

FERRAMENTAS DE FURAÇÃO

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BROCAS STANDARD

METAL DURO		PONTA INTERCAMBIÁVEL	
PARA FURO DE CENTRO E CHANFRO ...	N020	WSTAR INTERCAMBIÁVEL	N144
TOPO RETO	N025	TIPO INTERCAMBIÁVEL	
NEW DWAE	N030	MVX	N160
NEW TRISTAR	N038	TAF	N171
WSTAR	N046	BUCHA EXCÊNTRICA	N177
NEW DSA	N075	TIPO SOLDADA	
WSTAR PARA AÇO INOXIDÁVEL ...	N082	BROCA CANHÃO • ALARGADOR CANHÃO ...	N180
WSTAR PARA MOLDES E MATRIZES ...	N088	AÇO RÁPIDO INTEIRIÇO	
WSTAR PARA LIGAS DE ALUMÍNIO ...	N098	NEW PRÉ-FURO	N182
MAE / MAS	N104	HASTE PADRÃO FRESAMENTO ...	N184
PARA MATERIAIS COMPÓSITOS ...	N112	VIOLET DE PRECISÃO	N188
MSE	N119	VIOLET	N208
WSTAR (MWS)	N122	HASTE CILÍNDRICA	N210
MZE	N130	HASTE CÔNICA	N229
BROCA CANHÃO INTEIRIÇA ...	N136	HASTE TRIANGULAR	N243
PARA MATERIAIS NÃO FERROSOS ...	N140		
PARA MATERIAIS DUROS E FRÁGEIS ...	N142		

*Classificadas em ordem alfabética

N243 3KD	N112 MCC	N242 TTD
N142 DCBSS	N116 MCCH	N197 VAPDJ
N140 DCSSM	N114 MCT	N193 VAPDM
N140 DCSSS	N115 MCW	N202 VAPDMSUS
N020 DLE	N025 MFE	N188 VAPDS
N080 DSAE	N137 MGD	N206 VAPDSCB
N075 DSAS	N136 MGS	N199 VAPDSSUS
N038 DVAS	N088 MHS	N208 VSD
N030 DWAE	N082 MMS	
N228 EPSS	N098 MNS	
N182 GKCD	N119 MSE	
N210 GSD	N118 MSP	
N229 GTD	N068 MVE	
N241 GTTD	N046 MVS	
N222 GWSL	N160 MVX	
N220 GWSS	N122 MWS	
N240 GWTS	N130 MZE	
N177 JFS	N212 SD	
N218 KSD	N214 SD (Cilíndrica 1/100)	
N234 KTD	N215 SDLS	
N225 LSD	N186 SEPDM	
N236 LTD	N184 SEPDS	
N108 MAE	N144 STAW	
N104 MAS	N171 TAF	
N113 MCA	N151 TAW	
N117 MCAH	N230 TD	



IDENTIFICAÇÃO

CÓDIGO DE BROCAS

MV

S

0300

X

S

Aplicações	Refrigeração	Diâmetro	L/D	Tipo da haste
DVA : Usinagem Geral DWA : Tornos automáticos tipo Suíço e CNC compactos DSA : Para ligas resistentes ao calor MV : Usinagem Geral MF : Topo reto MG : Microbroca canhão MS : Para diâmetros pequenos MN : Para ligas de alumínio MH : Para moldes e matrizes MM : Para aço inoxidável MC : Para materiais compósitos DL : Para furo de centro e chanfro MA : Furação de alta precisão em alumínio e ferro fundido	E : Refrigeração Externa S : Refrigeração Interna	ex. 0050 → $\phi 0.5$ 0300 → $\phi 3.0$	S : 2D M : 3D L : 5D (MAE, MAS : 6D) X**D : **D X : 12D	A : Haste com diâmetro $\leq \phi$ de corte; B : Haste com diâmetro \geq ao ϕ de corte S*** : Diâm. da Haste

*Outros tipos especiais podem ser pedidos.

VC

S

S

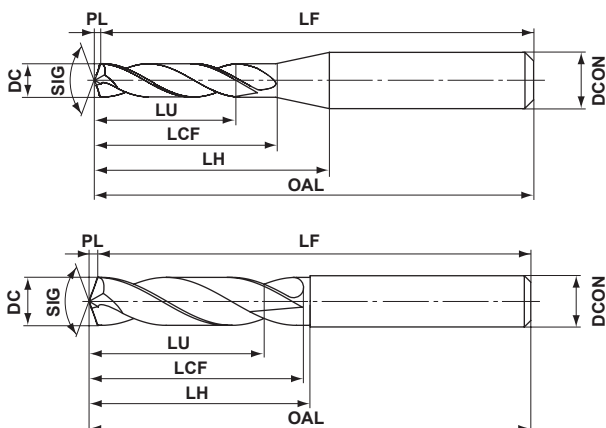
S

D0300

Nome do produto	Aplicações	Tipo da haste	Comprimento de corte	Diâmetro	Outros
DC : Broca com cobertura de diamante VA : Brocas de precisão com cobertura VIOLET (Aço rápido alta classe) SE : Brocas de alta precisão linha SE (Aço rápido) V : Brocas VIOLET G : Brocas com cobertura TiN (Aço rápido) E : Brocas HSS - Co Nenhum: Aço rápido	SD : Broca cilíndrica de uso geral TD : Broca cônica de uso geral PD : Para usinagem de alta precisão T : Para chapas sobrepostas W : Para furação profunda	S : Cilíndrica T : Cônica 3K : Triangular 6K : Hexagonal	S : Curto M : Médio J : Semilongo L : Longo	ex. D0050 → $\phi 0.5$ D0300 → $\phi 3.0$	A*** : Comp. Total M* : Cone Morse Nº

*Outros tipos especiais podem ser pedidos.

LEGENDA PARA SÍMBOLOS ISO 13399



Símbolo	Descrição
DC	Diâmetro de corte
SIG	Ângulo da ponta
LU	Comprimento útil
LCF	Comprimento do canal para cavacos
LH	Comprimento do diâmetro reduzido do corpo
OAL	Comprimento total
LF	Comprimento funcional
PL	Comprimento da ponta
DCON	Diâmetro da conexão

*Para símbolos que não constam nesta tabela, consulte as Informações Técnicas (página Q002).

DESCRIÇÕES DOS SÍMBOLOS

Material da ferramenta



Metal duro ultramicrogrão
Substrato de metal duro ultramicrogrão.



HSS alta classe para alta liga
Substrato de HSS alta classe para alta liga.



Aço rápido cobalto
Substrato de aço rápido cobalto.



Aço rápido cobalto D-STH
Substrato de aço rápido cobalto com tratamento superficial D-STH.



Aço rápido
Substrato de aço rápido.

Adelgaçamento do núcleo



Tipo X
Adelgaçamento tipo X é utilizado na ponta da broca.



Tipo Z
Adelgaçamento tipo Z é utilizado na ponta da broca.



Tipo XR
Adelgaçamento tipo XR é utilizado na ponta da broca.



Tipo C
Adelgaçamento tipo C é utilizado na ponta da broca.



Tipo S
Adelgaçamento tipo S é utilizado na ponta da broca.



Tipo N
Adelgaçamento tipo N é utilizado na ponta da broca.

Tolerância



Tolerância do diâmetro da broca



Tolerância do diâmetro da haste

Furo de refrigeração



Furo de refrigeração

Cobertura



Cobertura de diamante
Cobertura de diamante de alto desempenho e elevada força de adesão.



Cobertura VIOLET
Aumenta a vida útil da ferramenta em 2–3 vezes comparada com a cobertura TiN.



Cobertura TiN
Aumenta a vida útil da ferramenta em 2–3 vezes comparada aos produtos sem cobertura.



Cobertura PVD multicamadas
Com excelente resistência ao desgaste, é ideal para brocas de diâmetros pequenos.



Cobertura PVD multicamadas
Excelente resistência ao desgaste, aplicável em diversos materiais como aço baixo carbono, aço carbono, aço liga, aço inoxidável, ferro fundido e ligas de alumínio.



Cobertura PVD
Excelente resistência ao calor e alta lubrificidade, ideal para aços inoxidáveis.



Cobertura PVD
Nova classe com alta dureza que proporciona elevada resistência ao desgaste e à fratura, prolongando a vida útil na usinagem de ligas resistentes ao calor.



Cobertura MIRACLE
Exclusiva cobertura Miracle (Al,Ti)N. Também indicada para usinagem sem refrigeração.



Cobertura CVD de diamante
Elevada resistência ao desgaste e superfície lisa com a exclusiva tecnologia de controle dos cristais de diamante microgrão multicamadas.

Ângulo e formato da aresta de corte



Ângulo da ponta (SIG)
Indica o ângulo da ponta da broca.
*O ícone apresentado é apenas um exemplo.

APRESENTAÇÃO DO PRODUTO

NEW

DVAS Mini Brocas inteiriças de metal duro - Série TRISTAR

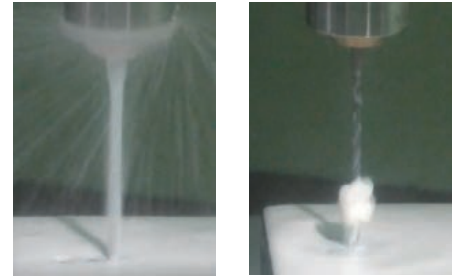
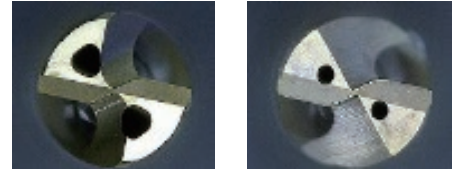
RÁPIDO, CONFIÁVEL E PRECISO.

Novos padrões estabelecidos através de 5 tecnologias!

Furo de refrigeração otimizado

A TRI-Cooling Technology é ideal para brocas de diâmetro pequeno e pode superar o dobro do volume de vazão convencional de fluido de refrigerante. Com isso, pode melhorar significativamente a expulsão de cavacos e a dissipação de calor, tornando a vida útil mais estável.

Comparação do volume de vazão de refrigeração



DVAS

Produto Convencional

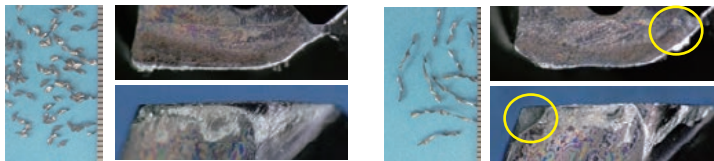
Novo adelgaçamento tipo XR

O novo adelgaçamento da ponta quebra os cavacos em formatos ideais, facilitando o fluxo de cavacos e reduzindo o esforço de corte.

Aresta de corte resistente e aguda

A aresta de corte reta e o adelgaçamento da ponta são conectados através de uma geometria levemente curva que aumenta significativamente a resistência à fratura. O ângulo de saída incorpora uma fase plana, que aumenta a resistência à craterização e facilita a expulsão de cavacos.

Grande craterização e fratura da aresta periférica.



DVAS

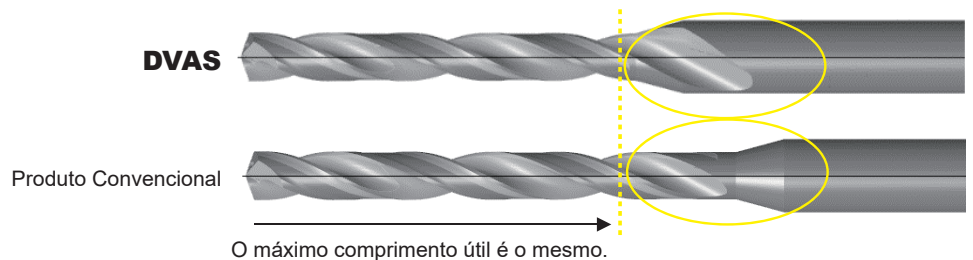
Produto Convencional

<Condições de Corte>

- Material : SCM440
- Ferramenta : DC=ø2mm, L/D=20
- Velocidade de Corte : vc= 50 m/min
- Avanço : fr= 0.06 mm/rot
- Modo de Usinagem : Com refrigeração, óleo solúvel, 2 Mpa

Exclusiva geometria do canal para maior rigidez

A broca curta com prolongamento reduzido foi projetada para oferecer alta rigidez e ótima expulsão de cavacos.



DVAS

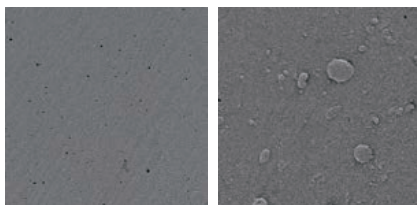
Produto Convencional

O máximo comprimento útil é o mesmo.

Nova classe com cobertura DP1120

A superfície extremamente lisa previne a obstrução por cavacos e a quebra. Além disso, a excelente resistência à craterização mantém a agudeza da aresta de corte, prolongando a vida útil.

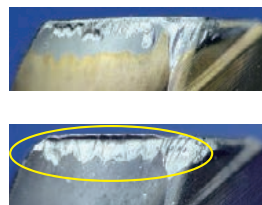
Imagem ampliada da superfície do canal



DVAS

Produto Convencional

DVAS



Produto Convencional

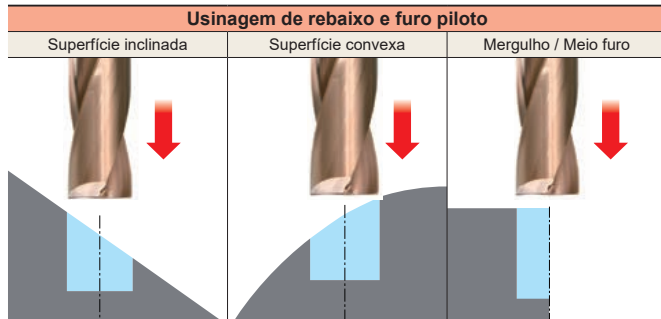
Grande craterização

<Condições de Corte>

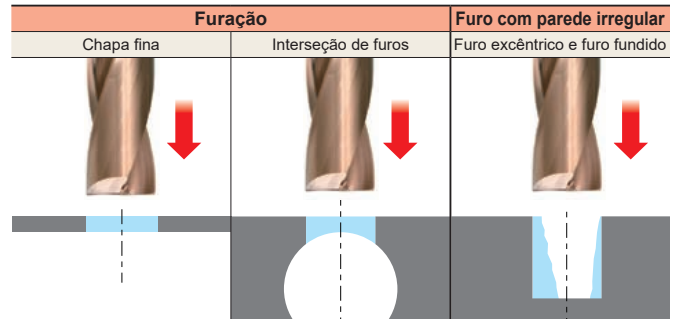
- Ferramenta : DC=ø2mm, L/D=20
- Velocidade de Corte : vc= 50 m/min
- Avanço : fr= 0.06 mm/rot
- Modo de Usinagem : Com refrigeração, óleo solúvel, 2 Mpa
- Número de furos : 500 furos

MFE Broca inteira de metal duro de topo reto

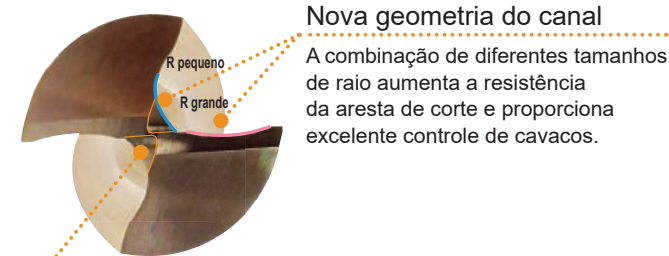
Furação de alta eficiência em diversos tipos de aplicação.



Alta eficiência e excelente resistência ao microlascamento na usinagem de rebaixo em diversas condições da superfície usinada.



Com baixo esforço de corte, previne a formação de rebarbas. Excelente desempenho na correção de furo excêntrico e furo fundido, devido à alta precisão de posição.



Nova geometria do canal

A combinação de diferentes tamanhos de raio aumenta a resistência da aresta de corte e proporciona excelente controle de cavacos.

Novo adelgaçamento "Z" com baixa força de empuxo

Esta nova geometria proporciona mais espaço para a saída de cavacos, resultando em excelente expulsão de cavacos e redução da força de empuxo.

*Brocas com diâmetro DC<3mm possuem formato de adelgaçamento diferente.



Alívio no canto

O alívio (saída de 0°) proporciona excelente resistência ao microlascamento.

ZERO-μ Surface

A superfície extremamente lisa reduz a deflexão e proporciona uma excelente precisão de posição.

NEW

DLE / GKCD Brocas inteiriças para furo de centro e chanfro

Brocas para pré-furo

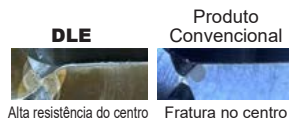
DLE



Ângulo da ponta escalonado 60°, 90°

O ângulo da ponta escalonado proporciona alta resistência na região central e previne fraturas repentinas.

*O centro no fundo do furo usinado será diferente de 60°, 90°.



Ângulo da ponta simples 120°, 145°

O ângulo da ponta simples proporciona precisão e favorece a entrada da broca nas operações de furação seguintes.



DP1020 Classe com cobertura

A classe DP1020 proporciona excelente resistência ao desgaste com baixo coeficiente de atrito, resultando em excelente versatilidade e longa vida útil.

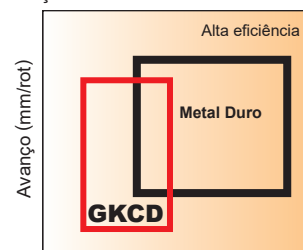
GKCD

O HSS cobalto é um material com excelente resistência ao calor, ao desgaste e ao microlascamento, sendo ideal para usinagem de diversos materiais, desde aço carbono a aços inoxidáveis. Proporciona excelente economia em aplicações com velocidades e avanços baixos.

Ângulo da ponta SIG 60°, 90°, 120°



Condições de corte diferentes do metal duro






FURAÇÃO

QUADRO DE SELEÇÃO PARA BROCAS METAL DURO

BROCAS INTEIRIÇAS

Aplicações	Código do Produto (Nome da linha)	Diâmetros Disponíveis	Prof. do Furo (L/D)	Refrigeração	Cobertura	Material						Formato	Página
						P	M	K	N	S	H		
						Aço	Aço Inoxidável	Ferro Fundido	Metais Não Ferrosos	Ligas Resist. ao Calor	Aço Endurecido		
Diâmetros pequenos	NEW DVAS...X02	φ1.0 -φ2.9	2	Interna	DP1	○	○	○	○	○			N038
	NEW DVAS...X07		7	Interna	DP1	○	○	○	○	○			N039
	NEW DVAS...X12		12	Interna	DP1	○	○	○	○	○			
	NEW DVAS...X20		20	Interna	DP1	○	○	○	○	○			
	NEW DVAS...X25		25	Interna	DP1	○	○	○	○	○			
	NEW DVAS...X30		30	Interna	DP1	○	○	○	○	○			
	NEW DVAS...X40		40	Interna	DP1	○	○	○	○	○			
	NEW DVAS...X50	φ1.0, 1.5, 2.0, 2.5	50	Interna	DP1	○	○	○	○	○			
	MVS...X02	φ1.0 -φ2.9	2	Interna	DP1	○	○	○	○	○			N046
	MVS...X07		7	Interna	DP1	○	○	○	○	○			N048
	MVS...X12		12	Interna	DP1	○	○	○	○	○			
	MVS...X20		20	Interna	DP1	○	○	○	○	○			
	MVS...X25		25	Interna	DP1	○	○	○	○	○			
	MVS...X30		30	Interna	DP1	○	○	○	○	○			
	MWS...SB	φ0.5 -φ2.95	1	Interna	VP	○	○	○	○	○			N122
MWS...LB	φ0.5 -φ2.9	5	Interna	VP	○	○	○	○	○				
MWS...XB		12	Interna	VP	○	○	○	○	○				
MWS...X20DB		20	Interna	VP	○	○	○	○	○				

Aplicações	Código do Produto (Nome da linha)	Diâmetros Disponíveis	Prof. do Furo (L/D)	Refrigeração	Cobertura	Material							Formato	Página
						P	M	K	N	S	H			
						Aço	Aço Inoxidável	Ferro Fundido	Metais Não Ferrosos	Ligas Resist. ao Calor	Aço Endurecido			
Diâmetros pequenos	MWS...X25DB	φ1.0 -φ2.95	25	Interna	VP	○	○	○	○	○			N122	
	MWS...X30DB		30	Interna	VP	○	○	○	○	○				
	MZE...SB	φ1.0 -φ1.9	2	Externa	VP	○	○	○	○	○	○		N130	
	MZE...SA	φ2.0 -φ2.9	2	Externa	VP	○	○	○	○	○	○			
	MZE...MA		3	Externa	VP	○	○	○	○	○	○			
Furação em Geral	MVE...X02	φ3.0 -φ20.0	2	Externa	DP1	○	○	○	○	○	○		N068	
	MVE...X03		3	Externa	DP1	○	○	○	○	○	○			
	MVS...X02...PL	φ3.0 -φ14.0	2	Interna	DP1	○	○	○	○	○	○		N046	
	MVS...X03	φ3.0 -φ20.0	3	Interna	DP1	○	○	○	○	○	○		N050	
	MVS...X05		5	Interna	DP1	○	○	○	○	○	○			
	MVS...X08	φ3.0 -φ16.0	8	Interna	DP1	○	○	○	○	○	○			
	MVS...X10		10	Interna	DP1	○	○	○	○	○	○			
	MVS...X15	φ3.0 -φ14.0	15	Interna	DP1	○	○	○	○	○	○			
	MVS...X20		20	Interna	DP1	○	○	○	○	○	○			
	MVS...X25	φ3.0 -φ12.0	25	Interna	DP1	○	○	○	○	○	○			
	MVS...X30	φ3.0 -φ10.0	30	Interna	DP1	○	○	○	○	○	○			
	MVS...X35		35	Interna	DP1	○	○	○	○	○	○			
	MVS...X40	φ3.0 -φ9.0	40	Interna	DP1	○	○	○	○	○	○			



QUADRO DE SELEÇÃO PARA BROCAS METAL DURO

BROCAS INTEIRIÇAS

Aplicações	Código do Produto (Nome da linha)	Diâmetros Disponíveis	Prof. do Furo (L/D)	Refrigeração	Cobertura	Material						Formato	Página
						P	M	K	N	S	H		
						Aço	Aço Inoxidável	Ferro Fundido	Metais Não Ferrosos	Ligas Resist. ao Calor	Aço Endurecido		
Furação em Geral	MZE...SA	φ3.0 -φ20.0	2	Externa		○	○	○	○	○	○		N130
	MZE...MA		3	Externa		○	○	○	○	○	○		
Para ligas resistentes ao calor	NEW DSAS...X03	φ3.0 -φ12.0	3	Interna						○			N075
	NEW DSAS...X05		5	Interna						○			
	NEW DSAE...X03		3	Externa						○			
Aço Inoxidável	MMS...X3DB	φ3.0 -φ20.0	3	Interna			○						N082
	MMS...X5DB		5	Interna			○						
Moldes e Matrizes	MHS	φ0.95 -φ12.0	1 -30	Interna		○	○			○	○		N088
Ligas de Alumínio	MNS...LB	φ3.0 -φ14.0	5	Interna	-					○			N098
	MNS...X10DB		10	Interna	-					○			
	MNS...X20DB		20	Interna	-					○			
	MNS...X30DB		φ3.0 -φ10.0	30	Interna	-				○			
Ligas de Alumínio, Ferro Fundido	MAE...MB	φ3.0 -φ16.0	3	Externa	-			○	○				N108
	MAS...MB		3	Interna	-			○	○				N104
	MAS...LB		6	Interna	-			○	○				

Aplicações	Código do Produto (Nome da linha)	Diâmetros Disponíveis	Prof. do Furo (L/D)	Refrigeração	Cobertura	Material							Formato	Página	
						P	M	K	N	S	H				
						Aço	Aço Inoxidável	Ferro Fundido	Metais Não Ferrosos	Ligas Resist. ao Calor	Aço Endurecido				
Materiais compósitos	MCC	φ4.76 -φ11.14	3	Externa		CFRP								N112	
	MCA		5	Interna		CFRP+Al								N113	
	MCT	φ6.38 -φ9.55	5	Interna	—	CFRP+Ti								N114	
	MCW		5	Interna		CFRP, CFRTP, CFRP+Al, CFRP+Ti								N115	
	MCCH		2 -15	Externa	—	CFRP								N116	
	MCAH	φ2.5 -φ9.55	3 -15	Externa	—	CFRP+Al								N117	
Tornos automáticos tipo Suízo e CNC compactos	NEW DWAE...X02		2	Externa		○	○	○						 DC<2.0 DC≥2.0	N030
	NEW DWAE...X04	φ1.0 -φ2.9	4	Externa		○	○	○							
	NEW DWAE...X02		2	Externa		○	○	○						N031	
	NEW DWAE...X04	φ3.0 -φ14.0	4	Externa		○	○	○							
Para furo de centro e chanfro	NEW DLE...P090	φ1.0 -φ2.5	—	Externa		○	○	○						N020	
	DLE...P060	φ3.0 -φ12.0	—	Externa		○	○	○							
	DLE...P090	φ3.0 -φ16.0	—	Externa		○	○	○							
	DLE...P120		—	Externa		○	○	○							
	NEW DLE...P145	φ3.0 -φ12.0	—	Externa		○	○	○							
															SIG 90°
															SIG 60°, 90°
															SIG 120°, 145°



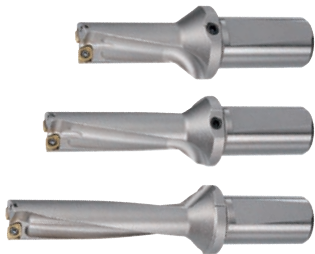
QUADRO DE SELEÇÃO PARA BROCAS METAL DURO

BROCAS INTEIRIÇAS


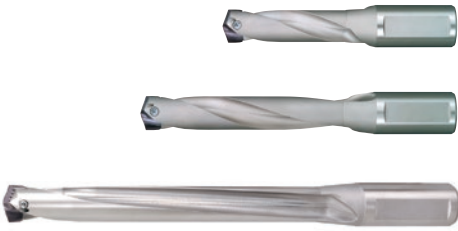
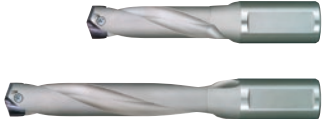
Aplicações	Código do Produto (Nome da linha)	Diâmetros Disponíveis	Prof. do Furo (L/D)	Refrigeração	Cobertura	Material						Formato	Página
						P	M	K	N	S	H		
Topo reto	MFE	φ0.75 -φ2.95	2	Externa		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		N025
		φ3.0 -φ20.0	2	Externa		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		N026
Para diâmetros pequenos	MSE	φ0.1 -φ0.99	-	Externa		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		N119
	MSP0300SB	-	-	Externa		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	 *Para pré-furo para broca MSE.	N118
Furação Profundidade	MGS	φ0.7 -φ3.0	-80	Interna	-	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		N136
Materiais não ferrosos	DCSSS	φ0.2 -φ2.0	-	Externa		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		N140
	DCSSM	φ2.1 -φ3.0	-	Externa		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		N140
Materiais duros e frágeis	DCBSS	φ0.05 -φ3.0	-	Externa		Materiais duros e frágeis, como cerâmica						N142	

BROCAS INTERCAMBIÁVEIS



Furação em Geral	MXV...X2	φ14.0 -φ63.0	2	Interna	-	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		N160
	MXV...X3		3	Interna	-	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
	MXV...X4		4	Interna	-	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
	MXV...X5		5	Interna	-	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
	MXV...X6		6	Interna	-	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		

Aplicações	Código do Produto (Nome da linha)	Diâmetros Disponíveis	Prof. do Furo (L/D)	Refrigeração	Cobertura	Material						Formato	Página
						P	M	K	N	S	H		
Furação em Geral	TAFS	φ12.0 -φ56.0	2	Interna	-	○	○	○					N171
	TAFM		3	Interna	-	○	○	○					
	TAFL	4	Interna	-	○	○	○						

BROCAS COM PONTA INTERCAMBIÁVEL

Furação em Geral	STAWSS	φ10.0 -φ18.4	1.5	Interna	-	○	○	○					N144
	STAWSN		3	Interna	-	○	○	○					
	STAWMN		5	Interna	-	○	○	○					
	STAWLN		8	Interna	-	○	○	○					
Usinagem de Ponte	TAWSN	φ18.5 -φ30.4	3	Interna	-	○	○	○					N151
	TAWMN		5	Interna	-	○	○	○					
	TAWLN		8	Interna	-	○	○	○					
Usinagem de Ponte	TAWSB	φ24.5 -φ26.7	3	Interna	-	○							N159
	TAWMB		5	Interna	-	○							

ALARGADOR CANHÃO SOLDADO

Acabamento	ALARGADOR CANHÃO	φ6.0 -φ30.0	-	Interna	-	○	○	○	○				N180
	ALARGADOR CANHÃO COM DIAMANTE COMPOSTO	φ6.0 -φ30.3	-	Interna	-				○				N181



QUADRO DE SELEÇÃO PARA BROCAS HSS

Tipo Da Broca	Aplicações	Código do Produto (Nome da linha)	Diâmetros Disponíveis	Material da Ferramenta	Refrigeração	Cobertura	Material						Formato	Página
							P	M	K	N	S	H		
							Aço	Aço Inoxidável	Ferro Fundido	Metais Não Ferrosos	Ligas Resist. ao Calor	Aço Endurecido		
Broca para furo de centro e chanfro	Para furo de centro e chanfro	NEW GKCD	φ3.0 -φ20.0	Aço rápido Cobalto	Externa		⊙	○	○					N182
Brocas com cobertura VIOLET	Geral, Alta Precisão	VAPDS	φ0.5 -φ13.0	Alta Classe, Aço rápido	Externa		⊙	○	○					N188
		VAPDM	φ0.5 -φ32.0		Externa		⊙	○	○					N193
		VAPDJ	φ1.0 -φ10.0		Externa		⊙	○	○					N197
	Geral, Aço Inoxidável	VAPDSSUS	φ0.5 -φ20.0	Aço rápido Cobalto	Externa		○	⊙	○	○				N199
		VAPDMSUS	φ0.5 -φ13.0	Externa		○	⊙	○	○				N202	
	Rebato	VAPDSCB	φ2.0 -φ32.0	Alta Classe, Aço rápido	Externa		⊙	○	○	○				N206
Linha VIOLET	Furação em Geral	VSD	φ0.5 -φ13.0	Aço rápido	Externa		⊙	○	○	○				N208
Brocas de alta precisão linha SE	Furação em Geral	SEPDS	φ0.5 -φ4.0	Aço rápido cobalto D-STH	Externa	-	⊙	○	⊙	○				N184
		SEPDM	φ0.5 -φ4.0		Externa	-	⊙	○	⊙	○				N186
Linha HASTE CILÍNDRICA	Furação em Geral	GSD	φ0.5 -φ13.0	Aço rápido	Externa		⊙	○	○	○				N210
		SD	φ0.2 -φ17.5		Externa	-	⊙	○	○	○				N212
		SD (Cilíndrica 1/100)	φ0.25 -φ5.95		Externa	-	⊙	○	○	○				N214
	Geral, Longa	SDLS	φ1.0 -φ10.0	Aço rápido	Externa	-	⊙	○	○	○				N215
	Furação em Geral	KSD	φ1.0 -φ13.0	Aço rápido Cobalto	Externa	-	⊙	⊙	○	○				N218

Tipo Da Broca	Aplicações	Código do Produto (Nome da linha)	Diâmetros Disponíveis	Material da Ferramenta	Refrigeração	Cobertura	Material						Formato	Página
							P	M	K	N	S	H		
							Aço	Aço Inoxidável	Ferro Fundido	Metais Não Ferrosos	Ligas Resist. ao Calor	Aço Endurecido		
Linha HASTE CILÍNDRICA	Furação Profunda	GWSS	φ1.0 -φ13.0	Aço rápido Cobalto	Externa		⊙	○	○	○				N220
		GWSL	φ2.0 -φ13.0	Aço rápido Cobalto	Externa		⊙	○	○	○				N222
		LSD	φ1.0 -φ13.0	Aço rápido	Externa	-	○	○	○	○				N225
	Chapas de Aço	EPSS	φ2.0 -φ13.0	Aço rápido	Externa	-	○	○	○	○				N228
Linha HASTE CÔNICA	Furação em Geral	GTD	φ6.0 -φ40.0	Aço rápido	Externa		⊙	○	○	○				N229
		TD	φ3.0 -φ75.0	Aço rápido	Externa	-	⊙	○	○	○				N230
		KTD	φ5.0 -φ50.0	Aço rápido Cobalto	Externa	-	⊙	○	○	○				N234
	Furação Profunda	GWTS	φ6.0 -φ32.0	Aço rápido Cobalto	Externa		⊙	○	○	○				N240
		LTD	φ6.0 -φ40.0	Aço rápido	Externa	-	○		○	○				N236
	Para Chapas Sobrepostas	GTDD	φ18.0 -φ26.0	Aço rápido	Externa		⊙							N241
		TTD	φ17.0 -φ32.0	Aço rápido	Externa	-	○							N242
	Linha HASTE TRIANGULAR	Furadeiras Elétricas	3KD	φ7.0 -φ26.0	Aço rápido	Externa	-	○		○				N243



Anotações

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Anotações

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CAMPO DE APLICAÇÃO

1ª Recomendação



2ª Recomendação

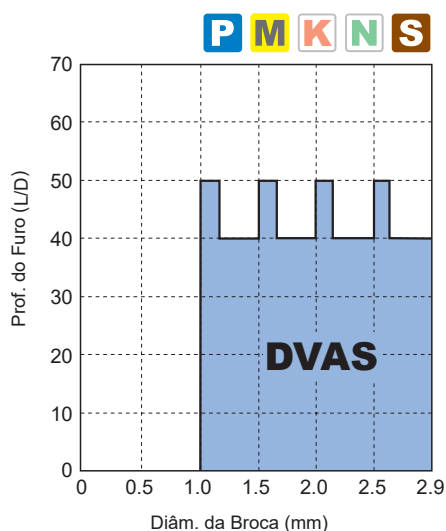


■ Brocas inteiriças de metal duro

DVAS Mini

NEW

Diâmetros pequenos



MVE/MVS

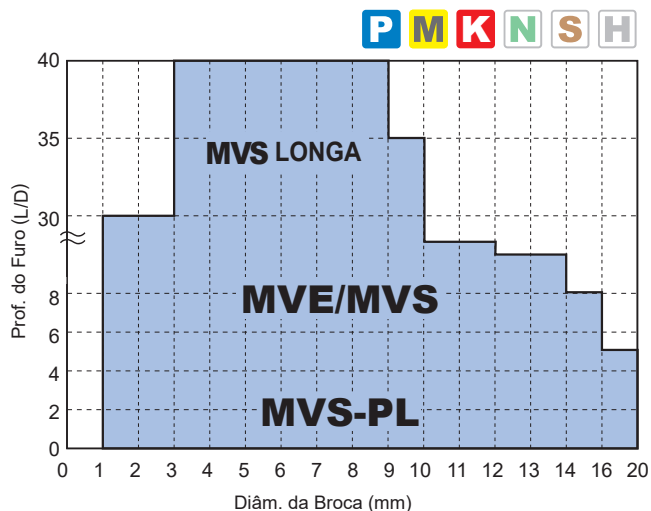
Furação em Geral



MVE



MVS



DSAE/DSAS

NEW

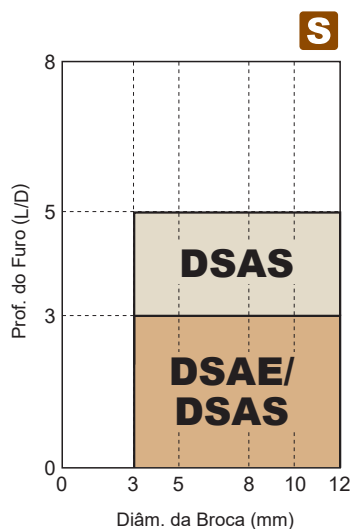
Para ligas resistentes ao calor



DSAE



DSAS

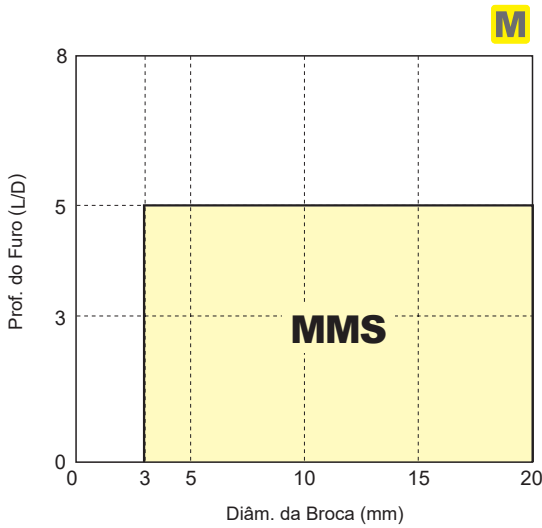


N

FURAÇÃO

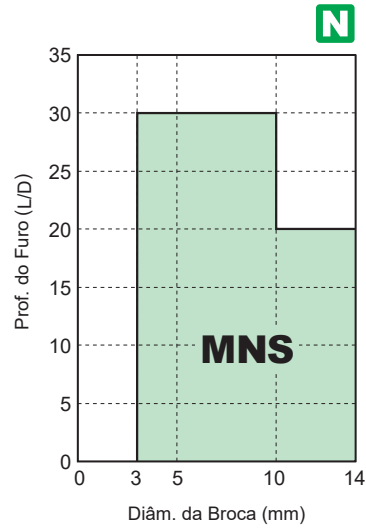
MMS

Para aço inoxidável



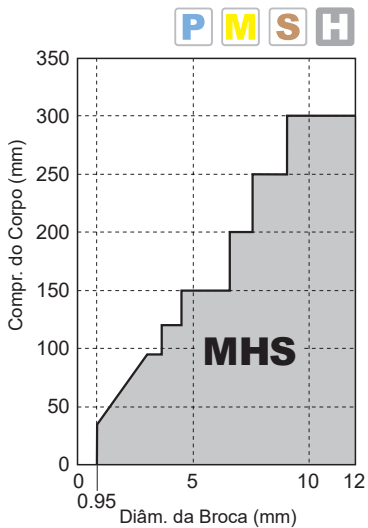
MNS

Para ligas de alumínio



MHS

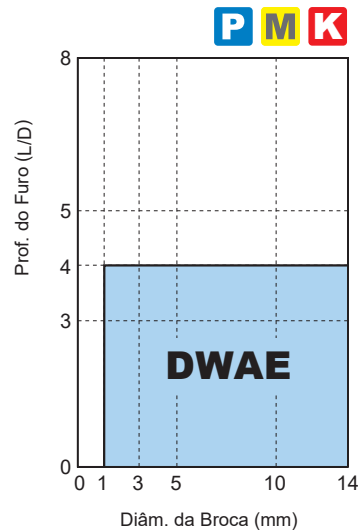
Para moldes e matrizes



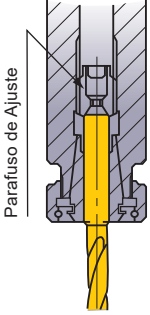
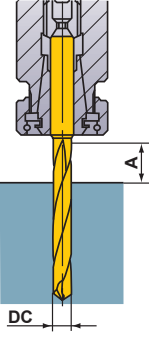
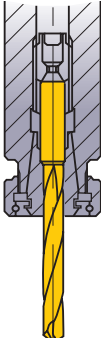
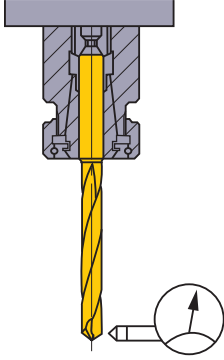
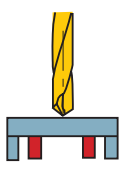
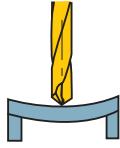
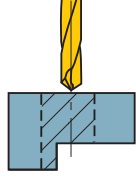
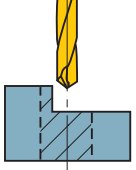
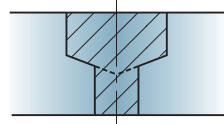
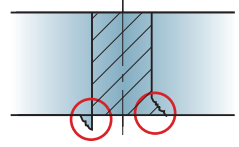
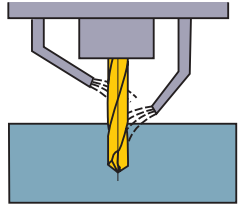
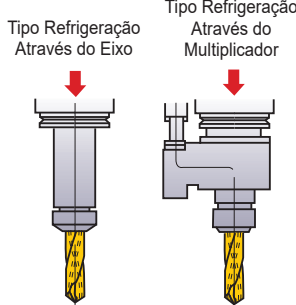
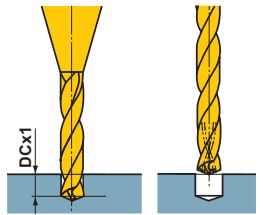
DWAE

NEW

Tornos automáticos tipo Suíço e CNC compactos



ORIENTAÇÃO DE OPERAÇÃO

<p>Fixação da Broca</p>  <p>Tenha certeza que a pinça esteja fixando a broca seguramente.</p>	<p>Comprimento da Broca</p>  <p>A Dimensão A deve ser DC x 1.5 ou mais (Quando DC < 3mm, A = DC x 2.0 ou mais).</p>	<p>Instalação da Broca</p>  <p>Não fixe a broca pela região do canal.</p>	<p>Tolância de Instalação</p>  <p>Batimento ≤ 0.03mm</p>
<p>Peça Fina</p>  <p>OK Ocorrência de deflexão</p>  <p>NG Peça com apoio adequado</p>	<p>Corte Interrompido</p>  <p>OK ① Reduza o avanço quando furar uma área interrompida.</p>  <p>Necessidade de usinagem prévia ① Rebaixo com uma fresa de topo.</p>	<p>Furos Conjugados</p>  <p>① Divida em 2 processos. ② Fure o diâmetro maior primeiro. * Uma ferramenta conjugada pode ser produzida através de pedido.</p>	<p>Rebarbas e Lascamento da Peça</p>  <p>Reduza o avanço na saída do furo passante.</p>
<p>Refrigeração externa</p>  <p>Recomenda-se ter dois bocais de refrigeração, um direcionado para o meio e outro para a ponta da broca.</p>	<p>Refrigeração interna</p>  <p>Tipo Refrigeração Através do Eixo Tipo Refrigeração Através do Multiplicador</p> <p>Menor que ø3mm : 1.5MPa-7MP Maior que ø3mm : 0.5MPa-7MP Recomendado: Superior a 3MPa.</p>	<p>Cuidados com o Fluido</p> <p><Quando usar refrigeração interna></p> <ol style="list-style-type: none"> Resíduos podem obstruir o furo de refrigeração das brocas de pequenos diâmetros. Sempre utilize um filtro com malha fina como uma medida preventiva. Partículas de sujeira aderem-se ao óleo lubrificante já utilizado e prejudicam um fluxo eficiente. A troca regular do lubrificante é recomendada. 	<p>Brocas de diâmetro pequeno</p>  <p>① Use um pré-furo de aprox. DC x 1 (DC=diâmetro da broca) usando uma broca com o menor comprimento de canal. ② Insira a broca com refrigeração interna no pré-furo e inicie a usinagem. Dependendo da aplicação, usine com avanço "pica-pau".</p>

*1 Para usinagem de pré-furo, consulte as brocas piloto nas páginas correspondentes a cada produto.

■ UTILIZAÇÃO (Para DC<3mm)

Utilize um filtro de malha fina (malha ≤ 5µm) para refrigeração a fim de prevenir a obstrução do canal de lubrificação.

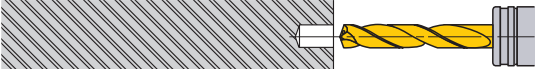
Antes da furação profunda com uma broca longa, recomenda-se usinar um furo de guia.

(Caso contrário, forças centrífugas podem causar quebra da broca.)

RECOMENDAÇÕES DE USO DAS BROCAS LONGAS

FURAÇÃO DE SUPERFÍCIES PLANAS ● Usinagem de um furo cego

1. Usinagem de furo de guia




① Use brocas piloto recomendadas para usinar o furo de guia.
★ Consulte as brocas piloto nas páginas correspondentes a cada produto.

② O furo de guia deve ser usinado com alta precisão.

③ Profundidade da furação: Aprox. $DC \times 1-2$.
(Ajuste a profundidade do furo de guia de acordo com o comprimento da broca tipo longa.)
★ Quando $L/D=50$, a profundidade do furo é $DC \times 7$.

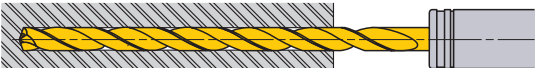
2. Furação profunda (entrada no furo de guia)



① Insira a broca longa no furo de guia em baixa rotação.
(Velocidade de corte 20–30m/min, avanço 0.2–0.3mm/rot)

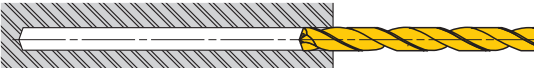
② Interrompa o avanço a uma distância de 0.5mm a 1mm do fundo do furo de guia. (Certifique-se para que a quina da broca seja inserida com segurança.)

3. Usine o furo profundo



① Inicie a usinagem na velocidade e avanço recomendados com um ciclo contínuo (sem "pica-pau").

4. Retorno da broca



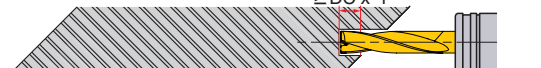
① Ao finalizar a operação de furação, diminua a rotação quando a broca estiver a uma distância aproximada de 0.5–1mm do fundo do furo, (Velocidade de avanço em torno de 20–30m/min)

② A uma velocidade de avanço de 3000mm/min, retorne a broca até a posição inicial da usinagem de furo profundo (dentro do furo guia).

③ Retire a broca do furo nas mesmas condições em que foi inserida no furo de guia.

FURAÇÃO INTERROMPIDA ● Entrada e saída da furação em superfícies irregulares ou inclinadas.

1. Rebaixamento na face em torno do furo (spot facing)

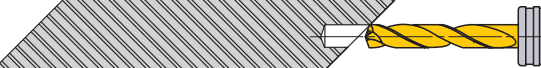


① Na usinagem de furo profundo em uma superfície inclinada, é recomendado usar a broca MFE ou uma fresa de topo para usinar o furo de guia.

② O furo de guia deve ser usinado com alta precisão.

③ Profundidade da furação: Aprox. $DC \times 1$.

2. Usinagem de furo de guia



① Use brocas piloto recomendadas para usinar o furo de guia.
★ Consulte as brocas piloto nas páginas correspondentes a cada produto.

② O furo de guia deve ser usinado com alta precisão.

③ Profundidade da furação: Aprox. $DC \times 1-2$.
(Ajuste a profundidade do furo de guia de acordo com o comprimento da broca tipo longa.)
★ Quando $L/D=50$, a profundidade do furo é $DC \times 7$.

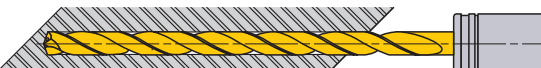
3. Furação profunda (entrada no furo de guia)



① Insira a broca longa no furo de guia em baixa rotação.
(Velocidade de corte 20–30m/min, avanço 0.2–0.3mm/rot)


② Interrompa o avanço a uma distância de 0.5mm a 1mm do fundo do furo de guia.

4. Usine o furo profundo



① Inicie a usinagem na velocidade e avanço recomendados com um ciclo contínuo (sem "pica-pau").

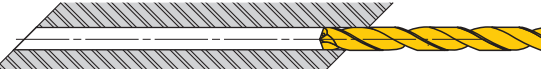
5. Saída de furos passantes



① Nas saídas de furos, a aresta de corte pode ser danificada.

② Reduza o avanço em 50% das condições normais para penetrar o furo.

6. Retorno da broca



① Finalmente, retire a broca do furo sob as mesmas condições no momento de penetração do furo guia ou seja, avanço de 0.2–0.3mm/rot. (Rotação em torno de 1000min⁻¹)

② A uma velocidade de avanço de 3000mm/min, retorne a broca para a posição inicial da usinagem de furo profundo (furo guia).

■ VELOCIDADE DE CORTE (vc)

$$vc = \frac{\pi \cdot DC \cdot n}{1000} \text{ (m/min)}$$

vc (m/min): Velocidade de Corte DC (mm) : Diâmetro da Broca
π (3.14) : Pi n (min⁻¹): Rotação do Eixo Principal

■ AVANÇO DO EIXO PRINCIPAL (vf)

$$vf = fr \cdot n \text{ (mm/min)}$$

vf (mm/min) : Velocidade de Avanço do Eixo Principal (eixo Z)
fr (mm/rot) : Avanço por Rotação
n (min⁻¹) : Rotação do Eixo Principal

FURAÇÃO(METAL DURO INTEIRIÇO)

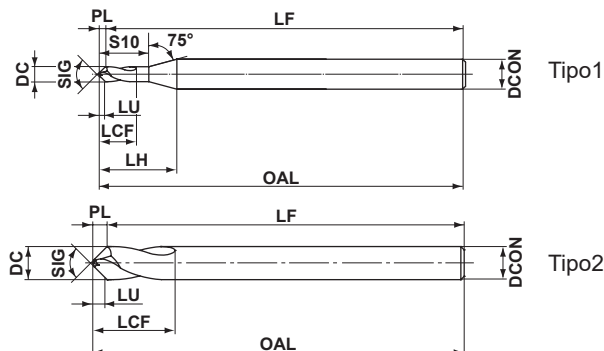
DLE

Para furo de centro e chanfro



Refrigeração Externa

■ Ângulo da ponta SIG 60°, 90°



■ Ângulo da ponta SIG 120°, 145°



h7	DCON=3	3<DCON≤6	6<DCON≤10	10<DCON≤16
	0 -0.010	0 -0.012	0 -0.015	0 -0.018

DC (mm)	SIG	DP1020 DP102A	Referência para Pedido	Dimensões (mm)										Tipo
				LU	LCF	LH	S10	OAL	LF	PL	KAPR	DCON	DC/4	
3.0	60°	●	DLE0300S030P060	2.0	9	—	—	45	42.9	2.1	60°	3	0.75	2
4.0	60°	●	DLE0400S040P060	2.7	12	—	—	50	47.2	2.8	60°	4	1.00	2
5.0	60°	●	DLE0500S050P060	3.4	14	—	—	60	56.5	3.5	60°	5	1.25	2
6.0	60°	●	DLE0600S060P060	4.0	15	—	—	66	61.8	4.2	60°	6	1.50	2
7.0	60°	●	DLE0700S070P060	4.7	18	—	—	74	69.1	4.9	60°	7	1.75	2
8.0	60°	●	DLE0800S080P060	5.4	20	—	—	74	68.4	5.6	60°	8	2.00	2
10.0	60°	●	DLE1000S100P060	6.8	24	—	—	84	77.0	7.0	60°	10	2.50	2
12.0	60°	●	DLE1200S120P060	8.1	28	—	—	95	86.6	8.4	60°	12	3.00	2
NEW 1.0	90°	●	DLE0100S030P090	0.35	2	6.7	3.0	45	44.6	0.4	45°	3	0.25	1
NEW 1.5	90°	●	DLE0150S030P090	0.55	3	7.3	4.5	45	44.4	0.6	45°	3	0.38	1
NEW 2.0	90°	●	DLE0200S030P090	0.80	4	7.9	6.1	45	44.1	0.9	45°	3	0.50	1
NEW 2.5	90°	●	DLE0250S030P090	1.00	5	7.9	7.1	45	43.9	1.1	45°	3	0.63	1
3.0	90°	●	DLE0300S030P090	1.2	9	—	—	45	43.7	1.3	45°	3	0.75	2
4.0	90°	●	DLE0400S040P090	1.6	12	—	—	50	48.3	1.7	45°	4	1.00	2
5.0	90°	●	DLE0500S050P090	2.0	14	—	—	60	57.9	2.1	45°	5	1.25	2
6.0	90°	●	DLE0600S060P090	2.4	15	—	—	66	63.4	2.6	45°	6	1.50	2
7.0	90°	●	DLE0700S070P090	2.8	18	—	—	74	71.0	3.0	45°	7	1.75	2
8.0	90°	●	DLE0800S080P090	3.2	20	—	—	74	70.6	3.4	45°	8	2.00	2
10.0	90°	●	DLE1000S100P090	4.1	24	—	—	84	79.7	4.3	45°	10	2.50	2
12.0	90°	●	DLE1200S120P090	4.9	28	—	—	95	89.9	5.1	45°	12	3.00	2
16.0	90°	●	DLE1600S160P090	6.6	35	—	—	113	106.2	6.8	45°	16	4.00	2
3.0	120°	●	DLE0300S030P120	0.8	9	—	—	45	44.1	0.9	30°	3	0.75	2
4.0	120°	●	DLE0400S040P120	1.1	12	—	—	50	48.8	1.2	30°	4	1.00	2
5.0	120°	●	DLE0500S050P120	1.3	14	—	—	60	58.6	1.4	30°	5	1.25	2

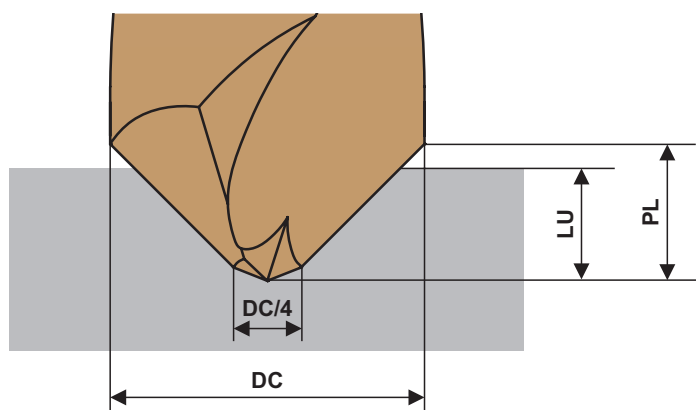
Nota 1) Ângulo da ponta SIG 60°, 90°

Nota 2) Devido à porção escalonada na ponta da broca (DC/4), o centro no fundo do furo usinado será diferente de 60° e 90°. Não é possível usinar chanfro com esta porção escalonada da broca.

● : Estoque mantido.

DC (mm)	SIG	DP1020	DP102A	Referência para Pedido	Dimensões (mm)									Tipo	
					LU	LCF	LH	S10	OAL	LF	PL	KAPR	DCON		DC/4
6.0	120°	●		DLE0600S060P120	1.6	15	—	—	66	64.3	1.7	30°	6	1.50	2
7.0	120°	●		DLE0700S070P120	1.9	18	—	—	74	72.0	2.0	30°	7	1.75	2
8.0	120°	●		DLE0800S080P120	2.2	20	—	—	74	71.7	2.3	30°	8	2.00	2
10.0	120°	●		DLE1000S100P120	2.8	24	—	—	84	81.1	2.9	30°	10	2.50	2
12.0	120°	●		DLE1200S120P120	3.3	28	—	—	95	91.5	3.5	30°	12	3.00	2
3.0	145°	●		DLE0300S030P145	0.4	9	—	—	45	44.5	0.5	17.5°	3	0.75	2
4.0	145°	●		DLE0400S040P145	0.5	12	—	—	50	49.4	0.6	17.5°	4	1.00	2
5.0	145°	●		DLE0500S050P145	0.7	14	—	—	60	59.2	0.8	17.5°	5	1.25	2
6.0	145°	●		DLE0600S060P145	0.8	15	—	—	66	65.1	0.9	17.5°	6	1.50	2
7.0	145°	●		DLE0700S070P145	1.0	18	—	—	74	72.9	1.1	17.5°	7	1.75	2
8.0	145°	●		DLE0800S080P145	1.1	20	—	—	74	72.7	1.3	17.5°	8	2.00	2
NEW 10.0	145°	●		DLE1000S100P145	1.4	24	—	—	84	82.4	1.6	17.5°	10	2.50	2
NEW 12.0	145°	●		DLE1200S120P145	1.7	28	—	—	95	93.1	1.9	17.5°	12	3.00	2

Nota 1) O diâmetro para furo de centro deve ser menor que o diâmetro da broca (diâmetro de corte) DC e o comprimento útil LU deve ser consultado como referência.



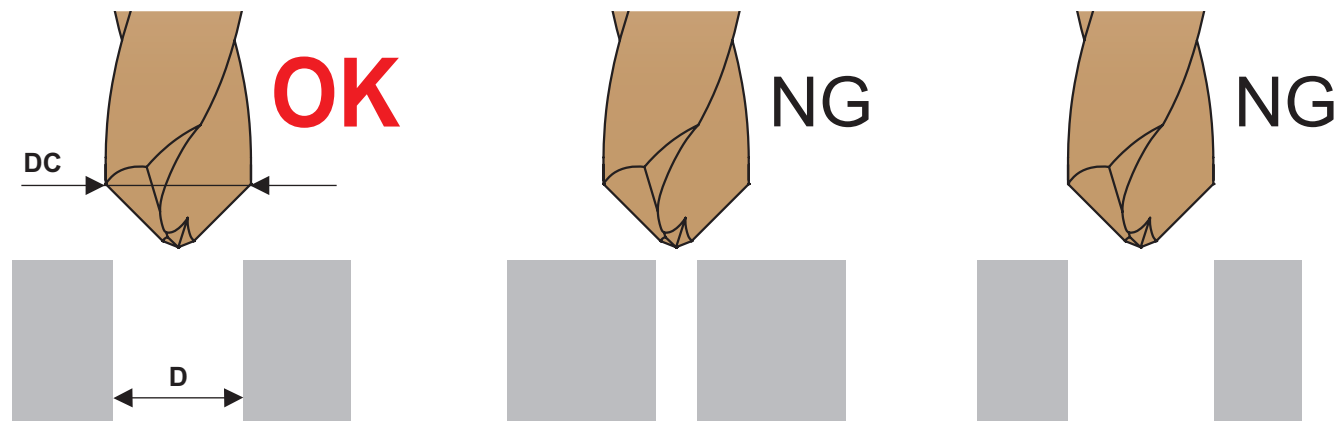
DLE

Para furo de centro e chanfro

Seleção do diâmetro da broca

Chanfro

Selecione o diâmetro da broca (DC) que seja maior que o diâmetro do furo de guia (D) e menor que o dobro deste (2xD).



Quando DC é igual ou maior que 2D:

Se o diâmetro da broca (DC) é muito grande (2D ou maior) em relação ao diâmetro do furo de guia (D), não pode realizar operações de chanfro.

Quando DC é igual a D:

Realize a usinagem de contorno ou selecione uma broca com diâmetro (DC) maior que o diâmetro do furo de guia (D).

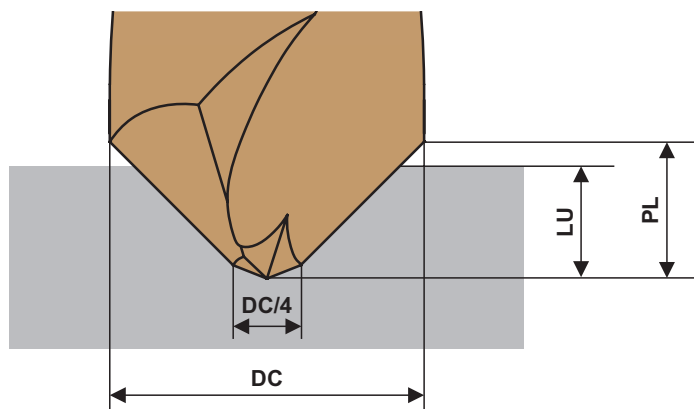
Exemplo: Se o diâmetro do furo de guia (D) é 5mm: o diâmetro da broca DC deve ser maior que 6 mm e menor que 10 mm. Selecione uma broca DC = 6 mm, 7 mm ou 8 mm.

Furo de centro

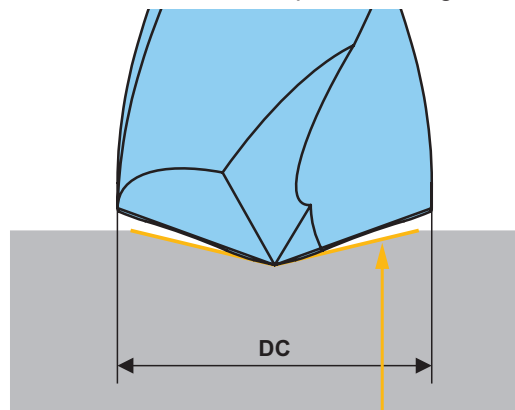
Para usinagem de furo de centro, não pode ser utilizado 100% do diâmetro da broca (DC). Consulte o comprimento útil LU como referência.

Devido à porção escalonada na ponta da broca ($DC/4$), o centro no fundo do furo usinado será diferente de 60° e 90°. Não é possível usinar chanfro com esta porção escalonada da broca.

Selecione a broca de centro com ângulo da ponta maior que a broca a ser usada no processo seguinte, para que esta inicie o corte pelo centro do furo.



Broca a ser usada no processo seguinte



Furo de centro com ângulo da ponta SIG145°

Ângulo da ponta SIG 60°

CONDIÇÕES DE CORTE RECOMENDADAS

Material	Aço Baixo Carbono (≤ 180 HB)		Aço Carbono-Aço Liga (180—280HB)		Aço Carbono-Aço Liga (280—350HB)	
	ASTM A36, AISI 1010 etc		AISI 1045, AISI 4140 etc		AISI 4340 etc	
Diâm. da Broca DC (mm)	Rotação (min^{-1})	Taxa de Avanço (mín.—máx.) (mm/rot)	Rotação (min^{-1})	Taxa de Avanço (mín.—máx.) (mm/rot)	Rotação (min^{-1})	Taxa de Avanço (mín.—máx.) (mm/rot)
3.0	7900	0.05(0.03—0.07)	6800	0.05(0.03—0.07)	6300	0.04(0.02—0.06)
4.0	5900	0.05(0.03—0.07)	5100	0.05(0.03—0.07)	4700	0.04(0.02—0.06)
5.0	5000	0.06(0.04—0.08)	4400	0.06(0.04—0.08)	4100	0.05(0.03—0.07)
6.0	4200	0.06(0.04—0.08)	3700	0.06(0.04—0.08)	3400	0.05(0.03—0.07)
7.0	3600	0.07(0.04—0.09)	3100	0.07(0.04—0.09)	2900	0.05(0.03—0.07)
8.0	3100	0.07(0.04—0.09)	2700	0.07(0.04—0.09)	2500	0.05(0.03—0.07)
10.0	2700	0.08(0.04—0.10)	2300	0.08(0.04—0.10)	2200	0.06(0.03—0.08)
12.0	2200	0.08(0.04—0.10)	1900	0.08(0.04—0.10)	1800	0.06(0.03—0.08)

Material	Aço Inoxidável Austenítico (≤ 200 HB)		Ferro Fundido Cinzento (≤ 350 MPa)		Ferro Fundido Nodular (≤ 450 MPa)	
	AISI 304, AISI 316 etc		DIN GG-30 etc		DIN GGG-45 etc	
Diâm. da Broca DC (mm)	Rotação (min^{-1})	Taxa de Avanço (mín.—máx.) (mm/rot)	Rotação (min^{-1})	Taxa de Avanço (mín.—máx.) (mm/rot)	Rotação (min^{-1})	Taxa de Avanço (mín.—máx.) (mm/rot)
3.0	1500	0.03(0.01—0.05)	7900	0.05(0.03—0.07)	5800	0.05(0.03—0.07)
4.0	1100	0.03(0.01—0.05)	5900	0.05(0.03—0.07)	4300	0.05(0.03—0.07)
5.0	1200	0.04(0.02—0.06)	5000	0.06(0.04—0.08)	3800	0.06(0.04—0.08)
6.0	1000	0.04(0.02—0.06)	4200	0.06(0.04—0.08)	3100	0.06(0.04—0.08)
7.0	900	0.04(0.02—0.06)	3600	0.07(0.04—0.09)	2700	0.06(0.04—0.08)
8.0	790	0.04(0.02—0.06)	3100	0.07(0.04—0.09)	2300	0.06(0.04—0.08)
10.0	630	0.04(0.02—0.06)	2700	0.08(0.04—0.10)	1900	0.07(0.04—0.09)
12.0	530	0.04(0.02—0.06)	2200	0.08(0.04—0.10)	1500	0.07(0.04—0.09)

Nota 1) Selecione o diâmetro da broca (DC) que seja maior que o diâmetro do furo de guia (D) e menor que o dobro deste ($2xD$).

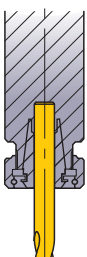
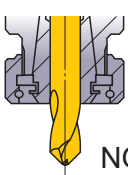
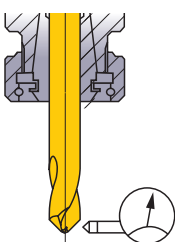
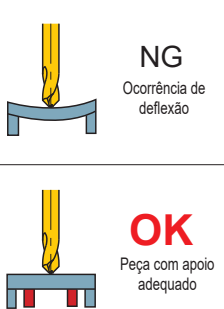
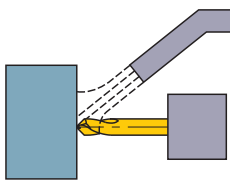
Nota 2) Na usinagem de furo de centro em superfícies irregulares ou inclinadas, reduza o avanço.

Nota 3) Para usinar canal V e chanfro, reduza os parâmetros de corte.

Nota 4) No caso de trepidação ou sons anormais, diminua o tempo de permanência do programa ("dwell time") ou reduza a rotação.

Nota 5) Na usinagem de furo de centro, não ultrapasse o **LU** (comprimento útil).

ORIENTAÇÃO DE OPERAÇÃO

Fixação da Broca	Instalação da Broca	Tolância de Instalação	Peça Fina	Método de Refrigeração
 <p>Tenha certeza que a pinça esteja fixando a broca seguramente.</p>	 <p>NG</p> <p>Não fixe a broca pela região do canal.</p>	 <p>Batimento $\leq 0.03\text{mm}$</p>	 <p>NG Ocorrência de deflexão</p> <p>OK Peça com apoio adequado</p>	 <p>Recomenda-se direcionar o bocal de refrigeração para a ponta da broca.</p>

FURAÇÃO(METAL DURO INTEIRIÇO)

DLE

Para furo de centro e chanfro

Ângulo da ponta SIG 90°, 120° e 145°

CONDIÇÕES DE CORTE RECOMENDADAS

Material	Aço Baixo Carbono (≤ 180 HB)		Aço Carbono-Aço Liga (180—280HB)		Aço Carbono-Aço Liga (280—350HB)	
	ASTM A36, AISI 1010 etc		AISI 1045, AISI 4140 etc		AISI 4340 etc	
Diâm. da Broca DC (mm)	Rotação (min ⁻¹)	Taxa de Avanço (mín.—máx.) (mm/rot)	Rotação (min ⁻¹)	Taxa de Avanço (mín.—máx.) (mm/rot)	Rotação (min ⁻¹)	Taxa de Avanço (mín.—máx.) (mm/rot)
1.0	9500	0.02 (0.01—0.03)	6300	0.02 (0.01—0.03)	4700	0.02 (0.01—0.03)
1.5	9500	0.02 (0.01—0.03)	7400	0.02 (0.01—0.03)	6300	0.02 (0.01—0.03)
2.0	9500	0.04 (0.03—0.05)	7900	0.04 (0.03—0.05)	7100	0.04 (0.03—0.05)
2.5	9500	0.04 (0.03—0.05)	8200	0.04 (0.03—0.05)	7600	0.04 (0.03—0.05)
3.0	7900	0.06 (0.04—0.08)	6800	0.06 (0.04—0.08)	6300	0.05 (0.03—0.07)
4.0	5900	0.06 (0.04—0.08)	5100	0.06 (0.04—0.08)	4700	0.05 (0.03—0.07)
5.0	5000	0.07 (0.05—0.09)	4400	0.07 (0.05—0.09)	4100	0.06 (0.04—0.08)
6.0	4200	0.07 (0.05—0.09)	3700	0.07 (0.05—0.09)	3400	0.06 (0.04—0.08)
7.0	3600	0.08 (0.05—0.10)	3100	0.08 (0.05—0.10)	2900	0.06 (0.04—0.08)
8.0	3100	0.08 (0.05—0.10)	2700	0.08 (0.05—0.10)	2500	0.06 (0.04—0.08)
10.0	2700	0.09 (0.05—0.11)	2300	0.09 (0.05—0.11)	2200	0.07 (0.04—0.09)
12.0	2200	0.09 (0.05—0.11)	1900	0.09 (0.05—0.11)	1800	0.07 (0.04—0.09)
16.0	1700	0.12 (0.10—0.14)	1500	0.12 (0.10—0.14)	1400	0.08 (0.06—0.10)

Material	Aço Inoxidável Austenítico (≤ 200 HB)		Ferro Fundido Cinzento (≤ 350 MPa)		Ferro Fundido Nodular (≤ 450 MPa)	
	AISI 304, AISI 316 etc		DIN GG-30 etc		DIN GGG-45 etc	
Diâm. da Broca DC (mm)	Rotação (min ⁻¹)	Taxa de Avanço (mín.—máx.) (mm/rot)	Rotação (min ⁻¹)	Taxa de Avanço (mín.—máx.) (mm/rot)	Rotação (min ⁻¹)	Taxa de Avanço (mín.—máx.) (mm/rot)
1.0	6300	0.01 (0.005—0.015)	9500	0.02 (0.01—0.03)	3100	0.02 (0.01—0.03)
1.5	4200	0.01 (0.005—0.015)	9500	0.02 (0.01—0.03)	5300	0.02 (0.01—0.03)
2.0	3100	0.04 (0.03—0.05)	9500	0.04 (0.03—0.05)	6300	0.04 (0.03—0.05)
2.5	2500	0.04 (0.03—0.05)	9500	0.04 (0.03—0.05)	7000	0.04 (0.03—0.05)
3.0	2100	0.04 (0.02—0.06)	7900	0.06 (0.04—0.08)	5800	0.06 (0.04—0.08)
4.0	1600	0.04 (0.02—0.06)	5900	0.06 (0.04—0.08)	4300	0.06 (0.04—0.08)
5.0	1200	0.06 (0.04—0.08)	5000	0.07 (0.05—0.09)	3800	0.07 (0.05—0.09)
6.0	1000	0.06 (0.04—0.08)	4200	0.07 (0.05—0.09)	3100	0.07 (0.05—0.09)
7.0	900	0.06 (0.04—0.08)	3600	0.08 (0.05—0.10)	2700	0.07 (0.05—0.09)
8.0	790	0.06 (0.04—0.08)	3100	0.08 (0.05—0.10)	2300	0.07 (0.05—0.09)
10.0	630	0.06 (0.04—0.08)	2700	0.09 (0.05—0.11)	1900	0.08 (0.05—0.10)
12.0	530	0.06 (0.04—0.08)	2200	0.09 (0.05—0.11)	1500	0.08 (0.05—0.10)
16.0	390	0.08 (0.06—0.10)	1700	0.12 (0.10—0.14)	1100	0.11 (0.09—0.13)

Nota 1) Selecione o diâmetro da broca (DC) que seja maior que o diâmetro do furo de guia (D) e menor que o dobro deste (2xD).

Nota 2) Na usinagem de furo de centro em superfícies irregulares ou inclinadas, reduza o avanço.

Nota 3) Para usinar canal V e chanfro, reduza os parâmetros de corte.

Nota 4) No caso de trepidação ou sons anormais, diminua o tempo de permanência do programa ("dwell time") ou reduza a rotação.

Nota 5) Na usinagem de furo de centro, não ultrapasse o LU (comprimento útil).

N

FURAÇÃO

MFE Diâmetros pequenos

Topo reto

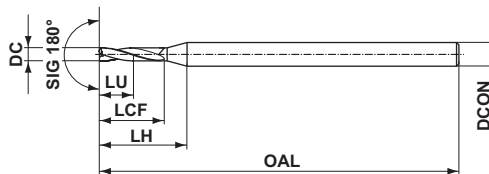
- Aresta de corte aguda com longa vida útil
- A combinação de diferentes raios proporciona alta resistência da aresta e excelente controle de cavacos.



METAL DURO



Refrigeração Externa



Tipo1

	$0.75 \leq DC \leq 2.95$	
	0 -0.014	
	DCON=3	DCON=4
	0 -0.006	0 -0.008

DC (mm)	Prof. do Furo (L/D)	DP102A	Referência para Pedido	Dimensões (mm)					Tipo
				LU	LCF	LH	OAL	DCON	
0.75	2	●	MFE0075X02S030	1.5	3.0	7.7	45	3	1
0.80	2	●	MFE0080X02S030	1.6	3.2	7.8	45	3	1
0.85	2	●	MFE0085X02S030	1.7	3.4	7.9	45	3	1
0.90	2	●	MFE0090X02S030	1.8	3.6	8.0	45	3	1
0.95	2	●	MFE0095X02S030	1.9	3.8	8.1	45	3	1
1.00	2	●	MFE0100X02S030	2.0	4.0	8.2	45	3	1
1.05	2	●	MFE0105X02S030	2.1	4.2	8.3	45	3	1
1.10	2	●	MFE0110X02S030	2.2	4.4	8.4	45	3	1
1.15	2	●	MFE0115X02S030	2.3	4.6	8.6	45	3	1
1.20	2	●	MFE0120X02S030	2.4	4.8	8.7	45	3	1
1.25	2	●	MFE0125X02S030	2.5	5.0	8.8	45	3	1
1.30	2	●	MFE0130X02S030	2.6	5.2	8.9	45	3	1
1.35	2	●	MFE0135X02S030	2.7	5.4	9.0	45	3	1
1.40	2	●	MFE0140X02S030	2.8	5.6	9.1	45	3	1
1.45	2	●	MFE0145X02S030	2.9	5.8	9.2	45	3	1
1.50	2	●	MFE0150X02S030	3.0	6.0	9.3	45	3	1
1.55	2	●	MFE0155X02S030	3.1	6.2	9.4	45	3	1
1.60	2	●	MFE0160X02S030	3.2	6.4	9.5	45	3	1
1.65	2	●	MFE0165X02S030	3.3	6.6	9.6	45	3	1
1.70	2	●	MFE0170X02S030	3.4	6.8	9.7	45	3	1
1.75	2	●	MFE0175X02S030	3.5	7.0	9.8	45	3	1
1.80	2	●	MFE0180X02S030	3.6	7.2	9.9	45	3	1
1.85	2	●	MFE0185X02S030	3.7	7.4	10.0	45	3	1
1.90	2	●	MFE0190X02S030	3.8	7.6	10.2	45	3	1
1.95	2	●	MFE0195X02S030	3.9	7.8	10.3	45	3	1
2.00	2	●	MFE0200X02S040	4.0	8.0	12.2	50	4	1
2.05	2	●	MFE0205X02S040	4.1	8.2	12.3	50	4	1
2.10	2	●	MFE0210X02S040	4.2	8.4	12.4	50	4	1
2.15	2	●	MFE0215X02S040	4.3	8.6	12.6	50	4	1
2.20	2	●	MFE0220X02S040	4.4	8.8	12.7	50	4	1
2.25	2	●	MFE0225X02S040	4.5	9.0	12.8	50	4	1
2.30	2	●	MFE0230X02S040	4.6	9.2	12.9	50	4	1
2.35	2	●	MFE0235X02S040	4.7	9.4	13.0	50	4	1
2.40	2	●	MFE0240X02S040	4.8	9.6	13.1	50	4	1
2.45	2	●	MFE0245X02S040	4.9	9.8	13.2	50	4	1
2.50	2	●	MFE0250X02S040	5.0	10.0	13.3	50	4	1
2.55	2	●	MFE0255X02S040	5.1	10.2	13.4	50	4	1
2.60	2	●	MFE0260X02S040	5.2	10.4	13.5	50	4	1
2.65	2	●	MFE0265X02S040	5.3	10.6	13.6	50	4	1
2.70	2	●	MFE0270X02S040	5.4	10.8	13.7	50	4	1
2.75	2	●	MFE0275X02S040	5.5	11.0	13.8	50	4	1
2.80	2	●	MFE0280X02S040	5.6	11.2	13.9	50	4	1
2.85	2	●	MFE0285X02S040	5.7	11.4	14.0	50	4	1
2.90	2	●	MFE0290X02S040	5.8	11.6	14.2	50	4	1
2.95	2	●	MFE0295X02S040	5.9	11.8	14.3	50	4	1

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FURAÇÃO

● : Estoque mantido.

FURAÇÃO(METAL DURO INTEIRIÇO)

MFE

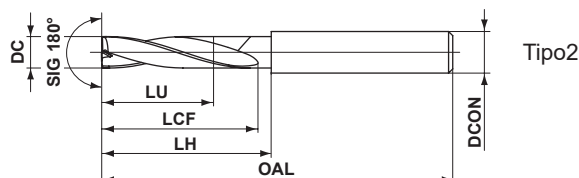
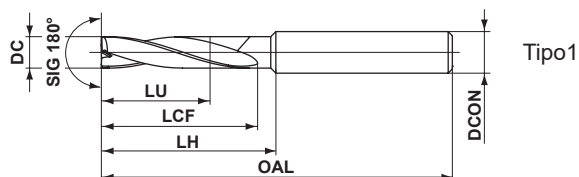
Topo reto

- Aresta de corte aguda com longa vida útil
- A combinação de diferentes raios proporciona alta resistência da aresta e excelente controle de cavacos.



Aço Aço Inoxidável Ferro Fundido Metais Não Ferrosos

Refrigeração Externa



	$3 \leq DC \leq 6$	$6 < DC \leq 10$	$10 < DC \leq 18$	$18 < DC \leq 20$
	$\begin{matrix} 0 \\ -0.012 \end{matrix}$	$\begin{matrix} 0 \\ -0.015 \end{matrix}$	$\begin{matrix} 0 \\ -0.018 \end{matrix}$	$\begin{matrix} 0 \\ -0.021 \end{matrix}$
	DCON=6	DCON=8, 10	DCON=12, 14, 16, 18	DCON=20
	$\begin{matrix} 0 \\ -0.008 \end{matrix}$	$\begin{matrix} 0 \\ -0.009 \end{matrix}$	$\begin{matrix} 0 \\ -0.011 \end{matrix}$	$\begin{matrix} 0 \\ -0.013 \end{matrix}$

DC (mm)	Prof. do Furo (L/D)	DP1020	Referência para Pedido	Dimensões (mm)					Tipo
				LU	LCF	LH	OAL	DCON	
3.0	2	●	MFE0300X02S060	6.0	12	19.6	55	6	1
3.1	2	●	MFE0310X02S060	6.2	14	21.4	55	6	1
3.2	2	●	MFE0320X02S060	6.4	14	21.2	55	6	1
3.3	2	●	MFE0330X02S060	6.6	14	21.0	55	6	1
3.4	2	●	MFE0340X02S060	6.8	14	20.9	55	6	1
3.5	2	●	MFE0350X02S060	7.0	14	20.7	55	6	1
3.6	2	●	MFE0360X02S060	7.2	16	22.5	55	6	1
3.7	2	●	MFE0370X02S060	7.4	16	22.3	55	6	1
3.8	2	●	MFE0380X02S060	7.6	16	22.1	55	6	1
3.9	2	●	MFE0390X02S060	7.8	16	21.9	55	6	1
4.0	2	●	MFE0400X02S060	8.0	16	21.7	55	6	1
4.1	2	●	MFE0410X02S060	8.2	18	23.5	62	6	1
4.2	2	●	MFE0420X02S060	8.4	18	23.4	62	6	1
4.3	2	●	MFE0430X02S060	8.6	18	23.2	62	6	1
4.4	2	●	MFE0440X02S060	8.8	18	23.0	62	6	1
4.5	2	●	MFE0450X02S060	9.0	18	22.8	62	6	1
4.6	2	●	MFE0460X02S060	9.2	20	23.7	62	6	1
4.7	2	●	MFE0470X02S060	9.4	20	23.7	62	6	1
4.8	2	●	MFE0480X02S060	9.6	20	23.6	62	6	1
4.9	2	●	MFE0490X02S060	9.8	20	23.6	62	6	1
5.0	2	●	MFE0500X02S060	10.0	20	23.5	62	6	1
5.1	2	●	MFE0510X02S060	10.2	22	25.5	62	6	1
5.2	2	●	MFE0520X02S060	10.4	22	25.4	62	6	1
5.3	2	●	MFE0530X02S060	10.6	22	25.4	62	6	1
5.4	2	●	MFE0540X02S060	10.8	22	25.3	62	6	1
5.5	2	●	MFE0550X02S060	11.0	22	25.3	62	6	1
5.6	2	●	MFE0560X02S060	11.2	24	27.2	62	6	1
5.7	2	●	MFE0570X02S060	11.4	24	27.2	62	6	1
5.8	2	●	MFE0580X02S060	11.6	24	27.1	62	6	1
5.9	2	●	MFE0590X02S060	11.8	24	27.1	62	6	1

FURAÇÃO

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● : Estoque mantido.

DC (mm)	Prof. do Furo (L/D)	DP1020	Referência para Pedido	Dimensões (mm)					Tipo
				LU	LCF	LH	OAL	DCON	
6.0	2	●	MFE0600X02S060	12.0	24	27.0	62	6	1
6.1	2	●	MFE0610X02S070	12.2	26	29.5	74	7	1
6.1	2	●	MFE0610X02S080	12.2	26	30.0	74	8	1
6.2	2	●	MFE0620X02S070	12.4	26	29.4	74	7	1
6.2	2	●	MFE0620X02S080	12.4	26	29.9	74	8	1
6.3	2	●	MFE0630X02S070	12.6	26	29.4	74	7	1
6.3	2	●	MFE0630X02S080	12.6	26	29.9	74	8	1
6.4	2	●	MFE0640X02S070	12.8	26	29.3	74	7	1
6.4	2	●	MFE0640X02S080	12.8	26	29.8	74	8	1
6.5	2	●	MFE0650X02S070	13.0	26	29.3	74	7	1
6.5	2	●	MFE0650X02S080	13.0	26	29.8	74	8	1
6.6	2	●	MFE0660X02S070	13.2	28	31.2	74	7	1
6.6	2	●	MFE0660X02S080	13.2	28	31.7	74	8	1
6.7	2	●	MFE0670X02S070	13.4	28	31.2	74	7	1
6.7	2	●	MFE0670X02S080	13.4	28	31.7	74	8	1
6.8	2	●	MFE0680X02S070	13.6	28	31.1	74	7	1
6.8	2	●	MFE0680X02S080	13.6	28	31.6	74	8	1
6.9	2	●	MFE0690X02S070	13.8	28	31.1	74	7	1
6.9	2	●	MFE0690X02S080	13.8	28	31.6	74	8	1
7.0	2	●	MFE0700X02S070	14.0	28	31.0	74	7	1
7.0	2	●	MFE0700X02S080	14.0	28	31.5	74	8	1
7.1	2	●	MFE0710X02S080	14.2	30	33.5	74	8	1
7.2	2	●	MFE0720X02S080	14.4	30	33.4	74	8	1
7.3	2	●	MFE0730X02S080	14.6	30	33.4	74	8	1
7.4	2	●	MFE0740X02S080	14.8	30	33.3	74	8	1
7.5	2	●	MFE0750X02S080	15.0	30	33.3	74	8	1
7.6	2	●	MFE0760X02S080	15.2	32	35.2	74	8	1
7.7	2	●	MFE0770X02S080	15.4	32	35.2	74	8	1
7.8	2	●	MFE0780X02S080	15.6	32	35.1	74	8	1
7.9	2	●	MFE0790X02S080	15.8	32	35.1	74	8	1
8.0	2	●	MFE0800X02S080	16.0	32	35.0	74	8	1
8.1	2	●	MFE0810X02S100	16.2	34	38.0	84	10	1
8.2	2	●	MFE0820X02S100	16.4	34	37.9	84	10	1
8.3	2	●	MFE0830X02S100	16.6	34	37.9	84	10	1
8.4	2	●	MFE0840X02S100	16.8	34	37.8	84	10	1
8.5	2	●	MFE0850X02S100	17.0	34	37.8	84	10	1
8.6	2	●	MFE0860X02S100	17.2	36	39.7	84	10	1
8.7	2	●	MFE0870X02S100	17.4	36	39.7	84	10	1
8.8	2	●	MFE0880X02S100	17.6	36	39.6	84	10	1
8.9	2	●	MFE0890X02S100	17.8	36	39.6	84	10	1
9.0	2	●	MFE0900X02S100	18.0	36	39.5	84	10	1
9.1	2	●	MFE0910X02S100	18.2	38	41.5	84	10	1
9.2	2	●	MFE0920X02S100	18.4	38	41.4	84	10	1
9.3	2	●	MFE0930X02S100	18.6	38	41.4	84	10	1
9.4	2	●	MFE0940X02S100	18.8	38	41.3	84	10	1
9.5	2	●	MFE0950X02S100	19.0	38	41.3	84	10	1
9.6	2	●	MFE0960X02S100	19.2	40	43.2	84	10	1
9.7	2	●	MFE0970X02S100	19.4	40	43.2	84	10	1

FURAÇÃO(METAL DURO INTEIRIÇO)

MFE

Topo reto

DC (mm)	Prof. do Furo (L/D)	DP1020	Referência para Pedido	Dimensões (mm)					Tipo
				LU	LCF	LH	OAL	DCON	
9.8	2	●	MFE0980X02S100	19.6	40	43.1	84	10	1
9.9	2	●	MFE0990X02S100	19.8	40	43.1	84	10	1
10.0	2	●	MFE1000X02S100	20.0	40	43.0	84	10	1
10.1	2	●	MFE1010X02S120	20.2	42	46.0	95	12	1
10.2	2	●	MFE1020X02S120	20.4	42	45.9	95	12	1
10.3	2	●	MFE1030X02S120	20.6	42	45.9	95	12	1
10.4	2	●	MFE1040X02S120	20.8	42	45.8	95	12	1
10.5	2	●	MFE1050X02S120	21.0	42	45.8	95	12	1
10.6	2	●	MFE1060X02S120	21.2	44	47.7	95	12	1
10.7	2	●	MFE1070X02S120	21.4	44	47.7	95	12	1
10.8	2	●	MFE1080X02S120	21.6	44	47.6	95	12	1
10.9	2	●	MFE1090X02S120	21.8	44	47.6	95	12	1
11.0	2	●	MFE1100X02S120	22.0	44	47.5	95	12	1
11.1	2	●	MFE1110X02S120	22.2	46	49.5	95	12	1
11.2	2	●	MFE1120X02S120	22.4	46	49.4	95	12	1
11.3	2	●	MFE1130X02S120	22.6	46	49.4	95	12	1
11.4	2	●	MFE1140X02S120	22.8	46	49.3	95	12	1
11.5	2	●	MFE1150X02S120	23.0	46	49.3	95	12	1
11.6	2	●	MFE1160X02S120	23.2	48	51.2	95	12	1
11.7	2	●	MFE1170X02S120	23.4	48	51.2	95	12	1
11.8	2	●	MFE1180X02S120	23.6	48	51.1	95	12	1
11.9	2	●	MFE1190X02S120	23.8	48	51.1	95	12	1
12.0	2	●	MFE1200X02S120	24.0	48	51.0	95	12	1
12.5	2	●	MFE1250X02S140	25.0	50	53.0	102	14	2
13.0	2	●	MFE1300X02S140	26.0	52	55.0	102	14	2
13.5	2	●	MFE1350X02S140	27.0	54	57.0	102	14	2
14.0	2	●	MFE1400X02S140	28.0	56	59.0	102	14	2
14.5	2	●	MFE1450X02S160	29.0	58	61.0	111	16	2
15.0	2	●	MFE1500X02S160	30.0	60	63.0	111	16	2
15.5	2	●	MFE1550X02S160	31.0	62	65.0	111	16	2
16.0	2	●	MFE1600X02S160	32.0	64	67.0	111	16	2
16.5	2	●	MFE1650X02S180	33.0	66	69.0	119	18	2
17.0	2	●	MFE1700X02S180	34.0	68	71.0	119	18	2
17.5	2	●	MFE1750X02S180	35.0	70	73.0	119	18	2
18.0	2	●	MFE1800X02S180	36.0	72	75.0	119	18	2
18.5	2	●	MFE1850X02S200	37.0	74	77.0	127	20	2
19.0	2	●	MFE1900X02S200	38.0	76	79.0	127	20	2
19.5	2	●	MFE1950X02S200	39.0	78	81.0	127	20	2
20.0	2	●	MFE2000X02S200	40.0	80	83.0	127	20	2

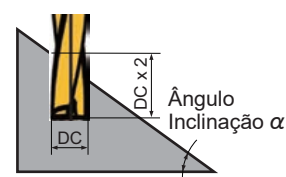
● : Estoque mantido.

CONDIÇÕES DE CORTE RECOMENDADAS

Material		Aço Baixo Carbono ($\leq 180\text{HB}$)		Aço Carbono, Aço Liga (180–280HB)		Aço Carbono, Aço Liga (280–350HB)	
		AISI 1010 etc		AISI 1045, AISI 4140 etc		AISI 4340 etc	
Diâm. DC (mm)	Prof. do Furo (L/D)	Rotação (min^{-1})	Superfície plana $\alpha=0^\circ$ Taxa de Avanço (mín.–máx.) (mm/rot)	Rotação (min^{-1})	Superfície plana $\alpha=0^\circ$ Taxa de Avanço (mín.–máx.) (mm/rot)	Rotação (min^{-1})	Superfície plana $\alpha=0^\circ$ Taxa de Avanço (mín.–máx.) (mm/rot)
0.75	≤ 2	23300	0.030 (0.010–0.050)	19000	0.030 (0.010–0.050)	16900	0.030 (0.010–0.050)
1.0	≤ 2	17500	0.030 (0.010–0.050)	14300	0.030 (0.010–0.050)	12700	0.030 (0.010–0.050)
1.5	≤ 2	12200	0.035 (0.015–0.055)	10000	0.035 (0.015–0.055)	8400	0.035 (0.015–0.050)
2.0	≤ 2	9500	0.040 (0.020–0.060)	7900	0.040 (0.020–0.060)	6700	0.040 (0.020–0.060)
2.5	≤ 2	7900	0.050 (0.030–0.070)	6600	0.050 (0.030–0.070)	5700	0.050 (0.030–0.070)
3.0	≤ 2	7900	0.060 (0.040–0.080)	7900	0.060 (0.040–0.080)	6800	0.060 (0.040–0.080)
4.0	≤ 2	5900	0.080 (0.060–0.100)	5900	0.080 (0.060–0.100)	5100	0.080 (0.060–0.100)
5.0	≤ 2	4700	0.100 (0.080–0.130)	4700	0.100 (0.080–0.130)	4100	0.100 (0.080–0.130)
6.0	≤ 2	3900	0.130 (0.100–0.150)	3900	0.130 (0.100–0.150)	3400	0.130 (0.100–0.150)
8.0	≤ 2	2900	0.150 (0.130–0.170)	2900	0.150 (0.130–0.170)	2500	0.150 (0.130–0.170)
10.0	≤ 2	2300	0.170 (0.150–0.200)	2300	0.170 (0.150–0.200)	2000	0.170 (0.150–0.200)
12.0	≤ 2	1900	0.200 (0.170–0.250)	1900	0.200 (0.170–0.250)	1700	0.200 (0.170–0.250)
16.0	≤ 2	1400	0.250 (0.200–0.300)	1400	0.250 (0.200–0.300)	1200	0.250 (0.200–0.300)
20.0	≤ 2	1100	0.300 (0.250–0.350)	1100	0.300 (0.250–0.350)	1000	0.300 (0.250–0.350)

Material		Aço Inoxidável Austenítico ($\leq 200\text{HB}$)		Ferro Fundido Cinzento ($\leq 350\text{MPa}$)		Ferro Fundido Nodular ($\leq 450\text{MPa}$)	
		AISI 304, AISI 316 etc		DIN GG-30 etc		DIN GGG-45 etc	
Diâm. DC (mm)	Prof. do Furo (L/D)	Rotação (min^{-1})	Superfície plana $\alpha=0^\circ$ Taxa de Avanço (mín.–máx.) (mm/rot)	Rotação (min^{-1})	Superfície plana $\alpha=0^\circ$ Taxa de Avanço (mín.–máx.) (mm/rot)	Rotação (min^{-1})	Superfície plana $\alpha=0^\circ$ Taxa de Avanço (mín.–máx.) (mm/rot)
0.75	≤ 2	10600	0.007 (0.003–0.011)	23300	0.030 (0.010–0.050)	16900	0.010 (0.005–0.015)
1.0	≤ 2	7900	0.007 (0.003–0.011)	17500	0.030 (0.010–0.050)	12700	0.010 (0.005–0.015)
1.5	≤ 2	5300	0.010 (0.005–0.015)	12200	0.035 (0.015–0.055)	10000	0.020 (0.010–0.030)
2.0	≤ 2	4700	0.015 (0.010–0.020)	9500	0.040 (0.020–0.060)	8700	0.030 (0.015–0.045)
2.5	≤ 2	3800	0.015 (0.010–0.020)	7900	0.050 (0.030–0.070)	7300	0.045 (0.025–0.065)
3.0	≤ 2	3100	0.020 (0.010–0.030)	7900	0.060 (0.040–0.080)	6800	0.050 (0.040–0.060)
4.0	≤ 2	2300	0.030 (0.020–0.040)	5900	0.080 (0.060–0.100)	5500	0.060 (0.050–0.080)
5.0	≤ 2	1900	0.040 (0.030–0.050)	4700	0.100 (0.080–0.120)	4400	0.080 (0.060–0.100)
6.0	≤ 2	1500	0.050 (0.040–0.060)	3900	0.120 (0.100–0.140)	3700	0.100 (0.080–0.120)
8.0	≤ 2	1100	0.060 (0.050–0.080)	2900	0.140 (0.120–0.160)	2700	0.120 (0.100–0.150)
10.0	≤ 2	950	0.080 (0.060–0.100)	2300	0.160 (0.140–0.180)	2200	0.150 (0.120–0.180)
12.0	≤ 2	790	0.100 (0.080–0.120)	1900	0.180 (0.160–0.200)	1800	0.180 (0.150–0.200)
16.0	≤ 2	590	0.120 (0.100–0.150)	1400	0.200 (0.180–0.240)	1300	0.200 (0.180–0.250)
20.0	≤ 2	470	0.150 (0.120–0.200)	1100	0.240 (0.200–0.280)	1100	0.250 (0.200–0.300)

Material		Ligas de Alumínio (Si<5%)	
Diâm. DC (mm)	Prof. do Furo (L/D)	Rotação (min^{-1})	Superfície plana $\alpha=0^\circ$ Taxa de Avanço (mín.–máx.) (mm/rot)
0.75	≤ 2	42400	0.020 (0.010–0.030)
1.0	≤ 2	31800	0.020 (0.010–0.030)
1.5	≤ 2	21200	0.020 (0.010–0.030)
2.0	≤ 2	17500	0.050 (0.030–0.070)
2.5	≤ 2	14000	0.060 (0.040–0.090)
3.0	≤ 2	11600	0.060 (0.040–0.090)
4.0	≤ 2	8700	0.080 (0.060–0.100)
5.0	≤ 2	7000	0.100 (0.080–0.130)
6.0	≤ 2	5800	0.130 (0.100–0.160)
8.0	≤ 2	4300	0.160 (0.130–0.200)
10.0	≤ 2	3500	0.200 (0.160–0.240)
12.0	≤ 2	2900	0.240 (0.200–0.280)
16.0	≤ 2	2100	0.280 (0.240–0.320)
20.0	≤ 2	1700	0.320 (0.280–0.360)



Nota 1) A profundidade do furo recomendada é $DC \times 2$. Na usinagem de superfícies inclinadas, esta profundidade deve ser considerada a partir do ponto mais alto em que a broca inicia o contato com a peça. (Consulte o diagrama.)

Nota 2) As condições de corte recomendadas acima referem-se à furação em superfícies planas.

Para usinagem de superfícies inclinadas, ajuste o avanço de acordo com o ângulo de inclinação.

Quando o ângulo de inclinação α é igual ou inferior a 30° , reduza o avanço para 70% ou menos.

Quando o ângulo de inclinação α é superior a 30° , reduza o avanço para 50% ou menos.

Nota 3) Este produto é uma ferramenta para furação. Não deve ser usada para usinagem transversal ou interpolação helicoidal.

FURAÇÃO(METAL DURO INTEIRIÇO)

DWAE NEW Mini
BROCAS WSTAR

- Comprimento otimizado do canal, ideal para uso em tornos automáticos tipo Suíço e CNC compactos.
- A geometria de baixo esforço de corte permite furação estável mesmo em condições de baixa rigidez da peça e da fixação.



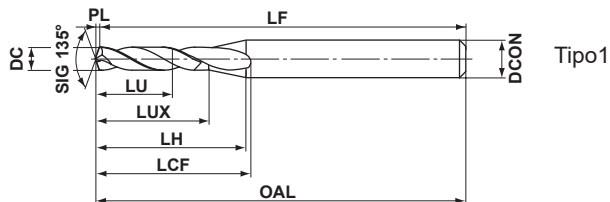
DC<2.0

DC≥2.0

P
M
K
N
S
H

Aço Aço Inoxidável Ferro Fundido

Refrigeração Externa



	DC ≤ 3	
	0 -0.014	
	DCON=3	DCON=4
	0 -0.006	0 -0.008

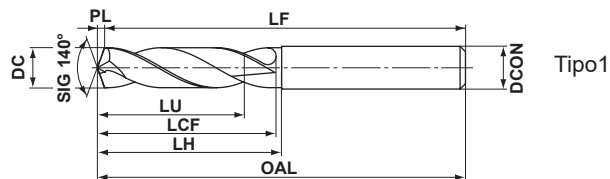
DC (mm)	Prof. do Furo (L/D)	DP102A	Referência para Pedido	Dimensões (mm)								Tipo
				LU	LUX	LCF	LH	OAL	LF	PL	DCON	
1.0	2	●	DWAE0100X02S030	2.2	5.0	7.7	8.7	45	44.8	0.2	3	1
1.0	4	●	DWAE0100X04S030	4.2	7.0	9.9	10.7	45	44.8	0.2	3	1
1.1	2	●	DWAE0110X02S030	2.4	5.4	8.1	8.9	45	44.8	0.2	3	1
1.1	4	●	DWAE0110X04S030	4.6	7.6	10.5	11.1	45	44.8	0.2	3	1
1.2	2	●	DWAE0120X02S030	2.6	5.8	8.5	9.2	45	44.8	0.2	3	1
1.2	4	●	DWAE0120X04S030	5.0	8.2	11.1	11.6	45	44.8	0.2	3	1
1.3	2	●	DWAE0130X02S030	2.9	6.3	9.0	9.5	45	44.7	0.3	3	1
1.3	4	●	DWAE0130X04S030	5.5	8.9	11.9	12.1	45	44.7	0.3	3	1
1.4	2	●	DWAE0140X02S030	3.1	6.7	9.4	9.7	45	44.7	0.3	3	1
1.4	4	●	DWAE0140X04S030	5.9	9.5	12.5	12.5	45	44.7	0.3	3	1
1.5	2	●	DWAE0150X02S030	3.3	7.1	9.8	9.9	45	44.7	0.3	3	1
1.5	4	●	DWAE0150X04S030	6.3	10.1	13.1	12.9	45	44.7	0.3	3	1
1.6	2	●	DWAE0160X02S030	3.5	7.5	10.2	10.1	45	44.7	0.3	3	1
1.6	4	●	DWAE0160X04S030	6.7	10.7	13.7	13.3	45	44.7	0.3	3	1
1.7	2	●	DWAE0170X02S030	3.8	8.0	10.7	10.4	45	44.6	0.4	3	1
1.7	4	●	DWAE0170X04S030	7.2	11.4	14.4	13.8	45	44.6	0.4	3	1
1.8	2	●	DWAE0180X02S030	4.0	8.4	11.1	10.6	45	44.6	0.4	3	1
1.8	4	●	DWAE0180X04S030	7.6	12.0	15.1	14.2	45	44.6	0.4	3	1
1.9	2	●	DWAE0190X02S030	4.2	8.8	11.5	10.9	45	44.6	0.4	3	1
1.9	4	●	DWAE0190X04S030	8.0	12.6	15.7	14.7	45	44.6	0.4	3	1
2.0	2	●	DWAE0200X02S040	4.4	9.2	12.8	12.9	50	49.6	0.4	4	1
2.0	4	●	DWAE0200X04S040	8.4	13.2	17.2	16.9	50	49.6	0.4	4	1
2.1	2	●	DWAE0210X02S040	4.6	9.6	13.2	13.1	50	49.6	0.4	4	1
2.1	4	●	DWAE0210X04S040	8.8	13.8	17.8	17.3	50	49.6	0.4	4	1
2.2	2	●	DWAE0220X02S040	4.9	10.1	13.7	13.5	50	49.5	0.5	4	1
2.2	4	●	DWAE0220X04S040	9.3	14.5	18.5	17.9	50	49.5	0.5	4	1
2.3	2	●	DWAE0230X02S040	5.1	10.5	14.1	13.7	50	49.5	0.5	4	1
2.3	4	●	DWAE0230X04S040	9.7	15.1	19.2	18.3	50	49.5	0.5	4	1
2.4	2	●	DWAE0240X02S040	5.3	10.9	14.5	13.9	50	49.5	0.5	4	1
2.4	4	●	DWAE0240X04S040	10.1	15.7	19.8	18.7	50	49.5	0.5	4	1
2.5	2	●	DWAE0250X02S040	5.5	11.3	14.9	14.1	50	49.5	0.5	4	1
2.5	4	●	DWAE0250X04S040	10.5	16.3	20.4	19.1	50	49.5	0.5	4	1
2.6	2	●	DWAE0260X02S040	5.7	11.7	15.3	14.3	50	49.5	0.5	4	1
2.6	4	●	DWAE0260X04S040	10.9	16.9	21.0	19.5	50	49.5	0.5	4	1
2.7	2	●	DWAE0270X02S040	6.0	12.2	15.8	14.6	50	49.4	0.6	4	1
2.7	4	●	DWAE0270X04S040	11.4	17.6	21.7	20.0	50	49.4	0.6	4	1
2.8	2	●	DWAE0280X02S040	6.2	12.6	16.2	14.8	50	49.4	0.6	4	1
2.8	4	●	DWAE0280X04S040	11.8	18.2	22.4	20.4	50	49.4	0.6	4	1
2.9	2	●	DWAE0290X02S040	6.4	13.0	16.6	15.1	50	49.4	0.6	4	1
2.9	4	●	DWAE0290X04S040	12.2	18.8	23.0	20.9	50	49.4	0.6	4	1

● : Estoque mantido.

- Comprimento otimizado do canal, ideal para uso em tornos automáticos tipo Suíço e CNC compactos.
- A geometria de baixo esforço de corte permite furação estável mesmo em condições de baixa rigidez da peça e da fixação.



Refrigeração Externa



	DC=3	3<DC≤6	6<DC≤10	10<DC≤14
	0 -0.014	0 -0.018	0 -0.022	0 -0.027
	DCON=3	3<DCON≤6	6<DCON≤10	10<DCON≤14
	0 -0.006	0 -0.008	0 -0.009	0 -0.011

DC (mm)	Prof. do Furo (L/D)	DP102A	Referência para Pedido	Dimensões (mm)							Tipo
				LU	LCF	LH	OAL	LF	PL	DCON	
3.0	2	●	DWAE0300X02S030	6.5	12.5	14.5	45.5	45	0.5	3	1
3.0	4	●	DWAE0300X04S030	12.5	21.5	23.5	55.5	55	0.5	3	1
3.1	2	●	DWAE0310X02S040	6.8	12.6	14.6	55.6	55	0.6	4	1
3.1	4	●	DWAE0310X04S040	13.0	21.6	23.6	60.6	60	0.6	4	1
3.2	2	●	DWAE0320X02S040	7.0	13.6	15.6	55.6	55	0.6	4	1
3.2	4	●	DWAE0320X04S040	13.4	22.6	24.6	60.6	60	0.6	4	1
3.3	2	●	DWAE0330X02S040	7.2	13.6	15.6	55.6	55	0.6	4	1
3.3	4	●	DWAE0330X04S040	13.8	23.6	25.6	60.6	60	0.6	4	1
3.4	2	●	DWAE0340X02S040	7.4	13.6	15.6	55.6	55	0.6	4	1
3.4	4	●	DWAE0340X04S040	14.2	23.6	25.6	60.6	60	0.6	4	1
3.5	2	●	DWAE0350X02S040	7.6	14.6	16.6	55.6	55	0.6	4	1
3.5	4	●	DWAE0350X04S040	14.6	24.6	26.6	60.6	60	0.6	4	1
3.6	2	●	DWAE0360X02S040	7.9	14.7	16.7	55.7	55	0.7	4	1
3.6	4	●	DWAE0360X04S040	15.1	25.7	27.7	60.7	60	0.7	4	1
3.7	2	●	DWAE0370X02S040	8.1	14.7	16.7	55.7	55	0.7	4	1
3.7	4	●	DWAE0370X04S040	15.5	25.7	27.7	60.7	60	0.7	4	1
3.8	2	●	DWAE0380X02S040	8.3	15.7	17.7	55.7	55	0.7	4	1
3.8	4	●	DWAE0380X04S040	15.9	26.7	28.7	60.7	60	0.7	4	1
3.9	2	●	DWAE0390X02S040	8.5	15.7	17.7	55.7	55	0.7	4	1
3.9	4	●	DWAE0390X04S040	16.3	27.7	29.7	60.7	60	0.7	4	1
4.0	2	●	DWAE0400X02S040	8.7	15.7	17.7	55.7	55	0.7	4	1
4.0	4	●	DWAE0400X04S040	16.7	27.7	29.7	60.7	60	0.7	4	1
4.1	2	●	DWAE0410X02S050	8.9	16.7	18.7	62.7	62	0.7	5	1
4.1	4	●	DWAE0410X04S050	17.1	28.7	30.7	80.7	80	0.7	5	1
4.2	2	●	DWAE0420X02S050	9.2	16.8	18.8	62.8	62	0.8	5	1
4.2	4	●	DWAE0420X04S050	17.6	29.8	31.8	80.8	80	0.8	5	1
4.3	2	●	DWAE0430X02S050	9.4	17.8	19.8	62.8	62	0.8	5	1
4.3	4	●	DWAE0430X04S050	18.0	30.8	32.8	80.8	80	0.8	5	1
4.4	2	●	DWAE0440X02S050	9.6	17.8	19.8	62.8	62	0.8	5	1
4.4	4	●	DWAE0440X04S050	18.4	30.8	32.8	80.8	80	0.8	5	1

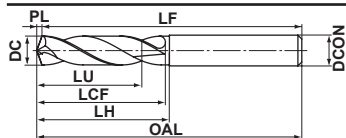
FURAÇÃO(METAL DURO INTEIRIÇO)

DWAE NEW

BROCAS WSTAR

DC (mm)	Prof. do Furo (L/D)	DP102A	Referência para Pedido	Dimensões (mm)							Tipo
				LU	LCF	LH	OAL	LF	PL	DCON	
4.5	2	●	DWAE0450X02S050	9.8	17.8	19.8	62.8	62	0.8	5	1
4.5	4	●	DWAE0450X04S050	18.8	31.8	33.8	80.8	80	0.8	5	1
4.6	2	●	DWAE0460X02S050	10.0	18.8	20.8	62.8	62	0.8	5	1
4.6	4	●	DWAE0460X04S050	19.2	32.8	34.8	80.8	80	0.8	5	1
4.7	2	●	DWAE0470X02S050	10.3	18.9	20.9	62.9	62	0.9	5	1
4.7	4	●	DWAE0470X04S050	19.7	32.9	34.9	80.9	80	0.9	5	1
4.8	2	●	DWAE0480X02S050	10.5	18.9	20.9	62.9	62	0.9	5	1
4.8	4	●	DWAE0480X04S050	20.1	33.9	35.9	80.9	80	0.9	5	1
4.9	2	●	DWAE0490X02S050	10.7	19.9	21.9	62.9	62	0.9	5	1
4.9	4	●	DWAE0490X04S050	20.5	34.9	36.9	80.9	80	0.9	5	1
5.0	2	●	DWAE0500X02S050	10.9	19.9	21.9	62.9	62	0.9	5	1
5.0	4	●	DWAE0500X04S050	20.9	34.9	36.9	80.9	80	0.9	5	1
5.1	2	●	DWAE0510X02S060	11.1	21.9	23.9	66.9	66	0.9	6	1
5.1	4	●	DWAE0510X04S060	21.3	35.9	37.9	80.9	80	0.9	6	1
5.2	2	●	DWAE0520X02S060	11.3	21.9	23.9	66.9	66	0.9	6	1
5.2	4	●	DWAE0520X04S060	21.7	36.9	38.9	80.9	80	0.9	6	1
5.3	2	●	DWAE0530X02S060	11.6	22.0	24.0	67.0	66	1.0	6	1
5.3	4	●	DWAE0530X04S060	22.2	37.0	39.0	81.0	80	1.0	6	1
5.4	2	●	DWAE0540X02S060	11.8	22.0	24.0	67.0	66	1.0	6	1
5.4	4	●	DWAE0540X04S060	22.6	38.0	40.0	81.0	80	1.0	6	1
5.5	2	●	DWAE0550X02S060	12.0	22.0	24.0	67.0	66	1.0	6	1
5.5	4	●	DWAE0550X04S060	23.0	39.0	41.0	81.0	80	1.0	6	1
5.6	2	●	DWAE0560X02S060	12.2	24.0	26.0	67.0	66	1.0	6	1
5.6	4	●	DWAE0560X04S060	23.4	39.0	41.0	81.0	80	1.0	6	1
5.7	2	●	DWAE0570X02S060	12.4	24.0	26.0	67.0	66	1.0	6	1
5.7	4	●	DWAE0570X04S060	23.8	39.0	41.0	81.0	80	1.0	6	1
5.8	2	●	DWAE0580X02S060	12.7	24.1	26.1	67.1	66	1.1	6	1
5.8	4	●	DWAE0580X04S060	24.3	41.1	43.1	81.1	80	1.1	6	1
5.9	2	●	DWAE0590X02S060	12.9	24.1	26.1	67.1	66	1.1	6	1
5.9	4	●	DWAE0590X04S060	24.7	41.1	43.1	81.1	80	1.1	6	1
6.0	2	●	DWAE0600X02S060	13.1	24.1	26.1	67.1	66	1.1	6	1
6.0	4	●	DWAE0600X04S060	25.1	42.1	44.1	81.1	80	1.1	6	1
6.1	2	●	DWAE0610X02S070	13.3	26.1	28.1	75.1	74	1.1	7	1
6.1	4	●	DWAE0610X04S070	25.5	44.1	46.1	84.1	83	1.1	7	1
6.2	2	●	DWAE0620X02S070	13.5	26.1	28.1	75.1	74	1.1	7	1
6.2	4	●	DWAE0620X04S070	25.9	44.1	46.1	84.1	83	1.1	7	1
6.3	2	●	DWAE0630X02S070	13.7	26.1	28.1	75.1	74	1.1	7	1
6.3	4	●	DWAE0630X04S070	26.3	44.1	46.1	84.1	83	1.1	7	1
6.4	2	●	DWAE0640X02S070	14.0	26.2	28.2	75.2	74	1.2	7	1
6.4	4	●	DWAE0640X04S070	26.8	44.2	46.2	84.2	83	1.2	7	1
6.5	2	●	DWAE0650X02S070	14.2	26.2	28.2	75.2	74	1.2	7	1
6.5	4	●	DWAE0650X04S070	27.2	44.2	46.2	84.2	83	1.2	7	1
6.6	2	●	DWAE0660X02S070	14.4	28.2	30.2	75.2	74	1.2	7	1
6.6	4	●	DWAE0660X04S070	27.6	46.2	48.2	84.2	83	1.2	7	1

● : Estoque mantido.



DC (mm)	Prof. do Furo (L/D)	DP102A	Referência para Pedido	Dimensões (mm)							Tipo
				LU	LCF	LH	OAL	LF	PL	DCON	
6.7	2	●	DWAE0670X02S070	14.6	28.2	30.2	75.2	74	1.2	7	1
6.7	4	●	DWAE0670X04S070	28.0	46.2	48.2	84.2	83	1.2	7	1
6.8	2	●	DWAE0680X02S070	14.8	28.2	30.2	75.2	74	1.2	7	1
6.8	4	●	DWAE0680X04S070	28.4	46.2	48.2	84.2	83	1.2	7	1
6.9	2	●	DWAE0690X02S070	15.1	28.3	30.3	75.3	74	1.3	7	1
6.9	4	●	DWAE0690X04S070	28.9	46.3	48.3	84.3	83	1.3	7	1
7.0	2	●	DWAE0700X02S070	15.3	28.3	30.3	75.3	74	1.3	7	1
7.0	4	●	DWAE0700X04S070	29.3	46.3	48.3	84.3	83	1.3	7	1
7.1	2	●	DWAE0710X02S080	15.5	29.3	31.3	80.3	79	1.3	8	1
7.1	4	●	DWAE0710X04S080	29.7	51.3	53.3	91.3	90	1.3	8	1
7.2	2	●	DWAE0720X02S080	15.7	29.3	31.3	80.3	79	1.3	8	1
7.2	4	●	DWAE0720X04S080	30.1	51.3	53.3	91.3	90	1.3	8	1
7.3	2	●	DWAE0730X02S080	15.9	29.3	31.3	80.3	79	1.3	8	1
7.3	4	●	DWAE0730X04S080	30.5	51.3	53.3	91.3	90	1.3	8	1
7.4	2	●	DWAE0740X02S080	16.1	29.3	31.3	80.3	79	1.3	8	1
7.4	4	●	DWAE0740X04S080	30.9	51.3	53.3	91.3	90	1.3	8	1
7.5	2	●	DWAE0750X02S080	16.4	29.4	31.4	80.4	79	1.4	8	1
7.5	4	●	DWAE0750X04S080	31.4	51.4	53.4	91.4	90	1.4	8	1
7.6	2	●	DWAE0760X02S080	16.6	31.4	33.4	80.4	79	1.4	8	1
7.6	4	●	DWAE0760X04S080	31.8	53.4	55.4	91.4	90	1.4	8	1
7.7	2	●	DWAE0770X02S080	16.8	31.4	33.4	80.4	79	1.4	8	1
7.7	4	●	DWAE0770X04S080	32.2	53.4	55.4	91.4	90	1.4	8	1
7.8	2	●	DWAE0780X02S080	17.0	31.4	33.4	80.4	79	1.4	8	1
7.8	4	●	DWAE0780X04S080	32.6	53.4	55.4	91.4	90	1.4	8	1
7.9	2	●	DWAE0790X02S080	17.2	31.4	33.4	80.4	79	1.4	8	1
7.9	4	●	DWAE0790X04S080	33.0	53.4	55.4	91.4	90	1.4	8	1
8.0	2	●	DWAE0800X02S080	17.5	31.5	33.5	80.5	79	1.5	8	1
8.0	4	●	DWAE0800X04S080	33.5	53.5	55.5	91.5	90	1.5	8	1
8.1	2	●	DWAE0810X02S090	17.7	33.5	35.5	85.5	84	1.5	9	1
8.1	4	●	DWAE0810X04S090	33.9	57.5	59.5	99.5	98	1.5	9	1
8.2	2	●	DWAE0820X02S090	17.9	33.5	35.5	85.5	84	1.5	9	1
8.2	4	●	DWAE0820X04S090	34.3	57.5	59.5	99.5	98	1.5	9	1
8.3	2	●	DWAE0830X02S090	18.1	33.5	35.5	85.5	84	1.5	9	1
8.3	4	●	DWAE0830X04S090	34.7	57.5	59.5	99.5	98	1.5	9	1
8.4	2	●	DWAE0840X02S090	18.3	33.5	35.5	85.5	84	1.5	9	1
8.4	4	●	DWAE0840X04S090	35.1	57.5	59.5	99.5	98	1.5	9	1
8.5	2	●	DWAE0850X02S090	18.5	33.5	35.5	85.5	84	1.5	9	1
8.5	4	●	DWAE0850X04S090	35.5	57.5	59.5	99.5	98	1.5	9	1
8.6	2	●	DWAE0860X02S090	18.8	34.6	36.6	85.6	84	1.6	9	1
8.6	4	●	DWAE0860X04S090	36.0	61.6	63.6	99.6	98	1.6	9	1
8.7	2	●	DWAE0870X02S090	19.0	34.6	36.6	85.6	84	1.6	9	1
8.7	4	●	DWAE0870X04S090	36.4	61.6	63.6	99.6	98	1.6	9	1
8.8	2	●	DWAE0880X02S090	19.2	34.6	36.6	85.6	84	1.6	9	1
8.8	4	●	DWAE0880X04S090	36.8	61.6	63.6	99.6	98	1.6	9	1

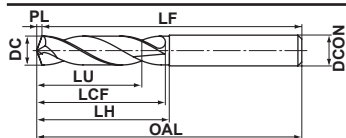
FURAÇÃO(METAL DURO INTEIRIÇO)

DWAE NEW

BROCAS WSTAR

DC (mm)	Prof. do Furo (L/D)	DP102A	Referência para Pedido	Dimensões (mm)							Tipo
				LU	LCF	LH	OAL	LF	PL	DCON	
8.9	2	●	DWAE0890X02S090	19.4	34.6	36.6	85.6	84	1.6	9	1
8.9	4	●	DWAE0890X04S090	37.2	61.6	63.6	99.6	98	1.6	9	1
9.0	2	●	DWAE0900X02S090	19.6	34.6	36.6	85.6	84	1.6	9	1
9.0	4	●	DWAE0900X04S090	37.6	61.6	63.6	99.6	98	1.6	9	1
9.1	2	●	DWAE0910X02S100	19.9	36.7	38.7	90.7	89	1.7	10	1
9.1	4	●	DWAE0910X04S100	38.1	63.7	65.7	106.7	105	1.7	10	1
9.2	2	●	DWAE0920X02S100	20.1	36.7	38.7	90.7	89	1.7	10	1
9.2	4	●	DWAE0920X04S100	38.5	63.7	65.7	106.7	105	1.7	10	1
9.3	2	●	DWAE0930X02S100	20.3	36.7	38.7	90.7	89	1.7	10	1
9.3	4	●	DWAE0930X04S100	38.9	63.7	65.7	106.7	105	1.7	10	1
9.4	2	●	DWAE0940X02S100	20.5	36.7	38.7	90.7	89	1.7	10	1
9.4	4	●	DWAE0940X04S100	39.3	63.7	65.7	106.7	105	1.7	10	1
9.5	2	●	DWAE0950X02S100	20.7	36.7	38.7	90.7	89	1.7	10	1
9.5	4	●	DWAE0950X04S100	39.7	63.7	65.7	106.7	105	1.7	10	1
9.6	2	●	DWAE0960X02S100	20.9	37.7	39.7	90.7	89	1.7	10	1
9.6	4	●	DWAE0960X04S100	40.1	66.7	68.7	106.7	105	1.7	10	1
9.7	2	●	DWAE0970X02S100	21.2	37.8	39.8	90.8	89	1.8	10	1
9.7	4	●	DWAE0970X04S100	40.6	66.8	68.8	106.8	105	1.8	10	1
9.8	2	●	DWAE0980X02S100	21.4	37.8	39.8	90.8	89	1.8	10	1
9.8	4	●	DWAE0980X04S100	41.0	66.8	68.8	106.8	105	1.8	10	1
9.9	2	●	DWAE0990X02S100	21.6	37.8	39.8	90.8	89	1.8	10	1
9.9	4	●	DWAE0990X04S100	41.4	66.8	68.8	106.8	105	1.8	10	1
10.0	2	●	DWAE1000X02S100	21.8	37.8	39.8	90.8	89	1.8	10	1
10.0	4	●	DWAE1000X04S100	41.8	66.8	68.8	106.8	105	1.8	10	1
10.1	2	●	DWAE1010X02S110	22.0	40.8	42.8	101.8	100	1.8	11	1
10.1	4	●	DWAE1010X04S110	42.2	71.8	73.8	115.8	114	1.8	11	1
10.2	2	●	DWAE1020X02S110	22.3	40.9	42.9	101.9	100	1.9	11	1
10.2	4	●	DWAE1020X04S110	42.7	71.9	73.9	115.9	114	1.9	11	1
10.3	2	●	DWAE1030X02S110	22.5	40.9	42.9	101.9	100	1.9	11	1
10.3	4	●	DWAE1030X04S110	43.1	71.9	73.9	115.9	114	1.9	11	1
10.4	2	●	DWAE1040X02S110	22.7	40.9	42.9	101.9	100	1.9	11	1
10.4	4	●	DWAE1040X04S110	43.5	71.9	73.9	115.9	114	1.9	11	1
10.5	2	●	DWAE1050X02S110	22.9	40.9	42.9	101.9	100	1.9	11	1
10.5	4	●	DWAE1050X04S110	43.9	71.9	73.9	115.9	114	1.9	11	1
10.6	2	●	DWAE1060X02S110	23.1	41.9	43.9	101.9	100	1.9	11	1
10.6	4	●	DWAE1060X04S110	44.3	72.9	74.9	115.9	114	1.9	11	1
10.7	2	●	DWAE1070X02S110	23.3	41.9	43.9	101.9	100	1.9	11	1
10.7	4	●	DWAE1070X04S110	44.7	72.9	74.9	115.9	114	1.9	11	1
10.8	2	●	DWAE1080X02S110	23.6	42.0	44.0	102.0	100	2.0	11	1
10.8	4	●	DWAE1080X04S110	45.2	73.0	75.0	116.0	114	2.0	11	1
10.9	2	●	DWAE1090X02S110	23.8	42.0	44.0	102.0	100	2.0	11	1
10.9	4	●	DWAE1090X04S110	45.6	73.0	75.0	116.0	114	2.0	11	1
11.0	2	●	DWAE1100X02S110	24.0	42.0	44.0	102.0	100	2.0	11	1
11.0	4	●	DWAE1100X04S110	46.0	73.0	75.0	116.0	114	2.0	11	1

● : Estoque mantido.



DC (mm)	Prof. do Furo (L/D)	DP102A	Referência para Pedido	Dimensões (mm)							Tipo
				LU	LCF	LH	OAL	LF	PL	DCON	
11.1	2	●	DWAE1110X02S120	24.2	45.0	47.0	102.0	100	2.0	12	1
11.1	4	●	DWAE1110X04S120	46.4	77.0	79.0	123.0	121	2.0	12	1
11.2	2	●	DWAE1120X02S120	24.4	45.0	47.0	102.0	100	2.0	12	1
11.2	4	●	DWAE1120X04S120	46.8	77.0	79.0	123.0	121	2.0	12	1
11.3	2	●	DWAE1130X02S120	24.7	45.1	47.1	102.1	100	2.1	12	1
11.3	4	●	DWAE1130X04S120	47.3	77.1	79.1	123.1	121	2.1	12	1
11.4	2	●	DWAE1140X02S120	24.9	45.1	47.1	102.1	100	2.1	12	1
11.4	4	●	DWAE1140X04S120	47.7	77.1	79.1	123.1	121	2.1	12	1
11.5	2	●	DWAE1150X02S120	25.1	45.1	47.1	102.1	100	2.1	12	1
11.5	4	●	DWAE1150X04S120	48.1	77.1	79.1	123.1	121	2.1	12	1
11.6	2	●	DWAE1160X02S120	25.3	47.1	49.1	102.1	100	2.1	12	1
11.6	4	●	DWAE1160X04S120	48.5	79.1	81.1	123.1	121	2.1	12	1
11.7	2	●	DWAE1170X02S120	25.5	47.1	49.1	102.1	100	2.1	12	1
11.7	4	●	DWAE1170X04S120	48.9	79.1	81.1	123.1	121	2.1	12	1
11.8	2	●	DWAE1180X02S120	25.7	47.1	49.1	102.1	100	2.1	12	1
11.8	4	●	DWAE1180X04S120	49.3	79.1	81.1	123.1	121	2.1	12	1
11.9	2	●	DWAE1190X02S120	26.0	47.2	49.2	102.2	100	2.2	12	1
11.9	4	●	DWAE1190X04S120	49.8	79.2	81.2	123.2	121	2.2	12	1
12.0	2	●	DWAE1200X02S120	26.2	47.2	49.2	102.2	100	2.2	12	1
12.0	4	●	DWAE1200X04S120	50.2	79.2	81.2	123.2	121	2.2	12	1
12.1	2	●	DWAE1210X02S130	26.4	49.2	51.2	102.2	100	2.2	13	1
12.1	4	●	DWAE1210X04S130	50.6	82.2	84.2	139.2	137	2.2	13	1
12.2	2	●	DWAE1220X02S130	26.6	49.2	51.2	102.2	100	2.2	13	1
12.2	4	●	DWAE1220X04S130	51.0	82.2	84.2	139.2	137	2.2	13	1
12.3	2	●	DWAE1230X02S130	26.8	49.2	51.2	102.2	100	2.2	13	1
12.3	4	●	DWAE1230X04S130	51.4	82.2	84.2	139.2	137	2.2	13	1
12.4	2	●	DWAE1240X02S130	27.1	49.3	51.3	102.3	100	2.3	13	1
12.4	4	●	DWAE1240X04S130	51.9	82.3	84.3	139.3	137	2.3	13	1
12.5	2	●	DWAE1250X02S130	27.3	49.3	51.3	102.3	100	2.3	13	1
12.5	4	●	DWAE1250X04S130	52.3	82.3	84.3	139.3	137	2.3	13	1
12.6	2	●	DWAE1260X02S130	27.5	52.3	54.3	102.3	100	2.3	13	1
12.6	4	●	DWAE1260X04S130	52.7	84.3	86.3	139.3	137	2.3	13	1
12.7	2	●	DWAE1270X02S130	27.7	52.3	54.3	102.3	100	2.3	13	1
12.7	4	●	DWAE1270X04S130	53.1	84.3	86.3	139.3	137	2.3	13	1
12.8	2	●	DWAE1280X02S130	27.9	52.3	54.3	102.3	100	2.3	13	1
12.8	4	●	DWAE1280X04S130	53.5	84.3	86.3	139.3	137	2.3	13	1
12.9	2	●	DWAE1290X02S130	28.1	52.3	54.3	102.3	100	2.3	13	1
12.9	4	●	DWAE1290X04S130	53.9	84.3	86.3	139.3	137	2.3	13	1
13.0	2	●	DWAE1300X02S130	28.4	52.4	54.4	102.4	100	2.4	13	1
13.0	4	●	DWAE1300X04S130	54.4	84.4	86.4	139.4	137	2.4	13	1
13.1	2	●	DWAE1310X02S140	28.6	55.4	57.4	102.4	100	2.4	14	1
13.1	4	●	DWAE1310X04S140	54.8	92.4	94.4	149.4	147	2.4	14	1
13.2	2	●	DWAE1320X02S140	28.8	55.4	57.4	102.4	100	2.4	14	1
13.2	4	●	DWAE1320X04S140	55.2	92.4	94.4	149.4	147	2.4	14	1

FURAÇÃO(METAL DURO INTEIRIÇO)

DWAE NEW

BROCAS WSTAR

METAL DURO

DC (mm)	Prof. do Furo (L/D)	DP102A	Referência para Pedido	Dimensões (mm)							Tipo
				LU	LCF	LH	OAL	LF	PL	DCON	
13.3	2	●	DWAE1330X02S140	29.0	55.4	57.4	102.4	100	2.4	14	1
13.3	4	●	DWAE1330X04S140	55.6	92.4	94.4	149.4	147	2.4	14	1
13.4	2	●	DWAE1340X02S140	29.2	55.4	57.4	102.4	100	2.4	14	1
13.4	4	●	DWAE1340X04S140	56.0	92.4	94.4	149.4	147	2.4	14	1
13.5	2	●	DWAE1350X02S140	29.5	55.5	57.5	102.5	100	2.5	14	1
13.5	4	●	DWAE1350X04S140	56.5	92.5	94.5	149.5	147	2.5	14	1
13.6	2	●	DWAE1360X02S140	29.7	57.5	59.5	102.5	100	2.5	14	1
13.6	4	●	DWAE1360X04S140	56.9	97.5	99.5	149.5	147	2.5	14	1
13.7	2	●	DWAE1370X02S140	29.9	57.5	59.5	102.5	100	2.5	14	1
13.7	4	●	DWAE1370X04S140	57.3	97.5	99.5	149.5	147	2.5	14	1
13.8	2	●	DWAE1380X02S140	30.1	57.5	59.5	102.5	100	2.5	14	1
13.8	4	●	DWAE1380X04S140	57.7	97.5	99.5	149.5	147	2.5	14	1
13.9	2	●	DWAE1390X02S140	30.3	57.5	59.5	102.5	100	2.5	14	1
13.9	4	●	DWAE1390X04S140	58.1	97.5	99.5	149.5	147	2.5	14	1
14.0	2	●	DWAE1400X02S140	30.5	57.5	59.5	102.5	100	2.5	14	1
14.0	4	●	DWAE1400X04S140	58.5	97.5	99.5	149.5	147	2.5	14	1

N

FURAÇÃO

● : Estoque mantido.

CONDIÇÕES DE CORTE RECOMENDADAS

Material	Aço Baixo Carbono ($\leq 180\text{HB}$)				Aço Carbono, Aço Liga ($180-280\text{HB}$)			
	AISI 1010 etc				AISI 1045, AISI 4140 etc			
Diâm. DC (mm)	Vel. de Corte (m/min)	Rotação (min^{-1})	Avanço (Mín.—Máx.) (mm/rot)	Avanço linear (mm/min)	Vel. de Corte (m/min)	Rotação (min^{-1})	Avanço (Mín.—Máx.) (mm/rot)	Avanço linear (mm/min)
1.0	30	9500	0.03 (0.02—0.04)	285	30	9500	0.03 (0.02—0.04)	285
1.5	30	6300	0.05 (0.03—0.06)	315	30	6300	0.05 (0.03—0.06)	315
2.0	55	8700	0.06 (0.04—0.08)	520	55	8700	0.06 (0.04—0.08)	520
2.5	55	7000	0.08 (0.05—0.10)	560	55	7000	0.08 (0.05—0.10)	560
3.0	65	6800	0.09 (0.07—0.11)	610	60	6300	0.09 (0.07—0.11)	565
4.0	70	5500	0.12 (0.09—0.14)	660	65	5100	0.12 (0.09—0.14)	610
5.0	70	4400	0.15 (0.11—0.18)	660	65	4100	0.15 (0.11—0.18)	615
6.0	80	4200	0.18 (0.14—0.21)	755	75	3900	0.18 (0.14—0.21)	700
7.0	80	3600	0.21 (0.16—0.25)	755	75	3400	0.21 (0.16—0.25)	715
8.0	85	3300	0.23 (0.18—0.28)	760	80	3100	0.23 (0.18—0.28)	715
10.0	90	2800	0.27 (0.21—0.32)	755	85	2700	0.27 (0.21—0.32)	730
12.0	95	2500	0.28 (0.22—0.34)	700	90	2300	0.28 (0.22—0.34)	645
14.0	95	2100	0.29 (0.23—0.35)	610	90	2000	0.29 (0.23—0.35)	580

Material	Aço Carbono, Aço Liga ($280-350\text{HB}$)				Aço Inoxidável Austenítico ($\leq 200\text{HB}$) Aço Inoxidável Ferrítico e Martensítico ($>200\text{HB}$) JIS SUS304, SUS316 AISI 431, AISI 420 etc			
	AISI 4340 etc							
Diâm. DC (mm)	Vel. de Corte (m/min)	Rotação (min^{-1})	Avanço (Mín.—Máx.) (mm/rot)	Avanço linear (mm/min)	Vel. de Corte (m/min)	Rotação (min^{-1})	Avanço (Mín.—Máx.) (mm/rot)	Avanço linear (mm/min)
1.0	25	7900	0.02 (0.01—0.03)	160	30	9500	0.02 (0.01—0.03)	190
1.5	25	5300	0.04 (0.02—0.05)	210	30	6300	0.04 (0.02—0.05)	250
2.0	50	7900	0.05 (0.03—0.07)	395	35	5500	0.04 (0.02—0.06)	220
2.5	50	6300	0.07 (0.04—0.09)	440	35	4400	0.06 (0.03—0.08)	265
3.0	55	5800	0.08 (0.06—0.09)	465	40	4200	0.07 (0.04—0.10)	295
4.0	60	4700	0.11 (0.08—0.13)	515	40	3100	0.08 (0.05—0.10)	250
5.0	60	3800	0.13 (0.10—0.16)	495	40	2500	0.10 (0.05—0.15)	250
6.0	70	3700	0.16 (0.12—0.19)	590	40	2100	0.11 (0.06—0.15)	230
7.0	70	3100	0.18 (0.14—0.22)	560	40	1800	0.12 (0.06—0.18)	215
8.0	75	2900	0.21 (0.16—0.25)	610	40	1500	0.13 (0.06—0.20)	195
10.0	80	2500	0.24 (0.20—0.28)	600	40	1200	0.14 (0.08—0.20)	170
12.0	85	2200	0.25 (0.20—0.30)	550	40	1000	0.18 (0.10—0.25)	180
14.0	85	1900	0.25 (0.20—0.30)	475	40	900	0.18 (0.10—0.25)	160

Material	Ferro Fundido Cinzento ($\leq 350\text{MPa}$)				Ferro Fundido Nodular ($\leq 450\text{MPa}$)			
	DIN GG-30 etc				DIN GGG-45 etc			
Diâm. DC (mm)	Vel. de Corte (m/min)	Rotação (min^{-1})	Avanço (Mín.—Máx.) (mm/rot)	Avanço linear (mm/min)	Vel. de Corte (m/min)	Rotação (min^{-1})	Avanço (Mín.—Máx.) (mm/rot)	Avanço linear (mm/min)
1.0	30	9500	0.03 (0.02—0.04)	285	25	7900	0.02 (0.01—0.03)	160
1.5	30	6300	0.05 (0.03—0.06)	315	25	5300	0.04 (0.02—0.05)	210
2.0	55	8700	0.06 (0.04—0.08)	520	50	7900	0.05 (0.03—0.07)	395
2.5	55	7000	0.08 (0.05—0.10)	560	50	6300	0.07 (0.04—0.09)	440
3.0	65	6800	0.09 (0.07—0.11)	610	55	5800	0.09 (0.05—0.12)	520
4.0	70	5500	0.12 (0.09—0.14)	660	60	4700	0.12 (0.07—0.17)	565
5.0	70	4400	0.15 (0.11—0.18)	660	60	3800	0.14 (0.08—0.20)	530
6.0	80	4200	0.18 (0.14—0.21)	755	70	3700	0.15 (0.10—0.20)	555
7.0	80	3600	0.21 (0.16—0.25)	755	70	3100	0.18 (0.12—0.23)	560
8.0	85	3300	0.23 (0.18—0.28)	760	75	2900	0.20 (0.15—0.25)	580
10.0	90	2800	0.27 (0.21—0.32)	755	80	2500	0.23 (0.18—0.28)	575
12.0	95	2500	0.28 (0.22—0.34)	700	85	2200	0.25 (0.20—0.30)	550
14.0	95	2100	0.29 (0.23—0.35)	610	85	1900	0.25 (0.20—0.30)	475

Nota 1) As condições de corte acima referem-se às aplicações com óleo solúvel. Para aços inoxidáveis, é recomendado o uso de óleo integral.

Nota 2) Quando utilizar óleo integral, reduza a velocidade de corte em 20% para garantir uma lubrificação adequada (exceto condições de corte recomendadas para aço inoxidável).

Nota 3) Verifique as condições dos cavacos e aplique avanço "pica-pau" se necessário. * Referência do incremento: $\text{DC} \times 0.2 - \text{DC} \times 1.0$

Nota 4) Ajuste as condições de corte de acordo com a rigidez da máquina e da fixação da peça, geometria da peça usinada, etc.

Nota 5) Não é recomendado usinar profundidades maiores que o comprimento útil (LU).

Nota 6) Fixe a broca de modo que o batimento seja menor que 0.03mm.

Nota 7) Não fixe a broca pela região do canal.

FURAÇÃO(METAL DURO INTEIRIÇO)

DVAS

NEW

Brocas piloto Mini

SÉRIE TRISTAR



P

Aço

M

Aço Inoxidável

K

Ferro Fundido

N

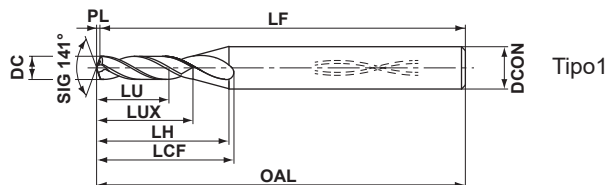
Metais Não Ferrosos

S

Ligas Resist. ao Calor

H

Refrigeração Interna



DC<3

0.006
-0.004



DCON=4

0
-0.008

DC (mm)	Prof. do Furo (L/D)	DP1120	Referência para Pedido	Dimensões (mm)								Tipo
				LU	LUX	LCF	LH	OAL	LF	PL	DCON	
1.0	2	●	DVAS0100X02S040	2.2	3.2	8.6	8.8	50	49.8	0.2	4	1
1.1	2	●	DVAS0110X02S040	2.4	3.5	9.0	8.9	50	49.8	0.2	4	1
1.2	2	●	DVAS0120X02S040	2.6	3.9	9.4	9.0	50	49.8	0.2	4	1
1.3	2	●	DVAS0130X02S040	2.8	4.2	9.9	9.2	50	49.8	0.2	4	1
1.4	2	●	DVAS0140X02S040	3.0	4.5	10.3	9.3	50	49.8	0.2	4	1
1.5	2	●	DVAS0150X02S040	3.3	4.8	10.7	9.4	50	49.7	0.3	4	1
1.6	2	●	DVAS0160X02S040	3.5	5.1	11.1	9.6	50	49.7	0.3	4	1
1.7	2	●	DVAS0170X02S040	3.7	5.5	11.6	9.7	50	49.7	0.3	4	1
1.8	2	●	DVAS0180X02S040	3.9	5.8	12.0	9.8	50	49.7	0.3	4	1
1.9	2	●	DVAS0190X02S040	4.1	6.1	12.4	10.0	50	49.7	0.3	4	1
2.0	2	●	DVAS0200X02S040	4.4	6.4	12.9	10.1	50	49.6	0.4	4	1
2.1	2	●	DVAS0210X02S040	4.6	6.7	13.3	10.2	50	49.6	0.4	4	1
2.2	2	●	DVAS0220X02S040	4.8	7.0	13.7	10.3	50	49.6	0.4	4	1
2.3	2	●	DVAS0230X02S040	5.0	7.4	14.1	10.5	55	54.6	0.4	4	1
2.4	2	●	DVAS0240X02S040	5.2	7.7	14.6	10.6	55	54.6	0.4	4	1
2.5	2	●	DVAS0250X02S040	5.5	8.0	15.0	10.7	55	54.6	0.4	4	1
2.6	2	●	DVAS0260X02S040	5.7	8.3	15.4	10.9	55	54.5	0.5	4	1
2.7	2	●	DVAS0270X02S040	5.9	8.6	15.8	11.0	55	54.5	0.5	4	1
2.8	2	●	DVAS0280X02S040	6.1	8.9	16.3	11.1	55	54.5	0.5	4	1
2.9	2	●	DVAS0290X02S040	6.3	9.3	16.7	11.3	55	54.5	0.5	4	1

N

FURAÇÃO

● : Estoque mantido.

N038

DVAS NEW Mini

SÉRIE TRISTAR

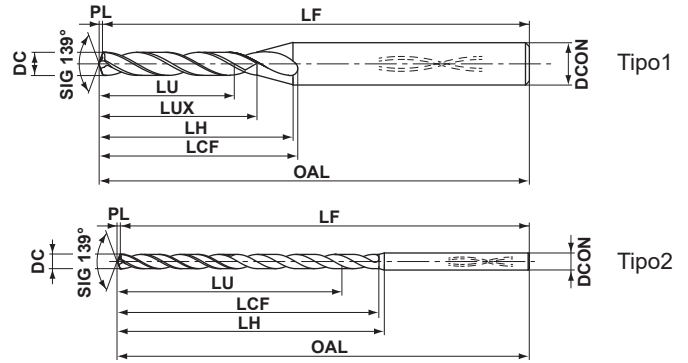
- Os furos de refrigeração amplos aumentam a eficiência de resfriamento e previnem danos à broca, prolongando a sua vida útil.
- Aresta de corte resistente e aguda.



METAL DURO



Refrigeração Interna



	DC < 3
	0 -0.010
	DCON = 4
	0 -0.008

Nota 1) Para usinagem de furo de guia, use a broca piloto DVAS.

DC (mm)	Prof. do Furo (L/D)	DP1120	Referência para Pedido	Dimensões (mm)								Tipo
				LU	LUX	LCF	LH	OAL	LF	PL	DCON	
1.0	7	●	DVAS0100X07S040	7.2	8.2	13.6	13.8	55	54.8	0.2	4	1
1.0	12	●	DVAS0100X12S040	12.2	13.2	18.6	18.8	58	57.8	0.2	4	1
1.0	20	●	DVAS0100X20S040	20.2	-	23.2	28.8	67	66.8	0.2	4	2
1.0	25	●	DVAS0100X25S040	25.2	-	28.2	33.8	73	72.8	0.2	4	2
1.0	30	●	DVAS0100X30S040	30.2	-	33.2	38.8	79	78.8	0.2	4	2
1.0	40	●	DVAS0100X40S040	40.2	-	43.2	48.8	90	89.8	0.2	4	2
1.0	50	●	DVAS0100X50S040	50.2	-	53.2	58.8	102	101.8	0.2	4	2
1.1	7	●	DVAS0110X07S040	7.9	9.1	14.5	14.4	55	54.8	0.2	4	1
1.1	12	●	DVAS0110X12S040	13.4	14.6	20.0	19.9	58	57.8	0.2	4	1
1.1	20	●	DVAS0110X20S040	22.2	-	25.5	30.9	67	66.8	0.2	4	2
1.1	25	●	DVAS0110X25S040	27.7	-	31.0	36.4	73	72.8	0.2	4	2
1.1	30	●	DVAS0110X30S040	33.2	-	36.5	41.9	79	78.8	0.2	4	2
1.1	40	●	DVAS0110X40S040	44.2	-	47.5	52.9	90	89.8	0.2	4	2
1.2	7	●	DVAS0120X07S040	8.6	9.9	15.4	15.0	55	54.8	0.2	4	1
1.2	12	●	DVAS0120X12S040	14.6	15.9	21.4	21.0	60	59.8	0.2	4	1
1.2	20	●	DVAS0120X20S040	24.2	-	27.8	33.0	71	70.8	0.2	4	2
1.2	25	●	DVAS0120X25S040	30.2	-	33.8	39.0	77	76.8	0.2	4	2
1.2	30	●	DVAS0120X30S040	36.2	-	39.8	45.0	84	83.8	0.2	4	2
1.2	40	●	DVAS0120X40S040	48.2	-	51.8	57.0	97	96.8	0.2	4	2
1.3	7	●	DVAS0130X07S040	9.3	10.7	16.4	15.7	55	54.8	0.2	4	1
1.3	12	●	DVAS0130X12S040	15.8	17.2	22.9	22.2	60	59.8	0.2	4	1
1.3	20	●	DVAS0130X20S040	26.2	-	30.1	35.2	71	70.8	0.2	4	2
1.3	25	●	DVAS0130X25S040	32.7	-	36.6	41.7	77	76.8	0.2	4	2
1.3	30	●	DVAS0130X30S040	39.2	-	43.1	48.2	84	83.8	0.2	4	2
1.3	40	●	DVAS0130X40S040	52.2	-	56.1	61.2	97	96.8	0.2	4	2
1.4	7	●	DVAS0140X07S040	10.1	11.5	17.3	16.3	55	54.7	0.3	4	1
1.4	12	●	DVAS0140X12S040	17.1	18.5	24.3	23.3	63	62.7	0.3	4	1
1.4	20	●	DVAS0140X20S040	28.3	-	32.5	37.3	75	74.7	0.3	4	2
1.4	25	●	DVAS0140X25S040	35.3	-	39.5	44.3	82	81.7	0.3	4	2
1.4	30	●	DVAS0140X30S040	42.3	-	46.5	51.3	90	89.7	0.3	4	2
1.4	40	●	DVAS0140X40S040	56.3	-	60.5	65.3	105	104.7	0.3	4	2
1.5	7	●	DVAS0150X07S040	10.8	12.3	18.2	16.9	55	54.7	0.3	4	1
1.5	12	●	DVAS0150X12S040	18.3	19.8	25.7	24.4	63	62.7	0.3	4	1
1.5	20	●	DVAS0150X20S040	30.3	-	34.8	39.4	75	74.7	0.3	4	2
1.5	25	●	DVAS0150X25S040	37.8	-	42.3	46.9	82	81.7	0.3	4	2
1.5	30	●	DVAS0150X30S040	45.3	-	49.8	54.4	90	89.7	0.3	4	2

FURAÇÃO Z

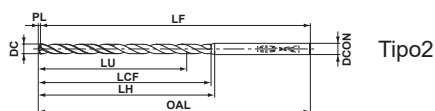
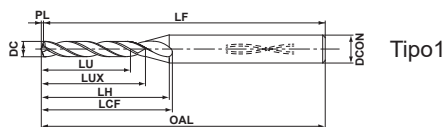
FURAÇÃO(METAL DURO INTEIRIÇO)

DVAS NEW Mini SÉRIE TRISTAR

METAL DURO

DC (mm)	Prof. do Furo (L/D)	DP1120	Referência para Pedido	Dimensões (mm)								Tipo
				LU	LUX	LCF	LH	OAL	LF	PL	DCON	
1.5	40	●	DVAS0150X40S040	60.3	–	64.8	69.4	105	104.7	0.3	4	2
1.5	50	●	DVAS0150X50S040	75.3	–	79.8	84.4	120	119.7	0.3	4	2
1.6	7	●	DVAS0160X07S040	11.5	13.1	19.2	17.6	57	56.7	0.3	4	1
1.6	12	●	DVAS0160X12S040	19.5	21.1	27.2	25.6	66	65.7	0.3	4	1
1.6	20	●	DVAS0160X20S040	32.3	–	37.1	41.6	79	78.7	0.3	4	2
1.6	25	●	DVAS0160X25S040	40.3	–	45.1	49.6	88	87.7	0.3	4	2
1.6	30	●	DVAS0160X30S040	48.3	–	53.1	57.6	99	98.7	0.3	4	2
1.6	40	●	DVAS0160X40S040	64.3	–	69.1	73.6	113	112.7	0.3	4	2
1.7	7	●	DVAS0170X07S040	12.2	14.0	20.1	18.2	57	56.7	0.3	4	1
1.7	12	●	DVAS0170X12S040	20.7	22.5	28.6	26.7	66	65.7	0.3	4	1
1.7	20	●	DVAS0170X20S040	34.3	–	39.4	43.7	79	78.7	0.3	4	2
1.7	25	●	DVAS0170X25S040	42.8	–	47.9	52.2	88	87.7	0.3	4	2
1.7	30	●	DVAS0170X30S040	51.3	–	56.4	60.7	99	98.7	0.3	4	2
1.7	40	●	DVAS0170X40S040	68.3	–	73.4	77.7	113	112.7	0.3	4	2
1.8	7	●	DVAS0180X07S040	12.9	14.8	21.0	18.8	59	58.7	0.3	4	1
1.8	12	●	DVAS0180X12S040	21.9	23.8	30.0	27.8	69	68.7	0.3	4	1
1.8	20	●	DVAS0180X20S040	36.3	–	41.7	45.8	84	83.7	0.3	4	2
1.8	25	●	DVAS0180X25S040	45.3	–	50.7	54.8	94	93.7	0.3	4	2
1.8	30	●	DVAS0180X30S040	54.3	–	59.7	63.8	104	103.7	0.3	4	2
1.8	40	●	DVAS0180X40S040	72.3	–	77.7	81.8	123	122.7	0.3	4	2
1.9	7	●	DVAS0190X07S040	13.7	15.6	21.9	19.5	59	58.6	0.4	4	1
1.9	12	●	DVAS0190X12S040	23.2	25.1	31.4	29.0	69	68.6	0.4	4	1
1.9	20	●	DVAS0190X20S040	38.4	–	44.1	48.0	84	83.6	0.4	4	2
1.9	25	●	DVAS0190X25S040	47.9	–	53.6	57.5	94	93.6	0.4	4	2
1.9	30	●	DVAS0190X30S040	57.4	–	63.1	67.0	104	103.6	0.4	4	2
1.9	40	●	DVAS0190X40S040	76.4	–	82.1	86.0	123	122.6	0.4	4	2
2.0	7	●	DVAS0200X07S040	14.4	16.4	22.9	20.1	62	61.6	0.4	4	1
2.0	12	●	DVAS0200X12S040	24.4	26.4	32.9	30.1	73	72.6	0.4	4	1
2.0	20	●	DVAS0200X20S040	40.4	–	46.4	50.1	91	90.6	0.4	4	2
2.0	25	●	DVAS0200X25S040	50.4	–	56.4	60.1	102	101.6	0.4	4	2
2.0	30	●	DVAS0200X30S040	60.4	–	66.4	70.1	113	112.6	0.4	4	2
2.0	40	●	DVAS0200X40S040	80.4	–	86.4	90.1	136	135.6	0.4	4	2
2.0	50	●	DVAS0200X50S040	100.4	–	106.4	110.1	158	157.6	0.4	4	2
2.1	7	●	DVAS0210X07S040	15.1	17.2	23.8	20.7	62	61.6	0.4	4	1
2.1	12	●	DVAS0210X12S040	25.6	27.7	34.3	31.2	73	72.6	0.4	4	1
2.1	20	●	DVAS0210X20S040	42.4	–	48.7	52.2	91	90.6	0.4	4	2
2.1	25	●	DVAS0210X25S040	52.9	–	59.2	62.7	102	101.6	0.4	4	2
2.1	30	●	DVAS0210X30S040	63.4	–	69.7	73.2	113	112.6	0.4	4	2
2.1	40	●	DVAS0210X40S040	84.4	–	90.7	94.2	136	135.6	0.4	4	2
2.2	7	●	DVAS0220X07S040	15.8	18.1	24.7	21.4	62	61.6	0.4	4	1
2.2	12	●	DVAS0220X12S040	26.8	29.1	35.7	32.4	73	72.6	0.4	4	1
2.2	20	●	DVAS0220X20S040	44.4	–	51.0	54.4	91	90.6	0.4	4	2
2.2	25	●	DVAS0220X25S040	55.4	–	62.0	65.4	102	101.6	0.4	4	2
2.2	30	●	DVAS0220X30S040	66.4	–	73.0	76.4	113	112.6	0.4	4	2
2.2	40	●	DVAS0220X40S040	88.4	–	95.0	98.4	136	135.6	0.4	4	2
2.3	7	●	DVAS0230X07S040	16.5	18.9	25.7	22.0	65	64.6	0.4	4	1
2.3	12	●	DVAS0230X12S040	28.0	30.4	37.2	33.5	78	77.6	0.4	4	1
2.3	20	●	DVAS0230X20S040	46.4	–	53.3	56.5	98	97.6	0.4	4	2

● : Estoque mantido.



DC (mm)	Prof. do Furo (L/D)	DP1120	Referência para Pedido	Dimensões (mm)								Tipo
				LU	LUX	LCF	LH	OAL	LF	PL	DC ON	
2.3	25	●	DVAS0230X25S040	57.9	–	64.8	68.0	111	110.6	0.4	4	2
2.3	30	●	DVAS0230X30S040	69.4	–	76.3	79.5	124	123.6	0.4	4	2
2.3	40	●	DVAS0230X40S040	92.4	–	99.3	102.5	150	149.6	0.4	4	2
2.4	7	●	DVAS0240X07S040	17.2	19.7	26.6	22.6	65	64.6	0.4	4	1
2.4	12	●	DVAS0240X12S040	29.2	31.7	38.6	34.6	78	77.6	0.4	4	1
2.4	20	●	DVAS0240X20S040	48.4	–	55.6	58.6	98	97.6	0.4	4	2
2.4	25	●	DVAS0240X25S040	60.4	–	67.6	70.6	111	110.6	0.4	4	2
2.4	30	●	DVAS0240X30S040	72.4	–	79.6	82.6	124	123.6	0.4	4	2
2.4	40	●	DVAS0240X40S040	96.4	–	103.6	106.6	150	149.6	0.4	4	2
2.5	7	●	DVAS0250X07S040	18.0	20.5	27.5	23.3	65	64.5	0.5	4	1
2.5	12	●	DVAS0250X12S040	30.5	33.0	40.0	35.8	78	77.5	0.5	4	1
2.5	20	●	DVAS0250X20S040	50.5	–	58.0	60.8	98	97.5	0.5	4	2
2.5	25	●	DVAS0250X25S040	63.0	–	70.5	73.3	111	110.5	0.5	4	2
2.5	30	●	DVAS0250X30S040	75.5	–	83.0	85.8	124	123.5	0.5	4	2
2.5	40	●	DVAS0250X40S040	100.5	–	108.0	110.8	150	149.5	0.5	4	2
2.5	50	●	DVAS0250X50S040	125.5	–	133.0	135.8	176	175.5	0.5	4	2
2.6	7	●	DVAS0260X07S040	18.7	21.3	28.4	23.9	65	64.5	0.5	4	1
2.6	12	●	DVAS0260X12S040	31.7	34.3	41.4	36.9	78	77.5	0.5	4	1
2.6	20	●	DVAS0260X20S040	52.5	–	60.3	62.9	98	97.5	0.5	4	2
2.6	25	●	DVAS0260X25S040	65.5	–	73.3	75.9	111	110.5	0.5	4	2
2.6	30	●	DVAS0260X30S040	78.5	–	86.3	88.9	124	123.5	0.5	4	2
2.6	40	●	DVAS0260X40S040	104.5	–	112.3	114.9	150	149.5	0.5	4	2
2.7	7	●	DVAS0270X07S040	19.4	22.2	29.4	24.5	68	67.5	0.5	4	1
2.7	12	●	DVAS0270X12S040	32.9	35.7	42.9	38.0	83	82.5	0.5	4	1
2.7	20	●	DVAS0270X20S040	54.5	–	62.6	65.0	107	106.5	0.5	4	2
2.7	25	●	DVAS0270X25S040	68.0	–	76.1	78.5	122	121.5	0.5	4	2
2.7	30	●	DVAS0270X30S040	81.5	–	89.6	92.0	137	136.5	0.5	4	2
2.7	40	●	DVAS0270X40S040	108.5	–	116.6	119.0	167	166.5	0.5	4	2
2.8	7	●	DVAS0280X07S040	20.1	23.0	30.3	25.2	68	67.5	0.5	4	1
2.8	12	●	DVAS0280X12S040	34.1	37.0	44.3	39.2	83	82.5	0.5	4	1
2.8	20	●	DVAS0280X20S040	56.5	–	64.9	67.2	107	106.5	0.5	4	2
2.8	25	●	DVAS0280X25S040	70.5	–	78.9	81.2	122	121.5	0.5	4	2
2.8	30	●	DVAS0280X30S040	84.5	–	92.9	95.2	137	136.5	0.5	4	2
2.8	40	●	DVAS0280X40S040	112.5	–	120.9	123.2	167	166.5	0.5	4	2
2.9	7	●	DVAS0290X07S040	20.8	23.8	31.2	25.8	68	67.5	0.5	4	1
2.9	12	●	DVAS0290X12S040	35.3	38.3	45.7	40.3	83	82.5	0.5	4	1
2.9	20	●	DVAS0290X20S040	58.5	–	67.2	69.3	107	106.5	0.5	4	2
2.9	25	●	DVAS0290X25S040	73.0	–	81.7	83.8	122	121.5	0.5	4	2
2.9	30	●	DVAS0290X30S040	87.5	–	96.2	98.3	137	136.5	0.5	4	2
2.9	40	●	DVAS0290X40S040	116.5	–	125.2	127.3	167	166.5	0.5	4	2

FURAÇÃO(METAL DURO INTEIRIÇO)

DVAS NEW Mini
SÉRIE TRISTAR

METAL DURO

CONDIÇÕES DE CORTE RECOMENDADAS

Material		Aço Baixo Carbono Aço Carbono, Aço Liga ASTM A36, AISI 1010, AISI 1045, AISI 4140 etc			Aço inoxidável ferrítico Aço Inoxidável Ferrítico e Martensítico Aço Inoxidável Austenítico, Aço Inoxidável Endurecido por Precipitação AISI 410, 420, 304, 316, 630 (17-4PH) etc		
Diâm. DC (mm)	Prof. do Furo (L/D)	Vel. de Corte (Mín.—Máx.) (m/min)	Rotação (min ⁻¹)	Avanço (Mín.—Máx.) (mm/rot)	Vel. de Corte (Mín.—Máx.) (m/min)	Rotação (min ⁻¹)	Avanço (Mín.—Máx.) (mm/rot)
1.0	2-30	65(30—100)	20700	0.035(0.020—0.050)	60(20—100)	19100	0.025(0.010—0.040)
1.0	40, 50	65(30—100)	20700	0.030(0.020—0.040)	60(20—100)	19100	0.020(0.010—0.030)
1.5	2-30	65(30—100)	13800	0.053(0.030—0.075)	60(20—100)	12700	0.038(0.015—0.060)
1.5	40, 50	65(30—100)	13800	0.045(0.030—0.060)	60(20—100)	12700	0.030(0.015—0.045)
2.0	2-30	70(40—100)	11100	0.070(0.040—0.100)	60(20—100)	9500	0.050(0.020—0.080)
2.0	40, 50	70(40—100)	11100	0.060(0.040—0.080)	60(20—100)	9500	0.040(0.020—0.060)
2.5	2-30	70(40—100)	8900	0.088(0.050—0.125)	60(20—100)	7600	0.063(0.025—0.100)
2.5	40, 50	70(40—100)	8900	0.075(0.050—0.100)	60(20—100)	7600	0.050(0.025—0.075)
2.9	2-30	70(40—100)	7700	0.102(0.058—0.145)	60(20—100)	6600	0.073(0.029—0.116)
2.9	40, 50	70(40—100)	7700	0.087(0.058—0.116)	60(20—100)	6600	0.058(0.029—0.087)

Material		Ferro fundido Ferro Fundido Nodular DIN GG-30, GGG-45 etc			Ligas de Alumínio JIS A5052, A6061, A7075		
Diâm. DC (mm)	Prof. do Furo (L/D)	Vel. de Corte (Mín.—Máx.) (m/min)	Rotação (min ⁻¹)	Avanço (Mín.—Máx.) (mm/rot)	Vel. de Corte (Mín.—Máx.) (m/min)	Rotação (min ⁻¹)	Avanço (Mín.—Máx.) (mm/rot)
1.0	2-30	70(40—100)	22300	0.035(0.020—0.050)	140(100—180)	31800	0.040(0.020—0.060)
1.0	40, 50	70(40—100)	22300	0.030(0.020—0.040)	140(100—180)	31800	0.035(0.020—0.050)
1.5	2-30	70(40—100)	14900	0.053(0.030—0.075)	140(100—180)	21200	0.060(0.030—0.090)
1.5	40, 50	70(40—100)	14900	0.045(0.030—0.060)	140(100—180)	21200	0.053(0.030—0.075)
2.0	2-30	70(40—100)	11100	0.070(0.040—0.100)	140(100—180)	15900	0.080(0.040—0.120)
2.0	40, 50	70(40—100)	11100	0.060(0.040—0.080)	140(100—180)	15900	0.070(0.040—0.100)
2.5	2-30	70(40—100)	8900	0.088(0.050—0.125)	140(100—180)	12700	0.100(0.050—0.150)
2.5	40, 50	70(40—100)	8900	0.075(0.050—0.100)	140(100—180)	12700	0.088(0.050—0.125)
2.9	2-30	70(40—100)	7700	0.102(0.058—0.145)	140(100—180)	11000	0.116(0.058—0.174)
2.9	40, 50	70(40—100)	7700	0.087(0.058—0.116)	140(100—180)	11000	0.102(0.058—0.145)

Material		Ligas Resistentes ao Calor Inconel718 etc			Ligas de titânio Ti-6Al-4V etc		
Diâm. DC (mm)	Prof. do Furo (L/D)	Vel. de Corte (Mín.—Máx.) (m/min)	Rotação (min ⁻¹)	Avanço (Mín.—Máx.) (mm/rot)	Vel. de Corte (Mín.—Máx.) (m/min)	Rotação (min ⁻¹)	Avanço (Mín.—Máx.) (mm/rot)
1.0	2-30	30(10—50)	9500	0.015(0.010—0.020)	30(20—40)	9500	0.020(0.010—0.030)
1.0	40, 50	30(10—50)	9500	0.015(0.010—0.020)	30(20—40)	9500	0.020(0.010—0.030)
1.5	2-30	30(10—50)	6400	0.023(0.015—0.030)	30(20—40)	6400	0.030(0.015—0.045)
1.5	40, 50	30(10—50)	6400	0.023(0.015—0.030)	30(20—40)	6400	0.030(0.015—0.045)
2.0	2-30	30(10—50)	4800	0.030(0.020—0.040)	30(20—40)	4800	0.040(0.020—0.060)
2.0	40, 50	30(10—50)	4800	0.030(0.020—0.040)	30(20—40)	4800	0.040(0.020—0.060)
2.5	2-30	30(10—50)	3800	0.038(0.025—0.050)	30(20—40)	3800	0.050(0.025—0.075)
2.5	40, 50	30(10—50)	3800	0.038(0.025—0.050)	30(20—40)	3800	0.050(0.025—0.075)
2.9	2-30	30(10—50)	3300	0.044(0.029—0.058)	30(20—40)	3300	0.058(0.029—0.087)
2.9	40, 50	30(10—50)	3300	0.044(0.029—0.058)	30(20—40)	3300	0.058(0.029—0.087)

Nota 1) As condições de corte acima referem-se apenas ao uso de refrigeração interna.

Nota 2) Verifique as condições dos cavacos e aplique avanço "pica-pau" se necessário. * Referência do incremento: DC×0.2—DC×1.0

Nota 3) Ajuste as condições de corte de acordo com a rigidez da máquina e da fixação da peça, geometria da peça usinada, etc.

Nota 4) Não é recomendado usinar profundidades seja maiores que o comprimento útil (LU).

Nota 5) Fixe a broca de modo que o batimento seja menor que 0.003mm.

Nota 6) Não fixe a broca pela região do canal.

FURAÇÃO

Material		Ligas de cobalto cromo T7402-2, ASTM F1537, F799 etc		
Diâm. DC (mm)	Prof. do Furo (L/D)	Vel. de Corte (Mín.—Máx.) (m/min)	Rotação (min ⁻¹)	Avanço (Mín.—Máx.) (mm/rot)
1.0	2-30	60(30-90)	19100	0.020(0.010-0.030)
1.0	40, 50	60(30-90)	19100	0.020(0.010-0.030)
1.5	2-30	60(30-90)	12700	0.030(0.015-0.045)
1.5	40, 50	60(30-90)	12700	0.030(0.015-0.045)
2.0	2-30	60(30-90)	9500	0.040(0.020-0.060)
2.0	40, 50	60(30-90)	9500	0.040(0.020-0.060)
2.5	2-30	60(30-90)	7600	0.050(0.025-0.075)
2.5	40, 50	60(30-90)	7600	0.050(0.025-0.075)
2.9	2-30	60(30-90)	6600	0.058(0.029-0.087)
2.9	40, 50	60(30-90)	6600	0.058(0.029-0.087)

Nota 1) As condições de corte acima referem-se apenas ao uso de refrigeração interna.

Nota 2) Verifique as condições dos cavacos e aplique avanço "pica-pau" se necessário. * Referência do incremento: DC×0.2—DC×1.0

Nota 3) Ajuste as condições de corte de acordo com a rigidez da máquina e da fixação da peça, geometria da peça usinada, etc.

Nota 4) Não é recomendado usinar profundidades maiores que o comprimento útil (LU).

Nota 5) Fixe a broca de modo que o batimento seja menor que 0.003mm.

Nota 6) Não fixe a broca pela região do canal.

Recomendações para usinagem de furo profundo maior que L/D = 40

Método de rotação da peça: tornos tipo Suíço, tornos automáticos, etc.

(1) Use um furo de centro na face. (É recomendada a broca DLE.)



(2) Use o furo de guia com profundidade aproximada DC x 3. (É recomendada a broca DVAS.)



(3) Use o furo profundo com a broca DVAS○○○○X50S040.



Método de rotação: Centros de usinagem, máquinas multitarefas, etc.

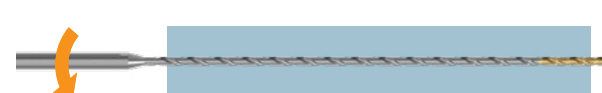
(1) Use o furo de guia com profundidade de aproximadamente 3D. (É recomendada a broca DVAS.)



(2) Use o furo de guia com profundidade aproximada DC x 7. Para uma usinagem mais estável, use um furo de guia com profundidade maior que DC x 7.



(3) Use o furo profundo com a broca DVAS○○○○X50S040.



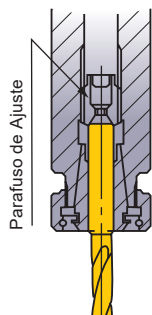
FURAÇÃO(METAL DURO INTEIRIÇO)

DVAS NEW Mini
SÉRIE TRISTAR

METAL DURO

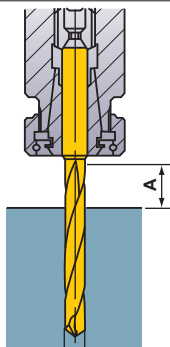
ORIENTAÇÃO DE OPERAÇÃO

Fixação da Broca



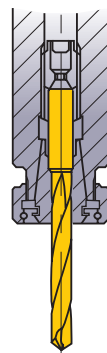
Tenha certeza que a pinça esteja fixando a broca seguramente.

Comprimento da Broca



$$A \geq DC \times 2$$

Instalação da Broca



NG

Não fixe a broca pela região do canal.

Pressão de refrigeração

Ajuste a pressão de refrigeração de acordo com o tipo e a concentração do fluido refrigerante.

Diâm. da broca DC	Óleo solúvel	Óleo integral
DC<2mm	≥ 3MPa	≥ 7MPa
DC<3mm	≥ 2MPa	≥ 5MPa

Brocas de diâmetro pequeno

Para furação profunda, consulte as imagens abaixo.

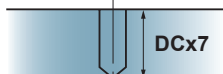
$$L/D \leq 40$$



Uso da DVAS X02S040

*L/D = 2 pode ser usinado até DC x 3 na usinagem de furos de guia.

$$L/D > 40$$



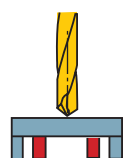
Uso da DVAS X07S040

Cuidados com o Fluido

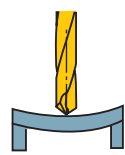
Resíduos podem obstruir o furo de refrigeração das brocas de diâmetros pequenos. Sempre utilize um filtro com malha fina como uma medida preventiva.

Diâm. da broca DC	Filtro de malha fina
DC<2mm	≤ 10µm
DC<3mm	≤ 20µm

Peça Fina

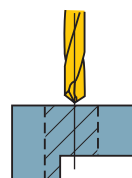


Peça com apoio adequado
OK



Ocorrência de deflexão
NG

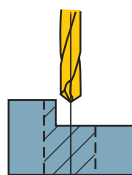
Corte Interrompido



Processo Único

OK

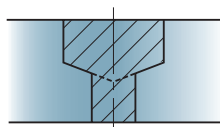
① Reduza o avanço quando furar uma área interrompida.



Necessidade de usinagem prévia

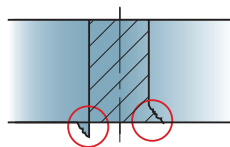
① Rebaixo com uma fresa de topo.

Furos Conjugados



- ① Divida em 2 processos.
- ② Fure o diâmetro maior primeiro.
- * Uma ferramenta conjugada pode ser produzida através de pedido.

Rebarbas e Lascamento da Peça



Reduza o avanço na saída do furo passante.

FURAÇÃO

Anotações

A series of horizontal dashed lines for writing notes, spanning the width of the page.

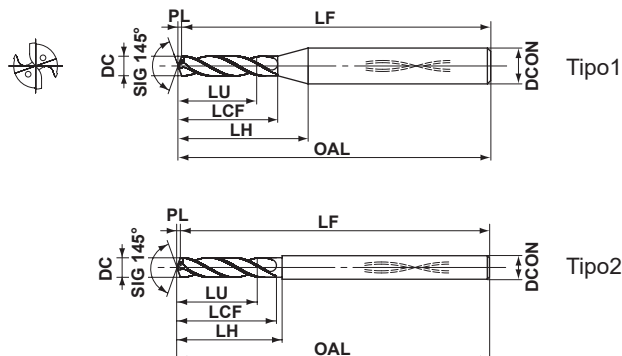
FURAÇÃO(METAL DURO INTEIRIÇO)

MVS Broca piloto
BROCAS WSTAR

● Para usinagem de furo piloto



Refrigeração Interna



	1 ≤ DC ≤ 2.9	DC = 3	3 < DC ≤ 6	6 < DC ≤ 10	10 < DC ≤ 14
	+0.014 0	0 -0.014	0 -0.018	0 -0.022	0 -0.027
		DCON = 3	3 < DCON ≤ 6	6 < DCON ≤ 10	10 < DCON ≤ 14
		0 -0.006	0 -0.008	0 -0.009	0 -0.011

DC (mm)	Prof. do Furo (L/D)	DP1020	Referência para Pedido	Dimensões (mm)							Tipo
				LU	LCF	LH	OAL	LF	PL	DCON	
1.0	2	●	MVS0100X02S030	2.2	5.2	8.9	55.2	55	0.2	3	1
1.1	2	●	MVS0110X02S030	2.4	5.6	9.1	55.2	55	0.2	3	1
1.2	2	●	MVS0120X02S030	2.6	6.2	9.6	55.2	55	0.2	3	1
1.3	2	●	MVS0130X02S030	2.8	6.6	9.8	55.2	55	0.2	3	1
1.4	2	●	MVS0140X02S030	3.0	7.2	10.2	55.2	55	0.2	3	1
1.5	2	●	MVS0150X02S030	3.2	7.6	10.4	55.2	55	0.2	3	1
1.6	2	●	MVS0160X02S030	3.5	8.3	10.9	68.3	68	0.3	3	1
1.7	2	●	MVS0170X02S030	3.7	8.7	11.1	68.3	68	0.3	3	1
1.8	2	●	MVS0180X02S030	3.9	9.3	11.5	68.3	68	0.3	3	1
1.9	2	●	MVS0190X02S030	4.1	9.7	11.8	68.3	68	0.3	3	1
2.0	2	●	MVS0200X02S030	4.3	10.3	12.2	68.3	68	0.3	3	1
2.1	2	●	MVS0210X02S030	4.5	10.7	12.4	74.3	74	0.3	3	1
2.2	2	●	MVS0220X02S030	4.7	11.3	12.8	74.3	74	0.3	3	1
2.3	2	●	MVS0230X02S030	5.0	11.8	13.1	74.4	74	0.4	3	1
2.4	2	●	MVS0240X02S030	5.2	12.4	13.5	74.4	74	0.4	3	1
2.5	2	●	MVS0250X02S030	5.4	12.8	13.7	74.4	74	0.4	3	1
2.6	2	●	MVS0260X02S030	5.6	13.4	13.4	81.4	81	0.4	3	2
2.7	2	●	MVS0270X02S030	5.8	13.8	13.8	81.4	81	0.4	3	2
2.8	2	●	MVS0280X02S030	6.0	14.4	14.4	81.4	81	0.4	3	2
2.9	2	●	MVS0290X02S030	6.3	14.9	14.9	81.5	81	0.5	3	2
3.0	2	●	MVS0300X02S030PL	6.5	16.5	16.5	55.5	55	0.5	3	2
3.1	2	●	MVS0310X02S040PL	6.7	18.5	20.5	55.5	55	0.5	4	1
3.2	2	●	MVS0320X02S040PL	6.9	18.5	20.5	55.5	55	0.5	4	1
3.3	2	●	MVS0330X02S040PL	7.1	18.5	20.5	55.5	55	0.5	4	1
3.4	2	●	MVS0340X02S040PL	7.3	18.5	20.5	55.5	55	0.5	4	1
3.5	2	●	MVS0350X02S040PL	7.6	18.5	20.6	55.6	55	0.6	4	1

DC (mm)	Prof. do Furo (L/D)	DP1020	Referência para Pedido	Dimensões (mm)							Tipo
				LU	LCF	LH	OAL	LF	PL	DCON	
3.6	2	●	MVS0360X02S040PL	7.8	20.6	20.6	55.6	55	0.6	4	1
3.7	2	●	MVS0370X02S040PL	8.0	20.6	20.6	55.6	55	0.6	4	1
3.8	2	●	MVS0380X02S040PL	8.2	20.6	20.6	55.6	55	0.6	4	1
3.9	2	●	MVS0390X02S040PL	8.4	20.6	20.6	55.6	55	0.6	4	1
4.0	2	●	MVS0400X02S040PL	8.6	20.6	20.6	55.6	55	0.6	4	2
4.1	2	●	MVS0410X02S050PL	8.8	22.6	24.6	62.6	62	0.6	5	1
4.2	2	●	MVS0420X02S050PL	9.1	22.7	24.7	62.7	62	0.7	5	1
4.3	2	●	MVS0430X02S050PL	9.3	22.7	24.7	62.7	62	0.7	5	1
4.4	2	●	MVS0440X02S050PL	9.5	22.7	24.7	62.7	62	0.7	5	1
4.5	2	●	MVS0450X02S050PL	9.7	22.7	24.7	62.7	62	0.7	5	1
4.6	2	●	MVS0460X02S050PL	9.9	24.7	24.7	62.7	62	0.7	5	2
4.7	2	●	MVS0470X02S050PL	10.1	24.7	24.7	62.7	62	0.7	5	2
4.8	2	●	MVS0480X02S050PL	10.4	24.8	24.8	62.8	62	0.8	5	2
4.9	2	●	MVS0490X02S050PL	10.6	24.8	24.8	62.8	62	0.8	5	2
5.0	2	●	MVS0500X02S050PL	10.8	24.8	24.8	62.8	62	0.8	5	2
5.1	2	●	MVS0510X02S060PL	11.0	26.8	28.8	66.8	66	0.8	6	2
5.2	2	●	MVS0520X02S060PL	11.2	26.8	28.8	66.8	66	0.8	6	2
5.3	2	●	MVS0530X02S060PL	11.4	26.8	28.8	66.8	66	0.8	6	2
5.4	2	●	MVS0540X02S060PL	11.7	26.9	28.9	66.9	66	0.9	6	2
5.5	2	●	MVS0550X02S060PL	11.9	26.9	28.9	66.9	66	0.9	6	2
5.6	2	●	MVS0560X02S060PL	12.1	28.9	28.9	66.9	66	0.9	6	2
5.7	2	●	MVS0570X02S060PL	12.3	28.9	28.9	66.9	66	0.9	6	2
5.8	2	●	MVS0580X02S060PL	12.5	28.9	28.9	66.9	66	0.9	6	2
5.9	2	●	MVS0590X02S060PL	12.7	28.9	28.9	66.9	66	0.9	6	2
6.0	2	●	MVS0600X02S060PL	12.9	28.9	28.9	66.9	66	0.9	6	2
6.1	2	●	MVS0610X02S070PL	13.2	32.0	35.0	75.0	74	1.0	7	2

Nota 1) As brocas de ø5mm ou menores têm furo de refrigeração com seção circular.

DC	Prof. do Furo (mm)	DP1020 (L/D)	Referência para Pedido	Dimensões (mm)							Tipo
				LU	LCF	LH	OAL	LF	PL	DCON	
6.2	2	●	MVS0620X02S070PL	13.4	32.0	35.0	75.0	74	1.0	7	2
6.3	2	●	MVS0630X02S070PL	13.6	32.0	35.0	75.0	74	1.0	7	2
6.4	2	●	MVS0640X02S070PL	13.8	32.0	35.0	75.0	74	1.0	7	2
6.5	2	●	MVS0650X02S070PL	14.0	32.0	35.0	75.0	74	1.0	7	2
6.6	2	●	MVS0660X02S070PL	14.2	35.0	35.0	75.0	74	1.0	7	2
6.7	2	●	MVS0670X02S070PL	14.5	35.1	35.1	75.1	74	1.1	7	2
6.8	2	●	MVS0680X02S070PL	14.7	35.1	35.1	75.1	74	1.1	7	2
6.9	2	●	MVS0690X02S070PL	14.9	35.1	35.1	75.1	74	1.1	7	2
7.0	2	●	MVS0700X02S070PL	15.1	35.1	35.1	75.1	74	1.1	7	2
7.1	2	●	MVS0710X02S080PL	15.3	35.1	38.1	80.1	79	1.1	8	2
7.2	2	●	MVS0720X02S080PL	15.5	35.1	38.1	80.1	79	1.1	8	2
7.3	2	●	MVS0730X02S080PL	15.8	35.2	38.2	80.2	79	1.2	8	2
7.4	2	●	MVS0740X02S080PL	16.0	35.2	38.2	80.2	79	1.2	8	2
7.5	2	●	MVS0750X02S080PL	16.2	35.2	38.2	80.2	79	1.2	8	2
7.6	2	●	MVS0760X02S080PL	16.4	38.2	38.2	80.2	79	1.2	8	2
7.7	2	●	MVS0770X02S080PL	16.6	38.2	38.2	80.2	79	1.2	8	2
7.8	2	●	MVS0780X02S080PL	16.8	38.2	38.2	80.2	79	1.2	8	2
7.9	2	●	MVS0790X02S080PL	17.0	38.2	38.2	80.2	79	1.2	8	2
8.0	2	●	MVS0800X02S080PL	17.3	38.3	38.3	80.3	79	1.3	8	2
8.1	2	●	MVS0810X02S090PL	17.5	38.3	41.3	85.3	84	1.3	9	2
8.2	2	●	MVS0820X02S090PL	17.7	38.3	41.3	85.3	84	1.3	9	2
8.3	2	●	MVS0830X02S090PL	17.9	38.3	41.3	85.3	84	1.3	9	2
8.4	2	●	MVS0840X02S090PL	18.1	38.3	41.3	85.3	84	1.3	9	2
8.5	2	●	MVS0850X02S090PL	18.3	38.3	41.3	85.3	84	1.3	9	2
8.6	2	●	MVS0860X02S090PL	18.6	41.4	41.4	85.4	84	1.4	9	2
8.7	2	●	MVS0870X02S090PL	18.8	41.4	41.4	85.4	84	1.4	9	2
8.8	2	●	MVS0880X02S090PL	19.0	41.4	41.4	85.4	84	1.4	9	2
8.9	2	●	MVS0890X02S090PL	19.2	41.4	41.4	85.4	84	1.4	9	2
9.0	2	●	MVS0900X02S090PL	19.4	41.4	41.4	85.4	84	1.4	9	2
9.1	2	●	MVS0910X02S100PL	19.6	41.4	44.4	90.4	89	1.4	10	2
9.2	2	●	MVS0920X02S100PL	19.9	41.5	44.5	90.5	89	1.5	10	2
9.3	2	●	MVS0930X02S100PL	20.1	41.5	44.5	90.5	89	1.5	10	2
9.4	2	●	MVS0940X02S100PL	20.3	41.5	44.5	90.5	89	1.5	10	2
9.5	2	●	MVS0950X02S100PL	20.5	41.5	44.5	90.5	89	1.5	10	2
9.6	2	●	MVS0960X02S100PL	20.7	44.5	44.5	90.5	89	1.5	10	2
9.7	2	●	MVS0970X02S100PL	20.9	44.5	44.5	90.5	89	1.5	10	2
9.8	2	●	MVS0980X02S100PL	21.1	44.5	44.5	90.5	89	1.5	10	2
9.9	2	●	MVS0990X02S100PL	21.4	44.6	44.6	90.6	89	1.6	10	2
10.0	2	●	MVS1000X02S100PL	21.6	44.6	44.6	90.6	89	1.6	10	2
10.1	2	●	MVS1010X02S110PL	21.8	44.6	47.6	96.6	95	1.6	11	2
10.2	2	●	MVS1020X02S110PL	22.0	44.6	47.6	96.6	95	1.6	11	2
10.3	2	●	MVS1030X02S110PL	22.2	44.6	47.6	96.6	95	1.6	11	2
10.4	2	●	MVS1040X02S110PL	22.4	44.6	47.6	96.6	95	1.6	11	2
10.5	2	●	MVS1050X02S110PL	22.7	44.7	47.7	96.7	95	1.7	11	2
10.6	2	●	MVS1060X02S110PL	22.9	48.7	48.7	96.7	95	1.7	11	2
10.7	2	●	MVS1070X02S110PL	23.1	48.7	48.7	96.7	95	1.7	11	2
10.8	2	●	MVS1080X02S110PL	23.3	48.7	48.7	96.7	95	1.7	11	2
10.9	2	●	MVS1090X02S110PL	23.5	48.7	48.7	96.7	95	1.7	11	2

DC	Prof. do Furo (mm)	DP1020 (L/D)	Referência para Pedido	Dimensões (mm)							Tipo
				LU	LCF	LH	OAL	LF	PL	DCON	
11.0	2	●	MVS1100X02S110PL	23.7	48.7	48.7	96.7	95	1.7	11	2
11.1	2	●	MVS1110X02S120PL	23.9	48.7	51.7	96.7	95	1.7	12	2
11.2	2	●	MVS1120X02S120PL	24.2	48.8	51.8	96.8	95	1.8	12	2
11.3	2	●	MVS1130X02S120PL	24.4	48.8	51.8	96.8	95	1.8	12	2
11.4	2	●	MVS1140X02S120PL	24.6	48.8	51.8	96.8	95	1.8	12	2
11.5	2	●	MVS1150X02S120PL	24.8	48.8	51.8	96.8	95	1.8	12	2
11.6	2	●	MVS1160X02S120PL	25.0	48.8	48.8	96.8	95	1.8	12	2
11.7	2	●	MVS1170X02S120PL	25.2	48.8	48.8	96.8	95	1.8	12	2
11.8	2	●	MVS1180X02S120PL	25.5	48.9	48.9	96.9	95	1.9	12	2
11.9	2	●	MVS1190X02S120PL	25.7	48.9	48.9	96.9	95	1.9	12	2
12.0	2	●	MVS1200X02S120PL	25.9	48.9	48.9	96.9	95	1.9	12	2
12.1	2	●	MVS1210X02S130PL	26.1	52.9	55.9	103.9	102	1.9	13	2
12.2	2	●	MVS1220X02S130PL	26.3	52.9	55.9	103.9	102	1.9	13	2
12.3	2	●	MVS1230X02S130PL	26.5	52.9	55.9	103.9	102	1.9	13	2
12.4	2	●	MVS1240X02S130PL	26.8	53.0	56.0	104.0	102	2.0	13	2
12.5	2	●	MVS1250X02S130PL	27.0	53.0	56.0	104.0	102	2.0	13	2
12.6	2	●	MVS1260X02S130PL	27.2	53.0	53.0	104.0	102	2.0	13	2
12.7	2	●	MVS1270X02S130PL	27.4	53.0	53.0	104.0	102	2.0	13	2
12.8	2	●	MVS1280X02S130PL	27.6	53.0	53.0	104.0	102	2.0	13	2
12.9	2	●	MVS1290X02S130PL	27.8	53.0	53.0	104.0	102	2.0	13	2
13.0	2	●	MVS1300X02S130PL	28.0	53.0	53.0	104.0	102	2.0	13	2
13.1	2	●	MVS1310X02S140PL	28.3	56.1	59.1	109.1	107	2.1	14	2
13.2	2	●	MVS1320X02S140PL	28.5	56.1	59.1	109.1	107	2.1	14	2
13.3	2	●	MVS1330X02S140PL	28.7	56.1	59.1	109.1	107	2.1	14	2
13.4	2	●	MVS1340X02S140PL	28.9	56.1	59.1	109.1	107	2.1	14	2
13.5	2	●	MVS1350X02S140PL	29.1	56.1	59.1	109.1	107	2.1	14	2
13.6	2	●	MVS1360X02S140PL	29.3	56.1	56.1	109.1	107	2.1	14	2
13.7	2	●	MVS1370X02S140PL	29.6	56.2	56.2	109.2	107	2.2	14	2
13.8	2	●	MVS1380X02S140PL	29.8	56.2	56.2	109.2	107	2.2	14	2
13.9	2	●	MVS1390X02S140PL	30.0	56.2	56.2	109.2	107	2.2	14	2
14.0	2	●	MVS1400X02S140PL	30.2	56.2	56.2	109.2	107	2.2	14	2

Nota 1) As brocas de $\varnothing 5\text{mm}$ ou menores têm furo de refrigeração com seção circular.

FURAÇÃO(METAL DURO INTEIRIÇO)

MVS Diâmetros pequenos
BROCAS WSTAR

- Aresta de corte reta com excelente equilíbrio entre expulsão de cavacos e resistência da aresta de corte.
- Brocas de diâmetros pequenos com ótimo balanceamento e alta precisão devido à dupla guia.

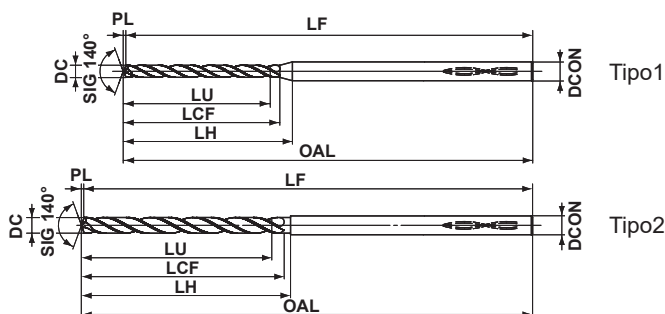


P	M	K	N	S	H
Aço	Aço Inoxidável	Ferro Fundido	Metais Não Ferrosos	Ligas Resist. ao Calor	

Refrigeração Interna



$1 \leq DC \leq 2.9$
$\begin{matrix} 0 \\ -0.014 \end{matrix}$
DCON=3
$\begin{matrix} 0 \\ -0.006 \end{matrix}$



Nota 1) Para usinagem de furo de guia, use a broca piloto MVS (página N046).

DC (mm)	Prof. do Furo (L/D)	DP1020	Referência para Pedido	Dimensões (mm)							Tipo
				LU	LCF	LH	OAL	LF	PL	DCON	
1.0	7	●	MVS0100X07S030	7.2	10.2	14.2	55.2	55	0.2	3	1
1.0	12	●	MVS0100X12S030	12.2	15.2	19.2	55.2	55	0.2	3	1
1.0	20	●	MVS0100X20S030	20.2	24.2	28.2	60.2	60	0.2	3	1
1.0	25	●	MVS0100X25S030	25.2	28.2	32.2	66.2	66	0.2	3	1
1.0	30	●	MVS0100X30S030	30.2	33.2	37.2	72.2	72	0.2	3	1
1.1	7	●	MVS0110X07S030	7.9	11.2	15.2	55.2	55	0.2	3	1
1.1	12	●	MVS0110X12S030	13.4	17.2	21.2	55.2	55	0.2	3	1
1.1	20	●	MVS0110X20S030	22.2	25.2	29.2	60.2	60	0.2	3	1
1.1	25	●	MVS0110X25S030	27.7	31.2	34.2	66.2	66	0.2	3	1
1.1	30	●	MVS0110X30S030	33.2	36.2	40.2	72.2	72	0.2	3	1
1.2	7	●	MVS0120X07S030	8.6	12.2	15.2	55.2	55	0.2	3	1
1.2	12	●	MVS0120X12S030	14.6	18.2	21.2	55.2	55	0.2	3	1
1.2	20	●	MVS0120X20S030	24.2	28.2	31.2	60.2	60	0.2	3	1
1.2	25	●	MVS0120X25S030	30.2	34.2	37.2	66.2	66	0.2	3	1
1.2	30	●	MVS0120X30S030	36.2	40.2	43.2	72.2	72	0.2	3	1
1.3	7	●	MVS0130X07S030	9.3	13.2	16.2	55.2	55	0.2	3	1
1.3	12	●	MVS0130X12S030	15.8	20.2	23.2	55.2	55	0.2	3	1
1.3	20	●	MVS0130X20S030	26.2	30.2	33.2	68.2	68	0.2	3	1
1.3	25	●	MVS0130X25S030	32.7	36.2	40.2	74.2	74	0.2	3	1
1.3	30	●	MVS0130X30S030	39.2	43.2	46.2	82.2	82	0.2	3	1
1.4	7	●	MVS0140X07S030	10.1	14.3	17.3	55.3	55	0.3	3	1
1.4	12	●	MVS0140X12S030	17.1	21.3	24.3	55.3	55	0.3	3	1
1.4	20	●	MVS0140X20S030	28.3	32.3	35.3	68.3	68	0.3	3	1
1.4	25	●	MVS0140X25S030	35.3	39.3	42.3	74.3	74	0.3	3	1
1.4	30	●	MVS0140X30S030	42.3	46.3	49.3	82.3	82	0.3	3	1
1.5	7	●	MVS0150X07S030	10.8	15.3	18.3	55.3	55	0.3	3	1
1.5	12	●	MVS0150X12S030	18.3	23.3	26.3	55.3	55	0.3	3	1
1.5	20	●	MVS0150X20S030	30.3	35.3	37.3	68.3	68	0.3	3	1
1.5	25	●	MVS0150X25S030	37.8	42.3	45.3	74.3	74	0.3	3	1
1.5	30	●	MVS0150X30S030	45.3	50.3	52.3	82.3	82	0.3	3	1

DC (mm)	Prof. do Furo (L/D)	DP1020	Referência para Pedido	Dimensões (mm)							Tipo
				LU	LCF	LH	OAL	LF	PL	DCON	
1.6	7	●	MVS0160X07S030	11.5	16.3	19.3	68.3	68	0.3	3	1
1.6	12	●	MVS0160X12S030	19.5	24.3	27.3	68.3	68	0.3	3	1
1.6	20	●	MVS0160X20S030	32.3	37.3	39.3	78.3	78	0.3	3	1
1.6	25	●	MVS0160X25S030	40.3	45.3	47.3	86.3	86	0.3	3	1
1.6	30	●	MVS0160X30S030	48.3	53.3	55.3	95.3	95	0.3	3	1
1.7	7	●	MVS0170X07S030	12.2	17.3	19.3	68.3	68	0.3	3	1
1.7	12	●	MVS0170X12S030	20.7	26.3	28.3	68.3	68	0.3	3	1
1.7	20	●	MVS0170X20S030	34.3	39.3	42.3	78.3	78	0.3	3	1
1.7	25	●	MVS0170X25S030	42.8	48.3	50.3	86.3	86	0.3	3	1
1.7	30	●	MVS0170X30S030	51.3	56.3	59.3	95.3	95	0.3	3	1
1.8	7	●	MVS0180X07S030	12.9	18.3	20.3	68.3	68	0.3	3	1
1.8	12	●	MVS0180X12S030	21.9	27.3	29.3	68.3	68	0.3	3	1
1.8	20	●	MVS0180X20S030	36.3	41.3	44.3	84.3	84	0.3	3	1
1.8	25	●	MVS0180X25S030	45.3	50.3	53.3	94.3	94	0.3	3	1
1.8	30	●	MVS0180X30S030	54.3	59.3	62.3	102.3	102	0.3	3	1
1.9	7	●	MVS0190X07S030	13.6	19.3	21.3	68.3	68	0.3	3	1
1.9	12	●	MVS0190X12S030	23.1	29.3	31.3	68.3	68	0.3	3	1
1.9	20	●	MVS0190X20S030	38.3	44.3	46.3	84.3	84	0.3	3	1
1.9	25	●	MVS0190X25S030	47.8	53.3	55.3	94.3	94	0.3	3	1
1.9	30	●	MVS0190X30S030	57.3	63.3	65.3	102.3	102	0.3	3	1
2.0	7	●	MVS0200X07S030	14.4	20.4	22.4	68.4	68	0.4	3	1
2.0	12	●	MVS0200X12S030	24.4	30.4	32.4	68.4	68	0.4	3	1
2.0	20	●	MVS0200X20S030	40.4	46.4	48.4	84.4	84	0.4	3	1
2.0	25	●	MVS0200X25S030	50.4	56.4	58.4	94.4	94	0.4	3	1
2.0	30	●	MVS0200X30S030	60.4	66.4	68.4	102.4	102	0.4	3	1
2.1	7	●	MVS0210X07S030	15.1	21.4	23.4	74.4	74	0.4	3	1
2.1	12	●	MVS0210X12S030	25.6	32.4	34.4	74.4	74	0.4	3	1
2.1	20	●	MVS0210X20S030	42.4	48.4	50.4	94.4	94	0.4	3	1
2.1	25	●	MVS0210X25S030	52.9	59.4	60.4	107.4	107	0.4	3	1
2.1	30	●	MVS0210X30S030	63.4	69.4	71.4	118.4	118	0.4	3	1

FURAÇÃO

DC (mm)	Prof. do Furo (L/D)	DP1020	Referência para Pedido	Dimensões (mm)							Tipo
				LU	LCF	LH	OAL	LF	PL	DCON	
2.2	7	●	MVS0220X07S030	15.8	22.4	23.4	74.4	74	0.4	3	1
2.2	12	●	MVS0220X12S030	26.8	33.4	34.4	74.4	74	0.4	3	1
2.2	20	●	MVS0220X20S030	44.4	51.4	52.4	94.4	94	0.4	3	1
2.2	25	●	MVS0220X25S030	55.4	62.4	63.4	107.4	107	0.4	3	1
2.2	30	●	MVS0220X30S030	66.4	73.4	74.4	118.4	118	0.4	3	1
2.3	7	●	MVS0230X07S030	16.5	23.4	24.4	74.4	74	0.4	3	1
2.3	12	●	MVS0230X12S030	28.0	35.4	36.4	74.4	74	0.4	3	1
2.3	20	●	MVS0230X20S030	46.4	53.4	54.4	94.4	94	0.4	3	1
2.3	25	●	MVS0230X25S030	57.9	64.4	66.4	107.4	107	0.4	3	1
2.3	30	●	MVS0230X30S030	69.4	76.4	77.4	118.4	118	0.4	3	1
2.4	7	●	MVS0240X07S030	17.2	24.4	25.4	74.4	74	0.4	3	1
2.4	12	●	MVS0240X12S030	29.2	36.4	37.4	74.4	74	0.4	3	1
2.4	20	●	MVS0240X20S030	48.4	55.4	56.4	94.4	94	0.4	3	1
2.4	25	●	MVS0240X25S030	60.4	67.4	68.4	107.4	107	0.4	3	1
2.4	30	●	MVS0240X30S030	72.4	79.4	80.4	118.4	118	0.4	3	1
2.5	7	●	MVS0250X07S030	18.0	25.5	26.5	74.5	74	0.5	3	1
2.5	12	●	MVS0250X12S030	30.5	38.5	39.5	74.5	74	0.5	3	1
2.5	20	●	MVS0250X20S030	50.5	58.5	59.5	94.5	94	0.5	3	1
2.5	25	●	MVS0250X25S030	63.0	70.5	71.5	107.5	107	0.5	3	1
2.5	30	●	MVS0250X30S030	75.5	83.5	84.5	118.5	118	0.5	3	1
2.6	7	●	MVS0260X07S030	18.7	26.5	26.5	81.5	81	0.5	3	2
2.6	12	●	MVS0260X12S030	31.7	39.5	39.5	81.5	81	0.5	3	2
2.6	20	●	MVS0260X20S030	52.5	60.5	60.5	103.5	103	0.5	3	2
2.6	25	●	MVS0260X25S030	65.5	73.5	73.5	117.5	117	0.5	3	2
2.6	30	●	MVS0260X30S030	78.5	86.5	86.5	132.5	132	0.5	3	2
2.7	7	●	MVS0270X07S030	19.4	27.5	27.5	81.5	81	0.5	3	2
2.7	12	●	MVS0270X12S030	32.9	41.5	41.5	81.5	81	0.5	3	2
2.7	20	●	MVS0270X20S030	54.5	62.5	62.5	103.5	103	0.5	3	2
2.7	25	●	MVS0270X25S030	68.0	76.5	76.5	117.5	117	0.5	3	2
2.7	30	●	MVS0270X30S030	81.5	89.5	89.5	132.5	132	0.5	3	2
2.8	7	●	MVS0280X07S030	20.1	28.5	28.5	81.5	81	0.5	3	2
2.8	12	●	MVS0280X12S030	34.1	42.5	42.5	81.5	81	0.5	3	2
2.8	20	●	MVS0280X20S030	56.5	64.5	64.5	103.5	103	0.5	3	2
2.8	25	●	MVS0280X25S030	70.5	78.5	78.5	117.5	117	0.5	3	2
2.8	30	●	MVS0280X30S030	84.5	92.5	92.5	132.5	132	0.5	3	2
2.9	7	●	MVS0290X07S030	20.8	29.5	29.5	81.5	81	0.5	3	2
2.9	12	●	MVS0290X12S030	35.3	44.5	44.5	81.5	81	0.5	3	2
2.9	20	●	MVS0290X20S030	58.5	67.5	67.5	103.5	103	0.5	3	2
2.9	25	●	MVS0290X25S030	73.0	81.5	81.5	117.5	117	0.5	3	2
2.9	30	●	MVS0290X30S030	87.5	96.5	96.5	132.5	132	0.5	3	2

FURAÇÃO(METAL DURO INTEIRIÇO)

MVS

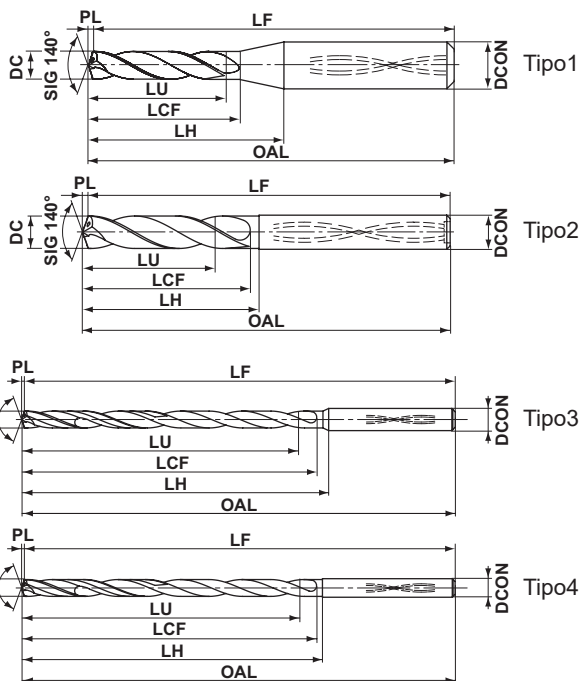
BROCAS WSTAR

- Classe DP1020 com cobertura PVD oferece longa vida útil em diversos materiais.
- A exclusiva tecnologia de refrigeração TRI-cooling proporciona alta eficiência da usinagem



P	M	K	N	S	H
Aço	Aço Inoxidável	Ferro Fundido	Metais Não Ferrosos	Ligas Resist. ao Calor	

Refrigeração Interna



L/D	DC=3	3<DC≤6	6<DC≤10	10<DC≤18	18<DC≤20
3,5,8	0 -0.014	0 -0.018	0 -0.022	0 -0.027	0 -0.033
L/D ≥ 10	-0.017 -0.031	-0.025 -0.043	-0.033 -0.055	-0.041 -0.068	-
	DCON=3	3<DCON≤6	6<DCON≤10	10<DCON≤18	18<DCON≤20
h6	0 -0.006	0 -0.008	0 -0.009	0 -0.011	0 -0.013

Nota 1) Para usinagem de furo de guia, use a broca piloto MVS (página N046).

DC (mm)	Prof. do Furo (L/D)	DP1020	Referência para Pedido	Dimensões (mm)							Tipo
				LU	LCF	LH	OAL	LF	PL	DCON	
3.0	3	●	MVS0300X03S030	9.5	21.5	21.5	72.5	72	0.5	3	2
3.0	3	●	MVS0300X03S060	9.5	21.5	24.7	72.5	72	0.5	6	1
3.0	5	●	MVS0300X05S030	15.5	28.5	28.5	81.5	81	0.5	3	2
3.0	5	●	MVS0300X05S060	15.5	28.5	31.7	81.5	81	0.5	6	1
3.0	8	●	MVS0300X08S030	24.5	35.5	35.5	81.5	81	0.5	3	2
3.0	8	●	MVS0300X08S060	24.5	35.5	38.7	81.5	81	0.5	6	1
3.0	10	●	MVS0300X10S030	30.5	39.5	42.5	90.5	90	0.5	3	3
3.0	15	●	MVS0300X15S030	45.5	54.5	57.5	105.5	105	0.5	3	3
3.0	20	●	MVS0300X20S030	60.5	69.5	72.5	120.5	120	0.5	3	3
3.0	25	●	MVS0300X25S030	75.5	84.5	87.5	135.5	135	0.5	3	3
3.0	30	●	MVS0300X30S030	90.5	99.5	102.5	150.5	150	0.5	3	3
3.0	35	●	MVS0300X35S030	105.5	115.5	118.5	166.5	166	0.5	3	3
3.0	40	●	MVS0300X40S030	120.5	130.5	133.5	181.5	181	0.5	3	3
3.1	3	●	MVS0310X03S040	9.9	21.6	23.6	76.6	76	0.6	4	2
3.1	3	●	MVS0310X03S060	9.9	21.6	24.7	76.6	76	0.6	6	1
3.1	5	●	MVS0310X05S040	16.1	32.6	32.6	87.6	87	0.6	4	2
3.1	5	●	MVS0310X05S060	16.1	32.6	35.7	87.6	87	0.6	6	1
3.1	8	●	MVS0310X08S040	25.4	41.6	41.6	87.6	87	0.6	4	2
3.1	8	●	MVS0310X08S060	25.4	41.6	44.7	87.6	87	0.6	6	1
3.1	10	●	MVS0310X10S040	31.6	46.6	49.6	97.6	97	0.6	4	3
3.1	15	●	MVS0310X15S040	47.1	63.6	66.6	114.6	114	0.6	4	3
3.1	20	●	MVS0310X20S040	62.6	81.6	84.6	132.6	132	0.6	4	3

DC (mm)	Prof. do Furo (L/D)	DP1020	Referência para Pedido	Dimensões (mm)							Tipo
				LU	LCF	LH	OAL	LF	PL	DCON	
3.1	25	●	MVS0310X25S040	78.1	98.6	101.6	149.6	149	0.6	4	3
3.1	30	●	MVS0310X30S040	93.6	116.6	119.6	167.6	167	0.6	4	3
3.1	35	□	MVS0310X35S040	109.1	134.6	137.6	185.6	185	0.6	4	3
3.1	40	□	MVS0310X40S040	124.6	150.6	153.6	201.6	201	0.6	4	3
3.2	3	●	MVS0320X03S040	10.2	21.6	23.6	76.6	76	0.6	4	2
3.2	3	●	MVS0320X03S060	10.2	21.6	24.6	76.6	76	0.6	6	1
3.2	5	●	MVS0320X05S040	16.6	32.6	32.6	87.6	87	0.6	4	2
3.2	5	●	MVS0320X05S060	16.6	32.6	35.6	87.6	87	0.6	6	1
3.2	8	●	MVS0320X08S040	26.2	41.6	41.6	87.6	87	0.6	4	2
3.2	8	●	MVS0320X08S060	26.2	41.6	44.6	87.6	87	0.6	6	1
3.2	10	●	MVS0320X10S040	32.6	46.6	49.6	97.6	97	0.6	4	3
3.2	15	●	MVS0320X15S040	48.6	63.6	66.6	114.6	114	0.6	4	3
3.2	20	●	MVS0320X20S040	64.6	81.6	84.6	132.6	132	0.6	4	3
3.2	25	●	MVS0320X25S040	80.6	98.6	101.6	149.6	149	0.6	4	3
3.2	30	●	MVS0320X30S040	96.6	116.6	119.6	167.6	167	0.6	4	3
3.2	35	□	MVS0320X35S040	112.6	134.6	137.6	185.6	185	0.6	4	3
3.2	40	□	MVS0320X40S040	128.6	150.6	153.6	201.6	201	0.6	4	3
3.3	3	●	MVS0330X03S040	10.5	21.6	23.6	76.6	76	0.6	4	2
3.3	3	●	MVS0330X03S060	10.5	21.6	24.5	76.6	76	0.6	6	1
3.3	5	●	MVS0330X05S040	17.1	32.6	32.6	87.6	87	0.6	4	2
3.3	5	●	MVS0330X05S060	17.1	32.6	35.5	87.6	87	0.6	6	1
3.3	8	●	MVS0330X08S040	27.0	41.6	41.6	87.6	87	0.6	4	2

Nota 1) As brocas de ø5mm ou menores têm furo de refrigeração com seção circular. (Para L/D=3, 5, 8, diâmetros menores que ø6mm.)

● : Estoque mantido. □ : Sem estoque, produzido somente por pedido.

□ : Lote mínimo para produtos especiais:

- ① Menor que ø3 = Mínimo 10
- ② Maior ou igual a ø3 e menor que ø10 = Mínimo 5
- ③ Maior ou igual a ø10 = Mínimo 3

DC (mm)	Prof. do Furo (L/D)	DP1020	Referência para Pedido	Dimensões (mm)							Tipo
				LU	LCF	LH	OAL	LF	PL	DCON	
3.3	8	●	MVS0330X08S060	27.0	41.6	44.5	87.6	87	0.6	6	1
3.3	10	●	MVS0330X10S040	33.6	46.6	49.6	97.6	97	0.6	4	3
3.3	15	●	MVS0330X15S040	50.1	63.6	66.6	114.6	114	0.6	4	3
3.3	20	●	MVS0330X20S040	66.6	81.6	84.6	132.6	132	0.6	4	3
3.3	25	●	MVS0330X25S040	83.1	98.6	101.6	149.6	149	0.6	4	3
3.3	30	●	MVS0330X30S040	99.6	116.6	119.6	167.6	167	0.6	4	3
3.3	35	□	MVS0330X35S040	116.1	134.6	137.6	185.6	185	0.6	4	3
3.3	40	□	MVS0330X40S040	132.6	150.6	153.6	201.6	201	0.6	4	3
3.4	3	●	MVS0340X03S040	10.8	21.6	23.6	76.6	76	0.6	4	2
3.4	3	●	MVS0340X03S060	10.8	21.6	24.4	76.6	76	0.6	6	1
3.4	5	●	MVS0340X05S040	17.6	32.6	32.6	87.6	87	0.6	4	2
3.4	5	●	MVS0340X05S060	17.6	32.6	35.4	87.6	87	0.6	6	1
3.4	8	●	MVS0340X08S040	27.8	41.6	41.6	87.6	87	0.6	4	2
3.4	8	●	MVS0340X08S060	27.8	41.6	44.4	87.6	87	0.6	6	1
3.4	10	●	MVS0340X10S040	34.6	46.6	49.6	97.6	97	0.6	4	3
3.4	15	●	MVS0340X15S040	51.6	63.6	66.6	114.6	114	0.6	4	3
3.4	20	●	MVS0340X20S040	68.6	81.6	84.6	132.6	132	0.6	4	3
3.4	25	●	MVS0340X25S040	85.6	98.6	101.6	149.6	149	0.6	4	3
3.4	30	●	MVS0340X30S040	102.6	116.6	119.6	167.6	167	0.6	4	3
3.4	35	□	MVS0340X35S040	119.6	134.6	137.6	185.6	185	0.6	4	3
3.4	40	□	MVS0340X40S040	136.6	150.6	153.6	201.6	201	0.6	4	3
3.5	3	●	MVS0350X03S040	11.1	21.6	23.6	76.6	76	0.6	4	2
3.5	3	●	MVS0350X03S060	11.1	21.6	24.3	76.6	76	0.6	6	1
3.5	5	●	MVS0350X05S040	18.1	32.6	32.6	87.6	87	0.6	4	2
3.5	5	●	MVS0350X05S060	18.1	32.6	35.3	87.6	87	0.6	6	1
3.5	8	●	MVS0350X08S040	28.6	41.6	41.6	87.6	87	0.6	4	2
3.5	8	●	MVS0350X08S060	28.6	41.6	44.3	87.6	87	0.6	6	1
3.5	10	●	MVS0350X10S040	35.6	46.6	49.6	97.6	97	0.6	4	3
3.5	15	●	MVS0350X15S040	53.1	63.6	66.6	114.6	114	0.6	4	3
3.5	20	●	MVS0350X20S040	70.6	81.6	84.6	132.6	132	0.6	4	3
3.5	25	●	MVS0350X25S040	88.1	98.6	101.6	149.6	149	0.6	4	3
3.5	30	●	MVS0350X30S040	105.6	116.6	119.6	167.6	167	0.6	4	3
3.5	35	●	MVS0350X35S040	123.1	134.6	137.6	185.6	185	0.6	4	3
3.5	40	●	MVS0350X40S040	140.6	150.6	153.6	201.6	201	0.6	4	3
3.6	3	●	MVS0360X03S040	11.5	23.7	23.7	80.7	80	0.7	4	2
3.6	3	●	MVS0360X03S060	11.5	23.7	26.3	80.7	80	0.7	6	1
3.6	5	●	MVS0360X05S040	18.7	36.7	36.7	92.7	92	0.7	4	2
3.6	5	●	MVS0360X05S060	18.7	36.7	39.3	92.7	92	0.7	6	1
3.6	8	●	MVS0360X08S040	29.5	46.7	46.7	92.7	92	0.7	4	2
3.6	8	●	MVS0360X08S060	29.5	46.7	49.3	92.7	92	0.7	6	1
3.6	10	●	MVS0360X10S040	36.7	52.7	55.7	103.7	103	0.7	4	3
3.6	15	●	MVS0360X15S040	54.7	72.7	75.7	123.7	123	0.7	4	3
3.6	20	●	MVS0360X20S040	72.7	92.7	95.7	143.7	143	0.7	4	3
3.6	25	●	MVS0360X25S040	90.7	112.7	115.7	163.7	163	0.7	4	3
3.6	30	●	MVS0360X30S040	108.7	132.7	135.7	183.7	183	0.7	4	3
3.6	35	□	MVS0360X35S040	126.7	152.7	155.7	203.7	203	0.7	4	3
3.6	40	□	MVS0360X40S040	144.7	172.7	175.7	223.7	223	0.7	4	3
3.7	3	●	MVS0370X03S040	11.8	23.7	23.7	80.7	80	0.7	4	2

DC (mm)	Prof. do Furo (L/D)	DP1020	Referência para Pedido	Dimensões (mm)							Tipo
				LU	LCF	LH	OAL	LF	PL	DCON	
3.7	3	●	MVS0370X03S060	11.8	23.7	26.2	80.7	80	0.7	6	1
3.7	5	●	MVS0370X05S040	19.2	36.7	36.7	92.7	92	0.7	4	2
3.7	5	●	MVS0370X05S060	19.2	36.7	39.2	92.7	92	0.7	6	1
3.7	8	●	MVS0370X08S040	30.3	46.7	46.7	92.7	92	0.7	4	2
3.7	8	●	MVS0370X08S060	30.3	46.7	49.2	92.7	92	0.7	6	1
3.7	10	●	MVS0370X10S040	37.7	52.7	55.7	103.7	103	0.7	4	3
3.7	15	●	MVS0370X15S040	56.2	72.7	75.7	123.7	123	0.7	4	3
3.7	20	●	MVS0370X20S040	74.7	92.7	95.7	143.7	143	0.7	4	3
3.7	25	●	MVS0370X25S040	93.2	112.7	115.7	163.7	163	0.7	4	3
3.7	30	●	MVS0370X30S040	111.7	132.7	135.7	183.7	183	0.7	4	3
3.7	35	□	MVS0370X35S040	130.2	152.7	155.7	203.7	203	0.7	4	3
3.7	40	□	MVS0370X40S040	148.7	172.7	175.7	223.7	223	0.7	4	3
3.8	3	●	MVS0380X03S040	12.1	23.7	23.7	80.7	80	0.7	4	2
3.8	3	●	MVS0380X03S060	12.1	23.7	26.1	80.7	80	0.7	6	1
3.8	5	●	MVS0380X05S040	19.7	36.7	36.7	92.7	92	0.7	4	2
3.8	5	●	MVS0380X05S060	19.7	36.7	39.1	92.7	92	0.7	6	1
3.8	8	●	MVS0380X08S040	31.1	46.7	46.7	92.7	92	0.7	4	2
3.8	8	●	MVS0380X08S060	31.1	46.7	49.1	92.7	92	0.7	6	1
3.8	10	●	MVS0380X10S040	38.7	52.7	55.7	103.7	103	0.7	4	3
3.8	15	●	MVS0380X15S040	57.7	72.7	75.7	123.7	123	0.7	4	3
3.8	20	●	MVS0380X20S040	76.7	92.7	95.7	143.7	143	0.7	4	3
3.8	25	●	MVS0380X25S040	95.7	112.7	115.7	163.7	163	0.7	4	3
3.8	30	●	MVS0380X30S040	114.7	132.7	135.7	183.7	183	0.7	4	3
3.8	35	□	MVS0380X35S040	133.7	152.7	155.7	203.7	203	0.7	4	3
3.8	40	□	MVS0380X40S040	152.7	172.7	175.7	223.7	223	0.7	4	3
3.9	3	●	MVS0390X03S040	12.4	23.7	23.7	80.7	80	0.7	4	2
3.9	3	●	MVS0390X03S060	12.4	23.7	26.0	80.7	80	0.7	6	1
3.9	5	●	MVS0390X05S040	20.2	36.7	36.7	92.7	92	0.7	4	2
3.9	5	●	MVS0390X05S060	20.2	36.7	39.0	92.7	92	0.7	6	1
3.9	8	●	MVS0390X08S040	31.9	46.7	46.7	92.7	92	0.7	4	2
3.9	8	●	MVS0390X08S060	31.9	46.7	49.0	92.7	92	0.7	6	1
3.9	10	●	MVS0390X10S040	39.7	52.7	55.7	103.7	103	0.7	4	3
3.9	15	●	MVS0390X15S040	59.2	72.7	75.7	123.7	123	0.7	4	3
3.9	20	●	MVS0390X20S040	78.7	92.7	95.7	143.7	143	0.7	4	3
3.9	25	●	MVS0390X25S040	98.2	112.7	115.7	163.7	163	0.7	4	3
3.9	30	●	MVS0390X30S040	117.7	132.7	135.7	183.7	183	0.7	4	3
3.9	35	□	MVS0390X35S040	137.2	152.7	155.7	203.7	203	0.7	4	3
3.9	40	□	MVS0390X40S040	156.7	172.7	175.7	223.7	223	0.7	4	3
4.0	3	●	MVS0400X03S040	12.7	23.7	23.7	80.7	80	0.7	4	2
4.0	3	●	MVS0400X03S060	12.7	23.7	25.8	80.7	80	0.7	6	1
4.0	5	●	MVS0400X05S040	20.7	36.7	36.7	92.7	92	0.7	4	2
4.0	5	●	MVS0400X05S060	20.7	36.7	38.8	92.7	92	0.7	6	1
4.0	8	●	MVS0400X08S040	32.7	46.7	46.7	92.7	92	0.7	4	2
4.0	8	●	MVS0400X08S060	32.7	46.7	48.8	92.7	92	0.7	6	1
4.0	10	●	MVS0400X10S040	40.7	52.7	55.7	103.7	103	0.7	4	3
4.0	15	●	MVS0400X15S040	60.7	72.7	75.7	123.7	123	0.7	4	3
4.0	20	●	MVS0400X20S040	80.7	92.7	95.7	143.7	143	0.7	4	3
4.0	25	●	MVS0400X25S040	100.7	112.7	115.7	163.7	163	0.7	4	3

FURAÇÃO(METAL DURO INTEIRIÇO)

MVS

BROCAS WSTAR

METAL DURO

DC (mm)	Prof. do Furo (L/D)	DP1020	Referência para Pedido	Dimensões (mm)							Tipo
				LU	LCF	LH	OAL	LF	PL	DCON	
4.0	30	●	MVS0400X30S040	120.7	132.7	135.7	183.7	183	0.7	4	3
4.0	35	●	MVS0400X35S040	140.7	152.7	155.7	203.7	203	0.7	4	3
4.0	40	●	MVS0400X40S040	160.7	172.7	175.7	223.7	223	0.7	4	3
4.1	3	●	MVS0410X03S050	13.0	25.7	25.7	86.7	86	0.7	5	2
4.1	3	●	MVS0410X03S060	13.0	25.7	27.7	86.7	86	0.7	6	1
4.1	5	●	MVS0410X05S050	21.2	40.7	40.7	100.7	100	0.7	5	2
4.1	5	●	MVS0410X05S060	21.2	40.7	42.7	100.7	100	0.7	6	1
4.1	8	●	MVS0410X08S050	33.5	52.7	52.7	100.7	100	0.7	5	2
4.1	8	●	MVS0410X08S060	33.5	52.7	54.7	100.7	100	0.7	6	1
4.1	10	●	MVS0410X10S050	41.7	59.7	62.7	112.7	112	0.7	5	3
4.1	15	●	MVS0410X15S050	62.2	81.7	84.7	134.7	134	0.7	5	3
4.1	20	●	MVS0410X20S050	82.7	104.7	107.7	157.7	157	0.7	5	3
4.1	25	●	MVS0410X25S050	103.2	126.7	129.7	179.7	179	0.7	5	3
4.1	30	●	MVS0410X30S050	123.7	149.7	152.7	202.7	202	0.7	5	3
4.1	35	□	MVS0410X35S050	144.2	171.7	174.7	224.7	224	0.7	5	3
4.1	40	□	MVS0410X40S050	164.7	195.7	198.7	248.7	248	0.7	5	3
4.2	3	●	MVS0420X03S050	13.4	25.8	25.8	86.8	86	0.8	5	2
4.2	3	●	MVS0420X03S060	13.4	25.8	27.7	86.8	86	0.8	6	1
4.2	5	●	MVS0420X05S050	21.8	40.8	40.8	100.8	100	0.8	5	2
4.2	5	●	MVS0420X05S060	21.8	40.8	42.7	100.8	100	0.8	6	1
4.2	8	●	MVS0420X08S050	34.4	52.8	52.8	100.8	100	0.8	5	2
4.2	8	●	MVS0420X08S060	34.4	52.8	54.7	100.8	100	0.8	6	1
4.2	10	●	MVS0420X10S050	42.8	59.8	62.8	112.8	112	0.8	5	3
4.2	15	●	MVS0420X15S050	63.8	81.8	84.8	134.8	134	0.8	5	3
4.2	20	●	MVS0420X20S050	84.8	104.8	107.8	157.8	157	0.8	5	3
4.2	25	●	MVS0420X25S050	105.8	126.8	129.8	179.8	179	0.8	5	3
4.2	30	●	MVS0420X30S050	126.8	149.8	152.8	202.8	202	0.8	5	3
4.2	35	□	MVS0420X35S050	147.8	171.8	174.8	224.8	224	0.8	5	3
4.2	40	□	MVS0420X40S050	168.8	195.8	198.8	248.8	248	0.8	5	3
4.3	3	●	MVS0430X03S050	13.7	25.8	25.8	86.8	86	0.8	5	2
4.3	3	●	MVS0430X03S060	13.7	25.8	27.6	86.8	86	0.8	6	1
4.3	5	●	MVS0430X05S050	22.3	40.8	40.8	100.8	100	0.8	5	2
4.3	5	●	MVS0430X05S060	22.3	40.8	42.6	100.8	100	0.8	6	1
4.3	8	●	MVS0430X08S050	35.2	52.8	52.8	100.8	100	0.8	5	2
4.3	8	●	MVS0430X08S060	35.2	52.8	54.6	100.8	100	0.8	6	1
4.3	10	●	MVS0430X10S050	43.8	59.8	62.8	112.8	112	0.8	5	3
4.3	15	●	MVS0430X15S050	65.3	81.8	84.8	134.8	134	0.8	5	3
4.3	20	●	MVS0430X20S050	86.8	104.8	107.8	157.8	157	0.8	5	3
4.3	25	●	MVS0430X25S050	108.3	126.8	129.8	179.8	179	0.8	5	3
4.3	30	●	MVS0430X30S050	129.8	149.8	152.8	202.8	202	0.8	5	3
4.3	35	□	MVS0430X35S050	151.3	171.8	174.8	224.8	224	0.8	5	3
4.3	40	□	MVS0430X40S050	172.8	195.8	198.8	248.8	248	0.8	5	3
4.4	3	●	MVS0440X03S050	14.0	25.8	25.8	86.8	86	0.8	5	2
4.4	3	●	MVS0440X03S060	14.0	25.8	27.5	86.8	86	0.8	6	1
4.4	5	●	MVS0440X05S050	22.8	40.8	40.8	100.8	100	0.8	5	2
4.4	5	●	MVS0440X05S060	22.8	40.8	42.5	100.8	100	0.8	6	1
4.4	8	●	MVS0440X08S050	36.0	52.8	52.8	100.8	100	0.8	5	2
4.4	8	●	MVS0440X08S060	36.0	52.8	54.5	100.8	100	0.8	6	1

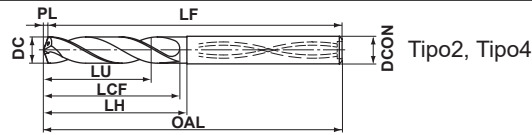
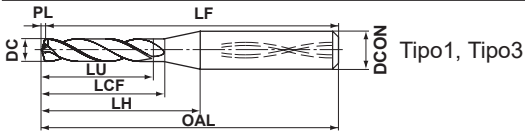
DC (mm)	Prof. do Furo (L/D)	DP1020	Referência para Pedido	Dimensões (mm)							Tipo
				LU	LCF	LH	OAL	LF	PL	DCON	
4.4	10	●	MVS0440X10S050	44.8	59.8	62.8	112.8	112	0.8	5	3
4.4	15	●	MVS0440X15S050	66.8	81.8	84.8	134.8	134	0.8	5	3
4.4	20	●	MVS0440X20S050	88.8	104.8	107.8	157.8	157	0.8	5	3
4.4	25	●	MVS0440X25S050	110.8	126.8	129.8	179.8	179	0.8	5	3
4.4	30	●	MVS0440X30S050	132.8	149.8	152.8	202.8	202	0.8	5	3
4.4	35	□	MVS0440X35S050	154.8	171.8	174.8	224.8	224	0.8	5	3
4.4	40	□	MVS0440X40S050	176.8	195.8	198.8	248.8	248	0.8	5	3
4.5	3	●	MVS0450X03S050	14.3	25.8	25.8	86.8	86	0.8	5	2
4.5	3	●	MVS0450X03S060	14.3	25.8	27.4	86.8	86	0.8	6	1
4.5	5	●	MVS0450X05S050	23.3	40.8	40.8	100.8	100	0.8	5	2
4.5	5	●	MVS0450X05S060	23.3	40.8	42.4	100.8	100	0.8	6	1
4.5	8	●	MVS0450X08S050	36.8	52.8	52.8	100.8	100	0.8	5	2
4.5	8	●	MVS0450X08S060	36.8	52.8	54.4	100.8	100	0.8	6	1
4.5	10	●	MVS0450X10S050	45.8	59.8	62.8	112.8	112	0.8	5	3
4.5	15	●	MVS0450X15S050	68.3	81.8	84.8	134.8	134	0.8	5	3
4.5	20	●	MVS0450X20S050	90.8	104.8	107.8	157.8	157	0.8	5	3
4.5	25	●	MVS0450X25S050	113.3	126.8	129.8	179.8	179	0.8	5	3
4.5	30	●	MVS0450X30S050	135.8	149.8	152.8	202.8	202	0.8	5	3
4.5	35	●	MVS0450X35S050	158.3	171.8	174.8	224.8	224	0.8	5	3
4.5	40	●	MVS0450X40S050	180.8	195.8	198.8	248.8	248	0.8	5	3
4.6	3	●	MVS0460X03S050	14.6	28.3	28.3	90.8	90	0.8	5	2
4.6	3	●	MVS0460X03S060	14.6	28.3	31.3	90.8	90	0.8	6	2
4.6	5	●	MVS0460X05S050	23.8	44.8	44.8	105.8	105	0.8	5	2
4.6	5	●	MVS0460X05S060	23.8	44.8	47.8	105.8	105	0.8	6	2
4.6	8	●	MVS0460X08S050	37.6	57.8	57.8	105.8	105	0.8	5	2
4.6	8	●	MVS0460X08S060	37.6	57.8	60.8	105.8	105	0.8	6	2
4.6	10	●	MVS0460X10S050	46.8	65.8	68.8	118.8	118	0.8	5	4
4.6	15	●	MVS0460X15S050	69.8	90.8	93.8	143.8	143	0.8	5	4
4.6	20	●	MVS0460X20S050	92.8	115.8	118.8	168.8	168	0.8	5	4
4.6	25	●	MVS0460X25S050	115.8	140.8	143.8	193.8	193	0.8	5	4
4.6	30	●	MVS0460X30S050	138.8	165.8	168.8	218.8	218	0.8	5	4
4.6	35	□	MVS0460X35S050	161.8	190.8	193.8	243.8	243	0.8	5	4
4.6	40	□	MVS0460X40S050	184.8	215.8	218.8	268.8	268	0.8	5	4
4.7	3	●	MVS0470X03S050	15.0	28.4	28.4	90.9	90	0.9	5	2
4.7	3	●	MVS0470X03S060	15.0	28.4	31.4	90.9	90	0.9	6	2
4.7	5	●	MVS0470X05S050	24.4	44.9	44.9	105.9	105	0.9	5	2
4.7	5	●	MVS0470X05S060	24.4	44.9	47.9	105.9	105	0.9	6	2
4.7	8	●	MVS0470X08S050	38.5	57.9	57.9	105.9	105	0.9	5	2
4.7	8	●	MVS0470X08S060	38.5	57.9	60.9	105.9	105	0.9	6	2
4.7	10	●	MVS0470X10S050	47.9	65.9	68.9	118.9	118	0.9	5	4
4.7	15	●	MVS0470X15S050	71.4	90.9	93.9	143.9	143	0.9	5	4
4.7	20	●	MVS0470X20S050	94.9	115.9	118.9	168.9	168	0.9	5	4
4.7	25	●	MVS0470X25S050	118.4	140.9	143.9	193.9	193	0.9	5	4
4.7	30	●	MVS0470X30S050	141.9	165.9	168.9	218.9	218	0.9	5	4
4.7	35	□	MVS0470X35S050	165.4	190.9	193.9	243.9	243	0.9	5	4
4.7	40	□	MVS0470X40S050	188.9	215.9	218.9	268.9	268	0.9	5	4
4.8	3	●	MVS0480X03S050	15.3	28.4	28.4	90.9	90	0.9	5	2
4.8	3	●	MVS0480X03S060	15.3	28.4	31.4	90.9	90	0.9	6	2

Nota 1) As brocas de ø5mm ou menores têm furo de refrigeração com seção circular. (Para L/D=3, 5, 8, diâmetros menores que ø6mm.)

● : Estoque mantido. □ : Sem estoque, produzido somente por pedido.

□ : Lote mínimo para produtos especiais:

- ① Menor que ø3 = Mínimo 10
- ② Maior ou igual a ø3 e menor que ø10 = Mínimo 5
- ③ Maior ou igual a ø10 = Mínimo 3



DC (mm)	Prof. do Furo (L/D)	DP1020	Referência para Pedido	Dimensões (mm)							Tipo
				LU	LCF	LH	OAL	LF	PL	DCON	
4.8	5	●	MVS0480X05S050	24.9	44.9	44.9	105.9	105	0.9	5	2
4.8	5	●	MVS0480X05S060	24.9	44.9	47.9	105.9	105	0.9	6	2
4.8	8	●	MVS0480X08S050	39.3	57.9	57.9	105.9	105	0.9	5	2
4.8	8	●	MVS0480X08S060	39.3	57.9	60.9	105.9	105	0.9	6	2
4.8	10	●	MVS0480X10S050	48.9	65.9	68.9	118.9	118	0.9	5	4
4.8	15	●	MVS0480X15S050	72.9	90.9	93.9	143.9	143	0.9	5	4
4.8	20	●	MVS0480X20S050	96.9	115.9	118.9	168.9	168	0.9	5	4
4.8	25	●	MVS0480X25S050	120.9	140.9	143.9	193.9	193	0.9	5	4
4.8	30	●	MVS0480X30S050	144.9	165.9	168.9	218.9	218	0.9	5	4
4.8	35	□	MVS0480X35S050	168.9	190.9	193.9	243.9	243	0.9	5	4
4.8	40	□	MVS0480X40S050	192.9	215.9	218.9	268.9	268	0.9	5	4
4.9	3	●	MVS0490X03S050	15.6	28.4	28.4	90.9	90	0.9	5	2
4.9	3	●	MVS0490X03S060	15.6	28.4	31.4	90.9	90	0.9	6	2
4.9	5	●	MVS0490X05S050	25.4	44.9	44.9	105.9	105	0.9	5	2
4.9	5	●	MVS0490X05S060	25.4	44.9	47.9	105.9	105	0.9	6	2
4.9	8	●	MVS0490X08S050	40.1	57.9	57.9	105.9	105	0.9	5	2
4.9	8	●	MVS0490X08S060	40.1	57.9	60.9	105.9	105	0.9	6	2
4.9	10	●	MVS0490X10S050	49.9	65.9	68.9	118.9	118	0.9	5	4
4.9	15	●	MVS0490X15S050	74.4	90.9	93.9	143.9	143	0.9	5	4
4.9	20	●	MVS0490X20S050	98.9	115.9	118.9	168.9	168	0.9	5	4
4.9	25	●	MVS0490X25S050	123.4	140.9	143.9	193.9	193	0.9	5	4
4.9	30	●	MVS0490X30S050	147.9	165.9	168.9	218.9	218	0.9	5	4
4.9	35	□	MVS0490X35S050	172.4	190.9	193.9	243.9	243	0.9	5	4
4.9	40	□	MVS0490X40S050	196.9	215.9	218.9	268.9	268	0.9	5	4
5.0	3	●	MVS0500X03S050	15.9	28.4	28.4	90.9	90	0.9	5	2
5.0	3	●	MVS0500X03S060	15.9	28.4	31.4	90.9	90	0.9	6	2
5.0	5	●	MVS0500X05S050	25.9	44.9	44.9	105.9	105	0.9	5	2
5.0	5	●	MVS0500X05S060	25.9	44.9	47.9	105.9	105	0.9	6	2
5.0	8	●	MVS0500X08S050	40.9	57.9	57.9	105.9	105	0.9	5	2
5.0	8	●	MVS0500X08S060	40.9	57.9	60.9	105.9	105	0.9	6	2
5.0	10	●	MVS0500X10S050	50.9	65.9	68.9	118.9	118	0.9	5	4
5.0	15	●	MVS0500X15S050	75.9	90.9	93.9	143.9	143	0.9	5	4
5.0	20	●	MVS0500X20S050	100.9	115.9	118.9	168.9	168	0.9	5	4
5.0	25	●	MVS0500X25S050	125.9	140.9	143.9	193.9	193	0.9	5	4
5.0	30	●	MVS0500X30S050	150.9	165.9	168.9	218.9	218	0.9	5	4
5.0	35	●	MVS0500X35S050	175.9	190.9	193.9	243.9	243	0.9	5	4
5.0	40	●	MVS0500X40S050	200.9	215.9	218.9	268.9	268	0.9	5	4
5.1	3	●	MVS0510X03S060	16.2	28.4	30.9	82.9	82	0.9	6	2
5.1	5	●	MVS0510X05S060	26.4	44.9	48.9	100.9	100	0.9	6	2
5.1	8	●	MVS0510X08S060	41.7	61.9	66.9	118.9	118	0.9	6	2
5.1	10	●	MVS0510X10S060	51.9	72.9	75.9	127.9	127	0.9	6	4
5.1	15	●	MVS0510X15S060	77.4	99.9	102.9	154.9	154	0.9	6	4
5.1	20	●	MVS0510X20S060	102.9	127.9	130.9	182.9	182	0.9	6	4
5.1	25	●	MVS0510X25S060	128.4	154.9	157.9	209.9	209	0.9	6	4
5.1	30	●	MVS0510X30S060	153.9	182.9	185.9	237.9	237	0.9	6	4
5.1	35	□	MVS0510X35S060	179.4	209.9	212.9	264.9	264	0.9	6	4
5.1	40	□	MVS0510X40S060	204.9	240.9	243.9	295.9	295	0.9	6	4
5.2	3	●	MVS0520X03S060	16.5	28.4	30.9	82.9	82	0.9	6	2

DC (mm)	Prof. do Furo (L/D)	DP1020	Referência para Pedido	Dimensões (mm)							Tipo
				LU	LCF	LH	OAL	LF	PL	DCON	
5.2	5	●	MVS0520X05S060	26.9	44.9	48.9	100.9	100	0.9	6	2
5.2	8	●	MVS0520X08S060	42.5	61.9	66.9	118.9	118	0.9	6	2
5.2	10	●	MVS0520X10S060	52.9	72.9	75.9	127.9	127	0.9	6	4
5.2	15	●	MVS0520X15S060	78.9	99.9	102.9	154.9	154	0.9	6	4
5.2	20	●	MVS0520X20S060	104.9	127.9	130.9	182.9	182	0.9	6	4
5.2	25	●	MVS0520X25S060	130.9	154.9	157.9	209.9	209	0.9	6	4
5.2	30	●	MVS0520X30S060	156.9	182.9	185.9	237.9	237	0.9	6	4
5.2	35	□	MVS0520X35S060	182.9	209.9	212.9	264.9	264	0.9	6	4
5.2	40	□	MVS0520X40S060	208.9	240.9	243.9	295.9	295	0.9	6	4
5.3	3	●	MVS0530X03S060	16.9	28.5	31.0	83.0	82	1.0	6	2
5.3	5	●	MVS0530X05S060	27.5	45.0	49.0	101.0	100	1.0	6	2
5.3	8	●	MVS0530X08S060	43.4	62.0	67.0	119.0	118	1.0	6	2
5.3	10	●	MVS0530X10S060	54.0	73.0	76.0	128.0	127	1.0	6	4
5.3	15	●	MVS0530X15S060	80.5	100.0	103.0	155.0	154	1.0	6	4
5.3	20	●	MVS0530X20S060	107.0	128.0	131.0	183.0	182	1.0	6	4
5.3	25	●	MVS0530X25S060	133.5	155.0	158.0	210.0	209	1.0	6	4
5.3	30	●	MVS0530X30S060	160.0	183.0	186.0	238.0	237	1.0	6	4
5.3	35	□	MVS0530X35S060	186.5	210.0	213.0	265.0	264	1.0	6	4
5.3	40	□	MVS0530X40S060	213.0	241.0	244.0	296.0	295	1.0	6	4
5.4	3	●	MVS0540X03S060	17.2	28.5	31.0	83.0	82	1.0	6	2
5.4	5	●	MVS0540X05S060	28.0	45.0	49.0	101.0	100	1.0	6	2
5.4	8	●	MVS0540X08S060	44.2	62.0	67.0	119.0	118	1.0	6	2
5.4	10	●	MVS0540X10S060	55.0	73.0	76.0	128.0	127	1.0	6	4
5.4	15	●	MVS0540X15S060	82.0	100.0	103.0	155.0	154	1.0	6	4
5.4	20	●	MVS0540X20S060	109.0	128.0	131.0	183.0	182	1.0	6	4
5.4	25	●	MVS0540X25S060	136.0	155.0	158.0	210.0	209	1.0	6	4
5.4	30	●	MVS0540X30S060	163.0	183.0	186.0	238.0	237	1.0	6	4
5.4	35	□	MVS0540X35S060	190.0	210.0	213.0	265.0	264	1.0	6	4
5.4	40	□	MVS0540X40S060	217.0	241.0	244.0	296.0	295	1.0	6	4
5.5	3	●	MVS0550X03S060	17.5	28.5	31.0	83.0	82	1.0	6	2
5.5	5	●	MVS0550X05S060	28.5	45.0	49.0	101.0	100	1.0	6	2
5.5	8	●	MVS0550X08S060	45.0	62.0	67.0	119.0	118	1.0	6	2
5.5	10	●	MVS0550X10S060	56.0	73.0	76.0	128.0	127	1.0	6	4
5.5	15	●	MVS0550X15S060	83.5	100.0	103.0	155.0	154	1.0	6	4
5.5	20	●	MVS0550X20S060	111.0	128.0	131.0	183.0	182	1.0	6	4
5.5	25	●	MVS0550X25S060	138.5	155.0	158.0	210.0	209	1.0	6	4
5.5	30	●	MVS0550X30S060	166.0	183.0	186.0	238.0	237	1.0	6	4
5.5	35	●	MVS0550X35S060	193.5	210.0	213.0	265.0	264	1.0	6	4
5.5	40	●	MVS0550X40S060	221.0	241.0	244.0	296.0	295	1.0	6	4
5.6	3	●	MVS0560X03S060	17.8	31.0	31.0	83.0	82	1.0	6	2
5.6	5	●	MVS0560X05S060	29.0	49.0	49.0	101.0	100	1.0	6	2
5.6	8	●	MVS0560X08S060	45.8	67.0	67.0	119.0	118	1.0	6	2
5.6	10	●	MVS0560X10S060	57.0	79.0	82.0	134.0	133	1.0	6	4
5.6	15	●	MVS0560X15S060	85.0	109.0	112.0	164.0	163	1.0	6	4
5.6	20	●	MVS0560X20S060	113.0	139.0	142.0	194.0	193	1.0	6	4
5.6	25	●	MVS0560X25S060	141.0	169.0	172.0	224.0	223	1.0	6	4
5.6	30	●	MVS0560X30S060	169.0	199.0	202.0	254.0	253	1.0	6	4
5.6	35	□	MVS0560X35S060	197.0	229.0	232.0	284.0	283	1.0	6	4

FURAÇÃO(METAL DURO INTEIRIÇO)

MVS

BROCAS WSTAR

METAL DURO

DC (mm)	Prof. do Furo (L/D)	DP1020	Referência para Pedido	Dimensões (mm)							Tipo
				LU	LCF	LH	OAL	LF	PL	DCON	
5.6	40	□	MVS0560X40S060	225.0	261.0	264.0	316.0	315	1.0	6	4
5.7	3	●	MVS0570X03S060	18.1	31.0	31.0	83.0	82	1.0	6	2
5.7	5	●	MVS0570X05S060	29.5	49.0	49.0	101.0	100	1.0	6	2
5.7	8	●	MVS0570X08S060	46.6	67.0	67.0	119.0	118	1.0	6	2
5.7	10	●	MVS0570X10S060	58.0	79.0	82.0	134.0	133	1.0	6	4
5.7	15	●	MVS0570X15S060	86.5	109.0	112.0	164.0	163	1.0	6	4
5.7	20	●	MVS0570X20S060	115.0	139.0	142.0	194.0	193	1.0	6	4
5.7	25	●	MVS0570X25S060	143.5	169.0	172.0	224.0	223	1.0	6	4
5.7	30	●	MVS0570X30S060	172.0	199.0	202.0	254.0	253	1.0	6	4
5.7	35	□	MVS0570X35S060	200.5	229.0	232.0	284.0	283	1.0	6	4
5.7	40	□	MVS0570X40S060	229.0	261.0	264.0	316.0	315	1.0	6	4
5.8	3	●	MVS0580X03S060	18.5	31.1	31.1	83.1	82	1.1	6	2
5.8	5	●	MVS0580X05S060	30.1	49.1	49.1	101.1	100	1.1	6	2
5.8	8	●	MVS0580X08S060	47.5	67.1	67.1	119.1	118	1.1	6	2
5.8	10	●	MVS0580X10S060	59.1	79.1	82.1	134.1	133	1.1	6	4
5.8	15	●	MVS0580X15S060	88.1	109.1	112.1	164.1	163	1.1	6	4
5.8	20	●	MVS0580X20S060	117.1	139.1	142.1	194.1	193	1.1	6	4
5.8	25	●	MVS0580X25S060	146.1	169.1	172.1	224.1	223	1.1	6	4
5.8	30	●	MVS0580X30S060	175.1	199.1	202.1	254.1	253	1.1	6	4
5.8	35	□	MVS0580X35S060	204.1	229.1	232.1	284.1	283	1.1	6	4
5.8	40	□	MVS0580X40S060	233.1	261.1	264.1	316.1	315	1.1	6	4
5.9	3	●	MVS0590X03S060	18.8	31.1	31.1	83.1	82	1.1	6	2
5.9	5	●	MVS0590X05S060	30.6	49.1	49.1	101.1	100	1.1	6	2
5.9	8	●	MVS0590X08S060	48.3	67.1	67.1	119.1	118	1.1	6	2
5.9	10	●	MVS0590X10S060	60.1	79.1	82.1	134.1	133	1.1	6	4
5.9	15	●	MVS0590X15S060	89.6	109.1	112.1	164.1	163	1.1	6	4
5.9	20	●	MVS0590X20S060	119.1	139.1	142.1	194.1	193	1.1	6	4
5.9	25	●	MVS0590X25S060	148.6	169.1	172.1	224.1	223	1.1	6	4
5.9	30	●	MVS0590X30S060	178.1	199.1	202.1	254.1	253	1.1	6	4
5.9	35	□	MVS0590X35S060	207.6	229.1	232.1	284.1	283	1.1	6	4
5.9	40	□	MVS0590X40S060	237.1	261.1	264.1	316.1	315	1.1	6	4
6.0	3	●	MVS0600X03S060	19.1	31.1	31.1	83.1	82	1.1	6	2
6.0	5	●	MVS0600X05S060	31.1	49.1	49.1	101.1	100	1.1	6	2
6.0	8	●	MVS0600X08S060	49.1	67.1	67.1	119.1	118	1.1	6	2
6.0	10	●	MVS0600X10S060	61.1	79.1	82.1	134.1	133	1.1	6	4
6.0	15	●	MVS0600X15S060	91.1	109.1	112.1	164.1	163	1.1	6	4
6.0	20	●	MVS0600X20S060	121.1	139.1	142.1	194.1	193	1.1	6	4
6.0	25	●	MVS0600X25S060	151.1	169.1	172.1	224.1	223	1.1	6	4
6.0	30	●	MVS0600X30S060	181.1	199.1	202.1	254.1	253	1.1	6	4
6.0	35	●	MVS0600X35S060	211.1	229.1	232.1	284.1	283	1.1	6	4
6.0	40	●	MVS0600X40S060	241.1	261.1	264.1	316.1	315	1.1	6	4
6.1	3	●	MVS0610X03S070	19.4	33.6	36.1	89.1	88	1.1	7	2
6.1	3	●	MVS0610X03S080	19.4	33.6	36.1	89.1	88	1.1	8	2
6.1	5	●	MVS0610X05S070	31.6	53.1	57.1	110.1	109	1.1	7	2
6.1	5	●	MVS0610X05S080	31.6	53.1	57.1	110.1	109	1.1	8	2
6.1	8	●	MVS0610X08S070	49.9	73.1	78.1	131.1	130	1.1	7	2
6.1	8	●	MVS0610X08S080	49.9	73.1	78.1	131.1	130	1.1	8	2
6.1	10	●	MVS0610X10S070	62.1	86.1	89.1	142.1	141	1.1	7	4

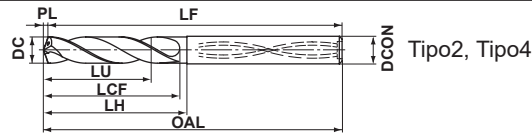
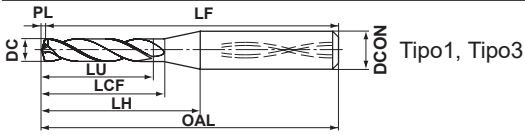
DC (mm)	Prof. do Furo (L/D)	DP1020	Referência para Pedido	Dimensões (mm)							Tipo
				LU	LCF	LH	OAL	LF	PL	DCON	
6.1	15	●	MVS0610X15S070	92.6	118.1	121.1	174.1	173	1.1	7	4
6.1	20	●	MVS0610X20S070	123.1	151.1	154.1	207.1	206	1.1	7	4
6.1	25	●	MVS0610X25S070	153.6	183.1	186.1	239.1	238	1.1	7	4
6.1	30	●	MVS0610X30S070	184.1	216.1	219.1	272.1	271	1.1	7	4
6.1	35	□	MVS0610X35S070	214.6	248.1	253.1	306.1	305	1.1	7	4
6.1	40	□	MVS0610X40S070	245.1	281.1	284.1	337.1	336	1.1	7	4
6.2	3	●	MVS0620X03S070	19.7	33.6	36.1	89.1	88	1.1	7	2
6.2	3	●	MVS0620X03S080	19.7	33.6	36.1	89.1	88	1.1	8	2
6.2	5	●	MVS0620X05S070	32.1	53.1	57.1	110.1	109	1.1	7	2
6.2	5	●	MVS0620X05S080	32.1	53.1	57.1	110.1	109	1.1	8	2
6.2	8	●	MVS0620X08S070	50.7	73.1	78.1	131.1	130	1.1	7	2
6.2	8	●	MVS0620X08S080	50.7	73.1	78.1	131.1	130	1.1	8	2
6.2	10	●	MVS0620X10S070	63.1	86.1	89.1	142.1	141	1.1	7	4
6.2	15	●	MVS0620X15S070	94.1	118.1	121.1	174.1	173	1.1	7	4
6.2	20	●	MVS0620X20S070	125.1	151.1	154.1	207.1	206	1.1	7	4
6.2	25	●	MVS0620X25S070	156.1	183.1	186.1	239.1	238	1.1	7	4
6.2	30	●	MVS0620X30S070	187.1	216.1	219.1	272.1	271	1.1	7	4
6.2	35	□	MVS0620X35S070	218.1	248.1	253.1	306.1	305	1.1	7	4
6.2	40	□	MVS0620X40S070	249.1	281.1	284.1	337.1	336	1.1	7	4
6.3	3	●	MVS0630X03S070	20.0	33.6	36.1	89.1	88	1.1	7	2
6.3	3	●	MVS0630X03S080	20.0	33.6	36.1	89.1	88	1.1	8	2
6.3	5	●	MVS0630X05S070	32.6	53.1	57.1	110.1	109	1.1	7	2
6.3	5	●	MVS0630X05S080	32.6	53.1	57.1	110.1	109	1.1	8	2
6.3	8	●	MVS0630X08S070	51.5	73.1	78.1	131.1	130	1.1	7	2
6.3	8	●	MVS0630X08S080	51.5	73.1	78.1	131.1	130	1.1	8	2
6.3	10	●	MVS0630X10S070	64.1	86.1	89.1	142.1	141	1.1	7	4
6.3	15	●	MVS0630X15S070	95.6	118.1	121.1	174.1	173	1.1	7	4
6.3	20	●	MVS0630X20S070	127.1	151.1	154.1	207.1	206	1.1	7	4
6.3	25	●	MVS0630X25S070	158.6	183.1	186.1	239.1	238	1.1	7	4
6.3	30	●	MVS0630X30S070	190.1	216.1	219.1	272.1	271	1.1	7	4
6.3	35	□	MVS0630X35S070	221.6	248.1	253.1	306.1	305	1.1	7	4
6.3	40	□	MVS0630X40S070	253.1	281.1	284.1	337.1	336	1.1	7	4
6.4	3	●	MVS0640X03S070	20.4	33.7	36.2	89.2	88	1.2	7	2
6.4	3	●	MVS0640X03S080	20.4	33.7	36.2	89.2	88	1.2	8	2
6.4	5	●	MVS0640X05S070	33.2	53.2	57.2	110.2	109	1.2	7	2
6.4	5	●	MVS0640X05S080	33.2	53.2	57.2	110.2	109	1.2	8	2
6.4	8	●	MVS0640X08S070	52.4	73.2	78.2	131.2	130	1.2	7	2
6.4	8	●	MVS0640X08S080	52.4	73.2	78.2	131.2	130	1.2	8	2
6.4	10	●	MVS0640X10S070	65.2	86.2	89.2	142.2	141	1.2	7	4
6.4	15	●	MVS0640X15S070	97.2	118.2	121.2	174.2	173	1.2	7	4
6.4	20	●	MVS0640X20S070	129.2	151.2	154.2	207.2	206	1.2	7	4
6.4	25	●	MVS0640X25S070	161.2	183.2	186.2	239.2	238	1.2	7	4
6.4	30	●	MVS0640X30S070	193.2	216.2	219.2	272.2	271	1.2	7	4
6.4	35	□	MVS0640X35S070	225.2	248.2	253.2	306.2	305	1.2	7	4
6.4	40	□	MVS0640X40S070	257.2	281.2	284.2	337.2	336	1.2	7	4
6.5	3	●	MVS0650X03S070	20.7	33.7	36.2	89.2	88	1.2	7	2
6.5	3	●	MVS0650X03S080	20.7	33.7	36.2	89.2	88	1.2	8	2
6.5	5	●	MVS0650X05S070	33.7	53.2	57.2	110.2	109	1.2	7	2

Nota 1) As brocas de ø5mm ou menores têm furo de refrigeração com seção circular. (Para L/D=3, 5, 8, diâmetros menores que ø6mm.)

● : Estoque mantido. □ : Sem estoque, produzido somente por pedido.

□ : Lote mínimo para produtos especiais:

① Menor que ø3 = Mínimo 10 ② Maior ou igual a ø3 e menor que ø10 = Mínimo 5
③ Maior ou igual a ø10 = Mínimo 3



DC (mm)	Prof. do Furo (L/D)	DP1020	Referência para Pedido	Dimensões (mm)								Tipo
				LU	LCF	LH	OAL	LF	PL	DCON		
6.5	5	●	MVS0650X05S080	33.7	53.2	57.2	110.2	109	1.2	8	2	
6.5	8	●	MVS0650X08S070	53.2	73.2	78.2	131.2	130	1.2	7	2	
6.5	8	●	MVS0650X08S080	53.2	73.2	78.2	131.2	130	1.2	8	2	
6.5	10	●	MVS0650X10S070	66.2	86.2	89.2	142.2	141	1.2	7	4	
6.5	15	●	MVS0650X15S070	98.7	118.2	121.2	174.2	173	1.2	7	4	
6.5	20	●	MVS0650X20S070	131.2	151.2	154.2	207.2	206	1.2	7	4	
6.5	25	●	MVS0650X25S070	163.7	183.2	186.2	239.2	238	1.2	7	4	
6.5	30	●	MVS0650X30S070	196.2	216.2	219.2	272.2	271	1.2	7	4	
6.5	35	●	MVS0650X35S070	228.7	248.2	253.2	306.2	305	1.2	7	4	
6.5	40	●	MVS0650X40S070	261.2	281.2	284.2	337.2	336	1.2	7	4	
6.6	3	●	MVS0660X03S070	21.0	36.2	36.2	89.2	88	1.2	7	2	
6.6	3	●	MVS0660X03S080	21.0	36.2	38.2	89.2	88	1.2	8	2	
6.6	5	●	MVS0660X05S070	34.2	57.2	57.2	110.2	109	1.2	7	2	
6.6	5	●	MVS0660X05S080	34.2	57.2	59.2	110.2	109	1.2	8	2	
6.6	8	●	MVS0660X08S070	54.0	78.2	78.2	131.2	130	1.2	7	2	
6.6	8	●	MVS0660X08S080	54.0	78.2	80.2	131.2	130	1.2	8	2	
6.6	10	●	MVS0660X10S070	67.2	92.2	95.2	148.2	147	1.2	7	4	
6.6	15	●	MVS0660X15S070	100.2	127.2	130.2	183.2	182	1.2	7	4	
6.6	20	●	MVS0660X20S070	133.2	162.2	165.2	218.2	217	1.2	7	4	
6.6	25	●	MVS0660X25S070	166.2	197.2	200.2	253.2	252	1.2	7	4	
6.6	30	●	MVS0660X30S070	199.2	232.2	235.2	288.2	287	1.2	7	4	
6.6	35	□	MVS0660X35S070	232.2	267.2	270.2	323.2	322	1.2	7	4	
6.6	40	□	MVS0660X40S070	265.2	301.2	304.2	357.2	356	1.2	7	4	
6.7	3	●	MVS0670X03S070	21.3	36.2	36.2	89.2	88	1.2	7	2	
6.7	3	●	MVS0670X03S080	21.3	36.2	38.2	89.2	88	1.2	8	2	
6.7	5	●	MVS0670X05S070	34.7	57.2	57.2	110.2	109	1.2	7	2	
6.7	5	●	MVS0670X05S080	34.7	57.2	59.2	110.2	109	1.2	8	2	
6.7	8	●	MVS0670X08S070	54.8	78.2	78.2	131.2	130	1.2	7	2	
6.7	8	●	MVS0670X08S080	54.8	78.2	80.2	131.2	130	1.2	8	2	
6.7	10	●	MVS0670X10S070	68.2	92.2	95.2	148.2	147	1.2	7	4	
6.7	15	●	MVS0670X15S070	101.7	127.2	130.2	183.2	182	1.2	7	4	
6.7	20	●	MVS0670X20S070	135.2	162.2	165.2	218.2	217	1.2	7	4	
6.7	25	●	MVS0670X25S070	168.7	197.2	200.2	253.2	252	1.2	7	4	
6.7	30	●	MVS0670X30S070	202.2	232.2	235.2	288.2	287	1.2	7	4	
6.7	35	□	MVS0670X35S070	235.7	267.2	270.2	323.2	322	1.2	7	4	
6.7	40	□	MVS0670X40S070	269.2	301.2	304.2	357.2	356	1.2	7	4	
6.8	3	●	MVS0680X03S070	21.6	36.2	36.2	89.2	88	1.2	7	2	
6.8	3	●	MVS0680X03S080	21.6	36.2	38.2	89.2	88	1.2	8	2	
6.8	5	●	MVS0680X05S070	35.2	57.2	57.2	110.2	109	1.2	7	2	
6.8	5	●	MVS0680X05S080	35.2	57.2	59.2	110.2	109	1.2	8	2	
6.8	8	●	MVS0680X08S070	55.6	78.2	78.2	131.2	130	1.2	7	2	
6.8	8	●	MVS0680X08S080	55.6	78.2	80.2	131.2	130	1.2	8	2	
6.8	10	●	MVS0680X10S070	69.2	92.2	95.2	148.2	147	1.2	7	4	
6.8	15	●	MVS0680X15S070	103.2	127.2	130.2	183.2	182	1.2	7	4	
6.8	20	●	MVS0680X20S070	137.2	162.2	165.2	218.2	217	1.2	7	4	
6.8	25	●	MVS0680X25S070	171.2	197.2	200.2	253.2	252	1.2	7	4	
6.8	30	●	MVS0680X30S070	205.2	232.2	235.2	288.2	287	1.2	7	4	
6.8	35	□	MVS0680X35S070	239.2	267.2	270.2	323.2	322	1.2	7	4	

DC (mm)	Prof. do Furo (L/D)	DP1020	Referência para Pedido	Dimensões (mm)								Tipo
				LU	LCF	LH	OAL	LF	PL	DCON		
6.8	40	□	MVS0680X40S070	273.2	301.2	304.2	357.2	356	1.2	7	4	
6.9	3	●	MVS0690X03S070	22.0	36.3	36.3	89.3	88	1.3	7	2	
6.9	3	●	MVS0690X03S080	22.0	36.3	38.3	89.3	88	1.3	8	2	
6.9	5	●	MVS0690X05S070	35.8	57.3	57.3	110.3	109	1.3	7	2	
6.9	5	●	MVS0690X05S080	35.8	57.3	59.3	110.3	109	1.3	8	2	
6.9	8	●	MVS0690X08S070	56.5	78.3	78.3	131.3	130	1.3	7	2	
6.9	8	●	MVS0690X08S080	56.5	78.3	80.3	131.3	130	1.3	8	2	
6.9	10	●	MVS0690X10S070	70.3	92.3	95.3	148.3	147	1.3	7	4	
6.9	15	●	MVS0690X15S070	104.8	127.3	130.3	183.3	182	1.3	7	4	
6.9	20	●	MVS0690X20S070	139.3	162.3	165.3	218.3	217	1.3	7	4	
6.9	25	●	MVS0690X25S070	173.8	197.3	200.3	253.3	252	1.3	7	4	
6.9	30	●	MVS0690X30S070	208.3	232.3	235.3	288.3	287	1.3	7	4	
6.9	35	□	MVS0690X35S070	242.8	267.3	270.3	323.3	322	1.3	7	4	
6.9	40	□	MVS0690X40S070	277.3	301.3	304.3	357.3	356	1.3	7	4	
7.0	3	●	MVS0700X03S070	22.3	36.3	36.3	89.3	88	1.3	7	2	
7.0	3	●	MVS0700X03S080	22.3	36.3	38.3	89.3	88	1.3	8	2	
7.0	5	●	MVS0700X05S070	36.3	57.3	57.3	110.3	109	1.3	7	2	
7.0	5	●	MVS0700X05S080	36.3	57.3	59.3	110.3	109	1.3	8	2	
7.0	8	●	MVS0700X08S070	57.3	78.3	78.3	131.3	130	1.3	7	2	
7.0	8	●	MVS0700X08S080	57.3	78.3	80.3	131.3	130	1.3	8	2	
7.0	10	●	MVS0700X10S070	71.3	92.3	95.3	148.3	147	1.3	7	4	
7.0	15	●	MVS0700X15S070	106.3	127.3	130.3	183.3	182	1.3	7	4	
7.0	20	●	MVS0700X20S070	141.3	162.3	165.3	218.3	217	1.3	7	4	
7.0	25	●	MVS0700X25S070	176.3	197.3	200.3	253.3	252	1.3	7	4	
7.0	30	●	MVS0700X30S070	211.3	232.3	235.3	288.3	287	1.3	7	4	
7.0	35	●	MVS0700X35S070	246.3	267.3	270.3	323.3	322	1.3	7	4	
7.0	40	●	MVS0700X40S070	281.3	301.3	304.3	357.3	356	1.3	7	4	
7.1	3	●	MVS0710X03S080	22.6	38.8	41.3	95.3	94	1.3	8	2	
7.1	5	●	MVS0710X05S080	36.8	61.3	65.3	119.3	118	1.3	8	2	
7.1	8	●	MVS0710X08S080	58.1	84.3	89.3	143.3	142	1.3	8	2	
7.1	10	●	MVS0710X10S080	72.3	99.3	102.3	156.3	155	1.3	8	4	
7.1	15	●	MVS0710X15S080	107.8	136.3	139.3	193.3	192	1.3	8	4	
7.1	20	●	MVS0710X20S080	143.3	174.3	177.3	231.3	230	1.3	8	4	
7.1	25	●	MVS0710X25S080	178.8	211.3	214.3	268.3	267	1.3	8	4	
7.1	30	●	MVS0710X30S080	214.3	249.3	252.3	306.3	305	1.3	8	4	
7.1	35	□	MVS0710X35S080	249.8	286.3	289.3	343.3	342	1.3	8	4	
7.1	40	□	MVS0710X40S080	285.3	321.3	324.3	378.3	377	1.3	8	4	
7.2	3	●	MVS0720X03S080	22.9	38.8	41.3	95.3	94	1.3	8	2	
7.2	5	●	MVS0720X05S080	37.3	61.3	65.3	119.3	118	1.3	8	2	
7.2	8	●	MVS0720X08S080	58.9	84.3	89.3	143.3	142	1.3	8	2	
7.2	10	●	MVS0720X10S080	73.3	99.3	102.3	156.3	155	1.3	8	4	
7.2	15	●	MVS0720X15S080	109.3	136.3	139.3	193.3	192	1.3	8	4	
7.2	20	●	MVS0720X20S080	145.3	174.3	177.3	231.3	230	1.3	8	4	
7.2	25	●	MVS0720X25S080	181.3	211.3	214.3	268.3	267	1.3	8	4	
7.2	30	●	MVS0720X30S080	217.3	249.3	252.3	306.3	305	1.3	8	4	
7.2	35	□	MVS0720X35S080	253.3	286.3	289.3	343.3	342	1.3	8	4	
7.2	40	□	MVS0720X40S080	289.3	321.3	324.3	378.3	377	1.3	8	4	
7.3	3	●	MVS0730X03S080	23.2	38.8	41.3	95.3	94	1.3	8	2	

FURAÇÃO(METAL DURO INTEIRIÇO)

MVS

BROCAS WSTAR

METAL DURO

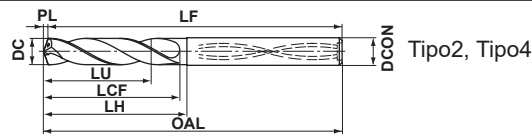
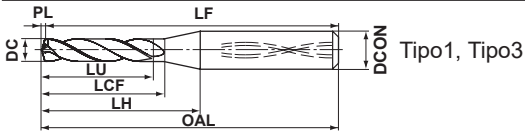
DC (mm)	Prof. do Furo (L/D)	DP1020	Referência para Pedido	Dimensões (mm)							Tipo
				LU	LCF	LH	OAL	LF	PL	DCON	
7.3	5	●	MVS0730X05S080	37.8	61.3	65.3	119.3	118	1.3	8	2
7.3	8	●	MVS0730X08S080	59.7	84.3	89.3	143.3	142	1.3	8	2
7.3	10	●	MVS0730X10S080	74.3	99.3	102.3	156.3	155	1.3	8	4
7.3	15	●	MVS0730X15S080	110.8	136.3	139.3	193.3	192	1.3	8	4
7.3	20	●	MVS0730X20S080	147.3	174.3	177.3	231.3	230	1.3	8	4
7.3	25	●	MVS0730X25S080	183.8	211.3	214.3	268.3	267	1.3	8	4
7.3	30	●	MVS0730X30S080	220.3	249.3	252.3	306.3	305	1.3	8	4
7.3	35	□	MVS0730X35S080	256.8	286.3	289.3	343.3	342	1.3	8	4
7.3	40	□	MVS0730X40S080	293.3	321.3	324.3	378.3	377	1.3	8	4
7.4	3	●	MVS0740X03S080	23.5	38.8	41.3	95.3	94	1.3	8	2
7.4	5	●	MVS0740X05S080	38.3	61.3	65.3	119.3	118	1.3	8	2
7.4	8	●	MVS0740X08S080	60.5	84.3	89.3	143.3	142	1.3	8	2
7.4	10	●	MVS0740X10S080	75.3	99.3	102.3	156.3	155	1.3	8	4
7.4	15	●	MVS0740X15S080	112.3	136.3	139.3	193.3	192	1.3	8	4
7.4	20	●	MVS0740X20S080	149.3	174.3	177.3	231.3	230	1.3	8	4
7.4	25	●	MVS0740X25S080	186.3	211.3	214.3	268.3	267	1.3	8	4
7.4	30	●	MVS0740X30S080	223.3	249.3	252.3	306.3	305	1.3	8	4
7.4	35	□	MVS0740X35S080	260.3	286.3	289.3	343.3	342	1.3	8	4
7.4	40	□	MVS0740X40S080	297.3	321.3	324.3	378.3	377	1.3	8	4
7.5	3	●	MVS0750X03S080	23.9	38.9	41.4	95.4	94	1.4	8	2
7.5	5	●	MVS0750X05S080	38.9	61.4	65.4	119.4	118	1.4	8	2
7.5	8	●	MVS0750X08S080	61.4	84.4	89.4	143.4	142	1.4	8	2
7.5	10	●	MVS0750X10S080	76.4	99.4	102.4	156.4	155	1.4	8	4
7.5	15	●	MVS0750X15S080	113.9	136.4	139.4	193.4	192	1.4	8	4
7.5	20	●	MVS0750X20S080	151.4	174.4	177.4	231.4	230	1.4	8	4
7.5	25	●	MVS0750X25S080	188.9	211.4	214.4	268.4	267	1.4	8	4
7.5	30	●	MVS0750X30S080	226.4	249.4	252.4	306.4	305	1.4	8	4
7.5	35	●	MVS0750X35S080	263.9	286.4	289.4	343.4	342	1.4	8	4
7.5	40	●	MVS0750X40S080	301.4	321.4	324.4	378.4	377	1.4	8	4
7.6	3	●	MVS0760X03S080	24.2	41.4	41.4	95.4	94	1.4	8	2
7.6	5	●	MVS0760X05S080	39.4	65.4	65.4	119.4	118	1.4	8	2
7.6	8	●	MVS0760X08S080	62.2	89.4	89.4	143.4	142	1.4	8	2
7.6	10	●	MVS0760X10S080	77.4	105.4	108.4	162.4	161	1.4	8	4
7.6	15	●	MVS0760X15S080	115.4	145.4	148.4	202.4	201	1.4	8	4
7.6	20	●	MVS0760X20S080	153.4	185.4	188.4	242.4	241	1.4	8	4
7.6	25	●	MVS0760X25S080	191.4	225.4	228.4	282.4	281	1.4	8	4
7.6	30	●	MVS0760X30S080	229.4	265.4	268.4	322.4	321	1.4	8	4
7.6	35	□	MVS0760X35S080	267.4	305.4	308.4	362.4	361	1.4	8	4
7.6	40	□	MVS0760X40S080	305.4	341.4	344.4	398.4	397	1.4	8	4
7.7	3	●	MVS0770X03S080	24.5	41.4	41.4	95.4	94	1.4	8	2
7.7	5	●	MVS0770X05S080	39.9	65.4	65.4	119.4	118	1.4	8	2
7.7	8	●	MVS0770X08S080	63.0	89.4	89.4	143.4	142	1.4	8	2
7.7	10	●	MVS0770X10S080	78.4	105.4	108.4	162.4	161	1.4	8	4
7.7	15	●	MVS0770X15S080	116.9	145.4	148.4	202.4	201	1.4	8	4
7.7	20	●	MVS0770X20S080	155.4	185.4	188.4	242.4	241	1.4	8	4
7.7	25	●	MVS0770X25S080	193.9	225.4	228.4	282.4	281	1.4	8	4
7.7	30	●	MVS0770X30S080	232.4	265.4	268.4	322.4	321	1.4	8	4
7.7	35	□	MVS0770X35S080	270.9	305.4	308.4	362.4	361	1.4	8	4

DC (mm)	Prof. do Furo (L/D)	DP1020	Referência para Pedido	Dimensões (mm)							Tipo
				LU	LCF	LH	OAL	LF	PL	DCON	
7.7	40	□	MVS0770X40S080	309.4	341.4	344.4	398.4	397	1.4	8	4
7.8	3	●	MVS0780X03S080	24.8	41.4	41.4	95.4	94	1.4	8	2
7.8	5	●	MVS0780X05S080	40.4	65.4	65.4	119.4	118	1.4	8	2
7.8	8	●	MVS0780X08S080	63.8	89.4	89.4	143.4	142	1.4	8	2
7.8	10	●	MVS0780X10S080	79.4	105.4	108.4	162.4	161	1.4	8	4
7.8	15	●	MVS0780X15S080	118.4	145.4	148.4	202.4	201	1.4	8	4
7.8	20	●	MVS0780X20S080	157.4	185.4	188.4	242.4	241	1.4	8	4
7.8	25	●	MVS0780X25S080	196.4	225.4	228.4	282.4	281	1.4	8	4
7.8	30	●	MVS0780X30S080	235.4	265.4	268.4	322.4	321	1.4	8	4
7.8	35	□	MVS0780X35S080	274.4	305.4	308.4	362.4	361	1.4	8	4
7.8	40	□	MVS0780X40S080	313.4	341.4	344.4	398.4	397	1.4	8	4
7.9	3	●	MVS0790X03S080	25.1	41.4	41.4	95.4	94	1.4	8	2
7.9	5	●	MVS0790X05S080	40.9	65.4	65.4	119.4	118	1.4	8	2
7.9	8	●	MVS0790X08S080	64.6	89.4	89.4	143.4	142	1.4	8	2
7.9	10	●	MVS0790X10S080	80.4	105.4	108.4	162.4	161	1.4	8	4
7.9	15	●	MVS0790X15S080	119.9	145.4	148.4	202.4	201	1.4	8	4
7.9	20	●	MVS0790X20S080	159.4	185.4	188.4	242.4	241	1.4	8	4
7.9	25	●	MVS0790X25S080	198.9	225.4	228.4	282.4	281	1.4	8	4
7.9	30	●	MVS0790X30S080	238.4	265.4	268.4	322.4	321	1.4	8	4
7.9	35	□	MVS0790X35S080	277.9	305.4	308.4	362.4	361	1.4	8	4
7.9	40	□	MVS0790X40S080	317.4	341.4	344.4	398.4	397	1.4	8	4
8.0	3	●	MVS0800X03S080	25.5	41.5	41.5	95.5	94	1.5	8	2
8.0	5	●	MVS0800X05S080	41.5	65.5	65.5	119.5	118	1.5	8	2
8.0	8	●	MVS0800X08S080	65.5	89.5	89.5	143.5	142	1.5	8	2
8.0	10	●	MVS0800X10S080	81.5	105.5	108.5	162.5	161	1.5	8	4
8.0	15	●	MVS0800X15S080	121.5	145.5	148.5	202.5	201	1.5	8	4
8.0	20	●	MVS0800X20S080	161.5	185.5	188.5	242.5	241	1.5	8	4
8.0	25	●	MVS0800X25S080	201.5	225.5	228.5	282.5	281	1.5	8	4
8.0	30	●	MVS0800X30S080	241.5	265.5	268.5	322.5	321	1.5	8	4
8.0	35	●	MVS0800X35S080	281.5	305.5	308.5	362.5	361	1.5	8	4
8.0	40	●	MVS0800X40S080	321.5	341.5	344.5	398.5	397	1.5	8	4
8.1	3	●	MVS0810X03S090	25.8	44.0	46.5	101.5	100	1.5	9	2
8.1	3	●	MVS0810X03S100	25.8	44.0	46.5	101.5	100	1.5	10	2
8.1	5	●	MVS0810X05S090	42.0	69.5	73.5	128.5	127	1.5	9	2
8.1	5	●	MVS0810X05S100	42.0	69.5	73.5	128.5	127	1.5	10	2
8.1	8	●	MVS0810X08S090	66.3	95.5	100.5	155.5	154	1.5	9	2
8.1	8	●	MVS0810X08S100	66.3	95.5	100.5	155.5	154	1.5	10	2
8.1	10	●	MVS0810X10S090	82.5	112.5	115.5	170.5	169	1.5	9	4
8.1	15	●	MVS0810X15S090	123.0	154.5	157.5	212.5	211	1.5	9	4
8.1	20	●	MVS0810X20S090	163.5	197.5	200.5	255.5	254	1.5	9	4
8.1	25	●	MVS0810X25S090	204.0	239.5	242.5	297.5	296	1.5	9	4
8.1	30	●	MVS0810X30S090	244.5	282.5	285.5	340.5	339	1.5	9	4
8.1	35	□	MVS0810X35S090	285.0	324.5	327.5	382.5	381	1.5	9	4
8.1	40	□	MVS0810X40S090	325.5	366.5	369.5	424.5	423	1.5	9	4
8.2	3	●	MVS0820X03S090	26.1	44.0	46.5	101.5	100	1.5	9	2
8.2	3	●	MVS0820X03S100	26.1	44.0	46.5	101.5	100	1.5	10	2
8.2	5	●	MVS0820X05S090	42.5	69.5	73.5	128.5	127	1.5	9	2
8.2	5	●	MVS0820X05S100	42.5	69.5	73.5	128.5	127	1.5	10	2

● : Estoque mantido. □ : Sem estoque, produzido somente por pedido.

□ : Lote mínimo para produtos especiais:

① Menor que ø3 = Mínimo 10 ② Maior ou igual a ø3 e menor que ø10 = Mínimo 5
③ Maior ou igual a ø10 = Mínimo 3



DC (mm)	Prof. do Furo (L/D)	DP1020	Referência para Pedido	Dimensões (mm)							Tipo
				LU	LCF	LH	OAL	LF	PL	DCON	
8.2	8	●	MVS0820X08S090	67.1	95.5	100.5	155.5	154	1.5	9	2
8.2	8	●	MVS0820X08S100	67.1	95.5	100.5	155.5	154	1.5	10	2
8.2	10	●	MVS0820X10S090	83.5	112.5	115.5	170.5	169	1.5	9	4
8.2	15	●	MVS0820X15S090	124.5	154.5	157.5	212.5	211	1.5	9	4
8.2	20	●	MVS0820X20S090	165.5	197.5	200.5	255.5	254	1.5	9	4
8.2	25	●	MVS0820X25S090	206.5	239.5	242.5	297.5	296	1.5	9	4
8.2	30	●	MVS0820X30S090	247.5	282.5	285.5	340.5	339	1.5	9	4
8.2	35	□	MVS0820X35S090	288.5	324.5	327.5	382.5	381	1.5	9	4
8.2	40	□	MVS0820X40S090	329.5	366.5	369.5	424.5	423	1.5	9	4
8.3	3	●	MVS0830X03S090	26.4	44.0	46.5	101.5	100	1.5	9	2
8.3	3	●	MVS0830X03S100	26.4	44.0	46.5	101.5	100	1.5	10	2
8.3	5	●	MVS0830X05S090	43.0	69.5	73.5	128.5	127	1.5	9	2
8.3	5	●	MVS0830X05S100	43.0	69.5	73.5	128.5	127	1.5	10	2
8.3	8	●	MVS0830X08S090	67.9	95.5	100.5	155.5	154	1.5	9	2
8.3	8	●	MVS0830X08S100	67.9	95.5	100.5	155.5	154	1.5	10	2
8.3	10	●	MVS0830X10S090	84.5	112.5	115.5	170.5	169	1.5	9	4
8.3	15	●	MVS0830X15S090	126.0	154.5	157.5	212.5	211	1.5	9	4
8.3	20	●	MVS0830X20S090	167.5	197.5	200.5	255.5	254	1.5	9	4
8.3	25	●	MVS0830X25S090	209.0	239.5	242.5	297.5	296	1.5	9	4
8.3	30	●	MVS0830X30S090	250.5	282.5	285.5	340.5	339	1.5	9	4
8.3	35	□	MVS0830X35S090	292.0	324.5	327.5	382.5	381	1.5	9	4
8.3	40	□	MVS0830X40S090	333.5	366.5	369.5	424.5	423	1.5	9	4
8.4	3	●	MVS0840X03S090	26.7	44.0	46.5	101.5	100	1.5	9	2
8.4	3	●	MVS0840X03S100	26.7	44.0	46.5	101.5	100	1.5	10	2
8.4	5	●	MVS0840X05S090	43.5	69.5	73.5	128.5	127	1.5	9	2
8.4	5	●	MVS0840X05S100	43.5	69.5	73.5	128.5	127	1.5	10	2
8.4	8	●	MVS0840X08S090	68.7	95.5	100.5	155.5	154	1.5	9	2
8.4	8	●	MVS0840X08S100	68.7	95.5	100.5	155.5	154	1.5	10	2
8.4	10	●	MVS0840X10S090	85.5	112.5	115.5	170.5	169	1.5	9	4
8.4	15	●	MVS0840X15S090	127.5	154.5	157.5	212.5	211	1.5	9	4
8.4	20	●	MVS0840X20S090	169.5	197.5	200.5	255.5	254	1.5	9	4
8.4	25	●	MVS0840X25S090	211.5	239.5	242.5	297.5	296	1.5	9	4
8.4	30	●	MVS0840X30S090	253.5	282.5	285.5	340.5	339	1.5	9	4
8.4	35	□	MVS0840X35S090	295.5	324.5	327.5	382.5	381	1.5	9	4
8.4	40	□	MVS0840X40S090	337.5	366.5	369.5	424.5	423	1.5	9	4
8.5	3	●	MVS0850X03S090	27.0	44.0	46.5	101.5	100	1.5	9	2
8.5	3	●	MVS0850X03S100	27.0	44.0	46.5	101.5	100	1.5	10	2
8.5	5	●	MVS0850X05S090	44.0	69.5	73.5	128.5	127	1.5	9	2
8.5	5	●	MVS0850X05S100	44.0	69.5	73.5	128.5	127	1.5	10	2
8.5	8	●	MVS0850X08S090	69.5	95.5	100.5	155.5	154	1.5	9	2
8.5	8	●	MVS0850X08S100	69.5	95.5	100.5	155.5	154	1.5	10	2
8.5	10	●	MVS0850X10S090	86.5	112.5	115.5	170.5	169	1.5	9	4
8.5	15	●	MVS0850X15S090	129.0	154.5	157.5	212.5	211	1.5	9	4
8.5	20	●	MVS0850X20S090	171.5	197.5	200.5	255.5	254	1.5	9	4
8.5	25	●	MVS0850X25S090	214.0	239.5	242.5	297.5	296	1.5	9	4
8.5	30	●	MVS0850X30S090	256.5	282.5	285.5	340.5	339	1.5	9	4
8.5	35	●	MVS0850X35S090	299.0	324.5	327.5	382.5	381	1.5	9	4
8.5	40	●	MVS0850X40S090	341.5	366.5	369.5	424.5	423	1.5	9	4

DC (mm)	Prof. do Furo (L/D)	DP1020	Referência para Pedido	Dimensões (mm)							Tipo
				LU	LCF	LH	OAL	LF	PL	DCON	
8.6	3	●	MVS0860X03S090	27.4	46.6	46.6	101.6	100	1.6	9	2
8.6	3	●	MVS0860X03S100	27.4	46.6	48.6	101.6	100	1.6	10	2
8.6	5	●	MVS0860X05S090	44.6	73.6	73.6	128.6	127	1.6	9	2
8.6	5	●	MVS0860X05S100	44.6	73.6	75.6	128.6	127	1.6	10	2
8.6	8	●	MVS0860X08S090	70.4	100.6	100.6	155.6	154	1.6	9	2
8.6	8	●	MVS0860X08S100	70.4	100.6	102.6	155.6	154	1.6	10	2
8.6	10	●	MVS0860X10S090	87.6	118.6	121.6	176.6	175	1.6	9	4
8.6	15	●	MVS0860X15S090	130.6	163.6	166.6	221.6	220	1.6	9	4
8.6	20	●	MVS0860X20S090	173.6	208.6	211.6	266.6	265	1.6	9	4
8.6	25	●	MVS0860X25S090	216.6	253.6	256.6	311.6	310	1.6	9	4
8.6	30	●	MVS0860X30S090	259.6	298.6	301.6	356.6	355	1.6	9	4
8.6	35	□	MVS0860X35S090	302.6	343.6	346.6	401.6	400	1.6	9	4
8.6	40	□	MVS0860X40S090	345.6	391.6	394.6	449.6	448	1.6	9	4
8.7	3	●	MVS0870X03S090	27.7	46.6	46.6	101.6	100	1.6	9	2
8.7	3	●	MVS0870X03S100	27.7	46.6	48.6	101.6	100	1.6	10	2
8.7	5	●	MVS0870X05S090	45.1	73.6	73.6	128.6	127	1.6	9	2
8.7	5	●	MVS0870X05S100	45.1	73.6	75.6	128.6	127	1.6	10	2
8.7	8	●	MVS0870X08S090	71.2	100.6	100.6	155.6	154	1.6	9	2
8.7	8	●	MVS0870X08S100	71.2	100.6	102.6	155.6	154	1.6	10	2
8.7	10	●	MVS0870X10S090	88.6	118.6	121.6	176.6	175	1.6	9	4
8.7	15	●	MVS0870X15S090	132.1	163.6	166.6	221.6	220	1.6	9	4
8.7	20	●	MVS0870X20S090	175.6	208.6	211.6	266.6	265	1.6	9	4
8.7	25	●	MVS0870X25S090	219.1	253.6	256.6	311.6	310	1.6	9	4
8.7	30	●	MVS0870X30S090	262.6	298.6	301.6	356.6	355	1.6	9	4
8.7	35	□	MVS0870X35S090	306.1	343.6	346.6	401.6	400	1.6	9	4
8.7	40	□	MVS0870X40S090	349.6	391.6	394.6	449.6	448	1.6	9	4
8.8	3	●	MVS0880X03S090	28.0	46.6	46.6	101.6	100	1.6	9	2
8.8	3	●	MVS0880X03S100	28.0	46.6	48.6	101.6	100	1.6	10	2
8.8	5	●	MVS0880X05S090	45.6	73.6	73.6	128.6	127	1.6	9	2
8.8	5	●	MVS0880X05S100	45.6	73.6	75.6	128.6	127	1.6	10	2
8.8	8	●	MVS0880X08S090	72.0	100.6	100.6	155.6	154	1.6	9	2
8.8	8	●	MVS0880X08S100	72.0	100.6	102.6	155.6	154	1.6	10	2
8.8	10	●	MVS0880X10S090	89.6	118.6	121.6	176.6	175	1.6	9	4
8.8	15	●	MVS0880X15S090	133.6	163.6	166.6	221.6	220	1.6	9	4
8.8	20	●	MVS0880X20S090	177.6	208.6	211.6	266.6	265	1.6	9	4
8.8	25	●	MVS0880X25S090	221.6	253.6	256.6	311.6	310	1.6	9	4
8.8	30	●	MVS0880X30S090	265.6	298.6	301.6	356.6	355	1.6	9	4
8.8	35	□	MVS0880X35S090	309.6	343.6	346.6	401.6	400	1.6	9	4
8.8	40	□	MVS0880X40S090	353.6	391.6	394.6	449.6	448	1.6	9	4
8.9	3	●	MVS0890X03S090	28.3	46.6	46.6	101.6	100	1.6	9	2
8.9	3	●	MVS0890X03S100	28.3	46.6	48.6	101.6	100	1.6	10	2
8.9	5	●	MVS0890X05S090	46.1	73.6	73.6	128.6	127	1.6	9	2
8.9	5	●	MVS0890X05S100	46.1	73.6	75.6	128.6	127	1.6	10	2
8.9	8	●	MVS0890X08S090	72.8	100.6	100.6	155.6	154	1.6	9	2
8.9	8	●	MVS0890X08S100	72.8	100.6	102.6	155.6	154	1.6	10	2
8.9	10	●	MVS0890X10S090	90.6	118.6	121.6	176.6	175	1.6	9	4
8.9	15	●	MVS0890X15S090	135.1	163.6	166.6	221.6	220	1.6	9	4
8.9	20	●	MVS0890X20S090	179.6	208.6	211.6	266.6	265	1.6	9	4

FURAÇÃO(METAL DURO INTEIRIÇO)

MVS

BROCAS WSTAR

METAL DURO

DC (mm)	Prof. do Furo (LD)	DP1020	Referência para Pedido	Dimensões (mm)							Tipo
				LU	LCF	LH	OAL	LF	PL	DCON	
8.9	25	●	MVS0890X25S090	224.1	253.6	256.6	311.6	310	1.6	9	4
8.9	30	●	MVS0890X30S090	268.6	298.6	301.6	356.6	355	1.6	9	4
8.9	35	□	MVS0890X35S090	313.1	343.6	346.6	401.6	400	1.6	9	4
8.9	40	□	MVS0890X40S090	357.6	391.6	394.6	449.6	448	1.6	9	4
9.0	3	●	MVS0900X03S090	28.6	46.6	46.6	101.6	100	1.6	9	2
9.0	3	●	MVS0900X03S100	28.6	46.6	48.6	101.6	100	1.6	10	2
9.0	5	●	MVS0900X05S090	46.6	73.6	73.6	128.6	127	1.6	9	2
9.0	5	●	MVS0900X05S100	46.6	73.6	75.6	128.6	127	1.6	10	2
9.0	8	●	MVS0900X08S090	73.6	100.6	100.6	155.6	154	1.6	9	2
9.0	8	●	MVS0900X08S100	73.6	100.6	102.6	155.6	154	1.6	10	2
9.0	10	●	MVS0900X10S090	91.6	118.6	121.6	176.6	175	1.6	9	4
9.0	15	●	MVS0900X15S090	136.6	163.6	166.6	221.6	220	1.6	9	4
9.0	20	●	MVS0900X20S090	181.6	208.6	211.6	266.6	265	1.6	9	4
9.0	25	●	MVS0900X25S090	226.6	253.6	256.6	311.6	310	1.6	9	4
9.0	30	●	MVS0900X30S090	271.6	298.6	301.6	356.6	355	1.6	9	4
9.0	35	●	MVS0900X35S090	316.6	343.6	346.6	401.6	400	1.6	9	4
9.0	40	●	MVS0900X40S090	361.6	391.6	394.6	449.6	448	1.6	9	4
9.1	3	●	MVS0910X03S100	29.0	49.2	51.7	107.7	106	1.7	10	2
9.1	5	●	MVS0910X05S100	47.2	77.7	81.7	137.7	136	1.7	10	2
9.1	8	●	MVS0910X08S100	74.5	106.7	111.7	167.7	166	1.7	10	2
9.1	10	●	MVS0910X10S100	92.7	125.7	128.7	183.7	182	1.7	10	4
9.1	15	●	MVS0910X15S100	138.2	172.7	175.7	230.7	229	1.7	10	4
9.1	20	●	MVS0910X20S100	183.7	220.7	223.7	278.7	277	1.7	10	4
9.1	25	●	MVS0910X25S100	229.2	267.7	270.7	325.7	324	1.7	10	4
9.1	30	●	MVS0910X30S100	274.7	315.7	318.7	373.7	372	1.7	10	4
9.1	35	□	MVS0910X35S100	320.2	362.7	365.7	420.7	419	1.7	10	4
9.2	3	●	MVS0920X03S100	29.3	49.2	51.7	107.7	106	1.7	10	2
9.2	5	●	MVS0920X05S100	47.7	77.7	81.7	137.7	136	1.7	10	2
9.2	8	●	MVS0920X08S100	75.3	106.7	111.7	167.7	166	1.7	10	2
9.2	10	●	MVS0920X10S100	93.7	125.7	128.7	183.7	182	1.7	10	4
9.2	15	●	MVS0920X15S100	139.7	172.7	175.7	230.7	229	1.7	10	4
9.2	20	●	MVS0920X20S100	185.7	220.7	223.7	278.7	277	1.7	10	4
9.2	25	●	MVS0920X25S100	231.7	267.7	270.7	325.7	324	1.7	10	4
9.2	30	●	MVS0920X30S100	277.7	315.7	318.7	373.7	372	1.7	10	4
9.2	35	□	MVS0920X35S100	323.7	362.7	365.7	420.7	419	1.7	10	4
9.3	3	●	MVS0930X03S100	29.6	49.2	51.7	107.7	106	1.7	10	2
9.3	5	●	MVS0930X05S100	48.2	77.7	81.7	137.7	136	1.7	10	2
9.3	8	●	MVS0930X08S100	76.1	106.7	111.7	167.7	166	1.7	10	2
9.3	10	●	MVS0930X10S100	94.7	125.7	128.7	183.7	182	1.7	10	4
9.3	15	●	MVS0930X15S100	141.2	172.7	175.7	230.7	229	1.7	10	4
9.3	20	●	MVS0930X20S100	187.7	220.7	223.7	278.7	277	1.7	10	4
9.3	25	●	MVS0930X25S100	234.2	267.7	270.7	325.7	324	1.7	10	4
9.3	30	●	MVS0930X30S100	280.7	315.7	318.7	373.7	372	1.7	10	4
9.3	35	□	MVS0930X35S100	327.2	362.7	365.7	420.7	419	1.7	10	4
9.4	3	●	MVS0940X03S100	29.9	49.2	51.7	107.7	106	1.7	10	2
9.4	5	●	MVS0940X05S100	48.7	77.7	81.7	137.7	136	1.7	10	2
9.4	8	●	MVS0940X08S100	76.9	106.7	111.7	167.7	166	1.7	10	2
9.4	10	●	MVS0940X10S100	95.7	125.7	128.7	183.7	182	1.7	10	4

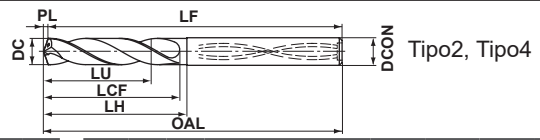
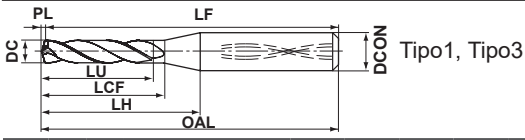
DC (mm)	Prof. do Furo (LD)	DP1020	Referência para Pedido	Dimensões (mm)							Tipo
				LU	LCF	LH	OAL	LF	PL	DCON	
9.4	15	●	MVS0940X15S100	142.7	172.7	175.7	230.7	229	1.7	10	4
9.4	20	●	MVS0940X20S100	189.7	220.7	223.7	278.7	277	1.7	10	4
9.4	25	●	MVS0940X25S100	236.7	267.7	270.7	325.7	324	1.7	10	4
9.4	30	●	MVS0940X30S100	283.7	315.7	318.7	373.7	372	1.7	10	4
9.4	35	□	MVS0940X35S100	330.7	362.7	365.7	420.7	419	1.7	10	4
9.5	3	●	MVS0950X03S100	30.2	49.2	51.7	107.7	106	1.7	10	2
9.5	5	●	MVS0950X05S100	49.2	77.7	81.7	137.7	136	1.7	10	2
9.5	8	●	MVS0950X08S100	77.7	106.7	111.7	167.7	166	1.7	10	2
9.5	10	●	MVS0950X10S100	96.7	125.7	128.7	183.7	182	1.7	10	4
9.5	15	●	MVS0950X15S100	144.2	172.7	175.7	230.7	229	1.7	10	4
9.5	20	●	MVS0950X20S100	191.7	220.7	223.7	278.7	277	1.7	10	4
9.5	25	●	MVS0950X25S100	239.2	267.7	270.7	325.7	324	1.7	10	4
9.5	30	●	MVS0950X30S100	286.7	315.7	318.7	373.7	372	1.7	10	4
9.5	35	●	MVS0950X35S100	334.2	362.7	365.7	420.7	419	1.7	10	4
9.6	3	●	MVS0960X03S100	30.5	51.7	51.7	107.7	106	1.7	10	2
9.6	5	●	MVS0960X05S100	49.7	81.7	81.7	137.7	136	1.7	10	2
9.6	8	●	MVS0960X08S100	78.5	111.7	111.7	167.7	166	1.7	10	2
9.6	10	●	MVS0960X10S100	97.7	131.7	134.7	189.7	188	1.7	10	4
9.6	15	●	MVS0960X15S100	145.7	181.7	184.7	239.7	238	1.7	10	4
9.6	20	●	MVS0960X20S100	193.7	231.7	234.7	289.7	288	1.7	10	4
9.6	25	●	MVS0960X25S100	241.7	281.7	284.7	339.7	338	1.7	10	4
9.6	30	●	MVS0960X30S100	289.7	331.7	334.7	389.7	388	1.7	10	4
9.6	35	□	MVS0960X35S100	337.7	381.7	384.7	439.7	438	1.7	10	4
9.7	3	●	MVS0970X03S100	30.9	51.8	51.8	107.8	106	1.8	10	2
9.7	5	●	MVS0970X05S100	50.3	81.8	81.8	137.8	136	1.8	10	2
9.7	8	●	MVS0970X08S100	79.4	111.8	111.8	167.8	166	1.8	10	2
9.7	10	●	MVS0970X10S100	98.8	131.8	134.8	189.8	188	1.8	10	4
9.7	15	●	MVS0970X15S100	147.3	181.8	184.8	239.8	238	1.8	10	4
9.7	20	●	MVS0970X20S100	195.8	231.8	234.8	289.8	288	1.8	10	4
9.7	25	●	MVS0970X25S100	244.3	281.8	284.8	339.8	338	1.8	10	4
9.7	30	●	MVS0970X30S100	292.8	331.8	334.8	389.8	388	1.8	10	4
9.7	35	□	MVS0970X35S100	341.3	381.8	384.8	439.8	438	1.8	10	4
9.8	3	●	MVS0980X03S100	31.2	51.8	51.8	107.8	106	1.8	10	2
9.8	5	●	MVS0980X05S100	50.8	81.8	81.8	137.8	136	1.8	10	2
9.8	8	●	MVS0980X08S100	80.2	111.8	111.8	167.8	166	1.8	10	2
9.8	10	●	MVS0980X10S100	99.8	131.8	134.8	189.8	188	1.8	10	4
9.8	15	●	MVS0980X15S100	148.8	181.8	184.8	239.8	238	1.8	10	4
9.8	20	●	MVS0980X20S100	197.8	231.8	234.8	289.8	288	1.8	10	4
9.8	25	●	MVS0980X25S100	246.8	281.8	284.8	339.8	338	1.8	10	4
9.8	30	●	MVS0980X30S100	295.8	331.8	334.8	389.8	388	1.8	10	4
9.8	35	□	MVS0980X35S100	344.8	381.8	384.8	439.8	438	1.8	10	4
9.9	3	●	MVS0990X03S100	31.5	51.8	51.8	107.8	106	1.8	10	2
9.9	5	●	MVS0990X05S100	51.3	81.8	81.8	137.8	136	1.8	10	2
9.9	8	●	MVS0990X08S100	81.0	111.8	111.8	167.8	166	1.8	10	2
9.9	10	●	MVS0990X10S100	100.8	131.8	134.8	189.8	188	1.8	10	4
9.9	15	●	MVS0990X15S100	150.3	181.8	184.8	239.8	238	1.8	10	4
9.9	20	●	MVS0990X20S100	199.8	231.8	234.8	289.8	288	1.8	10	4
9.9	25	●	MVS0990X25S100	249.3	281.8	284.8	339.8	338	1.8	10	4

● : Estoque mantido. □ : Sem estoque, produzido somente por pedido.

□ : Lote mínimo para produtos especiais:

① Menor que ø3 = Mínimo 10 ② Maior ou igual a ø3 e menor que ø10 = Mínimo 5

③ Maior ou igual a ø10 = Mínimo 3



DC (mm)	Prof. do Furo (L/D)	DP1020	Referência para Pedido	Dimensões (mm)							Tipo
				LU	LCF	LH	OAL	LF	PL	DCON	
9.9	30	●	MVS0990X30S100	298.8	331.8	334.8	389.8	388	1.8	10	4
9.9	35	□	MVS0990X35S100	348.3	381.8	384.8	439.8	438	1.8	10	4
10.0	3	●	MVS1000X03S100	31.8	51.8	51.8	107.8	106	1.8	10	2
10.0	5	●	MVS1000X05S100	51.8	81.8	81.8	137.8	136	1.8	10	2
10.0	8	●	MVS1000X08S100	81.8	111.8	111.8	167.8	166	1.8	10	2
10.0	10	●	MVS1000X10S100	101.8	131.8	134.8	189.8	188	1.8	10	4
10.0	15	●	MVS1000X15S100	151.8	181.8	184.8	239.8	238	1.8	10	4
10.0	20	●	MVS1000X20S100	201.8	231.8	234.8	289.8	288	1.8	10	4
10.0	25	●	MVS1000X25S100	251.8	281.8	284.8	339.8	338	1.8	10	4
10.0	30	●	MVS1000X30S100	301.8	331.8	334.8	389.8	388	1.8	10	4
10.0	35	●	MVS1000X35S100	351.8	381.8	384.8	439.8	438	1.8	10	4
10.1	3	●	MVS1010X03S110	32.1	54.3	56.8	117.8	116	1.8	11	2
10.1	3	●	MVS1010X03S120	32.1	54.3	56.8	117.8	116	1.8	12	2
10.1	5	●	MVS1010X05S110	52.3	85.8	89.8	150.8	149	1.8	11	2
10.1	5	●	MVS1010X05S120	52.3	85.8	89.8	150.8	149	1.8	12	2
10.1	8	●	MVS1010X08S110	82.6	117.8	122.8	183.8	182	1.8	11	2
10.1	8	●	MVS1010X08S120	82.6	117.8	122.8	183.8	182	1.8	12	2
10.1	10	●	MVS1010X10S110	102.8	138.8	141.8	202.8	201	1.8	11	4
10.1	15	●	MVS1010X15S110	153.3	190.8	193.8	254.8	253	1.8	11	4
10.1	20	●	MVS1010X20S110	203.8	243.8	246.8	307.8	306	1.8	11	4
10.1	25	●	MVS1010X25S110	254.3	295.8	298.8	359.8	358	1.8	11	4
10.2	3	●	MVS1020X03S110	32.5	54.4	56.9	117.9	116	1.9	11	2
10.2	3	●	MVS1020X03S120	32.5	54.4	56.9	117.9	116	1.9	12	2
10.2	5	●	MVS1020X05S110	52.9	85.9	89.9	150.9	149	1.9	11	2
10.2	5	●	MVS1020X05S120	52.9	85.9	89.9	150.9	149	1.9	12	2
10.2	8	●	MVS1020X08S110	83.5	117.9	122.9	183.9	182	1.9	11	2
10.2	8	●	MVS1020X08S120	83.5	117.9	122.9	183.9	182	1.9	12	2
10.2	10	●	MVS1020X10S110	103.9	138.9	141.9	202.9	201	1.9	11	4
10.2	15	●	MVS1020X15S110	154.9	190.9	193.9	254.9	253	1.9	11	4
10.2	20	●	MVS1020X20S110	205.9	243.9	246.9	307.9	306	1.9	11	4
10.2	25	●	MVS1020X25S110	256.9	295.9	298.9	359.9	358	1.9	11	4
10.3	3	●	MVS1030X03S110	32.8	54.4	56.9	117.9	116	1.9	11	2
10.3	3	●	MVS1030X03S120	32.8	54.4	56.9	117.9	116	1.9	12	2
10.3	5	●	MVS1030X05S110	53.4	85.9	89.9	150.9	149	1.9	11	2
10.3	5	●	MVS1030X05S120	53.4	85.9	89.9	150.9	149	1.9	12	2
10.3	8	●	MVS1030X08S110	84.3	117.9	122.9	183.9	182	1.9	11	2
10.3	8	●	MVS1030X08S120	84.3	117.9	122.9	183.9	182	1.9	12	2
10.3	10	●	MVS1030X10S110	104.9	138.9	141.9	202.9	201	1.9	11	4
10.3	15	●	MVS1030X15S110	156.4	190.9	193.9	254.9	253	1.9	11	4
10.3	20	●	MVS1030X20S110	207.9	243.9	246.9	307.9	306	1.9	11	4
10.3	25	●	MVS1030X25S110	259.4	295.9	298.9	359.9	358	1.9	11	4
10.4	3	●	MVS1040X03S110	33.1	54.4	56.9	117.9	116	1.9	11	2
10.4	3	●	MVS1040X03S120	33.1	54.4	56.9	117.9	116	1.9	12	2
10.4	5	●	MVS1040X05S110	53.9	85.9	89.9	150.9	149	1.9	11	2
10.4	5	●	MVS1040X05S120	53.9	85.9	89.9	150.9	149	1.9	12	2
10.4	8	●	MVS1040X08S110	85.1	117.9	122.9	183.9	182	1.9	11	2
10.4	8	●	MVS1040X08S120	85.1	117.9	122.9	183.9	182	1.9	12	2
10.4	10	●	MVS1040X10S110	105.9	138.9	141.9	202.9	201	1.9	11	4

DC (mm)	Prof. do Furo (L/D)	DP1020	Referência para Pedido	Dimensões (mm)							Tipo
				LU	LCF	LH	OAL	LF	PL	DCON	
10.4	15	●	MVS1040X15S110	157.9	190.9	193.9	254.9	253	1.9	11	4
10.4	20	●	MVS1040X20S110	209.9	243.9	246.9	307.9	306	1.9	11	4
10.4	25	●	MVS1040X25S110	261.9	295.9	298.9	359.9	358	1.9	11	4
10.5	3	●	MVS1050X03S110	33.4	54.4	56.9	117.9	116	1.9	11	2
10.5	3	●	MVS1050X03S120	33.4	54.4	56.9	117.9	116	1.9	12	2
10.5	5	●	MVS1050X05S110	54.4	85.9	89.9	150.9	149	1.9	11	2
10.5	5	●	MVS1050X05S120	54.4	85.9	89.9	150.9	149	1.9	12	2
10.5	8	●	MVS1050X08S110	85.9	117.9	122.9	183.9	182	1.9	11	2
10.5	8	●	MVS1050X08S120	85.9	117.9	122.9	183.9	182	1.9	12	2
10.5	10	●	MVS1050X10S110	106.9	138.9	141.9	202.9	201	1.9	11	4
10.5	15	●	MVS1050X15S110	159.4	190.9	193.9	254.9	253	1.9	11	4
10.5	20	●	MVS1050X20S110	211.9	243.9	246.9	307.9	306	1.9	11	4
10.5	25	●	MVS1050X25S110	264.4	295.9	298.9	359.9	358	1.9	11	4
10.6	3	●	MVS1060X03S110	33.7	56.9	56.9	117.9	116	1.9	11	2
10.6	3	●	MVS1060X03S120	33.7	56.9	57.9	117.9	116	1.9	12	2
10.6	5	●	MVS1060X05S110	54.9	89.9	89.9	150.9	149	1.9	11	2
10.6	5	●	MVS1060X05S120	54.9	89.9	90.9	150.9	149	1.9	12	2
10.6	8	●	MVS1060X08S110	86.7	122.9	122.9	183.9	182	1.9	11	2
10.6	8	●	MVS1060X08S120	86.7	122.9	123.9	183.9	182	1.9	12	2
10.6	10	●	MVS1060X10S110	107.9	144.9	147.9	208.9	207	1.9	11	4
10.6	15	●	MVS1060X15S110	160.9	199.9	202.9	263.9	262	1.9	11	4
10.6	20	●	MVS1060X20S110	213.9	254.9	257.9	318.9	317	1.9	11	4
10.6	25	●	MVS1060X25S110	266.9	309.9	312.9	373.9	372	1.9	11	4
10.7	3	●	MVS1070X03S110	34.0	56.9	56.9	117.9	116	1.9	11	2
10.7	3	●	MVS1070X03S120	34.0	56.9	57.9	117.9	116	1.9	12	2
10.7	5	●	MVS1070X05S110	55.4	89.9	89.9	150.9	149	1.9	11	2
10.7	5	●	MVS1070X05S120	55.4	89.9	90.9	150.9	149	1.9	12	2
10.7	8	●	MVS1070X08S110	87.5	122.9	122.9	183.9	182	1.9	11	2
10.7	8	●	MVS1070X08S120	87.5	122.9	123.9	183.9	182	1.9	12	2
10.7	10	●	MVS1070X10S110	108.9	144.9	147.9	208.9	207	1.9	11	4
10.7	15	●	MVS1070X15S110	162.4	199.9	202.9	263.9	262	1.9	11	4
10.7	20	●	MVS1070X20S110	215.9	254.9	257.9	318.9	317	1.9	11	4
10.7	25	●	MVS1070X25S110	269.4	309.9	312.9	373.9	372	1.9	11	4
10.8	3	●	MVS1080X03S110	34.4	57.0	57.0	118.0	116	2.0	11	2
10.8	3	●	MVS1080X03S120	34.4	57.0	58.0	118.0	116	2.0	12	2
10.8	5	●	MVS1080X05S110	56.0	90.0	90.0	151.0	149	2.0	11	2
10.8	5	●	MVS1080X05S120	56.0	90.0	91.0	151.0	149	2.0	12	2
10.8	8	●	MVS1080X08S110	88.4	123.0	123.0	184.0	182	2.0	11	2
10.8	8	●	MVS1080X08S120	88.4	123.0	124.0	184.0	182	2.0	12	2
10.8	10	●	MVS1080X10S110	110.0	145.0	148.0	209.0	207	2.0	11	4
10.8	15	●	MVS1080X15S110	164.0	200.0	203.0	264.0	262	2.0	11	4
10.8	20	●	MVS1080X20S110	218.0	255.0	258.0	319.0	317	2.0	11	4
10.8	25	●	MVS1080X25S110	272.0	310.0	313.0	374.0	372	2.0	11	4
10.9	3	●	MVS1090X03S110	34.7	57.0	57.0	118.0	116	2.0	11	2
10.9	3	●	MVS1090X03S120	34.7	57.0	58.0	118.0	116	2.0	12	2
10.9	5	●	MVS1090X05S110	56.5	90.0	90.0	151.0	149	2.0	11	2
10.9	5	●	MVS1090X05S120	56.5	90.0	91.0	151.0	149	2.0	12	2
10.9	8	●	MVS1090X08S110	89.2	123.0	123.0	184.0	182	2.0	11	2

FURAÇÃO(METAL DURO INTEIRIÇO)

MVS

BROCAS WSTAR

METAL DURO

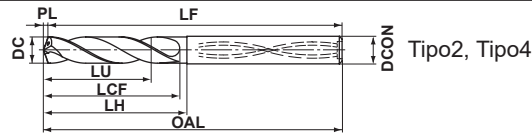
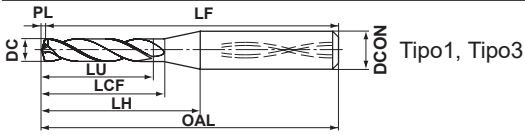
DC	Prof. do Furo (mm)	DP1020	Referência para Pedido	Dimensões (mm)							Tipo
				LU	LCF	LH	OAL	LF	PL	DCON	
10.9	8	●	MVS1090X08S120	89.2	123.0	124.0	184.0	182	2.0	12	2
10.9	10	●	MVS1090X10S110	111.0	145.0	148.0	209.0	207	2.0	11	4
10.9	15	●	MVS1090X15S110	165.5	200.0	203.0	264.0	262	2.0	11	4
10.9	20	●	MVS1090X20S110	220.0	255.0	258.0	319.0	317	2.0	11	4
10.9	25	●	MVS1090X25S110	274.5	310.0	313.0	374.0	372	2.0	11	4
11.0	3	●	MVS1100X03S110	35.0	57.0	57.0	118.0	116	2.0	11	2
11.0	3	●	MVS1100X03S120	35.0	57.0	58.0	118.0	116	2.0	12	2
11.0	5	●	MVS1100X05S110	57.0	90.0	90.0	151.0	149	2.0	11	2
11.0	5	●	MVS1100X05S120	57.0	90.0	91.0	151.0	149	2.0	12	2
11.0	8	●	MVS1100X08S110	90.0	123.0	123.0	184.0	182	2.0	11	2
11.0	8	●	MVS1100X08S120	90.0	123.0	124.0	184.0	182	2.0	12	2
11.0	10	●	MVS1100X10S110	112.0	145.0	147.0	209.0	207	2.0	11	4
11.0	15	●	MVS1100X15S110	167.0	200.0	203.0	264.0	262	2.0	11	4
11.0	20	●	MVS1100X20S110	222.0	255.0	258.0	319.0	317	2.0	11	4
11.0	25	●	MVS1100X25S110	277.0	310.0	313.0	374.0	372	2.0	11	4
11.1	3	●	MVS1110X03S120	35.3	59.5	62.0	124.0	122	2.0	12	2
11.1	5	●	MVS1110X05S120	57.5	94.0	98.0	160.0	158	2.0	12	2
11.1	8	●	MVS1110X08S120	90.8	129.0	134.0	196.0	194	2.0	12	2
11.1	10	●	MVS1110X10S120	113.0	152.0	155.0	217.0	215	2.0	12	4
11.1	15	●	MVS1110X15S120	168.5	209.0	212.0	274.0	272	2.0	12	4
11.1	20	●	MVS1110X20S120	224.0	267.0	270.0	332.0	330	2.0	12	4
11.1	25	●	MVS1110X25S120	279.5	324.0	327.0	389.0	387	2.0	12	4
11.2	3	●	MVS1120X03S120	35.6	59.5	62.0	124.0	122	2.0	12	2
11.2	5	●	MVS1120X05S120	58.0	94.0	98.0	160.0	158	2.0	12	2
11.2	8	●	MVS1120X08S120	91.6	129.0	134.0	196.0	194	2.0	12	2
11.2	10	●	MVS1120X10S120	114.0	152.0	155.0	217.0	215	2.0	12	4
11.2	15	●	MVS1120X15S120	170.0	209.0	212.0	274.0	272	2.0	12	4
11.2	20	●	MVS1120X20S120	226.0	267.0	270.0	332.0	330	2.0	12	4
11.2	25	●	MVS1120X25S120	282.0	324.0	327.0	389.0	387	2.0	12	4
11.3	3	●	MVS1130X03S120	36.0	59.6	62.1	124.1	122	2.1	12	2
11.3	5	●	MVS1130X05S120	58.6	94.1	98.1	160.1	158	2.1	12	2
11.3	8	●	MVS1130X08S120	92.5	129.1	134.1	196.1	194	2.1	12	2
11.3	10	●	MVS1130X10S120	115.1	152.1	155.1	217.1	215	2.1	12	4
11.3	15	●	MVS1130X15S120	171.6	209.1	212.1	274.1	272	2.1	12	4
11.3	20	●	MVS1130X20S120	228.1	267.1	270.1	332.1	330	2.1	12	4
11.3	25	●	MVS1130X25S120	284.6	324.1	327.1	389.1	387	2.1	12	4
11.4	3	●	MVS1140X03S120	36.3	59.6	62.1	124.1	122	2.1	12	2
11.4	5	●	MVS1140X05S120	59.1	94.1	98.1	160.1	158	2.1	12	2
11.4	8	●	MVS1140X08S120	93.3	129.1	134.1	196.1	194	2.1	12	2
11.4	10	●	MVS1140X10S120	116.1	152.1	155.1	217.1	215	2.1	12	4
11.4	15	●	MVS1140X15S120	173.1	209.1	212.1	274.1	272	2.1	12	4
11.4	20	●	MVS1140X20S120	230.1	267.1	270.1	332.1	330	2.1	12	4
11.4	25	●	MVS1140X25S120	287.1	324.1	327.1	389.1	387	2.1	12	4
11.5	3	●	MVS1150X03S120	36.6	59.6	62.1	124.1	122	2.1	12	2
11.5	5	●	MVS1150X05S120	59.6	94.1	98.1	160.1	158	2.1	12	2
11.5	8	●	MVS1150X08S120	94.1	129.1	134.1	196.1	194	2.1	12	2
11.5	10	●	MVS1150X10S120	117.1	152.1	155.1	217.1	215	2.1	12	4
11.5	15	●	MVS1150X15S120	174.6	209.1	212.1	274.1	272	2.1	12	4

DC	Prof. do Furo (mm)	DP1020	Referência para Pedido	Dimensões (mm)							Tipo
				LU	LCF	LH	OAL	LF	PL	DCON	
11.5	20	●	MVS1150X20S120	232.1	267.1	270.1	332.1	330	2.1	12	4
11.5	25	●	MVS1150X25S120	289.6	324.1	327.1	389.1	387	2.1	12	4
11.6	3	●	MVS1160X03S120	36.9	62.1	62.1	124.1	122	2.1	12	2
11.6	5	●	MVS1160X05S120	60.1	98.1	98.1	160.1	158	2.1	12	2
11.6	8	●	MVS1160X08S120	94.9	134.1	134.1	196.1	194	2.1	12	2
11.6	10	●	MVS1160X10S120	118.1	158.1	161.1	223.1	221	2.1	12	4
11.6	15	●	MVS1160X15S120	176.1	218.1	221.1	283.1	281	2.1	12	4
11.6	20	●	MVS1160X20S120	234.1	278.1	281.1	343.1	341	2.1	12	4
11.6	25	●	MVS1160X25S120	292.1	338.1	341.1	403.1	401	2.1	12	4
11.7	3	●	MVS1170X03S120	37.2	62.1	62.1	124.1	122	2.1	12	2
11.7	5	●	MVS1170X05S120	60.6	98.1	98.1	160.1	158	2.1	12	2
11.7	8	●	MVS1170X08S120	95.7	134.1	134.1	196.1	194	2.1	12	2
11.7	10	●	MVS1170X10S120	119.1	158.1	161.1	223.1	221	2.1	12	4
11.7	15	●	MVS1170X15S120	177.6	218.1	221.1	283.1	281	2.1	12	4
11.7	20	●	MVS1170X20S120	236.1	278.1	281.1	343.1	341	2.1	12	4
11.7	25	●	MVS1170X25S120	294.6	338.1	341.1	403.1	401	2.1	12	4
11.8	3	●	MVS1180X03S120	37.5	62.1	62.1	124.1	122	2.1	12	2
11.8	5	●	MVS1180X05S120	61.1	98.1	98.1	160.1	158	2.1	12	2
11.8	8	●	MVS1180X08S120	96.5	134.1	134.1	196.1	194	2.1	12	2
11.8	10	●	MVS1180X10S120	120.1	158.1	161.1	223.1	221	2.1	12	4
11.8	15	●	MVS1180X15S120	179.1	218.1	221.1	283.1	281	2.1	12	4
11.8	20	●	MVS1180X20S120	238.1	278.1	281.1	343.1	341	2.1	12	4
11.8	25	●	MVS1180X25S120	297.1	338.1	341.1	403.1	401	2.1	12	4
11.9	3	●	MVS1190X03S120	37.9	62.2	62.2	124.2	122	2.2	12	2
11.9	5	●	MVS1190X05S120	61.7	98.2	98.2	160.2	158	2.2	12	2
11.9	8	●	MVS1190X08S120	97.4	134.2	134.2	196.2	194	2.2	12	2
11.9	10	●	MVS1190X10S120	121.2	158.2	161.2	223.2	221	2.2	12	4
11.9	15	●	MVS1190X15S120	180.7	218.2	221.2	283.2	281	2.2	12	4
11.9	20	●	MVS1190X20S120	240.2	278.2	281.2	343.2	341	2.2	12	4
11.9	25	●	MVS1190X25S120	299.7	338.2	341.2	403.2	401	2.2	12	4
12.0	3	●	MVS1200X03S120	38.2	62.2	62.2	124.2	122	2.2	12	2
12.0	5	●	MVS1200X05S120	62.2	98.2	98.2	160.2	158	2.2	12	2
12.0	8	●	MVS1200X08S120	98.2	134.2	134.2	196.2	194	2.2	12	2
12.0	10	●	MVS1200X10S120	122.2	158.2	161.2	223.2	221	2.2	12	4
12.0	15	●	MVS1200X15S120	182.2	218.2	221.2	283.2	281	2.2	12	4
12.0	20	●	MVS1200X20S120	242.2	278.2	281.2	343.2	341	2.2	12	4
12.0	25	●	MVS1200X25S120	302.2	338.2	341.2	403.2	401	2.2	12	4
12.1	3	●	MVS1210X03S130	38.5	64.7	67.2	130.2	128	2.2	13	2
12.1	3	□	MVS1210X03S140	38.5	64.7	67.2	130.2	128	2.2	14	2
12.1	5	●	MVS1210X05S130	62.7	102.2	106.2	169.2	167	2.2	13	2
12.1	5	□	MVS1210X05S140	62.7	102.2	106.2	169.2	167	2.2	14	2
12.1	8	□	MVS1210X08S130	99.0	140.2	145.2	208.2	206	2.2	13	2
12.1	8	□	MVS1210X08S140	99.0	140.2	145.2	208.2	206	2.2	14	2
12.1	10	□	MVS1210X10S130	123.2	165.2	168.2	231.2	229	2.2	13	4
12.1	15	□	MVS1210X15S130	183.7	227.2	230.2	293.2	291	2.2	13	4
12.1	20	□	MVS1210X20S130	244.2	290.2	293.2	356.2	354	2.2	13	4
12.2	3	●	MVS1220X03S130	38.8	64.7	67.2	130.2	128	2.2	13	2
12.2	3	□	MVS1220X03S140	38.8	64.7	67.2	130.2	128	2.2	14	2

● : Estoque mantido. □ : Sem estoque, produzido somente por pedido.

□ : Lote mínimo para produtos especiais:

① Menor que ø3 = Mínimo 10 ② Maior ou igual a ø3 e menor que ø10 = Mínimo 5
 ③ Maior ou igual a ø10 = Mínimo 3



DC (mm)	Prof. do Furo (L/D)	DP1020	Referência para Pedido	Dimensões (mm)							Tipo
				LU	LCF	LH	OAL	LF	PL	DCON	
12.2	5	●	MVS1220X05S130	63.2	102.2	106.2	169.2	167	2.2	13	2
12.2	5	□	MVS1220X05S140	63.2	102.2	106.2	169.2	167	2.2	14	2
12.2	8	□	MVS1220X08S130	99.8	140.2	145.2	208.2	206	2.2	13	2
12.2	8	□	MVS1220X08S140	99.8	140.2	145.2	208.2	206	2.2	14	2
12.2	10	□	MVS1220X10S130	124.2	165.2	168.2	231.2	229	2.2	13	4
12.2	15	□	MVS1220X15S130	185.2	227.2	230.2	293.2	291	2.2	13	4
12.2	20	□	MVS1220X20S130	246.2	290.2	293.2	356.2	354	2.2	13	4
12.3	3	●	MVS1230X03S130	39.1	64.7	67.2	130.2	128	2.2	13	2
12.3	3	□	MVS1230X03S140	39.1	64.7	67.2	130.2	128	2.2	14	2
12.3	5	●	MVS1230X05S130	63.7	102.2	106.2	169.2	167	2.2	13	2
12.3	5	□	MVS1230X05S140	63.7	102.2	106.2	169.2	167	2.2	14	2
12.3	8	□	MVS1230X08S130	100.6	140.2	145.2	208.2	206	2.2	13	2
12.3	8	□	MVS1230X08S140	100.6	140.2	145.2	208.2	206	2.2	14	2
12.3	10	□	MVS1230X10S130	125.2	165.2	168.2	231.2	229	2.2	13	4
12.3	15	□	MVS1230X15S130	186.7	227.2	230.2	293.2	291	2.2	13	4
12.3	20	□	MVS1230X20S130	248.2	290.2	293.2	356.2	354	2.2	13	4
12.4	3	●	MVS1240X03S130	39.5	64.8	67.3	130.3	128	2.3	13	2
12.4	3	□	MVS1240X03S140	39.5	64.8	67.3	130.3	128	2.3	14	2
12.4	5	●	MVS1240X05S130	64.3	102.3	106.3	169.3	167	2.3	13	2
12.4	5	□	MVS1240X05S140	64.3	102.3	106.3	169.3	167	2.3	14	2
12.4	8	□	MVS1240X08S130	101.5	140.3	145.3	208.3	206	2.3	13	2
12.4	8	□	MVS1240X08S140	101.5	140.3	145.3	208.3	206	2.3	14	2
12.4	10	□	MVS1240X10S130	126.3	165.3	168.3	231.3	229	2.3	13	4
12.4	15	□	MVS1240X15S130	188.3	227.3	230.3	293.3	291	2.3	13	4
12.4	20	□	MVS1240X20S130	250.3	290.3	293.3	356.3	354	2.3	13	4
12.5	3	●	MVS1250X03S130	39.8	64.8	67.3	130.3	128	2.3	13	2
12.5	3	□	MVS1250X03S140	39.8	64.8	67.3	130.3	128	2.3	14	2
12.5	5	●	MVS1250X05S130	64.8	102.3	106.3	169.3	167	2.3	13	2
12.5	5	□	MVS1250X05S140	64.8	102.3	106.3	169.3	167	2.3	14	2
12.5	8	●	MVS1250X08S130	102.3	140.3	145.3	208.3	206	2.3	13	2
12.5	8	□	MVS1250X08S140	102.3	140.3	145.3	208.3	206	2.3	14	2
12.5	10	●	MVS1250X10S130	127.3	165.3	168.3	231.3	229	2.3	13	4
12.5	15	●	MVS1250X15S130	189.8	227.3	230.3	293.3	291	2.3	13	4
12.5	20	●	MVS1250X20S130	252.3	290.3	293.3	356.3	354	2.3	13	4
12.6	3	●	MVS1260X03S130	40.1	67.3	67.3	130.3	128	2.3	13	2
12.6	3	□	MVS1260X03S140	40.1	67.3	67.3	130.3	128	2.3	14	2
12.6	5	●	MVS1260X05S130	65.3	106.3	106.3	169.3	167	2.3	13	2
12.6	5	□	MVS1260X05S140	65.3	106.3	106.3	169.3	167	2.3	14	2
12.6	8	□	MVS1260X08S130	103.1	145.3	145.3	208.3	206	2.3	13	2
12.6	8	□	MVS1260X08S140	103.1	145.3	145.3	208.3	206	2.3	14	2
12.6	10	□	MVS1260X10S130	128.3	171.3	174.3	237.3	235	2.3	13	4
12.6	15	□	MVS1260X15S130	191.3	236.3	239.3	302.3	300	2.3	13	4
12.6	20	□	MVS1260X20S130	254.3	301.3	304.3	367.3	365	2.3	13	4
12.7	3	●	MVS1270X03S130	40.4	67.3	67.3	130.3	128	2.3	13	2
12.7	3	□	MVS1270X03S140	40.4	67.3	67.3	130.3	128	2.3	14	2
12.7	5	●	MVS1270X05S130	65.8	106.3	106.3	169.3	167	2.3	13	2
12.7	5	□	MVS1270X05S140	65.8	106.3	106.3	169.3	167	2.3	14	2
12.7	8	□	MVS1270X08S130	103.9	145.3	145.3	208.3	206	2.3	13	2

DC (mm)	Prof. do Furo (L/D)	DP1020	Referência para Pedido	Dimensões (mm)							Tipo
				LU	LCF	LH	OAL	LF	PL	DCON	
12.7	8	□	MVS1270X08S140	103.9	145.3	145.3	208.3	206	2.3	14	2
12.7	10	□	MVS1270X10S130	129.3	171.3	174.3	237.3	235	2.3	13	4
12.7	15	□	MVS1270X15S130	192.8	236.3	239.3	302.3	300	2.3	13	4
12.7	20	□	MVS1270X20S130	256.3	301.3	304.3	367.3	365	2.3	13	4
12.8	3	●	MVS1280X03S130	40.7	67.3	67.3	130.3	128	2.3	13	2
12.8	3	□	MVS1280X03S140	40.7	67.3	67.3	130.3	128	2.3	14	2
12.8	5	●	MVS1280X05S130	66.3	106.3	106.3	169.3	167	2.3	13	2
12.8	5	□	MVS1280X05S140	66.3	106.3	106.3	169.3	167	2.3	14	2
12.8	8	□	MVS1280X08S130	104.7	145.3	145.3	208.3	206	2.3	13	2
12.8	8	□	MVS1280X08S140	104.7	145.3	145.3	208.3	206	2.3	14	2
12.8	10	□	MVS1280X10S130	130.3	171.3	174.3	237.3	235	2.3	13	4
12.8	15	□	MVS1280X15S130	194.3	236.3	239.3	302.3	300	2.3	13	4
12.8	20	□	MVS1280X20S130	258.3	301.3	304.3	367.3	365	2.3	13	4
12.9	3	●	MVS1290X03S130	41.0	67.3	67.3	130.3	128	2.3	13	2
12.9	3	□	MVS1290X03S140	41.0	67.3	67.3	130.3	128	2.3	14	2
12.9	5	●	MVS1290X05S130	66.8	106.3	106.3	169.3	167	2.3	13	2
12.9	5	□	MVS1290X05S140	66.8	106.3	106.3	169.3	167	2.3	14	2
12.9	8	□	MVS1290X08S130	105.5	145.3	145.3	208.3	206	2.3	13	2
12.9	8	□	MVS1290X08S140	105.5	145.3	145.3	208.3	206	2.3	14	2
12.9	10	□	MVS1290X10S130	131.3	171.3	174.3	237.3	235	2.3	13	4
12.9	15	□	MVS1290X15S130	195.8	236.3	239.3	302.3	300	2.3	13	4
12.9	20	□	MVS1290X20S130	260.3	301.3	304.3	367.3	365	2.3	13	4
13.0	3	●	MVS1300X03S130	41.4	67.4	67.4	130.4	128	2.4	13	2
13.0	3	□	MVS1300X03S140	41.4	67.4	67.4	130.4	128	2.4	14	2
13.0	5	●	MVS1300X05S130	67.4	106.4	106.4	169.4	167	2.4	13	2
13.0	5	□	MVS1300X05S140	67.4	106.4	106.4	169.4	167	2.4	14	2
13.0	8	●	MVS1300X08S130	106.4	145.4	145.4	208.4	206	2.4	13	2
13.0	8	□	MVS1300X08S140	106.4	145.4	145.4	208.4	206	2.4	14	2
13.0	10	●	MVS1300X10S130	132.4	171.4	174.4	237.4	235	2.4	13	4
13.0	15	●	MVS1300X15S130	197.4	236.4	239.4	302.4	300	2.4	13	4
13.0	20	●	MVS1300X20S130	262.4	301.4	304.4	367.4	365	2.4	13	4
13.1	3	●	MVS1310X03S140	41.7	69.9	72.4	136.4	134	2.4	14	2
13.1	5	●	MVS1310X05S140	67.9	110.4	114.4	178.4	176	2.4	14	2
13.1	8	□	MVS1310X08S140	107.2	151.4	156.4	220.4	218	2.4	14	2
13.1	10	□	MVS1310X10S140	133.4	178.4	181.4	245.4	243	2.4	14	4
13.1	15	□	MVS1310X15S140	198.9	245.4	248.4	312.4	310	2.4	14	4
13.1	20	□	MVS1310X20S140	264.4	313.4	316.4	380.4	378	2.4	14	4
13.2	3	●	MVS1320X03S140	42.0	69.9	72.4	136.4	134	2.4	14	2
13.2	5	●	MVS1320X05S140	68.4	110.4	114.4	178.4	176	2.4	14	2
13.2	8	□	MVS1320X08S140	108.0	151.4	156.4	220.4	218	2.4	14	2
13.2	10	□	MVS1320X10S140	134.4	178.4	181.4	245.4	243	2.4	14	4
13.2	15	□	MVS1320X15S140	200.4	245.4	248.4	312.4	310	2.4	14	4
13.2	20	□	MVS1320X20S140	266.4	313.4	316.4	380.4	378	2.4	14	4
13.3	3	●	MVS1330X03S140	42.3	69.9	72.4	136.4	134	2.4	14	2
13.3	5	●	MVS1330X05S140	68.9	110.4	114.4	178.4	176	2.4	14	2
13.3	8	□	MVS1330X08S140	108.8	151.4	156.4	220.4	218	2.4	14	2
13.3	10	□	MVS1330X10S140	135.4	178.4	181.4	245.4	243	2.4	14	4
13.3	15	□	MVS1330X15S140	201.9	245.4	248.4	312.4	310	2.4	14	4

FURAÇÃO(METAL DURO INTEIRIÇO)

MVS

BROCAS WSTAR

METAL DURO

DC (mm)	Prof. do Furo (L/D)	DP1020	Referência para Pedido	Dimensões (mm)							Tipo
				LU	LCF	LH	OAL	LF	PL	DCON	
13.3	20	□	MVS1330X20S140	268.4	313.4	316.4	380.4	378	2.4	14	4
13.4	3	●	MVS1340X03S140	42.6	69.9	72.4	136.4	134	2.4	14	2
13.4	5	●	MVS1340X05S140	69.4	110.4	114.4	178.4	176	2.4	14	2
13.4	8	□	MVS1340X08S140	109.6	151.4	156.4	220.4	218	2.4	14	2
13.4	10	□	MVS1340X10S140	136.4	178.4	181.4	245.4	243	2.4	14	4
13.4	15	□	MVS1340X15S140	203.4	245.4	248.4	312.4	310	2.4	14	4
13.4	20	□	MVS1340X20S140	270.4	313.4	316.4	380.4	378	2.4	14	4
13.5	3	●	MVS1350X03S140	43.0	70.0	72.5	136.5	134	2.5	14	2
13.5	5	●	MVS1350X05S140	70.0	110.5	114.5	178.5	176	2.5	14	2
13.5	8	●	MVS1350X08S140	110.5	151.5	156.5	220.5	218	2.5	14	2
13.5	10	●	MVS1350X10S140	137.5	178.5	181.5	245.5	243	2.5	14	4
13.5	15	●	MVS1350X15S140	205.0	245.5	248.5	312.5	310	2.5	14	4
13.5	20	●	MVS1350X20S140	272.5	313.5	316.5	380.5	378	2.5	14	4
13.6	3	●	MVS1360X03S140	43.3	72.5	72.5	136.5	134	2.5	14	2
13.6	5	●	MVS1360X05S140	70.5	114.5	114.5	178.5	176	2.5	14	2
13.6	8	□	MVS1360X08S140	111.3	156.5	156.5	220.5	218	2.5	14	2
13.6	10	□	MVS1360X10S140	138.5	184.5	187.5	251.5	249	2.5	14	4
13.6	15	□	MVS1360X15S140	206.5	254.5	257.5	321.5	319	2.5	14	4
13.6	20	□	MVS1360X20S140	274.5	324.5	327.5	391.5	389	2.5	14	4
13.7	3	●	MVS1370X03S140	43.6	72.5	72.5	136.5	134	2.5	14	2
13.7	5	●	MVS1370X05S140	71.0	114.5	114.5	178.5	176	2.5	14	2
13.7	8	□	MVS1370X08S140	112.1	156.5	156.5	220.5	218	2.5	14	2
13.7	10	□	MVS1370X10S140	139.5	184.5	187.5	251.5	249	2.5	14	4
13.7	15	□	MVS1370X15S140	208.0	254.5	257.5	321.5	319	2.5	14	4
13.7	20	□	MVS1370X20S140	276.5	324.5	327.5	391.5	389	2.5	14	4
13.8	3	●	MVS1380X03S140	43.9	72.5	72.5	136.5	134	2.5	14	2
13.8	5	●	MVS1380X05S140	71.5	114.5	114.5	178.5	176	2.5	14	2
13.8	8	□	MVS1380X08S140	112.9	156.5	156.5	220.5	218	2.5	14	2
13.8	10	□	MVS1380X10S140	140.5	184.5	187.5	251.5	249	2.5	14	4
13.8	15	□	MVS1380X15S140	209.5	254.5	257.5	321.5	319	2.5	14	4
13.8	20	□	MVS1380X20S140	278.5	324.5	327.5	391.5	389	2.5	14	4
13.9	3	●	MVS1390X03S140	44.2	72.5	72.5	136.5	134	2.5	14	2
13.9	5	●	MVS1390X05S140	72.0	114.5	114.5	178.5	176	2.5	14	2
13.9	8	□	MVS1390X08S140	113.7	156.5	156.5	220.5	218	2.5	14	2
13.9	10	□	MVS1390X10S140	141.5	184.5	187.5	251.5	249	2.5	14	4
13.9	15	□	MVS1390X15S140	211.0	254.5	257.5	321.5	319	2.5	14	4
13.9	20	□	MVS1390X20S140	280.5	324.5	327.5	391.5	389	2.5	14	4
14.0	3	●	MVS1400X03S140	44.5	72.5	72.5	136.5	134	2.5	14	2
14.0	5	●	MVS1400X05S140	72.5	114.5	114.5	178.5	176	2.5	14	2
14.0	8	●	MVS1400X08S140	114.5	156.5	156.5	220.5	218	2.5	14	2
14.0	10	●	MVS1400X10S140	142.5	184.5	187.5	251.5	249	2.5	14	4
14.0	15	●	MVS1400X15S140	212.5	254.5	257.5	321.5	319	2.5	14	4
14.0	20	●	MVS1400X20S140	282.5	324.5	327.5	391.5	389	2.5	14	4
14.1	3	●	MVS1410X03S150	44.9	75.1	77.6	142.6	140	2.6	15	2
14.1	3	□	MVS1410X03S160	44.9	75.1	77.6	142.6	140	2.6	16	2
14.1	5	●	MVS1410X05S150	73.1	118.6	122.6	187.6	185	2.6	15	2
14.1	5	□	MVS1410X05S160	73.1	118.6	122.6	187.6	185	2.6	16	2
14.1	8	□	MVS1410X08S150	115.4	162.6	167.6	227.6	225	2.6	15	2

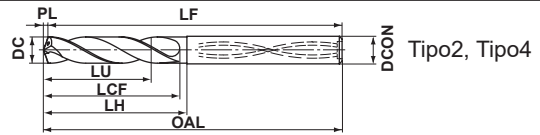
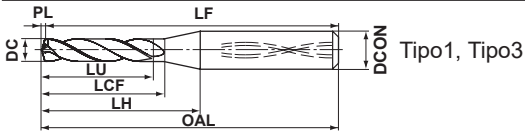
DC (mm)	Prof. do Furo (L/D)	DP1020	Referência para Pedido	Dimensões (mm)							Tipo
				LU	LCF	LH	OAL	LF	PL	DCON	
14.1	8	□	MVS1410X08S160	115.4	162.6	167.6	227.6	225	2.6	16	2
14.2	3	●	MVS1420X03S150	45.2	75.1	77.6	142.6	140	2.6	15	2
14.2	3	□	MVS1420X03S160	45.2	75.1	77.6	142.6	140	2.6	16	2
14.2	5	●	MVS1420X05S150	73.6	118.6	122.6	187.6	185	2.6	15	2
14.2	5	□	MVS1420X05S160	73.6	118.6	122.6	187.6	185	2.6	16	2
14.2	8	●	MVS1420X08S150	116.2	162.6	167.6	227.6	225	2.6	15	2
14.2	8	□	MVS1420X08S160	116.2	162.6	167.6	227.6	225	2.6	16	2
14.3	3	●	MVS1430X03S150	45.5	75.1	77.6	142.6	140	2.6	15	2
14.3	3	□	MVS1430X03S160	45.5	75.1	77.6	142.6	140	2.6	16	2
14.3	5	●	MVS1430X05S150	74.1	118.6	122.6	187.6	185	2.6	15	2
14.3	5	□	MVS1430X05S160	74.1	118.6	122.6	187.6	185	2.6	16	2
14.3	8	□	MVS1430X08S150	117.0	162.6	167.6	227.6	225	2.6	15	2
14.3	8	□	MVS1430X08S160	117.0	162.6	167.6	227.6	225	2.6	16	2
14.4	3	●	MVS1440X03S150	45.8	75.1	77.6	142.6	140	2.6	15	2
14.4	3	□	MVS1440X03S160	45.8	75.1	77.6	142.6	140	2.6	16	2
14.4	5	●	MVS1440X05S150	74.6	118.6	122.6	187.6	185	2.6	15	2
14.4	5	□	MVS1440X05S160	74.6	118.6	122.6	187.6	185	2.6	16	2
14.4	8	□	MVS1440X08S150	117.8	162.6	167.6	227.6	225	2.6	15	2
14.4	8	□	MVS1440X08S160	117.8	162.6	167.6	227.6	225	2.6	16	2
14.5	3	●	MVS1450X03S150	46.1	75.1	77.6	142.6	140	2.6	15	2
14.5	3	□	MVS1450X03S160	46.1	75.1	77.6	142.6	140	2.6	16	2
14.5	5	●	MVS1450X05S150	75.1	118.6	122.6	187.6	185	2.6	15	2
14.5	5	□	MVS1450X05S160	75.1	118.6	122.6	187.6	185	2.6	16	2
14.5	8	●	MVS1450X08S150	118.6	162.6	167.6	227.6	225	2.6	15	2
14.5	8	□	MVS1450X08S160	118.6	162.6	167.6	227.6	225	2.6	16	2
14.6	3	●	MVS1460X03S150	46.5	77.7	77.7	142.7	140	2.7	15	2
14.6	3	□	MVS1460X03S160	46.5	77.7	77.7	142.7	140	2.7	16	2
14.6	5	●	MVS1460X05S150	75.7	122.7	122.7	187.7	185	2.7	15	2
14.6	5	□	MVS1460X05S160	75.7	122.7	122.7	187.7	185	2.7	16	2
14.6	8	□	MVS1460X08S150	119.5	167.7	167.7	227.7	225	2.7	15	2
14.6	8	□	MVS1460X08S160	119.5	167.7	167.7	227.7	225	2.7	16	2
14.7	3	●	MVS1470X03S150	46.8	77.7	77.7	142.7	140	2.7	15	2
14.7	3	□	MVS1470X03S160	46.8	77.7	77.7	142.7	140	2.7	16	2
14.7	5	●	MVS1470X05S150	76.2	122.7	122.7	187.7	185	2.7	15	2
14.7	5	□	MVS1470X05S160	76.2	122.7	122.7	187.7	185	2.7	16	2
14.7	8	□	MVS1470X08S150	120.3	167.7	167.7	227.7	225	2.7	15	2
14.7	8	□	MVS1470X08S160	120.3	167.7	167.7	227.7	225	2.7	16	2
14.8	3	●	MVS1480X03S150	47.1	77.7	77.7	142.7	140	2.7	15	2
14.8	3	□	MVS1480X03S160	47.1	77.7	77.7	142.7	140	2.7	16	2
14.8	5	●	MVS1480X05S150	76.7	122.7	122.7	187.7	185	2.7	15	2
14.8	5	□	MVS1480X05S160	76.7	122.7	122.7	187.7	185	2.7	16	2
14.8	8	□	MVS1480X08S150	121.1	167.7	167.7	227.7	225	2.7	15	2
14.8	8	□	MVS1480X08S160	121.1	167.7	167.7	227.7	225	2.7	16	2
14.9	3	●	MVS1490X03S150	47.4	77.7	77.7	142.7	140	2.7	15	2
14.9	3	□	MVS1490X03S160	47.4	77.7	77.7	142.7	140	2.7	16	2
14.9	5	●	MVS1490X05S150	77.2	122.7	122.7	187.7	185	2.7	15	2
14.9	5	□	MVS1490X05S160	77.2	122.7	122.7	187.7	185	2.7	16	2
14.9	8	□	MVS1490X08S150	121.9	167.7	167.7	227.7	225	2.7	15	2

● : Estoque mantido. □ : Sem estoque, produzido somente por pedido.

□ : Lote mínimo para produtos especiais:

① Menor que ø3 = Mínimo 10 ② Maior ou igual a ø3 e menor que ø10 = Mínimo 5

③ Maior ou igual a ø10 = Mínimo 3



DC (mm)	Prof. do Furo (L/D)	DP1020	Referência para Pedido	Dimensões (mm)							Tipo
				LU	LCF	LH	OAL	LF	PL	DCON	
14.9	8	□	MVS1490X08S160	121.9	167.7	167.7	227.7	225	2.7	16	2
15.0	3	●	MVS1500X03S150	47.7	77.7	77.7	142.7	140	2.7	15	2
15.0	3	□	MVS1500X03S160	47.7	77.7	77.7	142.7	140	2.7	16	2
15.0	5	●	MVS1500X05S150	77.7	122.7	122.7	187.7	185	2.7	15	2
15.0	5	□	MVS1500X05S160	77.7	122.7	122.7	187.7	185	2.7	16	2
15.0	8	●	MVS1500X08S150	122.7	167.7	167.7	227.7	225	2.7	15	2
15.0	8	□	MVS1500X08S160	122.7	167.7	167.7	227.7	225	2.7	16	2
15.1	3	●	MVS1510X03S160	48.0	80.2	82.7	147.7	145	2.7	16	2
15.1	5	●	MVS1510X05S160	78.2	126.7	130.7	195.7	193	2.7	16	2
15.1	8	□	MVS1510X08S160	123.5	173.7	183.7	243.7	241	2.7	16	2
15.2	3	●	MVS1520X03S160	48.4	80.3	82.8	147.8	145	2.8	16	2
15.2	5	●	MVS1520X05S160	78.8	126.8	130.8	195.8	193	2.8	16	2
15.2	8	□	MVS1520X08S160	124.4	173.8	183.8	243.8	241	2.8	16	2
15.3	3	●	MVS1530X03S160	48.7	80.3	82.8	147.8	145	2.8	16	2
15.3	5	●	MVS1530X05S160	79.3	126.8	130.8	195.8	193	2.8	16	2
15.3	8	□	MVS1530X08S160	125.2	173.8	183.8	243.8	241	2.8	16	2
15.4	3	●	MVS1540X03S160	49.0	80.3	82.8	147.8	145	2.8	16	2
15.4	5	●	MVS1540X05S160	79.8	126.8	130.8	195.8	193	2.8	16	2
15.4	8	□	MVS1540X08S160	126.0	173.8	183.8	243.8	241	2.8	16	2
15.5	3	●	MVS1550X03S160	49.3	80.3	82.8	147.8	145	2.8	16	2
15.5	5	●	MVS1550X05S160	80.3	126.8	130.8	195.8	193	2.8	16	2
15.5	8	●	MVS1550X08S160	126.8	173.8	183.8	243.8	241	2.8	16	2
15.6	3	●	MVS1560X03S160	49.6	82.8	82.8	147.8	145	2.8	16	2
15.6	5	●	MVS1560X05S160	80.8	130.8	130.8	195.8	193	2.8	16	2
15.6	8	□	MVS1560X08S160	127.6	178.8	183.8	243.8	241	2.8	16	2
15.7	3	●	MVS1570X03S160	50.0	82.9	82.9	147.9	145	2.9	16	2
15.7	5	●	MVS1570X05S160	81.4	130.9	130.9	195.9	193	2.9	16	2
15.7	8	□	MVS1570X08S160	128.5	178.9	183.9	243.9	241	2.9	16	2
15.8	3	●	MVS1580X03S160	50.3	82.9	82.9	147.9	145	2.9	16	2
15.8	5	●	MVS1580X05S160	81.9	130.9	130.9	195.9	193	2.9	16	2
15.8	8	□	MVS1580X08S160	129.3	178.9	183.9	243.9	241	2.9	16	2
15.9	3	●	MVS1590X03S160	50.6	82.9	82.9	147.9	145	2.9	16	2
15.9	5	●	MVS1590X05S160	82.4	130.9	130.9	195.9	193	2.9	16	2
15.9	8	□	MVS1590X08S160	130.1	178.9	183.9	243.9	241	2.9	16	2
16.0	3	●	MVS1600X03S160	50.9	82.9	82.9	147.9	145	2.9	16	2
16.0	5	●	MVS1600X05S160	82.9	130.9	130.9	195.9	193	2.9	16	2
16.0	8	●	MVS1600X08S160	130.9	178.9	183.9	243.9	241	2.9	16	2
16.1	3	□	MVS1610X03S170	51.2	85.4	87.9	152.9	150	2.9	17	2
16.1	3	□	MVS1610X03S180	51.2	85.4	87.9	152.9	150	2.9	18	2
16.1	5	□	MVS1610X05S170	83.4	134.9	138.9	203.9	201	2.9	17	2
16.1	5	□	MVS1610X05S180	83.4	134.9	138.9	203.9	201	2.9	18	2
16.2	3	□	MVS1620X03S170	51.5	85.4	87.9	152.9	150	2.9	17	2
16.2	3	□	MVS1620X03S180	51.5	85.4	87.9	152.9	150	2.9	18	2
16.2	5	□	MVS1620X05S170	83.9	134.9	138.9	203.9	201	2.9	17	2
16.2	5	□	MVS1620X05S180	83.9	134.9	138.9	203.9	201	2.9	18	2
16.3	3	□	MVS1630X03S170	51.9	85.5	88.0	153.0	150	3.0	17	2
16.3	3	□	MVS1630X03S180	51.9	85.5	88.0	153.0	150	3.0	18	2
16.3	5	□	MVS1630X05S170	84.5	135.0	139.0	204.0	201	3.0	17	2

DC (mm)	Prof. do Furo (L/D)	DP1020	Referência para Pedido	Dimensões (mm)							Tipo
				LU	LCF	LH	OAL	LF	PL	DCON	
16.3	5	□	MVS1630X05S180	84.5	135.0	139.0	204.0	201	3.0	18	2
16.4	3	□	MVS1640X03S170	52.2	85.5	88.0	153.0	150	3.0	17	2
16.4	3	□	MVS1640X03S180	52.2	85.5	88.0	153.0	150	3.0	18	2
16.4	5	□	MVS1640X05S170	85.0	135.0	139.0	204.0	201	3.0	17	2
16.4	5	□	MVS1640X05S180	85.0	135.0	139.0	204.0	201	3.0	18	2
16.5	3	●	MVS1650X03S170	52.5	85.5	88.0	153.0	150	3.0	17	2
16.5	3	□	MVS1650X03S180	52.5	85.5	88.0	153.0	150	3.0	18	2
16.5	5	●	MVS1650X05S170	85.5	135.0	139.0	204.0	201	3.0	17	2
16.5	5	□	MVS1650X05S180	85.5	135.0	139.0	204.0	201	3.0	18	2
16.6	3	□	MVS1660X03S170	52.8	88.0	88.0	153.0	150	3.0	17	2
16.6	3	□	MVS1660X03S180	52.8	88.0	88.0	153.0	150	3.0	18	2
16.6	5	□	MVS1660X05S170	86.0	139.0	139.0	204.0	201	3.0	17	2
16.6	5	□	MVS1660X05S180	86.0	139.0	139.0	204.0	201	3.0	18	2
16.7	3	□	MVS1670X03S170	53.1	88.0	88.0	153.0	150	3.0	17	2
16.7	3	□	MVS1670X03S180	53.1	88.0	88.0	153.0	150	3.0	18	2
16.7	5	□	MVS1670X05S170	86.5	139.0	139.0	204.0	201	3.0	17	2
16.7	5	□	MVS1670X05S180	86.5	139.0	139.0	204.0	201	3.0	18	2
16.8	3	□	MVS1680X03S170	53.5	88.1	88.1	153.1	150	3.1	17	2
16.8	3	□	MVS1680X03S180	53.5	88.1	88.1	153.1	150	3.1	18	2
16.8	5	□	MVS1680X05S170	87.1	139.1	139.1	204.1	201	3.1	17	2
16.8	5	□	MVS1680X05S180	87.1	139.1	139.1	204.1	201	3.1	18	2
16.9	3	□	MVS1690X03S170	53.8	88.1	88.1	153.1	150	3.1	17	2
16.9	3	□	MVS1690X03S180	53.8	88.1	88.1	153.1	150	3.1	18	2
16.9	5	□	MVS1690X05S170	87.6	139.1	139.1	204.1	201	3.1	17	2
16.9	5	□	MVS1690X05S180	87.6	139.1	139.1	204.1	201	3.1	18	2
17.0	3	●	MVS1700X03S170	54.1	88.1	88.1	153.1	150	3.1	17	2
17.0	3	□	MVS1700X03S180	54.1	88.1	88.1	153.1	150	3.1	18	2
17.0	5	●	MVS1700X05S170	88.1	139.1	139.1	204.1	201	3.1	17	2
17.0	5	□	MVS1700X05S180	88.1	139.1	139.1	204.1	201	3.1	18	2
17.1	3	□	MVS1710X03S180	54.4	90.6	93.1	158.1	155	3.1	18	2
17.1	5	□	MVS1710X05S180	88.6	143.1	147.1	212.1	209	3.1	18	2
17.2	3	□	MVS1720X03S180	54.7	90.6	93.1	158.1	155	3.1	18	2
17.2	5	□	MVS1720X05S180	89.1	143.1	147.1	212.1	209	3.1	18	2
17.3	3	□	MVS1730X03S180	55.0	90.6	93.1	158.1	155	3.1	18	2
17.3	5	□	MVS1730X05S180	89.6	143.1	147.1	212.1	209	3.1	18	2
17.4	3	□	MVS1740X03S180	55.4	90.7	93.2	158.2	155	3.2	18	2
17.4	5	□	MVS1740X05S180	90.2	143.2	147.2	212.2	209	3.2	18	2
17.5	3	●	MVS1750X03S180	55.7	90.7	93.2	158.2	155	3.2	18	2
17.5	5	●	MVS1750X05S180	90.7	143.2	147.2	212.2	209	3.2	18	2
17.6	3	□	MVS1760X03S180	56.0	93.2	93.2	158.2	155	3.2	18	2
17.6	5	□	MVS1760X05S180	91.2	147.2	147.2	212.2	209	3.2	18	2
17.7	3	□	MVS1770X03S180	56.3	93.2	93.2	158.2	155	3.2	18	2
17.7	5	□	MVS1770X05S180	91.7	147.2	147.2	212.2	209	3.2	18	2
17.8	3	□	MVS1780X03S180	56.6	93.2	93.2	158.2	155	3.2	18	2
17.8	5	□	MVS1780X05S180	92.2	147.2	147.2	212.2	209	3.2	18	2
17.9	3	□	MVS1790X03S180	57.0	93.3	93.3	158.3	155	3.3	18	2
17.9	5	□	MVS1790X05S180	92.8	147.3	147.3	212.3	209	3.3	18	2
18.0	3	●	MVS1800X03S180	57.3	93.3	93.3	158.3	155	3.3	18	2

FURAÇÃO(METAL DURO INTEIRIÇO)

MVS

BROCAS WSTAR

METAL DURO

DC (mm)	Prof. do Furo (L/D)	DP1020	Referência para Pedido	Dimensões (mm)							Tipo
				LU	LCF	LH	OAL	LF	PL	DCON	
18.0	5	●	MVS1800X05S180	93.3	147.3	147.3	212.3	209	3.3	18	2
18.1	3	□	MVS1810X03S190	57.6	95.8	98.3	163.3	160	3.3	19	2
18.1	3	□	MVS1810X03S200	57.6	95.8	98.3	163.3	160	3.3	20	2
18.1	5	□	MVS1810X05S190	93.8	151.3	155.3	220.3	217	3.3	19	2
18.1	5	□	MVS1810X05S200	93.8	151.3	155.3	220.3	217	3.3	20	2
18.2	3	□	MVS1820X03S190	57.9	95.8	98.3	163.3	160	3.3	19	2
18.2	3	□	MVS1820X03S200	57.9	95.8	98.3	163.3	160	3.3	20	2
18.2	5	□	MVS1820X05S190	94.3	151.3	155.3	220.3	217	3.3	19	2
18.2	5	□	MVS1820X05S200	94.3	151.3	155.3	220.3	217	3.3	20	2
18.3	3	□	MVS1830X03S190	58.2	95.8	98.3	163.3	160	3.3	19	2
18.3	3	□	MVS1830X03S200	58.2	95.8	98.3	163.3	160	3.3	20	2
18.3	5	□	MVS1830X05S190	94.8	151.3	155.3	220.3	217	3.3	19	2
18.3	5	□	MVS1830X05S200	94.8	151.3	155.3	220.3	217	3.3	20	2
18.4	3	□	MVS1840X03S190	58.5	95.8	98.3	163.3	160	3.3	19	2
18.4	3	□	MVS1840X03S200	58.5	95.8	98.3	163.3	160	3.3	20	2
18.4	5	□	MVS1840X05S190	95.3	151.3	155.3	220.3	217	3.3	19	2
18.4	5	□	MVS1840X05S200	95.3	151.3	155.3	220.3	217	3.3	20	2
18.5	3	●	MVS1850X03S190	58.9	95.9	98.4	163.4	160	3.4	19	2
18.5	3	□	MVS1850X03S200	58.9	95.9	98.4	163.4	160	3.4	20	2
18.5	5	●	MVS1850X05S190	95.9	151.4	155.4	220.4	217	3.4	19	2
18.5	5	□	MVS1850X05S200	95.9	151.4	155.4	220.4	217	3.4	20	2
18.6	3	□	MVS1860X03S190	59.2	98.4	98.4	163.4	160	3.4	19	2
18.6	3	□	MVS1860X03S200	59.2	98.4	98.4	163.4	160	3.4	20	2
18.6	5	□	MVS1860X05S190	96.4	155.4	155.4	220.4	217	3.4	19	2
18.6	5	□	MVS1860X05S200	96.4	155.4	155.4	220.4	217	3.4	20	2
18.7	3	□	MVS1870X03S190	59.5	98.4	98.4	163.4	160	3.4	19	2
18.7	3	□	MVS1870X03S200	59.5	98.4	98.4	163.4	160	3.4	20	2
18.7	5	□	MVS1870X05S190	96.9	155.4	155.4	220.4	217	3.4	19	2
18.7	5	□	MVS1870X05S200	96.9	155.4	155.4	220.4	217	3.4	20	2
18.8	3	□	MVS1880X03S190	59.8	98.4	98.4	163.4	160	3.4	19	2
18.8	3	□	MVS1880X03S200	59.8	98.4	98.4	163.4	160	3.4	20	2
18.8	5	□	MVS1880X05S190	97.4	155.4	155.4	220.4	217	3.4	19	2
18.8	5	□	MVS1880X05S200	97.4	155.4	155.4	220.4	217	3.4	20	2
18.9	3	□	MVS1890X03S190	60.1	98.4	98.4	163.4	160	3.4	19	2
18.9	3	□	MVS1890X03S200	60.1	98.4	98.4	163.4	160	3.4	20	2
18.9	5	□	MVS1890X05S190	97.9	155.4	155.4	220.4	217	3.4	19	2
18.9	5	□	MVS1890X05S200	97.9	155.4	155.4	220.4	217	3.4	20	2
19.0	3	●	MVS1900X03S190	60.5	98.5	98.5	163.5	160	3.5	19	2
19.0	3	□	MVS1900X03S200	60.5	98.5	98.5	163.5	160	3.5	20	2
19.0	5	●	MVS1900X05S190	98.5	155.5	155.5	220.5	217	3.5	19	2
19.0	5	□	MVS1900X05S200	98.5	155.5	155.5	220.5	217	3.5	20	2
19.1	3	□	MVS1910X03S200	60.8	101.0	103.5	168.5	165	3.5	20	2
19.1	5	□	MVS1910X05S200	99.0	159.5	163.5	228.5	225	3.5	20	2
19.2	3	□	MVS1920X03S200	61.1	101.0	103.5	168.5	165	3.5	20	2
19.2	5	□	MVS1920X05S200	99.5	159.5	163.5	228.5	225	3.5	20	2
19.3	3	□	MVS1930X03S200	61.4	101.0	103.5	168.5	165	3.5	20	2
19.3	5	□	MVS1930X05S200	100.0	159.5	163.5	228.5	225	3.5	20	2
19.4	3	□	MVS1940X03S200	61.7	101.0	103.5	168.5	165	3.5	20	2

DC (mm)	Prof. do Furo (L/D)	DP1020	Referência para Pedido	Dimensões (mm)							Tipo
				LU	LCF	LH	OAL	LF	PL	DCON	
19.4	5	□	MVS1940X05S200	100.5	159.5	163.5	228.5	225	3.5	20	2
19.5	3	●	MVS1950X03S200	62.0	101.0	103.5	168.5	165	3.5	20	2
19.5	5	●	MVS1950X05S200	101.0	159.5	163.5	228.5	225	3.5	20	2
19.6	3	□	MVS1960X03S200	62.4	103.6	103.6	168.6	165	3.6	20	2
19.6	5	□	MVS1960X05S200	101.6	163.6	163.6	228.6	225	3.6	20	2
19.7	3	□	MVS1970X03S200	62.7	103.6	103.6	168.6	165	3.6	20	2
19.7	5	□	MVS1970X05S200	102.1	163.6	163.6	228.6	225	3.6	20	2
19.8	3	□	MVS1980X03S200	63.0	103.6	103.6	168.6	165	3.6	20	2
19.8	5	□	MVS1980X05S200	102.6	163.6	163.6	228.6	225	3.6	20	2
19.9	3	□	MVS1990X03S200	63.3	103.6	103.6	168.6	165	3.6	20	2
19.9	5	□	MVS1990X05S200	103.1	163.6	163.6	228.6	225	3.6	20	2
20.0	3	●	MVS2000X03S200	63.6	103.6	103.6	168.6	165	3.6	20	2
20.0	5	●	MVS2000X05S200	103.6	163.6	163.6	228.6	225	3.6	20	2

● : Estoque mantido. □ : Sem estoque, produzido somente por pedido.

□ : Lote mínimo para produtos especiais:

① Menor que ø3 = Mínimo 10 ② Maior ou igual a ø3 e menor que ø10 = Mínimo 5

③ Maior ou igual a ø10 = Mínimo 3

CONDIÇÕES DE CORTE RECOMENDADAS

Material		Aço Baixo Carbono ($\leq 180\text{HB}$)		Aço Carbono, Aço Liga (180–280HB)		Aço Carbono, Aço Liga (280–350HB)	
		AISI 1010 etc		AISI 1045, AISI 4140 etc		AISI 4340 etc	
Diâm. DC (mm)	L/D	Rotação (min ⁻¹)	Taxa de Avanço (mín.–máx.) (mm/rot)	Rotação (min ⁻¹)	Taxa de Avanço (mín.–máx.) (mm/rot)	Rotação (min ⁻¹)	Taxa de Avanço (mín.–máx.) (mm/rot)
1.0	2DC*,7DC	15900	0.04 (0.02–0.05)	15900	0.04 (0.02–0.05)	12700	0.04 (0.02–0.05)
1.0	12DC - 30DC	15900	0.02 (0.01–0.03)	12700	0.02 (0.01–0.03)	9500	0.02 (0.01–0.03)
1.5	2DC*,7DC	10600	0.05 (0.03–0.08)	10600	0.05 (0.03–0.08)	8400	0.05 (0.03–0.08)
1.5	12DC - 30DC	10600	0.05 (0.02–0.07)	8400	0.05 (0.03–0.08)	6300	0.05 (0.02–0.08)
2.0	2DC*,7DC	7900	0.07 (0.04–0.10)	7900	0.07 (0.04–0.10)	6300	0.07 (0.04–0.10)
2.0	12DC - 30DC	7900	0.07 (0.04–0.10)	7900	0.07 (0.04–0.10)	7900	0.07 (0.04–0.10)
2.5	2DC*,7DC	7600	0.09 (0.05–0.13)	6300	0.09 (0.05–0.13)	6300	0.09 (0.05–0.13)
2.5	12DC - 30DC	7600	0.09 (0.06–0.13)	6300	0.08 (0.05–0.13)	6300	0.08 (0.05–0.13)
3.0	2DC*	9500	0.17 (0.10–0.24)	9500	0.17 (0.10–0.24)	7400	0.15 (0.09–0.22)
3.0	3DC - 8DC	9500	0.10 (0.06–0.13)	9500	0.10 (0.06–0.13)	7400	0.10 (0.06–0.13)
3.0	10DC - 30DC	9500	0.17 (0.10–0.24)	9500	0.17 (0.10–0.24)	8400	0.15 (0.09–0.22)
3.0	35DC,40DC	7400	0.14 (0.08–0.19)	7400	0.14 (0.08–0.19)	6300	0.13 (0.07–0.18)
4.0	2DC*	7900	0.20 (0.12–0.30)	7100	0.20 (0.12–0.30)	6300	0.18 (0.11–0.27)
4.0	3DC - 8DC	7900	0.12 (0.08–0.16)	7100	0.12 (0.08–0.16)	6300	0.11 (0.07–0.14)
4.0	10DC - 30DC	7100	0.20 (0.12–0.30)	7100	0.20 (0.12–0.30)	6300	0.18 (0.11–0.27)
4.0	35DC,40DC	5900	0.16 (0.10–0.24)	5900	0.16 (0.10–0.24)	5100	0.15 (0.09–0.22)
5.0	2DC*	6300	0.25 (0.15–0.35)	5700	0.25 (0.15–0.35)	5000	0.22 (0.14–0.32)
5.0	3DC - 8DC	6300	0.15 (0.10–0.20)	5700	0.15 (0.10–0.20)	5000	0.14 (0.09–0.18)
5.0	10DC - 30DC	5700	0.25 (0.15–0.35)	5700	0.25 (0.15–0.35)	5000	0.22 (0.14–0.32)
5.0	35DC,40DC	4700	0.20 (0.12–0.28)	4700	0.20 (0.12–0.28)	4100	0.18 (0.11–0.24)
6.0	2DC*	5500	0.27 (0.17–0.37)	5000	0.27 (0.17–0.37)	4700	0.24 (0.15–0.33)
6.0	3DC - 8DC	5800	0.20 (0.13–0.26)	5300	0.20 (0.13–0.26)	4700	0.18 (0.11–0.24)
6.0	10DC - 30DC	5300	0.27 (0.17–0.37)	4700	0.27 (0.17–0.37)	4200	0.24 (0.15–0.33)
6.0	35DC,40DC	4500	0.22 (0.14–0.30)	3900	0.22 (0.14–0.30)	3700	0.20 (0.12–0.26)
8.0	2DC*	4700	0.30 (0.20–0.40)	4300	0.30 (0.20–0.40)	3900	0.27 (0.18–0.36)
8.0	3DC - 8DC	4700	0.23 (0.18–0.28)	4300	0.23 (0.18–0.28)	3900	0.21 (0.16–0.25)
8.0	10DC - 30DC	4300	0.30 (0.20–0.40)	3900	0.30 (0.20–0.40)	3500	0.27 (0.18–0.36)
8.0	35DC,40DC	3300	0.24 (0.16–0.32)	3100	0.24 (0.16–0.32)	2700	0.22 (0.14–0.29)
10.0	2DC*	4100	0.32 (0.22–0.42)	3800	0.32 (0.22–0.42)	3100	0.29 (0.20–0.38)
10.0	3DC - 8DC	4100	0.27 (0.22–0.32)	3800	0.27 (0.22–0.32)	3500	0.23 (0.19–0.27)
10.0	10DC - 30DC	3500	0.32 (0.22–0.42)	3100	0.32 (0.22–0.42)	2800	0.29 (0.20–0.38)
10.0	35DC	2800	0.26 (0.18–0.34)	2500	0.26 (0.18–0.34)	2200	0.24 (0.16–0.30)
12.0	2DC*	3700	0.34 (0.24–0.44)	3400	0.34 (0.24–0.44)	3000	0.30 (0.22–0.40)
12.0	3DC - 8DC	3700	0.30 (0.26–0.34)	3400	0.30 (0.26–0.34)	3100	0.25 (0.22–0.29)
12.0	10DC - 25DC	3400	0.34 (0.24–0.44)	3100	0.34 (0.24–0.44)	2600	0.30 (0.22–0.40)
16.0	3DC - 8DC	3100	0.33 (0.27–0.38)	2700	0.33 (0.27–0.38)	2500	0.28 (0.23–0.33)
20.0	3DC,5DC	2500	0.35 (0.30–0.40)	2200	0.35 (0.30–0.40)	2000	0.30 (0.26–0.34)

*Para usinagem de furo piloto

FURAÇÃO(METAL DURO INTEIRIÇO)

MVS

BROCAS WSTAR

CONDIÇÕES DE CORTE RECOMENDADAS

Material		Aço Inoxidável Austenítico (≤200HB)		Ferro Fundido Cinzento (≤350MPa)		Ferro Fundido Nodular (≤450MPa)	
		AISI 304, AISI 316 etc		DIN GG-30 etc		DIN GGG-45 etc	
Diâm. DC (mm)	L/D	Rotação (min ⁻¹)	Taxa de Avanço (mín.-máx.) (mm/rot)	Rotação (min ⁻¹)	Taxa de Avanço (mín.-máx.) (mm/rot)	Rotação (min ⁻¹)	Taxa de Avanço (mín.-máx.) (mm/rot)
1.0	2DC*,7DC	9500	0.03 (0.02—0.05)	15900	0.04 (0.02—0.05)	12700	0.04 (0.02—0.05)
1.0	12DC - 30DC	9500	0.02 (0.01—0.03)	12700	0.02 (0.01—0.03)	9500	0.02 (0.01—0.03)
1.5	2DC*,7DC	6300	0.05 (0.03—0.07)	10600	0.05 (0.03—0.08)	8400	0.05 (0.03—0.08)
1.5	12DC - 30DC	6300	0.05 (0.02—0.08)	8400	0.05 (0.02—0.08)	6300	0.05 (0.02—0.08)
2.0	2DC*,7DC	4700	0.06 (0.04—0.08)	7900	0.07 (0.04—0.10)	6300	0.07 (0.04—0.10)
2.0	12DC - 30DC	4700	0.06 (0.04—0.10)	7900	0.07 (0.04—0.10)	7900	0.07 (0.04—0.10)
2.5	2DC*,7DC	5000	0.08 (0.05—0.10)	7600	0.09 (0.05—0.13)	6300	0.09 (0.05—0.13)
2.5	12DC - 30DC	3800	0.08 (0.05—0.12)	6300	0.09 (0.06—0.13)	6300	0.08 (0.05—0.12)
3.0	2DC*	4200	0.08 (0.05—0.10)	9000	0.19 (0.11—0.26)	9000	0.17 (0.10—0.24)
3.0	3DC - 8DC	4200	0.08 (0.06—0.10)	9500	0.10 (0.06—0.13)	9000	0.10 (0.06—0.13)
3.0	10DC - 30DC	4200	0.08 (0.05—0.09)	8400	0.19 (0.11—0.26)	8400	0.17 (0.10—0.24)
3.0	35DC,40DC	2900	0.06 (0.04—0.07)	7400	0.15 (0.09—0.21)	7460	0.14 (0.08—0.19)
4.0	2DC*	3100	0.08 (0.06—0.10)	7900	0.22 (0.13—0.33)	7100	0.20 (0.12—0.30)
4.0	3DC - 8DC	3100	0.09 (0.06—0.11)	7900	0.12 (0.08—0.16)	7100	0.12 (0.08—0.16)
4.0	10DC - 30DC	3100	0.08 (0.06—0.10)	7100	0.22 (0.13—0.33)	7100	0.20 (0.12—0.30)
4.0	35DC,40DC	2300	0.07 (0.05—0.08)	5900	0.18 (0.10—0.26)	5900	0.16 (0.10—0.24)
5.0	2DC*	2500	0.10 (0.07—0.12)	6300	0.28 (0.16—0.39)	5700	0.25 (0.15—0.35)
5.0	3DC - 8DC	2500	0.11 (0.08—0.14)	6300	0.15 (0.10—0.20)	5700	0.15 (0.10—0.20)
5.0	10DC - 30DC	2500	0.10 (0.07—0.12)	5700	0.28 (0.07—0.39)	5700	0.25 (0.15—0.35)
5.0	35DC,40DC	1900	0.08 (0.06—0.10)	4700	0.22 (0.06—0.31)	4700	0.20 (0.12—0.28)
6.0	2DC*	2300	0.12 (0.08—0.16)	5500	0.30 (0.19—0.41)	5000	0.27 (0.17—0.37)
6.0	3DC - 8DC	2600	0.13 (0.09—0.18)	5800	0.20 (0.13—0.26)	5000	0.20 (0.13—0.26)
6.0	10DC - 30DC	2600	0.12 (0.08—0.14)	5300	0.30 (0.19—0.41)	4700	0.27 (0.17—0.37)
6.0	35DC,40DC	2100	0.10 (0.06—0.13)	4500	0.24 (0.15—0.33)	4200	0.22 (0.14—0.30)
8.0	2DC*	1900	0.14 (0.10—0.17)	4700	0.33 (0.22—0.44)	3900	0.30 (0.20—0.40)
8.0	3DC - 8DC	1900	0.15 (0.10—0.19)	4700	0.25 (0.18—0.31)	3900	0.23 (0.18—0.28)
8.0	10DC - 30DC	1900	0.14 (0.10—0.17)	4300	0.33 (0.22—0.44)	3900	0.30 (0.20—0.40)
8.0	35DC,40DC	1500	0.11 (0.08—0.14)	3300	0.26 (0.17—0.35)	3100	0.24 (0.16—0.32)
10.0	2DC*	1500	0.15 (0.12—0.18)	4100	0.35 (0.24—0.46)	3100	0.32 (0.22—0.42)
10.0	3DC - 8DC	1500	0.16 (0.12—0.20)	4100	0.29 (0.22—0.35)	3100	0.27 (0.22—0.32)
10.0	10DC - 30DC	1500	0.15 (0.12—0.18)	3500	0.35 (0.24—0.46)	3100	0.32 (0.22—0.42)
10.0	35DC	1200	0.12 (0.10—0.14)	2800	0.28 (0.19—0.37)	2500	0.26 (0.18—0.34)
12.0	2DC*	1400	0.17 (0.14—0.19)	3700	0.37 (0.26—0.48)	3000	0.34 (0.24—0.44)
12.0	3DC - 8DC	1500	0.18 (0.15—0.21)	3700	0.32 (0.26—0.37)	3000	0.30 (0.26—0.34)
12.0	10DC - 25DC	1500	0.17 (0.14—0.19)	3400	0.37 (0.26—0.48)	2900	0.34 (0.24—0.44)
16.0	3DC - 8DC	1100	0.19 (0.15—0.24)	3100	0.35 (0.28—0.42)	2500	0.33 (0.28—0.38)
20.0	3DC,5DC	900	0.21 (0.15—0.26)	2500	0.37 (0.30—0.44)	2300	0.35 (0.30—0.40)

*Para usinagem de furo piloto

N

FURAÇÃO

Material		Ligas de Alumínio (Si<5%)		Ligas Resistentes ao Calor Inconel718 etc	
Diâm. DC (mm)	L/D	Rotação (min ⁻¹)	Taxa de Avanço (mín.–máx.) (mm/rot)	Rotação (min ⁻¹)	Taxa de Avanço (mín.–máx.) (mm/rot)
1.0	2DC*,7DC	19000	0.05 (0.03 – 0.08)	3100	0.02 (0.01 – 0.03)
1.0	12DC - 30DC	15900	0.05 (0.03 – 0.08)	3100	0.02 (0.01 – 0.03)
1.5	2DC*,7DC	16900	0.07 (0.05 – 0.12)	2100	0.03 (0.02 – 0.04)
1.5	12DC - 30DC	14800	0.07 (0.05 – 0.12)	2100	0.03 (0.02 – 0.04)
2.0	2DC*,7DC	14300	0.10 (0.06 – 0.15)	2300	0.04 (0.03 – 0.05)
2.0	12DC - 30DC	12700	0.10 (0.06 – 0.15)	2300	0.04 (0.03 – 0.05)
2.5	2DC*,7DC	12700	0.13 (0.08 – 0.20)	1900	0.05 (0.04 – 0.06)
2.5	12DC - 30DC	11400	0.13 (0.08 – 0.20)	1900	0.05 (0.04 – 0.06)
3.0	2DC*	11600	0.23 (0.10 – 0.35)	2100	0.07 (0.05 – 0.09)
3.0	3DC - 8DC	12700	0.23 (0.10 – 0.35)	2100	0.07 (0.05 – 0.09)
3.0	10DC - 30DC	10600	0.23 (0.10 – 0.35)	2100	0.07 (0.05 – 0.09)
3.0	35DC,40DC	7900	0.18 (0.08 – 0.28)	1400	0.06 (0.04 – 0.07)
4.0	2DC*	9500	0.24 (0.12 – 0.35)	1500	0.09 (0.06 – 0.11)
4.0	3DC - 8DC	9500	0.24 (0.12 – 0.35)	1500	0.09 (0.06 – 0.11)
4.0	10DC - 30DC	7900	0.24 (0.12 – 0.35)	1500	0.09 (0.06 – 0.11)
4.0	35DC,40DC	6300	0.19 (0.10 – 0.28)	1100	0.07 (0.05 – 0.09)
5.0	2DC*	7600	0.25 (0.15 – 0.35)	1200	0.11 (0.08 – 0.14)
5.0	3DC - 8DC	7600	0.25 (0.15 – 0.35)	1200	0.11 (0.08 – 0.14)
5.0	10DC - 30DC	7000	0.25 (0.15 – 0.35)	1200	0.11 (0.08 – 0.14)
5.0	35DC,40DC	5000	0.20 (0.12 – 0.28)	900	0.09 (0.06 – 0.11)
6.0	2DC*	7400	0.35 (0.20 – 0.50)	1300	0.13 (0.09 – 0.16)
6.0	3DC - 8DC	7900	0.35 (0.20 – 0.50)	1300	0.13 (0.09 – 0.16)
6.0	10DC - 30DC	6300	0.35 (0.20 – 0.50)	1000	0.13 (0.09 – 0.16)
6.0	35DC,40DC	5300	0.28 (0.16 – 0.40)	700	0.10 (0.07 – 0.13)
8.0	2DC*	5900	0.35 (0.20 – 0.50)	900	0.14 (0.11 – 0.16)
8.0	3DC - 8DC	5900	0.35 (0.20 – 0.50)	900	0.14 (0.11 – 0.17)
8.0	10DC - 30DC	5100	0.35 (0.20 – 0.50)	700	0.14 (0.11 – 0.16)
8.0	35DC,40DC	3900	0.28 (0.16 – 0.40)	500	0.11 (0.09 – 0.13)
10.0	2DC*	4700	0.50 (0.20 – 0.80)	700	0.15 (0.12 – 0.17)
10.0	3DC - 8DC	4700	0.50 (0.20 – 0.80)	700	0.15 (0.12 – 0.18)
10.0	10DC - 30DC	4100	0.50 (0.20 – 0.80)	600	0.15 (0.12 – 0.17)
10.0	35DC	3300	0.40 (0.16 – 0.64)	400	0.12 (0.10 – 0.14)
12.0	2DC*	4200	0.50 (0.20 – 0.80)	600	0.16 (0.13 – 0.18)
12.0	3DC - 8DC	4200	0.50 (0.20 – 0.80)	600	0.16 (0.13 – 0.19)
12.0	10DC - 25DC	3700	0.50 (0.20 – 0.80)	500	0.16 (0.13 – 0.18)
16.0	3DC - 8DC	3100	0.60 (0.20 – 1.00)	400	0.18 (0.14 – 0.21)
20.0	3DC,5DC	2700	0.60 (0.20 – 1.00)	400	0.19 (0.15 – 0.22)

*Para usinagem de furo piloto

FURAÇÃO(METAL DURO INTEIRIÇO)

MVE

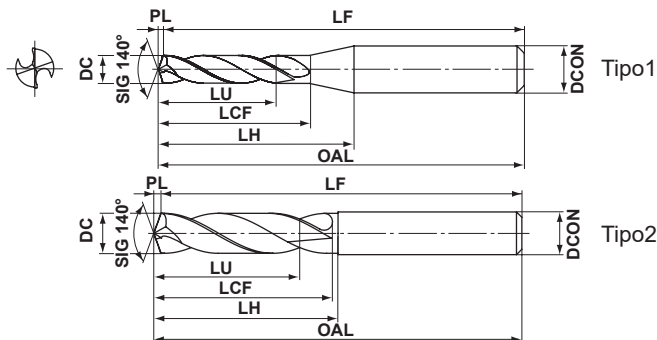
BROCAS WSTAR

- Classe DP1020 com cobertura PVD oferece longa vida útil em diversos materiais.
- O novo perfil ondulado da aresta proporciona excelente agudez e resistência, melhorando o controle do desgaste periférico.



P	M	K	N	S	H
Aço	Aço Inoxidável	Ferro Fundido	Metais Não Ferrosos	Ligas Resist. ao Calor	Aço Endurecido

Refrigeração Externa



DC=3	3<DC≤6	6<DC≤10	10<DC≤18	18<DC≤20
0 -0.014	0 -0.018	0 -0.022	0 -0.027	0 -0.033
DCON=3	3<DCON≤6	6<DCON≤10	10<DCON≤18	18<DCON≤20
0 -0.006	0 -0.008	0 -0.009	0 -0.011	0 -0.013

DC (mm)	Prof. do Furo (L/D)	DP1020	Referência para Pedido	Dimensões (mm)							Tipo
				LU	LCF	LH	OAL	LF	PL	DCON	
3.0	2	●	MVE0300X02S030	6.5	16.5	16.5	55.5	55	0.5	3	2
3.0	2	●	MVE0300X02S060	6.5	16.5	19.7	55.5	55	0.5	6	1
3.0	3	●	MVE0300X03S030	9.5	21.5	21.5	60.5	60	0.5	3	2
3.0	3	●	MVE0300X03S060	9.5	21.5	24.7	60.5	60	0.5	6	1
3.1	2	●	MVE0310X02S040	6.8	18.6	20.6	55.6	55	0.6	4	2
3.1	2	●	MVE0310X02S060	6.8	18.6	21.7	55.6	55	0.6	6	1
3.1	3	●	MVE0310X03S040	9.9	24.6	26.6	60.6	60	0.6	4	2
3.1	3	●	MVE0310X03S060	9.9	24.6	27.7	60.6	60	0.6	6	1
3.2	2	●	MVE0320X02S040	7.0	18.6	20.6	55.6	55	0.6	4	2
3.2	2	●	MVE0320X02S060	7.0	18.6	21.6	55.6	55	0.6	6	1
3.2	3	●	MVE0320X03S040	10.2	24.6	26.6	60.6	60	0.6	4	2
3.2	3	●	MVE0320X03S060	10.2	24.6	27.6	60.6	60	0.6	6	1
3.3	2	●	MVE0330X02S040	7.2	18.6	20.6	55.6	55	0.6	4	2
3.3	2	●	MVE0330X02S060	7.2	18.6	21.5	55.6	55	0.6	6	1
3.3	3	●	MVE0330X03S040	10.5	24.6	26.6	60.6	60	0.6	4	2
3.3	3	●	MVE0330X03S060	10.5	24.6	27.5	60.6	60	0.6	6	1
3.4	2	●	MVE0340X02S040	7.4	18.6	20.6	55.6	55	0.6	4	2
3.4	2	●	MVE0340X02S060	7.4	18.6	21.4	55.6	55	0.6	6	1
3.4	3	●	MVE0340X03S040	10.8	24.6	26.6	60.6	60	0.6	4	2
3.4	3	●	MVE0340X03S060	10.8	24.6	27.4	60.6	60	0.6	6	1
3.5	2	●	MVE0350X02S040	7.6	18.6	20.6	55.6	55	0.6	4	2
3.5	2	●	MVE0350X02S060	7.6	18.6	21.3	55.6	55	0.6	6	1
3.5	3	●	MVE0350X03S040	11.1	24.6	26.6	60.6	60	0.6	4	2
3.5	3	●	MVE0350X03S060	11.1	24.6	27.3	60.6	60	0.6	6	1
3.6	2	●	MVE0360X02S040	7.9	20.7	20.7	55.7	55	0.7	4	2
3.6	2	●	MVE0360X02S060	7.9	20.7	23.3	55.7	55	0.7	6	1
3.6	3	●	MVE0360X03S040	11.5	27.7	27.7	60.7	60	0.7	4	2
3.6	3	●	MVE0360X03S060	11.5	27.7	30.3	60.7	60	0.7	6	1
3.7	2	●	MVE0370X02S040	8.1	20.7	20.7	55.7	55	0.7	4	2
3.7	2	●	MVE0370X02S060	8.1	20.7	23.2	55.7	55	0.7	6	1
3.7	3	●	MVE0370X03S040	11.8	27.7	27.7	60.7	60	0.7	4	2
3.7	3	●	MVE0370X03S060	11.8	27.7	30.2	60.7	60	0.7	6	1

DC (mm)	Prof. do Furo (L/D)	DP1020	Referência para Pedido	Dimensões (mm)							Tipo
				LU	LCF	LH	OAL	LF	PL	DCON	
3.8	2	●	MVE0380X02S040	8.3	20.7	20.7	55.7	55	0.7	4	2
3.8	2	●	MVE0380X02S060	8.3	20.7	23.1	55.7	55	0.7	6	1
3.8	3	●	MVE0380X03S040	12.1	27.7	27.7	60.7	60	0.7	4	2
3.8	3	●	MVE0380X03S060	12.1	27.7	30.1	60.7	60	0.7	6	1
3.9	2	●	MVE0390X02S040	8.5	20.7	20.7	55.7	55	0.7	4	2
3.9	2	●	MVE0390X02S060	8.5	20.7	23.0	55.7	55	0.7	6	1
3.9	3	●	MVE0390X03S040	12.4	27.7	27.7	60.7	60	0.7	4	2
3.9	3	●	MVE0390X03S060	12.4	27.7	30.0	60.7	60	0.7	6	1
4.0	2	●	MVE0400X02S040	8.7	20.7	20.7	55.7	55	0.7	4	2
4.0	2	●	MVE0400X02S060	8.7	20.7	22.8	55.7	55	0.7	6	1
4.0	3	●	MVE0400X03S040	12.7	27.7	27.7	60.7	60	0.7	4	2
4.0	3	●	MVE0400X03S060	12.7	27.7	29.8	60.7	60	0.7	6	1
4.1	2	●	MVE0410X02S050	8.9	22.7	24.7	62.7	62	0.7	5	2
4.1	2	●	MVE0410X02S060	8.9	22.7	24.7	62.7	62	0.7	6	1
4.1	3	●	MVE0410X03S050	13.0	29.7	31.7	68.7	68	0.7	5	2
4.1	3	●	MVE0410X03S060	13.0	29.7	31.7	68.7	68	0.7	6	1
4.2	2	●	MVE0420X02S050	9.2	22.8	24.8	62.8	62	0.8	5	2
4.2	2	●	MVE0420X02S060	9.2	22.8	24.7	62.8	62	0.8	6	1
4.2	3	●	MVE0420X03S050	13.4	29.8	31.8	68.8	68	0.8	5	2
4.2	3	●	MVE0420X03S060	13.4	29.8	31.7	68.8	68	0.8	6	1
4.3	2	●	MVE0430X02S050	9.4	22.8	24.8	62.8	62	0.8	5	2
4.3	2	●	MVE0430X02S060	9.4	22.8	24.6	62.8	62	0.8	6	1
4.3	3	●	MVE0430X03S050	13.7	29.8	31.8	68.8	68	0.8	5	2
4.3	3	●	MVE0430X03S060	13.7	29.8	31.6	68.8	68	0.8	6	1
4.4	2	●	MVE0440X02S050	9.6	22.8	24.8	62.8	62	0.8	5	2
4.4	2	●	MVE0440X02S060	9.6	22.8	24.5	62.8	62	0.8	6	1
4.4	3	●	MVE0440X03S050	14.0	29.8	31.8	68.8	68	0.8	5	2
4.4	3	●	MVE0440X03S060	14.0	29.8	31.5	68.8	68	0.8	6	1
4.5	2	●	MVE0450X02S050	9.8	22.8	24.8	62.8	62	0.8	5	2
4.5	2	●	MVE0450X02S060	9.8	22.8	24.4	62.8	62	0.8	6	1
4.5	3	●	MVE0450X03S050	14.3	29.8	31.8	68.8	68	0.8	5	2
4.5	3	●	MVE0450X03S060	14.3	29.8	31.4	68.8	68	0.8	6	1

● : Estoque mantido.

DC (mm)	Prof. do Furo (L/D)	DP1020	Referência para Pedido	Dimensões (mm)							Tipo
				LU	LCF	LH	OAL	LF	PL	DCON	
4.6	2	●	MVE0460X02S050	10.0	24.8	24.8	62.8	62	0.8	5	2
4.6	2	●	MVE0460X02S060	10.0	24.8	27.8	62.8	62	0.8	6	2
4.6	3	●	MVE0460X03S050	14.6	32.8	32.8	68.8	68	0.8	5	2
4.6	3	●	MVE0460X03S060	14.6	32.8	35.8	68.8	68	0.8	6	2
4.7	2	●	MVE0470X02S050	10.3	24.9	24.9	62.9	62	0.9	5	2
4.7	2	●	MVE0470X02S060	10.3	24.9	27.9	62.9	62	0.9	6	2
4.7	3	●	MVE0470X03S050	15.0	32.9	32.9	68.9	68	0.9	5	2
4.7	3	●	MVE0470X03S060	15.0	32.9	35.9	68.9	68	0.9	6	2
4.8	2	●	MVE0480X02S050	10.5	24.9	24.9	62.9	62	0.9	5	2
4.8	2	●	MVE0480X02S060	10.5	24.9	27.9	62.9	62	0.9	6	2
4.8	3	●	MVE0480X03S050	15.3	32.9	32.9	68.9	68	0.9	5	2
4.8	3	●	MVE0480X03S060	15.3	32.9	35.9	68.9	68	0.9	6	2
4.9	2	●	MVE0490X02S050	10.7	24.9	24.9	62.9	62	0.9	5	2
4.9	2	●	MVE0490X02S060	10.7	24.9	27.9	62.9	62	0.9	6	2
4.9	3	●	MVE0490X03S050	15.6	32.9	32.9	68.9	68	0.9	5	2
4.9	3	●	MVE0490X03S060	15.6	32.9	35.9	68.9	68	0.9	6	2
5.0	2	●	MVE0500X02S050	10.9	24.9	24.9	62.9	62	0.9	5	2
5.0	2	●	MVE0500X02S060	10.9	24.9	27.9	62.9	62	0.9	6	2
5.0	3	●	MVE0500X03S050	15.9	32.9	32.9	68.9	68	0.9	5	2
5.0	3	●	MVE0500X03S060	15.9	32.9	35.9	68.9	68	0.9	6	2
5.1	2	●	MVE0510X02S060	11.1	26.9	28.9	66.9	66	0.9	6	2
5.1	3	●	MVE0510X03S060	16.2	34.9	36.9	74.9	74	0.9	6	2
5.2	2	●	MVE0520X02S060	11.3	26.9	28.9	66.9	66	0.9	6	2
5.2	3	●	MVE0520X03S060	16.5	34.9	36.9	74.9	74	0.9	6	2
5.3	2	●	MVE0530X02S060	11.6	27.0	29.0	67.0	66	1.0	6	2
5.3	3	●	MVE0530X03S060	16.9	35.0	37.0	75.0	74	1.0	6	2
5.4	2	●	MVE0540X02S060	11.8	27.0	29.0	67.0	66	1.0	6	2
5.4	3	●	MVE0540X03S060	17.2	35.0	37.0	75.0	74	1.0	6	2
5.5	2	●	MVE0550X02S060	12.0	27.0	29.0	67.0	66	1.0	6	2
5.5	3	●	MVE0550X03S060	17.5	35.0	37.0	75.0	74	1.0	6	2
5.6	2	●	MVE0560X02S060	12.2	29.0	29.0	67.0	66	1.0	6	2
5.6	3	●	MVE0560X03S060	17.8	37.0	37.0	75.0	74	1.0	6	2
5.7	2	●	MVE0570X02S060	12.4	29.0	29.0	67.0	66	1.0	6	2
5.7	3	●	MVE0570X03S060	18.1	37.0	37.0	75.0	74	1.0	6	2
5.8	2	●	MVE0580X02S060	12.7	29.1	29.1	67.1	66	1.1	6	2
5.8	3	●	MVE0580X03S060	18.5	37.1	37.1	75.1	74	1.1	6	2
5.9	2	●	MVE0590X02S060	12.9	29.1	29.1	67.1	66	1.1	6	2
5.9	3	●	MVE0590X03S060	18.8	37.1	37.1	75.1	74	1.1	6	2
6.0	2	●	MVE0600X02S060	13.1	29.1	29.1	67.1	66	1.1	6	2
6.0	3	●	MVE0600X03S060	19.1	37.1	37.1	75.1	74	1.1	6	2
6.1	2	●	MVE0610X02S070	13.3	32.1	35.1	75.1	74	1.1	7	2
6.1	2	●	MVE0610X02S080	13.3	32.1	35.1	75.1	74	1.1	8	2
6.1	3	●	MVE0610X03S070	19.4	42.1	45.1	84.1	83	1.1	7	2
6.1	3	●	MVE0610X03S080	19.4	42.1	45.1	84.1	83	1.1	8	2
6.2	2	●	MVE0620X02S070	13.5	32.1	35.1	75.1	74	1.1	7	2
6.2	2	●	MVE0620X02S080	13.5	32.1	35.1	75.1	74	1.1	8	2
6.2	3	●	MVE0620X03S070	19.7	42.1	45.1	84.1	83	1.1	7	2
6.2	3	●	MVE0620X03S080	19.7	42.1	45.1	84.1	83	1.1	8	2

DC (mm)	Prof. do Furo (L/D)	DP1020	Referência para Pedido	Dimensões (mm)							Tipo
				LU	LCF	LH	OAL	LF	PL	DCON	
6.3	2	●	MVE0630X02S070	13.7	32.1	35.1	75.1	74	1.1	7	2
6.3	2	●	MVE0630X02S080	13.7	32.1	35.1	75.1	74	1.1	8	2
6.3	3	●	MVE0630X03S070	20.0	42.1	45.1	84.1	83	1.1	7	2
6.3	3	●	MVE0630X03S080	20.0	42.1	45.1	84.1	83	1.1	8	2
6.4	2	●	MVE0640X02S070	14.0	32.2	35.2	75.2	74	1.2	7	2
6.4	2	●	MVE0640X02S080	14.0	32.2	35.2	75.2	74	1.2	8	2
6.4	3	●	MVE0640X03S070	20.4	42.2	45.2	84.2	83	1.2	7	2
6.4	3	●	MVE0640X03S080	20.4	42.2	45.2	84.2	83	1.2	8	2
6.5	2	●	MVE0650X02S070	14.2	32.2	35.2	75.2	74	1.2	7	2
6.5	2	●	MVE0650X02S080	14.2	32.2	35.2	75.2	74	1.2	8	2
6.5	3	●	MVE0650X03S070	20.7	42.2	45.2	84.2	83	1.2	7	2
6.5	3	●	MVE0650X03S080	20.7	42.2	45.2	84.2	83	1.2	8	2
6.6	2	●	MVE0660X02S070	14.4	35.2	35.2	75.2	74	1.2	7	2
6.6	2	●	MVE0660X02S080	14.4	35.2	37.2	75.2	74	1.2	8	2
6.6	3	●	MVE0660X03S070	21.0	44.2	44.2	84.2	83	1.2	7	2
6.6	3	●	MVE0660X03S080	21.0	44.2	46.2	84.2	83	1.2	8	2
6.7	2	●	MVE0670X02S070	14.6	35.2	35.2	75.2	74	1.2	7	2
6.7	2	●	MVE0670X02S080	14.6	35.2	37.2	75.2	74	1.2	8	2
6.7	3	●	MVE0670X03S070	21.3	44.2	44.2	84.2	83	1.2	7	2
6.7	3	●	MVE0670X03S080	21.3	44.2	46.2	84.2	83	1.2	8	2
6.8	2	●	MVE0680X02S070	14.8	35.2	35.2	75.2	74	1.2	7	2
6.8	2	●	MVE0680X02S080	14.8	35.2	37.2	75.2	74	1.2	8	2
6.8	3	●	MVE0680X03S070	21.6	44.2	44.2	84.2	83	1.2	7	2
6.8	3	●	MVE0680X03S080	21.6	44.2	46.2	84.2	83	1.2	8	2
6.9	2	●	MVE0690X02S070	15.1	35.3	35.3	75.3	74	1.3	7	2
6.9	2	●	MVE0690X02S080	15.1	35.3	37.3	75.3	74	1.3	8	2
6.9	3	●	MVE0690X03S070	22.0	44.3	44.3	84.3	83	1.3	7	2
6.9	3	●	MVE0690X03S080	22.0	44.3	46.3	84.3	83	1.3	8	2
7.0	2	●	MVE0700X02S070	15.3	35.3	35.3	75.3	74	1.3	7	2
7.0	2	●	MVE0700X02S080	15.3	35.3	37.3	75.3	74	1.3	8	2
7.0	3	●	MVE0700X03S070	22.3	44.3	44.3	84.3	83	1.3	7	2
7.0	3	●	MVE0700X03S080	22.3	44.3	46.3	84.3	83	1.3	8	2
7.1	2	●	MVE0710X02S080	15.5	35.3	38.3	80.3	79	1.3	8	2
7.1	3	●	MVE0710X03S080	22.6	46.3	49.3	91.3	90	1.3	8	2
7.2	2	●	MVE0720X02S080	15.7	35.3	38.3	80.3	79	1.3	8	2
7.2	3	●	MVE0720X03S080	22.9	46.3	49.3	91.3	90	1.3	8	2
7.3	2	●	MVE0730X02S080	15.9	35.3	38.3	80.3	79	1.3	8	2
7.3	3	●	MVE0730X03S080	23.2	46.3	49.3	91.3	90	1.3	8	2
7.4	2	●	MVE0740X02S080	16.1	35.3	38.3	80.3	79	1.3	8	2
7.4	3	●	MVE0740X03S080	23.5	46.3	49.3	91.3	90	1.3	8	2
7.5	2	●	MVE0750X02S080	16.4	35.4	38.4	80.4	79	1.4	8	2
7.5	3	●	MVE0750X03S080	23.9	46.4	49.4	91.4	90	1.4	8	2
7.6	2	●	MVE0760X02S080	16.6	38.4	38.4	80.4	79	1.4	8	2
7.6	3	●	MVE0760X03S080	24.2	49.4	49.4	91.4	90	1.4	8	2
7.7	2	●	MVE0770X02S080	16.8	38.4	38.4	80.4	79	1.4	8	2
7.7	3	●	MVE0770X03S080	24.5	49.4	49.4	91.4	90	1.4	8	2
7.8	2	●	MVE0780X02S080	17.0	38.4	38.4	80.4	79	1.4	8	2
7.8	3	●	MVE0780X03S080	24.8	49.4	49.4	91.4	90	1.4	8	2

FURAÇÃO(METAL DURO INTEIRIÇO)

MVE

BROCAS WSTAR

METAL DURO

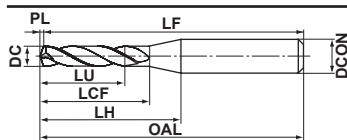
DC (mm)	Prof. do Furo (L/D)	DP1020	Referência para Pedido	Dimensões (mm)							Tipo
				LU	LCF	LH	OAL	LF	PL	DCON	
7.9	2	●	MVE0790X02S080	17.2	38.4	38.4	80.4	79	1.4	8	2
7.9	3	●	MVE0790X03S080	25.1	49.4	49.4	91.4	90	1.4	8	2
8.0	2	●	MVE0800X02S080	17.5	38.5	38.5	80.5	79	1.5	8	2
8.0	3	●	MVE0800X03S080	25.5	49.5	49.5	91.5	90	1.5	8	2
8.1	2	●	MVE0810X02S090	17.7	38.5	41.5	85.5	84	1.5	9	2
8.1	2	●	MVE0810X02S100	17.7	38.5	41.5	85.5	84	1.5	10	2
8.1	3	●	MVE0810X03S090	25.8	54.5	57.5	99.5	98	1.5	9	2
8.1	3	●	MVE0810X03S100	25.8	54.5	57.5	99.5	98	1.5	10	2
8.2	2	●	MVE0820X02S090	17.9	38.5	41.5	85.5	84	1.5	9	2
8.2	2	●	MVE0820X02S100	17.9	38.5	41.5	85.5	84	1.5	10	2
8.2	3	●	MVE0820X03S090	26.1	54.5	57.5	99.5	98	1.5	9	2
8.2	3	●	MVE0820X03S100	26.1	54.5	57.5	99.5	98	1.5	10	2
8.3	2	●	MVE0830X02S090	18.1	38.5	41.5	85.5	84	1.5	9	2
8.3	2	●	MVE0830X02S100	18.1	38.5	41.5	85.5	84	1.5	10	2
8.3	3	●	MVE0830X03S090	26.4	54.5	57.5	99.5	98	1.5	9	2
8.3	3	●	MVE0830X03S100	26.4	54.5	57.5	99.5	98	1.5	10	2
8.4	2	●	MVE0840X02S090	18.3	38.5	41.5	85.5	84	1.5	9	2
8.4	2	●	MVE0840X02S100	18.3	38.5	41.5	85.5	84	1.5	10	2
8.4	3	●	MVE0840X03S090	26.7	54.5	57.5	99.5	98	1.5	9	2
8.4	3	●	MVE0840X03S100	26.7	54.5	57.5	99.5	98	1.5	10	2
8.5	2	●	MVE0850X02S090	18.5	38.5	41.5	85.5	84	1.5	9	2
8.5	2	●	MVE0850X02S100	18.5	38.5	41.5	85.5	84	1.5	10	2
8.5	3	●	MVE0850X03S090	27.0	54.5	57.5	99.5	98	1.5	9	2
8.5	3	●	MVE0850X03S100	27.0	54.5	57.5	99.5	98	1.5	10	2
8.6	2	●	MVE0860X02S090	18.8	41.6	41.6	85.6	84	1.6	9	2
8.6	2	●	MVE0860X02S100	18.8	41.6	43.6	85.6	84	1.6	10	2
8.6	3	●	MVE0860X03S090	27.4	56.6	56.6	99.6	98	1.6	9	2
8.6	3	●	MVE0860X03S100	27.4	56.6	58.6	99.6	98	1.6	10	2
8.7	2	●	MVE0870X02S090	19.0	41.6	41.6	85.6	84	1.6	9	2
8.7	2	●	MVE0870X02S100	19.0	41.6	43.6	85.6	84	1.6	10	2
8.7	3	●	MVE0870X03S090	27.7	56.6	56.6	99.6	98	1.6	9	2
8.7	3	●	MVE0870X03S100	27.7	56.6	58.6	99.6	98	1.6	10	2
8.8	2	●	MVE0880X02S090	19.2	41.6	41.6	85.6	84	1.6	9	2
8.8	2	●	MVE0880X02S100	19.2	41.6	43.6	85.6	84	1.6	10	2
8.8	3	●	MVE0880X03S090	28.0	56.6	56.6	99.6	98	1.6	9	2
8.8	3	●	MVE0880X03S100	28.0	56.6	58.6	99.6	98	1.6	10	2
8.9	2	●	MVE0890X02S090	19.4	41.6	41.6	85.6	84	1.6	9	2
8.9	2	●	MVE0890X02S100	19.4	41.6	43.6	85.6	84	1.6	10	2
8.9	3	●	MVE0890X03S090	28.3	56.6	56.6	99.6	98	1.6	9	2
8.9	3	●	MVE0890X03S100	28.3	56.6	58.6	99.6	98	1.6	10	2
9.0	2	●	MVE0900X02S090	19.6	41.6	41.6	85.6	84	1.6	9	2
9.0	2	●	MVE0900X02S100	19.6	41.6	43.6	85.6	84	1.6	10	2
9.0	3	●	MVE0900X03S090	28.6	56.6	56.6	99.6	98	1.6	9	2
9.0	3	●	MVE0900X03S100	28.6	56.6	58.6	99.6	98	1.6	10	2
9.1	2	●	MVE0910X02S100	19.9	41.7	44.7	90.7	89	1.7	10	2
9.1	3	●	MVE0910X03S100	29.0	59.7	62.7	106.7	105	1.7	10	2
9.2	2	●	MVE0920X02S100	20.1	41.7	44.7	90.7	89	1.7	10	2
9.2	3	●	MVE0920X03S100	29.3	59.7	62.7	106.7	105	1.7	10	2

DC (mm)	Prof. do Furo (L/D)	DP1020	Referência para Pedido	Dimensões (mm)							Tipo
				LU	LCF	LH	OAL	LF	PL	DCON	
9.3	2	●	MVE0930X02S100	20.3	41.7	44.7	90.7	89	1.7	10	2
9.3	3	●	MVE0930X03S100	29.6	59.7	62.7	106.7	105	1.7	10	2
9.4	2	●	MVE0940X02S100	20.5	41.7	44.7	90.7	89	1.7	10	2
9.4	3	●	MVE0940X03S100	29.9	59.7	62.7	106.7	105	1.7	10	2
9.5	2	●	MVE0950X02S100	20.7	41.7	44.7	90.7	89	1.7	10	2
9.5	3	●	MVE0950X03S100	30.2	59.7	62.7	106.7	105	1.7	10	2
9.6	2	●	MVE0960X02S100	20.9	44.7	44.7	90.7	89	1.7	10	2
9.6	3	●	MVE0960X03S100	30.5	61.7	61.7	106.7	105	1.7	10	2
9.7	2	●	MVE0970X02S100	21.2	44.8	44.8	90.8	89	1.8	10	2
9.7	3	●	MVE0970X03S100	30.9	61.8	61.8	106.8	105	1.8	10	2
9.8	2	●	MVE0980X02S100	21.4	44.8	44.8	90.8	89	1.8	10	2
9.8	3	●	MVE0980X03S100	31.2	61.8	61.8	106.8	105	1.8	10	2
9.9	2	●	MVE0990X02S100	21.6	44.8	44.8	90.8	89	1.8	10	2
9.9	3	●	MVE0990X03S100	31.5	61.8	61.8	106.8	105	1.8	10	2
10.0	2	●	MVE1000X02S100	21.8	44.8	44.8	90.8	89	1.8	10	2
10.0	3	●	MVE1000X03S100	31.8	61.8	61.8	106.8	105	1.8	10	2
10.1	2	●	MVE1010X02S110	22.0	44.8	47.8	96.8	95	1.8	11	2
10.1	2	●	MVE1010X02S120	22.0	44.8	47.8	96.8	95	1.8	12	2
10.1	3	●	MVE1010X03S110	32.1	67.8	70.8	115.8	114	1.8	11	2
10.1	3	●	MVE1010X03S120	32.1	67.8	70.8	115.8	114	1.8	12	2
10.2	2	●	MVE1020X02S110	22.3	44.9	47.9	96.9	95	1.9	11	2
10.2	2	●	MVE1020X02S120	22.3	44.9	47.9	96.9	95	1.9	12	2
10.2	3	●	MVE1020X03S110	32.5	67.9	70.9	115.9	114	1.9	11	2
10.2	3	●	MVE1020X03S120	32.5	67.9	70.9	115.9	114	1.9	12	2
10.3	2	●	MVE1030X02S110	22.5	44.9	47.9	96.9	95	1.9	11	2
10.3	2	●	MVE1030X02S120	22.5	44.9	47.9	96.9	95	1.9	12	2
10.3	3	●	MVE1030X03S110	32.8	67.9	70.9	115.9	114	1.9	11	2
10.3	3	●	MVE1030X03S120	32.8	67.9	70.9	115.9	114	1.9	12	2
10.4	2	●	MVE1040X02S110	22.7	44.9	47.9	96.9	95	1.9	11	2
10.4	2	●	MVE1040X02S120	22.7	44.9	47.9	96.9	95	1.9	12	2
10.4	3	●	MVE1040X03S110	33.1	67.9	70.9	115.9	114	1.9	11	2
10.4	3	●	MVE1040X03S120	33.1	67.9	70.9	115.9	114	1.9	12	2
10.5	2	●	MVE1050X02S110	22.9	44.9	47.9	96.9	95	1.9	11	2
10.5	2	●	MVE1050X02S120	22.9	44.9	47.9	96.9	95	1.9	12	2
10.5	3	●	MVE1050X03S110	33.4	67.9	70.9	115.9	114	1.9	11	2
10.5	3	●	MVE1050X03S120	33.4	67.9	70.9	115.9	114	1.9	12	2
10.6	2	●	MVE1060X02S110	23.1	48.9	48.9	96.9	95	1.9	11	2
10.6	2	●	MVE1060X02S120	23.1	48.9	49.9	96.9	95	1.9	12	2
10.6	3	●	MVE1060X03S110	33.7	69.9	69.9	115.9	114	1.9	11	2
10.6	3	●	MVE1060X03S120	33.7	69.9	70.9	115.9	114	1.9	12	2
10.7	2	●	MVE1070X02S110	23.3	48.9	48.9	96.9	95	1.9	11	2
10.7	2	●	MVE1070X02S120	23.3	48.9	49.9	96.9	95	1.9	12	2
10.7	3	●	MVE1070X03S110	34.0	69.9	69.9	115.9	114	1.9	11	2
10.7	3	●	MVE1070X03S120	34.0	69.9	70.9	115.9	114	1.9	12	2
10.8	2	●	MVE1080X02S110	23.6	49.0	49.0	97.0	95	2.0	11	2
10.8	2	●	MVE1080X02S120	23.6	49.0	50.0	97.0	95	2.0	12	2
10.8	3	●	MVE1080X03S110	34.4	70.0	70.0	116.0	114	2.0	11	2
10.8	3	●	MVE1080X03S120	34.4	70.0	71.0	116.0	114	2.0	12	2

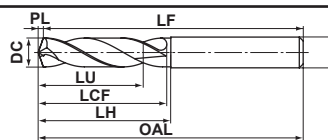
● : Estoque mantido. □ : Sem estoque, produzido somente por pedido.

□ : Lote mínimo para produtos especiais:

① Menor que ø3 = Mínimo 10 ② Maior ou igual a ø3 e menor que ø10 = Mínimo 5
 ③ Maior ou igual a ø10 = Mínimo 3



Tipo1



Tipo2

DC (mm)	Prof. do Furo (L/D)	DP1020	Referência para Pedido	Dimensões (mm)							Tipo
				LU	LCF	LH	OAL	LF	PL	DCON	
10.9	2	●	MVE1090X02S110	23.8	49.0	49.0	97.0	95	2.0	11	2
10.9	2	●	MVE1090X02S120	23.8	49.0	50.0	97.0	95	2.0	12	2
10.9	3	●	MVE1090X03S110	34.7	70.0	70.0	116.0	114	2.0	11	2
10.9	3	●	MVE1090X03S120	34.7	70.0	71.0	116.0	114	2.0	12	2
11.0	2	●	MVE1100X02S110	24.0	49.0	49.0	97.0	95	2.0	11	2
11.0	2	●	MVE1100X02S120	24.0	49.0	50.0	97.0	95	2.0	12	2
11.0	3	●	MVE1100X03S110	35.0	70.0	70.0	116.0	114	2.0	11	2
11.0	3	●	MVE1100X03S120	35.0	70.0	71.0	116.0	114	2.0	12	2
11.1	2	●	MVE1110X02S120	24.2	49.0	52.0	97.0	95	2.0	12	2
11.1	3	●	MVE1110X03S120	35.3	73.0	76.0	123.0	121	2.0	12	2
11.2	2	●	MVE1120X02S120	24.4	49.0	52.0	97.0	95	2.0	12	2
11.2	3	●	MVE1120X03S120	35.6	73.0	76.0	123.0	121	2.0	12	2
11.3	2	●	MVE1130X02S120	24.7	49.1	52.1	97.1	95	2.1	12	2
11.3	3	●	MVE1130X03S120	36.0	73.1	76.1	123.1	121	2.1	12	2
11.4	2	●	MVE1140X02S120	24.9	49.1	52.1	97.1	95	2.1	12	2
11.4	3	●	MVE1140X03S120	36.3	73.1	76.1	123.1	121	2.1	12	2
11.5	2	●	MVE1150X02S120	25.1	49.1	52.1	97.1	95	2.1	12	2
11.5	3	●	MVE1150X03S120	36.6	73.1	76.1	123.1	121	2.1	12	2
11.6	2	●	MVE1160X02S120	25.3	49.1	49.1	97.1	95	2.1	12	2
11.6	3	●	MVE1160X03S120	36.9	75.1	75.1	123.1	121	2.1	12	2
11.7	2	●	MVE1170X02S120	25.5	49.1	49.1	97.1	95	2.1	12	2
11.7	3	●	MVE1170X03S120	37.2	75.1	75.1	123.1	121	2.1	12	2
11.8	2	●	MVE1180X02S120	25.7	49.1	49.1	97.1	95	2.1	12	2
11.8	3	●	MVE1180X03S120	37.5	75.1	75.1	123.1	121	2.1	12	2
11.9	2	●	MVE1190X02S120	26.0	49.2	49.2	97.2	95	2.2	12	2
11.9	3	●	MVE1190X03S120	37.9	75.2	75.2	123.2	121	2.2	12	2
12.0	2	●	MVE1200X02S120	26.2	49.2	49.2	97.2	95	2.2	12	2
12.0	3	●	MVE1200X03S120	38.2	75.2	75.2	123.2	121	2.2	12	2
12.1	2	●	MVE1210X02S130	26.4	53.2	56.2	104.2	102	2.2	13	2
12.1	2	□	MVE1210X02S140	26.4	53.2	56.2	104.2	102	2.2	14	2
12.1	3	●	MVE1210X03S130	38.5	78.2	81.2	139.2	137	2.2	13	2
12.1	3	□	MVE1210X03S140	38.5	78.2	81.2	139.2	137	2.2	14	2
12.2	2	●	MVE1220X02S130	26.6	53.2	56.2	104.2	102	2.2	13	2
12.2	2	□	MVE1220X02S140	26.6	53.2	56.2	104.2	102	2.2	14	2
12.2	3	●	MVE1220X03S130	38.8	78.2	81.2	139.2	137	2.2	13	2
12.2	3	□	MVE1220X03S140	38.8	78.2	81.2	139.2	137	2.2	14	2
12.3	2	●	MVE1230X02S130	26.8	53.2	56.2	104.2	102	2.2	13	2
12.3	2	□	MVE1230X02S140	26.8	53.2	56.2	104.2	102	2.2	14	2
12.3	3	●	MVE1230X03S130	39.1	78.2	81.2	139.2	137	2.2	13	2
12.3	3	□	MVE1230X03S140	39.1	78.2	81.2	139.2	137	2.2	14	2
12.4	2	●	MVE1240X02S130	27.1	53.3	56.3	104.3	102	2.3	13	2
12.4	2	□	MVE1240X02S140	27.1	53.3	56.3	104.3	102	2.3	14	2
12.4	3	●	MVE1240X03S130	39.5	78.3	81.3	139.3	137	2.3	13	2
12.4	3	□	MVE1240X03S140	39.5	78.3	81.3	139.3	137	2.3	14	2
12.5	2	●	MVE1250X02S130	27.3	53.3	56.3	104.3	102	2.3	13	2
12.5	2	□	MVE1250X02S140	27.3	53.3	56.3	104.3	102	2.3	14	2
12.5	3	●	MVE1250X03S130	39.8	78.3	81.3	139.3	137	2.3	13	2
12.5	3	□	MVE1250X03S140	39.8	78.3	81.3	139.3	137	2.3	14	2

DC (mm)	Prof. do Furo (L/D)	DP1020	Referência para Pedido	Dimensões (mm)							Tipo
				LU	LCF	LH	OAL	LF	PL	DCON	
12.6	2	●	MVE1260X02S130	27.5	53.3	53.3	104.3	102	2.3	13	2
12.6	2	□	MVE1260X02S140	27.5	53.3	53.3	104.3	102	2.3	14	2
12.6	3	●	MVE1260X03S130	40.1	80.3	80.3	139.3	137	2.3	13	2
12.6	3	□	MVE1260X03S140	40.1	80.3	80.3	139.3	137	2.3	14	2
12.7	2	●	MVE1270X02S130	27.7	53.3	53.3	104.3	102	2.3	13	2
12.7	2	□	MVE1270X02S140	27.7	53.3	53.3	104.3	102	2.3	14	2
12.7	3	●	MVE1270X03S130	40.4	80.3	80.3	139.3	137	2.3	13	2
12.7	3	□	MVE1270X03S140	40.4	80.3	80.3	139.3	137	2.3	14	2
12.8	2	●	MVE1280X02S130	27.9	53.3	53.3	104.3	102	2.3	13	2
12.8	2	□	MVE1280X02S140	27.9	53.3	53.3	104.3	102	2.3	14	2
12.8	3	●	MVE1280X03S130	40.7	80.3	80.3	139.3	137	2.3	13	2
12.8	3	□	MVE1280X03S140	40.7	80.3	80.3	139.3	137	2.3	14	2
12.9	2	●	MVE1290X02S130	28.1	53.3	53.3	104.3	102	2.3	13	2
12.9	2	□	MVE1290X02S140	28.1	53.3	53.3	104.3	102	2.3	14	2
12.9	3	●	MVE1290X03S130	41.0	80.3	80.3	139.3	137	2.3	13	2
12.9	3	□	MVE1290X03S140	41.0	80.3	80.3	139.3	137	2.3	14	2
13.0	2	●	MVE1300X02S130	28.4	53.4	53.4	104.4	102	2.4	13	2
13.0	2	□	MVE1300X02S140	28.4	53.4	53.4	104.4	102	2.4	14	2
13.0	3	●	MVE1300X03S130	41.4	80.4	80.4	139.4	137	2.4	13	2
13.0	3	□	MVE1300X03S140	41.4	80.4	80.4	139.4	137	2.4	14	2
13.1	2	●	MVE1310X02S140	28.6	56.4	59.4	109.4	107	2.4	14	2
13.1	3	●	MVE1310X03S140	41.7	86.4	89.4	149.4	147	2.4	14	2
13.2	2	●	MVE1320X02S140	28.8	56.4	59.4	109.4	107	2.4	14	2
13.2	3	●	MVE1320X03S140	42.0	86.4	89.4	149.4	147	2.4	14	2
13.3	2	●	MVE1330X02S140	29.0	56.4	59.4	109.4	107	2.4	14	2
13.3	3	●	MVE1330X03S140	42.3	86.4	89.4	149.4	147	2.4	14	2
13.4	2	●	MVE1340X02S140	29.2	56.4	59.4	109.4	107	2.4	14	2
13.4	3	●	MVE1340X03S140	42.6	86.4	89.4	149.4	147	2.4	14	2
13.5	2	●	MVE1350X02S140	29.5	56.5	59.5	109.5	107	2.5	14	2
13.5	3	●	MVE1350X03S140	43.0	86.5	89.5	149.5	147	2.5	14	2
13.6	2	●	MVE1360X02S140	29.7	56.5	56.5	109.5	107	2.5	14	2
13.6	3	●	MVE1360X03S140	43.3	88.5	88.5	149.5	147	2.5	14	2
13.7	2	●	MVE1370X02S140	29.9	56.5	56.5	109.5	107	2.5	14	2
13.7	3	●	MVE1370X03S140	43.6	88.5	88.5	149.5	147	2.5	14	2
13.8	2	●	MVE1380X02S140	30.1	56.5	56.5	109.5	107	2.5	14	2
13.8	3	●	MVE1380X03S140	43.9	88.5	88.5	149.5	147	2.5	14	2
13.9	2	●	MVE1390X02S140	30.3	56.5	56.5	109.5	107	2.5	14	2
13.9	3	●	MVE1390X03S140	44.2	88.5	88.5	149.5	147	2.5	14	2
14.0	2	●	MVE1400X02S140	30.5	56.5	56.5	109.5	107	2.5	14	2
14.0	3	●	MVE1400X03S140	44.5	88.5	88.5	149.5	147	2.5	14	2
14.1	2	●	MVE1410X02S150	30.8	58.6	61.6	113.6	111	2.6	15	2
14.1	2	□	MVE1410X02S160	30.8	58.6	61.6	113.6	111	2.6	16	2
14.1	3	●	MVE1410X03S150	44.9	91.6	94.6	155.6	153	2.6	15	2
14.1	3	□	MVE1410X03S160	44.9	91.6	94.6	155.6	153	2.6	16	2
14.2	2	●	MVE1420X02S150	31.0	58.6	61.6	113.6	111	2.6	15	2
14.2	2	□	MVE1420X02S160	31.0	58.6	61.6	113.6	111	2.6	16	2
14.2	3	●	MVE1420X03S150	45.2	91.6	94.6	155.6	153	2.6	15	2
14.2	3	□	MVE1420X03S160	45.2	91.6	94.6	155.6	153	2.6	16	2

FURAÇÃO(METAL DURO INTEIRIÇO)

MVE

BROCAS WSTAR

METAL DURO

DC (mm)	Prof. do Furo (L/D)	DP1020	Referência para Pedido	Dimensões (mm)							Tipo
				LU	LCF	LH	OAL	LF	PL	DCON	
14.3	2	□	MVE1430X02S150	31.2	58.6	61.6	113.6	111	2.6	15	2
14.3	2	□	MVE1430X02S160	31.2	58.6	61.6	113.6	111	2.6	16	2
14.3	3	●	MVE1430X03S150	45.5	91.6	94.6	155.6	153	2.6	15	2
14.3	3	□	MVE1430X03S160	45.5	91.6	94.6	155.6	153	2.6	16	2
14.4	2	□	MVE1440X02S150	31.4	58.6	61.6	113.6	111	2.6	15	2
14.4	2	□	MVE1440X02S160	31.4	58.6	61.6	113.6	111	2.6	16	2
14.4	3	●	MVE1440X03S150	45.8	91.6	94.6	155.6	153	2.6	15	2
14.4	3	□	MVE1440X03S160	45.8	91.6	94.6	155.6	153	2.6	16	2
14.5	2	●	MVE1450X02S150	31.6	58.6	61.6	113.6	111	2.6	15	2
14.5	2	□	MVE1450X02S160	31.6	58.6	61.6	113.6	111	2.6	16	2
14.5	3	●	MVE1450X03S150	46.1	91.6	94.6	155.6	153	2.6	15	2
14.5	3	□	MVE1450X03S160	46.1	91.6	94.6	155.6	153	2.6	16	2
14.6	2	□	MVE1460X02S150	31.9	58.7	58.7	113.7	111	2.7	15	2
14.6	2	□	MVE1460X02S160	31.9	58.7	58.7	113.7	111	2.7	16	2
14.6	3	●	MVE1460X03S150	46.5	93.7	93.7	155.7	153	2.7	15	2
14.6	3	□	MVE1460X03S160	46.5	93.7	93.7	155.7	153	2.7	16	2
14.7	2	□	MVE1470X02S150	32.1	58.7	58.7	113.7	111	2.7	15	2
14.7	2	□	MVE1470X02S160	32.1	58.7	58.7	113.7	111	2.7	16	2
14.7	3	●	MVE1470X03S150	46.8	93.7	93.7	155.7	153	2.7	15	2
14.7	3	□	MVE1470X03S160	46.8	93.7	93.7	155.7	153	2.7	16	2
14.8	2	□	MVE1480X02S150	32.3	58.7	58.7	113.7	111	2.7	15	2
14.8	2	□	MVE1480X02S160	32.3	58.7	58.7	113.7	111	2.7	16	2
14.8	3	●	MVE1480X03S150	47.1	93.7	93.7	155.7	153	2.7	15	2
14.8	3	□	MVE1480X03S160	47.1	93.7	93.7	155.7	153	2.7	16	2
14.9	2	□	MVE1490X02S150	32.5	58.7	58.7	113.7	111	2.7	15	2
14.9	2	□	MVE1490X02S160	32.5	58.7	58.7	113.7	111	2.7	16	2
14.9	3	●	MVE1490X03S150	47.4	93.7	93.7	155.7	153	2.7	15	2
14.9	3	□	MVE1490X03S160	47.4	93.7	93.7	155.7	153	2.7	16	2
15.0	2	●	MVE1500X02S150	32.7	58.7	58.7	113.7	111	2.7	15	2
15.0	2	□	MVE1500X02S160	32.7	58.7	58.7	113.7	111	2.7	16	2
15.0	3	●	MVE1500X03S150	47.7	93.7	93.7	155.7	153	2.7	15	2
15.0	3	□	MVE1500X03S160	47.7	93.7	93.7	155.7	153	2.7	16	2
15.1	2	□	MVE1510X02S160	32.9	60.7	63.7	117.7	115	2.7	16	2
15.1	3	●	MVE1510X03S160	48.0	96.7	99.7	162.7	160	2.7	16	2
15.2	2	●	MVE1520X02S160	33.2	60.8	63.8	117.8	115	2.8	16	2
15.2	3	●	MVE1520X03S160	48.4	96.8	99.8	162.8	160	2.8	16	2
15.3	2	□	MVE1530X02S160	33.4	60.8	63.8	117.8	115	2.8	16	2
15.3	3	●	MVE1530X03S160	48.7	96.8	99.8	162.8	160	2.8	16	2
15.4	2	□	MVE1540X02S160	33.6	60.8	63.8	117.8	115	2.8	16	2
15.4	3	●	MVE1540X03S160	49.0	96.8	99.8	162.8	160	2.8	16	2
15.5	2	●	MVE1550X02S160	33.8	60.8	63.8	117.8	115	2.8	16	2
15.5	3	●	MVE1550X03S160	49.3	96.8	99.8	162.8	160	2.8	16	2
15.6	2	□	MVE1560X02S160	34.0	60.8	60.8	117.8	115	2.8	16	2
15.6	3	●	MVE1560X03S160	49.6	98.8	98.8	162.8	160	2.8	16	2
15.7	2	□	MVE1570X02S160	34.3	60.9	60.9	117.9	115	2.9	16	2
15.7	3	●	MVE1570X03S160	50.0	98.9	98.9	162.9	160	2.9	16	2
15.8	2	□	MVE1580X02S160	34.5	60.9	60.9	117.9	115	2.9	16	2
15.8	3	●	MVE1580X03S160	50.3	98.9	98.9	162.9	160	2.9	16	2

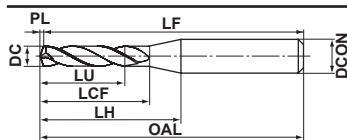
DC (mm)	Prof. do Furo (L/D)	DP1020	Referência para Pedido	Dimensões (mm)							Tipo
				LU	LCF	LH	OAL	LF	PL	DCON	
15.9	2	□	MVE1590X02S160	34.7	60.9	60.9	117.9	115	2.9	16	2
15.9	3	●	MVE1590X03S160	50.6	98.9	98.9	162.9	160	2.9	16	2
16.0	2	●	MVE1600X02S160	34.9	60.9	60.9	117.9	115	2.9	16	2
16.0	3	●	MVE1600X03S160	50.9	98.9	98.9	162.9	160	2.9	16	2
16.1	2	□	MVE1610X02S170	35.1	62.9	62.9	121.9	119	2.9	17	2
16.1	2	□	MVE1610X02S180	35.1	62.9	62.9	121.9	119	2.9	18	2
16.1	3	□	MVE1610X03S170	51.2	104.9	104.9	169.9	167	2.9	17	2
16.1	3	□	MVE1610X03S180	51.2	104.9	104.9	169.9	167	2.9	18	2
16.2	2	●	MVE1620X02S170	35.3	62.9	62.9	121.9	119	2.9	17	2
16.2	2	□	MVE1620X02S180	35.3	62.9	62.9	121.9	119	2.9	18	2
16.2	3	□	MVE1620X03S170	51.5	104.9	104.9	169.9	167	2.9	17	2
16.2	3	□	MVE1620X03S180	51.5	104.9	104.9	169.9	167	2.9	18	2
16.3	2	●	MVE1630X02S170	35.6	63.0	63.0	122.0	119	3.0	17	2
16.3	2	□	MVE1630X02S180	35.6	63.0	63.0	122.0	119	3.0	18	2
16.3	3	□	MVE1630X03S170	51.9	105.0	105.0	170.0	167	3.0	17	2
16.3	3	□	MVE1630X03S180	51.9	105.0	105.0	170.0	167	3.0	18	2
16.4	2	□	MVE1640X02S170	35.8	63.0	63.0	122.0	119	3.0	17	2
16.4	2	□	MVE1640X02S180	35.8	63.0	63.0	122.0	119	3.0	18	2
16.4	3	□	MVE1640X03S170	52.2	105.0	105.0	170.0	167	3.0	17	2
16.4	3	□	MVE1640X03S180	52.2	105.0	105.0	170.0	167	3.0	18	2
16.5	2	●	MVE1650X02S170	36.0	63.0	63.0	122.0	119	3.0	17	2
16.5	2	□	MVE1650X02S180	36.0	63.0	63.0	122.0	119	3.0	18	2
16.5	3	●	MVE1650X03S170	52.5	105.0	105.0	170.0	167	3.0	17	2
16.5	3	□	MVE1650X03S180	52.5	105.0	105.0	170.0	167	3.0	18	2
16.6	2	□	MVE1660X02S170	36.2	63.0	63.0	122.0	119	3.0	17	2
16.6	2	□	MVE1660X02S180	36.2	63.0	63.0	122.0	119	3.0	18	2
16.6	3	□	MVE1660X03S170	52.8	105.0	105.0	170.0	167	3.0	17	2
16.6	3	□	MVE1660X03S180	52.8	105.0	105.0	170.0	167	3.0	18	2
16.7	2	□	MVE1670X02S170	36.4	63.0	63.0	122.0	119	3.0	17	2
16.7	2	□	MVE1670X02S180	36.4	63.0	63.0	122.0	119	3.0	18	2
16.7	3	□	MVE1670X03S170	53.1	105.0	105.0	170.0	167	3.0	17	2
16.7	3	□	MVE1670X03S180	53.1	105.0	105.0	170.0	167	3.0	18	2
16.8	2	□	MVE1680X02S170	36.7	63.1	63.1	122.1	119	3.1	17	2
16.8	2	□	MVE1680X02S180	36.7	63.1	63.1	122.1	119	3.1	18	2
16.8	3	□	MVE1680X03S170	53.5	105.1	105.1	170.1	167	3.1	17	2
16.8	3	□	MVE1680X03S180	53.5	105.1	105.1	170.1	167	3.1	18	2
16.9	2	□	MVE1690X02S170	36.9	63.1	63.1	122.1	119	3.1	17	2
16.9	2	□	MVE1690X02S180	36.9	63.1	63.1	122.1	119	3.1	18	2
16.9	3	□	MVE1690X03S170	53.8	105.1	105.1	170.1	167	3.1	17	2
16.9	3	□	MVE1690X03S180	53.8	105.1	105.1	170.1	167	3.1	18	2
17.0	2	●	MVE1700X02S170	37.1	63.1	63.1	122.1	119	3.1	17	2
17.0	2	□	MVE1700X02S180	37.1	63.1	63.1	122.1	119	3.1	18	2
17.0	3	●	MVE1700X03S170	54.1	105.1	105.1	170.1	167	3.1	17	2
17.0	3	□	MVE1700X03S180	54.1	105.1	105.1	170.1	167	3.1	18	2
17.1	2	□	MVE1710X02S180	37.3	65.1	65.1	126.1	123	3.1	18	2
17.1	3	□	MVE1710X03S180	54.4	105.1	105.1	170.1	167	3.1	18	2
17.2	2	□	MVE1720X02S180	37.5	65.1	65.1	126.1	123	3.1	18	2
17.2	3	□	MVE1720X03S180	54.7	105.1	105.1	170.1	167	3.1	18	2

● : Estoque mantido. □ : Sem estoque, produzido somente por pedido.

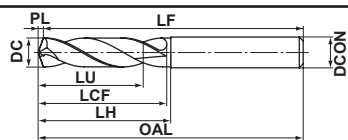
□ : Lote mínimo para produtos especiais:

① Menor que ø3 = Mínimo 10 ② Maior ou igual a ø3 e menor que ø10 = Mínimo 5

③ Maior ou igual a ø10 = Mínimo 3



Tipo1



Tipo2

DC (mm)	Prof. do Furo (L/D)	DP1020	Referência para Pedido	Dimensões (mm)							Tipo
				LU	LCF	LH	OAL	LF	PL	DCON	
17.3	2	□	MVE1730X02S180	37.7	65.1	65.1	126.1	123	3.1	18	2
17.3	3	□	MVE1730X03S180	55.0	105.1	105.1	170.1	167	3.1	18	2
17.4	2	□	MVE1740X02S180	38.0	65.2	65.2	126.2	123	3.2	18	2
17.4	3	□	MVE1740X03S180	55.4	105.2	105.2	170.2	167	3.2	18	2
17.5	2	●	MVE1750X02S180	38.2	65.2	65.2	126.2	123	3.2	18	2
17.5	3	●	MVE1750X03S180	55.7	105.2	105.2	170.2	167	3.2	18	2
17.6	2	□	MVE1760X02S180	38.4	65.2	65.2	126.2	123	3.2	18	2
17.6	3	□	MVE1760X03S180	56.0	105.2	105.2	170.2	167	3.2	18	2
17.7	2	□	MVE1770X02S180	38.6	65.2	65.2	126.2	123	3.2	18	2
17.7	3	□	MVE1770X03S180	56.3	105.2	105.2	170.2	167	3.2	18	2
17.8	2	●	MVE1780X02S180	38.8	65.2	65.2	126.2	123	3.2	18	2
17.8	3	□	MVE1780X03S180	56.6	105.2	105.2	170.2	167	3.2	18	2
17.9	2	□	MVE1790X02S180	39.1	65.3	65.3	126.3	123	3.3	18	2
17.9	3	□	MVE1790X03S180	57.0	105.3	105.3	170.3	167	3.3	18	2
18.0	2	●	MVE1800X02S180	39.3	65.3	65.3	126.3	123	3.3	18	2
18.0	3	●	MVE1800X03S180	57.3	105.3	105.3	170.3	167	3.3	18	2
18.1	2	□	MVE1810X02S190	39.5	67.3	67.3	130.3	127	3.3	19	2
18.1	2	□	MVE1810X02S200	39.5	67.3	67.3	130.3	127	3.3	20	2
18.1	3	□	MVE1810X03S190	57.6	117.3	117.3	182.3	179	3.3	19	2
18.1	3	□	MVE1810X03S200	57.6	117.3	117.3	182.3	179	3.3	20	2
18.2	2	□	MVE1820X02S190	39.7	67.3	67.3	130.3	127	3.3	19	2
18.2	2	□	MVE1820X02S200	39.7	67.3	67.3	130.3	127	3.3	20	2
18.2	3	□	MVE1820X03S190	57.9	117.3	117.3	182.3	179	3.3	19	2
18.2	3	□	MVE1820X03S200	57.9	117.3	117.3	182.3	179	3.3	20	2
18.3	2	□	MVE1830X02S190	39.9	67.3	67.3	130.3	127	3.3	19	2
18.3	2	□	MVE1830X02S200	39.9	67.3	67.3	130.3	127	3.3	20	2
18.3	3	□	MVE1830X03S190	58.2	117.3	117.3	182.3	179	3.3	19	2
18.3	3	□	MVE1830X03S200	58.2	117.3	117.3	182.3	179	3.3	20	2
18.4	2	□	MVE1840X02S190	40.1	67.3	67.3	130.3	127	3.3	19	2
18.4	2	□	MVE1840X02S200	40.1	67.3	67.3	130.3	127	3.3	20	2
18.4	3	□	MVE1840X03S190	58.5	117.3	117.3	182.3	179	3.3	19	2
18.4	3	□	MVE1840X03S200	58.5	117.3	117.3	182.3	179	3.3	20	2
18.5	2	●	MVE1850X02S190	40.4	67.4	67.4	130.4	127	3.4	19	2
18.5	2	□	MVE1850X02S200	40.4	67.4	67.4	130.4	127	3.4	20	2
18.5	3	●	MVE1850X03S190	58.9	117.4	117.4	182.4	179	3.4	19	2
18.5	3	□	MVE1850X03S200	58.9	117.4	117.4	182.4	179	3.4	20	2
18.6	2	□	MVE1860X02S190	40.6	67.4	67.4	130.4	127	3.4	19	2
18.6	2	□	MVE1860X02S200	40.6	67.4	67.4	130.4	127	3.4	20	2
18.6	3	□	MVE1860X03S190	59.2	117.4	117.4	182.4	179	3.4	19	2
18.6	3	□	MVE1860X03S200	59.2	117.4	117.4	182.4	179	3.4	20	2
18.7	2	□	MVE1870X02S190	40.8	67.4	67.4	130.4	127	3.4	19	2
18.7	2	□	MVE1870X02S200	40.8	67.4	67.4	130.4	127	3.4	20	2
18.7	3	□	MVE1870X03S190	59.5	117.4	117.4	182.4	179	3.4	19	2
18.7	3	□	MVE1870X03S200	59.5	117.4	117.4	182.4	179	3.4	20	2
18.8	2	□	MVE1880X02S190	41.0	67.4	67.4	130.4	127	3.4	19	2
18.8	2	□	MVE1880X02S200	41.0	67.4	67.4	130.4	127	3.4	20	2
18.8	3	□	MVE1880X03S190	59.8	117.4	117.4	182.4	179	3.4	19	2
18.8	3	□	MVE1880X03S200	59.8	117.4	117.4	182.4	179	3.4	20	2

DC (mm)	Prof. do Furo (L/D)	DP1020	Referência para Pedido	Dimensões (mm)							Tipo
				LU	LCF	LH	OAL	LF	PL	DCON	
18.9	2	□	MVE1890X02S190	41.2	67.4	67.4	130.4	127	3.4	19	2
18.9	2	□	MVE1890X02S200	41.2	67.4	67.4	130.4	127	3.4	20	2
18.9	3	□	MVE1890X03S190	60.1	117.4	117.4	182.4	179	3.4	19	2
18.9	3	□	MVE1890X03S200	60.1	117.4	117.4	182.4	179	3.4	20	2
19.0	2	●	MVE1900X02S190	41.5	67.5	67.5	130.5	127	3.5	19	2
19.0	2	□	MVE1900X02S200	41.5	67.5	67.5	130.5	127	3.5	20	2
19.0	3	●	MVE1900X03S190	60.5	117.5	117.5	182.5	179	3.5	19	2
19.0	3	□	MVE1900X03S200	60.5	117.5	117.5	182.5	179	3.5	20	2
19.1	2	□	MVE1910X02S200	41.7	69.5	69.5	134.5	131	3.5	20	2
19.1	3	□	MVE1910X03S200	60.8	117.5	117.5	182.5	179	3.5	20	2
19.2	2	□	MVE1920X02S200	41.9	69.5	69.5	134.5	131	3.5	20	2
19.2	3	□	MVE1920X03S200	61.1	117.5	117.5	182.5	179	3.5	20	2
19.3	2	□	MVE1930X02S200	42.1	69.5	69.5	134.5	131	3.5	20	2
19.3	3	□	MVE1930X03S200	61.4	117.5	117.5	182.5	179	3.5	20	2
19.4	2	□	MVE1940X02S200	42.3	69.5	69.5	134.5	131	3.5	20	2
19.4	3	□	MVE1940X03S200	61.7	117.5	117.5	182.5	179	3.5	20	2
19.5	2	●	MVE1950X02S200	42.5	69.5	69.5	134.5	131	3.5	20	2
19.5	3	●	MVE1950X03S200	62.0	117.5	117.5	182.5	179	3.5	20	2
19.6	2	□	MVE1960X02S200	42.8	69.6	69.6	134.6	131	3.6	20	2
19.6	3	□	MVE1960X03S200	62.4	117.6	117.6	182.6	179	3.6	20	2
19.7	2	□	MVE1970X02S200	43.0	69.6	69.6	134.6	131	3.6	20	2
19.7	3	□	MVE1970X03S200	62.7	117.6	117.6	182.6	179	3.6	20	2
19.8	2	□	MVE1980X02S200	43.2	69.6	69.6	134.6	131	3.6	20	2
19.8	3	□	MVE1980X03S200	63.0	117.6	117.6	182.6	179	3.6	20	2
19.9	2	□	MVE1990X02S200	43.4	69.6	69.6	134.6	131	3.6	20	2
19.9	3	□	MVE1990X03S200	63.3	117.6	117.6	182.6	179	3.6	20	2
20.0	2	●	MVE2000X02S200	43.6	69.6	69.6	134.6	131	3.6	20	2
20.0	3	●	MVE2000X03S200	63.6	117.6	117.6	182.6	179	3.6	20	2

FURAÇÃO(METAL DURO INTEIRIÇO)

MVE

BROCAS WSTAR

CONDIÇÕES DE CORTE RECOMENDADAS

Material	Aço Baixo Carbono ($\leq 180\text{HB}$)		Aço Carbono, Aço Liga (180–280HB)		Aço Carbono, Aço Liga (280–350HB)	
	AISI 1010 etc		AISI 1045, AISI 4140 etc		AISI 4340 etc	
Diâm. DC (mm)	Rotação (min^{-1})	Taxa de Avanço (mín.–máx.) (mm/rot)	Rotação (min^{-1})	Taxa de Avanço (mín.–máx.) (mm/rot)	Rotação (min^{-1})	Taxa de Avanço (mín.–máx.) (mm/rot)
3.2	6400	0.1 (0.06–0.13)	5900	0.1 (0.06–0.13)	5400	0.09 (0.06–0.12)
4.0	5500	0.12 (0.08–0.16)	5100	0.12 (0.08–0.16)	4700	0.11 (0.07–0.14)
5.0	4400	0.15 (0.10–0.20)	4100	0.15 (0.10–0.20)	3800	0.14 (0.09–0.18)
6.3	4000	0.2 (0.13–0.26)	3700	0.2 (0.13–0.26)	3500	0.18 (0.11–0.24)
8.0	3300	0.23 (0.18–0.28)	3100	0.23 (0.18–0.28)	2900	0.21 (0.16–0.25)
10.0	2800	0.27 (0.22–0.32)	2700	0.27 (0.22–0.32)	2500	0.23 (0.19–0.27)
12.0	2500	0.31 (0.28–0.34)	2300	0.31 (0.28–0.34)	2200	0.26 (0.23–0.29)
16.0	1900	0.33 (0.28–0.38)	1700	0.33 (0.28–0.38)	1600	0.29 (0.24–0.33)
20.0	1500	0.35 (0.30–0.40)	1400	0.35 (0.30–0.40)	1300	0.3 (0.26–0.34)

Material	Aço Inoxidável Austenítico ($\leq 200\text{HB}$)		Ferro Fundido Cinzento ($\leq 350\text{MPa}$)		Ferro Fundido Nodular ($\leq 450\text{MPa}$)	
	AISI 304, AISI 316 etc		DIN GG-30 etc		DIN GGG-45 etc	
Diâm. DC (mm)	Rotação (min^{-1})	Taxa de Avanço (mín.–máx.) (mm/rot)	Rotação (min^{-1})	Taxa de Avanço (mín.–máx.) (mm/rot)	Rotação (min^{-1})	Taxa de Avanço (mín.–máx.) (mm/rot)
3.2	1900	0.07 (0.05–0.08)	6900	0.1 (0.06–0.13)	6400	0.1 (0.06–0.13)
4.0	1500	0.08 (0.06–0.10)	5500	0.12 (0.08–0.16)	5100	0.12 (0.08–0.16)
5.0	1200	0.1 (0.07–0.13)	4400	0.15 (0.10–0.20)	4100	0.15 (0.10–0.20)
6.3	1200	0.13 (0.09–0.17)	3700	0.2 (0.13–0.26)	3500	0.2 (0.13–0.26)
8.0	900	0.14 (0.10–0.18)	2900	0.25 (0.18–0.31)	2700	0.23 (0.18–0.28)
10.0	700	0.16 (0.12–0.19)	2300	0.29 (0.22–0.35)	2200	0.27 (0.22–0.32)
12.0	600	0.18 (0.15–0.20)	2100	0.33 (0.28–0.37)	1900	0.31 (0.28–0.34)
16.0	400	0.19 (0.15–0.23)	1500	0.35 (0.28–0.42)	1400	0.33 (0.28–0.38)
20.0	300	0.2 (0.15–0.24)	1300	0.37 (0.30–0.44)	1200	0.35 (0.30–0.40)

Material	Ligas de Alumínio (Si<5%)		Ligas Resistentes ao Calor		Aço Endurecido (40–55HRC)	
			Inconel718 etc		AISI H13, SKT4 etc	
Diâm. DC (mm)	Rotação (min^{-1})	Taxa de Avanço (mín.–máx.) (mm/rot)	Rotação (min^{-1})	Taxa de Avanço (mín.–máx.) (mm/rot)	Rotação (min^{-1})	Taxa de Avanço (mín.–máx.) (mm/rot)
3.2	7900	0.1 (0.06–0.13)	1900	0.07 (0.05–0.09)	1900	0.07 (0.05–0.09)
4.0	6300	0.12 (0.08–0.16)	1500	0.09 (0.06–0.11)	1500	0.09 (0.06–0.11)
5.0	5000	0.15 (0.10–0.20)	1200	0.11 (0.08–0.14)	1200	0.11 (0.08–0.14)
6.3	4500	0.2 (0.13–0.26)	1200	0.14 (0.09–0.19)	1200	0.14 (0.09–0.19)
8.0	3500	0.23 (0.18–0.28)	900	0.14 (0.11–0.17)	900	0.14 (0.11–0.17)
10.0	2800	0.27 (0.22–0.32)	700	0.16 (0.12–0.19)	700	0.16 (0.12–0.19)
12.0	2600	0.31 (0.28–0.34)	600	0.16 (0.13–0.18)	600	0.16 (0.13–0.18)
16.0	1900	0.33 (0.28–0.38)	400	0.18 (0.14–0.21)	400	0.18 (0.14–0.21)
20.0	1700	0.35 (0.30–0.40)	400	0.19 (0.15–0.22)	400	0.19 (0.15–0.22)

FURAÇÃO

N

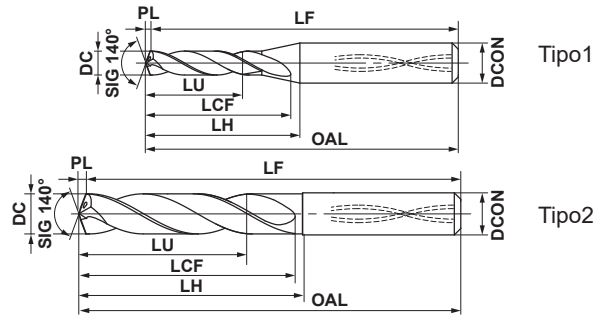


Broca inteira de metal duro para ligas resistentes ao calor

P
M
K
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S
H

Ligas Resist. ao Calor

Refrigeração Interna



	DC=3	3<DC≤6	6<DC≤10	10<DC≤12
	⁰ _{-0.018}	⁰ _{-0.018}	⁰ _{-0.022}	⁰ _{-0.027}
	DCON=6	6<DCON≤10	DCON=12	
	⁰ _{-0.018}	⁰ _{-0.009}	⁰ _{-0.011}	

*Dependendo da direção de visualização, a cobertura pode apresentar uma variação na coloração. Isto não afeta o rendimento da broca.

DC (mm)	Prof. do Furo (L/D)	DP9020	Referência para Pedido	Dimensões (mm)							Tipo
				LU	LCF	LH	OAL	LF	PL	DCON	
3.00	3	●	DSAS0300X03S060	9.5	21.5	23.5	70.5	70	0.5	6	1
3.00	5	●	DSAS0300X05S060	15.5	28.5	31.5	78.5	78	0.5	6	1
3.10	3	●	DSAS0310X03S060	9.9	21.6	23.6	70.6	70	0.6	6	1
3.10	5	●	DSAS0310X05S060	16.1	28.6	31.6	78.6	78	0.6	6	1
3.18	3	●	DSAS0318X03S060	10.1	21.6	23.6	70.6	70	0.6	6	1
3.18	5	●	DSAS0318X05S060	16.5	28.6	31.6	78.6	78	0.6	6	1
3.20	3	●	DSAS0320X03S060	10.2	21.6	23.6	70.6	70	0.6	6	1
3.20	5	●	DSAS0320X05S060	16.6	28.6	31.6	78.6	78	0.6	6	1
3.26	3	●	DSAS0326X03S060	10.4	21.6	23.6	70.6	70	0.6	6	1
3.26	5	●	DSAS0326X05S060	16.9	28.6	31.6	78.6	78	0.6	6	1
3.30	3	●	DSAS0330X03S060	10.5	21.6	23.6	70.6	70	0.6	6	1
3.30	5	●	DSAS0330X05S060	17.1	28.6	31.6	78.6	78	0.6	6	1
3.40	3	●	DSAS0340X03S060	10.8	21.6	23.6	70.6	70	0.6	6	1
3.40	5	●	DSAS0340X05S060	17.6	28.6	31.6	78.6	78	0.6	6	1
3.50	3	●	DSAS0350X03S060	11.1	21.6	23.6	70.6	70	0.6	6	1
3.50	5	●	DSAS0350X05S060	18.1	28.6	31.6	78.6	78	0.6	6	1
3.57	3	●	DSAS0357X03S060	11.4	22.7	23.7	70.7	70	0.7	6	1
3.57	5	●	DSAS0357X05S060	18.6	30.7	31.7	78.7	78	0.7	6	1
3.60	3	●	DSAS0360X03S060	11.5	22.7	23.7	70.7	70	0.7	6	1
3.60	5	●	DSAS0360X05S060	18.7	30.7	31.7	78.7	78	0.7	6	1
3.70	3	●	DSAS0370X03S060	11.8	22.7	23.7	70.7	70	0.7	6	1
3.70	5	●	DSAS0370X05S060	19.2	30.7	31.7	78.7	78	0.7	6	1
3.80	3	●	DSAS0380X03S060	12.1	22.7	23.7	70.7	70	0.7	6	1
3.80	5	●	DSAS0380X05S060	19.7	30.7	31.7	78.7	78	0.7	6	1
3.90	3	●	DSAS0390X03S060	12.4	22.7	23.7	70.7	70	0.7	6	1
3.90	5	●	DSAS0390X05S060	20.2	30.7	31.7	78.7	78	0.7	6	1
3.97	3	●	DSAS0397X03S060	12.6	22.7	23.7	70.7	70	0.7	6	1
3.97	5	●	DSAS0397X05S060	20.5	30.7	31.7	78.7	78	0.7	6	1
4.00	3	●	DSAS0400X03S060	12.7	22.7	23.7	70.7	70	0.7	6	1
4.00	5	●	DSAS0400X05S060	20.7	30.7	31.7	78.7	78	0.7	6	1
4.10	3	●	DSAS0410X03S060	13.0	24.7	26.7	73.7	73	0.7	6	1
4.10	5	●	DSAS0410X05S060	21.2	33.7	35.7	82.7	82	0.7	6	1
4.20	3	●	DSAS0420X03S060	13.4	24.8	26.8	73.8	73	0.8	6	1
4.20	5	●	DSAS0420X05S060	21.8	33.8	35.8	82.8	82	0.8	6	1
4.30	3	●	DSAS0430X03S060	13.7	24.8	26.8	73.8	73	0.8	6	1
4.30	5	●	DSAS0430X05S060	22.3	33.8	35.8	82.8	82	0.8	6	1
4.37	3	●	DSAS0437X03S060	13.9	24.8	26.8	73.8	73	0.8	6	1
4.37	5	●	DSAS0437X05S060	22.6	33.8	35.8	82.8	82	0.8	6	1

Nota 1) As brocas de ø5mm ou menores têm furo de refrigeração com seção circular.

FURAÇÃO(METAL DURO INTEIRIÇO)

DSAS NEW

Broca inteiraça de metal duro para ligas resistentes ao calor

DC (mm)	Prof. do Furo (L/D)	DP9020	Referência para Pedido	Dimensões (mm)							Tipo
				LU	LCF	LH	OAL	LF	PL	DCON	
4.40	3	●	DSAS0440X03S060	14.0	24.8	26.8	73.8	73	0.8	6	1
4.40	5	●	DSAS0440X05S060	22.8	33.8	35.8	82.8	82	0.8	6	1
4.50	3	●	DSAS0450X03S060	14.3	24.8	26.8	73.8	73	0.8	6	1
4.50	5	●	DSAS0450X05S060	23.3	33.8	35.8	82.8	82	0.8	6	1
4.60	3	●	DSAS0460X03S060	14.6	25.8	28.8	75.8	75	0.8	6	1
4.60	5	●	DSAS0460X05S060	23.8	35.8	38.8	85.8	85	0.8	6	1
4.70	3	●	DSAS0470X03S060	15.0	25.9	28.9	75.9	75	0.9	6	1
4.70	5	●	DSAS0470X05S060	24.4	35.9	38.9	85.9	85	0.9	6	1
4.76	3	●	DSAS0476X03S060	15.2	25.9	28.9	75.9	75	0.9	6	1
4.76	5	●	DSAS0476X05S060	24.7	35.9	38.9	85.9	85	0.9	6	1
4.80	3	●	DSAS0480X03S060	15.3	25.9	28.9	75.9	75	0.9	6	1
4.80	5	●	DSAS0480X05S060	24.9	35.9	38.9	85.9	85	0.9	6	1
4.86	3	●	DSAS0486X03S060	15.5	25.9	28.9	75.9	75	0.9	6	1
4.86	5	●	DSAS0486X05S060	25.2	35.9	38.9	85.9	85	0.9	6	1
4.90	3	●	DSAS0490X03S060	15.6	25.9	28.9	75.9	75	0.9	6	1
4.90	5	●	DSAS0490X05S060	25.4	35.9	38.9	85.9	85	0.9	6	1
5.00	3	●	DSAS0500X03S060	15.9	28.9	29.9	81.9	81	0.9	6	2
5.00	5	●	DSAS0500X05S060	25.9	39.9	42.9	89.9	89	0.9	6	2
5.10	3	●	DSAS0510X03S060	16.2	28.9	29.9	81.9	81	0.9	6	2
5.10	5	●	DSAS0510X05S060	26.4	39.9	42.9	89.9	89	0.9	6	2
5.16	3	●	DSAS0516X03S060	16.5	29.0	30.0	82.0	81	1.0	6	2
5.16	5	●	DSAS0516X05S060	26.8	40.0	43.0	90.0	89	1.0	6	2
5.20	3	●	DSAS0520X03S060	16.6	29.0	30.0	82.0	81	1.0	6	2
5.20	5	●	DSAS0520X05S060	27.0	40.0	43.0	90.0	89	1.0	6	2
5.30	3	●	DSAS0530X03S060	16.9	29.0	30.0	82.0	81	1.0	6	2
5.30	5	●	DSAS0530X05S060	27.5	40.0	43.0	90.0	89	1.0	6	2
5.40	3	●	DSAS0540X03S060	17.2	29.0	30.0	82.0	81	1.0	6	2
5.40	5	●	DSAS0540X05S060	28.0	40.0	43.0	90.0	89	1.0	6	2
5.50	3	●	DSAS0550X03S060	17.5	29.0	30.0	82.0	81	1.0	6	2
5.50	5	●	DSAS0550X05S060	28.5	40.0	43.0	90.0	89	1.0	6	2
5.56	3	●	DSAS0556X03S060	17.8	31.1	31.1	82.1	81	1.1	6	2
5.56	5	●	DSAS0556X05S060	28.9	43.1	43.1	90.1	89	1.1	6	2
5.60	3	●	DSAS0560X03S060	17.9	31.1	31.1	82.1	81	1.1	6	2
5.60	5	●	DSAS0560X05S060	29.1	43.1	43.1	90.1	89	1.1	6	2
5.70	3	●	DSAS0570X03S060	18.2	31.1	31.1	82.1	81	1.1	6	2
5.70	5	●	DSAS0570X05S060	29.6	43.1	43.1	90.1	89	1.1	6	2
5.80	3	●	DSAS0580X03S060	18.5	31.1	31.1	82.1	81	1.1	6	2
5.80	5	●	DSAS0580X05S060	30.1	43.1	43.1	90.1	89	1.1	6	2
5.90	3	●	DSAS0590X03S060	18.8	31.1	31.1	82.1	81	1.1	6	2
5.90	5	●	DSAS0590X05S060	30.6	43.1	43.1	90.1	89	1.1	6	2
5.95	3	●	DSAS0595X03S060	19.0	31.1	31.1	82.1	81	1.1	6	2
5.95	5	●	DSAS0595X05S060	30.9	43.1	43.1	90.1	89	1.1	6	2
6.00	3	●	DSAS0600X03S060	19.1	31.1	31.1	82.1	81	1.1	6	2
6.00	5	●	DSAS0600X05S060	31.1	43.1	43.1	90.1	89	1.1	6	2
6.10	3	●	DSAS0610X03S080	19.5	34.2	37.2	87.2	86	1.2	8	2
6.10	5	●	DSAS0610X05S080	31.7	47.2	49.2	96.2	95	1.2	8	2
6.20	3	●	DSAS0620X03S080	19.8	34.2	37.2	87.2	86	1.2	8	2
6.20	5	●	DSAS0620X05S080	32.2	47.2	49.2	96.2	95	1.2	8	2
6.30	3	●	DSAS0630X03S080	20.1	34.2	37.2	87.2	86	1.2	8	2
6.30	5	●	DSAS0630X05S080	32.7	47.2	49.2	96.2	95	1.2	8	2
6.35	3	●	DSAS0635X03S080	20.3	34.2	37.2	87.2	86	1.2	8	2
6.35	5	●	DSAS0635X05S080	33.0	47.2	49.2	96.2	95	1.2	8	2
6.40	3	●	DSAS0640X03S080	20.4	34.2	37.2	87.2	86	1.2	8	2
6.40	5	●	DSAS0640X05S080	33.2	47.2	49.2	96.2	95	1.2	8	2
6.50	3	●	DSAS0650X03S080	20.7	34.2	37.2	87.2	86	1.2	8	2
6.50	5	●	DSAS0650X05S080	33.7	47.2	49.2	96.2	95	1.2	8	2

● : Estoque mantido.



DC (mm)	Prof. do Furo (L/D)	DP9020	Referência para Pedido	Dimensões (mm)							Tipo
				LU	LCF	LH	OAL	LF	PL	DCON	
6.60	3	●	DSAS0660X03S080	21.1	36.3	38.3	91.3	90	1.3	8	2
6.60	5	●	DSAS0660X05S080	34.3	50.3	52.3	99.3	98	1.3	8	2
6.70	3	●	DSAS0670X03S080	21.4	36.3	38.3	91.3	90	1.3	8	2
6.70	5	●	DSAS0670X05S080	34.8	50.3	52.3	99.3	98	1.3	8	2
6.75	3	●	DSAS0675X03S080	21.5	36.3	38.3	91.3	90	1.3	8	2
6.75	5	●	DSAS0675X05S080	35.0	50.3	52.3	99.3	98	1.3	8	2
6.80	3	●	DSAS0680X03S080	21.7	36.3	38.3	91.3	90	1.3	8	2
6.80	5	●	DSAS0680X05S080	35.3	50.3	52.3	99.3	98	1.3	8	2
6.90	3	●	DSAS0690X03S080	22.0	36.3	38.3	91.3	90	1.3	8	2
6.90	5	●	DSAS0690X05S080	35.8	50.3	52.3	99.3	98	1.3	8	2
6.95	3	●	DSAS0695X03S080	22.2	36.3	38.3	91.3	90	1.3	8	2
6.95	5	●	DSAS0695X05S080	36.1	50.3	52.3	99.3	98	1.3	8	2
7.00	3	●	DSAS0700X03S080	22.3	36.3	38.3	91.3	90	1.3	8	2
7.00	5	●	DSAS0700X05S080	36.3	50.3	52.3	99.3	98	1.3	8	2
7.10	3	●	DSAS0710X03S080	22.7	39.4	40.4	91.4	90	1.4	8	2
7.10	5	●	DSAS0710X05S080	36.9	54.4	57.4	104.4	103	1.4	8	2
7.14	3	●	DSAS0714X03S080	22.8	39.4	40.4	91.4	90	1.4	8	2
7.14	5	●	DSAS0714X05S080	37.1	54.4	57.4	104.4	103	1.4	8	2
7.20	3	●	DSAS0720X03S080	23.0	39.4	40.4	91.4	90	1.4	8	2
7.20	5	●	DSAS0720X05S080	37.4	54.4	57.4	104.4	103	1.4	8	2
7.30	3	●	DSAS0730X03S080	23.3	39.4	40.4	91.4	90	1.4	8	2
7.30	5	●	DSAS0730X05S080	37.9	54.4	57.4	104.4	103	1.4	8	2
7.40	3	●	DSAS0740X03S080	23.6	39.4	40.4	91.4	90	1.4	8	2
7.40	5	●	DSAS0740X05S080	38.4	54.4	57.4	104.4	103	1.4	8	2
7.50	3	●	DSAS0750X03S080	23.9	39.4	40.4	91.4	90	1.4	8	2
7.50	5	●	DSAS0750X05S080	38.9	54.4	57.4	104.4	103	1.4	8	2
7.54	3	●	DSAS0754X03S080	24.1	41.5	41.5	91.5	90	1.5	8	2
7.54	5	●	DSAS0754X05S080	39.2	57.5	57.5	104.5	103	1.5	8	2
7.60	3	●	DSAS0760X03S080	24.3	41.5	41.5	91.5	90	1.5	8	2
7.60	5	●	DSAS0760X05S080	39.5	57.5	57.5	104.5	103	1.5	8	2
7.70	3	●	DSAS0770X03S080	24.6	41.5	41.5	91.5	90	1.5	8	2
7.70	5	●	DSAS0770X05S080	40.0	57.5	57.5	104.5	103	1.5	8	2
7.80	3	●	DSAS0780X03S080	24.9	41.5	41.5	91.5	90	1.5	8	2
7.80	5	●	DSAS0780X05S080	40.5	57.5	57.5	104.5	103	1.5	8	2
7.90	3	●	DSAS0790X03S080	25.2	41.5	41.5	91.5	90	1.5	8	2
7.90	5	●	DSAS0790X05S080	41.0	57.5	57.5	104.5	103	1.5	8	2
7.94	3	●	DSAS0794X03S080	25.3	41.5	41.5	91.5	90	1.5	8	2
7.94	5	●	DSAS0794X05S080	41.2	57.5	57.5	104.5	103	1.5	8	2
8.00	3	●	DSAS0800X03S080	25.5	41.5	41.5	91.5	90	1.5	8	2
8.00	5	●	DSAS0800X05S080	41.5	57.5	57.5	104.5	103	1.5	8	2
8.10	3	●	DSAS0810X03S100	25.8	44.5	47.5	97.5	96	1.5	10	2
8.10	5	●	DSAS0810X05S100	42.0	61.5	63.5	114.5	113	1.5	10	2
8.20	3	●	DSAS0820X03S100	26.1	44.5	47.5	97.5	96	1.5	10	2
8.20	5	●	DSAS0820X05S100	42.5	61.5	63.5	114.5	113	1.5	10	2
8.30	3	●	DSAS0830X03S100	26.4	44.5	47.5	97.5	96	1.5	10	2
8.30	5	●	DSAS0830X05S100	43.0	61.5	63.5	114.5	113	1.5	10	2
8.33	3	●	DSAS0833X03S100	26.5	44.5	47.5	97.5	96	1.5	10	2
8.33	5	●	DSAS0833X05S100	43.2	61.5	63.5	114.5	113	1.5	10	2
8.40	3	●	DSAS0840X03S100	26.7	44.5	47.5	97.5	96	1.5	10	2
8.40	5	●	DSAS0840X05S100	43.5	61.5	63.5	114.5	113	1.5	10	2
8.50	3	●	DSAS0850X03S100	27.0	44.5	47.5	97.5	96	1.5	10	2
8.50	5	●	DSAS0850X05S100	44.0	61.5	63.5	114.5	113	1.5	10	2
8.60	3	●	DSAS0860X03S100	27.4	46.6	48.6	102.6	101	1.6	10	2
8.60	5	●	DSAS0860X05S100	44.6	64.6	66.6	117.6	116	1.6	10	2
8.70	3	●	DSAS0870X03S100	27.7	46.6	48.6	102.6	101	1.6	10	2
8.70	5	●	DSAS0870X05S100	45.1	64.6	66.6	117.6	116	1.6	10	2

FURAÇÃO(METAL DURO INTEIRIÇO)

DSAS NEW

Broca inteiraça de metal duro para ligas resistentes ao calor

DC (mm)	Prof. do Furo (L/D)	DP9020	Referência para Pedido	Dimensões (mm)							Tipo
				LU	LCF	LH	OAL	LF	PL	DCON	
8.73	3	●	DSAS0873X03S100	27.8	46.6	48.6	102.6	101	1.6	10	2
8.73	5	●	DSAS0873X05S100	45.3	64.6	66.6	117.6	116	1.6	10	2
8.80	3	●	DSAS0880X03S100	28.0	46.6	48.6	102.6	101	1.6	10	2
8.80	5	●	DSAS0880X05S100	45.6	64.6	66.6	117.6	116	1.6	10	2
8.90	3	●	DSAS0890X03S100	28.3	46.6	48.6	102.6	101	1.6	10	2
8.90	5	●	DSAS0890X05S100	46.1	64.6	66.6	117.6	116	1.6	10	2
9.00	3	●	DSAS0900X03S100	28.6	46.6	48.6	102.6	101	1.6	10	2
9.00	5	●	DSAS0900X05S100	46.6	64.6	66.6	117.6	116	1.6	10	2
9.10	3	●	DSAS0910X03S100	29.1	49.8	50.8	102.8	101	1.8	10	2
9.10	5	●	DSAS0910X05S100	47.3	68.8	71.8	122.8	121	1.8	10	2
9.20	3	●	DSAS0920X03S100	29.4	49.8	50.8	102.8	101	1.8	10	2
9.20	5	●	DSAS0920X05S100	47.8	68.8	71.8	122.8	121	1.8	10	2
9.30	3	●	DSAS0930X03S100	29.7	49.8	50.8	102.8	101	1.8	10	2
9.30	5	●	DSAS0930X05S100	48.3	68.8	71.8	122.8	121	1.8	10	2
9.40	3	●	DSAS0940X03S100	30.0	49.8	50.8	102.8	101	1.8	10	2
9.40	5	●	DSAS0940X05S100	48.8	68.8	71.8	122.8	121	1.8	10	2
9.50	3	●	DSAS0950X03S100	30.3	49.8	50.8	102.8	101	1.8	10	2
9.50	5	●	DSAS0950X05S100	49.3	68.8	71.8	122.8	121	1.8	10	2
9.53	3	●	DSAS0953X03S100	30.4	49.8	50.8	102.8	101	1.8	10	2
9.53	5	●	DSAS0953X05S100	49.4	68.8	71.8	122.8	121	1.8	10	2
9.60	3	●	DSAS0960X03S100	30.6	49.8	50.8	102.8	101	1.8	10	2
9.60	5	●	DSAS0960X05S100	49.8	68.8	71.8	122.8	121	1.8	10	2
9.70	3	●	DSAS0970X03S100	30.9	49.8	50.8	102.8	101	1.8	10	2
9.70	5	●	DSAS0970X05S100	50.3	68.8	71.8	122.8	121	1.8	10	2
9.80	3	●	DSAS0980X03S100	31.2	51.8	51.8	102.8	101	1.8	10	2
9.80	5	●	DSAS0980X05S100	50.8	71.8	71.8	122.8	121	1.8	10	2
9.90	3	●	DSAS0990X03S100	31.5	51.9	51.8	102.8	101	1.8	10	2
9.90	5	●	DSAS0990X05S100	51.3	71.8	71.8	122.8	121	1.8	10	2
9.92	3	●	DSAS0992X03S100	31.6	51.8	51.8	102.8	101	1.8	10	2
9.92	5	●	DSAS0992X05S100	51.4	71.8	71.8	122.8	121	1.8	10	2
10.00	3	●	DSAS1000X03S100	31.8	51.8	51.8	102.8	101	1.8	10	2
10.00	5	●	DSAS1000X05S100	51.8	71.8	71.8	122.8	121	1.8	10	2
10.10	3	●	DSAS1010X03S120	32.2	54.9	57.9	112.9	111	1.9	12	2
10.10	5	●	DSAS1010X05S120	52.4	75.9	79.9	135.9	134	1.9	12	2
10.20	3	●	DSAS1020X03S120	32.5	54.9	57.9	112.9	111	1.9	12	2
10.20	5	●	DSAS1020X05S120	52.9	75.9	79.9	135.9	134	1.9	12	2
10.30	3	●	DSAS1030X03S120	32.8	54.9	57.9	112.9	111	1.9	12	2
10.30	5	●	DSAS1030X05S120	53.4	75.9	79.9	135.9	134	1.9	12	2
10.32	3	●	DSAS1032X03S120	32.9	54.9	57.9	112.9	111	1.9	12	2
10.32	5	●	DSAS1032X05S120	53.5	75.9	79.9	135.9	134	1.9	12	2
10.40	3	●	DSAS1040X03S120	33.1	54.9	57.9	112.9	111	1.9	12	2
10.40	5	●	DSAS1040X05S120	53.9	75.9	79.9	135.9	134	1.9	12	2
10.50	3	●	DSAS1050X03S120	33.4	54.9	57.9	112.9	111	1.9	12	2
10.50	5	●	DSAS1050X05S120	54.4	75.9	79.9	135.9	134	1.9	12	2
10.60	3	●	DSAS1060X03S120	33.7	54.9	57.9	112.9	111	1.9	12	2
10.60	5	●	DSAS1060X05S120	54.9	75.9	79.9	135.9	134	1.9	12	2
10.70	3	●	DSAS1070X03S120	34.0	54.9	57.9	112.9	111	1.9	12	2
10.70	5	●	DSAS1070X05S120	55.4	75.9	79.9	135.9	134	1.9	12	2
10.72	3	●	DSAS1072X03S120	34.1	57.0	59.0	118.0	116	2.0	12	2
10.72	5	●	DSAS1072X05S120	55.6	79.0	80.0	142.0	140	2.0	12	2
10.80	3	●	DSAS1080X03S120	34.4	57.0	59.0	118.0	116	2.0	12	2
10.80	5	●	DSAS1080X05S120	56.0	79.0	80.0	142.0	140	2.0	12	2
10.90	3	●	DSAS1090X03S120	34.7	57.0	59.0	118.0	116	2.0	12	2
10.90	5	●	DSAS1090X05S120	56.5	79.0	80.0	142.0	140	2.0	12	2
11.00	3	●	DSAS1100X03S120	35.0	57.0	59.0	118.0	116	2.0	12	2
11.00	5	●	DSAS1100X05S120	57.0	79.0	80.0	142.0	140	2.0	12	2

● : Estoque mantido.



DC (mm)	Prof. do Furo (L/D)	DP9020	Referência para Pedido	Dimensões (mm)							Tipo
				LU	LCF	LH	OAL	LF	PL	DCON	
11.10	3	●	DSAS1110X03S120	35.4	60.1	61.1	118.1	116	2.1	12	2
11.10	5	●	DSAS1110X05S120	57.6	83.1	86.1	142.1	140	2.1	12	2
11.11	3	●	DSAS1111X03S120	35.4	60.1	61.1	118.1	116	2.1	12	2
11.11	5	●	DSAS1111X05S120	57.7	83.1	86.1	142.1	140	2.1	12	2
11.20	3	●	DSAS1120X03S120	35.7	60.1	61.1	118.1	116	2.1	12	2
11.20	5	●	DSAS1120X05S120	58.1	83.1	86.1	142.1	140	2.1	12	2
11.30	3	●	DSAS1130X03S120	36.0	60.1	61.1	118.1	116	2.1	12	2
11.30	5	●	DSAS1130X05S120	58.6	83.1	86.1	142.1	140	2.1	12	2
11.40	3	●	DSAS1140X03S120	36.3	60.1	61.1	118.1	116	2.1	12	2
11.40	5	●	DSAS1140X05S120	59.1	83.1	86.1	142.1	140	2.1	12	2
11.50	3	●	DSAS1150X03S120	36.6	60.1	61.1	118.1	116	2.1	12	2
11.50	5	●	DSAS1150X05S120	59.6	83.1	86.1	142.1	140	2.1	12	2
11.51	3	●	DSAS1151X03S120	36.7	62.2	62.2	118.2	116	2.2	12	2
11.51	5	●	DSAS1151X05S120	59.7	86.2	86.2	142.2	140	2.2	12	2
11.60	3	●	DSAS1160X03S120	37.0	62.2	62.2	118.2	116	2.2	12	2
11.60	5	●	DSAS1160X05S120	60.2	86.2	86.2	142.2	140	2.2	12	2
11.70	3	●	DSAS1170X03S120	37.3	62.2	62.2	118.2	116	2.2	12	2
11.70	5	●	DSAS1170X05S120	60.7	86.2	86.2	142.2	140	2.2	12	2
11.80	3	●	DSAS1180X03S120	37.6	62.2	62.2	118.2	116	2.2	12	2
11.80	5	●	DSAS1180X05S120	61.2	86.2	86.2	142.2	140	2.2	12	2
11.90	3	●	DSAS1190X03S120	37.9	62.2	62.2	118.2	116	2.2	12	2
11.90	5	●	DSAS1190X05S120	61.7	86.2	86.2	142.2	140	2.2	12	2
12.00	3	●	DSAS1200X03S120	38.2	62.2	62.2	118.2	116	2.2	12	2
12.00	5	●	DSAS1200X05S120	62.2	86.2	86.2	142.2	140	2.2	12	2

FURAÇÃO(METAL DURO INTEIRIÇO)

DSAE NEW

● A guia fina especialmente desenvolvida para furação de ligas resistentes ao calor minimiza o contato com a superfície do furo. Combinada à TRI-Cooling Technology, reduz o calor de corte e previne o encruamento do material.

Broca inteiraça de metal duro para ligas resistentes ao calor



P

M

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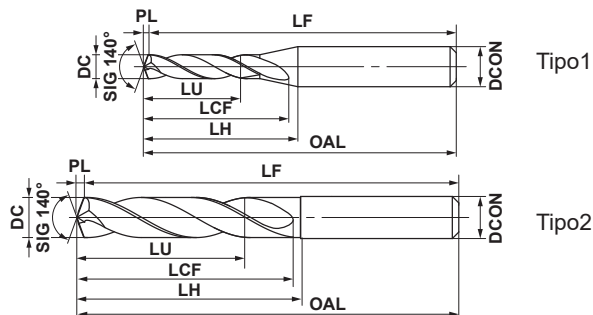
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Ligas Resist. ao Calor

Refrigeração Externa



DC=3	3<DC≤6	6<DC≤10	10<DC≤12
⁰ _{-0.018}	⁰ _{-0.018}	⁰ _{-0.022}	⁰ _{-0.027}
DCON=6	6<DCON≤10	DCON=12	
⁰ _{-0.018}	⁰ _{-0.009}	⁰ _{-0.011}	

*Dependendo da direção de visualização, a cobertura pode apresentar uma variação na coloração. Isto não afeta o rendimento da broca.

DC (mm)	Prof. do Furo (L/D)	DP9020	Referência para Pedido	Dimensões (mm)							Tipo
				LU	LCF	LH	OAL	LF	PL	DCON	
3.0	3	●	DSAE0300X03S060	9.5	21.5	23.5	70.5	70	0.5	6	1
3.4	3	●	DSAE0340X03S060	10.8	21.6	23.6	70.6	70	0.6	6	1
4.0	3	●	DSAE0400X03S060	12.7	22.7	23.7	70.7	70	0.7	6	1
4.3	3	●	DSAE0430X03S060	13.7	24.8	26.8	73.8	73	0.8	6	1
4.5	3	●	DSAE0450X03S060	14.3	24.8	26.8	73.8	73	0.8	6	1
5.0	3	●	DSAE0500X03S060	15.9	28.9	29.9	81.9	81	0.9	6	2
5.1	3	●	DSAE0510X03S060	16.2	28.9	29.9	81.9	81	0.9	6	2
5.4	3	●	DSAE0540X03S060	17.2	29.0	30.0	82.0	81	1.0	6	2
5.5	3	●	DSAE0550X03S060	17.5	29.0	30.0	82.0	81	1.0	6	2
5.6	3	●	DSAE0560X03S060	17.9	31.1	31.1	82.1	81	1.1	6	2
5.9	3	●	DSAE0590X03S060	18.8	31.1	31.1	82.1	81	1.1	6	2
6.0	3	●	DSAE0600X03S060	19.1	31.1	31.1	82.1	81	1.1	6	2
6.1	3	●	DSAE0610X03S080	19.5	34.2	37.2	87.2	86	1.2	8	2
6.2	3	●	DSAE0620X03S080	19.8	34.2	37.2	87.2	86	1.2	8	2
6.4	3	●	DSAE0640X03S080	20.4	34.2	37.2	87.2	86	1.2	8	2
6.8	3	●	DSAE0680X03S080	21.7	36.3	38.3	91.3	90	1.3	8	2
6.9	3	●	DSAE0690X03S080	22.0	36.3	38.3	91.3	90	1.3	8	2
7.0	3	●	DSAE0700X03S080	22.3	36.3	38.3	91.3	90	1.3	8	2
7.1	3	●	DSAE0710X03S080	22.7	39.4	40.4	91.4	90	1.4	8	2
7.8	3	●	DSAE0780X03S080	24.9	41.5	41.5	91.5	90	1.5	8	2
8.0	3	●	DSAE0800X03S080	25.5	41.5	41.5	91.5	90	1.5	8	2
8.1	3	●	DSAE0810X03S100	25.8	44.5	47.5	97.5	96	1.5	10	2
8.2	3	●	DSAE0820X03S100	26.1	44.5	47.5	97.5	96	1.5	10	2
8.4	3	●	DSAE0840X03S100	26.7	44.5	47.5	97.5	96	1.5	10	2
8.5	3	●	DSAE0850X03S100	27.0	44.5	47.5	97.5	96	1.5	10	2
9.0	3	●	DSAE0900X03S100	28.6	46.6	48.6	102.6	101	1.6	10	2
10.0	3	●	DSAE1000X03S100	31.8	51.8	51.8	102.8	101	1.8	10	2
10.5	3	●	DSAE1050X03S120	33.4	54.9	57.9	112.9	111	1.9	12	2
10.7	3	●	DSAE1070X03S120	34.0	54.9	57.9	112.9	111	1.9	12	2
11.0	3	●	DSAE1100X03S120	35.0	57.0	59.0	118.0	116	2.0	12	2
11.5	3	●	DSAE1150X03S120	36.6	60.1	61.1	118.1	116	2.1	12	2
12.0	3	●	DSAE1200X03S120	38.2	62.2	62.2	118.2	116	2.2	12	2

● : Estoque mantido.

CONDIÇÕES DE CORTE RECOMENDADAS

Material		Ligas Resistentes ao Calor		Ligas de titânio	
		Inconel718 etc		Ti-6Al-4V etc	
Diâm. DC (mm)	L/D	Rotação (min ⁻¹)	Taxa de Avanço (mín.—máx.) (mm/rot)	Rotação (min ⁻¹)	Taxa de Avanço (mín.—máx.) (mm/rot)
3.0	≤ 5	1000	0.06 (0.04—0.10)	4200	0.08 (0.06—0.12)
4.0	≤ 5	790	0.06 (0.04—0.10)	3100	0.10 (0.08—0.16)
5.0	≤ 5	760	0.08 (0.06—0.12)	2500	0.12 (0.08—0.20)
6.0	≤ 5	790	0.10 (0.08—0.15)	2100	0.14 (0.10—0.20)
8.0	≤ 5	590	0.10 (0.08—0.15)	1600	0.18 (0.15—0.25)
10.0	≤ 5	570	0.10 (0.08—0.15)	1300	0.22 (0.18—0.28)
12.0	≤ 5	530	0.12 (0.08—0.15)	1100	0.24 (0.20—0.30)

Nota 1) Para uma furação estável, recomenda-se usar refrigeração interna de alta pressão.

Nota 2) Recomenda-se emulsão aquosa.

Nota 3) Para uso de óleo integral, reduza a velocidade de corte em 10-20%.

Nota 4) Na usinagem de profundidades de corte maiores que DC x 1.0 com refrigeração externa, recomenda-se avanço "pica-pau" com incrementos em profundidade de DC x 0.5 para facilitar a quebra de cavacos.

FURAÇÃO(METAL DURO INTEIRIÇO)

MMS

BROCAS WSTAR

● Alta eficiência e longa vida útil na furação de aço inoxidável.



P

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K

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S

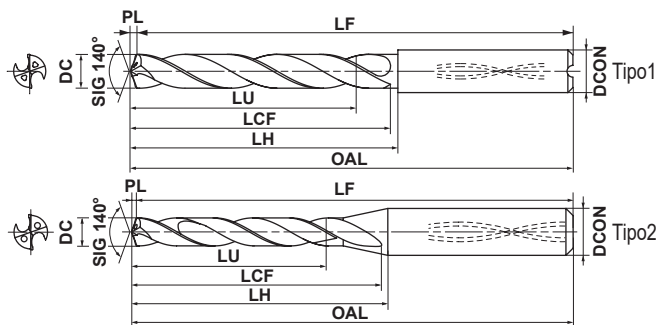
H

Aço Inoxidável

Refrigeração Interna



	DC=3	3<DC≤6	6<DC≤10	10<DC≤18	18<DC≤20
	⁰ / _{-0.014}	⁰ / _{-0.018}	⁰ / _{-0.022}	⁰ / _{-0.027}	⁰ / _{-0.033}
		3<DCON≤6	6<DCON≤10	10<DCON≤18	18<DCON≤20
h6		⁰ / _{-0.008}	⁰ / _{-0.009}	⁰ / _{-0.011}	⁰ / _{-0.013}



*Dependendo da direção de visualização, a cobertura pode apresentar uma variação na coloração. Isto não afeta o rendimento da broca.

Nota 1) As brocas MMS são indicadas para uso com mandris de contração térmica.

DC (mm)	Prof. do Furo (L/D)	DP7020	Referência para Pedido	Dimensões (mm)							Tipo
				LU	LCF	LH	OAL	LF	PL	DCON	
3.0	3	●	MMS0300X3DB	9.5	21.5	23.5	70.5	70	0.5	6	2
3.0	5	●	MMS0300X5DB	15.5	28.5	31.5	78.5	78	0.5	6	2
3.1	3	●	MMS0310X3DB	9.9	21.6	23.6	70.6	70	0.6	6	2
3.1	5	●	MMS0310X5DB	16.1	28.6	31.6	78.6	78	0.6	6	2
3.2	3	●	MMS0320X3DB	10.2	21.6	23.6	70.6	70	0.6	6	2
3.2	5	●	MMS0320X5DB	16.6	28.6	31.6	78.6	78	0.6	6	2
3.3	3	●	MMS0330X3DB	10.5	21.6	23.6	70.6	70	0.6	6	2
3.3	5	●	MMS0330X5DB	17.1	28.6	31.6	78.6	78	0.6	6	2
3.4	3	●	MMS0340X3DB	10.8	21.6	23.6	70.6	70	0.6	6	2
3.4	5	●	MMS0340X5DB	17.6	28.6	31.6	78.6	78	0.6	6	2
3.5	3	●	MMS0350X3DB	11.1	21.6	23.6	70.6	70	0.6	6	2
3.5	5	●	MMS0350X5DB	18.1	28.6	31.6	78.6	78	0.6	6	2
3.6	3	●	MMS0360X3DB	11.5	22.7	23.7	70.7	70	0.7	6	2
3.6	5	●	MMS0360X5DB	18.7	30.7	31.7	78.7	78	0.7	6	2
3.7	3	●	MMS0370X3DB	11.8	22.7	23.7	70.7	70	0.7	6	2
3.7	5	●	MMS0370X5DB	19.2	30.7	31.7	78.7	78	0.7	6	2
3.8	3	●	MMS0380X3DB	12.1	22.7	23.7	70.7	70	0.7	6	2
3.8	5	●	MMS0380X5DB	19.7	30.7	31.7	78.7	78	0.7	6	2
3.9	3	●	MMS0390X3DB	12.4	22.7	23.7	70.7	70	0.7	6	2
3.9	5	●	MMS0390X5DB	20.2	30.7	31.7	78.7	78	0.7	6	2
4.0	3	●	MMS0400X3DB	12.7	22.7	23.7	70.7	70	0.7	6	2
4.0	5	●	MMS0400X5DB	20.7	30.7	31.7	78.7	78	0.7	6	2
4.1	3	●	MMS0410X3DB	13.0	24.7	26.7	73.7	73	0.7	6	2
4.1	5	●	MMS0410X5DB	21.2	33.7	35.7	82.7	82	0.7	6	2
4.2	3	●	MMS0420X3DB	13.4	24.8	26.8	73.8	73	0.8	6	2
4.2	5	●	MMS0420X5DB	21.8	33.8	35.8	82.8	82	0.8	6	2
4.3	3	●	MMS0430X3DB	13.7	24.8	26.8	73.8	73	0.8	6	2
4.3	5	●	MMS0430X5DB	22.3	33.8	35.8	82.8	82	0.8	6	2
4.4	3	●	MMS0440X3DB	14.0	24.8	26.8	73.8	73	0.8	6	2
4.4	5	●	MMS0440X5DB	22.8	33.8	35.8	82.8	82	0.8	6	2
4.5	3	●	MMS0450X3DB	14.3	24.8	26.8	73.8	73	0.8	6	2
4.5	5	●	MMS0450X5DB	23.3	33.8	35.8	82.8	82	0.8	6	2

DC (mm)	Prof. do Furo (L/D)	DP7020	Referência para Pedido	Dimensões (mm)							Tipo
				LU	LCF	LH	OAL	LF	PL	DCON	
4.6	3	●	MMS0460X3DB	14.6	25.8	28.8	75.8	75	0.8	6	1
4.6	5	●	MMS0460X5DB	23.8	35.8	38.8	85.8	85	0.8	6	1
4.7	3	●	MMS0470X3DB	15.0	25.9	28.9	75.9	75	0.9	6	1
4.7	5	●	MMS0470X5DB	24.4	35.9	38.9	85.9	85	0.9	6	1
4.8	3	●	MMS0480X3DB	15.3	25.9	28.9	75.9	75	0.9	6	1
4.8	5	●	MMS0480X5DB	24.9	35.9	38.9	85.9	85	0.9	6	1
4.9	3	●	MMS0490X3DB	15.6	25.9	28.9	75.9	75	0.9	6	1
4.9	5	●	MMS0490X5DB	25.4	35.9	38.9	85.9	85	0.9	6	1
5.0	3	●	MMS0500X3DB	15.9	25.9	28.9	75.9	75	0.9	6	1
5.0	5	●	MMS0500X5DB	25.9	35.9	38.9	85.9	85	0.9	6	1
5.1	3	●	MMS0510X3DB	16.2	28.9	30.9	81.9	81	0.9	6	1
5.1	5	●	MMS0510X5DB	26.4	39.9	42.9	89.9	89	0.9	6	1
5.2	3	●	MMS0520X3DB	16.5	28.9	30.9	81.9	81	0.9	6	1
5.2	5	●	MMS0520X5DB	26.9	39.9	42.9	89.9	89	0.9	6	1
5.3	3	●	MMS0530X3DB	16.9	29.0	31.0	82.0	81	1.0	6	1
5.3	5	●	MMS0530X5DB	27.5	40.0	43.0	90.0	89	1.0	6	1
5.4	3	●	MMS0540X3DB	17.2	29.0	31.0	82.0	81	1.0	6	1
5.4	5	●	MMS0540X5DB	28.0	40.0	43.0	90.0	89	1.0	6	1
5.5	3	●	MMS0550X3DB	17.5	29.0	31.0	82.0	81	1.0	6	1
5.5	5	●	MMS0550X5DB	28.5	40.0	43.0	90.0	89	1.0	6	1
5.6	3	●	MMS0560X3DB	17.8	31.0	31.0	82.0	81	1.0	6	1
5.6	5	●	MMS0560X5DB	29.0	43.0	43.0	90.0	89	1.0	6	1
5.7	3	●	MMS0570X3DB	18.1	31.0	31.0	82.0	81	1.0	6	1
5.7	5	●	MMS0570X5DB	29.5	43.0	43.0	90.0	89	1.0	6	1
5.8	3	●	MMS0580X3DB	18.5	31.1	31.1	82.1	81	1.1	6	1
5.8	5	●	MMS0580X5DB	30.1	43.1	43.1	90.1	89	1.1	6	1
5.9	3	●	MMS0590X3DB	18.8	31.1	31.1	82.1	81	1.1	6	1
5.9	5	●	MMS0590X5DB	30.6	43.1	43.1	90.1	89	1.1	6	1
6.0	3	●	MMS0600X3DB	19.1	31.1	31.1	82.1	81	1.1	6	1
6.0	5	●	MMS0600X5DB	31.1	43.1	43.1	90.1	89	1.1	6	1
6.1	3	●	MMS0610X3DB	19.4	34.1	36.1	87.1	86	1.1	8	1
6.1	5	●	MMS0610X5DB	31.6	47.1	49.1	96.1	95	1.1	8	1

Nota 1) Por favor entre em contato para qualquer geometria que não conste no catálogo (ex.: diâmetro e comprimento diferente.).

Nota 2) As brocas de ø6mm ou menores têm furo de refrigeração com seção circular.

FURAÇÃO

DC (mm)	Prof. do Furo (L/D)	DP7020	Referência para Pedido	Dimensões (mm)							Tipo
				LU	LCF	LH	OAL	LF	PL	DCON	
6.2	3	●	MMS0620X3DB	19.7	34.1	36.1	87.1	86	1.1	8	1
6.2	5	●	MMS0620X5DB	32.1	47.1	49.1	96.1	95	1.1	8	1
6.3	3	●	MMS0630X3DB	20.0	34.1	36.1	87.1	86	1.1	8	1
6.3	5	●	MMS0630X5DB	32.6	47.1	49.1	96.1	95	1.1	8	1
6.4	3	●	MMS0640X3DB	20.4	34.2	36.2	87.2	86	1.2	8	1
6.4	5	●	MMS0640X5DB	33.2	47.2	49.2	96.2	95	1.2	8	1
6.5	3	●	MMS0650X3DB	20.7	34.2	36.2	87.2	86	1.2	8	1
6.5	5	●	MMS0650X5DB	33.7	47.2	49.2	96.2	95	1.2	8	1
6.6	3	●	MMS0660X3DB	21.0	36.2	38.2	91.2	90	1.2	8	1
6.6	5	●	MMS0660X5DB	34.2	50.2	52.2	99.2	98	1.2	8	1
6.7	3	●	MMS0670X3DB	21.3	36.2	38.2	91.2	90	1.2	8	1
6.7	5	●	MMS0670X5DB	34.7	50.2	52.2	99.2	98	1.2	8	1
6.8	3	●	MMS0680X3DB	21.6	36.2	38.2	91.2	90	1.2	8	1
6.8	5	●	MMS0680X5DB	35.2	50.2	52.2	99.2	98	1.2	8	1
6.9	3	●	MMS0690X3DB	22.0	36.3	38.3	91.3	90	1.3	8	1
6.9	5	●	MMS0690X5DB	35.8	50.3	52.3	99.3	98	1.3	8	1
7.0	3	●	MMS0700X3DB	22.3	36.3	38.3	91.3	90	1.3	8	1
7.0	5	●	MMS0700X5DB	36.3	50.3	52.3	99.3	98	1.3	8	1
7.1	3	●	MMS0710X3DB	22.6	39.3	40.3	91.3	90	1.3	8	1
7.1	5	●	MMS0710X5DB	36.8	54.3	57.3	104.3	103	1.3	8	1
7.2	3	●	MMS0720X3DB	22.9	39.3	40.3	91.3	90	1.3	8	1
7.2	5	●	MMS0720X5DB	37.3	54.3	57.3	104.3	103	1.3	8	1
7.3	3	●	MMS0730X3DB	23.2	39.3	40.3	91.3	90	1.3	8	1
7.3	5	●	MMS0730X5DB	37.8	54.3	57.3	104.3	103	1.3	8	1
7.4	3	●	MMS0740X3DB	23.5	39.3	40.3	91.3	90	1.3	8	1
7.4	5	●	MMS0740X5DB	38.3	54.3	57.3	104.3	103	1.3	8	1
7.5	3	●	MMS0750X3DB	23.9	39.4	40.4	91.4	90	1.4	8	1
7.5	5	●	MMS0750X5DB	38.9	54.4	57.4	104.4	103	1.4	8	1
7.6	3	●	MMS0760X3DB	24.2	41.4	41.4	91.4	90	1.4	8	1
7.6	5	●	MMS0760X5DB	39.4	57.4	57.4	104.4	103	1.4	8	1
7.7	3	●	MMS0770X3DB	24.5	41.4	41.4	91.4	90	1.4	8	1
7.7	5	●	MMS0770X5DB	39.9	57.4	57.4	104.4	103	1.4	8	1
7.8	3	●	MMS0780X3DB	24.8	41.4	41.4	91.4	90	1.4	8	1
7.8	5	●	MMS0780X5DB	40.4	57.4	57.4	104.4	103	1.4	8	1
7.9	3	●	MMS0790X3DB	25.1	41.4	41.4	91.4	90	1.4	8	1
7.9	5	●	MMS0790X5DB	40.9	57.4	57.4	104.4	103	1.4	8	1
8.0	3	●	MMS0800X3DB	25.5	41.5	41.5	91.5	90	1.5	8	1
8.0	5	●	MMS0800X5DB	41.5	57.5	57.5	104.5	103	1.5	8	1
8.1	3	●	MMS0810X3DB	25.8	44.5	46.5	97.5	96	1.5	10	1
8.1	5	●	MMS0810X5DB	42.0	61.5	63.5	114.5	113	1.5	10	1
8.2	3	●	MMS0820X3DB	26.1	44.5	46.5	97.5	96	1.5	10	1
8.2	5	●	MMS0820X5DB	42.5	61.5	63.5	114.5	113	1.5	10	1
8.3	3	●	MMS0830X3DB	26.4	44.5	46.5	97.5	96	1.5	10	1
8.3	5	●	MMS0830X5DB	43.0	61.5	63.5	114.5	113	1.5	10	1
8.4	3	●	MMS0840X3DB	26.7	44.5	46.5	97.5	96	1.5	10	1
8.4	5	●	MMS0840X5DB	43.5	61.5	63.5	114.5	113	1.5	10	1
8.5	3	●	MMS0850X3DB	27.0	44.5	46.5	97.5	96	1.5	10	1
8.5	5	●	MMS0850X5DB	44.0	61.5	63.5	114.5	113	1.5	10	1

DC (mm)	Prof. do Furo (L/D)	DP7020	Referência para Pedido	Dimensões (mm)							Tipo
				LU	LCF	LH	OAL	LF	PL	DCON	
8.6	3	●	MMS0860X3DB	27.4	46.6	48.6	102.6	101	1.6	10	1
8.6	5	●	MMS0860X5DB	44.6	64.6	66.6	117.6	116	1.6	10	1
8.7	3	●	MMS0870X3DB	27.7	46.6	48.6	102.6	101	1.6	10	1
8.7	5	●	MMS0870X5DB	45.1	64.6	66.6	117.6	116	1.6	10	1
8.8	3	●	MMS0880X3DB	28.0	46.6	48.6	102.6	101	1.6	10	1
8.8	5	●	MMS0880X5DB	45.6	64.6	66.6	117.6	116	1.6	10	1
8.9	3	●	MMS0890X3DB	28.3	46.6	48.6	102.6	101	1.6	10	1
8.9	5	●	MMS0890X5DB	46.1	64.6	66.6	117.6	116	1.6	10	1
9.0	3	●	MMS0900X3DB	28.6	46.6	48.6	102.6	101	1.6	10	1
9.0	5	●	MMS0900X5DB	46.6	64.6	66.6	117.6	116	1.6	10	1
9.1	3	●	MMS0910X3DB	29.0	49.7	51.7	102.7	101	1.7	10	1
9.1	5	●	MMS0910X5DB	47.2	68.7	71.7	122.7	121	1.7	10	1
9.2	3	●	MMS0920X3DB	29.3	49.7	51.7	102.7	101	1.7	10	1
9.2	5	●	MMS0920X5DB	47.7	68.7	71.7	122.7	121	1.7	10	1
9.3	3	●	MMS0930X3DB	29.6	49.7	51.7	102.7	101	1.7	10	1
9.3	5	●	MMS0930X5DB	48.2	68.7	71.7	122.7	121	1.7	10	1
9.4	3	●	MMS0940X3DB	29.9	49.7	51.7	102.7	101	1.7	10	1
9.4	5	●	MMS0940X5DB	48.7	68.7	71.7	122.7	121	1.7	10	1
9.5	3	●	MMS0950X3DB	30.2	49.7	51.7	102.7	101	1.7	10	1
9.5	5	●	MMS0950X5DB	49.2	68.7	71.7	122.7	121	1.7	10	1
9.6	3	●	MMS0960X3DB	30.5	51.7	51.7	102.7	101	1.7	10	1
9.6	5	●	MMS0960X5DB	49.7	71.7	71.7	122.7	121	1.7	10	1
9.7	3	●	MMS0970X3DB	30.9	51.8	51.8	102.8	101	1.8	10	1
9.7	5	●	MMS0970X5DB	50.3	71.8	71.8	122.8	121	1.8	10	1
9.8	3	●	MMS0980X3DB	31.2	51.8	51.8	102.8	101	1.8	10	1
9.8	5	●	MMS0980X5DB	50.8	71.8	71.8	122.8	121	1.8	10	1
9.9	3	●	MMS0990X3DB	31.5	51.8	51.8	102.8	101	1.8	10	1
9.9	5	●	MMS0990X5DB	51.3	71.8	71.8	122.8	121	1.8	10	1
10.0	3	●	MMS1000X3DB	31.8	51.8	51.8	102.8	101	1.8	10	1
10.0	5	●	MMS1000X5DB	51.8	71.8	71.8	122.8	121	1.8	10	1
10.1	3	●	MMS1010X3DB	32.1	54.8	56.8	112.8	111	1.8	12	1
10.1	5	●	MMS1010X5DB	52.3	75.8	79.8	135.8	134	1.8	12	1
10.2	3	●	MMS1020X3DB	32.5	54.9	56.9	112.9	111	1.9	12	1
10.2	5	●	MMS1020X5DB	52.9	75.9	79.9	135.9	134	1.9	12	1
10.3	3	●	MMS1030X3DB	32.8	54.9	56.9	112.9	111	1.9	12	1
10.3	5	●	MMS1030X5DB	53.4	75.9	79.9	135.9	134	1.9	12	1
10.4	3	●	MMS1040X3DB	33.1	54.9	56.9	112.9	111	1.9	12	1
10.4	5	●	MMS1040X5DB	53.9	75.9	79.9	135.9	134	1.9	12	1
10.5	3	●	MMS1050X3DB	33.4	54.9	56.9	112.9	111	1.9	12	1
10.5	5	●	MMS1050X5DB	54.4	75.9	79.9	135.9	134	1.9	12	1
10.6	3	●	MMS1060X3DB	33.7	56.9	57.9	117.9	116	1.9	12	1
10.6	5	●	MMS1060X5DB	54.9	78.9	79.9	135.9	134	1.9	12	1
10.7	3	●	MMS1070X3DB	34.0	56.9	57.9	117.9	116	1.9	12	1
10.7	5	●	MMS1070X5DB	55.4	78.9	79.9	135.9	134	1.9	12	1
10.8	3	●	MMS1080X3DB	34.4	57.0	58.0	118.0	116	2.0	12	1
10.8	5	●	MMS1080X5DB	56.0	79.0	80.0	136.0	134	2.0	12	1
10.9	3	●	MMS1090X3DB	34.7	57.0	58.0	118.0	116	2.0	12	1
10.9	5	●	MMS1090X5DB	56.5	79.0	80.0	136.0	134	2.0	12	1

FURAÇÃO(METAL DURO INTEIRIÇO)

MMS

BROCAS WSTAR

METAL DURO

DC (mm)	Prof. do Furo (L/D)	DP7020	Referência para Pedido	Dimensões (mm)								Tipo
				LU	LCF	LH	OAL	LF	PL	DCON		
11.0	3	●	MMS1100X3DB	35.0	57.0	58.0	118.0	116	2.0	12	1	
11.0	5	●	MMS1100X5DB	57.0	79.0	80.0	136.0	134	2.0	12	1	
11.1	3	●	MMS1110X3DB	35.3	60.0	62.0	118.0	116	2.0	12	1	
11.1	5	●	MMS1110X5DB	57.5	83.0	86.0	142.0	140	2.0	12	1	
11.2	3	●	MMS1120X3DB	35.6	60.0	62.0	118.0	116	2.0	12	1	
11.2	5	●	MMS1120X5DB	58.0	83.0	86.0	142.0	140	2.0	12	1	
11.3	3	●	MMS1130X3DB	36.0	60.1	62.1	118.1	116	2.1	12	1	
11.3	5	●	MMS1130X5DB	58.6	83.1	86.1	142.1	140	2.1	12	1	
11.4	3	●	MMS1140X3DB	36.3	60.1	62.1	118.1	116	2.1	12	1	
11.4	5	●	MMS1140X5DB	59.1	83.1	86.1	142.1	140	2.1	12	1	
11.5	3	●	MMS1150X3DB	36.6	60.1	62.1	118.1	116	2.1	12	1	
11.5	5	●	MMS1150X5DB	59.6	83.1	86.1	142.1	140	2.1	12	1	
11.6	3	●	MMS1160X3DB	36.9	62.1	62.1	118.1	116	2.1	12	1	
11.6	5	●	MMS1160X5DB	60.1	86.1	86.1	142.1	140	2.1	12	1	
11.7	3	●	MMS1170X3DB	37.2	62.1	62.1	118.1	116	2.1	12	1	
11.7	5	●	MMS1170X5DB	60.6	86.1	86.1	142.1	140	2.1	12	1	
11.8	3	●	MMS1180X3DB	37.5	62.1	62.1	118.1	116	2.1	12	1	
11.8	5	●	MMS1180X5DB	61.1	86.1	86.1	142.1	140	2.1	12	1	
11.9	3	●	MMS1190X3DB	37.9	62.2	62.2	118.2	116	2.2	12	1	
11.9	5	●	MMS1190X5DB	61.7	86.2	86.2	142.2	140	2.2	12	1	
12.0	3	●	MMS1200X3DB	38.2	62.2	62.2	118.2	116	2.2	12	1	
12.0	5	●	MMS1200X5DB	62.2	86.2	86.2	142.2	140	2.2	12	1	
12.1	3	●	MMS1210X3DB	38.5	65.2	68.2	124.2	122	2.2	14	1	
12.1	5	●	MMS1210X5DB	62.7	90.2	94.2	150.2	148	2.2	14	1	
12.2	3	●	MMS1220X3DB	38.8	65.2	68.2	124.2	122	2.2	14	1	
12.2	5	●	MMS1220X5DB	63.2	90.2	94.2	150.2	148	2.2	14	1	
12.3	3	●	MMS1230X3DB	39.1	65.2	68.2	124.2	122	2.2	14	1	
12.3	5	●	MMS1230X5DB	63.7	90.2	94.2	150.2	148	2.2	14	1	
12.4	3	●	MMS1240X3DB	39.5	65.3	68.3	124.3	122	2.3	14	1	
12.4	5	●	MMS1240X5DB	64.3	90.3	94.3	150.3	148	2.3	14	1	
12.5	3	●	MMS1250X3DB	39.8	65.3	68.3	124.3	122	2.3	14	1	
12.5	5	●	MMS1250X5DB	64.8	90.3	94.3	150.3	148	2.3	14	1	
12.6	3	●	MMS1260X3DB	40.1	67.3	68.3	124.3	122	2.3	14	1	
12.6	5	●	MMS1260X5DB	65.3	93.3	94.3	150.3	148	2.3	14	1	
12.7	3	●	MMS1270X3DB	40.4	67.3	68.3	124.3	122	2.3	14	1	
12.7	5	●	MMS1270X5DB	65.8	93.3	94.3	150.3	148	2.3	14	1	
12.8	3	●	MMS1280X3DB	40.7	67.3	68.3	124.3	122	2.3	14	1	
12.8	5	●	MMS1280X5DB	66.3	93.3	94.3	150.3	148	2.3	14	1	
12.9	3	●	MMS1290X3DB	41.0	67.3	68.3	124.3	122	2.3	14	1	
12.9	5	●	MMS1290X5DB	66.8	93.3	94.3	150.3	148	2.3	14	1	
13.0	3	●	MMS1300X3DB	41.4	67.4	68.4	124.4	122	2.4	14	1	
13.0	5	●	MMS1300X5DB	67.4	93.4	94.4	150.4	148	2.4	14	1	
13.1	3	●	MMS1310X3DB	41.7	70.4	72.4	128.4	126	2.4	14	1	
13.1	5	●	MMS1310X5DB	67.9	97.4	100.4	156.4	154	2.4	14	1	
13.2	3	●	MMS1320X3DB	42.0	70.4	72.4	128.4	126	2.4	14	1	
13.2	5	●	MMS1320X5DB	68.4	97.4	100.4	156.4	154	2.4	14	1	
13.3	3	●	MMS1330X3DB	42.3	70.4	72.4	128.4	126	2.4	14	1	
13.3	5	●	MMS1330X5DB	68.9	97.4	100.4	156.4	154	2.4	14	1	

DC (mm)	Prof. do Furo (L/D)	DP7020	Referência para Pedido	Dimensões (mm)								Tipo
				LU	LCF	LH	OAL	LF	PL	DCON		
13.4	3	●	MMS1340X3DB	42.6	70.4	72.4	128.4	126	2.4	14	1	
13.4	5	●	MMS1340X5DB	69.4	97.4	100.4	156.4	154	2.4	14	1	
13.5	3	●	MMS1350X3DB	43.0	70.5	72.5	128.5	126	2.5	14	1	
13.5	5	●	MMS1350X5DB	70.0	97.5	100.5	156.5	154	2.5	14	1	
13.6	3	●	MMS1360X3DB	43.3	72.5	72.5	128.5	126	2.5	14	1	
13.6	5	●	MMS1360X5DB	70.5	100.5	100.5	156.5	154	2.5	14	1	
13.7	3	●	MMS1370X3DB	43.6	72.5	72.5	128.5	126	2.5	14	1	
13.7	5	●	MMS1370X5DB	71.0	100.5	100.5	156.5	154	2.5	14	1	
13.8	3	●	MMS1380X3DB	43.9	72.5	72.5	128.5	126	2.5	14	1	
13.8	5	●	MMS1380X5DB	71.5	100.5	100.5	156.5	154	2.5	14	1	
13.9	3	●	MMS1390X3DB	44.2	72.5	72.5	128.5	126	2.5	14	1	
13.9	5	●	MMS1390X5DB	72.0	100.5	100.5	156.5	154	2.5	14	1	
14.0	3	●	MMS1400X3DB	44.5	72.5	72.5	128.5	126	2.5	14	1	
14.0	5	●	MMS1400X5DB	72.5	100.5	100.5	156.5	154	2.5	14	1	
14.1	3	●	MMS1410X3DB	44.9	75.6	78.6	137.6	135	2.6	16	1	
14.1	5	●	MMS1410X5DB	73.1	104.6	108.6	167.6	165	2.6	16	1	
14.2	3	●	MMS1420X3DB	45.2	75.6	78.6	137.6	135	2.6	16	1	
14.2	5	●	MMS1420X5DB	73.6	104.6	108.6	167.6	165	2.6	16	1	
14.3	3	●	MMS1430X3DB	45.5	75.6	78.6	137.6	135	2.6	16	1	
14.3	5	●	MMS1430X5DB	74.1	104.6	108.6	167.6	165	2.6	16	1	
14.4	3	●	MMS1440X3DB	45.8	75.6	78.6	137.6	135	2.6	16	1	
14.4	5	●	MMS1440X5DB	74.6	104.6	108.6	167.6	165	2.6	16	1	
14.5	3	●	MMS1450X3DB	46.1	75.6	78.6	137.6	135	2.6	16	1	
14.5	5	●	MMS1450X5DB	75.1	104.6	108.6	167.6	165	2.6	16	1	
14.6	3	●	MMS1460X3DB	46.5	77.7	78.7	137.7	135	2.7	16	1	
14.6	5	●	MMS1460X5DB	75.7	107.7	108.7	167.7	165	2.7	16	1	
14.7	3	●	MMS1470X3DB	46.8	77.7	78.7	137.7	135	2.7	16	1	
14.7	5	●	MMS1470X5DB	76.2	107.7	108.7	167.7	165	2.7	16	1	
14.8	3	●	MMS1480X3DB	47.1	77.7	78.7	137.7	135	2.7	16	1	
14.8	5	●	MMS1480X5DB	76.7	107.7	108.7	167.7	165	2.7	16	1	
14.9	3	●	MMS1490X3DB	47.4	77.7	78.7	137.7	135	2.7	16	1	
14.9	5	●	MMS1490X5DB	77.2	107.7	108.7	167.7	165	2.7	16	1	
15.0	3	●	MMS1500X3DB	47.7	77.7	78.7	137.7	135	2.7	16	1	
15.0	5	●	MMS1500X5DB	77.7	107.7	108.7	167.7	165	2.7	16	1	
15.1	3	●	MMS1510X3DB	48.0	80.7	82.7	141.7	139	2.7	16	1	
15.1	5	●	MMS1510X5DB	78.2	111.7	114.7	173.7	171	2.7	16	1	
15.2	3	●	MMS1520X3DB	48.4	80.8	82.8	141.8	139	2.8	16	1	
15.2	5	●	MMS1520X5DB	78.8	111.8	114.8	173.8	171	2.8	16	1	
15.3	3	●	MMS1530X3DB	48.7	80.8	82.8	141.8	139	2.8	16	1	
15.3	5	●	MMS1530X5DB	79.3	111.8	114.8	173.8	171	2.8	16	1	
15.4	3	●	MMS1540X3DB	49.0	80.8	82.8	141.8	139	2.8	16	1	
15.4	5	●	MMS1540X5DB	79.8	111.8	114.8	173.8	171	2.8	16	1	
15.5	3	●	MMS1550X3DB	49.3	80.8	82.8	141.8	139	2.8	16	1	
15.5	5	●	MMS1550X5DB	80.3	111.8	114.8	173.8	171	2.8	16	1	
15.6	3	●	MMS1560X3DB	49.6	82.8	82.8	141.8	139	2.8	16	1	
15.6	5	●	MMS1560X5DB	80.8	114.8	114.8	173.8	171	2.8	16	1	
15.7	3	●	MMS1570X3DB	50.0	82.9	82.9	141.9	139	2.9	16	1	
15.7	5	●	MMS1570X5DB	81.4	114.9	114.9	173.9	171	2.9	16	1	

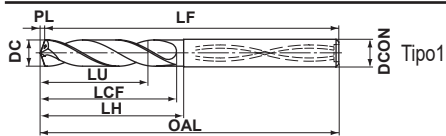
Nota 1) Por favor entre em contato para qualquer geometria que não conste no catálogo (ex.: diâmetro e comprimento diferente.).

● : Estoque mantido. □ : Sem estoque, produzido somente por pedido.

□ : Lote mínimo para produtos especiais:

① Menor que ø3 = Mínimo 10 ② Maior ou igual a ø3 e menor que ø10 = Mínimo 5

③ Maior ou igual a ø10 = Mínimo 3



DC (mm)	Prof. do Furo (L/D)	DP7020	Referência para Pedido	Dimensões (mm)							Tipo
				LU	LCF	LH	OAL	LF	PL	DCON	
15.8	3	●	MMS1580X3DB	50.3	82.9	82.9	141.9	139	2.9	16	1
15.8	5	●	MMS1580X5DB	81.9	114.9	114.9	173.9	171	2.9	16	1
15.9	3	●	MMS1590X3DB	50.6	82.9	82.9	141.9	139	2.9	16	1
15.9	5	●	MMS1590X5DB	82.4	114.9	114.9	173.9	171	2.9	16	1
16.0	3	●	MMS1600X3DB	50.9	82.9	82.9	141.9	139	2.9	16	1
16.0	5	●	MMS1600X5DB	82.9	114.9	114.9	173.9	171	2.9	16	1
16.1	3	□	MMS1610X3DB	51.2	85.9	88.9	147.9	145	2.9	18	1
16.1	5	□	MMS1610X5DB	83.4	118.9	122.9	181.9	179	2.9	18	1
16.2	3	□	MMS1620X3DB	51.5	85.9	88.9	147.9	145	2.9	18	1
16.2	5	□	MMS1620X5DB	83.9	118.9	122.9	181.9	179	2.9	18	1
16.3	3	□	MMS1630X3DB	51.9	86.0	89.0	148.0	145	3.0	18	1
16.3	5	□	MMS1630X5DB	84.5	119.0	123.0	182.0	179	3.0	18	1
16.4	3	□	MMS1640X3DB	52.2	86.0	89.0	148.0	145	3.0	18	1
16.4	5	□	MMS1640X5DB	85.0	119.0	123.0	182.0	179	3.0	18	1
16.5	3	●	MMS1650X3DB	52.5	86.0	89.0	148.0	145	3.0	18	1
16.5	5	●	MMS1650X5DB	85.5	119.0	123.0	182.0	179	3.0	18	1
16.6	3	□	MMS1660X3DB	52.8	88.0	89.0	148.0	145	3.0	18	1
16.6	5	□	MMS1660X5DB	86.0	122.0	123.0	182.0	179	3.0	18	1
16.7	3	□	MMS1670X3DB	53.1	88.0	89.0	148.0	145	3.0	18	1
16.7	5	□	MMS1670X5DB	86.5	122.0	123.0	182.0	179	3.0	18	1
16.8	3	□	MMS1680X3DB	53.5	88.1	89.1	148.1	145	3.1	18	1
16.8	5	□	MMS1680X5DB	87.1	122.1	123.1	182.1	179	3.1	18	1
16.9	3	□	MMS1690X3DB	53.8	88.1	89.1	148.1	145	3.1	18	1
16.9	5	□	MMS1690X5DB	87.6	122.1	123.1	182.1	179	3.1	18	1
17.0	3	●	MMS1700X3DB	54.1	88.1	89.1	148.1	145	3.1	18	1
17.0	5	●	MMS1700X5DB	88.1	122.1	123.1	182.1	179	3.1	18	1
17.1	3	□	MMS1710X3DB	54.4	91.1	93.1	152.1	149	3.1	18	1
17.1	5	□	MMS1710X5DB	88.6	126.1	129.1	188.1	185	3.1	18	1
17.2	3	□	MMS1720X3DB	54.7	91.1	93.1	152.1	149	3.1	18	1
17.2	5	□	MMS1720X5DB	89.1	126.1	129.1	188.1	185	3.1	18	1
17.3	3	□	MMS1730X3DB	55.0	91.1	93.1	152.1	149	3.1	18	1
17.3	5	□	MMS1730X5DB	89.6	126.1	129.1	188.1	185	3.1	18	1
17.4	3	□	MMS1740X3DB	55.4	91.2	93.2	152.2	149	3.2	18	1
17.4	5	□	MMS1740X5DB	90.2	126.2	129.2	188.2	185	3.2	18	1
17.5	3	●	MMS1750X3DB	55.7	91.2	93.2	152.2	149	3.2	18	1
17.5	5	●	MMS1750X5DB	90.7	126.2	129.2	188.2	185	3.2	18	1
17.6	3	□	MMS1760X3DB	56.0	93.2	93.2	152.2	149	3.2	18	1
17.6	5	□	MMS1760X5DB	91.2	129.2	129.2	188.2	185	3.2	18	1
17.7	3	□	MMS1770X3DB	56.3	93.2	93.2	152.2	149	3.2	18	1
17.7	5	□	MMS1770X5DB	91.7	129.2	129.2	188.2	185	3.2	18	1
17.8	3	□	MMS1780X3DB	56.6	93.2	93.2	152.2	149	3.2	18	1
17.8	5	□	MMS1780X5DB	92.2	129.2	129.2	188.2	185	3.2	18	1
17.9	3	□	MMS1790X3DB	57.0	93.3	93.3	152.3	149	3.3	18	1
17.9	5	□	MMS1790X5DB	92.8	129.3	129.3	188.3	185	3.3	18	1
18.0	3	●	MMS1800X3DB	57.3	93.3	93.3	152.3	149	3.3	18	1
18.0	5	●	MMS1800X5DB	93.3	129.3	129.3	188.3	185	3.3	18	1
18.1	3	□	MMS1810X3DB	57.6	96.3	99.3	160.3	157	3.3	20	1
18.1	5	□	MMS1810X5DB	93.8	133.3	137.3	198.3	195	3.3	20	1

DC (mm)	Prof. do Furo (L/D)	DP7020	Referência para Pedido	Dimensões (mm)							Tipo
				LU	LCF	LH	OAL	LF	PL	DCON	
18.2	3	□	MMS1820X3DB	57.9	96.3	99.3	160.3	157	3.3	20	1
18.2	5	□	MMS1820X5DB	94.3	133.3	137.3	198.3	195	3.3	20	1
18.3	3	□	MMS1830X3DB	58.2	96.3	99.3	160.3	157	3.3	20	1
18.3	5	□	MMS1830X5DB	94.8	133.3	137.3	198.3	195	3.3	20	1
18.4	3	□	MMS1840X3DB	58.5	96.3	99.3	160.3	157	3.3	20	1
18.4	5	□	MMS1840X5DB	95.3	133.3	137.3	198.3	195	3.3	20	1
18.5	3	●	MMS1850X3DB	58.9	96.4	99.4	160.4	157	3.4	20	1
18.5	5	●	MMS1850X5DB	95.9	133.4	137.4	198.4	195	3.4	20	1
18.6	3	□	MMS1860X3DB	59.2	98.4	99.4	160.4	157	3.4	20	1
18.6	5	□	MMS1860X5DB	96.4	136.4	137.4	198.4	195	3.4	20	1
18.7	3	□	MMS1870X3DB	59.5	98.4	99.4	160.4	157	3.4	20	1
18.7	5	□	MMS1870X5DB	96.9	136.4	137.4	198.4	195	3.4	20	1
18.8	3	□	MMS1880X3DB	59.8	98.4	99.4	160.4	157	3.4	20	1
18.8	5	□	MMS1880X5DB	97.4	136.4	137.4	198.4	195	3.4	20	1
18.9	3	□	MMS1890X3DB	60.1	98.4	99.4	160.4	157	3.4	20	1
18.9	5	□	MMS1890X5DB	97.9	136.4	137.4	198.4	195	3.4	20	1
19.0	3	●	MMS1900X3DB	60.5	98.5	99.5	160.5	157	3.5	20	1
19.0	5	●	MMS1900X5DB	98.5	136.5	137.5	198.5	195	3.5	20	1
19.1	3	□	MMS1910X3DB	60.8	101.5	103.5	164.5	161	3.5	20	1
19.1	5	□	MMS1910X5DB	99.0	140.5	143.5	204.5	201	3.5	20	1
19.2	3	□	MMS1920X3DB	61.1	101.5	103.5	164.5	161	3.5	20	1
19.2	5	□	MMS1920X5DB	99.5	140.5	143.5	204.5	201	3.5	20	1
19.3	3	□	MMS1930X3DB	61.4	101.5	103.5	164.5	161	3.5	20	1
19.3	5	□	MMS1930X5DB	100.0	140.5	143.5	204.5	201	3.5	20	1
19.4	3	□	MMS1940X3DB	61.7	101.5	103.5	164.5	161	3.5	20	1
19.4	5	□	MMS1940X5DB	100.5	140.5	143.5	204.5	201	3.5	20	1
19.5	3	●	MMS1950X3DB	62.0	101.5	103.5	164.5	161	3.5	20	1
19.5	5	●	MMS1950X5DB	101.0	140.5	143.5	204.5	201	3.5	20	1
19.6	3	□	MMS1960X3DB	62.4	103.6	103.6	164.6	161	3.6	20	1
19.6	5	□	MMS1960X5DB	101.6	143.6	143.6	204.6	201	3.6	20	1
19.7	3	□	MMS1970X3DB	62.7	103.6	103.6	164.6	161	3.6	20	1
19.7	5	□	MMS1970X5DB	102.1	143.6	143.6	204.6	201	3.6	20	1
19.8	3	□	MMS1980X3DB	63.0	103.6	103.6	164.6	161	3.6	20	1
19.8	5	□	MMS1980X5DB	102.6	143.6	143.6	204.6	201	3.6	20	1
19.9	3	□	MMS1990X3DB	63.3	103.6	103.6	164.6	161	3.6	20	1
19.9	5	□	MMS1990X5DB	103.1	143.6	143.6	204.6	201	3.6	20	1
20.0	3	●	MMS2000X3DB	63.6	103.6	103.6	164.6	161	3.6	20	1
20.0	5	●	MMS2000X5DB	103.6	143.6	143.6	204.6	201	3.6	20	1

CONDIÇÕES DE CORTE RECOMENDADAS

Material	Aço Inoxidável Austenítico (≤200HB)				Aço Inoxidável Austenítico (>200HB)			
	AISI 304, AISI 316 etc				AISI 304LN, AISI 316LN etc			
Diâm. DC (mm)	Vel. de Corte (m/min)	Rotação (min ⁻¹)	Avanço (Mín.—Máx.) (mm/rot)	Avanço linear (mm/min)	Vel. de Corte (m/min)	Rotação (min ⁻¹)	Avanço (Mín.—Máx.) (mm/rot)	Avanço linear (mm/min)
3.2	80	7900	0.13 (0.08—0.18)	1025	60	5900	0.1 (0.05—0.15)	590
4.0	80	6300	0.15 (0.10—0.20)	945	60	4700	0.12 (0.08—0.18)	560
5.0	80	5000	0.15 (0.10—0.20)	750	60	3800	0.12 (0.08—0.18)	455
6.3	80	4000	0.17 (0.12—0.22)	680	60	3000	0.15 (0.1—0.2)	450
8.0	80	3100	0.19 (0.14—0.24)	585	60	2300	0.17 (0.12—0.22)	390
10.0	60	1900	0.2 (0.15—0.25)	380	50	1500	0.18 (0.13—0.23)	270
12.0	60	1500	0.21 (0.16—0.26)	315	50	1300	0.19 (0.14—0.24)	245
16.0	60	1100	0.22 (0.17—0.27)	240	50	900	0.2 (0.15—0.25)	180
20.0	60	900	0.23 (0.18—0.28)	205	50	700	0.21 (0.16—0.26)	145

Material	Aço Inoxidável Duplex (≤280HB)				Aço Inoxidável Ferrítico e Martensítico (≤200HB)			
	AISI 329 etc				AISI 410, AISI 430 etc			
Diâm. DC (mm)	Vel. de Corte (m/min)	Rotação (min ⁻¹)	Avanço (Mín.—Máx.) (mm/rot)	Avanço linear (mm/min)	Vel. de Corte (m/min)	Rotação (min ⁻¹)	Avanço (Mín.—Máx.) (mm/rot)	Avanço linear (mm/min)
3.2	50	4900	0.1 (0.05—0.15)	490	80	7900	0.13 (0.08—0.18)	1025
4.0	50	3900	0.12 (0.08—0.18)	465	80	6300	0.15 (0.10—0.20)	945
5.0	50	3100	0.12 (0.08—0.18)	370	80	5000	0.15 (0.10—0.20)	750
6.3	50	2500	0.15 (0.1—0.2)	375	80	4000	0.17 (0.12—0.22)	680
8.0	50	1900	0.17 (0.12—0.22)	320	80	3100	0.19 (0.14—0.24)	585
10.0	40	1200	0.18 (0.13—0.23)	215	60	1900	0.2 (0.15—0.25)	380
12.0	40	1000	0.19 (0.14—0.24)	190	60	1500	0.21 (0.16—0.26)	315
16.0	40	700	0.2 (0.15—0.25)	140	60	1100	0.22 (0.17—0.27)	240
20.0	40	600	0.21 (0.16—0.26)	125	60	900	0.23 (0.18—0.28)	205

Material	Aço Inoxidável Ferrítico e Martensítico (>200HB)				Aço Inoxidável Endurecido por Precipitação (<450HB)			
	AISI 431, AISI 420 etc				ASTM 630, ASTM 631 etc			
Diâm. DC (mm)	Vel. de Corte (m/min)	Rotação (min ⁻¹)	Avanço (Mín.—Máx.) (mm/rot)	Avanço linear (mm/min)	Vel. de Corte (m/min)	Rotação (min ⁻¹)	Avanço (Mín.—Máx.) (mm/rot)	Avanço linear (mm/min)
3.2	60	5900	0.1 (0.05—0.15)	590	50	4900	0.1 (0.05—0.15)	490
4.0	60	4700	0.12 (0.08—0.18)	560	50	3900	0.12 (0.08—0.18)	465
5.0	60	3800	0.12 (0.08—0.18)	455	50	3100	0.12 (0.08—0.18)	370
6.3	60	3000	0.15 (0.1—0.2)	450	50	2500	0.15 (0.1—0.2)	375
8.0	60	2300	0.17 (0.12—0.22)	390	50	1900	0.17 (0.12—0.22)	320
10.0	50	1500	0.18 (0.13—0.23)	270	40	1200	0.18 (0.13—0.23)	215
12.0	50	1300	0.19 (0.14—0.24)	245	40	1000	0.19 (0.14—0.24)	190
16.0	50	900	0.2 (0.15—0.25)	180	40	700	0.2 (0.15—0.25)	140
20.0	50	700	0.21 (0.16—0.26)	145	40	600	0.21 (0.16—0.26)	125

Nota 1) Para a estabilidade da usinagem, recomenda-se usar refrigeração interna com alta pressão.

Nota 2) Recomenda-se emulsão aquosa.

Nota 3) Os parâmetros recomendados são baseados em condições de corte e refrigeração favoráveis. Reduza os parâmetros quando houver problemas de rigidez da máquina e da peça, e problemas quanto às propriedades e ao fornecimento do fluido refrigerante.

Referência cruzada de aços inoxidáveis

Material		Japão	Alemanha		EUA
		JIS	W-no.	DIN	AISI/SAE
Aço Inoxidável Ferrítico e Martensítico	≤200HB	SUS416	1.4005	X12CrS3	416
		SUS410	1.4006	X10Cr13	410
		SUS430	1.4016	X6Cr17	430
		SUS434	1.4113	X6CrMo17	434
		SUS430LX	1.4510	X6CrTi17	430Ti
		—	1.4512	X6CrTi12	409
	>200HB	SUS420J1	1.4021	X20Cr13	420
		SUS431	1.4057	X20CrNi17-2	431
		SUS420J2	1.4028	X30Cr13	420
		SUS440C	1.4125	X10CrMo17	440C
Aço Inoxidável Endurecido por Precipitação	<450HB	SUS630	1.4542	X5CrNiCuNb16 4	630 (17-4PH)
		—	1.4545	—	S15500 (15-5PH)
		SUS631	1.4568	X7CrNiAl17 7	631 (17-7PH)
Aço Inoxidável Austenítico	≤200HB	SUS304	1.4301	X5CrNi18 10	304
		SUS305	1.4303	X5CrNi8-12	305
		SUS303	1.4305	X12CrNiS18-9	303
		SUS304L	1.4307	X2CrNi19-11	304L
		SUS316	1.4401	X5CrNiMo17 12 2	316
	>200HB	SUS304LN	1.4311	X2CrNiN18 10	304LN
		SUS316L	1.4404	X2CrNiMo17 12 2	316L
		SUS316LN	1.4406	X2CrNiMoN17 12 2	316LN
		SUS316L	1.4435	X2CrNiMo18 14 3	—
		SUS317L	1.4438	X2CrNiMo18 15 4	317L
		—	1.4529	X1NiCrMoCuN25 20 7	N08926
		SUS321	1.4541	X6CrNiTi18-10	321
		SUS347	1.4550	X6CrNiNb18-10	347
SUS316Ti	1.4571	X6CrNiMoTi17 12 2	316Ti		
Aço Inoxidável Duplex	≤280HB	—	1.4362	X2CrNiN23 4	—
		SCS14A	1.4410	X2CrNiMoN25 7 4	S32750
		SUS329J1	1.4460	X3CrNiMoN27 5 2	329
		SUS329J3L	1.4462	X2CrNiMoN22 5 3	S31803

FURAÇÃO(METAL DURO INTEIURIÇO)

MHS

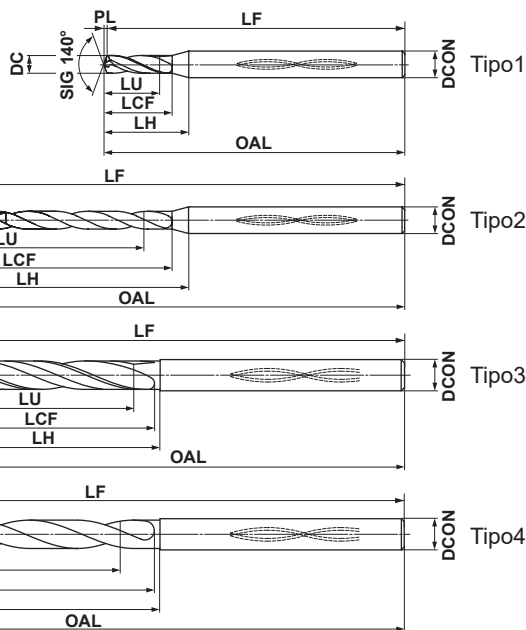
BROCAS WSTAR

- Brocas inteiriças de metal duro para moldes e matrizes
- Grande resistência à flambagem e exclusiva dupla guia.
- Furação contínua de aço endurecido, 35-55HRC com grande vida útil da ferramenta.



P	M	K	N	S	H
Aço	Aço Inoxidável			Ligas Resist. ao Calor	Aço Endurecido

Refrigeração Interna



DC ≤ 3	3 < DC ≤ 6	6 < DC ≤ 10	10 < DC ≤ 12
+0.010 -0.002	+0.010 -0.002	+0.010 -0.005	+0.010 -0.008
DCON=3	3 < DCON ≤ 6	6 < DCON ≤ 10	10 < DCON ≤ 12
0 -0.006	0 -0.008	0 -0.009	0 -0.011

Nota 1) As brocas MHS são indicadas para uso com mandris de contração térmica.

Nota 2) Para usinagem de furo de guia, use a broca mais curta do diâmetro correspondente.

DC (mm)	Prof. do Furo (L/D)	VP15TF	Referência para Pedido	Dimensões (mm)							Tipo
				LU	LCF	LH	OAL	LF	PL	DCON	
0.95	3	●	MHS0095L006B	3.0	6.2	10.0	60.2	60	0.17	3	1
0.95	6	●	MHS0095L009B	5.9	9.2	13.0	60.2	60	0.17	3	2
0.95	13	●	MHS0095L015B	12.5	15.2	19.0	60.2	60	0.17	3	2
0.95	23	●	MHS0095L025B	22.0	25.2	29.0	60.2	60	0.17	3	2
0.95	30	●	MHS0095L035B	28.7	35.2	39.0	80.2	80	0.17	3	2
1.00	3	●	MHS0100L006B	3.2	6.2	9.9	60.2	60	0.2	3	1
1.00	6	●	MHS0100L009B	6.2	9.2	12.9	60.2	60	0.2	3	2
1.00	12	●	MHS0100L015B	12.2	15.2	18.9	60.2	60	0.2	3	2
1.00	22	●	MHS0100L025B	22.2	25.2	28.9	60.2	60	0.2	3	2
1.00	30	●	MHS0100L035B	30.2	35.2	38.9	80.2	80	0.2	3	2
1.10	2	●	MHS0110L006B	2.4	6.2	9.7	60.2	60	0.2	3	1
1.10	5	●	MHS0110L009B	5.7	9.2	12.7	60.2	60	0.2	3	2
1.10	11	●	MHS0110L015B	12.3	15.2	18.7	60.2	60	0.2	3	2
1.10	20	●	MHS0110L025B	22.2	25.2	28.7	60.2	60	0.2	3	2
1.10	29	●	MHS0110L035B	32.1	35.2	38.7	80.2	80	0.2	3	2
1.20	2	●	MHS0120L006B	2.6	6.2	9.6	60.2	60	0.2	3	1
1.20	5	●	MHS0120L009B	6.2	9.2	12.6	60.2	60	0.2	3	2
1.20	10	●	MHS0120L015B	12.2	15.2	18.6	60.2	60	0.2	3	2
1.20	18	●	MHS0120L025B	21.8	25.2	28.6	60.2	60	0.2	3	2
1.20	26	●	MHS0120L035B	31.4	35.2	38.6	80.2	80	0.2	3	2
1.30	2	●	MHS0130L007B	2.8	7.2	10.4	60.2	60	0.2	3	1
1.30	5	●	MHS0130L011B	6.8	11.3	14.5	60.3	60	0.3	3	2
1.30	12	●	MHS0130L020B	15.9	20.3	23.5	60.3	60	0.3	3	2
1.30	20	●	MHS0130L030B	26.3	30.3	33.5	80.3	80	0.3	3	2

DC (mm)	Prof. do Furo (L/D)	VP15TF	Referência para Pedido	Dimensões (mm)							Tipo
				LU	LCF	LH	OAL	LF	PL	DCON	
1.30	30	●	MHS0130L045B	39.3	45.3	48.5	80.3	80	0.3	3	2
1.40	2	●	MHS0140L007B	3.1	7.3	10.3	60.3	60	0.3	3	1
1.40	5	●	MHS0140L011B	7.3	11.3	14.3	60.3	60	0.3	3	2
1.40	11	●	MHS0140L020B	15.7	20.3	23.3	60.3	60	0.3	3	2
1.40	18	●	MHS0140L030B	25.5	30.3	33.3	80.3	80	0.3	3	2
1.40	29	●	MHS0140L045B	40.9	45.3	48.3	80.3	80	0.3	3	2
1.45	3	●	MHS0145L008B	4.7	8.3	11.2	60.3	60	0.3	3	1
1.45	6	●	MHS0145L013B	9.0	13.3	16.2	60.3	60	0.3	3	2
1.45	11	●	MHS0145L020B	16.3	20.3	23.2	60.3	60	0.3	3	2
1.45	21	●	MHS0145L035B	30.8	35.3	38.2	80.3	80	0.3	3	2
1.45	30	●	MHS0145L055B	43.8	55.3	58.2	100.3	100	0.3	3	2
1.50	2	●	MHS0150L008B	3.3	8.3	11.1	60.3	60	0.3	3	1
1.50	6	●	MHS0150L013B	9.3	13.3	16.1	60.3	60	0.3	3	2
1.50	10	●	MHS0150L020B	15.3	20.3	23.1	60.3	60	0.3	3	2
1.50	20	●	MHS0150L035B	30.3	35.3	38.1	80.3	80	0.3	3	2
1.50	30	●	MHS0150L055B	45.3	55.3	58.1	100.3	100	0.3	3	2
1.60	2	●	MHS0160L008B	3.5	8.3	10.9	60.3	60	0.3	3	1
1.60	5	●	MHS0160L013B	8.3	13.3	15.9	60.3	60	0.3	3	2
1.60	10	●	MHS0160L020B	16.3	20.3	22.9	60.3	60	0.3	3	2
1.60	19	●	MHS0160L035B	30.7	35.3	37.9	80.3	80	0.3	3	2
1.60	30	●	MHS0160L055B	48.3	55.3	57.9	100.3	100	0.3	3	2
1.70	2	●	MHS0170L008B	3.7	8.3	10.7	60.3	60	0.3	3	1
1.70	5	●	MHS0170L013B	8.9	13.4	15.8	60.4	60	0.4	3	2
1.70	9	●	MHS0170L020B	15.7	20.4	22.8	60.4	60	0.4	3	2

Nota 1) Por favor entre em contato para qualquer geometria que não conste no catálogo (ex.: diâmetro e comprimento diferente.).

● : Estoque mantido. □ : Sem estoque, produzido somente por pedido.

□ : Lote mínimo para produtos especiais:

- ① Menor que ø3 = Mínimo 10
- ② Maior ou igual a ø3 e menor que ø10 = Mínimo 5
- ③ Maior ou igual a ø10 = Mínimo 3

DC (mm)	Prof. do Furo (L/D)	VP15TF	Referência para Pedido	Dimensões (mm)							Tipo
				LU	LCF	LH	OAL	LF	PL	DCON	
1.70	18	●	MHS0170L035B	31.0	35.4	37.8	80.4	80	0.4	3	2
1.70	29	●	MHS0170L055B	49.7	55.4	57.8	100.4	100	0.4	3	2
1.80	3	●	MHS0180L010B	5.7	10.3	12.5	60.3	60	0.3	3	1
1.80	5	●	MHS0180L015B	9.4	15.4	17.6	60.4	60	0.4	3	2
1.80	11	●	MHS0180L025B	20.2	25.4	27.6	60.4	60	0.4	3	2
1.80	22	●	MHS0180L045B	40.0	45.4	47.6	80.4	80	0.4	3	2
1.80	30	●	MHS0180L065B	54.4	65.4	67.6	100.4	100	0.4	3	2
1.90	2	●	MHS0190L010B	4.1	10.3	12.4	60.3	60	0.3	3	1
1.90	5	●	MHS0190L015B	9.9	15.4	17.5	60.4	60	0.4	3	2
1.90	10	●	MHS0190L025B	19.4	25.4	27.5	60.4	60	0.4	3	2
1.90	21	●	MHS0190L045B	40.3	45.4	47.5	80.4	80	0.4	3	2
1.90	30	●	MHS0190L065B	57.4	65.4	67.5	100.4	100	0.4	3	2
1.95	2	●	MHS0195L010B	4.3	10.4	12.4	60.4	60	0.4	3	1
1.95	5	●	MHS0195L015B	10.2	15.4	17.4	60.4	60	0.4	3	2
1.95	10	●	MHS0195L025B	19.9	25.4	27.4	60.4	60	0.4	3	2
1.95	20	●	MHS0195L045B	39.4	45.4	47.4	80.4	80	0.4	3	2
1.95	30	●	MHS0195L065B	58.9	65.4	67.4	100.4	100	0.4	3	2
2.00	2	●	MHS0200L010B	4.4	10.4	12.3	60.4	60	0.4	3	1
2.00	5	●	MHS0200L015B	10.4	15.4	17.3	60.4	60	0.4	3	2
2.00	9	●	MHS0200L025B	18.4	25.4	27.3	60.4	60	0.4	3	2
2.00	20	●	MHS0200L045B	40.4	45.4	47.3	80.4	80	0.4	3	2
2.00	30	●	MHS0200L065B	60.4	65.4	67.3	100.4	100	0.4	3	2
2.10	3	●	MHS0210L012B	6.7	12.4	14.1	60.4	60	0.4	3	1
2.10	7	●	MHS0210L020B	15.1	20.4	22.1	60.4	60	0.4	3	2
2.10	11	●	MHS0210L030B	23.5	30.4	32.1	80.4	80	0.4	3	2
2.10	23	●	MHS0210L055B	48.7	55.4	57.1	100.4	100	0.4	3	2
2.10	30	●	MHS0210L075B	63.4	75.4	77.1	120.4	120	0.4	3	2
2.20	2	●	MHS0220L012B	4.8	12.4	13.9	60.4	60	0.4	3	1
2.20	6	●	MHS0220L020B	13.7	20.5	22.0	60.5	60	0.5	3	2
2.20	11	●	MHS0220L030B	24.7	30.5	32.0	80.5	80	0.5	3	2
2.20	22	●	MHS0220L055B	48.9	55.5	57.0	100.5	100	0.5	3	2
2.20	30	●	MHS0220L075B	66.5	75.5	77.0	120.5	120	0.5	3	2
2.30	2	●	MHS0230L012B	5.0	12.4	13.7	60.4	60	0.4	3	1
2.30	6	●	MHS0230L020B	14.3	20.5	21.8	60.5	60	0.5	3	2
2.30	10	●	MHS0230L030B	23.5	30.5	31.8	80.5	80	0.5	3	2
2.30	21	●	MHS0230L055B	48.8	55.5	56.8	100.5	100	0.5	3	2
2.30	30	●	MHS0230L075B	69.5	75.5	76.8	120.5	120	0.5	3	2
2.40	2	●	MHS0240L012B	5.2	12.4	13.5	60.4	60	0.4	3	1
2.40	5	●	MHS0240L020B	12.5	20.5	21.6	60.5	60	0.5	3	2
2.40	9	●	MHS0240L030B	22.1	30.5	31.6	80.5	80	0.5	3	2
2.40	20	●	MHS0240L055B	48.5	55.5	56.6	100.5	100	0.5	3	2
2.40	28	●	MHS0240L075B	67.7	75.5	76.6	120.5	120	0.5	3	2
2.45	2	●	MHS0245L013B	5.3	13.4	14.4	70.4	70	0.4	4	1
2.45	5	●	MHS0245L020B	12.8	20.5	21.5	70.5	70	0.5	4	2
2.45	11	●	MHS0245L035B	27.5	35.5	36.5	90.5	90	0.5	4	2
2.45	24	●	MHS0245L065B	59.3	65.5	66.5	110.5	110	0.5	4	2
2.45	30	●	MHS0245L090B	74.0	90.5	91.5	140.5	140	0.5	4	2
2.50	2	●	MHS0250L013B	5.5	13.5	16.3	70.5	70	0.5	4	1

DC (mm)	Prof. do Furo (L/D)	VP15TF	Referência para Pedido	Dimensões (mm)							Tipo
				LU	LCF	LH	OAL	LF	PL	DCON	
2.50	5	●	MHS0250L020B	13.0	20.5	23.3	70.5	70	0.5	4	2
2.50	11	●	MHS0250L035B	28.0	35.5	38.3	90.5	90	0.5	4	2
2.50	23	●	MHS0250L065B	58.0	65.5	68.3	110.5	110	0.5	4	2
2.50	30	●	MHS0250L090B	75.5	90.5	93.3	140.5	140	0.5	4	2
2.60	2	●	MHS0260L013B	5.7	13.5	16.1	70.5	70	0.5	4	1
2.60	5	●	MHS0260L020B	13.5	20.5	23.1	70.5	70	0.5	4	2
2.60	10	●	MHS0260L035B	26.5	35.5	38.1	90.5	90	0.5	4	2
2.60	22	●	MHS0260L065B	57.7	65.5	68.1	110.5	110	0.5	4	2
2.60	30	●	MHS0260L090B	78.5	90.5	93.1	140.5	140	0.5	4	2
2.70	2	●	MHS0270L013B	5.9	13.5	15.9	70.5	70	0.5	4	1
2.70	4	●	MHS0270L020B	11.4	20.6	23.0	70.6	70	0.6	4	2
2.70	10	●	MHS0270L035B	27.6	35.6	38.0	90.6	90	0.6	4	2
2.70	21	●	MHS0270L065B	57.3	65.6	68.0	110.6	110	0.6	4	2
2.70	30	●	MHS0270L090B	81.6	90.6	93.0	140.6	140	0.6	4	2
2.80	2	●	MHS0280L014B	6.1	14.5	16.7	70.5	70	0.5	4	1
2.80	4	●	MHS0280L020B	11.8	20.6	22.8	70.6	70	0.6	4	2
2.80	9	●	MHS0280L035B	25.8	35.6	37.8	90.6	90	0.6	4	2
2.80	20	●	MHS0280L065B	56.6	65.6	67.8	110.6	110	0.6	4	2
2.80	29	●	MHS0280L090B	81.8	90.6	92.8	140.6	140	0.6	4	2
2.90	2	●	MHS0290L014B	6.3	14.5	16.6	70.5	70	0.5	4	1
2.90	4	●	MHS0290L020B	12.2	20.6	22.7	70.6	70	0.6	4	2
2.90	9	●	MHS0290L035B	26.7	35.6	37.7	90.6	90	0.6	4	2
2.90	19	●	MHS0290L065B	55.7	65.6	67.7	110.6	110	0.6	4	2
2.90	28	●	MHS0290L090B	81.8	90.6	92.7	140.6	140	0.6	4	2
2.95	2	●	MHS0295L014B	6.4	14.5	16.5	70.5	70	0.5	4	1
2.95	4	●	MHS0295L020B	12.4	20.6	22.6	70.6	70	0.6	4	2
2.95	9	●	MHS0295L035B	27.2	35.6	37.6	90.6	90	0.6	4	2
2.95	19	●	MHS0295L065B	56.7	65.6	67.6	110.6	110	0.6	4	2
2.95	28	●	MHS0295L090B	83.2	90.6	92.6	140.6	140	0.6	4	2
3.0	4	●	MHS0300L020B	12.5	19.5	20.5	70.5	70	0.5	4	3
3.0	10	●	MHS0300L040B	30.5	39.5	40.5	90.5	90	0.5	4	4
3.0	17	●	MHS0300L060B	51.5	59.5	60.5	110.5	110	0.5	4	4
3.0	27	●	MHS0300L090B	81.5	89.5	90.5	140.5	140	0.5	4	4
3.1	4	□	MHS0310L020B	12.9	20.0	20.5	70.5	70	0.5	4	3
3.1	10	□	MHS0310L040B	31.6	40.1	40.6	90.6	90	0.6	4	4
3.1	17	□	MHS0310L060B	53.3	60.1	60.6	110.6	110	0.6	4	4
3.1	26	□	MHS0310L090B	81.2	90.1	90.6	140.6	140	0.6	4	4
3.2	4	□	MHS0320L020B	13.4	20.1	20.6	70.6	70	0.6	4	3
3.2	10	□	MHS0320L040B	32.6	40.1	40.6	90.6	90	0.6	4	4
3.2	16	□	MHS0320L060B	51.8	60.1	60.6	110.6	110	0.6	4	4
3.2	25	□	MHS0320L090B	80.6	90.1	90.6	140.6	140	0.6	4	4
3.3	3	□	MHS0330L020B	10.5	20.1	20.6	70.6	70	0.6	4	3
3.3	9	□	MHS0330L040B	30.3	40.1	40.6	90.6	90	0.6	4	4
3.3	16	□	MHS0330L060B	53.4	60.1	60.6	110.6	110	0.6	4	4
3.3	25	□	MHS0330L090B	83.1	90.1	90.6	140.6	140	0.6	4	4
3.4	3	□	MHS0340L020B	10.8	20.1	20.6	70.6	70	0.6	4	3
3.4	9	□	MHS0340L040B	31.2	40.1	40.6	90.6	90	0.6	4	4
3.4	15	□	MHS0340L060B	51.6	60.1	60.6	110.6	110	0.6	4	4

FURAÇÃO(METAL DURO INTEIRIÇO)

MHS

BROCAS WSTAR

METAL DURO

DC (mm)	Prof. do Furo (L/D)	VP15TF	Referência para Pedido	Dimensões (mm)							Tipo
				LU	LCF	LH	OAL	LF	PL	DCON	
3.4	24	□	MHS0340L090B	82.2	90.1	90.6	140.6	140	0.6	4	4
3.5	3	●	MHS0350L020B	11.1	20.1	20.6	70.6	70	0.6	4	3
3.5	9	●	MHS0350L040B	32.1	40.1	40.6	90.6	90	0.6	4	4
3.5	14	●	MHS0350L060B	49.6	60.1	60.6	110.6	110	0.6	4	4
3.5	23	●	MHS0350L090B	81.1	90.1	90.6	140.6	140	0.6	4	4
3.6	3	□	MHS0360L020B	11.4	20.6	20.6	70.6	70	0.6	4	3
3.6	9	□	MHS0360L040B	33.1	40.7	40.7	90.7	90	0.7	4	4
3.6	14	□	MHS0360L060B	51.1	60.7	60.7	110.7	110	0.7	4	4
3.6	22	□	MHS0360L090B	79.9	90.7	90.7	140.7	140	0.7	4	4
3.6	30	□	MHS0360L120B	108.7	120.7	120.7	170.7	170	0.7	4	4
3.7	3	□	MHS0370L020B	11.7	20.6	20.6	70.6	70	0.6	4	3
3.7	8	□	MHS0370L040B	30.3	40.7	40.7	90.7	90	0.7	4	4
3.7	14	□	MHS0370L060B	52.5	60.7	60.7	110.7	110	0.7	4	4
3.7	22	□	MHS0370L090B	82.1	90.7	90.7	140.7	140	0.7	4	4
3.7	30	□	MHS0370L120B	111.7	120.7	120.7	170.7	170	0.7	4	4
3.8	3	●	MHS0380L020B	12.1	20.7	20.7	70.7	70	0.7	4	3
3.8	8	●	MHS0380L040B	31.1	40.7	40.7	90.7	90	0.7	4	4
3.8	13	●	MHS0380L060B	50.1	60.7	60.7	110.7	110	0.7	4	4
3.8	21	●	MHS0380L090B	80.5	90.7	90.7	140.7	140	0.7	4	4
3.8	29	●	MHS0380L120B	110.9	120.7	120.7	170.7	170	0.7	4	4
3.9	3	●	MHS0390L020B	12.4	20.7	20.7	70.7	70	0.7	4	3
3.9	8	●	MHS0390L040B	31.9	40.7	40.7	90.7	90	0.7	4	4
3.9	13	●	MHS0390L060B	51.4	60.7	60.7	110.7	110	0.7	4	4
3.9	21	□	MHS0390L090B	82.6	90.7	90.7	140.7	140	0.7	4	4
3.9	28	□	MHS0390L120B	109.9	120.7	120.7	170.7	170	0.7	4	4
4.0	2	●	MHS0400L020B	8.7	20.7	20.7	70.7	70	0.7	4	3
4.0	7	●	MHS0400L040B	28.7	40.7	40.7	90.7	90	0.7	4	4
4.0	12	●	MHS0400L060B	48.7	60.7	60.7	110.7	110	0.7	4	4
4.0	20	●	MHS0400L090B	80.7	90.7	90.7	140.7	140	0.7	4	4
4.0	27	●	MHS0400L120B	108.7	120.7	120.7	170.7	170	0.7	4	4
4.1	2	□	MHS0410L020B	8.9	19.2	20.7	70.7	70	0.7	6	3
4.1	7	□	MHS0410L040B	29.4	39.2	40.7	90.7	90	0.7	6	4
4.1	12	□	MHS0410L060B	49.9	59.2	60.7	110.7	110	0.7	6	4
4.1	19	□	MHS0410L090B	78.6	89.2	90.7	140.7	140	0.7	6	4
4.1	26	□	MHS0410L120B	107.3	119.2	120.7	170.7	170	0.7	6	4
4.2	2	□	MHS0420L020B	9.1	19.2	20.7	70.7	70	0.7	6	3
4.2	7	□	MHS0420L040B	30.2	39.3	40.8	90.8	90	0.8	6	4
4.2	11	□	MHS0420L060B	47.0	59.3	60.8	110.8	110	0.8	6	4
4.2	19	□	MHS0420L090B	80.6	89.3	90.8	140.8	140	0.8	6	4
4.2	26	□	MHS0420L120B	110.0	119.3	120.8	170.8	170	0.8	6	4
4.3	2	□	MHS0430L020B	9.3	19.2	20.7	70.7	70	0.7	6	3
4.3	6	□	MHS0430L040B	26.6	39.3	40.8	90.8	90	0.8	6	4
4.3	11	□	MHS0430L060B	48.1	59.3	60.8	110.8	110	0.8	6	4
4.3	18	□	MHS0430L090B	78.2	89.3	90.8	140.8	140	0.8	6	4
4.3	25	□	MHS0430L120B	108.3	119.3	120.8	170.8	170	0.8	6	4
4.4	2	●	MHS0440L020B	9.6	19.3	20.8	70.8	70	0.8	6	3
4.4	6	□	MHS0440L040B	27.2	39.3	40.8	90.8	90	0.8	6	4
4.4	11	□	MHS0440L060B	49.2	59.3	60.8	110.8	110	0.8	6	4

DC (mm)	Prof. do Furo (L/D)	VP15TF	Referência para Pedido	Dimensões (mm)							Tipo
				LU	LCF	LH	OAL	LF	PL	DCON	
4.4	18	□	MHS0440L090B	80.0	89.3	90.8	140.8	140	0.8	6	4
4.4	24	□	MHS0440L120B	106.4	119.3	120.8	170.8	170	0.8	6	4
4.5	2	●	MHS0450L020B	9.8	19.3	20.8	70.8	70	0.8	6	3
4.5	6	●	MHS0450L040B	27.8	39.3	40.8	90.8	90	0.8	6	4
4.5	10	●	MHS0450L060B	45.8	59.3	60.8	110.8	110	0.8	6	4
4.5	17	●	MHS0450L090B	77.3	89.3	90.8	140.8	140	0.8	6	4
4.5	24	●	MHS0450L120B	108.8	119.3	120.8	170.8	170	0.8	6	4
4.6	2	□	MHS0460L020B	10.0	19.8	20.8	70.8	70	0.8	6	3
4.6	6	□	MHS0460L040B	28.4	39.8	40.8	90.8	90	0.8	6	4
4.6	10	□	MHS0460L060B	46.8	59.8	60.8	110.8	110	0.8	6	4
4.6	17	□	MHS0460L090B	79.0	89.8	90.8	140.8	140	0.8	6	4
4.6	23	□	MHS0460L120B	106.6	119.8	120.8	170.8	170	0.8	6	4
4.6	30	□	MHS0460L150B	138.8	149.8	150.8	200.8	200	0.8	6	4
4.7	2	□	MHS0470L020B	10.2	19.8	20.8	70.8	70	0.8	6	3
4.7	6	□	MHS0470L040B	29.1	39.9	40.9	90.9	90	0.9	6	4
4.7	10	□	MHS0470L060B	47.9	59.9	60.9	110.9	110	0.9	6	4
4.7	16	□	MHS0470L090B	76.1	89.9	90.9	140.9	140	0.9	6	4
4.7	23	□	MHS0470L120B	109.0	119.9	120.9	170.9	170	0.9	6	4
4.7	29	□	MHS0470L150B	137.2	149.9	150.9	200.9	200	0.9	6	4
4.8	1	●	MHS0480L020B	5.6	19.8	20.8	70.8	70	0.8	6	3
4.8	6	●	MHS0480L040B	29.7	39.9	40.9	90.9	90	0.9	6	4
4.8	10	●	MHS0480L060B	48.9	59.9	60.9	110.9	110	0.9	6	4
4.8	16	●	MHS0480L090B	77.7	89.9	90.9	140.9	140	0.9	6	4
4.8	22	●	MHS0480L120B	106.5	119.9	120.9	170.9	170	0.9	6	4
4.8	29	●	MHS0480L150B	140.1	149.9	150.9	200.9	200	0.9	6	4
4.9	1	□	MHS0490L020B	5.7	19.8	20.8	70.8	70	0.8	6	3
4.9	5	□	MHS0490L040B	25.4	39.9	40.9	90.9	90	0.9	6	4
4.9	10	□	MHS0490L060B	49.9	59.9	60.9	110.9	110	0.9	6	4
4.9	16	□	MHS0490L090B	79.3	89.9	90.9	140.9	140	0.9	6	4
4.9	22	□	MHS0490L120B	108.7	119.9	120.9	170.9	170	0.9	6	4
4.9	28	□	MHS0490L150B	138.1	149.9	150.9	200.9	200	0.9	6	4
5.0	1	●	MHS0500L020B	5.9	19.9	20.9	70.9	70	0.9	6	3
5.0	5	●	MHS0500L040B	25.9	39.9	40.9	90.9	90	0.9	6	4
5.0	9	●	MHS0500L060B	45.9	59.9	60.9	110.9	110	0.9	6	4
5.0	15	●	MHS0500L090B	75.9	89.9	90.9	140.9	140	0.9	6	4
5.0	21	●	MHS0500L120B	105.9	119.9	120.9	170.9	170	0.9	6	4
5.0	27	●	MHS0500L150B	135.9	149.9	150.9	200.9	200	0.9	6	4
5.1	3	□	MHS0510L030B	16.2	30.4	30.9	80.9	80	0.9	6	3
5.1	9	□	MHS0510L060B	46.8	60.4	60.9	110.9	110	0.9	6	4
5.1	15	□	MHS0510L090B	77.4	90.4	90.9	140.9	140	0.9	6	4
5.1	21	□	MHS0510L120B	108.0	120.4	120.9	170.9	170	0.9	6	4
5.1	27	□	MHS0510L150B	138.6	150.4	150.9	200.9	200	0.9	6	4
5.2	3	□	MHS0520L030B	16.5	30.4	30.9	80.9	80	0.9	6	3
5.2	9	□	MHS0520L060B	47.7	60.4	60.9	110.9	110	0.9	6	4
5.2	15	□	MHS0520L090B	78.9	90.4	90.9	140.9	140	0.9	6	4
5.2	20	□	MHS0520L120B	104.9	120.4	120.9	170.9	170	0.9	6	4
5.2	26	□	MHS0520L150B	136.1	150.4	150.9	200.9	200	0.9	6	4
5.3	3	□	MHS0530L030B	16.8	30.4	30.9	80.9	80	0.9	6	3

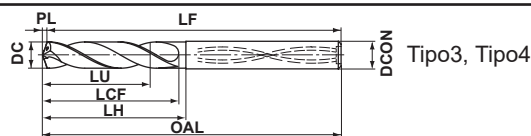
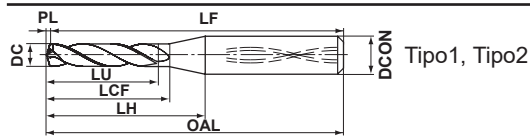
Nota 1) Por favor entre em contato para qualquer geometria que não conste no catálogo (ex.: diâmetro e comprimento diferente.).

● : Estoque mantido. □ : Sem estoque, produzido somente por pedido.

□ : Lote mínimo para produtos especiais:

① Menor que ø3 = Mínimo 10 ② Maior ou igual a ø3 e menor que ø10 = Mínimo 5

③ Maior ou igual a ø10 = Mínimo 3



DC (mm)	Prof. do Furo (L/D)	VP15TF	Referência para Pedido	Dimensões (mm)							Tipo
				LU	LCF	LH	OAL	LF	PL	DCON	
5.3	9	□	MHS0530L060B	48.7	60.5	61.0	111.0	110	1.0	6	4
5.3	14	●	MHS0530L090B	75.2	90.5	91.0	141.0	140	1.0	6	4
5.3	20	□	MHS0530L120B	107.0	120.5	121.0	171.0	170	1.0	6	4
5.3	26	□	MHS0530L150B	138.8	150.5	151.0	201.0	200	1.0	6	4
5.4	3	□	MHS0540L030B	17.1	30.4	30.9	80.9	80	0.9	6	3
5.4	9	□	MHS0540L060B	49.6	60.5	61.0	111.0	110	1.0	6	4
5.4	14	□	MHS0540L090B	76.6	90.5	91.0	141.0	140	1.0	6	4
5.4	20	□	MHS0540L120B	109.0	120.5	121.0	171.0	170	1.0	6	4
5.4	25	□	MHS0540L150B	136.0	150.5	151.0	201.0	200	1.0	6	4
5.5	3	●	MHS0550L030B	17.4	30.4	30.9	80.9	80	0.9	6	3
5.5	8	●	MHS0550L060B	45.0	60.5	61.0	111.0	110	1.0	6	4
5.5	14	●	MHS0550L090B	78.0	90.5	91.0	141.0	140	1.0	6	4
5.5	19	●	MHS0550L120B	105.5	120.5	121.0	171.0	170	1.0	6	4
5.5	25	●	MHS0550L150B	138.5	150.5	151.0	201.0	200	1.0	6	4
5.6	3	□	MHS0560L030B	17.8	31.0	31.0	81.0	80	1.0	6	3
5.6	8	□	MHS0560L060B	45.8	61.0	61.0	111.0	110	1.0	6	4
5.6	14	□	MHS0560L090B	79.4	91.0	91.0	141.0	140	1.0	6	4
5.6	19	□	MHS0560L120B	107.4	121.0	121.0	171.0	170	1.0	6	4
5.6	24	□	MHS0560L150B	135.4	151.0	151.0	201.0	200	1.0	6	4
5.7	3	□	MHS0570L030B	18.1	31.0	31.0	81.0	80	1.0	6	3
5.7	8	□	MHS0570L060B	46.6	61.0	61.0	111.0	110	1.0	6	4
5.7	13	□	MHS0570L090B	75.1	91.0	91.0	141.0	140	1.0	6	4
5.7	19	□	MHS0570L120B	109.3	121.0	121.0	171.0	170	1.0	6	4
5.7	24	□	MHS0570L150B	137.8	151.0	151.0	201.0	200	1.0	6	4
5.8	3	●	MHS0580L030B	18.4	31.0	31.0	81.0	80	1.0	6	3
5.8	8	●	MHS0580L060B	47.5	61.1	61.1	111.1	110	1.1	6	4
5.8	13	●	MHS0580L090B	76.5	91.1	91.1	141.1	140	1.1	6	4
5.8	18	●	MHS0580L120B	105.5	121.1	121.1	171.1	170	1.1	6	4
5.8	23	●	MHS0580L150B	134.5	151.1	151.1	201.1	200	1.1	6	4
5.9	3	□	MHS0590L030B	18.7	31.0	31.0	81.0	80	1.0	6	3
5.9	8	□	MHS0590L060B	48.3	61.1	61.1	111.1	110	1.1	6	4
5.9	13	□	MHS0590L090B	77.8	91.1	91.1	141.1	140	1.1	6	4
5.9	18	□	MHS0590L120B	107.3	121.1	121.1	171.1	170	1.1	6	4
5.9	23	□	MHS0590L150B	136.8	151.1	151.1	201.1	200	1.1	6	4
6.0	2	●	MHS0600L030B	13.0	31.0	31.0	81.0	80	1.0	6	3
6.0	7	●	MHS0600L060B	43.1	61.1	61.1	111.1	110	1.1	6	4
6.0	12	●	MHS0600L090B	73.1	91.1	91.1	141.1	140	1.1	6	4
6.0	17	●	MHS0600L120B	103.1	121.1	121.1	171.1	170	1.1	6	4
6.0	22	●	MHS0600L150B	133.1	151.1	151.1	201.1	200	1.1	6	4
6.1	2	□	MHS0610L030B	13.3	29.6	31.1	81.1	80	1.1	8	3
6.1	7	□	MHS0610L060B	43.8	59.6	61.1	111.1	110	1.1	8	4
6.1	12	□	MHS0610L090B	74.3	89.6	91.1	141.1	140	1.1	8	4
6.1	17	□	MHS0610L120B	104.8	119.6	121.1	171.1	170	1.1	8	4
6.1	22	□	MHS0610L150B	135.3	149.6	151.1	201.1	200	1.1	8	4
6.2	2	□	MHS0620L030B	13.5	29.6	31.1	81.1	80	1.1	8	3
6.2	7	□	MHS0620L060B	44.5	59.6	61.1	111.1	110	1.1	8	4
6.2	12	□	MHS0620L090B	75.5	89.6	91.1	141.1	140	1.1	8	4
6.2	17	□	MHS0620L120B	106.5	119.6	121.1	171.1	170	1.1	8	4

DC (mm)	Prof. do Furo (L/D)	VP15TF	Referência para Pedido	Dimensões (mm)							Tipo
				LU	LCF	LH	OAL	LF	PL	DCON	
6.2	21	□	MHS0620L150B	131.3	149.6	151.1	201.1	200	1.1	8	4
6.3	2	□	MHS0630L030B	13.7	29.6	31.1	81.1	80	1.1	8	3
6.3	7	□	MHS0630L060B	45.2	59.6	61.1	111.1	110	1.1	8	4
6.3	12	□	MHS0630L090B	76.7	89.6	91.1	141.1	140	1.1	8	4
6.3	16	□	MHS0630L120B	101.9	119.6	121.1	171.1	170	1.1	8	4
6.3	21	□	MHS0630L150B	133.4	149.6	151.1	201.1	200	1.1	8	4
6.4	2	□	MHS0640L030B	13.9	29.6	31.1	81.1	80	1.1	8	3
6.4	7	□	MHS0640L060B	46.0	59.7	61.2	111.2	110	1.2	8	4
6.4	11	□	MHS0640L090B	71.6	89.7	91.2	141.2	140	1.2	8	4
6.4	16	□	MHS0640L120B	103.6	119.7	121.2	171.2	170	1.2	8	4
6.4	21	□	MHS0640L150B	135.6	149.7	151.2	201.2	200	1.2	8	4
6.5	2	●	MHS0650L030B	14.1	29.6	31.1	81.1	80	1.1	8	3
6.5	6	●	MHS0650L060B	40.2	59.7	61.2	111.2	110	1.2	8	4
6.5	11	●	MHS0650L090B	72.7	89.7	91.2	141.2	140	1.2	8	4
6.5	16	●	MHS0650L120B	105.2	119.7	121.2	171.2	170	1.2	8	4
6.5	20	●	MHS0650L150B	131.2	149.7	151.2	201.2	200	1.2	8	4
6.6	2	□	MHS0660L030B	14.3	30.1	31.1	81.1	80	1.1	8	3
6.6	6	□	MHS0660L060B	40.8	60.2	61.2	111.2	110	1.2	8	4
6.6	11	□	MHS0660L090B	73.8	90.2	91.2	141.2	140	1.2	8	4
6.6	16	□	MHS0660L120B	106.8	120.2	121.2	171.2	170	1.2	8	4
6.6	20	□	MHS0660L150B	133.2	150.2	151.2	201.2	200	1.2	8	4
6.6	28	□	MHS0660L200B	186.0	200.2	201.2	251.2	250	1.2	8	4
6.7	2	□	MHS0670L030B	14.6	30.2	31.2	81.2	80	1.2	8	3
6.7	6	□	MHS0670L060B	41.4	60.2	61.2	111.2	110	1.2	8	4
6.7	11	□	MHS0670L090B	74.9	90.2	91.2	141.2	140	1.2	8	4
6.7	15	□	MHS0670L120B	101.7	120.2	121.2	171.2	170	1.2	8	4
6.7	20	□	MHS0670L150B	135.2	150.2	151.2	201.2	200	1.2	8	4
6.7	27	□	MHS0670L200B	182.1	200.2	201.2	251.2	250	1.2	8	4
6.8	2	●	MHS0680L030B	14.8	30.2	31.2	81.2	80	1.2	8	3
6.8	6	●	MHS0680L060B	42.0	60.2	61.2	111.2	110	1.2	8	4
6.8	11	●	MHS0680L090B	76.0	90.2	91.2	141.2	140	1.2	8	4
6.8	15	●	MHS0680L120B	103.2	120.2	121.2	171.2	170	1.2	8	4
6.8	19	●	MHS0680L150B	130.4	150.2	151.2	201.2	200	1.2	8	4
6.8	27	●	MHS0680L200B	184.8	200.2	201.2	251.2	250	1.2	8	4
6.9	2	□	MHS0690L030B	15.0	30.2	31.2	81.2	80	1.2	8	3
6.9	6	□	MHS0690L060B	42.7	60.3	61.3	111.3	110	1.3	8	4
6.9	10	□	MHS0690L090B	70.3	90.3	91.3	141.3	140	1.3	8	4
6.9	15	□	MHS0690L120B	104.8	120.3	121.3	171.3	170	1.3	8	4
6.9	19	□	MHS0690L150B	132.4	150.3	151.3	201.3	200	1.3	8	4
6.9	26	□	MHS0690L200B	180.7	200.3	201.3	251.3	250	1.3	8	4
7.0	2	●	MHS0700L030B	15.2	30.2	31.2	81.2	80	1.2	8	3
7.0	6	●	MHS0700L060B	43.3	60.3	61.3	111.3	110	1.3	8	4
7.0	10	●	MHS0700L090B	71.3	90.3	91.3	141.3	140	1.3	8	4
7.0	14	●	MHS0700L120B	99.3	120.3	121.3	171.3	170	1.3	8	4
7.0	19	●	MHS0700L150B	134.3	150.3	151.3	201.3	200	1.3	8	4
7.0	26	●	MHS0700L200B	183.3	200.3	201.3	251.3	250	1.3	8	4
7.1	2	□	MHS0710L030B	15.4	30.7	31.2	81.2	80	1.2	8	3
7.1	6	□	MHS0710L060B	43.9	60.8	61.3	111.3	110	1.3	8	4

FURAÇÃO(METAL DURO INTEIRIÇO)

MHS

BROCAS WSTAR

METAL DURO

DC (mm)	Prof. do Furo (L/D)	VP15TF	Referência para Pedido	Dimensões (mm)								Tipo
				LU	LCF	LH	OAL	LF	PL	DCON		
7.1	10	□	MHS0710L090B	72.3	90.8	91.3	141.3	140	1.3	8	4	
7.1	14	□	MHS0710L120B	100.7	120.8	121.3	171.3	170	1.3	8	4	
7.1	19	□	MHS0710L150B	136.2	150.8	151.3	201.3	200	1.3	8	4	
7.1	26	□	MHS0710L200B	185.9	200.8	201.3	251.3	250	1.3	8	4	
7.2	2	□	MHS0720L030B	15.6	30.7	31.2	81.2	80	1.2	8	3	
7.2	6	□	MHS0720L060B	44.5	60.8	61.3	111.3	110	1.3	8	4	
7.2	10	□	MHS0720L090B	73.3	90.8	91.3	141.3	140	1.3	8	4	
7.2	14	□	MHS0720L120B	102.1	120.8	121.3	171.3	170	1.3	8	4	
7.2	18	□	MHS0720L150B	130.9	150.8	151.3	201.3	200	1.3	8	4	
7.2	25	□	MHS0720L200B	181.3	200.8	201.3	251.3	250	1.3	8	4	
7.3	2	□	MHS0730L030B	15.9	30.8	31.3	81.3	80	1.3	8	3	
7.3	6	□	MHS0730L060B	45.1	60.8	61.3	111.3	110	1.3	8	4	
7.3	10	□	MHS0730L090B	74.3	90.8	91.3	141.3	140	1.3	8	4	
7.3	14	□	MHS0730L120B	103.5	120.8	121.3	171.3	170	1.3	8	4	
7.3	18	□	MHS0730L150B	132.7	150.8	151.3	201.3	200	1.3	8	4	
7.3	25	□	MHS0730L200B	183.8	200.8	201.3	251.3	250	1.3	8	4	
7.4	1	□	MHS0740L030B	8.7	30.8	31.3	81.3	80	1.3	8	3	
7.4	6	□	MHS0740L060B	45.7	60.8	61.3	111.3	110	1.3	8	4	
7.4	10	□	MHS0740L090B	75.3	90.8	91.3	141.3	140	1.3	8	4	
7.4	14	□	MHS0740L120B	104.9	120.8	121.3	171.3	170	1.3	8	4	
7.4	18	□	MHS0740L150B	134.5	150.8	151.3	201.3	200	1.3	8	4	
7.4	24	□	MHS0740L200B	178.9	200.8	201.3	251.3	250	1.3	8	4	
7.5	1	●	MHS0750L030B	8.8	30.8	31.3	81.3	80	1.3	8	3	
7.5	5	●	MHS0750L060B	38.9	60.9	61.4	111.4	110	1.4	8	4	
7.5	9	●	MHS0750L090B	68.9	90.9	91.4	141.4	140	1.4	8	4	
7.5	13	●	MHS0750L120B	98.9	120.9	121.4	171.4	170	1.4	8	4	
7.5	17	●	MHS0750L150B	128.9	150.9	151.4	201.4	200	1.4	8	4	
7.5	24	●	MHS0750L200B	181.4	200.9	201.4	251.4	250	1.4	8	4	
7.6	1	□	MHS0760L030B	8.9	31.3	31.3	81.3	80	1.3	8	3	
7.6	5	□	MHS0760L060B	39.4	61.4	61.4	111.4	110	1.4	8	4	
7.6	9	□	MHS0760L090B	69.8	91.4	91.4	141.4	140	1.4	8	4	
7.6	13	□	MHS0760L120B	100.2	121.4	121.4	171.4	170	1.4	8	4	
7.6	17	□	MHS0760L150B	130.6	151.4	151.4	201.4	200	1.4	8	4	
7.6	24	□	MHS0760L200B	183.8	201.4	201.4	251.4	250	1.4	8	4	
7.6	30	□	MHS0760L250B	229.4	251.4	251.4	301.4	300	1.4	8	4	
7.7	1	□	MHS0770L030B	9.0	31.3	31.3	81.3	80	1.3	8	3	
7.7	5	□	MHS0770L060B	39.9	61.4	61.4	111.4	110	1.4	8	4	
7.7	9	□	MHS0770L090B	70.7	91.4	91.4	141.4	140	1.4	8	4	
7.7	13	□	MHS0770L120B	101.5	121.4	121.4	171.4	170	1.4	8	4	
7.7	17	□	MHS0770L150B	132.3	151.4	151.4	201.4	200	1.4	8	4	
7.7	23	□	MHS0770L200B	178.5	201.4	201.4	251.4	250	1.4	8	4	
7.7	30	□	MHS0770L250B	232.4	251.4	251.4	301.4	300	1.4	8	4	
7.8	1	●	MHS0780L030B	9.1	31.3	31.3	81.3	80	1.3	8	3	
7.8	5	●	MHS0780L060B	40.4	61.4	61.4	111.4	110	1.4	8	4	
7.8	9	●	MHS0780L090B	71.6	91.4	91.4	141.4	140	1.4	8	4	
7.8	13	●	MHS0780L120B	102.8	121.4	121.4	171.4	170	1.4	8	4	
7.8	17	●	MHS0780L150B	134.0	151.4	151.4	201.4	200	1.4	8	4	
7.8	23	●	MHS0780L200B	180.8	201.4	201.4	251.4	250	1.4	8	4	

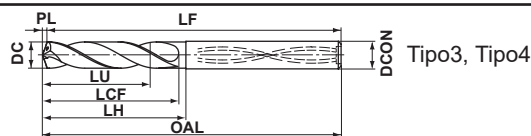
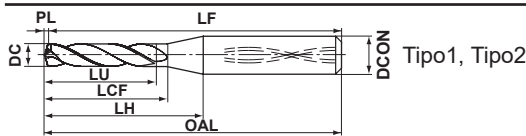
DC (mm)	Prof. do Furo (L/D)	VP15TF	Referência para Pedido	Dimensões (mm)								Tipo
				LU	LCF	LH	OAL	LF	PL	DCON		
7.8	30	●	MHS0780L250B	235.4	251.4	251.4	301.4	300	1.4	8	4	
7.9	1	□	MHS0790L030B	9.3	31.4	31.4	81.4	80	1.4	8	3	
7.9	5	□	MHS0790L060B	40.9	61.4	61.4	111.4	110	1.4	8	4	
7.9	9	□	MHS0790L090B	72.5	91.4	91.4	141.4	140	1.4	8	4	
7.9	13	□	MHS0790L120B	104.1	121.4	121.4	171.4	170	1.4	8	4	
7.9	16	□	MHS0790L150B	127.8	151.4	151.4	201.4	200	1.4	8	4	
7.9	23	□	MHS0790L200B	183.1	201.4	201.4	251.4	250	1.4	8	4	
7.9	29	□	MHS0790L250B	230.5	251.4	251.4	301.4	300	1.4	8	4	
8.0	1	●	MHS0800L030B	9.4	31.4	31.4	81.4	80	1.4	8	3	
8.0	5	●	MHS0800L060B	41.5	61.5	61.5	111.5	110	1.5	8	4	
8.0	9	●	MHS0800L090B	73.5	91.5	91.5	141.5	140	1.5	8	4	
8.0	12	●	MHS0800L120B	97.5	121.5	121.5	171.5	170	1.5	8	4	
8.0	16	●	MHS0800L150B	129.5	151.5	151.5	201.5	200	1.5	8	4	
8.0	22	●	MHS0800L200B	177.5	201.5	201.5	251.5	250	1.5	8	4	
8.0	29	●	MHS0800L250B	233.5	251.5	251.5	301.5	300	1.5	8	4	
8.1	2	□	MHS0810L040B	17.6	39.9	41.4	101.4	100	1.4	10	3	
8.1	8	□	MHS0810L090B	66.3	90.0	91.5	151.5	150	1.5	10	4	
8.1	12	□	MHS0810L120B	98.7	120.0	121.5	181.5	180	1.5	10	4	
8.1	16	□	MHS0810L150B	131.1	150.0	151.5	211.5	210	1.5	10	4	
8.1	22	□	MHS0810L200B	179.7	200.0	201.5	261.5	260	1.5	10	4	
8.1	28	□	MHS0810L250B	228.3	250.0	251.5	311.5	310	1.5	10	4	
8.2	2	□	MHS0820L040B	17.8	39.9	41.4	101.4	100	1.4	10	3	
8.2	8	□	MHS0820L090B	67.1	90.0	91.5	151.5	150	1.5	10	4	
8.2	12	□	MHS0820L120B	99.9	120.0	121.5	181.5	180	1.5	10	4	
8.2	16	□	MHS0820L150B	132.7	150.0	151.5	211.5	210	1.5	10	4	
8.2	22	□	MHS0820L200B	181.9	200.0	201.5	261.5	260	1.5	10	4	
8.2	28	□	MHS0820L250B	231.1	250.0	251.5	311.5	310	1.5	10	4	
8.3	2	□	MHS0830L040B	18.0	39.9	41.4	101.4	100	1.4	10	3	
8.3	8	□	MHS0830L090B	67.9	90.0	91.5	151.5	150	1.5	10	4	
8.3	12	□	MHS0830L120B	101.1	120.0	121.5	181.5	180	1.5	10	4	
8.3	15	□	MHS0830L150B	126.0	150.0	151.5	211.5	210	1.5	10	4	
8.3	21	□	MHS0830L200B	175.8	200.0	201.5	261.5	260	1.5	10	4	
8.3	27	□	MHS0830L250B	225.6	250.0	251.5	311.5	310	1.5	10	4	
8.4	2	□	MHS0840L040B	18.2	39.9	41.4	101.4	100	1.4	10	3	
8.4	8	□	MHS0840L090B	68.7	90.0	91.5	151.5	150	1.5	10	4	
8.4	12	□	MHS0840L120B	102.3	120.0	121.5	181.5	180	1.5	10	4	
8.4	15	□	MHS0840L150B	127.5	150.0	151.5	211.5	210	1.5	10	4	
8.4	21	□	MHS0840L200B	177.9	200.0	201.5	261.5	260	1.5	10	4	
8.4	27	□	MHS0840L250B	228.3	250.0	251.5	311.5	310	1.5	10	4	
8.5	2	●	MHS0850L040B	18.5	40.0	41.5	101.5	100	1.5	10	3	
8.5	8	●	MHS0850L090B	69.5	90.0	91.5	151.5	150	1.5	10	4	
8.5	11	●	MHS0850L120B	95.0	120.0	121.5	181.5	180	1.5	10	4	
8.5	15	●	MHS0850L150B	129.0	150.0	151.5	211.5	210	1.5	10	4	
8.5	21	●	MHS0850L200B	180.0	200.0	201.5	261.5	260	1.5	10	4	
8.5	27	●	MHS0850L250B	231.0	250.0	251.5	311.5	310	1.5	10	4	
8.6	2	□	MHS0860L040B	18.7	40.5	41.5	101.5	100	1.5	10	3	
8.6	8	□	MHS0860L090B	70.4	90.6	91.6	151.6	150	1.6	10	4	
8.6	11	□	MHS0860L120B	96.2	120.6	121.6	181.6	180	1.6	10	4	

Nota 1) Por favor entre em contato para qualquer geometria que não conste no catálogo (ex.: diâmetro e comprimento diferente.).

● : Estoque mantido. □ : Sem estoque, produzido somente por pedido.

□ : Lote mínimo para produtos especiais:

- ① Menor que ø3 = Mínimo 10
- ② Maior ou igual a ø3 e menor que ø10 = Mínimo 5
- ③ Maior ou igual a ø10 = Mínimo 3



DC (mm)	Prof. do Furo (L/D)	VP15TF	Referência para Pedido	Dimensões (mm)							Tipo
				LU	LCF	LH	OAL	LF	PL	DCON	
8.6	15	□	MHS0860L150B	130.6	150.6	151.6	211.6	210	1.6	10	4
8.6	21	□	MHS0860L200B	182.2	200.6	201.6	261.6	260	1.6	10	4
8.6	26	□	MHS0860L250B	225.2	250.6	251.6	311.6	310	1.6	10	4
8.7	2	□	MHS0870L040B	18.9	40.5	41.5	101.5	100	1.5	10	3
8.7	8	□	MHS0870L090B	71.2	90.6	91.6	151.6	150	1.6	10	4
8.7	11	□	MHS0870L120B	97.3	120.6	121.6	181.6	180	1.6	10	4
8.7	15	□	MHS0870L150B	132.1	150.6	151.6	211.6	210	1.6	10	4
8.7	20	□	MHS0870L200B	175.6	200.6	201.6	261.6	260	1.6	10	4
8.7	26	□	MHS0870L250B	227.8	250.6	251.6	311.6	310	1.6	10	4
8.8	2	●	MHS0880L040B	19.1	40.5	41.5	101.5	100	1.5	10	3
8.8	8	●	MHS0880L090B	72.0	90.6	91.6	151.6	150	1.6	10	4
8.8	11	●	MHS0880L120B	98.4	120.6	121.6	181.6	180	1.6	10	4
8.8	14	●	MHS0880L150B	124.8	150.6	151.6	211.6	210	1.6	10	4
8.8	20	●	MHS0880L200B	177.6	200.6	201.6	261.6	260	1.6	10	4
8.8	26	●	MHS0880L250B	230.4	250.6	251.6	311.6	310	1.6	10	4
8.9	2	□	MHS0890L040B	19.3	40.5	41.5	101.5	100	1.5	10	3
8.9	7	□	MHS0890L090B	63.9	90.6	91.6	151.6	150	1.6	10	4
8.9	11	□	MHS0890L120B	99.5	120.6	121.6	181.6	180	1.6	10	4
8.9	14	□	MHS0890L150B	126.2	150.6	151.6	211.6	210	1.6	10	4
8.9	20	□	MHS0890L200B	179.6	200.6	201.6	261.6	260	1.6	10	4
8.9	25	□	MHS0890L250B	224.1	250.6	251.6	311.6	310	1.6	10	4
9.0	2	●	MHS0900L040B	19.5	40.5	41.5	101.5	100	1.5	10	3
9.0	7	●	MHS0900L090B	64.6	90.6	91.6	151.6	150	1.6	10	4
9.0	11	●	MHS0900L120B	100.6	120.6	121.6	181.6	180	1.6	10	4
9.0	14	●	MHS0900L150B	127.6	150.6	151.6	211.6	210	1.6	10	4
9.0	20	●	MHS0900L200B	181.6	200.6	201.6	261.6	260	1.6	10	4
9.0	25	●	MHS0900L250B	226.6	250.6	251.6	311.6	310	1.6	10	4
9.1	2	□	MHS0910L040B	19.8	41.1	41.6	101.6	100	1.6	10	3
9.1	7	□	MHS0910L090B	65.4	91.2	91.7	151.7	150	1.7	10	4
9.1	11	□	MHS0910L120B	101.8	121.2	121.7	181.7	180	1.7	10	4
9.1	14	□	MHS0910L150B	129.1	151.2	151.7	211.7	210	1.7	10	4
9.1	19	□	MHS0910L200B	174.6	201.2	201.7	261.7	260	1.7	10	4
9.1	25	□	MHS0910L250B	229.2	251.2	251.7	311.7	310	1.7	10	4
9.1	30	□	MHS0910L300B	274.7	301.2	301.7	361.7	360	1.7	10	4
9.2	2	□	MHS0920L040B	20.0	41.1	41.6	101.6	100	1.6	10	3
9.2	7	□	MHS0920L090B	66.1	91.2	91.7	151.7	150	1.7	10	4
9.2	10	□	MHS0920L120B	93.7	121.2	121.7	181.7	180	1.7	10	4
9.2	14	□	MHS0920L150B	130.5	151.2	151.7	211.7	210	1.7	10	4
9.2	19	□	MHS0920L200B	176.5	201.2	201.7	261.7	260	1.7	10	4
9.2	25	□	MHS0920L250B	231.7	251.2	251.7	311.7	310	1.7	10	4
9.2	30	□	MHS0920L300B	277.7	301.2	301.7	361.7	360	1.7	10	4
9.3	2	□	MHS0930L040B	20.2	41.1	41.6	101.6	100	1.6	10	3
9.3	7	□	MHS0930L090B	66.8	91.2	91.7	151.7	150	1.7	10	4
9.3	10	□	MHS0930L120B	94.7	121.2	121.7	181.7	180	1.7	10	4
9.3	14	□	MHS0930L150B	131.9	151.2	151.7	211.7	210	1.7	10	4
9.3	19	□	MHS0930L200B	178.4	201.2	201.7	261.7	260	1.7	10	4
9.3	24	□	MHS0930L250B	224.9	251.2	251.7	311.7	310	1.7	10	4
9.3	30	□	MHS0930L300B	280.7	301.2	301.7	361.7	360	1.7	10	4

DC (mm)	Prof. do Furo (L/D)	VP15TF	Referência para Pedido	Dimensões (mm)							Tipo
				LU	LCF	LH	OAL	LF	PL	DCON	
9.4	2	□	MHS0940L040B	20.4	41.1	41.6	101.6	100	1.6	10	3
9.4	7	□	MHS0940L090B	67.5	91.2	91.7	151.7	150	1.7	10	4
9.4	10	□	MHS0940L120B	95.7	121.2	121.7	181.7	180	1.7	10	4
9.4	13	□	MHS0940L150B	123.9	151.2	151.7	211.7	210	1.7	10	4
9.4	19	□	MHS0940L200B	180.3	201.2	201.7	261.7	260	1.7	10	4
9.4	24	□	MHS0940L250B	227.3	251.2	251.7	311.7	310	1.7	10	4
9.4	29	□	MHS0940L300B	274.3	301.2	301.7	361.7	360	1.7	10	4
9.5	2	●	MHS0950L040B	20.6	41.1	41.6	101.6	100	1.6	10	3
9.5	7	●	MHS0950L090B	68.2	91.2	91.7	151.7	150	1.7	10	4
9.5	10	●	MHS0950L120B	96.7	121.2	121.7	181.7	180	1.7	10	4
9.5	13	●	MHS0950L150B	125.2	151.2	151.7	211.7	210	1.7	10	4
9.5	18	●	MHS0950L200B	172.7	201.2	201.7	261.7	260	1.7	10	4
9.5	24	●	MHS0950L250B	229.7	251.2	251.7	311.7	310	1.7	10	4
9.5	29	●	MHS0950L300B	277.2	301.2	301.7	361.7	360	1.7	10	4
9.6	2	□	MHS0960L040B	20.9	41.7	41.7	101.7	100	1.7	10	3
9.6	7	□	MHS0960L090B	68.9	91.7	91.7	151.7	150	1.7	10	4
9.6	10	□	MHS0960L120B	97.7	121.7	121.7	181.7	180	1.7	10	4
9.6	13	□	MHS0960L150B	126.5	151.7	151.7	211.7	210	1.7	10	4
9.6	18	□	MHS0960L200B	174.5	201.7	201.7	261.7	260	1.7	10	4
9.6	24	□	MHS0960L250B	232.1	251.7	251.7	311.7	310	1.7	10	4
9.6	29	□	MHS0960L300B	280.1	301.7	301.7	361.7	360	1.7	10	4
9.7	2	□	MHS0970L040B	21.1	41.7	41.7	101.7	100	1.7	10	3
9.7	7	□	MHS0970L090B	69.7	91.8	91.8	151.8	150	1.8	10	4
9.7	10	□	MHS0970L120B	98.8	121.8	121.8	181.8	180	1.8	10	4
9.7	13	□	MHS0970L150B	127.9	151.8	151.8	211.8	210	1.8	10	4
9.7	18	□	MHS0970L200B	176.4	201.8	201.8	261.8	260	1.8	10	4
9.7	23	□	MHS0970L250B	224.9	251.8	251.8	311.8	310	1.8	10	4
9.7	28	□	MHS0970L300B	273.4	301.8	301.8	361.8	360	1.8	10	4
9.8	2	●	MHS0980L040B	21.3	41.7	41.7	101.7	100	1.7	10	3
9.8	7	●	MHS0980L090B	70.4	91.8	91.8	151.8	150	1.8	10	4
9.8	10	●	MHS0980L120B	99.8	121.8	121.8	181.8	180	1.8	10	4
9.8	13	●	MHS0980L150B	129.2	151.8	151.8	211.8	210	1.8	10	4
9.8	18	●	MHS0980L200B	178.2	201.8	201.8	261.8	260	1.8	10	4
9.8	23	●	MHS0980L250B	227.2	251.8	251.8	311.8	310	1.8	10	4
9.8	28	●	MHS0980L300B	276.2	301.8	301.8	361.8	360	1.8	10	4
9.9	2	□	MHS0990L040B	21.5	41.7	41.7	101.7	100	1.7	10	3
9.9	7	□	MHS0990L090B	71.1	91.8	91.8	151.8	150	1.8	10	4
9.9	10	□	MHS0990L120B	100.8	121.8	121.8	181.8	180	1.8	10	4
9.9	13	□	MHS0990L150B	130.5	151.8	151.8	211.8	210	1.8	10	4
9.9	18	□	MHS0990L200B	180.0	201.8	201.8	261.8	260	1.8	10	4
9.9	23	□	MHS0990L250B	229.5	251.8	251.8	311.8	310	1.8	10	4
9.9	28	□	MHS0990L300B	279.0	301.8	301.8	361.8	360	1.8	10	4
10.0	1	●	MHS1000L040B	11.7	41.7	41.7	101.7	100	1.7	10	3
10.0	6	●	MHS1000L090B	61.8	91.8	91.8	151.8	150	1.8	10	4
10.0	9	●	MHS1000L120B	91.8	121.8	121.8	181.8	180	1.8	10	4
10.0	12	●	MHS1000L150B	121.8	151.8	151.8	211.8	210	1.8	10	4
10.0	17	●	MHS1000L200B	171.8	201.8	201.8	261.8	260	1.8	10	4
10.0	22	●	MHS1000L250B	221.8	251.8	251.8	311.8	310	1.8	10	4

FURAÇÃO(METAL DURO INTEIRIÇO)

MHS

BROCAS WSTAR

METAL DURO

DC (mm)	Prof. do Furo (L/D)	VP15TF	Referência para Pedido	Dimensões (mm)							Tipo
				LU	LCF	LH	OAL	LF	PL	DCON	
10.0	27	●	MHS1000L300B	271.8	301.8	301.8	361.8	360	1.8	10	4
10.1	1	□	MHS1010L040B	11.8	40.2	41.7	101.7	100	1.7	12	3
10.1	6	□	MHS1010L090B	62.4	90.3	91.8	151.8	150	1.8	12	4
10.1	9	□	MHS1010L120B	92.7	120.3	121.8	181.8	180	1.8	12	4
10.1	12	□	MHS1010L150B	123.0	150.3	151.8	211.8	210	1.8	12	4
10.1	17	□	MHS1010L200B	173.5	200.3	201.8	261.8	260	1.8	12	4
10.1	22	□	MHS1010L250B	224.0	250.3	251.8	311.8	310	1.8	12	4
10.1	27	□	MHS1010L300B	274.5	300.3	301.8	361.8	360	1.8	12	4
10.2	1	□	MHS1020L040B	12.0	40.3	41.8	101.8	100	1.8	12	3
10.2	6	□	MHS1020L090B	63.1	90.4	91.9	151.9	150	1.9	12	4
10.2	9	□	MHS1020L120B	93.7	120.4	121.9	181.9	180	1.9	12	4
10.2	12	□	MHS1020L150B	124.3	150.4	151.9	211.9	210	1.9	12	4
10.2	17	□	MHS1020L200B	175.3	200.4	201.9	261.9	260	1.9	12	4
10.2	22	□	MHS1020L250B	226.3	250.4	251.9	311.9	310	1.9	12	4
10.2	27	□	MHS1020L300B	277.3	300.4	301.9	361.9	360	1.9	12	4
10.3	1	□	MHS1030L040B	12.1	40.3	41.8	101.8	100	1.8	12	3
10.3	6	□	MHS1030L090B	63.7	90.4	91.9	151.9	150	1.9	12	4
10.3	9	□	MHS1030L120B	94.6	120.4	121.9	181.9	180	1.9	12	4
10.3	12	□	MHS1030L150B	125.5	150.4	151.9	211.9	210	1.9	12	4
10.3	17	□	MHS1030L200B	177.0	200.4	201.9	261.9	260	1.9	12	4
10.3	22	□	MHS1030L250B	228.5	250.4	251.9	311.9	310	1.9	12	4
10.3	26	□	MHS1030L300B	269.7	300.4	301.9	361.9	360	1.9	12	4
10.4	1	□	MHS1040L040B	12.2	40.3	41.8	101.8	100	1.8	12	3
10.4	6	□	MHS1040L090B	64.3	90.4	91.9	151.9	150	1.9	12	4
10.4	9	□	MHS1040L120B	95.5	120.4	121.9	181.9	180	1.9	12	4
10.4	12	□	MHS1040L150B	126.7	150.4	151.9	211.9	210	1.9	12	4
10.4	17	□	MHS1040L200B	178.7	200.4	201.9	261.9	260	1.9	12	4
10.4	21	□	MHS1040L250B	220.3	250.4	251.9	311.9	310	1.9	12	4
10.4	26	□	MHS1040L300B	272.3	300.4	301.9	361.9	360	1.9	12	4
10.5	1	●	MHS1050L040B	12.3	40.3	41.8	101.8	100	1.8	12	3
10.5	6	●	MHS1050L090B	64.9	90.4	91.9	151.9	150	1.9	12	4
10.5	9	●	MHS1050L120B	96.4	120.4	121.9	181.9	180	1.9	12	4
10.5	12	●	MHS1050L150B	127.9	150.4	151.9	211.9	210	1.9	12	4
10.5	16	●	MHS1050L200B	169.9	200.4	201.9	261.9	260	1.9	12	4
10.5	21	●	MHS1050L250B	222.4	250.4	251.9	311.9	310	1.9	12	4
10.5	26	●	MHS1050L300B	274.9	300.4	301.9	361.9	360	1.9	12	4
10.6	1	□	MHS1060L040B	12.4	40.8	41.8	101.8	100	1.8	12	3
10.6	6	□	MHS1060L090B	65.5	90.9	91.9	151.9	150	1.9	12	4
10.6	9	□	MHS1060L120B	97.3	120.9	121.9	181.9	180	1.9	12	4
10.6	12	□	MHS1060L150B	129.1	150.9	151.9	211.9	210	1.9	12	4
10.6	16	□	MHS1060L200B	171.5	200.9	201.9	261.9	260	1.9	12	4
10.6	21	□	MHS1060L250B	224.5	250.9	251.9	311.9	310	1.9	12	4
10.6	26	□	MHS1060L300B	277.5	300.9	301.9	361.9	360	1.9	12	4
10.7	1	□	MHS1070L040B	12.5	40.8	41.8	101.8	100	1.8	12	3
10.7	6	□	MHS1070L090B	66.1	90.9	91.9	151.9	150	1.9	12	4
10.7	9	□	MHS1070L120B	98.2	120.9	121.9	181.9	180	1.9	12	4
10.7	11	□	MHS1070L150B	119.6	150.9	151.9	211.9	210	1.9	12	4
10.7	16	□	MHS1070L200B	173.1	200.9	201.9	261.9	260	1.9	12	4

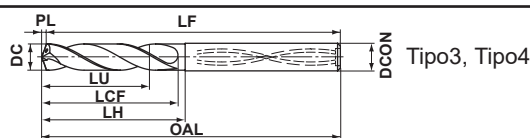
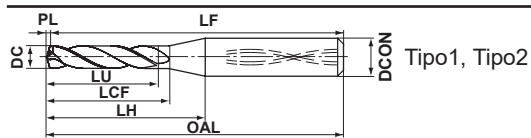
DC (mm)	Prof. do Furo (L/D)	VP15TF	Referência para Pedido	Dimensões (mm)							Tipo
				LU	LCF	LH	OAL	LF	PL	DCON	
10.7	21	□	MHS1070L250B	226.6	250.9	251.9	311.9	310	1.9	12	4
10.7	25	□	MHS1070L300B	269.4	300.9	301.9	361.9	360	1.9	12	4
10.8	1	●	MHS1080L040B	12.7	40.9	41.9	101.9	100	1.9	12	3
10.8	6	●	MHS1080L090B	66.8	91.0	92.0	152.0	150	2.0	12	4
10.8	9	●	MHS1080L120B	99.2	121.0	122.0	182.0	180	2.0	12	4
10.8	11	●	MHS1080L150B	120.8	151.0	152.0	212.0	210	2.0	12	4
10.8	16	●	MHS1080L200B	174.8	201.0	202.0	262.0	260	2.0	12	4
10.8	21	●	MHS1080L250B	228.8	251.0	252.0	312.0	310	2.0	12	4
10.8	25	●	MHS1080L300B	272.0	301.0	302.0	362.0	360	2.0	12	4
10.9	1	□	MHS1090L040B	12.8	40.9	41.9	101.9	100	1.9	12	3
10.9	6	□	MHS1090L090B	67.4	91.0	92.0	152.0	150	2.0	12	4
10.9	8	□	MHS1090L120B	89.2	121.0	122.0	182.0	180	2.0	12	4
10.9	11	□	MHS1090L150B	121.9	151.0	152.0	212.0	210	2.0	12	4
10.9	16	□	MHS1090L200B	176.4	201.0	202.0	262.0	260	2.0	12	4
10.9	20	□	MHS1090L250B	220.0	251.0	252.0	312.0	310	2.0	12	4
10.9	25	□	MHS1090L300B	274.5	301.0	302.0	362.0	360	2.0	12	4
11.0	1	●	MHS1100L040B	12.9	40.9	41.9	101.9	100	1.9	12	3
11.0	6	●	MHS1100L090B	68.0	91.0	92.0	152.0	150	2.0	12	4
11.0	8	●	MHS1100L120B	90.0	121.0	122.0	182.0	180	2.0	12	4
11.0	11	●	MHS1100L150B	123.0	151.0	152.0	212.0	210	2.0	12	4
11.0	16	●	MHS1100L200B	178.0	201.0	202.0	262.0	260	2.0	12	4
11.0	20	●	MHS1100L250B	222.0	251.0	252.0	312.0	310	2.0	12	4
11.0	25	●	MHS1100L300B	277.0	301.0	302.0	362.0	360	2.0	12	4
11.1	1	□	MHS1110L040B	13.0	41.4	41.9	101.9	100	1.9	12	3
11.1	6	□	MHS1110L090B	68.6	91.5	92.0	152.0	150	2.0	12	4
11.1	8	□	MHS1110L120B	90.8	121.5	122.0	182.0	180	2.0	12	4
11.1	11	□	MHS1110L150B	124.1	151.5	152.0	212.0	210	2.0	12	4
11.1	15	□	MHS1110L200B	168.5	201.5	202.0	262.0	260	2.0	12	4
11.1	20	□	MHS1110L250B	224.0	251.5	252.0	312.0	310	2.0	12	4
11.1	24	□	MHS1110L300B	268.4	301.5	302.0	362.0	360	2.0	12	4
11.2	1	□	MHS1120L040B	13.1	41.4	41.9	101.9	100	1.9	12	3
11.2	5	□	MHS1120L090B	58.0	91.5	92.0	152.0	150	2.0	12	4
11.2	8	□	MHS1120L120B	91.6	121.5	122.0	182.0	180	2.0	12	4
11.2	11	□	MHS1120L150B	125.2	151.5	152.0	212.0	210	2.0	12	4
11.2	15	□	MHS1120L200B	170.0	201.5	202.0	262.0	260	2.0	12	4
11.2	20	□	MHS1120L250B	226.0	251.5	252.0	312.0	310	2.0	12	4
11.2	24	□	MHS1120L300B	270.8	301.5	302.0	362.0	360	2.0	12	4
11.3	1	□	MHS1130L040B	13.2	41.4	41.9	101.9	100	1.9	12	3
11.3	5	□	MHS1130L090B	58.6	91.6	92.1	152.1	150	2.1	12	4
11.3	8	□	MHS1130L120B	92.5	121.6	122.1	182.1	180	2.1	12	4
11.3	11	□	MHS1130L150B	126.4	151.6	152.1	212.1	210	2.1	12	4
11.3	15	□	MHS1130L200B	171.6	201.6	202.1	262.1	260	2.1	12	4
11.3	20	□	MHS1130L250B	228.1	251.6	252.1	312.1	310	2.1	12	4
11.3	24	□	MHS1130L300B	273.3	301.6	302.1	362.1	360	2.1	12	4
11.4	1	□	MHS1140L040B	13.4	41.5	42.0	102.0	100	2.0	12	3
11.4	5	□	MHS1140L090B	59.1	91.6	92.1	152.1	150	2.1	12	4
11.4	8	□	MHS1140L120B	93.3	121.6	122.1	182.1	180	2.1	12	4
11.4	11	□	MHS1140L150B	127.5	151.6	152.1	212.1	210	2.1	12	4

Nota 1) Por favor entre em contato para qualquer geometria que não conste no catálogo (ex.: diâmetro e comprimento diferente.).

● : Estoque mantido. □ : Sem estoque, produzido somente por pedido.

□ : Lote mínimo para produtos especiais:

- ① Menor que ø3 = Mínimo 10
- ② Maior ou igual a ø3 e menor que ø10 = Mínimo 5
- ③ Maior ou igual a ø10 = Mínimo 3



DC (mm)	Prof. do Furo (L/D)	VP15TF	Referência para Pedido	Dimensões (mm)								Tipo
				LU	LCF	LH	OAL	LF	PL	DCON		
11.4	15	□	MHS1140L200B	173.1	201.6	202.1	262.1	260	2.1	12	4	
11.4	19	□	MHS1140L250B	218.7	251.6	252.1	312.1	310	2.1	12	4	
11.4	24	□	MHS1140L300B	275.7	301.6	302.1	362.1	360	2.1	12	4	
11.5	1	●	MHS1150L040B	13.5	41.5	42.0	102.0	100	2.0	12	3	
11.5	5	●	MHS1150L090B	59.6	91.6	92.1	152.1	150	2.1	12	4	
11.5	8	●	MHS1150L120B	94.1	121.6	122.1	182.1	180	2.1	12	4	
11.5	10	●	MHS1150L150B	117.1	151.6	152.1	212.1	210	2.1	12	4	
11.5	15	●	MHS1150L200B	174.6	201.6	202.1	262.1	260	2.1	12	4	
11.5	19	●	MHS1150L250B	220.6	251.6	252.1	312.1	310	2.1	12	4	
11.5	24	●	MHS1150L300B	278.1	301.6	302.1	362.1	360	2.1	12	4	
11.6	1	□	MHS1160L040B	13.6	42.0	42.0	102.0	100	2.0	12	3	
11.6	5	□	MHS1160L090B	60.1	92.1	92.1	152.1	150	2.1	12	4	
11.6	8	□	MHS1160L120B	94.9	122.1	122.1	182.1	180	2.1	12	4	
11.6	10	□	MHS1160L150B	118.1	152.1	152.1	212.1	210	2.1	12	4	
11.6	15	□	MHS1160L200B	176.1	202.1	202.1	262.1	260	2.1	12	4	
11.6	19	□	MHS1160L250B	222.5	252.1	252.1	312.1	310	2.1	12	4	
11.6	23	□	MHS1160L300B	268.9	302.1	302.1	362.1	360	2.1	12	4	
11.7	1	□	MHS1170L040B	13.7	42.0	42.0	102.0	100	2.0	12	3	
11.7	5	□	MHS1170L090B	60.6	92.1	92.1	152.1	150	2.1	12	4	
11.7	8	□	MHS1170L120B	95.7	122.1	122.1	182.1	180	2.1	12	4	
11.7	10	□	MHS1170L150B	119.1	152.1	152.1	212.1	210	2.1	12	4	
11.7	15	□	MHS1170L200B	177.6	202.1	202.1	262.1	260	2.1	12	4	
11.7	19	□	MHS1170L250B	224.4	252.1	252.1	312.1	310	2.1	12	4	
11.7	23	□	MHS1170L300B	271.2	302.1	302.1	362.1	360	2.1	12	4	

DC (mm)	Prof. do Furo (L/D)	VP15TF	Referência para Pedido	Dimensões (mm)								Tipo
				LU	LCF	LH	OAL	LF	PL	DCON		
11.8	1	●	MHS1180L040B	13.8	42.0	42.0	102.0	100	2.0	12	3	
11.8	5	●	MHS1180L090B	61.1	92.1	92.1	152.1	150	2.1	12	4	
11.8	8	●	MHS1180L120B	96.5	122.1	122.1	182.1	180	2.1	12	4	
11.8	10	●	MHS1180L150B	120.1	152.1	152.1	212.1	210	2.1	12	4	
11.8	14	●	MHS1180L200B	167.3	202.1	202.1	262.1	260	2.1	12	4	
11.8	19	●	MHS1180L250B	226.3	252.1	252.1	312.1	310	2.1	12	4	
11.8	23	●	MHS1180L300B	273.5	302.1	302.1	362.1	360	2.1	12	4	
11.9	1	□	MHS1190L040B	13.9	42.0	42.0	102.0	100	2.0	12	3	
11.9	5	□	MHS1190L090B	61.7	92.2	92.2	152.2	150	2.2	12	4	
11.9	8	□	MHS1190L120B	97.4	122.2	122.2	182.2	180	2.2	12	4	
11.9	10	□	MHS1190L150B	121.2	152.2	152.2	212.2	210	2.2	12	4	
11.9	14	□	MHS1190L200B	168.8	202.2	202.2	262.2	260	2.2	12	4	
11.9	19	□	MHS1190L250B	228.3	252.2	252.2	312.2	310	2.2	12	4	
11.9	23	□	MHS1190L300B	275.9	302.2	302.2	362.2	360	2.2	12	4	
12.0	1	●	MHS1200L040B	14.1	42.1	42.1	102.1	100	2.1	12	3	
12.0	5	●	MHS1200L090B	62.2	92.2	92.2	152.2	150	2.2	12	4	
12.0	7	●	MHS1200L120B	86.2	122.2	122.2	182.2	180	2.2	12	4	
12.0	10	●	MHS1200L150B	122.2	152.2	152.2	212.2	210	2.2	12	4	
12.0	14	●	MHS1200L200B	170.2	202.2	202.2	262.2	260	2.2	12	4	
12.0	18	●	MHS1200L250B	218.2	252.2	252.2	312.2	310	2.2	12	4	
12.0	22	●	MHS1200L300B	266.2	302.2	302.2	362.2	360	2.2	12	4	

CONDIÇÕES DE CORTE RECOMENDADAS

Diâm. DC (mm)	Aço Baixo Carbono ($\leq 180\text{HB}$), Aço Carbono, Aço Liga (180–280HB)				Aço Inoxidável Ferrítico e Martensítico ($>200\text{HB}$)			
	Vel. de Corte (m/min)	Rotação (min^{-1})	Avanço (Mín.–Máx.) (mm/rot)	Avanço linear (mm/min)	Vel. de Corte (m/min)	Rotação (min^{-1})	Avanço (Mín.–Máx.) (mm/rot)	Avanço linear (mm/min)
1.0	40	12700	0.030 (0.020–0.040)	380	20	6400	0.030 (0.020–0.040)	190
1.2	50	13300	0.035 (0.025–0.050)	465	30	8000	0.035 (0.025–0.050)	280
1.6	60	11900	0.050 (0.030–0.065)	595	40	8000	0.050 (0.030–0.065)	400
2.0	70	11100	0.060 (0.040–0.080)	665	50	8000	0.060 (0.040–0.080)	480
2.5	80	10200	0.075 (0.050–0.100)	765	60	7600	0.075 (0.050–0.100)	570
3.2	80	8000	0.100 (0.070–0.130)	800	60	6000	0.100 (0.070–0.130)	600
4.0	80	6400	0.100 (0.090–0.110)	640	60	4800	0.090 (0.080–0.090)	430
5.0	80	5100	0.130 (0.110–0.140)	665	60	3800	0.110 (0.100–0.120)	420
6.3	80	4000	0.160 (0.140–0.180)	640	60	3000	0.140 (0.130–0.150)	420
8.0	80	3200	0.200 (0.180–0.230)	640	60	2400	0.170 (0.160–0.190)	410
10.0	80	2600	0.250 (0.220–0.280)	650	60	1900	0.220 (0.200–0.230)	420
12.0	80	2100	0.300 (0.270–0.340)	630	60	1600	0.260 (0.240–0.280)	415

Diâm. DC (mm)	Aço pré-endurecido (35–45HRC), Aço ferramenta liga ($\leq 350\text{HB}$)				Aço Inoxidável (40–55HRC), Aço Inoxidável Endurecido por Precipitação ($<450\text{HB}$)			
	Vel. de Corte (m/min)	Rotação (min^{-1})	Avanço (Mín.–Máx.) (mm/rot)	Avanço linear (mm/min)	Vel. de Corte (m/min)	Rotação (min^{-1})	Avanço (Mín.–Máx.) (mm/rot)	Avanço linear (mm/min)
1.0	20	6400	0.025 (0.020–0.030)	160	40	12700	0.020 (0.015–0.025)	255
1.2	30	8000	0.030 (0.020–0.035)	240	40	10600	0.025 (0.020–0.030)	265
1.6	40	8000	0.040 (0.030–0.045)	320	50	10000	0.035 (0.025–0.040)	350
2.0	50	8000	0.045 (0.035–0.060)	360	50	8000	0.040 (0.030–0.050)	320
2.5	60	7600	0.060 (0.045–0.075)	455	60	7600	0.050 (0.040–0.065)	380
3.2	60	6000	0.080 (0.060–0.090)	480	60	6000	0.060 (0.050–0.080)	360
4.0	60	4800	0.080 (0.070–0.100)	385	60	4800	0.080 (0.060–0.100)	385
5.0	60	3800	0.110 (0.090–0.130)	420	60	3800	0.100 (0.080–0.130)	380
6.3	60	3000	0.130 (0.110–0.160)	390	60	3000	0.110 (0.090–0.130)	330
8.0	60	2400	0.170 (0.140–0.200)	410	60	2400	0.140 (0.120–0.160)	335
10.0	60	1900	0.210 (0.170–0.250)	400	60	1900	0.170 (0.140–0.200)	325
12.0	60	1600	0.250 (0.210–0.300)	400	60	1600	0.210 (0.170–0.240)	335

Nota 1) Para uso de brocas com comprimento L/D=10 ou maior, use previamente um furo de guia. (A força centrífuga pode causar desvio ou quebra da broca.)

Nota 2) As brocas MHS são indicadas para uso com mandris de contração térmica.

Nota 3) Para usinagem de furo de guia, use a broca mais curta do diâmetro correspondente.

Diâm. DC (mm)	Vel. de Corte (m/min)	Rotação (min ⁻¹)	Material	
			Avanço (Min.—Máx.) (mm/rot)	
			Aço Endurecido (40—55HRC), Ligas Resistentes ao Calor	
			AISI H13, JIS SKT4, Inconel718 etc	
1.0	10	3200	0.015 (0.015—0.020) 50	
1.2	10	2700	0.020 (0.015—0.025) 55	
1.6	10	2000	0.025 (0.020—0.030) 50	
2.0	20	3200	0.035 (0.025—0.040) 110	
2.5	20	2600	0.040 (0.030—0.050) 105	
3.2	20	2000	0.050 (0.040—0.070) 100	
4.0	30	2400	0.070 (0.050—0.080) 170	
5.0	30	1900	0.080 (0.060—0.100) 150	
6.3	30	1500	0.090 (0.080—0.110) 135	
8.0	40	1600	0.120 (0.100—0.130) 190	
10.0	40	1300	0.150 (0.130—0.170) 195	
12.0	40	1100	0.180 (0.150—0.200) 200	

Nota 1) Para uso de brocas com comprimento L/D=10 ou maior, use previamente um furo de guia. (A força centrífuga pode causar desvio ou quebra da broca.)

Nota 2) As brocas MHS são indicadas para uso com mandris de contração térmica.

Nota 3) Para usinagem de furo de guia, use a broca mais curta do diâmetro correspondente.

FURAÇÃO(METAL DURO INTEIRIÇO)

MNS

BROCAS WSTAR

- Sistema especial com 4 furos de refrigeração, melhora resistência à adesão.
- Furação de alta eficiência de ligas de alumínio.



P

M

K

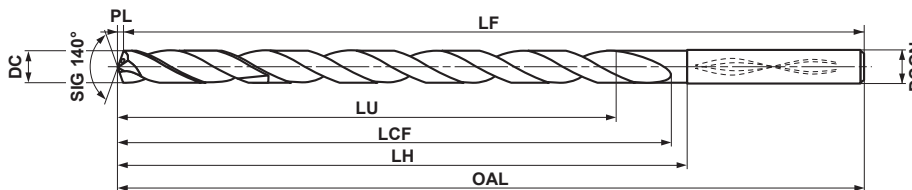
N

S

H

Metais Não Ferrosos

Refrigeração Interna



DC=3	3<DC≤6	6<DC≤10	10<DC≤14
0 -0.014	0 -0.018	0 -0.022	0 -0.027
DCON=3	3<DCON≤6	6<DCON≤10	10<DCON≤14
0 -0.006	0 -0.008	0 -0.009	0 -0.011



Nota 1) As brocas MNS são indicadas para uso com mandris de contração térmica.

Nota 2) As brocas com diâmetros de 4.5 ou menores foram projetadas com 2 furos de refrigeração.

Nota 3) Para usinagem de furo de guia, use a broca MNS ... LB, MAE ... MB ou MAS ... MB (páginas N104, N108).

DC (mm)	Prof. do Furo (L/D)	TF15	Referência para Pedido	Dimensões (mm)						
				LU	LCF	LH	OAL	LF	PL	DCON
3.0	5	●	MNS0300LB	15.5	33.5	33.5	81.5	81	0.5	3
3.0	10	●	MNS0300X10DB	30.5	39.5	42.5	90.5	90	0.5	3
3.0	20	●	MNS0300X20DB	60.5	69.5	72.5	120.5	120	0.5	3
3.0	30	●	MNS0300X30DB	90.5	99.5	102.5	150.5	150	0.5	3
3.1	5	●	MNS0310LB	16.1	39.6	39.6	87.6	87	0.6	4
3.1	10	□	MNS0310X10DB	31.6	46.6	49.6	97.6	97	0.6	4
3.1	20	□	MNS0310X20DB	62.6	81.6	84.6	132.6	132	0.6	4
3.1	30	□	MNS0310X30DB	93.6	116.6	119.6	167.6	167	0.6	4
3.2	5	●	MNS0320LB	16.6	39.6	39.6	87.6	87	0.6	4
3.2	10	●	MNS0320X10DB	32.6	46.6	49.6	97.6	97	0.6	4
3.2	20	●	MNS0320X20DB	64.6	81.6	84.6	132.6	132	0.6	4
3.2	30	●	MNS0320X30DB	96.6	116.6	119.6	167.6	167	0.6	4
3.3	5	●	MNS0330LB	17.1	39.6	39.6	87.6	87	0.6	4
3.3	10	□	MNS0330X10DB	33.6	46.6	49.6	97.6	97	0.6	4
3.3	20	□	MNS0330X20DB	66.6	81.6	84.6	132.6	132	0.6	4
3.3	30	□	MNS0330X30DB	99.6	116.6	119.6	167.6	167	0.6	4
3.4	5	●	MNS0340LB	17.6	39.6	39.6	87.6	87	0.6	4
3.4	10	●	MNS0340X10DB	34.6	46.6	49.6	97.6	97	0.6	4
3.4	20	●	MNS0340X20DB	68.6	81.6	84.6	132.6	132	0.6	4
3.4	30	●	MNS0340X30DB	102.6	116.6	119.6	167.6	167	0.6	4
3.5	5	●	MNS0350LB	18.1	39.6	39.6	87.6	87	0.6	4
3.5	10	□	MNS0350X10DB	35.6	46.6	49.6	97.6	97	0.6	4
3.5	20	□	MNS0350X20DB	70.6	81.6	84.6	132.6	132	0.6	4
3.5	30	□	MNS0350X30DB	105.6	116.6	119.6	167.6	167	0.6	4
3.6	5	●	MNS0360LB	18.7	44.7	44.7	92.7	92	0.7	4
3.6	10	●	MNS0360X10DB	36.7	52.7	55.7	103.7	103	0.7	4
3.6	20	●	MNS0360X20DB	72.7	92.7	95.7	143.7	143	0.7	4
3.6	30	●	MNS0360X30DB	108.7	132.7	135.7	183.7	183	0.7	4

DC (mm)	Prof. do Furo (L/D)	TF15	Referência para Pedido	Dimensões (mm)						
				LU	LCF	LH	OAL	LF	PL	DCON
3.7	5	●	MNS0370LB	19.2	44.7	44.7	92.7	92	0.7	4
3.7	10	□	MNS0370X10DB	37.7	52.7	55.7	103.7	103	0.7	4
3.7	20	□	MNS0370X20DB	74.7	92.7	95.7	143.7	143	0.7	4
3.7	30	□	MNS0370X30DB	111.7	132.7	135.7	183.7	183	0.7	4
3.8	5	●	MNS0380LB	19.7	44.7	44.7	92.7	92	0.7	4
3.8	10	□	MNS0380X10DB	38.7	52.7	55.7	103.7	103	0.7	4
3.8	20	□	MNS0380X20DB	76.7	92.7	95.7	143.7	143	0.7	4
3.8	30	□	MNS0380X30DB	114.7	132.7	135.7	183.7	183	0.7	4
3.9	5	●	MNS0390LB	20.2	44.7	44.7	92.7	92	0.7	4
3.9	10	●	MNS0390X10DB	39.7	52.7	55.7	103.7	103	0.7	4
3.9	20	●	MNS0390X20DB	78.7	92.7	95.7	143.7	143	0.7	4
3.9	30	●	MNS0390X30DB	117.7	132.7	135.7	183.7	183	0.7	4
4.0	5	●	MNS0400LB	20.7	44.7	44.7	92.7	92	0.7	4
4.0	10	●	MNS0400X10DB	40.7	52.7	55.7	103.7	103	0.7	4
4.0	20	●	MNS0400X20DB	80.7	92.7	95.7	143.7	143	0.7	4
4.0	30	●	MNS0400X30DB	120.7	132.7	135.7	183.7	183	0.7	4
4.1	5	●	MNS0410LB	21.2	50.7	50.7	100.7	100	0.7	5
4.1	10	□	MNS0410X10DB	41.7	59.7	62.7	112.7	112	0.7	5
4.1	20	□	MNS0410X20DB	82.7	104.7	107.7	157.7	157	0.7	5
4.1	30	□	MNS0410X30DB	123.7	149.7	152.7	202.7	202	0.7	5
4.2	5	●	MNS0420LB	21.8	50.8	50.8	100.8	100	0.8	5
4.2	10	□	MNS0420X10DB	42.8	59.8	62.8	112.8	112	0.8	5
4.2	20	□	MNS0420X20DB	84.8	104.8	107.8	157.8	157	0.8	5
4.2	30	□	MNS0420X30DB	126.8	149.8	152.8	202.8	202	0.8	5
4.3	5	●	MNS0430LB	22.3	50.8	50.8	100.8	100	0.8	5
4.3	10	□	MNS0430X10DB	43.8	59.8	62.8	112.8	112	0.8	5
4.3	20	□	MNS0430X20DB	86.8	104.8	107.8	157.8	157	0.8	5
4.3	30	□	MNS0430X30DB	129.8	149.8	152.8	202.8	202	0.8	5

Nota 1) Por favor entre em contato para qualquer geometria que não conste no catálogo (ex.: diâmetro e comprimento diferente.).

● : Estoque mantido. □ : Sem estoque, produzido somente por pedido.

□ : Lote mínimo para produtos especiais:

- ① Menor que ø3 = Mínimo 10
- ② Maior ou igual a ø3 e menor que ø10 = Mínimo 5
- ③ Maior ou igual a ø10 = Mínimo 3

DC (mm)	Prof. do Furo (L/D)	TF15	Referência para Pedido	Dimensões (mm)						
				LU	LCF	LH	OAL	LF	PL	DON
4.4	5	●	MNS0440LB	22.8	50.8	50.8	100.8	100	0.8	5
4.4	10	□	MNS0440X10DB	44.8	59.8	62.8	112.8	112	0.8	5
4.4	20	□	MNS0440X20DB	88.8	104.8	107.8	157.8	157	0.8	5
4.4	30	□	MNS0440X30DB	132.8	149.8	152.8	202.8	202	0.8	5
4.5	5	●	MNS0450LB	23.3	50.8	50.8	100.8	100	0.8	5
4.5	10	□	MNS0450X10DB	45.8	59.8	62.8	112.8	112	0.8	5
4.5	20	□	MNS0450X20DB	90.8	104.8	107.8	157.8	157	0.8	5
4.5	30	□	MNS0450X30DB	135.8	149.8	152.8	202.8	202	0.8	5
4.6	5	●	MNS0460LB	23.8	55.8	55.8	105.8	105	0.8	5
4.6	10	□	MNS0460X10DB	46.8	65.8	68.8	118.8	118	0.8	5
4.6	20	□	MNS0460X20DB	92.8	115.8	118.8	168.8	168	0.8	5
4.6	30	□	MNS0460X30DB	138.8	165.8	168.8	218.8	218	0.8	5
4.7	5	●	MNS0470LB	24.4	55.9	55.9	105.9	105	0.9	5
4.7	10	□	MNS0470X10DB	47.9	65.9	68.9	118.9	118	0.9	5
4.7	20	□	MNS0470X20DB	94.9	115.9	118.9	168.9	168	0.9	5
4.7	30	□	MNS0470X30DB	141.9	165.9	168.9	218.9	218	0.9	5
4.8	5	●	MNS0480LB	24.9	55.9	55.9	105.9	105	0.9	5
4.8	10	□	MNS0480X10DB	48.9	65.9	68.9	118.9	118	0.9	5
4.8	20	□	MNS0480X20DB	96.9	115.9	118.9	168.9	168	0.9	5
4.8	30	□	MNS0480X30DB	144.9	165.9	168.9	218.9	218	0.9	5
4.9	5	●	MNS0490LB	25.4	55.9	55.9	105.9	105	0.9	5
4.9	10	●	MNS0490X10DB	49.9	65.9	68.9	118.9	118	0.9	5
4.9	20	●	MNS0490X20DB	98.9	115.9	118.9	168.9	168	0.9	5
4.9	30	●	MNS0490X30DB	147.9	165.9	168.9	218.9	218	0.9	5
5.0	5	●	MNS0500LB	25.9	44.9	44.9	100.9	100	0.9	6
5.0	10	●	MNS0500X10DB	50.9	65.9	68.9	118.9	118	0.9	5
5.0	20	●	MNS0500X20DB	100.9	115.9	118.9	168.9	168	0.9	5
5.0	30	●	MNS0500X30DB	150.9	165.9	168.9	218.9	218	0.9	5
5.1	5	●	MNS0510LB	26.4	44.9	44.9	100.9	100	0.9	6
5.1	10	●	MNS0510X10DB	51.9	72.9	75.9	127.9	127	0.9	6
5.1	20	●	MNS0510X20DB	102.9	127.9	130.9	182.9	182	0.9	6
5.1	30	●	MNS0510X30DB	153.9	182.9	185.9	237.9	237	0.9	6
5.2	5	●	MNS0520LB	26.9	44.9	44.9	100.9	100	0.9	6
5.2	10	□	MNS0520X10DB	52.9	72.9	75.9	127.9	127	0.9	6
5.2	20	□	MNS0520X20DB	104.9	127.9	130.9	182.9	182	0.9	6
5.2	30	□	MNS0520X30DB	156.9	182.9	185.9	237.9	237	0.9	6
5.3	5	●	MNS0530LB	27.5	45.0	45.0	101.0	100	1.0	6
5.3	10	□	MNS0530X10DB	54.0	73.0	76.0	128.0	127	1.0	6
5.3	20	□	MNS0530X20DB	107.0	128.0	131.0	183.0	182	1.0	6
5.3	30	□	MNS0530X30DB	160.0	183.0	186.0	238.0	237	1.0	6
5.4	5	●	MNS0540LB	28.0	45.0	45.0	101.0	100	1.0	6
5.4	10	□	MNS0540X10DB	55.0	73.0	76.0	128.0	127	1.0	6
5.4	20	□	MNS0540X20DB	109.0	128.0	131.0	183.0	182	1.0	6
5.4	30	□	MNS0540X30DB	163.0	183.0	186.0	238.0	237	1.0	6
5.5	5	●	MNS0550LB	28.5	45.0	45.0	101.0	100	1.0	6
5.5	10	●	MNS0550X10DB	56.0	73.0	76.0	128.0	127	1.0	6
5.5	20	●	MNS0550X20DB	111.0	128.0	131.0	183.0	182	1.0	6
5.5	30	●	MNS0550X30DB	166.0	183.0	186.0	238.0	237	1.0	6

DC (mm)	Prof. do Furo (L/D)	TF15	Referência para Pedido	Dimensões (mm)						
				LU	LCF	LH	OAL	LF	PL	DON
5.6	5	●	MNS0560LB	29.0	49.0	49.0	101.0	100	1.0	6
5.6	10	□	MNS0560X10DB	57.0	79.0	82.0	134.0	133	1.0	6
5.6	20	□	MNS0560X20DB	113.0	139.0	142.0	194.0	193	1.0	6
5.6	30	□	MNS0560X30DB	169.0	199.0	202.0	254.0	253	1.0	6
5.7	5	●	MNS0570LB	29.5	49.0	49.0	101.0	100	1.0	6
5.7	10	□	MNS0570X10DB	58.0	79.0	82.0	134.0	133	1.0	6
5.7	20	□	MNS0570X20DB	115.0	139.0	142.0	194.0	193	1.0	6
5.7	30	□	MNS0570X30DB	172.0	199.0	202.0	254.0	253	1.0	6
5.8	5	●	MNS0580LB	30.1	49.1	49.1	101.1	100	1.1	6
5.8	10	□	MNS0580X10DB	59.1	79.1	82.1	134.1	133	1.1	6
5.8	20	□	MNS0580X20DB	117.1	139.1	142.1	194.1	193	1.1	6
5.8	30	□	MNS0580X30DB	175.1	199.1	202.1	254.1	253	1.1	6
5.9	5	●	MNS0590LB	30.6	49.1	49.1	101.1	100	1.1	6
5.9	10	□	MNS0590X10DB	60.1	79.1	82.1	134.1	133	1.1	6
5.9	20	□	MNS0590X20DB	119.1	139.1	142.1	194.1	193	1.1	6
5.9	30	□	MNS0590X30DB	178.1	199.1	202.1	254.1	253	1.1	6
6.0	5	●	MNS0600LB	31.1	49.1	49.1	101.1	100	1.1	6
6.0	10	●	MNS0600X10DB	61.1	79.1	82.1	134.1	133	1.1	6
6.0	20	●	MNS0600X20DB	121.1	139.1	142.1	194.1	193	1.1	6
6.0	30	●	MNS0600X30DB	181.1	199.1	202.1	254.1	253	1.1	6
6.1	5	●	MNS0610LB	31.6	53.1	53.1	110.1	109	1.1	7
6.1	10	●	MNS0610X10DB	62.1	86.1	89.1	142.1	141	1.1	7
6.1	20	●	MNS0610X20DB	123.1	151.1	154.1	207.1	206	1.1	7
6.1	30	●	MNS0610X30DB	184.1	216.1	219.1	272.1	271	1.1	7
6.2	5	●	MNS0620LB	32.1	53.1	53.1	110.1	109	1.1	7
6.2	10	□	MNS0620X10DB	63.1	86.1	89.1	142.1	141	1.1	7
6.2	20	□	MNS0620X20DB	125.1	151.1	154.1	207.1	206	1.1	7
6.2	30	□	MNS0620X30DB	187.1	216.1	219.1	272.1	271	1.1	7
6.3	5	●	MNS0630LB	32.6	53.1	53.1	110.1	109	1.1	7
6.3	10	□	MNS0630X10DB	64.1	86.1	89.1	142.1	141	1.1	7
6.3	20	□	MNS0630X20DB	127.1	151.1	154.1	207.1	206	1.1	7
6.3	30	□	MNS0630X30DB	190.1	216.1	219.1	272.1	271	1.1	7
6.4	5	●	MNS0640LB	33.2	53.2	53.2	110.2	109	1.2	7
6.4	10	□	MNS0640X10DB	65.2	86.2	89.2	142.2	141	1.2	7
6.4	20	□	MNS0640X20DB	129.2	151.2	154.2	207.2	206	1.2	7
6.4	30	□	MNS0640X30DB	193.2	216.2	219.2	272.2	271	1.2	7
6.5	5	●	MNS0650LB	33.7	53.2	53.2	110.2	109	1.2	7
6.5	10	●	MNS0650X10DB	66.2	86.2	89.2	142.2	141	1.2	7
6.5	20	●	MNS0650X20DB	131.2	151.2	154.2	207.2	206	1.2	7
6.5	30	●	MNS0650X30DB	196.2	216.2	219.2	272.2	271	1.2	7
6.6	5	●	MNS0660LB	34.2	57.2	57.2	110.2	109	1.2	7
6.6	10	□	MNS0660X10DB	67.2	92.2	95.2	148.2	147	1.2	7
6.6	20	□	MNS0660X20DB	133.2	162.2	165.2	218.2	217	1.2	7
6.6	30	□	MNS0660X30DB	199.2	232.2	235.2	288.2	287	1.2	7
6.7	5	●	MNS0670LB	34.7	57.2	57.2	110.2	109	1.2	7
6.7	10	●	MNS0670X10DB	68.2	92.2	95.2	148.2	147	1.2	7
6.7	20	●	MNS0670X20DB	135.2	162.2	165.2	218.2	217	1.2	7
6.7	30	●	MNS0670X30DB	202.2	232.2	235.2	288.2	287	1.2	7

FURAÇÃO(METAL DURO INTEIRIÇO)

MNS

BROCAS WSTAR

METAL DURO

DC (mm)	Prof. do Furo (L/D)	TF15	Referência para Pedido	Dimensões (mm)						
				LU	LCF	LH	OAL	LF	PL	DCON
6.8	5	●	MNS0680LB	35.2	57.2	57.2	110.2	109	1.2	7
6.8	10	□	MNS0680X10DB	69.2	92.2	95.2	148.2	147	1.2	7
6.8	20	□	MNS0680X20DB	137.2	162.2	165.2	218.2	217	1.2	7
6.8	30	□	MNS0680X30DB	205.2	232.2	235.2	288.2	287	1.2	7
6.9	5	●	MNS0690LB	35.8	57.3	57.3	110.3	109	1.3	7
6.9	10	□	MNS0690X10DB	70.3	92.3	95.3	148.3	147	1.3	7
6.9	20	□	MNS0690X20DB	139.3	162.3	165.3	218.3	217	1.3	7
6.9	30	□	MNS0690X30DB	208.3	232.3	235.3	288.3	287	1.3	7
7.0	5	●	MNS0700LB	36.3	57.3	57.3	110.3	109	1.3	7
7.0	10	●	MNS0700X10DB	71.3	92.3	95.3	148.3	147	1.3	7
7.0	20	●	MNS0700X20DB	141.3	162.3	165.3	218.3	217	1.3	7
7.0	30	●	MNS0700X30DB	211.3	232.3	235.3	288.3	287	1.3	7
7.1	5	●	MNS0710LB	36.8	61.3	65.3	119.3	118	1.3	8
7.1	10	□	MNS0710X10DB	72.3	99.3	102.3	156.3	155	1.3	8
7.1	20	□	MNS0710X20DB	143.3	174.3	177.3	231.3	230	1.3	8
7.1	30	□	MNS0710X30DB	214.3	249.3	252.3	306.3	305	1.3	8
7.2	5	●	MNS0720LB	37.3	61.3	65.3	119.3	118	1.3	8
7.2	10	●	MNS0720X10DB	73.3	99.3	102.3	156.3	155	1.3	8
7.2	20	●	MNS0720X20DB	145.3	174.3	177.3	231.3	230	1.3	8
7.2	30	●	MNS0720X30DB	217.3	249.3	252.3	306.3	305	1.3	8
7.3	5	●	MNS0730LB	37.8	61.3	65.3	119.3	118	1.3	8
7.3	10	□	MNS0730X10DB	74.3	99.3	102.3	156.3	155	1.3	8
7.3	20	□	MNS0730X20DB	147.3	174.3	177.3	231.3	230	1.3	8
7.3	30	□	MNS0730X30DB	220.3	249.3	252.3	306.3	305	1.3	8
7.4	5	●	MNS0740LB	38.3	61.3	65.3	119.3	118	1.3	8
7.4	10	□	MNS0740X10DB	75.3	99.3	102.3	156.3	155	1.3	8
7.4	20	□	MNS0740X20DB	149.3	174.3	177.3	231.3	230	1.3	8
7.4	30	□	MNS0740X30DB	223.3	249.3	252.3	306.3	305	1.3	8
7.5	5	●	MNS0750LB	38.9	61.4	65.4	119.4	118	1.4	8
7.5	10	□	MNS0750X10DB	76.4	99.4	102.4	156.4	155	1.4	8
7.5	20	□	MNS0750X20DB	151.4	174.4	177.4	231.4	230	1.4	8
7.5	30	□	MNS0750X30DB	226.4	249.4	252.4	306.4	305	1.4	8
7.6	5	●	MNS0760LB	39.4	65.4	65.4	119.4	118	1.4	8
7.6	10	□	MNS0760X10DB	77.4	105.4	108.4	162.4	161	1.4	8
7.6	20	□	MNS0760X20DB	153.4	185.4	188.4	242.4	241	1.4	8
7.6	30	□	MNS0760X30DB	229.4	265.4	268.4	322.4	321	1.4	8
7.7	5	●	MNS0770LB	39.9	65.4	65.4	119.4	118	1.4	8
7.7	10	□	MNS0770X10DB	78.4	105.4	108.4	162.4	161	1.4	8
7.7	20	□	MNS0770X20DB	155.4	185.4	188.4	242.4	241	1.4	8
7.7	30	□	MNS0770X30DB	232.4	265.4	268.4	322.4	321	1.4	8
7.8	5	●	MNS0780LB	40.4	65.4	65.4	119.4	118	1.4	8
7.8	10	●	MNS0780X10DB	79.4	105.4	108.4	162.4	161	1.4	8
7.8	20	●	MNS0780X20DB	157.4	185.4	188.4	242.4	241	1.4	8
7.8	30	●	MNS0780X30DB	235.4	265.4	268.4	322.4	321	1.4	8
7.9	5	●	MNS0790LB	40.9	65.4	65.4	119.4	118	1.4	8
7.9	10	□	MNS0790X10DB	80.4	105.4	108.4	162.4	161	1.4	8
7.9	20	□	MNS0790X20DB	159.4	185.4	188.4	242.4	241	1.4	8
7.9	30	□	MNS0790X30DB	238.4	265.4	268.4	322.4	321	1.4	8

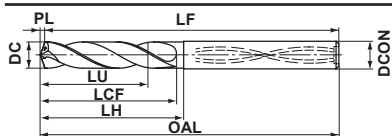
DC (mm)	Prof. do Furo (L/D)	TF15	Referência para Pedido	Dimensões (mm)						
				LU	LCF	LH	OAL	LF	PL	DCON
8.0	5	●	MNS0800LB	41.5	65.5	65.5	119.5	118	1.5	8
8.0	10	●	MNS0800X10DB	81.5	105.5	108.5	162.5	161	1.5	8
8.0	20	●	MNS0800X20DB	161.5	185.5	188.5	242.5	241	1.5	8
8.0	30	●	MNS0800X30DB	241.5	265.5	268.5	322.5	321	1.5	8
8.1	5	●	MNS0810LB	42.0	69.5	73.5	128.5	127	1.5	9
8.1	10	□	MNS0810X10DB	82.5	112.5	115.5	170.5	169	1.5	9
8.1	20	□	MNS0810X20DB	163.5	197.5	200.5	255.5	254	1.5	9
8.1	30	□	MNS0810X30DB	244.5	282.5	285.5	340.5	339	1.5	9
8.2	5	●	MNS0820LB	42.5	69.5	73.5	128.5	127	1.5	9
8.2	10	□	MNS0820X10DB	83.5	112.5	115.5	170.5	169	1.5	9
8.2	20	□	MNS0820X20DB	165.5	197.5	200.5	255.5	254	1.5	9
8.2	30	□	MNS0820X30DB	247.5	282.5	285.5	340.5	339	1.5	9
8.3	5	●	MNS0830LB	43.0	69.5	73.5	128.5	127	1.5	9
8.3	10	□	MNS0830X10DB	84.5	112.5	115.5	170.5	169	1.5	9
8.3	20	□	MNS0830X20DB	167.5	197.5	200.5	255.5	254	1.5	9
8.3	30	□	MNS0830X30DB	250.5	282.5	285.5	340.5	339	1.5	9
8.4	5	●	MNS0840LB	43.5	69.5	73.5	128.5	127	1.5	9
8.4	10	□	MNS0840X10DB	85.5	112.5	115.5	170.5	169	1.5	9
8.4	20	□	MNS0840X20DB	169.5	197.5	200.5	255.5	254	1.5	9
8.4	30	□	MNS0840X30DB	253.5	282.5	285.5	340.5	339	1.5	9
8.5	5	●	MNS0850LB	44.0	69.5	73.5	128.5	127	1.5	9
8.5	10	□	MNS0850X10DB	86.5	112.5	115.5	170.5	169	1.5	9
8.5	20	□	MNS0850X20DB	171.5	197.5	200.5	255.5	254	1.5	9
8.5	30	□	MNS0850X30DB	256.5	282.5	285.5	340.5	339	1.5	9
8.6	5	●	MNS0860LB	44.6	73.6	73.6	128.6	127	1.6	9
8.6	10	□	MNS0860X10DB	87.6	118.6	121.6	176.6	175	1.6	9
8.6	20	□	MNS0860X20DB	173.6	208.6	211.6	266.6	265	1.6	9
8.6	30	□	MNS0860X30DB	259.6	298.6	301.6	356.6	355	1.6	9
8.7	5	●	MNS0870LB	45.1	73.6	73.6	128.6	127	1.6	9
8.7	10	□	MNS0870X10DB	88.6	118.6	121.6	176.6	175	1.6	9
8.7	20	□	MNS0870X20DB	175.6	208.6	211.6	266.6	265	1.6	9
8.7	30	□	MNS0870X30DB	262.6	298.6	301.6	356.6	355	1.6	9
8.8	5	●	MNS0880LB	45.6	73.6	73.6	128.6	127	1.6	9
8.8	10	□	MNS0880X10DB	89.6	118.6	121.6	176.6	175	1.6	9
8.8	20	□	MNS0880X20DB	177.6	208.6	211.6	266.6	265	1.6	9
8.8	30	□	MNS0880X30DB	265.6	298.6	301.6	356.6	355	1.6	9
8.9	5	●	MNS0890LB	46.1	73.6	73.6	128.6	127	1.6	9
8.9	10	□	MNS0890X10DB	90.6	118.6	121.6	176.6	175	1.6	9
8.9	20	□	MNS0890X20DB	179.6	208.6	211.6	266.6	265	1.6	9
8.9	30	□	MNS0890X30DB	268.6	298.6	301.6	356.6	355	1.6	9
9.0	5	●	MNS0900LB	46.6	73.6	73.6	128.6	127	1.6	9
9.0	10	●	MNS0900X10DB	91.6	118.6	121.6	176.6	175	1.6	9
9.0	20	●	MNS0900X20DB	181.6	208.6	211.6	266.6	265	1.6	9
9.0	30	●	MNS0900X30DB	271.6	298.6	301.6	356.6	355	1.6	9
9.1	5	●	MNS0910LB	47.2	77.7	81.7	137.7	136	1.7	10
9.1	10	□	MNS0910X10DB	92.7	125.7	128.7	183.7	182	1.7	10
9.1	20	□	MNS0910X20DB	183.7	220.7	223.7	278.7	277	1.7	10
9.1	30	□	MNS0910X30DB	274.7	315.7	318.7	373.7	372	1.7	10

Nota 1) Por favor entre em contato para qualquer geometria que não conste no catálogo (ex.: diâmetro e comprimento diferente.).

● : Estoque mantido. □ : Sem estoque, produzido somente por pedido.

□ : Lote mínimo para produtos especiais:

① Menor que ø3 = Mínimo 10 ② Maior ou igual a ø3 e menor que ø10 = Mínimo 5
 ③ Maior ou igual a ø10 = Mínimo 3



DC (mm)	Prof. do Furo (L/D)	TFI5	Referência para Pedido	Dimensões (mm)						
				LU	LCF	LH	OAL	LF	PL	DCON
9.2	5	●	MNS0920LB	47.7	77.7	81.7	137.7	136	1.7	10
9.2	10	□	MNS0920X10DB	93.7	125.7	128.7	183.7	182	1.7	10
9.2	20	□	MNS0920X20DB	185.7	220.7	223.7	278.7	277	1.7	10
9.2	30	□	MNS0920X30DB	277.7	315.7	318.7	373.7	372	1.7	10
9.3	5	●	MNS0930LB	48.2	77.7	81.7	137.7	136	1.7	10
9.3	10	□	MNS0930X10DB	94.7	125.7	128.7	183.7	182	1.7	10
9.3	20	□	MNS0930X20DB	187.7	220.7	223.7	278.7	277	1.7	10
9.3	30	□	MNS0930X30DB	280.7	315.7	318.7	373.7	372	1.7	10
9.4	5	●	MNS0940LB	48.7	77.7	81.7	137.7	136	1.7	10
9.4	10	□	MNS0940X10DB	95.7	125.7	128.7	183.7	182	1.7	10
9.4	20	□	MNS0940X20DB	189.7	220.7	223.7	278.7	277	1.7	10
9.4	30	□	MNS0940X30DB	283.7	315.7	318.7	373.7	372	1.7	10
9.5	5	●	MNS0950LB	49.2	77.7	81.7	137.7	136	1.7	10
9.5	10	□	MNS0950X10DB	96.7	125.7	128.7	183.7	182	1.7	10
9.5	20	□	MNS0950X20DB	191.7	220.7	223.7	278.7	277	1.7	10
9.5	30	□	MNS0950X30DB	286.7	315.7	318.7	373.7	372	1.7	10
9.6	5	●	MNS0960LB	49.7	81.7	81.7	137.7	136	1.7	10
9.6	10	□	MNS0960X10DB	97.7	131.7	134.7	189.7	188	1.7	10
9.6	20	□	MNS0960X20DB	193.7	231.7	234.7	289.7	288	1.7	10
9.6	30	□	MNS0960X30DB	289.7	331.7	334.7	389.7	388	1.7	10
9.7	5	●	MNS0970LB	50.3	81.8	81.8	137.8	136	1.8	10
9.7	10	□	MNS0970X10DB	98.8	131.8	134.8	189.8	188	1.8	10
9.7	20	□	MNS0970X20DB	195.8	231.8	234.8	289.8	288	1.8	10
9.7	30	□	MNS0970X30DB	292.8	331.8	334.8	389.8	388	1.8	10
9.8	5	●	MNS0980LB	50.8	81.8	81.8	137.8	136	1.8	10
9.8	10	●	MNS0980X10DB	99.8	131.8	134.8	189.8	188	1.8	10
9.8	20	●	MNS0980X20DB	197.8	231.8	234.8	289.8	288	1.8	10
9.8	30	●	MNS0980X30DB	295.8	331.8	334.8	389.8	388	1.8	10
9.9	5	●	MNS0990LB	51.3	81.8	81.8	137.8	136	1.8	10
9.9	10	□	MNS0990X10DB	100.8	131.8	134.8	189.8	188	1.8	10
9.9	20	□	MNS0990X20DB	199.8	231.8	234.8	289.8	288	1.8	10
9.9	30	□	MNS0990X30DB	298.8	331.8	334.8	389.8	388	1.8	10
10.0	5	●	MNS1000LB	51.8	81.8	81.8	137.8	136	1.8	10
10.0	10	●	MNS1000X10DB	101.8	131.8	134.8	189.8	188	1.8	10
10.0	20	●	MNS1000X20DB	201.8	231.8	234.8	289.8	288	1.8	10
10.0	30	●	MNS1000X30DB	301.8	331.8	334.8	389.8	388	1.8	10
10.1	5	●	MNS1010LB	52.3	85.8	89.8	150.8	149	1.8	11
10.1	10	□	MNS1010X10DB	102.8	138.8	141.8	202.8	201	1.8	11
10.1	20	□	MNS1010X20DB	203.8	243.8	246.8	307.8	306	1.8	11
10.2	5	●	MNS1020LB	52.9	85.9	89.9	150.9	149	1.9	11
10.2	10	□	MNS1020X10DB	103.9	138.9	141.9	202.9	201	1.9	11
10.2	20	□	MNS1020X20DB	205.9	243.9	246.9	307.9	306	1.9	11
10.3	5	●	MNS1030LB	53.4	85.9	89.9	150.9	149	1.9	11
10.3	10	□	MNS1030X10DB	104.9	138.9	141.9	202.9	201	1.9	11
10.3	20	□	MNS1030X20DB	207.9	243.9	246.9	307.9	306	1.9	11
10.4	5	●	MNS1040LB	53.9	85.9	89.9	150.9	149	1.9	11
10.4	10	□	MNS1040X10DB	105.9	138.9	141.9	202.9	201	1.9	11
10.4	20	□	MNS1040X20DB	209.9	243.9	246.9	307.9	306	1.9	11

DC (mm)	Prof. do Furo (L/D)	TFI5	Referência para Pedido	Dimensões (mm)						
				LU	LCF	LH	OAL	LF	PL	DCON
10.5	5	●	MNS1050LB	54.4	85.9	89.9	150.9	149	1.9	11
10.5	10	●	MNS1050X10DB	106.9	138.9	141.9	202.9	201	1.9	11
10.5	20	●	MNS1050X20DB	211.9	243.9	246.9	307.9	306	1.9	11
10.6	5	●	MNS1060LB	54.9	89.9	89.9	150.9	149	1.9	11
10.6	10	□	MNS1060X10DB	107.9	144.9	147.9	208.9	207	1.9	11
10.6	20	□	MNS1060X20DB	213.9	254.9	257.9	318.9	317	1.9	11
10.7	5	●	MNS1070LB	55.4	89.9	89.9	150.9	149	1.9	11
10.7	10	□	MNS1070X10DB	108.9	144.9	147.9	208.9	207	1.9	11
10.7	20	□	MNS1070X20DB	215.9	254.9	257.9	318.9	317	1.9	11
10.8	5	●	MNS1080LB	56.0	90.0	90.0	151.0	149	2.0	11
10.8	10	□	MNS1080X10DB	110.0	145.0	148.0	209.0	207	2.0	11
10.8	20	□	MNS1080X20DB	218.0	255.0	258.0	319.0	317	2.0	11
10.9	5	●	MNS1090LB	56.5	90.0	90.0	151.0	149	2.0	11
10.9	10	□	MNS1090X10DB	111.0	145.0	148.0	209.0	207	2.0	11
10.9	20	□	MNS1090X20DB	220.0	255.0	258.0	319.0	317	2.0	11
11.0	5	●	MNS1100LB	57.0	90.0	90.0	151.0	149	2.0	11
11.0	10	●	MNS1100X10DB	112.0	145.0	148.0	209.0	207	2.0	11
11.0	20	●	MNS1100X20DB	222.0	255.0	258.0	319.0	317	2.0	11
11.1	5	●	MNS1110LB	57.5	94.0	98.0	160.0	158	2.0	12
11.1	10	□	MNS1110X10DB	113.0	152.0	155.0	217.0	215	2.0	12
11.1	20	□	MNS1110X20DB	224.0	267.0	270.0	332.0	330	2.0	12
11.2	5	●	MNS1120LB	58.0	94.0	98.0	160.0	158	2.0	12
11.2	10	□	MNS1120X10DB	114.0	152.0	155.0	217.0	215	2.0	12
11.2	20	□	MNS1120X20DB	226.0	267.0	270.0	332.0	330	2.0	12
11.3	5	●	MNS1130LB	58.6	94.1	98.1	160.1	158	2.1	12
11.3	10	□	MNS1130X10DB	115.1	152.1	155.1	217.1	215	2.1	12
11.3	20	□	MNS1130X20DB	228.1	267.1	270.1	332.1	330	2.1	12
11.4	5	●	MNS1140LB	59.1	94.1	98.1	160.1	158	2.1	12
11.4	10	□	MNS1140X10DB	116.1	152.1	155.1	217.1	215	2.1	12
11.4	20	□	MNS1140X20DB	230.1	267.1	270.1	332.1	330	2.1	12
11.5	5	●	MNS1150LB	59.6	94.1	98.1	160.1	158	2.1	12
11.5	10	□	MNS1150X10DB	117.1	152.1	155.1	217.1	215	2.1	12
11.5	20	□	MNS1150X20DB	232.1	267.1	270.1	332.1	330	2.1	12
11.6	5	●	MNS1160LB	60.1	98.1	98.1	160.1	158	2.1	12
11.6	10	□	MNS1160X10DB	118.1	158.1	161.1	223.1	221	2.1	12
11.6	20	□	MNS1160X20DB	234.1	278.1	281.1	343.1	341	2.1	12
11.7	5	●	MNS1170LB	60.6	98.1	98.1	160.1	158	2.1	12
11.7	10	□	MNS1170X10DB	119.1	158.1	161.1	223.1	221	2.1	12
11.7	20	□	MNS1170X20DB	236.1	278.1	281.1	343.1	341	2.1	12
11.8	5	●	MNS1180LB	61.1	98.1	98.1	160.1	158	2.1	12
11.8	10	□	MNS1180X10DB	120.1	158.1	161.1	223.1	221	2.1	12
11.8	20	□	MNS1180X20DB	238.1	278.1	281.1	343.1	341	2.1	12
11.9	5	●	MNS1190LB	61.7	98.2	98.2	160.2	158	2.2	12
11.9	10	□	MNS1190X10DB	121.2	158.2	161.2	223.2	221	2.2	12
11.9	20	□	MNS1190X20DB	240.2	278.2	281.2	343.2	341	2.2	12
12.0	5	●	MNS1200LB	62.2	98.2	98.2	160.2	158	2.2	12
12.0	10	●	MNS1200X10DB	122.2	158.2	161.2	223.2	221	2.2	12
12.0	20	●	MNS1200X20DB	242.2	278.2	281.2	343.2	341	2.2	12

FURAÇÃO(METAL DURO INTEIRIÇO)

MNS

BROCAS WSTAR

METAL DURO

DC (mm)	Prof. do Furo (L/D)	TF15	Referência para Pedido	Dimensões (mm)						
				LU	LCF	LH	OAL	LF	PL	DCON
12.1	5	●	MNS1210LB	62.7	102.2	106.2	169.2	167	2.2	13
12.1	10	□	MNS1210X10DB	123.2	165.2	168.2	231.2	229	2.2	13
12.1	20	□	MNS1210X20DB	244.2	290.2	293.2	356.2	354	2.2	13
12.2	5	●	MNS1220LB	63.2	102.2	106.2	169.2	167	2.2	13
12.2	10	□	MNS1220X10DB	124.2	165.2	168.2	231.2	229	2.2	13
12.2	20	□	MNS1220X20DB	246.2	290.2	293.2	356.2	354	2.2	13
12.3	5	●	MNS1230LB	63.7	102.2	106.2	169.2	167	2.2	13
12.3	10	□	MNS1230X10DB	125.2	165.2	168.2	231.2	229	2.2	13
12.3	20	□	MNS1230X20DB	248.2	290.2	293.2	356.2	354	2.2	13
12.4	5	●	MNS1240LB	64.3	102.3	106.3	169.3	167	2.3	13
12.4	10	□	MNS1240X10DB	126.3	165.3	168.3	231.3	229	2.3	13
12.4	20	□	MNS1240X20DB	250.3	290.3	293.3	356.3	354	2.3	13
12.5	5	●	MNS1250LB	64.8	102.3	106.3	169.3	167	2.3	13
12.5	10	□	MNS1250X10DB	127.3	165.3	168.3	231.3	229	2.3	13
12.5	20	□	MNS1250X20DB	252.3	290.3	293.3	356.3	354	2.3	13
12.6	5	●	MNS1260LB	65.3	106.3	106.3	169.3	167	2.3	13
12.6	10	□	MNS1260X10DB	128.3	171.3	174.3	237.3	235	2.3	13
12.6	20	□	MNS1260X20DB	254.3	301.3	304.3	367.3	365	2.3	13
12.7	5	●	MNS1270LB	65.8	106.3	106.3	169.3	167	2.3	13
12.7	10	□	MNS1270X10DB	129.3	171.3	174.3	237.3	235	2.3	13
12.7	20	□	MNS1270X20DB	256.3	301.3	304.3	367.3	365	2.3	13
12.8	5	●	MNS1280LB	66.3	106.3	106.3	169.3	167	2.3	13
12.8	10	□	MNS1280X10DB	130.3	171.3	174.3	237.3	235	2.3	13
12.8	20	□	MNS1280X20DB	258.3	301.3	304.3	367.3	365	2.3	13
12.9	5	●	MNS1290LB	66.8	106.3	106.3	169.3	167	2.3	13
12.9	10	□	MNS1290X10DB	131.3	171.3	174.3	237.3	235	2.3	13
12.9	20	□	MNS1290X20DB	260.3	301.3	304.3	367.3	365	2.3	13
13.0	5	●	MNS1300LB	67.4	106.4	106.4	169.4	167	2.4	13
13.0	10	●	MNS1300X10DB	132.4	171.4	174.4	237.4	235	2.4	13
13.0	20	●	MNS1300X20DB	262.4	301.4	304.4	367.4	365	2.4	13

DC (mm)	Prof. do Furo (L/D)	TF15	Referência para Pedido	Dimensões (mm)						
				LU	LCF	LH	OAL	LF	PL	DCON
13.1	5	●	MNS1310LB	67.9	110.4	114.4	178.4	176	2.4	14
13.1	10	□	MNS1310X10DB	133.4	178.4	181.4	245.4	243	2.4	14
13.1	20	□	MNS1310X20DB	264.4	313.4	316.4	380.4	378	2.4	14
13.2	5	●	MNS1320LB	68.4	110.4	114.4	178.4	176	2.4	14
13.2	10	□	MNS1320X10DB	134.4	178.4	181.4	245.4	243	2.4	14
13.2	20	□	MNS1320X20DB	266.4	313.4	316.4	380.4	378	2.4	14
13.3	5	●	MNS1330LB	68.9	110.4	114.4	178.4	176	2.4	14
13.3	10	□	MNS1330X10DB	135.4	178.4	181.4	245.4	243	2.4	14
13.3	20	□	MNS1330X20DB	268.4	313.4	316.4	380.4	378	2.4	14
13.4	5	●	MNS1340LB	69.4	110.4	114.4	178.4	176	2.4	14
13.4	10	□	MNS1340X10DB	136.4	178.4	181.4	245.4	243	2.4	14
13.4	20	□	MNS1340X20DB	270.4	313.4	316.4	380.4	378	2.4	14
13.5	5	●	MNS1350LB	70.0	110.5	114.5	178.5	176	2.5	14
13.5	10	□	MNS1350X10DB	137.5	178.5	181.5	245.5	243	2.5	14
13.5	20	□	MNS1350X20DB	272.5	313.5	316.5	380.5	378	2.5	14
13.6	5	●	MNS1360LB	70.5	114.5	114.5	178.5	176	2.5	14
13.6	10	□	MNS1360X10DB	138.5	184.5	187.5	251.5	249	2.5	14
13.6	20	□	MNS1360X20DB	274.5	324.5	327.5	391.5	389	2.5	14
13.7	5	●	MNS1370LB	71.0	114.5	114.5	178.5	176	2.5	14
13.7	10	□	MNS1370X10DB	139.5	184.5	187.5	251.5	249	2.5	14
13.7	20	□	MNS1370X20DB	276.5	324.5	327.5	391.5	389	2.5	14
13.8	5	●	MNS1380LB	71.5	114.5	114.5	178.5	176	2.5	14
13.8	10	□	MNS1380X10DB	140.5	184.5	187.5	251.5	249	2.5	14
13.8	20	□	MNS1380X20DB	278.5	324.5	327.5	391.5	389	2.5	14
13.9	5	●	MNS1390LB	72.0	114.5	114.5	178.5	176	2.5	14
13.9	10	□	MNS1390X10DB	141.5	184.5	187.5	251.5	249	2.5	14
13.9	20	□	MNS1390X20DB	280.5	324.5	327.5	391.5	389	2.5	14
14.0	5	●	MNS1400LB	72.5	114.5	114.5	178.5	176	2.5	14
14.0	10	●	MNS1400X10DB	142.5	184.5	187.5	251.5	249	2.5	14
14.0	20	●	MNS1400X20DB	282.5	324.5	327.5	391.5	389	2.5	14

Nota 1) Por favor entre em contato para qualquer geometria que não conste no catálogo (ex.: diâmetro e comprimento diferente.).

N

FURAÇÃO

● : Estoque mantido. □ : Sem estoque, produzido somente por pedido.

□ : Lote mínimo para produtos especiais:

① Menor que ø3 = Mínimo 10 ② Maior ou igual a ø3 e menor que ø10 = Mínimo 5
③ Maior ou igual a ø10 = Mínimo 3

CONDIÇÕES DE CORTE RECOMENDADAS

■ BROCA TIPO LB

Material	Ligas de Alumínio (Si<5%)		Ligas de Alumínio (5%≤Si≤10%)		Ligas de Alumínio (Si>10%)	
	A6061, A7075 etc		AC4B etc		ADC12, A390 etc	
Diâm. DC (mm)	Rotação (min ⁻¹)	Avanço (Min.—Máx.) (mm/rot)	Rotação (min ⁻¹)	Avanço (Min.—Máx.) (mm/rot)	Rotação (min ⁻¹)	Avanço (Min.—Máx.) (mm/rot)
3.2	11900	0.1 (0.11—0.16)	11900	0.15 (0.16—0.21)	11900	0.15 (0.16—0.21)
4.0	9500	0.15 (0.13—0.20)	9500	0.2 (0.20—0.27)	9500	0.2 (0.20—0.27)
5.0	7600	0.2 (0.17—0.25)	7600	0.25 (0.25—0.33)	7600	0.25 (0.25—0.33)
6.3	7500	0.25 (0.21—0.32)	7500	0.35 (0.32—0.42)	7500	0.35 (0.32—0.42)
8.0	5900	0.3 (0.27—0.40)	5900	0.45 (0.40—0.53)	5900	0.45 (0.40—0.53)
10.0	4700	0.4 (0.33—0.50)	4700	0.55 (0.50—0.67)	4700	0.55 (0.50—0.67)
12.0	5300	0.5 (0.40—0.60)	5300	0.7 (0.60—0.80)	5300	0.7 (0.60—0.80)
14.0	4500	0.5 (0.40—0.60)	4500	0.7 (0.60—0.80)	4500	0.7 (0.60—0.80)

Nota 1) Para uso de brocas com comprimento L/D=10 ou maior, usine previamente um furo de guia. (A força centrífuga pode causar desvio ou quebra da broca.)

Nota 2) Para usinagem de furo de guia, use a broca MNS ... LB, MAE ... MB ou MAS ... MB (páginas N104, N108).

■ BROCA TIPO DB

Material	Ligas de Alumínio (Si<5%)		Ligas de Alumínio (5%≤Si≤10%)		Ligas de Alumínio (Si>10%)	
	A6061, A7075 etc		AC4B etc		ADC12, A390 etc	
Diâm. DC (mm)	Rotação (min ⁻¹)	Avanço (Min.—Máx.) (mm/rot)	Rotação (min ⁻¹)	Avanço (Min.—Máx.) (mm/rot)	Rotação (min ⁻¹)	Avanço (Min.—Máx.) (mm/rot)
3.2	8900	0.1 (0.11—0.16)	8900	0.15 (0.16—0.21)	8900	0.15 (0.16—0.21)
4.0	7100	0.15 (0.13—0.20)	7100	0.2 (0.20—0.27)	7100	0.2 (0.20—0.27)
5.0	5700	0.2 (0.17—0.25)	5700	0.25 (0.25—0.33)	5700	0.25 (0.25—0.33)
6.3	6000	0.25 (0.21—0.32)	6000	0.35 (0.32—0.42)	6000	0.35 (0.32—0.42)
8.0	4700	0.3 (0.27—0.40)	4700	0.45 (0.40—0.53)	4700	0.45 (0.40—0.53)
10.0	3800	0.4 (0.33—0.50)	3800	0.55 (0.50—0.67)	3800	0.55 (0.50—0.67)
12.0	4200	0.5 (0.40—0.60)	4200	0.7 (0.60—0.80)	4200	0.7 (0.60—0.80)
14.0	3600	0.5 (0.40—0.60)	3600	0.7 (0.60—0.80)	3600	0.7 (0.60—0.80)

Nota 1) Para uso de brocas com comprimento L/D=10 ou maior, usine previamente um furo de guia. (A força centrífuga pode causar desvio ou quebra da broca.)

Nota 2) Para usinagem de furo de guia, use a broca MNS ... LB, MAE ... MB ou MAS ... MB (páginas N104, N108).

FURAÇÃO(METAL DURO INTEIRIÇO)

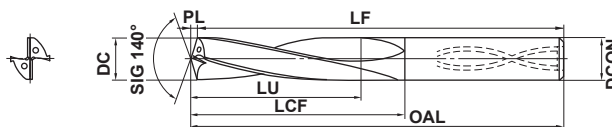
MAS

- Especial para furação de alumínio e ferro fundido.
- Furo com alta precisão.
- Pode usinar pré-furo para macho laminador.
- Refrigeração interna com canais helicoidais permitem usinagem em alta velocidade.



Ferro Fundido Metais Não Ferrosos

Refrigeração Interna



DC=3	3<DC≤6	6<DC≤10	10<DC≤16
+0.005 0	+0.005 0	+0.005 0	+0.005 0



DCON=3	3<DCON≤6	6<DCON≤10	10<DCON≤16
0 -0.006	0 -0.008	0 -0.009	0 -0.011

Nota 1) Broca tipo MAS com Ø maior que 5mm, possuem um rebaixo no topo da haste para os furos de refrigeração.

Nota 2) As brocas MAS são indicadas para uso com mandris de contração térmica.

DC (mm)	Prof. do Furo (L/D)	HT10	Referência para Pedido	Dimensões (mm)					
				LU	LCF	OAL	LF	PL	DCON
3.0	3	□	MAS0300MB	9.5	21.5	61.5	61	0.5	3
3.0	6	●	MAS0300LB	18.5	30.5	70.5	70	0.5	3
3.1	3	□	MAS0310MB	9.9	24.6	64.6	64	0.6	4
3.1	6	●	MAS0310LB	19.2	34.6	74.6	74	0.6	4
3.2	3	□	MAS0320MB	10.2	24.6	64.6	64	0.6	4
3.2	6	●	MAS0320LB	19.8	34.6	74.6	74	0.6	4
3.3	3	□	MAS0330MB	10.5	24.6	64.6	64	0.6	4
3.3	6	●	MAS0330LB	20.4	34.6	74.6	74	0.6	4
3.4	3	□	MAS0340MB	10.8	24.6	64.6	64	0.6	4
3.4	6	●	MAS0340LB	21.0	34.6	74.6	74	0.6	4
3.5	3	□	MAS0350MB	11.1	24.6	64.6	64	0.6	4
3.5	6	●	MAS0350LB	21.6	34.6	74.6	74	0.6	4
3.6	3	□	MAS0360MB	11.5	28.7	68.7	68	0.7	4
3.6	6	●	MAS0360LB	22.3	40.7	80.7	80	0.7	4
3.65	3	□	* MAS0365MB	11.7	28.7	68.7	68	0.7	4
3.65	6	●	* MAS0365LB	22.6	40.7	80.7	80	0.7	4
3.7	3	□	MAS0370MB	11.8	28.7	68.7	68	0.7	4
3.7	6	●	MAS0370LB	22.9	40.7	80.7	80	0.7	4
3.8	3	□	MAS0380MB	12.1	28.7	68.7	68	0.7	4
3.8	6	●	MAS0380LB	23.5	40.7	80.7	80	0.7	4
3.9	3	□	MAS0390MB	12.4	28.7	68.7	68	0.7	4
3.9	6	●	MAS0390LB	24.1	40.7	80.7	80	0.7	4
4.0	3	□	MAS0400MB	12.7	28.7	68.7	68	0.7	4
4.0	6	●	MAS0400LB	24.7	40.7	80.7	80	0.7	4
4.1	3	□	MAS0410MB	13.0	31.7	71.7	71	0.7	5
4.1	6	●	MAS0410LB	25.3	44.7	84.7	84	0.7	5
4.2	3	□	MAS0420MB	13.4	31.8	71.8	71	0.8	5
4.2	6	●	MAS0420LB	26.0	44.8	84.8	84	0.8	5
4.3	3	□	MAS0430MB	13.7	31.8	71.8	71	0.8	5
4.3	6	●	MAS0430LB	26.6	44.8	84.8	84	0.8	5

DC (mm)	Prof. do Furo (L/D)	HT10	Referência para Pedido	Dimensões (mm)					
				LU	LCF	OAL	LF	PL	DCON
4.4	3	□	MAS0440MB	14.0	31.8	71.8	71	0.8	5
4.4	6	●	MAS0440LB	27.2	44.8	84.8	84	0.8	5
4.5	3	□	* MAS0450MB	14.3	31.8	71.8	71	0.8	5
4.5	6	●	* MAS0450LB	27.8	44.8	84.8	84	0.8	5
4.6	3	□	MAS0460MB	14.6	33.8	73.8	73	0.8	5
4.6	6	●	MAS0460LB	28.4	48.8	88.8	88	0.8	5
4.7	3	□	MAS0470MB	15.0	33.9	73.9	73	0.9	5
4.7	6	●	MAS0470LB	29.1	48.9	88.9	88	0.9	5
4.8	3	□	MAS0480MB	15.3	33.9	73.9	73	0.9	5
4.8	6	●	MAS0480LB	29.7	48.9	88.9	88	0.9	5
4.9	3	□	MAS0490MB	15.6	33.9	73.9	73	0.9	5
4.9	6	●	MAS0490LB	30.3	48.9	88.9	88	0.9	5
5.0	3	●	MAS0500MB	15.9	33.9	73.9	73	0.9	5
5.0	6	●	MAS0500LB	30.9	48.9	88.9	88	0.9	5
5.1	3	□	MAS0510MB	16.2	36.9	76.9	76	0.9	6
5.1	6	●	MAS0510LB	31.5	52.9	92.9	92	0.9	6
5.2	3	□	MAS0520MB	16.5	36.9	76.9	76	0.9	6
5.2	6	●	MAS0520LB	32.1	52.9	92.9	92	0.9	6
5.3	3	□	MAS0530MB	16.9	37.0	77.0	76	1.0	6
5.3	6	●	MAS0530LB	32.8	53.0	93.0	92	1.0	6
5.4	3	□	* MAS0540MB	17.2	37.0	77.0	76	1.0	6
5.4	6	●	* MAS0540LB	33.4	53.0	93.0	92	1.0	6
5.5	3	●	MAS0550MB	17.5	37.0	77.0	76	1.0	6
5.5	6	●	MAS0550LB	34.0	53.0	93.0	92	1.0	6
5.6	3	□	MAS0560MB	17.8	40.0	80.0	79	1.0	6
5.6	6	●	MAS0560LB	34.6	58.0	98.0	97	1.0	6
5.7	3	□	MAS0570MB	18.1	40.0	80.0	79	1.0	6
5.7	6	●	MAS0570LB	35.2	58.0	98.0	97	1.0	6
5.8	3	□	MAS0580MB	18.5	40.1	80.1	79	1.1	6
5.8	6	●	MAS0580LB	35.9	58.1	98.1	97	1.1	6

Nota: Itens com símbolo * são indicados para pré-furo para macho laminador.

● : Estoque mantido. □ : Sem estoque, produzido somente por pedido.

□ : Lote mínimo para produtos especiais:

- ① Menor que ø3 = Mínimo 10
- ② Maior ou igual a ø3 e menor que ø10 = Mínimo 5
- ③ Maior ou igual a ø10 = Mínimo 3

DC (mm)	Prof. do Furo (L/D)	HTi10	Referência para Pedido	Dimensões (mm)					
				LU	LCF	OAL	LF	PL	DCON
5.9	3	□	MAS0590MB	18.8	40.1	80.1	79	1.1	6
5.9	6	●	MAS0590LB	36.5	58.1	98.1	97	1.1	6
6.0	3	●	MAS0600MB	19.1	40.1	80.1	79	1.1	6
6.0	6	●	MAS0600LB	37.1	58.1	98.1	97	1.1	6
6.1	3	□	MAS0610MB	19.4	43.1	85.1	84	1.1	7
6.1	6	●	MAS0610LB	37.7	63.1	105.1	104	1.1	7
6.2	3	□	MAS0620MB	19.7	43.1	85.1	84	1.1	7
6.2	6	●	MAS0620LB	38.3	63.1	105.1	104	1.1	7
6.3	3	□	MAS0630MB	20.0	43.1	85.1	84	1.1	7
6.3	6	●	MAS0630LB	38.9	63.1	105.1	104	1.1	7
6.4	3	□	MAS0640MB	20.4	43.2	85.2	84	1.2	7
6.4	6	●	MAS0640LB	39.6	63.2	105.2	104	1.2	7
6.5	3	●	MAS0650MB	20.7	43.2	85.2	84	1.2	7
6.5	6	●	MAS0650LB	40.2	63.2	105.2	104	1.2	7
6.6	3	□	MAS0660MB	21.0	43.2	85.2	84	1.2	7
6.6	6	●	MAS0660LB	40.8	66.2	108.2	107	1.2	7
6.7	3	□	MAS0670MB	21.3	43.2	85.2	84	1.2	7
6.7	6	●	MAS0670LB	41.4	66.2	108.2	107	1.2	7
6.8	3	●	MAS0680MB	21.6	43.2	85.2	84	1.2	7
6.8	6	●	MAS0680LB	42.0	66.2	108.2	107	1.2	7
6.9	3	□	MAS0690MB	22.0	43.3	85.3	84	1.3	7
6.9	6	●	MAS0690LB	42.7	66.3	108.3	107	1.3	7
7.0	3	●	MAS0700MB	22.3	43.3	85.3	84	1.3	7
7.0	6	●	MAS0700LB	43.3	66.3	108.3	107	1.3	7
7.1	3	□	MAS0710MB	22.6	49.3	91.3	90	1.3	8
7.1	6	●	MAS0710LB	43.9	69.3	111.3	110	1.3	8
7.2	3	□	* MAS0720MB	22.9	49.3	91.3	90	1.3	8
7.2	6	●	* MAS0720LB	44.5	69.3	111.3	110	1.3	8
7.3	3	□	MAS0730MB	23.2	49.3	91.3	90	1.3	8
7.3	6	●	MAS0730LB	45.1	69.3	111.3	110	1.3	8
7.35	3	●	MAS0735MB	23.4	49.3	91.3	90	1.3	8
7.35	6	●	MAS0735LB	45.4	69.3	111.3	110	1.3	8
7.4	3	□	MAS0740MB	23.5	49.3	91.3	90	1.3	8
7.4	6	●	MAS0740LB	45.7	69.3	111.3	110	1.3	8
7.5	3	□	MAS0750MB	23.9	49.4	91.4	90	1.4	8
7.5	6	●	MAS0750LB	46.4	69.4	111.4	110	1.4	8
7.6	3	□	MAS0760MB	24.2	49.4	91.4	90	1.4	8
7.6	6	●	MAS0760LB	47.0	73.4	115.4	114	1.4	8
7.7	3	□	MAS0770MB	24.5	49.4	91.4	90	1.4	8
7.7	6	●	MAS0770LB	47.6	73.4	115.4	114	1.4	8
7.8	3	□	MAS0780MB	24.8	49.4	91.4	90	1.4	8
7.8	6	●	MAS0780LB	48.2	73.4	115.4	114	1.4	8
7.9	3	□	MAS0790MB	25.1	49.4	91.4	90	1.4	8
7.9	6	●	MAS0790LB	48.8	73.4	115.4	114	1.4	8
8.0	3	●	MAS0800MB	25.5	49.5	91.5	90	1.5	8
8.0	6	●	MAS0800LB	49.5	73.5	115.5	114	1.5	8
8.1	3	□	MAS0810MB	25.8	51.5	95.5	94	1.5	9
8.1	6	●	MAS0810LB	50.1	76.5	120.5	119	1.5	9
8.2	3	□	MAS0820MB	26.1	51.5	95.5	94	1.5	9
8.2	6	●	MAS0820LB	50.7	76.5	120.5	119	1.5	9

DC (mm)	Prof. do Furo (L/D)	HTi10	Referência para Pedido	Dimensões (mm)					
				LU	LCF	OAL	LF	PL	DCON
8.3	3	□	MAS0830MB	26.4	51.5	95.5	94	1.5	9
8.3	6	●	MAS0830LB	51.3	76.5	120.5	119	1.5	9
8.4	3	□	MAS0840MB	26.7	51.5	95.5	94	1.5	9
8.4	6	●	MAS0840LB	51.9	76.5	120.5	119	1.5	9
8.5	3	●	MAS0850MB	27.0	51.5	95.5	94	1.5	9
8.5	6	●	MAS0850LB	52.5	76.5	120.5	119	1.5	9
8.6	3	□	MAS0860MB	27.4	51.6	95.6	94	1.6	9
8.6	6	●	MAS0860LB	53.2	78.6	122.6	121	1.6	9
8.7	3	□	MAS0870MB	27.7	51.6	95.6	94	1.6	9
8.7	6	●	MAS0870LB	53.8	78.6	122.6	121	1.6	9
8.8	3	□	MAS0880MB	28.0	51.6	95.6	94	1.6	9
8.8	6	●	MAS0880LB	54.4	78.6	122.6	121	1.6	9
8.9	3	□	MAS0890MB	28.3	51.6	95.6	94	1.6	9
8.9	6	●	MAS0890LB	55.0	78.6	122.6	121	1.6	9
9.0	3	●	MAS0900MB	28.6	51.6	95.6	94	1.6	9
9.0	6	●	MAS0900LB	55.6	78.6	122.6	121	1.6	9
9.1	3	□	MAS0910MB	29.0	54.7	98.7	97	1.7	10
9.1	6	●	MAS0910LB	56.3	82.7	126.7	125	1.7	10
9.2	3	□	* MAS0920MB	29.3	54.7	98.7	97	1.7	10
9.2	6	●	* MAS0920LB	56.9	82.7	126.7	125	1.7	10
9.21	3	●	MAS0921MB	29.3	54.7	98.7	97	1.7	10
9.21	6	●	MAS0921LB	57.0	82.7	126.7	125	1.7	10
9.3	3	□	MAS0930MB	29.6	54.7	98.7	97	1.7	10
9.3	6	●	MAS0930LB	57.5	82.7	126.7	125	1.7	10
9.4	3	□	MAS0940MB	29.9	54.7	98.7	97	1.7	10
9.4	6	●	MAS0940LB	58.1	82.7	126.7	125	1.7	10
9.5	3	●	MAS0950MB	30.2	54.7	98.7	97	1.7	10
9.5	6	●	MAS0950LB	58.7	82.7	126.7	125	1.7	10
9.6	3	□	MAS0960MB	30.5	54.7	98.7	97	1.7	10
9.6	6	●	MAS0960LB	59.3	82.7	126.7	125	1.7	10
9.7	3	□	MAS0970MB	30.9	54.8	98.8	97	1.8	10
9.7	6	●	MAS0970LB	60.0	82.8	126.8	125	1.8	10
9.8	3	□	MAS0980MB	31.2	54.8	98.8	97	1.8	10
9.8	6	●	MAS0980LB	60.6	82.8	126.8	125	1.8	10
9.9	3	□	MAS0990MB	31.5	54.8	98.8	97	1.8	10
9.9	6	●	MAS0990LB	61.2	82.8	126.8	125	1.8	10
10.0	3	●	MAS1000MB	31.8	54.8	98.8	97	1.8	10
10.0	6	●	MAS1000LB	61.8	82.8	126.8	125	1.8	10
10.1	3	□	MAS1010MB	32.1	56.8	102.8	101	1.8	11
10.1	6	□	MAS1010LB	62.4	90.8	136.8	135	1.8	11
10.2	3	□	MAS1020MB	32.5	56.9	102.9	101	1.9	11
10.2	6	□	MAS1020LB	63.1	90.9	136.9	135	1.9	11
10.3	3	●	MAS1030MB	32.8	56.9	102.9	101	1.9	11
10.3	6	●	MAS1030LB	63.7	90.9	136.9	135	1.9	11
10.4	3	□	MAS1040MB	33.1	56.9	102.9	101	1.9	11
10.4	6	□	MAS1040LB	64.3	90.9	136.9	135	1.9	11
10.5	3	●	MAS1050MB	33.4	56.9	102.9	101	1.9	11
10.5	6	●	MAS1050LB	64.9	90.9	136.9	135	1.9	11
10.6	3	□	MAS1060MB	33.7	56.9	102.9	101	1.9	11
10.6	6	□	MAS1060LB	65.5	90.9	136.9	135	1.9	11

FURAÇÃO(METAL DURO INTEIRIÇO)

MAS

METAL DURO

DC (mm)	Prof. do Furo (L/D)	HTI10	Referência para Pedido	Dimensões (mm)					
				LU	LCF	OAL	LF	PL	DCON
10.7	3	☐	MAS1070MB	34.0	56.9	102.9	101	1.9	11
10.7	6	☐	MAS1070LB	66.1	90.9	136.9	135	1.9	11
10.8	3	☐	MAS1080MB	34.4	57.0	103.0	101	2.0	11
10.8	6	☐	MAS1080LB	66.8	91.0	137.0	135	2.0	11
10.9	3	☐	MAS1090MB	34.7	57.0	103.0	101	2.0	11
10.9	6	☐	MAS1090LB	67.4	91.0	137.0	135	2.0	11
11.0	3	●	MAS1100MB	35.0	57.0	103.0	101	2.0	11
11.0	6	●	MAS1100LB	68.0	91.0	137.0	135	2.0	11
11.08	3	● *	MAS1108MB	35.2	62.0	108.0	106	2.0	12
11.08	6	● *	MAS1108LB	68.5	96.0	142.0	140	2.0	12
11.1	3	☐	MAS1110MB	35.3	62.0	108.0	106	2.0	12
11.1	6	☐	MAS1110LB	68.6	96.0	142.0	140	2.0	12
11.2	3	☐	MAS1120MB	35.6	62.0	108.0	106	2.0	12
11.2	6	☐	MAS1120LB	69.2	96.0	142.0	140	2.0	12
11.3	3	☐	MAS1130MB	36.0	62.1	108.1	106	2.1	12
11.3	6	☐	MAS1130LB	69.9	96.1	142.1	140	2.1	12
11.4	3	☐	MAS1140MB	36.3	62.1	108.1	106	2.1	12
11.4	6	☐	MAS1140LB	70.5	96.1	142.1	140	2.1	12
11.5	3	☐	MAS1150MB	36.6	62.1	108.1	106	2.1	12
11.5	6	☐	MAS1150LB	71.1	96.1	142.1	140	2.1	12
11.6	3	☐	MAS1160MB	36.9	62.1	108.1	106	2.1	12
11.6	6	☐	MAS1160LB	71.7	96.1	142.1	140	2.1	12
11.7	3	☐	MAS1170MB	37.2	62.1	108.1	106	2.1	12
11.7	6	☐	MAS1170LB	72.3	96.1	142.1	140	2.1	12
11.8	3	☐	MAS1180MB	37.5	62.1	108.1	106	2.1	12
11.8	6	☐	MAS1180LB	72.9	96.1	142.1	140	2.1	12
11.9	3	☐	MAS1190MB	37.9	62.2	108.2	106	2.2	12
11.9	6	☐	MAS1190LB	73.6	96.2	142.2	140	2.2	12
12.0	3	●	MAS1200MB	38.2	62.2	108.2	106	2.2	12
12.0	6	●	MAS1200LB	74.2	96.2	142.2	140	2.2	12
12.1	3	☐	MAS1210MB	38.5	67.2	117.2	115	2.2	13
12.1	6	☐	MAS1210LB	74.8	102.2	152.2	150	2.2	13
12.2	3	☐	MAS1220MB	38.8	67.2	117.2	115	2.2	13
12.2	6	☐	MAS1220LB	75.4	102.2	152.2	150	2.2	13
12.3	3	☐	MAS1230MB	39.1	67.2	117.2	115	2.2	13
12.3	6	☐	MAS1230LB	76.0	102.2	152.2	150	2.2	13
12.4	3	☐	MAS1240MB	39.5	67.3	117.3	115	2.3	13
12.4	6	☐	MAS1240LB	76.7	102.3	152.3	150	2.3	13
12.5	3	●	MAS1250MB	39.8	67.3	117.3	115	2.3	13
12.5	6	●	MAS1250LB	77.3	102.3	152.3	150	2.3	13
12.6	3	☐	MAS1260MB	40.1	67.3	117.3	115	2.3	13
12.6	6	☐	MAS1260LB	77.9	102.3	152.3	150	2.3	13
12.7	3	☐	MAS1270MB	40.4	67.3	117.3	115	2.3	13
12.7	6	☐	MAS1270LB	78.5	102.3	152.3	150	2.3	13
12.8	3	☐	MAS1280MB	40.7	67.3	117.3	115	2.3	13
12.8	6	☐	MAS1280LB	79.1	102.3	152.3	150	2.3	13
12.9	3	☐	MAS1290MB	41.0	67.3	117.3	115	2.3	13
12.9	6	☐	MAS1290LB	79.7	102.3	152.3	150	2.3	13

DC (mm)	Prof. do Furo (L/D)	HTI10	Referência para Pedido	Dimensões (mm)					
				LU	LCF	OAL	LF	PL	DCON
12.96	3	● *	MAS1296MB	41.3	67.4	117.4	115	2.4	13
12.96	6	● *	MAS1296LB	80.2	102.4	152.4	150	2.4	13
13.0	3	●	MAS1300MB	41.4	67.4	117.4	115	2.4	13
13.0	6	●	MAS1300LB	80.4	102.4	152.4	150	2.4	13
13.1	3	☐	MAS1310MB	41.7	72.4	122.4	120	2.4	14
13.1	6	☐	MAS1310LB	81.0	112.4	162.4	160	2.4	14
13.2	3	☐	MAS1320MB	42.0	72.4	122.4	120	2.4	14
13.2	6	☐	MAS1320LB	81.6	112.4	162.4	160	2.4	14
13.3	3	☐	MAS1330MB	42.3	72.4	122.4	120	2.4	14
13.3	6	☐	MAS1330LB	82.2	112.4	162.4	160	2.4	14
13.4	3	☐	MAS1340MB	42.6	72.4	122.4	120	2.4	14
13.4	6	☐	MAS1340LB	82.8	112.4	162.4	160	2.4	14
13.5	3	●	MAS1350MB	43.0	72.5	122.5	120	2.5	14
13.5	6	●	MAS1350LB	83.5	112.5	162.5	160	2.5	14
13.6	3	☐	MAS1360MB	43.3	72.5	122.5	120	2.5	14
13.6	6	☐	MAS1360LB	84.1	112.5	162.5	160	2.5	14
13.7	3	☐	MAS1370MB	43.6	72.5	122.5	120	2.5	14
13.7	6	☐	MAS1370LB	84.7	112.5	162.5	160	2.5	14
13.8	3	☐	MAS1380MB	43.9	72.5	122.5	120	2.5	14
13.8	6	☐	MAS1380LB	85.3	112.5	162.5	160	2.5	14
13.9	3	☐	MAS1390MB	44.2	72.5	122.5	120	2.5	14
13.9	6	☐	MAS1390LB	85.9	112.5	162.5	160	2.5	14
14.0	3	●	MAS1400MB	44.5	72.5	122.5	120	2.5	14
14.0	6	●	MAS1400LB	86.5	112.5	162.5	160	2.5	14
14.1	3	☐	MAS1410MB	44.9	74.6	132.6	130	2.6	15
14.1	6	☐	MAS1410LB	87.2	117.6	175.6	173	2.6	15
14.2	3	☐	MAS1420MB	45.2	74.6	132.6	130	2.6	15
14.2	6	☐	MAS1420LB	87.8	117.6	175.6	173	2.6	15
14.3	3	☐	MAS1430MB	45.5	74.6	132.6	130	2.6	15
14.3	6	☐	MAS1430LB	88.4	117.6	175.6	173	2.6	15
14.4	3	☐	MAS1440MB	45.8	74.6	132.6	130	2.6	15
14.4	6	☐	MAS1440LB	89.0	117.6	175.6	173	2.6	15
14.5	3	☐	MAS1450MB	46.1	74.6	132.6	130	2.6	15
14.5	6	☐	MAS1450LB	89.6	117.6	175.6	173	2.6	15
14.6	3	☐	MAS1460MB	46.5	74.7	132.7	130	2.7	15
14.6	6	☐	MAS1460LB	90.3	117.7	175.7	173	2.7	15
14.7	3	☐	MAS1470MB	46.8	74.7	132.7	130	2.7	15
14.7	6	☐	MAS1470LB	90.9	117.7	175.7	173	2.7	15
14.8	3	☐	MAS1480MB	47.1	74.7	132.7	130	2.7	15
14.8	6	☐	MAS1480LB	91.5	117.7	175.7	173	2.7	15
14.9	3	☐	MAS1490MB	47.4	74.7	132.7	130	2.7	15
14.9	6	☐	MAS1490LB	92.1	117.7	175.7	173	2.7	15
14.96	3	● *	MAS1496MB	47.6	74.7	132.7	130	2.7	15
14.96	6	● *	MAS1496LB	92.5	117.7	175.7	173	2.7	15
15.0	3	●	MAS1500MB	47.7	74.7	132.7	130	2.7	15
15.0	6	●	MAS1500LB	92.7	117.7	175.7	173	2.7	15
15.1	3	☐	MAS1510MB	48.0	78.7	136.7	134	2.7	16
15.1	6	☐	MAS1510LB	93.3	122.7	180.7	178	2.7	16

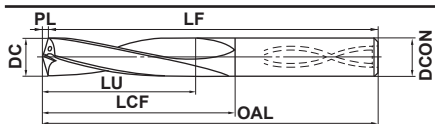
Nota: Itens com símbolo * são indicados para pré-furo para macho laminador.

● : Estoque mantido. ☐ : Sem estoque, produzido somente por pedido.

☐ : Lote mínimo para produtos especiais:

① Menor que ø3 = Mínimo 10 ② Maior ou igual a ø3 e menor que ø10 = Mínimo 5

③ Maior ou igual a ø10 = Mínimo 3



DC (mm)	Prof. do Furo (L/D)	HTi10	Referência para Pedido	Dimensões (mm)					
				LU	LCF	OAL	LF	PL	DCON
15.2	3	□	MAS1520MB	48.4	78.8	136.8	134	2.8	16
15.2	6	□	MAS1520LB	94.0	122.8	180.8	178	2.8	16
15.3	3	□	MAS1530MB	48.7	78.8	136.8	134	2.8	16
15.3	6	□	MAS1530LB	94.6	122.8	180.8	178	2.8	16
15.4	3	□	MAS1540MB	49.0	78.8	136.8	134	2.8	16
15.4	6	□	MAS1540LB	95.2	122.8	180.8	178	2.8	16
15.5	3	□	MAS1550MB	49.3	78.8	136.8	134	2.8	16
15.5	6	□	MAS1550LB	95.8	122.8	180.8	178	2.8	16
15.6	3	□	MAS1560MB	49.6	78.8	136.8	134	2.8	16
15.6	6	□	MAS1560LB	96.4	122.8	180.8	178	2.8	16

DC (mm)	Prof. do Furo (L/D)	HTi10	Referência para Pedido	Dimensões (mm)					
				LU	LCF	OAL	LF	PL	DCON
15.7	3	□	MAS1570MB	50.0	78.9	136.9	134	2.9	16
15.7	6	□	MAS1570LB	97.1	122.9	180.9	178	2.9	16
15.8	3	□	MAS1580MB	50.3	78.9	136.9	134	2.9	16
15.8	6	□	MAS1580LB	97.7	122.9	180.9	178	2.9	16
15.9	3	□	MAS1590MB	50.6	78.9	136.9	134	2.9	16
15.9	6	□	MAS1590LB	98.3	122.9	180.9	178	2.9	16
16.0	3	●	MAS1600MB	50.9	78.9	136.9	134	2.9	16
16.0	6	●	MAS1600LB	98.9	122.9	180.9	178	2.9	16

FURAÇÃO(METAL DURO INTEIRIÇO)

MAE

- Especial para furação de alumínio e ferro fundido.
- Furo com alta precisão.
- Pode usinar pré-furo para macho laminador.



P

M

K

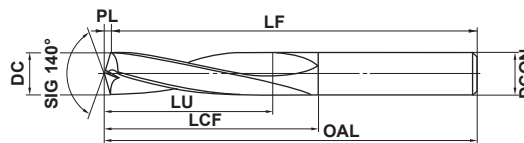
N

S

H

Ferro Fundido Metais Não Ferrosos

Refrigeração Externa



DC=3	3<DC≤6	6<DC≤10	10<DC≤16
+0.005 0	+0.005 0	+0.005 0	+0.005 0



DCON=3	3<DCON≤6	6<DCON≤10	10<DCON≤16
0 -0.006	0 -0.008	0 -0.009	0 -0.011

Nota 1) As brocas MAE são indicadas para uso com mandris de contração térmica.

DC (mm)	Prof. do Furo (L/D)	HT10	Referência para Pedido	Dimensões (mm)					
				LU	LCF	OAL	LF	PL	DCON
3.0	3	●	MAE0300MB	9.5	21.5	61.5	61	0.5	3
3.1	3	●	MAE0310MB	9.9	24.6	64.6	64	0.6	4
3.2	3	●	MAE0320MB	10.2	24.6	64.6	64	0.6	4
3.3	3	●	MAE0330MB	10.5	24.6	64.6	64	0.6	4
3.4	3	●	MAE0340MB	10.8	24.6	64.6	64	0.6	4
3.5	3	●	MAE0350MB	11.1	24.6	64.6	64	0.6	4
3.6	3	●	MAE0360MB	11.5	28.7	68.7	68	0.7	4
3.65	3	●	* MAE0365MB	11.7	28.7	68.7	68	0.7	4
3.7	3	●	MAE0370MB	11.8	28.7	68.7	68	0.7	4
3.8	3	●	MAE0380MB	12.1	28.7	68.7	68	0.7	4
3.9	3	●	MAE0390MB	12.4	28.7	68.7	68	0.7	4
4.0	3	●	MAE0400MB	12.7	28.7	68.7	68	0.7	4
4.1	3	●	MAE0410MB	13.0	31.7	71.7	71	0.7	5
4.2	3	●	MAE0420MB	13.4	31.8	71.8	71	0.8	5
4.3	3	●	MAE0430MB	13.7	31.8	71.8	71	0.8	5
4.4	3	●	MAE0440MB	14.0	31.8	71.8	71	0.8	5
4.5	3	●	MAE0450MB	14.3	31.8	71.8	71	0.8	5
4.6	3	●	* MAE0460MB	14.6	33.8	73.8	73	0.8	5
4.7	3	●	MAE0470MB	15.0	33.9	73.9	73	0.9	5
4.8	3	●	MAE0480MB	15.3	33.9	73.9	73	0.9	5
4.9	3	●	MAE0490MB	15.6	33.9	73.9	73	0.9	5
5.0	3	●	MAE0500MB	15.9	33.9	73.9	73	0.9	5
5.1	3	●	MAE0510MB	16.2	36.9	76.9	76	0.9	6
5.2	3	●	MAE0520MB	16.5	36.9	76.9	76	0.9	6
5.3	3	●	MAE0530MB	16.9	37.0	77.0	76	1.0	6
5.4	3	●	MAE0540MB	17.2	37.0	77.0	76	1.0	6
5.5	3	●	* MAE0550MB	17.5	37.0	77.0	76	1.0	6
5.6	3	●	MAE0560MB	17.8	40.0	80.0	79	1.0	6
5.7	3	●	MAE0570MB	18.1	40.0	80.0	79	1.0	6
5.8	3	●	MAE0580MB	18.5	40.1	80.1	79	1.1	6
5.9	3	●	MAE0590MB	18.8	40.1	80.1	79	1.1	6

DC (mm)	Prof. do Furo (L/D)	HT10	Referência para Pedido	Dimensões (mm)					
				LU	LCF	OAL	LF	PL	DCON
6.0	3	●	MAE0600MB	19.1	40.1	80.1	79	1.1	6
6.1	3	●	MAE0610MB	19.4	43.1	85.1	84	1.1	7
6.2	3	●	MAE0620MB	19.7	43.1	85.1	84	1.1	7
6.3	3	●	MAE0630MB	20.0	43.1	85.1	84	1.1	7
6.4	3	●	MAE0640MB	20.4	43.2	85.2	84	1.2	7
6.5	3	●	MAE0650MB	20.7	43.2	85.2	84	1.2	7
6.6	3	●	MAE0660MB	21.0	43.2	85.2	84	1.2	7
6.7	3	●	MAE0670MB	21.3	43.2	85.2	84	1.2	7
6.8	3	●	MAE0680MB	21.6	43.2	85.2	84	1.2	7
6.9	3	●	MAE0690MB	22.0	43.3	85.3	84	1.3	7
7.0	3	●	MAE0700MB	22.3	43.3	85.3	84	1.3	7
7.1	3	●	MAE0710MB	22.6	49.3	91.3	90	1.3	8
7.2	3	●	MAE0720MB	22.9	49.3	91.3	90	1.3	8
7.3	3	●	MAE0730MB	23.2	49.3	91.3	90	1.3	8
7.35	3	●	* MAE0735MB	23.4	49.3	91.3	90	1.3	8
7.4	3	●	MAE0740MB	23.5	49.3	91.3	90	1.3	8
7.5	3	●	MAE0750MB	23.9	49.4	91.4	90	1.4	8
7.6	3	●	MAE0760MB	24.2	49.4	91.4	90	1.4	8
7.7	3	●	MAE0770MB	24.5	49.4	91.4	90	1.4	8
7.8	3	●	MAE0780MB	24.8	49.4	91.4	90	1.4	8
7.9	3	●	MAE0790MB	25.1	49.4	91.4	90	1.4	8
8.0	3	●	MAE0800MB	25.5	49.5	91.5	90	1.5	8
8.1	3	●	MAE0810MB	25.8	51.5	95.5	94	1.5	9
8.2	3	●	MAE0820MB	26.1	51.5	95.5	94	1.5	9
8.3	3	●	MAE0830MB	26.4	51.5	95.5	94	1.5	9
8.4	3	●	MAE0840MB	26.7	51.5	95.5	94	1.5	9
8.5	3	●	MAE0850MB	27.0	51.5	95.5	94	1.5	9
8.6	3	●	MAE0860MB	27.4	51.6	95.6	94	1.6	9
8.7	3	●	MAE0870MB	27.7	51.6	95.6	94	1.6	9
8.8	3	●	MAE0880MB	28.0	51.6	95.6	94	1.6	9
8.9	3	●	MAE0890MB	28.3	51.6	95.6	94	1.6	9

Nota: Itens com símbolo * são indicados para pré-furo para macho laminador.

● : Estoque mantido. □ : Sem estoque, produzido somente por pedido.

□ : Lote mínimo para produtos especiais:

- ① Menor que ø3 = Mínimo 10
- ② Maior ou igual a ø3 e menor que ø10 = Mínimo 5
- ③ Maior ou igual a ø10 = Mínimo 3

DC (mm)	Prof. do Furo (L/D)	HTi10	Referência para Pedido	Dimensões (mm)					
				LU	LCF	OAL	LF	PL	DCON
9.0	3	●	MAE0900MB	28.6	51.6	95.6	94	1.6	9
9.1	3	●	MAE0910MB	29.0	54.7	98.7	97	1.7	10
9.2	3	●	MAE0920MB	29.3	54.7	98.7	97	1.7	10
9.21	3	●*	MAE0921MB	29.3	54.7	98.7	97	1.7	10
9.3	3	●	MAE0930MB	29.6	54.7	98.7	97	1.7	10
9.4	3	●	MAE0940MB	29.9	54.7	98.7	97	1.7	10
9.5	3	●	MAE0950MB	30.2	54.7	98.7	97	1.7	10
9.6	3	●	MAE0960MB	30.5	54.7	98.7	97	1.7	10
9.7	3	●	MAE0970MB	30.9	54.8	98.8	97	1.8	10
9.8	3	●	MAE0980MB	31.2	54.8	98.8	97	1.8	10
9.9	3	●	MAE0990MB	31.5	54.8	98.8	97	1.8	10
10.0	3	●	MAE1000MB	31.8	54.8	98.8	97	1.8	10
10.1	3	□	MAE1010MB	32.1	56.8	102.8	101	1.8	11
10.2	3	□	MAE1020MB	32.5	56.9	102.9	101	1.9	11
10.3	3	●	MAE1030MB	32.8	56.9	102.9	101	1.9	11
10.4	3	□	MAE1040MB	33.1	56.9	102.9	101	1.9	11
10.5	3	●	MAE1050MB	33.4	56.9	102.9	101	1.9	11
10.6	3	□	MAE1060MB	33.7	56.9	102.9	101	1.9	11
10.7	3	□	MAE1070MB	34.0	56.9	102.9	101	1.9	11
10.8	3	□	MAE1080MB	34.4	57.0	103.0	101	2.0	11
10.9	3	□	MAE1090MB	34.7	57.0	103.0	101	2.0	11
11.0	3	●	MAE1100MB	35.0	57.0	103.0	101	2.0	11
11.08	3	●*	MAE1108MB	35.2	62.0	108.0	106	2.0	12
11.1	3	□	MAE1110MB	35.3	62.0	108.0	106	2.0	12
11.2	3	□	MAE1120MB	35.6	62.0	108.0	106	2.0	12
11.3	3	□	MAE1130MB	36.0	62.1	108.1	106	2.1	12
11.4	3	□	MAE1140MB	36.3	62.1	108.1	106	2.1	12
11.5	3	□	MAE1150MB	36.6	62.1	108.1	106	2.1	12
11.6	3	□	MAE1160MB	36.9	62.1	108.1	106	2.1	12
11.7	3	□	MAE1170MB	37.2	62.1	108.1	106	2.1	12
11.8	3	□	MAE1180MB	37.5	62.1	108.1	106	2.1	12
11.9	3	□	MAE1190MB	37.9	62.2	108.2	106	2.2	12
12.0	3	●	MAE1200MB	38.2	62.2	108.2	106	2.2	12
12.1	3	□	MAE1210MB	38.5	67.2	117.2	115	2.2	13
12.2	3	□	MAE1220MB	38.8	67.2	117.2	115	2.2	13
12.3	3	□	MAE1230MB	39.1	67.2	117.2	115	2.2	13
12.4	3	□	MAE1240MB	39.5	67.3	117.3	115	2.3	13
12.5	3	●	MAE1250MB	39.8	67.3	117.3	115	2.3	13
12.6	3	□	MAE1260MB	40.1	67.3	117.3	115	2.3	13
12.7	3	□	MAE1270MB	40.4	67.3	117.3	115	2.3	13
12.8	3	□	MAE1280MB	40.7	67.3	117.3	115	2.3	13
12.9	3	□	MAE1290MB	41.0	67.3	117.3	115	2.3	13
12.96	3	●*	MAE1296MB	41.3	67.4	117.4	115	2.4	13
13.0	3	●	MAE1300MB	41.4	67.4	117.4	115	2.4	13
13.1	3	□	MAE1310MB	41.7	72.4	122.4	120	2.4	14
13.2	3	□	MAE1320MB	42.0	72.4	122.4	120	2.4	14
13.3	3	□	MAE1330MB	42.3	72.4	122.4	120	2.4	14
13.4	3	□	MAE1340MB	42.6	72.4	122.4	120	2.4	14

DC (mm)	Prof. do Furo (L/D)	HTi10	Referência para Pedido	Dimensões (mm)					
				LU	LCF	OAL	LF	PL	DCON
13.5	3	●	MAE1350MB	43.0	72.5	122.5	120	2.5	14
13.6	3	□	MAE1360MB	43.3	72.5	122.5	120	2.5	14
13.7	3	□	MAE1370MB	43.6	72.5	122.5	120	2.5	14
13.8	3	□	MAE1380MB	43.9	72.5	122.5	120	2.5	14
13.9	3	□	MAE1390MB	44.2	72.5	122.5	120	2.5	14
14.0	3	●	MAE1400MB	44.5	72.5	122.5	120	2.5	14
14.1	3	□	MAE1410MB	44.9	74.6	132.6	130	2.6	15
14.2	3	□	MAE1420MB	45.2	74.6	132.6	130	2.6	15
14.3	3	□	MAE1430MB	45.5	74.6	132.6	130	2.6	15
14.4	3	□	MAE1440MB	45.8	74.6	132.6	130	2.6	15
14.5	3	□	MAE1450MB	46.1	74.6	132.6	130	2.6	15
14.6	3	□	MAE1460MB	46.5	74.7	132.7	130	2.7	15
14.7	3	□	MAE1470MB	46.8	74.7	132.7	130	2.7	15
14.8	3	□	MAE1480MB	47.1	74.7	132.7	130	2.7	15
14.9	3	□	MAE1490MB	47.4	74.7	132.7	130	2.7	15
14.96	3	●*	MAE1496MB	47.6	74.7	132.7	130	2.7	15
15.0	3	●	MAE1500MB	47.7	74.7	132.7	130	2.7	15
15.1	3	□	MAE1510MB	48.0	78.7	136.7	134	2.7	16
15.2	3	□	MAE1520MB	48.4	78.8	136.8	134	2.8	16
15.3	3	□	MAE1530MB	48.7	78.8	136.8	134	2.8	16
15.4	3	□	MAE1540MB	49.0	78.8	136.8	134	2.8	16
15.5	3	□	MAE1550MB	49.3	78.8	136.8	134	2.8	16
15.6	3	□	MAE1560MB	49.6	78.8	136.8	134	2.8	16
15.7	3	□	MAE1570MB	50.0	78.9	136.9	134	2.9	16
15.8	3	□	MAE1580MB	50.3	78.9	136.9	134	2.9	16
15.9	3	□	MAE1590MB	50.6	78.9	136.9	134	2.9	16
16.0	3	●	MAE1600MB	50.9	78.9	136.9	134	2.9	16

CONDIÇÕES DE CORTE RECOMENDADAS

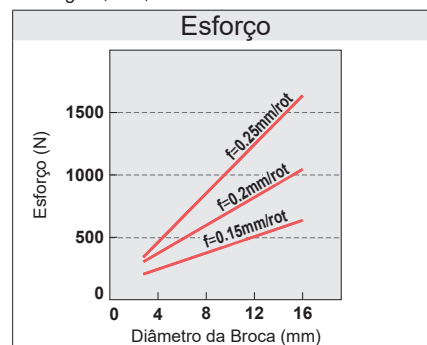
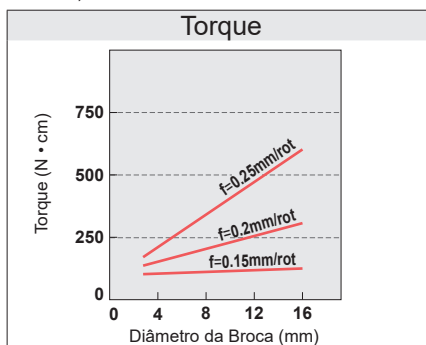
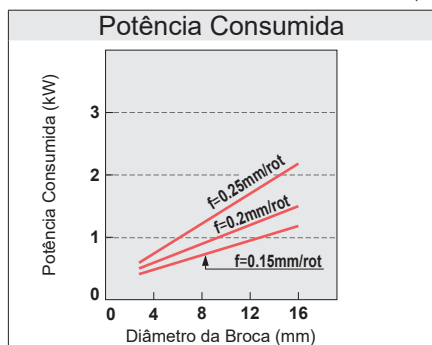
Tipo	Material	Diâm. da Broca $\phi 3.0 - \phi 6.0$		Diâm. da Broca $\phi 6.1 - \phi 10.0$		Diâm. da Broca $\phi 10.1 - \phi 16.0$	
		Vel. de Corte (m/min)	Avanço (mm/rot)	Vel. de Corte (m/min)	Avanço (mm/rot)	Vel. de Corte (m/min)	Avanço (mm/rot)
MAE	N Ligas de Alumínio Fundido	90 (40-140)	0.15 (0.05-0.3)	100 (50-150)	0.2 (0.1-0.3)	120 (60-170)	0.25 (0.1-0.4)
	Ligas de Alumínio Fundido para Moldes	100 (60-150)	0.12 (0.05-0.25)	110 (70-160)	0.15 (0.05-0.25)	130 (80-180)	0.2 (0.1-0.3)
	K Ferro Fundido Cinzento	40 (20-60)	0.15 (0.1-0.2)	60 (40-80)	0.2 (0.1-0.3)	80 (60-100)	0.3 (0.2-0.4)
	Ferro Fundido Nodular	30 (20-40)	0.1 (0.05-0.15)	40 (20-60)	0.12 (0.05-0.2)	60 (40-80)	0.2 (0.1-0.3)
MAS	N Ligas de Alumínio Fundido	100 (60-150)	0.15 (0.05-0.3)	120 (80-170)	0.2 (0.1-0.3)	150 (100-200)	0.25 (0.1-0.4)
	Ligas de Alumínio Fundido para Moldes	120 (80-170)	0.12 (0.05-0.25)	150 (100-180)	0.15 (0.05-0.25)	160 (120-200)	0.2 (0.1-0.3)
	K Ferro Fundido Cinzento	60 (40-80)	0.15 (0.1-0.2)	80 (60-110)	0.2 (0.1-0.3)	100 (70-130)	0.3 (0.2-0.4)
	Ferro Fundido Nodular	45 (30-60)	0.1 (0.05-0.15)	60 (40-80)	0.12 (0.05-0.2)	80 (60-100)	0.2 (0.1-0.3)

Furos e diâmetros das brocas para rosca

Tamanho da Rosca	Rosca Usinada			Tolerância do Furo		
	Diâmetro da Broca (DC)	Tolerância do Furo		Diâmetro da Broca (DC)	Tolerância do Furo	
		máx.	mín.		máx.	mín.
M4x0.7	3.3	3.242	3.422	3.65	3.65	3.70
M5x0.8	4.2	4.134	4.334	4.60	4.59	4.66
M6x1.0	5.0	4.917	5.153	5.50	5.48	5.57
M8x1.25	6.8	6.647	6.912	7.35	7.34	7.41
M10x1.5	8.5	8.376	8.676	9.21	9.18	9.28
M12x1.75	10.3	10.106	10.441	11.08	11.05	11.15
M14x2	12.0	11.835	12.210	12.96	12.92	13.04
M16x2	14.0	13.835	14.210	14.96	14.92	15.04

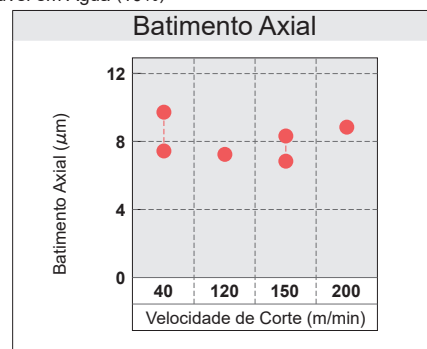
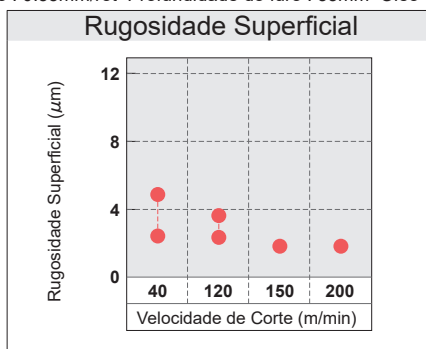
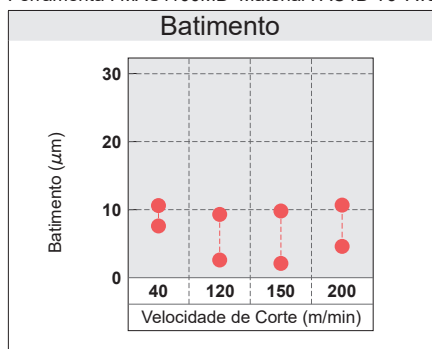
RESISTÊNCIA DE CORTE

Material : AC4B-T6 Profundidade do furo : L/D=3(Furo Passante) Velocidade de Corte : 100m/min Óleo Solúvel em Água (10%)



PRECISÃO DO FURO USINADO

Ferramenta : MAS1100MB Material : AC4B-T6 Avanço : 0.35mm/rot Profundidade do furo : 33mm Óleo Solúvel em Água (10%)



FURAÇÃO(METAL DURO INTEIRIÇO)

MCC

● O ângulo da ponta de 90° reduz o empuxo e minimiza a delaminação.



Máquina CNC/Para PRFC

P

M

K

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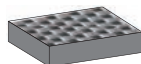
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Metais Não Ferrosos

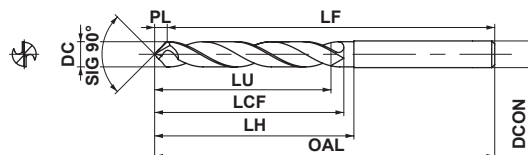


Máquina CNC



PRFC

Refrigeração Externa



3<DC≤6	6<DC≤10	10<DC≤18	18<DC≤20
0 -0.018	0 -0.022	0 -0.027	0 -0.033
DCON=6	6<DCON≤10	10<DCON≤12	
0 -0.008	0 -0.009	0 -0.011	

Diâmetro do Furo		Diâmetro da Broca		Prof. do Furo	Referência para Pedido	DD2105	Dimensões (mm)						
AWG*	pol. (inch)	DC (mm)	pol. (inch)	(L/D)			LU	LCF	LH	OAL	LF	PL	DCON
—	3/16	4.76	.1875	3	MCC0476X03S060	●	16.7	40	40	80	77.6	2.4	6
—	1/4	6.38	.251	3	MCC0638X03S080	●	22.3	50	50	90	86.8	3.2	8
—	5/16	7.96	.3125	3	MCC0796X03S080	●	27.9	50	50	90	86.0	4.0	8
—	3/8	9.55	.375	3	MCC0955X03S100	●	33.5	50	50	100	95.2	4.8	10
—	7/16	11.14	.4375	3	MCC1114X03S120	●	39.0	60	60	110	104.4	5.6	12

*AWG : American Wire Gage

CONDIÇÕES DE CORTE RECOMENDADAS

Material		PRFC			
Diâm. da Broca DC (mm)	Diâm. da Broca DC (pol.)	Vel. de Corte (m/min)	Rotação (min ⁻¹)	Taxa de Avanço (mín.—máx.) (mm/rot)	Avanço linear (mm/min)
4.76	.1875	100	6700	0.08 (0.05—0.12)	540
6.38	.251	100	5000	0.1 (0.05—0.12)	500
7.96	.3125	100	4000	0.1 (0.05—0.12)	400
9.55	.375	100	3400	0.1 (0.05—0.12)	340
11.14	.4375	100	2900	0.1 (0.05—0.12)	290

N

FURAÇÃO

● : Estoque mantido. □ : Sem estoque, produzido somente por pedido.

□ : Lote mínimo para produtos especiais:

① Menor que ø3 = Mínimo 10 ② Maior ou igual a ø3 e menor que ø10 = Mínimo 5

③ Maior ou igual a ø10 = Mínimo 3

N112

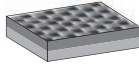
Máquina CNC/Para PRFC+Al

P M K **N** S H

Metais Não Ferrosos

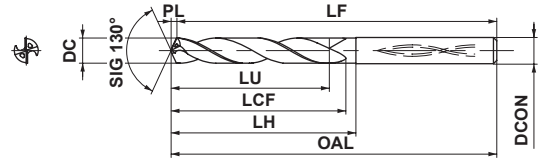


Máquina CNC



PRFC+Al

Refrigeração Interna



	$6 < DC \leq 10$
	$\begin{matrix} 0 \\ -0.022 \end{matrix}$
	$6 < DCON \leq 10$
	$\begin{matrix} 0 \\ -0.009 \end{matrix}$

Diâmetro do Furo		Diâmetro da Broca		Prof. do Furo	Referência para Pedido	DD2110	Dimensões (mm)						
AWG*	pol. (inch)	DC (mm)	pol. (inch)	(L/D)			LU	LCF	LH	OAL	LF	PL	DCON
—	1/4	6.38	.251	5	MCA0638X05S070	<input type="checkbox"/>	33.4	51	51	91	89.5	1.5	7
—	3/8	9.55	.375	5	MCA0955X05S100	<input type="checkbox"/>	50.0	77	77	118	115.8	2.2	10

*AWG : American Wire Gage

CONDIÇÕES DE CORTE RECOMENDADAS

Material		PRFC				Ligas de Alumínio (Si<5%) A6061, A7075 etc			
Diâm. da Broca DC (mm)	Diâm. da Broca DC (pol.)	Vel. de Corte (m/min)	Rotação (min ⁻¹)	Taxa de Avanço (mín.—máx.) (mm/rot)	Avanço linear (mm/min)	Vel. de Corte (m/min)	Rotação (min ⁻¹)	Taxa de Avanço (mín.—máx.) (mm/rot)	Avanço linear (mm/min)
6.38	.251	100	5000	0.15 (0.10—0.20)	750	100	5000	0.03 (0.02—0.04)	150
9.55	.375	100	3400	0.15 (0.10—0.20)	680	100	3400	0.03 (0.02—0.04)	100

Nota 1) Recomenda-se aplicar parâmetros de corte diferenciados de acordo com cada material.

FURAÇÃO(METAL DURO INTEIRIÇO)

MCT

● A aresta de corte aguda usina simultaneamente PRFC e titânio, realizando furação de alta qualidade.



Máquina CNC/Para PRFC+Ti

P

M

K

N

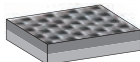
S

H

Metais Não Ferrosos

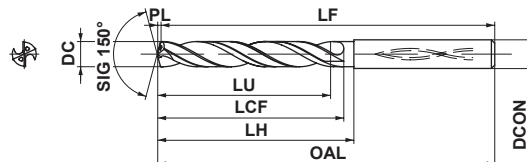


Máquina CNC



PRFC+Ti

Refrigeração Interna



$6 < DC \leq 10$

$\begin{matrix} 0 \\ -0.022 \end{matrix}$



$6 < DCON \leq 10$

$\begin{matrix} 0 \\ -0.009 \end{matrix}$

Diâmetro do Furo		Diâmetro da Broca		Prof. do Furo	Referência para Pedido	TF15	Dimensões (mm)						
AWG*	pol. (inch)	DC (mm)	pol. (inch)	(L/D)			LU	LCF	LH	OAL	LF	PL	DCON
—	1/4	6.38	.251	5	MCT0638X05S070	<input type="checkbox"/>	32.8	47	47	96	95.1	0.9	7
—	3/8	9.55	.375	5	MCT0955X05S100	<input type="checkbox"/>	49.1	71	71	122	120.7	1.3	10

*AWG : American Wire Gage

CONDIÇÕES DE CORTE RECOMENDADAS

Material		PRFC				Ligas de titânio Ti-6Al-4V				
Diâm. da Broca DC (mm)	Diâm. da Broca DC (pol.)	Vel. de Corte (m/min)	Rotação (min ⁻¹)	Taxa de Avanço (mín.—máx.) (mm/rot)	Avanço linear (mm/min)	Vel. de Corte (m/min)	Rotação (min ⁻¹)	Taxa de Avanço (mín.—máx.) (mm/rot)	Avanço linear (mm/min)	Avanço "pica-pau" (mm)
6.38	.251	100	5000	0.15 (0.10—0.20)	750	15	750	0.02 (0.01—0.03)	15	1
9.55	.375	100	3400	0.15 (0.10—0.20)	680	15	500	0.02 (0.01—0.03)	10	1

Nota 1) Estas condições de corte correspondem à usinagem com ar comprimido ou névoa de óleo.

Nota 2) Recomenda-se aplicar parâmetros de corte diferenciados de acordo com cada material.

N

FURAÇÃO

: Sem estoque, produzido somente por pedido.

: Lote mínimo para produtos especiais:

① Menor que ø3 = Mínimo 10 ② Maior ou igual a ø3 e menor que ø10 = Mínimo 5

③ Maior ou igual a ø10 = Mínimo 3

N114

Máquina CNC/Para furação de alta precisão de PRFC e materiais em pacote

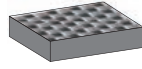
P M K **N** S H

Metais Não Ferrosos



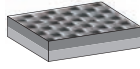
Máquina CNC

X



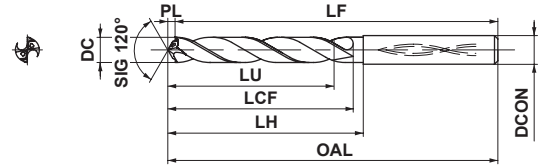
PRFC
CFRTF

OU



PRFC+AI
PRFC+TI

Refrigeração Interna



$$6 < DC \leq 10$$

$$0$$

$$-0.022$$



$$6 < DCON \leq 10$$

$$0$$

$$-0.009$$

Diâmetro do Furo		Diâmetro da Broca		Prof. do Furo	Referência para Pedido	HTi10	DD2110	Dimensões (mm)						
AWG*	pol. (inch)	DC (mm)	pol. (inch)	(L/D)				LU	LCF	LH	OAL	LF	PL	DCON
—	1/4	6.38	.251	5	MCW0638X05S070	<input type="checkbox"/>	<input type="checkbox"/>	33.7	52	52	92	90.2	1.8	7
—	3/8	9.55	.375	5	MCW0955X05S100	<input type="checkbox"/>	<input type="checkbox"/>	50.6	73	73	119	116.2	2.8	10

*AWG : American Wire Gage

CONDIÇÕES DE CORTE RECOMENDADAS

Material		PRFC			
Diâm. da Broca DC (mm)	Diâm. da Broca DC (pol.)	Vel. de Corte (m/min)	Rotação (min ⁻¹)	Taxa de Avanço (mín.—máx.) (mm/rot)	Avanço linear (mm/min)
6.38	.251	100	5000	0.15 (0.10—0.20)	750
9.55	.375	100	3400	0.15 (0.10—0.20)	680

Material		Ligas de Alumínio (Si<5%) A6061, A7075 etc					Ligas de titânio Ti-6Al-4V				
Diâm. da Broca DC (mm)	Diâm. da Broca DC (pol.)	Vel. de Corte (m/min)	Rotação (min ⁻¹)	Taxa de Avanço (mín.—máx.) (mm/rot)	Avanço linear (mm/min)	Avanço "pica-pau" (mm)	Vel. de Corte (m/min)	Rotação (min ⁻¹)	Taxa de Avanço (mín.—máx.) (mm/rot)	Avanço linear (mm/min)	Avanço "pica-pau" (mm)
6.38	.251	100	5000	0.15 (0.10—0.20)	750	3	15	750	0.02 (0.01—0.03)	15	1
9.55	.375	100	3400	0.15 (0.10—0.20)	500	3	15	500	0.02 (0.01—0.03)	10	1

Nota 1) Estas condições de corte correspondem à usinagem com ar comprimido ou névoa de óleo.

Nota 2) Recomenda-se aplicar parâmetros de corte diferenciados de acordo com cada material.

FURAÇÃO(METAL DURO INTEIRIÇO)

MCCH

● Realiza furação de alta confiabilidade devido ao uso do metal duro especial para máquina manual e ângulo duplo.



Máquina manual/Para PRFC

P

M

K

N

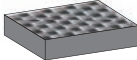
S

H

Metais Não Ferrosos

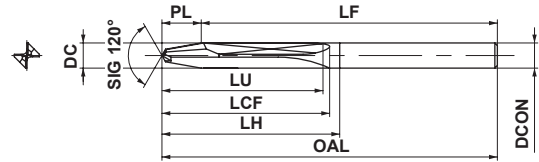


×



Máquina manual

PRFC



$1 \leq DC \leq 3$ $3 < DC \leq 6$ $6 < DC \leq 10$

0
-0.014 0
-0.018 0
-0.022



$DCON=3$ $3 < DCON \leq 6$ $6 < DCON \leq 10$

0
-0.006 0
-0.008 0
-0.009

Diâmetro do Furo		Diâmetro da Broca		Prof. do Furo	Referência para Pedido	DT2030	Dimensões (mm)						
AWG*	pol. (inch)	DC (mm)	pol. (inch)	(L/D)			LU	LCF	LH	OAL	LF	PL	DCON
#40	—	2.5	.0985	15	MCCH0250X15S030	●	42.1	48	50	100	95.4	4.6	3
#30	—	3.26	.1285	10	MCCH0326X10S040	●	38.6	48	50	100	94.0	6.0	4
#20	—	4.1	.1615	8	MCCH0410X08S050	●	40.3	48	50	100	92.5	7.5	5
#11	—	4.86	.1915	5	MCCH0486X05S050	●	33.2	48	50	100	91.1	8.9	5
—	1/4	6.38	.251	3	MCCH0638X03S070	●	30.8	48	50	100	88.3	11.7	7
—	3/8	9.55	.375	2	MCCH0955X02S100	●	36.6	48	50	100	82.5	17.5	10

*AWG : American Wire Gage

N

FURAÇÃO

● : Estoque mantido.

N116



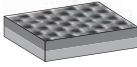
Máquina manual/Para PRFC+Al



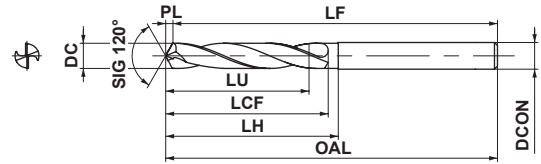
Metais Não Ferrosos



Máquina manual



PRFC+Al



$1 \leq DC \leq 3$	$3 < DC \leq 6$	$6 < DC \leq 10$
0 -0.014	0 -0.018	0 -0.022



DCON=3	$3 < DCON \leq 6$	$6 < DCON \leq 10$
0 -0.006	0 -0.008	0 -0.009

Diâmetro do Furo	Diâmetro da Broca		Prof. do Furo (L/D)	Referência para Pedido	DT2030	Dimensões (mm)							
	AWG*	pol. (inch)				DC (mm)	pol. (inch)	LU	LCF	LH	OAL	LF	PL
#40	—	2.5	.0985	15	MCAH0250X15S030	●	38.2	50	50	100	99.3	0.7	3
#30	—	3.26	.1285	15	MCAH0326X15S040	●	49.8	50	50	100	99.1	0.9	4
#20	—	4.1	.1615	10	MCAH0410X10S050	●	42.2	50	50	100	98.8	1.2	5
#11	—	4.86	.1915	8	MCAH0486X08S050	●	40.3	50	50	100	98.6	1.4	5
—	1/4	6.38	.251	5	MCAH0638X05S070	●	33.7	50	50	100	98.2	1.8	7
—	3/8	9.55	.375	3	MCAH0955X03S100	●	31.5	50	50	100	97.2	2.8	10

*AWG : American Wire Gage

FURAÇÃO(METAL DURO INTEIRIÇO)

MSP

BROCA PARA PONTEAR



P

Aço

M

Aço Inoxidável

K

Ferro Fundido

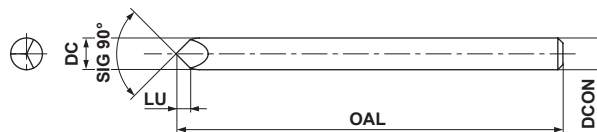
N

Metais Não Ferrosos

S

Ligas Resist. ao Calor

H



Referência para Pedido	Classe	Estoque	Dimensões (mm)				Diâmetros Disponíveis (mm)
			DC	LU	OAL	DCON	
MSP0300SB	VP15TF	●	3.0	1.5	38.0	3.0	0.1—3.0

CONDIÇÕES DE CORTE RECOMENDADAS

Diâmetros aplicáveis (mm)	Rotação (min ⁻¹)	Taxa de Avanço (Mín.—Máx.) (mm/rot)	Avanço linear (mm/min)
0.1—3.0	10000	0.0005 (0.00025—0.001)	5

N

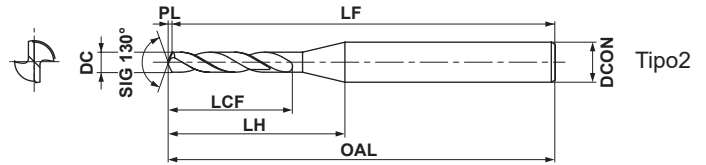
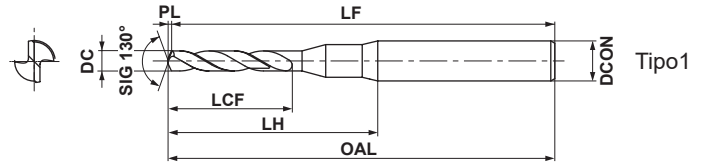
FURAÇÃO

● : Estoque mantido.

BROCAS MIRACLE MINI STAR



Refrigeração Externa



	$0.10 \leq DC \leq 0.99$
	$\begin{matrix} 0 \\ -0.009 \end{matrix}$
	DCON=3
	$\begin{matrix} 0 \\ -0.006 \end{matrix}$

Nota 1) As brocas MSE são indicadas para uso com mandris de contração térmica.

DC (mm)	VP20MF	VP15TF	Referência para Pedido	Dimensões (mm)						Tipo
				LCF	LH	OAL	LF	PL	DCON	
0.10	●		MSE0010SB	1.2	9.7	38.0	38	0.02	3	1
0.11	●		MSE0011SB	1.2	9.7	38.0	38	0.03	3	1
0.12	●		MSE0012SB	1.4	9.7	38.0	38	0.03	3	1
0.13	●		MSE0013SB	1.4	9.7	38.0	38	0.03	3	1
0.14	●		MSE0014SB	2.0	9.7	38.0	38	0.03	3	1
0.15	●		MSE0015SB	2.0	9.7	38.0	38	0.03	3	1
0.16	●		MSE0016SB	2.0	9.7	38.0	38	0.04	3	1
0.17	●		MSE0017SB	2.0	9.7	38.0	38	0.04	3	1
0.18	●		MSE0018SB	2.0	9.7	38.0	38	0.04	3	1
0.19	●		MSE0019SB	2.0	9.7	38.0	38	0.04	3	1
0.20	●		MSE0020SB	2.6	9.8	38.1	38	0.05	3	1
0.21	●		MSE0021SB	2.6	9.8	38.1	38	0.05	3	1
0.22	●		MSE0022SB	2.6	9.8	38.1	38	0.05	3	1
0.23	●		MSE0023SB	2.6	9.8	38.1	38	0.05	3	1
0.24	●		MSE0024SB	3.1	9.8	38.1	38	0.06	3	1
0.25	●		MSE0025SB	3.1	9.8	38.1	38	0.06	3	1
0.26	●		MSE0026SB	3.1	9.8	38.1	38	0.06	3	1
0.27	●		MSE0027SB	3.1	9.8	38.1	38	0.06	3	1
0.28	●		MSE0028SB	3.1	9.8	38.1	38	0.07	3	1
0.29	●		MSE0029SB	3.1	9.8	38.1	38	0.07	3	1
0.30		●	MSE0030SB	5.1	10.3	38.1	38	0.07	3	2
0.31		●	MSE0031SB	5.1	10.3	38.1	38	0.07	3	2
0.32		●	MSE0032SB	5.1	10.3	38.1	38	0.07	3	2
0.33		●	MSE0033SB	5.1	10.3	38.1	38	0.08	3	2
0.34		●	MSE0034SB	6.1	11.3	38.1	38	0.08	3	2
0.35		●	MSE0035SB	6.1	11.2	38.1	38	0.08	3	2
0.36		●	MSE0036SB	6.1	11.2	38.1	38	0.08	3	2
0.37		●	MSE0037SB	6.1	11.2	38.1	38	0.09	3	2

DC (mm)	VP20MF	VP15TF	Referência para Pedido	Dimensões (mm)						Tipo
				LCF	LH	OAL	LF	PL	DCON	
0.38		●	MSE0038SB	6.1	11.2	38.1	38	0.09	3	2
0.39		●	MSE0039SB	6.1	11.2	38.1	38	0.09	3	2
0.40		●	MSE0040SB	7.1	12.2	38.1	38	0.09	3	2
0.41		●	MSE0041SB	7.1	12.1	38.1	38	0.10	3	2
0.42		●	MSE0042SB	7.1	12.1	38.1	38	0.10	3	2
0.43		●	MSE0043SB	7.1	12.1	38.1	38	0.10	3	2
0.44		●	MSE0044SB	7.1	12.1	38.1	38	0.10	3	2
0.45		●	MSE0045SB	7.1	12.1	38.1	38	0.10	3	2
0.46		●	MSE0046SB	7.1	12.0	38.1	38	0.11	3	2
0.47		●	MSE0047SB	7.1	12.0	38.1	38	0.11	3	2
0.48		●	MSE0048SB	7.1	12.0	38.1	38	0.11	3	2
0.49		●	MSE0049SB	7.1	12.0	38.1	38	0.11	3	2
0.50		●	MSE0050SB	7.1	12.0	38.1	38	0.12	3	2
0.51		●	MSE0051SB	7.1	11.9	38.1	38	0.12	3	2
0.52		●	MSE0052SB	7.1	11.9	38.1	38	0.12	3	2
0.53		●	MSE0053SB	7.1	11.9	38.1	38	0.12	3	2
0.54		●	MSE0054SB	7.1	11.9	38.1	38	0.13	3	2
0.55		●	MSE0055SB	7.1	11.9	38.1	38	0.13	3	2
0.56		●	MSE0056SB	7.1	11.9	38.1	38	0.13	3	2
0.57		●	MSE0057SB	7.1	11.8	38.1	38	0.13	3	2
0.58		●	MSE0058SB	7.1	11.8	38.1	38	0.14	3	2
0.59		●	MSE0059SB	7.1	11.8	38.1	38	0.14	3	2
0.60		●	MSE0060SB	7.1	11.8	38.1	38	0.14	3	2
0.61		●	MSE0061SB	7.1	11.8	38.1	38	0.14	3	2
0.62		●	MSE0062SB	7.1	11.7	38.1	38	0.14	3	2
0.63		●	MSE0063SB	7.2	11.8	38.2	38	0.15	3	2
0.64		●	MSE0064SB	7.2	11.8	38.2	38	0.15	3	2
0.65		●	MSE0065SB	7.2	11.8	38.2	38	0.15	3	2

Nota 1) Por favor entre em contato para qualquer geometria que não conste no catálogo (ex.: diâmetro e comprimento diferente.).

FURAÇÃO(METAL DURO INTEIRIÇO)

MSE

BROCAS MIRACLE MINI STAR

METAL DURO

DC (mm)	VP20MF	VP15TF	Referência para Pedido	Dimensões (mm)						Tipo
				LCF	LH	OAL	LF	PL	DCON	
0.66		●	MSE0066SB	7.2	11.8	38.2	38	0.15	3	2
0.67		●	MSE0067SB	7.2	11.7	38.2	38	0.16	3	2
0.68		●	MSE0068SB	7.2	11.7	38.2	38	0.16	3	2
0.69		●	MSE0069SB	7.2	11.7	38.2	38	0.16	3	2
0.70		●	MSE0070SB	8.2	12.7	38.2	38	0.16	3	2
0.71		●	MSE0071SB	8.2	12.7	38.2	38	0.17	3	2
0.72		●	MSE0072SB	8.2	12.7	38.2	38	0.17	3	2
0.73		●	MSE0073SB	8.2	12.6	38.2	38	0.17	3	2
0.74		●	MSE0074SB	8.2	12.6	38.2	38	0.17	3	2
0.75		●	MSE0075SB	8.2	12.6	38.2	38	0.17	3	2
0.76		●	MSE0076SB	8.2	12.6	38.2	38	0.18	3	2
0.77		●	MSE0077SB	8.2	12.6	38.2	38	0.18	3	2
0.78		●	MSE0078SB	8.2	12.5	38.2	38	0.18	3	2
0.79		●	MSE0079SB	8.2	12.5	38.2	38	0.18	3	2
0.80		●	MSE0080SB	10.2	14.5	38.2	38	0.19	3	2
0.81		●	MSE0081SB	10.2	14.5	38.2	38	0.19	3	2
0.82		●	MSE0082SB	10.2	14.5	38.2	38	0.19	3	2

DC (mm)	VP20MF	VP15TF	Referência para Pedido	Dimensões (mm)						Tipo
				LCF	LH	OAL	LF	PL	DCON	
0.83		●	MSE0083SB	10.2	14.5	38.2	38	0.19	3	2
0.84		●	MSE0084SB	10.2	14.4	38.2	38	0.20	3	2
0.85		●	MSE0085SB	10.2	14.4	38.2	38	0.20	3	2
0.86		●	MSE0086SB	10.2	14.4	38.2	38	0.20	3	2
0.87		●	MSE0087SB	10.2	14.4	38.2	38	0.20	3	2
0.88		●	MSE0088SB	10.2	14.4	38.2	38	0.21	3	2
0.89		●	MSE0089SB	10.2	14.3	38.2	38	0.21	3	2
0.90		●	MSE0090SB	10.2	14.3	38.2	38	0.21	3	2
0.91		●	MSE0091SB	10.2	14.3	38.2	38	0.21	3	2
0.92		●	MSE0092SB	10.2	14.3	38.2	38	0.21	3	2
0.93		●	MSE0093SB	10.2	14.3	38.2	38	0.22	3	2
0.94		●	MSE0094SB	10.2	14.2	38.2	38	0.22	3	2
0.95		●	MSE0095SB	10.2	14.2	38.2	38	0.22	3	2
0.96		●	MSE0096SB	10.2	14.2	38.2	38	0.22	3	2
0.97		●	MSE0097SB	10.2	14.2	38.2	38	0.23	3	2
0.98		●	MSE0098SB	10.2	14.2	38.2	38	0.23	3	2
0.99		●	MSE0099SB	10.2	14.2	38.2	38	0.23	3	2

CONDIÇÕES DE CORTE RECOMENDADAS

Material	Aço Baixo Carbono (≤180HB)						Aço Carbono, Aço Liga (180—280HB)					
	AISI 1010 etc						AISI 1045, AISI 4140 etc					
Diâm. DC (mm)	Vel. de Corte (m/min)	Rotação (min ⁻¹)	Taxa de Avanço (Mín.—Máx.) (mm/rot)		Incremento (mm)	Avanço linear (mm/min)	Vel. de Corte (m/min)	Rotação (min ⁻¹)	Taxa de Avanço (Mín.—Máx.) (mm/rot)		Incremento (mm)	Avanço linear (mm/min)
0.1	6	20000	0.002 (0.001—0.003)		0.02	40	6	20000	0.002 (0.001—0.003)		0.02	40
0.12	8	20000	0.002 (0.001—0.003)		0.02	40	8	20000	0.002 (0.001—0.003)		0.02	40
0.16	10	20000	0.002 (0.001—0.003)		0.02	40	10	20000	0.002 (0.001—0.003)		0.02	40
0.2	13	20000	0.003 (0.002—0.004)		0.04	60	13	20000	0.003 (0.002—0.004)		0.04	60
0.25	16	20000	0.003 (0.002—0.004)		0.04	60	16	20000	0.003 (0.002—0.004)		0.04	60
0.32	20	20000	0.004 (0.003—0.005)		0.05	80	20	20000	0.004 (0.003—0.005)		0.05	80
0.4	25	20000	0.004 (0.003—0.005)		0.05	80	25	20000	0.004 (0.003—0.005)		0.05	80
0.5	31	20000	0.006 (0.005—0.007)		0.1	120	31	20000	0.006 (0.005—0.007)		0.1	120
0.63	40	20000	0.008 (0.006—0.01)		0.1	160	40	20000	0.008 (0.006—0.01)		0.1	160
0.8	50	20000	0.02 (0.015—0.025)		0.3	400	50	20000	0.015 (0.012—0.018)		0.3	300
0.99	62	20000	0.04 (0.03—0.05)		0.3	800	62	20000	0.02 (0.015—0.025)		0.3	400

Nota 1) Quando usar furos menores que $\phi 0.3\text{mm}$, é recomendado o uso de uma broca para pontear.

(Referência para pedido : MSP0300SB, Condições de corte : Ref. à pág. N118.)

Nota 2) Altere as condições de corte dependendo da máquina e rigidez da peça.

Nota 3) Quando usar furos maiores que 5D, reduza os incrementos definidos acima.

Nota 4) O uso de óleo solúvel (diluído em água na proporção 1:20) é recomendado para furação sob as condições de corte acima. Reduza a rotação, se utilizar óleo integral ou névoa.

● : Estoque mantido.

Material	Aço Carbono, Aço Liga (280–350HB)					Aço Pré-Endurecido (35–45HRC)				
	AISI 4340 etc					AISI P21, AISI P20 etc				
Diâm. DC (mm)	Vel. de Corte (m/min)	Rotação (min ⁻¹)	Taxa de Avanço (Mín.–Máx.) (mm/rot)	Incremento (mm)	Avanço linear (mm/min)	Vel. de Corte (m/min)	Rotação (min ⁻¹)	Taxa de Avanço (Mín.–Máx.) (mm/rot)	Incremento (mm)	Avanço linear (mm/min)
0.1	6	20000	0.002 (0.001–0.003)	0.02	40	6	20000	0.002 (0.001–0.003)	0.02	40
0.12	8	20000	0.002 (0.001–0.003)	0.02	40	8	20000	0.002 (0.001–0.003)	0.02	40
0.16	10	20000	0.002 (0.001–0.003)	0.02	40	10	20000	0.002 (0.001–0.003)	0.02	40
0.2	13	20000	0.003 (0.002–0.004)	0.04	60	13	20000	0.003 (0.002–0.004)	0.04	60
0.25	16	20000	0.003 (0.002–0.004)	0.04	60	16	20000	0.003 (0.002–0.004)	0.04	60
0.32	20	20000	0.004 (0.003–0.005)	0.05	80	20	20000	0.004 (0.003–0.005)	0.05	80
0.4	25	20000	0.004 (0.003–0.005)	0.05	80	25	20000	0.004 (0.003–0.005)	0.05	80
0.5	31	20000	0.006 (0.005–0.007)	0.1	120	31	20000	0.006 (0.005–0.007)	0.1	120
0.63	40	20000	0.008 (0.006–0.01)	0.1	160	40	20000	0.008 (0.006–0.01)	0.1	160
0.8	50	20000	0.015 (0.012–0.018)	0.3	300	50	20000	0.015 (0.012–0.018)	0.3	300
0.99	62	20000	0.02 (0.015–0.025)	0.3	400	62	20000	0.02 (0.015–0.025)	0.3	400

Material	Aço Inoxidável Austenítico (≤200HB)					Ferro Fundido Cinzento (≤350MPa)				
	AISI 304, AISI 316 etc					DIN GG-30 etc				
Diâm. DC (mm)	Vel. de Corte (m/min)	Rotação (min ⁻¹)	Taxa de Avanço (Mín.–Máx.) (mm/rot)	Incremento (mm)	Avanço linear (mm/min)	Vel. de Corte (m/min)	Rotação (min ⁻¹)	Taxa de Avanço (Mín.–Máx.) (mm/rot)	Incremento (mm)	Avanço linear (mm/min)
0.1	6	20000	0.002 (0.001–0.003)	0.02	40	6	20000	0.002 (0.001–0.003)	0.02	40
0.12	8	20000	0.002 (0.001–0.003)	0.02	40	8	20000	0.002 (0.001–0.003)	0.02	40
0.16	10	20000	0.002 (0.001–0.003)	0.02	40	10	20000	0.002 (0.001–0.003)	0.02	40
0.2	11	18000	0.003 (0.002–0.004)	0.04	54	13	20000	0.003 (0.002–0.004)	0.04	60
0.25	14	18000	0.003 (0.002–0.004)	0.04	54	16	20000	0.003 (0.002–0.004)	0.04	60
0.32	15	15000	0.004 (0.003–0.005)	0.05	60	20	20000	0.004 (0.003–0.005)	0.05	80
0.4	19	15000	0.004 (0.003–0.005)	0.05	60	25	20000	0.004 (0.003–0.005)	0.05	80
0.5	16	10000	0.006 (0.005–0.007)	0.1	60	31	20000	0.006 (0.005–0.007)	0.1	120
0.63	20	10000	0.008 (0.006–0.01)	0.1	80	40	20000	0.008 (0.006–0.01)	0.1	160
0.8	15	6000	0.015 (0.012–0.018)	0.2	90	50	20000	0.02 (0.015–0.025)	0.3	400
0.99	19	6000	0.02 (0.015–0.025)	0.2	120	62	20000	0.04 (0.03–0.05)	0.3	800

Material	Ligas de Alumínio (Si<5%)					Ligas Resistentes ao Calor				
						Inconel718 etc				
Diâm. DC (mm)	Vel. de Corte (m/min)	Rotação (min ⁻¹)	Taxa de Avanço (Mín.–Máx.) (mm/rot)	Incremento (mm)	Avanço linear (mm/min)	Vel. de Corte (m/min)	Rotação (min ⁻¹)	Taxa de Avanço (Mín.–Máx.) (mm/rot)	Incremento (mm)	Avanço linear (mm/min)
0.1	6	20000	0.002 (0.001–0.003)	0.05	40	2	7000	0.001 (0.0005–0.001)	0.02	7
0.12	8	20000	0.003 (0.002–0.004)	0.05	60	3	7000	0.001 (0.0005–0.001)	0.02	7
0.16	10	20000	0.004 (0.003–0.005)	0.05	80	4	7000	0.001 (0.0005–0.001)	0.02	7
0.2	13	20000	0.006 (0.005–0.007)	0.1	120	3	5000	0.002 (0.001–0.002)	0.04	10
0.25	16	20000	0.008 (0.006–0.01)	0.1	160	4	5000	0.002 (0.001–0.002)	0.04	10
0.32	20	20000	0.01 (0.008–0.012)	0.3	200	4	4000	0.002 (0.001–0.002)	0.05	8
0.4	25	20000	0.02 (0.015–0.025)	0.3	400	5	4000	0.002 (0.001–0.002)	0.05	8
0.5	31	20000	0.03 (0.025–0.035)	0.5	600	5	3000	0.003 (0.001–0.003)	0.1	9
0.63	40	20000	0.04 (0.035–0.045)	0.5	800	6	3000	0.004 (0.002–0.004)	0.1	12
0.8	50	20000	0.05 (0.045–0.055)	0.8	1000	5	1800	0.006 (0.004–0.006)	0.2	10.8
0.99	62	20000	0.06 (0.055–0.065)	0.8	1200	6	1800	0.01 (0.008–0.01)	0.2	18

Nota 1) Quando usar furos menores que $\phi 0.3\text{mm}$, é recomendado o uso de uma broca para pontear.

(Referência para pedido : MSP0300SB, Condições de corte : Ref. à pág. N118.)

Nota 2) Altere as condições de corte dependendo de sua máquina e rigidez da peça.

Nota 3) Quando usar furos maiores que 5D, reduza as etapas definidas acima.

Nota 4) O uso de óleo solúvel (diluído em água na proporção 1:20) é recomendado para furação nas condições de corte acima.

Reduza a rotação, se utilizar óleo integral ou névoa.

FURAÇÃO(METAL DURO INTEIRIÇO)

MWS

BROCAS WSTAR

● Para furação de alta precisão e eficiência de aços carbono a materiais de difícil usinabilidade.



METAL DURO

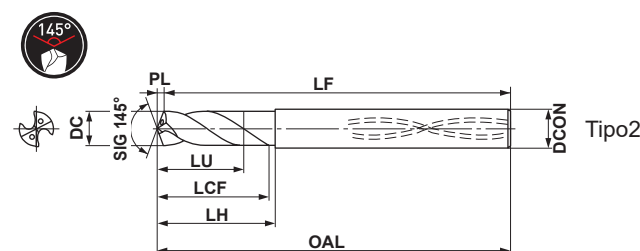
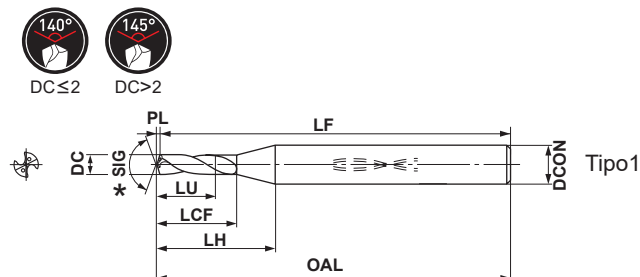
P	M	K	N	S	H
Aço	Aço Inoxidável	Ferro Fundido	Metais Não Ferrosos	Ligas Resist. ao Calor	

	$0.5 \leq DC < 1$	$1 \leq DC < 2.95$
	+0.009 0	+0.014 0
	DCON=3	
	0 -0.006	

Refrigeração Interna

■ Tipo SB

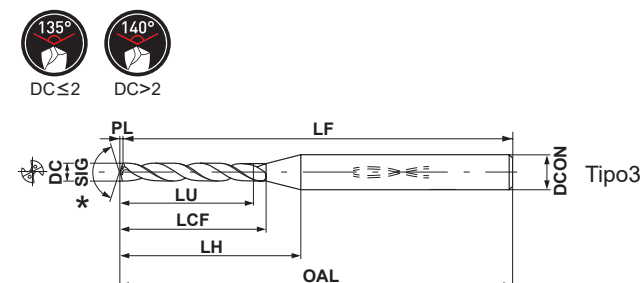
(Para usinagem de furo de guia)



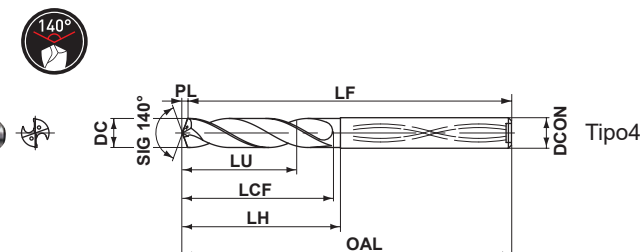
■ Tipo LB/XB



	$0.5 \leq DC < 1$	$1 \leq DC < 2.95$
	0 -0.009	0 -0.014
	DCON=3	
	0 -0.006	



■ Tipo DB



Nota 1) As brocas MWS são indicadas para uso com mandris de contração térmica.

* Ângulo da ponta do Tipo 1: 140° para brocas com diâmetros φ0.50-2.0 e 145° para brocas com diâmetro φ2.05-2.95.

* Ângulo da ponta do Tipo 3: 135° para brocas com diâmetro φ0.50-2.0 e 140° para brocas com diâmetro φ2.05-2.95.

Nota 2) Para usinagem de furo de guia, use a broca MWS...SB.

FURAÇÃO

DC (mm)	Prof. do Furo (L/D)	VP15TF	Referência para Pedido	Dimensões (mm)							Tipo
				LU	LCF	LH	OAL	LF	PL	DCON	
0.50	1	●	MWS0050SB	0.6	2.6	7.3	47.1	47	0.09	3	1
0.50	5	●	MWS0050LB	2.6	8.1	13.1	47.1	47	0.10	3	3
0.50	12	●	MWS0050XB	6.1	16.1	21.1	47.1	47	0.10	3	3
0.51	1	●	MWS0051SB	0.6	2.7	7.3	47.1	47	0.09	3	1
0.51	5	●	MWS0051LB	2.7	8.1	13.1	47.1	47	0.11	3	3
0.51	12	●	MWS0051XB	6.2	16.1	21.1	47.1	47	0.11	3	3
0.52	1	●	MWS0052SB	0.6	2.7	7.3	47.1	47	0.09	3	1
0.52	5	●	MWS0052LB	2.7	8.1	13.1	47.1	47	0.11	3	3
0.52	12	●	MWS0052XB	6.4	16.1	21.1	47.1	47	0.11	3	3
0.53	1	●	MWS0053SB	0.6	2.7	7.3	47.1	47	0.10	3	1
0.53	5	●	MWS0053LB	2.8	8.1	13.1	47.1	47	0.11	3	3
0.53	12	●	MWS0053XB	6.5	16.1	21.1	47.1	47	0.11	3	3
0.54	1	●	MWS0054SB	0.6	2.7	7.3	47.1	47	0.10	3	1
0.54	5	●	MWS0054LB	2.8	8.1	13.1	47.1	47	0.11	3	3
0.54	12	●	MWS0054XB	6.6	16.1	21.1	47.1	47	0.11	3	3
0.55	1	●	MWS0055SB	0.7	2.7	7.3	47.1	47	0.10	3	1
0.55	5	●	MWS0055LB	2.9	8.1	13.1	47.1	47	0.11	3	3
0.55	12	●	MWS0055XB	6.7	16.1	21.1	47.1	47	0.11	3	3
0.56	1	●	MWS0056SB	0.7	3.0	7.6	47.1	47	0.10	3	1
0.56	5	●	MWS0056LB	2.9	8.1	13.1	47.1	47	0.12	3	3
0.56	12	●	MWS0056XB	6.8	16.1	21.1	47.1	47	0.12	3	3
0.57	1	●	MWS0057SB	0.7	3.0	7.5	47.1	47	0.10	3	1
0.57	5	●	MWS0057LB	3.0	8.1	13.1	47.1	47	0.12	3	3
0.57	12	●	MWS0057XB	7.0	16.1	21.1	47.1	47	0.12	3	3
0.58	1	●	MWS0058SB	0.7	3.0	7.5	47.1	47	0.11	3	1
0.58	5	●	MWS0058LB	3.0	8.1	13.1	47.1	47	0.12	3	3
0.58	12	●	MWS0058XB	7.1	16.1	21.1	47.1	47	0.12	3	3
0.59	1	●	MWS0059SB	0.7	3.0	7.5	47.1	47	0.11	3	1
0.59	5	●	MWS0059LB	3.1	8.1	12.1	47.1	47	0.12	3	3
0.59	12	●	MWS0059XB	7.2	16.1	20.1	47.1	47	0.12	3	3
0.60	1	●	MWS0060SB	0.7	3.0	7.5	47.1	47	0.11	3	1
0.60	5	●	MWS0060LB	3.1	8.1	12.1	47.1	47	0.12	3	3
0.60	12	●	MWS0060XB	7.3	16.1	20.1	47.1	47	0.12	3	3
0.61	1	●	MWS0061SB	0.7	3.2	7.7	47.1	47	0.11	3	1
0.61	5	●	MWS0061LB	3.2	8.1	12.1	47.1	47	0.13	3	3
0.61	12	●	MWS0061XB	7.5	16.1	20.1	47.1	47	0.13	3	3
0.62	1	●	MWS0062SB	0.7	3.2	7.6	47.1	47	0.11	3	1
0.62	5	●	MWS0062LB	3.2	8.1	12.1	47.1	47	0.13	3	3
0.62	12	●	MWS0062XB	7.6	16.1	20.1	47.1	47	0.13	3	3
0.63	1	●	MWS0063SB	0.7	3.2	7.6	47.1	47	0.11	3	1
0.63	5	●	MWS0063LB	3.3	8.1	12.1	47.1	47	0.13	3	3
0.63	12	●	MWS0063XB	7.7	16.1	20.1	47.1	47	0.13	3	3
0.64	1	●	MWS0064SB	0.8	3.2	7.6	47.1	47	0.12	3	1
0.64	5	●	MWS0064LB	3.3	8.1	12.1	47.1	47	0.13	3	3
0.64	12	●	MWS0064XB	7.8	16.1	20.1	47.1	47	0.13	3	3
0.65	1	●	MWS0065SB	0.8	3.2	7.6	47.1	47	0.12	3	1
0.65	5	●	MWS0065LB	3.4	8.1	12.1	47.1	47	0.13	3	3
0.65	12	●	MWS0065XB	7.9	16.1	20.1	47.1	47	0.13	3	3

DC (mm)	Prof. do Furo (L/D)	VP15TF	Referência para Pedido	Dimensões (mm)							Tipo
				LU	LCF	LH	OAL	LF	PL	DCON	
0.66	1	●	MWS0066SB	0.8	3.5	7.9	47.1	47	0.12	3	1
0.66	5	●	MWS0066LB	3.4	8.1	12.1	47.1	47	0.14	3	3
0.66	12	●	MWS0066XB	8.1	16.1	20.1	47.1	47	0.14	3	3
0.67	1	●	MWS0067SB	0.8	3.5	7.8	47.1	47	0.12	3	1
0.67	5	●	MWS0067LB	3.5	8.1	12.1	47.1	47	0.14	3	3
0.67	12	●	MWS0067XB	8.2	16.1	20.1	47.1	47	0.14	3	3
0.68	1	●	MWS0068SB	0.8	3.5	7.8	47.1	47	0.12	3	1
0.68	5	●	MWS0068LB	3.5	8.1	12.1	47.1	47	0.14	3	3
0.68	12	●	MWS0068XB	8.3	16.1	20.1	47.1	47	0.14	3	3
0.69	1	●	MWS0069SB	0.8	3.5	7.8	47.1	47	0.13	3	1
0.69	5	●	MWS0069LB	3.6	8.1	12.1	47.1	47	0.14	3	3
0.69	12	●	MWS0069XB	8.4	16.1	20.1	47.1	47	0.14	3	3
0.70	1	●	MWS0070SB	0.8	3.5	7.8	47.1	47	0.13	3	1
0.70	5	●	MWS0070LB	3.6	8.1	12.1	47.1	47	0.14	3	3
0.70	12	●	MWS0070XB	8.5	16.1	20.1	47.1	47	0.14	3	3
0.71	1	●	MWS0071SB	0.8	3.7	8.0	50.1	50	0.13	3	1
0.71	5	●	MWS0071LB	3.7	10.1	14.1	50.1	50	0.15	3	3
0.71	12	●	MWS0071XB	8.7	20.1	24.1	50.1	50	0.15	3	3
0.72	1	●	MWS0072SB	0.9	3.7	8.0	50.1	50	0.13	3	1
0.72	5	●	MWS0072LB	3.8	10.1	14.1	50.1	50	0.15	3	3
0.72	12	●	MWS0072XB	8.8	20.1	24.1	50.1	50	0.15	3	3
0.73	1	●	MWS0073SB	0.9	3.7	7.9	50.1	50	0.13	3	1
0.73	5	●	MWS0073LB	3.8	10.1	14.1	50.1	50	0.15	3	3
0.73	12	●	MWS0073XB	8.9	20.1	24.1	50.1	50	0.15	3	3
0.74	1	●	MWS0074SB	0.9	3.7	7.9	50.1	50	0.13	3	1
0.74	5	●	MWS0074LB	3.9	10.1	14.1	50.1	50	0.15	3	3
0.74	12	●	MWS0074XB	9.0	20.1	24.1	50.1	50	0.15	3	3
0.75	1	●	MWS0075SB	0.9	3.7	7.9	50.1	50	0.14	3	1
0.75	5	●	MWS0075LB	3.9	10.1	14.1	50.1	50	0.16	3	3
0.75	12	●	MWS0075XB	9.2	20.1	24.1	50.1	50	0.16	3	3
0.76	1	●	MWS0076SB	0.9	4.0	8.2	50.1	50	0.14	3	1
0.76	5	●	MWS0076LB	4.0	10.1	14.1	50.1	50	0.16	3	3
0.76	12	●	MWS0076XB	9.3	20.1	24.1	50.1	50	0.16	3	3
0.77	1	●	MWS0077SB	0.9	4.0	8.2	50.1	50	0.14	3	1
0.77	5	●	MWS0077LB	4.0	10.1	14.1	50.1	50	0.16	3	3
0.77	12	●	MWS0077XB	9.4	20.1	24.1	50.1	50	0.16	3	3
0.78	1	●	MWS0078SB	0.9	4.0	8.1	50.1	50	0.14	3	1
0.78	5	●	MWS0078LB	4.1	10.1	14.1	50.1	50	0.16	3	3
0.78	12	●	MWS0078XB	9.5	20.1	24.1	50.1	50	0.16	3	3
0.79	1	●	MWS0079SB	0.9	4.0	8.1	50.1	50	0.14	3	1
0.79	5	●	MWS0079LB	4.1	10.1	14.1	50.1	50	0.16	3	3
0.79	12	●	MWS0079XB	9.6	20.1	24.1	50.1	50	0.16	3	3
0.80	1	●	MWS0080SB	1.0	4.1	8.2	50.2	50	0.15	3	1
0.80	5	●	MWS0080LB	4.2	10.2	14.2	50.2	50	0.17	3	3
0.80	12	●	MWS0080XB	9.8	20.2	24.2	50.2	50	0.17	3	3
0.81	1	●	MWS0081SB	1.0	4.3	8.4	50.2	50	0.15	3	1
0.81	5	●	MWS0081LB	4.2	10.2	14.2	50.2	50	0.17	3	3
0.81	12	●	MWS0081XB	9.9	20.2	24.2	50.2	50	0.17	3	3

Nota 1) Por favor entre em contato para qualquer geometria que não conste no catálogo (ex.: diâmetro e comprimento diferente.).

● : Estoque mantido.

FURAÇÃO(METAL DURO INTEIRIÇO)

MWS

BROCAS WSTAR

METAL DURO

DC	Prof. do Furo (L/D)	VP15TF	Referência para Pedido	Dimensões (mm)							Tipo
				LU	LCF	LH	OAL	LF	PL	DCON	
0.82	1	●	MWS0082SB	1.0	4.3	8.4	50.2	50	0.15	3	1
0.82	5	●	MWS0082LB	4.3	10.2	14.2	50.2	50	0.17	3	3
0.82	12	●	MWS0082XB	10.0	20.2	24.2	50.2	50	0.17	3	3
0.83	1	●	MWS0083SB	1.0	4.3	8.3	50.2	50	0.15	3	1
0.83	5	●	MWS0083LB	4.3	10.2	14.2	50.2	50	0.17	3	3
0.83	12	●	MWS0083XB	10.1	20.2	24.2	50.2	50	0.17	3	3
0.84	1	●	MWS0084SB	1.0	4.3	8.3	50.2	50	0.15	3	1
0.84	5	●	MWS0084LB	4.4	10.2	14.2	50.2	50	0.17	3	3
0.84	12	●	MWS0084XB	10.3	20.2	24.2	50.2	50	0.17	3	3
0.85	1	●	MWS0085SB	1.0	4.3	8.3	50.2	50	0.15	3	1
0.85	5	●	MWS0085LB	4.4	10.2	14.2	50.2	50	0.18	3	3
0.85	12	●	MWS0085XB	10.4	20.2	24.2	50.2	50	0.18	3	3
0.86	1	●	MWS0086SB	1.0	4.6	8.6	50.2	50	0.16	3	1
0.86	5	●	MWS0086LB	4.5	10.2	14.2	50.2	50	0.18	3	3
0.86	12	●	MWS0086XB	10.5	20.2	24.2	50.2	50	0.18	3	3
0.87	1	●	MWS0087SB	1.0	4.6	8.6	50.2	50	0.16	3	1
0.87	5	●	MWS0087LB	4.5	10.2	14.2	50.2	50	0.18	3	3
0.87	12	●	MWS0087XB	10.6	20.2	24.2	50.2	50	0.18	3	3
0.88	1	●	MWS0088SB	1.0	4.6	8.6	50.2	50	0.16	3	1
0.88	5	●	MWS0088LB	4.6	10.2	14.2	50.2	50	0.18	3	3
0.88	12	●	MWS0088XB	10.7	20.2	24.2	50.2	50	0.18	3	3
0.89	1	●	MWS0089SB	1.1	4.6	8.5	50.2	50	0.16	3	1
0.89	5	●	MWS0089LB	4.6	10.2	14.2	50.2	50	0.18	3	3
0.89	12	●	MWS0089XB	10.9	20.2	24.2	50.2	50	0.18	3	3
0.90	1	●	MWS0090SB	1.1	4.6	8.5	50.2	50	0.16	3	1
0.90	5	●	MWS0090LB	4.7	10.2	14.2	50.2	50	0.19	3	3
0.90	12	●	MWS0090XB	11.0	20.2	24.2	50.2	50	0.19	3	3
0.91	1	●	MWS0091SB	1.1	4.8	8.7	50.2	50	0.17	3	1
0.91	5	●	MWS0091LB	4.7	10.2	14.2	50.2	50	0.19	3	3
0.91	12	●	MWS0091XB	11.1	20.2	24.2	50.2	50	0.19	3	3
0.92	1	●	MWS0092SB	1.1	4.8	8.7	50.2	50	0.17	3	1
0.92	5	●	MWS0092LB	4.8	10.2	14.2	50.2	50	0.19	3	3
0.92	12	●	MWS0092XB	11.2	20.2	24.2	50.2	50	0.19	3	3
0.93	1	●	MWS0093SB	1.1	4.8	8.7	50.2	50	0.17	3	1
0.93	5	●	MWS0093LB	4.8	10.2	14.2	50.2	50	0.19	3	3
0.93	12	●	MWS0093XB	11.4	20.2	24.2	50.2	50	0.19	3	3
0.94	1	●	MWS0094SB	1.1	4.8	8.6	50.2	50	0.17	3	1
0.94	5	●	MWS0094LB	4.9	10.2	14.2	50.2	50	0.19	3	3
0.94	12	●	MWS0094XB	11.5	20.2	24.2	50.2	50	0.19	3	3
0.95	1	●	MWS0095SB	1.1	4.8	8.6	50.2	50	0.17	3	1
0.95	5	●	MWS0095LB	5.0	10.2	14.2	50.2	50	0.20	3	3
0.95	12	●	MWS0095XB	11.6	20.2	24.2	50.2	50	0.20	3	3
0.96	1	●	MWS0096SB	1.1	5.1	8.9	50.2	50	0.17	3	1
0.96	5	●	MWS0096LB	5.0	10.2	14.2	50.2	50	0.20	3	3
0.96	12	●	MWS0096XB	11.7	20.2	24.2	50.2	50	0.20	3	3
0.97	1	●	MWS0097SB	1.2	5.1	8.9	50.2	50	0.18	3	1
0.97	5	●	MWS0097LB	5.1	10.2	14.2	50.2	50	0.20	3	3
0.97	12	●	MWS0097XB	11.8	20.2	24.2	50.2	50	0.20	3	3

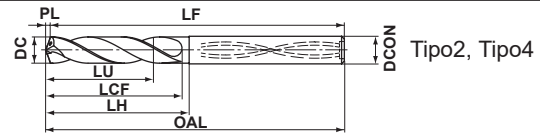
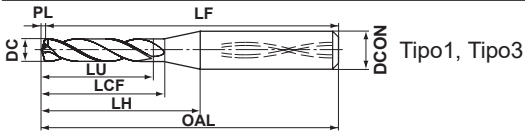
DC	Prof. do Furo (L/D)	VP15TF	Referência para Pedido	Dimensões (mm)							Tipo
				LU	LCF	LH	OAL	LF	PL	DCON	
0.98	1	●	MWS0098SB	1.2	5.1	8.9	50.2	50	0.18	3	1
0.98	5	●	MWS0098LB	5.1	10.2	14.2	50.2	50	0.20	3	3
0.98	12	●	MWS0098XB	12.0	20.2	24.2	50.2	50	0.20	3	3
0.99	1	●	MWS0099SB	1.2	5.1	8.9	50.2	50	0.18	3	1
0.99	5	●	MWS0099LB	5.2	10.2	14.2	50.2	50	0.21	3	3
0.99	12	●	MWS0099XB	12.1	20.2	24.2	50.2	50	0.21	3	3
1.00	1	●	MWS0100SB	1.2	5.2	8.9	55.2	55	0.2	3	1
1.00	5	●	MWS0100LB	5.2	11.2	15.2	55.2	55	0.2	3	3
1.00	12	●	MWS0100XB	12.2	23.2	27.2	55.2	55	0.2	3	3
1.00	20	●	MWS0100X20DB	20.2	24.2	28.2	60.2	60	0.2	3	3
1.00	25	●	MWS0100X25DB	25.2	28.2	32.2	66.2	66	0.2	3	3
1.00	30	●	MWS0100X30DB	30.2	33.2	37.2	72.2	72	0.2	3	3
1.05	1	□	MWS0105SB	1.3	5.4	9.0	55.2	55	0.2	3	1
1.05	20	□	MWS0105X20DB	21.2	24.2	28.2	60.2	60	0.2	3	3
1.05	25	□	MWS0105X25DB	26.5	29.2	33.2	66.2	66	0.2	3	3
1.05	30	□	MWS0105X30DB	31.7	35.2	38.2	72.2	72	0.2	3	3
1.10	1	●	MWS0110SB	1.3	5.6	9.1	55.2	55	0.2	3	1
1.10	5	●	MWS0110LB	5.7	17.2	21.2	55.2	55	0.2	3	3
1.10	12	●	MWS0110XB	13.4	23.2	27.2	55.2	55	0.2	3	3
1.10	20	●	MWS0110X20DB	22.2	25.2	29.2	60.2	60	0.2	3	3
1.10	25	●	MWS0110X25DB	27.7	31.2	34.2	66.2	66	0.2	3	3
1.10	30	●	MWS0110X30DB	33.2	36.2	40.2	72.2	72	0.2	3	3
1.15	1	□	MWS0115SB	1.4	5.8	9.3	55.2	55	0.2	3	1
1.15	20	□	MWS0115X20DB	23.2	26.2	30.2	60.2	60	0.2	3	3
1.15	25	□	MWS0115X25DB	29.0	32.2	36.2	66.2	66	0.2	3	3
1.15	30	□	MWS0115X30DB	34.7	38.2	41.2	72.2	72	0.2	3	3
1.20	1	●	MWS0120SB	1.4	6.2	9.6	55.2	55	0.2	3	1
1.20	5	●	MWS0120LB	6.3	17.2	20.2	55.2	55	0.2	3	3
1.20	12	●	MWS0120XB	14.7	23.2	26.2	55.2	55	0.2	3	3
1.20	20	●	MWS0120X20DB	24.3	28.2	31.2	60.2	60	0.2	3	3
1.20	25	●	MWS0120X25DB	30.3	34.2	37.2	66.2	66	0.2	3	3
1.20	30	●	MWS0120X30DB	36.3	40.2	43.2	72.2	72	0.2	3	3
1.25	1	□	MWS0125SB	1.5	6.4	9.7	55.2	55	0.2	3	1
1.25	20	□	MWS0125X20DB	25.3	29.3	32.3	68.3	68	0.3	3	3
1.25	25	□	MWS0125X25DB	31.6	35.3	38.3	74.3	74	0.3	3	3
1.25	30	□	MWS0125X30DB	37.8	41.3	45.3	82.3	82	0.3	3	3
1.30	1	●	MWS0130SB	1.5	6.6	9.8	55.2	55	0.2	3	1
1.30	5	●	MWS0130LB	6.8	17.3	20.3	55.3	55	0.3	3	3
1.30	12	●	MWS0130XB	15.9	23.3	26.3	55.3	55	0.3	3	3
1.30	20	●	MWS0130X20DB	26.3	30.3	33.3	68.3	68	0.3	3	3
1.30	25	●	MWS0130X25DB	32.8	36.3	40.3	74.3	74	0.3	3	3
1.30	30	●	MWS0130X30DB	39.3	43.3	46.3	82.3	82	0.3	3	3
1.35	1	□	MWS0135SB	1.7	6.8	9.9	55.2	55	0.3	3	1
1.35	20	□	MWS0135X20DB	27.3	31.3	34.3	68.3	68	0.3	3	3
1.35	25	□	MWS0135X25DB	34.1	38.3	41.3	74.3	74	0.3	3	3
1.35	30	□	MWS0135X30DB	40.8	45.3	48.3	82.3	82	0.3	3	3
1.40	1	●	MWS0140SB	1.7	7.3	10.3	55.3	55	0.3	3	1
1.40	5	●	MWS0140LB	7.3	17.3	20.3	55.3	55	0.3	3	3

Nota 1) Por favor entre em contato para qualquer geometria que não conste no catálogo (ex.: diâmetro e comprimento diferente.).

● : Estoque mantido. □ : Sem estoque, produzido somente por pedido.

□ : Lote mínimo para produtos especiais:

① Menor que ø3 = Mínimo 10 ② Maior ou igual a ø3 e menor que ø10 = Mínimo 5
③ Maior ou igual a ø10 = Mínimo 3



DC (mm)	Prof. do Furo (L/D)	VP15TF	Referência para Pedido	Dimensões (mm)							Tipo
				LU	LCF	LH	OAL	LF	PL	DCON	
1.40	12	●	MWS0140XB	17.1	23.3	26.3	55.3	55	0.3	3	3
1.40	20	●	MWS0140X20DB	28.3	32.3	35.3	68.3	68	0.3	3	3
1.40	25	●	MWS0140X25DB	35.3	39.3	42.3	74.3	74	0.3	3	3
1.40	30	●	MWS0140X30DB	42.3	46.3	49.3	82.3	82	0.3	3	3
1.45	1	□	MWS0145SB	1.8	7.5	10.4	55.3	55	0.3	3	1
1.45	20	□	MWS0145X20DB	29.3	33.3	36.3	68.3	68	0.3	3	3
1.45	25	□	MWS0145X25DB	36.6	41.3	43.3	74.3	74	0.3	3	3
1.45	30	□	MWS0145X30DB	43.8	48.3	51.3	82.3	82	0.3	3	3
1.50	1	●	MWS0150SB	1.8	7.7	10.5	55.3	55	0.3	3	1
1.50	5	●	MWS0150LB	7.8	17.3	20.3	55.3	55	0.3	3	3
1.50	12	●	MWS0150XB	18.3	23.3	26.3	55.3	55	0.3	3	3
1.50	20	●	MWS0150X20DB	30.3	35.3	37.3	68.3	68	0.3	3	3
1.50	25	●	MWS0150X25DB	37.8	42.3	45.3	74.3	74	0.3	3	3
1.50	30	●	MWS0150X30DB	45.3	50.3	52.3	82.3	82	0.3	3	3
1.55	1	□	MWS0155SB	1.9	7.9	10.6	68.3	68	0.3	3	1
1.55	20	□	MWS0155X20DB	31.3	36.3	38.3	78.3	78	0.3	3	3
1.55	25	□	MWS0155X25DB	39.1	43.3	46.3	86.3	86	0.3	3	3
1.55	30	□	MWS0155X30DB	46.8	51.3	54.3	95.3	95	0.3	3	3
1.60	1	●	MWS0160SB	1.9	8.3	10.9	68.3	68	0.3	3	1
1.60	5	●	MWS0160LB	8.3	22.3	25.3	68.3	68	0.3	3	3
1.60	12	●	MWS0160XB	19.5	30.3	33.3	68.3	68	0.3	3	3
1.60	20	●	MWS0160X20DB	32.3	37.3	39.3	78.3	78	0.3	3	3
1.60	25	●	MWS0160X25DB	40.3	45.3	47.3	86.3	86	0.3	3	3
1.60	30	●	MWS0160X30DB	48.3	53.3	55.3	95.3	95	0.3	3	3
1.65	1	□	MWS0165SB	2.0	8.5	11.0	68.3	68	0.3	3	1
1.65	20	□	MWS0165X20DB	33.3	38.3	40.3	78.3	78	0.3	3	3
1.65	25	□	MWS0165X25DB	41.6	46.3	49.3	86.3	86	0.3	3	3
1.65	30	□	MWS0165X30DB	49.8	54.3	57.3	95.3	95	0.3	3	3
1.70	1	●	MWS0170SB	2.0	8.7	11.1	68.3	68	0.3	3	1
1.70	5	●	MWS0170LB	8.9	22.4	24.4	68.4	68	0.4	3	3
1.70	12	●	MWS0170XB	20.8	30.4	32.4	68.4	68	0.4	3	3
1.70	20	●	MWS0170X20DB	34.4	39.4	42.4	78.4	78	0.4	3	3
1.70	25	●	MWS0170X25DB	42.9	48.4	50.4	86.4	86	0.4	3	3
1.70	30	●	MWS0170X30DB	51.4	56.4	59.4	95.4	95	0.4	3	3
1.75	1	□	MWS0175SB	2.1	8.9	11.2	68.3	68	0.3	3	1
1.75	20	□	MWS0175X20DB	35.4	40.4	43.4	84.4	84	0.4	3	3
1.75	25	□	MWS0175X25DB	44.2	49.4	51.4	94.4	94	0.4	3	3
1.75	30	□	MWS0175X30DB	52.9	58.4	60.4	102.4	102	0.4	3	3
1.80	1	●	MWS0180SB	2.1	9.3	11.5	68.3	68	0.3	3	1
1.80	5	●	MWS0180LB	9.4	22.4	24.4	68.4	68	0.4	3	3
1.80	12	●	MWS0180XB	22.0	30.4	32.4	68.4	68	0.4	3	3
1.80	20	●	MWS0180X20DB	36.4	41.4	44.4	84.4	84	0.4	3	3
1.80	25	●	MWS0180X25DB	45.4	50.4	53.4	94.4	94	0.4	3	3
1.80	30	●	MWS0180X30DB	54.4	59.4	62.4	102.4	102	0.4	3	3
1.85	1	□	MWS0185SB	2.2	9.5	11.6	68.3	68	0.3	3	1
1.85	20	□	MWS0185X20DB	37.4	43.4	45.4	84.4	84	0.4	3	3
1.85	25	□	MWS0185X25DB	46.7	52.4	54.4	94.4	94	0.4	3	3
1.85	30	□	MWS0185X30DB	55.9	61.4	63.4	102.4	102	0.4	3	3

DC (mm)	Prof. do Furo (L/D)	VP15TF	Referência para Pedido	Dimensões (mm)							Tipo
				LU	LCF	LH	OAL	LF	PL	DCON	
1.90	1	●	MWS0190SB	2.3	9.7	11.8	68.3	68	0.3	3	1
1.90	5	●	MWS0190LB	9.9	22.4	24.4	68.4	68	0.4	3	3
1.90	12	●	MWS0190XB	23.2	30.4	32.4	68.4	68	0.4	3	3
1.90	20	●	MWS0190X20DB	38.4	44.4	46.4	84.4	84	0.4	3	3
1.90	25	●	MWS0190X25DB	47.9	53.4	55.4	94.4	94	0.4	3	3
1.90	30	●	MWS0190X30DB	57.4	63.4	65.4	102.4	102	0.4	3	3
1.95	1	□	MWS0195SB	2.4	10.0	12.0	68.4	68	0.4	3	1
1.95	20	□	MWS0195X20DB	39.4	45.4	47.4	84.4	84	0.4	3	3
1.95	25	□	MWS0195X25DB	49.2	55.4	57.4	94.4	94	0.4	3	3
1.95	30	□	MWS0195X30DB	58.9	64.4	66.4	102.4	102	0.4	3	3
2.00	1	●	MWS0200SB	2.4	10.4	12.3	68.4	68	0.4	3	1
2.00	5	●	MWS0200LB	10.4	22.4	24.4	68.4	68	0.4	3	3
2.00	12	●	MWS0200XB	24.4	30.4	32.4	68.4	68	0.4	3	3
2.00	20	●	MWS0200X20DB	40.4	46.4	48.4	84.4	84	0.4	3	3
2.00	25	●	MWS0200X25DB	50.4	56.4	58.4	94.4	94	0.4	3	3
2.00	30	●	MWS0200X30DB	60.4	66.4	68.4	102.4	102	0.4	3	3
2.05	1	□	MWS0205SB	2.4	10.5	12.3	74.3	74	0.3	3	1
2.05	20	□	MWS0205X20DB	41.4	47.4	49.4	94.4	94	0.4	3	3
2.05	25	□	MWS0205X25DB	51.7	57.4	59.4	107.4	107	0.4	3	3
2.05	30	□	MWS0205X30DB	61.9	68.4	69.4	118.4	118	0.4	3	3
2.10	1	●	MWS0210SB	2.4	10.7	12.4	74.3	74	0.3	3	1
2.10	5	●	MWS0210LB	10.9	28.4	30.4	74.4	74	0.4	3	3
2.10	12	●	MWS0210XB	25.6	38.4	40.4	74.4	74	0.4	3	3
2.10	20	●	MWS0210X20DB	42.4	48.4	50.4	94.4	94	0.4	3	3
2.10	25	●	MWS0210X25DB	52.9	59.4	60.4	107.4	107	0.4	3	3
2.10	30	●	MWS0210X30DB	63.4	69.4	71.4	118.4	118	0.4	3	3
2.15	1	□	MWS0215SB	2.5	10.9	12.5	74.3	74	0.3	3	1
2.15	20	□	MWS0215X20DB	43.4	49.4	51.4	94.4	94	0.4	3	3
2.15	25	□	MWS0215X25DB	54.2	60.4	62.4	107.4	107	0.4	3	3
2.15	30	□	MWS0215X30DB	64.9	71.4	73.4	118.4	118	0.4	3	3
2.20	1	●	MWS0220SB	2.6	11.3	12.8	74.3	74	0.3	3	1
2.20	5	●	MWS0220LB	11.4	28.4	29.4	74.4	74	0.4	3	3
2.20	12	●	MWS0220XB	26.8	38.4	39.4	74.4	74	0.4	3	3
2.20	20	●	MWS0220X20DB	44.4	51.4	52.4	94.4	94	0.4	3	3
2.20	25	●	MWS0220X25DB	55.4	62.4	63.4	107.4	107	0.4	3	3
2.20	30	●	MWS0220X30DB	66.4	73.4	74.4	118.4	118	0.4	3	3
2.25	1	□	MWS0225SB	2.7	11.6	13.0	74.4	74	0.4	3	1
2.25	20	□	MWS0225X20DB	45.4	52.4	53.4	94.4	94	0.4	3	3
2.25	25	□	MWS0225X25DB	56.7	63.4	64.4	107.4	107	0.4	3	3
2.25	30	□	MWS0225X30DB	67.9	74.4	76.4	118.4	118	0.4	3	3
2.30	1	●	MWS0230SB	2.7	11.8	13.1	74.4	74	0.4	3	1
2.30	5	●	MWS0230LB	11.9	28.4	29.4	74.4	74	0.4	3	3
2.30	12	●	MWS0230XB	28.0	38.4	39.4	74.4	74	0.4	3	3
2.30	20	●	MWS0230X20DB	46.4	53.4	54.4	94.4	94	0.4	3	3
2.30	25	●	MWS0230X25DB	57.9	64.4	66.4	107.4	107	0.4	3	3
2.30	30	●	MWS0230X30DB	69.4	76.4	77.4	118.4	118	0.4	3	3
2.35	1	□	MWS0235SB	2.8	12.0	13.2	74.4	74	0.4	3	1
2.35	20	□	MWS0235X20DB	47.4	54.4	55.4	94.4	94	0.4	3	3

FURAÇÃO(METAL DURO INTEIRIÇO)

MWS

BROCAS WSTAR

METAL DURO

DC (mm)	Prof. do Furo (L/D)	VP15TF	Referência para Pedido	Dimensões (mm)							Tipo
				LU	LCF	LH	OAL	LF	PL	DCON	
2.35	25	<input type="checkbox"/>	MWS0235X25DB	59.2	66.4	67.4	107.4	107	0.4	3	3
2.35	30	<input type="checkbox"/>	MWS0235X30DB	70.9	78.4	79.4	118.4	118	0.4	3	3
2.40	1	<input checked="" type="checkbox"/>	MWS0240SB	2.8	12.4	13.5	74.4	74	0.4	3	1
2.40	5	<input checked="" type="checkbox"/>	MWS0240LB	12.4	28.4	29.4	74.4	74	0.4	3	3
2.40	12	<input checked="" type="checkbox"/>	MWS0240XB	29.2	38.4	39.4	74.4	74	0.4	3	3
2.40	20	<input checked="" type="checkbox"/>	MWS0240X20DB	48.4	55.4	56.4	94.4	94	0.4	3	3
2.40	25	<input checked="" type="checkbox"/>	MWS0240X25DB	60.4	67.4	68.4	107.4	107	0.4	3	3
2.40	30	<input checked="" type="checkbox"/>	MWS0240X30DB	72.4	79.4	80.4	118.4	118	0.4	3	3
2.45	1	<input type="checkbox"/>	MWS0245SB	2.9	12.6	13.6	74.4	74	0.4	3	1
2.45	20	<input type="checkbox"/>	MWS0245X20DB	49.5	56.4	57.4	94.4	94	0.4	3	3
2.45	25	<input type="checkbox"/>	MWS0245X25DB	61.8	69.4	70.4	107.4	107	0.4	3	3
2.45	30	<input type="checkbox"/>	MWS0245X30DB	74.0	81.4	82.4	118.4	118	0.4	3	3
2.50	1	<input checked="" type="checkbox"/>	MWS0250SB	2.9	12.8	13.7	74.4	74	0.4	3	1
2.50	5	<input checked="" type="checkbox"/>	MWS0250LB	13.0	28.5	29.5	74.5	74	0.5	3	3
2.50	12	<input checked="" type="checkbox"/>	MWS0250XB	30.5	38.5	39.5	74.5	74	0.5	3	3
2.50	20	<input checked="" type="checkbox"/>	MWS0250X20DB	50.5	58.5	59.5	94.5	94	0.5	3	3
2.50	25	<input checked="" type="checkbox"/>	MWS0250X25DB	63.0	70.5	71.5	107.5	107	0.5	3	3
2.50	30	<input checked="" type="checkbox"/>	MWS0250X30DB	75.5	83.5	84.5	118.5	118	0.5	3	3
2.55	1	<input type="checkbox"/>	MWS0255SB	3.1	13.0	13.0	81.4	81	0.4	3	2
2.55	20	<input type="checkbox"/>	MWS0255X20DB	51.5	59.5	59.5	103.5	103	0.5	3	4
2.55	25	<input type="checkbox"/>	MWS0255X25DB	64.3	71.5	71.5	117.5	117	0.5	3	4
2.55	30	<input type="checkbox"/>	MWS0255X30DB	77.0	84.5	84.5	132.5	132	0.5	3	4
2.60	1	<input checked="" type="checkbox"/>	MWS0260SB	3.1	13.4	13.4	81.4	81	0.4	3	2
2.60	5	<input checked="" type="checkbox"/>	MWS0260LB	13.5	33.5	33.5	81.5	81	0.5	3	4
2.60	12	<input checked="" type="checkbox"/>	MWS0260XB	31.7	45.5	45.5	81.5	81	0.5	3	4
2.60	20	<input checked="" type="checkbox"/>	MWS0260X20DB	52.5	60.5	60.5	103.5	103	0.5	3	4
2.60	25	<input checked="" type="checkbox"/>	MWS0260X25DB	65.5	73.5	73.5	117.5	117	0.5	3	4
2.60	30	<input checked="" type="checkbox"/>	MWS0260X30DB	78.5	86.5	86.5	132.5	132	0.5	3	4
2.65	1	<input type="checkbox"/>	MWS0265SB	3.2	13.6	13.6	81.4	81	0.4	3	2
2.65	20	<input type="checkbox"/>	MWS0265X20DB	53.5	61.5	61.5	103.5	103	0.5	3	4
2.65	25	<input type="checkbox"/>	MWS0265X25DB	66.8	74.5	74.5	117.5	117	0.5	3	4

DC (mm)	Prof. do Furo (L/D)	VP15TF	Referência para Pedido	Dimensões (mm)							Tipo
				LU	LCF	LH	OAL	LF	PL	DCON	
2.65	30	<input type="checkbox"/>	MWS0265X30DB	80.0	87.5	87.5	132.5	132	0.5	3	4
2.70	1	<input checked="" type="checkbox"/>	MWS0270SB	3.2	13.8	13.8	81.4	81	0.4	3	2
2.70	5	<input checked="" type="checkbox"/>	MWS0270LB	14.0	33.5	33.5	81.5	81	0.5	3	4
2.70	12	<input checked="" type="checkbox"/>	MWS0270XB	32.9	45.5	45.5	81.5	81	0.5	3	4
2.70	20	<input checked="" type="checkbox"/>	MWS0270X20DB	54.5	62.5	62.5	103.5	103	0.5	3	4
2.70	25	<input checked="" type="checkbox"/>	MWS0270X25DB	68.0	76.5	76.5	117.5	117	0.5	3	4
2.70	30	<input checked="" type="checkbox"/>	MWS0270X30DB	81.5	89.5	89.5	132.5	132	0.5	3	4
2.75	1	<input type="checkbox"/>	MWS0275SB	3.3	14.0	14.0	81.4	81	0.4	3	2
2.75	20	<input type="checkbox"/>	MWS0275X20DB	55.5	63.5	63.5	103.5	103	0.5	3	4
2.75	25	<input type="checkbox"/>	MWS0275X25DB	69.3	77.5	77.5	117.5	117	0.5	3	4
2.75	30	<input type="checkbox"/>	MWS0275X30DB	83.0	91.5	91.5	132.5	132	0.5	3	4
2.80	1	<input checked="" type="checkbox"/>	MWS0280SB	3.3	14.4	14.4	81.4	81	0.4	3	2
2.80	5	<input checked="" type="checkbox"/>	MWS0280LB	14.5	33.5	33.5	81.5	81	0.5	3	4
2.80	12	<input checked="" type="checkbox"/>	MWS0280XB	34.1	45.5	45.5	81.5	81	0.5	3	4
2.80	20	<input checked="" type="checkbox"/>	MWS0280X20DB	56.5	64.5	64.5	103.5	103	0.5	3	4
2.80	25	<input checked="" type="checkbox"/>	MWS0280X25DB	70.5	78.5	78.5	117.5	117	0.5	3	4
2.80	30	<input checked="" type="checkbox"/>	MWS0280X30DB	84.5	92.5	92.5	132.5	132	0.5	3	4
2.85	1	<input type="checkbox"/>	MWS0285SB	3.4	14.6	14.6	81.4	81	0.4	3	2
2.85	20	<input type="checkbox"/>	MWS0285X20DB	57.5	66.5	66.5	103.5	103	0.5	3	4
2.85	25	<input type="checkbox"/>	MWS0285X25DB	71.8	80.5	80.5	117.5	117	0.5	3	4
2.85	30	<input type="checkbox"/>	MWS0285X30DB	86.0	94.5	94.5	132.5	132	0.5	3	4
2.90	1	<input checked="" type="checkbox"/>	MWS0290SB	3.4	14.9	14.9	81.5	81	0.5	3	2
2.90	5	<input checked="" type="checkbox"/>	MWS0290LB	15.0	33.5	33.5	81.5	81	0.5	3	4
2.90	12	<input checked="" type="checkbox"/>	MWS0290XB	35.3	45.5	45.5	81.5	81	0.5	3	4
2.90	20	<input checked="" type="checkbox"/>	MWS0290X20DB	58.5	67.5	67.5	103.5	103	0.5	3	4
2.90	25	<input checked="" type="checkbox"/>	MWS0290X25DB	73.0	81.5	81.5	117.5	117	0.5	3	4
2.90	30	<input checked="" type="checkbox"/>	MWS0290X30DB	87.5	96.5	96.5	132.5	132	0.5	3	4
2.95	1	<input type="checkbox"/>	MWS0295SB	3.5	15.1	15.1	81.5	81	0.5	3	2
2.95	20	<input type="checkbox"/>	MWS0295X20DB	59.5	68.5	68.5	103.5	103	0.5	3	4
2.95	25	<input type="checkbox"/>	MWS0295X25DB	74.3	83.5	83.5	117.5	117	0.5	3	4
2.95	30	<input type="checkbox"/>	MWS0295X30DB	89.0	97.5	97.5	132.5	132	0.5	3	4

Nota 1) Por favor entre em contato para qualquer geometria que não conste no catálogo (ex.: diâmetro e comprimento diferente.).

N

FURAÇÃO

● : Estoque mantido. □ : Sem estoque, produzido somente por pedido.

□ : Lote mínimo para produtos especiais:

① Menor que ø3 = Mínimo 10 ② Maior ou igual a ø3 e menor que ø10 = Mínimo 5

③ Maior ou igual a ø10 = Mínimo 3

CONDIÇÕES DE CORTE RECOMENDADAS

■ BROCA TIPO SB/LB/XB(L/D≤12)

Material	Aço Baixo Carbono ($\leq 180\text{HB}$)				Aço Carbono-Aço Liga (180—280HB)			
	ASTM A36, AISI 1010 etc				AISI 1045, AISI 4140 etc			
Diâm. da Broca DC (mm)	Vel. de Corte (m/min)	Rotação (min^{-1})	Taxa de Avanço (mín.—máx.) (mm/rot)	Avanço de Mesa (mm/min)	Vel. de Corte (m/min)	Rotação (min^{-1})	Taxa de Avanço (mín.—máx.) (mm/rot)	Avanço de Mesa (mm/min)
0.5	40	25400	0.01 (0.005—0.015)	250	40	25400	0.01 (0.005—0.015)	250
0.63	40	20200	0.014 (0.008—0.020)	280	40	20200	0.014 (0.008—0.020)	280
0.8	45	17900	0.028 (0.016—0.040)	500	45	17900	0.028 (0.016—0.040)	500
1.0	50	15900	0.035 (0.020—0.050)	555	50	15900	0.035 (0.020—0.050)	555
1.2	50	13200	0.045 (0.030—0.060)	590	50	13200	0.045 (0.030—0.060)	590
1.6	50	9900	0.055 (0.035—0.080)	540	50	9900	0.055 (0.035—0.080)	540
2.0	50	7900	0.07 (0.040—0.100)	550	50	7900	0.07 (0.040—0.100)	550
2.5	60	7600	0.085 (0.050—0.125)	645	60	7600	0.085 (0.050—0.125)	645
2.9	60	7600	0.085 (0.050—0.125)	645	60	7600	0.085 (0.050—0.125)	645

Material	Aço Carbono-Aço Liga (280—350HB)				Aço Inoxidável Austenítico ($\leq 200\text{HB}$)			
	AISI 4340 etc				AISI 304, AISI 316 etc			
Diâm. da Broca DC (mm)	Vel. de Corte (m/min)	Rotação (min^{-1})	Taxa de Avanço (mín.—máx.) (mm/rot)	Avanço de Mesa (mm/min)	Vel. de Corte (m/min)	Rotação (min^{-1})	Taxa de Avanço (mín.—máx.) (mm/rot)	Avanço de Mesa (mm/min)
0.5	30	19000	0.01 (0.005—0.015)	190	20	12700	0.008 (0.005—0.010)	100
0.63	30	15100	0.014 (0.008—0.020)	210	20	10100	0.01 (0.008—0.013)	100
0.8	35	13900	0.028 (0.016—0.040)	385	25	9900	0.02 (0.016—0.026)	195
1.0	40	12700	0.035 (0.020—0.050)	440	30	9500	0.03 (0.020—0.044)	285
1.2	40	10600	0.045 (0.030—0.060)	475	30	7900	0.04 (0.030—0.053)	315
1.6	40	7900	0.055 (0.035—0.080)	430	30	5900	0.05 (0.035—0.070)	295
2.0	40	6300	0.07 (0.040—0.100)	440	30	4700	0.06 (0.040—0.080)	280
2.5	50	6300	0.085 (0.050—0.125)	535	40	5000	0.075 (0.050—0.100)	375
2.9	50	6300	0.085 (0.050—0.125)	535	40	5000	0.075 (0.050—0.100)	375

CONDIÇÕES DE CORTE RECOMENDADAS

■ BROCA TIPO SB/LB/XB(L/D≤12)

Material	Ferro Fundido Cinzento ($\leq 350\text{MPa}$)				Ferro Fundido Nodular ($\leq 450\text{MPa}$)			
	DIN GG-30 etc				DIN GGG-45 etc			
Diâm. da Broca DC (mm)	Vel. de Corte (m/min)	Rotação (min^{-1})	Taxa de Avanço (mín.—máx.) (mm/rot)	Avanço de Mesa (mm/min)	Vel. de Corte (m/min)	Rotação (min^{-1})	Taxa de Avanço (mín.—máx.) (mm/rot)	Avanço de Mesa (mm/min)
0.5	40	25400	0.01 (0.005—0.015)	250	30	19000	0.01 (0.005—0.015)	190
0.63	40	20200	0.014 (0.008—0.020)	280	30	15100	0.014 (0.008—0.020)	210
0.8	45	17900	0.028 (0.016—0.040)	500	35	13900	0.028 (0.016—0.040)	385
1.0	50	15900	0.035 (0.020—0.050)	555	40	12700	0.035 (0.020—0.050)	440
1.2	50	13200	0.045 (0.030—0.060)	590	40	10600	0.045 (0.030—0.060)	475
1.6	50	9900	0.055 (0.035—0.080)	540	40	7900	0.055 (0.035—0.080)	430
2.0	50	7900	0.07 (0.040—0.100)	550	40	6300	0.07 (0.040—0.100)	440
2.5	60	7600	0.085 (0.050—0.125)	645	50	6300	0.085 (0.050—0.125)	535
2.9	60	7600	0.085 (0.050—0.125)	645	50	6300	0.085 (0.050—0.125)	535

Material	Ligas de Alumínio (Si<5%)				Ligas Resistentes ao Calor			
	A6061, A7075 etc				Inconel718			
Diâm. da Broca DC (mm)	Vel. de Corte (m/min)	Rotação (min^{-1})	Taxa de Avanço (mín.—máx.) (mm/rot)	Avanço de Mesa (mm/min)	Vel. de Corte (m/min)	Rotação (min^{-1})	Taxa de Avanço (mín.—máx.) (mm/rot)	Avanço de Mesa (mm/min)
0.5	40	25400	0.014 (0.008—0.020)	355	10	6300	0.006 (0.004—0.008)	35
0.63	40	20200	0.02 (0.012—0.030)	400	10	5000	0.008 (0.007—0.010)	40
0.8	45	17900	0.036 (0.024—0.050)	640	10	3900	0.016 (0.013—0.021)	60
1.0	60	19000	0.05 (0.030—0.075)	950	10	3100	0.02 (0.016—0.027)	60
1.2	70	18500	0.065 (0.045—0.090)	1200	10	2600	0.025 (0.022—0.032)	65
1.6	80	15900	0.085 (0.053—0.120)	1350	10	1900	0.03 (0.025—0.040)	55
2.0	90	14300	0.105 (0.060—0.150)	1500	15	2300	0.04 (0.032—0.050)	90
2.5	100	12700	0.135 (0.075—0.200)	1710	15	1900	0.05 (0.040—0.060)	95
2.9	100	12700	0.135 (0.075—0.200)	1710	15	1900	0.05 (0.040—0.060)	95

■ BROCA TIPO DB(L/D>12)

Material	Aço Baixo Carbono (≤ 180 HB)				Aço Carbono-Aço Liga (180–280HB)			
	ASTM A36, AISI 1010 etc				AISI 1045, AISI 4140 etc			
Diâm. da Broca DC (mm)	Vel. de Corte (m/min)	Rotação (min ⁻¹)	Taxa de Avanço (mín.—máx.) (mm/rot)	Avanço de Mesa (mm/min)	Vel. de Corte (m/min)	Rotação (min ⁻¹)	Taxa de Avanço (mín.—máx.) (mm/rot)	Avanço de Mesa (mm/min)
1.0	50	15900	0.02 (0.010–0.030)	320	40	12700	0.02 (0.010–0.030)	255
1.2	50	13200	0.025 (0.016–0.037)	330	40	10600	0.025 (0.016–0.037)	265
1.6	50	9900	0.055 (0.032–0.080)	545	40	7900	0.055 (0.032–0.080)	435
2.0	60	9500	0.07 (0.040–0.100)	665	50	7900	0.07 (0.040–0.100)	550
2.5	60	7600	0.09 (0.063–0.125)	685	50	6300	0.09 (0.055–0.125)	565
2.9	60	7600	0.09 (0.063–0.125)	685	50	6300	0.09 (0.055–0.125)	565

Material	Aço Carbono-Aço Liga (280–350HB)				Aço Inoxidável Austenítico (≤ 200 HB)			
	AISI 4340 etc				AISI 304, AISI 316 etc			
Diâm. da Broca DC (mm)	Vel. de Corte (m/min)	Rotação (min ⁻¹)	Taxa de Avanço (mín.—máx.) (mm/rot)	Avanço de Mesa (mm/min)	Vel. de Corte (m/min)	Rotação (min ⁻¹)	Taxa de Avanço (mín.—máx.) (mm/rot)	Avanço de Mesa (mm/min)
1.0	30	9500	0.015 (0.009–0.028)	140	30	9500	0.015 (0.009–0.028)	140
1.2	30	7900	0.02 (0.013–0.035)	160	30	7900	0.02 (0.013–0.035)	155
1.6	30	5900	0.05 (0.027–0.076)	295	30	5900	0.045 (0.025–0.065)	265
2.0	50	7900	0.065 (0.034–0.095)	515	30	4700	0.055 (0.030–0.080)	255
2.5	50	6300	0.08 (0.045–0.120)	505	40	5000	0.06 (0.035–0.085)	300
2.9	50	6300	0.08 (0.045–0.120)	505	40	5000	0.06 (0.035–0.085)	300

Material	Ferro Fundido Cinzento (≤ 350 MPa)				Ferro Fundido Nodular (≤ 450 MPa)			
	DIN GG-30 etc				DIN GGG-45 etc			
Diâm. da Broca DC (mm)	Vel. de Corte (m/min)	Rotação (min ⁻¹)	Taxa de Avanço (mín.—máx.) (mm/rot)	Avanço de Mesa (mm/min)	Vel. de Corte (m/min)	Rotação (min ⁻¹)	Taxa de Avanço (mín.—máx.) (mm/rot)	Avanço de Mesa (mm/min)
1.0	40	12700	0.02 (0.010–0.030)	255	30	9500	0.015 (0.009–0.028)	140
1.2	40	10600	0.025 (0.016–0.037)	265	30	7900	0.02 (0.013–0.035)	160
1.6	40	7900	0.055 (0.032–0.080)	435	30	5900	0.05 (0.027–0.076)	295
2.0	50	7900	0.07 (0.040–0.100)	550	50	7900	0.065 (0.034–0.095)	515
2.5	50	6300	0.09 (0.055–0.125)	565	50	6300	0.08 (0.045–0.120)	505
2.9	50	6300	0.09 (0.055–0.125)	565	50	6300	0.08 (0.045–0.120)	505

Material	Ligas de Alumínio (Si<5%)				Ligas Resistentes ao Calor			
	A6061, A7075 etc				Inconel718			
Diâm. da Broca DC (mm)	Vel. de Corte (m/min)	Rotação (min ⁻¹)	Taxa de Avanço (mín.—máx.) (mm/rot)	Avanço de Mesa (mm/min)	Vel. de Corte (m/min)	Rotação (min ⁻¹)	Taxa de Avanço (mín.—máx.) (mm/rot)	Avanço de Mesa (mm/min)
1.0	50	15900	0.05 (0.030–0.075)	795	10	3100	0.02 (0.016–0.027)	60
1.2	60	15900	0.065 (0.045–0.090)	1035	10	2600	0.025 (0.022–0.032)	65
1.6	70	13900	0.085 (0.053–0.120)	1180	10	1900	0.03 (0.025–0.040)	55
2.0	80	12700	0.105 (0.060–0.150)	1335	15	2300	0.04 (0.032–0.050)	90
2.5	90	11400	0.135 (0.075–0.200)	1540	15	1900	0.05 (0.040–0.060)	95
2.9	90	11400	0.135 (0.075–0.200)	1540	15	1900	0.05 (0.040–0.060)	95

N

FURAÇÃO

FURAÇÃO(METAL DURO INTEIRIÇO)

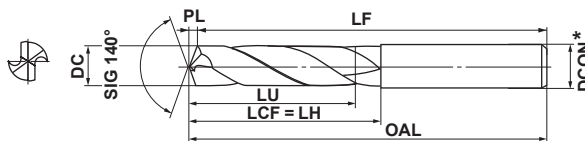
MZE

● O canal amplo proporciona excelente expulsão de cavacos.

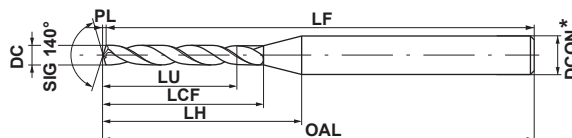


P	M	K	N	S	H
Aço	Aço Inoxidável	Ferro Fundido	Metais Não Ferrosos	Ligas Resist. ao Calor	Aço Endurecido

Refrigeração Externa



Tipo 1



Tipo 2

* DCON < 2 : h6
DCON ≥ 2 : h8

	DC < 2	2 ≤ DC ≤ 3	3 < DC ≤ 6	6 < DC ≤ 10	10 < DC ≤ 18	18 < DC ≤ 20
	$0^{-0.014}$	$0^{-0.014}$	$0^{-0.018}$	$0^{-0.022}$	$0^{-0.027}$	$0^{-0.033}$
	2 ≤ DCON ≤ 3	3 < DCON ≤ 6	6 < DCON ≤ 10	10 < DCON ≤ 18	18 < DCON ≤ 20	
	$0^{-0.014}$	$0^{-0.018}$	$0^{-0.022}$	$0^{-0.027}$	$0^{-0.033}$	

Nota 1) Para usinagem de furo de guia, use a broca MZE-SA.

DC (mm)	Prof. do Furo (L/D)	VP15TF	Referência para Pedido	Dimensões (mm)							Tipo
				LU	LCF	LH	OAL	LF	PL	DCON	
1.0	2	●	MZE0100SB	2.2	6.2	8.2	55.2	55	0.2	2.0	2
1.1	2	●	MZE0110SB	2.4	7.2	9.2	55.2	55	0.2	2.0	2
1.2	2	●	MZE0120SB	2.6	8.2	9.2	55.2	55	0.2	2.0	2
1.3	2	●	MZE0130SB	2.8	8.2	9.2	55.2	55	0.2	2.0	2
1.4	2	●	MZE0140SB	3.1	9.3	10.3	55.3	55	0.3	2.0	2
1.5	2	●	MZE0150SB	3.3	9.3	10.3	55.3	55	0.3	2.0	2
1.6	2	●	MZE0160SB	3.5	10.3	10.3	55.3	55	0.3	2.0	1
1.7	2	●	MZE0170SB	3.7	10.3	10.3	55.3	55	0.3	2.0	1
1.8	2	●	MZE0180SB	3.9	11.3	11.3	55.3	55	0.3	2.0	1
1.9	2	●	MZE0190SB	4.1	11.3	11.3	55.3	55	0.3	2.0	1
2.0	2	●	MZE0200SA	4.4	12.4	12.4	55.4	55	0.4	2.0	1
2.0	3	●	MZE0200MA	6.4	16.4	16.4	55.4	55	0.4	2.0	1
2.1	2	●	MZE0210SA	4.6	12.4	12.4	55.4	55	0.4	2.1	1
2.1	3	●	MZE0210MA	6.7	16.4	16.4	55.4	55	0.4	2.1	1
2.2	2	●	MZE0220SA	4.8	13.4	13.4	55.4	55	0.4	2.2	1
2.2	3	●	MZE0220MA	7.0	18.4	18.4	55.4	55	0.4	2.2	1
2.3	2	●	MZE0230SA	5.0	13.4	13.4	55.4	55	0.4	2.3	1
2.3	3	●	MZE0230MA	7.3	18.4	18.4	55.4	55	0.4	2.3	1
2.4	2	●	MZE0240SA	5.2	16.4	16.4	55.4	55	0.4	2.4	1
2.4	3	●	MZE0240MA	7.6	20.4	20.4	55.4	55	0.4	2.4	1
2.5	2	●	MZE0250SA	5.5	16.5	16.5	55.5	55	0.5	2.5	1
2.5	3	●	MZE0250MA	8.0	20.5	20.5	55.5	55	0.5	2.5	1
2.6	2	●	MZE0260SA	5.7	16.5	16.5	55.5	55	0.5	2.6	1
2.6	3	●	MZE0260MA	8.3	20.5	20.5	55.5	55	0.5	2.6	1
2.7	2	●	MZE0270SA	5.9	16.5	16.5	55.5	55	0.5	2.7	1
2.7	3	●	MZE0270MA	8.6	20.5	20.5	55.5	55	0.5	2.7	1

DC (mm)	Prof. do Furo (L/D)	VP15TF	Referência para Pedido	Dimensões (mm)							Tipo
				LU	LCF	LH	OAL	LF	PL	DCON	
2.8	2	●	MZE0280SA	6.1	16.5	16.5	55.5	55	0.5	2.8	1
2.8	3	●	MZE0280MA	8.9	21.5	21.5	60.5	60	0.5	2.8	1
2.9	2	●	MZE0290SA	6.3	16.5	16.5	55.5	55	0.5	2.9	1
2.9	3	●	MZE0290MA	9.2	21.5	21.5	60.5	60	0.5	2.9	1
3.0	2	●	MZE0300SA	6.5	16.5	16.5	55.5	55	0.5	3.0	1
3.0	3	●	MZE0300MA	9.5	21.5	21.5	60.5	60	0.5	3.0	1
3.1	2	●	MZE0310SA	6.8	18.6	18.6	55.6	55	0.6	3.1	1
3.1	3	●	MZE0310MA	9.9	24.6	24.6	60.6	60	0.6	3.1	1
3.2	2	●	MZE0320SA	7.0	18.6	18.6	55.6	55	0.6	3.2	1
3.2	3	●	MZE0320MA	10.2	24.6	24.6	60.6	60	0.6	3.2	1
3.3	2	●	MZE0330SA	7.2	18.6	18.6	55.6	55	0.6	3.3	1
3.3	3	●	MZE0330MA	10.5	24.6	24.6	60.6	60	0.6	3.3	1
3.4	2	●	MZE0340SA	7.4	20.6	20.6	55.6	55	0.6	3.4	1
3.4	3	●	MZE0340MA	10.8	24.6	24.6	60.6	60	0.6	3.4	1
3.5	2	●	MZE0350SA	7.6	20.6	20.6	55.6	55	0.6	3.5	1
3.5	3	●	MZE0350MA	11.1	24.6	24.6	60.6	60	0.6	3.5	1
3.6	2	●	MZE0360SA	7.9	20.7	20.7	55.7	55	0.7	3.6	1
3.6	3	●	MZE0360MA	11.5	27.7	27.7	60.7	60	0.7	3.6	1
3.7	2	●	MZE0370SA	8.1	20.7	20.7	55.7	55	0.7	3.7	1
3.7	3	●	MZE0370MA	11.8	27.7	27.7	60.7	60	0.7	3.7	1
3.8	2	●	MZE0380SA	8.3	22.7	22.7	55.7	55	0.7	3.8	1
3.8	3	●	MZE0380MA	12.1	27.7	27.7	60.7	60	0.7	3.8	1
3.9	2	●	MZE0390SA	8.5	22.7	22.7	55.7	55	0.7	3.9	1
3.9	3	●	MZE0390MA	12.4	27.7	27.7	60.7	60	0.7	3.9	1
4.0	2	●	MZE0400SA	8.7	22.7	22.7	55.7	55	0.7	4.0	1
4.0	3	●	MZE0400MA	12.7	27.7	27.7	60.7	60	0.7	4.0	1

Nota 1) Por favor entre em contato para qualquer geometria que não conste no catálogo (ex.: diâmetro e comprimento diferente.).

● : Estoque mantido.

DC (mm)	Prof. do Furo (L/D)	VP15TF	Referência para Pedido	Dimensões (mm)							Tipo
				LU	LCF	LH	OAL	LF	PL	DCON	
4.1	2	●	MZE0410SA	8.9	22.7	22.7	55.7	55	0.7	4.1	1
4.1	3	●	MZE0410MA	13.0	29.7	29.7	63.7	63	0.7	4.1	1
4.2	2	●	MZE0420SA	9.2	22.8	22.8	55.8	55	0.8	4.2	1
4.2	3	●	MZE0420MA	13.4	29.8	29.8	63.8	63	0.8	4.2	1
4.3	2	●	MZE0430SA	9.4	24.8	24.8	58.8	58	0.8	4.3	1
4.3	3	●	MZE0430MA	13.7	29.8	29.8	63.8	63	0.8	4.3	1
4.4	2	●	MZE0440SA	9.6	24.8	24.8	58.8	58	0.8	4.4	1
4.4	3	●	MZE0440MA	14.0	29.8	29.8	63.8	63	0.8	4.4	1
4.5	2	●	MZE0450SA	9.8	24.8	24.8	58.8	58	0.8	4.5	1
4.5	3	●	MZE0450MA	14.3	29.8	29.8	63.8	63	0.8	4.5	1
4.6	2	●	MZE0460SA	10.0	24.8	24.8	58.8	58	0.8	4.6	1
4.6	3	●	MZE0460MA	14.6	32.8	32.8	68.8	68	0.8	4.6	1
4.7	2	●	MZE0470SA	10.3	24.9	24.9	58.9	58	0.9	4.7	1
4.7	3	●	MZE0470MA	15.0	32.9	32.9	68.9	68	0.9	4.7	1
4.8	2	●	MZE0480SA	10.5	26.9	26.9	62.9	62	0.9	4.8	1
4.8	3	●	MZE0480MA	15.3	32.9	32.9	68.9	68	0.9	4.8	1
4.9	2	●	MZE0490SA	10.7	26.9	26.9	62.9	62	0.9	4.9	1
4.9	3	●	MZE0490MA	15.6	32.9	32.9	68.9	68	0.9	4.9	1
5.0	2	●	MZE0500SA	10.9	26.9	26.9	62.9	62	0.9	5.0	1
5.0	3	●	MZE0500MA	15.9	32.9	32.9	68.9	68	0.9	5.0	1
5.1	2	●	MZE0510SA	11.1	26.9	26.9	62.9	62	0.9	5.1	1
5.1	3	●	MZE0510MA	16.2	34.9	34.9	72.9	72	0.9	5.1	1
5.2	2	●	MZE0520SA	11.3	26.9	26.9	62.9	62	0.9	5.2	1
5.2	3	●	MZE0520MA	16.5	34.9	34.9	72.9	72	0.9	5.2	1
5.3	2	●	MZE0530SA	11.6	27.0	27.0	63.0	62	1.0	5.3	1
5.3	3	●	MZE0530MA	16.9	35.0	35.0	73.0	72	1.0	5.3	1
5.4	2	●	MZE0540SA	11.8	29.0	29.0	67.0	66	1.0	5.4	1
5.4	3	●	MZE0540MA	17.2	35.0	35.0	73.0	72	1.0	5.4	1
5.5	2	●	MZE0550SA	12.0	29.0	29.0	67.0	66	1.0	5.5	1
5.5	3	●	MZE0550MA	17.5	35.0	35.0	73.0	72	1.0	5.5	1
5.6	2	●	MZE0560SA	12.2	29.0	29.0	67.0	66	1.0	5.6	1
5.6	3	●	MZE0560MA	17.8	37.0	37.0	75.0	74	1.0	5.6	1
5.7	2	●	MZE0570SA	12.4	29.0	29.0	67.0	66	1.0	5.7	1
5.7	3	●	MZE0570MA	18.1	37.0	37.0	75.0	74	1.0	5.7	1
5.8	2	●	MZE0580SA	12.7	29.1	29.1	67.1	66	1.1	5.8	1
5.8	3	●	MZE0580MA	18.5	37.1	37.1	75.1	74	1.1	5.8	1
5.9	2	●	MZE0590SA	12.9	29.1	29.1	67.1	66	1.1	5.9	1
5.9	3	●	MZE0590MA	18.8	37.1	37.1	75.1	74	1.1	5.9	1
6.0	2	●	MZE0600SA	13.1	29.1	29.1	67.1	66	1.1	6.0	1
6.0	3	●	MZE0600MA	19.1	42.1	42.1	82.1	81	1.1	6.0	1
6.1	2	●	MZE0610SA	13.3	32.1	32.1	71.1	70	1.1	6.1	1
6.1	3	●	MZE0610MA	19.4	42.1	42.1	82.1	81	1.1	6.1	1
6.2	2	●	MZE0620SA	13.5	32.1	32.1	71.1	70	1.1	6.2	1
6.2	3	●	MZE0620MA	19.7	42.1	42.1	82.1	81	1.1	6.2	1
6.3	2	●	MZE0630SA	13.7	32.1	32.1	71.1	70	1.1	6.3	1
6.3	3	●	MZE0630MA	20.0	42.1	42.1	82.1	81	1.1	6.3	1
6.4	2	●	MZE0640SA	14.0	32.2	32.2	71.2	70	1.2	6.4	1
6.4	3	●	MZE0640MA	20.4	42.2	42.2	82.2	81	1.2	6.4	1

DC (mm)	Prof. do Furo (L/D)	VP15TF	Referência para Pedido	Dimensões (mm)							Tipo
				LU	LCF	LH	OAL	LF	PL	DCON	
6.5	2	●	MZE0650SA	14.2	32.2	32.2	71.2	70	1.2	6.5	1
6.5	3	●	MZE0650MA	20.7	42.2	42.2	82.2	81	1.2	6.5	1
6.6	2	●	MZE0660SA	14.4	32.2	32.2	71.2	70	1.2	6.6	1
6.6	3	●	MZE0660MA	21.0	44.2	44.2	84.2	83	1.2	6.6	1
6.7	2	●	MZE0670SA	14.6	32.2	32.2	71.2	70	1.2	6.7	1
6.7	3	●	MZE0670MA	21.3	44.2	44.2	84.2	83	1.2	6.7	1
6.8	2	●	MZE0680SA	14.8	35.2	35.2	75.2	74	1.2	6.8	1
6.8	3	●	MZE0680MA	21.6	44.2	44.2	84.2	83	1.2	6.8	1
6.9	2	●	MZE0690SA	15.1	35.3	35.3	75.3	74	1.3	6.9	1
6.9	3	●	MZE0690MA	22.0	44.3	44.3	84.3	83	1.3	6.9	1
7.0	2	●	MZE0700SA	15.3	35.3	35.3	75.3	74	1.3	7.0	1
7.0	3	●	MZE0700MA	22.3	44.3	44.3	84.3	83	1.3	7.0	1
7.1	2	●	MZE0710SA	15.5	35.3	35.3	75.3	74	1.3	7.1	1
7.1	3	●	MZE0710MA	22.6	46.3	46.3	88.3	87	1.3	7.1	1
7.2	2	●	MZE0720SA	15.7	35.3	35.3	75.3	74	1.3	7.2	1
7.2	3	●	MZE0720MA	22.9	46.3	46.3	88.3	87	1.3	7.2	1
7.3	2	●	MZE0730SA	15.9	35.3	35.3	75.3	74	1.3	7.3	1
7.3	3	●	MZE0730MA	23.2	46.3	46.3	88.3	87	1.3	7.3	1
7.4	2	●	MZE0740SA	16.1	35.3	35.3	75.3	74	1.3	7.4	1
7.4	3	●	MZE0740MA	23.5	46.3	46.3	88.3	87	1.3	7.4	1
7.5	2	●	MZE0750SA	16.4	35.4	35.4	75.4	74	1.4	7.5	1
7.5	3	●	MZE0750MA	23.9	46.4	46.4	88.4	87	1.4	7.5	1
7.6	2	●	MZE0760SA	16.6	38.4	38.4	80.4	79	1.4	7.6	1
7.6	3	●	MZE0760MA	24.2	49.4	49.4	91.4	90	1.4	7.6	1
7.7	2	●	MZE0770SA	16.8	38.4	38.4	80.4	79	1.4	7.7	1
7.7	3	●	MZE0770MA	24.5	49.4	49.4	91.4	90	1.4	7.7	1
7.8	2	●	MZE0780SA	17.0	38.4	38.4	80.4	79	1.4	7.8	1
7.8	3	●	MZE0780MA	24.8	49.4	49.4	91.4	90	1.4	7.8	1
7.9	2	●	MZE0790SA	17.2	38.4	38.4	80.4	79	1.4	7.9	1
7.9	3	●	MZE0790MA	25.1	49.4	49.4	91.4	90	1.4	7.9	1
8.0	2	●	MZE0800SA	17.5	38.5	38.5	80.5	79	1.5	8.0	1
8.0	3	●	MZE0800MA	25.5	49.5	49.5	91.5	90	1.5	8.0	1
8.1	2	●	MZE0810SA	17.7	38.5	38.5	80.5	79	1.5	8.1	1
8.1	3	●	MZE0810MA	25.8	54.5	54.5	97.5	96	1.5	8.1	1
8.2	2	●	MZE0820SA	17.9	38.5	38.5	80.5	79	1.5	8.2	1
8.2	3	●	MZE0820MA	26.1	54.5	54.5	97.5	96	1.5	8.2	1
8.3	2	●	MZE0830SA	18.1	38.5	38.5	80.5	79	1.5	8.3	1
8.3	3	●	MZE0830MA	26.4	54.5	54.5	97.5	96	1.5	8.3	1
8.4	2	●	MZE0840SA	18.3	38.5	38.5	80.5	79	1.5	8.4	1
8.4	3	●	MZE0840MA	26.7	54.5	54.5	97.5	96	1.5	8.4	1
8.5	2	●	MZE0850SA	18.5	38.5	38.5	80.5	79	1.5	8.5	1
8.5	3	●	MZE0850MA	27.0	54.5	54.5	97.5	96	1.5	8.5	1
8.6	2	●	MZE0860SA	18.8	41.6	41.6	85.6	84	1.6	8.6	1
8.6	3	●	MZE0860MA	27.4	56.6	56.6	99.6	98	1.6	8.6	1
8.7	2	●	MZE0870SA	19.0	41.6	41.6	85.6	84	1.6	8.7	1
8.7	3	●	MZE0870MA	27.7	56.6	56.6	99.6	98	1.6	8.7	1
8.8	2	●	MZE0880SA	19.2	41.6	41.6	85.6	84	1.6	8.8	1
8.8	3	●	MZE0880MA	28.0	56.6	56.6	99.6	98	1.6	8.8	1

FURAÇÃO(METAL DURO INTEIRIÇO)

MZE

METAL DURO

DC (mm)	Prof. do Furo (L/D)	VP15TF	Referência para Pedido	Dimensões (mm)							Tipo
				LU	LCF	LH	OAL	LF	PL	DCON	
8.9	2	●	MZE0890SA	19.4	41.6	41.6	85.6	84	1.6	8.9	1
8.9	3	●	MZE0890MA	28.3	56.6	56.6	99.6	98	1.6	8.9	1
9.0	2	●	MZE0900SA	19.6	41.6	41.6	85.6	84	1.6	9.0	1
9.0	3	●	MZE0900MA	28.6	56.6	56.6	99.6	98	1.6	9.0	1
9.1	2	●	MZE0910SA	19.9	41.7	41.7	85.7	84	1.7	9.1	1
9.1	3	●	MZE0910MA	29.0	59.7	59.7	103.7	102	1.7	9.1	1
9.2	2	●	MZE0920SA	20.1	41.7	41.7	85.7	84	1.7	9.2	1
9.2	3	●	MZE0920MA	29.3	59.7	59.7	103.7	102	1.7	9.2	1
9.3	2	●	MZE0930SA	20.3	41.7	41.7	85.7	84	1.7	9.3	1
9.3	3	●	MZE0930MA	29.6	59.7	59.7	103.7	102	1.7	9.3	1
9.4	2	●	MZE0940SA	20.5	41.7	41.7	85.7	84	1.7	9.4	1
9.4	3	●	MZE0940MA	29.9	59.7	59.7	103.7	102	1.7	9.4	1
9.5	2	●	MZE0950SA	20.7	41.7	41.7	85.7	84	1.7	9.5	1
9.5	3	●	MZE0950MA	30.2	59.7	59.7	103.7	102	1.7	9.5	1
9.6	2	●	MZE0960SA	20.9	44.7	44.7	90.7	89	1.7	9.6	1
9.6	3	●	MZE0960MA	30.5	61.7	61.7	106.7	105	1.7	9.6	1
9.7	2	●	MZE0970SA	21.2	44.8	44.8	90.8	89	1.8	9.7	1
9.7	3	●	MZE0970MA	30.9	61.8	61.8	106.8	105	1.8	9.7	1
9.8	2	●	MZE0980SA	21.4	44.8	44.8	90.8	89	1.8	9.8	1
9.8	3	●	MZE0980MA	31.2	61.8	61.8	106.8	105	1.8	9.8	1
9.9	2	●	MZE0990SA	21.6	44.8	44.8	90.8	89	1.8	9.9	1
9.9	3	●	MZE0990MA	31.5	61.8	61.8	106.8	105	1.8	9.9	1
10.0	2	●	MZE1000SA	21.8	44.8	44.8	90.8	89	1.8	10.0	1
10.0	3	●	MZE1000MA	31.8	61.8	61.8	106.8	105	1.8	10.0	1
10.1	2	●	MZE1010SA	22.0	44.8	44.8	90.8	89	1.8	10.1	1
10.1	3	●	MZE1010MA	32.1	67.8	67.8	113.8	112	1.8	10.1	1
10.2	2	●	MZE1020SA	22.3	44.9	44.9	90.9	89	1.9	10.2	1
10.2	3	●	MZE1020MA	32.5	67.9	67.9	113.9	112	1.9	10.2	1
10.3	2	●	MZE1030SA	22.5	44.9	44.9	90.9	89	1.9	10.3	1
10.3	3	●	MZE1030MA	32.8	67.9	67.9	113.9	112	1.9	10.3	1
10.4	2	●	MZE1040SA	22.7	44.9	44.9	90.9	89	1.9	10.4	1
10.4	3	●	MZE1040MA	33.1	67.9	67.9	113.9	112	1.9	10.4	1
10.5	2	●	MZE1050SA	22.9	44.9	44.9	90.9	89	1.9	10.5	1
10.5	3	●	MZE1050MA	33.4	67.9	67.9	113.9	112	1.9	10.5	1
10.6	2	●	MZE1060SA	23.1	44.9	44.9	90.9	89	1.9	10.6	1
10.6	3	●	MZE1060MA	33.7	69.9	69.9	115.9	114	1.9	10.6	1
10.7	2	●	MZE1070SA	23.3	48.9	48.9	96.9	95	1.9	10.7	1
10.7	3	●	MZE1070MA	34.0	69.9	69.9	115.9	114	1.9	10.7	1
10.8	2	●	MZE1080SA	23.6	49.0	49.0	97.0	95	2.0	10.8	1
10.8	3	●	MZE1080MA	34.4	70.0	70.0	116.0	114	2.0	10.8	1
10.9	2	●	MZE1090SA	23.8	49.0	49.0	97.0	95	2.0	10.9	1
10.9	3	●	MZE1090MA	34.7	70.0	70.0	116.0	114	2.0	10.9	1
11.0	2	●	MZE1100SA	24.0	49.0	49.0	97.0	95	2.0	11.0	1
11.0	3	●	MZE1100MA	35.0	70.0	70.0	116.0	114	2.0	11.0	1
11.1	2	●	MZE1110SA	24.2	49.0	49.0	97.0	95	2.0	11.1	1
11.1	3	●	MZE1110MA	35.3	73.0	73.0	120.0	118	2.0	11.1	1
11.2	2	●	MZE1120SA	24.4	49.0	49.0	97.0	95	2.0	11.2	1
11.2	3	●	MZE1120MA	35.6	73.0	73.0	120.0	118	2.0	11.2	1

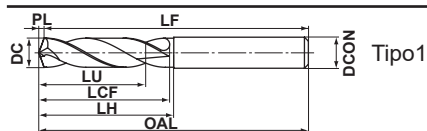
DC (mm)	Prof. do Furo (L/D)	VP15TF	Referência para Pedido	Dimensões (mm)							Tipo
				LU	LCF	LH	OAL	LF	PL	DCON	
11.3	2	●	MZE1130SA	24.7	49.1	49.1	97.1	95	2.1	11.3	1
11.3	3	●	MZE1130MA	36.0	73.1	73.1	120.1	118	2.1	11.3	1
11.4	2	●	MZE1140SA	24.9	49.1	49.1	97.1	95	2.1	11.4	1
11.4	3	●	MZE1140MA	36.3	73.1	73.1	120.1	118	2.1	11.4	1
11.5	2	●	MZE1150SA	25.1	49.1	49.1	97.1	95	2.1	11.5	1
11.5	3	●	MZE1150MA	36.6	73.1	73.1	120.1	118	2.1	11.5	1
11.6	2	●	MZE1160SA	25.3	49.1	49.1	97.1	95	2.1	11.6	1
11.6	3	●	MZE1160MA	36.9	75.1	75.1	123.1	121	2.1	11.6	1
11.7	2	●	MZE1170SA	25.5	49.1	49.1	97.1	95	2.1	11.7	1
11.7	3	●	MZE1170MA	37.2	75.1	75.1	123.1	121	2.1	11.7	1
11.8	2	●	MZE1180SA	25.7	49.1	49.1	97.1	95	2.1	11.8	1
11.8	3	●	MZE1180MA	37.5	75.1	75.1	123.1	121	2.1	11.8	1
11.9	2	●	MZE1190SA	26.0	53.2	53.2	104.2	102	2.2	11.9	1
11.9	3	●	MZE1190MA	37.9	75.2	75.2	123.2	121	2.2	11.9	1
12.0	2	●	MZE1200SA	26.2	53.2	53.2	104.2	102	2.2	12.0	1
12.0	3	●	MZE1200MA	38.2	75.2	75.2	123.2	121	2.2	12.0	1
12.1	2	●	MZE1210SA	26.4	53.2	53.2	104.2	102	2.2	12.1	1
12.1	3	●	MZE1210MA	38.5	78.2	78.2	137.2	135	2.2	12.1	1
12.2	2	●	MZE1220SA	26.6	53.2	53.2	104.2	102	2.2	12.2	1
12.2	3	●	MZE1220MA	38.8	78.2	78.2	137.2	135	2.2	12.2	1
12.3	2	●	MZE1230SA	26.8	53.2	53.2	104.2	102	2.2	12.3	1
12.3	3	●	MZE1230MA	39.1	78.2	78.2	137.2	135	2.2	12.3	1
12.4	2	●	MZE1240SA	27.1	53.3	53.3	104.3	102	2.3	12.4	1
12.4	3	●	MZE1240MA	39.5	78.3	78.3	137.3	135	2.3	12.4	1
12.5	2	●	MZE1250SA	27.3	53.3	53.3	104.3	102	2.3	12.5	1
12.5	3	●	MZE1250MA	39.8	78.3	78.3	137.3	135	2.3	12.5	1
12.6	2	●	MZE1260SA	27.5	53.3	53.3	104.3	102	2.3	12.6	1
12.6	3	●	MZE1260MA	40.1	80.3	80.3	139.3	137	2.3	12.6	1
12.7	2	●	MZE1270SA	27.7	53.3	53.3	104.3	102	2.3	12.7	1
12.7	3	●	MZE1270MA	40.4	80.3	80.3	139.3	137	2.3	12.7	1
12.8	2	●	MZE1280SA	27.9	53.3	53.3	104.3	102	2.3	12.8	1
12.8	3	●	MZE1280MA	40.7	80.3	80.3	139.3	137	2.3	12.8	1
12.9	2	●	MZE1290SA	28.1	53.3	53.3	104.3	102	2.3	12.9	1
12.9	3	●	MZE1290MA	41.0	80.3	80.3	139.3	137	2.3	12.9	1
13.0	2	●	MZE1300SA	28.4	53.4	53.4	104.4	102	2.4	13.0	1
13.0	3	●	MZE1300MA	41.4	80.4	80.4	139.4	137	2.4	13.0	1
13.1	2	●	MZE1310SA	28.6	53.4	53.4	104.4	102	2.4	13.1	1
13.1	3	●	MZE1310MA	41.7	86.4	86.4	146.4	144	2.4	13.1	1
13.2	2	●	MZE1320SA	28.8	53.4	53.4	104.4	102	2.4	13.2	1
13.2	3	●	MZE1320MA	42.0	86.4	86.4	146.4	144	2.4	13.2	1
13.3	2	●	MZE1330SA	29.0	56.4	56.4	109.4	107	2.4	13.3	1
13.3	3	●	MZE1330MA	42.3	86.4	86.4	146.4	144	2.4	13.3	1
13.4	2	●	MZE1340SA	29.2	56.4	56.4	109.4	107	2.4	13.4	1
13.4	3	●	MZE1340MA	42.6	86.4	86.4	146.4	144	2.4	13.4	1
13.5	2	●	MZE1350SA	29.5	56.5	56.5	109.5	107	2.5	13.5	1
13.5	3	●	MZE1350MA	43.0	86.5	86.5	146.5	144	2.5	13.5	1
13.6	2	●	MZE1360SA	29.7	56.5	56.5	109.5	107	2.5	13.6	1
13.6	3	●	MZE1360MA	43.3	88.5	88.5	149.5	147	2.5	13.6	1

Nota 1) Por favor entre em contato para qualquer geometria que não conste no catálogo (ex.: diâmetro e comprimento diferente.).

● : Estoque mantido. □ : Sem estoque, produzido somente por pedido.

□ : Lote mínimo para produtos especiais:

① Menor que ø3 = Mínimo 10 ② Maior ou igual a ø3 e menor que ø10 = Mínimo 5
③ Maior ou igual a ø10 = Mínimo 3



DC (mm)	Prof. do Furo (L/D)	VP15TF	Referência para Pedido	Dimensões (mm)							Tipo
				LU	LCF	LH	OAL	LF	PL	DCON	
13.7	2	●	MZE1370SA	29.9	56.5	56.5	109.5	107	2.5	13.7	1
13.7	3	●	MZE1370MA	43.6	88.5	88.5	149.5	147	2.5	13.7	1
13.8	2	●	MZE1380SA	30.1	56.5	56.5	109.5	107	2.5	13.8	1
13.8	3	●	MZE1380MA	43.9	88.5	88.5	149.5	147	2.5	13.8	1
13.9	2	●	MZE1390SA	30.3	56.5	56.5	109.5	107	2.5	13.9	1
13.9	3	●	MZE1390MA	44.2	88.5	88.5	149.5	147	2.5	13.9	1
14.0	2	●	MZE1400SA	30.5	56.5	56.5	109.5	107	2.5	14.0	1
14.0	3	●	MZE1400MA	44.5	88.5	88.5	149.5	147	2.5	14.0	1
14.1	2	●	MZE1410SA	30.8	58.6	58.6	113.6	111	2.6	14.1	1
14.1	3	●	MZE1410MA	44.9	91.6	91.6	153.6	151	2.6	14.1	1
14.2	2	●	MZE1420SA	31.0	58.6	58.6	113.6	111	2.6	14.2	1
14.2	3	●	MZE1420MA	45.2	91.6	91.6	153.6	151	2.6	14.2	1
14.3	2	□	MZE1430SA	31.2	58.6	58.6	113.6	111	2.6	14.3	1
14.3	3	●	MZE1430MA	45.5	91.6	91.6	153.6	151	2.6	14.3	1
14.4	2	□	MZE1440SA	31.4	58.6	58.6	113.6	111	2.6	14.4	1
14.4	3	●	MZE1440MA	45.8	91.6	91.6	153.6	151	2.6	14.4	1
14.5	2	●	MZE1450SA	31.6	58.6	58.6	113.6	111	2.6	14.5	1
14.5	3	●	MZE1450MA	46.1	91.6	91.6	153.6	151	2.6	14.5	1
14.6	2	□	MZE1460SA	31.9	58.7	58.7	113.7	111	2.7	14.6	1
14.6	3	●	MZE1460MA	46.5	93.7	93.7	155.7	153	2.7	14.6	1
14.7	2	□	MZE1470SA	32.1	58.7	58.7	113.7	111	2.7	14.7	1
14.7	3	●	MZE1470MA	46.8	93.7	93.7	155.7	153	2.7	14.7	1
14.8	2	□	MZE1480SA	32.3	58.7	58.7	113.7	111	2.7	14.8	1
14.8	3	●	MZE1480MA	47.1	93.7	93.7	155.7	153	2.7	14.8	1
14.9	2	□	MZE1490SA	32.5	58.7	58.7	113.7	111	2.7	14.9	1
14.9	3	●	MZE1490MA	47.4	93.7	93.7	155.7	153	2.7	14.9	1
15.0	2	●	MZE1500SA	32.7	58.7	58.7	113.7	111	2.7	15.0	1
15.0	3	●	MZE1500MA	47.7	93.7	93.7	155.7	153	2.7	15.0	1
15.1	2	□	MZE1510SA	32.9	60.7	60.7	117.7	115	2.7	15.1	1
15.1	3	●	MZE1510MA	48.0	96.7	96.7	159.7	157	2.7	15.1	1
15.2	2	●	MZE1520SA	33.2	60.8	60.8	117.8	115	2.8	15.2	1
15.2	3	●	MZE1520MA	48.4	96.8	96.8	159.8	157	2.8	15.2	1
15.3	2	□	MZE1530SA	33.4	60.8	60.8	117.8	115	2.8	15.3	1
15.3	3	●	MZE1530MA	48.7	96.8	96.8	159.8	157	2.8	15.3	1
15.4	2	□	MZE1540SA	33.6	60.8	60.8	117.8	115	2.8	15.4	1
15.4	3	●	MZE1540MA	49.0	96.8	96.8	159.8	157	2.8	15.4	1
15.5	2	●	MZE1550SA	33.8	60.8	60.8	117.8	115	2.8	15.5	1
15.5	3	●	MZE1550MA	49.3	96.8	96.8	159.8	157	2.8	15.5	1
15.6	2	□	MZE1560SA	34.0	60.8	60.8	117.8	115	2.8	15.6	1
15.6	3	●	MZE1560MA	49.6	98.8	98.8	162.8	160	2.8	15.6	1
15.7	2	□	MZE1570SA	34.3	60.9	60.9	117.9	115	2.9	15.7	1
15.7	3	●	MZE1570MA	50.0	98.9	98.9	162.9	160	2.9	15.7	1
15.8	2	□	MZE1580SA	34.5	60.9	60.9	117.9	115	2.9	15.8	1
15.8	3	●	MZE1580MA	50.3	98.9	98.9	162.9	160	2.9	15.8	1
15.9	2	□	MZE1590SA	34.7	60.9	60.9	117.9	115	2.9	15.9	1
15.9	3	●	MZE1590MA	50.6	98.9	98.9	162.9	160	2.9	15.9	1
16.0	2	●	MZE1600SA	34.9	60.9	60.9	117.9	115	2.9	16.0	1
16.0	3	●	MZE1600MA	50.9	98.9	98.9	162.9	160	2.9	16.0	1

DC (mm)	Prof. do Furo (L/D)	VP15TF	Referência para Pedido	Dimensões (mm)							Tipo
				LU	LCF	LH	OAL	LF	PL	DCON	
16.1	2	□	MZE1610SA	35.1	62.9	62.9	121.9	119	2.9	16.1	1
16.1	3	□	MZE1610MA	51.2	104.9	104.9	169.9	167	2.9	16.1	1
16.2	2	●	MZE1620SA	35.3	62.9	62.9	121.9	119	2.9	16.2	1
16.2	3	□	MZE1620MA	51.5	104.9	104.9	169.9	167	2.9	16.2	1
16.3	2	●	MZE1630SA	35.6	63.0	63.0	122.0	119	3.0	16.3	1
16.3	3	□	MZE1630MA	51.9	105.0	105.0	170.0	167	3.0	16.3	1
16.4	2	□	MZE1640SA	35.8	63.0	63.0	122.0	119	3.0	16.4	1
16.4	3	□	MZE1640MA	52.2	105.0	105.0	170.0	167	3.0	16.4	1
16.5	2	●	MZE1650SA	36.0	63.0	63.0	122.0	119	3.0	16.5	1
16.5	3	●	MZE1650MA	52.5	105.0	105.0	170.0	167	3.0	16.5	1
16.6	2	□	MZE1660SA	36.2	63.0	63.0	122.0	119	3.0	16.6	1
16.6	3	□	MZE1660MA	52.8	105.0	105.0	170.0	167	3.0	16.6	1
16.7	2	□	MZE1670SA	36.4	63.0	63.0	122.0	119	3.0	16.7	1
16.7	3	□	MZE1670MA	53.1	105.0	105.0	170.0	167	3.0	16.7	1
16.8	2	□	MZE1680SA	36.7	63.1	63.1	122.1	119	3.1	16.8	1
16.8	3	□	MZE1680MA	53.5	105.1	105.1	170.1	167	3.1	16.8	1
16.9	2	□	MZE1690SA	36.9	63.1	63.1	122.1	119	3.1	16.9	1
16.9	3	□	MZE1690MA	53.8	105.1	105.1	170.1	167	3.1	16.9	1
17.0	2	●	MZE1700SA	37.1	63.1	63.1	122.1	119	3.1	17.0	1
17.0	3	●	MZE1700MA	54.1	105.1	105.1	170.1	167	3.1	17.0	1
17.1	2	□	MZE1710SA	37.3	65.1	65.1	126.1	123	3.1	17.1	1
17.1	3	□	MZE1710MA	54.4	105.1	105.1	170.1	167	3.1	17.1	1
17.2	2	□	MZE1720SA	37.5	65.1	65.1	126.1	123	3.1	17.2	1
17.2	3	□	MZE1720MA	54.7	105.1	105.1	170.1	167	3.1	17.2	1
17.3	2	□	MZE1730SA	37.7	65.1	65.1	126.1	123	3.1	17.3	1
17.3	3	□	MZE1730MA	55.0	105.1	105.1	170.1	167	3.1	17.3	1
17.4	2	□	MZE1740SA	38.0	65.2	65.2	126.2	123	3.2	17.4	1
17.4	3	□	MZE1740MA	55.4	105.2	105.2	170.2	167	3.2	17.4	1
17.5	2	●	MZE1750SA	38.2	65.2	65.2	126.2	123	3.2	17.5	1
17.5	3	●	MZE1750MA	55.7	105.2	105.2	170.2	167	3.2	17.5	1
17.6	2	□	MZE1760SA	38.4	65.2	65.2	126.2	123	3.2	17.6	1
17.6	3	□	MZE1760MA	56.0	105.2	105.2	170.2	167	3.2	17.6	1
17.7	2	□	MZE1770SA	38.6	65.2	65.2	126.2	123	3.2	17.7	1
17.7	3	□	MZE1770MA	56.3	105.2	105.2	170.2	167	3.2	17.7	1
17.8	2	●	MZE1780SA	38.8	65.2	65.2	126.2	123	3.2	17.8	1
17.8	3	□	MZE1780MA	56.6	105.2	105.2	170.2	167	3.2	17.8	1
17.9	2	□	MZE1790SA	39.1	65.3	65.3	126.3	123	3.3	17.9	1
17.9	3	□	MZE1790MA	57.0	105.3	105.3	170.3	167	3.3	17.9	1
18.0	2	●	MZE1800SA	39.3	65.3	65.3	126.3	123	3.3	18.0	1
18.0	3	●	MZE1800MA	57.3	105.3	105.3	170.3	167	3.3	18.0	1
18.1	2	□	MZE1810SA	39.5	67.3	67.3	130.3	127	3.3	18.1	1
18.1	3	□	MZE1810MA	57.6	117.3	117.3	182.3	179	3.3	18.1	1
18.2	2	□	MZE1820SA	39.7	67.3	67.3	130.3	127	3.3	18.2	1
18.2	3	□	MZE1820MA	57.9	117.3	117.3	182.3	179	3.3	18.2	1
18.3	2	□	MZE1830SA	39.9	67.3	67.3	130.3	127	3.3	18.3	1
18.3	3	□	MZE1830MA	58.2	117.3	117.3	182.3	179	3.3	18.3	1
18.4	2	□	MZE1840SA	40.1	67.3	67.3	130.3	127	3.3	18.4	1
18.4	3	□	MZE1840MA	58.5	117.3	117.3	182.3	179	3.3	18.4	1

FURAÇÃO(METAL DURO INTEIRIÇO)

MZE

METAL DURO

DC (mm)	Prof. do Furo (L/D)	VP15TF	Referência para Pedido	Dimensões (mm)							Tipo
				LU	LCF	LH	OAL	LF	PL	DCON	
18.5	2	●	MZE1850SA	40.4	67.4	67.4	130.4	127	3.4	18.5	1
18.5	3	●	MZE1850MA	58.9	117.4	117.4	182.4	179	3.4	18.5	1
18.6	2	□	MZE1860SA	40.6	67.4	67.4	130.4	127	3.4	18.6	1
18.6	3	□	MZE1860MA	59.2	117.4	117.4	182.4	179	3.4	18.6	1
18.7	2	□	MZE1870SA	40.8	67.4	67.4	130.4	127	3.4	18.7	1
18.7	3	□	MZE1870MA	59.5	117.4	117.4	182.4	179	3.4	18.7	1
18.8	2	□	MZE1880SA	41.0	67.4	67.4	130.4	127	3.4	18.8	1
18.8	3	□	MZE1880MA	59.8	117.4	117.4	182.4	179	3.4	18.8	1
18.9	2	□	MZE1890SA	41.2	67.4	67.4	130.4	127	3.4	18.9	1
18.9	3	□	MZE1890MA	60.1	117.4	117.4	182.4	179	3.4	18.9	1
19.0	2	●	MZE1900SA	41.5	67.5	67.5	130.5	127	3.5	19.0	1
19.0	3	●	MZE1900MA	60.5	117.5	117.5	182.5	179	3.5	19.0	1
19.1	2	□	MZE1910SA	41.7	69.5	69.5	134.5	131	3.5	19.1	1
19.1	3	□	MZE1910MA	60.8	117.5	117.5	182.5	179	3.5	19.1	1
19.2	2	□	MZE1920SA	41.9	69.5	69.5	134.5	131	3.5	19.2	1
19.2	3	□	MZE1920MA	61.1	117.5	117.5	182.5	179	3.5	19.2	1

DC (mm)	Prof. do Furo (L/D)	VP15TF	Referência para Pedido	Dimensões (mm)							Tipo
				LU	LCF	LH	OAL	LF	PL	DCON	
19.3	2	□	MZE1930SA	42.1	69.5	69.5	134.5	131	3.5	19.3	1
19.3	3	□	MZE1930MA	61.4	117.5	117.5	182.5	179	3.5	19.3	1
19.4	2	□	MZE1940SA	42.3	69.5	69.5	134.5	131	3.5	19.4	1
19.4	3	□	MZE1940MA	61.7	117.5	117.5	182.5	179	3.5	19.4	1
19.5	2	●	MZE1950SA	42.5	69.5	69.5	134.5	131	3.5	19.5	1
19.5	3	●	MZE1950MA	62.0	117.5	117.5	182.5	179	3.5	19.5	1
19.6	2	□	MZE1960SA	42.8	69.6	69.6	134.6	131	3.6	19.6	1
19.6	3	□	MZE1960MA	62.4	117.6	117.6	182.6	179	3.6	19.6	1
19.7	2	□	MZE1970SA	43.0	69.6	69.6	134.6	131	3.6	19.7	1
19.7	3	□	MZE1970MA	62.7	117.6	117.6	182.6	179	3.6	19.7	1
19.8	2	□	MZE1980SA	43.2	69.6	69.6	134.6	131	3.6	19.8	1
19.8	3	□	MZE1980MA	63.0	117.6	117.6	182.6	179	3.6	19.8	1
19.9	2	□	MZE1990SA	43.4	69.6	69.6	134.6	131	3.6	19.9	1
19.9	3	□	MZE1990MA	63.3	117.6	117.6	182.6	179	3.6	19.9	1
20.0	2	●	MZE2000SA	43.6	69.6	69.6	134.6	131	3.6	20.0	1
20.0	3	●	MZE2000MA	63.6	117.6	117.6	182.6	179	3.6	20.0	1

Nota 1) Por favor entre em contato para qualquer geometria que não conste no catálogo (ex.: diâmetro e comprimento diferente.).

CONDIÇÕES DE CORTE RECOMENDADAS

Material	Aço Baixo Carbono (≤180HB)		Aço Carbono, Aço Liga (180—280HB)		Aço Carbono, Aço Liga (280—350HB)	
	AISI 1010 etc		AISI 1045, AISI 4140 etc		AISI 4340 etc	
Diâm. DC (mm)	Rotação (min ⁻¹)	Taxa de Avanço (mín.—máx.) (mm/rot)	Rotação (min ⁻¹)	Taxa de Avanço (mín.—máx.) (mm/rot)	Rotação (min ⁻¹)	Taxa de Avanço (mín.—máx.) (mm/rot)
1.0	12700	0.035 (0.020—0.050)	11100	0.035 (0.020—0.050)	9500	0.035 (0.020—0.050)
1.2	10600	0.045 (0.030—0.060)	9200	0.045 (0.030—0.060)	7900	0.045 (0.030—0.060)
1.6	8900	0.055 (0.035—0.080)	7900	0.055 (0.035—0.080)	6900	0.055 (0.035—0.080)
2.0	7100	0.07 (0.040—0.100)	6300	0.07 (0.040—0.100)	5500	0.07 (0.040—0.100)
2.5	5700	0.085 (0.050—0.125)	5000	0.085 (0.050—0.125)	4400	0.085 (0.050—0.125)
3.2	4400	0.1 (0.060—0.13)	3900	0.1 (0.06—0.13)	3400	0.09 (0.06—0.12)
4.0	3500	0.12 (0.080—0.16)	3100	0.12 (0.08—0.16)	2700	0.11 (0.07—0.14)
5.0	2800	0.15 (0.100—0.20)	2500	0.15 (0.10—0.20)	2200	0.14 (0.09—0.18)
6.3	2700	0.2 (0.13—0.26)	2500	0.2 (0.13—0.26)	2200	0.18 (0.11—0.24)
8.0	2100	0.23 (0.18—0.28)	1900	0.23 (0.18—0.28)	1700	0.21 (0.16—0.25)
10.0	1700	0.27 (0.22—0.32)	1500	0.27 (0.22—0.32)	1400	0.23 (0.19—0.27)
12.0	1700	0.31 (0.28—0.34)	1500	0.31 (0.28—0.34)	1400	0.26 (0.23—0.29)
16.0	1300	0.33 (0.28—0.38)	1200	0.33 (0.28—0.38)	1100	0.29 (0.24—0.33)
20.0	1100	0.35 (0.30—0.40)	1000	0.35 (0.30—0.40)	900	0.3 (0.26—0.34)

● : Estoque mantido. □ : Sem estoque, produzido somente por pedido.

□ : Lote mínimo para produtos especiais:

① Menor que ø3 = Mínimo 10 ② Maior ou igual a ø3 e menor que ø10 = Mínimo 5
③ Maior ou igual a ø10 = Mínimo 3

Material	Aço Inoxidável Austenítico ($\leq 200\text{HB}$)		Ferro Fundido Cinzento ($\leq 350\text{MPa}$)		Ferro Fundido Nodular ($\leq 450\text{MPa}$)	
	AISI 304, AISI 316 etc		DIN GG-30 etc		DIN GGG-45 etc	
Diâm. DC (mm)	Rotação (min^{-1})	Taxa de Avanço (mín.—máx.) (mm/rot)	Rotação (min^{-1})	Taxa de Avanço (mín.—máx.) (mm/rot)	Rotação (min^{-1})	Taxa de Avanço (mín.—máx.) (mm/rot)
1.0	4700	0.03 (0.020—0.044)	14300	0.035 (0.020—0.050)	12700	0.035 (0.020—0.050)
1.2	3900	0.04 (0.030—0.053)	11900	0.045 (0.030—0.060)	10600	0.045 (0.030—0.060)
1.6	3900	0.05 (0.035—0.070)	9900	0.055 (0.035—0.080)	8900	0.055 (0.035—0.080)
2.0	3100	0.06 (0.040—0.080)	7900	0.07 (0.040—0.100)	7100	0.07 (0.040—0.100)
2.5	2500	0.075 (0.050—0.100)	6300	0.085 (0.050—0.125)	5700	0.085 (0.050—0.125)
3.2	1900	0.07 (0.05—0.08)	4900	0.1 (0.06—0.13)	4400	0.1 (0.06—0.13)
4.0	1500	0.08 (0.06—0.10)	3900	0.12 (0.08—0.16)	3500	0.12 (0.08—0.16)
5.0	1200	0.1 (0.07—0.13)	3100	0.15 (0.10—0.20)	2800	0.15 (0.10—0.20)
6.3	1200	0.13 (0.09—0.17)	3000	0.2 (0.13—0.26)	2700	0.2 (0.13—0.26)
8.0	900	0.14 (0.10—0.18)	2300	0.25 (0.18—0.31)	2100	0.23 (0.18—0.28)
10.0	700	0.16 (0.12—0.19)	1900	0.29 (0.22—0.35)	1700	0.27 (0.22—0.32)
12.0	600	0.18 (0.15—0.20)	1800	0.33 (0.28—0.37)	1700	0.31 (0.28—0.34)
16.0	400	0.19 (0.15—0.23)	1300	0.35 (0.28—0.42)	1300	0.33 (0.28—0.38)
20.0	300	0.2 (0.15—0.24)	1100	0.37 (0.30—0.44)	1100	0.35 (0.30—0.40)

Material	Ligas de Alumínio (Si<5%)		Ligas Resistentes ao Calor		Aço Endurecido (40—55HRC)	
	ASTM A6061, ASTM A7075 etc		Inconel718 etc		AISI H13, JIS SKT4 etc	
Diâm. DC (mm)	Rotação (min^{-1})	Taxa de Avanço (mín.—máx.) (mm/rot)	Rotação (min^{-1})	Taxa de Avanço (mín.—máx.) (mm/rot)	Rotação (min^{-1})	Taxa de Avanço (mín.—máx.) (mm/rot)
1.0	15900	0.05 (0.030—0.075)	3100	0.02 (0.016—0.027)	3100	0.02 (0.016—0.031)
1.2	13200	0.065 (0.045—0.090)	2600	0.025 (0.022—0.032)	2600	0.03 (0.022—0.037)
1.6	11900	0.085 (0.053—0.120)	1900	0.03 (0.025—0.040)	1900	0.03 (0.025—0.040)
2.0	9500	0.105 (0.060—0.150)	2300	0.04 (0.032—0.050)	2300	0.04 (0.032—0.050)
2.5	8900	0.135 (0.075—0.200)	1900	0.05 (0.040—0.060)	1900	0.05 (0.040—0.060)
3.2	7900	0.1 (0.06—0.13)	1900	0.07 (0.05—0.09)	1900	0.07 (0.05—0.09)
4.0	6300	0.12 (0.08—0.16)	1500	0.09 (0.06—0.11)	1500	0.09 (0.06—0.11)
5.0	5000	0.15 (0.10—0.20)	1200	0.11 (0.08—0.14)	1200	0.11 (0.08—0.14)
6.3	4500	0.2 (0.13—0.26)	1200	0.14 (0.09—0.19)	1200	0.14 (0.09—0.19)
8.0	3500	0.23 (0.18—0.28)	900	0.14 (0.11—0.17)	900	0.14 (0.11—0.17)
10.0	2800	0.27 (0.22—0.32)	700	0.16 (0.12—0.19)	700	0.16 (0.12—0.19)
12.0	2600	0.31 (0.28—0.34)	600	0.16 (0.13—0.18)	600	0.16 (0.13—0.18)
16.0	2100	0.33 (0.28—0.38)	400	0.18 (0.14—0.21)	500	0.18 (0.14—0.21)
20.0	1700	0.35 (0.30—0.40)	400	0.19 (0.15—0.22)	400	0.19 (0.15—0.22)

FURAÇÃO(METAL DURO INTEIRIÇO)

MGS

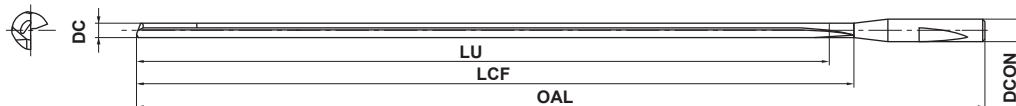
- É possível usinar microfuros profundos.
- Excelente precisão do batimento garante furação de alta precisão.



BROCA CANHÃO INTEIRIÇA



Refrigeração Interna



	DC ≤ 3
	0
	-0.005

Nota 1) As brocas MGS são indicadas para uso com mandris de contração térmica.

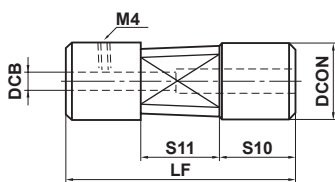
DC (mm)	Prof. do Furo (L/D)	HT10	Referência para Pedido	Dimensões (mm)			
				LU	LCF	OAL	DCON
0.7	50	●	MGS0070L040B	35.0	40	80	3
0.7	80	●	MGS0070L060B	56.0	60	100	3
0.8	45	●	MGS0080L040B	36.0	40	80	3
0.8	70	●	MGS0080L060B	56.0	60	100	3
0.9	40	●	MGS0090L040B	36.0	40	80	3
0.9	60	●	MGS0090L060B	54.0	60	100	3
1.0	35	●	MGS0100L040B	35.0	40	80	3
1.0	55	●	MGS0100L060B	55.0	60	100	3
1.0	75	●	MGS0100L080B	75.0	80	120	3
1.1	30	●	MGS0110L040B	33.0	40	80	3
1.1	50	●	MGS0110L060B	55.0	60	100	3
1.1	65	●	MGS0110L080B	71.5	80	120	3
1.2	30	●	MGS0120L040B	36.0	40	80	3
1.2	45	●	MGS0120L060B	54.0	60	100	3
1.2	60	●	MGS0120L080B	72.0	80	120	3
1.3	40	●	MGS0130L060B	52.0	60	100	3
1.3	55	●	MGS0130L080B	71.5	80	120	3
1.3	70	●	MGS0130L100B	91.0	100	140	3
1.4	35	●	MGS0140L060B	49.0	60	100	3
1.4	50	●	MGS0140L080B	70.0	80	120	3
1.4	65	●	MGS0140L100B	91.0	100	140	3
1.5	35	●	MGS0150L060B	52.5	60	100	3
1.5	50	●	MGS0150L080B	75.0	80	120	3
1.5	60	●	MGS0150L100B	90.0	100	140	3
1.6	30	●	MGS0160L060B	48.0	60	100	3
1.6	45	●	MGS0160L080B	72.0	80	120	3
1.6	55	●	MGS0160L100B	88.0	100	140	3
1.7	30	●	MGS0170L060B	51.0	60	100	3
1.7	40	●	MGS0170L080B	68.0	80	120	3
1.7	55	●	MGS0170L100B	93.5	100	140	3

DC (mm)	Prof. do Furo (L/D)	HT10	Referência para Pedido	Dimensões (mm)			
				LU	LCF	OAL	DCON
1.8	30	●	MGS0180L060B	54.0	60	100	3
1.8	40	●	MGS0180L080B	72.0	80	120	3
1.8	50	●	MGS0180L100B	90.0	100	140	3
1.9	25	●	MGS0190L060B	47.5	60	100	3
1.9	35	●	MGS0190L080B	66.5	80	120	3
1.9	45	●	MGS0190L100B	85.5	100	140	3
2.0	25	●	MGS0200L060B	50.0	60	100	3
2.0	35	●	MGS0200L080B	70.0	80	120	3
2.0	45	●	MGS0200L100B	90.0	100	140	3
2.1	35	●	MGS0210L080B	73.5	80	120	3
2.1	40	●	MGS0210L100B	84.0	100	140	3
2.2	30	●	MGS0220L080B	66.0	80	120	3
2.2	40	●	MGS0220L100B	88.0	100	140	3
2.3	30	●	MGS0230L080B	69.0	80	120	3
2.3	40	●	MGS0230L100B	92.0	100	140	3
2.4	30	●	MGS0240L080B	72.0	80	120	3
2.4	35	●	MGS0240L100B	84.0	100	140	3
2.5	25	●	MGS0250L080B	62.5	80	120	3
2.5	35	●	MGS0250L100B	87.5	100	140	3
2.6	25	●	MGS0260L080B	65.0	80	120	3
2.6	35	●	MGS0260L100B	91.0	100	140	3
2.7	25	●	MGS0270L080B	67.5	80	120	3
2.7	30	●	MGS0270L100B	81.0	100	140	3
2.8	25	●	MGS0280L080B	70.0	80	120	3
2.8	30	●	MGS0280L100B	84.0	100	140	3
2.9	20	●	MGS0290L080B	58.0	80	120	3
2.9	30	●	MGS0290L100B	87.0	100	140	3
3.0	20	●	MGS0300L080B	60.0	80	120	3
3.0	30	●	MGS0300L100B	90.0	100	140	3

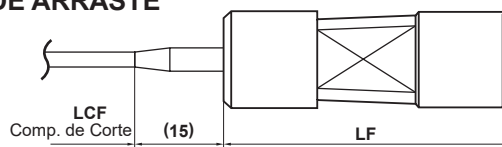
Nota 1) Consulte-nos quanto às brocas com cobertura.

● : Estoque mantido.

BUCHA DE ARRASTE



QUANDO FIXADO A UMA BUCHA DE ARRASTE DE ARRASTE



Referência para Pedido	Estoque	Dimensões (mm)					Parafuso de fixação	Chave
		DCON	DCB	LF	S10	S11		
MGD38	●	12.7	3.0	38.1	12.6	12.7	HSS04004	HKY20F
MGD70	●	12.7	3.0	70.0	25.0	20.0	HSS04004	HKY20F

FURAÇÃO(METAL DURO INTEIRIÇO)

MGS

BROCA CANHÃO INTEIRIÇA

CONDIÇÕES DE CORTE RECOMENDADAS

Material	Aço Baixo Carbono ($\leq 180\text{HB}$)				Aço Carbono, Aço Liga (180–280HB)			
	AISI 1010 etc				AISI 1045, AISI 4140 etc			
Fluido refrigerante	Óleo integral				Óleo integral			
Diâm. DC (mm)	Vel. de Corte (m/min)	Rotação (min^{-1})	Avanço (Mín.—Máx.) (mm/rot)	Avanço linear (mm/min)	Vel. de Corte (m/min)	Rotação (min^{-1})	Avanço (Mín.—Máx.) (mm/rot)	Avanço linear (mm/min)
0.8	50	19800	0.01 (0.005–0.016)	195	40	15900	0.01 (0.005–0.016)	155
1.0	50	15900	0.01 (0.007–0.020)	155	40	12700	0.01 (0.007–0.020)	125
1.2	60	15900	0.015 (0.008–0.024)	235	50	13200	0.015 (0.008–0.024)	195
1.6	60	11900	0.02 (0.011–0.032)	235	50	9900	0.02 (0.011–0.032)	195
2.0	60	9500	0.025 (0.013–0.040)	235	50	7900	0.025 (0.013–0.040)	195
2.5	70	8900	0.03 (0.017–0.050)	265	60	7600	0.03 (0.017–0.050)	225
3.0	70	7400	0.04 (0.020–0.060)	295	60	6300	0.04 (0.020–0.060)	250

Material	Aço Carbono, Aço Liga (280–350HB)				Aço Inoxidável Austenítico ($\leq 200\text{HB}$)			
	AISI 4340 etc				AISI 304, AISI 316 etc			
Fluido refrigerante	Óleo integral				Óleo integral			
Diâm. DC (mm)	Vel. de Corte (m/min)	Rotação (min^{-1})	Avanço (Mín.—Máx.) (mm/rot)	Avanço linear (mm/min)	Vel. de Corte (m/min)	Rotação (min^{-1})	Avanço (Mín.—Máx.) (mm/rot)	Avanço linear (mm/min)
0.8	30	11900	0.005 (0.004–0.005)	55	30	11900	0.01 (0.005–0.016)	115
1.0	30	9500	0.005 (0.005–0.007)	45	30	9500	0.01 (0.007–0.020)	95
1.2	40	10600	0.005 (0.006–0.008)	50	30	7900	0.015 (0.008–0.024)	115
1.6	40	7900	0.01 (0.008–0.011)	75	40	7900	0.02 (0.011–0.032)	155
2.0	40	6300	0.01 (0.010–0.013)	60	40	6300	0.025 (0.013–0.040)	155
2.5	50	6300	0.015 (0.013–0.017)	90	40	5000	0.03 (0.017–0.050)	150
3.0	50	5300	0.015 (0.015–0.020)	75	40	4200	0.04 (0.020–0.060)	165

Material	Ferro Fundido Cinzento ($\leq 350\text{MPa}$)				Ferro Fundido Nodular ($\leq 450\text{MPa}$)			
	DIN GG-30 etc				DIN GGG-45 etc			
Fluido refrigerante	Óleo integral Óleo solúvel				Óleo integral Óleo solúvel			
Diâm. DC (mm)	Vel. de Corte (m/min)	Rotação (min^{-1})	Avanço (Mín.—Máx.) (mm/rot)	Avanço linear (mm/min)	Vel. de Corte (m/min)	Rotação (min^{-1})	Avanço (Mín.—Máx.) (mm/rot)	Avanço linear (mm/min)
0.8	50	19800	0.01 (0.008–0.016)	195	40	15900	0.005 (0.005–0.008)	75
1.0	50	15900	0.015 (0.010–0.020)	235	40	12700	0.005 (0.007–0.010)	60
1.2	60	15900	0.015 (0.012–0.024)	235	50	13200	0.01 (0.008–0.012)	130
1.6	60	11900	0.02 (0.016–0.032)	235	50	9900	0.01 (0.011–0.016)	95
2.0	60	9500	0.03 (0.020–0.040)	285	50	7900	0.015 (0.013–0.020)	115
2.5	70	8900	0.035 (0.025–0.050)	310	60	7600	0.02 (0.017–0.025)	150
3.0	70	7400	0.045 (0.030–0.060)	330	60	6300	0.025 (0.020–0.030)	155

Material	Ligas de Alumínio (Si<5%)				Cobre, Ligas de cobre			
	Óleo integral Óleo solúvel				Óleo integral Óleo solúvel			
Diâm. DC (mm)	Vel. de Corte (m/min)	Rotação (min^{-1})	Avanço (Mín.—Máx.) (mm/rot)	Avanço linear (mm/min)	Vel. de Corte (m/min)	Rotação (min^{-1})	Avanço (Mín.—Máx.) (mm/rot)	Avanço linear (mm/min)
0.8	50	19800	0.01 (0.008–0.016)	195	40	15900	0.01 (0.008–0.016)	155
1.0	60	19000	0.015 (0.010–0.020)	285	50	15900	0.015 (0.010–0.020)	235
1.2	70	18500	0.015 (0.012–0.024)	275	60	15900	0.015 (0.012–0.024)	235
1.6	80	15900	0.02 (0.016–0.032)	315	70	13900	0.02 (0.016–0.032)	275
2.0	90	14300	0.03 (0.020–0.040)	425	80	12700	0.03 (0.020–0.040)	380
2.5	100	12700	0.035 (0.025–0.050)	440	90	11400	0.035 (0.025–0.050)	395
3.0	100	10600	0.045 (0.030–0.060)	475	100	10600	0.045 (0.030–0.060)	475

Nota 1) É necessário um furo de guia ou uma bucha de guia.

Nota 2) O filtro de fluido refrigerante deve ser capaz de reter partículas de 5 microns. É necessário filtragem fina para prevenir obstrução dos furos de refrigeração.

Nota 3) Para segurança e bom desempenho, utilize fluido refrigerante sob alta pressão. (Pressão mínima do fluido refrigerante=1,000PSI)

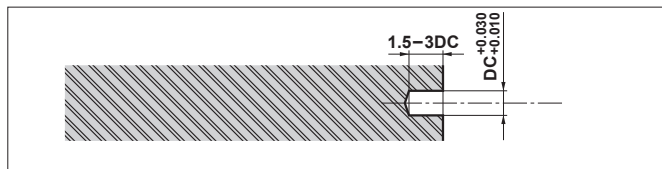
N

FURAÇÃO

NOTAS PARA APLICAÇÕES ESPECIAIS

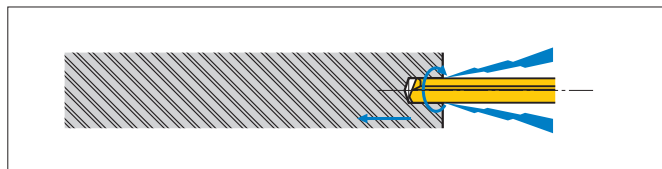
- É necessário um furo de guia ou uma bucha de guia.
- O filtro de fluido refrigerante deve ser capaz de reter partículas de 5 microns. É necessário filtragem fina para prevenir obstrução dos furos de refrigeração.
- Para segurança e bom desempenho, utilize fluido refrigerante sob alta pressão. (Pressão mínima do fluido refrigerante=1,000PSI)

COMO USAR



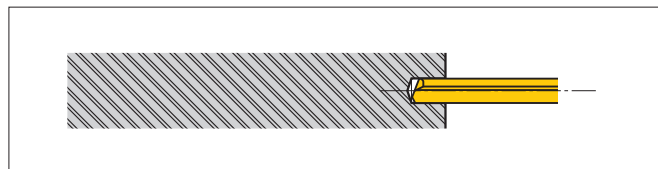
1. Usinagem de furo de guia

- O furo de guia deve ter o diâmetro da broca MGS +0.01 a +0.03mm.
- A profundidade do furo de guia deve ser 1.5 a 3 vezes o seu diâmetro.
- As brocas MVE / MVS são recomendadas para usinagem de furo de guia.



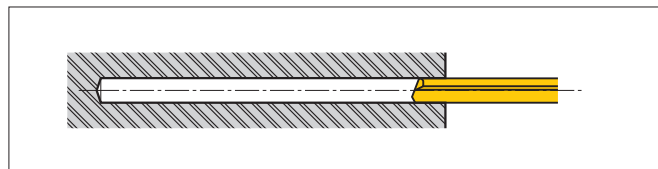
3. Com o fluido refrigerante ATIVADO, aumente a velocidade de corte e o avanço conforme as condições de corte recomendadas.

- Rotacionar a broca antes de inseri-la no furo de guia pode causar a quebra da ferramenta, sendo extremamente perigoso.



2. Insira a broca MGS no furo de guia sem rotação ou em rotação inversa a 300 rpm ou menos.

- Interrompa o avanço a uma distância de 1—2mm do fundo do furo piloto.



4. Após finalizar a operação de furação

- Retorne a broca rapidamente para a posição de inserção no furo de guia.
- Desligue a refrigeração e a rotação da broca para então retirá-la do furo.

FURAÇÃO(METAL DURO INTEIRIÇO)

DCSSS

Curta, para materiais não ferrosos



DC < 1.5 DC ≥ 1.5 DC ≥ 1.5

0.2 ≤ DC ≤ 2

0

-0.014

DCON = 3

0

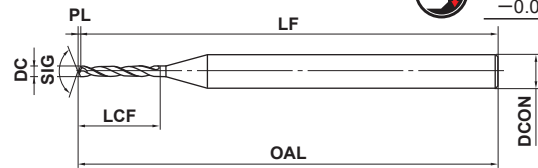
-0.006



P M K **N** S H

Metais Não Ferrosos

Refrigeração Externa



- A exclusiva tecnologia de cobertura CVD de diamante proporciona uma excelente adesão da cobertura, tornando a usinagem estável, sem deslocamento ou microlascamento.

DC (mm)	Referência para Pedido	Dimensões (mm)					Estoque
		LCF	OAL	LF	PL	DCON	
0.2	DCSSSD0020	2.1	38.1	38	0.05	3	●
0.3	DCSSSD0030	3.1	38.1	38	0.07	3	●
0.4	DCSSSD0040	4.1	38.1	38	0.09	3	●
0.5	DCSSSD0050	4.1	38.1	38	0.12	3	●
0.6	DCSSSD0060	5.1	38.1	38	0.14	3	●
0.7	DCSSSD0070	5.2	38.2	38	0.16	3	●
0.8	DCSSSD0080	6.2	38.2	38	0.19	3	●
0.9	DCSSSD0090	6.2	38.2	38	0.21	3	●
1.0	DCSSSD0100	8.2	38.2	38	0.2	3	●
1.1	DCSSSD0110	8.3	38.3	38	0.3	3	●

DC (mm)	Referência para Pedido	Dimensões (mm)					Estoque
		LCF	OAL	LF	PL	DCON	
1.2	DCSSSD0120	8.3	38.3	38	0.3	3	●
1.3	DCSSSD0130	8.3	38.3	38	0.3	3	●
1.4	DCSSSD0140	8.3	38.3	38	0.3	3	●
1.5	DCSSSD0150	10.3	45.3	45	0.3	3	●
1.6	DCSSSD0160	10.3	45.3	45	0.3	3	●
1.7	DCSSSD0170	10.4	45.4	45	0.4	3	●
1.8	DCSSSD0180	10.4	45.4	45	0.4	3	●
1.9	DCSSSD0190	10.4	45.4	45	0.4	3	●
2.0	DCSSSD0200	12.4	45.4	45	0.4	3	●

DCSSM

Média, para materiais não ferrosos



2.1 ≤ DC ≤ 3

0

-0.014

DCON = 3

0

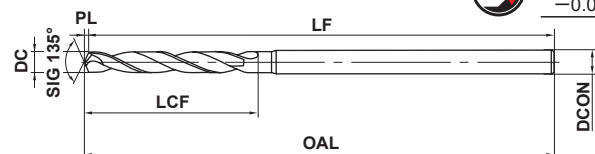
-0.006



P M K **N** S H

Metais Não Ferrosos

Refrigeração Externa



- A exclusiva tecnologia de cobertura CVD de diamante proporciona uma excelente adesão da cobertura, tornando a usinagem estável, sem deslocamento ou microlascamento.

DC (mm)	Referência para Pedido	Dimensões (mm)					Estoque
		LCF	OAL	LF	PL	DCON	
2.1	DCSSMD0210	17.4	60.4	60	0.4	3	●
2.2	DCSSMD0220	17.5	60.5	60	0.5	3	●
2.3	DCSSMD0230	17.5	60.5	60	0.5	3	●
2.4	DCSSMD0240	17.5	60.5	60	0.5	3	●
2.5	DCSSMD0250	21.5	60.5	60	0.5	3	●
2.6	DCSSMD0260	21.5	60.5	60	0.5	3	●

DC (mm)	Referência para Pedido	Dimensões (mm)					Estoque
		LCF	OAL	LF	PL	DCON	
2.7	DCSSMD0270	21.6	60.6	60	0.6	3	●
2.8	DCSSMD0280	21.6	60.6	60	0.6	3	●
2.9	DCSSMD0290	21.6	60.6	60	0.6	3	●
3.0	DCSSMD0300	21.6	60.6	60	0.6	3	●

N

FURAÇÃO

● : Estoque mantido.

CONDIÇÕES DE CORTE RECOMENDADAS

Material	Ligas de Alumínio		Ligas de Alumínio Fundido		Cobre, Ligas de Cobre		Grafite, Cerâmicas Usináveis		Composto de matriz metálica Polímero reforçado com fibra	
	Rotação (min ⁻¹)	Taxa de Avanço (mm/rot)	Rotação (min ⁻¹)	Taxa de Avanço (mm/rot)	Rotação (min ⁻¹)	Taxa de Avanço (mm/rot)	Rotação (min ⁻¹)	Taxa de Avanço (mm/rot)	Rotação (min ⁻¹)	Taxa de Avanço (mm/rot)
0.2	20000	0.006	10000	0.003	20000	0.003	20000	0.01	10000	0.003
0.5	20000	0.02	10000	0.01	20000	0.01	20000	0.03	10000	0.01
1.0	20000	0.04	10000	0.02	20000	0.02	20000	0.05	10000	0.02
1.5	20000	0.05	10000	0.02	16000	0.02	16000	0.08	10000	0.02
2.0	20000	0.06	9000	0.03	11000	0.03	11000	0.10	9000	0.03
2.5	18500	0.08	7500	0.04	10000	0.04	10000	0.12	7500	0.04
3.0	17000	0.10	6000	0.05	8500	0.05	8500	0.15	6000	0.05

Nota 1) Quando usar um material muito duro, reduza o avanço.

Nota 2) Utilize fluido refrigerante solúvel em água ou fluido de retífica.

Nota 3) Quando usar furos profundos, modere as condições de corte.

Nota 4) A rotação pode ser aumentada de acordo com a velocidade do eixo principal.

FURAÇÃO(METAL DURO INTEIRIÇO)

DCBSS

Para materiais duros e frágeis



DC<0.07 DC≥0.07

P

M

K

N

S

H

Metais Não Ferrosos

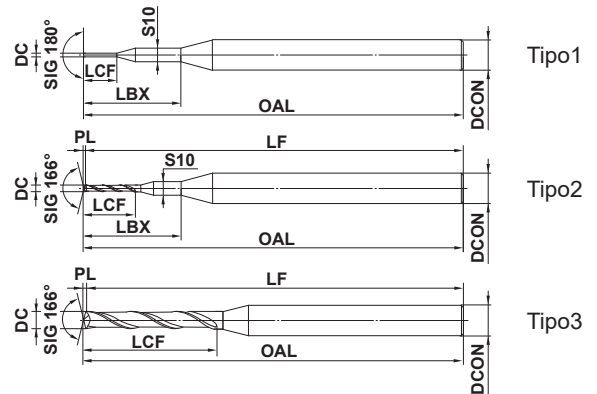
Refrigeração Externa



● Broca para usinagem de materiais duros e frágeis, tais como cerâmicas sinterizadas e vidro de quartzo que não podem ser usinados com brocas convencionais.



	0.05 ≤ DC < 0.2	0.2 ≤ DC ≤ 3
R_a	0 -0.009	0 -0.014
R_z	0 -0.006	0 -0.006



DC (mm)	Referência para Pedido	LBX	LCF	OAL	LF	PL	S10	DCON	Estoque	Tipo	Prazo de entrega reduzido
0.05	DCBSSD0005	6	0.5	38.0	38	-	1.0	3	□	1	◎
0.06	DCBSSD0006	6	0.6	38.0	38	-	1.0	3	□	1	◎
0.07	DCBSSD0007	6	0.7	38.004	38	0.004	1.0	3	□	2	◎
0.08	DCBSSD0008	6	0.8	38.005	38	0.005	1.0	3	□	2	◎
0.09	DCBSSD0009	6	0.9	38.006	38	0.006	1.0	3	□	2	◎
0.10	DCBSSD0010	6	1.0	38.01	38	0.01	1.0	3	●	2	◎
0.11	DCBSSD0011	6	1.2	38.01	38	0.01	1.0	3	●	2	◎
0.12	DCBSSD0012	6	1.4	38.01	38	0.01	1.0	3	●	2	◎
0.13	DCBSSD0013	6	1.5	38.01	38	0.01	1.0	3	●	2	◎
0.14	DCBSSD0014	6	1.5	38.01	38	0.01	1.0	3	●	2	◎
0.15	DCBSSD0015	6	1.5	38.01	38	0.01	1.0	3	●	2	◎
0.16	DCBSSD0016	6	1.5	38.01	38	0.01	1.0	3	●	2	◎
0.17	DCBSSD0017	6	1.5	38.01	38	0.01	1.0	3	●	2	◎
0.18	DCBSSD0018	6	1.5	38.01	38	0.01	1.0	3	●	2	◎
0.19	DCBSSD0019	6	1.5	38.01	38	0.01	1.0	3	●	2	◎
0.20	DCBSSD0020	-	2.0	38.01	38	0.01	-	3	●	3	◎
0.21	DCBSSD0021	-	2.0	38.01	38	0.01	-	3	□	3	◎
0.22	DCBSSD0022	-	2.0	38.01	38	0.01	-	3	□	3	◎
0.23	DCBSSD0023	-	2.0	38.01	38	0.01	-	3	□	3	◎
0.24	DCBSSD0024	-	2.0	38.01	38	0.01	-	3	□	3	◎
0.25	DCBSSD0025	-	2.5	38.02	38	0.02	-	3	●	3	◎
0.26	DCBSSD0026	-	2.5	38.02	38	0.02	-	3	□	3	◎
0.27	DCBSSD0027	-	2.5	38.02	38	0.02	-	3	□	3	◎
0.28	DCBSSD0028	-	2.5	38.02	38	0.02	-	3	□	3	◎
0.29	DCBSSD0029	-	2.5	38.02	38	0.02	-	3	□	3	◎
0.30	DCBSSD0030	-	3.0	38.02	38	0.02	-	3	●	3	◎

DC (mm)	Referência para Pedido	LBX	LCF	OAL	LF	PL	S10	DCON	Estoque	Tipo	Prazo de entrega reduzido
0.31	DCBSSD0031	-	3.0	38.02	38	0.02	-	3	□	3	◎
0.32	DCBSSD0032	-	3.0	38.02	38	0.02	-	3	□	3	◎
0.33	DCBSSD0033	-	3.0	38.02	38	0.02	-	3	□	3	◎
0.34	DCBSSD0034	-	3.5	38.02	38	0.02	-	3	□	3	◎
0.35	DCBSSD0035	-	3.5	38.02	38	0.02	-	3	●	3	◎
0.36	DCBSSD0036	-	3.5	38.02	38	0.02	-	3	□	3	◎
0.40	DCBSSD0040	-	4.0	38.02	38	0.02	-	3	●	3	◎
0.45	DCBSSD0045	-	4.0	38.03	38	0.03	-	3	□	3	◎
0.50	DCBSSD0050	-	4.0	38.03	38	0.03	-	3	●	3	◎
0.55	DCBSSD0055	-	4.5	38.03	38	0.03	-	3	□	3	◎
0.60	DCBSSD0060	-	5.0	38.04	38	0.04	-	3	●	3	◎
0.70	DCBSSD0070	-	5.0	38.04	38	0.04	-	3	●	3	◎
0.80	DCBSSD0080	-	6.1	38.05	38	0.05	-	3	●	3	◎
0.85	DCBSSD0085	-	6.1	38.05	38	0.05	-	3	□	3	◎
0.90	DCBSSD0090	-	6.1	38.06	38	0.06	-	3	●	3	◎
1.00	DCBSSD0100	-	8.1	38.1	38	0.1	-	3	●	3	◎
1.10	DCBSSD0110	-	8.1	38.1	38	0.1	-	3	●	3	◎
1.20	DCBSSD0120	-	8.1	38.1	38	0.1	-	3	●	3	◎
1.30	DCBSSD0130	-	8.1	38.1	38	0.1	-	3	●	3	◎
1.40	DCBSSD0140	-	8.1	38.1	38	0.1	-	3	●	3	◎
1.50	DCBSSD0150	-	10.1	38.1	38	0.1	-	3	●	3	◎
1.60	DCBSSD0160	-	10.1	38.1	38	0.1	-	3	●	3	◎
1.70	DCBSSD0170	-	10.1	38.1	38	0.1	-	3	●	3	◎
1.80	DCBSSD0180	-	10.1	38.1	38	0.1	-	3	●	3	◎
1.90	DCBSSD0190	-	10.1	38.1	38	0.1	-	3	●	3	◎
2.00	DCBSSD0200	-	12.1	38.1	38	0.1	-	3	●	3	◎

Nota 1) Os itens que apresentam símbolo □ (sem estoque, produzido somente por pedido) são tamanhos básicos. Para outros diâmetros e comprimentos de canal, consulte a Mitsubishi Materials.

Nota 2) As brocas com símbolo ◎ podem ser entregues em um prazo menor. Para consultar a entrega de outras brocas, entre em contato com a Mitsubishi Materials.

Nota 3) As brocas DC=0.05, 0.06 têm geometria especial. Portanto, as dimensões descritas como LCF (comprimento do canal) referem-se ao comprimento do prolongamento.

● : Estoque mantido. □ : Sem estoque, produzido somente por pedido.

DC (mm)	Referência para Pedido	LBX	LCF	OAL	LF	PL	S10	DCON	Estoque	Tipo	Prazo de entrega padrão
2.10	DCBSSD0210	-	12.1	38.1	38	0.1	-	3	<input type="checkbox"/>	3	☉
2.20	DCBSSD0220	-	12.1	38.1	38	0.1	-	3	<input type="checkbox"/>	3	☉
2.30	DCBSSD0230	-	12.1	38.1	38	0.1	-	3	<input type="checkbox"/>	3	☉
2.40	DCBSSD0240	-	12.2	38.2	38	0.2	-	3	<input type="checkbox"/>	3	☉
2.50	DCBSSD0250	-	12.2	38.2	38	0.2	-	3	<input checked="" type="checkbox"/>	3	☉

DC (mm)	Referência para Pedido	LBX	LCF	OAL	LF	PL	S10	DCON	Estoque	Tipo	Prazo de entrega padrão
2.60	DCBSSD0260	-	12.2	38.2	38	0.2	-	3	<input type="checkbox"/>	3	☉
2.70	DCBSSD0270	-	12.2	38.2	38	0.2	-	3	<input type="checkbox"/>	3	☉
2.80	DCBSSD0280	-	12.2	38.2	38	0.2	-	3	<input type="checkbox"/>	3	☉
2.90	DCBSSD0290	-	12.2	38.2	38	0.2	-	3	<input type="checkbox"/>	3	☉
3.00	DCBSSD0300	-	12.2	38.2	38	0.2	-	3	<input type="checkbox"/>	3	☉

CONDIÇÕES DE CORTE RECOMENDADAS

Material	Nitreto de alumínio				Óxido de alumínio				Óxido de zircônio			
	Diâm. DC (mm)	Vel. de Corte (m/min)	Rotação (min ⁻¹)	Taxa de Avanço (mm/rot)	Incremento (mm)	Vel. de Corte (m/min)	Rotação (min ⁻¹)	Taxa de Avanço (mm/rot)	Incremento (mm)	Vel. de Corte (m/min)	Rotação (min ⁻¹)	Taxa de Avanço (mm/rot)
0.05	3	20000	0.000015	0.001	3	20000	0.00001	0.001	3	20000	0.00001	0.001
0.08	5	20000	0.00003	0.003	5	20000	0.00002	0.002	5	20000	0.00002	0.001
0.1	6	20000	0.0002	0.01	6	20000	0.0001	0.005	6	20000	0.0001	0.003
0.16	9	18000	0.0002	0.01	9	18000	0.0001	0.005	9	18000	0.0001	0.003
0.2	9	15000	0.0002	0.01	9	15000	0.0001	0.005	9	15000	0.0001	0.003
0.32	12	12000	0.0002	0.01	12	12000	0.0001	0.005	12	12000	0.0001	0.003
0.4	15	12000	0.0002	0.01	15	12000	0.0001	0.005	15	12000	0.0001	0.003
0.5	19	12000	0.0002	0.01	19	12000	0.0001	0.005	19	12000	0.0001	0.003
0.6	19	10000	0.0002	0.01	19	10000	0.0001	0.005	19	10000	0.0001	0.003
0.8	25	10000	0.0002	0.01	25	10000	0.0001	0.005	25	10000	0.0001	0.003
1	31	10000	0.0002	0.01	31	10000	0.0001	0.005	31	10000	0.0001	0.003
1.2	30	8000	0.00025	0.01	30	8000	0.00015	0.005	30	8000	0.00015	0.003
1.6	40	8000	0.0003	0.01	40	8000	0.0002	0.005	40	8000	0.0002	0.003
2	38	6000	0.0003	0.01	38	6000	0.0002	0.005	38	6000	0.0002	0.003
3	47	5000	0.0003	0.01	47	5000	0.0003	0.005	47	5000	0.0002	0.003

Material	Carboneto de silício Nitreto de silício				Vidro de Quartzo				
	Diâm. DC (mm)	Vel. de Corte (m/min)	Rotação (min ⁻¹)	Taxa de Avanço (mm/rot)	Incremento (mm)	Vel. de Corte (m/min)	Rotação (min ⁻¹)	Taxa de Avanço (mm/rot)	Incremento (mm)
0.05	3	20000	0.000005	0.0005	3	20000	0.000015	0.001	
0.08	5	20000	0.00001	0.001	5	20000	0.00003	0.005	
0.1	6	20000	0.00005	0.002	6	20000	0.0002	0.05	
0.16	9	18000	0.00005	0.002	9	18000	0.0002	0.05	
0.2	9	15000	0.00005	0.002	9	15000	0.0002	0.05	
0.32	12	12000	0.00005	0.002	12	12000	0.0002	0.05	
0.4	15	12000	0.00005	0.002	15	12000	0.0003	0.05	
0.5	19	12000	0.00005	0.002	19	12000	0.0003	0.05	
0.6	19	10000	0.00005	0.002	19	10000	0.0003	0.05	
0.8	25	10000	0.00005	0.002	25	10000	0.0003	0.05	
1	31	10000	0.00005	0.002	31	10000	0.0003	0.05	
1.2	30	8000	0.00007	0.002	30	8000	0.0004	0.05	
1.6	40	8000	0.0001	0.002	40	8000	0.0004	0.05	
2	38	6000	0.0001	0.002	38	6000	0.0004	0.05	
3	47	5000	0.0001	0.002	47	5000	0.0005	0.05	

Nota 1) Dependendo do tipo de máquina, é possível aplicar rotações acima de 20000min⁻¹.

Nota 2) Utilize fluido refrigerante solúvel em água ou fluido de retífica.

Nota 3) Para diâmetros não informados na tabela, favor calcular com base nos diâmetros mais próximos.

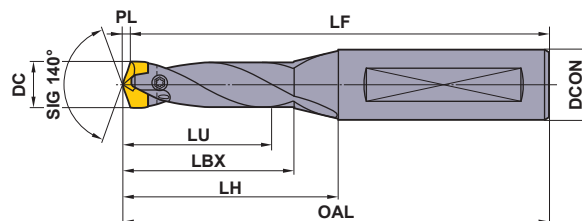
FURAÇÃO(TIPO INTERCAMBIÁVEL)

STAW

- Aresta de corte ondulada para melhor controle do cavaco.
- Sistema de fixação altamente rígida oferece estabilidade e confiabilidade na usinagem de furos pequenos.



Broca intercambiável de diâmetro pequeno



SUPORTES


DC (mm)	Prof. de Furo (L/D)	Suporte		Dimensões (mm)							F Chave	Inserto			
		Referência para Pedido	Estoque	LU	LBX	LH	OAL	LF	PL	DCON		DC (mm)	Referência para Pedido	Estoque VP15TF VP10H	
10.0 10.4	1.5	STAWSS1000S16	●	16.8	23.8	33.8	81.8	80	1.8	16	TIP06F	10.0	* STAWN1000TH	●	<input type="checkbox"/>
	3	STAWSN1000S16	●	31.8	38.8	48.8	96.8	95	1.8	16	TIP06F	10.1	STAWN1010TH	●	<input type="checkbox"/>
	5	STAWMN1000S16	●	51.8	58.8	68.8	116.8	115	1.8	16	TIP06F	10.2	STAWN1020TH	●	<input type="checkbox"/>
	8	STAWLN1000S16	●	81.8	88.8	98.8	146.8	145	1.8	16	TIP06F	10.3	STAWN1030TH	●	<input type="checkbox"/>
10.5 10.9	1.5	STAWSS1050S16	●	17.7	23.9	33.9	81.9	80	1.9	16	TIP06F	10.5	* STAWN1050TH	●	<input type="checkbox"/>
	3	STAWSN1050S16	●	33.4	38.9	48.9	96.9	95	1.9	16	TIP06F	10.6	STAWN1060TH	●	<input type="checkbox"/>
	5	STAWMN1050S16	●	54.4	58.9	68.9	116.9	115	1.9	16	TIP06F	10.7	STAWN1070TH	●	<input type="checkbox"/>
	8	STAWLN1050S16	●	85.9	88.9	98.9	146.9	145	1.9	16	TIP06F	10.8	STAWN1080TH	●	<input type="checkbox"/>
11.0 11.4	1.5	STAWSS1100S16	●	18.5	27.0	38.0	86.0	84	2.0	16	TIP06F	11.0	* STAWN1100TH	●	<input type="checkbox"/>
	3	STAWSN1100S16	●	35.0	43.0	54.0	102.0	100	2.0	16	TIP06F	11.1	STAWN1110TH	●	<input type="checkbox"/>
	5	STAWMN1100S16	●	57.0	68.0	79.0	127.0	125	2.0	16	TIP06F	11.2	STAWN1120TH	●	<input type="checkbox"/>
	8	STAWLN1100S16	●	90.0	98.0	109.0	157.0	155	2.0	16	TIP06F	11.3	STAWN1130TH	●	<input type="checkbox"/>
11.5 11.9	1.5	STAWSS1150S16	●	19.4	27.1	38.1	86.1	84	2.1	16	TIP06F	11.5	* STAWN1150TH	●	<input type="checkbox"/>
	3	STAWSN1150S16	●	36.6	43.1	54.1	102.1	100	2.1	16	TIP06F	11.6	STAWN1160TH	●	<input type="checkbox"/>
	5	STAWMN1150S16	●	59.6	68.1	79.1	127.1	125	2.1	16	TIP06F	11.7	STAWN1170TH	●	<input type="checkbox"/>
	8	STAWLN1150S16	●	94.1	98.1	109.1	157.1	155	2.1	16	TIP06F	11.8	STAWN1180TH	●	<input type="checkbox"/>
12.0 12.4	1.5	STAWSS1200S16	●	20.2	29.2	41.2	89.2	87	2.2	16	TIP06F	12.0	* STAWN1200TH	●	<input type="checkbox"/>
	3	STAWSN1200S16	●	38.2	47.2	59.2	107.2	105	2.2	16	TIP06F	12.1	STAWN1210TH	●	<input type="checkbox"/>
	5	STAWMN1200S16	●	62.2	72.2	84.2	132.2	130	2.2	16	TIP06F	12.2	STAWN1220TH	●	<input type="checkbox"/>
	8	STAWLN1200S16	●	98.2	107.2	119.2	167.2	165	2.2	16	TIP06F	12.3	STAWN1230TH	●	<input type="checkbox"/>
												12.4	STAWN1240TH	●	<input type="checkbox"/>

Nota 1) As dimensões indicadas (*) referem-se à montagem de insertos.

Nota 2) Por favor entre em contato para qualquer geometria que não conste no catálogo (ex.: diâmetro e comprimento diferente.).

● : Estoque mantido. □ : Sem estoque, produzido somente por pedido.

□ : Para produtos especiais, o lote mínimo será 5.
Cada embalagem de inserto contém 1 peça.


DC (mm)	Prof. de Furo (L/D)	Suporte		Dimensões (mm)							F  Chave	Inserto			
		Referência para Pedido	Estoque	LU	LBX	LH	OAL	LF	PL	DCON		DC (mm)	Referência para Pedido	Estoque VP15TF VP10H	
12.5 12.9	1.5	STAWSS1250S16	●	21.1	29.3	41.3	89.3	87	2.3	16	TIP06F	12.5	* STAWN1250TH	●	□
	3	STAWSN1250S16	●	39.8	47.3	59.3	107.3	105	2.3	16	TIP06F	12.6	STAWN1260TH	●	□
	5	STAWMN1250S16	●	64.8	72.3	84.3	132.3	130	2.3	16	TIP06F	12.7	STAWN1270TH	●	□
	8	STAWLN1250S16	●	102.3	107.3	119.3	167.3	165	2.3	16	TIP06F	12.8	STAWN1280TH	●	□
13.0 13.4	1.5	STAWSS1300S16	●	21.9	32.4	45.4	93.4	91	2.4	16	TIP08W	13.0	* STAWN1300TH	●	□
	3	STAWSN1300S16	●	41.4	51.4	64.4	112.4	110	2.4	16	TIP08W	13.1	STAWN1310TH	●	□
	5	STAWMN1300S16	●	67.4	76.4	89.4	137.4	135	2.4	16	TIP08W	13.2	STAWN1320TH	●	□
	8	STAWLN1300S16	●	106.4	116.4	129.4	177.4	175	2.4	16	TIP08W	13.3	STAWN1330TH	●	□
13.5 13.9	1.5	STAWSS1350S16	●	22.8	32.5	45.5	93.5	91	2.5	16	TIP08W	13.4	STAWN1340TH	●	□
	3	STAWSN1350S16	●	43.0	51.5	64.5	112.5	110	2.5	16	TIP08W	13.5	* STAWN1350TH	●	□
	5	STAWMN1350S16	●	70.0	76.5	89.5	137.5	135	2.5	16	TIP08W	13.6	STAWN1360TH	●	□
	8	STAWLN1350S16	●	110.5	116.5	129.5	177.5	175	2.5	16	TIP08W	13.7	STAWN1370TH	●	□
14.0 14.4	1.5	STAWSS1400S16	●	23.5	33.5	47.5	95.5	93	2.5	16	TIP08W	13.8	STAWN1380TH	●	□
	3	STAWSN1400S16	●	44.5	55.5	69.5	117.5	115	2.5	16	TIP08W	13.9	STAWN1390TH	●	□
	5	STAWMN1400S16	●	72.5	85.5	99.5	147.5	145	2.5	16	TIP08W	14.0	* STAWN1400TH	●	□
	8	STAWLN1400S16	●	114.5	124.5	139.5	187.5	185	2.5	16	TIP08W	14.1	STAWN1410TH	●	□
14.5 14.9	1.5	STAWSS1450S16	●	24.4	33.6	47.6	95.6	93	2.6	16	TIP08W	14.2	STAWN1420TH	●	□
	3	STAWSN1450S16	●	46.1	55.6	69.6	117.6	115	2.6	16	TIP08W	14.3	STAWN1430TH	●	□
	5	STAWMN1450S16	●	75.1	85.6	99.6	147.6	145	2.6	16	TIP08W	14.4	STAWN1440TH	●	□
	8	STAWLN1450S16	●	118.6	124.6	139.6	187.6	185	2.6	16	TIP08W	14.5	* STAWN1450TH	●	□
15.0 15.4	1.5	STAWSS1500S20	●	25.2	35.7	50.7	100.7	98	2.7	20	TIP08W	14.6	STAWN1460TH	●	□
	3	STAWSN1500S20	●	47.7	62.7	77.7	127.7	125	2.7	20	TIP08W	14.7	STAWN1470TH	●	□
	5	STAWMN1500S20	●	77.7	92.7	107.7	157.7	155	2.7	20	TIP08W	14.8	STAWN1480TH	●	□
	8	STAWLN1500S20	●	122.7	132.7	150.7	200.7	198	2.7	20	TIP08W	14.9	STAWN1490TH	●	□
15.0 15.4	1.5	STAWSS1500S20	●	25.2	35.7	50.7	100.7	98	2.7	20	TIP08W	15.0	* STAWN1500TH	●	□
	3	STAWSN1500S20	●	47.7	62.7	77.7	127.7	125	2.7	20	TIP08W	15.1	STAWN1510TH	●	□
	5	STAWMN1500S20	●	77.7	92.7	107.7	157.7	155	2.7	20	TIP08W	15.2	STAWN1520TH	●	□
	8	STAWLN1500S20	●	122.7	132.7	150.7	200.7	198	2.7	20	TIP08W	15.3	STAWN1530TH	●	□
15.0 15.4	1.5	STAWSS1500S20	●	25.2	35.7	50.7	100.7	98	2.7	20	TIP08W	15.4	STAWN1540TH	●	□
	3	STAWSN1500S20	●	47.7	62.7	77.7	127.7	125	2.7	20	TIP08W	15.4	STAWN1540TH	●	□

FURAÇÃO(TIPO INTERCAMBIÁVEL)

STAW

Broca intercambiável de diâmetro pequeno

METAL DURO

DC (mm)	Prof. de Furo (L/D)	Suporte		Dimensões (mm)							W  Chave	Inserto				
		Referência para Pedido	Estoque	LU	LBX	LH	OAL	LF	PL	DCON		DC (mm)	Referência para Pedido	Estoque VP15TF VP10H		
15.5 16.4	1.5	STAWSS1600S20	●	26.1	36.8	52.8	102.8	100	2.8	20	TIP10W	15.5	* STAWN1550T	●		
				15.6	STAWN1560T	●										
				15.7	STAWN1570T	●										
	3	STAWSN1600S20	●	49.3	62.8	82.8	132.8	130	2.8	20	TIP10W	15.8	STAWN1580T	●		
				15.9	STAWN1590T	●										
				16.0	STAWN1600T	●										
	5	STAWMN1600S20	●	80.3	92.8	117.8	167.8	165	2.8	20	TIP10W	16.1	STAWN1610T	●		
				16.2	STAWN1620T	●										
				16.3	STAWN1630T	●										
	8	STAWLN1600S20	●	126.8	140.8	160.8	210.8	208	2.8	20	TIP10W	16.4	STAWN1640T	●		
				16.5	* STAWN1650T	●										
				16.6	STAWN1660T	●										
16.5 17.4	1.5	STAWSS1700S20	●	27.8	39.0	56.0	106.0	103	3.0	20	TIP10W	16.7	STAWN1670T	●		
				16.8	STAWN1680T	●										
				16.9	STAWN1690T	●										
	3	STAWSN1700S20	●	52.5	64.0	88.0	138.0	135	3.0	20	TIP10W	17.0	STAWN1700T	●		
				17.1	STAWN1710T	●										
				17.2	STAWN1720T	●										
	5	STAWMN1700S20	●	85.5	98.0	123.0	173.0	170	3.0	20	TIP10W	17.3	STAWN1730T	●		
				17.4	STAWN1740T	●										
				17.5	* STAWN1750T	●										
	8	STAWLN1700S20	●	135.0	149.0	169.0	219.0	216	3.0	20	TIP10W	17.6	STAWN1760T	●		
				17.7	STAWN1770T	●										
				17.8	STAWN1780T	●										
17.5 18.4	1.5	STAWSS1800S20	●	29.5	40.2	58.2	108.2	105	3.2	20	TIP10W	17.9	STAWN1790T	●		
				18.0	STAWN1800T	●										
				18.1	STAWN1810T	●										
	3	STAWSN1800S20	●	55.7	67.2	93.2	143.2	140	3.2	20	TIP10W	18.2	STAWN1820T	●		
				18.3	STAWN1830T	●										
				18.4	STAWN1840T	●										
	5	STAWMN1800S20	●	90.7	103.2	128.2	178.2	175	3.2	20	TIP10W					
	8	STAWLN1800S20	●	143.2	157.2	177.2	227.2	224	3.2	20	TIP10W					

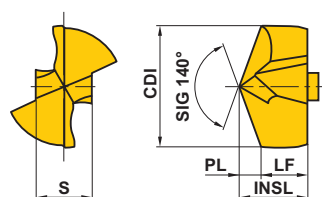
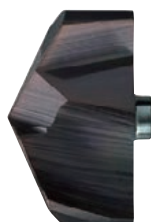
Nota 1) As dimensões indicadas (*) referem-se à montagem de insertos.

Nota 2) Por favor entre em contato para qualquer geometria que não conste no catálogo (ex.: diâmetro e comprimento diferente.).

● : Estoque mantido. □ : Sem estoque, produzido somente por pedido.

□ : Para produtos especiais, o lote mínimo será 5.
Cada embalagem de inserto contém 1 peça.

INSERTOS



Referência para Pedido	Com Cobertura		Dimensões (mm)					Código do Suporte
	VP15TF	VP10H	CDI	INSL	LF	PL	S	
STAWN1000TH	●	□	10.0	5.6	3.8	1.8	4.6	STAWSS1000S16
STAWN1010TH	●	□	10.1	5.6	3.8	1.8	4.6	STAWSN1000S16
STAWN1020TH	●	□	10.2	5.7	3.8	1.9	4.6	STAWMN1000S16
STAWN1030TH	●	□	10.3	5.7	3.8	1.9	4.6	STAWLN1000S16
STAWN1040TH	●	□	10.4	5.7	3.8	1.9	4.6	
STAWN1050TH	●	□	10.5	5.9	4.0	1.9	4.8	STAWSS1050S16
STAWN1060TH	●	□	10.6	5.9	4.0	1.9	4.8	STAWSN1050S16
STAWN1070TH	●	□	10.7	5.9	4.0	1.9	4.8	STAWMN1050S16
STAWN1080TH	●	□	10.8	6.0	4.0	2.0	4.8	STAWLN1050S16
STAWN1090TH	●	□	10.9	6.0	4.0	2.0	4.8	
STAWN1100TH	●	□	11.0	6.2	4.2	2.0	5.1	STAWSS1100S16
STAWN1110TH	●	□	11.1	6.2	4.2	2.0	5.1	STAWSN1100S16
STAWN1120TH	●	□	11.2	6.2	4.2	2.0	5.1	STAWMN1100S16
STAWN1130TH	●	□	11.3	6.3	4.2	2.1	5.1	STAWLN1100S16
STAWN1140TH	●	□	11.4	6.3	4.2	2.1	5.1	
STAWN1150TH	●	□	11.5	6.5	4.4	2.1	5.3	STAWSS1150S16
STAWN1160TH	●	□	11.6	6.5	4.4	2.1	5.3	STAWSN1150S16
STAWN1170TH	●	□	11.7	6.5	4.4	2.1	5.3	STAWMN1150S16
STAWN1180TH	●	□	11.8	6.5	4.4	2.1	5.3	STAWLN1150S16
STAWN1190TH	●	□	11.9	6.6	4.4	2.2	5.3	
STAWN1200TH	●	□	12.0	6.8	4.6	2.2	5.5	STAWSS1200S16
STAWN1210TH	●	□	12.1	6.8	4.6	2.2	5.5	STAWSN1200S16
STAWN1220TH	●	□	12.2	6.8	4.6	2.2	5.5	STAWMN1200S16
STAWN1230TH	●	□	12.3	6.8	4.6	2.2	5.5	STAWLN1200S16
STAWN1240TH	●	□	12.4	6.9	4.6	2.3	5.5	
STAWN1250TH	●	□	12.5	7.1	4.8	2.3	5.8	STAWSS1250S16
STAWN1260TH	●	□	12.6	7.1	4.8	2.3	5.8	STAWSN1250S16
STAWN1270TH	●	□	12.7	7.1	4.8	2.3	5.8	STAWMN1250S16
STAWN1280TH	●	□	12.8	7.1	4.8	2.3	5.8	STAWLN1250S16
STAWN1290TH	●	□	12.9	7.1	4.8	2.3	5.8	
STAWN1300TH	●	□	13.0	7.3	4.9	2.4	6.0	STAWSS1300S16
STAWN1310TH	●	□	13.1	7.3	4.9	2.4	6.0	STAWSN1300S16
STAWN1320TH	●	□	13.2	7.3	4.9	2.4	6.0	STAWMN1300S16
STAWN1330TH	●	□	13.3	7.3	4.9	2.4	6.0	STAWLN1300S16
STAWN1340TH	●	□	13.4	7.3	4.9	2.4	6.0	
STAWN1350TH	●	□	13.5	7.6	5.1	2.5	6.2	STAWSS1350S16
STAWN1360TH	●	□	13.6	7.6	5.1	2.5	6.2	STAWSN1350S16
STAWN1370TH	●	□	13.7	7.6	5.1	2.5	6.2	STAWMN1350S16
STAWN1380TH	●	□	13.8	7.6	5.1	2.5	6.2	STAWLN1350S16
STAWN1390TH	●	□	13.9	7.6	5.1	2.5	6.2	
STAWN1400TH	●	□	14.0	7.8	5.3	2.5	6.4	STAWSS1400S16
STAWN1410TH	●	□	14.1	7.9	5.3	2.6	6.4	STAWSN1400S16
STAWN1420TH	●	□	14.2	7.9	5.3	2.6	6.4	STAWMN1400S16
STAWN1430TH	●	□	14.3	7.9	5.3	2.6	6.4	STAWLN1400S16
STAWN1440TH	●	□	14.4	7.9	5.3	2.6	6.4	

N

FURAÇÃO

FURAÇÃO(TIPO INTERCAMBIÁVEL)

STAW

Broca intercambiável de diâmetro pequeno

METAL DURO

Referência para Pedido	Com Cobertura		Dimensões (mm)					Código do Suporte
	VP15TF	VP10H	CDI	INSL	LF	PL	S	
STAWN1450TH	●		14.5	8.1	5.5	2.6	6.7	STAWSS1450S16 STAWSN1450S16 STAWMN1450S16 STAWLN1450S16
STAWN1460TH	●		14.6	8.2	5.5	2.7	6.7	
STAWN1470TH	●		14.7	8.2	5.5	2.7	6.7	
STAWN1480TH	●		14.8	8.2	5.5	2.7	6.7	
STAWN1490TH	●		14.9	8.2	5.5	2.7	6.7	
STAWN1500TH	●		15.0	8.4	5.7	2.7	6.9	STAWSS1500S20 STAWSN1500S20 STAWMN1500S20 STAWLN1500S20
STAWN1510TH	●		15.1	8.4	5.7	2.7	6.9	
STAWN1520TH	●		15.2	8.5	5.7	2.8	6.9	
STAWN1530TH	●		15.3	8.5	5.7	2.8	6.9	
STAWN1540TH	●		15.4	8.5	5.7	2.8	6.9	
STAWN1550T	●		15.5	8.7	5.9	2.8	7.1	STAWSS1600S20 STAWSN1600S20 STAWMN1600S20 STAWLN1600S20
STAWN1560T	●		15.6	8.7	5.9	2.8	7.1	
STAWN1570T	●		15.7	8.8	5.9	2.9	7.1	
STAWN1580T	●		15.8	8.8	5.9	2.9	7.1	
STAWN1590T	●		15.9	8.8	5.9	2.9	7.1	
STAWN1600T	●		16.0	8.8	5.9	2.9	7.1	
STAWN1610T	●		16.1	8.8	5.9	2.9	7.1	
STAWN1620T	●		16.2	8.8	5.9	2.9	7.1	
STAWN1630T	●		16.3	8.9	5.9	3.0	7.1	
STAWN1640T	●		16.4	8.9	5.9	3.0	7.1	
STAWN1650T	●		16.5	9.3	6.3	3.0	7.6	STAWSS1700S20 STAWSN1700S20 STAWMN1700S20 STAWLN1700S20
STAWN1660T	●		16.6	9.3	6.3	3.0	7.6	
STAWN1670T	●		16.7	9.3	6.3	3.0	7.6	
STAWN1680T	●		16.8	9.4	6.3	3.1	7.6	
STAWN1690T	●		16.9	9.4	6.3	3.1	7.6	
STAWN1700T	●		17.0	9.4	6.3	3.1	7.6	
STAWN1710T	●		17.1	9.4	6.3	3.1	7.6	
STAWN1720T	●		17.2	9.4	6.3	3.1	7.6	
STAWN1730T	●		17.3	9.4	6.3	3.1	7.6	
STAWN1740T	●		17.4	9.5	6.3	3.2	7.6	
STAWN1750T	●		17.5	9.9	6.7	3.2	8.1	STAWSS1800S20 STAWSN1800S20 STAWMN1800S20 STAWLN1800S20
STAWN1760T	●		17.6	9.9	6.7	3.2	8.1	
STAWN1770T	●		17.7	9.9	6.7	3.2	8.1	
STAWN1780T	●		17.8	9.9	6.7	3.2	8.1	
STAWN1790T	●		17.9	10.0	6.7	3.3	8.1	
STAWN1800T	●		18.0	10.0	6.7	3.3	8.1	
STAWN1810T	●		18.1	10.0	6.7	3.3	8.1	
STAWN1820T	●		18.2	10.0	6.7	3.3	8.1	
STAWN1830T	●		18.3	10.0	6.7	3.3	8.1	
STAWN1840T	●		18.4	10.0	6.7	3.3	8.1	

FURAÇÃO
N

● : Estoque mantido.

Nota: 1 inserto por embalagem

PREPARAÇÃO DE ARESTA

Se um inserto com preparação de aresta for necessário, solicite utilizando o símbolo abaixo, o que melhor lhe atender.

(Referência para Pedido do Inserto)



(Preparação Standard)

Tipo da Preparação	Espessura da Preparação (mm)
F	0
G	0.02—0.05
H	0.05—0.10
-	0.10—0.15
K	0.15—0.20
S	0.20—0.25
M	0.25—0.30

CONDIÇÕES DE CORTE RECOMENDADAS

Material	Diâm. da Broca	φ10.0—φ12.9		φ13.0—φ13.9		φ14.0—φ15.4		φ15.5—φ18.4	
		Condições Dureza	Vel. de Corte (m/min)	Avanço (mm/rot)	Vel. de Corte (m/min)	Avanço (mm/rot)	Vel. de Corte (m/min)	Avanço (mm/rot)	Vel. de Corte (m/min)
P Aço Baixo Carbono	≤180HB	80 (60—100)	0.20 (0.15—0.25)	90 (70—110)	0.25 (0.20—0.30)	100 (80—120)	0.30 (0.25—0.35)	100 (80—120)	0.35 (0.25—0.40)
	180—280HB	80 (60—100)	0.20 (0.15—0.25)	90 (70—110)	0.25 (0.20—0.30)	100 (80—120)	0.30 (0.25—0.35)	100 (80—120)	0.35 (0.25—0.40)
	Aço Carbono Aço Liga 280—350HB	70 (60—90)	0.20 (0.15—0.25)	80 (60—100)	0.25 (0.20—0.30)	90 (70—110)	0.25 (0.20—0.30)	90 (70—110)	0.30 (0.20—0.35)
M Aço Inoxidável	≤200HB	40 (30—50)	0.13 (0.10—0.16)	50 (40—60)	0.15 (0.12—0.18)	60 (50—70)	0.17 (0.14—0.20)	60 (50—70)	0.17 (0.14—0.20)
K Ferro Fundido Cinzento	Resistência à Tração ≤350MPa	80 (60—100)	0.20 (0.15—0.25)	90 (70—110)	0.25 (0.20—0.30)	100 (80—120)	0.30 (0.25—0.35)	120 (80—140)	0.45 (0.35—0.55)
	Ferro Fundido Nodular Resistência à Tração ≤450MPa	70 (60—90)	0.20 (0.15—0.25)	80 (60—100)	0.25 (0.20—0.30)	90 (70—110)	0.30 (0.25—0.35)	100 (80—120)	0.35 (0.25—0.40)

Nota 1) Quando usar uma broca para um furo com profundidade DC×1.5, é possível aumentar o avanço em aprox. 20%.

Nota 2) Ao utilizar suportes DC×8, reduza a velocidade de corte em aprox. 20%.

Nota 3) Para uso de brocas DC×8, recomenda-se usinar previamente um furo de guia com o mesmo tamanho.

Nota 4) Para aço inoxidável, use refrigeração interna. (Névoa e MQL não são recomendados.)

UTILIZAÇÃO

■ INSTALAÇÃO DO INSERTO

1. Antes de montar o inserto no suporte, limpe o alojamento e certifique-se de que não há sujeira na fenda nem no alojamento.

2. Para abrir a ponta do suporte, use a chave fornecida para afrouxar o parafuso interno, depois coloque o inserto no alojamento como mostrado na figura 1.

*Certifique-se de que a chave está firmemente em contato com a base da cabeça do parafuso interno quando apertá-lo.

3. Após posicionar o inserto no alojamento, aperte o parafuso interno enquanto segura o inserto levemente como mostrado na figura 2 para localizar e fixar o inserto seguramente.

*Certifique-se de que a chave está firmemente em contato com a base da cabeça do parafuso interno quando apertá-lo.

Aperte o parafuso de fixação de acordo com o torque abaixo.

Diâmetro da broca (mm)	Torque	
	N · m	
10 –12.9	1	
13 –15.4	2	
15.5 –18.4	2.5	

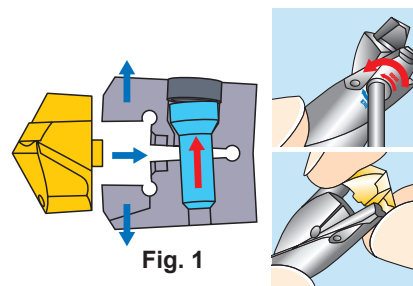
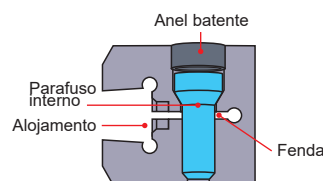


Fig. 1

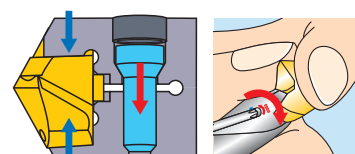
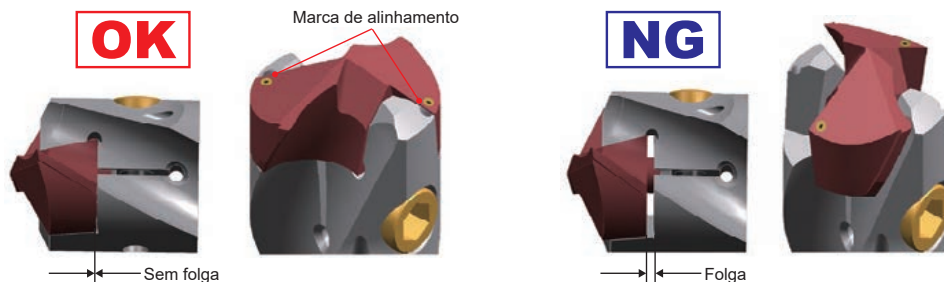


Fig. 2

4. Verifique se não há nenhuma folga entre a base do inserto com o suporte.



Nota 1) A fixação insuficiente ou incorreta dos insertos podem causar baixo desempenho da furação e/ou quebra da broca.

Portanto, assegure o alinhamento das marcas do corpo e do inserto na montagem.

Durante a usinagem, use óculos de proteção e outras medidas de segurança.

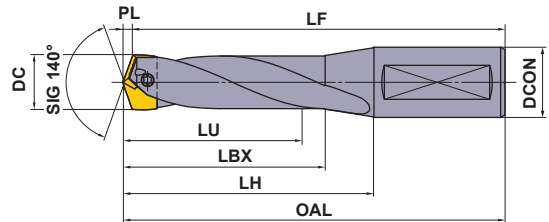
PEÇAS DE REPOSIÇÃO

Suporte Correspondente	Referência para pedido (Embalagem com parafuso interno e anel batente)		
		Parafuso interno	Anel batente
STAWSS/SN/MN/LN1000S16	WS203107TPS-35LH	WS203107TPS	WS35LH
STAWSS/SN/MN/LN1050S16	WS203107TPS-35LH	WS203107TPS	WS35LH
STAWSS/SN/MN/LN1100S16	WS203108TPS-35LH	WS203108TPS	WS35LH
STAWSS/SN/MN/LN1150S16	WS203108TPS-35LH	WS203108TPS	WS35LH
STAWSS/SN/MN/LN1200S16	WS203108TPS-35LH	WS203108TPS	WS35LH
STAWSS/SN/MN/LN1250S16	WS203108TPS-35LH	WS203108TPS	WS35LH
STAWSS/SN/MN/LN1300S16	WS253909TPS-45LH	WS253909TPS	WS45LH
STAWSS/SN/MN/LN1350S16	WS253909TPS-45LH	WS253909TPS	WS45LH
STAWSS/SN/MN/LN1400S16	WS253909TPS-45LH	WS253909TPS	WS45LH
STAWSS/SN/MN/LN1450S16	WS253909TPS-45LH	WS253909TPS	WS45LH
STAWSS/SN/MN/LN1500S20	WS253909TPS-45LH	WS253909TPS	WS45LH
STAWSS/SN/MN/LN1600S20	WS304912TPS-55LH	WS304912TPS	WS55LH
STAWSS/SN/MN/LN1700S20	WS304912TPS-55LH	WS304912TPS	WS55LH
STAWSS/SN/MN/LN1800S20	WS304912TPS-55LH	WS304912TPS	WS55LH

Nota 1) O conjunto de peças de reposição é composto por parafuso interno, anel batente e manual de instruções. Substitua as peças conforme o manual.



(Uso Geral)



SUPORTES

DC (mm)	Prof. de Furo (L/D)	Suporte		Dimensões (mm)							Parafuso de Fixação	Chave	Limpador	Lubrificante Antitravante	Inserto			
		Referência para Pedido	Estoque	LU	LBX	LH	OAL	LF	PL	DCON					DC (mm)	Referência para Pedido	Estoque	
															VP15TF	VP10H		
18.5 19.4	3	TAWSN1900S25	●	58.9	71.4	102.4	158.4	155.0	3.4	25	WS304517T	TKY10T	WPT4405	MK1KS	18.5	*TAWNH1850T	●	<input type="checkbox"/>
				18.6	TAWNH1860T	●	<input type="checkbox"/>											
				18.7	TAWNH1870T	●	<input type="checkbox"/>											
	5	TAWMN1900S25	●	95.9	110.4	137.4	193.4	190.0	3.4	25	WS304517T	TKY10T	WPT4405	MK1KS	18.8	TAWNH1880T	●	<input type="checkbox"/>
				18.9	TAWNH1890T	●	<input type="checkbox"/>											
				19.0	TAWNH1900T	●	<input type="checkbox"/>											
				19.1	TAWNH1910T	●	<input type="checkbox"/>											
				19.2	TAWNH1920T	●	<input type="checkbox"/>											
				19.3	TAWNH1930T	●	<input type="checkbox"/>											
8	TAWLN1900S25	●	151.4	165.4	188.4	244.4	241.0	3.4	25	WS304517T	TKY10T	WPT4405	MK1KS	19.4	TAWNH1940T	●	<input type="checkbox"/>	
			19.5	*TAWNH1950T	●	<input type="checkbox"/>												
			19.6	TAWNH1960T	●	<input type="checkbox"/>												
19.5 20.4	3	TAWSN2000S25	●	62.0	75.5	102.5	158.5	155.0	3.5	25	WS304518T	TKY10T	WPT4405	MK1KS	19.7	TAWNH1970T	●	<input type="checkbox"/>
				19.8	TAWNH1980T	●	<input type="checkbox"/>											
				19.9	TAWNH1990T	●	<input type="checkbox"/>											
	5	TAWMN2000S25	●	101.0	116.5	142.5	198.5	195.0	3.5	25	WS304518T	TKY10T	WPT4405	MK1KS	20.0	TAWNH2000T	●	<input type="checkbox"/>
				20.1	TAWNH2010T	<input type="checkbox"/>	<input type="checkbox"/>											
				20.2	TAWNH2020T	<input type="checkbox"/>	<input type="checkbox"/>											
				20.3	TAWNH2030T	<input type="checkbox"/>	<input type="checkbox"/>											
	8	TAWLN2000S25	●	159.5	173.5	196.5	252.5	249.0	3.5	25	WS304518T	TKY10T	WPT4405	MK1KS	20.4	TAWNH2040T	<input type="checkbox"/>	<input type="checkbox"/>

Nota 1) As dimensões indicadas (*) referem-se à montagem de insertos.

Nota 2) Por favor entre em contato para qualquer geometria que não conste no catálogo (ex.: diâmetro e comprimento diferente.).

● : Estoque mantido. : Sem estoque, produzido somente por pedido.

: Para produtos especiais, o lote mínimo será 5.
Cada embalagem de inserto contém 1 peça.

DESCRIÇÃO DO INSERTO > N156
ACESSÓRIOS > P001

FURAÇÃO(TIPO INTERCAMBIÁVEL)

TAW

METAL DURO

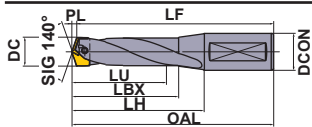
DC (mm)	Prof. de Furo (L/D)	Suporte		Dimensões (mm)							Parafuso de Fixação	Chave	Limpador	Lubrificante Antitravante	Inserto			
		Referência para Pedido	Estoque	LU	LBX	LH	OAL	LF	PL	DCON					DC (mm)	Referência para Pedido	Estoque	
																	VP15TF	VP10H
20.5 21.4	3	TAWSN2100S25	●	65.2	78.7	102.7	158.7	155.0	3.7	25	WS304518T	TKY10T	WPT4405	MK1KS	20.5	*TAWNH2050T	●	<input type="checkbox"/>
															20.6	TAWNH2060T	<input type="checkbox"/>	<input type="checkbox"/>
															20.7	TAWNH2070T	<input type="checkbox"/>	<input type="checkbox"/>
															20.8	TAWNH2080T	<input type="checkbox"/>	<input type="checkbox"/>
	5	TAWMN2100S25	●	106.2	121.7	142.7	198.7	195.0	3.7	25	WS304518T	TKY10T	WPT4405	MK1KS	20.9	TAWNH2090T	<input type="checkbox"/>	<input type="checkbox"/>
															21.0	TAWNH2100T	●	<input type="checkbox"/>
															21.1	TAWNH2110T	<input type="checkbox"/>	<input type="checkbox"/>
															21.2	TAWNH2120T	<input type="checkbox"/>	<input type="checkbox"/>
	8	TAWLN2100S25	●	167.7	181.7	205.7	261.7	258.0	3.7	25	WS304518T	TKY10T	WPT4405	MK1KS	21.3	TAWNH2130T	<input type="checkbox"/>	<input type="checkbox"/>
															21.4	TAWNH2140T	<input type="checkbox"/>	<input type="checkbox"/>
															21.5	*TAWNH2150T	●	<input type="checkbox"/>
															21.6	TAWNH2160T	<input type="checkbox"/>	<input type="checkbox"/>
21.5 22.4	3	TAWSN2200S25	●	68.4	83.2	108.2	164.2	160.3	3.9	25	WS355520T	TKY15T	WPT4405	MK1KS	21.7	TAWNH2170T	<input type="checkbox"/>	<input type="checkbox"/>
															21.8	TAWNH2180T	<input type="checkbox"/>	<input type="checkbox"/>
															21.9	TAWNH2190T	<input type="checkbox"/>	<input type="checkbox"/>
															22.0	TAWNH2200T	●	<input type="checkbox"/>
	5	TAWMN2200S25	●	111.4	128.2	148.2	204.2	200.3	3.9	25	WS355520T	TKY15T	WPT4405	MK1KS	22.1	TAWNH2210T	<input type="checkbox"/>	<input type="checkbox"/>
															22.2	TAWNH2220T	<input type="checkbox"/>	<input type="checkbox"/>
															22.3	TAWNH2230T	<input type="checkbox"/>	<input type="checkbox"/>
															22.4	TAWNH2240T	<input type="checkbox"/>	<input type="checkbox"/>
	8	TAWLN2200S25	●	175.9	189.9	213.9	269.9	266.0	3.9	25	WS355520T	TKY15T	WPT4405	MK1KS	22.5	*TAWNH2250T	●	<input type="checkbox"/>
															22.6	TAWNH2260T	<input type="checkbox"/>	<input type="checkbox"/>
															22.7	TAWNH2270T	<input type="checkbox"/>	<input type="checkbox"/>
															22.8	TAWNH2280T	<input type="checkbox"/>	<input type="checkbox"/>
22.5 23.4	3	TAWSN2300S25	●	71.6	86.4	108.4	164.4	160.3	4.1	25	WS355521T	TKY15T	WPT4405	MK1KS	22.9	TAWNH2290T	<input type="checkbox"/>	<input type="checkbox"/>
															23.0	TAWNH2300T	●	<input type="checkbox"/>
															23.1	TAWNH2310T	<input type="checkbox"/>	<input type="checkbox"/>
															23.2	TAWNH2320T	<input type="checkbox"/>	<input type="checkbox"/>
	5	TAWMN2300S25	●	116.6	133.4	158.4	214.4	210.3	4.1	25	WS355521T	TKY15T	WPT4405	MK1KS	23.3	TAWNH2330T	<input type="checkbox"/>	<input type="checkbox"/>
															23.4	TAWNH2340T	<input type="checkbox"/>	<input type="checkbox"/>
															23.5	*TAWNH2350T	●	<input type="checkbox"/>
															23.6	TAWNH2360T	<input type="checkbox"/>	<input type="checkbox"/>
	8	TAWLN2300S25	●	184.1	198.1	227.1	283.1	279.0	4.1	25	WS355521T	TKY15T	WPT4405	MK1KS	23.7	TAWNH2370T	<input type="checkbox"/>	<input type="checkbox"/>
															23.8	TAWNH2380T	<input type="checkbox"/>	<input type="checkbox"/>
															23.9	TAWNH2390T	<input type="checkbox"/>	<input type="checkbox"/>
															24.0	TAWNH2400T	<input type="checkbox"/>	<input type="checkbox"/>

Nota 1) As dimensões indicadas (*) referem-se à montagem de insertos.

Nota 2) Por favor entre em contato para qualquer geometria que não conste no catálogo (ex.: diâmetro e comprimento diferente.).

● : Estoque mantido. □ : Sem estoque, produzido somente por pedido.

□ : Para produtos especiais, o lote mínimo será 5.
Cada embalagem de inserto contém 1 peça.



DC (mm)	Prof. de Furo (L/D)	Suporte		Dimensões (mm)							Parafuso de Fixação	Chave	Limpador	Lubrificante Antitravante	Inserto			
		Referência para Pedido	Estoque	LU	LBX	LH	OAL	LF	PL	DCON					DC (mm)	Referência para Pedido	Estoque VP15TF VP10H	
23.5 24.4	3	TAWSN2400S32	●	74.8	90.6	114.6	174.6	170.3	4.3	32	WS355521T	TKY15T	WPT4405	MK1KS	23.5	*TAWNH2350T	●	<input type="checkbox"/>
															23.6	TAWNH2360T	<input type="checkbox"/>	<input type="checkbox"/>
															23.7	TAWNH2370T	<input type="checkbox"/>	<input type="checkbox"/>
															23.8	TAWNH2380T	<input type="checkbox"/>	<input type="checkbox"/>
	5	TAWMN2400S32	●	121.8	139.6	164.6	224.6	220.3	4.3	32	WS355521T	TKY15T	WPT4405	MK1KS	23.9	TAWNH2390T	<input type="checkbox"/>	<input type="checkbox"/>
															24.0	TAWNH2400T	●	<input type="checkbox"/>
															24.1	TAWNH2410T	<input type="checkbox"/>	<input type="checkbox"/>
															24.2	TAWNH2420T	<input type="checkbox"/>	<input type="checkbox"/>
	8	TAWLN2400S32	●	192.3	206.6	236.6	296.6	292.3	4.3	32	WS355521T	TKY15T	WPT4405	MK1KS	24.3	TAWNH2430T	<input type="checkbox"/>	<input type="checkbox"/>
															24.4	TAWNH2440T	<input type="checkbox"/>	<input type="checkbox"/>
															24.5	*TAWNH2450T	●	<input type="checkbox"/>
															24.6	TAWNH2460T	<input type="checkbox"/>	<input type="checkbox"/>
24.5 25.4	3	TAWSN2500S32	●	78.0	93.1	115.1	175.1	170.6	4.5	32	WS406023T	TKY25T	WPT4405	MK1KS	24.7	TAWNH2470T	<input type="checkbox"/>	<input type="checkbox"/>
															24.8	TAWNH2480T	<input type="checkbox"/>	<input type="checkbox"/>
															24.9	TAWNH2490T	<input type="checkbox"/>	<input type="checkbox"/>
															25.0	TAWNH2500T	●	<input type="checkbox"/>
	5	TAWMN2500S32	●	127.0	145.1	170.1	230.1	225.6	4.5	32	WS406023T	TKY25T	WPT4405	MK1KS	25.1	TAWNH2510T	<input type="checkbox"/>	<input type="checkbox"/>
															25.2	TAWNH2520T	<input type="checkbox"/>	<input type="checkbox"/>
															25.3	TAWNH2530T	<input type="checkbox"/>	<input type="checkbox"/>
															25.4	TAWNH2540T	<input type="checkbox"/>	<input type="checkbox"/>
	8	TAWLN2500S32	●	200.5	215.1	245.1	305.1	300.6	4.5	32	WS406023T	TKY25T	WPT4405	MK1KS	25.5	*TAWNH2550T	●	<input type="checkbox"/>
															25.6	TAWNH2560T	<input type="checkbox"/>	<input type="checkbox"/>
															25.7	TAWNH2570T	<input type="checkbox"/>	<input type="checkbox"/>
															25.8	TAWNH2580T	<input type="checkbox"/>	<input type="checkbox"/>
25.5 26.4	3	TAWSN2600S32	●	81.1	97.2	120.2	180.2	175.6	4.6	32	WS406024T	TKY25T	WPT4405	MK1KS	25.9	TAWNH2590T	<input type="checkbox"/>	<input type="checkbox"/>
															26.0	TAWNH2600T	●	<input type="checkbox"/>
															26.1	TAWNH2610T	<input type="checkbox"/>	<input type="checkbox"/>
															26.2	TAWNH2620T	<input type="checkbox"/>	<input type="checkbox"/>
	8	TAWLN2600S32	●	208.6	223.2	253.2	313.2	308.6	4.6	32	WS406024T	TKY25T	WPT4405	MK1KS	26.3	TAWNH2630T	<input type="checkbox"/>	<input type="checkbox"/>
															26.4	TAWNH2640T	<input type="checkbox"/>	<input type="checkbox"/>

N

FURAÇÃO

FURAÇÃO(TIPO INTERCAMBIÁVEL)

TAW

METAL DURO

DC (mm)	Prof. de Furo (L/D)	Suporte		Dimensões (mm)							Parafuso de Fixação	Chave	Limpador	Lubrificante Antitravante	Inserto			
		Referência para Pedido	Estoque	LU	LBX	LH	OAL	LF	PL	DCON					DC (mm)	Referência para Pedido	Estoque	
																	VP15TF	VP10H
26.5 27.4	3	TAWSN2700S32	●	84.3	99.4	120.4	180.4	175.6	4.8	32	WS406024T	TKY25T	WPT4405	MK1KS	26.5	*TAWNH2650T	●	<input type="checkbox"/>
															26.6	TAWNH2660T	<input type="checkbox"/>	<input type="checkbox"/>
															26.7	TAWNH2670T	<input type="checkbox"/>	<input type="checkbox"/>
															26.8	TAWNH2680T	<input type="checkbox"/>	<input type="checkbox"/>
	5	TAWMN2700S32	●	137.3	156.4	180.4	240.4	235.6	4.8	32	WS406024T	TKY25T	WPT4405	MK1KS	26.9	TAWNH2690T	<input type="checkbox"/>	<input type="checkbox"/>
															27.0	TAWNH2700T	●	<input type="checkbox"/>
															27.1	TAWNH2710T	<input type="checkbox"/>	<input type="checkbox"/>
															27.2	TAWNH2720T	<input type="checkbox"/>	<input type="checkbox"/>
	8	TAWLN2700S32	●	216.8	231.4	261.4	321.4	316.6	4.8	32	WS406024T	TKY25T	WPT4405	MK1KS	27.3	TAWNH2730T	<input type="checkbox"/>	<input type="checkbox"/>
															27.4	TAWNH2740T	<input type="checkbox"/>	<input type="checkbox"/>
															27.5	*TAWNH2750T	●	<input type="checkbox"/>
															27.6	TAWNH2760T	<input type="checkbox"/>	<input type="checkbox"/>
27.5 28.4	3	TAWSN2800S32	●	87.5	102.2	125.2	185.2	180.2	5.0	32	WS508026T	TKY27T	WPT4405	MK1KS	27.7	TAWNH2770T	<input type="checkbox"/>	<input type="checkbox"/>
															27.8	TAWNH2780T	<input type="checkbox"/>	<input type="checkbox"/>
															27.9	TAWNH2790T	<input type="checkbox"/>	<input type="checkbox"/>
															28.0	TAWNH2800T	●	<input type="checkbox"/>
	5	TAWMN2800S32	●	142.5	162.2	185.2	245.2	240.2	5.0	32	WS508026T	TKY27T	WPT4405	MK1KS	28.1	TAWNH2810T	<input type="checkbox"/>	<input type="checkbox"/>
															28.2	TAWNH2820T	<input type="checkbox"/>	<input type="checkbox"/>
															28.3	TAWNH2830T	<input type="checkbox"/>	<input type="checkbox"/>
															28.4	TAWNH2840T	<input type="checkbox"/>	<input type="checkbox"/>
	8	TAWLN2800S32	●	225.0	239.2	269.2	329.2	324.2	5.0	32	WS508026T	TKY27T	WPT4405	MK1KS	28.5	*TAWNH2850T	●	<input type="checkbox"/>
															28.6	TAWNH2860T	<input type="checkbox"/>	<input type="checkbox"/>
															28.7	TAWNH2870T	<input type="checkbox"/>	<input type="checkbox"/>
															28.8	TAWNH2880T	<input type="checkbox"/>	<input type="checkbox"/>
28.5 29.4	3	TAWSN2900S32	●	90.7	105.4	130.4	190.4	185.2	5.2	32	WS508027T	TKY27T	WPT4405	MK1KS	28.9	TAWNH2890T	<input type="checkbox"/>	<input type="checkbox"/>
															29.0	TAWNH2900T	●	<input type="checkbox"/>
															29.1	TAWNH2910T	<input type="checkbox"/>	<input type="checkbox"/>
	5	TAWMN2900S32	●	147.7	167.4	190.4	250.4	245.2	5.2	32	WS508027T	TKY27T	WPT4405	MK1KS	29.2	TAWNH2920T	<input type="checkbox"/>	<input type="checkbox"/>
															29.3	TAWNH2930T	<input type="checkbox"/>	<input type="checkbox"/>
															29.4	TAWNH2940T	<input type="checkbox"/>	<input type="checkbox"/>
8	TAWLN2900S32	●	233.2	247.4	277.4	337.4	332.2	5.2	32	WS508027T	TKY27T	WPT4405	MK1KS	29.2	TAWNH2920T	<input type="checkbox"/>	<input type="checkbox"/>	
														29.3	TAWNH2930T	<input type="checkbox"/>	<input type="checkbox"/>	

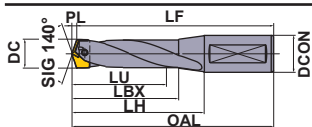
Nota 1) As dimensões indicadas (*) referem-se à montagem de insertos.

Nota 2) Por favor entre em contato para qualquer geometria que não conste no catálogo (ex.: diâmetro e comprimento diferente.).

● : Estoque mantido. □ : Sem estoque, produzido somente por pedido.

□ : Para produtos especiais, o lote mínimo será 5.

Cada embalagem de inserto contém 1 peça.



DC (mm)	Prof. de Furo (L/D)	Suporte		Dimensões (mm)							Parafuso de Fixação	Chave	Limpador	Lubrificante Antitravante	Inserto			
		Referência para Pedido	Estoque	LU	LBX	LH	OAL	LF	PL	DCON					DC (mm)	Referência para Pedido	Estoque VP15TF VP10H	
29.5 30.4	3	TAWSN3000S32	●	93.9	109.6	130.6	190.6	185.2	5.4	32	WS508027T	TKY27T	WPT4405	MK1KS	29.5	*TAWNH2950T	●	<input type="checkbox"/>
															29.6	TAWNH2960T	<input type="checkbox"/>	<input type="checkbox"/>
															29.7	TAWNH2970T	<input type="checkbox"/>	<input type="checkbox"/>
															29.8	TAWNH2980T	<input type="checkbox"/>	<input type="checkbox"/>
	5	TAWMN3000S32	●	152.9	172.6	200.6	260.6	255.2	5.4	32	WS508027T	TKY27T	WPT4405	MK1KS	29.9	TAWNH2990T	<input type="checkbox"/>	<input type="checkbox"/>
															30.0	TAWNH3000T	●	<input type="checkbox"/>
															30.1	TAWNH3010T	<input type="checkbox"/>	<input type="checkbox"/>
															30.2	TAWNH3020T	<input type="checkbox"/>	<input type="checkbox"/>
	8	TAWLN3000S32	●	241.4	255.6	290.6	350.6	345.2	5.4	32	WS508027T	TKY27T	WPT4405	MK1KS	30.3	TAWNH3030T	<input type="checkbox"/>	<input type="checkbox"/>
															30.4	TAWNH3040T	<input type="checkbox"/>	<input type="checkbox"/>

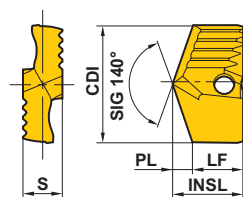
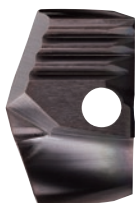
FURAÇÃO(TIPO INTERCAMBIÁVEL)

TAW

METAL DURO

INSERTOS

Tipo H



Referência para Pedido	Com Cobertura		Dimensões (mm)					Código do Suporte
	VP15TF	VP10H	CDI	INSL	LF	PL	S	
TAWNH1850T	●	□	18.5	12.7	9.3	3.4	7.0	TAWSN 1900S25
TAWNH1860T	●	□	18.6	12.7	9.3	3.4	7.0	
TAWNH1870T	●	□	18.7	12.7	9.3	3.4	7.0	
TAWNH1880T	●	□	18.8	12.7	9.3	3.4	7.0	
TAWNH1890T	●	□	18.9	12.7	9.3	3.4	7.0	
TAWNH1900T	●	□	19.0	12.7	9.2	3.5	7.0	
TAWNH1910T	●	□	19.1	12.7	9.2	3.5	7.0	
TAWNH1920T	●	□	19.2	12.7	9.2	3.5	7.0	
TAWNH1930T	●	□	19.3	12.7	9.2	3.5	7.0	
TAWNH1940T	●	□	19.4	12.7	9.2	3.5	7.0	
TAWNH1950T	●	□	19.5	12.6	9.1	3.5	7.0	TAWSN 2000S25
TAWNH1960T	●	□	19.6	12.7	9.1	3.6	7.0	
TAWNH1970T	●	□	19.7	12.7	9.1	3.6	7.0	
TAWNH1980T	●	□	19.8	12.7	9.1	3.6	7.0	
TAWNH1990T	●	□	19.9	12.7	9.1	3.6	7.0	
TAWNH2000T	●	□	20.0	12.6	9.0	3.6	7.0	
TAWNH2010T	□	□	20.1	12.7	9.0	3.7	7.0	
TAWNH2020T	□	□	20.2	12.7	9.0	3.7	7.0	
TAWNH2030T	□	□	20.3	12.7	9.0	3.7	7.0	
TAWNH2040T	□	□	20.4	12.7	9.0	3.7	7.0	
TAWNH2050T	●	□	20.5	12.6	8.9	3.7	7.0	TAWSN 2100S25
TAWNH2060T	□	□	20.6	12.6	8.9	3.7	7.0	
TAWNH2070T	□	□	20.7	12.7	8.9	3.8	7.0	
TAWNH2080T	□	□	20.8	12.7	8.9	3.8	7.0	
TAWNH2090T	□	□	20.9	12.7	8.9	3.8	7.0	
TAWNH2100T	●	□	21.0	12.6	8.8	3.8	7.0	
TAWNH2110T	□	□	21.1	12.6	8.8	3.8	7.0	
TAWNH2120T	□	□	21.2	12.7	8.8	3.9	7.0	
TAWNH2130T	□	□	21.3	12.7	8.8	3.9	7.0	
TAWNH2140T	□	□	21.4	12.7	8.8	3.9	7.0	
TAWNH2150T	●	□	21.5	14.5	10.6	3.9	8.0	TAWSN 2200S25
TAWNH2160T	□	□	21.6	14.5	10.6	3.9	8.0	
TAWNH2170T	□	□	21.7	14.5	10.6	3.9	8.0	
TAWNH2180T	□	□	21.8	14.6	10.6	4.0	8.0	
TAWNH2190T	□	□	21.9	14.6	10.6	4.0	8.0	
TAWNH2200T	●	□	22.0	14.5	10.5	4.0	8.0	
TAWNH2210T	□	□	22.1	14.5	10.5	4.0	8.0	
TAWNH2220T	□	□	22.2	14.5	10.5	4.0	8.0	
TAWNH2230T	□	□	22.3	14.6	10.5	4.1	8.0	
TAWNH2240T	□	□	22.4	14.6	10.5	4.1	8.0	

Referência para Pedido	Com Cobertura		Dimensões (mm)					Código do Suporte
	VP15TF	VP10H	CDI	INSL	LF	PL	S	
TAWNH2250T	●	□	22.5	14.5	10.4	4.1	8.0	TAWSN 2300S25
TAWNH2260T	□	□	22.6	14.5	10.4	4.1	8.0	
TAWNH2270T	□	□	22.7	14.5	10.4	4.1	8.0	
TAWNH2280T	□	□	22.8	14.5	10.4	4.1	8.0	
TAWNH2290T	□	□	22.9	14.6	10.4	4.2	8.0	
TAWNH2300T	●	□	23.0	14.5	10.3	4.2	8.0	
TAWNH2310T	□	□	23.1	14.5	10.3	4.2	8.0	
TAWNH2320T	□	□	23.2	14.5	10.3	4.2	8.0	
TAWNH2330T	□	□	23.3	14.5	10.3	4.2	8.0	
TAWNH2340T	□	□	23.4	14.6	10.3	4.3	8.0	
TAWNH2350T	●	□	23.5	14.5	10.2	4.3	8.0	TAWSN 2400S32
TAWNH2360T	□	□	23.6	14.5	10.2	4.3	8.0	
TAWNH2370T	□	□	23.7	14.5	10.2	4.3	8.0	
TAWNH2380T	□	□	23.8	14.5	10.2	4.3	8.0	
TAWNH2390T	□	□	23.9	14.5	10.2	4.3	8.0	
TAWNH2400T	●	□	24.0	14.5	10.1	4.4	8.0	
TAWNH2410T	□	□	24.1	14.5	10.1	4.4	8.0	
TAWNH2420T	□	□	24.2	14.5	10.1	4.4	8.0	
TAWNH2430T	□	□	24.3	14.5	10.1	4.4	8.0	
TAWNH2440T	□	□	24.4	14.5	10.1	4.4	8.0	
TAWNH2450T	●	□	24.5	16.2	11.7	4.5	9.0	TAWSN 2500S32
TAWNH2460T	□	□	24.6	16.2	11.7	4.5	9.0	
TAWNH2470T	□	□	24.7	16.2	11.7	4.5	9.0	
TAWNH2480T	□	□	24.8	16.2	11.7	4.5	9.0	
TAWNH2490T	□	□	24.9	16.2	11.7	4.5	9.0	
TAWNH2500T	●	□	25.0	16.1	11.6	4.5	9.0	
TAWNH2510T	□	□	25.1	16.2	11.6	4.6	9.0	
TAWNH2520T	□	□	25.2	16.2	11.6	4.6	9.0	
TAWNH2530T	□	□	25.3	16.2	11.6	4.6	9.0	
TAWNH2540T	□	□	25.4	16.2	11.6	4.6	9.0	
TAWNH2550T	●	□	25.5	16.1	11.5	4.6	9.0	TAWSN 2600S32
TAWNH2560T	□	□	25.6	16.2	11.5	4.7	9.0	
TAWNH2570T	□	□	25.7	16.2	11.5	4.7	9.0	
TAWNH2580T	□	□	25.8	16.2	11.5	4.7	9.0	
TAWNH2590T	□	□	25.9	16.2	11.5	4.7	9.0	
TAWNH2600T	●	□	26.0	16.1	11.4	4.7	9.0	
TAWNH2610T	□	□	26.1	16.1	11.4	4.7	9.0	
TAWNH2620T	□	□	26.2	16.2	11.4	4.8	9.0	
TAWNH2630T	□	□	26.3	16.2	11.4	4.8	9.0	
TAWNH2640T	□	□	26.4	16.2	11.4	4.8	9.0	

● : Estoque mantido. □ : Sem estoque, produzido somente por pedido.

▲ : Estoque mantido. Será substituído por novos produtos.

□ : Para produtos especiais, o lote mínimo será 5.
Cada embalagem de inserto contém 1 peça.

Referência para Pedido	Com Cobertura		Dimensões (mm)					Código do Suporte
	VP15TF	VP10H	CDI	INSL	LF	PL	S	
TAWNH2650T	●	□	26.5	16.1	11.3	4.8	9.0	TAWSN 2700S32
TAWNH2660T	□	□	26.6	16.1	11.3	4.8	9.0	
TAWNH2670T	□	□	26.7	16.2	11.3	4.9	9.0	
TAWNH2680T	□	□	26.8	16.2	11.3	4.9	9.0	
TAWNH2690T	□	□	26.9	16.2	11.3	4.9	9.0	
TAWNH2700T	●	□	27.0	16.1	11.2	4.9	9.0	
TAWNH2710T	□	□	27.1	16.1	11.2	4.9	9.0	
TAWNH2720T	□	□	27.2	16.1	11.2	4.9	9.0	
TAWNH2730T	□	□	27.3	16.2	11.2	5.0	9.0	
TAWNH2740T	□	□	27.4	16.2	11.2	5.0	9.0	
TAWNH2750T	●	□	27.5	17.3	12.3	5.0	10.0	TAWSN 2800S32
TAWNH2760T	□	□	27.6	17.3	12.3	5.0	10.0	
TAWNH2770T	□	□	27.7	17.3	12.3	5.0	10.0	
TAWNH2780T	□	□	27.8	17.4	12.3	5.1	10.0	
TAWNH2790T	□	□	27.9	17.4	12.3	5.1	10.0	
TAWNH2800T	●	□	28.0	17.3	12.2	5.1	10.0	
TAWNH2810T	□	□	28.1	17.3	12.2	5.1	10.0	
TAWNH2820T	□	□	28.2	17.3	12.2	5.1	10.0	
TAWNH2830T	□	□	28.3	17.4	12.2	5.2	10.0	
TAWNH2840T	□	□	28.4	17.4	12.2	5.2	10.0	

Referência para Pedido	Com Cobertura		Dimensões (mm)					Código do Suporte
	VP15TF	VP10H	CDI	INSL	LF	PL	S	
TAWNH2850T	●	□	28.5	17.3	12.1	5.2	10.0	TAWSN 2900S32
TAWNH2860T	□	□	28.6	17.3	12.1	5.2	10.0	
TAWNH2870T	□	□	28.7	17.3	12.1	5.2	10.0	
TAWNH2880T	□	□	28.8	17.3	12.1	5.2	10.0	
TAWNH2890T	□	□	28.9	17.4	12.1	5.3	10.0	
TAWNH2900T	●	□	29.0	17.3	12.0	5.3	10.0	
TAWNH2910T	□	□	29.1	17.3	12.0	5.3	10.0	
TAWNH2920T	□	□	29.2	17.3	12.0	5.3	10.0	
TAWNH2930T	□	□	29.3	17.3	12.0	5.3	10.0	
TAWNH2940T	□	□	29.4	17.4	12.0	5.4	10.0	
TAWNH2950T	●	□	29.5	17.3	11.9	5.4	10.0	TAWSN 3000S32
TAWNH2960T	□	□	29.6	17.3	11.9	5.4	10.0	
TAWNH2970T	□	□	29.7	17.3	11.9	5.4	10.0	
TAWNH2980T	□	□	29.8	17.3	11.9	5.4	10.0	
TAWNH2990T	□	□	29.9	17.3	11.9	5.4	10.0	
TAWNH3000T	●	□	30.0	17.3	11.8	5.5	10.0	
TAWNH3010T	□	□	30.1	17.3	11.8	5.5	10.0	
TAWNH3020T	□	□	30.2	17.3	11.8	5.5	10.0	
TAWNH3030T	□	□	30.3	17.3	11.8	5.5	10.0	
TAWNH3040T	□	□	30.4	17.3	11.8	5.5	10.0	

Inserto para anel chanfrador TAW

Formato Geometria	Referência para Pedido	Com Cobertura		Dimensões (mm)					
		VP15TF		L	LE	WI	S	RE	B9
	TAWC12T301-45GM	▲		17.4	9.05	8.5	3.97	0.1	5°

CONDIÇÕES DE CORTE RECOMENDADAS

Material	Diâm. da Broca	Condições Dureza	φ 18.5—φ 21.4		φ 21.5—φ 24.4	
			Vel. de Corte (m/min)	Avanço (mm/rot)	Vel. de Corte (m/min)	Avanço (mm/rot)
P Aço Baixo Carbono	≤ 180HB	≤ 180HB	90 (70—110)	0.25 (0.20—0.30)	100 (80—120)	0.30 (0.25—0.35)
			80 (60—100)	0.25 (0.20—0.30)	90 (70—110)	0.30 (0.25—0.35)
			70 (50—90)	0.20 (0.15—0.25)	80 (60—100)	0.25 (0.20—0.30)
M Aço Inoxidável	≤ 200HB	≤ 200HB	60 (50—70)	0.20 (0.15—0.22)	60 (50—70)	0.20 (0.15—0.22)
			120 (60—140)	0.25 (0.20—0.30)	130 (80—150)	0.35 (0.25—0.40)
K Ferro Fundido Cinzento	Resistência à Tração ≤ 350MPa	Resistência à Tração ≤ 350MPa	80 (60—90)	0.25 (0.20—0.30)	90 (60—100)	0.30 (0.25—0.35)
			80 (60—90)	0.25 (0.20—0.30)	90 (60—100)	0.30 (0.25—0.35)

Material	Diâm. da Broca	Condições Dureza	φ 24.5—φ 27.4		φ 27.5—φ 30.4	
			Vel. de Corte (m/min)	Avanço (mm/rot)	Vel. de Corte (m/min)	Avanço (mm/rot)
P Aço Baixo Carbono	≤ 180HB	≤ 180HB	110 (80—120)	0.30 (0.25—0.35)	110 (80—120)	0.30 (0.25—0.35)
			100 (80—120)	0.30 (0.25—0.35)	100 (80—120)	0.30 (0.25—0.35)
			90 (70—110)	0.25 (0.20—0.30)	90 (70—110)	0.25 (0.20—0.30)
M Aço Inoxidável	≤ 200HB	≤ 200HB	70 (60—80)	0.25 (0.20—0.28)	70 (60—80)	0.25 (0.20—0.28)
			140 (90—160)	0.35 (0.25—0.40)	140 (90—160)	0.40 (0.30—0.45)
K Ferro Fundido Cinzento	Resistência à Tração ≤ 350MPa	Resistência à Tração ≤ 350MPa	100 (80—110)	0.30 (0.25—0.35)	100 (80—110)	0.30 (0.25—0.35)
			100 (80—110)	0.30 (0.25—0.35)	100 (80—110)	0.30 (0.25—0.35)

Nota 1) Ao utilizar suportes DC×8, reduza a velocidade de corte em aprox. 20%.

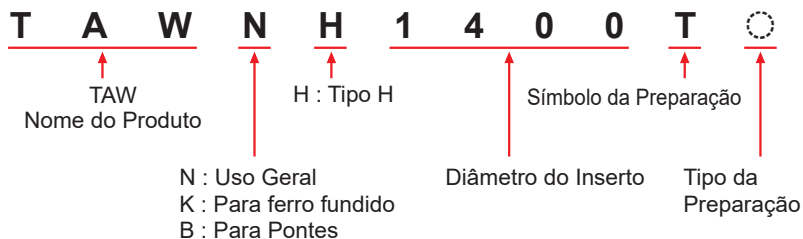
Nota 2) Para uso de brocas DC×8, recomenda-se usinar previamente um furo de guia com o mesmo tamanho.

Nota 3) A preparação de aresta (*honing*) é recomendada para a usinagem de aços baixo carbono e inoxidáveis.

PREPARAÇÃO DE ARESTA

Se um inserto com preparação de aresta for necessário, solicite utilizando o símbolo abaixo, o que melhor lhe atender.

(Referência para Pedido do Inserto)



(Preparação Standard)

Tipo da Preparação	Espessura da Preparação (mm)
F	0
G	0.02—0.05
H	0.05—0.10
(Standard)	0.10—0.15
K	0.15—0.20
S	0.20—0.25
M	0.25—0.30

UTILIZAÇÃO

INSTALAÇÃO DO INSERTO

- Solte o parafuso de fixação para inserir o inserto.
- Encaixe corretamente o inserto nas serrilhas do suporte e então deslize-o algumas vezes para que encaixe corretamente.
- Aperte o parafuso de fixação utilizando a chave torque fornecida, enquanto segura o inserto como mostrado. (Figura 1)
- Verifique se não há nenhuma folga entre a base do inserto com o suporte. (Figura 2)

Aperte o parafuso de fixação de acordo com o torque abaixo.

Diâmetro da Broca (mm)	Torque (N · m)
14—15	2.0
16—18	2.0
19—21	3.5
22—24	5.5
25—27	8.5
28—30	12.0

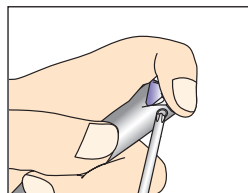


Fig. 1

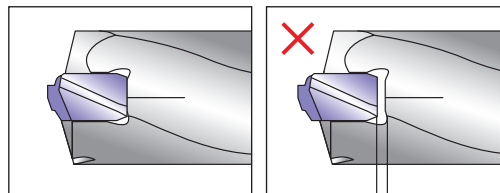


Fig. 2

Folga

SUBSTITUIÇÃO DO INSERTO

- Deixe as serrilhas do suporte limpas e deslizantes antes de colocar um novo inserto.

P

M

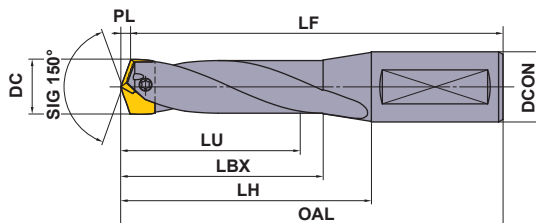
K

N

S

H

Aço

(Para Usinagem de Ponte)


SUPORTES

DC (mm)	Prof. de Furo (LD)	Suporte		Dimensões (mm)							Parafuso de Fixação	Chave	Limpador	Lubrificante Antitravante	Inserto		
		Referência para Pedido	Estoque	LU	LBX	LH	OAL	LF	PL	DCON					DC (mm)	Referência para Pedido	Estoque VP15TF
24.5	3	TAWSB2500S32	●	76.8	91.3	113.3	173.3	170.0	3.3	32	WS406023T	TKY25T	WPT4405	MK1KS	24.5	*TAWBH2450T	●
24.6	5	TAWMB2500S32	□	125.8	143.3	168.3	228.3	225.0	3.3	32	WS406023T	TKY25T	WPT4405	MK1KS	24.6	TAWBH2460T	□
24.7															24.7	TAWBH2470T	●
26.5	3	TAWSB2700S32	●	83.1	97.6	118.6	178.6	175.0	3.6	32	WS406024T	TKY25T	WPT4405	MK1KS	26.5	*TAWBH2650T	□
26.7	5	TAWMB2700S32	□	136.1	154.6	178.6	238.6	235.0	3.6	32	WS406024T	TKY25T	WPT4405	MK1KS	26.7	TAWBH2670T	●

Nota 1) As dimensões indicadas (*) referem-se à montagem de insertos.

Nota 2) Por favor entre em contato para qualquer geometria que não conste no catálogo (ex.: diâmetro e comprimento diferente.).

INSERTOS

Formato	Referência para Pedido	Com Cobertura VP15TF	Dimensões (mm)					Suporte Correspondente	Preparação da aresta (mm)	Geometria
			CDI	INSL	LF	PL	S			
Tipo H 	TAWBH2450T	●	24.5	15.0	11.7	3.3	9.0	TAWSB2500S32 TAWMB2500S32	0.20–0.25	
	TAWBH2460T	□	24.6	15.0	11.7	3.3	9.0			
	TAWBH2470T	●	24.7	15.0	11.7	3.3	9.0			
	TAWBH2650T	□	26.5	14.9	11.3	3.6	9.0	TAWSB2700S32 TAWMB2700S32		
	TAWBH2670T	●	26.7	14.9	11.3	3.6	9.0			

CONDIÇÕES DE CORTE RECOMENDADAS

Material	Diâm. da Broca	Condições Dureza	φ 24.5, φ 24.6, φ 24.7		φ 26.5, φ 26.7	
			Vel. de Corte (m/min)	Avanço (mm/rot)	Vel. de Corte (m/min)	Avanço (mm/rot)
P Aço Estrutural	SS400 (JIS)	Resistência à Tração ≤ 400–500MPa	70 (60–80)	0.30 (0.25–0.35)	70 (60–80)	0.30 (0.25–0.35)
	SM490 (JIS)	Resistência à Tração ≤ 490–610MPa	65 (55–75)	0.30 (0.25–0.35)	65 (55–75)	0.30 (0.25–0.35)
	SM570 (JIS)	Resistência à Tração ≤ 570–720MPa	60 (50–70)	0.30 (0.25–0.35)	60 (50–70)	0.30 (0.25–0.35)

● : Estoque mantido. □ : Sem estoque, produzido somente por pedido.

 □ : Para produtos especiais, o lote mínimo será 5.
Cada embalagem de inserto contém 1 peça.

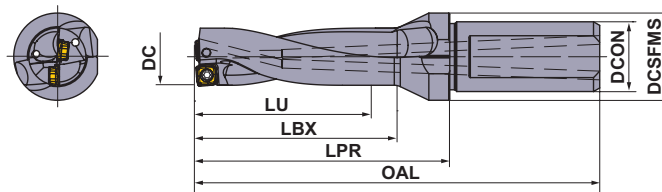
FURAÇÃO(TIPO INTERCAMBIÁVEL)

MVX

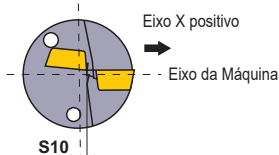
- Combinação ideal: inserto CVD na periferia e PVD no centro.
- Corpo de alta rigidez permite furação 6xD.



P	M	K	N	S	H
Aço	Aço Inoxidável	Ferro Fundido	Metais Não Ferrosos		Aço Endurecido





Ajuste radial máximo para utilização em torno



L/D	Tolerância do furo (meta)(mm)		
	ø14.0-ø33.0	ø33.5-ø47.0	ø48.0-ø63.0
2D, 3D	0 +0.25	0 +0.3	0 +0.3
4D, 5D	0 +0.35	0 +0.4	0 +0.45
6D	0 +0.45	0 +0.6	

DC (mm)	Prof. do Furo (L/D)	Referência para Pedido	Estoque	Número de Dentes	Dimensões (mm)					S10 (mm)	Referência do Inserto	Parafuso de Fixação	F Chave	
					LU	LBX	LPR	OAL	DCON					DCSFMS
14.0	2	MVX1400X2F20	●	2	28	35	50	93	20	25	0.6	SOX05	TPS20-1	TIP06F
14.0	3	MVX1400X3F20	●	2	42	49	64	107	20	25	0.6	SOX05	TPS20-1	TIP06F
14.0	4	MVX1400X4F20	●	2	56	63	78	121	20	25	0.6	SOX05	TPS20-1	TIP06F
14.0	5	MVX1400X5F20	●	2	70	77	92	135	20	25	0.6	SOX05	TPS20-1	TIP06F
14.5	2	MVX1450X2F20	●	2	29	36	51	94	20	25	0.5	SOX05	TPS20-1	TIP06F
14.5	3	MVX1450X3F20	●	2	43.5	50.5	65.5	108.5	20	25	0.5	SOX05	TPS20-1	TIP06F
14.5	4	MVX1450X4F20	●	2	58	65	80	123	20	25	0.5	SOX05	TPS20-1	TIP06F
14.5	5	MVX1450X5F20	●	2	72.5	79.5	94.5	137.5	20	25	0.5	SOX05	TPS20-1	TIP06F
15.0	2	MVX1500X2F20	●	2	30	37	52	95	20	25	0.35	SOX05	TPS20-1	TIP06F
15.0	3	MVX1500X3F20	●	2	45	52	67	110	20	25	0.35	SOX05	TPS20-1	TIP06F
15.0	4	MVX1500X4F20	●	2	60	67	82	125	20	25	0.35	SOX05	TPS20-1	TIP06F
15.0	5	MVX1500X5F20	●	2	75	82	97	140	20	25	0.35	SOX05	TPS20-1	TIP06F
15.5	2	MVX1550X2F20	●	2	31	38	53	96	20	25	0.3	SOX05	TPS20-1	TIP06F
15.5	3	MVX1550X3F20	●	2	46.5	53.5	68.5	111.5	20	25	0.3	SOX05	TPS20-1	TIP06F
15.5	4	MVX1550X4F20	●	2	62	69	84	127	20	25	0.3	SOX05	TPS20-1	TIP06F
15.5	5	MVX1550X5F20	●	2	77.5	84.5	99.5	142.5	20	25	0.3	SOX05	TPS20-1	TIP06F
16.0	2	MVX1600X2F20	●	2	32	39	54	97	20	25	0.25	SOX05	TPS20-1	TIP06F
16.0	3	MVX1600X3F20	●	2	48	55	70	113	20	25	0.25	SOX05	TPS20-1	TIP06F
16.0	4	MVX1600X4F20	●	2	64	71	86	129	20	25	0.25	SOX05	TPS20-1	TIP06F
16.0	5	MVX1600X5F20	●	2	80	87	102	145	20	25	0.25	SOX05	TPS20-1	TIP06F
16.5	2	MVX1650X2F20	●	2	33	40	55	98	20	25	0.25	SOX05	TPS20-1	TIP06F
16.5	3	MVX1650X3F20	●	2	49.5	56.5	71.5	114.5	20	25	0.25	SOX05	TPS20-1	TIP06F
16.5	4	MVX1650X4F20	●	2	66	73	88	131	20	25	0.25	SOX05	TPS20-1	TIP06F
16.5	5	MVX1650X5F20	●	2	82.5	89.5	104.5	147.5	20	25	0.25	SOX05	TPS20-1	TIP06F
17.0	2	MVX1700X2F20	●	2	34	41	56	99	20	25	0.5	SOX06	TPS25	TIP07F
17.0	3	MVX1700X3F20	●	2	51	58	73	116	20	25	0.5	SOX06	TPS25	TIP07F
17.0	4	MVX1700X4F20	●	2	68	75	90	133	20	25	0.5	SOX06	TPS25	TIP07F
17.0	5	MVX1700X5F20	●	2	85	92	107	150	20	25	0.5	SOX06	TPS25	TIP07F
17.0	6	MVX1700X6F20	●	2	102	109	124	167	20	25	0.5	SOX06	TPS25	TIP07F
17.5	2	MVX1750X2F25	●	2	35	42	62	112	25	32	0.45	SOX06	TPS25	TIP07F
17.5	3	MVX1750X3F25	●	2	52.5	59.5	79.5	129.5	25	32	0.45	SOX06	TPS25	TIP07F
17.5	4	MVX1750X4F25	●	2	70	77	97	147	25	32	0.45	SOX06	TPS25	TIP07F

* Torque de Fixação (N • m) : TPS20-1=0.6, TPS25=1.0

DC (mm)	Prof. do Furo (L/D)	Referência para Pedido	Estoque	Número de Dentes	Dimensões (mm)					S10 (mm)	Referência do Inserto			
					LU	LBX	LPR	OAL	DCON					DCSFMS
17.5	5	MVX1750X5F25	●	2	87.5	94.5	114.5	164.5	25	32	0.45	SOX06	TPS25	TIP07F
17.5	6	MVX1750X6F25	●	2	105	112	132	182	25	32	0.45	SOX06	TPS25	TIP07F
18.0	2	MVX1800X2F25	●	2	36	43	63	113	25	32	0.4	SOX06	TPS25	TIP07F
18.0	3	MVX1800X3F25	●	2	54	61	81	131	25	32	0.4	SOX06	TPS25	TIP07F
18.0	4	MVX1800X4F25	●	2	72	79	99	149	25	32	0.4	SOX06	TPS25	TIP07F
18.0	5	MVX1800X5F25	●	2	90	97	117	167	25	32	0.4	SOX06	TPS25	TIP07F
18.0	6	MVX1800X6F25	●	2	108	115	135	185	25	32	0.4	SOX06	TPS25	TIP07F
18.5	2	MVX1850X2F25	●	2	37	44	64	114	25	32	0.35	SOX06	TPS25	TIP07F
18.5	3	MVX1850X3F25	●	2	55.5	62.5	82.5	132.5	25	32	0.35	SOX06	TPS25	TIP07F
18.5	4	MVX1850X4F25	●	2	74	81	101	151	25	32	0.35	SOX06	TPS25	TIP07F
18.5	5	MVX1850X5F25	●	2	92.5	99.5	119.5	169.5	25	32	0.35	SOX06	TPS25	TIP07F
18.5	6	MVX1850X6F25	●	2	111	118	138	188	25	32	0.35	SOX06	TPS25	TIP07F
19.0	2	MVX1900X2F25	●	2	38	45	65	115	25	32	0.3	SOX06	TPS25	TIP07F
19.0	3	MVX1900X3F25	●	2	57	64	84	134	25	32	0.3	SOX06	TPS25	TIP07F
19.0	4	MVX1900X4F25	●	2	76	83	103	153	25	32	0.3	SOX06	TPS25	TIP07F
19.0	5	MVX1900X5F25	●	2	95	102	122	172	25	32	0.3	SOX06	TPS25	TIP07F
19.0	6	MVX1900X6F25	●	2	114	121	141	191	25	32	0.3	SOX06	TPS25	TIP07F
19.5	2	MVX1950X2F25	●	2	39	46	66	116	25	32	0.25	SOX06	TPS25	TIP07F
19.5	3	MVX1950X3F25	●	2	58.5	65.5	85.5	135.5	25	32	0.25	SOX06	TPS25	TIP07F
19.5	4	MVX1950X4F25	●	2	78	85	105	155	25	32	0.25	SOX06	TPS25	TIP07F
19.5	5	MVX1950X5F25	●	2	97.5	104.5	124.5	174.5	25	32	0.25	SOX06	TPS25	TIP07F
19.5	6	MVX1950X6F25	●	2	117	124	144	194	25	32	0.25	SOX06	TPS25	TIP07F
20.0	2	MVX2000X2F25	●	2	40	47	67	117	25	32	0.6	SOX07	TPS3	TIP10F
20.0	3	MVX2000X3F25	●	2	60	67	87	137	25	32	0.6	SOX07	TPS3	TIP10F
20.0	4	MVX2000X4F25	●	2	80	87	107	157	25	32	0.6	SOX07	TPS3	TIP10F
20.0	5	MVX2000X5F25	●	2	100	107	127	177	25	32	0.6	SOX07	TPS3	TIP10F
20.0	6	MVX2000X6F25	●	2	120	127	147	197	25	32	0.6	SOX07	TPS3	TIP10F
20.5	2	MVX2050X2F25	●	2	41	48	68	118	25	32	0.55	SOX07	TPS3	TIP10F
20.5	3	MVX2050X3F25	●	2	61.5	68.5	88.5	138.5	25	32	0.55	SOX07	TPS3	TIP10F
21.0	2	MVX2100X2F25	●	2	42	49	69	119	25	32	0.5	SOX07	TPS3	TIP10F
21.0	3	MVX2100X3F25	●	2	63	70	90	140	25	32	0.5	SOX07	TPS3	TIP10F
21.0	4	MVX2100X4F25	●	2	84	91	111	161	25	32	0.5	SOX07	TPS3	TIP10F
21.0	5	MVX2100X5F25	●	2	105	112	132	182	25	32	0.5	SOX07	TPS3	TIP10F
21.0	6	MVX2100X6F25	●	2	126	133	153	203	25	32	0.5	SOX07	TPS3	TIP10F
21.5	2	MVX2150X2F25	●	2	43	50	70	120	25	32	0.45	SOX07	TPS3	TIP10F
21.5	3	MVX2150X3F25	●	2	64.5	71.5	91.5	141.5	25	32	0.45	SOX07	TPS3	TIP10F
22.0	2	MVX2200X2F25	●	2	44	51	71	121	25	32	0.4	SOX07	TPS3	TIP10F
22.0	3	MVX2200X3F25	●	2	66	73	93	143	25	32	0.4	SOX07	TPS3	TIP10F
22.0	4	MVX2200X4F25	●	2	88	95	115	165	25	32	0.4	SOX07	TPS3	TIP10F
22.0	5	MVX2200X5F25	●	2	110	117	137	187	25	32	0.4	SOX07	TPS3	TIP10F
22.0	6	MVX2200X6F25	●	2	132	139	159	209	25	32	0.4	SOX07	TPS3	TIP10F
22.5	2	MVX2250X2F25	●	2	45	52	72	122	25	32	0.35	SOX07	TPS3	TIP10F
22.5	3	MVX2250X3F25	●	2	67.5	74.5	94.5	144.5	25	32	0.35	SOX07	TPS3	TIP10F
23.0	2	MVX2300X2F25	●	2	46	53	73	123	25	32	0.8	SOX08	TPS351	TIP10W
23.0	3	MVX2300X3F25	●	2	69	76	96	146	25	32	0.8	SOX08	TPS351	TIP10W
23.0	4	MVX2300X4F25	●	2	92	99	119	169	25	32	0.8	SOX08	TPS351	TIP10W
23.0	5	MVX2300X5F25	●	2	115	122	142	192	25	32	0.8	SOX08	TPS351	TIP10W
23.0	6	MVX2300X6F25	●	2	138	145	165	215	25	32	0.8	SOX08	TPS351	TIP10W
23.5	2	MVX2350X2F25	●	2	47	54	74	124	25	32	0.75	SOX08	TPS351	TIP10W
23.5	3	MVX2350X3F25	●	2	70.5	77.5	97.5	147.5	25	32	0.75	SOX08	TPS351	TIP10W

* Torque de Fixação (N • m) : TPS25=1.0, TPS3=2.0, TPS351=2.5



DESCRIÇÃO DO INSERTO > N167
ACESSÓRIOS > P001

N161

FURAÇÃO(TIPO INTERCAMBIÁVEL)

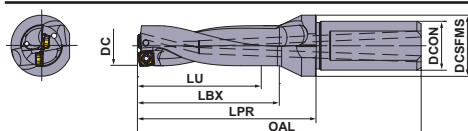
MVX



METAL DURO

DC (mm)	Prof. do Furo (L/D)	Referência para Pedido	Estoque	Número de Dentes	Dimensões (mm)					S10 (mm)	Referência do Inserto			
					LU	LBX	LPR	OAL	DCON					DCSFMS
24.0	2	MVX2400X2F25	●	2	48	55	75	125	25	32	0.7	SOX08	TPS351	TIP10W
24.0	3	MVX2400X3F25	●	2	72	79	99	149	25	32	0.7	SOX08	TPS351	TIP10W
24.0	4	MVX2400X4F25	●	2	96	103	123	173	25	32	0.7	SOX08	TPS351	TIP10W
24.0	5	MVX2400X5F25	●	2	120	127	147	197	25	32	0.7	SOX08	TPS351	TIP10W
24.0	6	MVX2400X6F25	●	2	144	151	171	221	25	32	0.7	SOX08	TPS351	TIP10W
24.5	2	MVX2450X2F25	●	2	49	56	76	126	25	32	0.65	SOX08	TPS351	TIP10W
24.5	3	MVX2450X3F25	●	2	73.5	80.5	100.5	150.5	25	32	0.65	SOX08	TPS351	TIP10W
25.0	2	MVX2500X2F25	●	2	50	57	77	127	25	32	0.6	SOX08	TPS351	TIP10W
25.0	3	MVX2500X3F25	●	2	75	82	102	152	25	32	0.6	SOX08	TPS351	TIP10W
25.0	4	MVX2500X4F25	●	2	100	107	127	177	25	32	0.6	SOX08	TPS351	TIP10W
25.0	5	MVX2500X5F25	●	2	125	132	152	202	25	32	0.6	SOX08	TPS351	TIP10W
25.0	6	MVX2500X6F25	●	2	150	157	177	227	25	32	0.6	SOX08	TPS351	TIP10W
25.5	2	MVX2550X2F25	●	2	51	58	78	128	25	32	0.6	SOX08	TPS351	TIP10W
25.5	3	MVX2550X3F25	●	2	76.5	83.5	103.5	153.5	25	32	0.6	SOX08	TPS351	TIP10W
26.0	2	MVX2600X2F32	●	2	52	59	79	134	32	42	0.5	SOX08	TPS351	TIP10W
26.0	3	MVX2600X3F32	●	2	78	85	105	160	32	42	0.5	SOX08	TPS351	TIP10W
26.0	4	MVX2600X4F32	●	2	104	111	131	186	32	42	0.5	SOX08	TPS351	TIP10W
26.0	5	MVX2600X5F32	●	2	130	137	157	212	32	42	0.5	SOX08	TPS351	TIP10W
26.0	6	MVX2600X6F32	●	2	156	163	183	238	32	42	0.5	SOX08	TPS351	TIP10W
26.5	2	MVX2650X2F32	●	2	53	60	80	135	32	42	0.5	SOX08	TPS351	TIP10W
26.5	3	MVX2650X3F32	●	2	79.5	86.5	106.5	161.5	32	42	0.5	SOX08	TPS351	TIP10W
27.0	2	MVX2700X2F32	●	2	54	61	81	136	32	42	0.45	SOX08	TPS351	TIP10W
27.0	3	MVX2700X3F32	●	2	81	88	108	163	32	42	0.45	SOX08	TPS351	TIP10W
27.0	4	MVX2700X4F32	●	2	108	115	135	190	32	42	0.45	SOX08	TPS351	TIP10W
27.0	5	MVX2700X5F32	●	2	135	142	162	217	32	42	0.45	SOX08	TPS351	TIP10W
27.0	6	MVX2700X6F32	●	2	162	169	189	244	32	42	0.45	SOX08	TPS351	TIP10W
27.5	2	MVX2750X2F32	●	2	55	62	82	137	32	42	0.4	SOX08	TPS351	TIP10W
27.5	3	MVX2750X3F32	●	2	82.5	89.5	109.5	164.5	32	42	0.4	SOX08	TPS351	TIP10W
28.0	2	MVX2800X2F32	●	2	56	63	83	138	32	42	0.85	SOX09	TPS4	TIP15W
28.0	3	MVX2800X3F32	●	2	84	91	111	166	32	42	0.85	SOX09	TPS4	TIP15W
28.0	4	MVX2800X4F32	●	2	112	119	139	194	32	42	0.85	SOX09	TPS4	TIP15W
28.0	5	MVX2800X5F32	●	2	140	147	167	222	32	42	0.85	SOX09	TPS4	TIP15W
28.0	6	MVX2800X6F32	●	2	168	175	195	250	32	42	0.85	SOX09	TPS4	TIP15W
28.5	2	MVX2850X2F32	●	2	57	64	84	139	32	42	0.8	SOX09	TPS4	TIP15W
28.5	3	MVX2850X3F32	●	2	85.5	92.5	112.5	167.5	32	42	0.8	SOX09	TPS4	TIP15W
29.0	2	MVX2900X2F32	●	2	58	65	85	140	32	42	0.75	SOX09	TPS4	TIP15W
29.0	3	MVX2900X3F32	●	2	87	94	114	169	32	42	0.75	SOX09	TPS4	TIP15W
29.0	4	MVX2900X4F32	●	2	116	123	143	198	32	42	0.75	SOX09	TPS4	TIP15W
29.0	5	MVX2900X5F32	●	2	145	152	172	227	32	42	0.75	SOX09	TPS4	TIP15W
29.0	6	MVX2900X6F32	●	2	174	181	201	256	32	42	0.75	SOX09	TPS4	TIP15W
29.5	2	MVX2950X2F32	●	2	59	66	86	141	32	42	0.7	SOX09	TPS4	TIP15W
29.5	3	MVX2950X3F32	●	2	88.5	95.5	115.5	170.5	32	42	0.7	SOX09	TPS4	TIP15W
30.0	2	MVX3000X2F32	●	2	60	67	87	142	32	42	0.65	SOX09	TPS4	TIP15W
30.0	3	MVX3000X3F32	●	2	90	97	117	172	32	42	0.65	SOX09	TPS4	TIP15W
30.0	4	MVX3000X4F32	●	2	120	127	147	202	32	42	0.65	SOX09	TPS4	TIP15W
30.0	5	MVX3000X5F32	●	2	150	157	177	232	32	42	0.65	SOX09	TPS4	TIP15W
30.0	6	MVX3000X6F32	●	2	180	187	207	262	32	42	0.65	SOX09	TPS4	TIP15W
30.5	3	MVX3050X3F32	●	2	91.5	98.5	118.5	173.5	32	42	0.6	SOX09	TPS4	TIP15W
31.0	2	MVX3100X2F40	●	2	62	69	89	154	40	50	0.55	SOX09	TPS4	TIP15W
31.0	3	MVX3100X3F40	●	2	93	100	120	185	40	50	0.55	SOX09	TPS4	TIP15W

* Torque de Fixação (N • m) : TPS351=2.5, TPS4=3.5

● : Estoque mantido.





DC (mm)	Prof. do Furo (L/D)	Referência para Pedido	Estoque	Número de Dentes	Dimensões (mm)					S10 (mm)	Referência do Inserto			
					LU	LBX	LPR	OAL	DCON					DCSFMS
31.0	4	MVX3100X4F40	●	2	124	131	151	216	40	50	0.55	SOX09	TPS4	TIP15W
31.0	5	MVX3100X5F40	●	2	155	162	182	247	40	50	0.55	SOX09	TPS4	TIP15W
31.0	6	MVX3100X6F40	●	2	186	193	213	278	40	50	0.55	SOX09	TPS4	TIP15W
31.5	3	MVX3150X3F40	●	2	94.5	101.5	121.5	186.5	40	50	0.55	SOX09	TPS4	TIP15W
32.0	2	MVX3200X2F40	●	2	64	71	91	156	40	50	0.45	SOX09	TPS4	TIP15W
32.0	3	MVX3200X3F40	●	2	96	103	123	188	40	50	0.45	SOX09	TPS4	TIP15W
32.0	4	MVX3200X4F40	●	2	128	135	155	220	40	50	0.45	SOX09	TPS4	TIP15W
32.0	5	MVX3200X5F40	●	2	160	167	187	252	40	50	0.45	SOX09	TPS4	TIP15W
32.0	6	MVX3200X6F40	●	2	192	199	219	284	40	50	0.45	SOX09	TPS4	TIP15W
32.5	3	MVX3250X3F40	●	2	97.5	104.5	124.5	189.5	40	50	0.45	SOX09	TPS4	TIP15W
33.0	2	MVX3300X2F40	●	2	66	73	93	158	40	50	0.4	SOX09	TPS4	TIP15W
33.0	3	MVX3300X3F40	●	2	99	106	126	191	40	50	0.4	SOX09	TPS4	TIP15W
33.0	4	MVX3300X4F40	●	2	132	139	159	224	40	50	0.4	SOX09	TPS4	TIP15W
33.0	5	MVX3300X5F40	●	2	165	172	192	257	40	50	0.4	SOX09	TPS4	TIP15W
33.0	6	MVX3300X6F40	●	2	198	205	225	290	40	50	0.4	SOX09	TPS4	TIP15W
33.5	3	MVX3350X3F40	●	2	100.5	107.5	127.5	192.5	40	50	1.15	SOX11	TPS43	TIP15W
34.0	2	MVX3400X2F40	●	2	68	75	105	170	40	50	1.11	SOX11	TPS43	TIP15W
34.0	3	MVX3400X3F40	●	2	102	109	139	204	40	50	1.11	SOX11	TPS43	TIP15W
34.0	4	MVX3400X4F40	●	2	136	143	173	238	40	50	1.11	SOX11	TPS43	TIP15W
34.0	5	MVX3400X5F40	●	2	170	177	207	272	40	50	1.11	SOX11	TPS43	TIP15W
34.0	6	MVX3400X6F40	●	2	204	211	241	306	40	50	1.1	SOX11	TPS43	TIP15W
34.5	3	MVX3450X3F40	●	2	103.5	110.5	140.5	205.5	40	50	1.08	SOX11	TPS43	TIP15W
35.0	2	MVX3500X2F40	●	2	70	77	107	172	40	50	1.03	SOX11	TPS43	TIP15W
35.0	3	MVX3500X3F40	●	2	105	112	142	207	40	50	1.03	SOX11	TPS43	TIP15W
35.0	4	MVX3500X4F40	●	2	140	147	177	242	40	50	1.03	SOX11	TPS43	TIP15W
35.0	5	MVX3500X5F40	●	2	175	182	212	277	40	50	1.03	SOX11	TPS43	TIP15W
35.0	6	MVX3500X6F40	●	2	210	217	247	312	40	50	1.02	SOX11	TPS43	TIP15W
35.5	3	MVX3550X3F40	●	2	106.5	113.5	143.5	208.5	40	50	0.99	SOX11	TPS43	TIP15W
36.0	2	MVX3600X2F40	●	2	72	79	109	174	40	50	0.95	SOX11	TPS43	TIP15W
36.0	3	MVX3600X3F40	●	2	108	115	145	210	40	50	0.95	SOX11	TPS43	TIP15W
36.0	4	MVX3600X4F40	●	2	144	151	181	246	40	50	0.95	SOX11	TPS43	TIP15W
36.0	5	MVX3600X5F40	●	2	180	187	217	282	40	50	0.95	SOX11	TPS43	TIP15W
36.0	6	MVX3600X6F40	●	2	216	223	253	318	40	50	0.94	SOX11	TPS43	TIP15W
37.0	2	MVX3700X2F40	●	2	74	81	111	176	40	50	0.87	SOX11	TPS43	TIP15W
37.0	3	MVX3700X3F40	●	2	111	118	148	213	40	50	0.87	SOX11	TPS43	TIP15W
37.0	4	MVX3700X4F40	●	2	148	155	185	250	40	50	0.87	SOX11	TPS43	TIP15W
37.0	5	MVX3700X5F40	●	2	185	192	222	287	40	50	0.87	SOX11	TPS43	TIP15W
37.0	6	MVX3700X6F40	●	2	222	229	259	324	40	50	0.86	SOX11	TPS43	TIP15W
38.0	2	MVX3800X2F40	●	2	76	83	113	178	40	50	0.79	SOX11	TPS43	TIP15W
38.0	3	MVX3800X3F40	●	2	114	121	151	216	40	50	0.79	SOX11	TPS43	TIP15W
38.0	4	MVX3800X4F40	●	2	152	159	189	254	40	50	0.79	SOX11	TPS43	TIP15W
38.0	5	MVX3800X5F40	●	2	190	197	227	292	40	50	0.79	SOX11	TPS43	TIP15W
38.0	6	MVX3800X6F40	●	2	228	235	265	330	40	50	0.78	SOX11	TPS43	TIP15W
39.0	2	MVX3900X2F40	●	2	78	85	115	180	40	50	0.71	SOX11	TPS43	TIP15W
39.0	3	MVX3900X3F40	●	2	117	124	154	219	40	50	0.71	SOX11	TPS43	TIP15W
39.0	4	MVX3900X4F40	●	2	156	163	193	258	40	50	0.71	SOX11	TPS43	TIP15W
39.0	5	MVX3900X5F40	●	2	195	202	232	297	40	50	0.71	SOX11	TPS43	TIP15W
39.0	6	MVX3900X6F40	●	2	234	241	271	336	40	50	0.7	SOX11	TPS43	TIP15W
40.0	2	MVX4000X2F40	●	2	80	87	117	182	40	50	1.46	SOX13	TPS43	TIP15W
40.0	3	MVX4000X3F40	●	2	120	127	157	222	40	50	1.46	SOX13	TPS43	TIP15W

* Torque de Fixação (N • m) : TPS4=3.5, TPS43=3.5

FURAÇÃO(TIPO INTERCAMBIÁVEL)

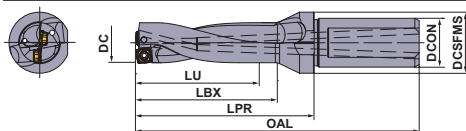
MVX



METAL DURO

DC (mm)	Prof. do Furo (L/D)	Referência para Pedido	Estoque	Número de Dentes	Dimensões (mm)					S10 (mm)	Referência do Inserto			
					LU	LBX	LPR	OAL	DCON					DCSFMS
40.0	4	MVX4000X4F40	●	2	160	167	197	262	40	50	1.46	SOX13	TPS43	TIP15W
40.0	5	MVX4000X5F40	●	2	200	207	237	302	40	50	1.46	SOX13	TPS43	TIP15W
40.0	6	MVX4000X6F40	●	2	240	247	277	342	40	50	1.45	SOX13	TPS43	TIP15W
41.0	2	MVX4100X2F40	●	2	82	89	119	184	40	50	1.36	SOX13	TPS43	TIP15W
41.0	3	MVX4100X3F40	●	2	123	130	160	225	40	50	1.36	SOX13	TPS43	TIP15W
41.0	4	MVX4100X4F40	●	2	164	171	201	266	40	50	1.36	SOX13	TPS43	TIP15W
41.0	5	MVX4100X5F40	●	2	205	212	242	307	40	50	1.36	SOX13	TPS43	TIP15W
41.0	6	MVX4100X6F40	●	2	246	253	283	348	40	50	1.35	SOX13	TPS43	TIP15W
42.0	2	MVX4200X2F40	●	2	84	91	121	186	40	50	1.27	SOX13	TPS43	TIP15W
42.0	3	MVX4200X3F40	●	2	126	133	163	228	40	50	1.27	SOX13	TPS43	TIP15W
42.0	4	MVX4200X4F40	●	2	168	175	205	270	40	63	1.27	SOX13	TPS43	TIP15W
42.0	4	MVX4200X4F50	●	2	168	175	205	280	50	63	1.27	SOX13	TPS43	TIP15W
42.0	5	MVX4200X5F40	●	2	210	217	247	312	40	63	1.27	SOX13	TPS43	TIP15W
42.0	5	MVX4200X5F50	●	2	210	217	247	322	50	63	1.27	SOX13	TPS43	TIP15W
42.0	6	MVX4200X6F40	●	2	252	259	289	354	40	63	1.27	SOX13	TPS43	TIP15W
42.0	6	MVX4200X6F50	●	2	252	259	289	364	50	63	1.26	SOX13	TPS43	TIP15W
43.0	2	MVX4300X2F40	●	2	86	93	123	188	40	50	1.18	SOX13	TPS43	TIP15W
43.0	3	MVX4300X3F40	●	2	129	136	166	231	40	50	1.18	SOX13	TPS43	TIP15W
43.0	4	MVX4300X4F40	●	2	172	179	209	274	40	63	1.18	SOX13	TPS43	TIP15W
43.0	4	MVX4300X4F50	●	2	172	179	209	284	50	63	1.18	SOX13	TPS43	TIP15W
43.0	5	MVX4300X5F40	●	2	215	222	252	317	40	63	1.18	SOX13	TPS43	TIP15W
43.0	5	MVX4300X5F50	●	2	215	222	252	327	50	63	1.18	SOX13	TPS43	TIP15W
43.0	6	MVX4300X6F40	●	2	258	265	295	360	40	63	1.17	SOX13	TPS43	TIP15W
43.0	6	MVX4300X6F50	●	2	258	265	295	370	50	63	1.17	SOX13	TPS43	TIP15W
44.0	2	MVX4400X2F40	●	2	88	95	125	190	40	50	1.08	SOX13	TPS43	TIP15W
44.0	3	MVX4400X3F40	●	2	132	139	169	234	40	50	1.08	SOX13	TPS43	TIP15W
44.0	4	MVX4400X4F40	●	2	176	183	213	278	40	63	1.08	SOX13	TPS43	TIP15W
44.0	4	MVX4400X4F50	●	2	176	183	213	288	50	63	1.08	SOX13	TPS43	TIP15W
44.0	5	MVX4400X5F40	●	2	220	227	257	322	40	63	1.08	SOX13	TPS43	TIP15W
44.0	5	MVX4400X5F50	●	2	220	227	257	332	50	63	1.08	SOX13	TPS43	TIP15W
45.0	2	MVX4500X2F40	●	2	90	97	127	192	40	50	0.99	SOX13	TPS43	TIP15W
45.0	3	MVX4500X3F40	●	2	135	142	172	237	40	50	0.99	SOX13	TPS43	TIP15W
45.0	4	MVX4500X4F40	●	2	180	187	217	282	40	63	0.99	SOX13	TPS43	TIP15W
45.0	4	MVX4500X4F50	●	2	180	187	217	292	50	63	0.99	SOX13	TPS43	TIP15W
45.0	5	MVX4500X5F40	●	2	225	232	262	327	40	63	0.99	SOX13	TPS43	TIP15W
45.0	5	MVX4500X5F50	●	2	225	232	262	337	50	63	0.99	SOX13	TPS43	TIP15W
46.0	2	MVX4600X2F40	●	2	92	99	129	194	40	50	0.89	SOX13	TPS43	TIP15W
46.0	3	MVX4600X3F40	●	2	138	145	175	240	40	50	0.89	SOX13	TPS43	TIP15W
46.0	4	MVX4600X4F40	●	2	184	191	221	286	40	63	0.89	SOX13	TPS43	TIP15W
46.0	4	MVX4600X4F50	●	2	184	191	221	296	50	63	0.89	SOX13	TPS43	TIP15W
46.0	5	MVX4600X5F40	●	2	230	237	267	332	40	63	0.89	SOX13	TPS43	TIP15W
46.0	5	MVX4600X5F50	●	2	230	237	267	342	50	63	0.89	SOX13	TPS43	TIP15W
47.0	2	MVX4700X2F40	●	2	94	101	141	206	40	63	1.9	SOX16	TPS54	TIP25D
47.0	3	MVX4700X3F40	●	2	141	148	188	253	40	63	1.9	SOX16	TPS54	TIP25D
47.0	4	MVX4700X4F40	●	2	188	195	235	300	40	63	1.9	SOX16	TPS54	TIP25D
47.0	4	MVX4700X4F50	●	2	188	195	235	310	50	63	1.9	SOX16	TPS54	TIP25D
47.0	5	MVX4700X5F40	●	2	235	242	282	347	40	63	1.9	SOX16	TPS54	TIP25D
47.0	5	MVX4700X5F50	●	2	235	242	282	357	50	63	1.9	SOX16	TPS54	TIP25D
48.0	2	MVX4800X2F40	●	2	96	103	143	208	40	63	1.8	SOX16	TPS54	TIP25D
48.0	3	MVX4800X3F40	●	2	144	151	191	256	40	63	1.8	SOX16	TPS54	TIP25D

* Torque de Fixação (N • m) : TPS43=3.5, TPS54=7.5

● : Estoque mantido.





DC (mm)	Prof. do Furo (L/D)	Referência para Pedido	Estoque	Número de Dentes	Dimensões (mm)					S10 (mm)	Referência do Inserto			
					LU	LBX	LPR	OAL	DCON					DCSFMS
48.0	4	MVX4800X4F40	●	2	192	199	239	304	40	63	1.8	SOX16	TPS54	TIP25D
48.0	4	MVX4800X4F50	●	2	192	199	239	314	50	63	1.8	SOX16	TPS54	TIP25D
48.0	5	MVX4800X5F40	●	2	240	247	287	352	40	63	1.8	SOX16	TPS54	TIP25D
48.0	5	MVX4800X5F50	●	2	240	247	287	362	50	63	1.8	SOX16	TPS54	TIP25D
49.0	2	MVX4900X2F40	●	2	98	105	145	210	40	63	1.7	SOX16	TPS54	TIP25D
49.0	3	MVX4900X3F40	●	2	147	154	194	259	40	63	1.7	SOX16	TPS54	TIP25D
49.0	4	MVX4900X4F40	●	2	196	203	243	308	40	63	1.7	SOX16	TPS54	TIP25D
49.0	4	MVX4900X4F50	●	2	196	203	243	318	50	63	1.7	SOX16	TPS54	TIP25D
49.0	5	MVX4900X5F40	●	2	245	252	292	357	40	63	1.7	SOX16	TPS54	TIP25D
49.0	5	MVX4900X5F50	●	2	245	252	292	367	50	63	1.7	SOX16	TPS54	TIP25D
50.0	2	MVX5000X2F40	●	2	100	107	147	212	40	63	1.6	SOX16	TPS54	TIP25D
50.0	3	MVX5000X3F40	●	2	150	157	197	262	40	63	1.6	SOX16	TPS54	TIP25D
50.0	4	MVX5000X4F40	●	2	200	207	247	312	40	63	1.6	SOX16	TPS54	TIP25D
50.0	4	MVX5000X4F50	●	2	200	207	247	322	50	63	1.6	SOX16	TPS54	TIP25D
50.0	5	MVX5000X5F40	●	2	250	257	297	362	40	63	1.6	SOX16	TPS54	TIP25D
50.0	5	MVX5000X5F50	●	2	250	257	297	372	50	63	1.6	SOX16	TPS54	TIP25D
51.0	2	MVX5100X2F40	●	2	102	109	149	214	40	63	1.5	SOX16	TPS54	TIP25D
51.0	3	MVX5100X3F40	●	2	153	160	200	265	40	63	1.5	SOX16	TPS54	TIP25D
51.0	4	MVX5100X4F40	●	2	204	211	251	316	40	63	1.5	SOX16	TPS54	TIP25D
51.0	4	MVX5100X4F50	●	2	204	211	251	326	50	63	1.5	SOX16	TPS54	TIP25D
51.0	5	MVX5100X5F40	●	2	255	262	302	367	40	63	1.5	SOX16	TPS54	TIP25D
51.0	5	MVX5100X5F50	●	2	255	262	302	377	50	63	1.5	SOX16	TPS54	TIP25D
52.0	2	MVX5200X2F40	●	2	104	111	151	216	40	63	1.39	SOX16	TPS54	TIP25D
52.0	3	MVX5200X3F40	●	2	156	163	203	268	40	63	1.39	SOX16	TPS54	TIP25D
52.0	4	MVX5200X4F40	●	2	208	215	255	320	40	63	1.39	SOX16	TPS54	TIP25D
52.0	4	MVX5200X4F50	●	2	208	215	255	330	50	63	1.39	SOX16	TPS54	TIP25D
52.0	5	MVX5200X5F40	●	2	260	267	307	372	40	63	1.39	SOX16	TPS54	TIP25D
52.0	5	MVX5200X5F50	●	2	260	267	307	382	50	63	1.39	SOX16	TPS54	TIP25D
53.0	2	MVX5300X2F40	●	2	106	113	153	218	40	63	1.29	SOX16	TPS54	TIP25D
53.0	3	MVX5300X3F40	●	2	159	166	206	271	40	63	1.29	SOX16	TPS54	TIP25D
53.0	4	MVX5300X4F40	●	2	212	219	259	324	40	63	1.29	SOX16	TPS54	TIP25D
53.0	4	MVX5300X4F50	●	2	212	219	259	334	50	63	1.29	SOX16	TPS54	TIP25D
53.0	5	MVX5300X5F40	●	2	265	272	312	377	40	63	1.29	SOX16	TPS54	TIP25D
53.0	5	MVX5300X5F50	●	2	265	272	312	387	50	63	1.29	SOX16	TPS54	TIP25D
54.0	2	MVX5400X2F40	●	2	108	115	155	220	40	63	1.19	SOX16	TPS54	TIP25D
54.0	3	MVX5400X3F40	●	2	162	169	209	274	40	63	1.19	SOX16	TPS54	TIP25D
54.0	4	MVX5400X4F40	●	2	216	223	263	328	40	63	1.19	SOX16	TPS54	TIP25D
54.0	4	MVX5400X4F50	●	2	216	223	263	338	50	63	1.19	SOX16	TPS54	TIP25D
54.0	5	MVX5400X5F40	●	2	270	277	317	382	40	63	1.19	SOX16	TPS54	TIP25D
54.0	5	MVX5400X5F50	●	2	270	277	317	392	50	63	1.19	SOX16	TPS54	TIP25D
55.0	2	MVX5500X2F40	●	2	110	117	157	222	40	63	1.08	SOX16	TPS54	TIP25D
55.0	3	MVX5500X3F40	●	2	165	172	212	277	40	63	1.08	SOX16	TPS54	TIP25D
55.0	4	MVX5500X4F40	●	2	220	227	267	332	40	63	1.08	SOX16	TPS54	TIP25D
55.0	4	MVX5500X4F50	●	2	220	227	267	342	50	63	1.08	SOX16	TPS54	TIP25D
55.0	5	MVX5500X5F40	●	2	275	282	322	387	40	63	1.08	SOX16	TPS54	TIP25D
55.0	5	MVX5500X5F50	●	2	275	282	322	397	50	63	1.08	SOX16	TPS54	TIP25D
56.0	2	MVX5600X2F40	●	2	112	119	159	224	40	63	0.98	SOX16	TPS54	TIP25D
56.0	3	MVX5600X3F40	●	2	168	175	215	280	40	63	0.98	SOX16	TPS54	TIP25D
56.0	4	MVX5600X4F40	●	2	224	231	271	336	40	63	0.98	SOX16	TPS54	TIP25D
56.0	4	MVX5600X4F50	●	2	224	231	271	346	50	63	0.98	SOX16	TPS54	TIP25D

* Torque de Fixação (N • m) : TPS54=7.5

FURAÇÃO(TIPO INTERCAMBIÁVEL)

MVX

METAL DURO

DC (mm)	Prof. do Furo (L/D)	Referência para Pedido	Estoque	Número de Dentes	Dimensões (mm)					S10 (mm)	Referência do Inserto			
					LU	LBX	LPR	OAL	DCON					DCSFMS
56.0	5	MVX5600X5F40	●	2	280	287	327	392	40	63	0.98	SOX16	TPS54	TIP25D
56.0	5	MVX5600X5F50	●	2	280	287	327	402	50	63	0.98	SOX16	TPS54	TIP25D
57.0	2	MVX5700X2F40	●	2	114	121	161	226	40	68	1.47	SOX18	TPS54	TIP25D
57.0	3	MVX5700X3F40	●	2	171	178	218	283	40	68	1.47	SOX18	TPS54	TIP25D
57.0	4	MVX5700X4F40	●	2	228	235	275	340	40	68	1.47	SOX18	TPS54	TIP25D
57.0	4	MVX5700X4F50	●	2	228	235	275	350	50	68	1.47	SOX18	TPS54	TIP25D
57.0	5	MVX5700X5F40	●	2	285	292	332	397	40	68	1.47	SOX18	TPS54	TIP25D
57.0	5	MVX5700X5F50	●	2	285	292	332	407	50	68	1.47	SOX18	TPS54	TIP25D
58.0	2	MVX5800X2F40	●	2	116	123	163	228	40	68	1.37	SOX18	TPS54	TIP25D
58.0	3	MVX5800X3F40	●	2	174	181	221	286	40	68	1.37	SOX18	TPS54	TIP25D
58.0	4	MVX5800X4F40	●	2	232	239	279	344	40	68	1.37	SOX18	TPS54	TIP25D
58.0	4	MVX5800X4F50	●	2	232	239	279	354	50	68	1.37	SOX18	TPS54	TIP25D
58.0	5	MVX5800X5F40	●	2	290	297	337	402	40	68	1.37	SOX18	TPS54	TIP25D
58.0	5	MVX5800X5F50	●	2	290	297	337	412	50	68	1.37	SOX18	TPS54	TIP25D
59.0	2	MVX5900X2F40	●	2	118	125	165	230	40	68	1.26	SOX18	TPS54	TIP25D
59.0	3	MVX5900X3F40	●	2	177	184	224	289	40	68	1.26	SOX18	TPS54	TIP25D
59.0	4	MVX5900X4F40	●	2	236	243	283	348	40	68	1.26	SOX18	TPS54	TIP25D
59.0	4	MVX5900X4F50	●	2	236	243	283	358	50	68	1.26	SOX18	TPS54	TIP25D
59.0	5	MVX5900X5F40	●	2	295	302	342	407	40	68	1.26	SOX18	TPS54	TIP25D
59.0	5	MVX5900X5F50	●	2	295	302	342	417	50	68	1.26	SOX18	TPS54	TIP25D
60.0	2	MVX6000X2F40	●	2	120	127	167	232	40	68	1.16	SOX18	TPS54	TIP25D
60.0	3	MVX6000X3F40	●	2	180	187	227	292	40	68	1.16	SOX18	TPS54	TIP25D
60.0	4	MVX6000X4F40	●	2	240	247	287	352	40	68	1.16	SOX18	TPS54	TIP25D
60.0	4	MVX6000X4F50	●	2	240	247	287	362	50	68	1.16	SOX18	TPS54	TIP25D
60.0	5	MVX6000X5F40	●	2	300	307	347	412	40	68	1.16	SOX18	TPS54	TIP25D
60.0	5	MVX6000X5F50	●	2	300	307	347	422	50	68	1.16	SOX18	TPS54	TIP25D
61.0	2	MVX6100X2F40	●	2	122	129	169	234	40	68	1.05	SOX18	TPS54	TIP25D
61.0	3	MVX6100X3F40	●	2	183	190	230	295	40	68	1.05	SOX18	TPS54	TIP25D
61.0	4	MVX6100X4F40	●	2	244	251	291	356	40	68	1.05	SOX18	TPS54	TIP25D
61.0	4	MVX6100X4F50	●	2	244	251	291	366	50	68	1.05	SOX18	TPS54	TIP25D
61.0	5	MVX6100X5F40	●	2	305	312	352	417	40	68	1.05	SOX18	TPS54	TIP25D
61.0	5	MVX6100X5F50	●	2	305	312	352	427	50	68	1.05	SOX18	TPS54	TIP25D
62.0	2	MVX6200X2F40	●	2	124	131	171	236	40	68	0.95	SOX18	TPS54	TIP25D
62.0	3	MVX6200X3F40	●	2	186	193	233	298	40	68	0.95	SOX18	TPS54	TIP25D
62.0	4	MVX6200X4F40	●	2	248	255	295	360	40	68	0.95	SOX18	TPS54	TIP25D
62.0	4	MVX6200X4F50	●	2	248	255	295	370	50	68	0.95	SOX18	TPS54	TIP25D
62.0	5	MVX6200X5F40	●	2	310	317	357	422	40	68	0.95	SOX18	TPS54	TIP25D
62.0	5	MVX6200X5F50	●	2	310	317	357	432	50	68	0.95	SOX18	TPS54	TIP25D
63.0	2	MVX6300X2F40	●	2	126	133	173	238	40	68	0.85	SOX18	TPS54	TIP25D
63.0	3	MVX6300X3F40	●	2	189	196	236	301	40	68	0.85	SOX18	TPS54	TIP25D
63.0	4	MVX6300X4F40	●	2	252	259	299	364	40	68	0.85	SOX18	TPS54	TIP25D
63.0	4	MVX6300X4F50	●	2	252	259	299	374	50	68	0.85	SOX18	TPS54	TIP25D
63.0	5	MVX6300X5F40	●	2	315	322	362	427	40	68	0.85	SOX18	TPS54	TIP25D
63.0	5	MVX6300X5F50	●	2	315	322	362	437	50	68	0.85	SOX18	TPS54	TIP25D


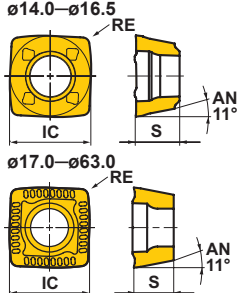

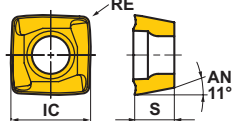

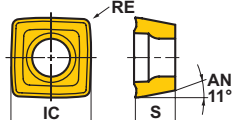

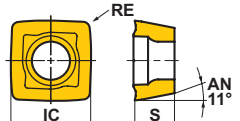
* Torque de Fixação (N • m) : TPS54=7.5

FURAÇÃO N

● : Estoque mantido.













(Nota: 1 insertos por embalagem)

INSERTOS

Formato	Diâm. da Broca	Referência do Inserto	IC	S	RE	Com Cobertura				Sem Cobertura	Geometria
						MC5020	MC1020	VP15TF	DP8020	TF15	
 Uso geral Inserto central/periférico	ø14.0–ø16.5	SOMX052704-UM	5.0	2.7	0.4	●	●	●			
	ø17.0–ø19.5	SOMX063005-UM	6.0	3.0	0.5	●	●	●			
	ø20.0–ø22.5	SOMX073505-UM	7.0	3.5	0.5	●	●	●			
	ø23.0–ø27.5	SOMX084005-UM	8.3	4.0	0.5	●	●	●			
	ø28.0–ø33.0	SOMX094506-UM	9.7	4.5	0.6	●	●	●			
	ø33.5–ø39.0	SOMX115506-UM	11.6	5.5	0.6	●	●	●			
	ø40.0–ø46.0	SOMX136008-UM	13.8	6.0	0.8	●	●	●			
 Para aço inoxidável Inserto central	ø17.0–ø19.5	SOMX063005-US	6.0	3.0	0.5			●			
	ø20.0–ø22.5	SOMX073505-US	7.0	3.5	0.5			●			
	ø23.0–ø27.5	SOMX084005-US	8.3	4.0	0.5			●			
	ø28.0–ø33.0	SOMX094506-US	9.7	4.5	0.6			●			
	ø33.5–ø39.0	SOMX115506-US	11.6	5.5	0.6			●			
	ø40.0–ø46.0	SOMX136008-US	13.8	6.0	0.8			●			
	ø47.0–ø56.0	SOMX166508-US	16.5	6.5	0.8			●			
 Aresta reforçada Inserto central	ø17.0–ø19.5	SOMX062905-UH	6.0	2.9	0.5				●		
	ø20.0–ø22.5	SOMX073405-UH	7.0	3.4	0.5				●		
	ø23.0–ø27.5	SOMX083905-UH	8.3	3.9	0.5				●		
	ø28.0–ø33.0	SOMX094406-UH	9.7	4.4	0.6				●		
	ø33.5–ø39.0	SOMX115406-UH	11.6	5.4	0.6				●		
	ø40.0–ø46.0	SOMX135908-UH	13.8	5.9	0.8				●		
	ø47.0–ø56.0	SOMX166408-UH	16.5	6.4	0.8				●		
 Para ligas de alumínio Inserto central/periférico	ø17.0–ø19.5	SOGX063005-UN	6.0	3.0	0.5				●		
	ø20.0–ø22.5	SOGX073505-UN	7.0	3.5	0.5				●		
	ø23.0–ø27.5	SOGX084005-UN	8.3	4.0	0.5				●		
	ø28.0–ø33.0	SOGX094506-UN	9.7	4.5	0.6				●		
	ø33.5–ø39.0	SOGX115506-UN	11.6	5.5	0.6				●		
	ø40.0–ø46.0	SOGX136008-UN	13.8	6.0	0.8				●		
	ø47.0–ø56.0	SOGX166508-UN	16.5	6.5	0.8				●		
ø57.0–ø63.0	SOGX187008-UN	18.2	7.0	0.8				●			

Nota 1) Classes MC1020 e MC5020 somente para inserto periférico. O DP8020 é indicado para uso exclusivo como inserto central.

SELEÇÃO DE INSERTOS

Material	1ª Recomendação		Quando o inserto periférico sofre fratura	
	Externo	Interno	Externo	Interno
P Aço Baixo Carbono, Aço Liga	MC1020 	VP15TF 	VP15TF 	VP15TF 
	Quebra-cavaco UM	Quebra-cavaco UM	Quebra-cavaco UM	Quebra-cavaco UM
M Aço Inoxidável	MC1020 	VP15TF 	VP15TF 	VP15TF 
	Quebra-cavaco UM	Quebra-cavaco US	Quebra-cavaco UM	Quebra-cavaco US
K Ferro Fundido	MC5020 	VP15TF 	VP15TF 	VP15TF 
	Quebra-cavaco UM	Quebra-cavaco UM	Quebra-cavaco UM	Quebra-cavaco UM

Material	1ª Recomendação		Quando o inserto periférico sofre fratura	
	Externo	Interno	Externo	Interno
H Aço Endurecido	MC1020 	DP8020 	VP15TF 	DP8020 
	Quebra-cavaco UM	Quebra-cavaco UH	Quebra-cavaco UM	Quebra-cavaco UH
N Ligas de Alumínio	TF15 	TF15 		
	Quebra-cavaco UN	Quebra-cavaco UN		

N

FURAÇÃO

CONDIÇÕES DE CORTE RECOMENDADAS

Material	Dureza	Vel. de Corte (m/min)	Quebra-cavaco central	φ14—φ16.5mm			
				Avanço (mm/rot)			
				L/D=2, 3	4	5	
P	Aço baixo carbono (ASTM A36, AISI 1010)	≤180HB	200 (180—235)	UM	0.05 (0.04—0.06)	0.05 (0.04—0.06)	0.05 (0.04—0.06)
				UH	—	—	—
	Aço Carbono, Aço Liga (AISI 1045, AISI 4140)	180—280HB	140 (115—180)	UM	0.08 (0.06—0.14)	0.08 (0.06—0.09)	0.08 (0.06—0.09)
				UH	—	—	—
	Aço Carbono, Aço Liga (AISI 4340)	280—350HB	100 (75—140)	UM	0.08 (0.06—0.14)	0.08 (0.06—0.09)	0.08 (0.06—0.09)
				UH	—	—	—
	Aço ferramenta liga (SKD, SKT)	≤350HB	135 (100—170)	UM	0.08 (0.06—0.14)	0.08 (0.06—0.09)	0.08 (0.06—0.09)
				UH	—	—	—
M	Aço Inoxidável Austenítico (AISI 304, AISI 316)	≤200HB	130 (80—180)	US	—	—	—
				UM	0.06 (0.04—0.08)	0.05 (0.04—0.06)	0.05 (0.04—0.06)
	Aço Inoxidável Austenítico (AISI 304LN, AISI 316LN)	>200HB	130 (80—180)	US	—	—	—
				UM	0.06 (0.04—0.08)	0.05 (0.04—0.06)	0.05 (0.04—0.06)
	Aço inoxidável ferrítico e martensítico (AISI 410, AISI 430)	≤200HB	120 (80—165)	US	—	—	—
				UM	0.06 (0.04—0.08)	0.05 (0.04—0.06)	0.05 (0.04—0.06)
	Aço inoxidável ferrítico e martensítico (AISI 431, AISI 420J2)	>200HB	120 (80—165)	US	—	—	—
				UM	0.06 (0.04—0.08)	0.05 (0.04—0.06)	0.05 (0.04—0.06)
K	Ferro Fundido Cinzento (DIN GG-30)	Resistência à Tração ≤350MPa	160 (130—195)	UM	0.10 (0.06—0.14)	0.08 (0.06—0.10)	0.08 (0.06—0.10)
	Ferro Fundido Nodular (DIN GGG-45)	Resistência à Tração ≤450MPa	100 (80—135)	UM	0.10 (0.06—0.14)	0.08 (0.06—0.10)	0.08 (0.06—0.10)
	Ferro Fundido Nodular (DIN GGG-70)	Resistência à Tração ≤800MPa	100 (70—125)	UM	0.08 (0.06—0.12)	0.07 (0.06—0.08)	0.07 (0.06—0.08)
N	Ligas de Alumínio (A6061, A7075)	Si < 5%	200 (100—350)	UN	—	—	—
	Ligas de Alumínio (AC4B)	5% ≤ Si ≤ 10%	150 (100—200)	UN	—	—	—
	Ligas de Alumínio (ADC12, A390)	Si > 10%	150 (100—200)	UN	—	—	—
H	Aço Endurecido (AISI H13, JIS SKT4)	38—45HRC	50 (30—80)	UH	—	—	—

Nota 1) Quando usar a classe VP15TF como inserto periférico, reduza a velocidade de corte para 70%.

Nota 2) Quando usar refrigeração externa, a profundidade máxima de corte deve ser L/D=3. Não é recomendado usar profundidades de corte maiores.

Nota 3) Para usinagem de aço inoxidável, use sempre refrigeração interna.

CONDIÇÕES DE CORTE RECOMENDADAS

Material	Dureza	Vel. de Corte (m/min)	Quebra-cavaco central	φ30—φ63mm				
				Avanço (mm/rot)				
				L/D=2, 3	4	5	6	
P Aço baixo carbono (ASTM A36, AISI 1010)	≤180HB	200 (180—235)	UM	0.08 (0.06—0.10)	0.07 (0.06—0.08)	0.07 (0.06—0.08)	0.06 (0.06—0.07)	
			UH					
	180—280HB	140 (115—180)	UM	0.14 (0.08—0.20)	0.12 (0.08—0.16)	0.12 (0.08—0.16)	0.11 (0.10—0.12)	
			UH					
Aço Carbono, Aço Liga (AISI 1045, AISI 4140)	280—350HB	100 (75—140)	UM	0.14 (0.08—0.20)	0.12 (0.08—0.16)	0.12 (0.08—0.16)	0.11 (0.10—0.12)	
			UH					
Aço ferramenta liga (SKD, SKT)	≤350HB	135 (100—170)	UM	0.14 (0.08—0.20)	0.12 (0.08—0.16)	0.12 (0.08—0.16)	0.10 (0.08—0.12)	
			UH					
M	≤200HB	130 (80—180)	US	0.10 (0.06—0.14)	0.09 (0.06—0.12)	0.09 (0.06—0.12)	0.07 (0.06—0.10)	
			UM	0.09 (0.06—0.12)	0.08 (0.06—0.10)	0.08 (0.06—0.10)	0.07 (0.06—0.08)	
	>200HB	130 (80—180)	US	0.10 (0.06—0.14)	0.09 (0.06—0.12)	0.09 (0.06—0.12)	0.07 (0.06—0.10)	
			UM	0.09 (0.06—0.12)	0.08 (0.06—0.10)	0.08 (0.06—0.10)	0.07 (0.06—0.08)	
	Aço inoxidável austenítico (AISI 304, AISI 316)	≤200HB	120 (80—165)	US	0.10 (0.06—0.14)	0.09 (0.06—0.12)	0.09 (0.06—0.12)	0.07 (0.06—0.10)
				UM	0.09 (0.06—0.12)	0.08 (0.06—0.10)	0.08 (0.06—0.10)	0.07 (0.06—0.08)
	Aço inoxidável austenítico (AISI 304LN, AISI 316LN)	>200HB	120 (80—165)	US	0.10 (0.06—0.14)	0.09 (0.06—0.12)	0.09 (0.06—0.12)	0.07 (0.06—0.10)
				UM	0.09 (0.06—0.12)	0.08 (0.06—0.10)	0.08 (0.06—0.10)	0.07 (0.06—0.08)
Aço inoxidável ferrítico e martensítico (AISI 410, AISI 430)	≤200HB	120 (80—165)	US	0.10 (0.06—0.14)	0.09 (0.06—0.12)	0.09 (0.06—0.12)	0.07 (0.06—0.10)	
			UM	0.09 (0.06—0.12)	0.08 (0.06—0.10)	0.08 (0.06—0.10)	0.07 (0.06—0.08)	
Aço inoxidável ferrítico e martensítico (AISI 431, AISI 420J2)	>200HB	120 (80—165)	US	0.10 (0.06—0.14)	0.09 (0.06—0.12)	0.09 (0.06—0.12)	0.07 (0.06—0.10)	
			UM	0.09 (0.06—0.12)	0.08 (0.06—0.10)	0.08 (0.06—0.10)	0.07 (0.06—0.08)	
K	Resistência à Tração ≤350MPa	160 (130—195)	UM	0.15 (0.10—0.20)	0.12 (0.10—0.13)	0.12 (0.10—0.13)	0.11 (0.10—0.12)	
	Resistência à Tração ≤450MPa	100 (80—135)	UM	0.15 (0.10—0.20)	0.12 (0.10—0.13)	0.12 (0.10—0.13)	0.11 (0.10—0.12)	
	Resistência à Tração ≤800MPa	100 (70—125)	UM	0.15 (0.10—0.20)	0.12 (0.10—0.13)	0.12 (0.10—0.13)	0.11 (0.10—0.12)	
N	Si < 5%	200 (100—350)	UN	0.12 (0.05—0.20)	0.12 (0.05—0.18)	0.12 (0.05—0.18)	0.08 (0.05—0.12)	
	5% ≤ Si ≤ 10%	150 (100—200)	UN	0.12 (0.05—0.20)	0.12 (0.05—0.18)	0.12 (0.05—0.18)	0.08 (0.05—0.12)	
	Si > 10%	150 (100—200)	UN	0.12 (0.05—0.20)	0.12 (0.05—0.18)	0.12 (0.05—0.18)	0.08 (0.05—0.12)	
H	38—45HRC	50 (30—80)	UH	0.11 (0.06—0.16)	0.09 (0.06—0.12)	—	—	

Nota 1) Quando usar a classe VP15TF como inserto periférico, reduza a velocidade de corte para 70%.

Nota 2) Quando usar refrigeração externa, a profundidade máxima de corte deve ser L/D=3. Não é recomendado usar profundidades de corte maiores.

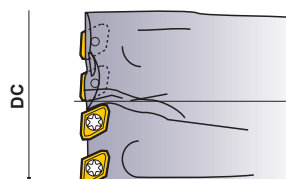
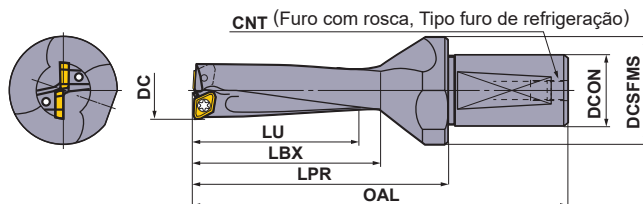
Nota 3) Para usinagem de aço inoxidável, use sempre refrigeração interna.

TAFS/TAFM/TAFL

- Suporte de alta rigidez.
- Insertos de 4 arestas.
- Várias classes e quebra-cavacos.



METAL DURO



Nota 1) O furo rosqueado na lateral da flange não é para refrigeração.

Número de Dentes = 4 ($\phi DC \geq 49$)

DC (mm)	Prof. do Furo (L/D)	Referência para Pedido	Estoque	Número de Dentes	Dimensões (mm)							Referência do Inserto	Parafuso de Fixação	F Chave
					LU	LBX	LPR	OAL	DCON	DCSFMS	CNT			
12.0	2	TAFS1200F20	●	2	24	29	39	82	20	25	PT1/8	GCMT040204-U	TS2	TKY06F
12.0	3	TAFM1200F20	●	2	36	41	51	94	20	25	PT1/8	GCMT040204-U	TS2	TKY06F
12.5	2	TAFS1250F20	●	2	25	29	39	82	20	25	PT1/8	GCMT040204-U	TS2	TKY06F
12.5	3	TAFM1250F20	●	2	37.5	41	51	94	20	25	PT1/8	GCMT040204-U	TS2	TKY06F
13.0	2	TAFS1300F20	●	2	26	31	41	84	20	25	PT1/8	GCMT040204-U	TS2	TKY06F
13.0	3	TAFM1300F20	●	2	39	44	54	97	20	25	PT1/8	GCMT040204-U	TS2	TKY06F
13.5	2	TAFS1350F20	●	2	27	31	41	84	20	25	PT1/8	GCMT040204-U	TS2	TKY06F
13.5	3	TAFM1350F20	●	2	40.5	44	54	97	20	25	PT1/8	GCMT040204-U	TS2	TKY06F
14.0	2	TAFS1400F20	●	2	28	33	43	86	20	25	PT1/8	GCMT040204-U	TS2	TKY06F
14.0	3	TAFM1400F20	●	2	42	47	57	100	20	25	PT1/8	GCMT040204-U	TS2	TKY06F
14.5	2	TAFS1450F20	●	2	29	33	43	86	20	25	PT1/8	GCMT040204-U	TS2	TKY06F
14.5	3	TAFM1450F20	●	2	43.5	47	57	100	20	25	PT1/8	GCMT040204-U	TS2	TKY06F
15.0	2	TAFS1500F20	●	2	30	35	45	88	20	25	PT1/8	GPMT060204-U	TS2	TKY06F
15.0	3	TAFM1500F20	●	2	45	50	60	103	20	25	PT1/8	GPMT060204-U	TS2	TKY06F
15.5	2	TAFS1550F20	●	2	31	35	45	88	20	25	PT1/8	GPMT060204-U	TS2	TKY06F
15.5	3	TAFM1550F20	●	2	46.5	50	60	103	20	25	PT1/8	GPMT060204-U	TS2	TKY06F
16.0	2	TAFS1600F25	●	2	32	38	57	107	25	35	PT1/8	GPMT060204-U	TS2	TKY06F
16.0	3	TAFM1600F25	●	2	48	54	73	123	25	35	PT1/8	GPMT060204-U	TS2	TKY06F
16.0	4	TAFL1600F25	●	2	64	70	89	139	25	35	PT1/8	GPMT060204-U	TS2	TKY06F
16.5	2	TAFS1650F25	●	2	33	38	57	107	25	35	PT1/8	GPMT060204-U	TS2	TKY06F
16.5	3	TAFM1650F25	●	2	49.5	54	73	123	25	35	PT1/8	GPMT060204-U	TS2	TKY06F
17.0	2	TAFS1700F25	●	2	34	41	59	109	25	35	PT1/8	GPMT060204-U	TS2	TKY06F
17.0	3	TAFM1700F25	●	2	51	58	76	126	25	35	PT1/8	GPMT060204-U	TS2	TKY06F
17.0	4	TAFL1700F25	●	2	68	75	93	143	25	35	PT1/8	GPMT060204-U	TS2	TKY06F
17.5	2	TAFS1750F25	▲	2	35	41	59	109	25	35	PT1/8	GPMT060204-U	TS2	TKY06F
17.5	3	TAFM1750F25	▲	2	52.5	58	76	126	25	35	PT1/8	GPMT060204-U	TS2	TKY06F
18.0	2	TAFS1800F25	▲	2	36	43	61	111	25	35	PT1/8	GPMT070204-U	TS25	TKY08F
18.0	3	TAFM1800F25	▲	2	54	61	79	129	25	35	PT1/8	GPMT070204-U	TS25	TKY08F
18.0	4	TAFL1800F25	▲	2	72	79	97	147	25	35	PT1/8	GPMT070204-U	TS25	TKY08F
18.5	2	TAFS1850F25	▲	2	37	43	61	111	25	35	PT1/8	GPMT070204-U	TS25	TKY08F

* Torque de Fixação (N • m) : TS2=0.5, TS25=1.0

- : Estoque mantido.
- ▲ : Estoque mantido. Será substituído por novos produtos.

DESCRIÇÃO DO INSERTO > N175
ACESSÓRIOS > P001


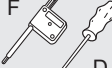
N171

N
FURAÇÃO

FURAÇÃO(TIPO INTERCAMBIÁVEL)

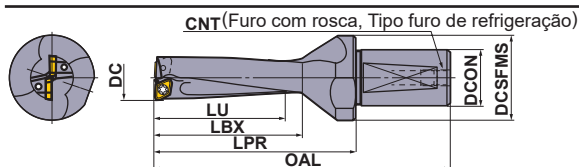
TAFS/TAFM/TAFL



METAL DURO

DC (mm)	Prof. do Furo (L/D)	Referência para Pedido	Estoque	Número de Dentes	Dimensões (mm)							Referência do Inserto	 Parafuso de Fixação	 Chave
					LU	LBX	LPR	OAL	DCON	DCSfMS	CNT			
18.5	3	TAFM1850F25	▲	2	55.5	61	79	129	25	35	PT1/8	GPMT070204-U	TS25	TKY08F
19.0	2	TAFS1900F25	▲	2	38	46	63	113	25	35	PT1/8	GPMT070204-U	TS25	TKY08F
19.0	3	TAFM1900F25	▲	2	57	65	82	132	25	35	PT1/8	GPMT070204-U	TS25	TKY08F
19.0	4	TAFL1900F25	▲	2	76	84	101	151	25	35	PT1/8	GPMT070204-U	TS25	TKY08F
19.5	2	TAFS1950F25	▲	2	39	46	63	113	25	35	PT1/8	GPMT070204-U	TS25	TKY08F
19.5	3	TAFM1950F25	▲	2	58.5	65	82	132	25	35	PT1/8	GPMT070204-U	TS25	TKY08F
20.0	2	TAFS2000F25	▲	2	40	48	65	115	25	35	PT1/8	GPMT070204-U	TS25	TKY08F
20.0	3	TAFM2000F25	▲	2	60	68	85	135	25	35	PT1/8	GPMT070204-U	TS25	TKY08F
20.0	4	TAFL2000F25	▲	2	80	88	105	155	25	35	PT1/8	GPMT070204-U	TS25	TKY08F
20.5	2	TAFS2050F25	▲	2	41	48	65	115	25	35	PT1/8	GPMT070204-U	TS25	TKY08F
20.5	3	TAFM2050F25	▲	2	61.5	68	85	135	25	35	PT1/8	GPMT070204-U	TS25	TKY08F
21.0	2	TAFS2100F25	▲	2	42	50	67	117	25	35	PT1/8	GPMT070204-U	TS25	TKY08F
21.0	3	TAFM2100F25	▲	2	63	71	88	138	25	35	PT1/8	GPMT070204-U	TS25	TKY08F
21.0	4	TAFL2100F25	▲	2	84	92	109	159	25	35	PT1/8	GPMT070204-U	TS25	TKY08F
21.5	2	TAFS2150F25	▲	2	43	50	67	117	25	35	PT1/8	GPMT070204-U	TS25	TKY08F
21.5	3	TAFM2150F25	▲	2	64.5	71	88	138	25	35	PT1/8	GPMT070204-U	TS25	TKY08F
22.0	2	TAFS2200F25	▲	2	44	53	69	119	25	35	PT1/8	GPMT070204-U	TS25	TKY08F
22.0	3	TAFM2200F25	▲	2	66	75	91	141	25	35	PT1/8	GPMT070204-U	TS25	TKY08F
22.0	4	TAFL2200F25	▲	2	88	97	113	163	25	35	PT1/8	GPMT070204-U	TS25	TKY08F
22.5	2	TAFS2250F25	▲	2	45	53	69	119	25	35	PT1/8	GPMT070204-U	TS25	TKY08F
22.5	3	TAFM2250F25	▲	2	67.5	75	91	141	25	35	PT1/8	GPMT070204-U	TS25	TKY08F
23.0	2	TAFS2300F25	▲	2	46	55	71	121	25	35	PT1/8	GPMT090304-U	TS3	TKY08F
23.0	3	TAFM2300F25	▲	2	69	78	94	144	25	35	PT1/8	GPMT090304-U	TS3	TKY08F
23.0	4	TAFL2300F25	▲	2	92	101	117	167	25	35	PT1/8	GPMT090304-U	TS3	TKY08F
23.5	2	TAFS2350F25	▲	2	47	55	71	121	25	35	PT1/8	GPMT090304-U	TS3	TKY08F
23.5	3	TAFM2350F25	▲	2	70.5	78	94	144	25	35	PT1/8	GPMT090304-U	TS3	TKY08F
24.0	2	TAFS2400F25	▲	2	48	58	73	123	25	35	PT1/8	GPMT090304-U	TS3	TKY08F
24.0	3	TAFM2400F25	▲	2	72	82	97	147	25	35	PT1/8	GPMT090304-U	TS3	TKY08F
24.0	4	TAFL2400F25	▲	2	96	106	121	171	25	35	PT1/8	GPMT090304-U	TS3	TKY08F
24.5	2	TAFS2450F25	▲	2	49	58	73	123	25	35	PT1/8	GPMT090304-U	TS3	TKY08F
24.5	3	TAFM2450F25	▲	2	73.5	82	97	147	25	35	PT1/8	GPMT090304-U	TS3	TKY08F
25.0	2	TAFS2500F32	▲	2	50	60	75	130	32	42	PT1/8	GPMT090304-U	TS3	TKY08F
25.0	3	TAFM2500F32	▲	2	75	85	100	155	32	42	PT1/8	GPMT090304-U	TS3	TKY08F
25.0	4	TAFL2500F32	▲	2	100	110	125	180	32	42	PT1/8	GPMT090304-U	TS3	TKY08F
25.5	2	TAFS2550F32	▲	2	51	60	75	130	32	42	PT1/8	GPMT090304-U	TS3	TKY08F
25.5	3	TAFM2550F32	▲	2	76.5	85	100	155	32	42	PT1/8	GPMT090304-U	TS3	TKY08F
26.0	2	TAFS2600F32	▲	2	52	62	77	132	32	42	PT1/8	GPMT090304-U	TS3	TKY08F
26.0	3	TAFM2600F32	▲	2	78	88	103	158	32	42	PT1/8	GPMT090304-U	TS3	TKY08F
26.0	4	TAFL2600F32	▲	2	104	114	129	184	32	42	PT1/8	GPMT090304-U	TS3	TKY08F
26.5	2	TAFS2650F32	▲	2	53	62	77	132	32	42	PT1/8	GPMT090304-U	TS3	TKY08F
26.5	3	TAFM2650F32	▲	2	79.5	88	103	158	32	42	PT1/8	GPMT090304-U	TS3	TKY08F
27.0	2	TAFS2700F32	▲	2	54	65	79	134	32	42	PT1/8	GPMT090304-U	TS3	TKY08F
27.0	3	TAFM2700F32	▲	2	81	92	106	161	32	42	PT1/8	GPMT090304-U	TS3	TKY08F
27.0	4	TAFL2700F32	▲	2	108	119	133	188	32	42	PT1/8	GPMT090304-U	TS3	TKY08F
27.5	2	TAFS2750F32	▲	2	55	65	79	134	32	42	PT1/8	GPMT090304-U	TS3	TKY08F
27.5	3	TAFM2750F32	▲	2	82.5	92	106	161	32	42	PT1/8	GPMT090304-U	TS3	TKY08F
28.0	2	TAFS2800F32	▲	2	56	67	81	136	32	42	PT1/8	GPMT11T308-U	TS4	TKY15D
28.0	3	TAFM2800F32	▲	2	84	95	109	164	32	42	PT1/8	GPMT11T308-U	TS4	TKY15D

* Torque de Fixação (N • m) : TS25=1.0, TS3=1.0

▲ : Estoque mantido. Será substituído por novos produtos.




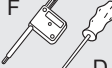
DC (mm)	Prof. do Furo (L/D)	Referência para Pedido	Estoque	Número de Dentes	Dimensões (mm)							Referência do Inserto		D 
					LU	LBX	LPR	OAL	DCON	DCSFMS	CNT			
28.0	4	T AFL2800F32	▲	2	112	123	137	192	32	42	PT1/8	GPMT11T308-U	TS4	TKY15D
28.5	2	T AFS2850F32	▲	2	57	67	81	136	32	42	PT1/8	GPMT11T308-U	TS4	TKY15D
28.5	3	T AFM2850F32	▲	2	85.5	95	109	164	32	42	PT1/8	GPMT11T308-U	TS4	TKY15D
29.0	2	T AFS2900F32	▲	2	58	70	83	138	32	42	PT1/8	GPMT11T308-U	TS4	TKY15D
29.0	3	T AFM2900F32	▲	2	87	99	112	167	32	42	PT1/8	GPMT11T308-U	TS4	TKY15D
29.0	4	T AFL2900F32	▲	2	116	128	141	196	32	42	PT1/8	GPMT11T308-U	TS4	TKY15D
29.5	2	T AFS2950F32	▲	2	59	70	83	138	32	42	PT1/8	GPMT11T308-U	TS4	TKY15D
29.5	3	T AFM2950F32	▲	2	88.5	99	112	167	32	42	PT1/8	GPMT11T308-U	TS4	TKY15D
30.0	2	T AFS3000F40	▲	2	60	72	90	155	40	50	PT1/4	GPMT11T308-U	TS4	TKY15D
30.0	3	T AFM3000F40	▲	2	90	102	120	185	40	50	PT1/4	GPMT11T308-U	TS4	TKY15D
30.0	4	T AFL3000F40	▲	2	120	132	150	215	40	50	PT1/4	GPMT11T308-U	TS4	TKY15D
31.0	2	T AFS3100F40	▲	2	62	74	92	157	40	50	PT1/4	GPMT11T308-U	TS4	TKY15D
31.0	3	T AFM3100F40	▲	2	93	105	123	188	40	50	PT1/4	GPMT11T308-U	TS4	TKY15D
31.0	4	T AFL3100F40	▲	2	124	136	154	219	40	50	PT1/4	GPMT11T308-U	TS4	TKY15D
32.0	2	T AFS3200F40	▲	2	64	77	94	159	40	50	PT1/4	GPMT11T308-U	TS4	TKY15D
32.0	3	T AFM3200F40	▲	2	96	109	126	191	40	50	PT1/4	GPMT11T308-U	TS4	TKY15D
32.0	4	T AFL3200F40	▲	2	128	141	158	223	40	50	PT1/4	GPMT11T308-U	TS4	TKY15D
33.0	2	T AFS3300F40	▲	2	66	79	96	161	40	50	PT1/4	GPMT11T308-U	TS4	TKY15D
33.0	3	T AFM3300F40	▲	2	99	112	129	194	40	50	PT1/4	GPMT11T308-U	TS4	TKY15D
33.0	4	T AFL3300F40	▲	2	132	145	162	227	40	50	PT1/4	GPMT11T308-U	TS4	TKY15D
34.0	2	T AFS3400F40	▲	2	68	82	98	163	40	50	PT1/4	GPMT11T308-U	TS4	TKY15D
34.0	3	T AFM3400F40	▲	2	102	116	132	197	40	50	PT1/4	GPMT11T308-U	TS4	TKY15D
34.0	4	T AFL3400F40	▲	2	136	150	166	231	40	50	PT1/4	GPMT11T308-U	TS4	TKY15D
35.0	2	T AFS3500F40	▲	2	70	84	100	165	40	50	PT1/4	GPMT140408-U	TS55	TKY25D
35.0	3	T AFM3500F40	▲	2	105	119	135	200	40	50	PT1/4	GPMT140408-U	TS55	TKY25D
36.0	2	T AFS3600F40	▲	2	72	86	102	167	40	50	PT1/4	GPMT140408-U	TS55	TKY25D
36.0	3	T AFM3600F40	▲	2	108	122	138	203	40	50	PT1/4	GPMT140408-U	TS55	TKY25D
37.0	2	T AFS3700F40	▲	2	74	89	104	169	40	50	PT1/4	GPMT140408-U	TS55	TKY25D
37.0	3	T AFM3700F40	▲	2	111	126	141	206	40	50	PT1/4	GPMT140408-U	TS55	TKY25D
38.0	2	T AFS3800F40	▲	2	76	91	106	171	40	50	PT1/4	GPMT140408-U	TS55	TKY25D
38.0	3	T AFM3800F40	▲	2	114	129	144	209	40	50	PT1/4	GPMT140408-U	TS55	TKY25D
39.0	2	T AFS3900F40	▲	2	78	94	108	173	40	50	PT1/4	GPMT140408-U	TS55	TKY25D
39.0	3	T AFM3900F40	▲	2	117	133	147	212	40	50	PT1/4	GPMT140408-U	TS55	TKY25D
40.0	2	T AFS4000F40	▲	2	80	96	110	175	40	50	PT1/4	GPMT140408-U	TS55	TKY25D
40.0	3	T AFM4000F40	▲	2	120	136	150	215	40	50	PT1/4	GPMT140408-U	TS55	TKY25D
41.0	2	T AFS4100F40	▲	2	82	98	112	177	40	50	PT1/4	GPMT140408-U	TS55	TKY25D
41.0	3	T AFM4100F40	▲	2	123	139	153	218	40	50	PT1/4	GPMT140408-U	TS55	TKY25D
42.0	2	T AFS4200F40	▲	2	84	101	114	179	40	50	PT1/4	GPMT140408-U	TS55	TKY25D
42.0	3	T AFM4200F40	▲	2	126	143	156	221	40	50	PT1/4	GPMT140408-U	TS55	TKY25D
43.0	2	T AFS4300F40	▲	2	86	103	116	181	40	50	PT1/4	GPMT140408-U	TS55	TKY25D
43.0	3	T AFM4300F40	▲	2	129	146	159	224	40	50	PT1/4	GPMT140408-U	TS55	TKY25D
44.0	2	T AFS4400F40	▲	2	88	106	118	183	40	50	PT1/4	GPMT140408-U	TS55	TKY25D
44.0	3	T AFM4400F40	▲	2	132	150	162	227	40	50	PT1/4	GPMT140408-U	TS55	TKY25D
45.0	2	T AFS4500F40	▲	2	90	108	120	185	40	54	PT1/4	GPMT140408-U	TS55	TKY25D
45.0	3	T AFM4500F40	▲	2	135	153	165	230	40	54	PT1/4	GPMT140408-U	TS55	TKY25D
46.0	2	T AFS4600F40	▲	2	92	110	122	187	40	54	PT1/4	GPMT140408-U	TS55	TKY25D
46.0	3	T AFM4600F40	▲	2	138	156	168	233	40	54	PT1/4	GPMT140408-U	TS55	TKY25D
47.0	2	T AFS4700F40	▲	2	94	113	124	189	40	54	PT1/4	GPMT140408-U	TS55	TKY25D

* Torque de Fixação (N • m) : TS4=3.5, TS55=7.5

FURAÇÃO(TIPO INTERCAMBIÁVEL)

TAFS/TAFM/TAFL

METAL DURO

DC (mm)	Prof. do Furo (L/D)	Referência para Pedido	Estoque	Número de Dentes	Dimensões (mm)							Referência do Inserto		
					LU	LBX	LPR	OAL	DCON	DCSFMS	CNT			
47.0	3	TAFM4700F40	▲	2	141	160	171	236	40	54	PT1/4	GPMT140408-U	TS55	TKY25D
48.0	2	TAFS4800F40	▲	2	96	115	126	191	40	54	PT1/4	GPMT140408-U	TS55	TKY25D
48.0	3	TAFM4800F40	▲	2	144	163	174	239	40	54	PT1/4	GPMT140408-U	TS55	TKY25D
49.0	2	TAFS4900F40	▲	4	98	118	133	198	40	58	PT1/4	GPMT090304-U	TS3	TKY08F
49.0	3	TAFM4900F40	▲	4	147	167	182	247	40	58	PT1/4	GPMT090304-U	TS3	TKY08F
50.0	2	TAFS5000F40	▲	4	100	120	135	200	40	58	PT1/4	GPMT090304-U	TS3	TKY08F
50.0	3	TAFM5000F40	▲	4	150	170	185	250	40	58	PT1/4	GPMT090304-U	TS3	TKY08F
51.0	2	TAFS5100F40	▲	4	102	122	137	202	40	58	PT1/4	GPMT090304-U	TS3	TKY08F
51.0	3	TAFM5100F40	▲	4	153	173	188	253	40	58	PT1/4	GPMT090304-U	TS3	TKY08F
52.0	2	TAFS5200F40	▲	4	104	125	139	204	40	58	PT1/4	GPMT090304-U	TS3	TKY08F
52.0	3	TAFM5200F40	▲	4	156	177	191	256	40	58	PT1/4	GPMT090304-U	TS3	TKY08F
53.0	2	TAFS5300F40	▲	4	106	127	141	206	40	63	PT1/4	GPMT090304-U	TS3	TKY08F
53.0	3	TAFM5300F40	▲	4	159	180	194	259	40	63	PT1/4	GPMT090304-U	TS3	TKY08F
54.0	2	TAFS5400F40	▲	4	108	128	143	208	40	63	PT1/4	GPMT090304-U	TS3	TKY08F
54.0	3	TAFM5400F40	▲	4	162	182	197	262	40	63	PT1/4	GPMT090304-U	TS3	TKY08F
55.0	2	TAFS5500F40	▲	4	110	130	145	210	40	63	PT1/4	GPMT090304-U	TS3	TKY08F
55.0	3	TAFM5500F40	▲	4	165	185	200	265	40	63	PT1/4	GPMT090304-U	TS3	TKY08F
56.0	2	TAFS5600F40	▲	4	112	132	147	212	40	63	PT1/4	GPMT090304-U	TS3	TKY08F
56.0	3	TAFM5600F40	▲	4	168	188	203	268	40	63	PT1/4	GPMT090304-U	TS3	TKY08F

* Torque de Fixação (N • m) : TS3=1.0, TS55=7.5

N

FURAÇÃO

● : Estoque mantido. ▲ : Estoque mantido. Será substituído por novos produtos.

(Nota: 10 insertos por embalagem)

N174

INSERTOS

Geometria	Diâm. da Broca	Referência do Inserto	Dimensões (mm)				Com Cobertura				
			IC	L	S	RE	VP15TF	UP20M	GP20M	UE6020	US735
Quebra-cavaco U1 	ø12.0–ø14.5	GCMT040204-U1	–	5.0	2.38	0.4		●			
	ø15.0–ø17.5	GPMT060204-U1	5.56	–	2.38	0.4		▲		▲	
	ø18.0–ø22.5	GPMT070204-U1	6.35	–	2.38	0.4		▲		▲	
	ø23.0–ø27.5 ø49.0–ø56.0	GPMT090304-U1	7.94	–	3.18	0.4		▲		▲	
	ø28.0–ø34.0	GPMT11T308-U1	9.525	–	3.97	0.8		▲		▲	
	ø35.0–ø48.0	GPMT140408-U1	12.70	–	4.76	0.8		▲		▲	
Quebra-cavaco U2 	ø12.0–ø14.5	GCMT040204-U2	–	5.0	2.38	0.4	●		●		
	ø15.0–ø17.5	GPMT060204-U2	5.56	–	2.38	0.4	▲	▲		▲	▲
	ø18.0–ø22.5	GPMT070204-U2	6.35	–	2.38	0.4	▲	▲		▲	▲
	ø23.0–ø27.5 ø49.0–ø56.0	GPMT090304-U2	7.94	–	3.18	0.4	▲	▲		▲	▲
	ø28.0–ø34.0	GPMT11T308-U2	9.525	–	3.97	0.8	▲	▲		▲	▲
	ø35.0–ø48.0	GPMT140408-U2	12.70	–	4.76	0.8	▲	▲		▲	▲
Quebra-cavaco U3 	ø15.0–ø17.5	GPMT060204-U3	5.56	–	2.38	0.4		▲		▲	▲
	ø18.0–ø22.5	GPMT070204-U3	6.35	–	2.38	0.4		▲		▲	▲
	ø23.0–ø27.5 ø49.0–ø56.0	GPMT090304-U3	7.94	–	3.18	0.4		▲		▲	▲
	ø28.0–ø34.0	GPMT11T308-U3	9.525	–	3.97	0.8		▲		▲	▲
	ø35.0–ø48.0	GPMT140408-U3	12.70	–	4.76	0.8		▲		▲	▲

RECOMENDAÇÃO DE INSERTO

RECOMENDAÇÃO DE QUEBRA-CAVACO

◎ : 1ª Recomendação ○ : 2ª Recomendação

Material	P						M		K			
	Aço Baixo Carbono		Aço Carbono		Aço Liga		Aço Inoxidável		Ferro Fundido Cinzento		Ferro Fundido Nodular	
	GCMT	GPMT	GCMT	GPMT	GCMT	GPMT	GCMT	GPMT	GCMT	GPMT	GCMT	GPMT
Quebra-cavaco U1	◎	◎	○	○	○	○	○	○	○	○	○	○
U2	○	○	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎
U3		○		○		○		○		○		○

RECOMENDAÇÃO DE CLASSE

◎ : 1ª Recomendação ○ : 2ª Recomendação

Material	P						M		K			
	Aço Baixo Carbono		Aço Carbono		Aço Liga		Aço Inoxidável		Ferro Fundido Cinzento		Ferro Fundido Nodular	
	GCMT	GPMT	GCMT	GPMT	GCMT	GPMT	GCMT	GPMT	GCMT	GPMT	GCMT	GPMT
VP15TF		○	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎
UP20M	◎	◎	○	○	○	○	○	○	○	○	○	○
GP20M	○		○		○		○		○		○	
UE6020		○		○		○		○		○		○
US735		○		○		○		○		○		○

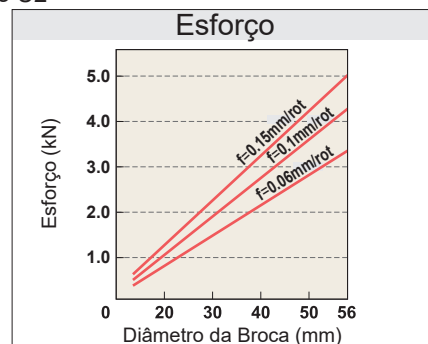
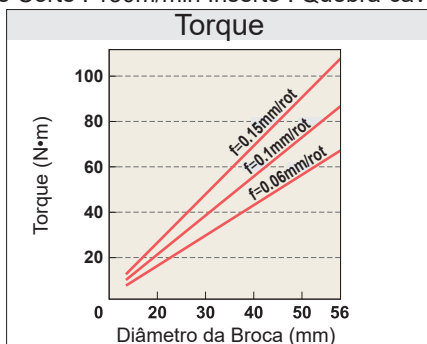
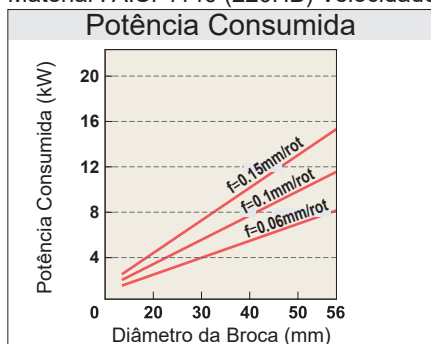
CONDIÇÕES DE CORTE RECOMENDADAS

Material	Dureza	Vel. de Corte (m/min)			Quebra-cavacos	Avanço (mm/rot)					
		Para L/D=2,3		Para L/D=4		Diâm. da Broca (mm)					
		($\phi 12-\phi 14.5$)	($\phi 15-$)	($\phi 16-$)		$\phi 12-\phi 14.5$	$\phi 15-\phi 22.5$	$\phi 23-\phi 34$	$\phi 35-\phi 48$	$\phi 49-\phi 56$	
P Aço Baixo Carbono	$\leq 180\text{HB}$	150 (100-200)	200 (150-300)	140 (100-200)	U1	0.06 (0.04-0.10)	0.07 (0.04-0.10)	0.08 (0.04-0.10)	0.10 (0.04-0.12)	0.08 (0.04-0.10)	
					U2	0.06 (0.04-0.10)	0.08 (0.04-0.12)	0.10 (0.04-0.12)	0.12 (0.04-0.14)	0.10 (0.04-0.12)	
					U3	-	0.08 (0.04-0.12)	0.10 (0.04-0.12)	0.12 (0.04-0.14)	0.10 (0.04-0.12)	
	Aço Carbono	180-280HB	120 (80-160)	150 (120-180)	100 (80-120)	U1	0.06 (0.04-0.10)	0.09 (0.06-0.12)	0.12 (0.08-0.14)	0.15 (0.08-0.18)	0.12 (0.08-0.14)
						U2	0.06 (0.04-0.10)	0.12 (0.06-0.14)	0.14 (0.08-0.18)	0.17 (0.08-0.20)	0.14 (0.08-0.18)
						U3	-	0.12 (0.06-0.14)	0.14 (0.08-0.18)	0.17 (0.08-0.20)	0.14 (0.08-0.18)
	Aço Liga	180-280HB	120 (80-160)	150 (120-180)	100 (80-120)	U1	0.06 (0.04-0.10)	0.08 (0.06-0.10)	0.09 (0.06-0.12)	0.11 (0.06-0.14)	0.09 (0.06-0.12)
						U2	0.06 (0.04-0.10)	0.10 (0.06-0.12)	0.12 (0.08-0.16)	0.14 (0.08-0.18)	0.12 (0.08-0.16)
						U3	-	0.10 (0.06-0.12)	0.12 (0.08-0.16)	0.14 (0.08-0.18)	0.12 (0.08-0.16)
M Aço Inoxidável	$\leq 200\text{HB}$	100 (80-120)	150 (120-200)	110 (80-140)	U1	0.07 (0.04-0.10)	0.07 (0.04-0.10)	0.08 (0.04-0.10)	0.10 (0.04-0.12)	0.08 (0.04-0.10)	
					U2	0.07 (0.04-0.10)	0.08 (0.04-0.12)	0.10 (0.04-0.14)	0.12 (0.04-0.16)	0.10 (0.04-0.14)	
					U3	-	0.08 (0.04-0.12)	0.10 (0.04-0.14)	0.12 (0.04-0.16)	0.10 (0.04-0.14)	
K Ferro Fundido Cinzento	Resistência à Tração $\leq 350\text{MPa}$	120 (80-160)	150 (120-180)	140 (110-160)	U1	0.07 (0.06-0.10)	0.07 (0.06-0.10)	0.10 (0.04-0.14)	0.10 (0.06-0.14)	0.10 (0.06-0.14)	
					U2	0.07 (0.06-0.10)	0.15 (0.10-0.18)	0.20 (0.10-0.25)	0.20 (0.10-0.25)	0.20 (0.10-0.25)	
					U3	-	0.15 (0.10-0.18)	0.20 (0.10-0.25)	0.20 (0.10-0.25)	0.20 (0.10-0.25)	
	Ferro Fundido Nodular	Resistência à Tração $\leq 450\text{MPa}$	120 (80-150)	150 (120-180)	100 (80-120)	U1	0.06 (0.04-0.10)	0.07 (0.06-0.10)	0.10 (0.06-0.14)	0.10 (0.06-0.14)	0.10 (0.06-0.14)
						U2	0.06 (0.04-0.10)	0.12 (0.08-0.14)	0.15 (0.08-0.20)	0.18 (0.08-0.20)	0.15 (0.08-0.20)
						U3	-	0.12 (0.08-0.14)	0.15 (0.08-0.20)	0.18 (0.08-0.20)	0.15 (0.08-0.20)

Nota 1) Quando utilizar brocas para L/D= 4, o avanço deve ser reduzido para 80% das recomendações acima.

RESISTÊNCIA DE CORTE

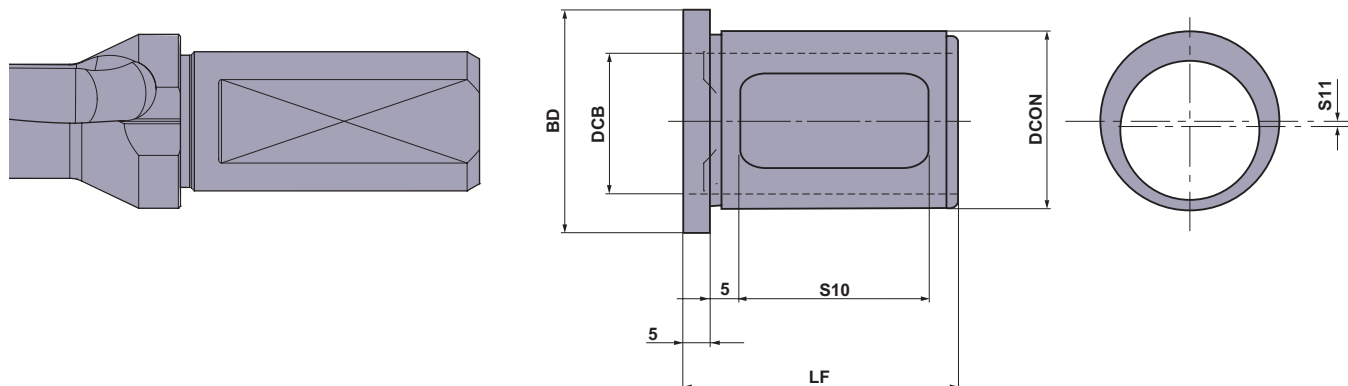
Material : AISI 4140 (220HB) Velocidade de Corte : 150m/min Inserto : Quebra-cavaco U2



BUCHA EXCÊNTRICA [JFS]

METAL DURO

- Ao instalar a broca na bucha, o eixo de rotação da broca é levemente deslocado, proporcionando uma leve majoração do diâmetro do furo usinado. (majoração: 0.1-0.5mm)



Referência para Pedido	Estoque	Referência para Pedido do Conjunto	Dimensões (mm)					*Incremento (S11×2)	Referência para pedido da broca MVX (Últimas 3 letras)
			DCB	DCON	BD	LF	S10		
JFS2520-10	●	JFS-1	20	25	33	43	30	0.1	F20
JFS2520-20	●	JFS-1	20	25	33	43	30	0.2	F20
JFS2520-30	●	JFS-1	20	25	33	43	30	0.3	F20
JFS2520-40	●	JFS-1	20	25	33	43	30	0.4	F20
JFS2520-50	●	JFS-1	20	25	33	43	30	0.5	F20
JFS3225-10	●	JFS-2	25	32	40	50	34	0.1	F25
JFS3225-20	●	JFS-2	25	32	40	50	34	0.2	F25
JFS3225-30	●	JFS-2	25	32	40	50	34	0.3	F25
JFS3225-40	●	JFS-2	25	32	40	50	34	0.4	F25
JFS3225-50	●	JFS-2	25	32	40	50	34	0.5	F25
JFS4032-10	●	JFS-3	32	40	48	55	40	0.1	F32
JFS4032-20	●	JFS-3	32	40	48	55	40	0.2	F32
JFS4032-30	●	JFS-3	32	40	48	55	40	0.3	F32
JFS4032-40	●	JFS-3	32	40	48	55	40	0.4	F32
JFS4032-50	●	JFS-3	32	40	48	55	40	0.5	F32
JFS5040-10	●	–	40	50	68	65	50	0.1	F40
JFS5040-20	●	–	40	50	68	65	50	0.2	F40
JFS5040-30	●	–	40	50	68	65	50	0.3	F40
JFS5040-40	●	–	40	50	68	65	50	0.4	F40
JFS5040-50	●	–	40	50	68	65	50	0.5	F40

Não compatível com a haste de diâmetro ø50mm.

*Incremento : Aumento no diâmetro de corte.

■ GUIA DE SELEÇÃO DA BUCHA EXCÊNTRICA

Desejado = (øBroca + Incremento da JFS) + 0.1mm

(Ex.) Diâmetro desejado é 20.3mm (considerando majoração de 0.1mm).

$$\text{ø}20.3 = (\text{MVX2000 X } \text{F25} + \text{JFS3225-20}) + 0.1$$

Broca 20mm

Usando JFS com incremento de 0.2mm.

Majoração

Ferramenta Selecionada
Broca MVX : MVX2000 X F25
BUCHA EXCÊNTRICA [JFS]
: JFS3225-20

N

FURAÇÃO

Nota 1) A majoração pode variar dependendo das condições de corte.

Use o guia de seleção acima como referência.

■ PEDIDO DE COMPRA DA BUCHA EXCÊNTRICA

● Método de Compra 1

A majoração pode variar dependendo das condições de corte. Portanto, recomenda-se efetuar a compra do conjunto. (Conjunto com 5 buchas) Neste caso, informe a referência para pedido do conjunto.

● Método de Compra 2

É possível efetuar a compra da bucha individualmente. Neste caso, informe a referência para pedido individual.

- : Estoque mantido.

BUCHA EXCÊNTRICA [JFS]

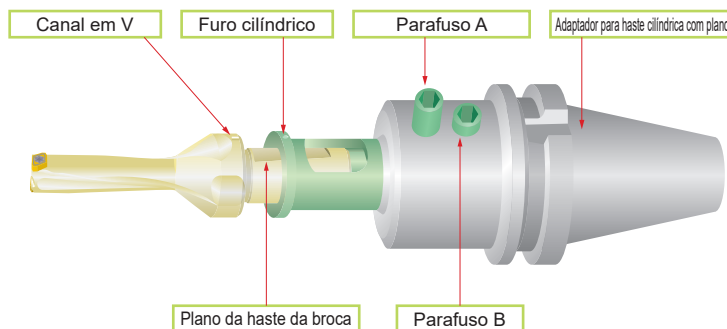
■ APLICAÇÃO DA BUCHA EXCÊNTRICA

1 Quando inserir a broca no adaptador, alinhe o canal em V do flange da broca, com o furo cilíndrico do flange da bucha e com os parafusos de fixação do adaptador. (Caso a broca não apresente um canal em V, alinhe pelo plano da haste da broca.)

2 Insira o parafuso A do adaptador diretamente na janela da bucha e fixe a broca. Aperte o parafuso B levemente para não danificar a bucha.

<Nota>

- Ajustes finos não podem ser realizados para o diâmetro da bucha.
- Não utilize suportes porta-piças.



■ APLICAÇÃO DA BROCA TIPO MVX

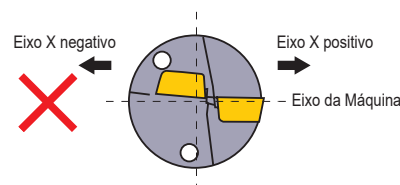
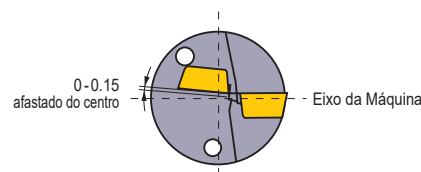
● Utilização em Torno

(1) O inserto periférico e o eixo X da máquina devem estar paralelos. A broca foi projetada para que o centro da broca e o centro da placa da máquina estejam alinhados, ficando o inserto central posicionado 0-0.15mm afastado do centro de rotação.

*O inserto central pode sofrer fraturas se o flanco estiver posicionado sobre o centro.

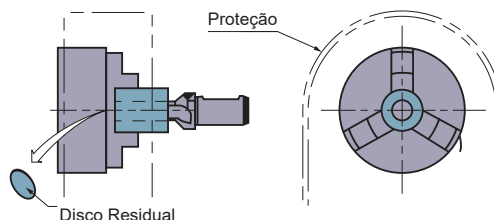
(2) É possível ajustar o diâmetro do furo com offset. Para isso, ajuste o eixo X no sentido positivo (sentido de majoração do furo). Consulte o valor máximo de ajuste para cada broca na relação de itens disponíveis.

*Não é recomendado ajustar o eixo X no sentido negativo, pois isto pode levar a uma interferência da broca com o furo.



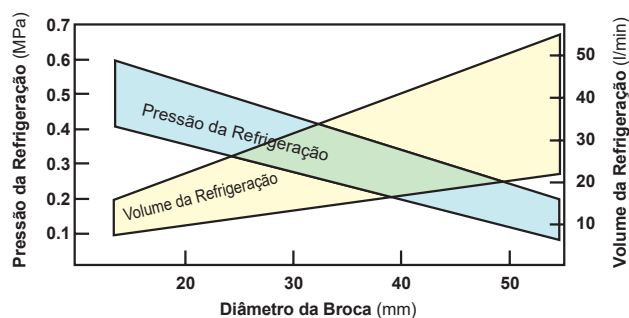
(3) Quando usinar um furo passante em um torno, um disco residual gerado na saída do furo pode ser expelido em alta velocidade.

Para reduzir os riscos de acidentes, é altamente recomendável usar uma proteção.



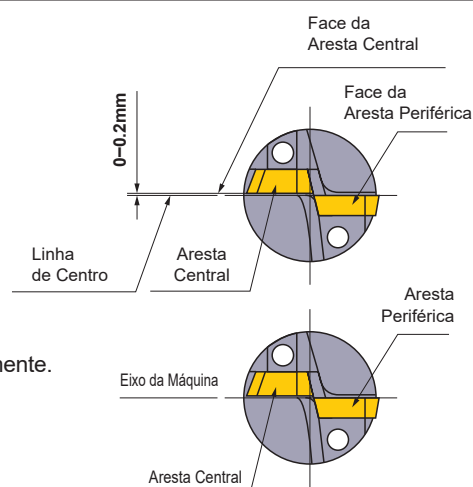
APLICAÇÃO DA BROCA TIPO TAF

- Garanta a melhor rigidez possível entre a preparação da máquina e a fixação do suporte.
- Para pressão e volume de refrigeração, consulte o gráfico a seguir. A refrigeração é um fator importante para o uso eficiente destas brocas.
- Não pode ser utilizada em furação de chapas sobrepostas. As brocas intercambiáveis tendem a gerar um disco residual na saída do furo. Na furação de chapas sobrepostas, este disco pode causar a quebra da broca.



Utilização em Torno

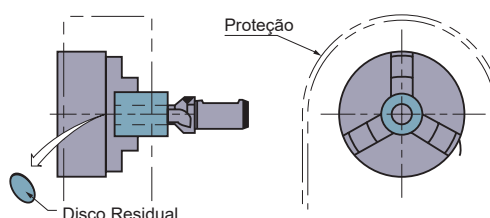
(1) Aresta de corte central deve estar posicionada entre 0–0.2mm do centro.



(2) Para ajustar o diâmetro do furo pela preparação da broca, a aresta de corte periférica e o eixo da máquina devem estar montados paralelamente.

(3) Quando produzir um furo maior.
A montagem da broca não deve ser maior que 2% do diâmetro.
Não é possível produzir um furo menor.

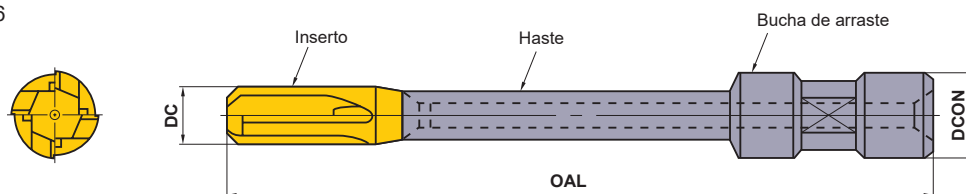
(4) Quando usinar um furo passante em torno, um disco residual no fim da usinagem pode ser expelido em alta velocidade.
Para reduzir o perigo ou um acidente, uma proteção é altamente recomendada.



ALARGADOR CANHÃO

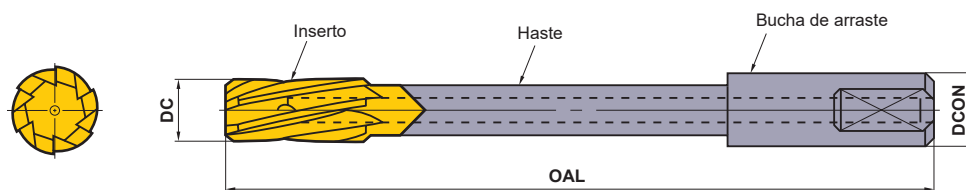
● Alargador canal reto

- Diâm. da Broca : $\phi 6.0 - \phi 30.0$
- Nº de Dentes : 1, 2, 3, 4, 6



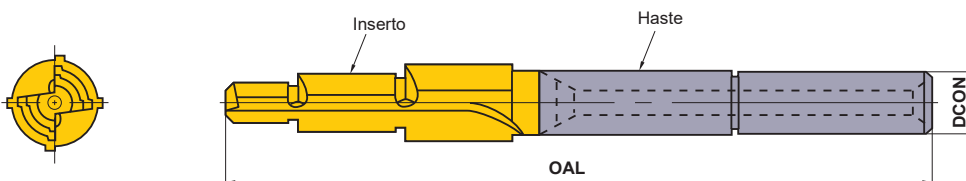
● Alargador canal helicoidal

- Diâm. da Broca : $\phi 6.0 - \phi 30.0$
- Nº de Dentes : 4, 6



● Alargador escalonado

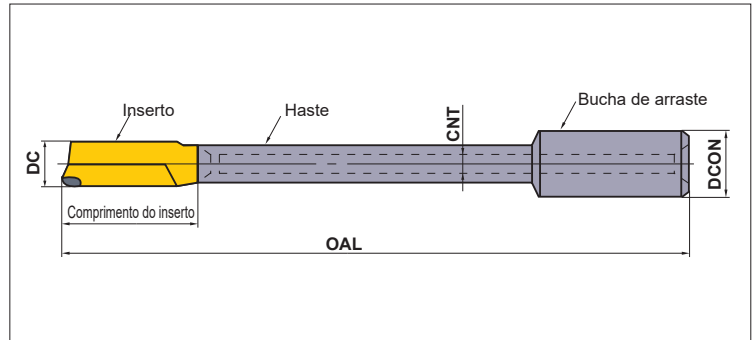
- Diâm. da Broca : $\phi 6.0 - \phi 30.0$
- Nº de Dentes : 1, 2, 4



■ COMO PEDIR?

Ao elaborar um pedido, favor especificar o seguinte:

- ① Nome do Alargador ② Diâmetro do Alargador (DC) ③ Comprimento do Alargador (OAL) ④ Diâmetro Externo da Haste (DCON) e Tipo ⑤ Número de Dentes ⑥ Material da Peça, Precisão da Furação, Profundidade e Tipo de Furo (Furo Passante, Furo Cego)
 Ex.: Alargador Canhão canal reto $\phi 12 \times 450 \times \phi 19.5$ Haste tipo A, 4-Dentes, DIN GG-25 (180HB) x $\phi 12^{+0.020} \times 100$ x Furo Passante

**STANDARD**

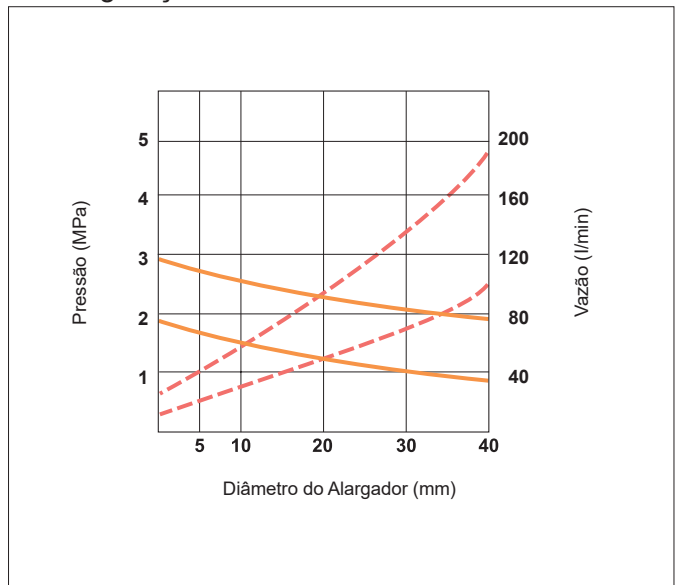
Diâmetro do Alargador	Comprimento do Inserto	Comp.Total OAL	Nº de Dentes	Geometria dos Dentes
ø6—ø30.3	*	*	*	Paralelo

*Contate-nos para consultar outros diâmetros de alargador e dimensões indicadas pelo símbolo * na tabela acima.

Diâmetro do Alargador DC	Diâmetro interno da haste CNT	Diâmetro Externo da Haste DCON
$6.0 \leq DC \leq 7.0$	3.5	12.70
$7.0 < DC \leq 13.3$	4.8	19.05
$13.3 < DC \leq 20.8$	6.4	25.40
$20.8 < DC \leq 25.3$	8.0	31.75
$25.3 < DC \leq 30.3$	8.0	38.10

CONDIÇÕES DE CORTE RECOMENDADAS

Material	Vel. de Corte (m/min)	Avanço (mm/rot)		
		ø5 — ø10	ø10 — ø20	ø25 — ø30
Ligas de Alumínio	150 (100—200)	0.08 (0.05—0.10)	0.10 (0.05—0.15)	0.10 (0.05—0.15)
Aço Liga	130 (80—180)	0.03 (0.02—0.04)	0.05 (0.03—0.06)	0.06 (0.04—0.07)

Refrigeração**COMO PEDIR?**

Ao elaborar um pedido, favor especificar o seguinte:

① Nome do Alargador ② Diâmetro do Alargador (DC) ③ Comprimento do Alargador (OAL) ④ Número de Dentes ⑤ Diâmetro Externo da Haste (DCON) e Tipo ⑥ Material da Peça, Precisão da Furação, Profundidade e Tipo de Furo (Furo Passante, Furo Cego)

Ex.: Alargador Canhão com Diamante Composto ø10 x 300 x 1-Dente x ø19.05 Haste Tipo A, AC4B x ø10^{+0.01} x 200 x Furo Passante

FURAÇÃO(HSS)

GKCD NEW

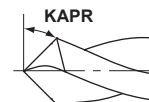
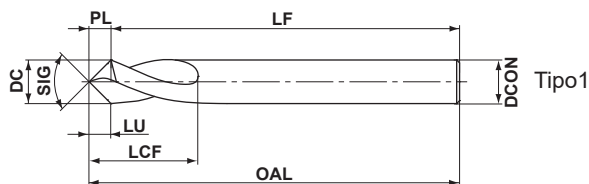
Broca para pré-furo, HSS cobalto



60° 90° DC > 12
120°

HSS

P	M	K	N	S	H
Aço	Aço Inoxidável	Ferro Fundido			



- O HSS cobalto é um material com excelente resistência ao calor, ao desgaste e ao microlascamento, sendo ideal para usinagem de diversos materiais, desde aços carbono a aços inoxidáveis.
- Proporciona excelente economia em aplicações com velocidades e avanços baixos.

DC (mm)	SIG	Estoque	Referência para Pedido	Dimensões (mm)							Tipo
				LU	LCF	OAL	LF	PL	KAPR	DCON	
3.0	60°	●	GKCDD030P060	2.4	10	50	47.4	2.6	60°	3	1
4.0	60°	●	GKCDD040P060	3.3	12	52	48.5	3.4	60°	4	1
5.0	60°	●	GKCDD050P060	4.1	15	60	55.6	4.3	60°	5	1
6.0	60°	●	GKCDD060P060	4.9	20	66	60.8	5.2	60°	6	1
8.0	60°	●	GKCDD080P060	6.6	25	79	72.0	6.9	60°	8	1
10.0	60°	●	GKCDD100P060	8.3	25	89	80.3	8.6	60°	10	1
12.0	60°	●	GKCDD120P060	9.9	30	102	91.6	10.4	60°	12	1
3.0	90°	●	GKCDD030P090	1.4	10	50	48.5	1.5	45°	3	1
4.0	90°	●	GKCDD040P090	1.9	12	52	50.0	2.0	45°	4	1
5.0	90°	●	GKCDD050P090	2.4	15	60	57.5	2.5	45°	5	1
6.0	90°	●	GKCDD060P090	2.8	20	66	63.0	3.0	45°	6	1
8.0	90°	●	GKCDD080P090	3.8	25	79	75.0	4.0	45°	8	1
10.0	90°	●	GKCDD100P090	4.8	25	89	84.0	5.0	45°	10	1
12.0	90°	●	GKCDD120P090	5.7	30	102	96.0	6.0	45°	12	1
16.0	90°	●	GKCDD160P090	7.7	35	115	107.0	8.0	45°	16	1
20.0	90°	●	GKCDD200P090	9.6	40	131	121.0	10.0	45°	20	1
3.0	120°	●	GKCDD030P120	0.8	10	50	49.1	0.8	30°	3	1
4.0	120°	●	GKCDD040P120	1.1	12	52	50.8	1.1	30°	4	1
6.0	120°	●	GKCDD060P120	1.6	20	66	64.2	1.7	30°	6	1
8.0	120°	●	GKCDD080P120	2.2	25	79	76.7	2.3	30°	8	1
10.0	120°	●	GKCDD100P120	2.7	25	89	86.2	2.8	30°	10	1
12.0	120°	●	GKCDD120P120	3.3	30	102	98.6	3.4	30°	12	1

FURAÇÃO

● : Estoque mantido.

CONDIÇÕES DE CORTE RECOMENDADAS

Material	Aço Baixo Carbono ($\leq 180\text{HB}$)		Aço Carbono, Aço Liga (180—280HB)		Aço Carbono, Aço Liga (280—350HB)	
	ASTM A36, AISI 1010 etc.		AISI 1045, 4140 etc.		AISI 4340, etc.	
Diâm. DC (mm)	Rotação (min^{-1})	Avanço (mm/rot)	Rotação (min^{-1})	Avanço (mm/rot)	Rotação (min^{-1})	Avanço (mm/rot)
3.0	3800	0.06	2400	0.06	1200	0.04
4.0	2900	0.08	1800	0.08	910	0.05
5.0	2300	0.10	1400	0.10	730	0.05
6.0	1900	0.10	1200	0.10	610	0.06
8.0	1400	0.12	900	0.12	450	0.08
10.0	1100	0.15	710	0.15	360	0.10
12.0	950	0.15	600	0.15	300	0.12
16.0	720	0.20	450	0.20	220	0.16
20.0	560	0.25	360	0.20	180	0.20

Material	Aço Inoxidável Austenítico ($\leq 200\text{HB}$)		Ferro Fundido Cinzento ($\leq 350\text{MPa}$)		Ferro fundido nodular ($\leq 450\text{MPa}$)	
	AISI 304, 316 etc.		DIN GG-30 etc.		DIN GGG-45	
Diâm. DC (mm)	Rotação (min^{-1})	Avanço (mm/rot)	Rotação (min^{-1})	Avanço (mm/rot)	Rotação (min^{-1})	Avanço (mm/rot)
3.0	1100	0.06	3800	0.06	2600	0.06
4.0	800	0.08	2900	0.08	1900	0.08
5.0	640	0.10	2300	0.10	1500	0.08
6.0	530	0.10	1900	0.10	1300	0.08
8.0	400	0.12	1400	0.12	990	0.10
10.0	320	0.15	1100	0.15	790	0.13
12.0	270	0.15	950	0.15	660	0.13
16.0	200	0.20	720	0.20	490	0.18
20.0	160	0.25	560	0.25	390	0.22

Nota 1) Para usinagem de chanfro do diâmetro do furo de guia (D), o diâmetro da broca (DC) deve atender a condição $D < DC < 2D$.

Nota 2) Na usinagem de furo de centro em superfícies irregulares ou inclinadas, reduza o avanço.

Nota 3) Na usinagem de chanfro, reduza as condições de corte.

Nota 4) No caso de trepidação ou sons anormais, diminua o tempo de permanência do programa ("dwell time") ou reduza a rotação.

Nota 5) Na usinagem de furo de centro, não ultrapasse o **LU** (comprimento útil).

Nota 6) Para chanfrar com uma broca de diâmetro grande, ajuste a velocidade de corte de acordo com o diâmetro de corte efetivo.

FURAÇÃO (BROCAS HSS COM HASTE PADRÃO FRESAMENTO)

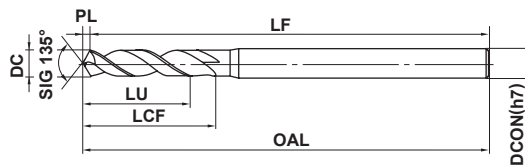
SEPDS

Brocas de alta precisão linha SE



HSS

P	M	K	N	S	H
Aço	Aço Inoxidável	Ferro Fundido	Metais Não Ferrosos	Ligas Resist. ao Calor	



*LU = LCF - 2DC (Máx 3×DC)



$0.5 \leq DC \leq 3$	$3.1 \leq DC \leq 4$
$\begin{matrix} 0 \\ -0.006 \end{matrix}$	$\begin{matrix} 0 \\ -0.008 \end{matrix}$

- Proporciona agudez, excelente resistência à soldagem e facilita a expulsão de cavacos devido ao tratamento superficial D-STH.

Referência para Pedido	Dimensões (mm)						Estoque
	DC	LCF	OAL	LF	PL	DCON	
SEPDS0050	0.50	3.1	50.1	50	0.10	3	●
SEPDS0055	0.55	3.1	50.1	50	0.11	3	●
SEPDS0060	0.60	5.1	50.1	50	0.12	3	●
SEPDS0065	0.65	5.1	50.1	50	0.13	3	●
SEPDS0070	0.70	5.1	50.1	50	0.14	3	●
SEPDS0075	0.75	5.2	50.2	50	0.16	3	●
SEPDS0080	0.80	5.2	50.2	50	0.17	3	●
SEPDS0085	0.85	5.2	50.2	50	0.18	3	●
SEPDS0090	0.90	6.2	50.2	50	0.19	3	●
SEPDS0095	0.95	6.2	50.2	50	0.2	3	●
SEPDS0100	1.0	6.2	50.2	50	0.2	3	●
SEPDS0110	1.1	8.2	55.2	55	0.2	3	●
SEPDS0120	1.2	8.3	55.3	55	0.3	3	●
SEPDS0130	1.3	9.3	55.3	55	0.3	3	●
SEPDS0140	1.4	9.3	55.3	55	0.3	3	●
SEPDS0150	1.5	9.3	55.3	55	0.3	3	●
SEPDS0160	1.6	11.3	55.3	55	0.3	3	●
SEPDS0170	1.7	11.4	55.4	55	0.4	3	●
SEPDS0180	1.8	11.4	55.4	55	0.4	3	●
SEPDS0190	1.9	12.4	55.4	55	0.4	3	●
SEPDS0200	2.0	12.4	60.4	60	0.4	3	●
SEPDS0210	2.1	12.4	60.4	60	0.4	3	●

Referência para Pedido	Dimensões (mm)						Estoque
	DC	LCF	OAL	LF	PL	DCON	
SEPDS0220	2.2	12.5	60.5	60	0.5	3	●
SEPDS0230	2.3	13.5	60.5	60	0.5	3	●
SEPDS0240	2.4	13.5	60.5	60	0.5	3	●
SEPDS0250	2.5	13.5	60.5	60	0.5	3	●
SEPDS0260	2.6	15.5	60.5	60	0.5	3	●
SEPDS0270	2.7	15.6	60.6	60	0.6	3	●
SEPDS0280	2.8	15.6	60.6	60	0.6	3	●
SEPDS0290	2.9	15.6	60.6	60	0.6	3	●
SEPDS0300	3.0	15.6	60.6	60	0.6	3	●
SEPDS0310	3.1	17.6	70.6	70	0.6	4	●
SEPDS0320	3.2	17.7	70.7	70	0.7	4	●
SEPDS0330	3.3	19.7	70.7	70	0.7	4	●
SEPDS0340	3.4	19.7	70.7	70	0.7	4	●
SEPDS0350	3.5	19.7	70.7	70	0.7	4	●
SEPDS0360	3.6	21.8	70.8	70	0.8	4	●
SEPDS0370	3.7	21.8	70.8	70	0.8	4	●
SEPDS0380	3.8	21.8	70.8	70	0.8	4	●
SEPDS0390	3.9	21.8	70.8	70	0.8	4	●
SEPDS0400	4.0	21.8	70.8	70	0.8	4	●

N

FURAÇÃO

● : Estoque mantido.

CONDIÇÕES DE CORTE RECOMENDADAS

Material	Aço Baixo Carbono ($\leq 180\text{HB}$), Ligas de Alumínio (Si<5%) AISI 1010 etc				Aço Carbono, Aço Liga (180–280HB), Ferro Fundido Cinzento ($\leq 350\text{MPa}$), Cobre, Ligas de cobre AISI 1045, AISI 4140, DIN GG-30 etc				Aço ferramenta liga ($\leq 250\text{HB}$) Aço Inoxidável Ferrítico e Martensítico ($\leq 200\text{HB}$) AISI D2, AISI 410, AISI 430 etc			
	Diâm. DC (mm)	Vel. de Corte (m/min)	Rotação (min^{-1})	Avanço (mm/rot)	Avanço linear (mm/min)	Vel. de Corte (m/min)	Rotação (min^{-1})	Avanço (mm/rot)	Avanço linear (mm/min)	Vel. de Corte (m/min)	Rotação (min^{-1})	Avanço (mm/rot)
0.5	24	15000	0.02	300	18	11250	0.01	110	13	8000	0.01	80
0.65	28	13700	0.03	410	22	10700	0.02	210	14	6800	0.02	135
0.8	33	13100	0.04	520	27	10700	0.03	320	14	5500	0.03	165
1.0	38	12000	0.05	600	31	10000	0.05	500	16	5000	0.05	250
1.2	38	10000	0.06	600	31	8200	0.06	490	17	4500	0.05	225
1.6	40	8000	0.08	640	33	6500	0.08	520	18	3500	0.06	210
2.0	40	6400	0.09	575	35	5500	0.09	495	18	2900	0.06	170
2.5	40	5100	0.11	560	35	4400	0.11	480	18	2300	0.08	180
3.2	40	4000	0.13	520	34	3400	0.13	440	18	1800	0.09	160
4.0	40	3200	0.15	480	35	2800	0.15	420	18	1400	0.10	140

Material	Aço Inoxidável Austenítico ($\leq 200\text{HB}$) AISI 304LN, AISI 316LN etc				Aço liga, Aço ferramenta ($\leq 30\text{HRC}$) ASTM H13, AISI L6 etc			
	Diâm. DC (mm)	Vel. de Corte (m/min)	Rotação (min^{-1})	Avanço (mm/rot)	Avanço linear (mm/min)	Vel. de Corte (m/min)	Rotação (min^{-1})	Avanço (mm/rot)
0.5	10	6600	0.01	65	10	6600	0.01	65
0.65	11	5300	0.012	60	11	5300	0.012	60
0.8	11	4300	0.015	60	11	4300	0.015	60
1.0	12	3800	0.02	75	12	3800	0.02	75
1.2	12	3100	0.025	75	12	3100	0.023	70
1.6	14	2700	0.03	80	14	2700	0.03	80
2.0	15	2400	0.04	95	15	2400	0.04	95
2.5	15	1900	0.05	95	15	1900	0.04	75
3.2	15	1500	0.07	105	15	1500	0.05	75
4.0	15	1200	0.09	105	15	1200	0.07	80

Nota 1) Reduza a rotação e a taxa de avanço conforme a condição de furação quando a fixação do material ou da máquina tiverem baixa rigidez.

Nota 2) Utilize um mandril porta-piça ou um mandril hidráulico.

Nota 3) Utilize refrigeração abundante.

Nota 4) Para materiais com dureza superior a 30HRC, são recomendadas as brocas VAPDS e VAPDM.

Nota 5) Para aços inoxidáveis endurecidos por precipitação (AISI 630, AISI 631), são recomendadas as brocas MVE, MVS e MMS.

Nota 6) Ao usinar furos com profundidades maiores que 4 x o diâmetro da broca, favor utilizar "pica-pau".

Nota 7) As condições de corte recomendadas são standard na usinagem com óleo solúvel.

Reduza a rotação ao utilizar óleo integral.

Nota 8) Para diâmetros não informados na tabela, favor calcular com base nos diâmetros mais próximos.

FURAÇÃO (BROCAS HSS COM HASTE PADRÃO FRESAMENTO)

SEPDM

Brocas de alta precisão linha SE

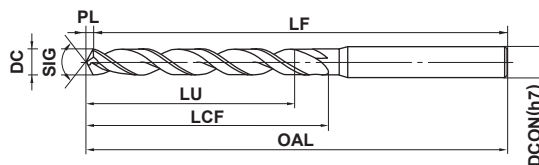


DC < 4

DC = 4

HSS

P	M	K	N	S	H
Aço	Aço Inoxidável	Ferro Fundido	Metais Não Ferrosos	Ligas Resist. ao Calor	



*LU = LCF - 2DC (Máx 5×DC)



$0.5 \leq DC \leq 3$	$3.1 \leq DC \leq 4$
$\begin{matrix} 0 \\ -0.006 \end{matrix}$	$\begin{matrix} 0 \\ -0.008 \end{matrix}$

- Proporciona agudez, excelente resistência à soldagem e facilita a expulsão de cavacos devido ao tratamento superficial D-STH.

Referência para Pedido	Dimensões (mm)						Estoque
	DC	LCF	OAL	LF	PL	DCON	
SEPDMD0050	0.50	6.2	50.2	50	0.15	3	●
SEPDMD0055	0.55	6.2	50.2	50	0.17	3	●
SEPDMD0060	0.60	8.2	50.2	50	0.18	3	●
SEPDMD0065	0.65	8.2	50.2	50	0.20	3	●
SEPDMD0070	0.70	10.2	50.2	50	0.21	3	●
SEPDMD0075	0.75	10.2	50.2	50	0.23	3	●
SEPDMD0080	0.80	10.2	50.2	50	0.24	3	●
SEPDMD0085	0.85	10.3	50.3	50	0.26	3	●
SEPDMD0090	0.90	12.3	50.3	50	0.27	3	●
SEPDMD0095	0.95	12.3	50.3	50	0.29	3	●
SEPDMD0100	1.0	12.3	60.3	60	0.3	3	●
SEPDMD0110	1.1	16.3	60.3	60	0.3	3	●
SEPDMD0120	1.2	16.4	60.4	60	0.4	3	●
SEPDMD0130	1.3	16.4	60.4	60	0.4	3	●
SEPDMD0140	1.4	18.4	60.4	60	0.4	3	●
SEPDMD0150	1.5	18.5	60.5	60	0.5	3	●
SEPDMD0160	1.6	20.5	60.5	60	0.5	3	●
SEPDMD0170	1.7	20.5	60.5	60	0.5	3	●
SEPDMD0180	1.8	22.5	60.5	60	0.5	3	●
SEPDMD0190	1.9	22.6	60.6	60	0.6	3	●
SEPDMD0200	2.0	23.6	70.6	70	0.6	3	●
SEPDMD0210	2.1	23.6	70.6	70	0.6	3	●

Referência para Pedido	Dimensões (mm)						Estoque
	DC	LCF	OAL	LF	PL	DCON	
SEPDMD0220	2.2	26.7	70.7	70	0.7	3	●
SEPDMD0230	2.3	26.7	70.7	70	0.7	3	●
SEPDMD0240	2.4	29.7	70.7	70	0.7	3	●
SEPDMD0250	2.5	29.8	70.8	70	0.8	3	●
SEPDMD0260	2.6	29.8	70.8	70	0.8	3	●
SEPDMD0270	2.7	32.8	70.8	70	0.8	3	●
SEPDMD0280	2.8	32.8	70.8	70	0.8	3	●
SEPDMD0290	2.9	32.9	70.9	70	0.9	3	●
SEPDMD0300	3.0	32.9	70.9	70	0.9	3	●
SEPDMD0310	3.1	35.9	85.9	85	0.9	4	●
SEPDMD0320	3.2	36.0	86.0	85	1.0	4	●
SEPDMD0330	3.3	36.0	86.0	85	1.0	4	●
SEPDMD0340	3.4	39.0	86.0	85	1.0	4	●
SEPDMD0350	3.5	39.1	86.1	85	1.1	4	●
SEPDMD0360	3.6	39.1	86.1	85	1.1	4	●
SEPDMD0370	3.7	39.1	86.1	85	1.1	4	●
SEPDMD0380	3.8	43.1	86.1	85	1.1	4	●
SEPDMD0390	3.9	43.2	86.2	85	1.2	4	●
SEPDMD0400	4.0	42.8	85.8	85	0.8	4	●

N

FURAÇÃO

● : Estoque mantido.

CONDIÇÕES DE CORTE RECOMENDADAS

Material	Aço Baixo Carbono ($\leq 180\text{HB}$), Ligas de Alumínio (Si<5%) AISI 1010 etc				Aço Carbono, Aço Liga (180–280HB), Ferro Fundido Cinzento ($\leq 350\text{MPa}$), Cobre, Ligas de cobre AISI 1045, AISI 4140, DIN GG-30 etc				Aço ferramenta liga ($\leq 250\text{HB}$) Aço Inoxidável Ferrítico e Martensítico ($\leq 200\text{HB}$) AISI D2, AISI 410, AISI 430 etc			
	Diâm. DC (mm)	Vel. de Corte (m/min)	Rotação (min^{-1})	Avanço (mm/rot)	Avanço linear (mm/min)	Vel. de Corte (m/min)	Rotação (min^{-1})	Avanço (mm/rot)	Avanço linear (mm/min)	Vel. de Corte (m/min)	Rotação (min^{-1})	Avanço (mm/rot)
0.5	24	15000	0.02	300	18	11250	0.01	110	13	8000	0.01	80
0.65	28	13700	0.03	410	22	10700	0.02	210	14	6800	0.02	135
0.8	33	13100	0.04	520	27	10700	0.03	320	14	5500	0.03	165
1.0	38	12000	0.05	600	31	10000	0.05	500	16	5000	0.05	250
1.2	38	10000	0.06	600	31	8200	0.06	490	17	4500	0.05	225
1.6	40	8000	0.08	640	33	6500	0.08	520	18	3500	0.06	210
2.0	40	6400	0.09	575	35	5500	0.09	495	18	2900	0.06	170
2.5	40	5100	0.11	560	35	4400	0.11	480	18	2300	0.08	180
3.2	40	4000	0.13	520	34	3400	0.13	440	18	1800	0.09	160
4.0	40	3200	0.15	480	35	2800	0.15	420	18	1400	0.10	140

Material	Aço Inoxidável Austenítico ($\leq 200\text{HB}$) AISI 304LN, AISI 316LN etc				Aço liga, Aço ferramenta ($\leq 30\text{HRC}$) ASTM H13, AISI L6 etc			
	Diâm. DC (mm)	Vel. de Corte (m/min)	Rotação (min^{-1})	Avanço (mm/rot)	Avanço linear (mm/min)	Vel. de Corte (m/min)	Rotação (min^{-1})	Avanço (mm/rot)
0.5	10	6600	0.01	65	10	6600	0.01	65
0.65	11	5300	0.012	60	11	5300	0.012	60
0.8	11	4300	0.015	60	11	4300	0.015	60
1.0	12	3800	0.02	75	12	3800	0.02	75
1.2	12	3100	0.025	75	12	3100	0.023	70
1.6	14	2700	0.03	80	14	2700	0.03	80
2.0	15	2400	0.04	95	15	2400	0.04	95
2.5	15	1900	0.05	95	15	1900	0.04	75
3.2	15	1500	0.07	105	15	1500	0.05	75
4.0	15	1200	0.09	105	15	1200	0.07	80

Nota 1) Reduza a rotação e a taxa de avanço conforme a condição de furação quando a fixação do material ou da máquina tiverem baixa rigidez.

Nota 2) Utilize um mandril porta-piça ou um mandril hidráulico.

Nota 3) Utilize refrigeração abundante.

Nota 4) Para materiais com dureza superior a 30HRC, são recomendadas as brocas VAPDS e VAPDM.

Nota 5) Para aços inoxidáveis endurecidos por precipitação (AISI 630, AISI 631), são recomendadas as brocas MVE, MVS e MMS.

Nota 6) Ao usinar furos com profundidades maiores que 4 x o diâmetro da broca, favor utilizar "pica-pau".

Nota 7) As condições de corte recomendadas são standard na usinagem com óleo solúvel.

Reduza a rotação ao utilizar óleo integral.

Nota 8) Para diâmetros não informados na tabela, favor calcular com base nos diâmetros mais próximos.

FURAÇÃO(HSS)

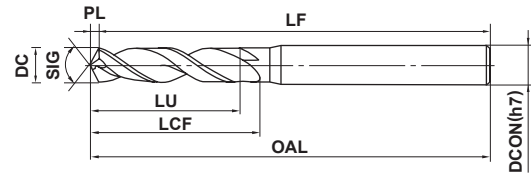
VAPDS

Curta, alta precisão



DC<2 DC≥2

HSS



*LU = LCF-2DC (Máx 3×DC)



0.5≤DC≤3	3<DC≤6	6<DC≤10	10<DC≤13
$\begin{matrix} 0 \\ -0.014 \end{matrix}$	$\begin{matrix} 0 \\ -0.018 \end{matrix}$	$\begin{matrix} 0 \\ -0.022 \end{matrix}$	$\begin{matrix} 0 \\ -0.027 \end{matrix}$

*Brocas acima de 2.0 mm possuem tolerância no diâmetro do Canal de 0-0.009.

- Furação altamente eficiente e longa vida útil alcançadas com o cobertura VIOLET.

Referência para Pedido	Dimensões (mm)						Estoque
	DC	LCF	OAL	LF	PL	DCON	
VAPDSD0050	0.50	3.2	50.2	50	0.15	3	●
VAPDSD0051	0.51	3.2	50.2	50	0.15	3	●
VAPDSD0052	0.52	3.2	50.2	50	0.16	3	●
VAPDSD0053	0.53	3.2	50.2	50	0.16	3	●
VAPDSD0054	0.54	3.2	50.2	50	0.16	3	●
VAPDSD0055	0.55	3.2	50.2	50	0.17	3	●
VAPDSD0056	0.56	4.2	50.2	50	0.17	3	●
VAPDSD0057	0.57	4.2	50.2	50	0.17	3	●
VAPDSD0058	0.58	4.2	50.2	50	0.17	3	●
VAPDSD0059	0.59	4.2	50.2	50	0.18	3	●
VAPDSD0060	0.60	5.2	50.2	50	0.18	3	●
VAPDSD0061	0.61	5.2	50.2	50	0.18	3	●
VAPDSD0062	0.62	5.2	50.2	50	0.19	3	●
VAPDSD0063	0.63	5.2	50.2	50	0.19	3	●
VAPDSD0064	0.64	5.2	50.2	50	0.19	3	●
VAPDSD0065	0.65	5.2	50.2	50	0.20	3	●
VAPDSD0066	0.66	5.2	50.2	50	0.20	3	●
VAPDSD0067	0.67	5.2	50.2	50	0.20	3	●
VAPDSD0068	0.68	5.2	50.2	50	0.20	3	●
VAPDSD0069	0.69	5.2	50.2	50	0.21	3	●
VAPDSD0070	0.70	5.2	50.2	50	0.21	3	●
VAPDSD0071	0.71	5.2	50.2	50	0.21	3	●
VAPDSD0072	0.72	5.2	50.2	50	0.22	3	●
VAPDSD0073	0.73	5.2	50.2	50	0.22	3	●
VAPDSD0074	0.74	5.2	50.2	50	0.22	3	●
VAPDSD0075	0.75	5.2	50.2	50	0.23	3	●
VAPDSD0076	0.76	5.2	50.2	50	0.23	3	●
VAPDSD0077	0.77	5.2	50.2	50	0.23	3	●
VAPDSD0078	0.78	5.2	50.2	50	0.23	3	●
VAPDSD0079	0.79	5.2	50.2	50	0.24	3	●
VAPDSD0080	0.80	5.2	50.2	50	0.24	3	●
VAPDSD0081	0.81	5.2	50.2	50	0.24	3	●

Referência para Pedido	Dimensões (mm)						Estoque
	DC	LCF	OAL	LF	PL	DCON	
VAPDSD0082	0.82	5.3	50.3	50	0.25	3	●
VAPDSD0083	0.83	5.3	50.3	50	0.25	3	●
VAPDSD0084	0.84	5.3	50.3	50	0.25	3	●
VAPDSD0085	0.85	5.3	50.3	50	0.26	3	●
VAPDSD0086	0.86	6.3	50.3	50	0.26	3	●
VAPDSD0087	0.87	6.3	50.3	50	0.26	3	●
VAPDSD0088	0.88	6.3	50.3	50	0.26	3	●
VAPDSD0089	0.89	6.3	50.3	50	0.27	3	●
VAPDSD0090	0.90	6.3	50.3	50	0.27	3	●
VAPDSD0091	0.91	6.3	50.3	50	0.27	3	●
VAPDSD0092	0.92	6.3	50.3	50	0.28	3	●
VAPDSD0093	0.93	6.3	50.3	50	0.28	3	●
VAPDSD0094	0.94	6.3	50.3	50	0.28	3	●
VAPDSD0095	0.95	6.3	50.3	50	0.29	3	●
VAPDSD0096	0.96	6.3	50.3	50	0.29	3	●
VAPDSD0097	0.97	6.3	50.3	50	0.29	3	●
VAPDSD0098	0.98	6.3	50.3	50	0.29	3	●
VAPDSD0099	0.99	6.3	50.3	50	0.30	3	●
VAPDSD0100	1.00	6.3	50.3	50	0.3	3	●
VAPDSD0101	1.01	6.3	50.3	50	0.3	3	●
VAPDSD0102	1.02	6.3	50.3	50	0.3	3	●
VAPDSD0103	1.03	6.3	50.3	50	0.3	3	●
VAPDSD0104	1.04	6.3	50.3	50	0.3	3	●
VAPDSD0105	1.05	6.3	50.3	50	0.3	3	●
VAPDSD0106	1.06	6.3	50.3	50	0.3	3	●
VAPDSD0107	1.07	8.3	55.3	55	0.3	3	●
VAPDSD0108	1.08	8.3	55.3	55	0.3	3	●
VAPDSD0109	1.09	8.3	55.3	55	0.3	3	●
VAPDSD0110	1.10	8.3	55.3	55	0.3	3	●
VAPDSD0111	1.11	8.3	55.3	55	0.3	3	●
VAPDSD0112	1.12	8.3	55.3	55	0.3	3	●
VAPDSD0113	1.13	8.3	55.3	55	0.3	3	●

● : Estoque mantido.

Referência para Pedido	Dimensões (mm)						Estoque
	DC	LCF	OAL	LF	PL	DON	
VAPDSD0114	1.14	8.3	55.3	55	0.3	3	●
VAPDSD0115	1.15	8.4	55.4	55	0.4	3	●
VAPDSD0116	1.16	8.4	55.4	55	0.4	3	●
VAPDSD0117	1.17	8.4	55.4	55	0.4	3	●
VAPDSD0118	1.18	8.4	55.4	55	0.4	3	●
VAPDSD0119	1.19	8.4	55.4	55	0.4	3	●
VAPDSD0120	1.20	8.4	55.4	55	0.4	3	●
VAPDSD0121	1.21	8.4	55.4	55	0.4	3	●
VAPDSD0122	1.22	8.4	55.4	55	0.4	3	●
VAPDSD0123	1.23	8.4	55.4	55	0.4	3	●
VAPDSD0124	1.24	8.4	55.4	55	0.4	3	●
VAPDSD0125	1.25	8.4	55.4	55	0.4	3	●
VAPDSD0126	1.26	8.4	55.4	55	0.4	3	●
VAPDSD0127	1.27	8.4	55.4	55	0.4	3	●
VAPDSD0128	1.28	8.4	55.4	55	0.4	3	●
VAPDSD0129	1.29	8.4	55.4	55	0.4	3	●
VAPDSD0130	1.30	9.4	55.4	55	0.4	3	●
VAPDSD0131	1.31	9.4	55.4	55	0.4	3	●
VAPDSD0132	1.32	9.4	55.4	55	0.4	3	●
VAPDSD0133	1.33	9.4	55.4	55	0.4	3	●
VAPDSD0134	1.34	9.4	55.4	55	0.4	3	●
VAPDSD0135	1.35	9.4	55.4	55	0.4	3	●
VAPDSD0136	1.36	9.4	55.4	55	0.4	3	●
VAPDSD0137	1.37	9.4	55.4	55	0.4	3	●
VAPDSD0138	1.38	9.4	55.4	55	0.4	3	●
VAPDSD0139	1.39	9.4	55.4	55	0.4	3	●
VAPDSD0140	1.40	9.4	55.4	55	0.4	3	●
VAPDSD0141	1.41	9.4	55.4	55	0.4	3	●
VAPDSD0142	1.42	9.4	55.4	55	0.4	3	●
VAPDSD0143	1.43	9.4	55.4	55	0.4	3	●
VAPDSD0144	1.44	9.4	55.4	55	0.4	3	●
VAPDSD0145	1.45	9.4	55.4	55	0.4	3	●
VAPDSD0146	1.46	9.4	55.4	55	0.4	3	●
VAPDSD0147	1.47	9.4	55.4	55	0.4	3	●
VAPDSD0148	1.48	9.4	55.4	55	0.4	3	●
VAPDSD0149	1.49	9.5	55.5	55	0.5	3	●
VAPDSD0150	1.50	9.5	55.5	55	0.5	3	●
VAPDSD0151	1.51	11.5	55.5	55	0.5	3	●
VAPDSD0152	1.52	11.5	55.5	55	0.5	3	●
VAPDSD0153	1.53	11.5	55.5	55	0.5	3	●
VAPDSD0154	1.54	11.5	55.5	55	0.5	3	●
VAPDSD0155	1.55	11.5	55.5	55	0.5	3	●
VAPDSD0156	1.56	11.5	55.5	55	0.5	3	●
VAPDSD0157	1.57	11.5	55.5	55	0.5	3	●
VAPDSD0158	1.58	11.5	55.5	55	0.5	3	●
VAPDSD0159	1.59	11.5	55.5	55	0.5	3	●
VAPDSD0160	1.60	11.5	55.5	55	0.5	3	●
VAPDSD0161	1.61	11.5	55.5	55	0.5	3	●

Referência para Pedido	Dimensões (mm)						Estoque
	DC	LCF	OAL	LF	PL	DON	
VAPDSD0162	1.62	11.5	55.5	55	0.5	3	●
VAPDSD0163	1.63	11.5	55.5	55	0.5	3	●
VAPDSD0164	1.64	11.5	55.5	55	0.5	3	●
VAPDSD0165	1.65	11.5	55.5	55	0.5	3	●
VAPDSD0166	1.66	11.5	55.5	55	0.5	3	●
VAPDSD0167	1.67	11.5	55.5	55	0.5	3	●
VAPDSD0168	1.68	11.5	55.5	55	0.5	3	●
VAPDSD0169	1.69	11.5	55.5	55	0.5	3	●
VAPDSD0170	1.70	11.5	55.5	55	0.5	3	●
VAPDSD0171	1.71	11.5	55.5	55	0.5	3	●
VAPDSD0172	1.72	11.5	55.5	55	0.5	3	●
VAPDSD0173	1.73	11.5	55.5	55	0.5	3	●
VAPDSD0174	1.74	11.5	55.5	55	0.5	3	●
VAPDSD0175	1.75	11.5	55.5	55	0.5	3	●
VAPDSD0176	1.76	11.5	55.5	55	0.5	3	●
VAPDSD0177	1.77	11.5	55.5	55	0.5	3	●
VAPDSD0178	1.78	11.5	55.5	55	0.5	3	●
VAPDSD0179	1.79	11.5	55.5	55	0.5	3	●
VAPDSD0180	1.80	11.5	55.5	55	0.5	3	●
VAPDSD0181	1.81	11.5	55.5	55	0.5	3	●
VAPDSD0182	1.82	11.6	55.6	55	0.6	3	●
VAPDSD0183	1.83	11.6	55.6	55	0.6	3	●
VAPDSD0184	1.84	11.6	55.6	55	0.6	3	●
VAPDSD0185	1.85	11.6	55.6	55	0.6	3	●
VAPDSD0186	1.86	11.6	55.6	55	0.6	3	●
VAPDSD0187	1.87	11.6	55.6	55	0.6	3	●
VAPDSD0188	1.88	11.6	55.6	55	0.6	3	●
VAPDSD0189	1.89	11.6	55.6	55	0.6	3	●
VAPDSD0190	1.90	12.6	55.6	55	0.6	3	●
VAPDSD0191	1.91	12.6	60.6	60	0.6	3	●
VAPDSD0192	1.92	12.6	60.6	60	0.6	3	●
VAPDSD0193	1.93	12.6	60.6	60	0.6	3	●
VAPDSD0194	1.94	12.6	60.6	60	0.6	3	●
VAPDSD0195	1.95	12.6	60.6	60	0.6	3	●
VAPDSD0196	1.96	12.6	60.6	60	0.6	3	●
VAPDSD0197	1.97	12.6	60.6	60	0.6	3	●
VAPDSD0198	1.98	12.6	60.6	60	0.6	3	●
VAPDSD0199	1.99	12.6	60.6	60	0.6	3	●
VAPDSD0200	2.00	12.4	60.4	60	0.4	3	●
VAPDSD0205	2.05	12.4	60.4	60	0.4	3	●
VAPDSD0210	2.10	12.4	60.4	60	0.4	3	●
VAPDSD0215	2.15	12.5	60.5	60	0.5	3	●
VAPDSD0220	2.20	12.5	60.5	60	0.5	3	●
VAPDSD0225	2.25	12.5	60.5	60	0.5	3	●
VAPDSD0230	2.30	13.5	60.5	60	0.5	3	●
VAPDSD0235	2.35	13.5	60.5	60	0.5	3	●
VAPDSD0240	2.40	13.5	60.5	60	0.5	3	●
VAPDSD0245	2.45	13.5	60.5	60	0.5	3	●

VAPDS

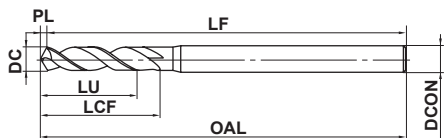
Curta, alta precisão

HSS

Referência para Pedido	Dimensões (mm)						Estoque
	DC	LCF	OAL	LF	PL	DCON	
VAPDSD0250	2.50	13.5	60.5	60	0.5	3	●
VAPDSD0255	2.55	13.5	60.5	60	0.5	3	●
VAPDSD0260	2.60	15.5	60.5	60	0.5	3	●
VAPDSD0265	2.65	15.6	60.6	60	0.6	3	●
VAPDSD0270	2.70	15.6	60.6	60	0.6	3	●
VAPDSD0275	2.75	15.6	60.6	60	0.6	3	●
VAPDSD0280	2.80	15.6	60.6	60	0.6	3	●
VAPDSD0285	2.85	15.6	60.6	60	0.6	3	●
VAPDSD0290	2.90	15.6	60.6	60	0.6	3	●
VAPDSD0295	2.95	15.6	60.6	60	0.6	3	●
VAPDSD0300	3.00	15.6	60.6	60	0.6	3	●
VAPDSD0305	3.05	17.6	70.6	70	0.6	4	●
VAPDSD0310	3.10	17.6	70.6	70	0.6	4	●
VAPDSD0315	3.15	17.7	70.7	70	0.7	4	●
VAPDSD0320	3.20	17.7	70.7	70	0.7	4	●
VAPDSD0325	3.25	17.7	70.7	70	0.7	4	●
VAPDSD0330	3.30	19.7	70.7	70	0.7	4	●
VAPDSD0335	3.35	19.7	70.7	70	0.7	4	●
VAPDSD0340	3.40	19.7	70.7	70	0.7	4	●
VAPDSD0345	3.45	19.7	70.7	70	0.7	4	●
VAPDSD0350	3.50	19.7	70.7	70	0.7	4	●
VAPDSD0355	3.55	19.7	70.7	70	0.7	4	●
VAPDSD0360	3.60	21.8	70.8	70	0.8	4	●
VAPDSD0365	3.65	21.8	70.8	70	0.8	4	●
VAPDSD0370	3.70	21.8	70.8	70	0.8	4	●
VAPDSD0375	3.75	21.8	70.8	70	0.8	4	●
VAPDSD0380	3.80	21.8	70.8	70	0.8	4	●
VAPDSD0385	3.85	21.8	70.8	70	0.8	4	●
VAPDSD0390	3.90	21.8	70.8	70	0.8	4	●
VAPDSD0395	3.95	21.8	70.8	70	0.8	4	●
VAPDSD0400	4.00	21.8	70.8	70	0.8	4	●
VAPDSD0405	4.05	21.8	80.8	80	0.8	6	●
VAPDSD0410	4.10	21.9	80.9	80	0.9	6	●
VAPDSD0415	4.15	21.9	80.9	80	0.9	6	●
VAPDSD0420	4.20	21.9	80.9	80	0.9	6	●
VAPDSD0425	4.25	21.9	80.9	80	0.9	6	●
VAPDSD0430	4.30	23.9	80.9	80	0.9	6	●
VAPDSD0435	4.35	23.9	80.9	80	0.9	6	●
VAPDSD0440	4.40	23.9	80.9	80	0.9	6	●
VAPDSD0445	4.45	23.9	80.9	80	0.9	6	●
VAPDSD0450	4.50	23.9	80.9	80	0.9	6	●
VAPDSD0455	4.55	23.9	80.9	80	0.9	6	●
VAPDSD0460	4.60	26.0	81.0	80	1.0	6	●
VAPDSD0465	4.65	26.0	81.0	80	1.0	6	●
VAPDSD0470	4.70	26.0	81.0	80	1.0	6	●
VAPDSD0475	4.75	26.0	81.0	80	1.0	6	●
VAPDSD0480	4.80	26.0	81.0	80	1.0	6	●
VAPDSD0485	4.85	26.0	81.0	80	1.0	6	●

Referência para Pedido	Dimensões (mm)						Estoque
	DC	LCF	OAL	LF	PL	DCON	
VAPDSD0490	4.90	26.0	81.0	80	1.0	6	●
VAPDSD0495	4.95	26.0	81.0	80	1.0	6	●
VAPDSD0500	5.00	26.0	81.0	80	1.0	6	●
VAPDSD0505	5.05	26.1	81.1	80	1.1	6	●
VAPDSD0510	5.10	26.1	81.1	80	1.1	6	●
VAPDSD0515	5.15	26.1	81.1	80	1.1	6	●
VAPDSD0520	5.20	26.1	81.1	80	1.1	6	●
VAPDSD0525	5.25	26.1	81.1	80	1.1	6	●
VAPDSD0530	5.30	26.1	81.1	80	1.1	6	●
VAPDSD0535	5.35	28.1	81.1	80	1.1	6	●
VAPDSD0540	5.40	28.1	81.1	80	1.1	6	●
VAPDSD0545	5.45	28.1	81.1	80	1.1	6	●
VAPDSD0550	5.50	28.1	81.1	80	1.1	6	●
VAPDSD0555	5.55	28.2	81.2	80	1.2	6	●
VAPDSD0560	5.60	28.2	81.2	80	1.2	6	●
VAPDSD0565	5.65	28.2	81.2	80	1.2	6	●
VAPDSD0570	5.70	28.2	81.2	80	1.2	6	●
VAPDSD0575	5.75	28.2	81.2	80	1.2	6	●
VAPDSD0580	5.80	28.2	81.2	80	1.2	6	●
VAPDSD0585	5.85	28.2	81.2	80	1.2	6	●
VAPDSD0590	5.90	28.2	81.2	80	1.2	6	●
VAPDSD0595	5.95	28.2	81.2	80	1.2	6	●
VAPDSD0600	6.00	28.2	81.2	80	1.2	6	●
VAPDSD0605	6.05	31.3	81.3	80	1.3	8	●
VAPDSD0610	6.10	31.3	81.3	80	1.3	8	●
VAPDSD0615	6.15	31.3	81.3	80	1.3	8	●
VAPDSD0620	6.20	31.3	81.3	80	1.3	8	●
VAPDSD0625	6.25	31.3	81.3	80	1.3	8	●
VAPDSD0630	6.30	31.3	81.3	80	1.3	8	●
VAPDSD0635	6.35	31.3	81.3	80	1.3	8	●
VAPDSD0640	6.40	31.3	81.3	80	1.3	8	●
VAPDSD0645	6.45	31.3	81.3	80	1.3	8	●
VAPDSD0650	6.50	31.4	81.4	80	1.4	8	●
VAPDSD0655	6.55	31.4	81.4	80	1.4	8	●
VAPDSD0660	6.60	31.4	81.4	80	1.4	8	●
VAPDSD0665	6.65	31.4	81.4	80	1.4	8	●
VAPDSD0670	6.70	31.4	81.4	80	1.4	8	●
VAPDSD0675	6.75	33.4	81.4	80	1.4	8	●
VAPDSD0680	6.80	33.4	81.4	80	1.4	8	●
VAPDSD0685	6.85	33.4	81.4	80	1.4	8	●
VAPDSD0690	6.90	33.4	81.4	80	1.4	8	●
VAPDSD0695	6.95	33.4	81.4	80	1.4	8	●
VAPDSD0700	7.00	33.5	81.5	80	1.5	8	●
VAPDSD0705	7.05	33.5	81.5	80	1.5	8	●
VAPDSD0710	7.10	33.5	81.5	80	1.5	8	●
VAPDSD0715	7.15	33.5	81.5	80	1.5	8	●
VAPDSD0720	7.20	33.5	81.5	80	1.5	8	●
VAPDSD0725	7.25	33.5	81.5	80	1.5	8	●

● : Estoque mantido.



Referência para Pedido	Dimensões (mm)						Estoque
	DC	LCF	OAL	LF	PL	DCON	
VAPDSD0730	7.30	33.5	81.5	80	1.5	8	●
VAPDSD0735	7.35	33.5	81.5	80	1.5	8	●
VAPDSD0740	7.40	33.5	81.5	80	1.5	8	●
VAPDSD0745	7.45	33.5	81.5	80	1.5	8	●
VAPDSD0750	7.50	33.6	81.6	80	1.6	8	●
VAPDSD0755	7.55	36.6	86.6	85	1.6	8	●
VAPDSD0760	7.60	36.6	86.6	85	1.6	8	●
VAPDSD0765	7.65	36.6	86.6	85	1.6	8	●
VAPDSD0770	7.70	36.6	86.6	85	1.6	8	●
VAPDSD0775	7.75	36.6	86.6	85	1.6	8	●
VAPDSD0780	7.80	36.6	86.6	85	1.6	8	●
VAPDSD0785	7.85	36.6	86.6	85	1.6	8	●
VAPDSD0790	7.90	36.6	86.6	85	1.6	8	●
VAPDSD0795	7.95	36.7	86.7	85	1.7	8	●
VAPDSD0800	8.00	36.7	86.7	85	1.7	8	●
VAPDSD0805	8.05	36.7	91.7	90	1.7	10	●
VAPDSD0810	8.10	36.7	91.7	90	1.7	10	●
VAPDSD0815	8.15	36.7	91.7	90	1.7	10	●
VAPDSD0820	8.20	36.7	91.7	90	1.7	10	●
VAPDSD0825	8.25	36.7	91.7	90	1.7	10	●
VAPDSD0830	8.30	36.7	91.7	90	1.7	10	●
VAPDSD0835	8.35	36.7	91.7	90	1.7	10	●
VAPDSD0840	8.40	36.7	91.7	90	1.7	10	●
VAPDSD0845	8.45	36.8	91.8	90	1.8	10	●
VAPDSD0850	8.50	36.8	91.8	90	1.8	10	●
VAPDSD0855	8.55	39.8	94.8	93	1.8	10	●
VAPDSD0860	8.60	39.8	94.8	93	1.8	10	●
VAPDSD0865	8.65	39.8	94.8	93	1.8	10	●
VAPDSD0870	8.70	39.8	94.8	93	1.8	10	●
VAPDSD0875	8.75	39.8	94.8	93	1.8	10	●
VAPDSD0880	8.80	39.8	94.8	93	1.8	10	●
VAPDSD0885	8.85	39.8	94.8	93	1.8	10	●
VAPDSD0890	8.90	39.8	94.8	93	1.8	10	●
VAPDSD0895	8.95	39.9	94.9	93	1.9	10	●
VAPDSD0900	9.00	39.9	94.9	93	1.9	10	●
VAPDSD0910	9.10	39.9	94.9	93	1.9	10	●
VAPDSD0920	9.20	39.9	94.9	93	1.9	10	●
VAPDSD0930	9.30	39.9	94.9	93	1.9	10	●
VAPDSD0940	9.40	40.0	95.0	93	2.0	10	●
VAPDSD0950	9.50	40.0	95.0	93	2.0	10	●
VAPDSD0960	9.60	43.0	98.0	96	2.0	10	●
VAPDSD0970	9.70	43.0	98.0	96	2.0	10	●
VAPDSD0980	9.80	43.0	98.0	96	2.0	10	●
VAPDSD0990	9.90	43.1	98.1	96	2.1	10	●
VAPDSD1000	10.00	43.1	98.1	96	2.1	10	●
VAPDSD1010	10.10	43.1	103.1	101	2.1	12	●
VAPDSD1020	10.20	43.1	103.1	101	2.1	12	●
VAPDSD1030	10.30	43.1	103.1	101	2.1	12	●

Referência para Pedido	Dimensões (mm)						Estoque
	DC	LCF	OAL	LF	PL	DCON	
VAPDSD1040	10.40	43.2	103.2	101	2.2	12	●
VAPDSD1050	10.50	43.2	103.2	101	2.2	12	●
VAPDSD1060	10.60	43.2	103.2	101	2.2	12	●
VAPDSD1070	10.70	47.2	107.2	105	2.2	12	●
VAPDSD1080	10.80	47.2	107.2	105	2.2	12	●
VAPDSD1090	10.90	47.3	107.3	105	2.3	12	●
VAPDSD1100	11.00	47.3	107.3	105	2.3	12	●
VAPDSD1110	11.10	47.3	107.3	105	2.3	12	●
VAPDSD1120	11.20	47.3	107.3	105	2.3	12	●
VAPDSD1130	11.30	47.3	107.3	105	2.3	12	●
VAPDSD1140	11.40	47.4	107.4	105	2.4	12	●
VAPDSD1150	11.50	47.4	107.4	105	2.4	12	●
VAPDSD1160	11.60	47.4	107.4	105	2.4	12	●
VAPDSD1170	11.70	47.4	107.4	105	2.4	12	●
VAPDSD1180	11.80	47.4	107.4	105	2.4	12	●
VAPDSD1190	11.90	51.5	111.5	109	2.5	12	●
VAPDSD1200	12.0	51.5	111.5	109	2.5	12	●
VAPDSD1210	12.1	51.5	111.5	109	2.5	12	●
VAPDSD1220	12.2	51.5	111.5	109	2.5	12	●
VAPDSD1230	12.3	51.6	111.6	109	2.6	12	●
VAPDSD1240	12.4	51.6	111.6	109	2.6	12	●
VAPDSD1250	12.5	51.6	111.6	109	2.6	12	●
VAPDSD1260	12.6	51.6	111.6	109	2.6	12	●
VAPDSD1270	12.7	51.6	111.6	109	2.6	12	●
VAPDSD1280	12.8	51.7	111.7	109	2.7	12	●
VAPDSD1290	12.9	51.7	111.7	109	2.7	12	●
VAPDSD1300	13.0	51.7	111.7	109	2.7	12	●

CONDIÇÕES DE CORTE RECOMENDADAS

Diâm. DC (mm)	Aço estrutural		Aço carbono, Aço liga, Ferro fundido		Aço ferramenta liga (Materiais de baixa dureza) Aço inoxidável ferrítico Aço inoxidável martensítico AISI D2, AISI 430, AISI 405, AISI 420, AISI 440		Aço ferramenta liga (-40HRC) Aço inoxidável endurecido por precipitação AISI H13, ASTM 630, ASTM 631	
	Rotação (min ⁻¹)	Taxa de Avanço (mm/rot)	Rotação (min ⁻¹)	Taxa de Avanço (mm/rot)	Rotação (min ⁻¹)	Taxa de Avanço (mm/rot)	Rotação (min ⁻¹)	Taxa de Avanço (mm/rot)
0.5	18000	0.02	16000	0.02	9000	0.02	8200	0.02
1.0	12000	0.05	10000	0.05	6300	0.05	5500	0.04
2.0	6400	0.09	5500	0.09	3200	0.09	2900	0.05
3.0	4300	0.13	3700	0.13	2100	0.13	1900	0.06
4.0	3200	0.15	2800	0.15	1600	0.15	1400	0.08
5.0	2600	0.18	2200	0.18	1300	0.18	1100	0.10
6.0	2100	0.19	1800	0.19	1100	0.20	950	0.11
8.0	1600	0.24	1400	0.24	800	0.22	720	0.13
10.0	1300	0.28	1100	0.28	640	0.25	570	0.15
12.0	1100	0.34	930	0.34	530	0.30	480	0.17
13.0	980	0.36	860	0.36	490	0.32	440	0.19

Nota 1) Reduza a rotação e a taxa de avanço conforme a condição de furação quando a fixação do material ou da máquina tiverem baixa rigidez.

Nota 2) Utilize um mandril porta-piça ou um mandril hidráulico.

Nota 3) Utilize refrigeração abundante.

Nota 4) VAPDSSUS são recomendadas para aço inoxidável austenítico (AISI 304).

Nota 5) Ao usinar furos com profundidades maiores que 4 x o diâmetro da broca, favor utilizar "pica-pau".

Nota 6) As condições de corte recomendadas são standard na usinagem com óleo solúvel.

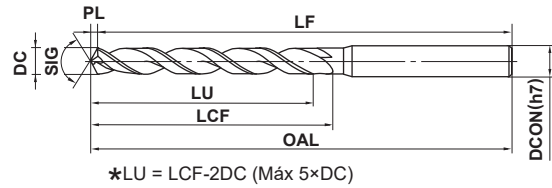
Reduza a rotação ao utilizar fluido não solúvel em água.

VAPDM

Média, alta precisão



HSS



	$0.5 \leq DC \leq 3$	$3 < DC \leq 6$	$6 < DC \leq 10$	$10 < DC \leq 18$	$18 < DC \leq 30$	$30 < DC \leq 32$
	0 -0.014	0 -0.018	0 -0.022	0 -0.027	0 -0.033	0 -0.039

● Furação altamente eficiente e longa vida útil alcançadas com o cobertura VIOLET.

Referência para Pedido	Dimensões (mm)						Estoque
	DC	LCF	OAL	LF	PL	DCON	
VAPDMD0050	0.50	6.2	50.2	50	0.15	3	●
VAPDMD0055	0.55	6.2	50.2	50	0.17	3	●
VAPDMD0060	0.60	8.2	50.2	50	0.18	3	●
VAPDMD0065	0.65	8.2	50.2	50	0.20	3	●
VAPDMD0070	0.70	10.2	50.2	50	0.21	3	●
VAPDMD0075	0.75	10.2	50.2	50	0.23	3	●
VAPDMD0080	0.80	10.2	50.2	50	0.24	3	●
VAPDMD0085	0.85	10.3	50.3	50	0.26	3	●
VAPDMD0090	0.90	12.3	50.3	50	0.27	3	●
VAPDMD0095	0.95	12.3	50.3	50	0.29	3	●
VAPDMD0100	1.00	12.3	60.3	60	0.3	3	●
VAPDMD0105	1.05	12.3	60.3	60	0.3	3	●
VAPDMD0110	1.10	16.3	60.3	60	0.3	3	●
VAPDMD0115	1.15	16.4	60.4	60	0.4	3	●
VAPDMD0120	1.20	16.4	60.4	60	0.4	3	●
VAPDMD0125	1.25	16.4	60.4	60	0.4	3	●
VAPDMD0130	1.30	16.4	60.4	60	0.4	3	●
VAPDMD0135	1.35	18.4	60.4	60	0.4	3	●
VAPDMD0140	1.40	18.4	60.4	60	0.4	3	●
VAPDMD0145	1.45	18.4	60.4	60	0.4	3	●
VAPDMD0150	1.50	18.5	60.5	60	0.5	3	●
VAPDMD0155	1.55	20.5	60.5	60	0.5	3	●
VAPDMD0160	1.60	20.5	60.5	60	0.5	3	●
VAPDMD0165	1.65	20.5	60.5	60	0.5	3	●
VAPDMD0170	1.70	20.5	60.5	60	0.5	3	●
VAPDMD0175	1.75	20.5	60.5	60	0.5	3	●
VAPDMD0180	1.80	22.5	60.5	60	0.5	3	●
VAPDMD0185	1.85	22.6	60.6	60	0.6	3	●
VAPDMD0190	1.90	22.6	60.6	60	0.6	3	●
VAPDMD0195	1.95	23.6	60.6	60	0.6	3	●
VAPDMD0200	2.00	23.4	70.4	70	0.4	3	●
VAPDMD0205	2.05	23.4	70.4	70	0.4	3	●

Referência para Pedido	Dimensões (mm)						Estoque
	DC	LCF	OAL	LF	PL	DCON	
VAPDMD0210	2.10	23.4	70.4	70	0.4	3	●
VAPDMD0215	2.15	23.5	70.5	70	0.5	3	●
VAPDMD0220	2.20	26.5	70.5	70	0.5	3	●
VAPDMD0225	2.25	26.5	70.5	70	0.5	3	●
VAPDMD0230	2.30	26.5	70.5	70	0.5	3	●
VAPDMD0235	2.35	26.5	70.5	70	0.5	3	●
VAPDMD0240	2.40	29.5	70.5	70	0.5	3	●
VAPDMD0245	2.45	29.5	70.5	70	0.5	3	●
VAPDMD0250	2.50	29.5	70.5	70	0.5	3	●
VAPDMD0255	2.55	29.5	70.5	70	0.5	3	●
VAPDMD0260	2.60	29.5	70.5	70	0.5	3	●
VAPDMD0265	2.65	29.6	70.6	70	0.6	3	●
VAPDMD0270	2.70	32.6	70.6	70	0.6	3	●
VAPDMD0275	2.75	32.6	70.6	70	0.6	3	●
VAPDMD0280	2.80	32.6	70.6	70	0.6	3	●
VAPDMD0285	2.85	32.6	70.6	70	0.6	3	●
VAPDMD0290	2.90	32.6	70.6	70	0.6	3	●
VAPDMD0295	2.95	32.6	70.6	70	0.6	3	●
VAPDMD0300	3.00	32.6	70.6	70	0.6	3	●
VAPDMD0305	3.05	35.6	85.6	85	0.6	4	●
VAPDMD0310	3.10	35.6	85.6	85	0.6	4	●
VAPDMD0315	3.15	35.7	85.7	85	0.7	4	●
VAPDMD0320	3.20	35.7	85.7	85	0.7	4	●
VAPDMD0325	3.25	35.7	85.7	85	0.7	4	●
VAPDMD0330	3.30	35.7	85.7	85	0.7	4	●
VAPDMD0335	3.35	35.7	85.7	85	0.7	4	●
VAPDMD0340	3.40	38.7	85.7	85	0.7	4	●
VAPDMD0345	3.45	38.7	85.7	85	0.7	4	●
VAPDMD0350	3.50	38.7	85.7	85	0.7	4	●
VAPDMD0355	3.55	38.7	85.7	85	0.7	4	●
VAPDMD0360	3.60	38.8	85.8	85	0.8	4	●
VAPDMD0365	3.65	38.8	85.8	85	0.8	4	●

● : Estoque mantido.

VAPDM

Média, alta precisão

HSS

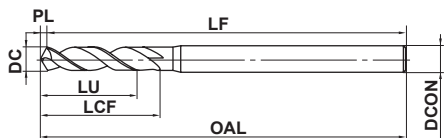
Referência para Pedido	Dimensões (mm)						Estoque
	DC	LCF	OAL	LF	PL	DON	
VAPDMD0370	3.70	38.8	85.8	85	0.8	4	●
VAPDMD0375	3.75	42.8	85.8	85	0.8	4	●
VAPDMD0380	3.80	42.8	85.8	85	0.8	4	●
VAPDMD0385	3.85	42.8	85.8	85	0.8	4	●
VAPDMD0390	3.90	42.8	85.8	85	0.8	4	●
VAPDMD0395	3.95	42.8	85.8	85	0.8	4	●
VAPDMD0400	4.00	42.8	85.8	85	0.8	4	●
VAPDMD0405	4.05	42.8	100.8	100	0.8	6	●
VAPDMD0410	4.10	42.9	100.9	100	0.9	6	●
VAPDMD0415	4.15	42.9	100.9	100	0.9	6	●
VAPDMD0420	4.20	42.9	100.9	100	0.9	6	●
VAPDMD0425	4.25	46.9	100.9	100	0.9	6	●
VAPDMD0430	4.30	46.9	100.9	100	0.9	6	●
VAPDMD0435	4.35	46.9	100.9	100	0.9	6	●
VAPDMD0440	4.40	46.9	100.9	100	0.9	6	●
VAPDMD0445	4.45	46.9	100.9	100	0.9	6	●
VAPDMD0450	4.50	46.9	100.9	100	0.9	6	●
VAPDMD0455	4.55	46.9	100.9	100	0.9	6	●
VAPDMD0460	4.60	47.0	101.0	100	1.0	6	●
VAPDMD0465	4.65	47.0	101.0	100	1.0	6	●
VAPDMD0470	4.70	47.0	101.0	100	1.0	6	●
VAPDMD0475	4.75	47.0	101.0	100	1.0	6	●
VAPDMD0480	4.80	52.0	101.0	100	1.0	6	●
VAPDMD0485	4.85	52.0	101.0	100	1.0	6	●
VAPDMD0490	4.90	52.0	101.0	100	1.0	6	●
VAPDMD0495	4.95	52.0	101.0	100	1.0	6	●
VAPDMD0500	5.00	52.0	101.0	100	1.0	6	●
VAPDMD0505	5.05	52.1	101.1	100	1.1	6	●
VAPDMD0510	5.10	52.1	101.1	100	1.1	6	●
VAPDMD0515	5.15	52.1	101.1	100	1.1	6	●
VAPDMD0520	5.20	52.1	101.1	100	1.1	6	●
VAPDMD0525	5.25	52.1	101.1	100	1.1	6	●
VAPDMD0530	5.30	52.1	101.1	100	1.1	6	●
VAPDMD0535	5.35	57.1	107.1	106	1.1	6	●
VAPDMD0540	5.40	57.1	107.1	106	1.1	6	●
VAPDMD0545	5.45	57.1	107.1	106	1.1	6	●
VAPDMD0550	5.50	57.1	107.1	106	1.1	6	●
VAPDMD0555	5.55	57.2	107.2	106	1.2	6	●
VAPDMD0560	5.60	57.2	107.2	106	1.2	6	●
VAPDMD0565	5.65	57.2	107.2	106	1.2	6	●
VAPDMD0570	5.70	57.2	107.2	106	1.2	6	●
VAPDMD0575	5.75	57.2	107.2	106	1.2	6	●
VAPDMD0580	5.80	57.2	107.2	106	1.2	6	●
VAPDMD0585	5.85	57.2	107.2	106	1.2	6	●
VAPDMD0590	5.90	57.2	107.2	106	1.2	6	●
VAPDMD0595	5.95	57.2	107.2	106	1.2	6	●
VAPDMD0600	6.00	57.2	107.2	106	1.2	6	●
VAPDMD0605	6.05	63.3	113.3	112	1.3	8	●

Referência para Pedido	Dimensões (mm)						Estoque
	DC	LCF	OAL	LF	PL	DON	
VAPDMD0610	6.10	63.3	113.3	112	1.3	8	●
VAPDMD0615	6.15	63.3	113.3	112	1.3	8	●
VAPDMD0620	6.20	63.3	113.3	112	1.3	8	●
VAPDMD0625	6.25	63.3	113.3	112	1.3	8	●
VAPDMD0630	6.30	63.3	113.3	112	1.3	8	●
VAPDMD0635	6.35	63.3	113.3	112	1.3	8	●
VAPDMD0640	6.40	63.3	113.3	112	1.3	8	●
VAPDMD0645	6.45	63.3	113.3	112	1.3	8	●
VAPDMD0650	6.50	63.4	113.4	112	1.4	8	●
VAPDMD0655	6.55	63.4	113.4	112	1.4	8	●
VAPDMD0660	6.60	63.4	113.4	112	1.4	8	●
VAPDMD0665	6.65	63.4	113.4	112	1.4	8	●
VAPDMD0670	6.70	63.4	113.4	112	1.4	8	●
VAPDMD0675	6.75	68.4	118.4	117	1.4	8	●
VAPDMD0680	6.80	68.4	118.4	117	1.4	8	●
VAPDMD0685	6.85	68.4	118.4	117	1.4	8	●
VAPDMD0690	6.90	68.4	118.4	117	1.4	8	●
VAPDMD0695	6.95	68.4	118.4	117	1.4	8	●
VAPDMD0700	7.00	68.5	118.5	117	1.5	8	●
VAPDMD0705	7.05	68.5	118.5	117	1.5	8	●
VAPDMD0710	7.10	68.5	118.5	117	1.5	8	●
VAPDMD0715	7.15	68.5	118.5	117	1.5	8	●
VAPDMD0720	7.20	68.5	118.5	117	1.5	8	●
VAPDMD0725	7.25	68.5	118.5	117	1.5	8	●
VAPDMD0730	7.30	68.5	118.5	117	1.5	8	●
VAPDMD0735	7.35	68.5	118.5	117	1.5	8	●
VAPDMD0740	7.40	68.5	118.5	117	1.5	8	●
VAPDMD0745	7.45	68.5	118.5	117	1.5	8	●
VAPDMD0750	7.50	68.6	118.6	117	1.6	8	●
VAPDMD0755	7.55	74.6	124.6	123	1.6	8	●
VAPDMD0760	7.60	74.6	124.6	123	1.6	8	●
VAPDMD0765	7.65	74.6	124.6	123	1.6	8	●
VAPDMD0770	7.70	74.6	124.6	123	1.6	8	●
VAPDMD0775	7.75	74.6	124.6	123	1.6	8	●
VAPDMD0780	7.80	74.6	124.6	123	1.6	8	●
VAPDMD0785	7.85	74.6	124.6	123	1.6	8	●
VAPDMD0790	7.90	74.6	124.6	123	1.6	8	●
VAPDMD0795	7.95	74.7	124.7	123	1.7	8	●
VAPDMD0800	8.00	74.7	124.7	123	1.7	8	●
VAPDMD0805	8.05	74.7	129.7	128	1.7	10	●
VAPDMD0810	8.10	74.7	129.7	128	1.7	10	●
VAPDMD0815	8.15	74.7	129.7	128	1.7	10	●
VAPDMD0820	8.20	74.7	129.7	128	1.7	10	●
VAPDMD0825	8.25	74.7	129.7	128	1.7	10	●
VAPDMD0830	8.30	74.7	129.7	128	1.7	10	●
VAPDMD0835	8.35	74.7	129.7	128	1.7	10	●
VAPDMD0840	8.40	74.7	129.7	128	1.7	10	●
VAPDMD0845	8.45	74.8	129.8	128	1.8	10	●

FURAÇÃO

N

● : Estoque mantido.



Referência para Pedido	Dimensões (mm)						Estoque
	DC	LCF	OAL	LF	PL	DCON	
VAPDMD0850	8.50	74.8	129.8	128	1.8	10	●
VAPDMD0855	8.55	80.8	135.8	134	1.8	10	●
VAPDMD0860	8.60	80.8	135.8	134	1.8	10	●
VAPDMD0865	8.65	80.8	135.8	134	1.8	10	●
VAPDMD0870	8.70	80.8	135.8	134	1.8	10	●
VAPDMD0875	8.75	80.8	135.8	134	1.8	10	●
VAPDMD0880	8.80	80.8	135.8	134	1.8	10	●
VAPDMD0885	8.85	80.8	135.8	134	1.8	10	●
VAPDMD0890	8.90	80.8	135.8	134	1.8	10	●
VAPDMD0895	8.95	80.9	135.9	134	1.9	10	●
VAPDMD0900	9.00	80.9	135.9	134	1.9	10	●
VAPDMD0910	9.10	80.9	135.9	134	1.9	10	●
VAPDMD0920	9.20	80.9	135.9	134	1.9	10	●
VAPDMD0930	9.30	80.9	135.9	134	1.9	10	●
VAPDMD0940	9.40	81.0	136.0	134	2.0	10	●
VAPDMD0950	9.50	81.0	136.0	134	2.0	10	●
VAPDMD0960	9.60	87.0	142.0	140	2.0	10	●
VAPDMD0970	9.70	87.0	142.0	140	2.0	10	●
VAPDMD0980	9.80	87.0	142.0	140	2.0	10	●
VAPDMD0990	9.90	87.1	142.1	140	2.1	10	●
VAPDMD1000	10.0	87.1	142.1	140	2.1	10	●
VAPDMD1010	10.1	87.1	147.1	145	2.1	12	●
VAPDMD1020	10.2	87.1	147.1	145	2.1	12	●
VAPDMD1030	10.3	87.1	147.1	145	2.1	12	●
VAPDMD1040	10.4	87.2	147.2	145	2.2	12	●
VAPDMD1050	10.5	87.2	147.2	145	2.2	12	●
VAPDMD1060	10.6	87.2	147.2	145	2.2	12	●
VAPDMD1070	10.7	94.2	154.2	152	2.2	12	●
VAPDMD1080	10.8	94.2	154.2	152	2.2	12	●
VAPDMD1090	10.9	94.3	154.3	152	2.3	12	●
VAPDMD1100	11.0	94.3	154.3	152	2.3	12	●
VAPDMD1110	11.1	94.3	154.3	152	2.3	12	●
VAPDMD1120	11.2	94.3	154.3	152	2.3	12	●
VAPDMD1130	11.3	94.3	154.3	152	2.3	12	●
VAPDMD1140	11.4	94.4	154.4	152	2.4	12	●
VAPDMD1150	11.5	94.4	154.4	152	2.4	12	●
VAPDMD1160	11.6	94.4	154.4	152	2.4	12	●
VAPDMD1170	11.7	94.4	154.4	152	2.4	12	●
VAPDMD1180	11.8	94.4	154.4	152	2.4	12	●
VAPDMD1190	11.9	101.5	161.5	159	2.5	12	●
VAPDMD1200	12.0	101.5	161.5	159	2.5	12	●
VAPDMD1210	12.1	101.5	161.5	159	2.5	12	●
VAPDMD1220	12.2	101.5	161.5	159	2.5	12	●
VAPDMD1230	12.3	101.6	161.6	159	2.6	12	●
VAPDMD1240	12.4	101.6	161.6	159	2.6	12	●
VAPDMD1250	12.5	101.6	161.6	159	2.6	12	●
VAPDMD1260	12.6	101.6	161.6	159	2.6	12	●
VAPDMD1270	12.7	101.6	161.6	159	2.6	12	●

Referência para Pedido	Dimensões (mm)						Estoque
	DC	LCF	OAL	LF	PL	DCON	
VAPDMD1280	12.8	101.7	161.7	159	2.7	12	●
VAPDMD1290	12.9	101.7	161.7	159	2.7	12	●
VAPDMD1300	13.0	101.7	161.7	159	2.7	12	●
VAPDMD1350	13.5	102.8	162.8	160	2.8	16	●
VAPDMD1400	14.0	102.9	162.9	160	2.9	16	●
VAPDMD1410	14.1	107.9	167.9	165	2.9	16	●
VAPDMD1420	14.2	107.9	167.9	165	2.9	16	●
VAPDMD1450	14.5	108.0	168.0	165	3.0	16	●
VAPDMD1500	15.0	108.1	168.1	165	3.1	16	●
VAPDMD1550	15.5	113.2	173.2	170	3.2	16	●
VAPDMD1560	15.6	113.2	173.2	170	3.2	16	●
VAPDMD1570	15.7	113.3	173.3	170	3.3	16	●
VAPDMD1600	16.0	113.3	173.3	170	3.3	16	●
VAPDMD1650	16.5	113.4	178.4	175	3.4	20	●
VAPDMD1700	17.0	113.5	178.5	175	3.5	20	●
VAPDMD1750	17.5	118.6	183.6	180	3.6	20	●
VAPDMD1760	17.6	118.7	183.7	180	3.7	20	●
VAPDMD1770	17.7	118.7	183.7	180	3.7	20	●
VAPDMD1800	18.0	118.7	183.7	180	3.7	20	●
VAPDMD1850	18.5	123.8	188.8	185	3.8	20	●
VAPDMD1900	19.0	123.9	188.9	185	3.9	20	●
VAPDMD1950	19.5	124.0	189.0	185	4.0	20	●
VAPDMD1960	19.6	124.1	189.1	185	4.1	20	●
VAPDMD1970	19.7	124.1	189.1	185	4.1	20	●
VAPDMD2000	20.0	124.1	189.1	185	4.1	20	●
VAPDMD2050	20.5	129.3	204.3	200	4.3	25	●
VAPDMD2100	21.0	129.4	204.4	200	4.4	25	●
VAPDMD2110	21.1	129.4	204.4	200	4.4	25	●
VAPDMD2120	21.2	129.4	204.4	200	4.4	25	●
VAPDMD2150	21.5	129.5	204.5	200	4.5	25	●
VAPDMD2200	22.0	129.6	204.6	200	4.6	25	●
VAPDMD2250	22.5	134.7	209.7	205	4.7	25	●
VAPDMD2300	23.0	134.8	209.8	205	4.8	25	●
VAPDMD2350	23.5	134.9	209.9	205	4.9	25	●
VAPDMD2400	24.0	140.0	215.0	210	5.0	25	●
VAPDMD2450	24.5	140.1	215.1	210	5.1	25	●
VAPDMD2500	25.0	140.2	215.2	210	5.2	25	●
VAPDMD2550	25.5	145.3	225.3	220	5.3	32	●
VAPDMD2600	26.0	145.4	225.4	220	5.4	32	●
VAPDMD2650	26.5	145.5	225.5	220	5.5	32	●
VAPDMD2700	27.0	145.6	225.6	220	5.6	32	●
VAPDMD2800	28.0	145.8	225.8	220	5.8	32	●
VAPDMD2900	29.0	151.0	231.0	225	6.0	32	●
VAPDMD3000	30.0	151.2	231.2	225	6.2	32	●
VAPDMD3100	31.0	156.4	236.4	230	6.4	32	●
VAPDMD3200	32.0	161.6	241.6	235	6.6	32	●

CONDIÇÕES DE CORTE RECOMENDADAS

Material	Aço estrutural		Aço carbono, Aço liga, Ferro fundido		Aço ferramenta liga (Materiais de baixa dureza) Aço inoxidável ferrítico Aço inoxidável martensítico AISI D2, AISI 430, AISI 405, AISI 420, AISI 440		Aço ferramenta liga (-40HRC) Aço inoxidável endurecido por precipitação AISI H13, ASTM 630, ASTM 631		
	Diâm. DC (mm)	Rotação (min ⁻¹)	Taxa de Avanço (mm/rot)	Rotação (min ⁻¹)	Taxa de Avanço (mm/rot)	Rotação (min ⁻¹)	Taxa de Avanço (mm/rot)	Rotação (min ⁻¹)	Taxa de Avanço (mm/rot)
	0.5	17000	0.01	12800	0.01	8000	0.01	6600	0.01
	1.0	11000	0.05	8300	0.05	5000	0.05	4100	0.04
	2.0	6400	0.09	4800	0.09	2900	0.06	2400	0.05
	3.0	4300	0.13	3200	0.13	1900	0.10	1600	0.06
	4.0	3200	0.15	2400	0.15	1400	0.10	1200	0.08
	5.0	2600	0.18	1900	0.18	1100	0.13	950	0.10
	6.0	2100	0.19	1600	0.20	950	0.15	800	0.11
	8.0	1600	0.24	1200	0.22	720	0.18	600	0.13
	10.0	1300	0.28	950	0.25	570	0.21	480	0.15
	12.0	1100	0.34	800	0.30	480	0.25	400	0.17
	14.0	910	0.39	680	0.35	410	0.30	340	0.21
	15.0	850	0.40	640	0.36	380	0.31	320	0.22
	16.0	800	0.42	600	0.38	360	0.32	300	0.23
	18.0	710	0.44	530	0.40	320	0.34	270	0.24
	20.0	570	0.44	450	0.40	250	0.34	220	0.24
	22.0	520	0.46	410	0.42	230	0.36	200	0.25
	24.0	480	0.48	370	0.44	210	0.37	190	0.26
	26.0	440	0.51	340	0.46	200	0.39	170	0.28
	28.0	410	0.53	320	0.48	180	0.41	160	0.29
	30.0	380	0.55	300	0.50	170	0.43	150	0.30
	32.0	360	0.55	280	0.50	160	0.43	140	0.30

Nota 1) Reduza a rotação e a taxa de avanço conforme a condição de furação quando a fixação do material ou da máquina tiverem baixa rigidez.

Nota 2) Utilize um mandril porta-piça ou um mandril hidráulico.

Nota 3) Utilize fluido refrigerante suficiente.

Nota 4) VAPDMSUS são recomendadas para aço inoxidável austenítico (AISI 304).

Nota 5) Ao usinar furos com profundidades maiores que 4 x o diâmetro da broca, favor utilizar "pica-pau".

Nota 6) As condições de corte recomendadas são standard na usinagem com óleo solúvel.

Reduza a rotação ao utilizar fluido não solúvel em água.

FURAÇÃO (BROCAS HSS COM HASTE PADRÃO FRESAMENTO)

VAPDJ

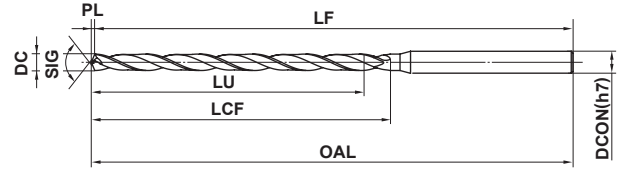
Semilonga, alta precisão



HSS

P
M
K
N
S
H

Aço Aço Inoxidável Ferro Fundido



*LU = LCF - 2DC (Máx 10×DC)

	0.5 ≤ DC ≤ 3	3 < DC ≤ 6	6 < DC ≤ 10
	$\begin{matrix} 0 \\ -0.014 \end{matrix}$	$\begin{matrix} 0 \\ -0.018 \end{matrix}$	$\begin{matrix} 0 \\ -0.022 \end{matrix}$

- Alta resistência e expulsão eficiente de cavacos para usinagem contínua de furos profundos até 10xD.

Referência para Pedido	Dimensões (mm)						Estoque
	DC	LCF	OAL	LF	PL	DCON	
VAPDJD0100	1.0	18.3	66.3	66	0.3	3	●
VAPDJD0110	1.1	22.3	66.3	66	0.3	3	●
VAPDJD0120	1.2	22.4	66.4	66	0.4	3	●
VAPDJD0130	1.3	22.4	66.4	66	0.4	3	●
VAPDJD0140	1.4	24.4	66.4	66	0.4	3	●
VAPDJD0150	1.5	24.5	66.5	66	0.5	3	●
VAPDJD0160	1.6	30.5	71.5	71	0.5	3	●
VAPDJD0170	1.7	30.5	71.5	71	0.5	3	●
VAPDJD0180	1.8	33.5	71.5	71	0.5	3	●
VAPDJD0190	1.9	33.6	71.6	71	0.6	3	●
VAPDJD0200	2.0	36.4	81.4	81	0.4	3	●
VAPDJD0210	2.1	36.4	81.4	81	0.4	3	●
VAPDJD0220	2.2	36.5	81.5	81	0.5	3	●
VAPDJD0230	2.3	36.5	81.5	81	0.5	3	●
VAPDJD0240	2.4	39.5	81.5	81	0.5	3	●
VAPDJD0250	2.5	39.5	81.5	81	0.5	3	●
VAPDJD0260	2.6	39.5	81.5	81	0.5	3	●
VAPDJD0270	2.7	45.6	81.6	81	0.6	3	●
VAPDJD0280	2.8	45.6	81.6	81	0.6	3	●
VAPDJD0290	2.9	45.6	81.6	81	0.6	3	●
VAPDJD0300	3.0	45.6	81.6	81	0.6	3	●
VAPDJD0310	3.1	51.6	102.6	102	0.6	4	●
VAPDJD0320	3.2	51.7	102.7	102	0.7	4	●
VAPDJD0330	3.3	51.7	102.7	102	0.7	4	●
VAPDJD0340	3.4	54.7	102.7	102	0.7	4	●
VAPDJD0350	3.5	54.7	102.7	102	0.7	4	●
VAPDJD0360	3.6	57.8	102.8	102	0.8	4	●
VAPDJD0370	3.7	57.8	102.8	102	0.8	4	●
VAPDJD0380	3.8	60.8	102.8	102	0.8	4	●
VAPDJD0390	3.9	60.8	102.8	102	0.8	4	●
VAPDJD0400	4.0	60.8	102.8	102	0.8	4	●
VAPDJD0410	4.1	60.9	118.9	118	0.9	6	●
VAPDJD0420	4.2	60.9	118.9	118	0.9	6	●

Referência para Pedido	Dimensões (mm)						Estoque
	DC	LCF	OAL	LF	PL	DCON	
VAPDJD0430	4.3	66.9	118.9	118	0.9	6	●
VAPDJD0440	4.4	66.9	118.9	118	0.9	6	●
VAPDJD0450	4.5	66.9	118.9	118	0.9	6	●
VAPDJD0460	4.6	67.0	122.0	121	1.0	6	●
VAPDJD0470	4.7	67.0	122.0	121	1.0	6	●
VAPDJD0480	4.8	73.0	122.0	121	1.0	6	●
VAPDJD0490	4.9	73.0	122.0	121	1.0	6	●
VAPDJD0500	5.0	73.0	122.0	121	1.0	6	●
VAPDJD0510	5.1	73.1	122.1	121	1.1	6	●
VAPDJD0520	5.2	73.1	122.1	121	1.1	6	●
VAPDJD0530	5.3	73.1	122.1	121	1.1	6	●
VAPDJD0540	5.4	79.1	129.1	128	1.1	6	●
VAPDJD0550	5.5	79.1	129.1	128	1.1	6	●
VAPDJD0560	5.6	79.2	129.2	128	1.2	6	●
VAPDJD0570	5.7	79.2	129.2	128	1.2	6	●
VAPDJD0580	5.8	79.2	129.2	128	1.2	6	●
VAPDJD0590	5.9	79.2	129.2	128	1.2	6	●
VAPDJD0600	6.0	79.2	129.2	128	1.2	6	●
VAPDJD0650	6.5	85.4	135.4	134	1.4	8	●
VAPDJD0680	6.8	91.4	141.4	140	1.4	8	●
VAPDJD0690	6.9	91.4	141.4	140	1.4	8	●
VAPDJD0700	7.0	91.5	141.5	140	1.5	8	●
VAPDJD0710	7.1	91.5	141.5	140	1.5	8	●
VAPDJD0750	7.5	91.6	141.6	140	1.6	8	●
VAPDJD0780	7.8	97.6	147.6	146	1.6	8	●
VAPDJD0790	7.9	97.6	147.6	146	1.6	8	●
VAPDJD0800	8.0	97.7	147.7	146	1.7	8	●
VAPDJD0850	8.5	103.8	158.8	157	1.8	10	●
VAPDJD0860	8.6	115.8	170.8	169	1.8	10	●
VAPDJD0900	9.0	115.9	170.9	169	1.9	10	●
VAPDJD0950	9.5	116.0	171.0	169	2.0	10	●
VAPDJD0960	9.6	122.0	177.0	175	2.0	10	●
VAPDJD1000	10.0	122.1	177.1	175	2.1	10	●

● : Estoque mantido.

N

FURAÇÃO

VAPDJ

Semilonga, alta precisão

CONDIÇÕES DE CORTE RECOMENDADAS

Material	Aço Baixo Carbono		Aço Carbono, Aço Liga Ferro Fundido Cinzento		Aço ferramenta liga (Materiais de baixa dureza) Aço inoxidável ferrítico Aço inoxidável martensítico		Aço ferramenta liga (-40HRC)	
	AISI 1010 etc.		AISI 1045, AISI 4140, AISI No 45 B etc.		AISI D2, AISI 430, AISI 420, AISI 440 etc.		AISI H13 etc.	
Diâm. DC (mm)	Rotação (min ⁻¹)	Taxa de Avanço (mm/rot)	Rotação (min ⁻¹)	Taxa de Avanço (mm/rot)	Rotação (min ⁻¹)	Taxa de Avanço (mm/rot)	Rotação (min ⁻¹)	Taxa de Avanço (mm/rot)
1.0	7800	0.030	6000	0.030	3600	0.026	2400	0.018
1.2	6500	0.036	5000	0.036	3200	0.030	2000	0.022
1.6	5700	0.045	4400	0.045	2800	0.034	1760	0.024
2.0	5200	0.060	4000	0.060	2400	0.040	1600	0.030
2.5	4200	0.075	3200	0.075	1900	0.050	1280	0.037
3.2	3200	0.100	2500	0.100	1500	0.070	1000	0.050
4.0	2600	0.120	2000	0.120	1200	0.084	800	0.060
5.0	2100	0.150	1600	0.150	960	0.110	640	0.075
6.5	1600	0.180	1200	0.160	720	0.130	480	0.080
8.0	1300	0.200	1000	0.180	600	0.150	400	0.090
10.0	1000	0.240	800	0.220	480	0.180	320	0.110

Nota 1) Reduza a rotação e a taxa de avanço conforme a condição de furação quando a fixação do material ou da máquina tiverem baixa rigidez.

Nota 2) Utilize um mandril porta-broca com pinça ou um porta-fresa.

Nota 3) Utilize fluido refrigerante suficiente.

Nota 4) Dependendo das condições de usinagem, a furação contínua pode dificultar a expulsão de cavacos ou gerar cavacos longos. Nestes casos, aplique o avanço "pica-pau" de aproximadamente DCx1 - DCx3.

Nota 5) As condições de corte recomendadas são standard na usinagem com óleo solúvel.

Reduza a rotação ao utilizar fluido não solúvel em água.

Nota 6) Para diâmetros intermediários que não estão listados na tabela, considere a rotação do diâmetro maior e mais próximo como referência. Já a taxa de avanço deve ser ajustada com base no diâmetro mais próximo.

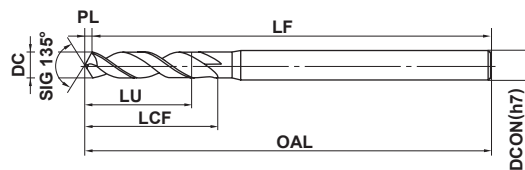
FURAÇÃO(HSS)

VAPDSSUS

Curta, alta precisão, para aço inoxidável



HSS



*LU = LCF-2DC (Máx 3×DC)



0.5 ≤ DC ≤ 3	3 < DC ≤ 6	6 < DC ≤ 10	10 < DC ≤ 18	18 < DC ≤ 20
⁰ / _{-0.014}	⁰ / _{-0.018}	⁰ / _{-0.022}	⁰ / _{-0.027}	⁰ / _{-0.033}

*Brocas acima de 4.0 mm possuem tolerância no diâmetro do Canal de 0 - -0.009.

- A cobertura VIOLET permite furação de alta eficiência e longa vida útil da ferramenta para aço inoxidável.

Referência para Pedido	Dimensões (mm)						Estoque
	DC	LCF	OAL	LF	PL	DCON	
VAPDSSUSD0050	0.50	3.1	50.1	50	0.10	3	●
VAPDSSUSD0053	0.53	3.1	50.1	50	0.11	3	●
VAPDSSUSD0055	0.55	3.1	50.1	50	0.11	3	●
VAPDSSUSD0056	0.56	4.1	50.1	50	0.12	3	●
VAPDSSUSD0060	0.60	5.1	50.1	50	0.12	3	●
VAPDSSUSD0065	0.65	5.1	50.1	50	0.13	3	●
VAPDSSUSD0070	0.70	5.1	50.1	50	0.14	3	●
VAPDSSUSD0075	0.75	5.2	50.2	50	0.16	3	●
VAPDSSUSD0080	0.80	5.2	50.2	50	0.17	3	●
VAPDSSUSD0085	0.85	5.2	50.2	50	0.18	3	●
VAPDSSUSD0090	0.90	6.2	50.2	50	0.19	3	●
VAPDSSUSD0092	0.92	6.2	50.2	50	0.19	3	●
VAPDSSUSD0095	0.95	6.2	50.2	50	0.20	3	●
VAPDSSUSD0100	1.00	6.2	50.2	50	0.2	3	●
VAPDSSUSD0101	1.01	6.2	50.2	50	0.2	3	●
VAPDSSUSD0102	1.02	6.2	50.2	50	0.2	3	●
VAPDSSUSD0105	1.05	6.2	50.2	50	0.2	3	●
VAPDSSUSD0107	1.07	8.2	55.2	55	0.2	3	●
VAPDSSUSD0109	1.09	8.2	55.2	55	0.2	3	●
VAPDSSUSD0110	1.10	8.2	55.2	55	0.2	3	●
VAPDSSUSD0112	1.12	8.2	55.2	55	0.2	3	●
VAPDSSUSD0115	1.15	8.2	55.2	55	0.2	3	●
VAPDSSUSD0117	1.17	8.2	55.2	55	0.2	3	●
VAPDSSUSD0120	1.20	8.3	55.3	55	0.3	3	●
VAPDSSUSD0122	1.22	8.3	55.3	55	0.3	3	●
VAPDSSUSD0123	1.23	8.3	55.3	55	0.3	3	●
VAPDSSUSD0124	1.24	8.3	55.3	55	0.3	3	●
VAPDSSUSD0125	1.25	8.3	55.3	55	0.3	3	●
VAPDSSUSD0126	1.26	8.3	55.3	55	0.3	3	●
VAPDSSUSD0127	1.27	8.3	55.3	55	0.3	3	●
VAPDSSUSD0128	1.28	8.3	55.3	55	0.3	3	●
VAPDSSUSD0130	1.30	9.3	55.3	55	0.3	3	●

Referência para Pedido	Dimensões (mm)						Estoque
	DC	LCF	OAL	LF	PL	DCON	
VAPDSSUSD0135	1.35	9.3	55.3	55	0.3	3	●
VAPDSSUSD0140	1.40	9.3	55.3	55	0.3	3	●
VAPDSSUSD0143	1.43	9.3	55.3	55	0.3	3	●
VAPDSSUSD0145	1.45	9.3	55.3	55	0.3	3	●
VAPDSSUSD0150	1.50	9.3	55.3	55	0.3	3	●
VAPDSSUSD0151	1.51	11.3	55.3	55	0.3	3	●
VAPDSSUSD0152	1.52	11.3	55.3	55	0.3	3	●
VAPDSSUSD0153	1.53	11.3	55.3	55	0.3	3	●
VAPDSSUSD0155	1.55	11.3	55.3	55	0.3	3	●
VAPDSSUSD0156	1.56	11.3	55.3	55	0.3	3	●
VAPDSSUSD0157	1.57	11.3	55.3	55	0.3	3	●
VAPDSSUSD0160	1.60	11.3	55.3	55	0.3	3	●
VAPDSSUSD0162	1.62	11.3	55.3	55	0.3	3	●
VAPDSSUSD0163	1.63	11.3	55.3	55	0.3	3	●
VAPDSSUSD0165	1.65	11.3	55.3	55	0.3	3	●
VAPDSSUSD0170	1.70	11.4	55.4	55	0.4	3	●
VAPDSSUSD0175	1.75	11.4	55.4	55	0.4	3	●
VAPDSSUSD0178	1.78	11.4	55.4	55	0.4	3	●
VAPDSSUSD0180	1.80	11.4	55.4	55	0.4	3	●
VAPDSSUSD0181	1.81	11.4	55.4	55	0.4	3	●
VAPDSSUSD0182	1.82	11.4	55.4	55	0.4	3	●
VAPDSSUSD0183	1.83	11.4	55.4	55	0.4	3	●
VAPDSSUSD0185	1.85	11.4	55.4	55	0.4	3	●
VAPDSSUSD0190	1.90	12.4	55.4	55	0.4	3	●
VAPDSSUSD0192	1.92	12.4	60.4	60	0.4	3	●
VAPDSSUSD0193	1.93	12.4	60.4	60	0.4	3	●
VAPDSSUSD0195	1.95	12.4	60.4	60	0.4	3	●
VAPDSSUSD0198	1.98	12.4	60.4	60	0.4	3	●
VAPDSSUSD0200	2.00	12.4	60.4	60	0.4	3	●
VAPDSSUSD0202	2.02	12.4	60.4	60	0.4	3	●
VAPDSSUSD0203	2.03	12.4	60.4	60	0.4	3	●
VAPDSSUSD0205	2.05	12.4	60.4	60	0.4	3	●

N

FURAÇÃO

● : Estoque mantido.

ISO13399 > N002
CONDIÇÕES DE CORTE > N205

N199

VAPDSSUS

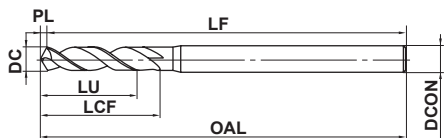
Curta, alta precisão, para aço inoxidável

HSS

Referência para Pedido	Dimensões (mm)						Estoque
	DC	LCF	OAL	LF	PL	DON	
VAPDSSUSD0207	2.07	12.4	60.4	60	0.4	3	●
VAPDSSUSD0210	2.10	12.4	60.4	60	0.4	3	●
VAPDSSUSD0211	2.11	12.4	60.4	60	0.4	3	●
VAPDSSUSD0212	2.12	12.4	60.4	60	0.4	3	●
VAPDSSUSD0215	2.15	12.5	60.5	60	0.5	3	●
VAPDSSUSD0220	2.20	12.5	60.5	60	0.5	3	●
VAPDSSUSD0221	2.21	12.5	60.5	60	0.5	3	●
VAPDSSUSD0223	2.23	12.5	60.5	60	0.5	3	●
VAPDSSUSD0225	2.25	12.5	60.5	60	0.5	3	●
VAPDSSUSD0227	2.27	12.5	60.5	60	0.5	3	●
VAPDSSUSD0228	2.28	12.5	60.5	60	0.5	3	●
VAPDSSUSD0230	2.30	13.5	60.5	60	0.5	3	●
VAPDSSUSD0232	2.32	13.5	60.5	60	0.5	3	●
VAPDSSUSD0235	2.35	13.5	60.5	60	0.5	3	●
VAPDSSUSD0238	2.38	13.5	60.5	60	0.5	3	●
VAPDSSUSD0240	2.40	13.5	60.5	60	0.5	3	●
VAPDSSUSD0243	2.43	13.5	60.5	60	0.5	3	●
VAPDSSUSD0244	2.44	13.5	60.5	60	0.5	3	●
VAPDSSUSD0245	2.45	13.5	60.5	60	0.5	3	●
VAPDSSUSD0250	2.50	13.5	60.5	60	0.5	3	●
VAPDSSUSD0252	2.52	13.5	60.5	60	0.5	3	●
VAPDSSUSD0253	2.53	13.5	60.5	60	0.5	3	●
VAPDSSUSD0255	2.55	13.5	60.5	60	0.5	3	●
VAPDSSUSD0257	2.57	13.5	60.5	60	0.5	3	●
VAPDSSUSD0258	2.58	13.5	60.5	60	0.5	3	●
VAPDSSUSD0260	2.60	15.5	60.5	60	0.5	3	●
VAPDSSUSD0262	2.62	15.5	60.5	60	0.5	3	●
VAPDSSUSD0265	2.65	15.6	60.6	60	0.6	3	●
VAPDSSUSD0270	2.70	15.6	60.6	60	0.6	3	●
VAPDSSUSD0275	2.75	15.6	60.6	60	0.6	3	●
VAPDSSUSD0276	2.76	15.6	60.6	60	0.6	3	●
VAPDSSUSD0277	2.77	15.6	60.6	60	0.6	3	●
VAPDSSUSD0278	2.78	15.6	60.6	60	0.6	3	●
VAPDSSUSD0280	2.80	15.6	60.6	60	0.6	3	●
VAPDSSUSD0285	2.85	15.6	60.6	60	0.6	3	●
VAPDSSUSD0290	2.90	15.6	60.6	60	0.6	3	●
VAPDSSUSD0295	2.95	15.6	60.6	60	0.6	3	●
VAPDSSUSD0297	2.97	15.6	60.6	60	0.6	3	●
VAPDSSUSD0298	2.98	15.6	60.6	60	0.6	3	●
VAPDSSUSD0299	2.99	15.6	60.6	60	0.6	3	●
VAPDSSUSD0300	3.00	15.6	60.6	60	0.6	3	●
VAPDSSUSD0301	3.01	17.6	70.6	70	0.6	4	●
VAPDSSUSD0302	3.02	17.6	70.6	70	0.6	4	●
VAPDSSUSD0303	3.03	17.6	70.6	70	0.6	4	●
VAPDSSUSD0304	3.04	17.6	70.6	70	0.6	4	●
VAPDSSUSD0305	3.05	17.6	70.6	70	0.6	4	●
VAPDSSUSD0310	3.10	17.6	70.6	70	0.6	4	●
VAPDSSUSD0315	3.15	17.7	70.7	70	0.7	4	●

Referência para Pedido	Dimensões (mm)						Estoque
	DC	LCF	OAL	LF	PL	DON	
VAPDSSUSD0320	3.20	17.7	70.7	70	0.7	4	●
VAPDSSUSD0325	3.25	17.7	70.7	70	0.7	4	●
VAPDSSUSD0330	3.30	19.7	70.7	70	0.7	4	●
VAPDSSUSD0335	3.35	19.7	70.7	70	0.7	4	●
VAPDSSUSD0340	3.40	19.7	70.7	70	0.7	4	●
VAPDSSUSD0345	3.45	19.7	70.7	70	0.7	4	●
VAPDSSUSD0350	3.50	19.7	70.7	70	0.7	4	●
VAPDSSUSD0355	3.55	19.7	70.7	70	0.7	4	●
VAPDSSUSD0356	3.56	19.7	70.7	70	0.7	4	●
VAPDSSUSD0360	3.60	21.8	70.8	70	0.8	4	●
VAPDSSUSD0365	3.65	21.8	70.8	70	0.8	4	●
VAPDSSUSD0366	3.66	21.8	70.8	70	0.8	4	●
VAPDSSUSD0367	3.67	21.8	70.8	70	0.8	4	●
VAPDSSUSD0368	3.68	21.8	70.8	70	0.8	4	●
VAPDSSUSD0369	3.69	21.8	70.8	70	0.8	4	●
VAPDSSUSD0370	3.70	21.8	70.8	70	0.8	4	●
VAPDSSUSD0371	3.71	21.8	70.8	70	0.8	4	●
VAPDSSUSD0375	3.75	21.8	70.8	70	0.8	4	●
VAPDSSUSD0380	3.80	21.8	70.8	70	0.8	4	●
VAPDSSUSD0385	3.85	21.8	70.8	70	0.8	4	●
VAPDSSUSD0390	3.90	21.8	70.8	70	0.8	4	●
VAPDSSUSD0400	4.00	21.8	70.8	70	0.8	4	●
VAPDSSUSD0405	4.05	21.8	80.8	80	0.8	6	●
VAPDSSUSD0410	4.10	21.9	80.9	80	0.9	6	●
VAPDSSUSD0415	4.15	21.9	80.9	80	0.9	6	●
VAPDSSUSD0420	4.20	21.9	80.9	80	0.9	6	●
VAPDSSUSD0425	4.25	21.9	80.9	80	0.9	6	●
VAPDSSUSD0430	4.30	23.9	80.9	80	0.9	6	●
VAPDSSUSD0440	4.40	23.9	80.9	80	0.9	6	●
VAPDSSUSD0450	4.50	23.9	80.9	80	0.9	6	●
VAPDSSUSD0455	4.55	23.9	80.9	80	0.9	6	●
VAPDSSUSD0460	4.60	26.0	81.0	80	1.0	6	●
VAPDSSUSD0465	4.65	26.0	81.0	80	1.0	6	●
VAPDSSUSD0470	4.70	26.0	81.0	80	1.0	6	●
VAPDSSUSD0480	4.80	26.0	81.0	80	1.0	6	●
VAPDSSUSD0490	4.90	26.0	81.0	80	1.0	6	●
VAPDSSUSD0500	5.00	26.0	81.0	80	1.0	6	●
VAPDSSUSD0505	5.05	26.1	81.1	80	1.1	6	●
VAPDSSUSD0510	5.10	26.1	81.1	80	1.1	6	●
VAPDSSUSD0515	5.15	26.1	81.1	80	1.1	6	●
VAPDSSUSD0520	5.20	26.1	81.1	80	1.1	6	●
VAPDSSUSD0530	5.30	26.1	81.1	80	1.1	6	●
VAPDSSUSD0540	5.40	28.1	81.1	80	1.1	6	●
VAPDSSUSD0550	5.50	28.1	81.1	80	1.1	6	●
VAPDSSUSD0555	5.55	28.2	81.2	80	1.2	6	●
VAPDSSUSD0560	5.60	28.2	81.2	80	1.2	6	●
VAPDSSUSD0565	5.65	28.2	81.2	80	1.2	6	●
VAPDSSUSD0570	5.70	28.2	81.2	80	1.2	6	●

● : Estoque mantido.



Referência para Pedido	Dimensões (mm)						Estoque
	DC	LCF	OAL	LF	PL	DCON	
VAPDSSUSD0580	5.80	28.2	81.2	80	1.2	6	●
VAPDSSUSD0590	5.90	28.2	81.2	80	1.2	6	●
VAPDSSUSD0600	6.00	28.2	81.2	80	1.2	6	●
VAPDSSUSD0605	6.05	31.3	81.3	80	1.3	8	●
VAPDSSUSD0610	6.10	31.3	81.3	80	1.3	8	●
VAPDSSUSD0615	6.15	31.3	81.3	80	1.3	8	●
VAPDSSUSD0620	6.20	31.3	81.3	80	1.3	8	●
VAPDSSUSD0625	6.25	31.3	81.3	80	1.3	8	●
VAPDSSUSD0630	6.30	31.3	81.3	80	1.3	8	●
VAPDSSUSD0640	6.40	31.3	81.3	80	1.3	8	●
VAPDSSUSD0645	6.45	31.3	81.3	80	1.3	8	●
VAPDSSUSD0650	6.50	31.4	81.4	80	1.4	8	●
VAPDSSUSD0660	6.60	31.4	81.4	80	1.4	8	●
VAPDSSUSD0670	6.70	31.4	81.4	80	1.4	8	●
VAPDSSUSD0680	6.80	33.4	81.4	80	1.4	8	●
VAPDSSUSD0685	6.85	33.4	81.4	80	1.4	8	●
VAPDSSUSD0690	6.90	33.4	81.4	80	1.4	8	●
VAPDSSUSD0700	7.00	33.5	81.5	80	1.5	8	●
VAPDSSUSD0705	7.05	33.5	81.5	80	1.5	8	●
VAPDSSUSD0710	7.10	33.5	81.5	80	1.5	8	●
VAPDSSUSD0720	7.20	33.5	81.5	80	1.5	8	●
VAPDSSUSD0730	7.30	33.5	81.5	80	1.5	8	●
VAPDSSUSD0735	7.35	33.5	81.5	80	1.5	8	●
VAPDSSUSD0740	7.40	33.5	81.5	80	1.5	8	●
VAPDSSUSD0750	7.50	33.6	81.6	80	1.6	8	●
VAPDSSUSD0760	7.60	36.6	86.6	85	1.6	8	●
VAPDSSUSD0770	7.70	36.6	86.6	85	1.6	8	●
VAPDSSUSD0780	7.80	36.6	86.6	85	1.6	8	●
VAPDSSUSD0790	7.90	36.6	86.6	85	1.6	8	●
VAPDSSUSD0800	8.00	36.7	86.7	85	1.7	8	●
VAPDSSUSD0805	8.05	36.7	91.7	90	1.7	10	●
VAPDSSUSD0810	8.10	36.7	91.7	90	1.7	10	●
VAPDSSUSD0815	8.15	36.7	91.7	90	1.7	10	●
VAPDSSUSD0820	8.20	36.7	91.7	90	1.7	10	●
VAPDSSUSD0830	8.30	36.7	91.7	90	1.7	10	●
VAPDSSUSD0840	8.40	36.7	91.7	90	1.7	10	●
VAPDSSUSD0850	8.50	36.8	91.8	90	1.8	10	●
VAPDSSUSD0855	8.55	39.8	94.8	93	1.8	10	●
VAPDSSUSD0860	8.60	39.8	94.8	93	1.8	10	●
VAPDSSUSD0870	8.70	39.8	94.8	93	1.8	10	●
VAPDSSUSD0880	8.80	39.8	94.8	93	1.8	10	●
VAPDSSUSD0890	8.90	39.8	94.8	93	1.8	10	●
VAPDSSUSD0900	9.00	39.9	94.9	93	1.9	10	●
VAPDSSUSD0920	9.20	39.9	94.9	93	1.9	10	●
VAPDSSUSD0930	9.30	39.9	94.9	93	1.9	10	●
VAPDSSUSD0950	9.50	40.0	95.0	93	2.0	10	●
VAPDSSUSD0960	9.60	43.0	98.0	96	2.0	10	●
VAPDSSUSD0970	9.70	43.0	98.0	96	2.0	10	●

Referência para Pedido	Dimensões (mm)						Estoque
	DC	LCF	OAL	LF	PL	DCON	
VAPDSSUSD0980	9.80	43.0	98.0	96	2.0	10	●
VAPDSSUSD1000	10.0	43.1	98.1	96	2.1	10	●
VAPDSSUSD1010	10.1	43.1	103.1	101	2.1	12	●
VAPDSSUSD1020	10.2	43.1	103.1	101	2.1	12	●
VAPDSSUSD1030	10.3	43.1	103.1	101	2.1	12	●
VAPDSSUSD1040	10.4	43.2	103.2	101	2.2	12	●
VAPDSSUSD1050	10.5	43.2	103.2	101	2.2	12	●
VAPDSSUSD1060	10.6	43.2	103.2	101	2.2	12	●
VAPDSSUSD1080	10.8	47.2	107.2	105	2.2	12	●
VAPDSSUSD1090	10.9	47.3	107.3	105	2.3	12	●
VAPDSSUSD1100	11.0	47.3	107.3	105	2.3	12	●
VAPDSSUSD1150	11.5	47.4	107.4	105	2.4	12	●
VAPDSSUSD1180	11.8	47.4	107.4	105	2.4	12	●
VAPDSSUSD1200	12.0	51.5	111.5	109	2.5	12	●
VAPDSSUSD1230	12.3	51.6	111.6	109	2.6	12	●
VAPDSSUSD1250	12.5	51.6	111.6	109	2.6	12	●
VAPDSSUSD1270	12.7	51.6	111.6	109	2.6	12	●
VAPDSSUSD1280	12.8	51.7	111.7	109	2.7	12	●
VAPDSSUSD1300	13.0	51.7	111.7	109	2.7	12	●
VAPDSSUSD1350	13.5	53.8	113.8	111	2.8	16	●
VAPDSSUSD1400	14.0	53.9	113.9	111	2.9	16	●
VAPDSSUSD1410	14.1	55.9	115.9	113	2.9	16	●
VAPDSSUSD1420	14.2	55.9	115.9	113	2.9	16	●
VAPDSSUSD1450	14.5	56.0	116.0	113	3.0	16	●
VAPDSSUSD1500	15.0	56.1	116.1	113	3.1	16	●
VAPDSSUSD1550	15.5	58.2	118.2	115	3.2	16	●
VAPDSSUSD1600	16.0	58.3	118.3	115	3.3	16	●
VAPDSSUSD1700	17.0	60.5	125.5	122	3.5	20	●
VAPDSSUSD1750	17.5	61.6	126.6	123	3.6	20	●
VAPDSSUSD1800	18.0	61.7	126.7	123	3.7	20	●
VAPDSSUSD2000	20.0	66.1	131.1	127	4.1	20	●

FURAÇÃO(HSS)

VAPDMSUS

Média, alta precisão, para aço inoxidável



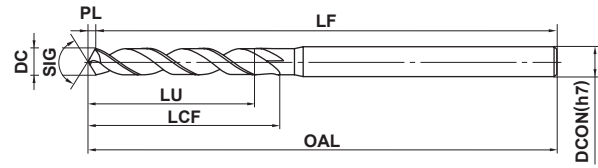
DC<4

DC≥4

DC≥1

HSS

P	M	K	N	S	H
Aço	Aço Inoxidável	Ferro Fundido	Metais Não Ferrosos	Ligas Resist. ao Calor	



*LU = LCF-2DC (Máx 5×DC)



0.5≤DC≤3	3<DC≤6	6<DC≤10	10<DC≤13
$\begin{matrix} 0 \\ -0.014 \end{matrix}$	$\begin{matrix} 0 \\ -0.018 \end{matrix}$	$\begin{matrix} 0 \\ -0.022 \end{matrix}$	$\begin{matrix} 0 \\ -0.027 \end{matrix}$

*Brocas acima de 4.0 mm possuem tolerância no diâmetro do Canal de 0-0.009.

- A cobertura VIOLET permite furação de alta eficiência e longa vida útil da ferramenta para aço inoxidável.

Referência para Pedido	Dimensões (mm)						Estoque
	DC	LCF	OAL	LF	PL	DCON	
VAPDMSUSD0050	0.50	6.2	50.2	50	0.15	3	●
VAPDMSUSD0055	0.55	6.2	50.2	50	0.17	3	●
VAPDMSUSD0060	0.60	8.2	50.2	50	0.18	3	●
VAPDMSUSD0065	0.65	8.2	50.2	50	0.20	3	●
VAPDMSUSD0070	0.70	10.2	50.2	50	0.21	3	●
VAPDMSUSD0075	0.75	10.2	50.2	50	0.23	3	●
VAPDMSUSD0077	0.77	10.2	50.2	50	0.23	3	●
VAPDMSUSD0080	0.80	10.2	50.2	50	0.24	3	●
VAPDMSUSD0081	0.81	10.2	50.2	50	0.24	3	●
VAPDMSUSD0082	0.82	10.3	50.3	50	0.25	3	●
VAPDMSUSD0085	0.85	10.3	50.3	50	0.26	3	●
VAPDMSUSD0090	0.90	12.3	50.3	50	0.27	3	●
VAPDMSUSD0092	0.92	12.3	50.3	50	0.28	3	●
VAPDMSUSD0095	0.95	12.3	50.3	50	0.29	3	●
VAPDMSUSD0097	0.97	12.3	50.3	50	0.29	3	●
VAPDMSUSD0100	1.00	12.3	60.3	60	0.3	3	●
VAPDMSUSD0101	1.01	12.3	60.3	60	0.3	3	●
VAPDMSUSD0102	1.02	12.3	60.3	60	0.3	3	●
VAPDMSUSD0103	1.03	12.3	60.3	60	0.3	3	●
VAPDMSUSD0105	1.05	12.3	60.3	60	0.3	3	●
VAPDMSUSD0110	1.10	16.3	60.3	60	0.3	3	●
VAPDMSUSD0112	1.12	16.3	60.3	60	0.3	3	●
VAPDMSUSD0115	1.15	16.4	60.4	60	0.4	3	●
VAPDMSUSD0120	1.20	16.4	60.4	60	0.4	3	●
VAPDMSUSD0122	1.22	16.4	60.4	60	0.4	3	●
VAPDMSUSD0125	1.25	16.4	60.4	60	0.4	3	●
VAPDMSUSD0126	1.26	16.4	60.4	60	0.4	3	●
VAPDMSUSD0130	1.30	16.4	60.4	60	0.4	3	●
VAPDMSUSD0132	1.32	18.4	60.4	60	0.4	3	●
VAPDMSUSD0135	1.35	18.4	60.4	60	0.4	3	●
VAPDMSUSD0140	1.40	18.4	60.4	60	0.4	3	●
VAPDMSUSD0144	1.44	18.4	60.4	60	0.4	3	●

Referência para Pedido	Dimensões (mm)						Estoque
	DC	LCF	OAL	LF	PL	DCON	
VAPDMSUSD0145	1.45	18.4	60.4	60	0.4	3	●
VAPDMSUSD0150	1.50	18.5	60.5	60	0.5	3	●
VAPDMSUSD0151	1.51	20.5	60.5	60	0.5	3	●
VAPDMSUSD0152	1.52	20.5	60.5	60	0.5	3	●
VAPDMSUSD0153	1.53	20.5	60.5	60	0.5	3	●
VAPDMSUSD0155	1.55	20.5	60.5	60	0.5	3	●
VAPDMSUSD0158	1.58	20.5	60.5	60	0.5	3	●
VAPDMSUSD0160	1.60	20.5	60.5	60	0.5	3	●
VAPDMSUSD0161	1.61	20.5	60.5	60	0.5	3	●
VAPDMSUSD0162	1.62	20.5	60.5	60	0.5	3	●
VAPDMSUSD0163	1.63	20.5	60.5	60	0.5	3	●
VAPDMSUSD0165	1.65	20.5	60.5	60	0.5	3	●
VAPDMSUSD0170	1.70	20.5	60.5	60	0.5	3	●
VAPDMSUSD0175	1.75	20.5	60.5	60	0.5	3	●
VAPDMSUSD0180	1.80	22.5	60.5	60	0.5	3	●
VAPDMSUSD0182	1.82	22.6	60.6	60	0.6	3	●
VAPDMSUSD0183	1.83	22.6	60.6	60	0.6	3	●
VAPDMSUSD0185	1.85	22.6	60.6	60	0.6	3	●
VAPDMSUSD0190	1.90	22.6	60.6	60	0.6	3	●
VAPDMSUSD0195	1.95	23.6	60.6	60	0.6	3	●
VAPDMSUSD0200	2.00	23.6	70.6	70	0.6	3	●
VAPDMSUSD0203	2.03	23.6	70.6	70	0.6	3	●
VAPDMSUSD0205	2.05	23.6	70.6	70	0.6	3	●
VAPDMSUSD0210	2.10	23.6	70.6	70	0.6	3	●
VAPDMSUSD0212	2.12	23.6	70.6	70	0.6	3	●
VAPDMSUSD0215	2.15	23.7	70.7	70	0.7	3	●
VAPDMSUSD0220	2.20	26.7	70.7	70	0.7	3	●
VAPDMSUSD0225	2.25	26.7	70.7	70	0.7	3	●
VAPDMSUSD0230	2.30	26.7	70.7	70	0.7	3	●
VAPDMSUSD0235	2.35	26.7	70.7	70	0.7	3	●
VAPDMSUSD0238	2.38	26.7	70.7	70	0.7	3	●
VAPDMSUSD0240	2.40	29.7	70.7	70	0.7	3	●

● : Estoque mantido.

Referência para Pedido	Dimensões (mm)						Estoque
	DC	LCF	OAL	LF	PL	DON	
VAPDMSUSD0243	2.43	29.7	70.7	70	0.7	3	●
VAPDMSUSD0245	2.45	29.7	70.7	70	0.7	3	●
VAPDMSUSD0248	2.48	29.8	70.8	70	0.8	3	●
VAPDMSUSD0250	2.50	29.8	70.8	70	0.8	3	●
VAPDMSUSD0255	2.55	29.8	70.8	70	0.8	3	●
VAPDMSUSD0260	2.60	29.8	70.8	70	0.8	3	●
VAPDMSUSD0262	2.62	29.8	70.8	70	0.8	3	●
VAPDMSUSD0265	2.65	29.8	70.8	70	0.8	3	●
VAPDMSUSD0270	2.70	32.8	70.8	70	0.8	3	●
VAPDMSUSD0275	2.75	32.8	70.8	70	0.8	3	●
VAPDMSUSD0278	2.78	32.8	70.8	70	0.8	3	●
VAPDMSUSD0280	2.80	32.8	70.8	70	0.8	3	●
VAPDMSUSD0285	2.85	32.9	70.9	70	0.9	3	●
VAPDMSUSD0290	2.90	32.9	70.9	70	0.9	3	●
VAPDMSUSD0295	2.95	32.9	70.9	70	0.9	3	●
VAPDMSUSD0298	2.98	32.9	70.9	70	0.9	3	●
VAPDMSUSD0300	3.00	32.9	70.9	70	0.9	3	●
VAPDMSUSD0301	3.01	35.9	85.9	85	0.9	4	●
VAPDMSUSD0302	3.02	35.9	85.9	85	0.9	4	●
VAPDMSUSD0303	3.03	35.9	85.9	85	0.9	4	●
VAPDMSUSD0305	3.05	35.9	85.9	85	0.9	4	●
VAPDMSUSD0310	3.10	35.9	85.9	85	0.9	4	●
VAPDMSUSD0315	3.15	36.0	86.0	85	1.0	4	●
VAPDMSUSD0320	3.20	36.0	86.0	85	1.0	4	●
VAPDMSUSD0325	3.25	36.0	86.0	85	1.0	4	●
VAPDMSUSD0330	3.30	36.0	86.0	85	1.0	4	●
VAPDMSUSD0333	3.33	39.0	86.0	85	1.0	4	●
VAPDMSUSD0335	3.35	39.0	86.0	85	1.0	4	●
VAPDMSUSD0340	3.40	39.0	86.0	85	1.0	4	●
VAPDMSUSD0345	3.45	39.0	86.0	85	1.0	4	●
VAPDMSUSD0350	3.50	39.1	86.1	85	1.1	4	●
VAPDMSUSD0355	3.55	39.1	86.1	85	1.1	4	●
VAPDMSUSD0360	3.60	39.1	86.1	85	1.1	4	●
VAPDMSUSD0365	3.65	39.1	86.1	85	1.1	4	●
VAPDMSUSD0367	3.67	39.1	86.1	85	1.1	4	●
VAPDMSUSD0368	3.68	39.1	86.1	85	1.1	4	●
VAPDMSUSD0370	3.70	39.1	86.1	85	1.1	4	●
VAPDMSUSD0372	3.72	43.1	86.1	85	1.1	4	●
VAPDMSUSD0380	3.80	43.1	86.1	85	1.1	4	●
VAPDMSUSD0390	3.90	43.2	86.2	85	1.2	4	●
VAPDMSUSD0396	3.96	43.2	86.2	85	1.2	4	●
VAPDMSUSD0400	4.00	42.8	85.8	85	0.8	4	●
VAPDMSUSD0405	4.05	42.8	100.8	100	0.8	6	●
VAPDMSUSD0410	4.10	42.9	100.9	100	0.9	6	●
VAPDMSUSD0420	4.20	42.9	100.9	100	0.9	6	●
VAPDMSUSD0425	4.25	46.9	100.9	100	0.9	6	●
VAPDMSUSD0430	4.30	46.9	100.9	100	0.9	6	●
VAPDMSUSD0440	4.40	46.9	100.9	100	0.9	6	●

Referência para Pedido	Dimensões (mm)						Estoque
	DC	LCF	OAL	LF	PL	DON	
VAPDMSUSD0445	4.45	46.9	100.9	100	0.9	6	●
VAPDMSUSD0450	4.50	46.9	100.9	100	0.9	6	●
VAPDMSUSD0460	4.60	47.0	101.0	100	1.0	6	●
VAPDMSUSD0470	4.70	47.0	101.0	100	1.0	6	●
VAPDMSUSD0480	4.80	52.0	101.0	100	1.0	6	●
VAPDMSUSD0490	4.90	52.0	101.0	100	1.0	6	●
VAPDMSUSD0495	4.95	52.0	101.0	100	1.0	6	●
VAPDMSUSD0500	5.00	52.0	101.0	100	1.0	6	●
VAPDMSUSD0510	5.10	52.1	101.1	100	1.1	6	●
VAPDMSUSD0520	5.20	52.1	101.1	100	1.1	6	●
VAPDMSUSD0530	5.30	52.1	101.1	100	1.1	6	●
VAPDMSUSD0540	5.40	57.1	107.1	106	1.1	6	●
VAPDMSUSD0550	5.50	57.1	107.1	106	1.1	6	●
VAPDMSUSD0555	5.55	57.2	107.2	106	1.2	6	●
VAPDMSUSD0560	5.60	57.2	107.2	106	1.2	6	●
VAPDMSUSD0570	5.70	57.2	107.2	106	1.2	6	●
VAPDMSUSD0580	5.80	57.2	107.2	106	1.2	6	●
VAPDMSUSD0590	5.90	57.2	107.2	106	1.2	6	●
VAPDMSUSD0600	6.00	57.2	107.2	106	1.2	6	●
VAPDMSUSD0610	6.10	63.3	113.3	112	1.3	8	●
VAPDMSUSD0620	6.20	63.3	113.3	112	1.3	8	●
VAPDMSUSD0630	6.30	63.3	113.3	112	1.3	8	●
VAPDMSUSD0640	6.40	63.3	113.3	112	1.3	8	●
VAPDMSUSD0650	6.50	63.4	113.4	112	1.4	8	●
VAPDMSUSD0660	6.60	63.4	113.4	112	1.4	8	●
VAPDMSUSD0680	6.80	68.4	118.4	117	1.4	8	●
VAPDMSUSD0690	6.90	68.4	118.4	117	1.4	8	●
VAPDMSUSD0700	7.00	68.5	118.5	117	1.5	8	●
VAPDMSUSD0735	7.35	68.5	118.5	117	1.5	8	●
VAPDMSUSD0740	7.40	68.5	118.5	117	1.5	8	●
VAPDMSUSD0750	7.50	68.6	118.6	117	1.6	8	●
VAPDMSUSD0755	7.55	74.6	124.6	123	1.6	8	●
VAPDMSUSD0760	7.60	74.6	124.6	123	1.6	8	●
VAPDMSUSD0780	7.80	74.6	124.6	123	1.6	8	●
VAPDMSUSD0800	8.00	74.7	124.7	123	1.7	8	●
VAPDMSUSD0810	8.10	74.7	129.7	128	1.7	10	●
VAPDMSUSD0820	8.20	74.7	129.7	128	1.7	10	●
VAPDMSUSD0840	8.40	74.7	129.7	128	1.7	10	●
VAPDMSUSD0850	8.50	74.8	129.8	128	1.8	10	●
VAPDMSUSD0860	8.60	80.8	135.8	134	1.8	10	●
VAPDMSUSD0870	8.70	80.8	135.8	134	1.8	10	●
VAPDMSUSD0880	8.80	80.8	135.8	134	1.8	10	●
VAPDMSUSD0900	9.00	80.9	135.9	134	1.9	10	●
VAPDMSUSD0950	9.50	81.0	136.0	134	2.0	10	●
VAPDMSUSD0980	9.80	87.0	142.0	140	2.0	10	●
VAPDMSUSD1000	10.0	87.1	142.1	140	2.1	10	●
VAPDMSUSD1020	10.2	87.1	147.1	145	2.1	12	●
VAPDMSUSD1030	10.3	87.1	147.1	145	2.1	12	●

VAPDMSUS

Média, alta precisão, para aço inoxidável

Referência para Pedido	Dimensões (mm)						Estoque
	DC	LCF	OAL	LF	PL	DCON	
VAPDMSUSD1040	10.4	87.2	147.2	145	2.2	12	●
VAPDMSUSD1050	10.5	87.2	147.2	145	2.2	12	●
VAPDMSUSD1100	11.0	94.3	154.3	152	2.3	12	●
VAPDMSUSD1150	11.5	94.4	154.4	152	2.4	12	●
VAPDMSUSD1200	12.0	101.5	161.5	159	2.5	12	●
VAPDMSUSD1250	12.5	101.6	161.6	159	2.6	12	●
VAPDMSUSD1300	13.0	101.7	161.7	159	2.7	12	●

VAPDSSUS VAPDMSUS

BROCAS VIOLET, alta precisão, para aço inoxidável, curta/média

HSS

CONDIÇÕES DE CORTE RECOMENDADAS

Material	Aço Inoxidável				Aço carbono, Aço inoxidável Ferro fundido Cobre, Ligas de cobre		Aço estrutural Ligas de alumínio	
	Austenítico AISI 304, AISI 316		Martensítico Ferrítico AISI 430		AISI 1049, SCM, FC			
Diâm. DC (mm)	Rotação (min ⁻¹)	Taxa de Avanço (mm/rot)	Rotação (min ⁻¹)	Taxa de Avanço (mm/rot)	Rotação (min ⁻¹)	Taxa de Avanço (mm/rot)	Rotação (min ⁻¹)	Taxa de Avanço (mm/rot)
0.5	7600	0.01	8800	0.01	11250	0.01	15000	0.02
1.0	4800	0.02	6300	0.05	10000	0.05	12000	0.05
2.0	2400	0.04	3200	0.06	5500	0.09	6400	0.09
3.0	1600	0.07	2100	0.10	3700	0.13	4300	0.13
4.0	1200	0.09	1600	0.10	2800	0.15	3200	0.15
5.0	950	0.12	1300	0.13	2200	0.18	2600	0.18
6.0	800	0.14	1100	0.15	1800	0.20	2100	0.19
8.0	600	0.18	800	0.18	1400	0.22	1600	0.24
10.0	480	0.22	640	0.21	1100	0.25	1300	0.28
12.0	400	0.24	530	0.25	930	0.30	1100	0.34
13.0	370	0.26	490	0.28	860	0.32	1000	0.36
14.0	340	0.30	450	0.27	730	0.31	930	0.36
15.0	320	0.31	425	0.28	680	0.32	870	0.38
16.0	300	0.32	400	0.30	640	0.34	820	0.42
18.0	270	0.34	350	0.32	570	0.36	725	0.43
20.0	240	0.36	320	0.35	510	0.38	660	0.45

Nota 1) Reduza a rotação e a taxa de avanço conforme a condição de furação quando a fixação do material ou da máquina tiverem baixa rigidez.

Nota 2) Utilize um mandril porta-piça ou um mandril hidráulico.

Nota 3) Utilize refrigeração abundante.

Nota 4) Para aços inoxidáveis endurecidos por precipitação (AISI 630, AISI 631), são recomendadas as brocas MVE, MVS e MMS.

Nota 5) Ao usinar furos com profundidades maiores que 4 x o diâmetro da broca, favor utilizar "pica-pau".

Nota 6) As condições de corte recomendadas são standard na usinagem com óleo solúvel.

Reduza a rotação ao utilizar fluido não solúvel em água.

N

FURAÇÃO

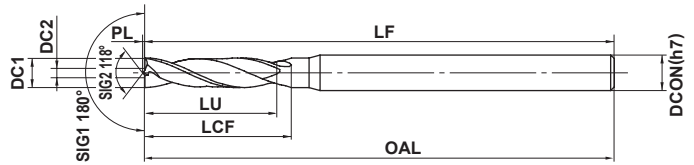
FURAÇÃO(HSS)

VAPDSCB

Canal curto, alta precisão, para rebaixo



HSS



*LU = LCF-2DC (Máx 3×DC)



DC ≤ 3	3 < DC ≤ 6	6 < DC ≤ 10	10 < DC ≤ 18	18 < DC ≤ 30	30 < DC ≤ 32
⁰ / _{-0.014}	⁰ / _{-0.018}	⁰ / _{-0.022}	⁰ / _{-0.027}	⁰ / _{-0.033}	⁰ / _{-0.039}

● Geometria exclusiva proporciona alta eficiência nas operações de rebaixo. Excelente controle de cavacos e planicidade da superfície usinada.

Referência para Pedido	Dimensões (mm)							Estoque
	DC1	DC2	LCF	OAL	LF	PL	DCON	
VAPDSCBD0200	2.0	0.7	12	60.2	60	0.2	3	●
VAPDSCBD0210	2.1	0.7	12	60.2	60	0.2	3	●
VAPDSCBD0220	2.2	0.7	12	60.2	60	0.2	3	●
VAPDSCBD0230	2.3	0.7	13	60.2	60	0.2	3	●
VAPDSCBD0240	2.4	0.7	13	60.2	60	0.2	3	●
VAPDSCBD0250	2.5	0.7	13	60.2	60	0.2	3	●
VAPDSCBD0260	2.6	0.8	15	60.2	60	0.2	3	●
VAPDSCBD0270	2.7	0.8	15	60.2	60	0.2	3	●
VAPDSCBD0280	2.8	0.8	15	60.2	60	0.2	3	●
VAPDSCBD0290	2.9	0.8	15	60.2	60	0.2	3	●
VAPDSCBD0300	3.0	0.8	15	60.2	60	0.2	3	●
VAPDSCBD0310	3.1	0.8	17	70.2	70	0.2	4	●
VAPDSCBD0320	3.2	0.8	17	70.2	70	0.2	4	●
VAPDSCBD0330	3.3	0.8	19	70.2	70	0.2	4	●
VAPDSCBD0340	3.4	0.8	19	70.2	70	0.2	4	●
VAPDSCBD0350	3.5	0.8	19	70.2	70	0.2	4	●
VAPDSCBD0360	3.6	1.0	21	70.2	70	0.2	4	●
VAPDSCBD0370	3.7	1.0	21	70.2	70	0.2	4	●
VAPDSCBD0380	3.8	1.0	21	70.2	70	0.2	4	●
VAPDSCBD0390	3.9	1.0	21	70.2	70	0.2	4	●
VAPDSCBD0400	4.0	1.0	21	70.3	70	0.3	4	●
VAPDSCBD0410	4.1	1.0	21	80.3	80	0.3	6	●
VAPDSCBD0420	4.2	1.0	21	80.3	80	0.3	6	●
VAPDSCBD0430	4.3	1.0	23	80.3	80	0.3	6	●
VAPDSCBD0440	4.4	1.0	23	80.3	80	0.3	6	●
VAPDSCBD0450	4.5	1.0	23	80.3	80	0.3	6	●
VAPDSCBD0460	4.6	1.4	25	80.3	80	0.3	6	●
VAPDSCBD0470	4.7	1.4	25	80.3	80	0.3	6	●
VAPDSCBD0480	4.8	1.4	25	80.3	80	0.3	6	●
VAPDSCBD0490	4.9	1.4	25	80.3	80	0.3	6	●
VAPDSCBD0500	5.0	1.4	25	80.4	80	0.4	6	●
VAPDSCBD0510	5.1	1.4	25	80.4	80	0.4	6	●
VAPDSCBD0520	5.2	1.4	25	80.4	80	0.4	6	●
VAPDSCBD0530	5.3	1.4	25	80.4	80	0.4	6	●
VAPDSCBD0540	5.4	1.4	27	80.4	80	0.4	6	●
VAPDSCBD0550	5.5	1.4	27	80.4	80	0.4	6	●
VAPDSCBD0560	5.6	1.4	27	80.4	80	0.4	6	●
VAPDSCBD0570	5.7	1.4	27	80.4	80	0.4	6	●
VAPDSCBD0580	5.8	1.4	27	80.4	80	0.4	6	●
VAPDSCBD0590	5.9	1.4	27	80.4	80	0.4	6	●

Referência para Pedido	Dimensões (mm)							Estoque
	DC1	DC2	LCF	OAL	LF	PL	DCON	
VAPDSCBD0600	6.0	1.4	27	80.4	80	0.4	6	●
VAPDSCBD0610	6.1	1.4	30	80.4	80	0.4	8	●
VAPDSCBD0620	6.2	1.4	30	80.4	80	0.4	8	●
VAPDSCBD0630	6.3	1.4	30	80.4	80	0.4	8	●
VAPDSCBD0640	6.4	1.4	30	80.4	80	0.4	8	●
VAPDSCBD0650	6.5	1.4	30	80.4	80	0.4	8	●
VAPDSCBD0660	6.6	1.8	30	80.4	80	0.4	8	●
VAPDSCBD0670	6.7	1.8	30	80.4	80	0.4	8	●
VAPDSCBD0680	6.8	1.8	32	80.4	80	0.4	8	●
VAPDSCBD0690	6.9	1.8	32	80.4	80	0.4	8	●
VAPDSCBD0700	7.0	1.8	32	80.6	80	0.6	8	●
VAPDSCBD0710	7.1	1.8	32	80.6	80	0.6	8	●
VAPDSCBD0720	7.2	1.8	32	80.6	80	0.6	8	●
VAPDSCBD0730	7.3	1.8	32	80.6	80	0.6	8	●
VAPDSCBD0740	7.4	1.8	32	80.6	80	0.6	8	●
VAPDSCBD0750	7.5	1.8	32	80.6	80	0.6	8	●
VAPDSCBD0760	7.6	2.0	35	85.6	85	0.6	8	●
VAPDSCBD0770	7.7	2.0	35	85.6	85	0.6	8	●
VAPDSCBD0780	7.8	2.0	35	85.6	85	0.6	8	●
VAPDSCBD0790	7.9	2.0	35	85.6	85	0.6	8	●
VAPDSCBD0800	8.0	2.0	35	85.6	85	0.6	8	●
VAPDSCBD0810	8.1	2.0	35	90.6	90	0.6	10	●
VAPDSCBD0850	8.5	2.0	35	90.6	90	0.6	10	●
VAPDSCBD0860	8.6	2.8	38	93.6	93	0.6	10	●
VAPDSCBD0880	8.8	2.8	38	93.6	93	0.6	10	●
VAPDSCBD0900	9.0	2.8	38	93.8	93	0.8	10	●
VAPDSCBD0910	9.1	2.8	38	93.8	93	0.8	10	●
VAPDSCBD0950	9.5	2.8	38	93.8	93	0.8	10	●
VAPDSCBD0960	9.6	3.2	41	96.8	96	0.8	10	●
VAPDSCBD0980	9.8	3.2	41	96.8	96	0.8	10	●
VAPDSCBD1000	10.0	3.2	41	96.9	96	0.9	10	●
VAPDSCBD1010	10.1	3.2	41	101.9	101	0.9	12	●
VAPDSCBD1030	10.3	3.2	41	101.9	101	0.9	12	●
VAPDSCBD1050	10.5	3.2	41	101.9	101	0.9	12	●
VAPDSCBD1080	10.8	3.7	45	105.9	105	0.9	12	●
VAPDSCBD1100	11.0	3.7	45	105.9	105	0.9	12	●
VAPDSCBD1110	11.1	3.7	45	105.9	105	0.9	12	●
VAPDSCBD1150	11.5	3.7	45	105.9	105	0.9	12	●
VAPDSCBD1180	11.8	3.7	45	105.9	105	0.9	12	●
VAPDSCBD1200	12.0	3.7	49	109.9	109	0.9	12	●

● : Estoque mantido.

Referência para Pedido	Dimensões (mm)							Estoque
	DC1	DC2	LCF	OAL	LF	PL	DCON	
VAPDSCBD1250	12.5	3.7	49	109.9	109	0.9	12	●
VAPDSCBD1300	13.0	4.2	49	110.1	109	1.1	12	●
VAPDSCBD1350	13.5	4.2	51	122.1	121	1.1	16	●
VAPDSCBD1380	13.8	4.2	51	122.1	121	1.1	16	●
VAPDSCBD1400	14.0	4.2	51	122.1	121	1.1	16	●
VAPDSCBD1410	14.1	5.5	58	124.1	123	1.1	16	●
VAPDSCBD1420	14.2	5.5	58	124.1	123	1.1	16	●
VAPDSCBD1450	14.5	5.5	58	124.1	123	1.1	16	●
VAPDSCBD1480	14.8	5.5	58	124.1	123	1.1	16	●
VAPDSCBD1500	15.0	5.5	58	124.3	123	1.3	16	●
VAPDSCBD1550	15.5	5.5	60	126.3	125	1.3	16	●
VAPDSCBD1570	15.7	5.5	60	126.3	125	1.3	16	●
VAPDSCBD1580	15.8	5.5	60	126.3	125	1.3	16	●
VAPDSCBD1600	16.0	5.5	60	126.3	125	1.3	16	●
VAPDSCBD1700	17.0	5.5	62	133.3	132	1.3	20	●
VAPDSCBD1750	17.5	5.5	63	134.6	133	1.6	20	●
VAPDSCBD1760	17.6	6.5	63	134.6	133	1.6	20	●
VAPDSCBD1770	17.7	6.5	63	134.6	133	1.6	20	●
VAPDSCBD1780	17.8	6.5	63	134.6	133	1.6	20	●
VAPDSCBD1800	18.0	6.5	63	134.6	133	1.6	20	●

Referência para Pedido	Dimensões (mm)							Estoque
	DC1	DC2	LCF	OAL	LF	PL	DCON	
VAPDSCBD1810	18.1	6.5	65	136.6	135	1.6	20	●
VAPDSCBD1900	19.0	6.5	65	136.6	135	1.6	20	●
VAPDSCBD1980	19.8	7.5	67	138.6	137	1.6	20	●
VAPDSCBD2000	20.0	7.5	67	138.8	137	1.8	20	●
VAPDSCBD2010	20.1	7.5	67	138.8	137	1.8	20	●
VAPDSCBD2100	21.0	7.5	75	166.8	165	1.8	25	●
VAPDSCBD2200	22.0	7.5	75	166.8	165	1.8	25	●
VAPDSCBD2300	23.0	7.5	80	171.8	170	1.8	25	●
VAPDSCBD2400	24.0	8.5	80	172.2	170	2.2	25	●
VAPDSCBD2500	25.0	8.5	85	182.2	180	2.2	25	●
VAPDSCBD2600	26.0	9.0	85	182.2	180	2.2	32	●
VAPDSCBD2700	27.0	9.0	95	192.2	190	2.2	32	●
VAPDSCBD2800	28.0	10.0	95	192.6	190	2.6	32	●
VAPDSCBD2900	29.0	10.0	100	197.6	195	2.6	32	●
VAPDSCBD3000	30.0	11.0	100	197.6	195	2.6	32	●
VAPDSCBD3100	31.0	11.0	105	202.6	200	2.6	32	●
VAPDSCBD3200	32.0	13.0	105	202.6	200	2.6	32	●

CONDIÇÕES DE CORTE RECOMENDADAS

Diâm. DC (mm)	Aço estrutural Ligas de alumínio		Aço carbono, Aço liga Ferro fundido Nodular		Aço ferramenta liga (Materiais de baixa dureza) Aço inoxidável ferrítico Aço inoxidável martensítico AISI D2, AISI 430, AISI 405, AISI 420, AISI 440		Aço ferramenta liga (-40HRC) Aço inoxidável endurecido por precipitação AISI H13, ASTM 630, ASTM 631	
	Rotação (min ⁻¹)	Taxa de Avanço (mm/rot)	Rotação (min ⁻¹)	Taxa de Avanço (mm/rot)	Rotação (min ⁻¹)	Taxa de Avanço (mm/rot)	Rotação (min ⁻¹)	Taxa de Avanço (mm/rot)
2.0	5600	0.07	4800	0.07	3200	0.07	2800	0.04
3.0	3700	0.10	3200	0.10	2100	0.10	1900	0.05
4.0	2800	0.12	2400	0.12	1600	0.12	1400	0.06
5.0	2200	0.14	1900	0.14	1300	0.14	1150	0.07
6.0	1850	0.15	1600	0.15	1050	0.15	950	0.08
8.0	1400	0.20	1200	0.20	800	0.20	720	0.10
10.0	1100	0.23	960	0.23	640	0.21	570	0.11
12.0	950	0.26	800	0.26	530	0.24	470	0.12
14.0	800	0.27	680	0.27	450	0.25	410	0.13
16.0	700	0.28	500	0.28	360	0.26	300	0.14
18.0	620	0.29	450	0.29	320	0.27	260	0.15
20.0	560	0.30	400	0.30	290	0.27	240	0.15
22.0	510	0.32	360	0.32	260	0.29	220	0.16
24.0	460	0.33	330	0.33	240	0.30	200	0.16
26.0	430	0.35	310	0.35	220	0.31	180	0.17
28.0	400	0.36	290	0.36	210	0.33	170	0.18
30.0	370	0.37	270	0.37	190	0.34	160	0.18
32.0	350	0.38	250	0.38	180	0.35	150	0.19

Nota 1) As condições de corte acima consideram profundidade do furo DC x 3, sem furo de guia. Para profundidade DC x 1 ou menor, a rotação pode ser aumentada em torno de 1.2 vezes.

Nota 2) Recomenda-se furação sem furo de guia. O furo de guia prejudica a quebra de cavacos. Aplique avanço "pica-pau", caso necessite quebrar os cavacos.

Nota 3) Para rebaixo em superfícies inclinadas, recomenda-se uma fresa de metal duro.

Nota 4) Na usinagem de aços inoxidáveis austeníticos (AISI 304, AISI 316), reduza a rpm para 40%–70% e o avanço para 40%–60%.

Nota 5) Utilize um mandril porta-piça ou um mandril hidráulico.

Nota 6) Reduza a rotação e a taxa de avanço conforme a condição de furação quando a fixação do material ou da máquina tiverem baixa rigidez.

Nota 7) Utilize refrigeração abundante.

Nota 8) As condições de corte recomendadas são standard na usinagem com óleo solúvel.

Reduza a rotação ao utilizar fluido não solúvel em água.

FURAÇÃO(HSS)

VSD

Haste cilíndrica



DC<0.7

DC≥0.7

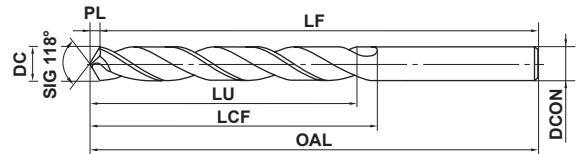
DC<2

DC≥2

HSS

P
M
K
N
S
H

Aço Aço Inoxidável Ferro Fundido Metais Não Ferrosos



*LU = LCF-2DC



0.5≤DC<1	1≤DC≤3	3<DC≤6	6<DC≤10	10<DC≤13
$\begin{matrix} 0 \\ -0.010 \end{matrix}$	$\begin{matrix} 0 \\ -0.014 \end{matrix}$	$\begin{matrix} 0 \\ -0.018 \end{matrix}$	$\begin{matrix} 0 \\ -0.022 \end{matrix}$	$\begin{matrix} 0 \\ -0.027 \end{matrix}$

Referência para Pedido	Dimensões (mm)						Estoque
	DC	LCF	OAL	LF	PL	DCON	
VSDD0050	0.5	6.2	27.2	27	0.18	0.5	●
VSDD0060	0.6	7.2	30.2	30	0.21	0.6	●
VSDD0070	0.7	9.2	32.2	32	0.21	0.7	●
VSDD0080	0.8	10.2	34.2	34	0.24	0.8	●
VSDD0090	0.9	11.3	36.3	36	0.27	0.9	●
VSDD0100	1.0	12.3	40.3	40	0.3	1.0	●
VSDD0110	1.1	14.3	42.3	42	0.3	1.1	●
VSDD0120	1.2	16.4	42.4	42	0.4	1.2	●
VSDD0130	1.3	16.4	45.4	45	0.4	1.3	●
VSDD0140	1.4	18.4	48.4	48	0.4	1.4	●
VSDD0150	1.5	18.5	48.5	48	0.5	1.5	●
VSDD0160	1.6	20.5	50.5	50	0.5	1.6	●
VSDD0170	1.7	20.5	50.5	50	0.5	1.7	●
VSDD0180	1.8	22.5	52.5	52	0.5	1.8	●
VSDD0190	1.9	22.6	52.6	52	0.6	1.9	●
VSDD0200	2.0	23.6	55.6	55	0.6	2.0	●
VSDD0210	2.1	23.6	55.6	55	0.6	2.1	●
VSDD0220	2.2	26.7	58.7	58	0.7	2.2	●
VSDD0230	2.3	26.7	58.7	58	0.7	2.3	●
VSDD0240	2.4	29.7	61.7	61	0.7	2.4	●
VSDD0250	2.5	29.8	61.8	61	0.8	2.5	●
VSDD0260	2.6	29.8	64.8	64	0.8	2.6	●
VSDD0270	2.7	32.8	64.8	64	0.8	2.7	●
VSDD0280	2.8	32.8	67.8	67	0.8	2.8	●
VSDD0290	2.9	32.9	71.9	71	0.9	2.9	●
VSDD0300	3.0	32.9	71.9	71	0.9	3.0	●
VSDD0310	3.1	35.9	71.9	71	0.9	3.1	●
VSDD0320	3.2	36.0	72.0	71	1.0	3.2	●
VSDD0330	3.3	36.0	74.0	73	1.0	3.3	●
VSDD0340	3.4	39.0	74.0	73	1.0	3.4	●
VSDD0350	3.5	39.1	74.1	73	1.1	3.5	●
VSDD0360	3.6	39.1	77.1	76	1.1	3.6	●
VSDD0370	3.7	39.1	77.1	76	1.1	3.7	●
VSDD0380	3.8	43.1	77.1	76	1.1	3.8	●
VSDD0390	3.9	43.2	80.2	79	1.2	3.9	●
VSDD0400	4.0	43.2	84.2	83	1.2	4.0	●
VSDD0410	4.1	43.2	84.2	83	1.2	4.1	●
VSDD0420	4.2	43.3	84.3	83	1.3	4.2	●

Referência para Pedido	Dimensões (mm)						Estoque
	DC	LCF	OAL	LF	PL	DCON	
VSDD0430	4.3	47.3	84.3	83	1.3	4.3	●
VSDD0440	4.4	47.3	87.3	86	1.3	4.4	●
VSDD0450	4.5	47.4	87.4	86	1.4	4.5	●
VSDD0460	4.6	47.4	87.4	86	1.4	4.6	●
VSDD0470	4.7	47.4	90.4	89	1.4	4.7	●
VSDD0480	4.8	52.4	90.4	89	1.4	4.8	●
VSDD0490	4.9	52.5	93.5	92	1.5	4.9	●
VSDD0500	5.0	52.5	93.5	92	1.5	5.0	●
VSDD0510	5.1	52.5	93.5	92	1.5	5.1	●
VSDD0520	5.2	52.6	96.6	95	1.6	5.2	●
VSDD0530	5.3	52.6	96.6	95	1.6	5.3	●
VSDD0540	5.4	57.6	96.6	95	1.6	5.4	●
VSDD0550	5.5	57.7	96.7	95	1.7	5.5	●
VSDD0560	5.6	57.7	99.7	98	1.7	5.6	●
VSDD0570	5.7	57.7	99.7	98	1.7	5.7	●
VSDD0580	5.8	57.7	99.7	98	1.7	5.8	●
VSDD0590	5.9	57.8	99.8	98	1.8	5.9	●
VSDD0600	6.0	57.8	103.8	102	1.8	6.0	●
VSDD0610	6.1	63.8	103.8	102	1.8	6.1	●
VSDD0620	6.2	63.9	103.9	102	1.9	6.2	●
VSDD0630	6.3	63.9	103.9	102	1.9	6.3	●
VSDD0640	6.4	63.9	106.9	105	1.9	6.4	●
VSDD0650	6.5	64.0	107.0	105	2.0	6.5	●
VSDD0660	6.6	64.0	107.0	105	2.0	6.6	●
VSDD0670	6.7	64.0	107.0	105	2.0	6.7	●
VSDD0680	6.8	69.0	107.0	105	2.0	6.8	●
VSDD0690	6.9	69.1	107.1	105	2.1	6.9	●
VSDD0700	7.0	69.1	107.1	105	2.1	7.0	●
VSDD0710	7.1	69.1	110.1	108	2.1	7.1	●
VSDD0720	7.2	69.2	110.2	108	2.2	7.2	●
VSDD0730	7.3	69.2	110.2	108	2.2	7.3	●
VSDD0740	7.4	69.2	113.2	111	2.2	7.4	●
VSDD0750	7.5	69.3	113.3	111	2.3	7.5	●
VSDD0760	7.6	75.3	113.3	111	2.3	7.6	●
VSDD0770	7.7	75.3	116.3	114	2.3	7.7	●
VSDD0780	7.8	75.3	116.3	114	2.3	7.8	●
VSDD0790	7.9	75.4	116.4	114	2.4	7.9	●
VSDD0800	8.0	75.4	116.4	114	2.4	8.0	●

Nota 1) Diâmetros entre ø0.5-ø1.9mm: 5 peças/embalagem; Diâmetros maiores que ø2mm: 1 peça/embalagem.

● : Estoque mantido.

Referência para Pedido	Dimensões (mm)						Estoque
	DC	LCF	OAL	LF	PL	DCON	
VSDD0810	8.1	75.4	119.4	117	2.4	8.1	●
VSDD0820	8.2	75.5	119.5	117	2.5	8.2	●
VSDD0830	8.3	75.5	119.5	117	2.5	8.3	●
VSDD0840	8.4	75.5	123.5	121	2.5	8.4	●
VSDD0850	8.5	75.6	123.6	121	2.6	8.5	●
VSDD0860	8.6	81.6	123.6	121	2.6	8.6	●
VSDD0870	8.7	81.6	123.6	121	2.6	8.7	●
VSDD0880	8.8	81.6	126.6	124	2.6	8.8	●
VSDD0890	8.9	81.7	126.7	124	2.7	8.9	●
VSDD0900	9.0	81.7	126.7	124	2.7	9.0	●
VSDD0910	9.1	81.7	126.7	124	2.7	9.1	●
VSDD0920	9.2	81.8	129.8	127	2.8	9.2	●
VSDD0930	9.3	81.8	129.8	127	2.8	9.3	●
VSDD0940	9.4	81.8	129.8	127	2.8	9.4	●
VSDD0950	9.5	81.9	129.9	127	2.9	9.5	●
VSDD0960	9.6	87.9	132.9	130	2.9	9.6	●
VSDD0970	9.7	87.9	132.9	130	2.9	9.7	●
VSDD0980	9.8	87.9	132.9	130	2.9	9.8	●
VSDD0990	9.9	88.0	133.0	130	3.0	9.9	●
VSDD1000	10.0	88.0	133.0	130	3.0	10.0	●
VSDD1010	10.1	88.0	136.0	133	3.0	10.1	●
VSDD1020	10.2	88.1	136.1	133	3.1	10.2	●
VSDD1030	10.3	88.1	136.1	133	3.1	10.3	●
VSDD1040	10.4	88.1	136.1	133	3.1	10.4	●
VSDD1050	10.5	88.2	140.2	137	3.2	10.5	●
VSDD1060	10.6	88.2	140.2	137	3.2	10.6	●
VSDD1070	10.7	95.2	140.2	137	3.2	10.7	●

Referência para Pedido	Dimensões (mm)						Estoque
	DC	LCF	OAL	LF	PL	DCON	
VSDD1080	10.8	95.2	143.2	140	3.2	10.8	●
VSDD1090	10.9	95.3	143.3	140	3.3	10.9	●
VSDD1100	11.0	95.3	143.3	140	3.3	11.0	●
VSDD1110	11.1	95.3	143.3	140	3.3	11.1	●
VSDD1120	11.2	95.4	146.4	143	3.4	11.2	●
VSDD1130	11.3	95.4	146.4	143	3.4	11.3	●
VSDD1140	11.4	95.4	146.4	143	3.4	11.4	●
VSDD1150	11.5	95.5	146.5	143	3.5	11.5	●
VSDD1160	11.6	95.5	149.5	146	3.5	11.6	●
VSDD1170	11.7	95.5	149.5	146	3.5	11.7	●
VSDD1180	11.8	95.5	149.5	146	3.5	11.8	●
VSDD1190	11.9	102.6	149.6	146	3.6	11.9	●
VSDD1200	12.0	102.6	152.6	149	3.6	12.0	●
VSDD1210	12.1	102.6	152.6	149	3.6	12.1	●
VSDD1220	12.2	102.7	152.7	149	3.7	12.2	●
VSDD1230	12.3	102.7	152.7	149	3.7	12.3	●
VSDD1240	12.4	102.7	155.7	152	3.7	12.4	●
VSDD1250	12.5	102.8	155.8	152	3.8	12.5	●
VSDD1260	12.6	102.8	155.8	152	3.8	12.6	●
VSDD1270	12.7	102.8	155.8	152	3.8	12.7	●
VSDD1280	12.8	102.8	155.8	152	3.8	12.8	●
VSDD1290	12.9	102.9	155.9	152	3.9	12.9	●
VSDD1300	13.0	102.9	155.9	152	3.9	13.0	●

CONDIÇÕES DE CORTE RECOMENDADAS

Material	Aço estrutural		Aço carbono		Aço inoxidável		Aço inoxidável, Aço ferramenta (Materiais de baixa dureza) Aço c/ tratamento térmico (-40HRC) AISI 304, AISI D2, AISI H13	
	40m/min		30m/min		20m/min		10-14m/min	
Vel. de corte	40m/min		30m/min		20m/min		10-14m/min	
Diâm. DC (mm)	Rotação (min ⁻¹)	Taxa de Avanço (mm/rot)	Rotação (min ⁻¹)	Taxa de Avanço (mm/rot)	Rotação (min ⁻¹)	Taxa de Avanço (mm/rot)	Rotação (min ⁻¹)	Taxa de Avanço (mm/rot)
0.5	15000	0.01	11250	0.01	7500	0.01	5620	0.01
1.0	10000	0.02	7500	0.02	5000	0.02	3750	0.02
1.5	8200	0.03	6150	0.03	4100	0.03	2800	0.03
2.0	6370	0.05	4780	0.05	3180	0.05	2200	0.04
3.0	4250	0.10	3180	0.10	2120	0.07	1400	0.06
4.0	3180	0.13	2390	0.13	1590	0.09	1100	0.08
5.0	2550	0.15	1910	0.15	1270	0.11	860	0.10
6.0	2120	0.18	1590	0.18	1060	0.13	720	0.11
7.0	1820	0.20	1360	0.20	910	0.14	610	0.12
8.0	1590	0.22	1190	0.21	800	0.15	540	0.13
9.0	1420	0.24	1060	0.22	710	0.17	480	0.14
10.0	1270	0.26	960	0.23	640	0.18	430	0.15
11.0	1160	0.28	870	0.24	580	0.19	390	0.16
12.0	1060	0.30	800	0.25	530	0.20	360	0.17
13.0	980	0.30	730	0.26	490	0.20	330	0.17

Nota 1) Reduza a rotação e a taxa de avanço conforme a condição de furação quando a fixação do material ou da máquina tiverem baixa rigidez.

Nota 2) Pare o avanço de furação e reduza as condições caso a profundidade de furação exceda DC×3.

Nota 3) As condições de corte recomendadas são standard na usinagem com óleo solúvel.

Reduza a rotação ao utilizar fluido não solúvel em água.

FURAÇÃO(HSS)

GSD

TiN, haste cilíndrica



DC<0.7

DC≥0.7

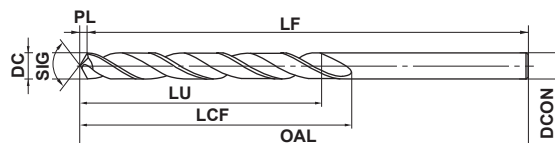
DC<2

DC≥2

HSS

P
M
K
N
S
H

Aço Aço Inoxidável Ferro Fundido Metais Não Ferrosos



*LU = LCF-2DC



0.5 ≤ DC < 1	1 ≤ DC ≤ 3	3 < DC ≤ 6	6 < DC ≤ 10	10 < DC ≤ 13
0 -0.010	0 -0.014	0 -0.018	0 -0.022	0 -0.027

Referência para Pedido	Dimensões (mm)						Estoque
	DC	LCF	OAL	LF	PL	DCON	
GSD0050	0.5	6.2	27.2	27	0.18	0.5	●
GSD0060	0.6	7.2	30.2	30	0.21	0.6	●
GSD0070	0.7	9.2	32.2	32	0.21	0.7	●
GSD0080	0.8	10.2	34.2	34	0.24	0.8	●
GSD0090	0.9	11.3	36.3	36	0.27	0.9	●
GSD0100	1.0	12.3	40.3	40	0.3	1.0	●
GSD0110	1.1	14.3	42.3	42	0.3	1.1	●
GSD0120	1.2	16.4	42.4	42	0.4	1.2	●
GSD0130	1.3	16.4	45.4	45	0.4	1.3	●
GSD0140	1.4	18.4	48.4	48	0.4	1.4	●
GSD0150	1.5	18.5	48.5	48	0.5	1.5	●
GSD0160	1.6	20.5	50.5	50	0.5	1.6	●
GSD0170	1.7	20.5	50.5	50	0.5	1.7	●
GSD0180	1.8	22.5	52.5	52	0.5	1.8	●
GSD0190	1.9	22.6	52.6	52	0.6	1.9	●
GSD0200	2.0	23.6	55.6	55	0.6	2.0	●
GSD0210	2.1	23.6	55.6	55	0.6	2.1	●
GSD0220	2.2	26.7	58.7	58	0.7	2.2	●
GSD0230	2.3	26.7	58.7	58	0.7	2.3	●
GSD0240	2.4	29.7	61.7	61	0.7	2.4	●
GSD0250	2.5	29.8	61.8	61	0.8	2.5	●
GSD0260	2.6	29.8	64.8	64	0.8	2.6	●
GSD0270	2.7	32.8	64.8	64	0.8	2.7	●
GSD0280	2.8	32.8	67.8	67	0.8	2.8	●
GSD0290	2.9	32.9	71.9	71	0.9	2.9	●
GSD0300	3.0	32.9	71.9	71	0.9	3.0	●
GSD0310	3.1	35.9	71.9	71	0.9	3.1	●
GSD0320	3.2	36.0	72.0	71	1.0	3.2	●
GSD0330	3.3	36.0	74.0	73	1.0	3.3	●
GSD0340	3.4	39.0	74.0	73	1.0	3.4	●
GSD0350	3.5	39.1	74.1	73	1.1	3.5	●
GSD0360	3.6	39.1	77.1	76	1.1	3.6	●
GSD0370	3.7	39.1	77.1	76	1.1	3.7	●
GSD0380	3.8	43.1	77.1	76	1.1	3.8	●
GSD0390	3.9	43.2	80.2	79	1.2	3.9	●
GSD0400	4.0	43.2	84.2	83	1.2	4.0	●
GSD0410	4.1	43.2	84.2	83	1.2	4.1	●
GSD0420	4.2	43.3	84.3	83	1.3	4.2	●

Referência para Pedido	Dimensões (mm)						Estoque
	DC	LCF	OAL	LF	PL	DCON	
GSD0430	4.3	47.3	84.3	83	1.3	4.3	●
GSD0440	4.4	47.3	87.3	86	1.3	4.4	●
GSD0450	4.5	47.4	87.4	86	1.4	4.5	●
GSD0460	4.6	47.4	87.4	86	1.4	4.6	●
GSD0470	4.7	47.4	90.4	89	1.4	4.7	●
GSD0480	4.8	52.4	90.4	89	1.4	4.8	●
GSD0490	4.9	52.5	93.5	92	1.5	4.9	●
GSD0500	5.0	52.5	93.5	92	1.5	5.0	●
GSD0510	5.1	52.5	93.5	92	1.5	5.1	●
GSD0520	5.2	52.6	96.6	95	1.6	5.2	●
GSD0530	5.3	52.6	96.6	95	1.6	5.3	●
GSD0540	5.4	57.6	96.6	95	1.6	5.4	●
GSD0550	5.5	57.7	96.7	95	1.7	5.5	●
GSD0560	5.6	57.7	99.7	98	1.7	5.6	●
GSD0570	5.7	57.7	99.7	98	1.7	5.7	●
GSD0580	5.8	57.7	99.7	98	1.7	5.8	●
GSD0590	5.9	57.8	99.8	98	1.8	5.9	●
GSD0600	6.0	57.8	103.8	102	1.8	6.0	●
GSD0610	6.1	63.8	103.8	102	1.8	6.1	●
GSD0620	6.2	63.9	103.9	102	1.9	6.2	●
GSD0630	6.3	63.9	103.9	102	1.9	6.3	●
GSD0640	6.4	63.9	106.9	105	1.9	6.4	●
GSD0650	6.5	64.0	107.0	105	2.0	6.5	●
GSD0660	6.6	64.0	107.0	105	2.0	6.6	●
GSD0670	6.7	64.0	107.0	105	2.0	6.7	●
GSD0680	6.8	69.0	107.0	105	2.0	6.8	●
GSD0690	6.9	69.1	107.1	105	2.1	6.9	●
GSD0700	7.0	69.1	107.1	105	2.1	7.0	●
GSD0710	7.1	69.1	110.1	108	2.1	7.1	●
GSD0720	7.2	69.2	110.2	108	2.2	7.2	●
GSD0730	7.3	69.2	110.2	108	2.2	7.3	●
GSD0740	7.4	69.2	113.2	111	2.2	7.4	●
GSD0750	7.5	69.3	113.3	111	2.3	7.5	●
GSD0760	7.6	75.3	113.3	111	2.3	7.6	●
GSD0770	7.7	75.3	116.3	114	2.3	7.7	●
GSD0780	7.8	75.3	116.3	114	2.3	7.8	●
GSD0790	7.9	75.4	116.4	114	2.4	7.9	●
GSD0800	8.0	75.4	116.4	114	2.4	8.0	●

● : Estoque mantido.

Referência para Pedido	Dimensões (mm)						Estoque
	DC	LCF	OAL	LF	PL	DCON	
GSDD0810	8.1	75.4	119.4	117	2.4	8.1	●
GSDD0820	8.2	75.5	119.5	117	2.5	8.2	●
GSDD0830	8.3	75.5	119.5	117	2.5	8.3	●
GSDD0840	8.4	75.5	123.5	121	2.5	8.4	●
GSDD0850	8.5	75.6	123.6	121	2.6	8.5	●
GSDD0860	8.6	81.6	123.6	121	2.6	8.6	●
GSDD0870	8.7	81.6	123.6	121	2.6	8.7	●
GSDD0880	8.8	81.6	126.6	124	2.6	8.8	●
GSDD0890	8.9	81.7	126.7	124	2.7	8.9	●
GSDD0900	9.0	81.7	126.7	124	2.7	9.0	●
GSDD0910	9.1	81.7	126.7	124	2.7	9.1	●
GSDD0920	9.2	81.8	129.8	127	2.8	9.2	●
GSDD0930	9.3	81.8	129.8	127	2.8	9.3	●
GSDD0940	9.4	81.8	129.8	127	2.8	9.4	●
GSDD0950	9.5	81.9	129.9	127	2.9	9.5	●
GSDD0960	9.6	87.9	132.9	130	2.9	9.6	●
GSDD0970	9.7	87.9	132.9	130	2.9	9.7	●
GSDD0980	9.8	87.9	132.9	130	2.9	9.8	●
GSDD0990	9.9	88.0	133.0	130	3.0	9.9	●
GSDD1000	10.0	88.0	133.0	130	3.0	10.0	●
GSDD1010	10.1	88.0	136.0	133	3.0	10.1	●
GSDD1020	10.2	88.1	136.1	133	3.1	10.2	●
GSDD1030	10.3	88.1	136.1	133	3.1	10.3	●
GSDD1040	10.4	88.1	136.1	133	3.1	10.4	●
GSDD1050	10.5	88.2	140.2	137	3.2	10.5	●

Referência para Pedido	Dimensões (mm)						Estoque
	DC	LCF	OAL	LF	PL	DCON	
GSDD1060	10.6	88.2	140.2	137	3.2	10.6	●
GSDD1070	10.7	95.2	140.2	137	3.2	10.7	●
GSDD1080	10.8	95.2	143.2	140	3.2	10.8	●
GSDD1090	10.9	95.3	143.3	140	3.3	10.9	●
GSDD1100	11.0	95.3	143.3	140	3.3	11.0	●
GSDD1110	11.1	95.3	143.3	140	3.3	11.1	●
GSDD1120	11.2	95.4	146.4	143	3.4	11.2	●
GSDD1130	11.3	95.4	146.4	143	3.4	11.3	●
GSDD1140	11.4	95.4	146.4	143	3.4	11.4	●
GSDD1150	11.5	95.5	146.5	143	3.5	11.5	●
GSDD1160	11.6	95.5	149.5	146	3.5	11.6	●
GSDD1170	11.7	95.5	149.5	146	3.5	11.7	●
GSDD1180	11.8	95.6	149.6	146	3.6	11.8	●
GSDD1190	11.9	102.6	149.6	146	3.6	11.9	●
GSDD1200	12.0	102.6	152.6	149	3.6	12.0	●
GSDD1210	12.1	102.6	152.6	149	3.6	12.1	●
GSDD1220	12.2	102.7	152.7	149	3.7	12.2	●
GSDD1230	12.3	102.7	152.7	149	3.7	12.3	●
GSDD1240	12.4	102.7	155.7	152	3.7	12.4	●
GSDD1250	12.5	102.8	155.8	152	3.8	12.5	●
GSDD1260	12.6	102.8	155.8	152	3.8	12.6	●
GSDD1270	12.7	102.8	155.8	152	3.8	12.7	●
GSDD1280	12.8	102.9	155.9	152	3.9	12.8	●
GSDD1290	12.9	102.9	155.9	152	3.9	12.9	●
GSDD1300	13.0	102.9	155.9	152	3.9	13.0	●

FURAÇÃO(HSS)

HSS

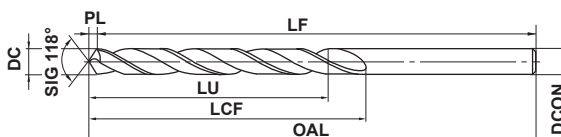
SD

Haste cilíndrica



P
M
K
N
S
H

Aço Aço Inoxidável Ferro Fundido Metais Não Ferrosos



*LU = LCF-2DC



$0.2 \leq DC < 1$	$1 \leq DC \leq 3$	$3 < DC \leq 6$	$6 < DC \leq 10$	$10 < DC \leq 17.5$
$0_{-0.012}$	$0_{-0.014}$	$0_{-0.018}$	$0_{-0.022}$	$0_{-0.027}$

● Para furação em geral.

Referência para Pedido	Dimensões (mm)						Estoque
	DC	LCF	OAL	LF	PL	DCON	
SDD0020	0.2	2.6	19.1	19	0.06	0.2	●
SDD0030	0.3	3.1	19.1	19	0.09	0.3	●
SDD0040	0.4	5.1	20.1	20	0.12	0.4	●
SDD0050	0.5	6.2	22.2	22	0.15	0.5	●
SDD0060	0.6	7.2	24.2	24	0.18	0.6	●
SDD0070	0.7	10.2	32.2	32	0.21	0.7	●
SDD0080	0.8	11.2	34.2	34	0.24	0.8	●
SDD0090	0.9	13.3	36.3	36	0.27	0.9	●
SDD0100	1.0	18.3	40.3	40	0.3	1.0	●
SDD0110	1.1	20.3	42.3	42	0.3	1.1	●
SDD0120	1.2	20.4	42.4	42	0.4	1.2	●
SDD0130	1.3	22.4	45.4	45	0.4	1.3	●
SDD0140	1.4	23.4	48.4	48	0.4	1.4	●
SDD0150	1.5	23.5	48.5	48	0.5	1.5	●
SDD0160	1.6	25.5	50.5	50	0.5	1.6	●
SDD0170	1.7	25.5	50.5	50	0.5	1.7	●
SDD0180	1.8	28.5	52.5	52	0.5	1.8	●
SDD0190	1.9	28.6	52.6	52	0.6	1.9	●
SDD0200	2.0	29.6	55.6	55	0.6	2.0	●
SDD0210	2.1	29.6	55.6	55	0.6	2.1	●
SDD0220	2.2	33.7	58.7	58	0.7	2.2	●
SDD0230	2.3	33.7	58.7	58	0.7	2.3	●
SDD0240	2.4	35.7	61.7	61	0.7	2.4	●
SDD0250	2.5	35.8	61.8	61	0.8	2.5	●
SDD0260	2.6	37.8	64.8	64	0.8	2.6	●
SDD0270	2.7	37.8	64.8	64	0.8	2.7	●
SDD0280	2.8	39.8	67.8	67	0.8	2.8	●
SDD0290	2.9	42.9	71.9	71	0.9	2.9	●
SDD0300	3.0	42.9	71.9	71	0.9	3.0	●
SDD0310	3.1	42.9	71.9	71	0.9	3.1	●
SDD0320	3.2	43.0	72.0	71	1.0	3.2	●
SDD0330	3.3	46.0	74.0	73	1.0	3.3	●
SDD0340	3.4	46.0	74.0	73	1.0	3.4	●
SDD0350	3.5	46.1	74.1	73	1.1	3.5	●

Referência para Pedido	Dimensões (mm)						Estoque
	DC	LCF	OAL	LF	PL	DCON	
SDD0360	3.6	49.1	77.1	76	1.1	3.6	●
SDD0370	3.7	49.1	77.1	76	1.1	3.7	●
SDD0380	3.8	49.1	77.1	76	1.1	3.8	●
SDD0390	3.9	52.2	80.2	79	1.2	3.9	●
SDD0400	4.0	55.2	84.2	83	1.2	4.0	●
SDD0410	4.1	55.2	84.2	83	1.2	4.1	●
SDD0420	4.2	55.3	84.3	83	1.3	4.2	●
SDD0430	4.3	55.3	84.3	83	1.3	4.3	●
SDD0440	4.4	57.3	87.3	86	1.3	4.4	●
SDD0450	4.5	57.4	87.4	86	1.4	4.5	●
SDD0460	4.6	57.4	87.4	86	1.4	4.6	●
SDD0470	4.7	60.4	90.4	89	1.4	4.7	●
SDD0480	4.8	60.4	90.4	89	1.4	4.8	●
SDD0490	4.9	63.5	93.5	92	1.5	4.9	●
SDD0500	5.0	63.5	93.5	92	1.5	5.0	●
SDD0510	5.1	63.5	93.5	92	1.5	5.1	●
SDD0520	5.2	65.6	96.6	95	1.6	5.2	●
SDD0530	5.3	65.6	96.6	95	1.6	5.3	●
SDD0540	5.4	65.6	96.6	95	1.6	5.4	●
SDD0550	5.5	65.7	96.7	95	1.7	5.5	●
SDD0560	5.6	68.7	99.7	98	1.7	5.6	●
SDD0570	5.7	68.7	99.7	98	1.7	5.7	●
SDD0580	5.8	68.7	99.7	98	1.7	5.8	●
SDD0590	5.9	68.8	99.8	98	1.8	5.9	●
SDD0600	6.0	71.8	103.8	102	1.8	6.0	●
SDD0610	6.1	71.8	103.8	102	1.8	6.1	●
SDD0620	6.2	71.9	103.9	102	1.9	6.2	●
SDD0630	6.3	71.9	103.9	102	1.9	6.3	●
SDD0640	6.4	74.9	106.9	105	1.9	6.4	●
SDD0650	6.5	75.0	107.0	105	2.0	6.5	●
SDD0660	6.6	75.0	107.0	105	2.0	6.6	●
SDD0670	6.7	75.0	107.0	105	2.0	6.7	●
SDD0680	6.8	75.0	107.0	105	2.0	6.8	●
SDD0690	6.9	75.1	107.1	105	2.1	6.9	●

FURAÇÃO

N

● : Estoque mantido.

Referência para Pedido	Dimensões (mm)						Estoque
	DC	LCF	OAL	LF	PL	DCON	
SDD0700	7.0	75.1	107.1	105	2.1	7.0	●
SDD0710	7.1	77.1	110.1	108	2.1	7.1	●
SDD0720	7.2	77.2	110.2	108	2.2	7.2	●
SDD0730	7.3	77.2	110.2	108	2.2	7.3	●
SDD0740	7.4	80.2	113.2	111	2.2	7.4	●
SDD0750	7.5	80.3	113.3	111	2.3	7.5	●
SDD0760	7.6	80.3	113.3	111	2.3	7.6	●
SDD0770	7.7	83.3	116.3	114	2.3	7.7	●
SDD0780	7.8	83.3	116.3	114	2.3	7.8	●
SDD0790	7.9	83.4	116.4	114	2.4	7.9	●
SDD0800	8.0	83.4	116.4	114	2.4	8.0	●
SDD0810	8.1	86.4	119.4	117	2.4	8.1	●
SDD0820	8.2	86.5	119.5	117	2.5	8.2	●
SDD0830	8.3	86.5	119.5	117	2.5	8.3	●
SDD0840	8.4	89.5	123.5	121	2.5	8.4	●
SDD0850	8.5	89.6	123.6	121	2.6	8.5	●
SDD0860	8.6	89.6	123.6	121	2.6	8.6	●
SDD0870	8.7	89.6	123.6	121	2.6	8.7	●
SDD0880	8.8	91.6	126.6	124	2.6	8.8	●
SDD0890	8.9	91.7	126.7	124	2.7	8.9	●
SDD0900	9.0	91.7	126.7	124	2.7	9.0	●
SDD0910	9.1	91.7	126.7	124	2.7	9.1	●
SDD0920	9.2	94.8	129.8	127	2.8	9.2	●
SDD0930	9.3	94.8	129.8	127	2.8	9.3	●
SDD0940	9.4	94.8	129.8	127	2.8	9.4	●
SDD0950	9.5	94.9	129.9	127	2.9	9.5	●
SDD0960	9.6	97.9	132.9	130	2.9	9.6	●
SDD0970	9.7	97.9	132.9	130	2.9	9.7	●
SDD0980	9.8	97.9	132.9	130	2.9	9.8	●
SDD0990	9.9	98.0	133.0	130	3.0	9.9	●
SDD1000	10.0	98.0	133.0	130	3.0	10.0	●
SDD1010	10.1	101.0	136.0	133	3.0	10.1	●
SDD1020	10.2	101.1	136.1	133	3.1	10.2	●
SDD1030	10.3	101.1	136.1	133	3.1	10.3	●
SDD1040	10.4	101.1	136.1	133	3.1	10.4	●
SDD1050	10.5	103.2	140.2	137	3.2	10.5	●

Referência para Pedido	Dimensões (mm)						Estoque
	DC	LCF	OAL	LF	PL	DCON	
SDD1060	10.6	103.2	140.2	137	3.2	10.6	●
SDD1070	10.7	103.2	140.2	137	3.2	10.7	●
SDD1080	10.8	106.2	143.2	140	3.2	10.8	●
SDD1090	10.9	106.3	143.3	140	3.3	10.9	●
SDD1100	11.0	106.3	143.3	140	3.3	11.0	●
SDD1110	11.1	106.3	143.3	140	3.3	11.1	●
SDD1120	11.2	109.4	146.4	143	3.4	11.2	●
SDD1130	11.3	109.4	146.4	143	3.4	11.3	●
SDD1140	11.4	109.4	146.4	143	3.4	11.4	●
SDD1150	11.5	109.5	146.5	143	3.5	11.5	●
SDD1160	11.6	112.5	149.5	146	3.5	11.6	●
SDD1170	11.7	112.5	149.5	146	3.5	11.7	●
SDD1180	11.8	112.6	149.6	146	3.6	11.8	●
SDD1190	11.9	112.6	149.6	146	3.6	11.9	●
SDD1200	12.0	114.6	152.6	149	3.6	12.0	●
SDD1210	12.1	114.6	152.6	149	3.6	12.1	●
SDD1220	12.2	114.7	152.7	149	3.7	12.2	●
SDD1230	12.3	114.7	152.7	149	3.7	12.3	●
SDD1240	12.4	117.7	155.7	152	3.7	12.4	●
SDD1250	12.5	117.8	155.8	152	3.8	12.5	●
SDD1260	12.6	117.8	155.8	152	3.8	12.6	●
SDD1270	12.7	117.8	155.8	152	3.8	12.7	●
SDD1280	12.8	117.9	155.9	152	3.9	12.8	●
SDD1290	12.9	117.9	155.9	152	3.9	12.9	●
SDD1300	13.0	117.9	155.9	152	3.9	13.0	●
SDD1350	13.5	126.1	172.1	168	4.1	13.5	●
SDD1400	14.0	126.2	172.2	168	4.2	14.0	●
SDD1450	14.5	126.4	172.4	168	4.4	14.5	●
SDD1500	15.0	136.5	185.5	181	4.5	15.0	●
SDD1550	15.5	136.7	185.7	181	4.7	15.5	●
SDD1600	16.0	136.8	185.8	181	4.8	16.0	●
SDD1650	16.5	137.0	186.0	181	5.0	16.5	●
SDD1700	17.0	148.1	199.1	194	5.1	17.0	●
SDD1750	17.5	148.3	199.3	194	5.3	17.5	●

FURAÇÃO(HSS)

SD

Haste cilíndrica, 1/100mm



HSS

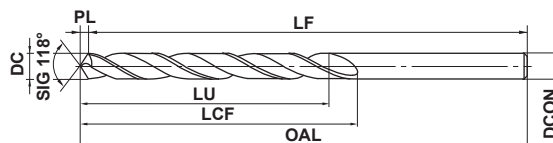
P
M
K
N
S
H

Aço

Aço Inoxidável

Ferro Fundido

Metais Não Ferrosos



*LU = LCF-2DC



$0.25 \leq DC \leq 5.95$

$\begin{matrix} 0 \\ -0.007 \end{matrix}$

● A tolerância do diâmetro é 0–0.007mm.

Referência para Pedido	Dimensões (mm)						Estoque
	DC	LCF	OAL	LF	PL	DCON	
SDD0025	0.25	3.1	19.1	19	0.08	0.25	●
SDD0035	0.35	4.1	19.1	19	0.11	0.35	●
SDD0045	0.45	5.1	20.1	20	0.14	0.45	●
SDD0055	0.55	7.2	24.2	24	0.17	0.55	●
SDD0065	0.65	8.2	26.2	26	0.20	0.65	●
SDD0075	0.75	11.2	34.2	34	0.23	0.75	●
SDD0085	0.85	13.3	36.3	36	0.26	0.85	●
SDD0095	0.95	18.3	40.3	40	0.29	0.95	●
SDD0105	1.05	20.3	42.3	42	0.3	1.05	●
SDD0115	1.15	20.4	42.4	42	0.4	1.15	●
SDD0125	1.25	22.4	45.4	45	0.4	1.25	●
SDD0135	1.35	23.4	48.4	48	0.4	1.35	●
SDD0145	1.45	23.4	48.4	48	0.4	1.45	●
SDD0155	1.55	25.5	50.5	50	0.5	1.55	●
SDD0165	1.65	25.5	50.5	50	0.5	1.65	●
SDD0175	1.75	28.5	52.5	52	0.5	1.75	●
SDD0185	1.85	28.6	52.6	52	0.6	1.85	●
SDD0195	1.95	29.6	55.6	55	0.6	1.95	●
SDD0205	2.05	29.6	55.6	55	0.6	2.05	●
SDD0215	2.15	29.7	55.7	55	0.7	2.15	●
SDD0225	2.25	33.7	58.7	58	0.7	2.25	●
SDD0235	2.35	33.7	58.7	58	0.7	2.35	●
SDD0245	2.45	35.7	61.7	61	0.7	2.45	●
SDD0255	2.55	37.8	64.8	64	0.8	2.55	●
SDD0265	2.65	37.8	64.8	64	0.8	2.65	●
SDD0275	2.75	39.8	67.8	67	0.8	2.75	●
SDD0285	2.85	39.9	67.9	67	0.9	2.85	●
SDD0295	2.95	42.9	71.9	71	0.9	2.95	●
SDD0305	3.05	42.9	71.9	71	0.9	3.05	●
SDD0315	3.15	43.0	72.0	71	1.0	3.15	●

Referência para Pedido	Dimensões (mm)						Estoque
	DC	LCF	OAL	LF	PL	DCON	
SDD0325	3.25	43.0	72.0	71	1.0	3.25	●
SDD0335	3.35	46.0	74.0	73	1.0	3.35	●
SDD0345	3.45	46.0	74.0	73	1.0	3.45	●
SDD0355	3.55	46.1	74.1	73	1.1	3.55	●
SDD0365	3.65	49.1	77.1	76	1.1	3.65	●
SDD0375	3.75	49.1	77.1	76	1.1	3.75	●
SDD0385	3.85	52.2	80.2	79	1.2	3.85	●
SDD0395	3.95	52.2	80.2	79	1.2	3.95	●
SDD0405	4.05	55.2	84.2	83	1.2	4.05	●
SDD0415	4.15	55.3	84.3	83	1.3	4.15	●
SDD0425	4.25	55.3	84.3	83	1.3	4.25	●
SDD0435	4.35	55.3	84.3	83	1.3	4.35	●
SDD0445	4.45	57.3	87.3	86	1.3	4.45	●
SDD0455	4.55	57.4	87.4	86	1.4	4.55	●
SDD0465	4.65	60.4	90.4	89	1.4	4.65	●
SDD0475	4.75	60.4	90.4	89	1.4	4.75	●
SDD0485	4.85	60.5	90.5	89	1.5	4.85	●
SDD0495	4.95	63.5	93.5	92	1.5	4.95	●
SDD0505	5.05	63.5	93.5	92	1.5	5.05	●
SDD0515	5.15	63.6	93.6	92	1.6	5.15	●
SDD0525	5.25	65.6	96.6	95	1.6	5.25	●
SDD0535	5.35	65.6	96.6	95	1.6	5.35	●
SDD0545	5.45	65.6	96.6	95	1.6	5.45	●
SDD0555	5.55	65.7	96.7	95	1.7	5.55	●
SDD0565	5.65	68.7	99.7	98	1.7	5.65	●
SDD0575	5.75	68.7	99.7	98	1.7	5.75	●
SDD0585	5.85	68.8	99.8	98	1.8	5.85	●
SDD0595	5.95	68.8	99.8	98	1.8	5.95	●

FURAÇÃO

N

● : Estoque mantido.

SDLS

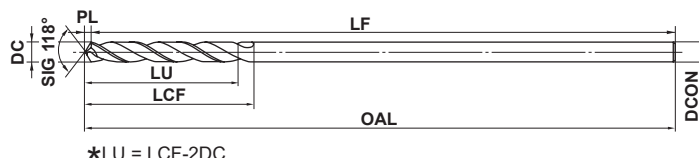
Haste cilíndrica longa



HSS

P
M
K
N
S
H

Aço Aço Inoxidável Ferro Fundido Metais Não Ferrosos



*LU = LCF - 2DC

	$1 \leq DC \leq 3$	$3 < DC \leq 6$	$6 < DC \leq 10$
	0	0	0
	-0.014	-0.018	-0.022

- É recomendada para operações que exigem alta rigidez e grande comprimento total para evitar interferência com a peça.
- Para centros de usinagem e máquinas convencionais.

Referência para Pedido	Dimensões (mm)						Estoque
	DC	LCF	OAL	LF	PL	DCON	
SDLS0100A100	1.0	12.3	100.3	100	0.3	1.0	●
SDLS0110A100	1.1	14.3	100.3	100	0.3	1.1	●
SDLS0120A100	1.2	16.4	100.4	100	0.4	1.2	●
SDLS0130A100	1.3	16.4	100.4	100	0.4	1.3	●
SDLS0140A100	1.4	18.4	100.4	100	0.4	1.4	●
SDLS0150A100	1.5	18.5	100.5	100	0.5	1.5	●
SDLS0160A100	1.6	20.5	100.5	100	0.5	1.6	●
SDLS0170A100	1.7	20.5	100.5	100	0.5	1.7	●
SDLS0180A100	1.8	22.5	100.5	100	0.5	1.8	●
SDLS0190A100	1.9	22.6	100.6	100	0.6	1.9	●
SDLS0200A100	2.0	23.6	100.6	100	0.6	2.0	●
SDLS0210A150	2.1	23.6	150.6	150	0.6	2.1	●
SDLS0220A150	2.2	26.7	150.7	150	0.7	2.2	●
SDLS0230A150	2.3	26.7	150.7	150	0.7	2.3	●
SDLS0240A150	2.4	29.7	150.7	150	0.7	2.4	●
SDLS0250A150	2.5	29.8	150.8	150	0.8	2.5	●
SDLS0260A150	2.6	29.8	150.8	150	0.8	2.6	●
SDLS0270A150	2.7	32.8	150.8	150	0.8	2.7	●
SDLS0280A150	2.8	32.8	150.8	150	0.8	2.8	●
SDLS0290A150	2.9	32.9	150.9	150	0.9	2.9	●
SDLS0300A150	3.0	32.9	150.9	150	0.9	3.0	●
SDLS0310A150	3.1	35.9	150.9	150	0.9	3.1	●
SDLS0320A150	3.2	36.0	151.0	150	1.0	3.2	●
SDLS0330A150	3.3	36.0	151.0	150	1.0	3.3	●
SDLS0340A150	3.4	39.0	151.0	150	1.0	3.4	●
SDLS0350A150	3.5	39.1	151.1	150	1.1	3.5	●
SDLS0360A200	3.6	39.1	201.1	200	1.1	3.6	●
SDLS0370A200	3.7	39.1	201.1	200	1.1	3.7	●
SDLS0380A200	3.8	43.1	201.1	200	1.1	3.8	●
SDLS0390A200	3.9	43.2	201.2	200	1.2	3.9	●
SDLS0400A200	4.0	43.2	201.2	200	1.2	4.0	●
SDLS0410A200	4.1	43.2	201.2	200	1.2	4.1	●
SDLS0420A200	4.2	43.3	201.3	200	1.3	4.2	●
SDLS0430A200	4.3	47.3	201.3	200	1.3	4.3	●

Referência para Pedido	Dimensões (mm)						Estoque
	DC	LCF	OAL	LF	PL	DCON	
SDLS0440A200	4.4	47.3	201.3	200	1.3	4.4	●
SDLS0450A200	4.5	47.4	201.4	200	1.4	4.5	●
SDLS0460A200	4.6	47.4	201.4	200	1.4	4.6	●
SDLS0470A200	4.7	47.4	201.4	200	1.4	4.7	●
SDLS0480A200	4.8	52.4	201.4	200	1.4	4.8	●
SDLS0490A200	4.9	52.5	201.5	200	1.5	4.9	●
SDLS0500A200	5.0	52.5	201.5	200	1.5	5.0	●
SDLS0510A200	5.1	52.5	201.5	200	1.5	5.1	●
SDLS0520A200	5.2	52.6	201.6	200	1.6	5.2	●
SDLS0530A200	5.3	52.6	201.6	200	1.6	5.3	●
SDLS0540A200	5.4	57.6	201.6	200	1.6	5.4	●
SDLS0550A200	5.5	57.7	201.7	200	1.7	5.5	●
SDLS0560A200	5.6	57.7	201.7	200	1.7	5.6	●
SDLS0570A200	5.7	57.7	201.7	200	1.7	5.7	●
SDLS0580A200	5.8	57.7	201.7	200	1.7	5.8	●
SDLS0590A200	5.9	57.8	201.8	200	1.8	5.9	●
SDLS0600A200	6.0	57.8	201.8	200	1.8	6.0	●
SDLS0610A250	6.1	63.8	251.8	250	1.8	6.1	●
SDLS0620A250	6.2	63.9	251.9	250	1.9	6.2	●
SDLS0630A250	6.3	63.9	251.9	250	1.9	6.3	●
SDLS0640A250	6.4	63.9	251.9	250	1.9	6.4	●
SDLS0650A250	6.5	64.0	252.0	250	2.0	6.5	●
SDLS0660A250	6.6	64.0	252.0	250	2.0	6.6	●
SDLS0670A250	6.7	64.0	252.0	250	2.0	6.7	●
SDLS0680A250	6.8	69.0	252.0	250	2.0	6.8	●
SDLS0690A250	6.9	69.1	252.1	250	2.1	6.9	●
SDLS0700A250	7.0	69.1	252.1	250	2.1	7.0	●
SDLS0710A250	7.1	69.1	252.1	250	2.1	7.1	●
SDLS0720A250	7.2	69.2	252.2	250	2.2	7.2	●
SDLS0730A250	7.3	69.2	252.2	250	2.2	7.3	●
SDLS0740A250	7.4	69.2	252.2	250	2.2	7.4	●
SDLS0750A250	7.5	69.3	252.3	250	2.3	7.5	●
SDLS0760A250	7.6	75.3	252.3	250	2.3	7.6	●
SDLS0770A250	7.7	75.3	252.3	250	2.3	7.7	●

N
 FURAÇÃO

SDLS

Haste cilíndrica longa

Referência para Pedido	Dimensões (mm)						Estoque
	DC	LCF	OAL	LF	PL	DON	
SDLS0780A250	7.8	75.3	252.3	250	2.3	7.8	●
SDLS0790A250	7.9	75.4	252.4	250	2.4	7.9	●
SDLS0800A250	8.0	75.4	252.4	250	2.4	8.0	●
SDLS0810A250	8.1	75.4	252.4	250	2.4	8.1	●
SDLS0820A250	8.2	75.5	252.5	250	2.5	8.2	●
SDLS0830A250	8.3	75.5	252.5	250	2.5	8.3	●
SDLS0840A250	8.4	75.5	252.5	250	2.5	8.4	●
SDLS0850A250	8.5	75.6	252.6	250	2.6	8.5	●
SDLS0860A250	8.6	81.6	252.6	250	2.6	8.6	●
SDLS0870A250	8.7	81.6	252.6	250	2.6	8.7	●
SDLS0880A250	8.8	81.6	252.6	250	2.6	8.8	●
SDLS0890A250	8.9	81.7	252.7	250	2.7	8.9	●

Referência para Pedido	Dimensões (mm)						Estoque
	DC	LCF	OAL	LF	PL	DON	
SDLS0900A250	9.0	81.7	252.7	250	2.7	9.0	●
SDLS0910A250	9.1	81.7	252.7	250	2.7	9.1	●
SDLS0920A250	9.2	81.8	252.8	250	2.8	9.2	●
SDLS0930A250	9.3	81.8	252.8	250	2.8	9.3	●
SDLS0940A250	9.4	81.8	252.8	250	2.8	9.4	●
SDLS0950A250	9.5	81.9	252.9	250	2.9	9.5	●
SDLS0960A250	9.6	87.9	252.9	250	2.9	9.6	●
SDLS0970A250	9.7	87.9	252.9	250	2.9	9.7	●
SDLS0980A250	9.8	87.9	252.9	250	2.9	9.8	●
SDLS0990A250	9.9	88.0	253.0	250	3.0	9.9	●
SDLS1000A250	10.0	88.0	253.0	250	3.0	10.0	●

CONDIÇÕES DE CORTE RECOMENDADAS

Material	Aço Baixo Carbono ($\leq 180\text{HB}$), Aço carbono, Aço liga (180–280HB)				Aço liga, Aço ferramenta ($\leq 30\text{HRC}$)				Aço liga, Aço ferramenta ($< 40\text{HRC}$)				Ferro Fundido Cinzento ($\leq 350\text{MPa}$)						
	Vel. de Corte (m/min)	Rotação (min^{-1})	Avanço (mm/rot)	Avanço linear (mm/min)	Vel. de Corte (m/min)	Rotação (min^{-1})	Avanço (mm/rot)	Avanço linear (mm/min)	Vel. de Corte (m/min)	Rotação (min^{-1})	Avanço (mm/rot)	Avanço linear (mm/min)	Vel. de Corte (m/min)	Rotação (min^{-1})	Avanço (mm/rot)	Avanço linear (mm/min)			
ASTM A36, AISI 1010 AISI 1045, AISI 4140 etc					AISI H13, AISI L6 etc					AISI H13, AISI L6 etc					DIN GG-30 etc				
1.0	16	5000	0.02	100	13	4000	0.01	40	9	2800	0.007	15	16	5000	0.02	100			
1.5	20	4200	0.03	125	15	3200	0.02	60	10	2100	0.01	20	20	4200	0.03	125			
2.0	20	3200	0.05	160	16	2500	0.03	75	11	1800	0.02	35	20	3200	0.05	160			
3.0	20	2100	0.1	210	17	1800	0.06	105	11	1200	0.04	45	22	2300	0.1	230			
4.0	20	1600	0.12	190	17	1350	0.08	105	11	900	0.06	50	22	1750	0.12	210			
5.0	20	1300	0.14	180	17	1100	0.1	110	11	700	0.08	55	22	1400	0.14	195			
6.0	20	1050	0.17	175	17	900	0.12	105	11	600	0.1	60	22	1150	0.18	205			
7.0	20	900	0.19	170	17	780	0.14	105	11	500	0.11	55	22	1000	0.19	190			
8.0	20	800	0.2	160	17	670	0.15	100	11	450	0.12	50	22	890	0.2	175			
9.0	20	700	0.21	145	17	600	0.16	95	11	400	0.13	50	22	780	0.21	160			
10.0	20	650	0.22	140	17	540	0.17	90	11	350	0.14	45	22	700	0.22	150			

Material	Aço inoxidável ferrítico e martensítico ($\leq 200\text{HB}$)				Aço Inoxidável Austenítico ($\leq 200\text{HB}$)				Cobre, Ligas de cobre				Ligas de Alumínio (Si<5%)					
	Vel. de Corte (m/min)	Rotação (min^{-1})	Avanço (mm/rot)	Avanço linear (mm/min)	Vel. de Corte (m/min)	Rotação (min^{-1})	Avanço (mm/rot)	Avanço linear (mm/min)	Vel. de Corte (m/min)	Rotação (min^{-1})	Avanço (mm/rot)	Avanço linear (mm/min)	Vel. de Corte (m/min)	Rotação (min^{-1})	Avanço (mm/rot)	Avanço linear (mm/min)		
AISI 410, AISI 430 etc					AISI 304, AISI 316 etc													
1.0	13	4000	0.02	80	9	3000	0.02	60	16	5000	0.02	100	22	7000	0.04	280		
1.5	14	3000	0.03	90	9	2000	0.03	60	20	4200	0.03	125	28	6000	0.06	360		
2.0	14	2200	0.05	110	9	1500	0.04	60	20	3200	0.05	160	30	4800	0.08	380		
3.0	15	1600	0.07	110	9	1000	0.06	60	20	2100	0.1	210	40	4200	0.13	545		
4.0	15	1200	0.11	130	9	700	0.08	55	20	1600	0.12	190	40	3200	0.16	510		
5.0	15	950	0.13	120	9	600	0.09	50	20	1300	0.14	180	40	2550	0.2	510		
6.0	15	800	0.14	110	10	530	0.1	50	20	1050	0.18	185	40	2100	0.23	480		
7.0	15	700	0.15	105	10	450	0.11	45	20	900	0.19	170	40	1800	0.25	450		
8.0	15	600	0.16	95	10	400	0.13	50	20	800	0.2	160	40	1600	0.28	445		
9.0	15	520	0.17	85	10	360	0.14	50	20	700	0.21	145	40	1400	0.3	420		
10.0	15	480	0.18	85	10	310	0.15	45	20	650	0.22	140	40	1280	0.33	420		

Nota 1) Para diâmetros não informados na tabela, favor calcular com base nos diâmetros mais próximos.

Nota 2) Em caso de baixa rigidez da máquina ou da fixação da peça, reduza a rotação e o avanço de acordo com as condições de usinagem.

Nota 3) Ao usinar furos com profundidades maiores que 3 x o diâmetro da broca, favor utilizar "pica-pau".

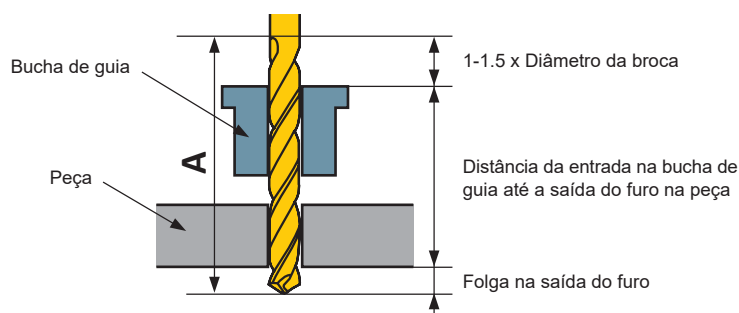
Nota 4) As condições de corte acima são uma referência considerando que o comprimento em balanço da ferramenta seja aproximadamente o dobro do comprimento do canal. Caso o comprimento em balanço seja maior, reduza os parâmetros de corte.

Nota 5) Óleo solúvel é recomendado. Reduza a rotação ao utilizar fluido não solúvel em água.

Nota 6) Use fluido refrigerante abundante. Reduza a rotação, caso o fornecimento de fluido refrigerante não seja suficiente.

Nota 7) Quando usar uma bucha de guia, verifique se o comprimento do canal é maior que a dimensão "A". Caso o comprimento do canal seja curto, usine sem a bucha de guia.

Quando não for possível retirar a bucha, use a broca LSD ou GWSL.



FURAÇÃO(HSS)

KSD

HSS Cobalto, comprimento do canal curto



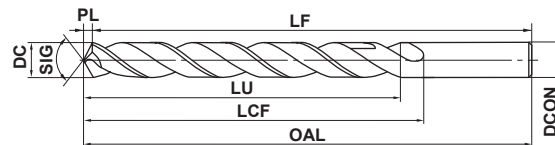
DC<2

DC≥2

DC≥2

HSS

P	M	K	N	S	H
Aço	Aço Inoxidável	Ferro Fundido	Metais Não Ferrosos		



*LU = LCF-2DC



1 ≤ DC ≤ 3	3 < DC ≤ 6	6 < DC ≤ 10	10 < DC ≤ 13
0 -0.014	0 -0.018	0 -0.022	0 -0.027

● Geometria aguda da aresta de corte para aço inoxidável até 200HB.

Referência para Pedido	Dimensões (mm)						Estoque
	DC	LCF	OAL	LF	PL	DCON	
KSDD0100	1.0	12.3	40.3	40	0.3	1.0	●
KSDD0110	1.1	14.3	42.3	42	0.3	1.1	●
KSDD0120	1.2	16.3	42.3	42	0.3	1.2	●
KSDD0130	1.3	16.3	45.3	45	0.3	1.3	●
KSDD0140	1.4	18.4	48.4	48	0.4	1.4	●
KSDD0150	1.5	18.4	48.4	48	0.4	1.5	●
KSDD0160	1.6	20.4	50.4	50	0.4	1.6	●
KSDD0170	1.7	20.4	50.4	50	0.4	1.7	●
KSDD0180	1.8	22.5	52.5	52	0.5	1.8	●
KSDD0190	1.9	22.5	52.5	52	0.5	1.9	●
KSDD0200	2.0	29.6	55.6	55	0.6	2.0	●
KSDD0210	2.1	29.6	55.6	55	0.6	2.1	●
KSDD0220	2.2	33.7	58.7	58	0.7	2.2	●
KSDD0230	2.3	33.7	58.7	58	0.7	2.3	●
KSDD0240	2.4	35.7	61.7	61	0.7	2.4	●
KSDD0250	2.5	35.8	61.8	61	0.8	2.5	●
KSDD0260	2.6	37.8	64.8	64	0.8	2.6	●
KSDD0270	2.7	37.8	64.8	64	0.8	2.7	●
KSDD0280	2.8	39.8	67.8	67	0.8	2.8	●
KSDD0290	2.9	42.9	71.9	71	0.9	2.9	●
KSDD0300	3.0	42.9	71.9	71	0.9	3.0	●
KSDD0310	3.1	42.9	71.9	71	0.9	3.1	●
KSDD0320	3.2	43.0	72.0	71	1.0	3.2	●
KSDD0330	3.3	46.0	74.0	73	1.0	3.3	●
KSDD0340	3.4	46.0	74.0	73	1.0	3.4	●
KSDD0350	3.5	46.1	74.1	73	1.1	3.5	●
KSDD0360	3.6	49.1	77.1	76	1.1	3.6	●
KSDD0370	3.7	49.1	77.1	76	1.1	3.7	●
KSDD0380	3.8	49.1	77.1	76	1.1	3.8	●
KSDD0390	3.9	52.2	80.2	79	1.2	3.9	●
KSDD0400	4.0	55.2	84.2	83	1.2	4.0	●
KSDD0410	4.1	55.2	84.2	83	1.2	4.1	●
KSDD0420	4.2	55.3	84.3	83	1.3	4.2	●
KSDD0430	4.3	55.3	84.3	83	1.3	4.3	●

Referência para Pedido	Dimensões (mm)						Estoque
	DC	LCF	OAL	LF	PL	DCON	
KSDD0440	4.4	57.3	87.3	86	1.3	4.4	●
KSDD0450	4.5	57.4	87.4	86	1.4	4.5	●
KSDD0460	4.6	57.4	87.4	86	1.4	4.6	●
KSDD0470	4.7	60.4	90.4	89	1.4	4.7	●
KSDD0480	4.8	60.4	90.4	89	1.4	4.8	●
KSDD0490	4.9	63.5	93.5	92	1.5	4.9	●
KSDD0500	5.0	63.5	93.5	92	1.5	5.0	●
KSDD0510	5.1	63.5	93.5	92	1.5	5.1	●
KSDD0520	5.2	65.6	96.6	95	1.6	5.2	●
KSDD0530	5.3	65.6	96.6	95	1.6	5.3	●
KSDD0540	5.4	65.6	96.6	95	1.6	5.4	●
KSDD0550	5.5	65.7	96.7	95	1.7	5.5	●
KSDD0560	5.6	68.7	99.7	98	1.7	5.6	●
KSDD0570	5.7	68.7	99.7	98	1.7	5.7	●
KSDD0580	5.8	68.7	99.7	98	1.7	5.8	●
KSDD0590	5.9	68.8	99.8	98	1.8	5.9	●
KSDD0600	6.0	71.8	103.8	102	1.8	6.0	●
KSDD0610	6.1	71.8	103.8	102	1.8	6.1	●
KSDD0620	6.2	71.9	103.9	102	1.9	6.2	●
KSDD0630	6.3	71.9	103.9	102	1.9	6.3	●
KSDD0640	6.4	74.9	106.9	105	1.9	6.4	●
KSDD0650	6.5	75.0	107.0	105	2.0	6.5	●
KSDD0660	6.6	75.0	107.0	105	2.0	6.6	●
KSDD0670	6.7	75.0	107.0	105	2.0	6.7	●
KSDD0680	6.8	75.0	107.0	105	2.0	6.8	●
KSDD0690	6.9	75.1	107.1	105	2.1	6.9	●
KSDD0700	7.0	75.1	107.1	105	2.1	7.0	●
KSDD0710	7.1	77.1	110.1	108	2.1	7.1	●
KSDD0720	7.2	77.2	110.2	108	2.2	7.2	●
KSDD0730	7.3	77.2	110.2	108	2.2	7.3	●
KSDD0740	7.4	80.2	113.2	111	2.2	7.4	●
KSDD0750	7.5	80.3	113.3	111	2.3	7.5	●
KSDD0760	7.6	80.3	113.3	111	2.3	7.6	●
KSDD0770	7.7	83.3	116.3	114	2.3	7.7	●

FURAÇÃO

N

● : Estoque mantido.

Referência para Pedido	Dimensões (mm)						Estoque
	DC	LCF	OAL	LF	PL	DCON	
KSDD0780	7.8	83.3	116.3	114	2.3	7.8	●
KSDD0790	7.9	83.4	116.4	114	2.4	7.9	●
KSDD0800	8.0	83.4	116.4	114	2.4	8.0	●
KSDD0810	8.1	86.4	119.4	117	2.4	8.1	●
KSDD0820	8.2	86.5	119.5	117	2.5	8.2	●
KSDD0830	8.3	86.5	119.5	117	2.5	8.3	●
KSDD0840	8.4	89.5	123.5	121	2.5	8.4	●
KSDD0850	8.5	89.6	123.6	121	2.6	8.5	●
KSDD0860	8.6	89.6	123.6	121	2.6	8.6	●
KSDD0870	8.7	89.6	123.6	121	2.6	8.7	●
KSDD0880	8.8	91.6	126.6	124	2.6	8.8	●
KSDD0890	8.9	91.7	126.7	124	2.7	8.9	●
KSDD0900	9.0	91.7	126.7	124	2.7	9.0	●
KSDD0910	9.1	91.7	126.7	124	2.7	9.1	●
KSDD0920	9.2	94.8	129.8	127	2.8	9.2	●
KSDD0930	9.3	94.8	129.8	127	2.8	9.3	●
KSDD0940	9.4	94.8	129.8	127	2.8	9.4	●
KSDD0950	9.5	94.9	129.9	127	2.9	9.5	●
KSDD0960	9.6	97.9	132.9	130	2.9	9.6	●
KSDD0970	9.7	97.9	132.9	130	2.9	9.7	●
KSDD0980	9.8	97.9	132.9	130	2.9	9.8	●
KSDD0990	9.9	98.0	133.0	130	3.0	9.9	●
KSDD1000	10.0	98.0	133.0	130	3.0	10.0	●
KSDD1010	10.1	101.0	136.0	133	3.0	10.1	●
KSDD1020	10.2	101.1	136.1	133	3.1	10.2	●
KSDD1030	10.3	101.1	136.1	133	3.1	10.3	●
KSDD1040	10.4	101.1	136.1	133	3.1	10.4	●
KSDD1050	10.5	103.2	140.2	137	3.2	10.5	●

Referência para Pedido	Dimensões (mm)						Estoque
	DC	LCF	OAL	LF	PL	DCON	
KSDD1060	10.6	103.2	140.2	137	3.2	10.6	●
KSDD1070	10.7	103.2	140.2	137	3.2	10.7	●
KSDD1080	10.8	106.2	143.2	140	3.2	10.8	●
KSDD1090	10.9	106.3	143.3	140	3.3	10.9	●
KSDD1100	11.0	106.3	143.3	140	3.3	11.0	●
KSDD1110	11.1	106.3	143.3	140	3.3	11.1	●
KSDD1120	11.2	109.4	146.4	143	3.4	11.2	●
KSDD1130	11.3	109.4	146.4	143	3.4	11.3	●
KSDD1140	11.4	109.4	146.4	143	3.4	11.4	●
KSDD1150	11.5	109.5	146.5	143	3.5	11.5	●
KSDD1160	11.6	112.5	149.5	146	3.5	11.6	●
KSDD1170	11.7	112.5	149.5	146	3.5	11.7	●
KSDD1180	11.8	112.5	149.5	146	3.5	11.8	●
KSDD1190	11.9	112.6	149.6	146	3.6	11.9	●
KSDD1200	12.0	114.6	152.6	149	3.6	12.0	●
KSDD1210	12.1	114.6	152.6	149	3.6	12.1	●
KSDD1220	12.2	114.7	152.7	149	3.7	12.2	●
KSDD1230	12.3	114.7	152.7	149	3.7	12.3	●
KSDD1240	12.4	117.7	155.7	152	3.7	12.4	●
KSDD1250	12.5	117.8	155.8	152	3.8	12.5	●
KSDD1260	12.6	117.8	155.8	152	3.8	12.6	●
KSDD1270	12.7	117.8	155.8	152	3.8	12.7	●
KSDD1280	12.8	117.8	155.8	152	3.8	12.8	●
KSDD1290	12.9	117.9	155.9	152	3.9	12.9	●
KSDD1300	13.0	117.9	155.9	152	3.9	13.0	●

FURAÇÃO(HSS)

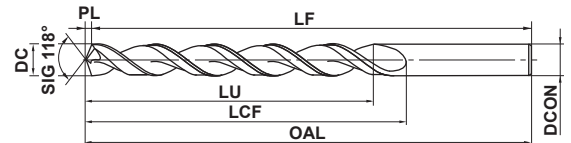
GWSS

TiN, para furação profunda, canal helicoidal



HSS

P	M	K	N	S	H
Aço	Aço Inoxidável	Ferro Fundido	Metals Não Ferrosos		



*LU = LCF-2DC



$1 \leq DC \leq 3$	$3 < DC \leq 6$	$6 < DC \leq 10$	$10 < DC \leq 13$
$\begin{matrix} 0 \\ -0.014 \end{matrix}$	$\begin{matrix} 0 \\ -0.018 \end{matrix}$	$\begin{matrix} 0 \\ -0.022 \end{matrix}$	$\begin{matrix} 0 \\ -0.027 \end{matrix}$

● Indicada para furação em geral e furação profunda.

Referência para Pedido	Dimensões (mm)						Estoque
	DC	LCF	OAL	LF	PL	DCON	
GWSSD0100	1.0	18.3	40.3	40	0.3	1.0	●
GWSSD0110	1.1	20.3	42.3	42	0.3	1.1	●
GWSSD0120	1.2	20.4	42.4	42	0.4	1.2	●
GWSSD0130	1.3	22.4	45.4	45	0.4	1.3	●
GWSSD0140	1.4	23.4	48.4	48	0.4	1.4	●
GWSSD0150	1.5	23.5	48.5	48	0.5	1.5	●
GWSSD0160	1.6	25.5	50.5	50	0.5	1.6	●
GWSSD0170	1.7	25.5	50.5	50	0.5	1.7	●
GWSSD0180	1.8	28.5	52.5	52	0.5	1.8	●
GWSSD0190	1.9	28.6	52.6	52	0.6	1.9	●
GWSSD0200	2.0	29.6	55.6	55	0.6	2.0	●
GWSSD0210	2.1	29.6	55.6	55	0.6	2.1	●
GWSSD0220	2.2	33.7	58.7	58	0.7	2.2	●
GWSSD0230	2.3	33.7	58.7	58	0.7	2.3	●
GWSSD0240	2.4	35.7	61.7	61	0.7	2.4	●
GWSSD0250	2.5	35.8	61.8	61	0.8	2.5	●
GWSSD0260	2.6	37.8	64.8	64	0.8	2.6	●
GWSSD0270	2.7	37.8	64.8	64	0.8	2.7	●
GWSSD0280	2.8	39.8	67.8	67	0.8	2.8	●
GWSSD0290	2.9	42.9	71.9	71	0.9	2.9	●
GWSSD0300	3.0	42.9	71.9	71	0.9	3.0	●
GWSSD0310	3.1	42.9	71.9	71	0.9	3.1	●
GWSSD0320	3.2	43.0	72.0	71	1.0	3.2	●
GWSSD0330	3.3	46.0	74.0	73	1.0	3.3	●
GWSSD0340	3.4	46.0	74.0	73	1.0	3.4	●
GWSSD0350	3.5	46.1	74.1	73	1.1	3.5	●
GWSSD0360	3.6	49.1	77.1	76	1.1	3.6	●
GWSSD0370	3.7	49.1	77.1	76	1.1	3.7	●
GWSSD0380	3.8	49.1	77.1	76	1.1	3.8	●
GWSSD0390	3.9	52.2	80.2	79	1.2	3.9	●
GWSSD0400	4.0	55.2	84.2	83	1.2	4.0	●
GWSSD0410	4.1	55.2	84.2	83	1.2	4.1	●
GWSSD0420	4.2	55.3	84.3	83	1.3	4.2	●
GWSSD0430	4.3	55.3	84.3	83	1.3	4.3	●

Referência para Pedido	Dimensões (mm)						Estoque
	DC	LCF	OAL	LF	PL	DCON	
GWSSD0440	4.4	57.3	87.3	86	1.3	4.4	●
GWSSD0450	4.5	57.4	87.4	86	1.4	4.5	●
GWSSD0460	4.6	57.4	87.4	86	1.4	4.6	●
GWSSD0470	4.7	60.4	90.4	89	1.4	4.7	●
GWSSD0480	4.8	60.4	90.4	89	1.4	4.8	●
GWSSD0490	4.9	63.5	93.5	92	1.5	4.9	●
GWSSD0500	5.0	63.5	93.5	92	1.5	5.0	●
GWSSD0510	5.1	63.5	93.5	92	1.5	5.1	●
GWSSD0520	5.2	65.6	96.6	95	1.6	5.2	●
GWSSD0530	5.3	65.6	96.6	95	1.6	5.3	●
GWSSD0540	5.4	65.6	96.6	95	1.6	5.4	●
GWSSD0550	5.5	65.7	96.7	95	1.7	5.5	●
GWSSD0560	5.6	68.7	99.7	98	1.7	5.6	●
GWSSD0570	5.7	68.7	99.7	98	1.7	5.7	●
GWSSD0580	5.8	68.7	99.7	98	1.7	5.8	●
GWSSD0590	5.9	68.8	99.8	98	1.8	5.9	●
GWSSD0600	6.0	71.8	103.8	102	1.8	6.0	●
GWSSD0610	6.1	71.8	103.8	102	1.8	6.1	●
GWSSD0620	6.2	71.9	103.9	102	1.9	6.2	●
GWSSD0630	6.3	71.9	103.9	102	1.9	6.3	●
GWSSD0640	6.4	74.9	106.9	105	1.9	6.4	●
GWSSD0650	6.5	75.0	107.0	105	2.0	6.5	●
GWSSD0660	6.6	75.0	107.0	105	2.0	6.6	●
GWSSD0670	6.7	75.0	107.0	105	2.0	6.7	●
GWSSD0680	6.8	75.0	107.0	105	2.0	6.8	●
GWSSD0690	6.9	75.1	107.1	105	2.1	6.9	●
GWSSD0700	7.0	75.1	107.1	105	2.1	7.0	●
GWSSD0710	7.1	77.1	110.1	108	2.1	7.1	●
GWSSD0720	7.2	77.2	110.2	108	2.2	7.2	●
GWSSD0730	7.3	77.2	110.2	108	2.2	7.3	●
GWSSD0740	7.4	80.2	113.2	111	2.2	7.4	●
GWSSD0750	7.5	80.3	113.3	111	2.3	7.5	●
GWSSD0760	7.6	80.3	113.3	111	2.3	7.6	●
GWSSD0770	7.7	83.3	116.3	114	2.3	7.7	●

● : Estoque mantido.

Referência para Pedido	Dimensões (mm)						Estoque
	DC	LCF	OAL	LF	PL	DON	
GWSSD0780	7.8	83.3	116.3	114	2.3	7.8	●
GWSSD0790	7.9	83.4	116.4	114	2.4	7.9	●
GWSSD0800	8.0	83.4	116.4	114	2.4	8.0	●
GWSSD0810	8.1	86.4	119.4	117	2.4	8.1	●
GWSSD0820	8.2	86.5	119.5	117	2.5	8.2	●
GWSSD0830	8.3	86.5	119.5	117	2.5	8.3	●
GWSSD0840	8.4	89.5	123.5	121	2.5	8.4	●
GWSSD0850	8.5	89.6	123.6	121	2.6	8.5	●
GWSSD0860	8.6	89.6	123.6	121	2.6	8.6	●
GWSSD0870	8.7	89.6	123.6	121	2.6	8.7	●
GWSSD0880	8.8	91.6	126.6	124	2.6	8.8	●
GWSSD0890	8.9	91.7	126.7	124	2.7	8.9	●
GWSSD0900	9.0	91.7	126.7	124	2.7	9.0	●
GWSSD0910	9.1	91.7	126.7	124	2.7	9.1	●
GWSSD0920	9.2	94.8	129.8	127	2.8	9.2	●
GWSSD0930	9.3	94.8	129.8	127	2.8	9.3	●
GWSSD0940	9.4	94.8	129.8	127	2.8	9.4	●
GWSSD0950	9.5	94.9	129.9	127	2.9	9.5	●
GWSSD0960	9.6	97.9	132.9	130	2.9	9.6	●
GWSSD0970	9.7	97.9	132.9	130	2.9	9.7	●
GWSSD0980	9.8	97.9	132.9	130	2.9	9.8	●
GWSSD0990	9.9	98.0	133.0	130	3.0	9.9	●
GWSSD1000	10.0	98.0	133.0	130	3.0	10.0	●
GWSSD1010	10.1	101.0	136.0	133	3.0	10.1	●
GWSSD1020	10.2	101.1	136.1	133	3.1	10.2	●
GWSSD1030	10.3	101.1	136.1	133	3.1	10.3	●
GWSSD1040	10.4	101.1	136.1	133	3.1	10.4	●
GWSSD1050	10.5	103.2	140.2	137	3.2	10.5	●

Referência para Pedido	Dimensões (mm)						Estoque
	DC	LCF	OAL	LF	PL	DON	
GWSSD1060	10.6	103.2	140.2	137	3.2	10.6	●
GWSSD1070	10.7	103.2	140.2	137	3.2	10.7	●
GWSSD1080	10.8	106.2	143.2	140	3.2	10.8	●
GWSSD1090	10.9	106.3	143.3	140	3.3	10.9	●
GWSSD1100	11.0	106.3	143.3	140	3.3	11.0	●
GWSSD1110	11.1	106.3	143.3	140	3.3	11.1	●
GWSSD1120	11.2	109.4	146.4	143	3.4	11.2	●
GWSSD1130	11.3	109.4	146.4	143	3.4	11.3	●
GWSSD1140	11.4	109.4	146.4	143	3.4	11.4	●
GWSSD1150	11.5	109.5	146.5	143	3.5	11.5	●
GWSSD1160	11.6	112.5	149.5	146	3.5	11.6	●
GWSSD1170	11.7	112.5	149.5	146	3.5	11.7	●
GWSSD1180	11.8	112.5	149.5	146	3.5	11.8	●
GWSSD1190	11.9	112.6	149.6	146	3.6	11.9	●
GWSSD1200	12.0	114.6	152.6	149	3.6	12.0	●
GWSSD1210	12.1	114.6	152.6	149	3.6	12.1	●
GWSSD1220	12.2	114.7	152.7	149	3.7	12.2	●
GWSSD1230	12.3	114.7	152.7	149	3.7	12.3	●
GWSSD1240	12.4	117.7	155.7	152	3.7	12.4	●
GWSSD1250	12.5	117.8	155.8	152	3.8	12.5	●
GWSSD1260	12.6	117.8	155.8	152	3.8	12.6	●
GWSSD1270	12.7	117.8	155.8	152	3.8	12.7	●
GWSSD1280	12.8	117.8	155.8	152	3.8	12.8	●
GWSSD1290	12.9	117.9	155.9	152	3.9	12.9	●
GWSSD1300	13.0	117.9	155.9	152	3.9	13.0	●

FURAÇÃO(HSS)

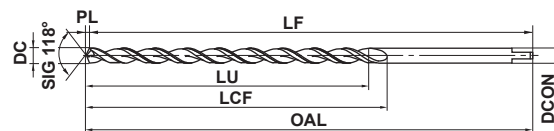
GWSL

TiN, extralonga



HSS

P	M	K	N	S	H
Aço	Aço Inoxidável	Ferro Fundido	Metals Não Ferrosos		



*LU = LCF-2DC



$2 \leq DC \leq 3$	$3 < DC \leq 6$	$6 < DC \leq 10$	$10 < DC \leq 13$
$\begin{matrix} 0 \\ -0.014 \end{matrix}$	$\begin{matrix} 0 \\ -0.018 \end{matrix}$	$\begin{matrix} 0 \\ -0.022 \end{matrix}$	$\begin{matrix} 0 \\ -0.027 \end{matrix}$

● Indicada para furação profunda.

Referência para Pedido	Dimensões (mm)						Estoque
	DC	LCF	OAL	LF	PL	DCON	
GWSLD0200A125	2.0	80.6	125.6	125	0.6	2.0	●
GWSLD0200A160	2.0	100.6	160.6	160	0.6	2.0	●
GWSLD0210A125	2.1	80.6	125.6	125	0.6	2.1	●
GWSLD0210A160	2.1	100.6	160.6	160	0.6	2.1	●
GWSLD0220A125	2.2	80.7	125.7	125	0.7	2.2	●
GWSLD0220A160	2.2	100.7	160.7	160	0.7	2.2	●
GWSLD0230A125	2.3	80.7	125.7	125	0.7	2.3	●
GWSLD0230A160	2.3	100.7	160.7	160	0.7	2.3	●
GWSLD0240A125	2.4	80.7	125.7	125	0.7	2.4	●
GWSLD0240A160	2.4	100.7	160.7	160	0.7	2.4	●
GWSLD0250A125	2.5	80.8	125.8	125	0.8	2.5	●
GWSLD0250A160	2.5	100.8	160.8	160	0.8	2.5	●
GWSLD0260A125	2.6	80.8	125.8	125	0.8	2.6	●
GWSLD0260A160	2.6	100.8	160.8	160	0.8	2.6	●
GWSLD0270A125	2.7	80.8	125.8	125	0.8	2.7	●
GWSLD0270A160	2.7	100.8	160.8	160	0.8	2.7	●
GWSLD0280A125	2.8	80.8	125.8	125	0.8	2.8	●
GWSLD0280A160	2.8	100.8	160.8	160	0.8	2.8	●
GWSLD0290A125	2.9	80.9	125.9	125	0.9	2.9	●
GWSLD0290A160	2.9	100.9	160.9	160	0.9	2.9	●
GWSLD0300A125	3.0	80.9	125.9	125	0.9	3.0	●
GWSLD0300A160	3.0	100.9	160.9	160	0.9	3.0	●
GWSLD0300A200	3.0	125.9	200.9	200	0.9	3.0	●
GWSLD0310A160	3.1	100.9	160.9	160	0.9	3.1	●
GWSLD0310A200	3.1	125.9	200.9	200	0.9	3.1	●
GWSLD0320A160	3.2	101.0	161.0	160	1.0	3.2	●
GWSLD0320A200	3.2	126.0	201.0	200	1.0	3.2	●
GWSLD0330A160	3.3	101.0	161.0	160	1.0	3.3	●
GWSLD0330A200	3.3	126.0	201.0	200	1.0	3.3	●
GWSLD0340A160	3.4	101.0	161.0	160	1.0	3.4	●
GWSLD0340A200	3.4	126.0	201.0	200	1.0	3.4	●
GWSLD0350A160	3.5	101.1	161.1	160	1.1	3.5	●
GWSLD0350A200	3.5	126.1	201.1	200	1.1	3.5	●
GWSLD0360A160	3.6	101.1	161.1	160	1.1	3.6	●

Referência para Pedido	Dimensões (mm)						Estoque
	DC	LCF	OAL	LF	PL	DCON	
GWSLD0360A200	3.6	126.1	201.1	200	1.1	3.6	●
GWSLD0370A160	3.7	101.1	161.1	160	1.1	3.7	●
GWSLD0370A200	3.7	126.1	201.1	200	1.1	3.7	●
GWSLD0380A160	3.8	101.1	161.1	160	1.1	3.8	●
GWSLD0380A200	3.8	126.1	201.1	200	1.1	3.8	●
GWSLD0390A160	3.9	101.2	161.2	160	1.2	3.9	●
GWSLD0390A200	3.9	126.2	201.2	200	1.2	3.9	●
GWSLD0400A160	4.0	101.2	161.2	160	1.2	4.0	●
GWSLD0400A200	4.0	126.2	201.2	200	1.2	4.0	●
GWSLD0400A250	4.0	161.2	251.2	250	1.2	4.0	●
GWSLD0410A160	4.1	101.2	161.2	160	1.2	4.1	●
GWSLD0410A200	4.1	126.2	201.2	200	1.2	4.1	●
GWSLD0410A250	4.1	161.2	251.2	250	1.2	4.1	●
GWSLD0420A160	4.2	101.3	161.3	160	1.3	4.2	●
GWSLD0420A200	4.2	126.3	201.3	200	1.3	4.2	●
GWSLD0420A250	4.2	161.3	251.3	250	1.3	4.2	●
GWSLD0430A160	4.3	101.3	161.3	160	1.3	4.3	●
GWSLD0430A200	4.3	126.3	201.3	200	1.3	4.3	●
GWSLD0430A250	4.3	161.3	251.3	250	1.3	4.3	●
GWSLD0440A160	4.4	101.3	161.3	160	1.3	4.4	●
GWSLD0440A200	4.4	126.3	201.3	200	1.3	4.4	●
GWSLD0440A250	4.4	161.3	251.3	250	1.3	4.4	●
GWSLD0450A160	4.5	101.4	161.4	160	1.4	4.5	●
GWSLD0450A200	4.5	126.4	201.4	200	1.4	4.5	●
GWSLD0450A250	4.5	161.4	251.4	250	1.4	4.5	●
GWSLD0460A160	4.6	101.4	161.4	160	1.4	4.6	●
GWSLD0460A200	4.6	126.4	201.4	200	1.4	4.6	●
GWSLD0460A250	4.6	161.4	251.4	250	1.4	4.6	●
GWSLD0470A160	4.7	101.4	161.4	160	1.4	4.7	●
GWSLD0470A200	4.7	126.4	201.4	200	1.4	4.7	●
GWSLD0470A250	4.7	161.4	251.4	250	1.4	4.7	●
GWSLD0480A160	4.8	101.4	161.4	160	1.4	4.8	●
GWSLD0480A200	4.8	126.4	201.4	200	1.4	4.8	●
GWSLD0480A250	4.8	161.4	251.4	250	1.4	4.8	●

FURAÇÃO

N

● : Estoque mantido.

Referência para Pedido	Dimensões (mm)						Estoque
	DC	LCF	OAL	LF	PL	DCON	
GWSLD0490A160	4.9	101.5	161.5	160	1.5	4.9	●
GWSLD0490A200	4.9	126.5	201.5	200	1.5	4.9	●
GWSLD0490A250	4.9	161.5	251.5	250	1.5	4.9	●
GWSLD0500A160	5.0	101.5	161.5	160	1.5	5.0	●
GWSLD0500A200	5.0	126.5	201.5	200	1.5	5.0	●
GWSLD0500A250	5.0	161.5	251.5	250	1.5	5.0	●
GWSLD0510A160	5.1	101.5	161.5	160	1.5	5.1	●
GWSLD0510A200	5.1	126.5	201.5	200	1.5	5.1	●
GWSLD0510A250	5.1	161.5	251.5	250	1.5	5.1	●
GWSLD0520A160	5.2	101.6	161.6	160	1.6	5.2	●
GWSLD0520A200	5.2	126.6	201.6	200	1.6	5.2	●
GWSLD0520A250	5.2	161.6	251.6	250	1.6	5.2	●
GWSLD0530A160	5.3	101.6	161.6	160	1.6	5.3	●
GWSLD0530A200	5.3	126.6	201.6	200	1.6	5.3	●
GWSLD0530A250	5.3	161.6	251.6	250	1.6	5.3	●
GWSLD0540A160	5.4	101.6	161.6	160	1.6	5.4	●
GWSLD0540A200	5.4	126.6	201.6	200	1.6	5.4	●
GWSLD0540A250	5.4	161.6	251.6	250	1.6	5.4	●
GWSLD0550A160	5.5	101.7	161.7	160	1.7	5.5	●
GWSLD0550A200	5.5	126.7	201.7	200	1.7	5.5	●
GWSLD0550A250	5.5	161.7	251.7	250	1.7	5.5	●
GWSLD0560A160	5.6	101.7	161.7	160	1.7	5.6	●
GWSLD0560A200	5.6	126.7	201.7	200	1.7	5.6	●
GWSLD0560A250	5.6	161.7	251.7	250	1.7	5.6	●
GWSLD0570A160	5.7	101.7	161.7	160	1.7	5.7	●
GWSLD0570A200	5.7	126.7	201.7	200	1.7	5.7	●
GWSLD0570A250	5.7	161.7	251.7	250	1.7	5.7	●
GWSLD0580A160	5.8	101.7	161.7	160	1.7	5.8	●
GWSLD0580A200	5.8	126.7	201.7	200	1.7	5.8	●
GWSLD0580A250	5.8	161.7	251.7	250	1.7	5.8	●
GWSLD0590A160	5.9	101.8	161.8	160	1.8	5.9	●
GWSLD0590A200	5.9	126.8	201.8	200	1.8	5.9	●
GWSLD0590A250	5.9	161.8	251.8	250	1.8	5.9	●
GWSLD0600A160	6.0	101.8	161.8	160	1.8	6.0	●
GWSLD0600A200	6.0	126.8	201.8	200	1.8	6.0	●
GWSLD0600A250	6.0	161.8	251.8	250	1.8	6.0	●
GWSLD0600A315	6.0	201.8	316.8	315	1.8	6.0	●
GWSLD0650A160	6.5	102.0	162.0	160	2.0	6.5	●
GWSLD0650A200	6.5	127.0	202.0	200	2.0	6.5	●
GWSLD0650A250	6.5	162.0	252.0	250	2.0	6.5	●

Referência para Pedido	Dimensões (mm)						Estoque
	DC	LCF	OAL	LF	PL	DCON	
GWSLD0650A315	6.5	202.0	317.0	315	2.0	6.5	●
GWSLD0680A160	6.8	102.0	162.0	160	2.0	6.8	●
GWSLD0680A200	6.8	127.0	202.0	200	2.0	6.8	●
GWSLD0680A250	6.8	162.0	252.0	250	2.0	6.8	●
GWSLD0680A315	6.8	202.0	317.0	315	2.0	6.8	●
GWSLD0700A160	7.0	102.1	162.1	160	2.1	7.0	●
GWSLD0700A200	7.0	127.1	202.1	200	2.1	7.0	●
GWSLD0700A250	7.0	162.1	252.1	250	2.1	7.0	●
GWSLD0700A315	7.0	202.1	317.1	315	2.1	7.0	●
GWSLD0750A200	7.5	127.3	202.3	200	2.3	7.5	●
GWSLD0750A250	7.5	162.3	252.3	250	2.3	7.5	●
GWSLD0750A315	7.5	202.3	317.3	315	2.3	7.5	●
GWSLD0800A200	8.0	127.4	202.4	200	2.4	8.0	●
GWSLD0800A250	8.0	162.4	252.4	250	2.4	8.0	●
GWSLD0800A315	8.0	202.4	317.4	315	2.4	8.0	●
GWSLD0850A200	8.5	142.6	202.6	200	2.6	8.5	●
GWSLD0850A250	8.5	162.6	252.6	250	2.6	8.5	●
GWSLD0850A315	8.5	202.6	317.6	315	2.6	8.5	●
GWSLD0900A200	9.0	142.7	202.7	200	2.7	9.0	●
GWSLD0900A250	9.0	162.7	252.7	250	2.7	9.0	●
GWSLD0900A315	9.0	202.7	317.7	315	2.7	9.0	●
GWSLD0950A200	9.5	142.9	202.9	200	2.9	9.5	●
GWSLD0950A250	9.5	162.9	252.9	250	2.9	9.5	●
GWSLD0950A315	9.5	202.9	317.9	315	2.9	9.5	●
GWSLD1000A200	10.0	143.0	203.0	200	3.0	10.0	●
GWSLD1000A250	10.0	163.0	253.0	250	3.0	10.0	●
GWSLD1000A315	10.0	203.0	318.0	315	3.0	10.0	●
GWSLD1050A250	10.5	163.2	253.2	250	3.2	10.5	●
GWSLD1050A315	10.5	203.2	318.2	315	3.2	10.5	●
GWSLD1100A250	11.0	163.3	253.3	250	3.3	11.0	●
GWSLD1100A315	11.0	203.3	318.3	315	3.3	11.0	●
GWSLD1150A250	11.5	163.5	253.5	250	3.5	11.5	●
GWSLD1150A315	11.5	203.5	318.5	315	3.5	11.5	●
GWSLD1200A250	12.0	163.6	253.6	250	3.6	12.0	●
GWSLD1200A315	12.0	203.6	318.6	315	3.6	12.0	●
GWSLD1250A250	12.5	163.8	253.8	250	3.8	12.5	●
GWSLD1250A315	12.5	203.8	318.8	315	3.8	12.5	●
GWSLD1300A250	13.0	163.9	253.9	250	3.9	13.0	●
GWSLD1300A315	13.0	203.9	318.9	315	3.9	13.0	●

CONDIÇÕES DE CORTE RECOMENDADAS

Material	Aço estrutural Aço carbono (-25HRC)		Aço liga Aço ferramenta (-35HRC)		Aço liga Aço fundido (-40HRC)		Ferro fundido	
	Rotação (min ⁻¹)	Taxa de Avanço (mm/rot)	Rotação (min ⁻¹)	Taxa de Avanço (mm/rot)	Rotação (min ⁻¹)	Taxa de Avanço (mm/rot)	Rotação (min ⁻¹)	Taxa de Avanço (mm/rot)
2.0	4700	0.05	3600	0.03	2400	0.02	4700	0.05
3.0	3200	0.10	2400	0.08	1800	0.05	3500	0.10
6.0	1600	0.18	1200	0.15	900	0.13	1750	0.18
8.0	1200	0.20	900	0.18	680	0.15	1300	0.20
10.0	960	0.22	720	0.20	550	0.18	1100	0.22
12.0	800	0.24	600	0.22	450	0.20	880	0.24
13.0	730	0.26	550	0.23	400	0.21	800	0.26

Material	Aço Inoxidável				Ligas de cobre, Bronze	Ligas de alumínio		
	Martensítico Ferrítico AISI 430		Austenítico AISI 304 Endurecido por precipitação ASTM 630					
Diâm. DC (mm)	Rotação (min ⁻¹)	Taxa de Avanço (mm/rot)	Rotação (min ⁻¹)	Taxa de Avanço (mm/rot)	Rotação (min ⁻¹)	Taxa de Avanço (mm/rot)	Rotação (min ⁻¹)	Taxa de Avanço (mm/rot)
2.0	2500	0.05	2300	0.04	4700	0.05	6000	0.08
3.0	1900	0.10	1500	0.07	3200	0.10	5500	0.13
6.0	950	0.18	750	0.10	1600	0.18	3100	0.23
8.0	700	0.20	530	0.13	1200	0.20	2300	0.28
10.0	560	0.22	420	0.15	960	0.22	1900	0.33
12.0	460	0.24	340	0.17	800	0.24	1600	0.38
13.0	420	0.25	300	0.18	730	0.25	1450	0.40

Nota 1) Reduza as condições de corte ao usinar um furo profundo.

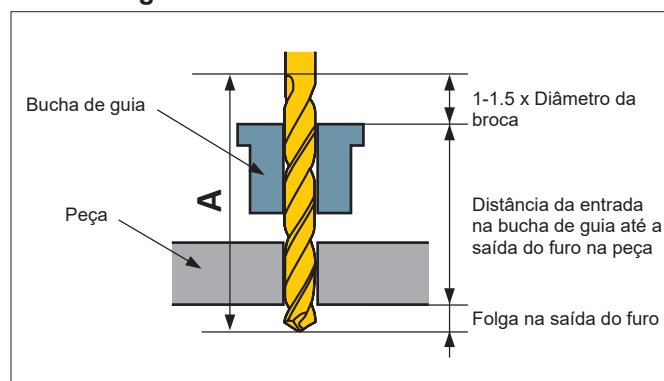
Nota 2) Esta tabela mostra somente condições de corte padrão com óleo solúvel em água. Faça correções ou ajustes conforme a aplicação.

Nota 3) As brocas longas de aço rápido têm rigidez mais baixa que as brocas longas de metal duro. Para evitar problemas como deflexão da broca e desvios, use buchas de guia e furos de guia (DC×1 a DC×2).

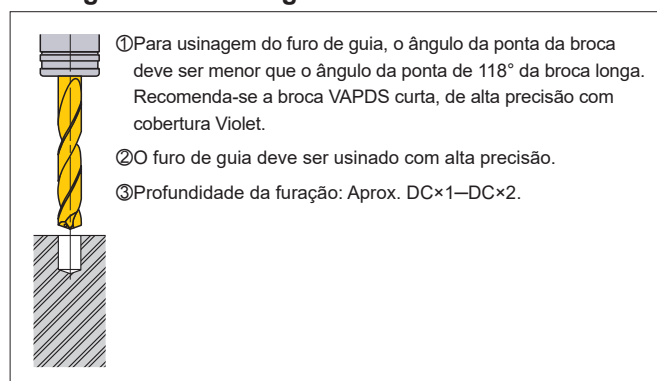
Nota 4) Para utilizar buchas de guia, selecione a broca de modo que o comprimento do canal seja maior que a dimensão A. (Veja abaixo.)

N

Bucha de guia



Usinagem de furo de guia



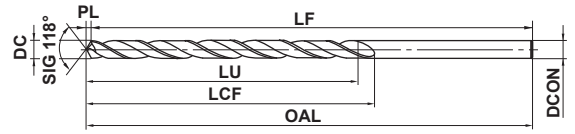
LSD

Extralonga



HSS

P	M	K	N	S	H
Aço	Aço Inoxidável	Ferro Fundido	Metais Não Ferrosos		



*LU = LCF-2DC



$1 \leq DC \leq 3$	$3 < DC \leq 6$	$6 < DC \leq 10$	$10 < DC \leq 13$
0 -0.014	0 -0.018	0 -0.022	0 -0.027

● Amplamente utilizada para furação profunda.

Referência para Pedido	Dimensões (mm)						Estoque
	DC	LCF	OAL	LF	PL	DCON	
LSDD0100A100	1.0	25.3	100.3	100	0.3	1.0	●
LSDD0100A150	1.0	25.3	150.3	150	0.3	1.0	●
LSDD0110A100	1.1	25.3	100.3	100	0.3	1.1	●
LSDD0110A150	1.1	25.3	150.3	150	0.3	1.1	●
LSDD0120A100	1.2	25.4	100.4	100	0.4	1.2	●
LSDD0120A150	1.2	25.4	150.4	150	0.4	1.2	●
LSDD0130A100	1.3	30.4	100.4	100	0.4	1.3	●
LSDD0130A150	1.3	30.4	150.4	150	0.4	1.3	●
LSDD0140A100	1.4	30.4	100.4	100	0.4	1.4	●
LSDD0140A150	1.4	30.4	150.4	150	0.4	1.4	●
LSDD0150A100	1.5	30.5	100.5	100	0.5	1.5	●
LSDD0150A150	1.5	30.5	150.5	150	0.5	1.5	●
LSDD0160A100	1.6	40.5	100.5	100	0.5	1.6	●
LSDD0160A150	1.6	40.5	150.5	150	0.5	1.6	●
LSDD0170A100	1.7	40.5	100.5	100	0.5	1.7	●
LSDD0170A150	1.7	40.5	150.5	150	0.5	1.7	●
LSDD0180A100	1.8	40.5	100.5	100	0.5	1.8	●
LSDD0180A150	1.8	40.5	150.5	150	0.5	1.8	●
LSDD0190A100	1.9	40.6	100.6	100	0.6	1.9	●
LSDD0190A150	1.9	40.6	150.6	150	0.6	1.9	●
LSDD0200A100	2.0	50.6	100.6	100	0.6	2.0	●
LSDD0200A125	2.0	65.6	125.6	125	0.6	2.0	●
LSDD0200A150	2.0	75.6	150.6	150	0.6	2.0	●
LSDD0210A100	2.1	50.6	100.6	100	0.6	2.1	●
LSDD0210A150	2.1	75.6	150.6	150	0.6	2.1	●
LSDD0220A100	2.2	50.7	100.7	100	0.7	2.2	●
LSDD0220A150	2.2	75.7	150.7	150	0.7	2.2	●
LSDD0230A100	2.3	50.7	100.7	100	0.7	2.3	●
LSDD0230A150	2.3	75.7	150.7	150	0.7	2.3	●
LSDD0240A100	2.4	50.7	100.7	100	0.7	2.4	●
LSDD0240A150	2.4	75.7	150.7	150	0.7	2.4	●
LSDD0250A100	2.5	50.8	100.8	100	0.8	2.5	●
LSDD0250A125	2.5	65.8	125.8	125	0.8	2.5	●
LSDD0250A150	2.5	75.8	150.8	150	0.8	2.5	●
LSDD0260A100	2.6	50.8	100.8	100	0.8	2.6	●
LSDD0260A150	2.6	75.8	150.8	150	0.8	2.6	●
LSDD0270A100	2.7	50.8	100.8	100	0.8	2.7	●
LSDD0270A150	2.7	75.8	150.8	150	0.8	2.7	●

Referência para Pedido	Dimensões (mm)						Estoque
	DC	LCF	OAL	LF	PL	DCON	
LSDD0280A100	2.8	50.8	100.8	100	0.8	2.8	●
LSDD0280A150	2.8	75.8	150.8	150	0.8	2.8	●
LSDD0290A100	2.9	50.9	100.9	100	0.9	2.9	●
LSDD0290A150	2.9	75.9	150.9	150	0.9	2.9	●
LSDD0300A100	3.0	50.9	100.9	100	0.9	3.0	●
LSDD0300A125	3.0	65.9	125.9	125	0.9	3.0	●
LSDD0300A150	3.0	75.9	150.9	150	0.9	3.0	●
LSDD0300A200	3.0	100.9	200.9	200	0.9	3.0	●
LSDD0310A150	3.1	75.9	150.9	150	0.9	3.1	●
LSDD0310A200	3.1	100.9	200.9	200	0.9	3.1	●
LSDD0320A125	3.2	66.0	126.0	125	1.0	3.2	●
LSDD0320A150	3.2	76.0	151.0	150	1.0	3.2	●
LSDD0320A200	3.2	101.0	201.0	200	1.0	3.2	●
LSDD0320A250	3.2	131.0	251.0	250	1.0	3.2	●
LSDD0330A150	3.3	76.0	151.0	150	1.0	3.3	●
LSDD0330A200	3.3	101.0	201.0	200	1.0	3.3	●
LSDD0340A150	3.4	76.0	151.0	150	1.0	3.4	●
LSDD0340A200	3.4	101.0	201.0	200	1.0	3.4	●
LSDD0350A125	3.5	66.1	126.1	125	1.1	3.5	●
LSDD0350A150	3.5	76.1	151.1	150	1.1	3.5	●
LSDD0350A200	3.5	101.1	201.1	200	1.1	3.5	●
LSDD0350A250	3.5	131.1	251.1	250	1.1	3.5	●
LSDD0360A150	3.6	76.1	151.1	150	1.1	3.6	●
LSDD0360A200	3.6	101.1	201.1	200	1.1	3.6	●
LSDD0370A150	3.7	76.1	151.1	150	1.1	3.7	●
LSDD0370A200	3.7	101.1	201.1	200	1.1	3.7	●
LSDD0380A150	3.8	76.1	151.1	150	1.1	3.8	●
LSDD0380A200	3.8	101.1	201.1	200	1.1	3.8	●
LSDD0390A150	3.9	76.2	151.2	150	1.2	3.9	●
LSDD0390A200	3.9	101.2	201.2	200	1.2	3.9	●
LSDD0400A125	4.0	71.2	126.2	125	1.2	4.0	●
LSDD0400A150	4.0	76.2	151.2	150	1.2	4.0	●
LSDD0400A200	4.0	101.2	201.2	200	1.2	4.0	●
LSDD0400A250	4.0	131.2	251.2	250	1.2	4.0	●
LSDD0410A150	4.1	76.2	151.2	150	1.2	4.1	●
LSDD0410A200	4.1	101.2	201.2	200	1.2	4.1	●
LSDD0420A150	4.2	76.3	151.3	150	1.3	4.2	●
LSDD0420A200	4.2	101.3	201.3	200	1.3	4.2	●

● : Estoque mantido.

LSD

Extralonga

HSS

Referência para Pedido	Dimensões (mm)						Estoque
	DC	LCF	OAL	LF	PL	DON	
LSDD0430A150	4.3	76.3	151.3	150	1.3	4.3	●
LSDD0430A200	4.3	101.3	201.3	200	1.3	4.3	●
LSDD0440A150	4.4	76.3	151.3	150	1.3	4.4	●
LSDD0440A200	4.4	101.3	201.3	200	1.3	4.4	●
LSDD0450A125	4.5	71.4	126.4	125	1.4	4.5	●
LSDD0450A150	4.5	76.4	151.4	150	1.4	4.5	●
LSDD0450A200	4.5	101.4	201.4	200	1.4	4.5	●
LSDD0450A250	4.5	131.4	251.4	250	1.4	4.5	●
LSDD0460A150	4.6	91.4	151.4	150	1.4	4.6	●
LSDD0460A200	4.6	101.4	201.4	200	1.4	4.6	●
LSDD0470A150	4.7	91.4	151.4	150	1.4	4.7	●
LSDD0470A200	4.7	101.4	201.4	200	1.4	4.7	●
LSDD0480A150	4.8	91.4	151.4	150	1.4	4.8	●
LSDD0480A200	4.8	101.4	201.4	200	1.4	4.8	●
LSDD0490A150	4.9	91.5	151.5	150	1.5	4.9	●
LSDD0490A200	4.9	101.5	201.5	200	1.5	4.9	●
LSDD0500A150	5.0	91.5	151.5	150	1.5	5.0	●
LSDD0500A200	5.0	101.5	201.5	200	1.5	5.0	●
LSDD0500A250	5.0	131.5	251.5	250	1.5	5.0	●
LSDD0500A300	5.0	151.5	301.5	300	1.5	5.0	●
LSDD0510A200	5.1	101.5	201.5	200	1.5	5.1	●
LSDD0510A250	5.1	131.5	251.5	250	1.5	5.1	●
LSDD0520A200	5.2	101.6	201.6	200	1.6	5.2	●
LSDD0520A250	5.2	131.6	251.6	250	1.6	5.2	●
LSDD0530A200	5.3	101.6	201.6	200	1.6	5.3	●
LSDD0530A250	5.3	131.6	251.6	250	1.6	5.3	●
LSDD0540A200	5.4	101.6	201.6	200	1.6	5.4	●
LSDD0540A250	5.4	131.6	251.6	250	1.6	5.4	●
LSDD0550A150	5.5	91.7	151.7	150	1.7	5.5	●
LSDD0550A200	5.5	101.7	201.7	200	1.7	5.5	●
LSDD0550A250	5.5	131.7	251.7	250	1.7	5.5	●
LSDD0550A300	5.5	151.7	301.7	300	1.7	5.5	●
LSDD0560A200	5.6	101.7	201.7	200	1.7	5.6	●
LSDD0560A250	5.6	131.7	251.7	250	1.7	5.6	●
LSDD0570A200	5.7	101.7	201.7	200	1.7	5.7	●
LSDD0570A250	5.7	131.7	251.7	250	1.7	5.7	●
LSDD0580A200	5.8	101.7	201.7	200	1.7	5.8	●
LSDD0580A250	5.8	131.7	251.7	250	1.7	5.8	●
LSDD0590A200	5.9	101.8	201.8	200	1.8	5.9	●
LSDD0590A250	5.9	131.8	251.8	250	1.8	5.9	●
LSDD0600A150	6.0	91.8	151.8	150	1.8	6.0	●
LSDD0600A200	6.0	101.8	201.8	200	1.8	6.0	●
LSDD0600A250	6.0	131.8	251.8	250	1.8	6.0	●
LSDD0600A300	6.0	151.8	301.8	300	1.8	6.0	●
LSDD0640A200	6.4	121.9	201.9	200	1.9	6.4	●
LSDD0650A150	6.5	92.0	152.0	150	2.0	6.5	●
LSDD0650A200	6.5	122.0	202.0	200	2.0	6.5	●
LSDD0650A250	6.5	132.0	252.0	250	2.0	6.5	●
LSDD0650A300	6.5	152.0	302.0	300	2.0	6.5	●
LSDD0700A150	7.0	92.1	152.1	150	2.1	7.0	●
LSDD0700A200	7.0	122.1	202.1	200	2.1	7.0	●
LSDD0700A250	7.0	132.1	252.1	250	2.1	7.0	●

Referência para Pedido	Dimensões (mm)						Estoque
	DC	LCF	OAL	LF	PL	DON	
LSDD0700A300	7.0	152.1	302.1	300	2.1	7.0	●
LSDD0750A150	7.5	92.3	152.3	150	2.3	7.5	●
LSDD0750A200	7.5	122.3	202.3	200	2.3	7.5	●
LSDD0750A250	7.5	132.3	252.3	250	2.3	7.5	●
LSDD0750A300	7.5	152.3	302.3	300	2.3	7.5	●
LSDD0800A150	8.0	92.4	152.4	150	2.4	8.0	●
LSDD0800A200	8.0	122.4	202.4	200	2.4	8.0	●
LSDD0800A250	8.0	132.4	252.4	250	2.4	8.0	●
LSDD0800A300	8.0	152.4	302.4	300	2.4	8.0	●
LSDD0850A200	8.5	122.6	202.6	200	2.6	8.5	●
LSDD0850A250	8.5	132.6	252.6	250	2.6	8.5	●
LSDD0850A300	8.5	182.6	302.6	300	2.6	8.5	●
LSDD0850A350	8.5	202.6	352.6	350	2.6	8.5	●
LSDD0900A200	9.0	122.7	202.7	200	2.7	9.0	●
LSDD0900A250	9.0	132.7	252.7	250	2.7	9.0	●
LSDD0900A300	9.0	182.7	302.7	300	2.7	9.0	●
LSDD0900A350	9.0	202.7	352.7	350	2.7	9.0	●
LSDD0950A200	9.5	122.9	202.9	200	2.9	9.5	●
LSDD0950A250	9.5	132.9	252.9	250	2.9	9.5	●
LSDD0950A300	9.5	182.9	302.9	300	2.9	9.5	●
LSDD0950A350	9.5	202.9	352.9	350	2.9	9.5	●
LSDD1000A200	10.0	123.0	203.0	200	3.0	10.0	●
LSDD1000A250	10.0	133.0	253.0	250	3.0	10.0	●
LSDD1000A300	10.0	183.0	303.0	300	3.0	10.0	●
LSDD1000A350	10.0	203.0	353.0	350	3.0	10.0	●
LSDD1050A200	10.5	123.2	203.2	200	3.2	10.5	●
LSDD1050A250	10.5	133.2	253.2	250	3.2	10.5	●
LSDD1050A300	10.5	183.2	303.2	300	3.2	10.5	●
LSDD1050A350	10.5	203.2	353.2	350	3.2	10.5	●
LSDD1100A200	11.0	123.3	203.3	200	3.3	11.0	●
LSDD1100A250	11.0	133.3	253.3	250	3.3	11.0	●
LSDD1100A300	11.0	183.3	303.3	300	3.3	11.0	●
LSDD1100A350	11.0	203.3	353.3	350	3.3	11.0	●
LSDD1150A200	11.5	123.5	203.5	200	3.5	11.5	●
LSDD1150A250	11.5	133.5	253.5	250	3.5	11.5	●
LSDD1150A300	11.5	183.5	303.5	300	3.5	11.5	●
LSDD1150A350	11.5	203.5	353.5	350	3.5	11.5	●
LSDD1200A200	12.0	123.6	203.6	200	3.6	12.0	●
LSDD1200A250	12.0	133.6	253.6	250	3.6	12.0	●
LSDD1200A300	12.0	183.6	303.6	300	3.6	12.0	●
LSDD1200A350	12.0	203.6	353.6	350	3.6	12.0	●
LSDD1250A200	12.5	123.8	203.8	200	3.8	12.5	●
LSDD1250A250	12.5	133.8	253.8	250	3.8	12.5	●
LSDD1250A300	12.5	183.8	303.8	300	3.8	12.5	●
LSDD1250A350	12.5	203.8	353.8	350	3.8	12.5	●
LSDD1300A200	13.0	123.9	203.9	200	3.9	13.0	●
LSDD1300A250	13.0	133.9	253.9	250	3.9	13.0	●
LSDD1300A300	13.0	183.9	303.9	300	3.9	13.0	●
LSDD1300A350	13.0	203.9	353.9	350	3.9	13.0	●

● : Estoque mantido.

CONDIÇÕES DE CORTE RECOMENDADAS

Material	Aço estrutural Aço carbono (-25HRC)		Aço liga Aço ferramenta (-35HRC)		Aço liga Aço fundido (-40HRC)		Ferro fundido	
	Diâm. DC (mm)	Rotação (min ⁻¹)	Taxa de Avanço (mm/rot)	Rotação (min ⁻¹)	Taxa de Avanço (mm/rot)	Rotação (min ⁻¹)	Taxa de Avanço (mm/rot)	Rotação (min ⁻¹)
1.0	5000	0.02	4000	0.01	2800	0.008	5000	0.02
2.0	3000	0.05	2500	0.03	1800	0.02	3000	0.05
3.0	2100	0.10	1800	0.08	1200	0.05	2300	0.10
6.0	1100	0.18	900	0.15	600	0.13	1100	0.18
8.0	800	0.20	670	0.18	450	0.15	900	0.20
10.0	650	0.22	540	0.20	350	0.18	700	0.22
12.0	520	0.24	450	0.22	300	0.20	600	0.24
13.0	480	0.26	410	0.23	280	0.21	540	0.26

Material	Aço Inoxidável				Ligas de cobre, Bronze	Ligas de alumínio		
	Martensítico Ferrítico AISI 430		Austenítico AISI 304 Endurecido por precipitação ASTM 630					
Diâm. DC (mm)	Rotação (min ⁻¹)	Taxa de Avanço (mm/rot)	Rotação (min ⁻¹)	Taxa de Avanço (mm/rot)	Rotação (min ⁻¹)	Taxa de Avanço (mm/rot)	Rotação (min ⁻¹)	Taxa de Avanço (mm/rot)
1.0	4000	0.02	3000	0.02	5000	0.02	7000	0.04
2.0	2200	0.05	1500	0.04	3000	0.05	5000	0.08
3.0	1600	0.10	1000	0.07	2100	0.10	4200	0.13
6.0	800	0.18	530	0.10	1100	0.18	2100	0.23
8.0	600	0.20	400	0.13	800	0.20	1600	0.28
10.0	480	0.22	310	0.15	650	0.22	1200	0.33
12.0	400	0.24	250	0.17	520	0.24	1000	0.38
13.0	370	0.25	200	0.18	480	0.25	970	0.40

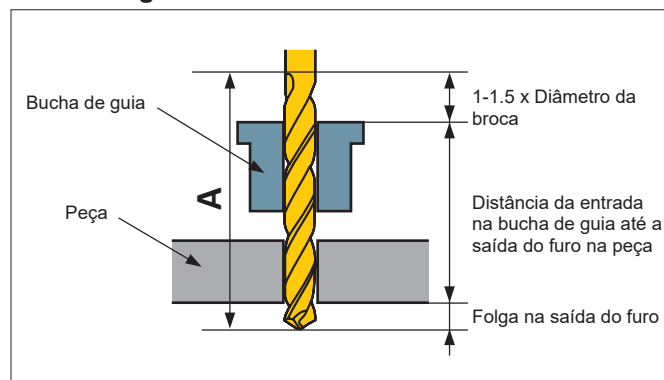
Nota 1) Reduza as condições de corte ao usinar um furo profundo.

Nota 2) Esta tabela mostra somente condições de corte padrão com óleo solúvel em água. Faça correções ou ajustes conforme a aplicação.

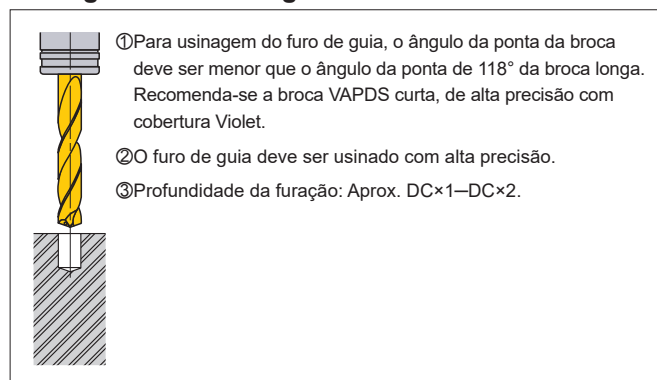
Nota 3) As brocas longas de aço rápido têm rigidez mais baixa que as brocas longas de metal duro. Para evitar problemas como deflexão da broca e desvios, use buchas de guia e furos de guia (DC×1 a DC×2).

Nota 4) Para utilizar buchas de guia, selecione a broca de modo que o comprimento do canal seja maior que a dimensão A. (Veja abaixo.)

Bucha de guia



Usinagem de furo de guia



FURAÇÃO(HSS)

EPSS

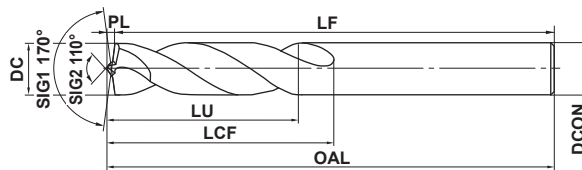
Chapa



HSS

P
M
K
N
S
H

Aço Aço Inoxidável Ferro Fundido Metais Não Ferrosos



*LU : Máx 1×DC



$2 \leq DC \leq 3$	$3 < DC \leq 6$	$6 < DC \leq 10$	$10 < DC \leq 13$
0 -0.014	0 -0.018	0 -0.022	0 -0.027

● Amplamente utilizada para furação profunda.

Referência para Pedido	Dimensões (mm)						Estoque
	DC	LCF	OAL	LF	PL	DCON	
EPSSD0200	2.0	17	48.3	48	0.3	2.0	●
EPSSD0210	2.1	17	48.3	48	0.3	2.1	●
EPSSD0220	2.2	17	48.3	48	0.3	2.2	●
EPSSD0230	2.3	17	48.3	48	0.3	2.3	●
EPSSD0240	2.4	17	48.3	48	0.3	2.4	●
EPSSD0250	2.5	17	48.4	48	0.4	2.5	●
EPSSD0260	2.6	17	48.4	48	0.4	2.6	●
EPSSD0270	2.7	17	48.4	48	0.4	2.7	●
EPSSD0280	2.8	17	48.4	48	0.4	2.8	●
EPSSD0290	2.9	17	48.4	48	0.4	2.9	●
EPSSD0300	3.0	17	48.5	48	0.5	3.0	●
EPSSD0310	3.1	17	48.5	48	0.5	3.1	●
EPSSD0320	3.2	17	48.5	48	0.5	3.2	●
EPSSD0330	3.3	17	48.5	48	0.5	3.3	●
EPSSD0340	3.4	19	51.5	51	0.5	3.4	●
EPSSD0350	3.5	19	51.6	51	0.6	3.5	●
EPSSD0360	3.6	19	51.6	51	0.6	3.6	●
EPSSD0370	3.7	19	51.6	51	0.6	3.7	●
EPSSD0380	3.8	21	54.6	54	0.6	3.8	●
EPSSD0390	3.9	21	54.6	54	0.6	3.9	●
EPSSD0400	4.0	21	54.6	54	0.6	4.0	●
EPSSD0410	4.1	21	54.6	54	0.6	4.1	●
EPSSD0420	4.2	21	54.6	54	0.6	4.2	●
EPSSD0430	4.3	23	57.6	57	0.6	4.3	●
EPSSD0440	4.4	23	57.6	57	0.6	4.4	●
EPSSD0450	4.5	23	57.7	57	0.7	4.5	●
EPSSD0460	4.6	23	57.7	57	0.7	4.6	●
EPSSD0470	4.7	23	57.7	57	0.7	4.7	●

Referência para Pedido	Dimensões (mm)						Estoque
	DC	LCF	OAL	LF	PL	DCON	
EPSSD0480	4.8	24	60.7	60	0.7	4.8	●
EPSSD0490	4.9	24	60.7	60	0.7	4.9	●
EPSSD0500	5.0	24	60.8	60	0.8	5.0	●
EPSSD0510	5.1	24	60.8	60	0.8	5.1	●
EPSSD0520	5.2	24	60.8	60	0.8	5.2	●
EPSSD0530	5.3	24	60.8	60	0.8	5.3	●
EPSSD0540	5.4	26	64.8	64	0.8	5.4	●
EPSSD0550	5.5	26	64.9	64	0.9	5.5	●
EPSSD0600	6.0	26	65.0	64	1.0	6.0	●
EPSSD0650	6.5	29	69.0	68	1.0	6.5	●
EPSSD0680	6.8	32	73.1	72	1.1	6.8	●
EPSSD0700	7.0	32	73.1	72	1.1	7.0	●
EPSSD0750	7.5	32	73.2	72	1.2	7.5	●
EPSSD0800	8.0	34	77.3	76	1.3	8.0	●
EPSSD0820	8.2	34	77.3	76	1.3	8.2	●
EPSSD0850	8.5	34	77.4	76	1.4	8.5	●
EPSSD0900	9.0	37	82.5	81	1.5	9.0	●
EPSSD0950	9.5	37	82.6	81	1.6	9.5	●
EPSSD1000	10.0	40	87.6	86	1.6	10.0	●
EPSSD1020	10.2	40	87.6	86	1.6	10.2	●
EPSSD1030	10.3	40	87.6	86	1.6	10.3	●
EPSSD1050	10.5	40	87.7	86	1.7	10.5	●
EPSSD1100	11.0	43	92.8	91	1.8	11.0	●
EPSSD1150	11.5	43	92.9	91	1.9	11.5	●
EPSSD1200	12.0	47	100.0	98	2.0	12.0	●
EPSSD1250	12.5	47	100.0	98	2.0	12.5	●
EPSSD1300	13.0	47	100.2	98	2.2	13.0	●

FURAÇÃO

N

● : Estoque mantido.

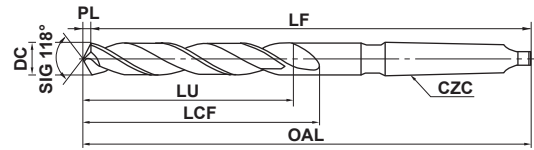
GTD

TiN



HSS

P	M	K	N	S	H
Aço	Aço Inoxidável	Ferro Fundido	Metais Não Ferrosos		



*LU = LCF-2DC



DC=6	6<DC≤10	10<DC≤18	18<DC≤30	30<DC≤40
$\begin{matrix} 0 \\ -0.018 \end{matrix}$	$\begin{matrix} 0 \\ -0.022 \end{matrix}$	$\begin{matrix} 0 \\ -0.027 \end{matrix}$	$\begin{matrix} 0 \\ -0.033 \end{matrix}$	$\begin{matrix} 0 \\ -0.039 \end{matrix}$

● Tecnologia de produção e cobertura original para melhor desempenho.

Referência para Pedido	Dimensões (mm)						Estoque
	DC	LCF	OAL	LF	PL	CZC	
GTDD0600M1	6.0	56.8	149.8	148	1.8	MT.1	●
GTDD0650M1	6.5	63.0	154.0	152	2.0	MT.1	●
GTDD0660M1	6.6	63.0	157.0	155	2.0	MT.1	●
GTDD0680M1	6.8	69.0	157.0	155	2.0	MT.1	●
GTDD0700M1	7.0	69.1	157.1	155	2.1	MT.1	●
GTDD0720M1	7.2	69.2	160.2	158	2.2	MT.1	●
GTDD0750M1	7.5	69.3	160.3	158	2.3	MT.1	●
GTDD0770M1	7.7	74.3	164.3	162	2.3	MT.1	●
GTDD0780M1	7.8	74.3	164.3	162	2.3	MT.1	●
GTDD0800M1	8.0	74.4	164.4	162	2.4	MT.1	●
GTDD0820M1	8.2	74.5	170.5	168	2.5	MT.1	●
GTDD0850M1	8.5	74.6	170.6	168	2.6	MT.1	●
GTDD0880M1	8.8	80.6	174.6	172	2.6	MT.1	●
GTDD0900M1	9.0	80.7	174.7	172	2.7	MT.1	●
GTDD0950M1	9.5	80.9	177.9	175	2.9	MT.1	●
GTDD0970M1	9.7	86.9	180.9	178	2.9	MT.1	●
GTDD0980M1	9.8	86.9	180.9	178	2.9	MT.1	●
GTDD1000M1	10.0	87.0	181.0	178	3.0	MT.1	●
GTDD1030M1	10.3	87.1	185.1	182	3.1	MT.1	●
GTDD1050M1	10.5	87.2	185.2	182	3.2	MT.1	●
GTDD1080M1	10.8	93.2	188.2	185	3.2	MT.1	●
GTDD1100M1	11.0	93.3	188.3	185	3.3	MT.1	●
GTDD1150M1	11.5	93.5	191.5	188	3.5	MT.1	●
GTDD1200M1	12.0	100.6	195.6	192	3.6	MT.1	●
GTDD1250M1	12.5	100.8	198.8	195	3.8	MT.1	●
GTDD1300M1	13.0	100.9	201.9	198	3.9	MT.1	●
GTDD1350M1	13.5	107.1	206.1	202	4.1	MT.1	●
GTDD1400M1	14.0	107.2	209.2	205	4.2	MT.1	●
GTDD1450M2	14.5	113.4	226.4	222	4.4	MT.2	●
GTDD1500M2	15.0	113.5	229.5	225	4.5	MT.2	●
GTDD1550M2	15.5	119.7	232.7	228	4.7	MT.2	●
GTDD1600M2	16.0	119.8	234.8	230	4.8	MT.2	●
GTDD1650M2	16.5	124.0	237.0	232	5.0	MT.2	●
GTDD1700M2	17.0	124.1	240.1	235	5.1	MT.2	●
GTDD1750M2	17.5	129.3	245.3	240	5.3	MT.2	●
GTDD1800M2	18.0	129.4	245.4	240	5.4	MT.2	●
GTDD1850M2	18.5	134.6	250.6	245	5.6	MT.2	●
GTDD1900M2	19.0	134.7	250.7	245	5.7	MT.2	●

Referência para Pedido	Dimensões (mm)						Estoque
	DC	LCF	OAL	LF	PL	CZC	
GTDD1950M2	19.5	138.9	255.9	250	5.9	MT.2	●
GTDD2000M2	20.0	139.0	256.0	250	6.0	MT.2	●
GTDD2050M2	20.5	144.2	261.2	255	6.2	MT.2	●
GTDD2100M2	21.0	144.3	261.3	255	6.3	MT.2	●
GTDD2150M2	21.5	149.5	266.5	260	6.5	MT.2	●
GTDD2150M3	21.5	149.5	286.5	280	6.5	MT.3	●
GTDD2200M2	22.0	149.6	266.6	260	6.6	MT.2	●
GTDD2200M3	22.0	149.6	286.6	280	6.6	MT.3	●
GTDD2250M2	22.5	153.8	271.8	265	6.8	MT.2	●
GTDD2250M3	22.5	153.8	291.8	285	6.8	MT.3	●
GTDD2300M2	23.0	153.9	271.9	265	6.9	MT.2	●
GTDD2300M3	23.0	153.9	291.9	285	6.9	MT.3	●
GTDD2350M3	23.5	154.1	292.1	285	7.1	MT.3	●
GTDD2400M3	24.0	159.2	292.2	285	7.2	MT.3	●
GTDD2450M3	24.5	159.4	292.4	285	7.4	MT.3	●
GTDD2500M3	25.0	159.5	292.5	285	7.5	MT.3	●
GTDD2550M3	25.5	163.7	292.7	285	7.7	MT.3	●
GTDD2600M3	26.0	163.8	292.8	285	7.8	MT.3	●
GTDD2650M3	26.5	164.0	298.0	290	8.0	MT.3	●
GTDD2700M3	27.0	169.1	298.1	290	8.1	MT.3	●
GTDD2750M3	27.5	169.3	303.3	295	8.3	MT.3	●
GTDD2800M3	28.0	169.4	303.4	295	8.4	MT.3	●
GTDD2850M3	28.5	173.6	308.6	300	8.6	MT.3	●
GTDD2900M3	29.0	173.7	308.7	300	8.7	MT.3	●
GTDD2950M3	29.5	173.9	313.9	305	8.9	MT.3	●
GTDD3000M3	30.0	174.0	314.0	305	9.0	MT.3	●
GTDD3050M3	30.5	179.2	319.2	310	9.2	MT.3	●
GTDD3100M3	31.0	179.3	319.3	310	9.3	MT.3	●
GTDD3150M3	31.5	179.5	324.5	315	9.5	MT.3	●
GTDD3200M3	32.0	183.6	324.6	315	9.6	MT.3	●
GTDD3300M4	33.0	183.9	354.9	345	9.9	MT.4	●
GTDD3400M4	34.0	189.2	360.2	350	10.2	MT.4	●
GTDD3500M4	35.0	189.5	360.5	350	10.5	MT.4	●
GTDD3600M4	36.0	193.8	365.8	355	10.8	MT.4	●
GTDD3700M4	37.0	194.1	366.1	355	11.1	MT.4	●
GTDD3800M4	38.0	198.4	371.4	360	11.4	MT.4	●
GTDD3900M4	39.0	198.7	371.7	360	11.7	MT.4	●
GTDD4000M4	40.0	199.0	377.0	365	12.0	MT.4	●

N

FURAÇÃO

FURAÇÃO(HSS)

TD

Haste cônica

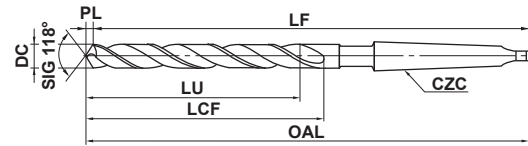


DC>40

HSS

P
M
K
N
S
H

Aço Aço Inoxidável Ferro Fundido Metais Não Ferrosos



*LU = LCF-2DC



DC=3	3<DC≤6	6<DC≤10	10<DC≤18	18<DC≤30	30<DC≤50	50<DC≤75
0	0	0	0	0	0	0
-0.014	-0.018	-0.022	-0.027	-0.033	-0.039	-0.046

● Para furação em geral.

Referência para Pedido	Dimensões (mm)						Estoque
	DC	LCF	OAL	LF	PL	CZC	
TDD0300M1	3.0	38.9	115.9	115	0.9	MT.1	●
TDD0310M1	3.1	45.9	122.9	122	0.9	MT.1	●
TDD0320M1	3.2	46.0	123.0	122	1.0	MT.1	●
TDD0330M1	3.3	46.0	123.0	122	1.0	MT.1	●
TDD0340M1	3.4	46.0	123.0	122	1.0	MT.1	●
TDD0350M1	3.5	46.1	123.1	122	1.1	MT.1	●
TDD0360M1	3.6	51.1	129.1	128	1.1	MT.1	●
TDD0370M1	3.7	51.1	129.1	128	1.1	MT.1	●
TDD0380M1	3.8	51.1	129.1	128	1.1	MT.1	●
TDD0390M1	3.9	51.2	129.2	128	1.2	MT.1	●
TDD0400M1	4.0	51.2	129.2	128	1.2	MT.1	●
TDD0410M1	4.1	56.2	136.2	135	1.2	MT.1	●
TDD0420M1	4.2	56.3	136.3	135	1.3	MT.1	●
TDD0430M1	4.3	56.3	136.3	135	1.3	MT.1	●
TDD0440M1	4.4	56.3	136.3	135	1.3	MT.1	●
TDD0450M1	4.5	56.4	136.4	135	1.4	MT.1	●
TDD0460M1	4.6	61.4	141.4	140	1.4	MT.1	●
TDD0470M1	4.7	61.4	141.4	140	1.4	MT.1	●
TDD0480M1	4.8	61.4	141.4	140	1.4	MT.1	●
TDD0490M1	4.9	61.5	141.5	140	1.5	MT.1	●
TDD0500M1	5.0	61.5	141.5	140	1.5	MT.1	●
TDD0510M1	5.1	66.5	146.5	145	1.5	MT.1	●
TDD0520M1	5.2	66.6	146.6	145	1.6	MT.1	●
TDD0530M1	5.3	66.6	146.6	145	1.6	MT.1	●
TDD0540M1	5.4	66.6	146.6	145	1.6	MT.1	●
TDD0550M1	5.5	66.7	146.7	145	1.7	MT.1	●
TDD0560M1	5.6	69.7	149.7	148	1.7	MT.1	●
TDD0570M1	5.7	69.7	149.7	148	1.7	MT.1	●
TDD0580M1	5.8	69.7	149.7	148	1.7	MT.1	●
TDD0590M1	5.9	69.8	149.8	148	1.8	MT.1	●
TDD0600M1	6.0	69.8	149.8	148	1.8	MT.1	●
TDD0610M1	6.1	73.8	153.8	152	1.8	MT.1	●
TDD0620M1	6.2	73.9	153.9	152	1.9	MT.1	●
TDD0630M1	6.3	73.9	153.9	152	1.9	MT.1	●
TDD0640M1	6.4	73.9	153.9	152	1.9	MT.1	●
TDD0650M1	6.5	74.0	154.0	152	2.0	MT.1	●

Referência para Pedido	Dimensões (mm)						Estoque
	DC	LCF	OAL	LF	PL	CZC	
TDD0660M1	6.6	77.0	157.0	155	2.0	MT.1	●
TDD0670M1	6.7	77.0	157.0	155	2.0	MT.1	●
TDD0680M1	6.8	77.0	157.0	155	2.0	MT.1	●
TDD0690M1	6.9	77.1	157.1	155	2.1	MT.1	●
TDD0700M1	7.0	77.1	157.1	155	2.1	MT.1	●
TDD0710M1	7.1	80.1	160.1	158	2.1	MT.1	●
TDD0720M1	7.2	80.2	160.2	158	2.2	MT.1	●
TDD0730M1	7.3	80.2	160.2	158	2.2	MT.1	●
TDD0740M1	7.4	80.2	160.2	158	2.2	MT.1	●
TDD0750M1	7.5	80.3	160.3	158	2.3	MT.1	●
TDD0760M1	7.6	84.3	164.3	162	2.3	MT.1	●
TDD0770M1	7.7	84.3	164.3	162	2.3	MT.1	●
TDD0780M1	7.8	84.3	164.3	162	2.3	MT.1	●
TDD0790M1	7.9	84.4	164.4	162	2.4	MT.1	●
TDD0800M1	8.0	84.4	164.4	162	2.4	MT.1	●
TDD0810M1	8.1	87.4	170.4	168	2.4	MT.1	●
TDD0820M1	8.2	87.5	170.5	168	2.5	MT.1	●
TDD0830M1	8.3	87.5	170.5	168	2.5	MT.1	●
TDD0840M1	8.4	87.5	170.5	168	2.5	MT.1	●
TDD0850M1	8.5	87.6	170.6	168	2.6	MT.1	●
TDD0860M1	8.6	90.6	174.6	172	2.6	MT.1	●
TDD0870M1	8.7	90.6	174.6	172	2.6	MT.1	●
TDD0880M1	8.8	90.6	174.6	172	2.6	MT.1	●
TDD0890M1	8.9	90.7	174.7	172	2.7	MT.1	●
TDD0900M1	9.0	90.7	174.7	172	2.7	MT.1	●
TDD0910M1	9.1	94.7	177.7	175	2.7	MT.1	●
TDD0920M1	9.2	94.8	177.8	175	2.8	MT.1	●
TDD0930M1	9.3	94.8	177.8	175	2.8	MT.1	●
TDD0940M1	9.4	94.8	177.8	175	2.8	MT.1	●
TDD0950M1	9.5	94.9	177.9	175	2.9	MT.1	●
TDD0960M1	9.6	97.9	180.9	178	2.9	MT.1	●
TDD0970M1	9.7	97.9	180.9	178	2.9	MT.1	●
TDD0980M1	9.8	97.9	180.9	178	2.9	MT.1	●
TDD0990M1	9.9	98.0	181.0	178	3.0	MT.1	●
TDD1000M1	10.0	98.0	181.0	178	3.0	MT.1	●
TDD1010M1	10.1	101.0	185.0	182	3.0	MT.1	●

FURAÇÃO

N

● : Estoque mantido.

Referência para Pedido	Dimensões (mm)						Estoque
	DC	LCF	OAL	LF	PL	CZC	
TDD1020M1	10.2	101.1	185.1	182	3.1	MT.1	●
TDD1030M1	10.3	101.1	185.1	182	3.1	MT.1	●
TDD1040M1	10.4	101.1	185.1	182	3.1	MT.1	●
TDD1050M1	10.5	101.2	185.2	182	3.2	MT.1	●
TDD1060M1	10.6	105.2	188.2	185	3.2	MT.1	●
TDD1070M1	10.7	105.2	188.2	185	3.2	MT.1	●
TDD1080M1	10.8	105.2	188.2	185	3.2	MT.1	●
TDD1090M1	10.9	105.3	188.3	185	3.3	MT.1	●
TDD1100M1	11.0	105.3	188.3	185	3.3	MT.1	●
TDD1110M1	11.1	108.3	191.3	188	3.3	MT.1	●
TDD1120M1	11.2	108.4	191.4	188	3.4	MT.1	●
TDD1130M1	11.3	108.4	191.4	188	3.4	MT.1	●
TDD1140M1	11.4	108.4	191.4	188	3.4	MT.1	●
TDD1150M1	11.5	108.5	191.5	188	3.5	MT.1	●
TDD1160M1	11.6	111.5	195.5	192	3.5	MT.1	●
TDD1170M1	11.7	111.5	195.5	192	3.5	MT.1	●
TDD1180M1	11.8	111.5	195.5	192	3.5	MT.1	●
TDD1190M1	11.9	111.6	195.6	192	3.6	MT.1	●
TDD1200M1	12.0	111.6	195.6	192	3.6	MT.1	●
TDD1210M1	12.1	115.6	198.6	195	3.6	MT.1	●
TDD1220M1	12.2	115.7	198.7	195	3.7	MT.1	●
TDD1230M1	12.3	115.7	198.7	195	3.7	MT.1	●
TDD1240M1	12.4	115.7	198.7	195	3.7	MT.1	●
TDD1250M1	12.5	115.8	198.8	195	3.8	MT.1	●
TDD1260M1	12.6	118.8	201.8	198	3.8	MT.1	●
TDD1270M1	12.7	118.8	201.8	198	3.8	MT.1	●
TDD1280M1	12.8	118.8	201.8	198	3.8	MT.1	●
TDD1290M1	12.9	118.9	201.9	198	3.9	MT.1	●
TDD1300M1	13.0	118.9	201.9	198	3.9	MT.1	●
TDD1310M1	13.1	121.9	205.9	202	3.9	MT.1	●
TDD1320M1	13.2	122.0	206.0	202	4.0	MT.1	●
TDD1330M1	13.3	122.0	206.0	202	4.0	MT.1	●
TDD1340M1	13.4	122.0	206.0	202	4.0	MT.1	●
TDD1350M1	13.5	122.1	206.1	202	4.1	MT.1	●
TDD1360M1	13.6	126.1	209.1	205	4.1	MT.1	●
TDD1370M1	13.7	126.1	209.1	205	4.1	MT.1	●
TDD1380M1	13.8	126.1	209.1	205	4.1	MT.1	●
TDD1390M1	13.9	126.2	209.2	205	4.2	MT.1	●
TDD1400M1	14.0	126.2	209.2	205	4.2	MT.1	●
TDD1410M2	14.1	126.2	226.2	222	4.2	MT.2	●
TDD1420M2	14.2	126.3	226.3	222	4.3	MT.2	●
TDD1430M2	14.3	126.3	226.3	222	4.3	MT.2	●
TDD1440M2	14.4	126.3	226.3	222	4.3	MT.2	●
TDD1450M2	14.5	126.4	226.4	222	4.4	MT.2	●
TDD1460M2	14.6	129.4	229.4	225	4.4	MT.2	●
TDD1470M2	14.7	129.4	229.4	225	4.4	MT.2	●
TDD1480M2	14.8	129.4	229.4	225	4.4	MT.2	●
TDD1490M2	14.9	129.5	229.5	225	4.5	MT.2	●

Referência para Pedido	Dimensões (mm)						Estoque
	DC	LCF	OAL	LF	PL	CZC	
TDD1500M2	15.0	129.5	229.5	225	4.5	MT.2	●
TDD1510M2	15.1	132.5	232.5	228	4.5	MT.2	●
TDD1520M2	15.2	132.6	232.6	228	4.6	MT.2	●
TDD1530M2	15.3	132.6	232.6	228	4.6	MT.2	●
TDD1540M2	15.4	132.6	232.6	228	4.6	MT.2	●
TDD1550M2	15.5	132.7	232.7	228	4.7	MT.2	●
TDD1560M2	15.6	134.7	234.7	230	4.7	MT.2	●
TDD1570M2	15.7	134.7	234.7	230	4.7	MT.2	●
TDD1580M2	15.8	134.7	234.7	230	4.7	MT.2	●
TDD1590M2	15.9	134.8	234.8	230	4.8	MT.2	●
TDD1600M2	16.0	134.8	234.8	230	4.8	MT.2	●
TDD1610M2	16.1	136.8	236.8	232	4.8	MT.2	●
TDD1620M2	16.2	136.9	236.9	232	4.9	MT.2	●
TDD1630M2	16.3	136.9	236.9	232	4.9	MT.2	●
TDD1640M2	16.4	136.9	236.9	232	4.9	MT.2	●
TDD1650M2	16.5	137.0	237.0	232	5.0	MT.2	●
TDD1660M2	16.6	140.0	240.0	235	5.0	MT.2	●
TDD1670M2	16.7	140.0	240.0	235	5.0	MT.2	●
TDD1680M2	16.8	140.0	240.0	235	5.0	MT.2	●
TDD1690M2	16.9	140.1	240.1	235	5.1	MT.2	●
TDD1700M2	17.0	140.1	240.1	235	5.1	MT.2	●
TDD1710M2	17.1	145.1	245.1	240	5.1	MT.2	●
TDD1720M2	17.2	145.2	245.2	240	5.2	MT.2	●
TDD1730M2	17.3	145.2	245.2	240	5.2	MT.2	●
TDD1740M2	17.4	145.2	245.2	240	5.2	MT.2	●
TDD1750M2	17.5	145.3	245.3	240	5.3	MT.2	●
TDD1760M2	17.6	145.3	245.3	240	5.3	MT.2	●
TDD1770M2	17.7	145.3	245.3	240	5.3	MT.2	●
TDD1780M2	17.8	145.3	245.3	240	5.3	MT.2	●
TDD1790M2	17.9	145.4	245.4	240	5.4	MT.2	●
TDD1800M2	18.0	145.4	245.4	240	5.4	MT.2	●
TDD1810M2	18.1	150.4	250.4	245	5.4	MT.2	●
TDD1820M2	18.2	150.5	250.5	245	5.5	MT.2	●
TDD1830M2	18.3	150.5	250.5	245	5.5	MT.2	●
TDD1840M2	18.4	150.5	250.5	245	5.5	MT.2	●
TDD1850M2	18.5	150.6	250.6	245	5.6	MT.2	●
TDD1860M2	18.6	150.6	250.6	245	5.6	MT.2	●
TDD1870M2	18.7	150.6	250.6	245	5.6	MT.2	●
TDD1880M2	18.8	150.6	250.6	245	5.6	MT.2	●
TDD1890M2	18.9	150.7	250.7	245	5.7	MT.2	●
TDD1900M2	19.0	150.7	250.7	245	5.7	MT.2	●
TDD1910M2	19.1	155.7	255.7	250	5.7	MT.2	●
TDD1920M2	19.2	155.8	255.8	250	5.8	MT.2	●
TDD1930M2	19.3	155.8	255.8	250	5.8	MT.2	●
TDD1940M2	19.4	155.8	255.8	250	5.8	MT.2	●
TDD1950M2	19.5	155.9	255.9	250	5.9	MT.2	●
TDD1960M2	19.6	155.9	255.9	250	5.9	MT.2	●
TDD1970M2	19.7	155.9	255.9	250	5.9	MT.2	●

FURAÇÃO(HSS)

TD

Haste cônica

HSS

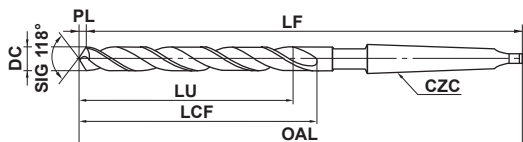
Referência para Pedido	Dimensões (mm)						Estoque
	DC	LCF	OAL	LF	PL	CZC	
TDD1980M2	19.8	155.9	255.9	250	5.9	MT.2	●
TDD1990M2	19.9	156.0	256.0	250	6.0	MT.2	●
TDD2000M2	20.0	156.0	256.0	250	6.0	MT.2	●
TDD2010M2	20.1	161.0	261.0	255	6.0	MT.2	●
TDD2020M2	20.2	161.1	261.1	255	6.1	MT.2	●
TDD2030M2	20.3	161.1	261.1	255	6.1	MT.2	●
TDD2040M2	20.4	161.1	261.1	255	6.1	MT.2	●
TDD2050M2	20.5	161.2	261.2	255	6.2	MT.2	●
TDD2060M2	20.6	161.2	261.2	255	6.2	MT.2	●
TDD2070M2	20.7	161.2	261.2	255	6.2	MT.2	●
TDD2080M2	20.8	161.2	261.2	255	6.2	MT.2	●
TDD2090M2	20.9	161.3	261.3	255	6.3	MT.2	●
TDD2100M2	21.0	161.3	261.3	255	6.3	MT.2	●
TDD2110M2	21.1	166.3	266.3	260	6.3	MT.2	●
TDD2120M2	21.2	166.4	266.4	260	6.4	MT.2	●
TDD2130M2	21.3	166.4	266.4	260	6.4	MT.2	●
TDD2140M2	21.4	166.4	266.4	260	6.4	MT.2	●
TDD2150M2	21.5	166.5	266.5	260	6.5	MT.2	●
TDD2160M2	21.6	166.5	266.5	260	6.5	MT.2	●
TDD2170M2	21.7	166.5	266.5	260	6.5	MT.2	●
TDD2180M2	21.8	166.5	266.5	260	6.5	MT.2	●
TDD2190M2	21.9	166.6	266.6	260	6.6	MT.2	●
TDD2200M2	22.0	166.6	266.6	260	6.6	MT.2	●
TDD2210M2	22.1	171.6	271.6	265	6.6	MT.2	●
TDD2220M2	22.2	171.7	271.7	265	6.7	MT.2	●
TDD2230M2	22.3	171.7	271.7	265	6.7	MT.2	●
TDD2240M2	22.4	171.7	271.7	265	6.7	MT.2	●
TDD2250M2	22.5	171.8	271.8	265	6.8	MT.2	●
TDD2260M2	22.6	171.8	271.8	265	6.8	MT.2	●
TDD2270M2	22.7	171.8	271.8	265	6.8	MT.2	●
TDD2280M2	22.8	171.8	271.8	265	6.8	MT.2	●
TDD2290M2	22.9	171.9	271.9	265	6.9	MT.2	●
TDD2300M2	23.0	171.9	271.9	265	6.9	MT.2	●
TDD2350M3	23.5	172.1	292.1	285	7.1	MT.3	●
TDD2400M3	24.0	172.2	292.2	285	7.2	MT.3	●
TDD2450M3	24.5	172.4	292.4	285	7.4	MT.3	●
TDD2500M3	25.0	172.5	292.5	285	7.5	MT.3	●
TDD2550M3	25.5	172.7	292.7	285	7.7	MT.3	●
TDD2600M3	26.0	172.8	292.8	285	7.8	MT.3	●
TDD2650M3	26.5	178.0	298.0	290	8.0	MT.3	●
TDD2700M3	27.0	178.1	298.1	290	8.1	MT.3	●
TDD2750M3	27.5	183.3	303.3	295	8.3	MT.3	●
TDD2800M3	28.0	183.4	303.4	295	8.4	MT.3	●
TDD2850M3	28.5	188.6	308.6	300	8.6	MT.3	●
TDD2900M3	29.0	188.7	308.7	300	8.7	MT.3	●
TDD2950M3	29.5	193.9	313.9	305	8.9	MT.3	●
TDD3000M3	30.0	194.0	314.0	305	9.0	MT.3	●
TDD3050M3	30.5	199.2	319.2	310	9.2	MT.3	●

Referência para Pedido	Dimensões (mm)						Estoque
	DC	LCF	OAL	LF	PL	CZC	
TDD3100M3	31.0	199.3	319.3	310	9.3	MT.3	●
TDD3150M3	31.5	204.5	324.5	315	9.5	MT.3	●
TDD3200M3	32.0	204.6	324.6	315	9.6	MT.3	●
TDD3250M4	32.5	209.8	354.8	345	9.8	MT.4	●
TDD3300M4	33.0	209.9	354.9	345	9.9	MT.4	●
TDD3350M4	33.5	215.1	360.1	350	10.1	MT.4	●
TDD3400M4	34.0	215.2	360.2	350	10.2	MT.4	●
TDD3450M4	34.5	215.4	360.4	350	10.4	MT.4	●
TDD3500M4	35.0	215.5	360.5	350	10.5	MT.4	●
TDD3550M4	35.5	220.7	365.7	355	10.7	MT.4	●
TDD3600M4	36.0	220.8	365.8	355	10.8	MT.4	●
TDD3650M4	36.5	221.0	366.0	355	11.0	MT.4	●
TDD3700M4	37.0	221.1	366.1	355	11.1	MT.4	●
TDD3750M4	37.5	226.3	371.3	360	11.3	MT.4	●
TDD3800M4	38.0	226.4	371.4	360	11.4	MT.4	●
TDD3850M4	38.5	226.6	371.6	360	11.6	MT.4	●
TDD3900M4	39.0	226.7	371.7	360	11.7	MT.4	●
TDD3950M4	39.5	231.9	376.9	365	11.9	MT.4	●
TDD4000M4	40.0	232.0	377.0	365	12.0	MT.4	●
TDD4050M4	40.5	232.2	377.2	365	12.2	MT.4	●
TDD4100M4	41.0	232.3	377.3	365	12.3	MT.4	●
TDD4150M4	41.5	237.5	382.5	370	12.5	MT.4	●
TDD4200M4	42.0	237.6	382.6	370	12.6	MT.4	●
TDD4250M4	42.5	237.8	382.8	370	12.8	MT.4	●
TDD4300M4	43.0	237.9	382.9	370	12.9	MT.4	●
TDD4350M4	43.5	243.1	388.1	375	13.1	MT.4	●
TDD4400M4	44.0	243.2	388.2	375	13.2	MT.4	●
TDD4450M4	44.5	243.4	388.4	375	13.4	MT.4	●
TDD4500M4	45.0	243.5	388.5	375	13.5	MT.4	●
TDD4550M4	45.5	248.7	393.7	380	13.7	MT.4	●
TDD4600M4	46.0	248.8	393.8	380	13.8	MT.4	●
TDD4650M4	46.5	249.0	394.0	380	14.0	MT.4	●
TDD4700M4	47.0	249.1	394.1	380	14.1	MT.4	●
TDD4750M4	47.5	254.3	399.3	385	14.3	MT.4	●
TDD4800M4	48.0	254.4	399.4	385	14.4	MT.4	●
TDD4850M4	48.5	254.6	399.6	385	14.6	MT.4	●
TDD4900M4	49.0	254.7	399.7	385	14.7	MT.4	●
TDD4950M4	49.5	259.9	404.9	390	14.9	MT.4	●
TDD5000M4	50.0	260.0	405.0	390	15.0	MT.4	●
TDD5100M5	51.0	260.3	440.3	425	15.3	MT.5	●
TDD5200M5	52.0	265.6	445.6	430	15.6	MT.5	●
TDD5300M5	53.0	265.9	445.9	430	15.9	MT.5	●
TDD5400M5	54.0	271.2	451.2	435	16.2	MT.5	●
TDD5500M5	55.0	271.5	451.5	435	16.5	MT.5	●
TDD5600M5	56.0	276.8	456.8	440	16.8	MT.5	●
TDD5700M5	57.0	277.1	457.1	440	17.1	MT.5	●
TDD5800M5	58.0	282.4	462.4	445	17.4	MT.5	●
TDD5900M5	59.0	282.7	462.7	445	17.7	MT.5	●

FURAÇÃO

N

● : Estoque mantido.



Referência para Pedido	Dimensões (mm)						Estoque
	DC	LCF	OAL	LF	PL	CZC	
TDD6000M5	60.0	288.0	468.0	450	18.0	MT.5	●
TDD6100M5	61.0	288.3	468.3	450	18.3	MT.5	●
TDD6200M5	62.0	293.6	473.6	455	18.6	MT.5	●
TDD6300M5	63.0	293.9	473.9	455	18.9	MT.5	●
TDD6400M5	64.0	299.2	479.2	460	19.2	MT.5	●
TDD6500M5	65.0	299.5	479.5	460	19.5	MT.5	●
TDD6600M5	66.0	304.8	484.8	465	19.8	MT.5	●
TDD6700M5	67.0	305.1	485.1	465	20.1	MT.5	●

Referência para Pedido	Dimensões (mm)						Estoque
	DC	LCF	OAL	LF	PL	CZC	
TDD6800M5	68.0	310.4	490.4	470	20.4	MT.5	●
TDD6900M5	69.0	310.7	490.7	470	20.7	MT.5	●
TDD7000M5	70.0	316.0	496.0	475	21.0	MT.5	●
TDD7100M5	71.0	316.3	496.3	475	21.3	MT.5	●
TDD7200M5	72.0	321.6	501.6	480	21.6	MT.5	●
TDD7300M5	73.0	321.9	501.9	480	21.9	MT.5	●
TDD7400M5	74.0	327.2	507.2	485	22.2	MT.5	●
TDD7500M5	75.0	327.5	507.5	485	22.5	MT.5	●

FURAÇÃO(HSS)

KTD

HSS Cobalto

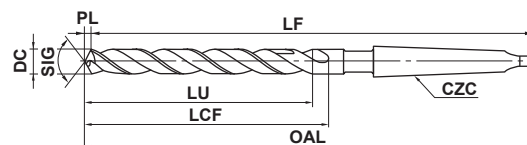


DC<10,DC>35 10≤DC≤35 16<DC≤35 DC>35

HSS

P
M
K
N
S
H

Aço Aço Inoxidável Ferro Fundido Metais Não Ferrosos



*LU = LCF-2DC



5≤DC≤6	6<DC≤10	10<DC≤18	18<DC≤30	30<DC≤50
0 -0.018	0 -0.022	0 -0.027	0 -0.033	0 -0.039

● Indicada para furação de materiais de difícil usinabilidade.

Referência para Pedido	Dimensões (mm)						Estoque
	DC	LCF	OAL	LF	PL	CZC	
KTDD0500M1	5.0	61.5	141.5	140	1.5	MT.1	●
KTDD0550M1	5.5	66.7	146.7	145	1.7	MT.1	●
KTDD0600M1	6.0	69.8	149.8	148	1.8	MT.1	●
KTDD0650M1	6.5	74.0	154.0	152	2.0	MT.1	●
KTDD0700M1	7.0	77.1	157.1	155	2.1	MT.1	●
KTDD0750M1	7.5	80.3	160.3	158	2.3	MT.1	●
KTDD0800M1	8.0	84.4	164.4	162	2.4	MT.1	●
KTDD0850M1	8.5	87.6	170.6	168	2.6	MT.1	●
KTDD0900M1	9.0	90.7	174.7	172	2.7	MT.1	●
KTDD0950M1	9.5	94.9	177.9	175	2.9	MT.1	●
KTDD1000M1	10.0	97.4	180.4	178	2.4	MT.1	●
KTDD1010M1	10.1	100.5	184.5	182	2.5	MT.1	●
KTDD1020M1	10.2	100.5	184.5	182	2.5	MT.1	●
KTDD1030M1	10.3	100.5	184.5	182	2.5	MT.1	●
KTDD1040M1	10.4	100.5	184.5	182	2.5	MT.1	●
KTDD1050M1	10.5	100.6	184.6	182	2.6	MT.1	●
KTDD1060M1	10.6	104.6	187.6	185	2.6	MT.1	●
KTDD1070M1	10.7	104.6	187.6	185	2.6	MT.1	●
KTDD1080M1	10.8	104.6	187.6	185	2.6	MT.1	●
KTDD1090M1	10.9	104.7	187.7	185	2.7	MT.1	●
KTDD1100M1	11.0	104.7	187.7	185	2.7	MT.1	●
KTDD1150M1	11.5	107.8	190.8	188	2.8	MT.1	●
KTDD1200M1	12.0	110.9	194.9	192	2.9	MT.1	●
KTDD1210M2	12.1	115.0	215.0	212	3.0	MT.2	●
KTDD1220M2	12.2	115.0	215.0	212	3.0	MT.2	●
KTDD1250M2	12.5	115.0	215.0	212	3.0	MT.2	●
KTDD1300M2	13.0	118.2	218.2	215	3.2	MT.2	●
KTDD1310M2	13.1	121.2	221.2	218	3.2	MT.2	●
KTDD1320M2	13.2	121.2	221.2	218	3.2	MT.2	●
KTDD1350M2	13.5	121.3	221.3	218	3.3	MT.2	●
KTDD1370M2	13.7	125.3	225.3	222	3.3	MT.2	●
KTDD1380M2	13.8	125.4	225.4	222	3.4	MT.2	●
KTDD1390M2	13.9	125.4	225.4	222	3.4	MT.2	●
KTDD1400M2	14.0	125.4	225.4	222	3.4	MT.2	●
KTDD1410M2	14.1	125.4	225.4	222	3.4	MT.2	●
KTDD1420M2	14.2	125.5	225.5	222	3.5	MT.2	●

Referência para Pedido	Dimensões (mm)						Estoque
	DC	LCF	OAL	LF	PL	CZC	
KTDD1430M2	14.3	125.5	225.5	222	3.5	MT.2	●
KTDD1440M2	14.4	125.5	225.5	222	3.5	MT.2	●
KTDD1450M2	14.5	125.5	225.5	222	3.5	MT.2	●
KTDD1470M2	14.7	128.6	228.6	225	3.6	MT.2	●
KTDD1500M2	15.0	128.7	228.7	225	3.7	MT.2	●
KTDD1550M2	15.5	131.8	231.8	228	3.8	MT.2	●
KTDD1600M2	16.0	133.9	233.9	230	3.9	MT.2	●
KTDD1620M2	16.2	136.0	236.0	232	4.0	MT.2	●
KTDD1650M2	16.5	136.0	236.0	232	4.0	MT.2	●
KTDD1670M2	16.7	139.1	239.1	235	4.1	MT.2	●
KTDD1700M2	17.0	139.1	239.1	235	4.1	MT.2	●
KTDD1750M2	17.5	144.3	244.3	240	4.3	MT.2	●
KTDD1770M2	17.7	144.3	244.3	240	4.3	MT.2	●
KTDD1800M2	18.0	144.4	244.4	240	4.4	MT.2	●
KTDD1850M2	18.5	149.5	249.5	245	4.5	MT.2	●
KTDD1900M2	19.0	149.6	249.6	245	4.6	MT.2	●
KTDD1950M2	19.5	154.8	254.8	250	4.8	MT.2	●
KTDD2000M2	20.0	154.9	254.9	250	4.9	MT.2	●
KTDD2050M3	20.5	160.0	280.0	275	5.0	MT.3	●
KTDD2100M3	21.0	160.1	280.1	275	5.1	MT.3	●
KTDD2150M3	21.5	165.2	285.2	280	5.2	MT.3	●
KTDD2200M3	22.0	165.4	285.4	280	5.4	MT.3	●
KTDD2250M3	22.5	170.5	290.5	285	5.5	MT.3	●
KTDD2300M3	23.0	170.6	290.6	285	5.6	MT.3	●
KTDD2350M3	23.5	170.7	290.7	285	5.7	MT.3	●
KTDD2400M3	24.0	170.9	290.9	285	5.9	MT.3	●
KTDD2450M3	24.5	171.0	291.0	285	6.0	MT.3	●
KTDD2500M3	25.0	171.1	291.1	285	6.1	MT.3	●
KTDD2550M3	25.5	171.2	291.2	285	6.2	MT.3	●
KTDD2600M3	26.0	171.3	291.3	285	6.3	MT.3	●
KTDD2650M3	26.5	176.5	296.5	290	6.5	MT.3	●
KTDD2700M3	27.0	176.6	296.6	290	6.6	MT.3	●
KTDD2750M4	27.5	181.7	326.7	320	6.7	MT.4	●
KTDD2800M4	28.0	181.8	326.8	320	6.8	MT.4	●
KTDD2850M4	28.5	187.0	332.0	325	7.0	MT.4	●
KTDD2900M4	29.0	187.1	332.1	325	7.1	MT.4	●

FURAÇÃO

N

● : Estoque mantido.

Referência para Pedido	Dimensões (mm)						Estoque
	DC	LCF	OAL	LF	PL	CZC	
KTDD2950M4	29.5	192.2	337.2	330	7.2	MT.4	●
KTDD3000M4	30.0	192.3	337.3	330	7.3	MT.4	●
KTDD3050M4	30.5	197.4	342.4	335	7.4	MT.4	●
KTDD3100M4	31.0	197.6	342.6	335	7.6	MT.4	●
KTDD3150M4	31.5	202.7	347.7	340	7.7	MT.4	●
KTDD3200M4	32.0	202.8	347.8	340	7.8	MT.4	●
KTDD3300M4	33.0	208.0	353.0	345	8.0	MT.4	●
KTDD3400M4	34.0	213.3	358.3	350	8.3	MT.4	●
KTDD3500M4	35.0	213.5	358.5	350	8.5	MT.4	●
KTDD3600M4	36.0	220.8	365.8	355	10.8	MT.4	●
KTDD3700M4	37.0	221.1	366.1	355	11.1	MT.4	●
KTDD3800M4	38.0	226.4	371.4	360	11.4	MT.4	●

Referência para Pedido	Dimensões (mm)						Estoque
	DC	LCF	OAL	LF	PL	CZC	
KTDD3900M4	39.0	226.7	371.7	360	11.7	MT.4	●
KTDD4000M4	40.0	232.0	377.0	365	12.0	MT.4	●
KTDD4100M4	41.0	232.3	377.3	365	12.3	MT.4	●
KTDD4200M4	42.0	237.6	382.6	370	12.6	MT.4	●
KTDD4300M4	43.0	237.9	382.9	370	12.9	MT.4	●
KTDD4400M4	44.0	243.2	388.2	375	13.2	MT.4	●
KTDD4500M4	45.0	243.5	388.5	375	13.5	MT.4	●
KTDD4600M4	46.0	248.8	393.8	380	13.8	MT.4	●
KTDD4700M4	47.0	249.1	394.1	380	14.1	MT.4	●
KTDD4800M4	48.0	254.4	399.4	385	14.4	MT.4	●
KTDD4900M4	49.0	254.7	399.7	385	14.7	MT.4	●
KTDD5000M4	50.0	260.0	405.0	390	15.0	MT.4	●

FURAÇÃO(HSS)

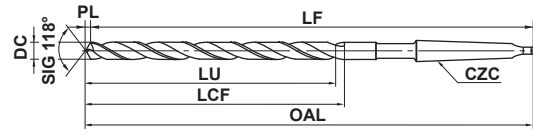
LTD

Extralonga



DC>6

HSS



*LU = LCF-2DC



DC=6	6<DC≤10	10<DC≤18	18<DC≤30	30<DC≤40
0 -0.018	0 -0.022	0 -0.027	0 -0.033	0 -0.039

● Para furação profunda.

Referência para Pedido	Dimensões (mm)						Estoque
	DC	LCF	OAL	LF	PL	CZC	
LTDD0600A200M1	6.0	101.8	201.8	200	1.8	MT.1	●
LTDD0600A250M1	6.0	151.8	251.8	250	1.8	MT.1	●
LTDD0600A300M1	6.0	201.8	301.8	300	1.8	MT.1	●
LTDD0600A350M1	6.0	226.8	351.8	350	1.8	MT.1	●
LTDD0650A250M1	6.5	152.0	252.0	250	2.0	MT.1	●
LTDD0650A300M1	6.5	202.0	302.0	300	2.0	MT.1	●
LTDD0650A350M1	6.5	227.0	352.0	350	2.0	MT.1	●
LTDD0700A250M1	7.0	152.1	252.1	250	2.1	MT.1	●
LTDD0700A300M1	7.0	202.1	302.1	300	2.1	MT.1	●
LTDD0700A350M1	7.0	227.1	352.1	350	2.1	MT.1	●
LTDD0750A250M1	7.5	152.3	252.3	250	2.3	MT.1	●
LTDD0750A300M1	7.5	202.3	302.3	300	2.3	MT.1	●
LTDD0750A350M1	7.5	227.3	352.3	350	2.3	MT.1	●
LTDD0800A250M1	8.0	152.4	252.4	250	2.4	MT.1	●
LTDD0800A300M1	8.0	202.4	302.4	300	2.4	MT.1	●
LTDD0800A350M1	8.0	227.4	352.4	350	2.4	MT.1	●
LTDD0850A250M1	8.5	152.6	252.6	250	2.6	MT.1	●
LTDD0850A300M1	8.5	202.6	302.6	300	2.6	MT.1	●
LTDD0850A350M1	8.5	227.6	352.6	350	2.6	MT.1	●
LTDD0900A250M1	9.0	152.7	252.7	250	2.7	MT.1	●
LTDD0900A300M1	9.0	202.7	302.7	300	2.7	MT.1	●
LTDD0900A350M1	9.0	227.7	352.7	350	2.7	MT.1	●
LTDD0950A250M1	9.5	152.9	252.9	250	2.9	MT.1	●
LTDD0950A300M1	9.5	202.9	302.9	300	2.9	MT.1	●
LTDD0950A350M1	9.5	227.9	352.9	350	2.9	MT.1	●
LTDD0950A400M1	9.5	252.9	402.9	400	2.9	MT.1	●
LTDD1000A250M1	10.0	153.0	253.0	250	3.0	MT.1	●
LTDD1000A300M1	10.0	203.0	303.0	300	3.0	MT.1	●
LTDD1000A350M1	10.0	228.0	353.0	350	3.0	MT.1	●
LTDD1000A400M1	10.0	253.0	403.0	400	3.0	MT.1	●
LTDD1050A250M1	10.5	153.2	253.2	250	3.2	MT.1	●
LTDD1050A300M1	10.5	203.2	303.2	300	3.2	MT.1	●
LTDD1050A350M1	10.5	228.2	353.2	350	3.2	MT.1	●
LTDD1050A400M1	10.5	253.2	403.2	400	3.2	MT.1	●
LTDD1100A250M1	11.0	153.3	253.3	250	3.3	MT.1	●
LTDD1100A300M1	11.0	203.3	303.3	300	3.3	MT.1	●

Referência para Pedido	Dimensões (mm)						Estoque
	DC	LCF	OAL	LF	PL	CZC	
LTDD1100A350M1	11.0	228.3	353.3	350	3.3	MT.1	●
LTDD1100A400M1	11.0	253.3	403.3	400	3.3	MT.1	●
LTDD1150A250M1	11.5	153.5	253.5	250	3.5	MT.1	●
LTDD1150A300M1	11.5	203.5	303.5	300	3.5	MT.1	●
LTDD1150A350M1	11.5	228.5	353.5	350	3.5	MT.1	●
LTDD1150A400M1	11.5	253.5	403.5	400	3.5	MT.1	●
LTDD1200A250M1	12.0	153.6	253.6	250	3.6	MT.1	●
LTDD1200A300M1	12.0	203.6	303.6	300	3.6	MT.1	●
LTDD1200A350M1	12.0	228.6	353.6	350	3.6	MT.1	●
LTDD1200A400M1	12.0	253.6	403.6	400	3.6	MT.1	●
LTDD1250A250M1	12.5	153.8	253.8	250	3.8	MT.1	●
LTDD1250A300M1	12.5	203.8	303.8	300	3.8	MT.1	●
LTDD1250A350M1	12.5	228.8	353.8	350	3.8	MT.1	●
LTDD1250A400M1	12.5	253.8	403.8	400	3.8	MT.1	●
LTDD1300A250M1	13.0	153.9	253.9	250	3.9	MT.1	●
LTDD1300A300M1	13.0	203.9	303.9	300	3.9	MT.1	●
LTDD1300A350M1	13.0	228.9	353.9	350	3.9	MT.1	●
LTDD1300A400M1	13.0	253.9	403.9	400	3.9	MT.1	●
LTDD1350A300M1	13.5	204.1	304.1	300	4.1	MT.1	●
LTDD1350A350M1	13.5	229.1	354.1	350	4.1	MT.1	●
LTDD1350A400M1	13.5	254.1	404.1	400	4.1	MT.1	●
LTDD1350A450M1	13.5	304.1	454.1	450	4.1	MT.1	●
LTDD1350A500M1	13.5	354.1	504.1	500	4.1	MT.1	●
LTDD1350A600M1	13.5	404.1	604.1	600	4.1	MT.1	●
LTDD1400A300M1	14.0	204.2	304.2	300	4.2	MT.1	●
LTDD1400A350M1	14.0	229.2	354.2	350	4.2	MT.1	●
LTDD1400A400M1	14.0	254.2	404.2	400	4.2	MT.1	●
LTDD1400A450M1	14.0	304.2	454.2	450	4.2	MT.1	●
LTDD1400A500M1	14.0	354.2	504.2	500	4.2	MT.1	●
LTDD1400A600M1	14.0	404.2	604.2	600	4.2	MT.1	●
LTDD1450A300M2	14.5	179.4	304.4	300	4.4	MT.2	●
LTDD1450A350M2	14.5	229.4	354.4	350	4.4	MT.2	●
LTDD1450A400M2	14.5	254.4	404.4	400	4.4	MT.2	●
LTDD1450A450M2	14.5	304.4	454.4	450	4.4	MT.2	●
LTDD1450A500M2	14.5	354.4	504.4	500	4.4	MT.2	●
LTDD1450A600M2	14.5	404.4	604.4	600	4.4	MT.2	●

● : Estoque mantido.

Referência para Pedido	Dimensões (mm)						Estoque
	DC	LCF	OAL	LF	PL	CZC	
LTDD1500A300M2	15.0	179.5	304.5	300	4.5	MT.2	●
LTDD1500A350M2	15.0	229.5	354.5	350	4.5	MT.2	●
LTDD1500A400M2	15.0	254.5	404.5	400	4.5	MT.2	●
LTDD1500A450M2	15.0	304.5	454.5	450	4.5	MT.2	●
LTDD1500A500M2	15.0	354.5	504.5	500	4.5	MT.2	●
LTDD1500A600M2	15.0	404.5	604.5	600	4.5	MT.2	●
LTDD1550A300M2	15.5	179.7	304.7	300	4.7	MT.2	●
LTDD1550A350M2	15.5	229.7	354.7	350	4.7	MT.2	●
LTDD1550A400M2	15.5	254.7	404.7	400	4.7	MT.2	●
LTDD1550A450M2	15.5	304.7	454.7	450	4.7	MT.2	●
LTDD1550A500M2	15.5	354.7	504.7	500	4.7	MT.2	●
LTDD1550A600M2	15.5	404.7	604.7	600	4.7	MT.2	●
LTDD1600A300M2	16.0	179.8	304.8	300	4.8	MT.2	●
LTDD1600A350M2	16.0	229.8	354.8	350	4.8	MT.2	●
LTDD1600A400M2	16.0	254.8	404.8	400	4.8	MT.2	●
LTDD1600A450M2	16.0	304.8	454.8	450	4.8	MT.2	●
LTDD1600A500M2	16.0	354.8	504.8	500	4.8	MT.2	●
LTDD1600A600M2	16.0	404.8	604.8	600	4.8	MT.2	●
LTDD1650A300M2	16.5	180.0	305.0	300	5.0	MT.2	●
LTDD1650A350M2	16.5	230.0	355.0	350	5.0	MT.2	●
LTDD1650A400M2	16.5	255.0	405.0	400	5.0	MT.2	●
LTDD1650A450M2	16.5	305.0	455.0	450	5.0	MT.2	●
LTDD1650A500M2	16.5	355.0	505.0	500	5.0	MT.2	●
LTDD1650A600M2	16.5	405.0	605.0	600	5.0	MT.2	●
LTDD1700A300M2	17.0	180.1	305.1	300	5.1	MT.2	●
LTDD1700A350M2	17.0	230.1	355.1	350	5.1	MT.2	●
LTDD1700A400M2	17.0	255.1	405.1	400	5.1	MT.2	●
LTDD1700A450M2	17.0	305.1	455.1	450	5.1	MT.2	●
LTDD1700A500M2	17.0	355.1	505.1	500	5.1	MT.2	●
LTDD1700A600M2	17.0	405.1	605.1	600	5.1	MT.2	●
LTDD1750A300M2	17.5	180.3	305.3	300	5.3	MT.2	●
LTDD1750A350M2	17.5	230.3	355.3	350	5.3	MT.2	●
LTDD1750A400M2	17.5	255.3	405.3	400	5.3	MT.2	●
LTDD1750A450M2	17.5	305.3	455.3	450	5.3	MT.2	●
LTDD1750A500M2	17.5	355.3	505.3	500	5.3	MT.2	●
LTDD1750A600M2	17.5	405.3	605.3	600	5.3	MT.2	●
LTDD1800A300M2	18.0	180.4	305.4	300	5.4	MT.2	●
LTDD1800A350M2	18.0	230.4	355.4	350	5.4	MT.2	●
LTDD1800A400M2	18.0	255.4	405.4	400	5.4	MT.2	●
LTDD1800A450M2	18.0	305.4	455.4	450	5.4	MT.2	●
LTDD1800A500M2	18.0	355.4	505.4	500	5.4	MT.2	●
LTDD1800A600M2	18.0	405.4	605.4	600	5.4	MT.2	●
LTDD1900A300M2	19.0	180.7	305.7	300	5.7	MT.2	●
LTDD1900A350M2	19.0	230.7	355.7	350	5.7	MT.2	●
LTDD1900A400M2	19.0	255.7	405.7	400	5.7	MT.2	●
LTDD1900A450M2	19.0	305.7	455.7	450	5.7	MT.2	●
LTDD1900A500M2	19.0	355.7	505.7	500	5.7	MT.2	●
LTDD1900A600M2	19.0	405.7	605.7	600	5.7	MT.2	●

Referência para Pedido	Dimensões (mm)						Estoque
	DC	LCF	OAL	LF	PL	CZC	
LTDD2000A300M2	20.0	181.0	306.0	300	6.0	MT.2	●
LTDD2000A350M2	20.0	231.0	356.0	350	6.0	MT.2	●
LTDD2000A400M2	20.0	256.0	406.0	400	6.0	MT.2	●
LTDD2000A450M2	20.0	306.0	456.0	450	6.0	MT.2	●
LTDD2000A500M2	20.0	356.0	506.0	500	6.0	MT.2	●
LTDD2000A600M2	20.0	406.0	606.0	600	6.0	MT.2	●
LTDD2100A350M2	21.0	231.3	356.3	350	6.3	MT.2	●
LTDD2100A400M2	21.0	256.3	406.3	400	6.3	MT.2	●
LTDD2100A450M2	21.0	306.3	456.3	450	6.3	MT.2	●
LTDD2100A500M2	21.0	356.3	506.3	500	6.3	MT.2	●
LTDD2100A600M2	21.0	406.3	606.3	600	6.3	MT.2	●
LTDD2200A350M2	22.0	231.6	356.6	350	6.6	MT.2	●
LTDD2200A400M2	22.0	256.6	406.6	400	6.6	MT.2	●
LTDD2200A450M2	22.0	306.6	456.6	450	6.6	MT.2	●
LTDD2200A500M2	22.0	356.6	506.6	500	6.6	MT.2	●
LTDD2200A600M2	22.0	406.6	606.6	600	6.6	MT.2	●
LTDD2300A350M2	23.0	231.9	356.9	350	6.9	MT.2	●
LTDD2300A400M2	23.0	256.9	406.9	400	6.9	MT.2	●
LTDD2300A450M2	23.0	306.9	456.9	450	6.9	MT.2	●
LTDD2300A500M2	23.0	356.9	506.9	500	6.9	MT.2	●
LTDD2300A600M2	23.0	406.9	606.9	600	6.9	MT.2	●
LTDD2400A350M3	24.0	207.2	357.2	350	7.2	MT.3	●
LTDD2400A400M3	24.0	257.2	407.2	400	7.2	MT.3	●
LTDD2400A450M3	24.0	307.2	457.2	450	7.2	MT.3	●
LTDD2400A500M3	24.0	357.2	507.2	500	7.2	MT.3	●
LTDD2400A600M3	24.0	407.2	607.2	600	7.2	MT.3	●
LTDD2500A350M3	25.0	207.5	357.5	350	7.5	MT.3	●
LTDD2500A400M3	25.0	257.5	407.5	400	7.5	MT.3	●
LTDD2500A450M3	25.0	307.5	457.5	450	7.5	MT.3	●
LTDD2500A500M3	25.0	357.5	507.5	500	7.5	MT.3	●
LTDD2500A600M3	25.0	407.5	607.5	600	7.5	MT.3	●
LTDD2600A400M3	26.0	257.8	407.8	400	7.8	MT.3	●
LTDD2600A450M3	26.0	307.8	457.8	450	7.8	MT.3	●
LTDD2600A500M3	26.0	357.8	507.8	500	7.8	MT.3	●
LTDD2600A600M3	26.0	407.8	607.8	600	7.8	MT.3	●
LTDD2700A400M3	27.0	258.1	408.1	400	8.1	MT.3	●
LTDD2700A450M3	27.0	308.1	458.1	450	8.1	MT.3	●
LTDD2700A500M3	27.0	358.1	508.1	500	8.1	MT.3	●
LTDD2700A600M3	27.0	408.1	608.1	600	8.1	MT.3	●
LTDD2800A400M3	28.0	258.4	408.4	400	8.4	MT.3	●
LTDD2800A450M3	28.0	308.4	458.4	450	8.4	MT.3	●
LTDD2800A500M3	28.0	358.4	508.4	500	8.4	MT.3	●
LTDD2800A600M3	28.0	408.4	608.4	600	8.4	MT.3	●
LTDD2900A400M3	29.0	258.7	408.7	400	8.7	MT.3	●
LTDD2900A450M3	29.0	308.7	458.7	450	8.7	MT.3	●
LTDD2900A500M3	29.0	358.7	508.7	500	8.7	MT.3	●
LTDD2900A600M3	29.0	408.7	608.7	600	8.7	MT.3	●
LTDD3000A400M3	30.0	259.0	409.0	400	9.0	MT.3	●

Referência para Pedido	Dimensões (mm)						Estoque
	DC	LCF	OAL	LF	PL	CZC	
LTDD3000A450M3	30.0	309.0	459.0	450	9.0	MT.3	●
LTDD3000A500M3	30.0	359.0	509.0	500	9.0	MT.3	●
LTDD3000A600M3	30.0	409.0	609.0	600	9.0	MT.3	●
LTDD3100A450M3	31.0	309.3	459.3	450	9.3	MT.3	●
LTDD3100A500M3	31.0	359.3	509.3	500	9.3	MT.3	●
LTDD3100A600M3	31.0	409.3	609.3	600	9.3	MT.3	●
LTDD3200A450M3	32.0	309.6	459.6	450	9.6	MT.3	●
LTDD3200A500M3	32.0	359.6	509.6	500	9.6	MT.3	●
LTDD3200A600M3	32.0	409.6	609.6	600	9.6	MT.3	●
LTDD3300A500M4	33.0	359.9	509.9	500	9.9	MT.4	●
LTDD3300A600M4	33.0	409.9	609.9	600	9.9	MT.4	●
LTDD3400A500M4	34.0	360.2	510.2	500	10.2	MT.4	●
LTDD3400A600M4	34.0	410.2	610.2	600	10.2	MT.4	●
LTDD3500A500M4	35.0	360.5	510.5	500	10.5	MT.4	●

Referência para Pedido	Dimensões (mm)						Estoque
	DC	LCF	OAL	LF	PL	CZC	
LTDD3500A600M4	35.0	410.5	610.5	600	10.5	MT.4	●
LTDD3600A500M4	36.0	360.8	510.8	500	10.8	MT.4	●
LTDD3600A600M4	36.0	410.8	610.8	600	10.8	MT.4	●
LTDD3700A500M4	37.0	361.1	511.1	500	11.1	MT.4	●
LTDD3700A600M4	37.0	411.1	611.1	600	11.1	MT.4	●
LTDD3800A500M4	38.0	361.4	511.4	500	11.4	MT.4	●
LTDD3800A600M4	38.0	411.4	611.4	600	11.4	MT.4	●
LTDD3900A500M4	39.0	361.7	511.7	500	11.7	MT.4	●
LTDD3900A600M4	39.0	411.7	611.7	600	11.7	MT.4	●
LTDD4000A500M4	40.0	362.0	512.0	500	12.0	MT.4	●
LTDD4000A600M4	40.0	412.0	612.0	600	12.0	MT.4	●

CONDIÇÕES DE CORTE RECOMENDADAS

Material	Aço estrutural Aço carbono (-25HRC)		Aço liga Aço ferramenta (-35HRC)		Aço liga Aço fundido (-40HRC)		Ferro fundido	
	Diâm. DC (mm)	Rotação (min ⁻¹)	Taxa de Avanço (mm/rot)	Rotação (min ⁻¹)	Taxa de Avanço (mm/rot)	Rotação (min ⁻¹)	Taxa de Avanço (mm/rot)	Rotação (min ⁻¹)
6.0	1100	0.18	900	0.15	600	0.13	1100	0.18
8.0	800	0.20	670	0.18	450	0.15	900	0.20
10.0	650	0.22	540	0.20	350	0.18	700	0.22
12.0	520	0.24	450	0.22	300	0.20	600	0.24
15.0	420	0.28	360	0.24	240	0.22	470	0.28
20.0	320	0.33	270	0.26	180	0.24	350	0.33
25.0	250	0.36	210	0.28	145	0.26	280	0.36
30.0	210	0.40	180	0.30	120	0.28	230	0.40
40.0	160	0.42	130	0.32	90	0.30	180	0.42

Material	Aço Inoxidável				Ligas de cobre, Bronze	Ligas de alumínio		
	Martensítico Ferrítico AISI 430		Austenítico AISI 304 Endurecido por precipitação ASTM 630					
Diâm. DC (mm)	Rotação (min ⁻¹)	Taxa de Avanço (mm/rot)	Rotação (min ⁻¹)	Taxa de Avanço (mm/rot)	Rotação (min ⁻¹)	Taxa de Avanço (mm/rot)	Rotação (min ⁻¹)	Taxa de Avanço (mm/rot)
6.0	800	0.18	530	0.10	1100	0.18	2100	0.23
8.0	600	0.20	400	0.13	800	0.20	1600	0.28
10.0	480	0.22	310	0.15	650	0.22	1200	0.33
12.0	400	0.24	250	0.17	520	0.24	1000	0.38
15.0	320	0.26	170	0.20	420	0.26	850	0.42
20.0	240	0.28	130	0.23	320	0.28	630	0.45
25.0	190	0.32	100	0.24	250	0.32	500	0.48
30.0	160	0.35	85	0.25	210	0.35	400	0.50
40.0	120	0.38	65	0.28	160	0.38	300	0.52

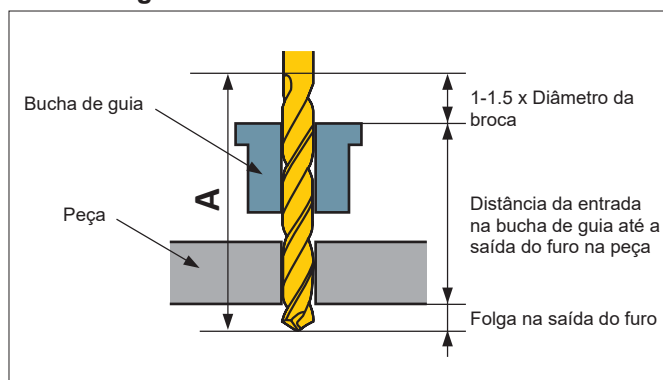
Nota 1) Reduza as condições de corte ao usar um furo profundo.

Nota 2) Esta tabela mostra somente condições de corte padrão com óleo solúvel em água. Faça correções ou ajustes conforme a aplicação.

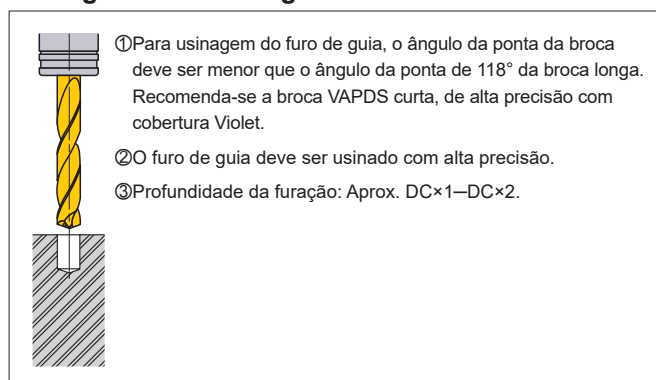
Nota 3) As brocas longas de aço rápido têm rigidez mais baixa que as brocas longas de metal duro. Para evitar problemas como deflexão da broca e desvios, use buchas de guia e furos de guia (DC×1 a DC×2).

Nota 4) Para utilizar buchas de guia, selecione a broca de modo que o comprimento do canal seja maior que a dimensão A. (Veja abaixo.)

Bucha de guia



Usinagem de furo de guia



FURAÇÃO(HSS)

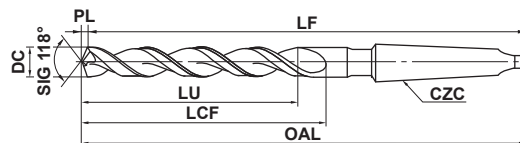
GWTS

TiN, para furação profunda, canal helicoidal



HSS

P	M	K	N	S	H
Aço	Aço Inoxidável	Ferro Fundido	Metais Não Ferrosos		



*LU = LCF-2DC



DC=6	6<DC≤10	10<DC≤18	18<DC≤30	30<DC≤32
0 -0.018	0 -0.022	0 -0.027	0 -0.033	0 -0.039

● Indicada para furação em geral e profunda.

Referência para Pedido	Dimensões (mm)						Estoque
	DC	LCF	OAL	LF	PL	CZC	
GWTS0600M1	6.0	69.8	149.8	148	1.8	MT.1	●
GWTS0620M1	6.2	73.9	153.9	152	1.9	MT.1	●
GWTS0650M1	6.5	74.0	154.0	152	2.0	MT.1	●
GWTS0680M1	6.8	77.0	157.0	155	2.0	MT.1	●
GWTS0690M1	6.9	77.1	157.1	155	2.1	MT.1	●
GWTS0700M1	7.0	77.1	157.1	155	2.1	MT.1	●
GWTS0720M1	7.2	80.2	160.2	158	2.2	MT.1	●
GWTS0750M1	7.5	80.3	160.3	158	2.3	MT.1	●
GWTS0780M1	7.8	84.3	164.3	162	2.3	MT.1	●
GWTS0800M1	8.0	84.4	164.4	162	2.4	MT.1	●
GWTS0820M1	8.2	87.5	170.5	168	2.5	MT.1	●
GWTS0850M1	8.5	87.6	170.6	168	2.6	MT.1	●
GWTS0880M1	8.8	90.6	174.6	172	2.6	MT.1	●
GWTS0900M1	9.0	90.7	174.7	172	2.7	MT.1	●
GWTS0920M1	9.2	94.8	177.8	175	2.8	MT.1	●
GWTS0950M1	9.5	94.9	177.9	175	2.9	MT.1	●
GWTS0980M1	9.8	97.9	180.9	178	2.9	MT.1	●
GWTS1000M1	10.0	98.0	181.0	178	3.0	MT.1	●
GWTS1020M1	10.2	101.1	185.1	182	3.1	MT.1	●
GWTS1030M1	10.3	101.1	185.1	182	3.1	MT.1	●
GWTS1050M1	10.5	101.2	185.2	182	3.2	MT.1	●
GWTS1100M1	11.0	105.3	188.3	185	3.3	MT.1	●
GWTS1150M1	11.5	108.5	191.5	188	3.5	MT.1	●
GWTS1200M1	12.0	111.6	195.6	192	3.6	MT.1	●
GWTS1220M2	12.2	115.7	215.7	212	3.7	MT.2	●
GWTS1230M2	12.3	115.7	215.7	212	3.7	MT.2	●
GWTS1250M2	12.5	115.8	215.8	212	3.8	MT.2	●
GWTS1300M2	13.0	118.9	218.9	215	3.9	MT.2	●

Referência para Pedido	Dimensões (mm)						Estoque
	DC	LCF	OAL	LF	PL	CZC	
GWTS1350M2	13.5	122.1	222.1	218	4.1	MT.2	●
GWTS1400M2	14.0	126.2	226.2	222	4.2	MT.2	●
GWTS1410M2	14.1	126.2	226.2	222	4.2	MT.2	●
GWTS1420M2	14.2	126.3	226.3	222	4.3	MT.2	●
GWTS1450M2	14.5	126.4	226.4	222	4.4	MT.2	●
GWTS1500M2	15.0	129.5	229.5	225	4.5	MT.2	●
GWTS1550M2	15.5	132.7	232.7	228	4.7	MT.2	●
GWTS1600M2	16.0	134.8	234.8	230	4.8	MT.2	●
GWTS1650M2	16.5	137.0	237.0	232	5.0	MT.2	●
GWTS1700M2	17.0	140.1	240.1	235	5.1	MT.2	●
GWTS1750M2	17.5	145.3	245.3	240	5.3	MT.2	●
GWTS1800M2	18.0	145.4	245.4	240	5.4	MT.2	●
GWTS1850M2	18.5	150.6	250.6	245	5.6	MT.2	●
GWTS1900M2	19.0	150.7	250.7	245	5.7	MT.2	●
GWTS1950M2	19.5	155.9	255.9	250	5.9	MT.2	●
GWTS2000M2	20.0	156.0	256.0	250	6.0	MT.2	●
GWTS2100M3	21.0	161.3	281.3	275	6.3	MT.3	●
GWTS2200M3	22.0	166.6	286.6	280	6.6	MT.3	●
GWTS2300M3	23.0	171.9	291.9	285	6.9	MT.3	●
GWTS2400M3	24.0	172.2	292.2	285	7.2	MT.3	●
GWTS2500M3	25.0	172.5	292.5	285	7.5	MT.3	●
GWTS2600M3	26.0	172.8	292.8	285	7.8	MT.3	●
GWTS2700M3	27.0	178.1	298.1	290	8.1	MT.3	●
GWTS2800M4	28.0	183.4	328.4	320	8.4	MT.4	●
GWTS2900M4	29.0	188.7	333.7	325	8.7	MT.4	●
GWTS3000M4	30.0	194.0	339.0	330	9.0	MT.4	●
GWTS3100M4	31.0	199.3	344.3	335	9.3	MT.4	●
GWTS3200M4	32.0	204.6	349.6	340	9.6	MT.4	●

FURAÇÃO N

● : Estoque mantido.

GTTD

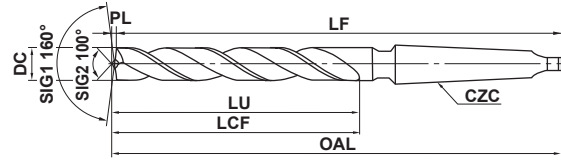
TiN, para chassi de aço



HSS

- P
- M
- K
- N
- S
- H

Aço



*LU = LCF - 2DC



$17 \leq DC \leq 18$	$18 < DC \leq 30$	$30 < DC \leq 32$
0	0	0
-0.027	-0.033	-0.039

● Geometria especial para rebarba mínima de furo passante.

Referência para Pedido	Dimensões (mm)						Estoque
	DC	LCF	OAL	LF	PL	CZC	
GTTDD1800M3	18.0	140	263.0	260	3.0	MT.3	●
GTTDD2200M3	22.0	160	283.7	280	3.7	MT.3	●
GTTDD2300M3	23.0	165	288.8	285	3.8	MT.3	●

Referência para Pedido	Dimensões (mm)						Estoque
	DC	LCF	OAL	LF	PL	CZC	
GTTDD2400M3	24.0	165	289.0	285	4.0	MT.3	●
GTTDD2500M3	25.0	165	289.1	285	4.1	MT.3	●
GTTDD2600M3	26.0	165	289.3	285	4.3	MT.3	●

N

FURAÇÃO

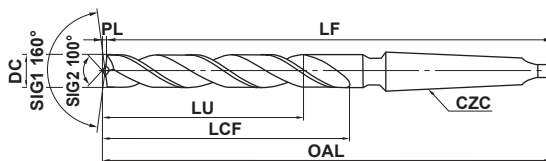
TTD

Para chassi de aço



- P
- M
- K
- N
- S
- H

Aço



*LU = LCF-2DC



$17 \leq DC \leq 18$	$18 < DC \leq 30$	$30 < DC \leq 32$
0	0	0
-0.027	-0.033	-0.039

● Geometria especial para rebarba mínima de furo passante.

Referência para Pedido	Dimensões (mm)						Estoque
	DC	LCF	OAL	LF	PL	CZC	
TTDD1700M3	17.0	135	257.9	255	2.9	MT.3	●
TTDD1750M3	17.5	140	263.0	260	3.0	MT.3	●
TTDD1800M3	18.0	140	263.0	260	3.0	MT.3	●
TTDD1900M3	19.0	145	268.2	265	3.2	MT.3	●
TTDD2000M3	20.0	150	273.3	270	3.3	MT.3	●
TTDD2150M3	21.5	160	283.6	280	3.6	MT.3	●
TTDD2200M3	22.0	160	283.7	280	3.7	MT.3	●
TTDD2250M3	22.5	165	288.8	285	3.8	MT.3	●
TTDD2300M3	23.0	165	288.8	285	3.8	MT.3	●
TTDD2350M3	23.5	165	289.0	285	4.0	MT.3	●

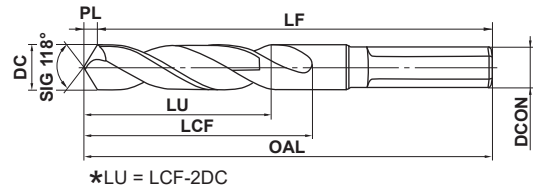
Referência para Pedido	Dimensões (mm)						Estoque
	DC	LCF	OAL	LF	PL	CZC	
TTDD2400M3	24.0	165	289.0	285	4.0	MT.3	●
TTDD2450M3	24.5	165	289.1	285	4.1	MT.3	●
TTDD2500M3	25.0	165	289.1	285	4.1	MT.3	●
TTDD2600M3	26.0	165	289.3	285	4.3	MT.3	●
TTDD2650M3	26.5	170	294.4	290	4.4	MT.3	●
TTDD2800M4	28.0	175	324.5	320	4.5	MT.4	●
TTDD3200M4	32.0	195	345.0	340	5.0	MT.4	●

3KD

Haste triangular (Tipo 6.5)(Tipo 10)(Tipo 13)



HSS



$7 < DC \leq 10$	$10 < DC \leq 18$	$18 < DC \leq 26$
$\begin{matrix} 0 \\ -0.022 \end{matrix}$	$\begin{matrix} 0 \\ -0.027 \end{matrix}$	$\begin{matrix} 0 \\ -0.033 \end{matrix}$

● 3 tipos de hastes para ferramentas portáteis.

Tipo 6.5

Referência para Pedido	Dimensões (mm)						Estoque
	DC	LCF	OAL	LF	PL	DCON	
3KD6D0700	7.0	37.1	77.1	75	2.1	6.5	●
3KD6D0750	7.5	37.3	77.3	75	2.3	6.5	●
3KD6D0800	8.0	37.4	77.4	75	2.4	6.5	●
3KD6D0850	8.5	37.6	77.6	75	2.6	6.5	●
3KD6D0900	9.0	37.7	77.7	75	2.7	6.5	●
3KD6D0950	9.5	37.9	77.9	75	2.9	6.5	●
3KD6D1000	10.0	53.0	93.0	90	3.0	6.5	●
3KD6D1050	10.5	53.2	93.2	90	3.2	6.5	●
3KD6D1100	11.0	53.3	93.3	90	3.3	6.5	●
3KD6D1150	11.5	53.5	93.5	90	3.5	6.5	●
3KD6D1200	12.0	53.6	93.6	90	3.6	6.5	●
3KD6D1250	12.5	53.8	93.8	90	3.8	6.5	●
3KD6D1300	13.0	53.9	93.9	90	3.9	6.5	●

Tipo 10

Referência para Pedido	Dimensões (mm)						Estoque
	DC	LCF	OAL	LF	PL	DCON	
3KD10D1000	10.0	53.0	93.0	90	3.0	10	●
3KD10D1050	10.5	53.2	93.2	90	3.2	10	●
3KD10D1100	11.0	53.3	93.3	90	3.3	10	●
3KD10D1150	11.5	53.5	93.5	90	3.5	10	●
3KD10D1200	12.0	53.6	93.6	90	3.6	10	●
3KD10D1250	12.5	53.8	93.8	90	3.8	10	●
3KD10D1300	13.0	53.9	93.9	90	3.9	10	●
3KD10D1350	13.5	89.1	144.1	140	4.1	10	●
3KD10D1400	14.0	89.2	144.2	140	4.2	10	●
3KD10D1450	14.5	89.4	144.4	140	4.4	10	●
3KD10D1500	15.0	89.5	144.5	140	4.5	10	●
3KD10D1550	15.5	89.7	144.7	140	4.7	10	●
3KD10D1600	16.0	89.8	144.8	140	4.8	10	●

Tipo 13

Referência para Pedido	Dimensões (mm)						Estoque
	DC	LCF	OAL	LF	PL	DCON	
3KD13D1350	13.5	89.1	144.1	140	4.1	13	●
3KD13D1400	14.0	89.2	144.2	140	4.2	13	●
3KD13D1450	14.5	89.4	144.4	140	4.4	13	●
3KD13D1500	15.0	89.5	144.5	140	4.5	13	●
3KD13D1550	15.5	89.7	144.7	140	4.7	13	●
3KD13D1600	16.0	89.8	144.8	140	4.8	13	●
3KD13D1650	16.5	90.0	145.0	140	5.0	13	●
3KD13D1700	17.0	90.1	145.1	140	5.1	13	●
3KD13D1750	17.5	90.3	145.3	140	5.3	13	●
3KD13D1800	18.0	90.4	145.4	140	5.4	13	●
3KD13D1850	18.5	90.6	145.6	140	5.6	13	●
3KD13D1900	19.0	90.7	145.7	140	5.7	13	●
3KD13D1950	19.5	90.9	145.9	140	5.9	13	●
3KD13D2000	20.0	91.0	146.0	140	6.0	13	●
3KD13D2050	20.5	91.2	146.2	140	6.2	13	●
3KD13D2100	21.0	91.3	146.3	140	6.3	13	●
3KD13D2150	21.5	91.5	146.5	140	6.5	13	●
3KD13D2200	22.0	91.6	146.6	140	6.6	13	●
3KD13D2250	22.5	91.8	146.8	140	6.8	13	●
3KD13D2300	23.0	91.9	146.9	140	6.9	13	●
3KD13D2350	23.5	92.1	147.1	140	7.1	13	●
3KD13D2400	24.0	92.2	147.2	140	7.2	13	●
3KD13D2450	24.5	92.4	147.4	140	7.4	13	●
3KD13D2500	25.0	92.5	147.5	140	7.5	13	●
3KD13D2550	25.5	92.7	147.7	140	7.7	13	●
3KD13D2600	26.0	92.8	147.8	140	7.8	13	●

N
FURAÇÃO

GSD GWSS GTD GWTS GTTD

Brocas com cobertura TiN

CONDIÇÕES DE CORTE RECOMENDADAS

Material	Aço estrutural Aço carbono (-25HRC)		Aço liga Aço ferramenta (-35HRC)		Aço liga Aço fundido (-40HRC)		Ferro fundido	
	Diâm. DC (mm)	Rotação (min ⁻¹)	Taxa de Avanço (mm/rot)	Rotação (min ⁻¹)	Taxa de Avanço (mm/rot)	Rotação (min ⁻¹)	Taxa de Avanço (mm/rot)	Rotação (min ⁻¹)
0.5	8000	0.01	7000	0.008	6000	0.005	8000	0.01
1.0	6000	0.02	5500	0.01	4500	0.008	6000	0.02
2.0	4700	0.05	3600	0.03	2400	0.02	4700	0.05
3.0	3200	0.10	2400	0.08	1800	0.05	3500	0.10
6.0	1600	0.18	1200	0.15	900	0.13	1750	0.18
8.0	1200	0.20	900	0.18	680	0.15	1300	0.20
10.0	960	0.22	720	0.20	550	0.18	1100	0.22
12.0	800	0.24	600	0.22	450	0.20	880	0.24
15.0	630	0.28	480	0.24	350	0.22	700	0.28
20.0	470	0.33	360	0.26	260	0.24	530	0.33
25.0	380	0.36	290	0.28	210	0.26	420	0.36
30.0	310	0.40	240	0.30	180	0.28	330	0.40

Material	Aço Inoxidável				Ligas de cobre, Bronze		Ligas de alumínio	
	Martensítico Ferrítico AISI 430		Austenítico AISI 304 Endurecido por precipitação ASTM 630					
Diâm. DC (mm)	Rotação (min ⁻¹)	Taxa de Avanço (mm/rot)	Rotação (min ⁻¹)	Taxa de Avanço (mm/rot)	Rotação (min ⁻¹)	Taxa de Avanço (mm/rot)	Rotação (min ⁻¹)	Taxa de Avanço (mm/rot)
0.5	8000	0.01	6000	0.01	8000	0.01	10000	0.02
1.0	5000	0.02	4000	0.02	6000	0.02	7000	0.04
2.0	2500	0.05	2300	0.04	4700	0.05	6000	0.08
3.0	1900	0.10	1500	0.07	3200	0.10	5500	0.13
6.0	950	0.18	750	0.10	1600	0.18	3100	0.23
8.0	700	0.20	530	0.13	1200	0.20	2300	0.28
10.0	560	0.22	420	0.15	960	0.22	1900	0.33
12.0	460	0.24	340	0.17	800	0.24	1600	0.38
15.0	360	0.26	270	0.20	630	0.26	1300	0.42
20.0	270	0.28	200	0.23	470	0.28	950	0.45
25.0	210	0.32	160	0.24	380	0.32	750	0.48
30.0	180	0.35	135	0.25	310	0.35	630	0.50

Nota 1) Reduza as condições de corte ao usar um furo profundo.

Nota 2) Esta tabela mostra somente condições de corte padrão com óleo solúvel em água. Faça correções ou ajustes conforme a aplicação.

Taxa de redução das condições de corte para furação

Prof. do furo	Taxa de redução da velocidade de corte	Taxa de redução do avanço	Prof. do furo	Taxa de redução da velocidade de corte	Taxa de redução do avanço
4DC	10%	10%	8DC	30%	20%
5DC	10%	15%	10DC	30%	25%
6DC	20%	20%	15DC	40%	30%
7DC	20%	20%	20DC	40%	45%

DC : Diâmetro da broca.

CONDIÇÕES DE CORTE RECOMENDADAS

Material	Aço estrutural Aço carbono (-25HRC)		Aço liga Aço ferramenta (-35HRC)		Aço liga Aço fundido (-40HRC)		Ferro fundido	
	Diâm. DC (mm)	Rotação (min ⁻¹)	Taxa de Avanço (mm/rot)	Rotação (min ⁻¹)	Taxa de Avanço (mm/rot)	Rotação (min ⁻¹)	Taxa de Avanço (mm/rot)	Rotação (min ⁻¹)
0.5	6000	0.01	5000	0.008	4000	0.005	6000	0.01
1.0	5000	0.02	4000	0.01	2800	0.008	5000	0.02
2.0	3000	0.05	2500	0.03	1800	0.02	3000	0.05
3.0	2100	0.10	1800	0.08	1200	0.05	2300	0.10
6.0	1100	0.18	900	0.15	600	0.13	1100	0.18
8.0	800	0.20	670	0.18	450	0.15	900	0.20
10.0	650	0.22	540	0.20	350	0.18	700	0.22
12.0	520	0.24	450	0.22	300	0.20	600	0.24
15.0	420	0.28	360	0.24	240	0.22	470	0.28
20.0	320	0.33	270	0.26	180	0.24	350	0.33
25.0	250	0.36	210	0.28	145	0.26	280	0.36
30.0	210	0.40	180	0.30	120	0.28	230	0.40
40.0	160	0.42	130	0.32	90	0.30	180	0.42

Material	Aço Inoxidável				Ligas de cobre, Bronze		Ligas de alumínio	
	Martensítico Ferrítico AISI 430		Austenítico AISI 304 Endurecido por precipitação ASTM 630					
Diâm. DC (mm)	Rotação (min ⁻¹)	Taxa de Avanço (mm/rot)	Rotação (min ⁻¹)	Taxa de Avanço (mm/rot)	Rotação (min ⁻¹)	Taxa de Avanço (mm/rot)	Rotação (min ⁻¹)	Taxa de Avanço (mm/rot)
0.5	5000	0.01	4000	0.01	6000	0.01	10000	0.02
1.0	4000	0.02	3000	0.02	5000	0.02	7000	0.04
2.0	2200	0.05	1500	0.04	3000	0.05	5000	0.08
3.0	1600	0.10	1000	0.07	2100	0.10	4200	0.13
6.0	800	0.18	530	0.10	1100	0.18	2100	0.23
8.0	600	0.20	400	0.13	800	0.20	1600	0.28
10.0	480	0.22	310	0.15	650	0.22	1200	0.33
12.0	400	0.24	250	0.17	520	0.24	1000	0.38
15.0	320	0.26	170	0.20	420	0.26	850	0.42
20.0	240	0.28	130	0.23	320	0.28	630	0.45
25.0	190	0.32	100	0.24	250	0.32	500	0.48
30.0	160	0.35	85	0.25	210	0.35	400	0.50
40.0	120	0.38	65	0.28	160	0.38	300	0.52

Nota 1) Reduza as condições de corte ao usar um furo profundo.

Nota 2) Esta tabela mostra somente condições de corte padrão com óleo solúvel em água. Faça correções ou ajustes conforme a aplicação.

Taxa de redução das condições de corte para furação

Prof. do furo	Taxa de redução da velocidade de corte	Taxa de redução do avanço	Prof. do furo	Taxa de redução da velocidade de corte	Taxa de redução do avanço
4DC	10%	10%	8DC	30%	20%
5DC	10%	15%	10DC	30%	25%
6DC	20%	20%	15DC	40%	30%
7DC	20%	20%	20DC	40%	45%

DC : Diâmetro da broca.

Anotações

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