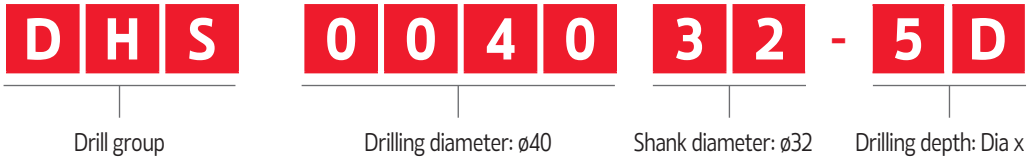
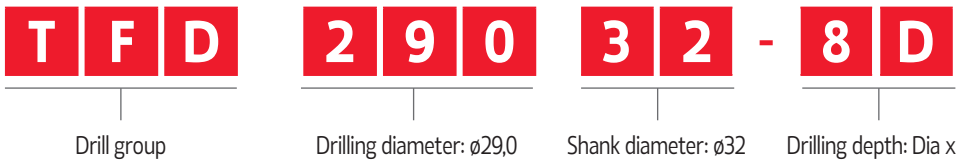
B

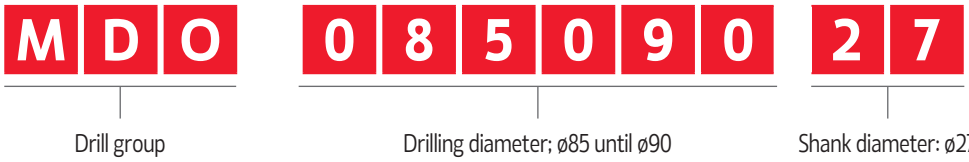
B - DRILLING

DRILLING

DRILLS CODE KEY



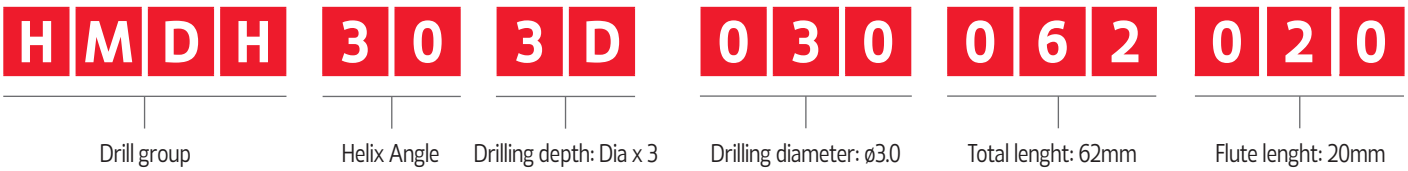



MDO
085090
27
Drill group
Drilling diameter; ø85 until ø90
Shank diameter: ø27

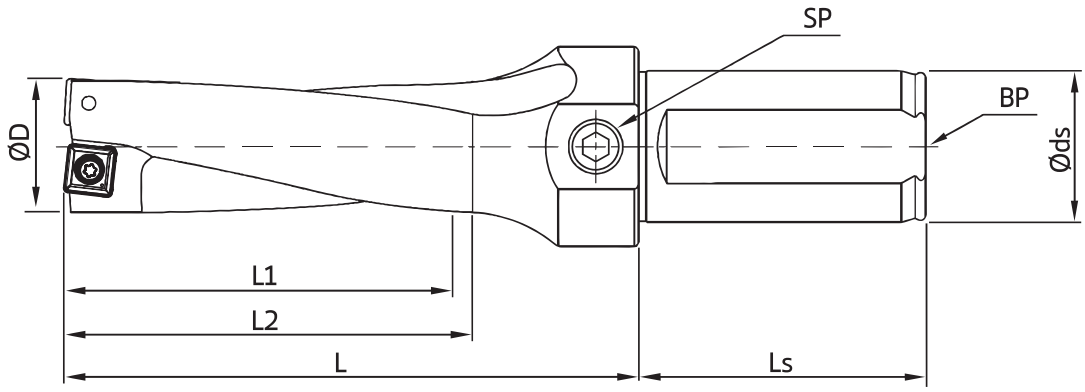

MDS
32
115
130
Drill group adapter
Shank diameter: ø32
Flute lenght: 115mm
Shank diameter for MDO: ø13


MDE
13
115
280
Drill group adapter
Shank diameter: ø13
Flute lenght: 115mm
Shank diameter for MDO: ø28


PND
055
40
-
2D
Drill group
Drilling diameter: ø55
Shank diameter: ø40
Drilling depth: Dia x 8


HMDH
30
3D
030
062
020
Drill group
Helix Angle
Drilling depth: Dia x 3
Drilling diameter: ø3.0
Total lenght: 62mm
Flute lenght: 20mm

NOMENCLATURE | Nomenclatura | Nomenclatura



ØD - Drill diameter	L - Length	L1 - Cut length	SP - Side plug
Øds - Shank diameter	Ls - Shank Length	L2 - Safety cut length	BP - Back plug

COOLANT SUPPLY | Furos de refrigeração | Agujeros de refrigeración

New version / Standard version *

Type	BP	SP
TDS	✓ / ✓	✗ / ✓
TDC	✓ / ✓	✓ / ✓
SCS	✓ / ✓	✗ / ✓
SCC	✓ / ✓	✓ / ✓
DHS	✓ / ✓	✗ / ✓
DHC	✓ / ✓	✗ / ✓
TFD	✓ / ✓	✓ / ✓
MDO	✓ / ✓	✓ / ✓
PND	✓ / ✓	✓ / ✓

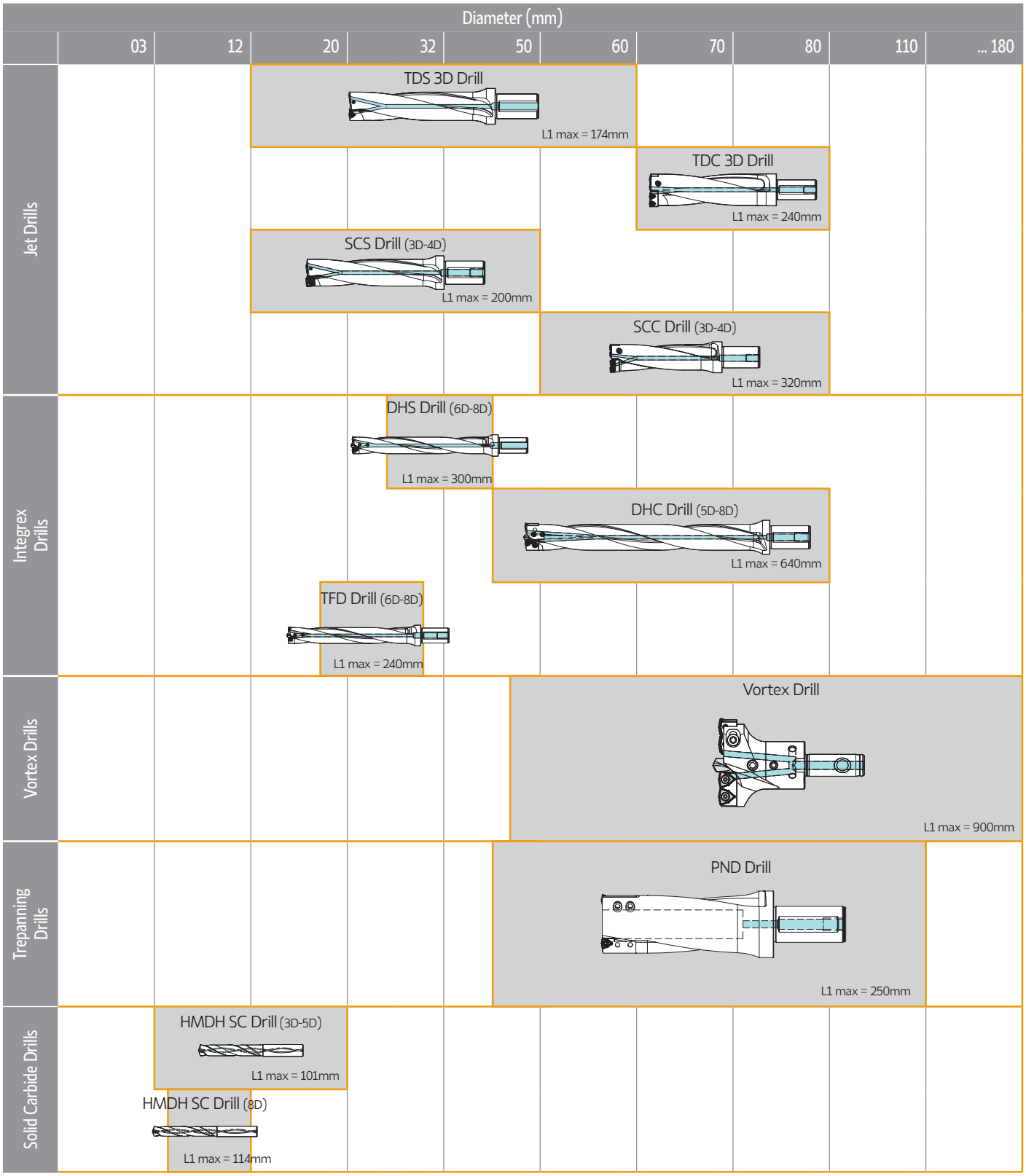
BP - Back Plug

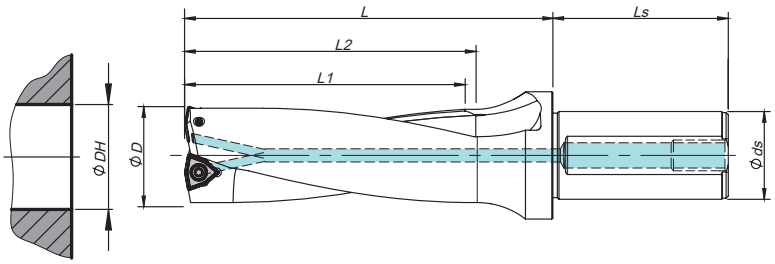
SP - Side Plug

✓ - Available

✗ - Not Available

* The new Drill version will replace the standard version when this type will be sold out.


Diameter (mm)
03
12
20
32
50
60
70
80
110
... 180
Jet Drills
TDS 3D Drill
L1 max = 174mm
TDC 3D Drill
L1 max = 240mm
SCS Drill (3D-4D)
L1 max = 200mm
SCC Drill (3D-4D)
L1 max = 320mm
Integrex Drills
DHS Drill (6D-8D)
L1 max = 300mm
DHC Drill (5D-8D)
L1 max = 640mm
TFD Drill (6D-8D)
L1 max = 240mm
Vortex Drills
Vortex Drill
L1 max = 900mm
Trepanning Drills
PND Drill
L1 max = 250mm
Solid Carbide Drills
HMDH SC Drill (3D-5D)
L1 max = 101mm
HMDH SC Drill (8D)
L1 max = 114mm



Øds	Ls	BP / SP
20	50	PT-1/8
25	56	PT-1/8
32	60	PT-1/4
40	70	PT-1/4

ØDH tolerance (mm)	
ØD	3D
13,0 - 21,5	-0,10 / +0,15
22,0 - 50,0	-0,12 / +0,20
50,0 - 58,0	-0,15 / +0,25

Order code Código	Reference Referência Referencia	Dimensions | Dimensões | Dimensiones (mm)					Insert	Insert Screw	Torx key	Stock
		ØD	Ø ds	L1	L2	L				
184034600	TDS 13020-3D	13,0	20	39	42	62	WCKX 02T104	P0180500	XT06	●
184034700	TDS 13520-3D	13,5	20	41	44	64	WCKX 02T104	P0180500	XT06	●
184034800	TDS 14020-3D	14,0	20	42	45	65	WCKX 02T104	P0180500	XT06	●
184034900	TDS 14520-3D	14,5	20	44	47	67	WCKX 02T104	P0180500	XT06	●
184035000	TDS 15020-3D	15,0	20	45	48	68	WCKX 02T104	P0180500	XT06	●
184035100	TDS 15520-3D	15,5	20	47	50	70	WCKX 02T104	P0180500	XT06	●
184035200	TDS 16025-3D	16,0	25	48	51	76	WCKX 030204	P0220500	XT07	●
184035300	TDS 16525-3D	16,5	25	50	53	78	WCKX 030204	P0220500	XT07	●
184035400	TDS 17025-3D	17,0	25	51	54	79	WCKX 030204	P0220500	XT07	●
184035500	TDS 17525-3D	17,5	25	53	56	81	WCKX 030204	P0220500	XT07	●
184035600	TDS 18025-3D	18,0	25	54	57	82	WCKX 030204	P0220500	XT07	●
184035700	TDS 18525-3D	18,5	25	56	59	84	WCKX 030204	P0220500	XT07	●
184035800	TDS 19025-3D	19,0	25	57	60	85	WCKX 030204	P0220500	XT07	●
184035900	TDS 19525-3D	19,5	25	59	62	87	WCKX 030204	P0220500	XT07	●
184036000	TDS 20025-3D	20,0	25	60	63	88	WCKX 030204	P0220500	XT07	●
184036100	TDS 20525-3D	20,5	25	62	65	90	WCKX 040204	P0250503	XT08	●
184036200	TDS 21025-3D	21,0	25	63	66	91	WCKX 040204	P0250503	XT08	●
184036300	TDS 21525-3D	21,5	25	65	68	93	WCKX 040204	P0250503	XT08	●
184036400	TDS 22025-3D	22,0	25	66	69	94	WCKX 040204	P0250503	XT08	●
184036500	TDS 22525-3D	22,5	25	68	71	96	WCKX 040204	P0250503	XT08	●
184036600	TDS 23025-3D	23,0	25	69	72	97	WCKX 040204	P0250503	XT08	●
184036700	TDS 23525-3D	23,5	25	71	74	99	WCKX 040204	P0250503	XT08	●
184036800	TDS 24025-3D	24,0	25	72	75	100	WCKX 040204	P0250503	XT08	●
184036900	TDS 24525-3D	24,5	25	74	77	102	WCKX 040204	P0250503	XT08	●
184037000	TDS 25025-3D	25,0	25	75	78	103	WCKX 040204	P0250503	XT08	●
184037100	TDS 25532-3D	25,5	32	77	80	110	WCKX 050308	P0300701	XT08	●
184037200	TDS 26032-3D	26,0	32	78	81	111	WCKX 050308	P0300701	XT08	●

● Stock item | Produto de stock | Itens de stock

○ Available under request | Disponível sobre consulta | Disponible bajo consulta

Order code Código	Reference Referência Referencia	Dimensions | Dimensões | Dimensiones (mm)					Insert	Insert Screw	Torx key	Stock
		ØD	Ø ds	L1	L2	L				
184037300	TDS 26532-3D	26,5	32	80	83	113	WCKX 050308	P0300701	XT08	◎
184037400	TDS 27032-3D	27,0	32	81	84	114	WCKX 050308	P0300701	XT08	◎
184037500	TDS 27532-3D	27,5	32	83	86	116	WCKX 050308	P0300701	XT08	◎
184037600	TDS 28032-3D	28,0	32	84	87	117	WCKX 050308	P0300701	XT08	◎
184037700	TDS 28532-3D	28,5	32	86	89	119	WCKX 050308	P0300701	XT08	◎
184037800	TDS 29032-3D	29,0	32	87	90	120	WCKX 050308	P0300701	XT08	◎
184037900	TDS 29532-3D	29,5	32	89	92	122	WCKX 050308	P0300701	XT08	◎
184038000	TDS 30032-3D	30,0	32	90	93	123	WCKX 050308	P0300701	XT08	◎
184038100	TDS 31032-3D	31,0	32	93	96	126	WCKX 06T308	P0350903	XT15	◎
184038200	TDS 32032-3D	32,0	32	96	99	129	WCKX 06T308	P0350903	XT15	◎
184038300	TDS 33032-3D	33,0	32	99	102	132	WCKX 06T308	P0350903	XT15	◎
184038400	TDS 34032-3D	34,0	32	102	105	135	WCKX 06T308	P0350903	XT15	◎
184038500	TDS 35032-3D	35,0	32	105	108	138	WCKX 06T308	P0350903	XT15	◎
184038600	TDS 36032-3D	36,0	32	108	111	141	WCKX 06T308	P0350903	XT15	◎
184038700	TDS 37032-3D	37,0	32	111	114	144	WCKX 06T308	P0350903	XT15	◎
184038800	TDS 38032-3D	38,0	32	114	117	147	WCKX 06T308	P0350903	XT15	◎
184038900	TDS 39032-3D	39,0	32	117	120	150	WCKX 06T308	P0350903	XT15	◎
184039000	TDS 40032-3D	40,0	32	120	123	153	WCKX 06T308	P0350903	XT15	◎
184039100	TDS 41032-3D	41,0	32	123	126	156	WCKX 06T308	P0350903	XT15	◎
184039200	TDS 42040-3D	42,0	40	126	129	164	WCKX 080408	P0401101	XT15	◎
184039300	TDS 43040-3D	43,0	40	129	132	167	WCKX 080408	P0401101	XT15	◎
184039400	TDS 44040-3D	44,0	40	132	135	170	WCKX 080408	P0401101	XT15	◎
184039500	TDS 45040-3D	45,0	40	135	138	173	WCKX 080408	P0401101	XT15	◎
184039600	TDS 46040-3D	46,0	40	138	141	176	WCKX 080408	P0401101	XT15	◎
184039700	TDS 47040-3D	47,0	40	141	144	179	WCKX 080408	P0401101	XT15	◎
184039800	TDS 48040-3D	48,0	40	144	147	182	WCKX 080408	P0401101	XT15	◎
184039900	TDS 49040-3D	49,0	40	147	150	185	WCKX 080408	P0401101	XT15	◎
184040000	TDS 50040-3D	50,0	40	150	153	188	WCKX 080408	P0401101	XT15	◎
184040100	TDS 51040-3D	51,0	40	153	156	191	WCKX 080408	P0401101	XT15	◎
184040200	TDS 52040-3D	52,0	40	156	159	194	WCKX 080408	P0401101	XT15	◎
184040300	TDS 53040-3D	53,0	40	159	162	197	WCKX 080408	P0401101	XT15	◎
184040400	TDS 54040-3D	54,0	40	162	165	200	WCKX 080408	P0401101	XT15	◎
184040500	TDS 55040-3D	55,0	40	165	168	203	WCKX 080408	P0401101	XT15	◎
184040600	TDS 56040-3D	56,0	40	168	171	206	WCKX 080408	P0401101	XT15	◎
184040700	TDS 57040-3D	57,0	40	171	174	209	WCKX 080408	P0401101	XT15	◎
184040800	TDS 58040-3D	58,0	40	174	177	212	WCKX 080408	P0401101	XT15	◎

◎ Stock item | Produto de stock | Itens de stock ○ Available under request | Disponível sobre consulta | Disponible bajo consulta

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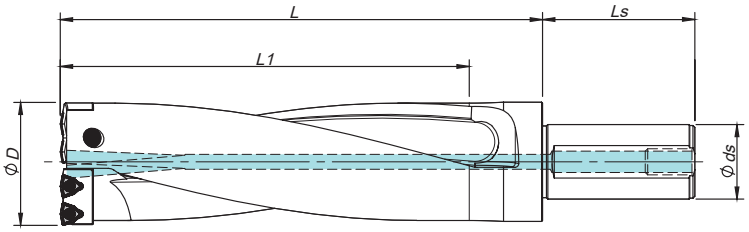
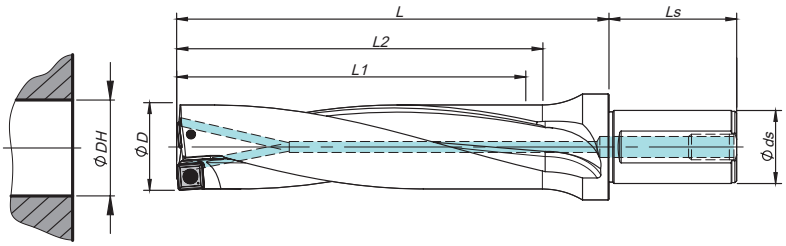


Øds	Ls	BP / SP
40	70	PT - 1/4

Order code Código	Reference Referência Referencia	Dimensions | Dimensões | Dimensiones (mm)					Insert	Insert Screw	Torx key	Stock
		ØD	Ø ds	L1	L	Cartridge				
184040900	TDC 596540-3D	59-65	40	195	235	TDC 059065-I/O	WCKX 06T308	P0350903	XT15	◎
184041000	TDC 657040-3D	65-70	40	210	250	TDC 065070-I/O	WCKX 06T308	P0350903	XT15	◎
184041100	TDC 707540-3D	70-75	40	225	265	TDC 070075-I/O	WCKX 06T308	P0350903	XT15	◎
184041200	TDC 758040-3D	75-80	40	240	280	TDC 075080-I/O	WCKX 06T308	P0350903	XT15	◎

◎ Stock item | Produto de stock | Itens de stock

○ Available under request | Disponível sobre consulta | Disponible bajo consulta



Øds	Ls	BP / SP
20	50	PT - 1/8
25	56	PT - 1/8
32	60	PT - 1/4
40	70	PT - 1/4

ØDH tolerance (mm)	
ØD	3D
13,0 - 21,5	-0,10 / +0,15
22,0 - 50,0	-0,12 / +0,20

Order code Código	Reference Referência Referencia	Dimensions | Dimensões | Dimensiones (mm)					Insert	Insert Screw	Torx key	Stock
		ØD	Ø ds	L1	L2	L				
184041400	SCS 13020-3D	13,0	20	39	42	62	SPKX 050204	P0200500	XT06	●
184041500	SCS 13520-3D	13,5	20	41	44	64	SPKX 050204	P0200500	XT06	●
184041600	SCS 14020-3D	14,0	20	42	45	65	SPKX 050204	P0200500	XT06	●
184041700	SCS 14520-3D	14,5	20	44	47	67	SPKX 050204	P0200500	XT06	●
184041800	SCS 15020-3D	15,0	20	45	48	68	SPKX 050204	P0200500	XT06	●
184041900	SCS 15525-3D	15,5	25	47	50	75	SPKX 060204	P0220500	XT07	●
184042000	SCS 16025-3D	16,0	25	48	51	76	SPKX 060204	P0220500	XT07	●
184042100	SCS 16525-3D	16,5	25	50	53	78	SPKX 060204	P0220500	XT07	●
184042200	SCS 17025-3D	17,0	25	51	54	79	SPKX 060204	P0220500	XT07	●
184042300	SCS 17525-3D	17,5	25	53	56	81	SPKX 060204	P0220500	XT07	●
184042400	SCS 18025-3D	18,0	25	54	57	82	SPKX 060204	P0220500	XT07	●
184042500	SCS 18525-3D	18,5	25	56	59	84	SPKX 060204	P0220500	XT07	●
184042600	SCS 19025-3D	19,0	25	57	60	85	SPKX 060204	P0220500	XT07	●
184042700	SCS 19525-3D	19,5	25	59	62	87	SPKX 060204	P0220500	XT07	●
184042800	SCS 20025-3D	20,0	25	60	63	88	SPKX 060204	P0220500	XT07	●
184042900	SCS 20525-3D	20,5	25	62	65	90	SPKX 060204	P0220500	XT07	●
184043000	SCS 21025-3D	21,0	25	63	66	91	SPKX 060204	P0220500	XT07	●
184043100	SCS 21525-3D	21,5	25	65	68	93	SPKX 060204	P0220500	XT07	●
184043200	SCS 22032-3D	22,0	32	66	69	99	SPKX 07T308	P0250704	XT08	●
184043300	SCS 22532-3D	22,5	32	68	71	101	SPKX 07T308	P0250704	XT08	●
184043400	SCS 23032-3D	23,0	32	69	72	102	SPKX 07T308	P0250704	XT08	●
184043500	SCS 23532-3D	23,5	32	71	74	104	SPKX 07T308	P0250704	XT08	●
184043600	SCS 24032-3D	24,0	32	72	75	105	SPKX 07T308	P0250704	XT08	●
184043700	SCS 24532-3D	24,5	32	74	77	107	SPKX 07T308	P0250704	XT08	●
184043800	SCS 25032-3D	25,0	32	75	78	108	SPKX 07T308	P0250704	XT08	●
184043900	SCS 25532-3D	25,5	32	77	80	110	SPKX 07T308	P0250704	XT08	●
184044000	SCS 26032-3D	26,0	32	78	81	111	SPKX 07T308	P0250704	XT08	●

● Stock item | Produto de stock | Itens de stock

○ Available under request | Disponível sobre consulta | Disponible bajo consulta

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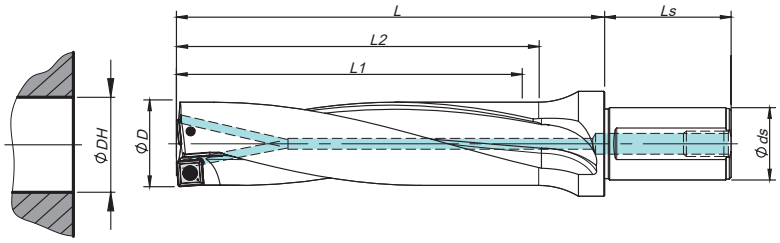
Order code Código	Reference Referência Referencia	Dimensions | Dimensões | Dimensiones (mm)					Insert	Insert Screw	Torx key	Stock
		ØD	Ø ds	L1	L2	L				
184044100	SCS 26532-3D	26,5	32	80	83	113	SPKX 07T308	P0250704	XT08	●
184044200	SCS 27032-3D	27,0	32	81	84	114	SPKX 07T308	P0250704	XT08	●
184044400	SCS 27532-3D	27,5	32	83	86	116	SPKX 07T308	P0250704	XT08	●
184044500	SCS 28032-3D	28,0	32	84	87	117	SPKX 090408	P0350903	XT15	●
184044600	SCS 28532-3D	28,5	32	86	89	119	SPKX 090408	P0350903	XT15	●
184044700	SCS 29032-3D	29,0	32	87	90	120	SPKX 090408	P0350903	XT15	●
184044800	SCS 29532-3D	29,5	32	89	93	123	SPKX 090408	P0350903	XT15	●
184044900	SCS 30032-3D	30,0	32	90	95	125	SPKX 090408	P0350903	XT15	●
184045000	SCS 31032-3D	31,0	32	93	98	128	SPKX 090408	P0350903	XT15	●
184045100	SCS 32032-3D	32,0	32	96	101	131	SPKX 090408	P0350903	XT15	●
184045200	SCS 33032-3D	33,0	32	99	104	134	SPKX 090408	P0350903	XT15	●
184045300	SCS 34040-3D	34,0	40	102	107	142	SPKX 110408	P0401200	XT15	●
184045400	SCS 35040-3D	35,0	40	105	110	145	SPKX 110408	P0401200	XT15	●
184045500	SCS 36040-3D	36,0	40	108	113	148	SPKX 110408	P0401200	XT15	●
184045600	SCS 37040-3D	37,0	40	111	116	151	SPKX 110408	P0401200	XT15	●
184045700	SCS 38040-3D	38,0	40	114	119	154	SPKX 110408	P0401200	XT15	●
184045800	SCS 39040-3D	39,0	40	117	122	157	SPKX 110408	P0401200	XT15	●
184045900	SCS 40040-3D	40,0	40	120	125	160	SPKX 110408	P0401200	XT15	●
184046000	SCS 41040-3D	41,0	40	123	128	163	SPKX 110408	P0401200	XT15	●
184046100	SCS 42040-3D	42,0	40	126	131	166	SPKX 140512	P0501300	XT20	●
184046200	SCS 43040-3D	43,0	40	129	134	169	SPKX 140512	P0501300	XT20	●
184046300	SCS 44040-3D	44,0	40	132	137	172	SPKX 140512	P0501300	XT20	●
184046400	SCS 45040-3D	45,0	40	135	140	175	SPKX 140512	P0501300	XT20	●
184046500	SCS 46040-3D	46,0	40	138	143	178	SPKX 140512	P0501300	XT20	●
184046600	SCS 47040-3D	47,0	40	141	146	181	SPKX 140512	P0501300	XT20	●
184046700	SCS 48040-3D	48,0	40	144	149	184	SPKX 140512	P0501300	XT20	●
184046800	SCS 49040-3D	49,0	40	147	152	187	SPKX 140512	P0501300	XT20	●
184046900	SCS 50040-3D	50,0	40	150	155	190	SPKX 140512	P0501300	XT20	●

● Stock item | Produto de stock | Itens de stock

○ Available under request | Disponível sobre consulta | Disponible bajo consulta



Øds	Ls	BP / SP
20	50	PT - 1/8
25	56	PT - 1/8
32	60	PT - 1/4
40	70	PT - 1/4

ØDH tolerance (mm)	
ØD	4D
13,0 - 21,5	-0,15 / +0,20
22,0 - 50,0	-0,15 / +0,25

Order code Código	Reference Referência Referencia	Dimensions | Dimensões | Dimensiones (mm)					Insert	Insert Screw	Torx key	Stock
		ØD	Ø ds	L1	L2	L				
184047100	SCS 13020-4D	13,0	20	52	55	75	SPKX 050204	P0200500	XT06	●
184047200	SCS 13520-4D	13,5	20	54	57	77	SPKX 050204	P0200500	XT06	●
184047300	SCS 14020-4D	14,0	20	56	59	79	SPKX 050204	P0200500	XT06	●
184047400	SCS 14520-4D	14,5	20	58	61	81	SPKX 050204	P0200500	XT06	●
184047500	SCS 15020-4D	15,0	20	60	63	83	SPKX 050204	P0200500	XT06	●
184047600	SCS 15525-4D	15,5	25	62	65	90	SPKX 060204	P0220500	XT07	●
184047700	SCS 16025-4D	16,0	25	64	67	92	SPKX 060204	P0220500	XT07	●
184047800	SCS 16525-4D	16,5	25	66	69	94	SPKX 060204	P0220500	XT07	●
184047900	SCS 17025-4D	17,0	25	68	71	96	SPKX 060204	P0220500	XT07	●
184048000	SCS 17525-4D	17,5	25	70	73	98	SPKX 060204	P0220500	XT07	●
184048100	SCS 18025-4D	18,0	25	72	75	100	SPKX 060204	P0220500	XT07	●
184048200	SCS 18525-4D	18,5	25	74	77	102	SPKX 060204	P0220500	XT07	●
184048300	SCS 19025-4D	19,0	25	76	79	104	SPKX 060204	P0220500	XT07	●
184048400	SCS 19525-4D	19,5	25	78	81	106	SPKX 060204	P0220500	XT07	●
184048500	SCS 20025-4D	20,0	25	80	83	108	SPKX 060204	P0220500	XT07	●
184048600	SCS 20525-4D	20,5	25	82	85	110	SPKX 060204	P0220500	XT07	●
184048700	SCS 21025-4D	21,0	25	84	87	112	SPKX 060204	P0220500	XT07	●
184048800	SCS 21525-4D	21,5	25	86	89	114	SPKX 060204	P0220500	XT07	●
184048900	SCS 22032-4D	22,0	32	88	91	121	SPKX 07T308	P0250704	XT08	●
184049000	SCS 22532-4D	22,5	32	90	93	123	SPKX 07T308	P0250704	XT08	●
184049100	SCS 23032-4D	23,0	32	92	95	125	SPKX 07T308	P0250704	XT08	●
184049200	SCS 23532-4D	23,5	32	94	97	127	SPKX 07T308	P0250704	XT08	●
184049300	SCS 24032-4D	24,0	32	96	99	129	SPKX 07T308	P0250704	XT08	●
184049400	SCS 24532-4D	24,5	32	98	101	131	SPKX 07T308	P0250704	XT08	●
184049500	SCS 25032-4D	25,0	32	100	103	133	SPKX 07T308	P0250704	XT08	●
184049600	SCS 25532-4D	25,5	32	102	105	135	SPKX 07T308	P0250704	XT08	●
184049700	SCS 26032-4D	26,0	32	104	107	137	SPKX 07T308	P0250704	XT08	●

● Stock item | Produto de stock | Itens de stock

○ Available under request | Disponível sobre consulta | Disponible bajo consulta

page B - 294 page B - 300 page B - 306 page B - 311

Order code Código	Reference Referência Referencia	Dimensions | Dimensões | Dimensiones (mm)					Insert	Insert Screw	Torx key	Stock
		ØD	Ø ds	L1	L2	L				
184049800	SCS 26532-4D	26,5	32	106	109	139	SP... 07T308	P0250704	XT08	◎
184049900	SCS 27032-4D	27,0	32	108	111	141	SP... 07T308	P0250704	XT08	◎
184050000	SCS 27532-4D	27,5	32	110	113	143	SP... 07T308	P0250704	XT08	◎
184050100	SCS 28032-4D	28,0	32	112	115	145	SP... 090408	P0350903	XT15	◎
184050200	SCS 28532-4D	28,5	32	114	117	147	SP... 090408	P0350903	XT15	◎
184050300	SCS 29032-4D	29,0	32	116	120	150	SP... 090408	P0350903	XT15	◎
184050400	SCS 29532-4D	29,5	32	118	123	153	SP... 090408	P0350903	XT15	◎
184050500	SCS 30032-4D	30,0	32	120	125	155	SP... 090408	P0350903	XT15	◎
184050600	SCS 31032-4D	31,0	32	124	129	159	SP... 090408	P0350903	XT15	◎
184050700	SCS 32032-4D	32,0	32	128	133	163	SP... 090408	P0350903	XT15	◎
184050800	SCS 33032-4D	33,0	32	132	137	167	SP... 090408	P0350903	XT15	◎
184050900	SCS 34040-4D	34,0	40	136	141	176	SP... 110408	P0401200	XT15	◎
184051000	SCS 35040-4D	35,0	40	140	145	180	SP... 110408	P0401200	XT15	◎
184051100	SCS 36040-4D	36,0	40	144	149	184	SP... 110408	P0401200	XT15	◎
184051200	SCS 37040-4D	37,0	40	148	153	188	SP... 110408	P0401200	XT15	◎
184051300	SCS 38040-4D	38,0	40	152	157	192	SP... 110408	P0401200	XT15	◎
184051400	SCS 39040-4D	39,0	40	156	161	196	SP... 110408	P0401200	XT15	◎
184051500	SCS 40040-4D	40,0	40	160	165	200	SP... 110408	P0401200	XT15	◎
184051600	SCS 41040-4D	41,0	40	164	169	204	SP... 110408	P0401200	XT15	◎
184051700	SCS 42040-4D	42,0	40	168	173	208	SP... 140512	P0501300	XT20	◎
184051800	SCS 43040-4D	43,0	40	172	177	212	SP... 140512	P0501300	XT20	◎
184051900	SCS 44040-4D	44,0	40	176	181	216	SP... 140512	P0501300	XT20	◎
184052000	SCS 45040-4D	45,0	40	180	185	220	SP... 140512	P0501300	XT20	◎
184052100	SCS 46040-4D	46,0	40	184	189	224	SP... 140512	P0501300	XT20	◎
184052200	SCS 47040-4D	47,0	40	188	193	228	SP... 140512	P0501300	XT20	◎
184052300	SCS 48040-4D	48,0	40	192	197	232	SP... 140512	P0501300	XT20	◎
184052400	SCS 49040-4D	49,0	40	196	201	236	SP... 140512	P0501300	XT20	◎
184052500	SCS 50040-4D	50,0	40	200	205	240	SP... 140512	P0501300	XT20	◎

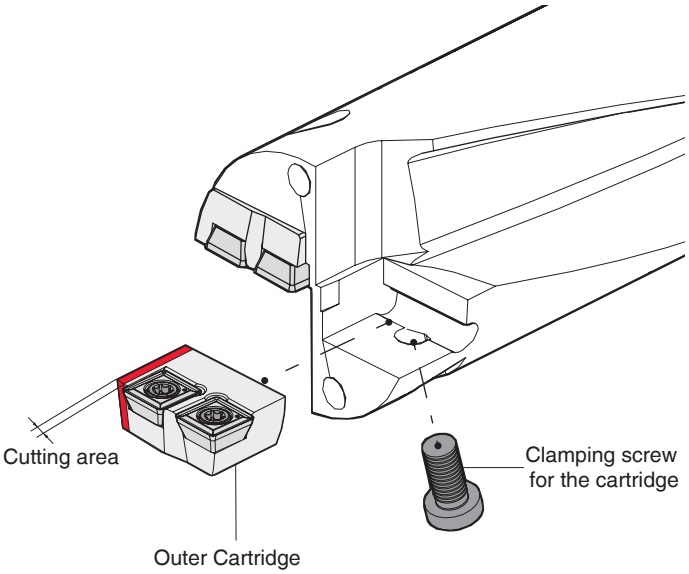
◎ Stock item | Produto de stock | Itens de stock

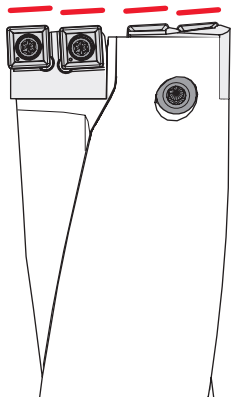
○ Available under request | Disponível sobre consulta | Disponible bajo consulta

SCC - SIZE ADAPTABLE CARTRIDGE (5mm)

- Unlock the clamping screw of the outer cartridge and move out the cartridge from the body.
- Cut off the outer cartridge's inside contacted part after calculation of the diameter that you want to drill.
- Slick the rough corner surface of the cut cartridge.
- Adhere closely the cartridge to the body not to make chink and fix it with the clamping screw firmly.

Note: The performance of the drill it's better with this type of cartridge.

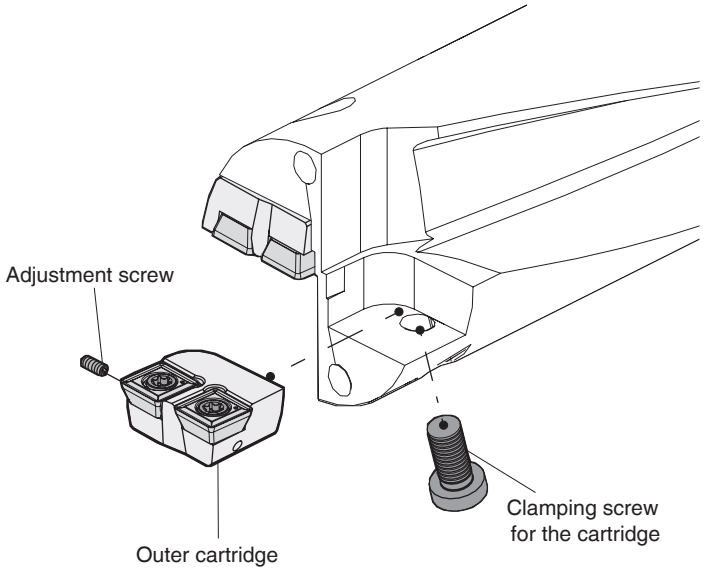


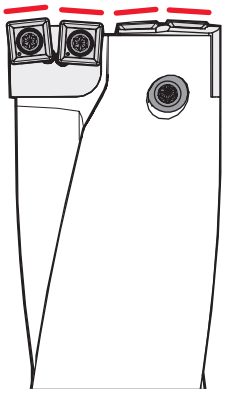


SCC - SIZE ADJUSTMENT CARTRIDGE (1mm)

- Unlock the clamping screw of the outer cartridge and move out the cartridge from the body.
- Adjust the length of the outer cartridge to the diameter that you want to drill.
- Adjustment within 6 mm by exchangeable cartridge on the same drill body.

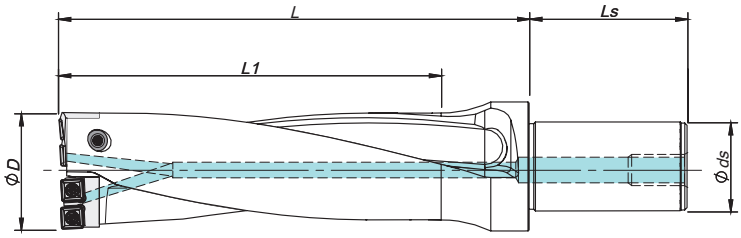
Note:This type of drill will be replaced by the size adaptable cartridge type of drill (5mm) when this will be sold out.





SCC 3D CARTRIDGE TYPE (DOUBLE INSERT) | Jet drills | Brocas jet | Brocas jet

Size adaptable cartridge (5mm)



Øds	Ls	BP / SP
40	70	PT - 1/4

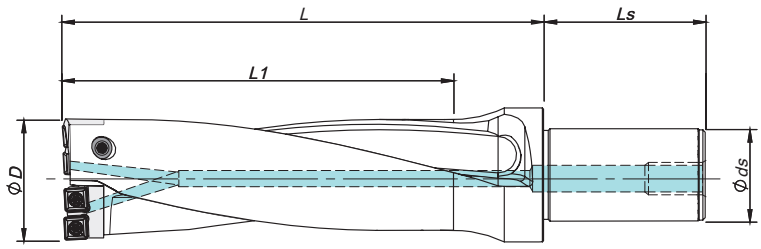
Order code Código	Reference Referência Referencia	Dimensions | Dimensões Dimensiones (mm)				Cartridge	Insert	Insert Screw	Torx key	Stock
		ØD	Ø ds	L1	L					
184231800	SCC 505540-3D	50-55	40	165	205	SCC 050055-I/O	SPKX 090408	P0350903	XT15	●
184231900	SCC 556040-3D	55-60	40	180	220	SCC 055060-I/O	SPKX 090408	P0350903	XT15	●
184232000	SCC 606540-3D	60-65	40	195	235	SCC 060065-I/O	SPKX 110408	P0401200	XT15	●
184232100	SCC 657040-3D	65-70	40	210	250	SCC 065070-I/O	SPKX 110408	P0401200	XT15	●
184232200	SCC 707540-3D	70-75	40	225	265	SCC 070075-I/O	SPKX 110408	P0401200	XT15	●
184232300	SCC 758040-3D	75-80	40	240	278	SCC 075080-I/O	SPKX 140512	P0501300	XT20	●

● Stock item | Produto de stock | Itens de stock

○ Available under request | Disponível sobre consulta | Disponible bajo consulta

SCC 4D CARTRIDGE TYPE (DOUBLE INSERT) | Jet drills | Brocas jet | Brocas jet

Size adaptable cartridge (5mm)



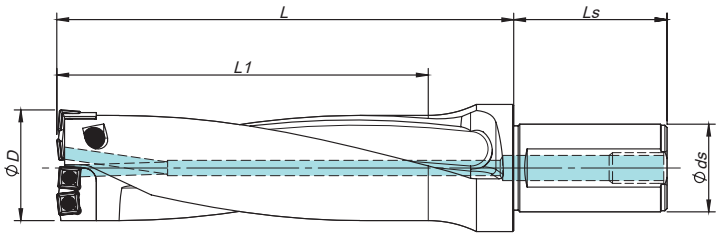
Øds	Ls	BP / SP
40	70	PT - 1/4

Order code Código	Reference Referência Referencia	Dimensions | Dimensões Dimensiones (mm)				Cartridge	Insert	Insert Screw	Torx key	Stock
		ØD	Ø ds	L1	L					
184232400	SCC 505540-4D	50-55	40	220	260	SCC 050055-I/O	SPKX 090408	P0350903	XT15	◎
184232500	SCC 556040-4D	55-60	40	240	280	SCC 055060-I/O	SPKX 090408	P0350903	XT15	◎
184232600	SCC 606540-4D	60-65	40	260	300	SCC 060065-I/O	SPKX 110408	P0401200	XT15	◎
184232700	SCC 657040-4D	65-70	40	280	320	SCC 065070-I/O	SPKX 110408	P0401200	XT15	◎
184232800	SCC 707540-4D	70-75	40	300	340	SCC 070075-I/O	SPKX 110408	P0401200	XT15	◎
184232900	SCC 758040-4D	75-80	40	320	358	SCC 075080-I/O	SPKX 140512	P0501300	XT20	◎

◎ Stock item | Produto de stock | Itens de stock ○ Available under request | Disponível sobre consulta | Disponible bajo consulta

SCC 4D CARTRIDGE TYPE (DOUBLE INSERT) | Jet drills | Brocas jet | Brocas jet

Size adjustment cartridge (1mm)

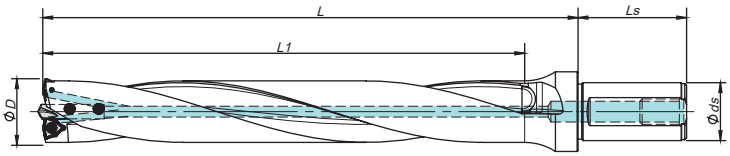


Øds	Ls	BP / SP
40	70	PT - 1/4

Order code Código	Reference Referência Referencia	Dimensions | Dimensões Dimensiones (mm)				Cartridge	Insert	Insert Screw	Torx key	Stock
		ØD	Ø ds	L1	L					
184056100	SCC 555640-4D	55-56	40	235	275	CISP 5560 / COSP 5556	SPKX 090408	P0350903	XT15	◈
184056300	SCC 575840-4D	57-58	40	235	275	CISP 5560 / COSP 5758	SPKX 090408	P0350903	XT15	◈
184056400	SCC 585940-4D	58-59	40	235	275	CISP 5560 / COSP 5859	SPKX 090408	P0350903	XT15	◈
184056500	SCC 596040-4D	59-60	40	235	275	CISP 5560 / COSP 5960	SPKX 090408	P0350903	XT15	◈
184057100	SCC 656640-4D	65-66	40	275	315	CISP 6570 / COSP 6566	SPKX 110408	P0401200	XT15	◈
184057200	SCC 666740-4D	66-67	40	275	315	CISP 6570 / COSP 6667	SPKX 110408	P0401200	XT15	◈
184057300	SCC 676840-4D	67-68	40	275	315	CISP 6570 / COSP 6768	SPKX 110408	P0401200	XT15	◈
184057400	SCC 686940-4D	68-69	40	275	315	CISP 6570 / COSP 6869	SPKX 110408	P0401200	XT15	◈
184057500	SCC 697040-4D	69-70	40	275	315	CISP 6570 / COSP 6970	SPKX 110408	P0401200	XT15	◈
184058400	SCC 787940-4D	78-79	40	315	355	CISP 7580 / COSP 7879	SPKX 140512	P0501300	XT20	◈
184058500	SCC 798040-4D	79-80	40	315	355	CISP 7580 / COSP 7980	SPKX 140512	P0501300	XT20	◈

◈ Stock item | Produto de stock | Itens de stock ◯ Available under request | Disponível sobre consulta | Disponible bajo consulta ◈ Available until sold out | Disponível até acabar o stock | Disponible hasta acabar el stock

* The new Drill version will replace the standard version when this type will be sold out.



New version / Standard version*

Øds	Ls	BP / SP
32	60 / 70	PT - 1/4

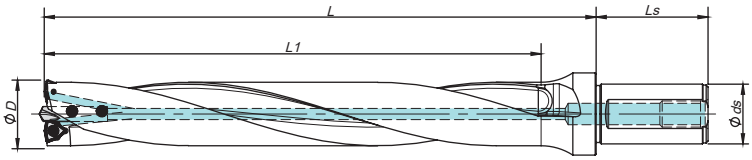
Order separatly

Order code Código	Reference Referência Referencia	Dimensions | Dimensões Dimensiones (mm)				Insert	Insert Screw	Torx key	Pilot drill	Stock
		ØD	Ø ds	L1	L					
184058600	DHS 002532-5D	25	32	150	180	WCKX 030204	P0220500	XT07	MDP 3006	○
184058700	DHS 002632-5D	26	32	150	180	WCKX 040204	P0250503	XT08	MDP 3006	○
184058800	DHS 002732-5D	27	32	150	180	WCKX 040204	P0250503	XT08	MDP 3006	○
184058900	DHS 002832-5D	28	32	150	180	WCKX 040204	P0250503	XT08	MDP 3006	○
184059000	DHS 002932-5D	29	32	150	180	WCKX 040204	P0250503	XT08	MDP 3006	○
184059100	DHS 003032-5D	30	32	150	180	WCKX 040204	P0250503	XT08	MDP 3006	○
184059200	DHS 003132-5D	31	32	175	205	WCKX 050308	P0300701	XT08	MDP 3508	○
184059300	DHS 003232-5D	32	32	175	205	WCKX 050308	P0300701	XT08	MDP 3508	○
184059400	DHS 003332-5D	33	32	175	205	WCKX 050308	P0300701	XT08	MDP 3508	○
184059500	DHS 003432-5D	34	32	175	205	WCKX 050308	P0300701	XT08	MDP 3508	○
184059600	DHS 003532-5D	35	32	175	205	WCKX 050308	P0300701	XT08	MDP 3508	○
184059700	DHS 003632-5D	36	32	200	230	WCKX 050308	P0300701	XT08	MDP 3508	○
184059800	DHS 003732-5D	37	32	200	230	WCKX 050308	P0300701	XT08	MDP 3508	○
184059900	DHS 003832-5D	38	32	200	230	WCKX 050308	P0300701	XT08	MDP 3508	○
184060000	DHS 003932-5D	39	32	200	230	WCKX 050308	P0300701	XT08	MDP 3508	○
184060100	DHS 004032-5D	40	32	200	230	WCKX 050308	P0300701	XT08	MDP 3508	○

Stock item | Produto de stock | Itens de stock ○ Available under request | Disponível sobre consulta | Disponible bajo consulta

Note:This type of drills are supplied without pilot drills. Please order them separately.

Please see Page B - 315 for setting pilot drill.



New version / Standard version*

Øds	Ls	BP / SP
32	60 / 70	PT - 1/4

Order separatly

Order code Código	Reference Referência Referencia	Dimensions | Dimensões Dimensiones (mm)				Insert	Insert Screw	Torx key	Pilot drill	Stock
		ØD	Ø ds	L1	L					
184062100	DHS 002532-8D	25	32	220	250	WCKX 030204	P0220500	XT07	MDP 3006	◈
184062200	DHS 002632-8D	26	32	220	250	WCKX 040204	P0250503	XT08	MDP 3006	○
184062300	DHS 002732-8D	27	32	220	250	WCKX 040204	P0250503	XT08	MDP 3006	○
184062400	DHS 002832-8D	28	32	220	250	WCKX 040204	P0250503	XT08	MDP 3006	○
184062500	DHS 002932-8D	29	32	220	250	WCKX 040204	P0250503	XT08	MDP 3006	○
184062600	DHS 003032-8D	30	32	220	250	WCKX 040204	P0250503	XT08	MDP 3006	◈
184062700	DHS 003132-8D	31	32	260	290	WCKX 050308	P0300701	XT08	MDP 3508	○
184062800	DHS 003232-8D	32	32	260	290	WCKX 050308	P0300701	XT08	MDP 3508	○
184062900	DHS 003332-8D	33	32	260	290	WCKX 050308	P0300701	XT08	MDP 3508	○
184063000	DHS 003432-8D	34	32	260	290	WCKX 050308	P0300701	XT08	MDP 3508	○
184063100	DHS 003532-8D	35	32	260	290	WCKX 050308	P0300701	XT08	MDP 3508	◈
184063200	DHS 003632-8D	36	32	300	330	WCKX 050308	P0300701	XT08	MDP 3508	○
184063300	DHS 003732-8D	37	32	300	330	WCKX 050308	P0300701	XT08	MDP 3508	○
184063400	DHS 003832-8D	38	32	300	330	WCKX 050308	P0300701	XT08	MDP 3508	○
184063500	DHS 003932-8D	39	32	300	330	WCKX 050308	P0300701	XT08	MDP 3508	○
184063600	DHS 004032-8D	40	32	300	330	WCKX 050308	P0300701	XT08	MDP 3508	◈

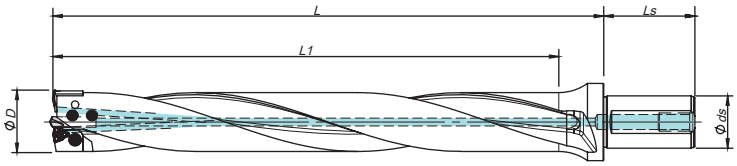
◈ Stock item | Produto de stock | Itens de stock ○ Available under request | Disponível sobre consulta | Disponible bajo consulta

Note:This type of drills are supplied without pilot drills. Please order them separately.

Please see Page B - 315 for setting pilot drill.

DHC 5D CARTRIDGE TYPE (SINGLE & DOUBLE INSERT)

Integrex drills | Brocas integrex | Brocas integrex



New version / Standard version*

Øds	Ls	BP / SP
40	70 / 80	PT - 1/4

Order separatly

Order code Código	Reference Referência Referencia	Dimensions Dimensões Dimensiones (mm)				Cartridge	Insert	Insert Screw	Torx key	Pilot drill	Stock
		ØD	Ø ds	L1	L						
184192500	DHC 004140-5D	41	40	225	260	CWC 041045-I / CWC 000041-O	WCKX 06T308	P0350903	XT15	MDP 3510	○
184192600	DHC 004240-5D	42	40	225	260	CWC 041045-I / CWC 000042-O	WCKX 06T308	P0350903	XT15	MDP 3510	○
184192700	DHC 004340-5D	43	40	225	260	CWC 041045-I / CWC 000043-O	WCKX 06T308	P0350903	XT15	MDP 3510	○
184192800	DHC 004440-5D	44	40	225	260	CWC 041045-I / CWC 000044-O	WCKX 06T308	P0350903	XT15	MDP 3510	○
184192900	DHC 004540-5D	45	40	225	260	CWC 041045-I / CWC 000045-O	WCKX 06T308	P0350903	XT15	MDP 3510	○
184193000	DHC 004640-5D	46	40	250	285	CWC 046050-I / CWC 000046-O	WCKX 06T308	P0350903	XT15	MDP 3510	○
184193100	DHC 004740-5D	47	40	250	285	CWC 046050-I / CWC 000047-O	WCKX 06T308	P0350903	XT15	MDP 3510	○
184193200	DHC 004840-5D	48	40	250	285	CWC 046050-I / CWC 000048-O	WCKX 06T308	P0350903	XT15	MDP 3510	○
184193300	DHC 004940-5D	49	40	250	285	CWC 046050-I / CWC 000049-O	WCKX 06T308	P0350903	XT15	MDP 3510	○
184193400	DHC 005040-5D	50	40	250	285	CWC 046050-I / CWC 000050-O	WCKX 06T308	P0350903	XT15	MDP 3510	○
184193500	DHC 005140-5D	51	40	275	310	CWC 051055-I / CWC 000051-O	WCKX 080408	P0401101	XT15	MDP 3812	○
184193600	DHC 005240-5D	52	40	275	310	CWC 051055-I / CWC 000052-O	WCKX 080408	P0401101	XT15	MDP 3812	○
184193700	DHC 005340-5D	53	40	275	310	CWC 051055-I / CWC 000053-O	WCKX 080408	P0401101	XT15	MDP 3812	○
184193800	DHC 005440-5D	54	40	275	310	CWC 051055-I / CWC 000054-O	WCKX 080408	P0401101	XT15	MDP 3812	○
184193900	DHC 005540-5D	55	40	275	310	CWC 051055-I / CWC 000055-O	WCKX 080408	P0401101	XT15	MDP 3812	○
184194000	DHC 005640-5D	56	40	300	335	CWC 056059-I / CWC 000056-O	WCKX 080408	P0401101	XT15	MDP 3812	○
184194100	DHC 005740-5D	57	40	300	335	CWC 056059-I / CWC 000057-O	WCKX 080408	P0401101	XT15	MDP 3812	○
184194200	DHC 005840-5D	58	40	300	335	CWC 056059-I / CWC 000058-O	WCKX 080408	P0401101	XT15	MDP 3812	○
184194300	DHC 005940-5D	59	40	300	335	CWC 056059-I / CWC 000059-O	WCKX 080408	P0401101	XT15	MDP 3812	○
		2 INSERTS PER CARTRIDGE									
184065600	DHC 606540-5D	60-65	40	325	360	MDC 060065-I/O	WCKX 050308	P0300701	XT08	MDP 3812	○
184065700	DHC 657040-5D	65-70	40	350	385	MDC 065070-I/O	WCKX 050308	P0300701	XT08	MDP 3812	○
184065800	DHC 707540-5D	70-75	40	375	410	MDC 070075-I/O	WCKX 050308	P0300701	XT08	MDP 3812	○
184065900	DHC 758040-5D	75-80	40	400	435	MDC 075080-I/O	WCKX 06T308	P0350903	XT15	MDP 4516	○

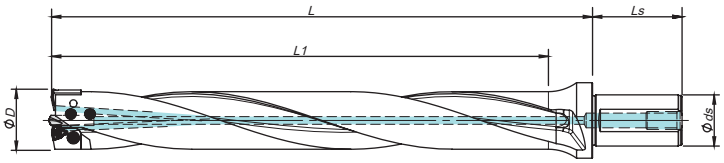
Stock item | Produto de stock | Itens de stock ○ Available under request | Disponível sobre consulta | Disponible bajo consulta

Note:This type of drills are supplied without pilot drills. Please order them separately.

Please see Page B - 315 for setting pilot drill.

DHC 8D CARTRIDGE TYPE (SINGLE & DOUBLE INSERT)

Integrex drills | Brocas integrex | Brocas integrex



New version / Standard version*

Øds	Ls	BP / SP
40	70 / 80	PT - 1/4

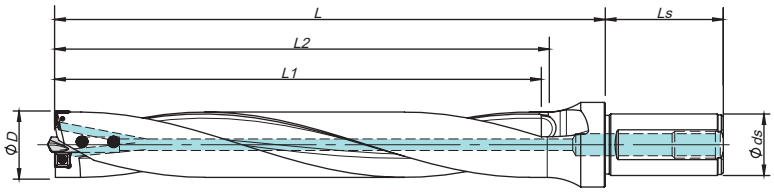
Order separatly

Order code Código	Reference Referência Referencia	Dimensions Dimensões Dimensiones (mm)				Cartridge	Insert	Insert Screw	Torx key	Pilot drill	Stock
		ØD	Ø ds	L1	L						
184194400	DHC 004140-8D	41	40	340	375	CWC 041045-I / CWC 000041-O	WCKX 06T308	P0350903	XT15	MDP 3510	○
184194500	DHC 004240-8D	42	40	340	375	CWC 041045-I / CWC 000042-O	WCKX 06T308	P0350903	XT15	MDP 3510	○
184194600	DHC 004340-8D	43	40	340	375	CWC 041045-I / CWC 000043-O	WCKX 06T308	P0350903	XT15	MDP 3510	○
184194700	DHC 004440-8D	44	40	340	375	CWC 041045-I / CWC 000044-O	WCKX 06T308	P0350903	XT15	MDP 3510	○
184194800	DHC 004540-8D	45	40	340	375	CWC 041045-I / CWC 000045-O	WCKX 06T308	P0350903	XT15	MDP 3510	○
184194900	DHC 004640-8D	46	40	380	415	CWC 046050-I / CWC 000046-O	WCKX 06T308	P0350903	XT15	MDP 3510	○
184195000	DHC 004740-8D	47	40	380	415	CWC 046050-I / CWC 000047-O	WCKX 06T308	P0350903	XT15	MDP 3510	○
184195100	DHC 004840-8D	48	40	380	415	CWC 046050-I / CWC 000048-O	WCKX 06T308	P0350903	XT15	MDP 3510	○
184195200	DHC 004940-8D	49	40	380	415	CWC 046050-I / CWC 000049-O	WCKX 06T308	P0350903	XT15	MDP 3510	○
184195300	DHC 005040-8D	50	40	380	415	CWC 046050-I / CWC 000050-O	WCKX 06T308	P0350903	XT15	MDP 3510	○
184195400	DHC 005140-8D	51	40	420	455	CWC 051055-I / CWC 000051-O	WCKX 080408	P0401101	XT15	MDP 3812	○
184195500	DHC 005240-8D	52	40	420	455	CWC 051055-I / CWC 000052-O	WCKX 080408	P0401101	XT15	MDP 3812	○
184195600	DHC 005340-8D	53	40	420	455	CWC 051055-I / CWC 000053-O	WCKX 080408	P0401101	XT15	MDP 3812	○
184195700	DHC 005440-8D	54	40	420	455	CWC 051055-I / CWC 000054-O	WCKX 080408	P0401101	XT15	MDP 3812	○
184195800	DHC 005540-8D	55	40	420	455	CWC 051055-I / CWC 000055-O	WCKX 080408	P0401101	XT15	MDP 3812	○
184195900	DHC 005640-8D	56	40	460	495	CWC 056059-I / CWC 000056-O	WCKX 080408	P0401101	XT15	MDP 3812	○
184196000	DHC 005740-8D	57	40	460	495	CWC 056059-I / CWC 000057-O	WCKX 080408	P0401101	XT15	MDP 3812	○
184196100	DHC 005840-8D	58	40	460	495	CWC 056059-I / CWC 000058-O	WCKX 080408	P0401101	XT15	MDP 3812	○
184196200	DHC 005940-8D	59	40	460	495	CWC 056059-I / CWC 000059-O	WCKX 080408	P0401101	XT15	MDP 3812	○
		2 INSERTS PER CARTRIDGE									
184066000	DHC 606540-8D	60-65	40	520	555	MDC 060065-I/O	WCKX 050308	P0300701	XT08	MDP 3812	○
184066100	DHC 657040-8D	65-70	40	560	595	MDC 065070-I/O	WCKX 050308	P0300701	XT08	MDP 3812	○
184066200	DHC 707540-8D	70-75	40	600	635	MDC 070075-I/O	WCKX 050308	P0300701	XT08	MDP 3812	○
184066300	DHC 758040-8D	75-80	40	640	675	MDC 075080-I/O	WCKX 06T308	P0350903	XT15	MDP 4516	○

Stock item | Produto de stock | Itens de stock ○ Available under request | Disponível sobre consulta | Disponible bajo consulta

Note:This type of drills are supplied without pilot drills. Please order them separately.

Please see Page B - 315 for setting pilot drill.



Øds	Ls	BP / SP
25	50	PT - 1/8
32	60	PT - 1/4

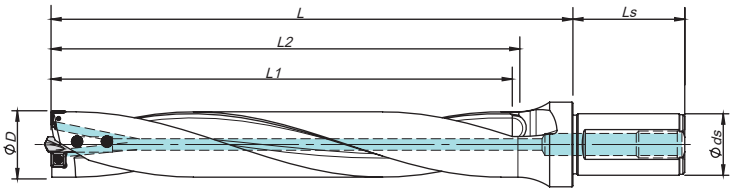
Order separatly

Order code Código	Reference Referência Referencia	Dimensions | Dimensões | Dimensiones (mm)					Insert	Insert Screw	Torx key	Pilot drill	Stock
		ØD	Ø ds	L1	L2	L					
184154300	TFD 18025-6D	18,0	25	108	112	142	SPKX 050204	P0200500	XT06	MDP 2006	○
184154400	TFD 18525-6D	18,5	25	111	115	145	SPKX 050204	P0200500	XT06	MDP 2006	○
184154500	TFD 19025-6D	19,0	25	114	118	148	SPKX 050204	P0200500	XT06	MDP 2006	○
184154600	TFD 19525-6D	19,5	25	117	121	151	SPKX 050204	P0200500	XT06	MDP 2006	○
184154700	TFD 20025-6D	20,0	25	120	124	154	SPKX 060204	P0220500	XT07	MDP 2006	○
184154800	TFD 20525-6D	20,5	25	123	127	157	SPKX 060204	P0220500	XT07	MDP 2006	○
184154900	TFD 21025-6D	21,0	25	126	130	160	SPKX 060204	P0220500	XT07	MDP 2006	○
184155000	TFD 21525-6D	21,5	25	129	133	163	SPKX 060204	P0220500	XT07	MDP 2006	○
184155100	TFD 22025-6D	22,0	25	132	136	166	SPKX 060204	P0220500	XT07	MDP 2006	○
184155200	TFD 22525-6D	22,5	25	135	139	169	SPKX 060204	P0220500	XT07	MDP 2006	○
184155300	TFD 23025-6D	23,0	25	138	142	172	SPKX 060204	P0220500	XT07	MDP 2006	○
184155400	TFD 23525-6D	23,5	25	141	145	175	SPKX 060204	P0220500	XT07	MDP 2006	○
184155500	TFD 24025-6D	24,0	25	144	148	178	SPKX 060204	P0220500	XT07	MDP 2006	○
184155600	TFD 24525-6D	24,5	25	147	151	181	SPKX 060204	P0220500	XT07	MDP 2006	○
184155700	TFD 25025-6D	25,0	25	150	154	184	SPKX 060204	P0220500	XT07	MDP 2006	○
184155800	TFD 25532-6D	25,5	32	153	157	192	SPKX 07T308	P0250704	XT08	MDP 2508	○
184155900	TFD 26032-6D	26,0	32	156	160	195	SPKX 07T308	P0250704	XT08	MDP 2508	○
184156000	TFD 26532-6D	26,5	32	159	163	198	SPKX 07T308	P0250704	XT08	MDP 2508	○
184156100	TFD 27032-6D	27,0	32	162	166	201	SPKX 07T308	P0250704	XT08	MDP 2508	○
184156200	TFD 27532-6D	27,5	32	165	169	204	SPKX 07T308	P0250704	XT08	MDP 2508	○
184156300	TFD 28032-6D	28,0	32	168	172	207	SPKX 07T308	P0250704	XT08	MDP 2508	○
184156400	TFD 28532-6D	28,5	32	171	175	210	SPKX 07T308	P0250704	XT08	MDP 2508	○
184156500	TFD 29032-6D	29,0	32	174	178	213	SPKX 07T308	P0250704	XT08	MDP 2508	○
184156600	TFD 29532-6D	29,5	32	177	181	216	SPKX 07T308	P0250704	XT08	MDP 2508	○
184156700	TFD 30032-6D	30,0	32	180	184	219	SPKX 07T308	P0250704	XT08	MDP 2508	○

Stock item | Produto de stock | Itens de stock ○ Available under request | Disponível sobre consulta | Disponible bajo consulta

Note:This type of drills are supplied without pilot drills. Please order them separately.

Please see Page B - 315 for setting pilot drill.



Øds	Ls	BP / SP
25	56	PT - 1/8
32	60	PT - 1/4

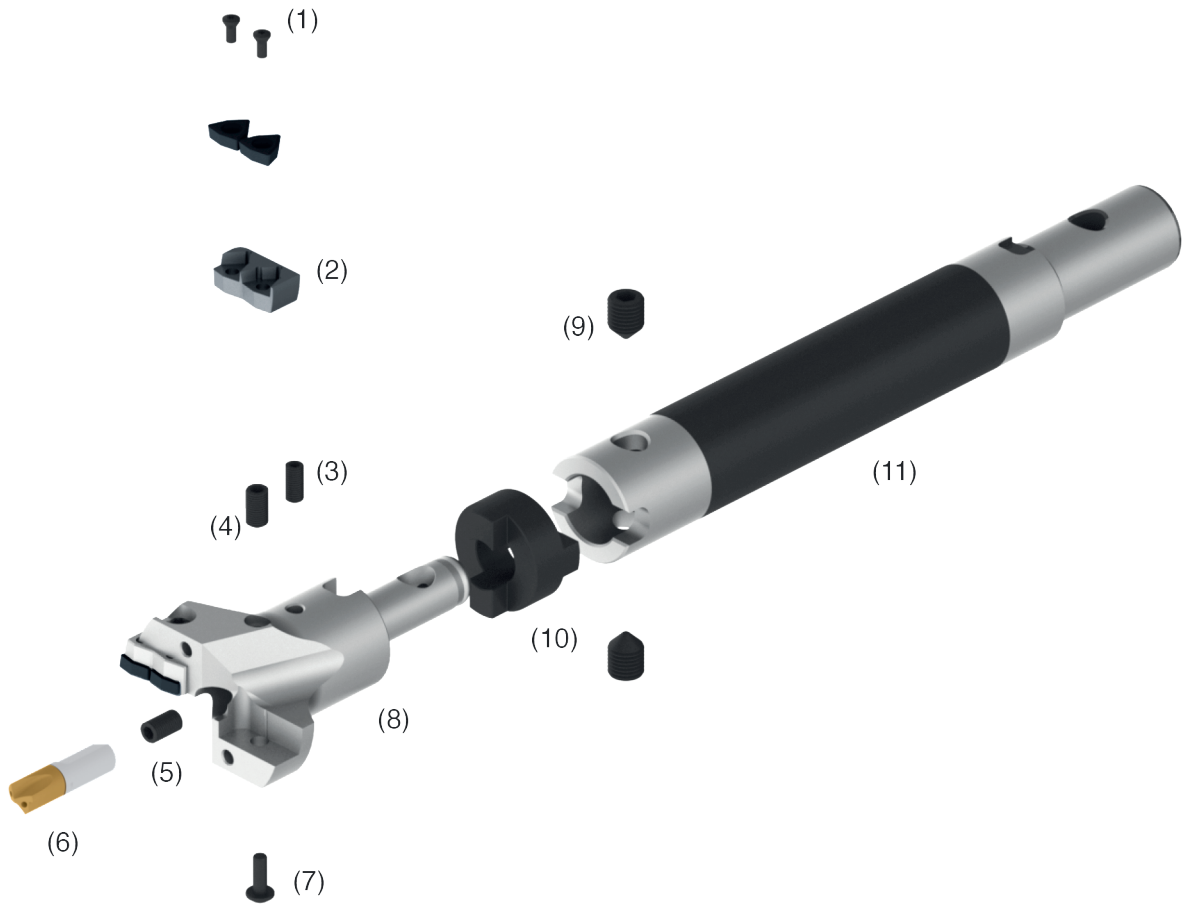
Order separatly

Order code Código	Reference Referência Referencia	Dimensions | Dimensões | Dimensiones (mm)					Insert	Insert Screw	Torx key	Pilot drill	Stock
		ØD	Ø ds	L1	L2	L					
184151800	TFD 18025-8D	18,0	25	144	149	179	SPKX 050204	P0200500	XT06	MDP 2006	○
184151900	TFD 18525-8D	18,5	25	148	153	183	SPKX 050204	P0200500	XT06	MDP 2006	○
184152000	TFD 19025-8D	19,0	25	152	157	187	SPKX 050204	P0200500	XT06	MDP 2006	○
184152100	TFD 19525-8D	19,5	25	156	161	191	SPKX 050204	P0200500	XT06	MDP 2006	○
184152200	TFD 20025-8D	20,0	25	160	165	195	SPKX 060204	P0220500	XT07	MDP 2006	○
184152300	TFD 20525-8D	20,5	25	164	169	199	SPKX 060204	P0220500	XT07	MDP 2006	○
184152400	TFD 21025-8D	21,0	25	168	173	203	SPKX 060204	P0220500	XT07	MDP 2006	○
184152500	TFD 21525-8D	21,5	25	172	177	207	SPKX 060204	P0220500	XT07	MDP 2006	○
184151200	TFD 22025-8D	22,0	25	176	181	211	SPKX 060204	P0220500	XT07	MDP 2006	○
184152700	TFD 22525-8D	22,5	25	180	185	215	SPKX 060204	P0220500	XT07	MDP 2006	○
184152800	TFD 23025-8D	23,0	25	184	189	219	SPKX 060204	P0220500	XT07	MDP 2006	○
184152900	TFD 23525-8D	23,5	25	188	193	223	SPKX 060204	P0220500	XT07	MDP 2006	○
184153000	TFD 24025-8D	24,0	25	192	197	227	SPKX 060204	P0220500	XT07	MDP 2006	○
184153100	TFD 24525-8D	24,5	25	196	201	231	SPKX 060204	P0220500	XT07	MDP 2006	○
184151300	TFD 25025-8D	25,0	25	200	205	235	SPKX 060204	P0220500	XT07	MDP 2006	○
184153300	TFD 25532-8D	25,5	32	204	209	244	SPKX 07T308	P0250704	XT08	MDP 2508	○
184153400	TFD 26032-8D	26,0	32	208	213	248	SPKX 07T308	P0250704	XT08	MDP 2508	○
184153500	TFD 26532-8D	26,5	32	212	217	252	SPKX 07T308	P0250704	XT08	MDP 2508	○
184153600	TFD 27032-8D	27,0	32	216	221	256	SPKX 07T308	P0250704	XT08	MDP 2508	○
184153700	TFD 27532-8D	27,5	32	220	225	260	SPKX 07T308	P0250704	XT08	MDP 2508	○
184153800	TFD 28032-8D	28,0	32	224	229	264	SPKX 07T308	P0250704	XT08	MDP 2508	○
184153900	TFD 28532-8D	28,5	32	228	233	268	SPKX 07T308	P0250704	XT08	MDP 2508	○
184154000	TFD 29032-8D	29,0	32	232	237	272	SPKX 07T308	P0250704	XT08	MDP 2508	○
184154100	TFD 29532-8D	29,5	32	236	241	276	SPKX 07T308	P0250704	XT08	MDP 2508	○
184154200	TFD 30032-8D	30,0	32	240	245	280	SPKX 07T308	P0250704	XT08	MDP 2508	○

Stock item | Produto de stock | Itens de stock ○ Available under request | Disponível sobre consulta | Disponible bajo consulta

Note:This type of drills are supplied without pilot drills. Please order them separately.

Please see Page B - 315 for setting pilot drill.



(1) - Insert Screw

(2) - Cartridge Inner / Outer

(3) - Fixing Screw for Pilot Drill

(4) - Clamping Bolt for Pilot Drill

(5) -Adjustment Screw for Pilot Drill

(6) - Pilot Drill

(7) - Screw for cartridge

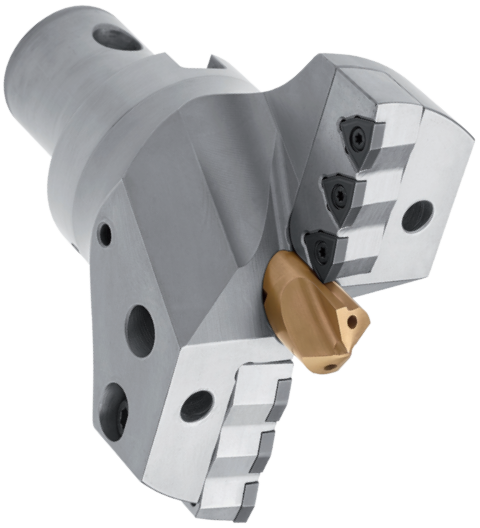
(8) -Vortex Drill

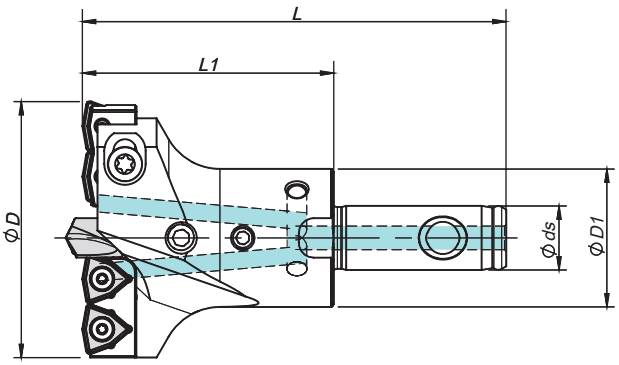
(9) - Fixation Screw

(10) - Drive Ring

(11) - MDS Shank or MDE Extension

MDO 10D | Vortex drills | Brocas Vortex | Brocas vortex





Order separatly

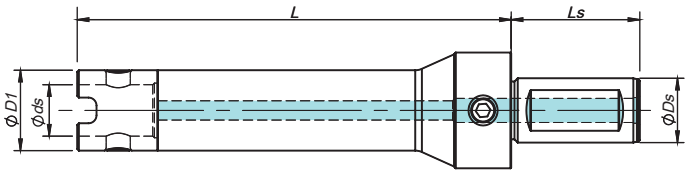
Order code Código	Reference Referência Referencia	Dimensions | Dimensões Dimensiones (mm)					Cartridge	Insert	Insert Screw	Torx key	Pilot drill	Stock
		ØD	Ø ds	L1	L	ØD1						
2 INSERTS PER CARTRIDGE												
184031000	MDO 04505013	45-50	13	50	85	28	MDC 045050-I/O	WCKX 030204	P0220500	XT07	MDP 3510	◎
184031100	MDO 05005513	50-55	13	50	85	28	MDC 050055-I/O	WCKX 030204	P0220500	XT07	MDP 3510	◎
184031200	MDO 05506016	55-60	16	60	100	32	MDC 055060-I/O	WCKX 040204	P0250503	XT08	MDP 3812	◎
184031300	MDO 06006516	60-65	16	60	100	32	MDC 060065-I/O	WCKX 050308	P0300701	XT08	MDP 3812	◎
184031500	MDO 06507016	65-70	16	60	100	32	MDC 065070-I/O	WCKX 050308	P0300701	XT08	MDP 3812	◎
184032400	MDO 07007522	70-75	22	70	115	40	MDC 070075-I/O	WCKX 050308	P0300701	XT08	MDP 3812	◎
184032500	MDO 07508022	75-80	22	70	115	40	MDC 075080-I/O	WCKX 06T308	P0350903	XT15	MDP 4516	◎
184032600	MDO 08008522	80-85	22	70	115	40	MDC 080085-I/O	WCKX 06T308	P0350903	XT15	MDP 4516	◎
184032700	MDO 08509027	85-90	27	70	120	48	MDC 085090-I/O	WCKX 06T308	P0350903	XT15	MDP 4516	◎
184032800	MDO 09009527	90-95	27	70	120	48	MDC 090095-I/O	WCKX 06T308	P0350903	XT15	MDP 4516	◎
184032900	MDO 09510027	95-100	27	70	120	48	MDC 095100-I/O	WCKX 06T308	P0350903	XT15	MDP 4516	◎
3 INSERTS PER CARTRIDGE												
184033000	MDO 10010532	100-105	32	80	130	58	MDC 100105-I/O	WCKX 050308	P0300701	XT08	MDP 4520	◎
184066400	MDO 10511032	105-110	32	80	130	58	MDC 105110-I/O	WCKX 06T308	P0350903	XT15	MDP 4520	◎
184066500	MDO 11011532	110-115	32	80	130	58	MDC 110115-I/O	WCKX 06T308	P0350903	XT15	MDP 4520	◎
184066600	MDO 11512040	115-120	40	90	145	70	MDC 115120-I/O	WCKX 06T308	P0350903	XT15	MDP 4520	◎
184066700	MDO 12012540	120-125	40	90	145	70	MDC 120125-I/O	WCKX 06T308	P0350903	XT15	MDP 5625	◎
184066800	MDO 12513040	125-130	40	90	145	70	MDC 125130-I/O	WCKX 06T308	P0350903	XT15	MDP 5625	◎
184066900	MDO 13013540	130-135	40	90	145	70	MDC 130135-I/O	WCKX 06T308	P0350903	XT15	MDP 5625	◎
184067000	MDO 13514040	135-140	40	90	145	70	MDC 135140-I/O	WCKX 06T308	P0350903	XT15	MDP 5625	◎
184067100	MDO 14015050	140-150	50	100	160	80	MDC 140150-I/O	WCKX 080408	P0401101	XT15	MDP 5625	◎
184067200	MDO 15016050	150-160	50	100	160	80	MDC 150160-I/O	WCKX 080408	P0401101	XT15	MDP 5625	◎
184067300	MDO 16017050	160-170	50	100	160	80	MDC 160170-I/O	WCKX 080408	P0401101	XT15	MDP 6830	◎
184067400	MDO 17018050	170-180	50	100	160	80	MDC 170180-I/O	WCKX 080408	P0401101	XT15	MDP 6830	◎

◎ Stock item | Produto de stock | Itens de stock ○ Available under request | Disponível sobre consulta | Disponible bajo consulta

Drills with larger diameter available under request with a minimum order quantity.

Note:This type of drills are supplied without pilot drills. Please order them separately.

Please see Page B - 318 for setting pilot drill.



New version / Standard version*

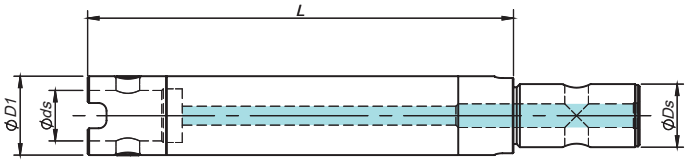
Ød	Ls	BP / SP
32	70	PT - 1/4
40	80	PT - 1/4
50	80 / 100	PT - 1/4

Order separatly

Order code Código	Reference Referência Referencia	Dimensions | Dimensões | Dimensiones (mm)				Drive Ring	Stock
		ØDs	Ød	ØD1	L		
184121900	MDS 32115130	32	13	28	115	MDR 1028	⚙
184253700	MDS 32200130	32	13	28	200	MDR 1028	⚙
184255400	MDS 32300130	32	13	28	300	MDR 1028	⚙
184122100	MDS 40125160	40	16	32	125	MDR 1032	⚙
184253800	MDS 40200160	40	16	32	200	MDR 1032	⚙
184255500	MDS 40300160	40	16	32	300	MDR 1032	⚙
184122300	MDS 40148220	40	22	40	148	MDR 1240	⚙
184122400	MDS 40200220	40	22	40	200	MDR 1240	⚙
184122500	MDS 40300220	40	22	40	300	MDR 1240	⚙
184122600	MDS 40168270	40	27	48	168	MDR 1248	⚙
184122700	MDS 40300270	40	27	48	300	MDR 1248	⚙
184122800	MDS 40186320	40	32	58	186	MDR 1458	⚙
184122900	MDS 40300320	40	32	58	300	MDR 1458	⚙
184123000	MDS 50186400	50	40	70	186	MDR 1470	⚙
184123100	MDS 50300400	50	40	70	300	MDR 1470	⚙
184123200	MDS 50184500	50	50	80	184	MDR 1680	⚙
184123300	MDS 50300500	50	50	80	300	MDR 1680	⚙

⚙ Stock item | Produto de stock | Itens de stock ◯ Available under request | Disponível sobre consulta | Disponible bajo consulta

Note: This shanks type are supplied without drive ring. Please order them separately.

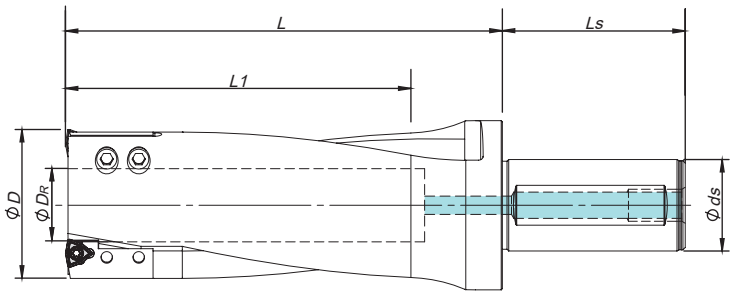


Order separatly

Order code Código	Reference Referência Referencia	Dimensions | Dimensões | Dimensiones (mm)				Drive Ring	Stock
		ØDs	Ød	ØD1	L		
184023500	MDE 13115280	13	13	28	115	MDR 1028	⛭
184023600	MDE 13150280	13	13	28	150	MDR 1028	⛭
184023700	MDE 13200280	13	13	28	200	MDR 1028	⛭
184021800	MDE 13300280	13	13	28	300	MDR 1028	⛭
184023800	MDE 16115320	16	16	32	115	MDR 1032	⛭
184021900	MDE 16200320	16	16	32	200	MDR 1032	⛭
184023900	MDE 16300320	16	16	32	300	MDR 1032	⛭
184024000	MDE 22113400	22	22	40	113	MDR 1240	⛭
184024100	MDE 22200400	22	22	40	200	MDR 1240	⛭
184024200	MDE 22300400	22	22	40	300	MDR 1240	⛭
184024300	MDE 27113480	27	27	48	113	MDR 1248	⛭
184024400	MDE 27200480	27	27	48	200	MDR 1248	⛭
184024500	MDE 27300480	27	27	48	300	MDR 1248	⛭
184024600	MDE 32186580	32	32	58	186	MDR 1458	⛭
184024700	MDE 32300580	32	32	58	300	MDR 1458	⛭
184024800	MDE 40186700	40	40	70	186	MDR 1470	⛭
184024900	MDE 40300700	40	40	70	300	MDR 1470	⛭
184025000	MDE 40500700	40	40	70	500	MDR 1470	⛭
184025100	MDE 50204800	50	50	80	204	MDR 1680	⛭
184025200	MDE 50300800	50	50	80	300	MDR 1680	⛭
184025300	MDE 50500800	50	50	80	500	MDR 1680	⛭

⛭ Stock item | Produto de stock | Itens de stock ◯ Available under request | Disponível sobre consulta | Disponible bajo consulta

Note: This shanks type are supplied without drive ring. Please order them separately.



Øds	Ls	BP / SP
32	70	PT - 1/4
40	80	PT - 1/4
50	100	PT - 1/4

Order code Código	Reference Referência Referencia	Dimensions | Dimensões | Dimensiones (mm)					Cartridge	Insert	Insert Screw	Torx key	Stock
		ØD	Ø DR	Ø ds	L1	L					
184067500	PND 04032-2D	40,0	10,0	32	100	140	PNC 040055-I/O	WCKX 050308	P0300701	XT08	○
184067600	PND 04540-2D	45,0	15,0	40	100	130	PNC 040055-I/O	WCKX 050308	P0300701	XT08	○
184067700	PND 05040-2D	50,0	21,0	40	120	150	PNC 040055-I/O	WCKX 050308	P0300701	XT08	○
184067800	PND 05540-2D	55,0	26,0	40	120	150	PNC 040055-I/O	WCKX 050308	P0300701	XT08	○
184067900	PND 06040-2D	60,0	24,5	40	150	190	PNC 060110-I/O	WCKX 06T308	P0350903	XT15	○
184068000	PND 06540-2D	65,0	30,5	40	150	190	PNC 060110-I/O	WCKX 06T308	P0350903	XT15	○
184068100	PND 07040-2D	70,0	35,5	40	170	210	PNC 060110-I/O	WCKX 06T308	P0350903	XT15	○
184068200	PND 07540-2D	75,0	40,5	40	170	210	PNC 060110-I/O	WCKX 06T308	P0350903	XT15	○
184068300	PND 08040-2D	80,0	45,5	40	190	230	PNC 060110-I/O	WCKX 06T308	P0350903	XT15	○
184068400	PND 08550-2D	85,0	50,5	50	190	230	PNC 060110-I/O	WCKX 06T308	P0350903	XT15	○
184068500	PND 09050-2D	90,0	55,0	50	210	250	PNC 060110-I/O	WCKX 06T308	P0350903	XT15	○
184068600	PND 09550-2D	95,0	60,0	50	210	250	PNC 060110-I/O	WCKX 06T308	P0350903	XT15	○
184068700	PND 10050-2D	100,0	66,0	50	250	290	PNC 060110-I/O	WCKX 06T308	P0350903	XT15	○
184068800	PND 11050-2D	110,0	76,0	50	250	290	PNC 060110-I/O	WCKX 06T308	P0350903	XT15	○

Stock item | Produto de stock | Itens de stock ○ Available under request | Disponível sobre consulta | Disponible bajo consulta

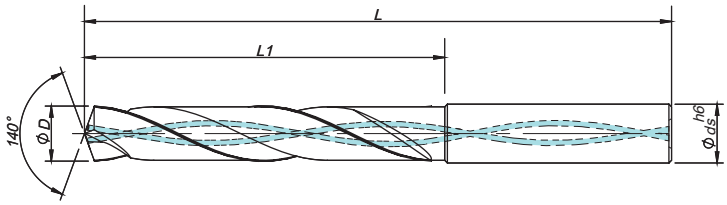
page B - 294 page B - 299 page B - 306 page B - 322

HMDH SC 3D

P K

HRC ≤ 60

IT8~9 IT class



Drill Dia. ØD	ØD3,0	3,0<ØD≤6,0	6,0<ØD≤10,0	10,0<ØD≤18,0	18,0<ØD≤20,0
Hole Tolerances	+0,002	+0,004	+0,006	+0,007	+0,008
	+0,012	+0,016	+0,021	+0,025	+0,028

Order code Código	Reference Referência Referencia	Dimensions | Dimensões Dimensiones (mm)				Z	Stock
		ØD	Ø ds	L1	L		
214157000	HMDH303D 030062020	3,0	6,0	20	62	2	●
214157100	HMDH303D 031062020	3,1	6,0	20	62	2	●
214157200	HMDH303D 032062020	3,2	6,0	20	62	2	●
214032300	HMDH303D 033062020	3,3	6,0	20	62	2	●
214157300	HMDH303D 034062020	3,4	6,0	20	62	2	●
214157400	HMDH303D 035062020	3,5	6,0	20	62	2	●
214157500	HMDH303D 036062020	3,6	6,0	20	62	2	●
214157600	HMDH303D 037062020	3,7	6,0	20	62	2	●
214157700	HMDH303D 038066024	3,8	6,0	20	66	2	●
214157800	HMDH303D 039066024	3,9	6,0	20	66	2	●
214157900	HMDH303D 040066024	4,0	6,0	20	66	2	●
214158000	HMDH303D 041066024	4,1	6,0	20	66	2	●
214158100	HMDH303D 042066024	4,2	6,0	20	66	2	●
214158200	HMDH303D 043066024	4,3	6,0	20	66	2	●
214158300	HMDH303D 044066024	4,4	6,0	20	66	2	●
214158400	HMDH303D 045066024	4,5	6,0	20	66	2	●
214158500	HMDH303D 046066024	4,6	6,0	20	66	2	●
214158600	HMDH303D 047066024	4,7	6,0	20	66	2	●
214158700	HMDH303D 048066028	4,8	6,0	28	66	2	●
214158800	HMDH303D 049066028	4,9	6,0	28	66	2	●
214158900	HMDH303D 050066028	5,0	6,0	28	66	2	●
214159000	HMDH303D 051066028	5,1	6,0	28	66	2	●

Order code	Reference	Dimensions (mm)				Z	Stock
		ØD	Ø ds	L1	L		
214159100	HMDH303D 052066028	5,2	6,0	28	66	2	●
214159200	HMDH303D 053066028	5,3	6,0	28	66	2	●
214159300	HMDH303D 054066028	5,4	6,0	28	66	2	●
214159400	HMDH303D 055066028	5,5	6,0	28	66	2	●
214159500	HMDH303D 056066028	5,6	6,0	28	66	2	●
214159600	HMDH303D 057066028	5,7	6,0	28	66	2	●
214159700	HMDH303D 058066028	5,8	6,0	28	66	2	●
214159800	HMDH303D 059066028	5,9	6,0	28	66	2	●
214159900	HMDH303D 060066028	6,0	6,0	28	66	2	●
214160000	HMDH303D 061079034	6,1	8,0	34	79	2	●
214160100	HMDH303D 062079034	6,2	8,0	34	79	2	●
214160200	HMDH303D 063079034	6,3	8,0	34	79	2	●
214160300	HMDH303D 064079034	6,4	8,0	34	79	2	●
214160400	HMDH303D 065079034	6,5	8,0	34	79	2	●
214160500	HMDH303D 066079034	6,6	8,0	34	79	2	●
214160600	HMDH303D 067079034	6,7	8,0	34	79	2	●
211134000	HMDH303D 068079034	6,8	8,0	34	79	2	●
214160700	HMDH303D 069079034	6,9	8,0	34	79	2	●
214160800	HMDH303D 070079034	7,0	8,0	34	79	2	●
214160900	HMDH303D 071079041	7,1	8,0	41	79	2	●
214161000	HMDH303D 072079041	7,2	8,0	41	79	2	●
214161100	HMDH303D 073079041	7,3	8,0	41	79	2	●

● Stock item | Produto de stock | Itens de stock

○ Available under request | Disponível sobre consulta | Disponible bajo consulta

Order code Código	Reference Referência Referencia	Dimensions | Dimensões Dimensiones (mm)				Z	Stock
		ØD	Ø ds	L1	L		
214161200	HMDH303D 074079041	7,4	8,0	41	79	2	●
214161300	HMDH303D 075079041	7,5	8,0	41	79	2	●
214161400	HMDH303D 076079041	7,6	8,0	41	79	2	●
214161500	HMDH303D 077079041	7,7	8,0	41	79	2	●
214161600	HMDH303D 078079041	7,8	8,0	41	79	2	●
214161700	HMDH303D 079079041	7,9	8,0	41	79	2	●
211082000	HMDH303D 080079041	8,0	8,0	41	79	2	●
214161800	HMDH303D 081089047	8,1	10,0	47	89	2	●
214161900	HMDH303D 082089047	8,2	10,0	47	89	2	●
214162000	HDMH303D 083089047	8,3	10,0	47	89	2	●
214162100	HMDH303D 084089047	8,4	10,0	47	89	2	●
211050700	HMDH303D 085089047	8,5	10,0	47	89	2	●
214162200	HMDH303D 086089047	8,6	10,0	47	89	2	●
214162300	HMDH303D 087089047	8,7	10,0	47	89	2	●
214162400	HMDH303D 088089047	8,8	10,0	47	89	2	●
214162500	HMDH303D 089089047	8,9	10,0	47	89	2	●
214162600	HMDH303D 090089047	9,0	10,0	47	89	2	●
214162700	HMDH303D 091089047	9,1	10,0	47	89	2	●
214162800	HMDH303D 092089047	9,2	10,0	47	89	2	●
214162900	HMDH303D 093089047	9,3	10,0	47	89	2	●
214163000	HMDH303D 094089047	9,4	10,0	47	89	2	●
214163100	HMDH303D 095089047	9,5	10,0	47	89	2	●
214163200	HMDH303D 096089047	9,6	10,0	47	89	2	●
214163300	HMDH303D 097089047	9,7	10,0	47	89	2	●
214163400	HMDH303D 098089047	9,8	10,0	47	89	2	●
214163500	HMDH303D 099089047	9,9	10,0	47	89	2	●
214024300	HMDH303D 100089047	10,0	10,0	47	89	2	●
214163600	HMDH303D 101102055	10,1	12,0	55	102	2	●
214163700	HMDH303D 102102055	10,2	12,0	55	102	2	●
214163800	HMDH303D 103102055	10,3	12,0	55	102	2	●
214163900	HMDH303D 104102055	10,4	12,0	55	102	2	●
214164000	HMDH303D 105102055	10,5	12,0	55	102	2	●
214164100	HMDH303D 106102055	10,6	12,0	55	102	2	●
214164200	HMDH303D 107102055	10,7	12,0	55	102	2	●
214164300	HMDH303D 108102055	10,8	12,0	55	102	2	●
214164400	HMDH303D 109102055	10,9	12,0	55	102	2	●
214164500	HMDH303D 110102055	11,0	12,0	55	102	2	●
211067700	HMDH303D 111102055	11,1	12,0	55	102	2	●
214164600	HMDH303D 112102055	11,2	12,0	55	102	2	●
214164700	HMDH303D 113102055	11,3	12,0	55	102	2	●
214164800	HMDH303D 114102055	11,4	12,0	55	102	2	●
214164900	HMDH303D 115102055	11,5	12,0	55	102	2	●
214165000	HMDH303D 116102055	11,6	12,0	55	102	2	●
214165100	HMDH303D 117102055	11,7	12,0	55	102	2	●
214165200	HMDH303D 118102055	11,8	12,0	55	102	2	●
214165300	HMDH303D 119102055	11,9	12,0	55	102	2	●
211135800	HMDH303D 120102055	12,0	12,0	55	102	2	●
214165400	HMDH303D 125107060	12,5	14,0	60	107	2	●
214165500	HMDH303D 130107060	13,0	14,0	60	107	2	●
214165600	HMDH303D 135107060	13,5	14,0	60	107	2	●
211135900	HMDH303D 140107060	14,0	14,0	60	107	2	●
214165700	HMDH303D 145115065	14,5	16,0	65	115	2	●
214165800	HMDH303D 150115065	15,0	16,0	65	115	2	●
211127200	HMDH303D 155115065	15,5	16,0	65	115	2	●
211081900	HMDH303D 160115065	16,0	16,0	65	115	2	●
214165900	HMDH303D 165123073	16,5	18,0	73	123	2	●
214166000	HMDH303D 170123073	17,0	18,0	73	123	2	●
214166100	HMDH303D 175123073	17,5	18,0	73	123	2	●
214166200	HMDH303D 180123073	18,0	18,0	73	123	2	●
214166300	HMDH303D 185131079	18,5	20,0	79	131	2	●
214166400	HMDH303D 190131079	19,0	20,0	79	131	2	●
214166500	HMDH303D 195131079	19,5	20,0	79	131	2	●
214166600	HMDH303D 200131070	20,0	20,0	79	131	2	●

● Stock item | Produto de stock
Itens de stock

○ Available under request | Disponível sobre consulta
Disponible bajo consulta

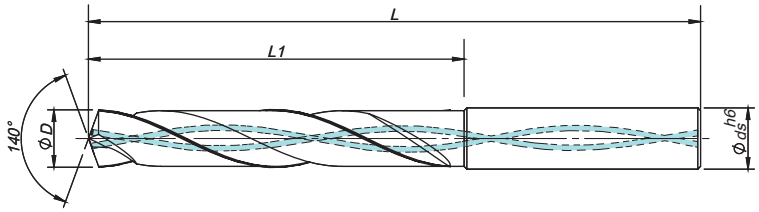
B
DRILLING
Jet Drills
Integrex Drills
Vortex Drills
Trepanning Drills
Solid Carbide Drills
Inserts
Spare Parts
Technical Data

HMDH SC 5D

P K

HRC ≤ 60

IT8~9 IT class



Drill Dia. ØD	ØD3,0	3,0<ØD≤6,0	6,0<ØD≤10,0	10,0<ØD≤18,0	18,0<ØD≤20,0
Hole Tolerances	+0,002	+0,004	+0,006	+0,007	+0,008
	+0,012	+0,016	+0,021	+0,025	+0,028

Order code Código	Reference Referência Referencia	Dimensions | Dimensões Dimensiones (mm)				Z	Stock
		ØD	Ø ds	L1	L		
214167300	HMDH305D 030066028	3,0	6,0	28	66	2	●
214167400	HMDH305D 031066028	3,1	6,0	28	66	2	●
214167500	HMDH305D 032066028	3,2	6,0	28	66	2	●
214167600	HMDH305D 033066028	3,3	6,0	28	66	2	●
214167700	HMDH305D 034066028	3,4	6,0	28	66	2	●
214167800	HMDH305D 035066028	3,5	6,0	28	66	2	●
214167900	HMDH305D 036066028	3,6	6,0	28	66	2	●
214168000	HMDH305D 037066028	3,7	6,0	28	66	2	●
211133900	HMDH305D 038074036	3,8	6,0	36	74	2	●
214168100	HMDH305D 039074036	3,9	6,0	36	74	2	●
214168200	HMDH305D 040074036	4,0	6,0	36	74	2	●
214168300	HMDH305D 041074036	4,1	6,0	36	74	2	●
214168400	HMDH305D 042074036	4,2	6,0	36	74	2	●
214168500	HMDH305D 043074036	4,3	6,0	36	74	2	●
214168600	HMDH305D 044074036	4,4	6,0	36	74	2	●
214168700	HMDH305D 045074036	4,5	6,0	36	74	2	●
214168800	HMDH305D 046074036	4,6	6,0	36	74	2	●
214168900	HMDH305D 047074036	4,7	6,0	36	74	2	●
214169000	HMDH305D 048082044	4,8	6,0	44	82	2	●
214169100	HMDH305D 049082044	4,9	6,0	44	82	2	●
214169200	HMDH305D 050082044	5,0	6,0	44	82	2	●
214169300	HMDH305D 051082044	5,1	6,0	44	82	2	●
214169400	HMDH305D 052082044	5,2	6,0	44	82	2	●
214169500	HMDH305D 053082044	5,3	6,0	44	82	2	●
214169600	HMDH305D 054082044	5,4	6,0	44	82	2	●

Order code Código	Reference Referência Referencia	Dimensions |Dimensões Dimensiones (mm)				Z	Stock
		ØD	Ø ds	L1	L		
214169700	HMDH305D 055082044	5,5	6,0	44	82	2	●
214169800	HMDH305D 056082044	5,6	6,0	44	82	2	●
214169900	HMDH305D 057082044	5,7	6,0	44	82	2	●
214170000	HMDH305D 058082044	5,8	6,0	44	82	2	●
214170100	HMDH305D 059082044	5,9	6,0	44	82	2	●
214170200	HMDH305D 060082044	6,0	6,0	44	82	2	●
214170300	HMDH305D 061091053	6,1	8,0	53	91	2	●
214170400	HMDH305D 062091053	6,2	8,0	53	91	2	●
214170500	HMDH305D 063091053	6,3	8,0	53	91	2	●
214170600	HMDH305D 064091053	6,4	8,0	53	91	2	●
214170700	HMDH305D 065091053	6,5	8,0	53	91	2	●
214170800	HMDH305D 066091053	6,6	8,0	53	91	2	●
214170900	HMDH305D 067091053	6,7	8,0	53	91	2	●
211052000	HMDH305D 068091053	6,8	8,0	53	91	2	●
214171000	HMDH305D 069091053	6,9	8,0	53	91	2	●
214171100	HMDH305D 070091053	7,0	8,0	53	91	2	●
214171200	HMDH305D 071091053	7,1	8,0	53	91	2	●
214171300	HMDH305D 072091053	7,2	8,0	53	91	2	●
214171400	HMDH305D 073091053	7,3	8,0	53	91	2	●
211123500	HMDH305D 074091053	7,4	8,0	53	91	2	●
214171500	HMDH305D 075091053	7,5	8,0	53	91	2	●
214171600	HMDH305D 076091053	7,6	8,0	53	91	2	●
214171700	HMDH305D 077091053	7,7	8,0	53	91	2	●
211123600	HMDH305D 078091053	7,8	8,0	53	91	2	●
214171800	HMDH305D 079091053	7,9	8,0	53	91	2	●

● Stock item | Produto de stock
Itens de stock

○ Available under request | Disponível sobre consulta
Disponible bajo consulta

Order code Código	Reference Referência Referencia	Dimensions | Dimensões Dimensiones (mm)				Z	Stock
		ØD	Ø ds	L1	L		
211064500	HMDH305D 080091053	8,0	8,0	53	91	2	●
214171900	HMDH305D 081103061	8,1	10,0	61	103	2	●
214172000	HMDH305D 082103061	8,2	10,0	61	103	2	●
214172100	HMDH305D 083103061	8,3	10,0	61	103	2	●
214172200	HMDH305D 084103061	8,4	10,0	61	103	2	●
211065000	HMDH305D 085103061	8,5	10,0	61	103	2	●
214172300	HMDH305D 086103061	8,6	10,0	61	103	2	●
214172400	HMDH305D 087103061	8,7	10,0	61	103	2	●
214172500	HMDH305D 088103061	8,8	10,0	61	103	2	●
214172600	HMDH305D 089103061	8,9	10,0	61	103	2	●
211127100	HMDH305D 090103061	9,0	10,0	61	103	2	●
214172700	HMDH305D 091103061	9,1	10,0	61	103	2	●
214172800	HMDH305D 092103061	9,2	10,0	61	103	2	●
214172900	HMDH305D 093103061	9,3	10,0	61	103	2	●
214173000	HMDH305D 094103061	9,4	10,0	61	103	2	●
214173100	HMDH305D 095103061	9,5	10,0	61	103	2	●
214173200	HMDH305D 096103061	9,6	10,0	61	103	2	●
214173300	HMDH305D 097103061	9,7	10,0	61	103	2	●
214173400	HMDH305D 098103061	9,8	10,0	61	103	2	●
214173500	HMDH305D 099103061	9,9	10,0	61	103	2	●
214024400	HMDH305D 100103061	10,0	10,0	61	103	2	●
214173600	HMDH305D 101118071	10,1	12,0	71	118	2	●
211051900	HMDH305D 102118071	10,2	12,0	71	118	2	●
214173700	HMDH305D 103118071	10,3	12,0	71	118	2	●
214173800	HMDH305D 104118071	10,4	12,0	71	118	2	●
211064600	HMDH305D 105118071	10,5	12,0	71	118	2	●
214173900	HMDH305D 106118071	10,6	12,0	71	118	2	●
214174000	HMDH305D 107118071	10,7	12,0	71	118	2	●
214174100	HMDH305D 108118071	10,8	12,0	71	118	2	●
214174200	HMDH305D 109118071	10,9	12,0	71	118	2	●
211051800	HMDH305D 110118071	11,0	12,0	71	118	2	●
214174300	HMDH305D 111118071	11,1	12,0	71	118	2	●
214174400	HMDH305D 112118071	11,2	12,0	71	118	2	●
214174500	HMDH305D 1113118071	11,3	12,0	71	118	2	●
214174600	HMDH305D 114118071	11,4	12,0	71	118	2	●
214174700	HMDH305D 115118071	11,5	12,0	71	118	2	●
214174800	HMDH305D 116118071	11,6	12,0	71	118	2	●
214174900	HMDH305D 117118071	11,7	12,0	71	118	2	●
214175000	HMDH305D 118118071	11,8	12,0	71	118	2	●
214175100	HMDH305D 119118071	11,9	12,0	71	118	2	●
211064800	HMDH305D 120118071	12,0	12,0	71	118	2	●
214175200	HMDH305D 125124077	12,5	14,0	77	124	2	●
214175300	HMDH305D 130124077	13,0	14,0	77	124	2	●
214175400	HMDH305D 135124077	13,5	14,0	77	124	2	●
214175500	HMDH305D 140124077	14,0	14,0	77	124	2	●
211064900	HMDH305D 145133083	14,5	16,0	83	133	2	●
214175600	HMDH305D 150133083	15,0	16,0	83	133	2	●
214175700	HMDH305D 155133083	15,5	16,0	83	133	2	●
214175800	HMDH305D 160133083	16,0	16,0	83	133	2	●
214175900	HMDH305D 165143093	16,5	18,0	93	143	2	●
214176000	HMDH305D 170143093	17,0	18,0	93	143	2	●
214176100	HMDH305D 175143093	17,5	18,0	93	143	2	●
214176200	HMDH305D 180143093	18,0	18,0	93	143	2	●
214176300	HMDH305D 185153101	18,5	20,0	101	153	2	●
214176400	HMDH305D 190153101	19,0	20,0	101	153	2	●
214176500	HMDH305D 195153101	19,5	20,0	101	153	2	●
214176600	HMDH305D 200153101	20,0	20,0	101	153	2	●

● Stock item | Produto de stock
Itens de stock

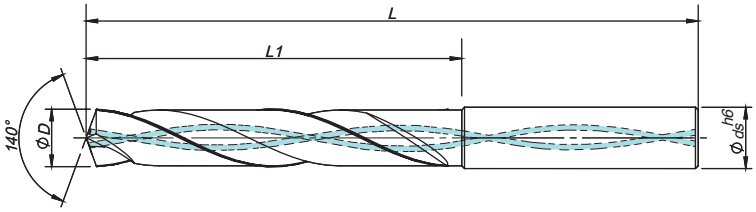
○ Available under request | Disponível sobre consulta
Disponible bajo consulta

HMDH SC 8D

P K

HRC ≤ 48

IT8~9 IT class



Drill Dia. ØD	5,0<ØD≤6,0	6,0<ØD≤10,0	10,0<ØD≤12,0
Hole Tolerances	+0,004	+0,006	+0,007
	+0,016	+0,021	+0,025

Order code Código	Reference Referência Referencia	Dimensions | Dimensões Dimensiones (mm)				Z	Stock
		ØD	Ø ds	L1	L		
214179300	HMDH308D 050095057	5,0	6,0	57	95	2	●
214179400	HMDH308D 051095057	5,1	6,0	57	95	2	●
214179500	HMDH308D 052095057	5,2	6,0	57	95	2	●
214179600	HMDH308D 053095057	5,3	6,0	57	95	2	●
214179700	HMDH308D 054095057	5,4	6,0	57	95	2	●
214179800	HMDH308D 055095057	5,5	6,0	57	95	2	●
214179900	HMDH308D 056095057	5,6	6,0	57	95	2	●
214180000	HMDH308D 057095057	5,7	6,0	57	95	2	●
214180100	HMDH308D 058095057	5,8	6,0	57	95	2	●
214180200	HMDH308D 059095057	5,9	6,0	57	95	2	●
211135400	HMDH308D 060095057	6,0	6,0	57	95	2	●
214180300	HMDH308D 061114076	6,1	8,0	76	114	2	●
214180400	HMDH308D 062114076	6,2	8,0	76	114	2	●
214180500	HMDH308D 063114076	6,3	8,0	76	114	2	●
214180600	HMDH308D 064114076	6,4	8,0	76	114	2	●
214180700	HMDH308D 065114076	6,5	8,0	76	114	2	●
214180800	HMDH308D 066114076	6,6	8,0	76	114	2	●
214180900	HMDH308D 067114076	6,7	8,0	76	114	2	●
214181000	HMDH308D 068114076	6,8	8,0	76	114	2	●
214181100	HMDH308D 069114076	6,9	8,0	76	114	2	●
214181200	HMDH308D 070114076	7,0	8,0	76	114	2	●
214181300	HMDH308D 071114076	7,1	8,0	76	114	2	●
214181400	HMDH308D 072114076	7,2	8,0	76	114	2	●
214181500	HMDH308D 073114076	7,3	8,0	76	114	2	●
214181600	HMDH308D 074114076	7,4	8,0	76	114	2	●

Order code Código	Reference Referência Referencia	Dimensions | Dimensões Dimensiones (mm)				Z	Stock
		ØD	Ø ds	L1	L		
214181700	HMDH308D 075114076	7,5	8,0	76	114	2	●
214181800	HMDH308D 076114076	7,6	8,0	76	114	2	●
214181900	HMDH308D 077114076	7,7	8,0	76	114	2	●
214182000	HMDH308D 078114076	7,8	8,0	76	114	2	●
214182100	HMDH308D 079114076	7,9	8,0	76	114	2	●
211068500	HMDH308D 080114076	8,0	8,0	76	114	2	●
214182200	HMDH308D 081142087	8,1	10,0	87	142	2	●
214182300	HMDH308D 082142087	8,2	10,0	87	142	2	●
214182400	HMDH308D 083142087	8,3	10,0	87	142	2	●
214182500	HMDH308D 084142087	8,4	10,0	87	142	2	●
214182600	HMDH308D 085142087	8,5	10,0	87	142	2	●
214182700	HMDH308D 086142087	8,6	10,0	87	142	2	●
211068600	HMDH308D 087142087	8,7	10,0	87	142	2	●
214182800	HMDH308D 088142087	8,8	10,0	87	142	2	●
214182900	HMDH308D 089142087	8,9	10,0	87	142	2	●
214183000	HMDH308D 090142087	9,0	10,0	87	142	2	●
214183100	HMDH308D 091142095	9,1	10,0	95	142	2	●
214183200	HMDH308D 092142095	9,2	10,0	95	142	2	●
214183300	HMDH308D 093142095	9,3	10,0	95	142	2	●
214183400	HMDH308D 094142095	9,4	10,0	95	142	2	●
214183500	HMDH308D 095142095	9,5	10,0	95	142	2	●
214183600	HMDH308D 096142095	9,6	10,0	95	142	2	●
214183700	HMDH308D 097142095	9,7	10,0	95	142	2	●
214019500	HMDH308D 098142095	9,8	10,0	95	142	2	●
214183800	HMDH308D 099142095	9,9	10,0	95	142	2	●

● Stock item | Produto de stock
Itens de stock

○ Available under request | Disponível sobre consulta
Disponible bajo consulta

Order code Código	Reference Referência Referencia	Dimensions | Dimensões Dimensiones (mm)				Z	Stock
		ØD	Ø ds	L1	L		
211068700	HMDH308D 100142095	10,0	10,0	95	142	2	◉
214183900	HMDH308D 101162114	10,1	12,0	114	162	2	◉
214184000	HMDH308D 102162114	10,2	12,0	114	162	2	◉
214184100	HMDH308D 103162114	10,3	12,0	114	162	2	◉
214184200	HMDH308D 104162114	10,4	12,0	114	162	2	◉
214184300	HMDH308D 105162114	10,5	12,0	114	162	2	◉
214184400	HMDH308D 106162114	10,6	12,0	114	162	2	◉
214184500	HMDH308D 107162114	10,7	12,0	114	162	2	◉
214184600	HMDH308D 108162114	10,8	12,0	114	162	2	◉
214184700	HMDH308D 109162114	10,9	12,0	114	162	2	◉
214184800	HMDH308D 110162114	11,0	12,0	114	162	2	◉
214184900	HMDH308D 111162114	11,1	12,0	114	162	2	◉
214030700	HMDH308D 112162114	11,2	12,0	114	162	2	◉
214185000	HMDH308D 113162114	11,3	12,0	114	162	2	◉
214185100	HMDH308D 114162114	11,4	12,0	114	162	2	◉
214185200	HMDH308D 115162114	11,5	12,0	114	162	2	◉
214185300	HMDH308D 116162114	11,6	12,0	114	162	2	◉
214185400	HMDH308D 117162114	11,7	12,0	114	162	2	◉
214185500	HMDH308D 118162114	11,8	12,0	114	162	2	◉
214185600	HMDH308D 119162114	11,9	12,0	114	162	2	◉
211068800	HMDH308D 120162114	12,0	12,0	114	162	2	◉

◉ Stock item | Produto de stock | Itens de stock

○ Available under request | Disponível sobre consulta | Disponible bajo consulta

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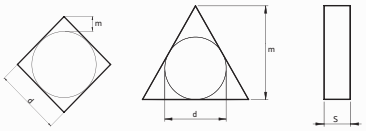
ISO DRILLING INSERTS CODE KEY

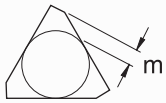
H	120°	M	86°
O	135°	V	35°
P	108°	W	80°
S	90°	L	90°
T	60°	A	85°
C	80°	B	82°
D	55°	K	55°
E	75°	R	
F	50°	X	Special

1- Insert shape symbol



Symbol	m (mm)	d (mm)	s (mm)
A	±0.005	±0.025	±0.025
F	±0.005	±0.013	±0.025
C	±0.013	±0.025	±0.025
H	±0.013	±0.013	±0.025
E	±0.025	±0.025	±0.025
G	±0.025	±0.025	±0.13
J	±0.005	±0.05~±0.13	±0.025
K*	±0.013	±0.05~±0.13	±0.025
L*	±0.025	±0.05~±0.13	±0.025
M*	±0.08~±0.20	±0.05~±0.13	±0.13
N*	±0.08~±0.20	±0.05~±0.13	±0.025
U*	±0.13~±0.38	±0.08~±0.25	±0.13

*As a rule, the sides of these inserts are as sintered. Tolerance differs with insert size, for the accuracy of class M, refer to the table on the right.



Triangular inserts with a facet (secondary cutting edge)

Detailed dimension of M class insert Insert height Tolerances (mm)					
Inscribed circle	T	S	C	D	V
6.35	±0.08	-	-	-	-
9.525	±0.08	±0.08	±0.11	±0.10	±0.13
12.70	±0.13	±0.13	±0.13	±0.15	-
15.875	±0.15	±0.15	±0.15	±0.18	-
19.05	±0.15	±0.15	±0.15	±0.18	-
25.40	-	±0.18	-	-	-
31.75	-	±0.25	-	-	-

Inscribed circle Tolerances (mm)					
Inscribed circle	T	S	C	D	V
6.35	±0.05	-	-	-	-
9.525	±0.05	±0.05	±0.05	±0.05	±0.05
12.70	±0.08	±0.08	±0.08	±0.08	±0.08
15.875	±0.10	±0.10	±0.10	±0.10	±0.10
19.05	-	-	-	-	±0.10
25.40	-	±0.13	-	-	±0.10
31.75	-	±0.20	-	-	±0.12

3 - Tolerances symbol

A	B	C	D	E
3°	5°	7°	15°	20°
F	G	N	P	O
25°	30°	0	11°	Other clearance angle

2 - Normal clearance symbol

ISO **W C K X**

4 - Insert symbol

symbol	Type	Hole type	Chipbreaker	Shape
W	with hole	Round hole / one countersink (40°~60°)	Without chipbreaker	
T			Chipbreaker on one side	
Q		Round hole / double countersink (40°~60°)	Without chipbreaker	
U			Chipbreaker on both sides	
B		Round hole / one countersink (70°~90°)	Without chipbreaker	
H	with hole	Round hole / one countersink (70°~90°)	Chipbreaker on one side	
C		Round hole / double countersink (70°~90°)	Without chipbreaker	
J			Chipbreaker on both sides	
A		Round hole	Without chipbreaker	
M			Chipbreaker on one side	
G	with hole	Round hole	Chipbreaker on both sides	
N	without hole	-	Without chipbreaker	
R		-	Chipbreaker on one side	
F		-	Chipbreaker on both sides	
X	-	-	-	On request

R's	V's (35°)	D's (55°)	C's (80°)	S's (90°)	T's (60°)	W's (80°)	Ø CI mm	Ø CI inch	ANSI Symbol
-	06	04	-	03	06	02	3,97	5/32	1,20
-	08	05	04	04	08	L3	4,76	3/16	1,50
-	09	06	05	05	09	03	5,56	7/32	1,80
06**	-	-	-	-	-	-	6,00	0,236	
06*	11	07	06	06	11	04	6,35	1/4	2,00
07*	13	09	08	07	13	05	7,94	5/16	2,50
08*	-	-	-	-	-	-	8,00	0,315	
09*	16	11	09	09	16	06	9,525	3/8	3,00
10**	-	-	-	-	-	-	10,00	0,394	
12**	-	-	-	-	-	-	12,00	0,472	
12*	22	15	12	12	22	08	12,70	1/2	4,00
15*	27	19	16	15	27	10	15,875	5/8	5,00
16**	-	-	-	-	-	-	16,00	0,63	
19*	33	23	19	19	33	13	19,05	3/4	6,00
20**	-	-	-	-	-	-	20,00	0,787	
25**	-	-	-	-	-	-	25,00	0,984	
25*	44	31	25	25	44	17	25,40	1,00	8,00
31*	54	38	32	31	54	21	31,75	1 1/4	10,00
32**	-	-	-	-	-	-	32,00	1,26	

5 - Insert size symbol

* ANSI designation only
(Radius Designation is 00)

** Metric designation only
(Radius Designation is M0)

According to International Standard ISO 1832 - 2012(E)

"Indexable inserts for cutting tools - Designation"

ISO	mm	ANSI	inch
01	1.59	1	0.062
T1	1.98	1.2	0.078
02	2.38	1.5	0.094
03	3.18	2	0.125
T3	3.97	2.5	0.156
04	4.76	3	0.188
05	5.56	3.5	0.219
06	6.35	4	0.250
07	7.94	5	0.312
09	9.52	6	0.375
12	12.70	8	0.500

6 - Insert thickness symbol

06 T3 08/AN E - LC

10 - Chipbreaker geometries

LC

7 - Insert corner symbol

ISO	mm	inch	ANSI
00	Sharp nose		0
01	0.10	.004	0.2
02	0.20	.008	0.5
04	0.40	.015	1
08	0.80	.032	2
12	1.2	.047	3
16	1.6	.062	4
20	2.0	.078	5
24	2.4	.094	6
28	2.8	.109	7
32	3.2	.125	8
00 (inch or M0/ metric)	Round insert		0

7.1* - Insert edges symbol

For inserts having secondary edges two digits are used:

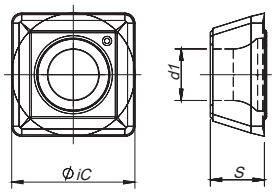
1st digit is secondary edge		2nd digit is secondary edges relief angle	
A	45°	A	3°
D	60°	B	5°
E	75°	C	7°
F	85°	D	15°
P	90°	E	20°
Z	special	F	25°
*only when required.		G	30°
		N	0°
		P	11°
		Z	special

8 - Cutting edge information

Shape	Honing	Symbol
	No honing	F
	With honing	E
	Chamfered No honing	T
	Chamfered with honing	S
*only when required.		

SPKX ‖ Inserts | Pastilhas | Plaquitas

(PHC grade)

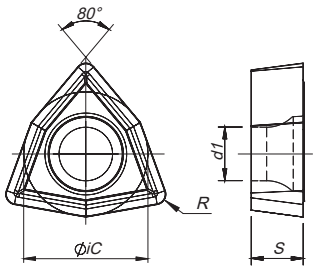


		P						M				K				N		S				H		Dimensions Dimensões Dimensiones (mm)			
		PVD						PVD				PVD				UNC	PCD	PVD				PVD					
	(2) Grade code	64	54	68	66	J3	78	68	66	J3	78	54	68	66	D2	10	D6	54	68	66	J3	64	D4				
(1) Geometry code	ISO Reference	PH6903	PH6910	PH6920	PH6930	PHC930	PH6125	PH6920	PH6930	PHC930	PH6125	PH6910	PH6920	PH6930	PH6705	PH0910	PDP410	PH6910	PH6920	PH6930	PHC930	PH6903	PBH910	iC	S	d1	R
1111281	SPKX 050204			◎	◎	◎		◎	◎	◎			◎	◎					◎	◎	◎			5,00	2,38	2,20	0,4
1111282	SPKX 060204			◎	◎	◎		◎	◎	◎			◎	◎					◎	◎	◎			6,00	2,38	2,55	0,4
1111283	SPKX 07T308			◎	◎	◎		◎	◎	◎			◎	◎					◎	◎	◎			7,94	3,97	2,85	0,8
1111284	SPKX 090408			◎	◎	◎		◎	◎	◎			◎	◎					◎	◎	◎			9,80	4,30	4,10	0,8
1111285	SPKX 110408			◎	◎	◎		◎	◎	◎			◎	◎					◎	◎	◎			11,50	4,80	4,40	0,8
1111286	SPKX 140512			◎	◎	◎		◎	◎	◎			◎	◎					◎	◎	◎			14,30	5,20	5,75	1,2

◎ Stock item | Produto de stock | Itens de stock ◯ Available under request | Disponível sobre consulta | Disponible bajo consulta

Insert order code = (1) Geometry Code + (2) Grade Code

WCKX ‖ Inserts | Pastilhas | Plaquitas

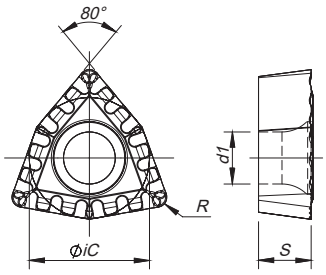


		P							M				K				N		S				H		Dimensions Dimensões Dimensiones (mm)			
		PVD							PVD				PVD				UNC	PCD	PVD				PVD					
	(2) Grade code	64	54	68	66	I5	78	86	68	66	78	86	54	68	66	D2	10	D6	54	68	66	64	D4				
(1) Geometry code	ISO Reference	PH6903	PH6910	PH6920	PH6930	PH6740	PH6125	PH6135	PH6920	PH6930	PH6125	PH6135	PH6910	PH6920	PH6930	PH6705	PH0910	PDP410	PH6910	PH6920	PH6930	PH6903	PBH910	iC	S	d1	R
1140300	WCKX 02T104			◎	◎	◯	◯		◎	◎				◎	◎					◎	◎			4,76	1,98	2,00	0,4
1140276	WCKX 030204			◎	◎	◯	◯		◎	◎				◎	◎					◎	◎			5,56	2,38	2,55	0,4
1140277	WCKX 040204			◎	◎	◯	◯		◎	◎				◎	◎					◎	◎			6,35	2,38	2,85	0,4
1140278	WCKX 050308			◎	◎	◯	◯		◎	◎				◎	◎					◎	◎			7,94	3,18	3,50	0,8
1140279	WCKX 06T308			◎	◎	◯	◯		◎	◎				◎	◎					◎	◎			9,55	3,97	4,10	0,8
1140280	WCKX 080408			◎	◎	◯	◯		◎	◎				◎	◎					◎	◎			12,70	4,76	5,60	0,8

◎ Stock item | Produto de stock | Itens de stock ◯ Available under request | Disponível sobre consulta | Disponible bajo consulta

Insert order code = (1) Geometry Code + (2) Grade Code

WCKX-LC for low carbon steels | Inserts | Pastilhas | Plaquitas



		P							M				K				N		S			H		Dimensions Dimensões Dimensiones (mm)			
		PVD							PVD				PVD				UNC	PCD	PVD			PVD					
	(2) Grade code	64	54	68	66	I5	78	86	68	66	78	86	54	68	66	D2	10	D6	54	68	66	64	D4				
(1) Geometry code	ISO Reference	PH6903	PH6910	PH6920	PH6930	PH6740	PH6125	PH6135	PH6920	PH6930	PH6125	PH6135	PH6910	PH6920	PH6930	PH6705	PH0910	PDP410	PH6910	PH6920	PH6930	PH6903	PBH910	iC	S	d1	R
1142068	WCKX 050308-LC			⛭	⛭																			7,94	3,18	3,50	0,8
1142069	WCKX 06T308-LC			⛭	⛭																			9,55	3,97	4,10	0,8

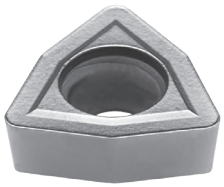
⛭ Stock item | Produto de stock | Itens de stock ◯ Available under request | Disponível sobre consulta | Disponible bajo consulta

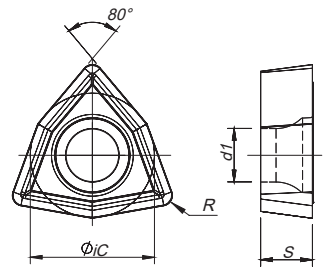
Insert order code = (1) Geometry Code + (2) Grade Code

WCMX | Inserts | Pastilhas | Plaquitas

ISO references for other drilling systems

(PHC grade)



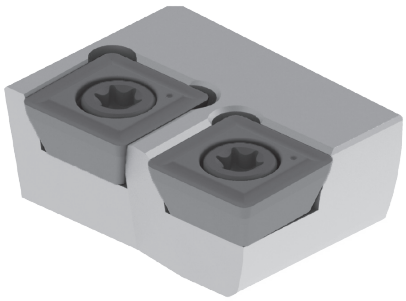


		P							M				K				N		S			H		Dimensions Dimensões Dimensiones (mm)			
		PVD							PVD				PVD				UNC	PCD	PVD			PVD					
	(2) Grade code	64	54	68	66	J3	78	86	68	J3	78	86	54	68	J3	D2	10	D6	54	68	J3	64	D4				
(1) Geometry code	ISO Reference	PH6903	PH6910	PH6920	PH6930	PHC930	PH6125	PH6135	PH6920	PHC930	PH6125	PH6135	PH6910	PH6920	PHC930	PH6705	PH0910	PDP410	PH6910	PH6920	PHC930	PH6903	PBH910	iC	S	d1	R
1120827	WCMX 030204			◯		◯			◯	◯				◯	◯					◯	◯			5,56	2,38	2,8	0,4
1120828	WCMX 030208			⛭		⛭			⛭	⛭				⛭	⛭					⛭	⛭			5,56	2,38	2,8	0,8
1120829	WCMX 040208			⛭		⛭			⛭	⛭				⛭	⛭					⛭	⛭			6,35	2,38	3,1	0,8
1120830	WCMX 050308			⛭		⛭			⛭	⛭				⛭	⛭					⛭	⛭			7,94	3,18	3,2	0,8
1120831	WCMX 06T308			⛭		⛭			⛭	⛭				⛭	⛭					⛭	⛭			9,525	3,97	3,7	0,8
1120832	WCMX 080408			⛭		⛭			⛭	⛭				⛭	⛭					⛭	⛭			12,70	4,76	4,3	0,8
1120833	WCMX 080412			⛭		⛭			⛭	⛭				⛭	⛭					⛭	⛭			12,70	4,76	4,3	1,2

⛭ Stock item | Produto de stock | Itens de stock ◯ Available under request | Disponível sobre consulta | Disponible bajo consulta

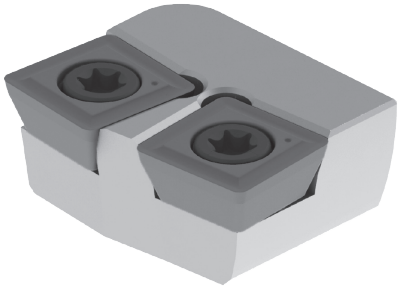
Insert order code = (1) Geometry Code + (2) Grade Code

SCC CARTRIDGE (5mm)



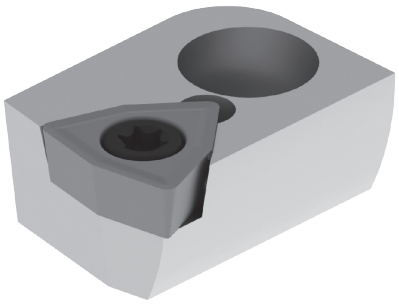
ØD	Inner Cartridge		Outer Cartridge		Insert	Insert Screw	Torx key	For Drill
	Order Code	Reference	Order Code	Reference				
50-55	184230600	SCC 050055-I	184230700	SCC 050055-O	SP... 090408	P0350903	XT15	SCC 505540-3D & 4D
55-60	184230800	SCC 055060-I	184230900	SCC 055060-O	SP... 090408	P0350903	XT15	SCC 556040-3D & 4D
60-65	184231000	SCC 060065-I	184231100	SCC 060065-O	SP... 110408	P0401200	XT15	SCC 606540-3D & 4D
65-70	184231200	SCC 065070-I	184231300	SCC 065070-O	SP... 110408	P0401200	XT15	SCC 657040-3D & 4D
70-75	184231400	SCC 070075-I	184231500	SCC 070075-O	SP... 110408	P0401200	XT15	SCC 707540-3D & 4D
75-80	184231600	SCC 075080-I	184231700	SCC 075080-O	SP... 140512	P0501300	XT20	SCC 758040-3D & 4D

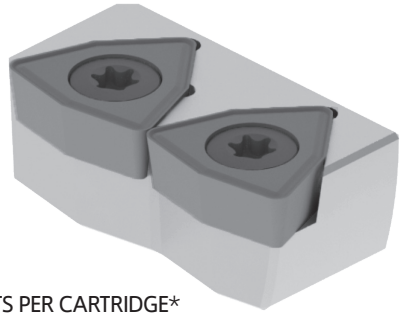
SCC CARTRIDGE (1mm)



ØD	Inner Cartridge		Outer Cartridge		Insert	Insert Screw	Torx key	For Drill
	Order Code	Reference	Order Code	Reference				
50-51	184069500	CISP 5055	184070100	COSP 5051	SP... 090408	P0350903	XT15	SCC 505140-3D & 4D
51-52	184069500	CISP 5055	184070200	COSP 5152	SP... 090408	P0350903	XT15	SCC 515240-3D & 4D
52-53	184069500	CISP 5055	184070300	COSP 5253	SP... 090408	P0350903	XT15	SCC 525340-3D & 4D
53-54	184069500	CISP 5055	184070400	COSP 5354	SP... 090408	P0350903	XT15	SCC 535440-3D & 4D
54-55	184069500	CISP 5055	184070500	COSP 5455	SP... 090408	P0350903	XT15	SCC 545540-3D & 4D
55-56	184069600	CISP 5560	184070600	COSP 5556	SP... 090408	P0350903	XT15	SCC 555640-3D & 4D
56-57	184069600	CISP 5560	184070700	COSP 5657	SP... 090408	P0350903	XT15	SCC 565740-3D & 4D
57-58	184069600	CISP 5560	184070800	COSP 5758	SP... 090408	P0350903	XT15	SCC 575840-3D & 4D
58-59	184069600	CISP 5560	184070900	COSP 5859	SP... 090408	P0350903	XT15	SCC 585940-3D & 4D
59-60	184069600	CISP 5560	184071000	COSP 5960	SP... 090408	P0350903	XT15	SCC 596040-3D & 4D
60-61	184069700	CISP 6065	184071100	COSP 6061	SP... 110408	P0401200	XT15	SCC 606140-3D & 4D
61-62	184069700	CISP 6065	184071200	COSP 6162	SP... 110408	P0401200	XT15	SCC 616240-3D & 4D
62-63	184069700	CISP 6065	184071300	COSP 6263	SP... 110408	P0401200	XT15	SCC 626340-3D & 4D
63-64	184069700	CISP 6065	184071400	COSP 6364	SP... 110408	P0401200	XT15	SCC 636440-3D & 4D
64-65	184069700	CISP 6065	184071500	COSP 6465	SP... 110408	P0401200	XT15	SCC 646540-3D & 4D
65-66	184069800	CISP 6570	184071600	COSP 6566	SP... 110408	P0401200	XT15	SCC 656640-3D & 4D
66-67	184069800	CISP 6570	184071700	COSP 6667	SP... 110408	P0401200	XT15	SCC 666740-3D & 4D
67-68	184069800	CISP 6570	184071800	COSP 6768	SP... 110408	P0401200	XT15	SCC 676840-3D & 4D
68-69	184069800	CISP 6570	184071900	COSP 6869	SP... 110408	P0401200	XT15	SCC 686940-3D & 4D
69-70	184069800	CISP 6570	184072000	COSP 6970	SP... 110408	P0401200	XT15	SCC 697040-3D & 4D
70-71	184069900	CISP 7075	184250100	COSP 7071	SP... 110408	P0401200	XT15	SCC 707140-3D & 4D
71-72	184069900	CISP 7075	184072200	COSP 7172	SP... 110408	P0401200	XT15	SCC 717240-3D & 4D
72-73	184069900	CISP 7075	184072300	COSP 7273	SP... 110408	P0401200	XT15	SCC 727340-3D & 4D
73-74	184069900	CISP 7075	184072400	COSP 7374	SP... 110408	P0401200	XT15	SCC 737440-3D & 4D
74-75	184069900	CISP 7075	184072500	COSP 7475	SP... 110408	P0401200	XT15	SCC 747540-3D & 4D
75-76	184070000	CISP 7580	184072600	COSP 7576	SP... 140512	P0501300	XT20	SCC 757640-3D & 4D
76-77	184070000	CISP 7580	184072700	COSP 7677	SP... 140512	P0501300	XT20	SCC 767740-3D & 4D
77-78	184070000	CISP 7580	184072800	COSP 7778	SP... 140512	P0501300	XT20	SCC 777840-3D & 4D
78-79	184070000	CISP 7580	184072900	COSP 7879	SP... 140512	P0501300	XT20	SCC 787940-3D & 4D
79-80	184070000	CISP 7580	184073000	COSP 7980	SP... 140512	P0501300	XT20	SCC 798040-3D & 4D

DHC CARTRIDGE

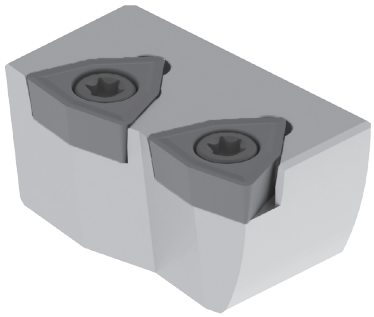




2 INSERTS PER CARTRIDGE*

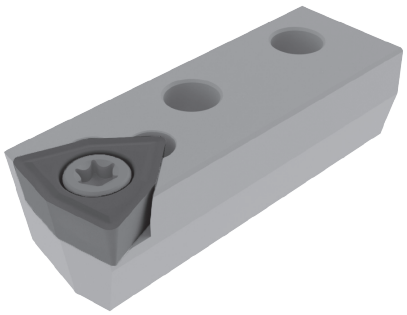
ØD	Inner Cartridge		Outer Cartridge		Insert	Insert Screw	Torx key	For Drill
	Order Code	Reference	Order Code	Reference				
41	184250300	CWC 041045-I	184226700	CWC 000041-O	WC... 06T308	P0350903	XT15	DHC 004140-5D & 8D
42	184250300	CWC 041045-I	184226800	CWC 000042-O	WC... 06T308	P0350903	XT15	DHC 004240-5D & 8D
43	184250300	CWC 041045-I	184226900	CWC 000043-O	WC... 06T308	P0350903	XT15	DHC 004340-5D & 8D
44	184250300	CWC 041045-I	184227000	CWC 000044-O	WC... 06T308	P0350903	XT15	DHC 004440-5D & 8D
45	184250300	CWC 041045-I	184227100	CWC 000045-O	WC... 06T308	P0350903	XT15	DHC 004540-5D & 8D
46	184226400	CWC 046050-I	184227200	CWC 000046-O	WC... 06T308	P0350903	XT15	DHC 004640-5D & 8D
47	184226400	CWC 046050-I	184227300	CWC 000047-O	WC... 06T308	P0350903	XT15	DHC 004740-5D & 8D
48	184226400	CWC 046050-I	184227400	CWC 000048-O	WC... 06T308	P0350903	XT15	DHC 004840-5D & 8D
49	184226400	CWC 046050-I	184227500	CWC 000049-O	WC... 06T308	P0350903	XT15	DHC 004940-5D & 8D
50	184226400	CWC 046050-I	184227600	CWC 000050-O	WC... 06T308	P0350903	XT15	DHC 005040-5D & 8D
51	184226500	CWC 051055-I	184227700	CWC 000051-O	WC... 080408	P0401101	XT15	DHC 005140-5D & 8D
52	184226500	CWC 051055-I	184227800	CWC 000052-O	WC... 080408	P0401101	XT15	DHC 005240-5D & 8D
53	184226500	CWC 051055-I	184227900	CWC 000053-O	WC... 080408	P0401101	XT15	DHC 005340-5D & 8D
54	184226500	CWC 051055-I	184228000	CWC 000054-O	WC... 080408	P0401101	XT15	DHC 005440-5D & 8D
55	184226500	CWC 051055-I	184228100	CWC 000055-O	WC... 080408	P0401101	XT15	DHC 005540-5D & 8D
56	184226600	CWC 056059-I	184228200	CWC 000056-O	WC... 080408	P0401101	XT15	DHC 005640-5D & 8D
57	184226600	CWC 056059-I	184228300	CWC 000057-O	WC... 080408	P0401101	XT15	DHC 005740-5D & 8D
58	184226600	CWC 056059-I	184228400	CWC 000058-O	WC... 080408	P0401101	XT15	DHC 005840-5D & 8D
59	184226600	CWC 056059-I	184228500	CWC 000059-O	WC... 080408	P0401101	XT15	DHC 005940-5D & 8D
2 INSERTS PER CARTRIDGE*								
60-65	184250600*	MDC 060065-I	184252900*	MDC 060065-O	WC... 050308	P0300701	XT08	DHC 606540-5D & 8D
65-70	184250700*	MDC 065070-I	184253000*	MDC 065070-O	WC... 050308	P0300701	XT08	DHC 657040-5D & 8D
70-75	184250800*	MDC 070075-I	184063700*	MDC 070075-O	WC... 050308	P0300701	XT08	DHC 707540-5D & 8D
75-80	184250900*	MDC 075080-I	184063800*	MDC 075080-O	WC... 06T308	P0350903	XT15	DHC 758040-5D & 8D

TDC CARTRIDGE



ØD	Inner Cartridge		Outer Cartridge		Insert	Insert Screw	Torx key	For Drill
	Order Code	Reference	Order Code	Reference				
59-65	184109200	TDC 059065-I	184109300	TDC 059065-O	WC... 06T308	P0350903	XT15	TDC 596540-3D
65-70	184109400	TDC 065070-I	184109500	TDC 065070-O	WC... 06T308	P0350903	XT15	TDC 657040-3D
70-75	184109600	TDC 070075-I	184109700	TDC 070075-O	WC... 06T308	P0350903	XT15	TDC 707540-3D
75-80	184109800	TDC 075080-I	184109900	TDC 075080-O	WC... 06T308	P0350903	XT15	TDC 758040-3D

PND CARTRIDGE



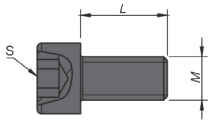
ØD	Inner Cartridge		Outer Cartridge		Insert	Insert Screw	Torx key	For Drill
	Order Code	Reference	Order Code	Reference				
40-55	184110000	PNC 040055-I	184128700	PNC 040055-O	WC... 050308	P0300701	XT08	PND 04032-2D ~ PND 05540-2D
60-110	184110100	PNC 060110-I	184128800	PNC 060110-O	WC... 06T308	P0350903	XT15	PND 06040-2D ~ PND 11050-2D

SCREWS & KEYS

Order Code	Reference Referência Referencia
290031400	P0200500
290030600	P0220500
290031300	P0250704
290030900	P0350903
290047500	P0401200
290031700	P0501300
290025800	P0180500
290033100	P0250503
290030800	P0300701
290031000	P0401101

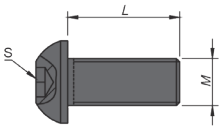
Order Code	Reference Referência Referencia
290011400	XT06
290012900	XT07
290011700	XT08
290025700	XT09
290012400	XT15
290013200	XT20
290074700	TT15
290056000	TT20
290056100	TT25

Screw for Cartridge (DIN 912)



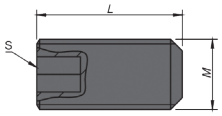
Order Code Código	Screw	Dimensions (mm) Dimensões (mm) Dimensiones (mm)		
		M	L	S
290042800	P0501079	M4 x 0,7	10,0	2,0
290042900	P0501279	M5 x 0,8	12,0	2,5
290043000	P0601279	M6 x 1,0	12,0	2,5
290043100	P0601479	M6 x 1,0	14,0	3,0
290043600	P0601679	M6 x 1,0	16,0	3,0
290043300	P0801879	M8 x 1,25	18,0	4,0
290043400	P0802079	M8 x 1,25	20,0	4,0
290043500	P0802579	M8 x 1,25	25,0	4,0

Screw for Cartridge (ISO 7380)



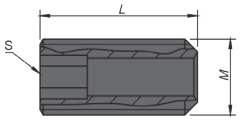
Order Code Código	Screw	Dimensions (mm) Dimensões (mm) Dimensiones (mm)		
		M	L	S
290042500	P0401078	M4 x 0,7	10,0	2,0
290042600	P0501078	M5 x 0,8	10,0	2,5
290042700	P0501278	M5 x 0,8	12,0	2,5

Fixing Screw and Clamping Bolt for Pilot Drill (DIN 916)



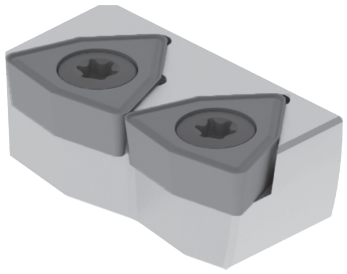
Order Code Código	Screw	Dimensions (mm) Dimensões (mm) Dimensiones (mm)		
		M	L	S
290040100	P0400875	M4 x 0,7	8,0	2,0
290040200	P0500875	M5 x 0,8	8,0	2,5
290040300	P0501075	M5 x 0,8	10,0	2,5
290040400	P0601075	M6 x 1,0	10,0	3,0
290040500	P0601275	M6 x 1,0	12,0	3,0
290040600	P0801275	M8 x 1,25	12,0	4,0
290040700	P0801575	M8 x 1,25	15,0	4,0
290040800	P1001575	M10 x 1,5	15,0	5,0
290040900	P1002075	M10 x 1,5	20,0	5,0
290041000	P1202075	M12 x 1,75	20,0	6,0
290041100	P1202575	M12 x 1,75	25,0	6,0
290041200	P1402575	M14 x 2,0	25,0	6,0
290041300	P1602575	M16 x 2,0	25,0	8,0

Adjustment Screw for Pilot Drill (DIN 916 w/ hole)



Order Code Código	Screw	Dimensions (mm) Dimensões (mm) Dimensiones (mm)		
		M	L	S
290041400	P0601076	M6 x 1,0	10,0	3,0
290041500	P0801576	M8 x 1,25	15,0	4,0
290041600	P1001676	M10 x 1,5	16,0	5,0
290041700	P1001876	M10 x 1,5	18,0	5,0
290041800	P1202076	M12 x 1,75	20,0	6,0
290041900	P1402076	M14 x 2,0	20,0	6,0

VORTEX SPARE PARTS - MDO CARTRIDGE

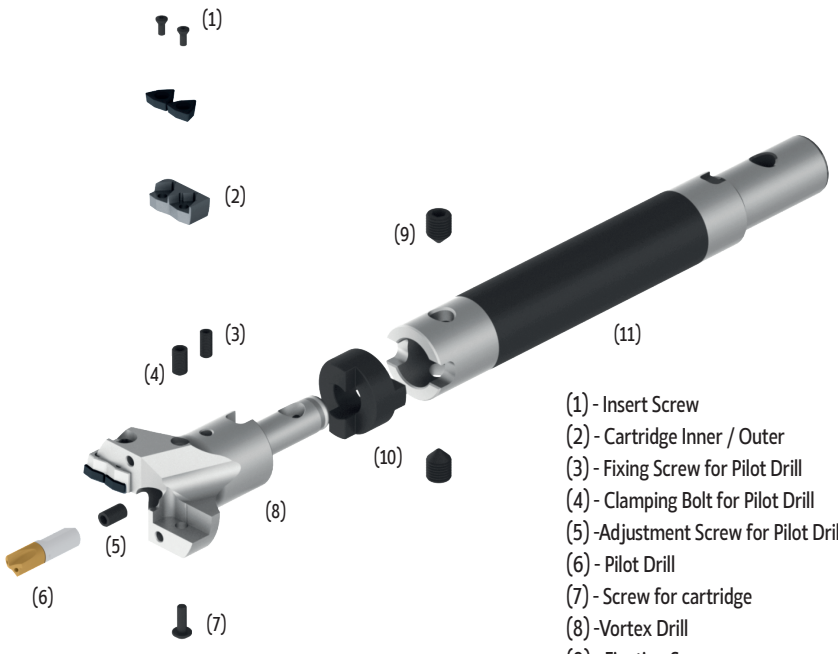


ØD	Inner Cartridge		Outer Cartridge		Insert	Insert Screw	Torx key	For Drill
	Order Code	Reference	Order Code	Reference				
2 INSERTS PER CARTRIDGE								
45-50	184062000	MDC 045050-I	184252600	MDC 045050-O	WC... 030204	P0220500	XT07	MDO 04505013
50-55	184250400	MDC 050055-I	184252700	MDC 050055-O	WC... 030204	P0220500	XT07	MDO 05005513
55-60	184250500	MDC 055060-I	184252800	MDC 055060-O	WC... 040204	P0250503	XT08	MDO 05506016
60-65	184250600	MDC 060065-I	184252900	MDC 060065-O	WC... 050308	P0300701	XT08	MDO 06006516
65-70	184250700	MDC 065070-I	184253000	MDC 065070-O	WC... 050308	P0300701	XT08	MDO 06507016
70-75	184250800	MDC 070075-I	184063700	MDC 070075-O	WC... 050308	P0300701	XT08	MDO 07007522
75-80	184250900	MDC 075080-I	184063800	MDC 075080-O	WC... 06T308	P0350903	XT15	MDO 07508022
80-85	184251000	MDC 080085-I	184063900	MDC 080085-O	WC... 06T308	P0350903	XT15	MDO 08008522
85-90	184251100	MDC 085090-I	184064000	MDC 085090-O	WC... 06T308	P0350903	XT15	MDO 08509027
90-95	184251200	MDC 090095-I	184064100	MDC 090095-O	WC... 06T308	P0350903	XT15	MDO 09009527
95-100	184251300	MDC 095100-I	184064200	MDC 095100-O	WC... 06T308	P0350903	XT15	MDO 09510027
3 INSERTS PER CARTRIDGE								
100-105	184251400	MDC 100105-I	184064300	MDC 100105-O	WC... 050308	P0300701	XT08	MDO 10010532
105-110	184251500	MDC 105110-I	184253100	MDC 105110-O	WC... 06T308	P0350903	XT15	MDO 10511032
110-115	184251600	MDC 110115-I	184253200	MDC 110115-O	WC... 06T308	P0350903	XT15	MDO 11011532
115-120	184251700	MDC 115120-I	184253300	MDC 115120-O	WC... 06T308	P0350903	XT15	MDO 11512040
120-125	184251800	MDC 120125-I	184253400	MDC 120125-O	WC... 06T308	P0350903	XT15	MDO 12012540
125-130	184251900	MDC 125130-I	184253500	MDC 125130-O	WC... 06T308	P0350903	XT15	MDO 12513040
130-135	184252000	MDC 130135-I	184068900	MDC 130135-O	WC... 06T308	P0350903	XT15	MDO 13013540
135-140	184252100	MDC 135140-I	184069000	MDC 135140-O	WC... 06T308	P0350903	XT15	MDO 13514040
140-150	184252200	MDC 140150-I	184253600	MDC 140150-O	WC... 080408	P0401101	XT15	MDO 14015050
150-160	184252300	MDC 150160-I	184069200	MDC 150160-O	WC... 080408	P0401101	XT15	MDO 15016050
160-170	184252400	MDC 160170-I	184069300	MDC 160170-O	WC... 080408	P0401101	XT15	MDO 16017050
170-180	184252500	MDC 170180-I	184069400	MDC 170180-O	WC... 080408	P0401101	XT15	MDO 17018050

VORTEX SPARE PARTS - SCREWS

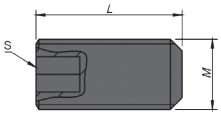
Vortex Drill	(3) Fixing Screw for Pilot Drill		(4) Clamping Bolt for Pilot Drill		(5) Adjustment Screw for Pilot Drill		(7) Screw for Cartridge	
	Order Code	Screw	Order Code	Screw	Order Code	Screw	Order Code	Screw
MDO 04505013	290040100	P0400875	290040400	P0601075	290041400	P0601076	290042500	P0401078
MDO 05005513	290040100	P0400875	290040400	P0601075	290041400	P0601076	290042500	P0401078
MDO 05506016	290040100	P0400875	290040600	P0801275	290041500	P0801576	290042700	P0501278
MDO 06006516	290040200	P0500875	290040600	P0801275	290041500	P0801576	290042700	P0501278
MDO 06507016	290040200	P0500875	290040600	P0801275	290041500	P0801576	290042700	P0501278
MDO 07007522	290040200	P0500875	290040700	P0801575	290041500	P0801576	290042700	P0501278
MDO 07508022	290040400	P0601075	290040900	P1002075	290041600	P1001676	290043000	P0601279
MDO 08008522	290040400	P0601075	290040900	P1002075	290041600	P1001676	290043100	P0601479
MDO 08509027	290040400	P0601075	290040900	P1002075	290041700	P1001876	290043600	P0601679
MDO 09009527	290040400	P0601075	290040900	P1002075	290041700	P1001876	290043600	P0601679
MDO 09510027	290040400	P0601075	290040900	P1002075	290041700	P1001876	290043600	P0601679
MDO 10010532	290040400	P0601075	290041000	P1202075	290041800	P1202076	290043300	P0801879
MDO 10511032	290040400	P0601075	290041000	P1202075	290041800	P1202076	290043300	P0801879
MDO 11011532	290040400	P0601075	290041000	P1202075	290041800	P1202076	290043300	P0801879
MDO 11512040	290040400	P0601075	290041100	P1202575	290041900	P1402076	290043400	P0802079
MDO 12012540	290040400	P0601075	290041200	P1402575	290041900	P1402076	290043500	P0802579
MDO 12513040	290040400	P0601075	290041200	P1402575	290041900	P1402076	290043500	P0802579
MDO 13013540	290040400	P0601075	290041200	P1402575	290041900	P1402076	290043500	P0802579
MDO 13514040	290040400	P0601075	290041200	P1402575	290041900	P1402076	290043500	P0802579
MDO 14015050	290040400	P0601075	290041200	P1402575	290041900	P1402076	290043500	P0802579
MDO 15016050	290040400	P0601075	290041200	P1402575	290041900	P1402076	290043500	P0802579
MDO 16017050	290040400	P0601075	290041300	P1602575	290041900	P1402076	290043500	P0802579
MDO 17018050	290040400	P0601075	290041300	P1602575	290041900	P1402076	290043500	P0802579

(9) Fixation Screw for MDS Shank, MDE Extension, MDM Reducer		
ØD / ØD1	Order Code Código	Screw
28	290032400	P0801280
32	290032400	P0801280
40	290032500	P1001580
48	290032600	P1201880
58	290039600	P1202080
70	290032800	P1602780
80	290032800	P1602780



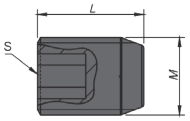
(1) - Insert Screw
(2) - Cartridge Inner / Outer
(3) - Fixing Screw for Pilot Drill
(4) - Clamping Bolt for Pilot Drill
(5) -Adjustment Screw for Pilot Drill
(6) - Pilot Drill
(7) - Screw for cartridge
(8) -Vortex Drill
(9) - Fixation Screw
(10) - Drive Ring
(11) - MDS Shank or MDE Extension

Fixing Screw and Clamping Bolt for Pilot Drill (DIN 916)



Order Code Código	Screw	Dimensions (mm) Dimensões (mm) Dimensiones (mm)		
		M	L	S
290040100	P0400875	M4 x 0,7	8,0	2,0
290040200	P0500875	M5 x 0,8	8,0	2,5
290040400	P0601075	M6 x 1,0	10,0	3,0
290040500	P0601275	M6 x 1,0	12,0	3,0
290040700	P0801575	M8 x 1,25	15,0	4,0
290040900	P1002075	M10 x 1,5	20,0	5,0
290041000	P1202075	M12 x 1,75	20,0	6,0
290041100	P1202575	M12 x 1,75	25,0	6,0
290041200	P1402575	M14 x 2,0	25,0	6,0
290041300	P1602575	M16 x 2,0	25,0	8,0

Fixation Screw for MDS Shank, MDE Extension, MDM Reducer

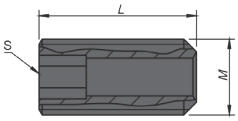


Order Code Código	Screw	Dimensions (mm) Dimensões (mm) Dimensiones (mm)		
		M	L	S
290032400	P0801280	M8	12,0	4,0
290032500	P1001580	M10	15,0	5,0
290032600	P1201880	M12	18,0	6,0
290039600	P1202080	M12	20,0	6,0
290032800	P1602780	M16	27,0	8,0

Insert Screw

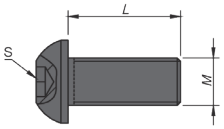
Order Code	Screw
290030600	P0220500
290033100	P0250503
290030800	P0300701
290030900	P0350903
290031000	P0401101

Adjustment Screw for Pilot Drill (DIN 916 w/ hole)



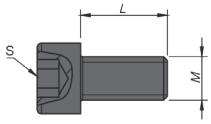
Order Code Código	Screw	Dimensions (mm) Dimensões (mm) Dimensiones (mm)		
		M	L	S
290041400	P0601076	M6 x 1,0	10,0	3,0
290041500	P0801576	M8 x 1,25	15,0	4,0
290041600	P1001676	M10 x 1,5	16,0	5,0
290041700	P1001876	M10 x 1,5	18,0	5,0
290041800	P1202076	M12 x 1,75	20,0	6,0
290041900	P1402076	M14 x 2,0	20,0	6,0

Screw for Cartridge (ISO 7380)



Order Code Código	Screw	Dimensions (mm) Dimensões (mm) Dimensiones (mm)		
		M	L	S
290042500	P0401078	M4 x 0,7	10,0	2,0
290042700	P0501278	M5 x 0,8	12,0	2,5

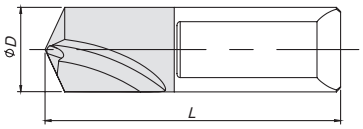
Screw for Cartridge (DIN 912)



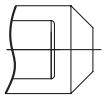
Order Code Código	Screw	Dimensions (mm) Dimensões (mm) Dimensiones (mm)		
		M	L	S
290043000	P0601279	M6 x 1,0	12,0	2,5
290043100	P0601479	M6 x 1,0	14,0	3,0
290043600	P0601679	M6 x 1,0	16,0	3,0
290043300	P0801879	M8 x 1,25	18,0	4,0
290043400	P0802079	M8 x 1,25	20,0	4,0
290043500	P0802579	M8 x 1,25	25,0	4,0

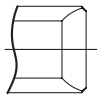
SPARE PARTS

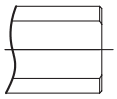
PILOT DRILL



Shank Type

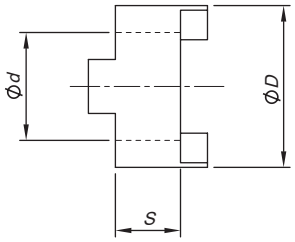

A (with cone)


B (with chamfer)


C

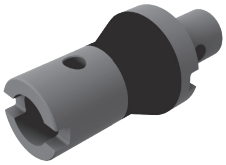
Order Code	Reference	Dimensions (mm)		Type	Oil Hole	For Drill
		ØD	L			
184104100	MDP 3006	6	30	B	-	DHS (Ø25 - Ø30)
184104400	MDP 3508	8	35	B	-	DHS (Ø31 - Ø40)
184033100	MDP 3510	10	35	B	✓	DHC (Ø41 - Ø50) , MDO (Ø45-Ø55)
184033200	MDP 3812	12	38	B	✓	DHC (Ø51 - Ø75) , MDO (Ø55-Ø75)
184033300	MDP 4516	16	45	B	✓	DHC (Ø75 - Ø80) , MDO (Ø75-Ø100)
184033400	MDP 4520	20	45	C	✓	MDO (Ø100-Ø120)
184033500	MDP 5625	25	56	C	✓	MDO (Ø120-Ø160)
184033600	MDP 6830	30	68	C	✓	MDO (Ø160-Ø180)
184150900	MDP 2006	6	20	A	-	TFD (Ø18,0 - Ø25,0)
184151000	MDP 2508	8	25	A	-	TFD (Ø25,5 - Ø30,0)

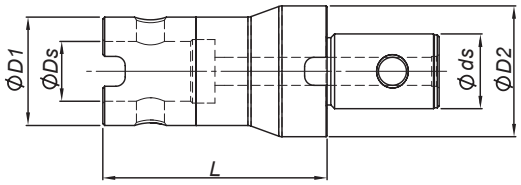
DRIVE RING



Order Code	Reference	Dimensions (mm) Dimensões (mm) Dimensiones (mm)		
		ØD	Ød	S
184021600	MDR 1028	28	13	10
184021700	MDR 1032	32	16	10
184022100	MDR 1240	40	22	12
184022200	MDR 1248	48	27	12
184022300	MDR 1458	58	32	14
184022400	MDR 1470	70	40	14
184022500	MDR 1680	80	50	16

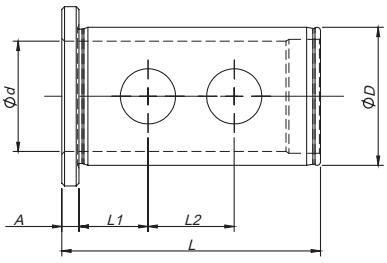
MDM - REDUCER



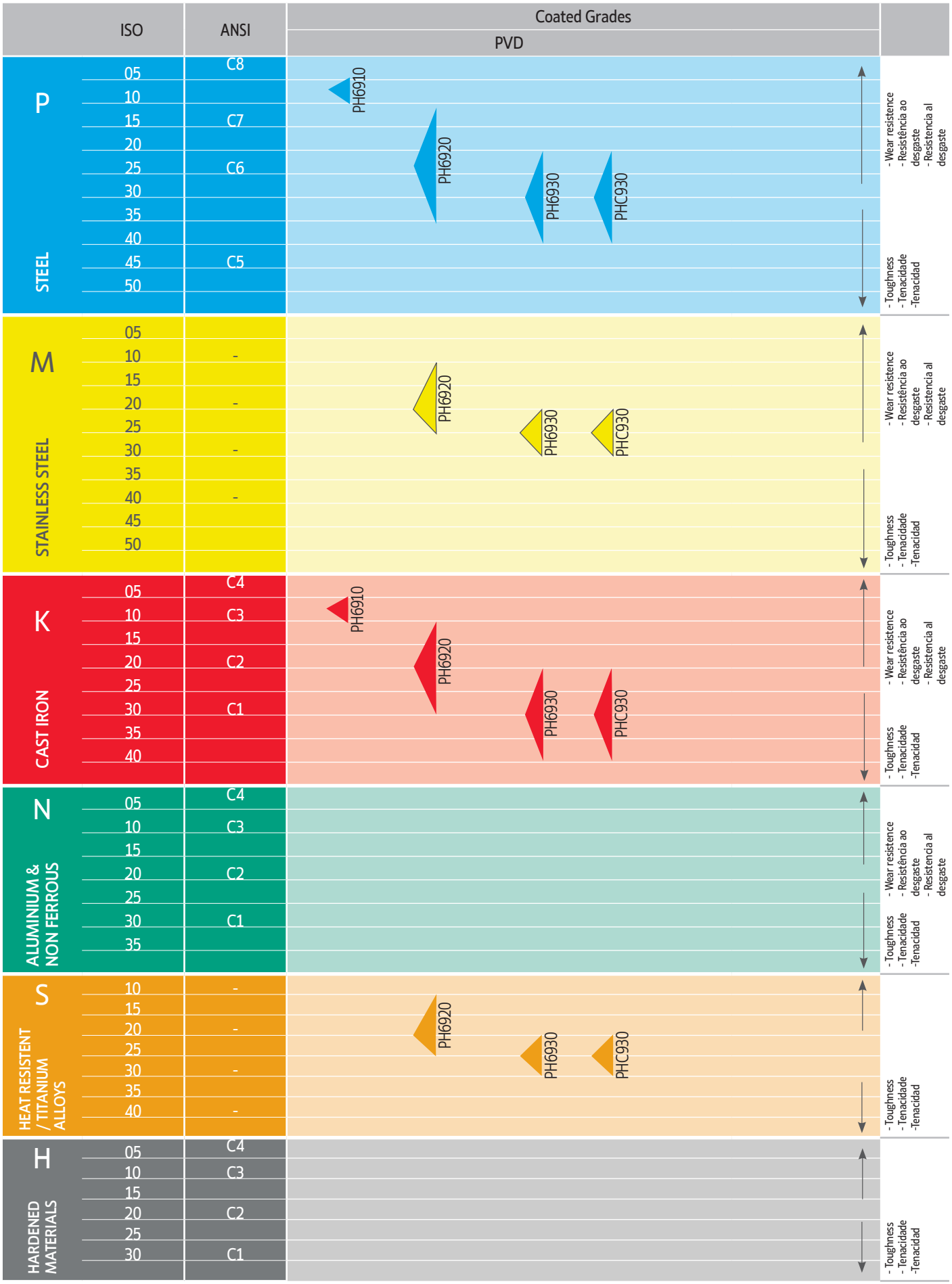


Order Code	Reference	Dimensions / Dimensões / Dimensiones (mm)					Drive Ring D1	Drive Ring D2
		ØDs	Ød	ØD1	ØD2	L		
184253900	MDM 16100130	13	16	28	32	100	MDR 1028	MDR 1032
184254000	MDM 22100160	16	22	32	40	100	MDR 1032	MDR 1240
184254100	MDM 27100220	22	27	40	48	100	MDR 1240	MDR 1248
184254200	MDM 32100130	13	32	28	58	100	MDR 1028	MDR 1458
184254300	MDM 32100160	16	32	32	58	100	MDR 1032	MDR 1458
184254400	MDM 32100220	22	32	40	58	100	MDR 1240	MDR 1458
184254500	MDM 32100270	27	32	48	58	100	MDR 1248	MDR 1458
184254600	MDM 40100320	32	40	58	70	100	MDR 1458	MDR 1470
184254700	MDM 50080130	13	50	28	80	80	MDR 1028	MDR 1680
184254800	MDM 50080160	16	50	32	80	80	MDR 1032	MDR 1680
184254900	MDM 50080220	22	50	40	80	80	MDR 1240	MDR 1680
184255000	MDM 50080270	27	50	48	80	80	MDR 1248	MDR 1680
184255100	MDM 50080320	32	50	58	80	80	MDR 1458	MDR 1680
184250200	MDM 50150400	40	50	70	80	150	MDR 1470	MDR 1680

RDS - DRILL SLEEVE



Order Code	Reference	Dimensions / Dimensões / Dimensiones (mm)					
		ØD	Ød	L	L1	L2	A
184258900	RDS 203265	32	20	65	20	-	5
184259000	RDS 253265	32	25	65	20	20	5
184259100	RDS 204075	40	20	75	20	-	5
184259200	RDS 254075	40	25	75	20	25	5
184259300	RDS 324075	40	32	75	20	25	5
184259400	RDS 205095	50	20	95	35	-	5
184259500	RDS 255095	50	25	95	35	-	5
184259600	RDS 325095	50	32	95	35	35	5
184259700	RDS 405095	50	40	95	35	35	5



The position and shape of grade symbols indicate the suitable field of application.

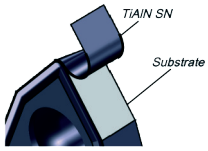
Centre of the field of application

Recommended field of application

Coated Carbide Grades

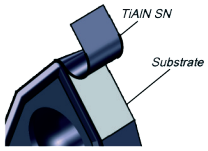
PVD Grades

PH6910
(P05-P10)
(K05-K10)



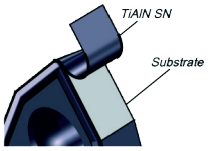
PVD (TiAlN SN) coated carbide grade with a very hard micro grain substrate for drilling of steels and cast irons.

PH6920
(P10-P35)
(M10-M25)
(K10-K30)
(S10-S30)



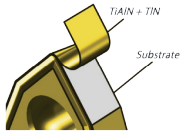
An advanced PVD TiAlN coated grade over a tough wear resistance sub-micro substrate for general purpose machining.

PH6930
(P20-P40)
(M20-M30)
(K20-K40)
(S20-S40)



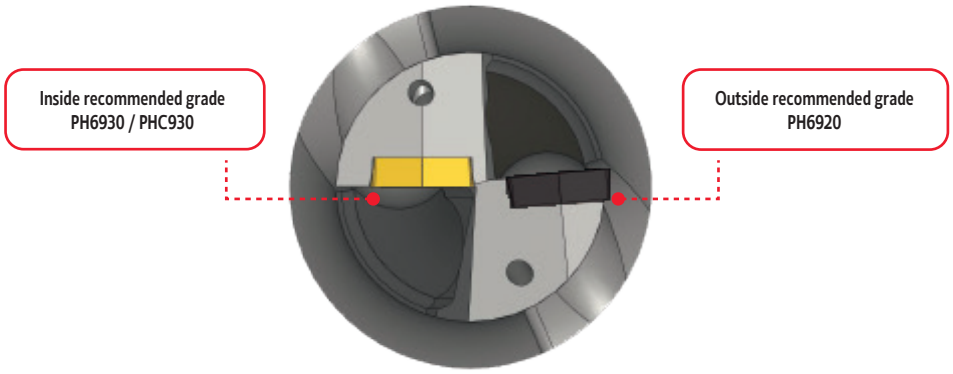
Micro-grain carbide grade suitable for applications with instability conditions. Excellent solution for medium cutting speed applications.

PHC930
(P20-P40)
(M20-M30)
(K20-K40)
(S20-S40)



An advanced PVD (TiAlN + Tin) coated grade over a tough wear resistance sub-micro substrate for general purpose machining of steel, stainless steel, cast iron, & super alloys at high cutting speeds.

Grades recommendation for drilling systems



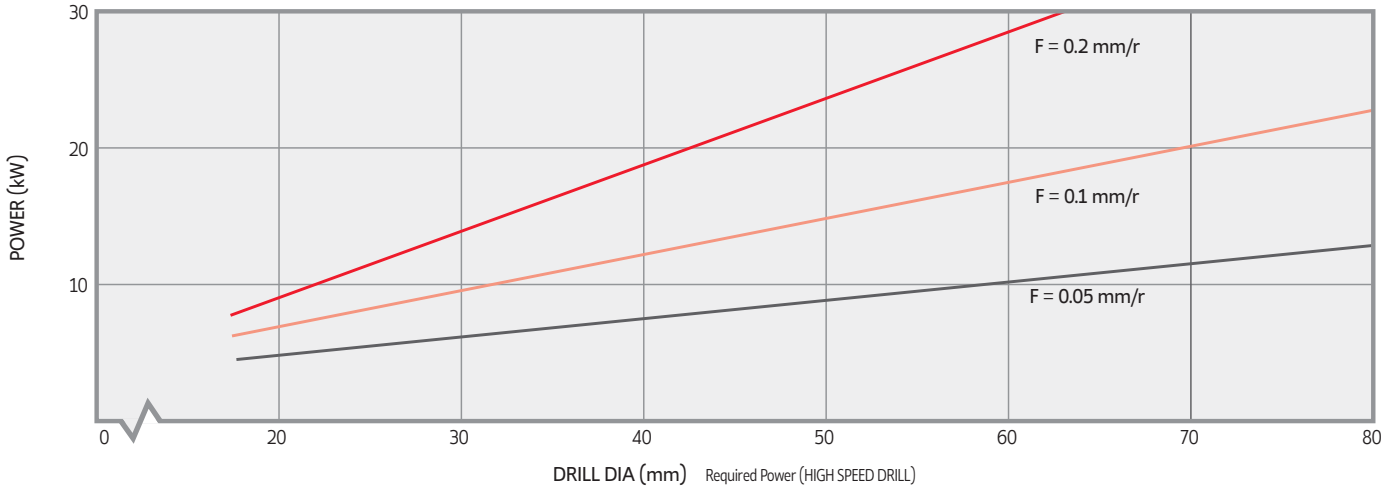
Note: This recommendation should be applied on High Alloy Steels, Stainless Steels and HRSA materials.

JET DRILLS - TDS & TDC DRILL TYPE

Recommended Speeds and Feeds | Parâmetros de Corte Recomendados
Recomendaciones de Datos de Corte

ISO	Material Group Grupo Materiais Grupo Materiales	Vc (m/min)	Ø13~15,5	Ø16~20	Ø20,5~25	Ø25,5~30	Ø31~41	Ø42~58	Ø59~80
P	UNALLOYED STEEL (-0,25%)	180-260	0,05-0,08	0,06-0,10	0,07-0,12	0,09-0,15	0,11-0,18	0,15-0,28	0,11-0,18
	LOW-ALLOY STEEL (0,25%-)	150-240	0,05-0,08	0,06-0,10	0,07-0,12	0,09-0,15	0,11-0,18	0,15-0,28	0,11-0,18
	LOW-ALLOY STEEL	120-240	0,05-0,08	0,06-0,10	0,07-0,12	0,09-0,15	0,11-0,18	0,15-0,28	0,11-0,18
	HIGH-ALLOY STEEL	130-220	0,05-0,08	0,06-0,10	0,07-0,12	0,09-0,15	0,11-0,18	0,15-0,28	0,11-0,18
M	STAINLESS STEEL	150-220	0,04-0,08	0,05-0,09	0,06-0,12	0,07-0,13	0,08-0,16	0,10-0,20	0,08-0,16
K	GREY CAST IRON	150-250	0,05-0,11	0,07-0,13	0,08-0,12	0,10-0,18	0,14-0,26	0,18-0,35	0,14-0,26
	CAST IRON WITH NODULAR CAST	120-200	0,05-0,11	0,06-0,13	0,07-0,12	0,08-0,18	0,14-0,26	0,18-0,35	0,14-0,26
S	SUPER-ALLOYS AND TITANIUM	40-80	0,03-0,05	0,04-0,06	0,04-0,07	0,05-0,08	0,06-0,10	0,07-0,13	0,06-0,10

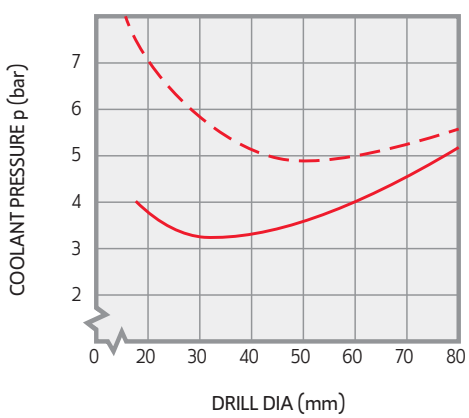
Power Requirements | Requisitos de Potência | Requisitos de Potencia



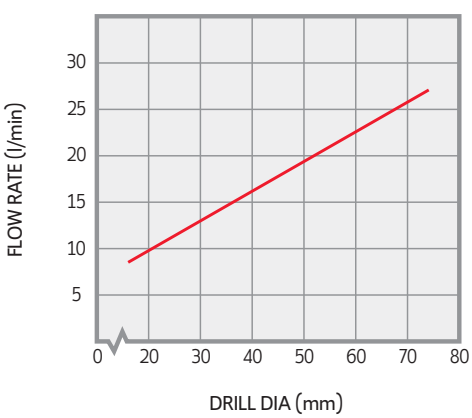
• These chart is based on machining experiences using steels with a hardness of 200-250HB and cutting speed of 100m/min.
• For cast iron the effective power requirement is around 30% lower.

Coolant Application Chart | Tabela Aplicação de Refrigeração | Tabla Aplicación de Refrigerante

Coolant pressure



Flow rate



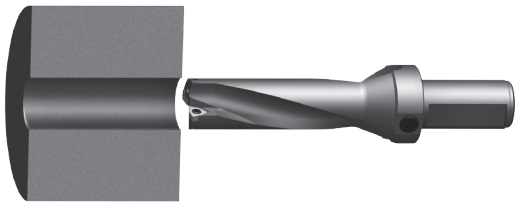
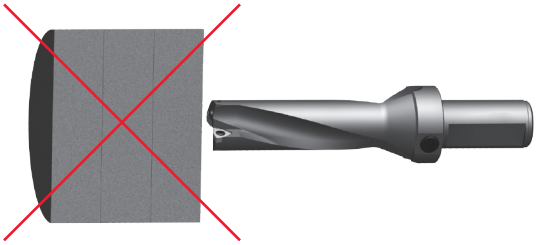
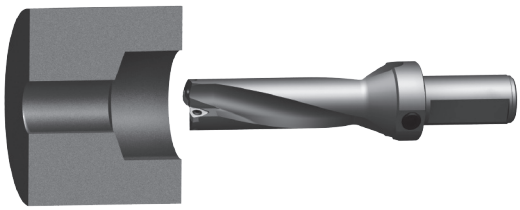
Hole Tolerance and Maximum Hole Size With Radial Adjustment | Tolerância do Furo e Dimensão Máxima do Furo com Ajuste Radial | Tolerancia de los Agujeros y el Tamaño Delagujero Máximo con AjusteRadial

Drill D	Radial Adjust	Max Hole D
13.00	1.50	16.00
13.50	1.50	16.50
14.00	1.50	17.00
14.50	1.50	17.50
15.00	1.50	18.00
15.50	1.50	18.50
16.00	1.50	19.00
16.50	1.50	19.50
17.00	1.50	20.00
17.50	1.50	20.50
18.00	1.40	20.80
18.50	1.30	21.10
19.00	1.20	21.40
20.00	1.00	22.00
21.00	1.60	24.20
22.00	1.50	25.00
23.00	1.25	25.50
24.00	1.00	26.00
25.00	0.80	26.60
26.00	2.50	31.00
27.00	2.20	31.40
28.00	2.10	32.20
29.00	1.80	32.60
30.00	1.50	33.00
31.00	3.50	38.00
32.00	3.20	38.40

Drill D	Radial Adjust	Max Hole D
33.00	3.00	39.00
34.00	2.80	39.60
35.00	2.50	40.00
36.00	2.30	40.60
37.00	2.00	41.00
38.00	1.80	41.60
39.00	1.50	42.00
40.00	1.20	42.40
41.00	1.00	43.00
42.00	4.20	50.40
43.00	4.00	51.00
44.00	3.70	51.40
45.00	3.50	52.00
46.00	3.30	52.60
47.00	3.00	53.00
48.00	2.70	53.40
49.00	2.50	54.00
50.00	2.20	54.40
51.00	2.00	55.00
52.00	1.80	55.60
53.00	1.50	56.00
54.00	1.20	56.40
55.00	0.80	56.60
56.00	0.60	57.20
58.00	0.40	58.80

JET DRILLS - TDS & TDC DRILL TYPE

Rules & Tips | Regras e Dicas | Normas e Consejos

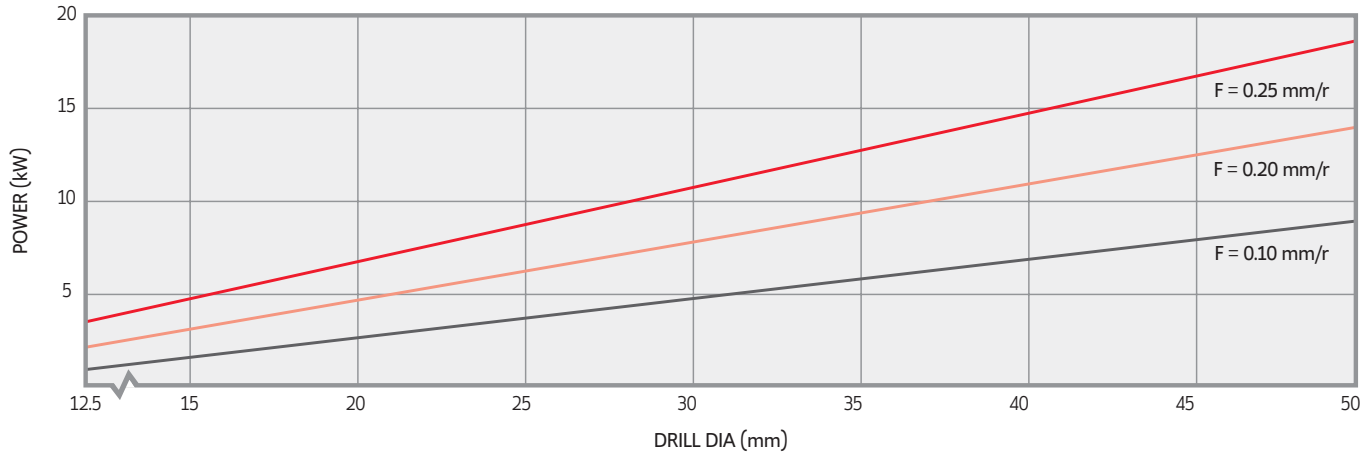
Operation | Operação | Operación	Description | Descrição | Descrición
• SPOT DRILLING THROUGH ON INCLINED SURFACES • FURAÇÃO LOCALIZADA E FURAÇÃO ATRAVÉS DE SUPERFICIES INCLINADAS • PERFORACIÓN LOCALIZADA Y PERFORACION SOBRE SUPERFICIES INCLINADAS 	• Up to a 30º inclination angle is possible without reducing the cutting parameters. For angles between 30-40º, reduce feed force at incline surface by 50% • Até um ângulo de 30º é possivel sem a redução dos parametros de corte. Para ângulos entre 30-40º, reduza o avanço na superfície inclinada em 50%. • Hasta un ângulo de inclinación de 30º és posible sin la redución de los parametros de corte. En ângulos entre 30~40º, reduzca el avance en 50%.
• INTERRUPTED CUTS • CORTE INTERROMPIDO • CORTE INTERRUMPIDO 	• For problem-free drilling in interrupted custs (croos drilling, etc.), reduce the cutting force and feed by 30% to maintain maximum stability of the machine and clamping mechanisms. • Para furação em corte interrompido, reduza a velocidade de corte e o avanço em 30% para manter a estabilidade máxima da máquina e sistemas de aperto. • En perfuración en corte interrumpido, reduzca la velocidad de corte e el avance en 30% para mantener la estabilidade.
• DRILLING OF STACKED PLATES • FURAÇÃO DE CHAPAS EMPILHADAS • PERFURACIÓN DE PLACAS APILADAS 	• This is not possible with the standart TDS or TDC drills. A final disc will form when the drill breaks through. • Esta operação não é possível com as brocas standart TDS ou TDC. Um disco forma-se e poderá saltar no final da operação quando trespassa a peça. • Esta operación no és posible com brocas standart TDS o TDC.
• BORING • MADRILAGEM • MANDRILAGEM 	• When the TDC or TDS drill are used as boring tool, oofset the drill in the direction of the cutter insert. Watch the outer insert for wear because is cutting more metal than the inner insert and may require more frequent indexing. • Quando as TDS ou TDC são usadas para operações de mandrilamento oriente a broca pela pastilha exterior. Observe o desgaste da pastilha exterior uma vez que esta debasta mais metal que a pastilha exterior e poderá requerer uma indexação mais frequente. • Siempre que use las TDS o TDC en operaciones de mandrilage, oriente el inserto exterior. Se deve observar el desgaste del inserto exterior una vez que podrá necessitar de una indexación mas regular.

JET DRILLS - SCS & SCC DRILL TYPE

Recommended Speeds and Feeds | Parâmetros de Corte Recomendados | Recomendaciones de Datos de Corte

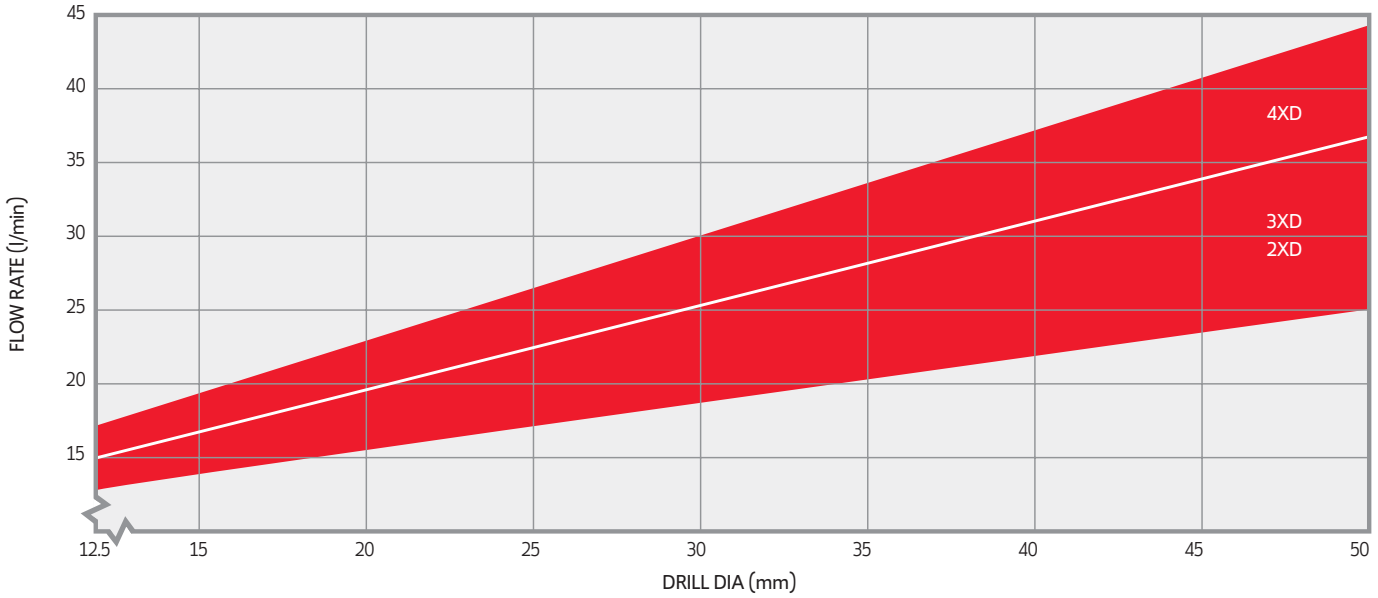
ISO	Material Group Grupo Materiais Grupo Materiales	Vc (m/min)	Ø12,5~15	Ø15,5~21,5	Ø22~27,5	Ø28~33	Ø34~41	Ø42~50	Ø50~60	Ø60~75	Ø75~80
P	UNALLOYED STEEL (-0,25%)	180-250	0,05-0,08	0,06-0,10	0,06-0,12	0,07-0,13	0,08-0,15	0,08-0,16	0,06-0,12	0,08-0,12	0,08-0,12
	LOW-ALLOY STEEL (0,25%-)	160-220	0,06-0,12	0,08-0,15	0,10-0,18	0,12-0,22	0,12-0,24	0,13-0,25	0,10-0,14	0,12-0,18	0,11-0,18
	LOW-ALLOY STEEL	150-220	0,06-0,12	0,08-0,14	0,10-0,18	0,12-0,22	0,12-0,23	0,13-0,24	0,08-0,15	0,10-0,18	0,10-0,18
	HIGH-ALLOY STEEL	130-180	0,06-0,10	0,08-0,15	0,10-0,20	0,12-0,23	0,12-0,24	0,13-0,25	0,08-0,14	0,09-0,15	0,09-0,14
M	STAINLESS STEEL	170-240	0,05-0,10	0,06-0,12	0,08-0,15	0,09-0,16	0,10-0,17	0,11-0,19	0,06-0,13	0,08-0,15	0,08-0,14
K	GREY CAST IRON	180-250	0,06-0,12	0,08-0,16	0,12-0,20	0,15-0,25	0,16-0,28	0,18-0,30	0,12-0,20	0,15-0,20	0,15-0,20
	CAST IRON WITH NODULAR CAST	130-200	0,06-0,10	0,08-0,15	0,10-0,18	0,12-0,20	0,15-0,23	0,16-0,25	0,10-0,15	0,09-0,18	0,10-0,18
N	ALUMINIUM FORGING ALLOYS	330-380	0,06-0,14	0,08-0,15	0,10-0,20	0,12-0,22	0,14-0,23	0,15-0,26	0,14-0,20	0,14-0,23	0,15-0,23
S	SUPER-ALLOYS AND TITANIUM	30-60	0,05-0,10	0,06-0,14	0,08-0,18	0,10-0,22	0,12-0,22	0,14-0,24	0,10-0,15	0,10-0,15	0,10-0,15

Power Requirements | Requisitos de Potência | Requisitos de Potencia



• These chart is based on machining experiences using steels with a hardness of 200-250HB and cutting speed of 100m/min.
• For cast iron the effective power requirement is around 30% lower.

Coolant Application Chart | Tabela Aplicação de Refrigeração | Tabla Aplicación de Refrigerante

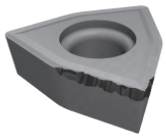
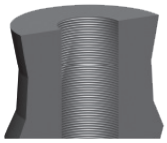


Hole Tolerance and Maximum Hole Size With Radial Adjustment
Tolerância do Furo e Dimensão Máxima do Furo com Ajuste Radial
Tolerancia de los Agujeros y el Tamaño Delagujero Máximo con AjusteRadial

Drill D	4xD	
	Radial Adjust	Max. Hole D
13	0.50	14.0
14	0.50	15.0
15	0.50	16.0
16	0.50	17.0
17	0.50	18.0
18	0.50	19.0
19	0.50	20.0
20	0.50	21.0
21	0.25	21.5
22	0.50	23.0
23	0.50	24.0
24	0.50	25.0
25	0.50	26.0
26	0.25	26.5
27	0.25	27.5
28	0.50	29.0
29	0.50	30.0
30	0.50	31.0
31	0.25	31.5
32	0.25	32.5
33	0.25	33.5
34	0.50	35.0
35	0.50	36.0
36	0.50	37.0
37	0.50	38.0
38	0.50	39.0
39	0.50	40.0
40	0.25	40.5
41	0.25	41.5
42	0.50	43.0
43	0.50	44.0
44	0.50	45.0
45	0.50	46.0
46	0.50	47.0
47	0.50	48.0
48	0.25	48.5
49	0.25	49.5
50	0.25	50.5

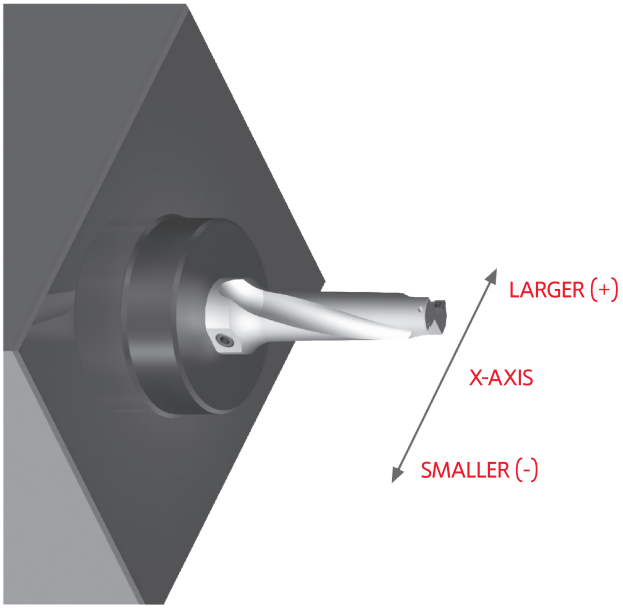
Drill D	4xD	
	Radial Adjust	Max. Hole D
13	0.50	14.0
14	0.50	15.0
15	0.50	16.0
16	0.50	17.0
17	0.50	18.0
18	0.50	19.0
19	0.50	20.0
20	0.50	21.0
21	0.25	21.5
22	0.50	23.0
23	0.50	24.0
24	0.50	25.0
25	0.50	26.0
26	0.25	26.5
27	0.25	27.5
28	0.50	29.0
29	0.50	30.0
30	0.50	31.0
31	0.25	31.5
32	0.25	32.5
33	0.25	33.5
34	0.50	35.0
35	0.50	36.0
36	0.50	37.0
37	0.50	38.0
38	0.50	39.0
39	0.50	40.0
40	0.25	40.5
41	0.25	41.5
42	0.50	43.0
43	0.50	44.0
44	0.50	45.0
45	0.50	46.0
46	0.50	47.0
47	0.50	48.0
48	0.25	48.5
49	0.25	49.5
50	0.25	50.5

JET DRILLS - TROUBLESHOOTING | Solução de problemas | Solucción de problemas

Problem | Problema	Corrective Action	Possível Solução	Solución Posible
INNER CUTTING EDGE CRACKING 	**On Lathes:** • Check machine alignment. • Check clamping accuracy. If tool clamping cannot be improved and/or optimum machine stability is doubtful, reduce feed by 30%. • User tougher carbide grade. **TIP:** Grades can be mixed to achieve optimum performance. **Example:** Use grade PH6125 in the inside pocket with PH6135 in the outside pocket.	**Em Tornos:** • Verifique o alinhamento máquina. • Verifique a precisão do aperto. Se o aperto não puder ser melhorado e/ou a optimização da estabilidade da máquina é duvidosa, reduza o avanço em 30%. • Usar classes de graus mais duras. **DICA:** Misture classes Graus para alcançar o desempenho ideal. **Exemplo:** Utilize PH6125 na pastilhainterior e PH6135 na pastilha exterior.	**Tornos en:** • Compruebe la alineación de máquinas. • Verificar la precisión de sujeción. Si la herramienta de sujeción no puede mejorar y/o optimizar la estabilidad de la máquina es dudosa, reducir los piensos en un 30%. • El usuario de carburo de calidad es más estrictas. **SUGERENCIA:** Las calificaciones se pueden mezclar para lograr un rendimiento óptimo. **Ejemplo:** Utilice PH6125 en el inserto interior e PH6135 en el inserto exterior.
CHIP EVACUATION NOT OPTIMAL 	• Increase coolant pressure and volume (coolant helps support chip evacuation as well as cooling the cutting edges). • Optimize chip control for a given application. • Increase cutting speed by 20%.	• Aumente a pressão e volume do líquido de refrigeração (este permite uma melhor evacuação da apara, bem como um arrefecimento das arestas de corte). • Optimize o controlo das aparas para cada operação. • Aumentar a velocidade de corte de 20%.	• Aumentar la presión del refrigerante y el volumen (el líquido de refrigeración de chips de apoyo ayuda a la evacuación, así como el enfriamiento de la corte de los bordes). • Optimizar el control de chip para una aplicación determinada. • Aumentar la velocidad de corte un 20%.
EXCESSIVE INSERT WEAR 	• Increase coolant pressure and volume. • Reduce cutting speed by 20%. • Use a more wear – resistant grade.	• Aumente o volume e a pressão do líquido de refrigeração. • Reduzir a velocidade de corte de 20%. • Utilize um grau mais resistente ao desgaste.	• Aumentar la presión del refrigerante y el volumen. • Reducir la velocidad de corte en un 20%. • Utilice un mayor desgaste - resistente grado.
POOR DRILL HOLE QUALITY 	• Increase coolant pressure and volume. • Increase cutting speed by 20% • Check clamping accuracy (tool and workpiece) for possible improvement. **TIP:** Use higher speed with lighter feed to produce better hole quality.	• Aumente o volume e a pressão do líquido de refrigeração. • Aumentar a velocidade de cortede 20% • Verifique a precisão do aperto (ferramenta e peça). **DICA:** Utilize velocidades com avanços menores para produzir uma melhor qualidade do furo.	• Aumentar la presión del refrigerante y el volumen. • Aumentar la velocidad de corte en un 20% • Verificar la precisión de sujeción(herramienta y pieza de trabajo) para una posible mejora. **SUGERENCIA:** El uso ligero con mayor velocidad de alimentación para producir una mejor calidad agujero.

Informação técnica para aplicações | Información técnica para aplicaciones

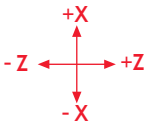
Initial Drill Set Up and Check | Ajuste Inicial da Broca e Verificação | Ajuste Inicial de la Broca e su Verificación

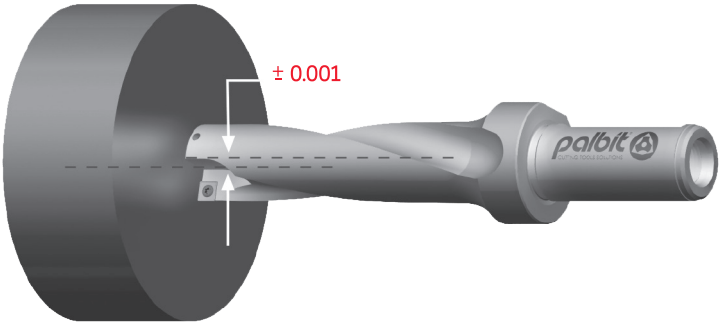


- The cutting edge of insert should be parallel to X-axis to make it possible to do offset cutting. Since a flat part on shank for side lock clamping has been made parallel with the cutting edge line of insert, operator can set the drill as per flat part of shank.

- A aresta de corte da pastilha deve ser paralela ao eixo X tornando possível o alinhamento de corte.

- El hilo de corte del inserto se debe posicionar paralelamente al axis-X tornando posible el aliñamiento de corte.

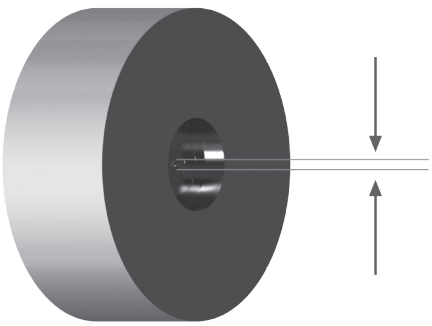




- The outer insert should be located in the direction (+) of X-axis to allow offset cutting and then the inner insert should face the operator.

- A pastilha exterior deve estar localizada na direcção (+) do eixo-X, permitindo assim o alinhamento do corte, a pastilha interior deve estar virada ao operador.

- El inserto exterior se debe localizar en la dirección (+) del axis-X, permitiendo el aliñamiento del corte, el inserto interior debe quedar-se virado para el operador.

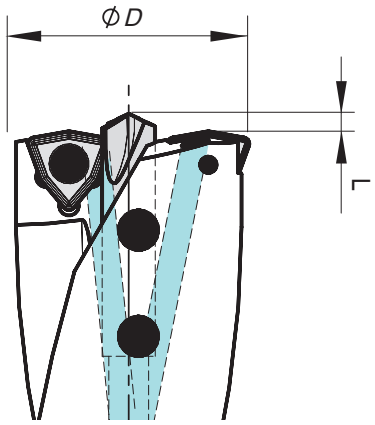


- To check up the setting of drill before use, test it by drilling about 5mm depth and then measure the core size if it is around 0,2mm - 0,7mm.

- Para verificar o ajuste faça o teste furando cerca de 5mm de profundidade medindo depois o núcleo verificando se este tem aproximadamente 0,2 a 0,7mm.

- Para comprobar el ajuste hacer un taladro de cerca de 5 mm de profundidad, medido después su núcleo si se trata de 0,2 a 0,7 mm.

Pilot Drill Adjustement | Ajuste da Broca Piloto | Ajuste de la Broca Piloto

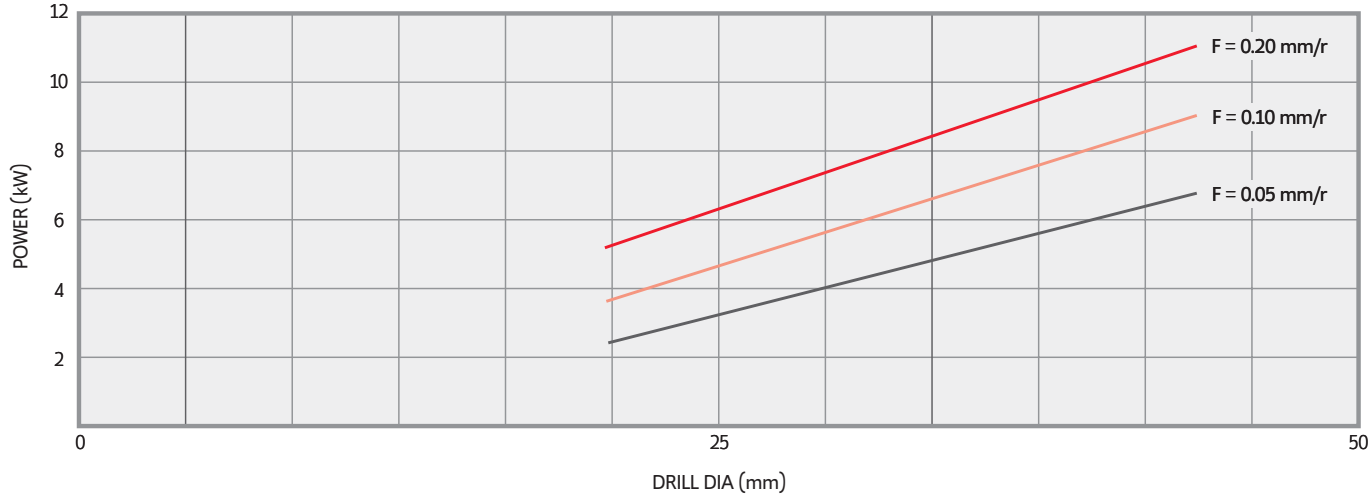


ØD	L
18-24	2,5
25-30	3,0
31-39	4,0
40-59	4,5
60-80	5,0

Recommended Speeds and Feeds | Parâmetros de Corte Recomendados Recomendaciones de Datos de Corte

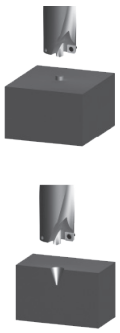
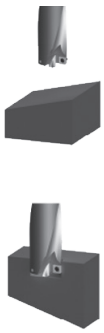
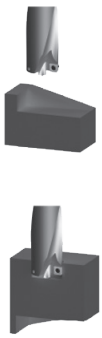
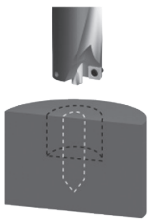
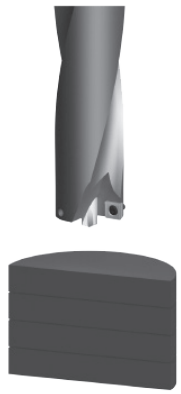
ISO	Material Group Grupo Materiais Grupo Materiales	Vc (m/min)	Ø25	Ø26~30	Ø31~40	Ø41~50	Ø51~59	Ø60~75	Ø75~80
P	UNALLOYED STEEL (-0,25%)	130-190	0,06-0,10	0,07-0,11	0,08-0,12	0,10-0,14	0,14-0,20	0,08-0,12	0,10-0,14
	LOW-ALLOY STEEL (0,25%-)	130-190	0,06-0,10	0,07-0,11	0,08-0,12	0,10-0,14	0,12-0,18	0,08-0,12	0,10-0,14
	LOW-ALLOY STEEL (-HB300)	100-140	0,06-0,10	0,07-0,11	0,08-0,12	0,10-0,14	0,12-0,18	0,08-0,12	0,10-0,14
	HIGH-ALLOY STEEL (HB300-)	60-100	0,05-0,07	0,05-0,07	0,06-0,08	0,06-0,10	0,09-0,13	0,06-0,08	0,06-0,10
M	STAINLESS STEEL	60-110	0,04-0,07	0,04-0,11	0,06-0,12	0,08-0,14	0,10-0,18	0,06-0,12	0,08-0,14
K	GREY CAST IRON	130-190	0,07-0,13	0,07-0,15	0,08-0,16	0,10-0,18	0,12-0,22	0,08-0,16	0,10-0,18
	CAST IRON WITH NODULAR CAST	110-190	0,04-0,13	0,07-0,15	0,08-0,16	0,10-0,25	0,12-0,26	0,08-0,16	0,10-0,25
N	ALUMINIUM FORGING ALLOYS	200-300	0,04-0,06	0,07-0,12	0,08-0,13	0,09-0,15	0,12-0,20	0,08-0,13	0,09-0,15
	ALUMINIUM CAST ALLOYS	140-300	0,04-0,06	0,06-0,12	0,08-0,13	0,09-0,15	0,12-0,20	0,08-0,13	0,09-0,15

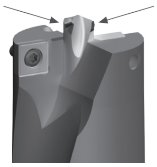
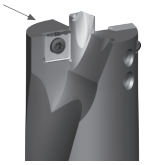
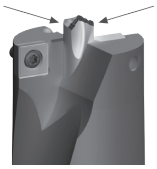
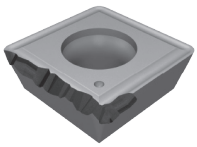
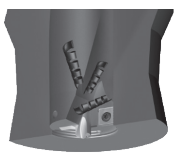
Power Requirements | Requisitos de Potência | Requisitos de Potencia



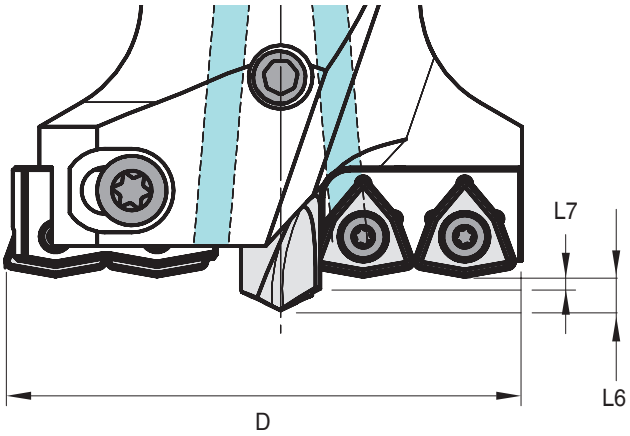
INTEGREX DRILLS - DHS, DHC, TFD DRILL TYPE

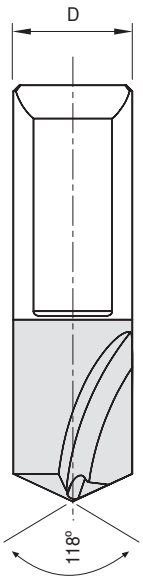
Rules & Tips | Regras e Dicas | Normas e Consejos

WRONG	CORRECT	EN	PT	ES
		**Spot Drilling** For plain/straight surfaces, no spot drilling is required. For centering, the center drill diameter should be considerably smaller than the pilot drill diameter.	**Furação Localizada** Para superfícies planas a furação localizada não é necessária. O diâmetro da broca de pré-furação deve ser consideravelmente menor do que o diâmetro da broca-piloto.	**Perforación Localizada** Para superficies planas, no se requiere la perforación in situ. Para centrar el diámetro de pré-perforación debe ser considerablemente más pequeño que el diámetro de la broca piloto.
		**Spot drilling and drilling throughon inclined surfaces.** Up to an 8º inclination angle is possible. Drilling through at a maximum of 4º is possible; otherwise, a pre-facing operation is necessary.	**Furação localizada e furação através de superfícies inclinadas.** Até 8 º ângulo de inclinação é possível. Furação até a um máximo de 4º é possível, caso contrário, é necessária uma pré-operação.	**Perforación localizada y perforación sobre superficies inclinadas.** Hasta un ángulo de inclinación de 8º es posible. Através de la perforación en un máximo de 4º es posible, de otro modo, es necesaria pre-operación.
		**Multi-Stage Drill Hole** Integrex series drills are not recommended for boring operations. First, use the Integrex drill to drill a larger diameter hole. Then, use a solid carbide drill for smaller holes. Optimum centering of the solid carbide drill is possible on the drill hole of the pilot drill.	**Furo Multi-Estágio** As brocas Integrex não são recomendadas para operações de mandrilagem. Primeiro utilize a Integrex para o furo de diâmetro maior, então use uma broca Metal Duro Integrex para o furo de diâmetro mais reduzido.	**Multi-etapa taladro** Las brocas Integrex no son recomendadas para las operaciones de mandrilagen. En primer lugar, utilizar la Integrex para perforar un agujero de diámetro mayor. A continuación,utilice una broca de carburo sólido para los pequeños agujeros. Centrado óptimo del taladro de carburo sólido es posible en el taladro de la broca piloto.
		**Drilling of stacked plates** This is not possible with Integrex series drills because a final disc forms when the drill breaks through. **Caution:** During through-hole operations, a slug or disc is produced as the tool breaks through the workpiece. When the drill is stationary and the workpiece is rotating, this slug may be hurled from the chuck by centrifugal force. Provide adequate shielding to protect all bystanders.	**Furação de chapas empilhadas** Isso não é possível com a Integrex porque um disco final forma-se quando a broca passa **Cuidado:** Durante operações de trespassar uma placa, uma apara ou disco é produzido quando a broca rompe através da peça. Quando a broca está parada e é a peça rotativa, este disco pode ser arremessado da brecha pela força centrífuga. Proporcionar adequada blindagem para proteger todos os transeuntes.	**Perforación de placas apiladas** Esto no es posible con la Integrex debido a un disco que se forma cuando el taladro a través de las placas. **Precaución:** Durante las operaciones a través de agujeros, una babosa o disco se produce como la herramienta provocando saltos de la pieza. Cuando la perforación es estacionaria y la pieza está girando, este disco puede ser lanzado desde el plato por la fuerza centrífuga. Proporcionar la protección adecuada para proteger a todos los transeúntes.

Problem | Problema	Corrective Action	Possível Solução	Solución Posible
PILOT DRILL CRACKING 	**On Lathes:** • Verify that the tool is centered correctly. Readjust machine, if necessary. • Check clamping accuracy (tool andworkpiece).	**Em Tornos:** • Verifique se a ferramenta está centrada correctamente. Reajustar a máquina caso necessário. • Verifique a precisão do aperto (ferramento e peça).	**Tornos en:** • Compruebe que la herramienta se centra correctamente. Reajustar la máquina, si es necesario. • Verificar la precisión de sujeción (herramienta y pieza de trabajo) para una posible mejora.
INNER INSERT CRACKING 	• Use tougher carbide grade. • Reduce feed by 20%. • Check clamping accuracy (tool and workpiece) for possible improvement.	• Use classes de graus mais duras. • Reduza o avanço em 20%. • Verifique a precisão do aperto (ferramento e peça).	• Uso más duras de carburo de grado. • Reducción de los piensos en un 20%. • Verificar la precisión de sujeción (herramienta y pieza de trabajo) para una posible mejora.
OUTER INSERT CRACKING 	• Use tougher carbide grade and / or stronger insert geometry. • Reduce feed by 20% • When drilling through, reduce feed by 50%. • Check clamping accuracy (tool and workpiece) for possible improvement.	• Use classes de graus mais duras. • Reduza o avanço em 20%. • Verifique a precisão do aperto (ferramenta e peça).	• Uso más duras de carburo de grado. • Reducción de los piensos en un 20%. • Verificar la precisión de sujeción (herramienta y pieza de trabajo) para una posible mejora.
EXTENSIVE PILOT DRILL WEAR 	• Use coated carbide pilot drill. • Increase coolant pressure and volume. • Reduce cutting speed by 20%.	• Utilize uma broca piloto revestida. • Aumente a pressão e o volume do líquido de refrigeração. • Reduzir a velocidade de corte em 20%.	• Utilice broca piloto revestida. • Aumentar la presión del refrigerante y el volumen. • Reducir la velocidad de corte en un 20%.
EXCESSIVE INSERT WEAR 	**On Lathes:** • Use a more wear-resistant carbide grade. • Increase coolant pressure and volume. • Reduce cutting speed by 20%.	**Em Tornos:** • Utilize um grau mais resistente ao desgaste. • Aumente a pressão e o volume do líquido de refrigeração. • Reduza a velocidade de corte em 20%.	**Tornos en:** • Utilice un más resistentes al desgaste de carburo de grado. • Aumentar la presión del refrigerante y el volumen. • Reducir la velocidad de corte en un 20%
CHIP BREAKING NOT OPTIMAL 	• Optimize chip control for given application. • Increase cutting speed by 20%, reduce feed by 20%.	• Optimizar a evacuação da apara para cada operação. • Aumentar a velocidade de corte em 20% e reduzir o avanço em 20%.	• Optimizar el control de chip aplicación dada. • Aumentar la velocidad de corte en un 20%, reducir la alimentaciónen un 20%.
CHIP EVACUATION NOT OPTIMAL, POOR DRILL HOLE QUALITY 	• Increase coolant pressure and volume. • Increase cutting speed by 20%.	• Aumentar o volume e a pressão do líquido de refrigeração. • Aumentar a velocidade de corte em 20%.	• Aumentar la presión del refrigerante y el volumen. • Aumentar la velocidad de corte en un 20%.

Pilot Drill Adjustement | Ajuste da Broca Piloto | Ajuste de la Broca Piloto



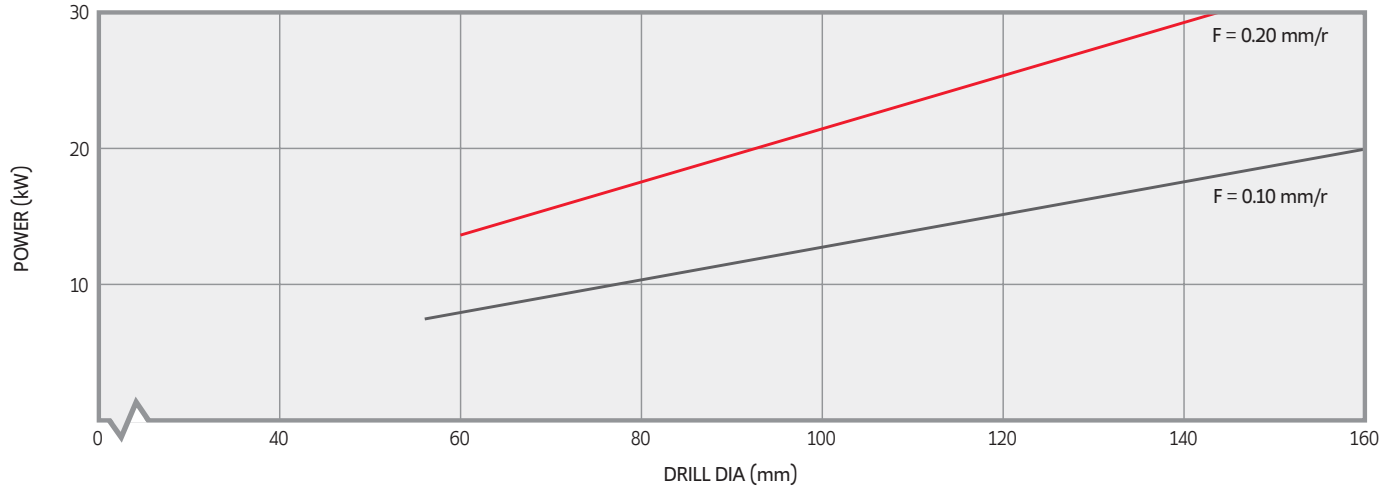


Dc (mm)	2D to 4D		4D to 6D		> 6D	
	L7	L6	L7	L6	L7	L6
45-55	1,6	4,0	1,8	4,2	2,0	4,4
55-75	1,8	5,4	2,0	5,6	2,2	5,8
75-100	2,2	6,5	2,5	6,8	2,8	7,1
100-120	2,4	7,7	2,8	8,1	3,2	8,5
120-170	3,2	9,9	3,6	10,3	4,0	10,7
170-180	3,5	12,2	3,9	12,6	4,3	13,0

Recommended Speeds and Feeds | Parâmetros de Corte Recomendados Recomendaciones de Datos de Corte

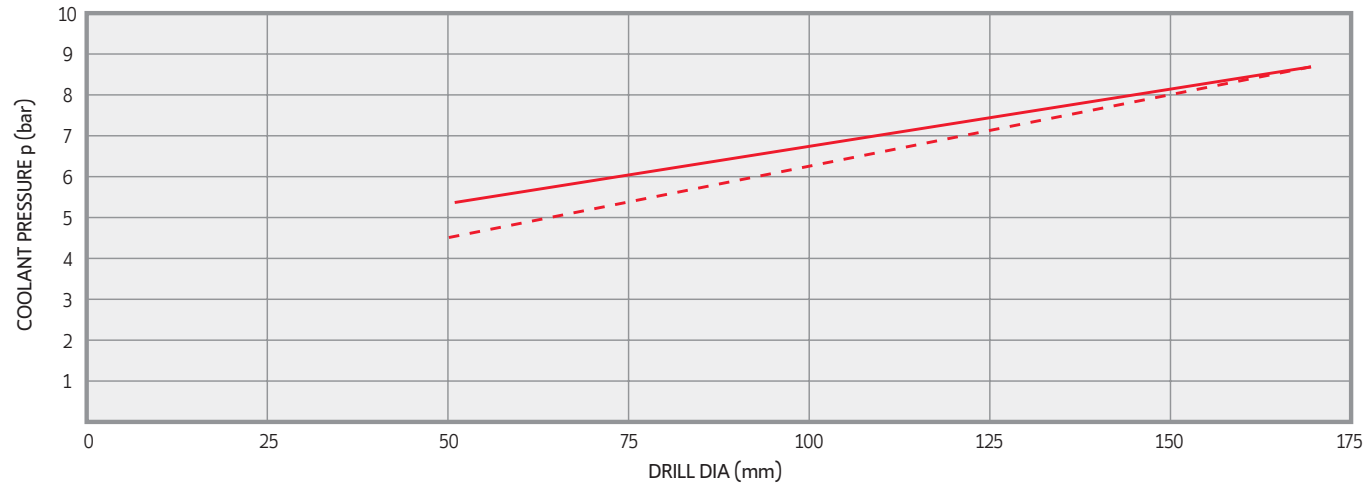
ISO	Material Group Grupo Materiais Grupo Materiales	Vc (m/min)	Ø45~55	Ø55~60	Ø60~75	Ø75~100	Ø100~105	Ø105~150	Ø150~180
P	UNALLOYED STEEL (-0,25%)	120-180	0,06-0,10	0,07-0,11	0,08-0,12	0,10-0,14	0,14-0,20	0,08-0,12	0,10-0,14
	LOW-ALLOY STEEL (0,25%-)	110-170	0,06-0,10	0,07-0,11	0,08-0,12	0,10-0,14	0,12-0,18	0,08-0,12	0,10-0,14
	LOW-ALLOY STEEL (-HB300)	90-130	0,06-0,10	0,07-0,11	0,08-0,12	0,10-0,14	0,12-0,18	0,08-0,12	0,10-0,14
	HIGH-ALLOY STEEL (HB300-)	60-100	0,05-0,07	0,05-0,07	0,06-0,08	0,06-0,10	0,09-0,13	0,06-0,08	0,06-0,10
M	STAINLESS STEEL	60-110	0,04-0,07	0,04-0,11	0,06-0,12	0,08-0,14	0,10-0,18	0,06-0,12	0,08-0,14
K	GREY CAST IRON	120-180	0,07-0,13	0,07-0,15	0,08-0,16	0,10-0,18	0,12-0,22	0,08-0,16	0,10-0,18
	CAST IRON WITH NODULAR CAST	100-180	0,04-0,13	0,07-0,15	0,08-0,16	0,10-0,25	0,12-0,26	0,08-0,16	0,10-0,25
N	ALUMINIUM FORGING ALLOYS	180-280	0,04-0,06	0,07-0,12	0,08-0,13	0,09-0,15	0,12-0,20	0,08-0,13	0,09-0,15
	ALUMINIUM CAST ALLOYS	120-270	0,04-0,06	0,06-0,12	0,08-0,13	0,09-0,15	0,12-0,20	0,08-0,13	0,09-0,15

Power Requirements | Requisitos de Potência | Requisitos de Potencia



• These chart is based on machining experiences using steels with a hardness of 200-250HB and cutting speed of 100m/min.

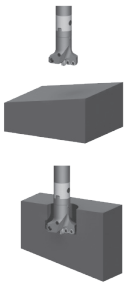
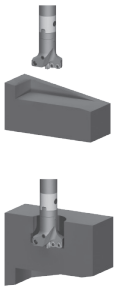
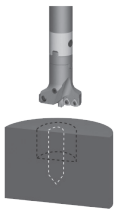
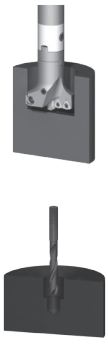
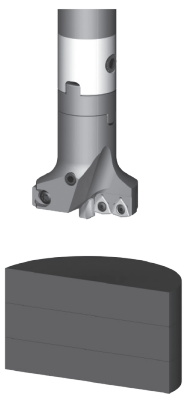
Coolant Application Chart | Tabela Aplicação de Refrigeração | Tabla Aplicación de Refrigerante

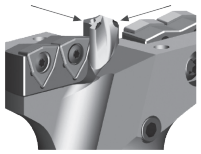
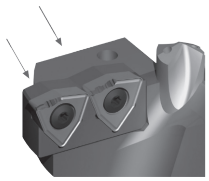
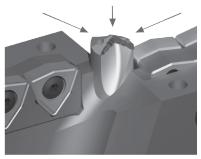
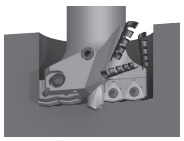


VORTEX DRILLS - CUTTING PARAMETERS AND ADJUSTMENTS

Parâmetros de corte e ajustes | Condiciones de corte y ajustes

Rules & Tips | Regras e Dicas | Normas e Consejos

WRONG	CORRECT	EN	PT	ES
		**Spot Drilling** For plain/straight surfaces, no spot drilling is required. For centering, the center drill diameter should be considerably smaller than the pilot drill diameter.	**Furação Localizada** Para superfícies planas a furação localizada não é necessária. O diâmetro da broca de pré-furação deve ser consideravelmente menor do que o diâmetro da broca-piloto.	**Perforación Localizada** Para superficies planas, no se requiere la perforación in situ. Para centrar el diámetro de pré-perforación debe ser considerablemente más pequeño que el diámetro de la broca piloto.
		**Spot drilling and drilling throughon inclined surfaces.** Up to an 8º inclination angle is possible. Drilling through at a maximum of 4º is possible; otherwise, a pre-facing operation is required.	**Furação localizada e furação através de superfícies inclinadas.** Até 8 º ângulo de inclinação é possível. Furação até a um máximo de 4º é possível, caso contrário, é necessária uma pré-operação.	**Perforación localizada y perforación sobre superficies inclinadas.** Hasta un ángulo de inclinación de 8º es posible. Através de la perforación en un máximo de 4º es posible, de otro modo, es necesaria pre-operación.
		**Multi-Stage Drill Hole** Vortex series drills are not recommended for boring operations. First, use the Integrex drill to drill a larger diameter hole. Then, use a solid carbide drill for smaller holes. Optimum centering of the solid carbide drill is possible on the drill hole of the pilot drill.	**Furo Multi-Estágio** As brocas Vortex não são recomendadas para operações de mandrilagem. Primeiro utilize a Integrex para o furo de diâmetro maior, então use uma broca Metal Duro Integrex para o furo de diâmetro mais reduzido.	**Multi-etapa taladro** Las brocas Vortex no son recomendadas para las operaciones de mandrilagen. En primer lugar, utilizar la Integrex para perforar un agujero de diámetro mayor. A continuación,utilice una broca de carburo sólido para los pequeños agujeros. Centrado óptimo del taladro de carburo sólido es posible en el taladro de la broca piloto.
		**Drilling of stacked plates** This is not possible with Integrex series drills because a final disc forms when the drill breaks through. **Caution:** During through-hole operations, a slug or disc is produced as the tool breaks through the workpiece. When the drill is stationary and the workpiece is rotating, this slug may be hurled from the chuck by centrifugal force. Provide adequate shielding to protect all bystanders.	**Furação de chapas empilhadas** Isso não é possível com a Integrex porque um disco final forma-se quando a broca passa **Cuidado:** Durante operações de trespassar uma placa, uma apara ou disco é produzido quando a broca rompe através da peça. Quando a broca está parada e é a peça rotativa, este disco pode ser arremessado da brecha pela força centrífuga. Proporcionar adequada blindagem para proteger todos os transeuntes.	**Perforación de placas apiladas** Esto no es posible con la Integrex debido a un disco que se forma cuando el taladro a través de las placas. **Precaución:** Durante las operaciones a través de agujeros, una babosa o disco se produce como la herramienta provocando saltos de la pieza. Cuando la perforación es estacionaria y la pieza está girando, este disco puede ser lanzado desde el plato por la fuerza centrífuga. Proporcionar la protección adecuada para proteger a todos los transeúntes.

Problem | Problema	Corrective Action	Possível Solução	Solución Posible
PILOT DRILL CRACKING 	**On Lathes:** • Verify that the tool is centered correctly. Readjust machine, if necessary. • Check clamping accuracy (tool andworkpiece).	**Em Tornos:** • Verifique se a ferramenta está centrada correctamente. Reajustar a máquina caso necessário. • Verifique a precisão do aperto (ferramento e peça).	**Tornos en:** • Compruebe que la herramienta se centra correctamente. Reajustar la máquina, si es necesario. • Verificar la precisión de sujeción (herramienta y pieza de trabajo) para una posible mejora.
INSERT CRACKING 	• Use tougher carbide grade. • Check clamping accuracy (tool and workpiece) for possible run out.	• Use classes de graus mais duras. • Verifique a precisão do aperto (ferramenta e peça).	• Uso más duras de carburo de grado. • Verificar la precisión de sujeción (herramienta y pieza de trabajo) para su posible run out.
EXCESSIVE INSERT WEAR 	• Use coated pilot drill. • Increase coolant pressure and volume. • Reduce speed by 20% • Use wear & resistant carbide grade.	• Utilizar uma broca piloto revestida. • Aumentar o volume e a pressão do liquido de refrigeração. • Reduzir a velocidade de corte em 20%. • Utilizar classes de graus mais resistentes ao desgaste.	• Utilice broca piloto revestida. • Aumentar la presión del refrigerante y el volumen. • Reduzca la velocidad en un 20% • Utilice el desgaste y resistentes de carburo de grado.
CHIP BREAKING NOT OPTIMAL 	• Optimize chip control for given application by using diferent chipbreaker geometry. • Increase cutting speed by 20%; reduce feed by 20%.	• Optimizar o controlo da apara numa determinada operação outra geometria de quebra aparas. • Aumentar a velocidade de corte em 20% e reduzir o avanço em 20%.	• Optimizar el control de viruta numa dada aplicación mediante utilizacion de otra geometría quebra viruta • Aumentar la velocidad de corte en un 20%, reducir la alimentación en un 20%.
CHIP EVACUATION NOT OPTIMAL, POOR DRILL HOLE QUALITY 	• Increase coolant pressure and volume. • Increase cutting speed by 20%.	• Aumentar o volume e a pressão do líquido de refrigeração. • Aumentar a velocidade de corte em 20%.	• Aumentar la presión del refrigerante y el volumen. • Aumentar la velocidad de corte en un 20%.

SAFETY

Caution:

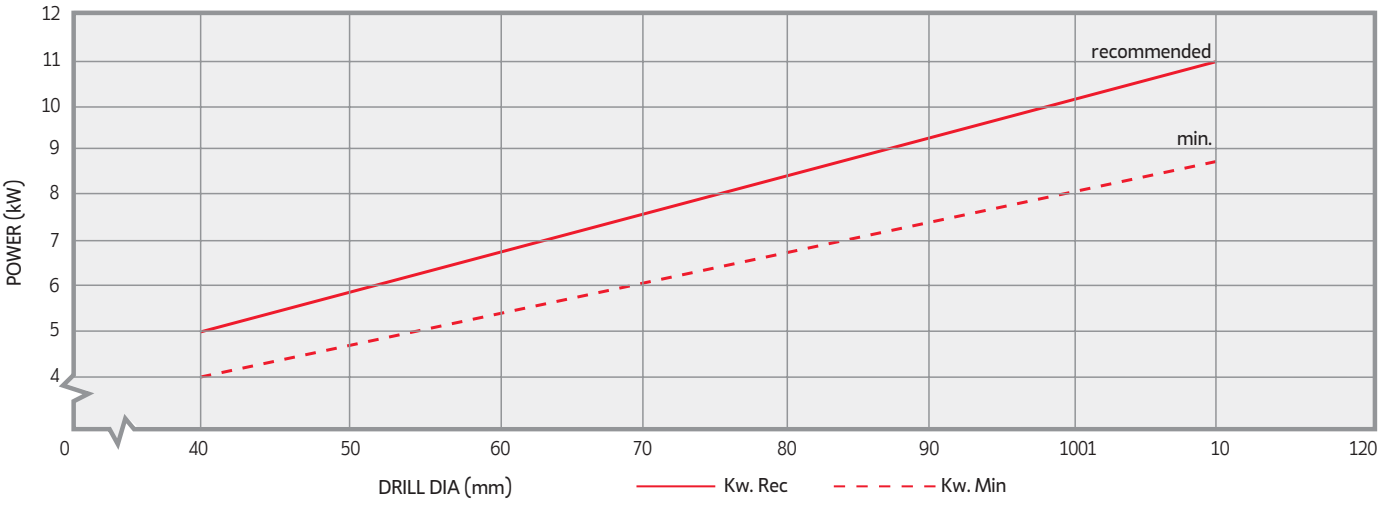
• During trough-hole operations, a slug or disc is produced as the tool breaks through the workpiece. When the drill is stationary and the workpiece is rotating, this slug may be hurled from the chuck by centrifugal force. Provide adequate shielding to protect all bystanders.

• When drilling through, a small shoulder will be produced on breakthrough as the pilot drill is no longer cutting.

Recommended Speeds and Feeds | Parâmetros de Corte Recomendados
Recomendaciones de Datos de Corte

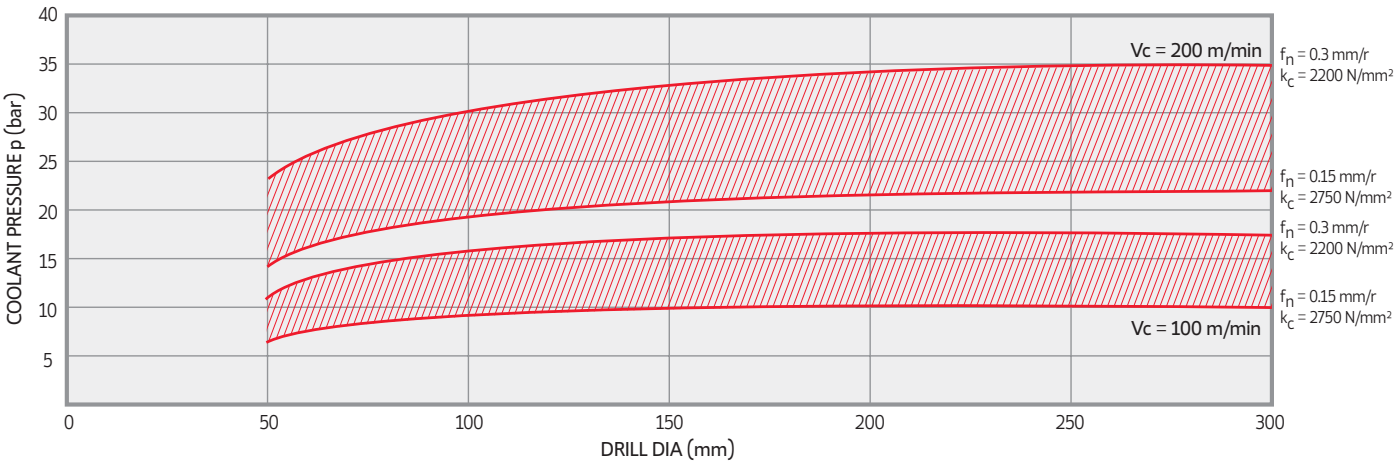
ISO	Material Group Grupo Materiais Grupo Materiales	DC (mm)	Fn (mm/r)	Vc (m/min)
P	UNALLOYED STEEL (-0,25%)	60-110	0,07-0,20	130-345
	LOW-ALLOY STEEL (0,25%-)	60-110	0,10-0,20	100-210
	LOW-ALLOY STEEL	60-110	0,10-0,20	90-200
	STEEL CASTING	60-110	0,06-0,18	120-280
M	STAINLESS STEEL	60-110	0,10-0,20	100-240
K	GREY CAST IRON	60-110	0,14-0,26	105-280
	CAST IRON WITH NODULAR CAST	60-110	0,14-0,20	110-195
N	ALUMINIUM FORGING ALLOYS	60-110	0,12-0,22	250-400
	COPPER AND COPPER ALLOYS	60-110	0,12-0,22	180-350

Power Requirements | Requisitos de Potência | Requisitos de Potencia



• The cutting fluid quantity is measured at the cutting edge of the drill

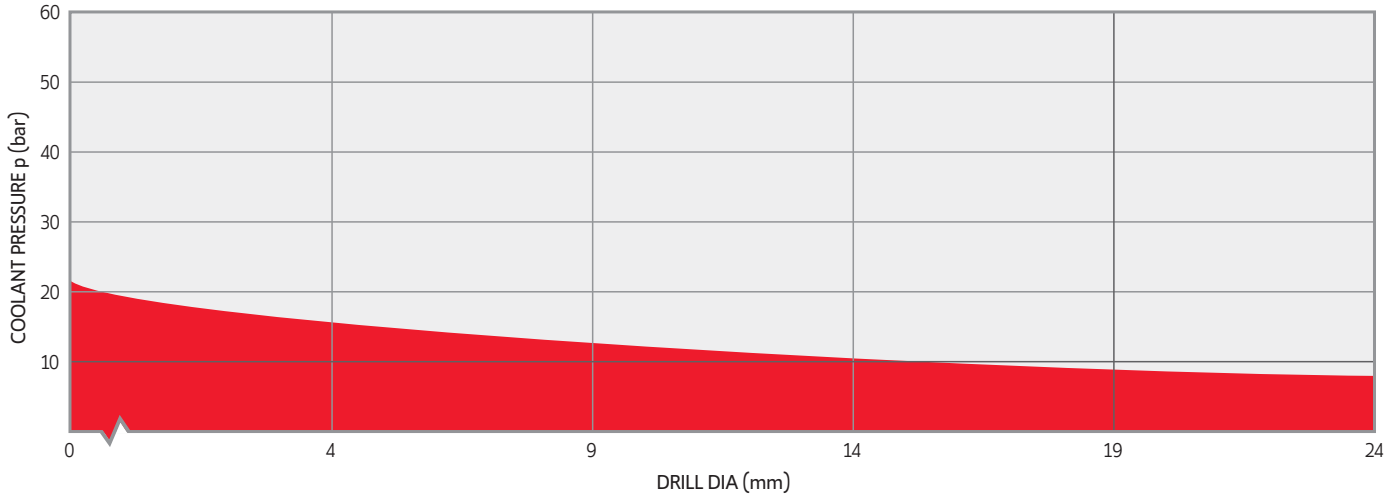
Coolant Application Chart | Tabela Aplicação de Refrigeração | Tabla Aplicación de Refrigerante



Recommended Speeds and Feeds | Parâmetros de Corte Recomendados Recomendaciones de Datos de Corte

ISO	Material Group Grupo Materiais Grupo Materiales	Vc (m/min)	Ø3~8mm	Ø8~12mm	Ø12~16mm	Ø16~20mm
P	UNALLOYED STEEL (-0,25%)	80-100	0,10-0,20	0,15-0,25	0,20-0,40	0,25-0,50
	LOW-ALLOY STEEL (0,25%-)	70-100	0,10-0,20	0,20-0,30	0,20-0,35	0,25-0,40
	HIGH-ALLOY STEEL	40-70	0,08-0,15	0,12-0,22	0,20-0,40	0,25-0,40
M	STAINLESS STEEL	35-50	0,08-0,15	0,12-0,25	0,15-0,30	0,20-0,35
K	MALEABLE CAST IRON	70-100	0,10-0,30	0,20-0,40	0,25-0,40	0,25-0,50
	GREY CAST IRON	70-100	0,10-0,25	0,20-0,35	0,30-0,45	0,35-0,55

Coolant Application Chart | Tabela Aplicação de Refrigeração | Tabla Aplicación de Refrigerante



SOLID CARBIDE DRILLS - TROUBLESHOOTING

Problem | Problema	Cause | Causa | Fuente	Possible Solution | Solução | Solución
Heavy wear on the cutting corners Desgaste profundo das arestas de corte Desgaste profundo de los gavilanse	• Spintering on the cutting corners • Estilhamento das esquinas de corte • Astillado en las esquinas de corte	• Check cooling lubricant. In the case of internal coolant supply, increase coolant pressure. In the case of external coolant supply, adjust positioning of coolant jet. Cool from both sides. • Veja o lubrificante. No caso de fornecimento interno, aumente a pressão da refrigeração, no caso de fornecimento externo, ajuste o posicionamento do jorro do refrigerante, esfrie ambos os lados. • Compruebe el lubricante de refrigeración. En caso de suministro de refrigerante interno,aumente la presión del refrigerante. En caso de suministro de refrigerante externo, ajuste el posicionamiento del chorro de refrigerante. Enfríe desde ambos lados.
	• Cutting conditions • Condições de corte • Condiciones de corte	• Reduce cutting speed, increase feed. • Reduza a velocidade de corte, aumente o avanço. • Reduzca la velocidad de corte, aumente el avance.
Splintering on the chisel edge Estilhamento do fio de corte transversal Astillado del filo de corte transversal	• Clamping chuck • Sistema de amarre • Sistema amarre	• Check clamping accuracy. Use hydraulic clamping chuck or high-precision chucking system. • Comprove a precisão da fixação utilize uma pinça de fixação hidraulica ou um sistema de aperto de alta precisão. • Compruebe la precisión de la fijación. Utilice una pinza de fijación hidráulica o un sistema de amarre de alta precisión.
	• Cutting conditions • Condições de corte • Condiciones de corte	• Increase feed. • Aumente o avanço. • Aumente el avance.
Built-up edge Acrescimo do fio de corte Recrecimiento del filo de corte	• Insufficient coolant. • Refrigeração insuficiente • Refrigerante insuficiente	• Check cooling lubricant. In the case of internal coolant supply, increase coolant pressure. In the case of external coolant supply, adjust positioning of coolant jet. Cool from both sides. .• Veja o lubrificante. No caso de fornecimento interno, aumente a pressão da refrigeração, no caso de fornecimento externo, ajuste o posicionamento do jorro do refrigerante, esfrie ambos lados. • Compruebe el lubricante de refrigeración. En caso de suministro de refrigerante interno, aumente la presión del refrigerante. En caso de suministro de refrigerante externo, ajuste el posicionamiento del chorro de refrigerante. Enfríe desde ambos lados
	• Cutting conditions • Condições de corte • Condiciones de corte	• Increase speed 20-30%. • Aumente a velocidade em uns 20% a 30%. • Aumente la velocidad en un 20-30%.
Splintering on the cutting edges Estinhamento do fio de corte principal Astillado del filo de corte principal	• Clamping chuck • Sistema de amarre • Sistema amarre	• Check clamping accuracy and torque transmission. Use hydraulic clamping chuck or high-precision chucking system. • Comprove a precisão da fixação utilize uma pinça de fixação hidraulica ou um sistema de aperto de alta precisão. • Compruebe la precisión de la fijación y la transmisión de par. Utilice una pinza de fijación hidráulica o un sistema de amarre de alta precisión.
	• Cutting conditions caused by built-up edge • Condições de corte provocadas por acrescimos no fio de corte • Condiciones de corte provocadas por recrecimiento del filo de corte	• Check cutting values and, possibly increase cutting speed. Examine regularly for built-up edge. • Veja os valores de corte e a ser possível aumente a velocidade de corte. Examine regularmente o aumento do fio de corte. • Compruebe los valores de corte y a ser posible aumente la velocidad de corte. Examine regularmente el recrecimiento del filo de corte.
Thermal checking / Comb cracking Desgaste / Rotura dos chanfros Desgaste / Rotura de los chaflanes	• Cutting conditions • Condições de corte • Condiciones de corte	• Inconsistent / insufficient coolant supply. • Fornecimento de refrigeração, inconsistente/insuficiente. • Suministro de refrigerante inconsistente/insuficiente.
Heavy wear on the cutting corners Desgaste profundo dos chanfros Desgaste profundo de los chaflanes	• Workpiece movement • Movimento das peças de trabalho • Movimiento de piezas de trabajo	• Stabilize workpiece chucking and check stability of machine tool. • Estabilize a fixação da peça de trabalho e veja a estabilidade da máquina ferramenta. • Estabilice la fijación de la pieza de trabajo y compruebe la estabilidad de la máquina herramienta
	• Insufficient coolant • Refrigeração insuficiente • Refrigerante insuficiente	• Check cooling lubricant. In the case of internal coolant supply, increase coolant pressure. In the case of external coolant supply, adjust positioning of coolant jet. Cool from both sides. •Veja o lubrificante. No caso de fornecimento interno, aumente a pressão da refrigeração, no caso de fornecimento externo, ajuste o posicionamentodo jorro do refrigerante, esfrie ambos lados. • Compruebe el lubricante de refrigeración. En caso de suministro de refrigerante interno, aumente la presión del refrigerante. En caso de suministro de refrigerante externo, ajuste el posicionamiento del chorro de refrigerante. Enfríe desde ambos lados.
	• Wrong drill • Broca incorrecta • Broca incorrecta	• Check drill type, drilling depth, cooling system, and workpiece material. • Veja o tipo de broca, a profundidade do furo, o sistema de refrigeração e o material de trabalho. • Compruebe el tipo de broca, la profundidad de taladrado, el sistema de refrigeración y el material de trabajo.
	• Cutting conditions • Condições de corte • Condiciones de corte	• Check cutting parameters at exit. Reduce feed 15-20% prior to breakout. • Revise os parâmetros de corte de saída. Reduza o avanço em uns 15% a 20% antes da rotura. • Revise los parámetros de corte de la salida. Reduzca el avance en un 15-20% antes de la rotura.
Hole too big Furo demasiado grande Orificio demasiado grande	• Cutting conditions • Condições de corte • Condiciones de corte	• Check cutting values, increase cutting speed, or reduce feed. • Comprove os valores de corte, aumente a velocidade de corte e reduza o avanço. • Compruebe los valores de corte, aumente la velocidad de corte o reduzca el avance.
	• Clamping chuck • Sistema de amarre • Sistema amarre	• Check clamping accuracy and torque transmission. Use hydraulic clamping chuck or high-precision chucking system. • Comprove a precisão da fixação utilize uma pinça de fixação hidraulica ou um sistema de aperto de alta precisão. • Compruebe la precisión de la fijación y la transmisión de par. Utilice una pinza de fijación hidráulica o un sistema de amarre de alta precisión.
	• Wrong drill • Broca incorrecta • Broca incorrecta	• Check drill diameter. Please notice that drills are ground to a positive tolerance. Check concentric running. • Veja o diâmetro da broca. Assegure-se que as brocas estão ligadas a uma tolerância positiva. Comprove que o funcionamento é concêntrico. • Compruebe el diámetro de la broca. Asegúrese de que las brocas están conectadas a una tolerancia positiva. Compruebe el funcionamiento concéntrico.

Problem | Problema	Cause | Causa | Fuente	Possible Solution | Solução | Solución
Hole too small **Furo demasiado pequeno** **Orificio demasiado pequeño**	• Insufficient coolant • Refrigeração insuficiente • Refrigerante insuficiente	• Check cooling lubricant. In the case of internal coolant supply, increase coolant pressure. In the case of external coolant supply, adjusting positioning of coolant jet. Cool from both sides. • Veja o lubrificante. No caso de fornecimento interno, aumente a pressão da refrigeração, no caso de fornecimento externo, ajuste o posicionamento do jorro do refrigerante, esfrie ambos lados. • Compruebe el lubricante de refrigeración. En caso de suministro de refrigerante interno, aumente la presión del refrigerante .En caso de suministro de refrigerante externo, ajuste el posicionamiento del chorro de refrigerante. Enfríe desde ambos lados.
	• Cutting conditions • Condições de corte • Condiciones de corte	• Reduce cutting speed; increase feed. • Reduza a velocidade de corte, aumente o avanço. • Reduzca la velocidad de corte, aumente el avance.
	• Wrong drill • Broca incorrecta • Broca incorrecta	• Check cutting-edge diameter. • Veja o diâmetro do fio de corte. • Compruebe el diámetro del filo de corte.
Hole not cylindrical Furo não está recto Orificio no es recto	• Clamping chuck • Sistema de amarre • Sistema amarre	• Check clamping accuracy and torque transmission. Use hydraulic clamping chuck or high-precision chucking system. • Veja a precisão da fixação e a transmição do par. Utilize uma pinça de fixação hidraulica ou um sistema de aperto de alta precisão. • Compruebe la precisión de la fijación y la transmisión de par. Utilice una pinza de fijación hidráulica o un sistema de amarre de alta precisión.
	• Workpiece movement • Movimento das peças de trabalho • Movimiento de piezas de trabajo	• Stabilize workpiece chucking and check stability of machine tool. • Estabilize a fixação da peça de trabalho e veja a estabilidade da maquina ferramenta. • Estabilice la fijación de la pieza de trabajo y compruebe la estabilidad de la máquina herramienta.
	• Wrong drill • Broca incorreta • Broca incorrecta	• Check drill type and drilling depth. Use longer drills • Veja o tipo de broca e a profundidade do furo. Utilize brocas mais largas. • Compruebe el tipo de broca y la profundidad de taladrado. Utilice brocas más largas.
	• Cutting conditions • Condições de corte • Condiciones de corte	• Reduce feed at entry. • Reduza o avanço de entrada. • Reduzca el avance de la entrada.
	• Clamping chuck • Sistema de amarre • Sistema amarre	• Check clamping accuracy and torque transmission.Use hydraulic clamping chuck or high-precision chucking system. • Veja a precisão da fixação e a transmição do par. Utilize uma pinça de fixação hidraulica ou um sistema de aperto de alta precisão. • Compruebe la precisión de la fijación y la transmisión de par. Utilice una pinza de fijación hidráulica o un sistema de amarre de alta precisión.
Drill Breakage Rotura da broca Rotura de broca	• Workpiece movement • Movimento das peças de trabalho • Movimiento de piezas de trabajo	• Stabilize workpiece chucking and check stability of machine tool. • Estabilize a fixação da peça de trabalho e veja a estabilidade da maquina ferramenta. • Estabilice la fijación de la pieza de trabajo y compruebe la estabilidad de la máquina herramienta.
	• Wrong drill • Broca incorreta • Broca incorrecta	• Check drill type, drilling depth, cooling system, and workpiece material. • Veja o tipo de broca, a profundidade do furo, o sistema de refrigeração e o material de trabalho. • Compruebe el tipo de broca, la profundidad de taladrado, el sistema de refrigeración y el material de trabajo.
	• Insufficient coolant • Refrigeração insuficiente • Refrigerante insuficiente	• Check cooling lubricant. In the case of internal coolant supply, increase coolant pressure. In the case of external coolant supply, adjusting positioning of coolant jet. Cool from both sides. • Veja o lubrificante. No caso de fornecimento interno, aumente a pressão da refrigeração, no caso de fornecimento externo, ajuste o posicionamento do jorro do refrigerante, esfrie ambos lados. • Compruebe el lubricante de refrigeración. En caso de suministro de refrigerante interno, aumente la presión del refrigerante .En caso de suministro de refrigerante externo, ajuste el posicionamiento del chorro de refrigerante. Enfríe desde ambos lados.
	• Cutting conditions • Condições de corte • Condiciones de corte	• Check cutting values, and possibly reduce feed. • Comprove os valores de corte, aumente a velocidade de corte e reduza o avanço. • Compruebe los valores de corte y a ser posible reduzca el avance.
	• Clamping chuck • Sistema de amarre • Sistema amarre	• Check torque transmission. Use hydraulic clamping chuck or high-precision chucking system. • Comprove a transmissão do par. Utilize uma pinça de fixação hidraulica ou um sistema de aperto de alta precisão. • Compruebe la transmisión de par. Utilice una pinza de fijación hidráulica o un sistema de amarre de alta precisión.
Splintering on the cutting corners Estilhamento das esquinas de corte Astillado en las esquinas de corte	• Workpiece movement • Movimento das peças de trabalho • Movimiento de piezas de trabajo	• Stabilize workpiece chucking and check stability of machine tool. • Estabilize a fixação da peça de trabalho e veja a estabilidade da maquina ferramenta. • Estabilice la fijación de la pieza de trabajo y compruebe la estabilidad de la máquina herramienta.
	• Wrong drill • Broca incorreta • Broca incorrecta	• Check drill type, drilling depth, cooling system, and workpiece material. Possibly, use longer drill. • Comprove o tipo de broca, a profundidade do furo, sistema de refrigeração e o material de trabalho. A ser possível utilize uma broca mais larga. • Compruebe el tipo de broca, la profundidad de taladrado, sistema de refrigeración y material de trabajo. A ser posible, utilice una broca más larga.
	• Insufficient coolant • Refrigeração insuficiente • Refrigerante insuficiente	• Check cooling lubricant. In the case of internal coolant supply, increase coolant pressure. In the case of external coolant supply, adjusting positioning of coolant jet. Cool from both sides. • Veja o lubrificante. No caso de fornecimento interno, aumente a pressão da refrigeração, no caso de fornecimento externo, ajuste o posicionamento do jorro do refrigerante, esfrie ambos lados. • Compruebe el lubricante de refrigeración. En caso de suministro de refrigerante interno, aumente la presión del refrigerante .En caso de suministro de refrigerante externo, ajuste el posicionamiento del chorro de refrigerante. Enfríe desde ambos lados.
	• Cutting conditions • Condições de corte • Condiciones de corte	• Check cutting values, and possibly reduce feed. • Comprove os valores de corte, aumente a velocidade de corte e reduza o avanço. • Compruebe los valores de corte y a ser posible reduzca el avance.