



B - DRILLING

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B



DRILLING



B - 302 | JET DRILLS

B - 312 | INTEGRIX DRILLS

B - 321 | TREPANNING DRILLS

B - 322 | SOLID CARBIDE DRILLS

B - 332 | Inserts code key

B - 334 | Inserts

B - 336 | Spare Parts

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DRILLS CODE KEY

DRILLING

T D S

Drill group

2 1 5

Drilling diameter: $\varnothing 21,5$

2 5 - 3 D

Shank diameter: $\varnothing 25$

Drilling depth: Dia x 3

DRILLING

Jet Drills

T D C

Drill group

7 5 8 0

Drilling diameter: $\varnothing 70$ until $\varnothing 80$

4 0 - 3 D

Shank diameter: $\varnothing 40$

Drilling depth: Dia x 3

Integrex Drills

S C S

Drill group

2 5 5

Drilling diameter: $\varnothing 25,5$

3 2 - 3 D

Shank diameter: $\varnothing 32$

Drilling depth: Dia x 3

Vortex Drills

S C C

Drill group

6 0 6 5

Drilling diameter: $\varnothing 60$ until $\varnothing 65$

4 0 - 4 D

Shank diameter: $\varnothing 40$

Drilling depth: Dia x 4

Trepanning Drills

D H S

Drill group

0 0 4 0

Drilling diameter: $\varnothing 40$

3 2 - 5 D

Shank diameter: $\varnothing 32$

Drilling depth: Dia x 5

Solid Carbide Drills

D H C

Drill group

7 0 7 5

Drilling diameter: $\varnothing 70$ until $\varnothing 75$

4 0 - 8 D

Shank diameter: $\varnothing 40$

Drilling depth: Dia x 8

Inserts

Spare Parts

T F D

Drill group

2 9 0

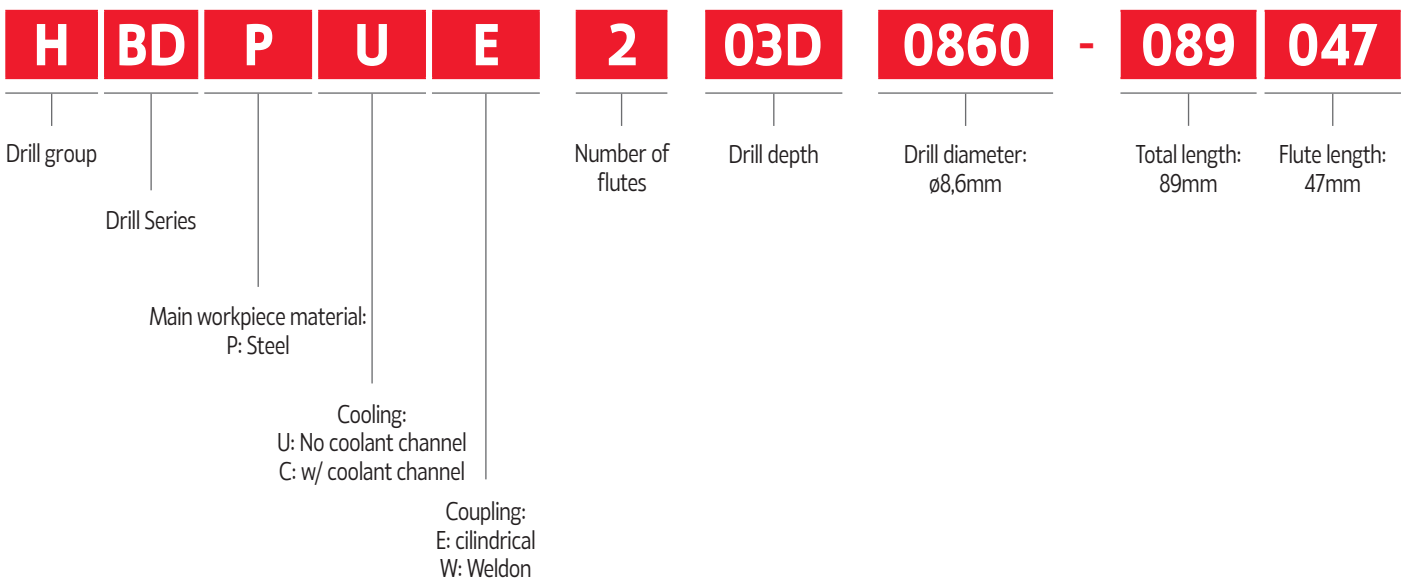
Drilling diameter: $\varnothing 29,0$

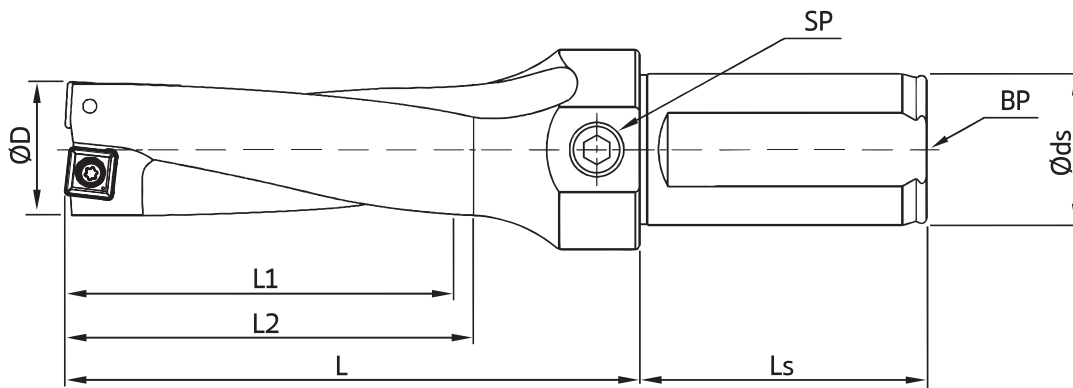
3 2 - 8 D

Shank diameter: $\varnothing 32$

Drilling depth: Dia x 8

Technical Data





- $\varnothing D$ - Drill diameter
- $\varnothing ds$ - Shank diameter
- L - Length
- Ls - Shank Length
- $L1$ - Cut length
- $L2$ - Safety cut length
- SP - Side plug
- 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	✓ / ✓	✓ / ✓

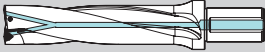

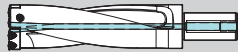


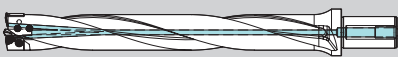

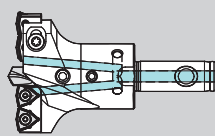
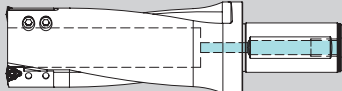


BP - Back Plug

SP - Side Plug

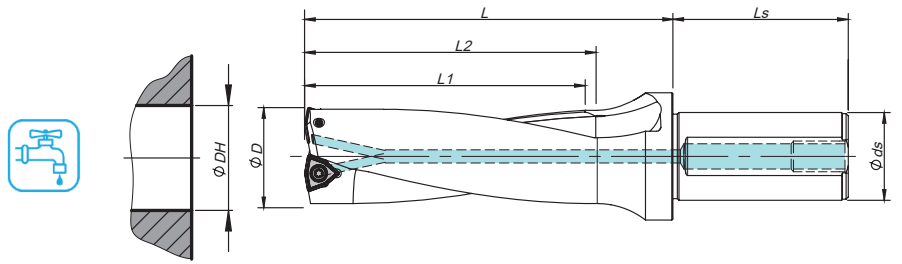
✓ - Available

✗ - 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  Page B - 302 L1 max = 174mm							
				SCS Drill (3D-4D)  Page B - 305 L1 max = 200mm				TDC 3D Drill  Page B - 304 L1 max = 240mm			
							SCC Drill (3D-4D)  Page B - 309 L1 max = 320mm				
Integrex Drills				DHS Drill (5D-8D)  Page B - 312 L1 max = 300mm							
						DHC Drill (5D-8D)  Page B - 314 L1 max = 640mm					
				TFD Drill (6D-8D)  Page B - 317 L1 max = 240mm							
Vortex Drills							MDO 10D - Vortex Drill  Page B - 318 L1 max = 900mm				
Trepanning Drills							PND Drill  Page B - 321 L1 max = 250mm				
Solid Carbide Drills			HBDP ... SC Drill (3D-5D)  Page B - 322 L1 max = 101mm								
			HBDP ... SC Drill (8D)  Page B - 330 L1 max = 162mm								

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











































Øds	Ls	BP / SP	ØDH tolerance (mm)	
			ØD	3D
20	50	PT-1/8	13,0 - 21,5	-0,10 / +0,15
25	56	PT-1/8	22,0 - 50,0	-0,12 / +0,20
32	60	PT-1/4	50,0 - 58,0	-0,15 / +0,25
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	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

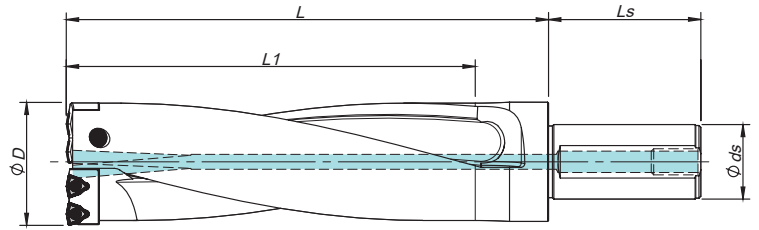
Order code Código	Reference Referência Referencia	Dimensions Dimensões Dimensiones (mm)					Insert	Insert Screw 	Torx key 	Stock 
		ØD	Ø ds	L1	L2	L				
184037300	TDS 26532-3D	26,5	32	80	83	113	WCKX 050308	P0300701	XT08	
184037400	TDS 27032-3D	27,0	32	81	84	114	WCKX 050308	P0300701	XT08	
184037500	TDS 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


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

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

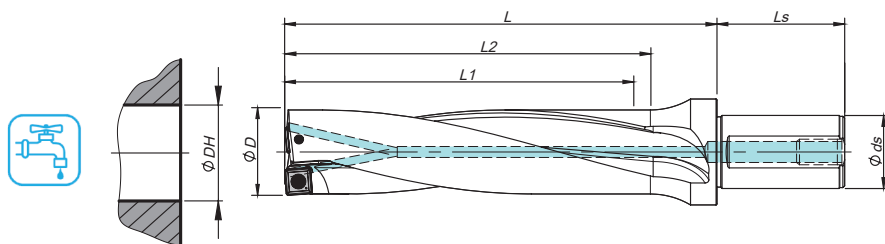


Øds	Ls	BP / SP
40	70	PT - 1/4































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	ØDH tolerance (mm)	
20	50	PT -1/8	ØD	3D
25	56	PT -1/8	13,0 - 21,5	-0,10 / +0,15
32	60	PT -1/4	22,0 - 50,0	-0,12 / +0,20
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	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

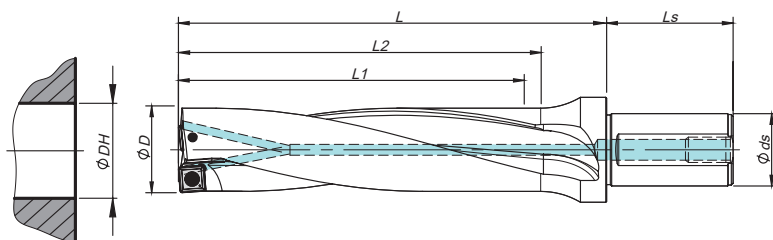
 Available under request | Disponível sobre consulta | Disponible bajo consulta

DRILLING
Jet Drills
Integrex Drills
Vortex Drills
Trepanning Drills
Solid Carbide Drills
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Spare Parts
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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	ØDH tolerance (mm)	
			ØD	4D
20	50	PT -1/8	13,0 - 21,5	-0,15 / +0,20
25	56	PT -1/8	22,0 - 50,0	-0,15 / +0,25
32	60	PT -1/4		
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	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

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

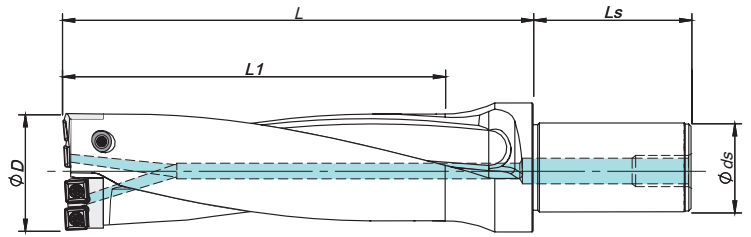
Order code Código	Reference Referência Referencia	Dimensions Dimensões Dimensiones (mm)					Insert	Insert Screw 	Torx key 	Stock 
		ØD	Ø ds	L1	L2	L				
184049800	SCS 26532-4D	26,5	32	106	109	139	SP... 07T308	P0250704	XT08	
184049900	SCS 27032-4D	27,0	32	108	111	141	SP... 07T308	P0250704	XT08	
184050000	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 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

3D

DRILLING

Jet Drills

Integrex Drills

Vortex Drills

Trepanning Drills

Solid Carbide Drills

Inserts

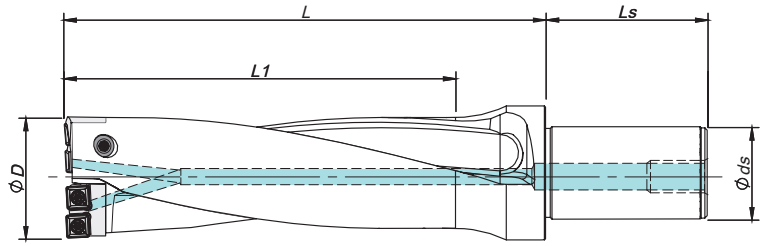
Spare Parts

Technical Data









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


Size adaptable cartridge (5mm)


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



Øds	Ls	BP / SP
40	70	PT - 1/4

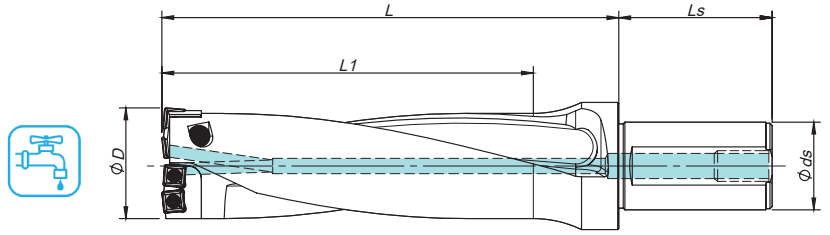
Order code Código	Reference Referência	Dimensions Dimensões Dimensiones (mm)				Cartridge	Insert	Insert Screw 	Torx key 	Stock
		ØD	Ø ds	L1	L					
184232400	SCC 505540-4D	50-55	40	220	260	SCC 050055-I/O	SPKX 090408	P0350903	XT15	
184232500	SCC 556040-4D	55-60	40	240	280	SCC 055060-I/O	SPKX 090408	P0350903	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)*

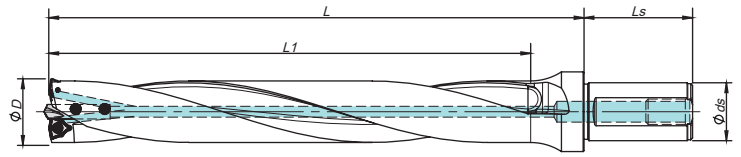


Øds	Ls	BP / SP
40	70	PT - 1/4

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



* Will be replaced by the new Drill version (size adjustment cartridge 5mm) when this type sold out.



New version / Standard version*

Øds	Ls	BP / SP
32	60 / 70	PT - 1/4

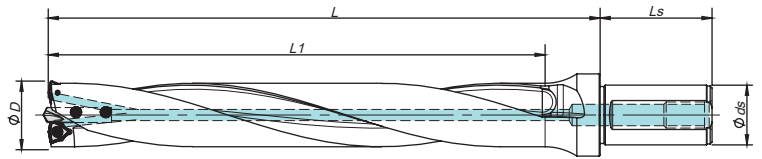
Order separately

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 separately

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

DRILLING

Jet Drills

Integrex Drills

Vortex Drills

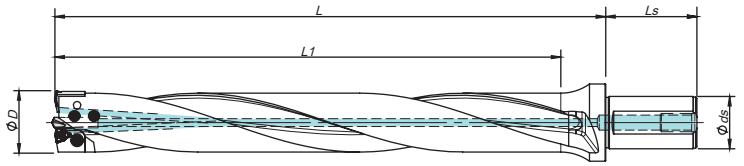
Trepanning Drills

Solid Carbide Drills

Inserts

Spare Parts

Technical Data



New version / Standard version*

Øds	Ls	BP / SP
40	70 / 80	PT - 1/4

Order separately

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	○

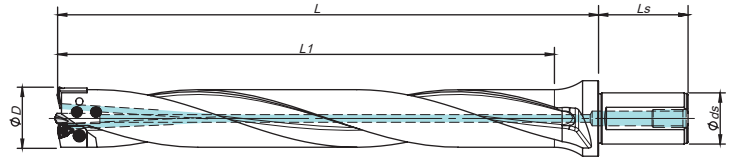
☑ Stock item | Produto de stock | Itens de stock ○ Available under request | Disponível sobre consulta | Disponible bajo consulta

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*

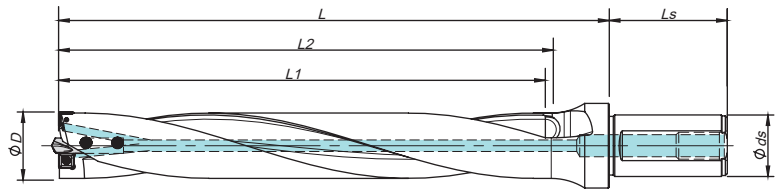
Øds	Ls	BP / SP
40	70 / 80	PT - 1/4

Order code Código	Reference Referência Referencia	Dimensions Dimensões Dimensiones (mm)				Cartridge	Insert	Order separately			Stock
		ØD	Ø ds	L1	L			Insert Screw	Torx key	Pilot drill	
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	56	PT - 1/8
32	60	PT - 1/4

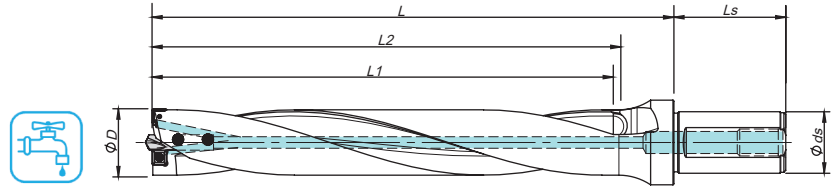
Order code Código	Reference Referência Referencia	Dimensions Dimensões Dimensiones (mm)					Insert	Insert Screw 	Torx key 	Pilot drill 	Stock
		ØD	Ø ds	L1	L2	L					
184154300	TFD 18025-6D	18,0	25	108	112	142	SPKX 050204	P0200500	XT06	MDP 2006	⊗
184154400	TFD 18525-6D	18,5	25	111	115	145	SPKX 050204	P0200500	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	⊗

Order separately

⊗ 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 separately

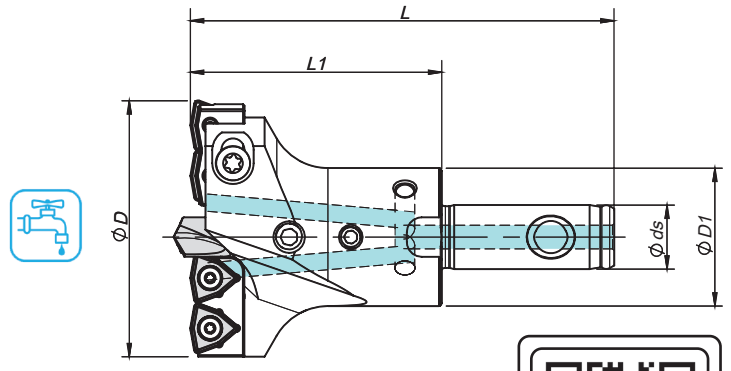
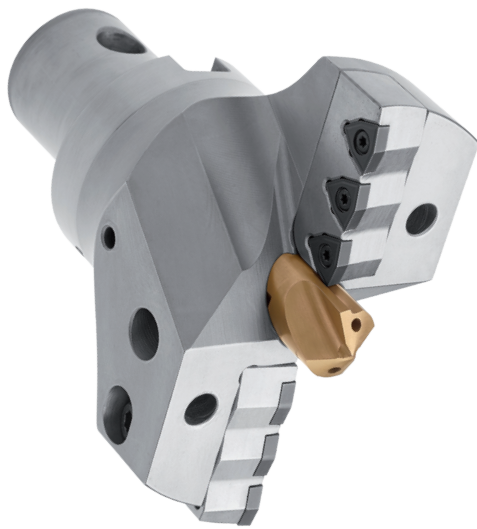
Order code Código	Reference Referência Referencia	Dimensions Dimensões Dimensiones (mm)					Insert	Insert Screw 	Torx key 	Pilot drill 	Stock
		ØD	Ø ds	L1	L2	L					
184151800	TFD 18025-8D	18,0	25	144	149	179	SPKX 050204	P0200500	XT06	MDP 2006	⊗
184151900	TFD 18525-8D	18,5	25	148	153	183	SPKX 050204	P0200500	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.

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



Order separately

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

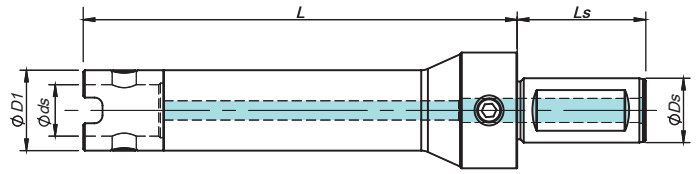
184033000	MDO 10010532	100-105	32	80	130	58	MDC 100105-I/O	WCKX 050308	P0300701	XT08	MDP 4520	📦
184066400	MDO 10511032	105-110	32	80	130	58	MDC 105110-I/O	WCKX 06T308	P0350903	XT15	MDP 4520	📦
184066500	MDO 11011532	110-115	32	80	130	58	MDC 110115-I/O	WCKX 06T308	P0350903	XT15	MDP 4520	📦
184066600	MDO 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*

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

Order separately

Order code Código	Reference Referência Referencia	Dimensions Dimensões Dimensiones (mm)				 Drive Ring	Stock
		ØDs	Øds	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 type of shank are supplied without drive ring. Please order them separately.

DRILLING

Jet Drills

Integrex Drills

Vortex Drills

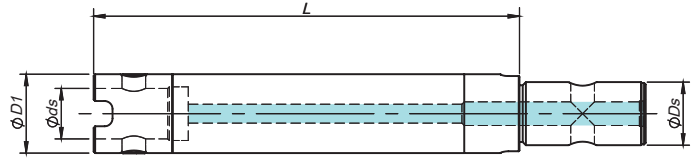
Trepanning Drills

Solid Carbide Drills


Inserts

Spare Parts

Technical Data

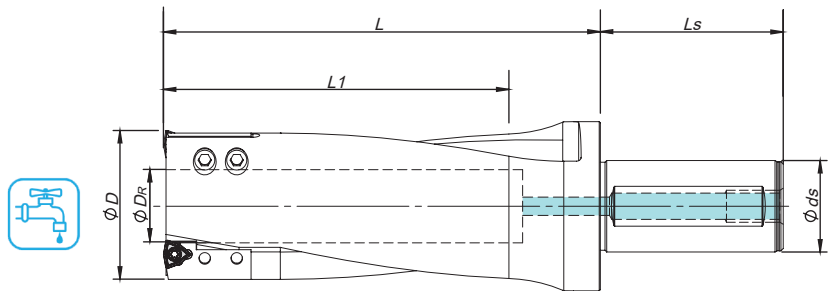


Order separately

Order code Código	Reference Referência Referencia	Dimensions Dimensões Dimensiones (mm)				Drive Ring 	Stock
		ØDs	Øds	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 type of shank 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

HBDPCE 2 03D

DRILLING

Jet Drills

Integrex Drills

Vortex Drills

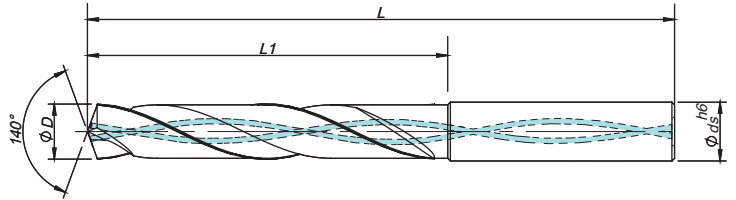
Trepanning Drills

Solid Carbide Drills

Inserts

Spare Parts

Technical Data



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	PHU920
		ØD	Ø ds	L1	L		
1180956Z9	HBDPCE 2 03D 0300-062020	3,00	6	20	62	2	⊗
1180957Z9	HBDPCE 2 03D 0310-062020	3,10	6	20	62	2	⊗
1180958Z9	HBDPCE 2 03D 0320-062020	3,20	6	20	62	2	⊗
1181791Z9	HBDPCE 2 03D 0325-062020	3,25	6	20	62	2	⊗
1180959Z9	HBDPCE 2 03D 0330-062020	3,30	6	20	62	2	⊗
1180960Z9	HBDPCE 2 03D 0340-062020	3,40	6	20	62	2	⊗
1180961Z9	HBDPCE 2 03D 0350-062020	3,50	6	20	62	2	⊗
1180962Z9	HBDPCE 2 03D 0360-062020	3,60	6	20	62	2	⊗
1180963Z9	HBDPCE 2 03D 0370-062020	3,70	6	20	62	2	⊗
1180964Z9	HBDPCE 2 03D 0380-066024	3,80	6	24	66	2	⊗
1180965Z9	HBDPCE 2 03D 0390-066024	3,90	6	24	66	2	⊗
1180966Z9	HBDPCE 2 03D 0400-066024	4,00	6	24	66	2	⊗
1180967Z9	HBDPCE 2 03D 0410-066024	4,10	6	24	66	2	⊗
1180968Z9	HBDPCE 2 03D 0420-066024	4,20	6	24	66	2	⊗
1180969Z9	HBDPCE 2 03D 0430-066024	4,30	6	24	66	2	⊗
1180970Z9	HBDPCE 2 03D 0440-066024	4,40	6	24	66	2	⊗
1180971Z9	HBDPCE 2 03D 0450-066024	4,50	6	24	66	2	⊗
1180972Z9	HBDPCE 2 03D 0460-066024	4,60	6	24	66	2	⊗
1181793Z9	HBDPCE 2 03D 0465-066024	4,65	6	24	66	2	⊗
1180973Z9	HBDPCE 2 03D 0470-066024	4,70	6	24	66	2	⊗
1180974Z9	HBDPCE 2 03D 0480-066028	4,80	6	28	66	2	⊗
1180975Z9	HBDPCE 2 03D 0490-066028	4,90	6	28	66	2	⊗

Order code Código	Reference Referência Referencia	Dimensions Dimensões Dimensiones (mm)				Z	PHU920
		ØD	Ø ds	L1	L		
1180976Z9	HBDPCE 2 03D 0500-066028	5,00	6	28	66	2	⊗
1180977Z9	HBDPCE 2 03D 0510-066028	5,10	6	28	66	2	⊗
1180978Z9	HBDPCE 2 03D 0520-066028	5,20	6	28	66	2	⊗
1180979Z9	HBDPCE 2 03D 0530-066028	5,30	6	28	66	2	⊗
1180980Z9	HBDPCE 2 03D 0540-066028	5,40	6	28	66	2	⊗
1180981Z9	HBDPCE 2 03D 0550-066028	5,50	6	28	66	2	⊗
1181795Z9	HBDPCE 2 03D 0555-066028	5,55	6	28	66	2	⊗
1180982Z9	HBDPCE 2 03D 0560-066028	5,60	6	28	66	2	⊗
1180983Z9	HBDPCE 2 03D 0570-066028	5,70	6	28	66	2	⊗
1180984Z9	HBDPCE 2 03D 0580-066028	5,80	6	28	66	2	⊗
1180985Z9	HBDPCE 2 03D 0590-066028	5,90	6	28	66	2	⊗
1180986Z9	HBDPCE 2 03D 0600-066028	6,00	6	28	66	2	⊗
1180987Z9	HBDPCE 2 03D 0610-079034	6,10	8	34	79	2	⊗
1180988Z9	HBDPCE 2 03D 0620-079034	6,20	8	34	79	2	⊗
1180989Z9	HBDPCE 2 03D 0630-079034	6,30	8	34	79	2	⊗
1180990Z9	HBDPCE 2 03D 0640-079034	6,40	8	34	79	2	⊗
1180991Z9	HBDPCE 2 03D 0650-079034	6,50	8	34	79	2	⊗
1180792Z9	HBDPCE 2 03D 0660-079034	6,60	8	34	79	2	⊗
1180992Z9	HBDPCE 2 03D 0670-079034	6,70	8	34	79	2	⊗
1180993Z9	HBDPCE 2 03D 0680-079034	6,80	8	34	79	2	⊗
1180994Z9	HBDPCE 2 03D 0690-079034	6,90	8	34	79	2	⊗
1180995Z9	HBDPCE 2 03D 0700-079034	7,00	8	34	79	2	⊗

⊗ Stock item | Produto de stock
Itens de stock

Available under request | Disponível sobre consulta
Disponível bajo consulta

Order code Código	Reference Referência Referencia	Dimensions Dimensões Dimensiones (mm)				Z	PHU920
		ØD	Ø ds	L1	L		
1180996Z9	HBDPCE 2 03D 0710-079041	7,10	8	41	79	2	⊗
1180997Z9	HBDPCE 2 03D 0720-079041	7,20	8	41	79	2	⊗
1180998Z9	HBDPCE 2 03D 0730-079041	7,30	8	41	79	2	⊗
1180999Z9	HBDPCE 2 03D 0740-079041	7,40	8	41	79	2	⊗
1181000Z9	HBDPCE 2 03D 0750-079041	7,50	8	41	79	2	⊗
1181001Z9	HBDPCE 2 03D 0760-079041	7,60	8	41	79	2	⊗
1181002Z9	HBDPCE 2 03D 0770-079041	7,70	8	41	79	2	⊗
1181003Z9	HBDPCE 2 03D 0780-079041	7,80	8	41	79	2	⊗
1181004Z9	HBDPCE 2 03D 0790-079041	7,90	8	41	79	2	⊗
1181005Z9	HBDPCE 2 03D 0800-079041	8,00	8	41	79	2	⊗
1181006Z9	HBDPCE 2 03D 0810-089047	8,10	10	47	89	2	⊗
1181007Z9	HBDPCE 2 03D 0820-089047	8,20	10	47	89	2	⊗
1181008Z9	HBDPCE 2 03D 0830-089047	8,30	10	47	89	2	⊗
1181009Z9	HBDPCE 2 03D 0840-089047	8,40	10	47	89	2	⊗
1181010Z9	HBDPCE 2 03D 0850-089047	8,50	10	47	89	2	⊗
1181011Z9	HBDPCE 2 03D 0860-089047	8,60	10	47	89	2	⊗
1181012Z9	HBDPCE 2 03D 0870-089047	8,70	10	47	89	2	⊗
1181013Z9	HBDPCE 2 03D 0880-089047	8,80	10	47	89	2	⊗
1181014Z9	HBDPCE 2 03D 0890-089047	8,90	10	47	89	2	⊗
1181015Z9	HBDPCE 2 03D 0900-089047	9,00	10	47	89	2	⊗
1181016Z9	HBDPCE 2 03D 0910-089047	9,10	10	47	89	2	⊗
1181017Z9	HBDPCE 2 03D 0920-089047	9,20	10	47	89	2	⊗
1181018Z9	HBDPCE 2 03D 0930-089047	9,30	10	47	89	2	⊗
1181019Z9	HBDPCE 2 03D 0940-089047	9,40	10	47	89	2	⊗
1181020Z9	HBDPCE 2 03D 0950-089047	9,50	10	47	89	2	⊗
1181021Z9	HBDPCE 2 03D 0960-089047	9,60	10	47	89	2	⊗
1181022Z9	HBDPCE 2 03D 0970-089047	9,70	10	47	89	2	⊗
1181023Z9	HBDPCE 2 03D 0980-089047	9,80	10	47	89	2	⊗
1181024Z9	HBDPCE 2 03D 0990-089047	9,90	10	47	89	2	⊗
1181025Z9	HBDPCE 2 03D 1000-089047	10,00	10	47	89	2	⊗
1181026Z9	HBDPCE 2 03D 1010-102055	10,10	12	55	102	2	⊗
1181027Z9	HBDPCE 2 03D 1020-102055	10,20	12	55	102	2	⊗
1181028Z9	HBDPCE 2 03D 1030-102055	10,30	12	55	102	2	⊗
1181029Z9	HBDPCE 2 03D 1040-102055	10,40	12	55	102	2	○
1181030Z9	HBDPCE 2 03D 1050-102055	10,50	12	55	102	2	⊗
1181031Z9	HBDPCE 2 03D 1060-102055	10,60	12	55	102	2	○
1181032Z9	HBDPCE 2 03D 1070-102055	10,70	12	55	102	2	○
1181033Z9	HBDPCE 2 03D 1080-102055	10,80	12	55	102	2	⊗
1181034Z9	HBDPCE 2 03D 1090-102055	10,90	12	55	102	2	○
1181035Z9	HBDPCE 2 03D 1100-102055	11,00	12	55	102	2	⊗
1181036Z9	HBDPCE 2 03D 1110-102055	11,10	12	55	102	2	○
1181037Z9	HBDPCE 2 03D 1120-102055	11,20	12	55	102	2	⊗
1181038Z9	HBDPCE 2 03D 1130-102055	11,30	12	55	102	2	○
1181039Z9	HBDPCE 2 03D 1140-102055	11,40	12	55	102	2	○

Order code Código	Reference Referência Referencia	Dimensions Dimensões Dimensiones (mm)				Z	PHU920
		ØD	Ø ds	L1	L		
1181040Z9	HBDPCE 2 03D 1150-102055	11,50	12	55	102	2	⊗
1181041Z9	HBDPCE 2 03D 1160-102055	11,60	12	55	102	2	○
1181042Z9	HBDPCE 2 03D 1170-102055	11,70	12	55	102	2	○
1181043Z9	HBDPCE 2 03D 1180-102055	11,80	12	55	102	2	⊗
1181044Z9	HBDPCE 2 03D 1190-102055	11,90	12	55	102	2	○
1181045Z9	HBDPCE 2 03D 1200-102055	12,00	12	55	102	2	⊗
1181046Z9	HBDPCE 2 03D 1250-107060	12,50	14	60	107	2	⊗
1181770Z9	HBDPCE 2 03D 1280-107060	12,80	14	60	107	2	⊗
1181047Z9	HBDPCE 2 03D 1300-107060	13,00	14	60	107	2	⊗
1181048Z9	HBDPCE 2 03D 1350-107060	13,50	14	60	107	2	⊗
1181772Z9	HBDPCE 2 03D 1380-107060	13,80	14	60	107	2	⊗
1181049Z9	HBDPCE 2 03D 1400-107060	14,00	14	60	107	2	⊗
1181774Z9	HBDPCE 2 03D 1420-115065	14,20	16	65	115	2	⊗
1181050Z9	HBDPCE 2 03D 1450-115065	14,50	16	65	115	2	⊗
1181776Z9	HBDPCE 2 03D 1480-115065	14,80	16	65	115	2	⊗
1181051Z9	HBDPCE 2 03D 1500-115065	15,00	16	65	115	2	⊗
1181052Z9	HBDPCE 2 03D 1550-115065	15,50	16	65	115	2	⊗
1181778Z9	HBDPCE 2 03D 1580-115065	15,80	16	65	115	2	⊗
1181053Z9	HBDPCE 2 03D 1600-115065	16,00	16	65	115	2	⊗
1181054Z9	HBDPCE 2 03D 1650-123073	16,50	18	73	123	2	⊗
1181055Z9	HBDPCE 2 03D 1700-123073	17,00	18	73	123	2	⊗
1181056Z9	HBDPCE 2 03D 1750-123073	17,50	18	73	123	2	⊗
1181057Z9	HBDPCE 2 03D 1800-123073	18,00	18	73	123	2	⊗
1181058Z9	HBDPCE 2 03D 1850-131079	18,50	20	79	131	2	⊗
1181059Z9	HBDPCE 2 03D 1900-131079	19,00	20	79	131	2	⊗
1181060Z9	HBDPCE 2 03D 1950-131079	19,50	20	79	131	2	⊗
1181061Z9	HBDPCE 2 03D 2000-131079	20,00	20	79	131	2	⊗

⊗ Stock item | Produto de stock
Itens de stock

○ Available under request | Disponível sobre consulta
Disponível bajo consulta

HBDPUE 2 03D

DRILLING

Jet Drills

Integrex Drills

Vortex Drills

Trepanning Drills

Solid Carbide Drills

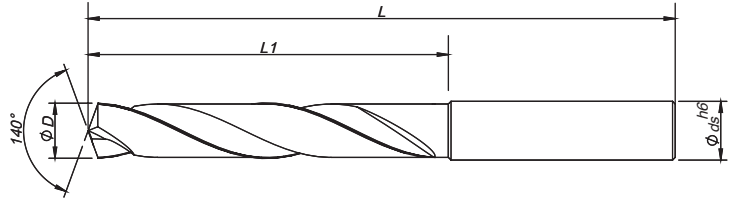
Inserts

Spare Parts

Technical Data



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	PHU920
		ØD	Ø ds	L1	L		
1180784Z9	HBDPUE 2 03D 0300-062020	3,00	6	20	62	2	⊗
1180852Z9	HBDPUE 2 03D 0310-062020	3,10	6	20	62	2	⊗
1180853Z9	HBDPUE 2 03D 0320-062020	3,20	6	20	62	2	⊗
1181790Z9	HBDPUE 2 03D 0325-062020	3,25	6	20	62	2	⊗
1180854Z9	HBDPUE 2 03D 0330-062020	3,30	6	20	62	2	⊗
1180790Z9	HBDPUE 2 03D 0340-062020	3,40	6	20	62	2	⊗
1180855Z9	HBDPUE 2 03D 0350-062020	3,50	6	20	62	2	⊗
1180856Z9	HBDPUE 2 03D 0360-062020	3,60	6	20	62	2	⊗
1180857Z9	HBDPUE 2 03D 0370-062020	3,70	6	20	62	2	⊗
1180858Z9	HBDPUE 2 03D 0380-066024	3,80	6	24	66	2	⊗
1180859Z9	HBDPUE 2 03D 0390-066024	3,90	6	24	66	2	⊗
1180860Z9	HBDPUE 2 03D 0400-066024	4,00	6	24	66	2	⊗
1180861Z9	HBDPUE 2 03D 0410-066024	4,10	6	24	66	2	⊗
1180862Z9	HBDPUE 2 03D 0420-066024	4,20	6	24	66	2	⊗
1180863Z9	HBDPUE 2 03D 0430-066024	4,30	6	24	66	2	⊗
1180864Z9	HBDPUE 2 03D 0440-066024	4,40	6	24	66	2	⊗
1180865Z9	HBDPUE 2 03D 0450-066024	4,50	6	24	66	2	⊗
1180866Z9	HBDPUE 2 03D 0460-066024	4,60	6	24	66	2	⊗
1181792Z9	HBDPUE 2 03D 0465-066024	4,65	6	24	66	2	⊗
1180867Z9	HBDPUE 2 03D 0470-066024	4,70	6	24	66	2	⊗
1180868Z9	HBDPUE 2 03D 0480-066028	4,80	6	28	66	2	⊗
1180869Z9	HBDPUE 2 03D 0490-066028	4,90	6	28	66	2	⊗

Order code Código	Reference Referência Referencia	Dimensions Dimensões Dimensiones (mm)				Z	PHU920
		ØD	Ø ds	L1	L		
1180870Z9	HBDPUE 2 03D 0500-066028	5,00	6	28	66	2	⊗
1181592Z9	HBDPUE 2 03D 0510-062028	5,10	6	28	62	2	○
1180871Z9	HBDPUE 2 03D 0510-066028	5,10	6	28	66	2	⊗
1180872Z9	HBDPUE 2 03D 0520-066028	5,20	6	28	66	2	⊗
1180873Z9	HBDPUE 2 03D 0530-066028	5,30	6	28	66	2	⊗
1180874Z9	HBDPUE 2 03D 0540-066028	5,40	6	28	66	2	⊗
1180875Z9	HBDPUE 2 03D 0550-066028	5,50	6	28	66	2	⊗
1181794Z9	HBDPUE 2 03D 0555-066028	5,55	6	28	66	2	⊗
1180791Z9	HBDPUE 2 03D 0560-066028	5,60	6	28	66	2	⊗
1180876Z9	HBDPUE 2 03D 0570-066028	5,70	6	28	66	2	⊗
1180877Z9	HBDPUE 2 03D 0580-066028	5,80	6	28	66	2	⊗
1180878Z9	HBDPUE 2 03D 0590-066028	5,90	6	28	66	2	⊗
1180879Z9	HBDPUE 2 03D 0600-066028	6,00	6	28	66	2	⊗
1180880Z9	HBDPUE 2 03D 0610-079034	6,10	8	34	79	2	⊗
1180881Z9	HBDPUE 2 03D 0620-079034	6,20	8	34	79	2	⊗
1180882Z9	HBDPUE 2 03D 0630-079034	6,30	8	34	79	2	⊗
1180883Z9	HBDPUE 2 03D 0640-079034	6,40	8	34	79	2	⊗
1180884Z9	HBDPUE 2 03D 0650-079034	6,50	8	34	79	2	⊗
1180885Z9	HBDPUE 2 03D 0660-079034	6,60	8	34	79	2	⊗
1180886Z9	HBDPUE 2 03D 0670-079034	6,70	8	34	79	2	⊗
1180887Z9	HBDPUE 2 03D 0680-079034	6,80	8	34	79	2	⊗
1180888Z9	HBDPUE 2 03D 0690-079034	6,90	8	34	79	2	⊗

⊗ Stock item | Produto de stock
Itens de stock

○ Available under request | Disponível sobre consulta
Disponível bajo consulta

Order code Código	Reference Referência Referencia	Dimensions Dimensões Dimensiones (mm)				Z	PHU920
		ØD	Ø ds	L1	L		
1180889Z9	HBDPUE 2 03D 0700-079034	7,00	8	34	79	2	⊗
1180890Z9	HBDPUE 2 03D 0710-079041	7,10	8	41	79	2	⊗
1180891Z9	HBDPUE 2 03D 0720-079041	7,20	8	41	79	2	⊗
1180892Z9	HBDPUE 2 03D 0730-079041	7,30	8	41	79	2	⊗
1180893Z9	HBDPUE 2 03D 0740-079041	7,40	8	41	79	2	⊗
1180894Z9	HBDPUE 2 03D 0750-079041	7,50	8	41	79	2	⊗
1180895Z9	HBDPUE 2 03D 0760-079041	7,60	8	41	79	2	⊗
1180896Z9	HBDPUE 2 03D 0770-079041	7,70	8	41	79	2	⊗
1180897Z9	HBDPUE 2 03D 0780-079041	7,80	8	41	79	2	⊗
1180898Z9	HBDPUE 2 03D 0790-079041	7,90	8	41	79	2	⊗
1180899Z9	HBDPUE 2 03D 0800-079041	8,00	8	41	79	2	⊗
1180900Z9	HBDPUE 2 03D 0810-089047	8,10	10	47	89	2	⊗
1180901Z9	HBDPUE 2 03D 0820-089047	8,20	10	47	89	2	⊗
1180902Z9	HBDPUE 2 03D 0830-089047	8,30	10	47	89	2	⊗
1180903Z9	HBDPUE 2 03D 0840-089047	8,40	10	47	89	2	⊗
1180904Z9	HBDPUE 2 03D 0850-089047	8,50	10	47	89	2	⊗
1180905Z9	HBDPUE 2 03D 0860-089047	8,60	10	47	89	2	⊗
1180906Z9	HBDPUE 2 03D 0870-089047	8,70	10	47	89	2	⊗
1180907Z9	HBDPUE 2 03D 0880-089047	8,80	10	47	89	2	⊗
1180908Z9	HBDPUE 2 03D 0890-089047	8,90	10	47	89	2	○
1180909Z9	HBDPUE 2 03D 0900-089047	9,00	10	47	89	2	⊗
1180910Z9	HBDPUE 2 03D 0910-089047	9,10	10	47	89	2	⊗
1180911Z9	HBDPUE 2 03D 0920-089047	9,20	10	47	89	2	⊗
1180912Z9	HBDPUE 2 03D 0930-089047	9,30	10	47	89	2	⊗
1180913Z9	HBDPUE 2 03D 0940-089047	9,40	10	47	89	2	⊗
1180914Z9	HBDPUE 2 03D 0950-089047	9,50	10	47	89	2	⊗
1180915Z9	HBDPUE 2 03D 0960-089047	9,60	10	47	89	2	⊗
1180916Z9	HBDPUE 2 03D 0970-089047	9,70	10	47	89	2	⊗
1180917Z9	HBDPUE 2 03D 0980-089047	9,80	10	47	89	2	⊗
1180918Z9	HBDPUE 2 03D 0990-089047	9,90	10	47	89	2	⊗
1180919Z9	HBDPUE 2 03D 1000-089047	10,00	10	47	89	2	⊗
1180920Z9	HBDPUE 2 03D 1010-102055	10,10	12	55	102	2	⊗
1180921Z9	HBDPUE 2 03D 1020-102055	10,20	12	55	102	2	⊗
1180922Z9	HBDPUE 2 03D 1030-102055	10,30	12	55	102	2	⊗
1180923Z9	HBDPUE 2 03D 1040-102055	10,40	12	55	102	2	○
1180924Z9	HBDPUE 2 03D 1050-102055	10,50	12	55	102	2	⊗
1180925Z9	HBDPUE 2 03D 1060-102055	10,60	12	55	102	2	○
1180926Z9	HBDPUE 2 03D 1070-102055	10,70	12	55	102	2	○
1180927Z9	HBDPUE 2 03D 1080-102055	10,80	12	55	102	2	⊗
1180928Z9	HBDPUE 2 03D 1090-102055	10,90	12	55	102	2	○
1180929Z9	HBDPUE 2 03D 1100-102055	11,00	12	55	102	2	⊗
1180930Z9	HBDPUE 2 03D 1110-102055	11,10	12	55	102	2	○
1180931Z9	HBDPUE 2 03D 1120-102055	11,20	12	55	102	2	⊗
1180932Z9	HBDPUE 2 03D 1130-102055	11,30	12	55	102	2	○

Order code Código	Reference Referência Referencia	Dimensions Dimensões Dimensiones (mm)				Z	PHU920
		ØD	Ø ds	L1	L		
1180933Z9	HBDPUE 2 03D 1140-102055	11,40	12	55	102	2	○
1180934Z9	HBDPUE 2 03D 1150-102055	11,50	12	55	102	2	⊗
1180935Z9	HBDPUE 2 03D 1160-102055	11,60	12	55	102	2	○
1180936Z9	HBDPUE 2 03D 1170-102055	11,70	12	55	102	2	○
1180937Z9	HBDPUE 2 03D 1180-102055	11,80	12	55	102	2	⊗
1180938Z9	HBDPUE 2 03D 1190-102055	11,90	12	55	102	2	○
1180939Z9	HBDPUE 2 03D 1200-102055	12,00	12	55	102	2	⊗
1180940Z9	HBDPUE 2 03D 1250-107060	12,50	14	60	107	2	⊗
1181769Z9	HBDPUE 2 03D 1280-107060	12,80	14	60	107	2	⊗
1180941Z9	HBDPUE 2 03D 1300-107060	13,00	14	60	107	2	⊗
1180942Z9	HBDPUE 2 03D 1350-107060	13,50	14	60	107	2	⊗
1181771Z9	HBDPUE 2 03D 1380-107060	13,80	14	60	107	2	⊗
1180943Z9	HBDPUE 2 03D 1400-107060	14,00	14	60	107	2	⊗
1181773Z9	HBDPUE 2 03D 1420-115065	14,20	16	65	115	2	⊗
1180944Z9	HBDPUE 2 03D 1450-115065	14,50	16	65	115	2	⊗
1181775Z9	HBDPUE 2 03D 1480-115065	14,80	16	65	115	2	⊗
1180945Z9	HBDPUE 2 03D 1500-115065	15,00	16	65	115	2	⊗
1180946Z9	HBDPUE 2 03D 1550-115065	15,50	16	65	115	2	⊗
1181777Z9	HBDPUE 2 03D 1580-115065	15,80	16	65	115	2	⊗
1180947Z9	HBDPUE 2 03D 1600-115065	16,00	16	65	115	2	⊗
1180948Z9	HBDPUE 2 03D 1650-123073	16,50	18	73	123	2	⊗
1180949Z9	HBDPUE 2 03D 1700-123073	17,00	18	73	123	2	⊗
1180950Z9	HBDPUE 2 03D 1750-123073	17,50	18	73	123	2	⊗
1180951Z9	HBDPUE 2 03D 1800-123073	18,00	18	73	123	2	⊗
1180952Z9	HBDPUE 2 03D 1850-131079	18,50	20	79	131	2	⊗
1180953Z9	HBDPUE 2 03D 1900-131079	19,00	20	79	131	2	⊗
1180954Z9	HBDPUE 2 03D 1950-131079	19,50	20	79	131	2	⊗
1180955Z9	HBDPUE 2 03D 2000-131079	20,00	20	79	131	2	⊗

⊗ Stock item | Produto de stock
Itens de stock

○ Available under request | Disponível sobre consulta
Disponível bajo consulta

HBDPCE 2 05D

DRILLING

Jet Drills

Integrex Drills

Vortex Drills

Trepanning Drills

Solid Carbide Drills

Inserts

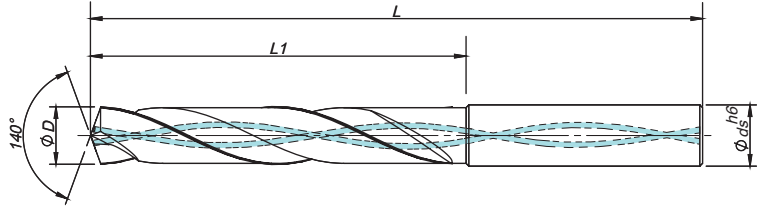
Spare Parts

Technical Data

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	PHU920
		ØD	Ø ds	L1	L		
1180788Z9	HBDPCE 2 05D 0300-066028	3,00	6	28	66	2	☉
1181160Z9	HBDPCE 2 05D 0310-066028	3,10	6	28	66	2	☉
1181161Z9	HBDPCE 2 05D 0320-066028	3,20	6	28	66	2	☉
1181825Z9	HBDPCE 2 05D 0325-066028	3,25	6	28	66	2	☉
1181162Z9	HBDPCE 2 05D 0330-066028	3,30	6	28	66	2	☉
1180797Z9	HBDPCE 2 05D 0340-066028	3,40	6	28	66	2	☉
1181163Z9	HBDPCE 2 05D 0350-066028	3,50	6	28	66	2	☉
1181164Z9	HBDPCE 2 05D 0360-066028	3,60	6	28	66	2	☉
1180798Z9	HBDPCE 2 05D 0370-066028	3,70	6	28	66	2	☉
1181165Z9	HBDPCE 2 05D 0380-074036	3,80	6	36	74	2	☉
1181166Z9	HBDPCE 2 05D 0390-074036	3,90	6	36	74	2	☉
1181167Z9	HBDPCE 2 05D 0400-074036	4,00	6	36	74	2	☉
1181168Z9	HBDPCE 2 05D 0410-074036	4,10	6	36	74	2	☉
1180799Z9	HBDPCE 2 05D 0420-074036	4,20	6	36	74	2	☉
1180800Z9	HBDPCE 2 05D 0430-074036	4,30	6	36	74	2	☉
1181169Z9	HBDPCE 2 05D 0440-074036	4,40	6	36	74	2	☉
1181170Z9	HBDPCE 2 05D 0450-074036	4,50	6	36	74	2	☉
1181171Z9	HBDPCE 2 05D 0460-074036	4,60	6	36	74	2	☉
1181535Z9	HBDPCE 2 05D 0465-074036	4,65	6	36	74	2	☉
1181172Z9	HBDPCE 2 05D 0470-074036	4,70	6	36	74	2	☉
1181173Z9	HBDPCE 2 05D 0480-082044	4,80	6	44	82	2	☉
1181174Z9	HBDPCE 2 05D 0490-082044	4,90	6	44	82	2	☉

Order code Código	Reference Referência Referencia	Dimensions Dimensões Dimensiones (mm)				Z	PHU920
		ØD	Ø ds	L1	L		
1180801Z9	HBDPCE 2 05D 0500-082044	5,00	6	44	82	2	☉
1181175Z9	HBDPCE 2 05D 0510-082044	5,10	6	44	82	2	☉
1181176Z9	HBDPCE 2 05D 0520-082044	5,20	6	44	82	2	☉
1181177Z9	HBDPCE 2 05D 0530-082044	5,30	6	44	82	2	☉
1181178Z9	HBDPCE 2 05D 0540-082044	5,40	6	44	82	2	☉
1181179Z9	HBDPCE 2 05D 0550-082044	5,50	6	44	82	2	☉
1181536Z9	HBDPCE 2 05D 0555-082044	5,55	6	44	82	2	☉
1181180Z9	HBDPCE 2 05D 0560-082044	5,60	6	44	82	2	☉
1181181Z9	HBDPCE 2 05D 0570-082044	5,70	6	44	82	2	☉
1180802Z9	HBDPCE 2 05D 0580-082044	5,80	6	44	82	2	☉
1181182Z9	HBDPCE 2 05D 0590-082044	5,90	6	44	82	2	☉
1181183Z9	HBDPCE 2 05D 0600-082044	6,00	6	44	82	2	☉
1181184Z9	HBDPCE 2 05D 0610-091053	6,10	8	53	91	2	☉
1181185Z9	HBDPCE 2 05D 0620-091053	6,20	8	53	91	2	☉
1181186Z9	HBDPCE 2 05D 0630-091053	6,30	8	53	91	2	☉
1181187Z9	HBDPCE 2 05D 0640-091053	6,40	8	53	91	2	☉
1180787Z9	HBDPCE 2 05D 0650-091053	6,50	8	53	91	2	☉
1181188Z9	HBDPCE 2 05D 0660-091053	6,60	8	53	91	2	☉
1181189Z9	HBDPCE 2 05D 0670-091053	6,70	8	53	91	2	☉
1180803Z9	HBDPCE 2 05D 0680-091053	6,80	8	53	91	2	☉
1181190Z9	HBDPCE 2 05D 0690-091053	6,90	8	53	91	2	☉
1180804Z9	HBDPCE 2 05D 0700-091053	7,00	8	53	91	2	☉

☉ Stock item | Produto de stock
Itens de stock

○ Available under request | Disponível sobre consulta
Disponível bajo consulta

Order code Código	Reference Referência Referencia	Dimensions Dimensões Dimensiones (mm)				Z	PHU920
		ØD	Ø ds	L1	L		
1181191Z9	HBDPCE 2 05D 0710-091053	7,10	8	53	91	2	⊗
1181192Z9	HBDPCE 2 05D 0720-091053	7,20	8	53	91	2	⊗
1181193Z9	HBDPCE 2 05D 0730-091053	7,30	8	53	91	2	⊗
1180805Z9	HBDPCE 2 05D 0740-091053	7,40	8	53	91	2	⊗
1181194Z9	HBDPCE 2 05D 0750-091053	7,50	8	53	91	2	⊗
1181195Z9	HBDPCE 2 05D 0760-091053	7,60	8	53	91	2	⊗
1181196Z9	HBDPCE 2 05D 0770-091053	7,70	8	53	91	2	⊗
1181197Z9	HBDPCE 2 05D 0780-091053	7,80	8	53	91	2	⊗
1181198Z9	HBDPCE 2 05D 0790-091053	7,90	8	53	91	2	⊗
1181199Z9	HBDPCE 2 05D 0800-091053	8,00	8	53	91	2	⊗
1181200Z9	HBDPCE 2 05D 0810-103061	8,10	10	61	103	2	⊗
1181201Z9	HBDPCE 2 05D 0820-103061	8,20	10	61	103	2	⊗
1181202Z9	HBDPCE 2 05D 0830-103061	8,30	10	61	103	2	⊗
1181203Z9	HBDPCE 2 05D 0840-103061	8,40	10	61	103	2	⊗
1180806Z9	HBDPCE 2 05D 0850-103061	8,50	10	61	103	2	⊗
1181204Z9	HBDPCE 2 05D 0860-103061	8,60	10	61	103	2	⊗
1181205Z9	HBDPCE 2 05D 0870-103061	8,70	10	61	103	2	⊗
1181206Z9	HBDPCE 2 05D 0880-103061	8,80	10	61	103	2	⊗
1181207Z9	HBDPCE 2 05D 0890-103061	8,90	10	61	103	2	⊗
1180807Z9	HBDPCE 2 05D 0900-103061	9,00	10	61	103	2	⊗
1181208Z9	HBDPCE 2 05D 0910-103061	9,10	10	61	103	2	⊗
1181209Z9	HBDPCE 2 05D 0920-103061	9,20	10	61	103	2	⊗
1181210Z9	HBDPCE 2 05D 0930-103061	9,30	10	61	103	2	⊗
1181211Z9	HBDPCE 2 05D 0940-103061	9,40	10	61	103	2	⊗
1181212Z9	HBDPCE 2 05D 0950-103061	9,50	10	61	103	2	⊗
1181213Z9	HBDPCE 2 05D 0960-103061	9,60	10	61	103	2	⊗
1181214Z9	HBDPCE 2 05D 0970-103061	9,70	10	61	103	2	⊗
1181215Z9	HBDPCE 2 05D 0980-103061	9,80	10	61	103	2	⊗
1181216Z9	HBDPCE 2 05D 0990-103061	9,90	10	61	103	2	⊗
1181217Z9	HBDPCE 2 05D 1000-103061	10,00	10	61	103	2	⊗
1181218Z9	HBDPCE 2 05D 1010-118071	10,10	12	71	118	2	⊗
1180808Z9	HBDPCE 2 05D 1020-118071	10,20	12	71	118	2	⊗
1181219Z9	HBDPCE 2 05D 1030-118071	10,30	12	71	118	2	⊗
1181220Z9	HBDPCE 2 05D 1040-118071	10,40	12	71	118	2	⊗
1180809Z9	HBDPCE 2 05D 1050-118071	10,50	12	71	118	2	⊗
1180810Z9	HBDPCE 2 05D 1060-118071	10,60	12	71	118	2	○
1181221Z9	HBDPCE 2 05D 1070-118071	10,70	12	71	118	2	○
1181222Z9	HBDPCE 2 05D 1080-118071	10,80	12	71	118	2	⊗
1181223Z9	HBDPCE 2 05D 1090-118071	10,90	12	71	118	2	○
1180811Z9	HBDPCE 2 05D 1100-118071	11,00	12	71	118	2	⊗
1181224Z9	HBDPCE 2 05D 1110-118071	11,10	12	71	118	2	⊗
1181225Z9	HBDPCE 2 05D 1120-118071	11,20	12	71	118	2	⊗
1181226Z9	HBDPCE 2 05D 1130-118071	11,30	12	71	118	2	⊗
1181227Z9	HBDPCE 2 05D 1140-118071	11,40	12	71	118	2	○

Order code Código	Reference Referência Referencia	Dimensions Dimensões Dimensiones (mm)				Z	PHU920
		ØD	Ø ds	L1	L		
1180812Z9	HBDPCE 2 05D 1150-118071	11,50	12	71	118	2	⊗
1181228Z9	HBDPCE 2 05D 1160-118071	11,60	12	71	118	2	○
1181229Z9	HBDPCE 2 05D 1170-118071	11,70	12	71	118	2	○
1181230Z9	HBDPCE 2 05D 1180-118071	11,80	12	71	118	2	⊗
1181231Z9	HBDPCE 2 05D 1190-118071	11,90	12	71	118	2	○
1180813Z9	HBDPCE 2 05D 1200-118071	12,00	12	71	118	2	⊗
1181805Z9	HBDPCE 2 05D 1220-124077	12,20	14	77	124	2	⊗
1181232Z9	HBDPCE 2 05D 1250-124077	12,50	14	77	124	2	⊗
1181806Z9	HBDPCE 2 05D 1280-124077	12,80	14	77	124	2	⊗
1180814Z9	HBDPCE 2 05D 1300-124077	13,00	14	77	124	2	⊗
1182267Z9	HBDPCE 2 05D 1320-124077	14,00	14	77	124	2	⊗
1181233Z9	HBDPCE 2 05D 1350-124077	13,50	14	77	124	2	⊗
1181807Z9	HBDPCE 2 05D 1380-124077	13,80	14	77	124	2	⊗
1181808Z9	HBDPCE 2 05D 1390-124077	13,90	14	77	124	2	⊗
1181234Z9	HBDPCE 2 05D 1400-124077	14,00	14	77	124	2	⊗
1181809Z9	HBDPCE 2 05D 1420-133083	14,20	16	83	133	2	⊗
1181235Z9	HBDPCE 2 05D 1450-133083	14,50	16	83	133	2	⊗
1181810Z9	HBDPCE 2 05D 1480-133083	14,80	16	83	133	2	⊗
1181236Z9	HBDPCE 2 05D 1500-133083	15,00	16	83	133	2	⊗
1181811Z9	HBDPCE 2 05D 1520-133083	15,20	16	83	133	2	⊗
1181237Z9	HBDPCE 2 05D 1550-133083	15,50	16	83	133	2	⊗
1181812Z9	HBDPCE 2 05D 1570-133083	15,70	16	83	133	2	⊗
1180815Z9	HBDPCE 2 05D 1580-133083	15,80	16	83	133	2	⊗
1181238Z9	HBDPCE 2 05D 1600-133083	16,00	16	83	133	2	⊗
1181239Z9	HBDPCE 2 05D 1650-143093	16,50	18	93	143	2	⊗
1181240Z9	HBDPCE 2 05D 1700-143093	17,00	18	93	143	2	⊗
1180816Z9	HBDPCE 2 05D 1750-143093	17,50	18	93	143	2	⊗
1181241Z9	HBDPCE 2 05D 1800-143093	18,00	18	93	143	2	⊗
1181242Z9	HBDPCE 2 05D 1850-153101	18,50	20	101	153	2	⊗
1181243Z9	HBDPCE 2 05D 1900-153101	19,00	20	101	153	2	⊗
1181244Z9	HBDPCE 2 05D 1950-153101	19,50	20	101	153	2	⊗
1181245Z9	HBDPCE 2 05D 2000-153101	20,00	20	101	153	2	⊗

⊗ Stock item | Produto de stock
Itens de stock

○ Available under request | Disponível sobre consulta
Disponível bajo consulta

HBDPUE 2 05D

DRILLING

Jet Drills

Integrex Drills

Vortex Drills

Trepanning Drills

Solid Carbide Drills

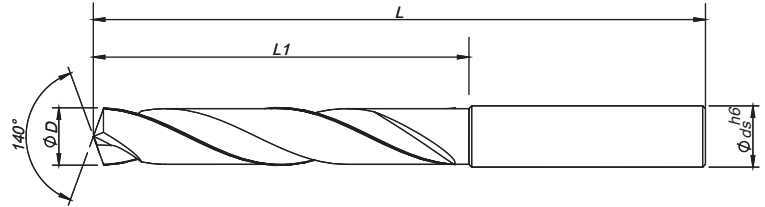
Inserts

Spare Parts

Technical Data

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	PHU920
		ØD	Ø ds	L1	L		
1180793Z9	HBDPUE 2 05D 0300-066028	3,00	6	28	66	2	⊗
1180794Z9	HBDPUE 2 05D 0310-066028	3,10	6	28	66	2	⊗
1181062Z9	HBDPUE 2 05D 0320-066028	3,20	6	28	66	2	⊗
1181063Z9	HBDPUE 2 05D 0330-066028	3,30	6	28	66	2	⊗
1180789Z9	HBDPUE 2 05D 0340-066028	3,40	6	28	66	2	⊗
1181064Z9	HBDPUE 2 05D 0350-066028	3,50	6	28	66	2	○
1181065Z9	HBDPUE 2 05D 0360-066028	3,60	6	28	66	2	○
1181066Z9	HBDPUE 2 05D 0370-066028	3,70	6	28	66	2	○
1181067Z9	HBDPUE 2 05D 0380-074036	3,80	6	36	74	2	⊗
1180795Z9	HBDPUE 2 05D 0390-074036	3,90	6	36	74	2	○
1181068Z9	HBDPUE 2 05D 0400-074036	4,00	6	36	74	2	⊗
1181069Z9	HBDPUE 2 05D 0410-074036	4,10	6	36	74	2	⊗
1180785Z9	HBDPUE 2 05D 0420-074036	4,20	6	36	74	2	⊗
1181070Z9	HBDPUE 2 05D 0430-074036	4,30	6	36	74	2	⊗
1181071Z9	HBDPUE 2 05D 0440-074036	4,40	6	36	74	2	○
1181072Z9	HBDPUE 2 05D 0450-074036	4,50	6	36	74	2	⊗
1181073Z9	HBDPUE 2 05D 0460-074036	4,60	6	36	74	2	○
1181534Z9	HBDPUE 2 05D 0465-074036	4,65	6	36	74	2	○
1180786Z9	HBDPUE 2 05D 0470-074036	4,70	6	36	74	2	⊗
1181074Z9	HBDPUE 2 05D 0480-082044	4,80	6	44	82	2	⊗
1181075Z9	HBDPUE 2 05D 0490-082044	4,90	6	44	82	2	○
1180782Z9	HBDPUE 2 05D 0500-082044	5,00	6	44	82	2	⊗

Order code Código	Reference Referência Referencia	Dimensions Dimensões Dimensiones (mm)				Z	PHU920
		ØD	Ø ds	L1	L		
1181076Z9	HBDPUE 2 05D 0510-082044	5,10	6	44	82	2	⊗
1181077Z9	HBDPUE 2 05D 0520-082044	5,20	6	44	82	2	⊗
1181078Z9	HBDPUE 2 05D 0530-082044	5,30	6	44	82	2	○
1181079Z9	HBDPUE 2 05D 0540-082044	5,40	6	44	82	2	○
1181080Z9	HBDPUE 2 05D 0550-082044	5,50	6	44	82	2	○
1181081Z9	HBDPUE 2 05D 0560-082044	5,60	6	44	82	2	⊗
1181082Z9	HBDPUE 2 05D 0570-082044	5,70	6	44	82	2	○
1181083Z9	HBDPUE 2 05D 0580-082044	5,80	6	44	82	2	⊗
1181084Z9	HBDPUE 2 05D 0590-082044	5,90	6	44	82	2	○
1181085Z9	HBDPUE 2 05D 0600-082044	6,00	6	44	82	2	⊗
1181086Z9	HBDPUE 2 05D 0610-091053	6,10	8	53	91	2	○
1181087Z9	HBDPUE 2 05D 0620-091053	6,20	8	53	91	2	○
1181088Z9	HBDPUE 2 05D 0630-091053	6,30	8	53	91	2	○
1181089Z9	HBDPUE 2 05D 0640-091053	6,40	8	53	91	2	⊗
1181090Z9	HBDPUE 2 05D 0650-091053	6,50	8	53	91	2	⊗
1181091Z9	HBDPUE 2 05D 0660-091053	6,60	8	53	91	2	○
1181092Z9	HBDPUE 2 05D 0670-091053	6,70	8	53	91	2	○
1180781Z9	HBDPUE 2 05D 0680-091053	6,80	8	53	91	2	⊗
1181093Z9	HBDPUE 2 05D 0690-091053	6,90	8	53	91	2	⊗
1181094Z9	HBDPUE 2 05D 0700-091053	7,00	8	53	91	2	⊗
1181095Z9	HBDPUE 2 05D 0710-091053	7,10	8	53	91	2	○
1181096Z9	HBDPUE 2 05D 0720-091053	7,20	8	53	91	2	⊗

⊗ Stock item | Produto de stock
Itens de stock

○ Available under request | Disponível sobre consulta
Disponível bajo consulta

Order code Código	Reference Referência Referencia	Dimensions Dimensões Dimensiones (mm)				Z	PHU920
		ØD	Ø ds	L1	L		
1181097Z9	HBDPUE 2 05D 0730-091053	7,30	8	53	91	2	○
1181098Z9	HBDPUE 2 05D 0740-091053	7,40	8	53	91	2	○
1181099Z9	HBDPUE 2 05D 0750-091053	7,50	8	53	91	2	○
1181100Z9	HBDPUE 2 05D 0760-091053	7,60	8	53	91	2	○
1181101Z9	HBDPUE 2 05D 0770-091053	7,70	8	53	91	2	○
1181102Z9	HBDPUE 2 05D 0780-091053	7,80	8	53	91	2	⊗
1181103Z9	HBDPUE 2 05D 0790-091053	7,90	8	53	91	2	○
1181104Z9	HBDPUE 2 05D 0800-091053	8,00	8	53	91	2	○
1181105Z9	HBDPUE 2 05D 0810-103061	8,10	10	61	103	2	○
1181106Z9	HBDPUE 2 05D 0820-103061	8,20	10	61	103	2	○
1181107Z9	HBDPUE 2 05D 0830-103061	8,30	10	61	103	2	⊗
1181108Z9	HBDPUE 2 05D 0840-103061	8,40	10	61	103	2	○
1181109Z9	HBDPUE 2 05D 0850-103061	8,50	10	61	103	2	⊗
1181110Z9	HBDPUE 2 05D 0860-103061	8,60	10	61	103	2	○
1181111Z9	HBDPUE 2 05D 0870-103061	8,70	10	61	103	2	○
1181112Z9	HBDPUE 2 05D 0880-103061	8,80	10	61	103	2	○
1181113Z9	HBDPUE 2 05D 0890-103061	8,90	10	61	103	2	○
1181114Z9	HBDPUE 2 05D 0900-103061	9,00	10	61	103	2	⊗
1181115Z9	HBDPUE 2 05D 0910-103061	9,10	10	61	103	2	○
1181116Z9	HBDPUE 2 05D 0920-103061	9,20	10	61	103	2	○
1181117Z9	HBDPUE 2 05D 0930-103061	9,30	10	61	103	2	○
1181118Z9	HBDPUE 2 05D 0940-103061	9,40	10	61	103	2	○
1181119Z9	HBDPUE 2 05D 0950-103061	9,50	10	61	103	2	⊗
1181120Z9	HBDPUE 2 05D 0960-103061	9,60	10	61	103	2	○
1181121Z9	HBDPUE 2 05D 0970-103061	9,70	10	61	103	2	○
1181122Z9	HBDPUE 2 05D 0980-103061	9,80	10	61	103	2	⊗
1181123Z9	HBDPUE 2 05D 0990-103061	9,90	10	61	103	2	○
1181124Z9	HBDPUE 2 05D 1000-103061	10,00	10	61	103	2	○
1181125Z9	HBDPUE 2 05D 1010-118071	10,10	12	71	118	2	○
1181126Z9	HBDPUE 2 05D 1020-118071	10,20	12	71	118	2	⊗
1181127Z9	HBDPUE 2 05D 1030-118071	10,30	12	71	118	2	○
1181128Z9	HBDPUE 2 05D 1040-118071	10,40	12	71	118	2	○
1180796Z9	HBDPUE 2 05D 1050-118071	10,50	12	71	118	2	⊗
1181129Z9	HBDPUE 2 05D 1060-118071	10,60	12	71	118	2	○
1181130Z9	HBDPUE 2 05D 1070-118071	10,70	12	71	118	2	○
1181131Z9	HBDPUE 2 05D 1080-118071	10,80	12	71	118	2	○
1181132Z9	HBDPUE 2 05D 1090-118071	10,90	12	71	118	2	○
1181133Z9	HBDPUE 2 05D 1100-118071	11,00	12	71	118	2	⊗
1181134Z9	HBDPUE 2 05D 1110-118071	11,10	12	71	118	2	○
1181135Z9	HBDPUE 2 05D 1120-118071	11,20	12	71	118	2	○
1181136Z9	HBDPUE 2 05D 1130-118071	11,30	12	71	118	2	○
1181137Z9	HBDPUE 2 05D 1140-118071	11,40	12	71	118	2	○
1181138Z9	HBDPUE 2 05D 1150-118071	11,50	12	71	118	2	⊗
1181139Z9	HBDPUE 2 05D 1160-118071	11,60	12	71	118	2	○

Order code Código	Reference Referência Referencia	Dimensions Dimensões Dimensiones (mm)				Z	PHU920
		ØD	Ø ds	L1	L		
1181140Z9	HBDPUE 2 05D 1170-118071	11,70	12	71	118	2	○
1181141Z9	HBDPUE 2 05D 1180-118071	11,80	12	71	118	2	○
1181142Z9	HBDPUE 2 05D 1190-118071	11,90	12	71	118	2	○
1181143Z9	HBDPUE 2 05D 1200-118071	12,00	12	71	118	2	⊗
1181144Z9	HBDPUE 2 05D 1250-124077	12,50	14	77	124	2	○
1181145Z9	HBDPUE 2 05D 1300-124077	13,00	14	77	124	2	⊗
1181146Z9	HBDPUE 2 05D 1350-124077	13,50	14	77	124	2	○
1181147Z9	HBDPUE 2 05D 1400-124077	14,00	14	77	124	2	⊗
1181148Z9	HBDPUE 2 05D 1450-133083	14,50	16	83	133	2	⊗
1181149Z9	HBDPUE 2 05D 1500-133083	15,00	16	83	133	2	○
1181150Z9	HBDPUE 2 05D 1550-133083	15,50	16	83	133	2	○
1181151Z9	HBDPUE 2 05D 1600-133083	16,00	16	83	133	2	○
1181152Z9	HBDPUE 2 05D 1650-143093	16,50	18	93	143	2	○
1181153Z9	HBDPUE 2 05D 1700-143093	17,00	18	93	143	2	○
1181154Z9	HBDPUE 2 05D 1750-143093	17,50	18	93	143	2	○
1181155Z9	HBDPUE 2 05D 1800-143093	18,00	18	93	143	2	○
1181156Z9	HBDPUE 2 05D 1850-153101	18,50	20	101	153	2	○
1181157Z9	HBDPUE 2 05D 1900-153101	19,00	20	101	153	2	○
1181158Z9	HBDPUE 2 05D 1950-153101	19,50	20	101	153	2	○
1181159Z9	HBDPUE 2 05D 2000-153101	20,00	20	101	153	2	○

⊗ Stock item | Produto de stock
Itens de stock

○ Available under request | Disponível sobre consulta
Disponível bajo consulta

HBDPCE 2 08D

DRILLING

Jet Drills

Integrex Drills

Vortex Drills

Trepanning Drills

Solid Carbide Drills

Inserts

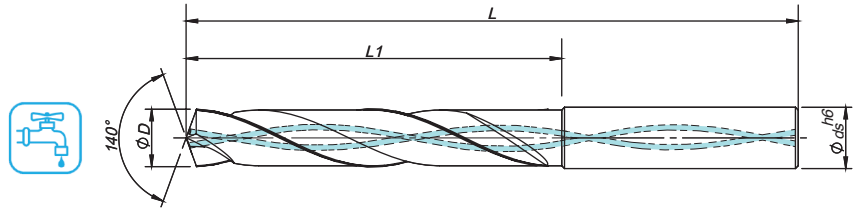
Spare Parts

Technical Data

P K

HRC ≤ 48

IT8-9 IT class



Drill Dia. ØD	3,0<ØD≤5,0	5,0<ØD≤6,0	6,0<ØD≤10,0	10,0<ØD≤12,0
Hole Tolerances	+0,002	+0,004	+0,006	+0,007
	+0,012	+0,016	+0,021	+0,025

Order code Código	Reference Referência Referencia	Dimensions Dimensões Dimensiones (mm)				Z	PHU920
		ØD	Ø ds	L1	L		
1181246Z9	HBDPCE 2 08D 0300-072034	3,00	6	34	72	2	⊗
1181247Z9	HBDPCE 2 08D 0310-072034	3,10	6	34	72	2	○
1181248Z9	HBDPCE 2 08D 0320-072034	3,20	6	34	72	2	○
1181249Z9	HBDPCE 2 08D 0330-072034	3,30	6	34	72	2	⊗
1181250Z9	HBDPCE 2 08D 0340-072034	3,40	6	34	72	2	⊗
1181251Z9	HBDPCE 2 08D 0350-072034	3,50	6	34	72	2	○
1181252Z9	HBDPCE 2 08D 0360-072034	3,60	6	34	72	2	○
1181253Z9	HBDPCE 2 08D 0370-072034	3,70	6	34	72	2	⊗
1181254Z9	HBDPCE 2 08D 0380-081043	3,80	6	43	81	2	○
1181255Z9	HBDPCE 2 08D 0390-081043	3,90	6	43	81	2	○
1181256Z9	HBDPCE 2 08D 0400-081043	4,00	6	43	81	2	⊗
1181257Z9	HBDPCE 2 08D 0410-081043	4,10	6	43	81	2	○
1181258Z9	HBDPCE 2 08D 0420-081043	4,20	6	43	81	2	⊗
1181259Z9	HBDPCE 2 08D 0430-081043	4,30	6	43	81	2	⊗
1181260Z9	HBDPCE 2 08D 0440-081043	4,40	6	43	81	2	○
1181261Z9	HBDPCE 2 08D 0450-081043	4,50	6	43	81	2	○
1181262Z9	HBDPCE 2 08D 0460-081043	4,60	6	43	81	2	○
1181263Z9	HBDPCE 2 08D 0470-081043	4,70	6	43	81	2	○
1181264Z9	HBDPCE 2 08D 0480-095057	4,80	6	57	95	2	⊗
1181265Z9	HBDPCE 2 08D 0490-095057	4,90	6	57	95	2	○
1181266Z9	HBDPCE 2 08D 0500-095057	5,00	6	57	95	2	⊗
1181267Z9	HBDPCE 2 08D 0510-095057	5,10	6	57	95	2	⊗

Order code Código	Reference Referência Referencia	Dimensions Dimensões Dimensiones (mm)				Z	PHU920
		ØD	Ø ds	L1	L		
1181268Z9	HBDPCE 2 08D 0520-095057	5,20	6	57	95	2	○
1181269Z9	HBDPCE 2 08D 0530-095057	5,30	6	57	95	2	○
1181270Z9	HBDPCE 2 08D 0540-095057	5,40	6	57	95	2	○
1181271Z9	HBDPCE 2 08D 0550-095057	5,50	6	57	95	2	⊗
1181272Z9	HBDPCE 2 08D 0560-095057	5,60	6	57	95	2	○
1181273Z9	HBDPCE 2 08D 0570-095057	5,70	6	57	95	2	○
1181274Z9	HBDPCE 2 08D 0580-095057	5,80	6	57	95	2	○
1181275Z9	HBDPCE 2 08D 0590-095057	5,90	6	57	95	2	○
1181276Z9	HBDPCE 2 08D 0600-095057	6,00	6	57	95	2	⊗
1181277Z9	HBDPCE 2 08D 0610-114076	6,10	8	76	114	2	○
1181278Z9	HBDPCE 2 08D 0620-114076	6,20	8	76	114	2	○
1181279Z9	HBDPCE 2 08D 0630-114076	6,30	8	76	114	2	○
1181280Z9	HBDPCE 2 08D 0640-114076	6,40	8	76	114	2	○
1181281Z9	HBDPCE 2 08D 0650-114076	6,50	8	76	114	2	⊗
1181282Z9	HBDPCE 2 08D 0660-114076	6,60	8	76	114	2	○
1181283Z9	HBDPCE 2 08D 0670-114076	6,70	8	76	114	2	○
1181284Z9	HBDPCE 2 08D 0680-114076	6,80	8	76	114	2	⊗
1181285Z9	HBDPCE 2 08D 0690-114076	6,90	8	76	114	2	○
1181286Z9	HBDPCE 2 08D 0700-114076	7,00	8	76	114	2	⊗
1181287Z9	HBDPCE 2 08D 0710-114076	7,10	8	76	114	2	○
1181288Z9	HBDPCE 2 08D 0720-114076	7,20	8	76	114	2	○
1181289Z9	HBDPCE 2 08D 0730-114076	7,30	8	76	114	2	○

⊗ Stock item | Produto de stock
Itens de stock

○ Available under request | Disponível sobre consulta
Disponível bajo consulta

Order code Código	Reference Referência Referencia	Dimensions Dimensões Dimensiones (mm)				Z	PHU920
		ØD	Ø ds	L1	L		
1181290Z9	HBDPCE 2 08D 0740-114076	7,40	8	76	114	2	○
1181291Z9	HBDPCE 2 08D 0750-114076	7,50	8	76	114	2	○
1181292Z9	HBDPCE 2 08D 0760-114076	7,60	8	76	114	2	○
1181293Z9	HBDPCE 2 08D 0770-114076	7,70	8	76	114	2	○
1181294Z9	HBDPCE 2 08D 0780-114076	7,80	8	76	114	2	⊗
1181295Z9	HBDPCE 2 08D 0790-114076	7,90	8	76	114	2	○
1181296Z9	HBDPCE 2 08D 0800-114076	8,00	8	76	114	2	⊗
1181297Z9	HBDPCE 2 08D 0810-142095	8,10	10	95	142	2	○
1181298Z9	HBDPCE 2 08D 0820-142095	8,20	10	95	142	2	○
1181299Z9	HBDPCE 2 08D 0830-142095	8,30	10	95	142	2	○
1181300Z9	HBDPCE 2 08D 0840-142095	8,40	10	95	142	2	○
1181301Z9	HBDPCE 2 08D 0850-142095	8,50	10	95	142	2	⊗
1181302Z9	HBDPCE 2 08D 0860-142095	8,60	10	95	142	2	○
1181303Z9	HBDPCE 2 08D 0870-142095	8,70	10	95	142	2	○
1181304Z9	HBDPCE 2 08D 0880-142095	8,80	10	95	142	2	⊗
1181305Z9	HBDPCE 2 08D 0890-142095	8,90	10	95	142	2	○
1181306Z9	HBDPCE 2 08D 0900-142095	9,00	10	95	142	2	○
1181307Z9	HBDPCE 2 08D 0910-142095	9,10	10	95	142	2	⊗
1181308Z9	HBDPCE 2 08D 0920-142095	9,20	10	95	142	2	○
1181309Z9	HBDPCE 2 08D 0930-142095	9,30	10	95	142	2	○
1181310Z9	HBDPCE 2 08D 0940-142095	9,40	10	95	142	2	○
1181311Z9	HBDPCE 2 08D 0950-142095	9,50	10	95	142	2	○
1181312Z9	HBDPCE 2 08D 0960-142095	9,60	10	95	142	2	○
1181313Z9	HBDPCE 2 08D 0970-142095	9,70	10	95	142	2	○
1181314Z9	HBDPCE 2 08D 0980-142095	9,80	10	95	142	2	○
1181315Z9	HBDPCE 2 08D 0990-142095	9,90	10	95	142	2	○
1181316Z9	HBDPCE 2 08D 1000-142095	10,00	10	95	142	2	○
1181317Z9	HBDPCE 2 08D 1010-162114	10,10	12	114	162	2	○
1181318Z9	HBDPCE 2 08D 1020-162114	10,20	12	114	162	2	⊗
1181319Z9	HBDPCE 2 08D 1030-162114	10,30	12	114	162	2	○
1181320Z9	HBDPCE 2 08D 1040-162114	10,40	12	114	162	2	○
1181321Z9	HBDPCE 2 08D 1050-162114	10,50	12	114	162	2	⊗
1181322Z9	HBDPCE 2 08D 1060-162114	10,60	12	114	162	2	○
1181323Z9	HBDPCE 2 08D 1070-162114	10,70	12	114	162	2	○
1181324Z9	HBDPCE 2 08D 1080-162114	10,80	12	114	162	2	○
1181325Z9	HBDPCE 2 08D 1090-162114	10,90	12	114	162	2	○
1181326Z9	HBDPCE 2 08D 1100-162114	11,00	12	114	162	2	○
1181327Z9	HBDPCE 2 08D 1110-162114	11,10	12	114	162	2	○
1181328Z9	HBDPCE 2 08D 1120-162114	11,20	12	114	162	2	○
1181329Z9	HBDPCE 2 08D 1130-162114	11,30	12	114	162	2	○
1181330Z9	HBDPCE 2 08D 1140-162114	11,40	12	114	162	2	○
1181331Z9	HBDPCE 2 08D 1150-162114	11,50	12	114	162	2	○
1181332Z9	HBDPCE 2 08D 1160-162114	11,60	12	114	162	2	○
1181333Z9	HBDPCE 2 08D 1170-162114	11,70	12	114	162	2	○

Order code Código	Reference Referência Referencia	Dimensions Dimensões Dimensiones (mm)				Z	PHU920
		ØD	Ø ds	L1	L		
1181334Z9	HBDPCE 2 08D 1180-162114	11,80	12	114	162	2	⊗
1181335Z9	HBDPCE 2 08D 1190-162114	11,90	12	114	162	2	○
1181336Z9	HBDPCE 2 08D 1200-162114	12,00	12	114	162	2	○

⊗ Stock item | Produto de stock
Itens de stock

○ Available under request | Disponível sobre consulta
Disponível bajo consulta

BD

DRILLING

Jet Drills

Integrex Drills

Vortex Drills

Trepanning Drills

Solid Carbide Drills

Inserts

Spare Parts

Technical Data

ISO DRILLING INSERTS CODE KEY

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

H		M	
O		V	
P		W	
S		L	
T		A	
C		B	
D		K	
E		R	
F		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
F	G	N	P	O
				Other clearance angle

2 - Normal clearance symbol

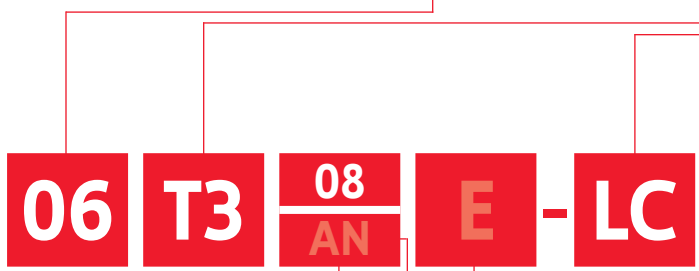
ISO **W C K X**

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

R's	35° V's	55° D's	80° C's	90° S's	60° T's	80° W's	Ø CI		ANSI
							mm	inch	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	

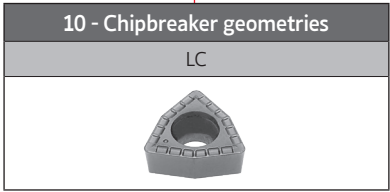
* ANSI designation only (Radius Designation is R00)
 ** Metric designation only (Radius Designation is M0)
 According to International Standard ISO 1832 - 2012(E)
 "Indexable inserts for cutting tools - Designation"

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



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:			
1 st digit is secondary edge		2 nd 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.		

INSERTS

SP.X | Inserts | Pastilhas | Plaquetas

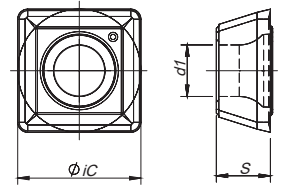
SPKX



SPKX
(PHC | PHL grade)



SPHX-LN



(1) Geometry code	(2) Grade code	P				M				K			S				N	Dimensions Dimensões Dimensiones (mm)			
		PVD				PVD				PVD			PVD				UNC				
		68	66	J3	3B	68	66	J3	3B	68	66	3B	68	66	J3	3B	10	iC	S	d1	R
1111281	SPKX 050204	⊗	⊗	⊗		⊗	⊗	⊗		⊗	⊗	⊗	⊗	⊗	⊗		5,00	2,38	2,20	0,40	
1111282	SPKX 060204	⊗	⊗	⊗	⊗	⊗	⊗	⊗	⊗	⊗	⊗	⊗	⊗	⊗	⊗		6,00	2,38	2,55	0,40	
1142099	SPHX 060204-LN															⊗	6,00	2,38	2,55	0,40	
1111283	SPKX 07T308	⊗	⊗		⊗	⊗	⊗		⊗	⊗	⊗	⊗	⊗	⊗			7,94	3,97	2,85	0,80	
1111284	SPKX 090408	⊗	⊗	⊗	⊗	⊗	⊗	⊗	⊗	⊗	⊗	⊗	⊗	⊗	⊗		9,80	4,30	4,10	0,80	
1111285	SPKX 110408	⊗	⊗		⊗	⊗	⊗		⊗	⊗	⊗	⊗	⊗	⊗			11,50	4,80	4,40	0,80	
1111286	SPKX 140512	⊗	⊗		⊗	⊗	⊗		⊗	⊗	⊗	⊗	⊗	⊗			14,30	5,20	5,75	1,20	

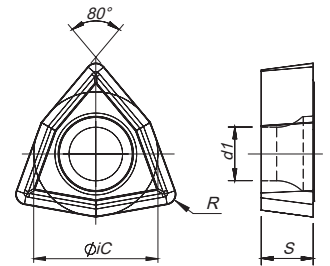
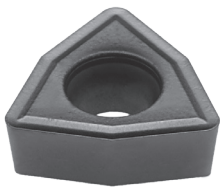
⊗ Stock item | Produto de stock | Itens de stock

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

⊗ Available until sold out | Disponível até acabar o stock | Disponible hasta acabar el stock

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

WCKX | Inserts | Pastilhas | Plaquetas



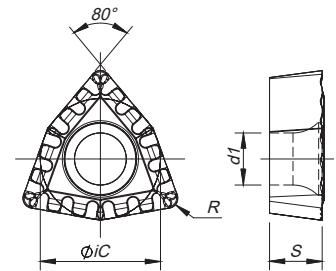
(1) Geometry code	(2) Grade code	P				M		K		S		Dimensions Dimensões Dimensiones (mm)			
		PVD				PVD		CVD		PVD					
		68	66	I5	78	68	66	68	66	68	66	iC	S	d1	R
1140300	WCKX 02T104	⊗	⊗	○	○	⊗	⊗	⊗	⊗	⊗	⊗	4,76	1,98	2,00	0,40
1140276	WCKX 030204	⊗	⊗	○	○	⊗	⊗	⊗	⊗	⊗	⊗	5,56	2,38	2,55	0,40
1140277	WCKX 040204	⊗	⊗	○	○	⊗	⊗	⊗	⊗	⊗	⊗	6,35	2,38	2,85	0,40
1140278	WCKX 050308	⊗	⊗	○	○	⊗	⊗	⊗	⊗	⊗	⊗	7,94	3,18	3,50	0,80
1140279	WCKX 06T308	⊗	⊗	○	○	⊗	⊗	⊗	⊗	⊗	⊗	9,55	3,97	4,10	0,80
1140280	WCKX 080408	⊗	⊗	○	○	⊗	⊗	⊗	⊗	⊗	⊗	12,70	4,76	5,60	0,80

⊗ 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 | Plaquetas



		P		Dimensions Dimensões Dimensiones (mm)			
		PVD					
	⁽²⁾ Grade code	68	66	iC	S	d1	R
⁽¹⁾ Geometry code	ISO Reference	PH6920	PH6930				
1142068	WCKX 050308-LC	⊗	⊗	7,94	3,18	3,50	0,80
1142069	WCKX 06T308-LC	⊗	⊗	9,55	3,97	4,10	0,80

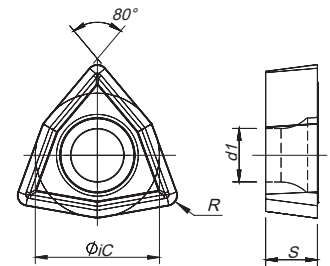
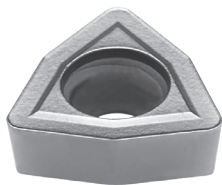
⊗ Stock item | Produto de stock | Itens de stock

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

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

WCMX | Inserts | Pastilhas | Plaquetas

ISO references for other drilling systems



		P			M			K			S			Dimensions Dimensões Dimensiones (mm)			
		PVD			PVD			PVD			PVD						
		⁽²⁾ Grade code	68	J3	3B	68	J3	3B	68	J3	3B	68	J3				
⁽¹⁾ Geometry code	ISO Reference	PH6920	PHC930	PHL930	PH6920	PHC930	PHL930	PH6920	PHC930	PHL930	PH6920	PHC930	PHL930	iC	S	d1	R
1120827	WCMX 030204	○	○	○	○	○	○	○	○	○	○	○	○	5,56	2,38	2,80	0,40
1120828	WCMX 030208	⊗	⊗	⊗	⊗	⊗	⊗	⊗	⊗	⊗	⊗	⊗	⊗	5,56	2,38	2,80	0,80
1120829	WCMX 040208	⊗	⊗	⊗	⊗	⊗	⊗	⊗	⊗	⊗	⊗	⊗	⊗	6,35	2,38	3,10	0,80
1120830	WCMX 050308	⊗	⊗	⊗	⊗	⊗	⊗	⊗	⊗	⊗	⊗	⊗	⊗	7,94	3,18	3,20	0,80
1120831	WCMX 06T308	⊗	⊗	⊗	⊗	⊗	⊗	⊗	⊗	⊗	⊗	⊗	⊗	9,55	3,97	3,70	0,80
1120832	WCMX 080408	⊗	⊗	⊗	⊗	⊗	⊗	⊗	⊗	⊗	⊗	⊗	⊗	12,70	4,76	4,30	0,80
1120833	WCMX 080412	⊗	⊗	⊗	⊗	⊗	⊗	⊗	⊗	⊗	⊗	⊗	⊗	12,70	4,76	4,30	1,20

⊗ 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

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

SPARE PARTS

CD

DRILLING

Jet Drills

Integrex Drills

Vortex Drills

Trepanning Drills

Solid Carbide Drills

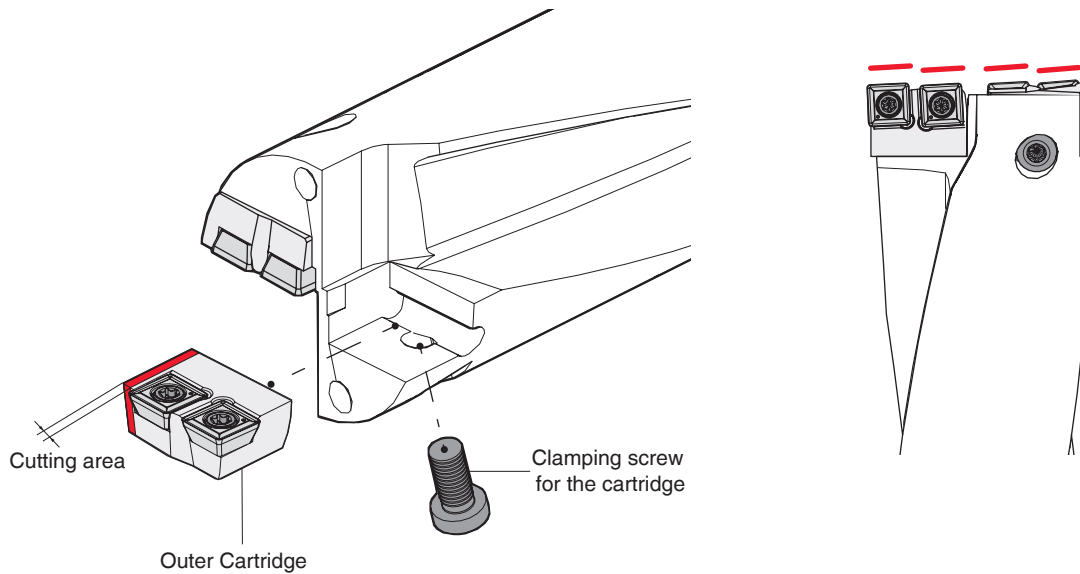
Inserts

Spare Parts

Technical Data

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.





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

SPARE PARTS

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

DRILLING

DRILLING

Jet Drills

Integrex Drills

Vortex Drills

Trepanning Drills

Solid Carbide Drills



Inserts

Spare Parts

Technical Data



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

B

DRILLING

Jet Drills

Integrex Drills

Vortex Drills

Trepanning Drills

Solid Carbide Drills

Inserts

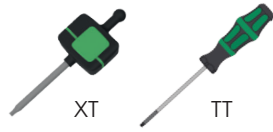
Spare Parts

Technical Data

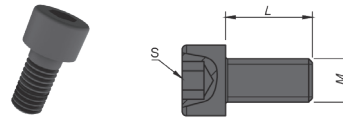
SPARE PARTS

SCREWS & KEYS

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



Screw for Cartridge (DIN 912)

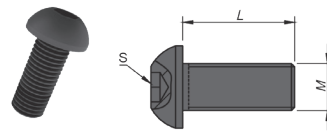


Order Code	Reference Referência Referencia
290031400	P0200500
290030600	P0220500
290031300	P0250704
290030900	P0350903
290047500	P0401200
290031700	P0501300
290025800	P0180500
290033100	P0250503
290030800	P0300701
290031000	P0401101

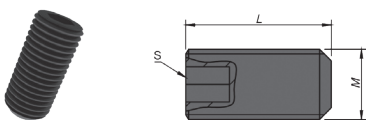
Order Code	Reference Referência Referencia
290011400	XT06
290012900	XT07
290011700	XT08
290025700	XT09
290012400	XT15
290013200	XT20
290074700	TT15
290056000	TT20
290056100	TT25

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)

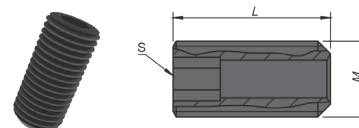


Fixing Screw and Clamping Bolt for Pilot Drill (DIN 916)



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

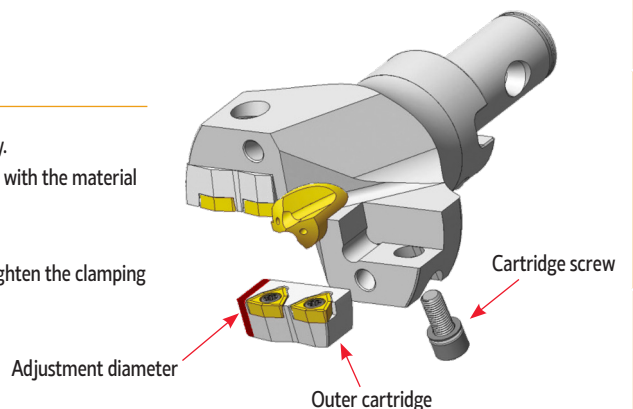


ØD	Inner Cartridge		Outer Cartridge		Insert	Insert Screw	Torx key	For Drill
	Order Code	Reference	Order Code	Reference				
2 INSERTS PER CARTRIDGE								
45-50	184062000	MDC 045050-I	184252600	MDC 045050-O	WC... 030204	P0220500	XT07	MDO 04505013
50-55	184250400	MDC 050055-I	184252700	MDC 050055-O	WC... 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

Adjusting the cutting diameter of Vortex MDO 10D

- 1 - Unscrew the clamping bolt that holds the outer cartridge in place and remove it from the drill body.
- 2 - Use a milling tool to carefully cut out the section of the outer cartridge that will come into contact with the material being drilled, making sure to calculate the correct diameter beforehand.
- 3 - Smooth out any sharp edges on the cartridge.
- 4 - Attach the cartridge securely to the drill body, ensuring there are no gaps between the two, and tighten the clamping bolt firmly to keep it in place.

Example: for a standard diameter of Ø120mm and you want Ø116mm you should cut 2mm.

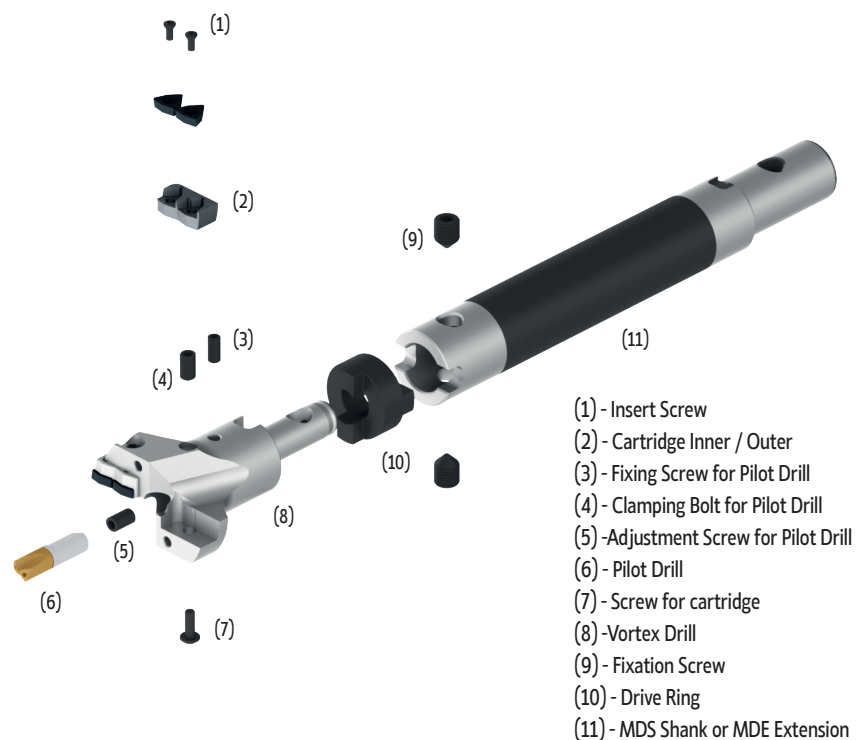


SPARE PARTS

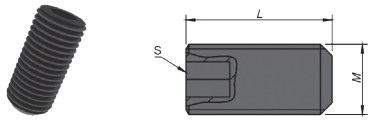
VORTEX SPARE PARTS - SCREWS

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

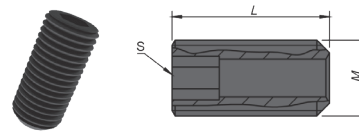


Fixing Screw and Clamping Bolt for Pilot Drill (DIN 916)



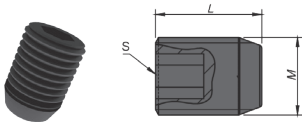
Order Code Código	Screw	Dimensions (mm) Dimensões (mm) Dimensiones (mm)		
		M	L	S
290040100	P0400875	M4 x 0,7	8,0	2,0
290040200	P0500875	M5 x 0,8	8,0	2,5
290040400	P0601075	M6 x 1,0	10,0	3,0
290040500	P0601275	M6 x 1,0	12,0	3,0
290040700	P0801575	M8 x 1,25	15,0	4,0
290040900	P1002075	M10 x 1,5	20,0	5,0
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

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



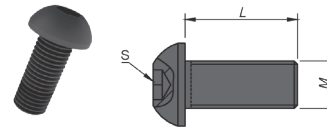
Order Code Código	Screw	Dimensions (mm) Dimensões (mm) Dimensiones (mm)		
		M	L	S
290041400	P0601076	M6 x 1,0	10,0	3,0
290041500	P0801576	M8 x 1,25	15,0	4,0
290041600	P1001676	M10 x 1,5	16,0	5,0
290041700	P1001876	M10 x 1,5	18,0	5,0
290041800	P1202076	M12 x 1,75	20,0	6,0
290041900	P1402076	M14 x 2,0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

Fixation Screw for MDS Shank, MDE Extension, MDM Reducer



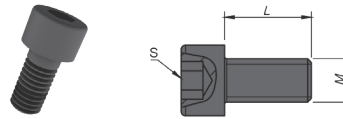
Order Code Código	Screw	Dimensions (mm) Dimensões (mm) Dimensiones (mm)		
		M	L	S
290032400	P0801280	M8	12,0	4,0
290032500	P1001580	M10	15,0	5,0
290032600	P1201880	M12	18,0	6,0
290039600	P1202080	M12	20,0	6,0
290032800	P1602780	M16	27,0	8,0

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

Insert Screw



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

SPARE PARTS

PILOT DRILL

DRILLING

Jet Drills

Integrex Drills

Vortex Drills

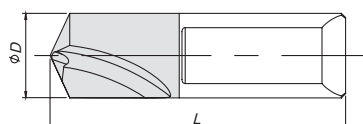
Trepanning Drills

Solid Carbide Drills

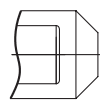
Inserts

Spare Parts

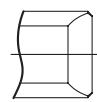
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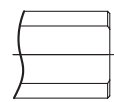
Shank Type



A (with cone)



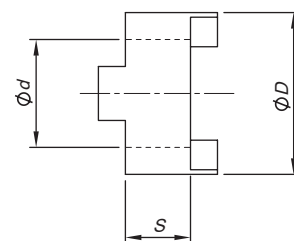
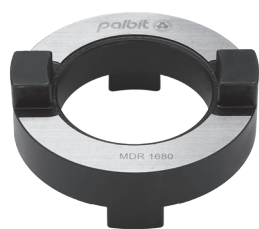
B (with chamfer)



C

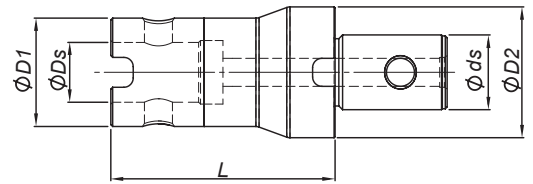
Order Code	Reference	Dimensions (mm)		Type	Oil Hole	For Drill
		ØD	L			
184150900	MDP 2006	6	20	A	-	TFD (Ø18,0 - Ø25,0)
184151000	MDP 2508	8	25	A	-	TFD (Ø25,5 - Ø30,0)
184104100	MDP 3006	6	30	B	-	DHS (Ø25 - Ø30)
184104400	MDP 3508	8	35	B	-	DHS (Ø31 - Ø40)
184033100	MDP 3510	10	35	B	✓	DHC (Ø41 - Ø50), 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)



DRIVE RING



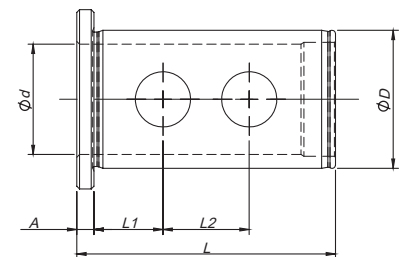
Order Code	Reference	Dimensions (mm) Dimensões (mm) Dimensiones (mm)		
		ØD	Ød	S
184021600	MDR 1028	28	13	10
184021700	MDR 1032	32	16	10
184022100	MDR 1240	40	22	12
184022200	MDR 1248	48	27	12
184022300	MDR 1458	58	32	14
184022400	MDR 1470	70	40	14
184022500	MDR 1680	80	50	16

MDM - REDUCER



Order Code	Reference	Dimensions / Dimensões / Dimensiones (mm)					Drive Ring D1	Drive Ring D2
		ØDs	Øds	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

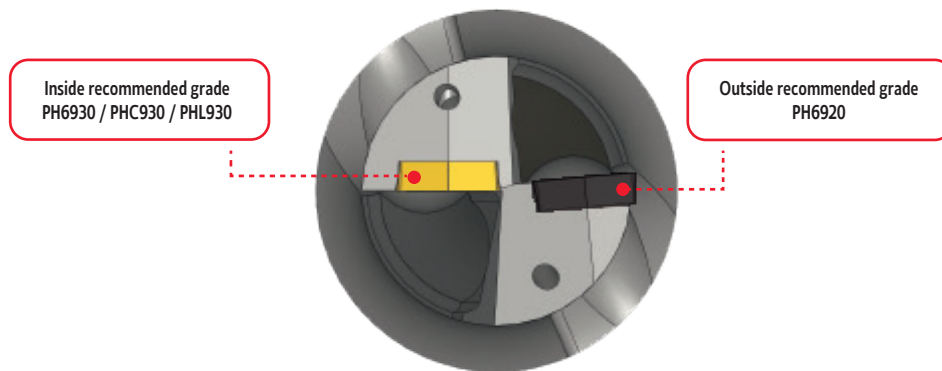
TECHNICAL DATA | Datos técnicos | Datos técnicos

	1	5	10	15	20	25	30	35	40	45	50		
DRILLING Jet Drills	P STEEL				PH6920								PVD
					PHU920					NEW			
							PH6930						
							PHC930						
							PHL930				NEW		
Integrex Drills	M STAINLESS STEEL				PH6920							PVD	
					PHU920			NEW					
							PH6930						
							PHC930						
							PHL930		NEW				
Vortex Drills	K CAST IRON				PH6920							PVD	
					PHU920				NEW				
							PH6930						
							PHC930						
							PHL930			NEW			
Trepanning Drills	N ALUMINIUM			PH0910								UNC	
Solid Carbide Drills	S HEAT RESISTANT / TITANIUM ALLOYS						PHC930					PVD	
							PHL930		NEW				

PVD GRADES

<p>PH6920 P10-P35 M10-M25 K10-K30</p>	<p>PHU920 P10-P35 M10-M25 K10-K30</p>	<p>PH6930 P20-P40 M20-M30 K20-K40</p>	<p>PHC930 PHL930 P20-P40 M20-M30 K20-K40 S20-S30</p>	<p>PH0910 N05-N10</p>
<p>Coated grade over a tough wear resistance substrate for general purpose machining.</p>	<p>With high thermal shock resistance and suitable for dry and wet machining, the PHU920 grade is recommended for steels, stainless steels and cast iron.</p>	<p>Grade suitable for applications with instability conditions. Excellent solution for medium cutting speed applications.</p>	<p>Grade suitable for applications with instability conditions. Excellent solution for medium cutting speed applications. Coated in Yellow to be visually distinguishable.</p>	<p>Uncoated carbide micro-grain grade combining a good abrasive wear resistance and toughness. Suitable for rough to finish operations of aluminum alloys.</p>

Grades recommendation for drilling systems



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

PHU920

Combining both excellent thermal resistance and excellent surface quality, the PHU920 grade is recommended for steels, stainless steels and cast iron.

Because of its surface quality and thermal resistance it is able to prevent built-up-edge in both low-alloy steels and stainless steels, making it a very versatile grade.

- High thermal shock resistance
- Carefully engineered surface quality
- Suitable for dry and wet machining
- Color: Grey

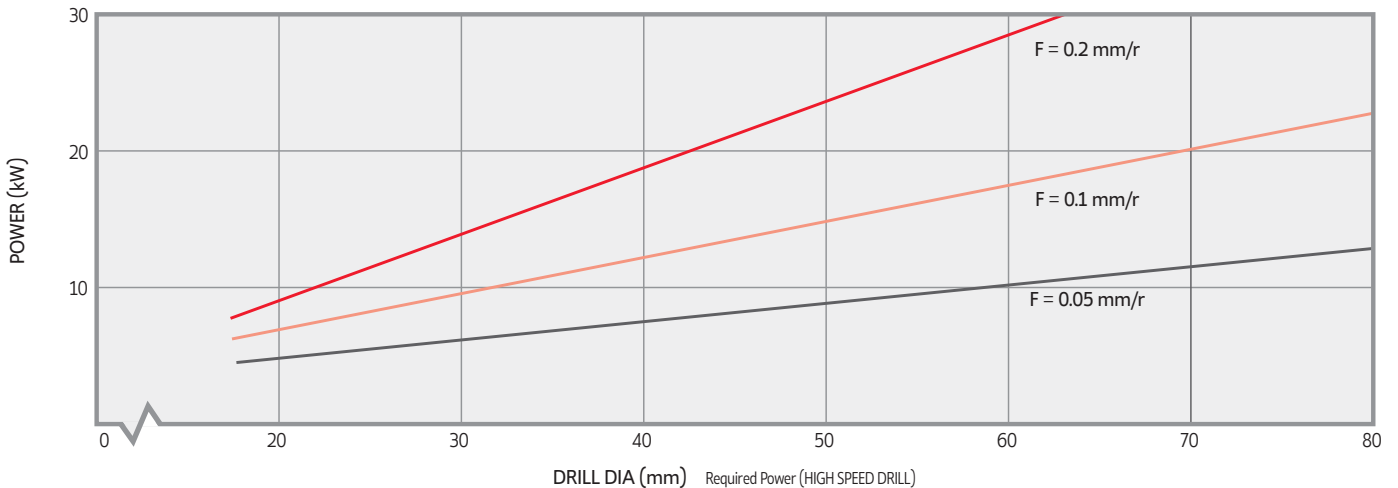


JET DRILLS = TDS & TDC DRILL TYPE

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

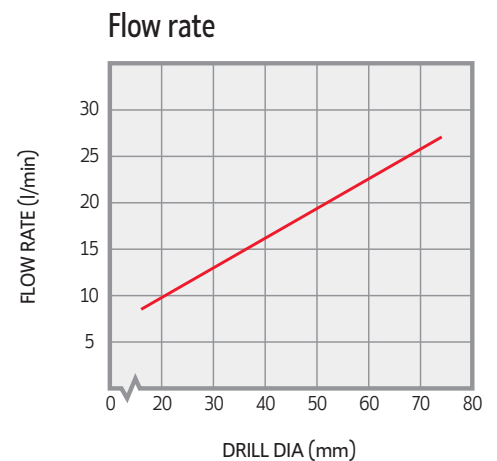
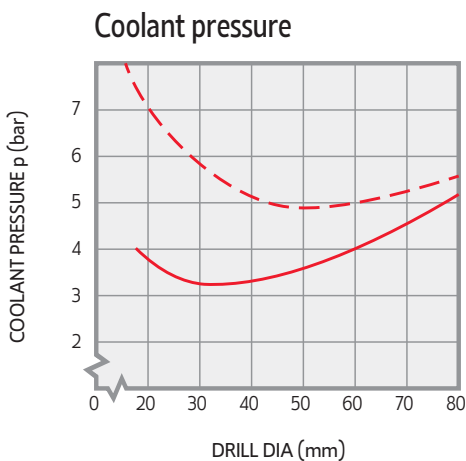
ISO	Material Group Grupo Materiais Grupo Materiales	Vc (m/min)	f (mm/rev)						
			Ø13-15,5	Ø16-20	Ø20,5-25	Ø25,5-30	Ø31-41	Ø42-58	Ø59-80
P	UNALLOYED STEEL (-0,25%)	180-260	0,05-0,08	0,06-0,10	0,07-0,12	0,09-0,15	0,11-0,18	0,15-0,28	0,11-0,18
	LOW-ALLOY STEEL (0,25%-)	150-240	0,05-0,08	0,06-0,10	0,07-0,12	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
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



- This 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



TDS & TDC DRILL TYPE

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 Del agujero Máximo con Ajuste Radial

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

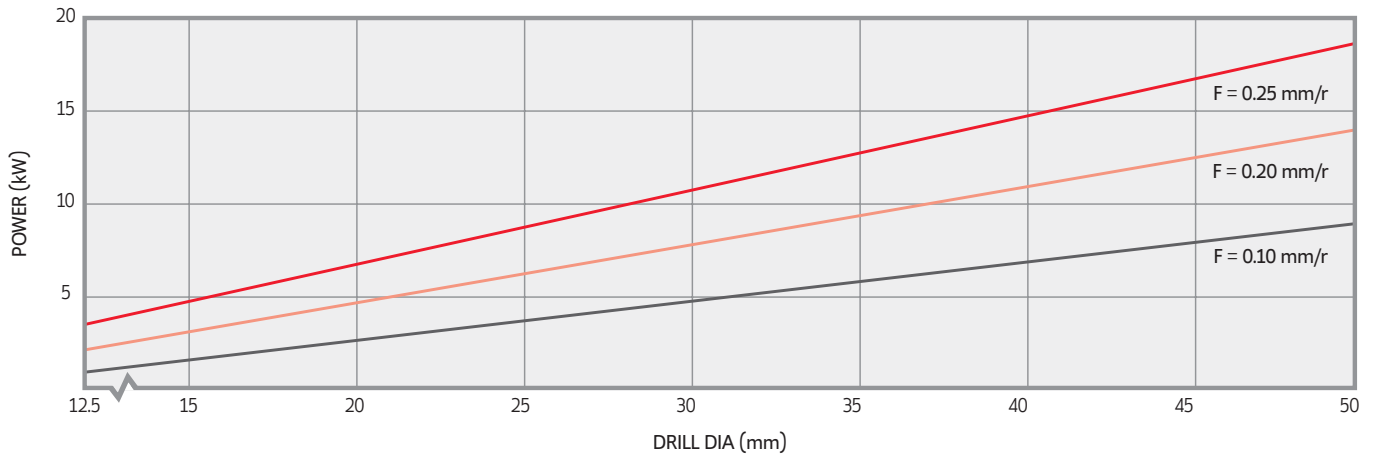
DRILLING
Jet Drills
Integrex Drills
Vortex Drills
Trepanning Drills
Solid Carbide Drills
Inserts
Spare Parts
Technical Data

JET DRILLS - SCS & SCC DRILL TYPE

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

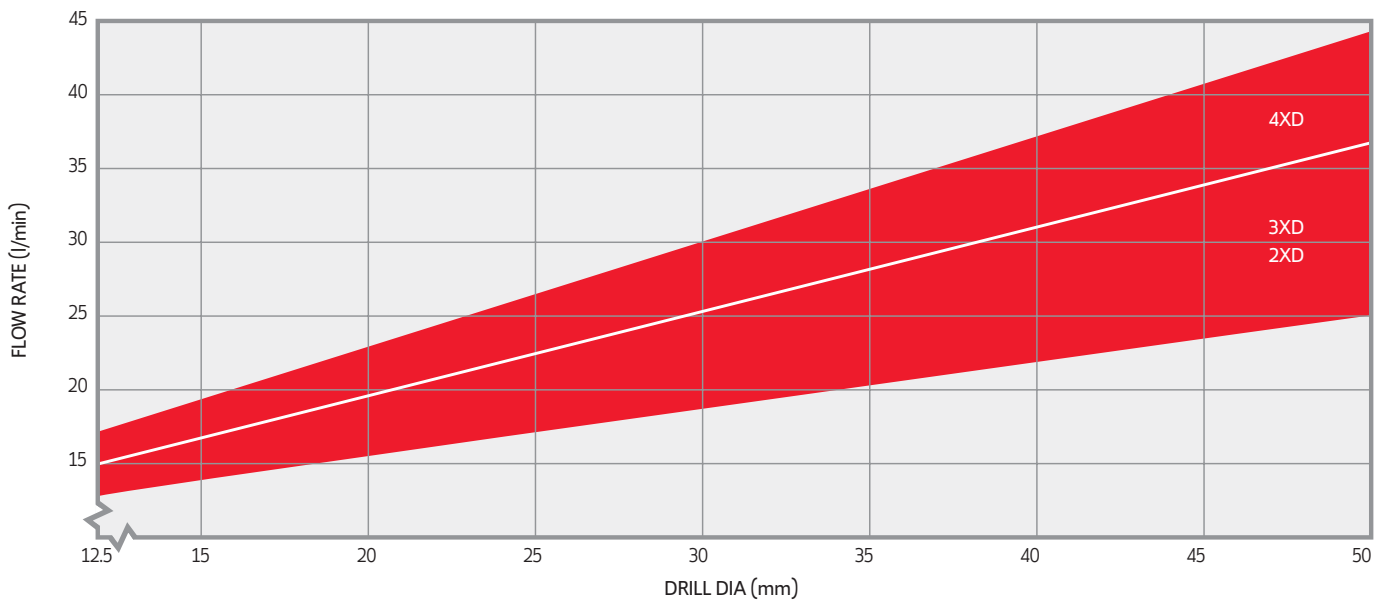
ISO	Material Group Grupo Materiais Grupo Materiales	Vc (m/min)	f (mm/rev)								
			Ø12,5-15	Ø15,5-21,5	Ø22-27,5	Ø28-33	Ø34-41	Ø42-50	Ø50-60	Ø60-75	Ø75-80
P	UNALLOYED STEEL (-0,25%)	180-250	0,05-0,08	0,06-0,10	0,06-0,12	0,07-0,13	0,08-0,15	0,08-0,16	0,06-0,12	0,08-0,12	0,08-0,12
	LOW-ALLOY STEEL (0,25%-)	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

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


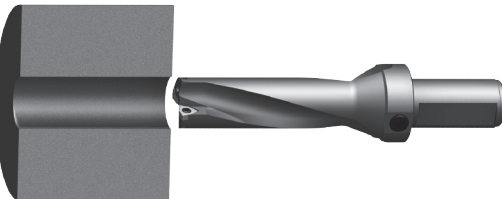
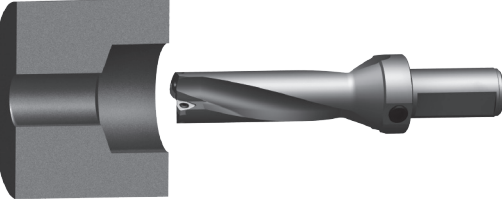
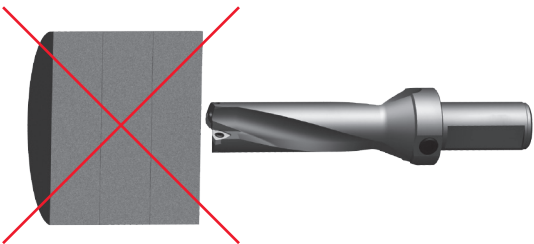




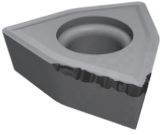
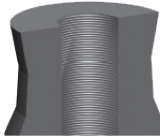
JET DRILLS - SCS DRILL TYPE

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 Del agujero Máximo con Ajuste Radial

Drill D	3xD		
	Normal	Radial Adjust	Max. Hole D
13	13.16	0.50	14.0
14	14.10	0.50	15.0
15	15.10	0.50	16.0
16	16.07	0.50	17.0
17	17.08	0.50	18.0
18	18.05	0.50	19.0
19	19.08	0.50	20.0
20	20.06	0.50	21.0
21	20.97	0.25	21.5
22	21.94	0.50	23.0
23	23.10	0.50	24.0
24	24.10	0.50	25.0
25	25.06	0.50	26.0
26	26.03	0.25	26.5
27	27.05	0.25	27.5
28	28.11	0.50	29.0
29	28.54	0.50	30.0
30	30.23	0.50	31.0
31	31.07	0.25	31.5
32	32.06	0.25	32.5
33	33.12	0.25	33.5
34	34.10	0.50	35.0
35	35.07	0.50	36.0
36	36.03	0.50	37.0
37	37.14	0.50	38.0
38	38.05	0.50	39.0
39	39.03	0.50	40.0
40	40.00	0.25	40.5
41	40.99	0.25	41.5
42	42.03	0.50	43.0
43	42.99	0.50	44.0
44	44.17	0.50	45.0
45	45.21	0.50	46.0
46	46.17	0.50	47.0
47	47.15	0.50	48.0
48	48.12	0.25	48.5
49	49.00	0.25	49.5
50	50.02	0.25	50.5

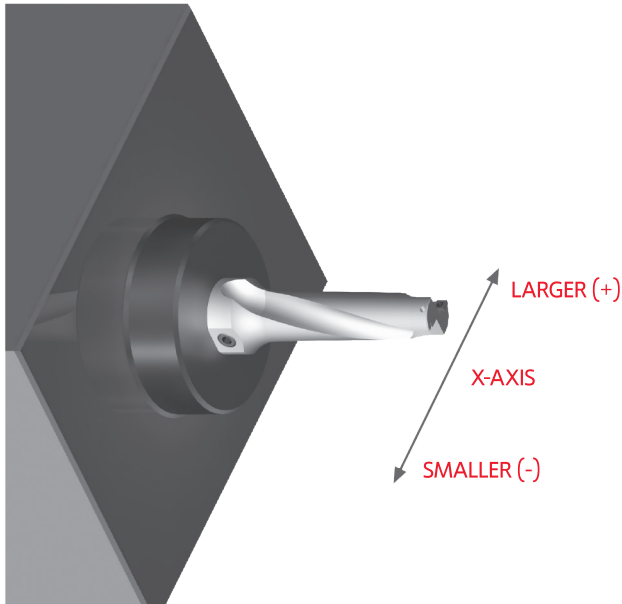
Drill D	4xD		
	Normal	Radial Adjust	Max. Hole D
13	13.22	0.50	14.0
14	14.15	0.50	15.0
15	15.17	0.50	16.0
16	16.09	0.50	17.0
17	17.13	0.50	18.0
18	18.20	0.50	19.0
19	19.18	0.50	20.0
20	20.05	0.50	21.0
21	21.00	0.25	21.5
22	22.01	0.50	23.0
23	23.10	0.50	24.0
24	24.15	0.50	25.0
25	25.13	0.50	26.0
26	26.09	0.25	26.5
27	26.96	0.25	27.5
28	27.97	0.50	29.0
29	29.07	0.50	30.0
30	30.13	0.50	31.0
31	31.12	0.25	31.5
32	32.11	0.25	32.5
33	33.17	0.25	33.5
34	34.15	0.50	35.0
35	35.12	0.50	36.0
36	36.08	0.50	37.0
37	37.19	0.50	38.0
38	38.08	0.50	39.0
39	39.08	0.50	40.0
40	40.05	0.25	40.5
41	41.04	0.25	41.5
42	42.08	0.50	43.0
43	43.04	0.50	44.0
44	44.22	0.50	45.0
45	45.26	0.50	46.0
46	46.23	0.50	47.0
47	47.20	0.50	48.0
48	48.17	0.25	48.5
49	49.05	0.25	49.5
50	50.07	0.25	50.5

Operation Operação Operación	Description Descrição Descripción
<ul style="list-style-type: none"> • SPOT DRILLING THROUGH ON INCLINED SURFACES • FURAÇÃO LOCALIZADA E FURAÇÃO ATRAVÉS DE SUPERFÍCIES INCLINADAS • PERFORACIÓN LOCALIZADA Y PERFORACION SOBRE SUPERFÍCIES INCLINADAS 	<ul style="list-style-type: none"> • Up to a 30° inclination angle is possible without reducing the cutting parameters. For angles between 30-40°, reduce feed force at incline surface by 50% • Até um ângulo de 30° é possível sem a redução dos parametros de corte. Para ângulos entre 30-40°, reduza o avanço na superfície inclinada em 50%. • Hasta un ângulo de inclinación de 30° é posible sin la reducción de los parametros de corte. En ângulos entre 30-40°, reduzca el avance en 50%.
<ul style="list-style-type: none"> • INTERRUPTED CUTS • CORTE INTERROMPIDO • CORTE INTERRUPTIDO 	<ul style="list-style-type: none"> • For problem-free drilling in interrupted cuts (cross 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 perforación en corte interrumpido, reduzca la velocidad de corte e el avance en 30% para mantener la estabilidad.
<ul style="list-style-type: none"> • BORING • MADRILAGEM • MANDRILAGEM 	<ul style="list-style-type: none"> • Used as boring tool, offset 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. • 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 interior e poderá requerer uma indexação mais frequente. • En operaciones de mandrilage, oriente el inserto exterior. Se deve observar el desgaste del inserto interior una vez que podrá necesitar de una indexación mas regular.
<ul style="list-style-type: none"> • DRILLING OF STACKED PLATES • FURAÇÃO DE CHAPAS EMPILHADAS • PERFORACIÓN DE PLACAS APILADAS 	<ul style="list-style-type: none"> • 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 é posible com brocas standart TDS o TDC.

Problem Problema	Corrective Action	Possível Solução	Solución Posible
<p>INNER CUTTING EDGE CRACKING</p> 	<p>On Lathes:</p> <ul style="list-style-type: none"> • 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. <p>TIP: Grades can be mixed to achieve optimum performance.</p> <p>Example: Use grade PH6125 in the inside pocket with PH6135 in the outside pocket.</p>	<p>Em Tornos:</p> <ul style="list-style-type: none"> • Verifique o alinhamento máquina. • Verifique a precisão do aperto. Se o aperto não puder ser melhorado e/ou a otimização da estabilidade da máquina é duvidosa, reduza o avanço em 30%. • Usar classes de graus mais duras. <p>DICA: Misture classes Graus para alcançar o desempenho ideal.</p> <p>Exemplo: Utilize PH6125 na pastilha interior e PH6135 na pastilha exterior.</p>	<p>Tornos en:</p> <ul style="list-style-type: none"> • 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. <p>SUGERENCIA: Las calificaciones se pueden mezclar para lograr un rendimiento óptimo.</p> <p>Ejemplo: Utilice PH6125 en el inserto interior e PH6135 en el inserto exterior.</p>
<p>CHIP EVACUATION NOT OPTIMAL</p> 	<ul style="list-style-type: none"> • 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%. 	<ul style="list-style-type: none"> • Aumente a pressão e volume do líquido de refrigeração (este permite uma melhor evacuação da apar, bem como um arrefecimento das arestas de corte). • Optimize o controlo das aparas para cada operação. • Aumentar a velocidade de corte de 20%. 	<ul style="list-style-type: none"> • 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%.
<p>EXCESSIVE INSERT WEAR</p> 	<ul style="list-style-type: none"> • Increase coolant pressure and volume. • Reduce cutting speed by 20%. • Use a more wear – resistant grade. 	<ul style="list-style-type: none"> • Aumente o volume e a pressão do líquido de refrigeração. • Reduzir a velocidade de corte de 20%. • Utilize um grau mais resistente ao desgaste. 	<ul style="list-style-type: none"> • Aumentar la presión del refrigerante y el volumen. • Reducir la velocidad de corte en un 20%. • Utilice un mayor desgaste - resistente grado.
<p>POOR DRILL HOLE QUALITY</p> 	<ul style="list-style-type: none"> • Increase coolant pressure and volume. • Increase cutting speed by 20% • Check clamping accuracy (tool and workpiece) for possible improvement. <p>TIP: Use higher speed with lighter feed to produce better hole quality.</p>	<ul style="list-style-type: none"> • Aumente o volume e a pressão do líquido de refrigeração. • Aumentar a velocidade de cortede 20% • Verifique a precisão do aperto (ferramenta e peça). <p>DICA: Utilize velocidades com avanços menores para produzir uma melhor qualidade do furo.</p>	<ul style="list-style-type: none"> • 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. <p>SUGERENCIA: El uso ligero con mayor velocidad de alimentación para producir una mejor calidad agujero.</p>

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

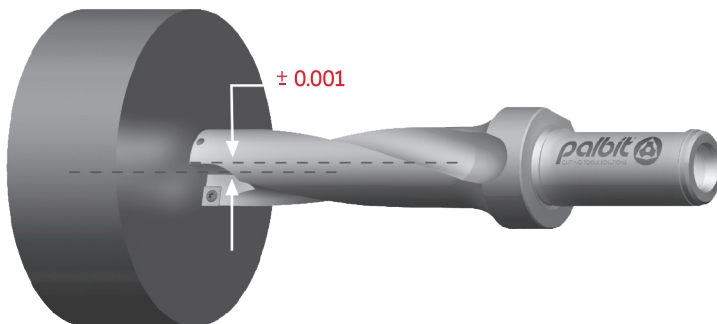
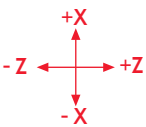
DRILLING
Jet Drills
Integrex Drills
Vortex Drills
Trepanning Drills
Solid Carbide Drills
Inserts
Spare Parts
Technical Data



- 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.

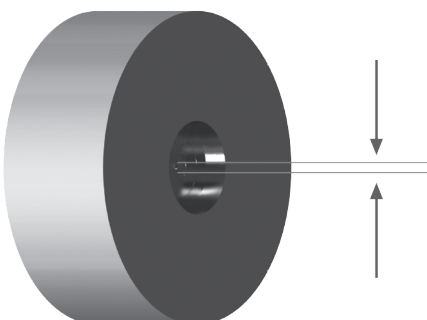
- El hilo de corte del inserto se debe posicionar paralelamente al axis-X tornando posible el aliñamiento de corte.



- 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.



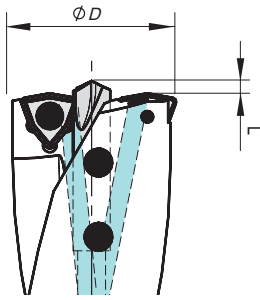
- To check up the setting of drill before use, test it by drilling about 5mm depth and then measure the core size if it is around 0,2mm - 0,7mm.

- 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.

INTEGREX DRILLS - DHS, DHC, TFD DRILL TYPE

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

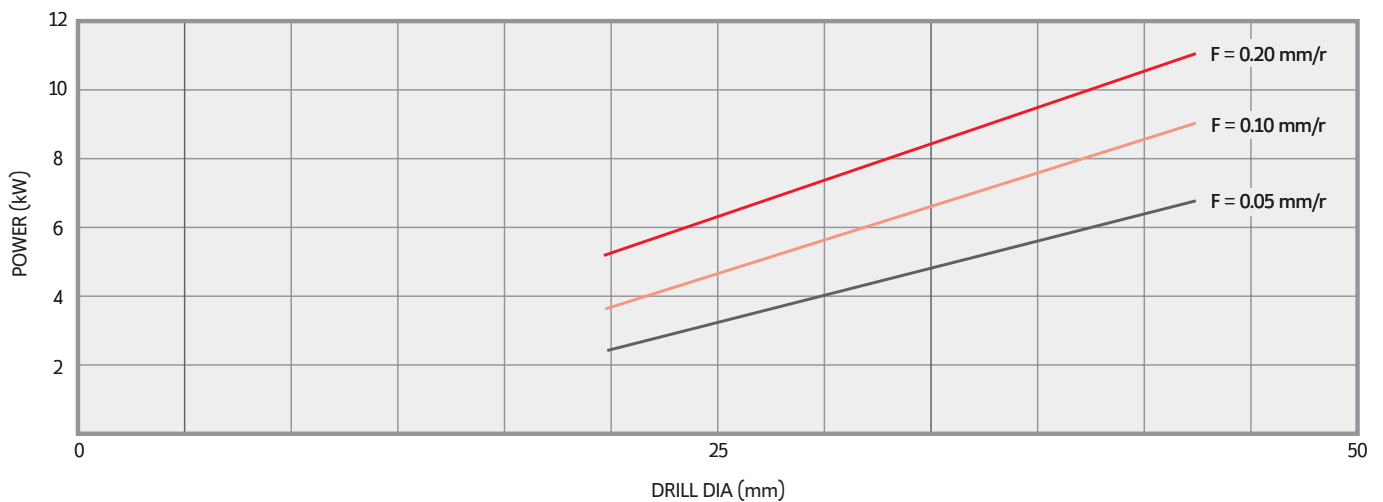


ØD	L
18-24	2,5
25-30	3,0
31-39	4,0
40-59	4,5
60-80	5,0

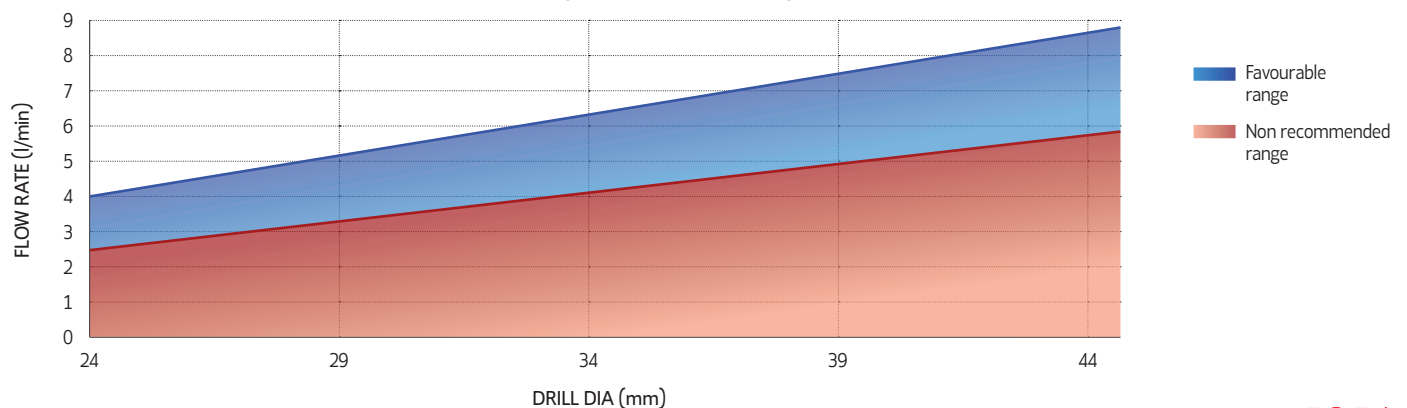
Recommended Speeds and Feeds | Parâmetros de Corte Recomendados Recomendaciones de Datos de Corte

ISO	Material Group Grupo Materiais Grupo Materiales	Vc (m/min)	f (mm/rev)						
			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

Power Requirements | Requisitos de Potência | Requisitos de Potencia

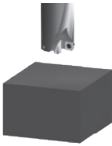
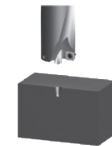
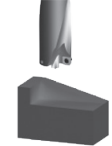





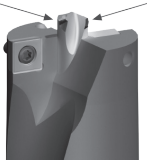

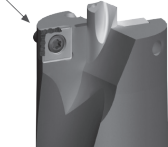
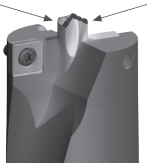
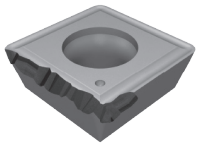

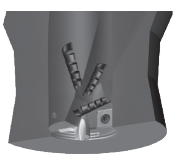
Coolant Application Chart | Tabela Aplicação de Refrigeração | Tabla Aplicación de Refrigerante



INTEGREX DRILLS - DHS, DHC, TFD DRILL TYPE

Rules & Tips | Regras e Dicas | Normas e Consejos

	WRONG	CORRECT	EN	PT	ES
DRILLING			<p>Spot Drilling</p> <p>For plain/straight surfaces, no spot drilling is required. For centering, the center drill diameter should be considerably smaller than the pilot drill diameter.</p>	<p>Furação Localizada</p> <p>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.</p>	<p>Perforación Localizada</p> <p>Para superficies planas, no se requiere la perforación in situ. Para centrar el diámetro de pre-perforación debe ser considerablemente más pequeño que el diámetro de la broca piloto.</p>
Jet Drills			<p>Spot drilling and drilling through on inclined surfaces.</p> <p>Up to an 8° inclination angle is possible. Drilling through at a maximum of 4° is possible; otherwise, a pre-facing operation is necessary.</p>	<p>Furação localizada e furação através de superfícies inclinadas.</p> <p>Até 8° ângulo de inclinação é possível. Furação até a um máximo de 4° é possível, caso contrário, é necessária uma pré-operação.</p>	<p>Perforación localizada y perforación sobre superficies inclinadas.</p> <p>Hasta un ángulo de inclinación de 8° es posible. A través de la perforación en un máximo de 4° es posible, de otro modo, es necesaria pre-operación.</p>
Integrex Drills			<p>Multi-Stage Drill Hole</p> <p>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.</p>	<p>Furo Multi-Estágio</p> <p>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.</p>	<p>Multi-etapa taladro</p> <p>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.</p>
Vortex Drills					
Trepanning Drills					
Solid Carbide Drills					
Inserts			<p>Drilling of stacked plates</p> <p>This is not possible with Integrex series drills because a final disc forms when the drill breaks through.</p> <p>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.</p>	<p>Furação de chapas empilhadas</p> <p>Isso não é possível com a Integrex porque um disco final forma-se quando a broca passa</p> <p>Cuidado: Durante operações de trespassar uma placa, uma avara 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.</p>	<p>Perforación de placas apiladas</p> <p>Esto no es posible con la Integrex debido a un disco que se forma cuando el taladro a través de las placas.</p> <p>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.</p>
Spare Parts					
Technical Data					

Problem Problema	Corrective Action	Possível Solução	Solución Posible
PILOT DRILL CRACKING 	On Lathes: <ul style="list-style-type: none"> • Verify that the tool is centered correctly. Readjust machine, if necessary. • Check clamping accuracy (tool and workpiece). 	Em Tornos: <ul style="list-style-type: none"> • Verifique se a ferramenta está centrada correctamente. Reajustar a máquina caso necessário. • Verifique a precisão do aperto (ferramento e peça). 	Tornos en: <ul style="list-style-type: none"> • 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 	<ul style="list-style-type: none"> • Use tougher carbide grade. • Reduce feed by 20%. • Check clamping accuracy (tool and workpiece) for possible improvement. 	<ul style="list-style-type: none"> • Use classes de graus mais duras. • Reduza o avanço em 20%. • Verifique a precisão do aperto (ferramento e peça). 	<ul style="list-style-type: none"> • 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 	<ul style="list-style-type: none"> • 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. 	<ul style="list-style-type: none"> • Use classes de graus mais duras. • Reduza o avanço em 20%. • Verifique a precisão do aperto (ferramento e peça). 	<ul style="list-style-type: none"> • 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 	<ul style="list-style-type: none"> • Use coated carbide pilot drill. • Increase coolant pressure and volume. • Reduce cutting speed by 20%. 	<ul style="list-style-type: none"> • Utilize uma broca piloto revestida. • Aumente a pressão e o volume do líquido de refrigeração. • Reduzir a velocidade de corte em 20%. 	<ul style="list-style-type: none"> • 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: <ul style="list-style-type: none"> • Use a more wear-resistant carbide grade. • Increase coolant pressure and volume. • Reduce cutting speed by 20%. 	Em Tornos: <ul style="list-style-type: none"> • 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: <ul style="list-style-type: none"> • 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 	<ul style="list-style-type: none"> • Optimize chip control for given application. • Increase cutting speed by 20%, reduce feed by 20%. 	<ul style="list-style-type: none"> • Optimizar a evacuação da apar para cada operação. • Aumentar a velocidade de corte em 20% e reduzir o avanço em 20%. 	<ul style="list-style-type: none"> • Optimizar el control de chip aplicación dada. • Aumentar la velocidad de corte en un 20%, reducir la alimentación en un 20%.
CHIP EVACUATION NOT OPTIMAL, POOR DRILL HOLE QUALITY 	<ul style="list-style-type: none"> • Increase coolant pressure and volume. • Increase cutting speed by 20%. 	<ul style="list-style-type: none"> • Aumentar o volume e a pressão do líquido de refrigeração. • Aumentar a velocidade de corte em 20%. 	<ul style="list-style-type: none"> • Aumentar la presión del refrigerante y el volumen. • Aumentar la velocidad de corte en un 20%.

VORTEX DRILLS - CUTTING PARAMETERS AND ADJUSTMENTS

QR

DRILLING

Jet Drills

Integrex Drills

Vortex Drills

Trepanning Drills

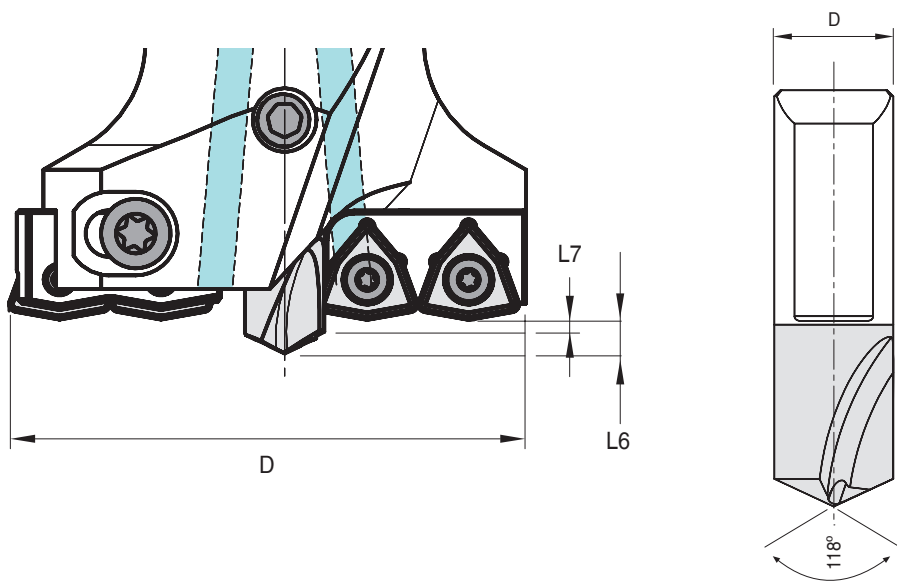
Solid Carbide Drills

Inserts

Spare Parts

Technical Data

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

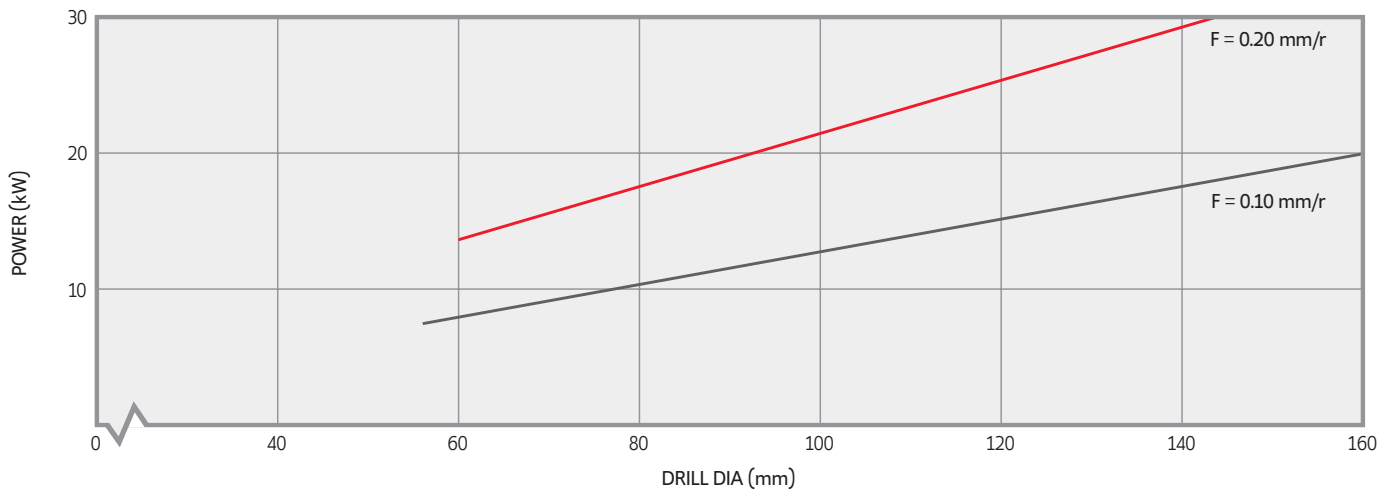


Dc (mm)	2D to 4D		4D to 6D		> 6D	
	L7	L6	L7	L6	L7	L6
45-55	1,6	4,0	1,8	4,2	2,0	4,4
55-75	1,8	5,4	2,0	5,6	2,2	5,8
75-100	2,2	6,5	2,5	6,8	2,8	7,1
100-120	2,4	7,7	2,8	8,1	3,2	8,5
120-170	3,2	9,9	3,6	10,3	4,0	10,7
170-180	3,5	12,2	3,9	12,6	4,3	13,0

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

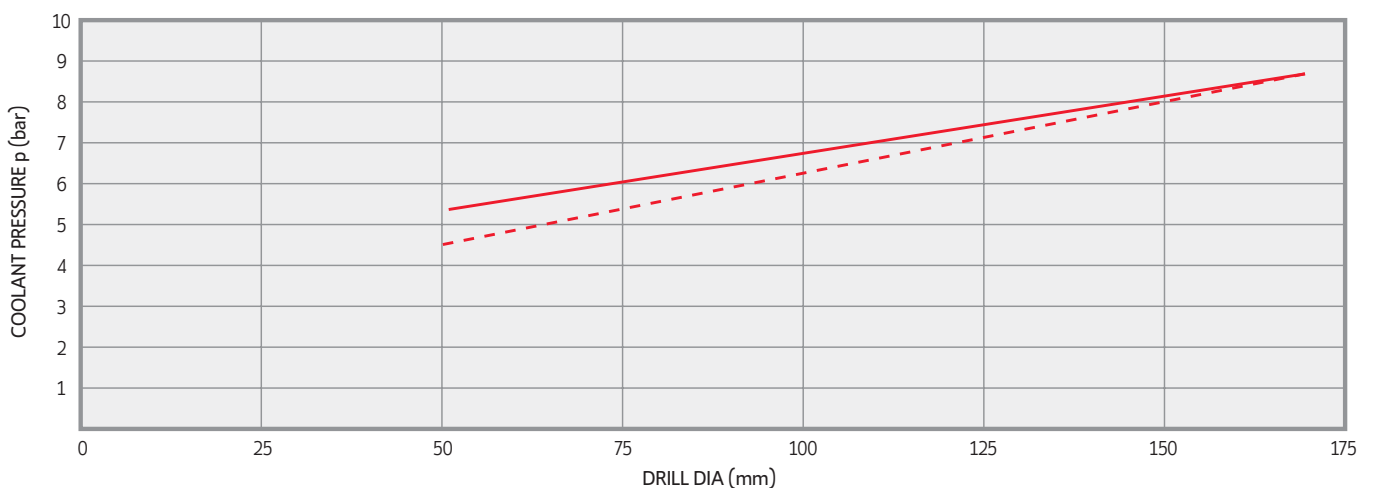
ISO	Material Group Grupo Materiais Grupo Materiales	Vc (m/min)	f (mm/rev)						
			Ø45-55	Ø55-60	Ø60-75	Ø75-100	Ø100-105	Ø105-150	Ø150-180
P	UNALLOYED STEEL (-0,25%)	120-180	0,06-0,10	0,07-0,11	0,08-0,12	0,10-0,14	0,14-0,20	0,08-0,12	0,10-0,14
	LOW-ALLOY STEEL (0,25%-)	110-170	0,06-0,10	0,07-0,11	0,08-0,12	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

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.

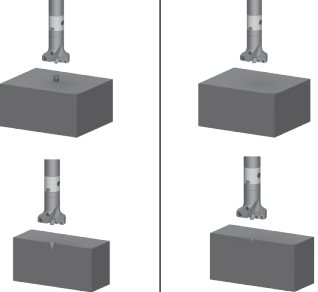
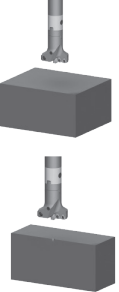
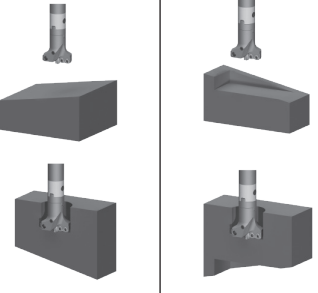
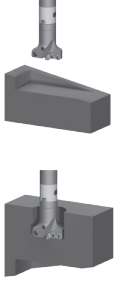
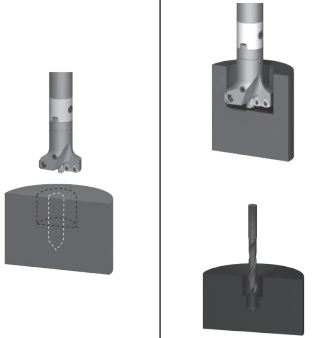
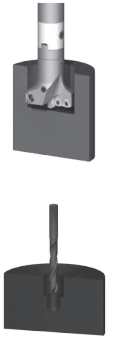
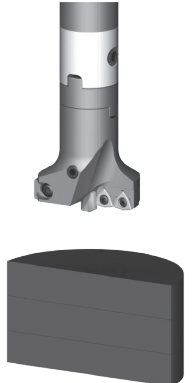
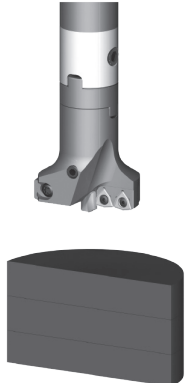
Coolant Application Chart | Tabela Aplicação de Refrigeração | Tabla Aplicación de Refrigerante

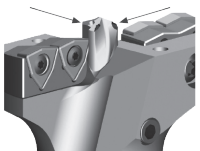
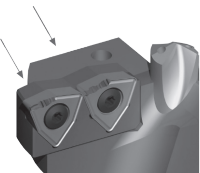
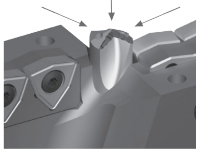




VORTEX DRILLS - CUTTING PARAMETERS AND ADJUSTMENTS

Parâmetros de corte e ajustes | Condiciones de corte y ajustes

Rules & Tips | Regras e Dicas | Normas e Consejos

WRONG	CORRECT	EN	PT	ES
		<p>Spot Drilling</p> <p>For plain/straight surfaces, no spot drilling is required. For centering, the center drill diameter should be considerably smaller than the pilot drill diameter.</p>	<p>Furação Localizada</p> <p>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.</p>	<p>Perforación Localizada</p> <p>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.</p>
		<p>Spot drilling and drilling through on inclined surfaces.</p> <p>Up to an 8° inclination angle is possible. Drilling through at a maximum of 4° is possible; otherwise, a pre-facing operation is required.</p>	<p>Furação localizada e furação através de superfícies inclinadas.</p> <p>Até 8° ângulo de inclinação é possível. Furação até a um máximo de 4° é possível, caso contrário, é necessária uma pré-operação.</p>	<p>Perforación localizada y perforación sobre superficies inclinadas.</p> <p>Hasta un ángulo de inclinación de 8° es posible. A través de la perforación en un máximo de 4° es posible, de otro modo, es necesaria pre-operación.</p>
		<p>Multi-Stage Drill Hole</p> <p>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.</p>	<p>Furo Multi-Estágio</p> <p>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.</p>	<p>Multi-etapa taladro</p> <p>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.</p>
		<p>Drilling of stacked plates</p> <p>This is not possible with Integrex series drills because a final disc forms when the drill breaks through.</p> <p>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.</p>	<p>Furação de chapas empilhadas</p> <p>Isso não é possível com a Integrex porque um disco final forma-se quando a broca passa</p> <p>Cuidado: Durante operações de trespassar uma placa, uma apana 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.</p>	<p>Perforación de placas apiladas</p> <p>Esto no es posible con la Integrex debido a un disco que se forma cuando el taladro a través de las placas.</p> <p>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.</p>

Problem Problema	Corrective Action	Possível Solução	Solución Posible
PILOT DRILL CRACKING 	On Lathes: <ul style="list-style-type: none"> • Verify that the tool is centered correctly. Readjust machine, if necessary. • Check clamping accuracy (tool and workpiece). 	Em Tornos: <ul style="list-style-type: none"> • Verifique se a ferramenta está centrada correctamente. Reajustar a máquina caso necessário. • Verifique a precisão do aperto (ferramento e peça). 	Tornos en: <ul style="list-style-type: none"> • 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 	<ul style="list-style-type: none"> • Use tougher carbide grade. • Check clamping accuracy (tool and workpiece) for possible run out. 	<ul style="list-style-type: none"> • Use classes de graus mais duras. • Verifique a precisão do aperto (ferramenta e peça). 	<ul style="list-style-type: none"> • 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 	<ul style="list-style-type: none"> • Use coated pilot drill. • Increase coolant pressure and volume. • Reduce speed by 20% • Use wear & resistant carbide grade. 	<ul style="list-style-type: none"> • Utilizar uma broca piloto revestida. • Aumentar o volume e a pressão do líquido de refrigeração. • Reduzir a velocidade de corte em 20%. • Utilizar classes de graus mais resistentes ao desgaste. 	<ul style="list-style-type: none"> • 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 	<ul style="list-style-type: none"> • Optimize chip control for given application by using different chipbreaker geometry. • Increase cutting speed by 20%; reduce feed by 20%. 	<ul style="list-style-type: none"> • Optimizar o controlo da aparca numa determinada operação outra geometria de quebra aparas. • Aumentar a velocidade de corte em 20% e reduzir o avanço em 20%. 	<ul style="list-style-type: none"> • Optimizar el control de viruta numa dada aplicación mediante utilización 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 	<ul style="list-style-type: none"> • Increase coolant pressure and volume. • Increase cutting speed by 20%. 	<ul style="list-style-type: none"> • Aumentar o volume e a pressão do líquido de refrigeração. • Aumentar a velocidade de corte em 20%. 	<ul style="list-style-type: none"> • 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.

TREPANING DRILLS - CUTTING PARAMETERS AND ADJUSTMENTS

Parâmetros de corte e ajustes | Condiciones de corte y ajustes

DRILLING

Jet Drills

Integrex Drills

Vortex Drills

Trepanning Drills

Solid Carbide Drills

Inserts

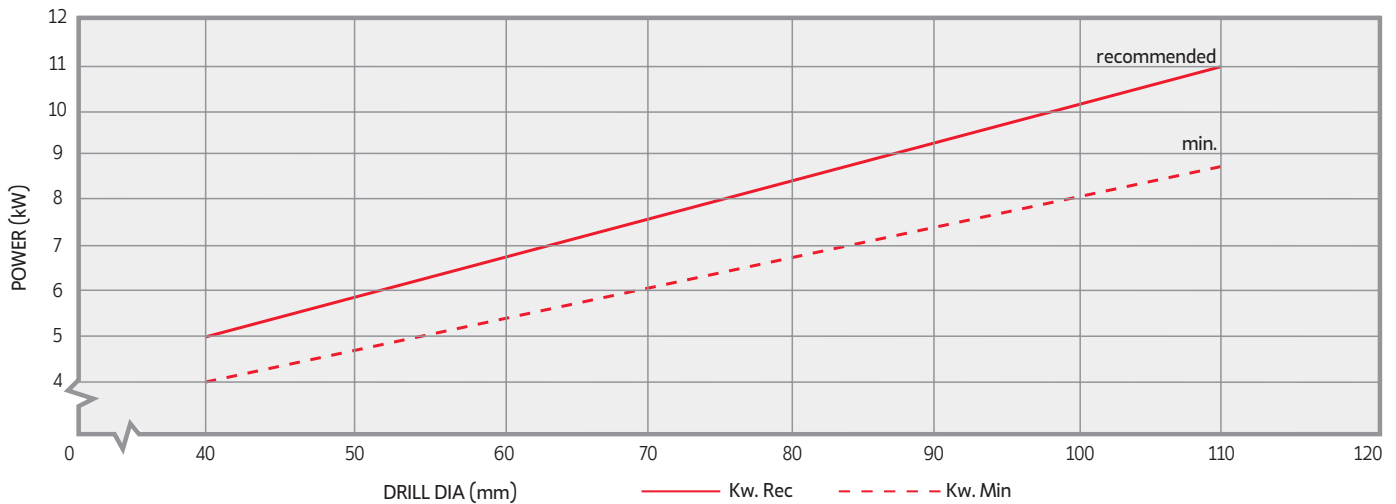
Spare Parts

Technical Data

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

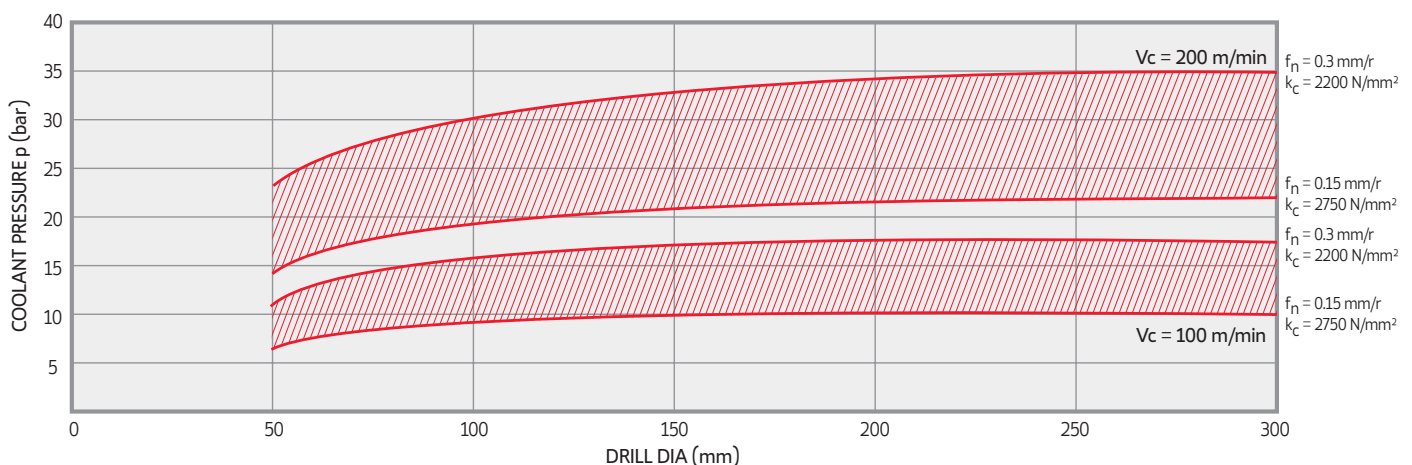
ISO	Material Group Grupo Materiais Grupo Materiales	DC (mm)	F _n (mm/r)	V _c (m/min)
P	UNALLOYED STEEL (-0,25%)	60-110	0,07-0,20	130-345
	LOW-ALLOY STEEL (0,25%-)	60-110	0,10-0,20	100-210
	LOW-ALLOY STEEL	60-110	0,10-0,20	90-200
	STEEL CASTING	60-110	0,06-0,18	120-280
M	STAINLESS STEEL	60-110	0,10-0,20	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



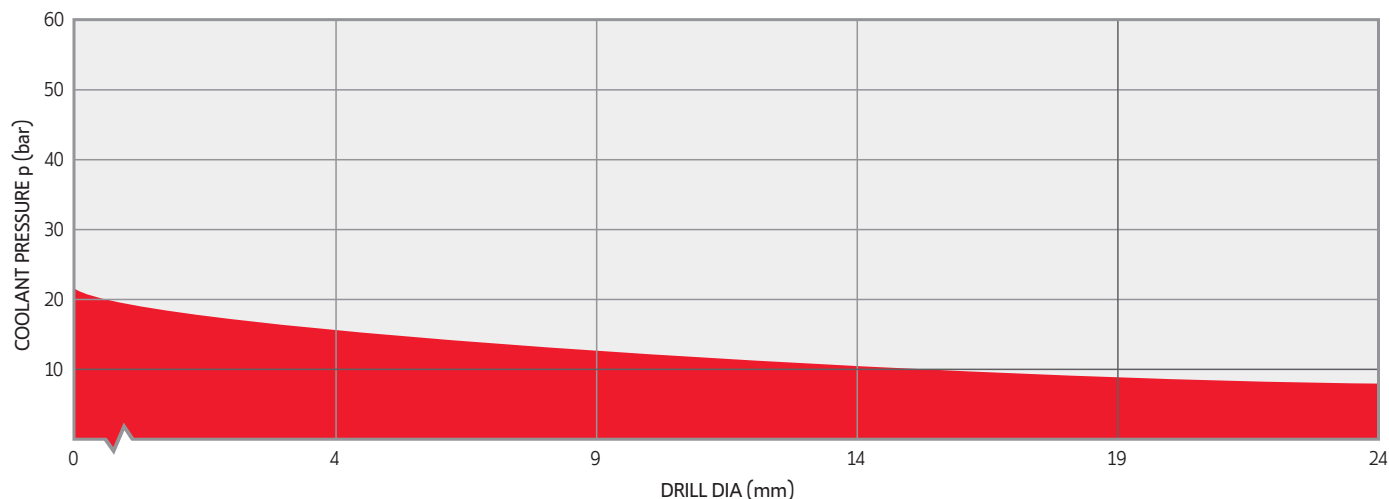
SOLID CARBIDE DRILLS - CUTTING PARAMETERS AND ADJUSTMENTS

Parâmetros de corte e ajustes | Condiciones de corte y ajustes

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

ISO	Material Group Grupo Materiais Grupo Materiales	Vc (m/min)	f (mm/rev)			
			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 gabilanse	<ul style="list-style-type: none"> Spintering on the cutting corners Estilhamento das esquinas de corte Astillado en las esquinas de corte 	<ul style="list-style-type: none"> 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. Enfrie desde ambos lados.
	<ul style="list-style-type: none"> Cutting conditions Condições de corte Condiciones de corte 	<ul style="list-style-type: none"> Reduce cutting speed, increase feed. Reduza a velocidade de corte, aumente o avanço. Reduzca la velocidad de corte, aumente el avance.
Spintering on the chisel edge Estilhamento do fio de corte transversal Astillado del filo de corte transversal	<ul style="list-style-type: none"> Clamping chuck Sistema de amarrar Sistema amarrar 	<ul style="list-style-type: none"> Check clamping accuracy. Use hydraulic clamping chuck or high-precision chucking system. Comprove a precisão da fixação utilize uma pinça de fixação hidráulica ou um sistema de aperto de alta precisão. Compruebe la precisión de la fijación. Utilice una pinza de fijación hidráulica o un sistema de amarrar de alta precisión.
	<ul style="list-style-type: none"> Cutting conditions Condições de corte Condiciones de corte 	<ul style="list-style-type: none"> Increase feed. Aumente o avanço. Aumente el avance.
Built-up edge Acrescimo do fio de corte Recrecimiento del filo de corte	<ul style="list-style-type: none"> Insufficient coolant. Refrigeração insuficiente Refrigerante insuficiente 	<ul style="list-style-type: none"> 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. Enfrie desde ambos lados.
	<ul style="list-style-type: none"> Cutting conditions Condições de corte Condiciones de corte 	<ul style="list-style-type: none"> Increase speed 20-30%. Aumente a velocidade em uns 20% a 30%. Aumente la velocidad en un 20-30%.
Spintering on the cutting edges Estilhamento do fio de corte principal Astillado del filo de corte principal	<ul style="list-style-type: none"> Clamping chuck Sistema de amarrar Sistema amarrar 	<ul style="list-style-type: none"> 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 hidráulica 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 amarrar de alta precisión.
	<ul style="list-style-type: none"> Cutting conditions caused by built-up edge Condições de corte provocadas por acrecimos no fio de corte Condiciones de corte provocadas por recrecimiento del filo de corte 	<ul style="list-style-type: none"> 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	<ul style="list-style-type: none"> Cutting conditions Condições de corte Condiciones de corte 	<ul style="list-style-type: none"> 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	<ul style="list-style-type: none"> Workpiece movement Movimento das peças de trabalho Movimiento de piezas de trabajo 	<ul style="list-style-type: none"> Stabilize workpiece chucking and check stability of machine tool. Estabilize a fixação da peça de trabalho e veja a estabilidade da máquina ferramenta. Establece la fijación de la pieza de trabajo y compruebe la estabilidad de la máquina herramienta
	<ul style="list-style-type: none"> Insufficient coolant Refrigeração insuficiente Refrigerante insuficiente 	<ul style="list-style-type: none"> 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. Enfrie desde ambos lados.
	<ul style="list-style-type: none"> Wrong drill Broca incorrecta Broca incorrecta 	<ul style="list-style-type: none"> 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.
	<ul style="list-style-type: none"> Cutting conditions Condições de corte Condiciones de corte 	<ul style="list-style-type: none"> 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	<ul style="list-style-type: none"> Cutting conditions Condições de corte Condiciones de corte 	<ul style="list-style-type: none"> 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.
	<ul style="list-style-type: none"> Clamping chuck Sistema de amarrar Sistema amarrar 	<ul style="list-style-type: none"> 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 hidráulica 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 amarrar de alta precisión.
	<ul style="list-style-type: none"> Wrong drill Broca incorrecta Broca incorrecta 	<ul style="list-style-type: none"> 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 pequeno	<ul style="list-style-type: none"> Insufficient coolant Refrigeração insuficiente Refrigerante insuficiente 	<ul style="list-style-type: none"> 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. Enfrie desde ambos lados.
	<ul style="list-style-type: none"> Cutting conditions Condições de corte Condiciones de corte 	<ul style="list-style-type: none"> Reduce cutting speed; increase feed. Reduza a velocidade de corte, aumente o avanço. Reduzca la velocidad de corte, aumente el avance.
	<ul style="list-style-type: none"> Wrong drill Broca incorrecta Broca incorrecta 	<ul style="list-style-type: none"> 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	<ul style="list-style-type: none"> Clamping chuck Sistema de amarre Sistema amarre 	<ul style="list-style-type: none"> Check clamping accuracy and torque transmission. Use hydraulic clamping chuck or high-precision chucking system. Veja a precisão da fixação e a transmissão do par. Utilize uma pinça de fixação hidráulica 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.
	<ul style="list-style-type: none"> Workpiece movement Movimento das peças de trabalho Movimiento de piezas de trabajo 	<ul style="list-style-type: none"> 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.
	<ul style="list-style-type: none"> Wrong drill Broca incorreta Broca incorrecta 	<ul style="list-style-type: none"> 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.
	<ul style="list-style-type: none"> Cutting conditions Condições de corte Condiciones de corte 	<ul style="list-style-type: none"> Reduce feed at entry. Reduza o avanço de entrada. Reduzca el avance de la entrada.
Drill Breakage Rotura da broca Rotura de broca	<ul style="list-style-type: none"> Workpiece movement Movimento das peças de trabalho Movimiento de piezas de trabajo 	<ul style="list-style-type: none"> 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.
	<ul style="list-style-type: none"> Wrong drill Broca incorreta Broca incorrecta 	<ul style="list-style-type: none"> 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.
	<ul style="list-style-type: none"> Insufficient coolant Refrigeração insuficiente Refrigerante insuficiente 	<ul style="list-style-type: none"> 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. Enfrie desde ambos lados.
	<ul style="list-style-type: none"> Cutting conditions Condições de corte Condiciones de corte 	<ul style="list-style-type: none"> 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.
Splintering on the cutting corners Estilhamento das esquinas de corte Astillado en las esquinas de corte	<ul style="list-style-type: none"> Clamping chuck Sistema de amarre Sistema amarre 	<ul style="list-style-type: none"> Check torque transmission. Use hydraulic clamping chuck or high-precision chucking system. Comprove a transmissão do par. Utilize uma pinça de fixação hidráulica 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.
	<ul style="list-style-type: none"> Workpiece movement Movimento das peças de trabalho Movimiento de piezas de trabajo 	<ul style="list-style-type: none"> 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.
	<ul style="list-style-type: none"> Wrong drill Broca incorreta Broca incorrecta 	<ul style="list-style-type: none"> 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.
	<ul style="list-style-type: none"> Insufficient coolant Refrigeração insuficiente Refrigerante insuficiente 	<ul style="list-style-type: none"> 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. Enfrie desde ambos lados.
	<ul style="list-style-type: none"> Cutting conditions Condições de corte Condiciones de corte 	<ul style="list-style-type: none"> 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.