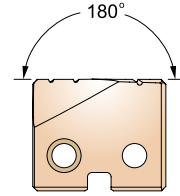


SPADE DRILL INSERTS - SUPER COBALT T15 FLAT BOTTOM

- SPADE DRILL BOHRER-EINSÄTZE - SUPER COBALT T15 (FLACH-NUT)
- Plaquettes SPADE DRILL à fond plat - Super Cobalt T15
- INSERTI SPADE DRILL - SUPER HSS T15 FONDO PIATTO



cutting conditions : p.A379

Recommended ToolHolder	Flat Shank	Page	Plain Shank	Page
	INDEXABLE DRILL HOLDER D245-246	-	-	-
	ER COLLET CHUCK	-	-	D73-115

Series Min. to Max. mm (inch)	Diameter			Thick Metric (mm, inch)	EDP No.		
	Inch (inch)	Metric (mm)	Decimal (inch)		SUPER HSS T15		
					TiN	Hardslick	TiAlN
Y Ø9.50 (.374) to Ø11.07 (.436)	3/8	9.50	.3740	2.4 (3/32)	S2155095	S2170095	S2165095
		9.53	.3750		S2105024	S2120024	S2115024
		9.80	.3858		S2155098	S2170098	S2165098
		9.92	.3906		S2105025	S2120025	S2115025
		10.00	.3937		S2155100	S2170100	S2165100
		10.20	.4016		S2155102	S2170102	S2165102
		10.32	.4062		S2105026	S2120026	S2115026
		10.50	.4134		S2155105	S2170105	S2165105
		10.72	.4219		S2105027	S2120027	S2115027
		10.80	.4252		S2155108	S2170108	S2165108
Z Ø11.11(.437) to Ø12.95(.510)	7/16	11.00	.4331	2.4 (3/32)	S2155110	S2170110	S2165110
		11.11	.4375		S2105028	S2120028	S2115028
		11.50	.4528		S2155115	S2170115	S2165115
		11.51	.4531		S2105029	S2120029	S2115029
		11.91	.4688		S2105030	S2120030	S2115030
		12.00	.4724		S2155120	S2170120	S2165120
		12.30	.4844		S2105031	S2120031	S2115031
		12.50	.4921		S2155125	S2170125	S2165125
		12.70	.5000		S2105032	S2120032	S2115032
		0 Ø12.98 (.511) to Ø17.65 (.695)	1/2		13.00	.5118	3.2 (1/8)
13.10	.5156			S2105033	S2120033	S2115033	
13.49	.5312			S2105034	S2120034	S2115034	
13.50	.5315			S2155135	S2170135	S2165135	
13.89	.5469			S2105035	S2120035	S2115035	
14.00	.5512			S2155140	S2170140	S2165140	
14.29	.5625			S2105036	S2120036	S2115036	
14.50	.5709			S2155145	S2170145	S2165145	
14.68	.5781			S2105037	S2120037	S2115037	
15.00	.5906			S2155150	S2170150	S2165150	
0	5/8	15.08	.5938	3.2 (1/8)	S2105038	S2120038	S2115038
		15.48	.6094		S2105039	S2120039	S2115039
		15.50	.6102		S2155155	S2170155	S2165155
		15.88	.6250		S2105040	S2120040	S2115040
		16.00	.6299		S2155160	S2170160	S2165160

◎ : Excellent ○ : Good

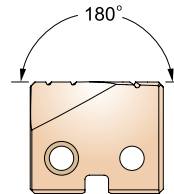
ISO Material Description	P										M				K						
	Non-alloy steel					Low alloy steel					High alloyed steel, and tool steel			Stainless steel			Grey cast iron		Nodular cast iron		Malleable cast iron
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	
HRc	13	25	28	32	30	10	29	32	38	35	35	15	23	10	10	26	3	25	21	21	
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	180	260	160	250	130	230	
Recommended	◎	◎	◎	◎	◎	◎	◎	○	○	○	○	○	○	○	○	◎	○	◎	○	◎	

ISO Material Description	N					S										H					
	Aluminum- wrought alloy		Aluminum-cast, alloyed			Copper and Copper Alloys (Bronze / Brass)			Non Metallic Materials		Heat Resistant Super Alloys					Titanium Alloys		Hardened steel	Chilled Cast Iron	Hardened Cast Iron	
VDI 3323	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
HRc											15	30	25	38	34			55	60	42	55
HB	60	100	75	90	130	110	90	100			200	280	250	350	320	400Rm	1050Rm	550	630	400	550
Recommended	○	○									◎	○	○	○	○			○			



SPADE DRILL INSERTS - SUPER COBALT T15 FLAT BOTTOM

- SPADE DRILL BOHRER-EINSÄTZE - SUPER COBALT T15 (FLACH-NUT)
- Plaquettes SPADE DRILL à fond plat - Super Cobalt T15
- INSERTI SPADE DRILL - SUPER HSS T15 FONDO PIATTO



Cutting conditions : p.A379

Recommended ToolHolder	Flat Shank	Page	Plain Shank	Page
	INDEXABLE DRILL HOLDER	D245-246	-	-
	ER COLLET CHUCK			D73-115

Series Min. to Max. mm (inch)	Diameter			Thick Metric (mm, inch)	EDP No.				
	Inch (inch)	Metric (mm)	Decimal (inch)		SUPER HSS T15				
					TiN	Hardslick	TiAIN		
0 Ø12.98(.511) to Ø17.65(.695)	41/64	16.27	.6406	3.2 (1/8)	S2105041	S2120041	S2115041		
					S2155165	S2170165	S2165165		
	21/32	16.67	.6562		S2105042	S2120042	S2115042		
					S2155170	S2170170	S2165170		
	43/64	17.07	.6719		S2105043	S2120043	S2115043		
					S2105044	S2120044	S2115044		
	11/16	17.46	.6875		S2155175	S2170175	S2165175		
					S2105045	S2120045	S2115045		
	1 Ø17.53 (.690) to Ø24.38 (.960)	45/64	17.86		.7031	4.0 (5/32)	S2155180	S2170180	S2165180
							S2105046	S2120046	S2115046
23/32		18.26	.7188	S2155185	S2170185		S2165185		
				S2105047	S2120047		S2115047		
47/64		18.65	.7344	S2155190	S2170190		S2165190		
				S2105048	S2120048		S2115048		
3/4		19.05	.7500	S2105049	S2120049		S2115049		
				S2155195	S2170195		S2165195		
49/64		19.45	.7656	S2105050	S2120050		S2115050		
				S2155200	S2170200		S2165200		
25/32		19.84	.7812	S2105051	S2120051		S2115051		
				S2155205	S2170205		S2165205		
51/64		20.24	.7969	S2105052	S2120052		S2115052		
				S2155210	S2170210		S2165210		
20.00		.7874	.8071	S2105054	S2120054		S2115054		
				S2105055	S2120055		S2115055		
13/16		20.64	.8125	S2155220	S2170220		S2165220		
				S2105056	S2120056		S2115056		
21.00		.8268	.8438	S2105057	S2120057		S2115057		
				S2155230	S2170230		S2165230		
27/32	21.43	.8438	S2105058	S2120058	S2115058				
			S2105059	S2120059	S2115059				
55/64	21.83	.8594	S2105060	S2120060	S2115060				
			S2155240	S2170240	S2165240				
22.00	.8661	.8750							
7/8	22.23	.8750							
57/64	22.62	.8906							
23.00	.9055	.9062							
29/32	23.02	.9062							
59/64	23.42	.9219							
15/16	23.81	.9375							
24.00	.9449								

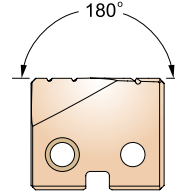
◎ : Excellent ○ : Good

ISO Material Description	P										M				K					
	Non-alloy steel					Low alloy steel					High alloyed steel, and tool steel		Stainless steel		Grey cast iron		Nodular cast iron		Malleable cast iron	
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
HRc	13	25	28	32	30	10	29	32	38	15	35	15	23	10	10	26	3	25		21
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	180	260	160	250	130	230
Recommended	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎

ISO Material Description	N										S						H				
	Aluminum- wrought alloy		Aluminum-cast, alloyed			Copper and Copper Alloys (Bronze / Brass)		Non Metallic Materials			Heat Resistant Super Alloys			Titanium Alloys			Hardened steel	Chilled Cast Iron	Hardened Cast Iron		
VDI 3323	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
HRc											15	30	25	38	34			55	60	42	55
HB	60	100	75	90	130	110	90	100			200	280	250	350	320	400Rm	1050Rm	550	630	400	550
Recommended	○	○									◎	○	○	○	○						

SPADE DRILL INSERTS - SUPER COBALT T15 FLAT BOTTOM

- SPADE DRILL BOHRER-EINSÄTZE - SUPER COBALT T15 (FLACH-NUT)
- Plaquettes SPADE DRILL à fond plat - Super Cobalt T15
- INSERTI SPADE DRILL - SUPER HSS T15 FONDO PIATTO



Cutting conditions : p.A379

Recommended ToolHolder	Flat Shank	Page	Plain Shank	Page
	INDEXABLE DRILL HOLDER D245-246	-	-	-
	ER COLLET CHUCK	-	-	D73-115

Series Min. to Max. mm (inch)	Diameter			Thick Metric (mm, inch)	EDP No.		
	Inch (inch)	Metric (mm)	Decimal (inch)		SUPER HSS T15		
					TiN	Hardslick	TiAlN
<p style="font-size: 2em; font-weight: bold; text-align: center;">2</p> <p>Ø24.41 (.961) to Ø35.05 (1.380)</p>	31/32	24.61	.9688	4.8 (3/16)	S2105062	S2120062	S2115062
	63/64	25.00	.9843		S2105063	S2120063	S2115063
	1	25.40	1.0000		S2105100	S2120100	S2115100
	1-1/64	25.80	1.0156		S2105101	S2120101	S2115101
					S2155260	S2170260	S2165260
	1-1/32	26.19	1.0312		S2105102	S2120102	S2115102
					S2105103	S2120103	S2115103
	1-3/64	26.59	1.0469		S2105104	S2120104	S2115104
	1-1/16	26.99	1.0625		S2155270	S2170270	S2165270
					S2105106	S2120106	S2115106
	1-3/32	27.78	1.0938		S2155280	S2170280	S2165280
					S2105107	S2120107	S2115107
	1-7/64	28.18	1.1094		S2105108	S2120108	S2115108
					S2155290	S2170290	S2165290
	1-1/8	28.58	1.1250		S2105110	S2120110	S2115110
					S2155300	S2170300	S2165300
	1-3/16	30.16	1.1875		S2105112	S2120112	S2115112
					S2105114	S2120114	S2115114
	1-7/32	30.96	1.2188		S2155310	S2170310	S2165310
					S2105116	S2120116	S2115116
	1-1/4	31.75	1.2500		S2155320	S2170320	S2165320
					S2105118	S2120118	S2115118
	1-9/32	32.54	1.2812		S2155330	S2170330	S2165330
					S2105120	S2120120	S2115120
	1-5/16	33.34	1.3125		S2155340	S2170340	S2165340
					S2105122	S2120122	S2115122
	1-11/32	34.13	1.3438		S2105124	S2120124	S2115124
					S2155350	S2170350	S2165350
1-3/8	34.93	1.3750					
	35.00	1.3780					

◎ : Excellent ○ : Good

ISO Material Description	P										M				K							
	Non-alloy steel					Low alloy steel					High alloyed steel, and tool steel				Stainless steel			Grey cast iron		Nodular cast iron		Malleable cast iron
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20		
HRc	13	25	28	32	30	10	29	32	38	15	35	15	23	10	10	26	3	25	21	21		
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	180	260	160	250	130	230		
Recommended	◎	◎	◎	◎	◎	◎	◎	○	○	○	○	○	○	○	○	◎	○	◎	○	◎		

ISO Material Description	N					S										H					
	Aluminum- wrought alloy		Aluminum-cast, alloyed			Copper and Copper Alloys (Bronze / Brass)			Non Metallic Materials		Heat Resistant Super Alloys					Titanium Alloys		Hardened steel	Chilled Cast Iron	Hardened Cast Iron	
VDI 3323	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
HRc											15	30	25	38	34			55	60	42	55
HB	60	100	75	90	130	110	90	100			200	280	250	350	320	400Rm	1050Rm	550	630	400	550
Recommended	○	○					○				◎	○	○	○	○			○			

SELECTION GUIDE



SERIES	1~8	Y,Z,0,1~4	Y,Z,0,1,2
TOOL MATERIAL	HSS M4	SUPER HSS T15	PREMIUM HSS M48
POINT	STANDARD	STANDARD	STANDARD
SIZE MIN	Ø17.86(#1)	Ø9.5(#Y)	Ø9.5(#Y)
SIZE MAX	Ø114.3(#8)	Ø65.09(#4)	Ø35(#2)
PAGE	A286	A292	A297



Please visit globalyg1.com/mat for material search

SURFACE TREATMENT

TiN / TiCN / TiAIN

INSERTS & HOLDERS SPADE DRILLS

For General Machines and Drilling Large Diameters
Longer Tool Life and High Productivity

◎ : Excellent ○ : Good

Recommended cutting conditions : p.A375



ISO	VDI 3323	Material Description	Composition / Structure / Heat Treatment	HB	HRc			
P	1	Non-alloy steel	About 0.15% C Annealed	125		○	◎	◎
	2		About 0.45% C Annealed	190	13	○	◎	◎
	3		About 0.45% C Quenched & Tempered	250	25	○	◎	◎
	4		About 0.75% C Annealed	270	28	○	◎	◎
	5		About 0.75% C Quenched & Tempered	300	32			
	6	Low alloy steel	Annealed	180	10	○	◎	◎
	7		Quenched & Tempered	275	29	○	◎	◎
	8		Quenched & Tempered	300	32		○	◎
	9		Quenched & Tempered	350	38		○	◎
	10		High alloyed steel, and tool steel	Annealed	200	15		○
	11	Quenched & Tempered		325	35		○	◎
M	12	Stainless steel	Ferritic / Martensitic Annealed	200	15	◎	○	
	13		Martensitic Quenched & Tempered	240	23	◎	○	
	14		Austenitic	180	10	◎	○	
K	15	Grey cast iron	Pearlitic / ferritic	180	10	◎	○	○
	16		Pearlitic (Martensitic)	260	26	○	◎	◎
	17	Nodular cast iron	Ferritic	160	3	◎	○	○
	18		Pearlitic	250	25	○	◎	◎
	19		Ferritic	130		◎	○	○
20	Malleable cast iron	Pearlitic	230	21	○	◎	◎	
N	21	Aluminum-wrought alloy	Not Curable	60		◎	○	○
	22		Curable Hardened	100		◎	○	○
	23	Aluminum-cast, alloyed	≤ 12% Si, Not Curable	75				
	24		≤ 12% Si, Curable Hardened	90				
	25		> 12% Si, Not Curable	130				
	26		Copper and Copper Alloys	Cutting Alloys, PB>1%	110			
	27	(Bronze / Brass)	CuZn, CuSnZn (Brass)	90		◎	○	○
	28		CuSn, lead-free copper and electrolytic copper	100				
	29		Non Metallic Materials	Duroplastic, Fiber Reinforced Plastic				
	30		Rubber, Wood, etc.					
S	31	Heat Resistant Super Alloys	Fe Based Annealed	200	15		◎	◎
	32		Cured	280	30		○	◎
	33		Annealed	250	25		○	◎
	34		Ni or Co Based Cured	350	38		○	◎
	35	Cast	320	34		○	◎	
	36	Titanium Alloys	Pure Titanium	400 Rm				
	37		Alpha + Beta Alloys Hardened	1050 Rm				
H	38	Hardened steel	Hardened	550	55		○	◎
	39		Hardened	630	60			
	40	Chilled Cast Iron	Cast	400	42			
	41	Hardened Cast Iron	Hardened	550	55			

REAMERS	TAPER SHANK		TAPER SHANK HOLDERS - INCH/METRIC	A364
COUNTER SINKS	FLANGED SHANK		FLANGED STRAIGHT SHANK HOLDERS - INCH/METRIC	A364
COUNTER BORES	STRAIGHT SHANK		STRAIGHT SHANK HOLDERS - INCH	A382

Y,Z,0,1,2	Y,Z,0,1~3	Y,Z,0,1~3	1~3	Y,Z,0,1~3	Y,Z,0,1,2	Y,Z,0,1,2	Y,Z,0,1~3	Y,Z,0,1~3	Y,Z,0,1,2
CARBIDE K10	CARBIDE K20	CARBIDE P40	HSS M4	SUPER HSS T15	PREMIUM HSS M48	CARBIDE K10	CARBIDE K20	CARBIDE P40	SUPER COBALT T15
STANDARD	STANDARD	STANDARD	SM-POINT	SM-POINT	SM-POINT	SM-POINT	SM-POINT	SM-POINT	FALT BOTTOM
Ø9.5(#Y)	Ø9.5(#Y)	Ø9.5(#Y)	Ø17.86(#1)	Ø9.5(#Y)	Ø9.5(#Y)	Ø9.5(#Y)	Ø9.5(#Y)	Ø9.5(#Y)	Ø9.5(#Y)
Ø35(#2)	Ø47.63(#3)	Ø47.63(#3)	Ø47.63(#3)	Ø47.63(#3)	Ø35(#2)	Ø35(#2)	Ø47.63(#3)	Ø47.63(#3)	Ø35(#2)
A300	A303	A307	A312	A315	A319	A322	A325	A329	A361

TiN / TiCN / TiAlN



											1	DREAM DRILLS -FLAT BOTTOM
											2	DREAM DRILLS -INOX
											3	DREAM DRILLS -ML
											4	DREAM DRILLS -HARDENED STEELS
											5	GENERAL CARBIDE DRILLS
											6	MULTI-1 DRILLS
											7	HPD DRILLS
											8	GOLD-P DRILLS
											9	SUPER-GP DRILLS
											10	STRAIGHT SHANK DRILLS
											11	TAPER SHANK DRILLS
											12	NC- SPOTTING DRILLS
											13	CENTER DRILLS
											14	SPADE DRILLS
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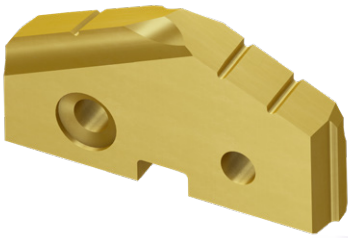
Coating	Characteristics
H	<ul style="list-style-type: none"> -First choice for excellent wear resistance and toughness -Preventive of chipping due to cold welding -Achieve high penetration rates even in deep holes with reliable tool life -Coefficient of friction against steel : 0.25 -Color : Bronze
TiN	<ul style="list-style-type: none"> -Increased tool life over non-coating -Improved wear resistance and high hardness -For normal applications -Coefficient of friction against steel : 0.4 -Color : Gold

Coating	Characteristics
TiCN	<ul style="list-style-type: none"> -Maximum working temperature up to 400°C -Better wear resistance over non-coating -Coefficient of friction against steel : 0.4 -Color : Blue-Grey
TiAlN	<ul style="list-style-type: none"> -Maximum working temperature up to 800°C -Excellent heat and oxidation resistance -Coefficient of friction against steel : 0.4 -Color : Violet-Grey
Hardslick	<ul style="list-style-type: none"> -Better chip evacuation for tapping and drilling -High hardness and improved lubrication -Coefficient of friction against steel : 0.2 -Color : Black-Grey

PRODUCT FEATURES

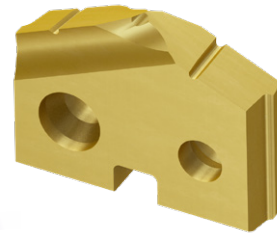
SPADE DRILLS (Standard, SM-Point)

Reference page : p.A299 - p.A380



Standard-Point

Standard Point
and Neutral Rake Angle for
Stable Cutting
Self Centering
Chip Breaking
Rigidity on Center



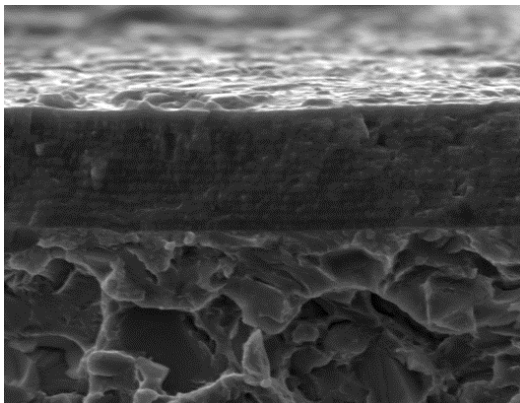
SM-Point

Multiple Web Thinning for and Radius Back Face
for Increased Cutting Speed and Feed
Wide Chip Space
Good Self-Centering
Less Tool Lead-off
Reduction in bell moutinging



Multi Layers

Carbide



Multi layered 'H'-coating Micro Grain Carbide Insert

Outstanding Productivity & Reliability

H - Coating

(Upgraded AlCrN-Based : **Multi-Layer coating**)

- Higher worn-out resistance and Lower friction
- Higher Cutting Speed and Feed
- Improved drill Hole Quality



Special features of SM-Point Spade Drill

This new "Hybrid Point" combines the strength of the standard point with additional "Web Thinning".

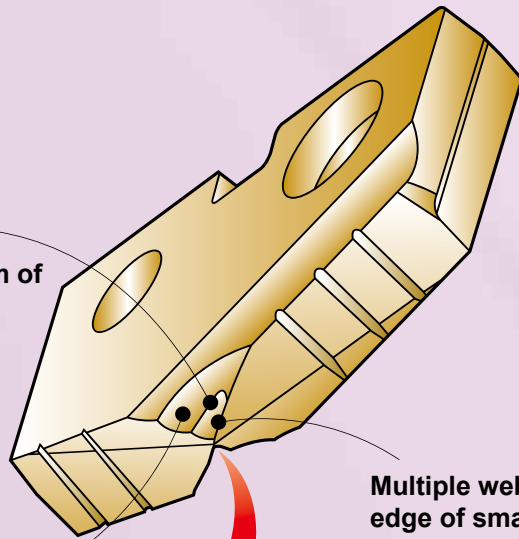
This new point increases stability, reduces thrust, improves centering and allows increased speeds and feeds.

Multiple thinning form at the bottom of the large thinning.

- ▶ The optimum thinning for the difference from the cutting speed, the cutting quantity and the cutting load according to the distance from the drill point to the cutting edge.

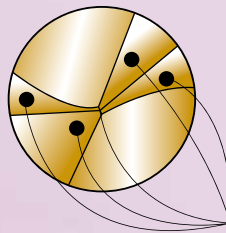
Radius back face

- ▶ Wide chip space



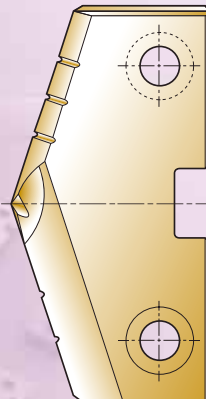
Multiple web thinning with the cutting edge of small web thinning.

- ▶ Good self-centering
- ▶ Less tool lead off
- ▶ Reduction in bell mouching, thrust
- ▶ Increased stability

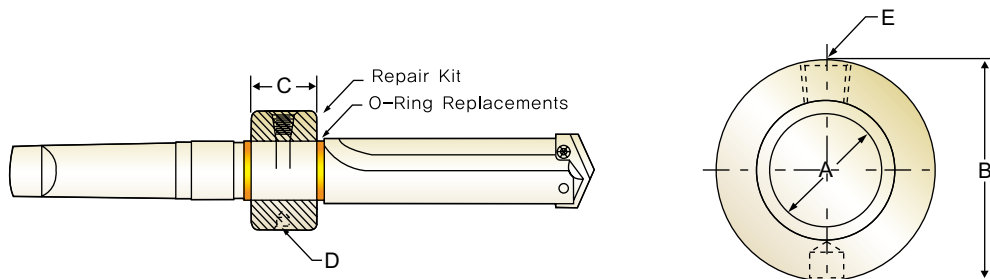


Four-facet point

- ▶ Self-centering
- ▶ Less thrust force



HOLDER ACCESSORIES
ROTARY COOLANT ADAPTER (RCA) AND ACCESSORIES



Inch

Item No.	I.D.	O.D.	Length	Thread for Driving Rod	Pipe Tap	RCA Repair Kit Item No.	RCA O-Ring Replacements Item No.
	A	B	C	D	E		
PR110048	3/4	1-3/4	7/8	5/16-NC	◆1/8	PR210048	PR310048
PR110100	1	2-1/8	1-1/8	5/16-NC	◆1/8	PR210100	PR310100
PR110116	1-1/4	2-1/2	1-3/8	3/8-NC	◆1/4	PR210116	PR310116
PR110148	1-3/4	3	1-3/8	3/8-NC	◆1/4	PR210148	PR310148
PR110216	2-1/4	3-3/4	1-3/4	1/2-NC	◆1/2	PR210216	PR310216

Metric

Item No.	I.D.	O.D.	Length	Thread for Driving Rod	Pipe Tap	RCA Repair Kit Item No.	RCA O-Ring Replacements Item No.
	A	B	C	D	E		
PR120190	19.05	44.45	22.23	M8 × 1.25	◆1/8	PR220190	PR320190
PR120254	25.40	53.97	28.57	M8 × 1.25	◆1/8	PR220254	PR320254
PR120317	31.75	63.50	34.92	M10 × 1.5	◆1/4	PR220317	PR320317
PR120444	44.45	76.20	34.92	M10 × 1.5	◆1/4	PR220444	PR320444
PR120571	57.15	95.27	44.45	M12 × 1.75	◆1/2	PR220571	PR320571

◆ Thread to BSP & ISO 7-1

TORX SCREWS

Holder Series	Item No.	TORX Hand Driver	Drill Range Used With	
			Inch	Metric
Y	J07Y0010	J05Y0070	3/8 ~ 27/64	9.5 mm ~ 11.0 mm
Z	J07Z0110		7/16 ~ 1/2	11.5 mm ~ 12.5 mm
0	J0800210	J0500080	33/64 ~ 11/16	13.0 mm ~ 17.5 mm
0.5	J0805310		39/64 ~ 11/16	15.5 mm ~ 17.5 mm
1	J0910410	J0510090	45/64 ~ 15/16	18.0 mm ~ 24.0 mm
1.5	J0915510		55/64 ~ 15/16	22.0 mm ~ 24.0 mm
2	J1520610	J0520150	31/32 ~ 1-3/8	25.0 mm ~ 35.0 mm
2.5	J1525710		1-3/16 ~ 1-3/8	30.0 mm ~ 35.0 mm
3,4	J2030810		1-13/32 ~ 2-9/16	36.0 mm ~ 65.0 mm
5 ~ 8	J2550910	J0550250	2-1/2 ~ 4-1/2	64.0 mm ~ 114.0 mm

** Note : Replacement screws sold in packages(10 screws per package)

SPADE DRILL FLAT BOTTOM HSS-T15

 RPM = rev./min.
 FEED = mm/rev.

ISO	VDI 3323	Material Description	Vc(m/min)		Feed(mm/rev)			
			TiN	TiAlN	Ø9.5-12.5	Ø13-17.5	Ø18-24	Ø25-35
P	1	Non-alloy steel	54	60	0.12	0.18	0.22	0.30
	2		46	55	0.10	0.15	0.19	0.27
	3		45	50	0.10	0.15	0.18	0.27
	4		42	46	0.08	0.14	0.17	0.22
	6	Low alloy steel	45	46	0.10	0.16	0.19	0.29
	7		40	45	0.10	0.13	0.18	0.28
	8		38	42	0.07	0.12	0.18	0.22
	9		34	37	0.06	0.12	0.17	0.22
	10	High alloyed steel, and tool steel	27	29	0.07	0.12	0.15	0.20
	11		22	23	0.07	0.12	0.15	0.20
	M	12	Stainless steel	23	25	0.13	0.15	0.18
13		23		25	0.13	0.15	0.18	0.22
14		26		29	0.17	0.18	0.20	0.23
K	15	Grey cast iron	51	60	0.12	0.21	0.29	0.40
	16		38	48	0.10	0.14	0.20	0.25
	17	Nodular cast iron	51	60	0.12	0.21	0.29	0.40
	18		38	48	0.10	0.14	0.20	0.25
	19	Malleable cast iron	56	66	0.13	0.25	0.35	0.41
	20		38	48	0.10	0.14	0.20	0.25
N	21	Aluminum-wrought alloy	208	213	0.17	0.28	0.36	0.43
	22		112	121	0.17	0.28	0.36	0.41
	27	Copper and Copper Alloys (Bronze / Brass)	48	70	0.15	0.26	0.37	0.45
S	31	Heat Resistant Super Alloys	20	10	0.06	0.14	0.16	0.19
	32		7	9	0.06	0.11	0.14	0.15
	33		7	9	0.06	0.11	0.14	0.15
	34		7	9	0.06	0.11	0.14	0.15
	35		7	9	0.06	0.11	0.14	0.15
H	38	Hardened steel	23	25	0.13	0.15	0.18	0.22

► The recommendations for speeds, feeds and other parameters presented in this chart are nominal recommendations and should be considered only as good starting points.
 Speed and feed reductions (20% reduction in speed and 10% reduction in feed) are recommended.

 i-ONE
 DRILLS

 i-DREAM
 DRILLS

 DREAM
 DRILLS
 -PRO

 DREAM
 DRILLS
 -GENERAL

 DREAM
 DRILLS
 -HIGH FEED

 DREAM
 DRILLS
 -FLAT BOTTOM

 DREAM
 DRILLS
 -INOX

 DREAM
 DRILLS
 -ALU

 DREAM
 DRILLS
 -MQL

 DREAM DRILLS
 for HIGH
 HARDENED STEELS

 GENERAL
 CARBIDE
 DRILLS

 MULTI-1
 DRILLS

 HPD
 DRILLS

 GOLD-P
 DRILLS

 SUPER-GP
 DRILLS

 STRAIGHT
 SHANK
 DRILLS

 TAPER SHANK
 DRILLS

 NC-
 SPOTTING
 DRILLS

 CENTER
 DRILLS

**SPADE
 DRILLS**

REAMERS

 COUNTER
 SINKS

 COUNTER
 BORES

 TECHNICAL
 DATA