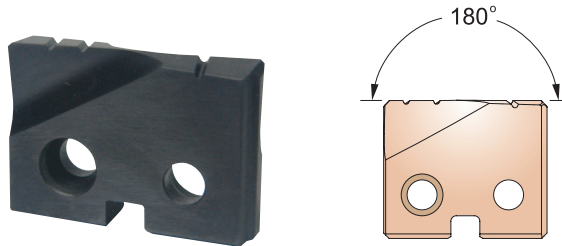


SPADE DRILL INSERTS - SUPER COBALT T15 FLAT BOTTOM SPADE DRILL BOHRER-EINSÄTZE - SUPER COBALT T15(FLACH-NUT)

POINT ANGLE : 180 degree



cutting conditions : P.327

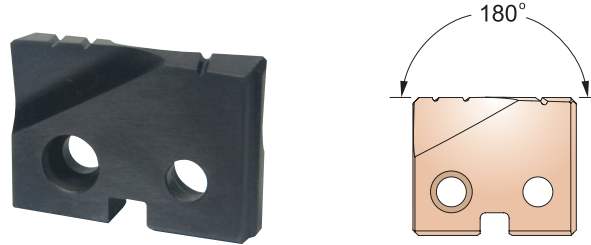
Series Min. to Max. (mm/inch)	Diameter			Thick Metric (mm/inch)	EDP No.		
	Inch (inch)	Metric (mm)	Decimal (inch)		SUPER HSS (T15)		
					TiN	Hardslick	TiAlN
Y 9.50 (.374") to 11.07 (.436")	3/8"	9.50	.3740"	2.4 (3/32")	S2155095	S2170095	S2165095
		9.53	.3750"		S2105024	S2120024	S2115024
	25/64"	9.80	.3858"		S2155098	S2170098	S2165098
		9.92	.3906"		S2105025	S2120025	S2115025
	13/32"	10.00	.3937"		S2155100	S2170100	S2165100
		10.20	.4016"		S2155102	S2170102	S2165102
	27/64"	10.32	.4062"		S2105026	S2120026	S2115026
		10.50	.4134"		S2155105	S2170105	S2165105
	11.00	10.72	.4219"		S2105027	S2120027	S2115027
		10.80	.4252"		S2155108	S2170108	S2165108
Z 11.11(.437") to 12.95(.510")	7/16"	11.00	.4331"	2.4 (3/32")	S2155110	S2170110	S2165110
		11.11	.4375"		S2105028	S2120028	S2115028
	29/64"	11.50	.4528"		S2155115	S2170115	S2165115
		11.51	.4531"		S2105029	S2120029	S2115029
	15/32"	11.91	.4688"		S2105030	S2120030	S2115030
		12.00	.4724"		S2155120	S2170120	S2165120
31/64"	12.30	.4844"	S2105031	S2120031	S2115031		
	12.50	.4921"	S2155125	S2170125	S2165125		
1/2"	12.70	.5000"	S2105032	S2120032	S2115032		
	13.00	.5118"	S2155130	S2170130	S2165130		
0 12.98 (.511") to 17.65 (.695")	33/64"	13.10	.5156"	3.2 (1/8")	S2105033	S2120033	S2115033
		17/32"	13.49		.5312"	S2105034	S2120034
	35/64"	13.50	.5315"		S2155135	S2170135	S2165135
		13.89	.5469"		S2105035	S2120035	S2115035
	9/16"	14.00	.5512"		S2155140	S2170140	S2165140
		14.29	.5625"		S2105036	S2120036	S2115036
	37/64"	14.50	.5709"		S2155145	S2170145	S2165145
		14.68	.5781"		S2105037	S2120037	S2115037
	15.00	15.00	.5906"		S2155150	S2170150	S2165150
		15.08	.5938"		S2105038	S2120038	S2115038
	39/64"	15.48	.6094"		S2105039	S2120039	S2115039
		15.50	.6102"		S2155155	S2170155	S2165155
	5/8"	15.88	.6250"		S2105040	S2120040	S2115040
		16.00	.6299"		S2155160	S2170160	S2165160

◎ : Excellent ○ : Good

Non- alloyed Steels, Free Machining Steels	Carbon Steels		Alloy Steels		High Alloyed steels		Structural Steels		Tool Steels		Stainless Steels	Cast Iron		Aluminum	Copper Alloys	
	~HRC24 (~HB250)	~HRC28 (~HB275)	HRC28~ (HB275~)	~HRC28 (~HB275)	HRC28~ (HB275~)	~HRC37 (~HB350)	HRC37~ (HB350~)	~HRC24 (~HB250)	HRC24~ (HB250~)	~HRC13 (~HB200)	HRC13~ (HB200~)	~HRC28 (~HB275)	~HRC19 (~HB220)	HRC19~ (HB220~)	~HRC8 (~HB180)	~HB110
◎	◎	◎	◎	○	○	○	◎	◎	○	○	○	○	○	◎	○	○

SPADE DRILL INSERTS - SUPER COBALT T15 FLAT BOTTOM
SPADE DRILL BOHRER-EINSÄTZE - SUPER COBALT T15(FLACH-NUT)

POINT ANGLE : 180 degree



cutting conditions : P.327

Series Min. to Max. (mm/inch)	Diameter			Thick Metric (mm/inch)	EDP No. SUPER HSS (T15)				
	Inch (inch)	Metric (mm)	Decimal (inch)		TiN	Hardslick	TiAlN		
0 12.98(.511") to 17.65(.695")	41/64"	16.27	.6406"	3.2 (1/8")	S2105041	S2120041	S2115041		
		16.50	.6496"		S2155165	S2170165	S2165165		
	21/32"	16.67	.6562"		S2105042	S2120042	S2115042		
		17.00	.6693"		S2155170	S2170170	S2165170		
	43/64"	17.07	.6719"		S2105043	S2120043	S2115043		
		17.46	.6875"		S2105044	S2120044	S2115044		
	11/16"	17.50	.6890"		S2155175	S2170175	S2165175		
		17.86	.7031"		S2105045	S2120045	S2115045		
	1 17.53 (.690") to 24.38 (.960")	45/64"	18.00		.7087"	4.0 (5/32")	S2155180	S2170180	S2165180
			18.26		.7188"		S2105046	S2120046	S2115046
23/32"		18.50	.7283"	S2155185	S2170185		S2165185		
		18.65	.7344"	S2105047	S2120047		S2115047		
47/64"		19.00	.7480"	S2155190	S2170190		S2165190		
		19.05	.7500"	S2105048	S2120048		S2115048		
3/4"		19.45	.7656"	S2105049	S2120049		S2115049		
		19.50	.7677"	S2155195	S2170195		S2165195		
25/32"		19.84	.7812"	S2105050	S2120050		S2115050		
		20.00	.7874"	S2155200	S2170200		S2165200		
51/64"		20.24	.7969"	S2105051	S2120051		S2115051		
		20.50	.8071"	S2155205	S2170205		S2165205		
13/16"		20.64	.8125"	S2105052	S2120052		S2115052		
		21.00	.8268"	S2155210	S2170210		S2165210		
27/32"		21.43	.8438"	S2105054	S2120054		S2115054		
		21.83	.8594"	S2105055	S2120055		S2115055		
55/64"		22.00	.8661"	S2155220	S2170220		S2165220		
		22.23	.8750"	S2105056	S2120056		S2115056		
7/8"		22.62	.8906"	S2105057	S2120057		S2115057		
		23.00	.9055"	S2155230	S2170230		S2165230		
29/32"	23.02	.9062"	S2105058	S2120058	S2115058				
	23.42	.9219"	S2105059	S2120059	S2115059				
59/64"	23.81	.9375"	S2105060	S2120060	S2115060				
	24.00	.9449"	S2155240	S2170240	S2165240				

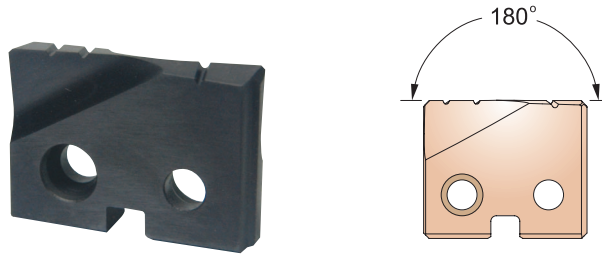
◎ : Excellent ○ : Good

Non- alloyed Steels, Free Machining Steels	Carbon Steels		Alloy Steels		High Alloyed steels		Structural Steels		Tool Steels		Stainless Steels	Cast Iron		Aluminum	Copper Alloys
	~HRc24 (~HB250)	~HRc28 (~HB275)	HRc28~ (HB275~)	~HRc28 (~HB275)	HRc28~ (HB275~)	~HRc37 (~HB350)	HRc37~ (HB350~)	~HRc24 (~HB250)	HRc24~ (HB250~)	~HRc13 (~HB200)	HRc13~ (HB200~)	~HRc28 (~HB275)	~HRc19 (~HB220)	HRc19~ (HB220~)	~HRc8 (~HB180)
◎	◎	◎	◎	○	○	○	◎	◎	○	○	○	○	◎	○	○

SPADE DRILL INSERTS - SUPER COBALT T15 FLAT BOTTOM

SPADE DRILL BOHRER-EINSÄTZE - SUPER COBALT T15(FLACH-NUT)

POINT ANGLE : 180 degree



cutting conditions : P.327

Series Min. to Max. (mm/inch)	Diameter			Thick Metric (mm/inch)	EDP No.		
	Inch (inch)	Metric (mm)	Decimal (inch)		SUPER HSS (T15)		
2 24.41 (.961") to 35.05 (1.380")				4.8 (3/16")	TiN	Hardslick	TiAlN
	31/32"	24.61	.9688"		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
		26.00	1.0236"		S2155260	S2170260	S2165260
	1-1/32"	26.19	1.0312"		S2105102	S2120102	S2115102
	1-3/64"	26.59	1.0469"		S2105103	S2120103	S2115103
	1-1/16"	26.99	1.0625"		S2105104	S2120104	S2115104
		27.00	1.0630"		S2155270	S2170270	S2165270
	1-3/32"	27.78	1.0938"		S2105106	S2120106	S2115106
		28.00	1.1024"		S2155280	S2170280	S2165280
	1-7/64"	28.18	1.1094"		S2105107	S2120107	S2115107
	1-1/8"	28.58	1.1250"		S2105108	S2120108	S2115108
		29.00	1.1417"		S2155290	S2170290	S2165290
	1-5/32"	29.37	1.1562"		S2105110	S2120110	S2115110
		30.00	1.1811"		S2155300	S2170300	S2165300
	1-3/16"	30.16	1.1875"		S2105112	S2120112	S2115112
	1-7/32"	30.96	1.2188"		S2105114	S2120114	S2115114
		31.00	1.2205"		S2155310	S2170310	S2165310
	1-1/4"	31.75	1.2500"		S2105116	S2120116	S2115116
		32.00	1.2598"		S2155320	S2170320	S2165320
	1-9/32"	32.54	1.2812"		S2105118	S2120118	S2115118
		33.00	1.2992"		S2155330	S2170330	S2165330
1-5/16"	33.34	1.3125"	S2105120	S2120120	S2115120		
	34.00	1.3386"	S2155340	S2170340	S2165340		
1-11/32"	34.13	1.3438"	S2105122	S2120122	S2115122		
1-3/8"	34.93	1.3750"	S2105124	S2120124	S2115124		
	35.00	1.3780"	S2155350	S2170350	S2165350		

◎ : Excellent ○ : Good

Non- alloyed Steels, Free Machining Steels	Carbon Steels		Alloy Steels		High Alloyed steels		Structural Steels		Tool Steels		Stainless Steels	Cast Iron		Aluminum	Copper Alloys
	~HRc24 (~HB250)	~HRc28 (~HB275)	HRc28~ (HB275~)	~HRc28 (~HB275)	HRc28~ (HB275~)	~HRc37 (~HB350)	HRc37~ (HB350~)	~HRc24 (~HB250)	HRc24~ (HB250~)	~HRc13 (~HB200)	HRc13~ (HB200~)	~HRc28 (~HB275)	~HRc19 (~HB220)	HRc19~ (HB220~)	~HRc8 (~HB180)
◎	◎	◎	◎	○	○	○	◎	◎	○	○	○	○	◎	○	○



SUPER HSS T-15 FLAT BOTTOM SPADE DRILL BOHRER-EINSÄTZE - SUPER COBALT T15(FLACH-NUT)

Material	Material Hardness		Speed		Feed			
	(Bhn)	(HRc)	TiN	TiAlN (Hardslick)	Ø 9.5 ~12.5	Ø 13 ~17.5	Ø 18 ~24	Ø 25 ~35
Free machining Steels 9SMn36, 9SMnPb28 10SPb20 etc	100 - 150		63	67	0.13	0.18	0.25	0.32
	150 - 200	- 13	56	65	0.13	0.18	0.25	0.32
	200 - 250	13 - 24	53	58	0.11	0.18	0.25	0.30
Low Carbon Steels C10, C15, C22, C25 etc	85 - 125		54	60	0.12	0.18	0.22	0.30
	125 - 175	- 7	50	58	0.12	0.18	0.22	0.30
	175 - 225	7 - 20	46	55	0.10	0.15	0.19	0.27
Medium Carbon Steels C35, C40, C45 etc	225 - 275	20 - 28	45	53	0.10	0.15	0.19	0.27
	125 - 175	- 7	50	60	0.11	0.18	0.22	0.28
	175 - 225	7 - 20	47	55	0.10	0.15	0.18	0.27
Structural Steels St33, St37-2, St44-2 St52, St60 etc	225 - 275	20 - 28	45	50	0.10	0.15	0.18	0.27
	275 - 325	28 - 34	42	46	0.08	0.14	0.17	0.22
	100 - 150		45	50	0.11	0.18	0.23	0.28
Cast Iron / S,G Iron GG10, 20, 25, 35, 40 GG50, 70 GTW35, GTS70 etc	150 - 250	- 24	38	44	0.10	0.18	0.19	0.22
	250 - 350	24 - 37	33	36	0.08	0.16	0.18	0.19
	120 - 150		56	66	0.13	0.25	0.35	0.41
	150 - 200	- 13	51	60	0.12	0.21	0.29	0.40
Alloy Steels 45CrMo4, 42CrMo4 16MnCr5, Ck75 35CrMo4, 16MnCr5 etc	200 - 220	13 - 19	47	51	0.12	0.20	0.25	0.36
	220 - 260	19 - 26	38	48	0.10	0.14	0.20	0.25
	260 - 320	26 - 34	30	37	0.10	0.13	0.13	0.20
	125 - 175	- 7	46	50	0.12	0.16	0.19	0.29
Tool Steels 102Cr6, 105WCr6, C75W etc	175 - 225	7 - 20	45	46	0.10	0.16	0.19	0.29
	225 - 275	20 - 28	40	45	0.10	0.13	0.18	0.28
	275 - 325	28 - 34	38	42	0.07	0.12	0.18	0.22
	325 - 375	34 - 40	34	37	0.06	0.12	0.17	0.22
High Temp. Alloy Hastelloy B, Inconel etc	150 - 200	- 13	27	29	0.07	0.12	0.15	0.20
	200 - 250	13 - 24	22	23	0.07	0.12	0.15	0.20
High Strength Alloy 36CrNiMo4, 34CrNiMo8 40NiCrMo73 etc	140 - 220	- 19	9	10	0.06	0.14	0.16	0.19
	220 - 310	19 - 33	7	9	0.06	0.11	0.14	0.15
Aluminum AlCuSiMn, AlMgSi0.5, AlZnMgCu1.5 etc	225 - 300	- 32	27	28	0.10	0.14	0.18	0.19
	300 - 350	32 - 37	21	22	0.08	0.14	0.18	0.19
	350 - 400	37 - 43	17	18	0.06	0.12	0.16	0.18
Stainless Steels X7Cr13, X10CrA118, X5CrNi189, X5CrNiMo18 10 etc	30		208	213	0.17	0.28	0.36	0.43
	180	- 8	112	121	0.17	0.28	0.36	0.41
Stainless Steels X7Cr13, X10CrA118, X5CrNi189, X5CrNiMo18 10 etc	135 - 185	- 9	26	29	0.12	0.18	0.20	0.23
	185 - 275	9 - 28	20	25	0.09	0.15	0.18	0.22

RPM= revolution per minute (rev/min)

M/min= surface meter per minute(M/min)

DIA= diameter of drill (mm)

mm/rev = feed rate(mm/rev)

* Formulas :

$$M/min = \frac{(RPM) \cdot (\pi) \cdot (DIA.)}{1000}$$

$$mm/min = (RPM) \cdot (mm/rev)$$

$$RPM = \frac{(M/min) \cdot (1000)}{(\pi) \cdot (DIA.)}$$

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.