

SUPERIOR PERFORMANCE

4F POINT T15 - P40

Self-centering
four facet point
for less thrust force.

Multiple web thinning
gives improved stability
and hole straightness.

Radius back face
with wide chip
space.

Optimum point thinning
for reduced cutting load.

IDEAL FOR MATERIAL GROUPS



SPADE DRILL INSERTS & HOLDERS












www.europatool.co.uk

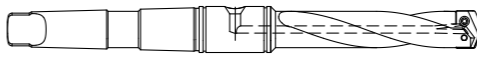
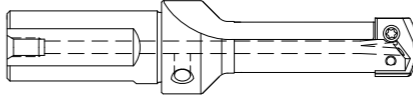
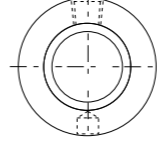
APPLICATION GUIDE

INDEX

●: Excellent ○: Good

P				H		M			K				S			N							O			INSERTS							
11	12	13	14	15	16	21	22	23	31	32	33	34	41	42	43	51	52	53	61	62	63	64	71	72	73	74	81	82	83	Code	Item	Description	Page No.
●	●	●	●	○	○	○	○		○	○	●	●				○	○	○					○	○	○					828327		Flat Bottom Insert Series Y to 2 HSS T15 TiAlN ø9.5mm to 35mm	P.114
		●	●	○	○						○	○				●	●	●												834327		4F- Point Insert Series Y to 3 HSS T15 TiAlN ø9.5mm - 47mm	P.116
●	●	●	●	●	●																									834523		4F-Point Insert Series Y to 3 Carbide P40 TiAlN ø9.5mm - 47mm	P.118
●	●	●	●			●	●	●	●	●													●	●	●					807304 807326		Standard Inserts Series 1 to 8 HSS M4 TiN and TiAlN ø17.86mm (45/64") - 114.3mm (4.1/2")	P.120
	●	●	○	○												●	●	●												808317 808327		Standard Inserts Series Y to 4 HSS T15 TiN and TiAlN ø9.5mm - 65.09mm (2.9/16")	P.126
	●	●	○	○							●	●				●	●	●												809305 809321		Standard Inserts Series Y to 2 HSS M48 TiN and TiAlN ø9.5mm - 35mm	P.130
									●	●	●	●																		832308 832323		Standard Inserts Series Y to 2 Carbide K10 TiN and TiAlN ø9.5mm - 35mm	P.133
						●	●	●	○	○	○	○				●	●	●					●	●	●					830308 830323		Standard Inserts Series Y to 2 Carbide K20 TiN and TiAlN ø9.5mm - 35mm	P.135
●	●	●	●	●	●																									831308 831323		Standard Inserts Series Y to 3 Carbide P40 TiN and TiAlN ø9.5mm - 47mm	P.137

HOLDERS AND ACCESSORIES

8Y215 to 89515		Taper Shank Holders Short, Intermediate, Standard, Extended	P.144
8Y115 to 87515		Straight Shank Holders Short, Intermediate, Standard, Extended	P.148
SP		Accessories Coolant Rings, Torx Screws, Torx Drivers	P.151
		Cutting Data	P.140

FLAT BOTTOM T15 SUPER HSS TiAIN



- For use in most materials, please refer to guide.
- Point angle 180°.

Series No. 828327

▶ cutting conditions : p.142

SERIES Y, Z, O

Series Min. to Max. (mm/inch)	Diameter		Width Metric (mm/inch)	EUROPA CODE
	Metric (mm)	Decimal (inch)		
Y 9.50(.374") to 11.07(.436")	9.50	.3740"	2.4 (3/32")	8283270950
	9.80	.3858"		8283270980
	10.00	.3937"		8283271000
	10.20	.4016"		8283271020
	10.50	.4134"		8283271050
	10.80	.4252"		8283271080
	11.00	.4331"		8283271100
Z 11.11(.437") to 12.95(.510")	11.50	.4528"	2.4 (3/32")	8283271150
	12.00	.4724"		8283271200
	12.50	.4921"		8283271250
O 12.98(.511") to 17.65(.695")	13.00	.5118"	3.2 (1/8")	8283271300
	13.50	.5315"		8283271350
	14.00	.5512"		8283271400
	14.50	.5709"		8283271450
	15.00	.5906"		8283271500
	15.50	.6102"		8283271550
	16.00	.6299"		8283271600
	16.50	.6496"		8283271650
	17.00	.6693"		8283271700
	17.50	.6890"		8283271750

●: Excellent ○: Good

P	H	M	K	S	N	O									
11	12	15	21	22	31	32	41	42	43	61	62	63	64	81	82
●	●	○	○	○	○	○									
13	14	16	23		33	34	51	52	53	71	72	73	74	83	
●	●	○			●	●	○	○	○	○	○	○	○		

FLAT BOTTOM T15 SUPER HSS TiAIN



- For use in most materials, please refer to guide.
- Point angle 180°.

Series No. 828327

▶ cutting conditions : p.142

SERIES 1, 2

Series Min. to Max. (mm/inch)	Diameter		Width Metric (mm/inch)	EUROPA CODE
	Metric (mm)	Decimal (inch)		
1 17.53(.690") to 24.38(.960")	18.00	.7087"	4.0 (5/32")	8283271800
	18.50	.7283"		8283271850
	19.00	.7480"		8283271900
	19.50	.7677"		8283271950
	20.00	.7874"		8283272000
	20.50	.8071"		8283272050
	21.00	.8268"		8283272100
	22.00	.8661"		8283272200
	23.00	.9055"		8283272300
	24.00	.9449"		8283272400
	25.00	.9843"		8283272500
	26.00	1.0236"		8283272600
2 24.41(.961") to 35.05(1.380")	27.00	1.0630"	4.8 (3/16")	8283272700
	28.00	1.1024"		8283272800
	29.00	1.1417"		8283272900
	30.00	1.1811"		8283273000
	31.00	1.2205"		8283273100
	32.00	1.2598"		8283273200
	33.00	1.2992"		8283273300
	34.00	1.3386"		8283273400
	35.00	1.3780"		8283273500

●: Excellent ○: Good

P	H	M	K	S	N	O									
11	12	15	21	22	31	32	41	42	43	61	62	63	64	81	82
●	●	○	○	○	○	○									
13	14	16	23		33	34	51	52	53	71	72	73	74	83	
●	●	○			●	●	○	○	○	○	○	○	○		

4F POINT T15 SUPER HSS TiAIN



- For use in high nickel alloy and materials over 280 Brinell.
- Improved stability and hole straightness by newly developed thinning design.
- Less thrust force and excellent self-centering.
- Any non-standard size available on request.

Series No. 834327

▶ cutting conditions : p.140

SERIES Y, Z, O, 1

Series Min. to Max. (mm/inch)	Width		EUROPA CODE	
	Metric (mm)	Decimal (inch)		
Y 9.50(.374") to 11.07(.436")	9.50	.3740"	2.4 (3/32")	8343270950
	9.80	.3860"		8343270980
	10.00	.3937"		8343271000
	10.20	.4016"		8343271020
	10.50	.4134"		8343271050
	10.80	.4252"		8343271080
	11.00	.4331"		8343271100
Z 11.11(.437") to 12.95(.510")	11.50	.4528"	2.4 (3/32")	8343271150
	12.00	.4724"		8343271200
	12.50	.4921"		8343271250
O 12.98(.511") to 17.65(.695")	13.00	.5118"	3.2 (1/8")	8343271300
	13.50	.5315"		8343271350
	14.00	.5512"		8343271400
	14.50	.5709"		8343271450
	15.00	.5906"		8343271500
	15.50	.6102"		8343271550
	16.00	.6299"		8343271600
	16.50	.6496"		8343271650
	17.00	.6693"		8343271700
	17.50	.6890"		8343271750
1 17.53(.690") to 24.38(.960")	18.00	.7087"	4.0 (5/32")	8343271800
	18.50	.7283"		8343271850
	19.00	.7480"		8343271900
	19.50	.7677"		8343271950
	20.00	.7874"		8343272000
	20.50	.8071"		8343272050
	21.00	.8268"		8343272100
	22.00	.8661"		8343272200
	23.00	.9055"		8343272300
	24.00	.9449"		8343272400

●: Excellent ○: Good

P	H	M	K	S	N	O									
11	12	15	21	22	31	32	41	42	43	61	62	63	64	81	82
		○													
13	14	16	23		33	34	51	52	53	71	72	73	74	83	
●	●	○			○	○	●	●	●						

4F POINT T15 SUPER HSS TiAIN



- For use in high nickel alloy and materials over 280 Brinell.
- Improved stability and hole straightness by newly developed thinning design.
- Less thrust force and excellent self-centering.
- Any non-standard size available on request.

Series No. 834327

▶ cutting conditions : p.140

SERIES 2, 3

Series Min. to Max. (mm/inch)	Width		EUROPA CODE			
	Metric (mm)	Decimal (inch)				
2 24.41(.961") to 35.05(1.380")	25.00	.9843"	4.8 (3/16")	8343272500		
	26.00	1.0236"		8343272600		
	27.00	1.0630"		8343272700		
	28.00	1.1024"		8343272800		
	29.00	1.1417"		8343272900		
	30.00	1.1811"		8343273000		
	31.00	1.2205"		8343273100		
	32.00	1.2598"		8343273200		
	33.00	1.2992"		8343273300		
	34.00	1.3386"		8343273400		
	35.00	1.3780"		8343273500		
	3 34.37(1.353") to 47.80(1.882")	36.00		1.4173"	6.4 (1/4")	8343273600
		37.00		1.4567"		8343273700
		38.00		1.4961"		8343273800
39.00		1.5354"	8343273900			
40.00		1.5748"	8343274000			
41.00		1.6142"	8343274100			
42.00		1.6535"	8343274200			
43.00		1.6929"	8343274300			
44.00		1.7323"	8343274400			
45.00		1.7717"	8343274500			
46.00		1.8110"	8343274600			
47.00		1.8504"	8343274700			

●: Excellent ○: Good

P	H	M	K	S	N	O									
11	12	15	21	22	31	32	41	42	43	61	62	63	64	81	82
		○													
13	14	16	23		33	34	51	52	53	71	72	73	74	83	
●	●	○			○	○	●	●	●						

4F POINT P40 CARBIDE TiAIN



- For use in carbon steel and alloy steel.
- Improved stability and hole straightness by newly developed thinning design.
- Less thrust force and excellent self-centering.
- Any non-standard size available on request.

Series No. 834523

▶ cutting conditions : p.141

SERIES Y, Z, O, 1

Series Min. to Max. (mm/inch)	Width		EUROPA CODE	
	Metric (mm)	Decimal (inch)		
Y 9.50(.374") to 11.07(.436")	9.50	.3740"	2.4 (3/32")	8345230950
	9.80	.3860"		8345230980
	10.00	.3937"		8345231000
	10.20	.4016"		8345231020
	10.50	.4134"		8345231050
	10.80	.4252"		8345231080
	11.00	.4331"		8345231100
Z 11.11(.437") to 12.95(.510")	11.50	.4528"	2.4 (3/32")	8345231150
	12.00	.4724"		8345231200
	12.50	.4921"		8345231250
O 12.98(.511") to 17.65(.695")	13.00	.5118"	3.2 (1/8")	8345231300
	13.50	.5315"		8345231350
	14.00	.5512"		8345231400
	14.50	.5709"		8345231450
	15.00	.5906"		8345231500
	15.50	.6102"		8345231550
	16.00	.6299"		8345231600
	16.50	.6496"		8345231650
	17.00	.6693"		8345231700
	17.50	.6890"		8345231750
1 17.53(.690") to 24.38(.960")	18.00	.7087"	4.0 (5/32")	8345231800
	18.50	.7283"		8345231850
	19.00	.7480"		8345231900
	19.50	.7677"		8345231950
	20.00	.7874"		8345232000
	20.50	.8071"		8345232050
	21.00	.8268"		8345232100
	22.00	.8661"		8345232200
	23.00	.9055"		8345232300
	24.00	.9449"		8345232400

●: Excellent ○: Good

P	H	M	K	S	N	O									
11	12	15	21	22	31	32	41	42	43	61	62	63	64	81	82
●	●	●													
13	14	16	23		33	34	51	52	53	71	72	73	74	83	
●	●	●													

4F POINT P40 CARBIDE TiAIN



- For use in carbon steel and alloy steel.
- Improved stability and hole straightness by newly developed thinning design.
- Less thrust force and excellent self-centering.
- Any non-standard size available on request.

Series No. 834523

▶ cutting conditions : p.141

SERIES 2, 3

Series Min. to Max. (mm/inch)	Width		EUROPA CODE			
	Metric (mm)	Decimal (inch)				
2 24.41(.961") to 35.05(1.380")	25.00	.9843"	4.8 (3/16")	8345232500		
	26.00	1.0236"		8345232600		
	27.00	1.0630"		8345232700		
	28.00	1.1024"		8345232800		
	29.00	1.1417"		8345232900		
	30.00	1.1811"		8345233000		
	31.00	1.2205"		8345233100		
	32.00	1.2598"		8345233200		
	33.00	1.2992"		8345233300		
	34.00	1.3386"		8345233400		
	35.00	1.3780"		8345233500		
	3 34.37(1.353") to 47.80(1.882")	36.00		1.4173"	6.4 (1/4")	8345233600
		37.00		1.4567"		8345233700
		38.00		1.4961"		8345233800
39.00		1.5354"	8345233900			
40.00		1.5748"	8345234000			
41.00		1.6142"	8345234100			
42.00		1.6535"	8345234200			
43.00		1.6929"	8345234300			
44.00		1.7323"	8345234400			
45.00		1.7717"	8345234500			
46.00		1.8110"	8345234600			
47.00		1.8504"	8345234700			

●: Excellent ○: Good

P	H	M	K	S	N	O									
11	12	15	21	22	31	32	41	42	43	61	62	63	64	81	82
●	●	●													
13	14	16	23		33	34	51	52	53	71	72	73	74	83	
●	●	●													

M4 HSS TiN & TiAlN



- For use in steel, stainless steel, cast iron and aluminium.
- Reduce set-up time, it easily can be replaced on the machine.
- Any non-standard size available on request.

Series No. 807304, 807326

▶ cutting conditions : p.140

SERIES 1

Series Min. to Max. (mm/inch)	Diameter			Width Metric (mm/inch)	EUROPA CODE	
	Inch (inch)	Metric (mm)	Decimal (inch)		TiN	TiAlN
1 17.53(.690") to 24.38(.960")	45/64"	17.86	.7031"	4.0 (5/32")	8073041786	8073261786
		18.00	.7087"		8073041800	8073261800
	23/32"	18.26	.7188"		8073041826	8073261826
		18.50	.7283"		8073041850	8073261850
	47/64"	18.65	.7344"		8073041865	8073261865
		19.00	.7480"		8073041900	8073261900
	3/4"	19.05	.7500"		8073041905	8073261905
	49/64"	19.45	.7656"		8073041945	8073261945
		19.50	.7677"		8073041950	8073261950
	25/32"	19.84	.7812"		8073041984	8073261984
		20.00	.7874"		8073042000	8073262000
	51/64"	20.24	.7969"		8073042024	8073262024
		20.50	.8071"		8073042050	8073262050
	13/16"	20.64	.8125"		8073042064	8073262064
		21.00	.8268"		8073042100	8073262100
	27/32"	21.43	.8438"		8073042143	8073262143
	55/64"	21.83	.8594"		8073042183	8073262183
		22.00	.8661"		8073042200	8073262200
	7/8"	22.23	.8750"		8073042223	8073262223
	57/64"	22.62	.8906"		8073042262	8073262262
	23.00	.9055"	8073042300	8073262300		
29/32"	23.02	.9062"	8073042302	8073262302		
59/64"	23.42	.9219"	8073042342	8073262342		
15/16"	23.81	.9375"	8073042381	8073262381		
	24.00	.9449"	8073042400	8073262400		

●: Excellent ○: Good

P	H	M	K	S	N	O									
11	12	15	21	22	31	32	41	42	43	61	62	63	64	81	82
●	●	●	●	●	●	●									
13	14	16	23	33	34	51	52	53	71	72	73	74	83		
●	●	●	●	●	●	●	●	●	●	●	●	●	●		

M4 HSS TiN & TiAlN



- For use in steel, stainless steel, cast iron and aluminium.
- Reduce set-up time, it easily can be replaced on the machine.
- Any non-standard size available on request.

Series No. 807304, 807326

▶ cutting conditions : p.140

SERIES 2

Series Min. to Max. (mm/inch)	Diameter			Width Metric (mm/inch)	EUROPA CODE	
	Inch (inch)	Metric (mm)	Decimal (inch)		TiN	TiAlN
2 24.41(.961") to 35.05(1.380")	31/32"	24.61	.9688"	4.8 (3/16")	8073042461	8073262461
	63/64"	25.00	.9843"		8073042500	8073262500
	1"	25.40	1.0000"		8073042540	8073262540
	1-1/64"	25.80	1.0156"		8073042580	8073262580
		26.00	1.0236"		8073042600	8073262600
	1-1/32"	26.19	1.0312"		8073042619	8073262619
	1-3/64"	26.59	1.0469"		8073042659	8073262659
	1-1/16"	26.99	1.0625"		8073042699	8073262699
		27.00	1.0630"		8073042700	8073262700
	1-3/32"	27.78	1.0938"		8073042778	8073262778
		28.00	1.1024"		8073042800	8073262800
	1-7/64"	28.18	1.1094"		8073042818	8073262818
	1-1/8"	28.58	1.1250"		8073042858	8073262858
		29.00	1.1417"		8073042900	8073262900
	1-5/32"	29.37	1.1562"		8073042937	8073262937
		30.00	1.1811"		8073043000	8073263000
	1-3/16"	30.16	1.1875"		8073043016	8073263016
	1-7/32"	30.96	1.2188"		8073043096	8073263096
		31.00	1.2205"		8073043100	8073263100
	1-1/4"	31.75	1.2500"		8073043175	8073263175
		32.00	1.2598"		8073043200	8073263200
	1-9/32"	32.54	1.2812"		8073043254	8073263254
		33.00	1.2992"		8073043300	8073263300
	1-5/16"	33.34	1.3125"		8073043334	8073263334
		34.00	1.3386"		8073043400	8073263400
	1-11/32"	34.13	1.3438"		8073043413	8073263413
	1-3/8"	34.93	1.3750"		8073043493	8073263493
		35.00	1.3780"		8073043500	8073263500

●: Excellent ○: Good

P	H	M	K	S	N	O									
11	12	15	21	22	31	32	41	42	43	61	62	63	64	81	82
●	●	●	●	●	●	●									
13	14	16	23	33	34	51	52	53	71	72	73	74	83		
●	●	●	●	●	●	●	●	●	●	●	●	●	●		

M4 HSS TiN & TiAlN



- For use in steel, stainless steel, cast iron and aluminium.
- Reduce set-up time, it easily can be replaced on the machine.
- Any non-standard size available on request.

Series No. 807304, 807326

▶ cutting conditions : p.140

SERIES 3

Series Min. to Max. (mm/inch)	Diameter			Width Metric (mm/inch)	EUROPA CODE	
	Inch (inch)	Metric (mm)	Decimal (inch)		TiN	TiAlN
3 34.37(1.353") to 47.80(1.882")	1-13/32"	35.72	1.4062"	6.4 (1/4")	8073043572	8073263572
		36.00	1.4173"		8073043600	8073263600
	1-7/16"	36.51	1.4375"		8073043651	8073263651
		37.00	1.4567"		8073043700	8073263700
	1-15/32"	37.31	1.4688"		8073043731	8073263731
		38.00	1.4961"		8073043800	8073263800
	1-1/2"	38.10	1.5000"		8073043810	8073263810
	1-17/32"	38.89	1.5312"		8073043889	8073263889
		39.00	1.5354"		8073043900	8073263900
	1-9/16"	39.69	1.5625"		8073043969	8073263969
		40.00	1.5748"		8073044000	8073264000
	1-19/32"	40.48	1.5938"		8073044048	8073264048
		41.00	1.6142"		8073044100	8073264100
	1-5/8"	41.28	1.6250"		8073044128	8073264128
		42.00	1.6535"		8073044200	8073264200
	1-21/32"	42.07	1.6562"		8073044207	8073264207
	1-11/16"	42.86	1.6875"		8073044286	8073264286
		43.00	1.6929"		8073044300	8073264300
	1-23/32"	43.66	1.7188"		8073044366	8073264366
		44.00	1.7323"		8073044400	8073264400
	1-3/4"	44.45	1.7500"		8073044445	8073264445
		45.00	1.7717"		8073044500	8073264500
	1-25/32"	45.24	1.7812"		8073044524	8073264524
		46.00	1.8110"		8073044600	8073264600
	1-13/16"	46.04	1.8125"		8073044604	8073264604
		46.83	1.8438"		8073044683	8073264683
	1-27/32"	47.00	1.8504"		8073044700	8073264700
		47.63	1.8750"		8073044763	8073264763

●: Excellent ○: Good

P	H	M	K	S	N	O									
11	12	15	21	22	31	32	41	42	43	61	62	63	64	81	82
●	●	●	●	●	●	●									
13	14	16	23	33	34	51	52	53	71	72	73	74	83		
●	●	●	●	●	●	●	●	●	●	●	●	●	●		

M4 HSS TiN & TiAlN



- For use in steel, stainless steel, cast iron and aluminium.
- Reduce set-up time, it easily can be replaced on the machine.
- Any non-standard size available on request.

Series No. 807304, 807326

▶ cutting conditions : p.140

SERIES 4

Series Min. to Max. (mm/inch)	Diameter			Width Metric (mm/inch)	EUROPA CODE	
	Inch (inch)	Metric (mm)	Decimal (inch)		TiN	TiAlN
4 46.99(1.850") to 65.28(2.570")		48.00	1.8898"	7.9 (5/16")	8073044800	8073264800
		1-29/32"	48.42		1.9062"	8073044842
		49.00	1.9291"		8073044900	8073264900
		1-15/16"	49.21		1.9375"	8073044921
		50.00	1.9685"		8073045000	8073265000
		1-31/32"	50.01		1.9688"	8073045001
	2"	50.80	2.0000"		8073045080	8073265080
		51.00	2.0079"		8073045100	8073265100
	2-1/32"	51.59	2.0312"		8073045159	8073265159
		2-3/64"	52.00		2.0472"	8073045200
	2-1/16"	52.39	2.0625"		8073045239	8073265239
		53.00	2.0866"		8073045300	8073265300
	2-3/32"	53.18	2.0938"		8073045318	8073265318
		53.98	2.1250"		8073045398	8073265398
	2-5/32"	54.00	2.1260"		8073045400	8073265400
		54.79	2.1562"		8073045479	8073265479
	2-3/16"	55.00	2.1654"		8073045500	8073265500
		55.56	2.1875"		8073045556	8073265556
	2-7/32"	56.00	2.2047"		8073045600	8073265600
		56.36	2.2188"		8073045636	8073265636
	2-1/4"	57.00	2.2441"		8073045700	8073265700
		57.15	2.2500"		8073045715	8073265715
	2-9/32"	57.94	2.2812"		8073045794	8073265794
		58.00	2.2835"		8073045800	8073265800
	2-5/16"	58.74	2.3125"		8073045874	8073265874
		59.00	2.3228"		8073045900	8073265900
	2-11/32"	59.53	2.3438"		8073045953	8073265953
		60.00	2.3622"		8073046000	8073266000
	2-3/8"	60.33	2.3750"		8073046033	8073266033
		61.00	2.4016"		8073046100	8073266100
	2-13/32"	61.12	2.4062"		8073046112	8073266112
		61.91	2.4375"		8073046191	8073266191
	2-7/16"	62.00	2.4409"		8073046200	8073266200
		62.71	2.4688"		8073046271	8073266271
	2-15/32"	63.00	2.4803"		8073046300	8073266300
		63.50	2.5000"		8073046350	8073266350
	2-1/2"	64.00	2.5197"		8073046400	8073266400
		64.29	2.5312"		8073046429	8073266429
	2-17/32"	65.00	2.5591"		8073046500	8073266500
		65.09	2.5625"		8073046509	8073266509

●: Excellent ○: Good

P	H	M	K	S	N	O									
11	12	15	21	22	31	32	41	42	43	61	62	63	64	81	82
●	●	●	●	●	●	●									
13	14	16	23	33	34	51	52	53	71	72	73	74	83		
●	●	●	●	●	●	●	●	●	●	●	●	●	●		

M4 HSS TiN & TiAlN



- For use in steel, stainless steel, cast iron and aluminium.
- Reduce set-up time, it easily can be replaced on the machine.
- Any non-standard size available on request.

Series No. 807304, 807326

▶ cutting conditions : p.140

SERIES 5, 6

Series Min. to Max. (mm/inch)	Diameter			Width Metric (mm/inch)	EUROPA CODE	
	Inch (inch)	Metric (mm)	Decimal (inch)		TiN	TiAlN
5 62.38(2.456") to 76.20(3.000")	2-1/2"	63.50	2.5000"	11.1 (7/16")	8073946350	8073966350
		64.00	2.5197"		8073946400	8073966400
	2-17/32"	64.29	2.5312"		8073946429	8073966429
	2-9/16"	65.09	2.5625"		8073946509	8073966509
	2-19/32"	65.88	2.5938"		8073046588	8073266588
		66.00	2.5984"		8073046600	8073266600
	2-5/8"	66.68	2.6250"		8073046668	8073266668
	2-21/32"	67.47	2.6562"		8073046747	8073266747
		68.00	2.6772"		8073046800	8073266800
	2-11/16"	68.26	2.6875"		8073046826	8073266826
	2-23/32"	69.05	2.7188"		8073046905	8073266905
	2-3/4"	69.85	2.7500"		8073046985	8073266985
		70.00	2.7559"		8073047000	8073267000
	2-25/32"	70.64	2.7812"		8073047064	8073267064
	2-13/16"	71.44	2.8125"		8073047144	8073267144
		72.00	2.8346"		8073047200	8073267200
	2-27/32"	72.23	2.8438"		8073047223	8073267223
	2-7/8"	73.03	2.8750"		8073047303	8073267303
	2-29/32"	73.82	2.9062"		8073047382	8073267382
		74.00	2.9134"		8073047400	8073267400
2-15/16"	74.61	2.9375"	8073047461	8073267461		
2-31/32"	75.41	2.9688"	8073047541	8073267541		
	76.00	2.9921"	8073047600	8073267600		
3"	76.20	3.0000"	8073047620	8073267620		
6 76.23(3.001") to 89.08(3.507")	3-1/32"	76.99	3.0312"	11.1 (7/16")	8073047699	8073267699
	3-1/16"	77.79	3.0625"		8073047779	8073267779
		78.00	3.0709"		8073047800	8073267800
	3-3/32"	78.58	3.0938"		8073047858	8073267858
	3-1/8"	79.38	3.1250"		8073047938	8073267938
		80.00	3.1496"		8073048000	8073268000
	3-5/32"	80.17	3.1562"		8073048017	8073268017
	3-3/16"	80.96	3.1875"		8073048096	8073268096
	3-7/32"	81.76	3.2188"		8073048176	8073268176
		82.00	3.2283"		8073048200	8073268200
	3-1/4"	82.55	3.2500"		8073048255	8073268255
	3-9/32"	83.34	3.2812"		8073048334	8073268334
		84.00	3.3071"		8073048400	8073268400
	3-5/16"	84.14	3.3125"		8073048414	8073268414
	3-11/32"	84.93	3.3438"		8073048493	8073268493
	3-3/8"	85.73	3.3750"		8073048573	8073268573
		86.00	3.3858"		8073048600	8073268600
	3-13/32"	86.52	3.4062"		8073048652	8073268652
	3-7/16"	87.31	3.4375"		8073048731	8073268731
		88.00	3.4646"		8073048800	8073268800
3-15/32"	88.11	3.4688"	8073048811	8073268811		
3-1/2"	88.90	3.5000"	8073048890	8073268890		

●: Excellent ○: Good

P	H	M	K	S	N	O									
11	12	15	21	22	31	32	41	42	43	61	62	63	64	81	82
●	●		●	●	●	●									
13	14	16	23		33	34	51	52	53	71	72	73	74	83	
●	●		●							●	●	●			

M4 HSS TiN & TiAlN



- For use in steel, stainless steel, cast iron and aluminium.
- Reduce set-up time, it easily can be replaced on the machine.
- Any non-standard size available on request.

Series No. 807304, 807326

▶ cutting conditions : p.140

SERIES 7, 8

Series Min. to Max. (mm/inch)	Diameter			Width Metric (mm/inch)	EUROPA CODE	
	Inch (inch)	Metric (mm)	Decimal (inch)		TiN	TiAlN
7 87.76(3.455") to 101.60(4.000")	3-17/32"	89.69	3.5312"	11.1 (7/16")	8073048969	8073268969
		90.00	3.5433"		8073049000	8073269000
	3-9/16"	90.49	3.5625"		8073049049	8073269049
	3-19/32"	91.28	3.5938"		8073049128	8073269128
		92.00	3.6221"		8073049200	8073269200
	3-5/8"	92.08	3.6250"		8073049208	8073269208
	3-21/32"	92.87	3.6562"		8073049287	8073269287
	3-11/16"	93.66	3.6875"		8073049366	8073269366
		94.00	3.7008"		8073049400	8073269400
	3-23/32"	94.46	3.7188"		8073049446	8073269446
	3-3/4"	95.25	3.7500"		8073049525	8073269525
		96.00	3.7795"		8073049600	8073269600
	3-25/32"	96.04	3.7812"		8073049604	8073269604
	3-13/16"	96.84	3.8125"		8073049684	8073269684
	3-27/32"	97.63	3.8438"		8073049763	8073269763
		98.00	3.8583"		8073049800	8073269800
	3-7/8"	98.43	3.8750"		8073049843	8073269843
	3-29/32"	99.22	3.9062"		8073049922	8073269922
		100.00	3.9370"		80730410000	80732610000
	3-15/16"	100.01	3.9375"		80730410001	80732610001
3-31/32"	100.81	3.9688"	80730410081	80732610081		
4"	101.60	4.0000"	80730410160	80732610160		
8 101.63(4.001") to 114.48(4.507")	4-1/64"	102.00	4.0156"	11.1 (7/16")	80730410200	80732610200
	4-1/16"	103.19	4.0625"		80730410319	80732610319
	4-3/32"	104.00	4.0945"		80730410400	80732610400
	4-1/8"	104.78	4.1250"		80730410478	80732610478
		106.00	4.1732"		80730410600	80732610600
	4-3/16"	106.36	4.1875"		80730410636	80732610636
	4-1/4"	107.95	4.2500"		80730410795	80732610795
		108.00	4.2520"		80730410800	80732610800
	4-5/16"	109.54	4.3125"		80730410954	80732610954
		110.00	4.3307"		80730411000	80732611000
	4-3/8"	111.13	4.3750"		80730411113	80732611113
		112.00	4.4094"		80730411200	80732611200
	4-7/16"	112.71	4.4375"		80730411271	80732611271
		114.00	4.4882"		80730411400	80732611400
	4-1/2"	114.30	4.5000"		80730411430	80732611430

●: Excellent ○: Good

P	H	M	K	S	N	O									
11	12	15	21	22	31	32	41	42	43	61	62	63	64	81	82
●	●		●	●	●	●									
13	14	16	23		33	34	51	52	53	71	72	73	74	83	
●	●		●							●	●	●			

T15 SUPER HSS TiN & TiAlN



- For use in high nickel alloy and materials over 280 Brinell.
- Reduce set-up time, it easily can be replaced on the machine.
- Any non-standard size available on request.

Series No. 808317, 808327

▶ cutting conditions : p.140

SERIES Y, Z, O

Series Min. to Max. (mm/inch)	Diameter			Width Metric (mm/inch)	EUROPA CODE	
	Inch (inch)	Metric (mm)	Decimal (inch)		TiN	TiAlN
Y 9.50(.374") to 11.07(.436")		9.50	.3740"	2.4 (3/32")	8083170950	8083270950
	3/8"	9.53	.3750"		8083170953	8083270953
		9.80	.3860"		8083170980	8083270980
	25/64"	9.92	.3906"		8083170992	8083270992
		10.00	.3937"		8083171000	8083271000
		10.20	.4016"		8083171020	8083271020
	13/32"	10.32	.4063"		8083171032	8083271032
		10.50	.4134"		8083171050	8083271050
	27/64"	10.72	.4219"		8083171072	8083271072
		10.80	.4252"		8083171080	8083271080
	11.00	.4331"	8083171100	8083271100		
Z 11.11(.437") to 12.95(.510")	7/16"	11.11	.4375"	2.4 (3/32")	8083171111	8083271111
		11.50	.4528"		8083171150	8083271150
	29/64"	11.51	.4531"		8083171151	8083271151
	15/32"	11.91	.4688"		8083171191	8083271191
		12.00	.4724"		8083171200	8083271200
	31/64"	12.30	.4844"		8083171230	8083271230
		12.50	.4921"		8083171250	8083271250
1/2"	12.70	.5000"	8083171270	8083271270		
O 12.98(.511") to 17.65(.695")		13.00	.5118"	3.2 (1/8")	8083171300	8083271300
	33/64"	13.10	.5156"		8083171310	8083271310
	17/32"	13.49	.5313"		8083171349	8083271349
		13.50	.5315"		8083171350	8083271350
	35/64"	13.89	.5469"		8083171389	8083271389
		14.00	.5512"		8083171400	8083271400
	9/16"	14.29	.5625"		8083171429	8083271429
		14.50	.5709"		8083171450	8083271450
	37/64"	14.68	.5781"		8083171468	8083271468
		15.00	.5906"		8083171500	8083271500
	19/32"	15.08	.5938"		8083171508	8083271508
	39/64"	15.48	.6094"		8083171548	8083271548
		15.50	.6102"		8083171550	8083271550
	5/8"	15.88	.6250"		8083171588	8083271588
		16.00	.6299"		8083171600	8083271600
	41/64"	16.27	.6406"		8083171627	8083271627
		16.50	.6496"		8083171650	8083271650
	21/32"	16.67	.6563"		8083171667	8083271667
		17.00	.6693"		8083171700	8083271700
	43/64"	17.07	.6719"		8083171707	8083271707
11/16"	17.46	.6875"	8083171746	8083271746		
	17.50	.6890"	8083171750	8083271750		

●: Excellent ○: Good

P	H	M	K	S	N	O									
11	12	15	21	22	31	32	41	42	43	61	62	63	64	81	82
		○													
13	14	16	23		33	34	51	52	53	71	72	73	74	83	
●	●	○			○	○	●	●	●						

T15 SUPER HSS TiN & TiAlN



- For use in high nickel alloy and materials over 280 Brinell.
- Reduce set-up time, it easily can be replaced on the machine.
- Any non-standard size available on request.

Series No. 808317, 808327

▶ cutting conditions : p.140

SERIES 1, 2

Series Min. to Max. (mm/inch)	Diameter			Width Metric (mm/inch)	EUROPA CODE			
	Inch (inch)	Metric (mm)	Decimal (inch)		TiN	TiAlN		
1 17.53(.690") to 24.38(.960")	45/64"	17.86	.7031"	4.0 (5/32")	8083171786	8083271786		
		18.00	.7087"		8083171800	8083271800		
	23/32"	18.26	.7188"		8083171826	8083271826		
		18.50	.7283"		8083171850	8083271850		
	47/64"	18.65	.7344"		8083171865	8083271865		
		19.00	.7480"		8083171900	8083271900		
	3/4"	19.05	.7500"		8083171905	8083271905		
	49/64"	19.45	.7656"		8083171945	8083271945		
		19.50	.7677"		8083171950	8083271950		
	25/32"	19.84	.7813"		8083171984	8083271984		
		20.00	.7874"		8083172000	8083272000		
	51/64"	20.24	.7969"		8083172024	8083272024		
		20.50	.8071"		8083172050	8083272050		
	13/16"	20.64	.8125"		8083172064	8083272064		
		21.00	.8268"		8083172100	8083272100		
	27/32"	21.43	.8438"		8083172143	8083272143		
	55/64"	21.83	.8594"		8083172183	8083272183		
		22.00	.8661"		8083172200	8083272200		
	7/8"	22.23	.8750"		8083172223	8083272223		
	57/64"	22.62	.8906"		8083172262	8083272262		
		23.00	.9055"		8083172300	8083272300		
	29/32"	23.02	.9063"		8083172302	8083272302		
	59/64"	23.42	.9219"		8083172342	8083272342		
	15/16"	23.81	.9375"		8083172381	8083272381		
		24.00	.9449"		8083172400	8083272400		
	2 24.41(.961") to 35.05(1.380")	31/32"	24.61		.9688"	4.8 (3/16")	8083172461	8083272461
		63/64"	25.00		.9843"		8083172500	8083272500
1"		25.40	1.0000"	8083172540	8083272540			
1-1/64"		25.80	1.0156"	8083172580	8083272580			
		26.00	1.0236"	8083172600	8083272600			
1-1/32"		26.19	1.0313"	8083172619	8083272619			
1-3/64"		26.59	1.0469"	8083172659	8083272659			
1-1/16"		26.99	1.0625"	8083172699	8083272699			
		27.00	1.0630"	8083172700	8083272700			
1-3/32"		27.78	1.0938"	8083172778	8083272778			
		28.00	1.1024"	8083172800	8083272800			
1-7/64"		28.18	1.1094"	8083172818	8083272818			
1-1/8"		28.58	1.1250"	8083172858	8083272858			
		29.00	1.1417"	8083172900	8083272900			
1-5/32"		29.37	1.1563"	8083172937	8083272937			
		30.00	1.1811"	8083173000	8083273000			
1-3/16"		30.16	1.1875"	8083173016	8083273016			
1-7/32"		30.96	1.2188"	8083173096	8083273096			
		31.00	1.2205"	8083173100	8083273100			
1-1/4"		31.75	1.2500"	8083173175	8083273175			
		32.00	1.2598"	8083173200	8083273200			
1-9/32"		32.54	1.2813"	8083173254	8083273254			
		33.00	1.2992"	8083173300	8083273300			
1-5/16"		33.34	1.3125"	8083173334	8083273334			
		34.00	1.3386"	8083173400	8083273400			
1-11/32"		34.13	1.3438"	8083173413	8083273413			
1-3/8"		34.93	1.3750"	8083173493	8083273493			
	35.00	1.3780"	8083173500	8083273500				

MATERIAL APPLICATION GUIDE ON PREVIOUS PAGE

T15 SUPER HSS TiN & TiAlN



- For use in high nickel alloy and materials over 280 Brinell.
- Reduce set-up time, it easily can be replaced on the machine.
- Any non-standard size available on request.

Series No. 808317, 808327

▶ cutting conditions : p.140

SERIES 3

Series Min. to Max. (mm/inch)	Diameter			Width Metric (mm/inch)	EUROPA CODE	
	Inch (inch)	Metric (mm)	Decimal (inch)		TiN	TiAlN
3 34.37(1.353") to 47.80(1.882")	1-13/32"	35.72	1.4063"	6.4 (1/4")	8083173572	8083273572
		36.00	1.4173"		8083173600	8083273600
	1-7/16"	36.51	1.4375"		8083173651	8083273651
		37.00	1.4567"		8083173700	8083273700
	1-15/32"	37.31	1.4688"		8083173731	8083273731
		38.00	1.4961"		8083173800	8083273800
	1-1/2"	38.10	1.5000"		8083173810	8083273810
	1-17/32"	38.89	1.5313"		8083173889	8083273889
		39.00	1.5354"		8083173900	8083273900
	1-9/16"	39.69	1.5625"		8083173969	8083273969
		40.00	1.5748"		8083174000	8083274000
	1-19/32"	40.48	1.5938"		8083174048	8083274048
		41.00	1.6142"		8083174100	8083274100
	1-5/8"	41.28	1.6250"		8083174128	8083274128
		42.00	1.6535"		8083174200	8083274200
	1-21/32"	42.07	1.6563"		8083174207	8083274207
	1-11/16"	42.86	1.6875"		8083174286	8083274286
		43.00	1.6929"		8083174300	8083274300
	1-23/32"	43.66	1.7188"		8083174366	8083274366
		44.00	1.7323"		8083174400	8083274400
	1-3/4"	44.45	1.7500"		8083174445	8083274445
		45.00	1.7717"		8083174500	8083274500
	1-25/32"	45.24	1.7813"		8083174524	8083274524
		46.00	1.8110"		8083174600	8083274600
	1-13/16"	46.04	1.8125"		8083174604	8083274604
	1-27/32"	46.83	1.8438"		8083174683	8083274683
		47.00	1.8504"		8083174700	8083274700
	1-7/8"	47.63	1.8750"		8083174763	8083274763

●: Excellent ○: Good

P	H	M	K	S	N	O									
11	12	15	21	22	31	32	41	42	43	61	62	63	64	81	82
		○													
13	14	16	23		33	34	51	52	53	71	72	73	74	83	
●	●	○			○	○	●	●	●						

T15 SUPER HSS TiN & TiAlN



- For use in high nickel alloy and materials over 280 Brinell.
- Reduce set-up time, it easily can be replaced on the machine.
- Any non-standard size available on request.

Series No. 808317, 808327

▶ cutting conditions : p.140

SERIES 4

Series Min. to Max. (mm/inch)	Diameter			Width Metric (mm/inch)	EUROPA CODE	
	Inch (inch)	Metric (mm)	Decimal (inch)		TiN	TiAlN
4 46.99(1.850") to 65.28(2.570")		48.00	1.8898"	7.9 (5/16")	8083174800	8083274800
	1-29/32	48.42	1.9062"		8083174842	8083274842
		49.00	1.9291"		8083174900	8083274900
	1-15/16	49.21	1.9375"		8083174921	8083274921
		50.00	1.9685"		8083175000	8083275000
	1-31/32	50.01	1.9688"		8083175001	8083275001
	2	50.80	2.0000"		8083175080	8083275080
		51.00	2.0079"		8083175100	8083275100
	2-1/32	51.59	2.0312"		8083175159	8083275159
		52.00	2.0472"		8083175200	8083275200
	2-3/64	52.39	2.0625"		8083175239	8083275239
		53.00	2.0866"		8083175300	8083275300
	2-3/32	53.18	2.0938"		8083175318	8083275318
		53.98	2.1250"		8083175398	8083275398
	2-1/8	54.00	2.1260"		8083175400	8083275400
		54.79	2.1562"		8083175479	8083275479
	2-5/32	55.00	2.1654"		8083175500	8083275500
		55.56	2.1875"		8083175556	8083275556
	2-3/16	56.00	2.2047"		8083175600	8083275600
		56.36	2.2188"		8083175636	8083275636
	2-7/32	57.00	2.2441"		8083175700	8083275700
		57.15	2.2500"		8083175715	8083275715
	2-1/4	57.94	2.2812"		8083175794	8083275794
		58.00	2.2835"		8083175800	8083275800
	2-9/32	58.74	2.3125"		8083175874	8083275874
		59.00	2.3228"		8083175900	8083275900
	2-5/16	59.53	2.3438"		8083175953	8083275953
		60.00	2.3622"		8083176000	8083276000
	2-3/8	60.33	2.3750"		8083176033	8083276033
		61.00	2.4016"		8083176100	8083276100
	2-13/32	61.12	2.4062"		8083176112	8083276112
		61.91	2.4375"		8083176191	8083276191
	2-7/16	62.00	2.4409"		8083176200	8083276200
		62.71	2.4688"		8083176271	8083276271
	2-15/32	63.00	2.4803"		8083176300	8083276300
		63.50	2.5000"		8083176350	8083276350
	2-1/2	64.00	2.5197"		8083176400	8083276400
		64.29	2.5312"		8083176429	8083276429
	2-17/32	65.00	2.5591"		8083176500	8083276500
		65.09	2.5625"		8083176509	8083276509

●: Excellent ○: Good

P	H	M	K	S	N	O									
11	12	15	21	22	31	32	41	42	43	61	62	63	64	81	82
		○													
13	14	16	23		33	34	51	52	53	71	72	73	74	83	
●	●	○			○	○	●	●	●						

M48 PREMIUM HSS TiN & TiAlN



- For use in high temperature alloy and materials with 350~500 Brinell.
- Reduce set-up time, it easily can be replaced on the machine.
- Any non-standard size available on request.

Series No. 809305, 809321

▶ cutting conditions : p.140

SERIES Y, Z, O

Series Min. to Max. (mm/inch)	Diameter			Width Metric (mm/inch)	EUROPA CODE	
	Inch (inch)	Metric (mm)	Decimal (inch)		TiN	TiAlN
Y 9.50(.374") to 11.07(.436")		9.50	.3740"	2.4 (3/32")	8093050950	8093210950
	3/8"	9.53	.3750"		8093050953	8093210953
		9.80	.3858"		8093050980	8093210980
	25/64"	9.92	.3906"		8093050992	8093210992
		10.00	.3937"		8093051000	8093211000
		10.20	.4016"		8093051020	8093211020
	13/32"	10.32	.4062"		8093051032	8093211032
		10.50	.4134"		8093051050	8093211050
	27/64"	10.72	.4219"		8093051072	8093211072
		10.80	.4252"		8093051080	8093211080
	11.00	.4331"	8093051100	8093211100		
Z 11.11(.437") to 12.95(.510")	7/16"	11.11	.4375"	2.4 (3/32")	8093051111	8093211111
		11.50	.4528"		8093051150	8093211150
	29/64"	11.51	.4531"		8093051151	8093211151
	15/32"	11.91	.4688"		8093051191	8093211191
		12.00	.4724"		8093051200	8093211200
	31/64"	12.30	.4844"		8093051230	8093211230
	12.50	.4921"	8093051250	8093211250		
	12.70	.5000"	8093051270	8093211270		
O 12.98(.511") to 17.65(.695")		13.00	.5118"	3.2 (1/8")	8093051300	8093211300
	33/64"	13.10	.5156"		8093051310	8093211310
	17/32"	13.49	.5312"		8093051349	8093211349
		13.50	.5315"		8093051350	8093211350
	35/64"	13.89	.5469"		8093051389	8093211389
		14.00	.5512"		8093051400	8093211400
	9/16"	14.29	.5625"		8093051429	8093211429
		14.50	.5709"		8093051450	8093211450
	37/64"	14.68	.5781"		8093051468	8093211468
		15.00	.5906"		8093051500	8093211500
	19/32"	15.08	.5938"		8093051508	8093211508
	39/64"	15.48	.6094"		8093051548	8093211548
		15.50	.6102"		8093051550	8093211550
	5/8"	15.88	.6250"		8093051588	8093211588
		16.00	.6299"		8093051600	8093211600
	41/64"	16.27	.6406"		8093051627	8093211627
		16.50	.6496"		8093051650	8093211650
	21/32"	16.67	.6562"		8093051667	8093211667
		17.00	.6693"		8093051700	8093211700
	43/64"	17.07	.6719"		8093051707	8093211707
11/16"	17.46	.6875"	8093051746	8093211746		
	17.50	.6890"	8093051750	8093211750		

●: Excellent ○: Good

P	H	M	K	S	N	O									
11	12	15	21	22	31	32	41	42	43	61	62	63	64	81	82
		○													
13	14	16	23		33	34	51	52	53	71	72	73	74	83	
●	●	○			●	●	●	●	●						

M48 PREMIUM HSS TiN & TiAlN



- For use in high temperature alloy and materials with 350~500 Brinell.
- Reduce set-up time, it easily can be replaced on the machine.
- Any non-standard size available on request.

Series No. 809305, 809321

▶ cutting conditions : p.140

SERIES 1

Series Min. to Max. (mm/inch)	Diameter			Width Metric (mm/inch)	EUROPA CODE	
	Inch (inch)	Metric (mm)	Decimal (inch)		TiN	TiAlN
1 17.53(.690") to 24.38(.960")	45/64"	17.86	.7031"	4.0 (5/32")	8093051786	8093211786
		18.00	.7087"		8093051800	8093211800
	23/32"	18.26	.7188"		8093051826	8093211826
		18.50	.7283"		8093051850	8093211850
	47/64"	18.65	.7344"		8093051865	8093211865
		19.00	.7480"		8093051900	8093211900
	3/4"	19.05	.7500"		8093051905	8093211905
	49/64"	19.45	.7656"		8093051945	8093211945
		19.50	.7677"		8093051950	8093211950
	25/32"	19.84	.7813"		8093051984	8093211984
		20.00	.7874"		8093052000	8093212000
	51/64"	20.24	.7969"		8093052024	8093212024
		20.50	.8071"		8093052050	8093212050
	13/16"	20.64	.8125"		8093052064	8093212064
		21.00	.8268"		8093052100	8093212100
	27/32"	21.43	.8438"		8093052143	8093212143
	55/64"	21.83	.8594"		8093052183	8093212183
		22.00	.8661"		8093052200	8093212200
	7/8"	22.23	.8750"		8093052223	8093212223
	57/64"	22.62	.8906"		8093052262	8093212262
	23.00	.9055"	8093052300	8093212300		
29/32"	23.02	.9063"	8093052302	8093212302		
59/64"	23.42	.9219"	8093052342	8093212342		
15/16"	23.81	.9375"	8093052381	8093212381		
	24.00	.9449"	8093052400	8093212400		

●: Excellent ○: Good

P	H	M	K	S	N	O									
11	12	15	21	22	31	32	41	42	43	61	62	63	64	81	82
		○													
13	14	16	23		33	34	51	52	53	71	72	73	74	83	
●	●	○			●	●	●	●	●						

M48 PREMIUM HSS TiN & TiAlN



- For use in high temperature alloy and materials with 350~500 Brinell.
- Reduce set-up time, it easily can be replaced on the machine.
- Any non-standard size available on request.

Series No. 809305, 809321

▶ cutting conditions : p.140

SERIES 2

Series Min. to Max. (mm/inch)	Diameter			Width Metric (mm/inch)	EUROPA CODE	
	Inch (inch)	Metric (mm)	Decimal (inch)		TiN	TiAlN
2 24.41(.961") to 35.05(1.380")	31/32"	24.61	.9688"	4.8 (3/16")	8093052461	8093212461
	63/64"	25.00	.9843"		8093052500	8093212500
	1"	25.40	1.0000"		8093052540	8093212540
	1-1/64"	25.80	1.0156"		8093052580	8093212580
		26.00	1.0236"		8093052600	8093212600
	1-1/32"	26.19	1.0313"		8093052619	8093212619
	1-3/64"	26.59	1.0469"		8093052659	8093212659
	1-1/16"	26.99	1.0625"		8093052699	8093212699
		27.00	1.0630"		8093052700	8093212700
	1-3/32"	27.78	1.0938"		8093052778	8093212778
		28.00	1.1024"		8093052800	8093212800
	1-7/64"	28.18	1.1094"		8093052818	8093212818
	1-1/8"	28.58	1.1250"		8093052858	8093212858
		29.00	1.1417"		8093052900	8093212900
	1-5/32"	29.37	1.1563"		8093052937	8093212937
		30.00	1.1811"		8093053000	8093213000
	1-3/16"	30.16	1.1875"		8093053016	8093213016
	1-7/32"	30.96	1.2188"		8093053096	8093213096
		31.00	1.2205"		8093053100	8093213100
	1-1/4"	31.75	1.2500"		8093053175	8093213175
		32.00	1.2598"		8093053200	8093213200
	1-9/32"	32.54	1.2813"		8093053254	8093213254
		33.00	1.2992"		8093053300	8093213300
	1-5/16"	33.34	1.3125"		8093053334	8093213334
		34.00	1.3386"		8093053400	8093213400
	1-11/32"	34.13	1.3438"		8093053413	8093213413
	1-3/8"	34.93	1.3750"		8093053493	8093213493
		35.00	1.3780"		8093053500	8093213500

●: Excellent ○: Good

P	H	M	K	S	N	O									
11	12	15	21	22	31	32	41	42	43	61	62	63	64	81	82
		○													
13	14	16	23		33	34	51	52	53	71	72	73	74	83	
●	●	○			●	●	●	●	●						

K10 CARBIDE TiN & TiAlN



- High performance on grey cast iron over 220 Brinell and malleable cast iron with short chips.
- Reduce set-up time, it easily can be replaced on the machine.
- Any non-standard size available on request.

Series No. 832308, 832323

▶ cutting conditions : p.141

SERIES Y, Z, O

Series Min. to Max. (mm/inch)	Diameter		Width Metric (mm/inch)	EUROPA CODE	
	Metric (mm)	Decimal (inch)		TiN	TiAlN
Y 9.50(.374") to 11.07(.436")	9.50	.3740"	2.4 (3/32")	8323080950	8323230950
	9.80	.3858"		8323080980	8323230980
	10.00	.3937"		8323081000	8323231000
	10.20	.4016"		8323081020	8323231020
	10.50	.4134"		8323081050	8323231050
	10.80	.4252"		8323081080	8323231080
	11.00	.4331"		8323081100	8323231100
Z 11.11(.437") to 12.95(.510")	11.50	.4528"	2.4 (3/32")	8323081150	8323231150
	12.00	.4724"		8323081200	8323231200
	12.50	.4921"		8323081250	8323231250
O 12.98(.511") to 17.65(.695")	13.00	.5118"	3.2 (1/8")	8323081300	8323231300
	13.50	.5315"		8323081350	8323231350
	14.00	.5512"		8323081400	8323231400
	14.50	.5709"		8323081450	8323231450
	15.00	.5906"		8323081500	8323231500
	15.50	.6102"		8323081550	8323231550
	16.00	.6299"		8323081600	8323231600
	16.50	.6496"		8323081650	8323231650
	17.00	.6693"		8323081700	8323231700
	17.50	.6890"		8323081750	8323231750

●: Excellent ○: Good

P	H	M	K	S	N	O									
11	12	15	21	22	31	32	41	42	43	61	62	63	64	81	82
			●	●											
13	14	16	23		33	34	51	52	53	71	72	73	74	83	
			●	●											

K10 CARBIDE TiN & TiAlN



- High performance on grey cast iron over 220 Brinell and malleable cast iron with short chips.
- Reduce set-up time, it easily can be replaced on the machine.
- Any non-standard size available on request.

Series No. 832308, 832323

▶ cutting conditions : p.141

SERIES 1, 2

Series Min. to Max. (mm/inch)	Width		EUROPA CODE		
	Metric (mm)	Decimal (inch)	Metric (mm/inch)	TiN / TiAlN	
1 17.53(.690") to 24.38(.960")	18.00	.7087"	4.0 (5/32")	8323081800	8323231800
	18.50	.7283"		8323081850	8323231850
	19.00	.7480"		8323081900	8323231900
	19.50	.7677"		8323081950	8323231950
	20.00	.7874"		8323082000	8323232000
	20.50	.8071"		8323082050	8323232050
	21.00	.8268"		8323082100	8323232100
	22.00	.8661"		8323082200	8323232200
	23.00	.9055"		8323082300	8323232300
	24.00	.9449"		8323082400	8323232400
2 24.41(.961") to 35.05(1.380")	25.00	.9843"	4.8 (3/16")	8323082500	8323232500
	26.00	1.0236"		8323082600	8323232600
	27.00	1.0630"		8323082700	8323232700
	28.00	1.1024"		8323082800	8323232800
	29.00	1.1417"		8323082900	8323232900
	30.00	1.1811"		8323083000	8323233000
	31.00	1.2205"		8323083100	8323233100
	32.00	1.2598"		8323083200	8323233200
	33.00	1.2992"		8323083300	8323233300
	34.00	1.3386"		8323083400	8323233400
	35.00	1.3780"		8323083500	8323233500

●: Excellent ○: Good

P	H	M	K	S	N	O									
11	12	15	21	22	31	32	41	42	43	61	62	63	64	81	82
			●	●											
13	14	16	23		33	34	51	52	53	71	72	73	74	83	
			●		●										

K20 CARBIDE TiN & TiAlN



- For use in stainless steel, high-temperature alloy, grey cast iron up to 220 Brinell and aluminium.
- Reduce set-up time, it easily can be replaced on the machine.
- Any non-standard size available on request.

Series No. 830308, 830323

▶ cutting conditions : p.141

SERIES Y, Z, O

Series Min. to Max. (mm/inch)	Width		EUROPA CODE		
	Metric (mm)	Decimal (inch)	Metric (mm/inch)	TiN / TiAlN	
Y 9.50(.374") to 11.07(.436")	9.50	.3740"	2.4 (3/32")	8303080950	8303230950
	9.80	.3858"		8303080980	8303230980
	10.00	.3937"		8303081000	8303231000
	10.20	.4016"		8303081020	8303231020
	10.50	.4134"		8303081050	8303231050
	10.80	.4252"		8303081080	8303231080
	11.00	.4331"		8303081100	8303231100
Z 11.11(.437") to 12.95(.510")	11.50	.4528"	2.4 (3/32")	8303081150	8303231150
	12.00	.4724"		8303081200	8303231200
	12.50	.4921"		8303081250	8303231250
O 12.98(.511") to 17.65(.695")	13.00	.5118"	3.2 (1/8")	8303081300	8303231300
	13.50	.5315"		8303081350	8303231350
	14.00	.5512"		8303081400	8303231400
	14.50	.5709"		8303081450	8303231450
	15.00	.5906"		8303081500	8303231500
	15.50	.6102"		8303081550	8303231550
	16.00	.6299"		8303081600	8303231600
	16.50	.6496"		8303081650	8303231650
	17.00	.6693"		8303081700	8303231700
	17.50	.6890"		8303081750	8303231750

●: Excellent ○: Good

P	H	M	K	S	N	O									
11	12	15	21	22	31	32	41	42	43	61	62	63	64	81	82
			●	●	○	○									
13	14	16	23		33	34	51	52	53	71	72	73	74	83	
			●		○	○	●	●	●	●	●	●	●		

K20 CARBIDE TiN & TiAlN



- For use in stainless steel, high-temperature alloy, grey cast iron up to 220 Brinell and aluminium.
- Reduce set-up time, it easily can be replaced on the machine.
- Any non-standard size available on request.

Series No. 830308, 830323

► cutting conditions : p.141

SERIES 1, 2

Series Min. to Max. (mm/inch)	Width		EUROPA CODE		
	Metric (mm)	Decimal (inch)	Metric (mm/inch)	TiN / TiAlN	
1 17.53(.690") to 24.38(.960")	18.00	.7087"	4.0 (5/32")	8303081800	8303231800
	18.50	.7283"		8303081850	8303231850
	19.00	.7480"		8303081900	8303231900
	19.50	.7677"		8303081950	8303231950
	20.00	.7874"		8303082000	8303232000
	20.50	.8071"		8303082050	8303232050
	21.00	.8268"		8303082100	8303232100
	22.00	.8661"		8303082200	8303232200
	23.00	.9055"		8303082300	8303232300
	24.00	.9449"		8303082400	8303232400
2 24.41(.961") to 35.05(1.380")	25.00	.9843"	4.8 (3/16")	8303082500	8303232500
	26.00	1.0236"		8303082600	8303232600
	27.00	1.0630"		8303082700	8303232700
	28.00	1.1024"		8303082800	8303232800
	29.00	1.1417"		8303082900	8303232900
	30.00	1.1811"		8303083000	8303233000
	31.00	1.2205"		8303083100	8303233100
	32.00	1.2598"		8303083200	8303233200
	33.00	1.2992"		8303083300	8303233300
	34.00	1.3386"		8303083400	8303233400
	35.00	1.3780"		8303083500	8303233500

●: Excellent ○: Good

P	H	M	K	S	N	O									
11	12	15	21	22	31	32	41	42	43	61	62	63	64	81	82
			●	●	○	○									
13	14	16	23		33	34	51	52	53	71	72	73	74	83	
			●		○	○	●	●	●	●	●	●			

P40 CARBIDE TiN & TiAlN



- For general use in carbon steel and alloy steel.
- Reduce set-up time, it easily can be replaced on the machine.
- Any non-standard size available on request.

Series No. 831308, 831323

► cutting conditions : p.141

SERIES Y, Z, O, 1

Series Min. to Max. (mm/inch)	Width		EUROPA CODE		
	Metric (mm)	Decimal (inch)	Metric (mm/inch)	TiN / TiAlN	
Y 9.50(.374") to 11.07(.436")	9.50	.3740"	2.4 (3/32")	8313080950	8313230950
	9.80	.3858"		8313080980	8313230980
	10.00	.3937"		8313081000	8313231000
	10.20	.4016"		8313081020	8313231020
	10.50	.4134"		8313081050	8313231050
	10.80	.4252"		8313081080	8313231080
	11.00	.4331"		8313081100	8313231100
Z 11.11(.437") to 12.95(.510")	11.50	.4528"	2.4 (3/32")	8313081150	8313231150
	12.00	.4724"		8313081200	8313231200
	12.50	.4921"		8313081250	8313231250
O 12.98(.511") to 17.65(.695")	13.00	.5118"	3.2 (1/8")	8313081300	8313231300
	13.50	.5315"		8313081350	8313231350
	14.00	.5512"		8313081400	8313231400
	14.50	.5709"		8313081450	8313231450
	15.00	.5906"		8313081500	8313231500
	15.50	.6102"		8313081550	8313231550
	16.00	.6299"		8313081600	8313231600
	16.50	.6496"		8313081650	8313231650
	17.00	.6693"		8313081700	8313231700
	17.50	.6890"		8313081750	8313231750
1 17.53(.690") to 24.38(.960")	18.00	.7087"	4.0 (5/32")	8313081800	8313231800
	18.50	.7283"		8313081850	8313231850
	19.00	.7480"		8313081900	8313231900
	19.50	.7677"		8313081950	8313231950
	20.00	.7874"		8313082000	8313232000
	20.50	.8071"		8313082050	8313232050
	21.00	.8268"		8313082100	8313232100
	22.00	.8661"		8313082200	8313232200
	23.00	.9055"		8313082300	8313232300
	24.00	.9449"		8313082400	8313232400

●: Excellent ○: Good

P	H	M	K	S	N	O									
11	12	15	21	22	31	32	41	42	43	61	62	63	64	81	82
●	●	●													
13	14	16	23		33	34	51	52	53	71	72	73	74	83	
●	●	●													

P40 CARBIDE TiN & TiAlN



- For general use in carbon steel and alloys steel.
- Reduce set-up time, it easily can be replaced on the machine.
- Any non-standard size available on request.

Series No. 831308, 831323

▶ cutting conditions : p.141

SERIES 2, 3

Series Min. to Max. (mm/inch)	Diameter		Width Metric (mm/inch)	EUROPA CODE			
	Metric (mm)	Decimal (inch)		TiN	TiAlN		
2 24.41(.961") to 35.05(1.380")	25.00	.9843"	4.8 (3/16")	8313082500	8313232500		
	26.00	1.0236"		8313082600	8313232600		
	27.00	1.0630"		8313082700	8313232700		
	28.00	1.1024"		8313082800	8313232800		
	29.00	1.1417"		8313082900	8313232900		
	30.00	1.1811"		8313083000	8313233000		
	31.00	1.2205"		8313083100	8313233100		
	32.00	1.2598"		8313083200	8313233200		
	33.00	1.2992"		8313083300	8313233300		
	34.00	1.3386"		8313083400	8313233400		
	35.00	1.3780"		8313083500	8313233500		
	3 34.37(1.353") to 47.80(1.882")	36.00		1.4173"	6.4 (1/4")	8313083600	8313233600
		37.00		1.4567"		8313083700	8313233700
38.00		1.4961"	8313083800	8313233800			
39.00		1.5354"	8313083900	8313233900			
40.00		1.5748"	8313084000	8313234000			
41.00		1.6142"	8313084100	8313234100			
42.00		1.6535"	8313084200	8313234200			
43.00		1.6929"	8313084300	8313234300			
44.00		1.7323"	8313084400	8313234400			
45.00		1.7717"	8313084500	8313234500			
46.00		1.8110"	8313084600	8313234600			
47.00		1.8504"	8313084700	8313234700			

●: Excellent ○: Good

P		H		M		K		S			N				O	
11	12	15	21	22	31	32	41	42	43	61	62	63	64	81	82	
●	●	●														
13	14	16	23		33	34	51	52	53	71	72	73	74	83		
●	●	●														

SPADE DRILL INSERTS CUTTING DATA

CUTTING CONDITIONS - HSS



SPADE DRILL INSERTS

Material Group	Material Hardness		HSS GRADE	v _c (m/min)		f _n (mm/rev)							
	Bhn	HRc		TiN	TiAlN	ø9.5 -12.5	ø13 -17.5	ø18 -24	ø25 -35	ø36 -47	ø48 -65	ø66 -114	
P	11 Low Carbon Steel 1015, 1020, 1140 1025 etc	85-125		M4	54	75	0.15	0.22	0.28	0.37	0.46	0.56	0.67
		125-175	>7	M4	51	72	0.15	0.22	0.28	0.37	0.46	0.56	0.67
		175-225	7-20	M4	49	69	0.13	0.19	0.24	0.34	0.43	0.50	0.57
		225-275	20-28	M4	45	66	0.13	0.19	0.24	0.34	0.43	0.50	0.57
	12 Free machining Steel 1213, 12L13, 1215 12L14, 1118 etc	100-150		M4	63	84	0.16	0.23	0.31	0.40	0.48	0.55	0.67
		150-200	>13	M4	58	81	0.16	0.23	0.31	0.40	0.48	0.55	0.67
		200-250	13-24	M4	51	72	0.14	0.23	0.31	0.38	0.48	0.55	0.67
	13 Medium Carbon Steel 1035, 1050, 1045 1055, 1140 etc	125-175	>7	M4	52	75	0.14	0.22	0.28	0.35	0.45	0.55	0.65
		175-225	7-20	M4	48	69	0.13	0.19	0.23	0.34	0.43	0.50	0.58
		225-275	20-28	M4	45	63	0.13	0.19	0.23	0.34	0.43	0.50	0.58
		275-325	28-34	T15, M48	42	58	0.10	0.17	0.21	0.28	0.38	0.45	0.55
	14 Structural Steel A36, A516, A182 etc	100-150		M4	44	63	0.14	0.23	0.29	0.35	0.44	0.50	0.63
150-250		>24	M4	39	55	0.13	0.22	0.24	0.28	0.38	0.46	0.59	
250-350		24-37	T15, M48	32	41	0.10	0.20	0.22	0.24	0.34	0.40	0.48	
125-175		>7	M4	48	63	0.15	0.20	0.24	0.36	0.43	0.47	0.55	
14 Alloy Steel 8620, 4130, 4137 4140, 6150 etc	175-225	7-20	M4	45	58	0.13	0.20	0.24	0.36	0.42	0.46	0.53	
	225-275	20-28	M4	41	56	0.13	0.16	0.23	0.35	0.41	0.44	0.53	
	275-325	28-34	T15, M48	39	53	0.09	0.15	0.22	0.28	0.38	0.41	0.51	
	325-375	34-40	T15, M48	36	46	0.08	0.15	0.21	0.27	0.38	0.40	0.50	
H	15 Tool Steel H13, H21, A2, S1 etc	150-200	>13	T15, M48	25	34	0.09	0.15	0.19	0.25	0.28	0.36	0.41
		200-250	13-24	T15, M48	19	26	0.09	0.15	0.19	0.25	0.28	0.36	0.41
	16 High Strength Alloy 9840, 4340, 4330V etc	225-300	>32	T15, M48	25	35	0.13	0.18	0.23	0.24	0.36	0.43	0.50
		300-350	32-37	T15, M48	19	27	0.10	0.18	0.23	0.24	0.36	0.43	0.50
M	21 22 23 Stainless Steel 310, 316, 410, 330 etc	135-185	>9	M4	24	34	0.14	0.20	0.23	0.26	0.36	0.41	0.50
		185-275	9-28	M4	20	29	0.12	0.18	0.20	0.24	0.30	0.36	0.46
K	31 32 33 34 Cast Iron / S.G. Iron A48-76 GR30/GR45 A536-72 60-40-18 A220-76 GR40010 etc	120-150		M4	52	75	0.16	0.30	0.40	0.49	0.59	0.69	0.78
		150-200	>13	M4	48	70	0.14	0.26	0.35	0.45	0.56	0.64	0.65
		200-220	13-19	M4	42	58	0.14	0.23	0.30	0.41	0.46	0.52	0.60
		220-260	19-26	T15, M48	35	52	0.13	0.17	0.23	0.30	0.36	0.43	0.50
S	51 52 53 High Temp. Alloy Hastelloy B, Inconel etc	150-200	>13	T15, M48	9	12	0.08	0.17	0.20	0.24	0.30	0.37	0.39
		220-310	13-24	M48	8	11	0.08	0.14	0.18	0.19	0.25	0.29	0.34
N	71 72 73 Aluminium 2014, 6061, 7075 etc	30		M4	187	244	0.19	0.33	0.41	0.50	0.54	0.64	0.72
		180	>8	M4	92	137	0.19	0.33	0.41	0.50	0.54	0.64	0.72

v_c - cutting speed (m/min)
n - RPM (rev/min)
f_n - feed rate (mm/rev)
ø - drill diameter (mm)

To calculate RPM from cutting speed: $n = \frac{v_c \cdot 1000}{\pi \cdot \phi}$

To calculate cutting speed from RPM: $v_c = \frac{n \cdot \pi \cdot \phi}{1000}$

All recommendations are based on ideal machining conditions. Adjustments may need to be made according to your set-up. 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 when using extended length tools.

CUTTING CONDITIONS - CARBIDE



SPADE DRILL INSERTS

Material Group	Material Hardness		CARBIDE GRADE	v _c (m/min)		0.440f _n (mm/rev)					
	Bhn	HRc		TiN	TiAlN	ø9.5 -12.5	ø13 -17.5	ø18 -24	ø25 -35	ø36 -47	
P	11 Low Carbon Steel 1015, 1020, 1140 1025 etc	85-125		P40	94	119	0.20	0.24	0.31	0.42	0.46
		125-175	>7	P40	82	107	0.18	0.24	0.31	0.39	0.43
		175-225	7-20	P40	76	96	0.15	0.22	0.29	0.36	0.40
		225-275	20-28	P40	62	84	0.13	0.22	0.29	0.36	0.40
	12 Free machining Steel 1213, 12L13, 1215 12L14, 1118 etc	100-150		P40	101	125	0.18	0.28	0.36	0.44	0.50
		150-200	>13	P40	88	110	0.16	0.26	0.33	0.39	0.45
		200-250	13-24	P40	82	101	0.14	0.23	0.31	0.41	0.42
	13 Medium Carbon Steel 1035, 1050, 1045 1055, 1140 etc	125-175	>7	P40	82	102	0.17	0.24	0.31	0.37	0.42
		175-225	7-20	P40	75	93	0.15	0.22	0.28	0.36	0.40
		225-275	20-28	P40	66	84	0.15	0.22	0.28	0.36	0.40
		275-325	28-34	P40	56	67	0.13	0.19	0.26	0.33	0.37
	14 Structural Steel A36, A516, A182 etc	100-150		P40	75	91	0.19	0.26	0.34	0.39	0.43
150-250		>24	P40	62	75	0.15	0.24	0.29	0.33	0.37	
250-350		24-37	P40	55	73	0.13	0.23	0.27	0.29	0.33	
125-175		>7	P40	79	98	0.18	0.25	0.32	0.40	0.45	
14 Alloy Steel 8620, 4130, 4137 4140, 6150 etc	175-225	7-20	P40	76	88	0.15	0.23	0.29	0.38	0.42	
	225-275	20-28	P40	66	81	0.15	0.21	0.28	0.37	0.41	
	275-325	28-34	P40	62	78	0.12	0.20	0.27	0.33	0.40	
	325-375	34-40	P40	53	64	0.10	0.18	0.23	0.30	0.38	
H	15 Tool Steel H13, H21, A2, S1 etc	150-200	>13	P40	50	67	0.09	0.18	0.22	0.28	0.31
		200-250	13-24	P40	37	50	0.09	0.18	0.22	0.28	0.31
	16 High Strength Alloy 9840, 4340, 4330V etc	225-300	>32	P40	49	62	0.15	0.23	0.25	0.29	0.38
		300-350	32-37	P40	43	55	0.12	0.20	0.23	0.27	0.35
M	21 22 23 Stainless Steel 310, 316, 410, 330 etc	135-185	>9	K20	50	62	0.19	0.19	0.21	0.24	-
		185-275	9-28	K20	38	46	0.15	0.17	0.20	0.21	-
K	31 32 33 34 Cast Iron / S.G. Iron A48-76 GR30/GR45 A536-72 60-40-18 A220-76 GR40010 etc	120-150		K10, K20	98	137	0.18	0.30	0.37	0.46	-
		150-200	>13	K10, K20	95	125	0.17	0.26	0.32	0.42	-
		200-220	13-19	K10, K20	75	111	0.14	0.23	0.30	0.38	-
		220-260	19-26	K10, K20	66	93	0.13	0.18	0.28	0.33	-
S	51 52 53 High Temp. Alloy Hastelloy B, Inconel etc	150-200	>13	K20	26	30	0.10	0.17	0.23	0.27	-
		220-310	13-24	K20	20	24	0.10	0.14	0.20	0.24	-
N	71 72 73 Aluminium 2014, 6061, 7075 etc	30		K20	366	427	0.24	0.38	0.45	0.50	-
		180	>8	K20	244	291	0.22	0.33	0.40	0.45	-

v_c - cutting speed (m/min)
n - RPM (rev/min)
f_n - feed rate (mm/rev)
ø - drill diameter (mm)

To calculate RPM from cutting speed: $n = \frac{v_c \cdot 1000}{\pi \cdot \phi}$

To calculate cutting speed from RPM: $v_c = \frac{n \cdot \pi \cdot \phi}{1000}$

All recommendations are based on ideal machining conditions. Adjustments may need to be made according to your set-up. 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 when using extended length tools.

CUTTING CONDITIONS - FLAT BOTTOM



SPADE DRILL INSERTS

Material Group	Material Hardness		v _c (m/min)	f _n (mm/rev)				
	Bhn	HRc		TiAlN	∅ 9.5 - 12.5	∅ 13 - 17.5	∅ 18 - 24	∅ 25 - 35
P	11 Low Carbon Steel 1015, 1020, 1140 1025 etc	85-125		60	0.12	0.18	0.22	0.30
		125-175	>7	58	0.12	0.18	0.22	0.30
		175-225	7-20	55	0.10	0.15	0.19	0.27
		225-275	20-28	53	0.10	0.15	0.19	0.27
	12 Free machining Steel 1213, 12L13, 1215 12L14, 1118 etc	100-150		67	0.13	0.18	0.25	0.32
		150-200	>13	65	0.13	0.18	0.25	0.32
		200-250	13-24	58	0.11	0.18	0.25	0.30
	13 Medium Carbon Steel 1035, 1050, 1045 1055, 1140 etc	125-175	>7	60	0.11	0.18	0.22	0.28
		175-225	7-20	55	0.10	0.15	0.18	0.27
		225-275	20-28	50	0.10	0.15	0.18	0.27
		275-325	28-34	46	0.08	0.14	0.17	0.22
	14 Structural Steel A36, A516, A182 etc	100-150		50	0.11	0.18	0.23	0.28
		150-250	>24	44	0.10	0.18	0.19	0.22
		250-350	24-37	36	0.08	0.16	0.18	0.19
Alloy Steel 8620, 4130, 4137 4140, 6150 etc		125-175	>7	50	0.12	0.16	0.19	0.29
		175-225	7-20	46	0.10	0.16	0.19	0.29
		225-275	20-28	45	0.10	0.13	0.18	0.28
15 Tool Steel H13, H21, A2, S1 etc	275-325	28-34	42	0.07	0.12	0.18	0.22	
	325-375	34-40	37	0.06	0.12	0.17	0.22	
	16 High Strength Alloy 9840, 4340, 4330V etc	150-200	>13	29	0.07	0.12	0.15	0.20
		200-250	13-24	23	0.07	0.12	0.15	0.20
21 22 Stainless Steel 310, 316, 410, 330 etc	225-300	>32	28	0.10	0.14	0.18	0.19	
	300-350	32-37	22	0.08	0.14	0.18	0.19	
	350-400	37-43	18	0.06	0.12	0.16	0.18	
M	31 32 Cast Iron / S.G. Iron A48-76 GR30/GR45 A536-72 60-40-18 A220-76 GR40010 etc	135-185	>9	29	0.12	0.18	0.20	0.23
		185-275	9-28	25	0.09	0.15	0.18	0.22
	33 34	120-150		66	0.13	0.25	0.35	0.41
		150-200	>13	60	0.12	0.21	0.29	0.40
		200-220	13-19	51	0.12	0.20	0.25	0.36
S	51 52 53 High Temp. Alloy Hastelloy B, Inconel etc	220-260	19-26	48	0.10	0.14	0.20	0.25
		260-320	26-34	37	0.10	0.13	0.13	0.20
N	71 72 73 Aluminium 2014, 6061, 7075 etc	150-200	>13	29	0.07	0.12	0.15	0.20
		220-310	13-24	23	0.07	0.12	0.15	0.20
		30		213	0.17	0.28	0.36	0.43
		180	>8	121	0.17	0.28	0.36	0.41

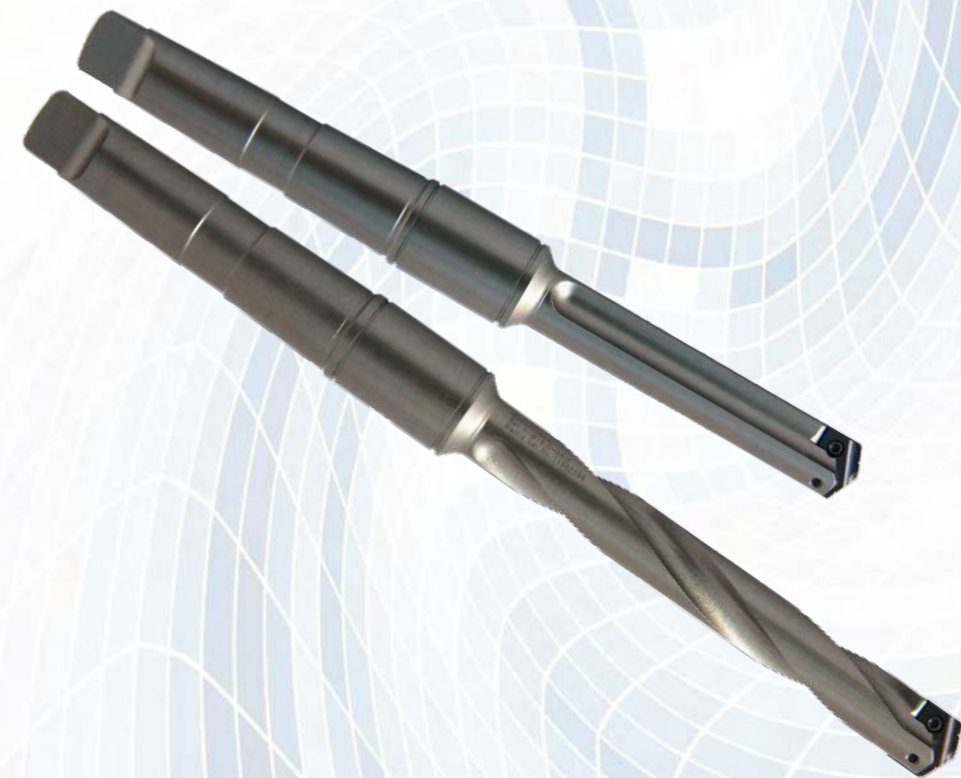
v_c - cutting speed (m/min)
n - RPM (rev/min)
f_n - feed rate (mm/rev)
∅ - drill diameter (mm)

To calculate RPM from cutting speed: $n = \frac{v_c * 1000}{\pi * \emptyset}$

To calculate cutting speed from RPM: $v_c = \frac{n * \pi * \emptyset}{1000}$

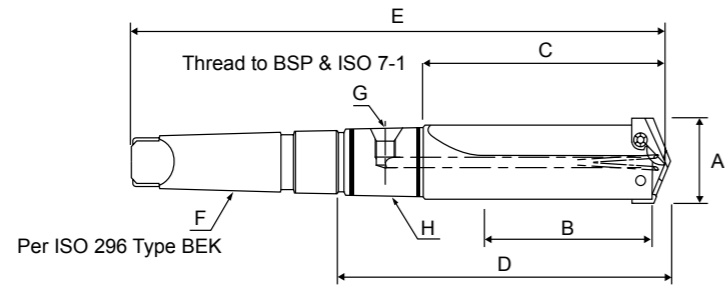
All recommendations are based on ideal machining conditions. Adjustments may need to be made according to your set-up. The recommendations for speeds, feeds and other parameters presented in this chart are nominal recommendations and should be considered only as good starting points. Speed and feed reductions (20% reduction in speed and 10% reduction in feed) are recommended when using extended length tools.

SPADE DRILL HOLDERS TAPER SHANK



TAPER SHANK - SHORT

Straight Flute

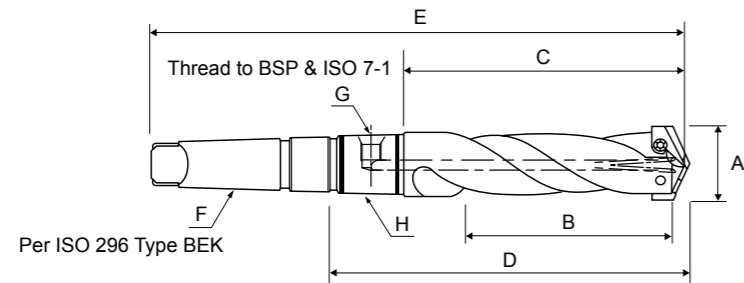


Series	EUROPA CODE	A	B	C	D	E	F	G	H
		Drill Insert Range	Max. Drill Depth	Flute Length	Ref. Length	Overall Length	MT	Pipe Tap	RCA
Y	8Y2150002M	9.5 ~ 11.0	31.7	51.5	88.0	160.3	#2	1/16"	SP0107
Z	8Z2150002M	11.5 ~ 12.5	31.7	51.5	88.0	160.3	#2	1/16"	SP0107
0	802150002M	13.0 ~ 17.5	34.9	55.5	92.4	164.3	#2	1/16"	SP0107
0.5	812150002M	15.5 ~ 17.5	34.9	55.5	92.4	164.3	#2	1/16"	SP0107
1	822150003M	18.0 ~ 24.0	69.8	98.4	142.5	232.5	#3	1/8"	SP0108
1.5	832150003M	22.0 ~ 24.0	69.8	98.4	142.5	232.5	#3	1/8"	SP0108
2	842150004M	25.0 ~ 35.0	85.7	114.3	160.4	273.8	#4	1/8"	SP0108
2.5	852150004M	30.0 ~ 35.0	85.7	114.3	167.6	281.0	#4	1/4"	SP0109
3	862150004M	36.0 ~ 47.0	120.6	152.4	206.4	319.1	#4	1/4"	SP0109
4	872150005M	48.0 ~ 65.0	130.1	165.1	219.1	363.5	#5	1/4"	SP0110
5	882150005M	64.0 ~ 88.0	171.1	215.9	287.3	430.2	#5	1/2"	SP0111
7	892150005M	90.0 ~ 114.0	171.1	225.4	296.8	439.7	#5	1/2"	SP0111

► Coolant ring can be applied for internal cooling, refer to page 151.

TAPER SHANK - INTERMEDIATE

Spiral Flute

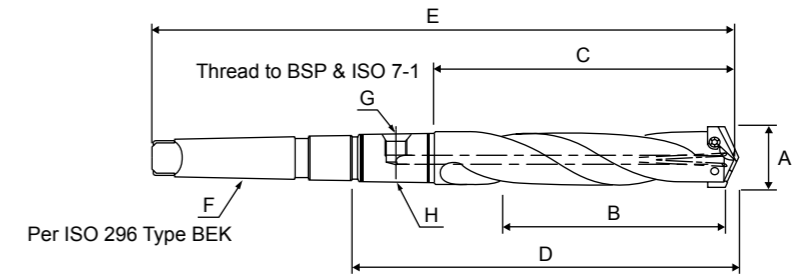


Series	EUROPA CODE	A	B	C	D	E	F	G	H
		Drill Insert Range	Max. Drill Depth	Flute Length	Ref. Length	Overall Length	MT	Pipe Tap	RCA
1	823250003M	18.0 ~ 24.0	120.7	149.2	193.3	283.3	#3	1/8"	SP0108
1.5	833250003M	22.0 ~ 24.0	120.7	149.2	193.3	283.3	#3	1/8"	SP0108
2	843250004M	25.0 ~ 35.0	136.5	165.1	211.2	324.6	#4	1/8"	SP0108
2.5	853250004M	30.0 ~ 35.0	136.5	165.1	218.4	331.8	#4	1/4"	SP0109
3	863250004M	36.0 ~ 47.0	165.1	196.9	250.9	363.6	#4	1/4"	SP0109

► Coolant ring can be applied for internal cooling, refer to page 151.

TAPER SHANK - STANDARD

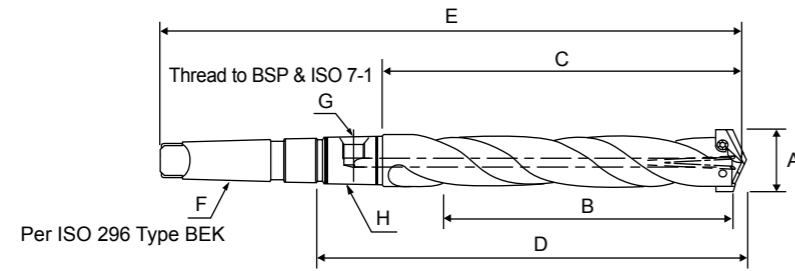
Spiral Flute



Series	EUROPA CODE	A	B	C	D	E	F	G	H
		Drill Insert Range	Max. Drill Depth	Flute Length	Ref. Length	Overall Length	MT	Pipe Tap	RCA
Y	8Y4250002M	9.5 ~ 11.0	60.3	80.2	116.7	188.9	#2	1/16"	SP0107
Z	8Z4250002M	11.5 ~ 12.5	60.3	80.2	116.7	188.9	#2	1/16"	SP0107
0	804250002M	13.0 ~ 17.5	63.5	84.1	121.0	192.9	#2	1/16"	SP0107
0.5	814250002M	15.5 ~ 17.5	63.5	84.1	121.0	192.9	#2	1/16"	SP0107
1	824250003M	18.0 ~ 24.0	171.5	200.0	244.1	334.2	#3	1/8"	SP0108
1.5	834250003M	22.0 ~ 24.0	171.5	200.0	244.1	334.2	#3	1/8"	SP0108
2	844250004M	25.0 ~ 35.0	187.3	215.9	262.0	375.4	#4	1/8"	SP0108
2.5	854250004M	30.0 ~ 35.0	187.3	215.9	269.2	382.6	#4	1/4"	SP0109
3	864250004M	36.0 ~ 47.0	209.5	241.3	295.3	408.0	#4	1/4"	SP0109
4	874250005M	48.0 ~ 65.0	231.8	266.7	320.7	465.1	#5	1/4"	SP0110
5	884250005M	64.0 ~ 88.0	273.1	317.5	388.9	531.8	#5	1/2"	SP0111
7	894250005M	90.0 ~ 114.0	273.1	327.0	398.5	541.3	#5	1/2"	SP0111

► Coolant ring can be applied for internal cooling, refer to page 151.

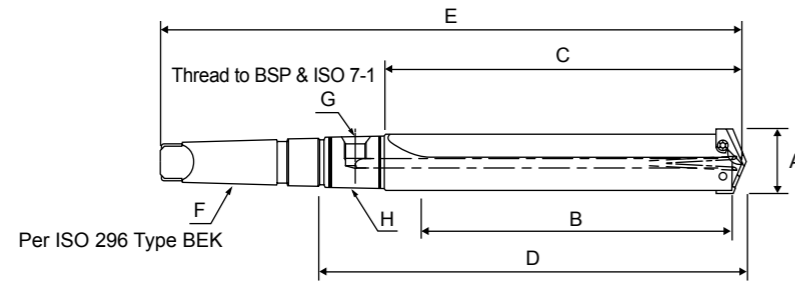
TAPER SHANK - EXTENDED Spiral Flute



Series	EUROPA CODE	A	B	C	D	E	F	G	H
		Drill Insert Range	Max. Drill Depth	Flute Length	Ref. Length	Overall Length			
Y	8Y5250002M	9.5 ~ 11.0	111.1	130.9	167.4	239.7	#2	1/16"	SP0107
Z	8Z5250002M	11.5 ~ 12.5	111.1	130.9	167.4	239.7	#2	1/16"	SP0107
0	805250002M	13.0 ~ 17.5	114.3	135.0	171.8	243.7	#2	1/16"	SP0107
0.5	815250002M	15.5 ~ 17.5	114.3	135.0	171.8	243.7	#2	1/16"	SP0107
1	825250003M	18.0 ~ 24.0	273.1	301.6	345.7	435.8	#3	1/8"	SP0108
1.5	835250003M	22.0 ~ 24.0	273.1	301.6	345.7	435.8	#3	1/8"	SP0108
2	845250004M	25.0 ~ 35.0	289.0	317.5	363.6	477.0	#4	1/8"	SP0108
2.5	855250004M	30.0 ~ 35.0	289.0	317.5	370.8	484.2	#4	1/4"	SP0109

► Coolant ring can be applied for internal cooling, refer to page 151.

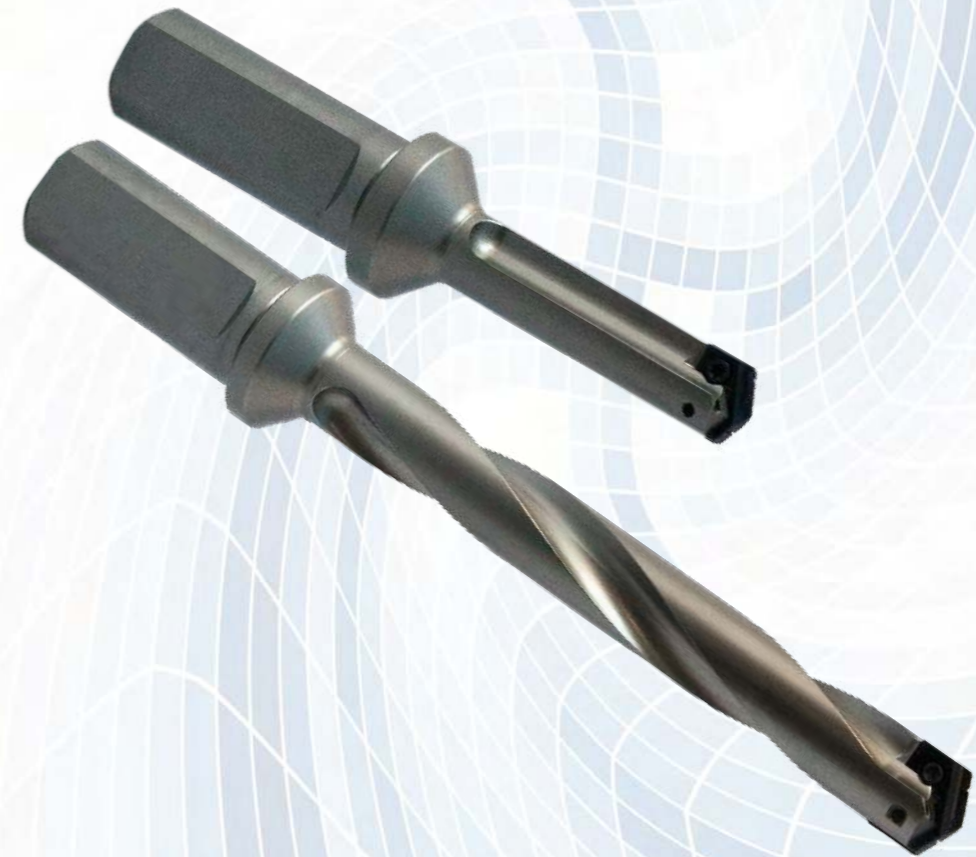
TAPER SHANK - EXTENDED Straight Flute



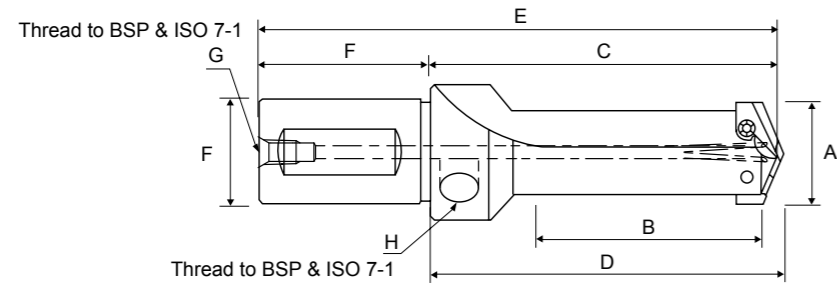
Series	EUROPA CODE	A	B	C	D	E	F	G	H
		Drill Insert Range	Max. Drill Depth	Flute Length	Ref. Length	Overall Length			
3	865150004M	36.0 ~ 47.0	349.3	381.0	435.0	547.7	#4	1/4"	SP0109
4	875150005M	48.0 ~ 65.0	422.3	457.2	511.2	655.6	#5	1/4"	SP0110
5	885150005M	64.0 ~ 88.0	463.6	508.0	579.4	722.3	#5	1/2"	SP0111
7	895150005M	90.0 ~ 114.0	555.6	609.6	681.1	823.9	#5	1/2"	SP0111

► Coolant ring can be applied for internal cooling, refer to page 151.

SPADE DRILL HOLDERS STRAIGHT SHANK

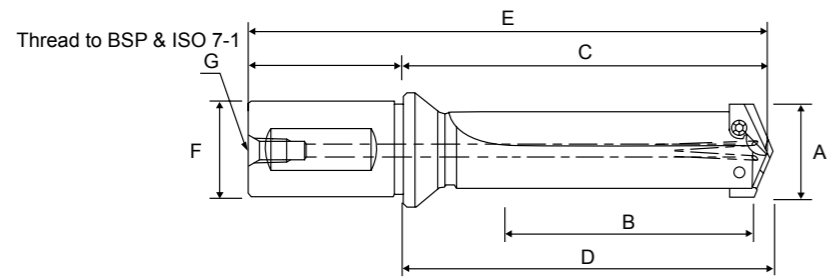


STRAIGHT SHANK - STUB Straight Flute



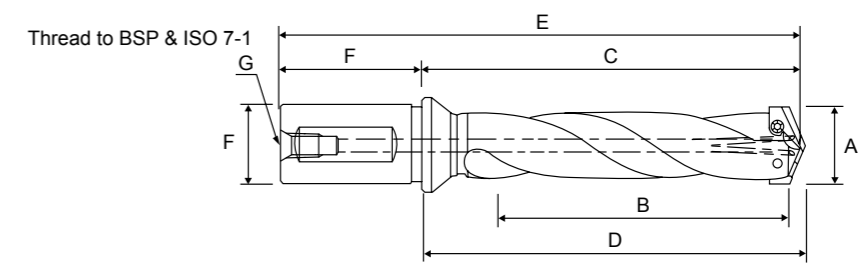
Series	EUROPA CODE	A Drill Insert Range	B Max. Drill Depth	C Flute Length	D Ref. Length	E Overall Length	F Shank		G Pipe Tap	
							Dia.	Length	Rear	Side
Y	8Y115016FM	9.5 ~ 11.0	19.1	47.6	50.0	89.5	16.0	41.9	1/16"	1/8"
Z	8Z115016FM	11.5 ~ 12.5	19.1	47.6	50.0	89.5	16.0	41.9	1/16"	1/8"
0	80115020FM	13.0 ~ 17.5	22.2	47.6	50.4	89.5	20.0	41.9	1/8"	1/8"
0.5	81115020FM	15.5 ~ 17.5	22.2	47.6	50.4	89.5	20.0	41.9	1/8"	1/8"
1	82115025FM	18.0 ~ 24.0	47.6	75.8	79.4	128.9	25.0	53.1	1/8"	1/8"
1.5	83115025FM	22.0 ~ 24.0	57.2	88.5	92.1	141.6	25.0	53.1	1/8"	1/8"
2	84115032FM	25.0 ~ 35.0	57.2	88.5	92.1	146.4	32.0	57.9	1/4"	1/8"

STRAIGHT SHANK - SHORT Straight Flute



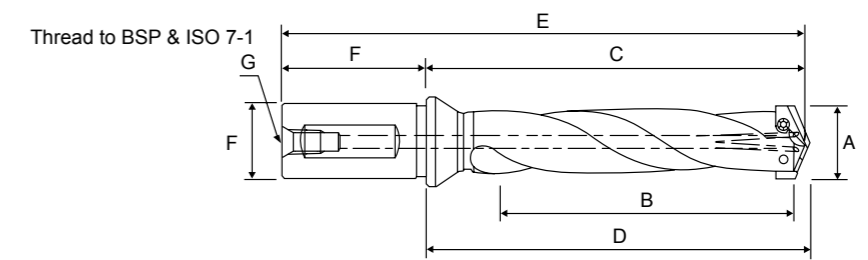
Series	EUROPA CODE	A Drill Insert Range	B Max. Drill Depth	C Flute Length	D Ref. Length	E Overall Length	F Shank		G Pipe Tap
							Dia.	Length	
Y	8Y215020FM	9.5 ~ 11.0	31.8	61.1	63.5	103.0	20.0	41.9	1/8"
Z	8Z215020FM	11.5 ~ 12.5	31.8	61.1	63.5	103.0	20.0	41.9	1/8"
0	80215020FM	13.0 ~ 17.5	34.9	63.5	66.3	105.4	20.0	41.9	1/8"
0.5	81215020FM	15.5 ~ 17.5	34.9	63.5	66.3	105.4	20.0	41.9	1/8"
1	82215025FM	18.0 ~ 24.0	66.7	107.2	110.7	160.2	25.0	53.1	1/8"
1.5	83215025FM	22.0 ~ 24.0	66.7	107.2	110.7	160.2	25.0	53.1	1/8"
2	84215032FM	25.0 ~ 35.0	85.7	128.6	132.2	186.5	32.0	57.9	1/4"
2.5	85215032FM	30.0 ~ 35.0	85.7	128.6	132.2	186.5	32.0	57.9	1/4"
3	86215040FM	36.0 ~ 47.0	120.7	173.0	177.8	243.1	40.0	70.1	1/4"
4	87215040FM	48.0 ~ 65.0	130.2	179.4	184.2	249.5	40.0	70.1	1/4"

STRAIGHT SHANK - INTERMEDIATE Spiral Flute



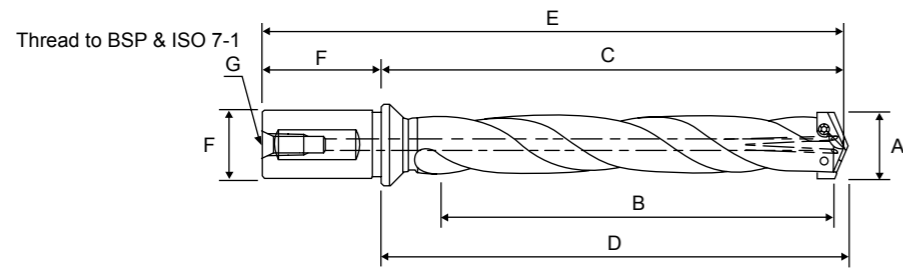
Series	EUROPA CODE	A Drill Insert Range	B Max. Drill Depth	C Flute Length	D Ref. Length	E Overall Length	F Shank		G Pipe Tap
							Dia.	Length	
1	82325025FM	18.0 ~ 24.0	117.5	154.8	158.4	207.9	25.0	53.1	1/8"
1.5	83325025FM	22.0 ~ 24.0	117.5	154.8	158.4	207.9	25.0	53.1	1/8"
2	84325032FM	25.0 ~ 35.0	136.5	179.4	183.0	237.3	32.0	57.9	1/4"
2.5	85325032FM	30.0 ~ 35.0	136.5	179.4	183.0	237.3	32.0	57.9	1/4"
3	86325040FM	36.0 ~ 47.0	165.1	217.5	222.3	287.6	40.0	70.1	1/4"

STRAIGHT SHANK - STANDARD Spiral Flute



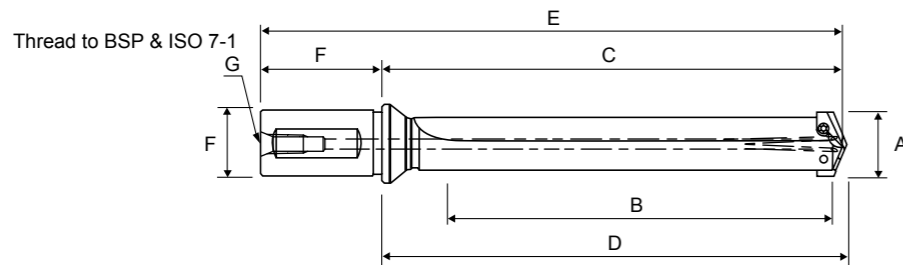
Series	EUROPA CODE	A Drill Insert Range	B Max. Drill Depth	C Flute Length	D Ref. Length	E Overall Length	F Shank		G Pipe Tap
							Dia.	Length	
Y	8Y325020FM	9.5 ~ 11.0	60.3	89.7	92.1	131.6	20.0	41.9	1/8"
Z	8Z425020FM	11.5 ~ 12.5	60.3	89.7	92.1	131.6	20.0	41.9	1/8"
0	80425020FM	13.0 ~ 17.5	63.5	92.1	94.9	134.0	20.0	41.9	1/8"
0.5	81425020FM	15.5 ~ 17.5	63.5	92.1	94.9	134.0	20.0	41.9	1/8"
1	82425025FM	18.0 ~ 24.0	168.3	205.6	209.2	258.7	25.0	53.1	1/8"
1.5	83425025FM	22.0 ~ 24.0	168.3	205.6	209.2	258.7	25.0	53.1	1/8"
2	84425032FM	25.0 ~ 35.0	187.3	230.2	233.8	288.1	32.0	57.9	1/4"
2.5	85425032FM	30.0 ~ 35.0	187.3	230.2	233.8	288.1	32.0	57.9	1/4"
3	86425040FM	36.0 ~ 47.0	209.6	261.9	266.7	332.0	40.0	70.1	1/4"
4	87425040FM	48.0 ~ 65.0	231.8	281.0	285.8	351.1	40.0	70.1	1/4"

STRAIGHT SHANK - EXTENDED Spiral Flute



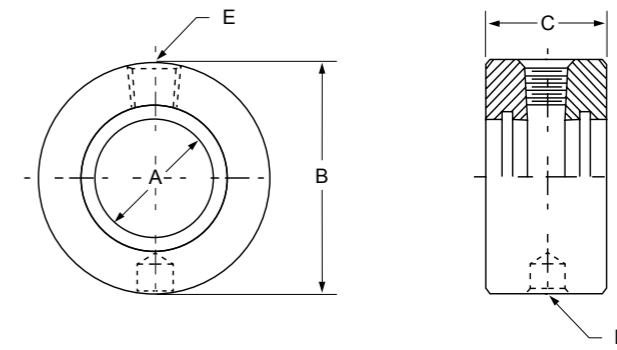
Series	EUROPA CODE	A	B	C	D	E	Shank		Pipe Tap
		Drill Insert Range	Max. Drill Depth	Flute Length	Ref. Length	Overall Length	Dia.	Length	
Y	8Y425020FM	9.5 ~ 11.0	111.1	140.5	142.9	182.4	20.0	41.9	1/8"
Z	8Z525020FM	11.5 ~ 12.5	111.1	140.5	142.9	182.4	20.0	41.9	1/8"
0	80525020FM	13.0 ~ 17.5	114.3	142.9	145.7	184.8	20.0	41.9	1/8"
0.5	81525020FM	15.5 ~ 17.5	114.3	142.9	145.7	184.8	20.0	41.9	1/8"
1	82525025FM	18.0 ~ 24.0	269.9	307.2	310.8	360.3	25.0	53.1	1/8"
1.5	83525025FM	22.0 ~ 24.0	269.9	307.2	310.8	360.3	25.0	53.1	1/8"
2	84525032FM	25.0 ~ 35.0	288.9	331.8	335.4	389.7	32.0	57.9	1/4"
2.5	85525032FM	30.0 ~ 35.0	288.9	331.8	335.4	389.7	32.0	57.9	1/4"

STRAIGHT SHANK - EXTENDED Straight Flute



Series	EUROPA CODE	A	B	C	D	E	Shank		Pipe Tap
		Drill Insert Range	Max. Drill Depth	Flute Length	Ref. Length	Overall Length	Dia.	Length	
3	86515040FM	36.0 ~ 47.0	349.3	401.6	406.4	471.7	40.0	70.1	1/4"
4	87515040FM	48.0 ~ 65.0	422.3	471.5	476.3	541.6	40.0	70.1	1/4"

HOLDER ACCESSORIES



Coolant Rings

Item No.	A	B	C	D	E
	I.D.	O.D.	Length	Thread for Driving Rod	Pipe Tap
SP0107	19.05	44.45	22.23	M8 X 1.25	1/8"
SP0108	25.40	53.97	28.57	M8 X 1.25	1/8"
SP0109	31.75	63.50	34.92	M10 X 1.5	1/4"
SP0110	44.45	76.20	34.92	M10 X 1.5	1/4"
SP0111	57.15	95.27	44.45	M12 X 1.75	1/2"

Thread to BSP & ISO 7-1

Torx Screws / Drivers

Holder Series	TORX Screw	TORX Hand Driver	Drill Range Used With
Y	SP0156	SP0157	9.5 mm ~ 11.0 mm
Z	SP0105	SP0158	11.5 mm ~ 12.5 mm
0	SP0114	SP0159	13.0 mm ~ 17.5 mm
0.5	SP1039	SP0159	15.5 mm ~ 17.5 mm
1	SP0106	SP0160	18.0 mm ~ 24.0 mm
1.5	SP0115	SP0160	22.0 mm ~ 24.0 mm
2	SP0116	SP0161	25.0 mm ~ 35.0 mm
2.5	SP1040	SP0161	30.0 mm ~ 35.0 mm
3,4	SP0119	SP0120	36.0 mm ~ 65.0 mm
5 ~ 8	SP0117	SP0162	64.0 mm ~ 114.0 mm

** Note : Replacement screws sold in packs of 10