



4 IN 1 COUNTER BORE

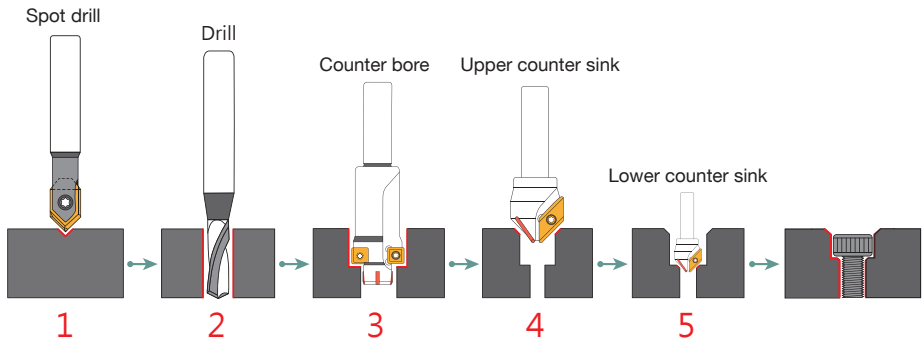
————— Machining time saver —————

2025. 03



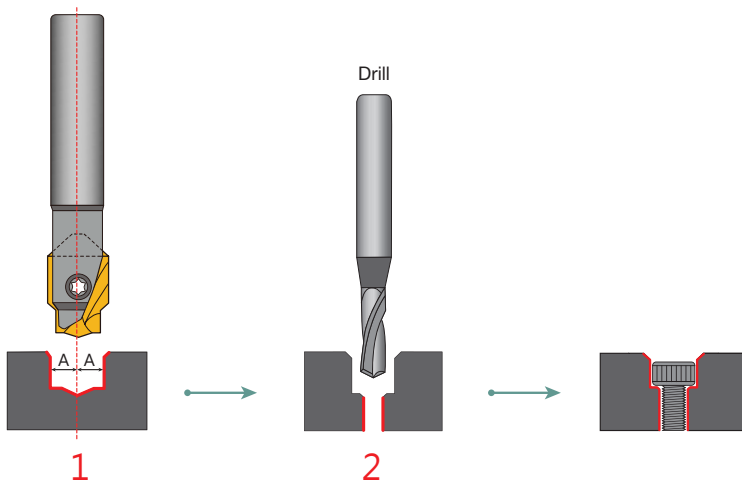
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Traditional Procedure: 5 Steps



Innovative solution: 2 Steps

Get the job making counterbore within 2 seconds.



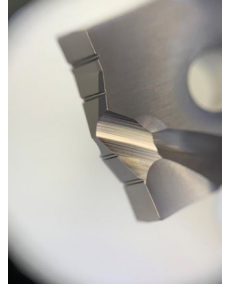
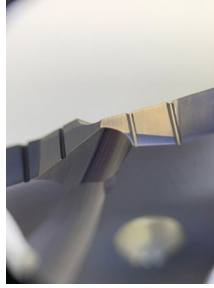
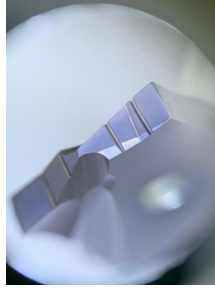
- Finish 4 operations in one.

Counterbore





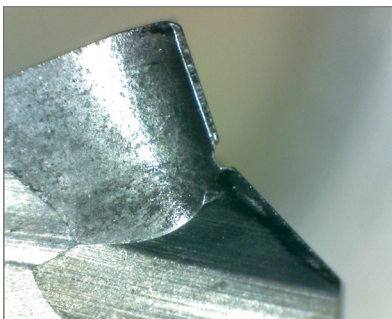
4 in 1 insert Geometric Angle design:



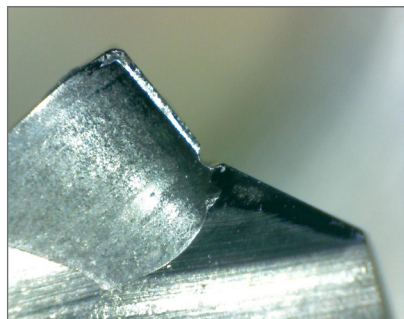
Chipbreaker with a unique edge on bottom :

- S-Curve spot design reduces thrust force and improve spot accuracy .
- Bottom chipbreaker with a large rake angle on spot to break the chip easily, solve chip stuck problem on inside of hole .
- opposite cutting edge with two relief angle reduces surface friction when make conterbore .
- 142 ° spot save toollife on drill .

Wear conclusion:



Material: S50C
Vc: 70m/min
Fz: 0.07mm/ tooth
Machine 310 holes

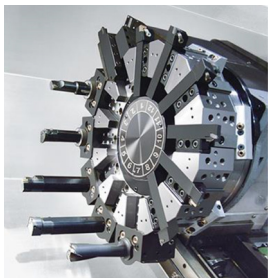


Material: S50C
Vc: 70m/min
Fz: 0.07mm/ tooth
Machine 1000 holes

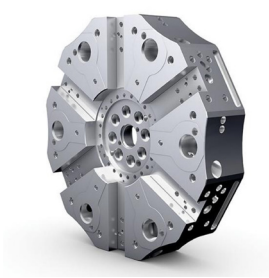


Application :

Machinery part :



Tool turret



Tool turret



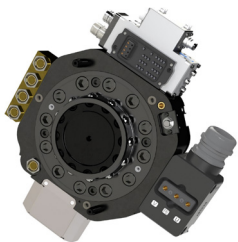
Modular vises



Robot Hollow Joints



Force Torque Sensors



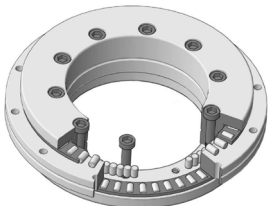
Robotic Tool Changers



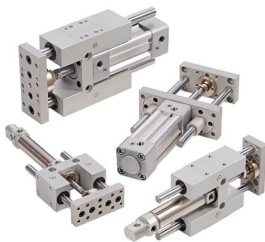
Shaft Supporter Four Holes



Ball-Screw-Support-Unit-Series



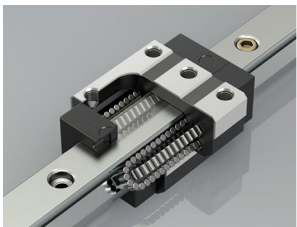
Rotary table bearing



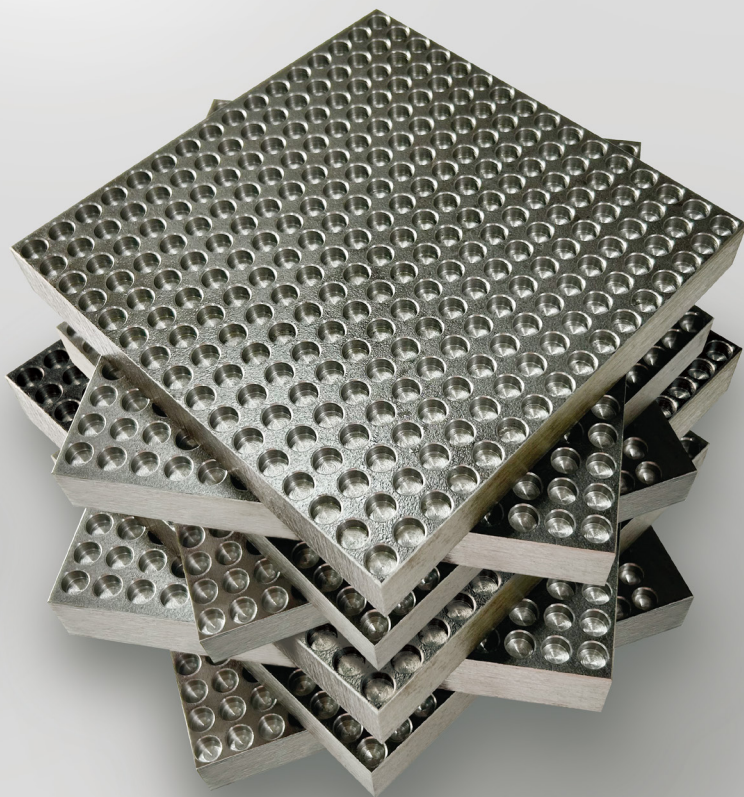
Pneumatic Hydraulic



Mounting Bracket



linear guide rail



Machining in M4 screw holes

Testing information:

Material: Steel S45C/ Vc: 70m/min/ Fz: 0.07mm/ tooth

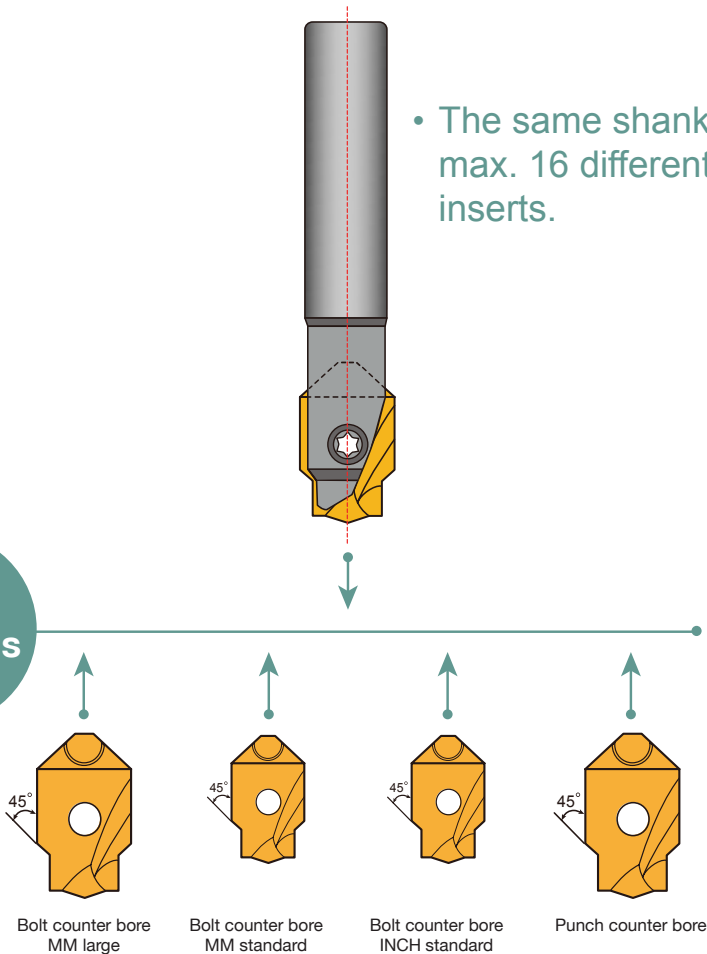
Toolholder: 14 -1004-80/ Insert: 26 -1004ST-M, B100

Toollife of one insert can machine 2100 holes

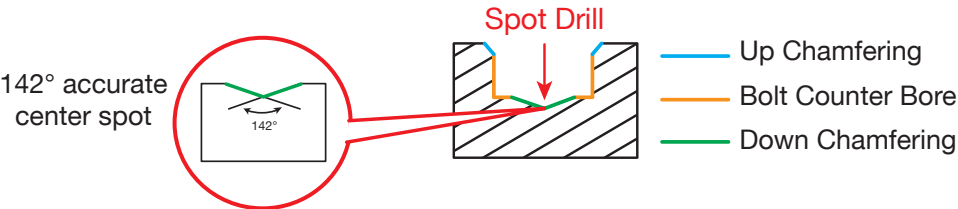
Product Design

- The same shank fits max. 16 different inserts.

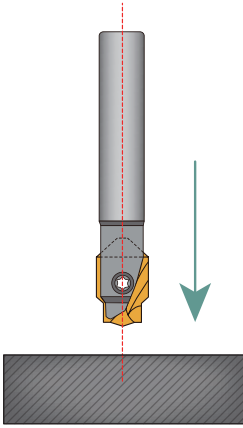
4 main functions



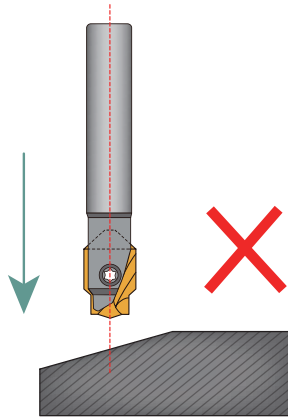
* Screws M3~M12



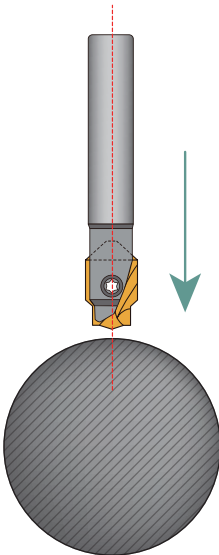
Recommendations and constraints :



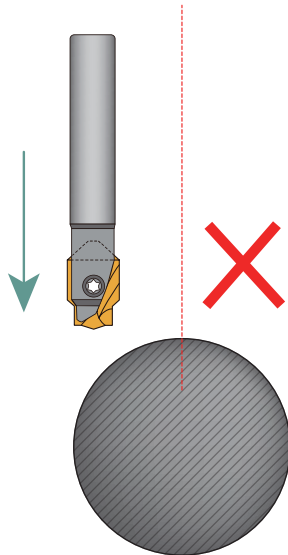
Suitable for vertical machining on flat surface.



It's not recommended to use 4 in 1 tool on inclined surface.



It can be used for round workpiece as long as it's center vertical alignment.

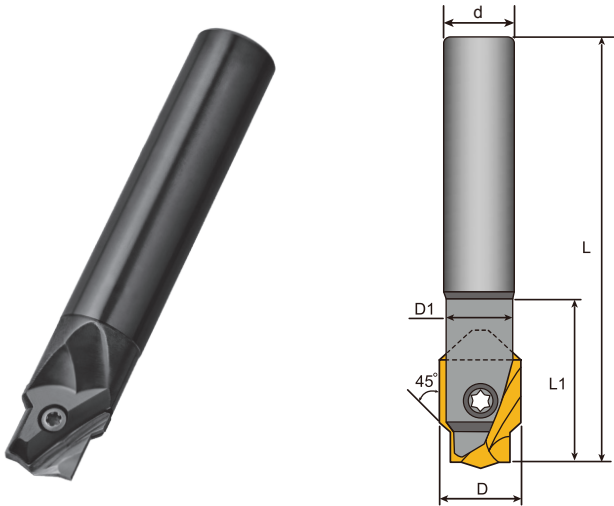


4 in 1 tool is not recommended to be used for curved surface or round workpiece when it's central misalignment.



4 in 1 Counter Bore Shank

- Inserts P. 10 - 12
- Cutting Data P. 14



14

Order Code	Counterbore Screw size		Ejector Pin	Dimensions (mm)					 KG	Screw	Key
	MM	INCH		D	D1	d	L	L1			
14-0803-70	3.0 3.5	1/8	-	8	7.4	8	70	20	0.08	C02506	T08P
14-0803-90		-					90		0.09		
14-1004-80	4.0	3/16	5.0	10	9.4	10	80	25	0.11	C03007	T09P
14-1004-100							100		0.12		
14-1206-80	5.0 6.0	-	6.0	12	11.3	12	80		0.12	C03008	T09P
14-1206-110		1/4					110		0.15		
14-1608-100	7.0 8.0	-	8.0	16	15.4	16	100	30	0.22	C03509	T10P
14-1608-130		5/16					130		0.27		
14-2010-100	10 12	3/8	13.0	20	19.0	20	100	35	0.30	C04011	T15P
14-2010-140							140		0.42		

4 in 1 Counter Bore Inserts

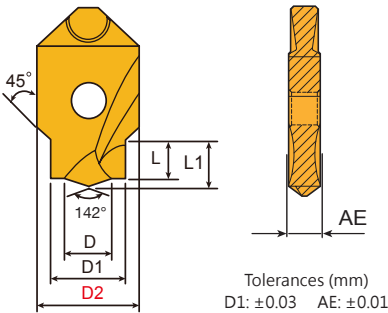
MM / INCH standard size dimensions- DIN373

Inserts 6 PCS / Box

Only for insert : 26-2010

26-2012

Inserts 10 PCS / Box



Dimensions (mm)							Counterbore Screw size	
D	D1	D2	L	L1	AE		MM	INCH
3.6	5.8	8	3.1	3.65	2.0		M3.0	1/8
4.1	6.3		3.6	4.25			M3.5	-
4.6	7.4	10	4.2	4.95	2.5		M4.0	-
5.6	9.3	12	5.3	6.25	3.0		M5.0	3/16
6.7	10.4		6.4	7.50			M6.0	1/4
7.7	11.5	16	7.4	8.70			M7.0	-
8.7	13.5		8.4	9.85			M8.0	5/16
10.8	16.5	20	10.3	12.15	3.5		M10	3/8
13.3	19.0		12.3	14.60			M12	-

* For other sizes, customization is acceptable.

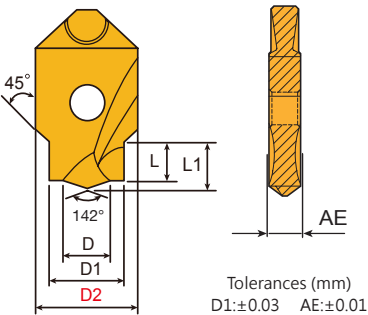
Inserts	Order Code	Grades										Corresponding shank
		Carbide					Cermet			Uncoated		
		B100	C125	C350	F20	F30	CE25	CE100	CE60	K10	CE	
	26-0803-E											14-0803-70 14-0803-90
	26-0803-ME	⊙										
	26-0803T-M	⊙										
	26-08035-E											
	26-08035-ME	⊙										
	26-08035T-M	⊙										
	26-1004-E											14-1004-80 14-1004-100
	26-1004-ME	⊙										
	26-1004T-M	⊙										
	26-1205-E											14-1206-80 14-1206-110
	26-1205-ME	⊙										
	26-1205T-M	⊙										
	26-1206-E											
	26-1206-ME	⊙										
	26-1206T-M	⊙										
	26-1607-E											14-1608-100 14-1608-130
	26-1607-ME	⊙										
	26-1607T-M	⊙										
	26-1608-E											
	26-1608-ME	⊙										
	26-1608T-M	⊙										
	26-2010-E											14-2010-100 14-2010-140
	26-2010-ME	⊙										
	26-2010T-M	⊙										
	26-2012-E											
	26-2012-ME	⊙										
	26-2012T-M	⊙										

- ⊙ Cast Iron/ Stainless Steel / Super alloy Aluminum Steel/ Cast Iron/ Hardness steel
- Prices and stocks are based on present conditions
- Please specify model numbers and the grade of inserts, ie.: 26-0803-E, F20



4 in 1 Counter Bore Inserts (Big)

MM large size dimensions- DIN373



 Inserts 6 PCS / Box
Only for insert : 26-2010S

 Inserts 10 PCS / Box

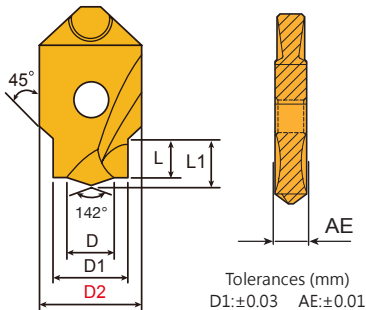
Dimensions (mm)						Counterbore Screw size
D	D1	D2	L	L1	AE	MM
3.8	6.5	8	3.1	3.70	2.0	M3.0
4.8	8.0	10	4.2	5.00	2.5	M4.0
5.8	10	12	5.3	6.25	3.0	M5.0
6.9	11		6.4	7.50		M6.0
9.3	15		8.4	9.95		M8.0
11.3	18	20	10.3	12.20	3.5	M10

* For other sizes, customization is acceptable.

Inserts	Order Code	Grades										Corresponding shank
		Carbide					Cermet			Uncoated		
		B100	C125	C350	F20	F30	CE25	CE100	CE60	K10	CE	
	26-0803S-E											14-0803-70 14-0803-90
	26-0803S-ME											
	26-0803ST-M											
	26-1004S-E											14-1004-80 14-1004-100
	26-1004S-ME											
	26-1004ST-M											
	26-1205S-E											14-1206-80 14-1206-110
	26-1205S-ME											
	26-1205ST-M											
	26-1206S-E											
	26-1206S-ME											
	26-1206ST-M											
	26-1608S-E											14-1608-100 14-1608-130
	26-1608S-ME											
	26-1608ST-M											
	26-2010S-E											14-2010-100 14-2010-140
	26-2010S-ME											
	26-2010ST-M											

-  Cast Iron/ Stainless Steel / Super alloy  Aluminum  Steel/ Cast Iron/ Hardness steel
- Prices and stocks are based on present conditions
- Please specify model numbers the and grade of inserts, ie.: 26-0803S-E, F20

4 in 1 Ejector Pin Counter Bore Inserts



Inserts 6 PCS / Box
Only for insert : 27-2013T



Inserts 10 PCS / Box

Dimensions (mm)						Ejector Pin Size
D	D1	D2	L	L1	AE	MM
5.5	9	10	5	5.85	2.5	5.0
6.5	10	12		6.05	3.0	6.0
8.5	12	16		6.40		8.0
10.5	14			6.75		10
13.5	17	20		7.25	3.5	13

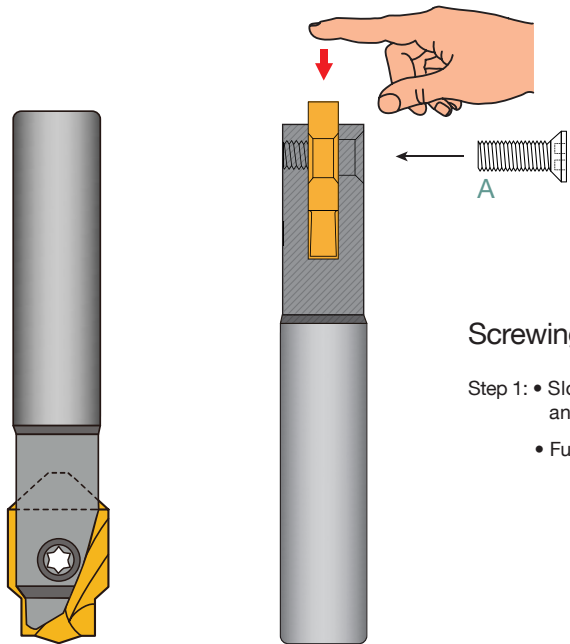
* For other sizes, customization is acceptable.

Inserts	Order Code	Grades										Corresponding shank
		Carbide					Cermet			Uncoated		
		B100	C125	C350	F20	F30	CE25	CE100	CE60	K10	CE	
	27-1005T-M											14-1004-80 14-1004-100
	27-1206T-M											14-1206-80 14-1206-110
	27-1608T-M											14-1608-100 14-1608-130
	27-1610T-M											
	27-2013T-M											14-2010-100 14-2010-140

- Steel/ Cast Iron/ Hardness steel
- Prices and stocks are based on present conditions
- Please specify model numbers the and grade of inserts, ie.: 27-1005T-M, B100



How to Fit Insert - Screw A



Screwing the Inserts

- Step 1:
- Slot the insert into the shank and push it against the bottom
 - Fully tighten the screw A

Standard spare parts

Insert dimension D2 (mm) 	Screw A 	Key 
8	C02506	T08P
10	C03007	T09P
12	C03008	
16	C03509	T10P
20	C04011	T15P

Recommended Cutting Data And Insert Grade

The effective no. of teeth is calculated with 1 flute.

Material group	 Cutting Speed Vc (m/min)	fn (mm/ rev)				Grades		
		142°				E	ME	M
		(D2) 8	(D2) 10	(D2) 12	(D2) 16-20			
1-2	50-70	0.06 0.08	0.06 0.08	0.07 0.09	0.07 0.09	-	-	B100
3	50-70	0.06 0.08	0.06 0.08	0.07 0.09	0.07 0.09	-	-	B100
4-5-6	45-60	0.05 0.07	0.05 0.07	0.06 0.08	0.06 0.08	-	-	B100
7	25-30	0.04 0.06	0.04 0.06	0.05 0.07	0.05 0.07	-	-	B100
8-9	35-45	0.06 0.08	0.06 0.08	0.07 0.09	0.07 0.09	-	B100	-
10-11	35-40	0.05 0.07	0.05 0.07	0.06 0.08	0.06 0.08	-	B100	-
12-13	70-90	0.12 0.15	0.12 0.15	0.13 0.16	0.13 0.16	-	B100	-
14-15	60-80	0.11 0.14	0.11 0.14	0.12 0.15	0.12 0.15	-	B100	-
16-18	100	0.14 0.19	0.14 0.19	0.15 0.20	0.15 0.20	F20	-	-

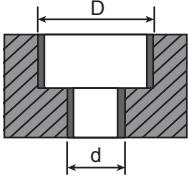
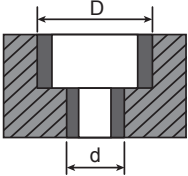
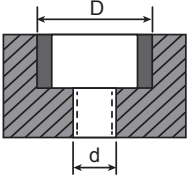
- While applying it as a spot drill the RPM and FEED can be increased 50%.

Counterbore



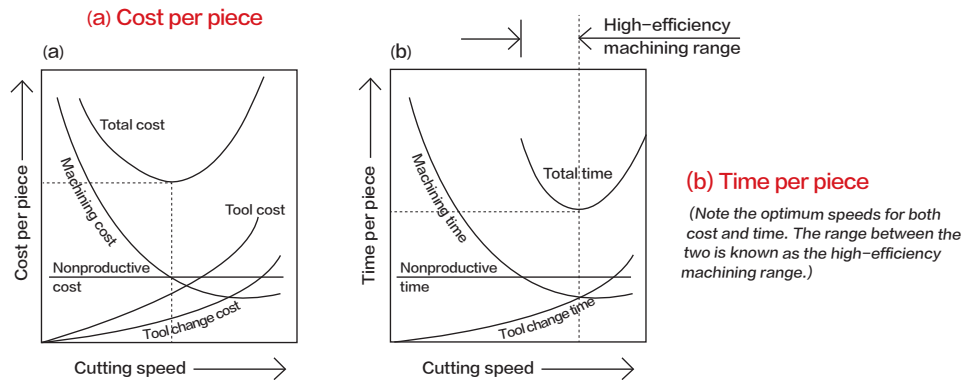
Bolt counter bore dimensions (DIN 373 - ISO 4205)

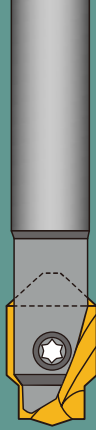
Unit: mm

Screw Dimensions	Standard (D x d)	Large (D x d)	Screw (D x d)
Dimension			
M1.0	2.1 x 1.1	2.2 x 1.2	2.2 x 0.75
M1.2	2.4 x 1.3	2.5 x 1.4	2.5 x 0.95
M1.4	2.7 x 1.5	2.8 x 1.6	2.8 x 1.1
M1.5-M1.6	3.2 x 1.7	3.3 x 1.8	3.3 x 1.25
M1.7	3.7 x 1.8	3.8 x 1.9	3.8 x 1.3
M2.0	4.2 x 2.2	4.3 x 2.4	4.3 x 1.6
M2.2	4.6 x 2.4	4.8 x 2.6	4.8 x 2.6
M2.3	5.0 x 2.7	5.2 x 2.9	5.0 x 1.9
M2.5-M2.6	5.4 x 2.8	5.5 x 3.0	5.5 x 2.1
M3.0	5.8 x 3.2	6.0 x 3.4	6.0 x 2.5
M3.5	6.3 x 3.7	6.5 x 3.9	6.5 x 2.9
M4.0	7.4 x 4.3	8.0 x 4.5	8.0 x 3.3
M5.0	9.3 x 5.3	10.0 x 5.5	10.0 x 4.2
M6.0	10.4 x 6.4	11.0 x 6.6	11.0 x 5.0
M8.0	13.5 x 8.4	15.0 x 9.0	15.0 x 6.8
M10	16.5 x 10.5	18.0 x 11	18.0 x 8.5
M12	19.0 x 13	20.0 x 14	20.0 x 10.2
M14	24.0 x 15	24.0 x 16	-
M16	26.0 x 17	26.0 x 18	-

Cutting parameter

Screw Dimensions	Steel (P)			Stainless steel (M)			Non-Ferrous metal (N)		
Speed and Unit	Vc 70/ Fz 0.07			Vc 40/ Fz 0.07			Vc 100/ Fz 0.2		
	S	F	Sec	S	F	Sec	S	F	Sec
M3 (D6.0)	3700	259	0.9	2100	147	1.7	5500	1100	0.20
M3.5 (D6.5)	3400	238	1.1	1950	136	2.0	5050	1010	0.25
M4 (D7.5)	2950	206	1.3	1690	118	2.8	4300	860	0.35
M5 (D9.5)	2340	163	2.4	1330	93	4.1	3420	685	0.55
M6 (D10.5)	2100	147	3.2	1200	84	5.6	3060	612	0.73
M7 (D11.5)	1930	135	3.9	1100	77	5.9	2770	554	0.91
M8 (D14)	1580	110	5.6	900	63	10.3	2350	470	1.25
M10 (D17)	1300	91	8.3	740	51	14.7	1930	386	1.87
M12 (D19)	1160	81	11	660	46	19.7	1675	335	2.60





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