COUNTER BORE SERIES

Features Description

4 In 1 Counter Bore: M3-M12
Only 2 machining process is needed.

Only 2 seconds get the job making counterbore done !

Counter Bore: M8-M36
Counter Bore with chamfer: M8-M36
Patented design with carbide strip on the head to improve cutters tool life.
The most economical insert with 4 cutting edges.

4 IN 1 COUNTER BORE

Video

Patent No.
M473882
M474588
M473881

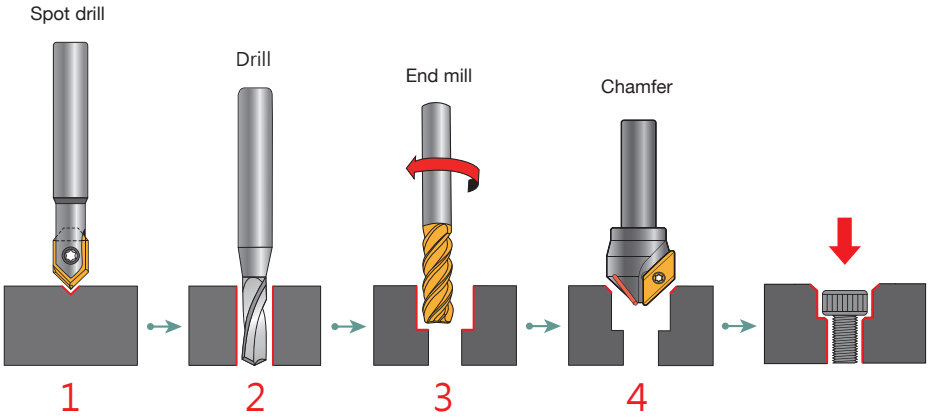
Patent No.
201310453057.2
201320772697.5

PCT Priority

Features

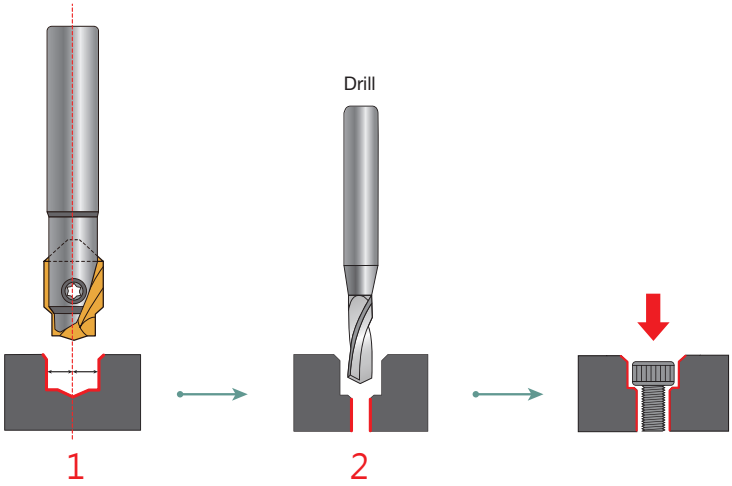
- Available in materials: P K M S H
- Cost 300~500% SAVING
- Applicable Machines: Milling / Drilling / Radial drilling
- Efficiency 300% UP
- Durability 300% UP

Traditional Procedure: 5 Steps



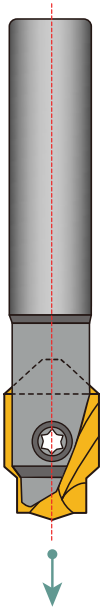
Innovative solution: 2 Steps

Get the job making counterbore within 2 seconds.



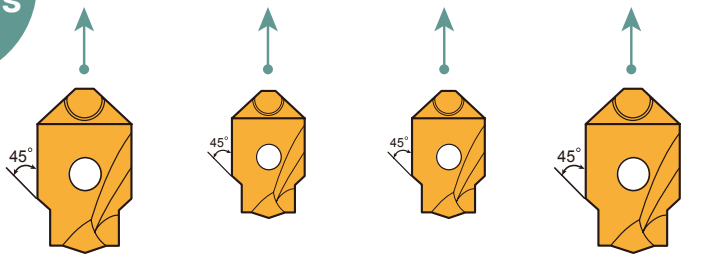
- Finish 4 operations in one.
- The center point is very accurate and does not deviate.

Product Design



- The same shank fits max. 16 different inserts.

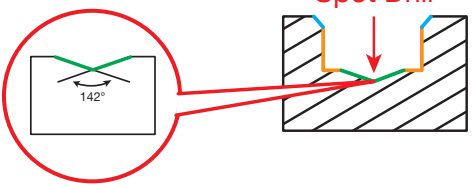
4 main functions



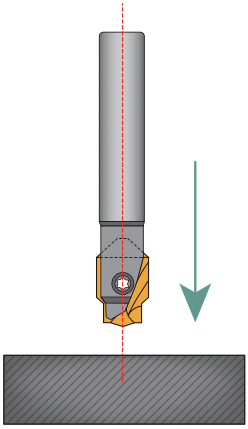
Bolt counter bore MM large | Bolt counter bore MM standard | Bolt counter bore INCH standard | Punch counter bore

* Screws M3~M12

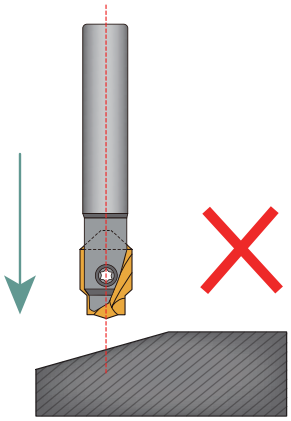
142° accurate center spot



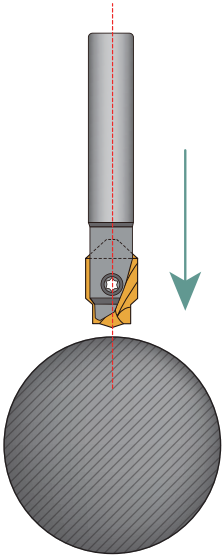
Recommendations and constraints :



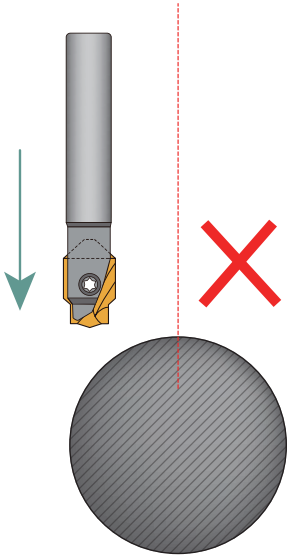
Suitable for vertical machining on flat surface.



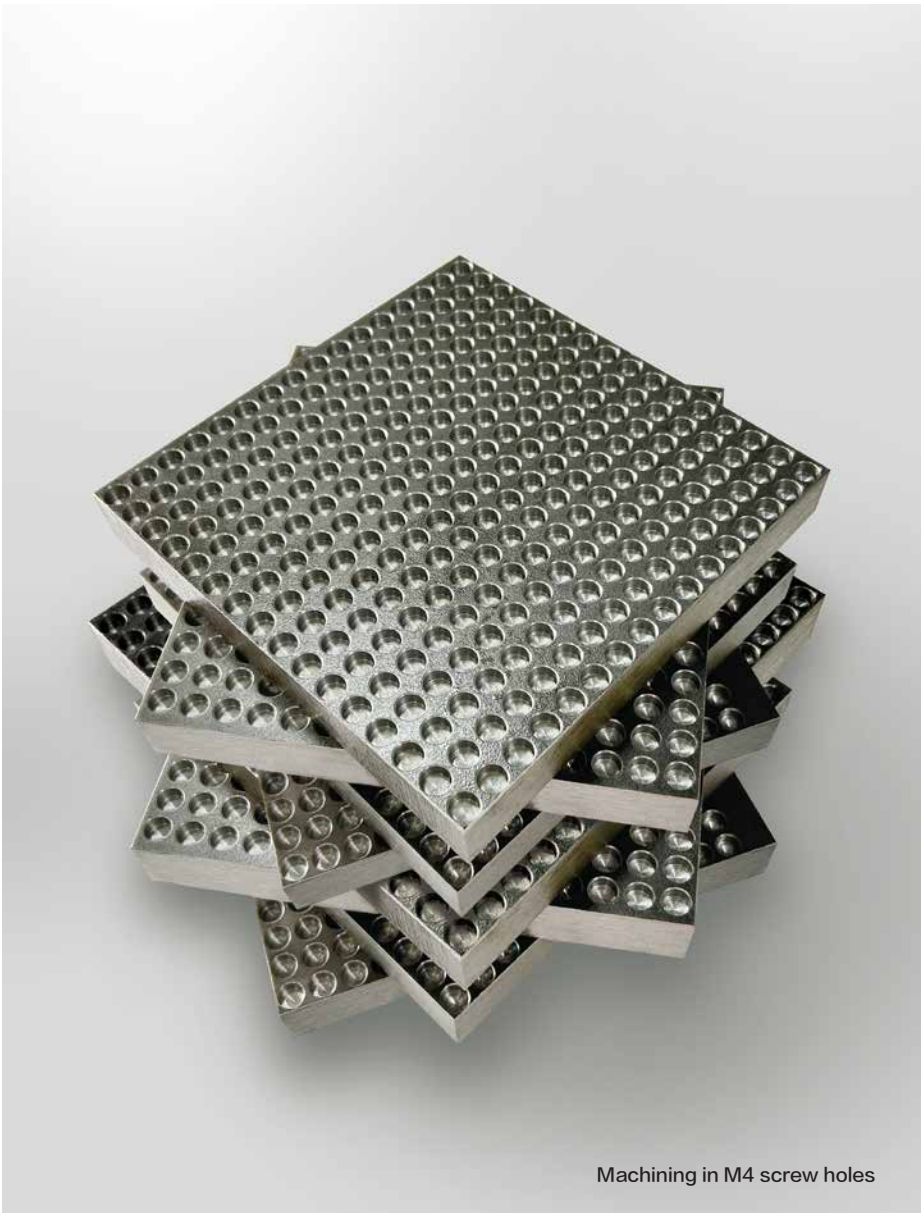
It's not recommended to use 4 in 1 tool on inclined surface.



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.



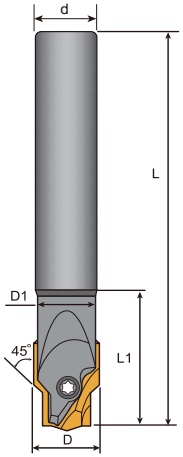
Machining in M4 screw holes

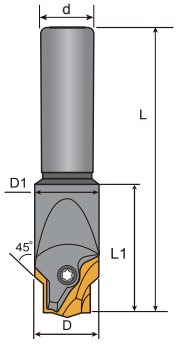
Testing information:
Material: Steel S45C/ Vc: 50m/min/ Fz: 0.07 mm/ tooth
Toolholder: 14 -1004-80/ Insert: 26 -1004ST-M, B100
Toollife of one insert can machine 2100 holes

PRODUCT SPECIFICATIONS

4 in 1 Counter Bore Shank

- Inserts P. 298 - 300
- Cutting Data P. 303



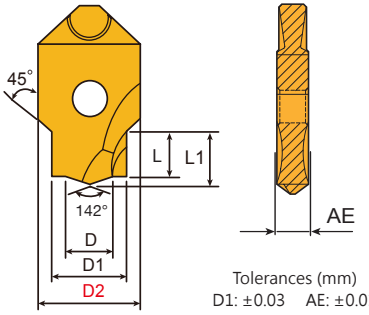


14

Order Code	Counterbore Screw size	Ejector Pin	Dimensions (mm)					KG	Screw	Key
	MM	MM	D	D1	d	L	L1			
14-0803-70	3.0	-	8	7.8	8	70	20	0.08	C02506	T08P
14-0803-90						90		0.09		
14-1004-80	4.0	5.0	10	9.8	10	80	25	0.11	C03007	T09P
14-1004-100						100		0.12		
14-1206-80	5.0 6.0	6.0	12	11.5	12	80		0.12	C03008	T09P
14-1206-110						110		0.15		
14-1208-70	8.0	8.0 10.0	16	15.8	12	70	33	0.19	C03509	T10P
14-1608-100					16	100	30	0.22		
14-1608-130						130		0.27		
14-1210-70	10	13.0	20	19.7	12	70	35	0.19	C04011	T15P
14-2010-100					20	100		0.30		
14-2010-140						140		0.42		

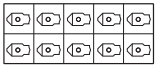
4 in 1 Counter Bore Inserts

MM / tandard size dimensions - DIN974



Tolerances (mm)
D1: ±0.03 AE: ±0.01

Inserts 6 PCS / Box
Only for insert : D26 - 2010



Inserts 10 PCS / Box

Dimensions (mm)						Counterbore Screw size
D	D1	D2	L	L1	AE	MM
4	6.5	8	3	3.6	2	M3.0
5	8	10	4	4.8	2.5	M4.0
6	10	12	5	5.95	3	M5.0
7	11		6	7.1		M6.0
9.5	15	16	8	9.55		M8.0
11.5	18	20	10	11.9	3.5	M10

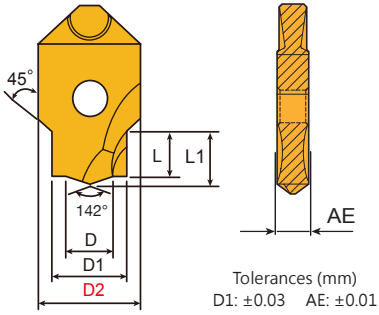
* For other sizes, customization is acceptable.

Inserts	Order Code	Grades										Corresponding shank
		Carbide					Cermet			Uncoated		
		B100	C125	C350	F20	F30	CE25	CE100	CE60	K10	CE	
	D26-0803-E				■							14-0803-70 14-0803-90
	D26-0803-ME	◎										
	D26-0803T-M	■										
	D26-1004-E				■							14-1004-80 14-1004-100
	D26-1004-ME	◎										
	D26-1004T-M	■										
	D26-1205-E				■							14-1206-80 14-1206-110
	D26-1205-ME	◎										
	D26-1205T-M	■										
	D26-1206-E				■							
	D26-1206-ME	◎										
	D26-1206T-M	■										
	D26-1608-E				■							14-1208-70 14-1608-100 14-1608-130
	D26-1608-ME	◎										
	D26-1608T-M	■										
	D26-2010-E				■							14-1210-70 14-2010-100 14-2010-140
	D26-2010-ME	◎										
	D26-2010T-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.: D26-0803-E, F20

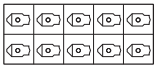
4 in 1 Counter Bore Inserts

MM / tandard size dimensions - JIS



Tolerances (mm)
D1: ±0.03 AE: ±0.01

Inserts 6 PCS / Box
Only for insert : J26 - 2010



Inserts 10 PCS / Box

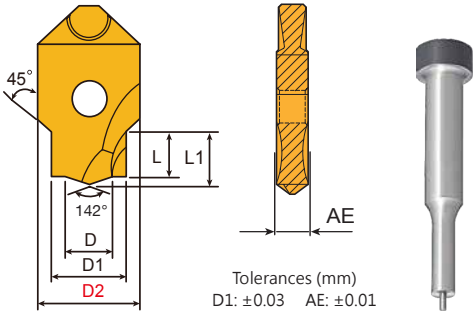
Dimensions (mm)						Counterbore Screw size
D	D1	D2	L	L1	AE	MM
4	6.5	8	3	3.6	2	M3.0
5	8	10	4	4.8	2.5	M4.0
6	9.5	12	5	5.95	3	M5.0
7	11		6	7.1		M6.0
9.5	14	16	8	9.55		M8.0
11.5	17.5	20	10	11.9	3.5	M10

* 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	
	J26-0803-E				■							14-0803-70 14-0803-90
	J26-0803-ME	◎										
	J26-0803T-M	■										
	J26-1004-E				■							14-1004-80 14-1004-100
	J26-1004-ME	◎										
	J26-1004T-M	■										
	J26-1205-E				■							14-1206-80 14-1206-110
	J26-1205-ME	◎										
	J26-1205T-M	■										
	J26-1206-E				■							
	J26-1206-ME	◎										
	J26-1206T-M	■										
	J26-1608-E				■							14-1208-70 14-1608-100 14-1608-130
	J26-1608-ME	◎										
	J26-1608T-M	■										
	J26-2010-E				■							14-1210-70 14-2010-100 14-2010-140
	J26-2010-ME	◎										
	J26-2010T-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.: J26-0803-E, F20

4 in 1 Ejector Pin Counter Bore Inserts



Tolerances (mm)
D1: ±0.03 AE: ±0.01

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

Inserts 10 PCS / Box

Dimensions (mm)						Ejector Pin Screw 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											14-1208-70 14-1608-100 14-1608-130
	27-1610T-M											
	27-2013T-M											14-1210-70 14-2010-100 14-2010-140

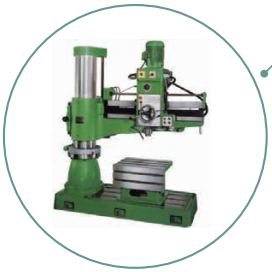
- Steel/ Cast Iron/ Hardness steel
- Prices and stocks are based on present conditions
- Please specify model numbers the and grade of inserts, ie.: 27-1005T-M, B100

Applicable Machine And Tools

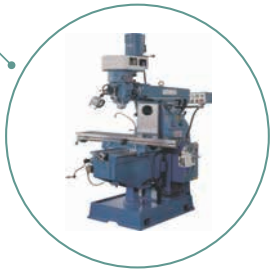
Suitable for various kinds of machines

A. Drilling Machine

B. CNC Milling Machine

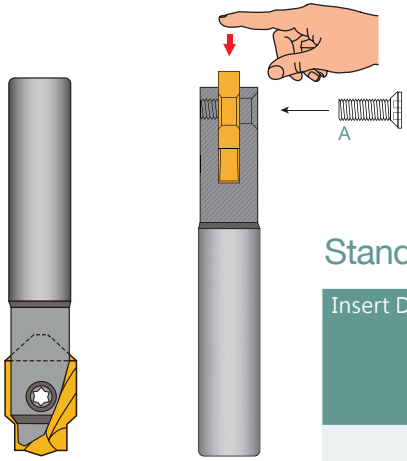


C. Radial Drilling Machine



D. Traditional Milling Machine

How to Fit Insert - Screw A



Screwing the Inserts

Step 1: • Slot the insert into the shank and push it agsinst on 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

Solving chips entanglement issue:

1. Can using peck drilling (Setting the Program on "Q" at 1mm-3mm below).
2. Reversing the spindle after hole machining (See below for Program settings).
   These 2 ways can be resolve the chips entanglement issue, help the tool keep a good toollife.

Spindle Reversal Operation Instructions :

G83 X_Y_Z_Q_R_F_;

M04 ↑ Spindle ON Counterclockwise

G04 ↑ Pause time

X2.0 ; ↑ Pause time

M03 ; ↑ Spindle ON Clockwise

Video for reference

Cutting Data And Screw Size

Screw size	Steel (P)			Stainless steel (M)			Non-ferrous metals (N)		
Unit	Cutting Speed Vc 50 / Fn 0.07			Cutting Speed Vc 15 / Fn 0.05			Cutting Speed Vc 100/ Fn 0.20		
	S (rev/min)	F (mm/min)	One pocket (sec)	S (rev/min)	F (mm/min)	One pocket (sec)	S (rev/min)	F (mm/min)	One pocket (sec)
M3 (D6.5)	2450	172	1.1	735	37	4.9	4900	980	0.2
M4 (D8.0)	1990	140	1.8	600	30	8	4000	800	0.3
M5 (D10)	1600	112	2.7	480	24	10	3200	640	0.5
M6 (D11)	1450	102	3.6	435	22	16.5	2900	580	0.7
M8 (D15)	1065	75	6.4	320	16	30	2150	430	1.2
M10 (D18)	890	63	9.7	265	13	46.5	1770	354	1.7

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%.

INDEXABLE COUNTER BORE

Video

Features

- Available in materials: P K M S H
- Cost **300~500%** SAVING
- Applicable type is available — max. 300mm
- Applicable Machines — Milling / Drilling / Radial drilling
- Efficiency **300%** UP
- Durability **300%** UP

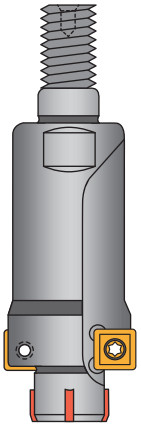
Product Design

CBK

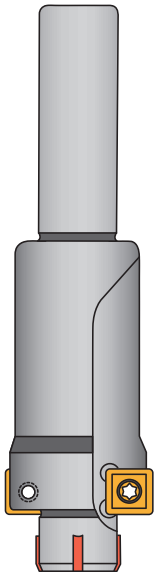
Counter bore tools application for bolts, nuts & screws

Patent No. ZL 01 2 23413.3

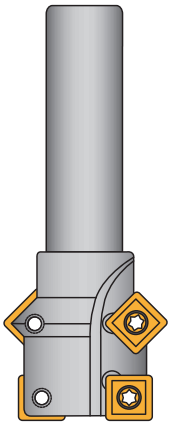
PCT Priority



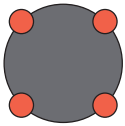
HBM



CBK



CBI

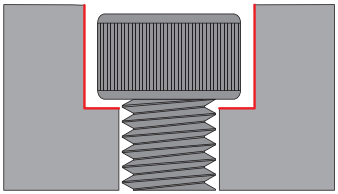


CBK

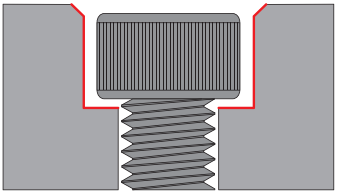
better cutter toollife
with patented carbide strip

Counterbore

Screw ranges M8~M36



counterbore

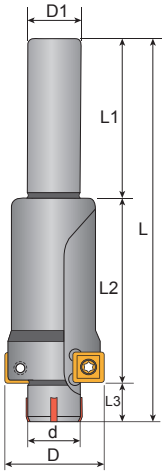


counterbore + chamfer

PRODUCT SPECIFICATIONS

Counterbore Toolholders

- Inserts P. 309
- Cutting Data P. 309



CBK

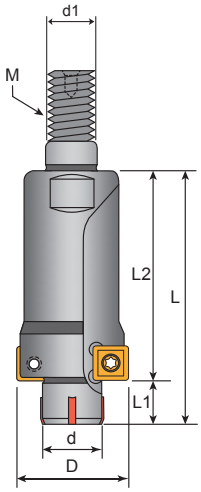
DIN 373

Order code	Dimensions (mm)							Z	KG	MAX RPM	Inserts SDET	Screw	Key
	D	d	D1	L	L1	L2	L3						
CBK-08	14	8.4	10	70	30	32	8	2	0.09	25000	060208	C025045	T08P
CBK-08S	15	8.9											
CBK-10	18	10.9							0.12				
CBK-10S	20												
CBK-12		13.4	12	80	35	37			0.16	22000			
CBK-12S	22												
CBK-14	24	14.9							0.20		09T308	C04007	T15P
CBK-14S	25	15.4											
CBK-16	26	17.4		90	38	44			0.24	17000		C04008	
CBK-16S	27												

* Use on drilling machine.

Counterbore Combi Cutters

- Inserts P. 309
- Cutting Data P. 309
- Combi Toolholders P. 346



HBM

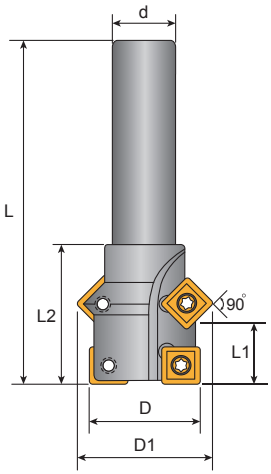
DIN 373

Order code	Dimensions (mm)							Z	KG	MAX RPM	Inserts SDET	Screw	Key
	D	d	L	L1	L2	M	d1						
HBM-16	26	17.4	48	8	40	16	22	2	0.23	17000	09T308	C04008	T15P
HBM-18	29	19.4	53		45			3	0.28				
HBM-20	33	21.9	56		48				0.33	15000			
HBM-22	36	23.4	60	10	50				0.40				
HBM-24	40	25.9	62		52				0.47	12000			
HBM-30	50	32.9							0.56				
HBM-36	58	38.8							0.65	10000			

* Use on drilling machine.

Counterbore + Chamfer Toolholders

- Inserts P. 309
- Cutting Data P. 309



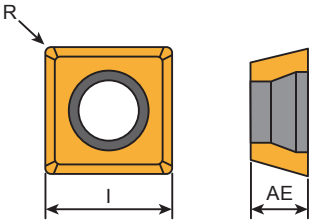
CBI

DIN 373

Order Code	Dimensions (mm)						Z	Zc	KG	MAX RPM	Inserts **SDET**	Screw	Key
	D	d	D1	L	L1	L2							
CBI-08	15	10	20.0	65	9	23	4	2	0.09	25000	060208	C025045	T08P
CBI-10	18		22.0		11				0.09				
CBI-12	20	12	23.8	70	13				0.12	22000			
CBI-14	24		31.4		15	30			0.17		09T308	C04007	T15P
CBI-16	26		33.4	80	16.5	33			0.20	17000		C04008	
CBI-18	29	16	35.4		19.5	36			0.25	16000			
CBI-20	33		37.4		21				0.27			C04011	
CBI-22	36	20	40.4	90	23.5	40			0.41	15000			
CBI-24	40		44.4		25	43			0.45				
CBI-30	50	25	53.4	100	34	50	6	3	0.71	14000			
CBI-36	58		61.4	110	38	60			0.94				

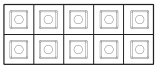
* Use on CNC machine.

SDET Inserts



Tolerances (mm)

I	AE
±0,03	±0,025



Inserts 10 PCS / Box

Code	Dimensions (mm)		
	I	AE	R
060208	6.0	2.3	0.3
09T308	9.0	3.97	0.5

Inserts	Order Code	Grades									
		Carbide					Metal cermet			Uncoated	
		B100	C200	C250	F20	F30	CE25	CE60		K10	CE
	SDET060208N-ME										
	SDET09T308TN-M										
	SDET09T308TN-ME										

- Steel Stainless Steel Steel/Stainless Steel /Super alloy Cast Iron Aluminum Steel/Cast Iron Steel/Stainless Steel/Cast Iron
- Prices and stocks are based on presen conditions
- Please specify model numbers the and grade of inserts, ie.: SDET060208N-ME,B100

Recommended Cutting Data and Grade

- Recommended Cutting Speed, Vc(m/min), fz(mm/ tooth)

Material group	Cutting Speed Vc (m/min)	fz (mm/tooth)		Insert Grade Selection	
		M8 - M12	M14 - M36	M	ME
1-2	40-70	0.05 0.08	0.06 0.10	B100	B100
3	35-60	0.05 0.08	0.06 0.10	B100	B100
4-5-6	30-55	0.04 0.06	0.05 0.08	B100	B100
7	20-30	0.03 0.05	0.04 0.06	B100	B100
12-13	40-70	0.06 0.08	0.08 0.10	F30	F30
14-15	35-65	0.06 0.08	0.08 0.10	F30	F30