COUNTER BORE SERIES

Features Description

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: M3-M12

Counterbore reduce machining process from 5 steps to 2 steps.

4 IN 1 COUNTER BORE

Video

Patent No.
M473882
M474588
M473881

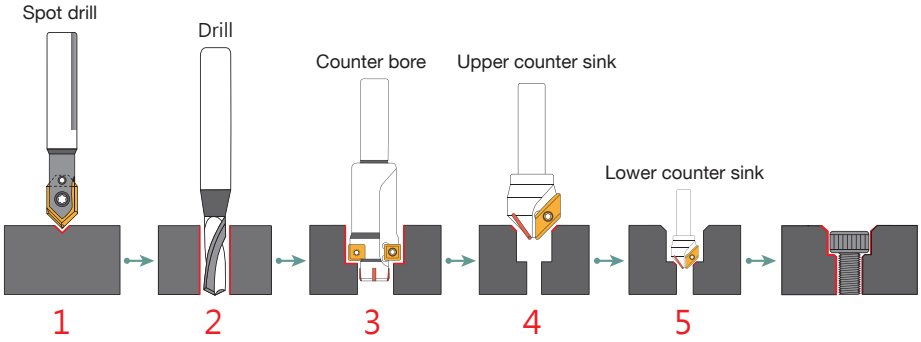
Patent No.
201310453057.2
201320772697.5

PCT Priority

Features

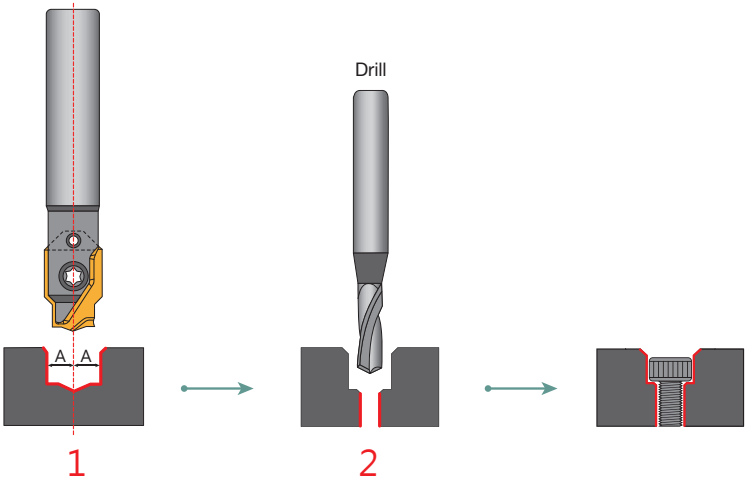
- Available in materials: P K M S H
- Cost **300~500%** SAVING
- Applicable Machines: Milling / Drilling / Radial drilling
- Efficiency **300%** UP
- Durability **300%** UP

Traditional Procedure: 5 Steps



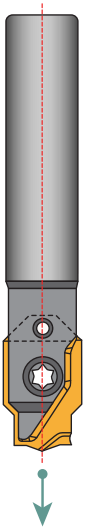
Innovative solution: 2 Steps

4 in 1 counter bore = 1+3+4+5



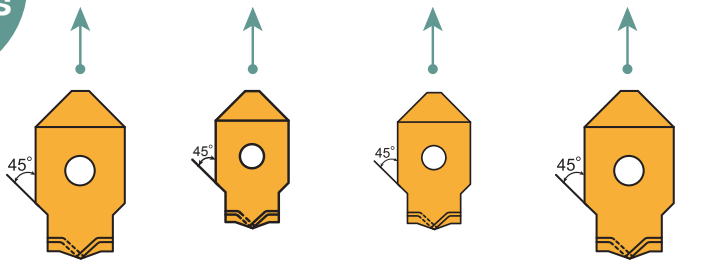
- Finish 4 operations in one.
- Extremely accuracy in center positioning, minimized eccentricity ±0.008mm.
- Create a counter bore within 3 seconds.

Product Design



- The same shank fits max. 20 different inserts.

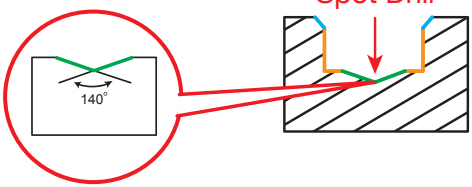
4 main functions



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

* Screws M3~M12

140° accurate center spot



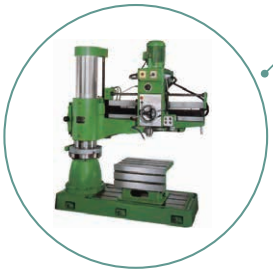
Up Chamfering
Bolt Counter Bore
Down Chamfering

Machines And Tools Application

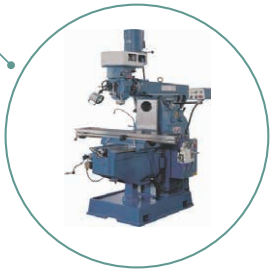
Suitable for various kinds of machines

A. Drilling machine

B. CNC Milling machine



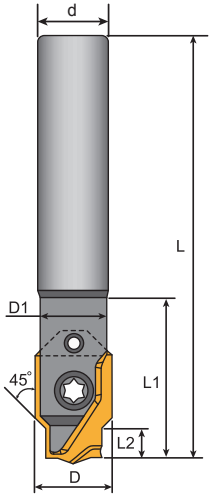
C. Radial drilling machine



D. Traditional milling machine

4 in 1 Counter Bore Shank

- Inserts P. 233 - 235
- Cutting Data P. 237

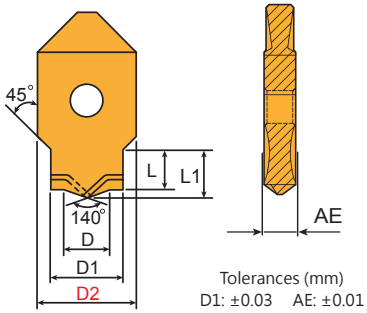


14

Order Code	Socket Cap Screw Size		Dimensions (mm)						KG	Screw	Key
	MM	INCH	D	D1	d	L	L1	L2			
14-0803-70	3.0 3.5	1/8	8	7.4	8	70	15	3.1 3.6	0.08	C02506 S025025	T08P L013
14-0803-90		-				90	20		0.09		
14-1004-80	4.0	3/16	10	9.4	10	80	16	4.2	0.11	C03007 S02503	T09P L013
14-1004-100						100	21		0.12		
14-1206-80	5.0 6.0	-	12	11.3	12	80	20	5.3 6.4	0.12	C03008 S0303	T09P L015
14-1206-110		1/4				110	25		0.15		
14-1208-80	7.0 8.0	5/16	16	15.4	16	80	22	7.4 8.4	0.13	C03510 S0405	T10P L02
14-1608-100		-				100	25		0.22		
14-1608-130		5/16				130	30		0.27		
14-2010-100	10 12	3/8	20	19.0	20	100		10.3	0.30	C04012 S0506	T15P L025
14-2010-140						140	35		0.42		

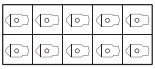
4 in 1 Counter Bore Inserts

MM / INCH standard size dimensions- DIN373



Tolerances (mm)
D1: ±0.03 AE: ±0.01

Inserts 6 PCS / Box
Only for insert : 26-20***



Inserts 10 PCS / Box

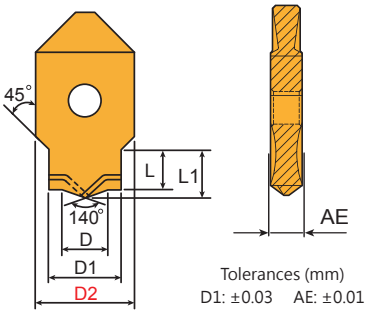
Dimensions (mm)						Socket Cap Screw Size	
D	D1	D2	L	L1	AE	MM	INCH
3.6	5.8	8	3.1	3.7	2.0	M3.0	1/8
4.1	6.3		3.6	4.3		M3.5	-
4.6	7.4	10	4.2	5.0	2.5	M4.0	-
5.6	9.3	12	5.3	6.2	3.0	M5.0	3/16
6.7	10.4		6.4	7.4		M6.0	1/4
7.7	11.5	16	7.4	8.4		M7.0	-
8.7	13.5		8.4	9.8		M8.0	5/16
10.8	16.5	20	10.3	12.0	3.5	M10	3/8
13.3	19.0		12.3	14.5		M12	-

Inserts	Order Code	Grades										Corresponding shank
		Carbide					Cermet			Uncoated		
		C125	B350	C350	F20	F30	CE25	CE100	CE60	K10	CE	
	26-0803-E											14-0803-70 14-0803-90
	26-0803-M		◎									
	26-0835-E											
	26-0835-M		◎									
	26-1004-E											14-1004-80 14-1004-100
	26-1004-M		◎									
	26-1205-E											14-1206-80 14-1206-110
	26-1205-M		◎									
	26-1206-E											
	26-1206-M		◎									
	26-1607-E											14-1208-80 14-1608-100 14-1608-130
	26-1607-M		◎									
	26-1608-E											
	26-1608-M		◎									
	26-2010-E											14-2010-100 14-2010-140
	26-2010-M		◎									
	26-2012-E											
	26-2012-M		◎									

- 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.: 26-0803-E,F20

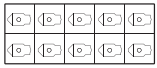
4 in 1 Counter Bore Inserts

MM large size dimensions- DIN373



Tolerances (mm)
D1: ±0.03 AE: ±0.01

Inserts 6 PCS / Box
Only for insert : 26-20***



Inserts 10 PCS / Box

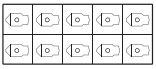
Dimensions (mm)						Socket Cap Screw Size
D	D1	D2	L	L1	AE	MM
3.8	6.5	8	3.1	3.7	2.0	M3.5
4.8	8.0	10	4.2	5.0	2.5	M4
5.8	10	12	5.3	6.2	3.0	M5
6.9	11		6.4	7.4		M6
9.3	15	16	8.4	9.8		M8
11.3	18	20	10.3	12	3.5	M10

Inserts	Order Code	Grades										Corresponding shank
		Carbide					Cermet			Uncoated		
		C125	B350	C350	F20	F30	CE25	CE100	CE60	K10	CE	
	26-0803S-E											14-0803-70 14-0803-90
	26-0803S-M		◎									
	26-1004S-E											14-1004-80 14-1004-100
	26-1004S-M		◎									
	26-1205S-E											14-1206-80 14-1206-110
	26-1205S-M		◎									
	26-1206S-E											
	26-1206S-M		◎									
	26-1608S-E											14-1208-80 14-1608-100 14-1608-130
	26-1608S-M		◎									
	26-2010S-E											14-2010-100 14-2010-140
	26-2010S-M		◎									

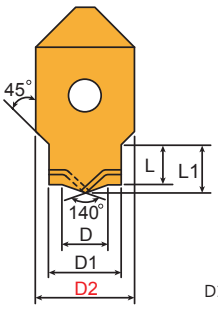
- Steel Stainless Steel Steel/Stainless Steel /Super alloy Cast Iron Aluminum Steel/Cast Iron Steel/Stainless Steel/Cast Iron
- Prices and stocks are based on presen conditions
- Please specify model numbers the and grade of inserts, ie.: 26-0803S-E,F20

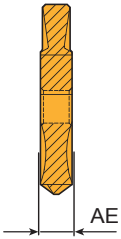
4 in 1 Punch Counter Bore Inserts

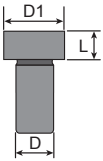
Inserts 6 PCS / Box
Only for insert : 27-20***



Inserts 10 PCS / Box

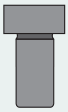






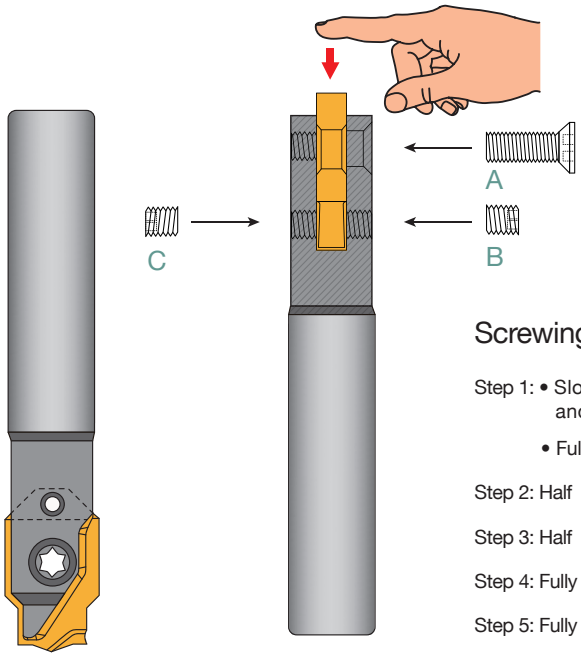
Tolerances (mm)
D1: ±0.03 AE: ±0.01

Dimensions (mm)						Socket Cap Screw Size
D	D1	D2	L	L1	AE	MM
5.0	8	10	5	-	2.5	M5.0
5.5						M5.5
6.0	10	12	6	-	3.0	M6.0
6.5						M6.5
7.0	11		8	-		M7.0
7.5						M7.5
8.0	13	16				M8.0
9.0	14					M9.0
10	15					M10
11	16	20			3.5	M11
12	17					M12
14	19					M14

Inserts	Order Code	Grades										Corresponding shank
		Carbide					Cermet			Uncoated		
		C125	B350	C350	F20	F30	CE25	CE100	CE60	K10	CE	
	27-1005-M			■								14-1004-80 14-1004-100
	27-10055-M			■								
	27-1206-M			■								14-1206-80 14-1206-110
	27-12065-M			■								
	27-1207-M			■								
	27-12075-M			■								
	27-1608-M			■								14-1208-80 14-1608-100 14-1608-130
	27-1609-M			■								
	27-1610-M			■								
	27-2011-M			■								14-2010-100 14-2010-140
	27-2012-M			■								
	27-2014-M			■								

- ■ 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.: 27-1005-M,C350

How to Fit Insert - Screw A.B.C.



Screwing the Inserts

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

• Fully tighten the screw A first

Step 2: Half tighten the screw B on one side

Step 3: Half tighten the screw C on other side

Step 4: Fully tighten the screw B again

Step 5: Fully tighten the screw C again

Standard spare parts

Insert dimension D2 (mm) 	Screw A 	Screw B/C 	Key 	Key 
8	C02506	S025025	T08P	L013
10	C03007	S02503	T09P	
12	C03008	S0304		L015
16	C03510	S0404	T10P	L02
20	C04012	S0506	T15P	L025

Recommended Cutting Data And Insert Grade

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

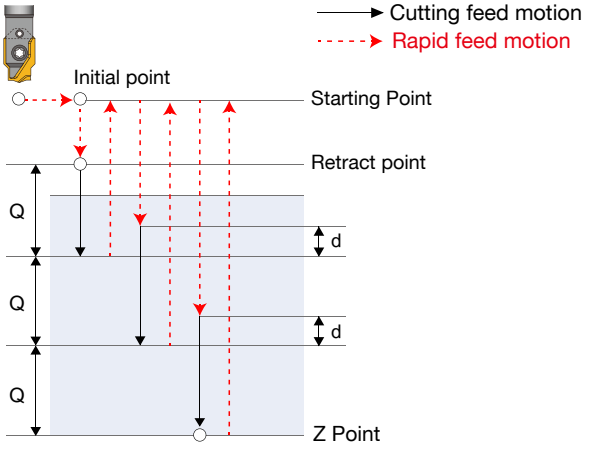
Material group	 Cutting Speed Vc (m/min)	fz (mm/ tooth)				Grades	
		140°				M	E
		(D2) 8	(D2) 10	(D2) 12	(D2) 16-20		
1-2	50-70	0.06 0.08	0.06 0.08	0.07 0.09	0.07 0.09	B350/C350	-
3	50-70	0.06 0.08	0.06 0.08	0.07 0.09	0.07 0.09	B350/C350	-
4-5-6	45-60	0.05 0.07	0.05 0.07	0.06 0.08	0.06 0.08	B350/C350	-
7	25-30	0.04 0.06	0.04 0.06	0.05 0.07	0.05 0.07	B350	-
8-9	35-45	0.06 0.08	0.06 0.08	0.07 0.09	0.07 0.09	B350	-
10-11	35-40	0.05 0.07	0.05 0.07	0.06 0.08	0.06 0.08	B350	-
12-13	70-90	0.12 0.15	0.12 0.15	0.13 0.16	0.13 0.16	F30	-
14-15	60-80	0.11 0.14	0.11 0.14	0.12 0.15	0.12 0.15	F30	-
16-18	100-150	0.10 0.13	0.10 0.13	0.11 0.14	0.11 0.14	-	F20

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

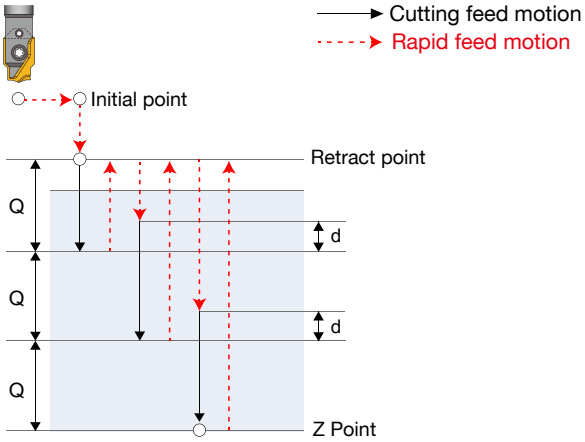
4 In 1 Counter Bore Program Description

Peck drilling (CNC No.G83)

CNC No. G83 (G98)

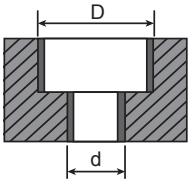
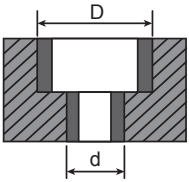
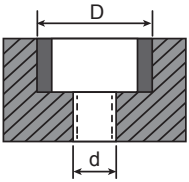


CNC No. G83 (G99)



- The G83 peck drilling cycle is for deep hole drilling and with chip breaking. The retracts cycle cleans chips in the hole and cut off long stringers (which happens often while drilling aluminum materials). This cycle takes a Q number which represents a "delta" increment along with the Z-axis.
- Program: G83 X_Y_Z_Q_R_F. It is an error if: The Q number is negative or zero.
- Peck drilling is not necessary in cast iron machining.

Bolt counter bore dimensions (DIN 373 - ISO 4205)

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
M14	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	-

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

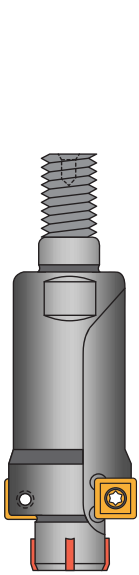
Product Design

CBK

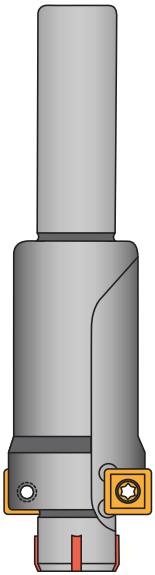
Counter bore tools application for bolts, nuts & screws

Patent No. ZL 01 2 23413.3

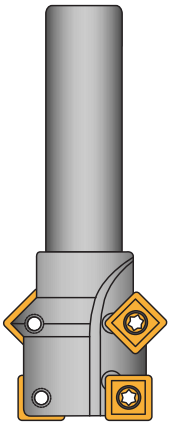
PCT Priority



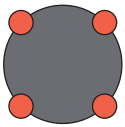
HBM



CBK



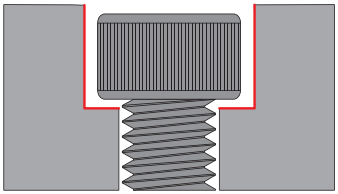
CBI



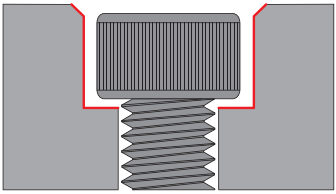
CBK

better cutter toollife
with patented carbide strip

Screw ranges M8~M36



counterbore

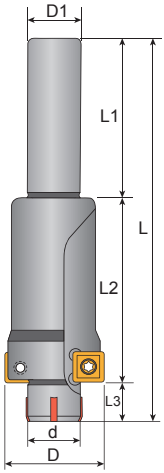


counterbore + chamfer

PRODUCT SPECIFICATIONS

Counterbore Toolholders

- Inserts P. 245
- Cutting Data P. 245



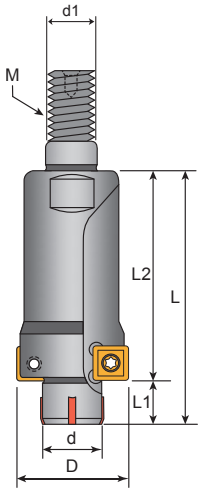
CBK

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		C02506	
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												

Counterbore Combi Cutters

- Toolholder P. 285
- Inserts P. 245
- Cutting Data P. 245



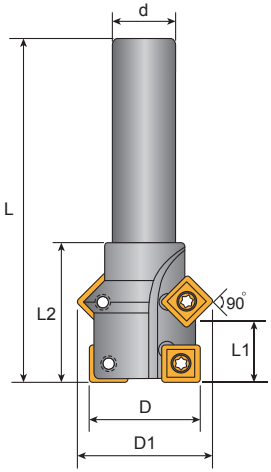
HBM

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			

Counterbore + Chamfer Toolholders

- Inserts P. 245
- Cutting Data P. 245

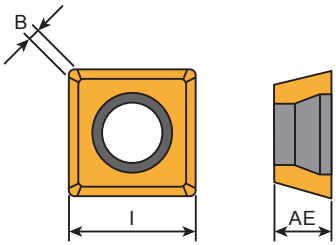


CBI

DIN 373

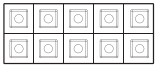
Order Code	Dimensions (mm)						Z	Zc	KG	MAX RPM	Inserts SDET	Screw	Key
	D	d	D1	L	L1	L2							
CBI-08	15	10	20.0	65	9	23	4	2	0.09	25000	060208	C025045	T08P
CBI-10	18		22.0		11				0.09				
CBI-12	20	12	23.8	70	13				0.12	22000			
CBI-14	24		31.4		15	30			0.17		09T308	C04007	T15P
CBI-16	26		33.4	80	16.5	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				

SDET Inserts



Tolerances (mm)

I	AE	B
±0,03	±0,025	±0,03



Inserts 10 PCS / Box

Code	Dimensions (mm)		
	I	AE	B
060208	6.0	2.3	0.4
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

Counterbore

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	0.06 0.10	0.10 0.15	B100	B100
3	35-60	0.06 0.10	0.08 0.12	B100	B100
4-5-6	30-55	0.06 0.10	0.08 0.10	B100	B100
7	20-30	0.06 0.08	0.06 0.08	B100	B100
12-13	40-70	0.08 0.12	0.10 0.15	F30	F30
14-15	35-65	0.08 0.10	0.10 0.15	F30	F30