PRODUCT NEWS

PN-E-017

SERIES EXPANSION

DIJET

One-Cut Ball 70

70HRC

"DH coating" Solid Carbide Ball Nose End Mill for high hardened material up to 70HRC.

DH-OCHB Size range: 1 -12 mm dia.

"One-Cut Ball 70", 4 flutes solid carbide ball nose end mill for high hardened material up to 70HRC. From roughing to finishing.

Un-equal pitch

4 flutes

Newly developed DH COATING

Adopted new PVD coated grade "DH102" by combination of newly developed DH COATING & super micro-grain carbide suitable for high hardened material. Achieved longer tool life.

Unique flute geometry

DIJET GmbH www.dijet.de

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Features

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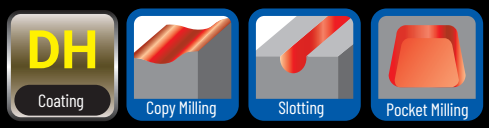
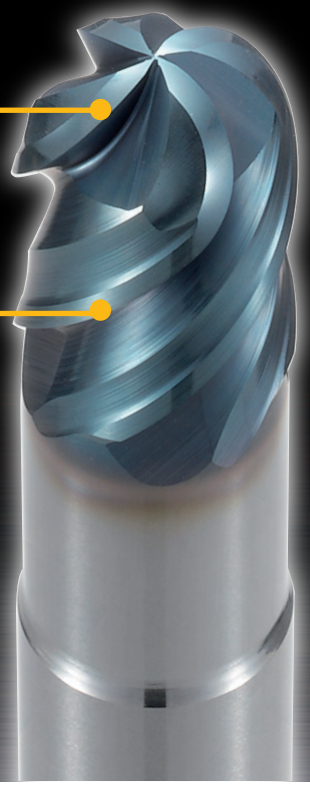


High efficient machining with **4 flutes.**

High rigidity of tool and **un-equal pitch** control the vibration.

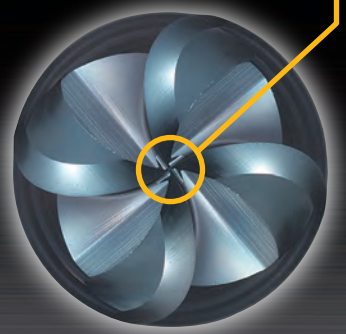
Achieved low cutting force due to **helix angle 45°**, and provided good cutting performance.

Adopted **new PVD coated grade "DH102"** by combination of **newly developed DH COATING & super micro-grain carbide** suitable for high hardened material. Achieved longer tool life.



Unique flute geometry

Adopting unique flute geometry at the center point achieved good chip ejection & stable machining.



Newly developed "DH COATING"

DH COATING gives stable and high-performance machining on high hardened materials even with high speed dry condition, due to higher hardness and higher oxidation resistance than the existing PVD coating.

● Characteristic value of various PVD coatings

	DH Coating	DV Coating	DZ Coating (TiAlN)
Hardness	3,500～3,700	3,300～3,500	2,800～2,900
Oxidization temperature	1,100～1,200	1,000～1,100	700～800
Coefficient of friction	0.5	0.65	0.6

DH-OCHB type

- For high hardened steel up to 70HRC.
- 4 flutes / Helix angle 45˚
- DH Coating

■ Tolerance (mm)

R of ball nose	Tolerance of R	Tolerance of Dc
R0.5～R1	±0.005	$^{0}_{-0.010}$
R1.5～R2	±0.008	$^{0}_{-0.010}$
R2.5～R6	±0.008	$^{0}_{-0.015}$

Fig.1 φDc＜φDs

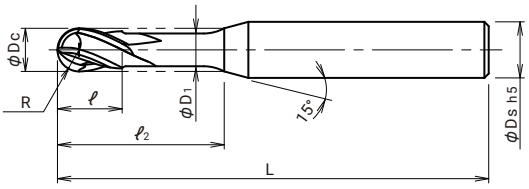
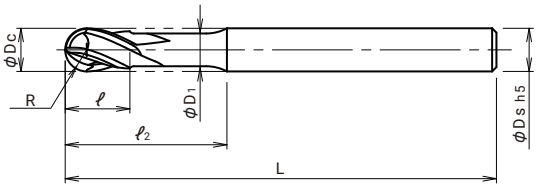


Fig.2 φDc＝φDs

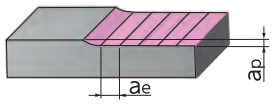
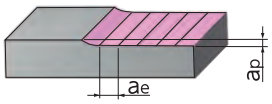
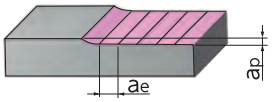
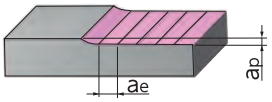


Cat. No.	Stock	Dimensions (mm)							Fig.
		R	φDc	ℓ	ℓ2	L	φD1	φDs	
DH-OCHB4010S04	●	0.5	1	1.5	3	50	0.95	4	1
DH-OCHB4010S06	●	0.5	1	1.5	3	50	0.95	6	1
DH-OCHB4020S04	●	1	2	3	6	50	1.9	4	1
DH-OCHB4020S06	●	1	2	3	6	50	1.9	6	1
DH-OCHB4030	●	1.5	3	4.5	9	70	2.9	6	1
DH-OCHB4040	●	2	4	6	12	70	3.8	6	1
DH-OCHB4050	●	2.5	5	7.5	15	80	4.8	6	1
DH-OCHB4060	●	3	6	9	18	90	5.7	6	2
DH-OCHB4080	●	4	8	12	24	100	7.6	8	2
DH-OCHB4100	●	5	10	15	30	100	9.5	10	2
DH-OCHB4120	●	6	12	18	36	110	11.4	12	2

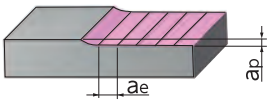
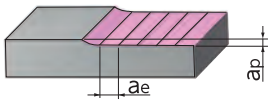
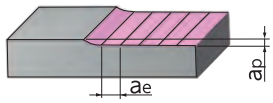
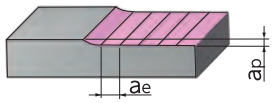
Stock availability ● : Standard stock items

Recommended cutting conditions for “One-cut Ball 70”

For finishing

Work materials	SKD、SKH、NAK (～45HRC) Tool & die steel, Mold steel (1.2344, 1.2379, 1.2311, P20, P21)		SKD、SKT (45～55HRC) Hardened steel (1.2344, 1.2379)		SKD、SKT (55～62HRC) Hardened steel (1.2344, 1.2379)		HAP (62～72HRC) Hardened steel (1.2379, HSS)	
Type of machining	 ap ≦ 0.03 mm ae ≦ 0.03 mm		 ap ≦ 0.03 mm ae ≦ 0.03 mm		 ap ≦ 0.03 mm ae ≦ 0.03 mm		 ap ≦ 0.03 mm ae ≦ 0.03 mm	
Tool dia. R (mm)	Tool dia. ϕDc (mm)	Spindle speed n (min-1)	Feed speed Vf (mm/min)	Spindle speed n (min-1)	Feed speed Vf (mm/min)	Spindle speed n (min-1)	Feed speed Vf (mm/min)	Spindle speed n (min-1)	Feed speed Vf (mm/min)
0.5	1	30,000	1,600	30,000	1,400	30,000	1,200	30,000	800
1	2	30,000	3,200	30,000	2,000	25,500	2,000	19,000	1,000
1.5	3	25,500	4,000	21,200	3,000	17,000	2,000	12,700	1,000
2	4	19,100	4,000	15,900	3,000	12,700	2,000	9,500	1,000
2.5	5	15,300	4,000	12,700	3,000	10,200	2,000	7,600	1,000
3	6	12,700	4,000	10,600	3,000	8,500	2,000	6,400	1,000
4	8	9,500	4,000	8,000	3,000	6,400	2,000	4,800	1,000
5	10	7,600	4,000	6,400	3,000	5,100	2,000	3,800	1,000
6	12	6,400	4,000	5,300	3,000	4,200	2,000	3,200	1,000

2.For roughing & semi-finishing

Work materials	SKD、SKH、NAK (～45HRC) Tool & die steel, Mold steel (1.2344, 1.2379, 1.2311, P20, P21)			SKD、SKT (45～55HRC) Hardened steel (1.2344, 1.2379)			SKD、SKT (55～62HRC) Hardened steel (1.2344, 1.2379)			HAP (62～72HRC) Hardened steel (1.2379, HSS)		
Type of machining	 ap ≦ 1.2 mm ae ≦ 0.2 mm ◆ Example：Dc3 ap=2.2, ae=0.1 (ap×ae≦0.22)			 ap ≦ 1.2 mm ae ≦ 0.2 mm ◆ Example：Dc3 ap=2.2, ae=0.1 (ap×ae≦0.22)			 ap ≦ 1.2 mm ae ≦ 0.2 mm ◆ Example：Dc3 ap=1.8, ae=0.1 (ap×ae≦0.18)			 ap ≦ 1.0 mm ae ≦ 0.1 mm ◆ Example：Dc3 ap=1, ae=0.05 (ap×ae≦0.05)		
Tool dia. R (mm)	Tool dia. ϕDc (mm)	Spindle speed n(min-1)	Feed speed Vf(mm/min)	ap×ae	Spindle speed n(min-1)	Feed speed Vf(mm/min)	ap×ae	Spindle speed n(min-1)	Feed speed Vf(mm/min)	ap×ae	Spindle speed n(min-1)	Feed speed Vf(mm/min)	ap×ae
0.5	1	30,000	1,500	0.024	30,000	1,400	0.024	30,000	1,200	0.02	28,800	750	0.006
1	2	28,600	3,000	0.095	23,800	2,250	0.095	19,100	1,500	0.08	14,400	750	0.025
1.5	3	19,100	3,000	0.22	15,900	2,250	0.22	12,700	1,500	0.18	9,500	750	0.05
2	4	14,300	3,000	0.38	11,900	2,250	0.38	9,500	1,500	0.32	7,200	750	0.10
2.5	5	11,500	3,000	0.60	9,500	2,250	0.60	7,600	1,500	0.50	5,700	750	0.15
3	6	9,500	3,000	0.86	8,000	2,250	0.86	6,400	1,500	0.72	4,800	750	0.22
4	8	7,200	3,000	1.54	6,000	2,250	1.54	4,800	1,500	1.28	3,600	750	0.38
5	10	5,700	3,000	2.40	4,800	2,250	2.40	3,800	1,500	2.00	2,900	750	0.60
6	12	4,800	3,000	3.46	4,000	2,250	3.46	3,200	1,500	2.88	2,400	750	0.86

● Note: The figures to be adjusted according to the machine rigidity or work rigidity.

● Attention for helical milling

1. Recommended ramping angle is under 1° (up to 3°).
2. In case of ramping angle under 1°, apply the above table. But, in case of ramping angle over 1°, recommend to reduce Feed speed according to actual machining condition.