Member IMC Group Tungaloy INDUSTRY 4.0

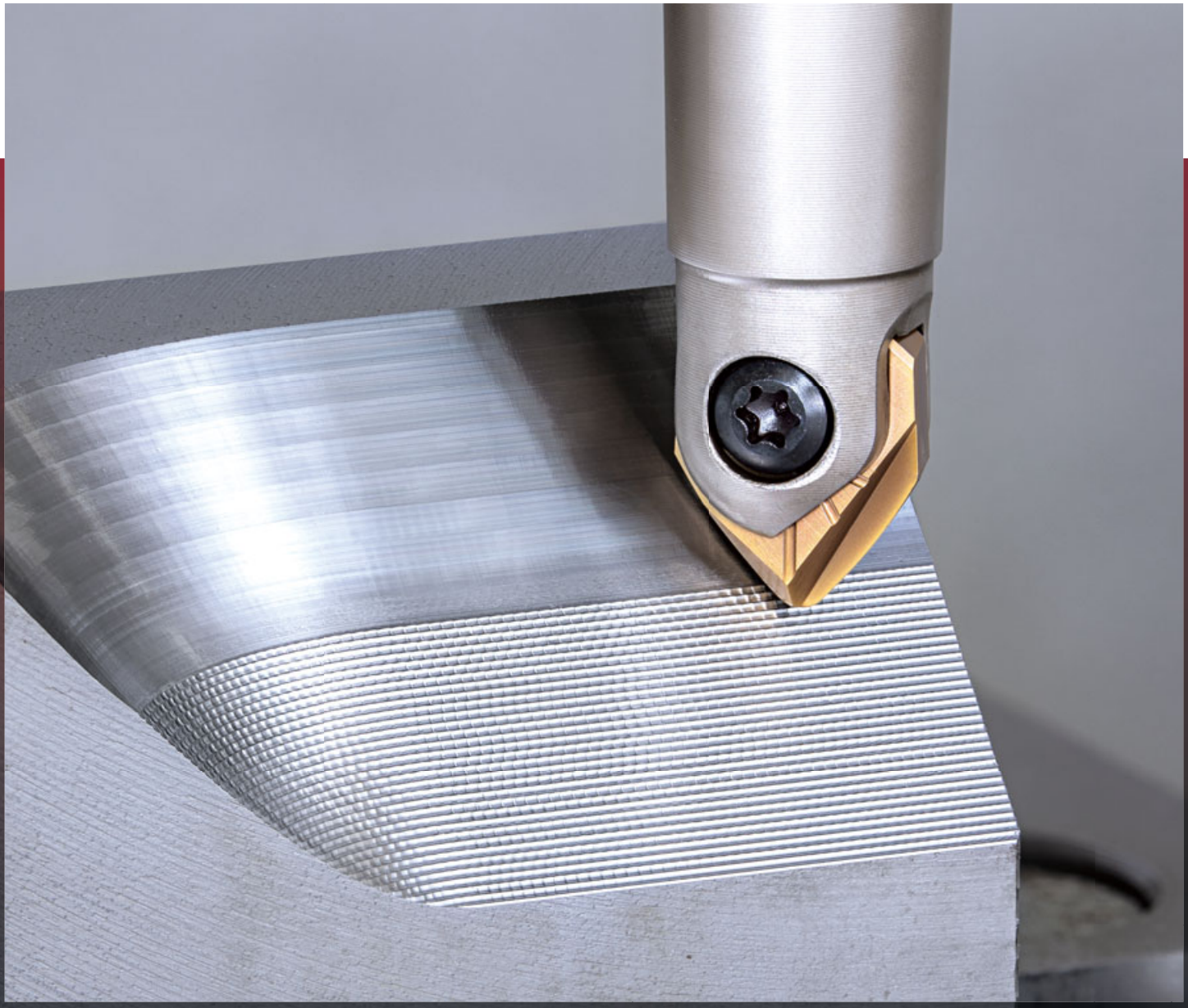
MillLine

Profile milling cutter

FINISH BALLFNOSE

Tungaloy Report No. 431S1-G

New barrel type insert with large R cutting edge for high productivity



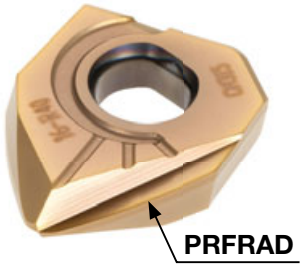
TUNGALOY ADDFORCE ACCELERATED LINES

BALLFINISHNOSE

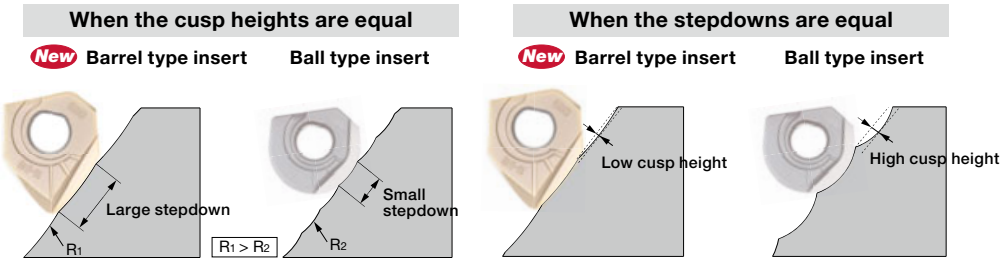
For more information

Large R cutting edge for high productivity and high accuracy

The barrel insert has a 5 times larger profile radius (PRFRAD) than the ball nose insert of the same tool diameter, enabling high part quality and increased efficiency.

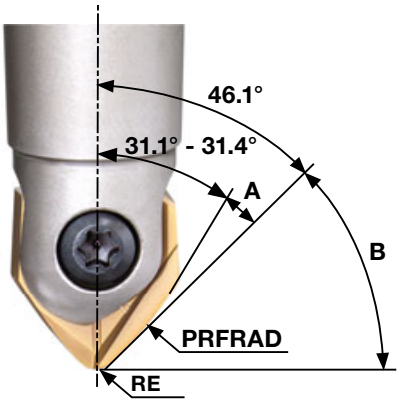


BALLFINISHNOSE Barrel type insert vs ball type insert



Improved productivity Barrel type insert provide larger stepdowns than ball type insert, reducing the number of tool passes.

Good surface finish Barrel type insert can reduce the cusp height generated by ball type insert, substantially increasing surface quality.



Applicable tilt angle ranges

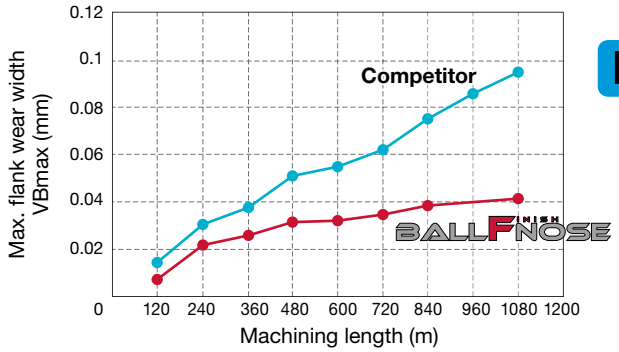
Designation	Tool dia. (mm)	PRFRAD (mm)	Applicable ranges of tilt angles on workpiece	
			A (PRFRAD)	B (RE)
ZFCBM120R300-MM	ø12	30	31.4° - 46.1°	46.1° - 90°
ZFCBM160R400-MM	ø16	40	31.4° - 46.1°	46.1° - 90°
ZFCBM200R500-MM	ø20	50	31.4° - 46.1°	46.1° - 90°
ZFCBM250R625-MM	ø25	62.5	31.2° - 46.1°	46.1° - 90°
ZFCBM300R750-MM	ø30	75	31.1° - 46.1°	46.1° - 90°

GRADE

CH315 P M K S H

- Unique grade with high wear resistance
- Suitable for semi-finishing to finishing applications

Tool life machining carbon steel

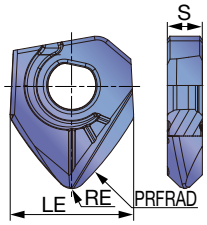


P

Cutter	: EBFM16T20S130 (DCX = 16 mm, CICT = 2)
Insert	: ZFCBM160R400-MM CH315
Workpiece material	: S55C / C55 (204HB)
Cutting speed	: *Vc* = 550 m/min
Feed per tooth	: *fz* = 0.2 mm/t
Pitch	: p = 0.15 mm
Width of cut	: *ae* = 0.1 mm
Coolant	: Dry
Overhang length	: 80 mm
Machine	: Vertical M/C, BT40

INSERTS

ZFCBM-MM



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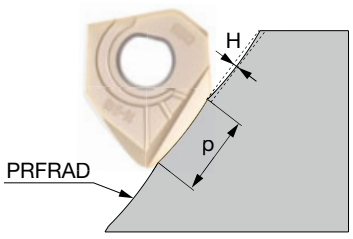
■ Cusp height and pitch



H: Cusp height
p: Pitch
PRFRAD: Radius of barrel-shaped cutting edge

To obtain the pitch (p) from the given cusp height (H)

PRFRAD (mm) \ H (mm)	0.001	0.002	0.003	0.004	0.005	0.01	0.015	0.02
30 (ZFCBM120R300...)	0.49	0.69	0.85	0.98	1.1	1.55	1.9	2.19
40 (ZFCBM160R400...)	0.57	0.8	0.98	1.13	1.26	1.79	2.19	2.53
50 (ZFCBM200R500...)	0.63	0.89	1.1	1.26	1.41	2	2.45	2.83
62.5 (ZFCBM250R625...)	0.71	1	1.22	1.41	1.58	2.24	2.74	3.16
75 (ZFCBM300R750...)	0.77	1.1	1.34	1.55	1.73	2.45	3	3.46

$$p = \sqrt{8 \times H \times PRFRAD} \quad (mm)$$

To obtain the cusp height (H) from the given pitch (p)

PRFRAD (mm) \ p (mm)	0.5	0.75	1	1.25	1.5	1.75	2
30 (ZFCBM120R300...)	0.001	0.002	0.004	0.007	0.009	0.013	0.017
40 (ZFCBM160R400...)	0.001	0.002	0.003	0.005	0.007	0.01	0.013
50 (ZFCBM200R500...)	0.001	0.001	0.003	0.004	0.006	0.008	0.01
62.5 (ZFCBM250R625...)	0.001	0.001	0.002	0.003	0.005	0.006	0.008
75 (ZFCBM300R750...)	< 0.001	0.001	0.002	0.003	0.004	0.005	0.007

$$H = \frac{p^2}{8 \times PRFRAD} \quad (mm)$$

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