

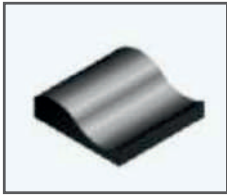


X-FIN LINE

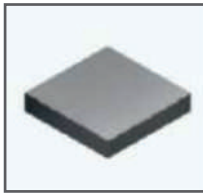
- Used for finishing in mainly die-mould industry as suitable for 3-D finishing
- Excellent surface finish and stable machining due to secure clamping and minimum run-out
- Have the full range with steel bodies, modular heads and carbide shanks!

X-FIN LINE overview

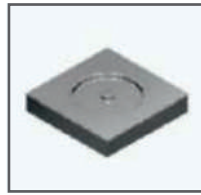
Applications



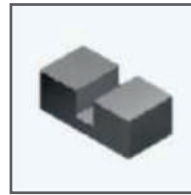
Profiling



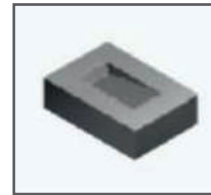
Face Milling



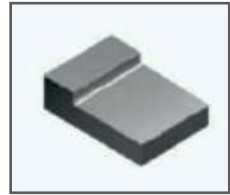
Helical Milling



Slot Milling



Ramping



Shoulder Milling

Features

Excellent tool life when machining hard materials by applying ultra-fine grade & coating

- High accuracy of R shape (Ball shape: ± 0.01 / Comer R shape: ± 0.015)
- Possible to apply a wide range of processing areas with various shapes
- Securing excellent performance and quality in mold and parts processing

Grade Features

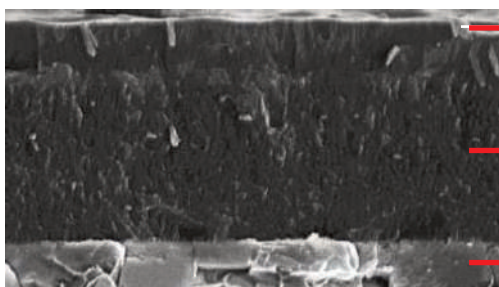
- Excellent abrasion resistance and chipping resistance by using high-characteristic base material applied with ultra-fine WC powder.
- Application of high-hardness exclusive PVD coating technology with excellent high temperature properties.

DH-S:

Grade applicable to high-speed and continuous machining of soft pre-hardened steels and stainless steels(mould, press) up to HRC52

DH-P:

Grade applicable to high speed and continuous machining of high-hardness heat-treated steel (mould, press) of HRC52 and higher. High-hardness exclusive insert coating to prevent tool defects and improve tool life



Hi-Hardness Nano-Crystalline Coating

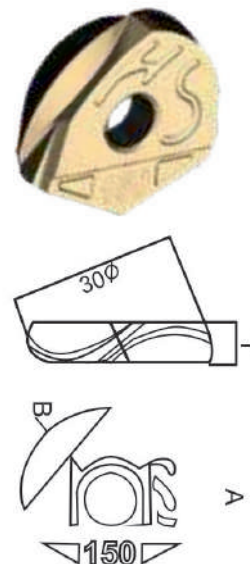
Nano Multi-Layered Coating Structure

Parent Material

XHBI Series (Ball End MILL Insert)

Description	Dimensions (mm)				Dh-S	Dh-P
	R	ODc	A	T		
XHBI-100	5.0/5.5	10.0/11.0	12.2/12.0	27	●	●
XHBI-120	6.0/6.5	12.0/13.0	14.6	32	●	●
XHBI-160	8.0/8.5	16.0/17	16.6/17.1	4.2	●	●
XHBI-160	10.0/10.5	20.0/21.0	20.3/20.8	5.2	●	●
XHBI-250-	12.5	25.0	24.1	6.2	●	●
XHBI-300-	15.0	30.0	29.2	7.2	○	○
XHBI-320-	16.0	32.0	30.2	7.2	○	○

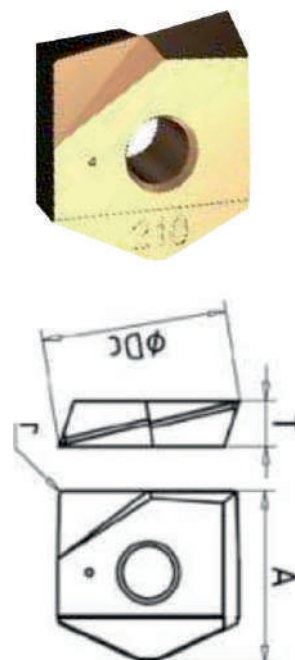
● STOCKABLE ○ NON STOCKABLE



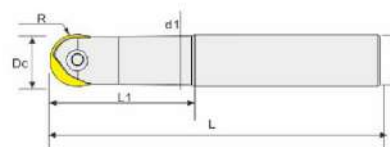
XHBR Series (Corner Radius End) Mill Insert

Description	Dimensions (mm)				DH-S	DH-P
	R	ODc	A	T		
XHBR-100-R0.5	0.50	10	12	2.7	○	○
XHBR-100-R1.0	1.00	10	12	2.7	○	●
XHBR-120-R0.5	0.50	12	14.6	3.2	○	●
XHBR-120-R1.0	1.00	12	14.6	3.2	○	●
XHBR-160-R0.5	0.50	16	16.6	4.2	○	●
XHBR-160-R1.0	1.00	16	16.6	4.2	○	●
XHBR-200-R0.5	0.50	20	19.8	5.2	○	●
XHBR-200-R1.0	1.00	20	19.8	5.2	○	●
XHBR-210-R0.5	0.50	21	19.8	5.2	○	○
XHBR-210-R1.0	1.00	21	19.8	5.2	○	○
XHBR-250-R0.5	0.50	25	22.55	6.1	○	●
XHBR-250-R1.0	1.00	25	22.55	6.1	○	●
XHBR-250-R2.0	2.00	25	22.55	6.1	○	○
XHBR-300-R0.5	0.50	30	27.2	7.2	○	○
XHBR-300-R1.0	1.00	30	27.2	7.2	○	○

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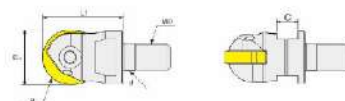


ABPF Types Ball/R Finishing End Mills-Steel Bodies



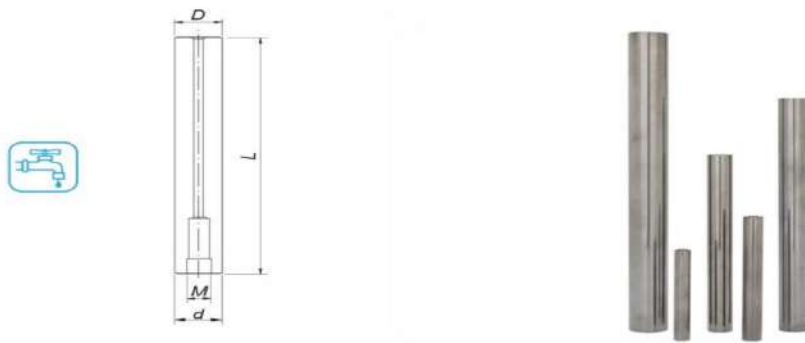
Item code	Teeth	Dimension					Corresponding Insert	Accessories		Stock
		Dc	d1	d	L1	L		Locking Screw	Wrench	
ABPF-R4-C08-120L	1	08	7.5	10	25	120	XHBI-080	SCREW-XHBI-080-FSW-3008H	TF08	○
ABPF-R5-C10-120L	1	10	9.5	10	25	120	XHBI-100	SCREW-XHBI-100-FSW-3508H	TF08	●
ABPF-R6-C12-120L	1	12	11.5	12	30	120	XHBI-120	SCREW-XHBI-120-FSW-5010H	TF15	●
ABPF-R8-C16-160L	1	16	15.5	16	49	160	XHBI-160	SCREW-XHBI-160-FSW-5013H	TF20	●
ABPF-R8-C16-200L	1	16	15.5	16	70	200	XHBI-160	SCREW-XHBI-160-FSW-5013H	TF20	●
ABPF-R10-C20-160L	1	20	19	20	59	160	XHBI-200	SCREW-XHBI-200-FSW-6017H	TF25	●
ABPF-R10-C20-200L	1	20	19	20	80	200	XHBI-200	SCREW-XHBI-200-FSW-6017H	TF25	●
ABPF-R12.5-C25-160L	1	25	24	25	68	160	XHBI-250	SCREW-XHBI-250-FSW-6022H	TF30	●
ABPF-R12.5-C25-200L	1	25	24	25	88	200	XHBI-250	SCREW-XHBI-250-FSW-6022H	TF30	●
ABPF-R15-C32-160L	1	30	29	32	78	160	XHBI-300	SCREW-XHBI-300-FSW-8025H	TF30	○
ABPF-R15-C32-200L	17	30	29	32	98	200	XHBI-300	SCREW-XHBI-300-FSW-8025H	TF30	○

Modular Mill types ABPF



Item code	Teeth	Dimension						Corresponding Insert	Accessories		Stock
		R	Dc	Lf	MC	D	d		Locking Screw	Wrench	
ABPF-080-M05	1	4	8	18	M05	6	5.5	XHBI-080	SCREW-XHBI-080-FSW-3008H	TF08	○
ABPF-100-M06	1	5	10	18	M06	6	6.5	XHBI-100	SCREW-XHBI-100-FSW-3508H	TF08	●
ABPF-120-M06	1	6	12	20	M06	6	6.5	XHBI-120	SCREW-XHBI-120-FSW-5010H	TF15	●
ABPF-160-M08	1	8	16	23	M08	8	8.5	XHBI-160	SCREW-XHBI-160-FSW-5013H	TF20	●
ABPF-200-M10	1	10	20	30	M10	8	10.5	XHBI-200	SCREW-XHBI-200-FSW-6017H	TF25	●
ABPF-250-M12	1	12.5	25	34	M12	10	12.5	XHBI-250	SCREW-XHBI-250-FSW-6022H	TF30	●
ABPF-300-M16	1	15	30	41	M16	12	17	XHBI-300	SCREW-XHBI-300-FSW-8025H	TF30	○

Modular Carbide Straight Shanks



Description	Shank Dia. (D)	Length (L)	Locating Thread	Nose Dia(d)	Availability
CSH-D10-M5-100L	10	100	M5	10	○
CSH-D10-M5-150L	10	150	M5	10	●
CSH-D12-M6-150L	12	150	M6	12	○
CSH-D12-M6-200L	12	200	M6	12	●
CSH-D16-M8-150L	16	150	M8	16	○
CSH-D16-M8-200L	16	200	M8	16	●
CSH-D16-M8-250L	16	250	M8	16	●
CSH-D20-M10-150L	20	150	M10	20	○
CSH-D20-M10-200L	20	200	M10	20	●
CSH-D20-M10-250L	20	250	M10	20	●
CSH-D25-M12-150L	25	150	M12	25	○
CSH-D25-M12-200L	25	200	M12	25	●
CSH-D25-M12-250L	25	250	M12	25	●
CSH-D25-M12-300L	25	300	M12	25	○

● STOCKABLE ○ NON STOCKABLE

Cutting Parameters

H	Hardness	Cutting conditions	5R		6R		8R		10R		12.5R		15R	
	uptoHRC 55(DH-S)	vc (m/min)	100-210	260	100-210	290	100-150	350	100-150	400.00	100-150	450.00	100-150	500
		fz (mm/t)	0.10-0.20	0.2	0.10-0.20	0.2	0.12-0.24	0.30	0.12-0.24	0.4	0.12-0.24	0.5	0.12-0.24	0.6
		ap (mm)	0.15-0.25	0.1	0.20-0.30	0.1	0.60-0.80	0.10	0.70-1.00	0.1	0.90-1.25	0.1	1.10-1.60	0.1
		yes (mm)	0.80-1.00	0.25	0.90-1.20	0.3	1.10-1.60	0.30	1.50-2.00	0.4	1.80-2.50	0.5	2.40-3.20	0.6
	HRC55- 68(DH-S)	vc (m/min)	80-170	200	80-160	230	80-200	280.00	80-120	320	80-120	360	80-120	400
		fz (mm/t)	0.10-0.20	0.2	0.10-0.20	0.2	0.12-0.24	0.30	0.12-0.24	0.4	0.12-0.24	0.5	0.12-0.24	0.6
		ap (mm)	0.15-0.25	0.1	0.20-0.30	0.1	0.60-0.80	0.10	0.70-1.00	0.1	0.90-1.25	0.1	1.10-1.60	0.1
		yes (mm)	0.80-1.00	0.25	0.90-1.20	0.3	1.10-1.60	0.30	1.50-2.00	0.4	1.80-2.50	0.5	2.40-3.20	0.6

Notes :

If the overhang length is more than 3 times the diameter, adjust the speed and feed conditions downward as shown in the table on the right.

Overhang	VC mm/min	fz (mm/n)
0-3D	100%	100%
3D-5D	70%	70%
3D-5D	60%	60%
8D-10D	50%	50%

Order Of Fastening

- Clean the fastening space (using air blow, etc.)
- Insert the screw after inserting it into the holder with the number side of the insert facing forward
- Use a torque wrench to tighten the screw with the torque specified on the right.
Do not press the insert while tightening.
- Complete insert fastening

Fasten In Order To Ensure Accuracy

Ball Type	Corner R type	Tightening torque (NM)
XHBI-100-XX	XHBR-100-XX	1.8
XHBI-120-XX	XHBR-120-XX	3.7
XHBI-160-XX	XHBR-160-XX	3.7
XHBI-200-XX	XHBR-200-XX	3.8
XHBI-250-XX	XHBR-250-XX	5.2
XHBI-300-XX	XHBR-300-XX	5.7