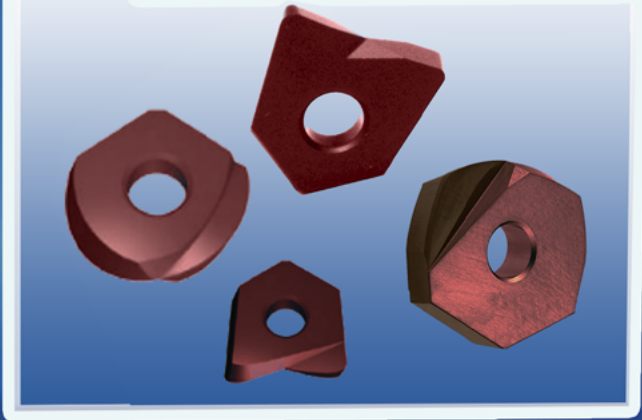


HF Hiper Flat

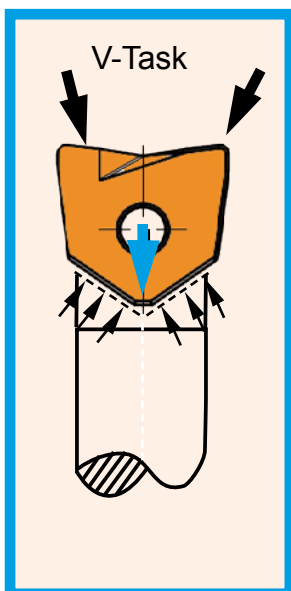
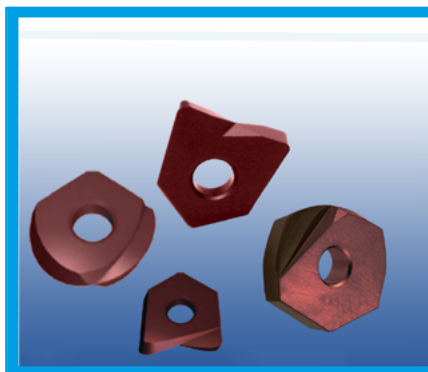


Concetto Hiper Flat

- Hiper Flat è un utensile a fissaggio meccanico ad inserto torico, sferico o barile per la lavorazione di stampi e profili tridimensionali.

Inserto monoblocco con due taglienti sono conveniente per la fresatura in contornatura e copiatura.

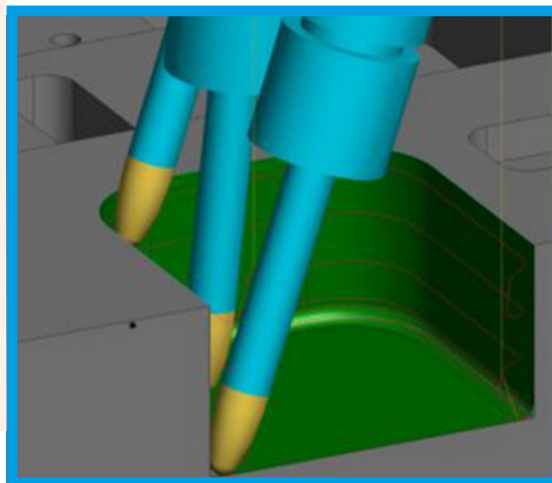
La geometria del raggio è completamente rettificata a CNC per una maggiore precisione (0 / - 0,01) di lavorazione e notevole riduzione della finitura manuale e lucidatura del pezzo.



V-Task Hiper Flat

La sede a V-Task rende l'alloggiamento dell'inserto estremamente preciso e rigido e non consentirà alcun movimento durante la fresatura con spinta laterale.

Un' unica vite di fissaggio garantisce precisione e rigidità, elimina il grip-paggio dovuto al calore, non permette movimenti radiali alla placchetta e uno scarico delle vibrazioni sul mandrino porta-utensile una maggiore rigidità con una maggiore durata ed un elevato grado di finitura.



- L' ampia gamma di diametri e raggi disponibili ,da d. 06 a d. 32 , steli in acciaio e in carburo monoblocco ne fanno uno strumento estremamente versatile.
- Rompitruciolo positivo o di design fortemente negativo per garantire un taglio di eccezionale prestazioni in un' ampia varietà di materiali .
- Una scelta di inserti all' avanguardia come gradi, disegni e una varietà di raggi , rivestimenti consentono velocità e avanzamenti che riducono i tempi di lavorazione dal 25% al 60%.

Micro diametri per inserto Hiper Flat.... Body screw Milling Micro cutter Flat bottom and back draft inserts.



.....PAG 06

Micro diametri per inserto Hiper Flat corpo in metallo duro.... Milling Micro cutter carbide shank Flat bottom and back draft inserts.



.....PAG 07

Inserto Hiper Flat Micro diametri lavorazioni di finitura su materiali temperatiHiper Flat Inserts small Flat bottom and back draft for hard steel . .



.....PAG 08

Fresa per inserto Hiper Flat cilindrico corpo in acciaio.... Steel cylindrical Flat bottom and back draft inserts...



.....PAG 09

Fresa per inserto Hiper Flat cilindrico rinforzato corpo in acciaio.... Steel cylindrical shank reinforced Flat bottom and back draft inserts



.....PAG 09

Fresa per inserto Hiper Flat corpo in metallo duro. Body cutter carbide shank Flat bottom and back draft inserts



.....PAG 10

Testina filettata per inserto Hiper Flat.....Body screw Milling cutter Flat bottom and back draft inserts



.....PAG 11

Prolunga cilindrica in Metallo Duro.....Cylindrical Solid Carbide extension



.....PAG 12

Inserto con fase rinforzata D.10-32 per materiali temperati . Insert back taper D.10-32 with reinforced chip flat bottom for harder materials.



.....PAG 13

Parametri di lavorazione consigliati..... Recommended cutting conditions.

.....PAG 16

Concetto Barrel Milling.... Presentation Barrel Milling. .

.....PAG 17

Testina filettata per inserto Hiper Flat Barrel Milling HBA d. 16-32... .. Body screw Milling cutter inserts Hiper Flat Barrel Milling HBA d. 16-32.

PAG 18

Inserto Hiper Flat Barrel Milling HD..BA d. 16-32.... Inserts Hiper Flat Barrel Milling HD..BA d. 16-32..

PAG 18

Testina filettata per inserto Hiper Flat Barrel Flam HBF d. 12-32... .. Body screw Milling cutter inserts Hiper Flat Barrel Flam HBF d. 12-32 . .

PAG 19

Inserto Hiper Flat Barrel Flam HD..BF d. 12-32.... Inserts Hiper Flat Barrel Milling HD..BF d. 12-32. .

PAG 19

Parametri di lavorazione consigliati..... Recommended cutting conditions.

.....PAG 21

Fresa per inserto Hiper Flat Sferico attacco cilindrico corpo in acciaio d.10-32..... Steel cylindrical shank Flat Sferical inserts d.10-32..

PAG 23

Fresa per inserto Hiper Flat Sferico attacco cilindrico rinforzato corpo in acciaio d.10-32... Steel cylindrical shank reinforced Flat Sferical insert d.10-32

PAG 23

Fresa Hiper Flat Sferico in metallo duro collo scaricato attacco cilindrico.. Body cutter carbide shank Hiper Flat Sferical inserts long neck cylindrical shank .

PAG 24

Testina filettata per inserto Hiper Flat Sferico ... d. 16-32... .. Body screw Milling cutter Hiper Flat Sferical inserts d. 16-32. .

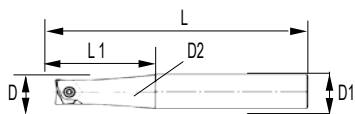
PAG 24

Inserto Sferico per super finitura per materiali temperati per materiali temperati Hiper Flat Sferical inserts for harder materials.

PAG 25

Parametri di lavorazione consigliati..... Recommended cutting conditions.

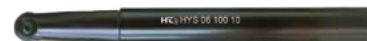
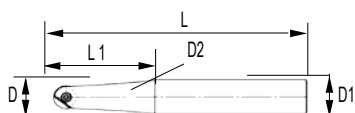
.....PAG 26



Micro diametri per inserto Hiper Flat...

Body screw Milling Micro cutter Flat bottom and back draft inserts.

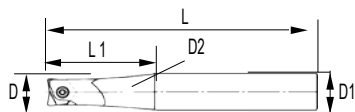
codice	D	L	D1	L1	D2	screw	torx	insert
HYF-06-100-10G	6	100	10	19	5,3	MS-06-N	T7	FIG. 1-2
HYF-08-100-10G	8	100	10	19	6,8	MS-08-N	T7	FIG. 1-2
HYS-06-095-12U	6	95	12	30	5,7	MS-06-N	T7	FIG. 3-4
HYS-08-095-12U	8	95	12	32	7,5	MS-08-N	T7	FIG. 3-4
HYF-06-150-10G	6	150	10	25	5,3	MS-06-N	T7	FIG. 1-2
HYF-08-150-10G	8	150	10	25	6,8	MS-08-N	T7	FIG. 1-2



Micro diametri per inserto Hiper Flat...

Body screw Milling Micro cutter Flat bottom and back draft inserts.

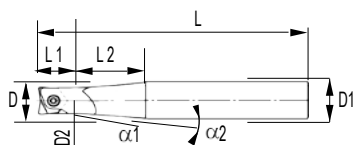
codice	D	L	D1	L1	D2	screw	torx	insert
HYS-06-095-12G	6	95	12	39	5,3	MS-06-N	T7	FIG. 1-2-5
HYS-06-100-10G	6	100	10	19	5,3	MS-06-N	T7	FIG. 1-2-5
HYS-06-125-12G	6	125	12	50	5,3	MS-06-N	T7	FIG. 1-2-5
HYS-06-150-10G	6	150	10	25	5,3	MS-06-N	T7	FIG. 1-2-5
HYS-08-095-12G	8	95	12	39	6,8	MS-08-N	T7	FIG. 1-2-5
HYS-08-100-10G	8	100	10	19	6,8	MS-08-N	T7	FIG. 1-2-5
HYS-08-125-12G	8	125	12	55	6,8	MS-08-N	T7	FIG. 1-2-5
HYS-08-150-10G	8	150	10	25	6,8	MS-08-N	T7	FIG. 1-2-5



Micro diametri per inserto Hiper Flat corpo in metallo duro...

Milling Micro cutter carbide shank Flat bottom and back draft inserts.

codice	D	L	D1	L1	D2	screw	torx	insert
HY-06-115-06-HMU	6	115	6	30	5,7	MS-06-N	T7	FIG. 3-4
HYF-06-070-10-040-HMG	6	70	10	40	5,6	MS-06-N	T7	FIG. 1-2
HYF-06-100-10-060-HMG	6	100	10	60	5,6	MS-06-N	T7	FIG. 1-2
HY-08-130-08-HMU	8	130	8	30	7,5	MS-08-N	T7	FIG. 3-4
HYF-08-070-10-040-HMG	8	70	10	40	7,2	MS-08-N	T7	FIG. 1-2
HYF-08-100-10-060-HMG	8	100	10	60	7,2	MS-08-N	T7	FIG. 1-2



Micro diametri per inserto Hiper Flat corpo in metallo duro...

Milling Micro cutter carbide shank Flat bottom and back draft inserts.

codice	D	L	D1	D2	L1	L2	$\alpha 1$	$\alpha 2$	screw	torx	insert
HY-06-075-12-HMU	6	75	12	5,7	35	--	6°		MS06N	T7	FIG. 3-4
HY-06-115-12-HMU	6	115	12	5,7	30	45	1°		MS06N	T7	FIG. 3-4
HY-06-150-12-030-HMU	6	150	12	5,7	30	--	6°		MS06N	T7	FIG. 3-4
HY-06-150-12-070-HMU	6	150	12	5,7	70	--	6°		MS06N	T7	FIG. 3-4
HY-08-080-12-HMU	8	80	12	7,5	40	--	6°		MS08N	T7	FIG. 3-4
HY-08-100-12-HMU	8	100	12	7,5	30	30	1°		MS08N	T7	FIG. 3-4
HY-08-150-12-HMU	8	150	12	7,5	30	--	6°		MS08N	T7	FIG. 3-4

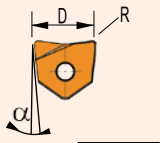
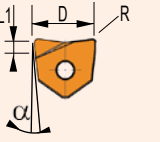
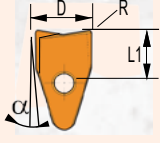
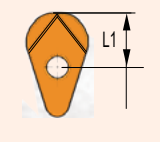
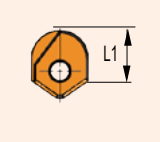


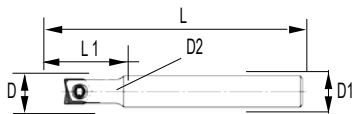
D
0 / 0,01

R
+/- 0,01

Inserto Hiper Flat Micro diametri lavorazioni di finitura su materiali temperati

Hiper Flat Inserts small Flat bottom and back draft for hard steel .

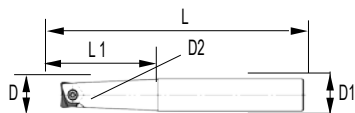
		codice	D	L1	R	α	screw	torx
①		HD-06 R	06	--	0,4/0,5	2°	MS06N	Tx 07
		HD-08 R	08	--	0,4/0,5	2°	MS08N	Tx 07
②		HD-06 RR	06	2,4	0,4/0,5	2°	MS06N	Tx 07
		HD-08 RR	08	2,5	0,4/0,5	2°	MS08N	Tx 07
③		HVBD-06	06	8,6	0,1/0,4	2°	MS06N	Tx 07
		HVBD-08	08	5,0	0,1/0,4	2°	MS08N	Tx 07
④		HVR 06 BS	06	8,10	3		MS06N	Tx 07
		HVR 08 BS	08	4,50	4		MS08N	Tx 07
⑤		HB 06 SF	06	7,7	3	-	MS06N	Tx 07
		HB 08 SF	08	7,0	4		MS08N	Tx 07



Fresa per inserto Hiper Flat cilindrico corpo in acciaio...

Steel cylindrical shank Flat bottom and back draft inserts.

codice	D	D1	D2	L1	L	screw	torx
HYF1010010*	10	10	9,0	19	100	MS10	T15
HYF1212512	12	12	10,8	36	125	MS12	T20
HYF1215012	12	12	10,8	46	150	MS12	T20
HYF1616016	16	16	14,4	50	160	MS16	T20
HYF2015020	20	20	18,0	50	150	MS20	T20
HYF2020020	20	20	18,0	61	200	MS20	T20
HYF2515025	25	25	22,5	50	150	MS25	T20
HYF2520025	25	25	22,5	64	200	MS25	T20
HYF3219032	32	32	28,6	57	190	MS32	T30
HYF3225032	32	32	28,6	76	250	MS32	T30

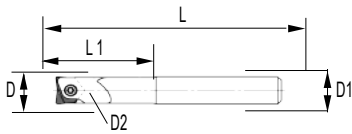


Fresa per inserto Hiper Flat cilindrico rinforzato corpo in acciaio...

Steel cylindrical shank reinforced Flat bottom and back draft inserts.



codice	D	D1	D2	L1	L	screw	torx
HYF1015012	10	12	9,0	35	150	MS10	T15
HYF1219016	12	16	10,8	60	190	MS12	T20
HYF1619020	16	20	14,4	57	190	MS16	T20
HyF2020025	20	25	18,0	80	200	MS20	T20
HYF2525032	25	32	22,5	100	250	MS25	T20
HYF2531532	25	32	22,5	100	315	MS25	T20
HYF3225040	32	40	28,6	120	250	MS32	T30

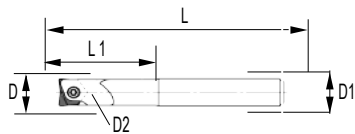
* = on demand



Fresa per inserto Hiper Flat corpo in metallo duro.



Body cutter carbide shank Flat bottom and back draft inserts

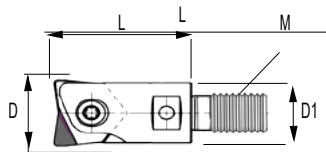
codice	D	D1	D2	L1	L	screw	torx
HYF1215012 HM	12	10,8	52	12	150	MS12	T20
HYF1615016 HM	16	14,4	52	16	150	MS16 	T20 
HYF2020020 HM	20	18	77	20	200	MS20	T20
HYF2520025 HM	25	22,5	93	25	200	MS25	T20



Fresa per inserto Hiper Flat corpo in metallo duro collo scaricato.

Body cutter carbide shank Flat bottom and back draft inserts long neck.

codice	D	L	D1	L1	D2	screw	torx
HYF-10-100-10-060-HMG	10	100	10	60	9,0	MS-10	T15
HYF-10-120-10-080-HMG	10	120	10	80	9,0	MS-10 	T15 
HYF-12-110-12-060-HMG	12	110	12	60	10,8	MS-12	T20
HYF-12-140-12-080-HMG	12	140	12	80	10,8	MS-12	T20
HYF-12-180-12-120-HMG	12	180	12	120	10,8	MS-12	T20
HYF-16-150-16-060-HMG	16	150	16	60	15,0	MS-16	T20
HYF-16-180-16-100-HMG	16	180	16	100	15,0	MS-16	T20
HYF-16-220-16-160-HMG	16	220	16	160	15,0	MS-16	T20
HYF-20-150-20-100-HMG	20	150	20	100	19,0	MS-20	T20
HYF-20-200-20-120-HMG	20	200	20	120	19,0	MS-20	T20
HYF-20-220-20-160-HMG	20	220	20	160	19,0	MS-20	T20



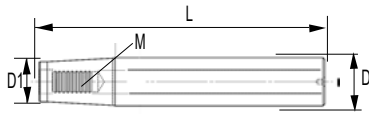
Testina filettata per inserto Hiper Flat...



Body screw Milling cutter Flat bottom and back draft inserts.

codice	D	M	D1	L	insert	screw	torx
060630HF	06	6	9,8	30	HD 06RR	06MS	Tx 06
080630HF	08	6	9,8	30	HD 08RR	08MS	Tx 07
10 06 25 HF	10	6	9,8	25	HD 10 S	10MS	Tx 15
12 06 27 HF	12	6	10,8	27	HD 12 S	12MS	Tx 20
16 08 31 HF	16	8	14,4	31	HD 16 S	16MS	Tx 20
20 10 36 HF	20	10	18,0	36	HD 20 S	20MS	Tx 20
25 12 44 HF	25	12	22,5	44	HD 25 S	25MS	Tx 20
32 16 52 HF	16	16	28,6	52	HD 32 S	32MS	Tx 30





CARBIDE



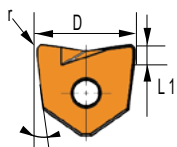
Prolunga cilindrica in Metallo Duro.

Cylindrical Solid Carbide extension.

codice	D	L	M	D1	L1
100 10 05 HC	10	100	M5	5,5	15
150 10 05 HC*	10	150	M5	5,5	15
100 12 06 HC	12	100	M6	6,5	15
150 12 06 HC	12	150	M6	6,5	15
200 12 06 HC*	12	200	M6	6,5	15
100 16 08 HC	16	100	M8	8,5	15
150 16 08 HC	16	150	M8	8,5	15
200 16 08 HC	16	200	M8	8,5	15
250 16 08 HC*	16	250	M8	8,5	15
300 16 08 HC*	16	300	M8	8,5	15
100 20 10 HC	20	100	M10	10,5	20
150 20 10 HC	20	150	M10	10,5	20
200 20 10 HC	20	200	M10	10,5	20
250 20 10 HC*	20	250	M10	10,5	20
300 20 10 HC*	20	300	M10	10,5	20
100 25 12 HC*	25	100	M12	12,5	30
150 25 12 HC	25	150	M12	12,5	30
200 25 12 HC	25	200	M12	12,5	30
250 25 12 HC	25	250	M12	12,5	30
300 25 12 HC	25	300	M12	12,5	30
350 25 12 HC*	25	350	M12	12,5	30
150 32 16 HC*	32	150	M16	17	35
200 32 16 HC*	32	200	M16	17	35
250 32 16 HC*	32	250	M16	17	35
300 32 16 HC	32	300	M16	17	35
350 32 16 HC*	32	350	M16	17	35
400 32 16 HC*	32	400	M16	17	35

* = NON A STOCK- ON DEMAND

** = SI ESEGUONO RETIFICHE A DISEGNO - ARE AVAILABLE ON DRAWING GRINDING



Cod. HD...S

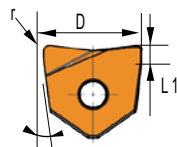
D
0 / 0,01

R
+/- 0,01

Inserto scaricato con fase rinforzata 90° per materiali temperati .

Insert back taper with reinforced chip flat bottom for harder materials.

codice	D	r	L1	
HD-10-S-ER0,1*	10	0,1	1,5	4°
HD-10-S-ER0,5	10	0,5	1,5	4°
HD-10-S-ER0,8	10	0,8	1,8	4°
HD-10-S-ER1,0	10	1,0	2,0	4°
HD-12-S-ER0,1*	12	0,1	2,5	7°
HD-12-S-ER0,5	12	0,5	2,5	7°
HD-12-S-ER1,0	12	1,0	3,0	7°
HD-16-S-ER0,1*	16	0,1	2,5	7°
HD-16-S-ER0,5	16	0,5	2,5	7°
HD-16-S-ER1,0	16	1,0	3,0	7°
HD-16-S-ER1,3	16	1,3	3,6	7°
HD-20-S-ER0,1*	20	0,1	2,5	7°
HD-20-S-ER0,5	20	0,5	2,5	7°
HD-20-S-ER1,0	20	1,0	3,0	7°
HD-20-S-ER1,6	20	1,6	3,6	7°
HD-25-S-ER1,0	25	1,0	4,0	7°
HD-25-S-ER2,0	25	2,0	4,0	7°
HD-32-S-ER2,6	32	2,6	4,6	7°



Cod. HD...RR

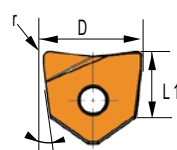
D
0 / 0,01

R
+/- 0,01

Inserto positivo con fase scaricata 90° per materiali abrasivi e temperati .

Insert with positive chip-breaker and flat bottom for harder materials.

codice	D	r	L1	
HD-10-RR-ER0,5	10	0,5	1,5	4°
HD-10-RR-ER0,8	10	0,8	1,8	4°
HD-10-RR-ER1,0	10	1,0	2,0	4°
HD-12-RR-ER0,5	12	0,5	2,5	7°
HD-12-RR-ER1,0	12	1,0	3,0	7°
HD-16-RR-ER0,5	16	0,5	2,5	7°
HD-16-RR-ER1,0	16	1,0	3,0	7°
HD-16-RR-ER1,3	16	1,3	3,6	7°
HD-20-RR-ER0,5	20	0,5	2,5	7°
HD-20-RR-ER1,6	20	1,6	3,6	7°
HD-25-RR-ER1,0	25	2,0	4,0	7°
HD-25-RR-ER2,0	25	2,0	4,0	7°
HD-32-RR-ER2,6	32	2,6	4,6	7°



Cod. HL...N

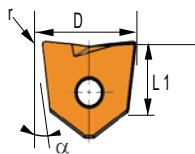
D
0 / 0,01

R
+/- 0,01

Inserto positivo con fase scaricata per alti avanzamenti , sgrossatura e finitura Alluminio.

Insert with positive chip-breaker and flat bottom for roughing and finishing Aluminium.

codice	D	r	L1	
HL-12-N-ER3,0	12	3,0	9,2	7°
HL-16-N-ER3,0	16	3,0	11,25	7°
HL-20-N-ER3,0	20	3,0	13,15	7°
HL-25-N-ER3,0	25	3,0	18,25	7°



Cod. HD...N

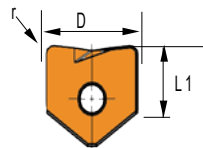
D
0 / 0,01

R
+/- 0,01

Inserto scaricato con fase rinforzata per materiali temperati .

Insert back taper with reinforced chip for harder materials.

codice	D	r	L1	α
HD-10-N-ER0,5	10	0,5	8,5	4°
HD-10-N-ER0,8	10	0,8	8,5	4°
HD-10-N-ER1,0	10	1,0	8,5	4°
HD-12-N-ER0,5	12	0,5	9,95	7°
HD-12-N-ER1,0	12	1,0	9,95	7°
HD-12-N-ER2,0	12	2,0	9,95	7°
HD-16-N-ER0,5	16	0,5	11,55	7°
HD-16-N-ER1,0	16	1,0	11,55	7°
HD-16-N-ER1,3	16	1,3	11,55	7°
HD-16-N-ER2,0	16	2,0	11,55	7°
HD-16-N-ER3,0	16	3,0	11,55	7°
HD-20-N-ER0,5	20	0,5	13,35	7°
HD-20-N-ER1,0	20	1,0	13,35	7°
HD-20-N-ER1,6	20	1,6	13,35	7°
HD-20-N-ER2,0	20	2,0	13,35	7°
HD-20-N-ER3,0	20	3,0	13,35	7°
HD-25-N-ER1,0	25	1,0	19,95	7°
HD-25-N-ER2,0	25	2,0	19,95	7°
HD-32-N-ER1,0	32	1,0	23,35	7°
HD-32-N-ER2,6	32	2,6	23,35	7°



Cod. HB...N

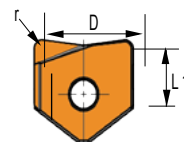
D
0 / 0,01

R
+/- 0,01

Inserto 90° con fase rinforzata per materiali temperati .

Insert with reinforced chip flat bottom for harder materials.

codice	D	r	L1	α
HB-10-N-ER0,5	10	0,5	7,8	
HB-10-N-ER0,8	10	0,8	7,9	
HB-12-N-ER0,5	12	0,5	8,6	
HB-12-N-ER1,0	12	1,0	8,6	
HB-16-N-ER1,3	16	1,3	10,1	
HB-20-N-ER1,6	20	1,6	11,8	
HB-25-N-ER2,0	25	2,0	15,8	
HB-32-N-ER2,6	32	2,6	20,6	



Cod. HB...R

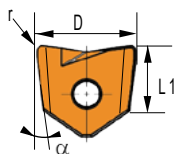
D
0 / 0,01

R
+/- 0,01

Inserto 90° con rompitruociolo per materiali dolci .

Insert with positive chip-breaker flat bottom for softer materials.

codice	D	r	L1	α
HB-10-R-ER0,5	10	0,5	7,8	-
HB-10-R-ER0,8	10	0,8	7,9	-
HB-12-R-ER0,5	12	0,5	8,6	-
HB-12-R-ER1,0	12	1,0	8,6	-
HB-16-R-ER0,5	16	0,5	10,1	-
HB-16-R-ER1,3	16	1,3	10,1	-
HB-20-R-ER1,6	20	1,6	11,8	-
HB-25-R-ER2,0	25	2,0	15,8	-
HB-32-R-ER2,6	32	2,6	20,6	-



Cod. HD...R

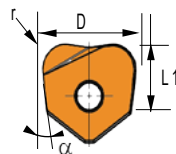
D
0 / 0,01

R
+/- 0,01

Inserto con rompitrucciolo per materiali dolci.

Insert with positive chip-breaker for softer materials.

codice	D	r	L1	α
HD-10-R-ER0,5	10	0,5	8,5	4°
HD-10-R-ER0,8	10	0,8	8,5	4°
HD-10-R-ER1,0	10	1,0	8,5	4°
HD-12-R-ER0,5	12	0,5	9,95	7°
HD-12-R-ER1,0	12	1,0	9,95	7°
HD-16-R-ER0,5	16	0,5	11,55	7°
HD-16-R-ER1,0	16	1,0	11,55	7°
HD-16-R-ER1,3	16	1,3	11,55	7°
HD-20-R-ER0,5	20	0,5	13,35	7°
HD-20-R-ER1,0	20	1,0	13,35	7°
HD-20-R-ER1,6	20	1,6	13,35	7°
HD-25-R-ER1,0	25	1,0	19,95	7°
HD-25-R-ER2,0	25	2,0	19,95	7°
HD-32-R-ER2,6	32	2,6	23,35	7°



Cod. HO...N

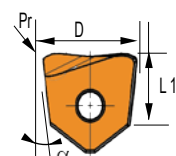
D
0 / 0,01

R
+/- 0,01

Inserto con raggio rinforzato per elevati avanzamenti.

Large corner radius for higher speeds.

codice	D	r	L1	α
HO-10-N-ER3,0	10	3,0	8,65	4°
HO-12-N-ER3,0	12	3,0	9,20	7°
HO-16-N-ER4,0	16	4,0	11,25	7°
HO-20-N-ER5,0	20	5,0	13,15	7°
HO-25-N-ER6,0	25	6,0	18,25	7°
HO-30-N-ER7,5	30	7,5	22,15	7°
HO-32-N-ER8,0	32	8,0	21,95	7°



Cod. HF...F

D
0 / 0,01

R
+/- 0,01

Inserto torico di sgrossatura High Feed.

Toric roughing insert High Feed programming.

codice	D	Pr	L1	α
HF-10-F-ER0,9G	10	0,9	8,65	4°
HF-10-F-ER1,0	10	1,0	8,65	4°
HF-12-F-ER1,43	12	1,43	9,20	7°
HF-12-F-ER1,5G	12	1,5	9,20	7°
HF-16-F-ER1,5G	16	1,5	11,25	7°
HF-16-F-ER1,94	16	1,94	11,25	7°
HF-20-F-ER2,26	20	2,26	13,15	7°
HF-25-F-ER2,82	25	2,82	18,25	7°

Pr = raggio teorico di programmazione

Pr = teorical programming radius

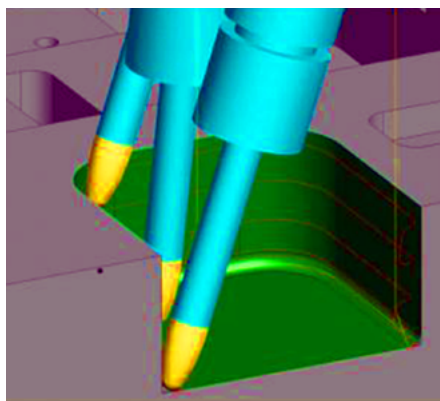
Parametri di lavorazione consigliati
Recommended cutting conditions

MATERIALI		SEMIFINITURA								FINITURA							
		D06		D08		D10		D12		D16		D20		D25		D32	
Acciaio non legato Carbon steels Alloy steels (< 30 HRC)	n (min-1)	8.490	16.450	6.370	11.940	5.090	9.550	4.240	7.960	3.190	5.970	2.550	4.780	2.040	3.820	1.590	2.990
	Vc (m/min)	160	310	160	300	160	300	160	300	160	300	160	300	160	300	160	300
	Vf (mm/min)	1.700	2.300	2.550	3.580	2.040	2.870	1.700	2.390	1.600	2.390	1.280	1.910	1.020	1.530	800	1.200
	fz (mm/t)	00.01	0.07	0.2	0.15	0.2	0.15	0.2	0.15	0.25	0.2	0.25	0.2	0.25	0.2	0.25	0.2
	ap (mm)	00.01	0.05	0.2	0.1	0.25	0.1	0.3	0.1	0.8	0.2	1	0.2	1,25	0.2	1,6	0.2
	ae (mm)	00.06	0.2	0.8	0.2	1	0.2	1,2	0.2	1,6	0.2	2	0.2	2,5	0.2	3,2	0.2
Acciaio a basso legante Carbon steels Alloy steels (30 - 45 HRC)	n (min-1)	6.370	14.850	4.770	11.150	3.820	8.920	3.180	7.430	2.390	5.570	1.910	4.460	1.530	3.570	1.190	2.790
	Vc (m/min)	120	280	120	280	120	280	120	280	120	280	120	280	120	280	120	280
	Vf (mm/min)	1.270	2.080	1.910	3.350	1.530	2.680	1.270	2.230	1.200	2.230	960	1.780	760	1.430	600	1.120
	fz (mm/t)	00.01	0.07	0.2	0.15	0.2	0.15	0.2	0.15	0.25	0.2	0.25	0.2	0.25	0.2	0.25	0.2
	ap (mm)	00.01	0.05	0.2	0.1	0.25	0.1	0.3	0.1	0.8	0.2	1	0.2	1,25	0.2	1,6	0.2
	ae (mm)	00.06	0.2	0.8	0.2	1	0.2	1,2	0.2	1,6	0.2	2	0.2	2,5	0.2	3,2	0.2
Acciaio ad alto legante Hardened steels (45 - 55 HRC)	n (min-1)	5.310	14.850	3.980	11.150	3.180	8.920	2.650	7.430	1.990	5.570	1.590	4.460	1.270	3.570	1.000	2.790
	Vc (m/min)	100	280	100	280	100	280	100	280	100	280	100	280	100	280	100	280
	Vf (mm/min)	850	1.190	800	1.120	640	890	530	740	480	670	380	530	310	430	240	330
	fz (mm/t)	00.08	0.04	0.1	0.05	0.1	0.05	0.1	0.05	0.12	0.06	0.12	0.06	0.12	0.06	0.12	0.06
	ap (mm)	00.01	0.05	0.2	0.1	0.25	0.1	0.3	0.1	0.8	0.2	1	0.2	1,25	0.2	1,6	0.2
	ae (mm)	00.06	0.2	0.8	0.2	1	0.2	1,2	0.2	1,6	0.2	2	0.2	2,5	0.2	3,2	0.2
Acciaio temprato Acciaio ad alto legante Hardened steels (50 - 60 HRC)	n (min-1)	4.240	11.670	3.180	8.760	2.550	7.000	2.120	5.840	1.590	4.380	1.270	3.500	1.020	2.800	800	2.190
	Vc (m/min)	80	220	80	220	80	220	80	220	80	220	80	220	80	220	80	220
	Vf (mm/min)	680	930	640	880	510	700	420	580	380	530	300	420	240	340	190	260
	fz (mm/t)	00.08	0.04	0.1	0.05	0.1	0.05	0.1	0.05	0.12	0.06	0.12	0.06	0.12	0.06	0.12	0.06
	ap (mm)	00.01	0.05	0.2	0.1	0.25	0.1	0.3	0.1	0.8	0.2	1	0.2	1,25	0.2	1,6	0.2
	ae (mm)	00.06	0.2	0.8	0.2	1	0.2	1,2	0.2	1,6	0.2	2	0.2	2,5	0.2	3,2	0.2
Ghisa grigia Ghisa grigia sferoidale Cast iron	n (min-1)	8.490	20.160	6.370	15.120	5.090	12.100	4.240	10.080	3.190	7.560	2.550	6.050	2.040	4.840	1.590	3.780
	Vc (m/min)	160	380	160	380	160	380	160	380	160	380	160	380	160	380	160	380
	Vf (mm/min)	2.550	4.030	3.820	6.050	3.050	4.840	2.550	4.030	2.240	4.540	1.790	3.630	1.430	2.900	1.110	2.270
	fz (mm/t)	00.15	0.1	0.3	0.2	0.3	0.2	0.3	0.2	0.35	0.3	0.35	0.3	0.35	0.3	0.35	0.3
	ap (mm)	00.01	0.05	0.2	0.1	0.25	0.1	0.3	0.1	0.8	0.2	1	0.2	1,25	0.2	1,6	0.2
	ae (mm)	00.06	0.2	0.8	0.2	1	0.2	1,2	0.2	1,6	0.2	2	0.2	2,5	0.2	3,2	0.2
Acciaio inossidabile Stainless steels	n (min-1)	15.920	26.530	11.940	19.900	9.550	15.920	7.960	13.270	5.970	9.950	4.780	7.960	3.830	6.370	3.190	5.310
	Vc (m/min)	300	500	300	500	300	500	300	500	300	500	300	500	300	500	300	500
	Vf (mm/min)	3.180	5.310	4.780	7.960	3.820	6.370	3.190	5.310	2.990	4.980	2.390	3.980	1.920	3.190	1.600	2.660
	fz (mm/t)	00.01	0.1	0.2	0.2	0.2	0.2	0.2	0.2	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25
	ap (mm)	00.03	0.15	0.4	0.2	0.5	0.2	0.6	0.2	0.8	0.2	1	0.2	1,25	0.2	1,6	0.2
	ae (mm)	00.06	0.2	0.8	0.25	1	0.25	1,2	0.3	1,6	0.3	2	0.4	2,5	0.4	3,2	0.4

Parametri in funzione della lunghezza		
	Vc (m/min)	Vf (mm/min)
3Dc	100%	100%
3Dc - 5Dc	70%	70%
5Dc - 6Dc	60%	60%
6Dc - 7Dc	50%	50%
7Dc	45%	45%

Concetto Barrel Milling

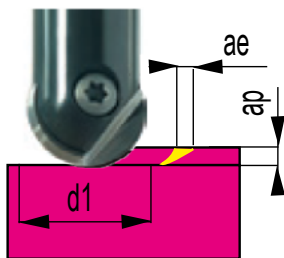
Per materiali duri utilizziamo di norma le frese sferiche o toriche per la lavorazione a 5 assi di geometrie complesse. Tuttavia, soltanto una piccola parte del tagliente dell' utensile è a contatto con il materiale. Una elevata qualità di fresatura si può ottenere soltanto con una minima distanza del percorso (ae).



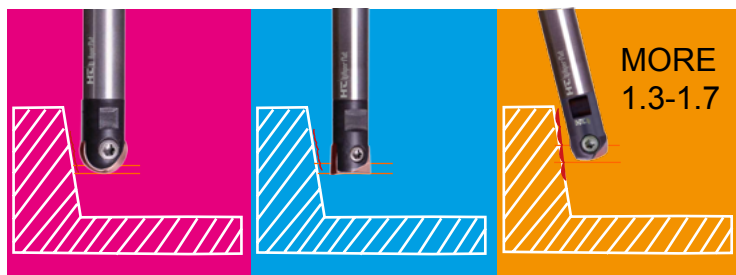
Barrel Milling è un inserto profilato noto anche con profilo a botte o paraboliche. Grazie al grande raggio della superficie laterale, nella fresa con profilo a botte un'ampia parte del tagliente è a contatto con il materiale. La distanza del percorso può quindi essere essenzialmente maggiore della fresa sferica o torica da 3 a 7 volte maggiore lasciando la qualità di fresatura invariata.



$ae =$ convenzionale

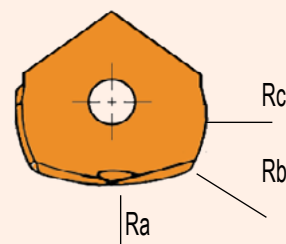
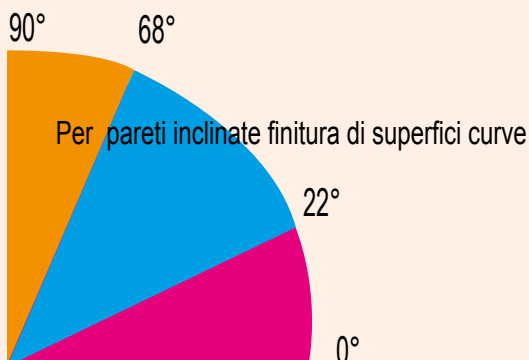


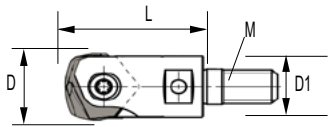
$ae =$ Barrel Milling



Barrel Milling

Barrel Milling

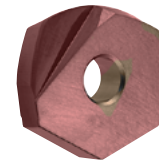
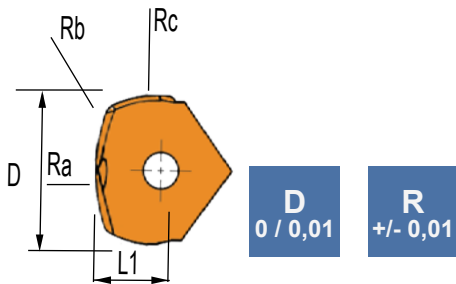




Testina filettata per inserto Hiper Flat...

Body screw Milling cutter Flat bottom and back draft inserts.

codice	D	M	D1	L	insert	screw	torx
16 08 31 HBA	16	8	14,4	31	HD 16 BA	16MS	Tx 20
20 10 36 HBA	20	10	18,0	36	HD 20 BA	20MS	Tx 20
25 12 44 HBA	25	12	22,5	44	HD 25 BA	25MS	Tx 20
32 16 52 HBA	32	16	28,6	52	HD 32 BA	32MS	Tx 30



Barrel Milling

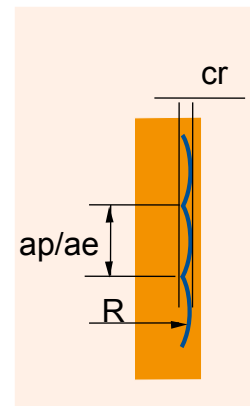
codice	D	Ra	Rb	Rc	L1	screw	torx
HD 16 BA	16	16	1,5	16	8,00	16MS	Tx 20
HD 20 BA	20	20	1,9	20	10,00	20MS	Tx 20
HD 25 BA	25	25	2,38	25	14,5	25MS	Tx 20
HD 32 BA	32	32	2,85	32	32MS	Tx 30

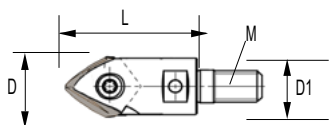
Formula per il calcoli ap/ae desiderato in funzione dell'altezza della cresta desiderata (cr):

$$ap/ae = 2 \sqrt{(R \text{ tools}^2 - (R \text{ tools} - cr)^2)}$$

Tabella con lo sviluppo della cresta (cr) desiderata

codice	R	cr 0.001	cr 0.002	cr 0.003	cr 0.004	cr 0.005	cr 0.01
HD 16 BA	16	0.36	0.51	0.62	0.72	0.8	1,13
HD 20 BA	20	0.4	0.57	0.69	0.8	0.89	1,26
HD 25 BA	25	0.45	0.63	0.77	0.89	1	1,41
HD 32 BA	32	0.49	0.69	0.85	0.98	1,1	1,55

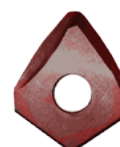
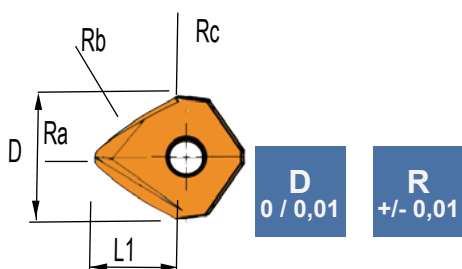




Testina filettata per inserto Hiper Barrel Flam...

Body screw Milling cutter Hiper Barrel Flam inserts.

codice	D	M	D1	L	insert	screw	torx
12 06 27 HBF	12	6	10,8	27	HD 12 BF	12MS	Tx 20
16 08 31 HBF	16	8	14,4	31	HD 16 BF	16MS	Tx 20
20 10 36 HBF	20	10	18,0	36	HD 20 BF	20MS	Tx 20
25 12 44 HBF	25	12	22,5	44	HD 25 BF	25MS	Tx 20
32 16 52 HBF	32	16	28,6	52	HD 32 BF	32MS	Tx 30



Barrel Flam Milling

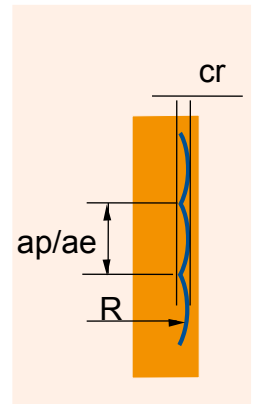
codice	D	Ra	Rb	Rc	L1	screw	torx
HD 12 BF	12	1,2	30	0,98	8,433	12MS	Tx 20
HD 16 BF	16	1,6	40	1,3	11,251	16MS	Tx 20
HD 20 BF	20	2	50	1,63	20MS	Tx 20
HD 25 BF	25	2,5	62,5	2,04	25MS	Tx 20
HD 32 BF	32	3	75	2,45		32MS	Tx 30

Formula per il calcolo di ap/ae desiderato in funzione dell'altezza della cresta desiderata (cr):

$$ap/ae = 2 \sqrt{(R_{tools}^2 - (R_{tools} - cr)^2)}$$

Tabella con lo sviluppo della cresta (cr) desiderata in lavorazione laterale

codice	R	cr 0.0005	cr 0.001	cr 0.002	cr 0.003	cr 0.004	cr 0.005	cr 0.01
HD 12 BF	30	0.35	0.49	0.69	0.85	0.98	1,1	1,55
HD 16 BF	40	0.4	0.57	0.8	0.98	1,13	1,26	1,79
HD 20 BF	50	0.45	0.63	0.89	1,1	1,26	1,41	2
HD 25 BF	62.5	0.5	0.71	1	1,22	1,41	1,58	2,24
HD 32 BF	75	0.55	0.77	1,1	1,34	1,55	1,73	2,45

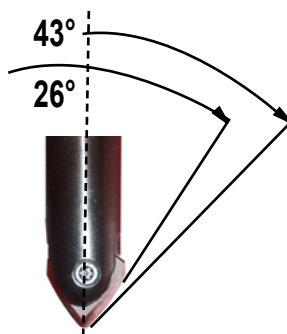


Formula per il calcolo di ap/ae desiderato in funzione dell'altezza della cresta desiderata (cr):

$$ap/ae = 2 \sqrt{(R_{tools}^2 - (R_{tools} - cr)^2)}$$

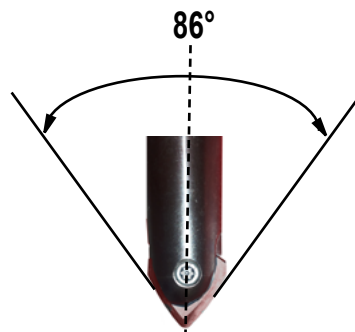
Tabella con lo sviluppo della cresta (cr) desiderata in lavorazione di testa

codice	R	cr 0.0005	cr 0.001	cr 0.002	cr 0.003	cr 0.004	cr 0.005	cr 0.01
HD 12 BF	1,2	0.07	0.1	0.14	0.17	0.2	0.22	0.31
HD 16 BF	1,6	0.08	0.11	0.16	0.2	0.23	0.25	0.36
HD 20 BF	2	0.09	0.13	0.18	0.22	0.25	0.28	0.4
HD 25 BF	2,5	0.1	0.14	0.2	0.24	0.28	0.32	0.45
HD 32 BF	3	0.11	0.15	0.22	0.27	0.31	0.35	0.49



Angoli di lavoro per superfici curve Flam

Tilt angle range of barrel R and tip R



Angolo di lavoro per essere usata come una fresa sferica

Angle range of tip R that can be used as a ball end mill

Cutting Conditions Barrel

Parametri di lavorazione consigliati
Recommended cutting conditions

MATERIALI		LAVORAZIONE DI TESTA				LAVORAZIONE LATERALE			
		D16	D20	D25	D32	D16	D20	D25	D32
Acciaio non legato Carbon steels Alloy steels (< 30 HRC)	n (min-1)	14,340	11,470	9,180	7,650	11,950	9,560	7,650	6,370
	vc (m/min)	720	720	720	720	600	600	600	600
	vf (mm/min)	7,170	5,740	4,590	3,830	4780	3,830	3,060	2,550
	fz (mm/t)	0.25	0.25	0.25	0.25	0.2	0.2	0.2	0.2
	ap (mm)	0.1	0.1	0.1	0.1	Refer to the blow table			
	ae (mm)	Fare riferimento alla tabella seguente				0.1	0.1	0.1	0.1
Acciaio a basso legante Carbon steels Alloy steels (30 - 45 HRC)	n (min-1)	10,360	8,290	6,630	5,530	7,970	6,370	5,100	4,250
	vc (m/min)	520	520	520	520	400	400	400	400
	vf (mm/min)	5,180	4,150	3,320	2,770	3,190	2,550	2,040	1,700
	fz (mm/t)	0.25	0.25	0.25	0.25	0.2	0.2	0.2	0.2
	ap (mm)	0.1	0.1	0.1	0.1	Fare riferimento alla tabella seguente			
	ae (mm)	Refer to the blow table				0.1	0.1	0.1	0.1
Acciaio ad alto legante Hardened steels (45 - 55 HRC)	n (min-1)	6,370	5,100	4,080	3,400	4,980	3,990	3,190	2,660
	vc (m/min)	320	320	320	320	250	250	250	250
	vf (mm/min)	2,550	2,040	1,640	1,360	1,500	1,200	960	800
	fz (mm/t)	0.20	0.20	0.20	0.20	0.15	0.15	0.15	0.15
	ap (mm)	0.08	0.08	0.08	0.08	Refer to the blow table			
	ae (mm)	Fare riferimento alla tabella seguente				0.08	0.08	0.08	0.08
Acciaio temprato Acciaio ad alto legante Hardened steels (50 - 60 HRC)	n (min-1)	5,580	4,460	3,570	2,980	4,380	3,510	2,810	2,340
	vc (m/min)	280	280	280	280	220	220	220	220
	vf (mm/min)	2,240	1,790	1,430	1,200	1,320	1,060	850	710
	fz (mm/t)	0.20	0.20	0.20	0.20	0.15	0.15	0.15	0.15
	ap (mm)	0.05	0.05	0.05	0.05	Fare riferimento alla tabella seguente			
	ae (mm)	Refer to the blow table				0.05	0.05	0.05	0.05
Ghisa grigia Ghisa grigia sferoidale Cast iron	n (min-1)	14,340	11,470	9,180	7,650	11,950	9,560	7,650	6,370
	vc (m/min)	720	720	720	720	600	600	600	600
	vf (mm/min)	11,480	9,180	7,350	6,120	5,980	4,780	3,830	3,190
	fz (mm/t)	0.4	0.4	0.4	0.4	0.25	0.25	0.25	0.25
	ap (mm)	0.1	0.1	0.1	0.1	Refer to the blow table			
	ae (mm)	Fare riferimento alla tabella seguente				0.1	0.1	0.1	0.1
Acciaio inossidabile Stainless steels	n (min-1)	12,940	10,360	8,290	6,910	9,960	7,970	6,370	5,310
	vc (m/min)	650	650	650	650	500	500	500	500
	vf (mm/min)	6,470	5,180	4,150	3,460	3,990	3,190	2,550	2,130
	fz (mm/t)	0.25	0.25	0.25	0.25	0.2	0.2	0.2	0.2
	ap (mm)	0.1	0.1	0.1	0.1	Fare riferimento alla tabella seguente			
	ae (mm)	Refer to the blow table				0.1	0.1	0.1	0.1

* CODICE	R	ALTEZZA CUSPIDE CR					
		0.001	0.002	0.003	0.004	0.005	0.01
HD16BA	16	0.36	0.51	0.62	0.72	0.8	1.13
HD20BA	20	0.4	0.57	0.69	0.8	0.89	1.26
HD25BA	25	0.45	0.63	0.77	0.89	1	1.41
HD32BA	32	0.49	0.69	0.85	0.98	1.1	1.55

Quando la lunghezza di sporgenza è 3Dc o superiore, regolare i valori mostrati nella tabella seguente

$$ap/ae = 2 \sqrt{(R \text{ tools}^2 - (R \text{ tools} - cr)^2)}$$

Formula per il calcolo di ap/ae desiderato in funzione dell'altezza della cresta desiderata (cr)

Parametri in funzione della lunghezza		
	vc (m/min)	vf (mm/min)
3Dc	100%	100%
3Dc - 5Dc	70%	70%
5Dc - 6Dc	60%	60%
6Dc - 7Dc	50%	50%
7Dc	45%	45%

Parametri di lavorazione consigliati
Recommended cutting conditions

MATERIALI		LAVORAZIONE DI TESTA					LAVORAZIONE LATERALE				
		D12	D16	D20	D25	D32	D12	D16	D20	D25	D32
Acciaio non legato Carbon steels Alloy steels (< 30 HRC)	n (min-1)	19.910	14.930	11.950	9.560	7.970	19.110	14.340	11.470	9.180	7.650
	Vc (m/min)	750	750	750	750	750	720	720	720	720	720
	Vf (mm/min)	1.600	1.500	1.440	1.340	1.280	5.740	4.310	3.450	2.760	2.300
	fz (mm/t)	0.04	0.05	0.06	0.07	0.08	0.15	0.15	0.15	0.15	0.15
	ap (mm)	0.1	0.1	0.1	0.1	0.1	Fare riferimento alla tabella seguente *				
	ae (mm)	Refer to the blow table *					0.1	0.1	0.1	0.1	0.1
Acciaio a basso legante Carbon steels Alloy steels (30 - 45 HRC)	n (min-1)	18.580	13.940	11.150	8.920	7.440	13.810	10.360	8.290	6.630	5.530
	Vc (m/min)	700	700	700	700	700	520	520	520	520	520
	Vf (mm/min)	1.490	1.400	1.340	1.250	1.200	4.150	3.110	2.490	1.990	1.660
	fz (mm/t)	0.04	0.05	0.06	0.07	0.08	0.15	0.15	0.15	0.15	0.15
	ap (mm)	0.1	0.1	0.1	0.1	0.1	Refer to the blow table *				
	ae (mm)	Fare riferimento alla tabella seguente *					0.1	0.1	0.1	0.1	0.1
Acciaio ad alto legante Hardened steels (45 - 55 HRC)	n (min-1)	13.270	9.960	7.970	6.370	5.310	8.500	6.370	5.100	4.080	3.400
	Vc (m/min)	500	500	500	500	500	320	320	320	320	320
	Vf (mm/min)	1.070	1.000	960	900	850	1.700	1.280	1.020	820	680
	fz (mm/t)	0.04	0.05	0.06	0.07	0.08	0.1	0.1	0.1	0.1	0.1
	ap (mm)	0.08	0.08	0.08	0.08	0.08	Fare riferimento alla tabella seguente *				
	ae (mm)	Refer to the blow table *					0.08	0.08	0.08	0.08	0.08
Acciaio temprato Acciaio ad alto legante Hardened steels (50 - 60 HRC)	n (min-1)	11.950	8.960	7.170	5.740	4.780	7.440	5.580	4.460	3.570	2.980
	Vc (m/min)	450	450	450	450	450	280	280	280	280	280
	Vf (mm/min)	960	900	870	810	770	1.490	1.120	900	720	600
	fz (mm/t)	0.04	0.05	0.06	0.07	0.08	0.1	0.1	0.1	0.1	0.1
	ap (mm)	0.05	0.05	0.05	0.05	0.05	Refer to the blow table *				
	ae (mm)	Fare riferimento alla tabella seguente *					0.05	0.05	0.05	0.05	0.05
Ghisa grigia Ghisa grigia steroidale Cast iron	n (min-1)	19.910	14.930	11.950	9.560	7.970	19.110	14.340	11.470	9.180	7.650
	Vc (m/min)	750	750	750	750	750	720	720	720	720	720
	Vf (mm/min)	1.600	1.500	1.440	1.340	1.280	7.650	5.740	4.590	3.680	3.060
	fz (mm/t)	0.04	0.05	0.06	0.07	0.08	0.2	0.2	0.2	0.2	0.2
	ap (mm)	0.1	0.1	0.1	0.1	0.1	Fare riferimento alla tabella seguente *				
	ae (mm)	Refer to the blow table *					0.1	0.1	0.1	0.1	0.1
Acciaio inossidabile Stainless steels	n (min-1)	19.910	14.930	11.950	9.560	7.970	17.260	12.940	10.360	8.290	6.910
	Vc (m/min)	750	750	750	750	750	650	650	650	650	650
	Vf (mm/min)	1.600	1.500	1.440	1.340	1.280	5.180	3.890	3.110	2.490	2.080
	fz (mm/t)	0.04	0.05	0.06	0.07	0.08	0.15	0.15	0.15	0.15	0.15
	ap (mm)	0.1	0.1	0.1	0.1	0.1	Refer to the blow table *				
	ae (mm)	Fare riferimento alla tabella seguente *					0.1	0.1	0.1	0.1	0.1

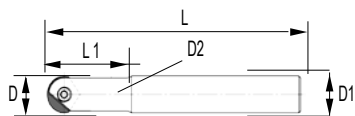
* CODICE	R	ALTEZZA CUSPIDE CR					
		0.001	0.002	0.003	0.004	0.005	0.01
HD16BA	16	0.36	0.51	0.62	0.72	0.8	1.13
HD20BA	20	0.4	0.57	0.69	0.8	0.89	1.26
HD25BA	25	0.45	0.63	0.77	0.89	1	1.41
HD32BA	32	0.49	0.69	0.85	0.98	1.1	1.55

Quando la lunghezza di sporgenza è 3Dc o superiore, regolare i valori mostrati nella tabella seguente

$$ap/ae = 2 \sqrt{(R \text{ tools}^2 - (R \text{ tools} - cr)^2)}$$

Formula per il calcolo di ap/ae desiderato in funzione dell'altezza della cresta desiderata (cr)

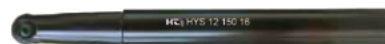
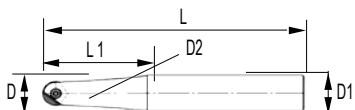
Parametri in funzione della lunghezza		
	vc (m/min)	vf (mm/min)
3Dc	100%	100%
3Dc - 5Dc	70%	70%
5Dc - 6Dc	60%	60%
6Dc - 7Dc	50%	50%
7Dc	45%	45%



Fresa per inserto Hiper Flat Sferico attacco cilindrico corpo in acciaio....

Steel cylindrical shank Flat Sferical inserts.

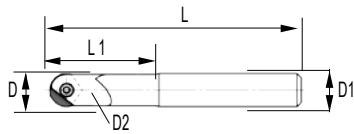
codice	D	D1	D2	L1	L	screw	torx
HYS1010010*	10	10	9,0	19	100	MS10	T15
HYS1212512	12	12	10,8	36	125	MS12	T20
HYS1215012	12	12	10,8	46	150	MS12	T20
HYS1616016	16	16	14,4	50	160	MS16	T20
HYS2015020	20	20	18,0	50	150	MS20	T20
HYS2020020	20	20	18,0	61	200	MS20	T20
HYS2515025	25	25	22,5	50	150	MS25	T20
HYS2520025	25	25	22,5	64	200	MS25	T20
HYS3219032	32	32	28,6	57	190	MS32	T30
HYS3225032	32	32	28,6	76	250	MS32	T30



Fresa per inserto Hiper Flat Sferico attacco cilindrico rinforzato corpo in acciaio....

Steel cylindrical shank reinforced Flat Sferical inserts.

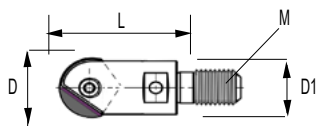
codice	D	D1	D2	L1	L	screw	torx
HYS1015012	10	12	9,0	35	150	MS10	T15
HYS1219016	12	16	10,8	60	190	MS12	T20
HYS1619020	16	20	14,4	57	190	MS16	T20
HYS2020025	20	25	18,0	80	200	MS20	T20
HYS2525032	25	32	22,5	100	250	MS25	T20
HYS2531532	25	32	22,5	100	315	MS25	T20
HYS3225040	32	40	28,6	120	250	MS32	T30



Fresa per inserto Hiper Flat Sferico corpo in metallo duro collo scaricato attacco cilindrico....

Body cutter carbide shank Hiper Flat Sferical inserts long neck cylindrical shank .

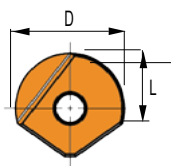
codice	D	L	D1	L1	D2	screw	torx
HYS-10-100-10-060-HMG		100	10	60	9,0	MS-10	T15
HYS-10-120-10-080-HMG		120	10	80	9,0	MS-10	T15
HYS-10-150-10-032-HMU		150	10	32	9,0	MS-10	T15
HYS-10-165-12-030-HMU		165	12	30	9,0	MS-10	T15
HYS-12-110-12-060-HMG		110	12	60	10,8	MS-12	T20
HYS-12-140-12-080-HMG		140	12	80	10,8	MS-12	T20
HYS-12-180-12-120-HMG		180	12	120	10,8	MS-12	T20
HYS-16-150-16-060HMG		150	16	60	15,0	MS-16	T20
HYS-16-180-16-100-HMG		180	16	100	15,0	MS-16	T20
HYS-16-220-16-160-HMG		220	16	160	15,0	MS-16	T20
HYS-20-150-20-100-HMG		150	20	100	19,0	MS-20	T20
HYS-20-200-20-120HMG		200	20	120	19,0	MS-20	T20
HYS-20-220-20-160-HMG		220	20	160	19,0	MS-20	T20



Testina filettata per inserto Hiper Flat Sferico

Body screw Milling cutter Flat bottom and back draft inserts.

codice	D	M	D1	L	insert	screw	torx
060630YS	06	6	9,8	30	HB 06...	06MS	Tx 06
080630YS	08	6	9,8	30	HB 08...	08MS	Tx 07
10 06 25YS	10	6	9,8	25	HB 10...	10MS	Tx 15
12 06 27 YS	12	6	10,8	27	HB 12...	12MS	Tx 20
16 08 31 YS	16	8	14,4	31	HB 16...	16MS	Tx 20
20 10 36 YS	20	10	18,0	36	HB 20...	20MS	Tx 20
25 12 44 YS	25	12	22,5	44	HB 25...	25MS	Tx 20
32 16 52 YS	16	16	28,6	52	HB 32...	32MS	Tx 30



Cod. HB...SF

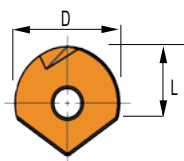
D
0 / 0,015

R
+/- 0,01

Inserto Sferico per super finitura per materiali temperati .

Hiper Flat Sferical inserts for superfinishing harder materials.

codice	D	r	L1
HB-10-SF	10	5	8,65
HB-12-SF	12	6	9,20
HB-16-SF	16	8	11,25
HB-20-SF	20	10	13,15
HB-25-SF	25	12,5	18,25
HB-32-SF	32	16	21,95



Cod. HB...BN

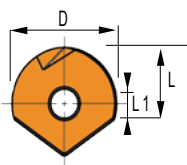
D
0 / 0,015

R
+/- 0,01

Inserto Sferico per finitura con fase rinforzata per materiali temperati .

Hiper Flat Sferical inserts for finishing with reinforced chip for harder materials.

codice	D	r	L
HB-10-BN	10	0,5	8,65
HB-12-BN	12	0,5	9,20
HB-16-BN	16	1,3	11,25
HB-20-BN	20	1,6	13,15
HB-25-BN	25	2,0	18,25
HB-32-BN	32	2,6	21,95



Cod. HB...BN

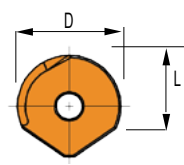
D
0 / 0,015

R
+/- 0,01

Inserto Sferico per finitura con fase rinforzata per materiali temperati

Hiper Flat Sferical inserts for finishing with reinforced chip for harder

codice	D	r	L1	L
HB-10-BN	10	5	3,65	9,50
HB-12-BN	12	6	2,90	8,80
HB-16-BN	16	8	2,85	10,70
HB-20-BN	20	10	2,85	12,75
HB-25-BN	25	12,5	4,85	17,20
HB-32-BN	32	16	5,30	21,00



Cod. HB...MB

D
0 / 0,015

R
+/- 0,01

Inserto Sferico per finitura con rompitruciolo per materiali dolci .

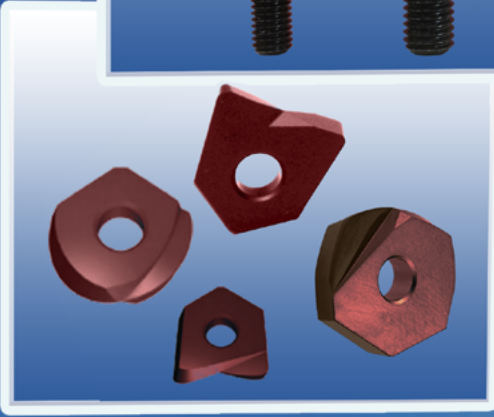
Hiper Flat Sferical inserts for superfinishing with positive chip-breaker for softer materials.

codice	D	r	L1
HB-10-MB	10	5	8,65
HB-12-MB	12	6	9,20
HB-16-MB	16	8	11,25
HB-20-MB	20	10	13,15
HB-25-MB	25	12,5	18,25
HB-32-MB	32	16	21,95

Parametri di lavorazione consigliati
Recommended cutting conditions

MATERIALI		SEMIFINITURA								FINITURA							
		D06		D08		D10		D12		D16		D20		D25		D32	
Acciaio non legato Carbon steels Alloy steels (< 30 HRC)	n (min-1)	8.490	16.450	6.370	12.340	5.100	11.150	4.250	10.080	3.180	9.950	2.550	9.080	2.040	8.030	1.590	7.170
	Vc (m/min)	160	310	160	310	160	350	160	380	160	500	160	570	160	630	160	720
	Vf (mm/min)	1.700	3.290	2.550	4.940	2.040	4.460	1.700	4.030	1.590	5.970	1.280	7.260	1.020	8.030	800	8.600
	fz (mm/t)	0.1	0.1	0.2	0.2	0.2	0.2	0.2	0.2	0.25	0.3	0.25	0.4	0.25	0.5	0.25	0.6
	ap (mm)	0.1	0.05	0.2	0.1	0.25	0.1	0.3	0.1	0.8	0.1	1	0.1	1,25	0.1	1,6	0.1
	ae (mm)	0.6	0.2	0.8	0.25	1	0.25	1,2	0.3	1,6	0.35	2	0.4	2,5	0.5	3,2	0.5
Acciaio a basso legante Carbon steels Alloy steels (30 - 45 HRC)	n (min-1)	6.370	14.320	4.780	10.750	3.820	9.550	3.180	8.760	2.390	7.560	1.910	6.690	1.530	5.990	1.190	5.370
	Vc (m/min)	120	270	120	270	120	300	120	330	120	380	120	420	120	470	120	540
	Vf (mm/min)	1.270	2.860	1.910	4.300	1.530	3.820	1.270	3.500	1.200	4.540	960	5.350	770	5.990	600	6.440
	fz (mm/t)	0.1	0.1	0.2	0.2	0.2	0.2	0.2	0.2	0.25	0.3	0.25	0.4	0.25	0.5	0.25	0.6
	ap (mm)	0.1	0.05	0.2	0.1	0.25	0.1	0.3	0.1	0.8	0.1	1	0.1	1,25	0.1	1,6	0.1
	ae (mm)	0.6	0.2	0.8	0.25	1	0.25	1,2	0.3	1,6	0.3	2	0.4	2,5	0.5	3,2	0.6
Acciaio ad alto legante Hardened steels (45 - 55 HRC)	n (min-1)	5.310	12.200	3.980	9.160	3.180	8.280	2.650	7.700	1.990	6.970	1.590	6.370	1.270	5.730	1.000	4.980
	Vc (m/min)	100	230	100	230	100	260	100	290	100	350	100	400	100	450	100	500
	Vf (mm/min)	850	2.440	800	3.660	640	3.310	530	3.080	480	4.180	380	5.100	310	5.730	240	5.980
	fz (mm/t)	0.08	0.1	0.1	0.2	0.1	0.2	0.1	0.2	0.12	0.3	0.12	0.4	0.12	0.5	0.12	0.6
	ap (mm)	0.1	0.05	0.2	0.1	0.25	0.1	0.3	0.1	0.8	0.1	1	0.1	1,25	0.1	1,6	0.1
	ae (mm)	0.6	0.2	0.8	0.25	1	0.25	1,2	0.3	1,6	0.3	2	0.4	2,5	0.5	3,2	0.6
Acciaio temprato Acciaio ad alto legante Hardened steels (50 - 60 HRC)	n (min-1)	4.240	9.550	3.180	7.170	2.550	6.370	2.120	6.100	1.590	5.570	1.270	5.100	1.020	4.590	800	3.980
	Vc (m/min)	80	180	80	180	80	200	80	230	80	280	80	320	80	360	80	400
	Vf (mm/min)	680	1.910	640	2.870	510	2.550	420	2.440	380	3.340	300	4.080	240	4.590	190	4.780
	fz (mm/t)	0.08	0.1	0.1	0.2	0.1	0.2	0.1	0.2	0.12	0.3	0.12	0.4	0.12	0.5	0.12	0.6
	ap (mm)	0.1	0.05	0.2	0.1	0.25	0.1	0.3	0.1	0.8	0.1	1	0.1	1,25	0,1	1,6	0.1
	ae (mm)	0.6	0.2	0.8	0.25	1	0.25	1,2	0.3	1,6	0.3	2	0.4	2,5	0,5	3,2	0.6
Ghisa - Ghisa grigia sferoidale Cast iron	n (min-1)	8.490	16.450	6.370	12.340	5.090	11.150	4.240	10.080	3.180	9.950	2.550	9.080	2.040	8.030	1.590	7.170
	Vc (m/min)	160	310	160	310	160	350	160	380	160	500	160	570	160	630	160	720
	Vf (mm/min)	1.700	3.290	3.820	4.940	3.050	6.690	2.550	6.050	2.230	5.970	1.790	7.260	1.430	8.030	1.110	8.600
	fz (mm/t)	0.1	0.1	0.3	0.2	0.3	0.3	0.3	0.3	0.35	0.3	0.35	0.4	0.35	0.5	0.35	0.6
	ap (mm)	0.1	0.05	0.2	0.1	0.25	0.1	0.3	0.1	0.8	0.1	1	0.1	1,25	0.1	1,6	0.1
	ae (mm)	0.6	0.2	0.8	0.25	1	0.25	1,2	0.3	1,6	0.3	2	0.4	2,5	0.5	3,2	0.6
Nonferrous materials ALU	n (min-1)	15.920	26.530	11.940	19.900	9.550	15.920	7.960	13.270	5.970	9.950	4.780	7.960	3.820	6.370	2.985	4.976
	Vc (m/min)	300	500	300	500	300	500	300	500	300	500	300	500	300	500	300	500
	Vf (mm/min)	3.180	10.610	4.780	15.920	3.820	6.370	3.190	5.310	2.990	4.980	2.390	3.980	1.910	6.370	1.492	4.976
	fz (mm/t)	0.1	0.2	0.2	0.4	0.2	0.2	0.2	0.2	0.25	0.25	0.25	0.25	0.25	0.5	0,25	0,5
	ap (mm)	0.3	0.15	0.4	0.2	0.5	0.2	0.6	0.2	0.8	0.1	1	0.1	1,25	1	1,5	0,1
	ae (mm)	0.6	0.6	0.8	0.8	1	0.25	1,2	0.3	1,6	0.3	2	0.4	2,5	0.5	2,5	0,6

Parametri in funzione della lunghezza		
	vc (m/min)	vf (mm/min)
3Dc	100%	100%
3Dc - 5Dc	70%	70%
5Dc - 6Dc	60%	60%
6Dc - 7Dc	50%	50%
7Dc	45%	45%



Hiper Tools

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