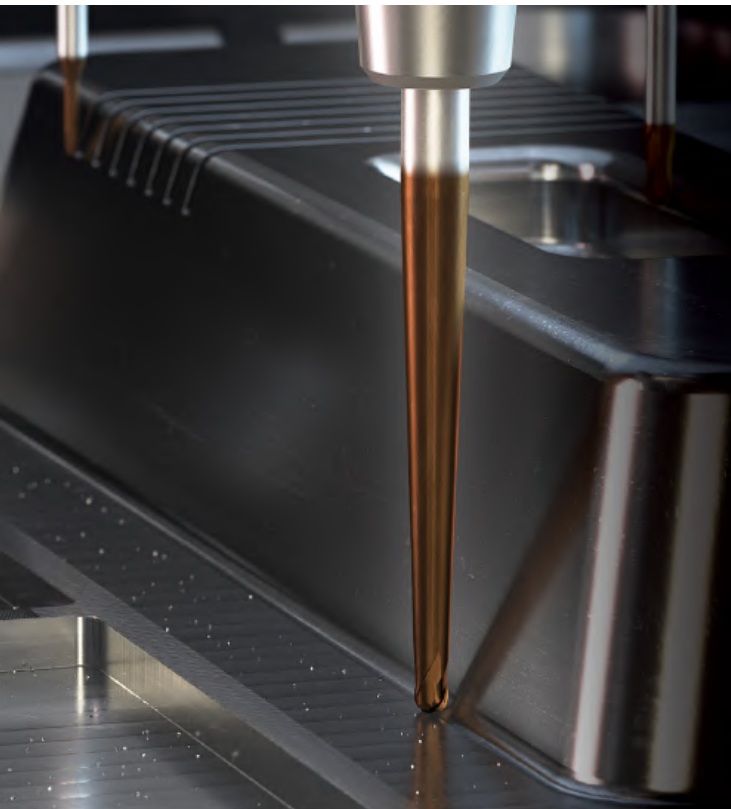


YGI-0324

YIG
X¹-EH

**FRESE IN METALLO DURO PER FINITURA
DI ACCIAI TEMPRATI**

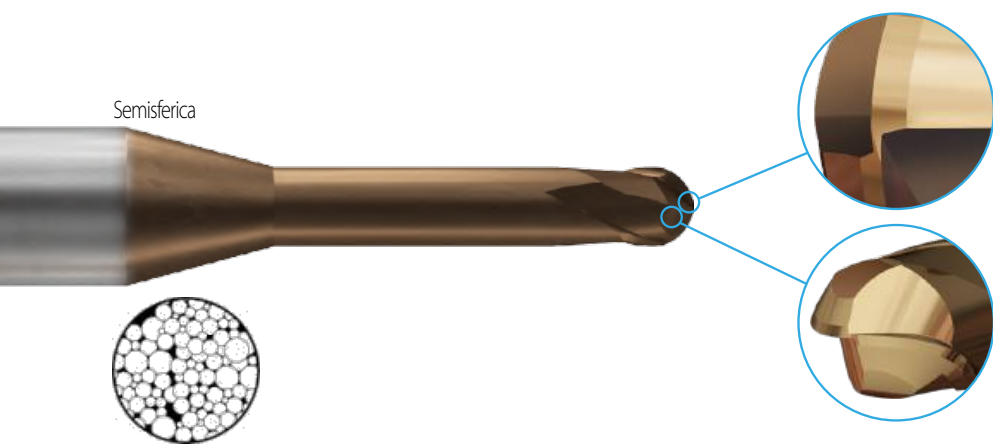
- /// **Massima precisione per tutte le operazioni di semifinitura e finitura**
- /// **Portafoglio prodotti completo per il settore di riferimento degli stampi**
- /// **La più recente tecnologia per una durata utensile elevata e prevedibile**



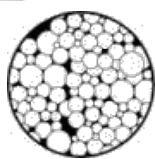
PREMIUM X¹-EH

Frese in metallo duro nano grana ad elevatissima precisione con rivestimento C ad alte prestazioni

- >800 Combinazioni tra lunghezze e diametri consentono di selezionare il prodotto migliore in funzione delle necessità specifiche
- Tolleranze costruttive di altissima precisione della sfera, degli scarichi, delle transizioni coniche e del gambo di presa



Semisferica



Materiale di base

- ▶ Substrato a grana fine nanostruttura di nuova concezione per una migliore stabilità allo shock termico e una maggiore durezza

Rivestimento ad alta tecnologia

- ▶ Eccellente resistenza all'usura e al calore con migliore stabilità allo shock termico. La struttura a nanostrati impedisce la propagazione di microfessurazioni e l'elasticità del rivestimento favorisce una maggiore durata dell'utensile

NEW

Fase trasversale tra i taglienti

- ▶ Geometria di transizione tra i taglienti ottimizzata per una migliore evacuazione dei trucioli a centro fresa

NEW

Rinforzo del tagliente posteriore

- ▶ Design del tagliente rinforzato per una maggiore stabilità

Geometria degli spigoli

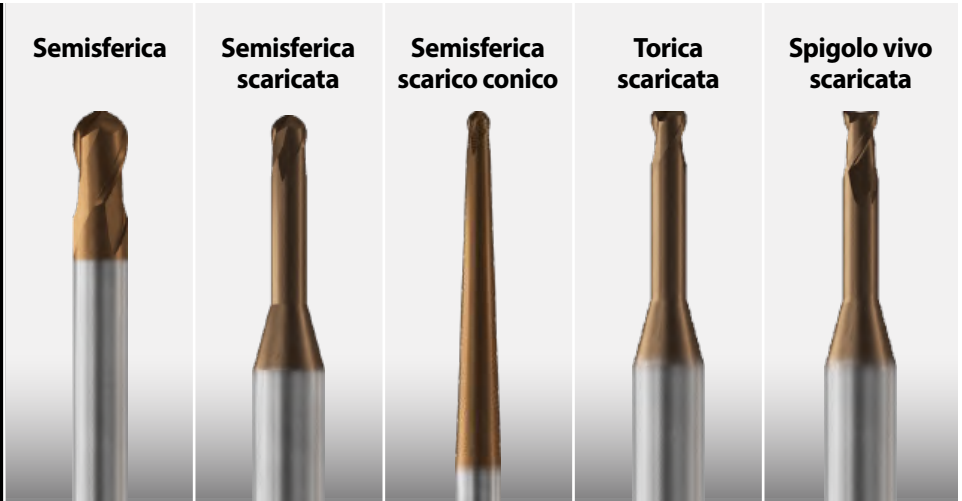
- ▶ Geometria degli spigoli e dei raggi ottimizzata per una maggiore durata nella lavorazione dei materiali temprati

Preparazione dei taglienti

- ▶ Preparazione ottimale del tagliente per prevenire scheggiature e ottenere finiture superficiali eccellenti con una maggiore durata dell'utensile nella lavorazione ad alta velocità

Spigolo vivo

Spigolo raggato



Tolleranze costruttive	Semisferica	Semisferica scaricata	Semisferica scarico conico	Torica scaricata	Spigolo vivo scaricata
$\leq \varnothing 6\text{mm}$	$\leq \varnothing 6\text{mm}$	$\leq \varnothing 6\text{mm}$	$< \varnothing 6\text{mm}$	$< \varnothing 6\text{mm}$	
$> \varnothing 6\text{mm}$	$> \varnothing 6\text{mm}$	$> \varnothing 6\text{mm}$	$> \varnothing 6\text{mm}$		

Tolleranza del gambo	Diametro	Tolleranza
	Fino a $\varnothing 6$	h4
	Oltre $\varnothing 6$	h5

Rivestimento	Colore	Tipo	Durezza (Hv)	Max. temp. esercizio (°C)	Coeff.te attrito (secco)	Spessore (μm)	Informazioni generali
C- Coating	Marrone Rosso	Si-based	3,900	1,000	0.40	0.5 ~ 3.0	<ul style="list-style-type: none"> Eccellente equilibrio tra durezza e tenacità Elevata stabilità termica e resistenza all'ossidazione La struttura a nanostrati impedisce la propagazione delle microfessure Rivestimento ad elevata durezza con ridotto coefficiente di attrito e ridotta tendenza all'incollamento

ICONOGRAFIA

MD	2	30°	35°	90°	R	R	R	C		
Metallo duro nanograna	N° Taglienti	Angolo d'elica		Spigolo vivo Spigolo raggiato	Tolleranza semisferiche		Toll. Spigolo raggiato	Tipo gambo	Riv. C	Dati taglio



GUIDA ALLA SELEZIONE

SERIES

N° TAGLIANTI

ANGOLO D'ELICA

FORMA DEL TAGLIANTE

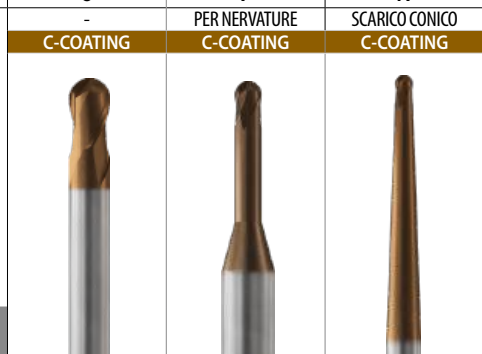
DIM. MIN

DIM. MAX

PAG

HPI90	HPI91	HPI92
2	2	2
30°	30°	30°
SEMISFERICA	SEMISFERICA	SEMISFERICA
R0.05	R0.05	R0.05
R10.0	R3.0	R6.0
6	7	17

FRESE IN METALLO DURO RIVESTITE C

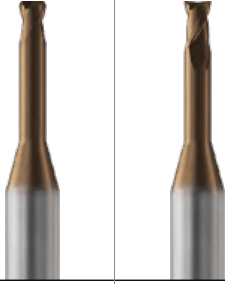


⊙: Specifico ○: Adatto

PARAMETRI DI TAGLIO: P 39

ISO	VDI 3323	Descrizione materiale	Composizione / Struttura / Trattamento		HB	HRc			
P	1	Acciai non legati	0.15% C	Ricotto	125				
	2		0.45% C	Ricotto	190	13			
	3		0.45% C	Bonificato	250	25			
	4		0.75% C	Ricotto	270	28			
	5		0.75% C	Bonificato	300	32	○	○	○
	6	Acciai basso legati		Ricotto	180	10			
	7			Bonificato	275	29			
	8			Bonificato	300	32	○	○	○
	9			Bonificato	350	38	○	○	○
	10			Ricotto	200	15			
	11.1	Acciai alto legati		Bonificato	325	35	○	○	○
	11.2	Acciai da utensili		Bonificato	409	44	○	○	○
M	12	Acciai Inox	Ferritico / Martensitico	Ricotto	200	15			
	13		Martensitico	Bonificato	240	23			
	14		Austenitico		180	10			
K	15	Ghisa grigia	Perlitico / Ferritico		180	10			
	16		Perlitico (Martensitico)		260	26			
	17	Ghisa nodulare	Ferritica		160	3			
	18		Perlitica		250	25			
	19		Ferritica		130				
20	Ghisa malleabile	Perlitica		230	21				
N	21	Lega di Alluminio	Non Trattabile		60				
	22		Trattabile Temprato		100				
	23	Alluminio fuso, legato	≤ 12% Si, Non Trattabile		75				
	24		≤ 12% Si, Trattabile Temprato		90				
	25		> 12% Si, Non Trattabile		130				
	26	Rame e leghe di rame (Bronzo/Ottone)	Leghe, PB>1%		110				
	27		CuZn, CuSnZn (Ottone)		90				
	28		CuSn, rame senza piombo e rame elettrolitico		100				
	29	Materiali non ferrosi	Duroplastic, Plastiche rinforzate fibra						
	30		Gomma, Legno, etc.						
S	31	Super leghe resistenti al calore	Base Fe	Ricotto	200	15			
	32			Cured	280	30			
	33		Base Ni o Co	Ricotto	250	25			
	34			Cured	350	38			
	35			Cast	320	34			
	36	Leghe di titanio	Titanio puro		400 Rm				
37	Alpha + Beta Leghe Temprato		1050 Rm						
H	38.1	Acciai temprati	Temprato		421-469	45-49	⊙	⊙	⊙
	38.2		Temprato		481-560	50-55	⊙	⊙	⊙
	39.1		Temprato		577-654	56-60	⊙	⊙	⊙
	39.2		Temprato		670-739	61-65	⊙	⊙	⊙
	39.3		Temprato			66-70	⊙	⊙	⊙
	40	Fusione di ghisa	Fuso		400	42	○	○	○
41	Ghisa indurita	Temprato		550	55	⊙	⊙	⊙	

HPI89	HPI88
2	2
35°	35°
TORICA	SPIGOLO VIVO
D0.2	D0.1
D3.0	D6.0
26	33
PER NERVATURE	PER NERVATURE
C-COATING	C-COATING

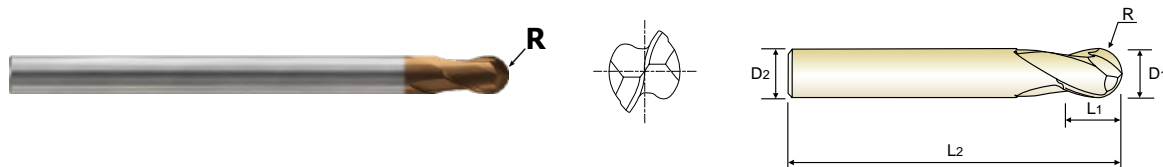


		1	P
		2	
		3	
		4	
○	○	5	
		6	
		7	
○	○	8	
○	○	9	
		10	
○	○	11.1	
○	○	11.2	
		12	M
		13	
		14.2	
		15	K
		16	
		17	
		18	
		19	
		20	
		21	N
		22	
		23	
		24	
		25	
		26	
		27	
		28	
		29.1	
		30	
		31	S
		32	
		33	
		34	
		35	
		36	
		37	
◎	◎	38.1	H
◎	◎	38.2	
◎	◎	39.1	
◎	◎	39.2	
◎	◎	39.3	
○	○	40	
◎	◎	41	

2 TAGLIENTI SEMISFERICA

HPI90

- ▶ Vita utensile aumentata grazie al nuovo rivestimento
- ▶ Applicazione di tolleranze ristrette per una lavorazione precisa



R0.05-R3 R4-R10

Unità: mm

CODICE	Raggio	Diametro fresa	Diametro gambo	Lunghezza tagliente	Lunghezza totale
	R	D ₁	D ₂	L ₁	L ₂
HPI90001	R0.05	0.1	4	0.1	50
HPI900015	R0.075	0.15	4	0.15	50
HPI90002	R0.1	0.2	4	0.2	50
HPI90003	R0.15	0.3	4	0.3	50
HPI90004	R0.2	0.4	4	0.6	50
HPI90005	R0.25	0.5	4	0.8	50
HPI90006	R0.3	0.6	4	0.9	50
HPI90008	R0.4	0.8	4	1.2	50
HPI90010	R0.5	1.0	4	1.5	50
HPI90015	R0.75	1.5	4	2.3	50
HPI90020	R1.0	2.0	4	3	60
HPI90025	R1.25	2.5	6	3.8	60
HPI90030	R1.5	3.0	6	5	60
HPI90040	R2.0	4.0	4	6	70
HPI90901	R2.0	4.0	6	6	70
HPI90050	R2.5	5.0	6	8	70
HPI90060	R3.0	6.0	6	10	80
HPI90080	R4.0	8.0	8	12	100
HPI90100	R5.0	10.0	10	15	100
HPI90120	R6.0	12.0	12	18	110
HPI90160	R8.0	16.0	16	24	140
HPI90200	R10.0	20.0	20	30	160

Dimensioni	Tolleranza del raggio (mm)	Tolleranza diametro fresa (mm)	Tolleranza gambo
Fino a R3	+0.001~-0.005	0~-0.010	h4
Oltre R3	+0.003~-0.007	0~-0.012	>ø6: h5

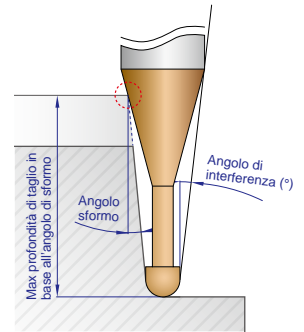
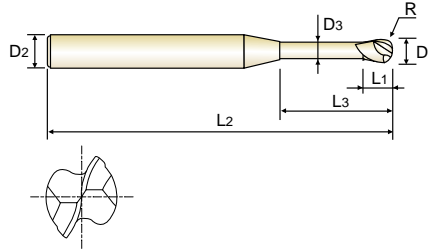
◎: Specifico ○: Adatto

ISO Descrizione materiale	P												M			K					Fusione di ghisa	Ghisa indurita		
	Acciai non legati				Acciai basso legati				Acciai alto legati Acciai da utensili				Acciai inox			Ghisa grigia	Ghisa nodulare		Ghisa malleabile					
VDI 3323	1	2	3	4	5	6	7	8	9	10	11.1	11.2	12	13	14.1	15	16	17	18	19	20			
HRc	13	25	28	32	32	10	29	32	38	15	35	44	15	23	10	10	26	3	25	21	21			
HB	125	190	250	270	300	180	275	300	350	200	325	409	200	240	180	180	260	160	250	130	230			
Consigliato					○			○	○		○	○												
ISO Descrizione materiale	N								S							H					Fusione di ghisa	Ghisa indurita		
VDI 3323	Leghe di alluminio		Alluminio fuso, legato			Rame e leghe di rame (Bronzo / Ottone)			Materiali non ferrosi		Super leghe resistenti al calore					Leghe di titanio		Acciai temprati						
HRc	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38.1	38.2	39.1	39.2	39.3	40	41
HB	60	100	75	90	130	110	90	100			200	280	250	350	320	400 Rm	1050 Rm	45-49	50-55	56-60	61-65	66-70	42	55
Consigliato																		◎	◎	◎	◎	◎	○	◎

2 TAGLIENTI SEMISFERICA PER NERVATURE

HPI91

- Vita utensile aumentata grazie al nuovo rivestimento
- Applicazione di tolleranze ristrette per una lavorazione precisa



Unità: mm

CODICE	Raggio R	Diametro fresa D ₁	Diametro gambo D ₂	Lungh. tagl. L ₁	Lungh. scarico L ₃	Lungh. totale L ₂	Diametro scarico D ₃	Angolo di interferenza (°)	Max profondità di taglio in base all'angolo di sforno				
									0.5°	1°	1.5°	2°	3°
HPI91001	R0.05	0.1	4	0.07	0.2	45	0.085	14.66	0.25	0.26	0.28	0.29	0.32
HPI91901	R0.05	0.1	4	0.07	0.3	45	0.085	14.47	0.36	0.37	0.39	0.41	0.47
HPI91902	R0.05	0.1	4	0.07	0.5	45	0.085	14.11	0.57	0.60	0.63	0.66	0.75
HPI910015	R0.075	0.15	4	0.1	0.3	45	0.135	14.51	0.36	0.37	0.39	0.41	0.46
HPI91903	R0.075	0.15	4	0.1	0.5	45	0.135	14.15	0.57	0.59	0.62	0.66	0.74
HPI91904	R0.075	0.15	4	0.1	1	45	0.135	13.31	1.09	1.15	1.21	1.28	1.45
HPI91002	R0.1	0.2	4	0.15	0.3	45	0.17	14.50	0.40	0.42	0.43	0.46	0.51
HPI91905	R0.1	0.2	4	0.15	0.5	45	0.17	14.13	0.61	0.64	0.67	0.70	0.79
HPI91906	R0.1	0.2	4	0.15	0.75	45	0.17	13.70	0.87	0.92	0.96	1.02	1.15
HPI91907	R0.1	0.2	4	0.15	1	45	0.17	13.29	1.14	1.19	1.26	1.33	1.50
HPI91908	R0.1	0.2	4	0.15	1	50	0.17	13.29	1.14	1.19	1.26	1.33	1.50
HPI91909	R0.1	0.2	4	0.15	1.25	45	0.17	12.90	1.40	1.47	1.55	1.64	1.86
HPI91910	R0.1	0.2	4	0.15	1.5	45	0.17	12.53	1.66	1.75	1.84	1.95	2.21
HPI91911	R0.1	0.2	4	0.15	1.75	45	0.17	12.19	1.93	2.03	2.14	2.26	2.57
HPI91912	R0.1	0.2	4	0.15	2	45	0.17	11.86	2.19	2.30	2.43	2.58	2.92
HPI91913	R0.1	0.2	4	0.15	2.5	45	0.17	11.26	2.71	2.86	3.02	3.20	3.64
HPI91914	R0.1	0.2	4	0.15	3	45	0.17	10.71	3.24	3.41	3.61	3.82	4.35
HPI91915	R0.1	0.2	4	0.2	0.5	35	0.17	14.13	0.61	0.64	0.67	0.70	0.79
HPI91916	R0.1	0.2	4	0.2	0.5	50	0.17	14.13	0.61	0.64	0.67	0.70	0.79
HPI91917	R0.1	0.2	6	0.2	0.5	50	0.17	14.42	0.61	0.64	0.67	0.70	0.79
HPI91003	R0.15	0.3	4	0.2	0.5	45	0.27	14.20	0.61	0.63	0.66	0.69	0.77
HPI91918	R0.15	0.3	4	0.2	0.6	45	0.27	14.02	0.71	0.74	0.78	0.82	0.91
HPI91919	R0.15	0.3	4	0.2	0.75	45	0.27	13.75	0.87	0.91	0.95	1.00	1.12
HPI91920	R0.15	0.3	4	0.2	1	45	0.27	13.33	1.13	1.19	1.25	1.32	1.48
HPI91921	R0.15	0.3	4	0.2	1.25	45	0.27	12.93	1.40	1.47	1.54	1.63	1.84
HPI91922	R0.15	0.3	4	0.2	1.5	45	0.27	12.55	1.66	1.74	1.84	1.94	2.19

Tolleranza del raggio (mm)	Tolleranza diametro fresa (mm)	Tolleranza gambo
+0.001~-0.005	0~-0.010	h4

SEGRE ►

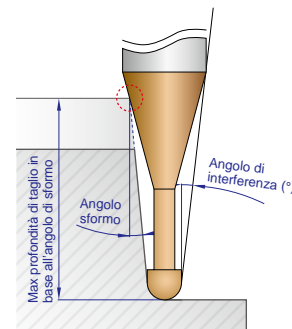
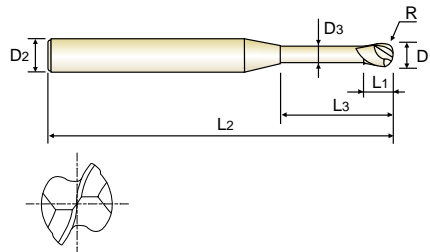
⊙: Specifico ○: Adatto

ISO	P												M			K									
	Acciai non legati						Acciai basso legati						Acciai inox			Ghisa grigia		Ghisa nodulare			Ghisa malleabile				
VDI 3323	1	2	3	4	5	6	7	8	9	10	11.1	11.2	12	13	14.1	15	16	17	18	19	20				
HRc	13	25	28	32	30	10	29	32	38	15	35	44	15	23	10	10	26	3	25	21	21				
HB	125	190	250	270	300	180	275	300	350	200	325	409	200	240	180	180	260	160	250	130	230				
Consigliato					○				○		○														
ISO	N										S						H								
	Leghe di alluminio		Alluminio fuso, legato			Rame e leghe di rame (Bronzo / Ottone)		Materiali non ferrosi			Super leghe resistenti al calore						Leghe di titanio		Acciai temprati						Fusione di ghisa
VDI 3323	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38.1	38.2	39.1	39.2	39.3	40	41	
HRc											15	30	25	38	34			45-49	50-55	56-60	61-65	66-70	42	55	
HB	60	100	75	90	130	110	90	100			200	280	250	350	320	400 Rm	1050 Rm	421-469	481-560	577-654	670-739	400	550		
Consigliato																		⊙	⊙	⊙	⊙	⊙	○	⊙	

2 TAGLIENTI SEMISFERICA PER NERVATURE

HPI91

- ▶ Vita utensile aumentata grazie al nuovo rivestimento
- ▶ Applicazione di tolleranze ristrette per una lavorazione precisa



Unità: mm

CODICE	Raggio	Diametro fresa	Diametro gambo	Lungh. tagl.	Lungh. scarico	Lungh. totale	Diametro scarico	Angolo di interferenza (°)	Max profondità di taglio in base all'angolo di sforno				
									0.5°	1°	1.5°	2°	3°
HPI91923	R0.15	0.3	4	0.2	1.75	45	0.27	12.19	1.92	2.02	2.13	2.25	2.55
HPI91924	R0.15	0.3	4	0.2	2	45	0.27	11.86	2.19	2.30	2.42	2.56	2.90
HPI91925	R0.15	0.3	4	0.2	2.25	45	0.27	11.54	2.45	2.58	2.72	2.87	3.26
HPI91926	R0.15	0.3	4	0.2	2.5	45	0.27	11.24	2.71	2.85	3.01	3.19	3.61
HPI91927	R0.15	0.3	4	0.2	3	45	0.27	10.68	3.24	3.41	3.60	3.81	4.33
HPI91928	R0.15	0.3	4	0.2	3.5	45	0.27	10.17	3.76	3.96	4.18	4.43	5.04
HPI91929	R0.15	0.3	4	0.2	4	45	0.27	9.71	4.29	4.52	4.77	5.06	5.75
HPI91930	R0.15	0.3	6	0.2	1.5	50	0.27	13.31	1.66	1.74	1.84	1.94	2.19
HPI91004	R0.2	0.4	4	0.3	0.5	45	0.37	14.28	0.61	0.63	0.65	0.68	0.75
HPI91931	R0.2	0.4	4	0.3	0.8	45	0.37	13.72	0.92	0.96	1.00	1.05	1.17
HPI91932	R0.2	0.4	4	0.3	1	45	0.37	13.37	1.13	1.18	1.24	1.30	1.46
HPI91933	R0.2	0.4	4	0.3	1.5	45	0.37	12.57	1.66	1.74	1.83	1.93	2.17
HPI91934	R0.2	0.4	4	0.3	2	45	0.37	11.86	2.18	2.29	2.41	2.55	2.88
HPI91935	R0.2	0.4	4	0.3	2.5	45	0.37	11.22	2.71	2.85	3.00	3.17	3.59
HPI91936	R0.2	0.4	4	0.3	3	45	0.37	10.65	3.24	3.40	3.59	3.80	4.31
HPI91937	R0.2	0.4	4	0.3	3.5	45	0.37	10.13	3.76	3.96	4.18	4.42	5.02
HPI91938	R0.2	0.4	4	0.3	4	45	0.37	9.66	4.29	4.51	4.76	5.04	5.73
HPI91939	R0.2	0.4	4	0.3	4.5	45	0.37	9.23	4.81	5.07	5.35	5.67	6.44
HPI91940	R0.2	0.4	4	0.3	5	45	0.37	8.84	5.34	5.62	5.94	6.29	7.15
HPI91941	R0.2	0.4	4	0.3	6	45	0.37	8.15	6.39	6.73	7.11	7.54	8.57
HPI91942	R0.2	0.4	4	0.4	1	35	0.37	13.37	1.13	1.18	1.24	1.30	1.46
HPI91943	R0.2	0.4	4	0.4	1	50	0.37	13.37	1.13	1.18	1.24	1.30	1.46
HPI91944	R0.2	0.4	6	0.3	1	50	0.37	13.91	1.13	1.18	1.24	1.30	1.46
HPI91945	R0.2	0.4	6	0.3	2	50	0.37	12.82	2.18	2.29	2.41	2.55	2.88
HPI91946	R0.2	0.4	6	0.4	1	50	0.37	13.91	1.13	1.18	1.24	1.30	1.46
HPI91005	R0.25	0.5	4	0.35	1	45	0.45	13.35	1.19	1.24	1.30	1.36	1.52

Tolleranza del raggio (mm)	Tolleranza diametro fresa (mm)	Tolleranza gambo
+0.001~-0.005	0~-0.010	h4

SEGUE ▶

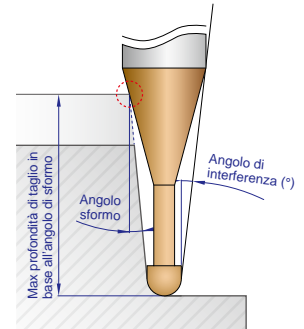
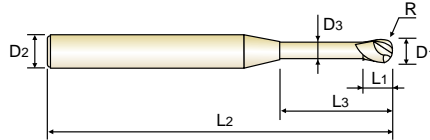
◎: Specifico ○: Adatto

ISO	P												M			K									
	Acciai non legati						Acciai basso legati						Acciai alto legati Acciai da utensili			Acciai inox			Ghisa grigia	Ghisa nodulare	Ghisa malleabile				
Descrizione materiale	1	2	3	4	5	6	7	8	9	10	11.1	11.2	12	13	14.1	15	16	17	18	19	20				
VDI 3323																									
HRc	13	25	28	32	30	10	29	32	38	15	35	44	15	23	10	10	26	3	25	21					
HB	125	190	250	270	300	180	275	300	350	200	325	409	200	240	180	180	260	160	250	130	230				
Consigliato					○				○		○														
ISO	N										S						H								
	Leghe di alluminio		Alluminio fuso, legato			Rame e leghe di rame (Bronzo / Ottone)					Materiali non ferrosi			Super leghe resistenti al calore			Leghe di titanio			Acciai temprati					Fusione di ghisa
Descrizione materiale	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38.1	38.2	39.1	39.2	39.3	40	41	
VDI 3323																									
HRc	60	100	75	90	130	110	90	100			15	30	25	38	34			45-49	50-55	56-60	61-65	66-70	42	55	
HB											200	280	250	350	320	400 Rm	1050 Rm	421-469	481-560	577-654	670-739	400	550		
Consigliato																		◎	◎	◎	◎	◎	○	◎	

2 TAGLIENTI SEMISFERICA PER NERVATURE

HPI91

- Vita utensile aumentata grazie al nuovo rivestimento
- Applicazione di tolleranze ristrette per una lavorazione precisa



Unità: mm

CODICE	Raggio	Diametro fresa	Diametro gambo	Lungh. tagl.	Lungh. scarico	Lungh. totale	Diametro scarico	Angolo di interferenza (°)	Max profondità di taglio in base all'angolo di sforno				
	R	D ₁	D ₂	L ₁	L ₃	L ₂	D ₃		0.5°	1°	1.5°	2°	3°
HPI91947	R0.25	0.5	4	0.35	1.5	45	0.45	12.53	1.71	1.79	1.88	1.99	2.23
HPI91948	R0.25	0.5	4	0.35	2	45	0.45	11.80	2.24	2.35	2.47	2.61	2.94
HPI91949	R0.25	0.5	4	0.35	2.5	45	0.45	11.16	2.77	2.90	3.06	3.23	3.65
HPI91950	R0.25	0.5	4	0.35	3	45	0.45	10.57	3.29	3.46	3.65	3.86	4.36
HPI91951	R0.25	0.5	4	0.35	3.5	45	0.45	10.05	3.82	4.01	4.23	4.48	5.08
HPI91952	R0.25	0.5	4	0.35	4	45	0.45	9.57	4.34	4.57	4.82	5.10	5.79
HPI91953	R0.25	0.5	4	0.35	4.5	45	0.45	9.14	4.87	5.12	5.41	5.73	6.50
HPI91954	R0.25	0.5	4	0.35	5	45	0.45	8.75	5.40	5.68	5.99	6.35	7.21
HPI91955	R0.25	0.5	4	0.35	5.5	45	0.45	8.38	5.92	6.23	6.58	6.97	7.92
HPI91956	R0.25	0.5	4	0.35	6	45	0.45	8.05	6.45	6.79	7.17	7.60	8.63
HPI91957	R0.25	0.5	4	0.35	8	45	0.45	6.94	8.55	9.01	9.52	10.09	11.43
HPI91958	R0.25	0.5	4	0.35	10	45	0.45	6.10	10.66	11.23	11.87	12.58	13.76
HPI91959	R0.25	0.5	4	0.5	1.25	50	0.45	12.93	1.45	1.52	1.59	1.67	1.87
HPI91960	R0.25	0.5	6	0.5	1.25	50	0.45	13.61	1.45	1.52	1.59	1.67	1.87
HPI91006	R0.3	0.6	4	0.45	1	45	0.55	13.40	1.19	1.23	1.29	1.35	1.50
HPI91961	R0.3	0.6	4	0.45	1.5	45	0.55	12.55	1.71	1.79	1.88	1.97	2.21
HPI91962	R0.3	0.6	4	0.45	2	45	0.55	11.80	2.24	2.34	2.46	2.60	2.92
HPI91963	R0.3	0.6	4	0.45	2.5	45	0.55	11.13	2.76	2.90	3.05	3.22	3.63
HPI91964	R0.3	0.6	4	0.45	3	45	0.55	10.54	3.29	3.45	3.64	3.84	4.34
HPI91965	R0.3	0.6	4	0.45	3.5	45	0.55	10.00	3.82	4.01	4.22	4.47	5.06
HPI91966	R0.3	0.6	4	0.45	4	45	0.55	9.52	4.34	4.56	4.81	5.09	5.77
HPI91967	R0.3	0.6	4	0.45	4.5	45	0.55	9.08	4.87	5.12	5.40	5.71	6.48
HPI91968	R0.3	0.6	4	0.45	5	45	0.55	8.68	5.39	5.67	5.99	6.34	7.19
HPI91969	R0.3	0.6	4	0.45	5.5	45	0.55	8.31	5.92	6.23	6.57	6.96	7.90
HPI91970	R0.3	0.6	4	0.45	6	45	0.55	7.97	6.45	6.78	7.16	7.58	8.61
HPI91971	R0.3	0.6	4	0.45	7	45	0.55	7.37	7.50	7.89	8.34	8.83	10.04

Tolleranza del raggio (mm)	Tolleranza diametro fresa (mm)	Tolleranza gambo
+0.001~-0.005	0~-0.010	h4

SEGRE ►

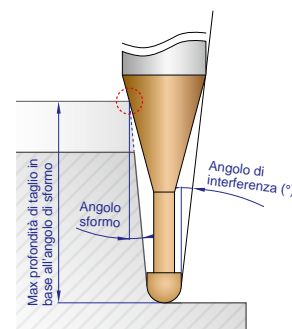
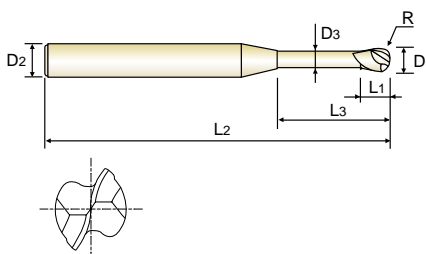
⊙: Specifico ○: Adatto

ISO	P												M			K								
	Acciai non legati						Acciai basso legati						Acciai alto legati Acciai da utensili			Acciai inox			Ghisa grigia		Ghisa nodulare		Ghisa malleabile	
VDI 3323	1	2	3	4	5	6	7	8	9	10	11.1	11.2	12	13	14.1	15	16	17	18	19	20			
HRc	13	25	28	32	30	10	29	32	38	15	35	44	15	23	10	10	26	3	25	21	21			
HB	125	190	250	270	300	180	275	300	350	200	325	409	200	240	180	180	260	160	250	130	230			
Consigliato					○				○		○	○												
ISO	N										S					H								
	Leghe di alluminio		Alluminio fuso, legato			Rame e leghe di rame (Bronzo / Ottone)		Materiali non ferrosi			Super leghe resistenti al calore					Leghe di titanio		Acciai temprati					Fusione di ghisa	Ghisa indurita
VDI 3323	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38.1	38.2	39.1	39.2	39.3	40	41
HRc											15	30	25	38	34			45-49	50-55	56-60	61-65	66-70	42	55
HB	60	100	75	90	130	110	90	100			200	280	250	350	320	400 Rm	1050 Rm	421-469	481-560	577-654	670-739	400	550	
Consigliato																		⊙	⊙	⊙	⊙	⊙	○	⊙

2 TAGLIENTI SEMISFERICA PER NERVATURE

HPI91

- ▶ Vita utensile aumentata grazie al nuovo rivestimento
- ▶ Applicazione di tolleranze ristrette per una lavorazione precisa



Unità: mm

CODICE	Raggio	Diametro fresa	Diametro gambo	Lungh. tagl.	Lungh. scarico	Lungh. totale	Diametro scarico	Angolo di interferenza (°)	Max profondità di taglio in base all'angolo di sforno				
									0.5°	1°	1.5°	2°	3°
HPI91972	R0.3	0.6	4	0.45	8	45	0.55	6.86	8.55	9.00	9.51	10.08	11.36
HPI91973	R0.3	0.6	4	0.45	9	45	0.55	6.41	9.60	10.11	10.68	11.33	12.53
HPI91974	R0.3	0.6	4	0.45	10	45	0.55	6.01	10.65	11.22	11.86	12.57	13.70
HPI91975	R0.3	0.6	4	0.45	12	45	0.55	5.35	12.76	13.44	14.21	15.07	16.03
HPI91976	R0.3	0.6	4	0.6	1.5	35	0.55	12.55	1.71	1.79	1.88	1.97	2.21
HPI91977	R0.3	0.6	4	0.6	1.5	50	0.55	12.55	1.71	1.79	1.88	1.97	2.21
HPI91978	R0.3	0.6	6	0.45	2	50	0.55	12.81	2.24	2.34	2.46	2.60	2.92
HPI91979	R0.3	0.6	6	0.45	3	50	0.55	11.85	3.29	3.45	3.64	3.84	4.34
HPI91980	R0.3	0.6	6	0.45	4	50	0.55	11.02	4.34	4.56	4.81	5.09	5.77
HPI91981	R0.3	0.6	6	0.6	1.5	50	0.55	13.36	1.71	1.79	1.88	1.97	2.21
HPI91007	R0.35	0.7	4	0.5	2	45	0.65	11.80	2.24	2.34	2.45	2.58	2.90
HPI91982	R0.35	0.7	4	0.5	4	45	0.65	9.46	4.34	4.56	4.80	5.08	5.75
HPI91983	R0.35	0.7	4	0.5	6	45	0.65	7.89	6.44	6.78	7.15	7.57	8.59
HPI91984	R0.35	0.7	4	0.5	8	45	0.65	6.77	8.55	9.00	9.50	10.07	11.29
HPI91008	R0.4	0.8	4	0.6	2	45	0.75	11.79	2.23	2.33	2.45	2.57	2.88
HPI91985	R0.4	0.8	4	0.6	3	45	0.75	10.46	3.28	3.44	3.62	3.82	4.30
HPI91986	R0.4	0.8	4	0.6	4	45	0.75	9.40	4.34	4.55	4.79	5.07	5.72
HPI91987	R0.4	0.8	4	0.6	5	45	0.75	8.53	5.39	5.66	5.97	6.31	7.15
HPI91988	R0.4	0.8	4	0.6	6	45	0.75	7.81	6.44	6.77	7.14	7.56	8.57
HPI91989	R0.4	0.8	4	0.6	7	45	0.75	7.20	7.49	7.88	8.32	8.81	9.99
HPI91990	R0.4	0.8	4	0.6	8	45	0.75	6.68	8.54	8.99	9.49	10.05	11.23
HPI91991	R0.4	0.8	4	0.6	10	45	0.75	5.83	10.65	11.21	11.84	12.55	13.56
HPI91992	R0.4	0.8	4	0.6	12	45	0.75	5.18	12.75	13.43	14.19	15.04	15.90
HPI91993	R0.4	0.8	4	0.8	2	35	0.75	11.79	2.23	2.33	2.45	2.57	2.88
HPI91994	R0.4	0.8	4	0.8	2	50	0.75	11.79	2.23	2.33	2.45	2.57	2.88
HPI91995	R0.4	0.8	6	0.6	2	50	0.75	12.85	2.23	2.33	2.45	2.57	2.88

SEGUE ►

Tolleranza del raggio (mm)	Tolleranza diametro fresa (mm)	Tolleranza gambo
+0.001~-0.005	0~-0.010	h4

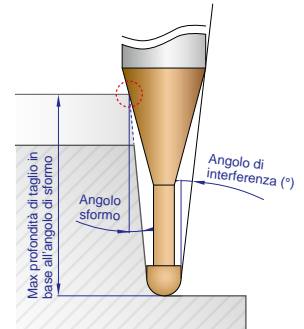
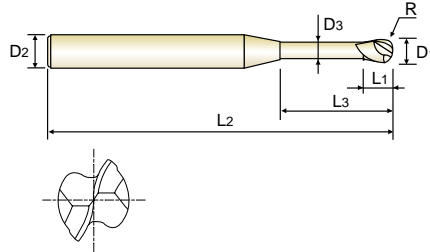
◎: Specifico ○: Adatto

ISO	P												M			K								
	Acciai non legati						Acciai basso legati						Acciai alto legati Acciai da utensili			Acciai inox			Ghisa grigia	Ghisa nodulare	Ghisa malleabile			
Descrizione materiale	1	2	3	4	5	6	7	8	9	10	11.1	11.2	12	13	14.1	15	16	17	18	19	20			
VDI 3323																								
HRc	13	25	28	32	10	29	32	38	15	35	44	15	23	10	10	26	3	25						
HB	125	190	250	270	300	180	275	300	350	200	325	409	200	240	180	180	260	160	250	130	230			
Consigliato					○			○	○		○	○												
ISO	N										S						H							
	Leghe di alluminio		Alluminio fuso, legato			Rame e leghe di rame (Bronzo / Ottone)		Materiali non ferrosi			Super leghe resistenti al calore						Leghe di titanio		Acciai temprati					Fusione di ghisa
Descrizione materiale	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38.1	38.2	39.1	39.2	39.3	40	41
VDI 3323																								
HRc											15	30	25	38	34			45-49	50-55	56-60	61-65	66-70	42	55
HB	60	100	75	90	130	110	90	100			200	280	250	350	320	400 Rm	1050 Rm	421-469	481-560	577-654	670-739	400	550	
Consigliato																		◎	◎	◎	◎	◎	○	◎

2 TAGLIENTI SEMISFERICA PER NERVATURE

HPI91

- Vita utensile aumentata grazie al nuovo rivestimento
- Applicazione di tolleranze ristrette per una lavorazione precisa



Unità: mm

CODICE	Raggio R	Diametro fresa D ₁	Diametro gambo D ₂	Lungh. tagl. L ₁	Lungh. scarico L ₃	Lungh. totale L ₂	Diametro scarico D ₃	Angolo di interferenza (°)	Max profondità di taglio in base all'angolo di sforno				
									0.5°	1°	1.5°	2°	3°
HPI91996	R0.4	0.8	6	0.8	2	50	0.75	12.85	2.23	2.33	2.45	2.57	2.88
HPI91009	R0.45	0.9	4	0.65	2	45	0.85	11.79	2.23	2.33	2.44	2.56	2.86
HPI91997	R0.45	0.9	4	0.65	4	45	0.85	9.34	4.33	4.55	4.79	5.05	5.70
HPI91998	R0.45	0.9	4	0.65	6	45	0.85	7.72	6.44	6.77	7.13	7.55	8.55
HPI91999	R0.45	0.9	4	0.65	8	45	0.85	6.58	8.54	8.99	9.48	10.04	11.16
HPI91010	R0.5	1.0	4	0.75	2	45	0.95	11.78	2.23	2.32	2.43	2.55	2.84
HPI91801	R0.5	1.0	4	0.75	2.5	45	0.95	11.04	2.75	2.88	3.02	3.17	3.55
HPI91802	R0.5	1.0	4	0.75	3	45	0.95	10.38	3.28	3.43	3.60	3.79	4.26
HPI91803	R0.5	1.0	4	0.75	4	45	0.95	9.27	4.33	4.54	4.78	5.04	5.68
HPI91804	R0.5	1.0	4	0.75	5	45	0.95	8.37	5.38	5.65	5.95	6.29	7.10
HPI91805	R0.5	1.0	4	0.75	6	45	0.95	7.63	6.44	6.76	7.13	7.54	8.53
HPI91806	R0.5	1.0	4	0.75	7	45	0.95	7.01	7.49	7.87	8.30	8.78	9.93
HPI91807	R0.5	1.0	4	0.75	8	45	0.95	6.49	8.54	8.98	9.47	10.03	11.10
HPI91808	R0.5	1.0	4	0.75	9	45	0.95	6.03	9.59	10.09	10.65	11.28	12.26
HPI91809	R0.5	1.0	4	0.75	10	45	0.95	5.64	10.64	11.20	11.82	12.52	13.43
HPI91810	R0.5	1.0	4	0.75	12	45	0.95	4.99	12.75	13.42	14.17	14.96	15.77
HPI91811	R0.5	1.0	4	0.75	13	45	0.95	4.71	13.80	14.53	15.35	16.06	16.94
HPI91812	R0.5	1.0	4	0.75	14	50	0.95	4.47	14.85	15.64	16.52	17.17	18.10
HPI91813	R0.5	1.0	4	0.75	16	50	0.95	4.05	16.96	17.86	18.87	19.38	20.44
HPI91814	R0.5	1.0	4	0.75	18	55	0.95	3.70	19.06	20.08	21.05	21.59	22.78
HPI91815	R0.5	1.0	4	0.75	20	55	0.95	3.41	21.16	22.30	23.20	23.81	25.11
HPI91816	R0.5	1.0	4	1	2.5	40	0.95	11.04	2.75	2.88	3.02	3.17	3.55
HPI91817	R0.5	1.0	4	1	2.5	50	0.95	11.04	2.75	2.88	3.02	3.17	3.55
HPI91818	R0.5	1.0	6	0.75	3	50	0.95	11.84	3.28	3.43	3.60	3.79	4.26
HPI91819	R0.5	1.0	6	0.75	4	50	0.95	10.95	4.33	4.54	4.78	5.04	5.68
HPI91820	R0.5	1.0	6	0.75	5	50	0.95	10.18	5.38	5.65	5.95	6.29	7.10

Tolleranza del raggio (mm)	Tolleranza diametro fresa (mm)	Tolleranza gambo
+0.001~-0.005	0~-0.010	h4

SEGRE ►

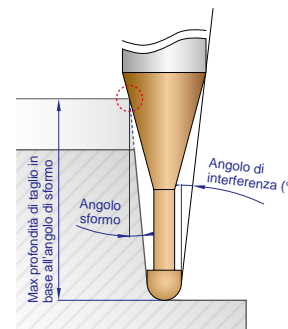
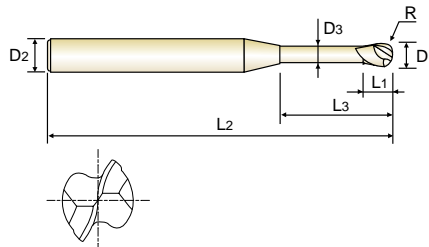
◎: Specifico ○: Adatto

ISO	P												M			K											
	Acciai non legati						Acciai basso legati						Acciai alto legati Acciai da utensili			Acciai inox			Ghisa grigia		Ghisa nodulare			Ghisa malleabile			
VDI 3323	1	2	3	4	5	6	7	8	9	10	11.1	11.2	12	13	14.1	15	16	17	18	19	20						
HRc	13	25	28	32	30	10	29	32	38	15	35	44	15	23	10	10	26	3	25	21	21						
HB	125	190	250	270	300	180	275	300	350	200	325	409	200	240	180	180	260	160	250	130	230						
Consigliato					○				○		○	○															
ISO	N										S						H										
	Leghe di alluminio		Alluminio fuso, legato				Rame e leghe di rame (Bronzo / Ottone)				Materiali non ferrosi		Super leghe resistenti al calore				Leghe di titanio		Acciai temprati						Fusione di ghisa		Ghisa indurita
VDI 3323	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38.1	38.2	39.1	39.2	39.3	40	41			
HRc											15	30	25	38	34			45-49	50-55	56-60	61-65	66-70	42	55			
HB	60	100	75	90	130	110	90	100			200	280	250	350	320	400 Rm	1050 Rm	421-469	481-560	577-654	670-739	400	550				
Consigliato																		◎	◎	◎	◎	◎	○	◎			

2 TAGLIENTI SEMISFERICA PER NERVATURE

HPI91

- ▶ Vita utensile aumentata grazie al nuovo rivestimento
- ▶ Applicazione di tolleranze ristrette per una lavorazione precisa



Unità: mm

CODICE	Raggio	Diametro fresa	Diametro gambo	Lungh. tagl.	Lungh. scarico	Lungh. totale	Diametro scarico	Angolo di interferenza (°)	Max profondità di taglio in base all'angolo di sforno				
	R	D ₁	D ₂	L ₁	L ₃	L ₂	D ₃	(°)	0.5°	1°	1.5°	2°	3°
HPI91821	R0.5	1.0	6	0.75	6	50	0.95	9.51	6.44	6.76	7.13	7.54	8.53
HPI91822	R0.5	1.0	6	0.75	7	50	0.95	8.92	7.49	7.87	8.30	8.78	9.95
HPI91823	R0.5	1.0	6	0.75	8	50	0.95	8.40	8.54	8.98	9.47	10.03	11.37
HPI91824	R0.5	1.0	6	0.75	10	50	0.95	7.53	10.64	11.20	11.82	12.52	14.22
HPI91825	R0.5	1.0	6	0.75	22	60	0.95	4.62	23.27	24.52	25.92	27.11	28.60
HPI91826	R0.5	1.0	6	1	2.5	50	0.95	12.34	2.75	2.88	3.02	3.17	3.55
HPI91012	R0.6	1.2	4	0.9	2.4	45	1.15	11.13	2.56	2.63	2.70	2.78	2.95
HPI91827	R0.6	1.2	4	0.9	4	45	1.15	9.12	4.21	4.34	4.47	4.62	4.94
HPI91828	R0.6	1.2	4	0.9	6	45	1.15	7.44	6.28	6.48	6.69	6.92	7.43
HPI91829	R0.6	1.2	4	0.9	8	45	1.15	6.28	8.35	8.62	8.90	9.22	9.92
HPI91830	R0.6	1.2	4	0.9	10	45	1.15	5.43	10.41	10.75	11.12	11.52	12.40
HPI91831	R0.6	1.2	4	0.9	12	45	1.15	4.79	12.48	12.89	13.34	13.82	14.89
HPI91832	R0.6	1.2	4	0.9	14	50	1.15	4.28	14.55	15.03	15.55	16.12	17.37
HPI91833	R0.6	1.2	4	0.9	16	50	1.15	3.87	16.61	17.17	17.77	18.42	19.86
HPI91834	R0.6	1.2	4	1.2	3	40	1.15	10.28	3.18	3.27	3.36	3.47	3.70
HPI91014	R0.7	1.4	4	1	8	45	1.35	6.06	8.34	8.61	8.89	9.20	9.89
HPI91835	R0.7	1.4	4	1	12	50	1.35	4.58	12.48	12.89	13.33	13.80	14.86
HPI91836	R0.7	1.4	4	1	16	50	1.35	3.67	16.61	17.17	17.76	18.40	19.84
HPI91015	R0.75	1.5	4	1.1	3	45	1.45	10.11	3.17	3.26	3.35	3.44	3.66
HPI91837	R0.75	1.5	4	1.1	4	45	1.45	8.87	4.21	4.33	4.46	4.59	4.91
HPI91838	R0.75	1.5	4	1.1	6	45	1.45	7.12	6.27	6.47	6.67	6.89	7.39
HPI91839	R0.75	1.5	4	1.1	8	45	1.45	5.94	8.34	8.61	8.89	9.19	9.88
HPI91840	R0.75	1.5	4	1.1	10	45	1.45	5.10	10.41	10.74	11.11	11.49	12.37
HPI91841	R0.75	1.5	4	1.1	12	45	1.45	4.46	12.48	12.88	13.32	13.79	14.85
HPI91842	R0.75	1.5	4	1.1	14	50	1.45	3.97	14.54	15.02	15.54	16.09	17.34
HPI91843	R0.75	1.5	4	1.1	16	50	1.45	3.57	16.61	17.16	17.76	18.39	19.82

SEGLUE ▶

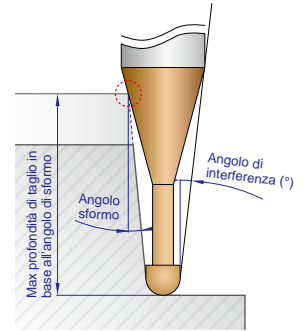
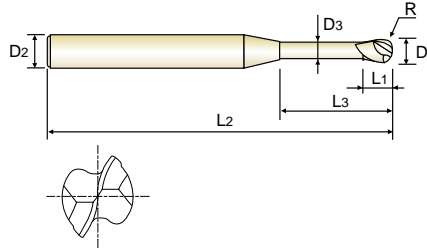
Tolleranza del raggio (mm)	Tolleranza diametro fresa (mm)	Tolleranza diametro gambo
+0.001~-0.005	0~-0.010	h4

◎: Specifico ○: Adatto

ISO	P												M			K								
	Acciai non legati						Acciai basso legati						Acciai alto legati Acciai da utensili			Acciai inox			Ghisa grigia	Ghisa nodulare	Ghisa malleabile			
Descrizione materiale VDI 3323	1	2	3	4	5	6	7	8	9	10	11.1	11.2	12	13	14.1	15	16	17	18	19	20			
HRc	13	25	28	32	30	10	29	32	38	15	35	44	15	23	10	10	26	3	25					
HB	125	190	250	270	300	180	275	300	350	200	325	409	200	240	180	180	260	160	250	130	230			
Consigliato					○				○		○													
ISO	N						S						H											
	Leghe di alluminio		Alluminio fuso, legato		Rame e leghe di rame (Bronzo / Ottone)		Materiali non ferrosi		Super leghe resistenti al calore				Leghe di titanio		Acciai temprati				Fusione di ghisa	Ghisa indurita				
Descrizione materiale VDI 3323	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38.1	38.2	39.1	39.2	39.3	40	41
HRc											15	30	25	38	34			45-49	50-55	56-60	61-65	66-70	42	55
HB	60	100	75	90	130	110	90	100			200	280	250	350	320	400 Rm	1050 Rm	421-469	481-560	577-654	670-739	400	400	550
Consigliato																		◎	◎	◎	◎	◎	○	◎

2 TAGLIENTI SEMISFERICA PER NERVATURE

- Vita utensile aumentata grazie al nuovo rivestimento
- Applicazione di tolleranze ristrette per una lavorazione precisa



MD 2 30° R +0.001 -0.005 C COATING P.40

Unità: mm

CODICE	Raggio R	Diametro fresa D ₁	Diametro gambo D ₂	Lungh. tagl. L ₁	Lungh. scarico L ₃	Lungh. totale L ₂	Diametro scarico D ₃	Angolo di interferenza (°)	Max profondità di taglio in base all'angolo di sforno				
									0,5°	1°	1,5°	2°	3°
HPI91844	R0.75	1.5	4	1.1	18	55	1.45	3.25	18.68	19.30	19.97	20.69	22.31
HPI91845	R0.75	1.5	4	1.1	20	55	1.45	2.98	20.74	21.44	22.19	22.99	-
HPI91846	R0.75	1.5	4	1.1	22	60	1.45	2.75	22.81	23.58	24.41	25.29	-
HPI91847	R0.75	1.5	4	1.1	30	70	1.45	2.10	31.08	32.14	33.27	34.49	-
HPI91848	R0.75	1.5	4	1.5	3.8	40	1.45	9.10	4.00	4.11	4.23	4.36	4.66
HPI91849	R0.75	1.5	4	1.5	3.8	50	1.45	9.10	4.00	4.11	4.23	4.36	4.66
HPI91850	R0.75	1.5	6	1.1	6	50	1.45	9.30	6.27	6.47	6.67	6.89	7.39
HPI91851	R0.75	1.5	6	1.1	8	50	1.45	8.13	8.34	8.61	8.89	9.19	9.88
HPI91852	R0.75	1.5	6	1.5	3.8	50	1.45	11.03	4.00	4.11	4.23	4.36	4.66
HPI91016	R0.8	1.6	4	1.2	8	45	1.55	5.82	8.34	8.60	8.88	9.19	9.87
HPI91853	R0.8	1.6	4	1.2	12	45	1.55	4.35	12.47	12.88	13.32	13.79	14.84
HPI91854	R0.8	1.6	4	1.2	16	50	1.55	3.47	16.61	17.16	17.75	18.39	19.81
HPI91855	R0.8	1.6	4	1.2	20	55	1.55	2.89	20.74	21.44	22.18	22.98	-
HPI91020	R1.0	2.0	4	1.5	3	45	1.95	9.74	3.16	3.24	3.32	3.41	3.60
HPI91856	R1.0	2.0	4	1.5	4	45	1.95	8.34	4.20	4.31	4.43	4.56	4.85
HPI91857	R1.0	2.0	4	1.5	6	45	1.95	6.46	6.26	6.45	6.64	6.86	7.33
HPI91858	R1.0	2.0	4	1.5	8	45	1.95	5.28	8.33	8.59	8.86	9.16	9.82
HPI91859	R1.0	2.0	4	1.5	10	45	1.95	4.46	10.40	10.73	11.08	11.46	12.30
HPI91860	R1.0	2.0	4	1.5	12	45	1.95	3.86	12.47	12.87	13.29	13.76	14.79
HPI91861	R1.0	2.0	4	1.5	13	45	1.95	3.62	13.50	13.94	14.40	14.91	16.03
HPI91862	R1.0	2.0	4	1.5	14	50	1.95	3.40	14.53	15.01	15.51	16.06	17.28
HPI91863	R1.0	2.0	4	1.5	16	50	1.95	3.04	16.60	17.15	17.73	18.36	19.76
HPI91864	R1.0	2.0	4	1.5	18	55	1.95	2.75	18.67	19.28	19.94	20.65	-
HPI91865	R1.0	2.0	4	1.5	20	55	1.95	2.51	20.74	21.42	22.16	22.95	-
HPI91866	R1.0	2.0	4	1.5	22	60	1.95	2.31	22.80	23.56	24.38	25.25	-
HPI91867	R1.0	2.0	4	1.5	25	65	1.95	2.06	25.90	26.77	27.70	28.70	-

Tolleranza del raggio (mm)	Tolleranza diametro fresa (mm)	Tolleranza gambo
+0.001~-0.005	0~-0.010	h4

SEGRE ►

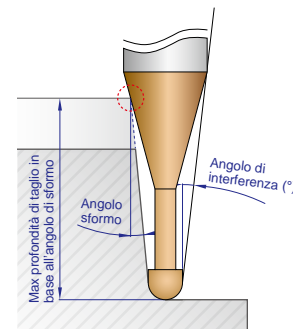
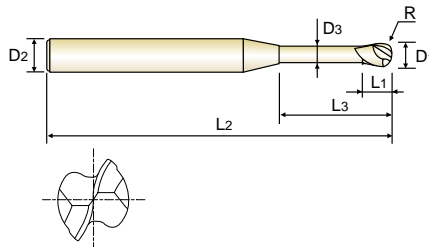
⊙: Specifico ○: Adatto

ISO	P												M			K								
	Acciai non legati					Acciai basso legati					Acciai alto legati Acciai da utensili			Acciai inox			Ghisa grigia		Ghisa nodulare		Ghisa malleabile			
VDI 3323	1	2	3	4	5	6	7	8	9	10	11.1	11.2	12	13	14.1	15	16	17	18	19	20			
HRc	13	25	28	32	30	10	29	32	38	15	35	44	15	23	10	10	26	3	25	21	21			
HB	125	190	250	270	300	180	275	300	350	200	325	409	200	240	180	180	260	160	250	130	230			
Consigliato					○				○		○	○												
ISO	N										S					H								
	Leghe di alluminio		Alluminio fuso, legato			Rame e leghe di rame (Bronzo / Ottone)		Materiali non ferrosi			Super leghe resistenti al calore					Leghe di titanio		Acciai temprati					Fusione di ghisa	Ghisa indurita
VDI 3323	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38.1	38.2	39.1	39.2	39.3	40	41
HRc											15	30	25	38	34			45-49	50-55	56-60	61-65	66-70	42	55
HB	60	100	75	90	130	110	90	100			200	280	250	350	320	400 Rm	1050 Rm	421-469	481-560	577-654	670-739	400	550	
Consigliato																		⊙	⊙	⊙	⊙	⊙	○	⊙

2 TAGLIENTI SEMISFERICA PER NERVATURE

HPI91

- ▶ Vita utensile aumentata grazie al nuovo rivestimento
- ▶ Applicazione di tolleranze ristrette per una lavorazione precisa



Unità: mm

CODICE	Raggio	Diametro fresa	Diametro gambo	Lungh. tagl.	Lungh. scarico	Lungh. totale	Diametro scarico	Angolo di interferenza (°)	Max profondità di taglio in base all'angolo di sforno				
									0.5°	1°	1.5°	2°	3°
HPI91868	R1.0	2.0	4	1.5	30	70	1.95	1.74	31.07	32.12	33.24	-	-
HPI91869	R1.0	2.0	4	1.5	35	70	1.95	1.51	36.24	37.47	38.79	-	-
HPI91870	R1.0	2.0	4	1.5	40	90	1.95	1.34	41.41	42.82	-	-	-
HPI91871	R1.0	2.0	4	2	5	40	1.95	7.28	5.23	5.38	5.54	5.71	6.09
HPI91872	R1.0	2.0	4	2	5	50	1.95	7.28	5.23	5.38	5.54	5.71	6.09
HPI91873	R1.0	2.0	6	1.5	4	50	1.95	10.73	4.20	4.31	4.43	4.56	4.85
HPI91874	R1.0	2.0	6	1.5	6	50	1.95	9.05	6.26	6.45	6.64	6.86	7.33
HPI91875	R1.0	2.0	6	1.5	8	50	1.95	7.82	8.33	8.59	8.86	9.16	9.82
HPI91876	R1.0	2.0	6	1.5	10	50	1.95	6.89	10.40	10.73	11.08	11.46	12.30
HPI91877	R1.0	2.0	6	1.5	16	60	1.95	5.07	16.60	17.15	17.73	18.36	19.76
HPI91878	R1.0	2.0	6	1.5	25	65	1.95	3.63	25.90	26.77	27.70	28.70	30.95
HPI91879	R1.0	2.0	6	2	5	50	1.95	9.82	5.23	5.38	5.54	5.71	6.09
HPI91025	R1.25	2.5	4	2.3	6	45	2.4	5.54	6.35	6.53	6.72	6.93	7.39
HPI91880	R1.25	2.5	4	2.3	8	45	2.4	4.41	8.42	8.67	8.94	9.23	9.87
HPI91881	R1.25	2.5	4	2.3	10	45	2.4	3.66	10.49	10.81	11.15	11.53	12.36
HPI91882	R1.25	2.5	4	2.3	15	50	2.4	2.57	15.66	16.16	16.70	17.28	-
HPI91883	R1.25	2.5	4	2.3	20	55	2.4	1.98	20.82	21.51	22.24	-	-
HPI91884	R1.25	2.5	4	2.3	25	65	2.4	1.61	25.99	26.85	27.78	-	-
HPI91885	R1.25	2.5	4	2.3	30	70	2.4	1.35	31.16	32.20	-	-	-
HPI91886	R1.25	2.5	4	2.3	35	70	2.4	1.17	36.33	37.55	-	-	-
HPI91030	R1.5	3.0	4	3	8	40	2.85	3.31	8.51	8.75	9.01	9.30	9.93
HPI91887	R1.5	3.0	6	2.5	6	60	2.85	8.22	6.44	6.61	6.80	7.00	7.44
HPI91888	R1.5	3.0	6	2.5	8	60	2.85	6.91	8.51	8.75	9.01	9.30	9.93
HPI91889	R1.5	3.0	6	2.5	10	60	2.85	5.96	10.58	10.89	11.23	11.60	12.41
HPI91890	R1.5	3.0	6	2.5	12	60	2.85	5.23	12.64	13.03	13.45	13.90	14.90
HPI91891	R1.5	3.0	6	2.5	14	60	2.85	4.67	14.71	15.17	15.66	16.20	17.39

SEGUE ►

Tolleranza del raggio (mm)	Tolleranza diametro fresa (mm)	Tolleranza gambo
+0.001~-0.005	0~-0.010	h4

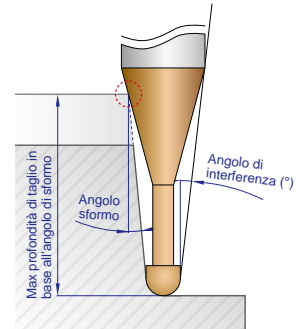
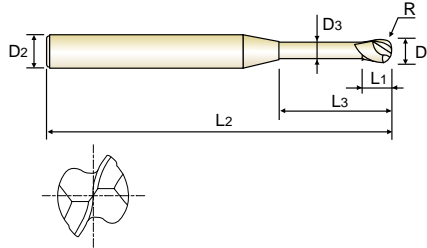
◎: Specifico ○: Adatto

ISO	P											M			K									
	Acciai non legati					Acciai basso legati						Acciai alto legati Acciai da utensili			Acciai inox			Ghisa grigia		Ghisa nodulare		Ghisa malleabile		
Descrizione materiale VDI 3323	1	2	3	4	5	6	7	8	9	10	11.1	11.2	12	13	14.1	15	16	17	18	19	20			
HRc	13	13	25	28	32	10	29	32	38	15	35	44	15	23	10	10	26	3	25	21	21			
HB	125	190	250	270	300	180	275	300	350	200	325	409	200	240	180	180	260	160	250	130	230			
Consigliato					○				○		○													
ISO	N								S							H								
	Leghe di alluminio		Alluminio fuso, legato			Rame e leghe di rame (Bronzo / Ottone)			Materiali non ferrosi		Super leghe resistenti al calore					Leghe di titanio		Acciai temprati					Fusione di ghisa	Ghisa indurita
Descrizione materiale VDI 3323	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38.1	38.2	39.1	39.2	39.3	40	41
HRc											15	30	25	38	34			45-49	50-55	56-60	61-65	66-70	42	55
HB	60	100	75	90	130	110	90	100			200	280	250	350	320	400 Rm	1050 Rm	421-469	481-560	577-654	670-739	400	550	
Consigliato																		◎	◎	◎	◎	◎	○	◎

2 TAGLIENTI SEMISFERICA PER NERVATURE

HPI91

- ▶ Vita utensile aumentata grazie al nuovo rivestimento
- ▶ Applicazione di tolleranze ristrette per una lavorazione precisa



Unità: mm

CODICE	Raggio R	Diametro fresa D ₁	Diametro gambo D ₂	Lungh. tagl. L ₁	Lungh. scarico L ₃	Lungh. totale L ₂	Diametro scarico D ₃	Angolo di interferenza (°)	Max profondità di taglio in base all'angolo di sforno				
									0,5°	1°	1,5°	2°	3°
HPI91892	R1.5	3.0	6	2.5	16	60	2.85	4.21	16.78	17.31	17.88	18.49	19.87
HPI91893	R1.5	3.0	6	2.5	20	65	2.85	3.52	20.91	21.59	22.31	23.09	24.85
HPI91894	R1.5	3.0	6	2.5	25	65	2.85	2.92	26.08	26.94	27.86	28.84	-
HPI91895	R1.5	3.0	6	2.5	30	70	2.85	2.50	31.25	32.29	33.40	34.59	-
HPI91896	R1.5	3.0	6	2.5	35	80	2.85	2.18	36.42	37.63	38.94	40.34	-
HPI91897	R1.5	3.0	6	2.5	40	90	2.85	1.94	41.59	42.98	44.48	-	-
HPI91898	R1.5	3.0	6	3	8	60	2.85	6.91	8.51	8.75	9.01	9.30	9.93
HPI91035	R1.75	3.5	6	2.8	15	60	3.35	3.93	15.74	16.22	16.75	17.31	18.57
HPI91899	R1.75	3.5	6	2.8	20	65	3.35	3.08	20.90	21.57	22.29	23.06	24.79
HPI91701	R1.75	3.5	6	2.8	25	65	3.35	2.54	26.07	26.92	27.83	28.81	-
HPI91702	R1.75	3.5	6	2.8	30	70	3.35	2.16	31.24	32.27	33.37	34.56	-
HPI91703	R1.75	3.5	6	2.8	35	80	3.35	1.87	36.41	37.62	38.91	-	-
HPI91704	R1.75	3.5	6	2.8	40	90	3.35	1.66	41.58	42.96	44.45	-	-
HPI91705	R1.75	3.5	6	2.8	45	90	3.35	1.49	46.75	48.31	-	-	-
HPI91040	R2.0	4.0	4	3	8	65	3.85	0.00	-	-	-	-	-
HPI91706	R2.0	4.0	6	3	8	65	3.85	5.70	8.49	8.72	8.96	9.22	9.81
HPI91707	R2.0	4.0	6	3	10	65	3.85	4.76	10.56	10.86	11.18	11.52	12.29
HPI91708	R2.0	4.0	6	3	12	65	3.85	4.08	12.63	13.00	13.39	13.82	14.78
HPI91709	R2.0	4.0	6	3	14	65	3.85	3.57	14.69	15.14	15.61	16.12	17.27
HPI91710	R2.0	4.0	6	3	15	65	3.85	3.36	15.73	16.21	16.72	17.27	18.51
HPI91711	R2.0	4.0	6	3	20	65	3.85	2.60	20.90	21.55	22.26	23.02	-
HPI91712	R2.0	4.0	6	3	25	70	3.85	2.12	26.06	26.90	27.80	28.77	-
HPI91713	R2.0	4.0	6	3	30	70	3.85	1.79	31.23	32.25	33.34	-	-
HPI91714	R2.0	4.0	6	3	35	80	3.85	1.55	36.40	37.60	38.88	-	-
HPI91715	R2.0	4.0	6	3	40	85	3.85	1.36	41.57	42.95	-	-	-
HPI91716	R2.0	4.0	6	3	45	90	3.85	1.22	46.74	48.30	-	-	-

Tolleranza del raggio (mm)	Tolleranza diametro fresa (mm)	Tolleranza gambo
+0.001~-0.005	0~-0.010	h4

SEGRE ▶

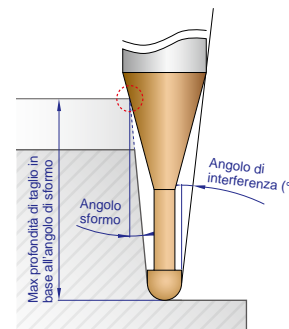
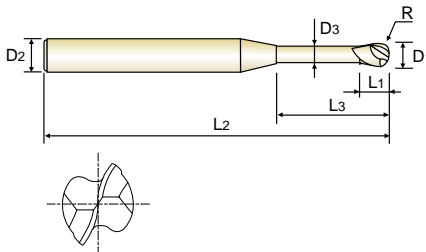
⊙: Specifico ○: Adatto

ISO	P												M			K								
	Acciai non legati						Acciai basso legati						Acciai alto legati Acciai da utensili			Acciai inox			Ghisa grigia		Ghisa nodulare		Ghisa malleabile	
VDI 3323	1	2	3	4	5	6	7	8	9	10	11.1	11.2	12	13	14.1	15	16	17	18	19	20			
HRc	13	25	28	32	30	10	29	32	38	15	35	44	15	23	10	10	26	3	25	21	21			
HB	125	190	250	270	300	180	275	300	350	200	325	409	200	240	180	180	260	160	250	130	230			
Consigliato					○				○		○	○												
ISO	N										S					H								
	Leghe di alluminio		Alluminio fuso, legato			Rame e leghe di rame (Bronzo / Ottone)		Materiali non ferrosi			Super leghe resistenti al calore					Leghe di titanio		Acciai temprati					Fusione di ghisa	Ghisa indurita
VDI 3323	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38.1	38.2	39.1	39.2	39.3	40	41
HRc											15	30	25	38	34			45-49	50-55	56-60	61-65	66-70	42	55
HB	60	100	75	90	130	110	90	100			200	280	250	350	320	400 Rm	1050 Rm	421-469	481-560	577-654	670-739	400	550	
Consigliato																		⊙	⊙	⊙	⊙	⊙	○	⊙

2 TAGLIENTI SEMISFERICA PER NERVATURE

HPI91

- ▶ Vita utensile aumentata grazie al nuovo rivestimento
- ▶ Applicazione di tolleranze ristrette per una lavorazione precisa



Unità: mm

CODICE	Raggio R	Diametro fresa D ₁	Diametro gambo D ₂	Lungh. tagl. L ₁	Lungh. scarico L ₃	Lungh. totale L ₂	Diametro scarico D ₃	Angolo di interferenza (°)	Max profondità di taglio in base all'angolo di sforno				
									0.5°	1°	1.5°	2°	3°
HPI91717	R2.0	4.0	6	3	50	100	3.85	1.10	51.91	53.64	-	-	-
HPI91718	R2.0	4.0	6	4	10	40	3.85	4.76	10.56	10.86	11.18	11.52	12.29
HPI91719	R2.0	4.0	6	4	10	60	3.85	4.76	10.56	10.86	11.18	11.52	12.29
HPI91050	R2.5	5.0	6	3.5	10	70	4.85	2.97	10.54	10.82	11.12	11.45	-
HPI91060	R3.0	6.0	6	6	10	70	5.85	0.00	-	-	-	-	-
HPI91720	R2.5	5.0	6	3.5	15	70	4.85	1.96	15.71	16.17	16.66	-	-
HPI91721	R2.5	5.0	6	3.5	20	70	4.85	1.46	20.88	21.52	-	-	-
HPI91722	R2.5	5.0	6	3.5	25	70	4.85	1.16	26.05	26.87	-	-	-
HPI91723	R2.5	5.0	6	3.5	30	80	4.85	0.97	31.22	-	-	-	-
HPI91724	R2.5	5.0	6	3.5	40	90	4.85	0.72	41.55	-	-	-	-
HPI91725	R2.5	5.0	6	5	12	45	4.85	2.46	12.61	12.96	13.34	13.75	-
HPI91726	R2.5	5.0	6	5	12	60	4.85	2.46	12.61	12.96	13.34	13.75	-
HPI91727	R3.0	6.0	6	6	15	45	5.85	0.00	-	-	-	-	-
HPI91728	R3.0	6.0	6	6	15	60	5.85	0.00	-	-	-	-	-
HPI91729	R3.0	6.0	6	6	15	70	5.85	0.00	-	-	-	-	-
HPI91730	R3.0	6.0	6	6	20	70	5.85	0.00	-	-	-	-	-
HPI91731	R3.0	6.0	6	6	25	70	5.85	0.00	-	-	-	-	-
HPI91732	R3.0	6.0	6	6	30	80	5.85	0.00	-	-	-	-	-
HPI91733	R3.0	6.0	6	6	35	85	5.85	0.00	-	-	-	-	-
HPI91734	R3.0	6.0	6	6	40	90	5.85	0.00	-	-	-	-	-
HPI91735	R3.0	6.0	6	6	50	120	5.85	0.00	-	-	-	-	-
HPI91736	R3.0	6.0	6	6	60	120	5.85	0.00	-	-	-	-	-

Tolleranza del raggio (mm)	Tolleranza diametro fresa (mm)	Tolleranza gambo
+0.001~-0.005	0~-0.010	h4

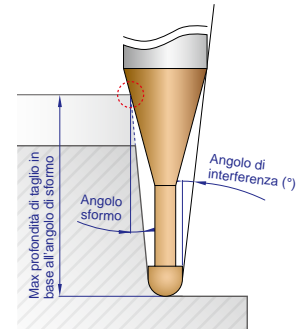
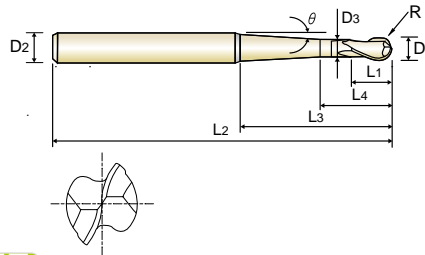
⊙: Specifico ○: Adatto

ISO	P										M			K										
	Acciai non legati					Acciai basso legati					Acciai alto legati Acciai da utensili			Acciai inox			Ghisa grigia	Ghisa nodulare	Ghisa malleabile					
Descrizione materiale	1	2	3	4	5	6	7	8	9	10	11.1	11.2	12	13	14.1	15	16	17	18	19	20			
VDI 3323	1	2	3	4	5	6	7	8	9	10	11.1	11.2	12	13	14.1	15	16	17	18	19	20			
HRc	13	25	28	32	32	10	29	32	38	15	35	44	15	23	10	10	26	3	25	21	21			
HB	125	190	250	270	300	180	275	300	350	200	325	409	200	240	180	180	260	160	250	130	230			
Consigliato					○				○		○													
ISO	N										S						H							
	Leghe di alluminio		Alluminio fuso, legato			Rame e leghe di rame (Bronzo / Ottone)		Materiali non ferrosi			Super leghe resistenti al calore			Leghe di titanio			Acciai temprati				Fusione di ghisa	Ghisa indurita		
Descrizione materiale	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38.1	38.2	39.1	39.2	39.3	40	41
VDI 3323	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38.1	38.2	39.1	39.2	39.3	40	41
HRc	60	100	75	90	130	110	90	100			15	30	25	38	34			45-49	50-55	56-60	61-65	66-70	42	55
HB	60	100	75	90	130	110	90	100			200	280	250	350	320			421-469	481-560	577-654	670-739		400	550
Consigliato																		⊙	⊙	⊙	⊙	⊙	○	⊙

2 TAGLIENTI SEMISFERICA PER NERVATURE, SCARICO CONICO

HPI92

- Vita utensile aumentata grazie al nuovo rivestimento
- Applicazione di tolleranze ristrette per una lavorazione precisa



R0.5~R3 R3.5~R6

Unità: mm

CODICE	Raggio	Diametro fresa	Diametro gambo	Lungh. tagl.	Lungh. scarico	Lungh. totale	Diametro scarico	Angolo scarico conico(°)	Lungh. scarico cilindrico	Angolo di interferenza (°)	Max profondità di taglio in base all'angolo di sforno				
	R	D1	D2	L1	L3	L2	D3	θ°	L4		0.5°	1°	1.5°	2°	3°
HPI92001	R0.05	0.1	4	0.07	0.5	50	0.085	3°	0.17	14.23	0.37	0.44	0.51	0.53	0.56
HPI92901	R0.05	0.1	4	0.07	0.75	50	0.085	3°	0.17	13.88	0.37	0.44	0.58	0.76	0.81
HPI920015	R0.075	0.15	4	0.1	1	50	0.135	3°	0.25	13.55	0.46	0.55	0.71	1.00	1.08
HPI92902	R0.075	0.15	4	0.1	1.5	50	0.135	3°	0.25	12.92	0.46	0.55	0.71	1.03	1.58
HPI92002	R0.1	0.2	4	0.15	1.5	50	0.17	0.5°	0.35	12.59	1.57	1.62	1.67	1.73	1.86
HPI92903	R0.1	0.2	4	0.15	1.5	50	0.17	1°	0.35	12.64	1.53	1.58	1.63	1.69	1.82
HPI92904	R0.1	0.2	4	0.15	1.5	50	0.17	1.5°	0.35	12.69	1.33	1.54	1.59	1.64	1.77
HPI92905	R0.1	0.2	4	0.15	1.5	50	0.17	2°	0.35	12.75	1.01	1.46	1.55	1.60	1.72
HPI92906	R0.1	0.2	4	0.15	2	50	0.17	0.5°	0.35	11.93	2.07	2.13	2.21	2.29	2.46
HPI92907	R0.1	0.2	4	0.15	2	50	0.17	1°	0.35	12.00	2.01	2.08	2.15	2.23	2.40
HPI92908	R0.1	0.2	4	0.15	2	50	0.17	1.5°	0.35	12.07	1.33	2.02	2.09	2.16	2.33
HPI92909	R0.1	0.2	4	0.15	2	50	0.17	2°	0.35	12.14	1.01	1.46	2.03	2.10	2.26
HPI92910	R0.1	0.2	4	0.15	3	50	0.17	3°	0.35	11.28	0.74	0.90	1.17	1.71	3.13
HPI92911	R0.1	0.2	4	0.15	3	50	0.17	5°	0.35	11.69	0.57	0.63	0.70	0.80	1.15
HPI92912	R0.1	0.2	4	0.15	5	50	0.17	3°	0.35	9.68	0.74	0.90	1.17	1.71	5.13
HPI92913	R0.1	0.2	4	0.15	5	50	0.17	5°	0.35	10.23	0.57	0.63	0.70	0.80	1.15
HPI92003	R0.15	0.3	4	0.2	2	50	0.27	0.5°	0.5	11.92	2.07	2.14	2.21	2.29	2.46
HPI92914	R0.15	0.3	4	0.2	2	50	0.27	1°	0.5	11.99	2.02	2.08	2.15	2.23	2.40
HPI92915	R0.15	0.3	4	0.2	2	50	0.27	1.5°	0.5	12.05	1.53	2.03	2.10	2.17	2.34
HPI92916	R0.15	0.3	4	0.2	2	50	0.27	2°	0.5	12.12	1.19	1.71	2.05	2.12	2.28
HPI92917	R0.15	0.3	4	0.2	2	50	0.27	3°	0.5	12.26	0.91	1.10	1.42	2.00	2.15
HPI92918	R0.15	0.3	4	0.2	3	50	0.27	0.5°	0.5	10.77	3.07	3.17	3.28	3.40	3.66
HPI92919	R0.15	0.3	4	0.2	3	50	0.27	1°	0.5	10.86	2.57	3.08	3.19	3.30	3.56
HPI92920	R0.15	0.3	4	0.2	3	50	0.27	1.5°	0.5	10.95	1.53	2.92	3.10	3.21	3.46
HPI92921	R0.15	0.3	4	0.2	3	50	0.27	2°	0.5	11.04	1.19	1.71	3.01	3.12	3.36
HPI92922	R0.15	0.3	4	0.2	3	50	0.27	3°	0.5	11.23	0.91	1.10	1.42	2.06	3.15

SEGRE ►

Dimensioni	Tolleranza del raggio (mm)	Tolleranza diametro fresa (mm)	Tolleranza gambo
Fino a R3	+0.001~-0.005	0~-0.010	h4
Oltre R3	+0.003~-0.007	0~-0.012	>ø6: h5

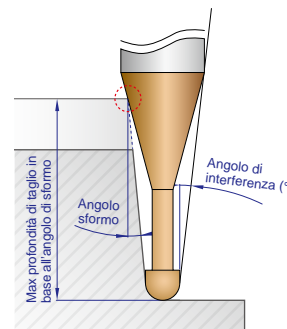
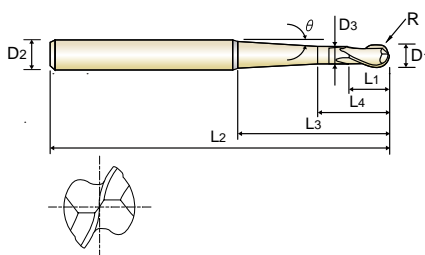
⊙: Specifico ○: Adatto

ISO	P											M			K									
	Acciai non legati					Acciai basso legati				Acciai alto legati		Acciai inox		Ghisa grigia		Ghisa nodulare		Ghisa malleabile						
VDI 3323	1	2	3	4	5	6	7	8	9	10	11.1	11.2	12	13	14.1	15	16	17	18	19	20			
HRc	13	25	28	32	30	10	29	32	38	15	35	44	15	23	10	10	26	3	25	21	21			
HB	125	190	250	270	300	180	275	300	350	200	325	409	200	240	180	180	260	160	250	130	230			
Consigliato					○				○		○	○												
ISO	N										S						H							
	Leghe di alluminio		Alluminio fuso, legato			Rame e leghe di rame (Bronzo / Ottone)		Materiali non ferrosi			Super leghe resistenti al calore			Leghe di titanio			Acciai temprati				Fusione di ghisa	Ghisa indurita		
VDI 3323	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38.1	38.2	39.1	39.2	39.3	40	41
HRc											15	30	25	38	34			45-49	50-55	56-60	61-65	66-70	42	55
HB	60	100	75	90	130	110	90	100			200	280	250	350	320	400 Rm 1050 Rm		421-469	481-560	577-654	670-739	400	400	550
Consigliato																		⊙	⊙	⊙	⊙	⊙	○	⊙

2 TAGLIENTI SEMISFERICA PER NERVATURE, SCARICO CONICO

HPI92

- ▶ Vita utensile aumentata grazie al nuovo rivestimento
- ▶ Applicazione di tolleranze ristrette per una lavorazione precisa



R0.5~R3 R3.5~R6

Unità: mm

CODICE	Raggio	Diametro fresa	Diametro gambo	Lungh. tagl.	Lungh. scarico	Lungh. totale	Diametro scarico	Angolo scarico conico(°)	Lungh. scarico cilindrico	Angolo di interferenza (°)	Max profondità di taglio in base all'angolo di sforno				
	R	D1	D2	L1	L3	L2	D3	θ°	L4		0.5°	1°	1.5°	2°	3°
HPI92923	R0.15	0.3	4	0.2	3	50	0.27	5°	0.5	11.62	0.73	0.80	0.89	1.02	1.45
HPI92924	R0.15	0.3	4	0.2	5	50	0.27	3°	0.5	9.61	0.91	1.10	1.42	2.06	5.15
HPI92925	R0.15	0.3	4	0.2	5	50	0.27	5°	0.5	10.14	0.73	0.80	0.89	1.02	1.45
HPI92926	R0.15	0.3	4	0.2	7	50	0.27	3°	0.5	8.39	0.91	1.10	1.42	2.06	7.15
HPI92927	R0.15	0.3	4	0.2	7	50	0.27	5°	0.5	8.99	0.73	0.80	0.89	1.02	1.45
HPI92004	R0.2	0.4	4	0.3	3	50	0.37	0.5°	0.7	10.73	3.07	3.17	3.28	3.40	3.66
HPI92928	R0.2	0.4	4	0.3	3	50	0.37	1°	0.7	10.81	2.92	3.09	3.20	3.31	3.56
HPI92929	R0.2	0.4	4	0.3	3	50	0.37	1.5°	0.7	10.90	1.81	3.01	3.12	3.23	3.47
HPI92930	R0.2	0.4	4	0.3	3	50	0.37	2°	0.7	10.98	1.44	2.06	3.03	3.14	3.38
HPI92931	R0.2	0.4	4	0.3	4	50	0.37	0.5°	0.7	9.76	4.07	4.21	4.35	4.51	4.86
HPI92932	R0.2	0.4	4	0.3	4	50	0.37	1°	0.7	9.86	2.92	4.09	4.24	4.39	4.73
HPI92933	R0.2	0.4	4	0.3	4	50	0.37	1.5°	0.7	9.96	1.81	3.42	4.12	4.26	4.59
HPI92934	R0.2	0.4	4	0.3	4	50	0.37	2°	0.7	10.06	1.44	2.06	3.92	4.14	4.46
HPI92935	R0.2	0.4	4	0.3	5	50	0.37	3°	0.7	9.52	1.14	1.38	1.77	2.56	5.19
HPI92936	R0.2	0.4	4	0.3	5	50	0.37	5°	0.7	10.04	0.95	1.04	1.16	1.32	1.87
HPI92937	R0.2	0.4	4	0.3	6	50	0.37	0.5°	0.7	8.26	6.07	6.28	6.50	6.74	7.27
HPI92938	R0.2	0.4	4	0.3	6	50	0.37	1°	0.7	8.37	2.92	6.09	6.31	6.54	7.05
HPI92939	R0.2	0.4	4	0.3	6	50	0.37	1.5°	0.7	8.49	1.81	3.42	6.12	6.34	6.84
HPI92940	R0.2	0.4	4	0.3	6	50	0.37	2°	0.7	8.61	1.44	2.06	3.92	6.14	6.62
HPI92941	R0.2	0.4	4	0.3	7	50	0.37	3°	0.7	8.30	1.14	1.38	1.77	2.56	7.19
HPI92942	R0.2	0.4	4	0.3	7	50	0.37	5°	0.7	8.88	0.95	1.04	1.16	1.32	1.87
HPI92005	R0.25	0.5	4	0.35	4	50	0.45	0.5°	0.85	9.67	4.12	4.25	4.40	4.55	4.90
HPI92943	R0.25	0.5	4	0.35	4	50	0.45	1°	0.85	9.76	4.01	4.14	4.28	4.43	4.77
HPI92944	R0.25	0.5	4	0.35	4	50	0.45	1.5°	0.85	9.86	2.58	4.03	4.17	4.32	4.65
HPI92945	R0.25	0.5	4	0.35	4	50	0.45	2°	0.85	9.96	2.00	2.88	4.05	4.20	4.52
HPI92946	R0.25	0.5	4	0.35	5	50	0.45	0.5°	0.85	8.85	5.12	5.29	5.47	5.66	6.10

SEGUE ▶

Dimensioni	Tolleranza del raggio (mm)	Tolleranza diametro fresa (mm)	Tolleranza gambo
Fino a R3	+0.001~-0.005	0~-0.010	h4
Oltre R3	+0.003~-0.007	0~-0.012	>ø6: h5

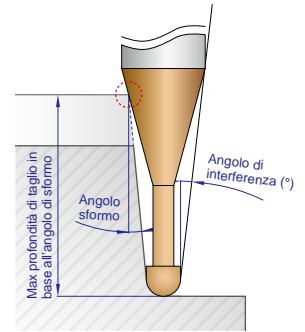
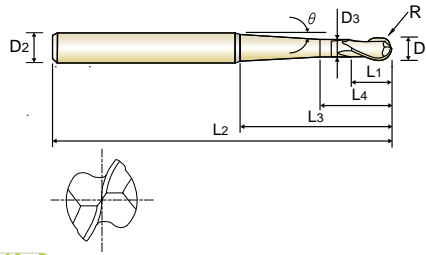
⊙: Specifico ○: Adatto

ISO	P												M			K								
	Acciai non legati						Acciai basso legati						Acciai alto legati Acciai da utensili			Acciai inox			Ghisa grigia	Ghisa nodulare	Ghisa malleabile			
Descrizione materiale VDI 3323	1	2	3	4	5	6	7	8	9	10	11.1	11.2	12	13	14.1	15	16	17	18	19	20			
HRc	13	13	25	28	32	10	29	32	38	15	35	44	15	23	10	10	26	3	25	21	21			
HB	125	190	250	270	300	180	275	300	350	200	325	409	200	240	180	180	260	160	250	130	230			
Consigliato					○			○	○		○	○												
ISO	N						S						H											
	Leghe di alluminio		Alluminio fuso, legato		Rame e leghe di rame (Bronzo / Ottone)		Materiali non ferrosi		Super leghe resistenti al calore				Leghe di titanio		Acciai temprati				Fusione di ghisa	Ghisa indurita				
Descrizione materiale VDI 3323	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38.1	38.2	39.1	39.2	39.3	40	41
HRc											15	30	25	38	34			45-49	50-55	56-60	61-65	66-70	42	55
HB	60	100	75	90	130	110	90	100			200	280	250	350	320	400 Rm	1050 Rm	421-469	481-560	577-654	670-739	400	550	
Consigliato																		⊙	⊙	⊙	⊙	⊙	○	⊙

2 TAGLIENTI SEMISFERICA PER NERVATURE, SCARICO CONICO

HPI92

- Vita utensile aumentata grazie al nuovo rivestimento
- Applicazione di tolleranze ristrette per una lavorazione precisa



R0.5-R3 R3.5-R6

Unità: mm

CODICE	Raggio	Diametro fresa	Diametro gambo	Lungh. tagl.	Lungh. scarico	Lungh. totale	Diametro scarico	Angolo scarico conico(°)	Lungh. scarico cilindrico	Angolo di interferenza (°)	Max profondità di taglio in base all'angolo di sforno				
	R	D1	D2	L1	L3	L2	D3	θ°	L4		0.5°	1°	1.5°	2°	3°
HPI92947	R0.25	0.5	4	0.35	5	50	0.45	1°	0.85	8.96	4.31	5.14	5.32	5.51	5.93
HPI92948	R0.25	0.5	4	0.35	5	50	0.45	1.5°	0.85	9.06	2.58	4.91	5.17	5.35	5.77
HPI92949	R0.25	0.5	4	0.35	5	50	0.45	2°	0.85	9.18	2.00	2.88	5.02	5.20	5.60
HPI92006	R0.3	0.6	4	0.45	4	50	0.55	0.5°	1.05	9.61	4.12	4.25	4.40	4.55	4.90
HPI92950	R0.3	0.6	4	0.45	4	50	0.55	1°	1.05	9.70	4.02	4.15	4.29	4.44	4.78
HPI92951	R0.3	0.6	4	0.45	4	50	0.55	1.5°	1.05	9.79	2.86	4.05	4.18	4.33	4.66
HPI92952	R0.3	0.6	4	0.45	4	50	0.55	3°	1.05	10.08	1.77	2.14	2.75	3.98	4.30
HPI92953	R0.3	0.6	4	0.45	5	50	0.55	0.5°	1.05	8.78	5.12	5.29	5.47	5.66	6.10
HPI92954	R0.3	0.6	4	0.45	5	50	0.55	1°	1.05	8.88	4.66	5.15	5.33	5.52	5.94
HPI92955	R0.3	0.6	4	0.45	5	50	0.55	1.5°	1.05	8.98	2.86	5.01	5.18	5.37	5.78
HPI92956	R0.3	0.6	4	0.45	5	50	0.55	2°	1.05	9.09	2.25	3.23	5.04	5.22	5.62
HPI92957	R0.3	0.6	4	0.45	5	50	0.55	3°	1.05	9.31	1.77	2.14	2.75	3.98	5.30
HPI92958	R0.3	0.6	4	0.45	5	50	0.55	5°	1.05	9.79	1.45	1.59	1.78	2.02	2.88
HPI92959	R0.3	0.6	4	0.45	6	50	0.55	0.5°	1.05	8.08	6.12	6.32	6.54	6.78	7.30
HPI92960	R0.3	0.6	4	0.45	6	50	0.55	1°	1.05	8.19	4.66	6.15	6.36	6.59	7.10
HPI92961	R0.3	0.6	4	0.45	6	50	0.55	1.5°	1.05	8.30	2.86	5.41	6.18	6.41	6.90
HPI92962	R0.3	0.6	4	0.45	6	50	0.55	2°	1.05	8.41	2.25	3.23	6.01	6.22	6.70
HPI92963	R0.3	0.6	4	0.45	7	50	0.55	3°	1.05	8.08	1.77	2.14	2.75	3.98	7.30
HPI92964	R0.3	0.6	4	0.45	7	50	0.55	5°	1.05	8.63	1.45	1.59	1.78	2.02	2.88
HPI92965	R0.3	0.6	4	0.45	8	50	0.55	0.5°	1.05	6.97	8.12	8.39	8.69	9.00	9.71
HPI92966	R0.3	0.6	4	0.45	8	50	0.55	1°	1.05	7.08	4.66	8.15	8.44	8.74	9.43
HPI92967	R0.3	0.6	4	0.45	8	50	0.55	1.5°	1.05	7.20	2.86	5.41	8.18	8.48	9.14
HPI92968	R0.3	0.6	4	0.45	8	50	0.55	2°	1.05	7.32	2.25	3.23	6.16	8.22	8.86
HPI92008	R0.4	0.8	4	0.6	8	60	0.75	0.5°	1.4	6.78	8.13	8.40	8.69	9.00	9.70
HPI92969	R0.4	0.8	4	0.6	8	60	0.75	1°	1.4	6.89	5.26	8.17	8.45	8.75	9.43
HPI92970	R0.4	0.8	4	0.6	8	60	0.75	1.5°	1.4	7.01	3.33	6.26	8.21	8.50	9.16

SEGRE ►

Dimensioni	Tolleranza del raggio (mm)	Tolleranza diametro fresa (mm)	Tolleranza gambo
Fino a R3	+0.001~-0.005	0~-0.010	h4
Oltre R3	+0.003~-0.007	0~-0.012	>ø6: h5

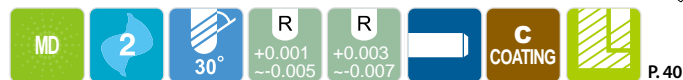
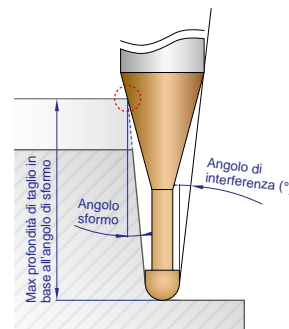
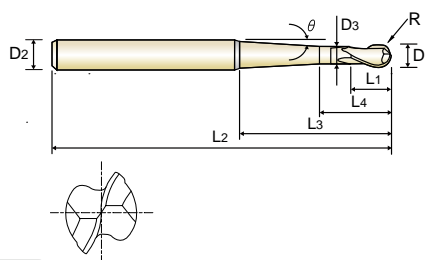
⊙: Specifico ○: Adatto

ISO	P											M			K									
	Acciai non legati					Acciai basso legati				Acciai alto legati		Acciai inox		Ghisa grigia		Ghisa nodulare		Ghisa malleabile						
Descrizione materiale	1	2	3	4	5	6	7	8	9	10	11.1	11.2	12	13	14.1	15	16	17	18	19	20			
VDI 3323																								
HRc	13	25	28	32	30	10	29	32	38	15	35	44	15	23	10	10	26	3	25	21				
HB	125	190	250	270	300	180	275	300	350	200	325	409	200	240	180	180	260	160	250	130	230			
Consigliato					○				○			○												
ISO	N										S						H							
	Leghe di alluminio		Alluminio fuso, legato			Rame e leghe di rame (Bronzo / Ottone)		Materiali non ferrosi			Super leghe resistenti al calore			Leghe di titanio			Acciai temprati				Fusione di ghisa	Ghisa indurita		
Descrizione materiale	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38.1	38.2	39.1	39.2	39.3	40	41
VDI 3323																								
HRc											15	30	25	38	34			45-49	50-55	56-60	61-65	66-70	42	55
HB	60	100	75	90	130	110	90	100			200	280	250	350	320	400 Rm	1050 Rm	421-469	481-560	577-654	670-739	400	400	550
Consigliato																		⊙	⊙	⊙	⊙	⊙	○	⊙

2 TAGLIENTI SEMISFERICA PER NERVATURE, SCARICO CONICO

HPI92

- ▶ Vita utensile aumentata grazie al nuovo rivestimento
- ▶ Applicazione di tolleranze ristrette per una lavorazione precisa



R0.5~R3 R3.5~R6

Unità: mm

CODICE	Raggio	Diametro fresa	Diametro gambo	Lungh. tagl.	Lungh. scarico	Lungh. totale	Diametro scarico	Angolo scarico conico(°)	Lungh. scarico cilindrico	Angolo di interferenza (°)	Max profondità di taglio in base all'angolo di sforno				
	R	D1	D2	L1	L3	L2	D3	θ°	L4		0.5°	1°	1.5°	2°	3°
HPI92971	R0.4	0.8	4	0.6	8	60	0.75	2°	1.4	7.12	2.69	3.83	7.26	8.26	8.89
HPI92972	R0.4	0.8	4	0.6	12	60	0.75	0.5°	1.4	5.28	12.13	12.54	12.98	13.45	14.51
HPI92973	R0.4	0.8	4	0.6	12	60	0.75	1°	1.4	5.38	5.26	12.17	12.59	13.05	14.08
HPI92974	R0.4	0.8	4	0.6	12	60	0.75	1.5°	1.4	5.50	3.33	6.26	12.21	12.65	13.65
HPI92975	R0.4	0.8	4	0.6	12	60	0.75	2°	1.4	5.61	2.69	3.83	7.26	12.26	13.22
HPI92010	R0.5	1.0	4	0.75	6	60	0.95	0.5°	2.75	7.71	6.17	6.37	6.58	6.81	7.32
HPI92976	R0.5	1.0	4	0.75	6	60	0.95	1°	2.75	7.78	6.06	6.26	6.46	6.69	7.19
HPI92977	R0.5	1.0	4	0.75	6	60	0.95	1.5°	2.75	7.85	5.31	6.14	6.35	6.57	7.06
HPI92978	R0.5	1.0	4	0.75	8	60	0.95	0.5°	2.75	6.57	8.17	8.44	8.73	9.03	9.73
HPI92979	R0.5	1.0	4	0.75	8	60	0.95	1°	2.75	6.66	7.86	8.26	8.54	8.84	9.51
HPI92980	R0.5	1.0	4	0.75	8	60	0.95	1.5°	2.75	6.75	5.31	8.07	8.35	8.64	9.30
HPI92981	R0.5	1.0	4	0.75	8	60	0.95	2°	2.75	6.84	4.45	6.43	8.16	8.44	9.09
HPI92982	R0.5	1.0	4	0.75	10	60	0.95	0.5°	2.75	5.73	10.17	10.51	10.87	11.26	12.13
HPI92983	R0.5	1.0	4	0.75	10	60	0.95	1°	2.75	5.82	7.86	10.26	10.61	10.99	11.84
HPI92984	R0.5	1.0	4	0.75	10	60	0.95	1.5°	2.75	5.91	5.31	10.00	10.35	10.72	11.55
HPI92985	R0.5	1.0	4	0.75	10	60	0.95	2°	2.75	6.01	4.45	6.43	10.09	10.44	11.25
HPI92986	R0.5	1.0	4	0.75	10	60	0.95	3°	2.75	6.22	3.77	4.59	5.95	8.67	10.66
HPI92987	R0.5	1.0	4	0.75	12	60	0.95	0.5°	2.75	5.08	12.17	12.58	13.02	13.48	14.54
HPI92988	R0.5	1.0	4	0.75	12	60	0.95	1°	2.75	5.17	7.86	12.26	12.68	13.14	14.16
HPI92989	R0.5	1.0	4	0.75	12	60	0.95	1.5°	2.75	5.26	5.31	10.11	12.35	12.79	13.79
HPI92990	R0.5	1.0	4	0.75	16	60	0.95	0.5°	2.75	4.13	16.17	16.72	17.30	17.93	19.35
HPI92991	R0.5	1.0	4	0.75	16	60	0.95	1°	2.75	4.22	7.86	16.26	16.83	17.44	18.81
HPI92992	R0.5	1.0	4	0.75	16	60	0.95	1.5°	2.75	4.31	5.31	10.11	16.35	16.94	18.28
HPI92993	R0.5	1.0	4	0.75	20	70	0.95	0.5°	2.75	3.49	20.17	20.86	21.59	22.38	24.16
HPI92994	R0.5	1.0	4	0.75	20	70	0.95	1°	2.75	3.57	7.86	20.26	20.97	21.74	23.46
HPI92995	R0.5	1.0	4	0.75	20	70	0.95	1.5°	2.75	3.65	5.31	10.11	20.35	21.09	22.76

SEGUE ►

Dimensioni	Tolleranza del raggio (mm)	Tolleranza diametro fresa (mm)	Tolleranza gambo
Fino a R3	+0.001~-0.005	0~-0.010	h4
Oltre R3	+0.003~-0.007	0~-0.012	>ø6: h5

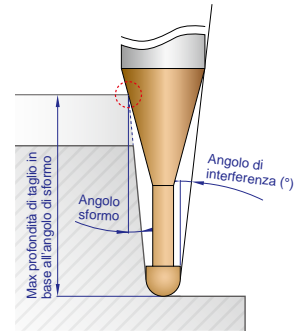
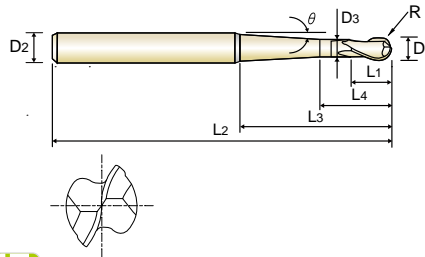
◎: Specifico ○: Adatto

ISO	P												M			K								
	Acciai non legati						Acciai basso legati						Acciai alto legati Acciai da utensili			Acciai inox			Ghisa grigia	Ghisa nodulare	Ghisa malleabile			
Descrizione materiale VDI 3323	1	2	3	4	5	6	7	8	9	10	11.1	11.2	12	13	14.1	15	16	17	18	19	20			
HRc	13	25	28	32	32	10	29	32	38	15	35	44	15	23	10	10	26	3	25	21	21			
HB	125	190	250	270	300	180	275	300	350	200	325	409	200	240	180	180	260	160	250	130	230			
Consigliato					○			○	○		○	○												
ISO	N						S						H											
	Leghe di alluminio		Alluminio fuso, legato		Rame e leghe di rame (Bronzo / Ottone)		Materiali non ferrosi			Super leghe resistenti al calore			Leghe di titanio		Acciai temprati					Fusione di ghisa	Ghisa indurita			
Descrizione materiale VDI 3323	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38.1	38.2	39.1	39.2	39.3	40	41
HRc	60	100	75	90	130	110	90	100			15	30	25	38	34			45-49	50-55	56-60	61-65	66-70	42	55
HB											200	280	250	350	320	400 Rm	1050 Rm	421-469	481-560	577-654	670-739		400	550
Consigliato																		◎	◎	◎	◎	◎	○	◎

2 TAGLIENTI SEMISFERICA PER NERVATURE, SCARICO CONICO

HPI92

- Vita utensile aumentata grazie al nuovo rivestimento
- Applicazione di tolleranze ristrette per una lavorazione precisa



MD 2 30° R +0.001 ~ -0.005 R +0.003 ~ -0.007 COATING P.40

R0.5-R3 R3.5-R6

Unità: mm

CODICE	Raggio	Diametro fresa	Diametro gambo	Lungh. tagl.	Lungh. scarico	Lungh. totale	Diametro scarico	Angolo scarico conico(°)	Lungh. scarico cilindrico	Angolo di interferenza (°)	Max profondità di taglio in base all'angolo di sforno				
	R	D1	D2	L1	L3	L2	D3	θ°	L4		0.5°	1°	1.5°	2°	3°
HPI92996	R0.5	1.0	4	0.75	20	70	0.95	2°	2.75	3.74	4.45	6.43	12.36	20.44	22.06
HPI92997	R0.5	1.0	4	0.75	20	70	0.95	3°	2.75	3.93	3.77	4.59	5.95	8.67	20.66
HPI92998	R0.5	1.0	4	0.75	25	70	0.95	0.5°	2.75	2.91	25.17	26.03	26.95	27.95	-
HPI92999	R0.5	1.0	4	0.75	25	70	0.95	1°	2.75	2.99	7.86	25.26	26.15	27.11	-
HPI92801	R0.5	1.0	4	0.75	25	70	0.95	1.5°	2.75	3.06	5.31	10.11	25.35	26.28	28.37
HPI92802	R0.5	1.0	4	0.75	30	70	0.95	0.5°	2.75	2.50	30.17	31.21	32.31	33.51	-
HPI92803	R0.5	1.0	4	0.75	30	70	0.95	1°	2.75	2.57	7.86	30.26	31.33	32.49	-
HPI92804	R0.5	1.0	4	0.75	30	70	0.95	1.5°	2.75	2.64	5.31	10.11	30.35	31.47	-
HPI92805	R0.5	1.0	4	0.75	30	70	0.95	2°	2.75	2.71	4.45	6.43	12.36	30.44	-
HPI92896	R0.5	1.0	6	0.75	30	70	0.95	3°	2.75	4.26	3.77	4.59	5.95	8.67	30.66
HPI92015	R0.75	1.5	4	1.1	10	60	1.45	0.5°	3.1	5.18	10.18	10.50	10.86	11.24	12.09
HPI92806	R0.75	1.5	4	1.1	10	60	1.45	1°	3.1	5.27	8.31	10.26	10.61	10.98	11.81
HPI92807	R0.75	1.5	4	1.1	10	60	1.45	1.5°	3.1	5.36	5.71	10.02	10.36	10.72	11.53
HPI92808	R0.75	1.5	4	1.1	10	60	1.45	2°	3.1	5.45	4.84	6.88	10.11	10.46	11.25
HPI92809	R0.75	1.5	4	1.1	15	60	1.45	0.5°	3.1	3.84	15.18	15.68	16.22	16.80	18.10
HPI92810	R0.75	1.5	4	1.1	15	60	1.45	1°	3.1	3.92	8.31	15.26	15.79	16.35	17.62
HPI92811	R0.75	1.5	4	1.1	15	60	1.45	1.5°	3.1	4.01	5.71	10.66	15.36	15.91	17.14
HPI92812	R0.75	1.5	4	1.1	15	60	1.45	2°	3.1	4.10	4.84	6.88	13.01	15.46	16.65
HPI92813	R0.75	1.5	4	1.1	20	70	1.45	0.5°	3.1	3.05	20.18	20.85	21.58	22.36	24.11
HPI92814	R0.75	1.5	4	1.1	20	70	1.45	1°	3.1	3.12	8.31	20.26	20.97	21.73	23.43
HPI92815	R0.75	1.5	4	1.1	20	70	1.45	1.5°	3.1	3.20	5.71	10.66	20.36	21.09	22.74
HPI92816	R0.75	1.5	4	1.1	20	70	1.45	2°	3.1	3.28	4.84	6.88	13.01	20.46	22.06
HPI92817	R0.75	1.5	4	1.1	25	70	1.45	0.5°	3.1	2.53	25.18	26.03	26.94	27.92	-
HPI92818	R0.75	1.5	4	1.1	25	70	1.45	1°	3.1	2.59	8.31	25.26	26.15	27.10	-
HPI92819	R0.75	1.5	4	1.1	30	70	1.45	0.5°	3.1	2.16	30.18	31.20	32.30	33.48	-
HPI92820	R0.75	1.5	4	1.1	30	70	1.45	1°	3.1	2.22	8.31	30.26	31.33	32.48	-

SEGRE ►

Dimensioni	Tolleranza del raggio (mm)	Tolleranza diametro fresa (mm)	Tolleranza gambo
Fino a R3	+0.001~-0.005	0~-0.010	h4
Oltre R3	+0.003~-0.007	0~-0.012	>ø6: h5

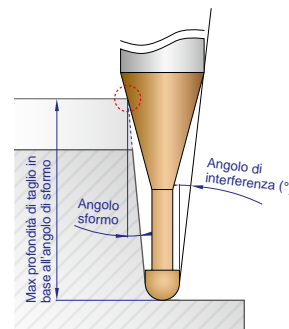
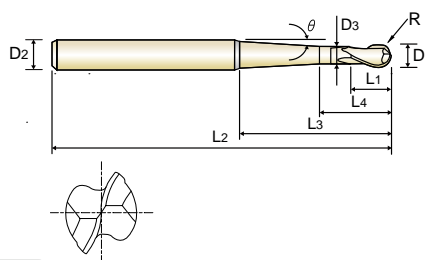
⊙: Specifico ○: Adatto

ISO	P											M			K									
	Acciai non legati					Acciai basso legati				Acciai alto legati		Acciai inox		Ghisa grigia		Ghisa nodulare		Ghisa malleabile						
Descrizione materiale	1	2	3	4	5	6	7	8	9	10	11.1	11.2	12	13	14.1	15	16	17	18	19	20			
VDI 3323																								
HRc	13	25	28	32	30	10	29	32	38	15	35	44	15	23	10	10	26	3	25	21				
HB	125	190	250	270	300	180	275	300	350	200	325	409	200	240	180	180	260	160	250	130	230			
Consigliato					○			○	○		○	○												
ISO	N										S						H							
Descrizione materiale	Leghe di alluminio		Alluminio fuso, legato			Rame e leghe di rame (Bronzo / Ottone)		Materiali non ferrosi			Super leghe resistenti al calore			Leghe di titanio			Acciai temprati				Fusione di ghisa	Ghisa indurita		
VDI 3323	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38.1	38.2	39.1	39.2	39.3	40	41
HRc											15	30	25	38	34			45-49	50-55	56-60	61-65	66-70	42	55
HB	60	100	75	90	130	110	90	100			200	280	250	350	320	400 Rm 1050 Rm		421-469	481-560	577-654	670-739	400	550	
Consigliato																		⊙	⊙	⊙	⊙	⊙	○	⊙

2 TAGLIENTI SEMISFERICA PER NERVATURE, SCARICO CONICO

HPI92

- ▶ Vita utensile aumentata grazie al nuovo rivestimento
- ▶ Applicazione di tolleranze ristrette per una lavorazione precisa



R0.5~R3 R3.5~R6

Unità: mm

CODICE	Raggio	Diametro fresa	Diametro gambo	Lungh. tagl.	Lungh. scarico	Lungh. totale	Diametro scarico	Angolo scarico conico(°)	Lungh. scarico cilindrico	Angolo di interferenza (°)	Max profondità di taglio in base all'angolo di sforno				
	R	D1	D2	L1	L3	L2	D3	θ°	L4		0.5°	1°	1.5°	2°	3°
HPI92020	R1.0	2.0	4	1.5	12	60	1.95	0.5°	3.5	3.93	12.18	12.57	12.99	13.44	14.45
HPI92821	R1.0	2.0	4	1.5	12	60	1.95	1°	3.5	4.01	8.86	12.27	12.68	13.12	14.10
HPI92822	R1.0	2.0	4	1.5	12	60	1.95	1.5°	3.5	4.09	6.18	11.36	12.37	12.80	13.76
HPI92823	R1.0	2.0	4	1.5	12	60	1.95	2°	3.5	4.17	5.29	7.43	12.07	12.48	13.41
HPI92824	R1.0	2.0	4	1.5	16	60	1.95	0.5°	3.5	3.11	16.18	16.71	17.28	17.89	19.26
HPI92825	R1.0	2.0	4	1.5	16	60	1.95	1°	3.5	3.18	8.86	16.27	16.83	17.42	18.75
HPI92826	R1.0	2.0	4	1.5	16	60	1.95	1.5°	3.5	3.25	6.18	11.36	16.37	16.95	18.24
HPI92827	R1.0	2.0	4	1.5	16	60	1.95	2°	3.5	3.33	5.29	7.43	13.86	16.48	17.74
HPI92828	R1.0	2.0	4	1.5	20	70	1.95	0.5°	3.5	2.57	20.18	20.85	21.57	22.34	-
HPI92829	R1.0	2.0	4	1.5	20	70	1.95	1°	3.5	2.63	8.86	20.27	20.97	21.72	-
HPI92830	R1.0	2.0	4	1.5	20	70	1.95	1.5°	3.5	2.70	6.18	11.36	20.37	21.10	-
HPI92831	R1.0	2.0	4	1.5	20	70	1.95	2°	3.5	2.77	5.29	7.43	13.86	20.48	-
HPI92832	R1.0	2.0	4	1.5	25	70	1.95	0.5°	3.5	2.11	25.18	26.02	26.93	27.90	-
HPI92833	R1.0	2.0	4	1.5	25	70	1.95	1°	3.5	2.17	8.86	25.27	26.15	27.09	-
HPI92834	R1.0	2.0	4	1.5	25	70	1.95	1.5°	3.5	2.23	6.18	11.36	25.37	26.29	-
HPI92835	R1.0	2.0	4	1.5	30	70	1.95	0.5°	3.5	1.79	30.18	31.20	32.29	-	-
HPI92836	R1.0	2.0	4	1.5	30	70	1.95	1°	3.5	1.84	8.86	30.27	31.33	-	-
HPI92837	R1.0	2.0	4	1.5	35	80	1.95	0.5°	3.5	1.56	35.18	36.37	37.65	-	-
HPI92838	R1.0	2.0	4	1.5	40	80	1.95	0.5°	3.5	1.38	40.18	41.55	-	-	-
HPI92839	R1.0	2.0	4	1.5	50	90	1.95	0.5°	3.5	1.12	50.18	51.89	-	-	-
HPI92840	R1.0	2.0	6	1.5	25	70	1.95	2°	3.5	3.98	5.29	7.43	13.86	25.48	27.47
HPI92841	R1.0	2.0	6	1.5	30	70	1.95	1.5°	3.5	3.37	6.18	11.36	30.37	31.48	33.95
HPI92842	R1.0	2.0	6	1.5	30	70	1.95	2°	3.5	3.46	5.29	7.43	13.86	30.48	32.87
HPI92843	R1.0	2.0	6	1.5	35	80	1.95	1°	3.5	2.90	8.86	35.27	36.51	37.84	-
HPI92844	R1.0	2.0	6	1.5	35	80	1.95	1.5°	3.5	2.98	6.18	11.36	35.37	36.66	-
HPI92845	R1.0	2.0	6	1.5	40	80	1.95	1°	3.5	2.59	8.86	40.27	41.69	43.22	-

SEGUE ▶

Dimensioni	Tolleranza del raggio (mm)	Tolleranza diametro fresa (mm)	Tolleranza gambo
Fino a R3	+0.001~-0.005	0~-0.010	h4
Oltre R3	+0.003~-0.007	0~-0.012	>ø6: h5

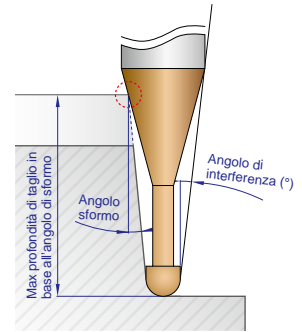
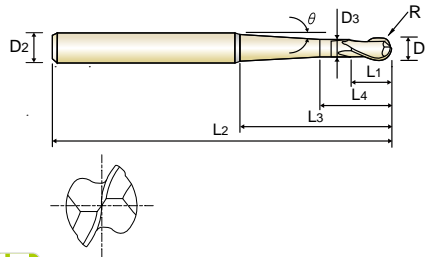
◎: Specifico ○: Adatto

ISO	P											M			K									
	Acciai non legati					Acciai basso legati				Acciai alto legati Acciai da utensili		Acciai inox			Ghisa grigia		Ghisa nodulare		Ghisa malleabile					
Descrizione materiale VDI 3323	1	2	3	4	5	6	7	8	9	10	11.1	11.2	12	13	14.1	15	16	17	18	19	20			
HRc	13	25	28	28	32	10	29	32	38	15	35	44	15	23	10	10	26	3	25	21				
HB	125	190	250	270	300	180	275	300	350	200	325	409	200	240	180	180	260	160	250	130	230			
Consigliato					○			○	○		○	○												
ISO	N					S					H													
	Leghe di alluminio		Alluminio fuso, legato			Rame e leghe di rame (Bronzo / Ottone)		Materiali non ferrosi			Super leghe resistenti al calore					Leghe di titanio		Acciai temprati					Fusione di ghisa	Ghisa indurita
Descrizione materiale VDI 3323	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38.1	38.2	39.1	39.2	39.3	40	41
HRc											15	30	25	38	34			45-49	50-55	56-60	61-65	66-70	42	55
HB	60	100	75	90	130	110	90	100			200	280	250	350	320	400 Rm	1050 Rm	421-469	481-560	577-654	670-739	400	550	
Consigliato																		◎	◎	◎	◎	◎	○	◎

2 TAGLIENTI SEMISFERICA PER NERVATURE, SCARICO CONICO

HPI92

- Vita utensile aumentata grazie al nuovo rivestimento
- Applicazione di tolleranze ristrette per una lavorazione precisa



MD 2 30° R +0.001 ~ -0.005 R +0.003 ~ -0.007 COATING P.40

R0.5-R3 R3.5-R6

Unità: mm

CODICE	Raggio	Diametro fresa	Diametro gambo	Lungh. tagl.	Lungh. scarico	Lungh. totale	Diametro scarico	Angolo scarico conico(°)	Lungh. scarico cilindrico	Angolo di interferenza (°)	Max profondità di taglio in base all'angolo di sforno				
	R	D1	D2	L1	L3	L2	D3	θ°	L4		0.5°	1°	1.5°	2°	3°
HPI92846	R1.0	2.0	6	1.5	40	80	1.95	1.5°	3.5	2.66	6.18	11.36	40.37	41.85	-
HPI92847	R1.0	2.0	6	1.5	40	80	1.95	2°	3.5	2.74	5.29	7.43	13.86	40.48	-
HPI92848	R1.0	2.0	6	1.5	50	90	1.95	1°	3.5	2.14	8.86	50.27	52.05	53.97	-
HPI92849	R1.0	2.0	6	1.5	50	90	1.95	1.5°	3.5	2.20	6.18	11.36	50.37	52.22	-
HPI92850	R1.0	2.0	6	1.5	50	90	1.95	2°	3.5	2.27	5.29	7.43	13.86	50.48	-
HPI92030	R1.5	3.0	6	2.5	15	70	2.85	0.5°	4.5	4.51	15.39	15.87	16.39	16.95	18.21
HPI92851	R1.5	3.0	6	2.5	15	70	2.85	1°	4.5	4.59	15.04	15.51	16.01	16.56	17.78
HPI92852	R1.5	3.0	6	2.5	15	70	2.85	1.5°	4.5	4.67	10.30	15.14	15.64	16.17	17.35
HPI92853	R1.5	3.0	6	2.5	15	70	2.85	2°	4.5	4.76	8.36	11.79	15.26	15.77	16.93
HPI92854	R1.5	3.0	6	2.5	20	70	2.85	0.5°	4.5	3.60	20.39	21.05	21.75	22.51	24.22
HPI92855	R1.5	3.0	6	2.5	20	70	2.85	1°	4.5	3.67	16.09	20.51	21.19	21.93	23.59
HPI92856	R1.5	3.0	6	2.5	20	70	2.85	1.5°	4.5	3.75	10.30	19.09	20.64	21.35	22.96
HPI92857	R1.5	3.0	6	2.5	20	70	2.85	2°	4.5	3.84	8.36	11.79	20.08	20.77	22.33
HPI92858	R1.5	3.0	6	2.5	25	70	2.85	0.5°	4.5	2.99	25.39	26.22	27.12	28.08	-
HPI92859	R1.5	3.0	6	2.5	25	70	2.85	1°	4.5	3.06	16.09	25.51	26.38	27.31	29.40
HPI92860	R1.5	3.0	6	2.5	25	70	2.85	1.5°	4.5	3.14	10.30	19.09	25.64	26.54	28.57
HPI92861	R1.5	3.0	6	2.5	30	70	2.85	0.5°	4.5	2.56	30.39	31.40	32.48	33.64	-
HPI92862	R1.5	3.0	6	2.5	30	70	2.85	1°	4.5	2.63	16.09	30.51	31.56	32.68	-
HPI92863	R1.5	3.0	6	2.5	30	70	2.85	1.5°	4.5	2.69	10.30	19.09	30.64	31.73	-
HPI92864	R1.5	3.0	6	2.5	30	70	2.85	2°	4.5	2.77	8.36	11.79	22.08	30.77	-
HPI92865	R1.5	3.0	6	2.5	40	80	2.85	0.5°	4.5	1.99	40.39	41.75	43.20	-	-
HPI92866	R1.5	3.0	6	2.5	40	80	2.85	1°	4.5	2.04	16.09	40.51	41.92	43.43	-
HPI92867	R1.5	3.0	6	2.5	40	80	2.85	1.5°	4.5	2.10	10.30	19.09	40.64	42.10	-
HPI92868	R1.5	3.0	6	2.5	50	90	2.85	0.5°	4.5	1.62	50.39	52.09	53.92	-	-
HPI92869	R1.5	3.0	6	2.5	50	90	2.85	1°	4.5	1.67	16.09	50.51	52.28	-	-
HPI92870	R1.5	3.0	6	2.5	50	90	2.85	1.5°	4.5	1.72	10.30	19.09	50.64	-	-

SEGRE ►

Dimensioni	Tolleranza del raggio (mm)	Tolleranza diametro fresa (mm)	Tolleranza gambo
Fino a R3	+0.001~-0.005	0~-0.010	h4
Oltre R3	+0.003~-0.007	0~-0.012	>ø6: h5

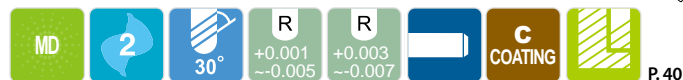
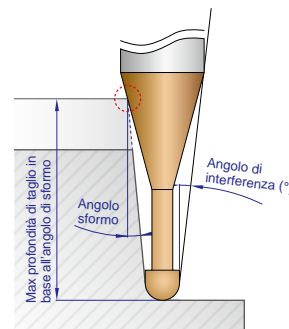
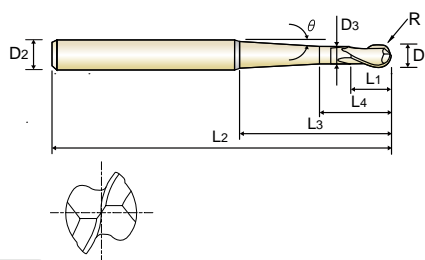
⊙: Specifico ○: Adatto

ISO	P											M			K									
	Acciai non legati					Acciai basso legati				Acciai alto legati		Acciai da utensili		Acciai inox			Ghisa grigia		Ghisa nodulare		Ghisa malleabile			
VDI 3323	1	2	3	4	5	6	7	8	9	10	11.1	11.2	12	13	14.1	15	16	17	18	19	20			
HRc	13	25	28	32	30	10	29	32	38	15	35	44	15	23	10	10	26	3	25	21	21			
HB	125	190	250	270	300	180	275	300	350	200	325	409	200	240	180	180	260	160	250	130	230			
Consigliato					○				○		○	○												
ISO	N										S						H							
	Leghe di alluminio		Alluminio fuso, legato			Rame e leghe di rame (Bronzo / Ottone)		Materiali non ferrosi			Super leghe resistenti al calore			Leghe di titanio			Acciai temprati				Fusione di ghisa	Ghisa indurita		
VDI 3323	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38.1	38.2	39.1	39.2	39.3	40	41
HRc											15	30	25	38	34			45-49	50-55	56-60	61-65	66-70	42	55
HB	60	100	75	90	130	110	90	100			200	280	250	350	320	400 Rm	1050 Rm	421-469	481-560	577-654	670-739	400	550	
Consigliato																		⊙	⊙	⊙	⊙	⊙	○	⊙

2 TAGLIENTI SEMISFERICA PER NERVATURE, SCARICO CONICO

HPI92

- ▶ Vita utensile aumentata grazie al nuovo rivestimento
- ▶ Applicazione di tolleranze ristrette per una lavorazione precisa



R0.5~R3 R3.5~R6

Unità: mm

CODICE	Raggio	Diametro fresa	Diametro gambo	Lungh. tagl.	Lungh. scarico	Lungh. totale	Diametro scarico	Angolo scarico conico(°)	Lungh. scarico cilindrico	Angolo di interferenza (°)	Max profondità di taglio in base all'angolo di sforno				
	R	D1	D2	L1	L3	L2	D3	θ°	L4		0.5°	1°	1.5°	2°	3°
HPI92040	R2.0	4.0	6	3	20	80	3.85	1°	5	2.72	16.59	20.51	21.18	21.90	-
HPI92871	R2.0	4.0	6	3	30	80	3.85	1°	5	1.89	16.59	30.51	31.54	-	-
HPI92872	R2.0	4.0	6	3	40	80	3.85	1°	5	1.44	16.59	40.51	-	-	-
HPI92873	R2.0	4.0	6	3	50	90	3.85	1°	5	1.17	16.59	50.51	-	-	-
HPI92874	R2.0	4.0	6	3	61.1	110	3.85	1°	5	0.96	16.59	-	-	-	-
HPI92897	R2.5	5.0	8	10	30	80	4.85	1°	13	2.66	30.07	31.03	32.06	33.17	-
HPI92898	R2.5	5.0	8	10	40	90	4.85	1°	13	2.06	32.09	41.03	42.42	43.92	-
HPI92899	R2.5	5.0	8	10	60	110	4.85	1°	13	1.42	32.09	61.03	-	-	-
HPI92701	R2.5	5.0	8	10	90	140	4.85	1°	13	0.97	32.09	-	-	-	-
HPI92702	R2.5	5.0	8	10	74	150	4.75	1.5°	13	1.20	25.41	48.31	-	-	-
HPI92703	R2.5	5.0	8	10	100	150	4.85	0.5°	13	0.85	100.64	-	-	-	-
HPI92704	R3.0	6.0	8	12	30	80	5.85	1°	15	1.91	30.19	31.14	32.15	-	-
HPI92705	R3.0	6.0	8	12	40	90	5.85	1°	15	1.45	35.59	41.14	-	-	-
HPI92706	R3.0	6.0	8	12	45	95	5.85	1°	15	1.30	35.59	46.14	-	-	-
HPI92707	R3.0	6.0	8	12	50	100	5.85	1°	15	1.18	35.59	51.14	-	-	-
HPI92708	R3.0	6.0	8	12	120	200	5.85	0.5°	15	0.49	-	-	-	-	-
HPI92709	R3.0	6.0	10	12	30	80	5.85	3°	15	3.60	19.11	23.14	29.84	30.99	33.27
HPI92710	R3.0	6.0	10	12	50	100	5.85	1.5°	15	2.23	25.29	47.58	51.61	53.43	-
HPI92711	R3.0	6.0	10	12	60	110	5.85	1°	15	1.85	35.59	61.14	63.24	-	-
HPI92712	R3.0	6.0	10	12	70	120	5.85	1°	15	1.61	35.59	71.14	73.60	-	-
HPI92713	R3.0	6.0	10	12	80	130	5.85	1°	15	1.42	35.59	81.14	-	-	-
HPI92714	R3.0	6.0	10	12	96	200	5.75	1.5°	15	1.23	28.16	53.31	-	-	-
HPI92715	R3.0	6.0	10	12	120	200	5.85	1°	15	0.97	35.59	-	-	-	-
HPI92070	R3.5	7.0	10	14	40	90	6.7	3°	17	2.25	23.13	28.03	36.20	40.94	-
HPI92875	R3.5	7.0	10	14	45	95	6.7	1°	17	1.87	45.09	46.54	48.09	-	-
HPI92876	R3.5	7.0	10	14	60	110	6.7	1.5°	17	1.47	32.34	60.04	-	-	-

SEGUE ▶

Dimensioni	Tolleranza del raggio (mm)	Tolleranza diametro fresa (mm)	Tolleranza gambo
Fino a R3	+0.001~-0.005	0~-0.010	h4
Oltre R3	+0.003~-0.007	0~-0.012	>ø6: h5

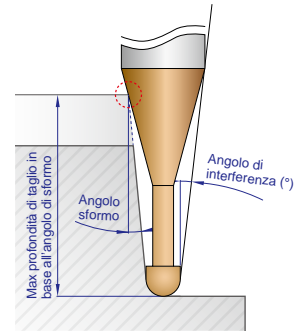
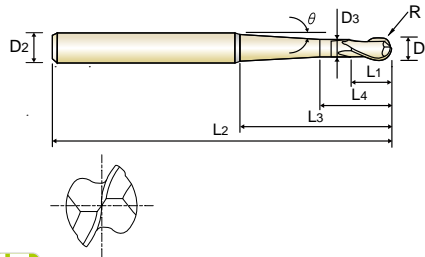
◎: Specifico ○: Adatto

ISO	P												M			K								
	Acciai non legati						Acciai basso legati						Acciai alto legati Acciai da utensili			Acciai inox			Ghisa grigia	Ghisa nodulare	Ghisa malleabile			
Descrizione materiale VDI 3323	1	2	3	4	5	6	7	8	9	10	11.1	11.2	12	13	14.1	15	16	17	18	19	20			
HRc	13	13	25	28	32	10	29	32	38	15	35	44	15	23	10	10	26	3	25	21	21			
HB	125	190	250	270	300	180	275	300	350	200	325	409	200	240	180	180	260	160	250	130	230			
Consigliato					○			○	○		○	○												
ISO	N						S						H											
	Leghe di alluminio		Alluminio fuso, legato		Rame e leghe di rame (Bronzo / Ottone)		Materiali non ferrosi		Super leghe resistenti al calore				Leghe di titanio		Acciai temprati				Fusione di ghisa	Ghisa indurita				
Descrizione materiale VDI 3323	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38.1	38.2	39.1	39.2	39.3	40	41
HRc											15	30	25	38	34			45-49	50-55	56-60	61-65	66-70	42	55
HB	60	100	75	90	130	110	90	100			200	280	250	350	320	400 Rm	1050 Rm	421-469	481-560	577-654	670-739	400	400	550
Consigliato																		◎	◎	◎	◎	◎	○	◎

2 TAGLIENTI SEMISFERICA PER NERVATURE, SCARICO CONICO

HPI92

- Vita utensile aumentata grazie al nuovo rivestimento
- Applicazione di tolleranze ristrette per una lavorazione precisa



R0.5-R3 R3.5-R6

Unità: mm

CODICE	Raggio	Diametro fresa	Diametro gambo	Lungh. tagl.	Lungh. scarico	Lungh. totale	Diametro scarico	Angolo scarico conico(°)	Lungh. scarico cilindrico	Angolo di interferenza (°)	Max profondità di taglio in base all'angolo di sforno				
	R	D1	D2	L1	L3	L2	D3	θ°	L4		0.5°	1°	1.5°	2°	3°
HPI92080	R4.0	8.0	10	14	35	95	7.7	3°	17	1.80	23.03	27.78	35.08	-	-
HPI92877	R4.0	8.0	10	14	50	110	7.7	1°	17	1.19	47.18	51.50	-	-	-
HPI92878	R4.0	8.0	10	14	50	110	7.7	1.5°	17	1.22	32.09	50.35	-	-	-
HPI92879	R4.0	8.0	10	14	55	115	7.7	1°	17	1.08	47.18	56.50	-	-	-
HPI92880	R4.0	8.0	10	14	60	120	7.7	1°	17	1.00	47.18	-	-	-	-
HPI92881	R4.0	8.0	10	14	70	130	7.7	1°	17	0.86	47.18	-	-	-	-
HPI92882	R4.0	8.0	10	14	120	200	7.7	0.5°	17	0.49	-	-	-	-	-
HPI92883	R4.0	8.0	12	14	80	140	7.7	1°	17	1.43	47.18	81.50	-	-	-
HPI92884	R4.0	8.0	12	14	98	200	7.7	1.5°	17	1.22	32.09	60.17	-	-	-
HPI92885	R4.0	8.0	12	14	120	200	7.7	1°	17	0.98	47.18	-	-	-	-
HPI92100	R5.0	10.0	12	18	35	105	9.7	3°	21	1.82	27.63	33.28	35.83	-	-
HPI92886	R5.0	10.0	12	18	55	125	9.7	1.5°	21	1.12	37.59	55.53	-	-	-
HPI92887	R5.0	10.0	12	18	60	130	9.7	1°	21	1.01	54.18	61.71	-	-	-
HPI92888	R5.0	10.0	12	18	65	135	9.7	1°	21	0.93	54.18	-	-	-	-
HPI92889	R5.0	10.0	12	18	75	140	9.7	1°	21	0.81	54.18	-	-	-	-
HPI92890	R5.0	10.0	12	18	86	200	9.7	1°	21	0.71	54.18	-	-	-	-
HPI92891	R5.0	10.0	12	18	120	200	9.7	0.5°	21	0.49	-	-	-	-	-
HPI92892	R5.0	10.0	16	18	120	200	9.7	1.5°	21	1.47	37.59	70.17	-	-	-
HPI92120	R6.0	12.0	16	22	60	140	11.7	3°	25	2.08	32.23	38.78	49.69	60.86	-
HPI92893	R6.0	12.0	16	22	80	160	11.7	1.5°	25	1.49	43.09	80.01	-	-	-
HPI92894	R6.0	12.0	16	22	106	200	11.7	1.5°	25	1.14	43.09	80.17	-	-	-
HPI92895	R6.0	12.0	16	22	120	200	11.7	1°	25	0.99	61.18	-	-	-	-

Dimensioni	Tolleranza del raggio (mm)	Tolleranza diametro fresa (mm)	Tolleranza gambo
Fino a R3	+0.001~-0.005	0~-0.010	h4
Oltre R3	+0.003~-0.007	0~-0.012	>ø6: h5

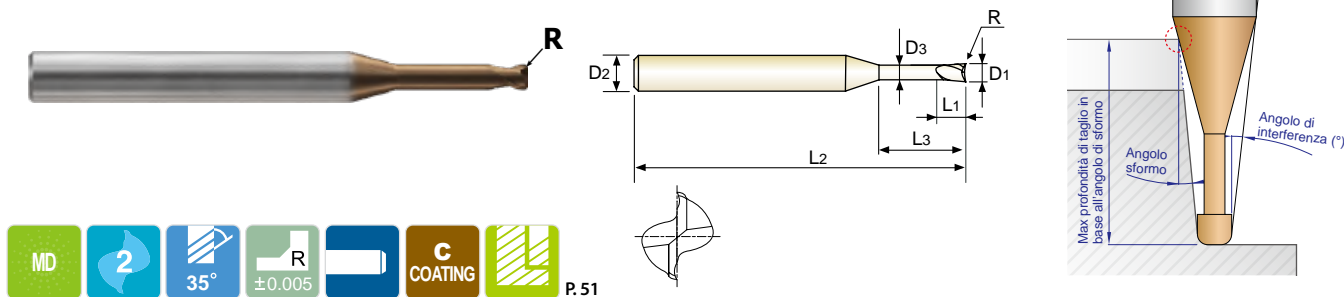
⊙: Specifico ○: Adatto

ISO	P												M			K											
	Acciai non legati						Acciai basso legati						Acciai alto legati Acciai da utensili			Acciai inox			Ghisa grigia		Ghisa nodulare			Ghisa malleabile			
VDI 3323	1	2	3	4	5	6	7	8	9	10	11.1	11.2	12	13	14.1	15	16	17	18	19	20						
HRc	13	25	28	32	38	10	29	32	38	15	35	44	15	23	10	10	26	3	25	21	21						
HB	125	190	250	270	300	180	275	300	350	200	325	409	200	240	180	180	260	160	250	130	230						
Consigliato					○				○			○															
ISO	N										S						H										
	Leghe di alluminio		Alluminio fuso, legato				Rame e leghe di rame (Bronzo/Ottone)				Materiali non ferrosi		Super leghe resistenti al calore				Leghe di titanio		Acciai temprati						Fusione di ghisa		Ghisa indurita
VDI 3323	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38.1	38.2	39.1	39.2	39.3	40	41			
HRc											15	30	25	38	34			45-49	50-55	56-60	61-65	66-70	42	55			
HB	60	100	75	90	130	110	90	100			200	280	250	350	320	400 Rm 1050 Rm		421-469	481-560	577-654	670-739	400	550				
Consigliato																		⊙	⊙	⊙	⊙	⊙	○	⊙			

2 TAGLIENTI TORICA PER NERVATURE

HPI89

- ▶ Vita utensile aumentata grazie al nuovo rivestimento
- ▶ Applicazione di tolleranze ristrette per una lavorazione precisa



Unità: mm

CODICE	Raggio	Diametro fresa	Diametro gambo	Lung. tagli.	Lung. scarico	Lung. totale	Diametro scarico	Angolo di interferenza (°)	Max profondità di taglio in base all'angolo di sforno				
	R	D1	D2	L1	L3	L2	D3		0.5°	1°	1.5°	2°	3°
HPI89002	R0.02	0.2	4	0.15	0.5	45	0.17	13.99	0.61	0.65	0.68	0.72	0.82
HPI89901	R0.05	0.2	4	0.15	0.5	45	0.17	14.04	0.61	0.64	0.68	0.72	0.81
HPI89902	R0.02	0.2	4	0.15	1	45	0.17	13.16	1.14	1.20	1.27	1.35	1.54
HPI89903	R0.05	0.2	4	0.15	1	45	0.17	13.21	1.14	1.20	1.27	1.34	1.52
HPI89904	R0.02	0.2	4	0.15	1.5	45	0.17	12.42	1.67	1.76	1.86	1.97	2.25
HPI89905	R0.05	0.2	4	0.15	1.5	45	0.17	12.46	1.66	1.75	1.85	1.96	2.23
HPI89906	R0.02	0.2	4	0.15	2	45	0.17	11.76	2.19	2.31	2.45	2.60	2.96
HPI89907	R0.05	0.2	4	0.15	2	45	0.17	11.80	2.19	2.31	2.44	2.59	2.95
HPI89003	R0.02	0.3	4	0.25	1	45	0.27	13.12	1.14	1.20	1.27	1.35	1.54
HPI89908	R0.05	0.3	4	0.25	1	45	0.27	13.16	1.14	1.20	1.27	1.34	1.52
HPI89909	R0.02	0.3	4	0.25	1.5	45	0.27	12.36	1.67	1.76	1.86	1.97	2.25
HPI89910	R0.05	0.3	4	0.25	1.5	45	0.27	12.41	1.66	1.75	1.85	1.96	2.23
HPI89911	R0.02	0.3	4	0.25	2	45	0.27	11.69	2.19	2.31	2.45	2.60	2.96
HPI89912	R0.05	0.3	4	0.25	2	45	0.27	11.73	2.19	2.31	2.44	2.59	2.95
HPI89913	R0.02	0.3	4	0.25	2.5	45	0.27	11.09	2.72	2.87	3.03	3.22	3.67
HPI89914	R0.05	0.3	4	0.25	2.5	45	0.27	11.12	2.72	2.86	3.03	3.21	3.66
HPI89915	R0.02	0.3	4	0.25	3	45	0.27	10.54	3.24	3.42	3.62	3.84	4.38
HPI89916	R0.05	0.3	4	0.25	3	45	0.27	10.57	3.24	3.42	3.61	3.83	4.37
HPI89004	R0.02	0.4	4	0.3	1	45	0.37	13.07	1.14	1.20	1.27	1.35	1.54
HPI89917	R0.05	0.4	4	0.3	1	45	0.37	13.12	1.14	1.20	1.27	1.34	1.52
HPI89918	R0.1	0.4	4	0.3	1	45	0.37	13.20	1.14	1.19	1.26	1.33	1.50
HPI89919	R0.02	0.4	4	0.3	1.5	45	0.37	12.30	1.67	1.76	1.86	1.97	2.25
HPI89920	R0.05	0.4	4	0.3	1.5	45	0.37	12.35	1.66	1.75	1.85	1.96	2.23
HPI89921	R0.02	0.4	4	0.3	2	45	0.37	11.62	2.19	2.31	2.45	2.60	2.96
HPI89922	R0.05	0.4	4	0.3	2	45	0.37	11.66	2.19	2.31	2.44	2.59	2.95
HPI89923	R0.1	0.4	4	0.3	2	45	0.37	11.72	2.19	2.30	2.43	2.58	2.92

SEGUE ▶

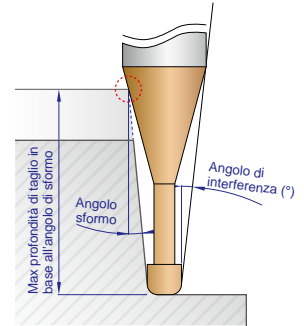
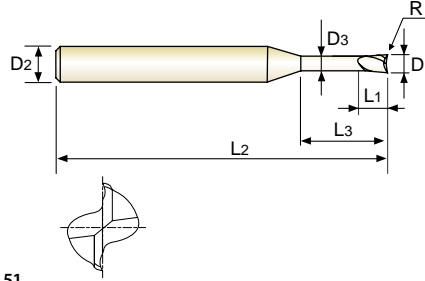
Tolleranza del raggio (mm)	Tolleranza diametro fresa (mm)	Tolleranza gambo
±0.005	0~-0.010	h4

◎: Specifico ○: Adatto

ISO	P												M			K								
	Acciai non legati						Acciai basso legati						Acciai alto legati Acciai da utensili			Acciai inox			Ghisa grigia	Ghisa nodulare	Ghisa malleabile			
Descrizione materiale VDI 3323	1	2	3	4	5	6	7	8	9	10	11.1	11.2	12	13	14.1	15	16	17	18	19	20			
HRc	13	25	28	32	30	10	29	32	38	15	35	44	15	23	10	10	26	3	25	21	21			
HB	125	190	250	270	300	180	275	300	350	200	325	409	200	240	180	180	260	160	250	130	230			
Consigliato					○				○		○													
ISO	N						S						H											
	Leghe di alluminio		Alluminio fuso, legato		Rame e leghe di rame (Bronzo / Ottone)		Materiali non ferrosi			Super leghe resistenti al calore			Leghe di titanio		Acciai temprati					Fusione di ghisa	Ghisa indurita			
Descrizione materiale VDI 3323	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38.1	38.2	39.1	39.2	39.3	40	41
HRc											15	30	25	38	34			45-49	50-55	56-60	61-65	66-70	42	55
HB	60	100	75	90	130	110	90	100			200	280	250	350	320	400 Rm	1050 Rm	421-469	481-560	577-654	670-739	400	550	550
Consigliato																		◎	◎	◎	◎	◎	○	◎

2 TAGLIENTI TORICA PER NERVATURE

- Vita utensile aumentata grazie al nuovo rivestimento
- Applicazione di tolleranze ristrette per una lavorazione precisa



Unità: mm

CODICE	Raggio	Diametro fresa	Diametro gambo	Lungh. tagl.	Lungh. scarico	Lungh. totale	Diametro scarico	Angolo di interferenza (°)	Max profondità di taglio in base all'angolo di sforno				
	R	D ₁	D ₂	L ₁	L ₃	L ₂	D ₃	(°)	0.5°	1°	1.5°	2°	3°
HPI89924	R0.02	0.4	4	0.3	2.5	45	0.37	11.01	2.72	2.87	3.03	3.22	3.67
HPI89925	R0.05	0.4	4	0.3	2.5	45	0.37	11.04	2.72	2.86	3.03	3.21	3.66
HPI89926	R0.02	0.4	4	0.3	3	45	0.37	10.46	3.24	3.42	3.62	3.84	4.38
HPI89927	R0.05	0.4	4	0.3	3	45	0.37	10.49	3.24	3.42	3.61	3.83	4.37
HPI89928	R0.1	0.4	4	0.3	3	45	0.37	10.54	3.24	3.41	3.61	3.82	4.35
HPI89929	R0.02	0.4	4	0.3	4	45	0.37	9.50	4.30	4.53	4.79	5.09	5.80
HPI89930	R0.05	0.4	4	0.3	4	45	0.37	9.53	4.30	4.53	4.79	5.08	5.79
HPI89931	R0.1	0.4	4	0.3	4	45	0.37	9.57	4.29	4.52	4.78	5.07	5.77
HPI89005	R0.02	0.5	4	0.4	1	45	0.45	12.96	1.20	1.27	1.34	1.42	1.62
HPI89932	R0.05	0.5	4	0.4	1	45	0.45	13.01	1.20	1.26	1.33	1.41	1.60
HPI89933	R0.1	0.5	4	0.4	1	45	0.45	13.09	1.20	1.26	1.32	1.40	1.58
HPI89934	R0.02	0.5	4	0.4	2	45	0.45	11.50	2.25	2.37	2.51	2.67	3.04
HPI89935	R0.05	0.5	4	0.4	2	45	0.45	11.54	2.25	2.37	2.51	2.66	3.03
HPI89936	R0.1	0.5	4	0.4	2	45	0.45	11.60	2.25	2.37	2.50	2.65	3.01
HPI89937	R0.02	0.5	4	0.4	3	45	0.45	10.33	3.30	3.48	3.69	3.91	4.46
HPI89938	R0.05	0.5	4	0.4	3	45	0.45	10.36	3.30	3.48	3.68	3.91	4.45
HPI89939	R0.1	0.5	4	0.4	3	45	0.45	10.41	3.30	3.48	3.67	3.89	4.43
HPI89940	R0.02	0.5	4	0.4	4	45	0.45	9.37	4.36	4.59	4.86	5.16	5.88
HPI89941	R0.05	0.5	4	0.4	4	45	0.45	9.40	4.35	4.59	4.86	5.15	5.87
HPI89942	R0.1	0.5	4	0.4	4	45	0.45	9.44	4.35	4.59	4.85	5.14	5.85
HPI89943	R0.02	0.5	4	0.4	5	45	0.45	8.58	5.41	5.70	6.04	6.41	7.31
HPI89944	R0.05	0.5	4	0.4	5	45	0.45	8.60	5.41	5.70	6.03	6.40	7.30
HPI89945	R0.1	0.5	4	0.4	5	45	0.45	8.63	5.40	5.70	6.02	6.39	7.27
HPI89946	R0.02	0.5	4	0.4	6	45	0.45	7.90	6.46	6.81	7.21	7.65	8.73
HPI89947	R0.05	0.5	4	0.4	6	45	0.45	7.92	6.46	6.81	7.20	7.65	8.72
HPI89948	R0.1	0.5	4	0.4	6	45	0.45	7.95	6.46	6.81	7.20	7.63	8.70

Tolleranza del raggio (mm)	Tolleranza diametro fresa (mm)	Tolleranza gambo
±0.005	0~-0.010	h4

SEGRE ►

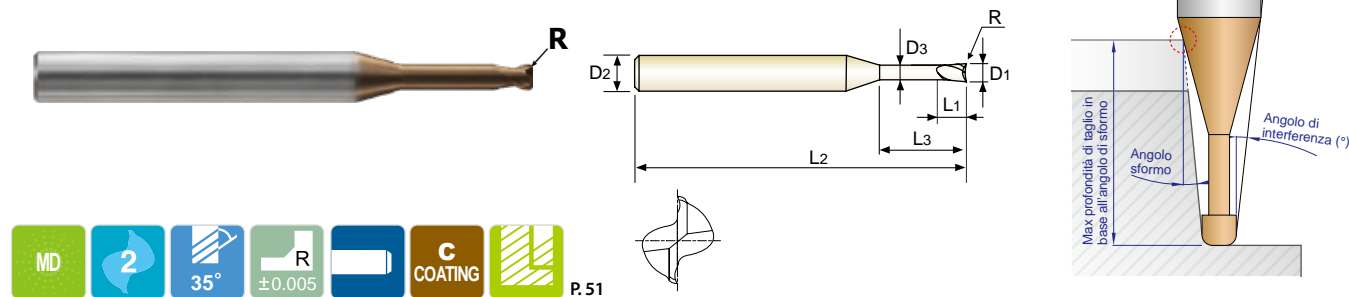
◎: Specifico ○: Adatto

ISO	P											M			K									
	Acciai non legati					Acciai basso legati					Acciai alto legati Acciai da utensili			Acciai inox			Ghisa grigia		Ghisa nodulare		Ghisa malleabile			
VDI 3323	1	2	3	4	5	6	7	8	9	10	11.1	11.2	12	13	14.1	15	16	17	18	19	20			
HRc	13	25	28	32	30	10	29	32	38	15	35	44	15	23	10	10	26	3	25	21	21			
HB	125	190	250	270	300	180	275	300	350	200	325	409	200	240	180	260	160	250	130	230	230			
Consigliato					○				○		○	○												
ISO	N										S						H							
	Leghe di alluminio		Alluminio fuso, legato			Rame e leghe di rame (Bronzo / Ottone)		Materiali non ferrosi			Super leghe resistenti al calore			Leghe di titanio			Acciai temprati						Fusione di ghisa	Ghisa indurita
VDI 3323	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38.1	38.2	39.1	39.2	39.3	40	41
HRc											15	30	25	38	34			45-49	50-55	56-60	61-65	66-70	42	55
HB	60	100	75	90	130	110	90	100			200	280	250	350	320	400 Rm 1050 Rm		421-469	481-560	577-654	670-739	400	550	
Consigliato																		◎	◎	◎	◎	◎	○	◎

2 TAGLIENTI TORICA PER NERVATURE

HPI89

- ▶ Vita utensile aumentata grazie al nuovo rivestimento
- ▶ Applicazione di tolleranze ristrette per una lavorazione precisa



Unità: mm

CODICE	Raggio	Diametro fresa	Diametro gambo	Lungh. tagli.	Lungh. scarico	Lungh. totale	Diametro scarico	Angolo di interferenza (°)	Max profondità di taglio in base all'angolo di sforno				
	R	D1	D2	L1	L3	L2	D3		0.5°	1°	1.5°	2°	3°
HPI89006	R0.02	0.6	4	0.5	2	45	0.55	11.42	2.25	2.37	2.51	2.67	3.04
HPI89949	R0.05	0.6	4	0.5	2	45	0.55	11.46	2.25	2.37	2.51	2.66	3.03
HPI89950	R0.1	0.6	4	0.5	2	45	0.55	11.52	2.25	2.37	2.50	2.65	3.01
HPI89951	R0.02	0.6	4	0.5	4	45	0.55	9.27	4.36	4.59	4.86	5.16	5.88
HPI89952	R0.05	0.6	4	0.5	4	45	0.55	9.29	4.35	4.59	4.86	5.15	5.87
HPI89953	R0.1	0.6	4	0.5	4	45	0.55	9.34	4.35	4.59	4.85	5.14	5.85
HPI89954	R0.02	0.6	4	0.5	6	45	0.55	7.80	6.46	6.81	7.21	7.65	8.73
HPI89955	R0.05	0.6	4	0.5	6	45	0.55	7.81	6.46	6.81	7.20	7.65	8.72
HPI89956	R0.1	0.6	4	0.5	6	45	0.55	7.85	6.46	6.81	7.20	7.63	8.70
HPI89957	R0.02	0.6	4	0.5	8	50	0.55	6.72	8.56	9.03	9.56	10.15	11.41
HPI89958	R0.05	0.6	4	0.5	8	50	0.55	6.74	8.56	9.03	9.55	10.14	11.40
HPI89959	R0.1	0.6	4	0.5	8	50	0.55	6.76	8.56	9.03	9.54	10.13	11.39
HPI89960	R0.02	0.6	4	0.5	10	50	0.55	5.91	10.67	11.25	11.91	12.64	13.74
HPI89961	R0.05	0.6	4	0.5	10	50	0.55	5.92	10.67	11.25	11.90	12.63	13.74
HPI89962	R0.1	0.6	4	0.5	10	50	0.55	5.94	10.66	11.25	11.89	12.62	13.73
HPI89007	R0.02	0.7	4	0.55	2	45	0.65	11.34	2.25	2.37	2.51	2.67	3.04
HPI89963	R0.05	0.7	4	0.55	2	45	0.65	11.38	2.25	2.37	2.51	2.66	3.03
HPI89964	R0.1	0.7	4	0.55	2	45	0.65	11.44	2.25	2.37	2.50	2.65	3.01
HPI89965	R0.02	0.7	4	0.55	4	45	0.65	9.16	4.36	4.59	4.86	5.16	5.88
HPI89966	R0.05	0.7	4	0.55	4	45	0.65	9.19	4.35	4.59	4.86	5.15	5.87
HPI89967	R0.1	0.7	4	0.55	4	45	0.65	9.23	4.35	4.59	4.85	5.14	5.85
HPI89968	R0.02	0.7	4	0.55	6	45	0.65	7.68	6.46	6.81	7.21	7.65	8.73
HPI89969	R0.05	0.7	4	0.55	6	45	0.65	7.70	6.46	6.81	7.20	7.65	8.72
HPI89970	R0.1	0.7	4	0.55	6	45	0.65	7.73	6.46	6.81	7.20	7.63	8.70
HPI89008	R0.02	0.8	4	0.65	2	45	0.75	11.25	2.25	2.37	2.51	2.67	3.04
HPI89971	R0.05	0.8	4	0.65	2	45	0.75	11.29	2.25	2.37	2.51	2.66	3.03

SEGUE ▶

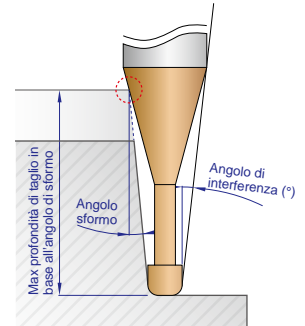
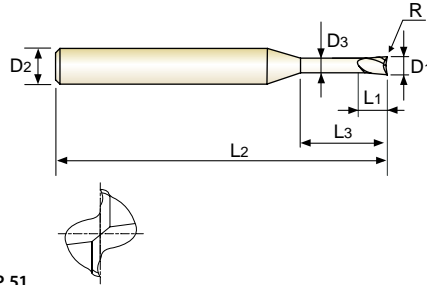
Tolleranza del raggio (mm)	Tolleranza diametro fresa (mm)	Tolleranza gambo
±0.005	0~-0.010	h4

◎: Specifico ○: Adatto

ISO	P												M			K														
	Acciai non legati						Acciai basso legati						Acciai alto legati Acciai da utensili			Acciai inox			Ghisa grigia	Ghisa nodulare	Ghisa malleabile									
Descrizione materiale	1	2	3	4	5	6	7	8	9	10	11.1	11.2	12	13	14.1	15	16	17	18	19	20									
VDI 3323	13	25	28	32	10	29	32	38	15	35	44	15	23	10	10	26	3	25												
HRc	125	190	250	270	300	180	275	300	350	200	325	409	200	240	180	180	260	160	250	130	230									
HB																														
Consigliato					○				○		○																			
ISO	N						S						H																	
	Leghe di alluminio		Alluminio fuso, legato		Rame e leghe di rame (Bronzo / Ottone)		Materiali non ferrosi		Super leghe resistenti al calore				Leghe di titanio		Acciai temprati					Fusione di ghisa	Ghisa indurita									
Descrizione materiale	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38.1	38.2	39.1	39.2	39.3	40	41						
VDI 3323	60	100	75	90	130	110	90	100			15	30	25	38	34	200	280	250	350	320	400 Rm	1050 Rm	45-49	50-55	56-60	61-65	66-70	42	55	
HRc																		421-469	481-560	577-654	670-739									
HB																														
Consigliato																		◎	◎	◎	◎	◎	◎	○	◎					

2 TAGLIENTI TORICA PER NERVATURE

- Vita utensile aumentata grazie al nuovo rivestimento
- Applicazione di tolleranze ristrette per una lavorazione precisa



Unità: mm

CODICE	Raggio	Diametro fresa	Diametro gambo	Lungh. tagl.	Lungh. scarico	Lungh. totale	Diametro scarico	Angolo di interferenza (°)	Max profondità di taglio in base all'angolo di sforno				
	R	D ₁	D ₂	L ₁	L ₃	L ₂	D ₃	(°)	0.5°	1°	1.5°	2°	3°
HPI89972	R0.1	0.8	4	0.65	2	45	0.75	11.36	2.25	2.37	2.50	2.65	3.01
HPI89973	R0.2	0.8	4	0.65	2	45	0.75	11.50	2.24	2.36	2.48	2.62	2.96
HPI89974	R0.02	0.8	4	0.65	4	45	0.75	9.05	4.36	4.59	4.86	5.16	5.88
HPI89975	R0.05	0.8	4	0.65	4	45	0.75	9.08	4.35	4.59	4.86	5.15	5.87
HPI89976	R0.1	0.8	4	0.65	4	45	0.75	9.12	4.35	4.59	4.85	5.14	5.85
HPI89977	R0.2	0.8	4	0.65	4	45	0.75	9.21	4.35	4.57	4.83	5.12	5.81
HPI89978	R0.02	0.8	4	0.65	6	45	0.75	7.57	6.46	6.81	7.21	7.65	8.73
HPI89979	R0.05	0.8	4	0.65	6	45	0.75	7.59	6.46	6.81	7.20	7.65	8.72
HPI89980	R0.1	0.8	4	0.65	6	45	0.75	7.62	6.46	6.81	7.20	7.63	8.70
HPI89981	R0.2	0.8	4	0.65	6	45	0.75	7.68	6.45	6.79	7.18	7.61	8.65
HPI89982	R0.02	0.8	4	0.65	8	50	0.75	6.50	8.56	9.03	9.56	10.15	11.29
HPI89983	R0.05	0.8	4	0.65	8	50	0.75	6.51	8.56	9.03	9.55	10.14	11.29
HPI89984	R0.1	0.8	4	0.65	8	50	0.75	6.54	8.56	9.03	9.54	10.13	11.28
HPI89985	R0.2	0.8	4	0.65	8	50	0.75	6.58	8.56	9.01	9.53	10.10	11.26
HPI89986	R0.05	0.8	4	0.65	12	50	0.75	5.08	12.77	13.47	14.25	15.11	15.96
HPI89987	R0.1	0.8	4	0.65	12	50	0.75	5.09	12.77	13.46	14.24	15.11	15.95
HPI89988	R0.2	0.8	4	0.65	12	50	0.75	5.12	12.76	13.45	14.22	15.09	15.93
HPI89009	R0.1	0.9	4	0.7	4	45	0.85	9.01	4.35	4.59	4.85	5.14	5.85
HPI89989	R0.1	0.9	4	0.7	8	50	0.85	6.42	8.56	9.03	9.54	10.13	11.22
HPI89010	R0.1	1.0	4	0.8	4	50	0.95	8.89	4.35	4.59	4.85	5.14	5.85
HPI89990	R0.2	1.0	4	0.8	4	50	0.95	8.98	4.35	4.57	4.83	5.12	5.81
HPI89991	R0.1	1.0	4	0.8	6	50	0.95	7.37	6.46	6.81	7.20	7.63	8.70
HPI89992	R0.2	1.0	4	0.8	6	50	0.95	7.44	6.45	6.79	7.18	7.61	8.65
HPI89993	R0.3	1.0	4	0.8	6	50	0.95	7.50	6.45	6.78	7.16	7.58	8.61
HPI89994	R0.1	1.0	4	0.8	8	50	0.95	6.30	8.56	9.03	9.54	10.13	11.16
HPI89995	R0.2	1.0	4	0.8	8	50	0.95	6.34	8.56	9.01	9.53	10.10	11.15

SEGRE ►

Tolleranza del raggio (mm)	Tolleranza diametro fresa (mm)	Tolleranza gambo
±0.005	0~-0.010	h4

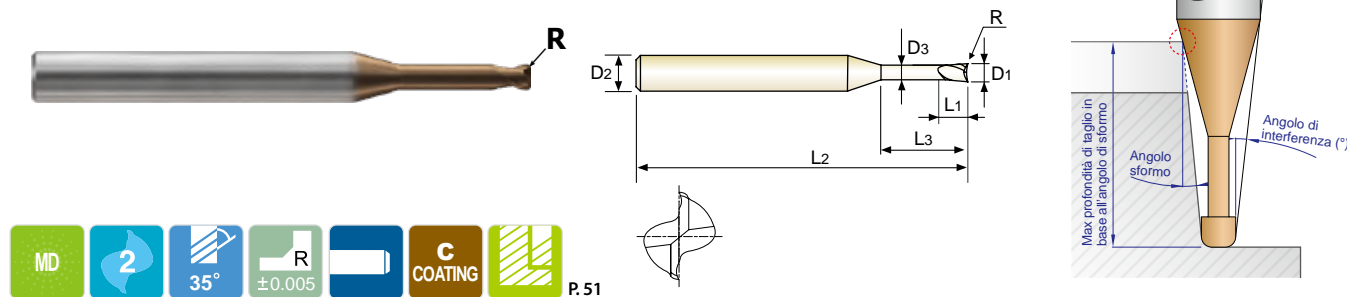
◎: Specifico ○: Adatto

ISO	P												M			K									
	Acciai non legati						Acciai basso legati						Acciai inox			Ghisa grigia		Ghisa nodulare			Ghisa malleabile				
VDI 3323	1	2	3	4	5	6	7	8	9	10	11.1	11.2	12	13	14.1	15	16	17	18	19	20				
HRc	13	25	28	32	30	10	29	32	38	15	35	44	15	23	10	10	26	3	25	21	21				
HB	125	190	250	270	300	180	275	300	350	200	325	409	200	240	180	180	260	160	250	130	230				
Consigliato					○				○		○														
ISO	N										S						H								
	Leghe di alluminio		Alluminio fuso, legato			Rame e leghe di rame (Bronzo / Ottone)		Materiali non ferrosi			Super leghe resistenti al calore			Leghe di titanio			Acciai temprati						Fusione di ghisa		Ghisa indurita
VDI 3323	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38.1	38.2	39.1	39.2	39.3	40	41	
HRc											15	30	25	38	34			45-49	50-55	56-60	61-65	66-70	42	55	
HB	60	100	75	90	130	110	90	100			200	280	250	350	320	400 Rm	1050 Rm	421-469	481-560	577-654	670-739	400	550		
Consigliato																		◎	◎	◎	◎	◎	○	◎	

2 TAGLIENTI TORICA PER NERVATURE

HPI89

- ▶ Vita utensile aumentata grazie al nuovo rivestimento
- ▶ Applicazione di tolleranze ristrette per una lavorazione precisa



Unità: mm

CODICE	Raggio	Diametro fresa	Diametro gambo	Lungh. tagli.	Lungh. scarico	Lungh. totale	Diametro scarico	Angolo di interferenza (°)	Max profondità di taglio in base all'angolo di sforno				
	R	D1	D2	L1	L3	L2	D3		0.5°	1°	1.5°	2°	3°
HPI89996	R0.1	1.0	4	0.8	10	50	0.95	5.50	10.66	11.25	11.89	12.62	13.50
HPI89997	R0.2	1.0	4	0.8	10	50	0.95	5.53	10.66	11.23	11.88	12.60	13.48
HPI89998	R0.3	1.0	4	0.8	10	50	0.95	5.57	10.65	11.22	11.86	12.57	13.47
HPI89999	R0.1	1.0	4	0.8	12	55	0.95	4.87	12.77	13.46	14.24	15.00	15.84
HPI89801	R0.2	1.0	4	0.8	12	55	0.95	4.90	12.76	13.45	14.22	14.99	15.82
HPI89802	R0.1	1.0	4	0.8	16	60	0.95	3.97	16.98	17.90	18.92	19.42	20.51
HPI89803	R0.2	1.0	4	0.8	16	60	0.95	3.99	16.97	17.89	18.92	19.41	20.49
HPI89804	R0.3	1.0	4	0.8	16	60	0.95	4.01	16.97	17.88	18.90	19.40	20.47
HPI89805	R0.1	1.0	4	0.8	20	60	0.95	3.35	21.19	22.34	23.23	23.85	25.18
HPI89806	R0.2	1.0	4	0.8	20	60	0.95	3.37	21.18	22.33	23.23	23.84	25.16
HPI89807	R0.3	1.0	4	0.8	20	60	0.95	3.38	21.17	22.32	23.22	23.83	25.15
HPI89015	R0.1	1.5	4	1.35	4	50	1.45	8.21	4.23	4.37	4.53	4.69	5.06
HPI89808	R0.2	1.5	4	1.35	4	50	1.45	8.31	4.22	4.36	4.51	4.68	5.04
HPI89809	R0.1	1.5	4	1.35	8	50	1.45	5.64	8.36	8.65	8.96	9.29	10.04
HPI89810	R0.2	1.5	4	1.35	8	50	1.45	5.68	8.36	8.64	8.95	9.28	10.01
HPI89811	R0.3	1.5	4	1.35	8	50	1.45	5.73	8.36	8.64	8.94	9.26	9.99
HPI89812	R0.2	1.5	4	1.35	12	55	1.45	4.32	12.49	12.92	13.38	13.88	14.99
HPI89813	R0.1	1.5	4	1.35	15	55	1.45	3.64	15.60	16.14	16.72	17.34	18.74
HPI89814	R0.2	1.5	4	1.35	15	55	1.45	3.66	15.59	16.13	16.71	17.33	18.71
HPI89815	R0.3	1.5	4	1.35	15	55	1.45	3.68	15.59	16.12	16.70	17.31	18.69
HPI89816	R0.1	1.5	4	1.35	20	60	1.45	2.90	20.77	21.49	22.26	23.09	-
HPI89817	R0.2	1.5	4	1.35	20	60	1.45	2.91	20.76	21.48	22.25	23.07	-
HPI89818	R0.3	1.5	4	1.35	20	60	1.45	2.93	20.76	21.47	22.24	23.06	-
HPI89020	R0.2	2.0	4	1.7	6	50	1.95	5.93	6.29	6.50	6.73	6.98	7.53
HPI89819	R0.5	2.0	4	1.7	6	50	1.95	6.12	6.28	6.48	6.70	6.93	7.45
HPI89820	R0.2	2.0	4	1.7	8	50	1.95	4.92	8.36	8.64	8.95	9.28	10.01

SEGUE ►

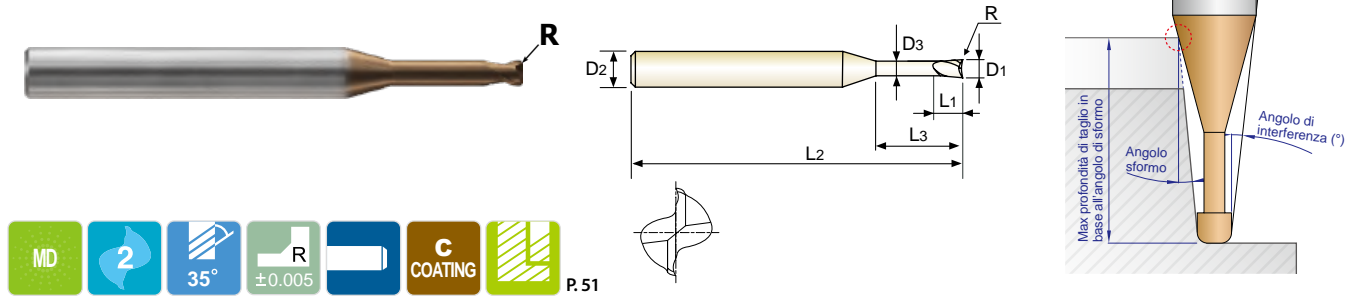
Tolleranza del raggio (mm)	Tolleranza diametro fresa (mm)	Tolleranza gambo
±0.005	0~-0.010	h4

◎: Specifico ○: Adatto

ISO	P											M			K									
	Acciai non legati					Acciai basso legati				Acciai alto legati Acciai da utensili		Acciai inox			Ghisa grigia	Ghisa nodulare	Ghisa malleabile							
Descrizione materiale VDI 3323	1	2	3	4	5	6	7	8	9	10	11.1	11.2	12	13	14.1	15	16	17	18	19	20			
HRc	13	13	25	28	32	10	29	32	38	15	35	44	15	23	10	10	26	3	25	21	21			
HB	125	190	250	270	300	180	275	300	350	200	325	409	200	240	180	180	260	160	250	130	230			
Consigliato					○				○		○													
ISO	N								S							H								
	Leghe di alluminio		Alluminio fuso, legato			Rame e leghe di rame (Bronzo / Ottone)			Materiali non ferrosi	Super leghe resistenti al calore				Leghe di titanio			Acciai temprati				Fusione di ghisa	Ghisa indurita		
Descrizione materiale VDI 3323	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38.1	38.2	39.1	39.2	39.3	40	41
HRc											15	30	25	38	34			45-49	50-55	56-60	61-65	66-70	42	55
HB	60	100	75	90	130	110	90	100			200	280	250	350	320	400 Rm	1050 Rm	421-469	481-560	577-654	670-739	400	550	
Consigliato																		◎	◎	◎	◎	◎	○	◎

2 TAGLIENTI TORICA PER NERVATURE

- Vita utensile aumentata grazie al nuovo rivestimento
- Applicazione di tolleranze ristrette per una lavorazione precisa



Unità: mm

CODICE	Raggio R	Diametro fresa D ₁	Diametro gambo D ₂	Lungh. tagl. L ₁	Lungh. scarico L ₃	Lungh. totale L ₂	Diametro scarico D ₃	Angolo di interferenza (°)	Max profondità di taglio in base all'angolo di sformo				
									0,5°	1°	1,5°	2°	3°
HPI89821	R0.3	2.0	4	1.7	8	50	1.95	4.96	8.36	8.64	8.94	9.26	9.99
HPI89822	R0.5	2.0	4	1.7	8	50	1.95	5.05	8.35	8.62	8.92	9.23	9.94
HPI89823	R0.8	2.0	4	1.7	8	50	1.95	5.18	8.34	8.60	8.88	9.19	9.87
HPI89824	R0.2	2.0	4	1.7	12	55	1.95	3.66	12.49	12.92	13.38	13.88	14.99
HPI89825	R0.5	2.0	4	1.7	12	55	1.95	3.73	12.48	12.90	13.35	13.83	14.91
HPI89826	R0.2	2.0	4	1.7	16	55	1.95	2.92	16.63	17.20	17.81	18.48	-
HPI89827	R0.3	2.0	4	1.7	16	55	1.95	2.93	16.62	17.19	17.80	18.46	-
HPI89828	R0.5	2.0	4	1.7	16	55	1.95	2.96	16.62	17.18	17.78	18.43	-
HPI89829	R0.8	2.0	4	1.7	16	55	1.95	3.01	16.61	17.16	17.75	18.39	19.81
HPI89830	R0.2	2.0	4	1.7	20	60	1.95	2.42	20.76	21.48	22.25	23.07	-
HPI89831	R0.3	2.0	4	1.7	20	60	1.95	2.43	20.76	21.47	22.24	23.06	-
HPI89832	R0.5	2.0	4	1.7	20	60	1.95	2.45	20.75	21.46	22.22	23.03	-
HPI89833	R0.8	2.0	4	1.7	20	60	1.95	2.49	20.74	21.44	22.18	22.98	-
HPI89834	R0.2	2.0	4	1.7	25	65	1.95	2.00	25.93	26.83	27.79	28.82	-
HPI89835	R0.5	2.0	4	1.7	25	65	1.95	2.02	25.92	26.81	27.76	28.78	-
HPI89836	R0.2	2.0	4	1.7	30	70	1.95	1.70	31.10	32.18	33.33	-	-
HPI89837	R0.5	2.0	4	1.7	30	70	1.95	1.72	31.09	32.16	33.30	-	-
HPI89030	R0.2	3.0	6	2.5	8	55	2.85	6.26	8.55	8.84	9.16	9.49	10.24
HPI89838	R0.3	3.0	6	2.5	8	55	2.85	6.30	8.55	8.84	9.14	9.48	10.22
HPI89839	R0.5	3.0	6	2.5	8	55	2.85	6.40	8.54	8.82	9.12	9.45	10.17
HPI89840	R0.2	3.0	6	2.5	12	60	2.85	4.85	12.69	13.12	13.59	14.09	15.22
HPI89841	R0.5	3.0	6	2.5	12	60	2.85	4.93	12.68	13.10	13.56	14.05	15.14
HPI89842	R0.2	3.0	6	2.5	16	60	2.85	3.96	16.82	17.40	18.02	18.69	20.19
HPI89843	R0.3	3.0	6	2.5	16	60	2.85	3.98	16.82	17.39	18.01	18.67	20.17
HPI89844	R0.5	3.0	6	2.5	16	60	2.85	4.01	16.81	17.38	17.99	18.64	20.12
HPI89845	R0.2	3.0	6	2.5	20	65	2.85	3.34	20.96	21.68	22.45	23.29	25.16

Tolleranza del raggio (mm)	Tolleranza diametro fresa (mm)	Tolleranza gambo
±0.005	0~-0.010	h4

SEGRE ►

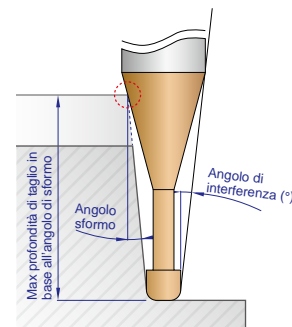
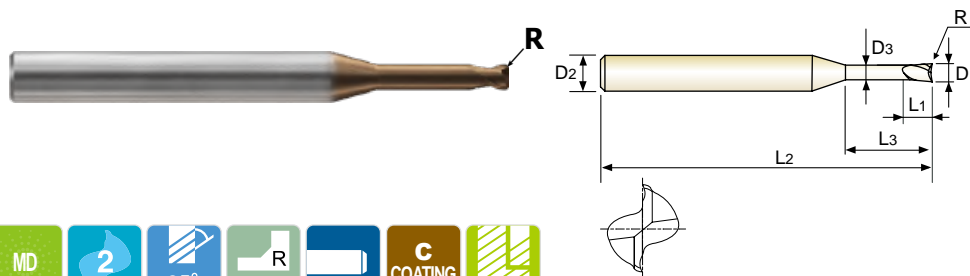
◎: Specifico ○: Adatto

ISO	P											M			K									
	Acciai non legati					Acciai basso legati				Acciai alto legati Acciai da utensili		Acciai inox			Ghisa grigia		Ghisa nodulare		Ghisa malleabile					
VDI 3323	1	2	3	4	5	6	7	8	9	10	11.1	11.2	12	13	14.1	15	16	17	18	19	20			
HRc		13	25	28	32	10	29	32	38	15	35	44	15	23	10	10	26	3	25	21	21			
HB	125	190	250	270	300	180	275	300	350	200	325	409	200	240	180	260	160	250	130	230	230			
Consigliato					○				○		○	○												
ISO	N								S							H								
	Leghe di alluminio		Alluminio fuso, legato			Rame e leghe di rame (Bronzo / Ottone)		Materiali non ferrosi			Super leghe resistenti al calore				Leghe di titanio			Acciai temprati					Fusione di ghisa	Ghisa indurita
VDI 3323	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38.1	38.2	39.1	39.2	39.3	40	41
HRc											15	30	25	38	34			45-49	50-55	56-60	61-65	66-70	42	55
HB	60	100	75	90	130	110	90	100			200	280	250	350	320	400 Rm	1050 Rm	421-469	481-560	577-654	670-739	400	400	550
Consigliato																		◎	◎	◎	◎	◎	○	◎

2 TAGLIENTI TORICA PER NERVATURE

HPI89

- ▶ Vita utensile aumentata grazie al nuovo rivestimento
- ▶ Applicazione di tolleranze ristrette per una lavorazione precisa



Unità: mm

CODICE	Raggio	Diametro fresa	Diametro gambo	Lungh. tagli.	Lungh. scarico	Lungh. totale	Diametro scarico	Angolo di interferenza (°)	Max profondità di taglio in base all'angolo di sforno				
	R	D ₁	D ₂	L ₁	L ₃	L ₂	D ₃		0.5°	1°	1.5°	2°	3°
HPI89846	R0.3	3.0	6	2.5	20	65	2.85	3.36	20.95	21.67	22.44	23.27	25.14
HPI89847	R0.5	3.0	6	2.5	20	65	2.85	3.38	20.95	21.66	22.42	23.24	25.09
HPI89848	R0.2	3.0	6	2.5	30	75	2.85	2.41	31.29	32.38	33.54	34.79	-
HPI89849	R0.3	3.0	6	2.5	30	75	2.85	2.41	31.29	32.37	33.53	34.77	-
HPI89850	R0.5	3.0	6	2.5	30	75	2.85	2.43	31.28	32.36	33.51	34.74	-
HPI89851	R0.2	3.0	6	2.5	35	80	2.85	2.11	36.46	37.72	39.08	40.54	-
HPI89852	R0.5	3.0	6	2.5	35	80	2.85	2.13	36.45	37.70	39.05	40.49	-

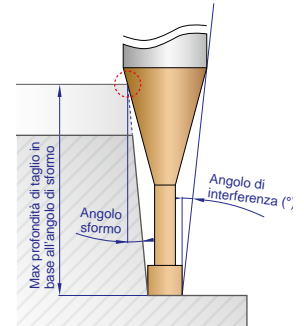
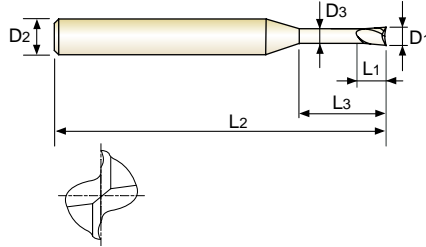
Tolleranza del raggio (mm)	Tolleranza diametro fresa (mm)	Tolleranza gambo
±0.005	0~-0.010	h4

◎: Specifico ○: Adatto

ISO	P										M			K										
	Acciai non legati					Acciai basso legati					Acciai alto legati Acciai da utensili			Acciai inox			Ghisa grigia		Ghisa nodulare		Ghisa malleabile			
Descrizione materiale VDI 3323	1	2	3	4	5	6	7	8	9	10	11.1	11.2	12	13	14.1	15	16	17	18	19	20			
HRc	13	25	28	32	10	29	32	38	15	35	44	15	23	10	10	26	3	25	21	21	21			
HB	125	190	250	270	300	180	275	300	350	200	325	409	200	240	180	180	260	160	250	130	230			
Consigliato					○			○	○		○	○												
ISO	N								S							H								
	Leghe di alluminio		Alluminio fuso, legato			Rame e leghe di rame (Bronzo / Ottone)			Materiali non ferrosi		Super leghe resistenti al calore					Leghe di titanio		Acciai temprati					Fusione di ghisa	Ghisa indurita
Descrizione materiale VDI 3323	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38.1	38.2	39.1	39.2	39.3	40	41
HRc											15	30	25	38	34			45-49	50-55	56-60	61-65	66-70	42	55
HB	60	100	75	90	130	110	90	100			200	280	250	350	320	400 Rm	1050 Rm	421-469	481-560	577-654	670-739	400	550	550
Consigliato																		◎	◎	◎	◎	◎	○	◎

2 TAGLIENTI PER NERVATURE

- ▶ Vita utensile aumentata grazie al nuovo rivestimento
- ▶ Applicazione di tolleranze ristrette per una lavorazione precisa



Unità: mm

CODICE	Diametro fresa	Diametro gambo	Lungh. tagl.	Lungh. scarico	Lungh. totale	Diametro scarico	Angolo di interferenza (°)	Max profondità di taglio in base all'angolo di sforno				
	D ₁	D ₂	L ₁	L ₃	L ₂	D ₃		0.5°	1°	1.5°	2°	3°
HPI88001	0.1	4	0.08	0.3	45	0.085	14.38	0.36	0.38	0.40	0.43	0.49
HPI88901	0.1	4	0.08	0.5	45	0.085	14.03	0.57	0.60	0.64	0.68	0.77
HPI88902	0.1	4	0.08	0.75	45	0.085	13.61	0.83	0.88	0.93	0.99	1.13
HPI88903	0.1	4	0.08	1	45	0.085	13.21	1.10	1.16	1.22	1.30	1.48
HPI880015	0.15	4	0.12	0.3	45	0.135	14.37	0.36	0.38	0.40	0.43	0.49
HPI88904	0.15	4	0.12	0.5	45	0.135	14.01	0.57	0.60	0.64	0.68	0.77
HPI88905	0.15	4	0.12	0.75	45	0.135	13.59	0.83	0.88	0.93	0.99	1.13
HPI88906	0.15	4	0.12	1	45	0.135	13.19	1.10	1.16	1.22	1.30	1.48
HPI88907	0.15	4	0.12	1.5	45	0.135	12.46	1.62	1.71	1.81	1.92	2.19
HPI88002	0.2	4	0.15	0.5	45	0.17	13.95	0.62	0.65	0.69	0.73	0.83
HPI88908	0.2	4	0.15	0.75	45	0.17	13.53	0.88	0.93	0.98	1.04	1.19
HPI88909	0.2	4	0.15	1	45	0.17	13.13	1.14	1.20	1.27	1.35	1.54
HPI88910	0.2	4	0.15	1.5	45	0.17	12.39	1.67	1.76	1.86	1.98	2.26
HPI88911	0.2	4	0.15	2	45	0.17	11.73	2.19	2.31	2.45	2.60	2.97
HPI88912	0.2	4	0.15	2.5	45	0.17	11.14	2.72	2.87	3.04	3.22	3.68
HPI88913	0.2	4	0.15	3	45	0.17	10.61	3.25	3.42	3.62	3.85	4.39
HPI88003	0.3	4	0.25	1	45	0.27	13.08	1.14	1.20	1.27	1.35	1.54
HPI88914	0.3	4	0.25	1.5	45	0.27	12.33	1.67	1.76	1.86	1.98	2.26
HPI88915	0.3	4	0.25	2	45	0.27	11.67	2.19	2.31	2.45	2.60	2.97
HPI88916	0.3	4	0.25	2.5	45	0.27	11.06	2.72	2.87	3.04	3.22	3.68
HPI88917	0.3	4	0.25	3	45	0.27	10.52	3.25	3.42	3.62	3.85	4.39
HPI88004	0.4	4	0.3	1	45	0.37	13.04	1.14	1.20	1.27	1.35	1.54
HPI88918	0.4	4	0.3	1.5	45	0.37	12.27	1.67	1.76	1.86	1.98	2.26
HPI88919	0.4	4	0.3	2	45	0.37	11.59	2.19	2.31	2.45	2.60	2.97
HPI88920	0.4	4	0.3	2.5	45	0.37	10.98	2.72	2.87	3.04	3.22	3.68
HPI88921	0.4	4	0.3	3	45	0.37	10.44	3.25	3.42	3.62	3.85	4.39

Tolleranza diametro fresa (mm)	Tolleranza gambo
0--0.010	h4

SEGRE ▶

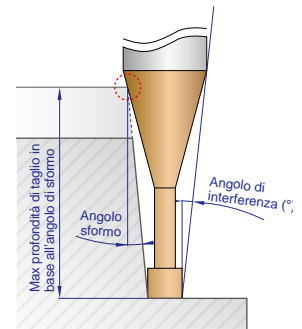
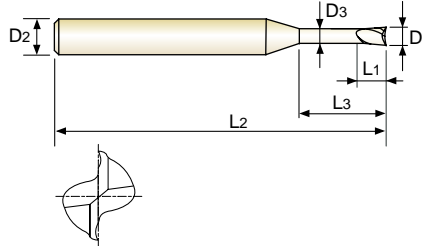
⊙: Specifico ○: Adatto

ISO	P												M			K								
	Acciai non legati						Acciai basso legati						Acciai alto legati Acciai da utensili			Acciai inox			Ghisa grigia		Ghisa nodulare		Ghisa malleabile	
VDI 3323	1	2	3	4	5	6	7	8	9	10	11.1	11.2	12	13	14.1	15	16	17	18	19	20			
HRc	13	25	28	32	30	10	29	32	38	15	35	44	15	23	10	10	26	3	25	21	21			
HB	125	190	250	270	300	180	275	300	350	200	325	409	200	240	180	180	260	160	250	130	230			
Consigliato					○				○		○	○												
ISO	N										S					H								
	Leghe di alluminio		Alluminio fuso, legato			Rame e leghe di rame (Bronzo / Ottone)		Materiali non ferrosi			Super leghe resistenti al calore					Leghe di titanio		Acciai temprati					Fusione di ghisa	Ghisa indurita
VDI 3323	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38.1	38.2	39.1	39.2	39.3	40	41
HRc											15	30	25	38	34			45-49	50-55	56-60	61-65	66-70	42	55
HB	60	100	75	90	130	110	90	100			200	280	250	350	320	400 Rm	1050 Rm	421-469	481-560	577-654	670-739	400	550	
Consigliato																		⊙	⊙	⊙	⊙	⊙	○	⊙

2 TAGLIENTI PER NERVATURE

HPI88

- ▶ Vita utensile aumentata grazie al nuovo rivestimento
- ▶ Applicazione di tolleranze ristrette per una lavorazione precisa



Unità: mm

CODICE	Diametro fresa D ₁	Diametro gambo D ₂	Lungh. tagl. L ₁	Lungh. scarico L ₃	Lungh. totale L ₂	Diametro scarico D ₃	Angolo di interferenza (°)	Max profondità di taglio in base all'angolo di sforno				
								0.5°	1°	1.5°	2°	3°
HPI88922	0.4	4	0.3	3.5	45	0.37	9.94	3.77	3.98	4.21	4.47	5.10
HPI88923	0.4	4	0.3	4	45	0.37	9.49	4.30	4.53	4.80	5.09	5.81
HPI88924	0.4	4	0.3	5	45	0.37	8.69	5.35	5.64	5.97	6.34	7.24
HPI88925	0.4	4	0.3	6	45	0.37	8.02	6.40	6.75	7.15	7.59	8.66
HPI88926	0.4	4	0.3	8	45	0.37	6.95	8.51	8.97	9.50	10.08	11.48
HPI88927	0.4	4	0.3	10	45	0.37	6.13	10.61	11.19	11.84	12.58	13.82
HPI88005	0.5	4	0.4	1	45	0.45	12.93	1.20	1.27	1.34	1.42	1.62
HPI88928	0.5	4	0.4	1.5	45	0.45	12.16	1.73	1.82	1.93	2.05	2.34
HPI88929	0.5	4	0.4	2	45	0.45	11.47	2.25	2.38	2.52	2.67	3.05
HPI88930	0.5	4	0.4	2.5	45	0.45	10.86	2.78	2.93	3.10	3.29	3.76
HPI88931	0.5	4	0.4	3	45	0.45	10.31	3.31	3.49	3.69	3.92	4.47
HPI88932	0.5	4	0.4	3.5	45	0.45	9.81	3.83	4.04	4.28	4.54	5.18
HPI88933	0.5	4	0.4	4	45	0.45	9.35	4.36	4.60	4.86	5.16	5.89
HPI88934	0.5	4	0.4	4.5	45	0.45	8.94	4.88	5.15	5.45	5.79	6.60
HPI88935	0.5	4	0.4	5	45	0.45	8.56	5.41	5.71	6.04	6.41	7.32
HPI88936	0.5	4	0.4	6	45	0.45	7.89	6.46	6.82	7.21	7.66	8.74
HPI88937	0.5	4	0.4	7	45	0.45	7.32	7.51	7.93	8.39	8.91	10.16
HPI88938	0.5	4	0.4	8	50	0.45	6.82	8.57	9.04	9.56	10.15	11.47
HPI88939	0.5	4	0.4	9	50	0.45	6.39	9.62	10.15	10.74	11.40	12.64
HPI88940	0.5	4	0.4	10	50	0.45	6.01	10.67	11.26	11.91	12.65	13.80
HPI88006	0.6	4	0.5	1.5	45	0.55	12.09	1.73	1.82	1.93	2.05	2.34
HPI88941	0.6	4	0.5	2	45	0.55	11.39	2.25	2.38	2.52	2.67	3.05
HPI88942	0.6	4	0.5	3	45	0.55	10.21	3.31	3.49	3.69	3.92	4.47
HPI88943	0.6	4	0.5	4	45	0.55	9.25	4.36	4.60	4.86	5.16	5.89
HPI88944	0.6	4	0.5	5	45	0.55	8.45	5.41	5.71	6.04	6.41	7.32
HPI88945	0.6	4	0.5	6	45	0.55	7.78	6.46	6.82	7.21	7.66	8.74

SEGUE ▶

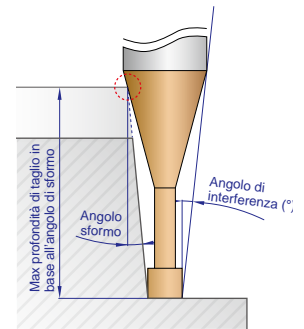
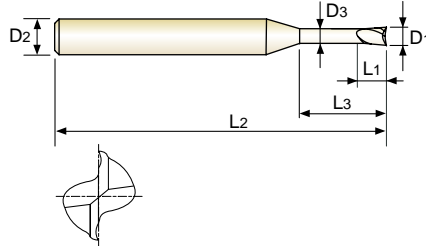
Tolleranza diametro fresa (mm)	Tolleranza gambo
0~-0.010	h4

◎: Specifico ○: Adatto

ISO	P												M			K										
	Acciai non legati					Acciai basso legati					Acciai alto legati Acciai da utensili			Acciai inox			Ghisa grigia	Ghisa nodulare	Ghisa malleabile							
Descrizione materiale VDI 3323	1	2	3	4	5	6	7	8	9	10	11.1	11.2	12	13	14.1	15	16	17	18	19	20					
HRc	13	25	28	28	32	10	29	32	38	15	35	44	15	23	10	10	26	3	25	21	21					
HB	125	190	250	270	300	180	275	300	350	200	325	409	200	240	180	180	260	160	250	130	230					
Consigliato					○			○	○		○	○														
ISO	N								S							H										
Descrizione materiale	Leghe di alluminio				Alluminio fuso, legato				Rame e leghe di rame (Bronzo / Ottone)		Materiali non ferrosi			Super leghe resistenti al calore				Leghe di titanio			Acciai temprati				Fusione di ghisa	Ghisa indurita
VDI 3323	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38.1	38.2	39.1	39.2	39.3	40	41		
HRc											15	30	25	38	34			45-49	50-55	56-60	61-65	66-70	42	55		
HB	60	100	75	90	130	110	90	100			200	280	250	350	320	400 Rm	1050 Rm	421-469	481-560	577-654	670-739	400	550			
Consigliato																		◎	◎	◎	◎	◎	○	◎		

2 TAGLIENTI PER NERVATURE

- ▶ Vita utensile aumentata grazie al nuovo rivestimento
- ▶ Applicazione di tolleranze ristrette per una lavorazione precisa



Unità: mm

CODICE	Diametro fresa	Diametro gambo	Lungh. tagl.	Lungh. scarico	Lungh. totale	Diametro scarico	Angolo di interferenza (°)	Max profondità di taglio in base all'angolo di sforno				
	D ₁	D ₂	L ₁	L ₃	L ₂	D ₃		0.5°	1°	1.5°	2°	3°
HPI88007	0.7	4	0.55	2	45	0.65	11.31	2.25	2.38	2.52	2.67	3.05
HPI88946	0.7	4	0.55	4	45	0.65	9.14	4.36	4.60	4.86	5.16	5.89
HPI88947	0.7	4	0.55	6	45	0.65	7.67	6.46	6.82	7.21	7.66	8.74
HPI88948	0.7	4	0.55	8	50	0.65	6.60	8.57	9.04	9.56	10.15	11.35
HPI88949	0.7	4	0.55	10	50	0.65	5.80	10.67	11.26	11.91	12.65	13.69
HPI88008	0.8	4	0.65	3	45	0.75	10.01	3.31	3.49	3.69	3.92	4.47
HPI88950	0.8	4	0.65	4	45	0.75	9.03	4.36	4.60	4.86	5.16	5.89
HPI88951	0.8	4	0.65	5	45	0.75	8.23	5.41	5.71	6.04	6.41	7.32
HPI88952	0.8	4	0.65	6	45	0.75	7.55	6.46	6.82	7.21	7.66	8.74
HPI88953	0.8	4	0.65	8	50	0.75	6.49	8.57	9.04	9.56	10.15	11.29
HPI88954	0.8	4	0.65	10	50	0.75	5.69	10.67	11.26	11.91	12.65	13.63
HPI88955	0.8	4	0.65	12	50	0.75	5.06	12.77	13.48	14.26	15.12	15.97
HPI88010	1.0	4	0.8	2	50	0.95	11.04	2.25	2.38	2.52	2.67	3.05
HPI88956	1.0	4	0.8	3	50	0.95	9.79	3.31	3.49	3.69	3.92	4.47
HPI88957	1.0	4	0.8	4	50	0.95	8.80	4.36	4.60	4.86	5.16	5.89
HPI88958	1.0	4	0.8	5	50	0.95	7.99	5.41	5.71	6.04	6.41	7.32
HPI88959	1.0	4	0.8	6	50	0.95	7.31	6.46	6.82	7.21	7.66	8.74
HPI88960	1.0	4	0.8	7	50	0.95	6.74	7.51	7.93	8.39	8.91	10.01
HPI88961	1.0	4	0.8	8	50	0.95	6.25	8.57	9.04	9.56	10.15	11.18
HPI88962	1.0	4	0.8	9	50	0.95	5.83	9.62	10.15	10.74	11.40	12.35
HPI88963	1.0	4	0.8	10	50	0.95	5.46	10.67	11.26	11.91	12.65	13.52
HPI88964	1.0	4	0.8	12	50	0.95	4.85	12.77	13.48	14.26	15.01	15.85
HPI88965	1.0	4	0.8	14	50	0.95	4.36	14.88	15.70	16.61	17.22	18.19
HPI88966	1.0	4	0.8	16	60	0.95	3.96	16.98	17.92	18.93	19.43	20.53
HPI88967	1.0	4	0.8	18	60	0.95	3.62	19.09	20.13	21.09	21.65	22.86
HPI88968	1.0	4	0.8	20	60	0.95	3.34	21.19	22.35	23.24	23.86	25.20

Tolleranza diametro fresa (mm)	Tolleranza gambo
0~-0.010	h4

SEGRE ▶

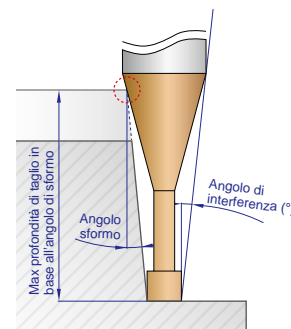
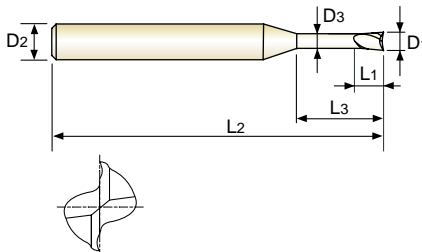
⊙: Specifico ○: Adatto

ISO	P												M			K													
	Acciai non legati						Acciai basso legati						Acciai alto legati Acciai da utensili			Acciai inox			Ghisa grigia		Ghisa nodulare		Ghisa malleabile						
VDI 3323	1	2	3	4	5	6	7	8	9	10	11.1	11.2	12	13	14.1	15	16	17	18	19	20								
HRc	13	25	28	32	38	10	29	32	38	15	35	44	15	23	10	10	26	3	25	21	21								
HB	125	190	250	270	300	180	275	300	350	200	325	409	200	240	180	180	260	160	250	130	230								
Consigliato					○				○		○	○																	
ISO	N										S						H												
	Leghe di alluminio		Alluminio fuso, legato				Rame e leghe di rame (Bronzo / Ottone)				Materiali non ferrosi		Super leghe resistenti al calore						Leghe di titanio		Acciai temprati						Fusione di ghisa		Ghisa indurita
VDI 3323	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38.1	38.2	39.1	39.2	39.3	40	41					
HRc											15	30	25	38	34			45-49	50-55	56-60	61-65	66-70	42	55					
HB	60	100	75	90	130	110	90	100			200	280	250	350	320	400 Rm	1050 Rm	421-469	481-560	577-654	670-739	400	550						
Consigliato																		⊙	⊙	⊙	⊙	⊙	○	⊙					

2 TAGLIENTI PER NERVATURE

HPI88

- ▶ Vita utensile aumentata grazie al nuovo rivestimento
- ▶ Applicazione di tolleranze ristrette per una lavorazione precisa



Unità: mm

CODICE	Diametro fresa D ₁	Diametro gambo D ₂	Lungh. tagl. L ₁	Lungh. scarico L ₃	Lungh. totale L ₂	Diametro scarico D ₃	Angolo di interferenza (°)	Max profondità di taglio in base all'angolo di sforno				
								0.5°	1°	1.5°	2°	3°
HPI88969	1.0	4	0.8	22	60	0.95	3.10	23.29	24.57	25.40	26.07	27.53
HPI88012	1.2	4	1	6	50	1.15	7.05	6.30	6.52	6.75	7.01	7.57
HPI88970	1.2	4	1	8	50	1.15	6.00	8.37	8.66	8.97	9.31	10.06
HPI88971	1.2	4	1	10	50	1.15	5.22	10.43	10.80	11.19	11.61	12.55
HPI88972	1.2	4	1	12	50	1.15	4.62	12.50	12.94	13.40	13.91	15.03
HPI88973	1.2	4	1	16	60	1.15	3.76	16.64	17.21	17.84	18.50	20.01
HPI88014	1.4	4	1.1	6	50	1.35	6.77	6.30	6.52	6.75	7.01	7.57
HPI88974	1.4	4	1.1	12	50	1.35	4.39	12.50	12.94	13.40	13.91	15.03
HPI88015	1.5	4	1.2	4	50	1.45	8.12	4.23	4.38	4.54	4.71	5.09
HPI88975	1.5	4	1.2	6	50	1.45	6.63	6.30	6.52	6.75	7.01	7.57
HPI88976	1.5	4	1.2	8	50	1.45	5.60	8.37	8.66	8.97	9.31	10.06
HPI88977	1.5	4	1.2	10	50	1.45	4.84	10.43	10.80	11.19	11.61	12.55
HPI88978	1.5	4	1.2	12	50	1.45	4.27	12.50	12.94	13.40	13.91	15.03
HPI88979	1.5	4	1.2	14	60	1.45	3.81	14.57	15.08	15.62	16.21	17.52
HPI88980	1.5	4	1.2	16	60	1.45	3.45	16.64	17.21	17.84	18.50	20.01
HPI88981	1.5	4	1.2	18	60	1.45	3.14	18.70	19.35	20.05	20.80	22.49
HPI88982	1.5	4	1.2	20	60	1.45	2.89	20.77	21.49	22.27	23.10	-
HPI88983	1.5	4	1.2	25	70	1.45	2.41	25.94	26.84	27.81	28.85	-
HPI88984	1.5	4	1.2	30	70	1.45	2.06	31.11	32.19	33.35	34.60	-
HPI88985	1.5	4	1.2	35	80	1.45	1.80	36.27	37.54	38.89	-	-
HPI88016	1.6	4	1.3	6	50	1.55	6.48	6.30	6.52	6.75	7.01	7.57
HPI88986	1.6	4	1.3	8	50	1.55	5.45	8.37	8.66	8.97	9.31	10.06
HPI88018	1.8	4	1.4	6	50	1.75	6.16	6.30	6.52	6.75	7.01	7.57
HPI88987	1.8	4	1.4	8	50	1.75	5.15	8.37	8.66	8.97	9.31	10.06
HPI88988	1.8	4	1.4	10	50	1.75	4.43	10.43	10.80	11.19	11.61	12.55
HPI88989	1.8	4	1.4	12	50	1.75	3.88	12.50	12.94	13.40	13.91	15.03

SEGUE ▶

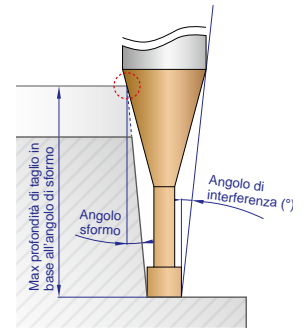
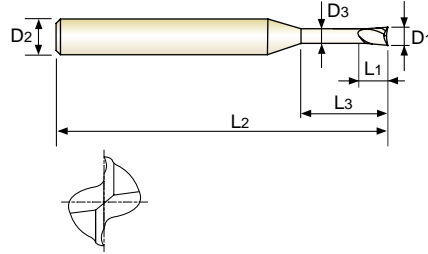
Tolleranza diametro fresa (mm)	Tolleranza gambo
0~-0.010	h4

◎: Specifico ○: Adatto

ISO	P												M			K								
	Acciai non legati						Acciai basso legati						Acciai alto legati Acciai da utensili			Acciai inox			Ghisa grigia	Ghisa nodulare	Ghisa malleabile			
Descrizione materiale	1	2	3	4	5	6	7	8	9	10	11.1	11.2	12	13	14.1	15	16	17	18	19	20			
VDI 3323	1	2	3	4	5	6	7	8	9	10	11.1	11.2	12	13	14.1	15	16	17	18	19	20			
HRc	13	13	25	28	32	10	29	32	38	15	35	44	15	23	10	10	26	3	25	21	21			
HB	125	190	250	270	300	180	275	300	350	200	325	409	200	240	180	180	260	160	250	130	230			
Consigliato					○					○														
ISO	N										S						H							
	Leghe di alluminio		Alluminio fuso, legato			Rame e leghe di rame (Bronzo / Ottone)		Materiali non ferrosi			Super leghe resistenti al calore						Leghe di titanio		Acciai temprati				Fusione di ghisa	Ghisa indurita
Descrizione materiale	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38.1	38.2	39.1	39.2	39.3	40	41
VDI 3323	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38.1	38.2	39.1	39.2	39.3	40	41
HRc	60	100	75	90	130	110	90	100			15	30	25	38	34			45-49	50-55	56-60	61-65	66-70	42	55
HB	60	100	75	90	130	110	90	100			200	280	250	350	320			421-469	481-560	577-654	670-739		400	550
Consigliato																		◎	◎	◎	◎	◎	○	◎

2 TAGLIENTI PER NERVATURE

- ▶ Vita utensile aumentata grazie al nuovo rivestimento
- ▶ Applicazione di tolleranze ristrette per una lavorazione precisa



Unità: mm

CODICE	Diametro fresa	Diametro gambo	Lungh. tagl.	Lungh. scarico	Lungh. totale	Diametro scarico	Angolo di interferenza (°)	Max profondità di taglio in base all'angolo di sforno				
	D ₁	D ₂	L ₁	L ₃	L ₂	D ₃		0.5°	1°	1.5°	2°	3°
HPI88990	1.8	4	1.4	14	50	1.75	3.46	14.57	15.08	15.62	16.21	17.52
HPI88991	1.8	4	1.4	16	60	1.75	3.12	16.64	17.21	17.84	18.50	20.01
HPI88992	1.8	4	1.4	18	60	1.75	2.84	18.70	19.35	20.05	20.80	-
HPI88020	2.0	4	1.6	4	50	1.95	7.28	4.23	4.38	4.54	4.71	5.09
HPI88993	2.0	4	1.6	6	50	1.95	5.81	6.30	6.52	6.75	7.01	7.57
HPI88994	2.0	4	1.6	8	50	1.95	4.83	8.37	8.66	8.97	9.31	10.06
HPI88995	2.0	4	1.6	10	50	1.95	4.14	10.43	10.80	11.19	11.61	12.55
HPI88996	2.0	4	1.6	12	50	1.95	3.62	12.50	12.94	13.40	13.91	15.03
HPI88997	2.0	4	1.6	14	60	1.95	3.21	14.57	15.08	15.62	16.21	17.52
HPI88998	2.0	4	1.6	16	60	1.95	2.89	16.64	17.21	17.84	18.50	-
HPI88999	2.0	4	1.6	18	60	1.95	2.62	18.70	19.35	20.05	20.80	-
HPI88801	2.0	4	1.6	20	60	1.95	2.40	20.77	21.49	22.27	23.10	-
HPI88802	2.0	4	1.6	25	70	1.95	1.99	25.94	26.84	27.81	-	-
HPI88803	2.0	4	1.6	30	70	1.95	1.69	31.11	32.19	33.35	-	-
HPI88804	2.0	4	1.6	35	80	1.95	1.48	36.27	37.54	-	-	-
HPI88805	2.0	4	1.6	40	90	1.95	1.31	41.44	42.89	-	-	-
HPI88806	2.0	4	1.6	50	100	1.95	1.06	51.78	53.58	-	-	-
HPI88025	2.5	4	2	8	50	2.4	3.91	8.46	8.76	9.07	9.41	10.18
HPI88807	2.5	4	2	12	50	2.4	2.87	12.60	13.04	13.51	14.01	-
HPI88808	2.5	4	2	16	60	2.4	2.26	16.73	17.31	17.94	18.61	-
HPI88809	2.5	4	2	20	60	2.4	1.87	20.87	21.59	22.37	-	-
HPI88810	2.5	4	2	30	70	2.4	1.30	31.20	32.29	-	-	-
HPI88811	2.5	4	2	40	90	2.4	1.00	41.54	-	-	-	-
HPI88812	2.5	4	2	50	100	2.4	0.81	51.88	-	-	-	-
HPI88030	3.0	6	4.5	8	50	2.85	6.17	8.56	8.86	9.18	9.52	10.29
HPI88813	3.0	6	4.5	12	50	2.85	4.80	12.69	13.14	13.61	14.12	15.27

Tolleranza diametro fresa (mm)	Tolleranza gambo
0~-0.010	h4

SEGRE ▶

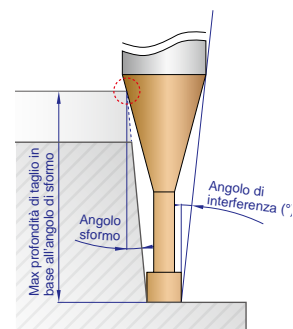
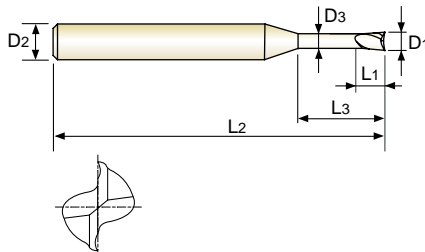
⊙: Specifico ○: Adatto

ISO	P												M			K									
	Acciai non legati						Acciai basso legati						Acciai alto legati Acciai da utensili			Acciai inox			Ghisa grigia		Ghisa nodulare		Ghisa malleabile		
VDI 3323	1	2	3	4	5	6	7	8	9	10	11.1	11.2	12	13	14.1	15	16	17	18	19	20				
HRc	13	25	28	32	30	10	29	32	38	15	35	44	15	23	10	10	26	3	25	21	21				
HB	125	190	250	270	300	180	275	300	350	200	325	409	200	240	180	180	260	160	250	130	230				
Consigliato					○				○		○	○													
ISO	N										S						H								
	Leghe di alluminio		Alluminio fuso, legato				Rame e leghe di rame (Bronzo / Ottone)				Materiali non ferrosi		Super leghe resistenti al calore						Leghe di titanio		Acciai temprati				Fusione di ghisa
VDI 3323	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38.1	38.2	39.1	39.2	39.3	40	41	
HRc											15	30	25	38	34			45-49	50-55	56-60	61-65	66-70	42	55	
HB	60	100	75	90	130	110	90	100			200	280	250	350	320	400 Rm	1050 Rm	421-469	481-560	577-654	670-739	400	550		
Consigliato																		⊙	⊙	⊙	⊙	⊙	○	⊙	

2 TAGLIENTI PER NERVATURE

HPI88

- ▶ Vita utensile aumentata grazie al nuovo rivestimento
- ▶ Applicazione di tolleranze ristrette per una lavorazione precisa



Unità: mm

CODICE	Diametro fresa D ₁	Diametro gambo D ₂	Lungh. tagl. L ₁	Lungh. scarico L ₃	Lungh. totale L ₂	Diametro scarico D ₃	Angolo di interferenza (°)	Max profondità di taglio in base all'angolo di sforno				
								0.5°	1°	1.5°	2°	3°
HPI88814	3.0	6	4.5	16	60	2.85	3.92	16.83	17.41	18.04	18.72	20.24
HPI88815	3.0	6	4.5	20	60	2.85	3.32	20.96	21.69	22.48	23.32	25.21
HPI88816	3.0	6	4.5	25	70	2.85	2.78	26.13	27.04	28.02	29.07	-
HPI88817	3.0	6	4.5	30	70	2.85	2.39	31.30	32.39	33.56	34.82	-
HPI88040	4.0	6	6	12	60	3.85	3.57	12.69	13.14	13.61	14.12	15.27
HPI88818	4.0	6	6	16	60	3.85	2.86	16.83	17.41	18.04	18.72	-
HPI88819	4.0	6	6	20	70	3.85	2.38	20.96	21.69	22.48	23.32	-
HPI88820	4.0	6	6	30	80	3.85	1.68	31.30	32.39	33.56	-	-
HPI88821	4.0	6	6	40	90	3.85	1.30	41.64	43.09	-	-	-
HPI88822	4.0	6	6	50	100	3.85	1.06	51.97	53.78	-	-	-
HPI88050	5.0	6	7.5	20	70	4.85	1.29	20.96	21.69	-	-	-
HPI88823	5.0	6	7.5	30	80	4.85	0.89	31.30	-	-	-	-
HPI88824	5.0	6	7.5	40	90	4.85	0.68	41.64	-	-	-	-
HPI88825	5.0	6	7.5	50	100	4.85	0.55	51.97	-	-	-	-
HPI88060	6.0	6	9	20	70	5.85	0.00	-	-	-	-	-
HPI88826	6.0	6	9	30	80	5.85	0.00	-	-	-	-	-
HPI88827	6.0	6	9	40	90	5.85	0.00	-	-	-	-	-
HPI88828	6.0	6	9	50	100	5.85	0.00	-	-	-	-	-

Tolleranza diametro fresa (mm)	Tolleranza gambo
0~-0.010	h4

◎: Specifico ○: Adatto

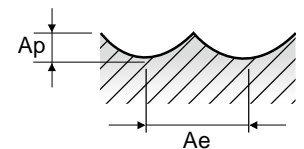
ISO	P										M			K										
	Acciai non legati					Acciai basso legati					Acciai alto legati Acciai da utensili			Acciai inox			Ghisa grigia		Ghisa nodulare		Ghisa malleabile			
Descrizione materiale VDI 3323	1	2	3	4	5	6	7	8	9	10	11.1	11.2	12	13	14.1	15	16	17	18	19	20			
HRc	13	25	28	32	32	10	29	32	38	15	35	44	15	23	10	10	26	3	25	21	21			
HB	125	190	250	270	300	180	275	300	350	200	325	409	200	240	180	180	260	160	250	130	230			
Consigliato					○				○		○	○												
ISO	N								S					H										
	Leghe di alluminio		Alluminio fuso, legato			Rame e leghe di rame (Bronzo / Ottone)			Materiali non ferrosi		Super leghe resistenti al calore					Leghe di titanio		Acciai temprati					Fusione di ghisa	Ghisa indurita
Descrizione materiale VDI 3323	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38.1	38.2	39.1	39.2	39.3	40	41
HRc											15	30	25	38	34			45-49	50-55	56-60	61-65	66-70	42	55
HB	60	100	75	90	130	110	90	100			200	280	250	350	320	400 Rm	1050 Rm	421-469	481-560	577-654	670-739	400	550	
Consigliato																		◎	◎	◎	◎	◎	○	◎

HPI90 SERIES

2 TAGLIENTI SEMISFERICA

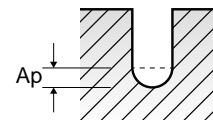
Vc = m/min. n = giri/min.
 fz = mm/dente Vf = mm/min

ISO	VDI 3323	Descrizione materiale	Ae	Ap	Param.	Diametro (Ø)																					
						0.2	0.3	0.4	0.5	0.6	0.8	1.0	1.5	2.0	2.5	3.0	4.0	5.0	6.0	8.0	10.0	12.0	16.0	20.0			
P	5	Acciai non legati	0.05D	0.02D	Vc	31	46	67	82	98	129	160	242	319	320	319	324	299	268	288	299	268	288	288			
					fz	0.012	0.015	0.019	0.024	0.029	0.039	0.048	0.054	0.057	0.074	0.091	0.120	0.156	0.174	0.189	0.199	0.212	0.238	0.264			
					n	49178	49178	53277	52458	51911	51228	50818	51365	50818	40685	33879	25819	19016	14207	11475	9508	7104	5737	4590			
					Vf	1180	1475	2025	2518	3011	3995	4878	5548	5794	5979	6166	6196	5933	4944	4337	3784	3012	2732	2424			
	8~9	Acciai basso legati	0.05D	0.02D	Vc	31	46	67	82	98	129	160	242	319	320	319	324	299	268	288	299	268	288	288			
					fz	0.012	0.015	0.019	0.024	0.029	0.039	0.048	0.054	0.057	0.074	0.091	0.120	0.156	0.174	0.189	0.199	0.212	0.238	0.264			
					n	49178	49178	53277	52458	51911	51228	50818	51365	50818	40685	33879	25819	19016	14207	11475	9508	7104	5737	4590			
					Vf	1180	1475	2025	2518	3011	3995	4878	5548	5794	5979	6166	6196	5933	4944	4337	3784	3012	2732	2424			
	11.1	Acciai alto legati	0.05D	0.02D	Vc	31	46	67	82	98	129	160	242	319	320	319	324	299	268	288	299	268	288	288			
					fz	0.012	0.015	0.019	0.024	0.029	0.039	0.048	0.054	0.057	0.074	0.091	0.120	0.156	0.174	0.189	0.199	0.212	0.238	0.264			
					n	49178	49178	53277	52458	51911	51228	50818	51365	50818	40685	33879	25819	19016	14207	11475	9508	7104	5737	4590			
					Vf	1180	1475	2025	2518	3011	3995	4878	5548	5794	5979	6166	6196	5933	4944	4337	3784	3012	2732	2424			
11.2	Acciai da utensili	0.05D	0.02D	Vc	31	46	67	82	98	129	160	232	309	309	309	309	288	263	278	288	257	278	278				
				fz	0.011	0.014	0.017	0.021	0.025	0.033	0.042	0.047	0.050	0.066	0.083	0.111	0.138	0.153	0.164	0.174	0.187	0.206	0.227				
				n	49178	49178	53277	52458	51911	51228	50818	49178	49178	39295	32786	24589	18360	13934	11065	9180	6830	5532	4426				
				Vf	1082	1377	1812	2203	2596	3381	4268	4623	4918	5180	5443	5459	5068	4264	3630	3195	2554	2279	2010				
H	38.1	Acciai temprati	0.05D	0.02D	Vc	31	46	67	82	98	129	160	232	309	309	309	288	263	278	288	257	278	278				
					fz	0.011	0.014	0.017	0.021	0.025	0.033	0.042	0.047	0.050	0.066	0.083	0.111	0.138	0.153	0.164	0.174	0.187	0.206	0.227			
					n	49178	49178	53277	52458	51911	51228	50818	49178	49178	39295	32786	24589	18360	13934	11065	9180	6830	5532	4426			
					Vf	1082	1377	1812	2203	2596	3381	4268	4623	4918	5180	5443	5459	5068	4264	3630	3195	2554	2279	2010			
					38.2	0.05D	0.02D	Vc	29	41	57	72	88	118	144	211	258	257	258	257	242	211	232	242	216	232	232
								fz	0.010	0.013	0.017	0.021	0.024	0.033	0.042	0.047	0.050	0.063	0.075	0.100	0.125	0.141	0.150	0.160	0.170	0.189	0.208
	n	45900	43714	45081				45900	46447	47130	45900	44807	40983	32754	27322	20491	15410	11202	9221	7704	5737	4610	3688				
	Vf	918	1136	1533				1928	2230	3111	3855	4212	4098	4098	4098	4098	3852	3159	2767	2466	1951	1743	1535				
	39.1	0.05D	0.02D	Vc				26	41	52	67	77	103	129	180	227	227	227	216	196	206	211	196	206	206		
				fz				0.010	0.012	0.015	0.019	0.023	0.030	0.038	0.042	0.045	0.056	0.067	0.090	0.113	0.125	0.134	0.144	0.155	0.169	0.188	
				n	40983	43714	40983	42621	40983	40983	38250	36064	28840	24043	18032	13770	10382	8197	6721	5191	4098	3278					
				Vf	820	1050	1230	1619	1885	2459	3115	3213	3246	3233	3222	3246	3112	2596	2197	1935	1609	1385	1233				
				39.2	0.05D	0.02D	Vc	21	36	46	57	67	93	113	160	206	206	206	206	185	170	180	185	170	180	180	
							fz	0.010	0.012	0.015	0.019	0.023	0.030	0.037	0.041	0.044	0.055	0.067	0.088	0.111	0.122	0.132	0.142	0.142	0.143	0.143	
	n	32786	38250				36884	36064	35519	36884	36064	33879	32786	26265	21858	16392	11803	9017	7172	5902	4508	3586	2869				
	Vf	656	918				1106	1371	1634	2213	2669	2778	2885	2907	2929	2885	2620	2200	1893	1676	1280	1026	821				
	39.3	0.05D	0.02D				Vc	21	31	41	52	62	82	113	144	185	185	185	185	170	155	170	170	154	165	165	
							fz	0.009	0.011	0.014	0.017	0.022	0.029	0.033	0.039	0.040	0.051	0.061	0.079	0.100	0.109	0.119	0.130	0.131	0.133	0.129	
				n	32786	32786	32786	32786	32786	32786	36064	30600	29507	23587	19672	14754	10819	8197	6762	5410	4098	3278	2622				
				Vf	590	721	918	1114	1443	1901	2380	2387	2361	2380	2400	2331	2164	1787	1609	1407	1073	872	677				
				40	Fusione di ghisa	0.05D	0.02D	Vc	31	46	67	82	98	129	160	232	309	309	309	288	263	278	288	257	278	278	
								fz	0.011	0.014	0.017	0.021	0.025	0.033	0.042	0.047	0.050	0.066	0.083	0.111	0.138	0.153	0.164	0.174	0.187	0.206	0.227
	n	49178	49178					53277	52458	51911	51228	50818	49178	49178	39295	32786	24589	18360	13934	11065	9180	6830	5532	4426			
	Vf	1082	1377					1812	2203	2596	3381	4268	4623	4918	5180	5443	5459	5068	4264	3630	3195	2554	2279	2010			
41	Ghisa indurita	0.05D	0.02D					Vc	29	41	57	72	88	118	144	211	258	257	258	257	242	211	232	242	216	232	232
								fz	0.010	0.013	0.017	0.021	0.024	0.033	0.042	0.047	0.050	0.063	0.075	0.100	0.125	0.141	0.150	0.160	0.170	0.189	0.208
				n	45900	43714	45081	45900	46447	47130	45900	44807	40983	32754	27322	20491	15410	11202	9221	7704	5737	4610	3688				
				Vf	918	1136	1533	1928	2230	3111	3855	4212	4098	4098	4098	4098	3852	3159	2767	2466	1951	1743	1535				



HPI91, HPI92 SERIES

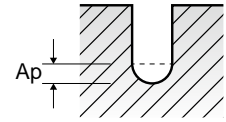
2 TAGLIENTI SEMISFERICA PER NERVATURE



Vc = m/min. n = giri/min.
fz = mm/dente Vf = mm/min

LBS: Lunghezza scarico

ISO	VDI 3323	Descrizione materiale	Param.	Diametro (Ø)																	
				0.2		0.2		0.2		0.2		0.2		0.2		0.2		0.3		0.3	
				LBS	0.3	0.5	0.75	1	1.25	1.5	1.75	2	2.5	3	5	0.5	0.6	0.75	1	1.25	1.5
P	5	Acciai non legati	Vc	31	31	31	31	28	28	28	28	25	25	9	46	46	46	46	46	46	42
			fz	0.012	0.012	0.012	0.012	0.011	0.011	0.011	0.011	0.010	0.010	0.007	0.015	0.015	0.015	0.015	0.015	0.015	0.014
			n	49178	49178	49178	49178	44260	44260	44260	44260	39342	39342	14753	49178	49178	49178	49178	49178	49178	44260
			Vf	1180	1180	1180	1180	974	974	974	974	787	787	207	1475	1475	1475	1475	1475	1475	1239
	Ap	0.004	0.004	0.004	0.004	0.003	0.003	0.003	0.003	0.003	0.003	0.003	0.001	0.006	0.006	0.006	0.005	0.005	0.005	0.005	
	8-9	Acciai basso legati	Vc	31	31	31	31	28	28	28	28	25	25	9	46	46	46	46	46	46	42
			fz	0.012	0.012	0.012	0.012	0.011	0.011	0.011	0.011	0.010	0.010	0.007	0.015	0.015	0.015	0.015	0.015	0.015	0.014
			n	49178	49178	49178	49178	44260	44260	44260	44260	39342	39342	14753	49178	49178	49178	49178	49178	49178	44260
			Vf	1180	1180	1180	1180	974	974	974	974	787	787	207	1475	1475	1475	1475	1475	1475	1239
	Ap	0.004	0.004	0.004	0.004	0.003	0.003	0.003	0.003	0.003	0.003	0.003	0.001	0.006	0.006	0.006	0.005	0.005	0.005	0.005	
	11.1	Acciai alto legati	Vc	31	31	31	31	28	28	28	28	25	25	9	46	46	46	46	46	46	42
			fz	0.012	0.012	0.012	0.012	0.011	0.011	0.011	0.011	0.010	0.010	0.007	0.015	0.015	0.015	0.015	0.015	0.015	0.014
n			49178	49178	49178	49178	44260	44260	44260	44260	39342	39342	14753	49178	49178	49178	49178	49178	49178	44260	
Vf			1180	1180	1180	1180	974	974	974	974	787	787	207	1475	1475	1475	1475	1475	1475	1239	
Ap	0.004	0.004	0.004	0.004	0.003	0.003	0.003	0.003	0.003	0.003	0.003	0.001	0.006	0.006	0.006	0.005	0.005	0.005	0.005		
11.2	Acciai da utensili	Vc	31	31	31	31	28	28	28	28	25	25	9	46	46	46	46	46	46	42	
		fz	0.011	0.011	0.011	0.011	0.010	0.010	0.010	0.010	0.009	0.009	0.007	0.014	0.014	0.014	0.014	0.014	0.014	0.013	
		n	49178	49178	49178	49178	44260	44260	44260	44260	39342	39342	14753	49178	49178	49178	49178	49178	49178	44260	
		Vf	1082	1082	1082	1082	885	885	885	885	708	708	207	1377	1377	1377	1377	1377	1377	1151	
Ap	0.003	0.003	0.003	0.003	0.003	0.003	0.002	0.002	0.002	0.002	0.002	0.001	0.005	0.005	0.005	0.005	0.005	0.005	0.004		
H	38.1		Vc	31	31	31	31	28	28	28	28	25	25	9	46	46	46	46	46	42	
			fz	0.011	0.011	0.011	0.011	0.010	0.010	0.010	0.010	0.009	0.009	0.007	0.014	0.014	0.014	0.014	0.014	0.014	0.013
			n	49178	49178	49178	49178	44260	44260	44260	44260	39342	39342	14753	49178	49178	49178	49178	49178	49178	44260
			Vf	1082	1082	1082	1082	885	885	885	885	708	708	207	1377	1377	1377	1377	1377	1377	1151
	Ap	0.003	0.003	0.003	0.003	0.003	0.003	0.002	0.002	0.002	0.002	0.002	0.001	0.005	0.005	0.005	0.005	0.005	0.005	0.004	
	38.2		Vc	29	29	29	29	26	26	26	26	23	23	9	41	41	41	41	41	41	37
			fz	0.010	0.010	0.010	0.010	0.009	0.009	0.009	0.009	0.008	0.008	0.006	0.013	0.013	0.013	0.013	0.013	0.013	0.012
			n	45900	45900	45900	45900	41310	41310	41310	41310	36720	36720	13770	43714	43714	43714	43714	43714	43714	39343
			Vf	918	918	918	918	744	744	744	744	588	588	165	1137	1137	1137	1137	1137	1137	944
	Ap	0.003	0.003	0.003	0.003	0.003	0.003	0.002	0.002	0.002	0.002	0.001	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.004	
	39.1	Acciai temprati	Vc	26	26	26	26	23	23	23	23	21	21	8	41	41	41	41	41	41	37
			fz	0.010	0.010	0.010	0.010	0.009	0.009	0.009	0.009	0.008	0.008	0.006	0.012	0.012	0.012	0.012	0.012	0.012	0.011
			n	40983	40983	40983	40983	36885	36885	36885	36885	32786	32786	12295	43714	43714	43714	43714	43714	43714	39343
			Vf	820	820	820	820	664	664	664	664	525	525	148	1049	1049	1049	1049	1049	1049	866
	Ap	0.003	0.003	0.003	0.003	0.003	0.003	0.002	0.002	0.002	0.002	0.001	0.005	0.005	0.005	0.005	0.004	0.004	0.004	0.004	
	39.2		Vc	21	21	21	21	19	19	19	19	16	16	6	36	36	36	36	36	36	32
			fz	0.010	0.010	0.010	0.010	0.009	0.009	0.009	0.009	0.008	0.008	0.006	0.012	0.012	0.012	0.012	0.012	0.012	0.011
			n	32786	32786	32786	32786	29507	29507	29507	29507	26229	26229	9836	38250	38250	38250	38250	38250	38250	34425
			Vf	656	656	656	656	531	531	531	531	420	420	118	918	918	918	918	918	918	757
	Ap	0.003	0.003	0.003	0.003	0.003	0.003	0.002	0.002	0.002	0.002	0.001	0.005	0.005	0.005	0.004	0.004	0.004	0.004	0.004	
	39.3		Vc	21	21	21	21	19	19	19	19	16	16	6	31	31	31	31	31	31	28
			fz	0.009	0.009	0.009	0.009	0.008	0.008	0.008	0.008	0.007	0.007	0.005	0.011	0.011	0.011	0.011	0.011	0.011	0.010
			n	32786	32786	32786	32786	29507	29507	29507	29507	26229	26229	9836	32786	32786	32786	32786	32786	32786	29507
			Vf	590	590	590	590	472	472	472	472	367	367	98	721	721	721	721	721	721	590
Ap	0.003	0.003	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.001	0.004	0.004	0.004	0.004	0.004	0.004	0.003			
40	Fusione di ghisa	Vc	31	31	31	31	28	28	28	28	25	25	9	46	46	46	46	46	46	42	
		fz	0.011	0.011	0.011	0.011	0.010	0.010	0.010	0.010	0.009	0.009	0.007	0.014	0.014	0.014	0.014	0.014	0.014	0.013	
		n	49178	49178	49178	49178	44260	44260	44260	44260	39342	39342	14753	49178	49178	49178	49178	49178	49178	44260	
		Vf	1082	1082	1082	1082	885	885	885	885	708	708	207	1377	1377	1377	1377	1377	1377	1151	
Ap	0.003	0.003	0.003	0.003	0.003	0.003	0.002	0.002	0.002	0.002	0.001	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.004		
41	Ghisa indurita	Vc	29	29	29	29	26	26	26	26	23	23	9	41	41	41	41	41	41	37	
		fz	0.010	0.010	0.010	0.010	0.009	0.009	0.009	0.009	0.008	0.008	0.006	0.013	0.013	0.013	0.013	0.013	0.013	0.012	
		n	45900	45900	45900	45900	41310	41310	41310	41310	36720	36720	13770	43714	43714	43714	43714	43714	43714	39343	
		Vf	918	918	918	918	744	744	744	744	588	588	165	1137	1137	1137	1137	1137	1137	944	
Ap	0.003	0.003	0.003	0.003	0.003	0.003	0.002	0.002	0.002	0.002	0.001	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.004		



Vc = m/min. n = giri/min.
fz = mm/dente Vf = mm/min

HPI91, HPI92 SERIES

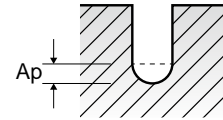
2 TAGLIENTI SEMISFERICA PER NERVATURE

LBS: Lunghezza scarico

VDI 3323	Param.	Diametro (Ø)																					
		0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.5		
	LBS	2	2.25	2.5	3	3.5	4	5	7	0.5	0.8	1	1.5	2	2.5	3	3.5	4	4.5	5	6	7	1
5	Vc	42	42	42	42	37	37	28	14	67	67	67	67	67	60	60	60	60	54	54	54	40	82
	fz	0.014	0.014	0.014	0.014	0.012	0.012	0.011	0.009	0.019	0.019	0.019	0.019	0.019	0.017	0.017	0.017	0.017	0.015	0.015	0.015	0.013	0.024
	n	44260	44260	44260	44260	39342	39342	29507	14753	53277	53277	53277	53277	53277	47949	47949	47949	47949	42622	42622	42622	31966	52458
	Vf	1239	1239	1239	1239	944	944	649	266	2025	2025	2025	2025	2025	1630	1630	1630	1630	1279	1279	1279	831	2518
	Ap	0.005	0.005	0.004	0.004	0.004	0.004	0.003	0.002	0.008	0.008	0.008	0.007	0.007	0.006	0.006	0.006	0.006	0.006	0.006	0.005	0.004	0.010
8-9	Vc	42	42	42	42	37	37	28	14	67	67	67	67	67	60	60	60	60	54	54	54	40	82
	fz	0.014	0.014	0.014	0.014	0.012	0.012	0.011	0.009	0.019	0.019	0.019	0.019	0.019	0.017	0.017	0.017	0.017	0.015	0.015	0.015	0.013	0.024
	n	44260	44260	44260	44260	39342	39342	29507	14753	53277	53277	53277	53277	53277	47949	47949	47949	47949	42622	42622	42622	31966	52458
	Vf	1239	1239	1239	1239	944	944	649	266	2025	2025	2025	2025	2025	1630	1630	1630	1630	1279	1279	1279	831	2518
	Ap	0.005	0.005	0.004	0.004	0.004	0.004	0.003	0.002	0.008	0.008	0.008	0.007	0.007	0.006	0.006	0.006	0.006	0.006	0.006	0.005	0.004	0.010
11.1	Vc	42	42	42	42	37	37	28	14	67	67	67	67	67	60	60	60	60	54	54	54	40	82
	fz	0.014	0.014	0.014	0.014	0.012	0.012	0.011	0.009	0.019	0.019	0.019	0.019	0.019	0.017	0.017	0.017	0.017	0.015	0.015	0.015	0.013	0.024
	n	44260	44260	44260	44260	39342	39342	29507	14753	53277	53277	53277	53277	53277	47949	47949	47949	47949	42622	42622	42622	31966	52458
	Vf	1239	1239	1239	1239	944	944	649	266	2025	2025	2025	2025	2025	1630	1630	1630	1630	1279	1279	1279	831	2518
	Ap	0.005	0.005	0.004	0.004	0.004	0.004	0.003	0.002	0.008	0.008	0.008	0.007	0.007	0.006	0.006	0.006	0.006	0.006	0.006	0.005	0.004	0.010
11.2	Vc	42	42	42	42	37	37	28	14	67	67	67	67	67	60	60	60	60	54	54	54	40	82
	fz	0.013	0.013	0.013	0.013	0.011	0.011	0.010	0.008	0.017	0.017	0.017	0.017	0.017	0.015	0.015	0.015	0.015	0.014	0.014	0.014	0.012	0.021
	n	44260	44260	44260	44260	39342	39342	29507	14753	53277	53277	53277	53277	53277	47949	47949	47949	47949	42622	42622	42622	31966	52458
	Vf	1151	1151	1151	1151	866	866	590	236	1811	1811	1811	1811	1811	1438	1438	1438	1438	1193	1193	1193	767	2203
	Ap	0.004	0.004	0.004	0.004	0.004	0.003	0.003	0.001	0.007	0.007	0.007	0.006	0.006	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.004	0.003
38.1	Vc	42	42	42	42	37	37	28	14	67	67	67	67	67	60	60	60	60	54	54	54	40	82
	fz	0.013	0.013	0.013	0.013	0.011	0.011	0.010	0.008	0.017	0.017	0.017	0.017	0.017	0.015	0.015	0.015	0.015	0.014	0.014	0.014	0.012	0.021
	n	44260	44260	44260	44260	39342	39342	29507	14753	53277	53277	53277	53277	53277	47949	47949	47949	47949	42622	42622	42622	31966	52458
	Vf	1151	1151	1151	1151	866	866	590	236	1811	1811	1811	1811	1811	1438	1438	1438	1438	1193	1193	1193	767	2203
	Ap	0.004	0.004	0.004	0.004	0.004	0.003	0.003	0.001	0.007	0.007	0.007	0.006	0.006	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.004	0.003
38.2	Vc	37	37	37	37	33	33	25	12	57	57	57	57	57	51	51	51	51	45	45	45	34	72
	fz	0.012	0.012	0.012	0.012	0.010	0.010	0.009	0.008	0.017	0.017	0.017	0.017	0.017	0.015	0.015	0.015	0.015	0.014	0.014	0.014	0.012	0.021
	n	39343	39343	39343	39343	34971	34971	26228	13114	45081	45081	45081	45081	45081	40573	40573	40573	40573	36065	36065	36065	27049	45900
	Vf	944	944	944	944	699	699	472	210	1533	1533	1533	1533	1533	1217	1217	1217	1217	1010	1010	1010	649	1928
	Ap	0.004	0.004	0.004	0.004	0.004	0.003	0.003	0.001	0.007	0.007	0.007	0.006	0.006	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.004	0.003
39.1	Vc	37	37	37	37	33	33	25	12	52	52	52	52	52	46	46	46	46	41	41	41	31	67
	fz	0.011	0.011	0.011	0.011	0.010	0.010	0.008	0.007	0.015	0.015	0.015	0.015	0.015	0.014	0.014	0.014	0.014	0.012	0.012	0.012	0.011	0.019
	n	39343	39343	39343	39343	34971	34971	26228	13114	40983	40983	40983	40983	40983	36885	36885	36885	36885	32786	32786	32786	24590	42621
	Vf	866	866	866	866	699	699	420	184	1229	1229	1229	1229	1229	1033	1033	1033	1033	787	787	787	541	1620
	Ap	0.004	0.004	0.003	0.003	0.003	0.003	0.002	0.001	0.006	0.006	0.006	0.006	0.006	0.005	0.005	0.004	0.004	0.004	0.004	0.004	0.003	0.008
39.2	Vc	32	32	32	32	29	29	22	11	46	46	46	46	46	42	42	42	42	37	37	37	28	57
	fz	0.011	0.011	0.011	0.011	0.010	0.010	0.008	0.007	0.015	0.015	0.015	0.015	0.015	0.014	0.014	0.014	0.014	0.012	0.012	0.012	0.011	0.019
	n	34425	34425	34425	34425	30600	30600	22950	11475	36884	36884	36884	36884	36884	33196	33196	33196	33196	29507	29507	29507	22130	36064
	Vf	757	757	757	757	612	612	367	161	1107	1107	1107	1107	1107	929	929	929	929	708	708	708	487	1370
	Ap	0.004	0.004	0.003	0.003	0.003	0.003	0.002	0.001	0.006	0.006	0.006	0.006	0.006	0.005	0.005	0.004	0.004	0.004	0.004	0.004	0.003	0.008
39.3	Vc	28	28	28	28	25	25	19	9	41	41	41	41	41	37	37	37	37	33	33	33	25	52
	fz	0.010	0.010	0.010	0.010	0.009	0.009	0.008	0.007	0.014	0.014	0.014	0.014	0.014	0.013	0.013	0.013	0.013	0.011	0.011	0.011	0.010	0.017
	n	29507	29507	29507	29507	26229	26229	19672	9836	32786	32786	32786	32786	32786	29507	29507	29507	29507	26229	26229	26229	19672	32786
	Vf	590	590	590	590	472	472	315	138	918	918	918	918	918	767	767	767	767	577	577	577	393	1115
	Ap	0.003	0.003	0.003	0.003	0.003	0.003	0.002	0.001	0.005	0.005	0.005	0.005	0.005	0.005	0.004	0.004	0.004	0.004	0.004	0.004	0.003	0.007
40	Vc	42	42	42	42	37	37	28	14	67	67	67	67	67	60	60	60	60	54	54	54	40	82
	fz	0.013	0.013	0.013	0.013	0.011	0.011	0.010	0.008	0.017	0.017	0.017	0.017	0.017	0.015	0.015	0.015	0.015	0.014	0.014	0.014	0.012	0.021
	n	44260	44260	44260	44260	39342	39342	29507	14753	53277	53277	53277	53277	53277	47949	47949	47949	47949	42622	42622	42622	31966	52458
	Vf	1151	1151	1151	1151	866	866	590	236	1811	1811	1811	1811	1811	1438	1438	1438	1438	1193	1193	1193	767	2203
	Ap	0.004	0.004	0.004	0.004	0.004	0.003	0.003	0.001	0.007	0.007	0.007	0.006	0.006	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.004	0.003
41	Vc	37	37	37	37	33	33	25	12	57	57	57	57	57	51	51	51	51	45	45	45	34	72
	fz	0.012	0.012	0.012	0.012	0.010	0.010	0.009	0.008	0.017	0.017	0.017	0.017	0.017	0.015	0.015	0.015	0.015	0.014	0.014	0.014	0.012	0.021
	n	39343	39343	39343	39343	34971	34971	26228	13114	45081	45081	45081	45081	45081	40573	40573	40573	40573	36065	36065	36065	27049	45900
	Vf	944	944	944	944	699	699																

HPI91, HPI92 SERIES

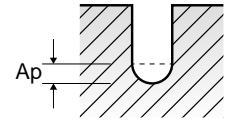
2 TAGLIENTI SEMISFERICA PER NERVATURE



Vc = m/min. n = giri/min.
fz = mm/dente Vf = mm/min

LBS: Lunghezza scarico

ISO	VDI 3323	Param. LBS	Diametro (Ø)																				
			0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.6	0.6	0.6	0.6	0.6	0.6	0.6	
			1.25	1.5	2	2.5	3	3.5	4	4.5	5	5.5	6	8	10	1	1.5	2	2.5	3	3.5	4	4.5
P	5	Vc	82	82	82	82	74	74	74	74	74	66	66	49	49	98	98	98	98	98	88	88	88
		fz	0.024	0.024	0.024	0.024	0.022	0.022	0.022	0.022	0.022	0.019	0.019	0.017	0.017	0.029	0.029	0.029	0.029	0.029	0.026	0.026	0.026
		n	52458	52458	52458	52458	47212	47212	47212	47212	47212	41966	41966	31475	31475	51911	51911	51911	51911	51911	46720	46720	46720
		Vf	2518	2518	2518	2518	2077	2077	2077	2077	2077	1595	1595	1070	1070	3011	3011	3011	3011	3011	2429	2429	2429
		Ap	0.010	0.010	0.009	0.009	0.008	0.008	0.008	0.007	0.007	0.007	0.007	0.007	0.007	0.005	0.012	0.012	0.011	0.011	0.010	0.010	0.010
	8-9	Vc	82	82	82	82	74	74	74	74	74	66	66	49	49	98	98	98	98	98	88	88	88
		fz	0.024	0.024	0.024	0.024	0.022	0.022	0.022	0.022	0.022	0.019	0.019	0.017	0.017	0.029	0.029	0.029	0.029	0.029	0.026	0.026	0.026
		n	52458	52458	52458	52458	47212	47212	47212	47212	47212	41966	41966	31475	31475	51911	51911	51911	51911	51911	46720	46720	46720
		Vf	2518	2518	2518	2518	2077	2077	2077	2077	2077	1595	1595	1070	1070	3011	3011	3011	3011	3011	2429	2429	2429
		Ap	0.010	0.010	0.009	0.009	0.008	0.008	0.008	0.007	0.007	0.007	0.007	0.007	0.007	0.005	0.012	0.012	0.011	0.011	0.010	0.010	0.010
	11.1	Vc	82	82	82	82	74	74	74	74	74	66	66	49	49	98	98	98	98	98	88	88	88
		fz	0.024	0.024	0.024	0.024	0.022	0.022	0.022	0.022	0.022	0.019	0.019	0.017	0.017	0.029	0.029	0.029	0.029	0.029	0.026	0.026	0.026
n		52458	52458	52458	52458	47212	47212	47212	47212	47212	41966	41966	31475	31475	51911	51911	51911	51911	51911	46720	46720	46720	
Vf		2518	2518	2518	2518	2077	2077	2077	2077	2077	1595	1595	1070	1070	3011	3011	3011	3011	3011	2429	2429	2429	
Ap		0.010	0.010	0.009	0.009	0.008	0.008	0.008	0.007	0.007	0.007	0.007	0.007	0.007	0.005	0.012	0.012	0.011	0.011	0.010	0.010	0.010	
11.2	Vc	82	82	82	82	74	74	74	74	74	66	66	49	49	98	98	98	98	98	88	88	88	
	fz	0.021	0.021	0.021	0.021	0.019	0.019	0.019	0.019	0.019	0.017	0.017	0.015	0.015	0.025	0.025	0.025	0.025	0.025	0.023	0.023	0.023	
	n	52458	52458	52458	52458	47212	47212	47212	47212	47212	41966	41966	31475	31475	51911	51911	51911	51911	51911	46720	46720	46720	
	Vf	2203	2203	2203	2203	1794	1794	1794	1794	1794	1427	1427	944	944	2596	2596	2596	2596	2596	2149	2149	2149	
	Ap	0.009	0.009	0.008	0.008	0.007	0.007	0.007	0.006	0.006	0.006	0.006	0.006	0.006	0.004	0.010	0.010	0.009	0.009	0.008	0.008	0.008	
H	38.1	Vc	82	82	82	82	74	74	74	74	74	66	66	49	49	98	98	98	98	98	88	88	88
		fz	0.021	0.021	0.021	0.021	0.019	0.019	0.019	0.019	0.019	0.017	0.017	0.015	0.015	0.025	0.025	0.025	0.025	0.025	0.023	0.023	0.023
		n	52458	52458	52458	52458	47212	47212	47212	47212	47212	41966	41966	31475	31475	51911	51911	51911	51911	51911	46720	46720	46720
		Vf	2203	2203	2203	2203	1794	1794	1794	1794	1794	1427	1427	944	944	2596	2596	2596	2596	2596	2149	2149	2149
		Ap	0.009	0.009	0.008	0.008	0.007	0.007	0.007	0.006	0.006	0.006	0.006	0.006	0.006	0.004	0.010	0.010	0.009	0.009	0.008	0.008	0.008
	38.2	Vc	72	72	72	72	65	65	65	65	65	58	58	43	43	88	88	88	88	88	79	79	79
		fz	0.021	0.021	0.021	0.021	0.019	0.019	0.019	0.019	0.019	0.017	0.017	0.015	0.015	0.024	0.024	0.024	0.024	0.024	0.022	0.022	0.022
		n	45900	45900	45900	45900	41310	41310	41310	41310	41310	36720	36720	27540	27540	46447	46447	46447	46447	46447	41802	41802	41802
		Vf	1928	1928	1928	1928	1570	1570	1570	1570	1570	1248	1248	826	826	2229	2229	2229	2229	2229	1839	1839	1839
		Ap	0.009	0.009	0.008	0.008	0.007	0.007	0.007	0.006	0.006	0.006	0.006	0.006	0.006	0.004	0.010	0.010	0.009	0.009	0.008	0.008	0.008
	39.1	Vc	67	67	67	67	60	60	60	60	60	54	54	40	40	77	77	77	77	77	70	70	70
		fz	0.019	0.019	0.019	0.019	0.017	0.017	0.017	0.017	0.017	0.015	0.015	0.013	0.013	0.023	0.023	0.023	0.023	0.023	0.021	0.021	0.021
n		42621	42621	42621	42621	38359	38359	38359	38359	38359	34097	34097	25573	25573	40983	40983	40983	40983	40983	36885	36885	36885	
Vf		1620	1620	1620	1620	1304	1304	1304	1304	1304	1023	1023	665	665	1885	1885	1885	1885	1885	1549	1549	1549	
Ap		0.008	0.008	0.007	0.007	0.006	0.006	0.006	0.006	0.006	0.006	0.006	0.005	0.005	0.010	0.010	0.009	0.009	0.009	0.008	0.008	0.008	
39.2	Vc	57	57	57	57	51	51	51	51	51	45	45	34	34	67	67	67	67	67	60	60	60	
	fz	0.019	0.019	0.019	0.019	0.017	0.017	0.017	0.017	0.017	0.015	0.015	0.013	0.013	0.023	0.023	0.023	0.023	0.023	0.021	0.021	0.021	
	n	36064	36064	36064	36064	32458	32458	32458	32458	32458	28851	28851	21638	21638	35519	35519	35519	35519	35519	31967	31967	31967	
	Vf	1370	1370	1370	1370	1104	1104	1104	1104	1104	866	866	563	563	1634	1634	1634	1634	1634	1343	1343	1343	
	Ap	0.008	0.008	0.007	0.007	0.006	0.006	0.006	0.006	0.006	0.006	0.006	0.005	0.004	0.010	0.010	0.009	0.009	0.009	0.008	0.008	0.008	
39.3	Vc	52	52	52	52	46	46	46	46	46	41	41	31	31	62	62	62	62	62	56	56	56	
	fz	0.017	0.017	0.017	0.017	0.015	0.015	0.015	0.015	0.015	0.014	0.014	0.012	0.012	0.022	0.022	0.022	0.022	0.022	0.020	0.020	0.020	
	n	32786	32786	32786	32786	29507	29507	29507	29507	29507	26229	26229	19672	19672	32786	32786	32786	32786	32786	29507	29507	29507	
	Vf	1115	1115	1115	1115	885	885	885	885	885	734	734	472	472	1443	1443	1443	1443	1443	1180	1180	1180	
	Ap	0.007	0.007	0.006	0.006	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.004	0.003	0.008	0.008	0.007	0.007	0.007	0.006	0.006	0.006	
40	Vc	82	82	82	82	74	74	74	74	74	66	66	49	49	98	98	98	98	98	88	88	88	
	fz	0.021	0.021	0.021	0.021	0.019	0.019	0.019	0.019	0.019	0.017	0.017	0.015	0.015	0.025	0.025	0.025	0.025	0.025	0.023	0.023	0.023	
	n	52458	52458	52458	52458	47212	47212	47212	47212	47212	41966	41966	31475	31475	51911	51911	51911	51911	51911	46720	46720	46720	
	Vf	2203	2203	2203	2203	1794	1794	1794	1794	1794	1427	1427	944	944	2596	2596	2596	2596	2596	2149	2149	2149	
	Ap	0.009	0.009	0.008	0.008	0.007	0.007	0.007	0.006	0.006	0.006	0.006	0.006	0.006	0.004	0.010	0.010	0.009	0.009	0.008	0.008	0.008	
41	Vc	72	72	72	72	65	65	65	65	65	58	58	43	43	88	88	88	88	88	79	79	79	
	fz	0.021	0.021	0.021	0.021	0.019	0.019	0.019	0.019	0.019	0.017	0.017	0.015	0.015	0.024	0.024	0.024	0.024	0.024	0.022	0.022	0.022	
	n	45900	45900	45900	45900	41310	41310	41310	41310	41310	36720	36720	27540	27540	46447	46447	46447	46447	46447	41802	41802	41802	
	Vf	1928	1928	1928	1928	1570	1570	1570	1570	1570	1248	1248	826	826	2229	2229	2229	2229	2229	1839	1839	1839	
	Ap	0.009	0.009	0.008	0.008	0.007	0.007	0.007	0.006	0.006	0.006	0.006	0.006	0.006	0.004	0.010	0.010	0.009	0.009	0.008	0.008	0.008	



Vc = m/min. n = giri/min.
fz = mm/dente Vf = mm/min

HPI91, HPI92 SERIES

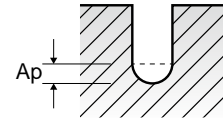
2 TAGLIENTI SEMISFERICA PER NERVATURE

LBS: Lunghezza scarico

VDI 3323	Param. LBS	Diametro (Ø)																					
		0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.7	0.7	0.7	0.7	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.9		
		5	5.5	6	7	8	9	10	12	2	4	6	8	2	3	4	5	6	7	8	10	12	2
5	Vc	88	88	88	78	78	78	59	59	114	103	103	91	129	129	129	116	116	116	116	103	103	145
	fz	0.026	0.026	0.026	0.023	0.023	0.023	0.020	0.020	0.029	0.026	0.023	0.039	0.039	0.039	0.035	0.035	0.035	0.035	0.035	0.031	0.031	0.039
	n	46720	46720	46720	41529	41529	41529	31147	31147	51911	46720	46720	41529	51228	51228	51228	46105	46105	46105	46105	40982	40982	51228
	Vf	2429	2429	2429	1910	1910	1910	1246	1246	3011	2429	2429	1910	3996	3996	3996	3227	3227	3227	3227	2541	2541	3996
	Ap	0.008	0.008	0.008	0.008	0.008	0.008	0.006	0.006	0.014	0.011	0.010	0.010	0.016	0.014	0.014	0.013	0.013	0.011	0.011	0.011	0.010	0.018
8-9	Vc	88	88	88	78	78	78	59	59	114	103	103	91	129	129	129	116	116	116	116	103	103	145
	fz	0.026	0.026	0.026	0.023	0.023	0.023	0.020	0.020	0.029	0.026	0.023	0.039	0.039	0.039	0.035	0.035	0.035	0.035	0.035	0.031	0.031	0.039
	n	46720	46720	46720	41529	41529	41529	31147	31147	51911	46720	46720	41529	51228	51228	51228	46105	46105	46105	46105	40982	40982	51228
	Vf	2429	2429	2429	1910	1910	1910	1246	1246	3011	2429	2429	1910	3996	3996	3996	3227	3227	3227	3227	2541	2541	3996
	Ap	0.008	0.008	0.008	0.008	0.008	0.008	0.006	0.006	0.014	0.011	0.010	0.010	0.016	0.014	0.014	0.013	0.013	0.011	0.011	0.011	0.010	0.018
11.1	Vc	88	88	88	78	78	78	59	59	114	103	103	91	129	129	129	116	116	116	116	103	103	145
	fz	0.026	0.026	0.026	0.023	0.023	0.023	0.020	0.020	0.029	0.026	0.023	0.039	0.039	0.039	0.035	0.035	0.035	0.035	0.035	0.031	0.031	0.039
	n	46720	46720	46720	41529	41529	41529	31147	31147	51911	46720	46720	41529	51228	51228	51228	46105	46105	46105	46105	40982	40982	51228
	Vf	2429	2429	2429	1910	1910	1910	1246	1246	3011	2429	2429	1910	3996	3996	3996	3227	3227	3227	3227	2541	2541	3996
	Ap	0.008	0.008	0.008	0.008	0.008	0.008	0.006	0.006	0.014	0.011	0.010	0.010	0.016	0.014	0.014	0.013	0.013	0.011	0.011	0.011	0.010	0.018
11.2	Vc	88	88	88	78	78	78	59	59	114	103	103	91	129	129	129	116	116	116	116	103	103	145
	fz	0.023	0.023	0.023	0.020	0.020	0.020	0.018	0.018	0.025	0.023	0.023	0.020	0.033	0.033	0.033	0.030	0.030	0.030	0.030	0.026	0.026	0.033
	n	46720	46720	46720	41529	41529	41529	31147	31147	51911	46720	46720	41529	51228	51228	51228	46105	46105	46105	46105	40982	40982	51228
	Vf	2149	2149	2149	1661	1661	1661	1121	1121	2596	2149	2149	1661	3381	3381	3381	2766	2766	2766	2766	2131	2131	3381
	Ap	0.007	0.007	0.007	0.007	0.007	0.007	0.005	0.005	0.012	0.010	0.008	0.008	0.014	0.012	0.012	0.011	0.011	0.010	0.010	0.010	0.009	0.015
38.1	Vc	88	88	88	78	78	78	59	59	114	103	103	91	129	129	129	116	116	116	116	103	103	145
	fz	0.023	0.023	0.023	0.020	0.020	0.020	0.018	0.018	0.025	0.023	0.023	0.020	0.033	0.033	0.033	0.030	0.030	0.030	0.030	0.026	0.026	0.033
	n	46720	46720	46720	41529	41529	41529	31147	31147	51911	46720	46720	41529	51228	51228	51228	46105	46105	46105	46105	40982	40982	51228
	Vf	2149	2149	2149	1661	1661	1661	1121	1121	2596	2149	2149	1661	3381	3381	3381	2766	2766	2766	2766	2131	2131	3381
	Ap	0.007	0.007	0.007	0.007	0.007	0.007	0.005	0.005	0.012	0.010	0.008	0.008	0.014	0.012	0.012	0.011	0.011	0.010	0.010	0.010	0.009	0.015
38.2	Vc	79	79	79	70	70	70	53	53	102	92	92	82	118	118	118	107	107	107	107	95	95	133
	fz	0.022	0.022	0.022	0.019	0.019	0.019	0.017	0.017	0.024	0.022	0.022	0.019	0.033	0.033	0.033	0.030	0.030	0.030	0.030	0.026	0.026	0.033
	n	41802	41802	41802	37158	37158	37158	27868	27868	46447	41802	41802	37158	47130	47130	47130	42417	42417	42417	42417	37704	37704	47130
	Vf	1839	1839	1839	1412	1412	1412	948	948	2229	1839	1839	1412	3111	3111	3111	2545	2545	2545	2545	1961	1961	3111
	Ap	0.007	0.007	0.007	0.007	0.007	0.007	0.005	0.005	0.012	0.010	0.008	0.008	0.014	0.012	0.012	0.011	0.011	0.010	0.010	0.010	0.009	0.015
39.1	Vc	70	70	70	62	62	62	46	46	90	81	81	72	103	103	103	93	93	93	93	82	82	116
	fz	0.021	0.021	0.021	0.018	0.018	0.018	0.016	0.016	0.023	0.021	0.021	0.018	0.030	0.030	0.030	0.027	0.027	0.027	0.027	0.024	0.024	0.030
	n	36885	36885	36885	32786	32786	32786	24590	24590	40983	36885	36885	32786	40983	40983	40983	36885	36885	36885	36885	32786	32786	40983
	Vf	1549	1549	1549	1180	1180	1180	787	787	1885	1549	1549	1180	2459	2459	2459	1992	1992	1992	1992	1574	1574	2459
	Ap	0.007	0.007	0.007	0.006	0.006	0.006	0.005	0.005	0.011	0.009	0.008	0.008	0.013	0.012	0.012	0.010	0.010	0.009	0.009	0.008	0.008	0.014
39.2	Vc	60	60	60	54	54	54	40	40	78	70	70	62	93	93	93	83	83	83	83	74	74	104
	fz	0.021	0.021	0.021	0.018	0.018	0.018	0.016	0.016	0.023	0.021	0.021	0.018	0.030	0.030	0.030	0.027	0.027	0.027	0.027	0.024	0.024	0.030
	n	31967	31967	31967	28415	28415	28415	21311	21311	35519	31967	31967	28415	36884	36884	36884	33196	33196	33196	33196	29507	29507	36884
	Vf	1343	1343	1343	1023	1023	1023	682	682	1634	1343	1343	1023	2213	2213	2213	1793	1793	1793	1793	1416	1416	2213
	Ap	0.007	0.007	0.007	0.007	0.006	0.006	0.005	0.005	0.011	0.009	0.008	0.008	0.013	0.012	0.012	0.010	0.010	0.009	0.009	0.008	0.008	0.014
39.3	Vc	56	56	56	49	49	49	37	37	72	65	65	58	82	82	82	74	74	74	74	66	66	93
	fz	0.020	0.020	0.020	0.018	0.018	0.018	0.015	0.015	0.022	0.020	0.020	0.018	0.029	0.029	0.029	0.026	0.026	0.026	0.026	0.023	0.023	0.029
	n	29507	29507	29507	26229	26229	26229	19672	19672	32786	29507	29507	26229	32786	32786	32786	29507	29507	29507	29507	26229	26229	32786
	Vf	1180	1180	1180	944	944	944	590	590	1443	1180	1180	944	1902	1902	1902	1534	1534	1534	1534	1207	1207	1902
	Ap	0.005	0.005	0.005	0.005	0.005	0.005	0.004	0.004	0.009	0.007	0.006	0.006	0.010	0.009	0.009	0.008	0.008	0.007	0.007	0.007	0.007	0.012
40	Vc	88	88	88	78	78	78	59	59	114	103	103	91	129	129	129	116	116	116	116	103	103	145
	fz	0.023	0.023	0.023	0.020	0.020	0.020	0.018	0.018	0.025	0.023	0.023	0.020	0.033	0.033	0.033	0.030	0.030	0.030	0.030	0.026	0.026	0.033
	n	46720	46720	46720	41529	41529	41529	31147	31147	51911	46720	46720	41529	51228	51228	51228	46105	46105	46105	46105	40982	40982	51228
	Vf	2149	2149	2149	1661	1661	1661	1121	1121	2596	2149	2149	1661	3381	3381	3381	2766	2766	2766	2766	2131	2131	3381
	Ap	0.007	0.007	0.007	0.007	0.007	0.007	0.005	0.005	0.012	0.010	0.008	0.008	0.014	0.012	0.012	0.011	0.011	0.010	0.010	0.010	0.009	0.015
41	Vc	79	79	79	70	70	70	53	53	102	92	92	82	118	118	118	107	107	107	107	95	95	133
	fz	0.022	0.022	0.022	0.019	0.019	0.019	0.017	0.017	0.024	0.022	0.022	0.019	0.033	0.033	0.033	0.030	0.030	0.030	0.030	0.026	0.026	0.033
	n	41802	41802	41802	37158	37158	37158	27868	27868	46447	41802	41802											

HPI91, HPI92 SERIES

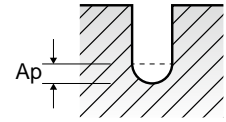
2 TAGLIENTI SEMISFERICA PER NERVATURE



Vc = m/min. n = giri/min.
fz = mm/dente Vf = mm/min

LBS: Lunghezza scarico

ISO	VDI 3323	Param. LBS	Diametro (Ø)																				
			0.9	0.9	0.9	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1		
			4	6	8	2	2.5	3	4	5	6	7	8	9	10	12	13	14	16	18	20	22	25
P	5	Vc	145	130	130	160	160	160	160	160	144	144	144	144	144	128	128	128	96	96	96	48	48
		fz	0.039	0.035	0.035	0.048	0.048	0.048	0.048	0.048	0.043	0.043	0.043	0.043	0.043	0.038	0.038	0.038	0.034	0.034	0.034	0.029	0.029
		n	51228	46105	46105	50818	50818	50818	50818	50818	45736	45736	45736	45736	45736	40654	40654	40654	30491	30491	30491	15245	15245
		Vf	3996	3227	3227	4879	4879	4879	4879	4879	3933	3933	3933	3933	3933	3090	3090	3090	2073	2073	2073	884	884
	Ap	0.016	0.014	0.013	0.020	0.020	0.020	0.018	0.018	0.016	0.016	0.016	0.016	0.014	0.014	0.014	0.014	0.013	0.013	0.010	0.010	0.005	0.005
	8-9	Vc	145	130	130	160	160	160	160	160	144	144	144	144	144	128	128	128	96	96	96	48	48
		fz	0.039	0.035	0.035	0.048	0.048	0.048	0.048	0.048	0.043	0.043	0.043	0.043	0.043	0.038	0.038	0.038	0.034	0.034	0.034	0.029	0.029
		n	51228	46105	46105	50818	50818	50818	50818	50818	45736	45736	45736	45736	45736	40654	40654	40654	30491	30491	30491	15245	15245
		Vf	3996	3227	3227	4879	4879	4879	4879	4879	3933	3933	3933	3933	3933	3090	3090	3090	2073	2073	2073	884	884
	Ap	0.016	0.014	0.013	0.020	0.020	0.020	0.018	0.018	0.016	0.016	0.016	0.016	0.014	0.014	0.014	0.014	0.013	0.013	0.010	0.010	0.005	0.005
	11.1	Vc	145	130	130	160	160	160	160	160	144	144	144	144	144	128	128	128	96	96	96	48	48
		fz	0.039	0.035	0.035	0.048	0.048	0.048	0.048	0.048	0.043	0.043	0.043	0.043	0.043	0.038	0.038	0.038	0.034	0.034	0.034	0.029	0.029
		n	51228	46105	46105	50818	50818	50818	50818	50818	45736	45736	45736	45736	45736	40654	40654	40654	30491	30491	30491	15245	15245
		Vf	3996	3227	3227	4879	4879	4879	4879	4879	3933	3933	3933	3933	3933	3090	3090	3090	2073	2073	2073	884	884
	Ap	0.016	0.014	0.013	0.020	0.020	0.020	0.018	0.018	0.016	0.016	0.016	0.016	0.014	0.014	0.014	0.014	0.013	0.013	0.010	0.010	0.005	0.005
	11.2	Vc	145	130	130	160	160	160	160	160	144	144	144	144	144	128	128	128	96	96	96	48	48
fz		0.033	0.030	0.030	0.042	0.042	0.042	0.042	0.042	0.038	0.038	0.038	0.038	0.038	0.034	0.034	0.034	0.029	0.029	0.029	0.025	0.025	
n		51228	46105	46105	50818	50818	50818	50818	50818	45736	45736	45736	45736	45736	40654	40654	40654	30491	30491	30491	15245	15245	
Vf		3381	2766	2766	4269	4269	4269	4269	4269	3476	3476	3476	3476	3476	2764	2764	2764	1768	1768	1768	762	762	
Ap	0.014	0.012	0.011	0.017	0.017	0.017	0.015	0.015	0.014	0.014	0.014	0.014	0.012	0.012	0.012	0.012	0.011	0.011	0.009	0.009	0.004	0.004	
H	38.1	Vc	145	130	130	160	160	160	160	160	144	144	144	144	144	128	128	128	96	96	96	48	48
		fz	0.033	0.030	0.030	0.042	0.042	0.042	0.042	0.042	0.038	0.038	0.038	0.038	0.038	0.034	0.034	0.034	0.029	0.029	0.029	0.025	0.025
		n	51228	46105	46105	50818	50818	50818	50818	50818	45736	45736	45736	45736	45736	40654	40654	40654	30491	30491	30491	15245	15245
		Vf	3381	2766	2766	4269	4269	4269	4269	4269	3476	3476	3476	3476	3476	2764	2764	2764	1768	1768	1768	762	762
	Ap	0.014	0.012	0.011	0.017	0.017	0.017	0.015	0.015	0.014	0.014	0.014	0.014	0.012	0.012	0.012	0.012	0.011	0.011	0.009	0.009	0.004	0.004
	38.2	Vc	133	120	120	144	144	144	144	144	130	130	130	130	130	115	115	115	87	87	87	43	43
		fz	0.033	0.030	0.030	0.042	0.042	0.042	0.042	0.042	0.038	0.038	0.038	0.038	0.038	0.034	0.034	0.034	0.029	0.029	0.029	0.025	0.025
		n	47130	42417	42417	45900	45900	45900	45900	45900	41310	41310	41310	41310	41310	36720	36720	36720	27540	27540	27540	13770	13770
		Vf	3111	2545	2545	3856	3856	3856	3856	3856	3140	3140	3140	3140	3140	2497	2497	2497	1597	1597	1597	689	689
	Ap	0.014	0.012	0.011	0.017	0.017	0.017	0.015	0.015	0.014	0.014	0.014	0.014	0.012	0.012	0.012	0.012	0.011	0.011	0.009	0.009	0.004	0.004
	39.1	Vc	116	104	104	129	129	129	129	129	116	116	116	116	116	103	103	103	77	77	77	39	39
		fz	0.030	0.027	0.027	0.038	0.038	0.038	0.038	0.038	0.034	0.034	0.034	0.034	0.034	0.030	0.030	0.030	0.027	0.027	0.027	0.023	0.023
		n	40983	36885	36885	40983	40983	40983	40983	40983	36885	36885	36885	36885	36885	32786	32786	32786	24590	24590	24590	12295	12295
		Vf	2459	1992	1992	3115	3115	3115	3115	3115	2508	2508	2508	2508	2508	1967	1967	1967	1328	1328	1328	566	566
	Ap	0.013	0.012	0.010	0.016	0.016	0.016	0.014	0.014	0.013	0.013	0.013	0.013	0.011	0.011	0.011	0.010	0.010	0.008	0.008	0.004	0.004	
	39.2	Vc	104	94	94	113	113	113	113	113	102	102	102	102	102	91	91	91	68	68	68	34	34
		fz	0.030	0.027	0.027	0.037	0.037	0.037	0.037	0.037	0.033	0.033	0.033	0.033	0.033	0.030	0.030	0.030	0.026	0.026	0.026	0.022	0.022
		n	36884	33196	33196	36064	36064	36064	36064	36064	32458	32458	32458	32458	32458	28851	28851	28851	21638	21638	21638	10819	10819
		Vf	2213	1793	1793	2669	2669	2669	2669	2669	2142	2142	2142	2142	2142	1731	1731	1731	1125	1125	1125	476	476
	Ap	0.013	0.012	0.010	0.016	0.016	0.016	0.014	0.014	0.013	0.013	0.013	0.013	0.011	0.011	0.011	0.010	0.010	0.008	0.008	0.004	0.004	
	39.3	Vc	93	83	83	113	113	113	113	113	102	102	102	102	102	91	91	91	68	68	68	34	34
		fz	0.029	0.026	0.026	0.033	0.033	0.033	0.033	0.033	0.030	0.030	0.030	0.030	0.030	0.026	0.026	0.026	0.023	0.023	0.023	0.020	0.020
		n	32786	29507	29507	36064	36064	36064	36064	36064	32458	32458	32458	32458	32458	28851	28851	28851	21638	21638	21638	10819	10819
		Vf	1902	1534	1534	2380	2380	2380	2380	2380	1947	1947	1947	1947	1947	1500	1500	1500	995	995	995	433	433
Ap	0.011	0.009	0.008	0.013	0.013	0.013	0.012	0.012	0.010	0.010	0.010	0.010	0.009	0.009	0.009	0.008	0.008	0.007	0.007	0.003	0.003		
40	Vc	145	130	130	160	160	160	160	160	144	144	144	144	144	128	128	128	96	96	96	48	48	
	fz	0.033	0.030	0.030	0.042	0.042	0.042	0.042	0.042	0.038	0.038	0.038	0.038	0.038	0.034	0.034	0.034	0.029	0.029	0.029	0.025	0.025	
	n	51228	46105	46105	50818	50818	50818	50818	50818	45736	45736	45736	45736	45736	40654	40654	40654	30491	30491	30491	15245	15245	
	Vf	3381	2766	2766	4269	4269	4269	4269	4269	3476	3476	3476	3476	3476	2764	2764	2764	1768	1768	1768	762	762	
Ap	0.014	0.012	0.011	0.017	0.017	0.017	0.015	0.015	0.014	0.014	0.014	0.014	0.012	0.012	0.012	0.012	0.011	0.011	0.009	0.009	0.004	0.004	
41	Vc	133	120	120	144	144	144	144	144	130	130	130	130	130	115	115	115	87	87	87	43	43	
	fz	0.033	0.030	0.030	0.042	0.042	0.042	0.042	0.042	0.038	0.038	0.038	0.038	0.038	0.034	0.034	0.034	0.029	0.029	0.029	0.025	0.025	
	n	47130	42417	42417	45900	45900	45900	45900	45900	41310	41310	41310	41310	41310	36720	36720	36720	27540	27540	27540	13770	13770	
	Vf	3111	2545	2545	3856	3856	3856	3856	3856	3140	3140	3140	3140	3140	2497	2497	2497	1597	1597	1597	689	689	
Ap	0.014	0.012	0.011	0.017	0.017	0.017	0.015	0.015															



Vc = m/min. n = giri/min.
fz = mm/dente Vf = mm/min

HPI91, HPI92 SERIES

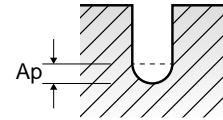
2 TAGLIENTI SEMISFERICA PER NERVATURE

LBS: Lunghezza scarico

VDI 3323	Param.	Diametro (Ø)																				
		1					1.2					1.4					1.5					
		30	2.4	4	6	8	10	12	14	16	8	12	16	3	3.8	4	6	8	10	12	14	15
5	Vc	48	196	196	196	176	176	176	157	157	197	197	175	242	242	242	242	218	218	218	218	194
	fz	0.029	0.051	0.051	0.051	0.046	0.046	0.046	0.041	0.041	0.048	0.048	0.042	0.054	0.054	0.054	0.054	0.049	0.049	0.049	0.049	0.043
	n	15245	51911	51911	51911	46720	46720	46720	41529	41529	44814	44814	39834	51365	51365	51365	51365	46229	46229	46229	46229	41092
	Vf	884	5295	5295	5295	4298	4298	4298	3405	3405	4302	4302	3346	5547	5547	5547	5547	4530	4530	4530	4530	3534
	Ap	0.005	0.024	0.022	0.022	0.019	0.017	0.017	0.017	0.016	0.022	0.020	0.020	0.030	0.030	0.030	0.027	0.024	0.024	0.021	0.021	0.021
8-9	Vc	48	196	196	196	176	176	176	157	157	197	197	175	242	242	242	242	218	218	218	218	194
	fz	0.029	0.051	0.051	0.051	0.046	0.046	0.046	0.041	0.041	0.048	0.048	0.042	0.054	0.054	0.054	0.054	0.049	0.049	0.049	0.049	0.043
	n	15245	51911	51911	51911	46720	46720	46720	41529	41529	44814	44814	39834	51365	51365	51365	51365	46229	46229	46229	46229	41092
	Vf	884	5295	5295	5295	4298	4298	4298	3405	3405	4302	4302	3346	5547	5547	5547	5547	4530	4530	4530	4530	3534
	Ap	0.005	0.024	0.022	0.022	0.019	0.017	0.017	0.017	0.016	0.022	0.020	0.020	0.030	0.030	0.030	0.027	0.024	0.024	0.021	0.021	0.021
11.1	Vc	48	196	196	196	176	176	176	157	157	197	197	175	242	242	242	242	218	218	218	218	194
	fz	0.029	0.051	0.051	0.051	0.046	0.046	0.046	0.041	0.041	0.048	0.048	0.042	0.054	0.054	0.054	0.054	0.049	0.049	0.049	0.049	0.043
	n	15245	51911	51911	51911	46720	46720	46720	41529	41529	44814	44814	39834	51365	51365	51365	51365	46229	46229	46229	46229	41092
	Vf	884	5295	5295	5295	4298	4298	4298	3405	3405	4302	4302	3346	5547	5547	5547	5547	4530	4530	4530	4530	3534
	Ap	0.005	0.024	0.022	0.022	0.019	0.017	0.017	0.017	0.016	0.022	0.020	0.020	0.030	0.030	0.030	0.027	0.024	0.024	0.021	0.021	0.021
11.2	Vc	48	185	185	185	167	167	167	148	148	189	189	168	232	232	232	232	209	209	209	209	185
	fz	0.025	0.045	0.045	0.045	0.041	0.041	0.041	0.036	0.036	0.041	0.041	0.037	0.047	0.047	0.047	0.047	0.042	0.042	0.042	0.042	0.038
	n	15245	49178	49178	49178	44260	44260	44260	39342	39342	42971	42971	38197	49178	49178	49178	49178	44260	44260	44260	44260	39342
	Vf	762	4426	4426	4426	3585	3585	3585	2833	2833	3558	3558	2811	4623	4623	4623	4623	3718	3718	3718	3718	2990
	Ap	0.004	0.020	0.018	0.018	0.016	0.014	0.014	0.013	0.019	0.017	0.017	0.017	0.026	0.026	0.026	0.023	0.020	0.020	0.020	0.018	0.018
38.1	Vc	48	185	185	185	167	167	167	148	148	189	189	168	232	232	232	232	209	209	209	209	185
	fz	0.025	0.045	0.045	0.045	0.041	0.041	0.041	0.036	0.036	0.041	0.041	0.037	0.047	0.047	0.047	0.047	0.042	0.042	0.042	0.042	0.038
	n	15245	49178	49178	49178	44260	44260	44260	39342	39342	42971	42971	38197	49178	49178	49178	49178	44260	44260	44260	44260	39342
	Vf	762	4426	4426	4426	3585	3585	3585	2833	2833	3558	3558	2811	4623	4623	4623	4623	3718	3718	3718	3718	2990
	Ap	0.004	0.020	0.018	0.018	0.016	0.014	0.014	0.013	0.019	0.017	0.017	0.017	0.026	0.026	0.026	0.023	0.020	0.020	0.020	0.018	0.018
38.2	Vc	43	165	165	165	148	148	148	132	132	172	172	153	211	211	211	211	190	190	190	190	169
	fz	0.025	0.045	0.045	0.045	0.041	0.041	0.041	0.036	0.036	0.041	0.041	0.037	0.047	0.047	0.047	0.047	0.042	0.042	0.042	0.042	0.038
	n	13770	43714	43714	43714	39343	39343	39343	34971	34971	39084	39084	34742	44807	44807	44807	44807	40326	40326	40326	40326	35846
	Vf	689	3934	3934	3934	3226	3226	3226	2518	2518	3205	3205	2571	4212	4212	4212	4212	3387	3387	3387	3387	2724
	Ap	0.004	0.020	0.018	0.018	0.016	0.014	0.014	0.013	0.019	0.017	0.017	0.017	0.026	0.026	0.026	0.023	0.020	0.020	0.020	0.018	0.018
39.1	Vc	39	149	149	149	134	134	134	119	119	147	147	130	180	180	180	180	162	162	162	162	144
	fz	0.023	0.039	0.039	0.039	0.035	0.035	0.035	0.031	0.031	0.037	0.037	0.033	0.042	0.042	0.042	0.042	0.038	0.038	0.038	0.038	0.034
	n	12295	39616	39616	39616	35654	35654	35654	31693	31693	33354	33354	29648	38250	38250	38250	38250	34425	34425	34425	34425	30600
	Vf	566	3090	3090	3090	2496	2496	2496	1965	1965	2468	2468	1957	3213	3213	3213	3213	2616	2616	2616	2616	2081
	Ap	0.004	0.019	0.017	0.017	0.015	0.013	0.013	0.013	0.012	0.018	0.016	0.016	0.024	0.024	0.024	0.022	0.019	0.019	0.019	0.017	0.017
39.2	Vc	34	134	134	134	121	121	121	107	107	130	130	115	160	160	160	160	144	144	144	144	128
	fz	0.022	0.040	0.040	0.040	0.036	0.036	0.036	0.032	0.032	0.037	0.037	0.033	0.041	0.041	0.041	0.041	0.037	0.037	0.037	0.037	0.033
	n	10819	35519	35519	35519	31967	31967	31967	28415	28415	29466	29466	26192	33879	33879	33879	33879	30491	30491	30491	30491	27103
	Vf	476	2842	2842	2842	2302	2302	2302	1819	1819	2180	2180	1729	2778	2778	2778	2778	2256	2256	2256	2256	1789
	Ap	0.004	0.019	0.017	0.017	0.015	0.013	0.013	0.013	0.012	0.018	0.016	0.016	0.024	0.024	0.024	0.022	0.019	0.019	0.019	0.017	0.017
39.3	Vc	34	118	118	118	107	107	107	95	95	117	117	104	144	144	144	144	130	130	130	130	115
	fz	0.020	0.038	0.038	0.038	0.034	0.034	0.034	0.030	0.030	0.035	0.035	0.031	0.039	0.039	0.039	0.039	0.035	0.035	0.035	0.035	0.031
	n	10819	31420	31420	31420	28278	28278	28278	25136	25136	26601	26601	23646	30600	30600	30600	30600	27540	27540	27540	27540	24480
	Vf	433	2388	2388	2388	1923	1923	1923	1508	1508	1862	1862	1466	2387	2387	2387	2387	1928	1928	1928	1928	1518
	Ap	0.003	0.016	0.014	0.014	0.012	0.011	0.011	0.011	0.010	0.015	0.013	0.013	0.020	0.020	0.020	0.018	0.016	0.016	0.016	0.014	0.014
40	Vc	48	185	185	185	167	167	167	148	148	189	189	168	232	232	232	232	209	209	209	209	185
	fz	0.025	0.045	0.045	0.045	0.041	0.041	0.041	0.036	0.036	0.041	0.041	0.037	0.047	0.047	0.047	0.047	0.042	0.042	0.042	0.042	0.038
	n	15245	49178	49178	49178	44260	44260	44260	39342	39342	42971	42971	38197	49178	49178	49178	49178	44260	44260	44260	44260	39342
	Vf	762	4426	4426	4426	3585	3585	3585	2833	2833	3558	3558	2811	4623	4623	4623	4623	3718	3718	3718	3718	2990
	Ap	0.004	0.020	0.018	0.018	0.016	0.014	0.014	0.013	0.019	0.017	0.017	0.017	0.026	0.026	0.026	0.023	0.020	0.020	0.020	0.018	0.018
41	Vc	43	165	165	165	148	148	148	132	132	172	172	153	211	211	211	211	190	190	190	190	169
	fz	0.025	0.045	0.045	0.045	0.041	0.041	0.041	0.036	0.036	0.041	0.041	0.037	0.047	0.047	0.047	0.047	0.042	0.042	0.042	0.042	0.038
	n	13770	43714	43714	43714	39343	39343	39343	34971	34971	39084	39084	34742	44807	44807	44807	44807	40326	40326	40326	40326	35846
	Vf	689	3934	3934	3934	3226	3226	3226	2518	2518	3205	3205	2571	4212	4212	4212	4212	3387	3387	3387	3387	2724
	Ap	0.004	0.020	0.018	0.018	0.016	0.014	0.014	0.013	0.019	0.017	0.017	0.017	0.026	0.026	0.026	0.023	0.020	0.020	0.020	0.018	

HPI91, HPI92 SERIES

2 TAGLIENTI SEMISFERICA PER NERVATURE



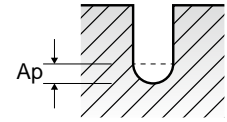
Vc = m/min. n = giri/min.
fz = mm/dente Vf = mm/min

LBS: Lunghezza scarico

ISO	VDI 3323	Param. LBS	Diametro (Ø)																				
			1.5	1.5	1.5	1.5	1.5	1.6	1.6	1.6	1.6	2	2	2	2	2	2	2	2	2	2		
			18	20	22	25	30	8	12	16	20	3	4	6	8	10	12	13	14	16	18	20	22
P	5	Vc	194	194	194	145	145	258	232	232	206	319	319	319	319	319	287	287	287	287	287	287	255
		fz	0.043	0.043	0.043	0.038	0.038	0.055	0.050	0.050	0.044	0.057	0.057	0.057	0.057	0.057	0.051	0.051	0.051	0.051	0.051	0.051	0.046
		n	41092	41092	41092	30819	30819	51228	46105	46105	40982	50818	50818	50818	50818	50818	45736	45736	45736	45736	45736	45736	40654
		Vf	3534	3534	3534	2342	2342	5635	4611	4611	3606	5793	5793	5793	5793	5793	4665	4665	4665	4665	4665	4665	3740
		Ap	0.021	0.020	0.020	0.015	0.015	0.029	0.026	0.022	0.022	0.040	0.040	0.040	0.036	0.036	0.032	0.032	0.032	0.032	0.028	0.028	0.028
	8-9	Vc	194	194	194	145	145	258	232	232	206	319	319	319	319	319	287	287	287	287	287	287	255
		fz	0.043	0.043	0.043	0.038	0.038	0.055	0.050	0.050	0.044	0.057	0.057	0.057	0.057	0.057	0.051	0.051	0.051	0.051	0.051	0.051	0.046
		n	41092	41092	41092	30819	30819	51228	46105	46105	40982	50818	50818	50818	50818	50818	45736	45736	45736	45736	45736	45736	40654
		Vf	3534	3534	3534	2342	2342	5635	4611	4611	3606	5793	5793	5793	5793	5793	4665	4665	4665	4665	4665	4665	3740
		Ap	0.021	0.020	0.020	0.015	0.015	0.029	0.026	0.022	0.022	0.040	0.040	0.040	0.036	0.036	0.032	0.032	0.032	0.032	0.028	0.028	0.028
	11.1	Vc	194	194	194	145	145	258	232	232	206	319	319	319	319	319	287	287	287	287	287	287	255
		fz	0.043	0.043	0.043	0.038	0.038	0.055	0.050	0.050	0.044	0.057	0.057	0.057	0.057	0.057	0.051	0.051	0.051	0.051	0.051	0.051	0.046
		n	41092	41092	41092	30819	30819	51228	46105	46105	40982	50818	50818	50818	50818	50818	45736	45736	45736	45736	45736	45736	40654
		Vf	3534	3534	3534	2342	2342	5635	4611	4611	3606	5793	5793	5793	5793	5793	4665	4665	4665	4665	4665	4665	3740
		Ap	0.021	0.020	0.020	0.015	0.015	0.029	0.026	0.022	0.022	0.040	0.040	0.040	0.036	0.036	0.032	0.032	0.032	0.032	0.028	0.028	0.028
	11.2	Vc	185	185	185	139	139	247	222	222	198	309	309	309	309	309	278	278	278	278	278	278	247
		fz	0.038	0.038	0.038	0.033	0.033	0.048	0.043	0.043	0.038	0.050	0.050	0.050	0.050	0.050	0.045	0.045	0.045	0.045	0.045	0.045	0.040
		n	39342	39342	39342	29507	29507	49178	44260	44260	39342	49178	49178	49178	49178	49178	44260	44260	44260	44260	44260	44260	39342
		Vf	2990	2990	2990	1947	1947	4721	3806	3806	2990	4918	4918	4918	4918	4918	3983	3983	3983	3983	3983	3983	3147
		Ap	0.018	0.017	0.017	0.013	0.013	0.024	0.022	0.019	0.019	0.034	0.034	0.034	0.031	0.031	0.027	0.027	0.027	0.027	0.024	0.024	0.024
H	38.1	Vc	185	185	185	139	139	247	222	222	198	309	309	309	309	309	278	278	278	278	278	247	
		fz	0.038	0.038	0.038	0.033	0.033	0.048	0.043	0.043	0.038	0.050	0.050	0.050	0.050	0.050	0.045	0.045	0.045	0.045	0.045	0.040	
		n	39342	39342	39342	29507	29507	49178	44260	44260	39342	49178	49178	49178	49178	49178	44260	44260	44260	44260	44260	44260	39342
		Vf	2990	2990	2990	1947	1947	4721	3806	3806	2990	4918	4918	4918	4918	4918	3983	3983	3983	3983	3983	3983	3147
		Ap	0.018	0.017	0.017	0.013	0.013	0.024	0.022	0.019	0.019	0.034	0.034	0.034	0.031	0.031	0.027	0.027	0.027	0.027	0.024	0.024	0.024
	38.2	Vc	169	169	169	127	127	225	202	202	180	258	258	258	258	258	232	232	232	232	232	232	206
		fz	0.038	0.038	0.038	0.033	0.033	0.048	0.043	0.043	0.038	0.050	0.050	0.050	0.050	0.050	0.045	0.045	0.045	0.045	0.045	0.045	0.040
		n	35846	35846	35846	26884	26884	44671	40204	40204	35737	40983	40983	40983	40983	40983	36885	36885	36885	36885	36885	36885	32786
		Vf	2724	2724	2724	1774	1774	4288	3458	3458	2716	4098	4098	4098	4098	4098	3320	3320	3320	3320	3320	3320	2623
		Ap	0.018	0.017	0.017	0.013	0.013	0.024	0.022	0.019	0.019	0.034	0.034	0.034	0.031	0.031	0.027	0.027	0.027	0.027	0.024	0.024	0.024
	39.1	Vc	144	144	144	108	108	192	172	172	153	227	227	227	227	227	204	204	204	204	204	204	181
		fz	0.034	0.034	0.034	0.029	0.029	0.043	0.039	0.039	0.034	0.045	0.045	0.045	0.045	0.045	0.041	0.041	0.041	0.041	0.041	0.041	0.036
		n	30600	30600	30600	22950	22950	38114	34303	34303	30491	36064	36064	36064	36064	36064	32458	32458	32458	32458	32458	32458	28851
		Vf	2081	2081	2081	1331	1331	3278	2676	2676	2073	3246	3246	3246	3246	3246	2662	2662	2662	2662	2662	2662	2077
		Ap	0.017	0.016	0.016	0.012	0.012	0.023	0.020	0.018	0.018	0.032	0.032	0.032	0.029	0.029	0.026	0.026	0.026	0.026	0.022	0.022	0.022
	39.2	Vc	128	128	128	96	96	170	153	153	136	206	206	206	206	206	185	185	185	185	185	185	165
		fz	0.033	0.033	0.033	0.029	0.029	0.043	0.039	0.039	0.034	0.044	0.044	0.044	0.044	0.044	0.040	0.040	0.040	0.040	0.040	0.040	0.035
		n	27103	27103	27103	20327	20327	33811	30430	30430	27049	32786	32786	32786	32786	32786	29507	29507	29507	29507	29507	29507	26229
		Vf	1789	1789	1789	1179	1179	2908	2374	2374	1839	2885	2885	2885	2885	2885	2361	2361	2361	2361	2361	2361	1836
		Ap	0.017	0.016	0.016	0.012	0.012	0.023	0.020	0.018	0.018	0.032	0.032	0.032	0.029	0.029	0.026	0.026	0.026	0.026	0.022	0.022	0.022
39.3	Vc	115	115	115	87	87	153	138	138	123	185	185	185	185	185	167	167	167	167	167	167	148	
	fz	0.031	0.031	0.031	0.027	0.027	0.039	0.035	0.035	0.031	0.040	0.040	0.040	0.040	0.040	0.036	0.036	0.036	0.036	0.036	0.036	0.032	
	n	24480	24480	24480	18360	18360	30532	27479	27479	24426	29507	29507	29507	29507	29507	26556	26556	26556	26556	26556	26556	23606	
	Vf	1518	1518	1518	991	991	2381	1924	1924	1514	2361	2361	2361	2361	2361	1912	1912	1912	1912	1912	1912	1511	
	Ap	0.014	0.013	0.013	0.010	0.010	0.019	0.017	0.015	0.015	0.026	0.026	0.026	0.023	0.023	0.021	0.021	0.021	0.021	0.018	0.018	0.018	
40	Vc	185	185	185	139	139	247	222	222	198	309	309	309	309	309	278	278	278	278	278	278	247	
	fz	0.038	0.038	0.038	0.033	0.033	0.048	0.043	0.043	0.038	0.050	0.050	0.050	0.050	0.050	0.045	0.045	0.045	0.045	0.045	0.045	0.040	
	n	39342	39342	39342	29507	29507	49178	44260	44260	39342	49178	49178	49178	49178	49178	44260	44260	44260	44260	44260	44260	39342	
	Vf	2990	2990	2990	1947	1947	4721	3806	3806	2990	4918	4918	4918	4918	4918	3983	3983	3983	3983	3983	3983	3147	
	Ap	0.018	0.017	0.017	0.013	0.013	0.024	0.022	0.019	0.019	0.034	0.034	0.034	0.031	0.031	0.027	0.027	0.027	0.027	0.024	0.024	0.024	
41	Vc	169	169	169	127	127	225	202	202	180	258	258	258	258	258	232	232	232	232	232	232	206	
	fz	0.038	0.038	0.038	0.033	0.033	0.048	0.043	0.043	0.038	0.050	0.050	0.050	0.050	0.050	0.045	0.045	0.045	0.045	0.045	0.045	0.040	
	n	35846	35846	35846	26884	26884	44671	40204	40204	35737	40983	40983	40983	40983	40983	36885	36885	36885	36885	36885	36885	32786	
	Vf	2724	2724	2724	1774	1774	4288	3458	3458	2716	4098	4098	4098	4098	4098	3320	3320	3320	3320	3320	3320	2623	
	Ap	0.018	0.017	0.017	0.013	0.013	0.024	0.022	0.019	0.019	0.034	0.											

HPI91, HPI92 SERIES

2 TAGLIENTI SEMISFERICA PER NERVATURE



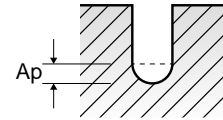
Vc = m/min. n = giri/min.
fz = mm/dente Vf = mm/min

LBS: Lunghezza scarico

VDI 3323	Param.	Diametro (Ø)																					
		2	2	2	2	2	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	3	3	3	3	3	3	3		
		LBS	25	30	35	40	50	6	8	10	15	20	25	30	35	6	8	10	12	14	15	16	20
5	Vc	255	255	192	192	96	320	320	320	288	288	288	256	256	319	319	319	319	319	319	287	287	287
	fz	0.046	0.046	0.040	0.040	0.034	0.074	0.074	0.074	0.066	0.066	0.066	0.059	0.059	0.091	0.091	0.091	0.091	0.091	0.091	0.082	0.082	0.082
	n	40654	40654	30491	30491	15245	40685	40685	40685	36617	36617	36617	32548	32548	33879	33879	33879	33879	33879	33879	30491	30491	30491
	Vf	3740	3740	2439	2439	1037	6021	6021	6021	4833	4833	4833	3841	3841	6166	6166	6166	6166	6166	6166	5001	5001	5001
	Ap	0.028	0.026	0.020	0.020	0.010	0.050	0.045	0.045	0.040	0.040	0.035	0.035	0.033	0.060	0.060	0.054	0.054	0.054	0.054	0.048	0.048	0.042
8-9	Vc	255	255	192	192	96	320	320	320	288	288	288	256	256	319	319	319	319	319	319	287	287	287
	fz	0.046	0.046	0.040	0.040	0.034	0.074	0.074	0.074	0.066	0.066	0.066	0.059	0.059	0.091	0.091	0.091	0.091	0.091	0.091	0.082	0.082	0.082
	n	40654	40654	30491	30491	15245	40685	40685	40685	36617	36617	36617	32548	32548	33879	33879	33879	33879	33879	33879	30491	30491	30491
	Vf	3740	3740	2439	2439	1037	6021	6021	6021	4833	4833	4833	3841	3841	6166	6166	6166	6166	6166	6166	5001	5001	5001
	Ap	0.028	0.026	0.020	0.020	0.010	0.050	0.045	0.045	0.040	0.040	0.035	0.035	0.033	0.060	0.060	0.054	0.054	0.054	0.054	0.048	0.048	0.042
11.1	Vc	255	255	192	192	96	320	320	320	288	288	288	256	256	319	319	319	319	319	319	287	287	287
	fz	0.046	0.046	0.040	0.040	0.034	0.074	0.074	0.074	0.066	0.066	0.066	0.059	0.059	0.091	0.091	0.091	0.091	0.091	0.091	0.082	0.082	0.082
	n	40654	40654	30491	30491	15245	40685	40685	40685	36617	36617	36617	32548	32548	33879	33879	33879	33879	33879	33879	30491	30491	30491
	Vf	3740	3740	2439	2439	1037	6021	6021	6021	4833	4833	4833	3841	3841	6166	6166	6166	6166	6166	6166	5001	5001	5001
	Ap	0.028	0.026	0.020	0.020	0.010	0.050	0.045	0.045	0.040	0.040	0.035	0.035	0.033	0.060	0.060	0.054	0.054	0.054	0.054	0.048	0.048	0.042
11.2	Vc	247	247	185	185	93	309	309	309	278	278	278	247	247	309	309	309	309	309	309	278	278	278
	fz	0.040	0.040	0.035	0.035	0.030	0.066	0.066	0.066	0.059	0.059	0.059	0.053	0.053	0.083	0.083	0.083	0.083	0.083	0.083	0.075	0.075	0.075
	n	39342	39342	29507	29507	14753	39295	39295	39295	35366	35366	35366	31436	31436	32786	32786	32786	32786	32786	32786	29507	29507	29507
	Vf	3147	3147	2065	2065	885	5187	5187	5187	4173	4173	4173	3332	3332	5442	5442	5442	5442	5442	5442	4426	4426	4426
	Ap	0.024	0.022	0.017	0.017	0.009	0.043	0.038	0.038	0.034	0.034	0.030	0.030	0.028	0.051	0.051	0.046	0.046	0.046	0.046	0.041	0.041	0.036
38.1	Vc	247	247	185	185	93	309	309	309	278	278	278	247	247	309	309	309	309	309	309	278	278	278
	fz	0.040	0.040	0.035	0.035	0.030	0.066	0.066	0.066	0.059	0.059	0.059	0.053	0.053	0.083	0.083	0.083	0.083	0.083	0.083	0.075	0.075	0.075
	n	39342	39342	29507	29507	14753	39295	39295	39295	35366	35366	35366	31436	31436	32786	32786	32786	32786	32786	32786	29507	29507	29507
	Vf	3147	3147	2065	2065	885	5187	5187	5187	4173	4173	4173	3332	3332	5442	5442	5442	5442	5442	5442	4426	4426	4426
	Ap	0.024	0.022	0.017	0.017	0.009	0.043	0.038	0.038	0.034	0.034	0.030	0.030	0.028	0.051	0.051	0.046	0.046	0.046	0.046	0.041	0.041	0.036
38.2	Vc	206	206	155	155	77	257	257	257	232	232	232	206	206	258	258	258	258	258	258	232	232	232
	fz	0.040	0.040	0.035	0.035	0.030	0.063	0.063	0.063	0.056	0.056	0.056	0.050	0.050	0.075	0.075	0.075	0.075	0.075	0.075	0.068	0.068	0.068
	n	32786	32786	24590	24590	12295	32754	32754	32754	29479	29479	29479	26203	26203	27322	27322	27322	27322	27322	27322	24590	24590	24590
	Vf	2623	2623	1721	1721	738	4127	4127	4127	3302	3302	3302	2620	2620	4098	4098	4098	4098	4098	4098	3344	3344	3344
	Ap	0.024	0.022	0.017	0.017	0.009	0.043	0.038	0.038	0.034	0.034	0.030	0.030	0.028	0.051	0.051	0.046	0.046	0.046	0.046	0.041	0.041	0.036
39.1	Vc	181	181	136	136	68	227	227	227	204	204	204	181	181	227	227	227	227	227	227	204	204	204
	fz	0.036	0.036	0.032	0.032	0.027	0.056	0.056	0.056	0.050	0.050	0.050	0.045	0.045	0.067	0.067	0.067	0.067	0.067	0.067	0.060	0.060	0.060
	n	28851	28851	21638	21638	10819	28840	28840	28840	25956	25956	25956	23072	23072	24043	24043	24043	24043	24043	24043	21639	21639	21639
	Vf	2077	2077	1385	1385	584	3230	3230	3230	2596	2596	2596	2076	2076	3222	3222	3222	3222	3222	3222	2597	2597	2597
	Ap	0.022	0.021	0.016	0.016	0.008	0.040	0.036	0.036	0.032	0.032	0.028	0.028	0.026	0.048	0.048	0.043	0.043	0.043	0.043	0.038	0.038	0.034
39.2	Vc	165	165	124	124	62	206	206	206	186	186	186	165	165	206	206	206	206	206	206	185	185	185
	fz	0.035	0.035	0.031	0.031	0.026	0.055	0.055	0.055	0.050	0.050	0.050	0.044	0.044	0.067	0.067	0.067	0.067	0.067	0.067	0.060	0.060	0.060
	n	26229	26229	19672	19672	9836	26265	26265	26265	23639	23639	23639	21012	21012	21858	21858	21858	21858	21858	21858	19672	19672	19672
	Vf	1836	1836	1220	1220	511	2889	2889	2889	2364	2364	2364	1849	1849	2929	2929	2929	2929	2929	2929	2361	2361	2361
	Ap	0.022	0.021	0.016	0.016	0.008	0.040	0.036	0.036	0.032	0.032	0.028	0.028	0.026	0.048	0.048	0.043	0.043	0.043	0.043	0.038	0.038	0.034
39.3	Vc	148	148	111	111	56	185	185	185	167	167	167	148	148	185	185	185	185	185	185	167	167	167
	fz	0.032	0.032	0.028	0.028	0.024	0.051	0.051	0.051	0.045	0.045	0.045	0.040	0.040	0.061	0.061	0.061	0.061	0.061	0.061	0.055	0.055	0.055
	n	23606	23606	17704	17704	8852	23587	23587	23587	21228	21228	21228	18870	18870	19672	19672	19672	19672	19672	19672	17705	17705	17705
	Vf	1511	1511	991	991	425	2406	2406	2406	1911	1911	1911	1510	1510	2400	2400	2400	2400	2400	2400	1948	1948	1948
	Ap	0.018	0.017	0.013	0.013	0.007	0.033	0.029	0.029	0.026	0.026	0.023	0.023	0.021	0.039	0.039	0.035	0.035	0.035	0.035	0.031	0.031	0.027
40	Vc	247	247	185	185	93	309	309	309	278	278	278	247	247	309	309	309	309	309	309	278	278	278
	fz	0.040	0.040	0.035	0.035	0.030	0.066	0.066	0.066	0.059	0.059	0.059	0.053	0.053	0.083	0.083	0.083	0.083	0.083	0.083	0.075	0.075	0.075
	n	39342	39342	29507	29507	14753	39295	39295	39295	35366	35366	35366	31436	31436	32786	32786	32786	32786	32786	32786	29507	29507	29507
	Vf	3147	3147	2065	2065	885	5187	5187	5187	4173	4173	4173	3332	3332	5442	5442	5442	5442	5442	5442	4426	4426	4426
	Ap	0.024	0.022	0.017	0.017	0.009	0.043	0.038	0.038	0.034	0.034	0.030	0.030	0.028	0.051	0.051	0.046	0.046	0.046	0.046	0.041	0.041	0.036
41	Vc	206	206	155	155	77	257	257	257	232	232	232	206	206	258	258	258	258	258	258	232	232	232
	fz	0.040	0.040	0.035	0.035	0.030	0.063	0.063	0.063	0.056	0.056	0.056	0.050	0.050	0.075	0.075	0.075	0.075	0.075	0.075	0.068	0.068	0.068
	n	32786	32786	24590	24590	12295	32754	32754	32754	29479	29479	29479	26203	26203	27322	27322	2732						

HPI91, HPI92 SERIES

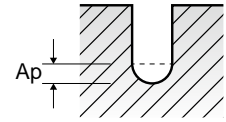
2 TAGLIENTI SEMISFERICA PER NERVATURE



Vc = m/min. n = giri/min.
fz = mm/dente Vf = mm/min

LBS: Lunghezza scarico

ISO	VDI 3323	Param. LBS	Diametro (Ø)																				
			3	3	3	3	3,5	3,5	3,5	3,5	3,5	3,5	3,5	4	4	4	4	4	4	4	4		
			30	35	40	50	15	20	25	30	35	40	45	8	10	12	14	15	20	25	30	35	40
P	5	Vc	287	255	255	192	324	292	292	292	292	260	260	324	324	324	324	324	292	292	292	292	
		fz	0.082	0.073	0.073	0.064	0.105	0.094	0.094	0.094	0.094	0.084	0.084	0.120	0.120	0.120	0.120	0.120	0.120	0.108	0.108	0.108	0.108
		n	30491	27103	27103	20327	29510	26559	26559	26559	26559	23608	23608	25819	25819	25819	25819	25819	25819	23237	23237	23237	23237
		Vf	5001	3957	3957	2602	6197	4993	4993	4993	4993	3966	3966	6197	6197	6197	6197	6197	6197	5019	5019	5019	5019
	8-9	Vc	287	255	255	192	324	292	292	292	292	260	260	324	324	324	324	324	292	292	292	292	
		fz	0.082	0.073	0.073	0.064	0.105	0.094	0.094	0.094	0.094	0.084	0.084	0.120	0.120	0.120	0.120	0.120	0.120	0.108	0.108	0.108	0.108
		n	30491	27103	27103	20327	29510	26559	26559	26559	26559	23608	23608	25819	25819	25819	25819	25819	25819	23237	23237	23237	23237
		Vf	5001	3957	3957	2602	6197	4993	4993	4993	4993	3966	3966	6197	6197	6197	6197	6197	6197	5019	5019	5019	5019
	11.1	Vc	287	255	255	192	324	292	292	292	292	260	260	324	324	324	324	324	292	292	292	292	
		fz	0.082	0.073	0.073	0.064	0.105	0.094	0.094	0.094	0.094	0.084	0.084	0.120	0.120	0.120	0.120	0.120	0.120	0.108	0.108	0.108	0.108
		n	30491	27103	27103	20327	29510	26559	26559	26559	26559	23608	23608	25819	25819	25819	25819	25819	25819	23237	23237	23237	23237
		Vf	5001	3957	3957	2602	6197	4993	4993	4993	4993	3966	3966	6197	6197	6197	6197	6197	6197	5019	5019	5019	5019
	11.2	Vc	278	247	247	185	309	278	278	278	278	247	247	309	309	309	309	309	278	278	278	278	
		fz	0.075	0.066	0.066	0.058	0.097	0.087	0.087	0.087	0.087	0.078	0.078	0.111	0.111	0.111	0.111	0.111	0.111	0.100	0.100	0.100	0.100
		n	29507	26229	26229	19672	28068	25261	25261	25261	25261	22454	22454	24589	24589	24589	24589	24589	24589	22130	22130	22130	22130
		Vf	4426	3462	3462	2282	5445	4395	4395	4395	4395	3503	3503	5459	5459	5459	5459	5459	5459	4426	4426	4426	4426
H	38.1	Vc	278	247	247	185	309	278	278	278	278	247	247	309	309	309	309	309	278	278	278	278	
		fz	0.075	0.066	0.066	0.058	0.097	0.087	0.087	0.087	0.087	0.078	0.078	0.111	0.111	0.111	0.111	0.111	0.111	0.100	0.100	0.100	0.100
		n	29507	26229	26229	19672	28068	25261	25261	25261	25261	22454	22454	24589	24589	24589	24589	24589	24589	22130	22130	22130	22130
		Vf	4426	3462	3462	2282	5445	4395	4395	4395	4395	3503	3503	5459	5459	5459	5459	5459	5459	4426	4426	4426	4426
	38.2	Vc	232	206	206	155	258	232	232	232	232	206	206	257	257	257	257	257	232	232	232	232	
		fz	0.068	0.060	0.060	0.053	0.087	0.079	0.079	0.079	0.079	0.070	0.070	0.100	0.100	0.100	0.100	0.100	0.100	0.090	0.090	0.090	0.090
		n	24590	21858	21858	16393	23433	21090	21090	21090	21090	18746	18746	20491	20491	20491	20491	20491	20491	18442	18442	18442	18442
		Vf	3344	2623	2623	1738	4077	3332	3332	3332	3332	2624	2624	4098	4098	4098	4098	4098	4098	3320	3320	3320	3320
	39.1	Vc	204	181	181	136	227	204	204	204	204	181	181	227	227	227	227	227	204	204	204	204	
		fz	0.060	0.054	0.054	0.047	0.079	0.071	0.071	0.071	0.071	0.063	0.063	0.090	0.090	0.090	0.090	0.090	0.090	0.081	0.081	0.081	0.081
		n	21639	19234	19234	14426	20600	18540	18540	18540	18540	16480	16480	18032	18032	18032	18032	18032	18032	16229	16229	16229	16229
		Vf	2597	2077	2077	1356	3255	2633	2633	2633	2633	2076	2076	3246	3246	3246	3246	3246	3246	2629	2629	2629	2629
	39.2	Vc	185	165	165	124	206	186	186	186	186	165	165	206	206	206	206	206	206	185	185	185	185
		fz	0.060	0.054	0.054	0.047	0.078	0.070	0.070	0.070	0.070	0.062	0.062	0.088	0.088	0.088	0.088	0.088	0.088	0.079	0.079	0.079	0.079
		n	19672	17486	17486	13115	18746	16871	16871	16871	16871	14997	14997	16392	16392	16392	16392	16392	16392	14753	14753	14753	14753
		Vf	2361	1888	1888	1233	2924	2362	2362	2362	2362	1860	1860	2885	2885	2885	2885	2885	2885	2331	2331	2331	2331
39.3	Vc	167	148	148	111	186	167	167	167	167	149	149	185	185	185	185	185	185	167	167	167	167	
	fz	0.055	0.049	0.049	0.043	0.070	0.063	0.063	0.063	0.063	0.056	0.056	0.079	0.079	0.079	0.079	0.079	0.079	0.071	0.071	0.071	0.071	
	n	17705	15738	15738	11803	16892	15203	15203	15203	15203	13514	13514	14754	14754	14754	14754	14754	14754	13279	13279	13279	13279	
	Vf	1948	1542	1542	1015	2365	1916	1916	1916	1916	1514	1514	2331	2331	2331	2331	2331	2331	1886	1886	1886	1886	
40	Vc	278	247	247	185	309	278	278	278	278	247	247	309	309	309	309	309	309	278	278	278	278	
	fz	0.075	0.066	0.066	0.058	0.097	0.087	0.087	0.087	0.087	0.078	0.078	0.111	0.111	0.111	0.111	0.111	0.111	0.100	0.100	0.100	0.100	
	n	29507	26229	26229	19672	28068	25261	25261	25261	25261	22454	22454	24589	24589	24589	24589	24589	24589	22130	22130	22130	22130	
	Vf	4426	3462	3462	2282	5445	4395	4395	4395	4395	3503	3503	5459	5459	5459	5459	5459	5459	4426	4426	4426	4426	
41	Vc	232	206	206	155	258	232	232	232	232	206	206	257	257	257	257	257	257	232	232	232	232	
	fz	0.068	0.060	0.060	0.053	0.087	0.079	0.079	0.079	0.079	0.070	0.070	0.100	0.100	0.100	0.100	0.100	0.100	0.090	0.090	0.090	0.090	
	n	24590	21858	21858	16393	23433	21090	21090	21090	21090	18746	18746	20491	20491	20491	20491	20491	20491	18442	18442	18442	18442	
	Vf	3344	2623	2623	1738	4077	3332	3332	3332	3332	2624	2624	4098	4098	4098	4098	4098	4098	3320	3320	3320	3320	



Vc = m/min. n = giri/min.
fz = mm/dente Vf = mm/min

HPI91, HPI92 SERIES

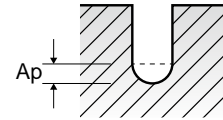
2 TAGLIENTI SEMISFERICA PER NERVATURE

LBS: Lunghezza scarico

VDI 3323	Param.	Diametro (Ø)																					
		4	4	4	5	5	5	5	5	5	5	6	6	6	6	6	6	6	6	7	7	7	
		LBS	45	50	61.1	10	12	15	20	25	30	40	10	15	20	25	30	35	40	50	60	40	45
5	Vc	260	260	195	299	299	299	299	299	269	269	268	268	268	268	268	241	241	241	241	255	255	255
	fz	0.096	0.096	0.084	0.156	0.156	0.156	0.156	0.156	0.140	0.140	0.174	0.174	0.174	0.174	0.174	0.157	0.157	0.157	0.157	0.162	0.162	0.162
	n	20655	20655	15491	19016	19016	19016	19016	19016	17114	17114	14207	14207	14207	14207	14207	12786	12786	12786	12786	11588	11588	11588
	Vf	3966	3966	2602	5933	5933	5933	5933	5933	4792	4792	4944	4944	4944	4944	4944	4015	4015	4015	4015	3755	3755	3755
	Ap	0.056	0.056	0.052	0.100	0.100	0.100	0.090	0.090	0.080	0.080	0.120	0.120	0.108	0.108	0.108	0.096	0.096	0.084	0.084	0.112	0.112	0.098
8-9	Vc	260	260	195	299	299	299	299	299	269	269	268	268	268	268	268	241	241	241	241	255	255	255
	fz	0.096	0.096	0.084	0.156	0.156	0.156	0.156	0.156	0.140	0.140	0.174	0.174	0.174	0.174	0.174	0.157	0.157	0.157	0.157	0.162	0.162	0.162
	n	20655	20655	15491	19016	19016	19016	19016	19016	17114	17114	14207	14207	14207	14207	14207	12786	12786	12786	12786	11588	11588	11588
	Vf	3966	3966	2602	5933	5933	5933	5933	5933	4792	4792	4944	4944	4944	4944	4944	4015	4015	4015	4015	3755	3755	3755
	Ap	0.056	0.056	0.052	0.100	0.100	0.100	0.090	0.090	0.080	0.080	0.120	0.120	0.108	0.108	0.108	0.096	0.096	0.084	0.084	0.112	0.112	0.098
11.1	Vc	260	260	195	299	299	299	299	299	269	269	268	268	268	268	268	241	241	241	241	255	255	255
	fz	0.096	0.096	0.084	0.156	0.156	0.156	0.156	0.156	0.140	0.140	0.174	0.174	0.174	0.174	0.174	0.157	0.157	0.157	0.157	0.162	0.162	0.162
	n	20655	20655	15491	19016	19016	19016	19016	19016	17114	17114	14207	14207	14207	14207	14207	12786	12786	12786	12786	11588	11588	11588
	Vf	3966	3966	2602	5933	5933	5933	5933	5933	4792	4792	4944	4944	4944	4944	4944	4015	4015	4015	4015	3755	3755	3755
	Ap	0.056	0.056	0.052	0.100	0.100	0.100	0.090	0.090	0.080	0.080	0.120	0.120	0.108	0.108	0.108	0.096	0.096	0.084	0.084	0.112	0.112	0.098
11.2	Vc	247	247	185	288	288	288	288	288	260	260	263	263	263	263	263	236	236	236	236	246	246	246
	fz	0.089	0.089	0.078	0.138	0.138	0.138	0.138	0.138	0.124	0.124	0.153	0.153	0.153	0.153	0.153	0.138	0.138	0.138	0.138	0.143	0.143	0.143
	n	19671	19671	14753	18360	18360	18360	18360	18360	16524	16524	13934	13934	13934	13934	13934	12541	12541	12541	12541	11171	11171	11171
	Vf	3501	3501	2301	5067	5067	5067	5067	5067	4098	4098	4264	4264	4264	4264	4264	3461	3461	3461	3461	3195	3195	3195
	Ap	0.048	0.048	0.044	0.085	0.085	0.085	0.077	0.077	0.068	0.068	0.102	0.102	0.092	0.092	0.092	0.082	0.082	0.071	0.071	0.095	0.095	0.083
38.1	Vc	247	247	185	288	288	288	288	288	260	260	263	263	263	263	263	236	236	236	236	246	246	246
	fz	0.089	0.089	0.078	0.138	0.138	0.138	0.138	0.138	0.124	0.124	0.153	0.153	0.153	0.153	0.153	0.138	0.138	0.138	0.138	0.143	0.143	0.143
	n	19671	19671	14753	18360	18360	18360	18360	18360	16524	16524	13934	13934	13934	13934	13934	12541	12541	12541	12541	11171	11171	11171
	Vf	3501	3501	2301	5067	5067	5067	5067	5067	4098	4098	4264	4264	4264	4264	4264	3461	3461	3461	3461	3195	3195	3195
	Ap	0.048	0.048	0.044	0.085	0.085	0.085	0.077	0.077	0.068	0.068	0.102	0.102	0.092	0.092	0.092	0.082	0.082	0.071	0.071	0.095	0.095	0.083
38.2	Vc	206	206	155	242	242	242	242	242	218	218	211	211	211	211	211	190	190	190	190	199	199	199
	fz	0.080	0.080	0.070	0.125	0.125	0.125	0.125	0.125	0.113	0.113	0.141	0.141	0.141	0.141	0.141	0.127	0.127	0.127	0.127	0.133	0.133	0.133
	n	16393	16393	12295	15410	15410	15410	15410	15410	13869	13869	11202	11202	11202	11202	11202	10082	10082	10082	10082	9048	9048	9048
	Vf	2623	2623	1721	3853	3853	3853	3853	3853	3134	3134	3159	3159	3159	3159	3159	2561	2561	2561	2561	2407	2407	2407
	Ap	0.048	0.048	0.044	0.085	0.085	0.085	0.077	0.077	0.068	0.068	0.102	0.102	0.092	0.092	0.092	0.082	0.082	0.071	0.071	0.095	0.095	0.083
39.1	Vc	181	181	136	216	216	216	216	216	195	195	196	196	196	196	196	176	176	176	176	180	180	180
	fz	0.072	0.072	0.063	0.113	0.113	0.113	0.113	0.113	0.102	0.102	0.125	0.125	0.125	0.125	0.125	0.113	0.113	0.113	0.113	0.118	0.118	0.118
	n	14426	14426	10819	13770	13770	13770	13770	13770	12393	12393	10382	10382	10382	10382	10382	9344	9344	9344	9344	8204	8204	8204
	Vf	2077	2077	1363	3112	3112	3112	3112	3112	2528	2528	2596	2596	2596	2596	2596	2112	2112	2112	2112	1936	1936	1936
	Ap	0.045	0.045	0.042	0.080	0.080	0.080	0.072	0.072	0.064	0.064	0.096	0.096	0.086	0.086	0.086	0.077	0.077	0.067	0.067	0.090	0.090	0.078
39.2	Vc	165	165	124	185	185	185	185	185	167	167	170	170	170	170	170	153	153	153	153	158	158	158
	fz	0.070	0.070	0.062	0.111	0.111	0.111	0.111	0.111	0.100	0.100	0.122	0.122	0.122	0.122	0.122	0.110	0.110	0.110	0.110	0.115	0.115	0.115
	n	13114	13114	9835	11803	11803	11803	11803	11803	10623	10623	9017	9017	9017	9017	9017	8115	8115	8115	8115	7185	7185	7185
	Vf	1836	1836	1220	2620	2620	2620	2620	2620	2125	2125	2200	2200	2200	2200	2200	1785	1785	1785	1785	1653	1653	1653
	Ap	0.045	0.045	0.042	0.080	0.080	0.080	0.072	0.072	0.064	0.064	0.096	0.096	0.086	0.086	0.086	0.077	0.077	0.067	0.067	0.090	0.090	0.078
39.3	Vc	148	148	111	170	170	170	170	170	153	153	155	155	155	155	155	139	139	139	139	148	148	148
	fz	0.063	0.063	0.055	0.100	0.100	0.100	0.100	0.100	0.090	0.090	0.109	0.109	0.109	0.109	0.109	0.098	0.098	0.098	0.098	0.102	0.102	0.102
	n	11803	11803	8852	10819	10819	10819	10819	10819	9737	9737	8197	8197	8197	8197	8197	7377	7377	7377	7377	6731	6731	6731
	Vf	1487	1487	974	2164	2164	2164	2164	2164	1753	1753	1787	1787	1787	1787	1787	1446	1446	1446	1446	1373	1373	1373
	Ap	0.036	0.036	0.034	0.065	0.065	0.065	0.059	0.059	0.052	0.052	0.078	0.078	0.078	0.078	0.078	0.070	0.070	0.062	0.062	0.073	0.073	0.064
40	Vc	247	247	185	288	288	288	288	288	260	260	263	263	263	263	263	236	236	236	236	246	246	246
	fz	0.089	0.089	0.078	0.138	0.138	0.138	0.138	0.138	0.124	0.124	0.153	0.153	0.153	0.153	0.153	0.138	0.138	0.138	0.138	0.143	0.143	0.143
	n	19671	19671	14753	18360	18360	18360	18360	18360	16524	16524	13934	13934	13934	13934	13934	12541	12541	12541	12541	11171	11171	11171
	Vf	3501	3501	2301	5067	5067	5067	5067	5067	4098	4098	4264	4264	4264	4264	4264	3461	3461	3461	3461	3195	3195	3195
	Ap	0.048	0.048	0.044	0.085	0.085	0.085	0.077	0.077	0.068	0.068	0.102	0.102	0.092	0.092	0.092	0.082	0.082	0.071	0.071	0.095	0.095	0.083
41	Vc	206	206	155	242	242	242	242	242	218	218	211	211	211	211	211	190	190	190	190	199	199	199
	fz	0.080	0.080	0.070	0.125	0.125	0.125	0.125	0.125	0.113	0.113	0.141	0.141	0.141	0.141	0.141	0.127	0.127	0.127	0.127	0.133	0.133	0.133
	n	16393	16393	12295	15410	15410	15410	15410</															

HPI91, HPI92 SERIES

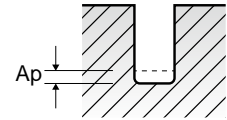
2 TAGLIENTI SEMISFERICA PER NERVATURE



Vc = m/min. n = giri/min.
fz = mm/dente Vf = mm/min

LBS: Lunghezza scarico

ISO	VDI 3323	Param. LBS	Diametro (Ø)																		
			8	8	8	8	8	8	8	8	8	10	10	10	10	10	10	12	12	12	12
			35	50	55	60	70	80	98	120	35	55	60	65	75	86	120	60	80	106	120
P	5	Vc	288	260	260	260	260	260	231	231	299	269	269	269	269	269	239	268	241	241	241
		fz	0.189	0.170	0.170	0.170	0.170	0.170	0.151	0.151	0.199	0.179	0.179	0.179	0.179	0.179	0.159	0.212	0.191	0.191	0.191
		n	11475	10328	10328	10328	10328	10328	9180	9180	9508	8557	8557	8557	8557	8557	7606	7104	6394	6394	6394
		Vf	4338	3512	3512	3512	3512	3512	2772	2772	3784	3063	3063	3063	3063	3063	2419	3012	2443	2443	2443
	Ap	0.144	0.128	0.128	0.128	0.112	0.112	0.112	0.104	0.180	0.160	0.160	0.160	0.160	0.140	0.140	0.216	0.192	0.168	0.168	
	8-9	Vc	288	260	260	260	260	260	231	231	299	269	269	269	269	269	239	268	241	241	241
		fz	0.189	0.170	0.170	0.170	0.170	0.170	0.151	0.151	0.199	0.179	0.179	0.179	0.179	0.179	0.159	0.212	0.191	0.191	0.191
		n	11475	10328	10328	10328	10328	10328	9180	9180	9508	8557	8557	8557	8557	8557	7606	7104	6394	6394	6394
		Vf	4338	3512	3512	3512	3512	3512	2772	2772	3784	3063	3063	3063	3063	3063	2419	3012	2443	2443	2443
	Ap	0.144	0.128	0.128	0.128	0.112	0.112	0.112	0.104	0.180	0.160	0.160	0.160	0.160	0.140	0.140	0.216	0.192	0.168	0.168	
	11.1	Vc	288	260	260	260	260	260	231	231	299	269	269	269	269	269	239	268	241	241	241
		fz	0.189	0.170	0.170	0.170	0.170	0.170	0.151	0.151	0.199	0.179	0.179	0.179	0.179	0.179	0.159	0.212	0.191	0.191	0.191
		n	11475	10328	10328	10328	10328	10328	9180	9180	9508	8557	8557	8557	8557	8557	7606	7104	6394	6394	6394
		Vf	4338	3512	3512	3512	3512	3512	2772	2772	3784	3063	3063	3063	3063	3063	2419	3012	2443	2443	2443
	Ap	0.144	0.128	0.128	0.128	0.112	0.112	0.112	0.104	0.180	0.160	0.160	0.160	0.160	0.140	0.140	0.216	0.192	0.168	0.168	
	11.2	Vc	278	250	250	250	250	250	222	222	288	260	260	260	260	260	231	257	232	232	232
fz		0.164	0.148	0.148	0.148	0.148	0.148	0.131	0.131	0.174	0.157	0.157	0.157	0.157	0.157	0.139	0.187	0.168	0.168	0.168	
n		11065	9959	9959	9959	9959	9959	8852	8852	9180	8262	8262	8262	8262	8262	7344	6830	6147	6147	6147	
Vf		3629	2948	2948	2948	2948	2948	2319	2319	3195	2594	2594	2594	2594	2594	2042	2554	2065	2065	2065	
Ap	0.122	0.109	0.109	0.109	0.095	0.095	0.095	0.088	0.153	0.136	0.136	0.136	0.136	0.119	0.119	0.184	0.163	0.143	0.143		
H	38.1	Vc	278	250	250	250	250	250	222	222	288	260	260	260	260	260	231	257	232	232	232
		fz	0.164	0.148	0.148	0.148	0.148	0.148	0.131	0.131	0.174	0.157	0.157	0.157	0.157	0.157	0.139	0.187	0.168	0.168	0.168
		n	11065	9959	9959	9959	9959	9959	8852	8852	9180	8262	8262	8262	8262	8262	7344	6830	6147	6147	6147
		Vf	3629	2948	2948	2948	2948	2948	2319	2319	3195	2594	2594	2594	2594	2594	2042	2554	2065	2065	2065
	Ap	0.122	0.109	0.109	0.109	0.095	0.095	0.095	0.088	0.153	0.136	0.136	0.136	0.136	0.119	0.119	0.184	0.163	0.143	0.143	
	38.2	Vc	232	209	209	209	209	209	185	185	242	218	218	218	218	218	194	216	195	195	195
		fz	0.150	0.135	0.135	0.135	0.135	0.135	0.120	0.120	0.160	0.144	0.144	0.144	0.144	0.144	0.128	0.170	0.153	0.153	0.153
		n	9221	8299	8299	8299	8299	8299	7377	7377	7704	6934	6934	6934	6934	6934	6163	5737	5163	5163	5163
		Vf	2766	2241	2241	2241	2241	2241	1770	1770	2465	1997	1997	1997	1997	1997	1578	1951	1580	1580	1580
	Ap	0.122	0.109	0.109	0.109	0.095	0.095	0.095	0.088	0.153	0.136	0.136	0.136	0.136	0.119	0.119	0.184	0.163	0.143	0.143	
	39.1	Vc	206	185	185	185	185	185	165	165	211	190	190	190	190	190	169	196	176	176	176
		fz	0.134	0.121	0.121	0.121	0.121	0.121	0.107	0.107	0.144	0.130	0.130	0.130	0.130	0.130	0.115	0.155	0.140	0.140	0.140
		n	8197	7377	7377	7377	7377	7377	6558	6558	6721	6049	6049	6049	6049	6049	5377	5191	4672	4672	4672
		Vf	2197	1785	1785	1785	1785	1785	1403	1403	1936	1573	1573	1573	1573	1573	1237	1609	1308	1308	1308
	Ap	0.115	0.102	0.102	0.102	0.090	0.090	0.090	0.083	0.144	0.128	0.128	0.128	0.128	0.112	0.112	0.173	0.154	0.134	0.134	
	39.2	Vc	180	162	162	162	162	162	144	144	185	167	167	167	167	167	148	170	153	153	153
		fz	0.132	0.119	0.119	0.119	0.119	0.119	0.106	0.106	0.142	0.128	0.128	0.128	0.128	0.128	0.114	0.142	0.128	0.128	0.128
		n	7172	6455	6455	6455	6455	6455	5738	5738	5902	5312	5312	5312	5312	5312	4722	4508	4057	4057	4057
		Vf	1893	1536	1536	1536	1536	1536	1216	1216	1676	1360	1360	1360	1360	1360	1077	1280	1039	1039	1039
	Ap	0.115	0.102	0.102	0.102	0.090	0.090	0.090	0.083	0.144	0.128	0.128	0.128	0.128	0.112	0.112	0.173	0.154	0.134	0.134	
39.3	Vc	170	153	153	153	153	153	136	136	170	153	153	153	153	153	136	154	139	139	139	
	fz	0.119	0.107	0.107	0.107	0.107	0.107	0.095	0.095	0.130	0.117	0.117	0.117	0.117	0.117	0.104	0.131	0.118	0.118	0.118	
	n	6762	6086	6086	6086	6086	6086	5410	5410	5410	4869	4869	4869	4869	4869	4328	4098	3688	3688	3688	
	Vf	1609	1302	1302	1302	1302	1302	1028	1028	1407	1139	1139	1139	1139	1139	900	1074	870	870	870	
Ap	0.094	0.083	0.083	0.083	0.073	0.073	0.073	0.068	0.117	0.104	0.104	0.104	0.104	0.091	0.091	0.140	0.125	0.109	0.109		
40	Vc	278	250	250	250	250	250	222	222	288	260	260	260	260	260	231	257	232	232	232	
	fz	0.164	0.148	0.148	0.148	0.148	0.148	0.131	0.131	0.174	0.157	0.157	0.157	0.157	0.157	0.139	0.187	0.168	0.168	0.168	
	n	11065	9959	9959	9959	9959	9959	8852	8852	9180	8262	8262	8262	8262	8262	7344	6830	6147	6147	6147	
	Vf	3629	2948	2948	2948	2948	2948	2319	2319	3195	2594	2594	2594	2594	2594	2042	2554	2065	2065	2065	
Ap	0.122	0.109	0.109	0.109	0.095	0.095	0.095	0.088	0.153	0.136	0.136	0.136	0.136	0.119	0.119	0.184	0.163	0.143	0.143		
41	Vc	232	209	209	209	209	209	185	185	242	218	218	218	218	218	194	216	195	195	195	
	fz	0.150	0.135	0.135	0.135	0.135	0.135	0.120	0.120	0.160	0.144	0.144	0.144	0.144	0.144	0.128	0.170	0.153	0.153	0.153	
	n	9221	8299	8299	8299	8299	8299	7377	7377	7704	6934	6934	6934	6934	6934	6163	5737	5163	5163	5163	
	Vf	2766	2241	2241	2241	2241	2241	1770	1770	2465	1997	1997	1997	1997	1997	1578	1951	1580	1580	1580	
Ap	0.122	0.109	0.109	0.109	0.095	0.095	0.095	0.088	0.153	0.136	0.136	0.136	0.136	0.119	0.119	0.184	0.163	0.143	0.143		



Vc = m/min. n = giri/min.
fz = mm/dente Vf = mm/min

HPI89 SERIES 2 TAGLIENTI TORICA PER NERVATURE

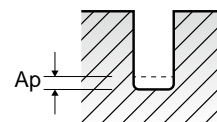
LBS: Lunghezza scarico

ISO	VDI 3323	Descrizione materiale	Cava	Param.	Diametro (Ø)																			
					Ae	LBS	0.2		0.3		0.4		0.5		0.6		0.8		1.0		1.2			
							0.5	1	1.5	2	1	1.5	2	2.5	3	1	1.5	2	2.5	3	4	1	2	3
P	5	Acciai non legati	1.0D	Vc	31	31	28	28	46	46	42	42	42	67	67	67	60	60	60	82	82	74		
				fz	0.001	0.001	0.001	0.001	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.004	0.004	0.004		
				n	49178	49178	44260	44260	49178	49178	44260	44260	44260	53277	53277	53277	47949	47949	47949	52458	52458	47212		
				Vf	98	98	89	89	197	197	177	177	177	213	213	213	192	192	192	420	420	378		
	8~9	Acciai basso legati	1.0D	Vc	31	31	28	28	46	46	42	42	42	67	67	67	60	60	60	82	82	74		
				fz	0.001	0.001	0.001	0.001	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.004	0.004	0.004		
				n	49178	49178	44260	44260	49178	49178	44260	44260	44260	53277	53277	53277	47949	47949	47949	52458	52458	47212		
				Vf	98	98	89	89	197	197	177	177	177	213	213	213	192	192	192	420	420	378		
	11.1	Acciai alto legati	1.0D	Vc	31	31	28	28	46	46	42	42	42	67	67	67	60	60	60	82	82	74		
				fz	0.001	0.001	0.001	0.001	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.004	0.004	0.004		
				n	49178	49178	44260	44260	49178	49178	44260	44260	44260	53277	53277	53277	47949	47949	47949	52458	52458	47212		
				Vf	98	98	89	89	197	197	177	177	177	213	213	213	192	192	192	420	420	378		
11.2	Acciai da utensili	1.0D	Vc	31	31	28	28	41	41	37	37	37	57	57	57	51	51	51	72	72	65			
			fz	0.001	0.001	0.001	0.001	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.003	0.003	0.003			
			n	49178	49178	44260	44260	43714	43714	39343	39343	39343	45081	45081	45081	40573	40573	40573	45900	45900	41310			
			Vf	98	98	89	89	175	175	157	157	157	180	180	180	162	162	162	275	275	248			
H	38.1	Acciai temprati	1.0D	Vc	31	31	28	28	41	41	37	37	37	57	57	57	51	51	51	72	72	65		
				fz	0.001	0.001	0.001	0.001	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.003	0.003	0.003		
				n	49178	49178	44260	44260	43714	43714	39343	39343	39343	45081	45081	45081	40573	40573	40573	45900	45900	41310		
				Vf	98	98	89	89	175	175	157	157	157	180	180	180	162	162	162	275	275	248		
	38.2	Acciai temprati	1.0D	Vc	26	26	23	23	41	41	37	37	37	52	52	52	46	46	46	67	67	60		
				fz	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.002	0.002	0.002	0.002	0.002	0.002	0.003	0.003	0.003		
				n	40983	40983	36885	36885	43714	43714	39343	39343	39343	40983	40983	40983	36885	36885	36885	42621	42621	38359		
				Vf	82	82	74	74	87	87	79	79	79	164	164	164	148	148	148	256	256	230		
	39.1	Acciai temprati	1.0D	Vc	21	21	19	19	31	31	28	28	28	41	41	41	37	37	37	52	52	46		
				fz	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.002	0.002	0.002		
				n	32786	32786	29507	29507	32786	32786	29507	29507	29507	32786	32786	32786	29507	29507	29507	32786	32786	29507		
				Vf	66	66	59	59	66	66	59	59	59	66	66	66	59	59	59	131	131	118		
39.2	Acciai temprati	1.0D	Vc	21	21	19	19	26	26	23	23	23	31	31	31	28	28	28	41	41	37			
			fz	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.002	0.002	0.002			
			n	32786	32786	29507	29507	27322	27322	24590	24590	24590	24589	24589	24589	22130	22130	22130	26229	26229	23606			
			Vf	66	66	59	59	55	55	49	49	49	49	49	49	44	44	44	105	105	94			
39.3	Acciai temprati	1.0D	Vc	21	21	19	19	21	21	19	19	19	26	26	26	23	23	23	31	31	28			
			fz	0.009	0.009	0.008	0.008	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.002	0.002	0.001			
			n	32786	32786	29507	29507	21858	21858	19672	19672	19672	20491	20491	20491	18442	18442	18442	19672	19672	17705			
			Vf	590	590	472	472	44	44	39	39	39	41	41	41	37	37	37	79	79	35			
40	Fusione di ghisa	1.0D	Vc	31	31	28	28	41	41	37	37	37	57	57	57	51	51	51	72	72	65			
			fz	0.001	0.001	0.001	0.001	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.003	0.003	0.003			
			n	49178	49178	44260	44260	43714	43714	39343	39343	39343	45081	45081	45081	40573	40573	40573	45900	45900	41310			
			Vf	98	98	89	89	175	175	157	157	157	180	180	180	162	162	162	275	275	248			
41	Ghisa indurita	1.0D	Vc	26	26	23	23	41	41	37	37	37	52	52	52	46	46	46	67	67	60			
			fz	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.002	0.002	0.002	0.002	0.002	0.002	0.003	0.003	0.003			
			n	40983	40983	36885	36885	43714	43714	39343	39343	39343	40983	40983	40983	36885	36885	36885	42621	42621	38359			
			Vf	82	82	74	74	87	87	79	79	79	164	164	164	148	148	148	256	256	230			

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HPI89 SERIES

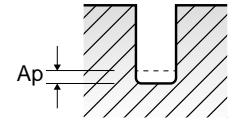
2 TAGLIENTI TORICA PER NERVATURE



Vc = m/min. n = giri/min.
fz = mm/dente Vf = mm/min

LBS: Lunghezza scarico

ISO	VDI 3323	Param. LBS	Diametro (Ø)																					
			0.5 4	0.5 5	0.5 6	0.6 2	0.6 4	0.6 6	0.6 8	0.6 10	0.7 2	0.7 4	0.7 6	0.8 2	0.8 4	0.8 6	0.8 8	0.8 12	0.9 4	0.9 8	1 4	1 6	1 8	1 10
P	5	Vc	74	74	66	98	88	88	78	59	113	102	102	129	129	116	116	103	144	130	154	139	139	139
		fz	0.004	0.004	0.003	0.005	0.005	0.005	0.004	0.004	0.006	0.005	0.005	0.006	0.006	0.005	0.005	0.005	0.007	0.006	0.010	0.009	0.009	0.009
		n	47212	47212	41966	51911	46720	46720	41529	31147	51569	46412	46412	51228	51228	46105	46105	40982	51000	45900	49178	44260	44260	44260
		Vf	378	378	252	519	467	467	332	249	619	464	464	615	615	461	461	410	714	551	984	797	797	797
	Ap	0.020	0.018	0.018	0.027	0.024	0.021	0.018	0.015	0.035	0.028	0.025	0.040	0.036	0.032	0.028	0.024	0.041	0.032	0.045	0.040	0.040	0.035	
	8~9	Vc	74	74	66	98	88	88	78	59	113	102	102	129	129	116	116	103	144	130	154	139	139	139
		fz	0.004	0.004	0.003	0.005	0.005	0.005	0.004	0.004	0.006	0.005	0.005	0.006	0.006	0.005	0.005	0.005	0.007	0.006	0.010	0.009	0.009	0.009
		n	47212	47212	41966	51911	46720	46720	41529	31147	51569	46412	46412	51228	51228	46105	46105	40982	51000	45900	49178	44260	44260	44260
		Vf	378	378	252	519	467	467	332	249	619	464	464	615	615	461	461	410	714	551	984	797	797	797
	11.1	Vc	74	74	66	98	88	88	78	59	113	102	102	129	129	116	116	103	144	130	154	139	139	139
		fz	0.004	0.004	0.003	0.005	0.005	0.005	0.004	0.004	0.006	0.005	0.005	0.006	0.006	0.005	0.005	0.005	0.007	0.006	0.010	0.009	0.009	0.009
		n	47212	47212	41966	51911	46720	46720	41529	31147	51569	46412	46412	51228	51228	46105	46105	40982	51000	45900	49178	44260	44260	44260
Vf		378	378	252	519	467	467	332	249	619	464	464	615	615	461	461	410	714	551	984	797	797	797	
11.2	Vc	65	65	58	88	79	79	70	53	93	84	84	103	103	93	93	82	113	102	124	111	111	111	
	fz	0.003	0.003	0.002	0.004	0.004	0.004	0.003	0.003	0.005	0.005	0.005	0.006	0.006	0.005	0.005	0.005	0.007	0.006	0.008	0.007	0.007	0.007	
	n	41310	41310	36720	46447	41802	41802	37158	27868	42230	38007	38007	40983	40983	36885	36885	32786	40072	36065	39343	35409	35409	35409	
	Vf	248	248	147	372	334	334	223	167	422	380	380	492	492	369	369	328	561	433	629	496	496	496	
H	38.1	Vc	65	65	58	88	79	79	70	53	93	84	84	103	103	93	93	82	113	102	124	111	111	111
		fz	0.003	0.003	0.002	0.004	0.004	0.004	0.003	0.003	0.005	0.005	0.005	0.006	0.006	0.005	0.005	0.005	0.007	0.006	0.008	0.007	0.007	0.007
		n	41310	41310	36720	46447	41802	41802	37158	27868	42230	38007	38007	40983	40983	36885	36885	32786	40072	36065	39343	35409	35409	35409
		Vf	248	248	147	372	334	334	223	167	422	380	380	492	492	369	369	328	561	433	629	496	496	496
	38.2	Vc	60	60	54	77	70	70	62	46	77	69	69	77	77	70	70	62	82	74	82	74	74	74
		fz	0.003	0.003	0.002	0.004	0.004	0.004	0.003	0.003	0.005	0.004	0.004	0.005	0.005	0.005	0.005	0.004	0.006	0.005	0.007	0.006	0.006	0.006
		n	38359	38359	34097	40983	36885	36885	32786	24590	35020	31518	31518	30737	30737	27663	27663	24590	29143	26229	26229	23606	23606	23606
		Vf	230	230	136	328	295	295	197	148	350	252	252	307	307	277	277	197	350	262	367	283	283	283
	39.1	Vc	46	46	41	57	51	51	45	34	62	56	56	67	67	60	60	54	67	60	67	60	60	60
		fz	0.002	0.002	0.002	0.003	0.003	0.003	0.002	0.002	0.004	0.003	0.003	0.004	0.004	0.004	0.004	0.003	0.005	0.005	0.005	0.005	0.005	0.005
		n	29507	29507	26229	30053	27048	27048	24042	18032	28335	25502	25502	26639	26639	23975	23975	21311	23679	21311	21311	19180	19180	19180
		Vf	118	118	105	180	162	162	96	72	227	153	153	213	213	192	192	128	237	213	213	192	192	192
39.2	Vc	37	37	33	46	42	42	37	28	46	42	42	51	51	46	46	41	52	46	51	46	46	46	
	fz	0.002	0.002	0.001	0.002	0.002	0.002	0.002	0.001	0.003	0.002	0.002	0.003	0.003	0.003	0.003	0.002	0.004	0.004	0.004	0.004	0.004	0.004	
	n	23606	23606	20983	24589	22130	22130	19671	14753	21115	19004	19004	20491	20491	18442	18442	16393	18215	16394	16392	14753	14753	14753	
	Vf	94	94	42	98	89	89	79	30	127	76	76	123	123	111	111	66	146	131	131	118	118	118	
39.3	Vc	28	28	25	41	37	37	33	25	42	38	38	41	41	37	37	33	41	37	41	37	37	37	
	fz	0.001	0.001	0.001	0.002	0.002	0.002	0.002	0.001	0.002	0.002	0.002	0.003	0.003	0.002	0.002	0.002	0.003	0.003	0.003	0.003	0.003	0.003	
	n	17705	17705	15738	21858	19672	19672	17486	13115	18952	17057	17057	16392	16392	14753	14753	13114	14571	13114	13114	11803	11803	11803	
	Vf	35	35	31	87	79	79	70	26	76	68	68	98	98	59	59	52	87	79	79	71	71	71	
40	Vc	65	65	58	88	79	79	70	53	93	84	84	103	103	93	93	82	113	102	124	111	111	111	
	fz	0.003	0.003	0.002	0.004	0.004	0.004	0.003	0.003	0.005	0.005	0.005	0.006	0.006	0.005	0.005	0.005	0.007	0.006	0.008	0.007	0.007	0.007	
	n	41310	41310	36720	46447	41802	41802	37158	27868	42230	38007	38007	40983	40983	36885	36885	32786	40072	36065	39343	35409	35409	35409	
	Vf	248	248	147	372	334	334	223	167	422	380	380	492	492	369	369	328	561	433	629	496	496	496	
41	Vc	60	60	54	77	70	70	62	46	77	69	69	77	77	70	70	62	82	74	82	74	74	74	
	fz	0.003	0.003	0.002	0.004	0.004	0.004	0.003	0.003	0.005	0.004	0.004	0.005	0.005	0.005	0.005	0.004	0.006	0.005	0.007	0.006	0.006	0.006	
	n	38359	38359	34097	40983	36885	36885	32786	24590	35020	31518	31518	30737	30737	27663	27663	24590	29143	26229	26229	23606	23606	23606	
	Vf	230	230	136	328	295	295	197	148	350	252	252	307	307	277	277	197	350	262	367	283	283	283	



Vc = m/min. n = giri/min.
fz = mm/dente Vf = mm/min

HPI89 SERIES

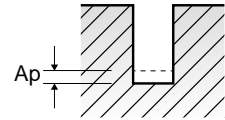
2 TAGLIENTI TORICA PER NERVATURE

LBS: Lunghezza scarico

VDI 3323	Param.	Diametro (Ø)																				
		1	1	1	1.5	1.5	1.5	1.5	1.5	2	2	2	2	2	2	2	2	3	3	3	3	3
LBS		12	16	20	4	8	12	15	20	6	8	12	16	20	25	30	8	12	16	20	30	35
5	Vc	124	93	93	196	176	176	176	157	216	216	195	195	195	173	173	211	211	190	190	190	169
	fz	0.008	0.007	0.007	0.011	0.010	0.010	0.010	0.009	0.013	0.013	0.012	0.012	0.012	0.010	0.010	0.019	0.019	0.017	0.017	0.017	0.015
	n	39342	29507	29507	41581	37423	37423	37423	33265	34426	34426	30983	30983	30983	27541	27541	22404	22404	20164	20164	20164	17923
	Vf	629	413	413	915	748	748	748	599	895	895	744	744	744	551	551	851	851	686	686	686	538
	Ap	0.035	0.030	0.025	0.075	0.060	0.060	0.053	0.045	0.100	0.090	0.080	0.080	0.070	0.070	0.060	0.150	0.135	0.120	0.120	0.105	0.105
8~9	Vc	124	93	93	196	176	176	176	157	216	216	195	195	195	173	173	211	211	190	190	190	169
	fz	0.008	0.007	0.007	0.011	0.010	0.010	0.010	0.009	0.013	0.013	0.012	0.012	0.012	0.010	0.010	0.019	0.019	0.017	0.017	0.017	0.015
	n	39342	29507	29507	41581	37423	37423	37423	33265	34426	34426	30983	30983	30983	27541	27541	22404	22404	20164	20164	20164	17923
	Vf	629	413	413	915	748	748	748	599	895	895	744	744	744	551	551	851	851	686	686	686	538
	Ap	0.035	0.030	0.025	0.075	0.060	0.060	0.053	0.045	0.100	0.090	0.080	0.080	0.070	0.070	0.060	0.150	0.135	0.120	0.120	0.105	0.105
11.1	Vc	124	93	93	196	176	176	176	157	216	216	195	195	195	173	173	211	211	190	190	190	169
	fz	0.008	0.007	0.007	0.011	0.010	0.010	0.010	0.009	0.013	0.013	0.012	0.012	0.012	0.010	0.010	0.019	0.019	0.017	0.017	0.017	0.015
	n	39342	29507	29507	41581	37423	37423	37423	33265	34426	34426	30983	30983	30983	27541	27541	22404	22404	20164	20164	20164	17923
	Vf	629	413	413	915	748	748	748	599	895	895	744	744	744	551	551	851	851	686	686	686	538
	Ap	0.035	0.030	0.025	0.075	0.060	0.060	0.053	0.045	0.100	0.090	0.080	0.080	0.070	0.070	0.060	0.150	0.135	0.120	0.120	0.105	0.105
11.2	Vc	99	74	74	154	139	139	139	123	170	170	153	153	153	136	136	170	170	153	153	153	136
	fz	0.006	0.006	0.006	0.010	0.009	0.009	0.009	0.008	0.013	0.013	0.012	0.012	0.012	0.010	0.010	0.020	0.020	0.018	0.018	0.018	0.016
	n	31474	23606	23606	32754	29479	29479	29479	26203	27049	27049	24344	24344	24344	21639	21639	18032	18032	16229	16229	16229	14426
	Vf	378	283	283	655	531	531	531	419	703	703	584	584	584	433	433	721	721	584	584	584	462
	Ap	0.030	0.026	0.021	0.064	0.051	0.051	0.045	0.038	0.085	0.077	0.068	0.068	0.060	0.060	0.051	0.128	0.115	0.102	0.102	0.089	0.089
38.1	Vc	99	74	74	154	139	139	139	123	170	170	153	153	153	136	136	170	170	153	153	153	136
	fz	0.006	0.006	0.006	0.010	0.009	0.009	0.009	0.008	0.013	0.013	0.012	0.012	0.012	0.010	0.010	0.020	0.020	0.018	0.018	0.018	0.016
	n	31474	23606	23606	32754	29479	29479	29479	26203	27049	27049	24344	24344	24344	21639	21639	18032	18032	16229	16229	16229	14426
	Vf	378	283	283	655	531	531	531	419	703	703	584	584	584	433	433	721	721	584	584	584	462
	Ap	0.030	0.026	0.021	0.064	0.051	0.051	0.045	0.038	0.085	0.077	0.068	0.068	0.060	0.060	0.051	0.128	0.115	0.102	0.102	0.089	0.089
38.2	Vc	66	49	49	103	93	93	93	83	113	113	102	102	102	91	91	113	113	102	102	102	91
	fz	0.006	0.005	0.005	0.009	0.008	0.008	0.008	0.007	0.012	0.012	0.011	0.011	0.011	0.010	0.010	0.018	0.018	0.016	0.016	0.016	0.014
	n	20983	15737	15737	21939	19745	19745	19745	17551	18032	18032	16229	16229	16229	14426	14426	12021	12021	10819	10819	10819	9617
	Vf	252	157	157	395	316	316	316	246	433	433	357	357	357	289	289	433	433	346	346	346	269
	Ap	0.030	0.026	0.021	0.064	0.051	0.051	0.045	0.038	0.085	0.077	0.068	0.068	0.060	0.060	0.051	0.128	0.115	0.102	0.102	0.089	0.089
39.1	Vc	54	40	40	83	74	74	74	66	93	93	83	83	83	74	74	93	93	83	83	83	74
	fz	0.004	0.004	0.004	0.007	0.006	0.006	0.006	0.005	0.009	0.009	0.008	0.008	0.008	0.007	0.007	0.014	0.014	0.013	0.013	0.013	0.011
	n	17049	12787	12787	17510	15759	15759	15759	14008	14754	14754	13279	13279	13279	11803	11803	9835	9835	8852	8852	8852	7868
	Vf	136	102	102	245	189	189	189	140	266	266	212	212	212	165	165	275	275	230	230	230	173
	Ap	0.028	0.024	0.020	0.060	0.048	0.048	0.042	0.036	0.080	0.072	0.064	0.064	0.056	0.056	0.048	0.120	0.108	0.096	0.096	0.084	0.084
39.2	Vc	41	31	31	62	56	56	56	50	72	72	65	65	65	58	58	72	72	65	65	65	58
	fz	0.003	0.003	0.003	0.006	0.005	0.005	0.005	0.004	0.007	0.007	0.006	0.006	0.006	0.006	0.006	0.011	0.011	0.010	0.010	0.010	0.009
	n	13114	9835	9835	13184	11866	11866	11866	10547	11475	11475	10328	10328	10328	9180	9180	7650	7650	6885	6885	6885	6120
	Vf	79	59	59	158	119	119	119	84	161	161	124	124	124	110	110	168	168	138	138	138	110
	Ap	0.028	0.024	0.020	0.060	0.048	0.048	0.042	0.036	0.080	0.072	0.064	0.064	0.056	0.056	0.048	0.120	0.108	0.096	0.096	0.084	0.084
39.3	Vc	33	25	25	52	47	47	47	42	62	62	56	56	56	49	49	62	62	56	56	56	49
	fz	0.003	0.002	0.002	0.005	0.004	0.004	0.004	0.004	0.006	0.006	0.005	0.005	0.005	0.005	0.005	0.009	0.009	0.008	0.008	0.008	0.007
	n	10491	7868	7868	11021	9919	9919	9919	8817	9835	9835	8852	8852	8852	7868	7868	6557	6557	5901	5901	5901	5246
	Vf	63	31	31	110	79	79	79	71	118	118	89	89	89	79	79	118	118	94	94	94	73
	Ap	0.023	0.020	0.016	0.049	0.039	0.039	0.034	0.029	0.065	0.059	0.052	0.052	0.046	0.046	0.039	0.098	0.088	0.078	0.078	0.068	0.068
40	Vc	99	74	74	154	139	139	139	123	170	170	153	153	153	136	136	170	170	153	153	153	136
	fz	0.006	0.006	0.006	0.010	0.009	0.009	0.009	0.008	0.013	0.013	0.012	0.012	0.012	0.010	0.010	0.020	0.020	0.018	0.018	0.018	0.016
	n	31474	23606	23606	32754	29479	29479	29479	26203	27049	27049	24344	24344	24344	21639	21639	18032	18032	16229	16229	16229	14426
	Vf	378	283	283	655	531	531	531	419	703	703	584	584	584	433	433	721	721	584	584	584	462
	Ap	0.030	0.026	0.021	0.064	0.051	0.051	0.045	0.038	0.085	0.077	0.068	0.068	0.060	0.060	0.051	0.128	0.115	0.102	0.102	0.089	0.089
41	Vc	66	49	49	103	93	93	93	83	113	113	102	102	102	91	91	113	113	102	102	102	91
	fz	0.006	0.005	0.005	0.009	0.008	0.008	0.008	0.007	0.012	0.012	0.011	0.011	0.011	0.010	0.010	0.018	0.018	0.016	0.016	0.016	0.014
	n	20983	15737	15737	21939	19745	19745	19745	17551	18032	18032	16229	16229	16229	14426	14426	12021	12021	10819	10819	10819	9617
	Vf	252	157	157	395	316	316	316	246	433	433	357	357	357	289	289	433	433	346	346	346	269
	Ap	0.030	0.026	0.021	0.064	0.051	0.051	0.045	0.038	0.085	0.077	0.068	0.068	0.060	0.060	0.051	0.128	0.115	0.102	0.102	0.089	0.089

HPI88 SERIES

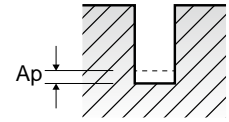
2 TAGLIENTI PER NERVATURE



Vc = m/min. n = giri/min.
fz = mm/dente Vf = mm/min

LBS: Lunghezza scarico

ISO	VDI 3323	Descrizione materiale	Param.	Diametro (Ø)																																																																																																		
				0.2		0.2		0.2		0.2		0.2		0.2		0.3		0.3		0.3		0.4		0.4		0.4		0.4																																																																										
				LBS	0.5	0.75	1	1.5	2	2.5	3	1	1.5	2	2.5	3	1	1.5	2	2.5	3	3.5																																																																																
P	5	Acciai non legati	Vc	31	31	31	28	28	25	25	46	46	42	42	42	67	67	67	60	60	60	fz	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	n	49178	49178	49178	44260	44260	39342	39342	49178	49178	44260	44260	44260	53277	53277	53277	47949	47949	47949	Vf	98	98	98	89	89	79	79	197	197	177	177	177	213	213	213	192	192	192	Ap	0.010	0.009	0.009	0.008	0.007	0.007	0.006	0.014	0.014	0.012	0.011	0.011	0.020	0.018	0.018	0.016	0.016	0.016					
			8~9	Acciai basso legati	Vc	31	31	31	28	28	25	25	46	46	42	42	42	67	67	67	60	60	60	fz	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	n	49178	49178	49178	44260	44260	39342	39342	49178	49178	44260	44260	44260	53277	53277	53277	47949	47949	47949	Vf	98	98	98	89	89	79	79	197	197	177	177	177	213	213	213	192	192	192	Ap	0.010	0.009	0.009	0.008	0.007	0.007	0.006	0.014	0.014	0.012	0.011	0.011	0.020	0.018	0.018	0.016	0.016	0.016			
					11.1	Acciai alto legati	Vc	31	31	31	28	28	25	25	46	46	42	42	42	67	67	67	60	60	60	fz	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	n	49178	49178	49178	44260	44260	39342	39342	49178	49178	44260	44260	44260	53277	53277	53277	47949	47949	47949	Vf	98	98	98	89	89	79	79	197	197	177	177	177	213	213	213	192	192	192	Ap	0.010	0.009	0.009	0.008	0.007	0.007	0.006	0.014	0.014	0.012	0.011	0.011	0.020	0.018	0.018	0.016	0.016	0.016	
							11.2	Acciai da utensili	Vc	31	31	31	28	28	25	25	41	41	37	37	37	57	57	57	51	51	51	fz	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	n	49178	49178	49178	44260	44260	39342	39342	43714	43714	39343	39343	39343	45081	45081	45081	40573	40573	40573	Vf	98	98	98	89	89	79	79	175	175	157	157	157	180	180	180	162	162	162	Ap	0.009	0.008	0.008	0.007	0.006	0.006	0.005	0.011	0.011	0.010	0.009	0.009	0.017	0.015	0.015	0.014	0.014
	H	38.1							Acciai temprati	Vc	31	31	31	28	28	25	25	41	41	37	37	37	57	57	57	51	51	51	fz	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	n	49178	49178	49178	44260	44260	39342	39342	43714	43714	39343	39343	39343	45081	45081	45081	40573	40573	40573	Vf	98	98	98	89	89	79	79	175	175	157	157	157	180	180	180	162	162	162	Ap	0.009	0.008	0.008	0.007	0.006	0.006	0.005	0.011	0.011	0.010	0.009	0.009	0.017	0.015	0.015	0.014
			38.2	Acciai temprati						Vc	26	26	26	23	23	21	21	41	41	37	37	37	52	52	52	46	46	46	fz	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.002	0.002	0.002	0.002	0.002	0.002	n	40983	40983	40983	36885	36885	32786	32786	43714	43714	39343	39343	39343	40983	40983	40983	36885	36885	36885	Vf	82	82	82	74	74	66	66	87	87	79	79	79	164	164	164	148	148	148	Ap	0.009	0.008	0.008	0.007	0.006	0.006	0.005	0.011	0.011	0.010	0.009	0.009	0.017	0.015	0.015	0.014
					39.1	Acciai temprati				Vc	21	21	21	19	19	16	16	31	31	28	28	28	41	41	41	37	37	37	fz	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	n	32786	32786	32786	29507	29507	26229	26229	32786	32786	29507	29507	29507	32786	32786	32786	29507	29507	29507	Vf	66	66	66	59	59	52	52	66	66	59	59	59	66	66	66	59	59	59	Ap	0.008	0.007	0.007	0.006	0.006	0.005	0.011	0.011	0.010	0.008	0.008	0.016	0.014	0.014	0.013	0.013
							39.2	Acciai temprati		Vc	21	21	21	19	19	16	16	26	26	23	23	23	31	31	31	28	28	28	fz	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	n	32786	32786	32786	29507	29507	26229	26229	27322	27322	24590	24590	24590	24589	24589	24589	22130	22130	22130	Vf	66	66	66	59	59	52	52	55	55	49	49	49	49	49	49	44	44	44	Ap	0.008	0.007	0.007	0.006	0.006	0.006	0.005	0.011	0.011	0.010	0.008	0.008	0.016	0.014	0.014	0.013
		39.3							Acciai temprati	Vc	21	21	21	19	19	16	16	21	21	19	19	19	26	26	26	23	23	23	fz	0.009	0.009	0.009	0.008	0.008	0.007	0.007	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	n	32786	32786	32786	29507	29507	26229	26229	21858	21858	19672	19672	19672	20491	20491	20491	18442	18442	18442	Vf	590	590	590	472	472	367	367	44	44	39	39	39	41	41	41	37	37	37	Ap	0.007	0.006	0.006	0.005	0.005	0.005	0.004	0.009	0.009	0.008	0.007	0.007	0.013	0.012	0.012	0.010
			40	Fusione di ghisa						Vc	31	31	31	28	28	25	25	41	41	37	37	37	57	57	57	51	51	51	fz	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	n	49178	49178	49178	44260	44260	39342	39342	43714	43714	39343	39343	39343	45081	45081	45081	40573	40573	40573	Vf	98	98	98	89	89	79	79	175	175	157	157	157	180	180	180	162	162	162	Ap	0.009	0.008	0.008	0.007	0.006	0.006	0.005	0.011	0.011	0.010	0.009	0.009	0.017	0.015	0.015	0.014
					41	Ghisa indurita				Vc	26	26	26	23	23	21	21	41	41	37	37	37	52	52	52	46	46	46	fz	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.002	0.002	0.002	0.002	0.002	0.002	n	40983	40983	40983	36885	36885	32786	32786	43714	43714	39343	39343	39343	40983	40983	40983	36885	36885	36885	Vf	82	82	82	74	74	66	66	87	87	79	79	79	164	164	164	148	148	148	Ap	0.009	0.008	0.008	0.007	0.006	0.006	0.005	0.011	0.011	0.010	0.009	0.009	0.017	0.015	0.015	0.014



Vc = m/min. n = giri/min.
fz = mm/dente Vf = mm/min

HPI88 SERIES **2 TAGLIANTI PER NERVATURE**

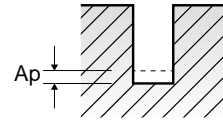
LBS: Lunghezza scarico

VDI 3323	Param.	Diametro (Ø)																				
		0.4	0.4	0.4	0.4	0.4	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.6	0.6	
	LBS	4	5	6	8	10	1	1.5	2	2.5	3	3.5	4	4.5	5	6	7	8	9	10	1.5	2
5	Vc	60	54	54	40	20	82	82	82	82	74	74	74	74	74	66	66	49	49	49	98	98
	fz	0.002	0.002	0.002	0.001	0.001	0.004	0.004	0.004	0.004	0.004	0.004	0.004	0.004	0.004	0.003	0.003	0.003	0.003	0.003	0.005	0.005
	n	47949	42622	42622	31966	15983	52458	52458	52458	52458	47212	47212	47212	47212	47212	41966	41966	31475	31475	31475	51911	51911
	Vf	192	170	170	64	32	420	420	420	420	378	378	378	378	378	252	252	189	189	189	519	519
	Ap	0.014	0.014	0.012	0.010	0.008	0.025	0.025	0.023	0.023	0.020	0.020	0.020	0.018	0.018	0.015	0.015	0.013	0.013	0.013	0.030	0.027
8~9	Vc	60	54	54	40	20	82	82	82	82	74	74	74	74	74	66	66	49	49	49	98	98
	fz	0.002	0.002	0.002	0.001	0.001	0.004	0.004	0.004	0.004	0.004	0.004	0.004	0.004	0.004	0.003	0.003	0.003	0.003	0.003	0.005	0.005
	n	47949	42622	42622	31966	15983	52458	52458	52458	52458	47212	47212	47212	47212	47212	41966	41966	31475	31475	31475	51911	51911
	Vf	192	170	170	64	32	420	420	420	420	378	378	378	378	378	252	252	189	189	189	519	519
	Ap	0.014	0.014	0.012	0.010	0.008	0.025	0.025	0.023	0.023	0.020	0.020	0.020	0.018	0.018	0.015	0.015	0.013	0.013	0.013	0.030	0.027
11.1	Vc	60	54	54	40	20	82	82	82	82	74	74	74	74	74	66	66	49	49	49	98	98
	fz	0.002	0.002	0.002	0.001	0.001	0.004	0.004	0.004	0.004	0.004	0.004	0.004	0.004	0.004	0.003	0.003	0.003	0.003	0.003	0.005	0.005
	n	47949	42622	42622	31966	15983	52458	52458	52458	52458	47212	47212	47212	47212	47212	41966	41966	31475	31475	31475	51911	51911
	Vf	192	170	170	64	32	420	420	420	420	378	378	378	378	378	252	252	189	189	189	519	519
	Ap	0.014	0.014	0.012	0.010	0.008	0.025	0.025	0.023	0.023	0.020	0.020	0.020	0.018	0.018	0.015	0.015	0.013	0.013	0.013	0.030	0.027
11.2	Vc	51	45	45	34	17	72	72	72	72	65	65	65	65	65	58	58	43	43	43	88	88
	fz	0.002	0.002	0.002	0.001	0.001	0.003	0.003	0.003	0.003	0.003	0.003	0.003	0.003	0.003	0.002	0.002	0.002	0.002	0.002	0.004	0.004
	n	40573	36065	36065	27049	13524	45900	45900	45900	45900	41310	41310	41310	41310	41310	36720	36720	27540	27540	27540	46447	46447
	Vf	162	144	144	54	27	275	275	275	275	248	248	248	248	248	147	147	110	110	110	372	372
	Ap	0.012	0.012	0.010	0.009	0.007	0.021	0.021	0.019	0.019	0.017	0.017	0.017	0.015	0.015	0.015	0.013	0.013	0.011	0.011	0.026	0.023
38.1	Vc	51	45	45	34	17	72	72	72	72	65	65	65	65	65	58	58	43	43	43	88	88
	fz	0.002	0.002	0.002	0.001	0.001	0.003	0.003	0.003	0.003	0.003	0.003	0.003	0.003	0.003	0.002	0.002	0.002	0.002	0.002	0.004	0.004
	n	40573	36065	36065	27049	13524	45900	45900	45900	45900	41310	41310	41310	41310	41310	36720	36720	27540	27540	27540	46447	46447
	Vf	162	144	144	54	27	275	275	275	275	248	248	248	248	248	147	147	110	110	110	372	372
	Ap	0.012	0.012	0.010	0.009	0.007	0.021	0.021	0.019	0.019	0.017	0.017	0.017	0.015	0.015	0.015	0.013	0.013	0.011	0.011	0.026	0.023
38.2	Vc	46	41	41	31	15	67	67	67	67	60	60	60	60	60	54	54	40	40	40	77	77
	fz	0.002	0.002	0.002	0.001	0.001	0.003	0.003	0.003	0.003	0.003	0.003	0.003	0.003	0.003	0.002	0.002	0.002	0.002	0.002	0.004	0.004
	n	36885	32786	32786	24590	12295	42621	42621	42621	42621	38359	38359	38359	38359	38359	34097	34097	25573	25573	25573	40983	40983
	Vf	148	131	131	49	25	256	256	256	256	230	230	230	230	230	136	136	102	102	102	328	328
	Ap	0.012	0.012	0.010	0.009	0.007	0.021	0.021	0.019	0.019	0.017	0.017	0.017	0.015	0.015	0.015	0.013	0.013	0.011	0.011	0.026	0.023
39.1	Vc	37	33	33	25	12	52	52	52	52	46	46	46	46	46	41	41	31	31	31	57	57
	fz	0.001	0.001	0.001	0.001	0.001	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.001	0.001	0.001	0.003	0.003
	n	29507	26229	26229	19672	9836	32786	32786	32786	32786	29507	29507	29507	29507	29507	26229	26229	19672	19672	19672	30053	30053
	Vf	59	52	52	39	20	131	131	131	131	118	118	118	118	118	105	105	39	39	39	180	180
	Ap	0.011	0.011	0.010	0.008	0.006	0.020	0.020	0.018	0.018	0.016	0.016	0.016	0.014	0.014	0.014	0.012	0.012	0.010	0.010	0.024	0.022
39.2	Vc	28	25	25	19	9	41	41	41	41	37	37	37	37	37	33	33	25	25	25	46	46
	fz	0.001	0.001	0.001	0.001	0.001	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.001	0.001	0.001	0.001	0.001	0.002	0.002
	n	22130	19671	19671	14753	7377	26229	26229	26229	26229	23606	23606	23606	23606	23606	20983	20983	15737	15737	15737	24589	24589
	Vf	44	39	39	30	15	105	105	105	105	94	94	94	94	94	42	42	31	31	31	98	98
	Ap	0.011	0.011	0.010	0.008	0.006	0.020	0.020	0.018	0.018	0.016	0.016	0.016	0.014	0.014	0.014	0.012	0.012	0.010	0.010	0.024	0.022
39.3	Vc	23	21	21	15	8	31	31	31	31	28	28	28	28	28	25	25	19	19	19	41	41
	fz	0.001	0.001	0.001	0.001	0.001	0.002	0.002	0.002	0.002	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.002	0.002
	n	18442	16393	16393	12295	6147	19672	19672	19672	19672	17705	17705	17705	17705	17705	15738	15738	11803	11803	11803	21858	21858
	Vf	37	33	33	25	12	79	79	79	79	35	35	35	35	35	31	31	24	24	24	87	87
	Ap	0.009	0.009	0.008	0.007	0.005	0.016	0.016	0.015	0.015	0.013	0.013	0.013	0.011	0.011	0.011	0.010	0.010	0.008	0.008	0.020	0.018
40	Vc	51	45	45	34	17	72	72	72	72	65	65	65	65	65	58	58	43	43	43	88	88
	fz	0.002	0.002	0.002	0.001	0.001	0.003	0.003	0.003	0.003	0.003	0.003	0.003	0.003	0.003	0.002	0.002	0.002	0.002	0.002	0.004	0.004
	n	40573	36065	36065	27049	13524	45900	45900	45900	45900	41310	41310	41310	41310	41310	36720	36720	27540	27540	27540	46447	46447
	Vf	162	144	144	54	27	275	275	275	275	248	248	248	248	248	147	147	110	110	110	372	372
	Ap	0.012	0.012	0.010	0.009	0.007	0.021	0.021	0.019	0.019	0.017	0.017	0.017	0.015	0.015	0.015	0.013	0.013	0.011	0.011	0.026	0.023
41	Vc	46	41	41	31	15	67	67	67	67	60	60	60	60	60	54	54	40	40	40	77	77
	fz	0.002	0.002	0.002	0.001	0.001	0.003	0.003	0.003	0.003	0.003	0.003	0.003	0.003	0.003	0.002	0.002	0.002	0.002	0.002	0.004	0.004
	n	36885	32786	32786	24590	12295	42621	42621	42621	42621	38359	38359	38359	38359	38359	34097	34097	25573	25573	25573	40983	40983
	Vf	148	131	131	49	25	256	256	256	256	230	230	230	230	230	136	136	102	102	102	328	328
	Ap	0.012	0.012	0.010	0.009	0.007	0.021	0.021	0.019	0.019	0.017	0.017	0.017	0.015	0.015	0.015	0.013	0.013	0.011	0.011	0.026	0.023

SEGUE ►

HPI88 SERIES

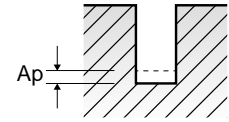
2 TAGLIANTI PER NERVATURE



Vc = m/min. n = giri/min.
fz = mm/dente Vf = mm/min

LBS: Lunghezza scarico

ISO	VDI 3323	Param. LBS	Diametro (Ø)																			
			0.6 3	0.6 4	0.6 5	0.6 6	0.7 2	0.7 4	0.7 6	0.7 8	0.7 10	0.8 3	0.8 4	0.8 5	0.8 6	0.8 8	0.8 10	0.8 12	1 2	1 3	1 4	1 5
P	5	Vc	98	88	88	88	113	102	102	91	91	129	129	116	116	116	103	103	154	154	154	154
		fz	0.005	0.005	0.005	0.005	0.006	0.005	0.005	0.004	0.004	0.006	0.006	0.005	0.005	0.005	0.005	0.005	0.010	0.010	0.010	0.010
		n	51911	46720	46720	46720	51569	46412	46412	41255	41255	51228	51228	46105	46105	46105	40982	40982	49178	49178	49178	49178
		Vf	519	467	467	467	619	464	464	330	330	615	615	461	461	461	410	410	984	984	984	984
		Ap	0.027	0.024	0.021	0.021	0.035	0.028	0.025	0.025	0.021	0.036	0.036	0.032	0.032	0.028	0.028	0.024	0.050	0.050	0.045	0.045
	8~9	Vc	98	88	88	88	113	102	102	91	91	129	129	116	116	116	103	103	154	154	154	154
		fz	0.005	0.005	0.005	0.005	0.006	0.005	0.005	0.004	0.004	0.006	0.006	0.005	0.005	0.005	0.005	0.005	0.010	0.010	0.010	0.010
		n	51911	46720	46720	46720	51569	46412	46412	41255	41255	51228	51228	46105	46105	46105	40982	40982	49178	49178	49178	49178
		Vf	519	467	467	467	619	464	464	330	330	615	615	461	461	461	410	410	984	984	984	984
		Ap	0.027	0.024	0.021	0.021	0.035	0.028	0.025	0.025	0.021	0.036	0.036	0.032	0.032	0.028	0.028	0.024	0.050	0.050	0.045	0.045
	11.1	Vc	98	88	88	88	113	102	102	91	91	129	129	116	116	116	103	103	154	154	154	154
		fz	0.005	0.005	0.005	0.005	0.006	0.005	0.005	0.004	0.004	0.006	0.006	0.005	0.005	0.005	0.005	0.005	0.010	0.010	0.010	0.010
		n	51911	46720	46720	46720	51569	46412	46412	41255	41255	51228	51228	46105	46105	46105	40982	40982	49178	49178	49178	49178
		Vf	519	467	467	467	619	464	464	330	330	615	615	461	461	461	410	410	984	984	984	984
		Ap	0.027	0.024	0.021	0.021	0.035	0.028	0.025	0.025	0.021	0.036	0.036	0.032	0.032	0.028	0.028	0.024	0.050	0.050	0.045	0.045
	11.2	Vc	88	79	79	79	93	84	84	74	74	103	103	93	93	93	82	82	124	124	124	124
fz		0.004	0.004	0.004	0.004	0.005	0.005	0.005	0.004	0.004	0.006	0.006	0.005	0.005	0.005	0.005	0.005	0.008	0.008	0.008	0.008	
n		46447	41802	41802	41802	42230	38007	38007	33784	33784	40983	40983	36885	36885	36885	32786	32786	39343	39343	39343	39343	
Vf		372	334	334	334	422	380	380	270	270	492	492	369	369	369	328	328	629	629	629	629	
Ap		0.023	0.020	0.018	0.018	0.030	0.024	0.021	0.021	0.018	0.031	0.031	0.027	0.027	0.024	0.024	0.020	0.043	0.043	0.038	0.038	
H	38.1	Vc	88	79	79	79	93	84	84	74	74	103	103	93	93	93	82	82	124	124	124	124
		fz	0.004	0.004	0.004	0.004	0.005	0.005	0.005	0.004	0.004	0.006	0.006	0.005	0.005	0.005	0.005	0.005	0.008	0.008	0.008	0.008
		n	46447	41802	41802	41802	42230	38007	38007	33784	33784	40983	40983	36885	36885	36885	32786	32786	39343	39343	39343	39343
		Vf	372	334	334	334	422	380	380	270	270	492	492	369	369	369	328	328	629	629	629	629
		Ap	0.023	0.020	0.018	0.018	0.030	0.024	0.021	0.021	0.018	0.031	0.031	0.027	0.027	0.024	0.024	0.020	0.043	0.043	0.038	0.038
	38.2	Vc	77	70	70	70	77	69	69	62	62	77	77	70	70	70	62	62	82	82	82	82
		fz	0.004	0.004	0.004	0.004	0.005	0.004	0.004	0.004	0.004	0.005	0.005	0.005	0.005	0.005	0.004	0.004	0.007	0.007	0.007	0.007
		n	40983	36885	36885	36885	35020	31518	31518	28016	28016	30737	30737	27663	27663	27663	24590	24590	26229	26229	26229	26229
		Vf	328	295	295	295	350	252	252	224	224	307	307	277	277	277	197	197	367	367	367	367
		Ap	0.023	0.020	0.018	0.018	0.030	0.024	0.021	0.021	0.018	0.031	0.031	0.027	0.027	0.024	0.024	0.020	0.043	0.043	0.038	0.038
	39.1	Vc	57	51	51	51	62	56	56	50	50	67	67	60	60	60	54	54	67	67	67	67
		fz	0.003	0.003	0.003	0.003	0.004	0.003	0.003	0.003	0.003	0.004	0.004	0.004	0.004	0.004	0.003	0.003	0.005	0.005	0.005	0.005
		n	30053	27048	27048	27048	28335	25502	25502	22668	22668	26639	26639	23975	23975	23975	21311	21311	21311	21311	21311	21311
		Vf	180	162	162	162	227	153	153	136	136	213	213	192	192	192	128	128	213	213	213	213
		Ap	0.022	0.019	0.017	0.017	0.028	0.022	0.020	0.020	0.017	0.029	0.029	0.026	0.026	0.022	0.022	0.019	0.040	0.040	0.036	0.036
	39.2	Vc	46	42	42	42	46	42	42	37	37	51	51	46	46	46	41	41	51	51	51	51
		fz	0.002	0.002	0.002	0.002	0.003	0.002	0.002	0.002	0.002	0.003	0.003	0.003	0.003	0.003	0.002	0.002	0.004	0.004	0.004	0.004
		n	24589	22130	22130	22130	21115	19004	19004	16892	16892	20491	20491	18442	18442	18442	16393	16393	16392	16392	16392	16392
		Vf	98	89	89	89	127	76	76	68	68	123	123	111	111	111	66	66	131	131	131	131
		Ap	0.022	0.019	0.017	0.017	0.028	0.022	0.020	0.020	0.017	0.029	0.029	0.026	0.026	0.022	0.022	0.019	0.040	0.040	0.036	0.036
	39.3	Vc	41	37	37	37	42	38	38	33	33	41	41	37	37	37	33	33	41	41	41	41
		fz	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.003	0.003	0.002	0.002	0.002	0.002	0.002	0.003	0.003	0.003	0.003
		n	21858	19672	19672	19672	18952	17057	17057	15162	15162	16392	16392	14753	14753	14753	13114	13114	13114	13114	13114	13114
		Vf	87	79	79	79	76	68	68	61	61	98	98	59	59	59	52	52	79	79	79	79
Ap		0.018	0.016	0.014	0.014	0.023	0.018	0.016	0.016	0.014	0.023	0.023	0.021	0.021	0.018	0.018	0.016	0.033	0.033	0.029	0.029	
40	Vc	88	79	79	79	93	84	84	74	74	103	103	93	93	93	82	82	124	124	124	124	
	fz	0.004	0.004	0.004	0.004	0.005	0.005	0.005	0.004	0.004	0.006	0.006	0.005	0.005	0.005	0.005	0.005	0.008	0.008	0.008	0.008	
	n	46447	41802	41802	41802	42230	38007	38007	33784	33784	40983	40983	36885	36885	36885	32786	32786	39343	39343	39343	39343	
	Vf	372	334	334	334	422	380	380	270	270	492	492	369	369	369	328	328	629	629	629	629	
	Ap	0.023	0.020	0.018	0.018	0.030	0.024	0.021	0.021	0.018	0.031	0.031	0.027	0.027	0.024	0.024	0.020	0.043	0.043	0.038	0.038	
41	Vc	77	70	70	70	77	69	69	62	62	77	77	70	70	70	62	62	82	82	82	82	
	fz	0.004	0.004	0.004	0.004	0.005	0.004	0.004	0.004	0.004	0.005	0.005	0.005	0.005	0.005	0.004	0.004	0.007	0.007	0.007	0.007	
	n	40983	36885	36885	36885	35020	31518	31518	28016	28016	30737	30737	27663	27663	27663	24590	24590	26229	26229	26229	26229	
	Vf	328	295	295	295	350	252	252	224	224	307	307	277	277	277	197	197	367	367	367	367	
	Ap	0.023	0.020	0.018	0.018	0.030	0.024	0.021	0.021	0.018	0.031	0.031	0.027	0.027	0.024	0.024	0.020	0.043	0.043	0.038	0.038	



Vc = m/min. n = giri/min.
fz = mm/dente Vf = mm/min

HPI88 SERIES

2 TAGLIANTI PER NERVATURE

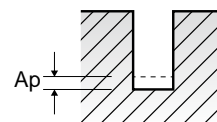
LBS: Lunghezza scarico

VDI 3323	Param.	Diametro (Ø)																				
		1	1	1	1	1	1	1	1	1	1	1	1.2	1.2	1.2	1.2	1.2	1.4	1.4	1.5	1.5	1.5
	LBS	6	7	8	9	10	12	14	16	18	20	22	6	8	10	12	16	6	12	4	6	8
5	Vc	139	139	139	139	139	124	124	93	93	93	46	170	153	153	153	136	185	167	196	196	176
	fz	0.009	0.009	0.009	0.009	0.009	0.008	0.008	0.007	0.007	0.007	0.006	0.011	0.009	0.009	0.009	0.008	0.011	0.010	0.011	0.011	0.010
	n	44260	44260	44260	44260	44260	39342	39342	29507	29507	29507	14753	45081	40573	40573	40573	36065	42154	37939	41581	41581	37423
	Vf	797	797	797	797	797	629	629	413	413	413	177	992	730	730	730	577	927	759	915	915	748
	Ap	0.040	0.040	0.040	0.035	0.035	0.035	0.030	0.030	0.025	0.025	0.025	0.020	0.054	0.048	0.042	0.042	0.036	0.063	0.049	0.075	0.068
8~9	Vc	139	139	139	139	139	124	124	93	93	93	46	170	153	153	153	136	185	167	196	196	176
	fz	0.009	0.009	0.009	0.009	0.009	0.008	0.008	0.007	0.007	0.007	0.006	0.011	0.009	0.009	0.009	0.008	0.011	0.010	0.011	0.011	0.010
	n	44260	44260	44260	44260	44260	39342	39342	29507	29507	29507	14753	45081	40573	40573	40573	36065	42154	37939	41581	41581	37423
	Vf	797	797	797	797	797	629	629	413	413	413	177	992	730	730	730	577	927	759	915	915	748
	Ap	0.040	0.040	0.040	0.035	0.035	0.035	0.030	0.030	0.025	0.025	0.020	0.054	0.048	0.042	0.042	0.036	0.063	0.049	0.075	0.068	0.060
11.1	Vc	139	139	139	139	139	124	124	93	93	93	46	170	153	153	153	136	185	167	196	196	176
	fz	0.009	0.009	0.009	0.009	0.009	0.008	0.008	0.007	0.007	0.007	0.006	0.011	0.009	0.009	0.009	0.008	0.011	0.010	0.011	0.011	0.010
	n	44260	44260	44260	44260	44260	39342	39342	29507	29507	29507	14753	45081	40573	40573	40573	36065	42154	37939	41581	41581	37423
	Vf	797	797	797	797	797	629	629	413	413	413	177	992	730	730	730	577	927	759	915	915	748
	Ap	0.040	0.040	0.040	0.035	0.035	0.035	0.030	0.030	0.025	0.025	0.020	0.054	0.048	0.042	0.042	0.036	0.063	0.049	0.075	0.068	0.060
11.2	Vc	111	111	111	111	111	99	99	74	74	74	37	139	125	125	125	111	144	130	154	154	139
	fz	0.007	0.007	0.007	0.007	0.007	0.006	0.006	0.006	0.006	0.006	0.005	0.009	0.008	0.008	0.008	0.007	0.010	0.009	0.010	0.010	0.009
	n	35409	35409	35409	35409	35409	31474	31474	23606	23606	23606	11803	36884	33196	33196	33196	29507	32786	29507	32754	32754	29479
	Vf	496	496	496	496	496	378	378	283	283	283	118	664	538	538	538	425	662	536	655	655	531
	Ap	0.034	0.034	0.034	0.030	0.030	0.030	0.026	0.026	0.021	0.021	0.017	0.046	0.041	0.036	0.036	0.031	0.054	0.042	0.064	0.057	0.051
38.1	Vc	111	111	111	111	111	99	99	74	74	74	37	139	125	125	125	111	144	130	154	154	139
	fz	0.007	0.007	0.007	0.007	0.007	0.006	0.006	0.006	0.006	0.006	0.005	0.009	0.008	0.008	0.008	0.007	0.010	0.009	0.010	0.010	0.009
	n	35409	35409	35409	35409	35409	31474	31474	23606	23606	23606	11803	36884	33196	33196	33196	29507	32786	29507	32754	32754	29479
	Vf	496	496	496	496	496	378	378	283	283	283	118	664	538	538	538	425	662	536	655	655	531
	Ap	0.034	0.034	0.034	0.030	0.030	0.030	0.026	0.026	0.021	0.021	0.017	0.046	0.041	0.036	0.036	0.031	0.054	0.042	0.064	0.057	0.051
38.2	Vc	74	74	74	74	74	66	66	49	49	49	25	93	83	83	83	74	98	88	103	103	93
	fz	0.006	0.006	0.006	0.006	0.006	0.006	0.006	0.005	0.005	0.005	0.004	0.008	0.007	0.007	0.007	0.006	0.009	0.008	0.009	0.009	0.008
	n	23606	23606	23606	23606	23606	20983	20983	15737	15737	15737	7869	24589	22130	22130	22130	19671	22248	20023	21939	21939	19745
	Vf	283	283	283	283	283	252	252	157	157	157	63	393	310	310	310	236	400	320	395	395	316
	Ap	0.034	0.034	0.034	0.030	0.030	0.030	0.026	0.026	0.021	0.021	0.017	0.046	0.041	0.036	0.036	0.031	0.054	0.042	0.064	0.057	0.051
39.1	Vc	60	60	60	60	60	54	54	40	40	40	20	75	68	68	68	60	77	70	83	83	74
	fz	0.005	0.005	0.005	0.005	0.005	0.004	0.004	0.004	0.004	0.004	0.003	0.006	0.005	0.005	0.005	0.005	0.007	0.006	0.007	0.007	0.006
	n	19180	19180	19180	19180	19180	17049	17049	12787	12787	12787	6393	19945	17951	17951	17951	15956	17564	15808	17510	17510	15759
	Vf	192	192	192	192	192	136	136	102	102	102	38	239	180	180	180	160	246	190	245	245	189
	Ap	0.032	0.032	0.032	0.028	0.028	0.028	0.024	0.024	0.020	0.020	0.016	0.043	0.038	0.034	0.034	0.029	0.050	0.039	0.060	0.054	0.048
39.2	Vc	46	46	46	46	46	41	41	31	31	31	15	57	51	51	51	45	60	54	62	62	56
	fz	0.004	0.004	0.004	0.004	0.004	0.003	0.003	0.003	0.003	0.003	0.002	0.005	0.005	0.005	0.005	0.004	0.005	0.005	0.006	0.006	0.005
	n	14753	14753	14753	14753	14753	13114	13114	9835	9835	9835	4918	15027	13524	13524	13524	12022	13583	12225	13184	13184	11866
	Vf	118	118	118	118	118	79	79	59	59	59	20	150	135	135	135	96	136	122	158	158	119
	Ap	0.032	0.032	0.032	0.028	0.028	0.028	0.024	0.024	0.020	0.020	0.016	0.043	0.038	0.034	0.034	0.029	0.050	0.039	0.060	0.054	0.048
39.3	Vc	37	37	37	37	37	33	33	25	25	25	12	46	42	42	42	37	49	44	52	52	47
	fz	0.003	0.003	0.003	0.003	0.003	0.003	0.003	0.002	0.002	0.002	0.002	0.004	0.004	0.004	0.004	0.003	0.005	0.004	0.005	0.005	0.004
	n	11803	11803	11803	11803	11803	10491	10491	7868	7868	7868	3934	12295	11066	11066	11066	9836	11241	10117	11021	11021	9919
	Vf	71	71	71	71	71	63	63	31	31	31	16	98	89	89	89	59	112	81	110	110	79
	Ap	0.026	0.026	0.026	0.023	0.023	0.023	0.020	0.020	0.016	0.016	0.013	0.035	0.031	0.027	0.027	0.023	0.041	0.032	0.049	0.044	0.039
40	Vc	111	111	111	111	111	99	99	74	74	74	37	139	125	125	125	111	144	130	154	154	139
	fz	0.007	0.007	0.007	0.007	0.007	0.006	0.006	0.006	0.006	0.006	0.005	0.009	0.008	0.008	0.008	0.007	0.010	0.009	0.010	0.010	0.009
	n	35409	35409	35409	35409	35409	31474	31474	23606	23606	23606	11803	36884	33196	33196	33196	29507	32786	29507	32754	32754	29479
	Vf	496	496	496	496	496	378	378	283	283	283	118	664	538	538	538	425	662	536	655	655	531
	Ap	0.034	0.034	0.034	0.030	0.030	0.030	0.026	0.026	0.021	0.021	0.017	0.046	0.041	0.036	0.036	0.031	0.054	0.042	0.064	0.057	0.051
41	Vc	74	74	74	74	74	66	66	49	49	49	25	93	83	83	83	74	98	88	103	103	93
	fz	0.006	0.006	0.006	0.006	0.006	0.006	0.006	0.005	0.005	0.005	0.004	0.008	0.007	0.007	0.007	0.006	0.009	0.008	0.009	0.009	0.008
	n	23606	23606	23606	23606	23606	20983	20983	15737	15737	15737	7869	24589	22130	22130	22130	19671	22248	20023	21939	21939	19745
	Vf	283	283	283	283	283	252	252	157	157	157	63	393	310	310	310	236	400	320	395	395	316
	Ap	0.034	0.034	0.034	0.030	0.030	0.030	0.026	0.026	0.021	0.021	0.017	0.046	0.041	0.036	0.036	0.031	0.054	0.042	0.064	0.057	0.051

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HPI88 SERIES

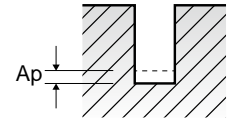
2 TAGLIENTI PER NERVATURE



Vc = m/min. n = giri/min.
fz = mm/dente Vf = mm/min

LBS: Lunghezza scarico

ISO	VDI 3323	Param. LBS	Diametro (Ø)																				
			1.5 10	1.5 12	1.5 14	1.5 16	1.5 18	1.5 20	1.5 25	1.5 30	1.5 35	1.6 6	1.6 8	1.8 6	1.8 8	1.8 10	1.8 12	1.8 14	1.8 16	1.8 18	2 4	2 6	
P	5	Vc	176	176	176	157	157	157	118	118	59	201	201	226	226	203	203	203	203	203	203	216	216
		fz	0.010	0.010	0.010	0.009	0.009	0.009	0.008	0.008	0.007	0.012	0.012	0.012	0.012	0.010	0.010	0.010	0.010	0.010	0.010	0.013	0.013
		n	37423	37423	37423	33265	33265	33265	24949	24949	12474	39958	39958	39958	39958	35962	35962	35962	35962	35962	35962	34426	34426
		Vf	748	748	748	599	599	599	399	399	175	959	959	959	959	719	719	719	719	719	719	895	895
	Ap	0.060	0.060	0.053	0.053	0.053	0.045	0.038	0.038	0.030	0.072	0.072	0.081	0.081	0.072	0.072	0.072	0.072	0.063	0.063	0.100	0.100	
	8~9	Vc	176	176	176	157	157	157	118	118	59	201	201	226	226	203	203	203	203	203	203	216	216
		fz	0.010	0.010	0.010	0.009	0.009	0.009	0.008	0.008	0.007	0.012	0.012	0.012	0.012	0.010	0.010	0.010	0.010	0.010	0.010	0.013	0.013
		n	37423	37423	37423	33265	33265	33265	24949	24949	12474	39958	39958	39958	39958	35962	35962	35962	35962	35962	35962	34426	34426
		Vf	748	748	748	599	599	599	399	399	175	959	959	959	959	719	719	719	719	719	719	895	895
	11.1	Vc	176	176	176	157	157	157	118	118	59	201	201	226	226	203	203	203	203	203	203	216	216
		fz	0.010	0.010	0.010	0.009	0.009	0.009	0.008	0.008	0.007	0.012	0.012	0.012	0.012	0.010	0.010	0.010	0.010	0.010	0.010	0.013	0.013
		n	37423	37423	37423	33265	33265	33265	24949	24949	12474	39958	39958	39958	39958	35962	35962	35962	35962	35962	35962	34426	34426
		Vf	748	748	748	599	599	599	399	399	175	959	959	959	959	719	719	719	719	719	719	895	895
	11.2	Vc	139	139	139	123	123	123	93	93	46	161	161	181	181	163	163	163	163	163	163	170	170
		fz	0.009	0.009	0.009	0.008	0.008	0.008	0.007	0.007	0.006	0.010	0.010	0.010	0.010	0.009	0.009	0.009	0.009	0.009	0.009	0.013	0.013
		n	29479	29479	29479	26203	26203	26203	19652	19652	9826	31966	31966	31966	31966	28769	28769	28769	28769	28769	28769	27049	27049
Vf		531	531	531	419	419	419	275	275	118	639	639	639	639	518	518	518	518	518	518	703	703	
H	38.1	Vc	139	139	139	123	123	123	93	93	46	161	161	181	181	163	163	163	163	163	163	170	170
		fz	0.009	0.009	0.009	0.008	0.008	0.008	0.007	0.007	0.006	0.010	0.010	0.010	0.010	0.009	0.009	0.009	0.009	0.009	0.009	0.013	0.013
		n	29479	29479	29479	26203	26203	26203	19652	19652	9826	31966	31966	31966	31966	28769	28769	28769	28769	28769	28769	27049	27049
		Vf	531	531	531	419	419	419	275	275	118	639	639	639	639	518	518	518	518	518	518	703	703
	38.2	Vc	93	93	93	83	83	83	62	62	31	106	106	119	119	107	107	107	107	107	107	113	113
		fz	0.008	0.008	0.008	0.007	0.007	0.007	0.006	0.006	0.005	0.010	0.010	0.010	0.010	0.009	0.009	0.009	0.009	0.009	0.009	0.012	0.012
		n	19745	19745	19745	17551	17551	17551	13163	13163	6582	21106	21106	21106	21106	18995	18995	18995	18995	18995	18995	18032	18032
		Vf	316	316	316	246	246	246	158	158	66	422	422	422	422	342	342	342	342	342	342	433	433
	39.1	Vc	74	74	74	66	66	66	50	50	25	85	85	96	96	87	87	87	87	87	87	93	93
		fz	0.006	0.006	0.006	0.005	0.005	0.005	0.005	0.005	0.004	0.007	0.007	0.007	0.007	0.006	0.006	0.006	0.006	0.006	0.006	0.009	0.009
		n	15759	15759	15759	14008	14008	14008	10506	10506	5253	17007	17007	17007	17007	15306	15306	15306	15306	15306	15306	14754	14754
		Vf	189	189	189	140	140	140	105	105	42	238	238	238	238	184	184	184	184	184	184	266	266
	39.2	Vc	56	56	56	50	50	50	37	37	19	65	65	73	73	66	66	66	66	66	66	72	72
		fz	0.005	0.005	0.005	0.004	0.004	0.004	0.004	0.004	0.003	0.006	0.006	0.006	0.006	0.005	0.005	0.005	0.005	0.005	0.005	0.007	0.007
		n	11866	11866	11866	10547	10547	10547	7910	7910	3955	12910	12910	12910	12910	11619	11619	11619	11619	11619	11619	11475	11475
		Vf	119	119	119	84	84	84	63	63	24	155	155	155	155	116	116	116	116	116	116	161	161
39.3	Vc	47	47	47	42	42	42	31	31	16	55	55	61	61	55	55	55	55	55	55	62	62	
	fz	0.004	0.004	0.004	0.004	0.004	0.004	0.003	0.003	0.003	0.005	0.005	0.005	0.005	0.004	0.004	0.004	0.004	0.004	0.004	0.006	0.006	
	n	9919	9919	9919	8817	8817	8817	6613	6613	3306	10860	10860	10860	10860	9774	9774	9774	9774	9774	9774	9835	9835	
	Vf	79	79	79	71	71	71	40	40	20	109	109	109	109	78	78	78	78	78	78	118	118	
40	Vc	139	139	139	123	123	123	93	93	46	161	161	181	181	163	163	163	163	163	163	170	170	
	fz	0.009	0.009	0.009	0.008	0.008	0.008	0.007	0.007	0.006	0.010	0.010	0.010	0.010	0.009	0.009	0.009	0.009	0.009	0.009	0.013	0.013	
	n	29479	29479	29479	26203	26203	26203	19652	19652	9826	31966	31966	31966	31966	28769	28769	28769	28769	28769	28769	27049	27049	
	Vf	531	531	531	419	419	419	275	275	118	639	639	639	639	518	518	518	518	518	518	703	703	
41	Vc	93	93	93	83	83	83	62	62	31	106	106	119	119	107	107	107	107	107	107	113	113	
	fz	0.008	0.008	0.008	0.007	0.007	0.007	0.006	0.006	0.005	0.010	0.010	0.010	0.010	0.009	0.009	0.009	0.009	0.009	0.009	0.012	0.012	
	n	19745	19745	19745	17551	17551	17551	13163	13163	6582	21106	21106	21106	21106	18995	18995	18995	18995	18995	18995	18032	18032	
	Vf	316	316	316	246	246	246	158	158	66	422	422	422	422	342	342	342	342	342	342	433	433	
41	Vc	93	93	93	83	83	83	62	62	31	106	106	119	119	107	107	107	107	107	107	113	113	
	fz	0.008	0.008	0.008	0.007	0.007	0.007	0.006	0.006	0.005	0.010	0.010	0.010	0.010	0.009	0.009	0.009	0.009	0.009	0.009	0.012	0.012	
	n	19745	19745	19745	17551	17551	17551	13163	13163	6582	21106	21106	21106	21106	18995	18995	18995	18995	18995	18995	18032	18032	
	Vf	316	316	316	246	246	246	158	158	66	422	422	422	422	342	342	342	342	342	342	433	433	



Vc = m/min. n = giri/min.
fz = mm/dente Vf = mm/min

HPI88 SERIES

2 TAGLIANTI PER NERVATURE

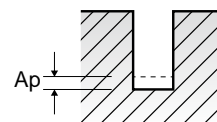
LBS: Lunghezza scarico

VDI 3323	Param.	Diametro (Ø)																				
		2	2	2	2	2	2	2	2	2	2	2	2	2.5	2.5	2.5	2.5	2.5	2.5	3	3	
	LBS	8	10	12	14	16	18	20	25	30	35	40	50	8	12	16	20	30	40	50	8	12
5	Vc	216	216	195	195	195	195	195	173	173	130	130	65	217	217	195	195	173	130	130	211	211
	fz	0.013	0.013	0.012	0.012	0.012	0.012	0.012	0.010	0.010	0.009	0.009	0.008	0.016	0.016	0.014	0.014	0.013	0.011	0.011	0.019	0.019
	n	34426	34426	30983	30983	30983	30983	30983	27541	27541	20656	20656	10328	27604	27604	24844	24844	22083	16562	16562	22404	22404
	Vf	895	895	744	744	744	744	744	551	551	372	372	165	883	883	696	696	574	364	364	851	851
	Ap	0.090	0.090	0.080	0.080	0.080	0.070	0.070	0.070	0.060	0.050	0.050	0.040	0.113	0.113	0.100	0.100	0.088	0.075	0.063	0.150	0.135
8~9	Vc	216	216	195	195	195	195	195	173	173	130	130	65	217	217	195	195	173	130	130	211	211
	fz	0.013	0.013	0.012	0.012	0.012	0.012	0.012	0.010	0.010	0.009	0.009	0.008	0.016	0.016	0.014	0.014	0.013	0.011	0.011	0.019	0.019
	n	34426	34426	30983	30983	30983	30983	30983	27541	27541	20656	20656	10328	27604	27604	24844	24844	22083	16562	16562	22404	22404
	Vf	895	895	744	744	744	744	744	551	551	372	372	165	883	883	696	696	574	364	364	851	851
	Ap	0.090	0.090	0.080	0.080	0.080	0.070	0.070	0.070	0.060	0.050	0.050	0.040	0.113	0.113	0.100	0.100	0.088	0.075	0.063	0.150	0.135
11.1	Vc	216	216	195	195	195	195	195	173	173	130	130	65	217	217	195	195	173	130	130	211	211
	fz	0.013	0.013	0.012	0.012	0.012	0.012	0.012	0.010	0.010	0.009	0.009	0.008	0.016	0.016	0.014	0.014	0.013	0.011	0.011	0.019	0.019
	n	34426	34426	30983	30983	30983	30983	30983	27541	27541	20656	20656	10328	27604	27604	24844	24844	22083	16562	16562	22404	22404
	Vf	895	895	744	744	744	744	744	551	551	372	372	165	883	883	696	696	574	364	364	851	851
	Ap	0.090	0.090	0.080	0.080	0.080	0.070	0.070	0.070	0.060	0.050	0.050	0.040	0.113	0.113	0.100	0.100	0.088	0.075	0.063	0.150	0.135
11.2	Vc	170	170	153	153	153	153	136	136	102	102	51	170	170	153	153	136	102	102	170	170	
	fz	0.013	0.013	0.012	0.012	0.012	0.012	0.010	0.010	0.009	0.009	0.008	0.017	0.017	0.015	0.015	0.013	0.012	0.012	0.020	0.020	
	n	27049	27049	24344	24344	24344	24344	21639	21639	16229	16229	8115	21630	21630	19467	19467	17304	12978	12978	18032	18032	
	Vf	703	703	584	584	584	584	433	433	292	292	130	735	735	584	584	450	311	311	721	721	
	Ap	0.077	0.077	0.068	0.068	0.068	0.060	0.060	0.060	0.051	0.043	0.043	0.034	0.096	0.096	0.085	0.085	0.074	0.064	0.053	0.128	0.115
38.1	Vc	170	170	153	153	153	153	136	136	102	102	51	170	170	153	153	136	102	102	170	170	
	fz	0.013	0.013	0.012	0.012	0.012	0.012	0.010	0.010	0.009	0.009	0.008	0.017	0.017	0.015	0.015	0.013	0.012	0.012	0.020	0.020	
	n	27049	27049	24344	24344	24344	24344	21639	21639	16229	16229	8115	21630	21630	19467	19467	17304	12978	12978	18032	18032	
	Vf	703	703	584	584	584	584	433	433	292	292	130	735	735	584	584	450	311	311	721	721	
	Ap	0.077	0.077	0.068	0.068	0.068	0.060	0.060	0.060	0.051	0.043	0.043	0.034	0.096	0.096	0.085	0.085	0.074	0.064	0.053	0.128	0.115
38.2	Vc	113	113	102	102	102	102	91	91	68	68	34	113	113	102	102	91	68	68	113	113	
	fz	0.012	0.012	0.011	0.011	0.011	0.011	0.010	0.010	0.008	0.008	0.007	0.015	0.015	0.014	0.014	0.012	0.011	0.011	0.018	0.018	
	n	18032	18032	16229	16229	16229	16229	14426	14426	10819	10819	5410	14420	14420	12978	12978	11536	8652	8652	12021	12021	
	Vf	433	433	357	357	357	357	289	289	173	173	76	433	433	363	363	277	190	190	433	433	
	Ap	0.077	0.077	0.068	0.068	0.068	0.060	0.060	0.060	0.051	0.043	0.043	0.034	0.096	0.096	0.085	0.085	0.074	0.064	0.053	0.128	0.115
39.1	Vc	93	93	83	83	83	83	74	74	56	56	28	93	93	84	84	74	56	56	93	93	
	fz	0.009	0.009	0.008	0.008	0.008	0.008	0.007	0.007	0.006	0.006	0.005	0.011	0.011	0.010	0.010	0.009	0.008	0.008	0.014	0.014	
	n	14754	14754	13279	13279	13279	13279	11803	11803	8852	8852	4426	11845	11845	10661	10661	9476	7107	7107	9835	9835	
	Vf	266	266	212	212	212	212	165	165	106	106	44	261	261	213	213	171	114	114	275	275	
	Ap	0.072	0.072	0.064	0.064	0.064	0.056	0.056	0.056	0.048	0.040	0.040	0.032	0.090	0.090	0.080	0.080	0.070	0.060	0.050	0.120	0.108
39.2	Vc	72	72	65	65	65	65	58	58	43	43	22	72	72	65	65	58	43	43	72	72	
	fz	0.007	0.007	0.006	0.006	0.006	0.006	0.006	0.006	0.005	0.005	0.004	0.009	0.009	0.008	0.008	0.007	0.006	0.006	0.011	0.011	
	n	11475	11475	10328	10328	10328	10328	9180	9180	6885	6885	3443	9167	9167	8250	8250	7334	5500	5500	7650	7650	
	Vf	161	161	124	124	124	124	110	110	69	69	28	165	165	132	132	103	66	66	168	168	
	Ap	0.072	0.072	0.064	0.064	0.064	0.056	0.056	0.056	0.048	0.040	0.040	0.032	0.090	0.090	0.080	0.080	0.070	0.060	0.050	0.120	0.108
39.3	Vc	62	62	56	56	56	56	49	49	37	37	19	62	62	56	56	50	37	37	62	62	
	fz	0.006	0.006	0.005	0.005	0.005	0.005	0.005	0.005	0.004	0.004	0.004	0.008	0.008	0.007	0.007	0.006	0.005	0.005	0.009	0.009	
	n	9835	9835	8852	8852	8852	8852	7868	7868	5901	5901	2951	7931	7931	7138	7138	6345	4759	4759	6557	6557	
	Vf	118	118	89	89	89	89	79	79	47	47	24	127	127	100	100	76	48	48	118	118	
	Ap	0.059	0.059	0.052	0.052	0.052	0.046	0.046	0.046	0.039	0.033	0.033	0.026	0.073	0.073	0.065	0.065	0.057	0.049	0.041	0.098	0.088
40	Vc	170	170	153	153	153	153	136	136	102	102	51	170	170	153	153	136	102	102	170	170	
	fz	0.013	0.013	0.012	0.012	0.012	0.012	0.010	0.010	0.009	0.009	0.008	0.017	0.017	0.015	0.015	0.013	0.012	0.012	0.020	0.020	
	n	27049	27049	24344	24344	24344	24344	21639	21639	16229	16229	8115	21630	21630	19467	19467	17304	12978	12978	18032	18032	
	Vf	703	703	584	584	584	584	433	433	292	292	130	735	735	584	584	450	311	311	721	721	
	Ap	0.077	0.077	0.068	0.068	0.068	0.060	0.060	0.060	0.051	0.043	0.043	0.034	0.096	0.096	0.085	0.085	0.074	0.064	0.053	0.128	0.115
41	Vc	113	113	102	102	102	102	91	91	68	68	34	113	113	102	102	91	68	68	113	113	
	fz	0.012	0.012	0.011	0.011	0.011	0.011	0.010	0.010	0.008	0.008	0.007	0.015	0.015	0.014	0.014	0.012	0.011	0.011	0.018	0.018	
	n	18032	18032	16229	16229	16229	16229	14426	14426	10819	10819	5410	14420	14420	12978	12978	11536	8652	8652	12021	12021	
	Vf	433	433	357	357	357	357	289	289	173	173	76	433	433	363	363	277	190	190	433	433	
	Ap	0.077	0.077	0.068	0.068	0.068	0.060	0.060	0.060	0.051	0.043	0.043	0.034	0.096	0.096	0.085	0.085	0.074	0.064	0.053	0.128	0.115

SEGUE ►

HPI88 SERIES

2 TAGLIANTI PER NERVATURE



Vc = m/min. n = giri/min.
fz = mm/dente Vf = mm/min

LBS: Lunghezza scarico

ISO	VDI 3323	Param. LBS	Diametro (Ø)																	
			3	3	3	3	4	4	4	4	4	4	5	5	5	5	6	6	6	6
P	5	Vc	190	190	190	190	216	216	216	195	195	173	252	227	227	227	252	252	227	227
		fz	0.017	0.017	0.017	0.017	0.026	0.026	0.026	0.023	0.023	0.021	0.032	0.029	0.029	0.029	0.036	0.036	0.032	0.032
		n	20164	20164	20164	20164	17212	17212	17212	15491	15491	13770	16065	14459	14459	14459	13388	13388	12049	12049
		Vf	686	686	686	686	895	895	895	713	713	578	1028	839	839	839	964	964	771	771
		Ap	0.120	0.120	0.105	0.105	0.200	0.180	0.180	0.160	0.140	0.140	0.225	0.200	0.200	0.175	0.270	0.270	0.240	0.210
	8~9	Vc	190	190	190	190	216	216	216	195	195	173	252	227	227	227	252	252	227	227
		fz	0.017	0.017	0.017	0.017	0.026	0.026	0.026	0.023	0.023	0.021	0.032	0.029	0.029	0.029	0.036	0.036	0.032	0.032
		n	20164	20164	20164	20164	17212	17212	17212	15491	15491	13770	16065	14459	14459	14459	13388	13388	12049	12049
		Vf	686	686	686	686	895	895	895	713	713	578	1028	839	839	839	964	964	771	771
		Ap	0.120	0.120	0.105	0.105	0.200	0.180	0.180	0.160	0.140	0.140	0.225	0.200	0.200	0.175	0.270	0.270	0.240	0.210
	11.1	Vc	190	190	190	190	216	216	216	195	195	173	252	227	227	227	252	252	227	227
		fz	0.017	0.017	0.017	0.017	0.026	0.026	0.026	0.023	0.023	0.021	0.032	0.029	0.029	0.029	0.036	0.036	0.032	0.032
		n	20164	20164	20164	20164	17212	17212	17212	15491	15491	13770	16065	14459	14459	14459	13388	13388	12049	12049
		Vf	686	686	686	686	895	895	895	713	713	578	1028	839	839	839	964	964	771	771
		Ap	0.120	0.120	0.105	0.105	0.200	0.180	0.180	0.160	0.140	0.140	0.225	0.200	0.200	0.175	0.270	0.270	0.240	0.210
	11.2	Vc	153	153	153	153	170	170	170	153	153	136	201	181	181	181	201	201	181	181
fz		0.018	0.018	0.018	0.018	0.027	0.027	0.027	0.024	0.024	0.022	0.032	0.029	0.029	0.029	0.037	0.037	0.033	0.033	
n		16229	16229	16229	16229	13524	13524	13524	12172	12172	10819	12786	11507	11507	11507	10655	10655	9590	9590	
Vf		584	584	584	584	730	730	730	584	584	476	818	667	667	667	788	788	633	633	
Ap		0.102	0.102	0.089	0.089	0.170	0.153	0.153	0.136	0.119	0.119	0.191	0.170	0.170	0.149	0.230	0.230	0.204	0.179	
H	38.1	Vc	153	153	153	153	170	170	170	153	153	136	201	181	181	181	201	201	181	181
		fz	0.018	0.018	0.018	0.018	0.027	0.027	0.027	0.024	0.024	0.022	0.032	0.029	0.029	0.029	0.037	0.037	0.033	0.033
		n	16229	16229	16229	16229	13524	13524	13524	12172	12172	10819	12786	11507	11507	11507	10655	10655	9590	9590
		Vf	584	584	584	584	730	730	730	584	584	476	818	667	667	667	788	788	633	633
		Ap	0.102	0.102	0.089	0.089	0.170	0.153	0.153	0.136	0.119	0.119	0.191	0.170	0.170	0.149	0.230	0.230	0.204	0.179
	38.2	Vc	102	102	102	102	113	113	113	102	102	91	134	121	121	121	134	134	121	121
		fz	0.016	0.016	0.016	0.016	0.025	0.025	0.025	0.023	0.023	0.020	0.030	0.027	0.027	0.027	0.035	0.035	0.032	0.032
		n	10819	10819	10819	10819	9017	9017	9017	8115	8115	7214	8524	7672	7672	7672	7104	7104	6394	6394
		Vf	346	346	346	346	451	451	451	373	373	289	511	414	414	414	497	497	409	409
		Ap	0.102	0.102	0.089	0.089	0.170	0.153	0.153	0.136	0.119	0.119	0.191	0.170	0.170	0.149	0.230	0.230	0.204	0.179
	39.1	Vc	83	83	83	83	93	93	93	83	83	74	103	93	93	93	103	103	93	93
		fz	0.013	0.013	0.013	0.013	0.019	0.019	0.019	0.017	0.017	0.015	0.022	0.020	0.020	0.020	0.026	0.026	0.023	0.023
		n	8852	8852	8852	8852	7377	7377	7377	6639	6639	5902	6557	5901	5901	5901	5464	5464	4918	4918
		Vf	230	230	230	230	280	280	280	226	226	177	289	236	236	236	284	284	226	226
		Ap	0.096	0.096	0.084	0.084	0.160	0.144	0.144	0.128	0.112	0.112	0.180	0.160	0.160	0.140	0.216	0.216	0.192	0.168
	39.2	Vc	65	65	65	65	72	72	72	65	65	58	82	74	74	74	82	82	74	74
		fz	0.010	0.010	0.010	0.010	0.015	0.015	0.015	0.014	0.014	0.012	0.018	0.016	0.016	0.016	0.021	0.021	0.019	0.019
		n	6885	6885	6885	6885	5737	5737	5737	5163	5163	4590	5246	4721	4721	4721	4371	4371	3934	3934
		Vf	138	138	138	138	172	172	172	145	145	110	189	151	151	151	184	184	149	149
		Ap	0.096	0.096	0.084	0.084	0.160	0.144	0.144	0.128	0.112	0.112	0.180	0.160	0.160	0.140	0.216	0.216	0.192	0.168
	39.3	Vc	56	56	56	56	62	62	62	56	56	49	72	65	65	65	72	72	65	65
		fz	0.008	0.008	0.008	0.008	0.012	0.012	0.012	0.011	0.011	0.010	0.015	0.013	0.013	0.013	0.018	0.018	0.016	0.016
		n	5901	5901	5901	5901	4918	4918	4918	4426	4426	3934	4590	4131	4131	4131	3825	3825	3443	3443
		Vf	94	94	94	94	118	118	118	97	97	79	138	107	107	107	138	138	110	110
Ap		0.078	0.078	0.068	0.068	0.130	0.117	0.117	0.104	0.091	0.091	0.146	0.130	0.130	0.114	0.176	0.176	0.156	0.137	
40	Vc	153	153	153	153	170	170	170	153	153	136	201	181	181	181	201	201	181	181	
	fz	0.018	0.018	0.018	0.018	0.027	0.027	0.027	0.024	0.024	0.022	0.032	0.029	0.029	0.029	0.037	0.037	0.033	0.033	
	n	16229	16229	16229	16229	13524	13524	13524	12172	12172	10819	12786	11507	11507	11507	10655	10655	9590	9590	
	Vf	584	584	584	584	730	730	730	584	584	476	818	667	667	667	788	788	633	633	
	Ap	0.102	0.102	0.089	0.089	0.170	0.153	0.153	0.136	0.119	0.119	0.191	0.170	0.170	0.149	0.230	0.230	0.204	0.179	
41	Vc	102	102	102	102	113	113	113	102	102	91	134	121	121	121	134	134	121	121	
	fz	0.016	0.016	0.016	0.016	0.025	0.025	0.025	0.023	0.023	0.020	0.030	0.027	0.027	0.027	0.035	0.035	0.032	0.032	
	n	10819	10819	10819	10819	9017	9017	9017	8115	8115	7214	8524	7672	7672	7672	7104	7104	6394	6394	
	Vf	346	346	346	346	451	451	451	373	373	289	511	414	414	414	497	497	409	409	
	Ap	0.102	0.102	0.089	0.089	0.170	0.153	0.153	0.136	0.119	0.119	0.191	0.170	0.170	0.149	0.230	0.230	0.204	0.179	



MEMO

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MEMO

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Qualità, Innovazione e Customer Care sono le parole d'ordine della YG-1 fin dal 1982. I risultati raggiunti e l'esperienza maturata sul campo hanno permesso all'azienda di diventare un leader nella produzione di utensili da taglio.



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