



SVILUPPATO
& PROGETTATO



IN ITALIA

ELLIPSE C400

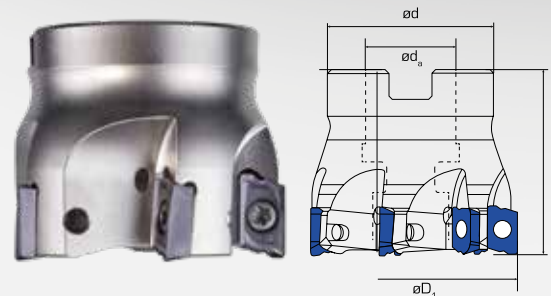
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2019.3 IT-ENG

C400A / ATTACCO A MANICOTTO / FACE MILL TYPE A

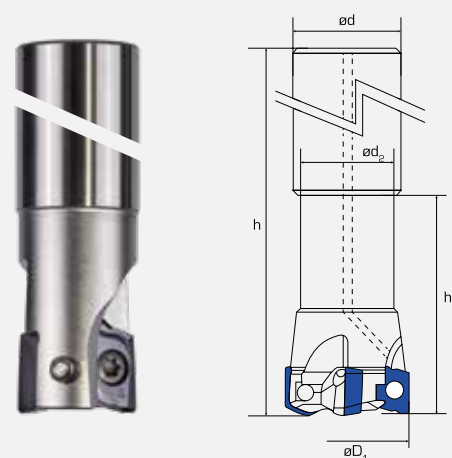
Cod.	$\varnothing D_1$	h	$\varnothing d$	$\varnothing d_2$	z
C400A-40R04-12	40	40	38	16	4
C400A-50R05-12	50	40	41	22	5
C400A-63R06-12	63	40	48	22	6
C400A-80R07-12	80	50	58	27	7
C400A-100R09-12	100	50	78	32	9
C400A-125R10-12	125	63	88	40	10



Esempio d'ordine How to order
C400A-80R07-12

C400C / ATTACCO CILINDRICO / ENDMILL TYPE C

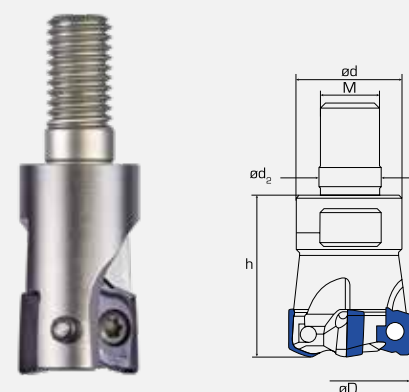
Cod.	$\varnothing D_1$	h	$\varnothing d$	$\varnothing d_2$	h_1	z
C400C-20R02-12	20	200	20	18	32	2
C400C-25R03-12	25	200	25	23	40	3
C400C-32R04-12	32	250	32	30	50	4



Esempio d'ordine How to order
C400C-25R03-12

C400G / ATTACCO FILETTATO / THREAD CUTTER TYPE G

Cod.	$\varnothing D_1$	h	$\varnothing d$	$\varnothing d_2$	M	z
C400G-20R02-12	20	30	18	10,5	10	2
C400G-25R03-12	25	35	21	12,5	12	3
C400G-32R04-12	32	40	29	17	16	4



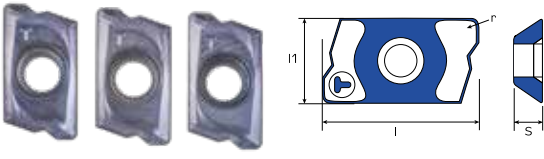
Esempio d'ordine How to order
C400G-20R02-12

PARTI DI RICAMBIO SPARE PARTS

FORZA SERRAGGIO /TIGHTENING FORCE 3,2 Nm

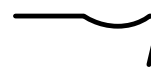
Cod.	$\varnothing D_1$	l	N_m	Tx plus	M
VT0350670	20-32	6,7	3,2	15	3,5
VT0350720	40-125	7,2	3,2	15	3,5

XDHT / XDMT

					P	H	M	K	S
Cod.	l	s	r	l ₁	Acciai Steel	Acciai Temprati Hardened Steel	Acciai Inox Stainless Steel	Ghise Cast Iron	Super Leghe Heat Resistant Alloys
XDHT-120408 PDER-ST	14,6	4,7	0,8	8	● PP35				
XDHT-120408 PDER-HT	14,6	4,7	0,8	8	● PP35				
XDHT-120408 PDER-ST	14,6	4,7	0,8	8			● PM40		
XDHT-120408 PDER-XT	14,6	4,7	0,8	8			● C540		● C540
XDMT-120408 PDER-HT	14,6	4,7	0,8	8	● PP35				

 **Esempio d'ordine** How to order
XDHT-120408 PDER-HT PP35

GEOMETRIA / GEOMETRY

HT		ST		XT	
					
P	Acciai Steel	P	Acciai Steel	S	Super Leghe Heat Res. Alloys
		M	Acciai Inox Stainless Steel	M	Acciai Inox Stainless Steel

QUALITÀ MD / GRADE DESIGNATION

Qualità Grade	Dim. Grano Grain Size	Rivestimento Coating	Hv 30	Utilizzo Use		Tenacità Toughness	Res. Usura Wear Resistance	Impiego Type of Use
				Umido Wet	Secco Dry	Scala da 1 a 10 Standard from 1 to 10		
PP 35	1-2 μ		1400	✓	✓	8	7	ACCIAI STEEL
PM 40	1 μ		1380	✓	✓	9	8	ACCIAI INOSSIDABILI STAINLESS STEEL
C 540	2 μ		1330	✓	✓	7	7	TITANIO E LEGHE RESISTENTI AL CALORE TITANIUM AND HEAT RESISTANT ALLOYS

PARAMETRI DI LAVORO CUTTING DATA



Materiale Material			Resistenza Mechanical Strength (N/mm²)	GR	PP35 / P135		PM40 / P235		P615		C535		C540	
					Secco Dry	Emulsione Wet	Secco Dry	Emulsione Wet	Secco Dry	Emulsione Wet	Secco Dry	Emulsione Wet	Secco Dry	Emulsione Wet
					V _c (m/min)		V _c (m/min)		V _c (m/min)		V _c (m/min)		V _c (m/min)	
P	Acciaï Steel	Non Legati Non-Alloy	600-800	1-2-3	300 / 160	190 / 140								
		Basso Legati Low-Alloy	800-1000	4-5-6	250 / 120	150 / 100								
		Medio Legati Medium-Alloy	1000-1200	7-9	200 / 100	140 / 80								
		Alto Legati High-Alloy	1200-1300	10	180 / 100	160 / 80								
			1400-1500	11	120 / 80	100 / 60			160 / 80					
M	Acciaï Inox Stainless Steel	Martensitico Martensitic	700-800	12			300 / 150	180 / 120						
		Austenitico Austenitic	600-700	13			250 / 130	150 / 110					250 / 140	140 / 80
		Inox Duplex Duplex	800-900	14			140 / 80				250 / 140		250 / 140	140 / 80
		Inox Super Duplex Super Duplex	900-1100	14.1			110 / 60				200 / 120		200 / 100	
S	Super Leghe Heat Res. Alloys	Fe	600-900	31-32							85 / 45		80 / 45	
		Ni-Co	900-1000	34-35									70 / 45	
			1200	36									40 / 20	
		Leghe Titanio Titanium Alloy	α-β	37									85 / 60	
H	Acciaï Temprati Hardened Steel		45-50 Hrc	38					200 / 150					
			50-55 Hrc	39					150 / 100					
			> 55 Hrc	40					80 / 60					
K	Ghise Cast Iron		≤ 200 HB	15					250 / 150					

Nome Name		GR	DIN	UNI	AISI /ASTM	N° Materiale N° Material	Note Notes
P	C 15	1	C 15	C 15		1.0401	
	Fe 37	1	ST 37-2	Fe 37		1.0038	
	15 CrMo5	6		15 CrMo5		1.7262	
	C45	3	C45	C45		1.0503	
	38NCD5	9		40NiCrMo6		1.6565	Bonificato /Hardened and Tempered Steel
	1.2162	6					
	1.2311	9	40 CrMgMo 7	40 CrMgMo 7		1.2311	Bonificato /Hardened and Tempered Steel
	1.2312	9					
	1.2714	9					
	1.2738	9		40 CrMnNi Mo 8 6 1		1.2738	
	1.2738 HH	11				1.2738 HH	Bonificato /Hardened and Tempered Steel
	1.2343	11				1.2343	
	1.2344	11					
	HP1	11					

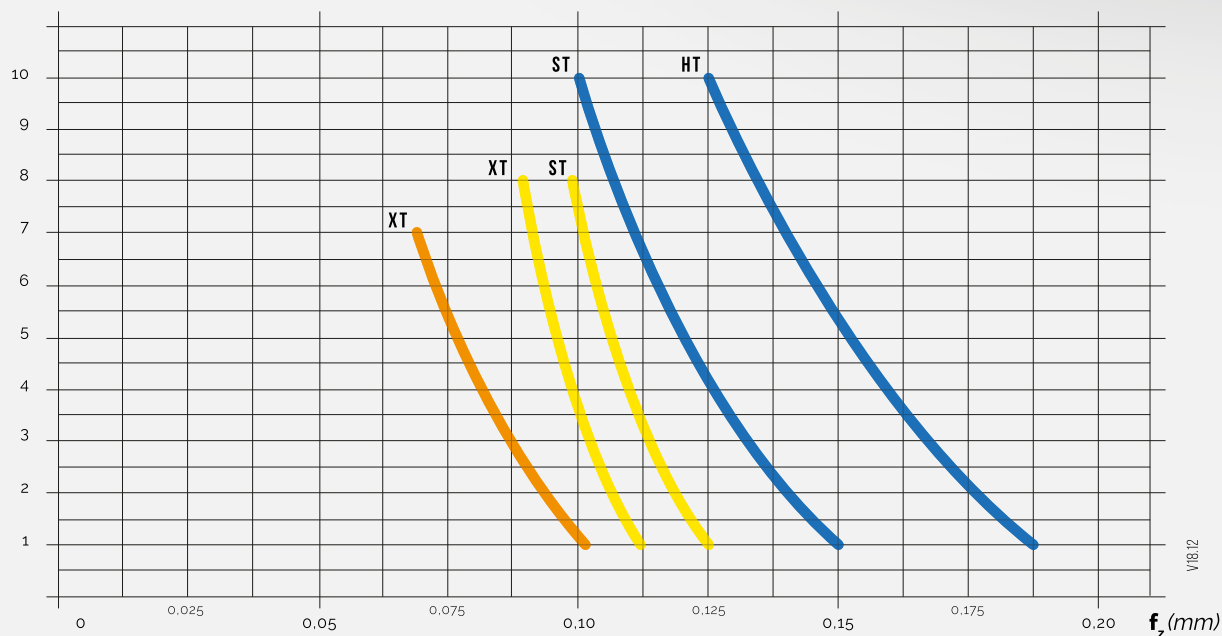


	Nome Name	GR	DIN	UNI	AISI /ASTM	N° Materiale N° Material	Note Notes
P	1.2083 STAVAX	11	X 40 Cr 13		420		
	ELMAX	11					
	1.2085	11	X 33 CrS 16		422		
	1.2365	11					
	1.2367	11					
	100Cr 6	9		100Cr6		1.2067	Bonificato Hardened and Tempered Steel
	36 CrNiMo4	9		36 CrNiMo4		1.6511	
	42 CrMo4	10		42 CrMo4		1.7225	
	38 NiCrMo4	10		38 NiCrMo		1.6511	
	21 NiCrMo2	9		21 NiCrMo2		1.6523	Bonificato /Hardened and Tempered Steel
	Hardox 450	11					
	X100CrMoV5 1	11		X100CrMoV5 1		1.2363	Bonificato Hardened and Tempered Steel
	NIMAX	9				1.2738 / P20	
	DAC MAGIC	9					
	W 300	11				1.2343	
	IMPAX	11					
	1.2080	10					
	K100	10					
	K110	10				1.2379	
	K720	11				1.2842	
	K390	11					
	K890	11					
M	M4- HSS	11			M4		
	AISI 304	13		X 5Cr Ni 18 10	630	1.4301	
	304LN	14		XCrNiN	304LN	1.4311	
	AISI 316L	13		X 2 Cr Ni Mo 17 12 2	316L	1.4404	
	FA6	13					
	AISI 420	12		X 30Cr 13	420	1.4028	
	AISI 904L	13		X1NiCrMoCu25 20 5	904L	1.4539	
	17-4PH	14					
	15-5PH	14					
	F53	14.1		X 2 Cr Ni Mo 25 7 4	F53	1.4410	
	F51	14					
	F44	14.1					
	F55	14.1					
S	NIMONIC 80 A	34				2.4631	
	HASTELLOY C22	36					
	MONEL K500	34				2.4375	
	INCONEL 625	35				2.4856	
	INCONEL 718	36				2.4668	
	INCONEL 718 INVECCHIATO / AGED	36				2.4668	Invecchiato /Aged
K	TITANIO / TITANIUM	37	TiAl6V4			3.7165	
	G25 GHISA / CAST IRON	15	G25	G25		0.6025	



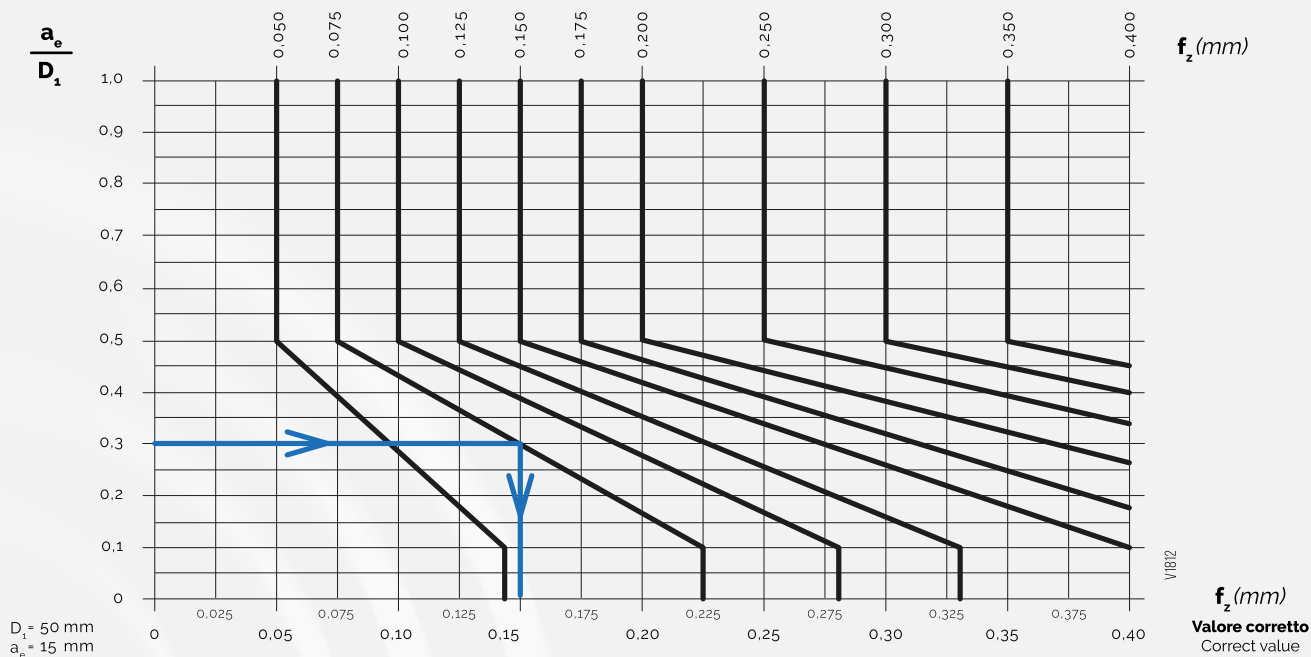
AVANZAMENTO AL DENTE f_z / FEED PER TOOTH

a_p (mm)



P	Acciai Steel	HT ST	M	Acciai Inox Stainless Steel	ST XT	S	Super Leghe Heat Res. Alloys	XT
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CORREZIONE VALORE f_z PER LO SPALLAMENTO RETTO (90°) / CORRECTION VALUE FOR SQUARE SHOULDER



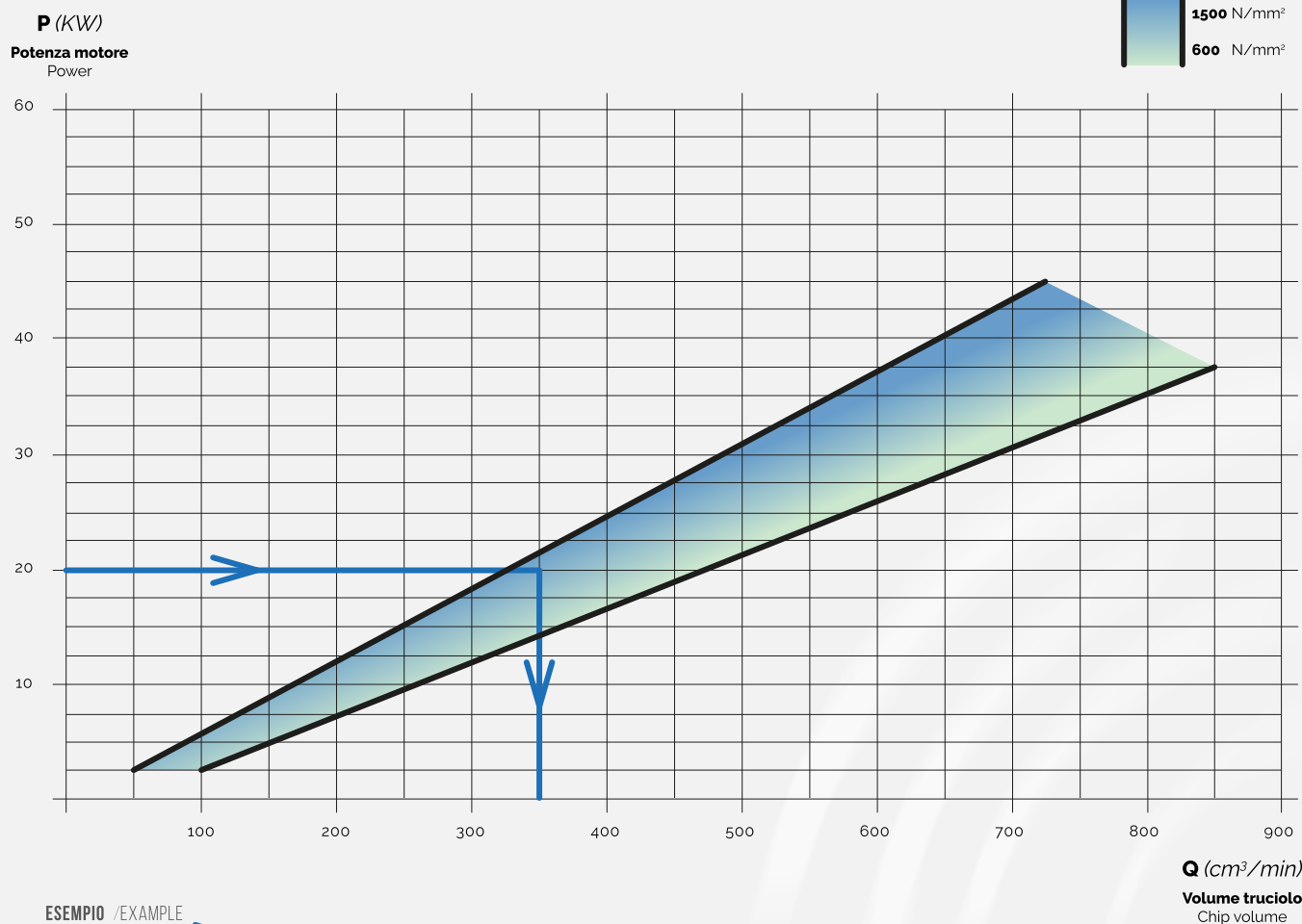
ESEMPIO /EXAMPLE

Con $f_z = 0.075$ mm
 E $a_p/D_1 = 0.3$
 Il valore corretto $f_z = 0.15$ mm

If $f_z = 0.075$ mm
 And $a_p/D_1 = 0.3$
 Correct value of $f_z = 0.15$ mm

FORMULE FORMULA COLLECTION	VELOCITÀ DI TAGLIO CUTTING SPEED (m/min) $V_c = \frac{D_1 \cdot \pi \cdot n}{1000}$	NUMERO DI GIRI DEL MANDRINO RPM (min⁻¹) $n = \frac{V_c \cdot 1000}{D_1 \cdot \pi}$
AVANZAMENTO FEED RATE (mm/min) $V_f = f_z \cdot n \cdot z$	VOLUME TRUCIOLO PER UNITÀ DI TEMPO CHIP VOLUME (cm³/min) $Q = \frac{a_p \cdot a_e \cdot V_f}{1000}$	AVANZAMENTO AL DENTE FEED PER TOOTH (mm) $f_z = h_m \cdot \sqrt{\frac{D_1}{a_e}}$

POTENZA MOTORE RICHIESTA INDICATIVA /INDICATIVE POWER REQUIRED

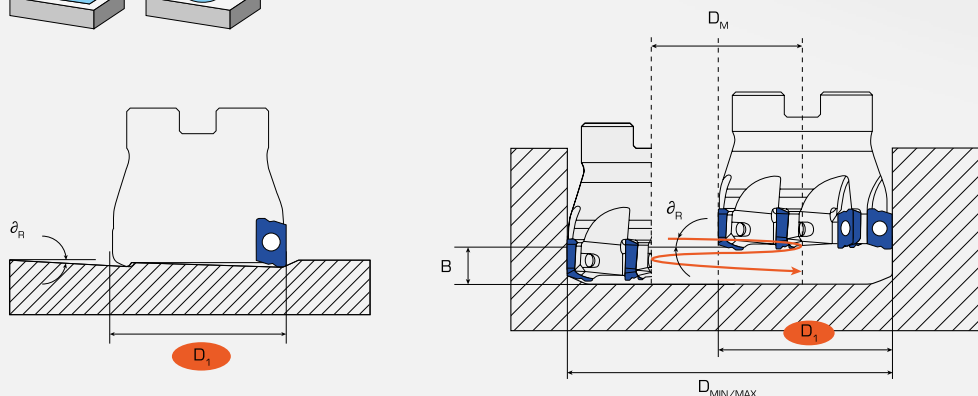
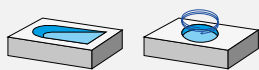


ESEMPIO /EXAMPLE

Materiale x100CrMoV5 - GR11
Volume truciolo Q=350 cm³/min
Potenza motore P=20 KW

Material x100CrMoV5 - GR11
Chip volume Q=350 cm³/min
Power P=20 KW

PENETRAZIONE AD INTERPOLAZIONE ELICOIDALE ELICOIDAL RAMPING



$$D_M \text{ [mm]} = D_{MAX} - D_1$$

$$B \text{ [mm]} = D_M \times \pi \times \tan \theta_R$$

$$D_M \text{ [mm]} = D_{MIN} - D_1$$

D_1		20	25	32	40	50	63	80	100	125
XD 12	D_{MIN}	30	40	53	72	93	118	152	191	242
	D_{MAX}	37	47	61	77	98	123	157	197	247
	θ_R [°]	5	4	3	2	1,5	1,5	1	0,8	0,6

Note / Notes

θ_R valore massimo consentito. / θ_R maximum value allowed.

APPROCCI E METODI DI LAVORAZIONE HOW TO APPROACH

SI RACCOMANDA / IT IS RECOMMENDED

- 1** **INGRESSO E USCITA CON V_f RIDOTTA 50%**
COMPONENT APPROACH, REDUCE FEED 50%
- 2** **LAVORAZIONE CONCORDE**
UP MILLING MACHINING
- 3** **INSERIRE RACCORDI XY RAGGIATI**
USE SMOOTHING MILLING
- 4** **UTILIZZO ARIA O EMULSIONE INTERNA**
USE INTERNAL COOLING OR AIR
- 5** **QUANDO SI LAVORA TITANIO, DUPLEX, SUPER-DUPLEX USARE % OLIO $\geq 10\%$**
WHILE WORKING TITANIUM, DUPLEX, SUPER DUPLEX MUST USE % OF OIL $\geq 10\%$

TABELLA CONVERSIONI DUREZZE ACCIAI HARDNESS CONVERSION TABLE



HRC	HV	HB	HRA	Rm
Cono diamante	Vickers 30	Brinell 3000 Kgf	Cono diamante	N/mm ² MPa
68	940	-	85.6	-
67	900	-	85.0	-
66	865	-	84.5	-
65	832	739	83.9	-
64	800	722	83.4	-
63	772	706	82.8	-
62	746	688	82.3	-
61	720	670	81.8	-
60	697	654	81.2	-
59	674	634	80.7	2420
58	653	615	80.1	2330
57	633	595	79.6	2240
56	613	577	79.0	2160
55	595	560	78.5	2070
54	577	543	78.0	2010
53	560	525	77.4	1950
52	544	512	76.8	1880
51	528	496	76.3	1820
50	513	482	75.9	1760
49	498	468	75.2	1700
48	484	455	74.7	1640
47	471	442	74.1	1580
46	458	432	73.6	1520
45	446	421	73.1	1480
44	434	409	72.5	1430
43	423	400	72.0	1390
42	412	390	71.5	1340
41	402	381	70.9	1300
40	392	371	70.4	1250
39	382	362	69.9	1220
38	372	353	69.4	1180
37	363	344	68.9	1140
36	354	336	68.4	1110
35	345	327	67.9	1080
34	336	319	67.4	1050
33	327	311	66.8	1030
32	318	301	66.3	1010
31	310	294	65.8	970
30	302	286	65.3	950
29	294	279	64.6	930
28	286	271	64.3	900
27	279	264	63.8	880
26	272	258	63.3	860
25	266	253	62.8	850
24	260	247	62.4	820
23	254	243	62.0	810
22	248	237	61.5	790
21	243	231	61.0	770
20	238	226	60.5	760



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Rivenditore autorizzato

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