

# ACCESSORI ACCESORIES

Pinze DIN 6499 forma B - tipo ER <i>Spring collets DIN 6499 form B - ER type</i> .....	8-2
Pinze DIN 6499 <i>Spring collets DIN 6499</i> .....	8-2
Pinze di maschiatura con compensazione - tipo ET1 <i>Tapping collets with compensation - ET1 type</i> .....	8-3
Pinze di maschiatura senza compensazione - tipo ER <i>Tapping collets without compensation - ER type</i> .....	8-3
Pinze <i>Collets</i> .....	8-3
Pinze porta maschi DIN 6328 <i>Tapholder collets DIN 6328</i> .....	8-4
Pinze porta punte DIN 6329 <i>Toolholder collets DIN 6329</i> .....	8-4
Ghiere esagonali per pinze DIN 6499 <i>Exagon clamping nut for spring collets DIN 6499</i> .....	8-5
Ghiere equilibrate per pinze DIN 6499 <i>Balanced clamping nut for spring collets DIN 6499</i> .....	8-5
Ghiere per pinze DIN 6499 <i>Clamping nut for spring collets DIN 6499</i> .....	8-5
Inseri registrabili porta utensili a cono Morse DIN 6327/1 <i>DIN 6327 adjustable adapters for morse taper shank tools</i> .....	8-6
Inseri registrabili porta utensili a cono Morse DIN 6327/2 <i>DIN 6327 adjustable adapters for morse taper shank tools</i> .....	8-6
Inseri registrabili porta utensili a cono Morse (Norma OMG) <i>Adjustable adapters for morse taper shank tools (OMG norm)</i> .....	8-7
Insero porta pinze per utensili a gambo cilindrico (DIN 6327) <i>DIN 6327 adjustable adapters for cylindrical shank tools</i> .....	8-7
Mandrini per maschiare con diametro ridotto <i>Tapping spindles with reduced diameter</i> .....	8-8
Mandrini a cambio rapido per maschiare con compensazione assiale <i>Quick change tapping chucks with axial compensation</i> .....	8-8
Mandrini a cambio rapido per maschiare con compensazione assiale e spostamento parallelo all'asse <i>Quick change tapping chucks with axial compensation and radial parallel floating</i> .....	8-9
Mandrini a cambio rapido per maschiare con spostamento parallelo all'asse <i>Quick change tapping chucks with radial parallel floating</i> .....	8-9
Mandrini a cambio rapido per maschiare con compensazione assiale <i>Quick change tapping chucks with axial compensation</i> .....	8-9
Bussole porta maschio a cambio rapido con frizione destra e sfere <i>Quick connection tap-holder bushes with ball right clutch</i> .....	8-10
Bussole porta maschio a cambio rapido <i>Quick connection tap-holder bushes</i> .....	8-10
Manicotti ad innesto rapido <i>Quick connection sleeves</i> .....	8-11
Ghiere ad innesto rapido <i>Ring nuts</i> .....	8-11
Bussole di riduzione da cono Morse a cono Morse DIN 2195 <i>Morse taper reduction bushes DIN 2195</i> .....	8-11
Chiavi per ghiere <i>Clamping nuts spanner</i> .....	8-12



TA

MO

HT

VH

TSI/TSX

T

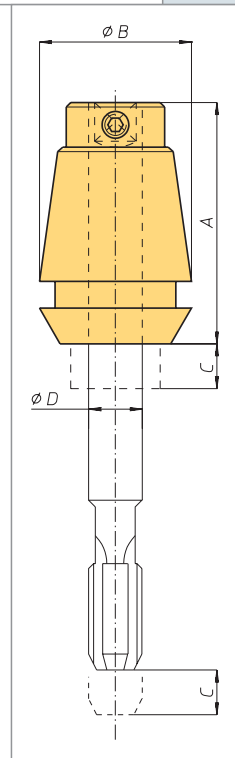
MT-TC-TC3

Accessori  
AccessoriesAppendice tecnica  
Technical supplement



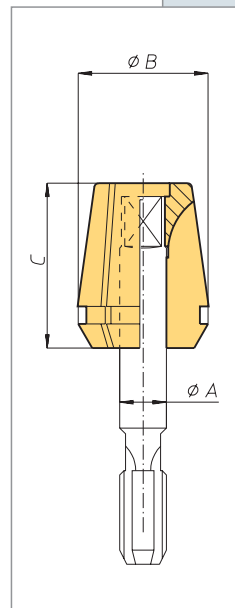
Pinze di maschiatura con compensazione - tipo ET1  
Tapping collets with compensation - ET1 type

ET 1-12	A=21,5	$\phi B=11,5$	C=5,5	CAPACITÀ M2 - M4						
Codice Code	224650	224651	224652	224653	224654					
$\phi D$	1,4	2,2	2,5	2,8	3,5					
ET 1-16	A=27	$\phi B=17$	C=7	CAPACITÀ M2 - M8						
Codice Code	224658	224659	224660	224661	224662	224663	224664	224665		
$\phi D$	1,4	2,2	2,5	2,8	3,5	4	4,5	6		
ET 1-20	A=31	$\phi B=21$	C=7	CAPACITÀ M2 - M10						
Codice Code	224670	224671	224672	224673	224674	224675	224676	224677		
$\phi D$	2,2	2,5	2,8	3,5	4	4,5	6	7		
ET 1-25	A=34	$\phi B=26$	C=8	CAPACITÀ M2 - M12						
Codice Code	224682	224683	224684	224685	224686	224687	224688	224689	224690	224691
$\phi D$	2,2	2,5	2,8	3,5	4	4,5	6	7	8	9
ET 1-32	A=43	$\phi B=33$	C=10	CAPACITÀ M35 - M16						
Codice Code	224695	224696	224697	224698	224699	224700	224701	224702	224703	
$\phi D$	4	4,5	6	7	8	9	10	11	12	
ET 1-40	A=54	$\phi B=41$	C=13	CAPACITÀ M5 - M20						
Codice Code	224706	224707	224708	224709	224710	224711	224712	224713	224714	
$\phi D$	6	7	8	9	10	11	12	14	16	



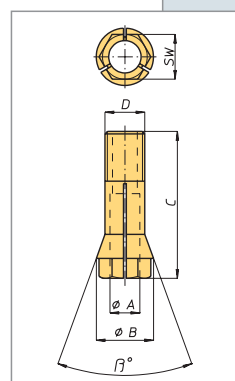
Pinze di maschiatura senza compensazione - tipo ER  
Tapping collets without compensation - ER type

ER 16 GB	$\phi B=16$	C=27,5										
Codice Code	224585	224587	224588	224589	224590							
$\phi A$	4,5	6	7	8	9							
ER 20 GB	$\phi B=20$	C=31,5										
Codice Code	224593	224595	224596	224597	224598	224599	224600					
$\phi A$	4,5	6	7	8	9	10	11					
ER 25 GB	$\phi B=25$	C=34										
Codice Code	224604	224606	224607	224608	224609	224610	224611	224612	224613	224614		
$\phi A$	4,5	6	7	8	9	10	11	12	14	16		
ER 32 GB	$\phi B=32$	C=40										
Codice Code	224617	224619	224620	224621	224622	224623	224624	224625	224626	224627	224628	224629
$\phi A$	4,5	6	7	8	9	10	11	12	14	16	18	20
ER 40 GB	$\phi B=40$	C=46										
Codice Code	224634	224635	224636	224637	224638	224639	224640	224641	224642	224643	224644	224645
$\phi A$	6	7	8	9	10	11	12	14	16	18	20	22



Pinze Collets

600E	$\phi B=9$	C=28,5	D=M6 x0,75	SW=7	$\beta^\circ=20^\circ$						
Codice Code	224574	224575	224576	224577	224578	224579	224580				
$\phi A$	1,5	2	2,5	3	3,5	4	4,5				
601E	$\phi B=11$	C=30	D=M8 x0,75	SW=9	$\beta^\circ=20^\circ$						
Codice Code	224728	224729	224730	224731	224732	224733	224734	224735	224736	224737	
$\phi A$	1,5	2	2,5	3	3,5	4	4,5	5	5,5	6	



TA

MO

HT

VH

TSI/TSX

T

MT-TC-TC3

Accessori  
Accessories

Appendice tecnica  
Technical supplement

TA

MO

HT

VH

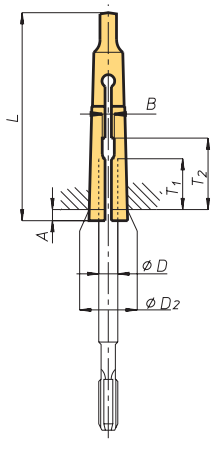
TSI/TSX

T

MT-TC-TC3

Accessori  
Accessories

Appendice tecnica  
Technical supplement



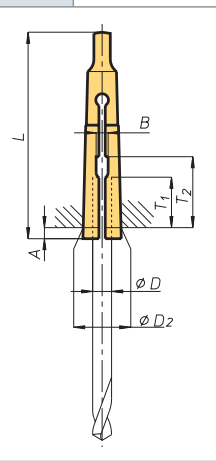
Pinze porta maschi DIN 6328  
Tapholder collets DIN 6328

DIN 6328 - CONO MORSE 1 D2 = 12.065A = 3,5 L = 65,5								
D	2,5	2,8	3,5	4	4,5	6	7	8
Codice Code	224000	224002	224008	224010	224012	224018	224022	224024
B	2,2	2,2	2,8	3,1	3,5	5,1	5,7	7,3
T1	15	15	16	16	18	19,5	19,5	22
T2	19	19	21	24	24	26	27	30

DIN 6328 - CONO MORSE 2 D2 = 17.78 A = 5 L = 80							
D	6	7	8	9	10	11	12
Codice Code	224112	224116	224120	224122	224126	224128	224134
B	5,1	5,7	6,4	7,3	8,3	9,3	9,3
T1	19,5	19,5	19,5	22	23	24	24
T2	26	26	27	22	32	34	34

Pinze porta punte DIN 6329  
Toolholder collets DIN 6329

DIN 6329 - CONO MORSE 1 D2 = 12.065 A = 3,5 L = 65,5																						
D	3	3,2	3,5	3,7	4	4,2	4,5	4,7	5	5,2	5,5	5,7	6	6,2	6,5	6,7	7	7,2	7,5	7,7	7,5	
Codice Code	224164	224166	224168	224170	224172	224174	224176	224178	224180	224182	224184	224186	224188	224190	224192	224194	224196	224198	224200	224202	224200	
B		1,8		2,2		2,4		2,7					3,2								3,8	
T1					20								22								22	
T2			25					26					29								29	

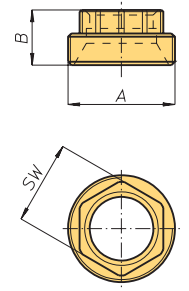


DIN 6329 - CONO MORSE 2 D2 = 17.78 A = 5 L = 80																
D	5,5	6	6,5	7	7,5	8	8,5	9	9,5	10	10,5	11	11,5	12	12,5	13
Codice Code	224260	224262	224264	224266	224268	224270	224272	224274	224276	224278	224280	224282	224284	224286	224288	224300
B		3,2			3,8			4,8			5,3				6,3	
T1				22				25					28			
T2				29				33			37				39	

Ghiere esagonali per pinze DIN 6499  
Exagon clamping nut for spring collets DIN 6499

Ghiera Nut	Codice Code	$\phi$ A	B	SW	Coppia serraggio Clamping force (Nm)
ER 11AS	224951	M18 x1	10,5	13	24 (30)
ER 16AC	224950	M24 x1	13,5	19	56 (70)
ER 20AC	224952	M28 x1,5	14,5	22	80 (100)
ER 25AC	224953	M32 x1,5	16,5	25	104 (130)

Tra parentesi valore massimo - Between brackets max. value



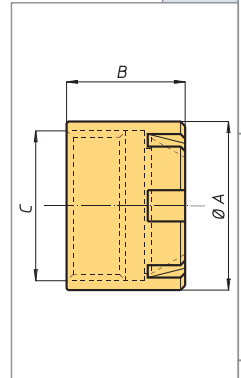
TA

MO

Ghiere equilibrate per pinze DIN 6499  
Balanced clamping nut for spring collets DIN 6499

Ghiera Nut	Codice Code	$\phi$ A	B	C	Coppia serraggio Clamping force (Nm)	
					Pinze con scarico Spring collet with extractor	Pinze senza scarico Spring collet without extractor
ER 16MS	224921	24	12	M19 x1	40 (50)	56 (70)
EXE 20	224922	34	18,5	M24 x1	32 (40)	80 (100)
EXE 25	224923	42	20,5	M32 x1,5	104 (130)	104 (130)
ER 40B	224924	63	29	M50 x1,5	176 (220)	176 (220)

Tra parentesi valore massimo - Between brackets max. value



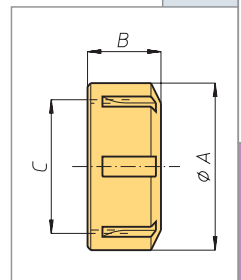
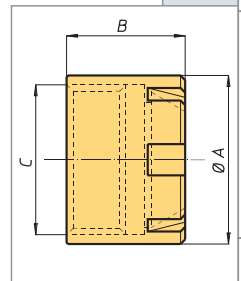
HT

VH

Ghiere per pinze DIN 6499  
Clamping nut for spring collets DIN 6499

Tipo Type	Codice Code	$\phi$ A	B	C	Coppia serraggio Clamping force (Nm)	
					Pinze con scarico Spring collet with extractor	Pinze senza scarico Spring collet without extractor
ER 8M	224900	12	10,8	M10 x0,75	5 (6)	5 (6)
ER 11M	224902	16	12	M13 x0,75	12 (15)	16 (20)
ER 16M	224904	22	18	M19 x1	24 (30)	24 (30)
ER 20M	224906	28	19	M24 x1	28 (35)	28 (35)
ER 25M	224908	35	20	M30 x1	32 (40)	32 (40)
ER 20UM	224910	34	19	M25 x1,5	32 (40)	80 (100)
ER 25UM	224912	42	20	M32 x1,5	104 (130)	104 (130)
ER 32UM	224914	50	22,5	M40 x1,5	136 (170)	136 (170)
ER 40UM	224916	63	25,5	M50 x1,5	176 (220)	176 (220)
ER 50UM	224918	78	35	M64 x2	240 (300)	240 (300)

Tra parentesi valore massimo - Between brackets max. value



TSI/TSX

T

MT-TC-TC3

Accessori Accessories

Appendice tecnica Technical supplement

TA

MO

HT

VH

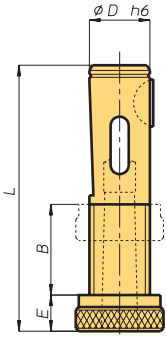
TSI/TSX

T

MT-TC-TC3

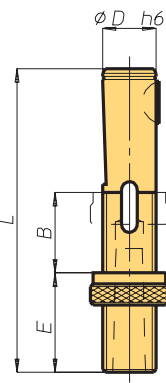
Accessori  
Accessories

Appendice tecnica  
Technical supplement



Inserti registrabili DIN 6327/1 porta utensili a cono Morse  
DIN 6327/1 adjustable adapters for morse taper shank tools

Codice-code	Grandezza-size	Cono Morse-Morse taper	$\phi D^{h6}$	Filettatura-Thread	B	E	L	Linguetta-Woodruff key
009010	D 16 x 1	1	16	Tr 16 x 1,5	28	12	85	5 x 6,5
009012	D 20 x 1	1	20	Tr 20 x 2	28	12	88	5 x 7,5
009014	D 25 x 2	2	25	Tr 25 x 2	30	12	95	6 x 9
009016	D 28 x 2	2	28	Tr 28 x 2	30	12	95	6 x 9
009018	D 32 x 3	3	32	Tr 32 x 2	36	12	118	8 x 11
009020	D 36 x 3	3	36	Tr 36 x 2	36	14	118	8 x 11
009022	D 48 x 4	4	48	Tr 48 x 2	47	18	144	10 x 13

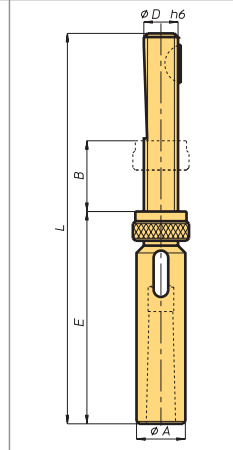


Inserti registrabili DIN 6327/2 porta utensili a cono Morse  
DIN 6327/2 adjustable adapters for morse taper shank tools

Codice-code	Grandezza-size	Cono Morse-Morse taper	$\phi D^{h6}$	Filettatura-Thread	B	E	L	Linguetta-Woodruff key
009024	F 16 x 1 x 25	1	16	Tr 16 x 1,5	28	37	110	5 x 6,5
009026	F 16 x 1 x 50					62	135	
009028	F 16 x 1 x 75					87	160	
009030	F 16 x 1 x 100					112	185	
009032	F 20 x 1 x 25	1	20	Tr 20 x 2	28	37	113	5 x 7,5
009034	F 20 x 1 x 50					62	138	
009036	F 20 x 1 x 75					87	163	
009038	F 20 x 1 x 100					112	188	
009040	F 25 x 2 x 25	2	25	Tr 25 x 2	30	37	120	6 x 9
009042	F 25 x 2 x 50					62	145	
009044	F 25 x 2 x 75					87	170	
009046	F 25 x 2 x 100					112	195	
009048	F 28 x 2 x 25	2	28	Tr 28 x 2	30	37	120	6 x 9
009050	F 28 x 2 x 50					62	145	
009052	F 28 x 2 x 75					87	170	
009054	F 28 x 2 x 100					112	195	
009056	F 32 x 3 x 25	3	32	Tr 32 x 2	36	37	148	8 x 11
009058	F 32 x 3 x 50					62	178	
009060	F 32 x 3 x 75					87	208	
009062	F 32 x 3 x 100					112	238	
009064	F 36 x 3 x 25	3	36	Tr 36 x 2	36	37	148	8 x 11
009066	F 36 x 3 x 50					62	178	
009068	F 36 x 3 x 75					87	208	
009070	F 36 x 3 x 100					112	238	
009072	F 48 x 4 x 25	4	48	Tr 48 x 2	47	37	184	10 x 13
009074	F 48 x 4 x 50					62	224	
009076	F 48 x 4 x 75					87	264	
009078	F 48 x 4 x 100					112	304	

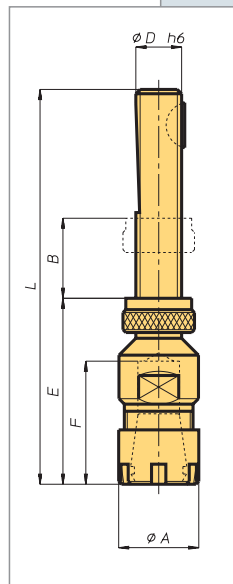
Inserti registrabili porta utensili a cono Morse (Norma OMG)  
Adjustable adapters for morse taper tools (OMG norm)

Codice-code	Grandezza-size	Cono Morse-Morse taper	$\phi D^{h6}$	Filettatura-Thread	$\phi A$	B	E	L	Linguetta-Woodruff key
009110	Tr 8 x 1	1	8	Tr 8 x 1	16,8	16	84	126	2 x 3,7
009116	Tr 10 x 1	1	10	Tr 10 x 1,5	19,5	18	89	138	3 x 5
009122	Tr 12 x 1	1	12	Tr 12 x 1,5	22	18	91	138	3 x 5



Inserto porta pinze per utensili a gambo cilindrico (DIN 6327)  
DIN 6327 adjustable adapters for cylindrical shank tools

Codice-code	Grandezza-size	$\phi D^{h6}$	Filettatura-Thread	$\phi A$	B	E	F	L	Pinza-Collet	Linguetta-Woodruff key
009112	Tr 8 ER 8	8	Tr 8 x 1	12	16	36	23	75	ER 8	2 x 3,7
009114	Tr 8 ER 11	8	Tr 8 x 1	16	16	41	28	80	ER 11	2 x 3,7
009118	Tr 10 ER 11	10	Tr 10 x 1,5	16	18	43	28	93	ER 11	3 x 5
009120	Tr 10 ER 16	10	Tr 10 x 1,5	22	18	54	39	104	ER 16	3 x 5
009124	Tr 12 ER 16	12	Tr 12 x 1,5	22	18	56	39	106	ER 16	3 x 5
009130	Tr 16 ER 20	16	Tr 16 x 1,5	28	28	65	47	136	ER 20	5 x 6,5
009140	Tr 20 ER 20	20	Tr 20 x 2	32	28	65	47	139	ER 20	5 x 7,5
009145	Tr 20 ER 25	20	Tr 20 x 2	35	28	61	44	135	ER 25	5 x 7,5
009170	Tr 28 ER 32	28	Tr 28 x 2	50	30	65	49	147	ER 32	6 x 9



TA

MO

HT

VH

TSI/TSX

T

MT-TC-TC3

Accessori  
Accessories

Appendice tecnica  
Technical supplement



TA

MO

HT

VH

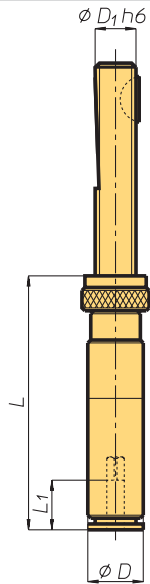
TSI/TSX

T

MT-TC-TC3

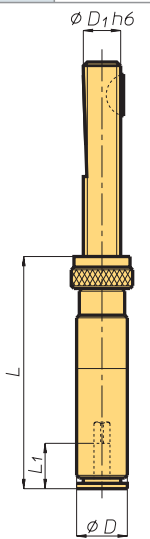
Accessori  
Accessories

Appendice tecnica  
Technical supplement



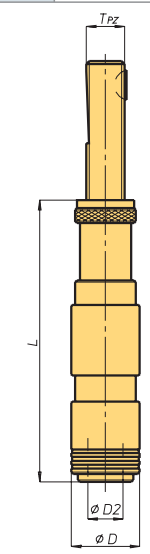
### Mandrini per maschiare con diametro ridotto Tapping spindles with reduced diameter

Codice code	Mandrino Spindle			$\phi D$	$D_1$	L	$L_1$	
227015	MM. 15 D - 20.20 - 8x1 Tpz	M1 - M6	2.5 - 6	20	0	13.5	8	109
227016	MM. 15 D - 20.15 - 8x1 Tpz			15	5			104
227017	MM. 15 D - 20.10 - 8x1 Tpz			10	10			99
227018	MM. 15 D - 20.5 - 8x1 Tpz			5	15			94
227019	MM. 15 D - 20.0 - 8x1 Tpz			0	20			89
227020	MM. 16 D - 20.20 - 10x1,5 Tpz	M1 - M8	2.5 - 8	20	0	15.5	10	116
227021	MM. 16 D - 20.15 - 10x1,5 Tpz			15	5			111
227022	MM. 16 D - 20.10 - 10x1,5 Tpz			10	10			106
227023	MM. 16 D - 20.5 - 10x1,5 Tpz			5	15			101
227024	MM. 16 D - 20.0 - 10x1,5 Tpz			0	20			96
227025	MM. 17 D - 20.20 - 12x1,5 Tpz	M4 - M12	4.5 - 10	20	0	19	12	107
227026	MM. 17 D - 20.15 - 12x1,5 Tpz			15	5			102
227027	MM. 17 D - 20.10 - 12x1,5 Tpz			10	10			97
227028	MM. 17 D - 20.5 - 12x1,5 Tpz			5	15			92
227029	MM. 17 D - 20.0 - 12x1,5 Tpz			0	20			87



### Mandrini per maschiare con diametro ridotto Tapping spindles with reduced diameter

Codice code	Mandrino Spindle		$\phi D$	$D_1$	L	$L_1$	
227030	MR. 0 - 10x1.5 Tpz	M1 - M10	2.5 - 7.2	14	10	44	15
227031	MR. 0 - 12x1.5 Tpz			12	12		
227032	MR. 1 - 12x1.5 Tpz	M4 - M14	4.5 - 11.3	19	12	52	17
227033	MR. 1 - 16x1.5 Tpz			16	16		
227034	MR. 2 - 20x2 Tpz	M8 - M24	7 - 18	31	20	77	30
227035	MR. 2 - 28x2 Tpz			28	28		
227036	MR. 3 - 28x2 Tpz	M14 - M36	11 - 28	48	28	95	44
227037	MR. 3 - 36x2 Tpz			36	36		
227038	MR. 4 - 36x2 Tpz	M22 - M48	18 - 36	60	36	132	71
227039	MR. 4 - 48x2 Tpz			48	48		







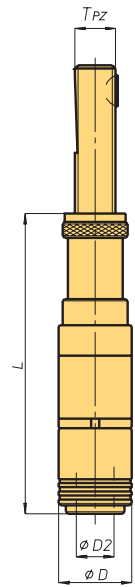
### Mandrini a cambio rapido per maschiare con compensazione assiale Quick change tapping chucks with axial compensation

Mandrino Spindle		D	$D_2$			16x1,5 Tpz	Codice Code	20x2 Tpz	Codice Code	L	28x2 Tpz	Codice Code	36x2 Tpz	Codice Code	
MF 0-5D-20-10	M1 - M10	23	13	20	10	0	116	227060	116	227061					
MF 0-5D-15-15				15	15	111	227062	111	227063						
MF 0-5D- 0-30				0	30	96	227064	96	227065						
MF 1-5D-30-10	M3 - M12	35	19	30	10	1	148	227066	148	227067	148	227068			
MF 1-5D-20-20				20	20	138	227069	138	227070	138	227071				
MF 1-5D- 0-40				0	40	118	227072	118	227073	118	227074				
MF 2-4D-30-10	M8 - M20	50	31	30	10	2		172	227075	172	227076	174	227077		
MF 2-4D-20-20				20	20		162	227078	162	227079	164	227080			
MF 2-4D- 0-40				0	40		142	227081	142	227082	144	227083			
MF 3-3D-30-10	M14 - M33	72	48	30	10					218	227084	220	227085		
MF 3-3D-20-20				20	20			208	227086	210	227087				
MF 3-3D- 0-40				0	40			188	227088	190	227089				







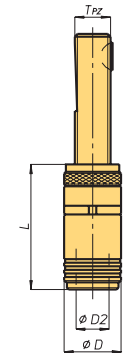
Mandrini a cambio rapido per maschiare con compensazione assiale e spostamento parallelo all'asse  
Quick change tapping chucks with axial compensation and radial parallel floating

Mandrino Spindle		D	D <sub>2</sub>				16x1,5 Tpz	Codice Code	20x2 Tpz	Codice Code	L	28x2 Tpz	Codice Code	36x2 Tpz	Codice Code
MFC0-5D-20*10					20	10		138	227090	138	227091				
MFC0-5D-15*15	M1 - M10	23	13	0.25	15	15	0	133	227092	133	227093				
MFC0-5D- 0*30					0	30		118	227094	118	227095				
MFC1-5D-30*10					30	10		163	227096	163	227097	163	227098		
MFC1-5D-20*20	M3 - M12	35	19	0.5	20	20	1	153	227099	153	227100	153	227101		
MFC1-5D- 0*40					0	40		133	227102	133	227103	133	227104		
MFC2-4D-30*10					30	10				196	227105	196	227106	174	227077
MFC2-4D-20*20	M8 - M20	50	31	1	20	20	2			186	227108	186	227109	164	227080
MFC2-4D- 0*40					0	40				166	227111	166	227112	144	227083
MFC3-3D-30*10					30	10						252	227084	220	227085
MFC3-3D-20*20	M14 - M33	72	48	1.5	20	20	3					242	227116	210	227087
MFC3-3D- 0*40					0	40						222	227118	190	227089






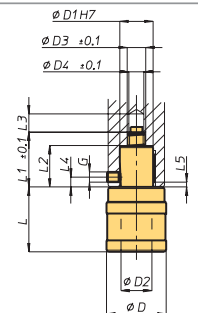
Mandrini a cambio rapido per maschiare con spostamento parallelo all'asse  
Quick change tapping chucks with radial parallel floating

Mandrino Spindle		D	D <sub>2</sub>				16x1,5 Tpz	Codice Code	20x2 Tpz	Codice Code	L	28x2 Tpz	Codice Code	36x2 Tpz	Codice Code
MFC 0	M1 - M10	23	13	0,25	0		65	227131	65	227132					
MFC 1	M3 - M12	35	19	0,5	1		70	227133	70	227134	70	227135			
MFC 2	M8 - M20	50	31	1	2				96	227136	96	227137	98	227138	
MFC 3	M14 - M33	72	48	1,5	3						136	227139	138	227146	






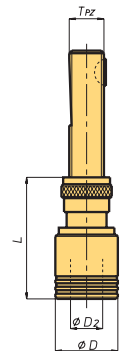
Mandrini a cambio rapido per maschiare con compensazione assiale  
Quick change tapping chucks with axial compensation

Codice Code	Mandrino Spindle				D	D <sub>1</sub>	D <sub>2</sub>	D <sub>3</sub>	D <sub>4</sub>	L	L <sub>1</sub>	L <sub>2</sub>	L <sub>3</sub>	L <sub>4</sub>	L <sub>5</sub>	G	Chiavetta DIN 6885	
227185	MKD0.GC	M1 - M10	0	6,5	6,5	26	15	13	8,2	6	37	32	18,5	11	6	3	M5	5x3x12
227186	MKD1.GC	M3 - M12	1	7,5	7,5	36	20	19	11,2	9	39	33	24,5	11	6	3	M6	6x4x16
227187	MKD2.GC	M8 - M20	2	12,5	12,5	53	25	31	13,2	11	63	39	30,5	20	8	4	M8	6x6x20






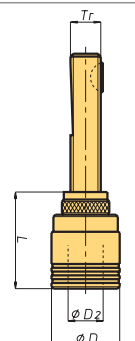
Mandrini a cambio rapido per maschiare con compensazione assiale  
Quick change tapping chucks with axial compensation

Mandrino Spindle				$\phi D$	$\phi D_2$	28x2 Tpz	Codice Code	36x2 Tpz	L	Codice Code	48x2 Tpz	Codice Code
AKD 1 - ..	M3 - M12	1	20	20	32	19	65	227190	67	227191	71	227192
AKD 2 - ..	M8 - M20	2	20	25	50	31			83	227193	87	227194
AKD 40 - ..	M6 - M18	4	20	20	40	26	80	227195				



Mandrini a cambio rapido per maschiare con compensazione assiale  
Quick change tapping chucks with axial compensation

Mandrino Spindle				$\phi D$	$\phi D_2$	16x1,5 Tpz	Codice Code	28x2 Tpz	L	Codice Code	36 x2 Tpz	Codice Code
MKD-0 - Tr.	M1 - M10	0	6,5	6,5	26	13	49	227165				
MKD-1 - Tr.	M1 - M12	1	7,5	7,5	36	19	51	227167		227165		
MKD-2 - Tr.	M4 - M20	2	12,5	12,5	53	31			75	227171		
MKD-3 - Tr.	M4 - M33	3	20	20	78	48					77	227173



TA

MO

HT

VH

TSI/TSX

T

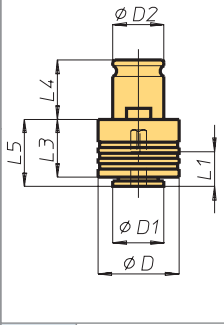
MT-TC-TC3


Accessori  
Accessories

Appendice tecnica  
Technical supplement

TA

Bussole porta maschio a cambio rapido con frizione destra e sfere  
Quick connection tap-holder bushes with ball right clutch



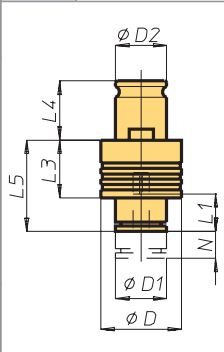
Codice Code	Bussola Bush		phi Gambo maschio Tap shank diametre	phi D	phi D1	phi D2	phi I1	phi I3	phi I4	phi I5
227206	BFS 0	M1 - M10	2,5 - 7,2	23	13	13	15	20	19,5	21
227207	BFS 1	M3 - M12	3,5 - 11,3	32	19	19	17	25	21,5	25
227208	BFS 2	M8 - M20	7 - 18	50	30	31	30	31	35	34
227209	BFS 3	M14 - M33	11 - 28	72	48	48	44	41	55,5	45
227010	BFS 40	M6 - M18	6 - 14	40	25	26	30	27	32	30


MO

HT

VH

Bussole porta maschio a cambio rapido con frizione destra e sfere  
Quick connection tap-holder bushes with ball right clutch

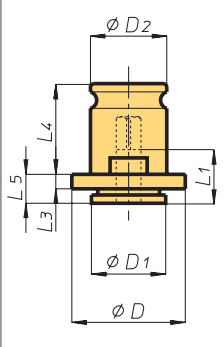



Codice Code	Bussola Bush		phi Gambo maschio Tap shank diametre	N	phi D	phi D1	phi D2	phi I1	phi I3	phi I4	phi I5
227211	BFSR 0	M1 - M10	2,5 - 7,2	8	23	13	15	15	20	19,5	28
227212	BFSR 1	M2 - M12	3,5 - 11,3	10	32	19	17	17	25	21,5	33
227213	BFSR 2	M8 - M20	7 - 18	15	50	30	30	30	31	35	59
227214	BFSR 3	M14 - M33	11 - 28	25	72	48	44	44	41	55,5	82

TSI/TSX

T

Bussole porta maschio a cambio rapido  
Quick connection tap-holder bushes



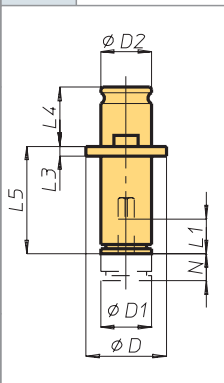
Codice Code	Bussola Bush		phi Gambo maschio Tap shank diametre	phi D	phi D1	phi D2	phi I1	phi I3	phi I4	phi I5
227250	BFC 0	M1 - M10	2,5 - 7,2	22	13	13	15	4	19,5	7
227251	BFC 1	M3 - M12	3,5 - 11,3	30	19	19	17	4	21,5	7
227252	BFC 2	M8 - M20	7 - 18	48	30	31	30	5	35	11
227253	BFC 3	M14 - M33	11 - 28	70	48	48	44	6	55,5	14
227254	BFC 40	M6 - M18	6 - 14	40	25	26	30	5	32	13


MT-TC-TC3

Accessori Accessories

Appendice tecnica Technical supplement

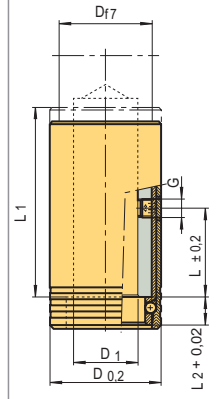
Bussole porta maschio a cambio rapido  
Quick connection tap-holder bushes



Codice Code	Bussola Bush		phi Gambo maschio Tap shank diametre	N	phi D	phi D1	phi D2	phi I1	phi I3	phi I4	phi I5
227255	BFCR 0	M1 - M10	2,5 - 7,2	8	22	13	13	15	4	19,5	28
227256	BFCR 1	M3 - M12	3,5 - 11,3	10	30	19	19	17	4	21,5	33
227257	BFCR 2	M8 - M20	7 - 18	15	48	30	31	30	5	35	59
227258	BFCR 3	M14 - M33	11 - 28	25	70	48	48	44	6	55,5	82

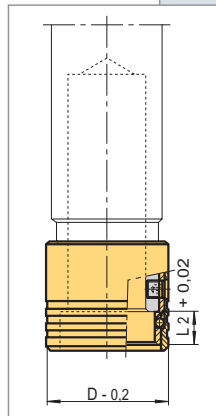
Manicotti ad innesto rapido  
Quick connection sleeves

Codice Code	Manicotto Sleeve	φD	φD <sub>1</sub>	φD <sub>3</sub>	L	L <sub>1</sub>	L <sub>2</sub>	G
227309	AIRFA. 12	24	12	20	22	48	9	M5
227310	AIRFA. 16	30	16	25	34	64	9,5	M6
227311	AIRFA. 20	38	20	32	34	70	11	M6
227312	AIRFA. 25	45	25	37	38	76	12	M8
227313	AIRFA. 28	48	28	40	38	78	12	M8
227314	AIRFA. 32	55	32	45	45	89	14	M8
227315	AIRFA. 36	60	36	50	45	97	16	M8
227316	AIRFA. 48	80	48	67	57	122	20	M10



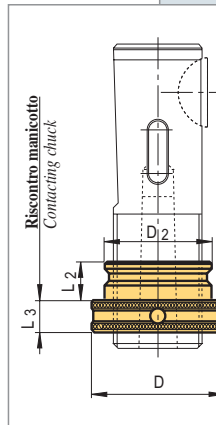
Manicotti ad innesto rapido  
Quick connection sleeves

Codice Code	Manicotto Sleeve	φD	φD <sub>1</sub>	φD <sub>3</sub>	φD <sub>4</sub>	L	L <sub>1</sub>	L <sub>2</sub>	G
227350	AIRFCA. 16	27	16	25	22	8	30	9,5	M5
227351	AIRFCA. 20	34	20	32	28	8	30	11	M5
227352	AIRFCA. 25	41	25	37	34,5	8	32	12	M6
227353	AIRFCA. 28	44	28	40	37	8	32	12	M6
227354	AIRFCA. 32	49	32	45	41	9	39	13,5	M6
227355	AIRFCA. 36	55	36	50	46	9	39	16	M6
227356	AIRFCA. 48	73	48	67	61	11	51	20	M8



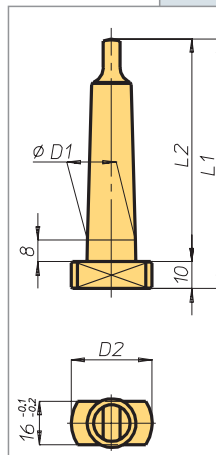
Ghiere ad innesto rapido  
Ring nuts

Codice Code	Ghiera Nut	φD	φD <sub>2</sub>	L <sub>2</sub>	L <sub>3</sub>
227367	GIRF. 12	21,5	16,4	9	9
227368	GIRF. 16	26	19,9	9,5	9
227369	GIRF. 20	33	25,4	11	9
227370	GIRF. 25	40	31,9	12	10
227371	GIRF. 28	42	33,9	12	10
227372	GIRF. 32	47	37,9	13,5	10
227373	GIRF. 36	54	43,4	16	10
227374	GIRF. 48	72	57,9	20	14



Trascinatori a cono Morse  
Morse taper with driving dog

Codice Code	Cono Morse Morse Taper	A	B	l <sub>1</sub>	l <sub>2</sub>	l <sub>3</sub>	D <sub>1</sub>	D <sub>2</sub>	D <sub>3</sub>	R	β
011120	2	8	6,3	93	83	16	17,78	28	13,5	6	1°25' 50"
011125	3	8	7,9	112	102	20	23,825	30	18,5	7	1°26' 16"
011130	4	8	11,9	135,5	125,5	24	31,267	42	24,5	8	1°29' 15"
011135	5	8	15,9	167,5	157,5	29	44,399	50	35,7	10	1°30' 26"
011136	6	8	19	228	218	40	63,348	62	51	13	1°29' 36"



TA

MO

HT

VH

TSI/TSX

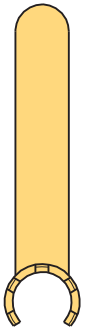
T

MT-TC-TC3

Accessori Accessories

Appendice tecnica Technical supplement

TA

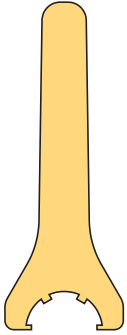


Chiavi per ghiera  
Clamping nuts spanner

Chiavi Keys	Codice Code	Per ghiera For clamping nut
CE 8M	231300	ER8M
CE 11M	231302	ER11M
CE 16M	231306	ER16M
CE 20M	231309	ER20M
CE 25M	231313	ER25M

MO

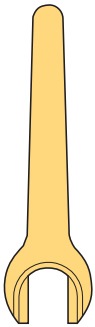
HT



Chiavi Keys	Codice Code	Per ghiera For clamping nut
CE 20U	231315	ER20UM
CE 25U	231314	ER25UM
CE 32U	231320	ER32UM
CE 40U	231321	ER40UM
CE 50U	231323	ER50UM

VH

TSI/TSX



Chiavi per ghiera  
Clamping nuts spanner

Chiavi Keys	Codice Code	Per ghiera For clamping nut
CE 16MB	231322	ER16MB

T

MT-TC-TC3

Accessori  
Accessories

Appendice tecnica  
Technical supplement

# Appendice tecnica

## *Technical supplement*

calcolo momento torcente e potenza <i>estimate torque and power</i> .....	9-2
manicotti di collegamento <i>connection collars</i> .....	9-3
DIN 228 - DIN 55058 .....	9-4
DIN 6499 .....	9-5
DIN 6499-B.....	9-6
DIN 69893 Forma A.....	9-7
DIN 69871 Forma A.....	9-8
MAS 403.....	9-9
DIN 2080 .....	9-10
Maschi.....	9-11

TA

MO

HT

VH

TSI/TSX

T

MT-TC-TC3

Accessori  
AccessoriesAppendice tecnica  
Technical supplement

# calcolo momento torcente e potenza estimate torque and power

La OMG, con questo diagramma, desidera offrire la possibilità di calcolare con velocità e ottima approssimazione, il momento torcente e la relativa potenza necessaria per l'esecuzione delle forature. Scegliendo l'appropriato avanzamento sull'ascissa, congiungendo con il relativo diametro di foratura, in ordinata si leggerà un determinato valore del "coefficiente  $\beta$ "; moltiplicando questo per la resistenza del materiale si otterrà il momento torcente. Applicando poi la formula

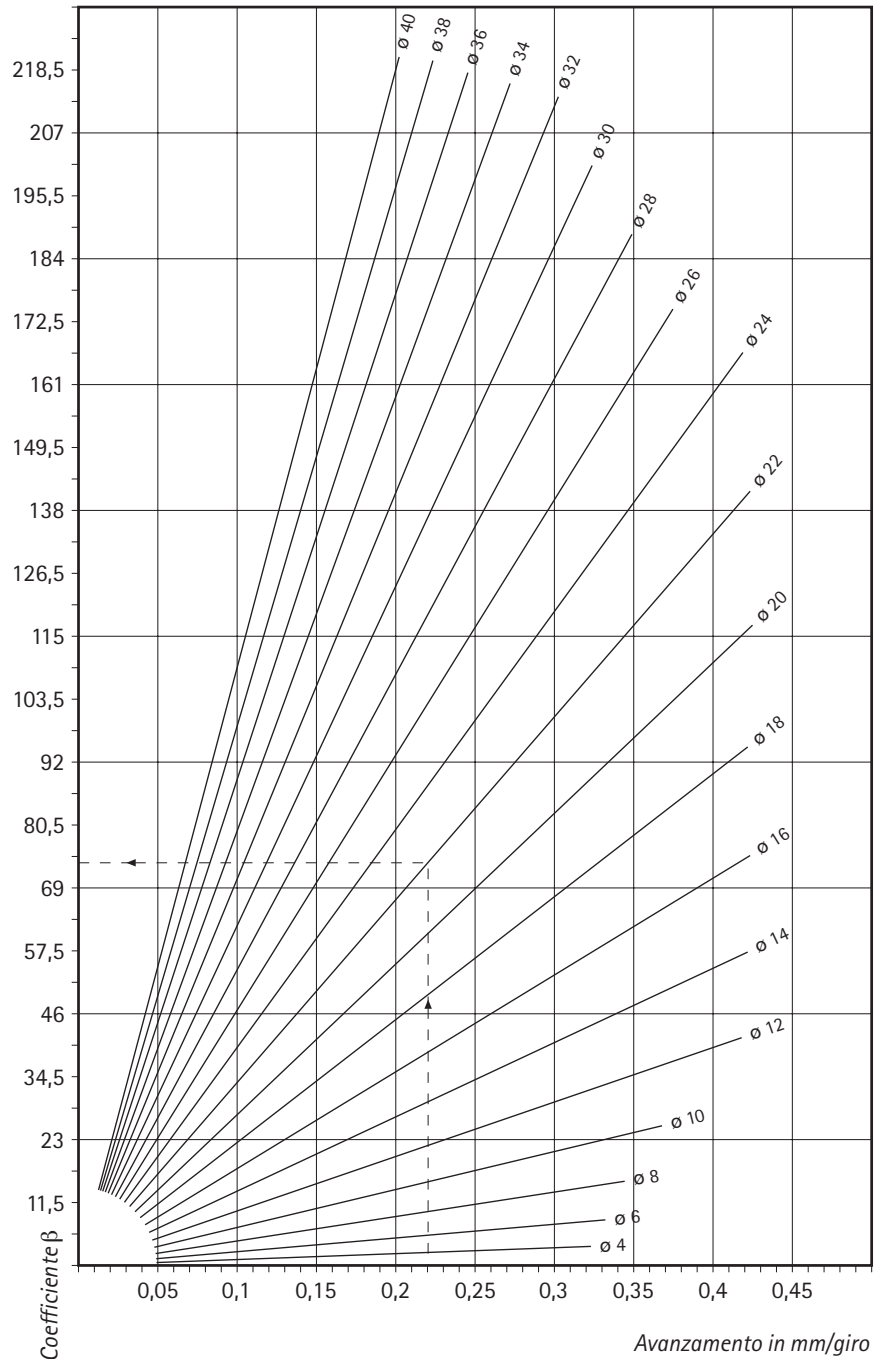
$$N = \frac{M_t \times n}{9549,3}$$

dove  $n$  è il n° di giri, si otterrà la potenza  $N$  espressa in kW

With this diagram, OMG makes it possible to calculate the torque and corresponding power necessary for drilling quickly and with maximum approximation. By selecting the proper feed on the abscissa and adding it to the corresponding drilling diameter on the ordinate, a certain «coefficiente  $\beta$ » value is obtained. By multiplying this by the material strength, the torque can be found. Then, by applying the formula,

$$N = \frac{M_t \times n}{9549,3}$$

where  $n$  is the number of revolutions, it is possible to determine power  $N$  expressed in kW.



Es:

$a = 0,22$  mm/giro  
 punta  $\varnothing 22$   
 giri/1' = 230  
 $R = 500$  M/mm<sup>2</sup>  
 coefficiente  $\beta = 73$

$$M_t = \frac{73 \times 500}{1000} = 36,5 \text{ Nm}$$

$$N = \frac{36,5 \times 230}{9549,3} = 0,88 \text{ kW}$$

# manicotti di collegamento connection collars

**Dimensioni estremità mandrini macchine utensili per la costruzione del manicotto di collegamento.**  
*Spindles dimensions off machine-tools to manufacture the connection collar.*

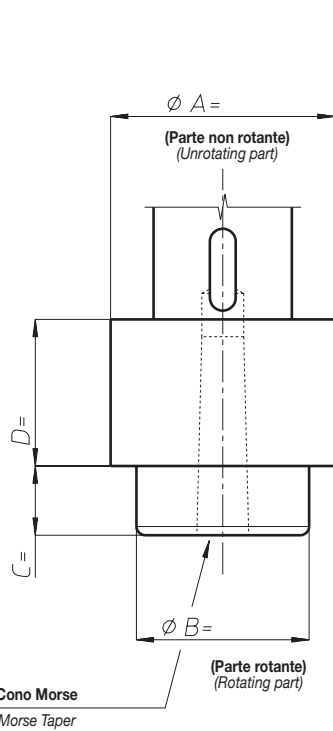


Fig. 1

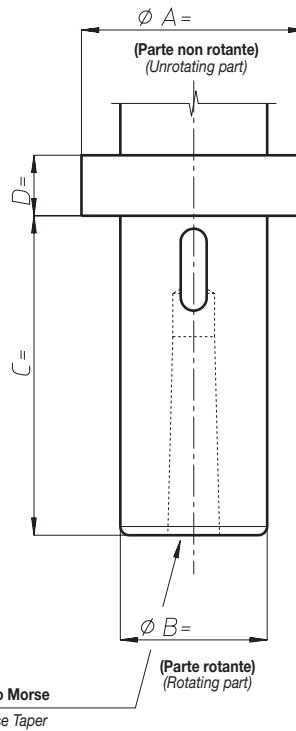


Fig. 2

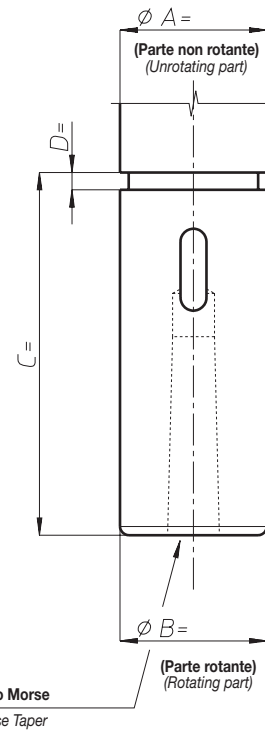


Fig. 3

**Se nessuna figura si adatta alla vostra macchina, disegnate qui l'estremità mandrino.**  
*If no picture fits your machine, draw here the spindle end.*

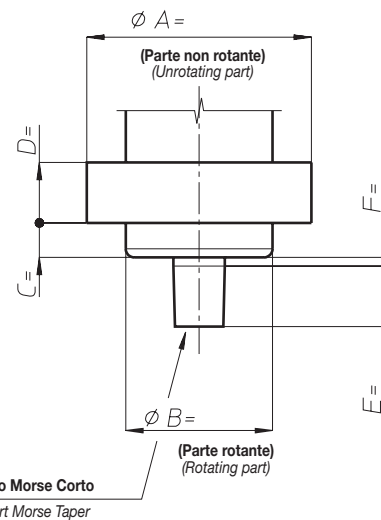
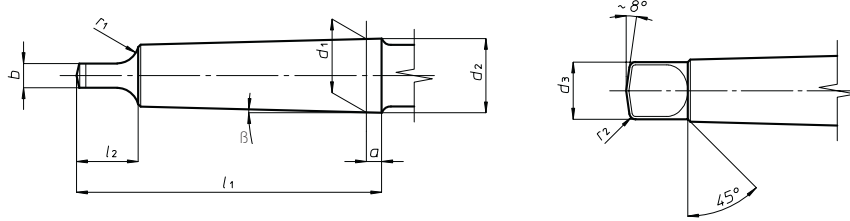


Fig. 4



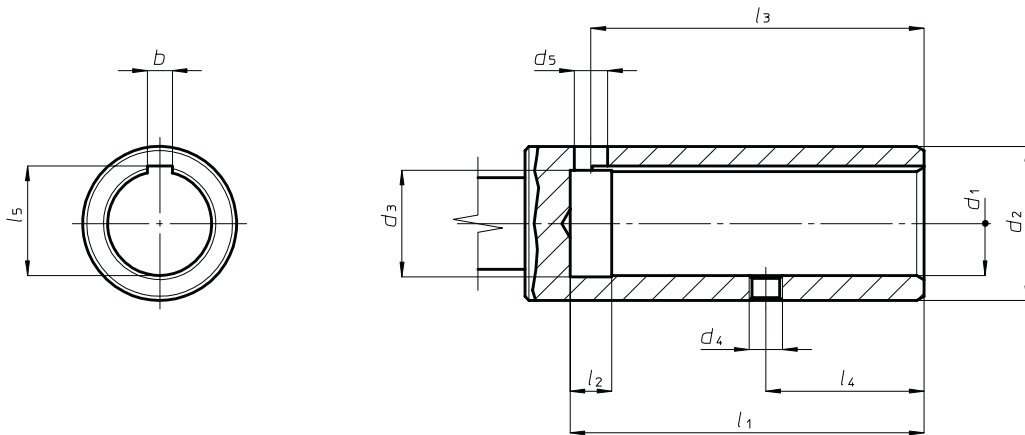
# DIN 228

Cono Morse  
Morse taper



Cono Morse Morse Taper	a	b <sup>h13</sup>	d <sub>1</sub>	d <sub>2</sub>	d <sub>3max</sub>	l <sub>1max</sub>	l <sub>2max</sub>	r <sub>1</sub>	r <sub>2</sub>	β
0	3	3,9	9,045	9,2	6	59,5	10,5	4	1	1°29' 27"
1	3,5	5,2	12,065	12,2	8,7	65,5	13,5	5	1,2	1°25' 43"
2	5	6,3	17,780	18	13,5	80	16	6	1,6	1°25' 50"
3	5	7,9	23,825	24,1	18,5	99	20	7	2	1°26' 16"
4	6,5	11,9	31,267	31,6	24,5	124	24	8	2,5	1°29' 15"
5	6,5	15,9	44,399	44,7	35,7	156	29	10	3	1°30' 26"
6	8	19	63,348	63,8	51	218	40	13	4	1°29' 36"

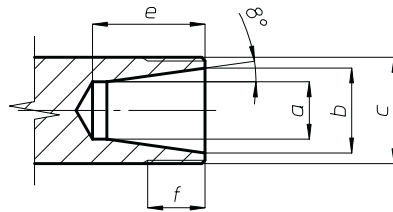
# DIN 55058



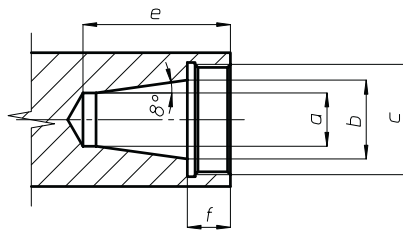
Grandezza Size d <sub>1</sub> H7	8	10	12	16	20	25	28	32	36	48
b	2	3	3	5	5	6	6	8	8	10
d <sub>2</sub> f7	15	18	20	25	32	37	40	45	50	67
d <sub>3</sub>	8,6	10,6	12,6	16,6	20,6	25,6	28,6	32,8	36,8	48,8
d <sub>4</sub>	M4	M5	M5	M6	M6	M8	M8	M8	M8	M10
d <sub>5</sub>	3,5	5	5	6	6	8	8	10	10	12
l <sub>1</sub> min	42	52	52	75	78	85	85	106	106	129
l <sub>2</sub>	8	8	8	8	8	10	10	10	10	12
l <sub>3</sub>	35	48	48	70	73	80	80	101	101	123
l <sub>4</sub> ±0,1	16	22	22	34	34	38	38	45	45	57
l <sub>5</sub> <sup>+0,3</sup> <sub>0</sub>	9	11,1	13,1	17,3	21,3	26,7	29,7	33,7	37,7	50,1

Sedi delle pinze ER  
ER housing

# DIN 6499



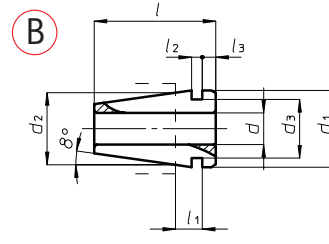
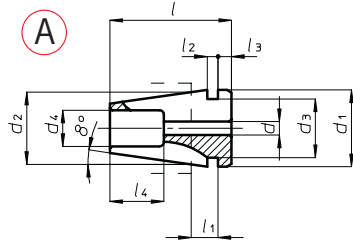
Grandezza Size	Serraggio Clamping	a	$b_{\pm 0,05}$	c	e	f
ER8	0,5... 5,0	5,2	8	M10x0,75	13,0	7,5
ER11	0,5... 7,0	7,5	11	M13x0,75	17,0	10,0
ER16	0,5... 10,0	10,5	16	M19x1,00	22,0	13,0
ER20	0,5... 13,0	13,5	20	M24x1,00	26,5	13,5
ER25	0,5... 16,0	18,0	25	M30x1,00	29,0	14,0
ER16	0,5... 10,0	10,5	16	M22x1,50	22,0	13,0
ER20	0,5... 13,0	13,5	20	M25x1,50	26,5	13,5
ER25	0,5... 16,0	18,0	25	M32x1,50	29,0	14,0
ER32	1,0... 20,0	23,5	32	M40x1,50	34,0	16,0
ER40	2,0... 30,0	30,5	40	M50x1,50	38,0	17,0
ER50	4,0... 34,0	38,0	50	M64x2,00	48,0	24,0



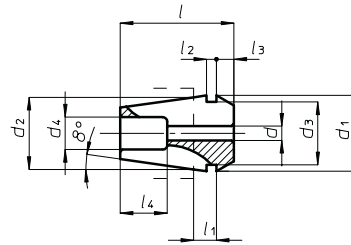
Grandezza Size	Serraggio Clamping	a	$b_{\pm 0,05}$	c	e	f
ER11	0,5... 7,0	7,5	11	M18x1,00	23,0	7,0
ER16	0,5... 10,0	10,5	16	M24x1,00	32,0	10,0
ER20	0,5... 13,0	13,5	20	M28x1,50	37,5	11,0
ER25	0,5... 16,0	18,0	25	M32x1,50	41,0	12,0
ER32	1,0... 20,0	23,5	32	M40x1,50	48,0	14,0

# DIN 6499-B

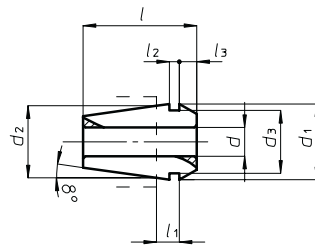
Pinze  
Collets



Grandezza Size	d	d1	d2	d3	d4	l	l1	l2	l3	l4	Disegno Picture
ER8	0,5... 2,5	8,5	8,0	6,5	4,0	13,5	2,98	1,2	1,5	6,0	A
ER8	3,0... 5,0	8,5	8,0	6,5	-	13,5	2,98	1,2	1,5	-	B

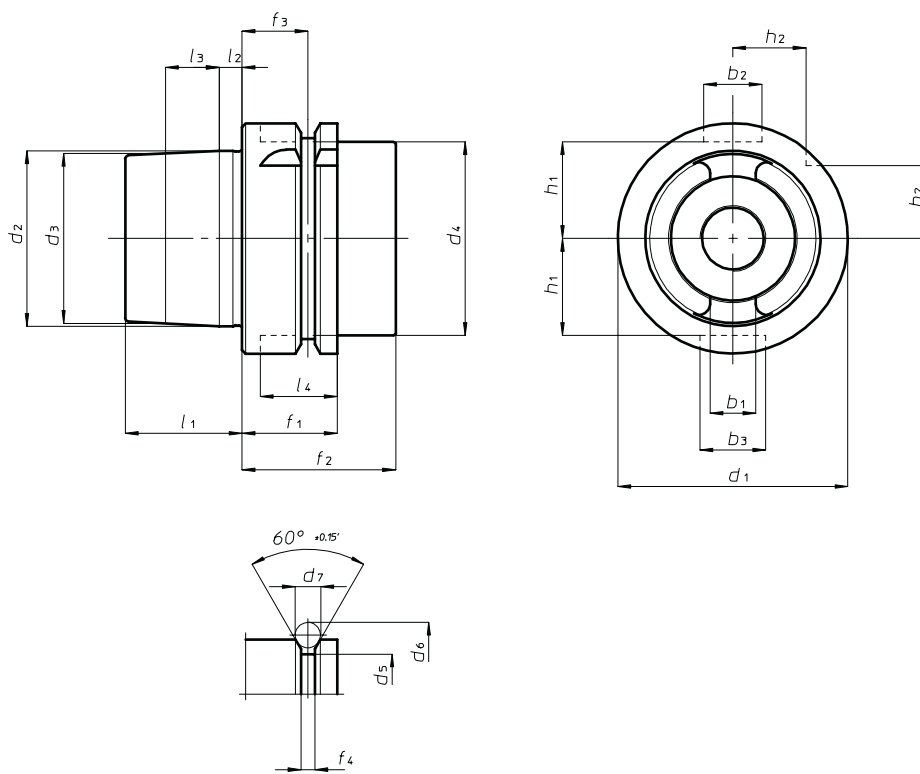


Grandezza Size	d	d1	d2	d3	d4	l	l1	l2	l3	l4
ER11	0,5... 2,5	11,5	11,0	9,5	5,0	18,0	3,80	2,0	2,5	9,0
ER16	0,5... 4,5	17,0	16,0	13,8	7,5	27,5	6,26	2,7	4,0	10,0
ER20	1,0... 6,5	21,0	20,0	17,4	9,0	31,5	6,36	2,8	4,8	13,0
ER25	1,0... 7,5	26,0	25,0	22,0	12,0	34,0	6,66	3,1	5,0	15,0
ER32	2,0... 3,5	33,0	32,0	29,2	15,0	40,0	7,16	3,6	5,5	20,0
ER32	4,0... 7,5	33,0	32,0	29,2	15,0	40,0	7,16	3,6	5,5	15,0
ER40	3,0... 3,5	41,0	40,0	36,2	20,0	46,0	7,66	4,1	7,0	21,0
ER40	4,0... 8,5	41,0	40,0	36,2	20,0	46,0	7,66	4,1	7,0	18,0
ER50	4,0... 10,0	52,0	50,0	46,0	20,0	60,0	12,60	5,5	8,5	26,0



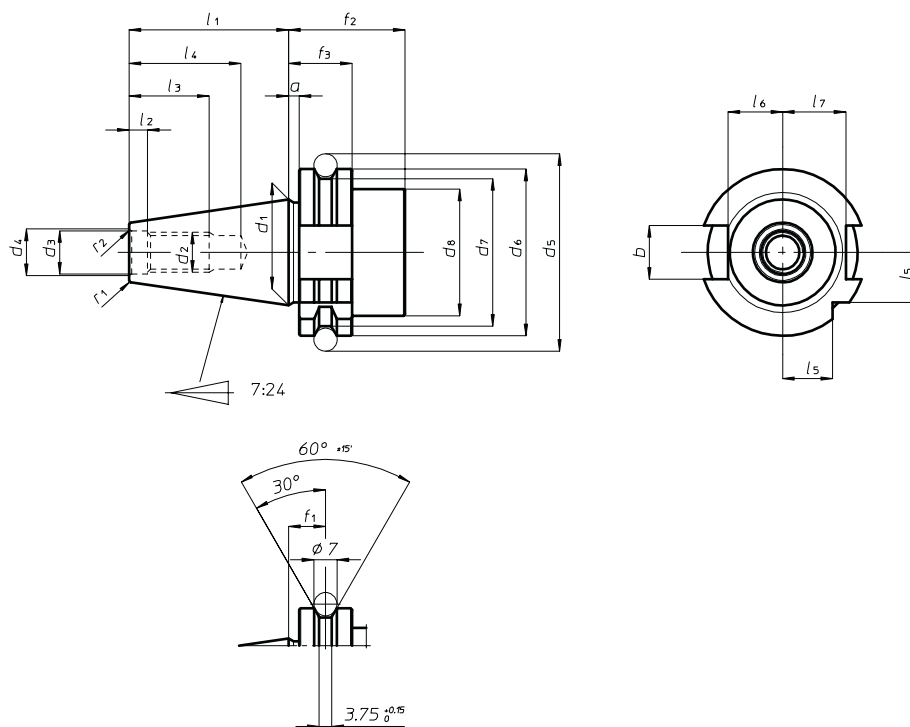
Grandezza Size	d	d1	d2	d3	l	l1	l2	l3
ER11	3,0... 7,0	11,5	11,0	9,5	18,0	3,80	2,0	2,5
ER16	5,0... 10,0	17,0	16,0	13,8	27,5	6,26	2,7	4,0
ER20	7,0... 13,0	21,0	20,0	17,4	31,5	6,36	2,8	4,8
ER25	8,0... 16,0	26,0	25,0	22,0	34,0	6,66	3,1	5,0
ER32	8,0... 20,0	33,0	32,0	29,2	40,0	7,16	3,6	5,5
ER40	9,0... 30,0	41,0	40,0	36,2	46,0	7,66	4,1	7,0
ER50	12,0... 34,0	52,0	50,0	46,0	60,0	12,60	5,5	8,5

# DIN 69893 Forma A



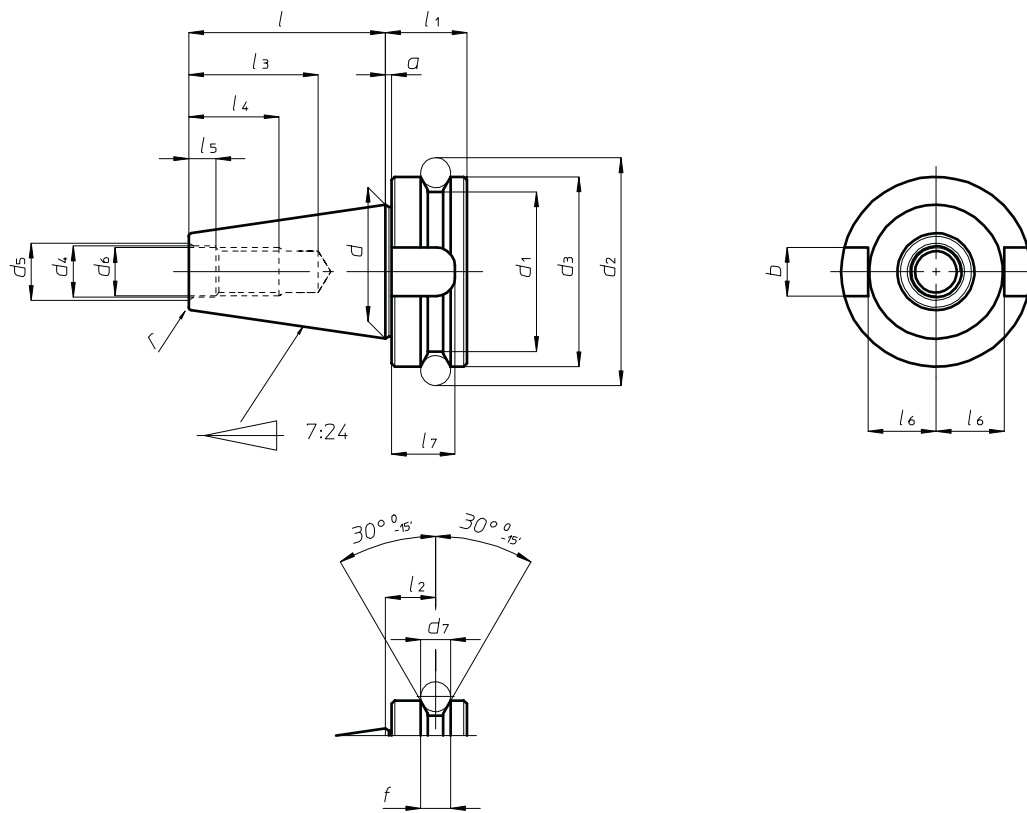
	HSK50	HSK63	HSK80	HSK100
$b_1$ H10	10,5	12,5	16	20
$b_2$ H10	12	16	18	20
$b_3$ H10	14	18	20	22
$d_1$ H10	50	63	80	100
$d_2$	38 $\begin{smallmatrix} +0,009 \\ +0,006 \end{smallmatrix}$	48 $\begin{smallmatrix} +0,011 \\ +0,007 \end{smallmatrix}$	60 $\begin{smallmatrix} +0,013 \\ +0,008 \end{smallmatrix}$	75 $\begin{smallmatrix} +0,015 \\ +0,009 \end{smallmatrix}$
$d_3$	36,900 $\begin{smallmatrix} +0,006 \\ +0,003 \end{smallmatrix}$	46,530 $\begin{smallmatrix} +0,007 \\ +0,003 \end{smallmatrix}$	58,100 $\begin{smallmatrix} +0,008 \\ +0,003 \end{smallmatrix}$	72,600 $\begin{smallmatrix} +0,009 \\ +0,003 \end{smallmatrix}$
$d_4$ max	42	53	67	85
$d_5$ $\begin{smallmatrix} 0 \\ -0,1 \end{smallmatrix}$	43	55	70	92
$d_6$ $\begin{smallmatrix} 0 \\ -0,1 \end{smallmatrix}$	59,3	72,3	88,8	109,75
$d_7$	7	7	7	7
$f_1$ $\begin{smallmatrix} 0 \\ -0,1 \end{smallmatrix}$	26	26	26	29
$f_2$ min	42	42	42	45
$f_3$ $\pm 0,1$	18	18	18	20
$f_4$ $\begin{smallmatrix} +0,15 \\ 0 \end{smallmatrix}$	3,75	3,75	3,75	3,75
$h_1$ $\begin{smallmatrix} 0 \\ -0,2 \end{smallmatrix}$	21	26,5	34	44
$h_2$ $\begin{smallmatrix} 0 \\ -0,3 \end{smallmatrix}$	15,5	20	25	31,5
$l_1$ $\begin{smallmatrix} 0 \\ -0,2 \end{smallmatrix}$	25	32	40	50
$l_2$	5	6,3	8	10
$l_3$	11	14,7	19	24
$l_4$	19	21	22	24

# DIN 69871 Forma A



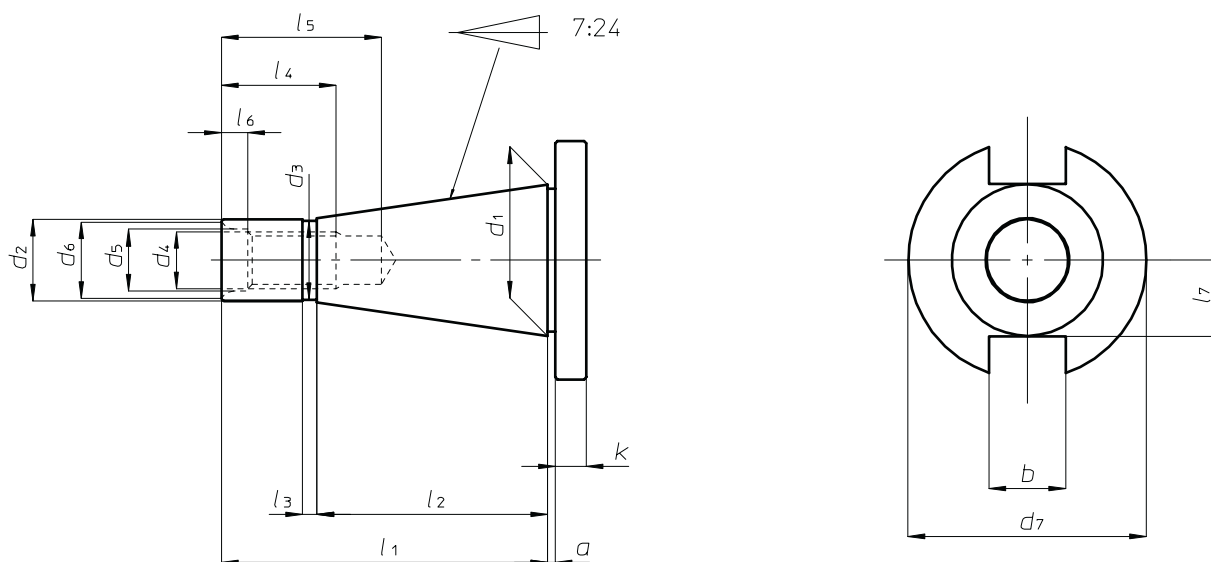
Grandezza Size	30	40	45	50
a $^{+0,1}_{-0,1}$	3,2	3,2	3,2	3,2
b h12	16,1	16,1	19,3	25,7
d <sub>1</sub>	31,75	44,45	57,15	69,85
d <sub>2</sub>	M12	M16	M20	M24
d <sub>3</sub> H7	13	17	21	25
d <sub>4</sub> max	14	19	23,4	28
d <sub>5</sub> $^{+0,05}_{-0,05}$	59,3	72,3	91,35	107,25
d <sub>6</sub> $^0_{-0,1}$	50	63,55	82,55	97,50
d <sub>7</sub> $^0_{-0,5}$	44,3	56,25	75,25	91,25
d <sub>8</sub> max	45	50	63	80
f <sub>1</sub> $^{+0,1}_{-0,1}$	11,1	11,1	11,1	11,1
f <sub>2</sub> min	35	35	35	35
f <sub>3</sub> $^0_{-0,1}$	19,1	19,1	19,1	19,1
l <sub>1</sub> $^0_{-0,3}$	47,8	68,4	82,7	101,75
l <sub>2</sub> $^{+0,5}_{0}$	5,5	8,2	10	11,5
l <sub>3</sub> min	24	32	40	47
l <sub>4</sub> min	33,5	42,5	52,5	61,5
l <sub>5</sub> $^0_{-0,3}$	15	18,5	24	30
l <sub>6</sub> $^0_{-0,4}$	16,4	22,8	29,1	35,5
l <sub>7</sub> $^0_{-0,4}$	19	25	31,3	37,7
r <sub>1</sub>	0,6 $^0_{-0,3}$	1,2 $^0_{-0,5}$	2 $^0_{-0,5}$	2,5 $^0_{-0,5}$
r <sub>2</sub> $^0_{-0,5}$	0,8	1	1,2	1,5

# MAS 403



Grandezza Size	30	40	50
$a_{\pm 0,4}$	2	2	3
$b_{H8}$	16,1	16,1	25,7
$d$	31,75	44,45	69,85
$d_{1 \begin{smallmatrix} -0,1 \\ -0,3 \end{smallmatrix}}$	38	53	85
$d_2$	56,144	75,679	119,019
$d_3_{H8}$	46	63	100
$d_4_{H8}$	12,5	17	25
$d_5$	14,5	19	27
$d_6$	M12	M16	M24
$d_7$	8	10	15
$f_{\begin{smallmatrix} +0,1 \\ 0 \end{smallmatrix}}$	8	10	15
$l_{\pm 0,15}$	48,4	65,4	101,8
$l_1$	22	27	38
$l_2_{\pm 0,1}$	13,6	16,6	23,2
$l_3$	34	43	62
$l_4$	24	30	45
$l_5_{\begin{smallmatrix} +0,5 \\ 0 \end{smallmatrix}}$	7	9	13
$l_6_{\begin{smallmatrix} 0 \\ -0,2 \end{smallmatrix}}$	16,3	22,6	35,4
$l_7$	17	21	31
$r$	0,5	1	1

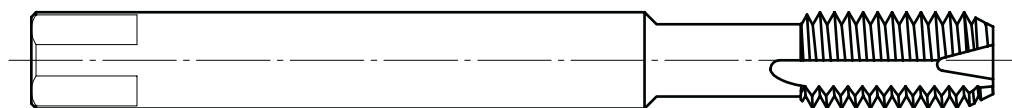
# DIN 2080



Grandezza Size	30	40	45	50
a $\pm 0,2$	1,6	1,6	3,2	3,2
b H12	16,1	16,1	19,3	25,7
d <sub>1</sub>	31,75	44,45	57,15	69,85
d <sub>2</sub> a10	17,4	25,3	32,4	39,6
d <sub>3</sub>	16,5	24	30	38
d <sub>4</sub>	M12	M16	M20	M24
d <sub>5</sub>	13	17	21	26
d <sub>6</sub> max	16	21,5	26	32
d <sub>7</sub> $\begin{smallmatrix} 0 \\ -0,4 \end{smallmatrix}$	50	63	80	97,5
k $\pm 0,15$	8	10	12	12
l <sub>1</sub>	68,4	93,4	106,8	126,8
l <sub>2</sub>	48,4	65,4	82,8	101,8
l <sub>3</sub>	3	5	6	8
l <sub>4</sub>	24	32	40	47
l <sub>5</sub> min	33,5	42,5	52,5	61,5
l <sub>6</sub> $\begin{smallmatrix} +0,5 \\ 0 \end{smallmatrix}$	5,5	8,2	10	11,5
l <sub>7</sub> max	16,2	22,5	29	35,3



# MASCHI



Maschi (mm) (pollici)	ISO 529		DIN 371 (DIN 2181)		DIN 357 DIN 376		DIN 352		JAPAN JIS		US STANDARD		
	(Ø)	(□)	(Ø)	(□)	(Ø)	(□)	(Ø)	(□)	(Ø)	(□)	(Ø)"	(□)"	
M 1.0		2,50	2,10	-	-	2,50	2,10	-	-	3,00	2,50	-	-
M 1.1		2,50	2,10	-	-	2,50	2,10	-	-	3,00	2,50	-	-
M 1.2		2,50	2,10	-	-	2,50	2,10	-	-	3,00	2,50	-	-
M 1.4		2,50	2,10	-	-	2,50	2,10	-	-	3,00	2,50	-	-
M 1.6	1/16	2,50	2,10	-	-	2,50	2,10	-	-	3,00	2,50	0,141	0,110
M 1.7		2,50	2,10	-	-	2,50	2,10	-	-	3,00	2,50	-	-
M 1.8		2,50	2,10	-	-	2,50	2,10	-	-	3,00	2,50	0,141	0,110
M 2.0		2,80	2,10	2,50	2,00	2,50	2,10	-	-	3,00	2,50	0,141	0,110
M 2.2		2,80	2,10	2,80	2,24	2,50	2,10	-	-	3,00	2,50	0,141	0,110
M 2.3		2,80	2,10	2,80	2,24	2,50	2,10	-	-	3,00	2,50	-	-
M 2.5	3/32	2,80	2,10	2,80	2,24	2,50	2,10	-	-	3,00	2,50	0,141	0,110
M 2.6		2,80	2,10	2,80	2,24	2,50	2,10	-	-	3,00	2,50	-	-
M 3.0	1/8	3,15	2,50	3,15	2,50	3,50	2,70	3,00	-	4,00	3,00	0,141	0,110
M 3.5		3,55	2,80	3,55	2,80	4,00	3,00	2,50	2,10	4,00	3,00	0,141	0,110
M 4.0	5/32	4,00	3,15	-	-	4,50	3,40	2,80	2,10	5,00	4,00	0,168	0,131
M 4.5	3/16	4,50	3,55	-	-	6,00	4,90	3,50	2,70	5,00	4,00	0,194	0,152
M 5.0		5,00	4,00	-	-	6,00	4,90	3,50	2,70	5,50	4,50	0,194	0,152
M 6.0	1/4	6,30	5,00	-	-	6,00	4,90	4,50	3,40	6,00	4,50	0,255	0,191
M 7.0	5/16	7,10	5,60	-	-	7,00	5,50	5,50	4,30	6,20	5,00	0,318	0,238
M 8.0		8,00	6,30	-	-	8,00	6,20	6,00	4,90	6,20	5,00	0,318	0,238
M 9.0		9,00	7,10	-	-	9,00	7,00	7,00	5,50	7,00	5,50	0,381	0,286
M 10.0	3/8	10,00	8,00	-	-	10,00	8,00	7,00	5,50	7,00	5,50	0,381	0,286
M 11.0		8,00	6,30	-	-	-	-	8,00	6,20	8,00	6,20	0,381	0,286
M 12.0	1/2	9,00	7,10	-	-	-	-	9,00	7,00	8,50	6,50	0,367	0,275
M 14.0	9/16	11,20	9,00	11,20	-	-	-	11,00	9,00	10,50	8,00	0,429	0,322
M 16.0	5/8	12,50	10,00	12,50	-	-	-	12,00	9,00	12,50	10,00	0,480	0,360
M 18.0	11/16	14,00	11,20	14,00	-	-	-	14,00	11,00	14,00	11,00	0,542	0,406
M 20.0	13/16	14,00	11,20	14,00	-	-	-	16,00	12,00	15,00	12,00	0,652	0,489
M 22.0	7/8	16,00	12,50	16,00	-	-	-	18,00	14,50	17,00	13,00	0,697	0,523
M 24.0	15/16	18,00	14,00	18,00	-	-	-	18,00	14,50	19,00	15,00	0,760	0,570
M 27.0	1 1/16	20,00	16,00	20,00	-	-	-	20,00	16,00	20,00	15,00	0,896	0,672
M 30.0	1 3/16	20,00	16,00	20,00	-	-	-	22,00	18,00	23,00	23,17	1,021	0,766

US STANDARD: in pollici