

# Appendice tecnica

## *Technical supplement*

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BAH

TA.CP

TA

MO

HT

VH

TSI/TSX

T

MT-TC-TC3

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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

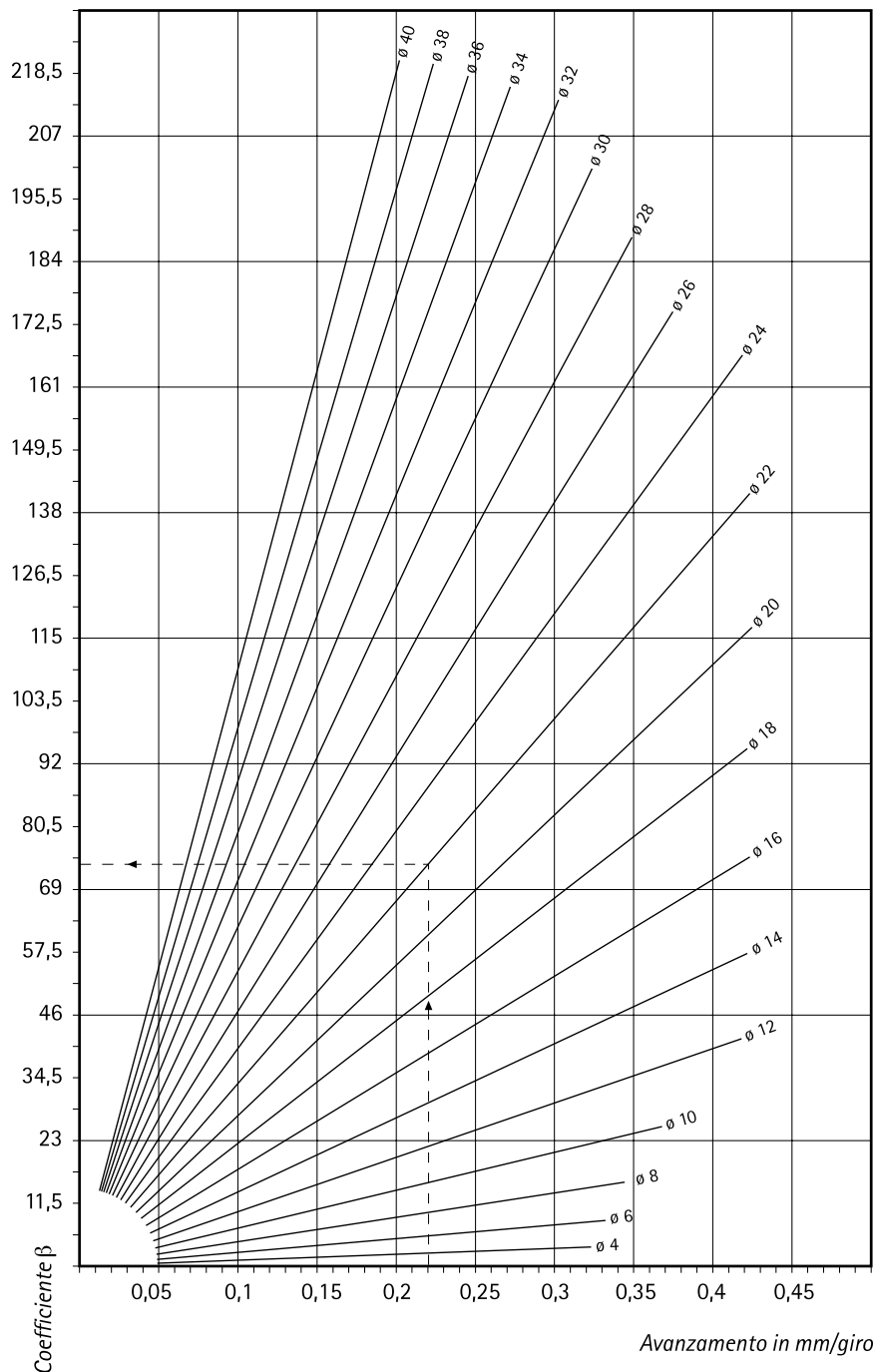
$$N = \frac{M_t \times n}{9549,3}$$

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 «coefficient  $\beta$ » 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 Ø 22  
 giri/1' = 230  
 $R = 500$  N/mm<sup>2</sup>  
 coefficiente  $\beta = 73$

Ex:

$a = 0,22$  mm/revs  
 tip Ø 22  
 rpm = 230  
 $R = 500$  N/mm<sup>2</sup>  
 coefficient  $\beta = 73$

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

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



# 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.

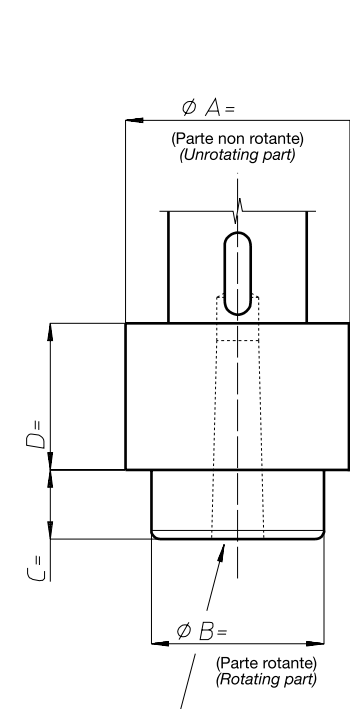


Fig. 1

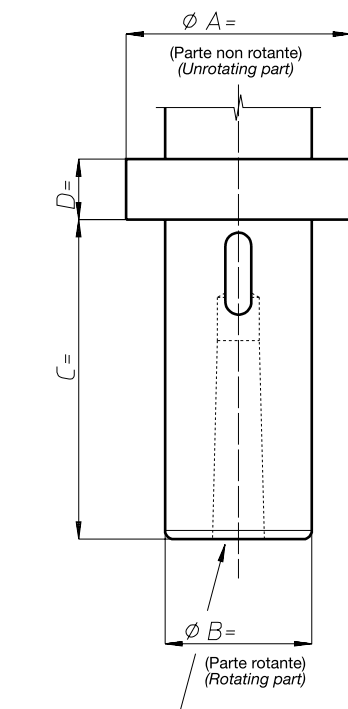


Fig. 2

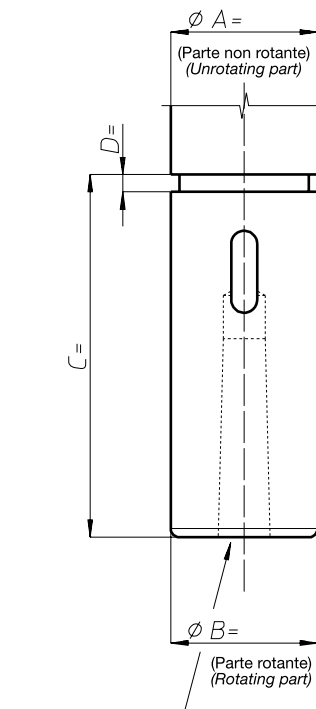


Fig. 3

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

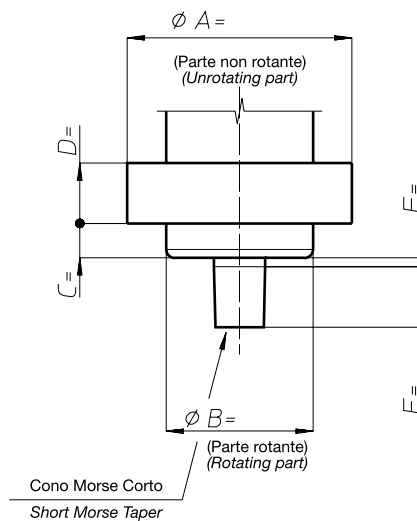
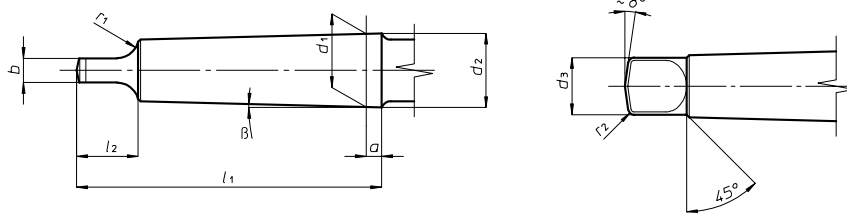


Fig. 4

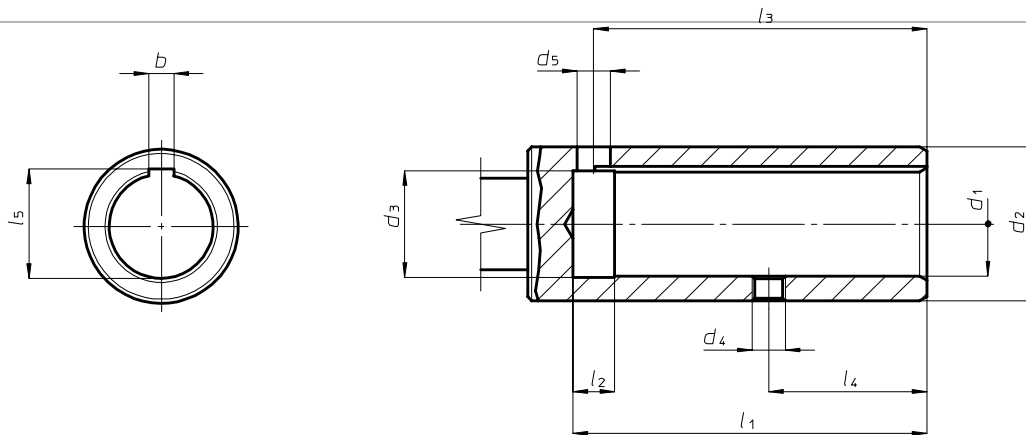
# DIN 228

Cono Morse  
Morse taper



Cono Morse Morse Taper	a	b <sup>h13</sup>	d1	d2	d3max	l1max	l2max	r1	r2	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

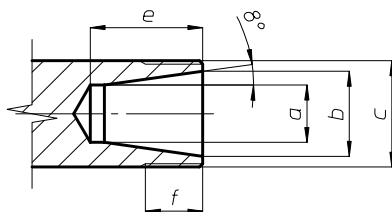


Grandezza Size d1 H7	Ø8	Ø10	12	16	Ø20	Ø25	28	Ø32	Ø36	48
b	2	3	3	5	5	6	6	8	9	10
d2f7	15	18	20	25	32	37	40	45	50	67
d3	8,6	10,6	12,6	16,6	20,6	25,6	28,6	32,8	36,8	48,8
d4	M4	M5	M5	M6	M6	M8	M8	M8	M8	M10
d5	3,5	5	5	6	6	8	8	10	10	12
l1 min	42	52	52	75	78	85	85	106	106	129
l2	8	8	8	8	8	10	10	10	10	12
l3	35	48	48	70	73	80	80	101	101	123
l4 ±0,1	16	22	22	34	34	38	38	45	45	57
l5 ±0,1	9	11,1	13,1	17,3	21,3	26,7	29,7	33,7	37,7	50,1

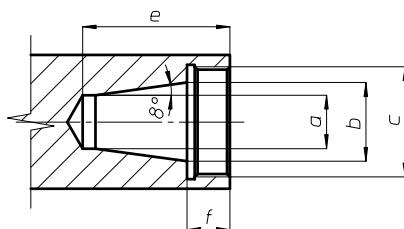


Sedi delle pinze ER  
ER housing

# DIN 6499



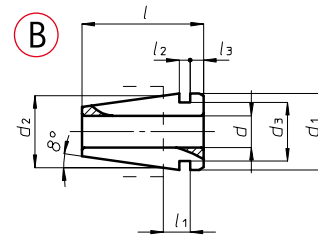
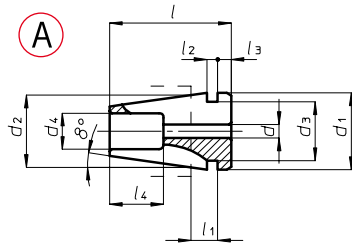
Grandezza Size	Serraggio Clamping	a	b ±0,05	c	e	f
ER8	0,5... 5,0	5,2	8	M10x0,75	13,0	7,5
ER11	0,5... 7,0	7,5	11	M13x0,75	17,0	10,0
ER16	0,5... 10,0	10,5	16	M19x1,00	22,0	13,0
ER20	0,5... 13,0	13,5	20	M24x1,00	26,5	13,5
ER25	0,5... 16,0	18,0	25	M30x1,00	29,0	14,0
ER16	0,5... 10,0	10,5	16	M22x1,50	22,0	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



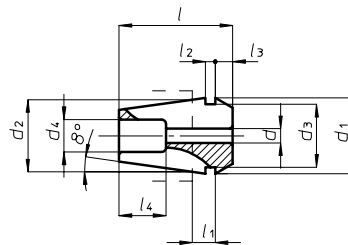
Grandezza Size	Serraggio Clamping	a	b ±0,05	c	e	f
ER11	0,5... 7,0	7,5	11	M18x1,00	23,0	7,0
ER16	0,5... 10,0	10,5	16	M24x1,00	32,0	10,0
ER20	0,5... 13,0	13,5	20	M28x1,50	37,5	11,0
ER25	0,5... 16,0	18,0	25	M32x1,50	41,0	12,0
ER32	1,0... 20,0	23,5	32	M40x1,50	48,0	14,0

# DIN 6499-B

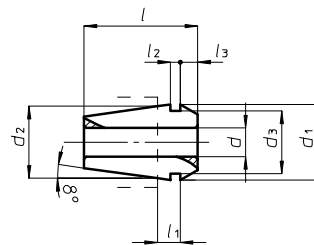
Pinze  
Collets



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	-	A



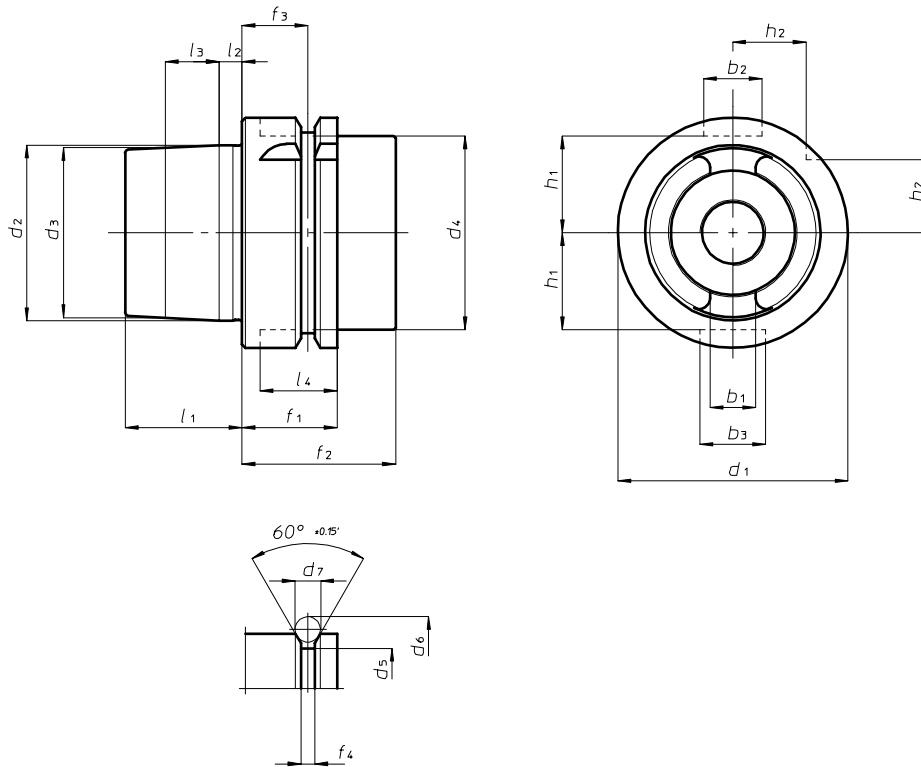
Grandezza Size	d	d1	d2	d3	d4	l	l1	l2	l3	l4
ER11	0,5... 2,5	11,5	11,0	9,5	5,0	18,0	3,80	2,0	2,5	9,0
ER16	0,5... 4,5	17,0	16,0	13,8	7,5	27,5	6,26	2,7	4,0	10,0
ER20	1,0... 6,5	21,0	20,0	17,4	9,0	31,5	6,36	2,8	4,8	13,0
ER25	1,0... 7,5	26,0	25,0	22,0	12,0	34,0	6,66	3,1	5,0	15,0
ER32	2,0... 3,5	33,0	32,0	29,2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

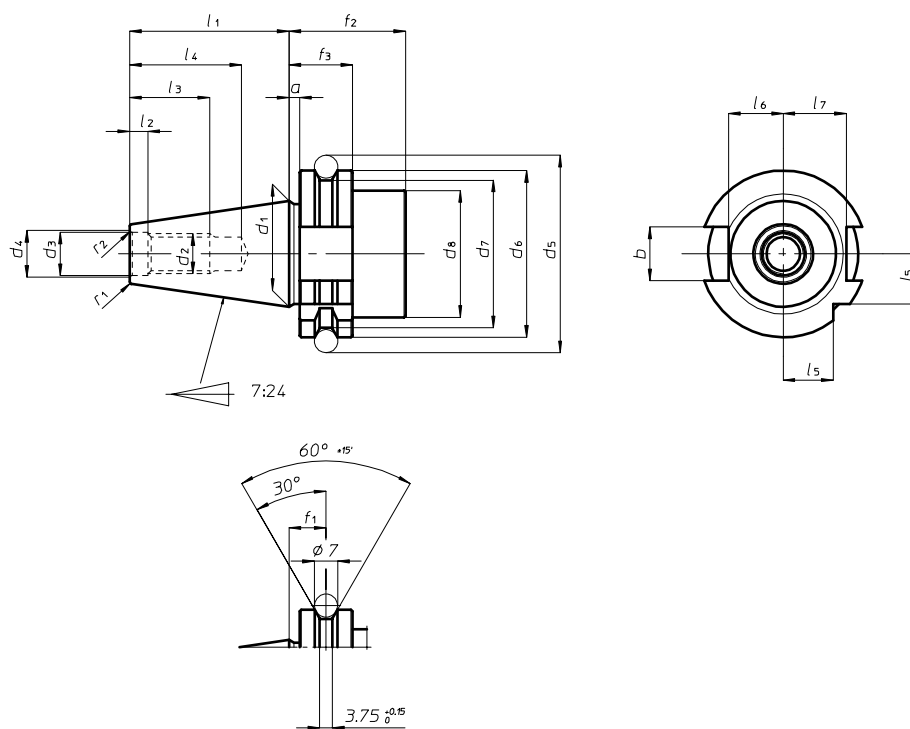


# DIN 69893 Forma A



	HSK50	HSK63	HSK80	HSK100
<b>b<sub>1</sub> H10</b>	10,5	12,5	16	20
<b>b<sub>2</sub> H10</b>	12	16	18	20
<b>b<sub>3</sub> H10</b>	14	18	20	22
<b>b<sub>1</sub> H10</b>	50	63	80	100
<b>d<sub>2</sub></b>	38 <sup>+0,009</sup> / <sub>+0,006</sub>	48 <sup>+0,011</sup> / <sub>+0,007</sub>	60 <sup>+0,013</sup> / <sub>+0,008</sub>	75 <sup>+0,015</sup> / <sub>+0,009</sub>
<b>d<sub>3</sub></b>	36,900 <sup>+0,006</sup> / <sub>+0,003</sub>	46,530 <sup>+0,007</sup> / <sub>+0,003</sub>	58,100 <sup>+0,008</sup> / <sub>+0,003</sub>	72,600 <sup>+0,009</sup> / <sub>+0,003</sub>
<b>d<sub>4</sub> max</b>	42	53	67	85
<b>d<sub>5</sub></b> <sup>0</sup> / <sub>-0,1</sub>	43	55	70	92
<b>d<sub>6</sub></b> <sup>0</sup> / <sub>-0,1</sub>	59,3	72,3	88,8	109,75
<b>d<sub>7</sub></b>	7	7	7	7
<b>f<sub>1</sub></b> <sup>0</sup> / <sub>-0,1</sub>	26	26	26	29
<b>f<sub>2</sub> min</b>	42	42	42	45
<b>f<sub>3</sub> ±0,1</b>	18	18	18	20
<b>f<sub>4</sub></b> <sup>+0,15</sup> / <sub>0</sub>	3,75	3,75	3,75	3,75
<b>h<sub>1</sub></b> <sup>0</sup> / <sub>-0,2</sub>	21	26,5	34	44
<b>h<sub>2</sub></b> <sup>0</sup> / <sub>-0,3</sub>	15,5	20	25	31,5
<b>l<sub>1</sub></b> <sup>0</sup> / <sub>-0,2</sub>	25	32	40	50
<b>l<sub>2</sub></b>	5	6,3	8	10
<b>l<sub>3</sub></b>	11	14,7	19	24
<b>l<sub>4</sub></b>	19	21	22	24

# DIN 69871 Forma A

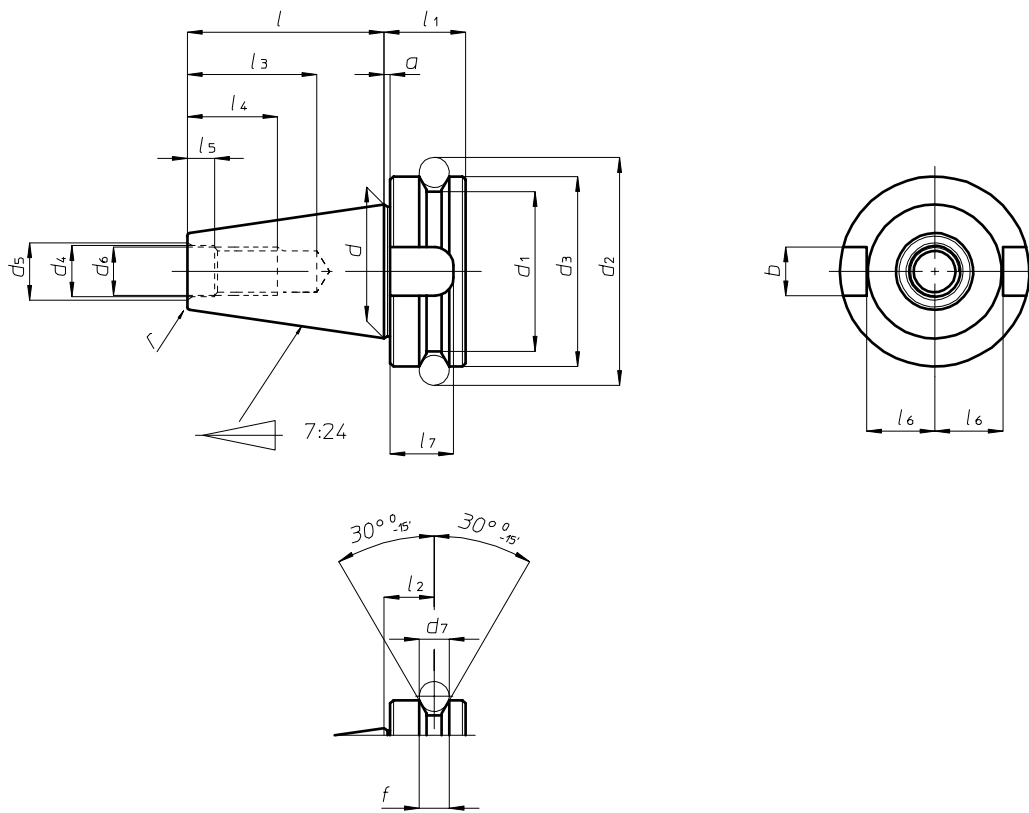


Grandezza Size	30	40	45	50
<b>a</b> $\begin{smallmatrix} +0,1 \\ -0,1 \end{smallmatrix}$	32	3,2	3,2	3,2
<b>b</b> H12	16,1	16,1	19,3	25,7
<b>d1</b>	31,75	44,45	57,15	69,85
<b>d2</b>	M12	M16	M20	M24
<b>d3</b> H7	13	17	21	25
<b>d4 max</b>	14	19	23,4	28
<b>d5</b> $\begin{smallmatrix} +0,05 \\ -0,05 \end{smallmatrix}$	59,3	72,3	91,35	107,25
<b>d6</b> $\begin{smallmatrix} 0 \\ -0,1 \end{smallmatrix}$	50	63,55	82,55	97,50
<b>d7</b> $\begin{smallmatrix} 0 \\ -0,5 \end{smallmatrix}$	44,3	56,25	75,25	91,25
<b>d8 max</b>	45	50	63	80
<b>f1</b> $\begin{smallmatrix} +0,1 \\ -0,1 \end{smallmatrix}$	11,1	11,1	11,1	11,1
<b>f2 min</b>	35	35	35	35
<b>f3</b> $\begin{smallmatrix} 0 \\ -0,1 \end{smallmatrix}$	19,1	19,1	19,1	19,1
<b>l1</b> $\begin{smallmatrix} 0 \\ -0,3 \end{smallmatrix}$	47,8	68,4	82,7	101,75
<b>l2</b> $\begin{smallmatrix} +0,5 \\ 0 \end{smallmatrix}$	5,5	8,2	10	11,5
<b>l3 min</b>	24	32	40	47
<b>l4 min</b>	33,5	42,5	52,5	61,5
<b>l5</b> $\begin{smallmatrix} 0 \\ -0,3 \end{smallmatrix}$	15	18,5	24	30
<b>l6</b> $\begin{smallmatrix} 0 \\ -0,4 \end{smallmatrix}$	16,4	22,8	29,1	35,5
<b>l7</b> $\begin{smallmatrix} 0 \\ -0,4 \end{smallmatrix}$	19	25	31,3	37,7
<b>r1</b>	0,6 $\begin{smallmatrix} 0 \\ -0,3 \end{smallmatrix}$	1,2 $\begin{smallmatrix} 0 \\ -0,5 \end{smallmatrix}$	2 $\begin{smallmatrix} 0 \\ -0,5 \end{smallmatrix}$	2,5 $\begin{smallmatrix} 0 \\ -0,5 \end{smallmatrix}$
<b>r2</b> $\begin{smallmatrix} 0 \\ -0,5 \end{smallmatrix}$	0,8	1	1,2	1,5



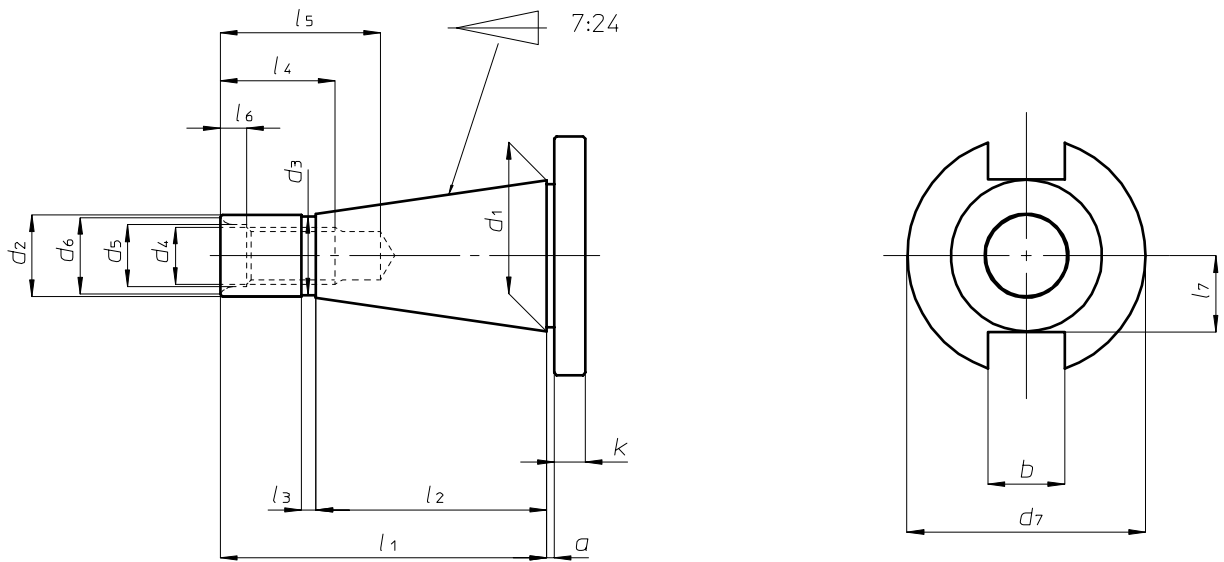


# MAS 403



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
d1 $\begin{matrix} -0,1 \\ -0,3 \end{matrix}$	38	53	85
d2	56,144	75,679	119,019
d3 H8	46	63	100
d4 H8	12,5	17	25
d5	14,5	19	27
d6	M12	M16	M24
d7	8	10	15
f $\begin{matrix} +0,1 \\ 0 \end{matrix}$	8	10	15
l $\pm 0,15$	48,4	65,4	101,8
l1	22	27	38
l2 $\pm 0,1$	13,6	16,6	23,2
l3	34	43	62
l4	24	30	45
l5 $\begin{matrix} +0,5 \\ 0 \end{matrix}$	7	9	13
l6 $\begin{matrix} 0 \\ -0,2 \end{matrix}$	16,3	22,6	35,4
l7	17	21	31
r	0,5	1	1

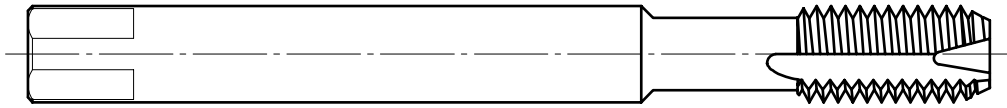
# DIN 2080



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



# MASCHI



Maschi		ISO 529		DIN 371 (DIN 2181)		DIN 371		DIN 376		JAPAN JIS		US STANDARD	
(mm)	(pollici)	(Ø)	(□)	(Ø)	(□)	(Ø)	(□)	(Ø)	(□)	(Ø)	(□)	(Ø)"	(□)"
<b>M1.0</b>		2,50	2,10	-	-	2,50	2,10	-	-	3,00	2,50	-	-
M1.1		2,50	2,10	-	-	2,50	2,10	-	-	3,00	2,50	-	-
M1.2		2,50	2,10	-	-	2,50	2,10	-	-	3,00	2,50	-	-
<b>M1.4</b>		2,50	2,10	-	-	2,50	2,10	-	-	3,00	2,50	-	-
M1.6	1/16	2,50	2,10	-	-	2,50	2,10	-	-	3,00	2,50	0,141	0,110
M1.7		2,50	2,10	-	-	2,50	2,10	-	-	3,00	2,50	-	-
<b>M1.8</b>		2,50	2,10	-	-	2,50	2,10	-	-	3,00	2,50	0,141	0,110
M2.0		2,80	2,10	2,50	2,00	2,50	2,10	-	-	3,00	2,50	0,141	0,110
M2.2		2,80	2,10	2,80	2,24	2,50	2,10	-	-	3,00	2,50	0,141	0,110
<b>M2.3</b>		2,80	2,10	2,80	2,24	2,50	2,10	-	-	3,00	2,50		
M2.5	3/32	2,80	2,10	2,80	2,24	2,50	2,10	-	-	3,00	2,50	0,141	0,110
M2.6		2,80	2,10	2,80	2,24	2,50	2,10	-	-	3,00	2,50		
<b>M3.0</b>	1/8	3,15	2,50	3,15	2,50	3,50	2,70	3,00	-	4,00	3,00	0,141	0,110
M3.5		3,55	2,80	3,55	2,80	4,00	3,00	2,50	2,10	4,00	3,00	0,141	0,110
<b>M4.0</b>	5/32	4,00	3,15	-	-	4,50	3,40	2,80	2,10	5,00	4,00	0,168	0,131
M4.5	3/16	4,50	3,55	-	-	6,00	4,90	3,50	2,70	5,00	4,00	0,194	0,152
M5.0		5,00	4,00	-	-	6,00	4,90	3,50	2,70	5,50	4,50	0,194	0,152
<b>M6.0</b>	1/4	6,30	5,00	-	-	6,00	4,90	4,50	3,40	6,00	4,50	0,255	0,191
M7.0	5/16	7,10	5,60	-	-	7,00	5,50	5,50	4,30	6,20	5,00	0,318	0,238
M8.0		8,00	6,30	-	-	8,00	6,20	6,00	4,90	6,20	5,00	0,318	0,238
<b>M9.0</b>		9,00	7,10	-	-	9,00	7,00	7,00	5,50	7,00	5,50	0,381	0,286
M10.0	3/8	10,00	8,00	-	-	10,00	8,00	7,00	5,50	7,00	5,50	0,381	0,286
M11.0		8,00	6,30	-	-	-	-	8,00	6,20	8,00	6,20	0,381	0,286
<b>M12.0</b>	1/2	9,00	7,10	-	-	-	-	9,00	7,00	8,50	6,50	0,367	0,275
M14.0	9/16	11,20	9,00	11,20	-	-	-	11,00	9,00	10,50	8,00	0,429	0,322
M16.0	5/8	12,50	10,00	12,50	-	-	-	12,00	9,00	12,50	10,00	0,480	0,360
<b>M18.0</b>	11/16	14,00	11,20	14,00	-	-	-	14,00	11,00	14,00	11,00	0,542	0,406
M20.0	13/16	14,00	11,20	14,00	-	-	-	16,00	12,00	15,00	12,00	0,652	0,489
M22.0	7/8	16,00	12,50	16,00	-	-	-	18,00	14,50	17,00	13,00	0,697	0,523
<b>M24.0</b>	15/16	18,00	14,00	18,00	-	-	-	18,00	14,50	19,00	15,00	0,760	0,570
M27.0	1 1/16	20,00	16,00	20,00	-	-	-	20,00	16,00	20,00	15,00	0,896	0,672
M30.0	1 3/16	20,00	16,00	20,00	-	-	-	22,00	18,00	23,00	23,17	1,021	0,766

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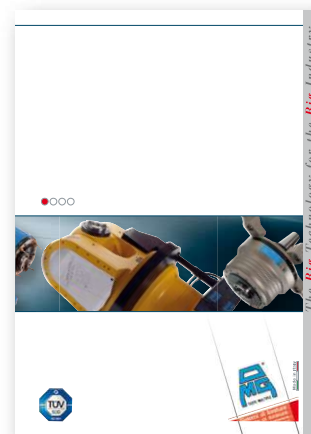


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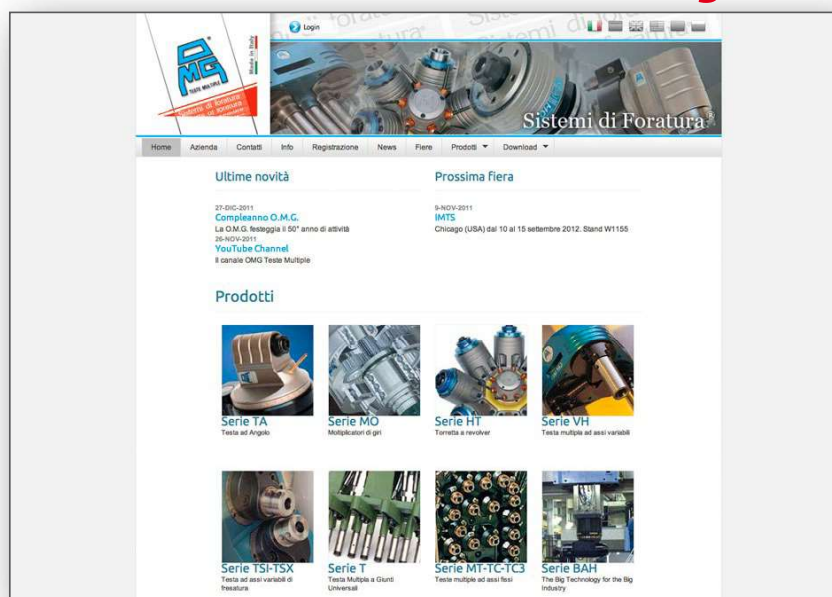


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