

PUNZONI

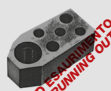
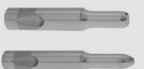
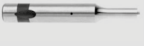
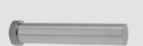
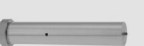
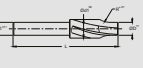
Punches



Punzoni

Punches

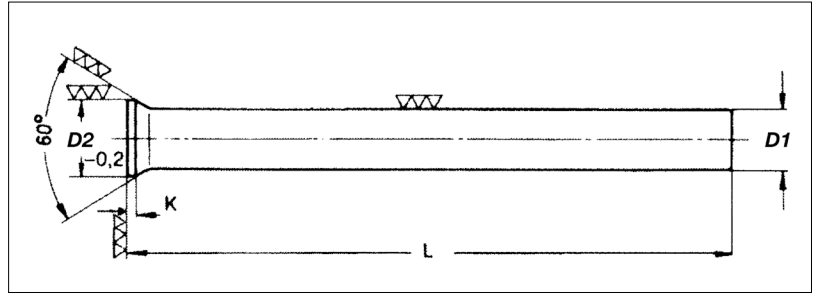
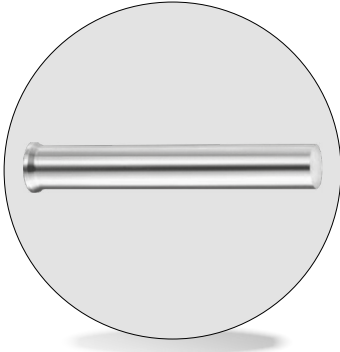


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PUNZONI
Punches

Punzoni a testa svasata

Punch with countersunk head



* Su richiesta lunghezza L = 125 mm/Length L = 125 on request

Codice/Code	Tipo/Type	Materiale/Material	Durezza/Hardness	Durezza testa/Head hardness
Cod. 320 Acciaio Wolframio	DIN 9861/DA	1.251 WS	HRC 62 $\pm$ 2	HRC 45 $\pm$ 5
Cod. 321 Acciaio cromo		1.2080 HWS	HRC 62 $\pm$ 2	HRC 50 $\pm$ 5
Cod. 322 Acciaio HSS		1.3343 HSS	HRC 64 $\pm$ 2	HRC 50 $\pm$ 5
** Cod. 322D Acciaio HSS lucido	DIN 9861/D	1.3343 HSS	HRC 64 $\pm$ 2	HRC 50 $\pm$ 5
** Cod. 323 Acciaio sinterizzato		Vanadis 23 sinterizzato	HRC 64 $\pm$ 2	HRC 50 $\pm$ 5

D1 h6 (progressione / progression 0,1)	D2 ^{+0 -0,2}	K ^{+0,2 -0}	L ^{+0,5 -0} *		
			71	80	100
0,3	0,6	0,2	•	•	
0,4	0,7	0,2	•	•	
0,5	0,9	0,2	•	•	•
0,6	1,1	0,2	•	•	•
0,65	1,2	0,2	•	•	•
0,7-0,75	1,3	0,2	•	•	•
0,8-0,85	1,4	0,4	•	•	•
0,9-0,95	1,6	0,4	•	•	•
1-1,1	1,8	0,5	•	•	•
1,2-1,3	2	0,5	•	•	•
1,4-1,5	2,2	0,5	•	•	•
1,6-1,7	2,5	0,5	•	•	•
1,75-1,9	2,8	0,5	•	•	•
2	3	0,5	•	•	•
2,1-2,2	3,2	0,5	•	•	•
2,3-2,5	3,5	0,5	•	•	•
2,6-2,9	4	0,5	•	•	•
3-3,4	4,5	0,5	•	•	•
3,5-3,9	5	0,5	•	•	•
4-4,4	5,5	0,5	•	•	•
4,5-4,9	6	0,5	•	•	•
5-5,4	6,5	0,5	•	•	•
5,5-5,9	7	0,5	•	•	•
6-6,4	8	0,5	•	•	•
6,5-7,4	9	1	•	•	•
7,5-8,4	10	1	•	•	•
8,5-9,4	11	1	•	•	•
9,5-10,4	12	1	•	•	•
10,5-11,4	13	1	•	•	•
11,5-12,4	14	1	•	•	•
12,5-13,4	15	1	•	•	•
13,5-14,4	16	1,5	•	•	•
14,5-15	17	1,5	•	•	•
15,1-16	18	1,5	•	•	•
16,1-16,9	19	1,5	•	•	•
17-17,9	20	1,5	•	•	•
18-18,9	21	1,5	•	•	•
19-20	22	1,5	•	•	•

Esempio di ordinazione/Order example:
321 - 6,2x100 (codice/code + D1 x L)

** Punzoni DIN 9861/D fornibili a richiesta/Punches DIN 9861/D available on request
A richiesta trattamento Balinit-TIN su codice 322-322D-323/Balinit-TIN coating on request for code 322-322D-323

PUNZONI
Punches

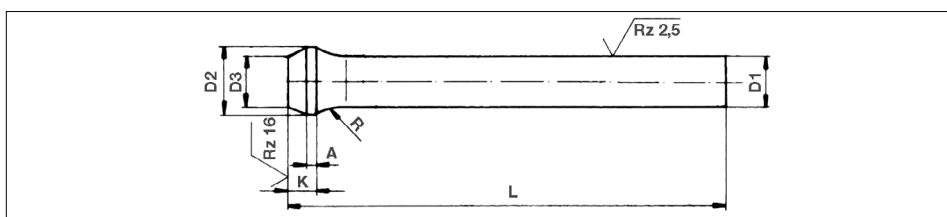
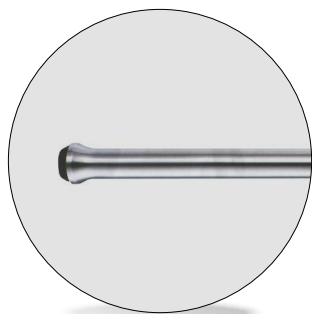
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Normalizzati per stampi

Standard parts for Die and Mold



Punzone collo di bottiglia *Bottle-neck punch*



Codice/Code	Tipo	Materiale/Material	Durezza/Hardness	Durezza testa/Head hardness
Cod. 324	D	HSS (1.3343)	HRC 64 ±2	HRC 50 ±5

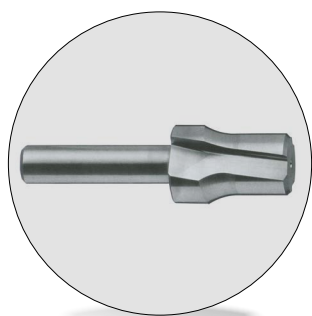
D1 h6	Progressione Progression D1	L +0,5 0	D2 0 -0,2	K +0,2	A	D3	R 0 -0,2	
2,0	0,1	71/80/100/125	3,0	3,0	1,0	D1 ± 0,1	3,5	
≥ 2,1			3,2				5,0	
≥ 2,3			3,5				6,5	
≥ 2,6			4,0				8,0	
≥ 3,0			4,5	4,0	1,5		10,0	
≥ 3,5			5,0				12,0	
≥ 4,0			5,5				15,0	
≥ 4,5			6,0					
≥ 5,0			7,0					
≥ 5,5			8,0					
6,0	0,5		9,0					
≥ 6,5			10,0					
≥ 7,5			11,0					
≥ 8,5			13,0					
9.5			14.0					

D1 h6	Progressione Progression D1	L +0,5 0	D2 0 -0,2	K +0,2	A	D3	R 0 -0,2
10,0	0,5	71/80/100/125	14,0	4,0	1,5	D1 ± 0,1	15,0
10,5			15,0				
11,0							
11,5							
12,0							
13,0	1,0		17,0				
14,0			18,0				
15,0			19,0				
16,0			20,0				
17,0			21,0				
18,0			22,0				
19,0			23,0				
20,0			25,0				
22,0			27,0				
25,0			30,0				

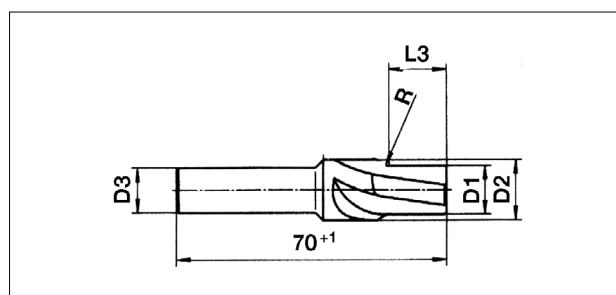
Esempio di ordinazione/Order example: 324 - 2x100 (codice/code + D1 x L1)

Su richiesta forniamo tutti i diametri decimali sopra il Ø 5,5.
On request we supply all decimal diameters above Ø 5,5.

Svasatori per punzoni a collo di bottiglia *Countersinks for bottle-neck punches*



Codice Code	Materiale Material
Cod. 325	HSS

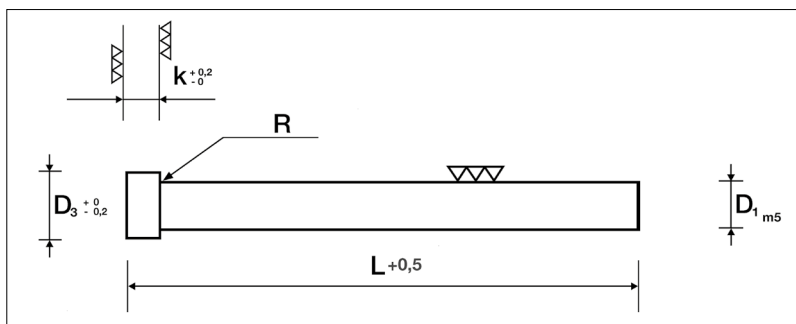
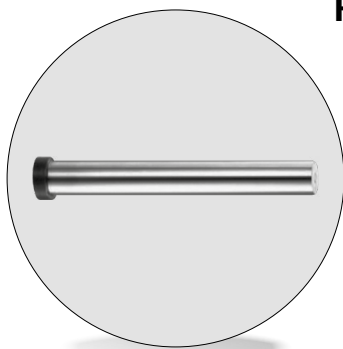


D1 f7	D2 h8	D3 h11	R +0,2	L3
2,0	3,3	= D2	3,5	5,0
≥ 2,1	3,5		5,0	
≥ 2,3	3,8		6,5	7,0
≥ 2,6	4,3		8,0	
≥ 3,0	4,9		10,0	10,0
≥ 3,5	5,4		12,0	
≥ 4,0	5,9			
≥ 4,5	6,4			
≥ 5,0	7,4			
≥ 5,5	8,5			
≥ 6,0	9,5	10		
≥ 6,5	10,5			
≥ 7,5	11,5			

D1 f7	D2 h8	D3 h11	R +0,2	L3
≥ 8,5	13,5	= 10	15,0	12,0
≥ 9,5	14,5			
≥ 10,5	15,5			
≥ 11,5	16,5			
≥ 12,5	17,5			
≥ 13,5	18,5			
≥ 14,5	19,5			
≥ 15,5	20,5			
≥ 16,5	21,5	16		
≥ 17,5	22,5			
≥ 18,5	23,5			
≥ 19,5...20,0	25,5			

Esempio di ordinazione/Order example: 325 - 2 (codice/code + D1)

Punzoni testa cilindrica *Cylindrical head punches*

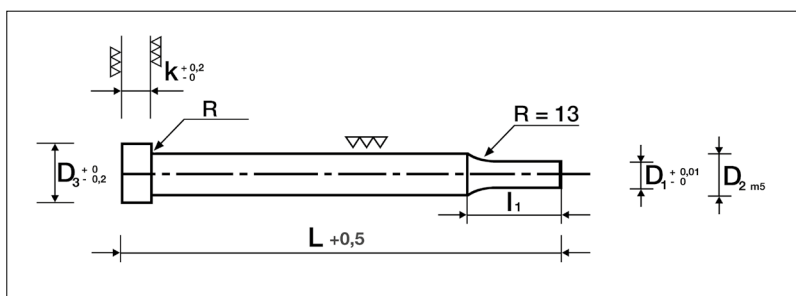
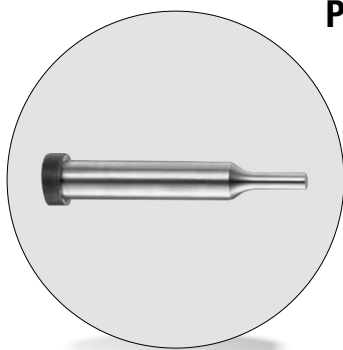


Codice/Code	Materiale/Material
Cod. 328 Acciaio/Steel Cromo	1.2080 HWS HRC 61÷63
Cod. 331 Acciaio/Steel HSS	1.3343 HSS HRC 62÷64

D1	D3	K	L
2	4	3	71
3	5	3	100
4	6	3	
5	8	5	
6	9	5	
8	11	5	
10	13	5	
13	16	5	
16	19	5	
20	23/24	5	
25	28/29	5	

Esempio di ordinazione/Order example: 328 - 10x100 (codice/code+D1xL)

Punzoni testa cilindrica forma C *Punches type C*



Codice/Code	Materiale/Material
Cod. 329 Acciaio/Steel Cromo	1.2080 HWS HRC 61÷63
Cod. 332 Acciaio/Steel HSS	1.3343 HSS HRC 62÷64

MATERIALE FORNITO SOLO SU RICHIESTA
ONLY ON REQUEST

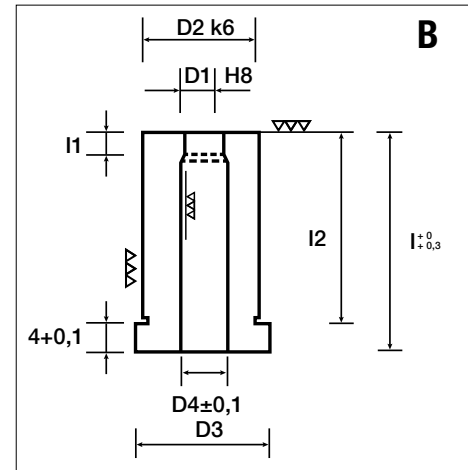
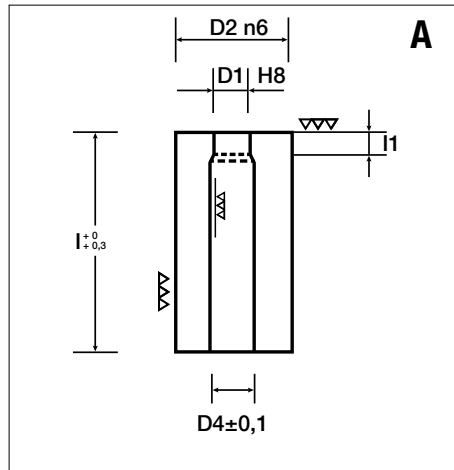
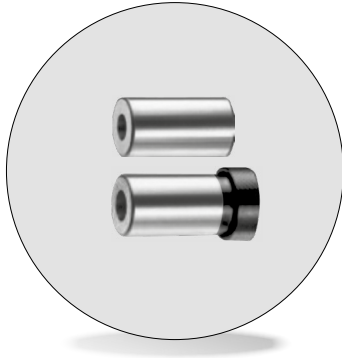
D2	D3	K	D1	I1	L
2	4	3	0,5-1,9	8	71
3	5	3	1,6-2,9	9	100
4	6	3	2-3,9	10	
5	8	5	2-4,9	12	
6	9	5	3-5,9	13	
8	11	5	3-7,9	14	
10	13	5	4,5-9,9	16	
13	16	5	6,5-12,9	21	
16	19	5	9,5-15,9	24	
20	23/24	5	12,5-19,9	27	
25	28/29	5	16,5-24,9	32	

Esempio di ordinazione/Order example: 329 - 10x100 rib. 6,8 (codice/code+ D2 x L x D1)

A richiesta trattamento Balinit-TIN su codice 332
Balinit-TIN coating on request for code 332

Matrici di tranciatura

Buttons



Codice/Code	Tipo/Type	Materiale/Material	Durezza/Hardness
Cod. 376 Matrici lisce corte/Headless die buttons short (A) l=20	DIN 9845	1.2080 HWS 1.3343 HSS*	HCR 60 ±2 HRC 64 ±2
Cod. 377 Matrici lisce lunghe/Headless die buttons long (A) l=28			
Cod. 378 Matrici c/collare corte/Headed die buttons short (B) l=20			
Cod. 379 Matrici c/collare lunghe/Headed die buttons long (B) l=28			

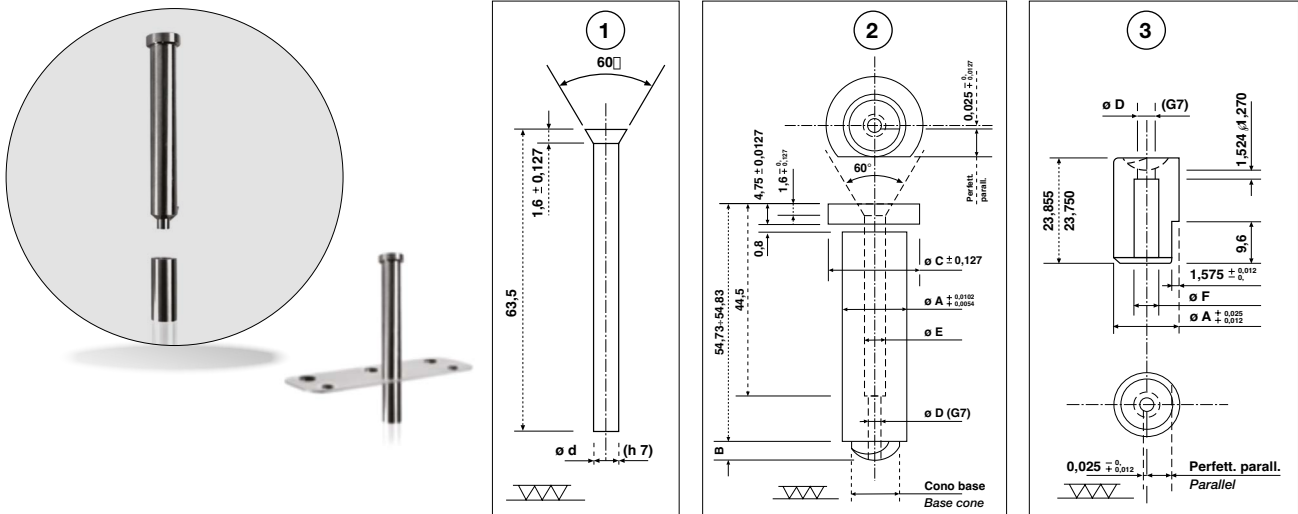
* Su richiesta, specificare in fase di ordine. Only on request, specify when ordering

D1	D2	D3	D4	I1	I	I2	A		B	
							HWS	HSS	HWS	HSS
0,8 - 1,0	5	7	D1+0,3	3	20	16		*		*
1,1 - 2,0	6	8	D1+0,3	3	20	16		*		*
					28	24		*		*
2,0 - 3,3	7	9	D1+0,5	3	20	16	•	*	•	*
					28	24	•	*	•	*
3,4 - 4,0 A richiesta/on request 3,1/ 3,2 / 3,3	8	10	D1+0,5	3	20	16	•	*	•	*
					28	24	•	*	•	*
4,1 - 5,0	10	12	D1+0,7	4	20	16	•	*	•	*
					28	24	•	*	•	*
5,1 - 6,0	12	14	D1+0,7	4	20	16	•	*	•	*
					28	24	•	*	•	*
6,1 - 8,0	15	17	D1+0,7	4	20	16	•	*	•	*
					28	24	•	*	•	*
8,1 - 10,0	18	20	D1+1	4	20	16	•	*	•	*
					28	24	•	*	•	*
10,1 - 12	22	24	D1+1	5	20	16	•	*	•	*
					28	24	•	*	•	*
12,1 - 15	26	28	D1+1	5	20	16	•	*	•	*
					28	24	•	*	•	*
15,5 - 18	30	32	D1+1	5	28	24	*	*	*	*
18,5 - 22	35	37	D1+1	5	28	24	*	*	*	*
22,5 - 26,0	42	44	D1+1	5	28	24	*	*	*	*
26,5 - 30	48	50	D1+2	5	28	24	*	*	*	*

Esempio di ordinazione/Order example: 376 - 3,4 codice/code + D1)

Progressione: 0,1 fino al Ø 15 - 0,5 dal Ø 15,5 al Ø 30
Progression: 0,1 up to Ø 15 - 0,5 up to Ø 30

Punzoni Prestole per viti autofilettanti *Punches prestole for self-tapping screws*



Codice/Code	Disegno/Drawing	Riferimento/Reference
Cod. 01467	01467	61144.1

CODICE/CODE	Tipo vite/Screw type	A	B	C	D	E	F	d
01467/140	3,5	9,525	2	14,22	2,5 $\frac{+0,02}{+0,01}$	2,8	3,5	2,5 $\frac{-0,01}{-0,02}$
01467/120	4,2	12,70	2,65	17,27	2,9 $\frac{+0,02}{+0,01}$	3,2	3,9	2,9 $\frac{-0,01}{-0,02}$
01467/125	4,8	12,70	2,65	17,27	3,3 $\frac{+0,02}{+0,01}$	3,6	4,3	3,3 $\frac{-0,01}{-0,02}$
01467/130	5,5	15,87	3,3	22,09	3,9 $\frac{+0,02}{+0,01}$	4,2	4,9	3,9 $\frac{-0,01}{-0,02}$
01467/135	6,3	15,87	3,3	22,09	4,5 $\frac{+0,02}{+0,01}$	4,8	5,5	4,5 $\frac{-0,01}{-0,02}$
01467/150	8	20,00	4,2	25	5,8 $\frac{+0,02}{+0,01}$	6,1	7,1	5,8 $\frac{-0,01}{-0,02}$

Esempio di ordinazione/Order example = 01467/140 (codice/code)

Con il codice di ordinazione si forniscono i particolari n. 1 / 2 / 3
With ordering code supplied parts n. 1 / 2 / 3

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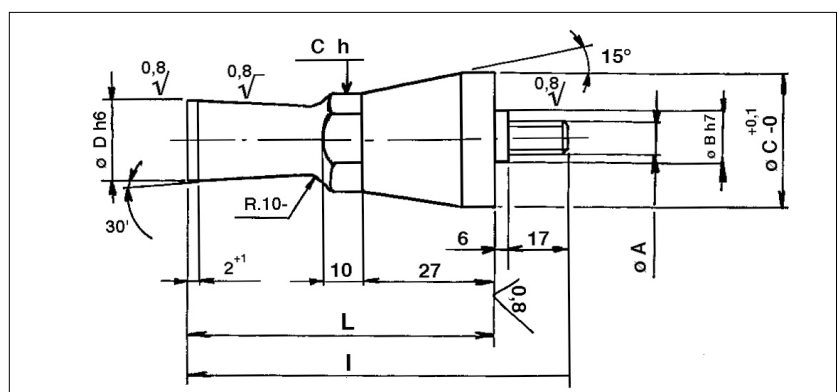
Punzoni speciali di tranciatura filettati *Special threaded punches*



FORNITO SOLO SU RICHIESTA
ONLY ON REQUEST

Codice/Code

Cod. **M73820021**



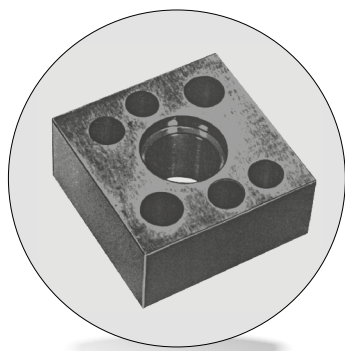
Ø A	Ø B	Ø C	Ø D	L	I	ch	N° pz.

Note: Costruiamo anche le matrici di tranciatura codice M73820022

Note: We also build buttons code M73820022

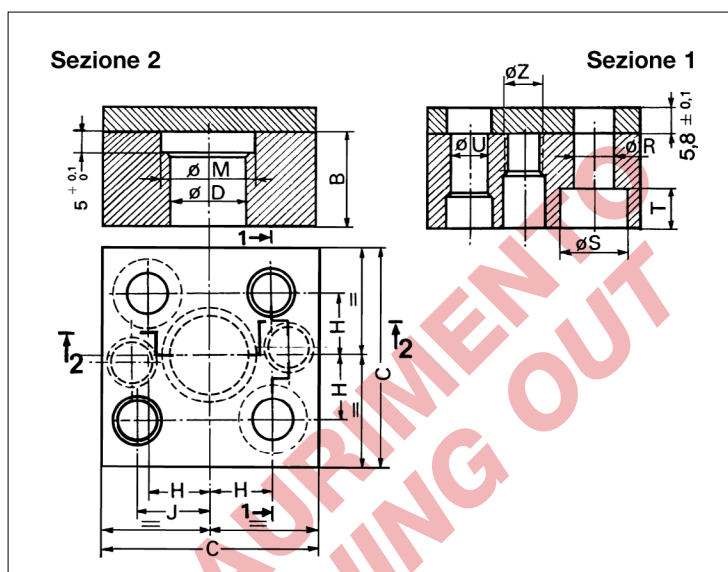
Esempio di ordinazione/Order example = M73820021 + dimensioni tabella/table dimensions

Portapunzoni per ribassati tondi



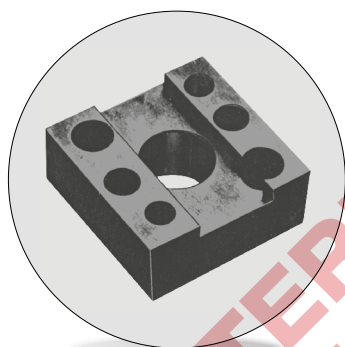
Codice/Code

Cod. **CF/CC**



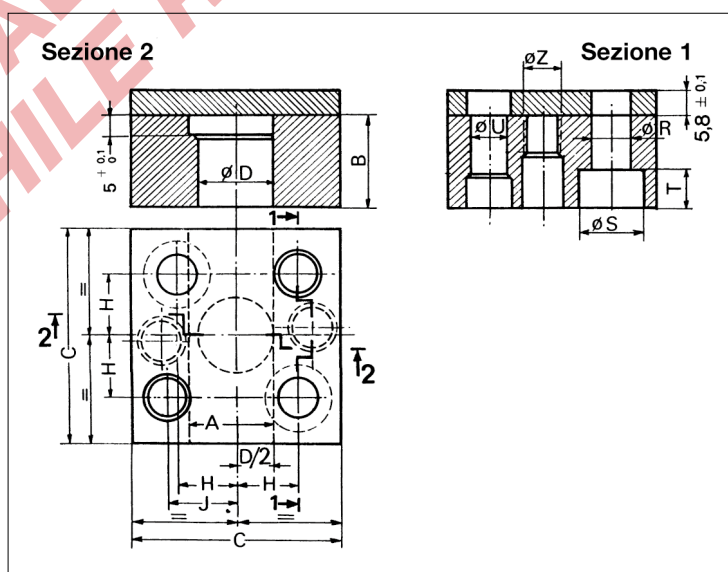
Esempio di ordinazione/Order example = CF/CC - 20 (codice/code + D)

Portapunzoni per ribassati sagoma



Codice/Code

Cod. **CF/CC-P**



Esempio di ordinazione/Order example = CF/CC-P - 20 (codice/code + D)

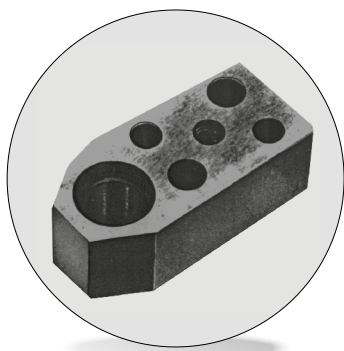
DH7	M ±0,25	C ±0,25	A ±0,25	B ±0,1	H ±0,1	J ±0,1	R H13	S H13	T ±0,25	U G6	Z 6H
8	12	45	11	25	13	15,5	9	16	9	8	M8
10	14		12								
13	17		17								
16	20		18,5								
20	25	56	23	32	16	19	11	18	11	10	M10
25	30	63	28,5		20	22,5	14	22	13		M12
32	37	75	35		25	28	14	22	20		M12

Portapunzoni rettangolari per punzoni a testa cilindrica

Retainers

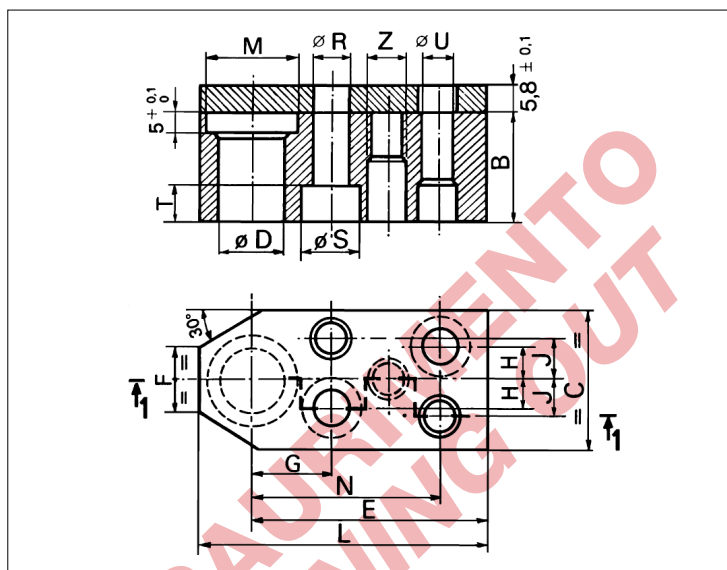


Portapunzoni per ribassati tondi



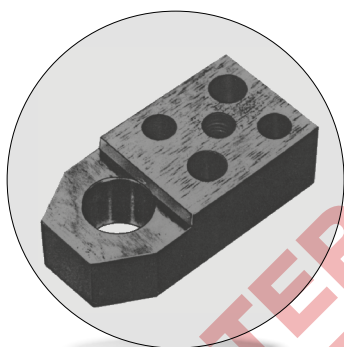
Codice/Code

Cod. **CF/RC**



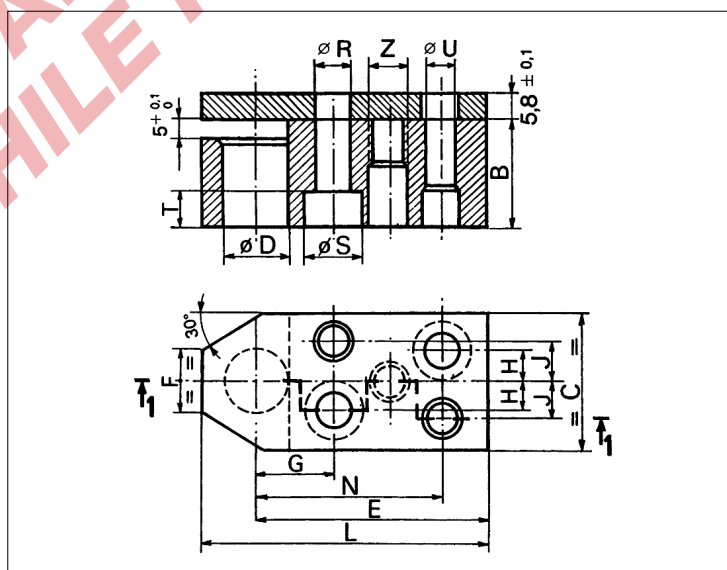
Esempio di ordinazione/Order example = CF/RC - 20 (codice/code + D)

Portapunzoni per ribassati sagoma



Codice/Code

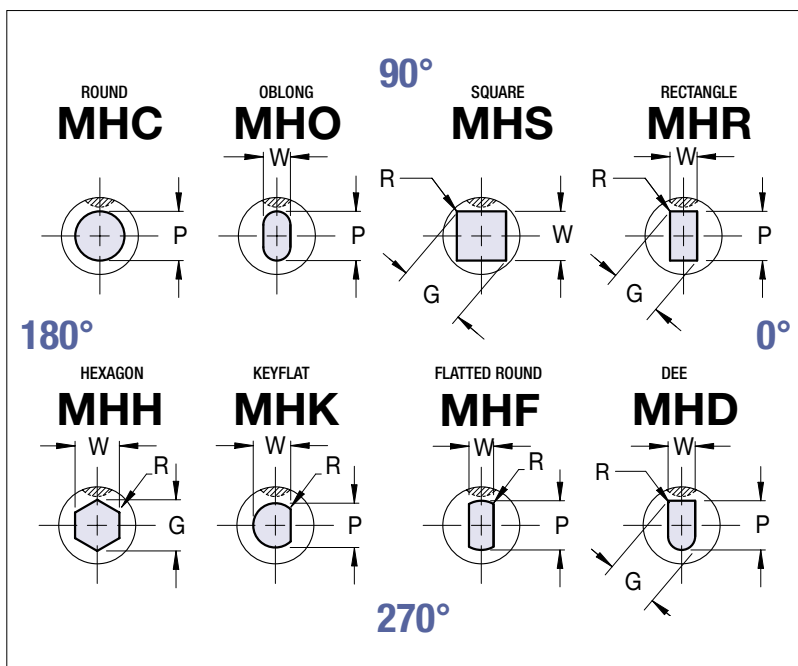
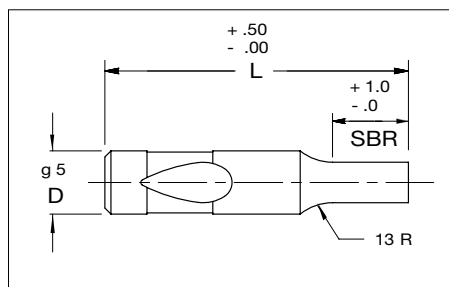
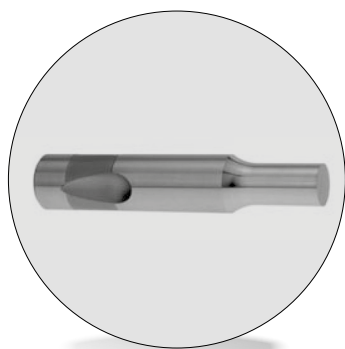
Cod. **CF/RC-P**



Esempio di ordinazione/Order example = CF/RC-P - 16 (codice/code + D)

INDEX

DH7	M ±0,25	L ±0,25	B +01 0	C ±0,25	E ±0,2	F ±0,25	G ±0,1	H ±0,1	J ±0,1	N ±0,1	R H13	S H13	T ±0,25	U G6	Z 6H	
8	12	60	25	32	50	11	15	7	9	40	9	16	9	8	M8	
10	14				53	16	18			43						
13	17															
16	20	80		40	60	22	25	9	11	50	11	18	11	10	M10	
20	25															
25	30															
32	37	95	32	50	70	30	28	13	15	58	14	22	20			M12



Per le alterazioni standard vedi pagg. 3.56 ÷ 3.61
For product alterations see pages 3.56 ÷ 3.61

I disegni rappresentano i punzoni visti dalla parte del corpo ma disegnate con linea piena per chiarezza.
Views are shown looking through the shank but drawn with solid lines for clarity.

Codice/Code	Materiale/Material	Tolleranze standard/ Standard Point Tolerance
Cod. MH_	Acciaio/Steel: M2, HRC 60-63	Tondo/Round P $\begin{matrix} +.01 \\ -.00 \end{matrix}$
	ALTERNATIVA/ALTERNATIVE *PM4, HRC 60-63	Sagoma/Shape P,W $\pm .01$

CODICE CODE	D	TONDO ROUND	SAGOMA SHAPE		L					
		P	MIN W	MAX G/P	71	80	90	100	110	125
MH_10	10	2.50 - 9.98	2.50	10.00	♦ •	♦ •	♦ •	♦ •	♦ •	♦ •
MH_13	13	5.00 - 12.98	4.50	13.00	♦ •	♦ •	♦ •	♦ •	♦ •	♦ •
MH_16	16	8.00 - 15.98	6.00	16.00	♦ •	♦ •	♦ •	♦ •	♦ •	♦ •
MH_20	20	12.00 - 19.98	8.00	20.00	♦ •	♦ •	♦ •	♦ •	♦ •	♦ •
MH_25	25	16.00 - 24.98	10.00	25.00		♦ •	♦ •	♦ •	♦ •	♦ •
MH_32	32	24.00 - 31.98	12.00	32.00		♦ •	♦ •	♦ •	♦ •	♦ •
MH_40	40	30.00 - 39.98	14.00	40.00		♦ •	♦ •	♦ •	♦ •	♦ •

CODICE CODE	D	SBR		
		STD	B	C
MH_10	10	19	10	—
MH_13	13	19	13	25
MH_16	16	19	13	25
MH_20	20	19	13	25
MH_25	25	19	13	25
MH_32	32	19	13	25
MH_40	40	25	19	30

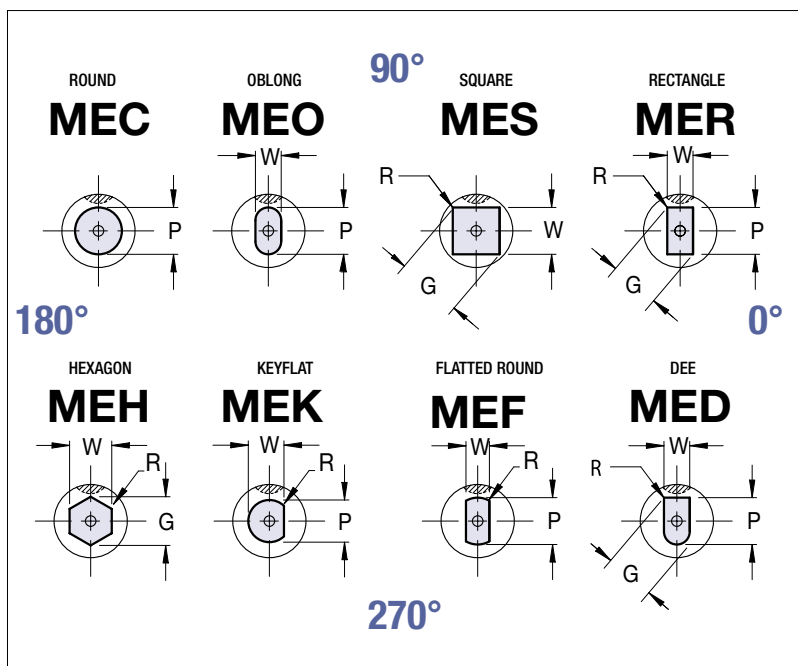
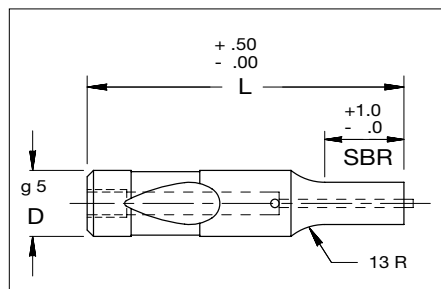
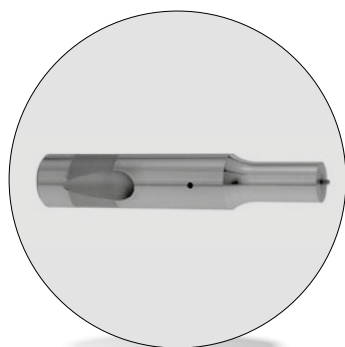
STD = standard
L = 71 SBR MAX = 19

La posizione standard della sede sfera è a 90°. Tutte le altre posizioni devono essere specificate in fase d'ordine (es. BS@45°)
Standard ball seat location is at 90° as shown. For other positions, specify when ordering (ex. BS@45°)

* Specificare M2 o PM4 in fase d'ordine
* Must specify M2 or PM4 when ordering

Esempio di ordinazione/Order example:					
TIPO	"D"	"L"	Lung. SBR	P (o P&W) dimensioni	MATERIALE
MHC	13	90	C	8,0	M2
MHO	16	80	STD	14,0x7,0	PM4

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Per le alterazioni standard vedi pagg. 3.56 ÷ 3.61
For product alterations see pages 3.56 ÷ 3.61

I disegni rappresentano i punzoni visti dalla parte del corpo ma disegnate con linea piena per chiarezza.
Views are shown looking through the shank but drawn with solid lines for clarity.

Codice/Code	Materiale/Material	Tolleranze standard/Standard Point Tolerance
Cod. ME	Acciaio/Steel: M2, HRC 60-63	Tondo/Round P $\begin{matrix} +.01 \\ -.00 \end{matrix}$ $\odot$ 0.01 P - D
	ALTERNATIVA/ALTERNATIVE *PM4, HRC 60-63	Sagoma/Shape P,W $\pm .01$ $\odot$ 0.02 P - D
Quando P=D si usa la tolleranza del corpo (D) / When P = D Shank Tolerances apply (D)		

CODICE CODE	D	TONDO/ROUND	SAGOMA/SHAPE		L						
		P	MIN W	MAX G/P	63	71	80	90	100	110	125
ME_10	10	2.50 - 9.98	2.50	10.00	◆ ●	◆ ●	◆ ●	◆ ●	◆ ●	◆ ●	
ME_13	13	5.00 - 12.98	4.50	13.00	◆ ●	◆ ●	◆ ●	◆ ●	◆ ●	◆ ●	◆ ●
ME_16	16	8.00 - 15.98	6.00	16.00	◆ ●	◆ ●	◆ ●	◆ ●	◆ ●	◆ ●	◆ ●
ME_20	20	12.00 - 19.98	8.00	20.00	◆ ●	◆ ●	◆ ●	◆ ●	◆ ●	◆ ●	◆ ●
ME_25	25	16.00 - 24.98	10.00	25.00			◆ ●	◆ ●	◆ ●	◆ ●	◆ ●
ME_32	32	24.00 - 31.98	12.00	32.00			◆ ●	◆ ●	◆ ●	◆ ●	◆ ●
ME_40	40	30.00 - 39.98	14.00	40.00			◆ ●	◆ ●	◆ ●	◆ ●	◆ ●

CODICE CODE	D	SBR			CODICE EIETTORE EJECTOR SIZE
		STD	B	C	
ME_10	10	19	10	—	MAE 4
ME_13	13	19	13	25	MAE 5
ME_16	16	19	13	25	MAE 5
ME_20	20	19	13	25	MAE 6
ME_25	25	19	13	25	MAE 6
ME_32	32	19	13	25	MAE 6
ME_40	40	25	19	30	MAE 6

Specificare M2 o PM4 in fase d'ordine
Must specify M2 or PM4 when ordering

Esempio di ordinazione/Order example:

TIPO	"D"	"L"	Lung. SBR	P (o P&W) dimensioni	MATERIALE
MEC	10	90	B	5,0	M2
MEO	16	80	STD	14,0x8,0	PM4

STD = standard

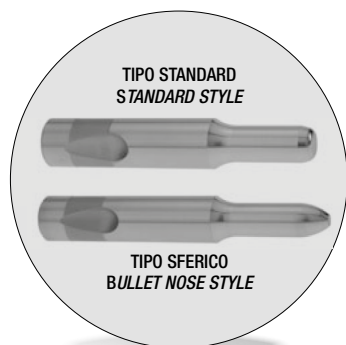
L = 63 SBR MAX = 19

L = 71 SBR MAX = 19

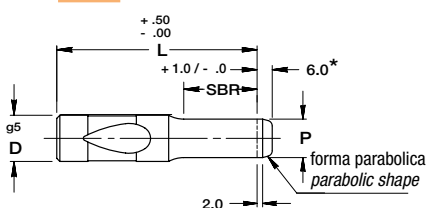
XP = ALTERAZIONE NON POSSIBILE SE L=63 E SBR=19/ XP ALTERATION NOT AVAILABLE IF L=63 AND SBR=19
La posizione standard della sede sfera è a 90°. Tutte le altre posizioni devono essere specificate in fase d'ordine (es. BS 45°)
Standard ball seat location is at 90° as shown. For other positions, specify when ordering
(ex. BS@45°)

Piloti innesto rapido applicazioni pesanti

Ball lock pilot heavy duty

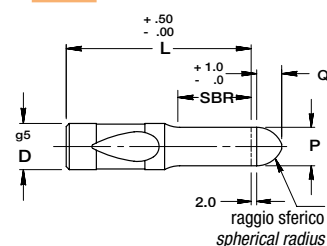


Cod. **MHT** TIPO STANDARD/STANDARD STYLE



* LEGGERMENTE INFERIORE PER Ø AL DI SOTTO DI 5,6 MM / SLIGHTLY LESS FOR DIA'S UNDER 5.6

Cod. **MHP** TIPO SFERICO/BULLET NOSE STYLE



Per le alterazioni standard vedi pagg. 3.56 ÷ 3.61 / For product alterations see pages 3.56 ÷ 3.61

Codice/Code	Materiale/Material	Tolleranze standard/Standard Point Tolerance
Cod. MHT / MHP	Acciaio/Steel: M2, HRC 60-63 ALTERNATIVA/ALTERNATIVE *PM4, HRC 60-63	Tondo/Round P $\begin{matrix} +.01 \\ -.00 \end{matrix}$ $\odot$ 0.01 P - D Quando P=D si usa la tolleranza del corpo (D) When P = D Shank Tolerances apply (D)

Quota P/P dim.	Q
1.50-9.50	4
>9.51	10

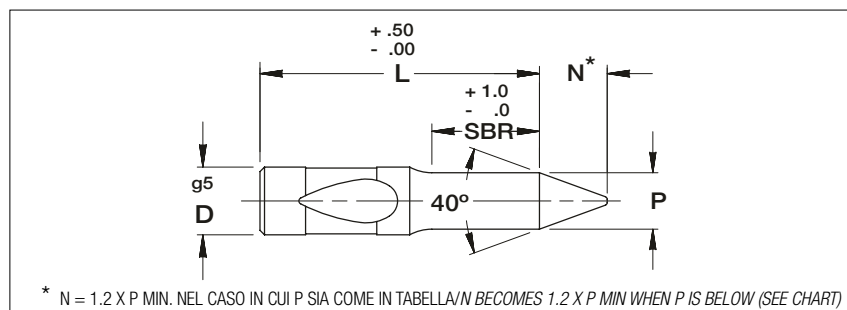
CODICE CODE	D	P	L					
			71	80	90	100	110	125
MH_10	10	2.50 - 10.00	♦ ●	♦ ●	♦ ●	♦ ●	♦ ●	●
MH_13	13	5.00 - 13.00	♦ ●	♦ ●	♦ ●	♦ ●	♦ ●	●
MH_16	16	8.00 - 16.00	♦ ●	♦ ●	♦ ●	♦ ●	♦ ●	●
MH_20	20	12.00 - 20.00	♦ ●	♦ ●	♦ ●	♦ ●	♦ ●	●
MH_25	25	16.00 - 25.00		♦ ●	♦ ●	♦ ●	♦ ●	●
MH_32	32	24.00 - 32.00		♦ ●	♦ ●	♦ ●	♦ ●	●
MH_40	40	30.00 - 40.00		♦ ●	♦ ●	♦ ●	♦ ●	●

CODICE CODE	D	STD	SBR	
			B	C
MH_10	10	19	10	
MH_13	13	19	13	25
MH_16	16	19	13	25
MH_20	20	19	13	25
MH_25	25	19	13	25
MH_32	32	19	13	25
MH_40	40	25	19	30

*Specificare M2 o PM4 in fase d'ordine / *Must specify M2 or PM4 when ordering

Esempio di ordinazione / Order example: MHT 020.071 STD P=9,00 (codice/code+D+L+SBR+P)

STD = standard
L = 71 SBR MAX = 19



Per le alterazioni standard vedi pagg. 3.56 ÷ 3.61 / For product alterations see pages 3.56 ÷ 3.61

Codice/Code	Materiale/Material	Tolleranze standard/Standard Point Tolerance
Cod. MHA	Acciaio/Steel: M2, HRC 60-63 ALTERNATIVA/ALTERNATIVE *PM4, HRC 60-63	Tondo/Round P $\begin{matrix} +.01 \\ -.00 \end{matrix}$ $\odot$ 0.01 P - D Quando P=D si usa la tolleranza del corpo (D) When P = D Shank Tolerances apply (D)

NB: bisogna avere minimo 38 mm di lunghezza del corpo.
Note: must maintain minimum length of 38 mm.

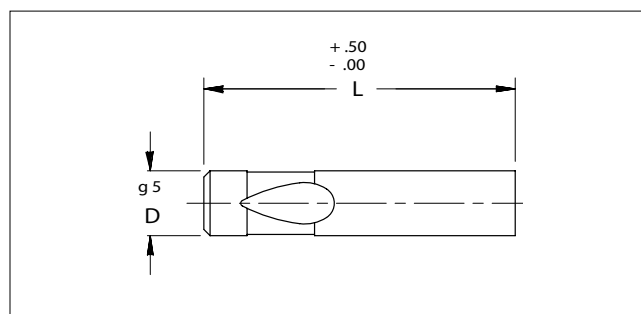
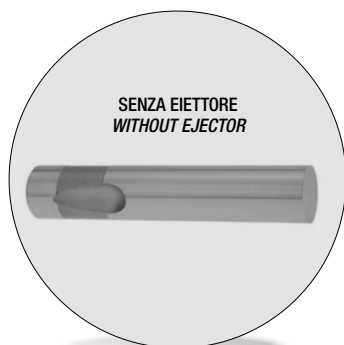
CODICE CODE	D	TONDO/ ROUND	N	P min.	L							
		P			80	90	100	110	125	140	150	
MHA 10	10	5.90 - 10.00	8	5.64	◆●	◆●	◆●	◆●	●			
MHA 13	13	9.90 - 13.00	10	7.11	◆●	◆●	◆●	◆●	●	●		
MHA 16	16	12.90 - 16.00	15	10.74	◆●	◆●	◆●	◆●	●	●	●	
MHA 20	20	15.90 - 20.00	20	14.38	◆●	◆●	◆●	●	●	●	●	
MHA 25	25	19.90 - 25.00	25	18.00	◆●	◆●	◆●	●	●	●	●	
MHA 32	32	24.90 - 32.00	30	21.67	◆●	◆●	●	●	●	●	●	
MHA 40	40	31.90 - 40.00	40	28.96	◆●	●	●	●	●	●	●	

CODICE CODE	D	SBR	
		STD	B
MHA 10	10	19	32
MHA 13	13	19	32
MHA 16	16	25	38
MHA 20	20	25	38
MHA 25	25	25	38
MHA 32	32	25	38
MHA 40	40	30	45

*Specificare M2 o PM4 in fase d'ordine / *Must specify M2 or PM4 when ordering

Esempio di ordinazione / Order example: MHA 25-100 B P=20,0 (codice/code + D+L+SBR+P)

STD = standard



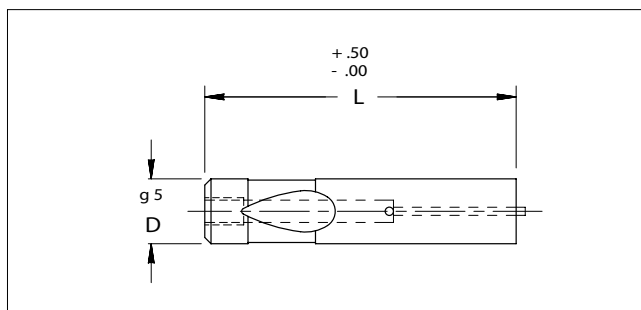
Codice/Code	Materiale/Material
Cod. MHB	Acciaio/ Steel M2, HRC 60-63 • ALTERNATIVA/ALTERNATIVE *Acciaio/ Steel PM4 ♦

Per le alterazioni standard vedi pagg. 3.56 ÷ 3.61
For product alterations see pages 3.56 ÷ 3.61

CODICE CODE	D	L											
		71	80	90	100	110	125	150	165	170	175	180	190
MHB 10	10	♦ •	♦ •	♦ •	♦ •	♦ •	♦ •	•					
MHB 13	13	♦ •	♦ •	♦ •	♦ •	♦ •	♦ •	•					
MHB 16	16	♦ •	♦ •	♦ •	♦ •	♦ •	♦ •	•	•				
MHB 20	20	♦ •	♦ •	♦ •	♦ •	♦ •	♦ •	•		•			
MHB 25	25		♦ •	♦ •	♦ •	♦ •	♦ •	•			•		
MHB 32	32		♦ •	♦ •	♦ •	♦ •	♦ •	•				•	
MHB 40	40		♦ •	♦ •	♦ •	♦ •	♦ •	•					•

Esempio di ordinazione/Order example: MHB 20-110 (codice/code + D+L)

*Specificare M2 o PM4 in fase d'ordine
*Must specify M2 or PM4 when ordering



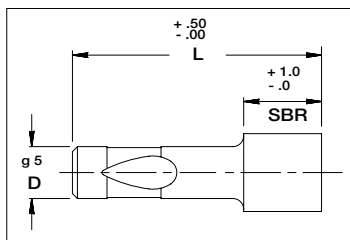
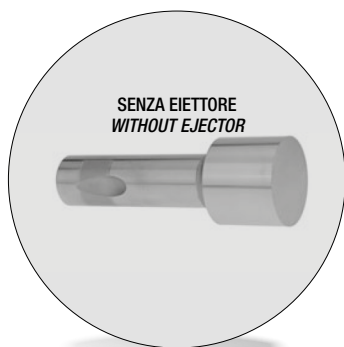
Codice/Code	Materiale/Material
Cod. MEB	Acciaio/ Steel M2, HRC 60-63 • ALTERNATIVA/ALTERNATIVE *Acciaio/ Steel PM4 ♦

Per le alterazioni standard vedi pagg. 3.56 ÷ 3.61
For product alterations see pages 3.56 ÷ 3.61

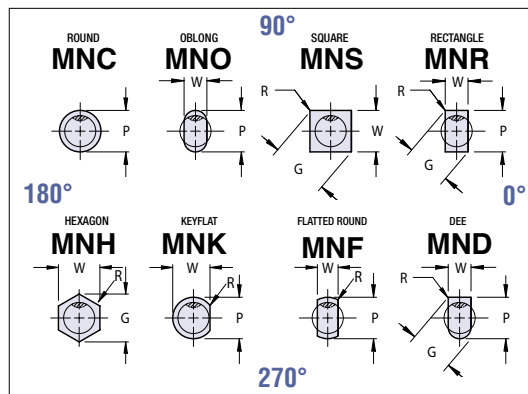
CODICE CODE	D	L							CODICE EIEETTORE EJECTOR SIZE
		63	71	80	90	100	110	125	
MEB 10	10	♦ •	♦ •	♦ •	♦ •	♦ •	♦ •		MAE 4
MEB 13	13	♦ •	♦ •	♦ •	♦ •	♦ •	♦ •	♦ •	MAE 5
MEB 16	16	♦ •	♦ •	♦ •	♦ •	♦ •	♦ •	♦ •	MAE 5
MEB 20	20	♦ •	♦ •	♦ •	♦ •	♦ •	♦ •	♦ •	MAE 6
MEB 25	25			♦ •	♦ •	♦ •	♦ •	♦ •	MAE 6
MEB 32	32			♦ •	♦ •	♦ •	♦ •	♦ •	MAE 6
MEB 40	40			♦ •	♦ •	♦ •	♦ •	♦ •	MAE 6

Esempio di ordinazione/Order example: MEB 16-100 (codice/code +D+L)

*Specificare M2 o PM4 in fase d'ordine
*Must specify M2 or PM4 when ordering



I disegni rappresentano i punzoni visti dalla parte del corpo ma disegnate con linea piena per chiarezza.
Views are shown looking through the shank but drawn with solid lines for clarity.



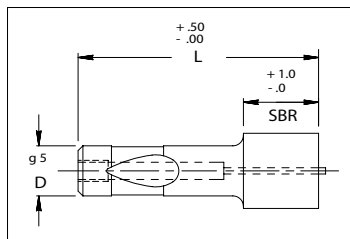
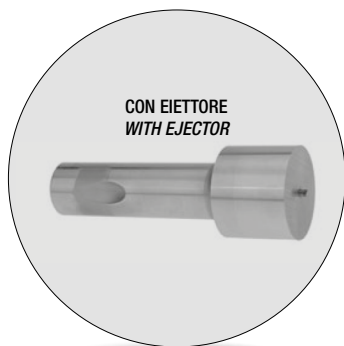
Codice/Code	Materiale/Material	Tolleranze standard/Standard Point Tolerance
Cod. MN	Acciaio/Steel M2, HRC 60-63	Tondo/Round P $\begin{matrix} +.01 \\ -.00 \end{matrix}$ 0.01 P - D Sagoma/Shape P,W $\pm .01$ 0.02 P - D

La posizione standard della sede sfera è a 90°. Tutte le altre posizioni devono essere specificate in fase d'ordine (es. BS@45°)
Standard ball seat location is at 90° as shown. For other positions, specify when ordering (ex. BS@45°)

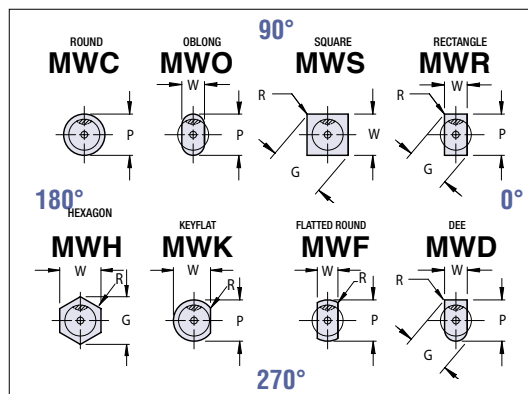
CODICE/CODE	D	SBR	TONDO/ROUND	SAGOMA/SHAPE		L		
			P	MIN W	MAX G/P	80	90	100
MN_10	10	16	10.10 - 25.00	3.00	25.00	●	●	●
MN_13	13	20	13.10 - 32.00	5.00	32.00	●	●	●
MN_16	16	25	16.10 - 38.00	6.00	38.00	●	●	●
MN_20	20	25	20.10 - 40.00	8.00	40.00	●	●	●
MN_25	25	25	25.10 - 47.00	10.00	47.00	●	●	●
MN_32	32	32	32.10 - 63.00	11.50	63.00	●	●	●
MN_40	40	32	40.10 - 63.00	14.00	63.00	●	●	●

Esempio di ordinazione/Order example: MNR 20-90 P=22 W=12 (Codice/code + D + L + P o P/W)

Per le alterazioni standard vedi pagg. 3.56 ÷ 3.61
For product alterations see pages 3.56 ÷ 3.61



I disegni rappresentano i punzoni visti dalla parte del corpo ma disegnate con linea piena per chiarezza.
Views are shown looking through the shank but drawn with solid lines for clarity.



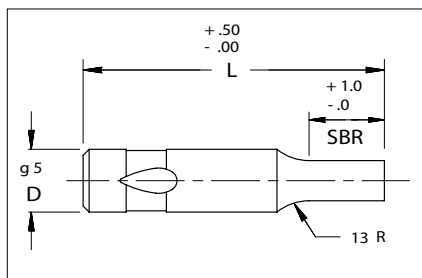
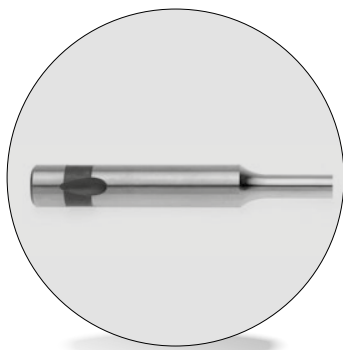
Codice/Code	Materiale/Material	Tolleranze standard/Standard Point Tolerance
Cod. MW	Acciaio/Steel M2, HRC 60-63	Tondo/Round P $\begin{matrix} +.01 \\ -.00 \end{matrix}$ 0.01 P - D Sagoma/Shape P,W $\pm .01$ 0.02 P - D

La posizione standard della sede sfera è a 90°. Tutte le altre posizioni devono essere specificate in fase d'ordine (es. BS@45°)
Standard ball seat location is at 90° as shown. For other positions, specify when ordering (ex. BS@45°)

CODICE/CODE	D	SBR	TONDO/ROUND	SAGOMA/SHAPE		L			CODICE EIEETTORE EJECTOR SIZE
			P	MIN W	MAX G/P	80	90	100	
MW_10	10	16	10.10 - 25.00	3.00	25.00	●	●	●	MAE 4
MW_13	13	20	13.10 - 32.00	5.00	32.00	●	●	●	MAE 5
MW_16	16	25	16.10 - 38.00	6.00	38.00	●	●	●	MAE 5
MW_20	20	25	20.10 - 40.00	8.00	40.00	●	●	●	MAE 6
MW_25	25	25	25.10 - 47.00	10.00	47.00	●	●	●	MAE 6
MW_32	32	32	32.10 - 63.00	11.50	63.00	●	●	●	MAE 6
MW_40	40	32	40.10 - 63.00	14.00	63.00	●	●	●	MAE 6

Esempio di ordinazione/Order example: MWO 16 90 P=19 W=13 (codice/code + D+L+P o P/W)

Per le alterazioni standard vedi pagg. 3.56 ÷ 3.61
For product alterations see pages 3.56 ÷ 3.61



Per le alterazioni standard vedi pagg. 3.56 ÷ 3.61
For product alterations see pages 3.56 ÷ 3.61

I disegni rappresentano i punzoni visti dalla parte del corpo ma disegnate con linea piena per chiarezza.
Views are shown looking through the shank but drawn with solid lines for clarity.

Codice/Code	Materiale/Material	Tolleranze standard/ Standard Point Tolerance
Cod. ML_	Acciaio/Steel M2, HRC 60-63	Tondo/Round P $\begin{matrix} +.01 \\ -.00 \end{matrix}$ $\text{P} \begin{matrix} \text{0.01} \\ \text{P - D} \end{matrix}$ Sagoma/Shape P,W $\pm .01$ $\text{P} \begin{matrix} \text{0.02} \\ \text{P - D} \end{matrix}$

CODICE CODE	D	TONDO/ROUND	SAGOMA/SHAPE		L				
		P	MIN W	MAX G/P	63	71	80	90	100
ML_06	6	2.20 - 5.98	2.20	6.00	•	•	•	•	•
ML_10	10	2.50 - 9.98	2.50	10.00	•	•	•	•	•
ML_13	13	5.00 - 12.98	4.50	13.00	•	•	•	•	•
ML_16	16	8.00 - 15.98	6.00	16.00	•	•	•	•	•
ML_20	20	12.00 - 19.98	8.00	20.00	•	•	•	•	•
ML_25	25	16.00 - 24.98	10.00	25.00	•	•	•	•	•

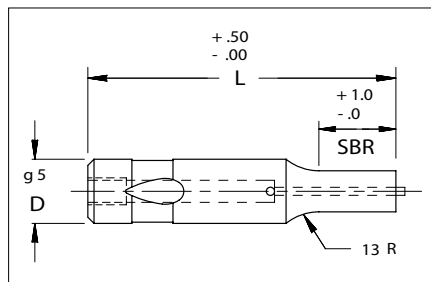
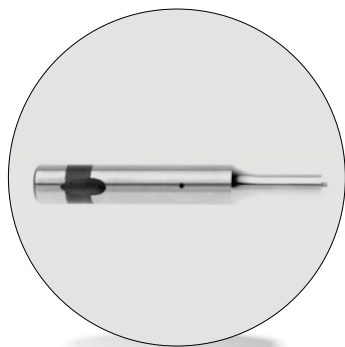
CODICE CODE	D	SBR		
		STD	B	C
ML_06	6	13	10	—
ML_10	10	19	10	—
ML_13	13	19	13	25
ML_16	16	19	13	25
ML_20	20	19	13	25
ML_25	25	19	13	25

STD = standard L = 63 SBR MAX = 19

Esempio di ordinazione/Order example:

TIPO	"D"	"L"	Lung. SBR	P (o P&W) dimensioni
MLO	16	80	B	14,0x7,0
MLC	10	90	STD	8,0

La posizione standard della sede sfera è a 90°.
Tutte le altre posizioni devono essere specificate in fase d'ordine (es. BS@45°)
Standard ball seat location is at 90° as shown.
For other positions, specify when ordering (ex. BS@45°)



Per le alterazioni standard vedi pagg. 3.56 ÷ 3.61
For product alterations see pages 3.56 ÷ 3.61

I disegni rappresentano i punzoni visti dalla parte del corpo ma disegnate con linea piena per chiarezza.
Views are shown looking through the shank but drawn with solid lines for clarity.

Codice/Code	Materiale/Material	Tolleranze standard/ Standard Point Tolerance
Cod. MJ	Acciaio/Steel M2, HRC 60-63	Tondo/Round P $\begin{matrix} +.01 \\ -.00 \end{matrix}$ $\odot$ 0.01 P - D Sagoma/Shape P,W $\pm .01$ $\odot$ 0.02 P - D

CODICE CODE	D	TONDO/ROUND	SAGOMA/SHAPE		L				
		P	MIN W	MAX G/P	63	71	80	90	100
MJ_06	6	2.20 - 5.98	2.20	6.00	•	•	•	•	•
MJ_10	10	2.50 - 9.98	2.50	10.00	•	•	•	•	•
MJ_13	13	5.00 - 12.98	4.50	13.00	•	•	•	•	•
MJ_16	16	8.00 - 15.98	6.00	16.00	•	•	•	•	•
MJ_20	20	12.00 - 19.98	8.00	20.00	•	•	•	•	•
MJ_25	25	16.00 - 24.98	10.00	25.00	•	•	•	•	•

CODICE CODE	D	SBR			CODICE EIETTORE EJECTOR SIZE
		STD	B	C	
MJ_06	6	13	10	—	MAE 3
MJ_10	10	19	10	—	MAE 4
MJ_13	13	19	13	25	MAE 5
MJ_16	16	19	13	25	MAE 5
MJ_20	20	19	13	25	MAE 6
MJ_25	25	19	13	25	MAE 6

STD = standard

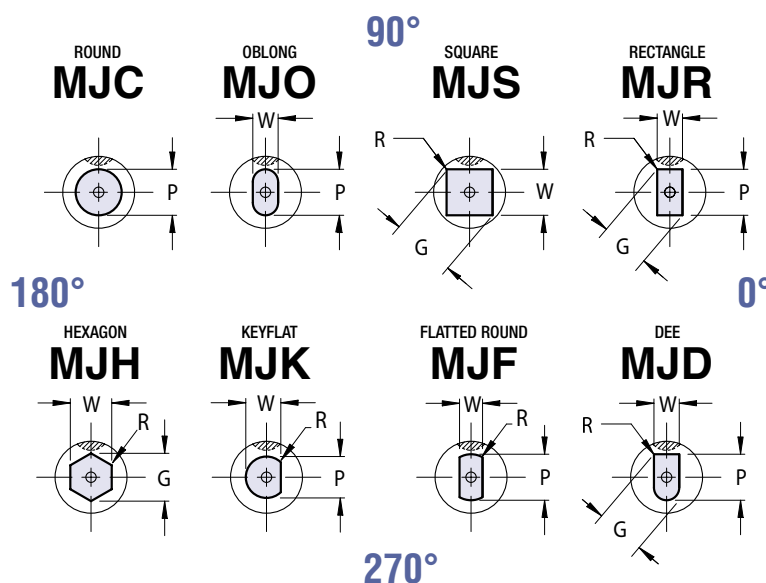
L = 63 SBR MAX = 19

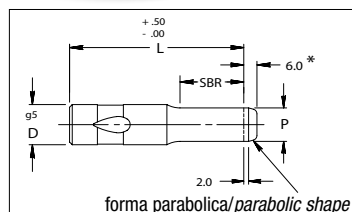
L = 71 SBR MAX = 19

Esempio di ordinazione/Order example:

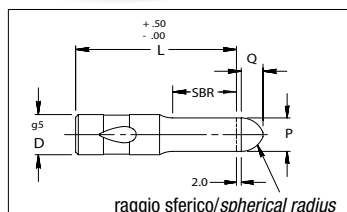
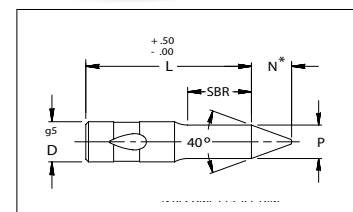
TIPO	"D"	"L"	Lung. SBR	P (o P&W) dimensioni
MJC	16	90	STD	10,0
MJO	13	80	B	10,0x7,0

La posizione standard della sede sfera è a 90°. Tutte le altre posizioni devono essere specificate in fase d'ordine (es. BS@45°)
Standard ball seat location is at 90° as shown. For other positions, specify when ordering (ex. BS@45°)



Piloti innesto rapido *Ball lock pilots*Cod. **MLT**

*LEGGERMENTE INFERIORE PER Ø AL DI SOTTO DI 5,6 mm
*SLIGHTLY LESS FOR DIA'S UNDER 5.6

Cod. **MLP**Cod. **MLA**

* N = 1.2 X P MIN. NEL CASO IN CUI P SIA COME IN TABELLA
* N BECOMES 1.2 X P DIM WHEN P IS BELOW MIN (SEE CHART)

Codice/Code	Materiale/Material	Tolleranze standard/ Standard Point Tolerance
Cod. MLT / MLP MLA	Acciaio/Steel M2, HRC 60-63	Tondo/Round P $\begin{matrix} +.01 \\ -.00 \end{matrix}$ 0.01 P - D Quando P=D si usa la tolleranza del corpo (D) When P = D Shank Tolerances apply (D)

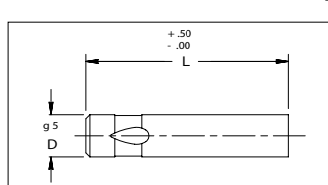
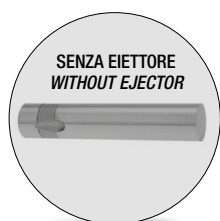
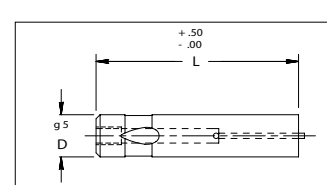
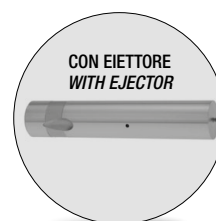
Codice/Code	Quota P / P dim.	Q
Cod. MLP	1.50-9.50 >9.51	4 10

CODICE/CODE	D	P	N	P MIN. *	L				
					63	71	80	90	100
ML_06	6	2.20 - 6.00	—	—	●	●	●	●	●
ML_10	10	2.50 - 10.00	8	5.64	●	●	●	●	●
ML_13	13	5.00 - 13.00	10	7.11	●	●	●	●	●
ML_16	16	8.00 - 16.00	15	10.74	●	●	●	●	●
ML_20	20	12.00 - 20.00	20	14.38	●	●	●	●	●
ML_25	25	16.00 - 25.00	25	18.00	●	●	●	●	●

CODICE/CODE	D	SBR		
		STD	B	C
ML_06	6	13	10	—
ML_10	10	19	10	—
ML_13	13	19	13	25
ML_16	16	19	13	25
ML_20	20	19	13	25
ML_25	25	19	13	25

Esempio di ordinazione/Order example: MLT 10 80 B P=7.00 (codice/code + D+L+SBR+P)

STD = standard
L = 63 SBR MAX = 19

Punzoni innesto rapido sbozzati *Ball lock punches blanks*Cod. **MLB**Cod. **MJB**

Codice/Code	Materiale/Material
Cod. MLB / MJB	Acciaio/Steel M2, HRC 60-63

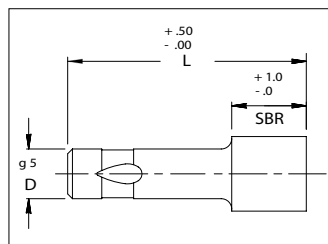
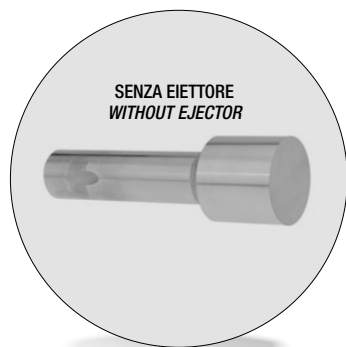
Per le alterazioni standard vedi pagg. 3.56 ÷ 3.61
For product alterations see pages 3.56 ÷ 3.61

CODICE/CODE	D	L					
		63	71	80	90	100	125
MLB_06	6	●	●	●	●	●	●
MLB_10	10	●	●	●	●	●	●
MLB_13	13	●	●	●	●	●	●
MLB_16	16	●	●	●	●	●	●
MLB_20	20	●	●	●	●	●	●
MLB_25	25	●	●	●	●	●	●

Esempio di ordinazione/Order example:
MLB 20 90 (codice/code+D+L)

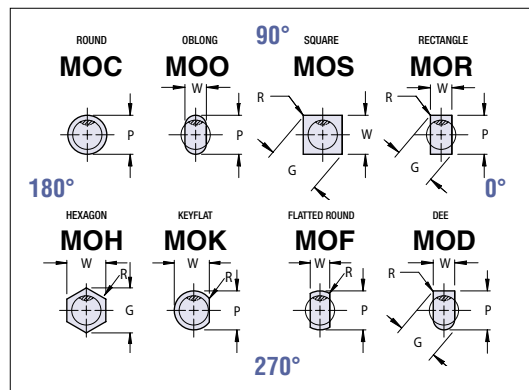
CODICE/CODE	D	L					CODICE EIETTORE EJECTOR SIZE
		63	71	80	90	100	
MJB_06	6	●	●	●	●	●	MAE 3
MJB_10	10	●	●	●	●	●	MAE 4
MJB_13	13	●	●	●	●	●	MAE 5
MJB_16	16	●	●	●	●	●	MAE 5
MJB_20	20	●	●	●	●	●	MAE 6
MJB_25	25	●	●	●	●	●	MAE 6

Esempio di ordinazione/Order example:
MJB 16 90 (codice/code+D+L)



I disegni rappresentano i punzoni visti dalla parte del corpo ma disegnate con linea piena per chiarezza.

Views are shown looking through the shank but drawn with solid lines for clarity.



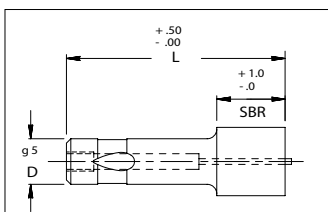
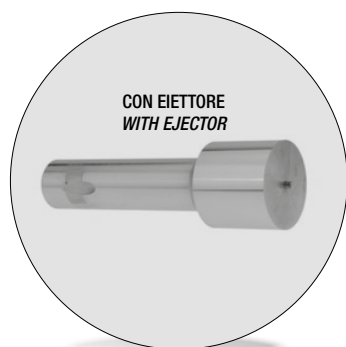
Per le alterazioni standard vedi pagg. 3.56 ÷ 3.61
For product alterations see pages 3.56 ÷ 3.61

Codice/Code	Materiale/Material	Tolleranze standard/ Standard Point Tolerance
Cod. MO_	Acciaio/Steel M2, HRC 60-63	Tondo/Round P $\begin{matrix} +.01 \\ -.00 \end{matrix}$ $\odot$ 0.01 P - D Sagoma/Shape P,W $\pm .01$ $\odot$ 0.02 P - D

La posizione standard della sede sfera è a 90°.
Tutte le altre posizioni devono essere specificate in fase d'ordine (es. BS@45°)
Standard ball seat location is at 90° as shown.
For other positions, specify when ordering (ex. BS@45°)

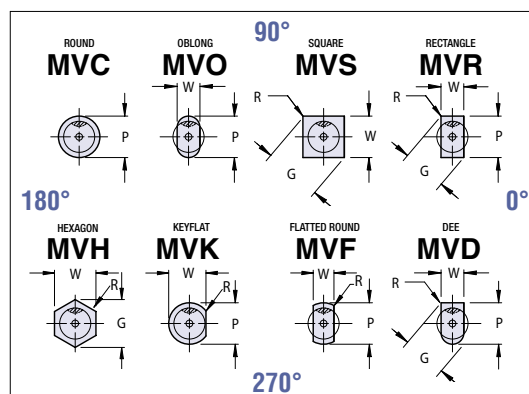
CODICE/CODE	D	SBR	TONDO/ROUND	SAGOMA/SHAPE		L		
			P	MIN W	MAX G/P	80	90	100
MO_10	10	16	10.10 - 25.00	3.00	25.00	●	●	●
MO_13	13	20	13.10 - 32.00	5.00	32.00	●	●	●
MO_16	16	25	16.10 - 38.00	6.00	38.00	●	●	●
MO_20	20	25	20.10 - 40.00	8.00	40.00	●	●	●
MO_25	25	25	25.10 - 47.00	10.00	45.00	●	●	●
MO_32	32	32	32.10 - 63.00	11.50	63.00	●	●	●

Esempio di ordinazione/Order example: MOO 16 90 P = 22,0 W = 11,0 (codice/code+D+L+P o P/W)



I disegni rappresentano i punzoni visti dalla parte del corpo ma disegnate con linea piena per chiarezza.

Views are shown looking through the shank but drawn with solid lines for clarity.



Per le alterazioni standard vedi pagg. 3.56 ÷ 3.61/For product alterations see pages 3.56 ÷ 3.61

Codice/Code	Materiale/Material	Tolleranze standard/ Standard Point Tolerance
Cod. MV_	Acciaio/Steel M2, HRC 60-63	Tondo/Round P $\begin{matrix} +.01 \\ -.00 \end{matrix}$ $\odot$ 0.01 P - D Sagoma/Shape P,W $\pm .01$ $\odot$ 0.02 P - D

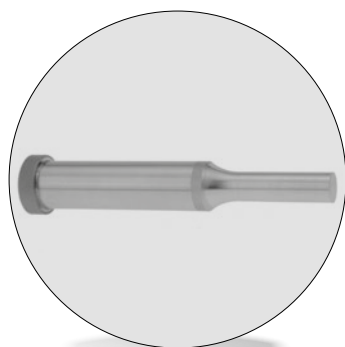
La posizione standard della sede sfera è a 90°.
Tutte le altre posizioni devono essere specificate in fase d'ordine (es. BS@45°)
Standard ball seat location is at 90° as shown.
For other positions, specify when ordering (ex. BS@45°)

CODICE/CODE	D	SBR	TONDO/ROUND	SAGOMA/SHAPE		L			CODICE EIEETTORE EJECTOR SIZE
			P	MIN W	MAX G/P	80	90	100	
MV_10	10	16	10.10 - 25.00	3.00	25.00	●	●	●	MAE 4
MV_13	13	20	13.10 - 32.00	5.00	32.00	●	●	●	MAE 5
MV_16	16	25	16.10 - 38.00	6.00	38.00	●	●	●	MAE 5
MV_20	20	25	20.10 - 40.00	8.00	40.00	●	●	●	MAE 6
MV_25	25	25	25.10 - 47.00	10.00	45.00	●	●	●	MAE 6
MV_32	32	32	32.10 - 63.00	11.50	63.00	●	●	●	MAE 6

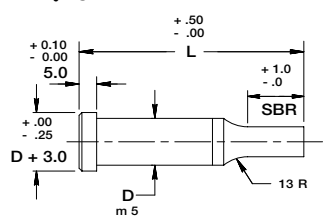
Esempio di ordinazione/Order example: MVR 16 90 P=21 W=7 (codice/code + D+L+P o P/W)

Punzoni testa cilindrica

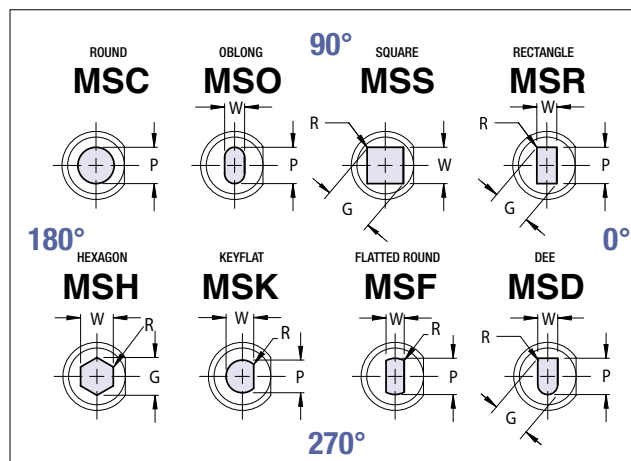
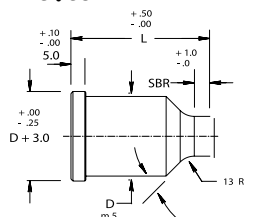
Shoulder punches - Solid



D. 4÷40



D. 45÷63



Per le alterazioni standard vedi pagg. 3.56 ÷ 3.61
For product alterations see pages 3.56 ÷ 3.61

I disegni rappresentano i punzoni visti dalla parte del corpo ma disegnate con linea piena per chiarezza/Views are shown looking through the shank but drawn with solid lines for clarity.

Codice/Code	Materiale/Materiale	Tolleranze standard/ Standard Point Tolerance	*Tolleranza alternativa/Alt. point tol.	T2
Cod. MS	Acciaio/Steel: M2, HRC 60-63	Tondo/Round P $\begin{matrix} +.01 \\ -.00 \end{matrix}$ 0.01 P - D	P, W $\begin{matrix} +.005 \\ -.000 \end{matrix}$	
	Testa/Head - HRC 45-55 ALTERNATIVA/ALTERNATIVE **PM4, HRC 60-63 Testa/Head - HRC 45-55	Sagoma/Shape P, W $\pm .01$ 0.02 P - D Quando P=D si usa la tolleranza del corpo (D) When P = D Shank Tolerances apply (D)	P - D 0.008 * a richiesta e non eseguibile oltre il Ø 45 * on request, not available beyond Ø 45	

CODICE CODE	D	TONDO/ROUND	SAGOMA/SHAPE		L														
		P	MIN W	MAX G/P	40	50	56	60	63	70	71	80	90	100	110	120	125	150	
MS_04	4	1.60 - 3.99	1.60	4.00	●	●	●	●	●	●	●	●	●	●		●	●		
MS_05	5	1.60 - 4.99	1.60	5.00	◆●	◆◆	◆◆	◆◆	◆◆	◆◆	◆◆	◆◆	◆◆	◆◆		●	●		
MS_06	6	1.60 - 5.99	1.60	6.00		◆◆	◆◆	◆◆	◆◆	◆◆	◆◆	◆◆	◆◆	◆◆		●	●		
MS_08	8	2.50 - 7.99	2.50	8.00		◆●	◆◆	◆◆	◆◆	◆◆	◆◆	◆◆	◆◆	◆◆	●	●	●		
MS_10	10	3.20 - 9.99	3.20	10.00		◆◆	◆◆	◆◆	◆◆	◆◆	◆◆	◆◆	◆◆	◆◆	●	●	●	●	
MS_13	13	5.00 - 12.99	4.50	13.00	◆◆	◆◆	◆◆	◆◆	◆◆	◆◆	◆◆	◆◆	◆◆	◆◆	●	●	●	●	
MS_16	16	8.00 - 15.99	6.00	16.00	◆◆	◆◆	◆◆	◆◆	◆◆	◆◆	◆◆	◆◆	◆◆	◆◆	●	●	●	●	
MS_20	20	10.00 - 19.99	8.00	20.00		◆◆	◆◆	◆◆	◆◆	◆◆	◆◆	◆◆	◆◆	◆◆	●	●	●	●	
MS_25	25	12.00 - 24.99	9.00	25.00		◆◆	◆◆	◆◆	◆◆	◆◆	◆◆	◆◆	◆◆	◆◆	●	●	●	●	
MS_32	32	16.00 - 31.99	10.00	32.00				◆◆	◆◆	◆◆	◆◆	◆◆	◆◆	◆◆	●	●	●	●	
MS_40	40	30.00 - 39.99	14.00	40.00								◆◆	◆◆	◆◆	●	●	●	●	
MS_45	45	25.00 - 44.99	10.00	45.00								●	●	●	●	●	●	●	
MS_50	50	30.00 - 49.99	12.00	50.00								●	●	●	●	●	●	●	
MS_56	56	35.00 - 55.99	13.00	56.00								●	●	●	●	●	●	●	
MS_63	63	40.00 - 62.99	14.00	63.00								●	●	●	●		●		

CODICE CODE	D	SBR		
		STD	B	C
MS_04	4	8	10	—
MS_05	5	13	10	—
MS_06	6	13	10	—
MS_08	8	19	13	—
MS_10	10	19	13	25
MS_13	13	19	13	25
MS_16	16	19	13	25
MS_20	20	19	13	25

CODICE CODE	D	SBR		
		STD	B	C
MS_25	25	19	13	25
MS_32	32	25	19	30
MS_40	40	25	19	30
MS_45	45	25	19	30
MS_50	50	25	19	30
MS_56	56	25	19	30
MS_63	63	25	19	30

L=50 SBR MAX=13 L=60 SBR MAX=19
L=56 SBR MAX=19 L=63 SBR MAX=25

**Specificare M2 o PM4 in fase d'ordine
**Must specify M2 or PM4 when ordering

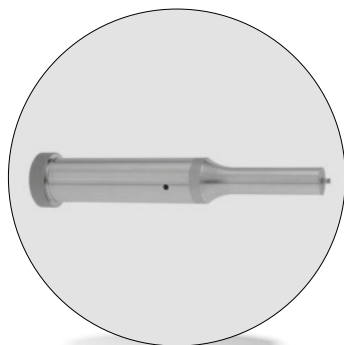
Esempio di ordinazione/Order example:

TIPO	"D"	"L"	Lung. SBR	P (o P/W) dimensioni	ALT. STD.	MATERIALE
MSC	13	90	13	10,0	F1	M2
MSO	16	80	STD	14,0x8,0	F1	PM4

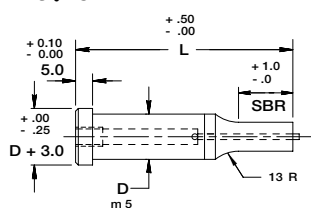
Il taglio della chiavetta è in posizione standard a 0°. Tutte le altre posizioni devono essere specificate in fase d'ordine (es. 90°).
Standard flat location is at 0° as shown. For other positions, specify when ordering (ex. 90°)

Punzoni testa cilindrica con eiettore

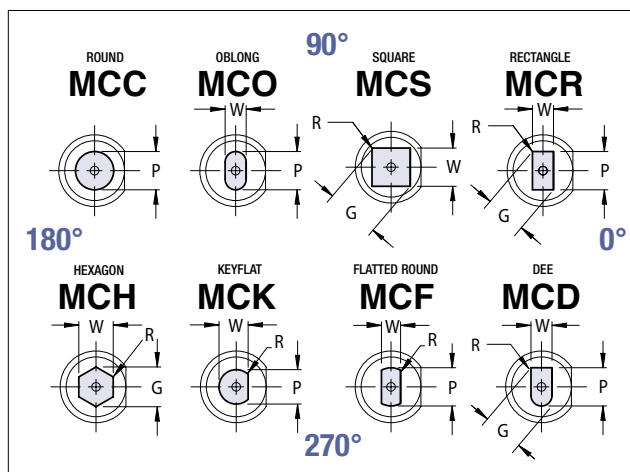
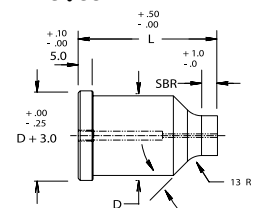
Shoulder punches ejector



D. 5÷40



D. 45÷63



Per le alterazioni standard vedi pagg. 3.56 ÷ 3.61
For product alterations see pages 3.56 ÷ 3.61

I disegni rappresentano i punzoni visti dalla parte del corpo ma disegnate con linea piena per chiarezza/Views are shown looking through the shank but drawn with solid lines for clarity.

Codice/Code	Materiale/Materiale	Tolleranze standard/ Standard Point Tolerance	*Tolleranza alternativa/Alt. point tol.	T2
Cod. MC_	Acciaio/Steel: M2, HRC 60-63 Testa/Head - HRC 45-55 ALTERNATIVA/ALTERNATIVE **PM4, HRC 60-63 Testa/Head - HRC 45-55	Tondo/Round P $\begin{matrix} +.01 \\ -.00 \end{matrix}$ 0.01 P - D Sagoma/Shape P,W $\pm .01$ 0.02 P - D Quando P=D si usa la tolleranza del corpo (D) When P = D Shank Tolerances apply (D)	P,W $\begin{matrix} +.005 \\ -.000 \end{matrix}$ P - D 0.008 * a richiesta e non eseguibile oltre il Ø 45 * on request, not available beyond Ø 45	

CODICE CODE	D	TONDO/ROUND	SAGOMA/SHAPE		L											
		P	MIN W	MAX G/P	50	56	60	63	70	71	80	90	100	110	125	
MC_05	5	1.60 - 4.99	1.60	5.00	●	●	●	●	●	●	●	●	●			
MC_06	6	2.50 - 5.99	2.50	6.00	●	●	●	●	●	●	●	●	●			
MC_08	8	3.20 - 7.99	3.20	8.00	●	●	●	●	●	●	●	●	●	●	●	
MC_10	10	4.50 - 9.99	4.50	10.00	●	●	●	●	●	●	●	●	●	●	●	
MC_13	13	6.00 - 12.99	6.00	13.00	●	●	●	●	●	●	●	●	●	●	●	
MC_16	16	8.00 - 15.99	7.50	16.00	●	●	●	●	●	●	●	●	●	●	●	
MC_20	20	10.00 - 19.99	8.00	20.00		●	●	●	●	●	●	●	●	●	●	
MC_25	25	12.00 - 24.99	9.00	25.00		●	●	●	●	●	●	●	●	●	●	
MC_32	32	16.00 - 31.99	10.00	32.00				●	●	●	●	●	●	●	●	
MC_40	40	30.00 - 39.99	14.00	40.00							●	●	●	●	●	
MC_45	45	25.00 - 44.99	10.00	45.00							●	●	●	●	●	
MC_50	50	30.00 - 49.99	12.00	50.00							●	●	●	●	●	
MC_56	56	35.00 - 55.99	13.00	56.00							●	●	●	●	●	
MC_63	63	40.00 - 62.99	14.00	63.00							●	●	●	●	●	

CODICE CODE	D	SBR			CODICE EIETTORE EJECTOR SIZE
		STD	B	C	
MC_05	5	13	10	—	MAE 2
MC_06	6	13	10	—	MAE 3
MC_08	8	19	13	—	MAE 4
MC_10	10	19	13	25	MAE 5
MC_13	13	19	13	25	MAE 5
MC_16	16	19	13	25	MAE 6
MC_20	20	19	13	25	MAE 6

**Specificare M2 o PM4 in fase d'ordine
**Must specify M2 or PM4 when ordering

Esempio di ordinazione/Order example:						
TIPO	"D"	"L"	Lung.	SBR	P (o P/W) dimensioni	MATERIALE
MCC	13	90	STD		10,0	M2
MCO	16	80	B		13,0x9,0	PM4

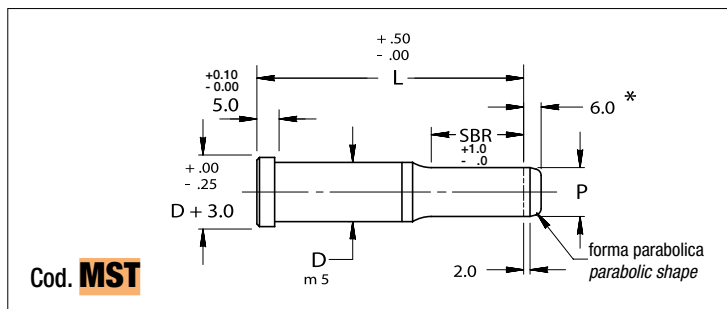
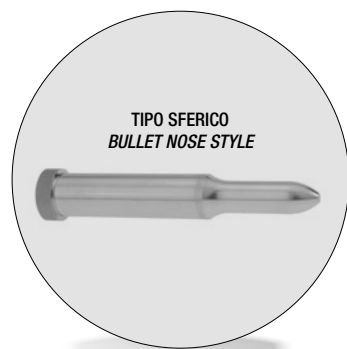
CODICE CODE	D	SBR			CODICE EIETTORE EJECTOR SIZE
		STD	B	C	
MC_25	25	19	13	25	MAE 6
MC_32	32	25	19	30	MAE 6
MC_40	40	25	19	30	MAE 6
MC_45	45	25	19	30	MAE 12
MC_50	50	25	19	30	MAE 12
MC_56	56	25	19	30	MAE 12
MC_63	63	25	19	30	MAE 12

L=50 SBR MAX=13 L=60 SBR MAX=19
L=56 SBR MAX=19 L=63 SBR MAX=25

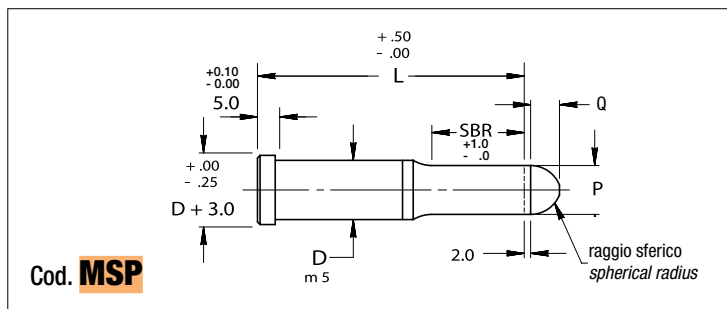
Il taglio della chiavetta è in posizione standard a 0°. Tutte le altre posizioni devono essere specificate in fase d'ordine.
Standard flat location is at 0° as shown. For other positions, specify when ordering (ex. 90°)

Piloti testa cilindrica

Shoulder pilots



* LEGGERMENTE INFERIORE PER Ø AL DI SOTTO DI 5,6 MM / SLIGHTLY LESS FOR DIA'S UNDER 5.6



Per le alterazioni standard vedi pagg. 3.56 ÷ 3.61
For product alterations see pages 3.56 ÷ 3.61

Codice/Code	Quota P / P dim.	Q
Cod. MSP	1.50-9.50 >9.51	4 10

Codice/Code	Materiale/Materiale	Tolleranze standard/Standard Point Tolerance	*Toller. alternativa/Alt. point tol.	T2
Cod. MST Cod. MSP	Acciaio/Steel M2, HRC 60-63 ALTERNATIVA/ALTERNATIVE **Acciaio/Steel PM4 Testa/Head - HRC 45-55	Tondo/Round P $\begin{matrix} +.01 \\ -.00 \end{matrix}$ $\odot$ 0.01 P - D Quando P=D si usa la tolleranza del corpo (D). When P=D shank tolerances apply.	P, W $\begin{matrix} +.005 \\ -.000 \end{matrix}$ P - D $\odot$ 0.008	* a richiesta/on request

CODICE CODE	D	P	L									
			40	50	56	60	63	70	71	80	90	100
MS_04	4	1.55 - 4.00	●	●	●	●	●	●	●	●	●	●
MS_05	5	1.55 - 5.00	◆	◆	◆	◆	◆	◆	◆	◆	◆	●
MS_06	6	1.55 - 6.00		◆	◆	◆	◆	◆	◆	◆	◆	●
MS_08	8	2.45 - 8.00		◆	◆	◆	◆	◆	◆	◆	◆	●
MS_10	10	3.15 - 10.00		◆	◆	◆	◆	◆	◆	◆	◆	●
MS_13	13	4.95 - 13.00		◆	◆	◆	◆	◆	◆	◆	◆	●
MS_16	16	7.95 - 16.00		◆	◆	◆	◆	◆	◆	◆	◆	●
MS_20	20	9.95 - 20.00			◆	◆	◆	◆	◆	◆	●	●
MS_25	25	11.95 - 25.00			◆	◆	◆	◆	◆	◆	●	●
MS_32	32	15.95 - 32.00				◆	◆	◆	◆	◆	●	●

CODICE CODE	D	SBR		
		STD	B	C
MS_04	4	8	10	—
MS_05	5	13	10	—
MS_06	6	13	10	—
MS_08	8	19	13	—
MS_10	10	19	13	25

CODICE CODE	D	SBR		
		STD	B	C
MS_13	13	19	13	25
MS_16	16	19	13	25
MS_20	20	19	13	25
MS_25	25	19	13	25
MS_32	32	25	19	30

STD = standard L = 50 SBR MAX = 13 L = 60 SBR MAX = 19
L = 56 SBR MAX = 19 L = 63 SBR MAX = 25

Esempio di ordinazione/Order example: MST13 71 STD P=10,00 (codice/code + D+L+SBR+P)

****Specificare M2 o PM4 in fase d'ordine**
****Must specify M2 or PM4 when ordering**

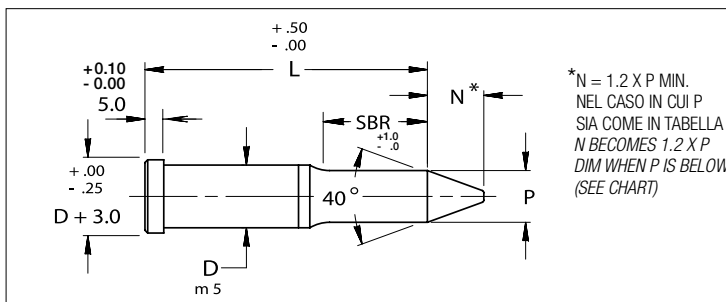
Piloti testa cilindrica

Shoulder pilots



TIPO A PUNTA
LONG LEAD STYLE

Per le alterazioni standard vedi
pagg. 3.56 ÷ 3.61
For product alterations
see pages
3.56 ÷ 3.61



*N = 1.2 X P MIN.
NEL CASO IN CUI P
SIA COME IN TABELLA
N BECOMES 1.2 X P
DIM WHEN P IS BELOW
(SEE CHART)

Per alterazione spina di centraggio CD vedi pag. 60/For center dowel alteration, see page 60.

Codice/Code	Materiale/Materiale	Tolleranze standard/ Standard Point Tolerance	*Toller. altern./Alt. point tol.	T2
Cod. MSA	Acciaio/Steel M2, HRC 60-63 ALTERNATIVA/ALTERNATIVE **Acciaio/Steel PM4 Testa/Head - HRC 45-55	Tondo/Round P $\begin{matrix} +.01 \\ -.00 \end{matrix}$ $\odot$ 0.01 P - D Quando P=D si usa la tolleranza del corpo (D). When P=D shank tolerances apply.	P, W $\begin{matrix} +.005 \\ -.000 \end{matrix}$ P - D $\odot$ 0.008	* a richiesta/on request

CODICE/CODE	D	P	N	P MIN. *	63	70	71	80	90	100	110	125	140
MSA 10	10	4.85 - 10.00	8	5.64	♦	♦	♦	♦	♦	♦	♦	♦	♦
MSA 13	13	6.30 - 13.00	10	7.11	♦	♦	♦	♦	♦	♦	♦	♦	♦
MSA 16	16	9.95 - 16.00	15	10.74		♦	♦	♦	♦	♦	♦	♦	♦
MSA 20	20	13.60 - 20.00	20	14.38		♦	♦	♦	♦	♦	♦	♦	♦
MSA 25	25	17.25 - 25.00	25	18.00		♦	♦	♦	♦	♦	♦	♦	♦
MSA 32	32	20.85 - 32.00	30	21.67			♦	♦	♦	♦	♦	♦	♦

CODICE/CODE	D	STD	B
MSA 10	10	19	25
MSA 13	13	19	25
MSA 16	16	19	25

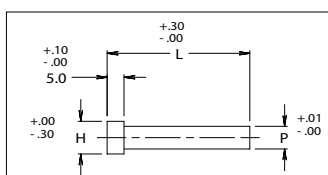
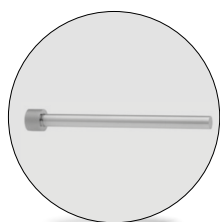
CODICE/CODE	D	STD	B
MSA 20	20	19	25
MSA 25	25	19	25
MSA 32	32	25	30

STD = standard

Esempio di ordinazione/Order example: MSA 20 90 STD P=17,0 (codice/code + D+L+SBR+P)

****Specificare M2 o PM4 in fase d'ordine**
****Must specify M2 or PM4 when ordering**

Punzoni "tipo quill" Quill punches

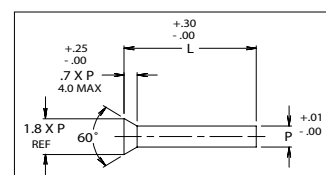
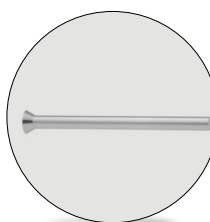


Cod. **MQS**

Per le alterazioni standard vedi pagg. 3.56 ÷ 3.61
For product alterations see pages 3.56 ÷ 3.61

Codice/Code	Materiale/Materiale
Cod. MQS / MQB	Acciaio/Steel M2, HRC 60-63

CODICE/CODE	H	P	50	63	40	45	56
MQS 01	3	0.80 - 1.60	♦	♦	♦	♦	♦
MQS 02	4	1.61 - 2.00	♦	♦	♦	♦	♦
MQS 03	5	2.01 - 3.00	♦	♦	♦	♦	♦
MQS 04	6	3.01 - 4.00	♦	♦	♦	♦	♦
MQS 05	7	4.01 - 5.00	♦	♦	♦	♦	♦
MQS 06	8	5.01 - 6.00	♦	♦	♦	♦	♦
MQS 07	9	6.01 - 7.00	♦	♦	♦	♦	♦



Cod. **MQB**

La quota "P" ha incrementi di centesimo in centesimo (2.01 - 2.02 - 2.03, ecc). Prezzo a richiesta per tutte le altre dimensioni.

"P" Dimension must be ordered in .01 increments. Other three place sizes are P.O.R.

CODICE/CODE	P	50	63	40	45	56
MQB 01	0.80 - 1.60	♦	♦	♦	♦	♦
MQB 02	1.61 - 2.00	♦	♦	♦	♦	♦
MQB 03	2.01 - 3.00	♦	♦	♦	♦	♦
MQB 04	3.01 - 4.00	♦	♦	♦	♦	♦
MQB 05	4.01 - 5.00	♦	♦	♦	♦	♦
MQB 06	5.01 - 6.00	♦	♦	♦	♦	♦
MQB 07	6.01 - 7.00	♦	♦	♦	♦	♦

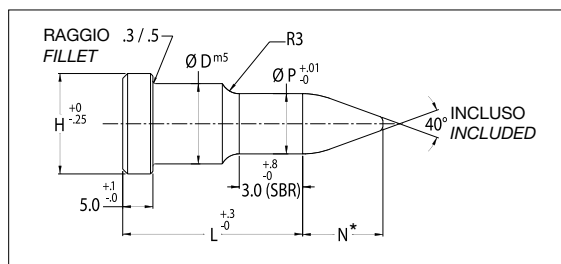
Esempio di ordinazione/Order example: MQS 04 40 P=3,5 (codice/code + D+L+P)

INDEX

Pilota / Compatto / A punta Pilot / Compact / Pointed



*N diventa 1.2 x Ø P quando
P è inferiore (vedi tabella).
N becomes 1.2 x P dim when
P is below (see chart).



Codice/Code	Materiale/Material	Tolleranze standard/ Standard Point Tolerance	*Tolleranza alternativa/Alt. point tol.	T2
Cod. MSW	Acciaio/Steel M2 HRC 60-63	Tondo/Round P $\begin{matrix} +.01 \\ -.00 \end{matrix}$.01 P - D Quando P=D si usa la tolleranza del corpo (D). When P=D shank tolerances apply.	P $\begin{matrix} +.005 \\ -.000 \end{matrix}$ P-D .01 P - D	* a richiesta on request

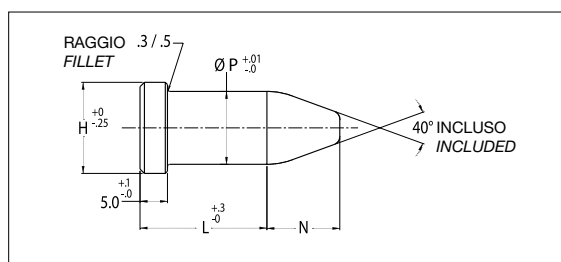
CODICE CODE	D	P	N	P<	H	L						
						16	20	22	25	28	32	35
MSW 04	4	1.95 - 3.99	4	4.00	7.0	•	•	•	•	•	•	•
MSW 05	5	2.65 - 4.99	5	4.19	8.0	•	•	•	•	•	•	•
MSW 06	6	3.30 - 5.99	6	4.19	9.0	•	•	•	•	•	•	•
MSW 08	8	4.10 - 7.99	7	4.19	11.0	•	•	•	•	•	•	•
MSW 10	10	4.80 - 9.99	8	5.64	13.0	•	•	•	•	•	•	•
MSW 13	13	6.25 - 12.99	10	7.11	16.0	•	•	•	•	•	•	•
MSW 16	16	9.85 - 15.99	15	10.74	19.0	•	•	•	•	•	•	•
MSW 20	20	13.50 - 19.99	20	14.38	23.0	•	•	•	•	•	•	•
MSW 25	25	17.20 - 24.99	25	18.00	28.0	•	•	•	•	•	•	•
MSW 32	32	20.80 - 31.99	30	21.67	35.0	•	•	•	•	•	•	•

Esempio di ordinazione/Order example:

TIPO "D" "L" "P" ALT
MSW 13 25 10,0 STD

Per le alterazioni standard vedi pagg. 3.56 ÷ 3.61
For product alterations see pages 3.56 ÷ 3.61

Pilota / Compatto / Dritto Pilot / Compact / Straight



Codice/Code	Materiale/Material	Tolleranze standard/ Standard Point Tolerance	*Toller. alternativa/Alt. point tol.	T2
Cod. MSV	Acciaio/Steel: M2 HRC 60-63	Tondo/Round P $\begin{matrix} +.01 \\ -.00 \end{matrix}$.01 P - D	P $\begin{matrix} +.005 \\ -.000 \end{matrix}$ * a richiesta/on request	

CODICE CODE	P	N	H	L						
				16	20	22	25	28	32	35
MSV 04	3.01 - 4.00	4	7.0	•	•	•	•	•	•	•
MSV 05	4.01 - 5.00	5	8.0	•	•	•	•	•	•	•
MSV 06	5.01 - 6.00	6	9.0	•	•	•	•	•	•	•
MSV 08	6.01 - 8.00	7	11.0	•	•	•	•	•	•	•

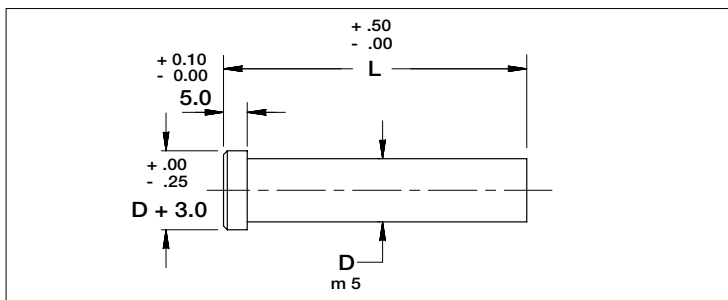
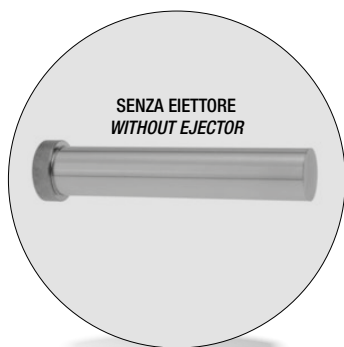
CODICE CODE	P	N	H	L						
				16	20	22	25	28	32	35
MSV 10	8.01 - 10.00	8	13.0	•	•	•	•	•	•	•
MSV 13	10.01 - 13.00	10	16.0	•	•	•	•	•	•	•
MSV 16	13.01 - 16.00	15	19.0	•	•	•	•	•	•	•
MSV 20	16.01 - 20.00	20	23.0	•	•	•	•	•	•	•

Esempio di ordinazione/Order example: MSV 10 30 P=9.0 (codice/code + L+P)

Per le alterazioni standard vedi pagg. 3.56 ÷ 3.61
For product alterations see pages 3.56 ÷ 3.61

Punzoni testa cilindrica sbazzati

Shoulder punches blanks



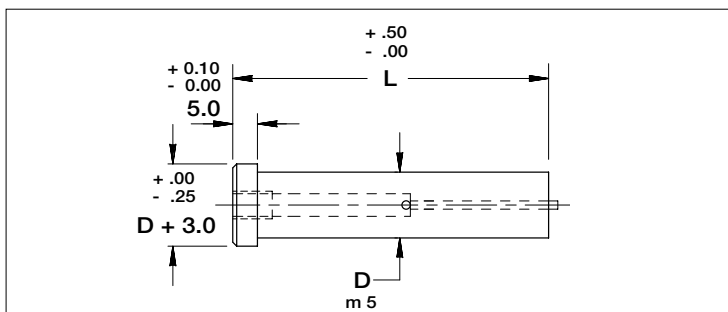
Per le alterazioni standard vedi pagg. 3.56 ÷ 3.61
For product alterations see pages 3.56 ÷ 3.61

Codice/Code	Materiale/Material
Cod. MSB	Acciaio/Steel M2, HRC 60-63, Testa/Head - HRC 45-55 • ALTERNATIVA/ALTERNATIVE *Acciaio/Steel PM4 ♦

CODICE/CODE	D	40	50	56	60	63	70	71	80	90	100	120	125	150	155	160	165	170
MSB 04	4	•	•	•	•	•	•	•	•	•	•	•	•					
MSB 05	5	♦	•	♦	•	♦	•	♦	•	♦	•	♦	•					
MSB 06	6		♦	•	♦	•	♦	•	♦	•	♦	•	♦					
MSB 08	8		♦	•	♦	•	♦	•	♦	•	♦	•	♦					
MSB 10	10		♦	•	♦	•	♦	•	♦	•	♦	•	♦	•				
MSB 13	13		♦	•	♦	•	♦	•	♦	•	♦	•	♦	•				
MSB 16	16		♦	•	♦	•	♦	•	♦	•	♦	•	♦	•	•			
MSB 20	20			♦	•	♦	•	♦	•	♦	•	♦	•	♦	•	•		
MSB 25	25			♦	•	♦	•	♦	•	♦	•	♦	•	♦	•		•	
MSB 32	32					♦	•	♦	•	♦	•	♦	•	♦	•			•
MSB 40	40								♦	•	♦	•	♦	•	♦	•		

Esempio di ordinazione/Order example: MSB.8.100 (codice/code + D+L)

*Specificare M2 o PM4 in fase d'ordine
*Must specify M2 or PM4 when ordering



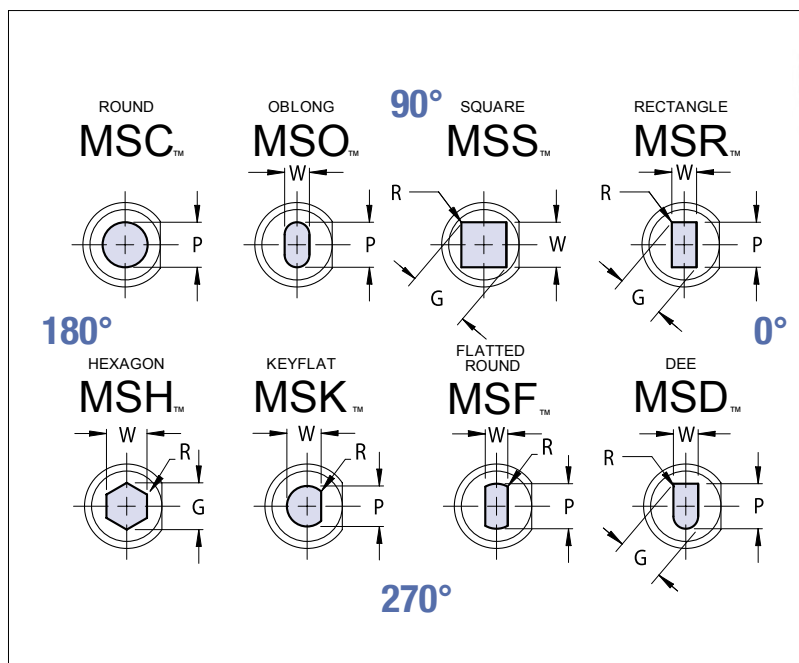
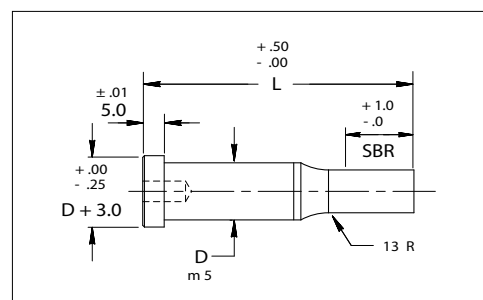
Per le alterazioni standard vedi pagg. 3.56 ÷ 3.61
For product alterations see pages 3.56 ÷ 3.61

Codice/Code	Materiale/Material
Cod. MCB	Acciaio/Steel M2, HRC 60-63, Testa/Head - HRC 45-55 • ALTERNATIVA/ALTERNATIVE *Acciaio/Steel PM4 ♦

CODICE/CODE	D	50	56	60	63	70	71	80	90	100	110	125	CODICE EIEETTORE EJECTOR SIZE
MCB 05	5	♦	•	♦	•	♦	•	♦	•	♦	•		MAE 2
MCB 06	6	♦	•	♦	•	♦	•	♦	•	♦	•		MAE 3
MCB 08	8	♦	•	♦	•	♦	•	♦	•	♦	•		MAE 4
MCB 10	10	♦	•	♦	•	♦	•	♦	•	♦	•	•	MAE 5
MCB 13	13	♦	•	♦	•	♦	•	♦	•	♦	•	•	MAE 5
MCB 16	16	♦	•	♦	•	♦	•	♦	•	♦	•	•	MAE 6
MCB 20	20		♦	•	♦	•	♦	•	♦	•	♦	•	MAE 6
MCB 25	25		♦	•	♦	•	♦	•	♦	•	♦	•	MAE 6
MCB 32	32				♦	•	♦	•	♦	•	♦	•	MAE 6
MCB 40	40							♦	•	♦	•	♦	MAE 6

Esempio di ordinazione/Order example: MCB.16.125 (codice/code + D+L)

*Specificare M2 o PM4 in fase d'ordine
*Must specify M2 or PM4 when ordering



Per le alterazioni standard vedi pagg. 3.56 ÷ 3.61
For product alterations see pages 3.56 ÷ 3.61

I disegni rappresentano i punzoni visti dalla parte del corpo ma disegnate con linea piena per chiarezza.
Views are shown looking through the shank but drawn with solid lines for clarity.

Codice/Code	Materiale/Materiale	Tolleranze standard/ Standard Point Tolerance	*Tolleranza alternativa/Alt. point tol.	T2
Cod. MS	Acciaio/Steel: M2, HRC 60-63 • Testa/Head - HRC 45-55	Tondo/Round P $\begin{matrix} +.01 \\ -.00 \end{matrix}$ 0.01 P - D	P, W $\begin{matrix} +.005 \\ -.000 \end{matrix}$	
	ALTERNATIVA/ALTERNATIVE **PM4, HRC 60-63 ♦ Testa/Head - HRC 45-55	Sagoma/Shape P, W $\pm .01$ 0.02 P - D Quando P=D si usa la tolleranza del corpo (D) When P = D Shank Tolerances apply (D)	P - D 0.008	* a richiesta/on request

CODICE CODE	D	TONDO/ROUND	SAGOMA/SHAPE		L								
		P	MIN W	MAX G/P	70	71	80	90	100	110	120	125	150
MS_10	10	3.20 - 9.99	3.20	10.00	♦♦	♦♦	♦♦	♦♦	♦♦	♦	♦	♦	♦
MS_13	13	5.00 - 12.99	4.50	13.00	♦♦	♦♦	♦♦	♦♦	♦♦	♦	♦	♦	♦
MS_16	16	8.00 - 15.99	6.00	16.00	♦♦	♦♦	♦♦	♦♦	♦♦	♦	♦	♦	♦
MS_20	20	10.00 - 19.99	8.00	20.00	♦♦	♦♦	♦♦	♦♦	♦♦	♦	♦	♦	♦
MS_25	25	12.00 - 24.99	9.00	25.00	♦♦	♦♦	♦♦	♦♦	♦♦	♦	♦	♦	♦
MS_32	32	16.00 - 31.99	10.00	32.00	♦♦	♦♦	♦♦	♦♦	♦♦	♦	♦	♦	♦
MS_40	40	30.00 - 39.99	14.00	40.00			♦♦	♦♦	♦♦	♦		♦	♦

Il taglio della chiavetta è in posizione standard a 0°. Tutte le altre posizioni devono essere specificate in fase d'ordine (es. 90°).
Standard flat location is at 0° as shown. For other positions, specify when ordering (ex. 90°)

CODICE CODE	D	STD	SBR	
			ALTERAZIONE/ALTERNATES	
			B	C
MS_10	10	19	13	19
MS_13	13	19	13	19
MS_16	16	19	13	19
MS_20	20	19	13	25
MS_25	25	19	13	25
MS_32	32	25	19	30
MS_40	40	25	19	30

***Specificare CD e X4=5.0 in fase d'ordine
***Must specify CD and X4=5.0 Alteration

**Specificare M2 o PM4 in fase d'ordine
**Must specify M2 or PM4 when ordering

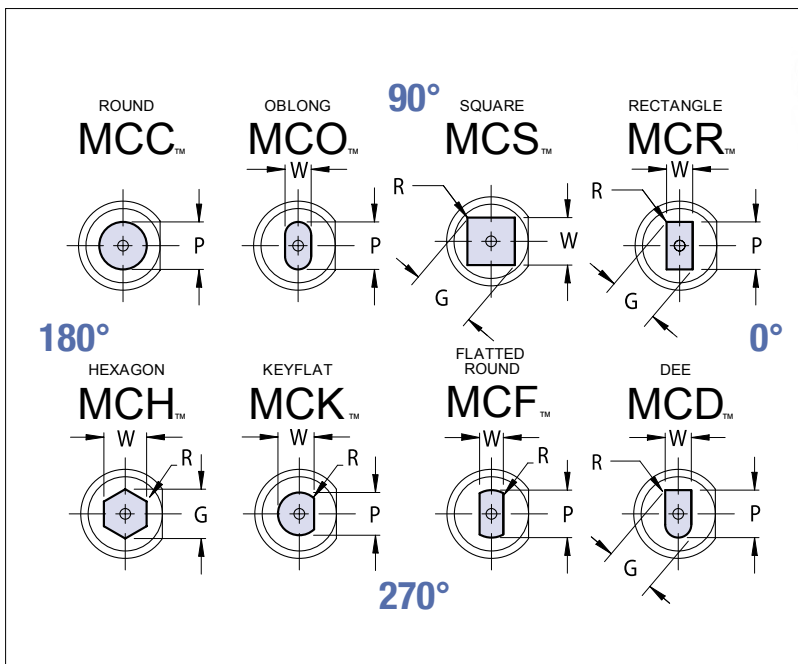
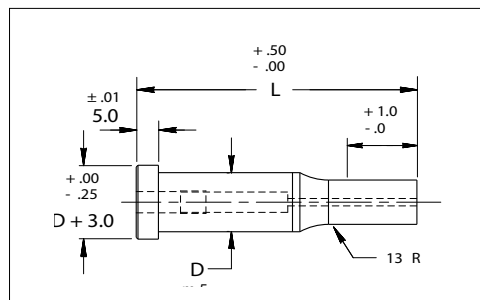
Esempio di ordinazione/Order example:

TIPO	"D"	"L"	Lung. SBR	P (o P/W) dimensioni	Codice alterazione	Tolleranza	Materiale
MSC	13	90	B	10.0	CD X4=5.0	T2	M2
MSO	16	80	STD	14.0x8.0	CD X4=5.0	STD	PM4

L=50 SBR MAX=13 L=60 SBR MAX=19
L=56 SBR MAX=19 L=63 SBR MAX=25

Punzoni testa cilindrica con eiettore e spina centraggio

Shoulder punches ejector with center dowel



Per le alterazioni standard vedi pagg. 3.56 ÷ 3.61
For product alterations see pages 3.56 ÷ 3.61

I disegni rappresentano i punzoni visti dalla parte del corpo ma disegnate con linea piena per chiarezza.
Views are shown looking through the shank but drawn with solid lines for clarity.

Codice/Code	Materiale/Materiale	Tolleranze standard/ Standard Point Tolerance	*Tolleranza alternativa/Alt. point tol.	T2
Cod. MC_	Acciaio/Steel: M2, HRC 60-63 Testa/Head - HRC 45-55 ALTERNATIVA/ALTERNATIVE **PM4, HRC 60-63 Testa/Head - HRC 45-55	Tondo/Round P $\begin{matrix} +.01 \\ -.00 \end{matrix}$ $\odot$ 0.01 P - D Sagoma/Shape P,W $\pm .01$ $\odot$ 0.02 P - D Quando P=D si usa la tolleranza del corpo (D) When P = D Shank Tolerances apply (D)	P,W $\begin{matrix} +.005 \\ -.000 \end{matrix}$ P - D $\odot$ 0.008	* a richiesta/on request

CODICE CODE	D	TONDO/ROUND	SAGOMA/SHAPE	L							
		P	MIN W	MAX G/P	70	71	80	90	100	110	125
MC_10	10	4.50 - 9.99	4.50	10.00	♦ ♦	♦ ♦	♦ ♦	♦ ♦	♦ ♦	♦ ♦	♦ ♦
MC_13	13	6.00 - 12.99	6.00	13.00	♦ ♦	♦ ♦	♦ ♦	♦ ♦	♦ ♦	♦ ♦	♦ ♦
MC_16	16	8.00 - 15.99	7.50	16.00	♦ ♦	♦ ♦	♦ ♦	♦ ♦	♦ ♦	♦ ♦	♦ ♦
MC_20	20	10.00 - 19.99	8.00	20.00	♦ ♦	♦ ♦	♦ ♦	♦ ♦	♦ ♦	♦ ♦	♦ ♦
MC_25	25	12.00 - 24.99	9.00	25.00	♦ ♦	♦ ♦	♦ ♦	♦ ♦	♦ ♦	♦ ♦	♦ ♦
MC_32	32	16.00 - 31.99	10.00	32.00	♦ ♦	♦ ♦	♦ ♦	♦ ♦	♦ ♦	♦ ♦	♦ ♦
MC_40	40	30.00 - 39.99	14.00	40.00	♦ ♦	♦ ♦	♦ ♦	♦ ♦	♦ ♦	♦ ♦	♦ ♦

Il taglio della chiave è in posizione standard a 0°.
Tutte le altre posizioni devono essere specificate in fase d'ordine (es. 90°).
Standard flat location is at 0° as shown. For other positions, specify when ordering (ex. 90°)

***Specificare CD e X4=5.0 in fase d'ordine
***Must specify CD and X4=5.0 Alteration

**Specificare M2 o PM4 in fase d'ordine
**Must specify M2 or PM4 when ordering

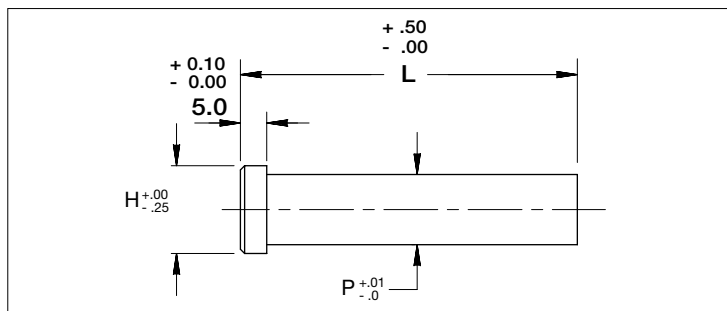
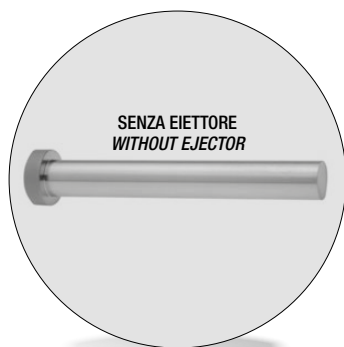
Esempio di ordinazione/Order example:

TIPO	"D"	"L"	Lung. SBR	P (o P/W) dimensioni	Codice alterazione	Tolleranza	Materiale
MCC	13	90	STD	10.0	CD X4=5.0	STD	M2
MCO	16	80	B	13.0x9.0	CD X4=5.0	T2	PM4

CODICE CODE	D	STD	SBR	
			ALTERAZIONE/ALTERNATES	
			B	C
MC_10	10	19	13	19
MC_13	13	19	13	19
MC_16	16	19	13	19
MC_20	20	19	13	25
MC_25	25	19	13	25
MC_32	32	25	19	30
MC_40	40	25	19	30

L=50 SBR MAX=13 L=60 SBR MAX=19
L=56 SBR MAX=19 L=63 SBR MAX=25

INDEX



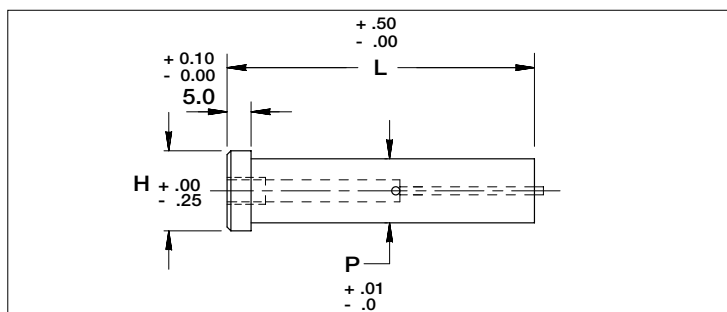
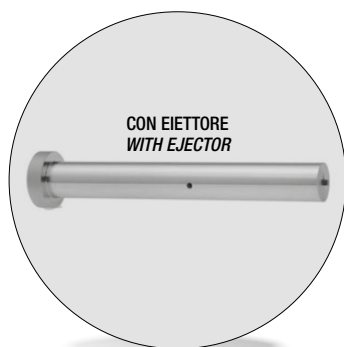
Per le alterazioni standard vedi pagg. 3.56 ÷ 3.61
For product alterations see pages 3.56 ÷ 3.61

Codice/Code	Materiale/Material
Cod. MSX	Acciaio/Steel M2, HRC 60-63, Testa/Head - HRC 45-55 • ALTERNATIVA/ALTERNATIVE *Acciaio/Steel PM4, HRC 60-63 ♦ Testa/Head - HRC 45-55

*Specificare M2 o PM4 in fase d'ordine
*Must specify M2 or PM4 when ordering

CODICE CODE	P	H	L										
			50	56	60	63	70	71	80	90	100	120	125
MSX 04	3.01 - 4.00	7	•	•	•	•	•	•	•	•	•	•	•
MSX 05	4.01 - 5.00	8	♦	♦	♦	♦	♦	♦	♦	♦	♦	♦	♦
MSX 06	5.01 - 6.00	9	♦	♦	♦	♦	♦	♦	♦	♦	♦	♦	♦
MSX 08	6.01 - 8.00	11	♦	♦	♦	♦	♦	♦	♦	♦	♦	♦	♦
MSX 10	8.01 - 10.00	13	♦	♦	♦	♦	♦	♦	♦	♦	♦	♦	♦
MSX 13	10.01 - 13.00	16	♦	♦	♦	♦	♦	♦	♦	♦	♦	♦	♦
MSX 16	13.01 - 16.00	19	♦	♦	♦	♦	♦	♦	♦	♦	♦	♦	♦

Esempio di ordinazione/Order example: MSX 10 80 P=8,50 (codice/code+L+P)



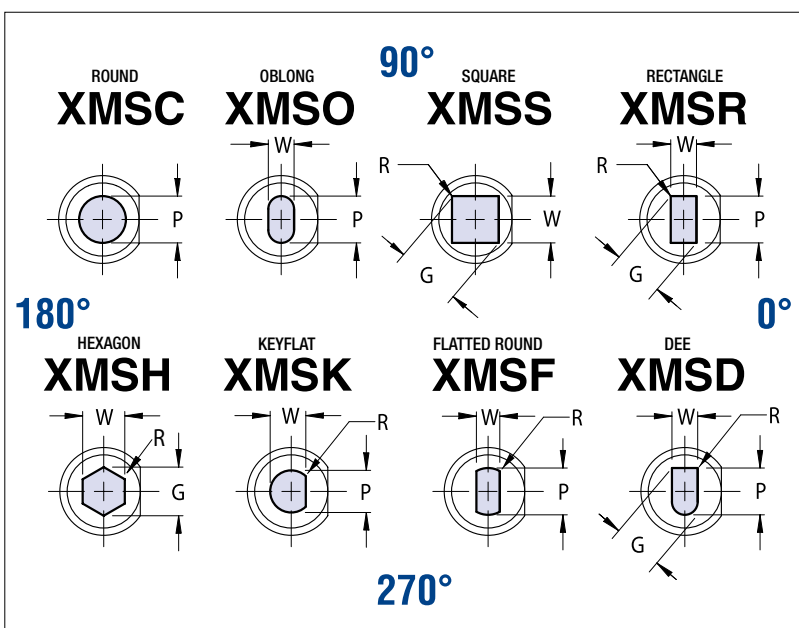
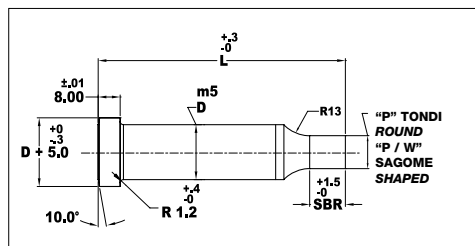
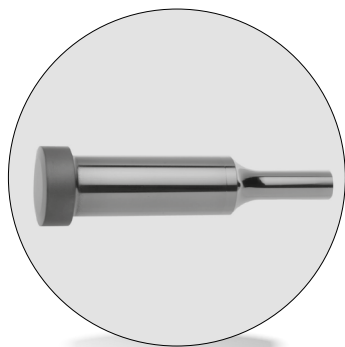
Per le alterazioni standard vedi pagg. 3.56 ÷ 3.61
For product alterations see pages 3.56 ÷ 3.61

Codice/Code	Materiale/Material
Cod. MCX	Acciaio/Steel M2, HRC 60-63, Testa/Head - HRC 45-55 • ALTERNATIVA/ALTERNATIVE *Acciaio/Steel PM4, HRC 60-63 ♦ Testa/Head - HRC 45-55

*Specificare M2 o PM4 in fase d'ordine
*Must specify M2 or PM4 when ordering

CODICE CODE	P	H	L								CODICE EIETTORE EJECTOR SIZE
			50	56	60	63	70	71	80	90	
MCX 05	4.01 - 5.00	8	♦	♦	♦	♦	♦	♦	♦	♦	MAE 2
MCX 06	5.01 - 6.00	9	♦	♦	♦	♦	♦	♦	♦	♦	MAE 3
MCX 08	6.01 - 8.00	11	♦	♦	♦	♦	♦	♦	♦	♦	MAE 4
MCX 10	8.01 - 10.00	13	♦	♦	♦	♦	♦	♦	♦	♦	MAE 5
MCX 13	10.01 - 13.00	16	♦	♦	♦	♦	♦	♦	♦	♦	MAE 5
MCX 16	13.01 - 16.00	19	♦	♦	♦	♦	♦	♦	♦	♦	MAE 6

Esempio di ordinazione/Order example: MCX 16 70 P=14,00 (codice/code+L+P)



*I disegni rappresentano i punzoni visti dalla parte del corpo ma disegnate con linea piena per chiarezza.
Views are shown looking through the shank but drawn with solid lines for clarity.*



Per alterazione spina di centraggio CD vedi pag. 60/For center dowel alteration, see page 60.

Per le alterazioni standard vedi pagg. 3.56 ÷ 3.61/ *For product alterations see pages 3.56 ÷ 3.61*

Codice/Code	Materiale/Material	Tolleranze standard/Standard Point Tolerance					
Cod. XMS	Acciaio/Steel	Tondo/Round	P	+01 -00		0.01	P - D
	PM4 HRC 60-62	Sagoma/Shape	PW	± .01		0.025	P - D
	Testa/Head - HRC 40-55						

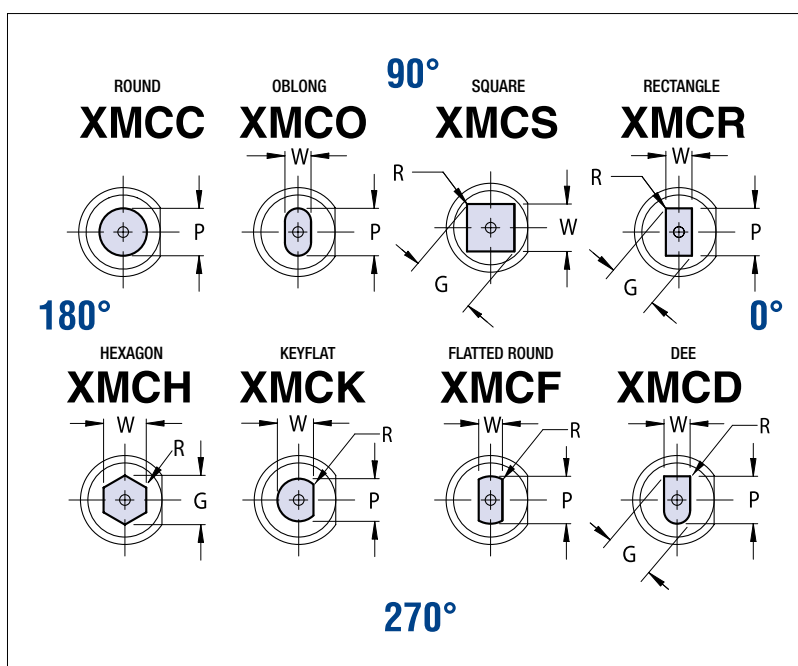
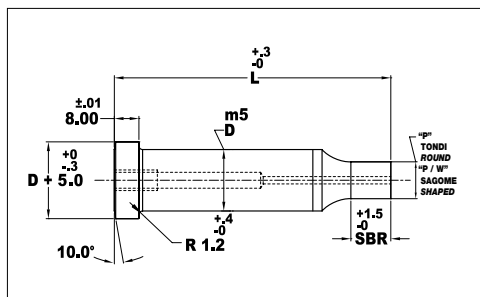
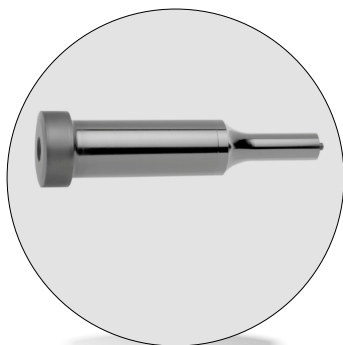
CODICE CODE	D	TONDO/ROUND	SAGOMA/SHAPE		L						
		P	MIN W	MAX G/P	70	80	90	100	110	125	150
XMS_ 08	8	3.10 - 7.99	3.10	8.00	●	●	●	●	●	●	●
XMS_ 10	10	3.20 - 9.99	3.20	10.00	●	●	●	●	●	●	●
XMS_ 13	13	5.00 - 12.99	4.50	13.00	●	●	●	●	●	●	●
XMS_ 16	16	8.00 - 15.99	6.00	16.00	●	●	●	●	●	●	●
XMS_ 20	20	10.00 - 19.99	8.00	20.00	●	●	●	●	●	●	●
XMS_ 25	25	12.00 - 24.99	9.00	25.00	●	●	●	●	●	●	●
XMS_ 32	32	16.00 - 31.99	10.00	32.00	●	●	●	●	●	●	●

CODICE CODE	D	SBR	
		STD	alterazioni/alternates
			B
XMS_08	8	13	19
XMS_10	10	13	19
XMS_13	13	13	19
XMS_16	16	19	25
XMS_20	20	19	25
XMS_25	25	19	25
XMS_32	32	19	25

Esempio di ordinazione/*Order example:*

TIPO	"D"	"L"	Lung. SBR	P (o P/W) dimensioni	ALT STD
XMSC	13	90	13	10,0	F1
XMSO	16	80	STD	14,0x8,0	F1@90

Il taglio della chiavetta è in posizione standard a 0°. Tutte le altre posizioni devono essere specificate in fase d'ordine (es. 90°).
*Standard flat location is at 0° as shown.
 For other positions, specify when ordering (ex. 90°)*



I disegni rappresentano i punzoni visti dalla parte del corpo ma disegnate con linea piena per chiarezza.
Views are shown looking through the shank but drawn with solid lines for clarity.



Per alterazione spina di centraggio CD vedi pag. 60/For center dowel alteration, see page 60.

Per le alterazioni standard vedi pagg. 3.56 ÷ 3.61/ For product alterations see pages 3.56 ÷ 3.61

Codice/Code	Materiale/Material	Tolleranze standard/Standard Point Tolerance
Cod. XMC	Acciaio/Steel PM4 HRC 60-62 Testa/Head - HRC 45-55	Tondo/Round P $\begin{matrix} +.01 \\ -.00 \end{matrix}$ $\odot$ 0.01 P - D Sagoma/Shape P,W $\pm .01$ $\odot$ 0.025 P - D

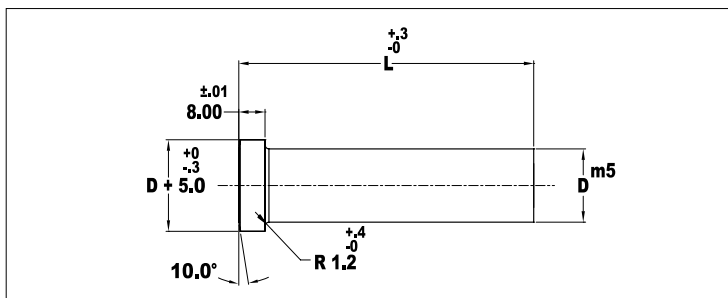
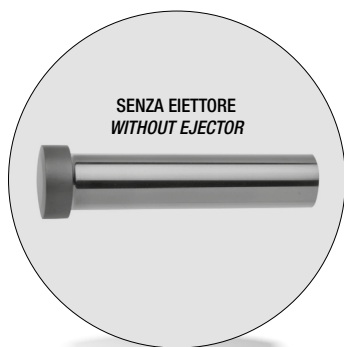
CODICE CODE	D	TONDO/ROUND	SAGOMA/SHAPE		L					
		P	MIN W	MAX G/P	70	80	90	100	110	125
XMC_08	8	4.00 - 7.99	4.00	8.00	•	•	•	•	•	•
XMC_10	10	4.50 - 9.99	4.50	10.00	•	•	•	•	•	•
XMC_13	13	6.00 - 12.99	6.00	13.00	•	•	•	•	•	•
XMC_16	16	8.00 - 15.99	7.50	16.00	•	•	•	•	•	•
XMC_20	20	10.00 - 19.99	8.00	20.00	•	•	•	•	•	•
XMC_25	25	12.00 - 24.99	9.00	25.00	•	•	•	•	•	•
XMC_32	32	16.00 - 31.99	10.00	32.00	•	•	•	•	•	•

CODICE CODE	D	SBR		CODICE EIETTORE EJECTOR SIZE
		STD	alterazioni/alternates B	
XMC_08	8	13	19	MAE 4
XMC_10	10	13	19	MAE 5
XMC_13	13	13	19	MAE 5
XMC_16	16	19	25	MAE 6
XMC_20	20	19	25	MAE 6
XMC_25	25	19	25	MAE 6
XMC_32	32	19	25	MAE 6

Esempio di ordinazione/Order example:

TIPO	"D"	"L"	Lung.	SBR	P (o P/W) dimensioni	ALT STD F1 F1@90
XMSC	13	90	B		10,0	
XMSO	16	80	STD		14,0x8,0	F1@90

Il taglio della chiave è in posizione standard a 0°. T
utte le altre posizioni devono essere specificate in fase d'ordine (es. 90°).
Standard flat location is at 0° as shown.
For other positions, specify when ordering (ex. 90°)

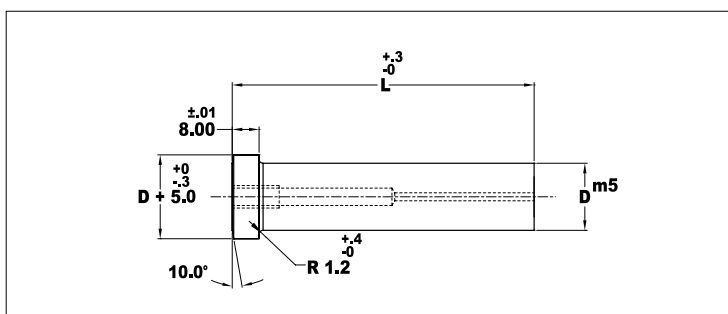


Per le alterazioni standard vedi pagg. 3.56 ÷ 3.61
For product alterations see pages 3.56 ÷ 3.61

Codice/Code	Materiale/Material
Cod. XMSB	Acciaio/Steel PM4 HRC 60-62, Testa/Head - HRC 40-55

CODICE CODE	D	L						
		70	80	90	100	110	125	150
XMSB 08	08	•	•	•	•	•	•	•
XMSB 10	10	•	•	•	•	•	•	•
XMSB 13	13	•	•	•	•	•	•	•
XMSB 16	16	•	•	•	•	•	•	•
XMSB 20	20	•	•	•	•	•	•	•
XMSB 25	25	•	•	•	•	•	•	•
XMSB 32	32	•	•	•	•	•	•	•

Esempio di ordinazione/Order example: XMSB 16 100 (codice/code + D+L)



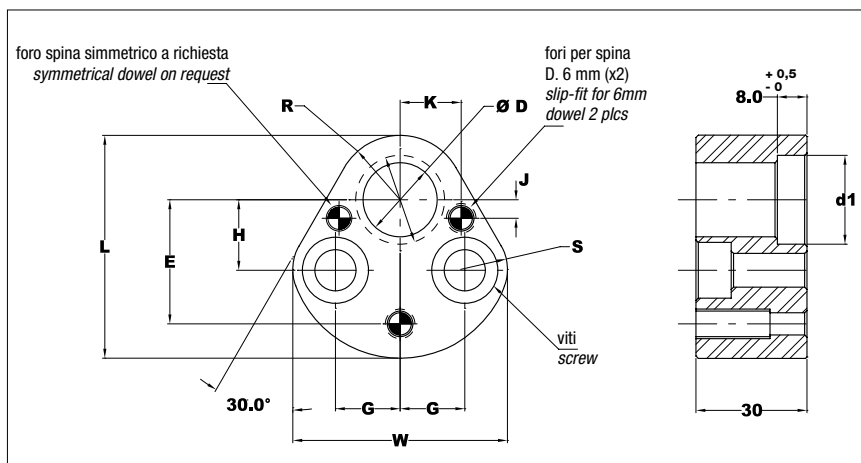
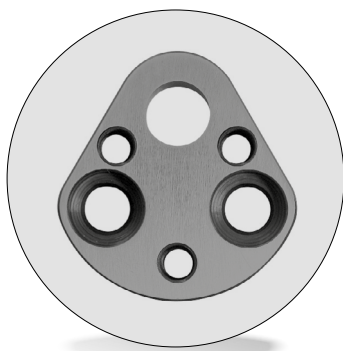
Per le alterazioni standard vedi pagg. 3.56 ÷ 3.61
For product alterations see pages 3.56 ÷ 3.61

Codice/Code	Materiale/Material
Cod. XMCB	Acciaio/Steel PM4 HRC 60-62, Testa/Head - HRC 40-55

CODICE CODE	D	L							CODICE EIETTORE EJECTOR SIZE
		70	80	90	100	110	125		
XMCB 08	08	•	•	•	•	•	•		MAE 4
XMCB 10	10	•	•	•	•	•	•		MAE 5
XMCB 13	13	•	•	•	•	•	•		MAE 5
XMCB 16	16	•	•	•	•	•	•		MAE 6
XMCB 20	20	•	•	•	•	•	•		MAE 6
XMCB 25	25	•	•	•	•	•	•		MAE 6
XMCB 32	32	•	•	•	•	•	•		MAE 6

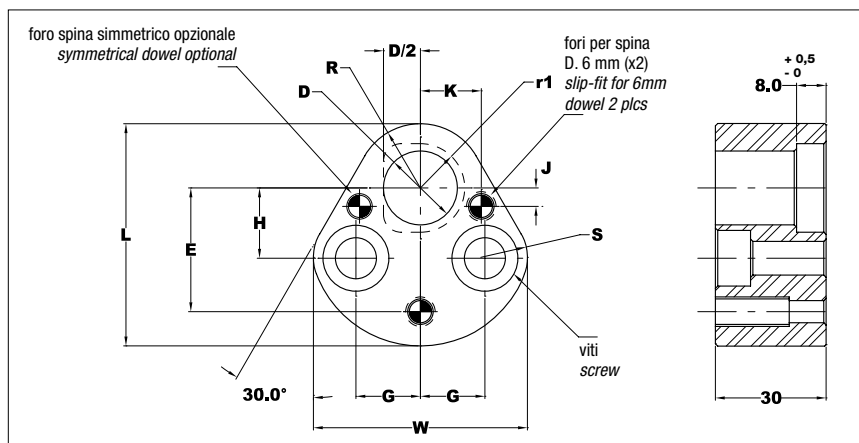
Esempio di ordinazione/Order example: XMCB 20 90 (codice/code + D+L)

XMRN per punzoni tondi Dura Punch For round Dura Punch



CODICE CODE	D	d1	L	W	R	H	J	K	S	G	E	MISURA VITI SCREW SIZE
XMRN-10	10.00	15.5	44.3	39.75	9.5	19.05	7.5	9.0	12.65	11.12	26.924	M8
XMRN-13	13.00	18.5	50.67	48.13	12.7	19.05	6.5	12.0	9.47	14.27	29.972	M8
XMRN-16	16.00	21.5	53.85	51.6	14.2	19.05	6.0	13.5	9.47	15.87	31.750	M8
XMRN-20	20.00	25.5	60.2	58.0	17.4	19.05	5.0	16.5	12.62	17.47	33.528	M10
XMRN-25	25.00	30.5	69.72	66.32	22.2	23.82	7.0	22.0	22.17	19.84	40.640	M12

XMRO per punzoni sagomati Dura Punch For shaped Dura Punch

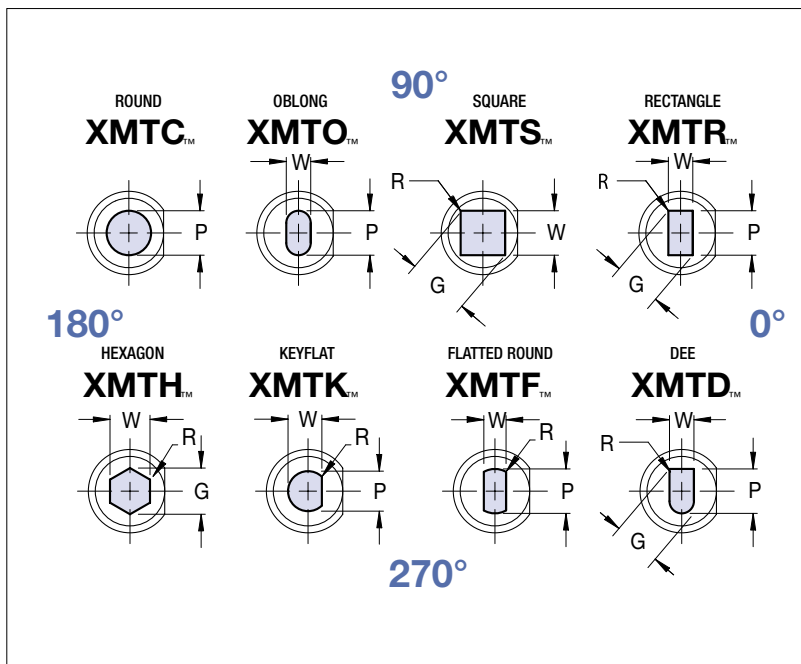
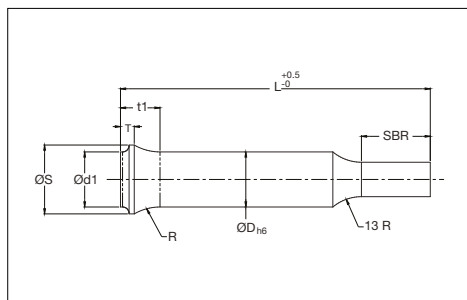
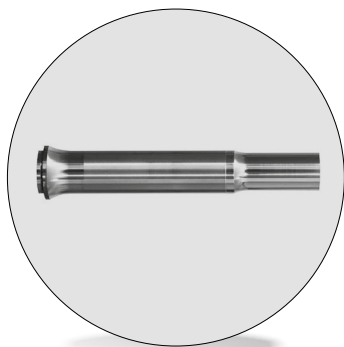


CODICE CODE	D	r1	L	W	R	H	J	K	S	G	E	MISURA VITI SCREW SIZE
XMRO-10	10.00	7.75	44.3	39.75	9.5	19.05	7.5	9.0	12.65	11.12	26.924	M8
XMRO-13	13.00	9.25	50.67	48.13	12.7	19.05	6.5	12.0	9.47	14.27	29.972	M8
XMRO-16	16.00	10.75	53.85	51.6	14.2	19.05	6.0	13.5	14.2	15.87	31.750	M8
XMRO-20	20.00	12.75	60.2	58.0	17.4	19.05	5.0	16.5	12.62	17.47	33.528	M10
XMRO-25	25.00	15.25	69.72	66.32	22.2	23.82	7.0	22.0	22.17	19.84	40.640	M12

Esempio di ordinazione/Order example: XMRO13 (codice/code)

Punzoni a collo di trombone

Trumpet head punches



Per le alterazioni standard vedi pagg. 3.56 ÷ 3.61

For product alterations see pages 3.56 ÷ 3.61

I disegni rappresentano i punzoni visti dalla parte del corpo ma disegnate con linea piena per chiarezza.

Views are shown looking through the shank but drawn with solid lines for clarity.

Code/Code	Materiale/Material	Tolleranze standard/Standard Point Tolerance	*Toller. alternativa/Alt. point tol. T2
Cod. XMT	Acciaio/Steel PM4 HRC 60-62 Testa/Head - HRC 45-55	Tondo/Round P $\begin{matrix} +.01 \\ -.00 \end{matrix}$ $\begin{matrix} \odot \\ \ominus \end{matrix}$ 0.01 P - D Sagoma/Shape P,W $\pm .01$ $\begin{matrix} \odot \\ \ominus \end{matrix}$ 0.02 P - D	P, W $\begin{matrix} +.005 \\ -.000 \end{matrix}$ P - D .008 $\begin{matrix} \odot \\ \ominus \end{matrix}$

*a richiesta/on request

CODICE CODE							TONDO/ROUND		SAGOMA/SHAPE		L			
	ØD	ØS	Ød1	t1	T	R	P	MIN. W	MAX P/G		71	80	90	100
XMT_005	5	7	5	8.36	4	10	1.60-4.99	1.60	5.00		X	X	X	X
XMT_006	6	9	6	9.27	4	10	1.60-5.99	1.60	6.00		X	X	X	X
XMT_008	8	11	8	9.81	4	12	2.50-7.99	2.50	8.00		X	X	X	X
XMT_010	10	14	10	11.48	4	15	3.20-9.99	3.20	10.00		X	X	X	X
XMT_013	13	17	13	11.48	4	15	5.00-12.99	4.50	13.00		X	X	X	X
XMT_016	16	20	16	11.48	4	15	8.00-15.99	6.00	16.00		X	X	X	X
XMT_020	20	25	20	12.29	4	15	10.00-19.99	8.00	20.00		X	X	X	X

CODICE CODE	D	SBR		
		STD	B	C
XMT_005	5	13	10	-
XMT_006	6	13	10	-
XMT_008	8	19	13	-
XMT_010	10	19	13	25
XMT_013	13	19	13	25
XMT_016	16	19	13	25
XMT_020	20	19	13	25

Esempio di ordinazione/Order example:

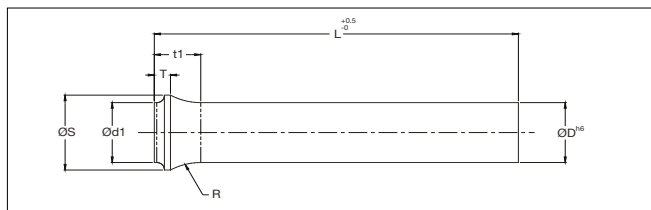
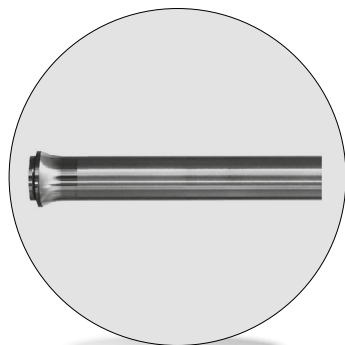
TIPO	"D"	"L"	Lung. SBR	P (o P/W) dimensioni	ALT STD
XMTC	13	90	B	10,0	F1
XMTR	16	80	STD	14,0x8,0	F1@90

Il taglio della chiavetta è in posizione standard a 0°. Tutte le altre posizioni devono essere specificate in fase d'ordine (es. 90°).
Standard flat location is at 0° as shown. For other positions, specify when ordering (ex. 90°)

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Punzoni a collo di trombone sbazzati

Trumpet head punches blanks



Codice/Code	Materiale/Material
Cod. XMTB	Acciaio/Steel PM4 HRC 62-66 Testa/ Head HRC 45-55

Per le alterazioni standard vedi
pagg. 3.56 ÷ 3.61
For product alterations see pages
3.56 ÷ 3.61

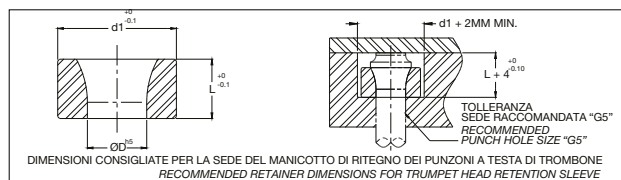
	SHANK DIA						OVERALL LENGTH "L"			
CODICE/CODE	ØD	ØS	ØD1	t1	T	R	71	80	90	100
XMTB 005	5	7	5	8,36	4	10	X	X	X	X
XMTB 006	6	9	6	9,27	4	10	X	X	X	X
XMTB 008	8	11	8	9,81	4	12	X	X	X	X
XMTB 010	10	14	10	11,48	4	15	X	X	X	X
XMTB 013	13	17	13	11,48	4	15	X	X	X	X
XMTB 016	16	20	16	11,48	4	15	X	X	X	X
XMTB 020	20	25	20	12,29	4	15	X	X	X	X

Esempio di ordinazione/Order example: XMTB 16.100 (codice/code)

Manicotto di ritegno per punzoni a collo di trombone

Trumpet head punch retention sleeve

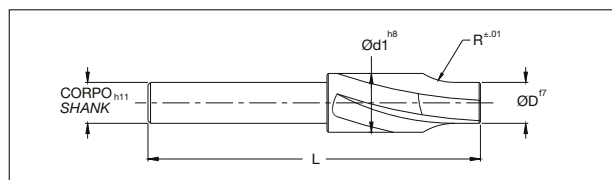
CODICE/CODE	D	d1	L
XMAQ 005	5	9	7
XMAQ 006	6	11	7
XMAQ 008	8	13	8
XMAQ 010	10	16	9
XMAQ 013	13	19	9
XMAQ 016	16	22	9
XMAQ 020	20	27	10



Utensile per sedi punzoni a collo di trombone

Endmill for trumpet head retainers

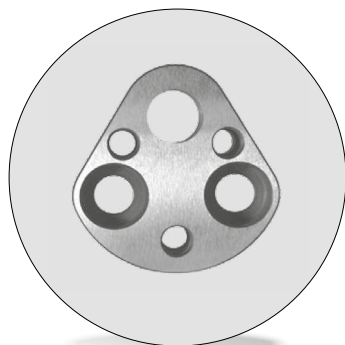
CODICE/CODE	D	d1	R	CORPO/ SHANK	L
XMAK 005	5	7.4	10	7.4	71
XMAK 006	6	9.5	10	9.5	71
XMAK 008	8	11.5	12	11.5	71
XMAK 010	10	14.5	15	13	71
XMAK 013	13	17.5	15	13	71
XMAK 016	16	20.5	15	13	71
XMAK 020	20	25.5	15	16	71



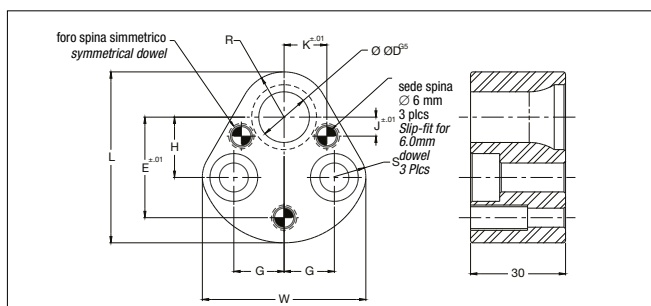
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Portapunzoni per punzoni a collo di trombone

Trumpet head punch retainer



Codice/Code
Cod. XMRT

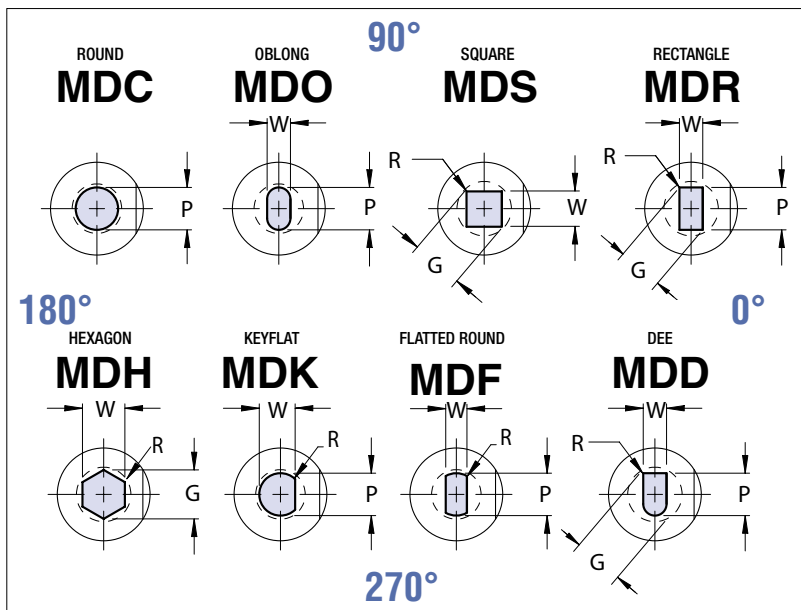
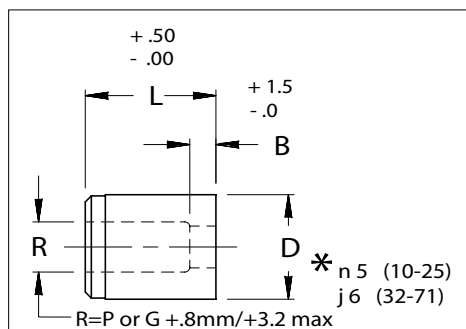
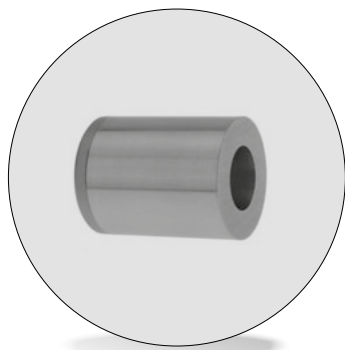


CODICE/CODE	D	L	W	R	H	J	K	S	G	E	MISURA VITI/SCREW SIZE
XMRT 010	10	44.32	39.75	9.5	19.05	7.5	9.0	12.65	11.1	26.925	M8
XMRT 013	13	50.67	48.13	12.7	19.05	6.5	12.0	9.47	14.3	29.970	M8
XMRT 016	16	53.85	51.64	14.2	19.05	6.0	13.5	9.47	15.9	31.750	M8
XMRT 020	20	60.20	58.0	17.4	19.05	5.0	16.5	12.62	17.5	33.530	M10

Esempio di ordinazione/Order example: XMRT 010 (codice/code)

Matrici lisce scarico cilindrico

Press-fit buttons counter bore relief



I disegni rappresentano le matrici viste dalla parte di trancia.
Views are shown looking at top face of button.

Codice/Code	Materiale/Material	Tolleranze standard/Standard Point Tolerance
Cod. MD_	Acciaio/Steel: A2, HRC 60-63 • ALTERNATIVA/ALTERNATIVE *M2, HRC 60-63 ♦	Tondo/Round P $\begin{matrix} +.01 \\ -.00 \end{matrix}$ $\odot$ 0.01 P - D Sagoma/Shape P,W $\begin{matrix} +.02 \\ -.00 \end{matrix}$ $\odot$ 0.02 P - D

Per le alterazioni standard
vedi pagg. 3.56 ÷ 3.61
For product alterations see
pages 3.56 ÷ 3.61

CODICE CODE	D	B			R	TONDO/ROUND	SAGOMA/SHAPE		L							
		STD	alterazioni alternates				P	MIN W	MAX G/P	20	22	25	28	30	32	35
			A	B												
MD_08	8	4.0	8	-	4.0	1.50 - 3.20	1.50	3.20	♦ ●	♦ ●	♦ ●	♦ ●	♦ ●	♦ ●	♦ ●	
MD_10	10	4.0	8	-	6.0	1.60 - 5.00	1.60	5.00	♦ ●	♦ ●	♦ ●	♦ ●	♦ ●	♦ ●	♦ ●	
MD_13	13	5.0	8	-	8.0	1.80 - 7.20	1.80	7.20	♦ ●	♦ ●	♦ ●	♦ ●	♦ ●	♦ ●	♦ ●	
MD_16	16	5.0	8	-	9.5	5.00 - 8.80	2.50	8.80	♦ ●	♦ ●	♦ ●	♦ ●	♦ ●	♦ ●	♦ ●	
MD_20	20	5.0	12	-	12.0	5.50 - 11.0	3.20	11.0	♦ ●	♦ ●	♦ ●	♦ ●	♦ ●	♦ ●	♦ ●	
MD_22	22	6.0	12	-	15.0	7.50 - 14.0	4.00	14.0	♦ ●	♦ ●	♦ ●	♦ ●	♦ ●	♦ ●	♦ ●	
MD_25	25	6.0	12	-	17.5	9.50 - 16.50	4.80	16.50	♦ ●	♦ ●	♦ ●	♦ ●	♦ ●	♦ ●	♦ ●	
MD_32	32	6.0	12	-	21.0	13.0 - 20.00	5.50	20.00	♦ ●	♦ ●	♦ ●	♦ ●	♦ ●	♦ ●	♦ ●	
MD_38	38	8.0	12	-	27.0	16.00 - 26.00	6.40	26.00	♦ ●	♦ ●	♦ ●	♦ ●	♦ ●	♦ ●	♦ ●	
MD_40	40	8.0	12	-	27.0	16.00 - 26.00	6.40	26.00	♦ ●	♦ ●	♦ ●	♦ ●	♦ ●	♦ ●	♦ ●	
MD_45	45	8.0	12	20	36.0	17.50 - 35.00	7.50	35.00		♦ ●	♦ ●	♦ ●	♦ ●	♦ ●	♦ ●	
MD_50	50	8.0	12	20	41.0	20.00 - 40.00	8.00	40.00		♦ ●	♦ ●	♦ ●	♦ ●	♦ ●	♦ ●	
MD_56	56	8.0	12	20	46.0	22.50 - 45.00	9.00	45.00		♦ ●	♦ ●	♦ ●	♦ ●	♦ ●	♦ ●	
MD_63	63	8.0	12	20	51.0	25.00 - 50.00	10.00	50.00		♦ ●	♦ ●	♦ ●	♦ ●	♦ ●	♦ ●	
MD_71	71	8.0	12	20	57.0	27.50 - 56.00	11.00	56.00		♦ ●	♦ ●	♦ ●	♦ ●	♦ ●	♦ ●	

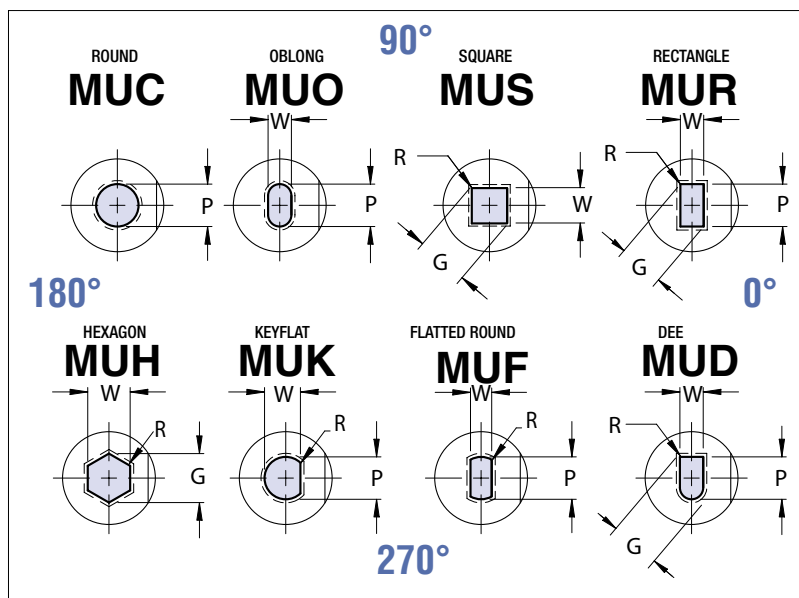
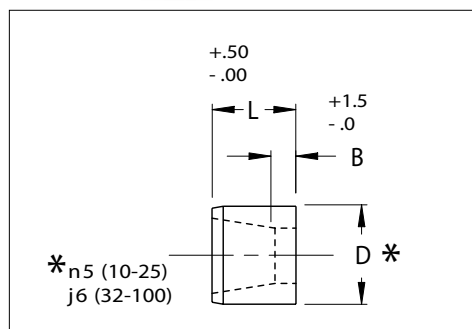
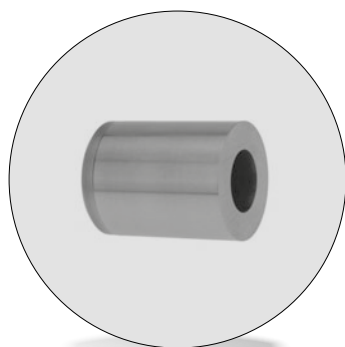
Esempio di ordinazione/Order example:

TIPO	"D"	"L"	Altezza quota "B"	P (o P/W) dimensioni	Alterazione standard	Materiale
MDC	20	30	A	9.0	F2	A2
MDO	13	20	STD	6.0x3.0	F2	M2

*Specificare A2 o M2 in fase d'ordine
*Must specify A2 or M2 when ordering

Il taglio della chiavetta è in posizione standard a 0°. Tutte le altre posizioni devono essere specificate in fase d'ordine (es. 90°).
Standard flat location is at 0° as shown. For other positions, specify when ordering (ex. 90°)

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Per le alterazioni standard vedi pagg. 3.56 ÷ 3.61
Standard alterations see pages 3.56 ÷ 3.61

I disegni rappresentano le matrici viste dalla parte di trancia.
Views are shown looking at top face of button.

Codice Code	Materiale Material	Tolleranze standard Standard Point Tolerance	* Tolleranza alternativa Alternate Point Tolerance	T2
Cod. MU	Acciaio/Steel A2 HRC 58-60 **ALTERNATIVA/ALTERNATIVE M2, HRC 60-63	Tondo/Round P $\begin{matrix} +.01 \\ -.00 \end{matrix}$ Sagoma/ Shape P,W $\begin{matrix} +.02 \\ -.00 \end{matrix}$	P,W $\begin{matrix} +.005 \\ -.000 \end{matrix}$ P - D $\begin{matrix} \text{0.01} \\ \text{0.02} \end{matrix}$ *a richiesta dal diametro 45 *on request from diameter 45	

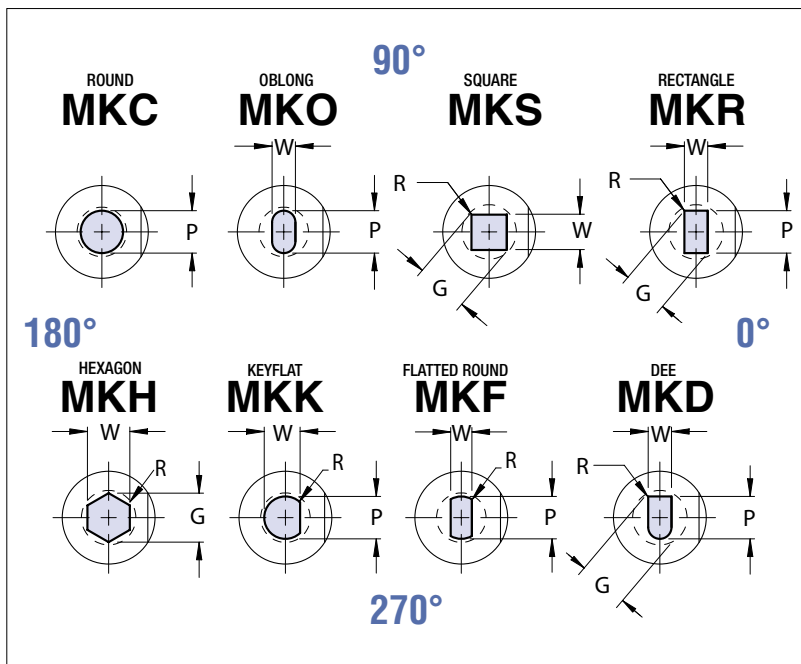
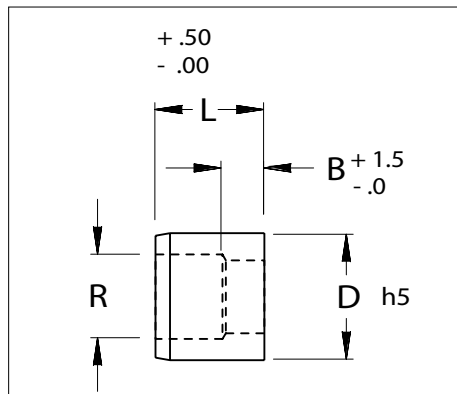
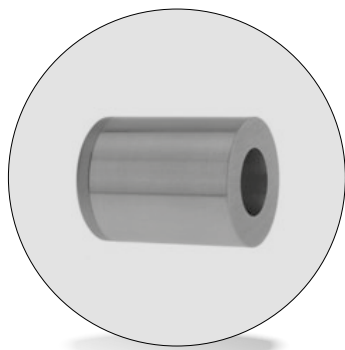
**Specificare A2 o M2 in fase d'ordine/Must specify A2 or M2 when ordering

CODICE CODE	D	B				TONDO/ROUND		SAGOMA/SHAPE		L							
		STD	alterazioni/alternates			P	MIN W	MAX G/P		20	22	25	28	30	32	35	40
			A	B	C												
MU_8	8	4.0	8.0		3.0	1.50 - 3.20	1.50	3.20		•	•	•	•	•	•	•	•
MU_10	10	4.0	8.0		3.0	1.60 - 5.00	1.60	5.00		•	•	•	•	•	•	•	•
MU_13	13	5.0	8.0		3.0	3.00 - 7.20	1.80	7.20		•	•	•	•	•	•	•	•
MU_16	16	5.0	8.0		3.0	5.00 - 8.80	2.50	8.80		•	•	•	•	•	•	•	•
MU_20	20	5.0	12.0	20.0	3.0	5.50 - 11.0	3.20	11.0		•	•	•	•	•	•	•	•
MU_22	22	6.0	12.0	20.0	3.0	7.50 - 14.0	4.00	14.0		•	•	•	•	•	•	•	•
MU_25	25	6.0	12.0	20.0	3.0	9.50 - 16.50	4.80	16.50		•	•	•	•	•	•	•	•
MU_32	32	6.0	12.0	20.0	3.0	13.0 - 20.00	5.50	20.00		•	•	•	•	•	•	•	•
MU_38	38	8.0	12.0	20.0	3.0	16.00 - 26.00	6.40	26.00		•	•	•	•	•	•	•	•
MU_40	40	8.0	12.0	20.0	3.0	16.00 - 26.00	6.40	26.00		•	•	•	•	•	•	•	•
MU_45	45	8.0	12.0	20.0	3.0	22.00 - 31.00	7.50	31.00				•	•	•	•	•	•
MU_50	50	8.0	12.0	20.0	3.0	24.00 - 34.00	8.00	34.00				•	•	•	•	•	•
MU_56	56	8.0	12.0	20.0	3.0	26.00 - 38.00	8.50	38.00				•	•	•	•	•	•
MU_63	63	8.0	12.0	20.0	3.0	30.00 - 43.00	9.00	43.00				•	•	•	•	•	•
MU_71	71	8.0	12.0	20.0	3.0	34.00 - 48.00	9.50	48.00				•	•	•	•	•	•
MU_76	76	8.0	12.0	20.0	3.0	36.00 - 52.00	10.00	52.00					•	•	•	•	•
MU_85	85	8.0	12.0	20.0	3.0	40.00 - 58.00	11.00	58.00								•	•
MU_90	90	8.0	12.0	20.0	3.0	43.00 - 61.00	12.00	61.00								•	•
MU_100	100	8.0	12.0	20.0	3.0	48.00 - 68.00	13.00	68.00								•	•

Esempio di ordinazione/Order example:

TIPO	"D"	"L"	Lunghezza quota "B"	P (o P/W) dimensioni	Alterazione standard	Materiale
MUC	25	30	A	15,0	F2	A2
MUH	20	30	STD	10,0x5,0	F2	M2

Il taglio della chiavetta è in posizione standard a 0°.
Tutte le altre posizioni devono essere specificate in fase d'ordine
(es. 90°).
Standard flat location is at 0° as shown.
For other positions, specify when ordering (ex. 90°)



Per le alterazioni standard vedi pagg. 3.56 ÷ 3.61
Standard alterations see pages 3.56 ÷ 3.61

I disegni rappresentano le matrici viste dalla parte di trancia.
Views are shown looking at top face of button.

Codice/Code	Materiale/Material	Tolleranze standard/Standard Point Tolerance	Alterazione VDI/VDI alteration
Cod. MK_	Acciaio/Steel A2 HRC 58-60 *ALTERNATIVA/ALTERNATIVE M2, HRC 60-63	Tondo P $\begin{matrix} +.01 \\ -.00 \end{matrix}$ $\odot$ 0.01 P - D Sagoma P,W $\begin{matrix} +.02 \\ -.00 \end{matrix}$ $\odot$ 0.02 P - D	Per scarichi secondo normativa VDI +2./3 oltre quota "P" o "G" aggiungere VDI al fondo della descrizione. For vdi style relief +2./3 over "p" or "g" add vdi at end of description.

*Acciaio M2 a richiesta/M2 steel on request

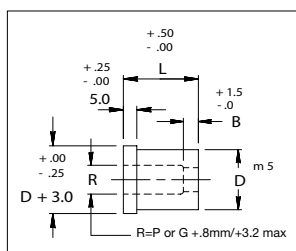
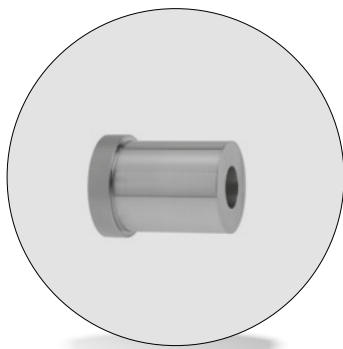
CODICE CODE	D	B		TONDO/ROUND	SAGOMA/SHAPE		R	L	
		STD	alterazioni/alternates A		MIN W	MAX G/P		25	32
MK_ 13	13	5.0	8	1.80 - 3.00	1.80	3.00	5.2	•	
		5.0	8	3.01 - 6.20	1.80	6.20	7.0	•	
MK_ 16	16	5.0	9	5.00 - 6.20	2.50	6.20	7.2	•	
		5.0	9	6.21 - 8.00	2.50	8.00	8.7	•	
MK_ 20	20	5.0	9	5.40 - 8.30	3.20	8.30	9.1	•	
		5.0	9	8.31 - 11.00	3.20	11.0	11.9	•	
MK_ 25	25	5.0	12	9.40 - 13.00	4.80	13.00	13.9	•	•
		5.0	12	13.01 - 16.00	4.80	16.00	16.7	•	•
MK_ 32	32	5.0	12	13.00 - 16.50	5.50	16.50	17.5	•	•
		5.0	12	16.51 - 20.00	5.50	20.00	21.5	•	•
MK_ 40	40	5.0	15	15.80 - 21.40	6.40	21.40	22.2	•	•
		5.0	15	21.41 - 26.00	6.40	26.00	27.0	•	•
MK_ 50	50	5.0	20	20.00 - 26.00	9.00	26.00	27.0		•
		5.0	20	26.01 - 37.00	9.00	37.00	38.0		•
MK_ 56	56	5.0	20	25.00 - 35.00	10.00	35.00	36.0		•
		5.0	20	35.01 - 44.00	10.00	44.00	45.0		•
MK_ 63	63	5.0	20	28.00 - 40.00	11.00	40.00	41.0		•
		5.0	20	40.01 - 50.00	11.00	50.00	51.0		•

Esempio di ordinazione/Order example:

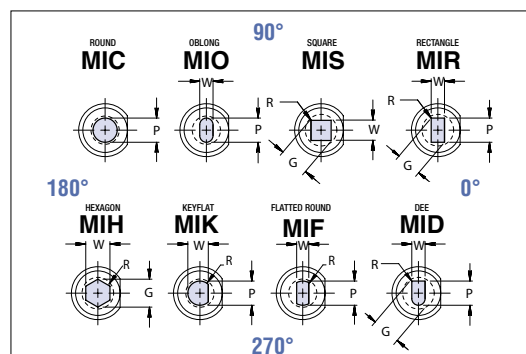
TIPO	"D"	"L"	Lunghezza quota "B"	P (o P/W) dimensioni	Alterazione standard	Materiale
MKC	25	32	A	15,0	F2	A2
MKO	20	25	STD	10,0x5,0	F2	M2

Il taglio della chiave è in posizione standard a 0°.
Tutte le altre posizioni devono essere specificate in fase d'ordine
(es. 90°).

Standard flat location is at 0° as shown.
For other positions, specify when ordering (ex. 90°)

Matrici con collare scarico cilindrico *Shoulder buttons bore relief*

I disegni rappresentano le matrici viste dalla parte di trancia.
Views are shown looking at top face of button.



Codice/Code	Materiale/Material	Tolleranze standard/Standard Point Tolerance
Cod. MI	Acciaio/Steel A2 HRC 58-60 *ALTERNATIVA/ALTERNATIVE M2, HRC 60-63	Tondo/Round P $\begin{matrix} +.01 \\ -.00 \end{matrix}$ $\odot$ 0.01 P - D Sagoma/Shape P,W $\begin{matrix} +.02 \\ -.00 \end{matrix}$ $\odot$ 0.02 P - D

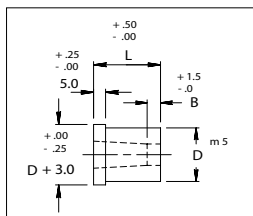
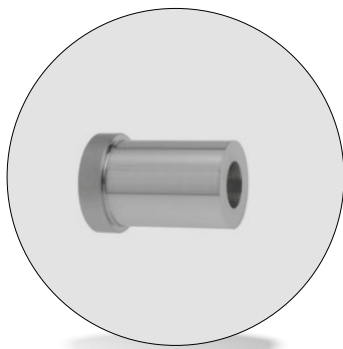
Per le alterazioni standard vedi pagg. 3.56 ÷ 3.61
Standard alterations see pages 3.56 ÷ 3.61

Il taglio della chiave è in posizione standard a 0°.
Tutte le altre posizioni devono essere specificate in fase d'ordine (es. 90°).
Standard flat location is at 0° as shown.
For other positions, specify when ordering (ex. 90°)

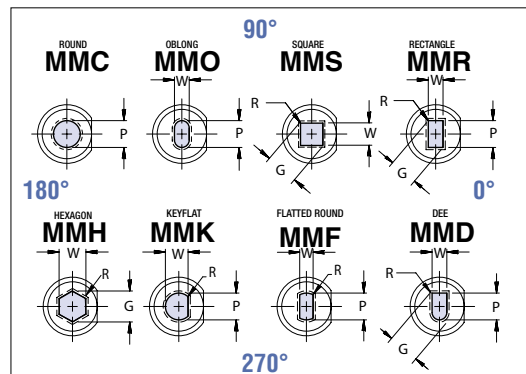
CODICE CODE	D	B		R	TONDO/ROUND	SAGOMA/SHAPE		L							
		STD	alterazioni			P	MIN W	MAX G/P	20	22	25	28	30	32	35
		A													
MI_8	8	4.0	8	4.0	1.50 - 3.20	1.50	3.20	♦ ♦	♦ ♦	♦ ♦	♦ ♦	♦ ♦	♦ ♦	♦ ♦	
MI_10	10	4.0	8	6.0	1.60 - 5.00	1.60	5.00	♦ ♦	♦ ♦	♦ ♦	♦ ♦	♦ ♦	♦ ♦	♦ ♦	
MI_13	13	5.0	8	8.0	1.80 - 7.20	1.80	7.20	♦ ♦	♦ ♦	♦ ♦	♦ ♦	♦ ♦	♦ ♦	♦ ♦	
MI_16	16	5.0	8	9.5	5.00 - 8.80	2.50	8.80	♦ ♦	♦ ♦	♦ ♦	♦ ♦	♦ ♦	♦ ♦	♦ ♦	
MI_20	20	5.0	12	12.0	5.50 - 11.0	3.20	11.0	♦ ♦	♦ ♦	♦ ♦	♦ ♦	♦ ♦	♦ ♦	♦ ♦	
MI_22	22	6.0	12	15.0	7.50 - 14.0	4.00	14.0	♦ ♦	♦ ♦	♦ ♦	♦ ♦	♦ ♦	♦ ♦	♦ ♦	
MI_25	25	6.0	12	17.5	9.50 - 16.50	4.80	16.50	♦ ♦	♦ ♦	♦ ♦	♦ ♦	♦ ♦	♦ ♦	♦ ♦	
MI_32	32	6.0	12	21.0	13.0 - 20.00	5.50	20.00	♦ ♦	♦ ♦	♦ ♦	♦ ♦	♦ ♦	♦ ♦	♦ ♦	
MI_38	38	8.0	12	27.0	16.00 - 26.00	6.40	26.00	♦ ♦	♦ ♦	♦ ♦	♦ ♦	♦ ♦	♦ ♦	♦ ♦	
MI_40	40	8.0	12	27.0	16.00 - 26.00	6.50	26.00	♦ ♦	♦ ♦	♦ ♦	♦ ♦	♦ ♦	♦ ♦	♦ ♦	

Esempio di ordinazione/Order example: MIO 020-025 STD P=10,0 W=6,00 (codice/code +D+L+P/W)

*Specificare A2 o M2 in fase d'ordine/
Must specify A2 or M2 when ordering

Matrici con collare scarico conico *Shoulder buttons taper relief*

I disegni rappresentano le matrici viste dalla parte di trancia.
Views are shown looking at top face of button.
Per le alterazioni standard vedi pagg. 3.56 ÷ 3.61



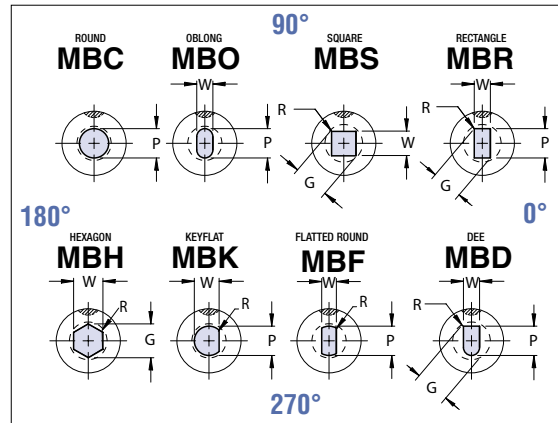
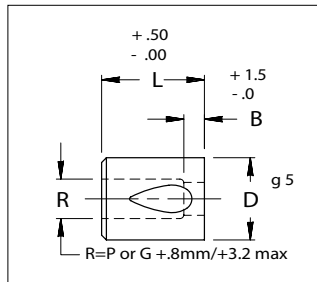
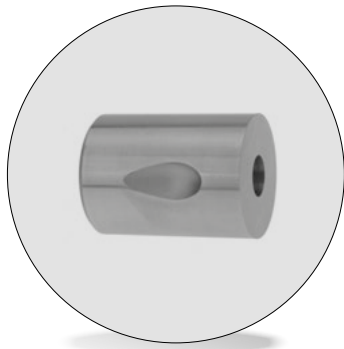
Codice/Code	Materiale/Material	Tolleranze standard/Standard Point Tolerance	Toll. altern./Altern. Hole Toler.	T2
Cod. MM	Acciaio/Steel M2 - HRC 60-63	Tondo/Round P $\begin{matrix} +.01 \\ -.00 \end{matrix}$ $\odot$ 0.01 P - D Sagoma/Shape P,W $\begin{matrix} +.02 \\ -.00 \end{matrix}$ $\odot$ 0.02 P - D	P,W $\begin{matrix} +.005 \\ -.000 \end{matrix}$ P - D $\odot$ 0.008	

CODICE CODE	D	B				TONDO/ROUND	SAGOMA/SHAPE		L							
		STD	alterazioni				P	MIN W	MAX G/P	20	22	25	28	30	32	35
			A	B	C											
MM 8	8	4.0	8.0		3.0	1.50 - 3.20	1.50	3.20	•	•	•	•	•	•	•	•
MM 10	10	4.0	8.0		3.0	1.60 - 5.00	1.60	5.00	•	•	•	•	•	•	•	•
MM 13	13	5.0	8.0		3.0	1.80 - 7.20	1.80	7.20	•	•	•	•	•	•	•	•
MM 16	16	5.0	12.0		3.0	5.00 - 8.80	2.50	8.80	•	•	•	•	•	•	•	•
MM 20	20	5.0	12.0	20.0	3.0	5.50 - 11.0	3.20	11.0	•	•	•	•	•	•	•	•
MM 22	22	6.0	12.0	20.0	3.0	7.50 - 14.0	4.00	14.0	•	•	•	•	•	•	•	•
MM 25	25	6.0	12.0	20.0	3.0	9.50 - 16.50	4.80	16.50	•	•	•	•	•	•	•	•
MM 32	32	6.0	12.0	20.0	3.0	13.0 - 20.00	5.50	20.00	•	•	•	•	•	•	•	•
MM 38	38	8.0	12.0	20.0	3.0	16.00 - 26.00	6.40	26.00	•	•	•	•	•	•	•	•
MM 40	40	8.0	12.0	20.0	3.0	16.00 - 26.00	6.50	26.00	•	•	•	•	•	•	•	•
MM 45	45	8.0	12.0	20.0	3.0	22.00 - 31.00	7.50	31.00	•	•	•	•	•	•	•	•

Il taglio della chiave è in posizione standard a 0°. Tutte le altre posizioni devono essere specificate in fase d'ordine (es. 90°).
Standard flat location is at 0° as shown. For other positions, specify when ordering (ex. 90°)

Esempio di ordinazione/Order example: MMR 016-028 C P=7,00 W=5, 00 (codice/code +D+L+P/W)

Matrici a innesto rapido scarico cilindrico *Ball lock buttons counter bore relief*



Per le alterazioni standard vedi pagg. 3.56 ÷ 3.61
Standard alterations see pages 3.56 ÷ 3.61

I disegni rappresentano le matrici viste dalla parte di trancia.
Views are shown looking at top face of button.

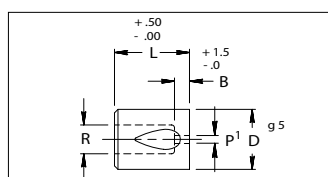
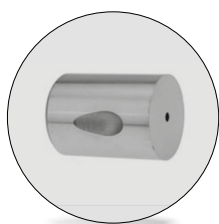
Codice/Code	Materiale/Material	Tolleranze standard/Standard Point Tolerance
Cod. MB_	Acciaio/Steel A2, HRC 58-60	Tondo/Round P $\begin{matrix} +.01 \\ -.00 \end{matrix}$ Sagoma/Shape P,W $\begin{matrix} +.02 \\ -.00 \end{matrix}$

La posizione standard della sede sfera è a 90°. Tutte le altre posizioni devono essere specificate in fase d'ordine (es. BS@45°).
Standard ball seat location is at 90° as shown. For other positions, specify when ordering (ex. BS@45°)

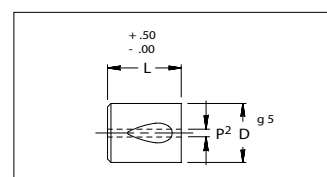
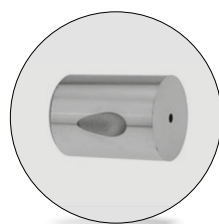
CODICE CODE	D	B	R	TONDO/ROUND	SAGOMA/SHAPE		L
				P	MIN W	MAX G/P	
MB_ 13	13	4.0	6.0	1.60 - 5.00	1.60	5.00	•
MB_ 16	16	5.0	8.0	3.20 - 7.20	2.00	7.20	•
MB_ 20	20	5.0	12.0	4.00 - 11.0	2.50	11.0	•
MB_ 25	25	6.0	16.0	8.00 - 15.00	4.00	15.00	•
MB_ 32	32	6.0	20.0	11.0 - 19.00	5.50	19.00	•

Esempio di ordinazione/Order example: MBC 16-32 P=5.00 (codice/code + D+L+P o P/W)

Matrici sbazzate innesto rapido *Ball lock buttons blanks*



Cod. **MBB**



Cod. **MFB**

Per le alterazioni standard vedi pagg. 3.56 ÷ 3.61
Standard alterations see pages 3.56 ÷ 3.61

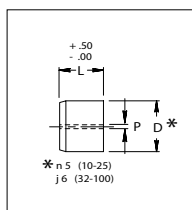
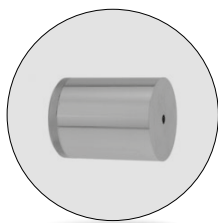
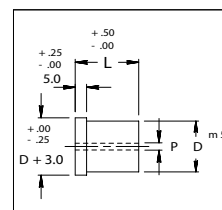
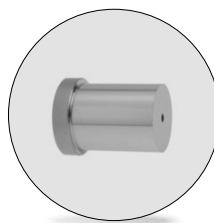
Codice/Code	Materiale/Material
Cod. MBB	Acciaio/Steel A2 - HRC 58-60

Codice/Code	Materiale/Material
Cod. MFB	Acciaio/Steel M2 - HRC 60-63

CODICE CODE	D	B	R	P ¹	P ²	L
						32
M_B 13	13	4.0	5.8	1.2	1.2	•
M_B 16	16	5.0	8.0	1.6	1.6	•
M_B 20	20	5.0	11.9	2.0	2.0	•
M_B 25	25	6.0	16.0	3.6	2.4	•
M_B 32	32	6.0	20.0	4.4	4.4	•

Esempio di ordinazione/Order example: MBB 13-32 (codice/code + D+L)

Matrici sbazzate con preforo Buttons blanks with straight thru hole

Cod. **MUB**Cod. **MMB**

Codice/Code	Materiale/Material
Cod. MUB / MMB	Acciaio/Steel M2 - HRC 60-63

Per le alterazioni standard vedi pagg. 3.56 ÷ 3.61
Standard alterations see pages 3.56 ÷ 3.61

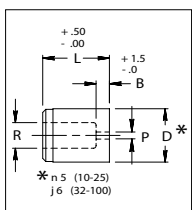
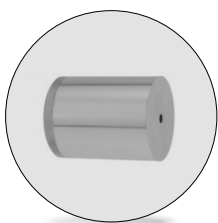
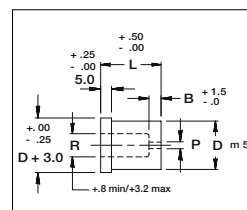
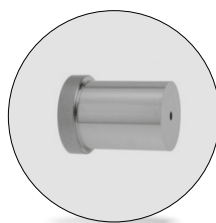
CODICE CODE	D	P	L						
			20	22	25	28	30	32	35
M_B 8	8	1.2	•	•	•	•	•	•	•
M_B 10	10	1.2	•	•	•	•	•	•	•
M_B 13	13	1.4	•	•	•	•	•	•	•
M_B 16	16	2.0	•	•	•	•	•	•	•
M_B 20	20	2.4	•	•	•	•	•	•	•
M_B 22	22	2.4	•	•	•	•	•	•	•
M_B 25	25	2.4	•	•	•	•	•	•	•
M_B 32	32	2.4	•	•	•	•	•	•	•
M_B 38	38	2.4	•	•	•	•	•	•	•
M_B 40	40	2.4	•	•	•	•	•	•	•
M_B 45	45	2.4			•	•	•	•	•
MUB 50*	50	2.4			•	•	•		•
MUB 56*	56	2.4			•	•	•		•
MUB 63*	63	2.4			•	•	•		•
MUB 71*	71	2.4			•	•	•		•
MUB 76*	76	2.4			•	•	•		•
MUB 85*	85	2.4			•	•	•		•
MUB 90*	90	2.4			•	•	•		•
MUB 100*	100	2.4			•	•	•		•

A richiesta cod. MMB: Ø fino a mm. 100
code MMB: on request up to D.100mm

Esempio di ordinazione/Order example: MUB 40 30 (codice/code +D+L)

*Disponibile solo in MUB/Available only in MUB

Matrici sbazzate a scarico cilindrico Buttons blanks with counter bore relief

Cod. **MDB**Cod. **MIB**

Codice/Code	Materiale/Material
Cod. MDB / MIB	Acciaio/Steel A2 - HRC 58-60

Per le alterazioni standard vedi pagg. 3.56 ÷ 3.61
Standard alterations see pages 3.56 ÷ 3.61

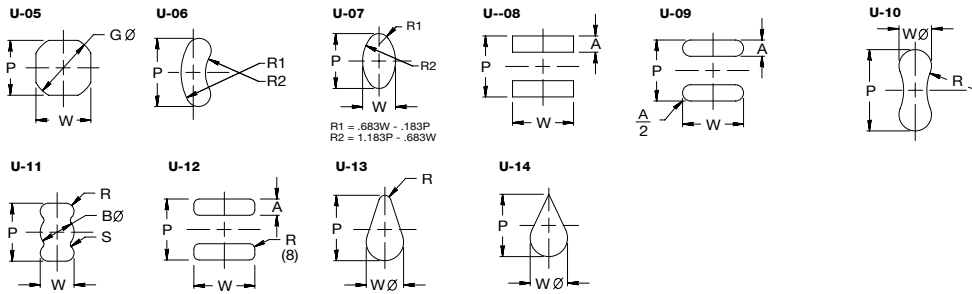
CODICE CODE	D	B	R	P	L						
					20	22	25	28	30	32	35
M_B 8	8	4.0	4.0	1.2	•	•	•	•	•	•	•
M_B 10	10	4.0	6.0	1.2	•	•	•	•	•	•	•
M_B 13	13	5.0	8.0	1.4	•	•	•	•	•	•	•
M_B 16	16	5.0	9.5	2.0	•	•	•	•	•	•	•
M_B 20	20	5.0	12.0	2.8	•	•	•	•	•	•	•
M_B 22	22	6.0	15.0	2.8	•	•	•	•	•	•	•
M_B 25	25	6.0	17.0	4.4	•	•	•	•	•	•	•
M_B 32	32	6.0	21.0	5.2	•	•	•	•	•	•	•
M_B 38	38	8.0	27.0	5.6		•	•	•	•	•	•
M_B 40	40	8.0	27.0	5.6		•	•	•	•	•	•

Esempio di ordinazione/Order example: MIB 25 30 (codice/code +D+L)

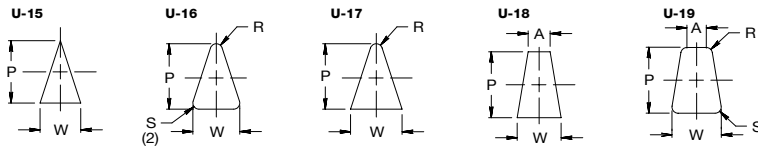
INDEX

90°

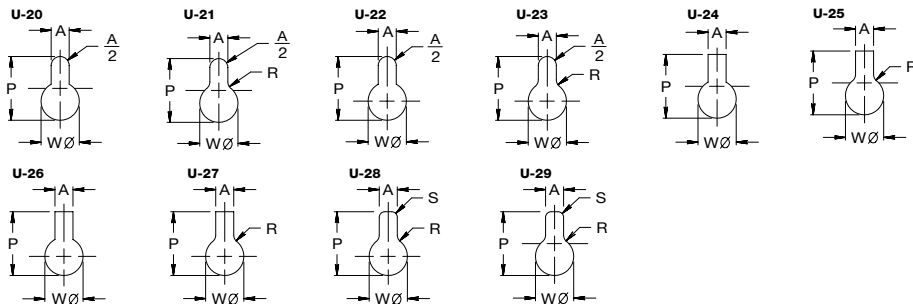
Sagome miste/Miscellaneous



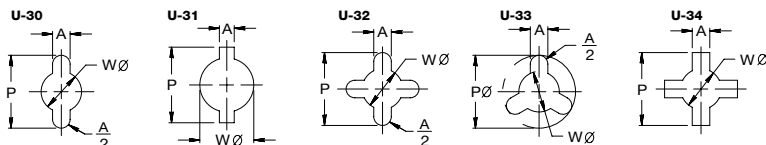
Triangoli e trapezi/Triangles/trapezoids



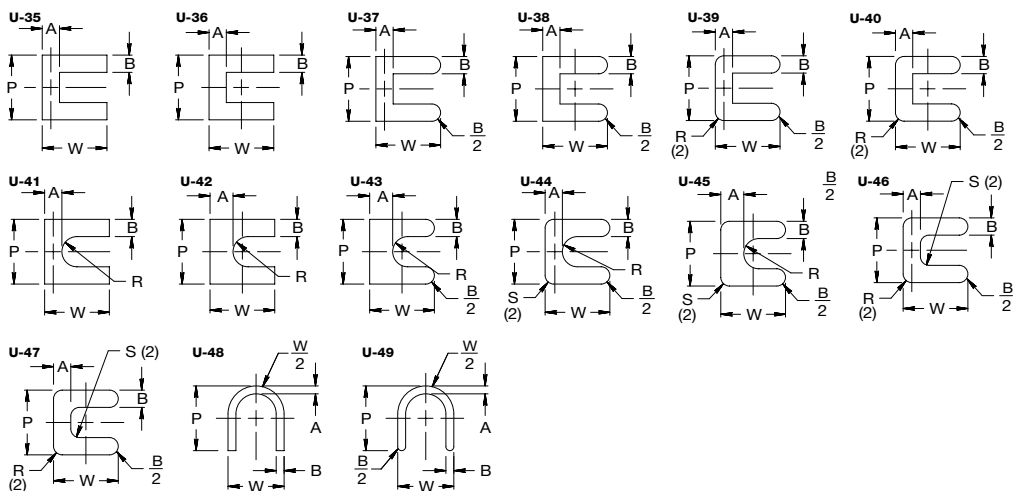
Mono lobo/Mono lobes



Multi lobo/Multi lobes



Sagome a "U"/U's

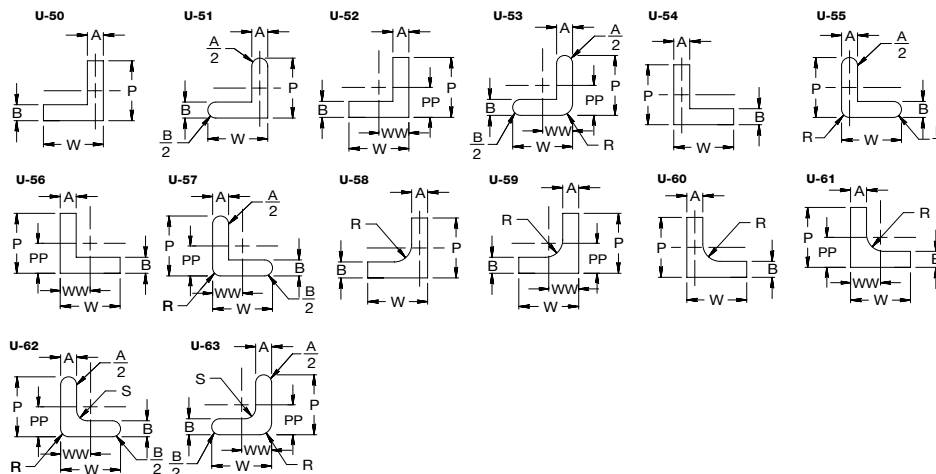


270°

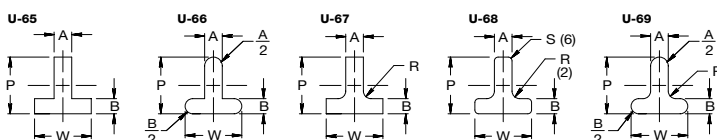
Esempio di ordinazione/Order example: MHU 32-90 P=24,5 W=16.6 B=5,5 A=5,5 , U-38

90°

Sagome a "L"/L's

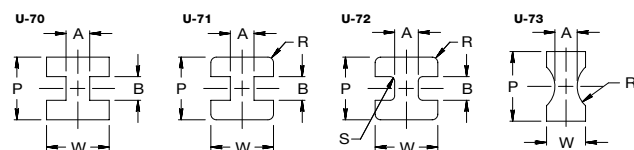


Sagome a "T"/T's



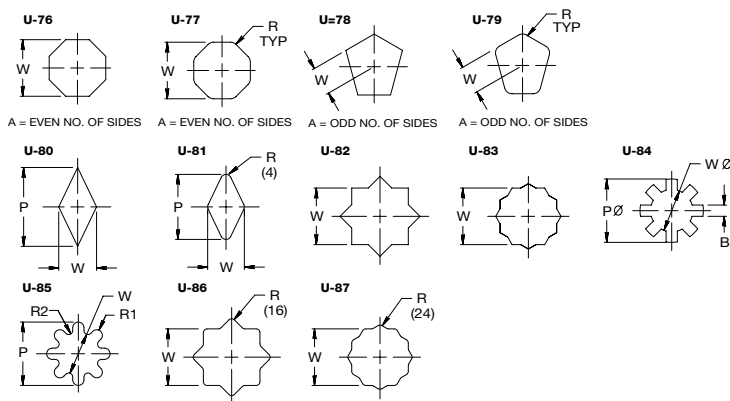
180°

Sagome a doppia "T"/Duo tees

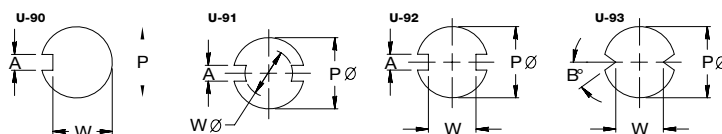


0°

Poligoni/Polygons

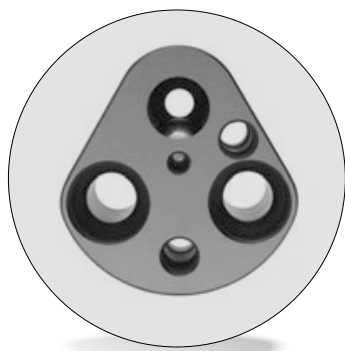


Sedi chiavetta/Keys

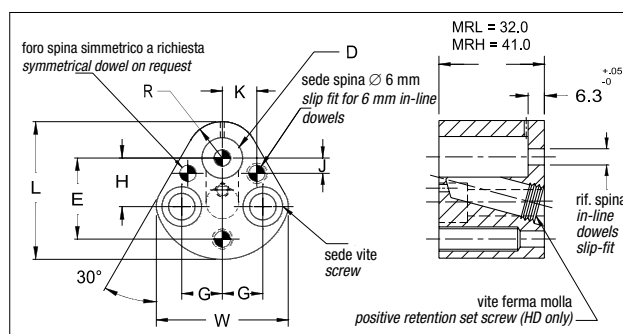


270°

Esempio di ordinazione/Order example: MHU 25-100 P=23,5 W=16 R=1.5, U-81

Portapunzoni innesto rapido serie Standard *Ball lock retainers True Set Standard*

Codice/Code

Cod. **MR**

Per accessori e piastrelle di spessoramento vedi pagg. 3.52-3.53
For accessories and backing plates see pages 3.52-3.53

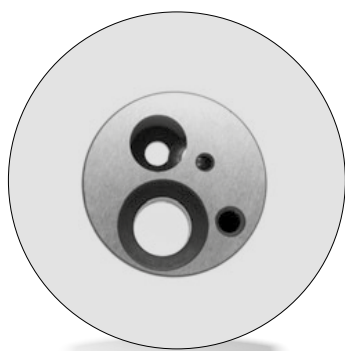
PER APPLICAZIONI PESANTI / Heavy duty

CODICE/CODE	D	E	G	L	W	R	H	J	K	$\varnothing$ SPINA/DOWEL	VITE/SCREW
MRH-10	10	26.924	11.12	44.5	39.9	9.5	19.05	7.50	9.00	6	M8
MRH-13	13	29.972	14.27	50.8	48.3	12.7	19.05	6.50	12.00	6	M8
MRH-16	16	31.750	15.87	54.0	51.6	14.3	19.05	6.00	13.50	6	M8
MRH-20	20	33.528	17.47	60.3	58.2	17.5	19.05	5.00	16.50	6	M10
MRH-25	25	40.640	19.84	69.9	66.5	22.2	23.82	7.00	22.00	6	M12
MRH-32	32	40.640	19.84	69.9	66.5	22.2	23.82	7.00	22.00	6	M12
MRH-40	40	43.993	24.00	77.4	77.8	26.0	27.00	10.00	26.00	6	M12

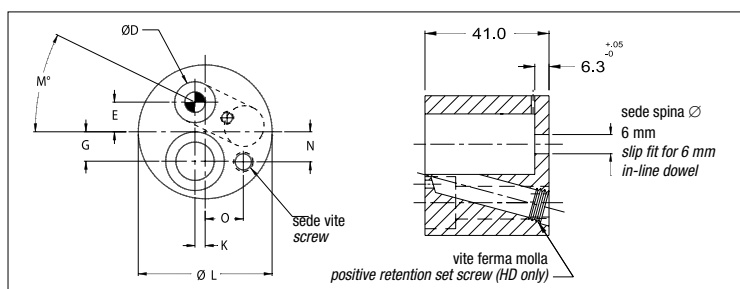
PER APPLICAZIONI LEGGERE / Light duty

CODICE/CODE	D	E	G	L	W	R	H	J	K	$\varnothing$ SPINA/DOWEL	VITE/SCREW
MRL-06	6	23.000	11.10	41.3	37.8	8.0	19.00	9.0	8.00	3	M6
MRL-10	10	26.924	11.12	44.5	39.9	9.5	19.05	7.50	9.00	6	M8
MRL-13	13	29.972	14.27	50.8	48.3	12.7	19.05	6.50	12.00	6	M8
MRL-16	16	31.750	15.87	54.0	51.6	14.3	19.05	6.00	13.50	6	M8
MRL-20	20	33.528	17.47	60.3	58.2	17.5	19.05	5.00	16.50	6	M10
MRL-25	25	40.640	19.84	69.9	66.5	22.2	23.82	7.00	22.00	6	M12
MRL-32	32	40.640	19.80	69.9	66.5	22.2	23.82	7.00	22.00	6	M12
MRL-38	38	43.993	24.00	77.4	77.8	26.0	27.00	10.00	26.00	6	M12

Esempio di ordinazione/Order example: MRH-10 (codice/code)

Portapunzoni tondi innesto rapido serie Economy *Economy retainers round true set heavy duty*

Codice/Code

Cod. **MRR**

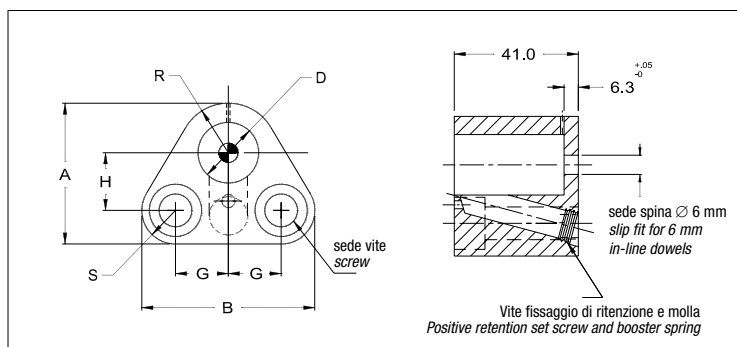
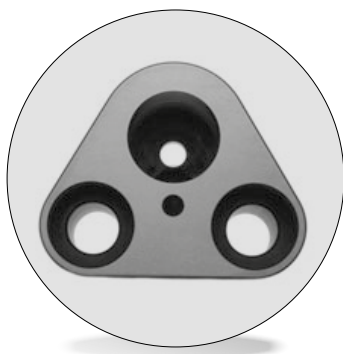
Per accessori e piastrelle di spessoramento vedi pagg. 3.52-3.53
For accessories and backing plates see pages 3.52-3.53

PER APPLICAZIONI PESANTI / Heavy duty

CODICE/CODE	$\varnothing D$	$\varnothing L$	E	G	K	M	N	O	$\varnothing$ SPINA/DOWEL	VITE/SCREW
MRR-10	10	38.1	9.86	7.10	2.65	20.5	4.47	12.72	6	M6x1.0
MRR-13	13	41.3	9.25	9.17	3.18	26	9.35	11.88	6	M6x1.0
MRR-16	16	44.5	9.10	11.07	1.93	33.5	10.21	13.16	6	M6x1.0
MRR-20	20	57.2	12.20	14.30	0	30	9.35	19.40	6	M8x1.25
MRR-25	25	63.5	12.51	17.50	0	30	14.27	20.17	6	M8x1.25
MRR-32	32	76.2	15.67	20.83	0	30	15.46	26.12	6	M8x1.25
MRR-40	40	82.6	15.39	23.55	0	30	15.46	26.12	6	M8x1.25

Esempio di ordinazione/Order example: MRR-20 (codice/code)

Portapunzoni innesto rapido serie Mini *Ball lock retainers Mini True Set*



Codice/Code

Cod. **MRM**

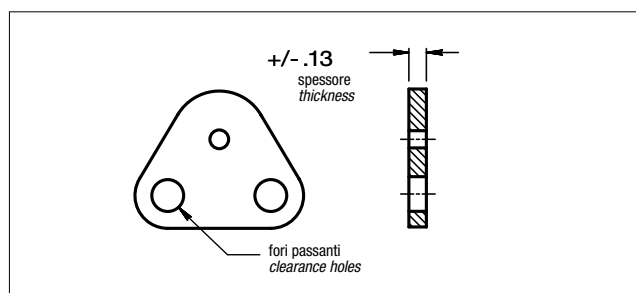
Per accessori vedi pag. 3.53
For accessories see page 3.53

PUNZONI
Punches

PER APPLICAZIONI PESANTI / HEAVY DUTY								
CODICE CODE	D	A	B	G	H	R	S	VITE
MRM-10	10	37.8	40.6	11.1	19.0	9.5	9.2	M8
MRM-13	13	40.3	47.6	14.3	19.0	11.7	9.5	M8
MRM-16	16	42.1	50.8	15.9	19.0	13.5	9.5	M8
MRM-20	20	46.5	57.1	17.5	19.0	16.4	11.1	M10
MRM-25	25	56.5	65.1	19.8	23.8	20.0	12.7	M12
MRM-32	32	58.2	64.0	19.8	23.8	22.2	12.2	M12
MRM-40	40	67.3	76.2	24.0	27.0	26.0	14.3	M12

Esempio di ordinazione/Order example: MRM-16 (codice/code)

Piastrine di reazione *Shim plates*



Codice/Code

Cod. **MAM**

INDEX

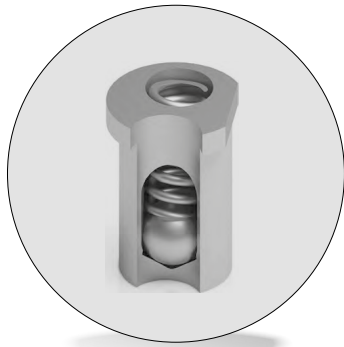
CODICE/CODE
MAM_10-
MAM_13-
MAM_16-
MAM_20-
MAM_25-
MAM_32-
MAM_40-

Inserire
il N° di
riferimento
← Insert shim
ordering
number

SPESSORI DISPONIBILI AVAILABLE THICKNESS	N° DI RIFERIMENTO ORDERING NUMBER
3.0	030
6.0	060
10.0	100
13.0	130

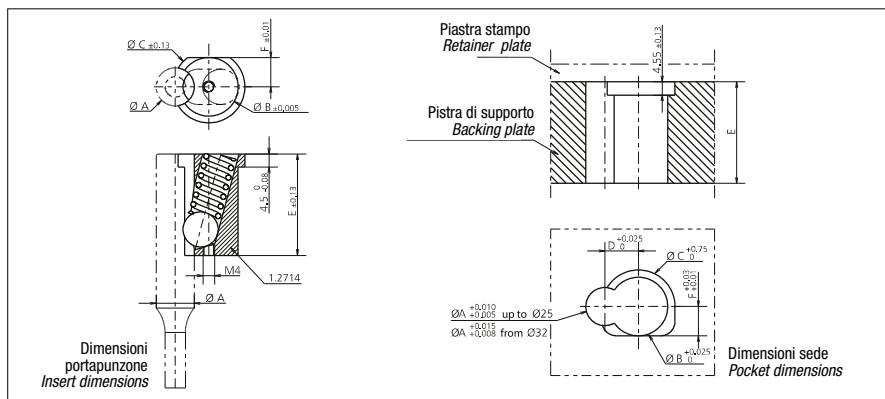
Esempio di ordinazione/Order example: MAM 25-030 (codice/code + n° rif. spessore/ordering number)

Portapunzoni innesto rapido serie Economy *Economy ball lock insert retainers*



Codice/Code

Cod. MRK



Per piastra di contrasto solo applicazioni pesanti/Backing plate style only heavy duty

CODICE CODE	Ø A	Ø B	Ø C	D	E	F
MRK010	10	16	19.6	10	34.7	8
MRK013	13	20	24.6	11.5	34.7	10
MRK016	16	20	24.6	13	34.7	10
MRK020	20	20	24.6	15	34.7	10
MRK025	25	20	24.6	17.5	34.7	10
MRK032	32	20	24.6	21	34.7	10
MRK040	40	20	24.6	25	34.7	10

Esempio di ordinazione/Order example: MRK010 (codice/code)

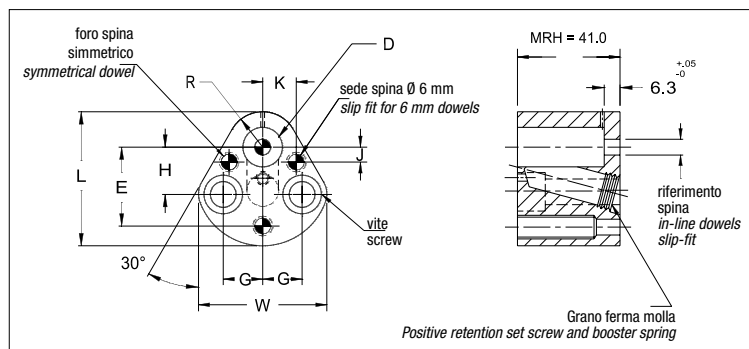
PUNZONI
Punches

Portapunzoni per punzoni innesto rapido serie Advanced *Retainers for shoulder True Set-Advanced*



Codice/Code

Cod. MRH_A



INDEX

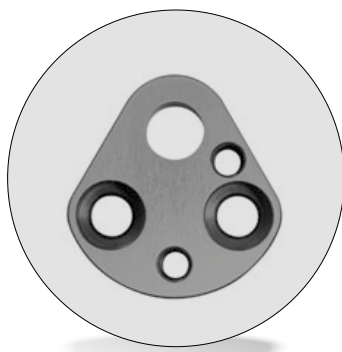
PER APPLICAZIONI PESANTI / HEAVY DUTY											
CODICE CODE	D DIA.	±,01 E	G	L	W	R	H	±,01 J	±,01 K	In-line dowel	Screw size
MRH10A	10	26.924	11.12	44.5	39.9	9.5	19.05	7.50	9.00	6	M8
MRH13A	13	29.972	14.27	50.8	48.3	12.7	19.05	6.50	12.00	6	M8
MRH16A	16	31.750	15.87	54.0	51.6	14.3	19.05	6.00	13.50	6	M8
MRH20A	20	33.528	17.47	60.3	58.2	17.5	19.05	5.00	16.50	6	M10
MRH25A	25	40.640	19.84	69.9	66.5	22.2	23.82	7.00	22.00	6	M12
MRH32A	32	40.640	19.84	69.9	66.5	22.2	23.82	7.00	22.00	6	M12
MRH40A	40	43.993	24.00	77.4	77.8	26.0	27.00	10.00	26.00	6	M12

Esempio di ordinazione/Order example: MRH10A (codice/code)

Per accessori e piastre di spessoramento vedi pagg. 3.52-3.53
For accessories and backing plates see pages 3.52-3.53

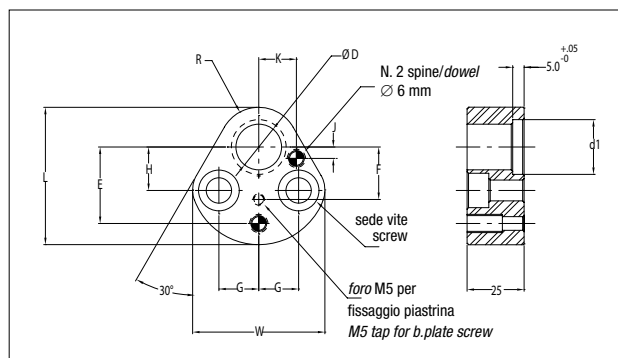
Portapunzoni per punzoni testa cilindrica tondi

Retainers for shoulder round punches



Codice/Code

Cod. **MRN**



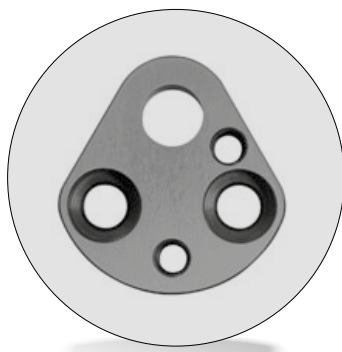
CODICE CODE	D	d1	L	W	R	H	J	K	G	E	F	VITE SCREW
MRN 10	10	14.0	44.5	39.9	9.5	19.05	7.50	9.00	11.12	26.924	16.00	M8
MRN 13	13	17.0	50.8	48.3	12.7	19.05	6.50	12.00	14.27	29.972	16.00	M8
MRN 16	16	20.0	54.0	51.6	14.3	19.05	6.00	13.50	15.87	31.750	16.00	M8
MRN 20	20	24.0	60.3	58.2	17.5	19.05	5.00	16.50	17.47	33.528	23.00	M10
MRN 25	25	29.0	69.9	66.5	22.2	23.82	7.00	22.00	19.84	40.640	30.00	M12
MRN 32	32	36.0	69.9	66.5	22.2	23.82	7.00	22.00	19.84	40.640	30.00	M12

Esempio di ordinazione/Order example: MRN 32 (codice/code)

Per accessori e piastrine di spessoramento vedi pagg. 3.52-3.53
For accessories and backing plates see pages 3.52-3.53

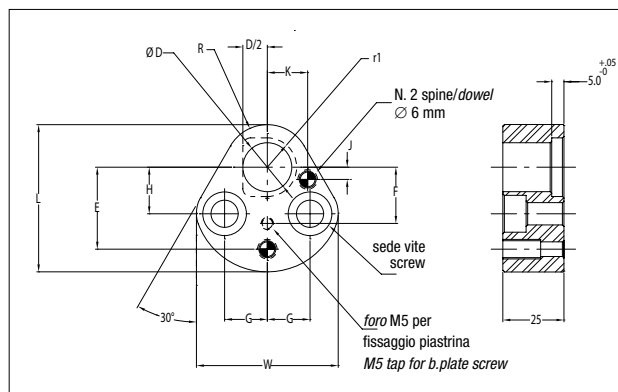
Portapunzoni per punzoni testa cilindrica con sagoma

Retainers for shoulder shaped punches



Codice/Code

Cod. **MRO**



CODICE CODE	D	r1	L	W	R	H	J	K	G	E	F	VITE SCREW
MRO 10	10	7.0	44.5	39.9	9.5	19.05	7.50	9.00	11.12	26.924	16.00	M8
MRO 13	13	8.5	50.8	48.3	12.7	19.05	6.50	12.00	14.27	29.972	16.00	M8
MRO 16	16	10.0	54.0	51.6	14.3	19.05	6.00	13.50	15.87	31.750	16.00	M8
MRO 20	20	12.0	60.3	58.2	17.5	19.05	5.00	16.50	17.47	33.528	23.00	M10
MRO 25	25	14.5	69.9	66.5	22.2	23.82	7.00	22.00	19.84	40.640	30.00	M12
MRO 32	32	18.0	69.9	66.5	22.2	23.82	7.00	22.00	19.84	40.640	30.00	M12

Esempio di ordinazione/Order example: MRO 25 (codice/code)

Per accessori e piastrine di spessoramento vedi pagg. 3.52-3.53
For accessories and backing plates see pages 3.52-3.53

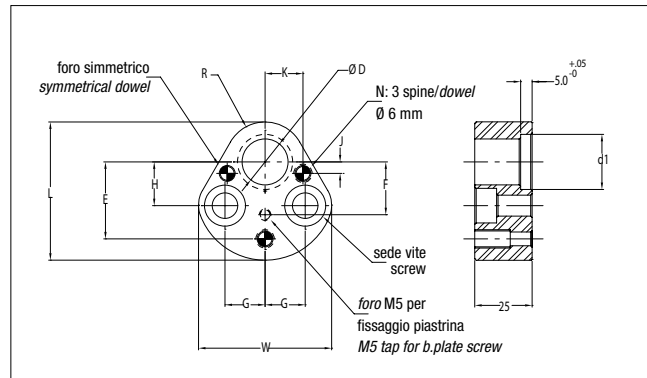
Portapunzoni per punzoni testa cilindrica tondi con terzo foro spina simmetrico

Retainers for shoulder round punches with symmetrical 3rd dowel



Codice/Code

Cod. **MRP**



CODICE CODE	D	d1	L	W	R	H	± .01 J	± .01 K	G	± .01 E	F	VITE SCREW
MRP 10	10	14.0	44.5	39.9	9.5	19.05	7.50	9.00	11.12	26.924	16.00	M8
MRP 13	13	17.0	50.8	48.3	12.7	19.05	6.50	12.00	14.27	29.972	16.00	M8
MRP 16	16	20.0	54.0	51.6	14.3	19.05	6.00	13.50	15.87	31.750	16.00	M8
MRP 20	20	24.0	60.3	58.2	17.5	19.05	5.00	16.50	17.47	33.528	23.00	M10
MRP 25	25	29.0	69.9	66.5	22.2	23.82	7.00	22.00	19.84	40.640	30.00	M12
MRP 32	32	36.0	69.9	66.5	22.2	23.82	7.00	22.00	19.84	40.640	30.00	M12
MRP 40	40	44.0	77.40	77.8	26.0	27.00	10.00	26.00	24.00	43.993	33.35	M12

Esempio di ordinazione/Order example: MRP 16 (codice/code)

Per accessori e piastrine di spessoramento vedi pagg. 3.52-3.53
For accessories and backing plates see pages 3.52-3.53

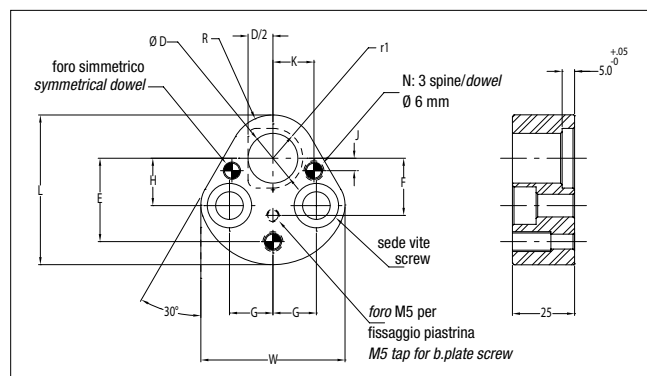
Portapunzoni per punzoni testa cilindrica con sagoma con terzo foro simmetrico

Retainers for shoulder shaped punches with symmetrical 3rd dowel



Codice/Code

Cod. **MRQ**



CODICE CODE	D	r1	L	W	R	H	± .01 J	± .01 K	G	± .01 E	F	VITE SCREW
MRQ 10	10	7.0	44.5	39.9	9.5	19.05	7.50	9.00	11.12	26.924	16.00	M8
MRQ 13	13	8.5	50.8	48.3	12.7	19.05	6.50	12.00	14.27	29.972	16.00	M8
MRQ 16	16	10.0	54.0	51.6	14.3	19.05	6.00	13.50	15.87	31.750	16.00	M8
MRQ 20	20	12.0	60.3	58.2	17.5	19.05	5.00	16.50	17.47	33.528	23.00	M10
MRQ 25	25	14.5	69.9	66.5	22.2	23.82	7.00	22.00	19.84	40.640	30.00	M12
MRQ 32	32	18.0	69.9	66.5	22.2	23.82	7.00	22.00	19.84	40.640	30.00	M12
MRQ 40	40	22.0	77.40	77.8	26.0	27.00	10.00	26.00	24.00	43.993	33.35	M12

Esempio di ordinazione/Order example: MRQ 10 (codice/code)

Per accessori e piastrine di spessoramento vedi pagg. 3.52-3.53
For accessories and backing plates see pages 3.52-3.53

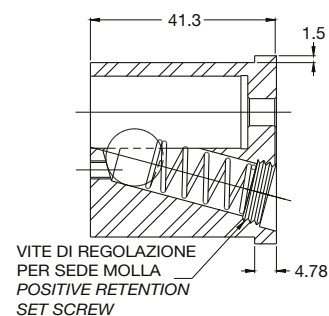
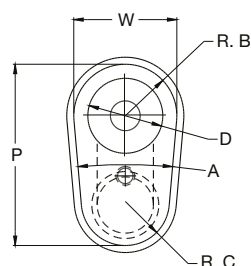
Portapunzone True-Fit

Insertable punch retainers True-Fit



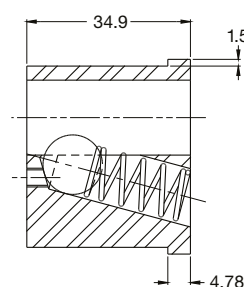
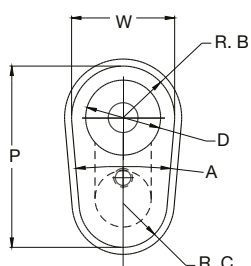
MRI

Versione integrale/True-set style



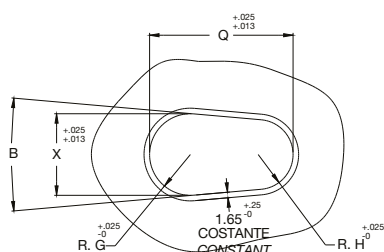
MRJ

Versione con piastra di ritegno/Backing plate style



CODICE/CODE	D	P	W	A	R. B	R. C
MR_010	10	29.48	15.88	5°	7.94	7.32
MR_013	13	36.04	19.05	5°	9.53	8.75
MR_016	16	39.21	22.23	10°	11.11	9.49
MR_020	20	42.39	25.4	10°	12.70	11.08
MR_025	25	48.74	31.75	30°	15.88	9.94
MR_032	32	55.09	38.10	30°	19.05	13.12
MR_040	40	63.69	48.00	30°	24.00	18.52

Dimensioni per foro inserimento True-Fit
Hole dimensions for true-fit inserts

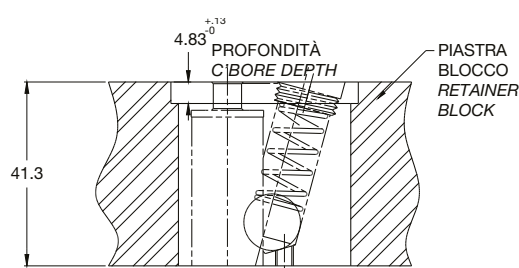


Ø PUNZONE/PUNCH	Q	X	B	R. G	R. H
10	29.494	15.885	5°	7.943	7.323
13	36.048	19.060	5°	9.530	8.755
16	39.223	22.235	10°	11.118	9.497
20	42.398	25.410	10°	12.705	11.085
25	48.748	31.760	30°	15.880	9.949
32	55.098	38.110	30°	19.055	13.124
40	63.699	48.010	30°	24.005	18.526

INDEX

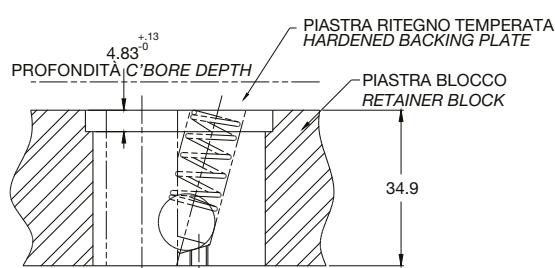
MRI

Versione integrale/True-set style

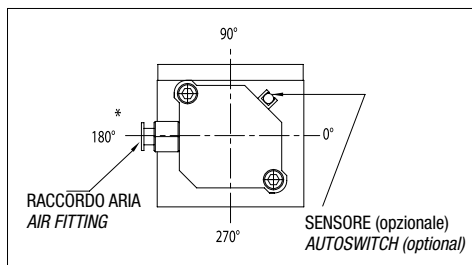


MRJ

Versione con piastra di ritegno/Backing plate style



Esempio di ordinazione/Order example: MRI010 (codice/code)

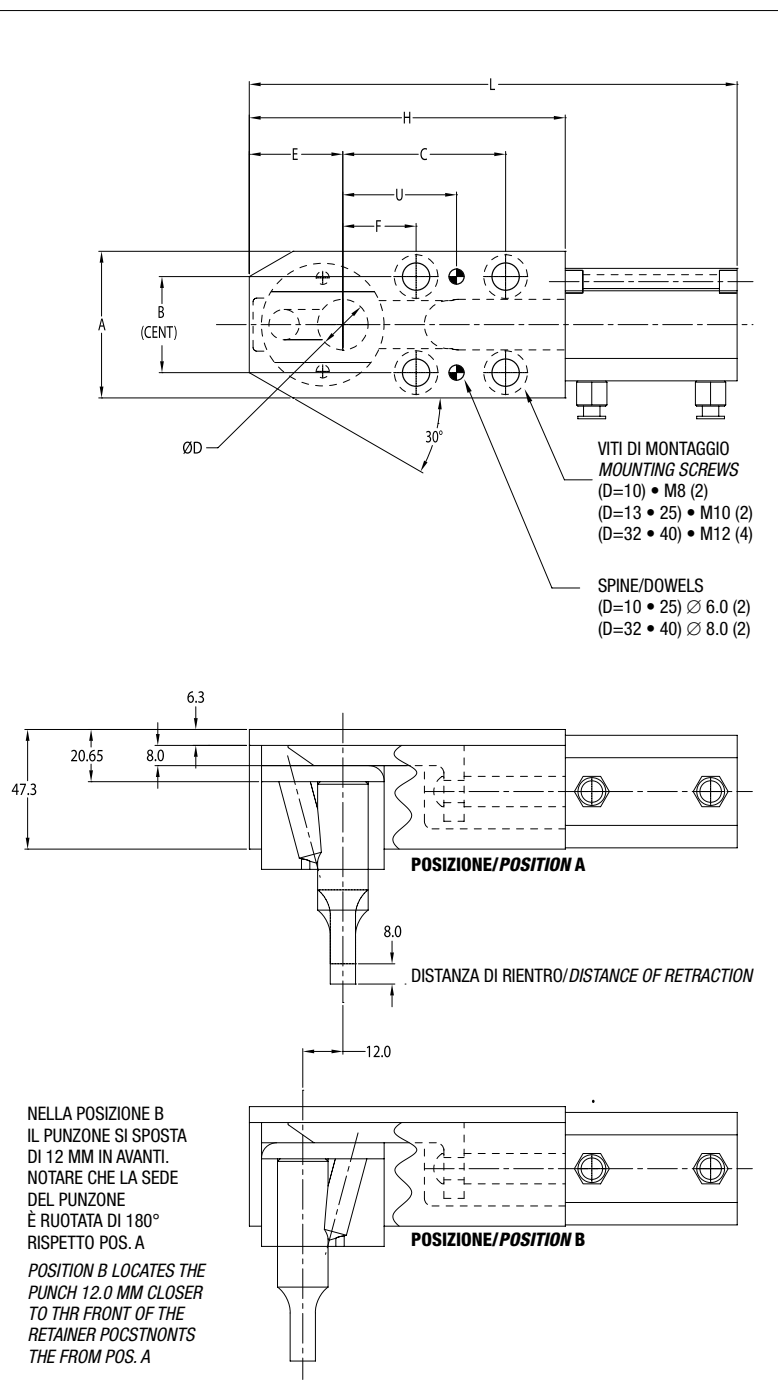


Il portapunzone retrattile a doppia posizione ball lock fornisce la capacità di aggiungere o togliere fori rapidamente, senza richiedere impegnativi piani di produzione e senza aggiungere ulteriori costi e attrezzature supplementari. Questo portapunzone è conforme alle normative NAAMS e alle principali normative automobilistiche. La posizione B facilita le operazioni di cambio spostando il punzone di 12 mm verso la parte anteriore del portapunzone. Le caratteristiche di questo portapunzone sono che ha un corpo unico robusto e conveniente, ed elimina la necessità di protezioni di sicurezza.

Moeller dual-position ball lock retractable retainers provide the capability to add, or subtract, holes quickly without affecting demanding production schedules, and without the added cost of additional tooling. Moeller dual-position ball lock retractable retainers are available to conform to NAAMS, and leading automotive standards. Position B facilitates close-space applications by moving the punch 12mm closer to the front end of the retainer. Moeller dual-position ball lock retainers feature a strong and convenient one-piece body, eliminating the need for a separate safety shield.

Codice/Code

Cod. **MRA**

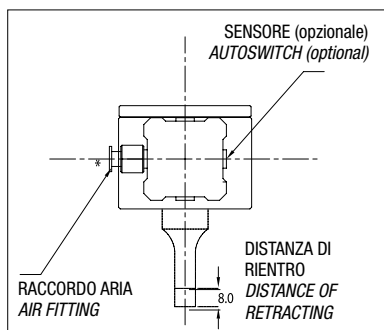


Nota: con il portapunzone vengono fornite viti, spine, cilindro aria e raccordi. Tubi per aria e sensori non sono inclusi e devono essere ordinati separatamente. Consultateci per accessori aggiuntivi.

Change retainer set includes all necessary screws and dowels, air cylinder and fittings. Tubing for air supply and autoswitch are not included and must be ordered separately. Consult factory for additional accessories.

CODICE CODE	D	L	A	± .01 B	C		E		F		H	U ± .01		VITE SCREW
					POS. A	POS. B	POS. A	POS. B	POS. A	POS. B		POS. A	POS. B	
MRA 10	10	161	46	30			28	16	21	33	93,5	37	49	M8
MRA 13	13	172,5	50	30			28	16	25	37	100	41	53	M10
MRA 16	16	177	50	30			31	19	25	37	104,5	41	53	M10
MRA 20	20	191,5	58	38			32,5	20,5	29	41	113,5	45	57	M10
MRA 25	25	206,5	58	38			35	23	29	41	123,5	45	57	M10
MRA 32	32	260	80	56	100	112	38	26	38	50	152	60	72	M12
MRA 40	40	264	80	56	100	112	42	30	38	50	156	60	72	M12

Esempio di ordinazione/Order example: MRA 40 (codice/code) o/or MRA 40 Pos. B (codice/code+pos.)



Codice/Code

Cod. **MRC / MRB**

Nota: con il portapunzone vengono fornite viti, spine, cilindro aria e raccordi. Tubi per aria e sensori non sono inclusi e devono essere ordinati separatamente. Consultateci per accessori aggiuntivi/Note: change retainer set includes all necessary screws and dowels, air cylinder and fittings. Tubing for air supply and autoswitch are not included and must be ordered separately. Consult factory for additional accessories.

CODICE per punzoni tondi	CODICE per punzoni sagomati	D	L	A	± .01 B	C	E	F	T	U ± .01	VITE
MRC 10	MRB 10	10	128	46	30	73	18	25	45	41	M8
MRC 13	MRB 13	13	128	49	30	73	18	25	45	41	M10
MRC 16	MRB 16	16	128	49	30	73	18	25	45	41	M10
MRC 20	MRB 20	20	155	58	38	90	23	29	45	45	M10
MRC 25	MRB 25	25	155	58	38	90	23	29	45	45	M10
MRC 32	MRB 32	32	208	80	56	125	33	38	55	60	M12
MRC 40	MRB 40	40	208	80	56	125	33	38	55	60	M12

Esempio di ordinazione/Order example: MRB 16 (codice/code)

Portapunzoni speciali multiforo Special ball-lock retainers multi hole

TOLLERANZE tutti i tipi/TOLERANCES all types

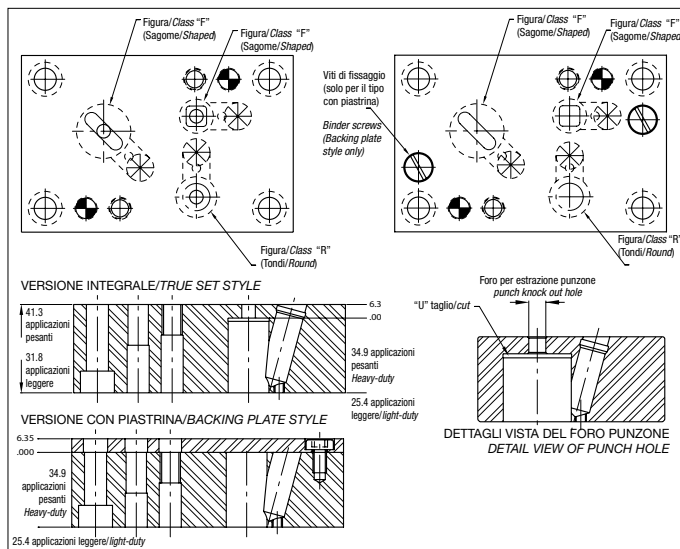
PERIMETRO/OUTSIDE EDGES	± .5
FORI SPINA/DOWEL HOLE LOCATIONS	± .01
FORI SEDI VITI/SCREW HOLE LOCATIONS	± .1
FORI SEDI POSIZIONAMENTO/COMPONENT HOLE LOCATIONS	± .01

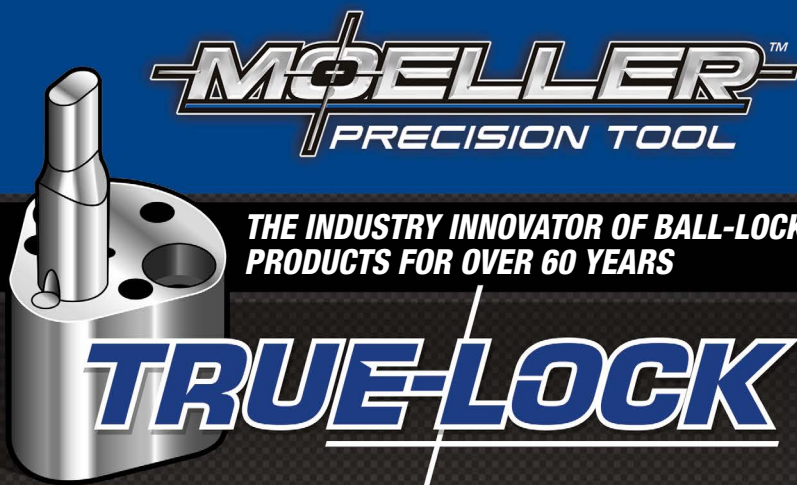
FORI SFERE/BALL-HOLES

FIGURE CLASS	TOLLERANZA RADIALE RADIAL TOLERANCE
R	± .5°
F	± .0°5°

*Tutti i portapunzoni Ball Lock per fori punzoni o matrici devono essere disegnati come tondi, figura "R" o sagome, figura "F". Dove vengono utilizzati punzoni con sagome, i fori e le semisfere sono eseguiti con precisione. Questo garantisce il posizionamento radiale, senza ulteriori aggiunte di costo sul portapunzone./ All Ball Lock retainer punch or button holes must be designated as Round, class "R" or Shaped, class "F". Where shaped components are being used, the angle holes are precision ground. This guarantees radial location, but adds cost to the retainer.

Nota: Sede sfera figura "R" sarà fornita senza alcuna specifica/Note: Ball-Seat class "R" will be supplied unless otherwise specified





**THE INDUSTRY INNOVATOR OF BALL-LOCK
PRODUCTS FOR OVER 60 YEARS**

TRUE-LOCK™

L'**esclusivo** True-Lock™ di Moeller: il rivoluzionario sistema che garantisce un perfetto allineamento e **fissaggio del punzone** nel portapunzone ball-lock.

Moeller's **Exclusive** True-Lock™ is the revolutionary ball-lock system re-engineered for perfect alignment and **positive locking position** between punches and retainers, guaranteed!

Una spina di centraggio tra punzone e portapunzone, e la sfera dalla parte opposta, garantiscono un fissaggio permanente ed un posizionamento radiale corretto.



Groove in punch shank opposing the ball lock mates with a permanently affixed dowel pin in the retainer for correct radial location.

- Elimina i costi derivanti da guasti accidentali
- Garantisce un posizionamento corretto
- Assicura il fissaggio della sfera
- Prodotto standard pronto a magazzino
- Adattabile a tutte le applicazioni ball-lock
- Sistemi anti-rotazione non necessari

- Eliminates the cost of catastrophic failures
- Guarantees correct locking position
- Assures ball-lock retention
- Standard inventoried product 2-day delivery
- Effective and adaptable to all ball-lock application
- Eliminates the need for twist-and-lock

Per ordini aggiungere il codice alterazione:
To order, simply add alteration code:

TL



USA patent nos. FD1, D1,026,604; D1,026,983; D1, 039,012 and US Patent Pending.
European design registered; European Patent Pending

PUNZONI
Punches

INDEX

Accessori per portapunzoni innesto rapido *Ball lock retainers components*

PORTA PUNZONE TRUE SET RETAINER		TAPPO VITE CAP SCREW	SPINA DOWELS	SFERA BALL	MOLLA SPRING	VITE DI TENUTA BALL RELEASE SCREW	VITE PER FORO INCL. ANGLE HOLE SET SCREW		
CARICO LEGGERO/LIGHT DUTY	MRL-06	MAC 6-35 M6 x 35	MAD 3-20 3 mm x 20 MAD 6-20 6 mm x 20	MAB 6 6 mm	MAS 6 6 mm	MAC 3-15 M3 x 15			
	MRL-10	MAC 8-35 M8 x 35	MAD 6-20 6 mm x 20	MAB 8 8 mm	MAS 8 8 mm	MAC 4-20 M4 x 20			
	MRL-13								
	MRL-16								
	MRL-20	MAC 10-40 M10 • 40							
	MRL-25	MAC 12-40 M12 x 40							
	MRL-32								
	MRL-38								
CARICO PESANTE/HEAVY DUTY	MRH-10	MAC 8-45 M8 x 45	MAD 6-20 6 mm x 20	MAB 10 10 mm	MAS 10 10 mm	MAC 4-20 M4 x 20	MAN 10		
	MRH-13			MAB 12 12 mm	MAS 10 T		MAN 12		
	MRH-16				MAS 12 12 mm MAS 12 T				
	MRH-20	MAC 10-50 M10 x 50							
	MRH-25	MAC 12-50 M12 x 50							
	MRH-32								
	MRH-40								

PIASTRINE SPECIALI
ACCESSORI
PER PORTAPUNZONI
SPECIAL BACKING PLATE
RETAINER ACCESSORIES

	MOLLA SPRINGS	SFERA BALLS
6 DIA.	MAS 6S	MAB 6
8 DIA.	MAS 8S	MAB 8
10 DIA.	MAS 10S	MAB 10
12 DIA.	MAS 12S	MAB 12

MOLLE/ BOOSTER SPRINGS

	PUNCH SIZE 10 MM HDBL CATALOG # MAS010B
	PUNCH SIZE 13 THRU 40 MM HDBL CATALOG # MAS012B

PUNZONI
Punches

Esempio di ordinazione/Order example: MAB 12 (codice/code)

Accessori per portapunzoni economici tondi *Economy round true set retainers components*

PORTA PUNZONE TRUE SET RETAINER	TAPPO VITE CAPSCREW	SPINA DOWELS	SFERA BALL	MOLLA SPRING	VITE DI TENUTA BALL RELEASE SCREW	VITE PER FORO INCL. ANGLE HOLE SET SCREW					
MRR-10	MAC 12-50 M12-1.75 x 50 mm	MAD 6-20 6 mm x 20	MAB 10 10 mm	MAS 10T 10 mm	MAC 4-20 M4 x 20	MAN 10					
MRR-13			MAB 12 12 mm	MAS 12T 12 mm		MAN 12					
MRR-16											
MRR-20	MAC 16-50 M16-2.0 x 50 mm										
MRR-25											
MRR-32	MAC 20-50 M20-2.5 x 50 mm										
MRR-40											

Esempio di ordinazione/Order example: MAN 10 (codice/code)

Accessori per portapunzoni trio con testa *Shoulder true set retainers components*

PORTA PUNZONE TRUE SET RETAINER	TAPPO VITE CAP SCREW	SPINA DOWELS
MRN-10	MAC 8-35 M8 x 35	MAD 6-20 6 mm x 20
MRN-13		
MRN-16		
MRN-20	MAC 10-40 M10 x 40	
MRN-25	MAC 12-40 M12 x 40-50	
MRN-32		

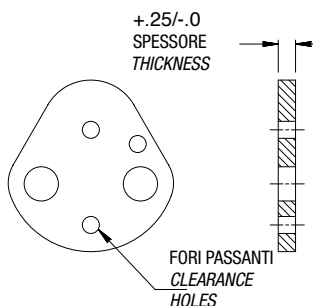
PORTA PUNZONE TRUE SET RETAINER	TAPPO VITE CAP SCREW	SPINA DOWELS
MRO-10	MAC 8-35 M8 x 35	MAD 6-20 6 mm x 20
MRO-13		
MRO-16		
MRO-20	MAC 10-40 M10 x 40	
MRO-25	MAC 12-40 M12 x 40	
MRO-32		

Esempio di ordinazione/Order example: MAC 10-40 (codice/code)

INDEX

Piastrine di spessoramento per portapunzoni *True set shim plates*

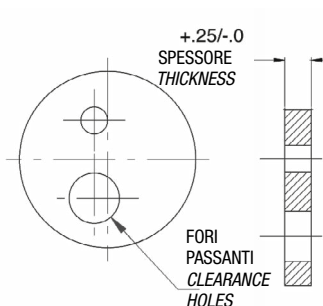
CODICE CODE
MAX 10-
MAX 13-
MAX 16-
MAX 20-
MAX 25-
MAX 32-
MAX 40-



spessore Available Thickness	cod. ordinaz. Ordering Number
1.80	018
3.00	030
3.18	031
4.75	047
6.00	060
6.35	063
10.00	100
13.00	130

Esempio di ordinazione/Order example:
MAX 13-031 (codice/code+codice ordinazione+order code)

CODICE CODE
MAY 10-
MAY 13-
MAY 16-
MAY 20-
MAY 25-
MAY 32-
MAY 40-



spessore Available Thickness	cod. ordinaz. Ordering Number
1.80	018
3.00	030
3.18	031
4.75	047
6.00	060
6.35	063
10.00	100
13.00	130

Esempio di ordinazione/Order example:
MAY 13-031 (codice/code+codice ordinazione+order code)

Strumenti per bloccaggio sfera
Ball release tools

Punta ad angolo/Angle tip
(per tutti i tipi di portapunzoni/for all retainers) Cod. **MAT 01**



Punta dritta/Straight tip
(per tutti i tipi di portapunzoni/for all retainers) Cod. **MAT 02**

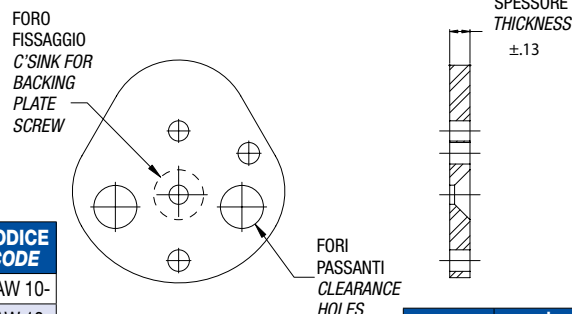


Punta filettata/Threaded tip heavy duty
(per portapunzoni heavy duty da ø10 a 40/
for true set retainers 10-40 Diameter) Cod. **MAT 03**



Esempio di ordinazione/Order example: MAT 01 (codice/code)

Piastrine di reazione per portapunzoni
Retainer backing plates



CODICE CODE
MAW 10-
MAW 13-
MAW 16-
MAW 20-
MAW 25-
MAW 32-

spessore Available Thickness	cod. ordinaz. Ordering Number
4.75	047
6.35	063

Esempio di ordinazione/Order example:
MAW 13-047 (codice/code+codice ordinazione+order code)

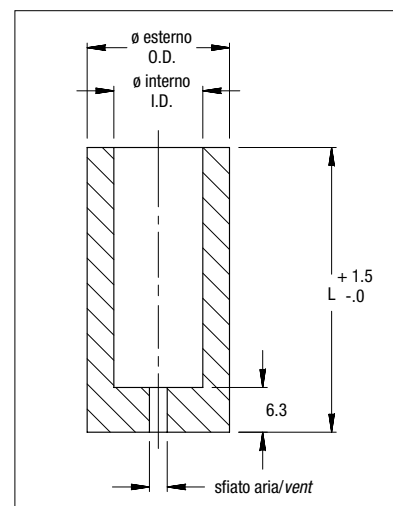
Estrattori in poliuretano *Urethane stripper*

CODICE CODE	Ø INTERNO I.D.	Ø ESTERNO O.D.	L	PRESSIONE APPROSSIMATIVA APPROXIMATE PRESSURE		
				3.0	6.5	9.5
MTC 06-45	06	19	45	1324	2256	—
MTC 06-53			53	1079	1863	—
MTC 06-71			71	686	1079	1765
MTC 08-45	08	21	45	1471	2207	—
MTC 08-53			53	1324	1961	2942
MTC 08-71			71	981	1618	2648
MTC 10-45	10	23	45	1716	2795	—
MTC 10-53			53	1422	2452	3187
MTC 10-56			56	1422	2452	3187
MTC 10-71			71	1128	2010	2697
MTC 13-45	13	26	45	2109	3334	—
MTC 13-53			53	1471	2354	3432
MTC 13-56			56	1471	2354	2942
MTC 13-71			71	1275	1961	2452
MTC 16-45	16	30	45	2354	3825	—
MTC 16-53			53	2158	3531	4511
MTC 16-56			56	2158	3431	4511
MTC 16-71			71	1814	2942	3825
MTC 20-45	20	38	45	2452	3923	—
MTC 20-53			53	2158	3629	5590
MTC 20-71			71	1618	2942	4658
MTC 25-45	25	50	45	9317	14318	—
MTC 25-53			53	7355	11572	15985
MTC 25-71			71	4904	8336	13485

Esempio di ordinazione/Order example: MTC 20-45 (codice/code)

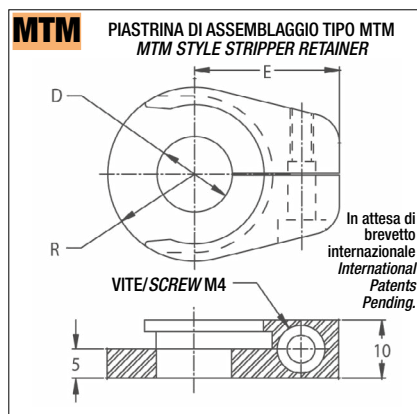
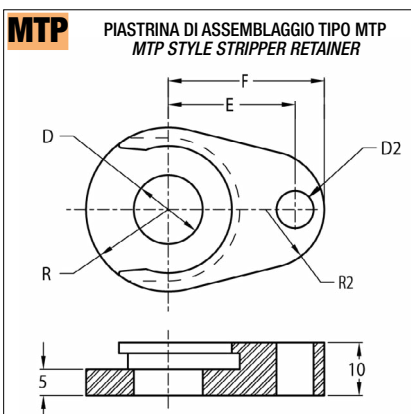
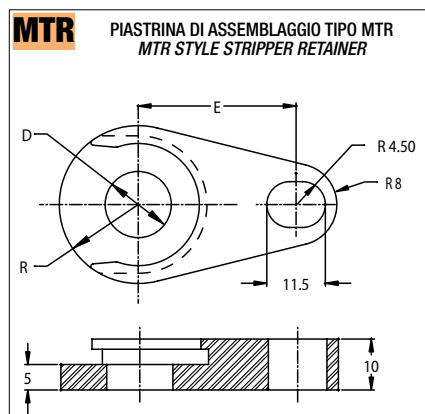
Codice/Code	sfiato aria / vent	ø interno / I.D.'s
Cod. MTC	1.6	06 - 10
	3.2	13 - 25

Materiale/Material: poliuretano/polyurethane
Durezza/Durometer hardness: 95 Shore A



- Mono struttura innovativa
- Sistema brevettato integrale per una migliore tenuta in trancia
- Complementari e intercambiabili con le norme NAAMS (Standard USA)
- Alta precisione tecnica per assicurare perpendicolarità risultante dalla lunga durata del poliuretano
- Adattabile a portapunzoni speciali multi-foro

- Innovative One-Piece construction
- Patented cost savings "Snap in" retention feature
- Interchangeable and complies with NAAMS standards
- Precision machined to assure perpendicularity resulting in prolonged Urethane life
- Adaptable to special multi-hole Retainers



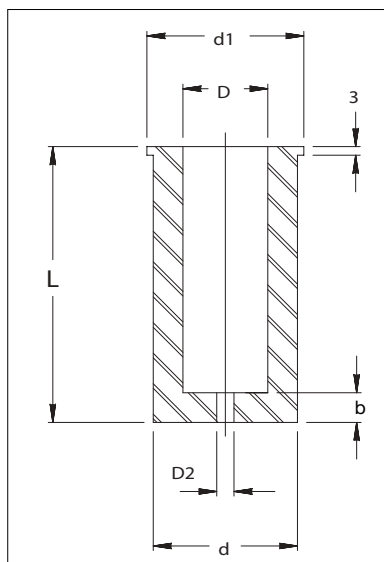
CODICE/CODE	D	R	E
MTR 10	10	13	28
MTR 13	13	15.5	31
MTR 16	16	18	32.9
MTR 20	20	20.5	34.8
MTR 25	25	24	39.8
MTR 32	32	31	41.3
MTR 40	40	36	45

CODICE/CODE	D	R	E	F	D2	R2
MTP 10	10	13.0	21.0	26.5	7	10.0
MTP 13	13	15.5	23.9	29.4	7	11.0
MTP 16	16	18.0	24.5	30.0	7	12.8
MTP 20	20	20.5	29.0	36.0	9	11.8
MTP 25	25	24.0	33.5	40.5	9	12.9
MTP 32	32	31.0	40.6	49.3	9	8.0
MTP 40	40	36.0	44.0	53.0	9	8.0

CODICE/CODE	D	R	E
MTM 10	10	13	22.5
MTM 13	13	15.5	25
MTM 16	16	18	27.5
MTM 20	20	20.5	30
MTM 25	25	24	35.5
MTM 32	32	31	37.5
MTM 40	40	36	42.3

Esempio di ordinazione/Order example: MTR 10 (codice/code)

Codice/Code
Cod. **MTS**



ELEMENTO IN POLIURETANO CON DUREZZA 95 SHORE A URETHANE HARDNESS 95 SHORE A		
Lunghezza punzone carico pesante Heavy Duty Ball Lock Punch Length	Lunghezza punzone carico leggero Light Duty Ball Lock Punch Length	Lunghezza consigliata Recommended Stripper Length "L"
80	71	44
90	80	54
100	90	64
110	100	74

CODICE/ CODE	GAMBO PUNZONE SHANK	D	d	L	d1	d2	b
MTS10-44	10	9.75	18	44	21	1.6	6
MTS10-54	10	9.75	18	54	21	1.6	6
MTS10-64	10	9.75	18	64	21	1.6	6
MTS10-74	10	9.75	18	74	21	1.6	6
MTS13-44	13	12.75	23	44	26	3.0	6
MTS13-54	13	12.75	23	54	26	3.0	6
MTS13-64	13	12.75	23	64	26	3.0	6
MTS13-74	13	12.75	23	74	26	3.0	6
MTS16-44	16	15.75	28	44	31	3.0	6
MTS16-54	16	15.75	28	54	31	3.0	6
MTS16-64	16	15.75	28	64	31	3.0	6
MTS16-74	16	15.75	28	74	31	3.0	6
MTS20-44	20	19.75	33	44	36	3.0	7
MTS20-54	20	19.75	33	54	36	3.0	7
MTS20-64	20	19.75	33	64	36	3.0	7
MTS20-74	20	19.75	33	74	36	3.0	7
MTS25-44	25	24.75	40	44	43	3.0	7
MTS25-54	25	24.75	40	54	43	3.0	7
MTS25-64	25	24.75	40	64	43	3.0	7
MTS25-74	25	24.75	40	74	43	3.0	7
MTS32-44	32	31.70	50	44	55	3.0	7
MTS32-54	32	31.70	50	54	55	3.0	7
MTS32-64	32	31.70	50	64	55	3.0	7
MTS32-74	32	31.70	50	74	55	3.0	7
MTS40-44	40	39.70	60	44	65	3.0	8
MTS40-54	40	39.70	60	54	65	3.0	8
MTS40-64	40	39.70	60	64	65	3.0	8

Esempio di ordinazione/Order example: MTS 25-44 (codice/code)

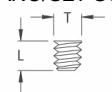
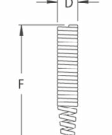
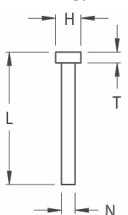
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Specifiche dimensionali per punzoni con eiettore Ejector punch dimensional specifications

Ø GAMBO PUNZONE SHANK DIA.	SPECIFICHE EIETTORE EJECTOR SPECIFICATION	FORO PERNO DRILL PIN HOLE	FORO MOLLA SIZE SPRING HOLE	MISURA VITE SCREW SIZE	DIMENSIONE FORO PASSANTE CROSS HOLE SIZE	ESTENSIONE PERNO PIN EXTENSION
5.0 CON TESTA/SHOULDER	MAE 2	.64	2.18	M2.6	.81	.81 ± .25
6.0 TUTTI/ALL	MAE 3	.79	2.64	M3	.81	.81 ± .25
8.0 CON TESTA/SHOULDER 10.0 INN. RAPIDO/ BALL-LOCK	MAE 4	1.17	3.45	M4	1.57	1.57 ± 38
10.0 CON TESTA/SHOULDER 13.0 TUTTI/ALL 16.0 INN. RAPIDO/ BALL-LOCK	MAE 5	1.58	4.37	M5	1.57	1.57 ± 38
16.0 CON TESTA/SHOULDER 20.0 TUTTI/ALL 25.0 TUTTI/ALL 32.0 TUTTI/ALL 40.0 TUTTI/ALL	MAE 6	2.36	5.18	M6	1.57	1.57 ± 38
DAL 45,0 AL 63,0 CON TESTA/SHOULDER	MAE 12	3.18	7.13	M8 X 1.25		

PUNZONI
Punches

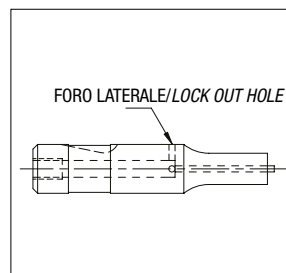
Componenti specifici eiettore Ejector component specifications

DESCRIZIONE COMPONENTI PART DESCRIPTION	SPECIFICHE SPEC. DESCRIPTION	MAE-2	MAE-3	MAE-4	MAE-5	MAE-6	MAE-12
GRANO/SET SCREW 	DIMENSIONE FILETTO "T" THREAD SIZE "T"	M2.6	M3	M4	M5	M6	M8
	LUNGHEZZA "L" LENGTH "L"	5.0	5.0	5.0	5.0	6.0	6.0
MOLLA/SPRING 	DIAMETRO "D" $\begin{smallmatrix} +.0 \\ -.25 \end{smallmatrix}$ DIAMETER "D"	1.98	2.38	3.30	4.16	5.05	6.86
	LUNGHEZZA LIBERA "F" $\begin{smallmatrix} +1.5 \\ -.0 \end{smallmatrix}$ FREE-LENGTH "F"	60.4	60.4	81.0	81.0	81.0	81.0
	PRESSIONE (3.0 PRE-CARICO) PRESSURE (3.0 PRE-L OAD)	2.22	3.34	4.45	6.67	8.9	8.9
PERNO/PIN 	DIAMETRO CORPO "N" $\pm .025$ BODY DIAMETER "N" $\pm .025$	.48	.69	1.04	1.47	2.26	3.05
	LUNGHEZZA "L" $\begin{smallmatrix} +1.5 \\ -.0 \end{smallmatrix}$ LENGTH "L"	35.0	35.0	49.3	49.3	63.50	76.20
	DIAMETRO TESTA "H" $\begin{smallmatrix} +.025 \\ +.025 \end{smallmatrix}$ HEAD DIAMETER "H" $\begin{smallmatrix} +.025 \\ +.025 \end{smallmatrix}$	1.20	1.98	2.39	3.18	4.01	4.75
	SPESSORE TESTA "T" $\pm .13$ HEAD THICKNESS "T" $\pm .13$	.81	1.17	1.57	1.57	2.39	2.39

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CODICE CATALOGO/CATALOG NUMBERS

CODICE KIT ASSEMBLY	PERNO PIN	MOLLA SPRING	GRANO SCREW
MAE 2	MAE 2P	MAE 2S	MAE 2C
MAE 3	MAE 3P	MAE 3S	MAE 3C
MAE 4	MAE 4P	MAE 4S	MAE 4C
MAE 5	MAE 5P	MAE 5S	MAE 5C
MAE 6	MAE 6P	MAE 6S	MAE 6C
MAE 12	MAE 12P	MAE 12S	MAE 12C



Nota: non disponibile sul gambo
diametro 32 e 40.
Note: Not available on shank
diameters of 32mm and above,
shoulder and ball lock.



Il set include 12 pezzi di ogni
misura.
Set includes 12 pcs. of each
size.

Esempio di ordinazione/Order example: MAE 4 (codice/code)

Riferimenti standard *Standard locations*

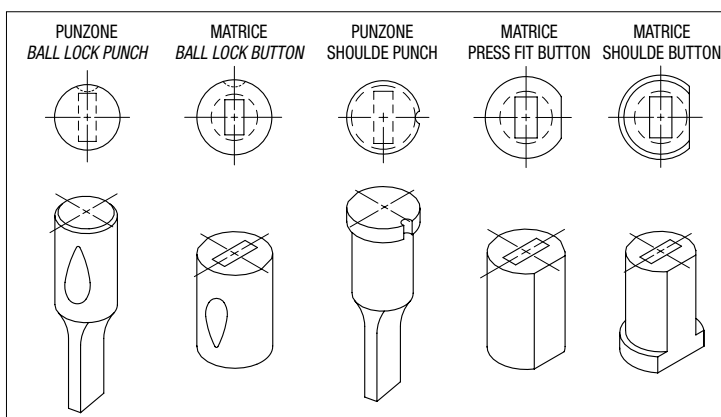
La sede standard della sfera, per tutti i prodotti a innesto rapido, è a 90°. Il taglio di chiave e il foro spina standard sono a 0°. In alternativa, e senza sovrapprezzo, si possono ordinare nelle posizioni: 0°, 90°, 180°, 270°. Per ordinare specificare @ ____°.

Standard ballseat location for all ball lock products is 90°. Standard flat, dowel groove and Windsor Lock location is at 0°.

Note: 0° is at 3:00. Alternate no charge locations are 0°, 90°, 180°, 270° (see drawing). To order alternate locations specify locating device type @ ____°.

Es. punzone Ball lock/Ball lock punch example
MHR 13-80 P=6.0 W=5.5 BS 0°

Es. chiave per matrice/Button flat example
MDO25-32 P=13.0 W=10.5 F1 90°



Riferimenti a richiesta *Custom locations*

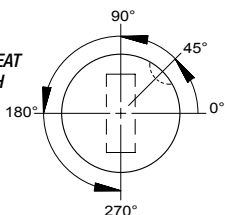
I particolari sono visti in posizione sullo stampo guardando dall'alto.

I punzoni sono visti dal gambo, le matrici dall'alto di faccia.

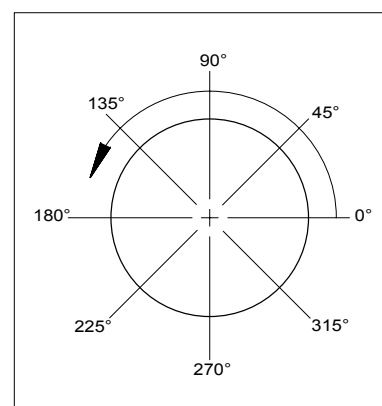
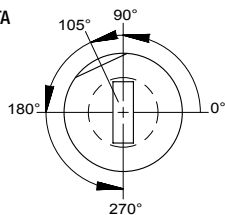
Parts are viewed in the position looking from above the die. Punches are viewed looking through the shanks. Buttons are viewed through top face.

Esempi tipici/Typical examples

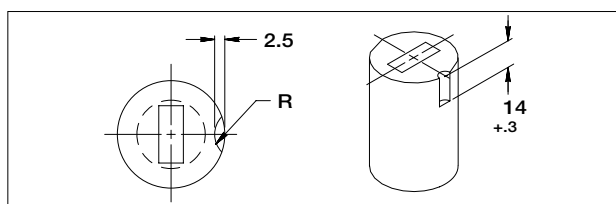
RIFERIMENTO
SEDE SFERA
CUSTOM BALL SEAT
LOCATION PUNCH
BS-45°



TAGLIO DI CHIAVETTA
CUSTOM FLAT
LOCATION
DIE BUTTON
F2-105°



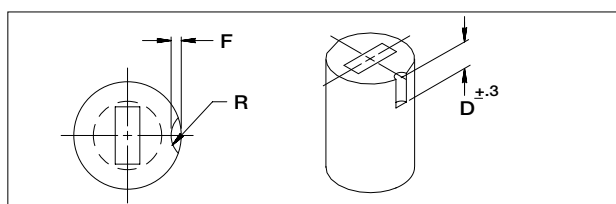
Windsor lock



W6 6.0 WINDSOR LOCK R = 3.0 RAD

W10 10.0 WINDSOR LOCK R = 5.0 RAD

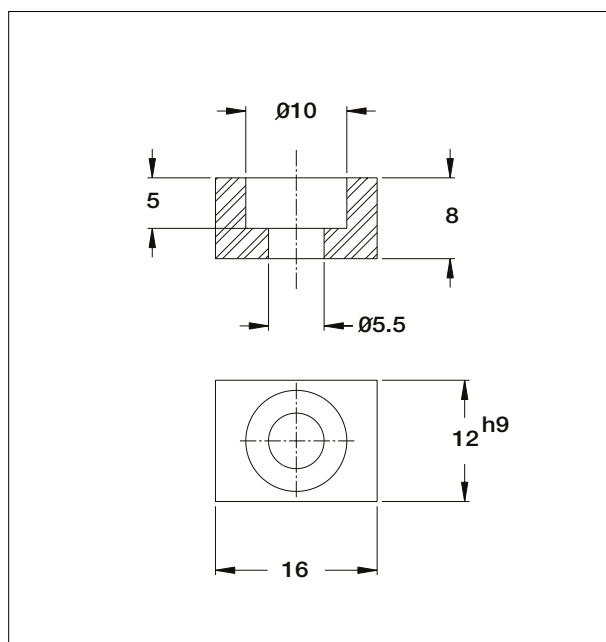
W13 13.0 WINDSOR LOCK R = 6.5 RAD



WX

Definito dall'utente/User defined
Specificare le dimensioni di "F", "R" e "D"
Must specify "F", "R" and "D" dimensions

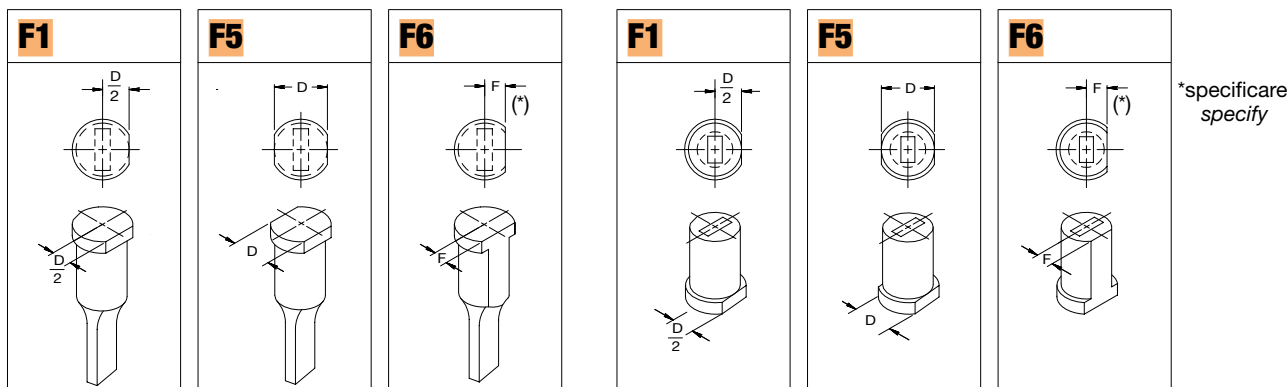
Chiavetta ritegno matrice *Button retention key*



MAK-01

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Tagli di chiave a punzoni e matrici con testa Flats on shoulder punches and buttons



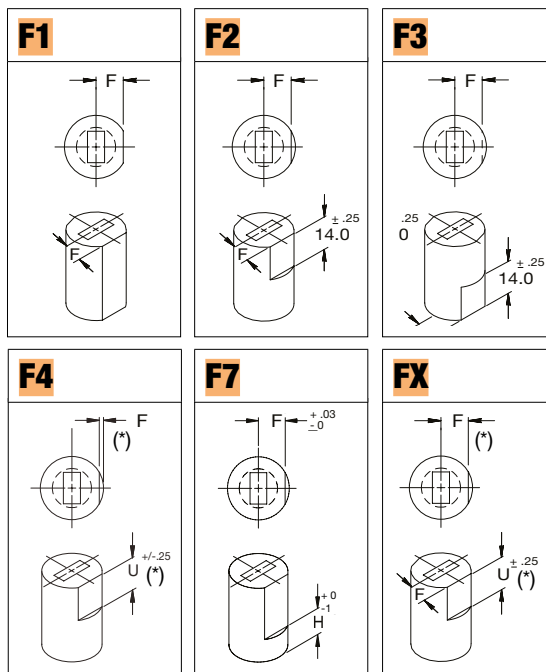
F1 e F5 sono tangenti al gambo. Per F6 si richiede di specificare quota "F" in sede d'ordine. F5 standard a 180°.
F1, F5 are ground flush to shank. F6 is a user defined flat and requires an "F" dimension specified with order. F5 flats are standard 180° apart.

Tagli di chiave su matrici lisce Flats on press fit buttons

F1, F2, F3		F7	
CORPO/BODY DIA	"F" $+0.02$ -0.00	F	H
8	3.5		
10	4.0		
13	5.5	5.0	9
16	7.0	6.5	9
20	8.5	8.5	9
22	9.5		
25	11.0	10.5	16
32	14.0	14.0	16
38	17.0		
40	18.0	18.0	16
45	20.5		
50	23.0	23.0	16
56	26.0		
63	29.5	29.5	16
71	33.5		
76	35.5		
85	40.0		
90	42.5		
100	47.5		

Per F1, F2, F3 utilizzare quota "F" come da tabella. Per FX, F4 specificare le quote "F" e "U" in fase d'ordine. F1 uses "F" dimension as defined in chart, unless an alternate "F" dimension is specified with order. F2, F3 use "F" dimensions as defined in chart. F4, FX are user defined flats and requires "F" and "U" dimension specified with order.

*specificare specify

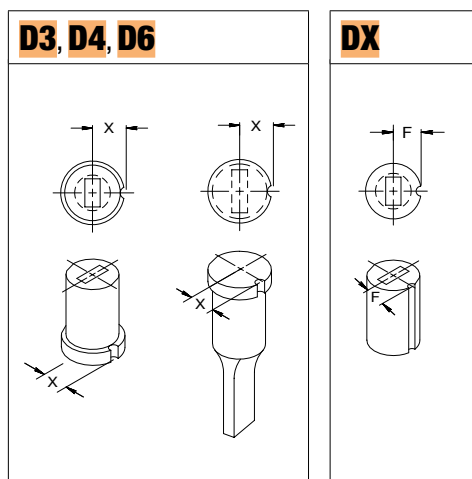


INDEX

Foro spina Dowel grooves

Ø CORPO/BODY "D"	DX SPINA/DOWEL "F" dim	D3 3.0 SPINA/DOWEL "F" dim	D4 4.0 SPINA/DOWEL "F" dim	D6 6.0 SPINA/DOWEL "F" dim
8	specificare/specify	4.7	5.2	6.2
10	specificare/specify	5.5	6.0	7.0
13	specificare/specify	6.7	7.2	8.2
16	specificare/specify	8.0	8.0	9.0
20	specificare/specify	10.0	10.0	11.0
22	specificare/specify	11.0	11.0	12.0
25	specificare/specify	12.5	12.5	13.5
32-UP	specificare/specify	D/2	D/2	D/2

D3, D4 e D6 identificano le sedi spina con Ø=3, 4 e 6 mm. Nelle matrici e punzoni con collare sono posizionate tangenti al corpo. In tutti gli altri prodotti la sede spina è posizionata, rispetto al centro, con la quota F (indicata nella tabella). La DX identifica una sede spina con la quota F specificata dal cliente e deve essere citata in fase d'ordine/ D3, D4, D6 are standard 3, 4, 6, dowel grooves. On shoulder products, the groove is positioned tangent to shank. On all other products the dowel is ground to an "F" dimension as shown on chart. DX is a user defined dowel groove and requires an "F" dimension and dowel size specified with the order.

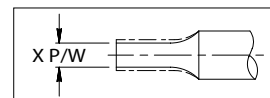


X/F dimens. +/- .013

Quote di trancia per punzoni non standard *Out of range punch point*

Viene utilizzato quando le quote "P" e/o "W" sono inferiori o maggiori rispetto a quelle standard indicate nelle tabelle sottostanti/Point "P" or "W" dimensions below catalog standard. The minimums (see charts) apply to standard catalog point lengths and overall lengths. Extended B lengths and reduced overall lengths do not apply.

XP / XW

Punzoni a innesto rapido e a testa cilindrica *Ball lock and shoulder punches solid*

GAMBO/SHANK D	MAX S.B.R		
	13	19	25
	QUOTA MIN. P TONDI/MIN P ROUNDS		
4	1.20		
5	1.30	1.30	
6	1.40	1.40	1.40
8	1.70	1.70	1.70
10	2.00	2.00	2.00
13	2.50	2.50	2.50
16	3.50	3.50	3.50
20	5.00	5.00	5.00
25	8.00	8.00	8.00
32	12.00	12.00	12.00
40	16.00	16.00	16.00
45	18.00	18.00	18.00
50	23.00	23.00	23.00
56	28.00	28.00	28.00
63	33.00	33.00	33.00

GAMBO SHANK D	MAX S.B.R		
	13	19	25
	QUOTA MIN. W SAGOME/ MIN W SHAPES		
4	1.20		
5	1.30	1.30	
6	1.40	1.40	
8	1.70	1.70	1.70
10	2.00	2.00	2.00
13	2.50	2.50	2.50
16	3.50	3.50	3.50
20	4.50	4.50	4.50
25	4.50	4.50	4.50
32	5.00	5.00	5.00
40	6.00	6.00	6.00
45	6.00	6.00	6.00
50	8.00	8.00	8.00
56	9.00	9.00	9.00
63	10.00	10.00	10.00

Punzoni applicazioni leggere con eiettore

Light duty ejector punches

GAMBO SHANK D	MAX S.B.R		
	13 63.0 min O.A.L.	19 63.0 min O.A.L.	25 71.0 min O.A.L.
	QUOTA MIN. P TONDI/MIN P ROUNDS		
6	2.00		
10	2.70	2.70	
13	3.20	3.20	3.20
16	3.50	3.50	3.50
20	5.00	5.00	5.00
25	8.00	8.00	8.00

GAMBO SHANK D	MAX S.B.R		
	13 63.0 min O.A.L.	19 63.0 min O.A.L.	25 71.0 min O.A.L.
	QUOTA MIN. W SAGOME/ MIN W SHAPES		
6	2.00		
10	2.70	2.70	
13	3.20	3.20	3.20
16	3.50	3.50	3.50
20	4.00	4.00	4.00
25	5.00	5.00	5.00

Punzoni applicazioni pesanti con eiettore

Heavy duty ejector punches

GAMBO SHANK D	MAX S.B.R		
	13 63.0 min O.A.L.	19 63.0 min O.A.L.	25 71.0 min O.A.L.
	QUOTA MIN. P TONDI/MIN P ROUNDS		
10	2.70	2.70	
13	3.20	3.20	3.20
16	3.50	3.50	3.50
20	5.00	5.00	5.00
25	8.00	8.00	8.00
32	12.00	12.00	12.00
40	16.00	16.00	16.00

GAMBO SHANK D	MAX S.B.R		
	13 63.0 min O.A.L.	19 63.0 min O.A.L.	25 71.0 min O.A.L.
	QUOTA MIN. W SAGOME/ MIN W SHAPES		
10	2.50	2.50	
13	3.20	3.20	3.20
16	3.50	3.50	3.50
20	4.00	4.00	4.00
25	5.00	5.00	5.00
32	6.00	6.00	6.00
40	8.00	8.00	8.00

Punzoni testa cilindrica con eiettore *Shoulder ejector punches*

GAMBO/SHANK D	MAX S.B.R		
	13 63.0 min O.A.L.	19 63.0 min O.A.L.	25 71.0 min O.A.L.
	QUOTA MIN. P TONDI/MIN P ROUNDS		
5	1.60		
6	2.00		
8	3.00	3.00	
10	3.20	3.20	3.20
13	3.20	3.20	3.20
16	4.00	4.00	4.00
20	4.00	4.00	4.00
25	5.00	5.00	5.00
32	6.00	6.00	6.00
40	8.00	8.00	8.00
45	18.00	18.00	18.00
50	23.00	23.00	23.00
56	28.00	28.00	28.00
63	33.00	33.00	33.00

GAMBO/SHANK D	MAX S.B.R		
	13 63.0 min O.A.L.	19 63.0 min O.A.L.	25 71.0 min O.A.L.
	QUOTA MIN. W SAGOME/ MIN W SHAPES		
5	1.60		
6	2.00		
8	3.00	3.00	
10	3.20	3.20	3.20
13	3.20	3.20	3.20
16	4.00	4.00	4.00
20	4.00	4.00	4.00
25	4.50	4.50	4.50
32	5.00	5.00	5.00
40	6.00	6.00	6.00
45	6.00	6.00	6.00
50	8.00	8.00	8.00
56	9.00	9.00	9.00
63	10.00	10.00	10.00

PUNZONI
Punches

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Quote di trancia della matrice non standard *Out of range button dimension*

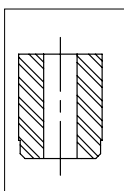
MATRICI LISCE SCARICO CONICO PRESS FIT ULTRA LIFE TAPER RELIEF			
CODICE/CODE	min P	min W	max P/G
MU_08	1.50	1.50	3.60
MU_10	1.60	1.60	5.80
MU_13	1.80	1.80	8.00
MU_16	2.50	2.50	10.00
MU_20	2.80	2.80	13.00
MU_22	3.10	3.10	16.00
MU_25	3.20	3.20	18.50
MU_32	3.20	3.20	22.00
MU_38	3.20	3.20	29.00
MU_40	3.20	3.20	30.00
MU_45	3.20	3.20	34.00
MU_50	3.20	3.20	37.00
MU_56	3.20	3.20	41.00
MU_63	3.20	3.20	47.00
MU_71	3.20	3.20	52.00
MU_76	3.20	3.20	56.00
MU_85	3.20	3.20	62.00
MU_90	3.20	3.20	65.00
MU_100	3.20	3.20	73.00

XP / XW

Viene utilizzato quando le quote "P" e/o "W" sono inferiori o maggiori rispetto a quelle standard indicate nelle tabelle sottostanti.
Hole "P" or "W" dimension above or below catalog standard range (see charts) available on Ultra Life style button only.

MATRICI CON COLLARE SCARICO CONICO SHOULDER ULTRA LIFE TAPER RELIEF			
CODICE/CODE	min P	min W	max P/G
MM_08	1.50	1.50	3.60
MM_10	1.60	1.60	5.80
MM_13	1.80	1.80	8.00
MM_16	2.50	2.50	10.00
MM_20	2.80	2.80	13.00
MM_22	3.10	3.10	16.00
MM_25	3.20	3.20	18.50
MM_32	3.20	3.20	22.00
MM_38	3.20	3.20	29.00
MM_40	3.20	3.20	30.00
MM_45	3.20	3.20	34.00

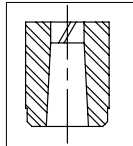
XR



Indica la mancanza di scarico con le quote "P" e/o "W" passanti per tutta l'altezza della matrice/Button round or shape/I.D. through hole no relief

Controllo eliminazione sfridi
Slug control alteration

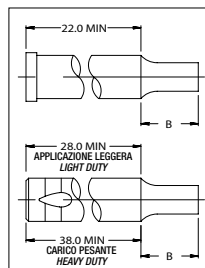
XS



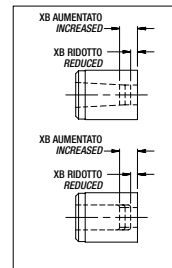
N.B.: in fase d'ordine, specificare spessore materiale da tranciare e "gioco" tra punzone e matrice/ Advise material thickness and die clearance, per side at time of order.

Quota "B" non standard
Altered point length B

XBR



XB

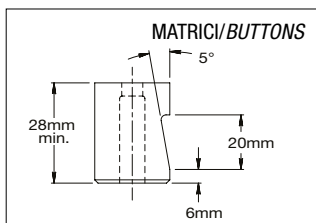
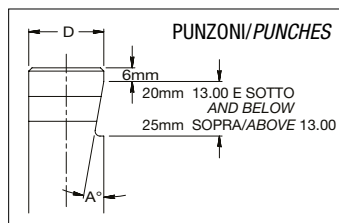


Identifica la quota "B" con misure specifiche date dal cliente.
This is a customer specific alteration and a dimension must be supplied.

Scanalatura a fischiello

Whistle notch

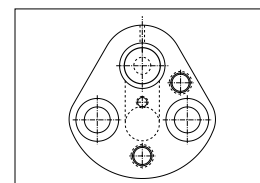
W1



Solo per punzoni applicazioni leggere/For light-duty punches only

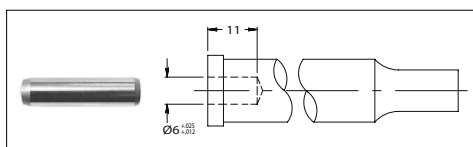
Tappo per matrici
(controllo eliminazione sfridi)
Open in-line dowel for slug relief

SR



Spina centraggio
Center dowel

CD



Eseguibile su tutti i punzoni con testa cilindrica e con eiettore da Ø 10 a Ø 40 e su lunghezze 80, 90 e 100 mm/Available on all length shoulder punches in diameters of 10mm through 40mm.

Spina di ritegno simmetrica
Symmetrical retainer dowel

SD

Applicazione foro eiettore per sfogo aria
Air ejector application

AE

Indica un foro passante all'interno del punzone, senza kit eiettore per l'espulsione dell'aria durante la trancia.
Filled cross pin hole with no ejector components.

Sede sfera
Ball seat

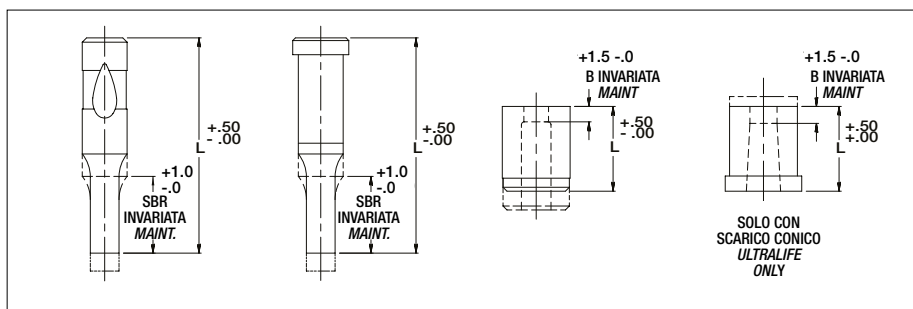
GB

N.B.: specificare posizione radiale se viene richiesta una doppia posizione/Specify a radial location if a double ballseat is required.

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Riduzioni della lunghezza totale *Overall length reductions*

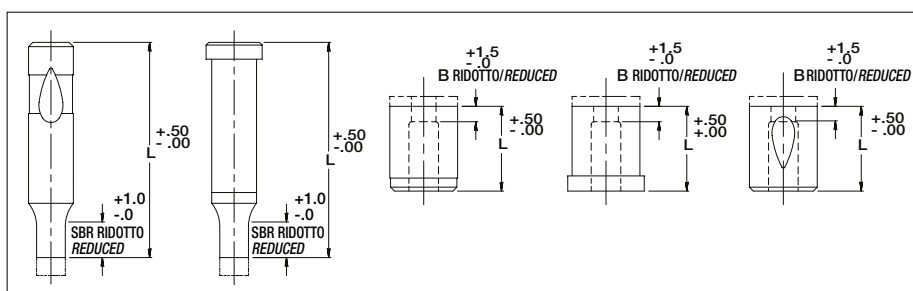
X1



Riduzione della lunghezza mantenendo la quota "SBR" su punzoni e "B" sulle matrici. Non eseguibili su matrici con collare a scarico cilindrico o a innesto rapido.

Reduces punch or button length maintaining "B" point or land length. Not available in counter bore style on shoulder or ball lock buttons.

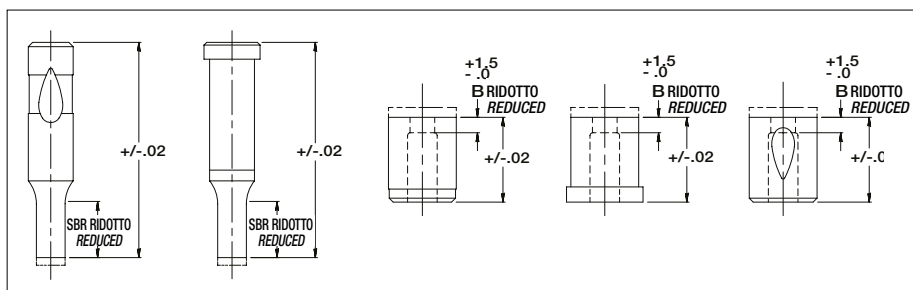
X2



Riduce la lunghezza di punzone o matrice ma anche la quota "B" ed "SBR".

Reduces punch or button length but also reduces "B" dimension or land length.

X3

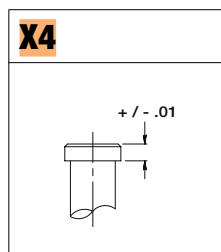


Lunghezza totale precisa di $+/- 0.02$. Nota: 0,5 mm quota max di riduzione.

Provides a precision overall length of $+/- .02$ Note: .5 maximum stock removal.

Alterazioni della testa *Head alterations*

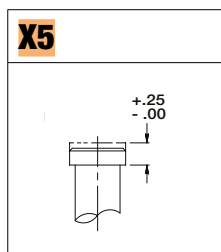
X4



Garantisce uno spessore preciso della testa ma riduce la lunghezza totale.

Provides a precision head length but reduces overall length

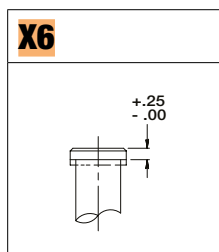
X5



Garantisce lo spessore della testa ma riduce la lunghezza totale.

Reduces head length but reduces overall length

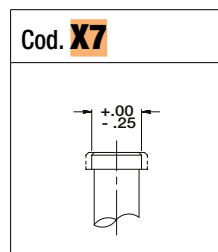
X6



Garantisce lo spessore della testa mantenendo la lunghezza totale.

Reduces head length while maintaining overall length

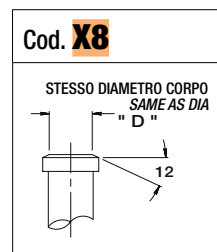
Cod. X7



Riduce il diametro della testa.

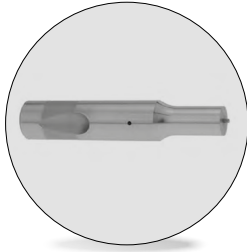
Reduces head diameter

Cod. X8



Spigoli sulla testa per migliorare la forza.

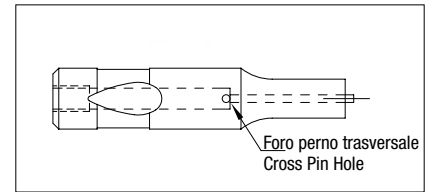
Angle on head face to improve strength



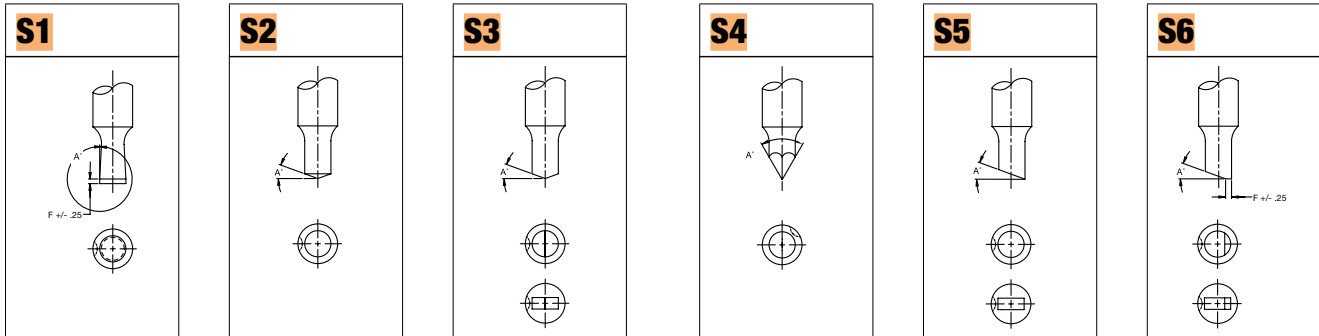
Alterazione perno trasversale *Cross pin alteration*

XCP

Per aggiungere il Foro Perno Trasversale utilizzare XCP alla fine del codice
To add a Cross Pin Hole use alteration code XCP at end of description



Spigoli trancianti *Shear angles*



L'angolo "A" e la quota "F" devono essere definite dal cliente in fase d'ordine/Angle "A" and dimension "F" are user defined and must be S1 specified with order.

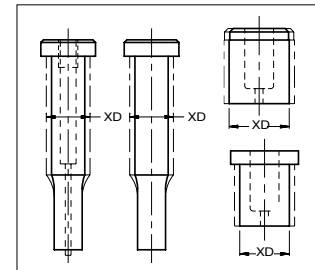
RIFERIMENTI SEDE STANDARD: Sede standard della sfera come da immagine. La sede della chiavetta su prodotti con testa è a 90°.
STANDARD SEAT REFERENCES: Standard ball seat as per drawing. The flat, for product with head, is at 90°.

Riduzione della dimensione del gambo *Reduction of shank dimension*

XD

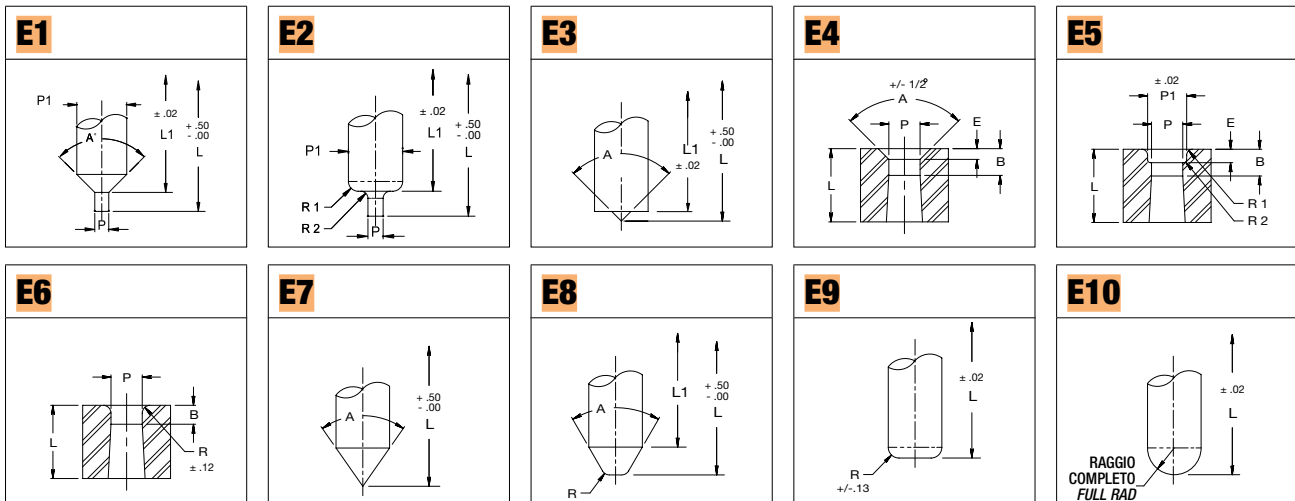
La riduzione del diametro del gambo, secondo le specifiche richieste dal cliente, non altera i diametri della testa.
Reduce shank to customer specific size. Does not alter head diameter.

CORPO/BODY	5	6	8	10	13	16	20	22	25	32	38	40
PUNZONE/PUNCH SOLID MIN D	3.5	5.0	6.5	8.5	11.5	14.5	18.5		23.5	30.5		38.5
PUNZONE EIETTORE/PUNCH EJECTOR MIN D	4.5	5.0	6.8	9.0	11.5	14.5	18.5		23.5	30.5		38.5
MATRICE/BUTTON MIN D			6.5	8.5	11.5	14.5	18.5	20.5	23.0	30.0	36.0	38.0



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Punzoni e matrici per flangiatura *Extrusion tools*



Le quote "L1" e "E" devono essere specificate in fase d'ordine insieme alla tolleranza specifica. Per precisare meglio la quota "L" utilizzare le alterazioni X3. Per contrastare la resistenza della lamiera in fase di trancia si consiglia l'uso di matrici con scarico conico/ How precise L1 and E dimensions need to be is application specific. Please specify tolerance with order. For a precision "L" dimension add alteration code X3. For strength, all extrusion buttons are produced in the "Ultralife" style.



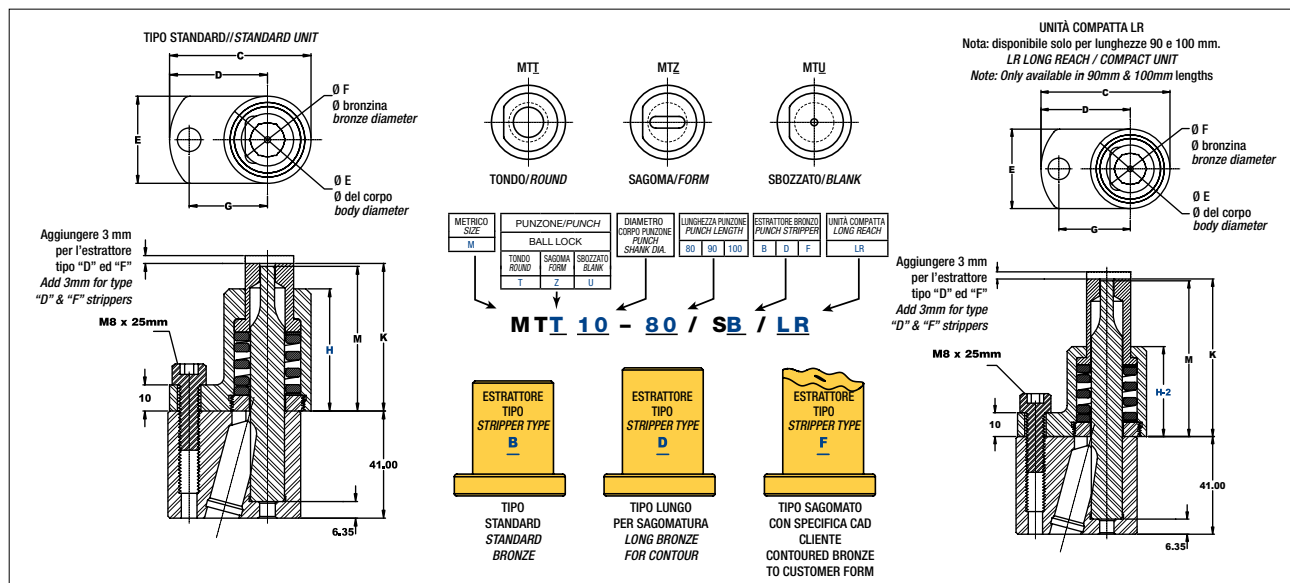
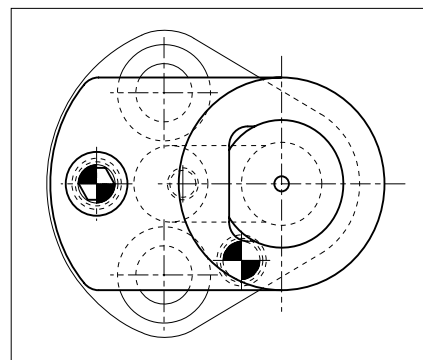
SPECIFICARE IN FASE D'ORDINE:

- se il portapunzone e il punzone sono richiesti, devono essere ordinati a parte come voci aggiuntive;
- se viene richiesto il tipo "F" con sagoma personalizzata bisogna prevedere, in fase d'ordine, l'aggiunta del dato CAD della superficie.

SPECIFY AT TIME OF ORDER:

- If retainer and punch are required, please purchase as additional line items at time of order.
- If panel contour is required on stripper face, please specify at time of order and provide surface data. P.O.R.

Indicare dimensioni punzone (P o P/W) in fase d'ordine per poter effettuare la lavorazione sulla bronzina/Denote punch point dimensions at time of order for factory machining.



CODICE CODE	C	D	E	F	G	H	H-2	K	M	TIPO STANDARD corsa massima con molla blu Standard max travel from k-dim. [blue]	TIPO COMPATTO LR corsa massima con molla blu Long reach/ compact max travel from k-dim. [blue]	TIPO STANDARD corsa massima con molla rossa Standard max travel from k-dim [red]	TIPO COMPATTO LR corsa massima con molla rossa Long reach/ compact max travel from k-dim. [red]
MT_10-80/S_						37.74		45.7	45.1	8.3		6.3	
MT_10-90/S_	47.4	33.9	27	15	26.9	46.74	37.74	55.7	55.1		8.3		6.3
MT_10-100/S_						54.52		65.7	65.1	11.1		8.4	
MT_13-80/S_						37.74		45.7	45.1	8.0		6.5	
MT_13-90/S_	54.1	37.5	33.3	20	30	46.74	37.74	55.7	55.1		8.0		6.5
MT_13-100/S_						54.52		65.7	65.1	10.9		8.5	
MT_16-80/S_						37.74		45.7	45.1	9.4		7.4	
MT_16-90/S_	58.7	38.7	40	27	31.8	46.74	37.74	55.7	55.1		9.4		7.4
MT_16-100/S_						54.52		65.7	65.1	13		9.5	
MT_20-80/S_						37.74		45.7	45.1	9.1		7.4	
MT_20-90/S_	65.4	42.4	46.1	33	33.5	46.74	37.74	55.7	55.1		9.1		7.4
MT_20-100/S_						54.52		65.7	65.1	11.0		8.9	
MT_25-80/S_						37.74		45.7	45.1	10.1		8.4	
MT_25-90/S_	74.9	47.1	55.6	42.5	40.6	46.74	37.74	55.7	55.1		10.1		8.4
MT_25-100/S_						54.52		65.7	65.1	10.6		8.9	
MT_32-80/S_						37.74		45.7	45.1	9.7		7.6	
MT_32-90/S_	78.9	47.1	63.5	50.6	40.6	46.74	37.74	55.7	55.1		9.7		7.6
MT_32-100/S_						54.52		65.7	65.1	11.8		7.7	
MT_40-80/S						37.74		45.7	45.1	8.4		7.2	
MT_40-90/S	90.8	54.5	72.5	59.7	44	46.74	37.74	55.7	55.1		8.4		7.2
MT_40-100/S						54.52		65.7	65.1	10.4		7.7	

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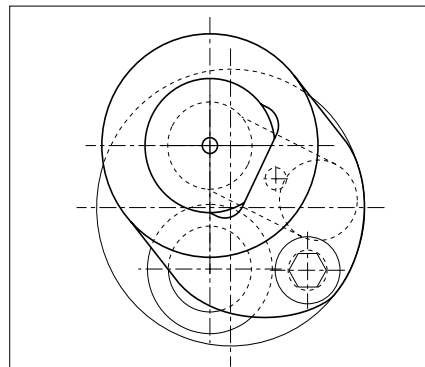
SPECIFICARE IN FASE D'ORDINE:

- se il portapunzone e il punzone sono richiesti, devono essere ordinati a parte come voci aggiuntive;
- se viene richiesto il tipo "F" con sagoma personalizzata bisogna prevedere, in fase d'ordine, l'aggiunta del dato CAD della superficie.

SPECIFY AT TIME OF ORDER:

- If retainer and punch are required, please purchase as additional line items at time of order.
- If panel contour is required on stripper face, please specify at time of order and provide surface data. P.O.R.

Indicare dimensioni punzone (P o P/W) in fase d'ordine per poter effettuare la lavorazione sulla bronzina/Denote punch point dimensions at time of order for factory machining.



TIPO STANDARD/STANDARD UNIT

Rotazione estrattore bronzo
Stripper rotation

Ø F
Ø bronzina
bronze diameter

Ø E
Ø del corpo
body diameter

Aggiungere 3 mm per l'estrattore tipo "D" ed "F"
Add 3mm for type "D" & "F" strippers

S.H.C.S.

41.00

6.35

MTJ **MTL**

TONDO/ROUND **SBOZZATO/BLANK**

METRIC SIZE	PUNZONE/PUNCH	DIAMETRO CORPO PUNZONE PUNCH SHANK DIA.	LUNGHEZZA PUNZONE PUNCH LENGTH	ESTRATTORE BRONZO PUNCH STRIPPER	UNITÀ COMPATTA LONG REACH
M	BALL LOCK		80 90 100	B D F	LR
J	TONDO ROUND				
L	SBOZZATO BLANK				

MTJ 10 - 80 / SB / LR

ESTRATTORE TIPO STRIPPER TYPE B

TIPO STANDARD STANDARD BRONZE

ESTRATTORE TIPO STRIPPER TYPE D

TIPO LUNGO PER SAGOMATURA LONG BRONZE FOR CONTOUR

ESTRATTORE TIPO STRIPPER TYPE F

TIPO SAGOMATO CON SPECIFICA CAD CLIENTE CONTOURED BRONZE TO CUSTOMER FORM

UNITÀ COMPATTA LR

Nota: disponibile solo per lunghezze 90 e 100 mm.
LR LONG REACH / COMPACT UNIT
Note: Only available in 90mm & 100mm lengths

Rotazione estrattore bronzo
Stripper rotation

Ø F
Ø bronzina
bronze diameter

Ø E
Ø del corpo
body diameter

Aggiungere 3 mm per l'estrattore tipo "D" ed "F"
Add 3mm for type "D" & "F" strippers

S.H.C.S.

41.00

6.35

CODICE CODE	C	D	E	F	G	H	H-2	K	M	N	TIPO STANDARD corsa massima con molla blu Standard max travel from k-dim. [blue]	TIPO COMPATTO LR corsa massima con molla blu Long reach/ compact max travel from k-dim. [blue]	TIPO STANDARD corsa massima con molla rossa Standard max travel from k-dim [red]	TIPO COMPATTO LR corsa massima con molla rossa Long reach/ compact max travel from k-dim. [red]	S.H.C.S.
MT_10-80/S	40	26.5	27	15	21	37.74	37.74	45.7	45.1	22.5°	8.3		6.3	6.3	6 mm x1.0 25 mm lungn.
MT_10-90/S						46.74		55.7	55.1						
MT_10-100/S						54.52		65.7	65.1						
MT_13-80/S	46.1	29.4	33.3	20	23.9	37.74	37.74	45.7	45.1	25°	8.0		6.5	6.5	
MT_13-90/S						46.74		55.7	55.1						
MT_13-100/S						54.52		65.7	65.1						
MT_16-80/S	50	30	40	27	24.5	37.74	37.74	45.7	45.1	18.5°	9.4		7.4	7.4	
MT_16-90/S						46.74		55.7	55.1						
MT_16-100/S						54.52		65.7	65.1						
MT_20-80/S	59	36	46.1	33	29	37.74	37.74	45.7	45.1	18°	9.1		7.4	7.4	
MT_20-90/S						46.74		55.7	55.1						
MT_20-100/S						54.52		65.7	65.1						
MT_25-80/S	68.3	40.5	55.6	42.5	33.5	37.74	37.74	45.7	45.1	23°	10.1		8.4	8.4	
MT_25-90/S						46.74		55.7	55.1						
MT_25-100/S						54.52		65.7	65.1						
MT_32-80/S	79.4	47.6	63.5	50.6	40.6	37.74	37.74	45.7	45.1	20°	9.7		7.6	7.6	
MT_32-90/S						46.74		55.7	55.1						
MT_32-100/S						54.52		65.7	65.1						
MT_40-80/S	87.2	51	72.5	59.7	44	37.74	37.74	45.7	45.1	20°	8.4		7.2	7.2	
MT_40-90/S						46.74		55.7	55.1						
MT_40-100/S						54.52		65.7	65.1						

Estrattore meccanico per portapunzoni con testa cilindrica e a innesto rapido per applicazioni leggere

Shoulder style and light duty Ball lock retainers



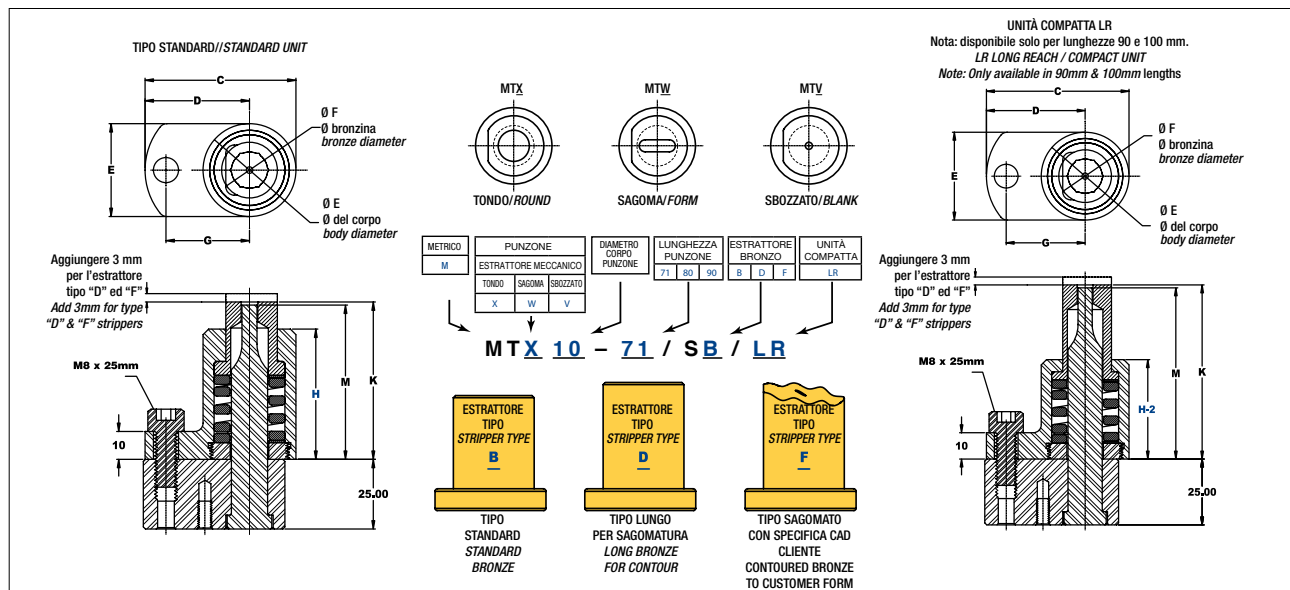
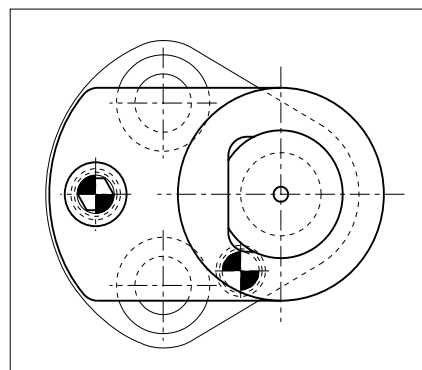
SPECIFICARE IN FASE D'ORDINE:

- se il portapunzone e il punzone sono richiesti, devono essere ordinati a parte come voci aggiuntive;
- se viene richiesto il tipo "F" con sagoma personalizzata bisogna prevedere, in fase d'ordine, l'aggiunta del dato CAD della superficie.

SPECIFY AT TIME OF ORDER:

- If retainer and punch are required, please purchase as additional line items at time of order.
- If panel contour is required on stripper face, please specify at time of order and provide surface data. P.O.R.

Indicare dimensioni punzone (P o P/W) in fase d'ordine per poter effettuare la lavorazione sulla bronzina/Denote punch point dimensions at time of order for factory machining.



CODICE CODE	C	D	E	F	G	H	H-2	K	M	TIPO STANDARD corsa massima con molla blu Standard max travel from k-dim. [blue]	TIPO COMPATTO LR corsa massima con molla blu Long reach/ compact max travel from k-dim. [blue]	TIPO STANDARD corsa massima con molla rossa Standard max travel from k-dim [red]	TIPO COMPATTO LR corsa massima con molla rossa Long reach/ compact max travel from k-dim. [red]
MT_10-71/S						37.74		46.6	46	8.3		6.3	
MT_10-80/S	47.4	33.9	27	15	26.9	46.74	37.74	55.6	55		8.3		6.3
MT_10-90/S						54.52		65.6	65	11.1		8.4	
MT_13-71/S						37.74		46.6	46	8.0		6.5	
MT_13-80/S	54.1	37.5	33.3	20	30	46.74	37.74	55.6	55		8.0		6.5
MT_13-90/S						54.52		65.6	65	10.9		8.5	
MT_16-71/S						37.74		46.6	46	9.4		7.4	
MT_16-80/S	58.7	38.7	40	27	31.8	46.74	37.74	55.6	55		9.4		7.4
MT_16-90/S						54.52		65.6	65	13		9.5	
MT_20-71/S						37.74		46.6	46	9.1		7.4	
MT_20-80/S	65.4	42.4	46.1	33	33.5	46.74	37.74	55.6	55		9.1		7.4
MT_20-90/S						54.52		65.6	65	11.0		8.9	
MT_25-71/S						37.74		46.6	46	10.1		8.4	
MT_25-80/S	74.9	47.1	55.6	42.5	40.6	46.74	37.74	55.6	55		10.1		8.4
MT_25-90/S						54.52		65.6	65	10.6		8.9	
MT_32-71/S						37.74		46.6	46	9.7		7.6	
MT_32-80/S	78.9	47.1	63.5	50.6	40.6	46.74	37.74	55.6	55		9.7		7.6
MT_32-90/S						54.52		65.6	65	11.8		7.7	

INDEX

Aumenta la durata dei tuoi punzoni e riduci i fermi di produzione

Improve tool life and reduce down time

La costante evoluzione siderurgica nella produzione delle lamiere costringe l'industria di oggi a continue e nuove sfide nell'affrontare lavorazioni su materiali ultraleggeri e alto resistenziali. Per questo tipo di Applicazioni Avanzate, Moeller è in grado di offrire soluzioni che vanno incontro alla crescente domanda di utilizzo di questi materiali moderni.

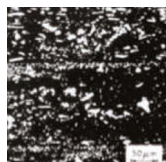
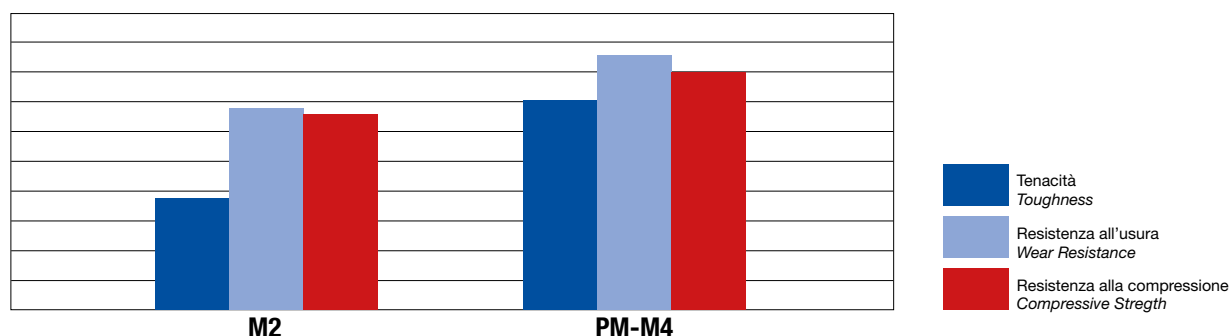
As the art of metalforming continues to evolve, today's industry faces increasingly difficult challenges in processing high-strength and complex lightweight materials. Moeller's tooling for Advanced Stamping Applications provides solutions, which allow our customers to exceed the increased demands of modern materials.

Punzoni in PM-M4 vs in M2

Non è solo una questione di Tenacità contro Usura, Si vuole migliorare la durata dei punzoni riducendo di conseguenza, i tempi di fermo, quando si stampa sui nuovi materiali quali acciaio alto resistenziale, acciaio martensitico o alluminio. È necessaria la combinazione ottimale tra tenacità, resistenza all'usura e resistenza alla compressione. Oggi, con le nuove **Advanced Tooling Solutions**, Moeller offre una linea completa di punzoni standard in materiale **PM-M4**. Il **PM-M4** garantisce un eccezionale equilibrio tra tenacità, resistenza all'usura e resistenza alla trazione, risultando ottimale anche nelle applicazioni più esigenti.

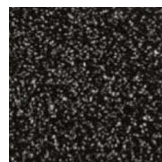
PM-M4 vs M2 Punches

*It is no longer just a question of TOUGHNESS vs. WEAR. Want to improve tool life and reduce downtime while stamping modern materials, such as high strength, martensitic steel, and aluminum? You need the optimum combination of toughness, wear resistance, and superior compressive strength. Moeller's new **Advanced Tooling Solutions** now offer a complete line of standard **PM-M4** punches. **PM-M4** provides an outstanding balance of toughness, wear resistance, and tensile strength, and will perform in the most demanding applications.*



Microstruttura acciaio sinterizzato standard non PM. Le particelle di carburo sono distribuite in maniera grossolana, non uniforme. Aumento del rischio di scheggiatura e rotture premature.

Standard (Non-PM) tool steel cross section. Large non-uniform, disbursement of carbides allow cracking, chipping and premature wear.



Microstruttura acciaio PM-M4. Le particelle di carburo sono fini e distribuite in maniera uniforme diminuendo il rischio di scheggiature e rotture.

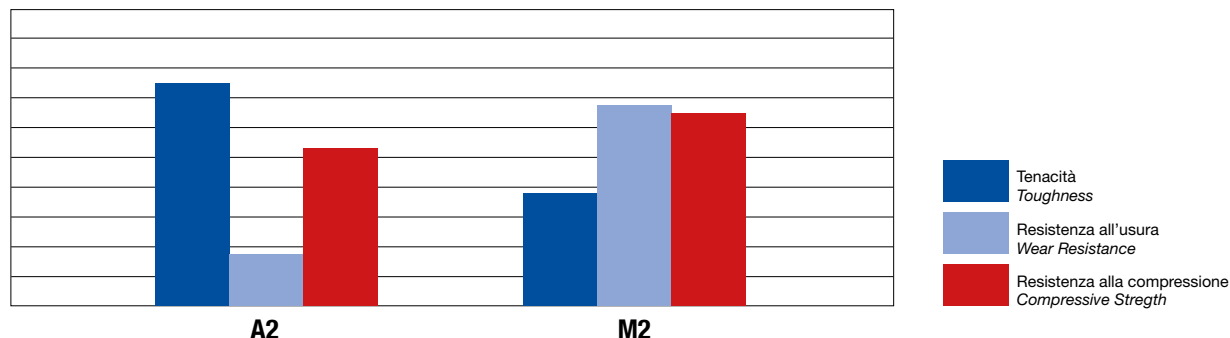
PM-M4 microstructure is uniform with fine disbursement of carbides providing greatly improved performance.

Matrici in M2 vs in A2

Lo stampaggio sulle lamiere moderne non richiede unicamente prestazioni superiori da parte del punzone. Anche per le matrici si richiede un aumento di rendimento. Le matrici Moeller **Advanced Tooling** in M2 offrono una resistenza all'usura notevolmente maggiore rispetto a quelle in A2, e sono la soluzione a gran parte dei problemi di usura prematura e rottura delle stesse durante lo stampaggio.

M2 vs A2 die button

*Stamping modern materials does not only require superior punch performance. The mating die buttons are also under increased demand. Moeller's **Advanced Tooling** M2 die buttons offer greatly increased wear resistance over A2 die buttons, and are the solution to many of the problems associated with premature wear and edge breakdown.*



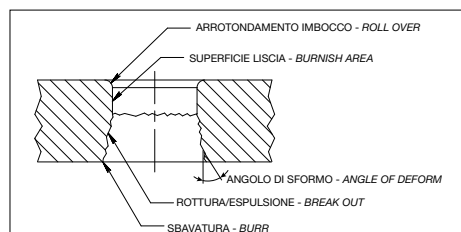
Contattaci per conoscere la nostra vasta gamma di soluzioni per le tue applicazioni avanzate, tra cui i nuovi rivestimenti per prestazioni superiori, i portapunzoni più idonei; per creare un punzone con una resistenza senza pari.

Contact us to learn about our wide array of advanced solutions for your advanced application, including specialized performance coatings, unique punch configurations for unparalleled strength, and exclusive retainer geometry for improved punch retention.

Gioco Punzone-Matrice *Punch & Die Clearances*

Il gioco tra punzone e matrice è basato sulla tipologia del materiale, spessore del materiale, finitura richiesta del foro e la durata prevista. È espresso in percentuale sullo spessore del materiale stampato. È importante ricordare che il punzone determina la dimensione del foro e la matrice determina la dimensione della pastiglia. Di regola, un gioco ottimale consente una tranciatura piatta, taglio netto con un minimo di carico necessario. Un gioco insufficiente determina una sbavatura minima, ma la vita del punzone diminuisce a causa del grosso sforzo. Un eccessivo gioco tra punzone e matrice determina una deformazione e un'imboccatura eccessiva ma aumenta la vita del punzone. Qui di seguito alcune linee guida per diversi tipi di materiali stampati. I valori indicati si riferiscono al gioco totale delle matrici per un uso generale con punzoni senza eiettore. Raddoppiando il gioco e usando punzoni con l'eiettore, la durata prevista risulterà notevolmente più lunga. La maggior parte dell'usura punzoni è dovuta dalle forze di strisciamento durante la fase di estrazione. L'aumento del gioco e l'uso di punzoni con l'eiettore aiuta a mantenere l'usura dei punzoni al minimo.

Clearance between punch and die is based upon type of material being stamped, material thickness, finish requirement of hole and anticipated tool life. It is expressed as a total percentage of material thickness being stamped. It is important to remember that the punch determines hole size and the die determines slug size. As a rule, optimal clearance provides flat, sharp and clean punching with minimum tool load. Insufficient clearance results in minimum burr and rollover, but tool life is shortened due to high tool loads. Excessive clearance results in deformation and larger rollover but increased tool life. Below are some general guidelines for different types of material being stamped. The values shown are recommended total die clearance for general purpose holes using non-ejector punches. By doubling the amount of clearance and using ejector punches, anticipated tool life will be greatly increased. Most of the punch wear is produced by strip-ping forces when the punch is being withdrawn. The increased clearance by using ejector punches helps keep tool wear to a minimum.



Materiale	Material	Soft	Hard
Alluminio	Aluminum	10%	20%
Ottone/Rame	Brass/Copper	6%	15%
Acciaio (poco carbonio)	Steel (Low Carbon)	10%	12%
Acciaio (molto carbonio)	Steel (High Carbon)	18%	20%

Suggerimenti sulle applicazioni dei trattamenti superficiali *Suggested surface treatment applications*

	FORMATURA & ESTRUSIONE <i>Forming & extruding</i>					FORATURA & TAGLIO <i>Piercing & trimming</i>			
	Dis/Flangiatura <i>Draw/Flange</i>	Estrusione <i>Extruding</i>	Forgiatura <i>Forging</i>	Formatura a caldo <i>Hot Forming</i>	Coniatura/ Goffratura <i>Coin/Emboss</i>	Forare & Tagliare <i>Pierce & Trim</i>	Stampaggio a caldo <i>Hot Stamping</i>	Tranciatura fine <i>Fine Blanking</i>	Rifilare/Cesoiare <i>Shave/Lance</i>
Acciai non legati <i>Non-alloyed Steel</i>	TAN	TAN MWU* ACD	TAN MWU* ACD	TAN MWU* ACD	TCN TAN MTN	TAN ACE	ACE TAN TCN	TCN ACE ACA	TCN ACE
Acciai < 250 Mpa <i>Steel < 250 Mpa</i>	TIN TCN	ACE MWU* ACD MTN			TCN MTN	TIN TCN		TCN ACE	TIN TCN ACE
Acciai < 400 Mpa <i>Steel < 400 Mpa</i>	TCN ACE	ACE MWU*			TCN ACE	ACE MWU* ACA		TAN ACE	TAN TCN ACE
Acciai ad alta resistenza <i>High Strength Steels</i>	ACE TCN	ACE TCN TAN		ACE MWU* ACD	TCN ACE MWU*	ACE MWU* ACA	ACE TCN MWU* ACA	TAN ACE	TAN ACE
Alluminio** <i>Aluminum**</i>	MAY	MAY	MAY		MAY TCN	MAY		MAY	MAY
Acciai inossidabili <i>Stainless Steels</i>	TCN ACE MWU* ACD	TCN ACE MWU* ACD	TCN ACE MWU* ACD		TCN MWU* ACD	ACE TCN MWU* ACA MSP		ACE TCN	ACE TCN
Ottone/Bronzo/Rame <i>Brass/Bronze/Copper</i>	CRN ACD	CRN MWU* ACD	CRN MWU* ACD		CRN MWU* ACD	CRN ACE TAN		CRN ACE TAN	CRN ACE TAN
Leghe esotiche <i>Exotic Alloys</i>	ACO	ACO	ACO		ACO	ACO		ACO	ACO

*M-Wear Ultra include la finitura superficiale eseguita da Moeller (ESF).
* M-Wear Ultra includes Moeller's Enhanced Surface Finish (ESF).

**La finitura superficiale eseguita da Moeller ESF è consigliata per tutte le applicazioni sull'alluminio.
** Moeller Enhanced Surface Finish ESF is recommended for all aluminum applications.

TIN Titanium Nitride (TiN)
TCN Titanium Carbonitride (TiCN)
TAN Titanium Aluminum Nitride (TiAlN)
ACA Alcrona EVO Advanced
ACD Alcrona EVO Duplex
ACE Alcrona EVO (AlCrN-based)
ACO Alcronos

CRN Chromium Nitride (CRN)
ESF Enhanced Surface Finish
MAY Mayura DLC

MWU* M-Wear Ultra
MSP Moeller Special Process
MTN M-Tride