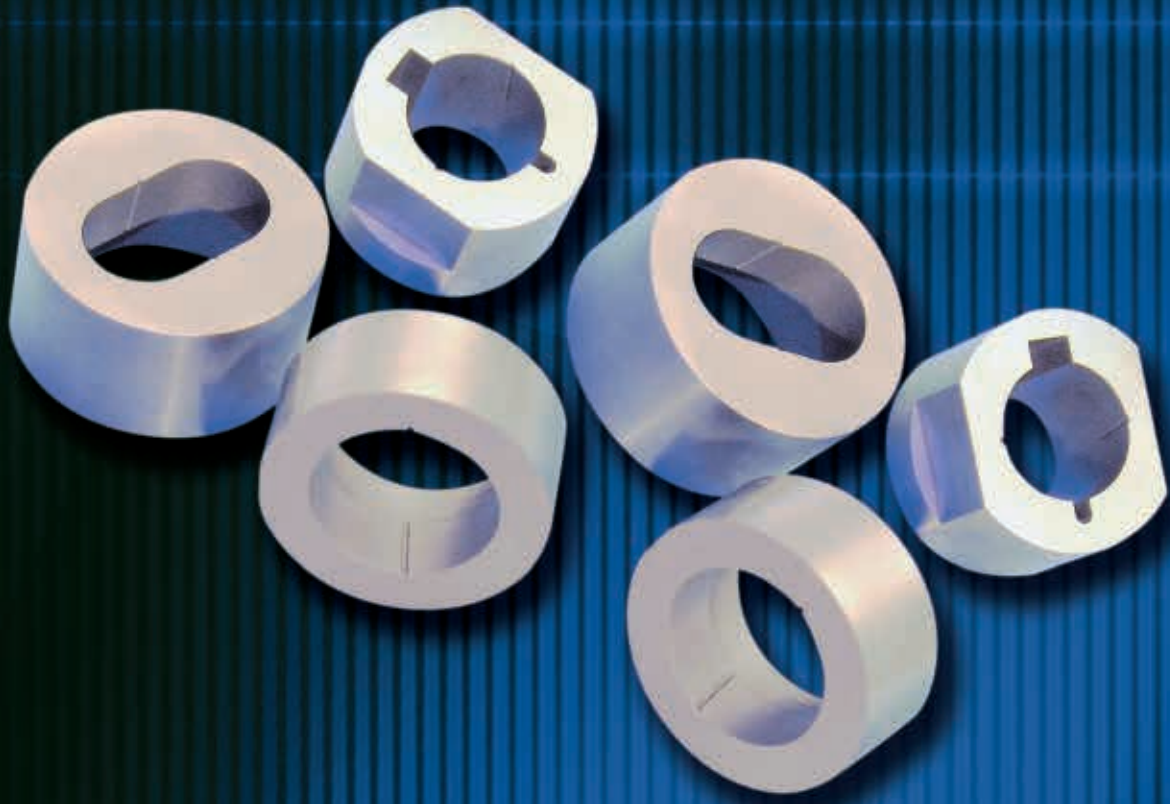


tipco»
PUNCH INC.

Metric Catalog





The Slug Keeper™

It keeps... money in your pocket!

Any experienced tool and die maker knows the cost of pulling a slug. A pulled slug can crash an entire die, shutting down your press operations for expensive die repairs and lost production on the line!

Tipco's Slug Keeper™ (TSK) solves the problem of pulling slugs with its unique design. The Slug Keeper's™ strategically placed grooves capture the slug and virtually eliminate the possibility of it coming back out of the die button. This machined groove guards your bottom line and keeps your high production presses running.














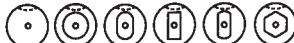




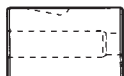


The Slug Keeper™ causes no engineering or part quality concerns, yet provides the value-added reassurance that slugs will stay firmly in the die button. No pulled slugs. No down time. No problems.

The next time you order a die button, make sure you have The Slug Keeper™ watching over YOUR bottom line.

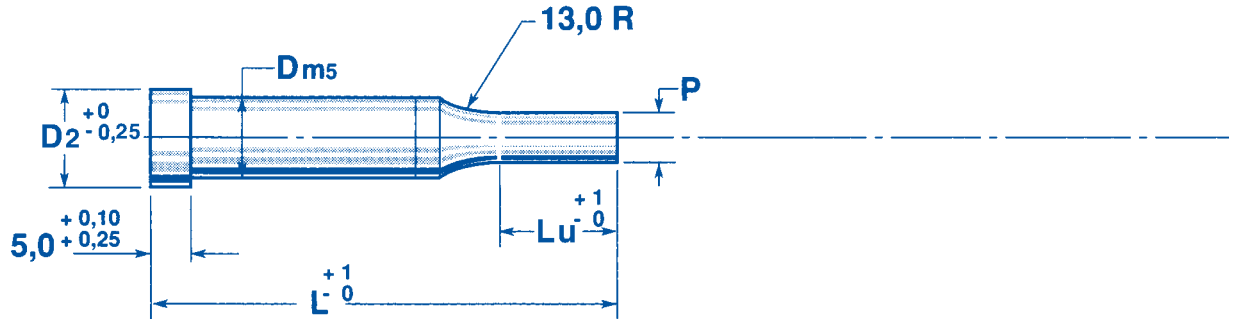
(Note - When placing your next order, simply add the letters TSK to the end of the Tipco part number for the Tipco Slug Keeper™ feature.)

tipco»
INC.

Worldwide locations and contact information on back

	<u>Part #</u>	<u>Page:</u>
 	a) Punch - headed MT b) Punch - headed flexible MF	2 4
 	Punch - headed ejector.....	ME 6
  	a) Die - headed, step relief b) Die - headless, step relief.....	MH 8 MD 10
  	a) Die - headed, taper relief b) Die - headless, taper relief	MFH 12 MFD 14
Die - headed, wire		MFHW 16
Die - headless, wire		MFDW 17
 	Punch - ball lock light duty	MBL 18
 	Punch - ball lock light duty ejector	MBLE 20
 	Punch - ball lock heavy duty	MBH 22
 	Punch - ball lock heavy duty ejector	MBHE 24
 	Die - ball lock	MBLD 26
Die - ball lock, wire		MFBLDW 28
Punch - ball lock heavy duty, knob-style		MBHK, MBHEK 29
Punch - ball lock light duty, knob-style		MBLK, MBLEK 29
Retainers - for ball lock punches		MTHR, MTLR 30
Retainers - for headed punches		ART, ARTS 31
Punch - headed, center dowel.....		MC 32
Punch - headed ejector, center dowel.....		MCE 34
Punches - pilot, angle-point		MTA, MFA, MBLA, MBHA 36
Punches - Close Space		MCSA, MCSB, MCSAP, MCSBP 37
Urethane Strippers		MU- 38
Ejector Kits		MK- 39
 Qualified Shapes.....		40
Ordering Example.....		41
Alterations.....		42
Locking Methods		43
ISO Tolerances Chart.....		44

MT
punch



Mat.: M2

RC: 60-62

D	D2	Lu	L							
			50	56	63	71	80	90	100	
5,0	8,0	7	X	X	X	X	X	X		
6,0	9,0	13	X	X	X	X	X	X	X	
8,0	11,0	13	X	X	X	X	X	X	X	
10,0	13,0	13	X	X	X	X	X	X	X	
13,0	16,0	13	X	X	X	X	X	X	X	
16,0	19,0	19	X	X	X	X	X	X	X	
20,0	23,0	19		X	X	X	X	X	X	
25,0	28,0	25		X	X	X	X	X	X	
32,0	35,0	25		X	X	X	X	X	X	

When ordering specify:
Bestellbeispiel:

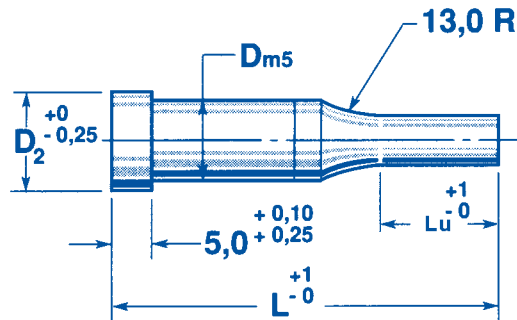
Pour commander:
Especifique Cuando Ordene:

Qty.:	Mat.	Cat. No.	D	L	W	P
6	M2	MTO	13	x 90	x 6,0	x 10,2 SF*

	MTB	MTC	MTO	MTR	MTL	MTF	MTH	MTP					
	<i>W & P = +/- 0,01</i>												
	MTB	MTC	MTO	MTR	MTL	MTF	MTH	MTP					
	D	P	MIN W	MAX P	MIN W	MAX G	MIN W	MAX G	MIN W	MAX P	MIN W	MAX G	P
	5,0	1,0-4,99	1,0	4,99	1,0	4,99	1,0	4,99	1,0	4,99	1,0	4,99	0,99-4,99
	6,0	1,6-5,99	1,6	5,99	1,6	5,99	1,6	5,99	1,6	5,99	1,6	5,99	1,99-5,99
	8,0	2,5-7,99	2,0	7,99	2,0	7,99	2,0	7,99	2,0	7,99	2,0	7,99	2,4-7,99
	10,0	4,0-9,99	3,5	9,99	3,5	9,99	3,5	9,99	3,5	9,99	3,5	9,99	3,9-9,99
	13,0	5,0-12,99	4,5	12,99	4,5	12,99	4,5	12,99	4,5	12,99	4,5	12,99	4,9-12,99
	16,0	8,0-15,99	6,0	15,99	6,0	15,99	6,0	15,99	6,0	15,99	6,0	15,99	7,9-15,99
	20,0	12,0-19,99	8,0	19,99	8,0	19,99	8,0	19,99	8,0	19,99	8,0	19,99	11,9-19,99
	25,0	16,5-24,99	10,0	24,99	10,0	24,99	10,0	24,99	10,0	24,99	10,0	24,99	15,0-24,99
	32,0	20,0-31,99	10,0	31,99	10,0	31,99	10,0	31,99	10,0	31,99	10,0	31,99	19,9-31,99

- * For key-flats and other locating methods, see page 43.
- * Fuer Arretierungsflaechen und Verdrehsicherungen, siehe Seite 43.
- * Methodes de loaclisation voir page 43.
- * Para claves y otros metodos de localizar ver pagina 43.

MF
punch



Mat.: M2 - RC: 60-62

PS (available) - RC: 63-65

D	D ₂	Lu			L							
		13	19	25	50	56	63	71	80	90	100	
5,0	8,0	X			X	X	X	X	X	X		
6,0	9,0	X	X		X	X	X	X	X	X	X	
8,0	11,0	X	X	X	X	X	X	X	X	X	X	
10,0	13,0	X	X	X	X	X	X	X	X	X	X	
13,0	16,0	X	X	X	X	X	X	X	X	X	X	
16,0	19,0	X	X	X	X	X	X	X	X	X	X	
20,0	23,0	X	X	X	X	X	X	X	X	X	X	
25,0	28,0	X	X	X		X	X	X	X	X	X	
32,0	35,0	X	X	X		X	X	X	X	X	X	

When ordering specify:
Bestellbeispiel:

Pour commander:
Especifique Cuando Ordene:

Qty.:	Mat.	Cat. No.	D	L	W	P	Lu
24	M2	MFF	10	x 71	x 4,2	x 8,6	Lu19

MFB	MFC	MFO	MFR	MFL	MFF	MFH	MFP					
<i>W & P = +/- 0,01</i>												
MFB	MFC	MFO	MFR	MFL	MFF	MFH	MFP					
D	P	MIN W	MAX P	MIN W	MAX G	MIN W	MAX G	MIN W	MAX P	MIN W	MAX G	P
5,0	1,0-4,99	1,5	4,99	1,5	4,99	1,5	4,99	1,5	4,99	1,5	4,99	0,99-4,99
6,0	1,6-5,99	1,6	5,99	1,6	5,99	1,6	5,99	1,6	5,99	1,6	5,99	1,99-5,99
8,0	2,5-7,99	2,5	7,99	2,5	7,99	2,5	7,99	2,5	7,99	2,5	7,99	2,4-7,99
10,0	4,0-9,99	3,5	9,99	3,5	9,99	3,5	9,99	3,5	9,99	3,5	9,99	3,9-9,99
13,0	5,0-12,99	4,5	12,99	4,5	12,99	4,5	12,99	4,5	12,99	4,5	12,99	4,9-12,99
16,0	8,0-15,99	6,0	15,99	6,0	15,99	6,0	15,99	6,0	15,99	6,0	15,99	7,9-15,99
20,0	12,0-19,99	8,0	19,99	8,0	19,99	8,0	19,99	8,0	19,99	8,0	19,99	11,9-19,99
25,0	16,5-24,99	10,0	24,99	10,0	24,99	10,0	24,99	10,0	24,99	10,0	24,99	15,0-24,99
32,0	20,0-31,99	10,0	31,99	10,0	31,99	10,0	31,99	10,0	31,99	10,0	31,99	19,9-31,99

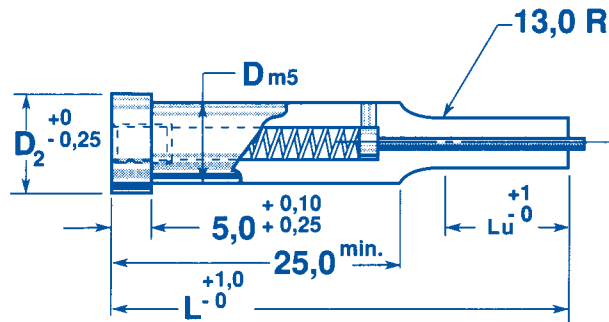
* For key-flats and other locating methods, see page 43.

* Fuer Arretierungsflaechen und Verdrehsicherungen, siehe Seite 43.

* Methodes de loaclisation voir page 43.

* Para claves y otros metodos de localizar ver pagina 43.

ME
punch



Mat.: M2 - RC: 60-62

PS (available) - RC: 63-65

D	D ₂	Lu				L						
		7	13	19	25	50	56	63	71	80	90	100
5,0	8,0	X	X			X	X	X	X	X	X	
6,0	9,0	X	X			X	X	X	X	X	X	X
8,0	11,0	X	X			X	X	X	X	X	X	X
10,0	13,0		X	X	X	X	X	X	X	X	X	X
13,0	16,0		X	X	X	X	X	X	X	X	X	X
16,0	19,0		X	X	X	X	X	X	X	X	X	X
20,0	23,0		X	X	X	X	X	X	X	X	X	X
25,0	28,0		X	X	X		X	X	X	X	X	X
32,0	35,0		X	X	X		X	X	X	X	X	X

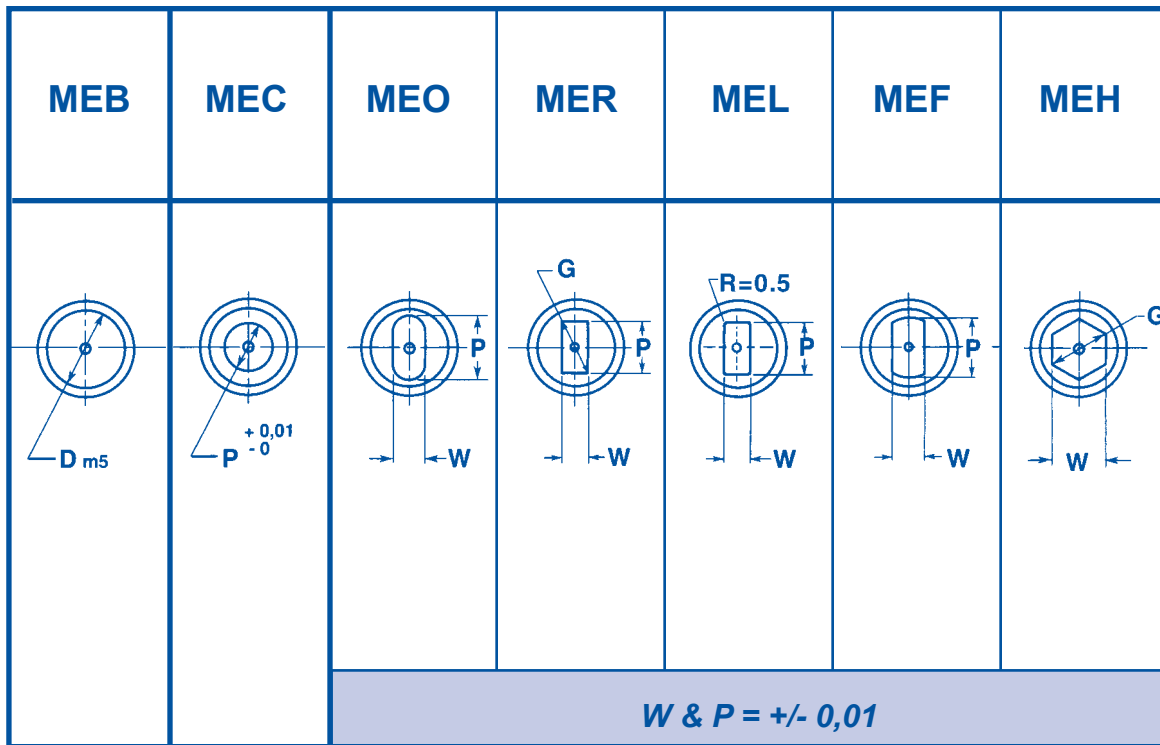
When ordering specify:

Bestellbeispiel:

Pour commander:

Especifique Cuando Ordene:

Qty.: Mat. Cat. No. D L P Lu
24 M2 MEC 20 x 80 x 16,2 Lu19

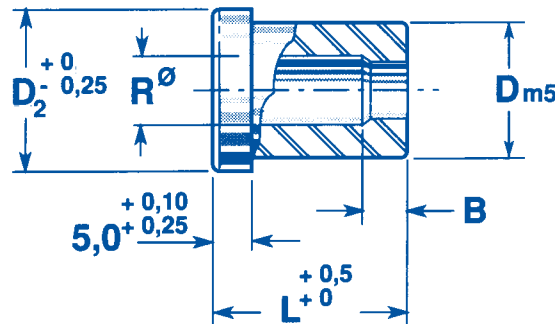


MEB	MEC	MEO	MER	MEL	MEF	MEH
-----	-----	-----	-----	-----	-----	-----

D	P	MIN W	MAX P	MIN W	MAX G	MIN W	MAX G	MIN W	MAX P	MIN W	MAX G	D
5,0	2,0-4,99	2,0	4,99	2,0	4,99	2,0	4,99	2,0	4,99	2,0	4,99	5,0
6,0	2,5-5,99	2,0	5,99	2,0	5,99	2,0	5,99	2,0	5,99	2,0	5,99	6,0
8,0	3,0-7,99	2,0	7,99	2,0	7,99	2,0	7,99	2,0	7,99	2,0	7,99	8,0
10,0	4,0-9,99	3,5	9,99	3,5	9,99	3,5	9,99	3,5	9,99	3,5	9,99	10,0
13,0	5,0-12,99	4,5	12,99	4,5	12,99	4,5	12,99	4,5	12,99	4,5	12,99	13,0
16,0	8,0-15,99	6,0	15,99	6,0	15,99	6,0	15,99	6,0	15,99	6,0	15,99	16,0
20,0	12,0-19,99	8,0	19,99	8,0	19,99	8,0	19,99	8,0	19,99	8,0	19,99	20,0
25,0	16,5-24,99	10,0	24,99	10,0	24,99	10,0	24,99	10,0	24,99	10,0	24,99	25,0
32,0	20,0-31,99	10,0	31,99	10,0	31,99	10,0	31,99	10,0	31,99	10,0	31,99	32,0

- * For key-flats and other locating methods, see page 43.
- * Fuer Arretierungsflaechen und Verdrehsicherungen, siehe Seite 43.
- * Methodes de loaclisation voir page 43.
- * Para claves y otros metodos de localizar ver pagina 43.

MH
die



Mat.: M2

RC: 60-62

Available in quantities of 25 or more only. For smaller quantities see MFH on page 12.

D	D ₂	R,max	B	L					
				16	20	25	30	32	35
5,0	8,0	2,8	2,0	X	X	X			
6,0	9,0	3,5	3,0	X	X	X			
8,0	11,0	4,0	4,0	X	X	X	X	X	
10,0	13,0	5,8	4,0	X	X	X	X	X	
13,0	16,0	8,0	5,0		X	X	X	X	
16,0	19,0	9,5	5,0		X	X	X	X	X
20,0	23,0	12,0	8,0		X	X	X	X	X
25,0	28,0	17,3	8,0		X	X	X	X	X
32,0	35,0	20,7	8,0		X	X	X	X	X
40,0	43,0	27,7	8,0		X	X	X	X	X
50,0	53,0	37,0	8,0		X	X	X	X	X

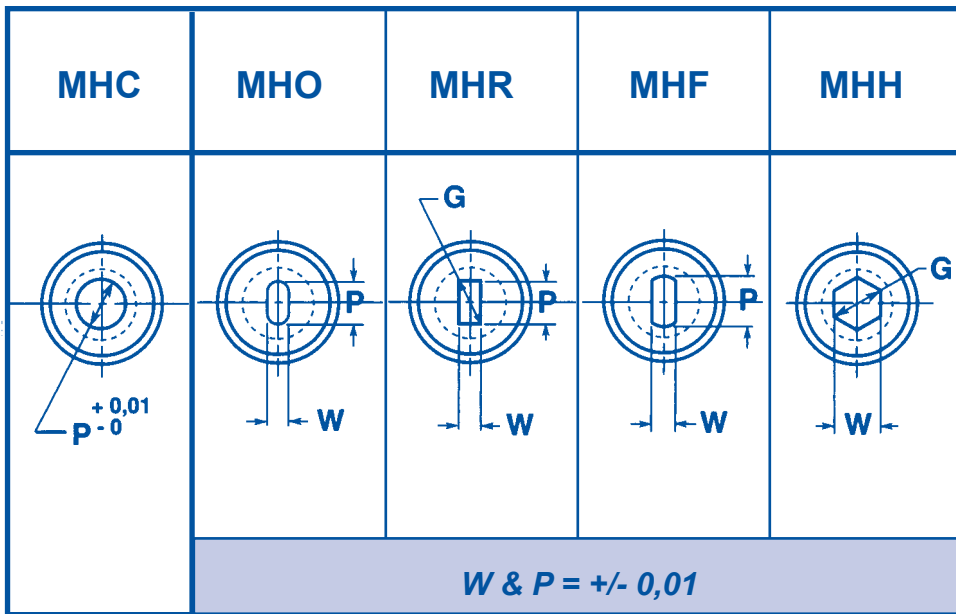
When ordering specify:

Pour commander:

Bestellbeispiel:

Especifique Cuando Ordene:

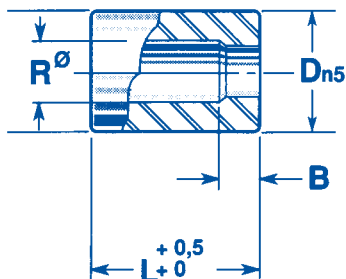
Qty.: 6 Mat.: M2 Cat.No.: MHR D: 20 L: x 25 W: x 6.0 P: x 7.0 SF 135 ° *



MHC	MHO	MHR	MHF	MHH	D				
P	MIN W	MAX P	MIN P,W	MAX G	MIN W	MAX P	MIN W	MAX G	D
1,0-2,4									5,0
1,6-3,0									6,0
2,0-3,5									8,0
3,0-5,0	1,5	5,0	1,5	5,0	1,5	5,0	1,5	5,0	10,0
4,0-7,2	2,0	7,2	2,0	7,2	2,0	7,2	2,0	7,2	13,0
6,0-8,8	4,0	8,8	4,0	8,8	4,0	8,8	4,0	8,8	16,0
7,5-11,3	6,0	11,3	6,0	11,3	6,0	11,3	6,0	11,3	20,0
11,0-16,6	8,0	16,6	8,0	16,6	8,0	16,6	8,0	16,6	25,0
15,0-20,0	9,0	20,0	9,0	20,0	9,0	20,0	9,0	20,0	32,0
18,0-27,0	10,0	27,0	10,0	27,0	10,0	27,0	10,0	27,0	40,0
26,0-36,0									50,0

- * For key-flats and other locating methods, see page 43.
- * Fuer Arretierungsflaechen und Verdrehsicherungen, siehe Seite 43.
- * Methodes de loaclisation voir page 43.
- * Para claves y otros metodos de localizar ver pagina 43.

MD
die



Mat.: M2

RC: 60-62

D	R,max	B	L					
			16	20	25	30	32	35
5,0	2,8	2,0	X	X	X			
6,0	3,5	3,0	X	X	X			
8,0	4,0	4,0	X	X	X	X	X	
10,0	5,8	4,0	X	X	X	X	X	
13,0	8,0	5,0		X	X	X	X	
16,0	9,5	5,0		X	X	X	X	X
20,0	12,0	8,0		X	X	X	X	X
25,0	17,3	8,0		X	X	X	X	X
32,0	20,7	8,0		X	X	X	X	X
40,0	27,7	8,0		X	X	X	X	X
50,0	37,0	8,0		X	X	X	X	X

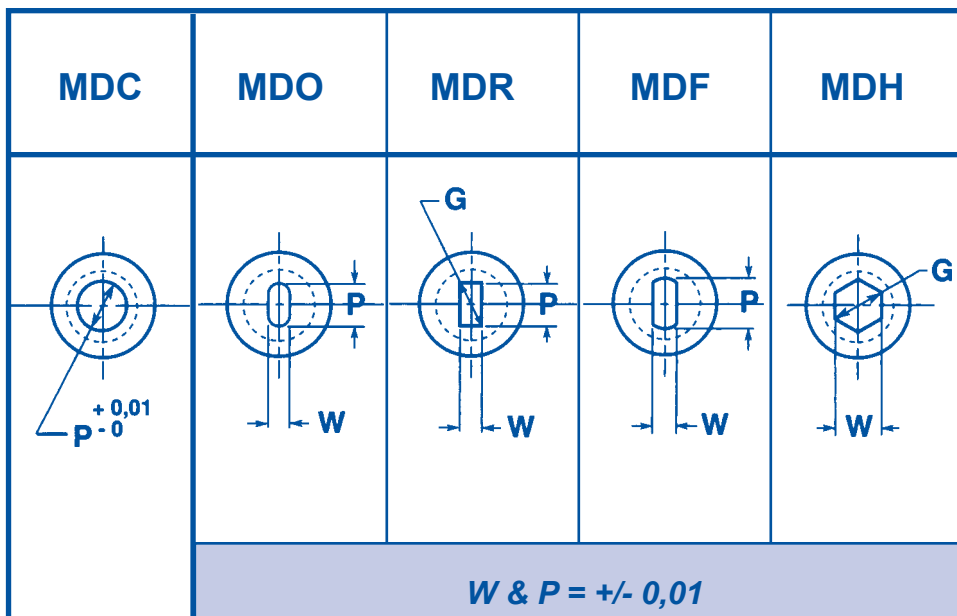
When ordering specify:

Pour commander:

Bestellbeispiel:

Especifique Cuando Ordene:

Qty.:	Mat.	Cat. No.	D	L	W	P
6	M2	MDR	20 x 25	x	6,0	x 7,0 SF4 @ 135° *



	MDC	MDO	MDR	MDF	MDH					
	P	MIN W	MAX P	MIN P,W	MAX G	MIN W	MAX P	MIN W	MAX G	D
	1,0-2,4									5,0
	1,6-3,0									6,0
	2,0-3,5									8,0
	3,0-5,0	1,5	5,0	1,5	5,0	1,5	5,0	1,5	5,0	10,0
	4,0-7,2	2,0	7,2	2,0	7,2	2,0	7,2	2,0	7,2	13,0
	6,0-8,8	4,0	8,8	4,0	8,8	4,0	8,8	4,0	8,8	16,0
	7,5-11,3	6,0	11,3	6,0	11,3	6,0	11,3	6,0	11,3	20,0
	11,0-16,6	8,0	16,6	8,0	16,6	8,0	16,6	8,0	16,6	25,0
	15,0-20,0	9,0	20,0	9,0	20,0	9,0	20,0	9,0	20,0	32,0
	18,0-27,0	10,0	27,0	10,0	27,0	10,0	27,0	10,0	27,0	40,0
	26,0-36,0									50,0

* For key-flats and other locating methods, see page 43.

* Fuer Arretierungsflaechen und Verdrehsicherungen, siehe Seite 43.

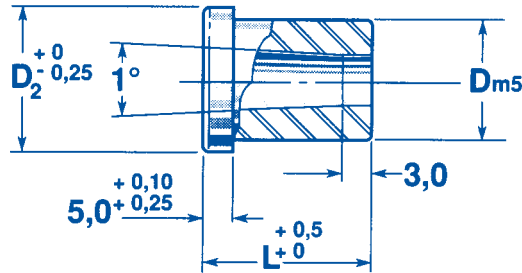
* Methodes de loaclisation voir page 43.

* Para claves y otros metodos de localizar ver pagina 43.

MFH
die

Mat.: M2

RC: 60-62



		L					
D	D ₂	20	25	30	32	35	
6,0	9,0	X	X				
8,0	11,0	X	X	X	X		
10,0	13,0	X	X	X	X	X	
13,0	16,0	X	X	X	X	X	
16,0	19,0	X	X	X	X	X	
20,0	23,0	X	X	X	X	X	
25,0	28,0	X	X	X	X	X	
32,0	35,0	X	X	X	X	X	
40,0	43,0	X	X	X	X	X	

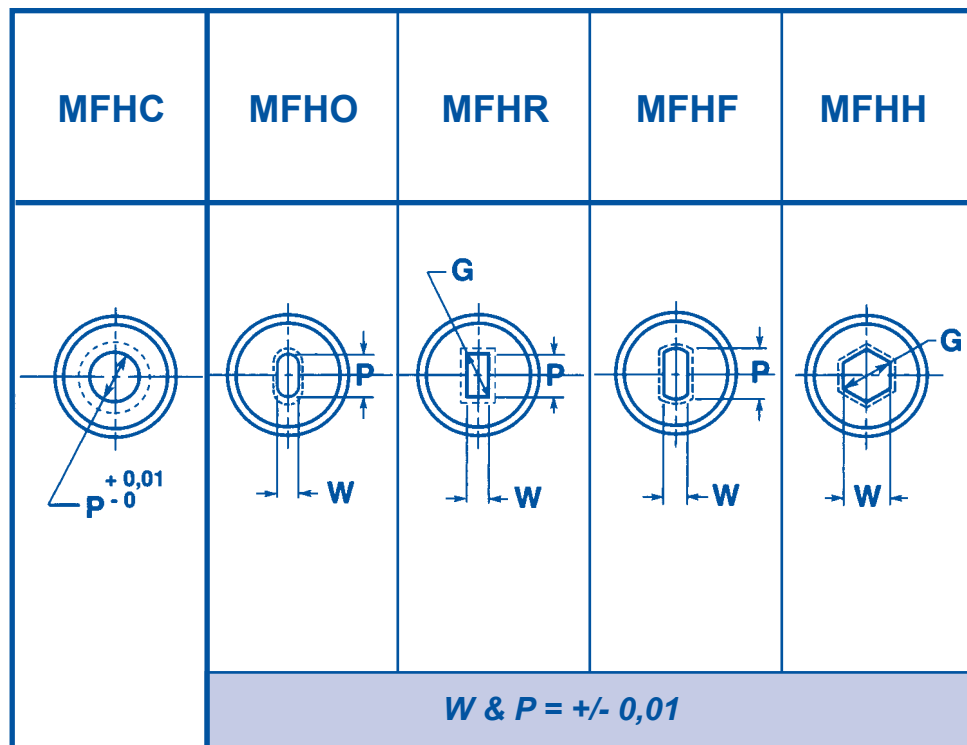
When ordering specify:

Bestellbeispiel:

Pour commander:

Especifique Cuando Ordene:

Qty.: Mat. Cat. No. D L W
16 M2 MFHH 13 x 32 x 5,0 SF 45° *

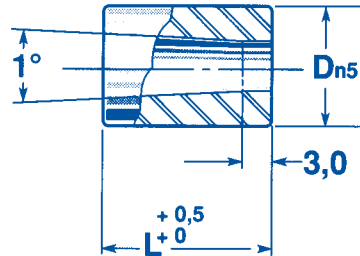


MFHC	MFHO		MFHR		MFHF		MFHH	
P	MIN W	MAX P	MIN P,W	MAX G	MIN W	MAX P	MIN W	MAX G

P	MIN W	MAX P	MIN P,W	MAX G	MIN W	MAX P	MIN W	MAX G	D
1,6-3,9	1,6	3,9	1,6	3,9	1,6	3,9	1,6	3,9	6,0
2,4-5,4	1,6	5,4	1,6	5,4	1,6	5,4	1,6	5,4	8,0
3,2-6,8	2,0	6,8	2,0	6,8	2,0	6,8	2,0	6,8	10,0
5,4-8,8	2,0	8,8	2,0	8,8	2,0	8,8	2,0	8,8	13,0
7,4-10,8	3,0	10,8	3,0	10,8	3,0	10,8	3,0	10,8	16,0
9,4-13,6	3,0	13,6	3,0	13,6	3,0	13,6	3,0	13,6	20,0
12,0-17,0	4,0	17,0	4,0	17,0	4,0	17,0	4,0	17,0	25,0
16,0-22,0	4,0	22,0	4,0	22,0	4,0	22,0	4,0	22,0	32,0
18,0-27,0	4,0	27,0	4,0	27,0	4,0	27,0	4,0	27,0	40,0

- * For key-flats and other locating methods, see page 43.
- * Fuer Arretierungsflaechen und Verdrehsicherungen, siehe Seite 43.
- * Methodes de loaclisation voir page 43.
- * Para claves y otros metodos de localizar ver pagina 43.

MFD
die



Mat.: M2

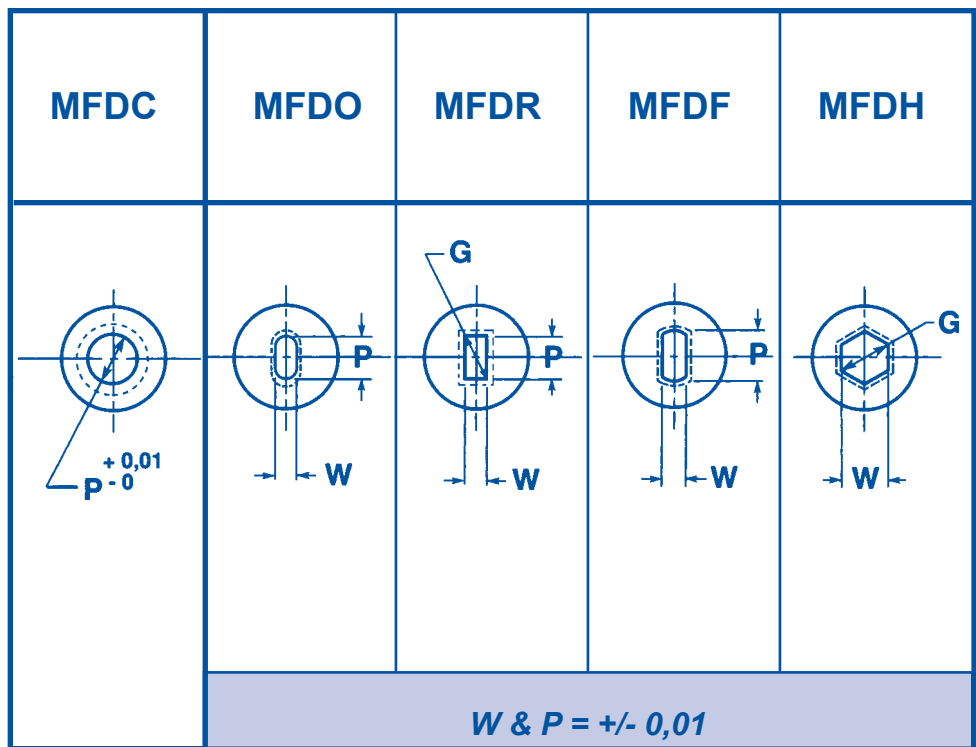
RC: 60-62

D	L					
	20	25	30	32	35	
6,0	X	X				
8,0	X	X	X	X		
10,0	X	X	X	X	X	
13,0	X	X	X	X	X	
16,0	X	X	X	X	X	
20,0	X	X	X	X	X	
25,0	X	X	X	X	X	
32,0	X	X	X	X	X	
40,0	X	X	X	X	X	

When ordering specify:
Bestellbeispiel:

Pour commander:
Especifique Cuando Ordene:

Qty.:	Mat.	Cat. No.	D	L	W	
16	M2	MFDH	13	x 32	x 5,0	SF4 @ 45° *



MFDC	MFDO	MFDR	MFDF	MFDH
------	------	------	------	------

	P	MIN W	MAX P	MIN P,W	MAX G	MIN W	MAX P	MIN W	MAX G	D
	1,6-3,9	1,6	3,9	1,6	3,9	1,6	3,9	1,6	3,9	6,0
	2,4-5,4	1,6	5,4	1,6	5,4	1,6	5,4	1,6	5,4	8,0
	3,2-6,8	2,0	6,8	2,0	6,8	2,0	6,8	2,0	6,8	10,0
	5,4-8,8	2,0	8,8	2,0	8,8	2,0	8,8	2,0	8,8	13,0
	7,4-10,8	3,0	10,8	3,0	10,8	3,0	10,8	3,0	10,8	16,0
	9,4-13,6	3,0	13,6	3,0	13,6	3,0	13,6	3,0	13,6	20,0
	12,0-17,0	4,0	17,0	4,0	17,0	4,0	17,0	4,0	17,0	25,0
	16,0-22,0	4,0	22,0	4,0	22,0	4,0	22,0	4,0	22,0	32,0
	18,0-27,0	4,0	27,0	4,0	27,0	4,0	27,0	4,0	27,0	40,0

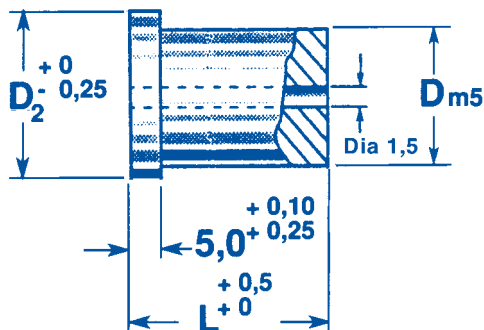
* For key-flats and other locating methods, see page 43.
 * Fuer Arretierungsflaechen und Verdrehsicherungen, siehe Seite 43.
 * Methodes de loaclisation voir page 43.
 * Para claves y otros metodos de localizar ver pagina 43.

MFHW

die

Mat.: M2

RC: 60-62



		L					
D	D ₂	16	20	25	30	32	35
5,0	8,0	X	X	X			
6,0	9,0	X	X	X			
8,0	11,0	X	X	X	X	X	
10,0	13,0	X	X	X	X	X	
13,0	16,0		X	X	X	X	
16,0	19,0		X	X	X	X	X
20,0	23,0		X	X	X	X	X
25,0	28,0		X	X	X	X	X
32,0	35,0		X	X	X	X	X
40,0	43,0		X	X	X	X	X
50,0	53,0		X	X	X	X	X

When ordering specify:
Bestellbeispiel:

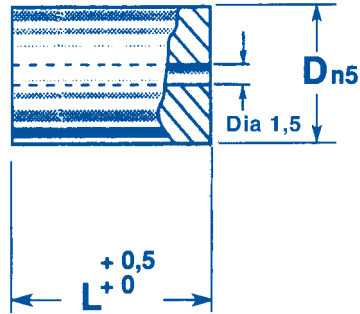
Pour commander:
Especifique Cuando Ordene:

Qty.:	Mat.	Cat. No.	D	L
6	M2	MFHW	16	x 25 SF

MFDW
die

Mat.: M2

RC: 60-62



	L					
D	16	20	25	30	32	35
5,0	X	X	X			
6,0	X	X	X			
8,0	X	X	X	X	X	
10,0	X	X	X	X	X	
13,0		X	X	X	X	
16,0		X	X	X	X	X
20,0		X	X	X	X	X
25,0		X	X	X	X	X
32,0		X	X	X	X	X
40,0		X	X	X	X	X
50,0		X	X	X	X	X

When ordering specify:

Bestellbeispiel:

Pour commander:

Especifique Cuando Ordene:

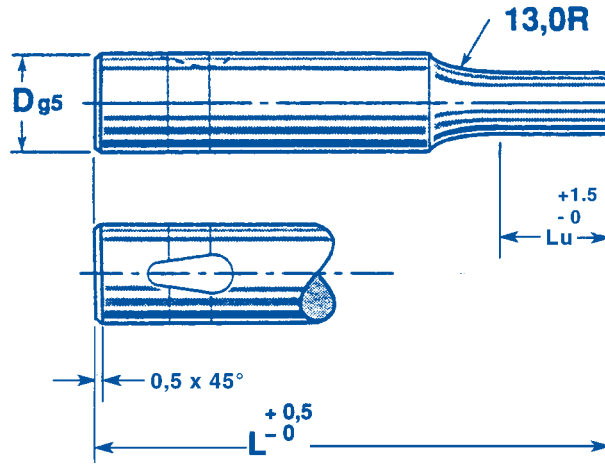
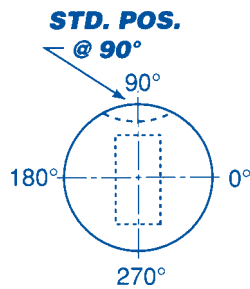
Qty.:	Mat.	Cat. No.	D	L
6	M2	MFDW	16 x	25 SF

MBL punch

S/T ≤ 3,0 mm

Mat.: M2

RC: 60-62



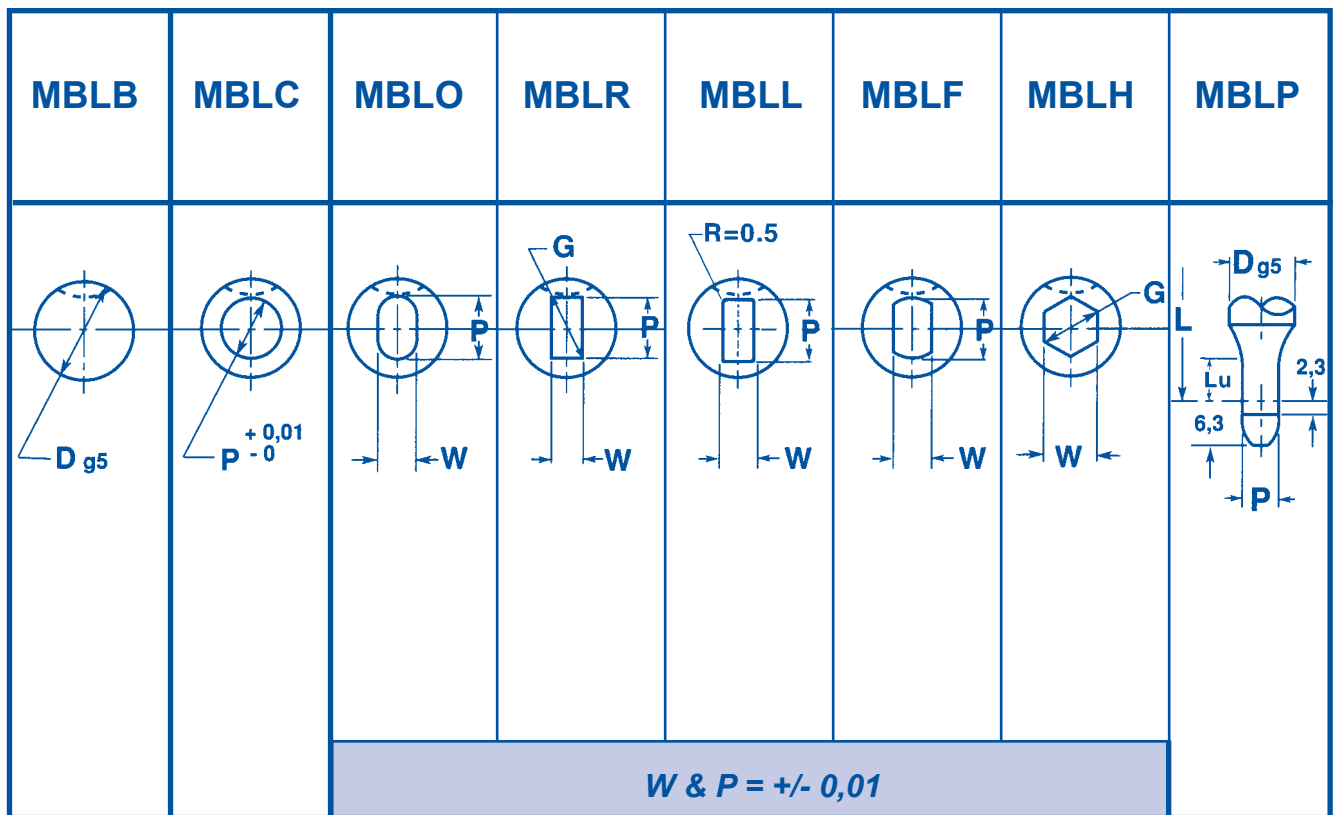
D	Lu - please specify			L						
	Std.	Alternate		50	56	63	71	80	90	100
6,0	13*			X	X	X	X	X	X	X
10,0	19*	13*		X	X	X	X	X	X	X
13,0	19	13		X	X	X	X	X	X	X
16,0	19	13	25		X	X	X	X	X	X
20,0	19	13	25		X	X	X	X	X	X
25,0	19	13	25			X	X	X	X	X
32,0	19	13	25				X	X	X	X
38,0	25	19	30					X	X	X

* Lu = 10 when P or W is below 2.20

When ordering specify:
Bestellbeispiel:

Pour commander:
Especifique Cuando Ordene:

Qty.: Mat. Cat. No. D L W P Lu
5 M2 MBLO 16 x 71 x 8,0 x 12,0 Lu 19

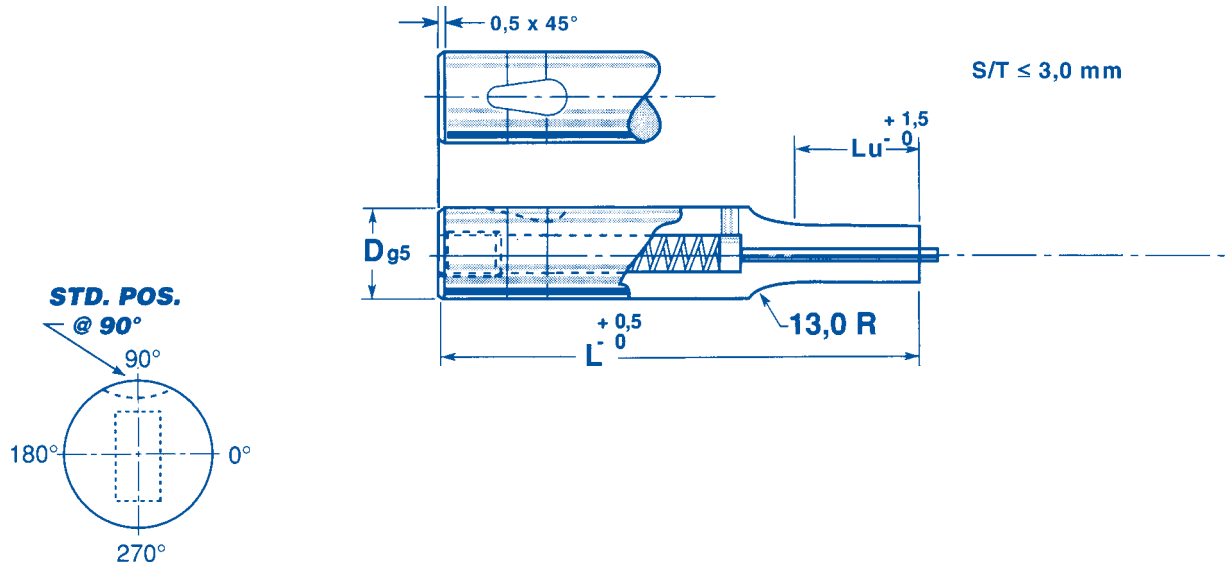


MBLB	MBLC	MBLO	MBLR	MBLL	MBLF	MBLH	MBLP					
D	P	MIN W	MAX P	MIN W	MAX G	MIN W	MAX G	MIN W	MAX P	MIN W	MAX G	P
6,0	1,6-5,9	1,6	5,9	1,6	5,9	1,6	5,9	1,6	5,9	1,6	5,9	1,6-5,9
10,0	1,6-9,9	1,6	9,9	1,6	9,9	1,6	9,9	1,6	9,9	1,6	9,9	3,2-9,9
13,0	5,0-12,9	4,5	12,9	4,5	12,9	4,5	12,9	4,5	12,9	4,5	12,9	5,0-12,9
16,0	8,0-15,9	6,0	15,9	6,0	15,9	6,0	15,9	6,0	15,9	6,0	15,9	8,0-15,9
20,0	12,0-19,9	8,0	19,9	8,0	19,9	8,0	19,9	8,0	19,9	8,0	19,9	12,0-19,9
25,0	16,0-24,9	10,0	24,9	10,0	24,9	10,0	24,9	10,0	24,9	10,0	24,9	16,0-24,9
32,0	24,0-31,9	12,5	31,9	12,5	31,9	12,5	31,9	12,5	31,9	12,5	31,9	24,0-31,9
38,0	30,0-37,9	14,0	37,9	14,0	37,9	14,0	37,9	14,0	37,9	14,0	37,9	30,0-37,9

MBLE punch

Mat.: M2

RC: 60-62



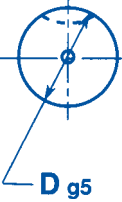






D	Lu - please specify			L						
	Std.	Alternate		50	56	63	71	80	90	100
6,0	13*			X	X	X	X	X	X	X
10,0	19*	13*		X	X	X	X	X	X	X
13,0	19	13		X	X	X	X	X	X	X
16,0	19	13	25			X	X	X	X	X
20,0	19	13	25			X	X	X	X	X
25,0	19	13	25			X	X	X	X	X
32,0	19	13	25				X	X	X	X
38,0	25	19	30					X	X	X

* Lu = 10 when P or W is below 2.20

When ordering specify:
Bestellbeispiel:

Pour commander:
Especifique Cuando Ordene:

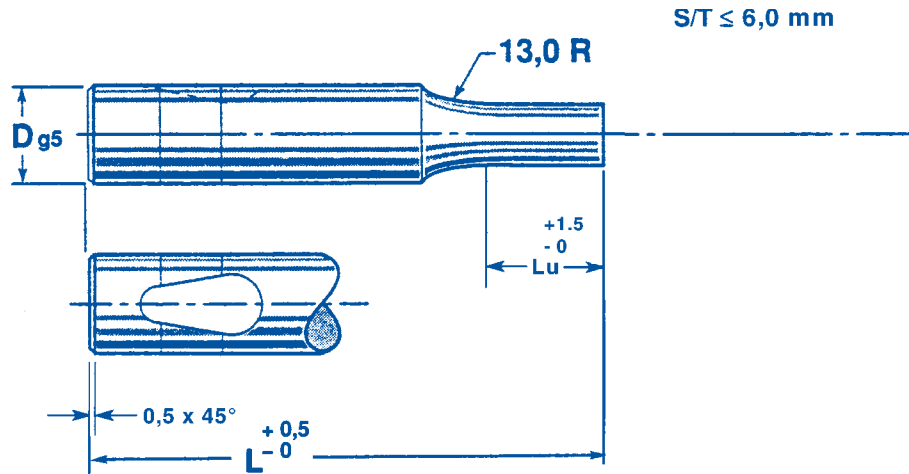
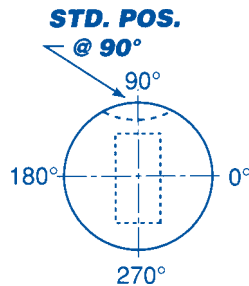
Qty.: Mat. Cat. No. D L W P Lu
5 M2 MBLEO 16 x 71 x 8,0 x 12,0 Lu13

	MBLEB	MBLEC	MBLEO	MBLER	MBLEL	MBLEF	MBLEH					
												
	<i>W & P = +/- 0,01</i>											
	MBLEB	MBLEC	MBLEO	MBLER	MBLEL	MBLEF	MBLEH					
	D	P	MIN W	MAX P	MIN W	MAX G	MIN W	MAX G	MIN W	MAX P	MIN W	MAX G
	6,0	1,6-5,9	1,6	5,9	1,6	5,9	1,6	5,9	1,6	5,9	1,6	5,9
	10,0	1,6-9,9	1,6	9,9	1,6	9,9	1,6	9,9	1,6	9,9	1,6	9,9
	13,0	5,0-12,9	4,5	12,9	4,5	12,9	4,5	12,9	4,5	12,9	4,5	12,9
	16,0	8,0-15,9	6,0	15,9	6,0	15,9	6,0	15,9	6,0	15,9	6,0	15,9
	20,0	12,0-19,9	8,0	19,9	8,0	19,9	8,0	19,9	8,0	19,9	8,0	19,9
	25,0	16,0-24,9	10,0	24,9	10,0	24,9	10,0	24,9	10,0	24,9	10,0	24,9
	32,0	24,0-31,9	12,5	31,9	12,5	31,9	12,5	31,9	12,5	31,9	12,5	31,9
	38,0	30,0-37,9	14,0	37,9	14,0	37,9	14,0	37,9	14,0	37,9	14,0	37,9

MBH
punch

Mat.: M2

RC: 60-62



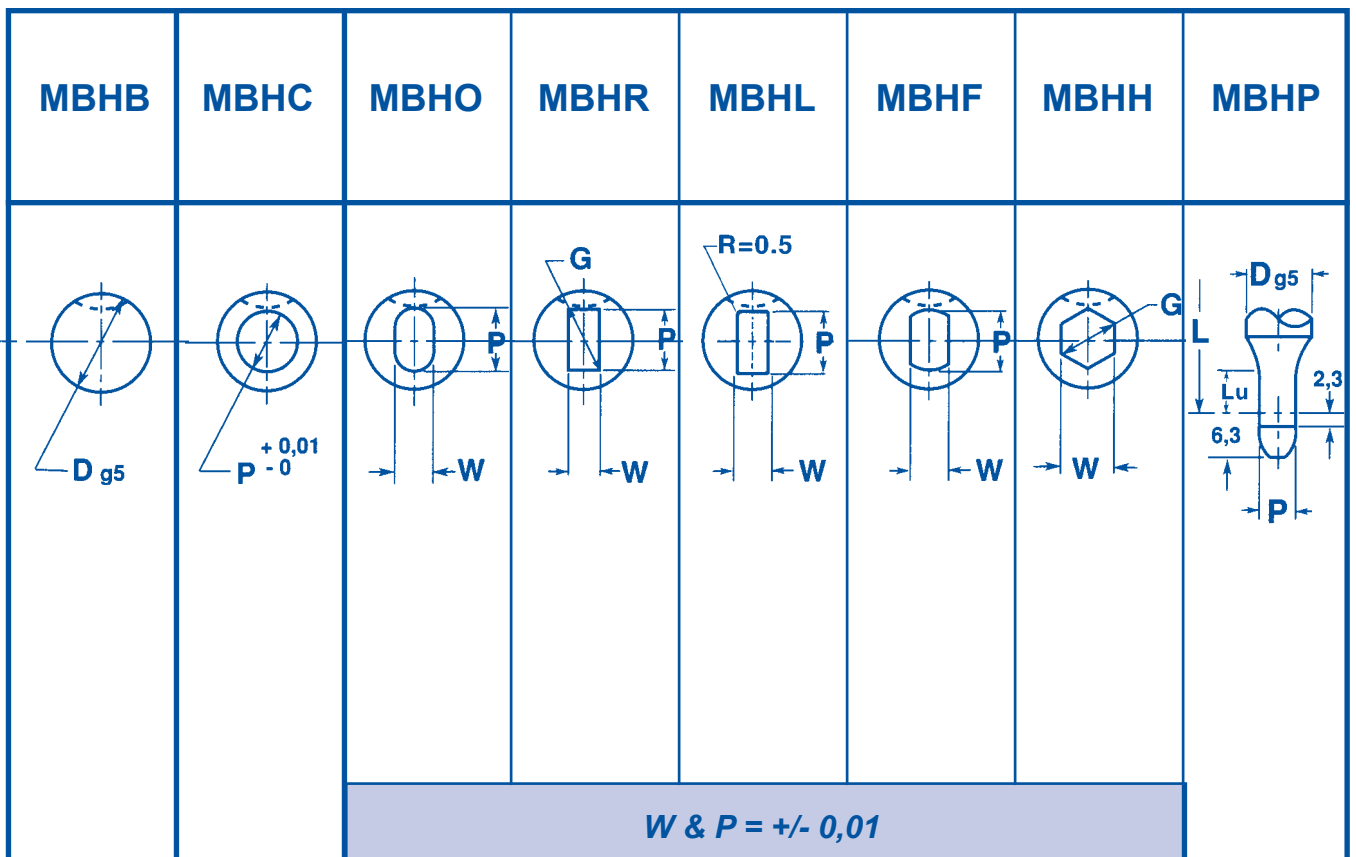
D	Lu - please specify			L						
	Std.	Alternate		63	71	80	90	100	110	125
10,0	19*	13*		X	X	X	X	X	X	X
13,0	19	13		X	X	X	X	X	X	X
16,0	19	13	25	X	X	X	X	X	X	X
20,0	19	13	25	X	X	X	X	X	X	X
25,0	19	13	25		X	X	X	X	X	X
32,0	19	13	25		X	X	X	X	X	X
40,0	25	19	30			X	X	X	X	X

* Lu = 10 when P or W is below 2.20

When ordering specify:
Bestellbeispiel:

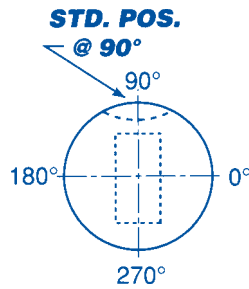
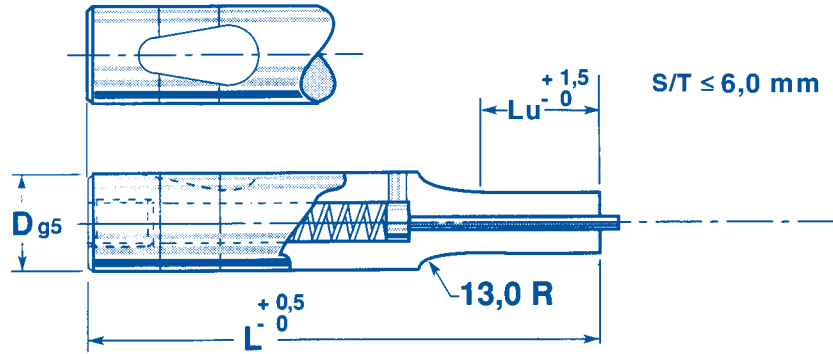
Pour commander:
Especifique Cuando Ordene:

Qty.: Mat. Cat. No. D L W P Lu
6 M2 MBHF 10 x 90 x 5,2 x 8,3 Lu13



	MBHB	MBHC	MBHO	MBHR	MBHL	MBHF	MBHH	MBHP					
	D	P	MIN W	MAX P	MIN W	MAX G	MIN W	MAX G	MIN W	MAX P	MIN W	MAX G	P
	10,0	1,6-9,9	1,6	9,9	1,6	9,9	1,6	9,9	1,6	9,9	1,6	9,9	2,5-9,9
	13,0	5,0-12,9	4,5	12,9	4,5	12,9	4,5	12,9	4,5	12,9	4,5	12,9	5,0-12,9
	16,0	8,0-15,9	6,0	15,9	6,0	15,9	6,0	15,9	6,0	15,9	6,0	15,9	8,0-15,9
	20,0	12,0-19,9	8,0	19,9	8,0	19,9	8,0	19,9	8,0	19,9	8,0	19,9	12,0-19,9
	25,0	16,0-24,9	10,0	24,9	10,0	24,9	10,0	24,9	10,0	24,9	10,0	24,9	16,0-24,9
	32,0	24,0-31,9	12,5	31,9	12,5	31,9	12,5	31,9	12,5	31,9	12,5	31,9	
	40,0	30,0-39,9	14,0	39,9	14,0	39,9	14,0	39,9	14,0	39,9	14,0	39,9	

MBHE punch



Mat.: M2

RC: 60-62

D	Lu - please specify			L						
	Std.	Alternate		63	71	80	90	100	110	125
10,0	19*	13*		X	X	X	X	X		
13,0	19	13		X	X	X	X	X	X	X
16,0	19	13	25	X	X	X	X	X	X	X
20,0	19	13	25	X	X	X	X	X	X	X
25,0	19	13	25		X	X	X	X	X	X
32,0	19	13	25		X	X	X	X	X	X
40,0	25	19	30			X	X	X	X	X

* Lu = 10 when P or W is below 2.20

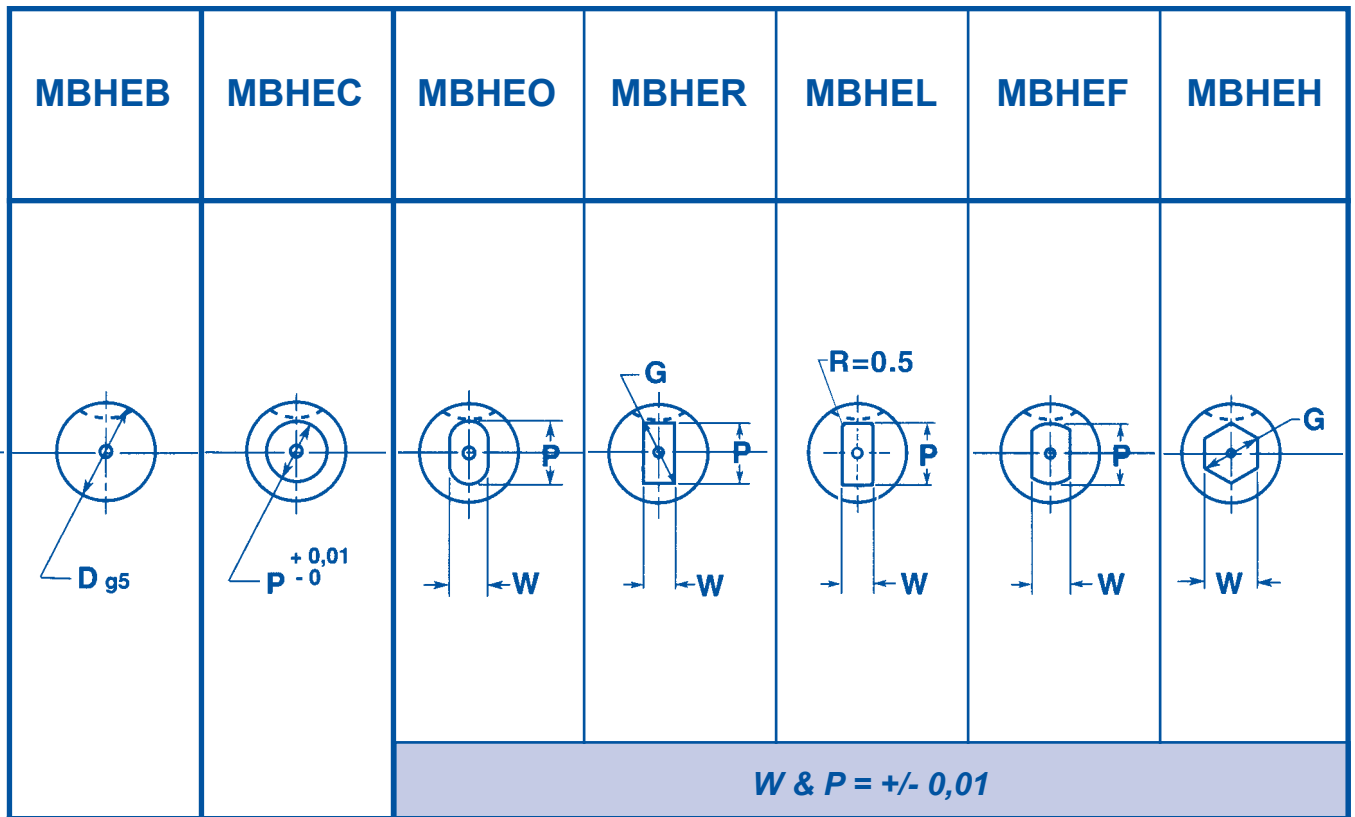
When ordering specify:

Bestellbeispiel:

Pour commander:

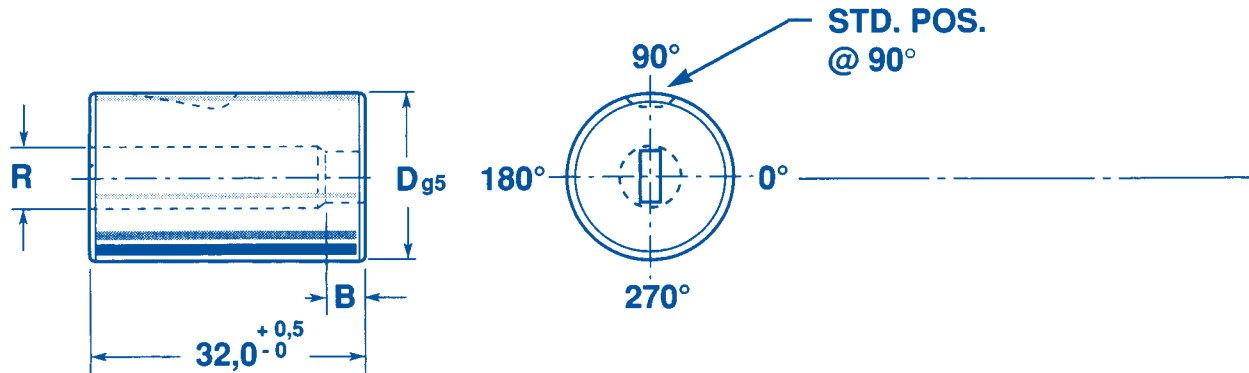
Especifique Cuando Ordene:

Qty.:	Mat.	Cat. No.	D	L	W	P	Lu
6	M2	MBHEF	10	x 90	x 5,2	x 8,3	Lu19



	MBHEB	MBHEC	MBHEO	MBHER	MBHEL	MBHEF	MBHEH					
	D	P	MIN W	MAX P	MIN W	MAX G	MIN W	MAX G	MIN W	MAX P	MIN W	MAX G
	10,0	2,5-9,9	1,6	9,9	1,6	9,9	1,6	9,9	1,6	9,9	1,6	9,9
	13,0	5,0-12,9	4,5	12,9	4,5	12,9	4,5	12,9	4,5	12,9	4,5	12,9
	16,0	8,0-15,9	6,0	15,9	6,0	15,9	6,0	15,9	6,0	15,9	6,0	15,9
	20,0	12,0-19,9	8,0	19,9	8,0	19,9	8,0	19,9	8,0	19,9	8,0	19,9
	25,0	16,0-24,9	10,0	24,9	10,0	24,9	10,0	24,9	10,0	24,9	10,0	24,9
	32,0	24,0-31,9	12,5	31,9	12,5	31,9	12,5	31,9	12,5	31,9	12,5	31,9
	40,0	30,0-39,9	14,0	39,9	14,0	39,9	14,0	39,9	14,0	39,9	14,0	39,9

MBLD
die



Mat.: M2

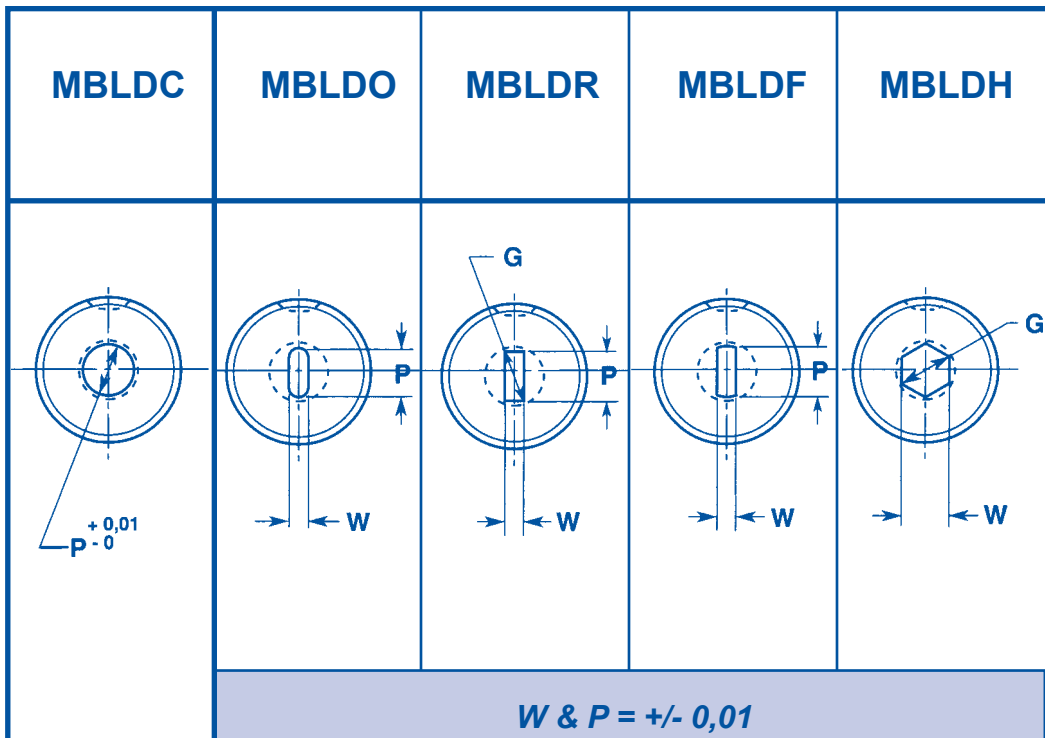
RC: 60-62

D	R,max	B	
13,0	5,8	4,0	
16,0	8,0	5,0	
20,0	12,0	5,0	
25,0	16,0	6,0	
32,0	20,0	6,0	
38,0	27,0	8,0	

When ordering specify:
Bestellbeispiel:

Pour commander:
Especifique Cuando Ordene:

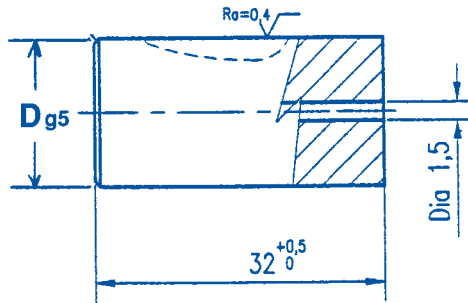
Qty.:	Mat.	Cat. No.	D	W	P
12	M2	MBLDO	25	x 5,5	x 10,5



	MBLDC	MBLDO		MBLDR		MBLDF		MBLDH		D
	P	MIN W	MAX P	MIN P,W	MAX G	MIN W	MAX P	MIN W	MAX G	
	1,5-5,0	2,0	5,0	2,0	5,0	2,0	5,0	2,0	5,0	13,0
	3,0-7,2	2,5	7,2	2,5	7,2	2,5	7,2	2,5	7,2	16,0
	4,5-11,0	4,5	11,0	4,5	11,0	4,5	11,0	4,5	11,0	20,0
	8,0-15,0	5,0	15,0	5,0	15,0	5,0	15,0	5,0	15,0	25,0
	11,0-19,0	6,0	19,0	6,0	19,0	6,0	19,0	6,0	19,0	32,0
	16,0-26,0	8,0	26,0	8,0	26,0	8,0	26,0	8,0	26,0	38,0

MFBLDW
die

Mat.: M2



RC: 60-62

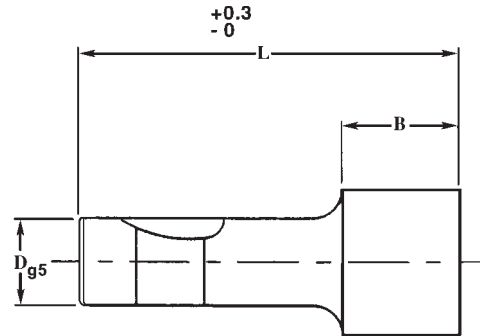
D	13,0	16,0	20,0	25,0	32,0	38,0
---	------	------	------	------	------	------

When ordering specify:
Bestellbeispiel:

Pour commander:
Especifique Cuando Ordene:

Qty.:	Mat.	Cat. No.	D
5	M2	MFBLDW	16

**METRIC
BALL LOCK
HEAVY DUTY
KNOB STYLE**



MBHK

WITH EJECTOR
SPECIFY **MBHEK**

LIGHT DUTY
SPECIFY **MBLK** or **MBLEK**

CIRCULAR		STANDARD SHAPES													
Std. Ball Seat		<u>Q</u> BLONG	RE <u>R</u> ECTANGLE	<u>L</u> ONG LIFE		FLATTED ROUND									
P=+0.01 -0		TOLERANCE FOR P & W = +0.01 -0.01													
DIA. D	POINT LENGTH B		LENGTH			BHKC		BHKO		BHKR		BHKL		BHKF	
	STD.	ALT.	80	90	100	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX
CODE						P	P	W	P	W	G	W	G	W	P
13	19	30	X	X	X	13.10	32.00	5.00	32.00	5.00	32.00	5.00	32.00	5.00	32.00
16	19	30	X	X	X	16.10	38.00	6.50	38.00	6.50	38.00	6.50	38.00	6.50	38.00
20	19	30	X	X	X	20.10	40.00	8.00	40.00	8.00	40.00	8.00	40.00	8.00	40.00
25	19	30	X	X	X	25.10	44.00	10.00	44.00	10.00	44.00	10.00	44.00	10.00	44.00
32	19	30	X	X	X	32.10	50.00	11.50	50.00	11.50	50.00	11.50	50.00	11.50	50.00
* 40	19	30	X	X	X	40.10	56.00	14.00	56.00	14.00	56.00	14.00	56.00	14.00	56.00

* 40 mm available only as heavy duty.

Alterations, including longer lengths, are available on request!

WHEN ORDERING SPECIFY:

QTY.	MAT.	TYPE	SHAPE	CODE	LENGTH	W	P
5	M2	MBHEK	O	16	X 90	X 9.40	X 31.20



HEAVY DUTY
LIGHT DUTY

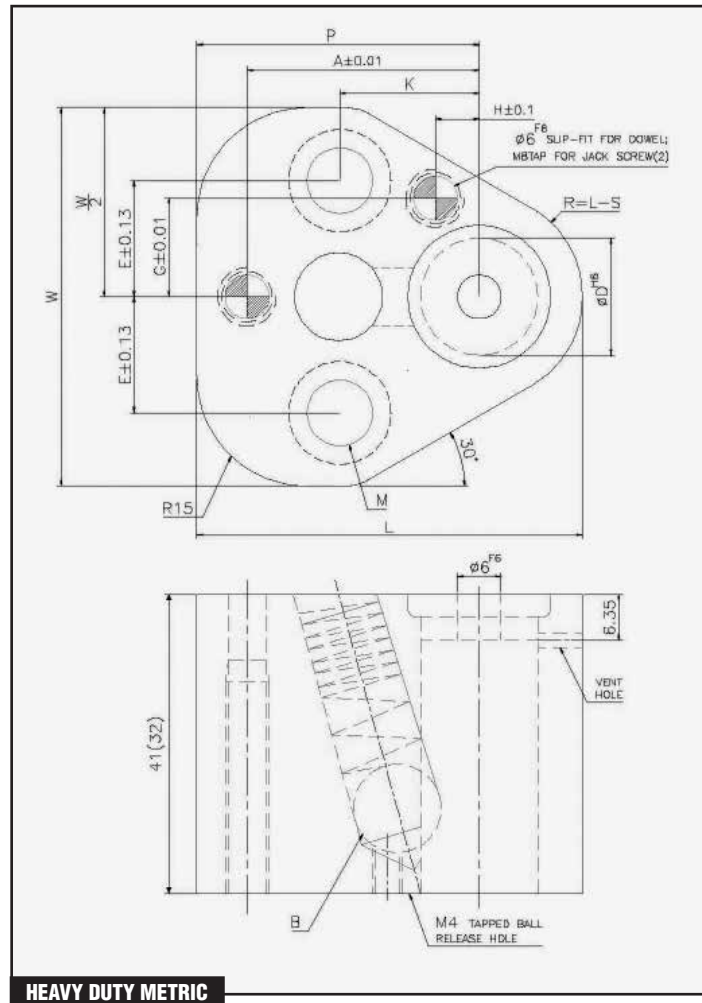
RETAINERS

BALL LOCK RETAINERS



RETAINER INCLUDES:

- 1 Ball ■ 1 Tru-Lock Spring
- 2 Socket Head Cap Screws
- 1 Ball Release Screw
- 2 Dowels ■ 1 Backing Plug



HEAVY DUTY METRIC

HEAVY DUTY


MTHR	D	W	L	P	A	K	E	H	G	B	M
MTHR	10	41.0	43.5	34.0	26.924	19.05	11.12	7.5	9.0	10.0	M8
MTHR	13	48.5	49.6	37.0	29.972	19.05	14.27	6.5	12.0	12.0	M8
MTHR	16	51.7	52.7	38.6	31.750	19.05	15.87	6.0	13.5	12.0	M8
MTHR	20	56.8	59.3	41.9	33.528	19.05	17.47	5.0	16.5	12.0	M10
MTHR	25	64.5	68.9	46.7	40.640	23.82	19.84	7.0	22.0	12.0	M12
MTHR	32	64.5	68.9	46.7	40.640	23.82	19.84	7.0	22.0	12.0	M12
MTHR	40	72.9	76.4	50.5	43.993	27.00	24.00	10.0	26.0	12.0	M12

LIGHT DUTY


MTLR	D	W	L	P	A	K	E	H	G	B	P	M
MTLR	6	37.5	35.0	27.0	23.000	19.00	11.10	9.0	8.0	6.0	3.0	M6
MTLR	10	41.0	43.5	34.0	26.924	19.05	11.12	7.5	9.0	8.0	6.0	M8
MTLR	13	48.5	49.6	37.0	29.972	19.05	14.27	6.5	12.0	8.0	6.0	M8
MTLR	16	51.7	52.7	38.6	31.750	19.05	15.87	6.0	13.5	8.0	6.0	M8
MTLR	20	56.8	59.3	41.9	33.528	19.05	17.47	5.0	16.5	8.0	6.0	M10
MTLR	25	64.5	68.9	46.7	40.640	23.82	19.84	7.0	22.0	8.0	6.0	M12
MTLR	32	64.5	68.9	46.7	40.640	23.82	19.84	7.0	22.0	8.0	6.0	M12
MTLR	38	72.9	76.4	50.5	43.993	27.00	24.00	10.0	26.0	8.0	6.0	M12

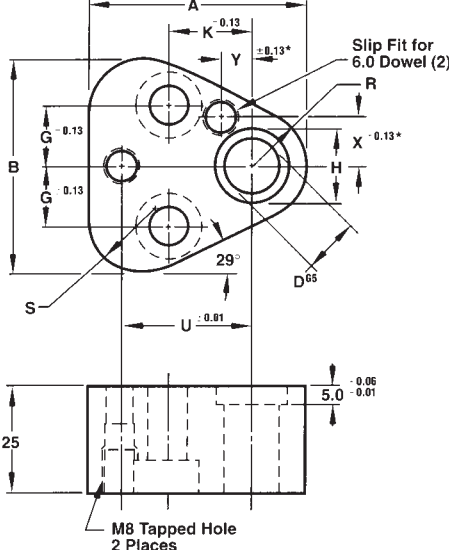
Headed Punch Retainers

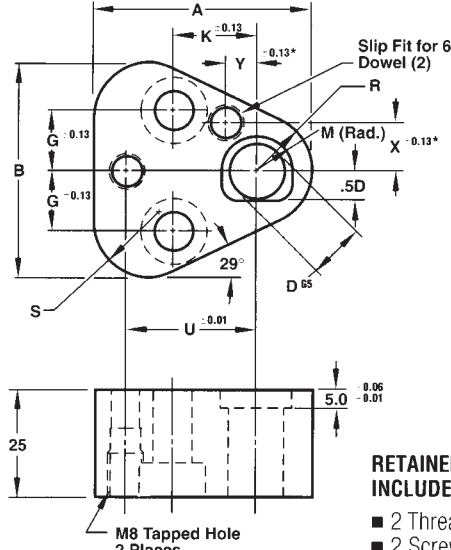
Type
ART
For
Round
Punches



Type
ARTS
For
Shaped
Punches







RETAINER INCLUDES:

- 2 Threaded dowels
- 2 Screws

Don't waste time and money building a retainer for just one punch. TRUE LOCATION Retainers offer precise dowel locations allowing CNC machining of the punch and die plates. The dimensional accuracy also permits interchangeability of retainers that before could not have been done without plugging holes and re-machining for dowels.

Use Tipco's Center Dowel Punches and Pilots for the best accuracy. With the dowel located directly over the center-line of the punch, accumulation of tolerances is eliminated. This provides the best possible alignment. In addition, only one dowel is needed for a round

punch, a shaped punch requires a second dowel for radial location.

An additional dowel hole is provided for use with matrixes. It is in an approximate location, plus or minus 0.13. An accurate location for this dowel hole is available by specifying XY at the end of the catalog number. This will give you a location held to plus or minus 0.01. The accurate location eliminates hand-fitting.

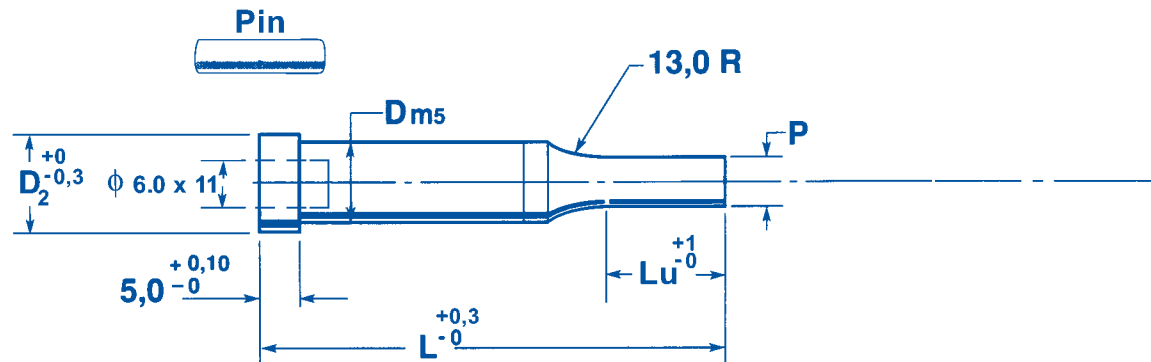
- Ground top and bottom
- Hardened to approximately Rc 42

Catalog No.					ART	ARTS								Screw Size
Type	Code	D	A	B	H	G	K	M	R	S	U	X	Y	
ART/ARTS	10	10.00	44.5	43.7	14.0	11.1	19.0	7.0	9.5	12.0	26.925	9.0	7.5	M8
ART/ARTS	13	13.00	50.8	50.0	17.0	14.3	19.0	8.5	12.7	15.2	29.970	12.0	6.5	M8
ART/ARTS	16	16.00	54.0	53.2	20.0	15.9	19.0	10.0	14.3	16.8	31.750	13.5	6.0	M8
ART/ARTS	20	20.00	60.3	59.5	24.0	17.5	19.0	12.0	17.5	20.0	33.530	16.5	5.0	M10
ART/ARTS	25	25.00	69.9	69.1	29.0	19.8	23.8	14.5	22.2	24.7	40.640	22.0	7.0	M12
ART/ARTS	32	32.00	69.9	69.1	36.0	19.8	23.8	18.0	22.2	24.7	40.640	22.0	7.0	M12

*Note: For precision tolerance (± 0.01) specify XY at end of catalog number. Example **ART13 XY**

MANUFACTURED BY DAYTON PROGRESS CORPORATION. TRUE POSITION, TRUE SHAPE, TRUE POSITION PLUG DESIGN AND TRILATERAL DESIGNATORS ARE REGISTERED TRADEMARKS OF DAYTON PROGRESS CORPORATION.

MC
punch



Mat.: M2

RC: 60-62

D	D2	Lu	alt. Lu	L				
				71	80	90	100	
10,0	13,0	19	25	X	X	X	X	
13,0	16,0	19	25	X	X	X	X	
16,0	19,0	19	25	X	X	X	X	
20,0	23,0	19	25	X	X	X	X	
25,0	28,0	19	25	X	X	X	X	
32,0	35,0	25	30	X	X	X	X	

When ordering specify:
Bestellbeispiel:

Pour commander:
Especifique Cuando Ordene:

Qty.:	Mat.	Cat. No.	D	L	W	P	
6	M2	MCO	13	x 90	x 6,0	x 10,2	SF*

MCB	MCC	MCO	MCR	MCL	MCF	MCH	MCP					
<i>W & P = +/- 0,01</i>												
MCB	MCC	MCO	MCR	MCL	MCF	MCH	MCP					
D	P	MIN W	MAX P	MIN W	MAX G	MIN W	MAX G	MIN W	MAX P	MIN W	MAX G	P
10,0	4,0-9,99	3,5	9,99	3,5	9,99	3,5	9,99	3,5	9,99	3,5	9,99	3,9-9,99
13,0	5,0-12,99	4,5	12,99	4,5	12,99	4,5	12,99	4,5	12,99	4,5	12,99	4,9-12,99
16,0	8,0-15,99	6,0	15,99	6,0	15,99	6,0	15,99	6,0	15,99	6,0	15,99	7,9-15,99
20,0	12,0-19,99	8,0	19,99	8,0	19,99	8,0	19,99	8,0	19,99	8,0	19,99	11,9-19,99
25,0	16,5-24,99	10,0	24,99	10,0	24,99	10,0	24,99	10,0	24,99	10,0	24,99	15,0-24,99
32,0	20,0-31,99	10,0	31,99	10,0	31,99	10,0	31,99	10,0	31,99	10,0	31,99	19,9-31,99

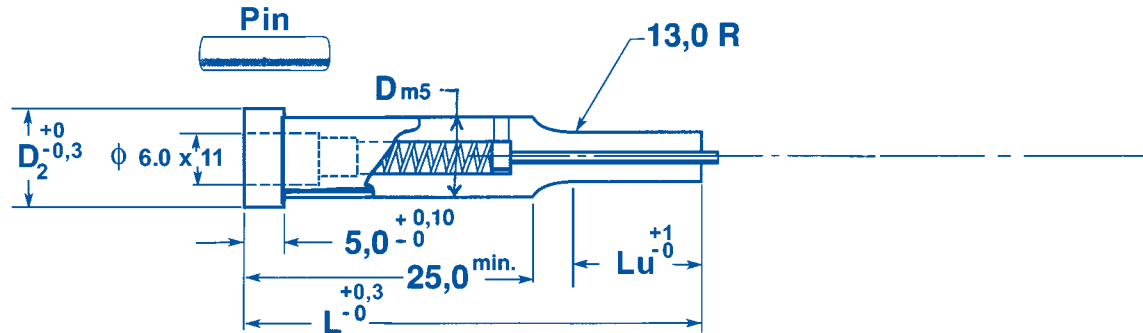
* For key-flats and other locating methods, see page 43.

* Fuer Arretierungsflaechen und Verdrehsicherungen, siehe Seite 43.

* Methodes de loaclisation voir page 43.

* Para claves y otros metodos de localizar ver pagina 43.

MCE
punch



Mat.: M2

RC: 60-62

				L				
D	D ₂	Lu	alt. Lu	71	80	90	100	
10,0	13,0	19	25	X	X	X	X	
13,0	16,0	19	25	X	X	X	X	
16,0	19,0	19	25	X	X	X	X	
20,0	23,0	19	25	X	X	X	X	
25,0	28,0	19	25	X	X	X	X	
32,0	35,0	25	30	X	X	X	X	

When ordering specify:
Bestellbeispiel:

Pour commander:
Especifique Cuando Ordene:

Qty.:	Mat.	Cat. No.	D	L	P	Lu
24	M2	MCEC	20	x 80	x 16,2	x Lu 25

	MCEB	MCEC	MCEO	MCER	MCEL	MCEF	MCEH					
	<i>W & P = +/- 0,01</i>											
	MCEB	MCEC	MCEO	MCER	MCEL	MCEF	MCEH					
	D	P	MIN W	MAX P	MIN W	MAX G	MIN W	MAX G	MIN W	MAX P	MIN W	MAX G
	10,0	4,0-9,99	3,5	9,99	3,5	9,99	3,5	9,99	3,5	9,99	3,5	9,99
	13,0	5,0-12,99	4,5	12,99	4,5	12,99	4,5	12,99	4,5	12,99	4,5	12,99
	16,0	8,0-15,99	6,0	15,99	6,0	15,99	6,0	15,99	6,0	15,99	6,0	15,99
	20,0	12,0-19,99	8,0	19,99	8,0	19,99	8,0	19,99	8,0	19,99	8,0	19,99
	25,0	16,5-24,99	10,0	24,99	10,0	24,99	10,0	24,99	10,0	24,99	10,0	24,99
	32,0	20,0-31,99	10,0	31,99	10,0	31,99	10,0	31,99	10,0	31,99	10,0	31,99

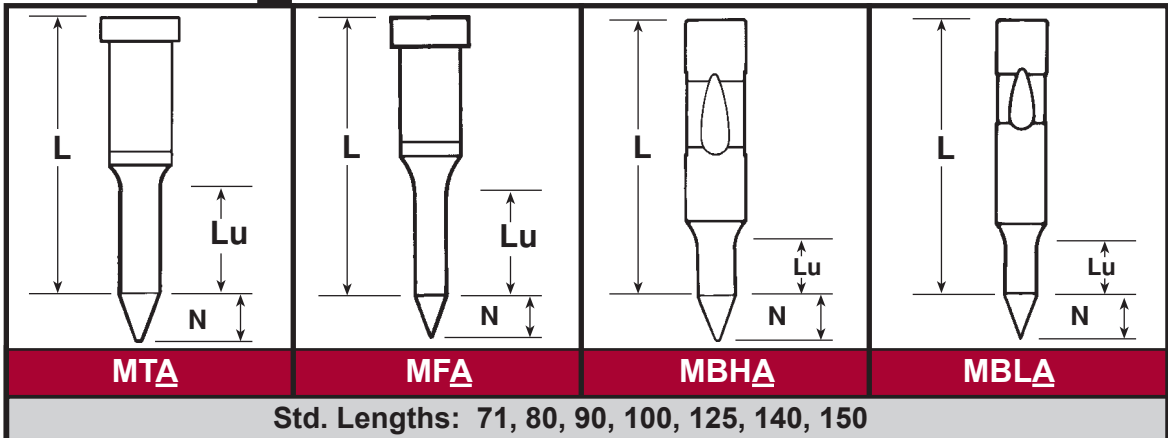
* For key-flats and other locating methods, see page 43.

* Fuer Arretierungsflaechen und Verdrehsicherungen, siehe Seite 43.

* Methodes de loaclisation voir page 43.

* Para claves y otros metodos de localizar ver pagina 43.

ANGLE POINT PILOT



Std. Lengths: 71, 80, 90, 100, 125, 140, 150

SHANK	N	Lu	P. RANGE	Lu	P. RANGE	Lu	P. RANGE	Lu	P. RANGE
10	8	7	5.90 - 9.98	13	5.90 - 9.98	19	5.90 - 9.98	19	5.90 - 9.98
13	10	13	9.90 - 12.98	13	9.90 - 12.98	19	9.90 - 12.98	19	9.90 - 12.98
16	15	13	12.90 - 15.98	13	12.90 - 15.98	25	12.90 - 15.98	25	12.90 - 15.98
20	20	13	15.90 - 19.98	13	15.90 - 19.98	25	15.90 - 19.98	25	15.90 - 19.98
25	25	25	19.90 - 24.98	13	19.90 - 24.98	25	19.90 - 24.98	25	19.90 - 24.98
32	30	25	24.90 - 31.98	13	24.90 - 31.98	25	24.90 - 31.98	25	24.90 - 31.98
38	35	25	31.90 - 37.98	13	31.90 - 37.98			30	31.90 - 37.98
40	40					30	31.90 - 39.98		
13	10			19	9.90 - 12.98				
16	15			19	12.90 - 15.98				
20	20			19	15.90 - 19.98				
25	25			19	19.90 - 24.98				
32	30			19	24.90 - 31.98				
38	35			19	31.90 - 37.98				
16	15			25	12.90 - 15.98				
20	20			25	15.90 - 19.98				
25	25			25	19.90 - 24.98				
32	30			25	24.90 - 31.98				
38	35			25	31.90 - 37.98				

WHEN ORDERING SPECIFY:

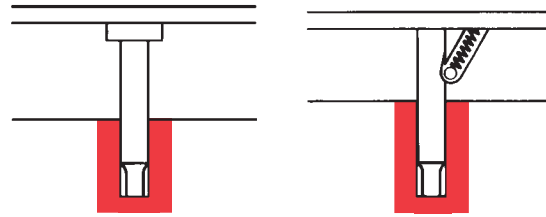
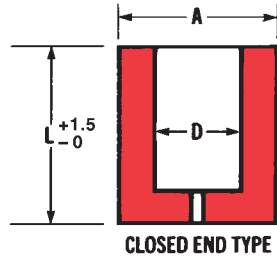
QTY.	TYPE	SHANK	LENGTH	P.	Lu
12	MBHA	20	X 110	X 17.53,	25

CLOSE SPACE PUNCHES

STANDARD LENGTHS AVAILABLE IN 40, 50, 56, 63 mm									
MCSA	MCSB		MCSAP			MCSBP			
D	D	H	D	Min. P	Max P	D	Min. P	Max P	Lu
0.8 - 1.6	0.8 - 1.6	3.0							
1.7 - 2.0	1.7 - 2.0	4.0	2.0	.081	2.00	2.0	.081	2.00	5.0
2.1 - 3.0	2.1 - 3.0	5.0	3.0	2.01	3.00	3.0	2.01	3.00	7.0
3.1 - 4.0	3.1 - 4.0	6.0	4.0	3.01	4.00	4.0	3.01	4.00	8.0
4.1 - 5.0	4.1 - 5.0	7.0	5.0	4.01	5.00	5.0	4.01	5.00	8.0
5.1 - 6.0	5.1 - 6.0	8.0	6.0	5.01	6.00	6.0	5.01	6.00	8.0
6.1 - 7.0	6.1 - 7.0	9.0	7.0	6.01	7.00	7.0	6.01	7.00	8.0

	QTY			LENGTH	P
EXAMPLE #1	25	M2	MCSA 1.0	X 50	
EXAMPLE #2	10	PS	MCSB 5.3	X 63	
EXAMPLE #3	15	M2	MCSAP 4.0	X 40	X 3.29
EXAMPLE #4	14	M2	MCSBP 2.0	X 56	X 1.65

URETHANE STRIPPERS



CAT. NO.	PUNCH BODY D	OUTSIDE DIA. A	LENGTH L	APPROXIMATE STRIPPING PRESSURE AVAILABLE AT DEFLECTION INDICATED		
				3.0	6.5	9.5
MU06	6.0	19.0	45	1324	2256	—
			53	1079	1863	2354
			71	686	1079	1765
MU08	8.0	21.0	45	1471	2207	—
			53	1324	1961	2942
			71	981	1618	2648
MU10	10.0	23.0	45	1716	2795	—
			53	1422	2452	3187
			56	1422	2452	3187
			71	1128	2010	2697
MU13	13.0	26.0	45	2109	3334	—
			53	1471	2354	3432
			56	1471	2354	2942
			71	1275	1961	2452
MU16	16.0	30.0	45	2354	3825	—
			53	2158	3531	4511
			56	2158	3531	4511
			71	1814	2942	3825
MU20	20.0	38.0	45	2452	3923	—
			53	2158	3629	5590
			71	1618	2942	4658
MU25	25.0	50.0	45	9317	14318	—
			53	7355	11572	15985
			71	4904	8336	13485
MU32	32.0	60.0	45	13352	20535	—

WILL FIT ALL STANDARD COMMERCIAL PUNCHES. STD DUROMETER 95A

WHEN ORDERING SPECIFY:

QTY. CAT. NO. LENGTH
2 MU25 - 53

MK

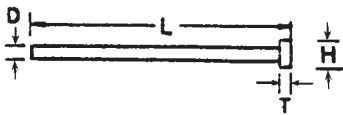
PIN - MKP				
Part #	D	H	T	L
MKP 5	0,51	1,2	0,8	28,2
MKP 6	0,69	1,9	1,2	50,8
MKP 8	1,04	2,4	1,6	50,8
MKP 10*	1,47	3,1	1,6	50,8
MKP 20+	2,26	3,9	2,4	57,2

SPRING - MKS		
Part #	D	L
MKS 5	2,0	50,8
MKS 6	2,4	60,5
MKS 8	3,3	66,8
MKS 10*	4,2	76,2
MKS 20+	5,0	76,2

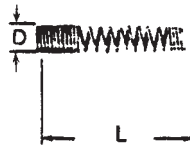
SET SCREW - MKSS		
Part #	D	L
MKSS 5	M2,5 x 0,45	5
MKSS 6	M3 x 0,5	5
MKSS 8	M4 x 0,7	5
MKSS 10*	M5 x 0,8	5
MKSS 20+	M6 x 1	6

* also fits 13 and 16mm diameter punches

+ also fits 25 and 32 mm diameter punches



pin



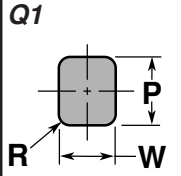
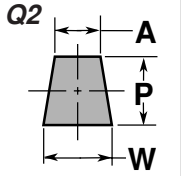
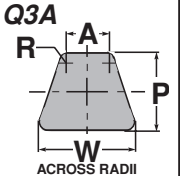
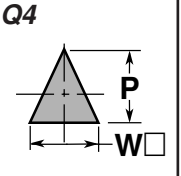
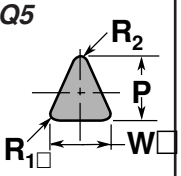
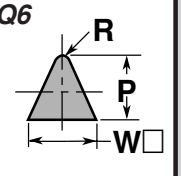
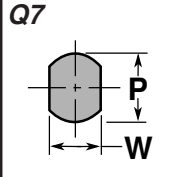
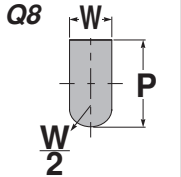
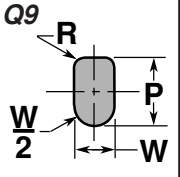
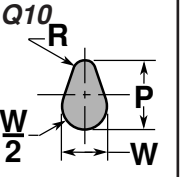
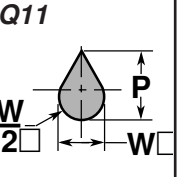
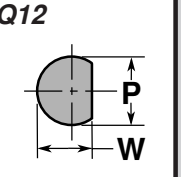
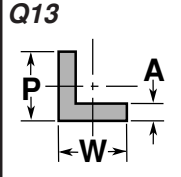
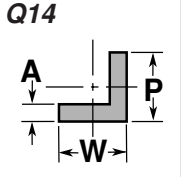
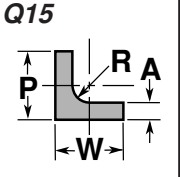
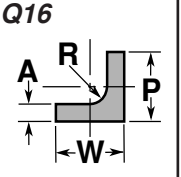
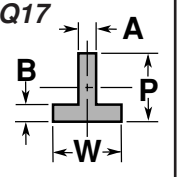
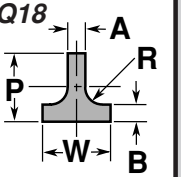
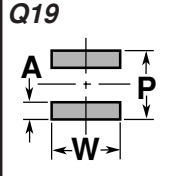
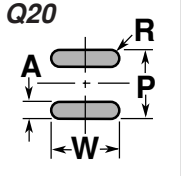
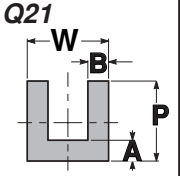
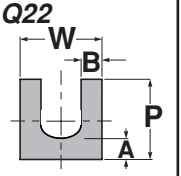
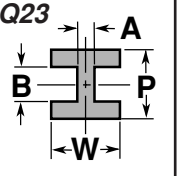
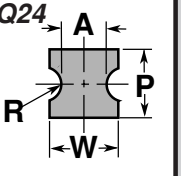
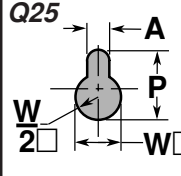
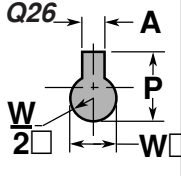
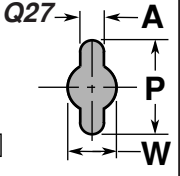
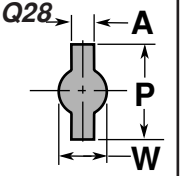
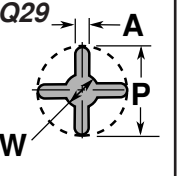
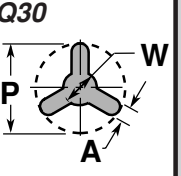
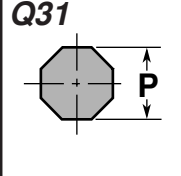
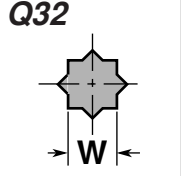
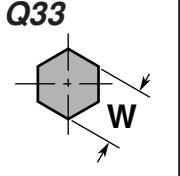
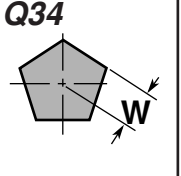
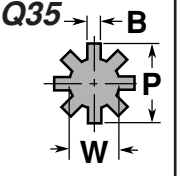
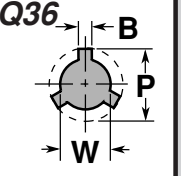
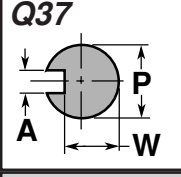
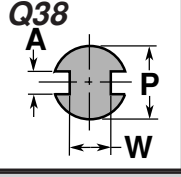
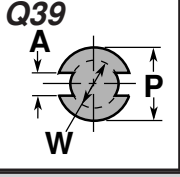
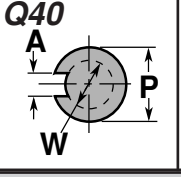
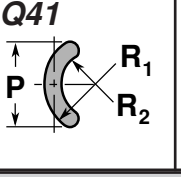
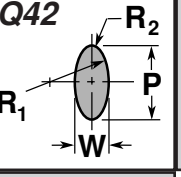
spring



set screw

QUALIFIED SHAPES: FORMES SPECIALES
FORMEN: FORMAS ESPECIALES

90°

	Q1 	Q2 	Q3A 	Q4 	Q5 	Q6 	
	Q7 	Q8 	Q9 	Q10 	Q11 	Q12 	
	Q13 	Q14 	Q15 	Q16 	Q17 	Q18 	
180°	Q19 	Q20 	Q21 	Q22 	Q23 	Q24 	
	Q25 	Q26 	Q27 	Q28 	Q29 	Q30 	
	Q31 	Q32 	Q33 	Q34 	Q35 	Q36 	
	Q37 	Q38 	Q39 	Q40 	Q41 	Q42 	
	270°						

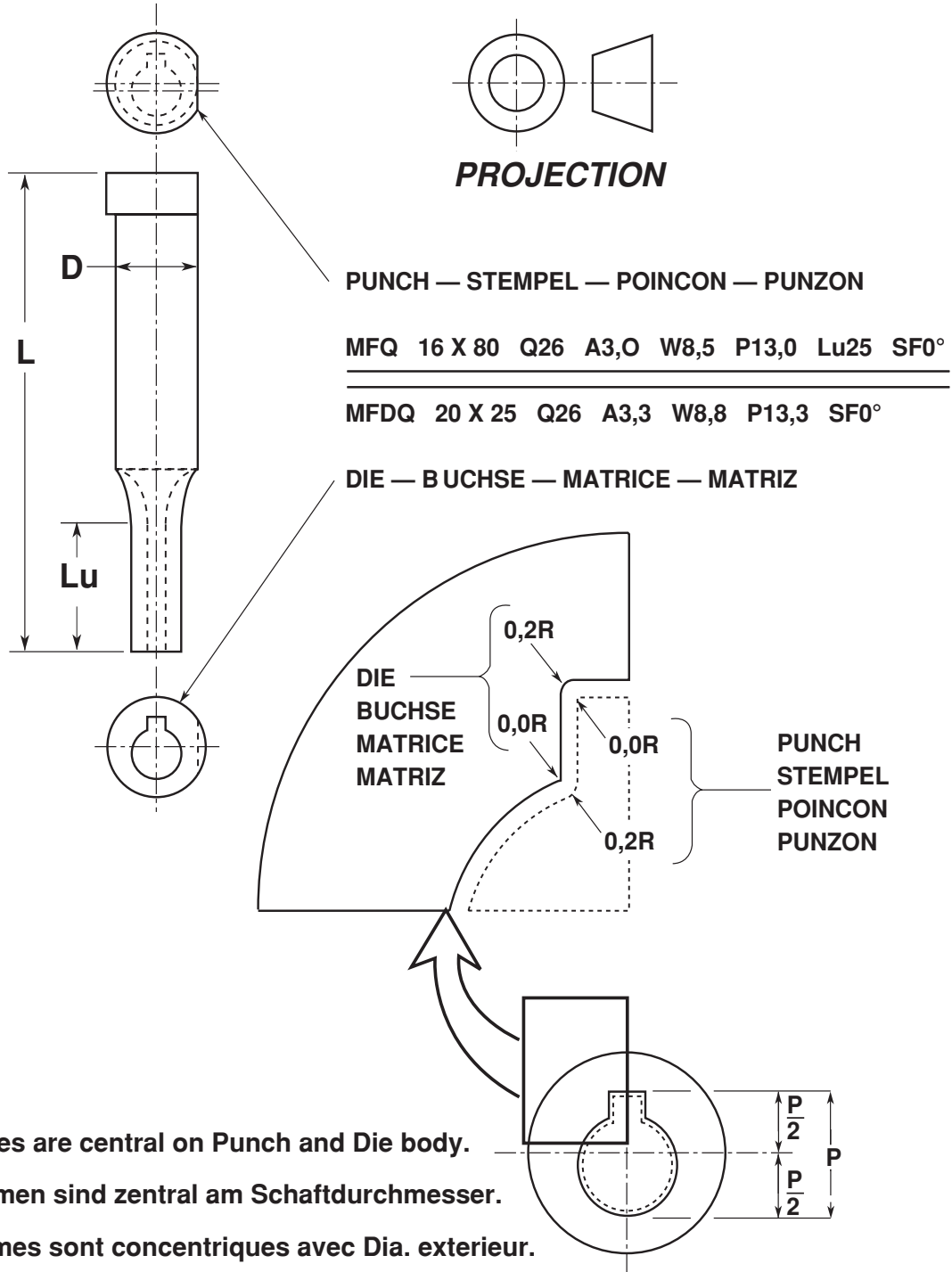
For key-flats, and other locating methods see page 43.

Ballseat Std. Pos. @ 90°

Views are from above shank on punches and cutting edge of die button.

**When ordering specify Punch or Die Type.
Bei Bestellung, den Stempel oder Buchsen Typ angeben.
Confirmer Sorte de Poincon ou de matrice.
Especificque Punzon o Matriz Cuando ordene.**

EXAMPLE — BEISPIEL — EXAMPLE — EJEMPLO



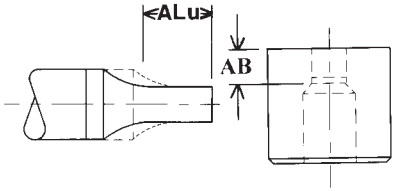
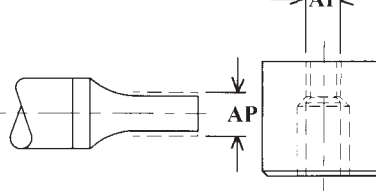
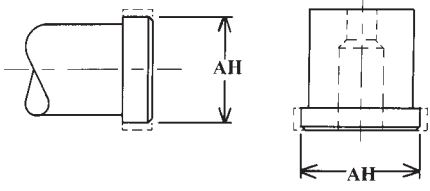
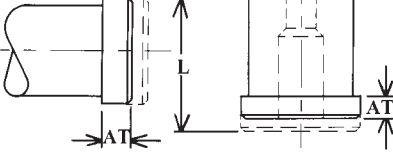
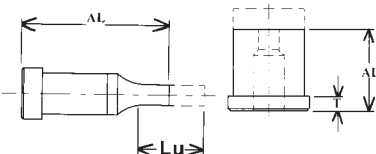
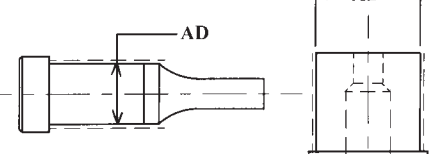
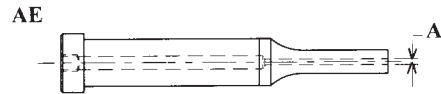
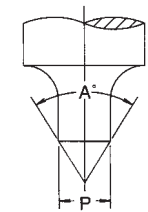
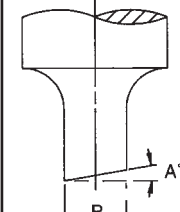

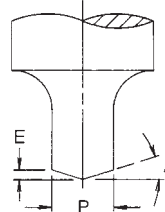
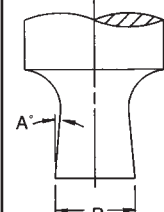
All shapes are central on Punch and Die body.

Alle Formen sind zentral am Schaftdurchmesser.

Les Formes sont concentriques avec Dia. exterieur.

Todas las Formas son centrales sobre Punzon y el Cuerpo de Matriz.

ALTERATIONS

 <p>ALTERED "Lu" or "B" - NON STANDARD</p>	 <p>ALTERED "P* & W" BELOW STANDARD CATALOGE RANGE</p>	 <p>ALTERED "H" REDUCED HEAD DIAMETER PUNCHES OR DIES</p>
 <p>ALTERED "T" REDUCED HEAD THICKNESS ON PUNCHES OR DIES ATX PRECISION HEAD THICKNESS ± 0.013</p>	 <p>ALTERED "L" SHORTENED OVER- ALL LENGTH. ALX PRECISION OVERALL LENGTH ± 0.013</p>	 <p>ALTERED "D" SHANK DIAMETER SMALLER THAN CATALOGE DIMENSIONS PUNCHES OR DIES</p>
 <p>ALTERNATE EJECTOR - NON STANDARD EJECTOR</p>	 <p>CONICAL POINT</p>	 <p>ANGLE SHEAR</p>
 <p>TIPCO GOLD COATING - TITANIUM NITRIDE COATING FOR GREATER WEAR RISTANCE</p>	 <p>ROOFTOP SHEAR</p>	 <p>BACK TAPER</p>

When ordering specify Punch or Die Type.
Bei Bestellung, den Stempel oder Buchsen Typ angeben.
Confirmer Sorte de Poincon ou de matrice.
Especifique Punzon o Matriz Cuando ordene.

**LOCATING METHODS:
VERDREHSICHERUNG:
METHODES DES LOCALISATION:
METODOS DE LOCALIZAR:**

**STANDARD POSITIONS:
NORMALAUSFUEHRUNG:
LOCALISATIONS NORMAL:
POSITIONES NORMALES:**

SF	DF	DS
<p>Z = 6,0 Std.</p>		
<p>SPECIAL LOCATIONS: ABWEICHENDE AUSFUEHRUNG: LOCALISATIONS SPECIALE: LOCALIZACIONES ESPECIALES:</p>	<p>PUNCH STEMPEL</p>	<p>DIE BUCHSE</p> <p>MATRICE MATRIZ</p>

ISO Tolerances

DIN ISO 286 part 2 (extract)

Outside diameters (shafts): Dimensions in $\mu\text{m} = 0.001\text{mm}$

Range in mm	Tolerance Class																			
	f6	f7	g5	g6	h3	h4	h5	h6	h8	h9	i6	js6	js9	js14	js15	k6	m5	m6	n5	n6
from 0 to 3	-6	-6	-2	-2	0	0	0	0	0	0	+4	+3	+12.5	+125	+200	+6	+6	+8	+8	+10
	-12	-16	-6	-8	-2	-3	-4	-6	-14	-25	-2	-3	-12.5	-125	-200	0	+2	+2	+4	+4
over 3 to 6	-10	-10	-4	-4	0	0	0	0	0	0	+6	+4	+15	+150	+240	+9	+9	+12	+13	+16
	-18	-22	-9	-12	-2.5	-4	-5	-8	-18	-30	-2	-4	-15	-150	-240	+1	+4	+4	+8	+8
over 6 to 10	-13	-13	-5	-5	0	0	0	0	0	0	+7	+4.5	+18	+180	+290	+10	+12	+15	+16	+19
	-22	-28	-11	-14	-2.5	-4	-6	-9	-22	-36	-2	-4.5	-18	-180	-290	+1	+6	+6	+10	+10
over 10 to 18	-16	-16	-6	-6	0	0	0	0	0	0	+8	+5.5	+21.5	+215	+350	+12	+15	+18	+20	+23
	-27	-34	-14	-17	-3	-5	-8	-11	-27	-43	-3	-5.5	-21.5	-215	-350	+1	+7	+7	+12	+12
over 18 to 30	-20	-20	-7	-7	0	0	0	0	0	0	+9	+6.5	+26	+260	+420	+15	+17	+21	+24	+28
	-33	-41	-16	-20	-4	-6	-9	-13	-33	-52	-4	-6.5	-26	-260	-420	+1	+8	+8	+15	+15
over 30 to 50	-25	-25	-9	-9	0	0	0	0	0	0	+11	+8	+31	+310	+500	+18	+20	+25	+28	+33
	-41	-50	-20	-25	-4	-7	-11	-16	-39	-62	-8	-5	-31	-310	-500	+2	+9	+9	+17	+17
over 50 to 80	-30	-30	-10	-10	0	0	0	0	0	0	+12	+9.5	+37	+370	+600	+21	+24	+30	+33	+39
	-49	-60	-23	-29	-5	-8	-13	-19	-46	-74	-7	-9.5	-37	-370	-600	+2	+11	+11	+20	+20
over 80 to 125	-36	-36	-12	-12	0	0	0	0	0	0	+13	+11	+43.5	+435	+700	+25	+28	+35	+38	+45
	-58	-71	-27	-34	-6	-10	-15	-22	-54	-87	-9	-11	-43.5	-435	-700	+3	+13	+13	+23	+23

Inside diameters (bores): Dimensions in $\mu\text{m} = 0.001\text{mm}$

Range in mm	Tolerance Class																	
	E8	F7	G7	H5	H6	H7	H8	H9	H10	H11	J7	JS5	K6	K7	M6	M7	P9	P7
from 0 to 3	+28	+16	+12	+4	+6	+10	+14	+25	+40	+60	+4	+2	0	0	-2	-2	-6	-6
	+14	+5	+2	0	0	0	0	0	0	0	-5	-2	-6	-10	-8	-12	-12	-16
over 3 to 6	+38	+22	+16	+5	+8	+12	+18	+30	+48	+75	+6	+2.5	+2	+3	-1	0	-9	-8
	+20	+10	+4	0	0	0	0	0	0	0	-6	-2.5	-6	-9	-9	-12	-17	-20
over 6 to 10	+47	+28	+20	+6	+9	+15	+22	+35	+58	+90	+8	+3	+2	+5	-3	0	-12	-9
	+25	+13	+5	0	0	0	0	0	0	0	-7	-3	-7	-10	-12	-15	-21	-24
over 10 to 18	+59	+34	+24	+8	+11	+18	+27	+43	+70	+110	+10	+4	+2	+6	-4	0	-15	-11
	+32	+16	+8	0	0	0	0	0	0	0	-8	-4	-9	-12	-15	-18	-26	-29
over 18 to 30	+73	+41	+28	+9	+13	+21	+33	+52	+84	+130	+12	+4.5	+2	+6	-4	0	-18	-14
	+40	+20	+7	0	0	0	0	0	0	0	-9	-4.5	-11	-15	-17	-21	-31	-35
over 30 to 50	+89	+50	+34	+11	+16	+25	+39	+62	+100	+160	+14	+5.5	+3	+7	-4	0	-21	-17
	+50	+25	+9	0	0	0	0	0	0	0	-11	-5.5	-13	-18	-20	-25	-37	-42
over 50 to 80	+106	+50	+40	+13	+19	+30	+46	+74	+120	+190	+18	+6.5	+4	+9	-5	0	-26	-21
	+60	+30	+10	0	0	0	0	0	0	0	-12	-6.5	-15	-21	-24	-30	-45	-51
over 80 to 125	+125	+71	+47	+15	+22	+35	+54	+87	+140	+220	+22	+7.5	+4	+10	-6	0	-30	-24
	+72	+36	+12	0	0	0	0	0	0	0	-13	-7.5	-18	-25	-28	-35	-52	-59

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<http://www.tipcopunch.com>

