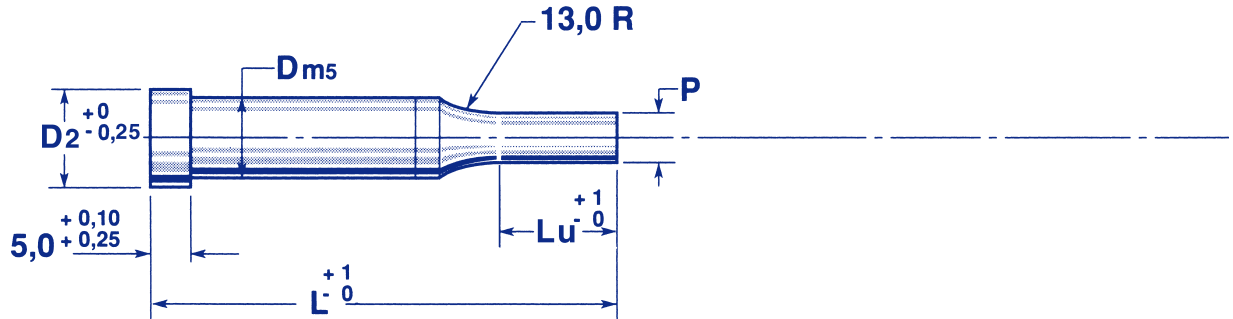


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MT
punch



Mat.: M2
A2

RC: 60-62

D	D ₂	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	24,0*	19		X	X	X	X	X	X	
25,0	29,0*	25		X	X	X	X	X	X	
32,0	36,0*	25		X	X	X	X	X	X	

* D+3 also available — please specify.

When ordering specify:
Bestellbeispiel:

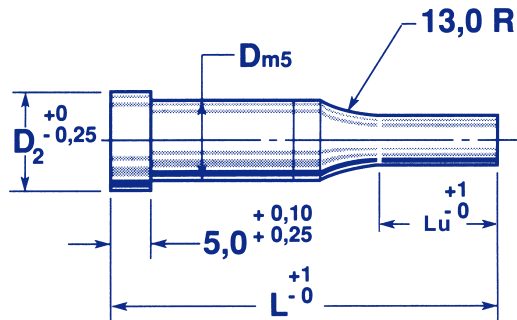
Pour commander:
Especifique Cuando Ordene:

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

A2 - “

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	24,0*	X	X	X	X	X	X	X	X	X	X	
25,0	29,0*	X	X	X		X	X	X	X	X	X	
32,0	36,0*	X	X	X		X	X	X	X	X	X	

* D+3 also available — please specify.

When ordering specify:
Bestellbeispiel:

Pour commander:
Especifique Cuando Ordene:

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

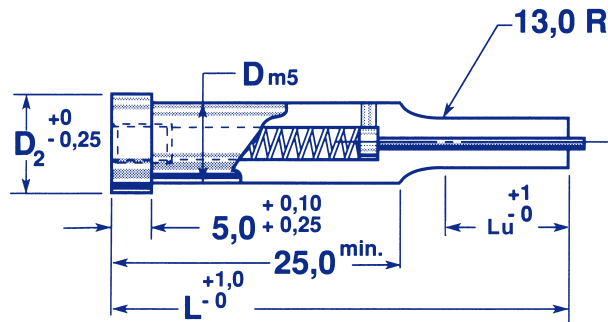
* For key-flats and other locating methods, see page 43.

* Fuer Arretierungsflaechen und Verdrehsicherungen, siehe Seite 43.

* Methodes de localisation voir page 43.

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

ME punch



Mat.: M2 - RC: 60-62

A2 - “

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	24,0*		X	X	X	X	X	X	X	X	X	X
25,0	29,0*		X	X	X		X	X	X	X	X	X
32,0	36,0*		X	X	X		X	X	X	X	X	X

* D+3 also available — please specify.

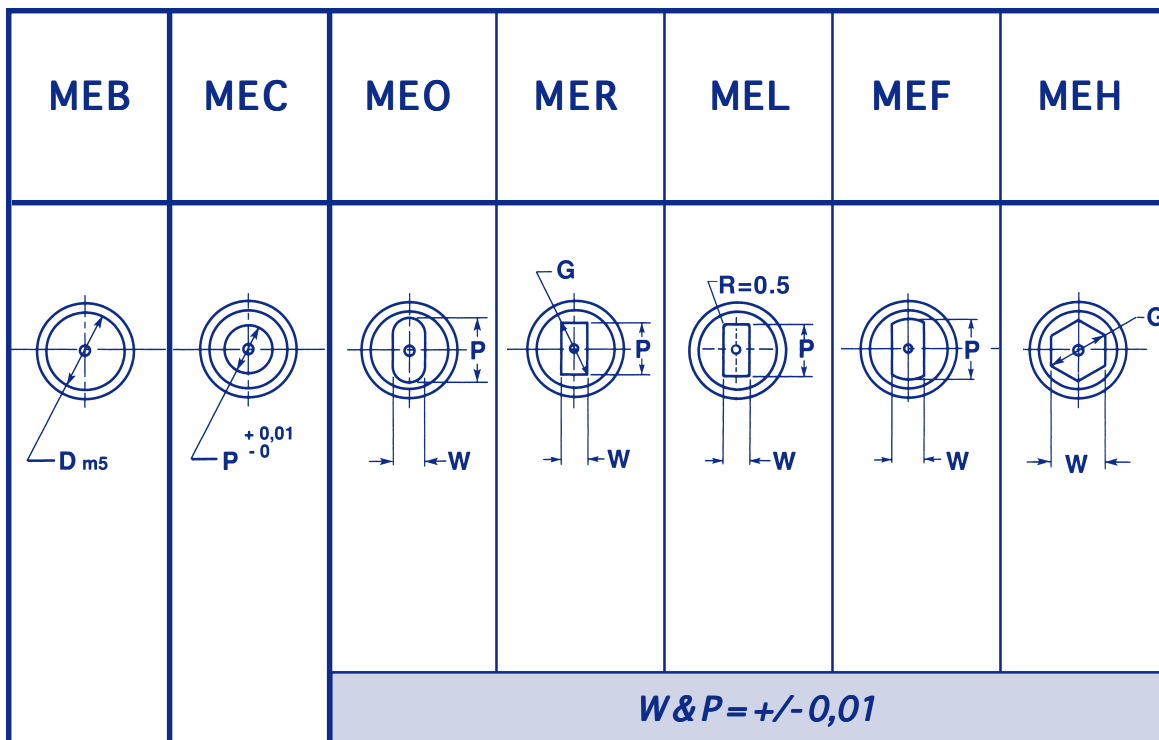
When ordering specify:

Bestellbeispiel:

Pour commander:

Especifique Cuando Ordene:

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



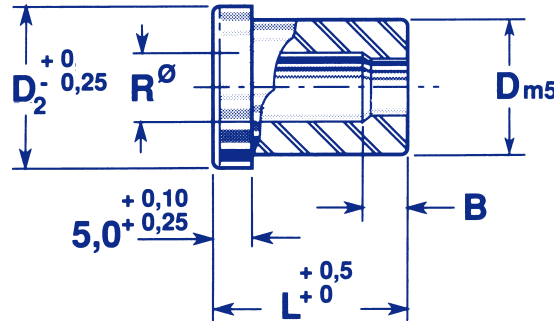
MEB	MEC	MEO	MER	MEL	MEF	MEH
------------	------------	------------	------------	------------	------------	------------

	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
A2

RC: 60-62

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	24,0*	12,0	8,0		X	X	X	X	X
25,0	29,0*	17,3	8,0		X	X	X	X	X
32,0	36,0*	20,7	8,0		X	X	X	X	X
40,0	44,0*	27,7	8,0		X	X	X	X	X
50,0	54,0*	37,0	8,0		X	X	X	X	X

* D+3 also available — please specify.

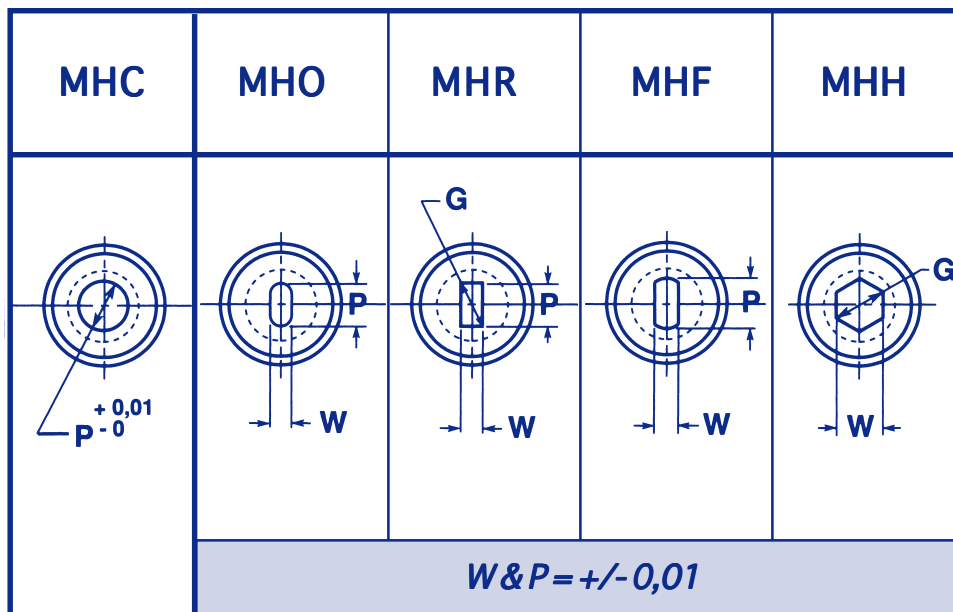
When ordering specify:

Bestellbeispiel:

Qty.: 6 Mat. A2 Cat. No. MHR D 20 x L 25 x W 6,0 x P 7,0 SF 135° *

Pour commander:

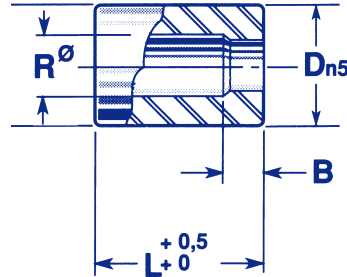
Especifique Cuando Ordene:



	MHC	MHO		MHR		MHF		MHH		
	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
A2

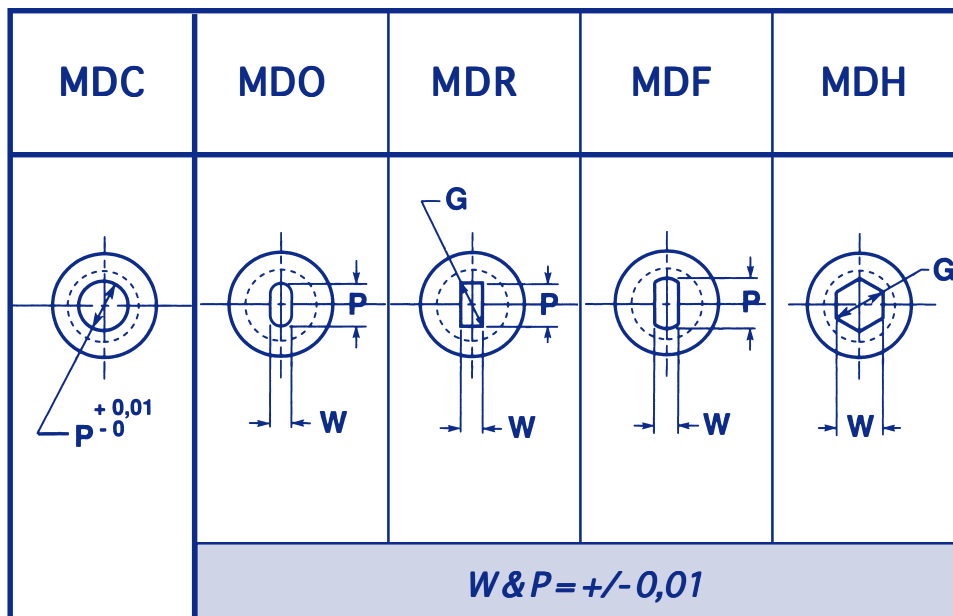
RC: 60-62

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:
Bestellbeispiel:

Pour commander:
Especifique Cuando Ordene:

Qty.: Mat. Cat. No. D L W P
6 A2 MDR 20 x 25 x 6,0 x 7,0 SF4 @ 135° *



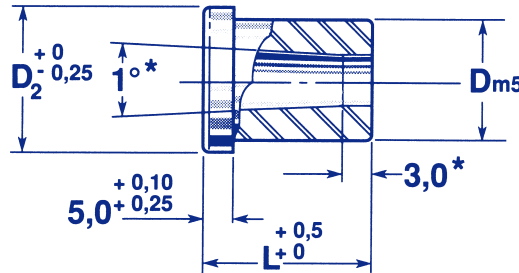
	MDC	MDO	MDR	MDF	MDH					
	P	MIN W	MAX P	MIN P,W	MAX G	MIN W	MAX P	MIN W	MAX G	D
	1,0-2,4									5,0
	1,6-3,0									6,0
	2,0-3,5									8,0
	3,0-5,0	1,5	5,0	1,5	5,0	1,5	5,0	1,5	5,0	10,0
	4,0-7,2	2,0	7,2	2,0	7,2	2,0	7,2	2,0	7,2	13,0
	6,0-8,8	4,0	8,8	4,0	8,8	4,0	8,8	4,0	8,8	16,0
	7,5-11,3	6,0	11,3	6,0	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
A2

RC: 60-62

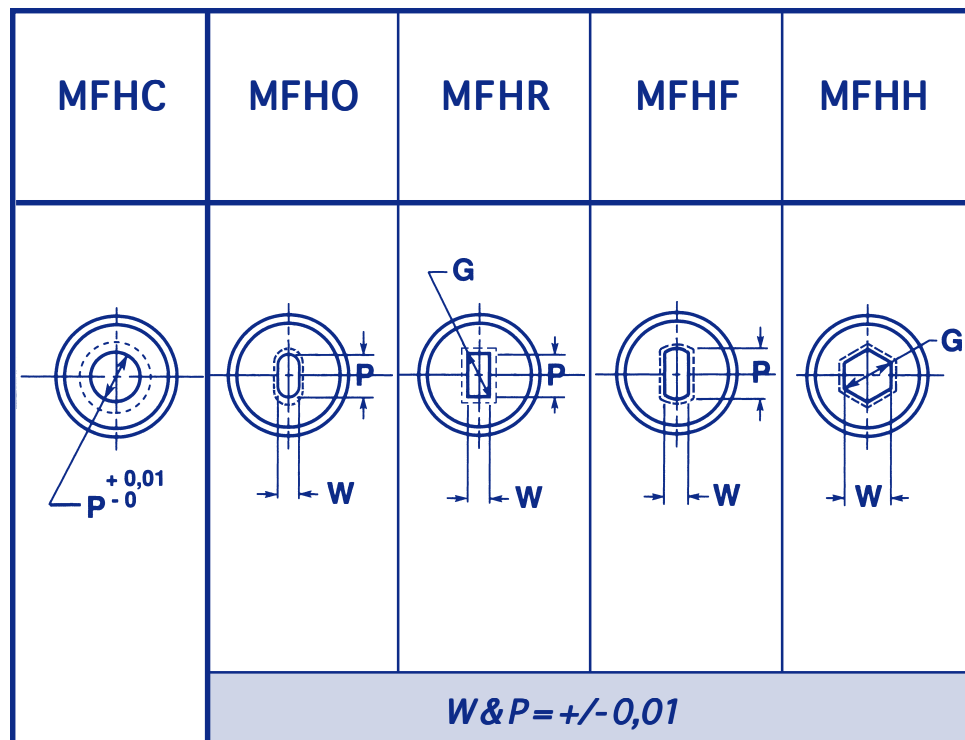


		L					
D	D ₂	20	25	30	32	35	
6,0	9,0	X	X				
8,0	11,0	X	X	X	X		
10,0	13,0	X	X	X	X	X	
13,0	16,0	X	X	X	X	X	
16,0	19,0	X	X	X	X	X	
20,0	24,0*	X	X	X	X	X	
25,0	29,0*	X	X	X	X	X	
32,0	36,0*	X	X	X	X	X	
40,0	44,0*	X	X	X	X	X	

* D+3 also available — please specify.

When ordering specify: Pour commander:
Bestellbeispiel: Especificue Cuando Ordene:

Qty.: Mat. Cat. No. D L W
16 A2 MFHH 13 x 32 x 5,0 SF 45° *

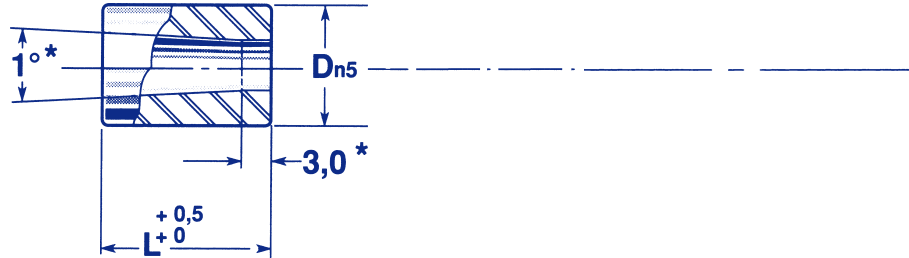


MFHC	MFHO	MFHR	MFHF	MFHH
------	------	------	------	------

	P	MIN W	MAX P	MIN P,W	MAX G	MIN W	MAX P	MIN W	MAX G	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



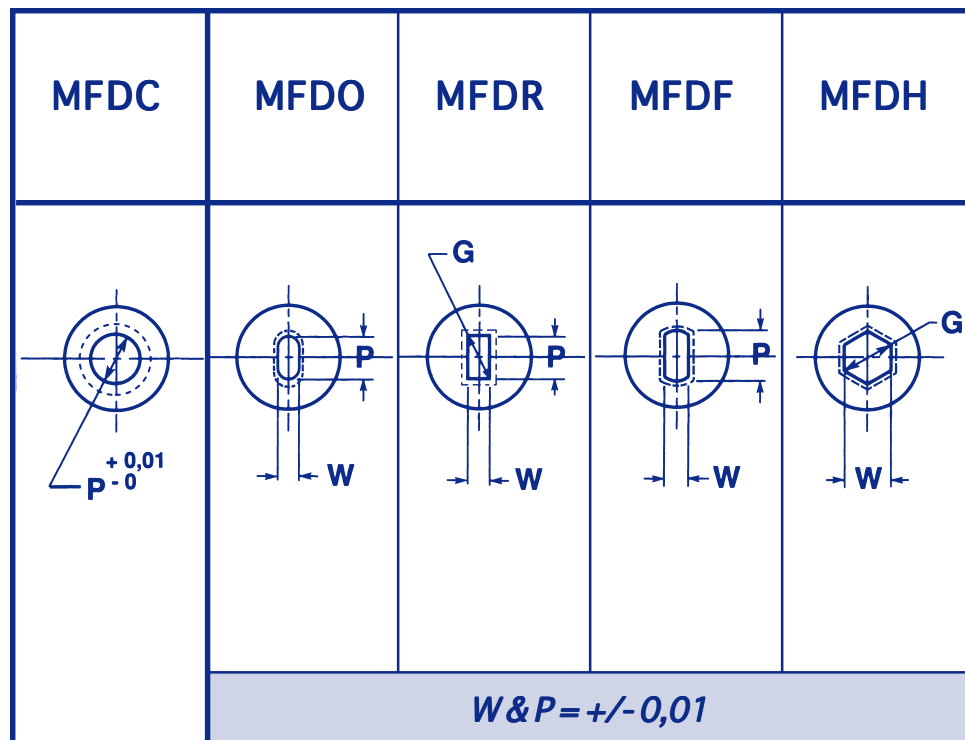
Mat.: M2
A2

RC: 60-62

	L					
D	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: Pour commander:
Bestellbeispiel: Especificue Cuando Ordene:

Qty.: Mat. Cat. No. D L W
16 A2 MFDH 13 x 32 x 5,0 SF4 @ 45° *



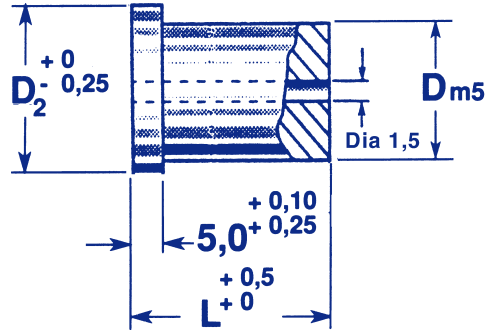
MFDC	MFDO	MFDR	MFDF	MFDH
------	------	------	------	------

	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
A2

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	24,0*		X	X	X	X	X
25,0	29,0*		X	X	X	X	X
32,0	36,0*		X	X	X	X	X
40,0	44,0*		X	X	X	X	X
50,0	54,0*		X	X	X	X	X

* D+3 also available — please specify.

When ordering specify:
Bestellbeispiel:

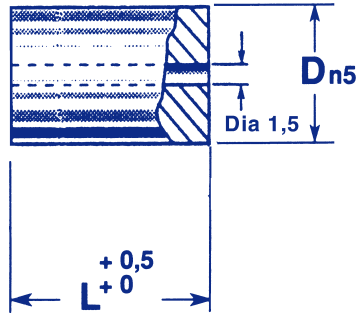
Pour commander:
Especifique Cuando Ordene:

Qty.: Mat. Cat. No. D L
6 A2 MFHW 16 x 25 SF

MFDW
die

Mat.: M2
A2

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:

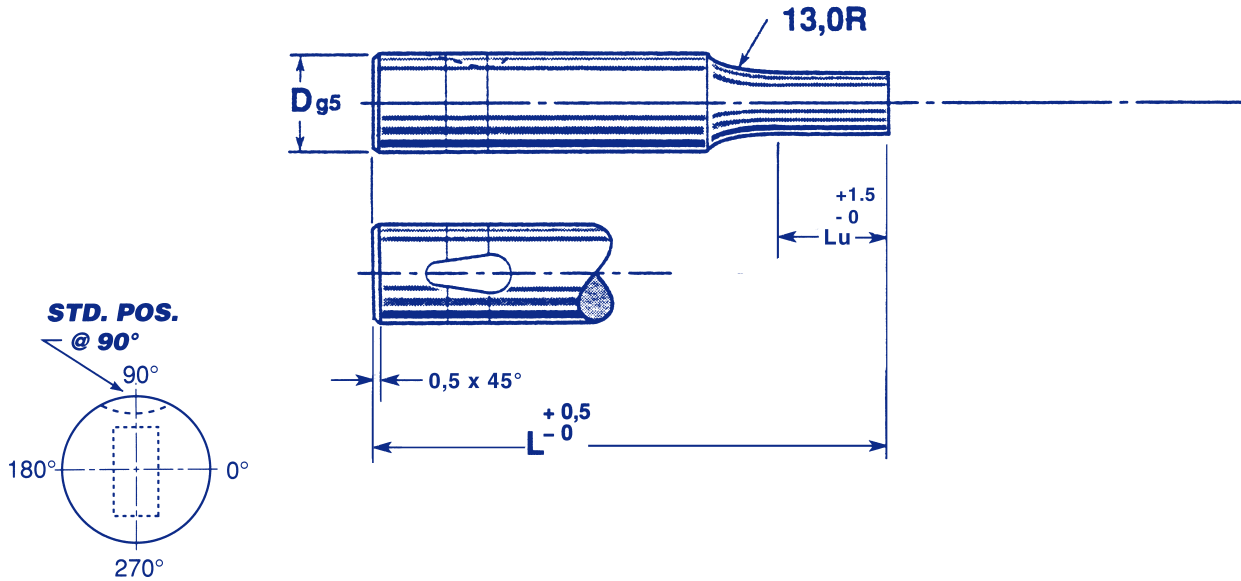
Qty.: 6 Mat. A2 Cat. No. MFDW D 16 x L 25 SF

MBL
punch

S/T ≤ 3,0 mm

Mat.: M2
A2

RC: 60-62



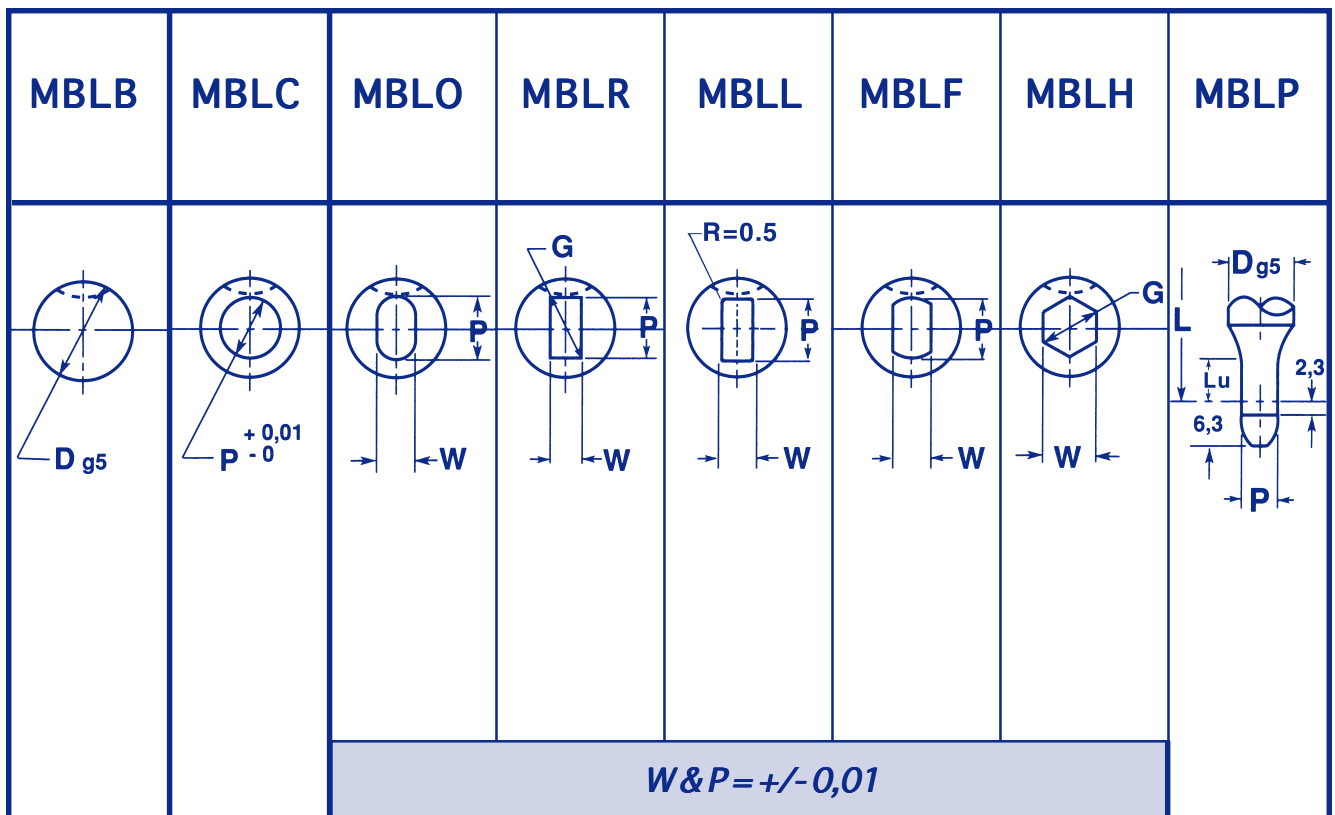
D	Lu - please specify			L						
	Std.	Alternate		50	56	63	71	80	90	100
6,0	13*			X	X	X	X	X	X	X
10,0	19*	13*		X	X	X	X	X	X	X
13,0	19	13		X	X	X	X	X	X	X
16,0	19	13	25		X	X	X	X	X	X
20,0	19	13	25		X	X	X	X	X	X
25,0	19	13	25			X	X	X	X	X
32,0	19	13	25				X	X	X	X
38,0	25	19	30					X	X	X

* 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 Lu19

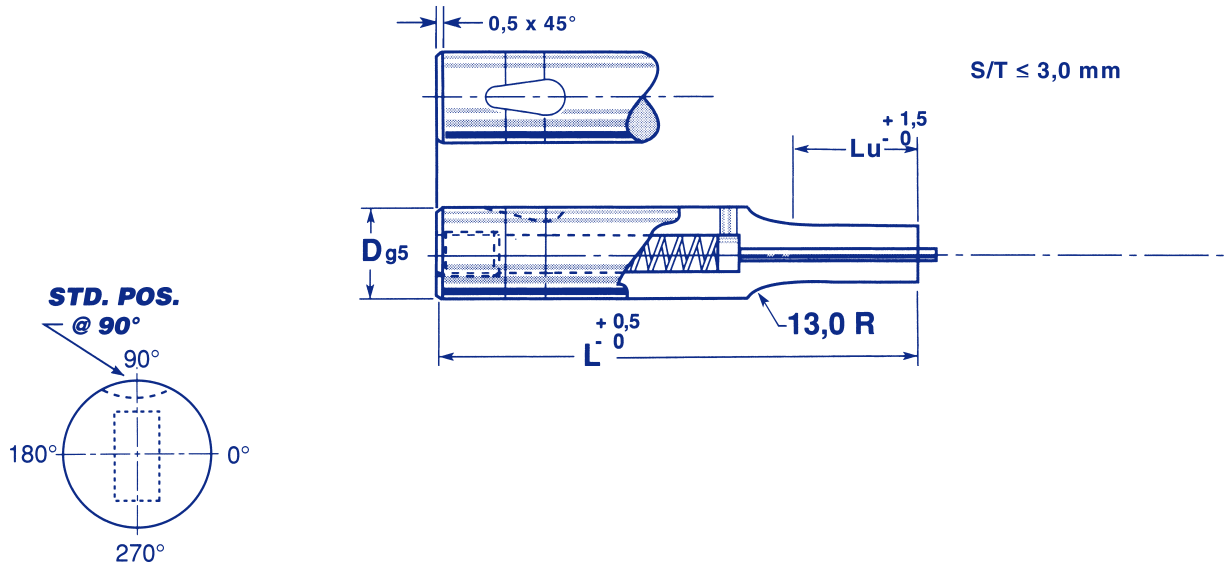


MBLB	MBLC	MBLO	MBLR	MBLL	MBLF	MBLH	MBLP					
D	P	MIN W	MAX P	MIN W	MAX G	MIN W	MAX G	MIN W	MAX P	MIN W	MAX G	P
6,0	1,6-5,9	1,6	5,9	1,6	5,9	1,6	5,9	1,6	5,9	1,6	5,9	1,6-5,9
10,0	1,6-9,9	1,6	9,9	1,6	9,9	1,6	9,9	1,6	9,9	1,6	9,9	3,2-9,9
13,0	5,0-12,9	4,5	12,9	4,5	12,9	4,5	12,9	4,5	12,9	4,5	12,9	5,0-12,9
16,0	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
A2

RC: 60-62

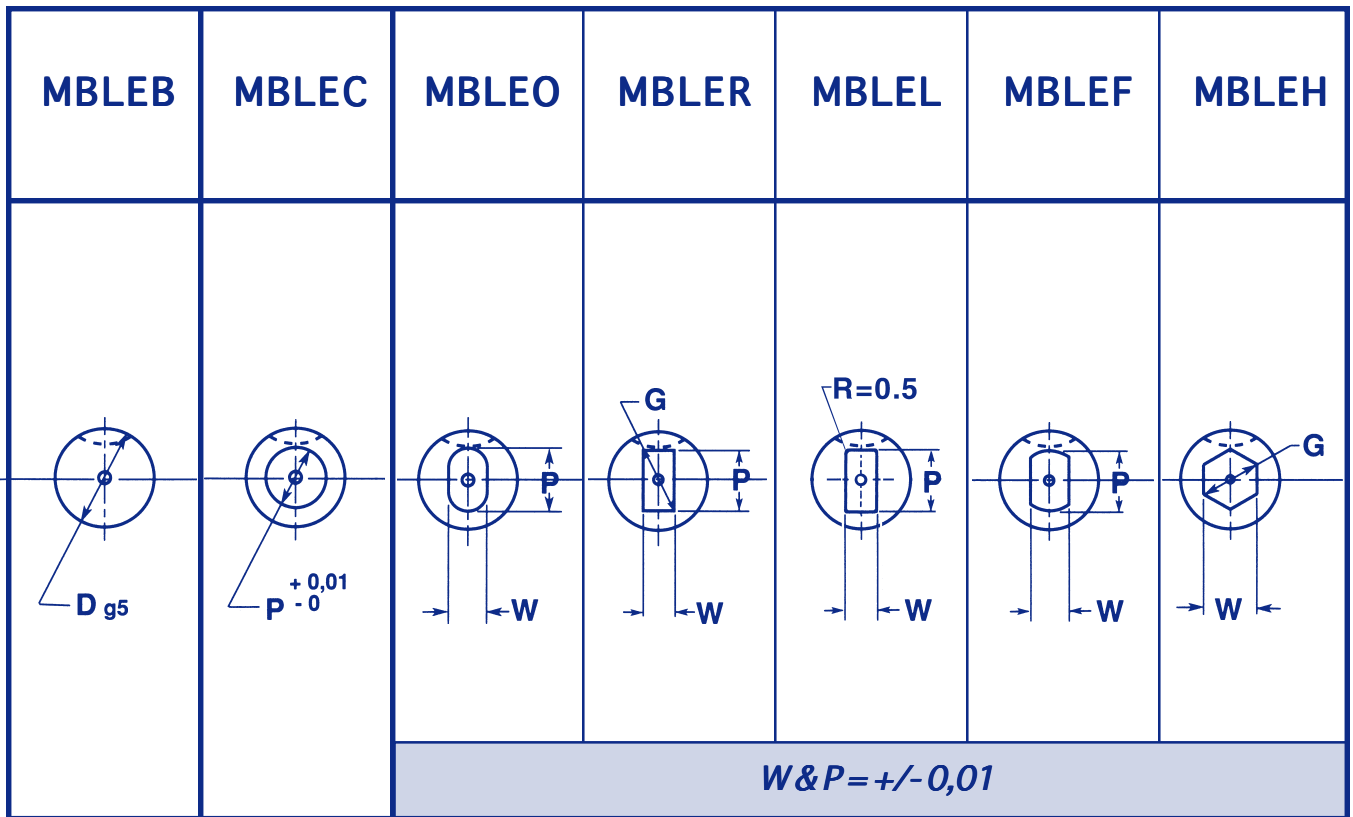


D	Lu - please specify			L						
	Std.	Alternate		50	56	63	71	80	90	100
6,0	13*			X	X	X	X	X	X	X
10,0	19*	13*		X	X	X	X	X	X	X
13,0	19	13		X	X	X	X	X	X	X
16,0	19	13	25			X	X	X	X	X
20,0	19	13	25			X	X	X	X	X
25,0	19	13	25			X	X	X	X	X
32,0	19	13	25				X	X	X	X
38,0	25	19	30					X	X	X

* Lu = 10 when P or W is below 2.20

When ordering specify: Pour commander:
Bestellbeispiel: Especificue Cuando Ordene:

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



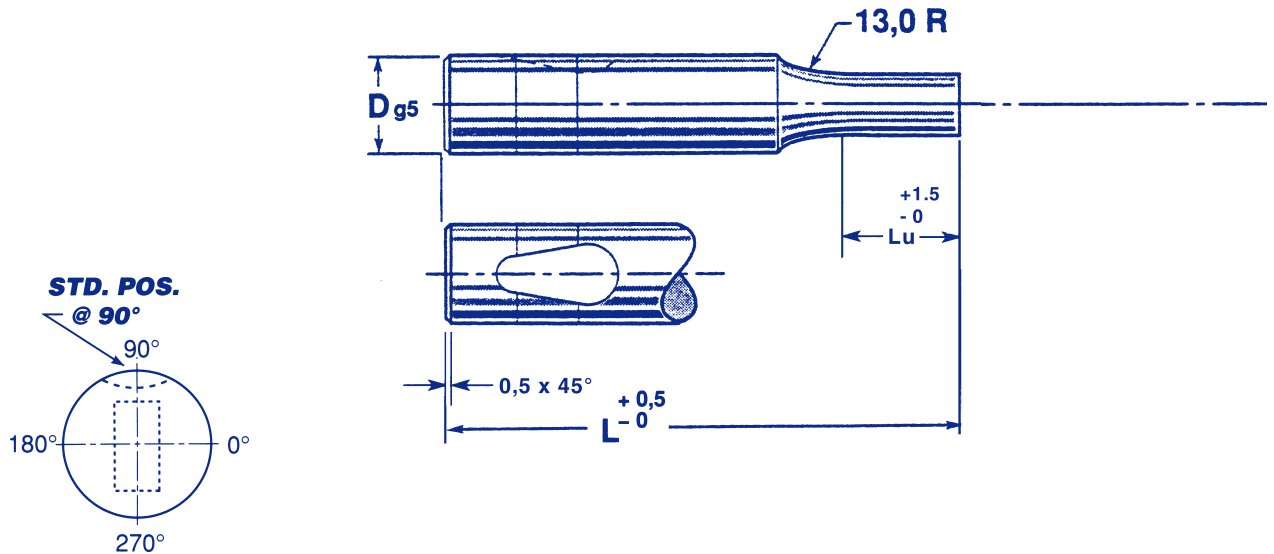
	MBLEB	MBLEC	MBLEO	MBLER	MBLEL	MBLEF	MBLEH					
	D	P	MIN W	MAX P	MIN W	MAX G	MIN W	MAX P	MIN W	MAX G	MIN W	MAX G
	6,0	1,6-5,9	1,6	5,9	1,6	5,9	1,6	5,9	1,6	5,9	1,6	5,9
	10,0	1,6-9,9	1,6	9,9	1,6	9,9	1,6	9,9	1,6	9,9	1,6	9,9
	13,0	5,0-12,9	4,5	12,9	4,5	12,9	4,5	12,9	4,5	12,9	4,5	12,9
	16,0	8,0-15,9	6,0	15,9	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

S/T ≤ 6,0 mm

Mat.: M2

RC: 60-62



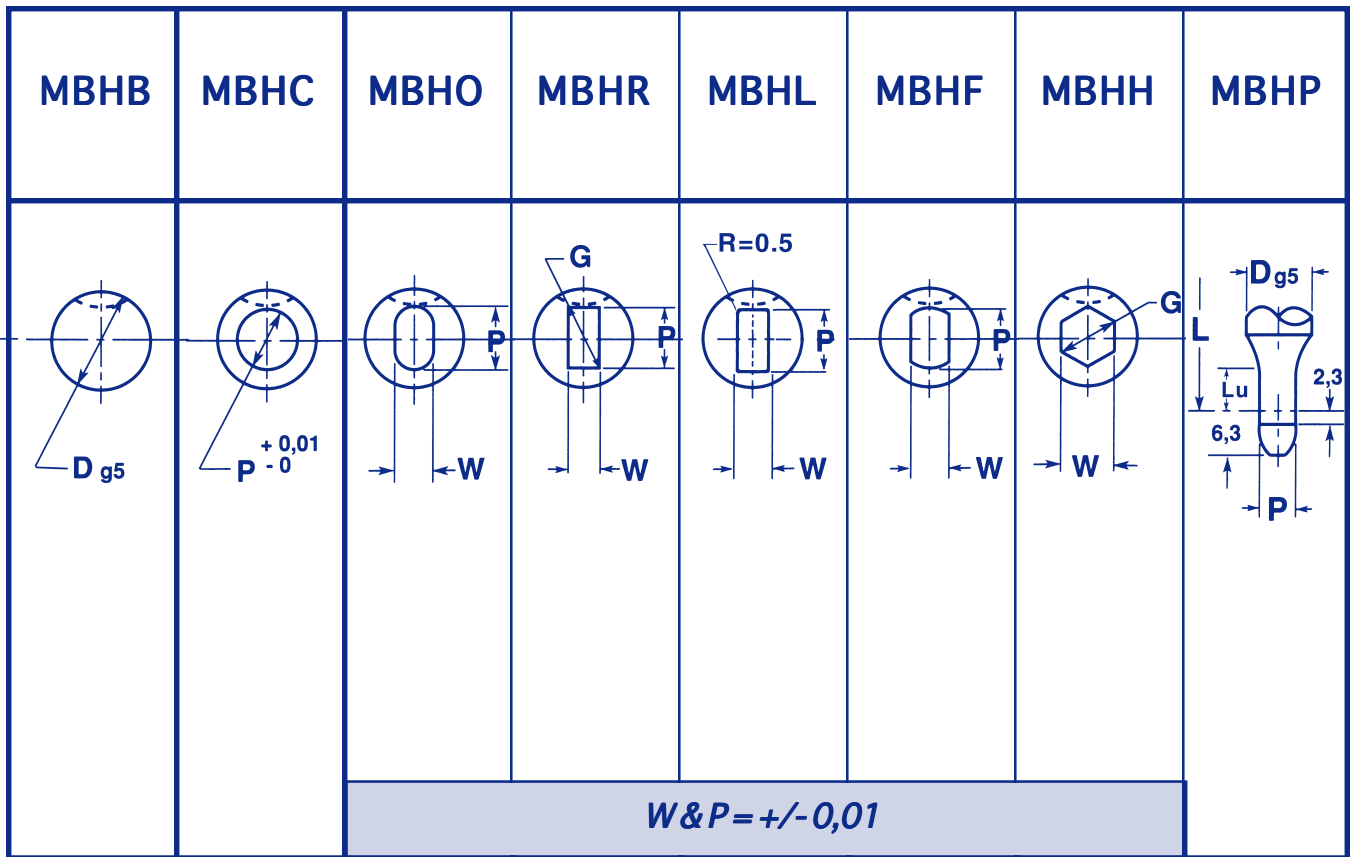
D	Lu - please specify			L						
	Std.	Alternate		63	71	80	90	100	110	125
10,0	19*	13*		X	X	X	X	X	X	X
13,0	19	13		X	X	X	X	X	X	X
16,0	19	13	25	X	X	X	X	X	X	X
20,0	19	13	25	X	X	X	X	X	X	X
25,0	19	13	25		X	X	X	X	X	X
32,0	19	13	25		X	X	X	X	X	X
40,0	25	19	30			X	X	X	X	X

* Lu = 10 when P or W is below 2.20

When ordering specify:
Bestellbeispiel:

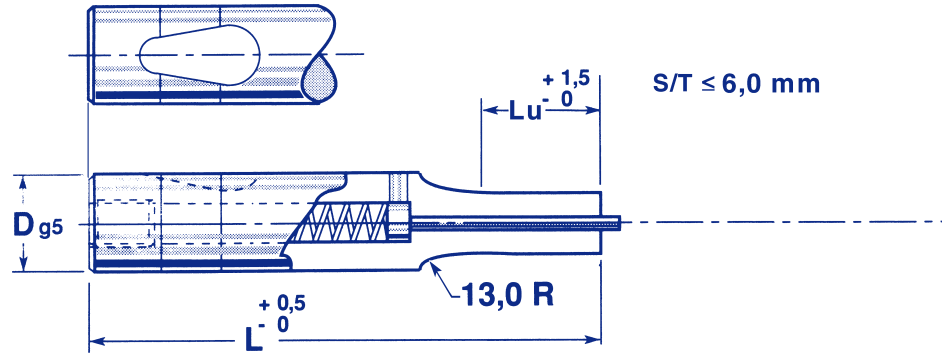
Pour commander:
Especifique Cuando Ordene:

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



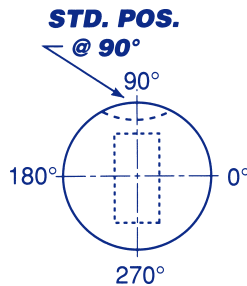
MBHB	MBHC	MBHO	MBHR	MBHL	MBHF	MBHH	MBHP					
D	P	MIN W	MAX P	MIN W	MAX G	MIN W	MAX G	MIN W	MAX P	MIN W	MAX G	P
10,0	1,6-9,9	1,6	9,9	1,6	9,9	1,6	9,9	1,6	9,9	1,6	9,9	2,5-9,9
13,0	5,0-12,9	4,5	12,9	4,5	12,9	4,5	12,9	4,5	12,9	4,5	12,9	5,0-12,9
16,0	8,0-15,9	6,0	15,9	6,0	15,9	6,0	15,9	6,0	15,9	6,0	15,9	8,0-15,9
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

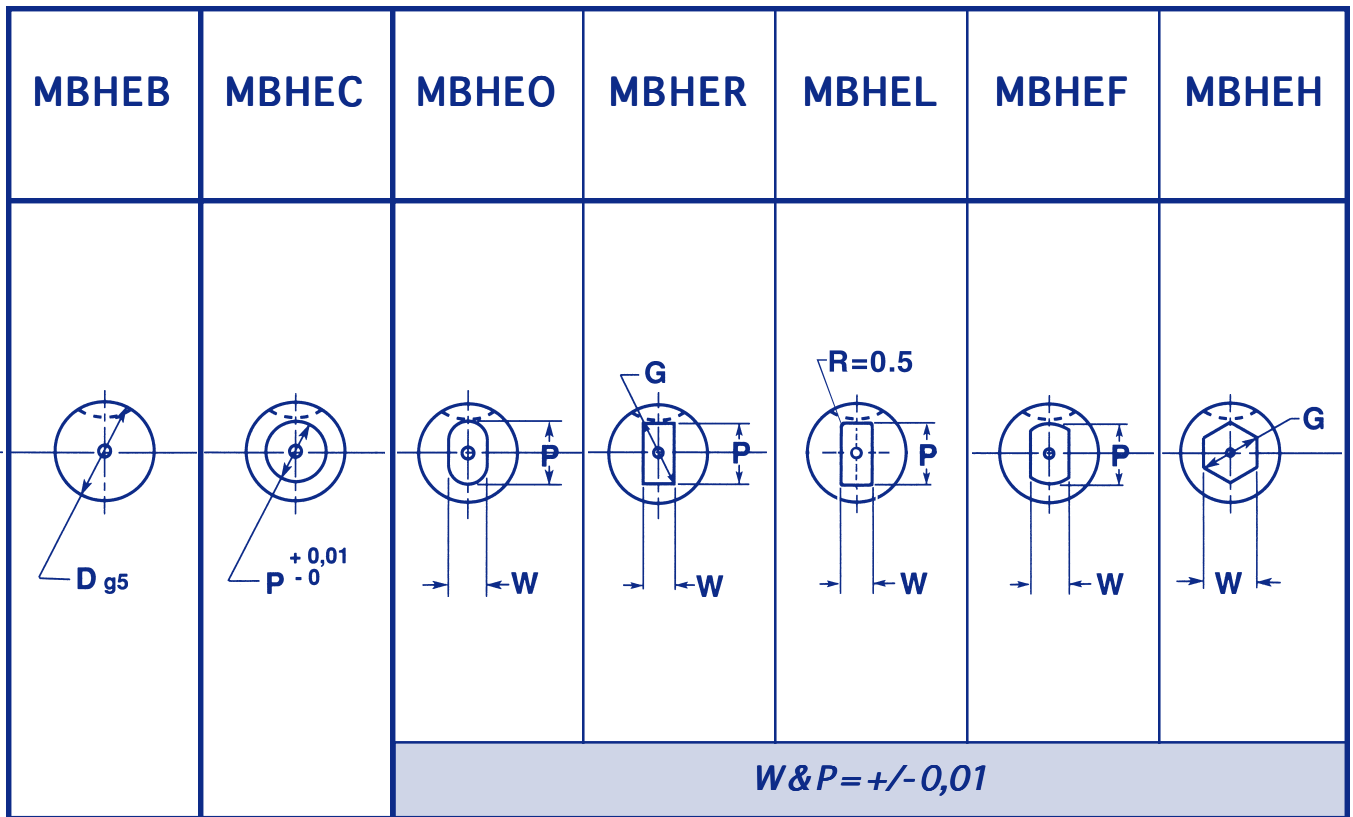
When ordering specify:

Bestellbeispiel:

Pour commander:

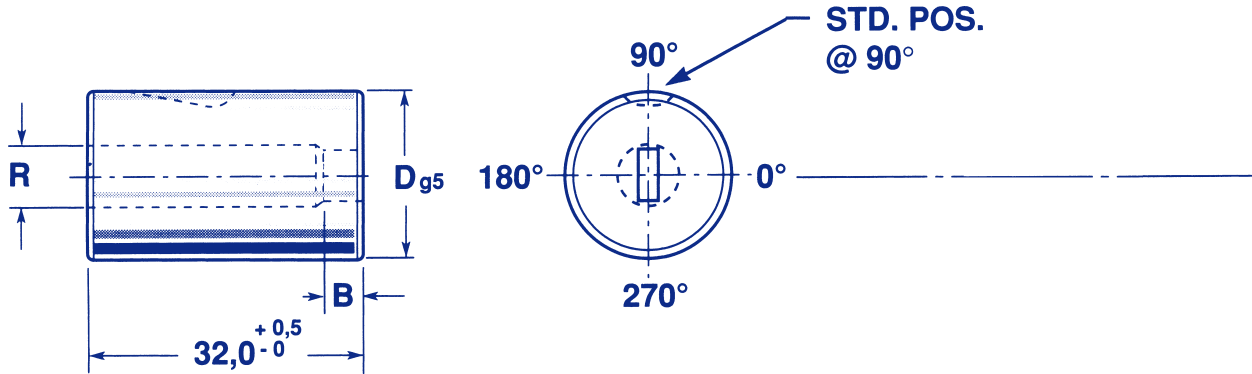
Especifique Cuando Ordene:

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
A2

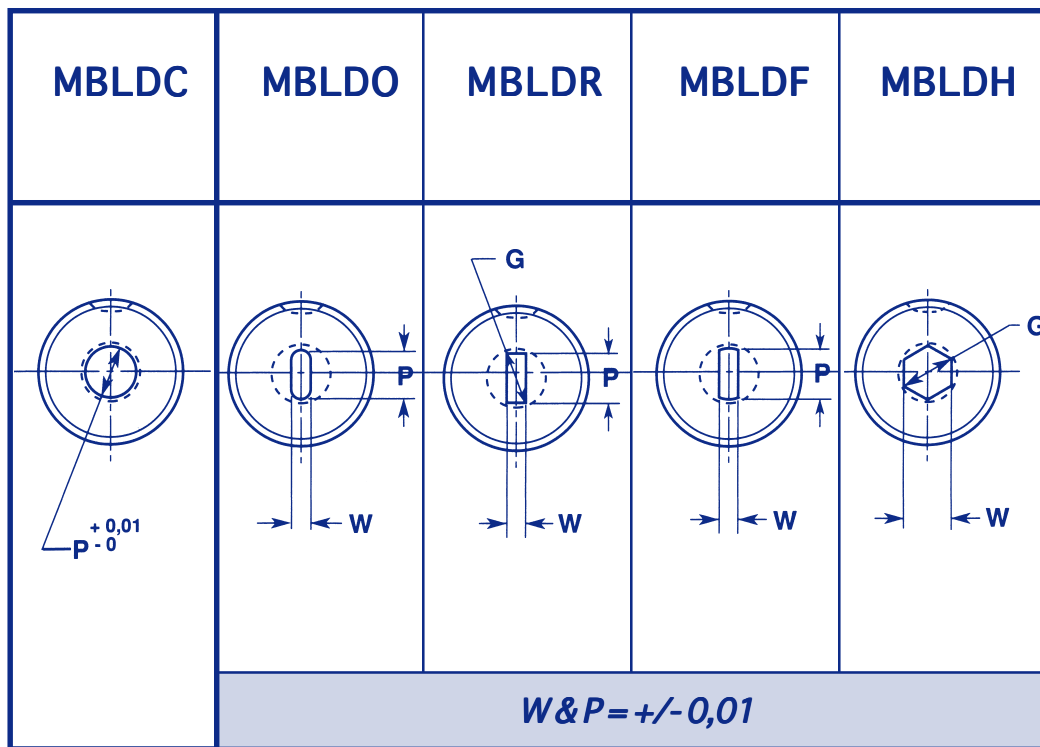
RC: 60-62

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:

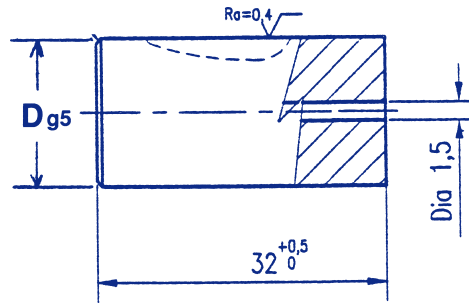
Pour commander:
Especifique Cuando Ordene:

Qty.: Mat. Cat. No. D W P
12 A2 MBLDO 25 x 5,5 x 10,5



	MBLDC	MBLDO		MBLDR		MBLDF		MBLDH		
	P	MIN W	MAX P	MIN P,W	MAX G	MIN W	MAX P	MIN W	MAX G	D
	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
A2

RC: 60-62

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

When ordering specify:
Bestellbeispiel:

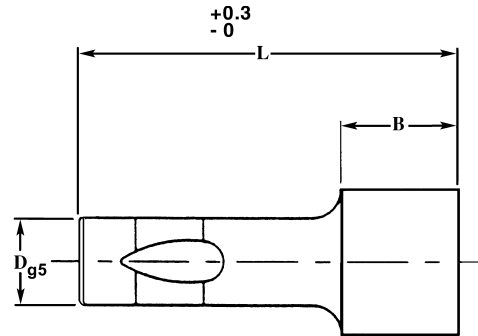
Pour commander:
Especifique Cuando Ordene:

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



Material: M2

**METRIC
BALL LOCK
HEAVY DUTY
KNOB STYLE**



MBHK

WITH EJECTOR
SPECIFY **MBHEK**

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

CIRCULAR	STANDARD SHAPES			
Std. Ball Seat 	OBLONG 	RECTANGLE 	LONG LIFE 	FLATTED ROUND
P=+0.1 -0	TOLERANCE FOR P & W = +0.01 -0.01			

DIA. D	POINT LENGTH B		LENGTH			BHKC		BHKO		BHKR		BHKL		BHKF	
						MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX
CODE	STD.	ALT.	80	90	100	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

RETAINERS HEAVY DUTY LIGHT DUTY

SINGLE BALL LOCK PUNCH RETAINERS

The interchangeable retainer that's become the industry standard

- n The in-line dowel guarantees precise punch-to-matrix alignment. You gain higher quality parts, longer punch life and drastically reduced downtime.
- n True-Position retainers eliminate hand fitting and cut mounting time by nearly 50%. Simply pull the retainer from its box and screw it to the die set. True Position retainers give you dimensional accuracy every time.
- n Shaped punches use the secondary dowel for precise alignment; round punches need only one.
- n The precision-ground ball hole assures perfect alignment of *any* punch shape—even if you replace the retainer.
- n Tapped ball release hole.
- n True-Position adaptability can cut your retainer inventory in half.



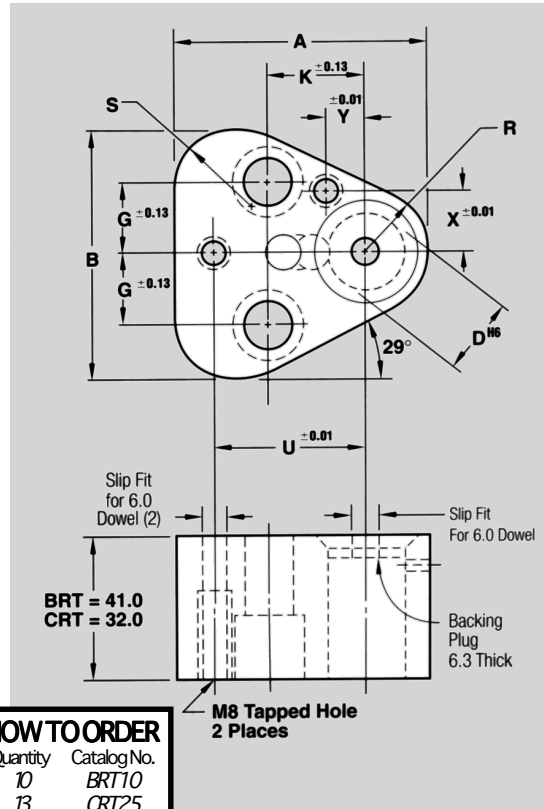
BRT HEAVY DUTY

CRT LIGHT DUTY

**TRUE POSITION
RETAINER
INCLUDES:**

- n 1 Ball n 1 Spring
- n 2 Screws n 2 Threaded Dowels
- n 1 Ball Release Screw

Manufactured by
Dayton Progress Corporation



CATALOG NUMBER

HEAVY DUTY	LIGHT DUTY	CODE	D	A	B	G	K	R	S	U	X	Y	SCREW SIZE
BRT	CRT	10	1000	445	43.7	11.1	190	9.5	120	26925	9.0	7.5	M8
BRT	CRT	13	1300	508	50.0	14.3	190	12.7	152	29970	12.0	6.5	M8
BRT	CRT	16	1600	540	53.2	15.9	190	14.3	168	31750	13.5	6.0	M8
BRT	CRT	20	2000	603	59.5	17.5	190	17.5	200	33530	16.5	5.0	M10
BRT	CRT	25	2500	699	69.1	19.8	238	22.2	247	40640	22.0	7.0	M12
BRT	CRT	32	3200	699	69.1	19.8	238	22.2	247	40640	22.0	7.0	M12
—	CRT	38	3800	774	76.6	24.0	270	26.0	285	43993	26.0	10.0	M12
BRT	—	40	4000	774	76.6	24.0	270	26.0	285	43993	26.0	10.0	M12

See Note Below

*Note: BRT is ±0.13. For precision tolerance (±0.01) specify XY at end of catalog number. Example: BRT13.XY
BRT conforms to N.A.A.M.S.T.M standard for Ball Lock Punch Retainer.

LIGHT DUTY RETAINER

TRN06

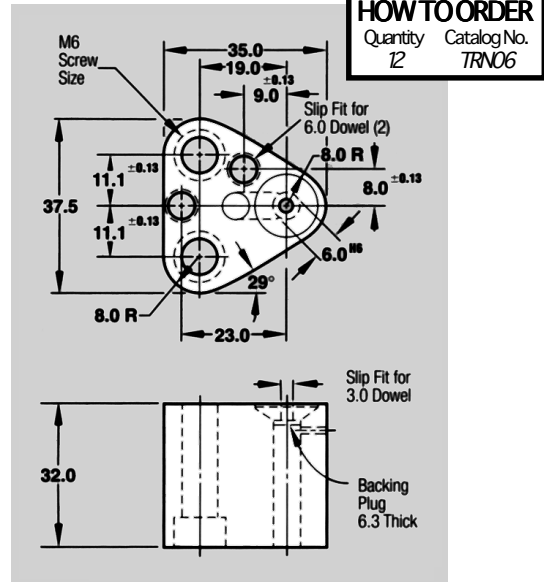


For Small Holes
and Limited Space Applications

- n Mounting space required to mount most retainers can be reduced by as much as 47% eliminating interference problems.
- n For piercing tightly spaced holes up to Ø6, the TRN solves most mounjin problems.


**TRN06 RETAINER
INCLUDES:**

- n 1 Ball n 1 Spring
- n 2 Screws n 2 Threaded Dowels
- n 1 Ball Release Screw




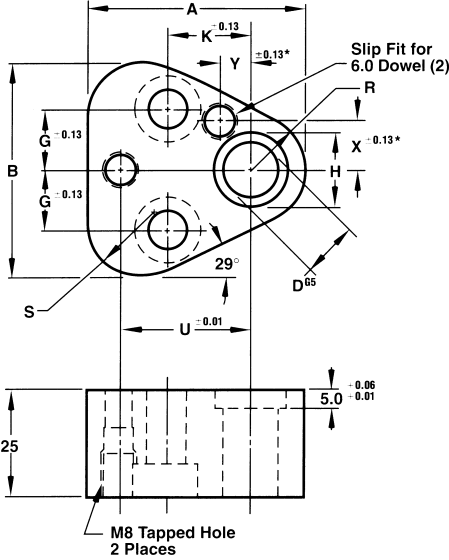
Headed Punch Retainers

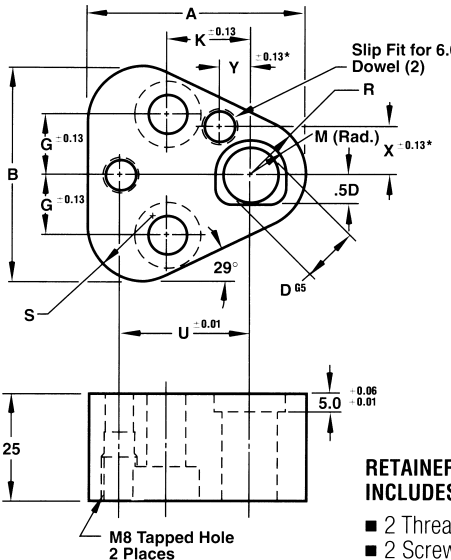
Type
ART
For
Round
Punches



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.

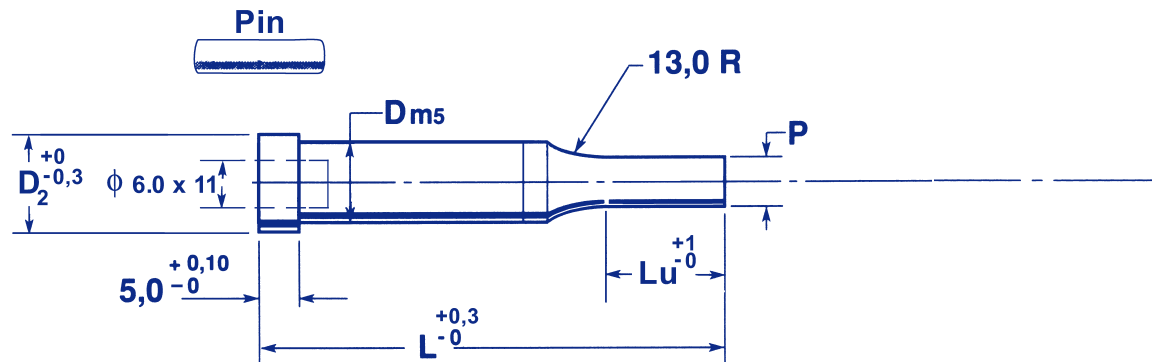
- Ground top and bottom
- Hardened to approximately Rc 42

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
A2

RC: 60-62

D	D ₂	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	24,0*	19	25	X	X	X	X	
25,0	29,0*	19	25	X	X	X	X	
32,0	36,0*	25	30	X	X	X	X	

* D+3 also available — please specify.

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

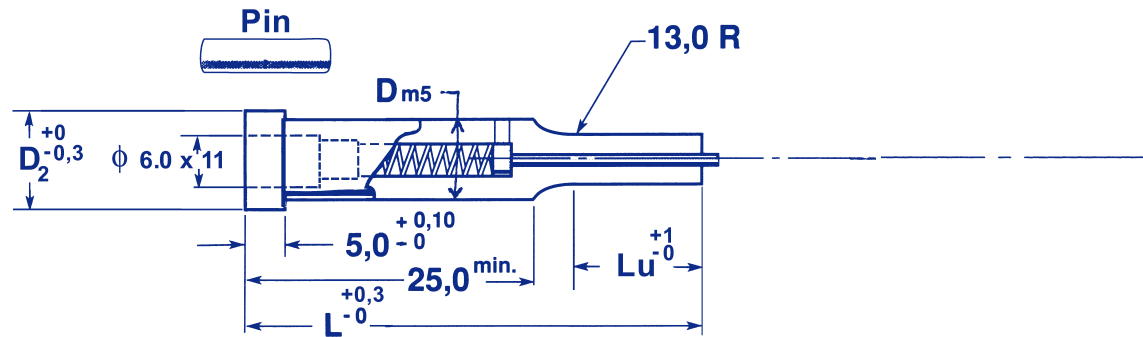
* For key-flats and other locating methods, see page 43.

* 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
A2

RC: 60-62

				L				
D	Dz	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

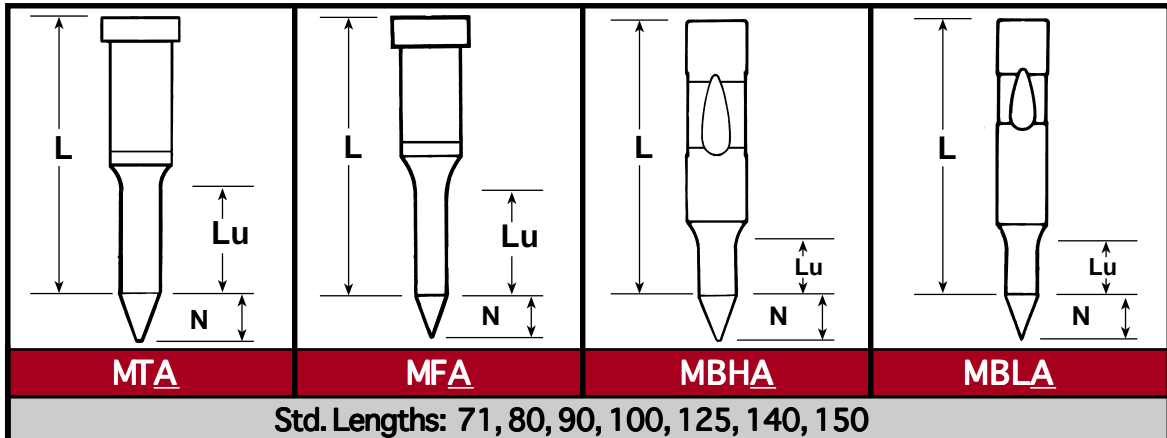
* For key-flats and other locating methods, see page 43.

* 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:

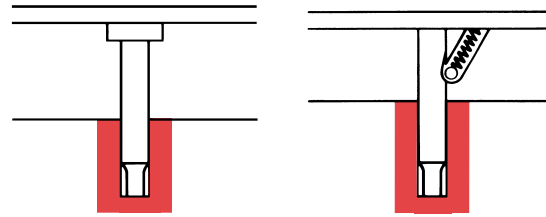
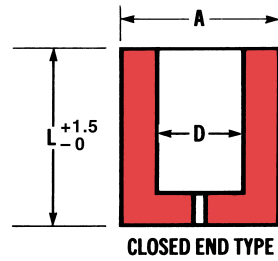
QTY.	TYPE	SHANK	LENGTH	P.	Lu
12	MBHA	20	X 110	X 17.53,	25

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



QUICKLY AND EASILY MOUNTED

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
MU13	13.0	26.0	71	1128	2010	2697
			45	2109	3334	—
			53	1471	2354	3432
MU16	16.0	30.0	56	1471	2354	2942
			71	1275	1961	2452
			45	2354	3825	—
MU20	20.0	38.0	53	2158	3531	4511
			56	2158	3531	4511
			71	1814	2942	3825
MU25	25.0	50.0	45	2452	3923	—
			53	2158	3629	5590
			71	1618	2942	4658
MU32	32.0	60.0	45	9317	14318	—
			53	7355	11572	15985
			71	4904	8336	13485

WILL FIT ALL STANDARD COMMERCIAL PUNCHES. STD DUROMETER 95A

WHEN ORDERING SPECIFY:

QTY. CAT. NO. LENGTH
 2 MU25 - 53

MK

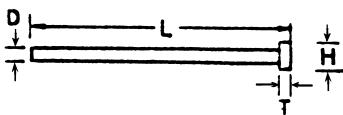
PIN - MKP				
Part#	D	H	T	L
MKP5	051	12	08	282
MKP6	069	19	12	508
MKP8	104	24	16	508
MKP10*	147	31	16	508
MKP20+	226	39	24	572

SPRING - MKS		
Part#	D	L
MKS5	20	508
MKS6	24	605
MKS8	33	668
MKS10*	42	762
MKS20+	50	762

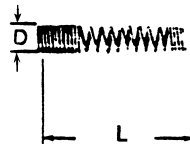
SET SCREW - MKSS		
Part #	D	L
MKSS5	M2,5x0,45	5
MKSS6	M3x0,5	5
MKSS8	M4x0,7	5
MKSS10*	M5x0,8	5
MKSS20+	M6x1	6

* also fits 13 and 16mm diameter punches

+ also fits 25 and 32 mm diameter punches



pin



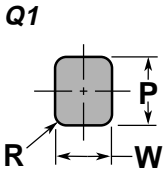
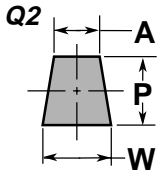
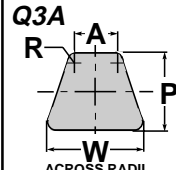
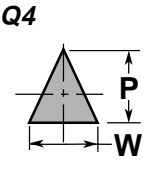
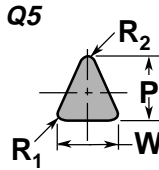
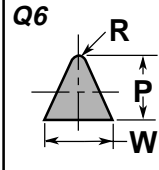
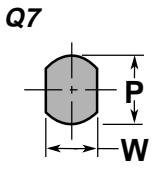
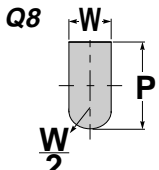
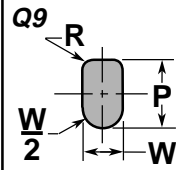
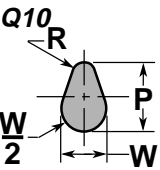
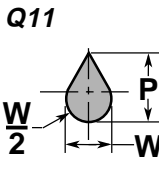
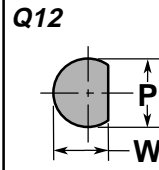
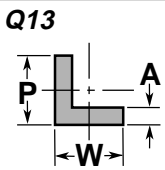
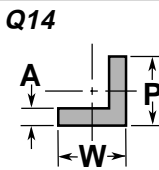
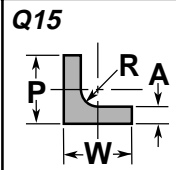
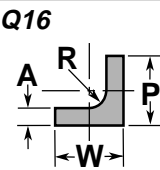
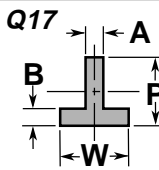
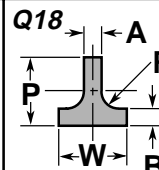
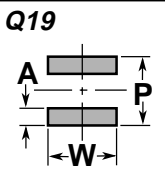
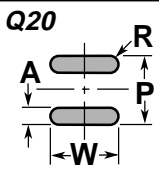
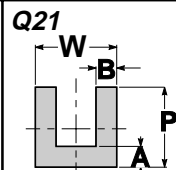
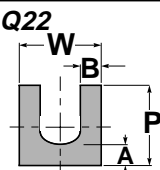
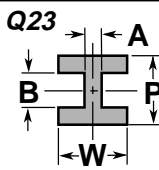
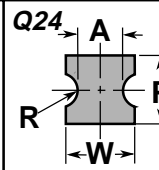
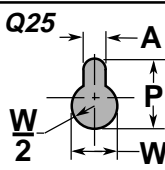
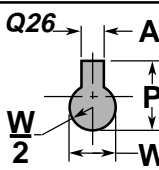
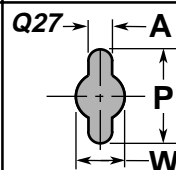
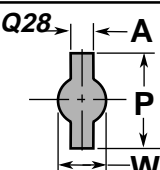
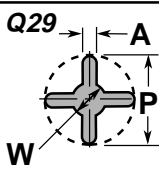
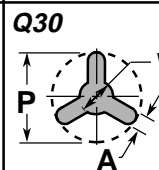
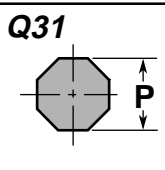
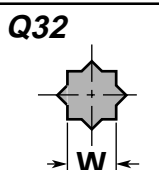
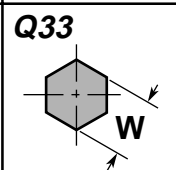
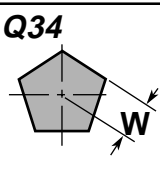
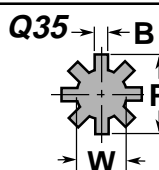
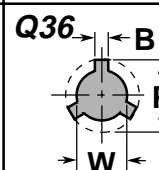
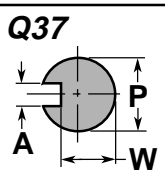
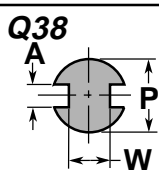
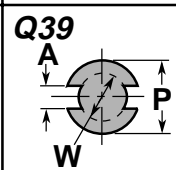
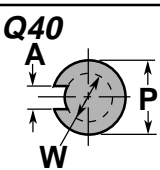
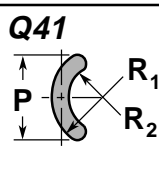
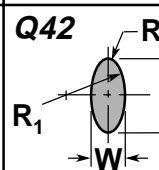
spring



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	0°
							
	Q25	Q26	Q27	Q28	Q29	Q30	
							
	Q31	Q32	Q33	Q34	Q35	Q36	
							
	Q37	Q38	Q39	Q40	Q41	Q42	
							
	270°						

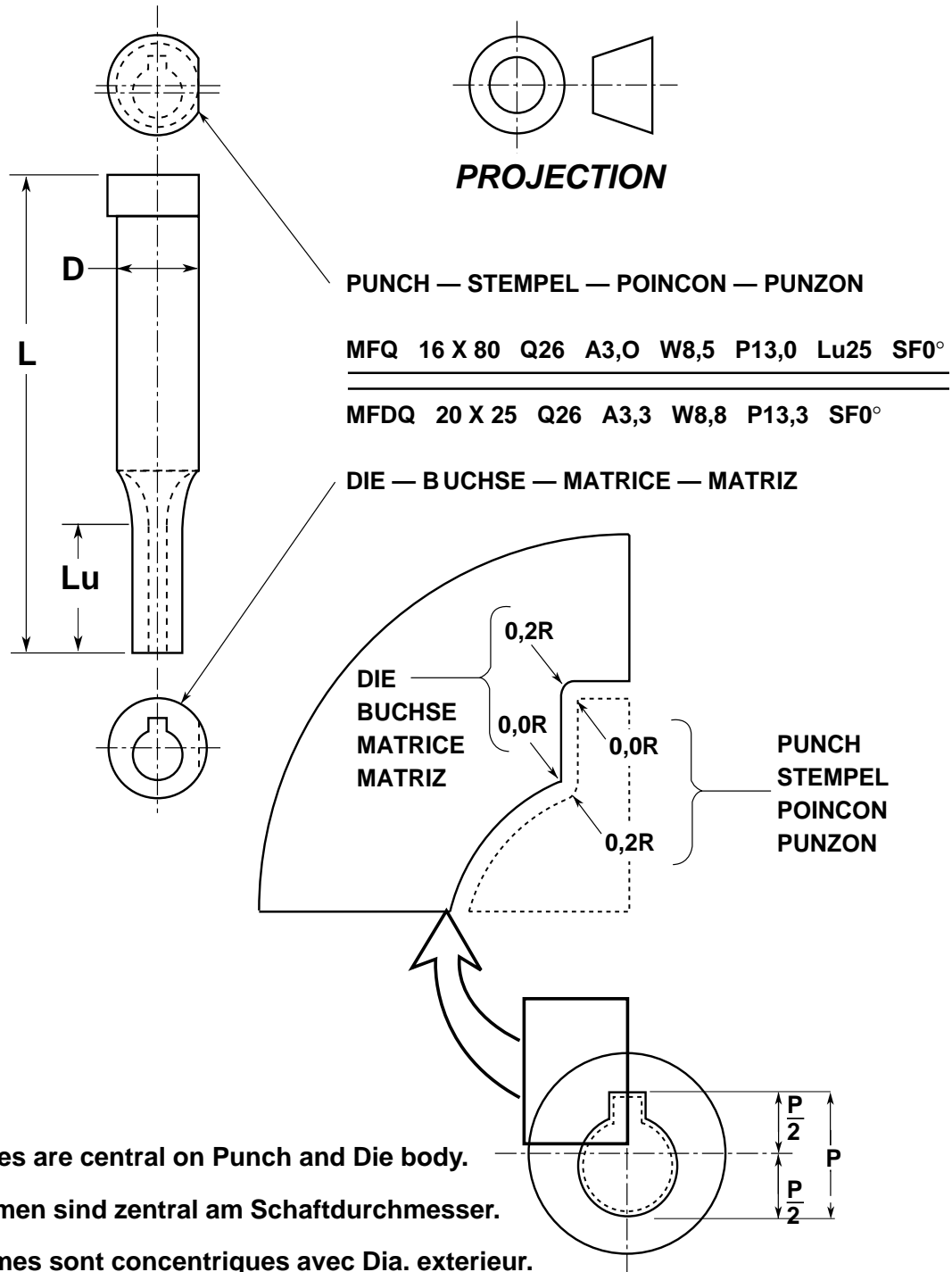
For key-flats, and other locating methods see page 43.

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.
Especifique Punzon o Matriz Cuando ordene.

EXAMPLE — BEISPIEL — EXAMPLE — EJEMPLO



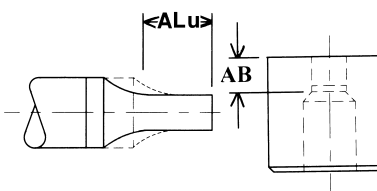
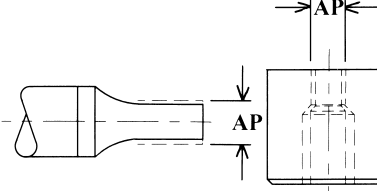
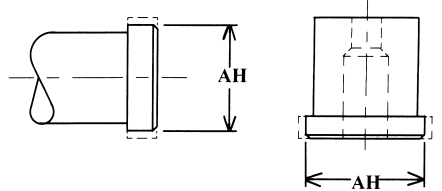
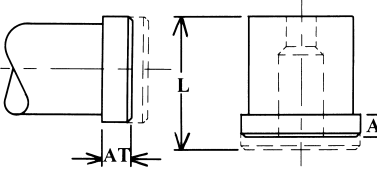
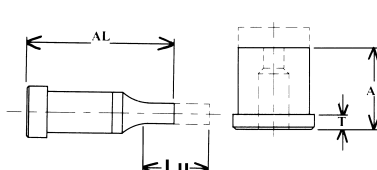
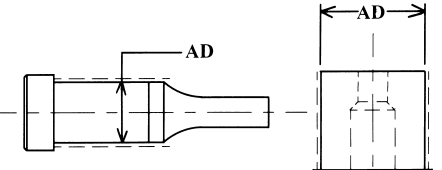
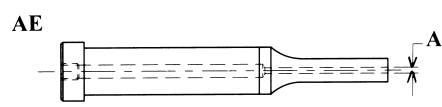
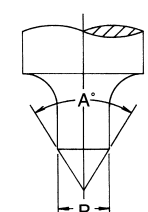
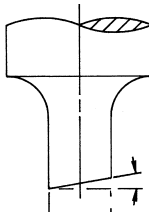
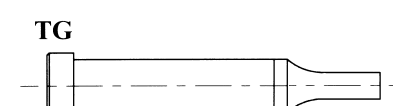
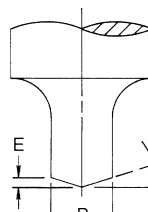
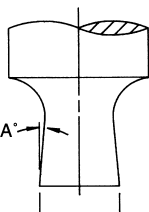
All shapes are central on Punch and Die body.

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 CATALOGUE 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 CATALOGUE 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.
 Especificue 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>POINCON PUNZONE</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	j6	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	+125	+125	+200	+6	+6	+8	+8	+10
	-12	-16	-6	-8	-2	-3	-4	-6	-14	-25	-2	-3	-125	-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	-25	-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	-25	-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																	
	H8	F7	G7	H5	H6	H7	H8	H9	H10	H11	J	JS	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