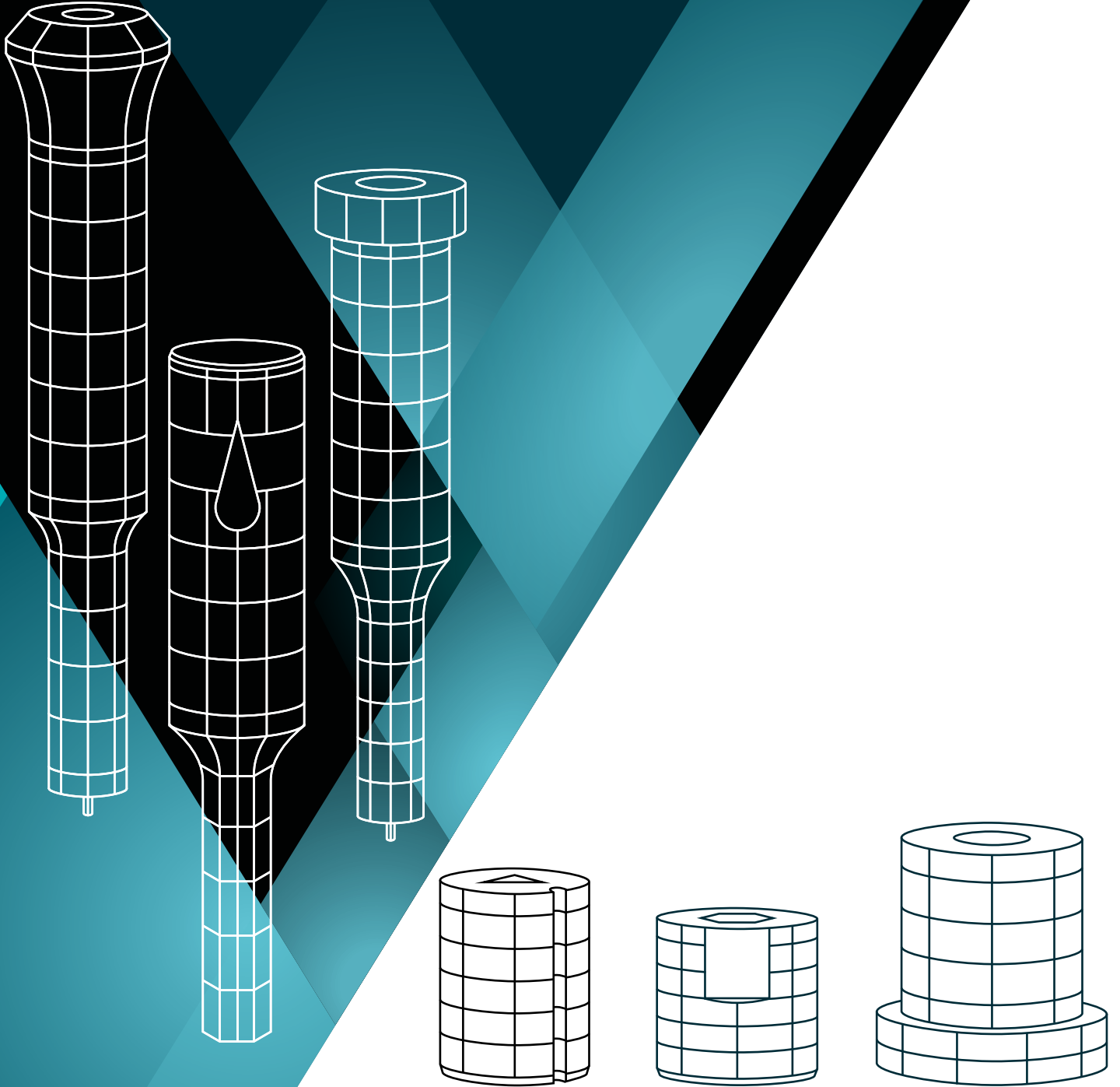


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Y TROQUELES

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ANIVERSARIO



CATALOG

PUNCHES AND DIES

Tipco Italy, part of Tipco Inc Group, was founded in Trezzo sull'Adda, Milan, in 2001. By continuing to invest in **the very latest manufacturing technologies**, we quickly became the **European Leader in Punches and Dies production**. Our target has always been to give our customers **the best service** providing value through machine know-how, design and application assistance. Tipco's roots are in our **metalworking competencies** that allow us to supply custom precision machined components for a myriad of applications.



Our Vision

Our strength lies on three key elements: **Rapidity, Quality and Reliability**.

Rapidity: our **fast and efficient system** allows us to offer "same day" shipping for your emergency requirements as well as ultra fast delivery time for standard catalogue items to manage urgency. We provide daily deliveries for standard products and we manage coating and requests according to customer specification quickly.

Quality: from blank part to finished products, **we aim to an excellent level in technology and process**.

Reliability: Our success is based on the enthusiasm and creativity of our employees. **We develop new innovative solutions** for the customers, which may include tool design suggestions, material selection or coatings to optimize tool performance.

Our technical background and competency regarding production, the quality of our products and leading machines have made Tipco Italy the chosen and reliable partner around Europe.



TIPCO HAS THE ABILITY TO BE YOUR MACHINING SOURCE.

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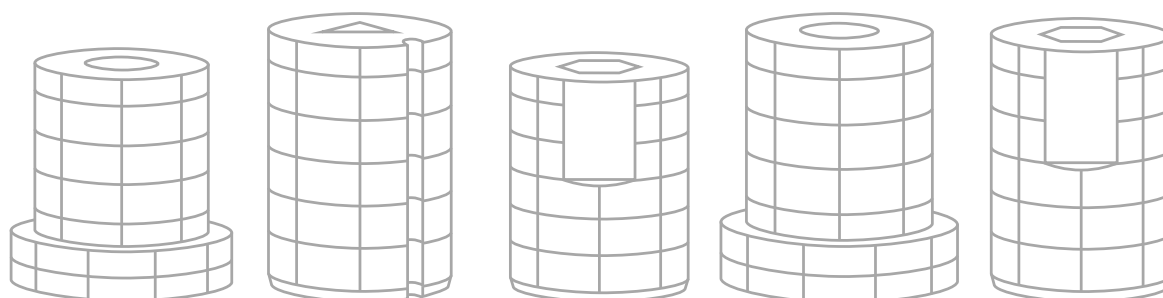
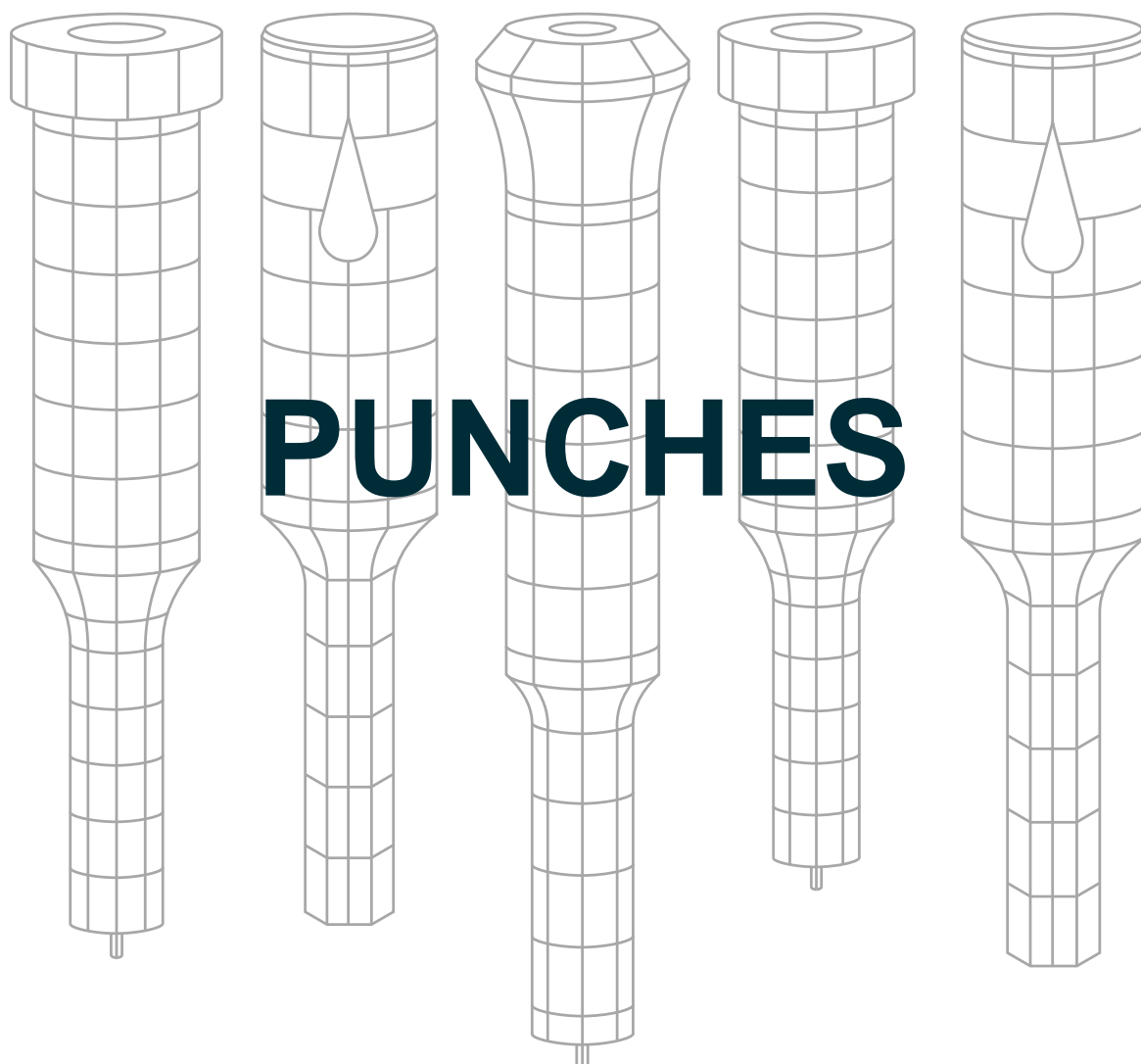
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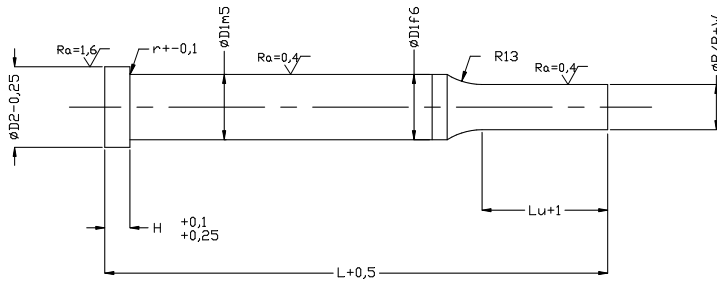
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Material	Hardness HRC
HSS - M2	60-62
A2	58-60
PS (on request)	62-64

All heads drawn to HRC: 45-55

MTB	MTC	MTO	MTR	MTL	MTF	MTH
			$G = \sqrt{W^2 + P^2}$	$G = \sqrt{(W - 2R)^2 + (P - 2R)^2} - 2R$		$G = W \times 1,1547$

For qualified shapes see page 50.

D1	D2	H	Lu	ROUND	SHAPE		OVERALL LENGTH L								
				RANGE P	MIN W	MAX G/P	50	56	63	71	80	90	100	125	
3,0	5,0	3	7/13	1,0 - 2,99	1,0	2,99	X	X	X	X	X	X	X	X	
4,0	6,0	3	7/13	1,0 - 3,99	1,0	3,99	X	X	X	X	X	X	X	X	
5,0	8,0	5	7/13/19	1,5 - 4,99	1,5	4,99	X	X	X	X	X	X	X	X	X
6,0	9,0	5	13/19	1,5 - 5,99	1,5	5,99	X	X	X	X	X	X	X	X	X
8,0	11,0	5	13/19/25	2,5 - 7,99	2,5	7,99	X	X	X	X	X	X	X	X	X
10,0	13,0	5	13/19/25	4,0 - 9,99	3,5	9,99	X	X	X	X	X	X	X	X	X
13,0	16,0	5	13/19/25	5,0 - 12,99	4,5	12,99	X	X	X	X	X	X	X	X	X
16,0	19,0	5	13/19/25	8,0 - 15,99	6,0	15,99		X	X	X	X	X	X	X	X
20,0	23,0	5	13/19/25	12,0 - 19,99	8,0	19,99		X	X	X	X	X	X	X	X
25,0	28,0	5	13/19/25	16,0 - 24,99	10,0	24,99		X	X	X	X	X	X	X	X
32,0	35,0	5	13/19/25	20,0 - 31,99	10,0	31,99			X	X	X	X	X	X	X

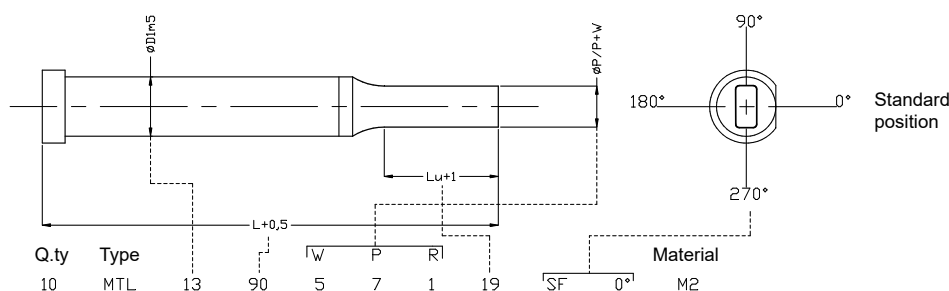
For extended range shank diameters see the following page.

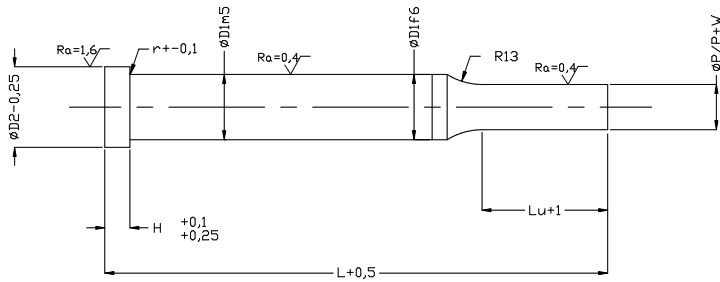
For standard alterations see pages 51 and 52.

For flats see page 53.

See page 67 for surface treatments and coatings.

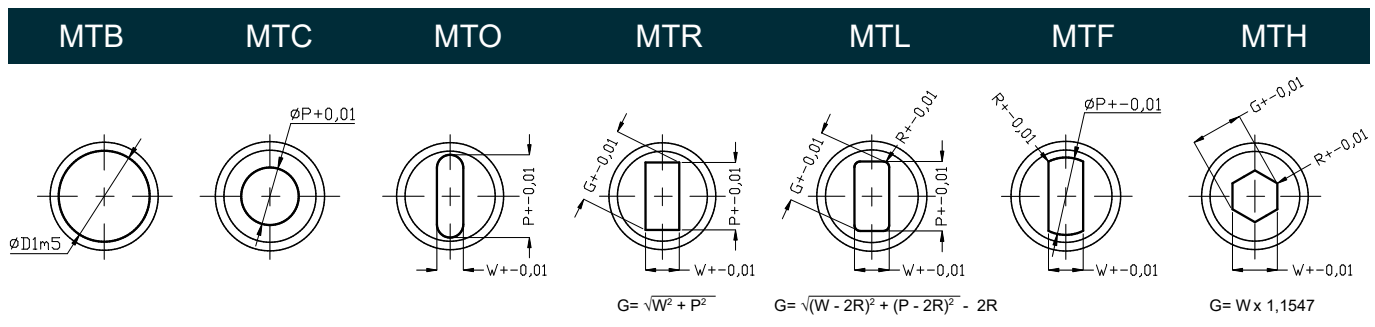
Order example:





Material	Hardness HRC
HSS - M2	60-62
A2	58-60
PS (on request)	62-64

All heads drawn to HRC: 45-55



For qualified shapes see page 50.

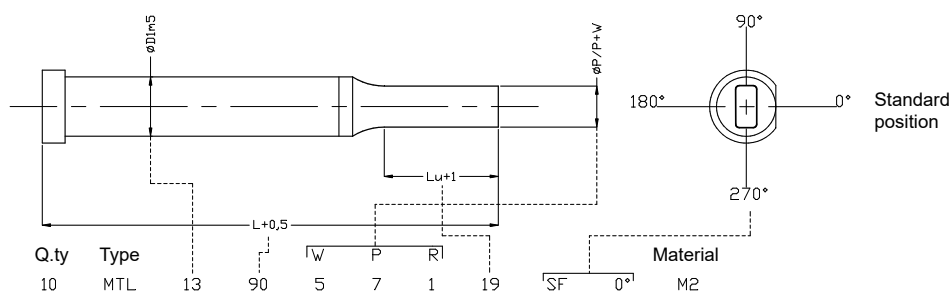
D1	D2	H	Lu	ROUND	SHAPE		OVERALL LENGTH L				
				RANGE P	MIN W	MAX G/P	71	80	90	100	125
40,0	43,0	5	25/30	20,0 - 39,99	8,0	39,99	X	X	X	X	X
45,0	48,0	5	25/30	25,0 - 44,99	9,0	44,99	X	X	X	X	X
50,0	53,0	5	25/30	30,0 - 49,99	10,0	49,99	X	X	X	X	X
56,0	59,0	5	25/30	35,0 - 55,99	11,0	55,99	X	X	X	X	X
63,0	66,0	5	25/30	40,0 - 62,99	12,0	62,99	X	X	X	X	X

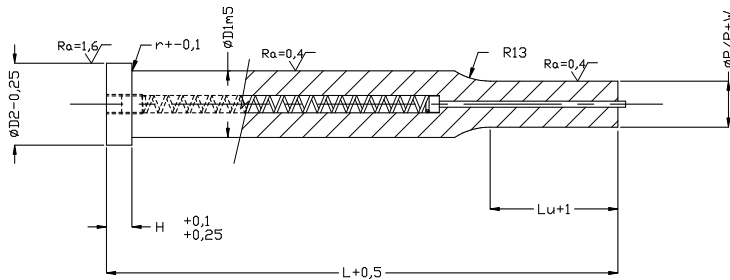
For standard alterations see pages 51 and 52.

For flats see page 53.

See page 67 for surface treatments and coatings.

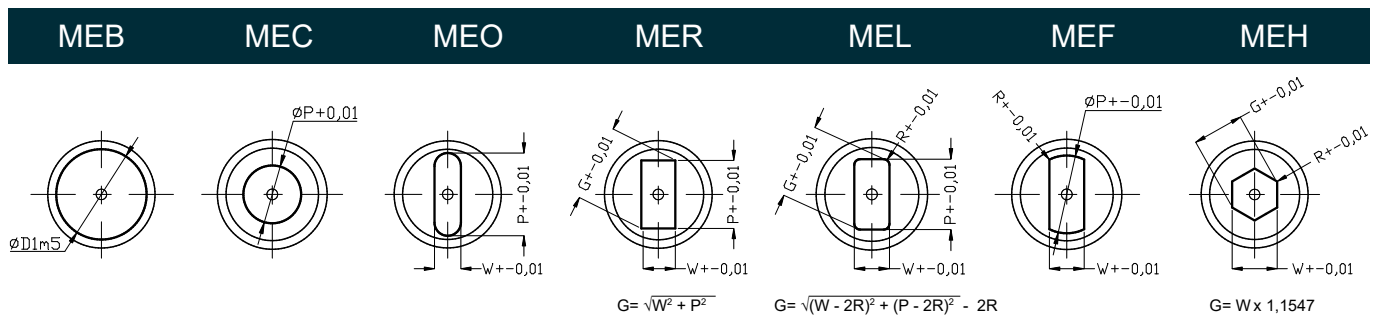
Order example:





Material	Hardness HRC
HSS - M2	60-62
A2	58-60
PS (on request)	62-64

All heads drawn to HRC: 45-55



For qualified shapes see page 50.

D1	D2	H	Lu	ROUND	SHAPE		OVERALL LENGTH L								
				RANGE P	MIN W	MAX G/P	50	56	63	71	80	90	100	125	
5,0	8,0	5	7/13/19	1,5 - 4,99	1,5	4,99	X	X	X	X	X	X	X	X	X
6,0	9,0	5	13/19	1,5 - 5,99	1,5	5,99	X	X	X	X	X	X	X	X	X
8,0	11,0	5	13/19/25	2,5 - 7,99	2,5	7,99	X	X	X	X	X	X	X	X	X
10,0	13,0	5	13/19/25	4,0 - 9,99	3,5	9,99	X	X	X	X	X	X	X	X	X
13,0	16,0	5	13/19/25	5,0 - 12,99	4,5	12,99	X	X	X	X	X	X	X	X	X
16,0	19,0	5	13/19/25	8,0 - 15,99	6,0	15,99		X	X	X	X	X	X	X	X
20,0	23,0	5	13/19/25	12,0 - 19,99	8,0	19,99		X	X	X	X	X	X	X	X
25,0	28,0	5	13/19/25	16,5 - 24,99	10,0	24,99		X	X	X	X	X	X	X	X
32,0	35,0	5	13/19/25	20,0 - 31,99	10,0	31,99		X	X	X	X	X	X	X	X

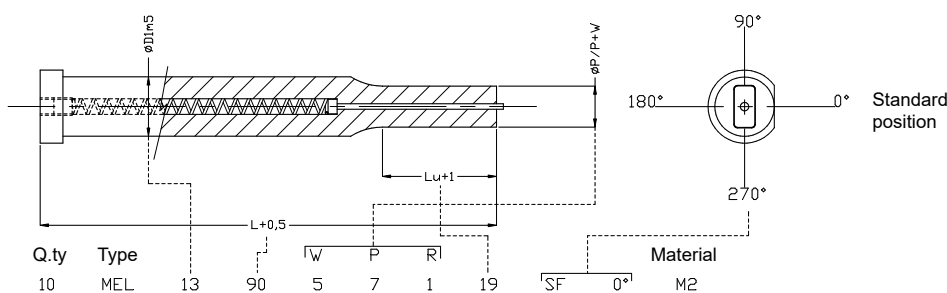
For extended range shank diameters see the following page.

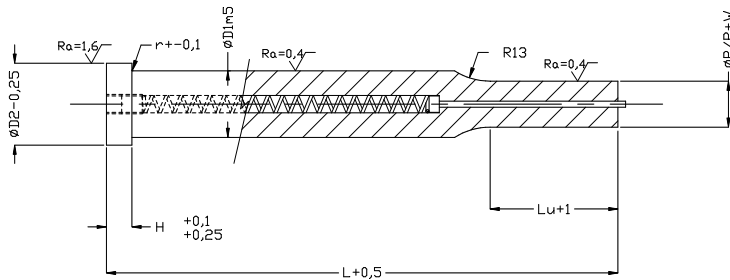
For standard alterations see pages 51 and 52.

For flats see page 53.

See page 67 for surface treatments and coatings.

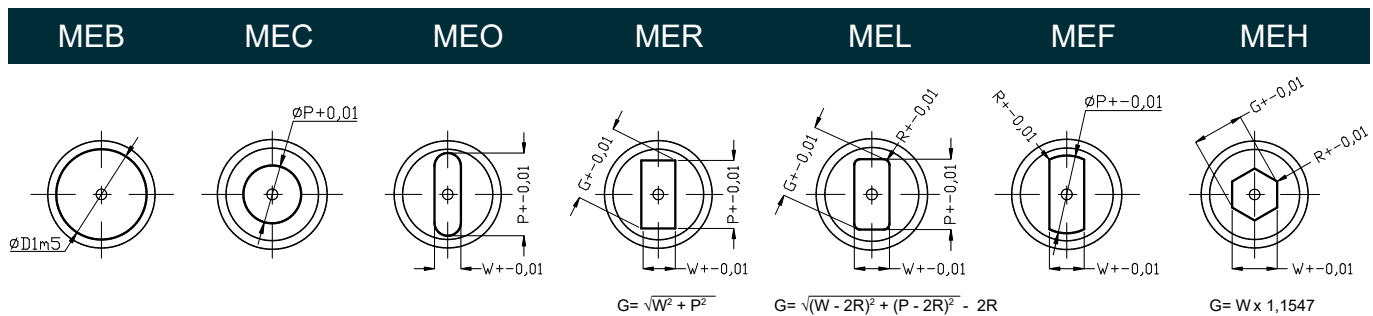
Order example:





Material	Hardness HRC
HSS - M2	60-62
A2	58-60
PS (on request)	62-64

All heads drawn to HRC: 45-55



For qualified shapes see page 50.

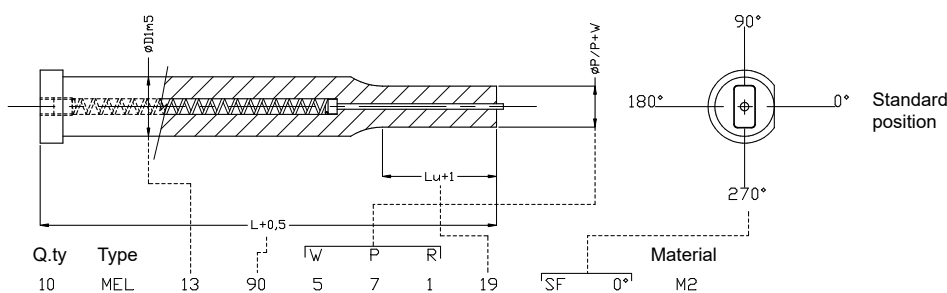
D1	D2	H	Lu	ROUND	SHAPE		OVERALL LENGTH L				
				RANGE P	MIN W	MAX G/P	71	80	90	100	125
40,0	43,0	5	25/30	20,0 - 39,99	8,0	33,99	X	X	X	X	X
45,0	48,0	5	25/30	25,0 - 44,99	9,0	44,99	X	X	X	X	X
50,0	53,0	5	25/30	30,0 - 49,99	10,0	49,99	X	X	X	X	X
56,0	59,0	5	25/30	35,0 - 55,99	11,0	55,99	X	X	X	X	X
63,0	66,0	5	25/30	40,0 - 62,99	12,0	62,99	X	X	X	X	X

For standard alterations see pages 51 and 52.

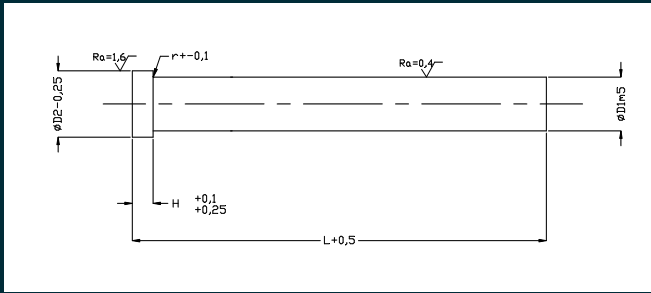
For flats see page 53.

See page 67 for surface treatments and coatings.

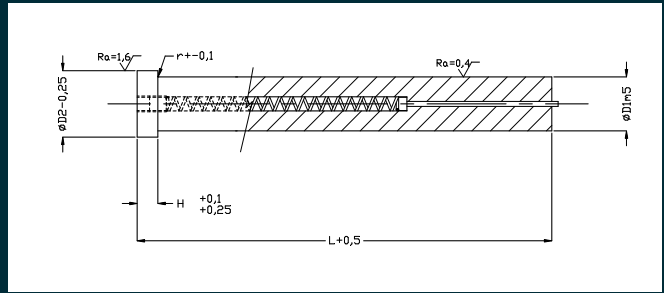
Order example:



MTX



MEX



RANGE D1	D2	H	OVERALL LENGTH L							
			50	56	63	71	80	90	100	125
2,0 - 3,0*	5,0	3	X	X	X	X	X	X		
3,01 - 4,0*	6,0	3	X	X	X	X	X	X		
4,01 - 5,0	8,0	5	X	X	X	X	X	X	X	
5,01 - 6,0	9,0	5	X	X	X	X	X	X	X	
6,01 - 8,0	11,0	5	X	X	X	X	X	X	X	X
8,01 - 10,0	13,0	5	X	X	X	X	X	X	X	X
10,01 - 13,0	16,0	5	X	X	X	X	X	X	X	X
13,01 - 16,0	19,0	5		X	X	X	X	X	X	X
16,01 - 20,0	23,0	5		X	X	X	X	X	X	X
20,01 - 25,0	28,0	5		X	X	X	X	X	X	X
25,01 - 32,0	35,0	5		X	X	X	X	X	X	X

*MTX only

For standard alterations see pages 51 and 52.

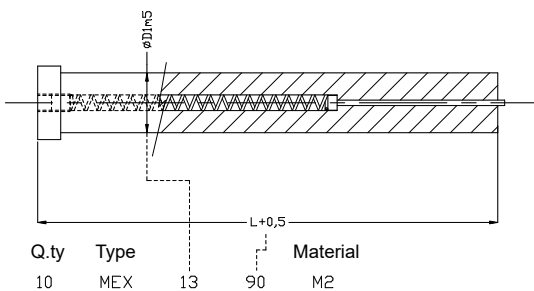
For flats see page 53.

See page 67 for surface treatments and coatings.

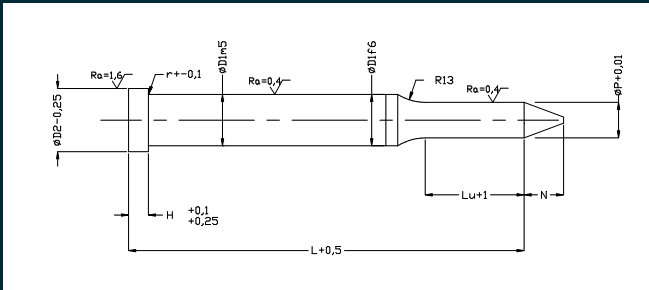
Material	Hardness HRC
HSS - M2	60-62
A2	58-60
PS (on request)	62-64

All heads drawn to HRC: 45-55

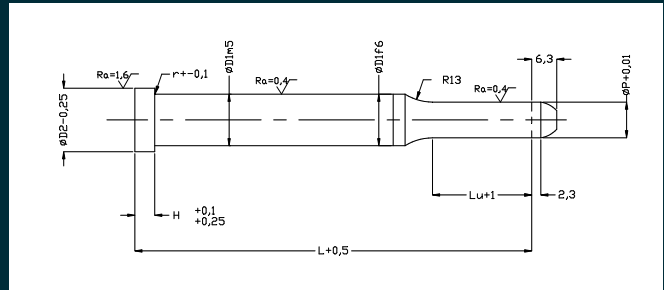
Order example:



MTA



MTP



MTA						OVERALL LENGTH L				
D1	D2	H	Lu	N	RANGE P	63	71	80	90	100
10,0	13,0	5	13/19/25	10,0	4,9 - 9,99	X	X	X	X	X
13,0	16,0	5	13/19/25	12,0	5,9 - 12,99	X	X	X	X	X
16,0	19,0	5	13/19/25	17,0	9,9 - 15,99	X	X	X	X	X
20,0	23,0	5	13/19/25	22,0	12,9 - 19,99	X	X	X	X	X
25,0	28,0	5	13/19/25	25,0	16,9 - 24,99	X	X	X	X	X
32,0	35,0	5	13/19/25	25,0	19,9 - 31,99	X	X	X	X	X

MTP						OVERALL LENGTH L					
D1	D2	H	Lu	RANGE P	50	56	63	71	80	90	100
5,0	8,0	5	13	1,0 - 4,99	X	X	X	X	X	X	X
6,0	9,0	5	13/19	1,9 - 5,99	X	X	X	X	X	X	X
8,0	11,0	5	13/19/25	2,4 - 7,99	X	X	X	X	X	X	X
10,0	13,0	5	13/19/25	3,9 - 9,99	X	X	X	X	X	X	X
13,0	16,0	5	13/19/25	4,9 - 12,99	X	X	X	X	X	X	X
16,0	19,0	5	13/19/25	7,9 - 15,99	X	X	X	X	X	X	X
20,0	23,0	5	13/19/25	11,9 - 19,99	X	X	X	X	X	X	X
25,0	28,0	5	13/19/25	14,9 - 24,99		X	X	X	X	X	X
32,0	35,0	5	13/19/25	19,9 - 31,99		X	X	X	X	X	X

For standard alterations see pages 51 and 52.

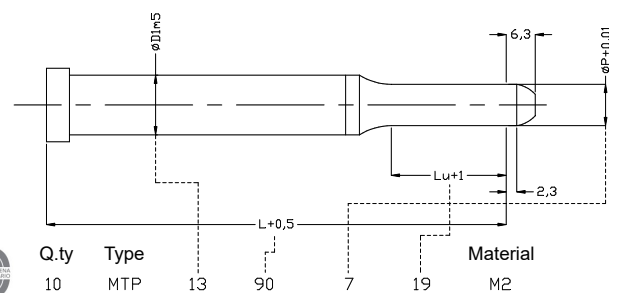
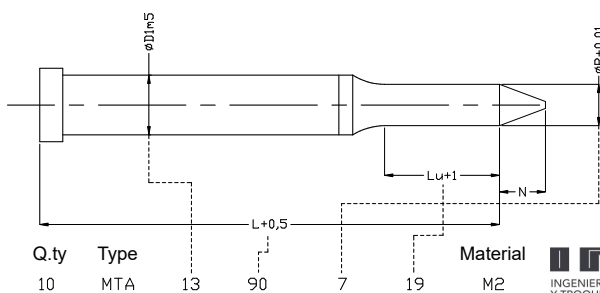
For flats see page 53.

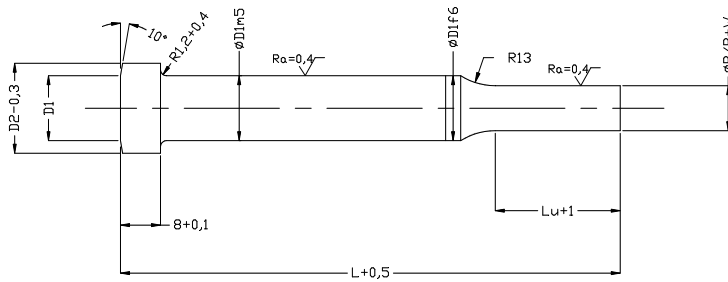
See page 67 for surface treatments and coatings.

Material	Hardness HRC
HSS - M2	60-62
A2	58-60
PS (on request)	62-64

All heads drawn to HRC: 45-55

Order example:





Material	Hardness HRC
HSS - M2	60-62
PS (on request)	62-64

All heads drawn to HRC: 45-55

MTUB	MTUC	MTUO	MTUR	MTUL	MTUF	MTUH
			$G = \sqrt{W^2 + P^2}$	$G = \sqrt{(W - 2R)^2 + (P - 2R)^2} - 2R$		$G = W \times 1,1547$

For qualified shapes see page 50.

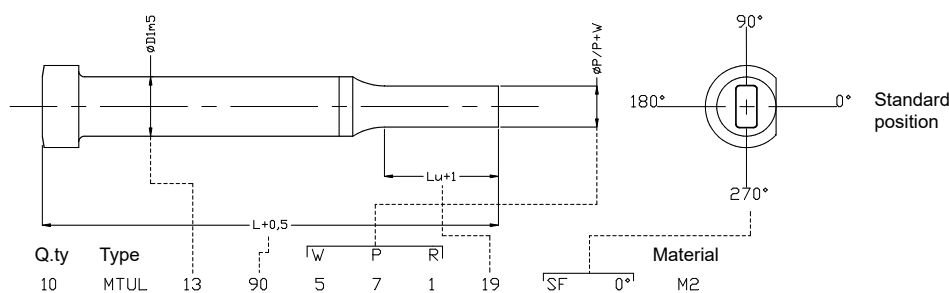
D1	D2	H	Lu	ROUND	SHAPE		OVERALL LENGTH L		
				RANGE P	MIN W	MAX G/P	80	90	100
8,0	13,0	8	13/19/25	3,0 - 7,99	3,0	7,99	X	X	X
10,0	15,0	8	13/19/25	3,0 - 9,99	3,0	9,99	X	X	X
13,0	18,0	8	13/19/25	6,0 - 12,99	3,0	12,99	X	X	X
16,0	21,0	8	13/19/25	8,0 - 15,99	4,0	15,99	X	X	X
20,0	25,0	8	13/19/25	12,0 - 19,99	5,0	19,99	X	X	X
25,0	30,0	8	13/19/25	16,0 - 24,99	6,0	24,99	X	X	X

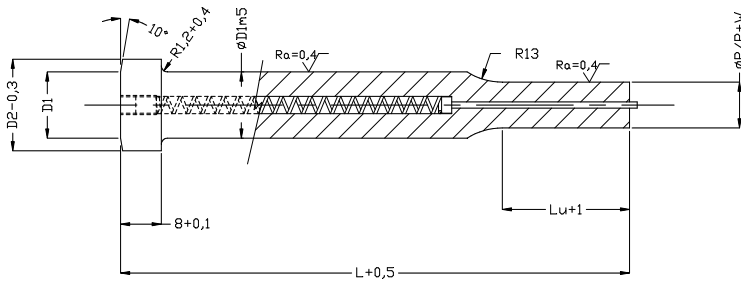
For standard alterations see pages 51 and 52.

For flats see page 53.

See page 67 for surface treatments and coatings.

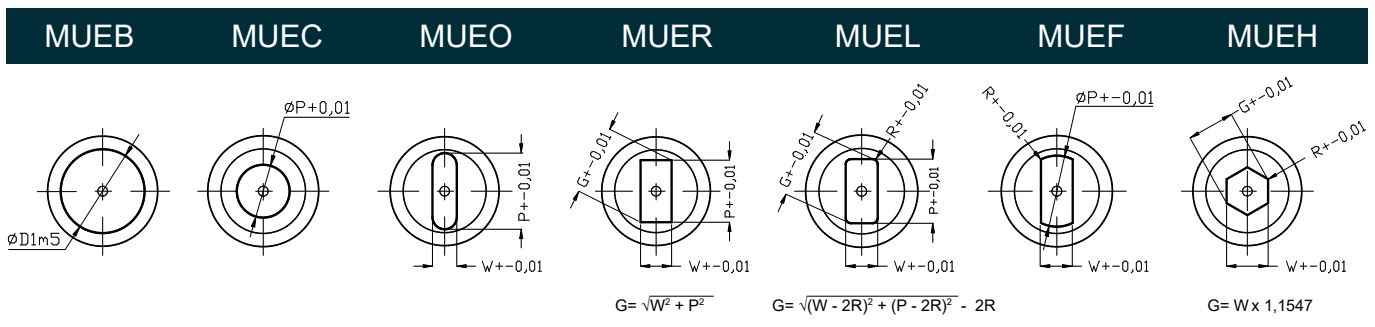
Order example:





Material	Hardness HRC
HSS - M2	60-62
PS (on request)	62-64

All heads drawn to HRC: 45-55



For qualified shapes see page 50.

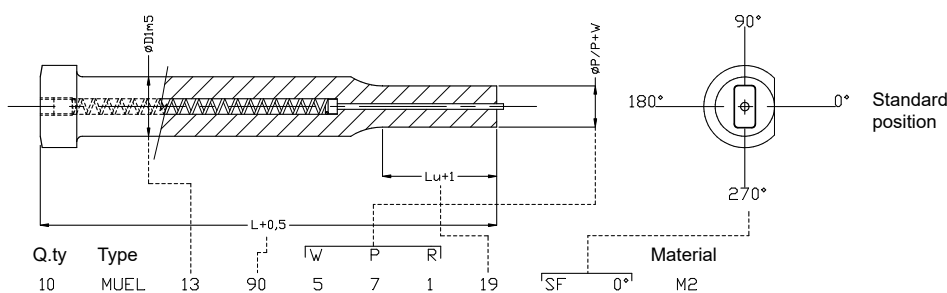
D1	D2	H	Lu	ROUND	SHAPE		OVERALL LENGTH L		
				RANGE P	MIN W	MAX G/P	80	90	100
8,0	13,0	8	13/19/25	3,0 - 7,99	3,0	7,99	X	X	X
10,0	15,0	8	13/19/25	3,0 - 9,99	3,0	9,99	X	X	X
13,0	18,0	8	13/19/25	6,0 - 12,99	3,0	12,99	X	X	X
16,0	21,0	8	13/19/25	8,0 - 15,99	4,0	15,99	X	X	X
20,0	25,0	8	13/19/25	12,0 - 19,99	5,0	19,99	X	X	X
25,0	30,0	8	13/19/25	16,0 - 24,99	6,0	24,99	X	X	X

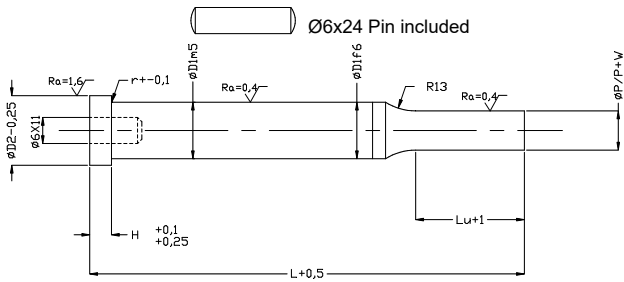
For standard alterations see pages 51 and 52.

For flats see page 53.

See page 67 for surface treatments and coatings.

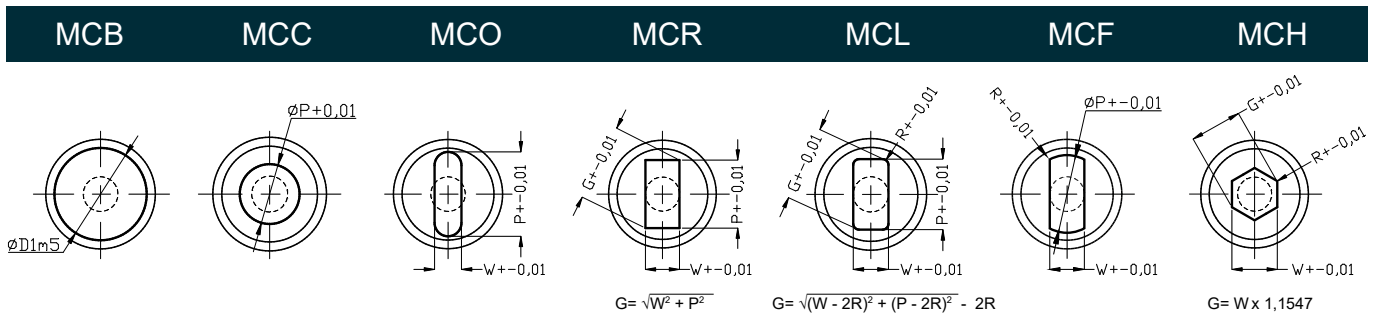
Order example:





Material	Hardness HRC
HSS - M2	60-62
A2	58-60

All heads drawn to HRC: 45-55



For qualified shapes see page 50.

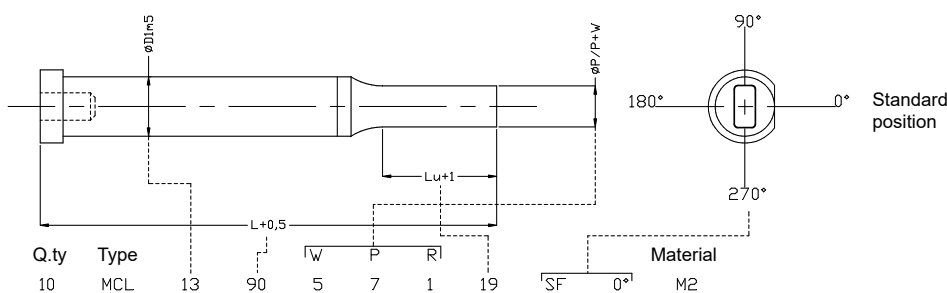
D1	D2	H	Lu	ROUND	SHAPE		OVERALL LENGTH L			
				RANGE P	MIN W	MAX G/P	71	80	90	100
10,0	13,0	5	13/19/25	4,0 - 9,99	3,5	9,99	X	X	X	X
13,0	16,0	5	13/19/25	5,0 - 12,99	4,5	12,99	X	X	X	X
16,0	19,0	5	13/19/25	8,0 - 15,99	6,0	15,99	X	X	X	X
20,0	23,0	5	13/19/25	12,0 - 19,99	8,0	19,99	X	X	X	X
25,0	28,0	5	13/19/25	16,5 - 24,99	10,0	24,99	X	X	X	X
32,0	35,0	5	13/19/25	20,0 - 31,99	10,0	31,99	X	X	X	X

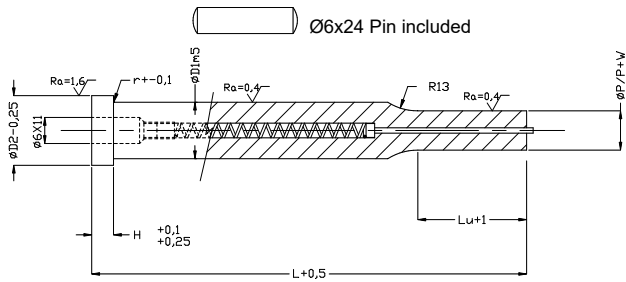
For standard alterations see pages 51 and 52.

For flats see page 53.

See page 67 for surface treatments and coatings.

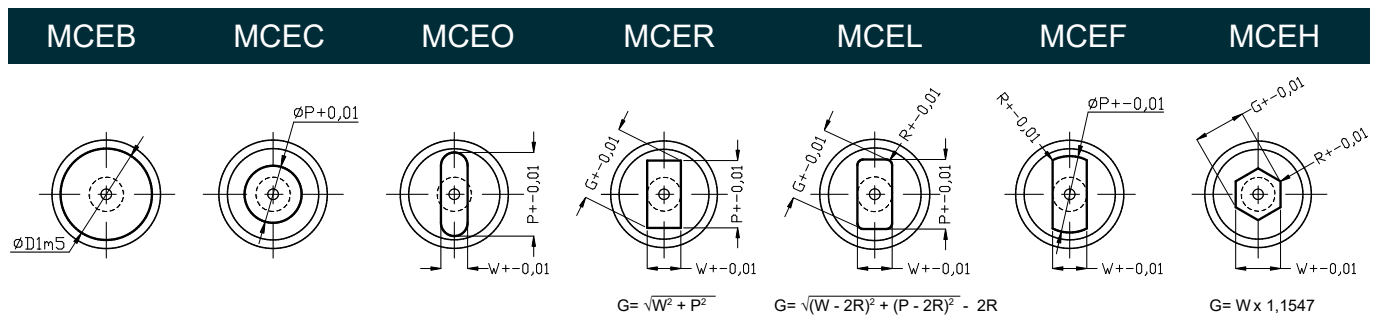
Order example:





Material	Hardness HRC
HSS - M2	60-62
A2	58-60

All heads drawn to HRC: 45-55



For qualified shapes see page 50.

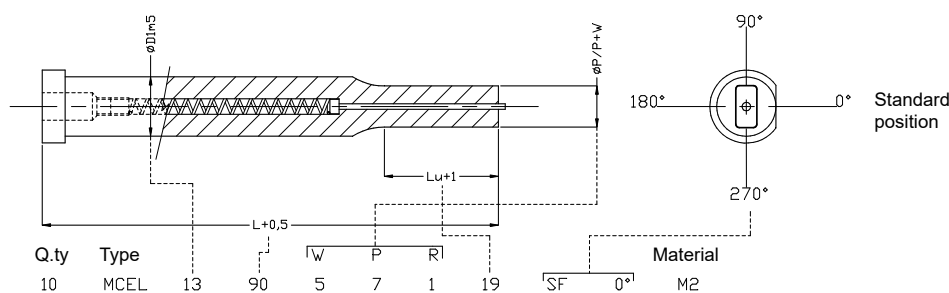
D1	D2	H	Lu	ROUND	SHAPE		OVERALL LENGTH L			
				RANGE P	MIN W	MAX G/P	71	80	90	100
10,0	13,0	5	13/19/25	4,0 - 9,99	3,5	9,99	X	X	X	X
13,0	16,0	5	13/19/25	5,0 - 12,99	4,5	12,99	X	X	X	X
16,0	19,0	5	13/19/25	8,0 - 15,99	6,0	15,99	X	X	X	X
20,0	23,0	5	13/19/25	12,0 - 19,99	8,0	19,99	X	X	X	X
25,0	28,0	5	13/19/25	16,5 - 24,99	10,0	24,99	X	X	X	X
32,0	35,0	5	13/19/25	20,0 - 31,99	10,0	31,99	X	X	X	X

For standard alterations see pages 51 and 52.

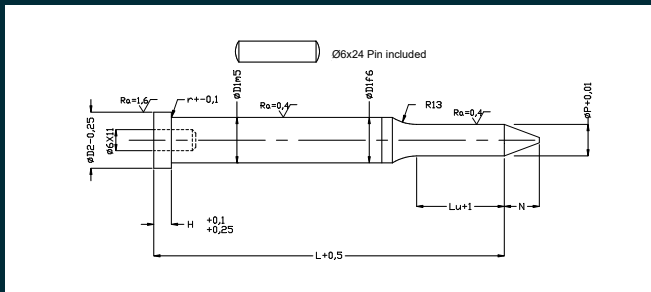
For flats see page 53.

See page 67 for surface treatments and coatings.

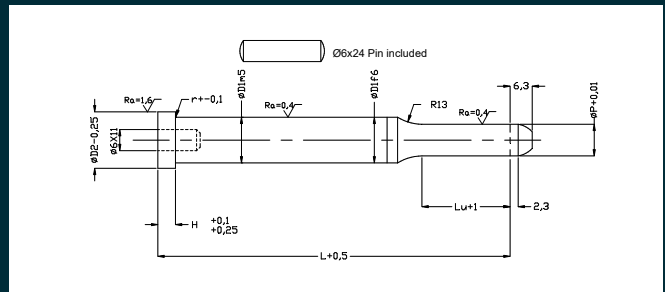
Order example:



MCA



MCP



MCA

D1	D2	H	Lu	N	RANGE P	OVERALL LENGTH L				
						63	71	80	90	100
10,0	13,0	5	13/19/25	10,0	4,9 - 9,99	X	X	X	X	X
13,0	16,0	5	13/19/25	12,0	5,9 - 12,99	X	X	X	X	X
16,0	19,0	5	13/19/25	17,0	9,9 - 15,99	X	X	X	X	X
20,0	23,0	5	13/19/25	22,0	12,9 - 19,99	X	X	X	X	X
25,0	28,0	5	13/19/25	25,0	16,9 - 24,99	X	X	X	X	X
32,0	35,0	5	13/19/25	25,0	19,9 - 31,99	X	X	X	X	X

MCP

D1	D2	H	Lu	RANGE P	OVERALL LENGTH L						
					50	56	63	71	80	90	100
5,0	8,0	5	13	1,0 - 4,99	X	X	X	X	X	X	X
6,0	9,0	5	13/19	1,9 - 5,99	X	X	X	X	X	X	X
8,0	11,0	5	13/19/25	2,4 - 7,99	X	X	X	X	X	X	X
10,0	13,0	5	13/19/25	3,9 - 9,99	X	X	X	X	X	X	X
13,0	16,0	5	13/19/25	4,9 - 12,99	X	X	X	X	X	X	X
16,0	19,0	5	13/19/25	7,9 - 15,99	X	X	X	X	X	X	X
20,0	23,0	5	13/19/25	11,9 - 19,99	X	X	X	X	X	X	X
25,0	28,0	5	13/19/25	14,9 - 24,99		X	X	X	X	X	X
32,0	35,0	5	13/19/25	19,9 - 31,99		X	X	X	X	X	X

For standard alterations see pages 51 and 52.

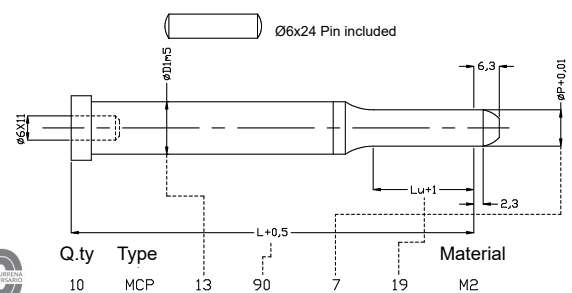
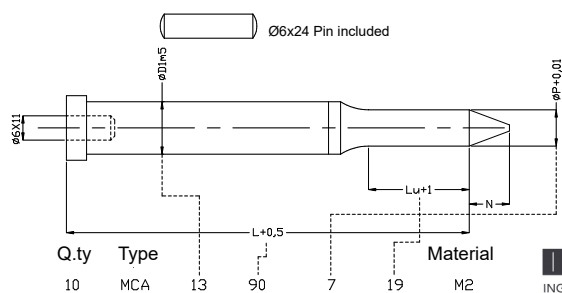
For flats see page 53.

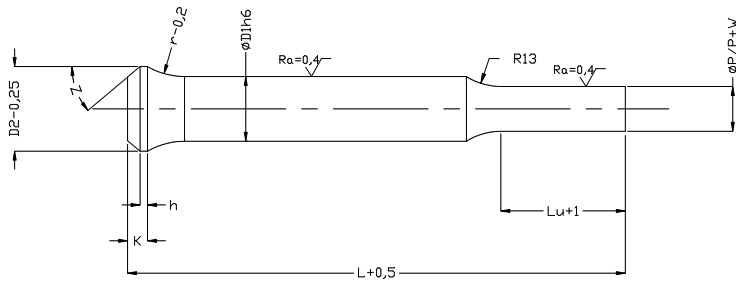
See page 67 for surface treatments and coatings.

Material	Hardness HRC
HSS - M2	60-62
A2	58-60

All heads drawn to HRC: 45-55

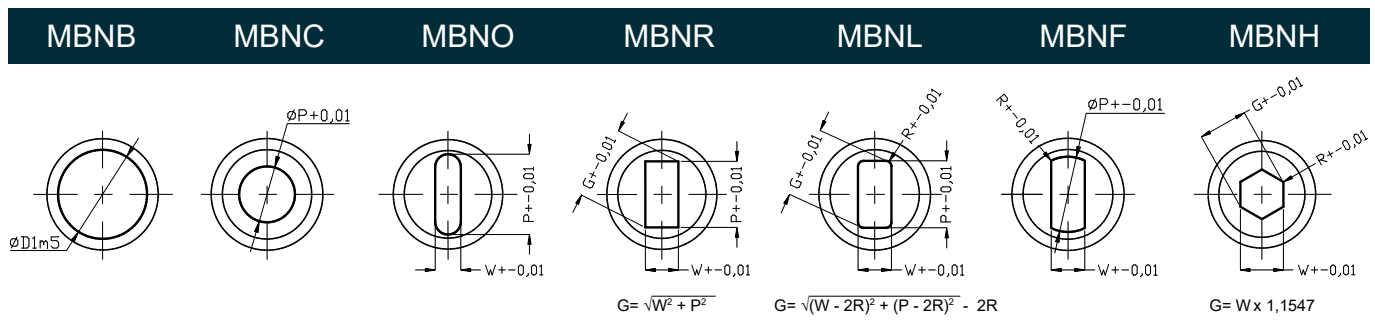
Order example:





Material	Hardness HRC
HSS - M2	60-62
A2	58-60
PS (on request)	62-64

All heads drawn to HRC: 45-55



For qualified shapes see page 50.

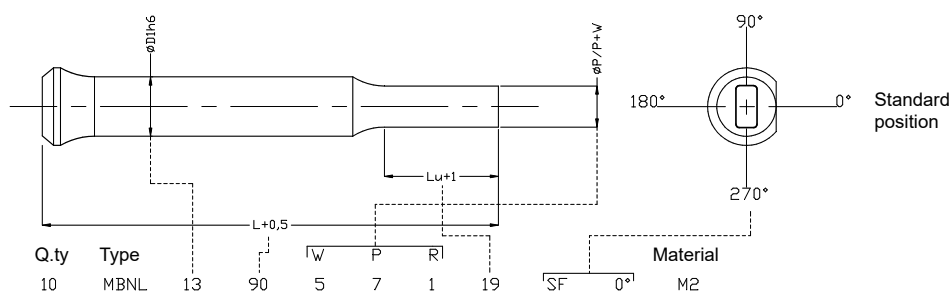
D1	D2	h	Lu	k	r	z	ROUND	SHAPE		OVERALL LENGTH L			
							RANGE P	MIN W	MAX G/P	80	90	100	125
5,0	7,0	1,5	13/19	4,0	10,0	15,0	1,5 - 4,99	1,5	4,99	X	X	X	
6,0	9,0	1,5	13/19	4,0	10,0	15,0	1,5 - 5,99	1,5	5,99	X	X	X	
8,0	11,0	1,5	13/19	4,0	12,0	15,0	2,5 - 7,99	2,5	7,99	X	X	X	X
10,0	14,0	1,5	13/19/25	4,0	15,0	15,0	4,0 - 9,99	3,5	9,99	X	X	X	X
13,0	17,0	1,5	13/19/25	4,0	15,0	15,0	5,0 - 12,99	4,5	12,99	X	X	X	X
16,0	20,0	1,5	13/19/25	4,0	15,0	15,0	8,0 - 15,99	6,0	15,99	X	X	X	X
20,0	25,0	1,5	13/19/25	4,0	15,0	15,0	12,0 - 19,99	8,0	19,99	X	X	X	X
25,0	30,0	1,5	13/19/25	4,0	15,0	15,0	16,0 - 24,99	10,0	24,99	X	X	X	X

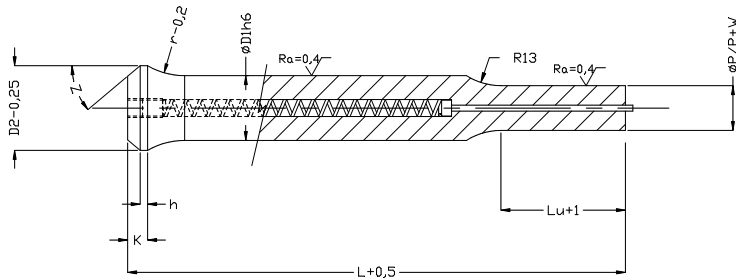
For standard alterations see pages 51 and 52.

For flats see page 53.

See page 67 for surface treatments and coatings.

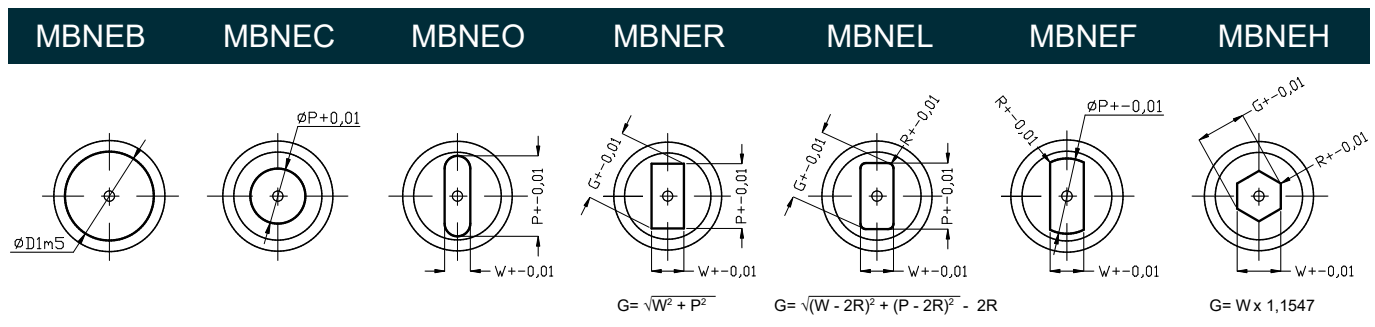
Order example:





Material	Hardness HRC
HSS - M2	60-62
A2	58-60
PS (on request)	62-64

All heads drawn to HRC: 45-55



For qualified shapes see page 50.

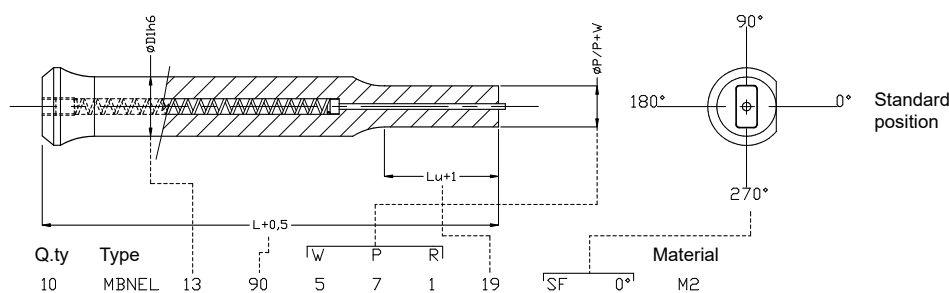
D1	D2	h	Lu	k	r	z	ROUND	SHAPE		OVERALL LENGTH L		
							RANGE P	MIN W	MAX G/P	80	90	100
6,0	9,0	1,5	13/19	4,0	10,0	15,0	1,5 - 5,99	1,5	5,99	X	X	X
8,0	11,0	1,5	13/19	4,0	10,0	15,0	2,5 - 7,99	2,5	7,99	X	X	X
10,0	14,0	1,5	13/19/25	4,0	12,0	15,0	4,0 - 9,99	3,5	9,99	X	X	X
13,0	17,0	1,5	13/19/25	4,0	15,0	15,0	5,0 - 12,99	4,5	12,99	X	X	X
16,0	20,0	1,5	13/19/25	4,0	15,0	15,0	8,0 - 15,99	6,0	15,99	X	X	X
20,0	25,0	1,5	13/19/25	4,0	15,0	15,0	12,0 - 19,99	8,0	19,99	X	X	X
25,0	30,0	1,5	13/19/25	4,0	15,0	15,0	16,0 - 24,99	10,0	24,99	X	X	X

For standard alterations see pages 51 and 52.

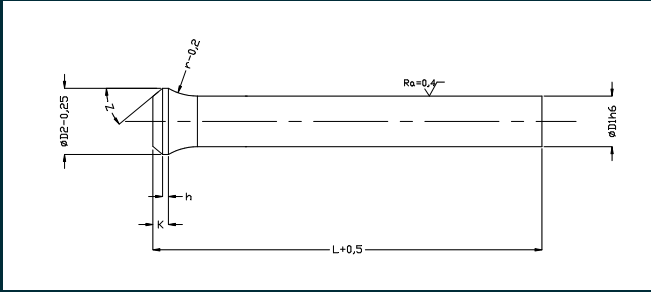
For flats see page 53.

See page 67 for surface treatments and coatings.

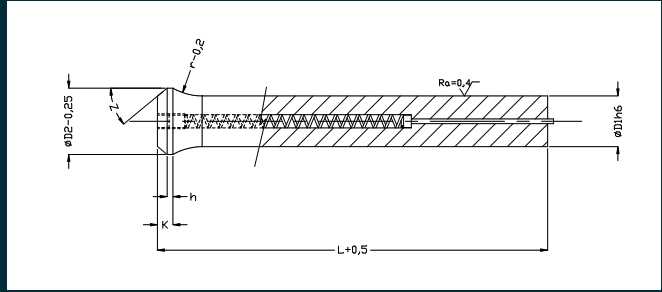
Order example:



MBNX



MBNEX



RANGE D1	D2	h	k	r	OVERALL LENGTH L					
					63	71	80	90	100	125*
5,0 - 5,4	7,0	1,5	4,0	10,0	X	X	X	X	X	
5,5 - 5,9	8,0	1,5	4,0	10,0	X	X	X	X	X	
6,0 - 6,4	9,0	1,5	4,0	10,0	X	X	X	X	X	
6,5 - 7,4	10,0	1,5	4,0	12,0	X	X	X	X	X	
7,5 - 8,4	11,0	1,5	4,0	12,0	X	X	X	X	X	
8,5 - 9,4	13,0	1,5	4,0	15,0	X	X	X	X	X	
9,5 - 10,4	14,0	1,5	4,0	15,0	X	X	X	X	X	X
10,5 - 11,4	15,0	1,5	4,0	15,0	X	X	X	X	X	X
11,5 - 12,4	16,0	1,5	4,0	15,0	X	X	X	X	X	X
12,5 - 13,4	17,0	1,5	4,0	15,0	X	X	X	X	X	X
13,5 - 14,4	18,0	1,5	4,0	15,0	X	X	X	X	X	X
14,5 - 15,4	19,0	1,5	4,0	15,0	X	X	X	X	X	X
15,5 - 16,4	20,0	1,5	4,0	15,0	X	X	X	X	X	X
16,5 - 17,4	21,0	1,5	4,0	15,0	X	X	X	X	X	X
17,5 - 18,4	22,0	1,5	4,0	15,0	X	X	X	X	X	X
18,5 - 19,4	23,0	1,5	4,0	15,0	X	X	X	X	X	X
19,5 - 20,0	25,0	1,5	4,0	15,0	X	X	X	X	X	X

*MBNX only

For standard alterations see pages 51 and 52.

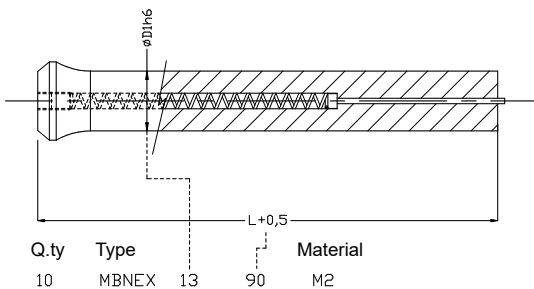
For flats see page 53.

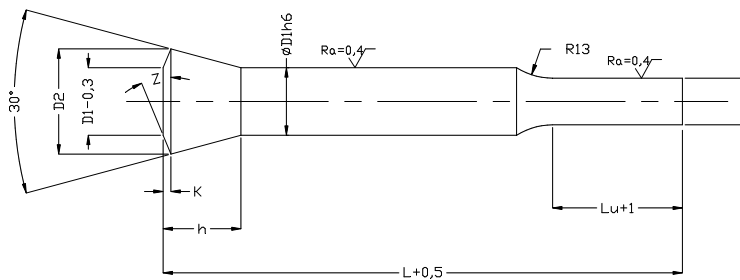
See page 67 for surface treatments and coatings.

Material	Hardness HRC
HSS - M2	60-62
A2	58-60
PS (on request)	62-64

Order example:

All heads drawn to HRC: 45-55





Material	Hardness HRC
HSS - M2	60-62
A2	58-60
PS (on request)	62-64

All heads drawn to HRC: 45-55

MCHB	MCHC	MCHO	MCHR	MCHL	MCHF	MCHH
$\phi D1 \pm 0,015$	$\phi P \pm 0,01$	$P \pm 0,01$	$G \pm 0,01$ $P \pm 0,01$ $W \pm 0,01$	$G \pm 0,01$ $R \pm 0,01$ $P \pm 0,01$ $W \pm 0,01$	$R \pm 0,01$ $\phi P \pm 0,01$ $W \pm 0,01$	$G \pm 0,01$ $R \pm 0,01$ $W \pm 0,01$
			$G = \sqrt{W^2 + P^2}$	$G = \sqrt{(W - 2R)^2 + (P - 2R)^2} - 2R$		$G = W \times 1,1547$

For qualified shapes see page 50.

D1	D2	h	Lu	k	z	ROUND	SHAPE		OVERALL LENGTH L			
						RANGE P	MIN W	MAX G/P	80	90	100	120
5,0	8,55	7,0	13/19	1,0	28,0	1,5 - 4,99	1,5	4,99	X	X	X	
6,0	9,75	8,0	13/19	1,0	28,0	1,5 - 5,99	1,5	5,99	X	X	X	
8,0	12,8	10,0	13/19	1,0	23,0	2,5 - 7,99	2,5	7,99	X	X	X	X
10,0	15,9	12,0	13/19/25	1,0	20,0	4,0 - 9,99	3,5	9,99	X	X	X	X
13,0	20,2	15,0	13/19/25	1,5	22,0	5,0 - 12,99	4,5	12,99	X	X	X	X
16,0	24,6	18,0	13/19/25	2,0	25,0	8,0 - 15,99	6,0	15,99	X	X	X	X
20,0	30,7	22,0	13/19/25	2,0	25,0	12,0 - 19,99	8,0	19,99	X	X	X	X
25,0	34,4	21,0	13/19/25	2,0	25,0	16,0 - 24,99	10,0	24,99	X	X	X	X

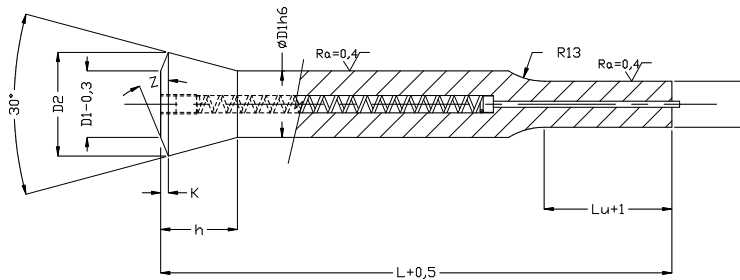
For standard alterations see pages 51 and 52.

For flats see page 53.

See page 67 for surface treatments and coatings.

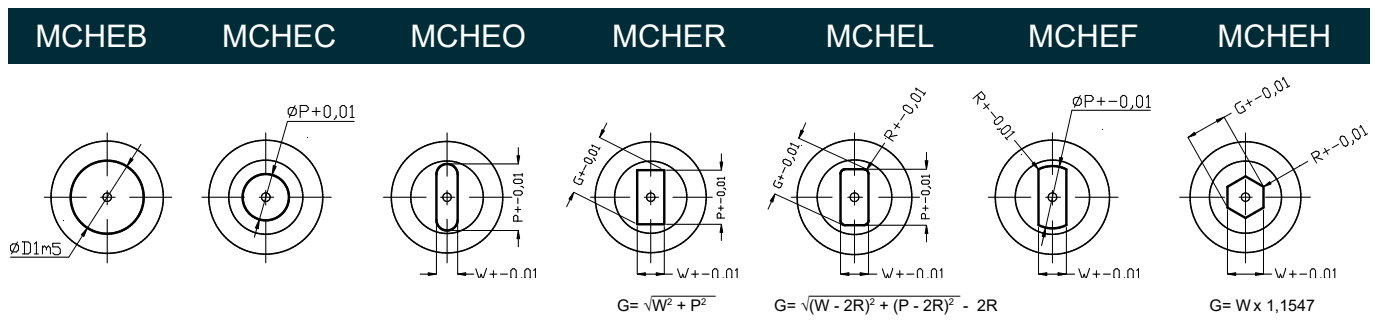
Order example:

Q.ty 10 Type MCHL 13 90 W 5 P 7 R 1 19 Material M2



Material	Hardness HRC
HSS - M2	60-62
A2	58-60
PS (on request)	62-64

All heads drawn to HRC: 45-55



For qualified shapes see page 50.

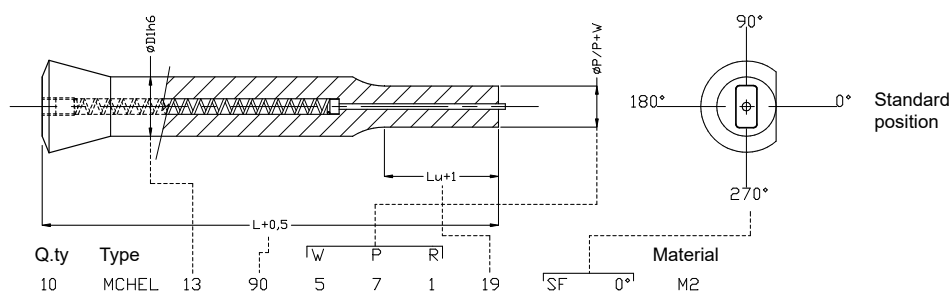
D1	D2	h	Lu	k	z	ROUND	SHAPE		OVERALL LENGTH L		
						RANGE P	MIN W	MAX G/P	80	90	100
8,0	12,8	10,0	13/19	1,0	23,0	2,5 - 7,99	2,5	7,99	X	X	X
10,0	15,9	12,0	13/19/25	1,0	20,0	4,0 - 9,99	3,5	9,99	X	X	X
13,0	20,2	15,0	13/19/25	1,5	22,0	5,0 - 12,99	4,5	12,99	X	X	X
16,0	24,6	18,0	13/19/25	2,0	25,0	8,0 - 15,99	6,0	15,99	X	X	X
20,0	30,7	22,0	13/19/25	2,0	25,0	12,0 - 19,99	8,0	19,99	X	X	X
25,0	34,4	21,0	13/19/25	2,0	25,0	16, - 24,99	10,0	24,99	X	X	X

For standard alterations see pages 51 and 52.

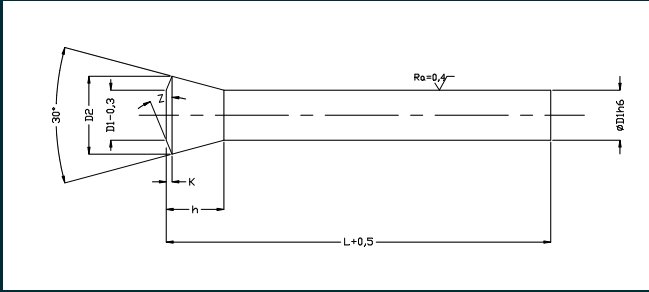
For flats see page 53.

See page 67 for surface treatments and coatings.

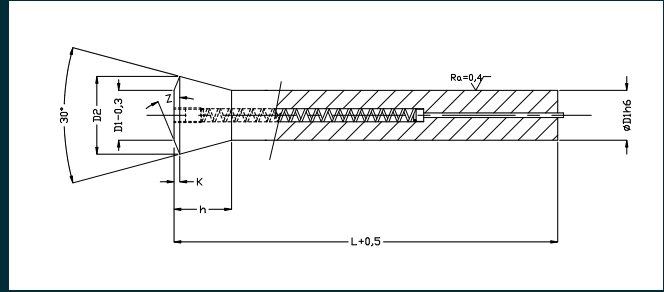
Order example:



MCHX



MCHX



D1	D2	h	k	z	OVERALL LENGTH L					
					63	71	80	90	100	125*
5,0 - 5,4	8,55	7,0	1,0	28,0	X	X	X	X	X	
5,5 - 5,9	9,25	7,5	1,0	28,0	X	X	X	X	X	
6,0 - 6,9	9,75	8,0	1,0	28,0	X	X	X	X	X	
7,0 - 7,9	11,8	10,0	1,0	28,0	X	X	X	X	X	
8,0	12,8	10,0	1,0	23,0	X	X	X	X	X	
8,5	13,9	11,0	1,0	23,0	X	X	X	X	X	
9,0	14,4	11,0	1,0	23,0	X	X	X	X	X	
10,0	15,9	12,0	1,0	20,0	X	X	X	X	X	X
11,0	17,5	13,0	1,5	20,0	X	X	X	X	X	X
12,0	18,7	14,0	1,5	20,	X	X	X	X	X	X
13,0	20,2	15,0	1,5	22,0	X	X	X	X	X	X
14,0	21,8	16,0	1,5	22,0	X	X	X	X	X	X
15,0	23,3	17,0	1,5	22,0		X	X	X	X	X
16,0	24,6	18,0	2,0	25,0		X	X	X	X	X
17,0	26,1	19,0	2,0	25,0		X	X	X	X	X
18,0	27,6	20,0	2,0	25,0		X	X	X	X	X
20,0	30,7	22,0	2,0	25,0		X	X	X	X	X

*MCHX only

For standard alterations see pages 51 and 52.

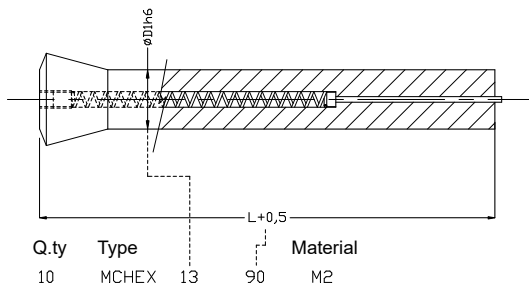
For flats see page 53.

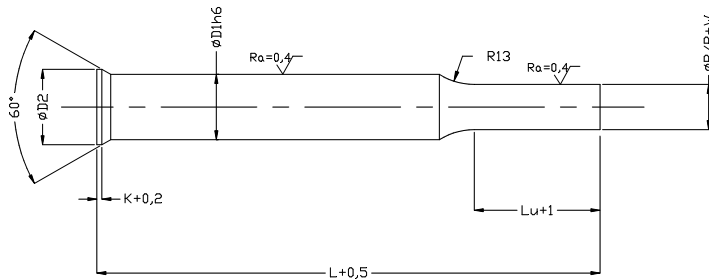
See page 67 for surface treatments and coatings.

Material	Hardness HRC
HSS - M2	60-62
A2	58-60
PS (on request)	62-64

Order example:

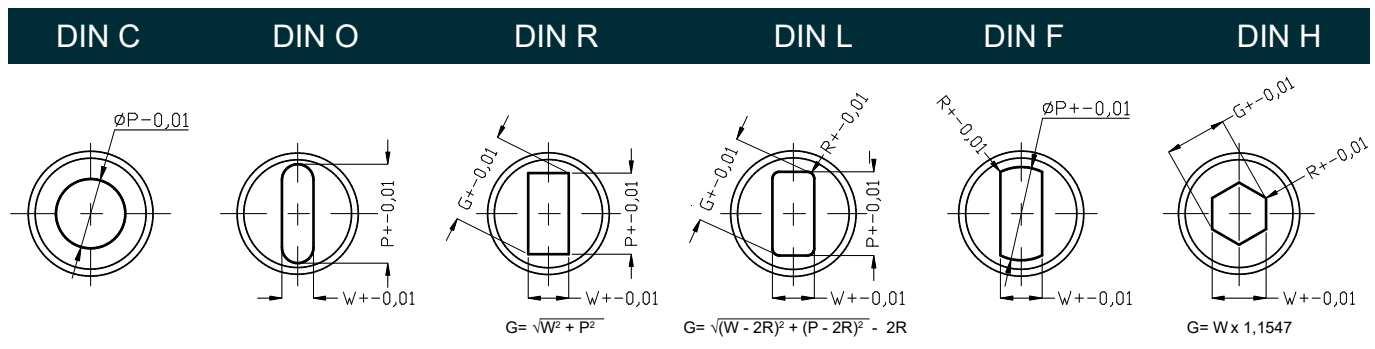
All heads drawn to HRC: 45-55





Material	Hardness HRC
HSS - M2	60-62
HWS (on request)	58-60

All heads drawn to HRC: 45-55



For qualified shapes see page 50.

D1	Scala-mento D1	D2	k	P h6	Lu	ROUND	SHAPE		OVERALL LENGTH L		
						RANGE P	MIN W	MAX G/P	71	80	100
3,0-3,4	0,1	4,5	0,5	1,0-3,39	7	1,0-3,38	1,0	3,38	X	X	X
3,5-3,9	0,1	5,0	0,5	1,5-3,89	7/10	1,0-3,88	1,0	3,88	X	X	X
4,0-4,4	0,1	5,5	0,5	1,5-4,39	7/10	1,0-4,38	1,0	4,38	X	X	X
4,5-4,9	0,1	6,0	0,5	1,5-4,89	7/10	1,5-4,88	1,5	4,88	X	X	X
5,0-5,9	0,1	6,5	0,5	1,5-5,39	7/10	1,5-5,38	1,5	5,38	X	X	X
6,0-6,4	0,1	7,0	0,5	2,0-5,89	10/13	1,5-5,88	1,5	5,88	X	X	X
6,5-7,0	0,5	8,0	1,0	2,0-6,39	10/13	1,5-6,38	1,5	6,38	X	X	X
7,5-8,0	0,5	9,0	1,0	2,5-6,99	10/13	2,0-6,98	2,0	6,98	X	X	X
8,5-9,0	0,5	10,0	1,0	2,5-7,99	10/13	2,0-7,98	2,0	7,98	X	X	X
9,5-10,0	0,5	11,0	1,0	3,0-8,99	13/19	2,0-8,98	2,0	8,98	X	X	X
10,5-11,0	0,5	12,0	1,0	4,0-9,99	13/19	3,0-9,98	3,0	9,98	X	X	X
11,5-12,0	0,5	13,0	1,0	5,0-10,99	13/19	4,0-10,98	4,0	10,98	X	X	X

Continue on next page.

D1	Scala-mento D1	D2	k	P h6	Lu	ROUND	SHAPE		OVERALL LENGTH L		
						RANGE P	MIN W	MAX G/P	71	80	100
12,5-13,0	0,5	14,0	1,0	5,0-11,99	13/19/25	4,0-11,98	4,0	11,98	X	X	X
15,5-14,0	0,5	15,0	1,0	6,0-12,99	13/19/25	4,0-12,98	4,0	12,98	X	X	X
14,5-15,0	0,5	16,0	1,5	6,0-13,99	13/19/25	4,0-13,98	4,0	13,98	X	X	X
15,5-16,0	0,5	18,0	1,5	8,0-15,99	13/19/25	5,0-15,98	5,0	15,98	X	X	X
16,5-17,0	0,5	19,0	1,5	8,0-16,99	13/19/25	6,0-16,98	6,0	1,98	X	X	X
17,5-18,0	0,5	20,0	1,5	9,0-17,99	13/19/25	6,0-17,98	6,0	17,98	X	X	X
18,5-19,0	0,5	21,0	1,5	9,0-18,99	13/19/25	8,0-18,98	8,0	18,98	X	X	X
19,5-20,0	0,5	22,0	1,5	10,0-19,99	13/19/25	8,0-19,98	8,0	19,98	X	X	X

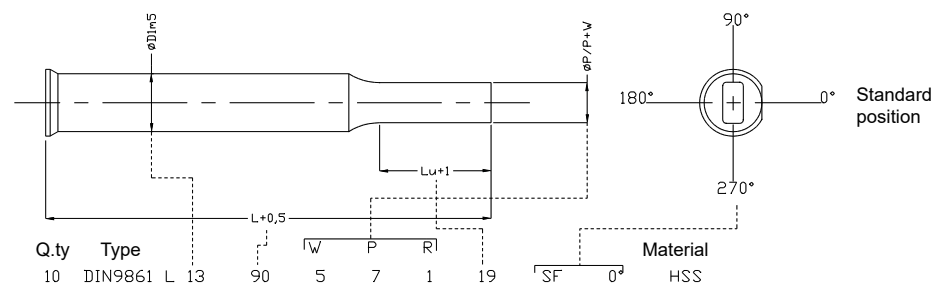
Other diameters (D1) and lengths (L) available on request.

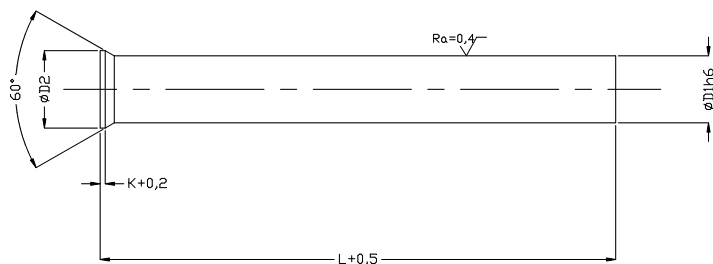
For standard alterations see pages 51 and 52.

For flats see page 53.

See page 67 for surface treatments and coatings.

Order example:





Material	Hardness HRC
HSS - M2	60-62
HWS (on request)	58-60

All heads drawn to HRC: 45-55

D1	Scalamto D1	D2	k	OVERALL LENGTH L		
				71	80	100
3,0-3,4	0,1	4,5	0,5	X	X	X
3,5-3,9	0,1	5,0	0,5	X	X	X
4,0-4,4	0,1	5,5	0,5	X	X	X
4,5-4,9	0,1	6,0	0,5	X	X	X
5,0-5,9	0,1	6,5	0,5	X	X	X
6,0-6,4	0,1	7,0	0,5	X	X	X
6,5-7,0	0,5	8,0	1,0	X	X	X
7,5-8,0	0,5	9,0	1,0	X	X	X
8,5-9,0	0,5	10,0	1,0	X	X	X
9,5-10,0	0,5	11,0	1,0	X	X	X
10,5-11,0	0,5	12,0	1,0	X	X	X
11,5-12,0	0,5	13,0	1,0	X	X	X
12,5-13,0	0,5	14,0	1,0	X	X	X
15,5-14,0	0,5	15,0	1,0	X	X	X
14,5-15,0	0,5	16,0	1,5	X	X	X
15,5-16,0	0,5	18,0	1,5	X	X	X
16,5-17,0	0,5	19,0	1,5	X	X	X
17,5-18,0	0,5	20,0	1,5	X	X	X
18,5-19,0	0,5	21,0	1,5	X	X	X
19,5-20,0	0,5	22,0	1,5	X	X	X

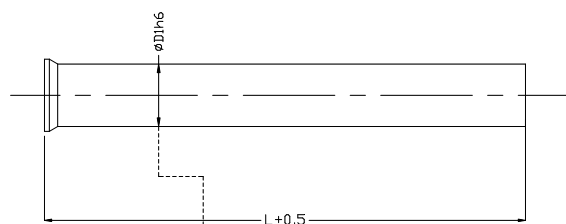
Other diameters (D1) and lengths (L) available on request.

For standard alterations see pages 51 and 52.

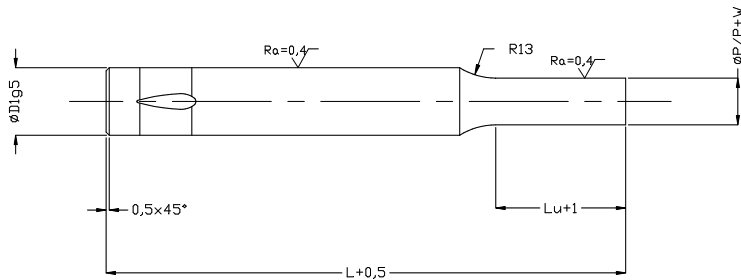
For flats see page 53.

See page 67 for surface treatments and coatings.

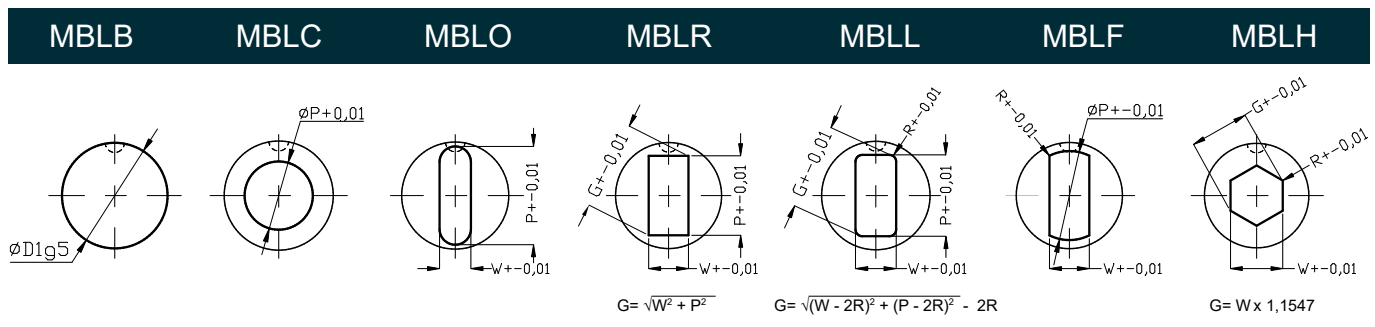
Order example:



Q.ty Type Material
10 DIN9861 D13 90 HSS



Material	Hardness HRC
HSS - M2	60-62
A2	58-60



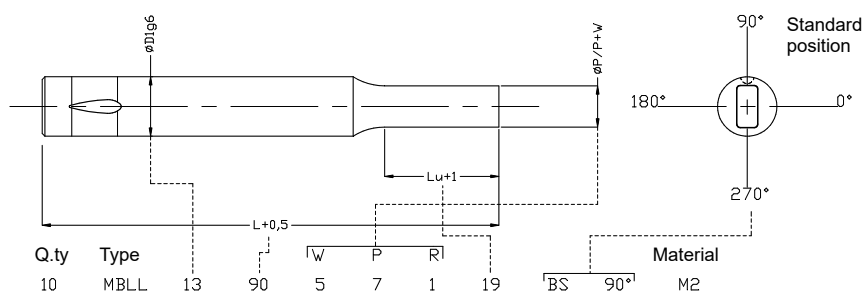
For qualified shapes see page 50.

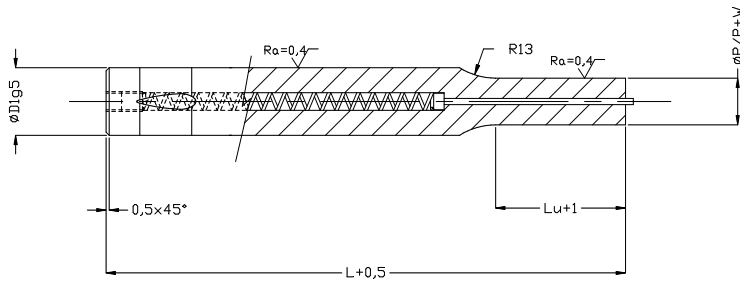
D1	Lu	ROUND	SHAPE		OVERALL LENGTH L					
		RANGE P	MIN W	MAX G/P	56	63	71	80	90	100
6,0	13/19	2,5 - 5,98	2,0	5,98	X	X	X	X	X	X
10,0	13/19	3,5 - 9,98	3,2	9,98	X	X	X	X	X	X
13,0	13/19	5,0 - 12,98	4,5	12,98	X	X	X	X	X	X
16,0	19/25	8,5 - 15,98	6,0	15,98	X	X	X	X	X	X
20,0	19/25	12,5 - 19,98	8,0	19,98	X	X	X	X	X	X
25,0	19/25	16,0 - 24,98	10,0	24,98		X	X	X	X	X
32,0	19/25	20,0 - 31,98	16,0	31,98		X	X	X	X	X
38,0	19/25	25 - 37,98	18,0	37,98			X	X	X	X

For standard alterations see pages 51 and 52.

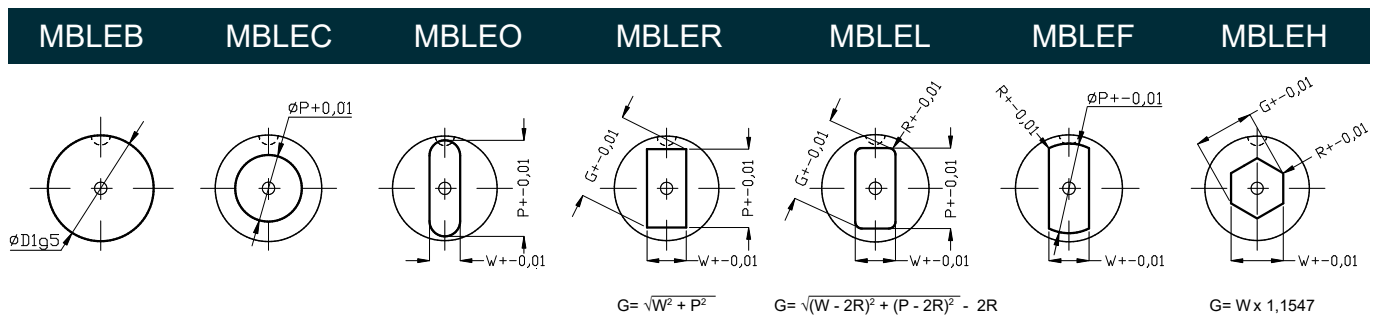
See page 67 for surface treatments and coatings.

Order example:





Material	Hardness HRC
HSS - M2	60-62
A2	58-60



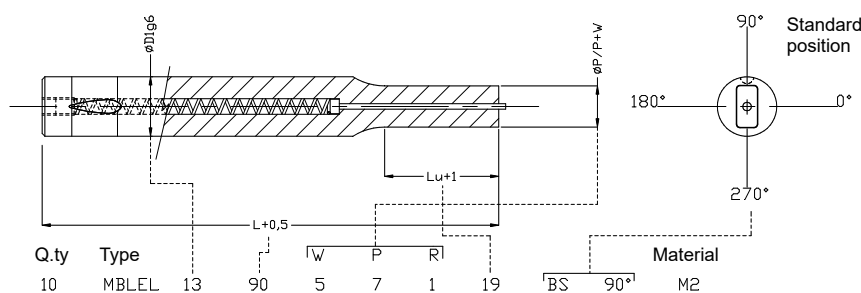
For qualified shapes see page 50.

D1	Lu	ROUND	SHAPE		OVERALL LENGTH L					
		RANGE P	MIN W	MAX G/P	56	63	71	80	90	100
6,0	13/19	2,5 - 5,98	2,0	5,98	X	X	X	X	X	X
10,0	13/19	3,5 - 9,98	3,2	9,98	X	X	X	X	X	X
13,0	13/19	5,0 - 12,98	4,5	12,98	X	X	X	X	X	X
16,0	19/25	8,5 - 15,98	6,0	15,98	X	X	X	X	X	X
20,0	19/25	12,5 - 19,98	8,0	19,98	X	X	X	X	X	X
25,0	19/25	16,0 - 24,98	10,0	24,98		X	X	X	X	X
32,0	19/25	20,0 - 31,98	16,0	31,98		X	X	X	X	X
38,0	19/25	25 - 37,98	18,0	37,98			X	X	X	X

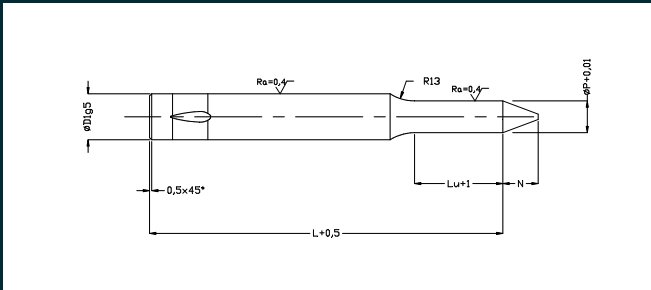
For standard alterations see pages 51 and 52.

See page 67 for surface treatments and coatings.

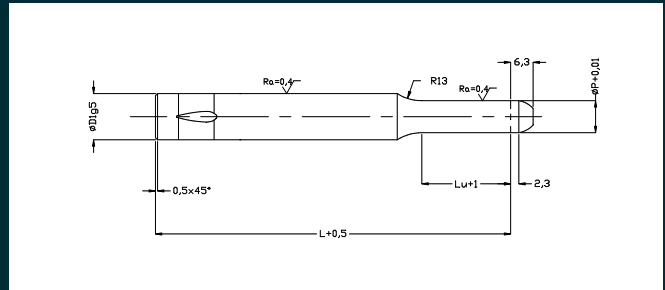
Order example:



MBLA



MBLP



MBLA

D1	Lu	N	RANGE P	OVERALL LENGTH L						
				63	71	80	90	100	110	125
10,0	13/19/25	10,0	4,9 - 9,99	X	X	X	X	X	X	
13,0	13/19/25	12,0	5,9 - 12,99	X	X	X	X	X	X	X
16,0	13/19/25	17,0	9,9 - 15,99	X	X	X	X	X	X	X
20,0	13/19/25	22,0	12,9 - 19,99	X	X	X	X	X	X	X
25,0	13/19/25	25,0	16,9 - 24,99		X	X	X	X	X	X
32,0	13/19/25	25,0	19,9 - 31,99		X	X	X	X	X	X
38,0	13/19/25	30,0	24,9 - 37,99		X	X	X	X	X	X

MBLP

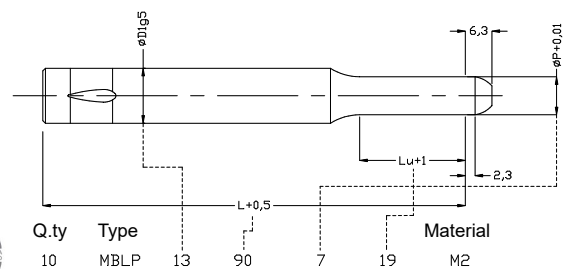
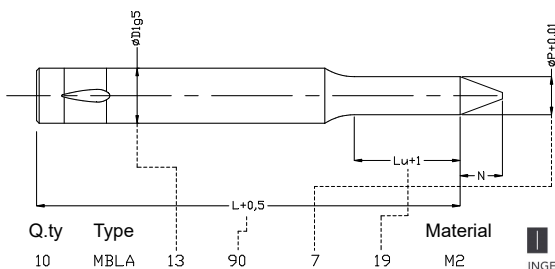
D1	Lu	RANGE P	OVERALL LENGTH L					
			56	63	71	80	90	100
6,0	13/19	1,9 - 5,99	X	X	X	X	X	
10,0	13/19/25	3,9 - 9,99	X	X	X	X	X	X
13,0	13/19/25	4,9 - 12,99	X	X	X	X	X	X
16,0	13/19/25	7,9 - 15,99	X	X	X	X	X	X
20,0	13/19/25	11,9 - 19,99	X	X	X	X	X	X
25,0	13/19/25	14,9 - 24,99		X	X	X	X	X
32,0	13/19/25	19,9 - 31,99		X	X	X	X	X
38,0	13/19/25	24,9 - 37,99		X	X	X	X	X

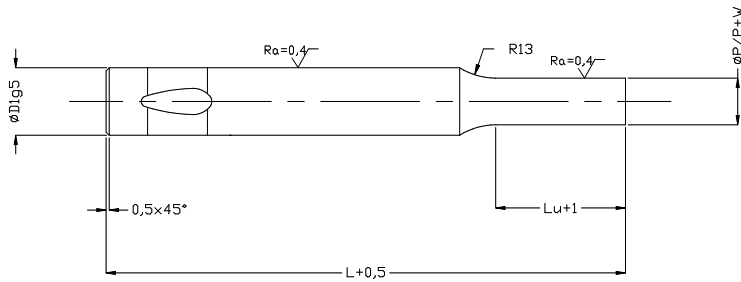
For standard alterations see pages 51 and 52.

See page 67 for surface treatments and coatings.

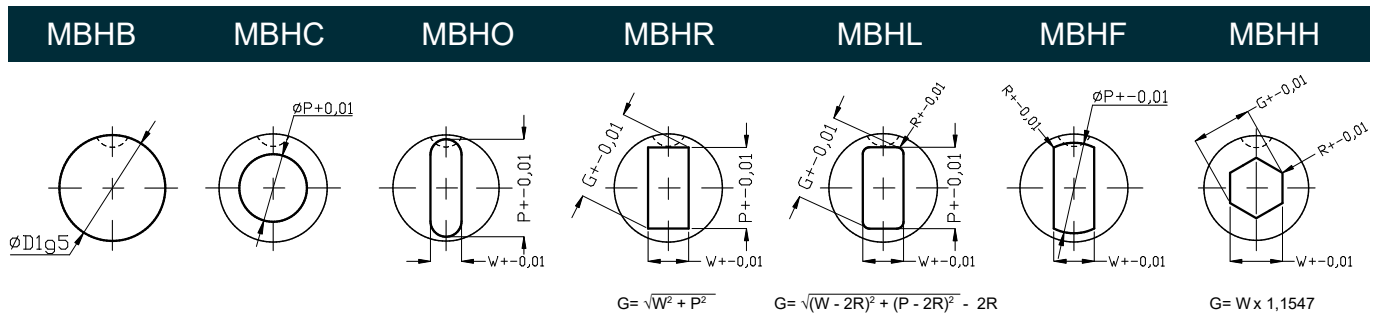
Material	Hardness HRC
HSS - M2	60-62
A2	58-60

Order example:





Material	Hardness HRC
HSS - M2	60-62



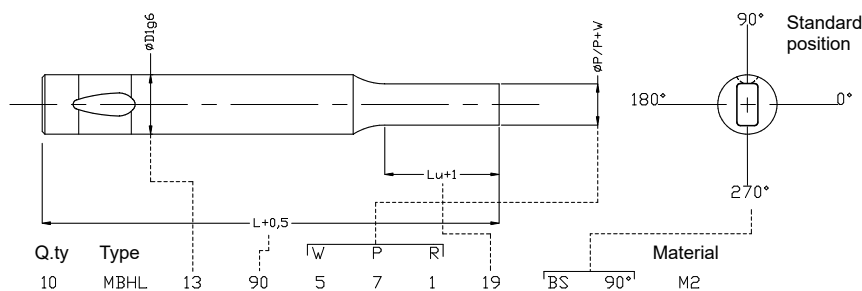
For qualified shapes see page 50.

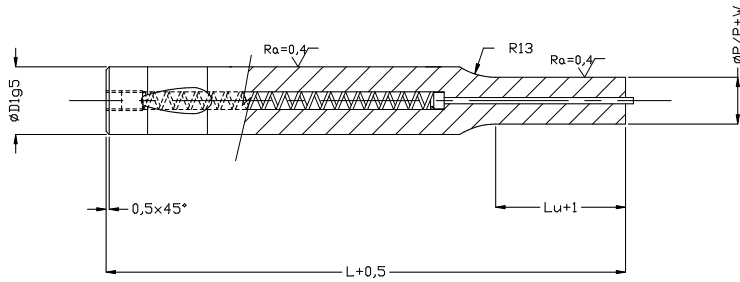
D1	Lu	ROUND	SHAPE		OVERALL LENGTH L					
		RANGE P	MIN W	MAX G/P	63	71	80	90	100	125
10,0	13/19	2,5 - 9,98	2,5	9,98	X	X	X	X	X	X
13,0	13/19	5,0 - 12,98	4,5	12,98	X	X	X	X	X	X
16,0	19/25	8,0 - 15,98	6,0	15,98	X	X	X	X	X	X
20,0	19/25	12,0 - 19,98	8,0	19,98	X	X	X	X	X	X
25,0	19/25	16,0 - 24,98	10,0	24,98	X	X	X	X	X	X
32,0	19/25	24,0 - 31,98	12,0	31,98		X	X	X	X	X
40,0	19/25	30,0 - 39,98	18,0	39,98			X	X	X	X

For standard alterations see pages 51 and 52.

See page 67 for surface treatments and coatings.

Order example:





Material	Hardness HRC
HSS - M2	60-62

MBHEB

MBHEC

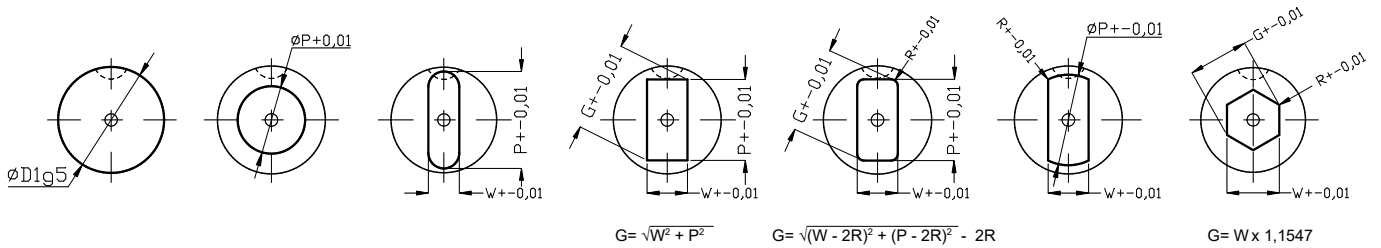
MBHEO

MBHER

MBHEL

MBHEF

MBHEH



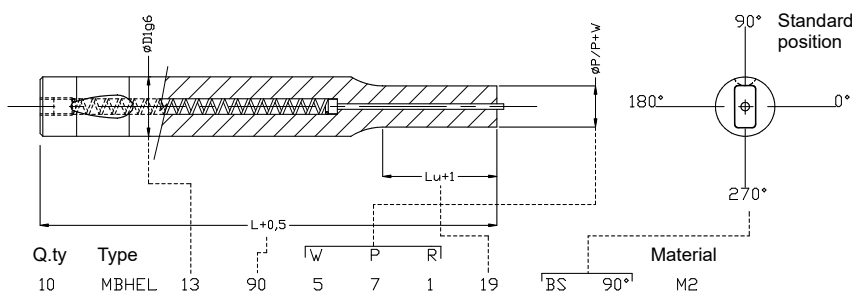
For qualified shapes see page 50.

D1	Lu	ROUND	SHAPE		OVERALL LENGTH L					
		RANGE P	MIN W	MAX G/P	63	71	80	90	100	125
10,0	13/19	2,5 - 9,98	2,5	9,98	X	X	X	X	X	X
13,0	13/19	5,0 - 12,98	4,5	12,98	X	X	X	X	X	X
16,0	19/25	8,0 - 15,98	6,0	15,98	X	X	X	X	X	X
20,0	19/25	12,0 - 19,98	8,0	19,98	X	X	X	X	X	X
25,0	19/25	16,0 - 24,98	10,0	24,98	X	X	X	X	X	X
32,0	19/25	24,0 - 31,98	12,0	31,98		X	X	X	X	X
40,0	19/25	30,0 - 39,98	18,0	39,98			X	X	X	X

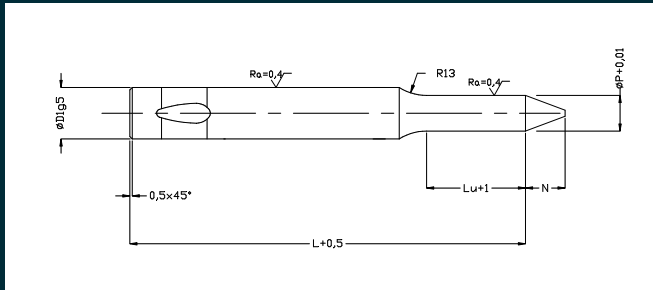
For standard alterations see pages 51 and 52.

See page 67 for surface treatments and coatings.

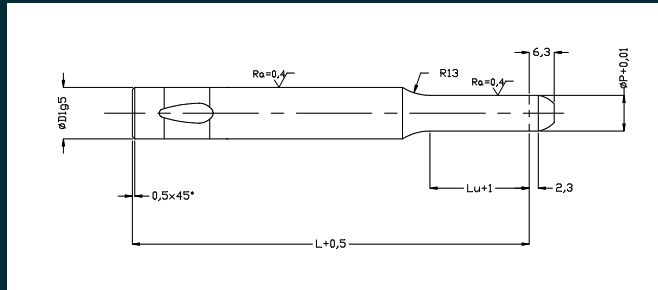
Order example:



MBHA



MBHP



MBHA

D1	Lu	N	RANGE P	OVERALL LENGTH L						
				63	71	80	90	100	110	125
10,0	13/19/25	10,0	4,9 - 9,99	X	X	X	X	X	X	
13,0	13/19/25	12,0	5,9 - 12,99	X	X	X	X	X	X	X
16,0	13/19/25	17,0	9,9 - 15,99	X	X	X	X	X	X	X
20,0	13/19/25	22,0	12,9 - 19,99	X	X	X	X	X	X	X
25,0	13/19/25	25,0	16,9 - 24,99		X	X	X	X	X	X
32,0	13/19/25	25,0	19,9 - 31,99		X	X	X	X	X	X
40,0	13/19/25	30,0	24,9 - 39,99		X	X	X	X	X	X

MBHP

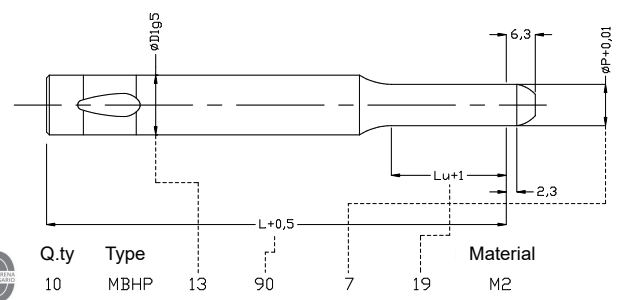
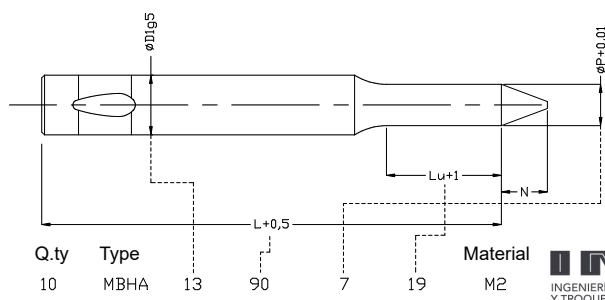
D1	Lu	RANGE P	OVERALL LENGTH L						
			56	63	71	80	90	100	110
10,0	13/19/25	3,9 - 9,99	X	X	X	X	X	X	X
13,0	13/19/25	4,9 - 12,99	X	X	X	X	X	X	X
16,0	13/19/25	7,9 - 15,99	X	X	X	X	X	X	X
20,0	13/19/25	11,9 - 19,99	X	X	X	X	X	X	X
25,0	13/19/25	14,9 - 24,99		X	X	X	X	X	X
32,0	13/19/25	19,9 - 31,99		X	X	X	X	X	X
40,0	13/19/25	24,9 - 39,99		X	X	X	X	X	X

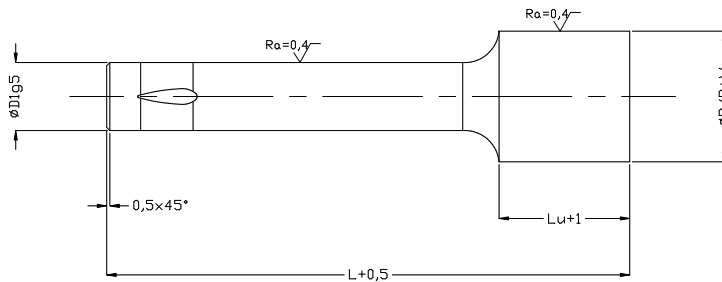
For standard alterations see pages 51 and 52.

See page 67 for surface treatments and coatings.

Material	Hardness HRC
HSS - M2	60-62

Order example:





Material	Hardness HRC
HSS - M2	60-62
A2	58-60

MBLKC

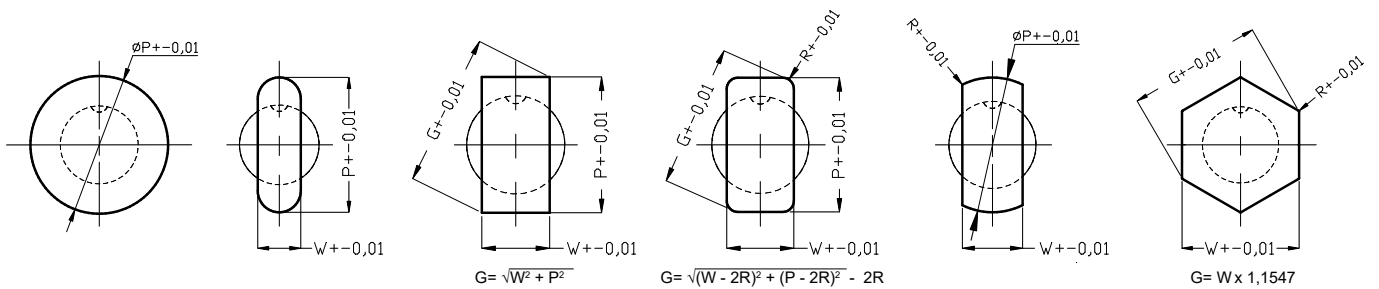
MBLKO

MBLKR

MBLKL

MBLKF

MBLKH



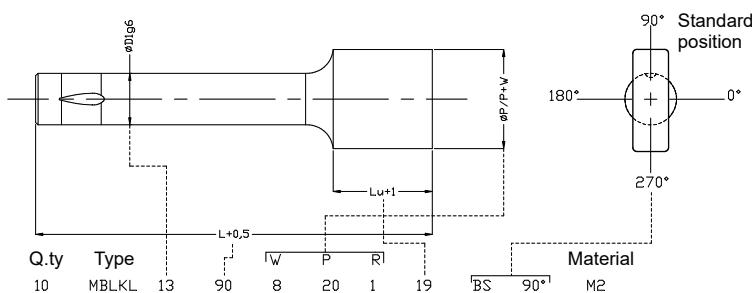
For qualified shapes see page 50.

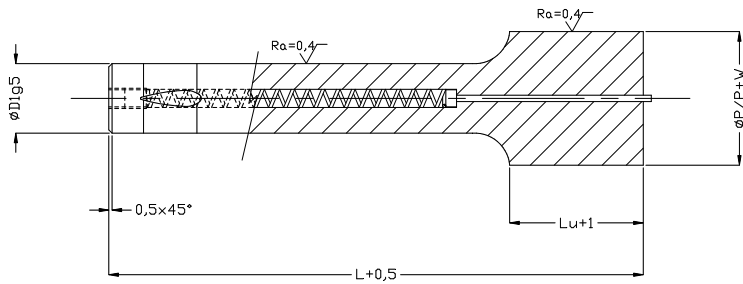
D1	Lu	ROUND	SHAPE		OVERALL LENGTH L		
		RANGE P	MIN W	MAX G/P	80	90	100
10,0	13/19/25	10,01 - 30,0	4,0	30,0	X	X	X
13,0	13/19/25	13,01 - 32,0	5,0	32,0	X	X	X
16,0	13/19/25	16,01 - 38,0	6,5	38,0	X	X	X
20,0	13/19/25	20,01 - 40,0	8,0	40,0	X	X	X
25,0	13/19/25	25,01 - 44,0	10,0	44,0	X	X	X
32,0	13/19/25	32,01 - 50,0	11,5	50,0	X	X	X
38,0	13/19/25	38,01 - 56,0	14,0	56,0	X	X	X

For standard alterations see pages 51 and 52.

See page 67 for surface treatments and coatings.

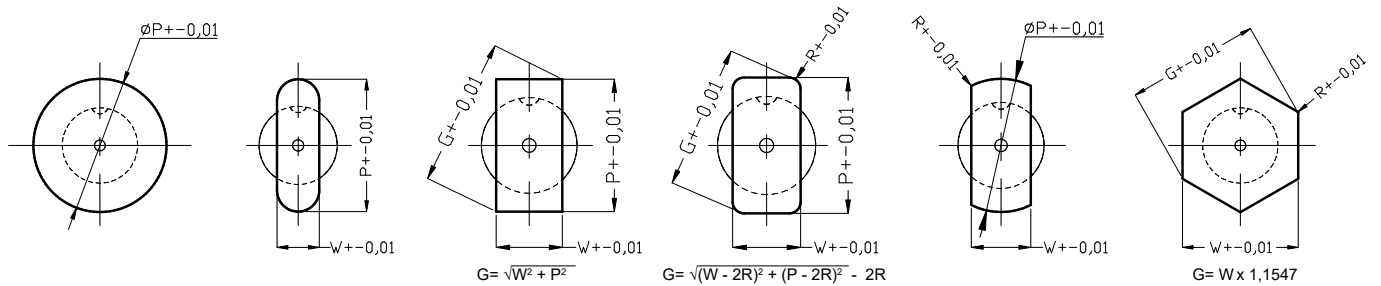
Order example:





Material	Hardness HRC
HSS - M2	60-62
A2	58-60

MBLEKC MBLEKO MBLEKR MBLEKL MBLEKF MBLEKH



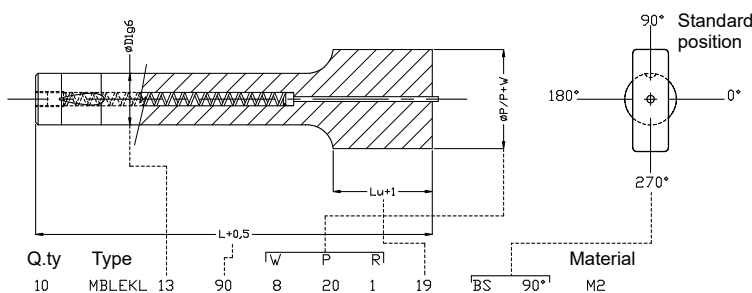
For qualified shapes see page 50.

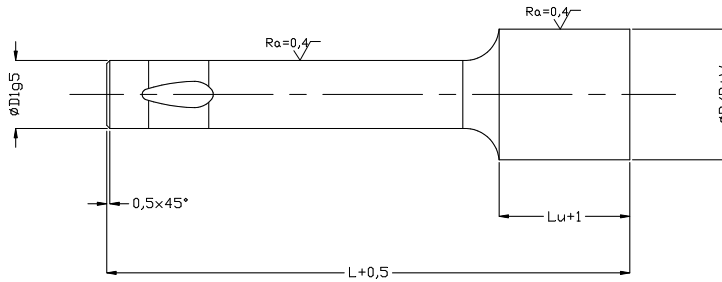
D1	Lu	ROUND	SHAPE		OVERALL LENGTH L		
		RANGE P	MIN W	MAX G/P	80	90	100
10,0	13/19/25	10,01 - 30,0	4,0	30,0	X	X	X
13,0	13/19/25	13,01 - 32,0	5,0	32,0	X	X	X
16,0	13/19/25	16,01 - 38,0	6,5	38,0	X	X	X
20,0	13/19/25	20,01 - 40,0	8,0	40,0	X	X	X
25,0	13/19/25	25,01 - 44,0	10,0	44,0	X	X	X
32,0	13/19/25	32,01 - 50,0	11,5	50,0	X	X	X
38,0	13/19/25	38,01 - 56,0	14,0	56,0	X	X	X

For standard alterations see pages 51 and 52.

See page 67 for surface treatments and coatings.

Order example:





Material	Hardness HRC
HSS - M2	60-62

MBHKC

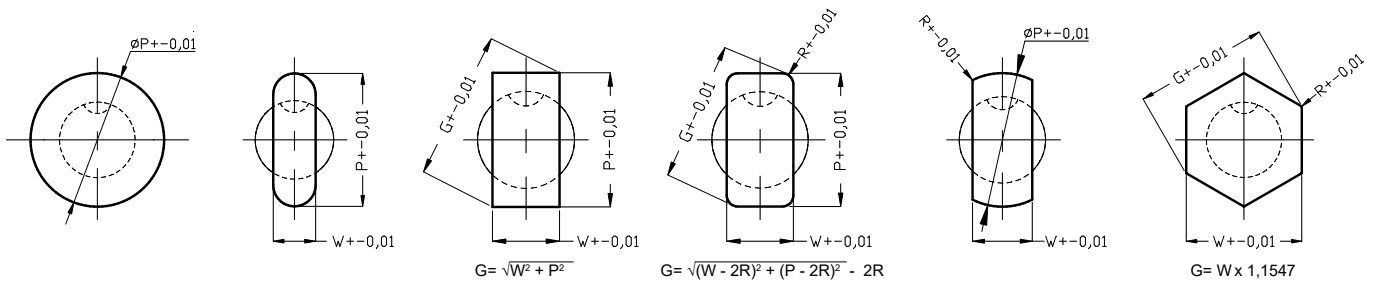
MBHKO

MBHKR

MBHKL

MBHKF

MBHKH



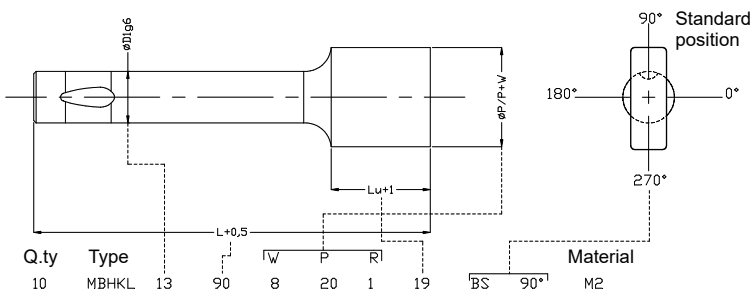
For qualified shapes see page 50.

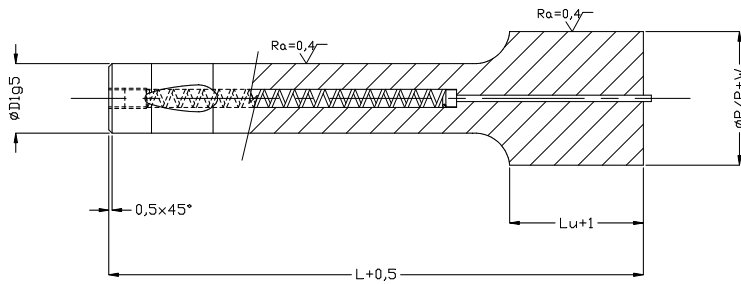
D1	Lu	ROUND	SHAPE		OVERALL LENGTH L			
		RANGE P	MIN W	MAX G/P	80	90	100	125
10,0	13/19/25	10,01 - 30,0	4,0	30,0	X	X	X	
13,0	13/19/25	13,01 - 32,0	5,0	32,0	X	X	X	
16,0	13/19/25	16,01 - 38,0	6,5	38,0	X	X	X	X
20,0	19/25/30	20,01 - 40,0	8,0	40,0	X	X	X	X
25,0	19/25/30	25,01 - 44,0	10,0	44,0	X	X	X	X
32,0	19/25/30	32,01 - 50,0	11,5	50,0	X	X	X	X
40,0	19/25/30	40,01 - 56,0	14,0	56,0	X	X	X	X

For standard alterations see pages 51 and 52.

See page 67 for surface treatments and coatings.

Order example:





Material	Hardness HRC
HSS - M2	60-62

MBHEKC

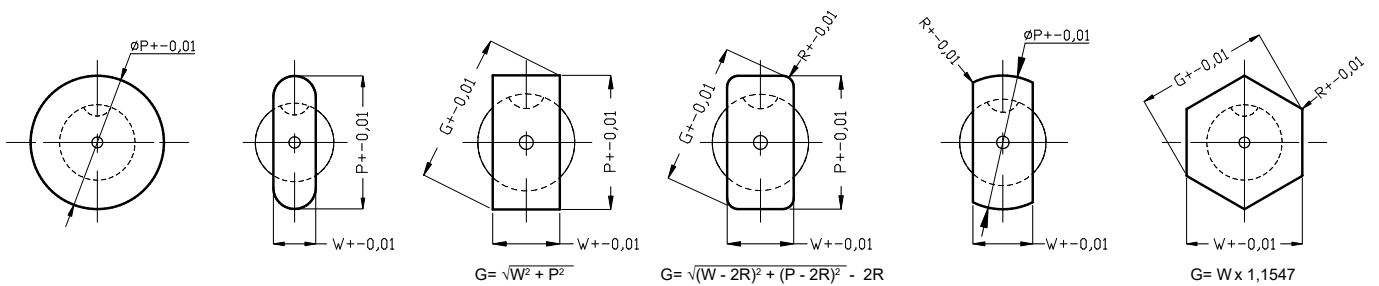
MBHEKO

MBHEKR

MBHEKL

MBHEKF

MBHEKH



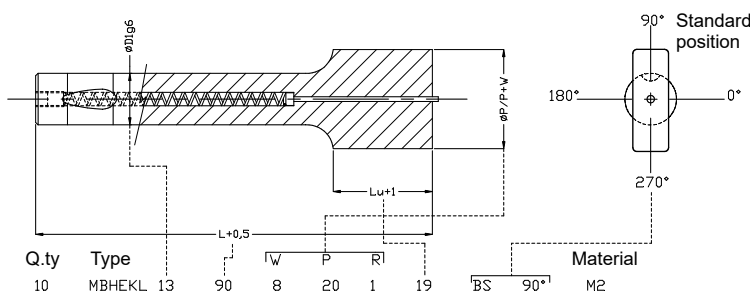
For qualified shapes see page 50.

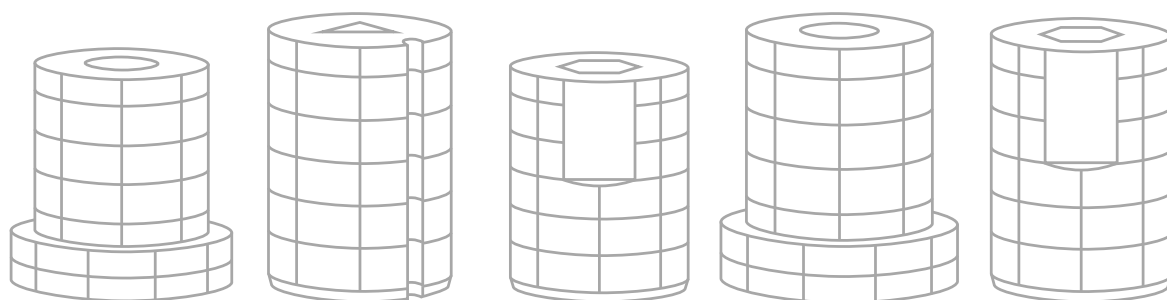
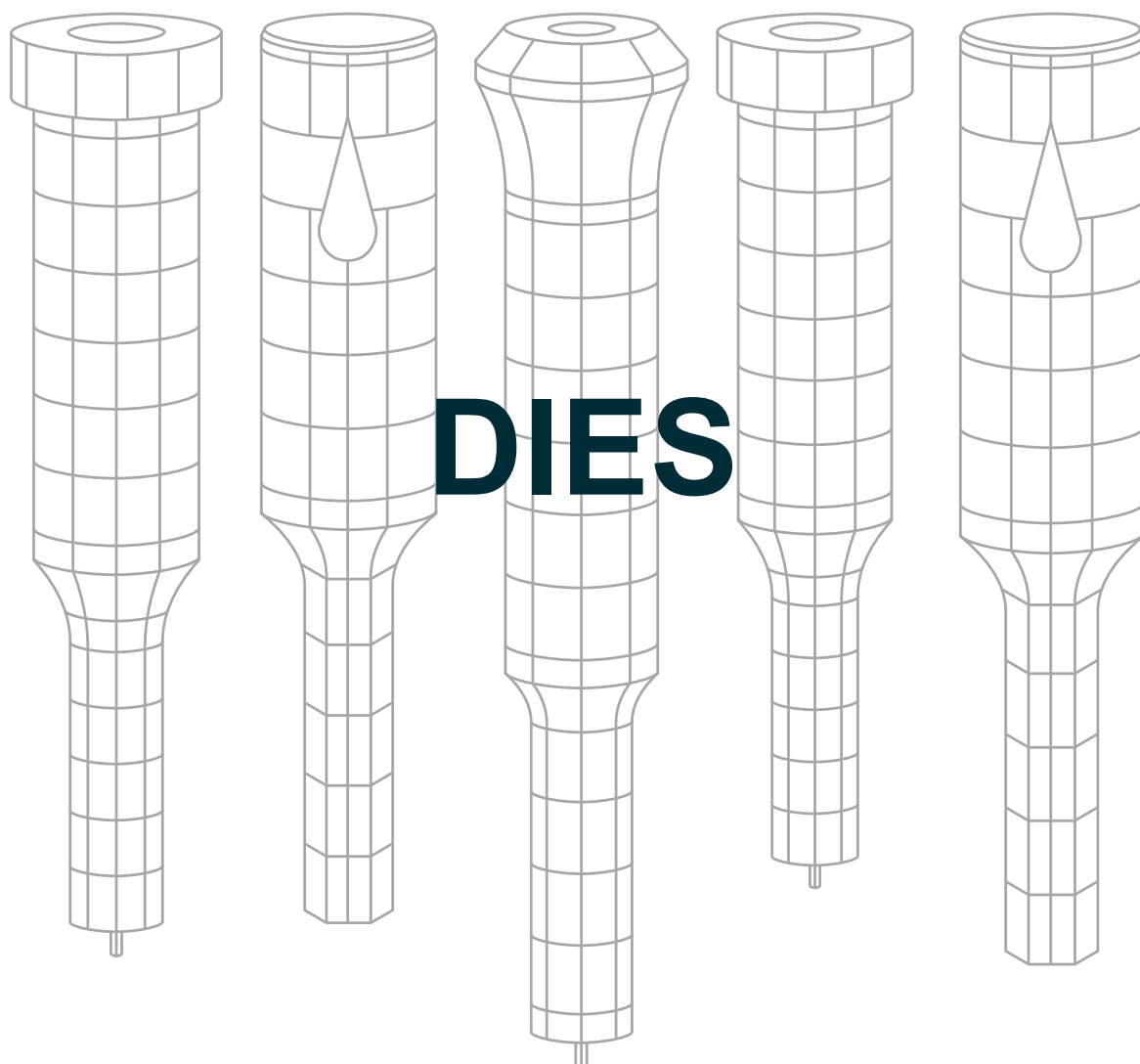
D1	Lu	ROUND	SHAPE		OVERALL LENGTH L			
		RANGE P	MIN W	MAX G/P	80	90	100	125
10,0	13/19/25	10,01 - 30,0	4,0	30,0	X	X	X	
13,0	13/19/25	13,01 - 32,0	5,0	32,0	X	X	X	
16,0	13/19/25	16,01 - 38,0	6,5	38,0	X	X	X	X
20,0	19/25/30	20,01 - 40,0	8,0	40,0	X	X	X	X
25,0	19/25/30	25,01 - 44,0	10,0	44,0	X	X	X	X
32,0	19/25/30	32,01 - 50,0	11,5	50,0	X	X	X	X
40,0	19/25/30	40,01 - 56,0	14,0	56,0	X	X	X	X

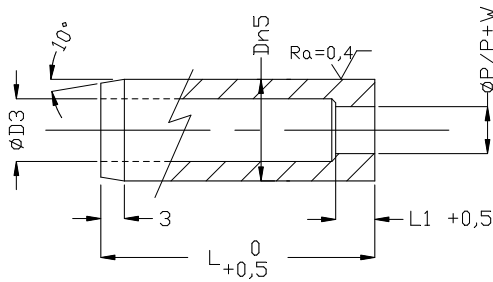
For standard alterations see pages 51 and 52.

See page 67 for surface treatments and coatings.

Order example:







Material	Hardness HRC
HSS - M2	60-62
A2	58-60
PS (on request)	62-64

MDC	MDO	MDR	MDL	MDF	MDH
		$G = \sqrt{W^2 + P^2}$	$G = \sqrt{(W - 2R)^2 + (P - 2R)^2} - 2R$		$G = W \times 1,1547$

For qualified shapes see page 50.

D1	L1	MAX D3	ROUND	SHAPE		OVERALL LENGTH L					
			RANGE P	MIN W	MAX P	16	20	25	30	32	35
5,0	2	2,8	1,0 - 2,4	1,2	2,4	X	X	X	X	X	
6,0	3	3,5	1,6 - 3,0	1,5	3,0	X	X	X	X	X	
8,0	4	4,0	2,0 - 3,5	1,5	3,5	X	X	X	X	X	
10,0	4	5,8	3,0 - 5,0	2,0	5,0	X	X	X	X	X	X
13,0	5	8,0	4,0 - 7,2	3,0	7,2		X	X	X	X	X
16,0	5	9,5	6,0 - 8,8	4,0	8,8		X	X	X	X	X
20,0	8	12,0	7,5 - 11,3	6,0	11,3		X	X	X	X	X
22,0	8	15,0	9,0 - 14,3	8,0	14,3		X	X	X	X	X
25,0	8	17,3	11,0 - 16,6	8,0	16,6		X	X	X	X	X
32,0	8	20,7	15,0 - 20,0	8,0	20,0		X	X	X	X	X
38,0	8	27,7	18,0 - 27,0	10,0	27,0		X	X	X	X	X
40,0	8	27,7	18,0 - 27,0	10,0	27,0		X	X	X	X	X

For extended range shank diameters see the following page.

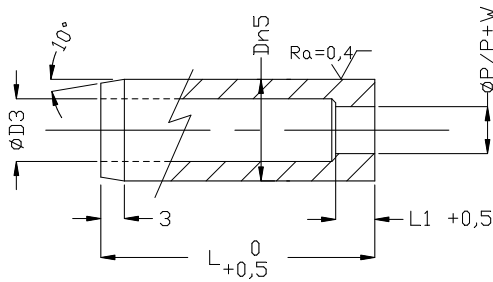
Order example:

For standard alterations see pages 51 and 52.

For flats see page 53.

See page 67 for surface treatments and coatings.

Q.ty 10 Type MDL W 25 P 32 R1 5 7 1 Material M2



Material	Hardness HRC
HSS - M2	60-62
A2	58-60
PS (on request)	62-64

MDC	MDO	MDR	MDL	MDF	MDH

For qualified shapes see page 50.

D1	L1	MAX D3	ROUND	SHAPE		OVERALL LENGTH L						
			RANGE P	MIN W	MAX P	20	25	30	32	35	40	45
45,0	8	36,0	19,05 - 35,6	5,0	35,6	X	X	X	X	X	X	X
50,0	8	41,0	22,2 - 40,6	7,0	40,6	X	X	X	X	X	X	X
56,0	8	46,0	25,4 - 45,6	8,0	45,6	X	X	X	X	X	X	X
63,0	8	51,0	28,55 - 50,5	9,0	50,5	X	X	X	X	X	X	X
71,0	8	57,0	31,75 - 56,5	11,0	56,5	X	X	X	X	X	X	X
76,0	8	61,0	34,90 - 60,5	13,0	60,5	X	X	X	X	X	X	X
85,0	8	67,0	42,50 - 66,5	15,0	66,5	X	X	X	X	X	X	X
90,0	8	71,0	44,5 - 70,5	20,0	70,5	X	X	X	X	X	X	X
100,0	8	79,0	49,5 - 78,5	25,0	78,5	X	X	X	X	X	X	X

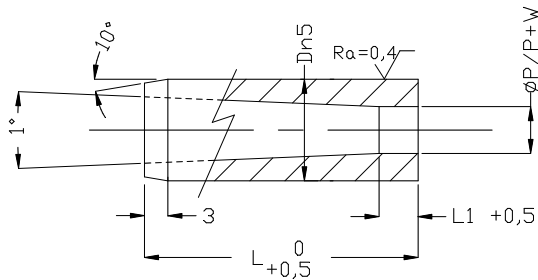
For standard alterations see pages 51 and 52.

For flats see page 53.

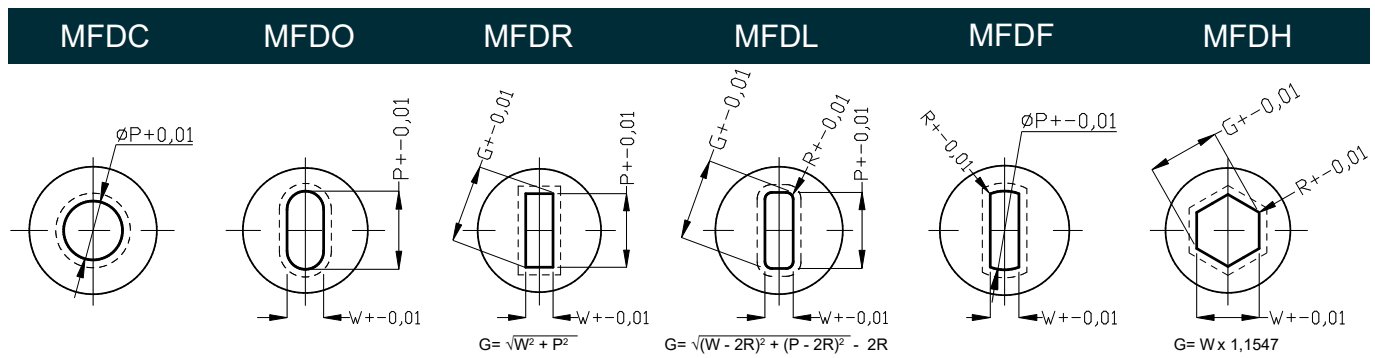
See page 67 for surface treatments and coatings.

Order example:

Q.ty 10 Type MDL W 25 P 32 R 5 L 7 R 1 Material M2



Material	Hardness HRC
HSS - M2	60-62
A2	58-60
PS (on request)	62-64



For qualified shapes see page 50.

D1	L1	MAX D3	ROUND	SHAPE		OVERALL LENGTH L					
			RANGE P	MIN W	MAX P	16	20	25	30	32	35
5,0	2	2,8	1,0 - 2,4	1,2	2,4	X	X	X	X	X	
6,0	3	3,5	1,6 - 3,0	1,5	3,0	X	X	X	X	X	
8,0	4	4,0	2,0 - 3,5	1,5	3,5	X	X	X	X	X	
10,0	4	5,8	3,0 - 5,0	2,0	5,0	X	X	X	X	X	X
13,0	5	8,0	4,0 - 7,2	3,0	7,2		X	X	X	X	X
16,0	5	9,5	6,0 - 8,8	4,0	8,8		X	X	X	X	X
20,0	8	12,0	7,5 - 11,3	6,0	11,3		X	X	X	X	X
22,0	8	15,0	9,0 - 14,3	8,0	14,3		X	X	X	X	X
25,0	8	17,3	11,0 - 16,6	8,0	16,6		X	X	X	X	X
32,0	8	20,7	15,0 - 20,0	8,0	20,0		X	X	X	X	X
38,0	8	27,7	18,0 - 27,0	10,0	27,0		X	X	X	X	X
40,0	8	27,7	18,0 - 27,0	10,0	27,0		X	X	X	X	X

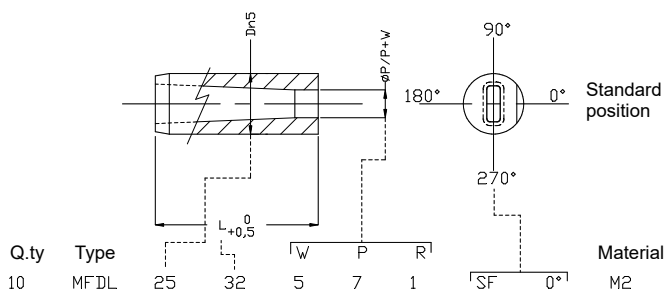
For extended range shank diameters see the following page.

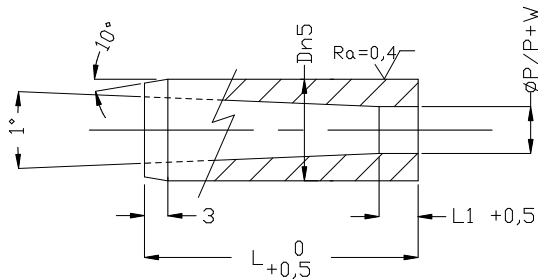
For standard alterations see pages 51 and 52.

For flats see page 53.

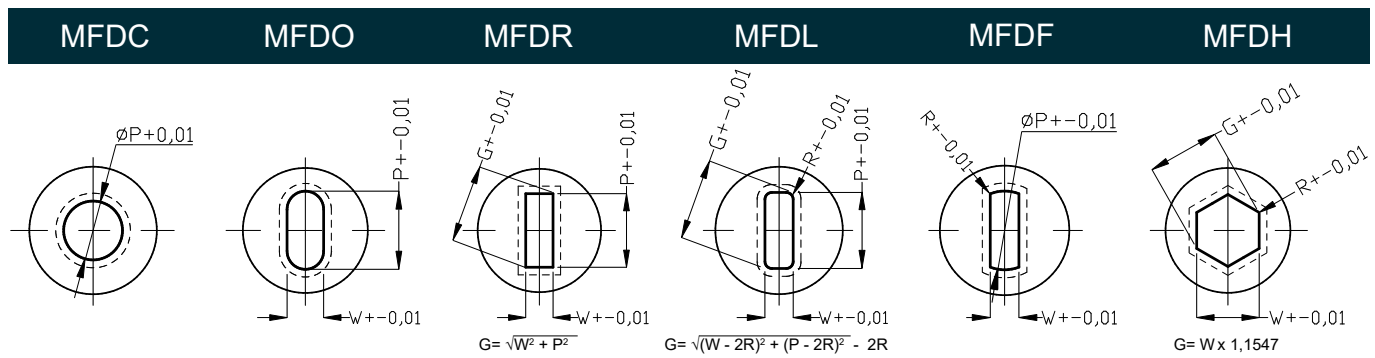
See page 67 for surface treatments and coatings.

Order example:





Material	Hardness HRC
HSS - M2	60-62
A2	58-60
PS (on request)	62-64



For qualified shapes see page 50.

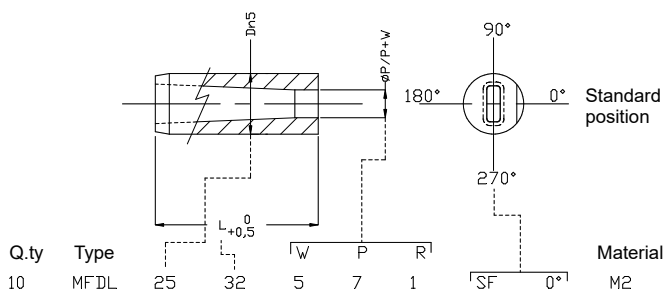
D1	L1	MAX D3	ROUND	SHAPE		OVERALL LENGTH L						
			RANGE P	MIN W	MAX P	20	25	30	32	35	40	45
45,0	8	36,0	19,05 - 35,6	5,0	35,6	X	X	X	X	X	X	X
50,0	8	41,0	22,2 - 40,6	7,0	40,6	X	X	X	X	X	X	X
56,0	8	46,0	25,4 - 45,6	8,0	45,6	X	X	X	X	X	X	X
63,0	8	51,0	28,55 - 50,5	9,0	50,5	X	X	X	X	X	X	X
71,0	8	57,0	31,75 - 56,5	11,0	56,5	X	X	X	X	X	X	X
76,0	8	61,0	34,90 - 60,5	13,0	60,5	X	X	X	X	X	X	X
85,0	8	67,0	42,50 - 66,5	15,0	66,5	X	X	X	X	X	X	X
90,0	8	71,0	44,5 - 70,5	20,0	70,5	X	X	X	X	X	X	X
100,0	8	79,0	49,5 - 78,5	25,0	78,5	X	X	X	X	X	X	X

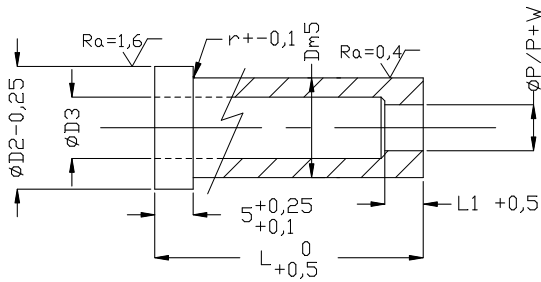
For standard alterations see pages 51 and 52.

For flats see page 53.

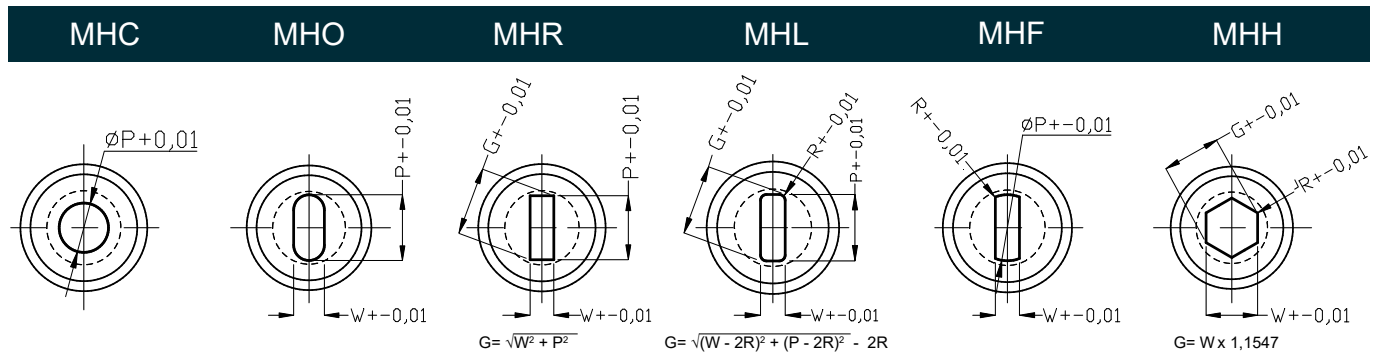
See page 67 for surface treatments and coatings.

Order example:





Material	Hardness HRC
HSS - M2	60-62
A2	58-60
PS (on request)	62-64



For qualified shapes see page 50.

D1	L1	D2	MAX D3	ROUND	SHAPE		OVERALL LENGTH L				
				RANGE P	MIN W	MAX P	20	25	30	32	35
5,0	2	8,0	2,8	1,0 - 2,4	1,2	2,4	X	X	X	X	
6,0	3	9,0	3,5	1,6 - 3,0	1,5	3,0	X	X	X	X	
8,0	4	11,0	4,0	2,0 - 3,5	1,5	3,5	X	X	X	X	X
10,0	4	13,0	5,8	3,0 - 5,0	2,0	5,0	X	X	X	X	X
13,0	5	16,0	8,0	4,0 - 7,2	3,0	7,2	X	X	X	X	X
16,0	5	19,0	9,5	6,0 - 8,8	4,0	8,8	X	X	X	X	X
20,0	8	23,0	12,0	7,5 - 11,3	6,0	11,3	X	X	X	X	X
22,0	8	25,0	15,0	9,0 - 14,3	8,0	14,3	X	X	X	X	X
25,0	8	28,0	17,3	11,0 - 16,6	8,0	16,6	X	X	X	X	X
32,0	8	35,0	20,7	15,0 - 20,0	8,0	20,0	X	X	X	X	X
38,0	8	41,0	27,7	18,0 - 27,0	10,0	27,0	X	X	X	X	X
40,0	8	43,0	27,7	18,0 - 27,0	10,0	27,0	X	X	X	X	X

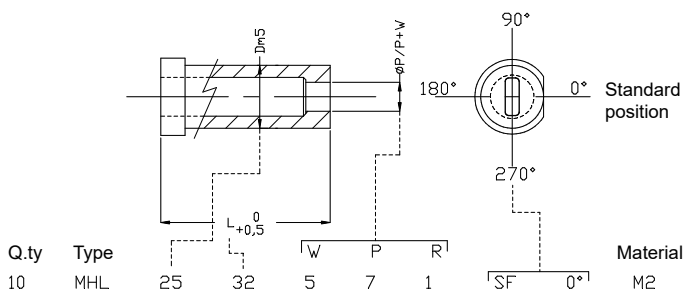
For extended range shank diameters see the following page.

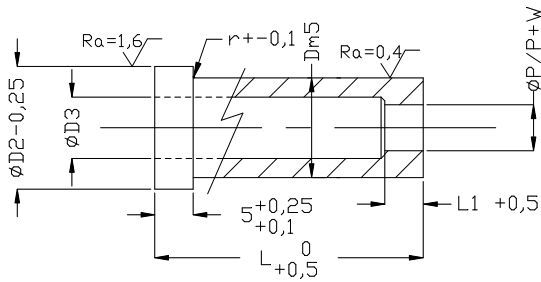
For standard alterations see pages 51 and 52.

For flats see page 53.

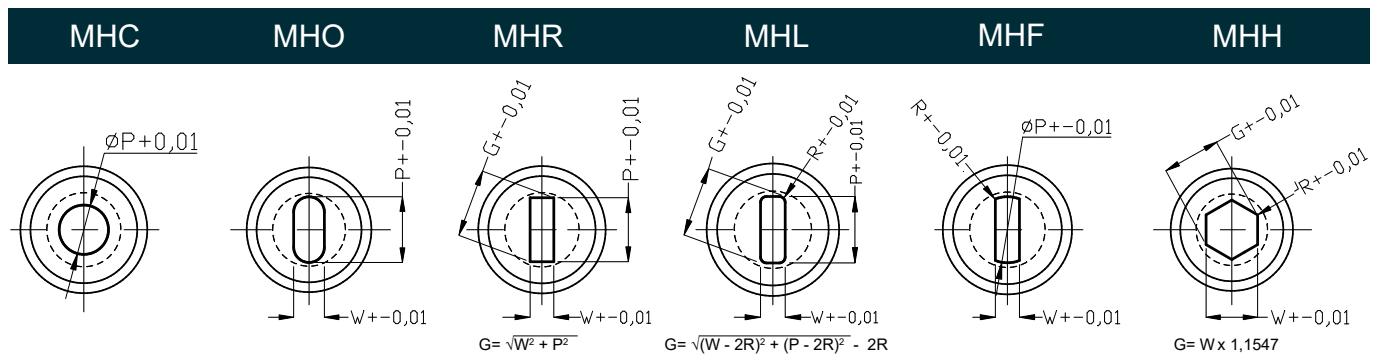
See page 67 for surface treatments and coatings.

Order example:





Material	Hardness HRC
HSS - M2	60-62
A2	58-60
PS (on request)	62-64



For qualified shapes see page 50.

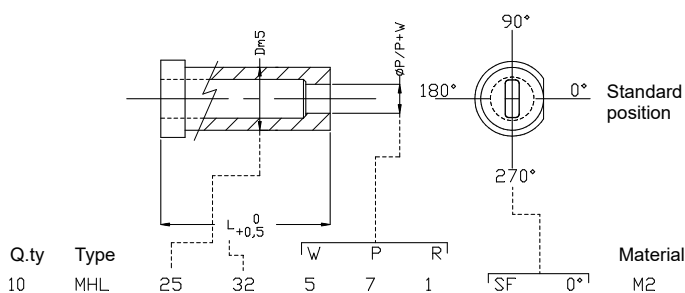
D1	L1	D2	MAX D3	ROUND	SHAPE		OVERALL LENGTH L							
				RANGE P	MIN W	MAX P	20	25	30	32	35	40	45	
45,0	8	48,0	36,0	19,05 - 35,6	5,0	35,6	X	X	X	X	X	X	X	X
50,0	8	53,0	41,0	22,2 - 40,6	7,0	40,6	X	X	X	X	X	X	X	X
56,0	8	59,0	46,0	25,4 - 45,6	8,0	45,6	X	X	X	X	X	X	X	X
63,0	8	66,0	51,0	28,55 - 50,5	9,0	50,5	X	X	X	X	X	X	X	X
71,0	8	74,0	57,0	31,75 - 56,5	11,0	56,5	X	X	X	X	X	X	X	X
76,0	8	79,0	61,0	34,90 - 60,5	13,0	60,5	X	X	X	X	X	X	X	X
85,0	8	88,0	67,0	42,50 - 66,5	15,0	66,5	X	X	X	X	X	X	X	X
90,0	8	93,0	71,0	44,5 - 70,5	20,0	70,5	X	X	X	X	X	X	X	X
100,0	8	103,0	79,0	49,5 - 78,5	25,0	78,5	X	X	X	X	X	X	X	X

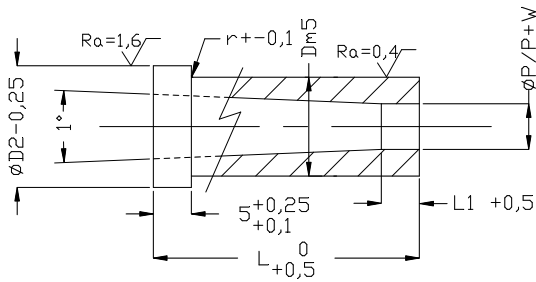
For standard alterations see pages 51 and 52.

For flats see page 53.

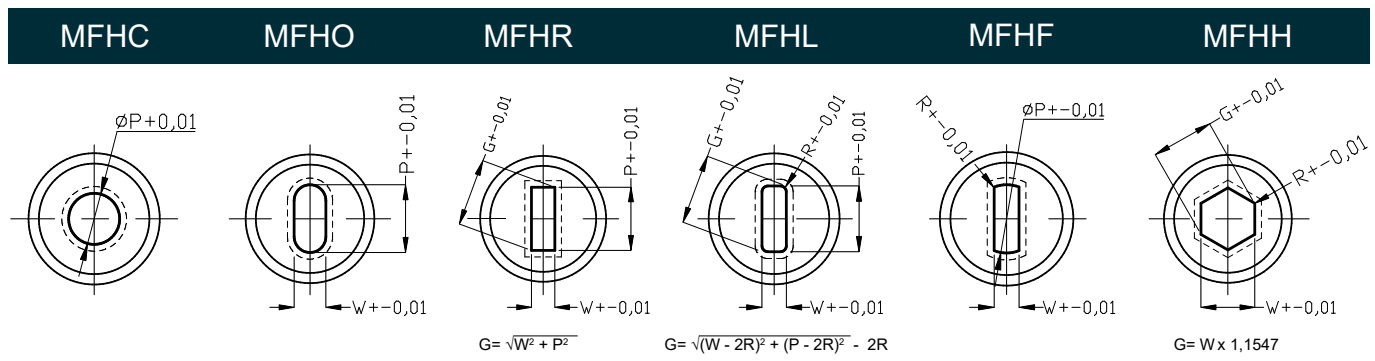
See page 67 for surface treatments and coatings.

Order example:





Material	Hardness HRC
HSS - M2	60-62
A2	58-60
PS (on request)	62-64



For qualified shapes see page 50.

D1	L1	D2	ROUND	SHAPE		OVERALL LENGTH L					
			RANGE P	MIN W	MAX P	16	20	25	30	32	35
5,0	3	8,0	1,0 - 2,4	1,2	2,4	X	X	X	X	X	
6,0	3	9,0	1,6 - 3,0	1,5	3,0	X	X	X	X	X	
8,0	3	11,0	2,0 - 3,5	1,5	3,5	X	X	X	X	X	
10,0	5	13,0	3,0 - 5,0	2,0	5,0	X	X	X	X	X	X
13,0	5	16,0	4,0 - 7,2	3,0	7,2		X	X	X	X	X
16,0	5	19,0	6,0 - 8,8	4,0	8,8		X	X	X	X	X
20,0	8	23,0	7,5 - 11,3	6,0	11,3		X	X	X	X	X
22,0	8	25,0	9,0 - 14,3	8,0	14,3		X	X	X	X	X
25,0	8	28,0	11,0 - 16,6	8,0	16,6		X	X	X	X	X
32,0	8	35,0	15,0 - 20,0	8,0	20,0		X	X	X	X	X
38,0	8	41,0	18,0 - 27,0	10,0	27,0		X	X	X	X	X
40,0	8	43,0	18,0 - 27,0	10,0	27,0		X	X	X	X	X

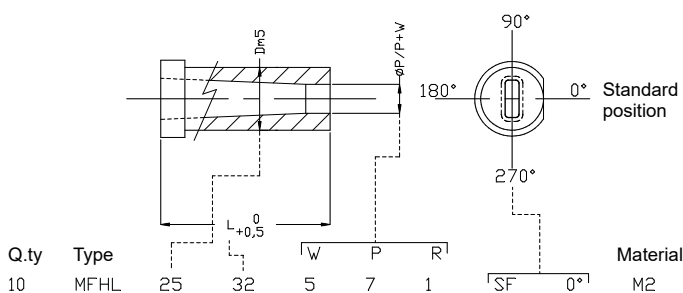
For extended range shank diameters see the following page.

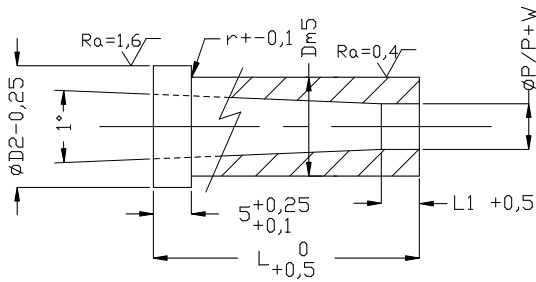
For standard alterations see pages 51 and 52.

For flats see page 53.

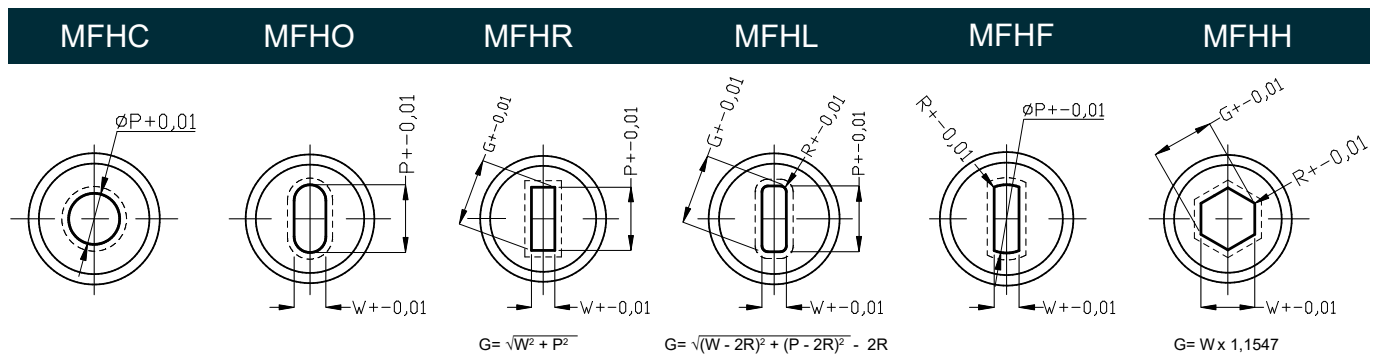
See page 67 for surface treatments and coatings.

Order example:





Material	Hardness HRC
HSS - M2	60-62
A2	58-60
PS (on request)	62-64



For qualified shapes see page 50.

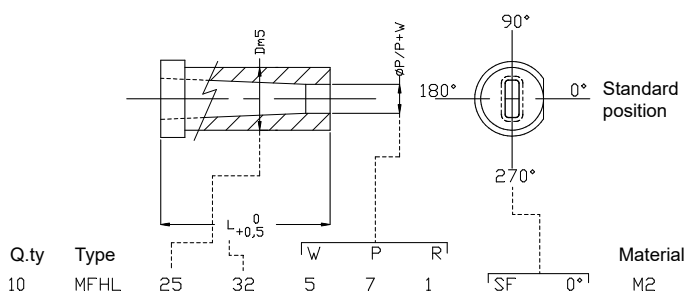
D1	L1	D2	MAX D3	ROUND	SHAPE		OVERALL LENGTH L							
				RANGE P	MIN W	MAX P	20	25	30	32	35	40	45	
45,0	8	48,0	36,0	19,05 - 35,6	5,0	35,6	X	X	X	X	X	X	X	X
50,0	8	53,0	41,0	22,2 - 40,6	7,0	40,6	X	X	X	X	X	X	X	X
56,0	8	59,0	46,0	25,4 - 45,6	8,0	45,6	X	X	X	X	X	X	X	X
63,0	8	66,0	51,0	28,55 - 50,5	9,0	50,5	X	X	X	X	X	X	X	X
71,0	8	74,0	57,0	31,75 - 56,5	11,0	56,5	X	X	X	X	X	X	X	X
76,0	8	79,0	61,0	34,90 - 60,5	13,0	60,5	X	X	X	X	X	X	X	X
85,0	8	88,0	67,0	42,50 - 66,5	15,0	66,5	X	X	X	X	X	X	X	X
90,0	8	93,0	71,0	44,5 - 70,5	20,0	70,5	X	X	X	X	X	X	X	X
100,0	8	103,0	79,0	49,5 - 78,5	25,0	78,5	X	X	X	X	X	X	X	X

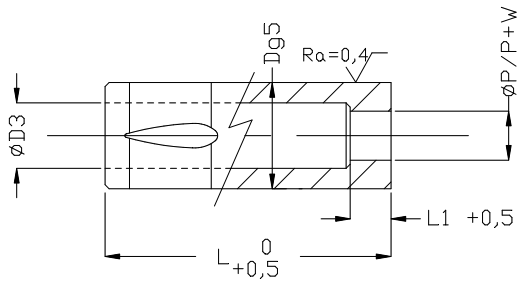
For standard alterations see pages 51 and 52.

For flats see page 53.

See page 67 for surface treatments and coatings.

Order example:





Material	Hardness HRC
HSS - M2	60-62
A2	58-60

MBLDC

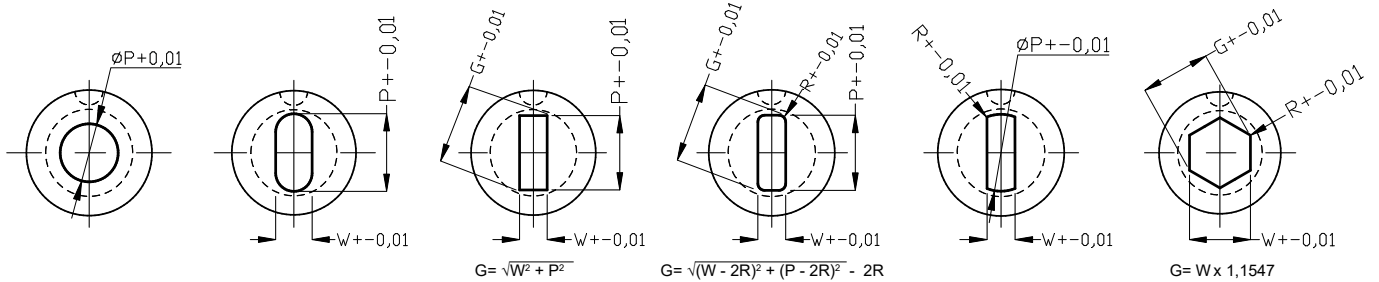
MBLDO

MBLDR

MBLDL

MBLDF

MBLDH



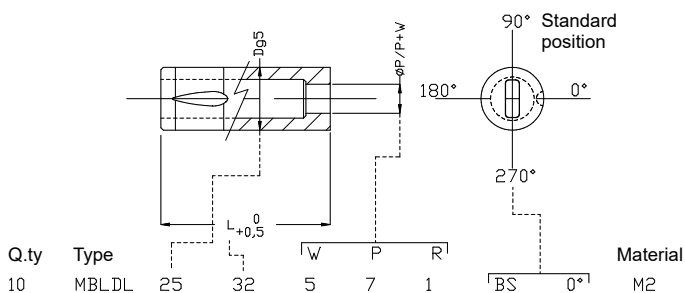
For qualified shapes see page 50.

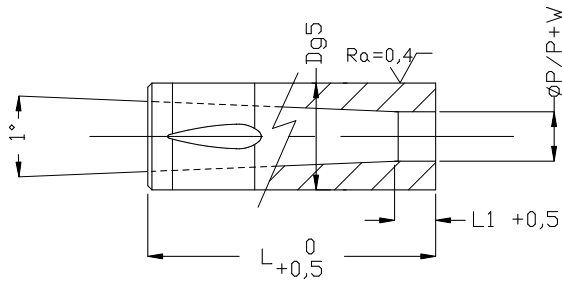
D1	L1	MAX D3	ROUND	SHAPE		L
			RANGE P	MIN W	MAX P	
13,0	4	5,8	1,5 - 5,0	2,0	5,0	X
16,0	5	8,0	3,0 - 7,2	2,5	7,2	X
20,0	5	12,0	4,5 - 11,0	4,5	11,0	X
25,0	6	16,0	8,0 - 15,0	5,0	15,0	X
32,0	6	20,0	11,0 - 19,0	6,0	19,0	X
38,0	8	27,0	16,0 - 26,0	8,0	26,0	X

For standard alterations see pages 51 and 52.

See page 67 for surface treatments and coatings.

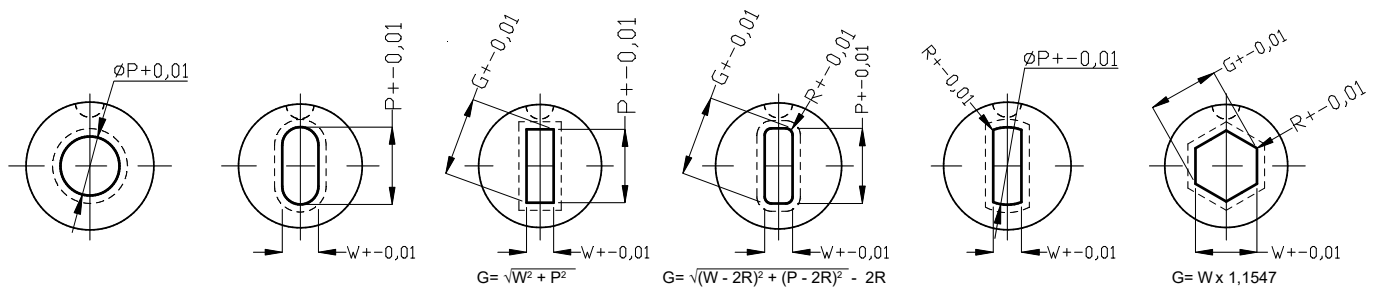
Order example:





Material	Hardness HRC
HSS - M2	60-62
A2	58-60

MFBLDC MFBLDO MFBLDR MFBLDL MFBLDF MFBLDH



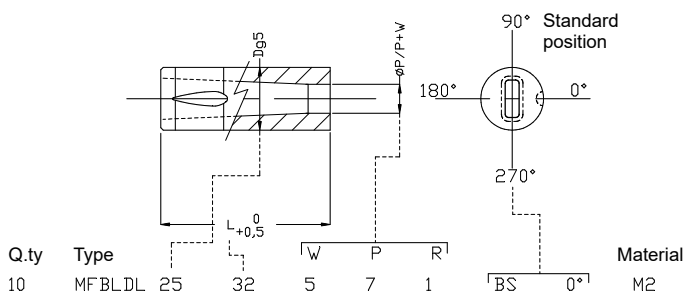
For qualified shapes see page 50.

D1	L1	MAX D3	ROUND	SHAPE		L
			RANGE P	MIN W	MAX P	
13,0	4	5,8	1,5 - 5,0	2,0	5,0	X
16,0	5	8,0	3,0 - 7,2	2,5	7,2	X
20,0	5	12,0	4,5 - 11,0	4,5	11,0	X
25,0	6	16,0	8,0 - 15,0	5,0	15,0	X
32,0	6	20,0	11,0 - 19,0	6,0	19,0	X
38,0	8	27,0	16,0 - 26,0	8,0	26,0	X

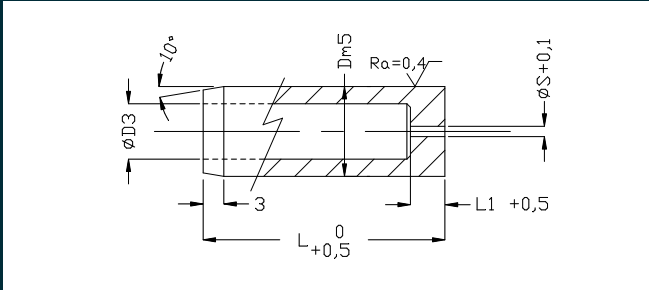
For standard alterations see pages 51 and 52.

See page 67 for surface treatments and coatings.

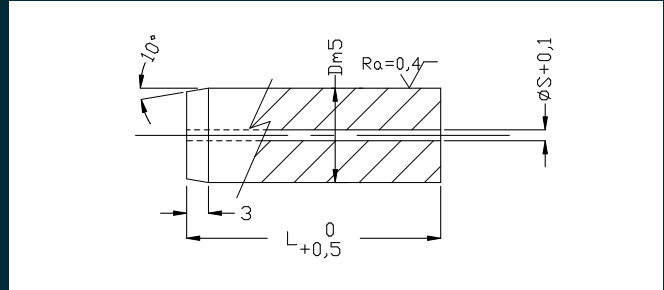
Order example:



MDW



MFDW



D1	L1*	D3*	S	OVERALL LENGTH L								
				16	20	25	30	32	35	40	45	
5,0	2	2,8	1,0	X	X	X	X	X				
6,0	3	3,5	1,0	X	X	X	X	X				
8,0	4	4,0	1,0	X	X	X	X	X				
10,0	4	5,8	1,5	X	X	X	X	X	X			
13,0	5	8,0	1,5		X	X	X	X	X			
16,0	5	9,5	1,5		X	X	X	X	X			
20,0	8	12,0	1,5		X	X	X	X	X			
22,0	8	15,0	1,5		X	X	X	X	X			
25,0	8	17,3	1,5		X	X	X	X	X			
32,0	8	20,7	1,5		X	X	X	X	X			
38,0	8	27,7	1,5		X	X	X	X	X			
40,0	8	27,7	1,5		X	X	X	X	X			
45,0	8	36,0	1,5		X	X	X	X	X	X	X	X
50,0	8	41,0	1,5		X	X	X	X	X	X	X	X
56,0	8	46,0	1,5		X	X	X	X	X	X	X	X
63,0	8	51,0	1,5		X	X	X	X	X	X	X	X
71,0	8	57,0	1,5		X	X	X	X	X	X	X	X
76,0	8	61,0	1,5		X	X	X	X	X	X	X	X
85,0	8	67,0	1,5		X	X	X	X	X	X	X	X
90,0	8	71,0	1,5		X	X	X	X	X	X	X	X
100,0	8	79,0	1,5		X	X	X	X	X	X	X	X

*MDW only

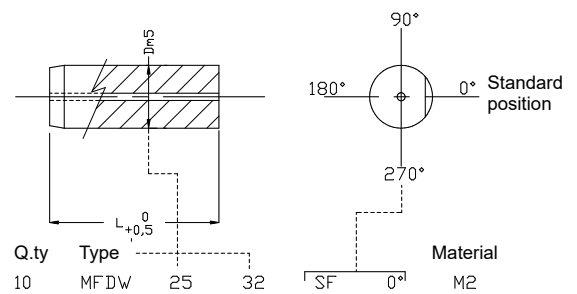
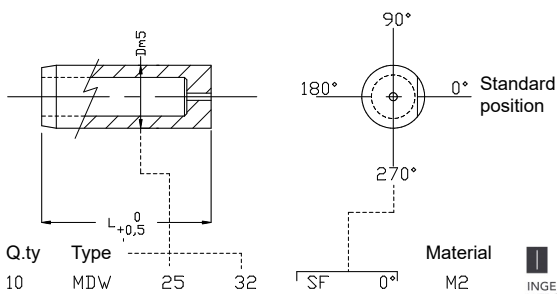
For standard alterations see pages 51 and 52.

For flats see page 53.

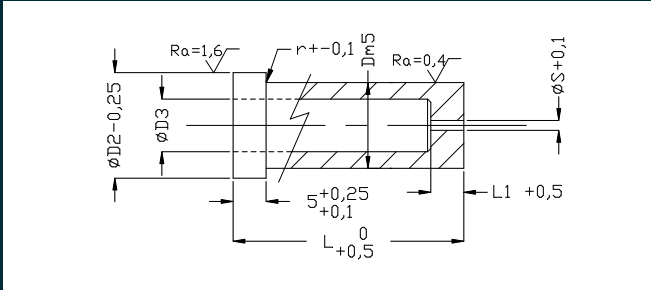
See page 67 for surface treatments and coatings.

Material	Hardness HRC
HSS - M2	60-62
A2	58-60
PS (on request)	62-64

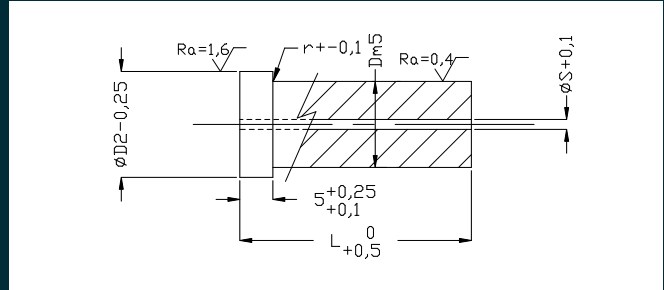
Order example:



MHW



MFHW



D1	L1*	D2	D3*	S	OVERALL LENGTH L								
					16	20	25	30	32	35	40	45	
5,0	2	8,0	2,8	1,0	X	X	X	X	X				
6,0	3	9,0	3,5	1,0	X	X	X	X	X				
8,0	4	11,0	4,0	1,0	X	X	X	X	X				
10,0	4	13,0	5,8	1,5	X	X	X	X	X	X			
13,0	5	16,0	8,0	1,5		X	X	X	X	X			
16,0	5	19,0	9,5	1,5		X	X	X	X	X			
20,0	8	23,0	12,0	1,5		X	X	X	X	X			
22,0	8	25,0	15,0	1,5		X	X	X	X	X			
25,0	8	28,0	17,3	1,5		X	X	X	X	X			
32,0	8	35,0	20,7	1,5		X	X	X	X	X			
38,0	8	41,0	27,7	1,5		X	X	X	X	X			
40,0	8	43,0	27,7	1,5		X	X	X	X	X			
45,0	8	48,0	36,0	1,5		X	X	X	X	X	X	X	X
50,0	8	53,0	41,0	1,5		X	X	X	X	X	X	X	X
56,0	8	59,0	46,0	1,5		X	X	X	X	X	X	X	X
63,0	8	66,0	51,0	1,5		X	X	X	X	X	X	X	X
71,0	8	74,0	57,0	1,5		X	X	X	X	X	X	X	X
76,0	8	79,0	61,0	1,5		X	X	X	X	X	X	X	X
85,0	8	88,0	67,0	1,5		X	X	X	X	X	X	X	X
90,0	8	93,0	71,0	1,5		X	X	X	X	X	X	X	X
100,0	8	103,0	79,0	1,5		X	X	X	X	X	X	X	X

*MHW only

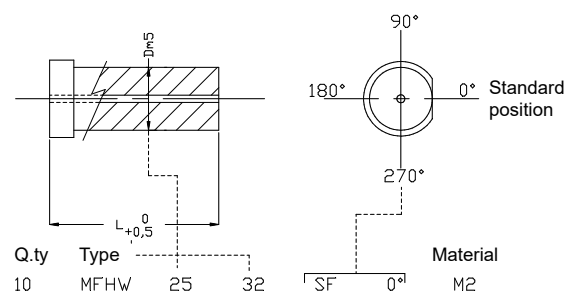
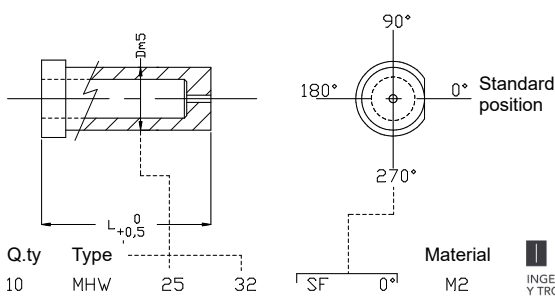
For standard alterations see pages 51 and 52.

For flats see page 53.

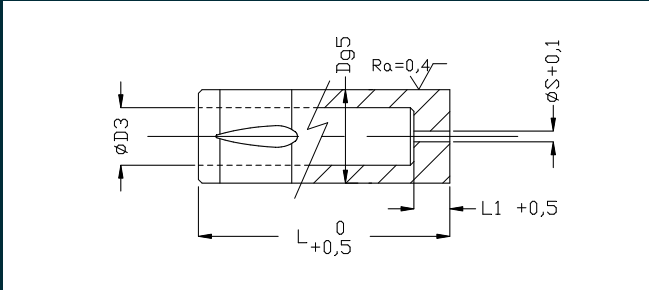
See page 67 for surface treatments and coatings.

Material	Hardness HRC
HSS - M2	60-62
A2	58-60
PS (on request)	62-64

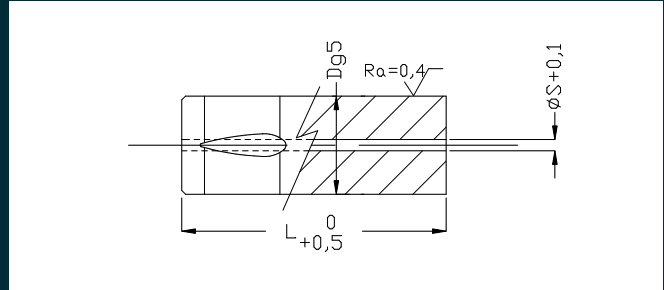
Order example:



MBLDW



MFBLDW



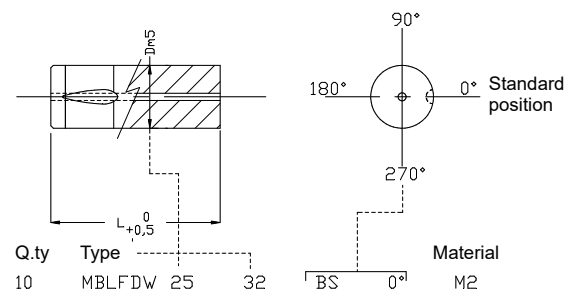
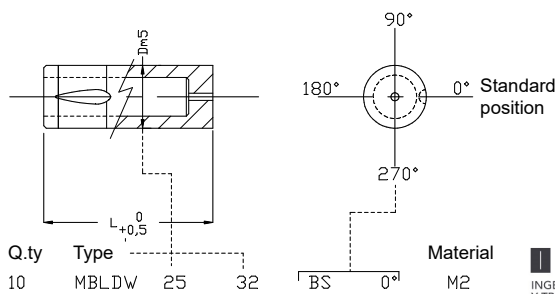
D1	L1*	D3*	S	OVERALL LENGTH L
				32
13,0	4	5,8	1,5	X
16,0	5	8,0	1,5	X
20,0	5	12,0	1,5	X
25,0	6	16,0	1,5	X
32,0	6	20,0	1,5	X
38,0	8	27,0	1,5	X

For standard alterations see pages 51 and 52.

See page 67 for surface treatments and coatings.

Material	Hardness HRC
HSS - M2	60-62
A2	58-60

Order example:



90°							
						<p>Your drawing</p>	
	270°						

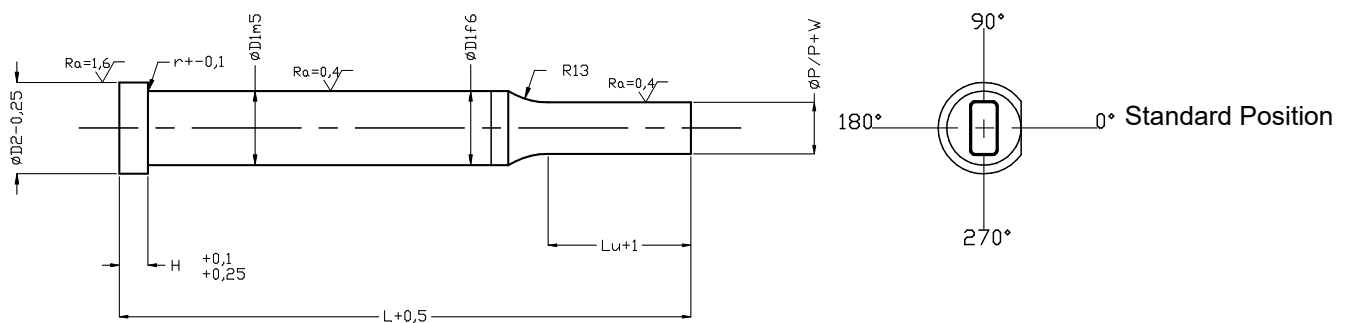
EXAMPLE: MTQ 13 80 W=5 P=12 A=3 R=0,5 Lu19 SF0° Q25 M2

STANDARD ALTERATIONS

To obtain different sizes compared to the standard sizes table, write the size you need directly into the description, adding possible missing codes (for example H and D2 that normally are not in the description) after the Lu code for the punch, or P/P+W for the die.

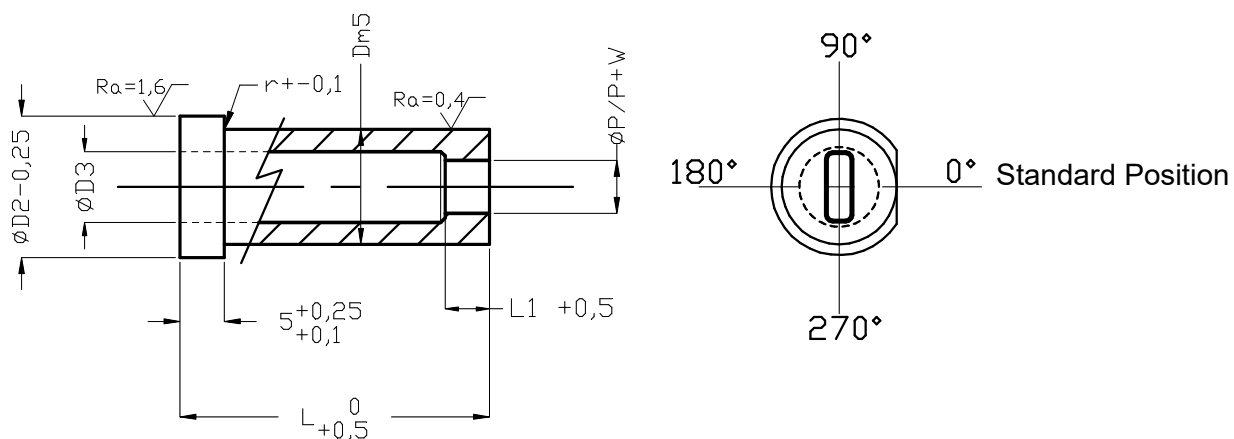
See below:

1 - PUNCHES



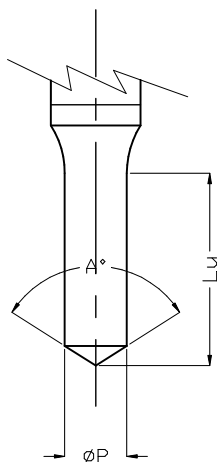
Q.ty	Type	D1	L	W	P	R	Lu	H	D2	Key flat	Material
10	MTL	12	81	5	7	1	17	4	14	SF 0°	M2

2 - DIES



Q.ty	Type	D	L	W	P	R	L1	H	D2	D3	Key flat	Material
10	MHL	27	33	5	7	1	7	4	31	18	SF 0°	M2

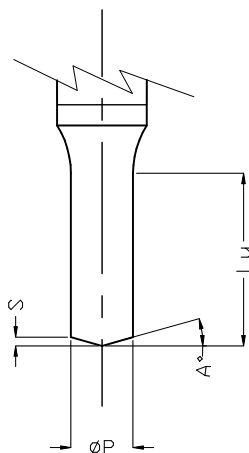
CONICAL POINT



Please add the following line to the order:

CP $A=3^\circ$

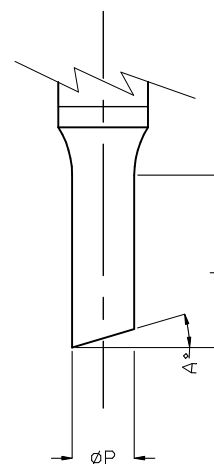
ROOFTOP SHEAR



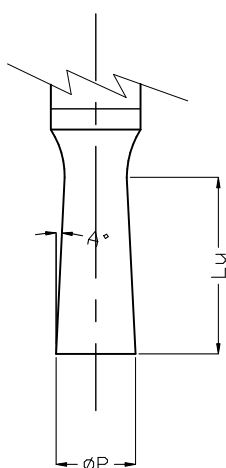
Please add the following line to the order:

RS $A=3^\circ$ OR RS $S=3$

ANGLE SHEAR



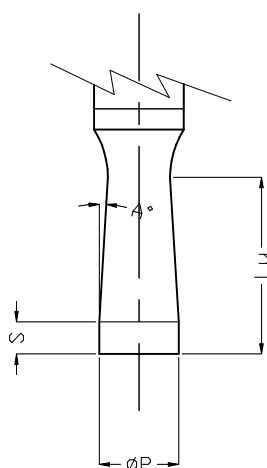
BACK TAPERED



Please add the following line to the order:

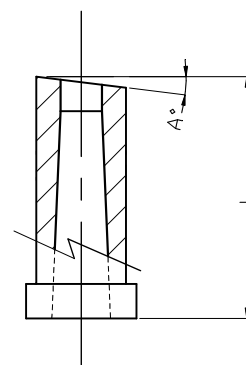
BT $A=0,5^\circ$

STRAIGHT + BACK TAPERED



Please add the following line to the order:

SC $S=2$ $A=0,5^\circ$



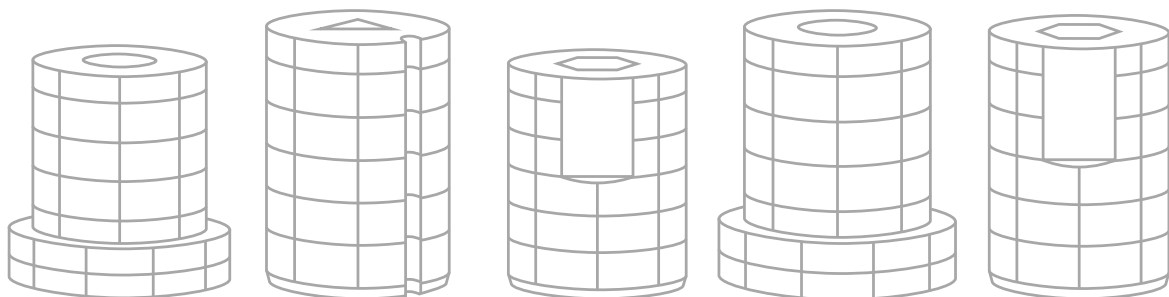
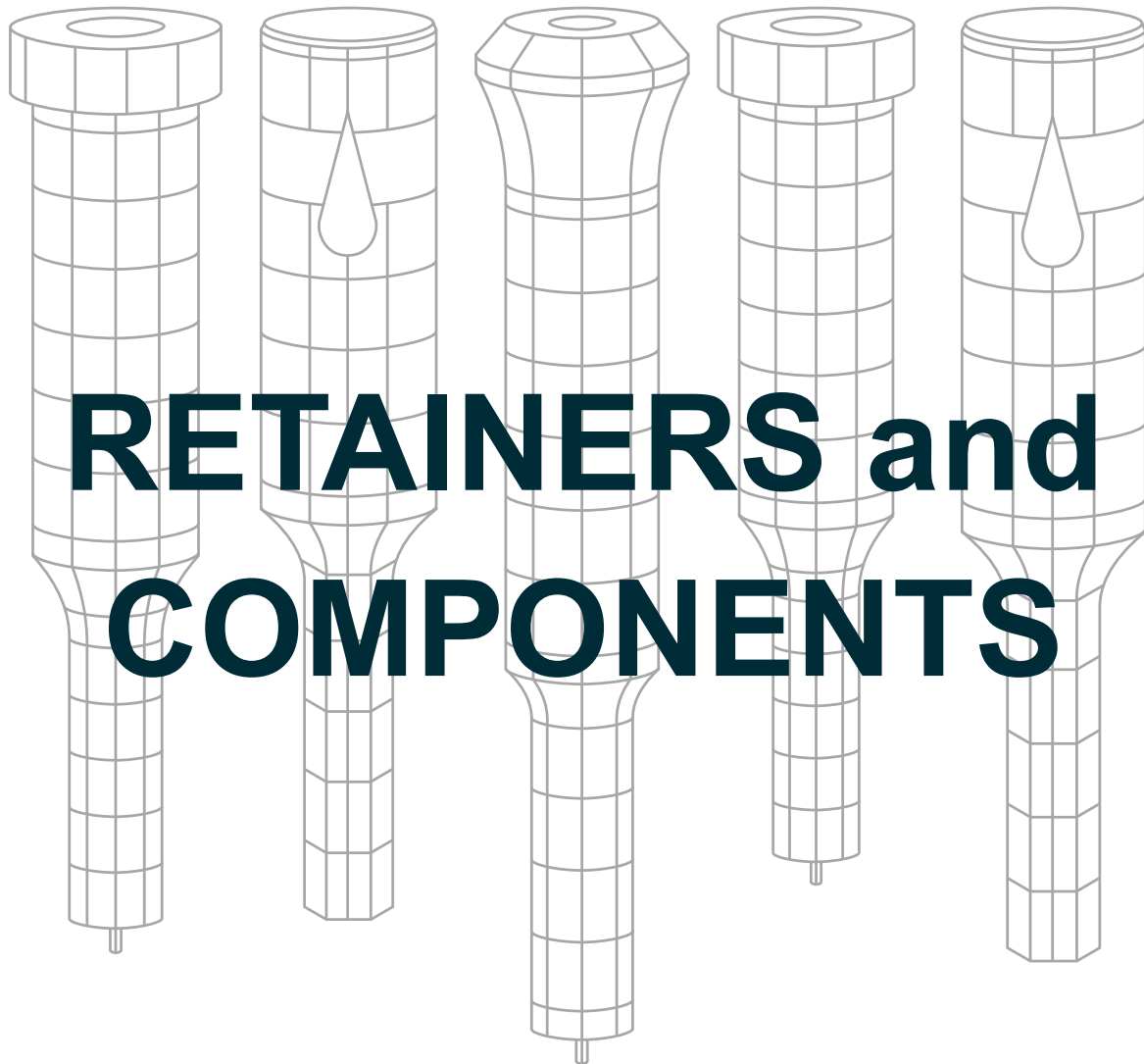
Please add the following line to the order:

AS $A=3^\circ$

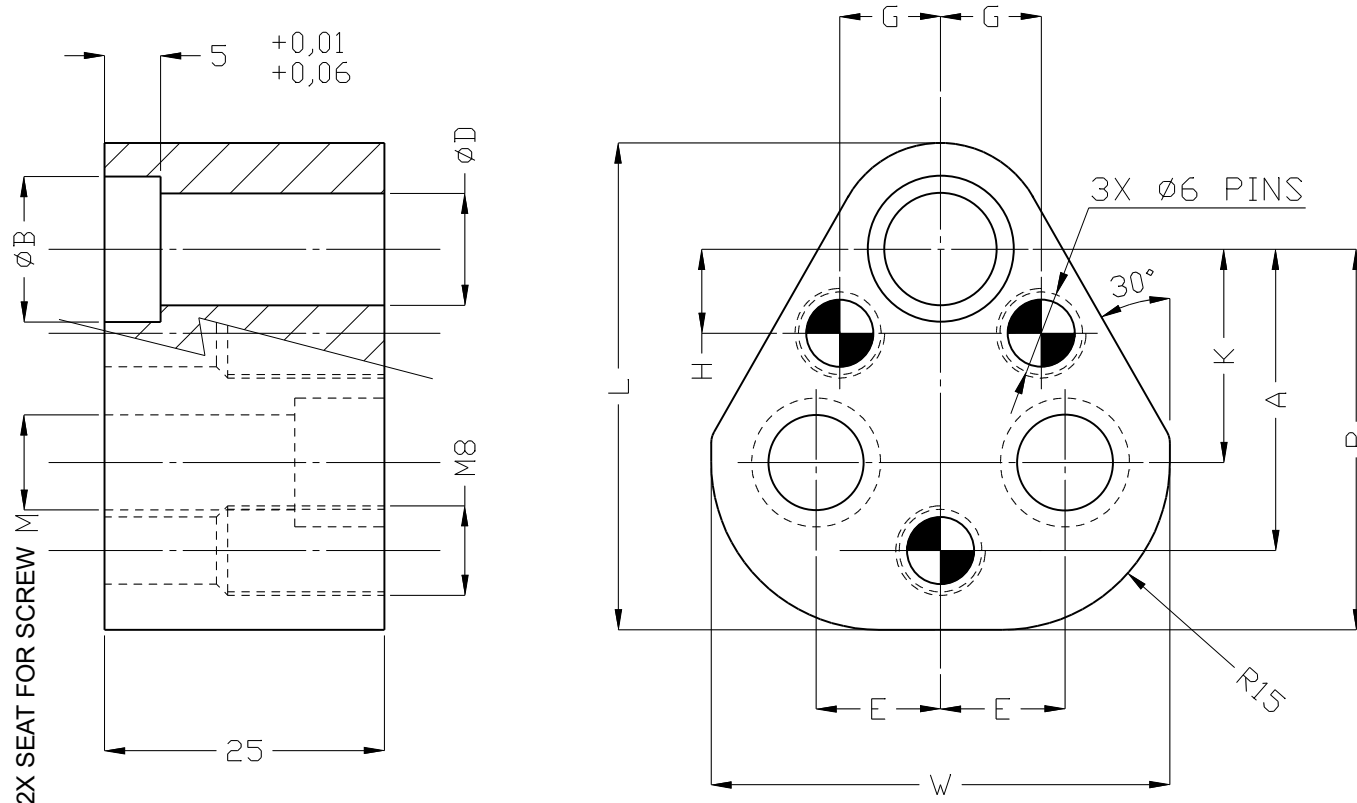
SF	DF	DS	SF1
<p>Add the following line to the description. Example: SF 145°</p>	<p>Add the following line to the description. Example: DF 145°</p>	<p>Add the following line to the description. Example: DS3 F=D1/2+DS/2 145° F from punch center to pin center</p>	<p>Add the following line to the description. Example: SF1 F=1 145° F = depth</p>

SF	DF	DS	SF1
<p>Add the following line to the description. Example: SF 145°</p>	<p>Add the following line to the description. Example: DF 145°</p>	<p>Add the following line to the description. Example: DS3 F=D1/2+DS/2 145° F from die center to pin center</p>	<p>Add the following line to the description. Example: SF1 F=1 145° F = depth</p>

SF3	SF4	DS	SF1
<p>Add the following line to the description. Example: SF3 1X14 145° (F=1 Z=14)</p>	<p>Add the following line to the description. Example: SF4 1X14 145° (F=1 Z=14)</p>	<p>Add the following line to the description. Example: DS6 F=9 145° F from die center to pin center</p>	<p>Add the following line to the description. Example: SF1 F=1 145° F = depth</p>



Head retainer

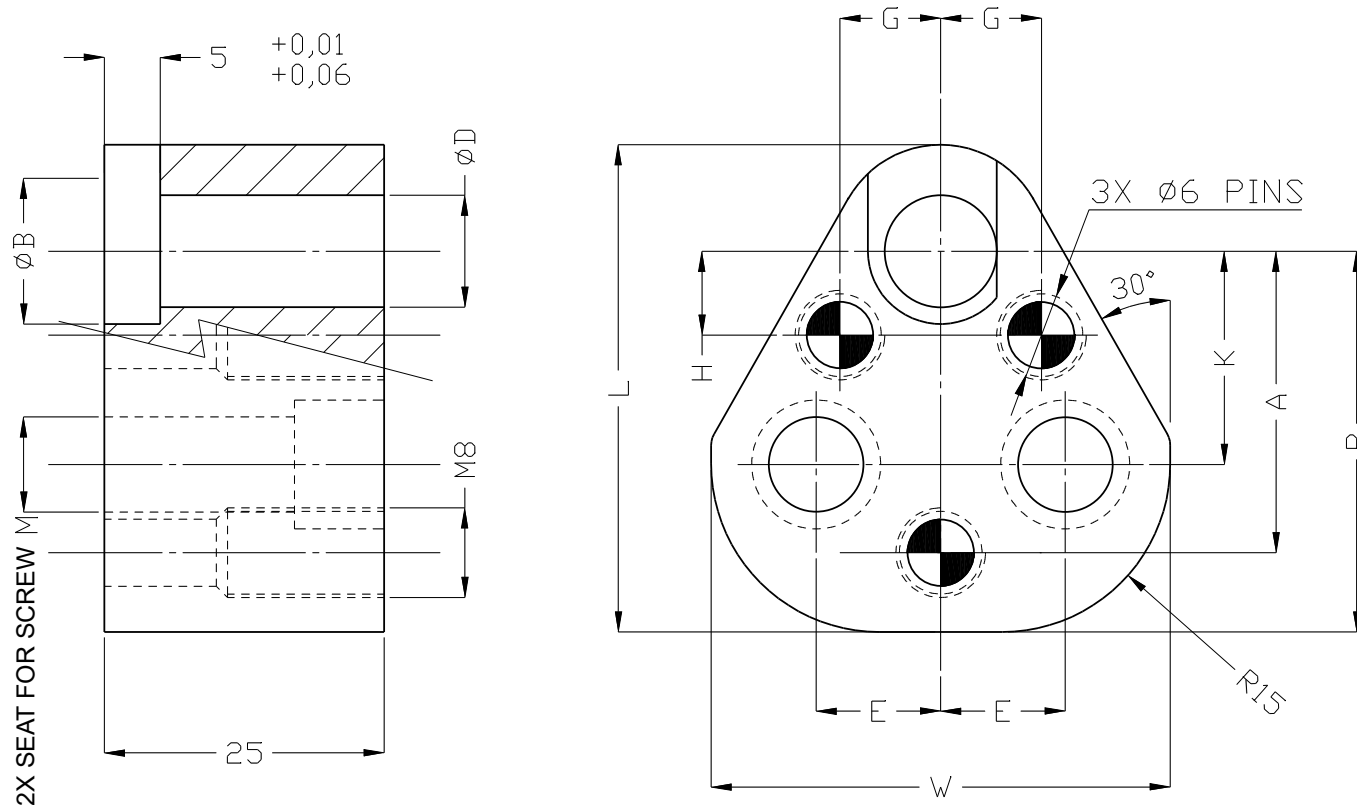


D	10	13	16	20	25	32
L	43,50	49,60	52,70	59,30	68,90	68,90
W	41,00	48,50	51,70	56,80	64,50	64,50
P	34,00	37,00	38,60	41,90	46,70	46,70
A ± 0,01	26,92	29,97	31,75	33,53	40,64	40,64
K ± 0,13	19,05	19,05	19,05	19,05	23,82	23,82
E ± 0,13	11,12	14,27	15,87	17,47	19,84	19,84
H ± 0,01	7,50	6,50	6,00	5,00	7,00	7,00
G ± 0,01	9,00	12,00	13,50	16,50	22,00	22,00
B	14,00	17,00	20,00	24,00	29,00	36,00
M	M8	M8	M8	M10	M12	M12

Accessories included: 2 screws, 3 dowel pins

Order example: MTPR with diameter 16 → MTPR-16

Head flat retainer

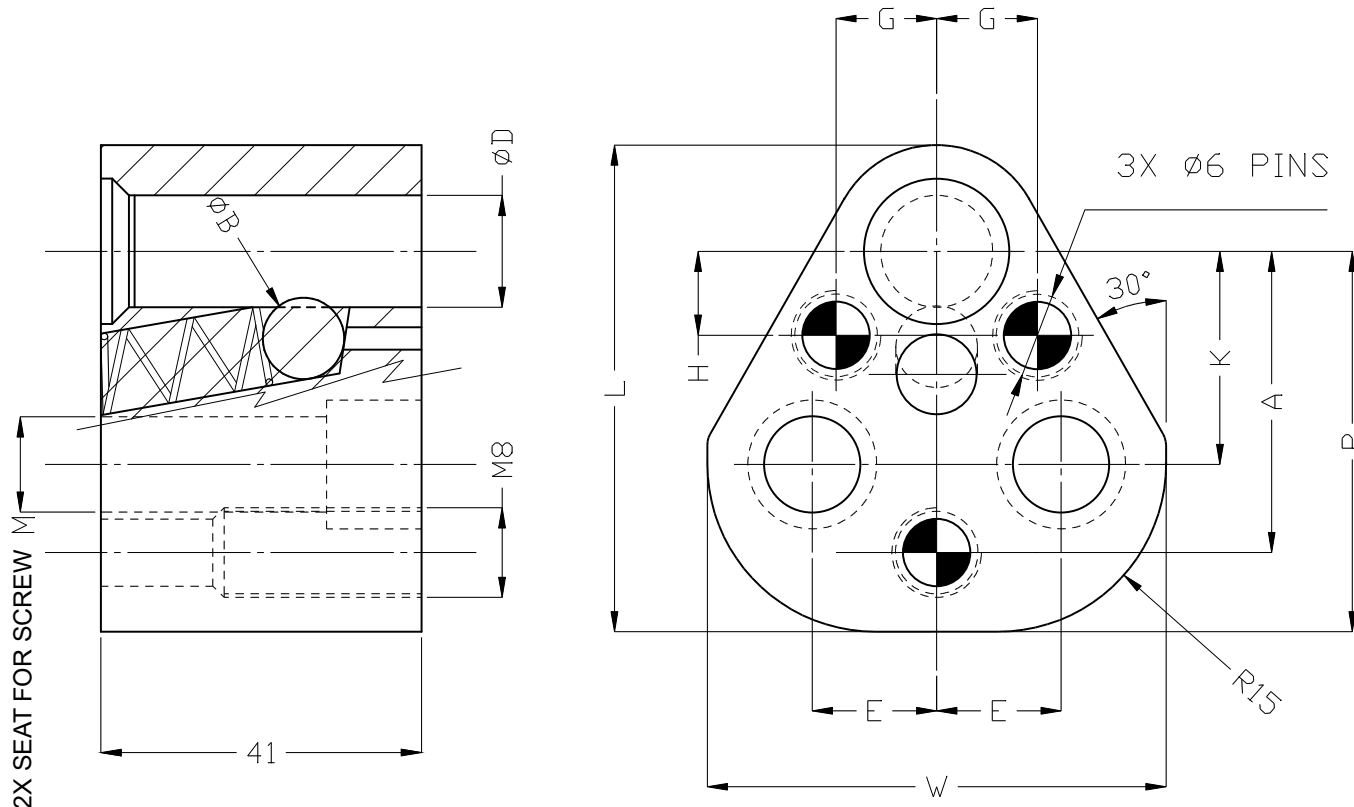


D	10	13	16	20	25	32
L	43,50	49,60	52,70	59,30	68,90	68,90
W	41,00	48,50	51,70	56,80	64,50	64,50
P	34,00	37,00	38,60	41,90	46,70	46,70
A ± 0,01	26,92	29,97	31,75	33,53	40,64	40,64
K ± 0,13	19,05	19,05	19,05	19,05	23,82	23,82
E ± 0,13	11,12	14,27	15,87	17,47	19,84	19,84
H ± 0,01	7,50	6,50	6,00	5,00	7,00	7,00
G ± 0,01	9,00	12,00	13,50	16,50	22,00	22,00
B	14,00	17,00	20,00	24,00	29,00	36,00
M	M8	M8	M8	M10	M12	M12

Accessories included: 2 screws, 3 dowel pins

Order example: MTPFR with diameter 16 → MTPFR-16

Heavy duty retainer

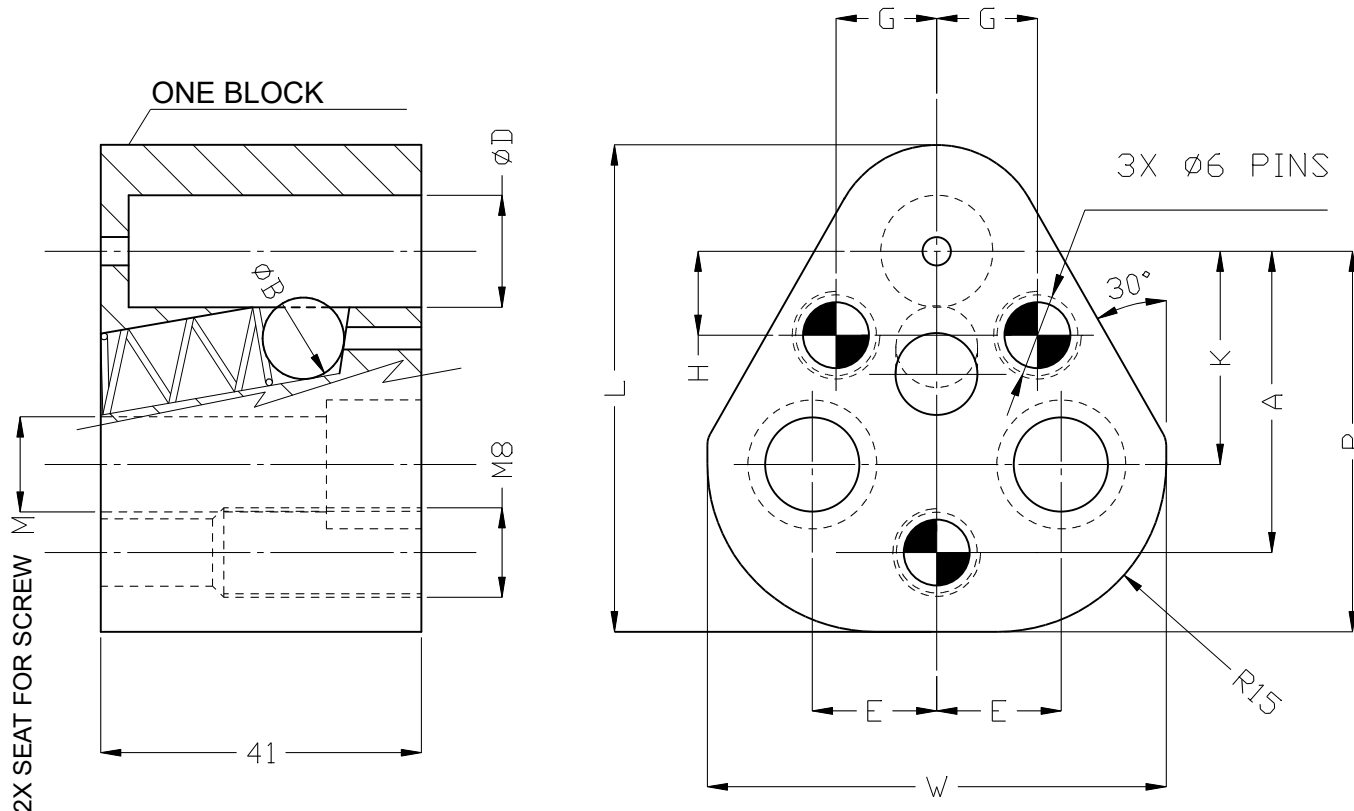


D	10	13	16	20	25	32	40
L	43,50	49,60	52,70	59,30	68,90	68,90	76,40
W	41,00	48,50	51,70	56,80	64,50	64,50	72,90
P	34,00	37,00	38,60	41,90	46,70	46,70	50,50
A ± 0,01	26,92	29,97	31,75	33,53	40,64	40,64	43,99
K ± 0,13	19,05	19,05	19,05	19,05	23,82	23,82	27,00
E ± 0,13	11,12	14,27	15,87	17,47	19,84	19,84	24,00
H ± 0,01	7,50	6,50	6,00	5,00	7,00	7,00	10,00
G ± 0,01	9,00	12,00	13,50	16,50	22,00	22,00	26,00
B	10,00	12,00	12,00	12,00	12,00	12,00	12,00
M	M8	M8	M8	M10	M12	M12	M12

Accessories included: 2 screws, 3 dowel pins

Order example: MTHR with diameter 16 → MTHR-16

Heavy duty retainer

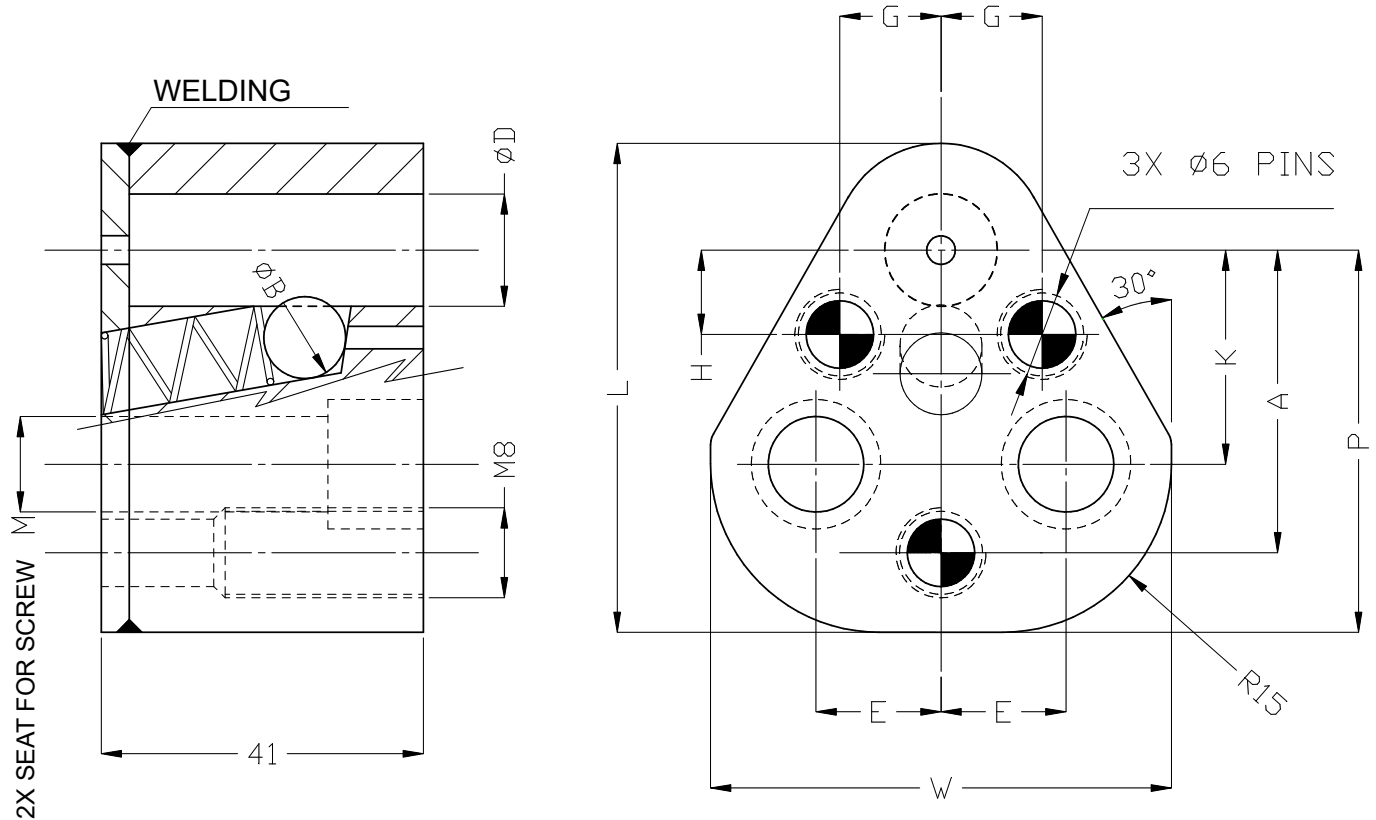


D	10	13	16	20	25	32	40
L	43,50	49,60	52,70	59,30	68,90	68,90	76,40
W	41,00	48,50	51,70	56,80	64,50	64,50	72,90
P	34,00	37,00	38,60	41,90	46,70	46,70	50,50
A $\pm 0,01$	26,92	29,97	31,75	33,53	40,64	40,64	43,99
K $\pm 0,13$	19,05	19,05	19,05	19,05	23,82	23,82	27,00
E $\pm 0,13$	11,12	14,27	15,87	17,47	19,84	19,84	24,00
H $\pm 0,01$	7,50	6,50	6,00	5,00	7,00	7,00	10,00
G $\pm 0,01$	9,00	12,00	13,50	16,50	22,00	22,00	26,00
B	10,00	12,00	12,00	12,00	12,00	12,00	12,00
M	M8	M8	M8	M10	M12	M12	M12

Accessories included: 2 screws, 3 dowel pins

Order example: MTHRB with diameter 16 → MTHRB-16

Heavy duty retainer

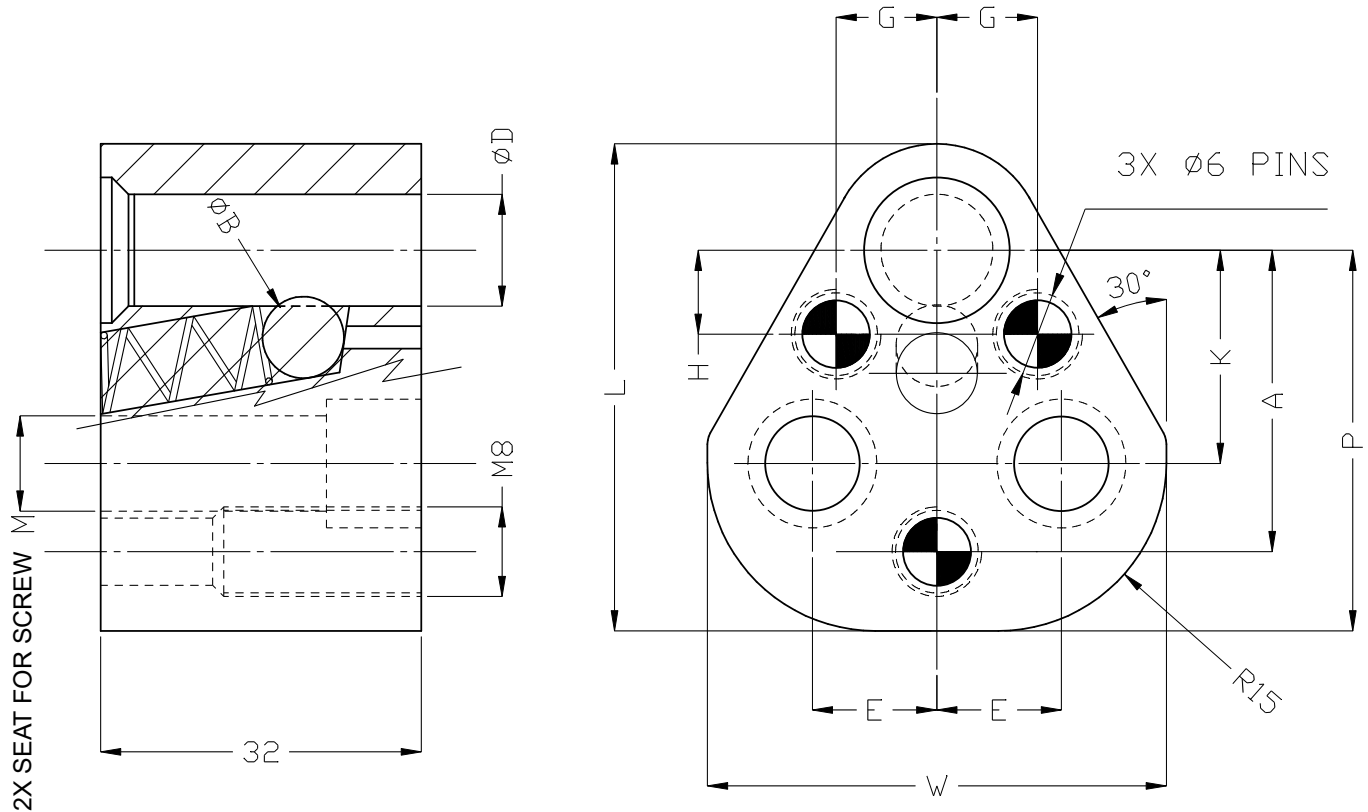


D	10	13	16	20	25	32	40
L	43,50	49,60	52,70	59,30	68,90	68,90	76,40
W	41,00	48,50	51,70	56,80	64,50	64,50	72,90
P	34,00	37,00	38,60	41,90	46,70	46,70	50,50
A ± 0,01	26,92	29,97	31,75	33,53	40,64	40,64	43,99
K ± 0,13	19,05	19,05	19,05	19,05	23,82	23,82	27,00
E ± 0,13	11,12	14,27	15,87	17,47	19,84	19,84	24,00
H ± 0,01	7,50	6,50	6,00	5,00	7,00	7,00	10,00
G ± 0,01	9,00	12,00	13,50	16,50	22,00	22,00	26,00
B	10,00	12,00	12,00	12,00	12,00	12,00	12,00
M	M8	M8	M8	M10	M12	M12	M12

Accessories included: 2 screws, 3 dowel pins

Order example: MTHRS with diameter 16 → MTHRS-16

Light duty retainer

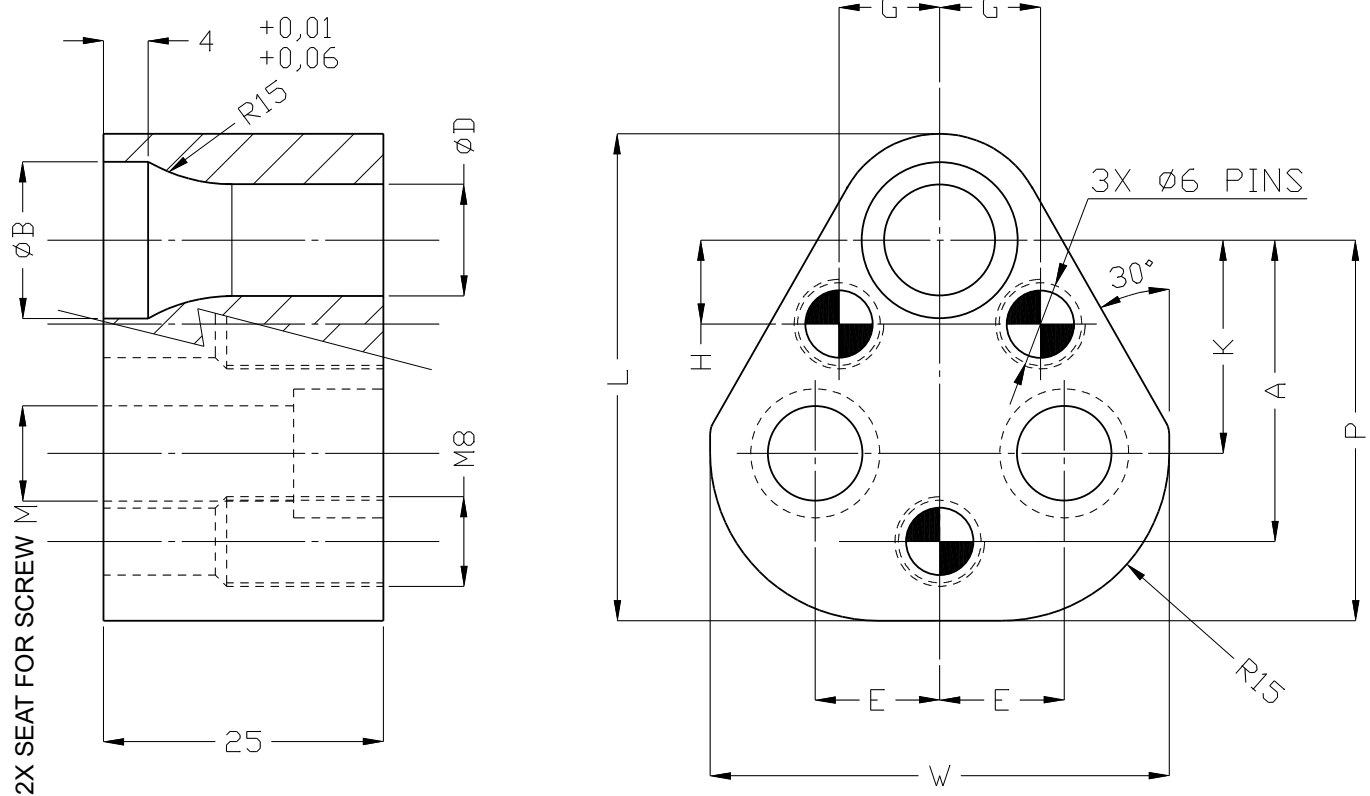


D	6	10	13	16	20	25	32	38
L	35,00	43,50	49,60	52,70	59,30	68,90	68,90	76,40
W	37,50	41,00	48,50	51,70	56,80	64,50	64,50	72,90
P	27,00	34,00	37,00	38,60	41,90	46,70	46,70	50,50
A ± 0,01	23,00	26,92	29,97	31,75	33,53	40,64	40,64	43,99
K ± 0,13	19,00	19,05	19,05	19,05	19,05	23,82	23,82	27,00
E ± 0,13	11,10	11,12	14,27	15,87	17,47	19,84	19,84	24,00
H ± 0,01	9,00	7,50	6,50	6,00	5,00	7,00	7,00	10,00
G ± 0,01	8,00	9,00	12,00	13,50	16,50	22,00	22,00	26,00
B	6,00	8,00	8,00	8,00	8,00	8,00	8,00	8,00
M	M8	M8	M8	M8	M10	M12	M12	M12

Accessories included: 2 screws, 3 dowel pins

Order example: MTLR with diameter 16 → MTLR-16

Bottle neck retainer

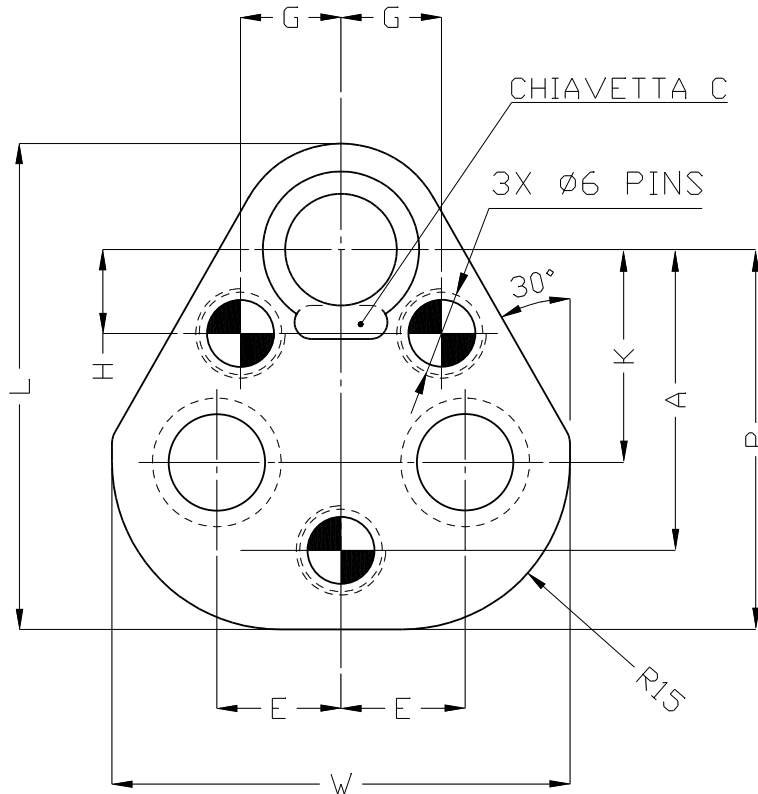
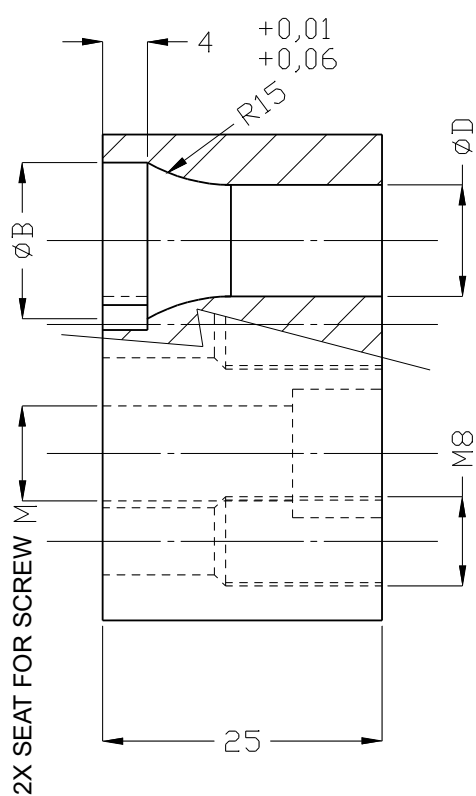


D	10	13	16	20	25
L	43,50	49,60	52,70	59,30	68,90
W	41,00	48,50	51,70	56,80	64,50
P	34,00	37,00	38,60	41,90	46,70
A ± 0,01	26,92	29,97	31,75	33,53	40,64
K ± 0,13	19,05	19,05	19,05	19,05	23,82
E ± 0,13	11,12	14,27	15,87	17,47	19,84
H ± 0,01	7,50	6,50	6,00	5,00	7,00
G ± 0,01	9,00	12,00	13,50	16,50	22,00
B	14,00	17,00	20,00	25,00	30,00
M	M8	M8	M8	M10	M12

Accessories included: 2 screws, 3 dowel pins

Order example: MTBR with diameter 16 → MTBR-16

Bottle neck flat retainer

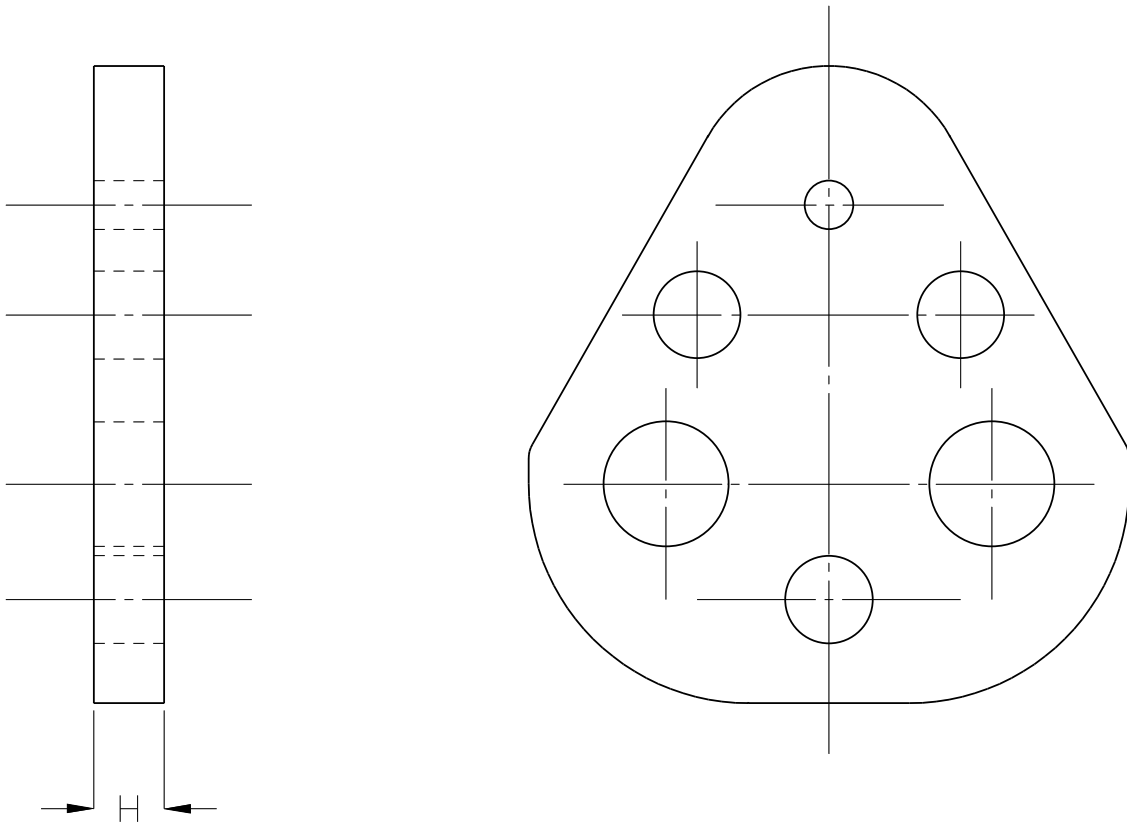


D	10	13	16	20	25
L	43,50	49,60	52,70	59,30	68,90
W	41,00	48,50	51,70	56,80	64,50
P	34,00	37,00	38,60	41,90	46,70
A ± 0,01	26,92	29,97	31,75	33,53	40,64
K ± 0,13	19,05	19,05	19,05	19,05	23,82
E ± 0,13	11,12	14,27	15,87	17,47	19,84
H ± 0,01	7,50	6,50	6,00	5,00	7,00
G ± 0,01	9,00	12,00	13,50	16,50	22,00
B	8,00	8,00	8,00	8,00	8,00
C	5 x 9	5 x 9	5 x 9	5 x 13	5 x 13
M	M8	M8	M8	M10	M12

Accessories included: 2 screws, 3 dowel pins

Order example: MTBFR with diameter 16 → MTBFR-16

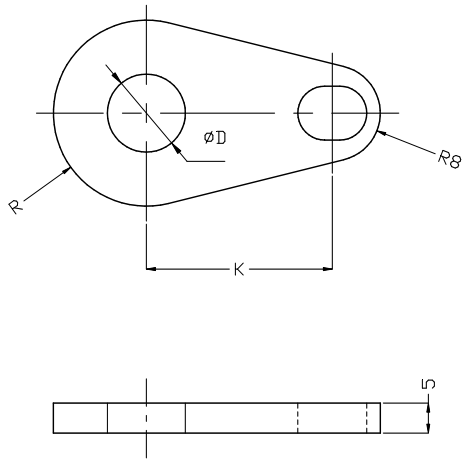
Shim plat



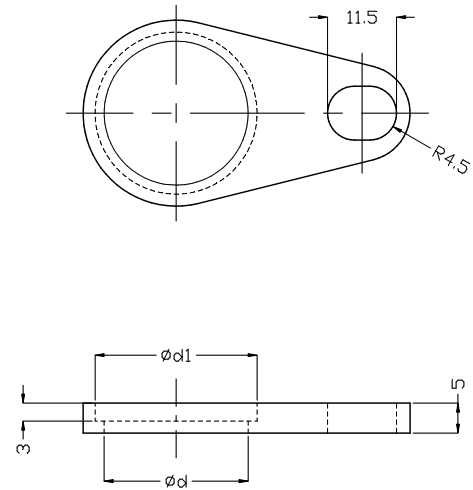
D	10	13	16	20	25	32
H = 1,8mm	18MTSP	18MTSP	18MTSP	18MTSP	18MTSP	18MTSP
H = 4,8mm	48MTSP	48MTSP	48MTSP	48MTSP	48MTSP	48MTSP
H = 6mm	60MTSP	60MTSP	60MTSP	60MTSP	60MTSP	60MTSP

Order example: MTSP with D = 16 and SP = 4,8mm → 48MTSP-16

Backing Plates MTBP



Retaining Plates MTRP

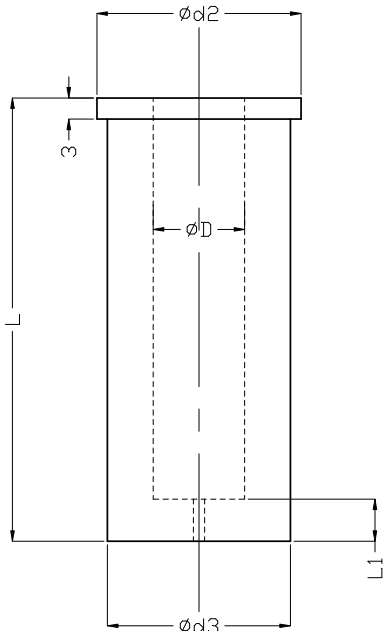


Back Plate	Ret. Plate	D	d	d1	R	K
MTBP 10	MTRP 10	10	19	22	13,0	28,0
MTBP 13	MTRP 13	13	24	27	15,5	31,0
MTBP 16	MTRP 16	16	29	32	18,0	32,9
MTBP 20	MTRP 20	20	34	37	20,5	34,8
MTBP 25	MTRP 25	25	41	44	24,0	39,8
MTBP 32	MTRP 32	32	51	56	31,0	41,3
MTBP 38	MTRP 38	38	61	66	36,0	45,0
MTBP 40	MTRP 40	40	61	66	36,0	45,0

Order example: MTBP 13

Order example: MTRP 13

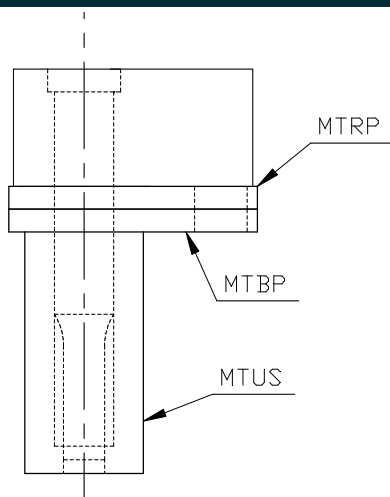
URETHANE STRIPPERS MTUS



Order example: MTUS 13 - 52

D	d2	d3	L1
10	21	18	6
13	26	23	6
16	31	28	6
20	36	33	7
25	43	40	7
32	55	50	7
38	65	60	8
40	65	60	8

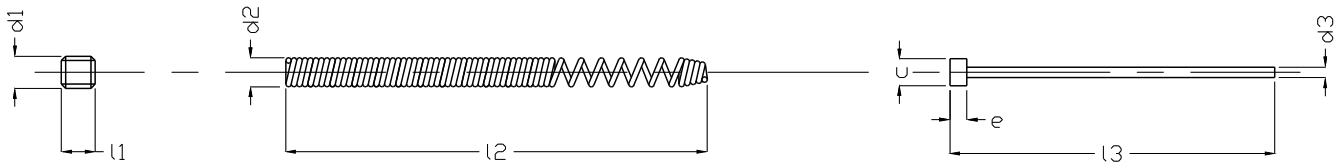
KIT MTUSU



Order example: MTUSU 13 - 52

Urethane Strippers	D	L	Newton per mm		
			3	6	9
MTUS 10 - 43	10	43	1060	1820	-
MTUS 10 - 52		52	900	1650	2170
MTUS 10 - 63		63	720	1450	1860
MTUS 10 - 72		72	570	1280	1610
MTUS 13 - 43	13	43	1700	2850	-
MTUS 13 - 52		52	1460	2610	3410
MTUS 13 - 63		63	1170	2320	2910
MTUS 13 - 72		72	930	2080	2500
MTUS 16 - 43	16	43	2310	3900	-
MTUS 16 - 52		52	1990	3560	4640
MTUS 16 - 63		63	1590	3150	3980
MTUS 16 - 72		72	1270	2810	3440
MTUS 20 - 43	20	43	2900	4900	-
MTUS 20 - 52		52	2500	4470	5820
MTUS 20 - 63		63	2000	3950	5000
MTUS 20 - 72		72	1590	3420	4330
MTUS 25 - 43	25	43	4440	7520	-
MTUS 25 - 52		52	3810	6860	8780
MTUS 25 - 63		63	3050	6050	7680
MTUS 25 - 72		72	2420	5390	6780
MTUS 32 - 43	32	43	6840	11390	-
MTUS 32 - 52		52	5880	10450	13300
MTUS 32 - 63		63	4700	9310	11640
MTUS 32 - 72		72	3740	8370	10280
MTUS 38 - 52	38	52	9480	19330	29720
MTUS 38 - 72		72	5950	11630	18160
MTUS 40 - 43	40	43	10100	20190	-
MTUS 40 - 52		52	8650	17300	25960
MTUS 40 - 63		63	6890	13780	20670

KIT MK



MKSS

MKS

MKP

D	5	6	8	10	13	16	20	25	32
d1	M2,5 x 0,45	M3 x 0,5	M4 x 0,7	M5 x 0,8	M5 x 0,8	M5 x 0,8	M6 x 1,0	M6 x 1,0	M6 x 1,0
l1	5	5	5	5	5	5	6	6	6
d2	2,01	2,39	3,30	4,19	4,19	4,19	5,03	5,03	5,03
l2	50,80	60,45	66,80	76,20	76,20	76,20	76,20	76,20	76,20
d3	0,51	0,69	1,04	1,47	1,47	1,47	2,26	2,26	2,26
l3	28,19	50,8	50,8	50,8	50,8	50,8	57,15	57,15	57,15
c	1,22	1,86	2,39	3,05	3,05	3,05	3,96	3,96	3,96
e	0,76	1,19	1,58	1,58	1,58	1,58	2,39	2,39	2,39

Order example KIT, MK D=10 (D = punch diameter)

Single component order example: MKS D=10, MK D=10 (D = punch diameter)

TiN

It is the least expensive and most commonly used.

- Good wear resistance on cutting edges and wear surfaces
- Good lubricity
- Suitable thermal stability for most cold work metalworking applications
- High micro hardness of 2300 Vickers

Note: TiN works best when used with lubricants and is not recommended for uses in stainless steel, nickel, or copper applications.

TiCN

It has the broadest range of application use regarding PVD coatings including stainless steel, nickel and copper.

- Higher hardness and lower coefficient of friction than that of TiN coating resulting in extremely high wear resistance
- Improved lubricity
- Micro durezza estremamente elevata di 3000 Vickers

Note: Suitable for uses in stainless steel, nickel, or copper applications.

TiAlN

It is ideal for applications where surface heat is generated, which converts the aluminum constituent to aluminum oxide for added protection against shear stress and wear resistance on cutting edges.

- High thermal stability
- Extremely high micro hardness of 3400 Vickers

Note: Suitable for uses in stainless steel, nickel, copper or aluminum applications.

ALCRONA

Performance is enhanced utilizing the thermal stability, low coefficient of friction and ductility advantages.

- Exceptionally low coefficient of friction
- Extraordinary high thermal stability
- Extremely high micro hardness of 3400 Vickers

Balanit® Alcrona is a trademark of Oerlikon Balzers.

ALCRONA ADVANCE

All the ALCRONA advantages, plus nitration, which increases wear resistance, without weakening the punch or matrix Balanit®.

Alcrona Advance is a trademark of Oerlikon Balzers.

DLC

Being a carbon coating, it has extreme wear resistance and very low friction coefficients.

- Exceptionally low coefficient of friction
- Extraordinary high thermal stability

Note: Can be used without lubricants.

SHT

Designed by tipco italy, it is a relaxing heat treatment, it is possible to apply it with or without lining.

The full relaxation of the material promises to improve the punch or die life by 50% because it is more ductile, so less subject to breaks, and is superficially harder, so wear resistant, especially in the cutting area, so, decreases the frequency of maintenance, and machine stoppages, greatly reducing production costs.

On request, high-quality coatings and/or treatments are also available.

IMT
INGENIERÍA DE MOLDES
Y TROQUELES



Plaza Eihera, 14 bajo
20305 IRUN (Guipuzcoa)
España

Tlf: 943 57 53 90
Fax: 943 57 53 91
Email: imtsa@imtsa.net
www.imtsa.net

tipco italy»» srl

Tipco Italy srl
Via Don Minzoni, 26
20056 Trezzo sull'Adda
Milano - Italy

T +39 02 90937311
F + 39 02 90937315
info@tipcoitaly.com
www.tipcoitaly.com