

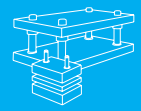


Every step of the way



www.dme.net

Die Sets & Components

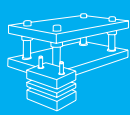


Die Sets

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Guiding components

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Material

Steel types

DIN material type	1.1730	1.2379
AISI material type	1045	D2
Chemical composition	C=0,45 Mn=0,75 Si=0,30	C= 1,6 Mn=0,3 Si=0,25 Cr=12,0 V=1,0
Tensile strength	600 N/mm ²	855 N/mm ²
Hardness	Max. 241 HB	Max. 253 HB
General information	Unalloyed tool steel for non-hardened plates	Alloyed tool steel for dies, punches and other cutting tools. High impact strength and wear resistance when hardened. Can be heat treated up to 62 HRC. Gas cutting not available.

CERTAL®

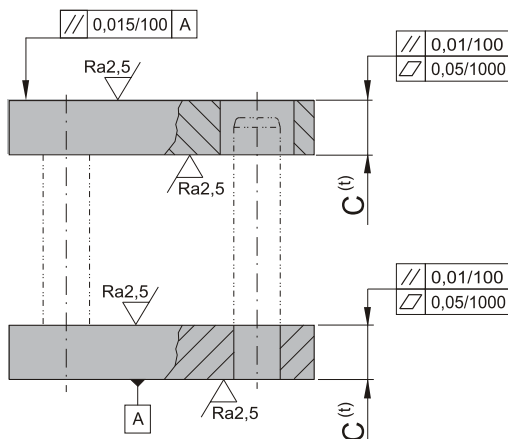
Mechanical and physical properties

	CERTAL® (T651)			CERTAL SPC® (T652)
Thickness (mm)	≥ 8 ÷ 25	> 25 ÷ 100	> 100 ÷ 140	≥ 150 ÷ 300
Yield strength Re 0,2 (N/mm²)	495	495	490	480
Tensile strength (N/mm²)	555	550	545	540
Hardness Brinell (2,5/62,5)	170	165	165	160
Density (g/cm³)	2,76			
Lineal coefficient of expansion (K⁻¹)	23,6 x 10 ⁻⁶			
Thermal conductivity (W/m x K)	120 ÷ 150			
General information	Strength properties comparable to non heat treated constructional carbon steel or low-alloy steel. Excellent machining properties and EDM properties. Good for resistance welding. Apply to die shoes, stripper plates and punch holders for progression tools. Gas cutting not available.			

Alloy code according to EN: AlZn5Mg3Cu
Other materials upon request.

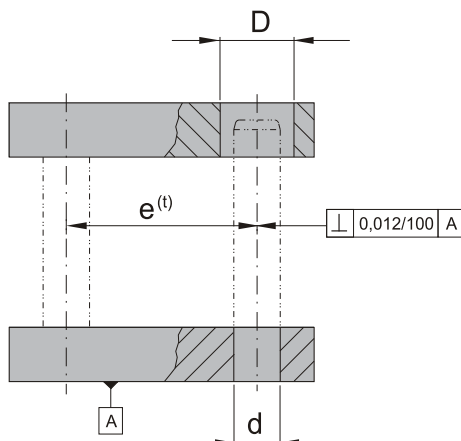
Info

Tolerances



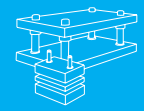
Version	C tolerances
T economic	+0,00 -2,00
K premium	+0,00 -0,10

Note:
Positional and geometrical tolerances are preserved irrespective of the version.



e	(t)
≤ 100	± 0,008
> 100 - 180	± 0,010
> 180 - 350	± 0,012
> 350 - 500	± 0,015
> 500 - 800	± 0,018
> 800	± 0,020

D= H5 - applies to bushes FFT, FFB, FFG, FFC, FBPE
d= H5 - applies to pin FFK
d= R6 - applies to pin FFS

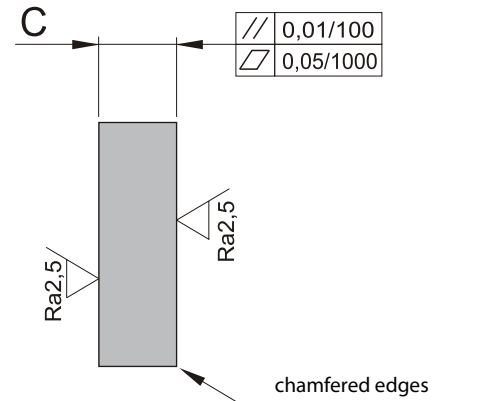
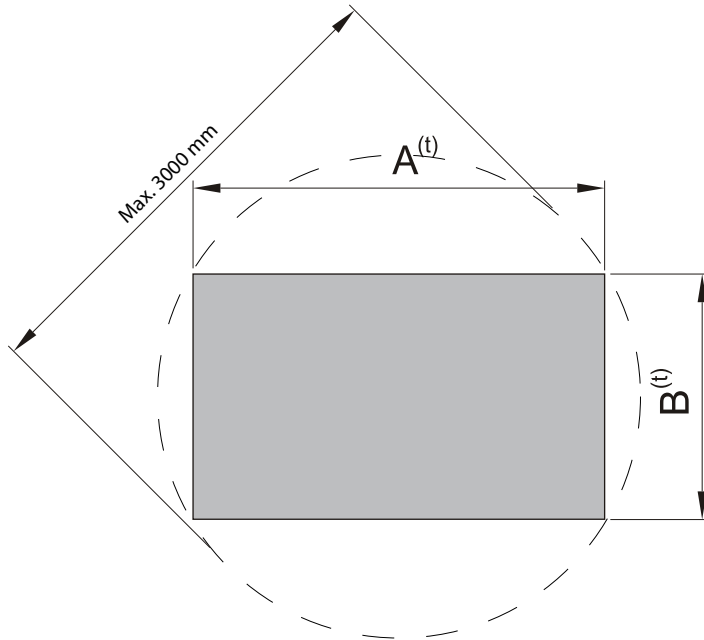


Execution 1

Mat.: 1.1730 / 1.0045 / 1.2311 / 1.2312

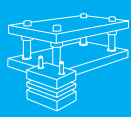
Die Set Plates

Sides - CNC gas cut and painted in blue
Thickness - planetary grinding (3000 mm - diam. of magnetic table of the grinder)



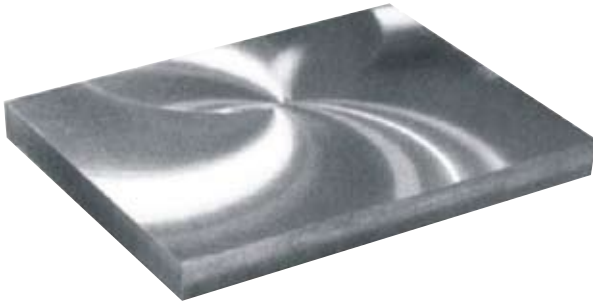
Overall tolerances for gas cut steel plates

C plate thickness	A, B		burn outs tolerance	Min. width cutout	Min length cutout	Min. hole diam.	Min. corner radius	Min. slug clearance/ side	Squarness to surface of plate	Min. distance between cutout
	A, B plate size	(t) tolerance								
9 - 50	760	± 0,8	+ 1,6	8,0	19,0	19,0	4,0	1,5	0,8	3,5
	>760 - 1500	± 1,5	+ 3,0							
	>1500 - 2500	± 2,3	+ 4,6							
>50 - 75	760	± 0,8	+ 1,6	9,5	22,5	22,5	4,0	1,5	0,8	5,0
	>760 - 1500	± 1,5	+ 3,0							
	>1500 - 2500	± 2,3	+ 4,6							
>75 - 115	760	± 1,2	+ 2,4	13,0	25,5	28,5	5,0	2,3	1,2	6,5
	>760 - 1500	± 2,3	+ 4,6							
	>1500 - 2500	± 3,2	+ 6,4							
>115 - 150	760	± 1,2	+ 2,4	16,0	32,0	32,0	5,0	3,2	1,5	8,0
	>760 - 1500	± 2,3	+ 4,6							
	>1500 - 2500	± 3,2	+ 6,4							
>150 - 190	760	± 2,3	+ 4,6	25,5	44,5	44,5	6,5	4,8	1,9	11,5
	>760 - 1500	± 3,2	+ 6,4							
	>1500 - 2500	± 4,5	+ 9,0							
>190 - 250	760	± 2,5	+ 5,0	44,5	63,5	63,5	6,5	6,5	2,5	16,0
	>760 - 1500	± 4,0	+ 8,0							
	>1500 - 2500	± 5,0	+ 10,0							

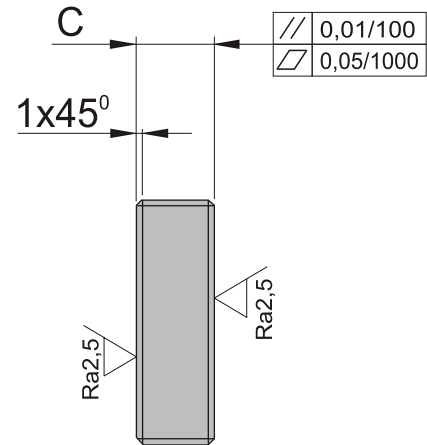
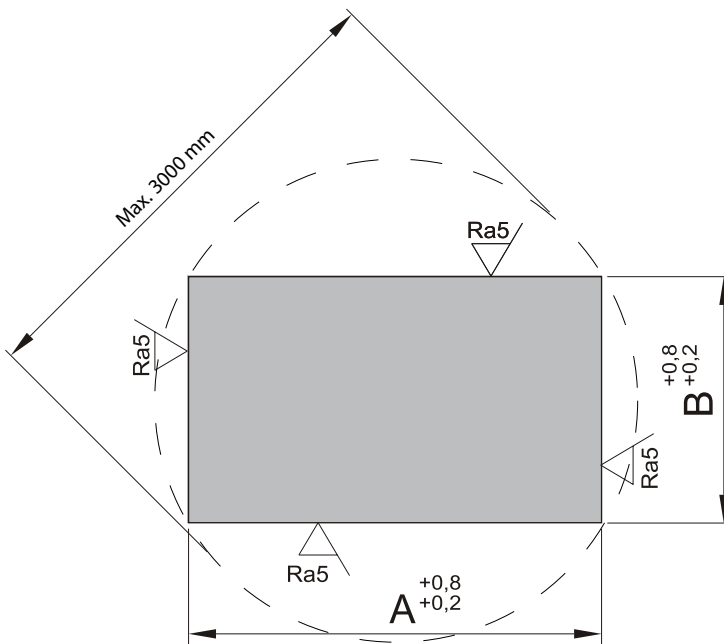


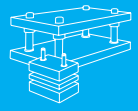
Die Set Plates

Execution 2

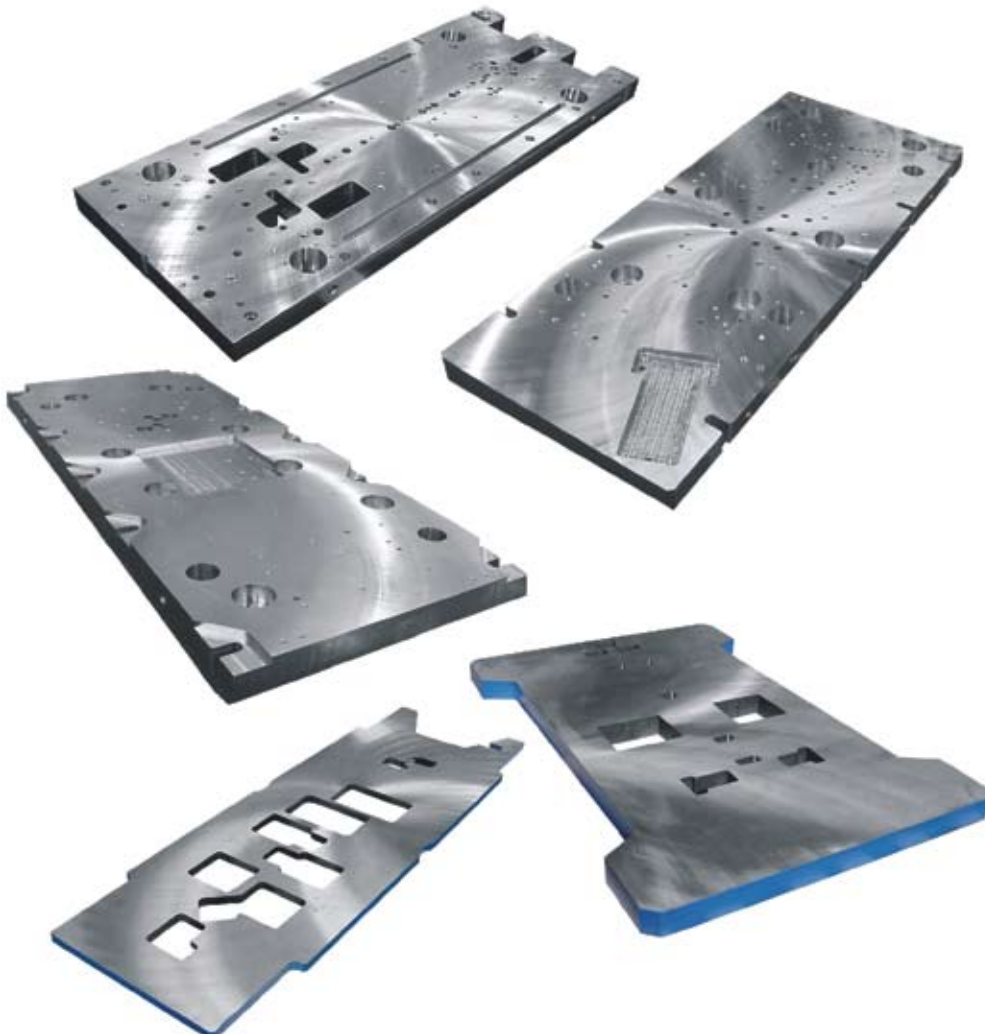
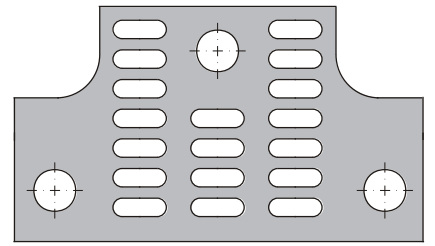
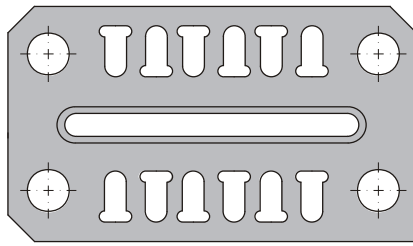
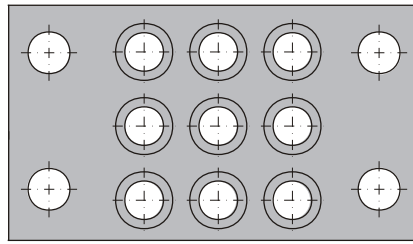
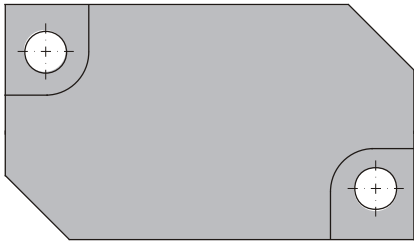


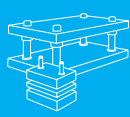
Sides - quality milling
Thickness - planetary grinding (3000 mm - diam. of magnetic table of the grinder)





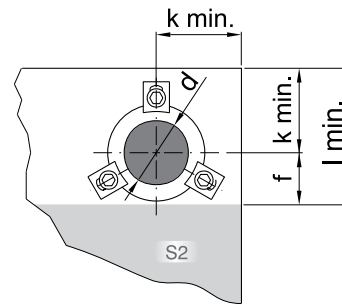
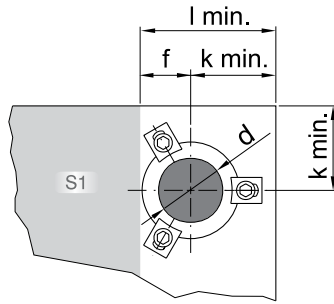
Custom made die sets ————— Special Plates





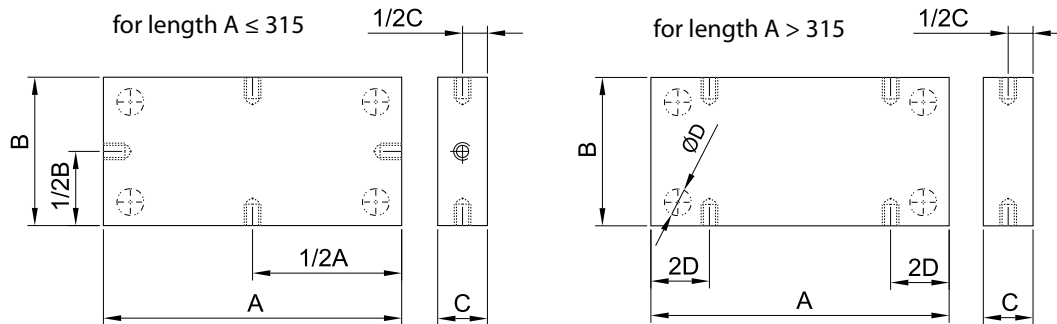
FFB, FFT, FFG, FFC, FFS, FFK

Locations

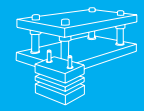


d	FFZM			FZMI		
	k min.	l min.	f	k min.	l min.	f
20/19	39	59	20	40	60	20
25/24	44	71	27	45	74	29
32/30	47	76	29	50	81	31
40/38	50	83	33	55	88	33
50/48	56	96	40	60	100	40
63/60	65	113	48	70	118	48
80	75	134	59	80	139	59

Handling holes locations

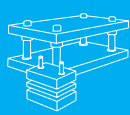


Lifting stud thread size	F max. (kg)
M16	320
M20	500
M24	1000
M30	1500
M36	2500

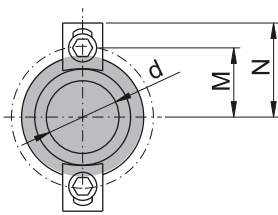
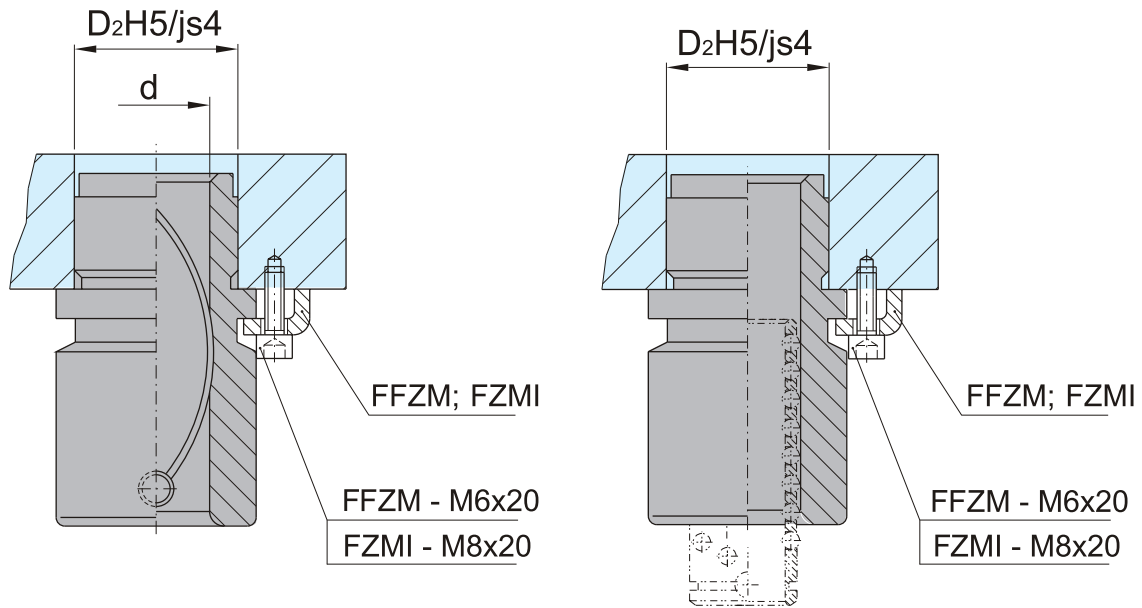


Die set types - "f" parameter see table p. 6

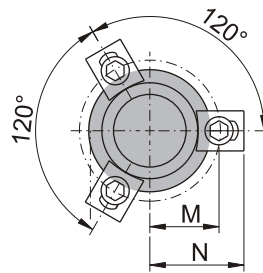
Plates	Die set types		Working area	
	<p>E/2-</p>	<p>E/3-</p>	<p>$a_1 = e_1 - 2f$</p>	
	<p>F/2-</p>	<p>F/3-</p>	<p>$a_1 = e_1 - 2f$</p>	<p>$b_1 = e_2 - f$</p>
	<p>D/2-</p>	<p>D/3-</p>	<p>$a_1 = e_1 - 2f$</p>	<p>$b_1 = e_2 - 2f$</p>
	<p>H/2-</p>	<p>H/3-</p>	<p>$a_1 = e_1 - 2f$</p>	<p>$b_1 = e_2 - 2f$</p>
	<p>N/2-</p>	<p>N/3-</p>	<p>$a_1 = e_1 - 2f$</p>	<p>$b_1 = e_2 - 2f$</p>



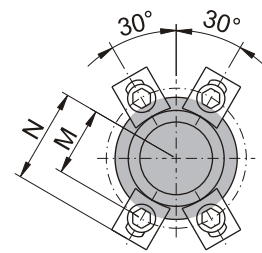
Tolerances and class of fit apply to ISO standard bushings



for $d \leq 20$

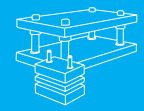


for $24 \leq d \leq 32$



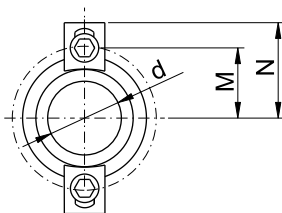
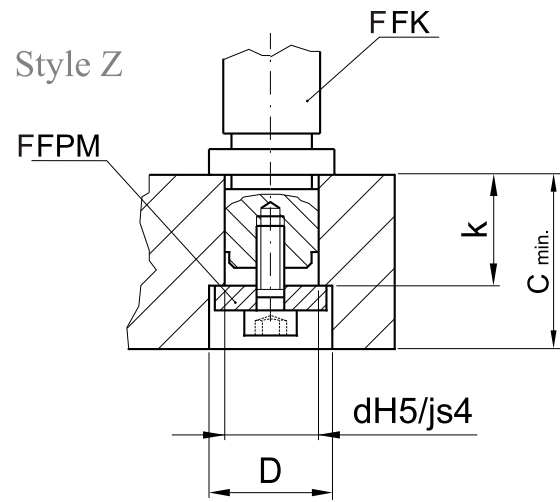
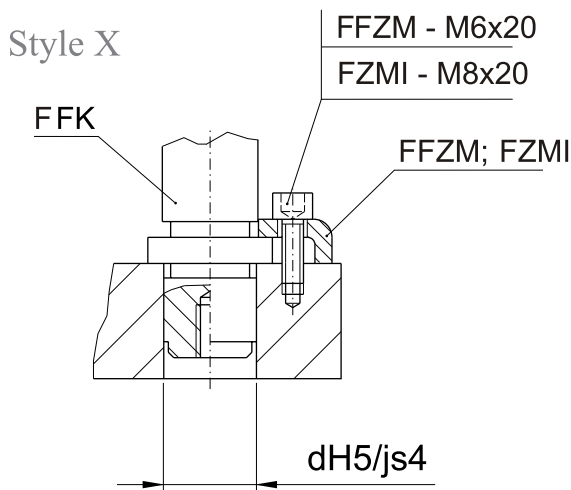
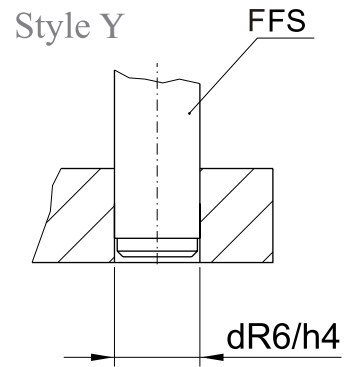
for $d \geq 38$

D2	Diam. d tolerances		d	FFZM		FZMI	
	for hole H5	for pin js4		M	N	M	N
32	+0,011 -0,000	+0,0035 -0,0035	20/19	26,0	34,5	27,0	36,0
40			25/24	30,0	38,5	31,0	40,0
48	+0,013 -0,000	+0,004 -0,004	32/30	33,5	42,0	35,0	44,0
58			40/38	38,5	47,0	40,0	49,0
70	+0,015 -0,000	+0,005 -0,005	50/48	45,5	54,0	47,0	56,0
85			63/60	53,0	61,5	54,5	63,5
105			80	64,5	73,0	66,0	75,0

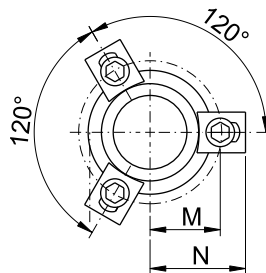


pins

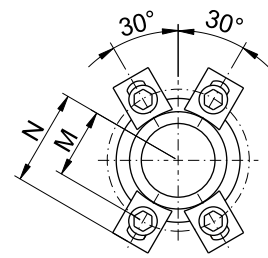
d	Diam. d tolerances	
	for hole R6	for pin h4
20/19	-0,024 -0,037	+0,000
25/24		-0,006
30		
32	-0,029 -0,045	+0,000
40/38		-0,007
50/48		
63/60	-0,035 -0,054	+0,000
80		-0,008
		-0,056



$d \leq 20$

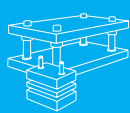


$24 \leq d \leq 32$



$d \geq 38$

d	Diam. d tolerances		D	k	C min.	FFZM		FZMI	
	for hole H5	for pin js4				M	N	M	N
20/19	+0,009 -0,000	+0,003 -0,003	27	24	37	18,0	26,5	19,5	28,5
25/24			34	31	44	21,5	30,0	22,0	31,0
30			42	38	51	25,5	34,0	25,5	34,5
32	+0,011 -0,000	+0,0035 -0,0035	52	48	61	30,5	39,0	29,5	38,5
40/38			62	48	61	37,0	44,5	36,0	45,0
50/48			72	61	83	45,5	54,0	44,5	53,5
63/60	+0,013 -0,000	+0,004 -0,004	95	61	83	53,0	61,5	54,5	63,5
80									



Die sets configuration according to drawings (see page 7)

When ordering please specify:

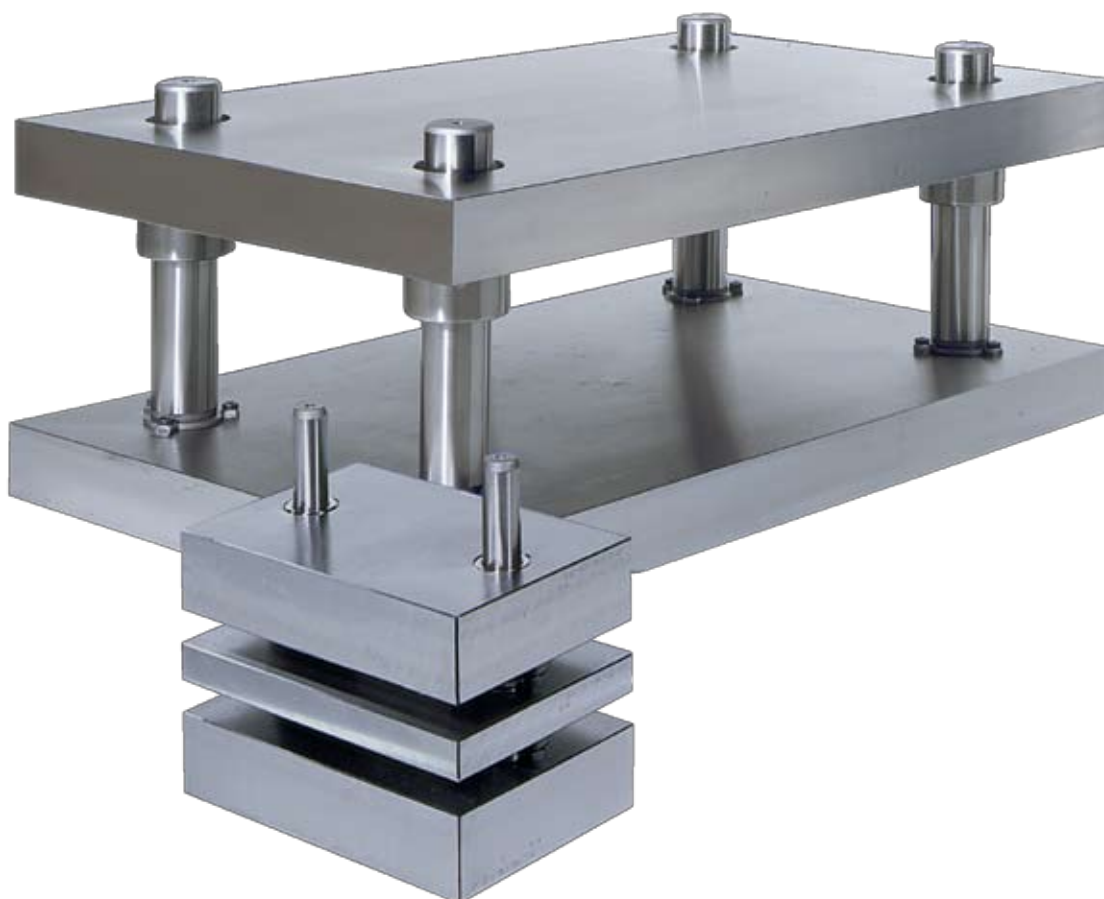
- 1). Die set type
- 2). Location of holes for guiding components -e1, e2
- 3). Plates dimensions: -length and width of plate (A, B) must fulfill the following conditions:
A min. = $e1+2k$ min.
B min. = $e2+2k$ min. (k min. -see page 6 for details)
B min. = $e2+k$ min. (for die set type F only)
- 4). Type of working surface: S1 or S2
- 5). Sides finish:
- gas cut or quality milled (see pages 3 and 4)
- 6). Tolerance of plate thickness (see page 3)
- select version: "T"- economic or "K"- premium
- 7). Guiding components -please specify catalog symbols and required quantities
- 8). Method of mounting guiding components in plate:
a) type of clamps-FFZM or FZMI -(see pages 8 and 9 for details)
b) for pin FFK type -Z or X style (see page 9 for details)

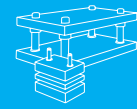
Note: For fast and simple order please use our special form.

Special die sets

When ordering custom made die sets please enclose additional documents.

For electronic documents one of the following formats is required: dwg, dxf, igs, sat, sldprt





Date: Die Set Inquiry

Company: Contact:

VAT registration No:

Address:

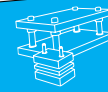
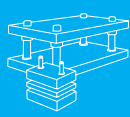
Tel.: Fax: E-mail:

<p>1. Die set type</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="text-align: center;">E/2</td> <td style="width: 20%;"></td> <td style="text-align: center;">E/3</td> <td style="width: 20%;"></td> </tr> <tr> <td style="text-align: center;">F/2</td> <td></td> <td style="text-align: center;">F/3</td> <td></td> </tr> <tr> <td style="text-align: center;">D/2</td> <td></td> <td style="text-align: center;">D/3</td> <td></td> </tr> <tr> <td style="text-align: center;">H/2</td> <td></td> <td style="text-align: center;">H/3</td> <td></td> </tr> <tr> <td style="text-align: center;">N/2</td> <td></td> <td style="text-align: center;">N/3</td> <td></td> </tr> </table> <p>mark the applicable field with "X"</p>	E/2		E/3		F/2		F/3		D/2		D/3		H/2		H/3		N/2		N/3		<p>1. Plate dimensions</p> <table style="width: 100%;"> <thead> <tr> <th style="text-align: left;">Length A</th> <th style="text-align: left;">Width B</th> <th style="text-align: left;">Thickness C2/C3</th> <th style="text-align: left;">€/pc</th> </tr> </thead> <tbody> <tr> <td>C1</td> <td>x</td> <td>x</td> <td>..... Bottom</td> </tr> <tr> <td>C2</td> <td>x</td> <td>x</td> <td>..... Top</td> </tr> <tr> <td>C3</td> <td>x</td> <td>x</td> <td>.....</td> </tr> </tbody> </table>	Length A	Width B	Thickness C2/C3	€/pc	C1	x	x Bottom	C2	x	x Top	C3	x	x
E/2		E/3																																			
F/2		F/3																																			
D/2		D/3																																			
H/2		H/3																																			
N/2		N/3																																			
Length A	Width B	Thickness C2/C3	€/pc																																		
C1	x	x Bottom																																		
C2	x	x Top																																		
C3	x	x																																		

<p>3. Sides</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 50%;">gas cut</td> <td style="width: 50%;"></td> </tr> <tr> <td>quality milled</td> <td></td> </tr> </table> <p>mark the applicable field with "X"</p>	gas cut		quality milled		<p>4. Thickness tolerance</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 50%;">"T" economic</td> <td style="width: 50%;"></td> </tr> <tr> <td>"K" premium</td> <td></td> </tr> </table> <p>mark the applicable field with "X"</p>	"T" economic		"K" premium		<p>5. Location of holes for guiding components</p> <p>e1 =</p> <p>e2 =</p>
gas cut										
quality milled										
"T" economic										
"K" premium										

<p>6. Guiding elements</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 15%;"></th> <th style="width: 15%;">REF</th> <th style="width: 20%;">quantity</th> <th style="width: 50%;">€/pc</th> </tr> </thead> <tbody> <tr> <td>bushings</td> <td></td> <td></td> <td></td> </tr> <tr> <td>bushings</td> <td></td> <td></td> <td></td> </tr> <tr> <td>pins</td> <td></td> <td></td> <td></td> </tr> <tr> <td>pins</td> <td></td> <td></td> <td></td> </tr> </tbody> </table>		REF	quantity	€/pc	bushings				bushings				pins				pins				<p>7. Mounting guiding components</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th colspan="2" style="text-align: center;">Clamp type</th> </tr> </thead> <tbody> <tr> <td style="width: 50%;">FFZM</td> <td style="width: 50%;"></td> </tr> <tr> <td>FZMI</td> <td></td> </tr> <tr> <th colspan="2" style="text-align: center;">Methode of mounting FFK type of pin</th> </tr> <tr> <td>Z</td> <td></td> </tr> <tr> <td>X</td> <td></td> </tr> </tbody> </table> <p>mark the applicable field with "X"</p> <p>Pillars mounted in <input type="checkbox"/> C1 / <input type="checkbox"/> C2</p>	Clamp type		FFZM		FZMI		Methode of mounting FFK type of pin		Z		X	
	REF	quantity	€/pc																														
bushings																																	
bushings																																	
pins																																	
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Clamp type																																	
FFZM																																	
FZMI																																	
Methode of mounting FFK type of pin																																	
Z																																	
X																																	

<p>8. Type of working surface</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 50%;">S1</td> <td style="width: 50%;"></td> </tr> <tr> <td>S2</td> <td></td> </tr> </table> <p>mark the applicable field with "X"</p>	S1		S2		<p>Price of die set</p> <p>Discount</p> <p>Total price</p>
S1					
S2					



Order Form

Date: Die Set Inquiry _____

Company: Contact:

VAT registration No: **Example**

Address:

Tel.: Fax: E-mail:

1. Die set type

E/2		E/3	
F/2		F/3	
D/2		D/3	
H/2		H/3	
N/2		N/3	X

mark the applicable field with "X"

1. Plate dimensions

Length A	Width B	Thickness C2/C3	€/pc
800	x 500	x 40	Bottom
800	x 500	x 40	Top
800	x 500	x 30	

3. Sides

gas cut	X
quality milled	

mark the applicable field with "X"

4. Thickness tolerance

"T" economic	X
"K" premium	

mark the applicable field with "X"

5. Location of holes for guiding components

e1 =	685
e2 =	390

6. Guiding elements

	REF	quantity	€/pc
bushings	FFB-32042	4	
bushings	FFB-32075	4	
pins	FFB-32280	4	
pins			

7. Mounting guiding components

Clamp type	
FFZM	X
FZMI	
Methode of mounting FFK type of pin	
Z	
X	X

mark the applicable field with "X"
Pillars mounted in C1 / C2

8. Type of working surface

S1	X
S2	

mark the applicable field with "X"

Price of die set

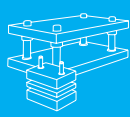
Discount

Total price




www.dme.net

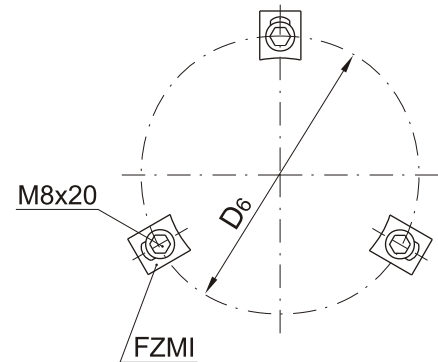
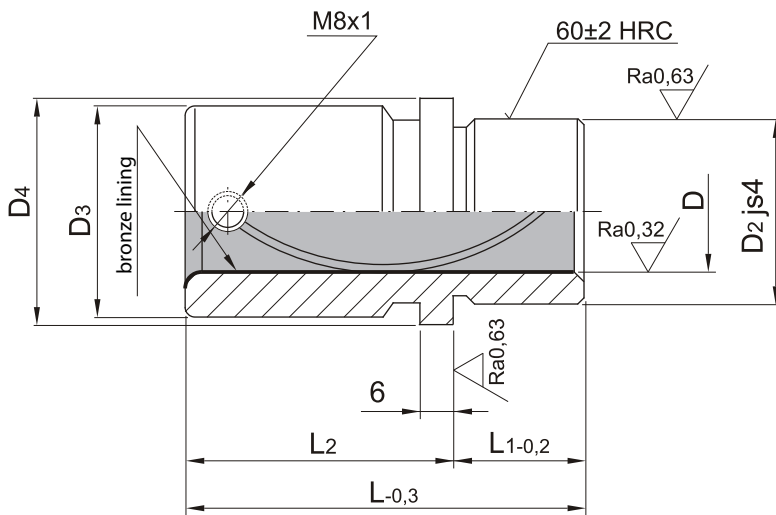
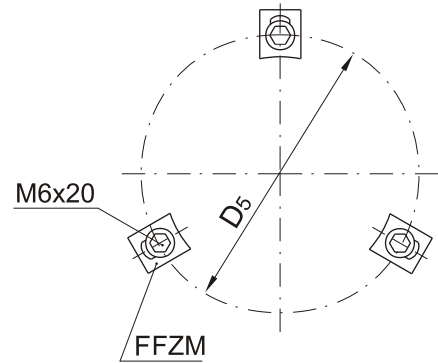
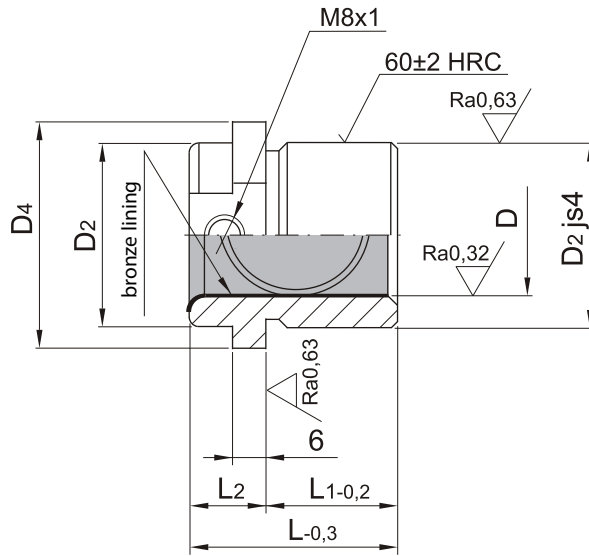
Guiding Components



FFB

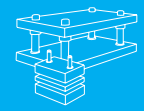
Guide bushings - Bronze-Rite™

ISO 9448



Note: Bushings are standard supplied with FFZM type retaining clamps. FZMI retaining clamps available upon request.

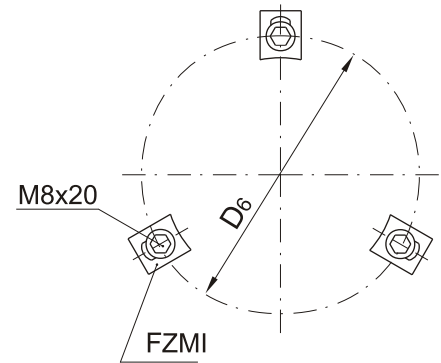
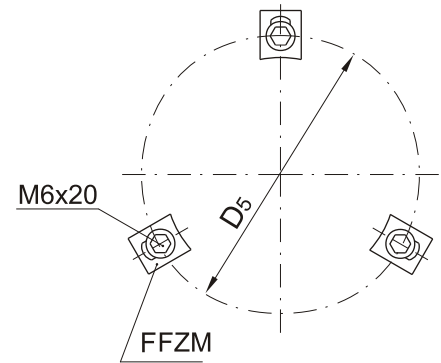
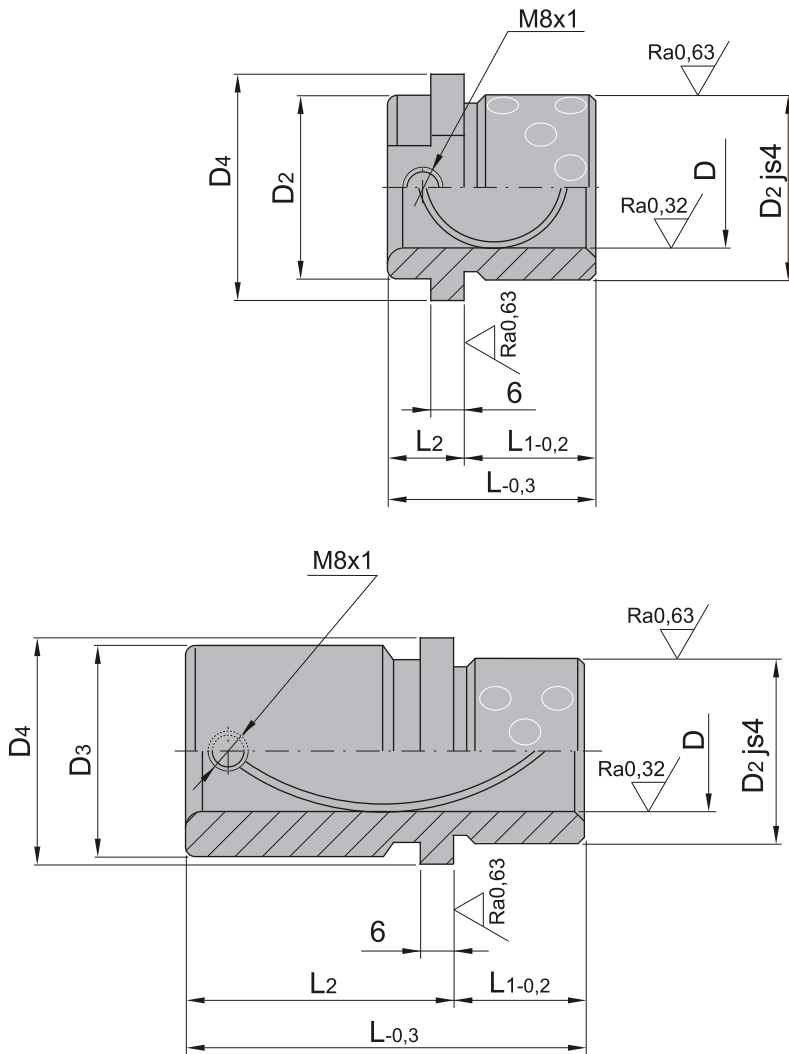
D	Tol.	D2	D3	D4	FZM	FZMI	L1	L2	L	REF	
					D5	D6					
20/19	+0,012 +0,004	32	39	40	52	54	23	12	35	FFB-20035	FFB-19035
								20	43	FFB-20043	FFB-19043
								36	59	FFB-20059	FFB-19059
25/24		40	46	48	60	62	23	12	35	FFB-25035	FFB-24035
								36	59	FFB-25059	FFB-24059
								56	79	FFB-25079	FFB-24079
32/30		48	53	56	67	70	30	12	42	FFB-32042	FFB-30042
								45	75	FFB-32075	FFB-30075
								63	93	FFB-32093	FFB-30093
40/38	+0,015 +0,005	58	63	66	77	80	37	15	52	FFB-40052	FFB-38052
								45	82	FFB-40082	FFB-38082
								70	107	FFB-40107	FFB-38107
50/48		70	77	80	91	94	47	18	65	FFB-50065	FFB-48065
								50	97	FFB-50097	FFB-48097
								80	127	FFB-50127	FFB-48127
63/60		85	92	95	106	109	60	20	80	FFB-63080	FFB-60080
								55	115	FFB-63115	FFB-60115
								90	150	FFB-63150	FFB-60150
80	+0,018 +0,006	105	115	118	129	132	60	20	80	FFB-80080	
								60	120	FFB-80120	
								90	150	FFB-80150	



FFT

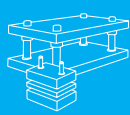
Guide bushings - Steel

Mat.: 1.7131, carbonized 62±2 HRC - ISO 9448



Note: Bushings are standard supplied with FFZM type retaining clamps. FZMI retaining clamps available upon request.

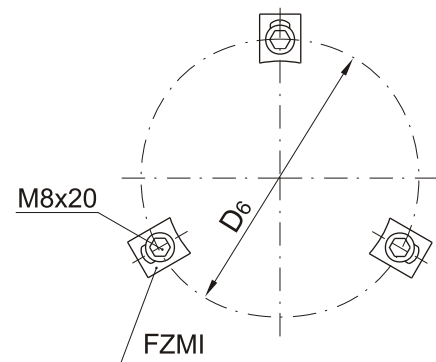
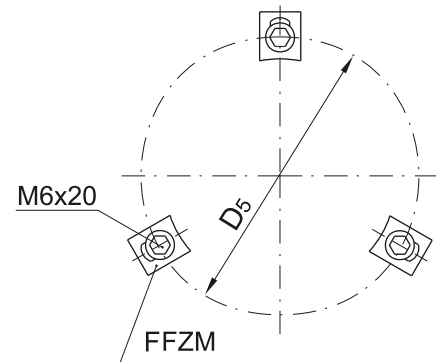
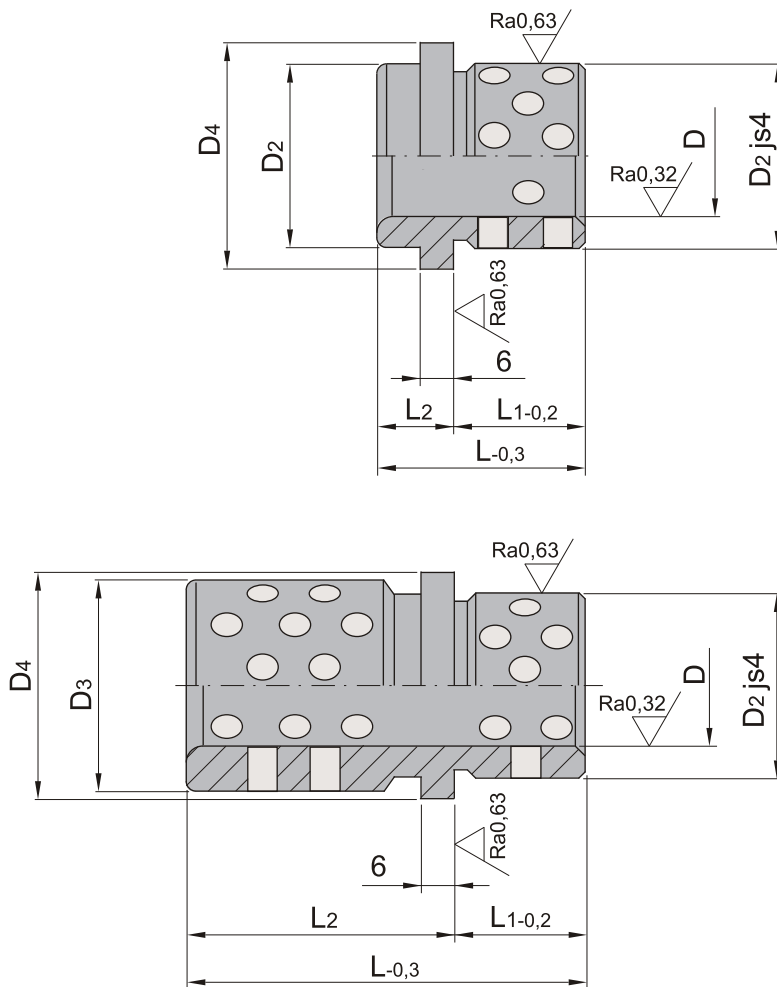
D	Tol.	D2	D3	D4	FZM	FZMI	L1	L2	L	REF	
					D5	D6					
20/19	+0,012 +0,004	32	39	40	52	54	23	12	35	FFT-20035	FFT-19035
								20	43	FFT-20043	FFT-19043
								36	59	FFT-20059	FFT-19059
25/24	+0,015 +0,005	40	46	48	60	62	23	12	35	FFT-25035	FFT-24035
								36	59	FFT-25059	FFT-24059
								56	79	FFT-25079	FFT-24079
32/30	+0,015 +0,005	48	53	56	67	70	30	12	42	FFT-32042	FFT-30042
								45	75	FFT-32075	FFT-30075
								63	93	FFT-32093	FFT-30093
40/38	+0,015 +0,005	58	63	66	77	80	37	15	52	FFT-40052	FFT-38052
								45	82	FFT-40082	FFT-38082
								70	107	FFT-40107	FFT-38107
50/48	+0,018 +0,006	70	77	80	91	94	47	18	65	FFT-50065	FFT-48065
								50	97	FFT-50097	FFT-48097
								80	127	FFT-50127	FFT-48127
63/60	+0,018 +0,006	85	92	95	106	109	60	20	80	FFT-63080	FFT-60080
								55	115	FFT-63115	FFT-60115
								90	150	FFT-63150	FFT-60150
80	+0,018 +0,006	105	115	118	129	132	60	20	80	FFT-80080	
								60	120	FFT-80120	
								90	150	FFT-80150	



FFG

Guide bushings - self lubricating

Mat.: Aluminium bronze - ISO 9448



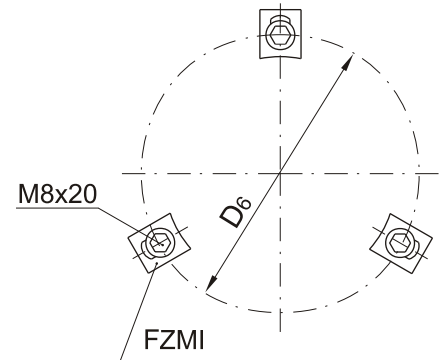
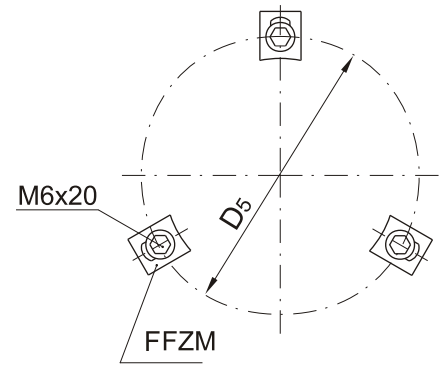
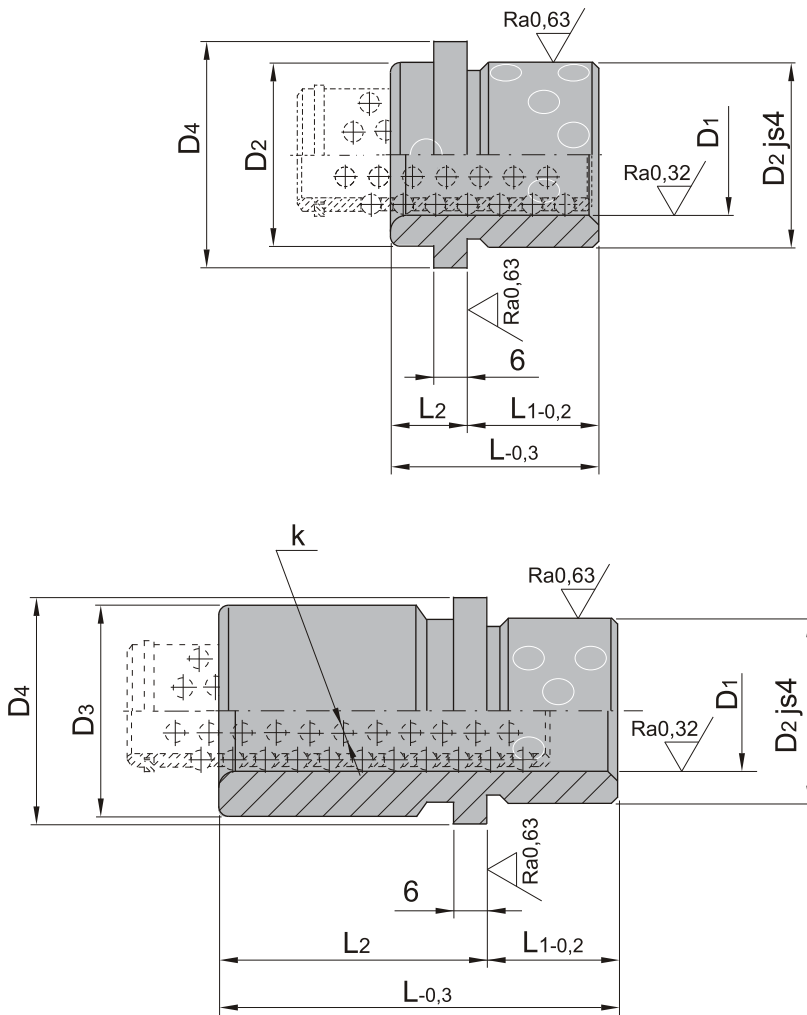
Note: Bushings are standard supplied with FFZM type retaining clamps. FZMI retaining clamps available upon request.

D	Tol.	D2	D3	D4	FZM	FZMI	L1	L2	L	REF	
					D5	D6					
20/19	+0,012 +0,004	32	39	40	52	54	23	12	35	FFG-20035	FFG-19035
								20	43	FFG-20043	FFG-19043
								36	59	FFG-20059	FFG-19059
25/24	+0,012 +0,004	40	46	48	60	62	23	12	35	FFG-25035	FFG-24035
								36	59	FFG-25059	FFG-24059
								56	79	FFG-25079	FFG-24079
32/30	+0,015 +0,005	48	53	56	67	70	30	12	42	FFG-32042	FFG-30042
								45	75	FFG-32075	FFG-30075
								63	93	FFG-32093	FFG-30093
40/38	+0,015 +0,005	58	63	66	77	80	37	15	52	FFG-40052	FFG-38052
								45	82	FFG-40082	FFG-38082
								70	107	FFG-40107	FFG-38107
50/48	+0,015 +0,005	70	77	80	91	94	47	18	65	FFG-50065	FFG-48065
								50	97	FFG-50097	FFG-48097
								80	127	FFG-50127	FFG-48127
63/60	+0,018 +0,006	85	92	95	106	109	60	20	80	FFG-63080	FFG-60080
								55	115	FFG-63115	FFG-60115
								90	150	FFG-63150	FFG-60150
80	+0,018 +0,006	105	115	118	129	132	60	20	80	FFG-80080	
								60	120	FFG-80120	
								90	150	FFG-80150	

Guide bushings - Ball bearing

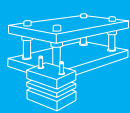
Mat.: 1.3505, 64±2 HRC - ISO 9448

FFC



Note: Bushings are standard supplied with FFZM type retaining clamps. FZMI retaining clamps available upon request.

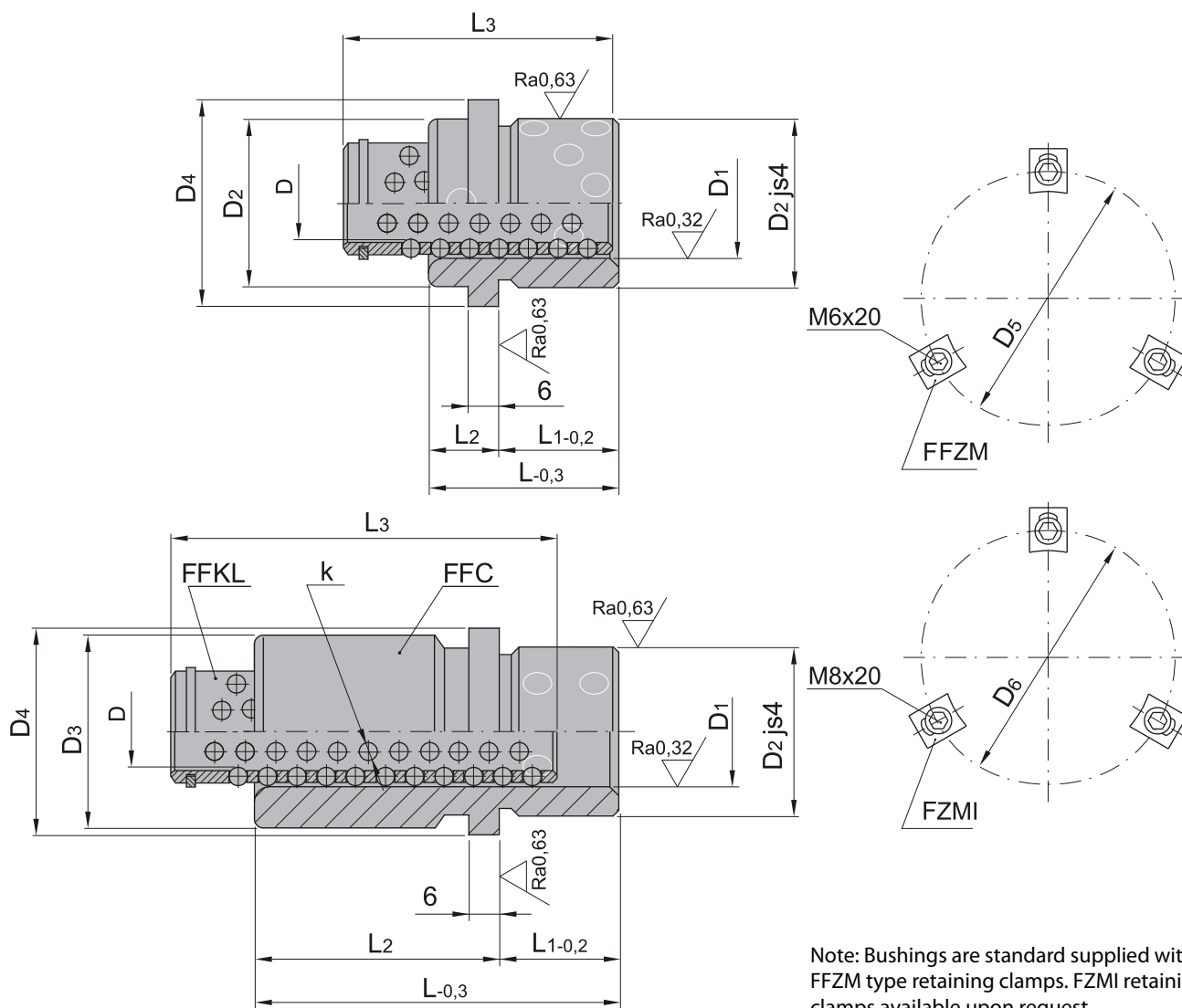
D	D1	D2	D3	D4	k	FZM	FZMI	L1	L2	L	REF	
						D5	D6					
20/19	26/25	32	39	40	3	52	54	23	12	35	FFC-20035	FFC-19035
									20	43	FFC-20043	FFC-19043
									36	59	FFC-20059	FFC-19059
25/24	31/30	40	46	48	3	60	62	23	12	35	FFC-25035	FFC-24035
									36	59	FFC-25059	FFC-24059
									56	79	FFC-25079	FFC-24079
32/30	40/38	48	53	56	4	67	70	30	12	42	FFC-32042	FFC-30042
									45	75	FFC-32075	FFC-30075
									63	93	FFC-32093	FFC-30093
40/38	48/46	58	63	66	4	77	80	37	15	52	FFC-40052	FFC-38052
									45	82	FFC-40082	FFC-38082
									70	107	FFC-40107	FFC-38107
50/48	58/56	70	77	80	4	91	94	47	18	65	FFC-50065	FFC-48065
									50	97	FFC-50097	FFC-48097
									80	127	FFC-50127	FFC-48127
63/60	73/70	85	92	95	5	106	109	60	20	80	FFC-63080	FFC-60080
									55	115	FFC-63115	FFC-60115
									90	150	FFC-63150	FFC-60150
80	92	105	115	118	6	129	132	60	20	80	FFC-80080	
									60	120	FFC-80120	
									90	150	FFC-80150	



FCKL

Guide bushings - with ball bearing cage

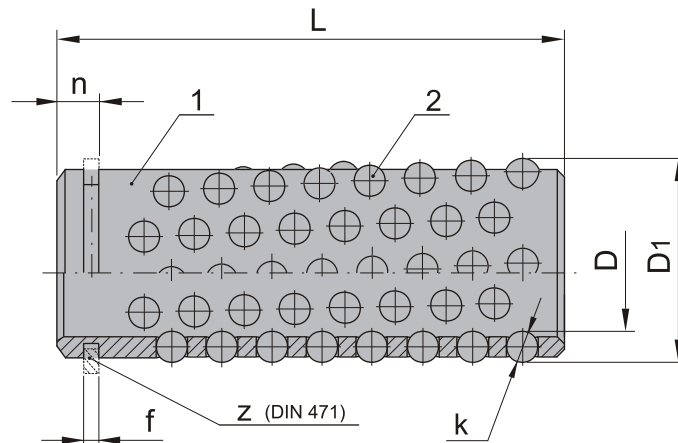
Mat.: FC: 1.3505, 64±2 HRC - FKL: Aluminium - ISO 9448



Note: Bushings are standard supplied with FFZM type retaining clamps. FZMI retaining clamps available upon request.

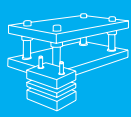
D	D1	D2	D3	D4	L3	k	FZM	FZMI	L1	L2	L	REF	
							D5	D6					
20/19	26/25	32	39	40	43	3	52	54	23	12	35	FCKL-20035	FCKL-19035
					54					20	43	FCKL-20043	FCKL-19043
					74					36	59	FCKL-20059	FCKL-19059
25/24	31/30	40	46	48	43	3	60	62	23	12	35	FCKL-25035	FCKL-24035
					74					36	59	FCKL-25059	FCKL-24059
					90					56	79	FCKL-25079	FCKL-24079
32/30	40/38	48	53	56	54	4	67	70	30	12	42	FCKL-32042	FCKL-30042
					83					45	75	FCKL-32075	FCKL-30075
					103					63	93	FCKL-32093	FCKL-30093
40/38	48/46	58	63	66	58	4	77	80	37	15	52	FCKL-40052	FCKL-38052
					94					45	82	FCKL-40082	FCKL-38082
					128					70	107	FCKL-40107	FCKL-38107
50/48	58/56	70	77	80	74	4	91	94	47	18	65	FCKL-50065	FCKL-48065
					108					50	97	FCKL-50097	FCKL-48097
					128					80	127	FCKL-50127	FCKL-48127
63/60	73/70	85	92	95	113	5	106	109	60	20	80	FCKL-63080	FCKL-60080
					128					55	115	FCKL-63115	FCKL-60115
					154					90	150	FCKL-63150	FCKL-60150
80	92	105	115	118	113	6	129	132	60	20	80	FCKL-80080	
					138					60	120	FCKL-80120	
					156					90	150	FCKL-80150	

Ball bearing cage Mat.: Cage (1): Aluminium - Balls (2): ball bearing steel FFKL



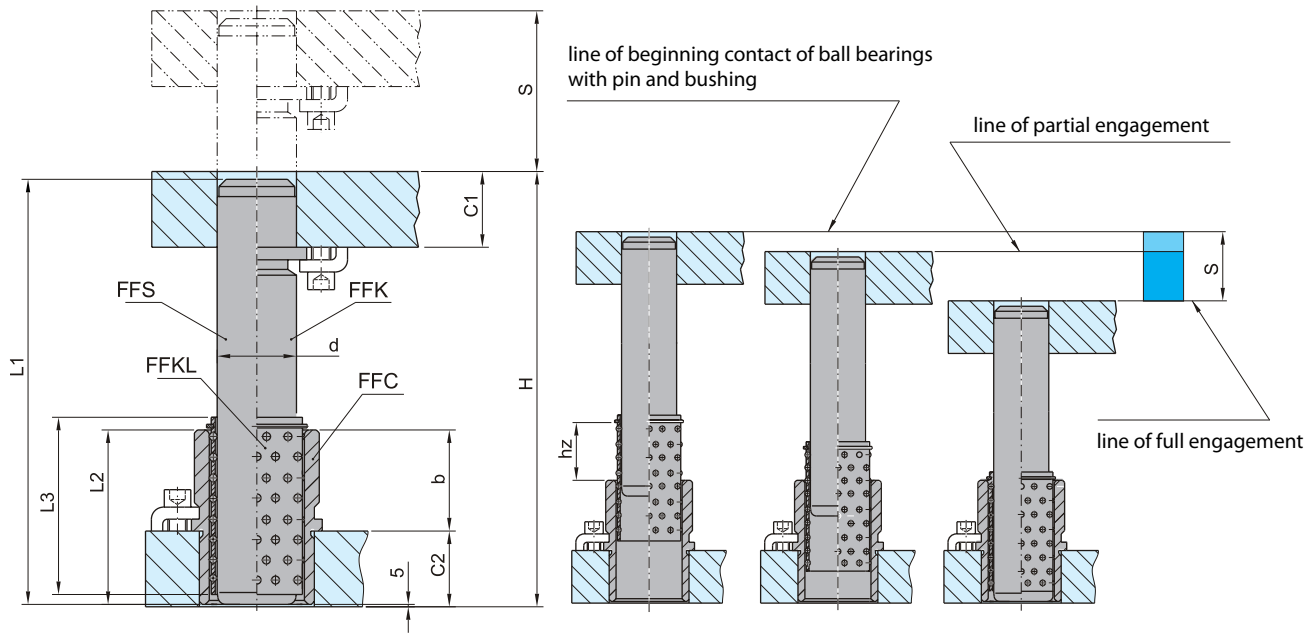
Note: Bushings are standard supplied with FFZM type retaining clamps. FZMI retaining clamps available upon request.

D	D1	k	z	f	n	L	REF	
20/19	26/25	3	Z25/24	1,20	2,9	43	FFKL-20043	FFKL-19043
						54	FFKL-20054	FFKL-19054
						74	FFKL-20074	FFKL-19074
25/24	31/30	3	Z30	1,50	3,2	43	FFKL-25043	FFKL-24043
						74	FFKL-25074	FFKL-24074
						90	FFKL-25090	FFKL-24090
32/30	40/38	4	Z38/36	1,75	4,0	54	FFKL-32054	FFKL-30054
						83	FFKL-32083	FFKL-30083
						103	FFKL-32103	FFKL-30103
40/38	48/46	4	Z48/45	1,75	4,0	58	FFKL-40058	FFKL-38058
						94	FFKL-40094	FFKL-38094
						128	FFKL-40128	FFKL-38128
50/48	58/56	4	Z58/56	2,00	4,3	74	FFKL-50074	FFKL-48074
						108	FFKL-50108	FFKL-48108
						128	FFKL-50128	FFKL-48128
63/60	73/70	5	Z72/70	2,50	4,8	113	FFKL-63113	FFKL-60113
						128	FFKL-63128	FFKL-60128
						154	FFKL-63154	FFKL-60154
80	92	6	Z90	3,00	6,2	113	FFKL-80113	
						138	FFKL-80138	
						156	FFKL-80156	



Info

Stroke calculation chart



d	bushing		ball cage		Stroke S (mm)						
	L2	b	L3	hz	10	30	50	70	90	110	130
20/19	35	12	43	24	[shaded]						
	43	20	54	31	[shaded]						
	59	36	74	43	[shaded]						
25/24	35	12	43	25	[shaded]						
	59	36	74	44	[shaded]						
	79	56	90	50	[shaded]						
30/32	42	12	54	31	[shaded]						
	75	45	83	44	[shaded]						
	93	63	103	55	[shaded]						
40/38	52	15	58	30	[shaded]						
	82	45	94	51	[shaded]						
	107	70	128	73	[shaded]						
50/48	65	18	74	32	[shaded]						
	97	50	108	58	[shaded]						
	127	80	128	63	[shaded]						
63/60	80	20	113	71	[shaded]						
	115	55	128	69	[shaded]						
	150	90	154	77	[shaded]						
80	80	20	113	70	[shaded]						
	120	60	138	75	[shaded]						
	150	90	156	78	[shaded]						

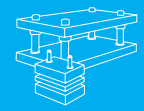
the stroke range recommended for reaching best engagement of ball bearing system
 the maximum suggested stroke - exceedment of this value causes a disengagement of the ball bearing system

Leader pin length calculation

$$L1_{max.} = H - 5$$

Minimum shut height calculation

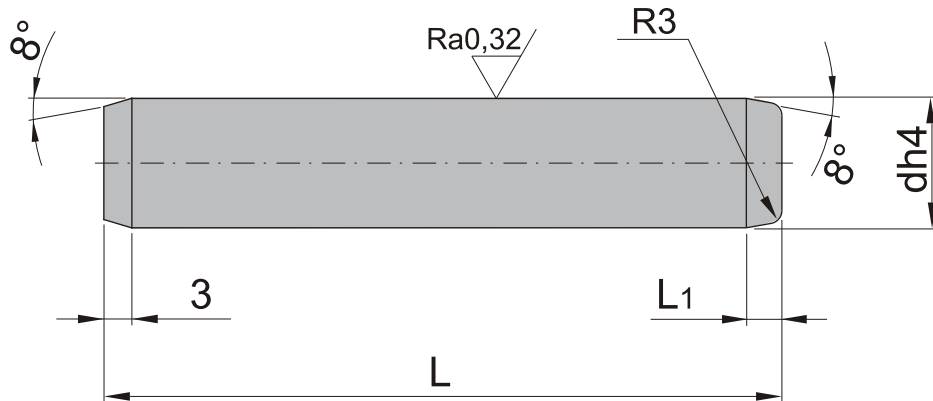
- Hmin = L2 + C1 + 28 (for removable pin with flange (clamps used))
- Hmin = L2 + C1 + 15 (for removable pin with flange (retaining ring used))
- Hmin = L2 + C1 + 9 (for straight pin)



Guide pin - straight press fit

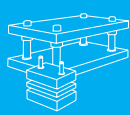
Mat.: 1.1221, surface induction hardened 62±2 HR - ISO 9182

FFS



Note: Centre holes are not concentric with O.D.

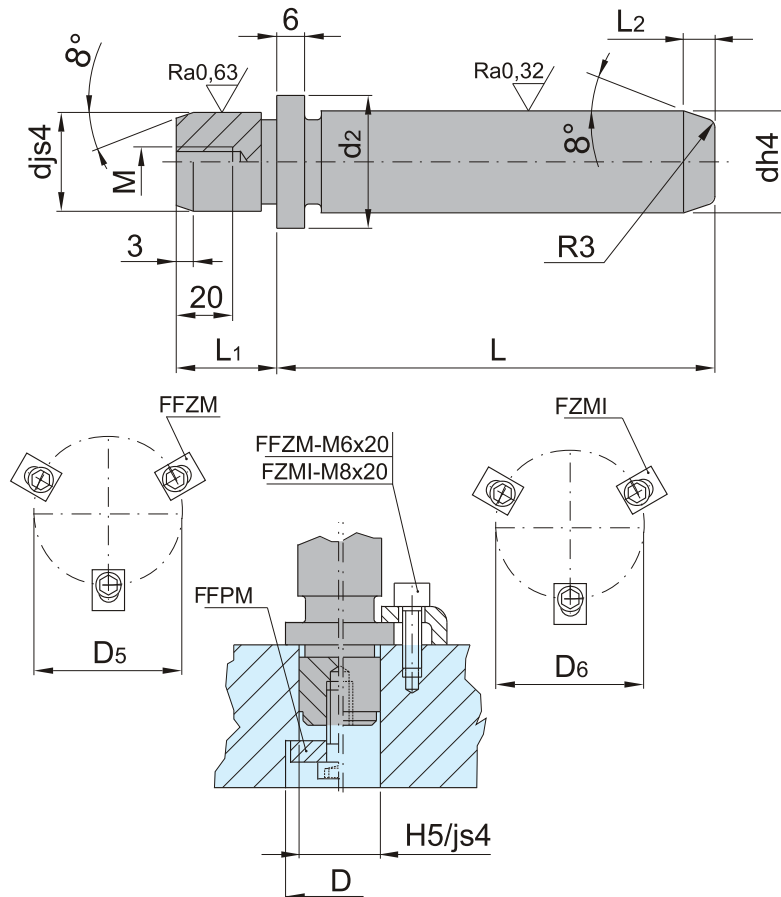
d	L	L1	REF		d	L	L1	REF	
20/19	100	4	FFS-20100	FFS-19100	40/38	250	6	FFS-40250	FFS-38250
	112		FFS-20112	FFS-19112		280		FFS-40280	FFS-38280
	125		FFS-20125	FFS-19125		315		FFS-40315	FFS-38315
	140		FFS-20140	FFS-19140		355		FFS-40355	FFS-38355
	160		FFS-20160	FFS-19160		400		FFS-40400	FFS-38400
	180		FFS-20180	FFS-19180		450		FFS-40450	FFS-38450
	200		FFS-20200	FFS-19200		500		FFS-40500	FFS-38500
	224		FFS-20224	FFS-19224		550		FFS-40550	FFS-38550
	250		FFS-20250	FFS-19250		600		FFS-40600	FFS-38600
	280		FFS-20280	FFS-19280		180		FFS-50180	FFS-48180
	315		FFS-20315	FFS-19315		200		FFS-50200	FFS-48200
25/24	100	6	FFS-25100	FFS-24100	50/48	224	8	FFS-50224	FFS-48224
	112		FFS-25112	FFS-24112		250		FFS-50250	FFS-48250
	125		FFS-25125	FFS-24125		280		FFS-50280	FFS-48280
	140		FFS-25140	FFS-24140		315		FFS-50315	FFS-48315
	160		FFS-25160	FFS-24160		355		FFS-50355	FFS-48355
	180		FFS-25180	FFS-24180		400		FFS-50400	FFS-48400
	200		FFS-25200	FFS-24200		450		FFS-50450	FFS-48450
	224		FFS-25224	FFS-24224		500		FFS-50500	FFS-48500
	250		FFS-25250	FFS-24250		550		FFS-50550	FFS-48550
	280		FFS-25280	FFS-24280		600		FFS-50600	FFS-48600
	315		FFS-25315	FFS-24315		250		FFS-63250	FFS-60250
32/30	355	6	FFS-25355	FFS-24355	63/60	280	8	FFS-63280	FFS-60280
	400		FFS-25400	FFS-24400		315		FFS-63315	FFS-60315
	125		FFS-32125	FFS-30125		355		FFS-63355	FFS-60355
	140		FFS-32140	FFS-30140		400		FFS-63400	FFS-60400
	160		FFS-32160	FFS-30160		450		FFS-63450	FFS-60450
	180		FFS-32180	FFS-30180		500		FFS-63500	FFS-60500
	200		FFS-32200	FFS-30200		550		FFS-63550	FFS-60550
	224		FFS-32224	FFS-30224		600		FFS-63600	FFS-60600
	250		FFS-32250	FFS-30250		280		FFS-80280	
	280		FFS-32280	FFS-30280		315		FFS-80315	
	315		FFS-32315	FFS-30315		355		FFS-80355	
40/38	355	6	FFS-32355	FFS-30355	80	400	8	FFS-80400	
	400		FFS-32400	FFS-30400		450		FFS-80450	
	160		FFS-40160	FFS-38160		500		FFS-80500	
	180		FFS-40180	FFS-38180		550		FFS-80550	
	200		FFS-40200	FFS-38200		600		FFS-80600	
224	FFS-40224	FFS-38224							



FFK

Guide pin - demountable

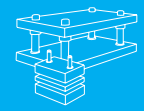
Mat.: 1.1221, surface induction hardened 62±2 HR - ISO 9182



Note: Guide pins are standard supplied with FFZM type retaining clamps. Other clamps upon request.
Centre holes are not concentric with O.D.

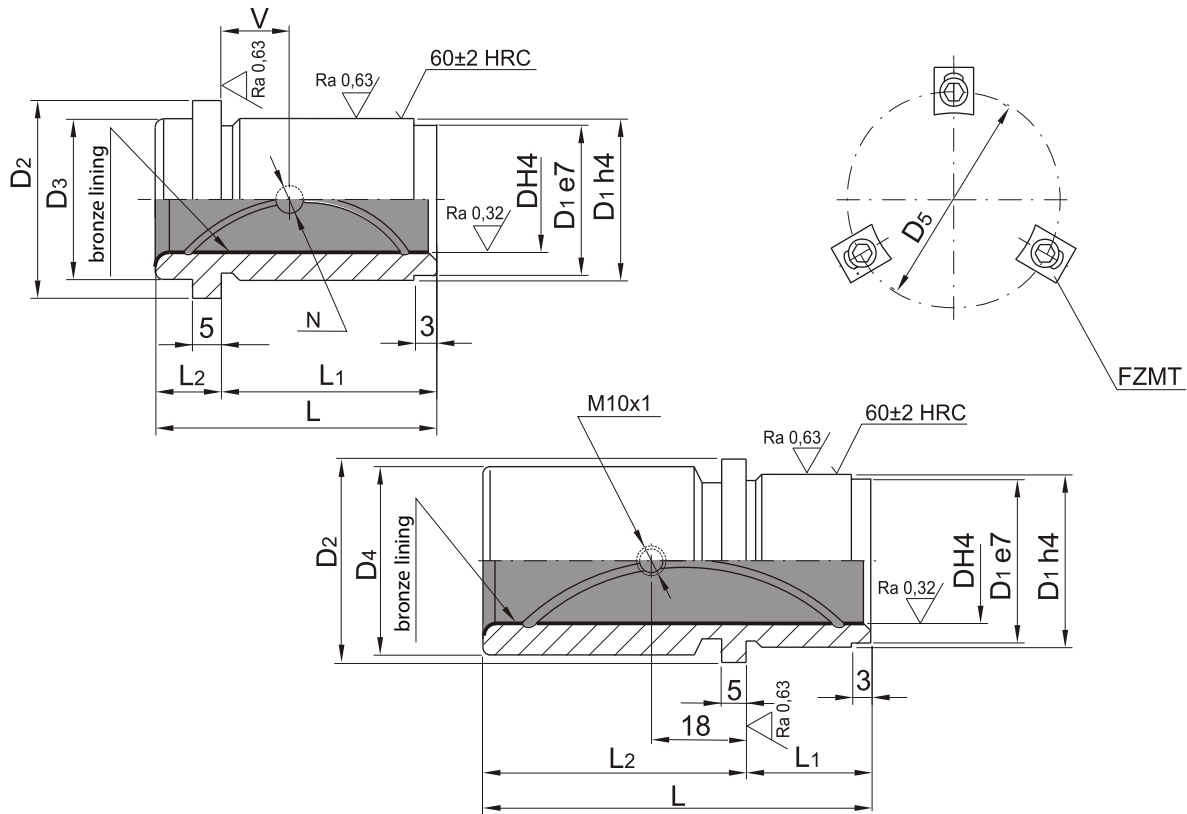
d	d2	L1	L2	M	D	D5	D6
20/19	25	23	4	M8	27	36	39
25/24	32	30	6		34	43	44
32/30	40	37	6		42	51	51
40/38	50	37	6		52	61	59
50/48	63	48	8		62	74	72
63/60	80	48	8		72	91	89
80	95	60	8	M12	95	106	109

d	L	REF	d	L	REF	d	L	REF
20/19	100	FFK-20100 FFK-19100	32/30	200	FFK-32200 FFK-30200	50/48	280	FFK-50280 FFK-48280
	112	FFK-20112 FFK-19112		224	FFK-32224 FFK-30224		315	FFK-50315 FFK-48315
	125	FFK-20125 FFK-19125		250	FFK-32250 FFK-30250		355	FFK-50355 FFK-48355
	140	FFK-20140 FFK-19140		280	FFK-32280 FFK-30280		400	FFK-50400 FFK-48400
	160	FFK-20160 FFK-19160		315	FFK-32315 FFK-30315		160	FFK-63160 FFK-60160
	180	FFK-20180 FFK-19180		125	FFK-40125 FFK-38125		180	FFK-63180 FFK-60180
25/24	200	FFK-20200 FFK-19200	40/38	140	FFK-40140 FFK-38140	63/60	200	FFK-63200 FFK-60200
	100	FFK-25100 FFK-24100		160	FFK-40160 FFK-38160		224	FFK-63224 FFK-60224
	112	FFK-25112 FFK-24112		180	FFK-40180 FFK-38180		250	FFK-63250 FFK-60250
	125	FFK-25125 FFK-24125		200	FFK-40200 FFK-38200		280	FFK-63280 FFK-60280
	140	FFK-25140 FFK-24140		224	FFK-40224 FFK-38224		315	FFK-63315 FFK-60315
	160	FFK-25160 FFK-24160		250	FFK-40250 FFK-38250		355	FFK-63355 FFK-60355
	180	FFK-25180 FFK-24180		280	FFK-40280 FFK-38280		400	FFK-63400 FFK-60400
	200	FFK-25200 FFK-24200		315	FFK-40315 FFK-38315		200	FFK-80200
32/30	224	FFK-25224 FFK-24224	50/48	355	FFK-40355 FFK-38355	80	224	FFK-80224
	250	FFK-25250 FFK-24250		140	FFK-50140 FFK-48140		250	FFK-80250
	112	FFK-32112 FFK-30112		160	FFK-50160 FFK-48160		280	FFK-80280
	125	FFK-32125 FFK-30125		180	FFK-50180 FFK-48180		315	FFK-80315
	140	FFK-32140 FFK-30140		200	FFK-50200 FFK-48200		355	FFK-80355
	160	FFK-32160 FFK-30160		224	FFK-50224 FFK-48224		400	FFK-80400
180	FFK-32180 FFK-30180	250	FFK-50250 FFK-48250					

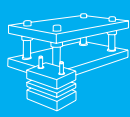


Guide bushing - Bronze-Rite™, DME compatible

FBPE



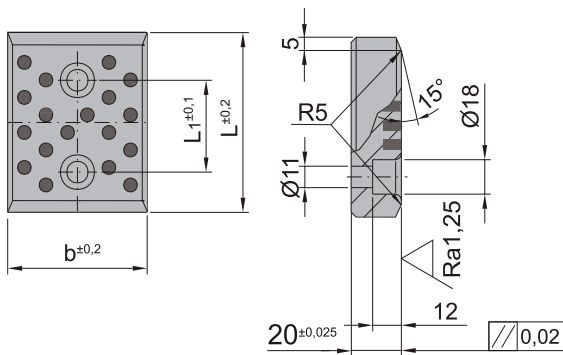
D	L	L1	L2	D1	D2	D3	D4	D5	V	N	REF	
18/19	31	18	13	28	34	29	-	47	8	5	FBPE-1818031	FBPE-1918031
	49	36	13			FBPE-1836049	FBPE-1936049					
	50	18	32			-	-		FBPE-1818050	FBPE-1918050		
	69	26	43			-	31		FBPE-1826069	FBPE-1926069		
	70	18	52			-	-		FBPE-1818070	FBPE-1918070		
24/25	36	23	13	38	44	39	-	57	12	5	FBPE-2423036	FBPE-2523036
	55	42	13			FBPE-2442055	FBPE-2542055					
	55	23	32			-	-		FBPE-2423055	FBPE-2523055		
	80	32	48			-	41		FBPE-2432080	FBPE-2532080		
	80	23	57			-	-		FBPE-2423080	FBPE-2523080		
30/32	43	30	13	45	53	48	-	66	15	5	FBPE-3030043	FBPE-3230043
	59	46	13			FBPE-3046059	FBPE-3246059					
	60	26	34			-	-		FBPE-3026060	FBPE-3226060		
	89	36	53			-	50		FBPE-3036089	FBPE-3236089		
	90	26	64			-	-		FBPE-3026090	FBPE-3226090		
40/42	49	36	13	54	63	58	-	76	19	8	FBPE-4036049	FBPE-4236049
	67	54	13			FBPE-4054067	FBPE-4254067					
	67	30	37			-	-		FBPE-4030067	FBPE-4230067		
	99	46	53			-	60		FBPE-4046099	FBPE-4246099		
	100	30	70			-	-		FBPE-4030100	FBPE-4230100		
50/52	59	46	13	65	79	74	-	92	19	8	FBPE-5046059	FBPE-5246059
	75	62	13			FBPE-5062075	FBPE-5262075					
	75	35	40			-	-		FBPE-5035075	FBPE-5235075		
	109	56	53			-	76		FBPE-5056109	FBPE-5256109		
	110	35	75			-	-		FBPE-5035110	FBPE-5235110		
63	74	61	13	81	92	87	-	105	1-	8	FBPE-6361074	
	89	76	13			FBPE-6376089						
	88	46	42			-	-		FBPE-6346088			
	129	66	63			-	89		FBPE-6366129			
	128	46	82			-	-		FBPE-6346128			
80	89	76	13	100	111	106	-	124	19	8	FBPE-8076089	
	98	46	52			FBPE-8046098						
	149	76	73			-	-		FBPE-8076149			
	148	46	102			-	-		FBPE-8046148			



FPGA

Self lubricating wear plate

Mat.: Aluminium bronze

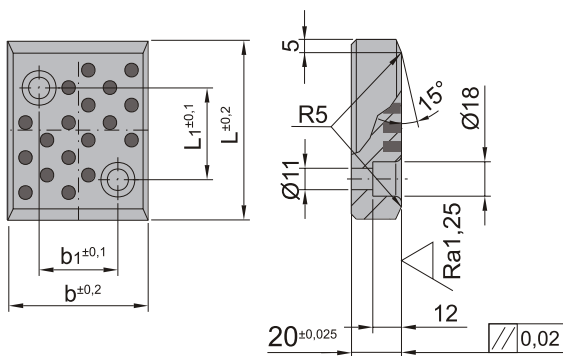


b	L	L1	REF
48	75	45	FPGA-048075
	100	50	FPGA-048100
	125	75	FPGA-048125
	150	100	FPGA-048150
	200	150	FPGA-048200
75	125	75	FPGA-075125
	150	100	FPGA-075150
	200	150	FPGA-075200

FPGB

Self lubricating wear plate

Mat.: Aluminium bronze

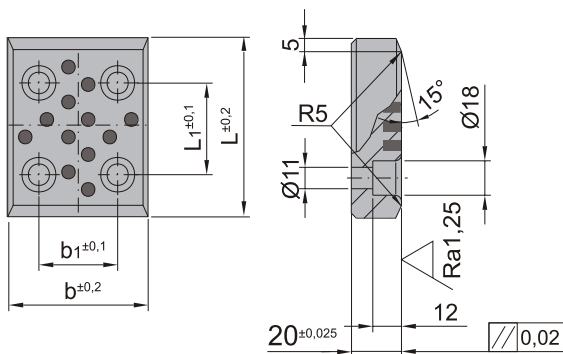


b	b1	L	L1	REF
75	25	75	25	FPGB-075075
		100	50	FPGB-075100

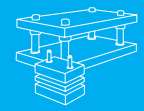
FPGC

Self lubricating wear plate

Mat.: Aluminium bronze



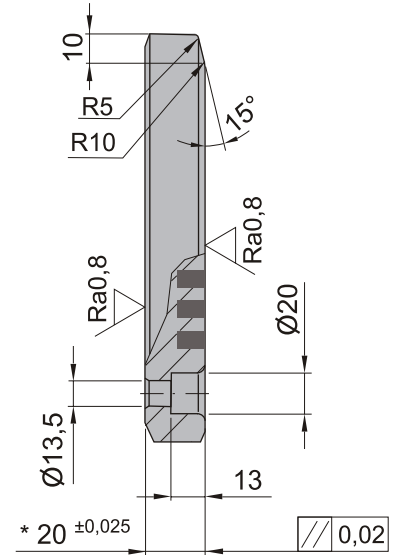
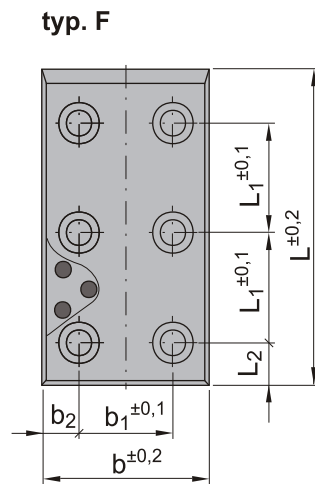
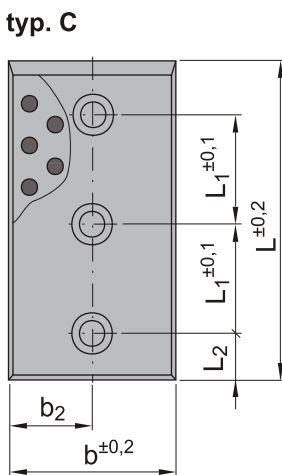
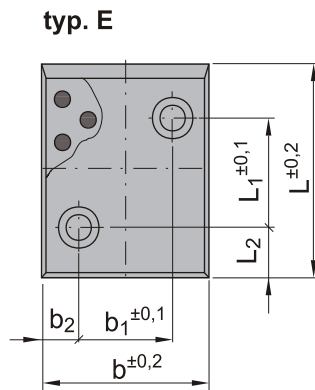
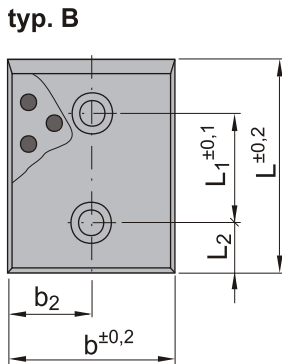
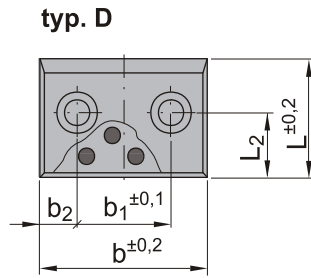
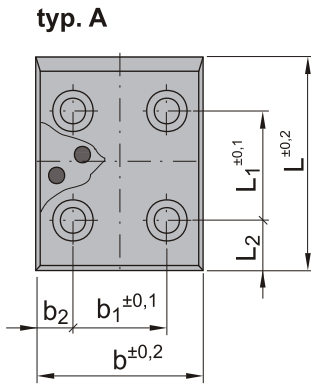
b	b1	L	L1	REF
100	50	100	50	FPGC-100100
		125	75	FPGC-100125
		150	100	FPGC-100150
		200	150	FPGC-100200
		250	200	FPGC-100250
125	50	150	100	FPGC-125150
		200	150	FPGC-125200
		250	200	FPGC-125250
150	100	150	100	FPGC-150150
		200	150	FPGC-150200
		250	200	FPGC-150250



Self lubricating wear plate

Mat.: Aluminium bronze / solid steel - ISO 9183-1

FDS01

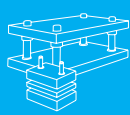


* Also available in 25mm thickness

Note: Wear plates are offered in two version:
Version **G** - material aluminium bronze with self-lubricating graphite plugs
Version **S** - material solid steel (without self-lubricating graphite plugs) surface hardened

b	L	b1	b2	L1	L2	Type	Nr	b	L	b1	b2	L1	L2	Type	Nr	b	L	b1	b2	L1	L2	Type	Nr	
50	80	-	25	35	20	B	01	100	60	20	-	25	D	15	160	120	20	-	25	D	31			
	100			35			E				16													
	125			55			E				17													
	160			80			A				18													
	200			115			A				19													
	250			155			A				20													
80	50	40	20	-	25	D	07	125	85	20	-	25	D	23	-	-	-	-	-	-	-	-	-	-
	80			35	E	08	35				E	24												
	100			55	E	09	55				E	25												
	125			80	A	10	80				A	26												
	160			115	A	11	115				A	27												
	200			155	A	12	155				A	28												
	250			100	F	13	100				F	29												
	315			132	F	14	132				F	30												

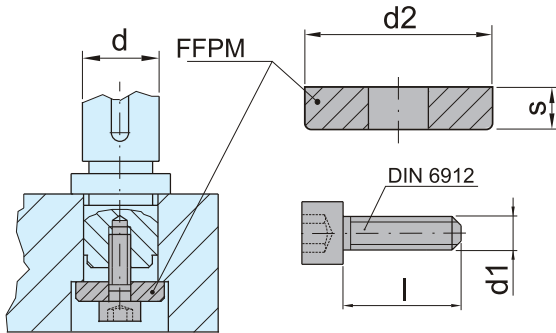
Ordering example: Wear plate Nr 05, type B, version G, b=50mm, L=200mm, thickness 20mm - REF: **FDS01-05/20G**
Wear plate Nr 12, type A, version S, b=80mm, L=200mm, thickness 25mm - REF: **FDS01-12/25S**



FFPM

Retaining ring

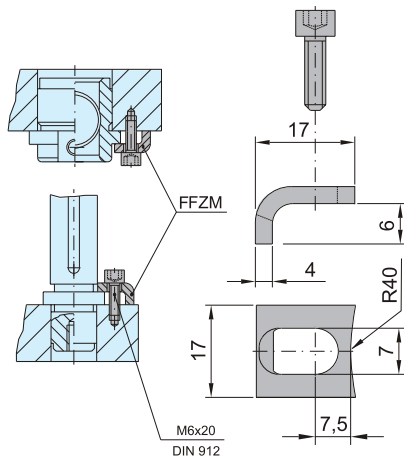
Mat.: 1.0503



d	d2	s	d1	l	REF					
19	25	6	M8	20	FFPM-20					
20										
24	32				12	M12	30	FFPM-20		
25										
30	40							FFPM-20		
32										
38	50								FFPM-20	
40										
48	60									FFPM-20
50										
60	70	FFPM-20								
63										
80	93		FFPM-20							

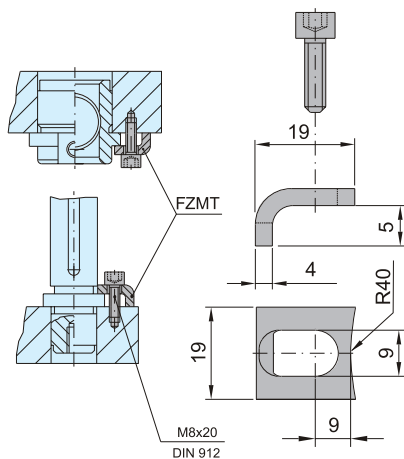
FFZM

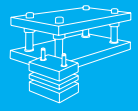
Retaining clamp



FZMT

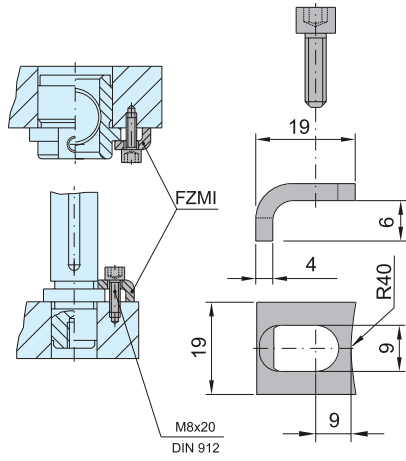
Retaining clamp

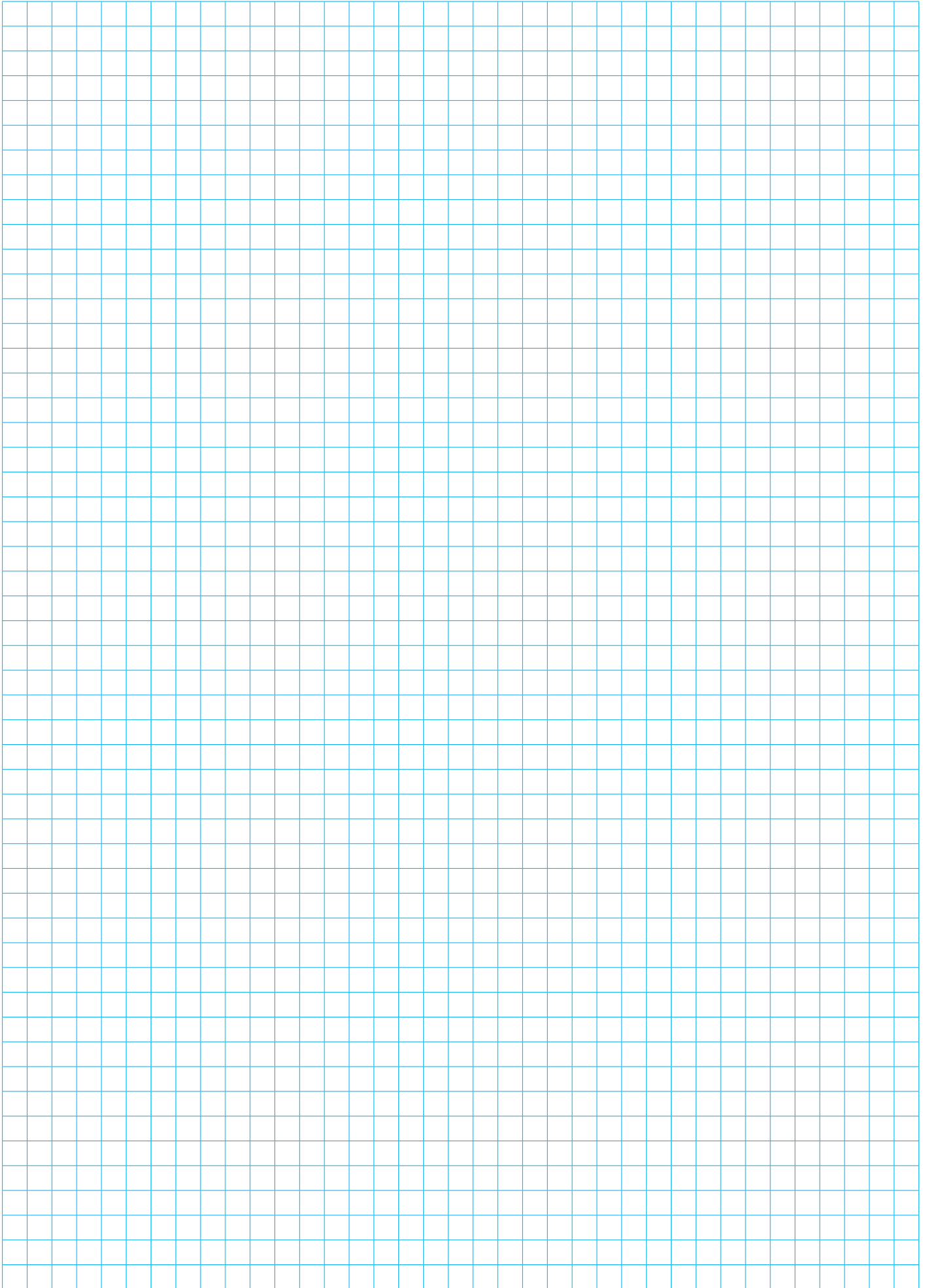
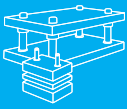




FZMI

Retaining clamp





GENERAL CONDITIONS OF SALE DME EUROPE

1. CONCLUSION OF CONTRACT - APPLICATION

The contract is validly entered into and the order is accepted after written confirmation by seller. These sales conditions apply to the exclusion of any other terms or conditions, unless expressly accepted in writing beforehand by the vendor.

Seller has 30 (thirty) days since the reception of the order to accept or to refuse it. During this period, buyer shall not withdraw his order.

Absence of any written confirmation of the order shall only be interpreted as being an implicit acceptance in case of performance of the order by seller.

2. PAYMENT

Unless otherwise agreed in writing, invoices are payable in the stated currency within 30 (thirty) days after invoice date to the bank designated by seller. Transfer charges are for account of buyer.

If buyer does not pay within this term, seller shall automatically have ipso jure and without any prior formal notice, the right to charge legal interest plus 2 % from due date of the invoice. Moreover, in case of late payment, a fixed indemnity corresponding to 10 % of the payable amount shall automatically be due from the first day following the due date, without prejudice to seller's right to prove higher damage and ask for corresponding indemnity. Should payment be in foreign currency, seller has the right to adapt the foreign currency in case of depreciation of this foreign currency in regard of the euro.

Should payment of the delivered goods be in instalments, the non-payment of one of the instalments gives seller the right to terminate the contract. The payments, which were done until then, shall remain property of seller as indemnity, without prejudice to the right to claim further damages or to the right to require the performance of the contract.

Payment of advance shall not give buyer the right to terminate the contract upon reimbursement of the paid advance. If payment is done by bill of exchange or check, payment is deemed satisfied only when the bill of exchange or the check is honoured.

Place of payment is always Mechelen even if payment is done with bill of exchange.

3. RETENTION OF TITLE

Delivered goods remain property of seller until full payment has been received by seller. The sale of an unpaid item by buyer to a third party results in automatic assignment of the debt due by the third party to buyer, inclusively the retention of title, to seller. Seller has then the authority to take any necessary means in order to validly assign towards the third party. Seller may retake unpaid goods at any time and he may inform any client and/or any subcontractor of buyer about the fact that seller is and remains the only owner of the concerned goods until full payment.

The purchaser undertakes to carefully keep the goods that have not been paid for, and undertakes not to pledge them or use them in any other way as a guarantee or security. The purchaser shall inform third parties who may apply any security rights over his assets (such as, but not limited to, the lessor of the premises occupied by the purchaser) that the products are and shall remain the property of the vendor until full payment of all sums owed by the purchaser to the vendor, and in the event of an attachment or other measures taken by third parties that apply to products for which full payment has not yet been made the purchaser undertakes to immediately inform the vendor of this to enable him to apply his rights.

4. RISKS

Notwithstanding the preceding provisions, the risk transfers to buyer as soon as he has the goods at his disposal.

5. DISPATCHING OF INSIGNIFICANT VALUE

Each dispatch of less than € 50 will be increased with costs of payments and may, at sellers option, be sent cash on delivery (COD).

6. PRICE OFFERS AND PRICE LISTS

Price offers and price lists are without obligation and are subject to change without any previous notice.

Any information released by seller is delivered in good faith and seller shall not be responsible for the choice of material and goods.

7. PRICE AND DISPATCHING

All prices are ex works. Transportation, duties and taxes for account of buyer, unless seller's previous and express written specification to the contrary. Seller shall send goods by the fastest and most economic way at the risks of buyer. Goods may be insured by seller at buyer's option, the insurance premiums are for buyer. Seller is not responsible for the choice of packing.

8. DELIVERY

Date of delivery is the date when the goods are ready for inspection at the indicated place. Place of origin is Mechelen, Belgium, or any other place indicated by seller. Seller is not responsible for any late delivery, except those delays due to his own fault or gross negligence.

9. RETURNING OF GOODS

No goods can be returned without seller's previous, express and written consent. If buyer commits an error in ordering, the retaking of goods is possible only for inventory standard items. Goods must be returned within 15 (fifteen) days after invoice date and all goods must be in original conditions; all costs of transport are for buyer, as well as insurance and repacking costs. Special-order goods, marked or used items are non-returnable.

10. DEFECTS

Seller warrants defects in material and/or workmanship. Warranty is limited to the replacement or repair, at seller's option, of any merchandise found defective during 1 month. This warranty does not include defects due to buyer's fault or to abnormal use, bad maintenance, imperfect installation, buyer's inadequate repair, unforeseeable circumstances or in case changes were brought to material without previous and express written approval of seller.

Notice of conspicuous defects must be given to seller by registered letter sent within 10 (ten) working days following date of delivery.

Notice of hidden defects must be given to seller by registered letter with in 10 (ten) working days after date of discovery, and in any case, within a 10-month term following date of delivery.

Seller is not responsible for any damage and in particular salary and material costs, losses, loss of profit or loss of a chance incurred by buyer, unless it is demonstrated that defect is due to seller's gross or intentional fault. If seller is responsible for defect, seller has the right either to terminate the contract and to pay back all the invoiced prices or to replace the delivered product within a reasonable term. If goods for repair must be transported, costs and risks of this transport are for buyer.

In case seller is responsible for any damage, this will be limited to the foreseeable damage with a maximum amount corresponding to the amount of the product's invoiced price.

Should a third party lodge a claim against seller to obtain payment of an indemnity for a damage for which seller is not responsible in accordance with the present conditions or for a higher amount than the one seller is responsible for, buyer will warrant seller against those claims.

11. DESCRIPTION

Only product descriptions used in seller's latest literature and correspondence with buyer, are binding for description of goods.

Buyer is responsible for using items in conformity with all regulations, including but not limited to, the safety regulations in force at the place of use.

12. SPECIFIC ORDERS

For the performance of a special work, the project signed by buyer is binding to the extent it has been accepted by seller.

For the performance of such work, special conditions may be required. In case of any inconsistency between general conditions and special conditions, the special conditions shall apply. Should special conditions be unclear, they shall be interpreted in light of the general conditions.

13. ACT OF GOD

Seller shall not pay any damage for non-performance or late performance of his undertakings due to Act of God. Act of God includes in particular and without being limited thereto, strike, lock-out, and the non-performance by seller's suppliers of their undertakings.

14. VALIDITY AND INDIVIDUAL CLAUSES

If one or more provisions of these present general conditions are held to be invalid, the remaining provisions will continue to be valid and enforceable, and parties will agree upon other provisions having an economic effect that corresponds closest to the economic effect of the invalid provision(s).

15. WAIVER

In case seller does not exercise one of his rights in accordance with the present conditions, this shall not be interpreted as a waiver of these rights.

16. APPLICABLE LAW – COMPETENT COURTS

This sales contract will be governed by Belgian law. The competent court is the Commercial Court of Mechelen, without prejudice to seller's right to introduce the case before another competent court.



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