Series 16, 23, 24 and 25 mini-cylinders

Series 16: ø 8, 10, 12 mm - non-magnetic
Series 23: ø 16, 20, 25 mm - magnetic, auto-cushioned
Series 24: ø 16, 20, 25 mm - magnetic
Series 25: ø 16, 20, 25 mm - magnetic, cushioned

- Single and double-acting
- In compliance with ISO 6432
- Stainless steel rod and barrel
- Anodized aluminium end-blocks
- Cushioning types: mechanical with bumper, pneumatic auto-cushioning, adjustable pneumatic cushioning

Series 16, 23, 24 and 25 mini-cylinders are designed according to ISO 6432.
It is possible to choose from three different types of cushioning: mechanical (standard bumper on Series 16 and 24), adjustable pneumatic cushioning (Series 25) and pneumatic auto-cushioning (Series 23). This last version, thanks to a patented system, automatically adjusts the cushioning in order to provide optimal deceleration during the entire cushioning phase. The cylinder enjoys smooth, jolt-free movement, reducing vibrations and noise, while also guaranteeing high reliability and constant performance over time.

The adopted technical solutions and the choice of materials have provided the basis for a complete range of versatile and very reliable mini-cylinders. They are suitable to be used in a multitude of industrial applications, especially where operating conditions undergo changes over time like for example wear of machine components. Various mounting accessories are available to fix the cylinders in different ways.

GENERAL DATA

Type of construction	crimped
Operation	single-acting and double-acting
Design	ISO 6432
Materials	anodized aluminium end-caps - stainless steel barrel and rod, aluminium piston - NBR/PU seals, other parts: see the coding example
Brackets	rod end - flange - feet - trunnion
Stroke min - max	Series 16 ø 8 ÷ ø 10: 10 - 250 mm - Series 16: ø 12: 10 - 300 mm - Series 23, 24 and 25 ø 16: 10 - 600 mm; ø 20 - ø 25: 10 - 1000 mm
Bores	Series 16: ø 8, 10, 12 - Series 23, 24 and 25: ø 16, 20, 25
Operating temperature	0°C ÷ 80°C (with dry air -20°C)
Operating pressure	1 ÷ 10 bar (double-acting); 2 ÷ 10 bar (single-acting)
Fluid	filtered ait in class 7.8.4 according to ISO 8573-1. If lubricated air is used, it is recommended to use oil ISO VG32. Once applied the lubrication should never be interrupted.
Speed	10 ÷ 1000 mm/sec (without load)

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STANDARD STROKES FOR MINICYLINDERS

■ = Double-acting
✖ = Single-acting

STANDARD STROKES															
Series	Ø	10	25	40	50	80	100	125	160	200	250	300	320	400	500
16	8	■ ✖	■ ✖	■ ✖	■ ✖	■	■	■	■	■					
16	10	■ ✖	■ ✖	■ ✖	■ ✖	■	■	■	■	■					
16	12	■ ✖	■ ✖	■ ✖	■ ✖	■	■	■	■	■	■	■			
24	16	■ ✖	■ ✖	■ ✖	■ ✖	■	■	■	■	■	■	■	■	■	■
24	20	■ ✖	■ ✖	■ ✖	■ ✖	■	■	■	■	■	■	■	■	■	■
24	25	■ ✖	■ ✖	■ ✖	■ ✖	■	■	■	■	■	■	■	■	■	■
23/25	16	■	■	■	■	■	■	■	■	■	■	■	■	■	■
23/25	20	■	■	■	■	■	■	■	■	■	■	■	■	■	■
23/25	25	■	■	■	■	■	■	■	■	■	■	■	■	■	■

CODING EXAMPLE

24	N	2	A	16	A	100	

24 SERIES
16 = non magnetic, with mechanical cushioning
23 = magnetic, auto-cushioning
24 = magnetic, with mechanical cushioning
25 = magnetic, adjustable cushioning

N VERSION
N = standard

2 OPERATION
1 = single-acting, front spring, no cushion (only for series 16, 24)
2 = double-acting
3 = double-acting, through-rod
7 = single-acting, through-rod (only for series 16, 24)

PNEUMATIC SYMBOLS
CS02 (s. 16) - CS06 (s. 24)
CD01 (s. 16) - CD08 (s. 24) - CD23 (s.23) - CD09 (s. 25)
CD05 (s. 16) - CD12 (s. 24) - CD24 (s.23) - CD13 (s. 25)
CS04 (s. 16) - CS10 (s. 24)

A MATERIALS
A = rolled stainless steel AISI 303 rod, stainless steel AISI 304 tube, anodized AL end-blocks

16 BORE
08 = 8 mm (only for series 16)
10 = 10 mm (only for series 16)
12 = 12 mm (only for series 16)
16 = 16 mm (only for series 23, 24 e 25)
20 = 20 mm (only for series 23, 24 e 25)
25 = 25 mm (only for series 23, 24 e 25)

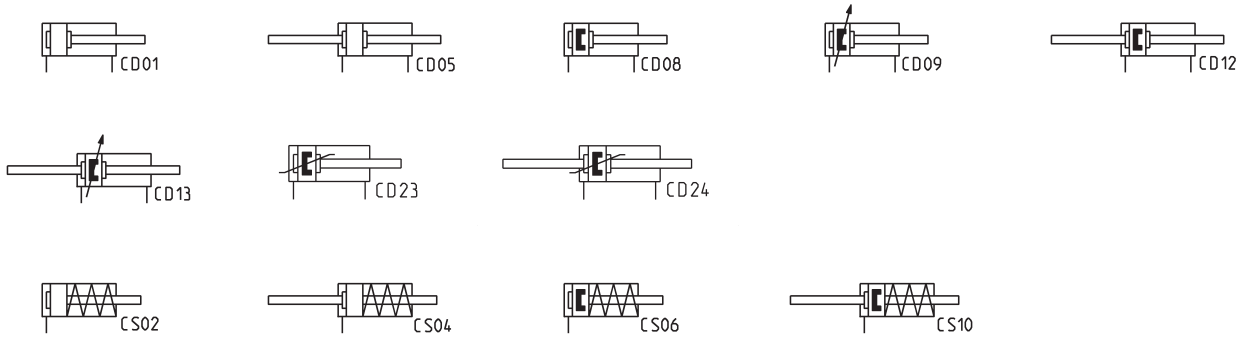
A CONSTRUCTION
A = Nose nut Mod. V + Piston rod lock nut Mod. U
RL = cylinder with rod lock (only for Ø20 - Ø25)

100 STROKE (see graph)

= standard
V = rod seal in FKM
W = all seals in FKM, +130°C (for series 25 only)
(_ _ _) = extended rod _ _ _mm

PNEUMATIC SYMBOLS

The pneumatic symbols which have been indicated in the CODING EXAMPLE are shown below.

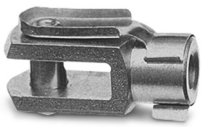


ACCESSORIES FOR MINICYLINDERS SERIES 16 - 23 - 24 - 25

Foot mount Mod. B

Front/rear flange mount
Mod. E

Rear trunnion bracket
Mod. I



Rod fork end Mod. G

Swivel ball joint Mod. GA

Piston rod socket joint
Mod. GY

Piston rod lock nut
Mod. U

Nose nut Mod. V

Self aligning rod
Mod. GK

Coupling piece
Mod. GKF

All accessories are supplied separately, except for piston rod lock nut Mod. U and nose nut Mod. V

SERIES 23: APPLICABLE MASS ACCORDING TO THE CYLINDER'S SPEED

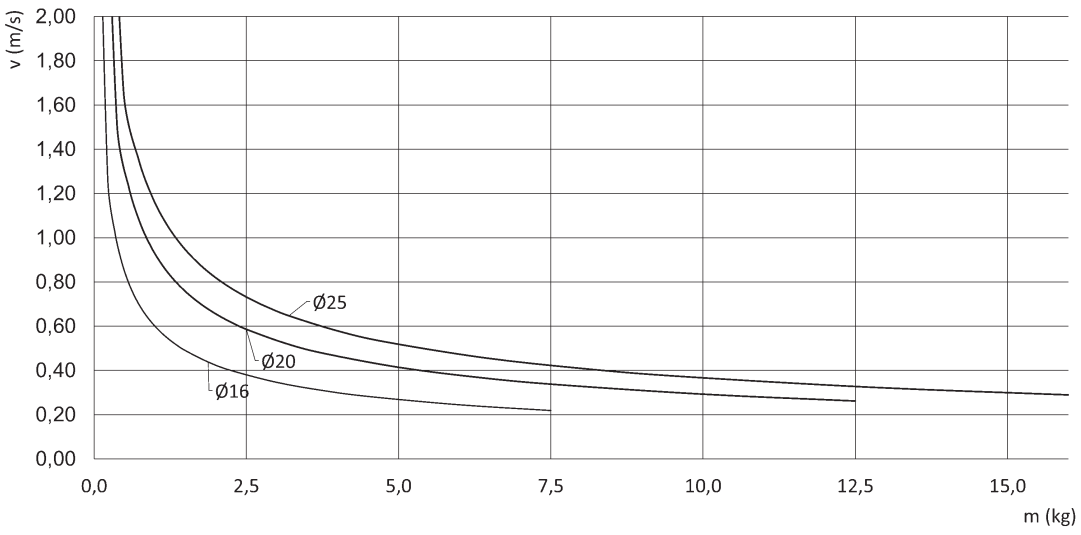
CHOICE OF THE CYLINDER

1) Choose the right size according to the force needed in the application

2) Check on the graph if the working conditions, mass and speed intersect
at a point below the curve that corresponds to the size chosen

m = mass applied to the cylinder
v = speed applied to the cylinder (m/s)

Example:
Diameter = 20 mm; Max speed = 0,4 m/s; Applicable mass = 6kg;



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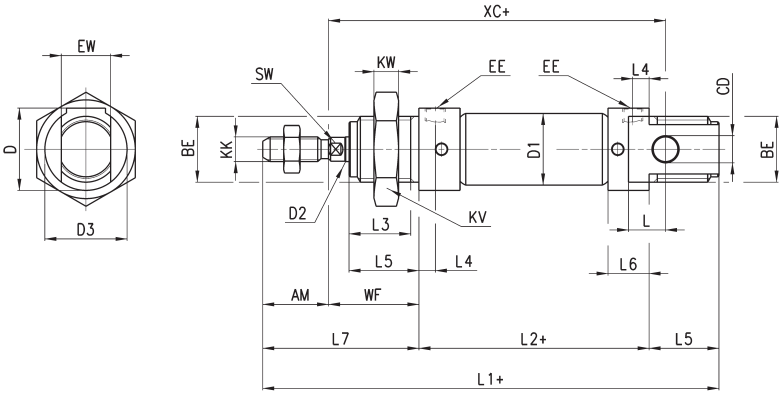
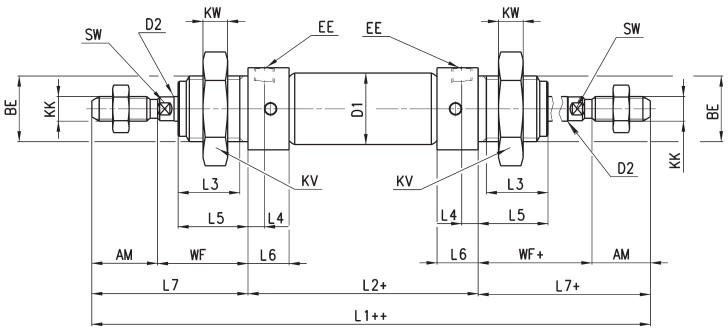
Series 16, 23, 24 and 25 mini-cylinders



+ = add the stroke

DIMENSIONS																							
Series	Ø	EW	KW	BE	KK	CD	øD1	EE	øD2	L1+	XC+	L2+	AM	L3	L4	L5	L	WF	L6	L7	KV	SW	D	D3	front/rear cushion stroke
16	8	8	7	M12x1,25	M4x0,7	4	9,3	M5	4	86	64	46	12	10	4,5	12	6	16	9	28	19	-	15	15	-
16	10	8	7	M12x1,25	M4x0,7	4	11,3	M5	4	86	64	46	12	10	4,5	12	6	16	9	28	19	-	15	15	-
16	12	12	8	M16x1,5	M6x1	6	13,3	M5	6	105	75	50	16	15	4,5	17	9	22	9	38	24	5	20,5	20	-
23	16	12	8	M16x1,5	M6x1	6	17,3	M5	6	111	82	56	16	15	5,5	17	9	22	12	38	24	5	20,5	20	10
24-25	16	12	8	M16x1,5	M6x1	6	17,3	M5	6	111	82	56	16	15	5,5	17	9	22	10	38	24	5	20,5	20	10
23-24-25	20	16	10	M22x1,5	M8x1,25	8	21,3	G1/8	8	132	95	68	20	18	8	20	12	24	16	44	32	7	27	27	15
23-24-25	25	16	10	M22x1,5	M10x1,25	8	26,5	G1/8	10	141,5	104	69,5	22	20	8	22	12	28	16	50	32	9	27	27	16

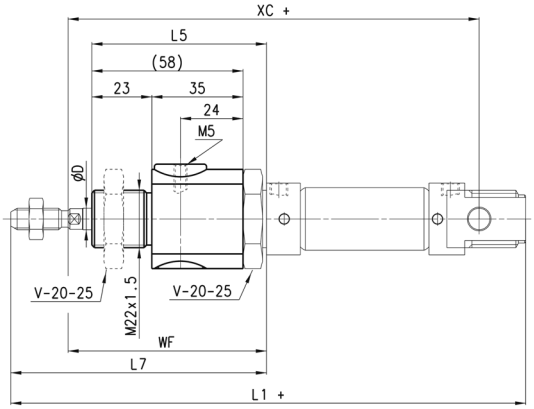
Series 16, 23, 24 and 25 mini-cylinders with through-rod

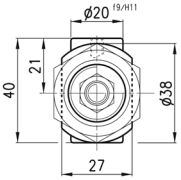


+ = add the stroke once
++ = add the stroke twice

DIMENSIONS																		
Series	Ø	KW	BE	KK	øD1	EE	øD2	L1++	L2+	AM	L3	L4	L5	WF+	L6	L7+	KV	SW	front/rear cushion stroke
16	8	7	M12x1,25	M4x0,7	9,3	M5	4	102	46	12	10	4,5	12	16	9	28	19	-	-
16	10	7	M12x1,25	M4x0,7	11,3	M5	4	102	46	12	10	4,5	12	16	9	28	19	-	-
16	12	8	M16x1,5	M6x1	13,3	M5	6	126	50	16	15	4,5	17	22	9	38	24	5	-
23	16	8	M16x1,5	M6x1	17,3	M5	6	132	56	16	15	5,5	17	22	12	38	24	5	10
24-25	16	8	M16x1,5	M6x1	17,3	M5	6	132	56	16	15	5,5	17	22	10	38	24	5	10
23-24-25	20	10	M22x1,5	M8x1,25	21,3	G1\8	8	156	68	20	18	8	20	24	16	44	32	7	15
23-24-25	25	10	M22x1,5	M10x1,25	26,5	G1\8	10	169,5	69,5	22	20	8	22	28	16	50	32	9	16

Series 23 - 24 - 25 mini-cylinders with rod lock (Mod. RLC)





+ = add the stroke

DIMENSIONS								
Series	Ø	G7D	WF	L5	L7	XC+	L1+	F (N)
23-24-25	20	8	74	70	94	145	182	300
23-24-25	25	10	76	70	98	152	189,5	400

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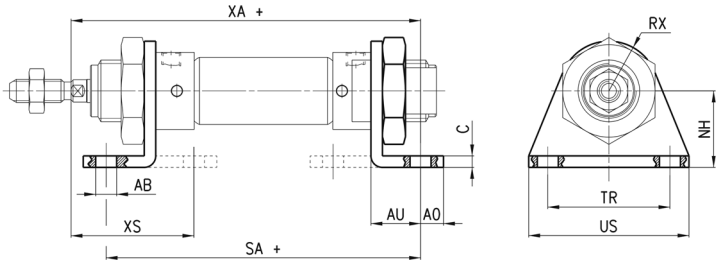
Foot mount Mod. B

Feet and nose nut material: zinc-plated steel.

Supplied with:
2x feet
1x nose nut mod. V

+ = add the stroke

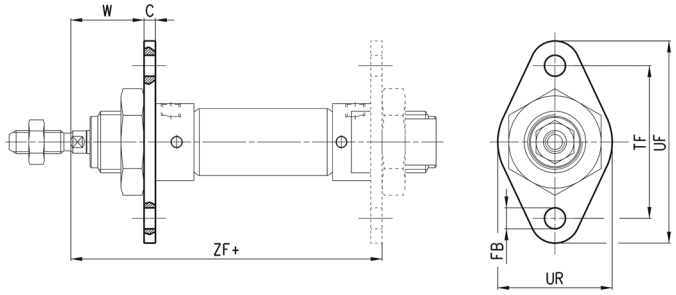


DIMENSIONS												
Mod.	Ø	ØAB	XS	XA+	SA+	AO	AU	C	RX	TR	US	NH
B-8-10	8-10	4,5	24	72,5	67	4,5	10,5	2,5	10	25	35	16
B-12-16	12	5,5	32	82,5	76	6	13	3	13	32	42	20
B-12-16	16	5,5	32	91	82	6	13	3	13	32	42	20
B-20-25	20	6,6	36	108	100	8	16	4	20	40	54	25
B-20-25	25	6,6	40	113,5	101,5	8	16	4	20	40	54	25

Front/rear flange mount Mod. E

Material: zinc-plated steel.

+ = add the stroke



DIMENSIONS								
Mod.	Ø	W	C	ZF+	FB	UF	TF	UR
E-8-10	8-10	13,5	2,5	64,5	4,5	40	30	25
E-12-16	12	19	3	75	5,5	53	40	30
E-12-16	16	19	3	81	5,5	53	40	30
E-20-25	20	20	4	96	6,6	66	50	40
E-20-25	25	24	4	101,5	6,6	66	50	40

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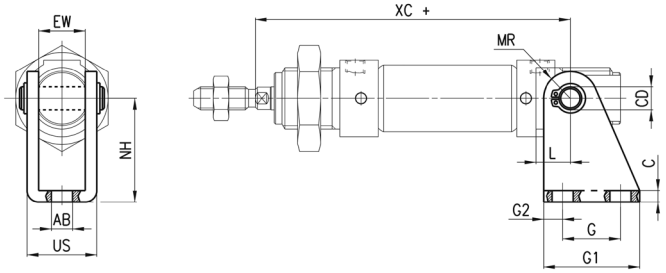
Rear trunnion bracket Mod. I

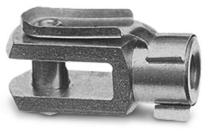
Supplied with:
1x zinc-plated steel rear trunnion
1x stainless steel clevis pin
2x steel Seeger



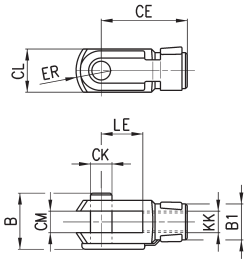
+ = add the stroke

DIMENSIONS													
Mod.	Ø	EW	ØAB	US	NH	XC+	MR	L	G2	G	G1	CD	C
I-8-10	8-10	8	4,5	13,1	24	64	5	6	3,5	12,5	20	4	2,5
I-12-16	12	12	5,5	18,1	27	75	7	9	5	15	25	6	3
I-12-16	16	12	5,5	18,1	27	82	7	9	5	15	25	6	3
I-20-25	20	16	6,6	24,1	30	95	10	12	6	20	32	8	4
I-20-25	25	16	6,6	24,1	30	104	10	12	6	20	32	8	4

Rod fork end Mod. G



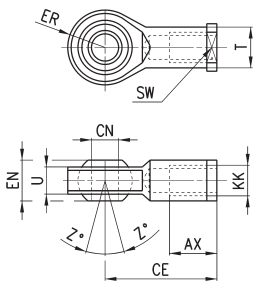
ISO 8140
Material: zinc-plated steel.



DIMENSIONS										
Mod.	Ø	CL	ER	CE	B	CM	ØCK	LE	KK	ØB1
G-8-10	8-10	8	5	16	11	4	4	8	M4x0,7	8
G-12-16	12-16	12	7	24	16	6	6	12	M6x1	10
G-20	20	16	10	32	22	8	8	16	M8x1,25	14
G-25-32	25	20	12	40	26	10	10	20	M10x1,25	18

Swivel ball joint Mod. GA

ISO 8139
Material: zinc-plated steel.



DIMENSIONS											
Mod.	Ø	$_{\varnothing}$CN$^{(H7)}$	U	EN	ER	AX	CE	KK	ØT	Z	SW
GA-8-10	8-10	5	6	8	9	10	27	M4x0.7	9	6.5°	9
GA-12-16	12-16	6	7	9	10	12	30	M6X1	10	6.5°	11
GA-20	20	8	9	12	12	16	36	M8X1.25	12.5	6.5°	14
GA-32	25	10	10.5	14	14	20	43	M10X1.25	15	6.5°	17

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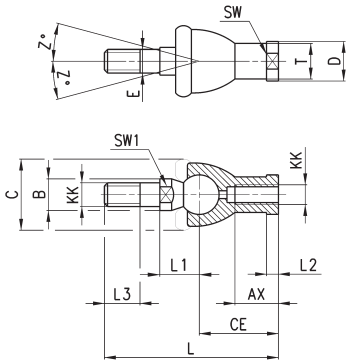
Piston rod socket joint Mod. GY

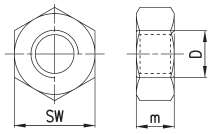
ISO 8139
Material: zama and zinc-plated steel.



DIMENSIONS																
Mod.	Ø	Z	E	SW	øT	øD	øC	øB	KK	L3	SW1	L1	L	CE	AX	L2
GY-12-16	12-16	15	6	11	10	13	20	10	M6X1	11	8	12,2	55	28	15	5
GY-20	20	15	8	14	12,5	16	24	12	M8X1,25	12	10	16	65	32	16	5
GY-32	25	15	10	17	15	19	28	14	M10X1,25	15	11	19,5	74	35	18	6,5

Piston rod lock nut Mod. U

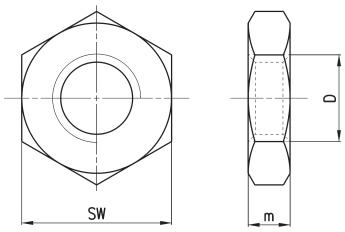
ISO 4035
Material: zinc-plated steel.



DIMENSIONS				
Mod.	Ø	SW	m	D
U-8-10	8-10	7	3	M4X0,7
U-12-16	12-16	10	4	M6X1
U-20	20	13	5	M8X1,25
U-25-32	25	17	6	M10X1,25

Nose nut Mod.V

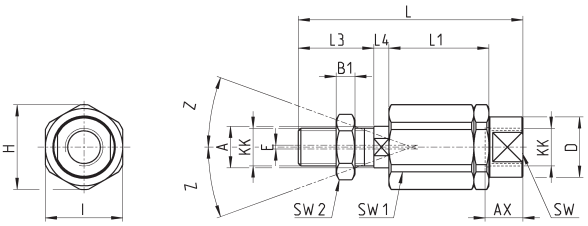
ISO 4035
V-8-10 / V-20-25 not according standard.
Material: zinc-plated steel



DIMENSIONS				
Mod.	Ø	D	m	SW
V-8-10	8-10	M12X1,25	7	19
V-12-16	12-16	M16X1,5	8	24
V-20-25	20-25	M22X1,5	10	32

Self aligning rod Mod. GK

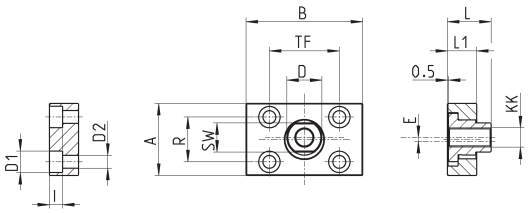
Material: zinc-plated steel.



DIMENSIONS																	
Mod.	Ø	H	I	Z	ØA	KK	E	L	L3	L4	L1	B1	SW2	SW1	AX	SW	ØD
GK-12-16	12-16	14.5	13	3	6	M6x1	1	35	11	2.5	17.5	4	10	5	12.5	7	8.5
GK-20	20	19	17	4	8	M8x1,25	2	57	21	5	26	4	13	7	16	11	12.5
GK-25-32	25-32	32	30	4	14	M10x1,25	2	71.5	20	7.5	35	5	17	12	22	19	22

Coupling piece Mod. GKF

Material: zinc-plated steel.



DIMENSIONS													
Mod.	Ø	Ø D1	I	Ø D2	A	R	SW	B	TF	Ø D	E	L	L1	KK
GKF-20	20	5,5	-	-	30	20	13	35	25	14	1,5	22,5	10	M8x1,25
GKF-25-32	25	11	6,8	6,6	37	23	15	60	36	18	2	22,5	15	M10x1,25

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