AROS Hydraulik GmbH

Product catalogue – ZD4 series
Double-acting hydraulic cylinders

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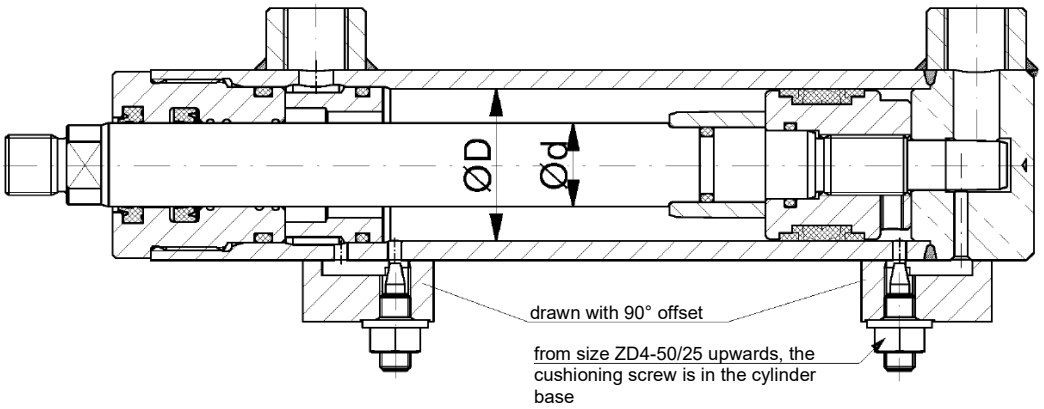
1 General technical data

Robust and universally usable welded-bolted construction for simpler applications.
Easy dismantling and replaceability of all wear parts is ensured. Please note our boundary and use conditions.



Piston rod:	ground, polished and hard-chrome plated
End cushioning:	adjustable on both sides with a non-return valve
Operating temperature:	-20°C to +80°C (other temperatures available on request)
Operating fluid:	mineral-based hydraulic oil (other operating fluids possible on request)
Connections:	for pipe fittings according to DIN 2353 / ISO 8434-1
max. operating pressure:	160 bar on the piston side, 315 bar on the rod side
max. piston speed:	0.5 m/s (higher speeds available on request)
Compact seal:	achieves retaining function
Seals:	available with Viton or a Glyd-Ring® piston seal on request
Tolerance:	For stroke tolerance, see 1.6 Angular tolerances of the mounting holes according to EN ISO 13920-BE

1.1 Boundary and use conditions

- The mechanical alignment of the movement axis and, consequently, the mounting points of the AROS cylinder and piston rod must be ensured. Lateral forces on the piston rod and piston guides must be avoided. Where applicable, the self-weight of the AROS cylinder or piston rod must be taken into account.
- The buckling length/buckling load of the piston rod or the AROS cylinder must be noted. The maximum buckling load is calculated on request.
- Note the maximum allowable stroke speeds with regard to the suitability of the seals and their compatibility with the operating fluid used.
- The maximum allowable speeds when moving to the end positions, taking external loads into account, must be observed. If the end positions are approached at a speed > 0.1 m/s (guide value), a cylinder with end cushioning should be provided.

Danger

Overpressurisation

The maximum allowable operating pressure must be observed in all operating states of the AROS cylinder. Potential pressure intensification resulting from the ratio of the annular area to the piston area and any potential restriction points must be avoided.

- Harmful environmental factors, such as aggressive ultrafine particles, vapours, high temperatures, etc., as well as dirt and damage to the hydraulic fluid, must be avoided.

If you are unsure about media (fluid) compatibility or if the boundary and use conditions are exceeded, please contact us.

1.2 Service life

The AROS ZD4 series cylinders are robust, welded cylinders. Reliability is highly dependent on the application. Because it is welded, its service life is significantly shorter than that of a bolted version. Please contact our engineering department regarding the operating limits for > 300,000 cycles.

1.3 Acceptance

Every cylinder is tested in accordance with the AROS standard and ISO 10100:2001.

1.4 Safety instructions

For the assembly, commissioning and maintenance of AROS cylinders, refer to the “General Operating and Assembly Instructions for Hydraulic Cylinders”!
Servicing and repair work must be carried out by AROS Hydraulik GmbH or by personnel specially trained for this purpose. No warranty is provided for damage resulting from assembly, maintenance or repair.

1.5 Checklists

Cylinders whose characteristics and operating data differ from the values stated in the data sheet can only be supplied on request as customised cylinders. For quotations, any deviations from the characteristics and operating data set out in the AROS cylinder specifications must be described.

1.6 Stroke tolerances

Nominal stroke	Tolerance
≤ 1,250	+2 0
> 1,250 ≤ 3,150	+5 0
> 3,150 ≤ 8,000	+8 0

Dimensions in millimetres

2 Type code

ZD4 B – 50/35 – 400 – G – E + SA1 -25

Double-acting hydraulic cylinder
Series 4

Design:
X – Basic version without mounting
B – Swivel eye on the cylinder base
G – Spherical rod eye on the cylinder base (standard spherical plain bearing)
K – Spherical rod eye on the cylinder base (wide spherical plain bearing)
H – Clevis on the cylinder base
C – Flange on the cylinder head, front centring
E – Trunnion on the cylinder head

Piston Ø in mm (D)

Piston rod Ø in mm (d)

Cylinder stroke in mm
Further details regarding allowable stroke lengths (buckling lengths) can be found in publication 0-Z-01

Connections
G – Whitworth pipe thread
M – Metric thread

Bleeding
(omitted if not required)

Mounting eye:
Screwed onto the piston rod (omitted if not required)

Smaller and larger connections are also possible as custom versions; these must then be specified in the type designation as shown in the following example:

ZD4G – 50/35 – 400 - G ½

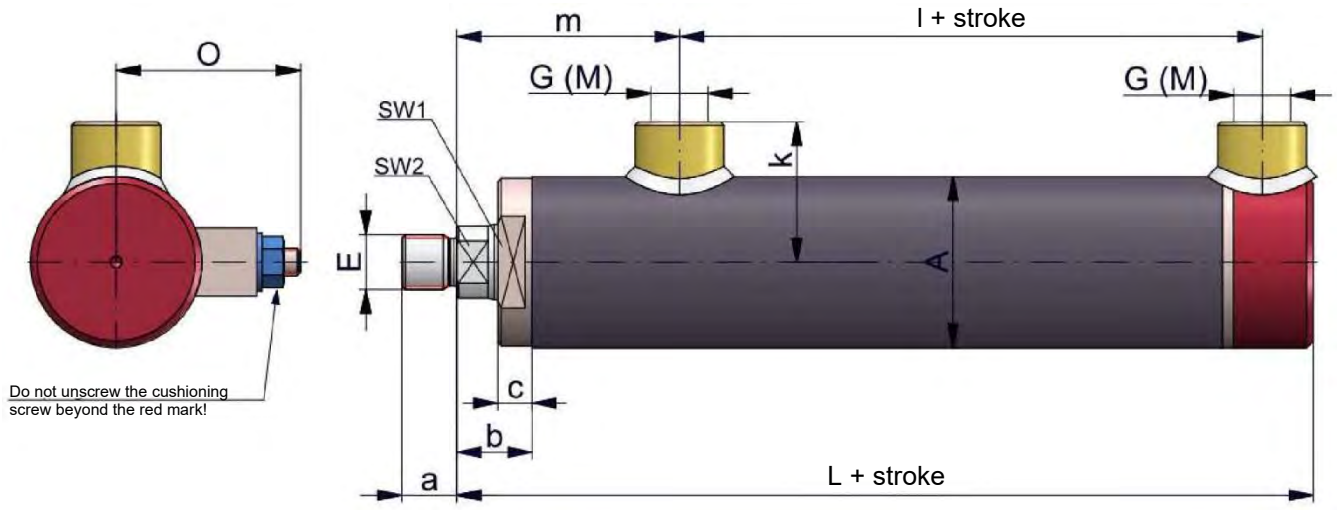
The max. possible connection thread is shown in the dimension table for design X.

3 Designs

3.1 Design X

Basic version without mounting

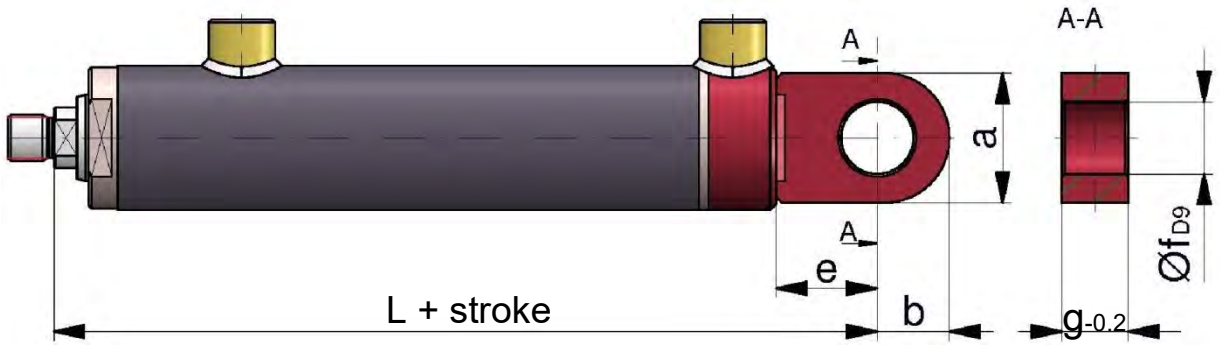
If the connections differ (G, M), the dimension ‘k’ changes; for larger connections, the dimension ‘m’ may increase slightly for designs C and E (dimension ‘l’ decreases accordingly). Cylinder sizes ZD4-32/22 and ZD4-40/22 have a cushioning eye welded to the base; for all other cylinder sizes, the cushioning screw is located in the cylinder base!



Type ZD4X												
Piston	32	40		50		63		80		100	
Rod	22	22	30	25	35	32	45	40	55	55	70
A	42	50		60		75		95		120	
E	M16 x 1.5	M16 x 1.5		M22 x 1.5		M28 x 1.5		M35 x 1.5		M45 x 1.5	
L	135	150		170		194		228		280	
AF1	36	41		50		65		85		100	
AF2	17	17		19	27	27	32	32	46	46	60
a	16	16		22		28		35		45	
b	20	22		26		26		35		37	
c	10	10		10		10		10		10	
k	37	41		46		56		66		78	
l	67	70		83		98		111		140	
m	55	65		72		80		98		115	
O	55	59		64		82		92		110	
V	15	25		25		28		30		35	
G	G ¼	G ⅜		G ⅜		G ½		G ½		G ½	
M	M14 x 1.5	M18 x 1.5		M18 x 1.5		M22 x 1.5		M22 x 1.5		M22 x 1.5	
G max. M max.	G ⅜ M18 x 1.5	G ½ M22 x 1.5		G ½ M22 x 1.5		G ¾ M27 x 2		G ¾ M27 x 2		G 1 M33 x 2	

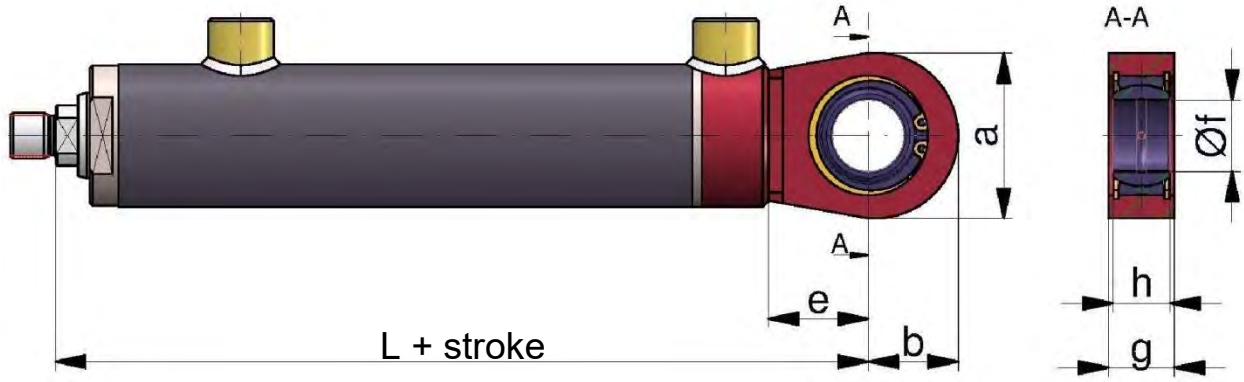
V = cushioning length

3.2 Design B



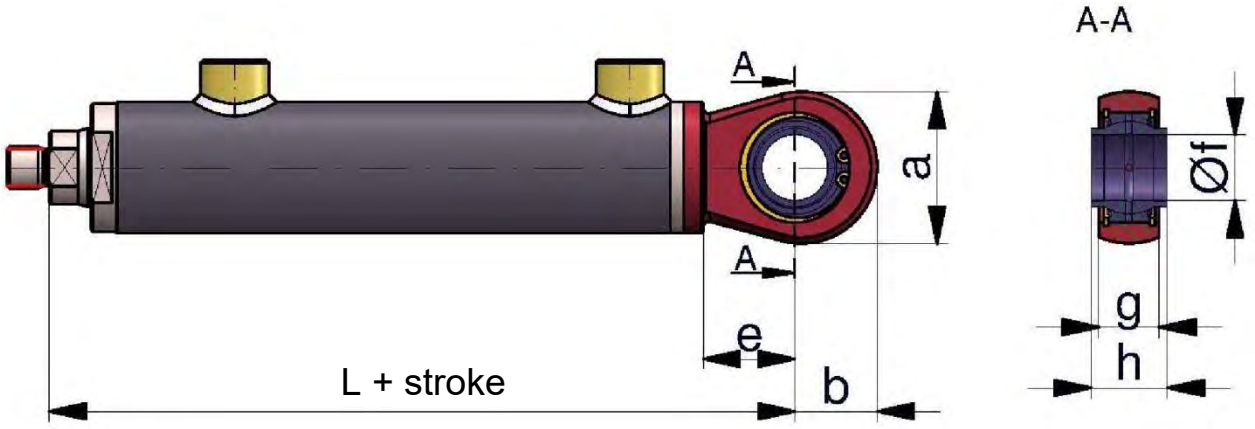
Type ZD4B												
Piston	32	40		50		63		80		100		
Rod	22	22	30	25	35	32	45	40	55	55	70	
L	165	185		210		244		288		350		
a	35	45		55		65		75		95		
b	20	25		30		35		40		50		
e	30	35		40		50		60		70		
f	20	25		30		35		40		50		
g	19	23		28		30		35		40		

3.3 Design G



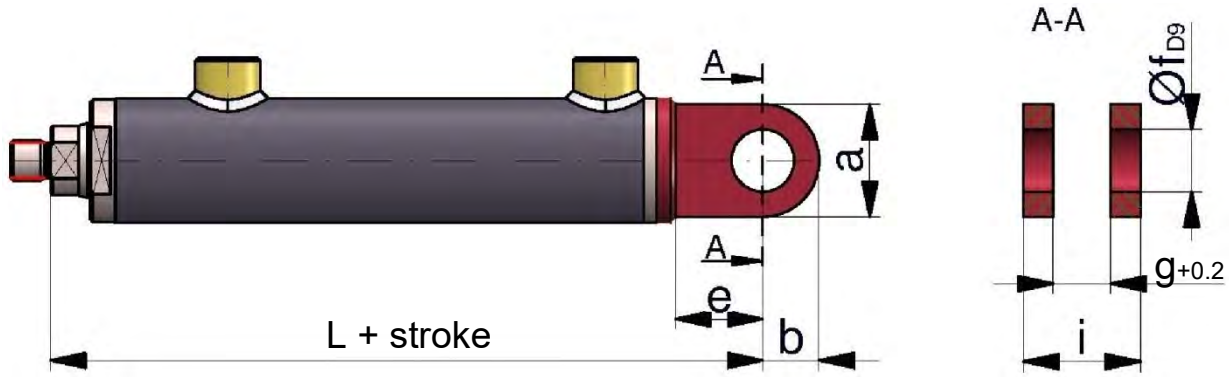
Type ZD4G												
Piston	32	40		50		63		80		100		
Rod	22	22	30	25	35	32	45	40	55	55	70	
L	165	185		210		244		288		350		
a	50	58		65		80		94		116		
b	27	32		33		44		50		63		
e	30	35		40		50		60		70		
f	20	25		30		35		40		50		
g	19	23		28		30		35		40		
h	16	20		22		25		28		35		

3.4 Design K



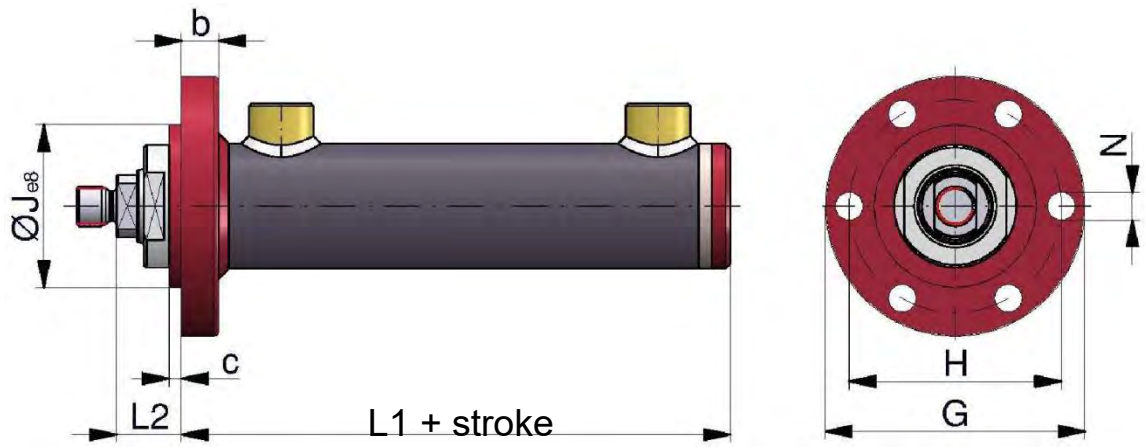
Type ZD4K												
Piston	32	40		50		63		80		100		
Rod	22	22	30	25	35	32	45	40	55	55	70	
L	-	185		210		244		288		350		
a	-	58		65		80		94		116		
b	-	32		33		44		50		63		
e	-	35		40		50		60		70		
f	-	25		30		35		40		50		
g	-	23		28		30		35		40		
h	-	29		30		35		38		43		

3.5 Design H



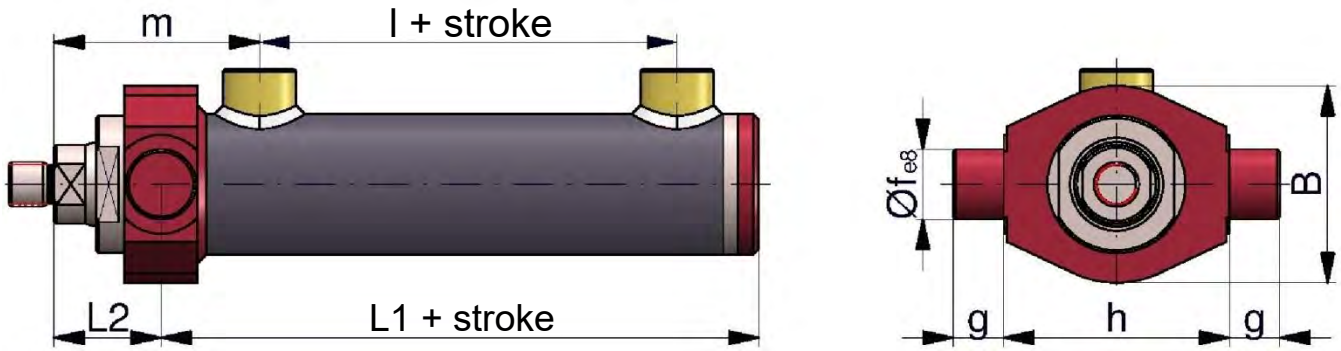
Type ZD4H												
Piston	32	40		50		63		80		100		
Rod	22	22	30	25	35	32	45	40	55	55	70	
L	165	185		210		244		288		350		
a	35	45		55		65		75		95		
b	20	25		30		35		40		51		
e	30	35		40		50		60		70		
f	20	25		30		35		40		50		
g	19	23		28		30		35		40		
i	39	47		56		62		71		80		

3.6 Design C



Type ZD4C												
Piston	32	40		50		63		80		100		
Rod	22	22	30	25	35	32	45	40	55	55	70	
G	94	104		118		138		178		205		
H	75	85		95		115		145		170		
J	60	65		75		90		115		140		
L1	110	123		139		163		188		238		
L2	25	27		31		31		40		42		
N	9	11		11		13		17		17		
b	12	15		18		22		25		35		
c	5	5		5		5		5		5		

3.7 Design E

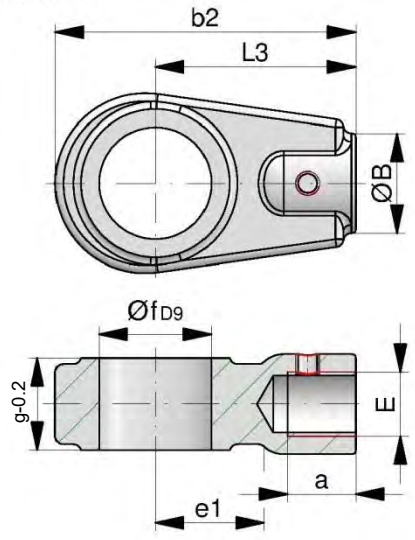


Type ZD4E												
Piston	32	40		50		63		80		100		
Rod	22	22	30	25	35	32	45	40	55	55	70	
B	60	70		80		100		125		150		
L1	105	115		129		150.5		173		218		
L2	30	35		41		43.5		55		62		
f	20	25		30		35		40		50		
g	15	18		20		20		25		30		
h	70	80		90		115		140		170		
l	50	65		55		60		108		62		
m	63	70		79		87		101		106		

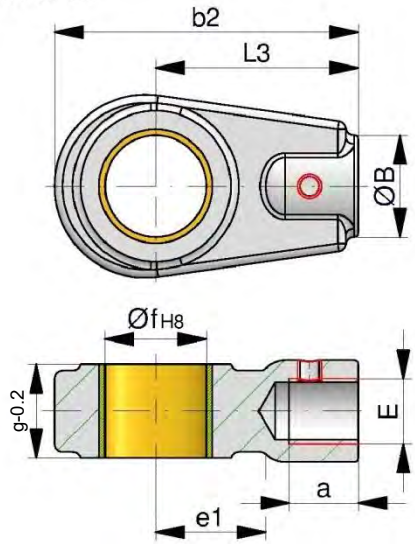
4 Mounting eyes

Type					Cyl. Ø D	Dimensions (mm)												
						B	E	L3	a	b1	b2	e1	e2	f	g	h1	h2	i	k
SA1-20	-	GK1-20	GA2-20	GA2-20 B	32	25	M16 x 1.5	50	17	80	70	25	25	20	19	16	24	39	M8
SA1-25	SA2-25	GK1-25	GA2-25	GA2-25 B	40	25	M16 x 1.5	50	17	80	75	28	30	25	23	20	29	47	M8
SA1-30	SA2-30	GK1-30	GA2-30	GA2-30 B	50	34	M22 x 1.5	60	23	94	90	30	35	30	28	22	30	56	M8
SA1-35	SA2-35	GK1-35	GA2-35	GA2-35 B	63	44	M28 x 1.5	70	29	112	106	38	40	35	30	25	35	62	M10
SA1-40	SA2-40	GK1-40	GA2-40	GA2-40 B	80	55	M35 x 1.5	85	36	135	126	45	47	40	35	28	38	71	M10
SA1-50	SA2-50	GK1-50	GA2-50	GA2-50 B	100	61	M45 x 1.5	105	46	168	168	55	60	50	40	35	43	80	M12

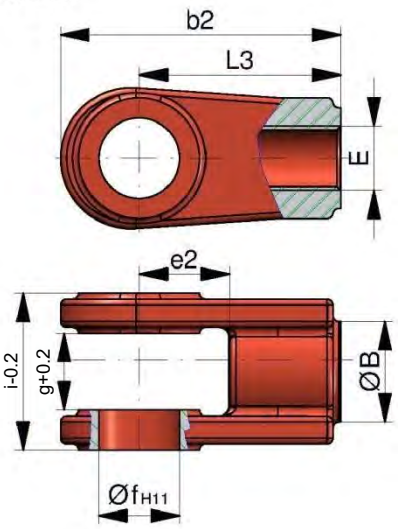
SA1-...



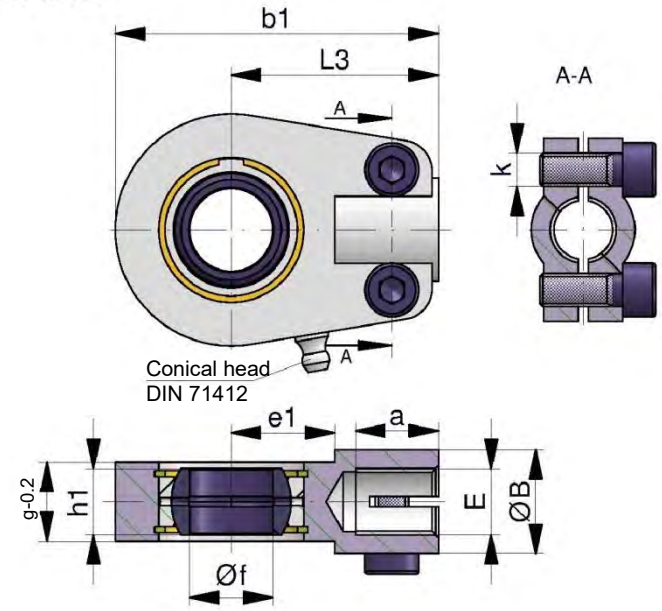
SA2-...



GK1-...



GA2-...



GA2-... B