









Product catalogue – standard cylinders



Single-acting cylinders:

ZE0		<ul style="list-style-type: none"> ✓ Single-acting cylinder ✓ Bolted-welded construction ✓ Nominal pressure: up to 160 bar
ZE1		<ul style="list-style-type: none"> ✓ Single-acting cylinder ✓ Bolted-welded construction ✓ Nominal pressure: up to 280 bar

Double-acting cylinders:

ZD0		<ul style="list-style-type: none"> ✓ Double-acting cylinder ✓ Bolted-welded construction ✓ Nominal pressure: up to 210 bar
ZD1		<ul style="list-style-type: none"> ✓ Double-acting cylinder ✓ Bolted-welded construction ✓ Nominal pressure: up to 280 bar
ZD4		<ul style="list-style-type: none"> ✓ Double-acting cylinder ✓ Bolted-welded construction ✓ Nominal pressure: up to 160 bar on the piston side up to 315 bar on the rod side ✓ End cushioning: adjustable on both sides
ZD5		<ul style="list-style-type: none"> ✓ Double-acting cylinder ✓ Bolted-welded construction ✓ Nominal pressure: up to 280 bar
GZD5		<ul style="list-style-type: none"> ✓ Double-acting cylinder ✓ Bolted-welded construction ✓ Nominal pressure: up to 280 bar
ZDV7		<ul style="list-style-type: none"> ✓ Double-acting cylinder ✓ Bolted assembly ✓ Nominal pressure: up to 250 bar ✓ According to ISO 6022

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AROS Hydraulik GmbH

Product catalogue – ZE0 series Single-acting hydraulic cylinders

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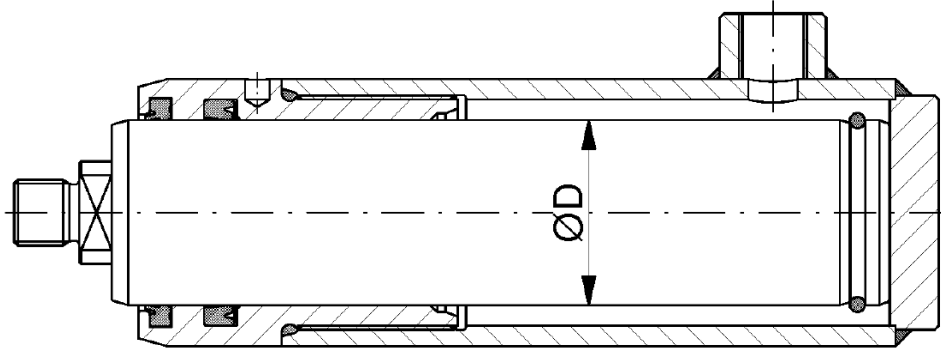
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1 General technical data

ZE0 series hydraulic cylinders are single-acting cylinders that produce force in the extension direction only. The piston is returned to its original position either by its self-weight or by an external force. Plunger cylinders in this series are fitted with an internal stop that prevents the plunger (piston) from leaving the cylinder. 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:	not possible
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
Nominal pressure:	160 bar
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.



Overpressurisation

Danger



ZEO series Single-acting hydraulic cylinders

Product catalogue:
0-ZEO
July 2016

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 ZEO 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



ZEO series

Single-acting hydraulic cylinders

Product catalogue:
0-ZEO
July 2016

2 Type code

ZEO B - 50 - 250 - G - E + SA1-25

Single-acting hydraulic cylinders
Series 0

Design:

- X – Basic version without mounting
- A – Bore in the piston rod and cylinder base
- B – Thread on the piston, bore in the cylinder base
- G – Spherical plain bearings on the piston and cylinder base
- H – Thread on the piston, clevis on the cylinder base
- C – Thread on the piston, flange on the cylinder head
- D – Thread on the piston, flange on the cylinder base

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; these must then be specified in the type designation as shown in the following example:

ZE0G – 50 – 400 - G ½ - E

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

Longer installation lengths:

The installation lengths L can be increased by using an extended piston. The installation lengths corresponding to the design must then also be stated in the type designation.

ZE0G – 50 – 400 - 368 - G ½ - E

Stro

30mm longer installation dimension

3 Designs

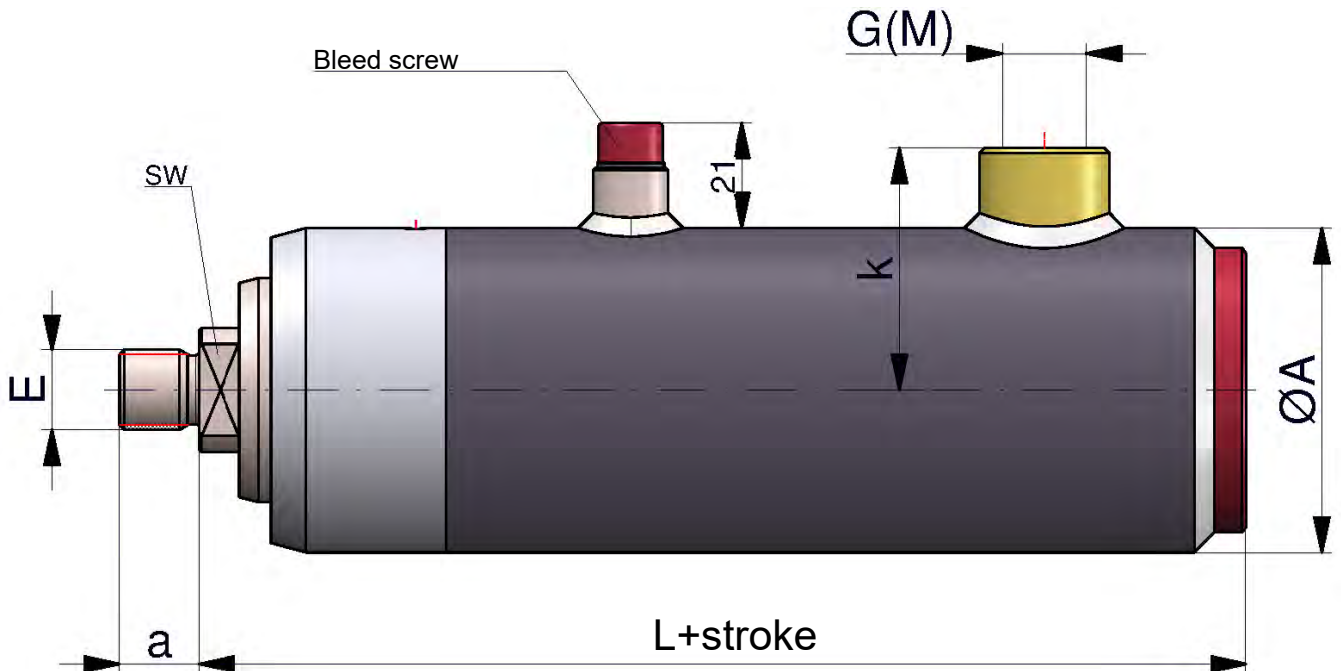
3.1 Design X

Basic version without mounting

If the connections differ (G, M), the dimension 'k' changes.

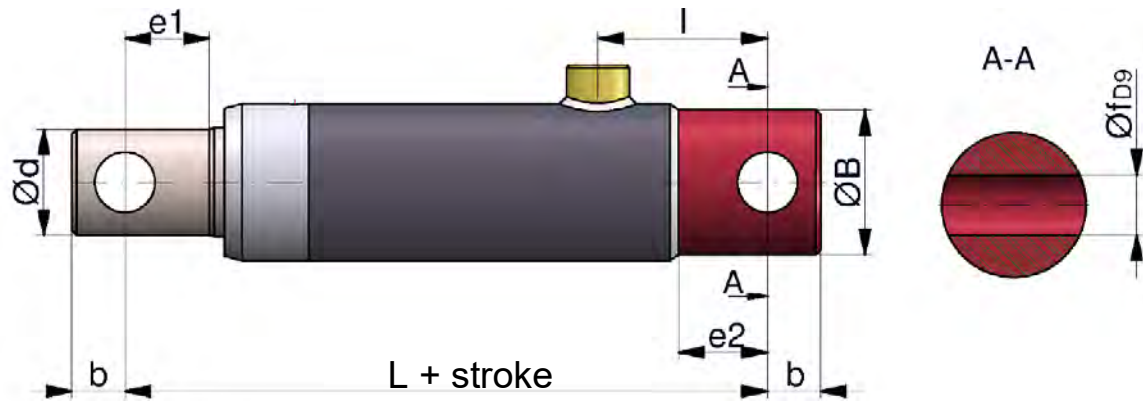
The bleed screw is on the same side as the barrel connection. For very short strokes, position accordingly relative to the barrel connection.

The max. tightening torque for the bleed screw is 30 Nm.



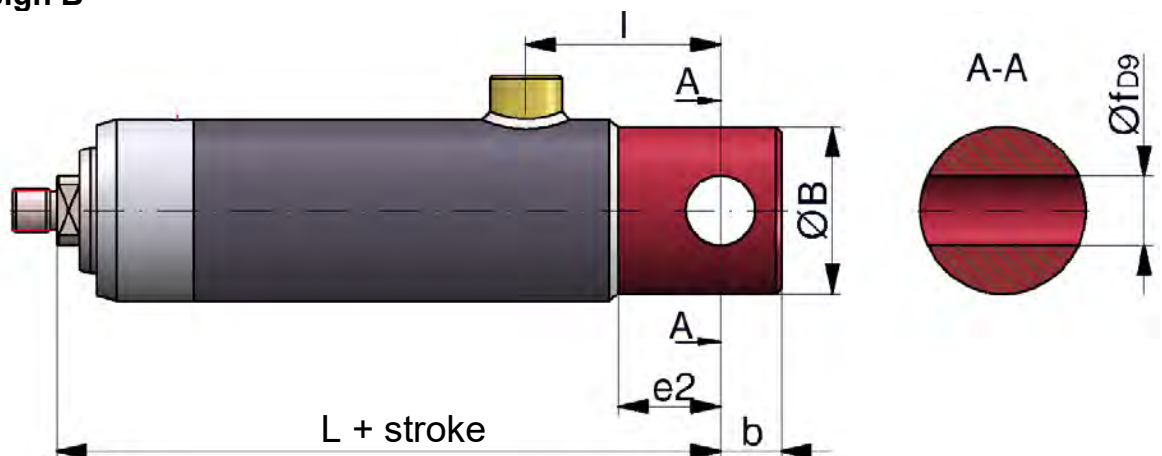
Type ZE0X											
Rod	22	25	28	30	32	35	40	45	50	55	60
min. stroke	40	40	40	40	40	40	50	50	50	50	50
A	38	42	45	46	48	52	58	65	70	75	85
E	M14x1.5	M14x1.5	M14x1.5	M16x1.5	M16x1.5	M16x1.5	M16x1.5	M16x1.5	M22x1.5	M22x1.5	M28x1.5
L	70	73	78	81	85	89	100	110	120	124	138
AF	17	17	17	17	17	17	17	17	27	27	32
a	14	14	14	16	16	16	16	16	22	22	28
k	34	37	38.5	39	40	42	47	50	53	56	60
G	G ¼	G ¼	G ¼	G ⅜	G ⅜	G ⅜	G ½	G ½	G ½	G ½	G ½
M	M14x1.5	M14x1.5	M14x1.5	M18x1.5	M18x1.5	M18x1.5	M22x1.5	M22x1.5	M22x1.5	M22x1.5	M22x1.5
G max.	G ⅜	G ⅜	G ½	G ½	G ½	G ½	G ¾	G ¾	G ¾	G1	G1
M max.	M18x1.5	M18x1.5	M22x1.5	M22x1.5	M22x1.5	M22x1.5	M27x2	M27x2	M27x2	M33x2	M33x2

3.2 Design A



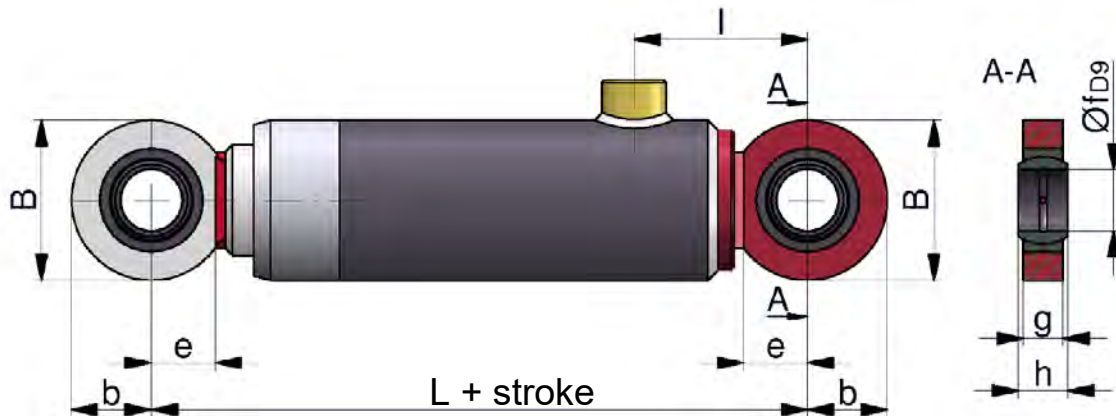
Type ZE0A											
Rod	22	25	28	30	32	35	40	45	50	55	60
min. stroke	40	40	40	40	40	40	50	50	50	50	50
L	110	113	118	131	134	138	159	167	185	190	220
B	32	35	40	40	42	45	50	60	65	70	75
l	55	55	55	60	60	60	72	72	77	77	87
b	13	13	13	18	18	18	22	22	25	25	30
d	21.5	24.5	27.5	29.5	31.5	34.5	39	44	49	53	59
e1	25	22	24	24	25	25	30	32	35	38	45
e2	20	20	20	25	25	25	30	30	32	32	40
f	15	15	15	20	20	20	25	25	30	30	35

3.3 Design B



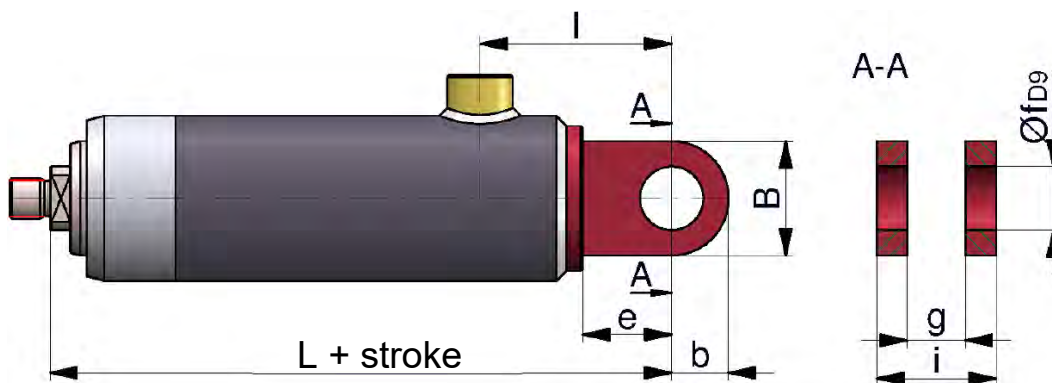
Type ZE0B											
Rod	22	25	28	30	32	35	40	45	50	55	60
min. stroke	40	40	40	40	40	40	50	50	50	50	50
L	90	93	98	106	110	114	130	140	155	159	180
B	32	35	40	40	42	45	50	60	65	70	75
l	55	55	55	60	60	60	72	72	77	77	87
b	13	13	13	18	18	18	22	22	25	25	30
e2	20	20	20	25	25	25	30	30	32	32	40
f	15	15	15	20	20	20	25	25	30	30	35

3.4 Design G



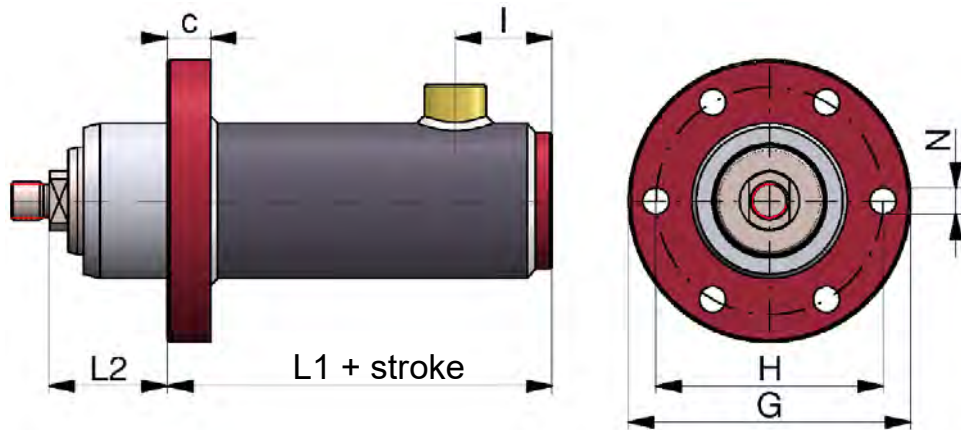
Type ZE0G											
Rod	22	25	28	30	32	35	40	45	50	55	60
min. stroke	40	40	40	40	40	40	50	50	50	50	50
L	110	113	118	131	134	138	159	167	185	190	220
B	42	42	42	55	55	55	65	65	75	75	90
l	55	55	55	60	60	60	72	72	77	77	87
b	21	21	21	27.5	27.5	27.5	32.5	32.5	37.5	37.5	45
e	15	15	15	20	20	20	25	25	28	28	35
f	15	15	15	20	20	20	25	25	30	30	35
g	9	9	9	12	12	12	16	16	18	18	20
h	12	12	12	16	16	16	20	20	22	22	25

3.5 Design H



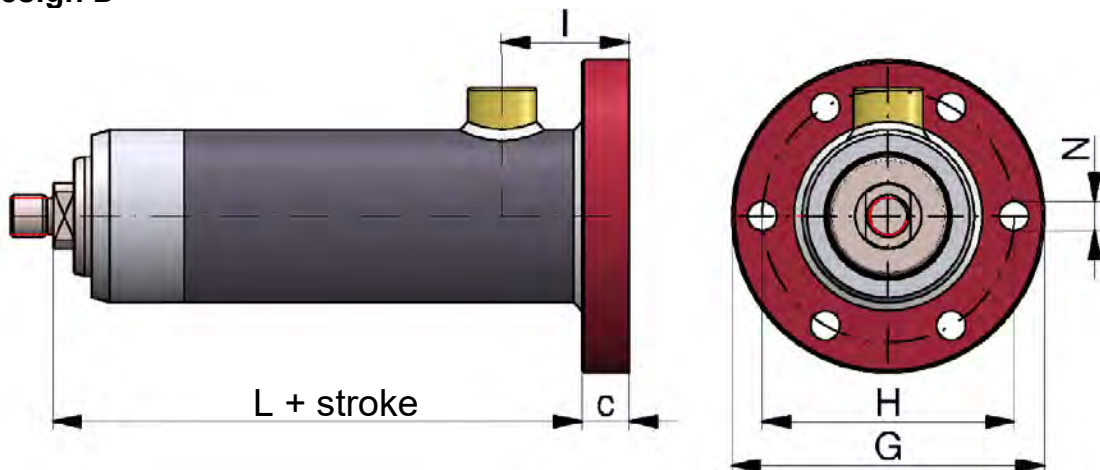
Type ZE0H											
Rod	22	25	28	30	32	35	40	45	50	55	60
min. stroke	40	40	40	40	40	40	50	50	50	50	50
L	95	98	103	111	115	119	135	145	160	164	188
B	30	30	30	35	35	35	45	45	55	55	65
l	60	60	60	65	65	65	77	77	82	82	95
b	15	15	15	20	20	20	25	25	30	30	35
e	20	20	20	25	25	25	30	30	32	32	40
f	15	15	15	20	20	20	25	25	30	30	35
g	15	15	15	19	19	19	23	23	28	28	30
i	31	31	35	39	39	39	47	47	56	56	62

3.6 Design C



Type ZE0C											
Rod	22	25	28	30	32	35	40	45	50	55	60
min. stroke	40	40	40	40	40	40	50	50	50	50	50
L1	30	33	38	41	41	46	54	62	65	70	78
L2	40	40	40	40	44	43	46	48	55	54	60
l	35	35	35	35	35	35	42	42	42	42	45
c	12	12	12	15	15	15	18	18	22	22	25
G	94	94	94	94	104	104	118	118	138	138	178
H	75	75	75	75	85	85	95	95	115	115	145
N	9	9	9	9	11	11	11	11	13	13	17

3.7 Design D

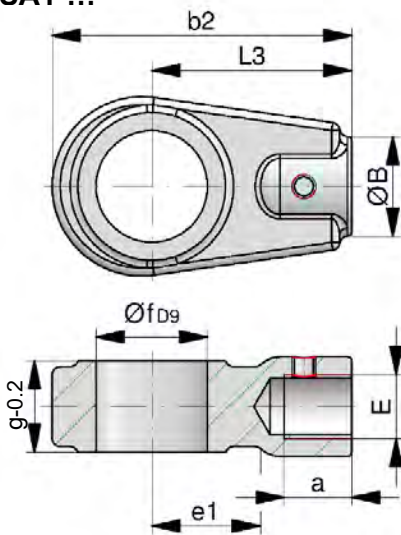


Type ZE0D											
Rod	22	25	28	30	32	35	40	45	50	55	60
min. stroke	40	40	40	40	40	40	50	50	50	50	50
L	72	75	80	86	90	94	106	116	130	134	148
l	37	37	37	40	40	40	48	48	52	52	55
c	12	12	12	15	15	15	18	18	22	22	25
G	94	94	94	94	104	104	118	118	138	138	178
H	75	75	75	75	85	85	95	95	115	115	145
N	9	9	9	9	11	11	11	11	13	13	17

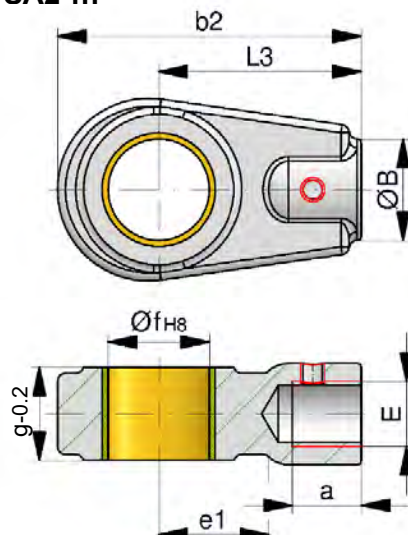
4 Mounting eyes

Type					Cyl. Ø D	Dimensions (mm)													
						B	E	L3	a	b1	b2	e1	e2	f	g	h1	h2	i	k
SA1-15	-	GK1-15	GA2-15	-	32	22	M14 x 1.5	47	15	69	64	20	20	15	15	12	-	31	M6
SA1-20	-	GK1-20	GA2-20	GA2-20 B	40	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	50	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	63	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	80	44	M28 x 1.5	70	29	112	106	38	40	35	30	25	35	62	M10

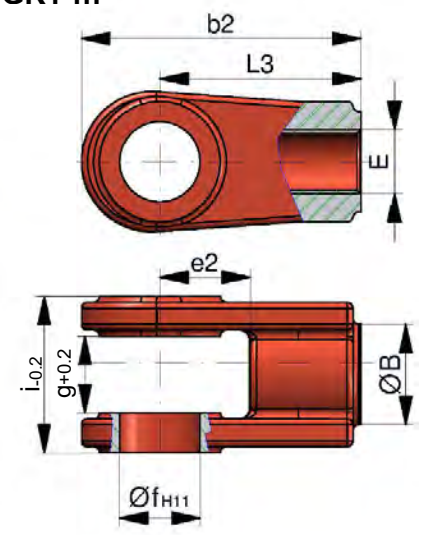
SA1-...



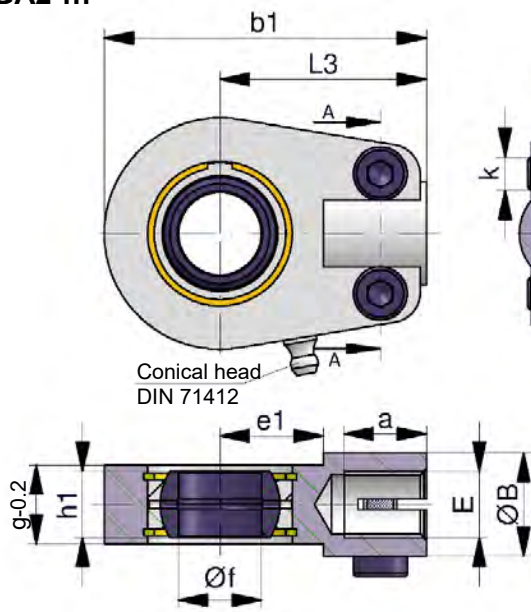
SA2-...



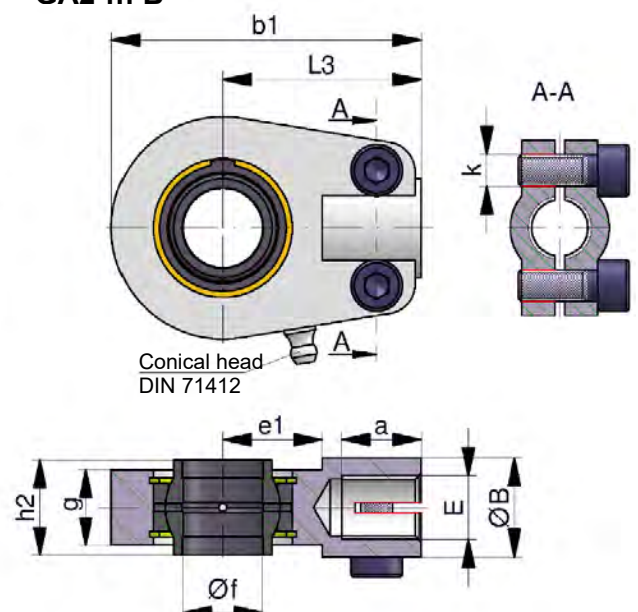
GK1-...



GA2-...



GA2-... B





ZE0 series Single-acting hydraulic cylinders

Product catalogue:
0-ZE0
July 2016

5 Weight table (kg)

Cylinder type	Designs (stroke = 0)							50 mm Stroke	Mounting eyes					Ø f mm
	X	A	B	G	H	C	D		SA1-	SA2-	GK1-	GA2-	GA2-B	
ZE0.- 22	0.55	0.76	0.68	0.61	0.62	1.05	1.07	0.32	0.12	--	0.16	0.22	--	15
ZE0.- 25	0.72	0.94	0.87	0.75	0.73	1.20	1.16	0.38						
ZE0.- 28	0.93	1.18	1.08	1.02	1.00	1.40	1.30	0.49						
ZE0.- 30	0.95	1.36	1.20	1.15	1.10	1.45	1.60	0.49	0.25	--	0.25	0.37	0.37	20
ZE0.- 32	0.98	1.60	1.45	1.25	1.25	1.70	1.80	0.53						
ZE0.- 35	1.32	1.92	1.70	1.50	1.60	2.00	2.00	0.61						
ZE0.- 40	1.76	2.85	2.50	2.20	2.25	2.85	3.00	0.82	0.30	0.45	0.35	0.43	0.43	25
ZE0.- 45	2.90	4.00	3.60	2.85	2.95	3.90	3.55	1.00						
ZE0.- 50	3.12	5.00	4.50	3.55	4.30	4.90	5.40	1.17	0.50	0.75	0.65	0.70	0.70	30
ZE0.- 55	3.61	5.70	5.00	4.30	5.00	5.30	6.70	1.36						
ZE0.- 60	6.49	8.25	7.35	6.20	6.60	8.35	9.60	1.68	0.90	1.15	1.00	1.11	1.13	35



AROS Hydraulik GmbH

Product catalogue – ZE1 series Single-acting hydraulic cylinders

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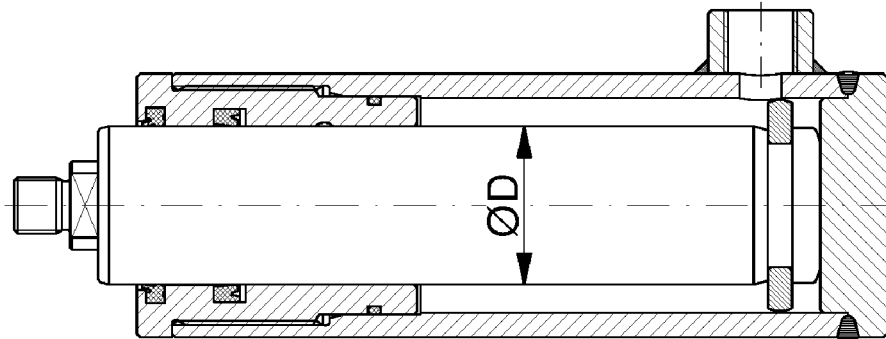
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1 General technical data

ZE1 series hydraulic cylinders are single-acting cylinders that produce force in the extension direction only. The piston is returned to its original position either by its self-weight or by an external force. ZE1 series plunger cylinders are fitted with an internal stop that prevents the plunger (piston) from leaving the cylinder. 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:	not possible
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
Nominal pressure:	280 bar
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 ZE1 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



ZE1 series

Single-acting hydraulic cylinders

Product catalogue:
1-ZE1
July 2016

2 Type code

ZE1 E – 60 – 350 – G – E + SA1-25

Single-acting hydraulic cylinders

Series 1

Design:

- X – Basic version without mounting
- A – Swivel eye on the cylinder base and bore on the piston rod
- B – Swivel eye on the cylinder base
- G – Spherical plain bearing on the cylinder base (standard spherical plain bearing)
- K – Spherical plain bearing on the cylinder base (wide spherical plain bearing)
- H – Clevis on the cylinder base
- C – Flange on the cylinder head
- D – Flange on the cylinder base
- E – Trunnion on the cylinder head

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; these must then be specified in the type designation as shown in the following example:

ZE1G – 50 – 400 - G ½ - E

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

Longer installation lengths:

The installation lengths L can be increased by using an extended piston. The installation lengths corresponding to the design must then also be stated in the type designation.

ZE1G – 50 – 400 - 368 - G ½ - E

Stroke

30mm longer installation dimension

3 Designs

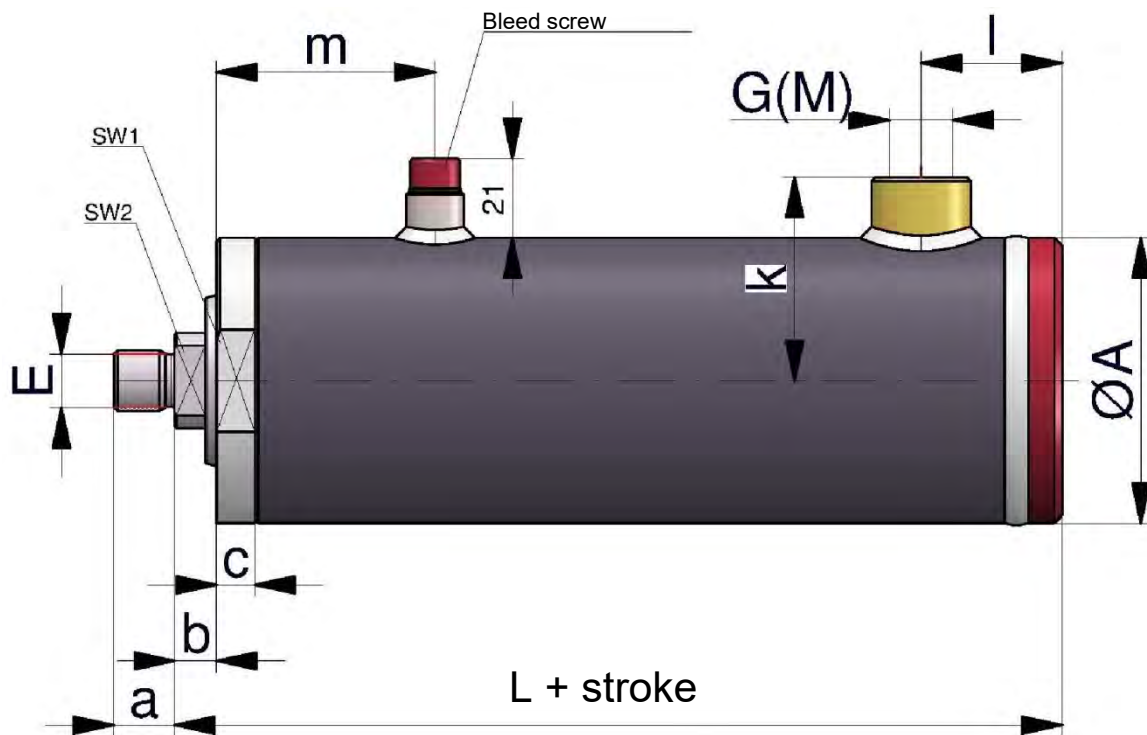
3.1 Design X

Basic version without mounting

If the connections differ (G, M), the dimension 'k' changes.

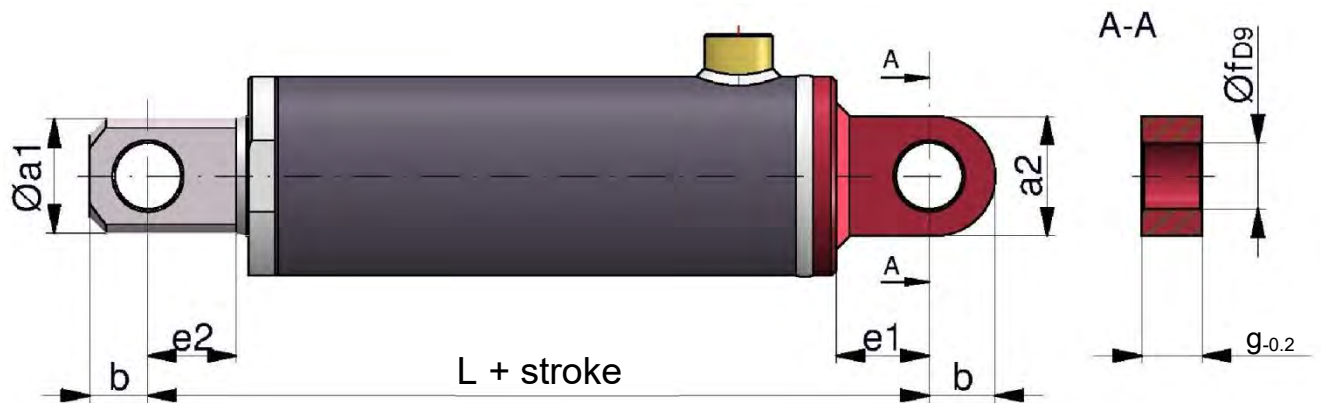
The bleed screw is on the same side as the barrel connection. For very short strokes, position accordingly relative to the barrel connection.

The max. tightening torque for the bleed screw is 30 Nm.



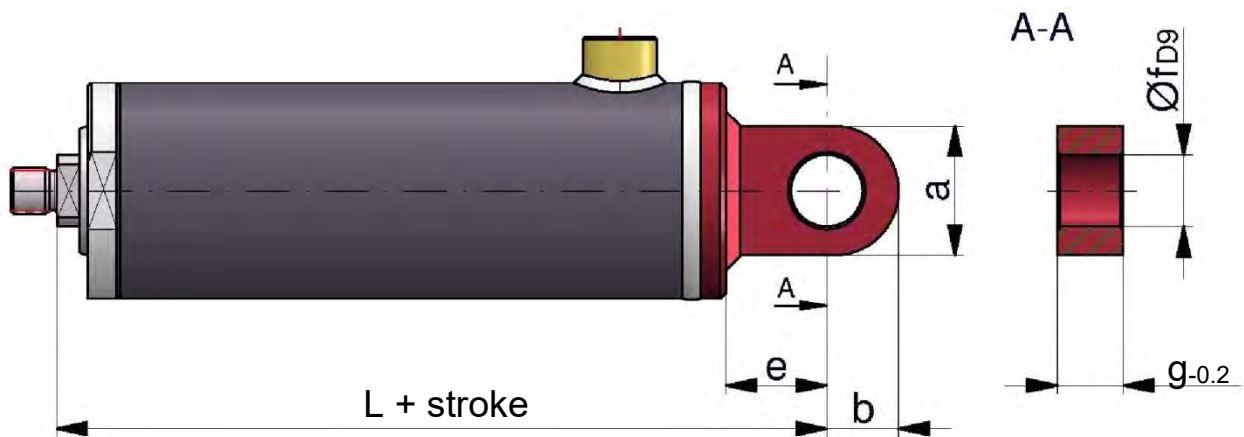
Type ZE1X													
Rod	22	25	30	35	40	45	50	55	60	70	80	90	100
A	40	45	50	60	70	75	80	90	95	105	120	130	153
E	M14x1.5		M16x1.5				M22x1.5		M28x1.5	M35x1.5		M45x1.5	
L	70	81	96	103	119	133	140	150	162	175	210	230	250
AF1	36	41	46	55	60	70	70	80	85	Holes / grooves on the circumference			
AF2	17	17	17	17	17	17	27	27	32	41	41	75	85
a	14	14	16	16	16	16	22	22	28	35	35	45	45
b	12	14	16	16	16	18	20	20	20	26	28	33	36
c	10	10	10	10	10	10	10	10	10	10	12	12	12
k	36	39	41	46	52	56	58	63	66	74	81	86	98
l	20	22	30	30	35	37	37	38	40	42	45	45	50
m	42	47	57	62	72	82	87	92	102	112	132	147	162
G	G ¼	G ¼	G ⅜	G ⅜	G ½	G ½	G ½	G ½	G ½	G ¾	G ¾	G ¾	G ¾
M	M14x1.5		M18x1.5		M22x1.5				M27x2				
G max.	G ½	G ½	G ½	G ½	G ¾	G ¾	G ¾	G ¾	G1	G1	G1	G1	G1 ¼
M max.	M22x1.5				M27x2				M33x2				M42x2

3.2 Design A



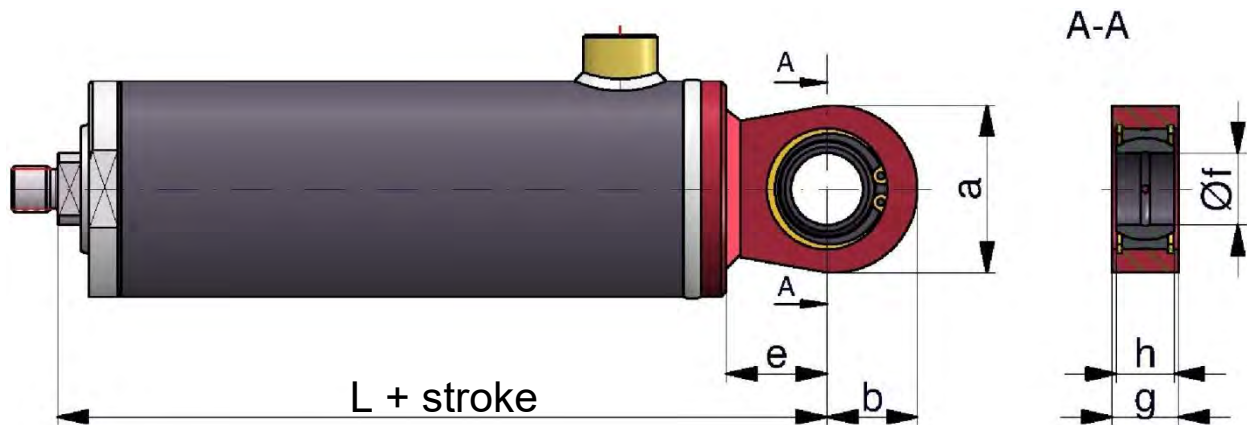
Type ZE1A													
Rod	22	25	30	35	40	45	50	55	60	70	80	90	100
L	107	115	140	147	173	188	205	215	242	277	310	344	362
a1	21	23	29	33	38	43	48	53	58	68	78	88	98
a2	30	30	40	40	50	45	60	60	65	75	75	95	95
b	15	15	20	20	25	25	30	30	35	40	40	50	50
e1	25	23	30	30	35	35	40	40	50	60	60	70	70
e2	20	20	25	25	30	32	40	40	45	62	62	70	70
f	15	15	20	20	25	25	30	30	35	40	40	50	50
g	15	15	19	19	23	23	28	28	30	35	35	40	40

3.3 Design B



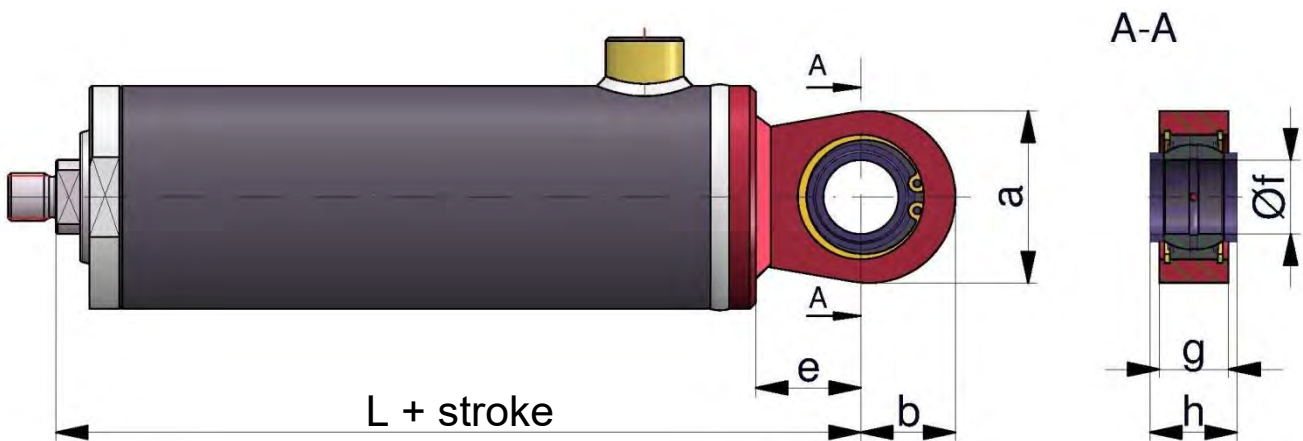
Type ZE1B													
Rod	22	25	30	35	40	45	50	55	60	70	80	90	100
L	95	104	126	133	154	168	180	190	212	235	270	300	320
a	30	30	40	40	50	45	60	60	65	75	75	95	95
b	15	15	20	20	25	25	30	30	35	40	40	50	50
e	25	23	30	30	35	35	40	40	50	60	60	70	70
f	15	15	20	20	25	25	30	30	35	40	40	50	50
g	15	15	19	19	23	23	28	28	30	35	35	40	40

3.4 Design G



Type ZE1G													
Rod	22	25	30	35	40	45	50	55	60	70	80	90	100
L	95	104	126	133	154	168	180	190	212	235	270	300	320
a	40	40	50	50	58	58	65	65	80	94	94	116	116
b	20	20	27	27	32	32	33	33	44	50	50	63	63
e	25	25	30	30	35	35	40	40	50	60	60	70	70
f	15	15	20	20	25	25	30	30	35	40	40	50	50
g	15	15	19	19	23	23	28	28	30	35	35	40	40
h	12	12	16	16	20	20	22	22	25	28	28	35	35

3.5 Design K



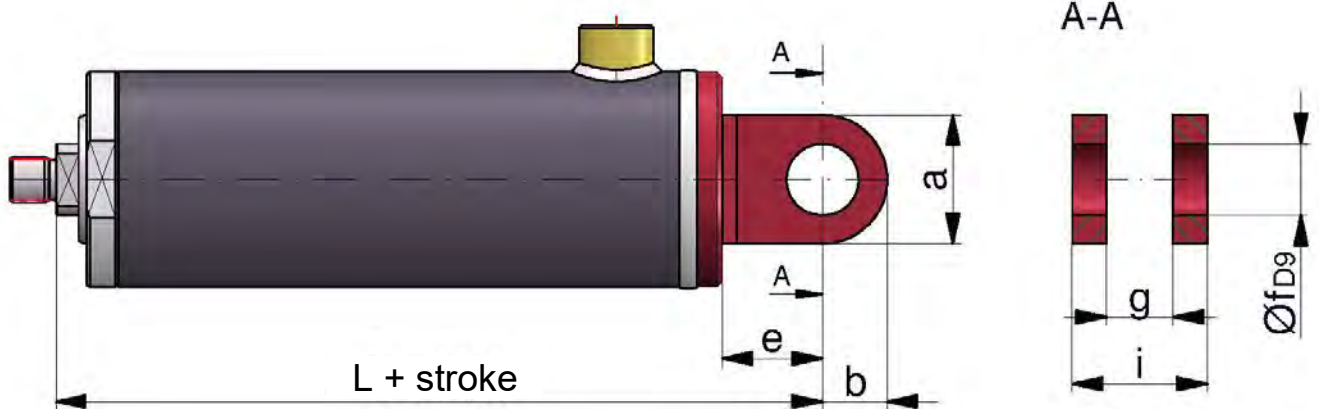
Type ZE1K													
Rod	22	25	30	35	40	45	50	55	60	70	80	90	100
L	-	-	126	133	154	168	180	190	212	235	270	300	320
a	-	-	50	50	58	58	65	65	80	94	94	116	116
b	-	-	27	27	32	32	33	33	44	50	50	63	63
e	-	-	30	30	35	35	40	40	50	60	60	70	70
f	-	-	20	20	25	25	30	30	35	40	40	50	50
g	-	-	19	19	23	23	28	28	30	35	35	40	40
h	-	-	24	24	29	29	30	30	35	38	38	43	43



ZE1 series Single-acting hydraulic cylinders

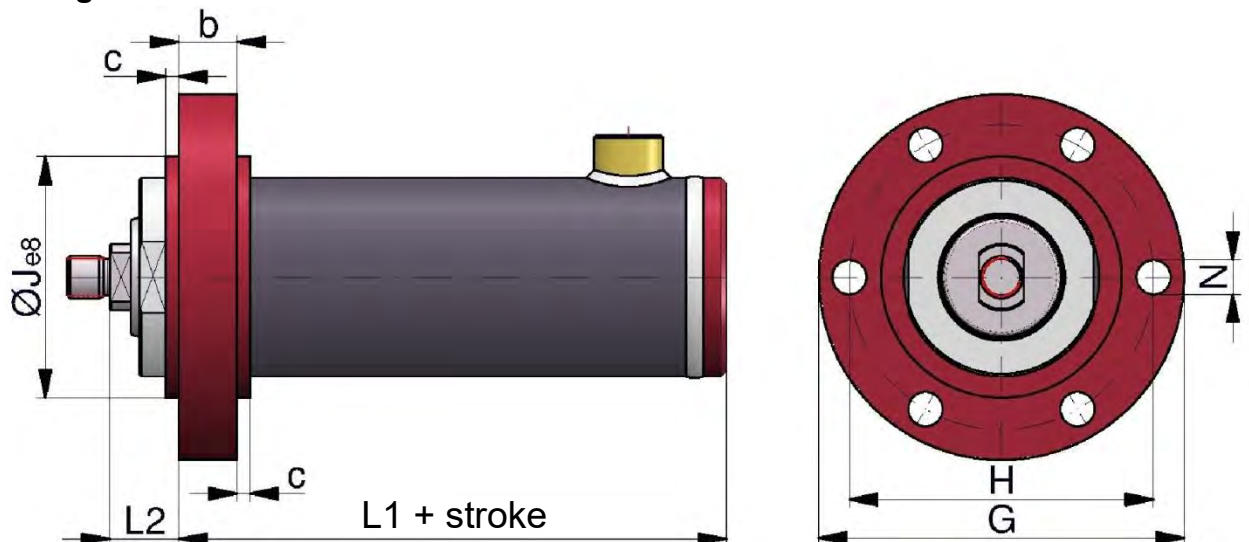
Product catalogue:
1-ZE1
July 2016

3.6 Design H



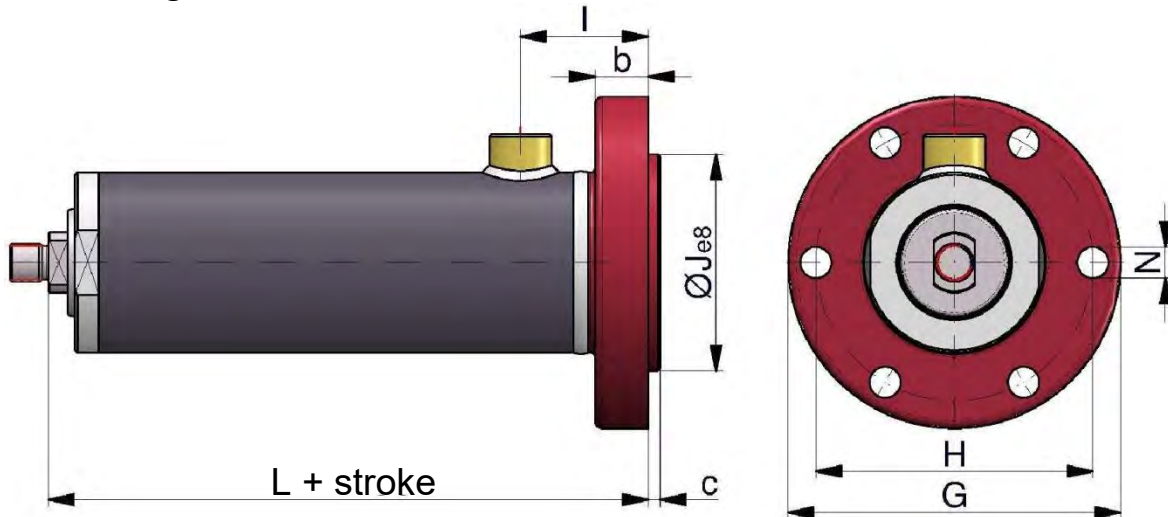
Type ZE1H													
Rod	22	25	30	35	40	45	50	55	60	70	80	90	100
L	95	106	126	133	154	168	180	190	212	235	270	300	320
a	30	30	35	35	45	45	55	55	65	75	75	95	95
b	18	18	25	25	25	25	30	30	35	40	40	51	51
e	25	25	30	30	35	35	40	40	50	60	60	70	70
f	15	15	20	20	25	25	30	30	35	40	40	50	50
g	15	15	19	19	23	23	28	28	30	35	35	40	40
i	31	31	39	39	47	47	56	56	62	71	71	80	80

3.7 Design C



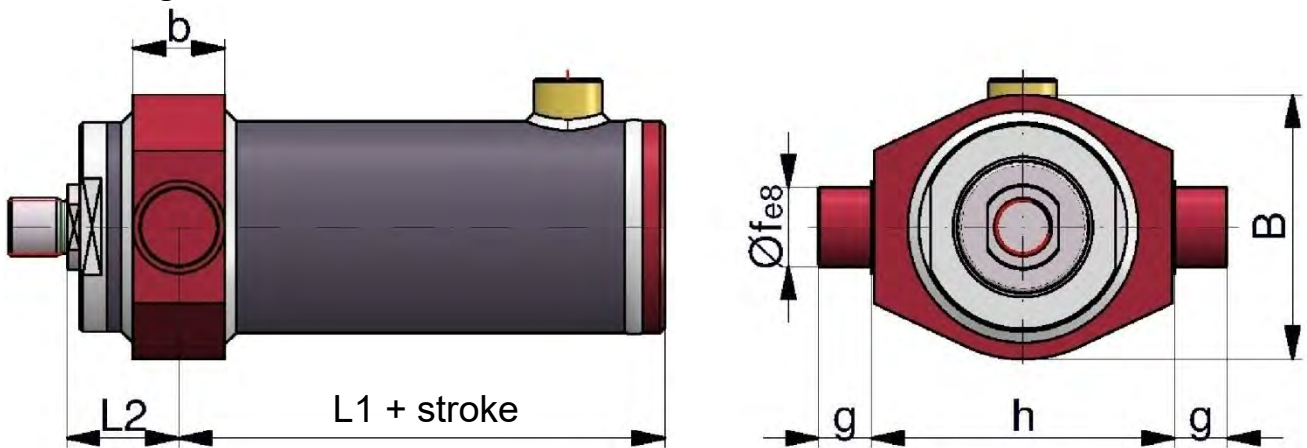
Type ZE1C													
Rod	22	25	30	35	40	45	50	55	60	70	80	90	100
L1	43	52	65	72	88	100	105	115	127	134	165	180	197
L2	27	29	31	31	31	33	35	35	35	41	45	50	53
G	94	94	104	118	138	138	138	178	178	188	205	215	245
H	75	75	85	95	115	115	115	145	145	155	170	180	205
J	60	60	65	75	90	90	90	115	115	120	140	150	165
N	9	9	11	11	13	13	13	17	17	17	17	17	21
b	12	12	15	18	22	22	22	25	25	35	35	35	40
c	5	5	5	5	5	5	5	5	5	5	5	5	5

3.8 Design D



Type ZE1D													
Rod	22	25	30	35	40	45	50	55	60	70	80	90	100
L	82	91	106	116	136	149	156	169	176	202	238	258	283
G	94	94	104	118	138	138	138	178	178	188	205	215	245
H	75	75	85	95	115	115	115	145	145	155	170	180	205
I	32	32	40	43	52	53	53	57	54	69	73	73	83
J	60	60	65	75	90	90	90	115	115	120	140	150	165
N	9	9	11	11	13	13	13	17	17	17	17	17	21
b	12	12	15	18	22	22	22	25	25	35	35	35	40
c	5	5	5	5	5	5	5	5	5	5	5	5	5

3.9 Design E

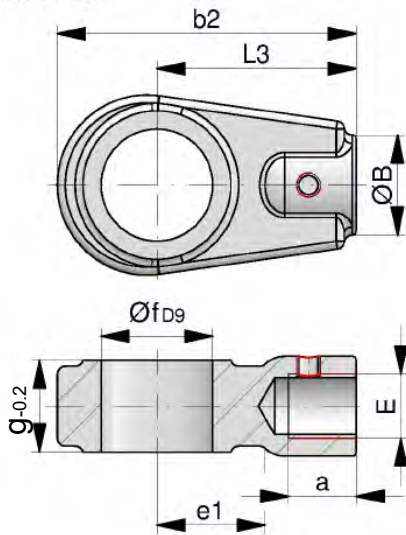


Type ZE1D													
Rod	22	25	30	35	40	45	50	55	60	70	80	90	100
L1	28	37	47.5	52	66	78	82.5	90	102	105	130	140	150
L2	42	44	48.5	51	53	55	57.5	60	60	70	80	90	100
B	60	60	70	80	100	100	100	125	125	130	150	160	175
g	10	10	15	15	18	18	20	20	20	25	30	30	35
h	70	70	80	90	115	115	115	140	140	140	170	170	190
f	15	15	20	20	25	25	30	30	35	40	50	50	60
b	20	20	25	30	34	34	35	38	40	40	50	50	60

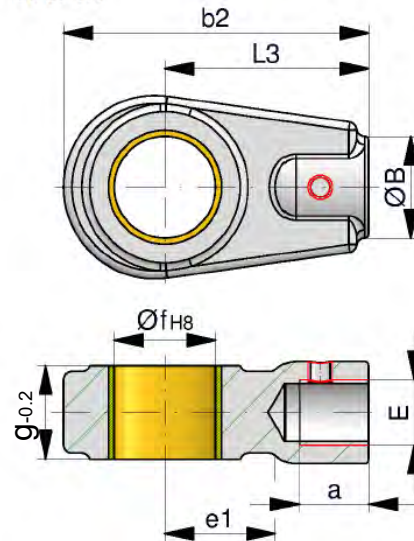
4 Mounting eyes

Type					Cyl. Ø D	Dimensions (mm)													
						B	E	L3	a	b1	b2	e1	e2	f	g	h1	h2	i	k
SA1-15	-	GK1-15	GA2-15	-	22;25	22	M14 x 1.5	47	15	69	63.5	20	20	15	15	12	-	31	M6
SA1-20	-	GK1-20	GA2-20	GA2-20 B	30;35	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;45	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;55	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	60	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	70;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	90;100	61	M45 x 1.5	105	46	168	168	55	60	50	40	35	43	80	M12

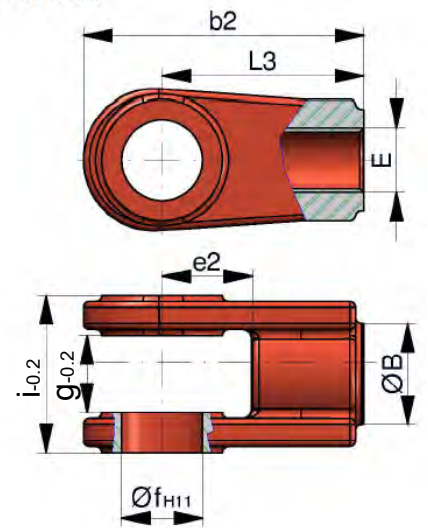
SA1-...



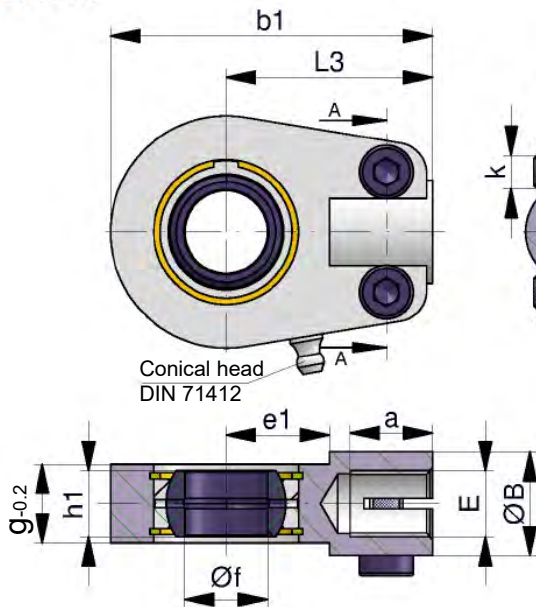
SA2-...



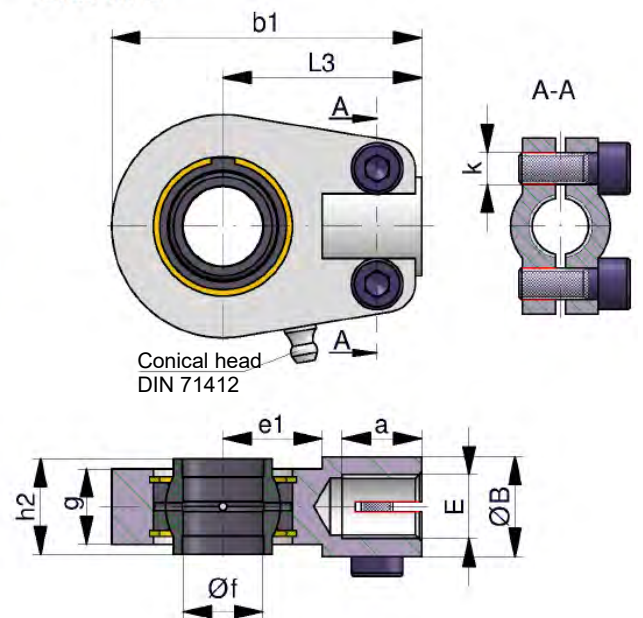
GK1-...



GA2-...



GA2-... B





ZE1 series Single-acting hydraulic cylinders

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5 Weight table (kg)

Cylinder type	Designs (Stroke = 0)							50 mm stroke	Mounting eyes					Ø f mm
	X	A	B	G,K	H	C,D	E		SA1-	SA2-	GK1-	GA2-	GA2-B	
ZE1.- 22	0.64	0.83	0.79	0.83	0.81	1.54	0.94	0.37	0.12	--	0.16	0.22	--	15
ZE1.- 25	0.90	1.10	1.06	1.10	1.08	1.80	1.23	0.44						
ZE1.- 30	1.47	1.82	1.72	1.83	1.85	2.83	2.22	0.56	0.25	--	0.25	0.37	0.37	20
ZE1.- 35	2.26	2.67	2.53	2.65	2.62	4.30	3.17	0.72						
ZE1.- 40	3.40	4.19	3.93	4.02	3.99	6.58	5.04	1.02	0.30	0.45	0.35	0.43	0.43	25
ZE1.- 45	4.60	5.54	5.19	5.25	5.19	7.15	6.12	1.21						
ZE1.- 50	5.65	6.91	6.44	6.40	6.66	9.11	6.91	1.44	0.50	0.75	0.65	0.70	0.70	30
ZE1.- 55	7.53	8.83	8.26	8.45	8.59	12.58	10.16	1.74						
ZE1.- 60	9.52	12.22	11.44	11.09	11.32	15.73	12.43	2.16	0.90	1.15	1.00	1.11	1.13	35
ZE1.- 70	13.05	16.74	15.18	15.55	15.75	22.44	15.84	2.72						
ZE1.- 80	19.46	23.61	21.66	22.14	21.99	31.67	24.41	3.34	2.00	1.40	1.70	1.32	1.34	40
ZE1.- 90	25.71	31.99	29.29	29.95	29.51	32.74	31.00	4.02						
ZE1.- 100	32.78	40.07	36.89	36.34	36.89	51.96	39.92	5.99	2.20	3.40	3.50	3.28	3.32	50



AROS Hydraulik GmbH

Product catalogue – ZD0 series Double-acting hydraulic cylinders

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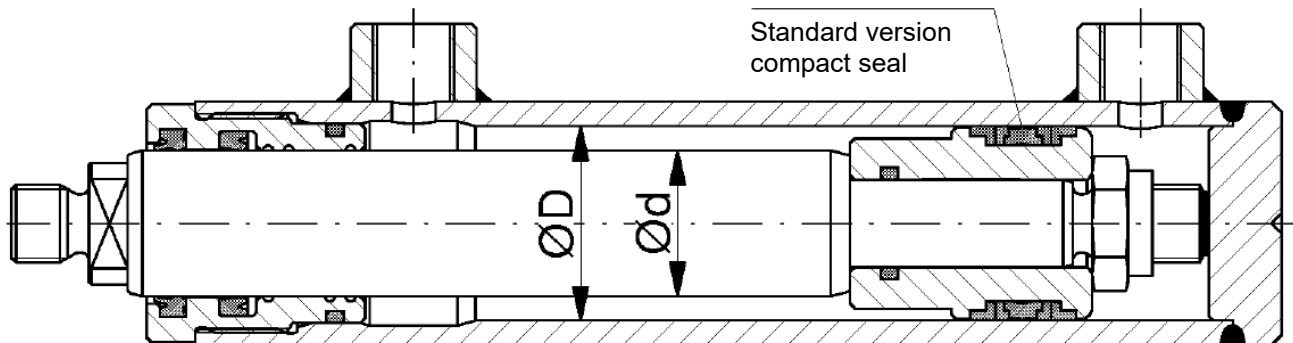
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1 General technical data

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:	not possible
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:	210 bar
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 the 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



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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 ZD0 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



ZD0 series

Double-acting hydraulic cylinders

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2 Type code

ZD0 B – 50/35 – 400 – G – E + SA1-25

Double-acting hydraulic cylinder

Series 0

Design:

- X – Basic version without mounting
- A – Swivel eye on the cylinder base and on the piston rod (welded)
- 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
- C1 – Flange on the cylinder head, front centring
- C2 – Flange on the cylinder head, rear centring
- D – Flange on the cylinder base
- E – Trunnion on the cylinder head
- F – Foot mounting

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:

ZD0G – 50/35 – 400 - G ½

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

3 Designs

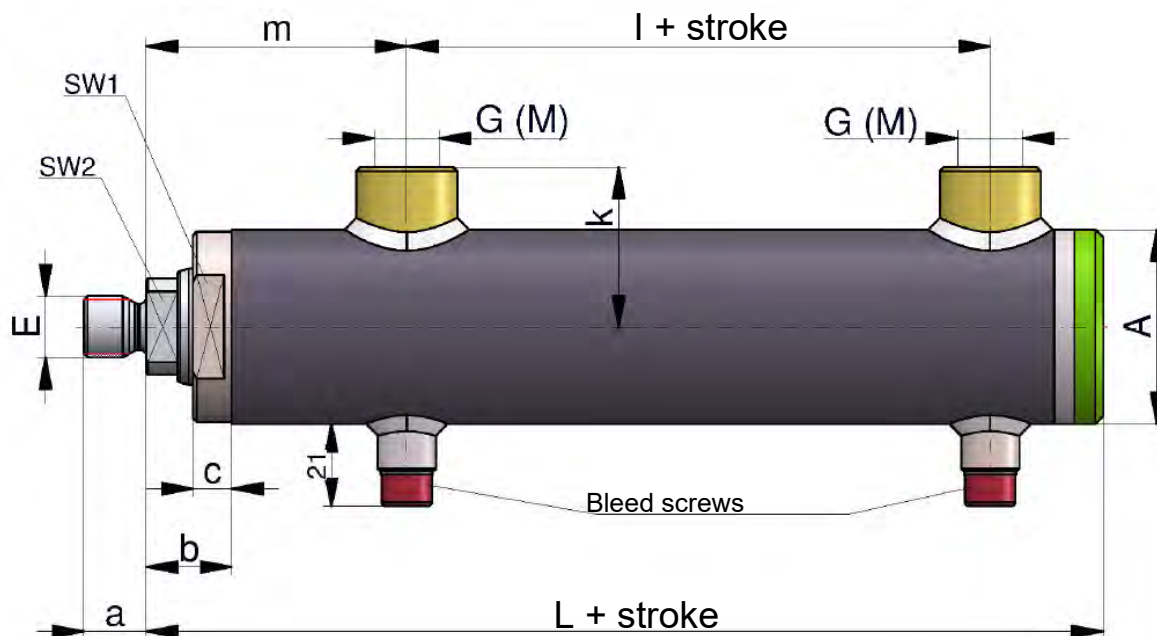
3.1 Design X

Basic version without mounting

If the connections differ (G, M), the dimension 'k' changes.

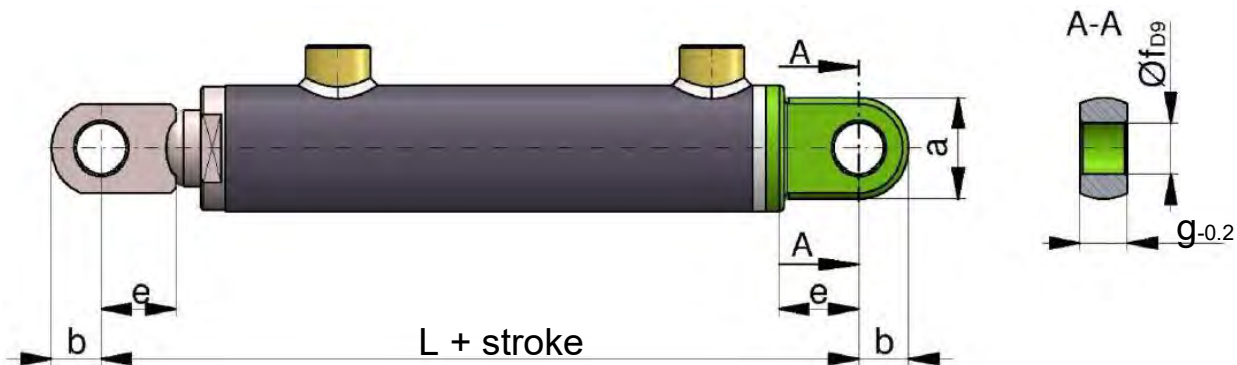
The bleed screws are located opposite the barrel connections.

Exception: Design F (see dimension table) max. tightening torque 30 Nm.



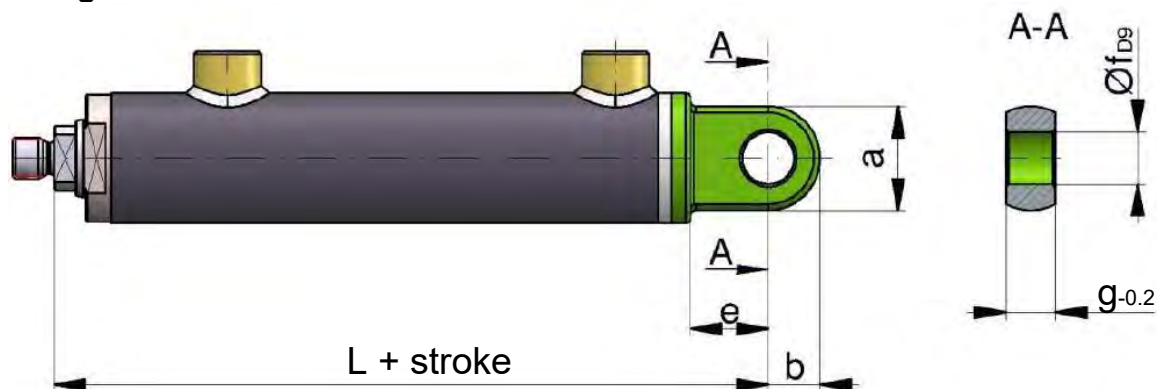
Type ZD0X															
Piston	32		40		50		63			80		100		120	
Rod	22	22	30	25	35	32	40	45	40	55	55	70	70	85	
A	42	50		60		75			95		115		140		
E	M14 x 1.5	M16 x 1.5		M16 x 1.5		M22 x 1.5			M28 x 1.5		M35 x 1.5		M45 x 1.5		
L	133	146		165		179			199		207		250		
AF1	36	41		50		65			85		100		Grooves on the circumference		
AF2	17	17		17		27			32		41		50		
a	14	16		16		22			28		35		45		
b	20	22		25		26			27		27		37		
c	10	10		10		10			10		10		12		
k	37	41		46		56			66		76		91		
l	53	50		59		65			71		67		74		
m	60	67		75		82			93		101		131		
G	G ¼	G ⅜		G ⅜		G ½			G ½		G ½		G ¾		
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		M27 x 2		
G max.	G ⅜	G ½		G ½		G ¾			G ¾		G 1		G 1¼		
M max.	M18 x 1.5	M22 x 1.5		M22 x 1.5		M27 x 2			M27 x 2		M33 x 2		M42 x 2		

3.2 Design A



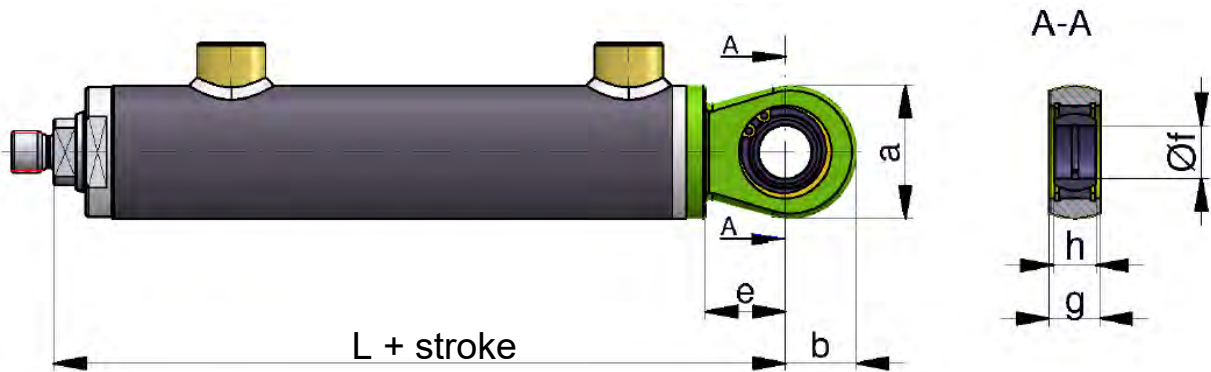
Type ZD0A														
Piston	32	40		50		63			80		100		120	
Rod	22	22	30	25	35	32	40	45	40	55	55	70	70	85
L	183	204		230		255			294		325		380	
a	30	40		48		55			65		75		95	
b	15	20		25		30			35		40		50	
e	25	30		35		40			50		60		70	
f	15	20		25		30			35		40		50	
g	15	19		23		28			30		35		40	

3.3 Design B



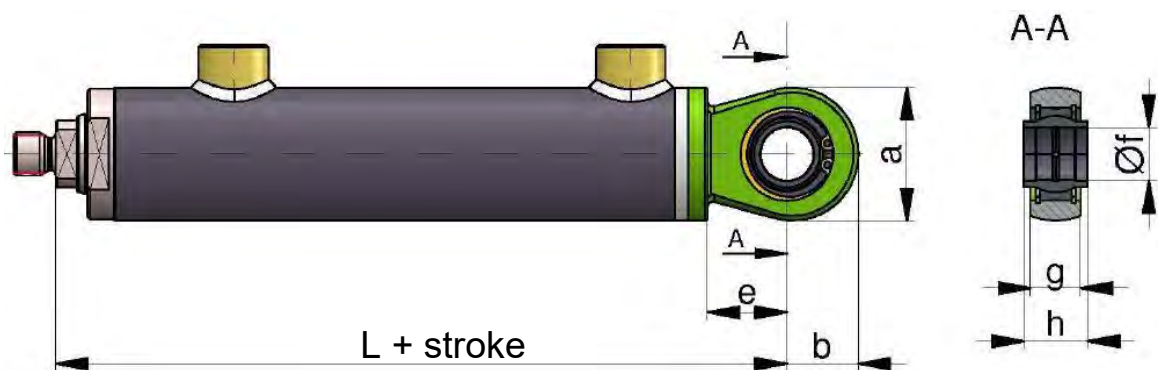
Type ZD0B														
Piston	32	40		50		63			80		100		120	
Rod	22	22	30	25	35	32	40	45	40	55	55	70	70	85
L	158	176		200		219			249		267		320	
a	30	40		48		55			65		75		95	
b	15	20		25		30			35		40		50	
e	25	30		35		40			50		60		70	
f	15	20		25		30			35		40		50	
g	15	19		23		28			30		35		40	

3.4 Design G



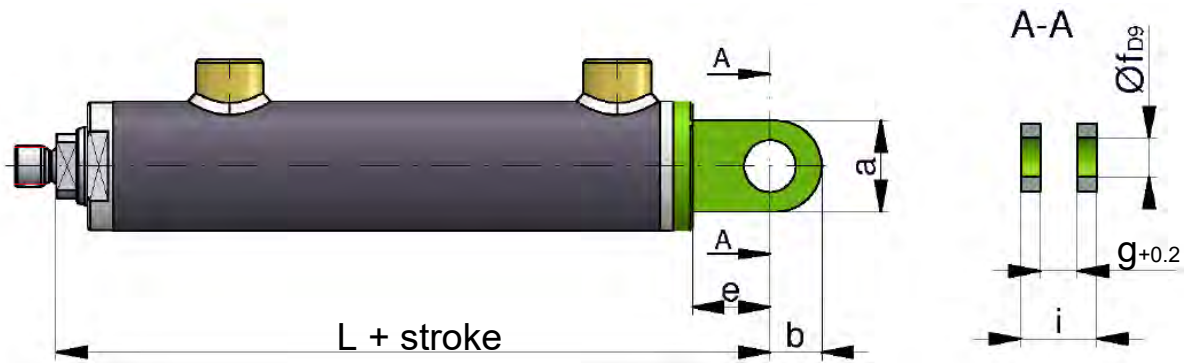
Type ZD0G															
Piston	32		40		50		63			80		100		120	
Rod	22	22	30	25	35	32	40	45	40	55	55	70	70	85	
L	158	176	200	200	219	219	219	219	249	249	267	267	320	320	
a	40	50	58	58	65	65	65	65	80	80	94	94	116	116	
b	20	27	32	32	33	33	33	33	44	44	50	50	63	63	
e	25	30	35	35	40	40	40	40	50	50	60	60	70	70	
f	15	20	25	25	30	30	30	30	35	35	40	40	50	50	
g	15	19	23	23	28	28	28	28	30	30	35	35	40	40	
h	12	16	20	20	22	22	22	22	25	25	28	28	35	35	

3.5 Design K



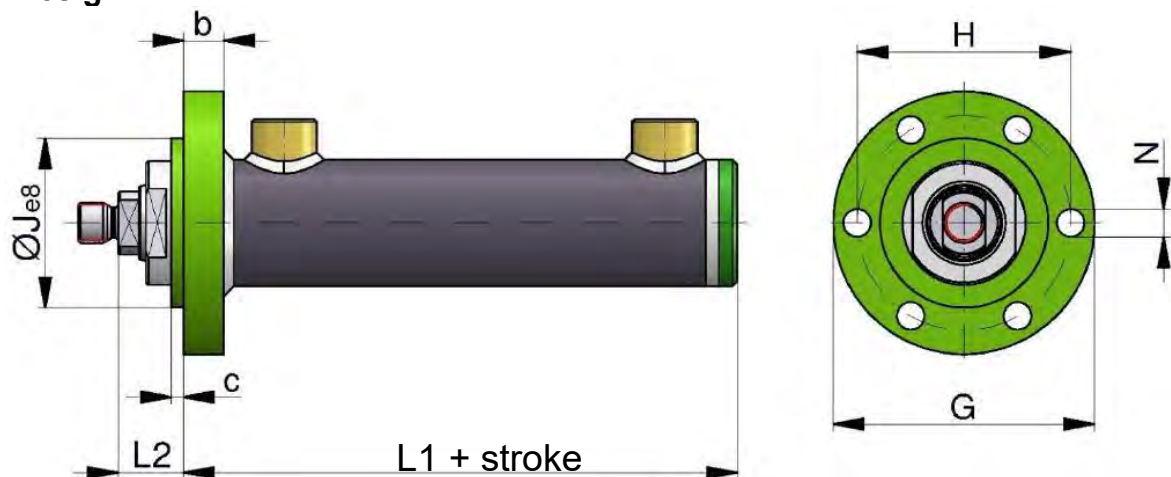
Type ZD0K													
Piston	40		50		63			80		100		120	
Rod	22	30	25	35	32	40	45	40	55	55	70	70	85
L	176	200	200	219	219	219	219	249	249	267	267	320	320
a	50	58	58	65	65	65	65	80	80	94	94	116	116
b	27	32	32	33	33	33	33	44	44	50	50	63	63
e	30	35	35	40	40	40	40	50	50	60	60	70	70
f	20	25	25	30	30	30	30	35	35	40	40	50	50
g	19	23	23	28	28	28	28	30	30	35	35	40	40
h	24	29	29	30	30	30	30	35	35	38	38	43	43

3.6 Design H



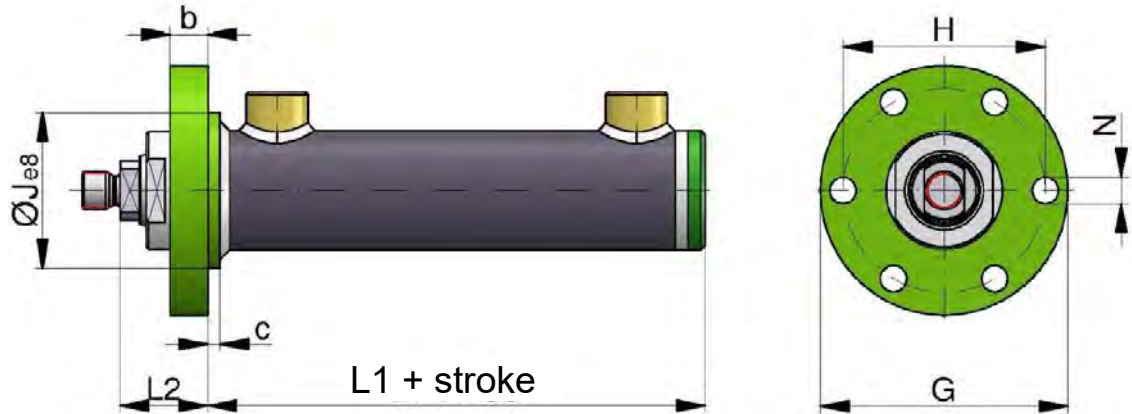
Type ZD0H														
Piston	32		40		50		63		80		100		120	
Rod	22	22	30	25	35	32	40	45	40	55	55	70	70	85
L	158		176		200		219		249		267		320	
a	30		35		45		55		65		75		95	
b	18		20		25		30		35		40		51	
e	25		30		35		40		50		60		70	
f	15		20		25		30		35		40		50	
g	15		19		23		28		30		35		40	
i	31		39		47		56		62		71		80	

3.7 Design C1



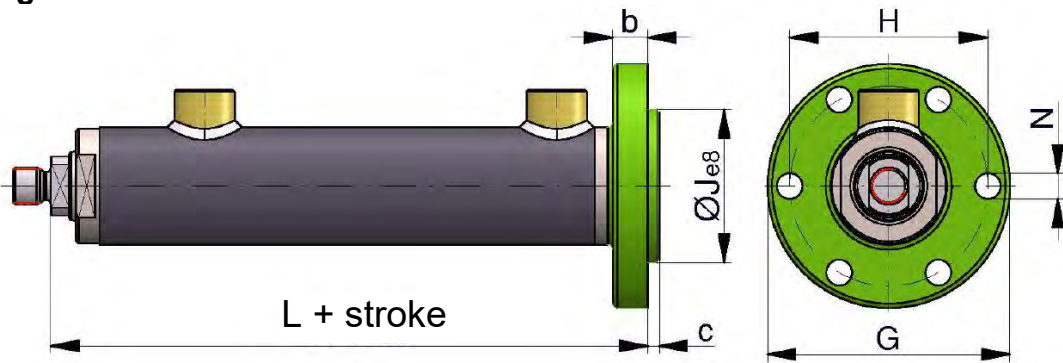
Type ZD0C1														
Piston	32		40		50		63		80		100		120	
Rod	22	22	30	25	35	32	40	45	40	55	55	70	70	85
G	94		104		118		138		178		205		245	
H	75		85		95		115		145		170		205	
J	60		65		75		90		115		140		165	
L1	108		119		135		148		167		175		208	
L2	25		27		30		31		32		32		42	
N	9		11		11		13		17		17		21	
b	12		15		18		22		25		35		40	
c	5		5		5		5		5		5		5	

3.8 Design C2



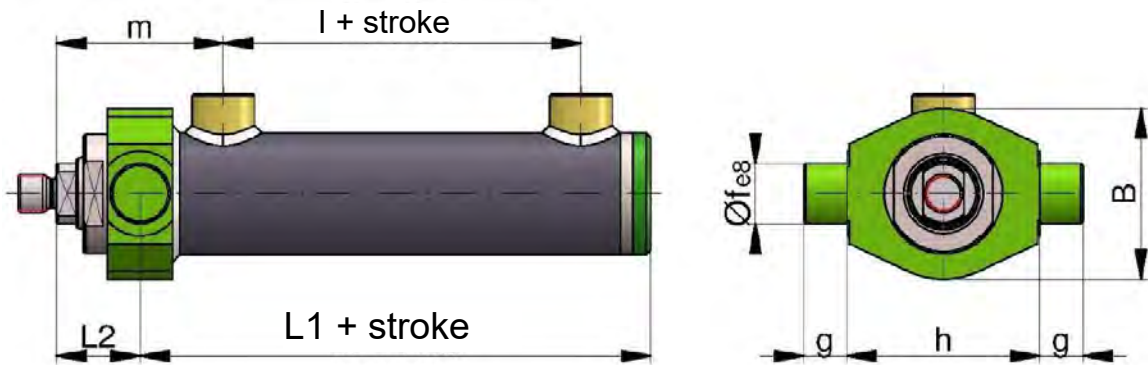
Type ZD0C2															
Piston	32		40		50		63			80		100		120	
Rod	22	22	30	25	35	32	40	45	40	55	55	70	70	85	
G	94	104		118		138			178		205		245		
H	75	85		95		115			145		170		205		
J	60	65		75		90			115		140		165		
L1	101	109		122		131			147		145		173		
L2	32	37		43		48			52		62		77		
N	9	11		11		13			17		17		21		
b	12	15		18		22			25		35		40		
c	6	6		6		6			6		6		6		

3.9 Design D



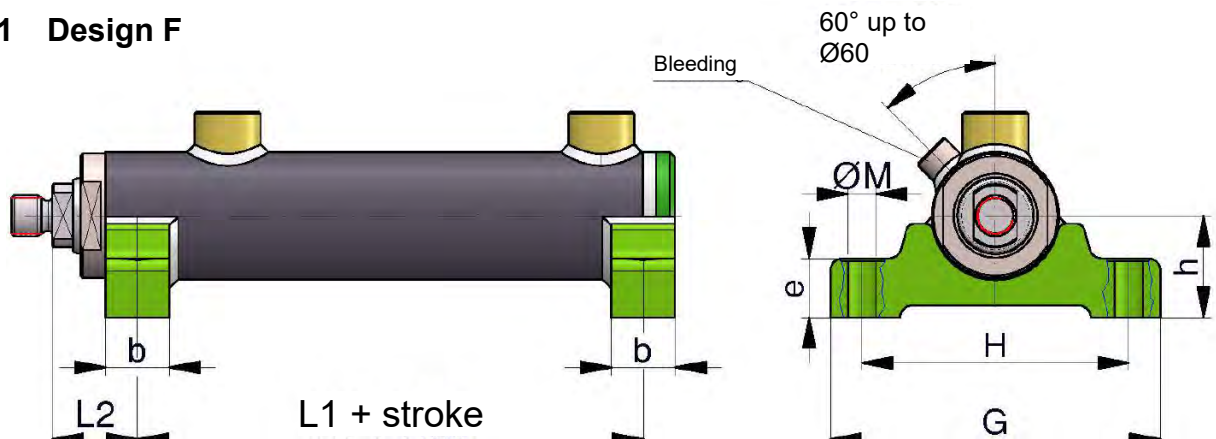
Type ZD0D															
Piston	32		40		50		63			80		100		120	
Rod	22	22	30	25	35	32	40	45	40	55	55	70	70	85	
G	94	104		118		138			178		205		245		
H	75	85		95		115			145		170		205		
J	60	65		75		90			115		140		205		
L	145	156		178		196			218		235		283		
N	9	11		11		13			17		17		21		
b	12	15		18		22			25		35		40		
c	5	5		5		5			5		5		5		

3.10 Design E



Type ZD0E															
Piston	32		40		50		63			80		100		120	
Rod	22	22	30	25	35	32	40	45	40	55	55	70	70	85	
B	60	70	80	100			125		150		175				
L1	103	111	125	135.5			152		155		183				
L2	30	35	40	43.5			47		52		67				
f	20	25	30	35			40		50		60				
g	15	18	20	20			25		30		35				
h	70	80	90	115			140		170		190				
l	50	47	55	60			68		62		72				
m	63	70	79	87			96		106		133				

3.11 Design F

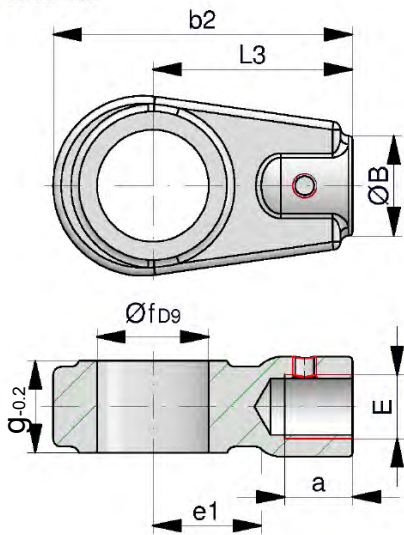


Type ZD0F															
	32		40		50		63			80		100		120	
	22	22	30	25	35	32	40	45	40	55	55	70	70	85	
G	110	130	150	175			215		265		295				
H	90	105	120	140			175		215		240				
L1	93	99	110	118			132		130		158				
L2	30	34.5	40	43.5			47		52		64.5				
M	9	11	13	13			17		21		25				
b	20	25	30	35			40		50		55				
e	18.5	23.5	28.5	33.5			38.5		47.5		50.5				
h	36	40	45	55			67.5		77.5		100				

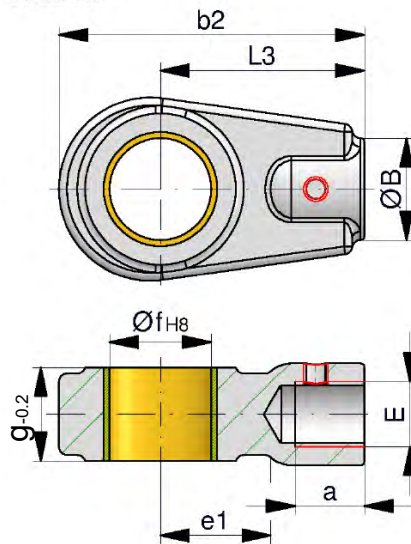
4 Mounting eyes

Type					Cyl. Ø D	Dimensions (mm)													
						B	E	L3	a	b1	b2	e1	e2	f	g	h1	h2	i	k
SA1-15	-	GK1-15	GA2-15	-	32	22	M14 x 1.5	47	15	69	64	20	20	15	15	12	-	31	M6
SA1-20	-	GK1-20	GA2-20	GA2-20 B	40	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	50	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	63	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	80	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	100	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	120	61	M45 x 1.5	105	46	168	168	55	60	50	40	35	43	80	M12

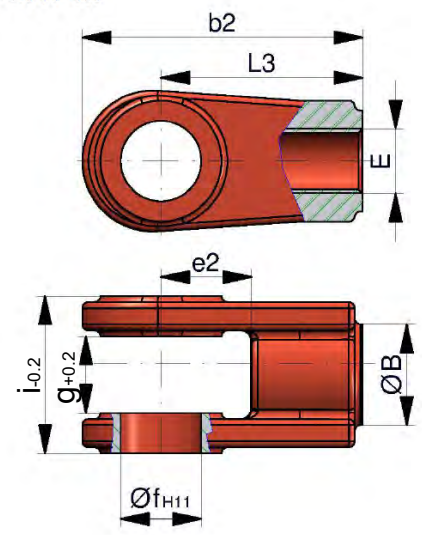
SA1-...



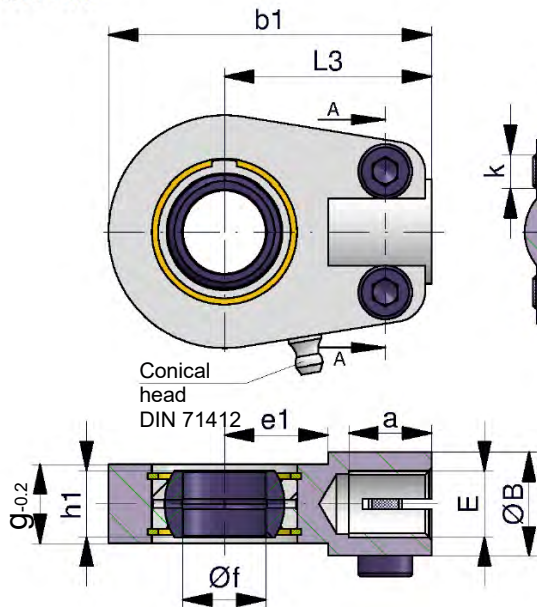
SA2-...



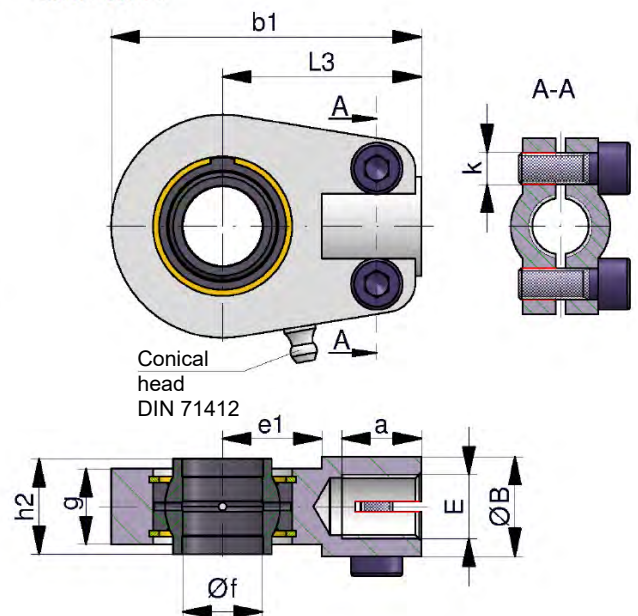
GK1-...



GA2-...



GA2-... B





ZD0 series Double-acting hydraulic cylinders

Product catalogue:
0-ZD0
July 2016

5 Weight table (kg)

Cylinder type		Designs (Stroke = 0)								50 mm	Mounting eyes					Ø f
		X	A	B	G,K	H	C,D	E	F	Stroke	SA1-	SA2-	GK1-	GA2-	GA2-B	mm
ZD0.- 32/	22	1.10	1.32	1.20	1.45	1.30	1.60	1.40	1.40	0.28	0.12	--	0.16	0.22	--	15
ZD0.- 40/	22	1.65	1.94	1.82	1.90	1.82	2.45	2.20	2.85	0.45	0.25	--	0.25	0.37	0.37	20
	30	1.95	2.27	2.15	2.20	2.15	2.75	2.50	3.15	0.55						
ZD0.- 50/	25	2.20	3.05	2.75	2.75	2.70	4.60	2.95	4.20	0.50	0.30	0.45	0.35	0.43	0.43	25
	35	2.60	3.50	3.20	3.15	3.20	5.00	3.40	4.60	0.65						
ZD0.- 63/	32	4.00	5.35	4.85	4.70	4.85	6.00	5.75	7.00	0.65	0.50	0.75	0.65	0.70	0.70	30
	40	4.30	5.65	5.15	5.00	5.15	6.30	6.05	7.30	0.80						
ZD0.- 80/	40	7.55	9.60	8.70	8.70	9.40	11.15	10.10	12.30	1.35	0.90	1.15	1.00	1.11	1.13	35
	55	8.75	10.9	9.95	9.90	10.35	12.35	11.95	13.55	1.80						
ZD0.-100/	55	11.60	16.40	13.90	14.10	13.60	18.10	14.20	19.60	1.95	2.00	1.40	1.70	1.32	1.34	40
	70	13.30	18.10	15.60	15.80	15.30	19.80	15.90	21.30	2.50						
ZD0.-120/	70	19.50	26.10	23.50	26.10	25.50	29.30	26.30	31.50	3.10	2.20	3.40	3.50	3.28	3.32	50
	85	20.20	26.80	24.20	26.80	26.20	30.80	27.00	32.20	3.80						



AROS Hydraulik GmbH

Product catalogue – ZD1 series Double-acting hydraulic cylinders

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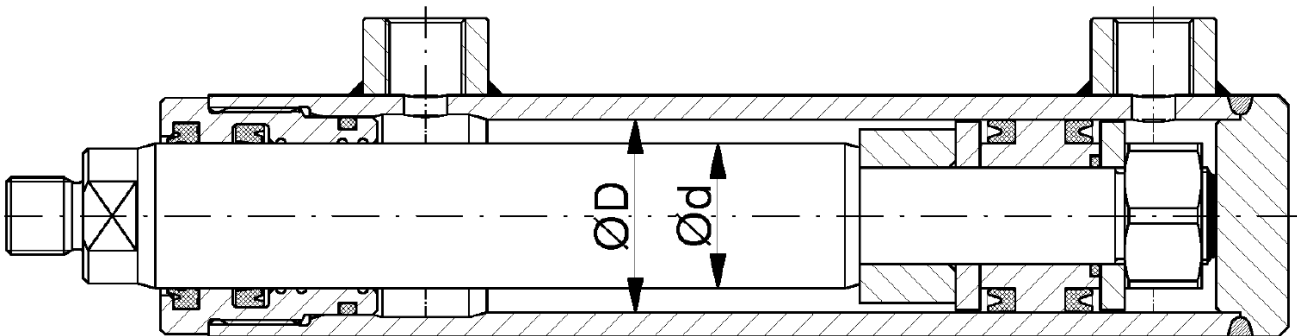
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D-87700 Memmingen

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Internet: www.aros-hydraulik.de

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:	not possible
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:	280 bar
max. piston speed:	0.5 m/s (higher speeds available on request)
2x grooved ring seal piston seal:	achieves retaining function
Seals:	Viton available 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.



Overpressurisation

Danger

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 ZD1 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



ZD1 series

Double-acting hydraulic cylinders

Product catalogue:
1-ZD1
July 2016

2 Type code

ZD1 B – 50/35 – 400 – G – E + SA1-25

Double-acting hydraulic cylinders

Series 1

Design:

- X – Basic version without mounting
- A – Swivel eye on the cylinder base and on the piston rod
- 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
- D – Flange on the cylinder base
- E – Trunnion on the cylinder head
- F – Foot mounting

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:

ZD1G – 50/35 – 400 - G ½

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

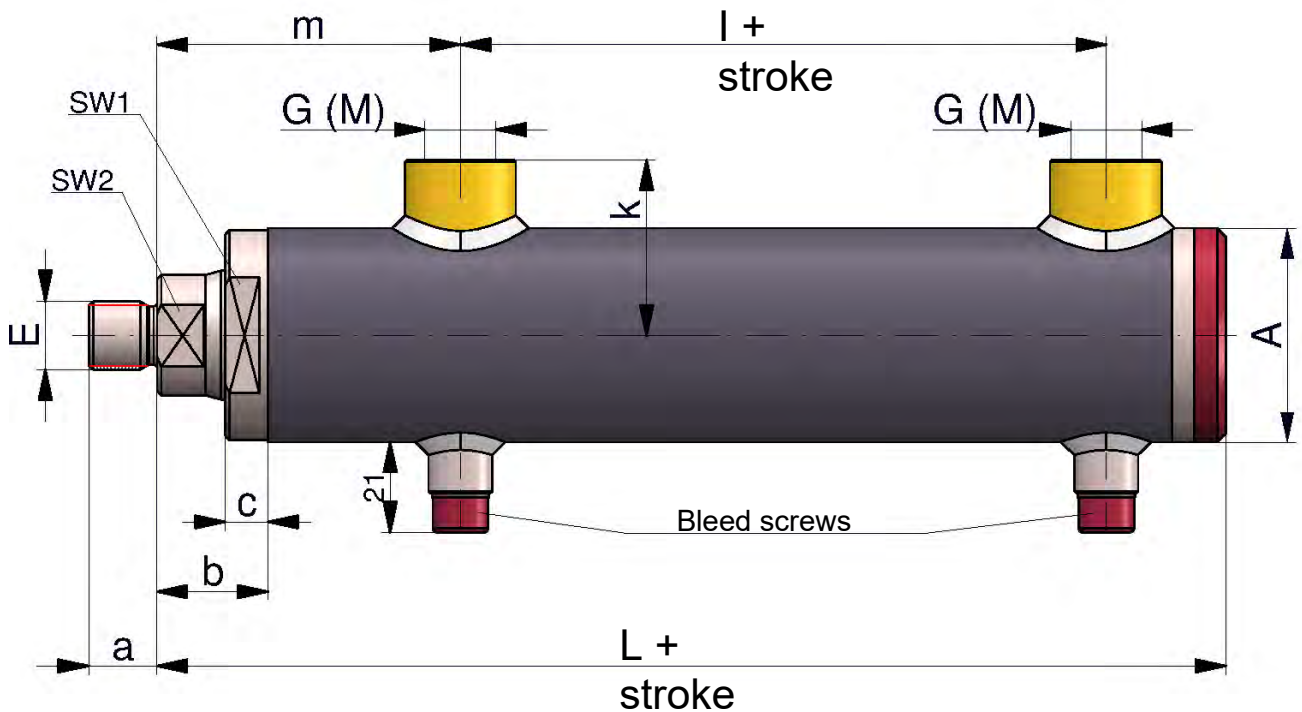
3 Designs

3.1 Design X

Basic version without mounting

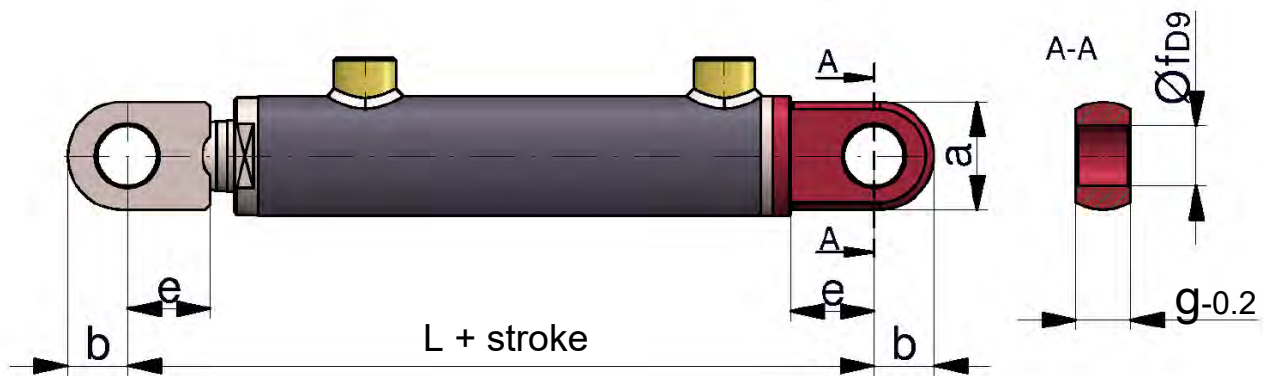
If the connections differ (G, M), the dimension 'k' changes; for larger connections, the dimension 'm' may increase slightly for designs C and E (dimension 'l' decreases accordingly). The bleed screws are located opposite the barrel connections.

Exception: Design F (see dimension table) max. tightening torque 30 Nm.



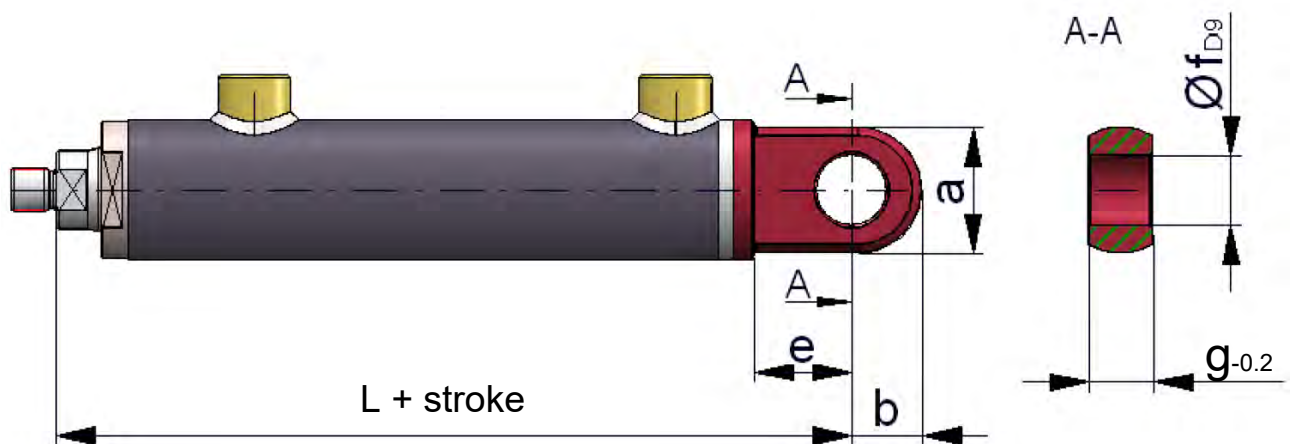
Type ZD1X																			
Piston	30		40			50			60			80			100			120	
Rod	22	22	25	30	25	30	35	30	35	40	40	50	55	55	60	70	70	85	
A	40		50			60			75			95			120			140	
E	M16 x 1.5		M16 x 1.5			M22 x 1.5			M28 x 1.5			M35 x 1.5			M45 x 1.5			M58 x 1.5	
L	117		150			170			194			228			280			312	
AF1	36		41			50			65			85			100			Grooves on the circumference	
AF2	17	17	19	24	19	24	27	24	27	32	32	41	46	46	50	60	60	75	
a	16		16			22			28			35			45			58	
b	22		26			26			26			35			37			44	
c	10		10			10			10			10			10			12	
k	36		41			46			56			66			78			91	
l	38		51			64			79			90			124			119	
m	59		71			76			82			101			111			138	
G	G ¼		G ⅜			G ⅜			G ½			G ½			G ½			G ¾	
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			M27 x 2	
G max.	G ⅜		G ½			G ¾			G 1			G 1			G 1			G 1¼	
M max.	M18 x 1.5		M22 x 1.5			M27 x 2			M33 x 2			M33 x 2			M33 x 2			M42 x 2	

3.2 Design A



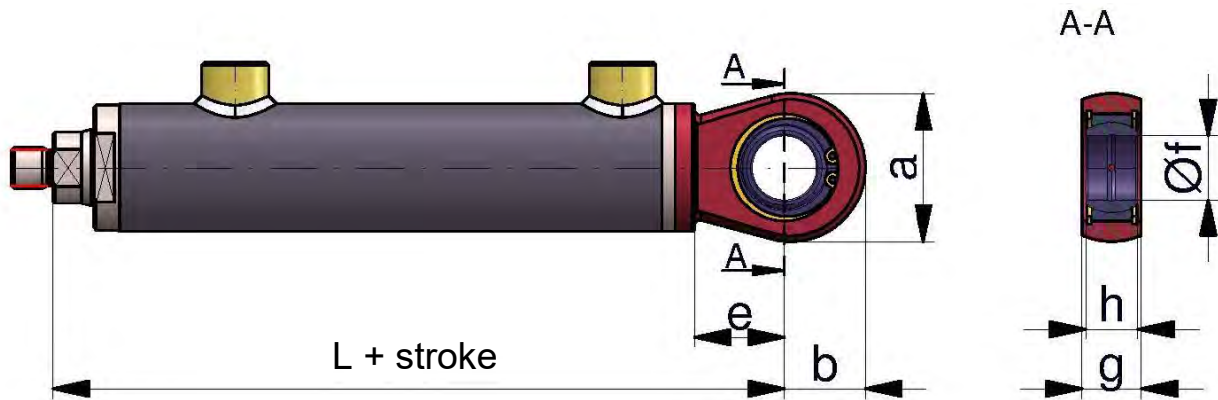
Type ZD1A																		
Piston	30		40			50			60			80			100		120	
Rod	22	22	25	30	25	30	35	30	35	40	40	50	55	55	60	70	70	85
L	175	214			244			290			335			408		450		
a	35	45			55			65			75			95		110		
b	20	25			30			35			40			50		60		
e	30	35			40			50			60			70		70		
f	20	25			30			35			40			50		60		
g	19	23			28			30			35			40		50		

3.3 Design B



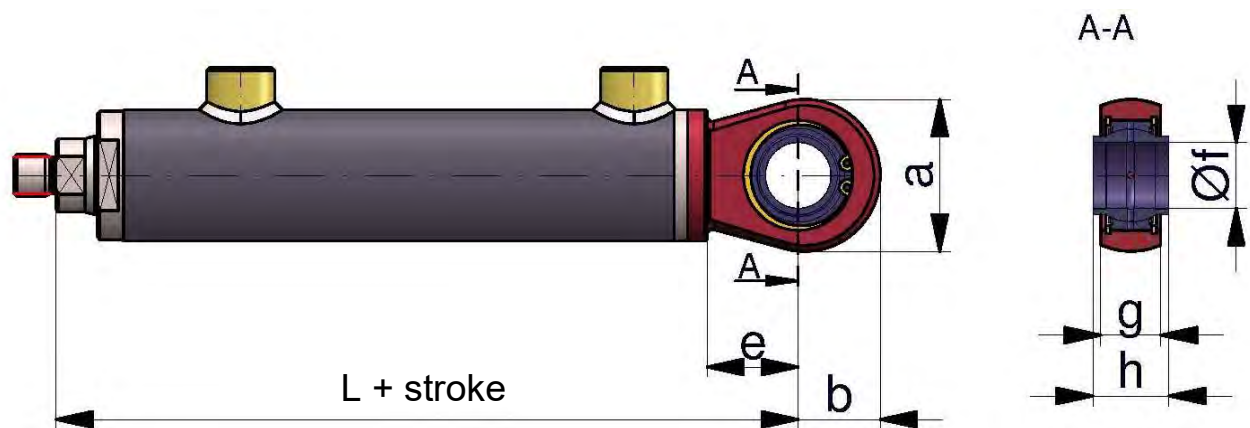
Type ZD1A																		
Piston	30		40			50			60			80			100		120	
Rod	22	22	25	30	25	30	35	30	35	40	40	50	55	55	60	70	70	85
L	147	185			210			244			288			350		382		
a	35	45			55			65			75			95		110		
b	20	25			30			35			40			50		60		
e	30	35			40			50			60			70		70		
f	20	25			30			35			40			50		60		
g	19	23			28			30			35			40		50		

3.4 Design G



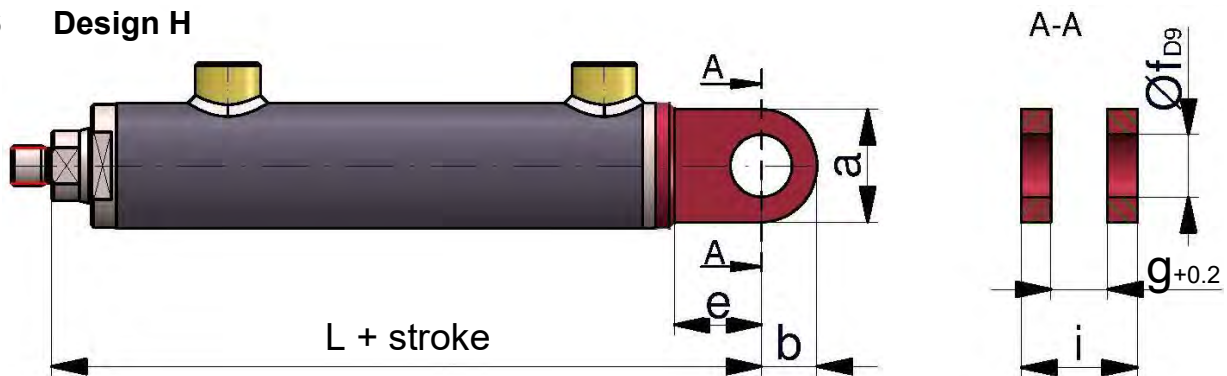
Type ZD1G																				
Piston	30			40			50			60			80			100			120	
Rod	22	22	25	30	25	30	35	30	35	40	40	50	55	55	60	70	70	85		
L	147			185			210			244			288			350			382	
a	50			58			65			80			94			116			130	
b	27			32			33			44			50			63			70	
e	30			35			40			50			60			70			70	
f	20			25			30			35			40			50			60	
g	19			23			28			30			35			40			50	
h	16			20			22			25			28			35			44	

3.5 Design K



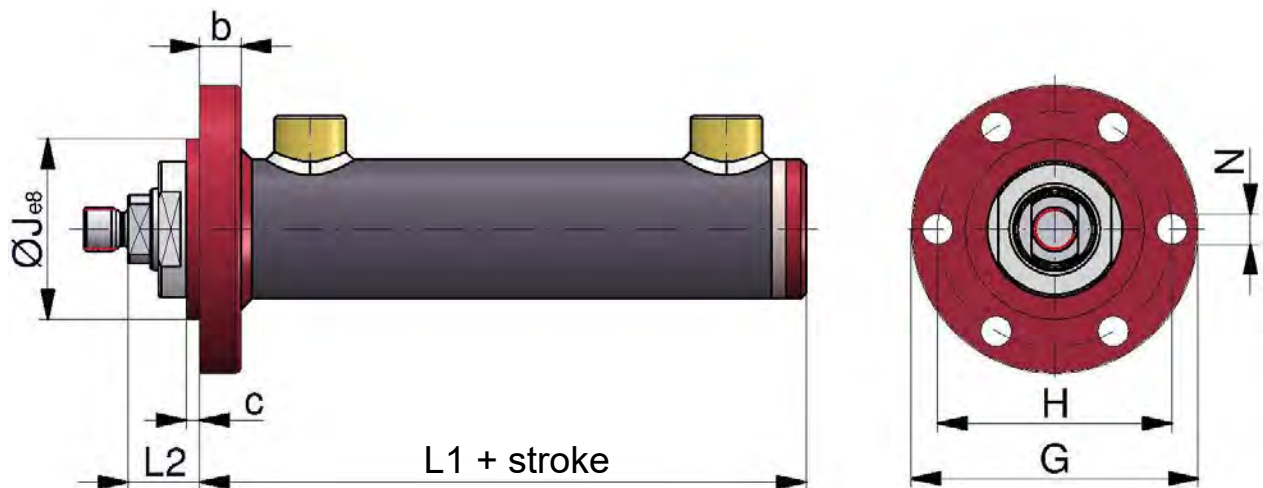
Type ZD1K																				
Piston	30			40			50			60			80			100			120	
Rod	22	22	25	30	25	30	35	30	35	40	40	50	55	55	60	70	70	85		
L	147			185			210			244			288			350			382	
a	50			58			65			80			94			116			130	
b	27			32			33			44			50			63			70	
e	30			35			40			50			60			70			70	
f	20			25			30			35			40			50			60	
g	19			23			28			30			35			40			50	
h	24			29			30			35			38			43			54	

3.6 Design H



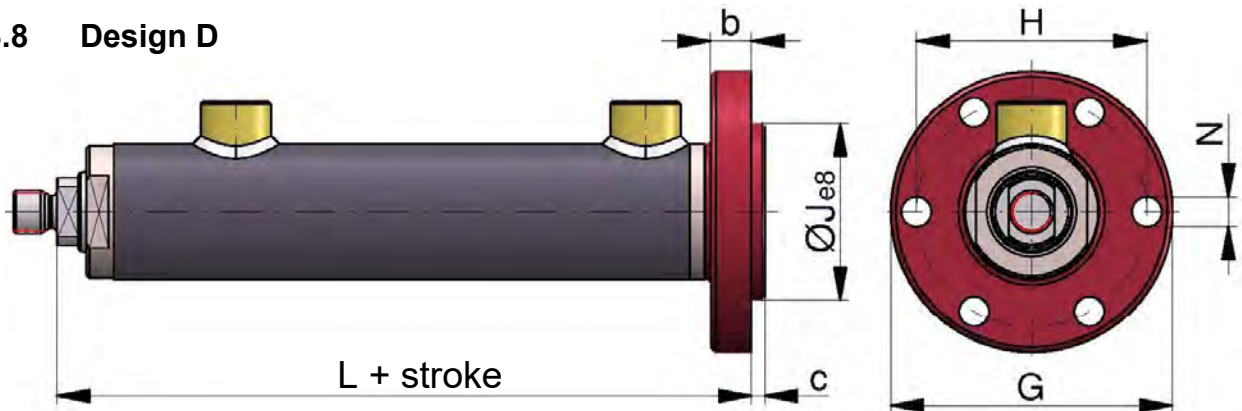
Type ZD1H																		
Piston	30		40		50			60			80			100		120		
Rod	22	22	25	30	25	30	35	30	35	40	40	50	55	55	60	70	70	85
L	147	185		210			244			288			350		382			
a	35	45		55			65			75			95		110			
b	20	25		30			35			40			50		60			
e	30	35		40			50			60			70		70			
f	20	25		30			35			40			50		60			
g	19	23		28			30			35			40		50			
i	39	47		56			60			71			80		100			

3.7 Design C



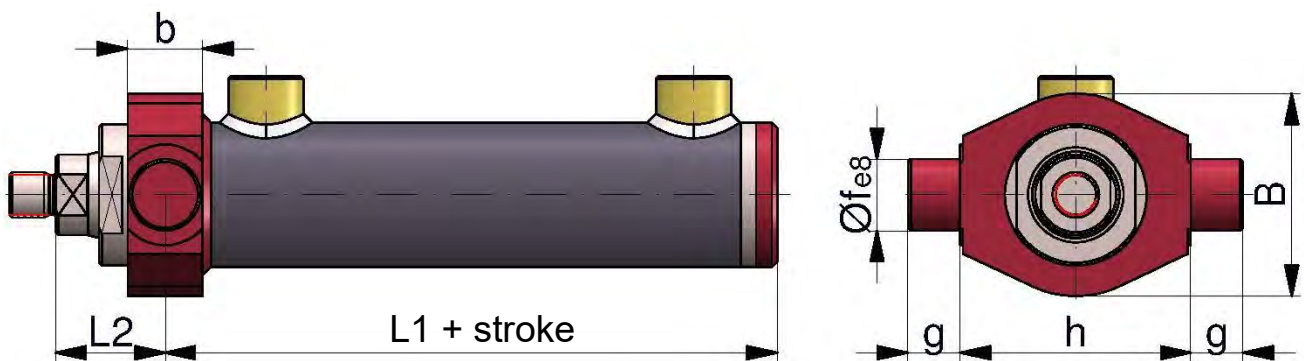
Type ZD1C																		
Piston	30		40		50			60			80			100		120		
Rod	22	22	25	30	25	30	35	30	35	40	40	50	55	55	60	70	70	85
L1	90	119		139			163			188			238		263			
L2	27	31		31			31			40			42		49			
G	94	104		118			138			178			205		245			
H	75	85		95			115			145			170		205			
J	60	65		75			90			115			140		165			
N	9	11		11			13			17			17		21			
b	12	15		18			22			25			35		40			
c	5	5		5			5			5			5		5			

3.8 Design D



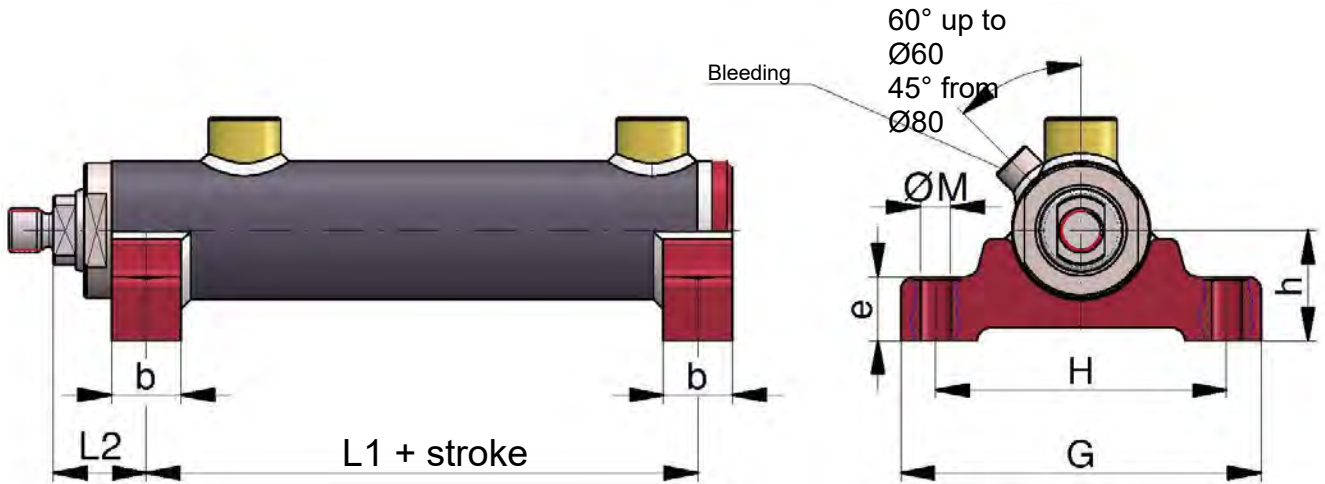
Type ZD1D																				
Piston	30			40			50			60			80			100			120	
Rod	22	22	25	30	25	30	35	30	35	40	40	50	55	55	60	70	70	85		
L	129			160			183			211			247			308			345	
G	94			104			118			138			178			205			245	
H	75			85			95			115			145			170			205	
J	60			65			75			90			115			140			165	
N	9			11			11			13			17			17			21	
b	12			15			18			22			25			35			40	
c	5			5			5			5			5			5			5	

3.9 Design E



Type ZD1E																				
Piston	30			40			50			60			80			100			120	
Rod	22	22	25	30	25	30	35	30	35	40	40	50	55	55	60	70	70	85		
B	60			70			80			100			125			150			175	
L1	85			111			129			150.5			173			218			238	
L2	32			39			41			43.5			55			62			74	
b	20			26			30			35			40			50			60	
f	20			25			30			35			40			50			60	
g	15			18			20			20			25			30			35	
h	70			80			90			115			140			170			190	

3.10 Design F

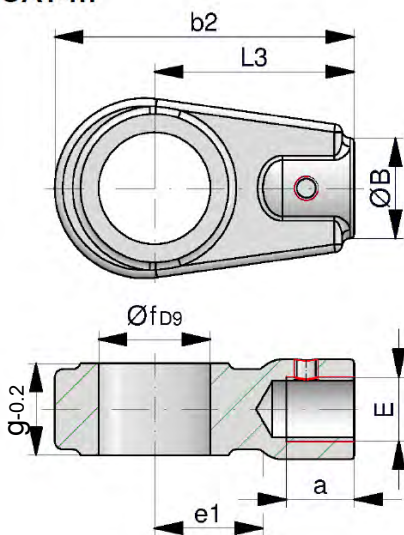


Type ZD1F																			
Piston	30		40			50			60			80			100			120	
Rod	22	22	25	30	25	30	35	30	35	40	40	50	55	55	60	70	70	85	
G	110		130			150			175			215			265			295	
H	90		105			120			140			175			215			240	
L1	75		99			114			133			153			193			213	
L2	32		38.5			41			43.5			55			62			71.5	
M	9		11			13			13			17			21			25	
b	20		25			30			35			40			50			55	
e	20		25			30			35			40			50			55	
h	35		40			45			55			68			80			100	

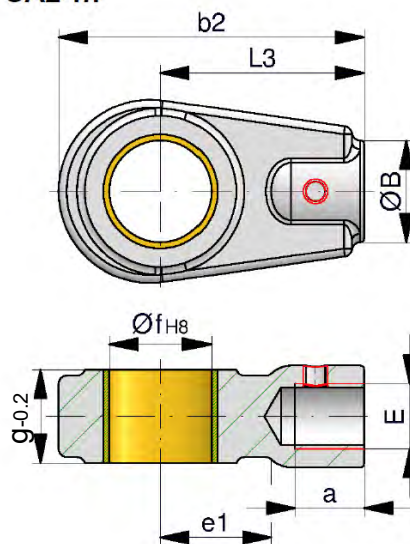
4 Mounting eyes

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	30	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	60	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
SA1-60	SA2-60	GK1-60	GA2-60	GA2-60 B	120	75	M58 x 1.5	130	59	200	189	65	67	60	50	44	54	100	M10

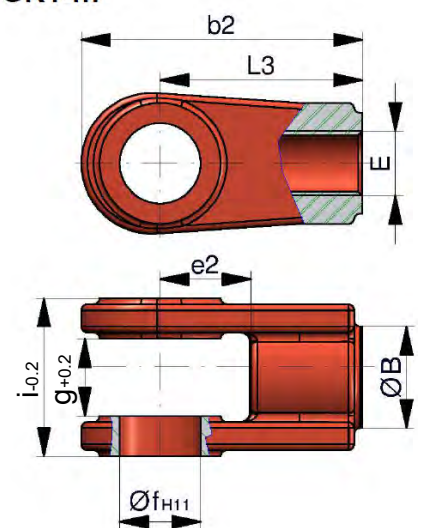
SA1-...



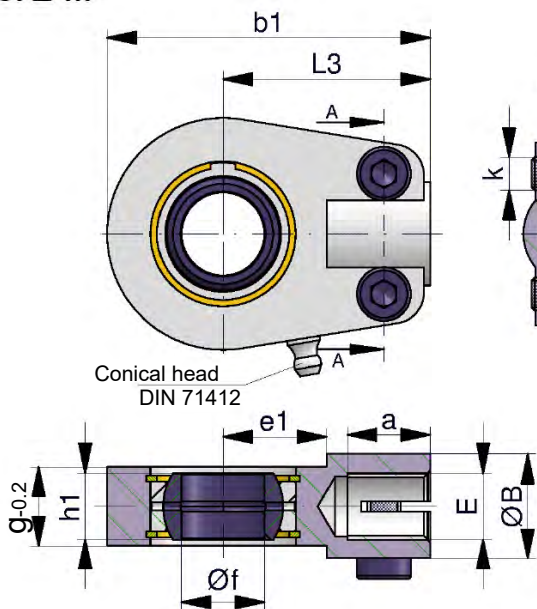
SA2-...



GK1-...



GA2-...



GA2-... B





ZD1 series Double-acting hydraulic cylinders

Product catalogue:
1-ZD1
July 2016

5 Weight table (kg)

Cylinder type		Designs (Stroke = 0)								50 mm Stroke	Mounting eyes					Ø f mm
		X	A	B	G,K	H	C,D	E	F		SA1-	SA2-	GK1-	GA2-	GA2-B	
ZD1.- 30/	22	1.10	1.32	1.20	1.45	1.30	1.60	1.40	1.40	0.28	0.25	--	0.25	0.37	0.37	20
	22	2.05	2.65	2.35	2.47	2.45	2.85	2.65	3.05	0.45						
ZD1.- 40/	25	2.10	2.70	2.40	2.52	2.50	2.90	2.70	3.10	0.48	0.30	0.45	0.35	0.43	0.43	25
	30	2.20	2.80	2.50	2.62	2.60	3.00	2.80	3.20	0.55						
ZD1.- 50/	25	2.96	4.08	3.58	3.64	3.68	4.16	3.96	4.56	0.50	0.50	0.75	0.65	0.70	0.70	30
	30	3.07	4.19	3.69	3.75	3.79	4.27	4.07	4.67	0.65						
	35	3.20	4.32	3.82	3.88	3.92	4.40	4.20	4.80	0.68						
ZD1.- 60/	30	5.51	7.31	6.41	6.74	6.51	7.51	7.11	8.11	0.65	0.90	1.15	1.00	1.11	1.13	35
	35	5.65	7.45	6.55	6.88	6.65	7.65	7.25	8.25	0.72						
	40	5.81	7.61	6.71	7.04	6.81	7.81	7.41	8.41	0.78						
ZD1.- 80/	40	9.90	12.90	10.40	11.72	11.30	13.40	12.70	14.10	1.35	2.00	1.40	1.70	1.32	1.34	40
	50	10.40	13.40	10.90	12.22	11.80	13.90	13.20	14.60	1.60						
	55	10.70	13.70	11.20	12.52	12.10	14.20	13.50	14.90	1.80						
ZD1.-100/	55	19.30	24.70	22.10	22.80	22.30	25.60	23.90	27.30	1.95	2.20	3.40	3.50	3.28	3.32	50
	60	19.60	25.00	22.40	23.10	22.60	25.90	24.20	28.00	2.20						
	70	20.40	25.80	23.20	23.90	23.40	26.70	25.00	28.40	2.50						
ZD1.-120/	70	29.34	37.24	33.24	33.94	33.04	39.14	36.14	41.34	3.10	5.00	5.20	5.50	5.47	5.53	60
	85	31.04	38.94	34.94	35.64	34.74	40.48	37.84	43.04	3.80						



AROS Hydraulik GmbH

Product catalogue – ZD4 series Double-acting hydraulic cylinders

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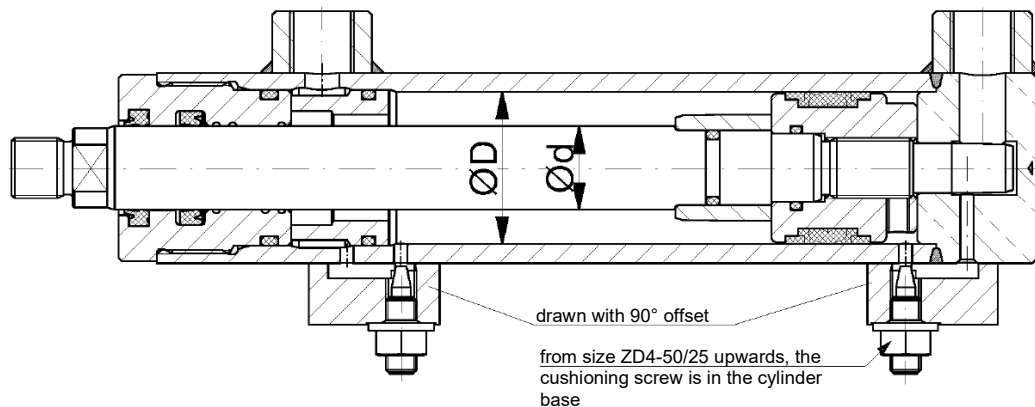
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1 General technical data

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.



Overpressurisation

Danger

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
$\leq 1,250$	+2 0
$> 1,250 \leq 3,150$	+5 0
$> 3,150 \leq 8,000$	+8 0

Dimensions in millimetres



ZD4 series Double-acting hydraulic cylinders

Product catalogue:
4-ZD4
July 2016

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

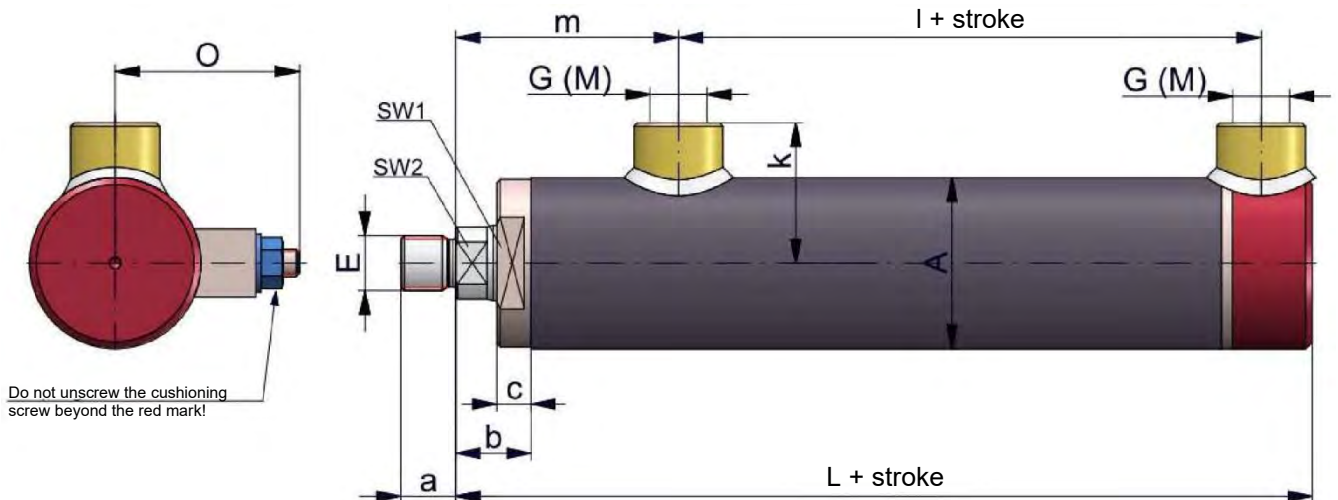
The max. possible connection thread is shown in the dimension table for design X.

3 Designs

3.1 Design X

Basic version without mounting

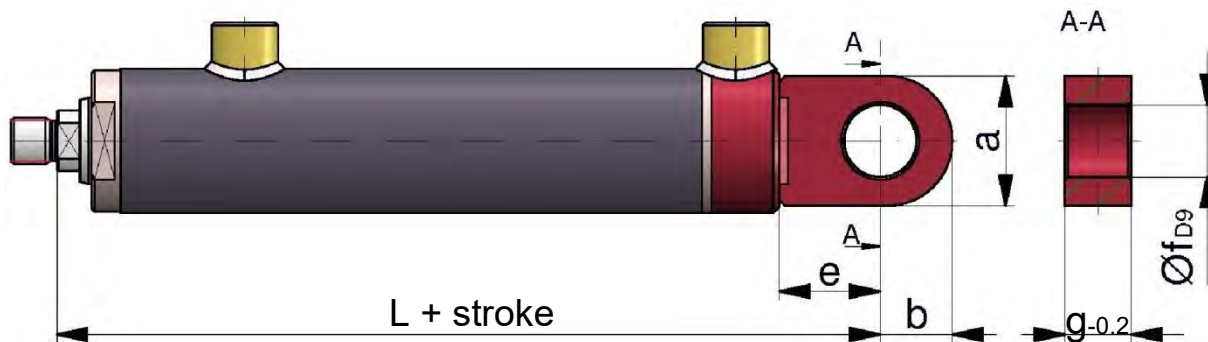
If the connections differ (G, M), the dimension 'k' changes; for larger connections, the dimension 'm' may increase slightly for designs C and E (dimension 'l' decreases accordingly). Cylinder sizes ZD4-32/22 and ZD4-40/22 have a cushioning eye welded to the base; for all other cylinder sizes, the cushioning 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.	G ⅜		G ½		G ½		G ¾		G ¾		G 1	
M max.	M18 x 1.5		M22 x 1.5		M22 x 1.5		M27 x 2		M27 x 2		M33 x 2	

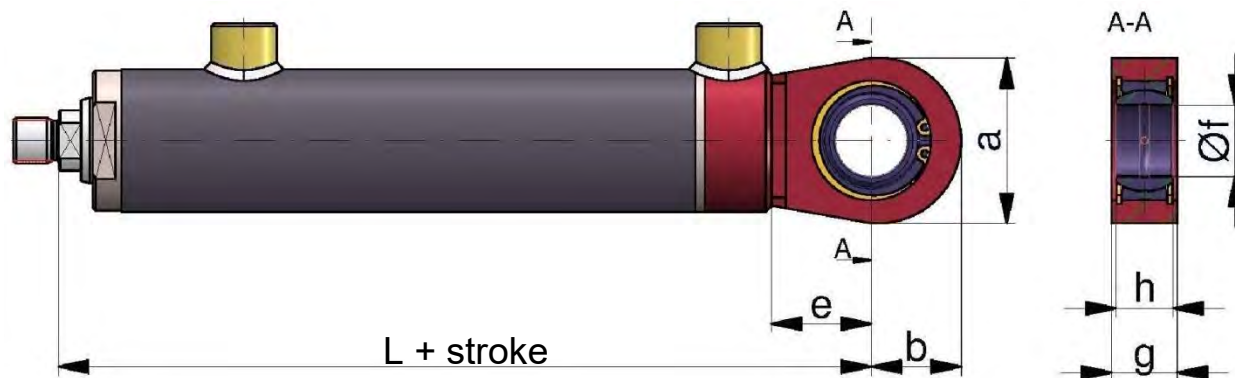
V = cushioning length

3.2 Design B



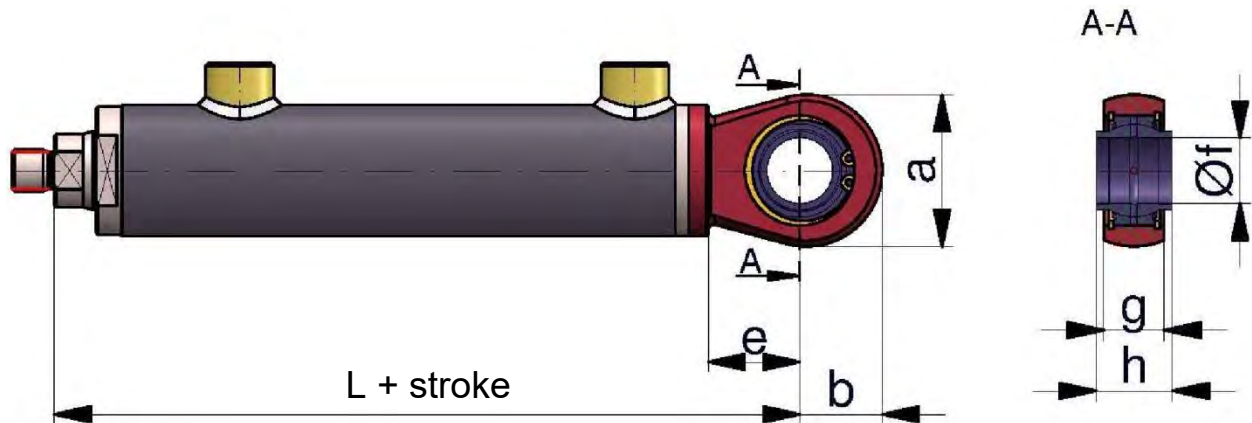
Type ZD4B											
Piston	32	40		50		63		80		100	
Rod	22	22	30	25	35	32	45	40	55	55	70
L	165	185		210		244		288		350	
a	35	45		55		65		75		95	
b	20	25		30		35		40		50	
e	30	35		40		50		60		70	
f	20	25		30		35		40		50	
g	19	23		28		30		35		40	

3.3 Design G



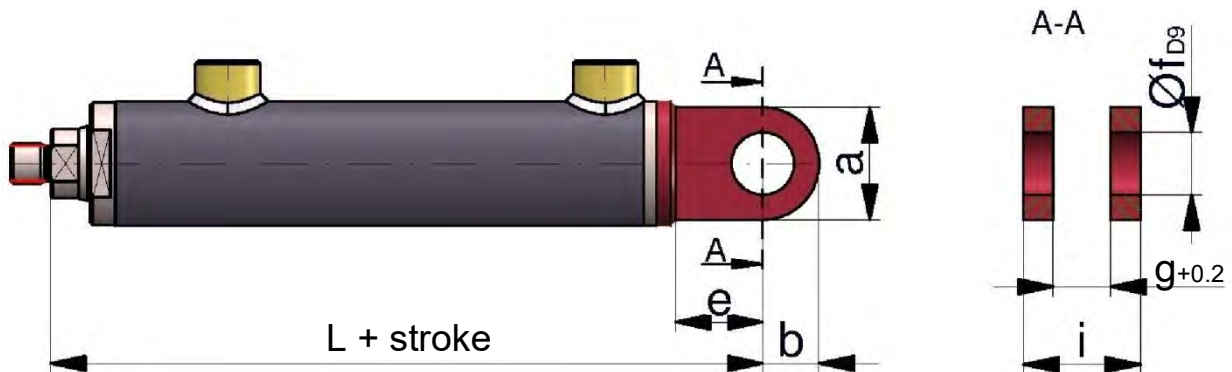
Type ZD4G											
Piston	32	40		50		63		80		100	
Rod	22	22	30	25	35	32	45	40	55	55	70
L	165	185		210		244		288		350	
a	50	58		65		80		94		116	
b	27	32		33		44		50		63	
e	30	35		40		50		60		70	
f	20	25		30		35		40		50	
g	19	23		28		30		35		40	
h	16	20		22		25		28		35	

3.4 Design K



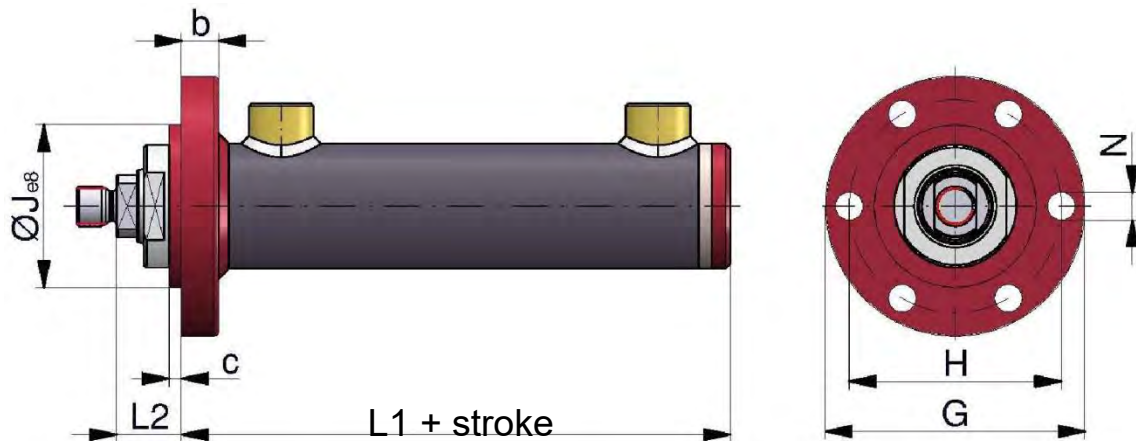
Type ZD4K											
Piston	32	40		50		63		80		100	
Rod	22	22	30	25	35	32	45	40	55	55	70
L	-	185		210		244		288		350	
a	-	58		65		80		94		116	
b	-	32		33		44		50		63	
e	-	35		40		50		60		70	
f	-	25		30		35		40		50	
g	-	23		28		30		35		40	
h	-	29		30		35		38		43	

3.5 Design H



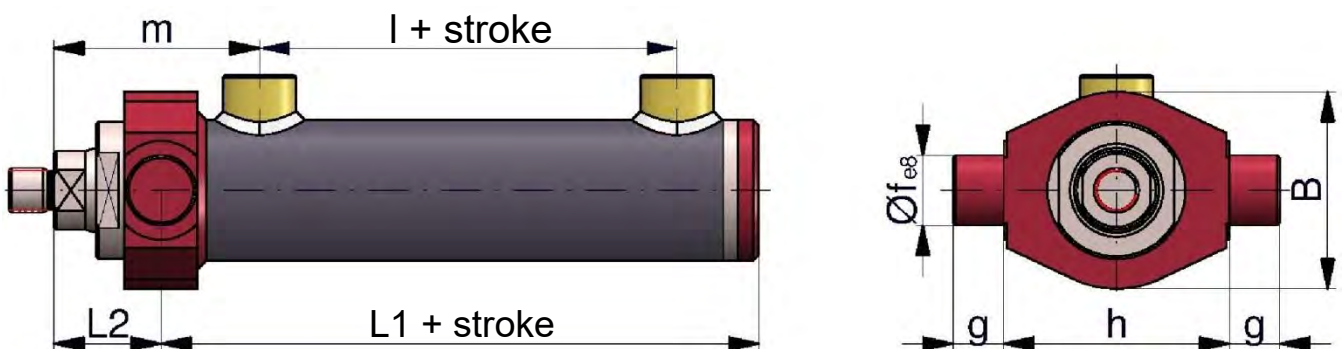
Type ZD4H											
Piston	32	40		50		63		80		100	
Rod	22	22	30	25	35	32	45	40	55	55	70
L	165	185		210		244		288		350	
a	35	45		55		65		75		95	
b	20	25		30		35		40		51	
e	30	35		40		50		60		70	
f	20	25		30		35		40		50	
g	19	23		28		30		35		40	
i	39	47		56		62		71		80	

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

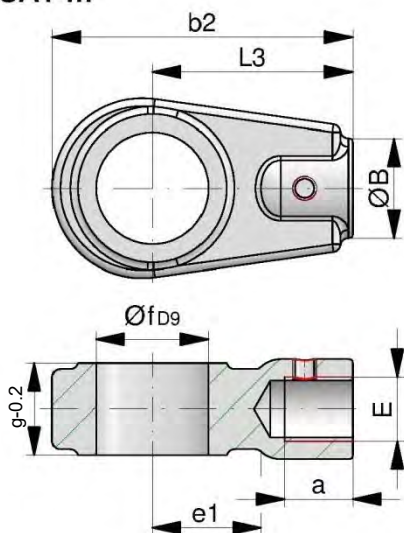


Type ZD4E											
Piston	32	40		50		63		80		100	
Rod	22	22	30	25	35	32	45	40	55	55	70
B	60	70		80		100		125		150	
L1	105	115		129		150.5		173		218	
L2	30	35		41		43.5		55		62	
f	20	25		30		35		40		50	
g	15	18		20		20		25		30	
h	70	80		90		115		140		170	
l	50	65		55		60		108		62	
m	63	70		79		87		101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

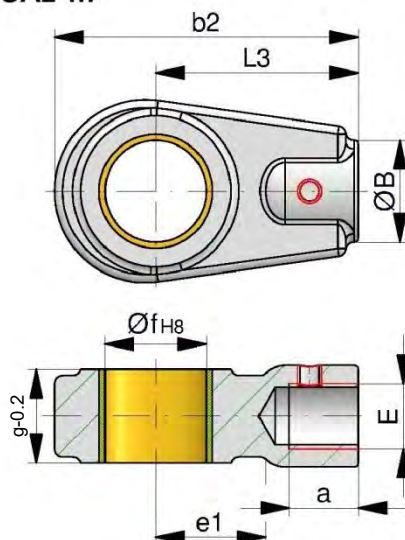
4 Mounting eyes

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

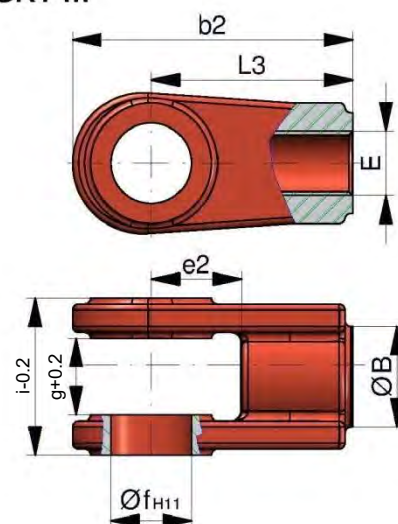
SA1-...



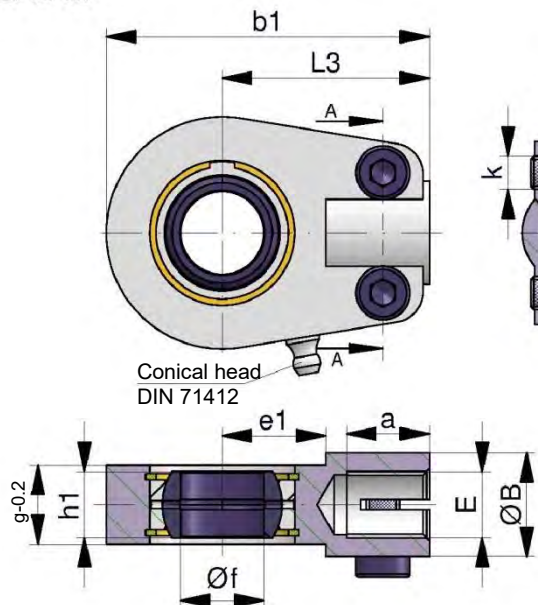
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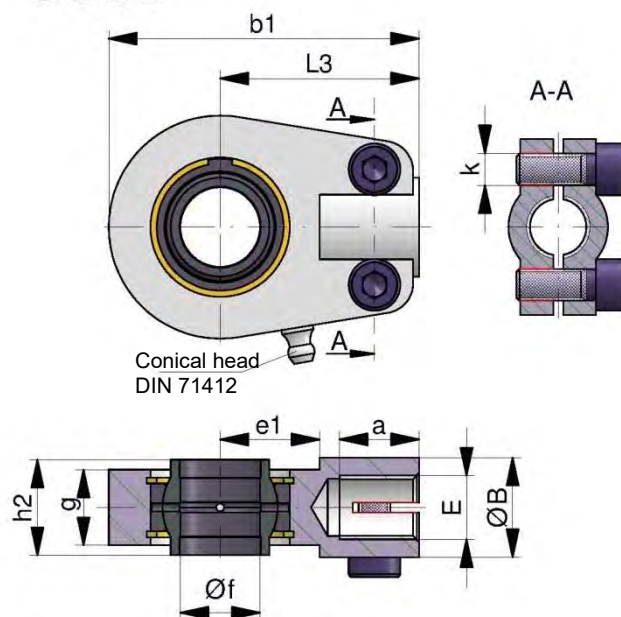
GK1-...



GA2-...



GA2-... B





AROS Hydraulik GmbH

Product catalogue – ZD5 series Double-acting hydraulic cylinders

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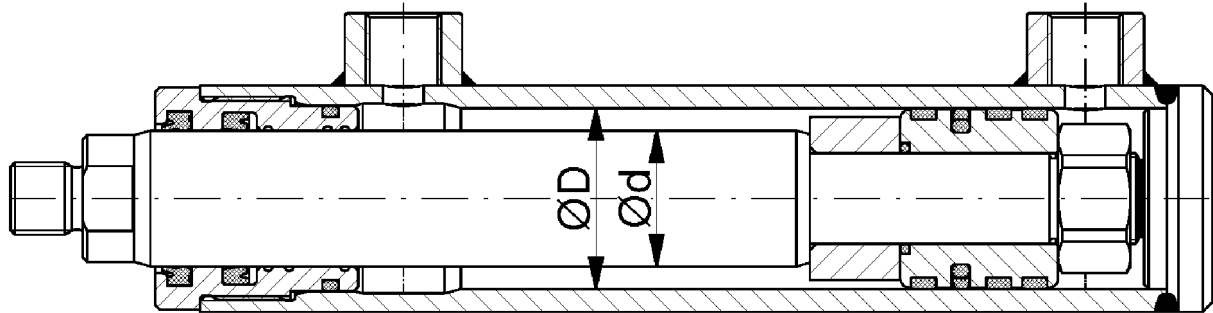
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1 General technical data

Robust and universally usable welded-bolted construction for simpler applications. Easy dismantling and replaceability of all wear parts is ensured. PTFE-based piston seals and piston guide bands ensure smooth, stick-slip-free running. Due to its low friction, it is particularly well suited for differential arrangements. Please note our boundary and use conditions.



Piston rod:	ground, polished and hard-chrome plated
End cushioning:	not possible
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:	280 bar
max. piston speed:	0.5 m/s (higher speeds available on request)
Glydring:	smooth-running, stick-slip-free, no retaining function (standard version)
AQ seal:	smooth-running, stick-slip-free, for retaining function
Seals:	Viton available 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.



Overpressurisation

Danger

- 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 ZD5 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/or 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



ZD5 series

Double-acting hydraulic cylinders

Product catalogue:
5-ZD5
July 2016

2 Type code

ZD5 B – 50/35 – 400 – G – E + GA2-40

Double-acting hydraulic cylinder

Series 5

Design:

- X – Basic version without mounting
- A – Swivel eye on the cylinder base and on the piston rod
- 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
- D – Flange on the cylinder base
- E – Trunnion on the cylinder head
- F – Foot mounting

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:

ZD5G – 50/35 – 400 - G ½

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

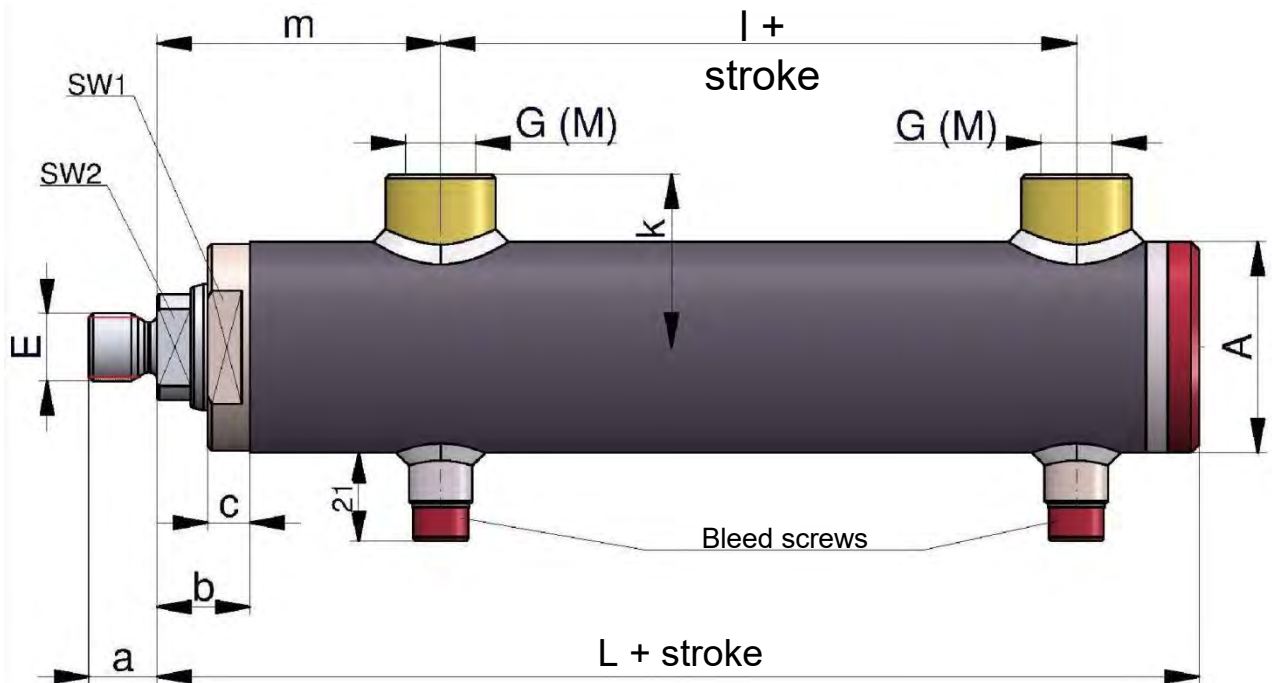
3 Designs

3.1 Design X

Basic version without mounting

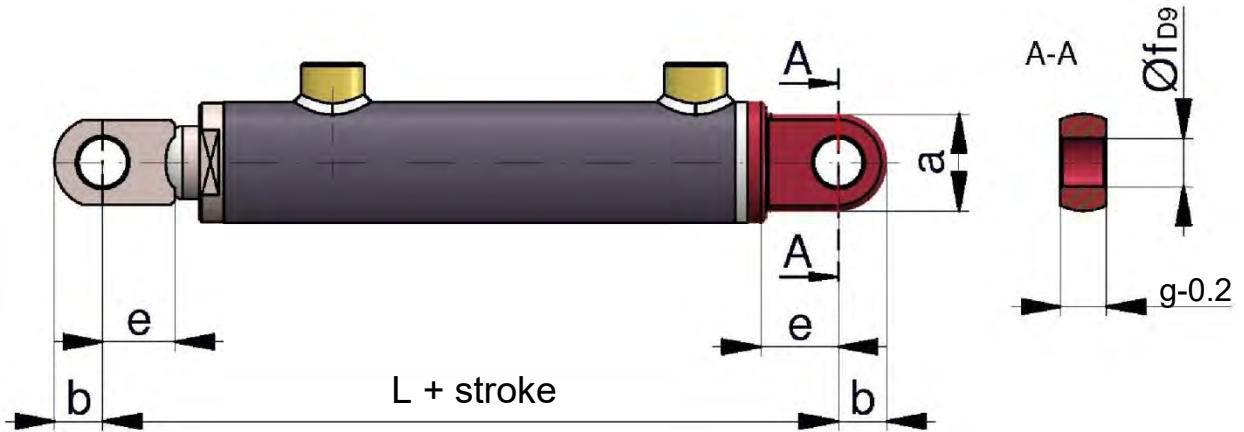
If the connections differ (G, M), the dimension 'k' changes. For larger connections, the dimension 'm' may increase slightly in designs C and E. (Dimension 'l' is reduced accordingly) The bleed screws are located opposite the barrel connections

Exception: Design F (see dimension table) max. tightening torque 30 Nm.



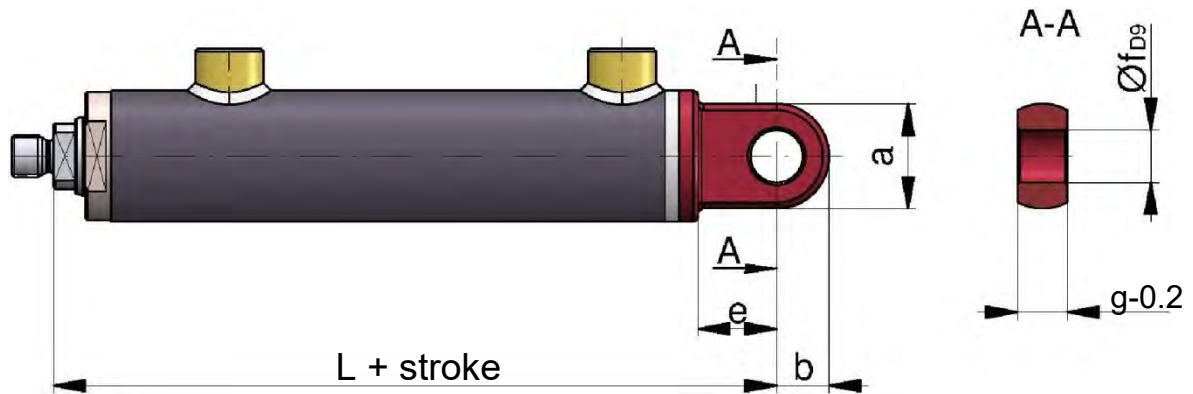
Type ZD5X																										
Piston	30		40		50		60		80		100		120		140		160		180		200					
Rod	22	22	25	30	25	30	35	30	35	40	40	50	55	55	60	70	70	85	85	100	90	110	110	125	125	140
A	40	50		60		75		95		120		140		170		190		210		245						
E	M16x1.5	M16x1.5		M22x1.5		M28x1.5		M35x1.5		M45x1.5		M58x1.5		M65x1.5		M80x2		M100x2		M110x2						
L	117	150		170		194		228		280		312		317		382		422		477						
AF1	36	41		50		65		85		100		Grooves on the circumference														
AF2	17	17	19	24	19	24	27	24	27	32	32	41	46	46	50	60	60	75	75	85	80	95	100	110	110	120
a	16	16		22		28		35		45		58		65		80		100		110						
b	22	26		26		26		35		37		44		47		52		57		72						
c	10	10		10		10		10		10		12		12		15		15		25						
k	36	41		46		56		66		78		91		106		119		129		147						
l	38	51		64		79		90		124		119		108		140		150		170						
m	59	71		76		82		101		111		138		147		177		207		237						
G	G ¼	G ⅜		G ⅜		G ½		G ½		G ½		G ¾		G ¾		G 1		G 1		G 1						
M	M14x1.5	M18x1.5		M18x1.5		M22x1.5		M22x1.5		M22x1.5		M27x2		M27x2		M33x2		M33x2		M33x2						
G max.	G ⅜	G ½		G ¾		G 1		G 1		G 1		G 1¼		G 1¼		G 1½		G 1½		G 1½						
M max.	M22x1.5	M22x1.5		M27x2		M33x2		M33x2		M33x2		M42x2		M42x2		M48x2		M48x2		M48x2						

3.2 Design A



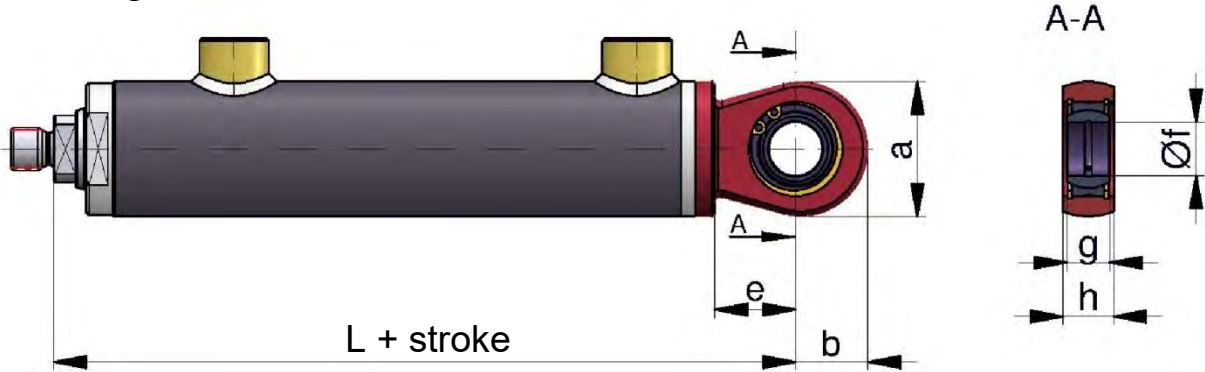
Type ZD5A																										
Piston	30	40			50			60			80			100		120		140		160		180		200		
Rod	22	22	25	30	25	30	35	30	35	40	40	50	55	55	60	70	70	85	85	100	90	110	110	125	125	140
L	175	214			244			290			335			408		450		462		560		625		700		
a	35	45			55			65			75			95		110		120		146		170		190		
b	20	25			30			35			40			50		60		65		80		95		105		
e	30	35			40			50			60			70		70		75		95		110		120		
f	20	25			30			35			40			50		60		70		80		90		100		
g	19	23			28			30			35			40		50		55		60		65		70		

3.3 Design B



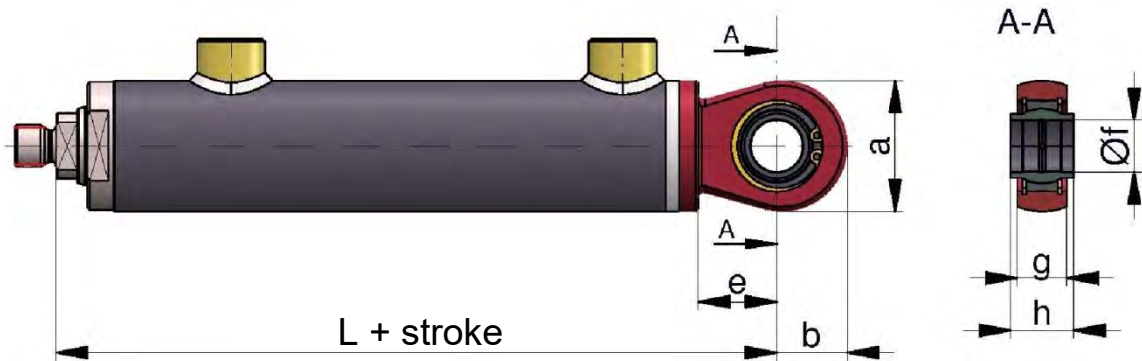
Type ZD5B																										
Piston	30	40			50			60			80			100		120		140		160		180		200		
Rod	22	22	25	30	25	30	35	30	35	40	40	50	55	55	60	70	70	85	85	100	90	110	110	125	125	140
L	147	185			210			244			288			350		382		392		477		532		597		
a	35	45			55			65			75			95		110		120		146		170		190		
b	20	25			30			35			40			50		60		65		80		95		105		
e	30	35			40			50			60			70		70		75		95		110		120		
f	20	25			30			35			40			50		60		70		80		90		100		
g	19	23			28			30			35			40		50		55		60		65		70		

3.4 Design G



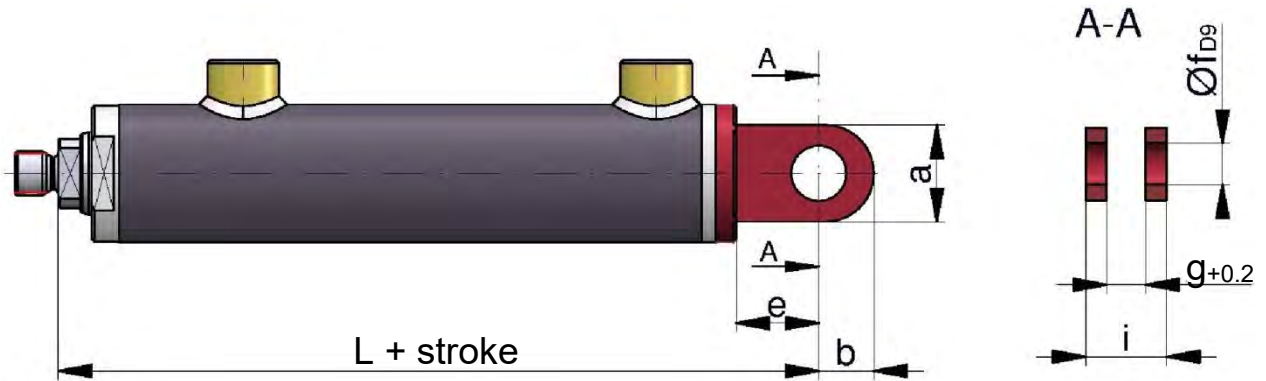
Type ZD5G																										
Piston	30	40		50			60		80			100		120		140		160		180		200				
Rod	22	22	25	30	25	30	35	30	35	40	40	50	55	55	60	70	70	85	85	100	90	110	110	125	125	140
L	147	185		210			244		288			350		382		392		477		532		597				
a	50	58		65			80		94			116		130		154		176		206		230				
b	27	32		33			44		50			63		70		82		95		113		125				
e	30	35		40			50		60			70		70		75		95		110		120				
f	20	25		30			35		40			50		60		70		80		90		100				
g	19	23		28			30		35			40		50		55		60		65		70				
h	16	20		22			25		28			35		44		49		55		60		70				

3.5 Design K



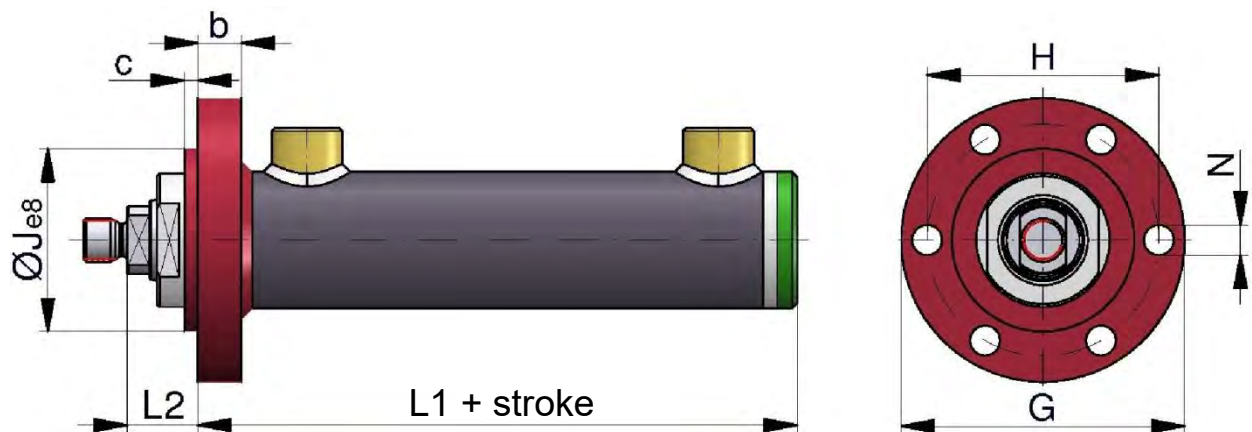
Type ZD5K																						
Piston	30	40		50			60		80			100		120		140		160				
Rod	22	22	25	30	25	30	35	30	35	40	40	50	55	55	60	70	70	85	85	100	90	110
L	147	185		210			244		288			350		382		392		477				
a	50	58		65			80		94			116		130		154		176				
b	27	32		33			44		50			63		70		82		95				
e	30	35		40			50		60			70		70		75		95				
f	20	25		30			35		40			50		60		70		80				
g	19	23		28			30		35			40		50		55		60				
h	24	29		30			35		38			43		54		65		74				

3.6 Design H



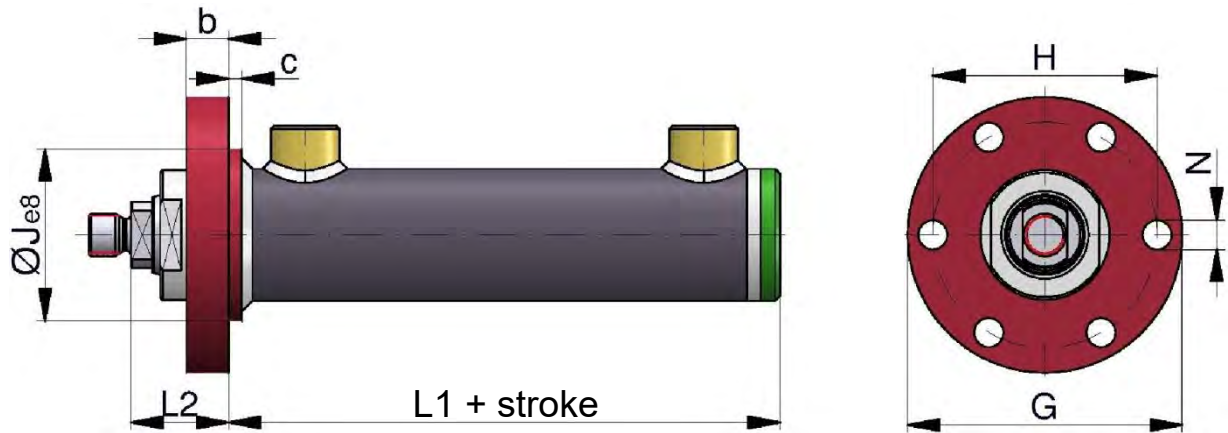
Type ZD5H																										
Piston	30	40			50			60			80			100		120		140		160		180		200		
Rod	22	22	25	30	25	30	35	30	35	40	40	50	55	55	60	70	70	85	85	100	90	110	110	125	125	140
L	147	185			210			244			288			350		382		392		477		532		597		
a	35	45			55			65			75			95		110		120		146		170		190		
b	20	25			30			35			40			50		60		65		80		95		105		
e	30	35			40			50			60			70		70		75		95		110		120		
f	20	25			30			35			40			50		60		70		80		90		100		
g	19	23			28			30			35			40		50		55		60		65		70		
i	39	47			56			60			71			80		100		111		120		125		140		

3.7 Design C1



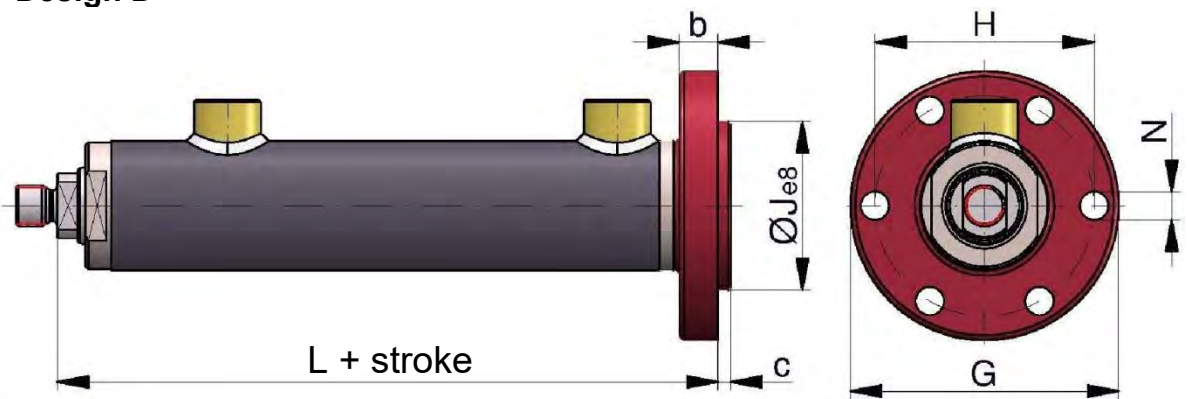
Type ZD5C1																										
Piston	30	40			50			60			80			100		120		140		160		180		200		
Rod	22	22	25	30	25	30	35	30	35	40	40	50	55	55	60	70	70	85	85	100	90	110	110	125	125	140
G	94	104			118			138			178			205		245		280		335		360		420		
H	75	85			95			115			145			170		205		240		275		300		345		
J	60	65			75			90			115			140		165		200		225		250		285		
L1	90	119			139			163			188			238		263		265		320		355		395		
L2	27	31			31			31			40			42		49		52		62		67		82		
N	9	11			11			13			17			17		21		21		30		30		33		
b	12	15			18			22			25			35		40		45		55		60		70		
c	5	5			5			5			5			5		5		5		10		10		10		

3.8 Design C2



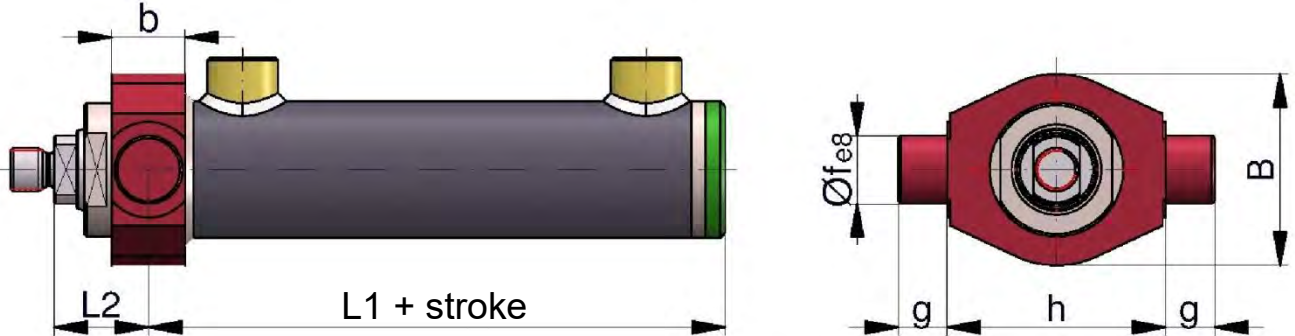
Type ZD5C2																										
Piston	30	40		50			60			80			100		120		140		160		180		200			
Rod	22	22	25	30	25	30	35	30	35	40	40	50	55	55	60	70	70	85	85	100	90	110	110	125	125	140
G	94	104		118			138			178			205		245		280		335		360		420			
H	75	85		95			115			145			170		205		240		275		300		345			
J	60	65		75			90			115			140		165		200		225		250		285			
L1	83	109		126			146			168			208		228		225		275		305		335			
L2	34	41		44			48			60			72		84		92		107		117		142			
N	9	11		11			13			17			17		21		21		30		30		33			
b	12	15		18			22			25			35		40		45		55		60		70			
c	6	6		6			6			6			6		6		6		11		12		12			

3.9 Design D



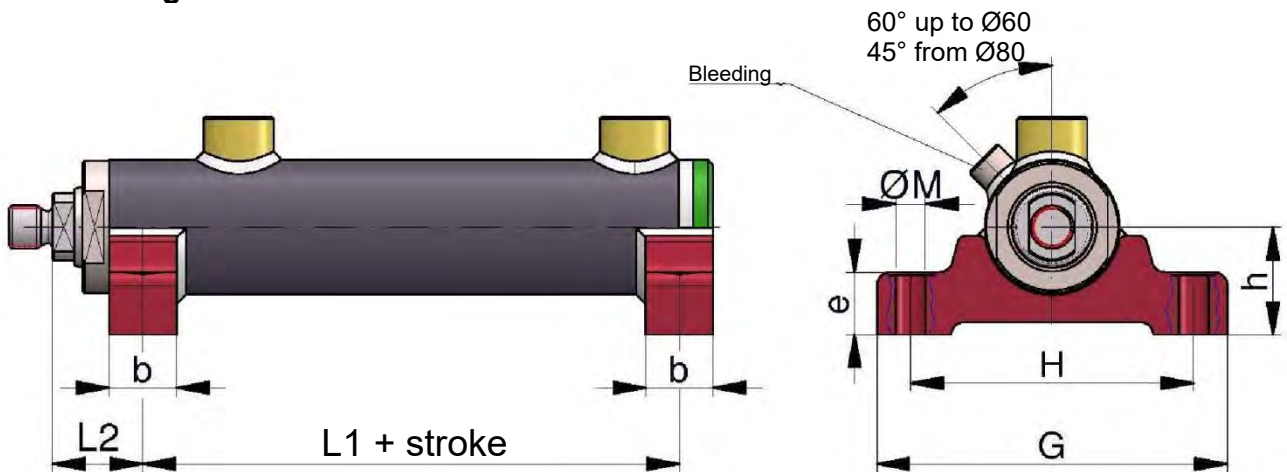
Type ZD5D																										
Piston	30	40		50			60			80			100		120		140		160		180		200			
Rod	22	22	25	30	25	30	35	30	35	40	40	50	55	55	60	70	70	85	85	100	90	110	110	125	125	140
G	94	104		118			138			178			205		245		280		335		360		420			
H	75	85		95			115			145			170		205		240		275		300		345			
J	60	65		75			90			115			140		165		200		225		250		285			
L	129	160		183			211			247			308		345		347		412		457		522			
N	9	11		11			13			17			17		21		21		30		30		33			
b	12	15		18			22			25			35		40		45		55		60		70			
c	5	5		5			5			5			5		5		5		10		10		10			

3.10 Design E



Type ZD5E																										
Piston	30		40		50		60		80		100		120		140		160		180		200					
Rod	22	22	25	30	25	30	35	30	35	40	40	50	55	55	60	70	70	85	85	100	90	110	110	125	125	140
B	60		70		80		100		125		150		175		210		235		255		295					
L1	85		111		129		150.5		173		218		238		238		290		323		357					
L2	32		39		41		43.5		55		62		74		79		92		99		120					
b	20		26		30		35		40		50		60		67		80		85		95					
f	20		25		30		35		40		50		60		65		75		80		90					
g	15		18		20		20		25		30		35		40		50		55		55					
h	70		80		90		115		140		170		190		230		245		275		320					

3.11 Design F

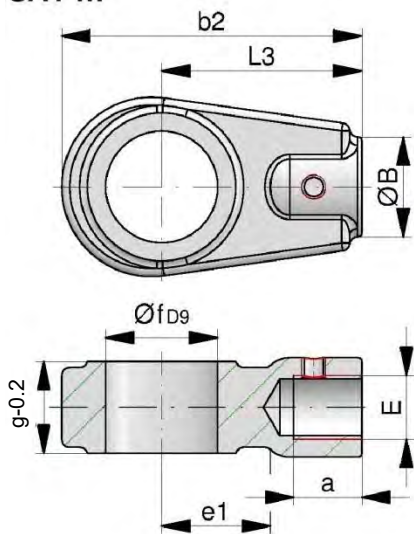


Type ZD5F																										
Piston	30		40		50		60		80		100		120		140		160		180		200					
Rod	22	22	25	30	25	30	35	30	35	40	40	50	55	55	60	70	70	85	85	100	90	110	110	125	125	140
G	110		130		150		175		215		265		295		340		400		450		510					
H	90		105		120		140		175		215		240		280		330		380		430					
L1	75		99		114		133		153		193		213		210		260		285		315					
L2	32		38.5		41		43.5		55		62		71.5		77		87		97		117					
M	9		11		13		13		17		21		25		28		31		37		37					
b	20		25		30		35		40		50		55		60		70		80		90					
e	18.5		23.5		28.5		33.5		39		50		50.5		60		70		80		90					
h	35		40		45		55		68		80		100		115		130		145		165					

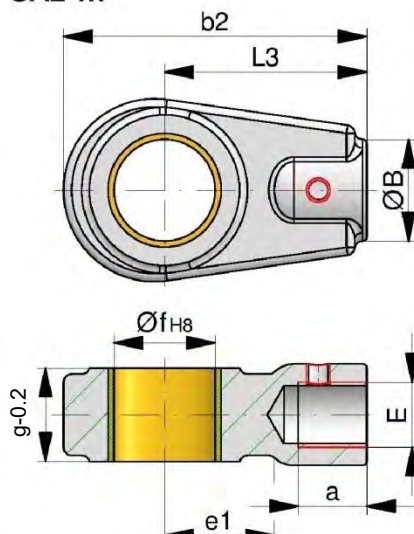
4 Mounting eyes

Type					Cyl. Ø	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	30	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	60	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
SA1-60	SA2-60	GK1-60	GA2-60	GA2-60 B	120	75	M58 x 1.5	130	59	200	189	65	67	60	50	44	54	100	M10
SA1-70	-	GK1-70	GA2-70	GA2-70 B	140	86	M65 x 1.5	150	66	232	220	75	80	70	55	49	65	111	M12
SA1-80	-	GK1-80	GA2-80	GA2-80 B	160	102	M80 x 2	170	81	265	251	80	80	80	60	55	74	120	M16
SA1-90	-	GK1-90	GA2-90	-	180	124	M100 x 2	210	101	323	302	90	95	90	65	60	-	125	M16
SA1-100	-	GK1-100	GA2-100	-	200	138	M110 x 2	235	111	360	338	105	105	100	70	70	-	140	M20

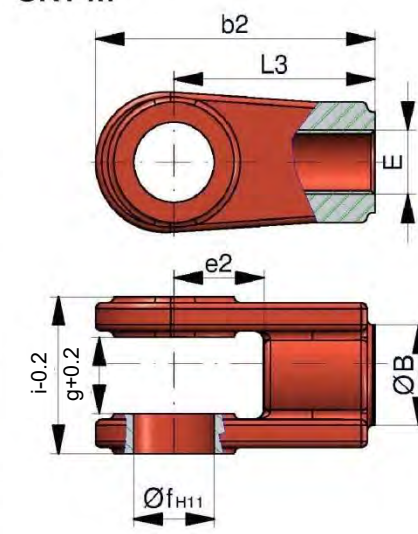
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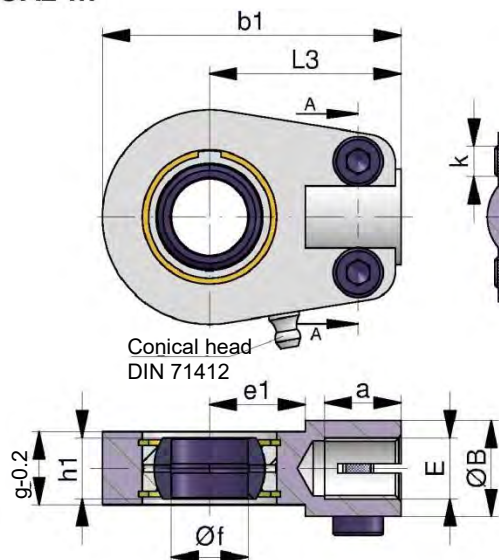
SA2-...



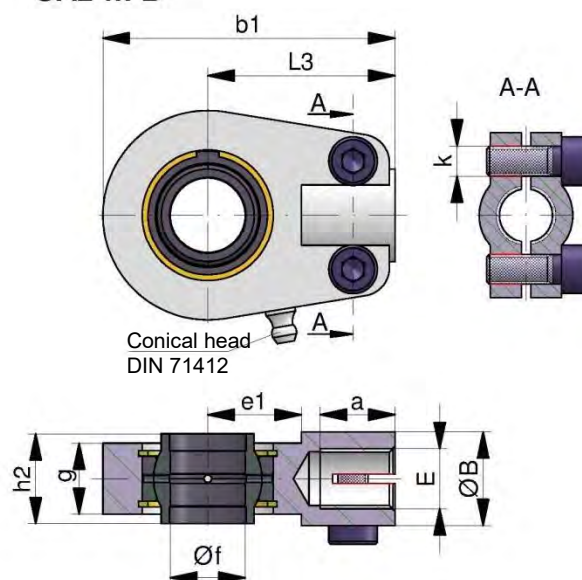
GK1-...



GA2-...



GA2-... B





ZD5 series Double-acting hydraulic cylinders

Product catalogue:
5-ZD5
July 2016

5 Weight table (kg)

Cylinder type	Designs	(stroke = 0)								50 mm Stroke	Mounting eyes					Ø f mm
		X	A	B	G,K	H	C,D	E	F		SA1-	SA2-	GK1-	GA2-	GA2-B	
ZD5.-30/	22	1.10	1.32	1.20	1.45	1.30	1.60	1.40	1.40	0.28	0.25	--	0.25	0.37	0.37	20
ZD5.-40/	22	2.05	2.65	2.35	2.47	2.45	2.85	2.65	3.05	0.45	0.30	0.45	0.35	0.43	0.43	25
	25	2.10	2.70	2.40	2.52	2.50	2.90	2.70	3.10	0.48						
ZD5.-50/	30	2.20	2.80	2.50	2.62	2.60	3.00	2.80	3.20	0.55	0.50	0.75	0.65	0.70	0.70	30
	25	2.96	4.08	3.58	3.64	3.68	4.16	3.96	4.56	0.50						
	30	3.07	4.19	3.69	3.75	3.79	4.27	4.07	4.67	0.65						
ZD5.-60/	35	3.20	4.32	3.82	3.88	3.92	4.40	4.20	4.80	0.68	0.90	1.15	1.00	1.11	1.13	35
	30	5.51	7.31	6.41	6.74	6.51	7.51	7.11	8.11	0.65						
	35	5.65	7.45	6.55	6.88	6.65	7.65	7.25	8.25	0.72						
ZD5.-80/	40	5.81	7.61	6.71	7.04	6.81	7.81	7.41	8.41	0.78	2.00	1.40	1.70	1.32	1.34	40
	40	9.90	12.90	10.40	11.72	11.30	13.40	12.70	14.10	1.35						
	50	10.40	13.40	10.90	12.22	11.80	13.90	13.20	14.60	1.60						
ZD5.-100/	55	10.70	13.70	11.20	12.52	12.10	14.20	13.50	14.90	1.80	2.20	3.40	3.50	3.28	3.32	50
	55	19.30	24.70	22.10	22.80	22.30	25.60	23.90	27.30	1.95						
	60	19.60	25.00	22.40	23.10	22.60	25.90	24.20	28.00	2.20						
ZD5.-120/	70	20.40	25.80	23.20	23.90	23.40	26.70	25.00	28.40	2.50	5.00	5.20	5.50	5.47	5.53	60
	70	29.34	37.24	33.24	33.94	33.04	39.14	36.14	41.34	3.10						
ZD5.-140/	85	31.04	38.94	34.94	35.64	34.74	40.48	37.84	43.04	3.80	8.10	—	8.60	8.57	8.68	70
	85	43.60	55.80	51.70	52.15	50.10	58.60	54.50	59.60	5.00						
ZD5.-160/	100	46.00	58.20	54.10	54.55	52.50	61.00	56.90	62.00	5.95	12.00	—	12.40	12.18	12.35	80
	90	73.70	90.00	81.80	84.00	90.00	99.20	89.60	105.2	5.73						
ZD5.-180/	110	78.70	95.00	86.80	89.00	95.00	104.2	94.60	110.2	6.95	18.50	--	19.50	21.41	—	90
	110	114.00	134.4	124.2	129.5	132.8	146	135.6	159.2	6.68						
ZD5.-200/	125	119.00	139.4	129.2	134.5	137.8	151	140.6	164.2	8.40	26.00	--	26.80	27.46	—	100
	125	166.3	210.5	183.9	189.1	183.9	217	198.9	231.1	10.96						
	140	172.7	207.9	190.3	195.5	190.3	223	205.3	237.5	12.19						



AROS Hydraulik GmbH

Product catalogue – GZD5 series Double-rod cylinders

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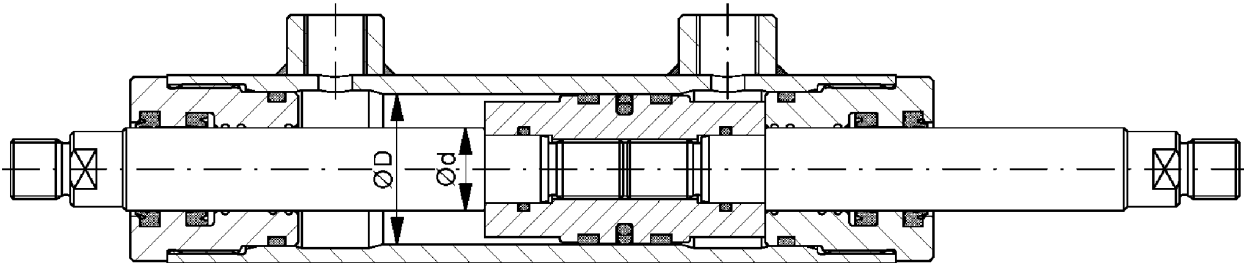
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1 General technical data

This is a variant of the series 5 double-acting hydraulic cylinder as shown in dimensioned sheet 5-ZD5. The piston rods at both ends of the cylinder produce the same stroke force and stroke speed in both directions of movement with a constant pump flow rate.

Please note our boundary and use conditions.



Piston rod:	ground, polished and hard-chrome plated
End cushioning:	not possible
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:	280 bar
max. piston speed:	0.5 m/s (higher speeds available on request)
Glydring:	smooth-running, stick-slip-free, no retaining function (standard version)
AQ seal:	smooth-running, stick-slip-free, for retaining function
Seals:	Viton available 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.



Overpressurisation

Danger

- 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 GZD5 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/or 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



GZD5 series Double-rod cylinders

Product catalogue:
5-GZD5
July 2016

2 Type code

GZD5 **F** – **50/30** – **400** – **G** – **E** + **GA2-40**

Double-rod cylinders

Series 5

Design:

X – Basic version without mounting
C – Flange on the cylinder head
D – Flange on the cylinder base
E – Trunnion on the cylinder head
F – Foot mounting

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:

GZD5G – 50/35 – 400 - G ½

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

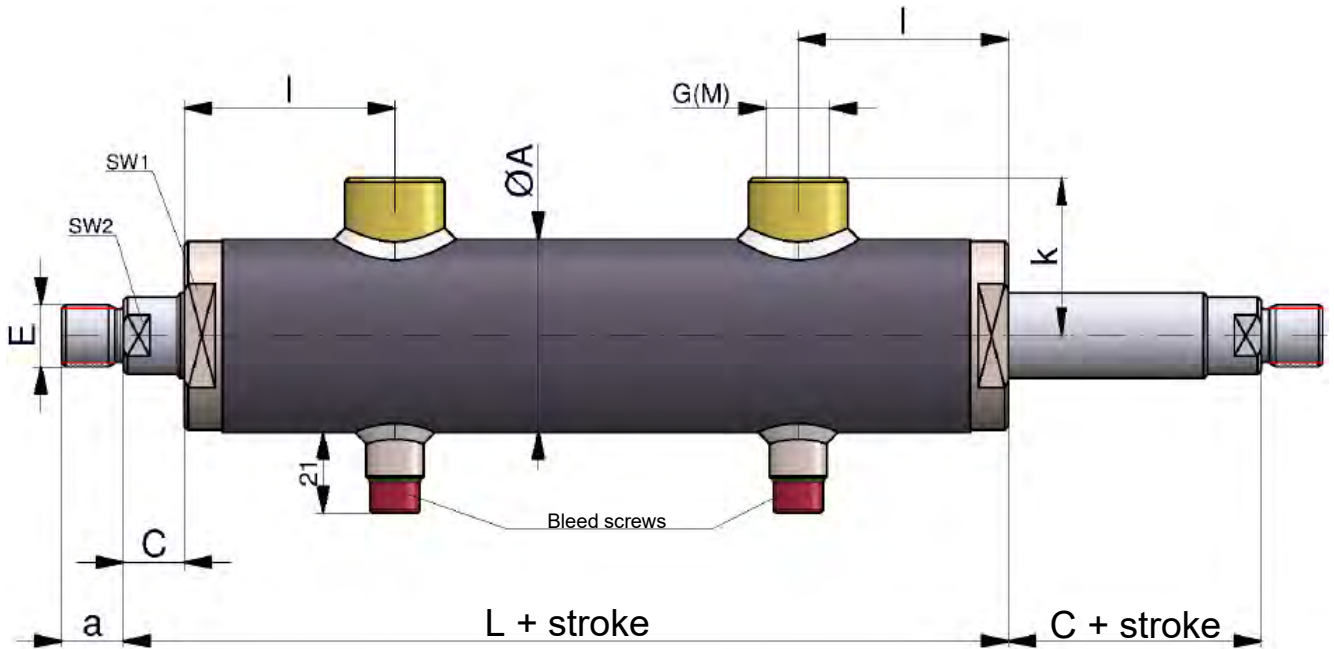
3 Designs

3.1 Design X

Basic version without mounting

If the connections differ (G, M), the dimension 'k' changes. For larger connections, dimension "l" may increase slightly in designs C, D and E. Bleed screws can be installed on request. They are located opposite the barrel connections.

Exception: Design F (see dimensioned drawing)



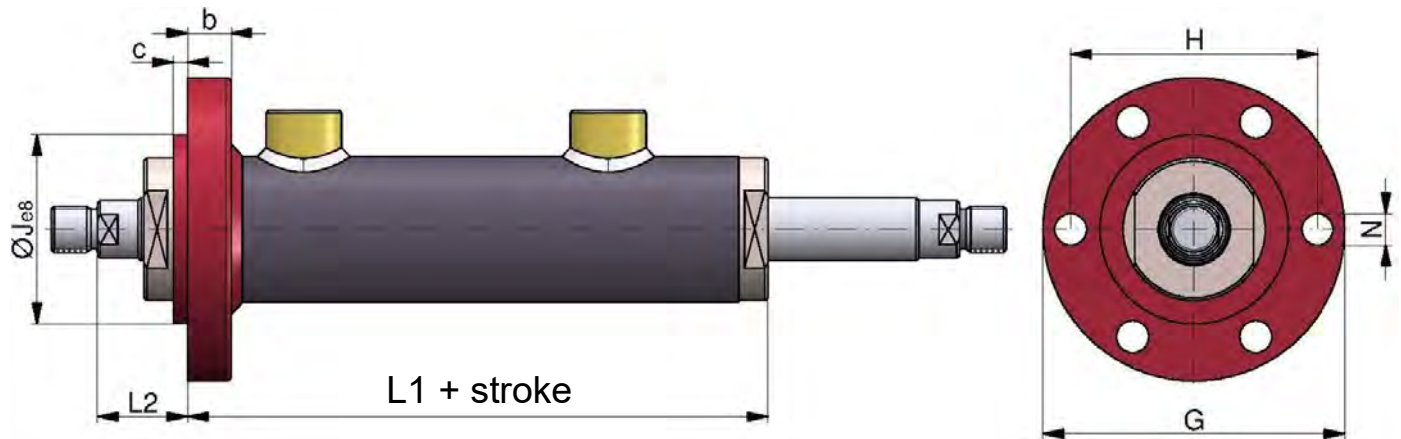
Type GZD5X																																	
Piston	30		40			50			60			80			100			120		140		160		180		200							
Rod	22	22	25	30	25	30	35	30	35	40	40	50	55	55	60	70	70	85	85	100	90	110	110	125	125	140							
A	40	50		60			75			95			120			140		170		190		210		245									
C	12	16		16			16			25			27			32		35		37		42		47									
E	M16x1.5	M16x1.5		M22x1.5			M28x1.5			M35x1.5			M45x1.5			M58x1.5		M65x1.5		M80x2		M100x2		M110x2									
L	162	181		196			218			255			287			362		399		467		528		585									
AF1	36	41		50			65			85			100			Grooves on the circumference																	
AF2	17	17	19	24	19	24	27	24	27	32	32	41	46	46	50	60	60	75	75	85	80	95	100	110	110	120							
a	16	16		22			28			35			45			58		65		80		100		110									
k	36	41		46			56			66			78			91		106		119		129		147									
l	47	55		60			66			76			84			106		112		140		165		190									
G	G ¼	G ⅜		G ⅜			G ½			G ½			G ½			G ¾		G ¾		G 1		G 1		G 1									
M	M14x1.5	M18x1.5		M18x1.5			M22x1.5			M22x1.5			M22x1.5			M27x2		M27x2		M33x2		M33x2		M33x2									
G max.	G ½	G ¾		G ¾			G 1			G 1			G 1			G 1¼		G 1¼		G 1½		G 1½		G 1½									
M max.	M22x1.5	M27x2		M27x2			M33x2			M33x2			M33x2			M42x2		M42x2		M48x2		M48x2		M48x2									



GZD5 series Double-rod cylinders

Product catalogue:
5-GZD5
July 2016

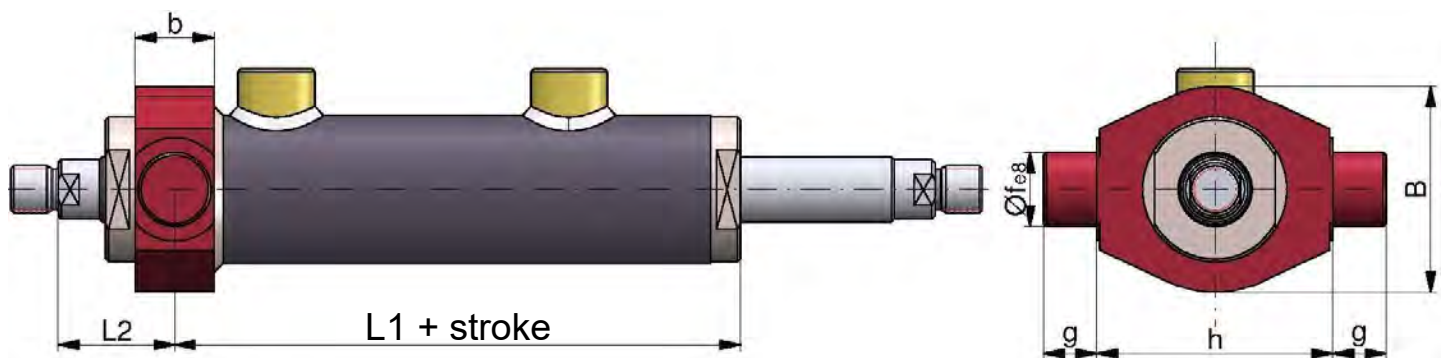
3.2 Design C



Type GZD5C

Piston	30		40			50			60			80			100		120		140		160		180		200	
Rod	22	22	25	30	25	30	35	30	35	40	40	50	55	55	60	70	70	85	85	100	90	110	110	125	125	140
G	94	104		118			138			178			205		245		280		335		360		420			
H	75	85		95			115			145			170		205		240		275		300		345			
J	60	65		75			90			115			140		165		200		225		250		285			
L1	135	150		165			187			215			245		313		347		405		461		503			
L2	27	31		31			31			40			42		49		52		62		67		82			
N	9	11		11			13			17			17		21		21		30		30		33			
b	12	15		18			22			25			35		40		45		55		60		70			
c	5	5		5			5			5			5		5		5		10		10		10			

3.3 Design E



Type GZD5E

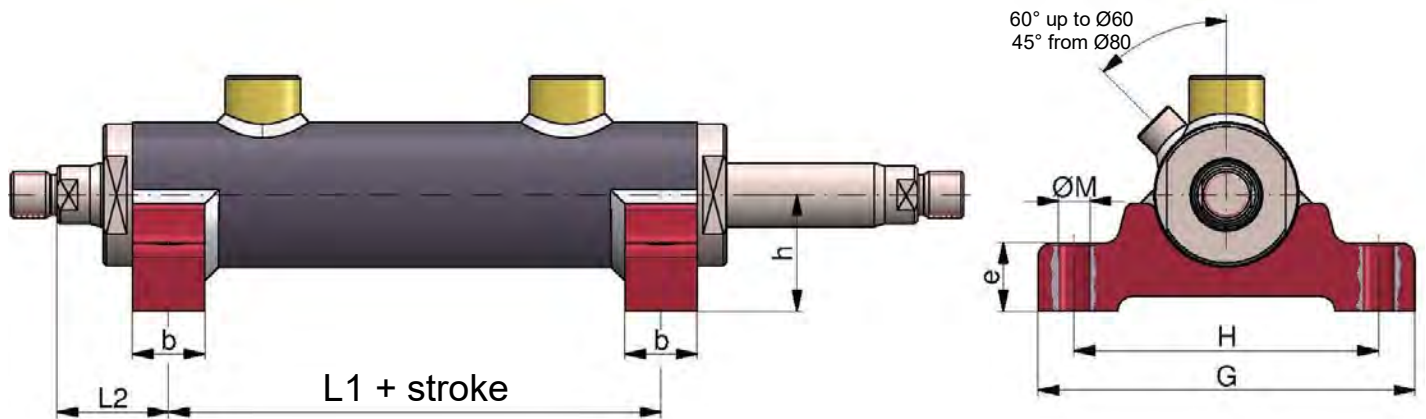
Piston	30		40			50			60			80			100		120		140		160		180		200	
Rod	22	22	25	30	25	30	35	30	35	40	40	50	55	55	60	70	70	85	85	100	90	110	110	125	125	140
B	60	70		80			100			125			150		175		210		235		255		295			
L1	130	142		155			174.5			200			225		288		320		375		429		465			
L2	32	39		41			43.5			55			62		74		79		92		99		120			
b	20	26		30			35			40			50		60		65		80		85		95			
f	20	25		30			35			40			50		60		65		75		80		90			
g	15	18		20			20			25			30		35		40		50		55		55			
h	70	80		90			115			140			170		190		230		245		275		320			



GZD5 series Double-rod cylinders

Product catalogue:
5-GZD5
July 2016

3.4 Design F

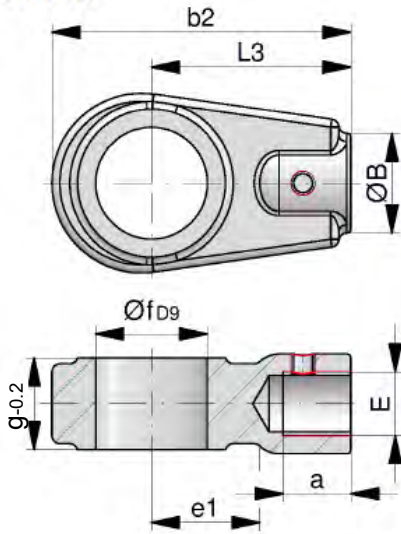


Type GZD5F																												
Piston	30			40			50			60			80			100			120		140		160		180		200	
Rod	22	22	25	30	25	30	35	30	35	40	40	50	55	55	60	70	70	85	85	100	90	110	110	125	125	140		
G	110	130	150	175	215	265	295	340	400	450	510																	
H	90	105	120	140	175	215	240	280	330	380	430																	
L1	110	120	130	147	170	190	251	280	330	376	398																	
L2	32	38.5	41	43.5	55	62	71.5	77	87	97	117																	
M	9	11	13	13	17	21	25	28	31	37	37																	
b	20	25	30	35	40	50	55	60	70	80	90																	
e	18.5	23.5	28.5	33.5	39	50	50.5	60	70	80	90																	
h	35	40	45	55	68	80	100	115	130	145	165																	

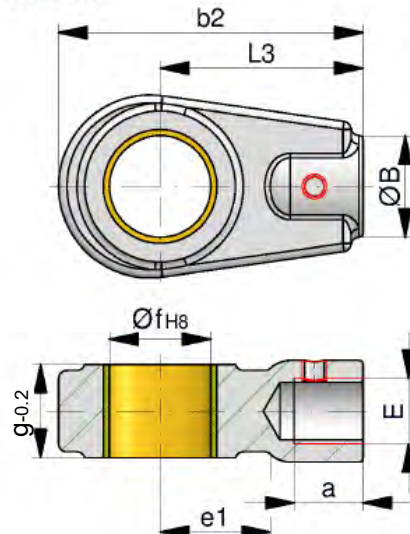
4 Mounting eyes

Type					Cyl. Ø	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	30	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	60	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
SA1-60	SA2-60	GK1-60	GA2-60	GA2-60 B	120	75	M58 x 1.5	130	59	200	189	65	67	60	50	44	54	100	M10
SA1-70	-	GK1-70	GA2-70	GA2-70 B	140	86	M65 x 1.5	150	66	232	220	75	80	70	55	49	65	111	M12
SA1-80	-	GK1-80	GA2-80	GA2-80 B	160	102	M80 x 2	170	81	265	251	80	80	80	60	55	74	120	M16
SA1-90	-	GK1-90	GA2-90	-	180	124	M100 x 2	210	101	323	302	90	95	90	65	60	-	125	M16
SA1-100	-	GK1-100	GA2-100	-	200	138	M110 x 2	235	111	360	338	105	105	100	70	70	-	140	M20

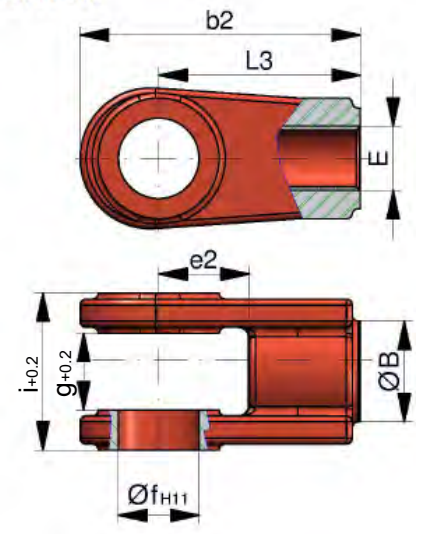
SA1-...



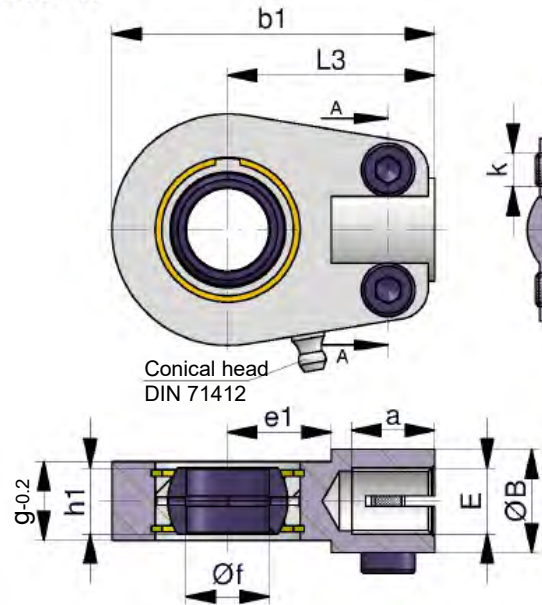
SA2-...



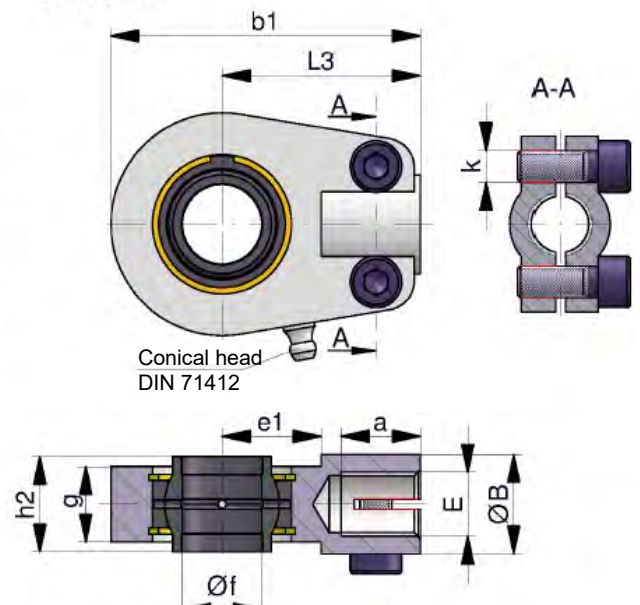
GK1-...



GA2-...



GA2-... B





GZD5 series Double-rod cylinders

Product catalogue:
5-GZD5
July 2016

5 Weight table (kg)

Cylinder type		Designs (stroke = 0)				50 mm	Mounting eyes					Ø f
		X	C,D	E	F	Stroke	SA1-	SA2-	GK1-	GA2-	GA2-B	mm
GZD5.-30/	22	1.10	1.60	1.40	1.40	0.28	0.25	--	0.25	0.37	0.37	20
GZD5.- 40/	22	2.05	2.85	2.65	3.05	0.45	0.30	0.45	0.35	0.43	0.43	25
	25	2.10	2.90	2.70	3.10	0.48						
	30	2.20	3.00	2.80	3.20	0.55						
GZD5.- 50/	25	2.96	4.16	3.96	4.56	0.50	0.50	0.75	0.65	0.70	0.70	30
	30	3.07	4.27	4.07	4.67	0.65						
	35	3.20	4.40	4.20	4.80	0.68						
GZD5.- 60/	30	5.51	7.51	7.11	8.11	0.65	0.90	1.15	1.00	1.11	1.13	35
	35	5.65	7.65	7.25	8.25	0.72						
	40	5.81	7.81	7.41	8.41	0.78						
GZD5.- 80/	40	9.90	13.40	12.70	14.10	1.35	2.00	1.40	1.70	1.32	1.34	40
	50	10.40	13.90	13.20	14.60	1.60						
	55	10.70	14.20	13.50	14.90	1.80						
GZD5.-100/	55	19.30	25.60	23.90	27.30	1.95	2.20	3.40	3.50	3.28	3.32	50
	60	19.60	25.90	24.20	28.00	2.20						
	70	20.40	26.70	25.00	28.40	2.50						
GZD5.-120/	70	29.34	39.14	36.14	41.34	3.10	5.00	5.20	5.50	5.47	5.53	60
	85	31.04	40.48	37.84	43.04	3.80						
GZD5.-140/	85	43.60	58.60	54.50	59.60	5.00	8.10	--	8.60	8.57	8.68	70
	100	46.00	61.00	56.90	62.00	5.95						
GZD5.-160/	90	73.70	99.20	89.60	105.2	5.73	12.00	--	12.40	12.18	12.35	80
	110	78.70	104.2	94.60	110.2	6.95						
GZD5.-180/	110	114.00	146	135.6	159.2	6.68	18.50	--	19.50	21.41	--	90
	125	119.00	151	140.6	164.2	8.40						
GZD5.-200/	125	166.3	217	198.9	231.1	10.96	26.00	--	26.80	27.46	--	100
	140	172.7	223	205.3	237.5	12.19						



AROS Hydraulik GmbH

Product catalogue – ZDV7
Series double-acting hydraulic cylinders
Nominal pressure = 250 bar

Standards:

DIN 24 333, ISO 6022,

CETOP RP 73H

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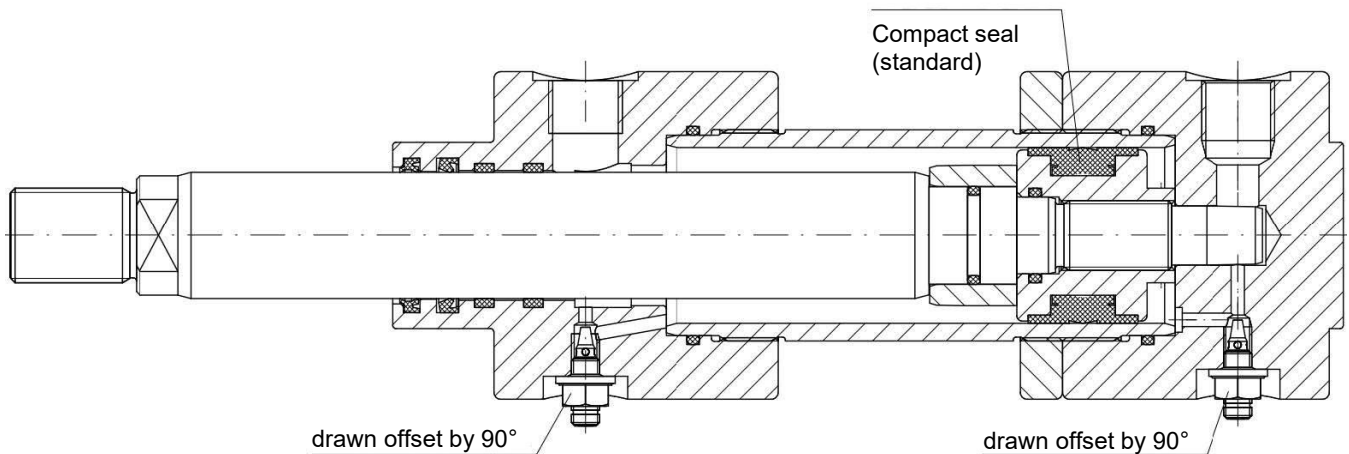
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1 General technical data

Robust and universally usable bolted assemblies. This series of cylinders includes the necessary dimensions to ensure international interchangeability of hydraulic cylinders for a nominal pressure of 250 bar. Starting with a basic cylinder, all designs can be created by attaching the mounting components. Tried-and-tested seals ensure optimal sealing. The end cushioning behaves progressively as it transitions into the cushioning phase and can be finely adjusted. In addition to the standardised dimensions, a compact cylinder design with smaller installation dimensions is available.



Nominal pressure:	250 bar
Piston rod:	ground and hard chrome-plated; can be hardened in special cases
End cushioning:	without, on the rod side and the base side, on both sides
Operating temperature:	-20°C to +80°C (other temperatures available on request)
Operating fluid:	mineral-based hydraulic oil (other operating fluids possible on request)
Piston speed:	0 - 0.5 m/s (higher speeds available on request)
Compact seal:	achieves retaining function
Glydring:	smooth-running, stick-slip-free, excellent static sealing
Piston area ratio /	performance
Annular area:	$\varphi = 1.6$ and 2
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.



Overpressurisation

Danger

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 ZDV7 series cylinders are robust, bolted cylinders. Reliability is highly dependent on the application. Thanks to the bolted assembly, the service life is significantly longer than that of a welded version. Please contact our engineering department regarding the operating limits for $> 1,000,000$ 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 work not carried out by AROS Hydraulik GmbH.



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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
$\leq 1,250$	+2 0
$> 1,250 \leq 3,150$	+5 0
$> 3,150 \leq 8,000$	+8 0

Dimensions in millimetres



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2 Type code

ZDV7 C – N – DB – 80 – 56 – 600 – G3/4 – G-V + GA3-50

Double-acting hydraulic cylinder

Series 7

Design:

X – Basic version
G – Spherical rod eye on the cylinder base
C – Flange on the rod side
D – Flange on the base side

Standard or compact series

N – Installation dimension according to DIN 24333
K – Installation dimension of the compact series; dimensions marked with *

Cushioning

DH – Base-side cushioning
DV – Rod-side cushioning
DB – Cushioning on both sides
--- – without cushioning

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

Seal type

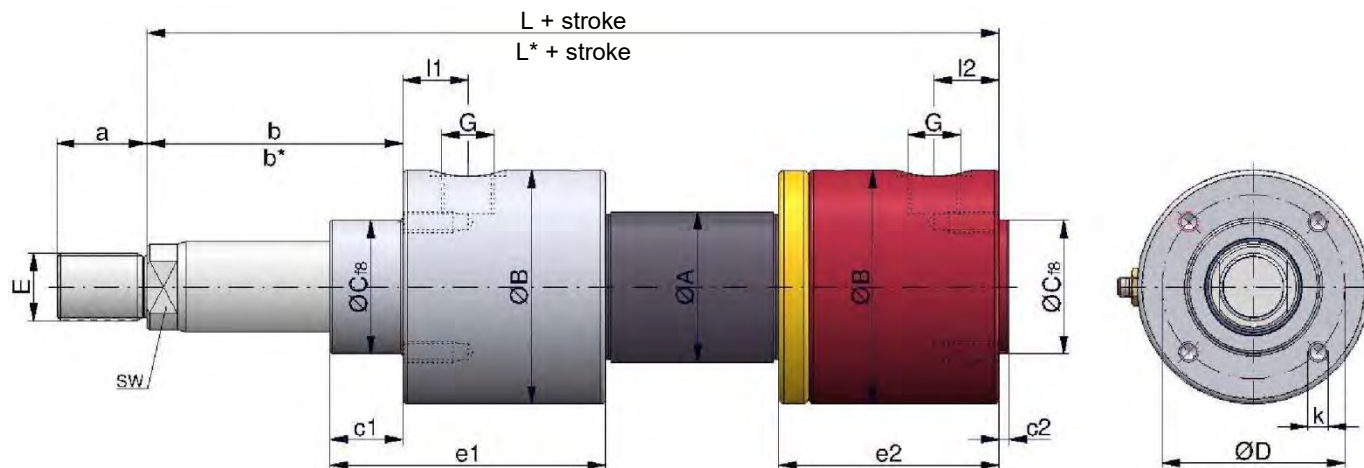
--- – Compact seal (standard)
G – Glyd ring
V – Seal material: VITON (with Glyd Ring piston seal)

Mounting (omitted if not required)

3 Designs

3.1 Design X (A)

Basic version without mounting

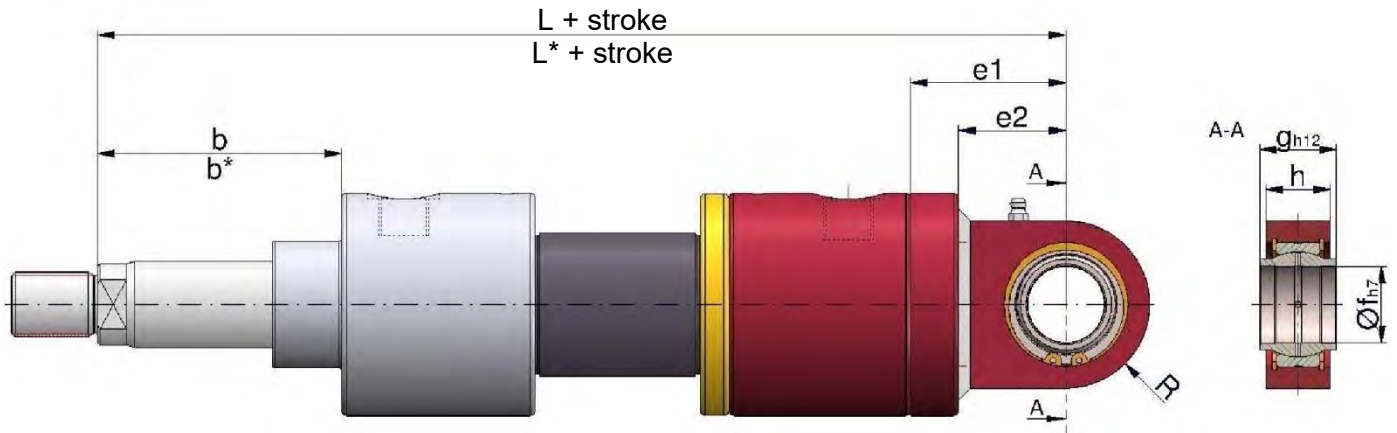


Type ZDV7X												
Piston	40		50		63		80		100		125	
Rod	25	28	32	36	40	45	50	56	63	70	80	90
G	G ½		G ½		G ¾		G ¾		G 1		G 1	
Min. stroke	50											
A	50		60		75		95		120		150	
B	82		93		108		128		158		197	
C	43		53		65		82		98		120	
E	M20 x 1.5		M27 x 2		M33 x 2		M42 x 2		M48 x 2		M64 x 3	
L	--		240		270		300		335		390	
L *	157		185		205		223		247		269	
AF	20	22	27	27	32	36	40	46	50	60	70	80
a	28		36		45		56		63		85	
b	--		102		118		137		156		197	
b *	36		47		53		60		68		76	
c1	21		29		32		36		41		45	
c2	3		4		4		4		5		5	
e1	92		110		120		135		145		156	
e2	76		88		94		103		111		116	
l1	23		26		31		36		37		37	
l2	22		26		27		27		30		30	
D	62		73		87		105		128		158	
k	M 8		M 8		M 10		M 12		M 16		M 20	
Cush. length	25		25		28		30		35		40	

Pistons up to Ø 40mm available in compact design only (non-standardised)

* Installation dimensions of the compact series

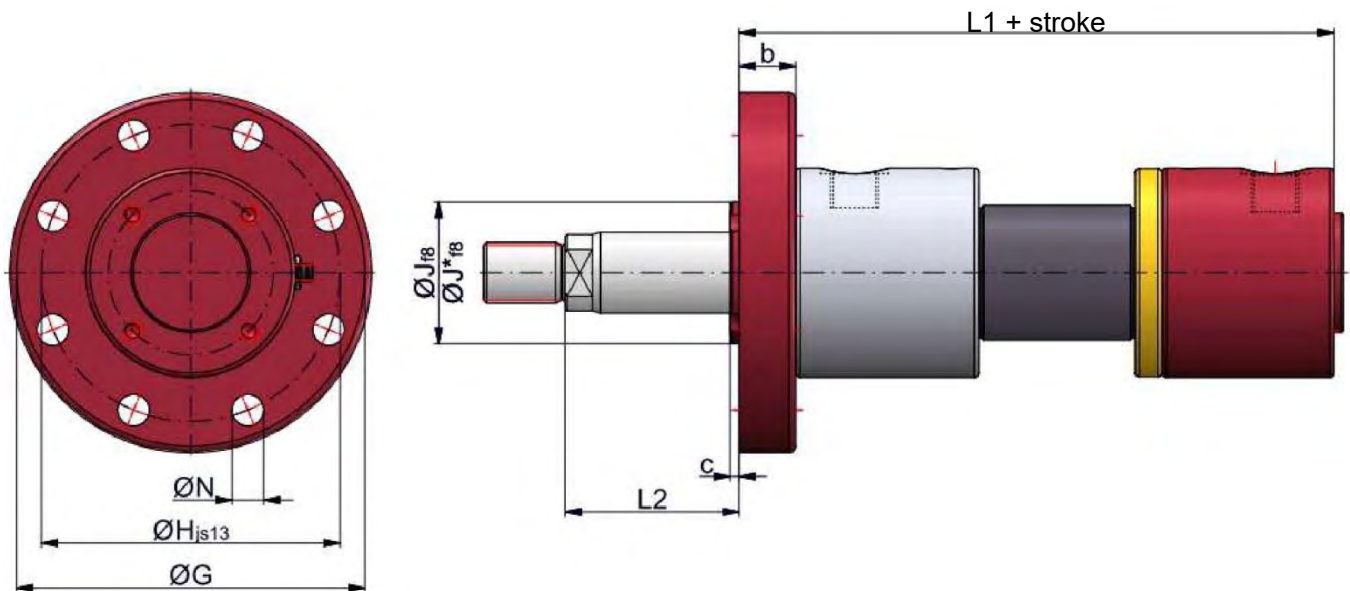
3.2 Design G (DB)



Type ZDV7G												
Piston	40		50		63		80		100		125	
Rod	25	28	32	36	40	45	50	56	63	70	80	90
L1	---		305		348		395		442		520	
L*1	213		250		283		318		354		399	
b	---		102		118		137		156		197	
b*	36		47		53		60		68		76	
e1	56		65		78		95		107		130	
e2	38		45		58		70		77		90	
R	30		35		50		62		71		90	
f	25		32		40		50		63		80	
g	25		32		40		50		63		80	
h	23		27		35		40		55		60	

* Installation dimensions of the compact series

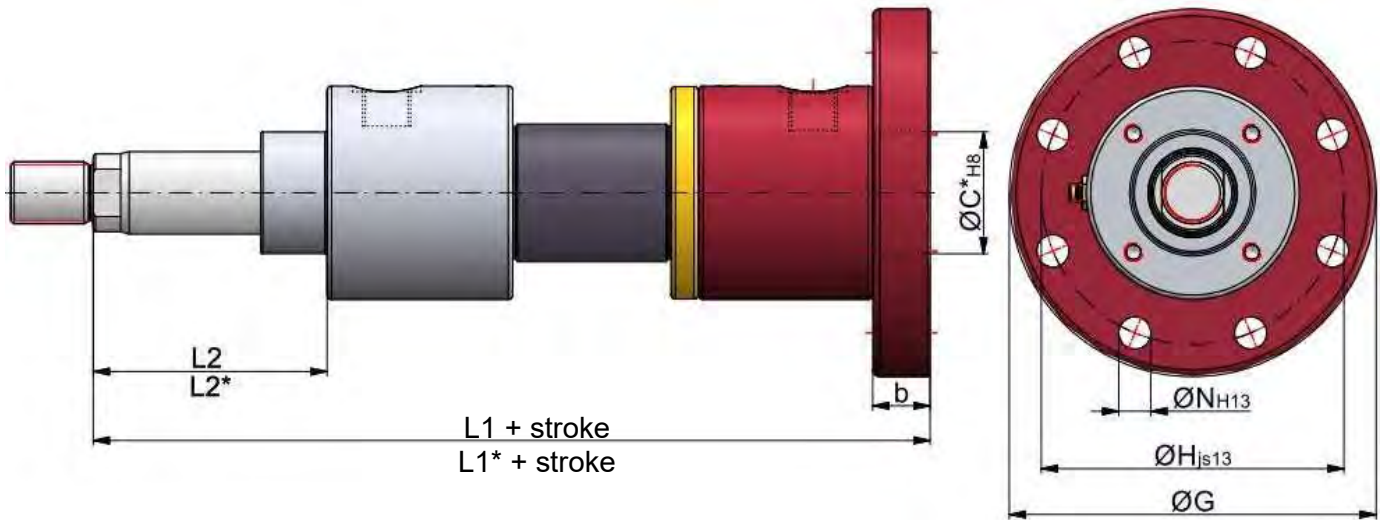
3.3 Design C (CA)



Type ZDV7C												
Piston	40		50		63		80		100		125	
	25	28	32	36	40	45	50	56	63	70	80	90
L1	139		163		180		195		215		233	
L2	18		22		25		28		32		36	
G	145		160		180		210		250		290	
H	120		132		150		180		212		250	
J	---		63		75		90		110		132	
J*	43		53		65		82		98		120	
N	11		14		14		18		22		22	
b	18		25		28		32		36		40	
c	3		4		4		4		5		5	

* Installation dimensions of the compact series

3.4 Design D (CB)



Type ZDV7D												
Piston	40		50		63		80		100		125	
Rod	25	28	32	36	40	45	50	56	63	70	80	90
L1	---		265		298		332		371		430	
L*1	175		210		233		255		283		309	
L2	---		102		118		137		156		197	
L2*	36		47		53		60		68		76	
G	145		160		180		210		250		290	
H	120		132		150		180		212		250	
C*	43		53		65		82		98		120	
N	11		14		14		18		22		22	
b	18		25		28		32		36		40	

* Installation dimensions of the compact series



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4 Mounting eye

Type	Cyl. Ø D	Dimensions (mm)													Weight t (kg)
		Øf	E	L	a	d	B	e1	e2	b1	b2	h	g	k	
GA 3-25	40	25	M 20x1.5	65	29	58	30	27	94	54	17	21	25	M6	0.66
GA 3-32	50	32	M 27x2	80	37	70	38	32	115	66	22	27	32	M8	1.2
GA 3-40	63	40	M 33x2	97	46	89	47	41	142	80	26	32	40	M8	2.1
GA 3-50	80	50	M 42x2	120	57	108	58	50	174	96	32	40	50	M10	4.4
GA 3-63	100	63	M 48x2	140	64	132	70	62	211	114	38	52	63	M12	7.6
GA 3-80	125	80	M 64x3	180	86	168	90	78	270	148	48	66	80	M 16	14.5

GA3-...
(according to DIN 24338 – ISO 6982)

