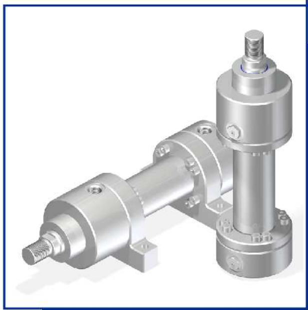
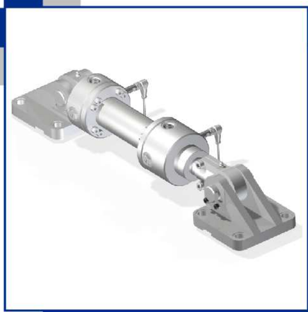
ISO 6022

MADE IN GERMANY

Edition 1/2016

ONLINE
configurable





AGIROSSI GMBH
INDUSTRIE- & MOBILHYDRAULIK

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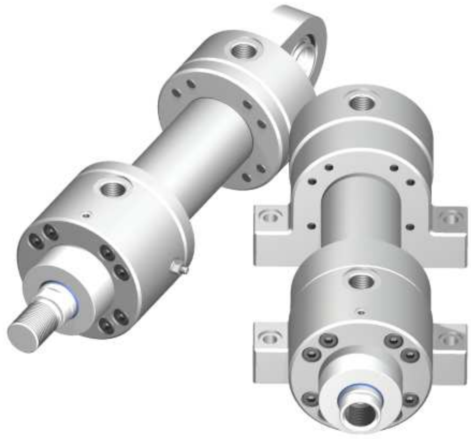
Accessory:

ISO 6022

General Information

The R2 series of the double-acting hydraulic cylinders was developed, to meet the requirements of the industry related to ISO 6022 and DIN 24333 construction standards. The compact construction and the quality selection of the used materials and gaskets, combined with their strict concluding examination, which simulates the normal working condition of the cylinders, make these cylinders an optimal choice for all kinds of industrial applications.



Technical Information

Dimensions: according to ISO 6022 and DIN 24333
Available piston diameters: from 40mm to 320mm
Rods: resistant, chrome plated and grinded with a roughness Ra = 0.2µm
On request also available with an induction hardened, in stainless steel or NIKROM suface.
Stroke: customer request
tolerances: stroke <= 500mm = +/-1mm
stroke 500 to 1.500mm = +/-2mm
stroke 1.500 to 3.000mm = +/-3mm
stroke 3.000 to 6.000mm = +/-4,5mm
Working pressure: 250 bar (25MPa)
Test pressure: 320 bar (32MPa)
Available mountings: different mountings for the cylinder and 4 additional accessory parts the rod
Safety instruction:
- the installation may only be conducted by a hydraulic expert
- the operating pressure must be secured by a relief valve
- security norm EN 982 for hydraulic must be observed

Intended usage: performing a linear pressure in a stroke under observance of technical data

Seal Selection				
Seal Type	Hydraulic Fluid	Min. Working Pressure	Working Temperature	Max. Speed
Standard (small friction) (Nithril (NBR) + PTFE)	Mineral oil HH, HL, HLP, HLPD and HM	20 bar	- 20 °C to + 100 °C	1 m/s *
VITON (Fluoroelastomer (FKM) + PTFE) Utilization: high temperatures and / or aggressive fluid	Nonflameable hydraulic fluid with phosphoric ester (HFP-R), hydraulic oil for high tempera-tures Special hydraulic fluid	10 bar	- 10 °C to + 150 °C	1 m/s *
* 0,1 m/s gegen Anschlag, darüber hinaus ist eine Endlagendämpfung erforderlich				

Distance Ring Selection		
Distance Ring Quantity	Distance Ring Length	Recommendation for Strokes
0	0 mm	from 0 to 1.000 mm
1	50 mm	from 1.000 to 1.500 mm
2	100 mm	from 1.500 to 2.000 mm
3	150 mm	from 2.000 to 3.000 mm
4	200 mm	above 3.000 mm

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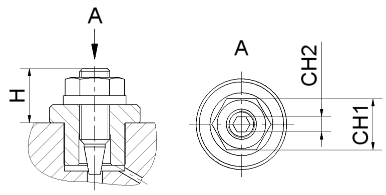
General Information

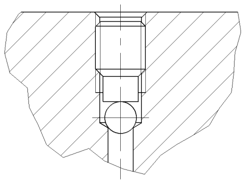
Final Cushion									
Piston-ø	50	63	80	100	125	160	200	250	320
Cushioning Length	30	30	32	40	45	50	65	95	100

Adjustment Screw



H	CH1	CH2
18	17	5

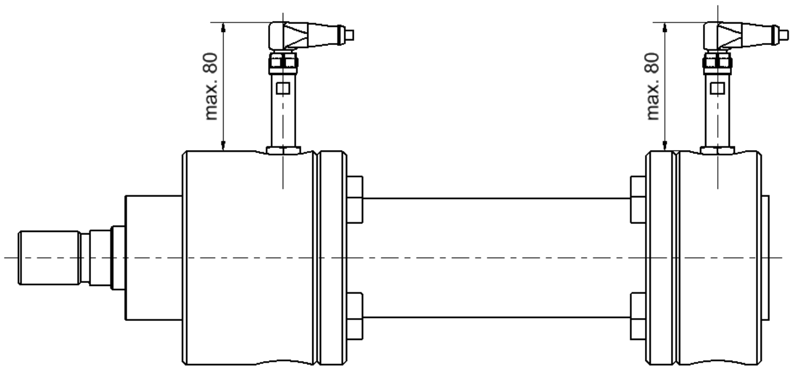
Air Vents



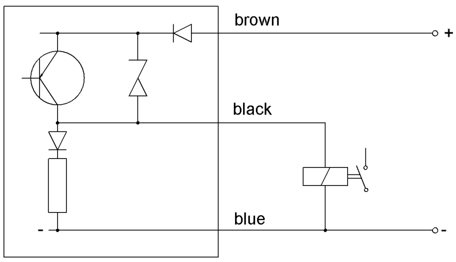
The air vents are mounted inside the cylinder head and bottom and are so protected from any accidental removal.
To drain air, remove the set screw, after discharging the air, close is again and check the sealing.

Inductive Sensors

Inductive sensors can detect the position of the piston near the stroke end. They are mounted directly inside the cylinder head and bottom. The sensors create a magnetic field and measure any change when the piston ist approaching.
The sensors are delivered with a connector and an about 4m long cable.



Technical Data	
Working temperature	-25 + 80°C
Supply voltage	10 – 30 V cc
Load	200 mA
Execution	PNP
Output type	NA
dyn. pressure	350 bar
min. working pressure	20 bar



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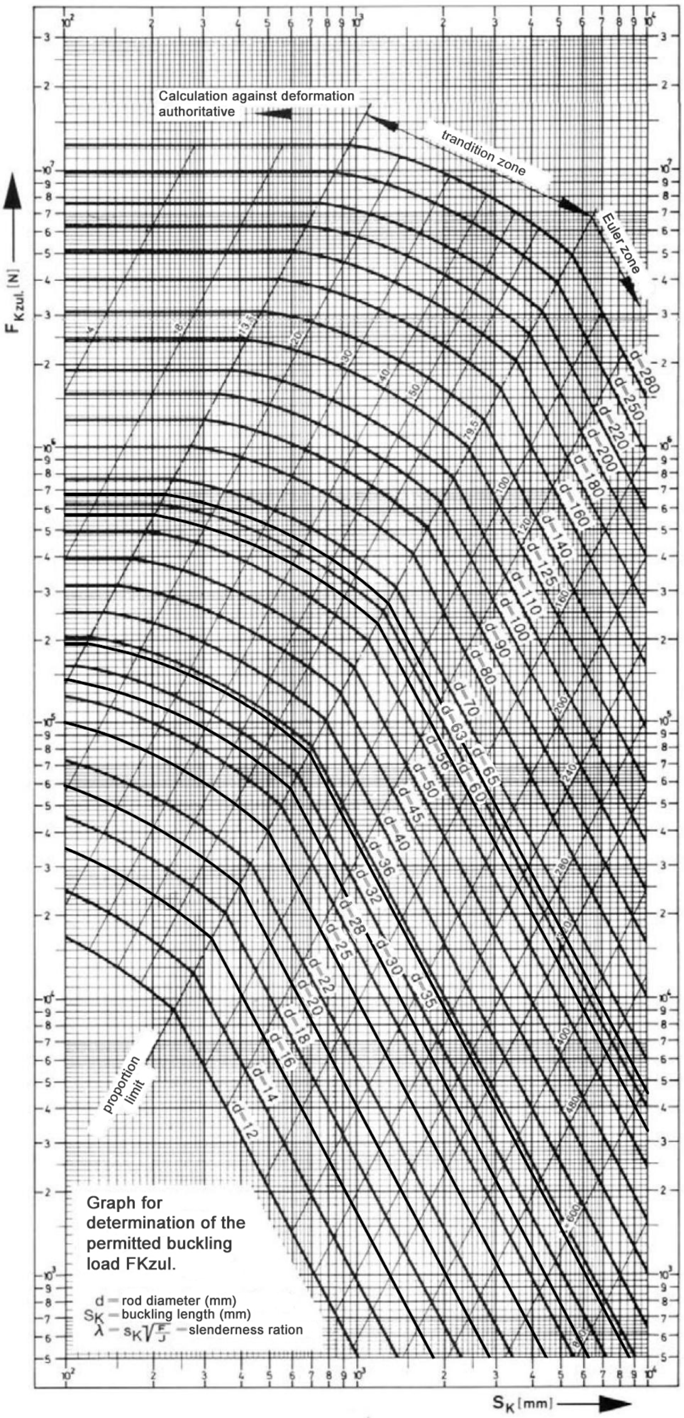
General Information

Buckling Load

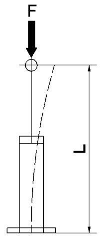
For hydraulic cylinder, especially for long strokes, rod buckling is possible.

Calculation of the permitted buckling load

1. Determine the buckling length SK using the assembly type and the installation length.
2. Determine the permitted buckling load $F_{K\ zul.}$ with SK, rod diameter d and the graph.

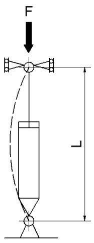


Euler - Case 1

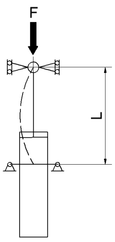


S_K=L*2

Euler - Case 2

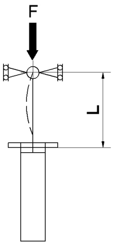


S_K=L

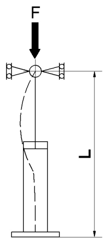


S_K=L

Euler - Case 3

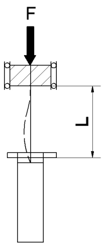


S_K=L*0,7



S_K=L*0,7

Euler - Case 4



S_K=L*0,5

Buckling load calculation $F_{K\ zul.}$ according to Euler

$$F_{K\ zul.} = \frac{\pi^2 * E * I}{\nu * S_K^2}$$

$F_{K\ zul.}$ = permitted buckling load in N
E = elasticity modulus of steel = 210.000 N/mm²
I = area moment in mm^4

$$I = \frac{\pi * d^4}{64}$$

d = rod-ø in mm
S_K = free buckling length in mm
ν = safety factor (4)

General Information

Calculation Force F / Volume V						
Piston-ø	Rod-ø	Area Ratio	Pressure with 100 bar (in kN)	Tension with 100 bar (in kN)	Volume with 100mm stroke (in L) piston side	Volume with 100mm stroke (in L) rod side
50	36	2,08	19,63	9,46	0,2	0,09
63	45	2,04	31,17	15,27	0,31	0,15
80	56	1,96	50,27	25,64	0,5	0,26
100	70	1,96	78,54	40,06	0,79	0,4
125	90	2,08	122,72	59,1	1,23	0,59
160	110	1,9	201,06	106,03	2,01	1,06
200	140	1,96	314,16	160,22	3,14	1,6
250	180	2,08	490,87	236,4	4,91	2,36
320	220	1,9	804,25	424,12	8,04	4,24

All pressure designations are calculated with a theoretical degree of efficiency of 100%.

Order Specification (Article code)

1		2		3		4		5		6		7		8		9		10		11	
R2	-		-		-		-		-		-		-		-		-		-		-

	12	13			14	15			16	17			18	19		20		21	22		23	24
P			-	R			-	S			-	K			-		-			-		

1 Type
R2 – ISO 6022

2 Piston-ø	3 Rod-ø
50	**L** - 36
63	**M** - 45
80	**P** - 56
100	**R** - 70
125	**T** - 90
160	**V** - 110
200	**Z** - 140
250	**X** - 180
320	**Y** - 220

4 Stroke Length (in mm)

5 Cushioning
C - without
E – rod side
G – bottom side
P – both sides

6 Rod end
A – male thread
W – female thread

7 Cylinder Mounting
00 – basic version (nicht nach ISO)
03 – support (ISO MS2)
06 – trunnion in the middle (ISO MT4) (put the dimension XV to the end of the code: **XV*****)
07 – strap bottom side (ISO MP3)
08 – ball-joint end bottom side (ISO MP5)
13 – flange head side (ISO MF3)
14 – flange bottom side (ISO MF4)

8 Air Bleed
O – without
A – rod side
B – bottom side
C – both sides

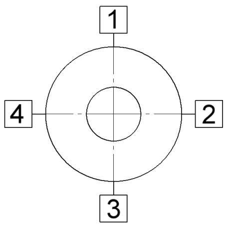
9 Induktive Sensor
O – without
A – rod side
B – bottom side
C – both sides

10 – Seals
S – Standard
V – VITON

11 Distance Rings Quantity (50mm per ring)
O – without
1 – 1 distance ring
2 – 2 distance rings
3 – 3 distance rings
4 – 4 distance rings

Connection Positions

View On Rod



Oil Port			
12	rod side	13	rod side
Cushioning *			
14	rod side	15	rod side
Air Bleed *			
16	rod side	17	rod side
Induktive Sensor *			
18	rod side	19	rod side
* leave out when „without“ was chosen			

20 Drainage Port (rod side)
D0 – without
D1 – with

Accessory		
* leave out if not necessary ** see accessory (from p. 15) for Art-Code	**21 Bottom Side ***	**22 Art-Code ***
	B	**
	23 Rod Side *	**24 Art-Code ***
	S	**

Order example: R2-80-P-200-P-A-06-C-F-S-1-P11-R22-S33-K44-D0 XV236

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Further information about the configurator on www.agirossi.de

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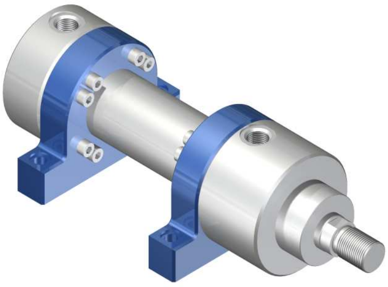
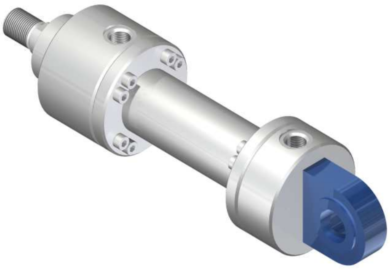
Overview of Mountings

00 – Basic version (not in ISO)



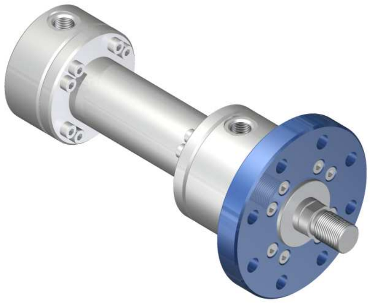
03 – Support (ISO MS2)

06 – Trunnion in the middle (ISO MT4)

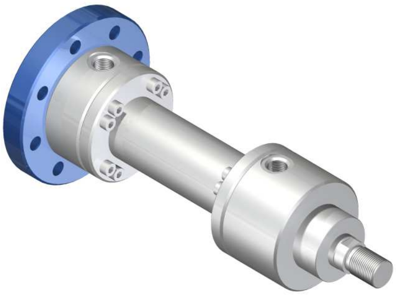


07 – Strap bottom side (ISO MP3)

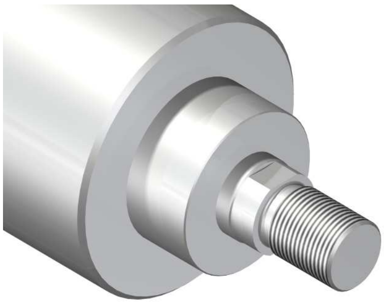
08 – Ball-joint end bottom side (ISO MP5)



13 – Flange head side (ISO MF3)



14 – Flange bottom side (ISO MF4)



A – Male thread

W – Female thread

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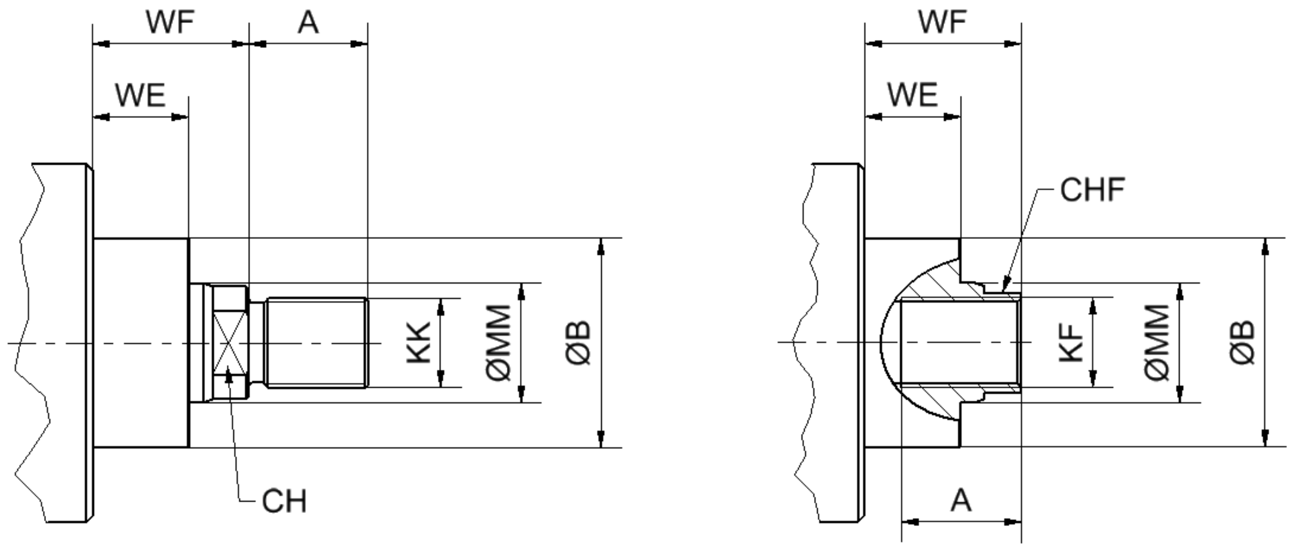
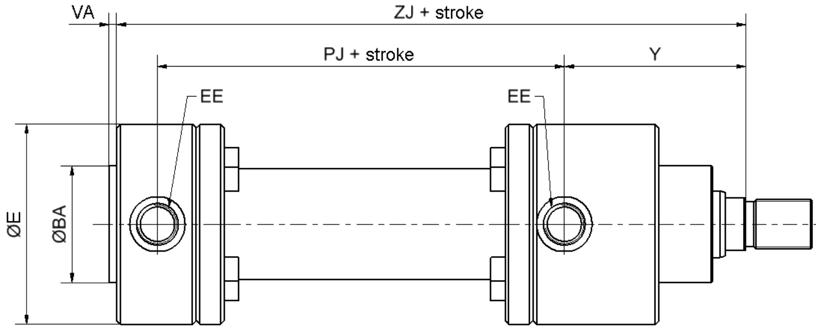
Rod End



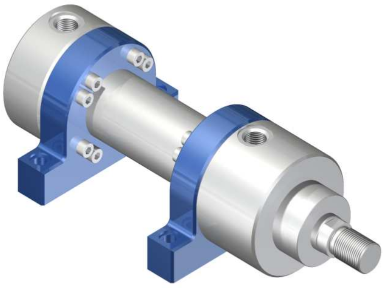
Piston-ø	Stangen-ø (MM)	KK	KF	A	CH	CHF	B	WE	WF
50	36	M27x2	M27x2	36	28	28	63	29	47
63	45	M33x2	M33x2	45	36	36	75	32	53
80	56	M42x2	M42x2	56	46	46	90	36	60
100	70	M48x2	M48x2	63	60	60	110	41	68
125	90	M64x3	M64x3	85	75	75	132	45	76
160	110	M80x3	M80x3	95	95	95	160	50	85
200	140	M100x3	M100x3	112	120	120	200	61	101
250	180	M125x4	M125x4	125	-	-	250	71	113
320	220	M160x4	M160x4	160	-	-	320	88	136

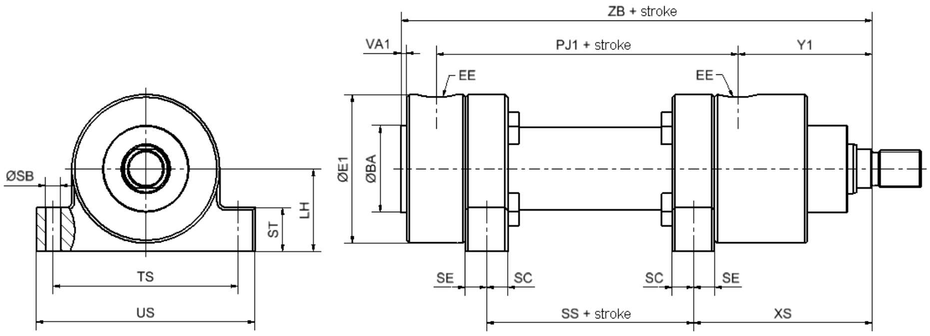
Cylinder Mounting

Basic Version — not in ISO — 00

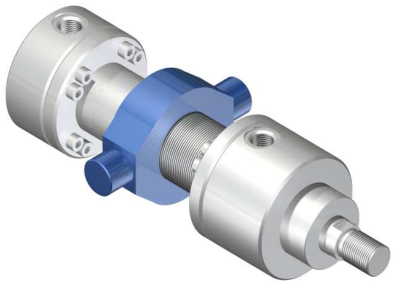


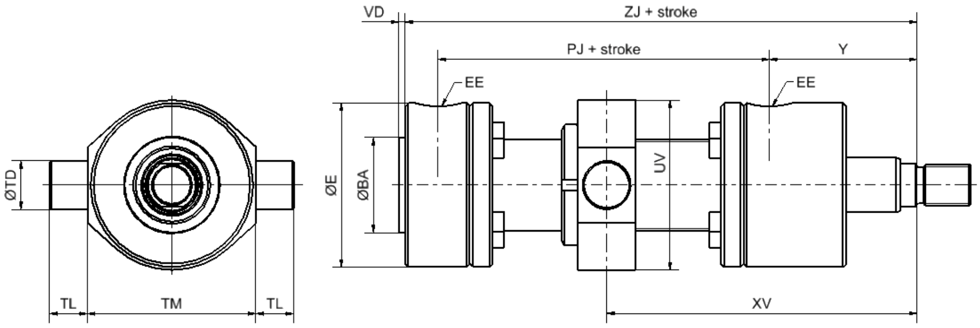
Support — ISO MS2 — 03



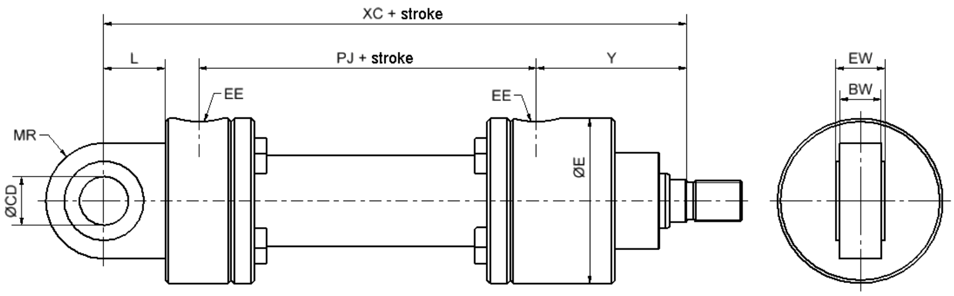


Trunnion In The Middle — ISO MT4 — 06

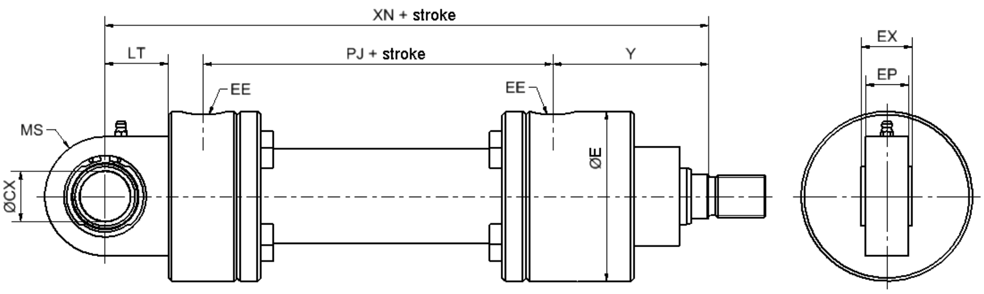




Strap Bottom Side — ISO MP3 — 07



Ball-Joint End Bottom Side — ISO MP5 — 08



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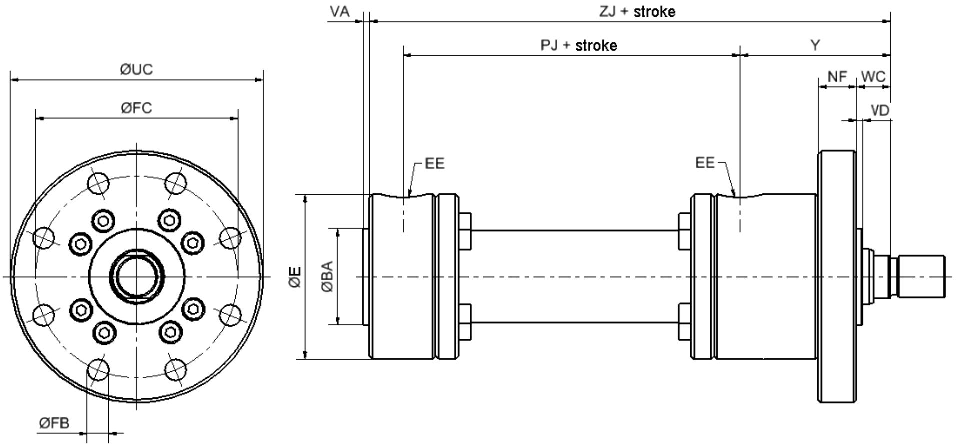
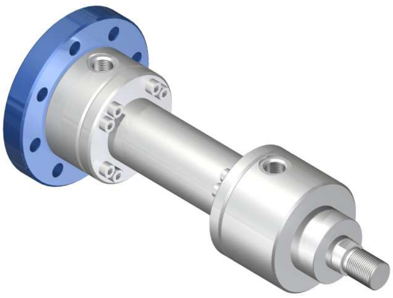
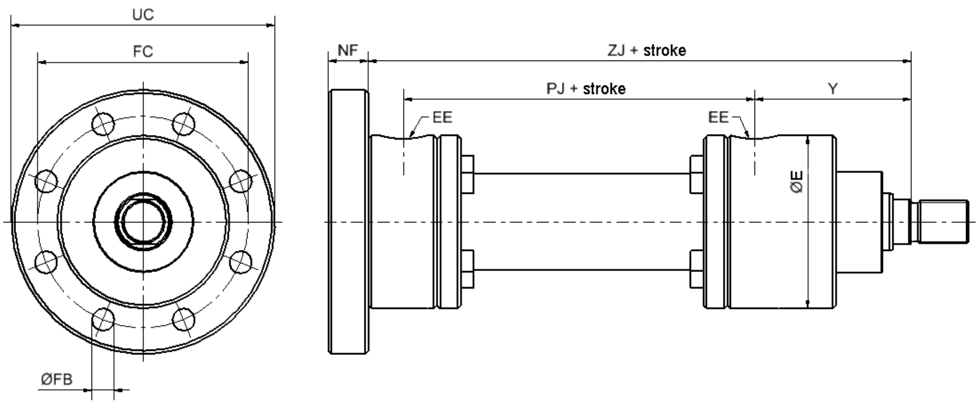
Cylinder Mounting

Flange Head Side | ISO MF3 | 13



Flange Bottom Side | ISO MF4 | 14





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Cylinder Mounting

Piston-ø	50	63	80	100	125	160	200	250	320
BA	63	75	90	110	132	160	200	250	320
BW	27	35	40	52	60	84	102	130	162
CD	32	40	50	63	80	100	125	160	200
CX	32	40	50	63	80	100	125	160	200
E	108	124	148	175	210	270	330	410	510
E1	105	124	148	175	207	270	330	412	510
EE	G 1/2“	G 3/4“	G 3/4“	G 1“	G 1“	G 1 1/4“	G 1 1/4“	G 1 1/2“	G 1 1/2“
EP	27	35	40	52	60	80	102	130	162
EW	32	40	50	63	80	100	125	160	200
EX	32	40	50	63	80	100	125	160	200
FB	14	14	18	22	22	26	33	39	45
FC	132	150	180	212	250	315	385	475	600
L	65	69	88	107	124	150	206	253	330
LH	60	68	80	95	115	145	170	215	260
LT	40	50	63	71	90	112	160	200	250
MR	35	50	61,5	72,5	90	112	145	163	210
MS	40	50	63	80	100	125	160	200	250
NF	25	28	32	36	40	45	56	63	80
PJ	120	133	155	171	205	235	278	347	350
PJ1	120	136	156	172	205	235	278	325	350
SB	11	13,5	17,5	22	26	33	40	52	62
SC	15,5	17,5	22,5	27,5	30	37,5	45	50	60
SE	15,5	17,5	22,5	27,5	30	37,5	45	50	60
SS	55	55	55	55	60	79	90	120	120
ST	32	37	42	52	62	77	87	112	152
TD	32	40	50	63	80	100	125	160	200
TL	25	32	40	50	63	80	100	125	160
TM	112	125	150	180	224	280	335	425	530
TS	135	155	185	220	270	340	405	520	620
UC	165	180	220	260	295	370	460	540	680
US	160	185	225	265	325	405	480	620	740
UV	112	135	162	196	250	270	320	410	510
VA	4	5	5	6	6	7	8	8	8
VA1	4	4	5	5	6	7	10	12	14
VD	4	4	4	5	5	5	5	8	8
WC	22	25	28	32	36	40	45	50	56
XC	305	348	395	442	520	617	756	903	1080
XN	305	348	395	442	520	617	756	903	1080
XS	130	147,5	170,5	192,5	230	265,5	315	360	425
XV min	177	206	236	277	321	398	452	500	630
XV max + stroke	120	140	155	170	190	220	250	270	280
Y	98	112	120	134	153	185	220	260	310
Y1	98	107	120	134	153	185	221	260	310
ZB	244	274	305	340	396	467	550	652	764
ZJ	240	270	300	335	390	460	540	640	750

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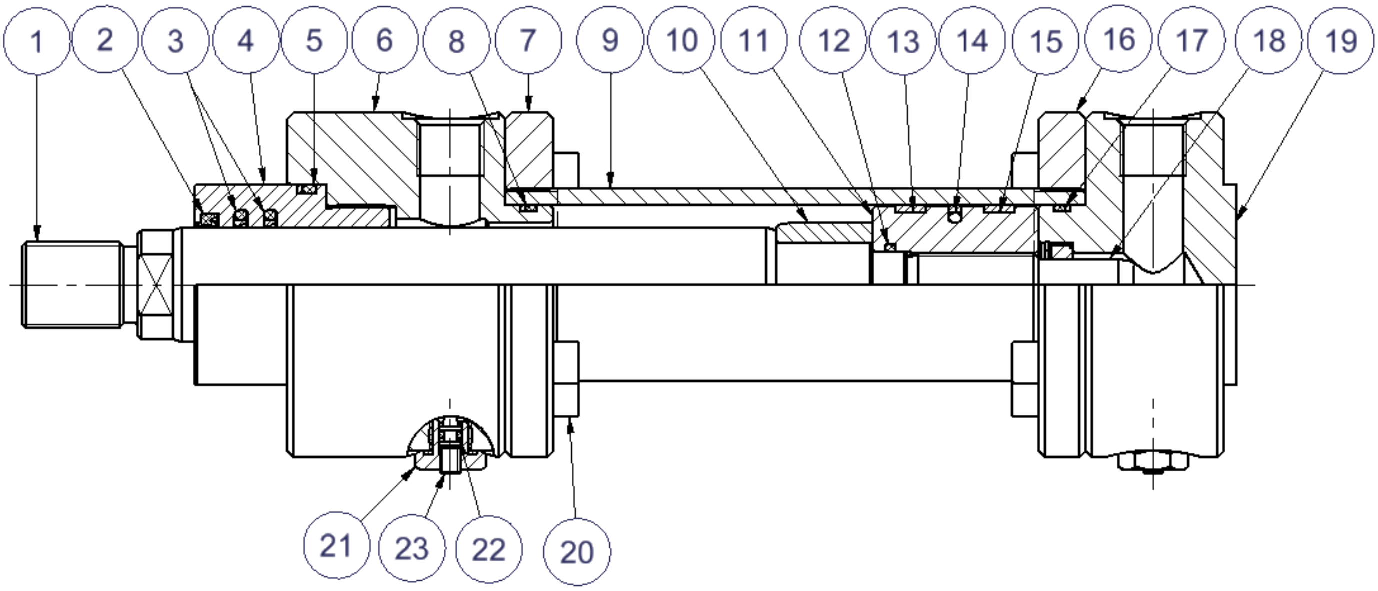
Parts List



Pos.	Designation	Material
1	Rod	Steel, hard chrome plated
4	Guide bush	Steel
6	Head bush	Steel
7	Tube flange	Steel
9	Cylinder tube	Steel
10	Cushioning bush	Steel
11	Piston	Steel
16	Tube flange	Steel
18	Cushioning tenon	Steel
19	End plug	Steel
20	Screw	Steel
21	Safety plug	Steel
23	Dämpfungsschrau	Steel

Seal Kit			
Pos.	Designation	Material	
		Standard	VITON
2	Scraper	Nithril (NBR)	Fluoroelastomer (FKM)
3	Rod Seal	Nithril (NBR) + PTFE	Fluoroelastomer (FKM) + PTFE
5	O-Ring seal + support ring	Nithril (NBR) + Sealon	Fluoroelastomer (FKM)) + PTFE
8	O-Ring seal + support ring	Nithril (NBR) + Sealon	Fluoroelastomer (FKM)) + PTFE
12	O-Ring seal	Nithril (NBR)	Fluoroelastomer (FKM)
13	Piston guide	PTFE	PTFE
14	Pisto seal	Nithril (NBR) + PTFE	Fluoroelastomer (FKM)) + PTFE
15	Piston guide	PTFE	PTFE
17	O-Ring seal + support ring	Nithril (NBR) + Sealon	Fluoroelastomer (FKM)) + PTFE
22	O-Ring seal	Nithril (NBR)	Fluoroelastomer (FKM)

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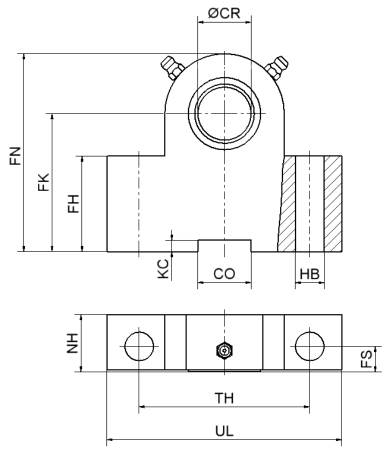
Accessory

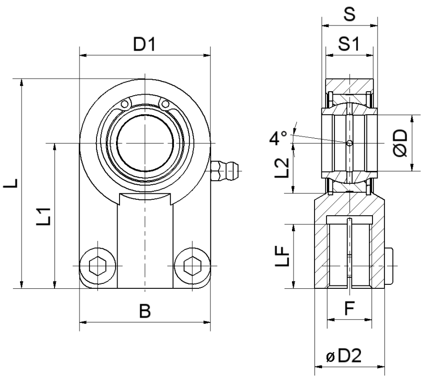
Accessory

Trunnion Bracket ISO 8132



Piston-ø	CR H7	FH	FK js12	FN max	UL max	NH max	HB H13	TH js14	FS js14	CO N9	KC +0,3	Art.-Code
50	32		65	100	150	33	17,5	110	15	25	5,4	TB
63	40		76	120	170	41	22	125	16	36	8,4	
80	50		95	140	210	51	26	160	20	36	8,4	
100	63		112	177	265	61	33	200	25	50	11,4	
125	80		140	220	325	81	39	250	31	50	11,4	

Ball-Joint End ISO 6982 / DIN 24338



D	D1	D2	S	S1	B	L	L1	L2	F	LF	Art.-Code
32	71	38	32	28	66	118,5	80	32	M27x2	37	GA
40	90	47	40	33	80	146	97	41	M33x2	46	
50	109	58	50	40	96	179,5	120	50	M42x2	57	
63	136	70	63	53	114	211	140	62	M48x2	64	with support ISO 8132 90° CBB
80	170	90	80	67	148	270	180	78	M64x3	86	
100	211	110	100	85	178	322	210	98	M80x3	96	
125	265	135	125	103	200	405	260	120	M100x3	113	with support ISO 8132 180° CBA
160	310	165	160	130	250	488	310	150	M125x4	126	
200	390	215	200	162	320	620	390	195	M160x4	161	

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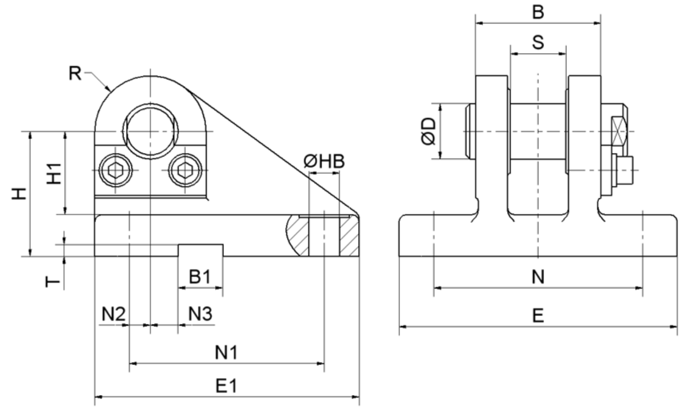
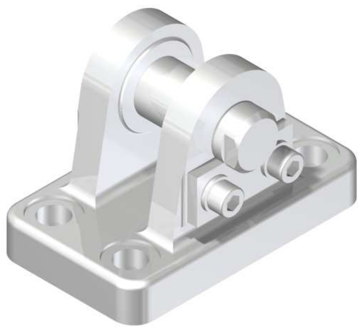
Accessory

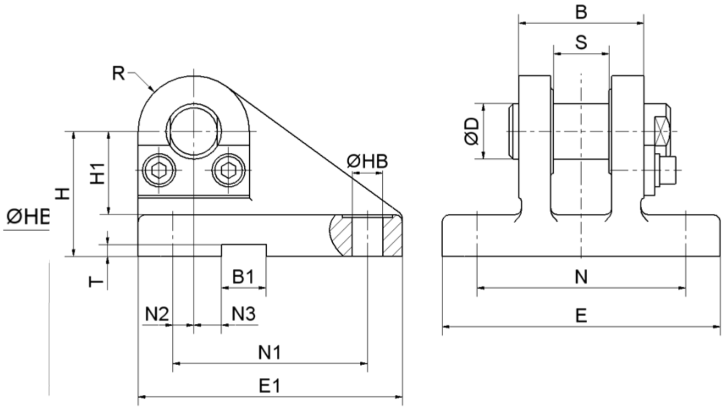
Clevis Bracket 90° — for ball-joint end on cylinder bottom ISO MP5 [08] for ball-joint end ISO 6982 / DIN 24338 [GA] — ISO 8132



D H9	S A12	B h16	B1 N9	T +0,3	H js12	H1 min	E max	E1 max	N js14	N1 js14	N2 js14	N3 js12	HB H13	R max	Art.-Code
32	32	70	25	5,4	65	43	145	145	110	110	14,5	6	17,5	32	CBB
40	40	90	36	8,4	76	52	185	170	140	125	17,5	6	22	40	
50	50	110	36	8,4	95	65	215	200	165	150	25	-	26	50	
63	63	140	50	11,4	112	75	270	230	210	170	33	-	33	63	
80	80	170	50	11,4	140	95	320	280	250	210	45	-	39	80	
100	100	210	63	12,4	180	120	405	345	315	250	52,5	-	52	100	
125	125	270	80	15,4	230	170	455	450	365	350	75	-	52	125	

Clevis Bracket 180° — for ball-joint end on cylinder bottom ISO MP5 [08] for ball-joint end ISO 6982 / DIN 24338 [GA] — ISO 8132

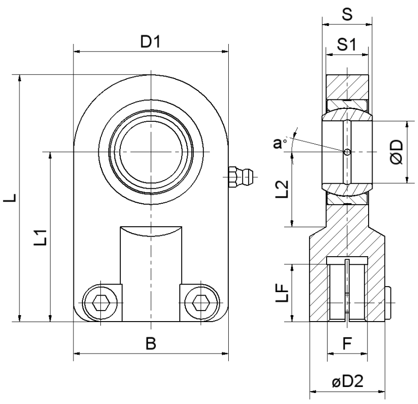




D H9	S A12	B h16	H js12	H1 min	E max	E1 max	N js14	N1 js14	HB H13	R max	Art.-Code
32	32	70	65	43	85	143	50	110	17,5	32	CBA
40	40	90	76	52	108	170	65	130	22	40	
50	50	110	95	65	130	220	80	170	26	50	
63	63	140	112	75	160	270	100	210	33	63	
80	80	170	140	95	210	320	125	250	39	80	
100	100	210	180	120	260	400	160	315	45	100	
125	125	270	230	170	320	470	200	385	45	125	

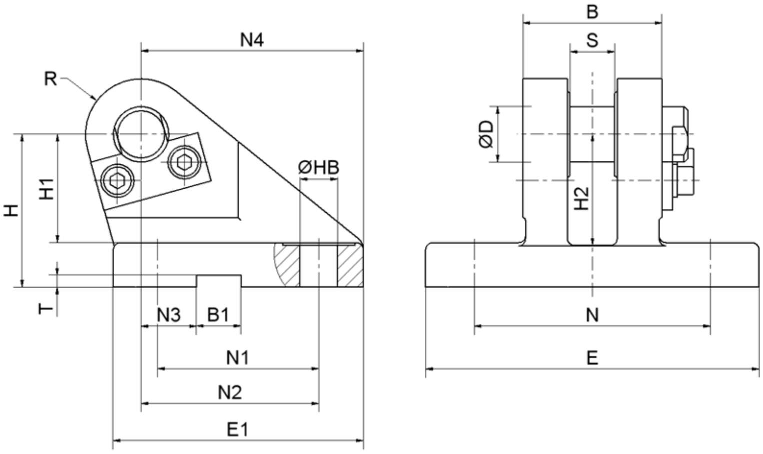
Accessory

Ball-Joint End — ISO 8133 / DIN 24555



D	D1	D2	S	S1	L	L1	L2	B	F	LF	a	Art.-Code
40	100	45	28	23	155	105	45	90	M27x2	37	7	GB
50	120	55	35	30	190	130	58	105	M33x2	46	6	
60	160	68	44	38	230	150	68	134	M42x2	57	6	with support DIN 24556 LD
80	205	90	55	47	287,5	185	92	156	M48x2	64	6	
100	240	110	70	57	360	240	116	190	M64x3	90	6	

Clevis Bracket — for ball-joint end ISO 8133 / DIN 24555 [GB] — DIN 24556



D K7	H js11	H1	H2	E	E1	N js13	N1 js13	N2 js13	N3 js14	N4	B h14	B1 N9	T +0,3	S +0,3 +0,1	HB H13	R max	Art.-Code
40	100	72	73	190	170	135	120	123	24	148	80	36	8,4	28	22	40	LD
50	125	90	92	240	215	170	145	155	35	190	100	36	8,4	35	30	50	
60	150	108	110	270	260	200	185	187	35	225	120	50	11,4	44	39	60	
80	190	140	142	320	340	240	260	255	35	295	160	50	11,4	55	45	80	
100	210	150	152	400	400	300	300	285	35	335	200	63	12,4	70	48	100	

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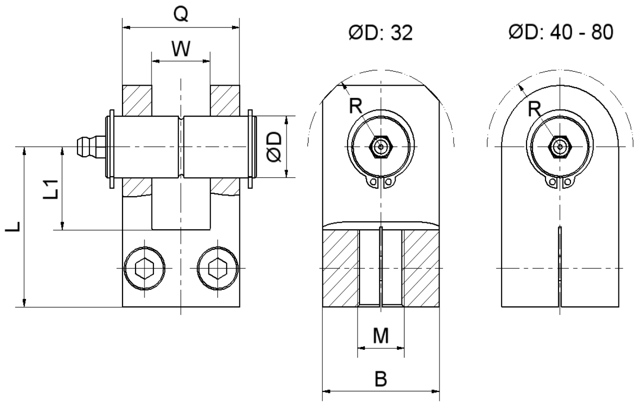
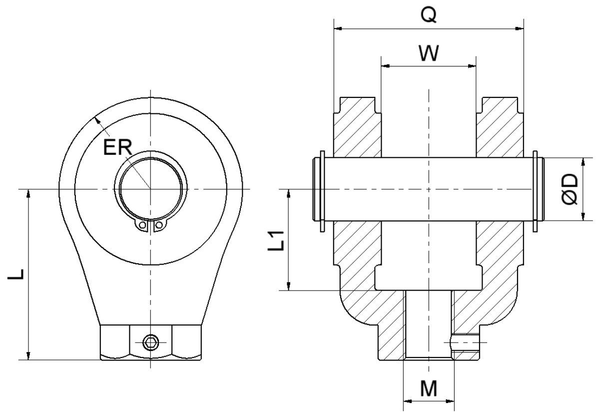
Accessory

Fork ISO 8132



D	L	L1	W	Q	B	M	R	Art.-Code
32	80	42	32	70	65	M27x2	40	GE
40	97	52	40	90	80	M33x2	50	
50	120	64	50	110	100	M42x2	63	
63	140	75	63	140	120	M48x2	71	
80	180	94	80	170	150	M64x3	90	

Fork ISO 8133



D	M	L	L1	W	Q	ER	Art.-Code
28	M27x2	75	39	40	80	34	GH
36	M33x2	99	54	50	100	50	
45	M42x2	113	57	60	120	53	
56	M48x2	126	63	70	140	59	
70	M64x3	168	83	80	160	78	
70	M80x3	168	83	80	160	78	

AGIROSSI GMBH INDUSTRIE- & MOBILHYDRAULIK

Edition 1/2016

General Operating and Maintenance Instruction

I. GENERAL

The following instructions and supporting hints should be strictly adhered to for catalogue products as well as for spezial cylinders (if present). This applies also for system-/ and telescope cylinders.

II. Safety instruction

A hydraulic cylinder has two properties – it either serves as a pressure tank during operation or in its main function serves as a motional device. Therefore the following instructions must be STRICTLY followed:

- the installation may only be conducted by a hydraulic expert.
- the operating pressure must be secured by a Relief-Valve.
- security norm EN 982 for hydraulic must be observed.

III. Installation and assembling

Assembling: When assembling hydraulic cylinders the following instructions apply:

- All screws and connecting elements for securing the cylinder (including its attachments) should comply with stability class 8.8 (recommended 10.9) in accordance with DIN / ISO 898 T1.
- Pay attention to a clean surrounding as well as to all parts to be assembled.
- The hydraulic cylinder must be deaerated before starting operation.
- The sealing material must be compatible with the used hydraulic media. Sealing materials such as hemp, cementing composition or plastic sealing tape may not be used.
- All pipes and containers must be thoroughly cleaned of dirt, dust, sand, spunk, cuttings and shreds etc..
- All pipes that are either welted or have been warm bended must be pickled, rinsed and oiled afterwards.
- All cleaning must be performed with fibreless rugs or with special paper.

Installation: When selecting or installing a hydraulic cylinder the following instructions must be obeyed:

- The pressure within the hydraulic cylinder may never exceed the maximum pressure recommended.
- When selecting a hydraulic cylinder the maximum operating length recommended must be taken into account and strictly adhered to. The same applies to the recommended place of the installation, the recommended way of operation (vertical or horizontal), and the maximum operating pressure.
- The hydraulic cylinder must be installed tensionless. Neither a diagonal nor transverse force may occur or apply to the hydraulic cylinders base or to its moving parts.

We strictly advise against using the product in any other way then recommended.
In case of uncertainty please call our technical office. For further inquiries we are glad to be of assistance.

IV. INITIAL STARTING INSTRUCTION

Deaering: Before the hydraulic cylinder is taken into operation for the first time, it must be deaerated. During idle operating pressure the special deaerating valve must be opened. This valve may only be closed after the upcoming oil contains no air bubbles any more. The valve must then be tightened again.

Pressure Media:

- All Agirossi-Cylinders are build to be used with HLP Mineral Oil iaw DIN 51524 as well as with Bio-Oil (such as Panolin).
- Please check whether the pressure media of the machine is compatible with the recommended pressure media of the hydraulic cylinder.
- Before use of other pressure media please consult our technical office!
- The recommended maximum operating temperature of the pressure media may not be exceeded. To ascertain a continuos and dependable performance, we recommend to keep the pressure media constant (+/-5° C.

Filter: The live expectancy of the hydraulic cylinder may be increased by the use of reliable filtering. Please take notice of the recommendations of the maximum rate of contamination of the pressure media in accordance with NAS 1638. We advocate to use hydraulic filtering with electrical contamination meter.

V. ELECTRICAL INSTALLATION

The installation of the electricity supply should be taken from the respective catalogue.

VI. MAINTENANCE

- Generally regular maintenance of hydraulic cylinders is not necessary. However joints and ball-bearings should be greased in regular intervals.
- The tightness of the hydraulic cylinder should be checked in short intervals.

Change of seals: Seals are inclined to wear out after a certain period of time. In case of obvious leakage we recommend to replace the complete set of seals or to send the hydraulic cylinder to our maintenance plant. When replacing the seals we also check all parts of the hydraulic cylinder.

VII. REQUIREMENTS OF THE STORAGE MEDIA

- Hydraulic cylinders should be stored in locations that are dry, free of dust, free of acids or other corrosive liquids or gas.
- In case of storage of longer than six months the hydraulic cylinder must be filled with conservation oil or must already be ordered for longer storage periods.
- In case of longer periods of storage the hydraulic cylinder must be stored whenever possible vertically.

IX. SPARE PARTS

Complete sets of seals can be ordered by using the number of the hydraulic cylinder with the attachment of "**S**" (for example Art #: "6909201" for the hydraulic cylinder, "6909201S" for the complete set of seals).
Please order other spare parts by using the number of the requested item – or the serial number.

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