



HYDROBLOCK
INNOVATIVE ENGINEERING

CATALOGUE



SEPTEMBER 2010

COMPANY PROFILE AND PRODUCT RANGE

HYDRAULIC COMPONENTS FOR PRODUCTION ENGINEERING

HYDROBLOCK stands for efficient implementation of innovation: continuous technological research, state-of-the-art project engineering and careful material selection.

Hydroblock's corporate philosophy is focussed on customer orientation and partnership.



PRODUCT RANGE

Hydroblock produces highly functional and safe clamping systems for machine tools, which are rated for outstanding reliability even under extreme operating conditions.

The product range comprises hydraulic cylinders and elements for the most varied applications:

- Swing clamp cylinders
- Self-adjusting swing clamp cylinders (worldwide unique)
- Link clamp cylinders
- Push and pull-type cylinders
- Block cylinders
- Threaded clamping cylinders
- Work supports
- Hydraulic components and accessories (rotary joints, hydraulic intensifiers, pressure reducing valves, sequence valves, check valves, flow control valves, air-oil booster units, hydraulic power units, coupling units, accumulators, filters, integrated quick couplings, pressure gauges, etc.)

PRODUCT SPECIFICATION AND SPECIAL FEATURES

- Hydroblock swing clamp cylinders are equipped with a unique compensating system that minimizes the angular play of the clamping arm even after long operating periods.
- All Hydroblock swing clamp cylinders can be provided with clamp closing control valve to ensure proper clamping of the work piece in the correct position.
- At identical space requirements, Hydroblock swing clamp cylinders offer a clamping area that is about 30% larger than that of comparable models on the market. This is why they provide proportionally higher clamping force or the possibility to obtain the same clamping force using lower pressure.

The advantages obtained are significant: a smaller cylinder can be used at identical performance with the relative benefits in terms of cost and space requirements and there is no need for pressure intensifiers, which leads to further cost reduction.

COMPANY PROFILE AND PRODUCT RANGE

PRODUCT CHARACTERISTICS AND OPERATING CONDITIONS

MATERIALS

The cylinders are made of heat-treated free cutting steel to enhance the wear resistance and ensure smooth running. The surface is subject to an additional thermal treatment to obtain optimum corrosion protection. The inside components are made of high-quality special steel with hardened and ground surface.

Hydroblock uses exclusively high-quality seals that are perfectly adapted to the functional characteristics of the cylinders and the relevant type of application.

Upon request, the cylinders can also be equipped with VITON seals for high operating temperatures.

PRODUCT TESTS

All Hydroblock cylinders are rated for an operating pressure of up to 500 bars and tested on special test benches at the pressure specified by the customer or at the corresponding standard pressure. Hydroblock subjects all cylinders and components to a 100% check. The test report is placed at the customer's disposal.

HYDRAULIC OIL

Only hydraulic oil based on mineral oil should be used (DIN 51524). The use of other fluids that are not suitable for this purpose may affect the proper functioning of the cylinders and other components or even damage them.

VISCOSITY

The oil viscosity should comply with the parameters specified in ISO 3448. For oil temperatures ranging between +10° and - 60° C, we recommend a viscosity as per ISO VG32.

DEGREE OF OIL CONTAMINATION

The degree of oil contamination should not exceed class 18/14 as per ISO 4406. The hydraulic oil purity is of fundamental importance for the operational reliability and proper functioning of the cylinders and all other components of a hydraulic system. For this reason, the use of filters with a filter mesh of at least 25° micron is recommended.

OPERATING TEMPERATURE

- > Ambient temperature: -10°C / +60°C
- > Oil temperature: +10°C / +60°C

ADMISSIBLE SPEED RANGE

- > The minimum speed is 0.01 m/sec.
- > The maximum speed of 0.25 m/sec. must not be exceeded.

OPERATING CONDITIONS

Hydroblock cylinders are rated and used for a maximum static clamping pressure of up to 500 bar. The indicated maximum speed must not be exceeded.

While the cylinders work without any oil leakage in static condition, minor oil leakage may occur during dynamic operation to ensure the durability of the seals.

The maximum admissible oil leakage is $<0.3 \text{ cm}^3$ for 1000 cycles (extension and retraction) and at a reference stroke of 100 mm for pistons with a diameter of up to 35 mm. At a piston diameter of 40 mm and a reference stroke of 100 mm, the maximum admissible oil leakage amounts to $<0.6 \text{ cm}^3$.

WARRANTY

Hydroblock warrants that the products sold are free from defects in material and workmanship for a period of 12 months from the date of delivery. This warranty does not cover any damage to the products due to improper or inadmissible use of the products or due to the use of inadmissible operating fluids. This warranty does not include defects from normal wear and tear.

Hydroblock S.r.l. strives for continuous improvement and reserves the right to change the specifications of its products without prior notice at any time. The technical data in the present catalogue is thus not binding.



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TECHNICAL CYLINDER SPECIFICATIONS

Cylinder type	Stroke (mm)			Effective cylinder area (cm ²)		Oil volume (cm ³)		Screws (VTCEI) UNI 5931-12K	Tightening torque screws/ threaded body (Nm max.)	Weight (kg)	Max. admissible flow rate	Pressure min/max	Tightening torque clamping arm nut Nm max.
	Clamp.	Unclamp.	Tot.	Clamp.	Unclamp.	Clamp.	Unclamp.						
SR 10.0 FD	8	8	16	0.75	1.54	1.2	2.5	M5x25	12	0.3	0.15	30 - 400	12
SR 10.0 FS	8	8	16	0.75		1.2		M5x25	12	0.3	0.15	30 - 400	12
SR 10.0 PD	8	8	16	0.75	1.54	1.2	2.5	M5x25	12	0.3	0.15	30 - 400	12
SR 10.0 PS	8	8	16	0.75		1.2		M5x25	12	0.3	0.15	30 - 400	12
SR 16.0 FD	8	14	22	2.51	4.52	5.52	9.94	M6x40	16	0.9	0.33	30 - 500	26
SR 16.0 PD	8	14	22	2.51	4.52	5.52	9.94	M6x40	16	0.9	0.33	30 - 500	26
SR 16.0 CD	8	14	22	2.51	4.52	5.52	9.94	M6x20	16	0.8	0.33	30 - 500	26
SR 16.0 CDB	8	18	26	1.13	3.14	2.9	8.2	M5x16	12	0.6	0.25	30 - 350	26
SR 16.0 FS	8	14	22	2.51		5.52		M6x40	16	0.9	0.33	30 - 500	26
SR 18.0 FD	8	14	22	1.98	4.52	4.36	9.94	M6x40	16	1.0	0.25	30 - 500	39
SR 18.0 PD	8	14	22	1.98	4.52	4.36	9.94	M6x40	16	0.9	0.25	30 - 500	39
SR 18.0 CD	8	14	22	1.98	4.52	4.36	9.94	M6x20	16	0.8	0.25	30 - 500	39
SR 20.0 PS	9	11	20	1.76	3.52			M6x35	16		0.2	30 - 500	39
SR 20.0 PD	9	11	20	1.76	4.9	3.52	9.82	M6x35	16	1.3	0.2	30 - 500	39
SR 20.59 FD	9	50	59	1.77	4.9	10.44	29	M6x30	16	1.8	0.2	30 - 500	39
SR 22.0 FD	10	15	25	5.27	9.07	13.17	22.6	M6x40	16	1.9	0.8	30 - 500	51
SR 22.0 PD	10	15	25	5.27	9.07	13.17	22.6	M6x40	16	1.6	0.8	30 - 500	51
SR 22.0 CD	10	15	25	5.27	9.07	13.17	22.6	M6x20	16	1.4	0.8	30 - 500	51
SR 25.0 FD	10	15	25	4.17	9.07	10.4	22.6	M6x40	16	1.8	0.6	30 - 500	78
SR 25.0 PD	10	15	25	4.17	9.07	10.4	22.6	M6x40	16	1.6	0.6	30 - 500	78
SR 25.0 CD	10	15	25	4.17	9.07	10.4	22.6	M6x20	16	1.4	0.6	30 - 500	78
SR 28.0 FD	12	16	28	9.75	15.9	27.3	44.5	M8x45	39	3.0	1.2	30 - 500	78
SR 28.0 PD	12	16	28	9.75	15.9	27.3	44.5	M8x25	39	2.6	1.2	30 - 500	78
SR 28.0 CD	12	16	28	9.75	15.9	27.3	44.5	M8x40	39	2.2	1.2	30 - 500	78
SR 32.0 FD	8	14	22	4.52	12.56	9.95	27.6	M8x45	39	2.5	0.55	30 - 500	75
SR 35.0 FD	15	21	36	14.1	23.8	50.76	85.7	M10x45	77	5.5	2	30 - 500	120
SR 35.0 PD	15	21	36	14.1	23.8	50.76	85.7	M10x55	77	5.0	2	30 - 500	120
SR 35.0 CD	15	21	36	14.1	23.8	50.76	85.7	M10x30	77	4.5	2	30 - 500	120
SR 35 RPS	15	21	36	14.1	23.8	50.76	85.7	M10x55	77	5.5	2	30 - 500	120
SR 45.0 FD	15	36	51	17.3	33.2	88.2	169.3	M12x50	135	9.0	2.5	30 - 500	190
SR 45.0 PD	15	36	51	17.3	33.2	88.2	169.3	M12x60	135	8.3	2.5	30 - 500	190
SR 50.62 PD	11	51	62	11.5	31.2	71.55	193.2	M14x45	210	6.9	1.7	30 - 500	210
SRA20FD	8	14	22	1.98	4.52	4.36	9.94	M8x25	39	4.8	0.25	30 - 500	39
CT16.0FD			22	2.51	4.52	5.52	9.94	M6x40	16	1.0		30 - 500	
CT 16.0 CD			22	2.51	4.52	5.52	9.94	M6x20	16	0.8		30 - 500	
CT 22.0 FD			25	5.27	9.07	13.17	22.6	M6x40	16	1.8		30 - 500	
CT 22.0 CD			25	5.27	9.07	13.17	22.6	M6x20	16	1.4		30 - 500	
CT 28.0 FD			28	9.75	15.9	27.3	44.5	M8x40	39	3.0		30 - 500	
CT 35.0 FD			36	14.1	23.8	50.76	85.7	M10x45	77	5.5		30 - 500	
BS 12			16	3.14	2	5	3.2	M6x50	16	0.9	1.4	30 - 500	
BS 16			20	4.91	2.9	9.82	5.6	M8x60	39	1.4		30 - 500	
BS 25			50	12.56	7.66	62.8	38.3	M10x85	39	1.4		30 - 500	
BS 32			50	19.63	98	11.6	58	M12x85	135	5		30 - 500	
BS 36			25	33.18	23	83	57.5	M16x110	320	9		30 - 500	
CG16.0			24	4.52	2.51	9.95	5.5	M6x40	16	0.8	2.5	30 - 200	
CG25.0			24	4.52	2.51	9.95	5.5	M6x40	16	0.8	2.5	30 - 200	
CGF40.0			18.5	4.9	3.8	9.1	7			1	2.5	30 - 200	
CGF50.0			24.5	9	5.9	22.2	14.5			2.2	2.5	30 - 200	
CF12.14 CM6			14	3.14	2	4.4	2.8		90	0.25		30 - 500	
CF12.18 CM6			18	3.14	2	5.7	3.6		90	0.28		30 - 500	
CF22-5-A/B			5	1.13		0.57			60	0.05		30 - 500	
CF22-10-A/B			10	1.13		1.13			60	0.05		30 - 500	
CF30-7-A/B			7	2.54		1.78			80	0.07		30 - 500	
CF30-12-A/B			12	2.54		3.05			80	0.07		30 - 500	
CF40-15-A/B			15	4.9		7.35			120	0.10		30 - 500	
CF38.0			4	3.14		1.26			100	0.15		30 - 500	
CF38.3			3	3.14		0.95			100	0.15		30 - 500	
CF 36 E23			23	4.9		11.3			130	0.8		30 - 400	
CF 48 E23			23	11.3		26			220	1.1		30 - 400	
CF 48 E32			23	11.3		36			220	1.4		30 - 400	
CR12.5			5	0.5		0.25			30	0.02		30 - 400	
CR12.10			210	0.5		0.5			30	0.03		30 - 400	
CR22-10-A/B			10	1.13		1.13			40	0.1		30 - 400	
CR22-25-A			25	1.13		2.8			40	0.12		30 - 400	
CR26-12-A/B			12	2		2.4			50	0.14		30 - 400	
CR30-12-A/B			12	3.14		4.7			60	0.25		30 - 400	
IRF P 16.2			9.7			0.75				0.26	1.5	100 - 400	
IRF P/M 16.0			8			0.7				0.24	1.5	100 - 400	
IRF P/M 25.0			8			1.61				0.30	2	100 - 400	
IRF P/M 25.1			13			2.3				0.40	2	100 - 400	
IRF P/M 32.0			12			2.5				0.24	1.5	100 - 400	
IRCP 32.0			12			2.5		M8x40	39	0.75	2.1	50 - 400	
IRFL 32.0			12			2.5		M8x40	39	0.75	2.1	50 - 400	
IRFP40 P			18			4.6		M8x35	39	4	2.5	30 - 400	

Note: The maximum admissible flow rate refers to vertical mounting of the cylinder with standard clamping arm. For other mounting positions or arm types, it may be necessary to reduce the admissible flow rate. If the maximum admissible flow rate corresponds to the values indicated in the table, the shortest clamping time amounts to 10 mm/sec.

CONVERSION CHART

PRESSURE:

MPa	bar	PSI
1	10	145.04
0.1	1	14.504
0.00689	0.0689	1

UNIT OF MEASUREMT

1 inch (in) = 25.4 mm
1 square inch (in ²) = 6.452 cm ²
1 cubic inch (in ³) = 16.387 cm ³
1 mm = 0.03937 in
1 cm ² = 0.155 in ²
1 cm ³ = 0.061 in ³
1 Nm = 0.738 Ft.lbs
1 KN = 224.82 lbs
1 Kg = 2.205 lbs
1 lb = 4.448 N = 0.4536 Kg
1 litre = 61.02 in ³ = 0.264 gal
1 US gallon (US gal) = 3,785 cm ³ = 3.785 litres = 231 in ³
1 lt./min = 61.02 in ³ /min

MOUNTING SCREWS

Screw seat mm / inches	Mounting screws metriche / inches
Ø7 / 0.27	M6 / 1/4-20 UNC
Ø9 / 0.35	M8 / 5/16-18 UNC
Ø11 / 0.43	M10 / 3/8-16 UNC
Ø13.5 / 0.53	M12 / 1/2-13 UNC

CONVERSION METRIC UNIT/INCHES UNIT

mm	decimal inches	mm	decimal inches
1	0.039	26	1.024
2	0.078	27	1.063
3	0.118	28	1.102
4	0.157	29	1.142
5	0.197	30	1.181
6	0.236	31	1.22
7	0.275	32	1.26
8	0.315	33	1.3
9	0.354	34	1.338
10	0.394	35	1.378
11	0.433	36	1.417
12	0.472	37	1.457
13	0.512	38	1.496
14	0.551	39	1.535
15	0.591	40	1.575
16	0.630	41	1.614
17	0.670	42	1.653
18	0.709	43	1.693
19	0.748	44	1.732
20	0.787	45	1.772
21	0.827	46	1.81
22	0.966	47	1.85
23	0.906	48	1.89
24	0.945	49	1.929
25	0.983	50	1.969



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CILINDRI ROTANTI

HIGH-PRECISION SWING CLAMPING CYLINDERS -
SCHWENKSPANNZYLINDER IN HOCHPRÄZISIONSAUSFÜHRUNG



CILINDRI A STAFFA VERTICALE

LINK CLAMP CYLINDER - HEBELSPANNER



CILINDRI TRAENTI E PREMENTI

DOUBLE ACTING PULL AND PUSH-TYPE CYLINDERS -
ZUG- UND DRUCKZYLINDER



CILINDRI FILETTATI

THREADED CYLINDERS - EINSCHRAUBZYLINDER



CILINDRI IRRIGIDITORI

HYDRAULIC WORK SUPPORTS - ABSTÜTZELEMENTE



COMPONENTI E ACCESSORI

COMPONENTS AND ACCESSORIES -
KOMPONENTEN UND ZUBEHÖR



SR



CILINDRI ROTANTI

HIGH-PRECISION SWING
CLAMPING CYLINDERS

SCHWENKSPANNZYLINDER IN
HOCHPRÄZISIONSAUSFÜHRUNG



CILINDRI ROTANTI

SR






HIGH-PRECISION SWING
CLAMPING CYLINDERS

SCHWENKSPANNZYLINDER IN
HOCHPRÄZISIONSAUSFÜHRUNG

CILINDRI ROTANTI

HIGH-PRECISION SWING CLAMPING CYLINDERS

SCHWENKSPANNZYLINDER IN HOCHPRÄZISIONSAUSFÜHRUNG

MODELLO CILINDRO - CYLINDER TYPE - ZYLINDERTYP			SR10	SR16
TIPOLOGIA CORPI DISPONIBILI AVAILABLE CYLINDER BODY VERSIONS VERFÜGBARE AUSFÜHRUNGEN DES ZYLINDERKÖRPERS	Flangia - FD upper flange - FD Kopfflansch		Sì Yes Ja	Sì Yes Ja
	Flangia con valvola pneumatica integrata FD upper flange with integrated pneumatic valve VCS01 FD Kopfflansch mit integriertem Pneumatikventil VCS01		Sì Yes Ja	Sì Yes Ja
	Piede - PD lower flange - PD Fußflansch		Sì Yes Ja	Sì Yes Ja
	Piede con valvola pneumatica integrata PD lower flange with integrated pneumatic valve VCS01 PD Fußflansch mit integriertem Pneumatikventil VCS01		No No Nein	Sì Yes Ja
	Cartuccia - CD cartridge - CD Patrone		No No Nein	Sì Yes Ja
Possibilità raschiatore metallico (solo optional) Metal wiper (upon request only) Metallabstreifer (nur als Option verfügbar)			No No Nein	Sì Yes Ja
Pressione max. in lavoro (Bar) - Maximum working pressure (bar) Maximaler Betriebsdruck (bar)			350	500
Forza in bloccaggio a 100 Bar con staffa standard “tipo 01” lunghezza “L” (*) (Kn) Clamping force at 100 bar with the “01” standard clamping arm length (*) (kN) Zugkraft bei 100 bar und Einsatz der Standardspannarmlänge “01”) (*) (kN)			0.5	1.9
Lunghezza staffa “L” (*) - Clamping arm length “L” (*) (mm) Spannarmlänge “L” (*) (mm)			26	40
Diametro stelo (mm) - Rod diameter (mm) - Stangendurchmesser (mm)			10	16
Diametro pistone (mm) - Piston diameter (mm) - Kolbendurchmesser (mm)			14	24
Corsa totale cilindro (mm) - Total cylinder stroke (mm) - Zylinderhub insgesamt (mm)			16	22
Corsa rotazione (mm) - Swinging stroke (mm) - Schwenkhub (mm)			8	8
Corsa bloccaggio (mm) - Clamping stroke (mm) - Spannhub (mm)			8	14
Area cilindro in bloccaggio (cm²) - Cylinder clamping area (cm²) Kolbenfläche beim Spannen (cm²)			0.75	2.51
Area cilindro in sbloccaggio (cm²) - Cylinder unclamping area (cm²) Kolbenfläche beim Entspannen (cm²)			1.54	4.52
Capacità olio in bloccaggio (cm³) - Clamping oil volume (cm³) Ölvolumen beim Spannen (cm³)			1.2	5.5
Capacità olio in sbloccaggio (cm³) - Unclamping oil volume (cm³) Ölvolumen beim Entspannen (cm³)			2.5	10

(*) = VEDI GRAFICI SPECIFICI - (*) SEE PERFORMANCE DIAGRAMS
 (*) SIEHE ENTSPRECHENDES LEISTUNGSDIAGRAMM



SR18	SR20	SR22	SR25	SR28	SR32	SR35	SR45	SR50
Sì Yes Ja	No No Nein	Sì Yes Ja	Sì Yes Ja	Sì Yes Ja	Sì Yes Ja	Sì Yes Ja	Sì Yes Ja	No No Nein
Sì Yes Ja	No No Nein	Sì Yes Ja	Sì Yes Ja	Sì Yes Ja	Sì Yes Ja	Sì Yes Ja	Sì Yes Ja	No No Nein
Sì Yes Ja	Sì Yes Ja	Sì Yes Ja	Sì Yes Ja	Sì Yes Ja	No No Nein	Sì Yes Ja	Sì Yes Ja	Sì Yes Ja
Sì Yes Ja	No No Nein	Sì Yes Ja	Sì Yes Ja	Sì Yes Ja	No No Nein	Sì Yes Ja	Sì Yes Ja	No No Nein
Sì Yes Ja	No No Nein	Sì Yes Ja	Sì Yes Ja	Sì Yes Ja	No No Nein	Sì Yes Ja	No No Nein	No No Nein
Sì Yes Ja	Sì Yes Ja	Sì Yes Ja	Sì Yes Ja	Sì Yes Ja	Sì Yes Ja	Sì Yes Ja	Sì Yes Ja	Sì Yes Ja
500	500	500	500	500	500	500	500	500
1.5	1.3	4	3.1	7.3	3.4	10.5	13	8.7
40	40	52	52	60	75	80	100	125
18	20	22	25	28	32	35	45	50
24	25	34	34	45	40	55	65	63
22	18	25	25	28	22	36	51	62
8	9	10	10	12	8	15	15	11
14	9	15	15	16	14	21	36	51
1.98	1.76	5.27	4.17	9.75	4.52	14.1	17.3	11.5
4.52	4.9	9.07	9.07	15.9	12.56	23.8	33.2	31.2
4.4	3.2	13.2	10.4	27,3	10	50.8	88.2	71.6
10	8.8	22.6	22.6	44.5	27.6	85.7	169.3	193.2

SWING CLAMPING CYLINDERS

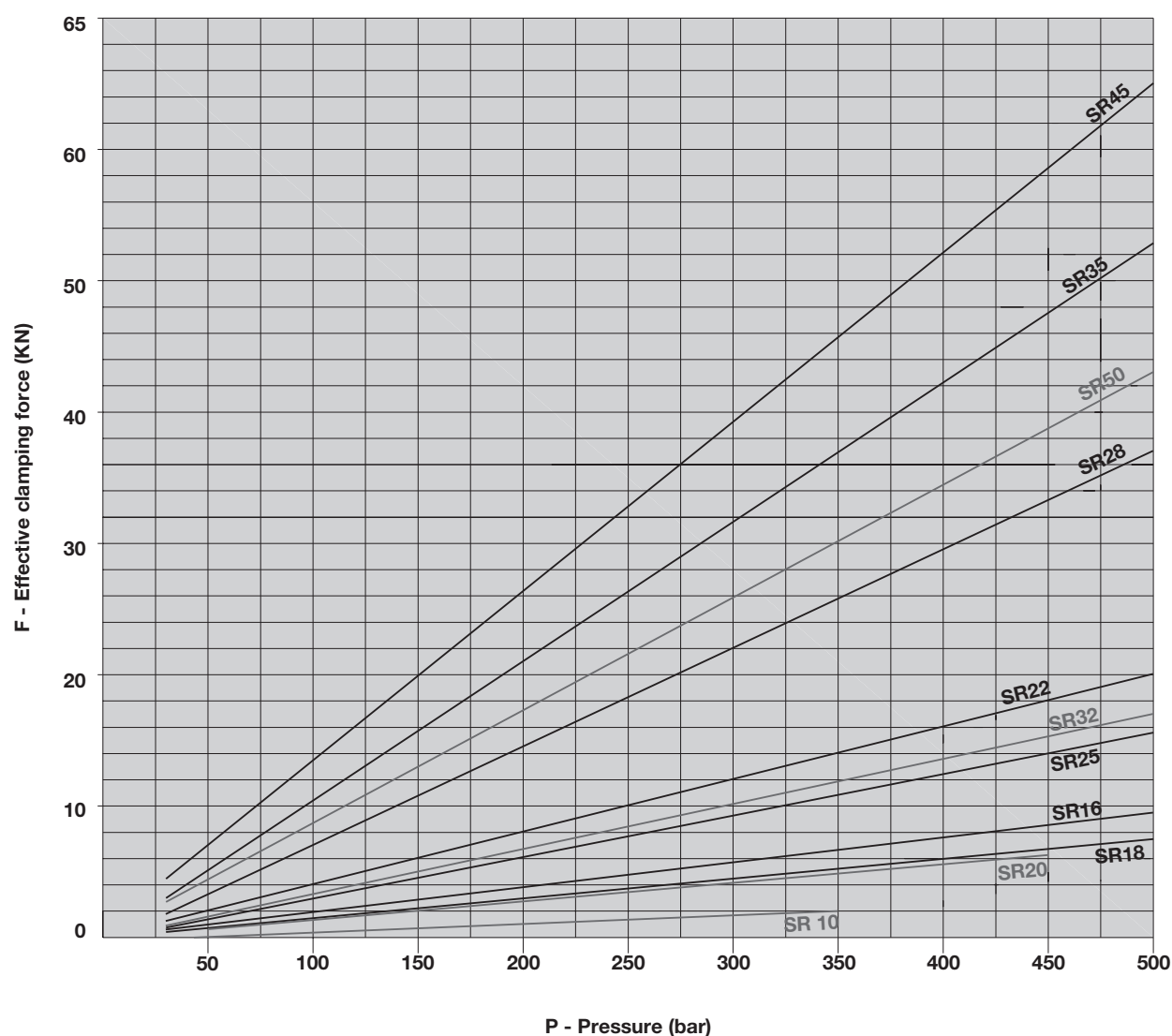
MAX. WORKING PRESSURE = 500 BAR

Swing clamping cylinders are generally used for clamping workpieces to be machined in hydraulic systems, where easy workpiece release during manual or roboticized loading and unloading is indispensable.

Thanks to the exclusive swing play compensating system, swing-clamping cylinders offer outstanding reliability and positioning accuracy and are thus suitable for use in complex hydraulic systems.

In combination with pneumatic clamp closing control valves they ensure correct clamping of the clamping arm, high functional safety and reliable cycle times in roboticized loading/unloading applications.

The following diagram shows the performance data of SR series double-acting swing clamping cylinders as a function of the supply pressure.



SR10

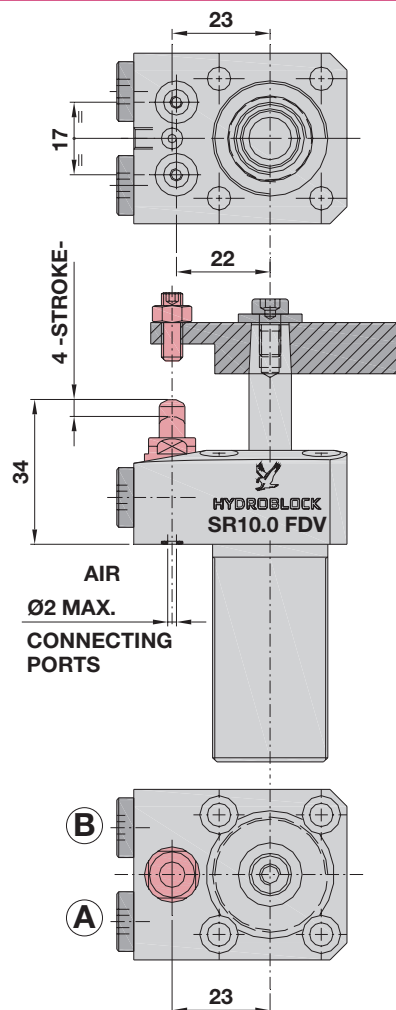
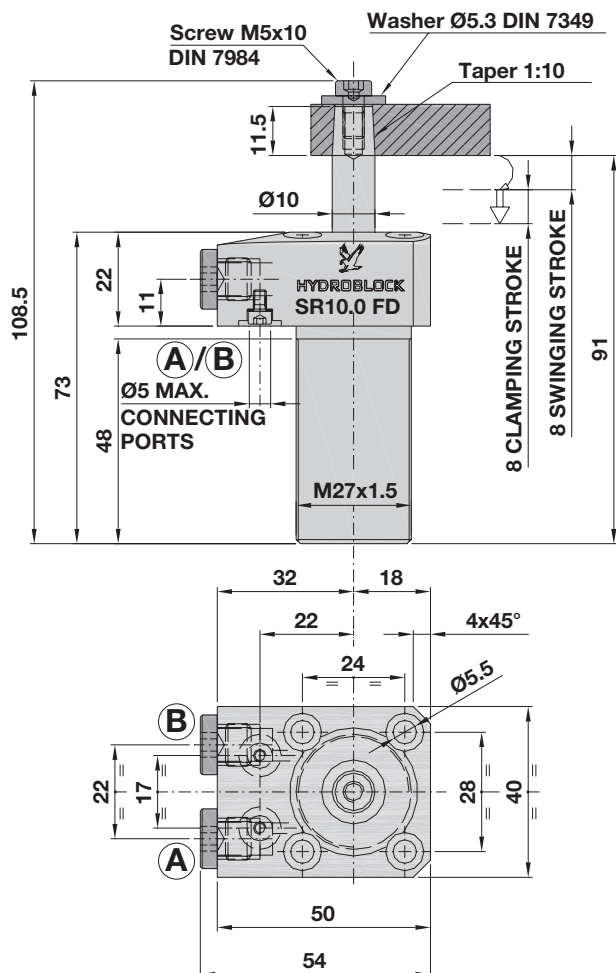
DOUBLE-ACTING SWING CLAMPING CYLINDER WITH UPPER AND LOWER FLANGE

MAX. WORKING PRESSURE=350 BAR

A: Clamping

B: Unclamping (venting for FS version)

Single- and double-acting swing clamping cylinders with threaded body and upper mounting flange provided with in-line ports and O-ring connections.



While clamping is performed through port "A" (regardless of whether the 1/8" in-line ports or the O-ring connections are used), port "B" is applied for unclamping in the double-acting version.

To avoid any damaging liquid pollution inside of the cylinder, we generally recommend using a proper venting circuit on the "B" port of the single-acting FS version. In this case, the filter plug included in the standard equipment is to be removed.

The cylinders of this series are not equipped with the exclusive Hydroblock swing compensation system and cannot be provided with the safety clutch against overload during rotation. However, the sturdy swinging system of special design ensures long service life, maximum reliability and minimized angular play.

Right and left-hand swinging at a standard angle of 90°.

Swinging angles of 60°, 45° or 0° are available upon request.

Supplied:

- > TC M5x25 UNI 5931 K12 mounting screws.
- > O-Rings.

STROKE mm		EFFECTIVE CYLINDER AREA		TOTAL OIL VOLUME	
		Cm ²		Cm ³	
Total	16	Clamping	Unclamping	Clamping	Unclamping
Swinging	8	0.75	1.54	1.2	2.5
Clamping	8				

Material:

- > **Piston/rod:** Hardened nitrided steel.
- > **Body:** Nitrided free machining steel.

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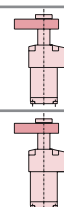
SR10.FD/FS

SINGLE- AND DOUBLE-ACTING SWING CLAMPING CYLINDER WITH LOWER FLANGE

MAX. WORKING PRESSURE=350 BAR

ORDERING CODE

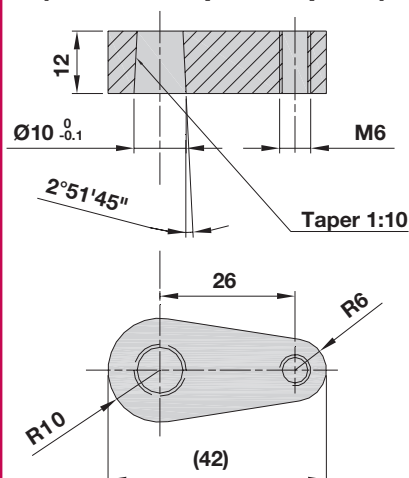
0: Standard version with stroke 16 (8r + 8b)	0
FD: Double-acting version with lower flange	FD
FS: Single-acting version with lower flange	FS
L: Left-hand swinging	L
R: Right-hand swinging	R
0°-45°-60°: Available swinging angles (<i>upon request</i>)	0 - 45 - 60
V: Versione con valvola di controllo chiusura staffa (<i>upon request</i>)	V



N.B.: When using hydraulic cylinders, make sure not to exceed the maximum dimensions and the maximum admissible weight of the clamping arm. Excessively high flow rates may cause too high cylinder speeds and affect the performance and reliability of the cylinder.

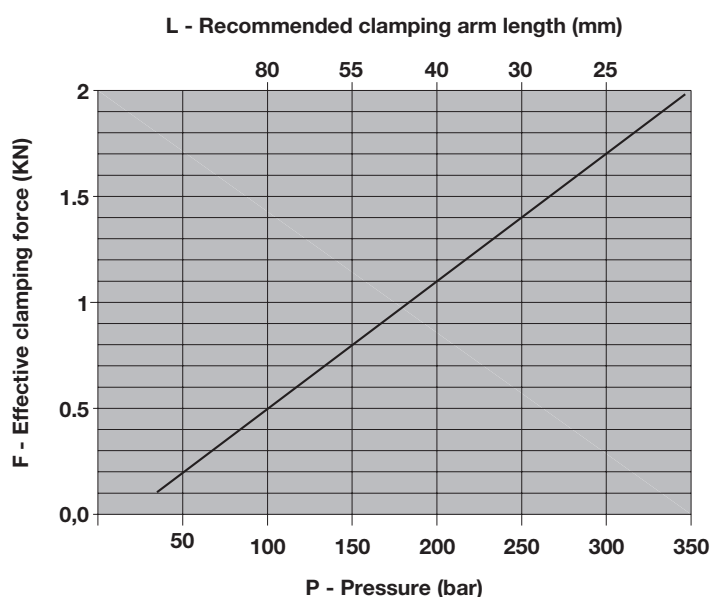
With high flow rates, use flow control valves in the pressure line only and not in the return line to avoid dangerous back-pressure acting on the cylinders, which may cause damage to the cylinder.

Standard clamping arm (available upon request)



The ratio between the cylinder clamping area and the cylinder unclamping area may produce dangerous high pressure.

The diagram shows the effective clamping force "F" as a function of the operating pressure "P" and the recommended maximum clamping arm length "L".



SR10

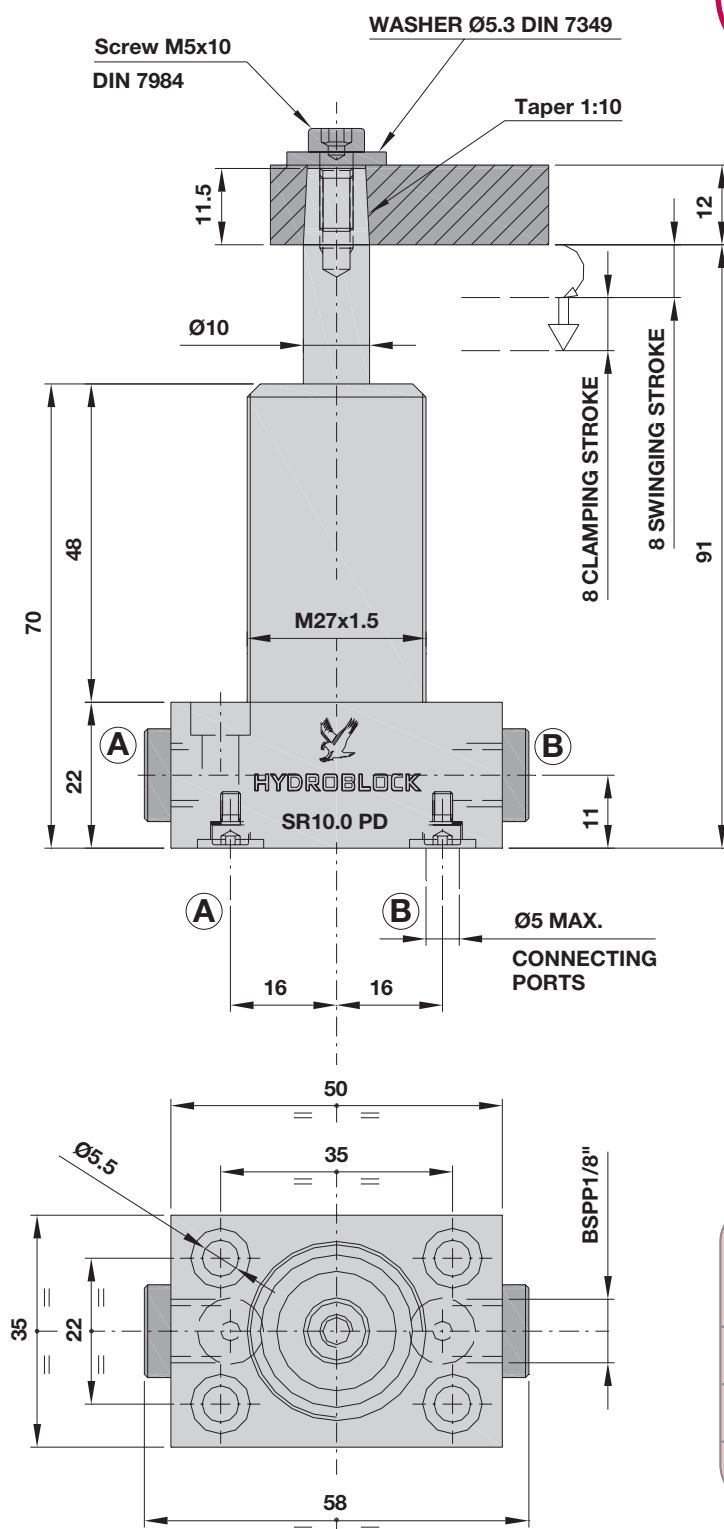
DOUBLE-ACTING SWING CLAMPING CYLINDER WITH UPPER AND LOWER FLANGE

MAX. WORKING PRESSURE=350 BAR

A: Clamping

B: Unclamping (venting for PS version)

Single- and double acting swing clamping cylinders with threaded body and lower mounting flange provided with in-line and O-ring connections.



While clamping is performed through port "A" (regardless of whether the 1/8" in-line ports or the O-ring connections are used), port "B" is applied for unclamping in the double-acting PD version.

To avoid any damaging liquid pollution inside of the cylinder, we generally recommend using a proper venting circuit on the "B" port of the single-acting FS version. In this case, the filter plug included in the standard equipment is to be removed.

The cylinders of this series are not equipped with the exclusive Hydroblock swing compensation system and cannot be provided with the safety clutch against overload during rotation. However, the sturdy swinging system of special design ensures long service life, maximum reliability and minimized angular play.

Right and left-hand swinging at a standard angle of 90°.

Swinging angles of 60°, 45° or 0° are available upon request.

Supplied:

- > TC M5x25 UNI 5931 K12 mounting screws.
- > O-Rings.

Material:

- > **Piston/rod:** Hardened nitrided steel.
- > **Body:** Nitrided free machining steel.

STROKE mm		EFFECTIVE CYLINDER AREA		TOTAL OIL VOLUME	
		Cm ²		Cm ³	
Total	16	Clamping	Unclamping	Clamping	Unclamping
Swinging	8	0.75	1.54	1.2	2.5
Clamping	8				

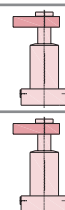
SR10.PD/PS

ACTING SWING CLAMPING CYLINDER WITH UPPER AND LOWER FLANGE

MAX. WORKING PRESSURE = 350 BAR

ORDERING CODE

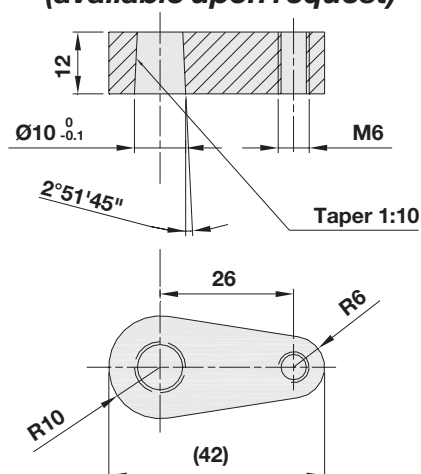
0: Standard version with stroke 16 (8r + 8b)	0
PD: Double-acting version with lower flange	PD
PS: Single-acting version with lower flange	PS
L: Left-hand swinging	L
R: Right-hand swinging	R
0°-45°-60°: Available swinging angles (<i>upon request</i>)	0 - 45 - 60
V: Version with clamp closing control valve (<i>upon request</i>)	V



Note: When using hydraulic cylinders, make sure not to exceed the maximum dimensions and the maximum admissible weight of the clamping arm. Excessively high flow rates may cause too high cylinder speeds and affect the performance and reliability of the cylinder.

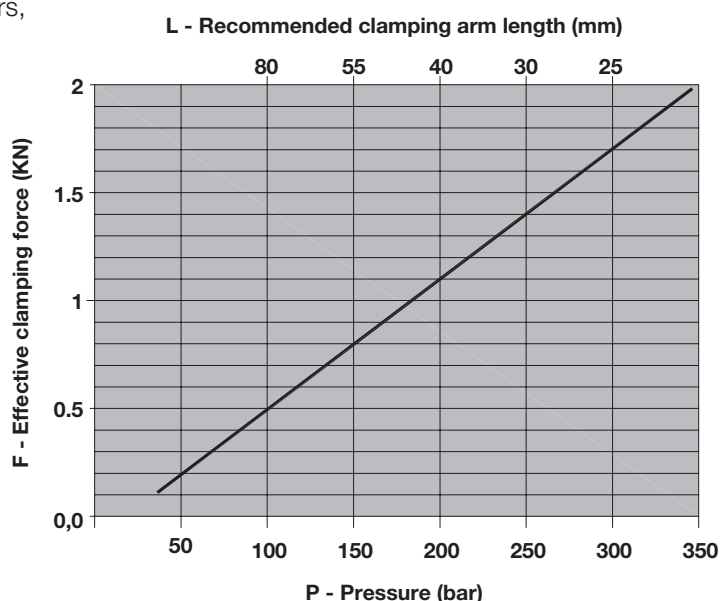
With high flow rates, use flow control valves in the pressure line only and not in the return line to avoid dangerous back-pressure acting on the cylinders, which may cause damage to the cylinder.

Standard clamping arm (available upon request)



The ratio between the cylinder clamping area and the cylinder unclamping area may produce dangerous high pressure.

The diagram shows the effective clamping force **F** as a function of the operating pressure **P** and the recommended maximum clamping arm length **L**.

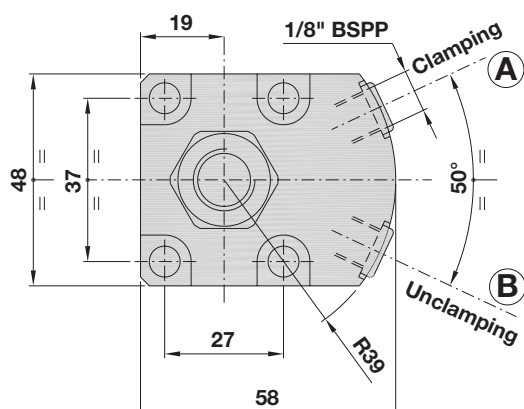
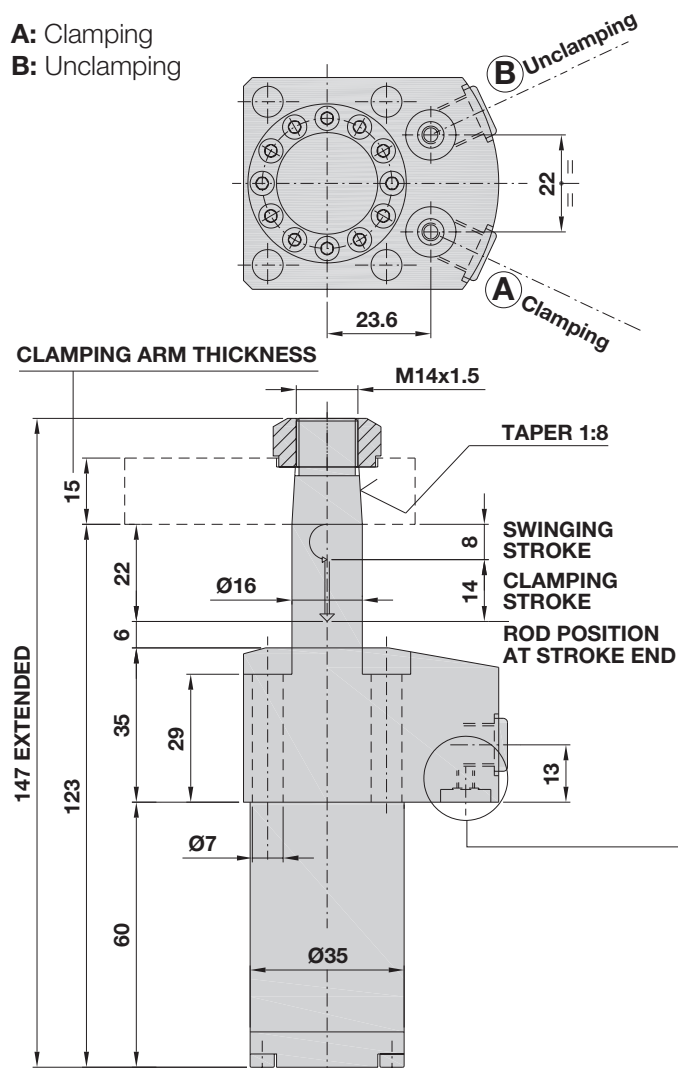


SR16.0 FD

DOUBLE-ACTING SWING CLAMPING CYLINDER WITH UPPER FLANGE

MAX. WORKING PRESSURE=350 BAR

A: Clamping
B: Unclamping



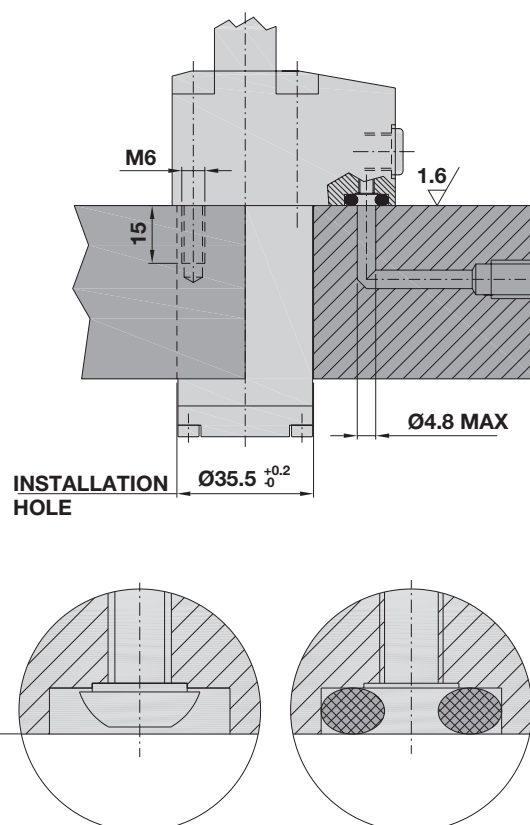
Variants:

- > Safety clutch against overload during rotation (*upon request*).
- > Metal wiper. (*upon request*).

Material:

- > **Piston/rod:** Hardened nitrided steel.
- > **Body:** Nitrided free machining steel.

Installation dimensions with O-ring manifold mounting



To use the O-ring ports, remove the plug and insert the O-rings Ø 4.34 x 3.53 (supplied)

Supplied:

- > TCEI M6x40 UNI 5931 12.9 mounting screws.
- > O-rings Ø 4.34 x 3.53

Note: for ordering code, please refer to page 16.D for accessories (clamping arms), see page 16.S1 for clamping force diagrams, see page 16.S2

STROKE mm		EFFECTIVE CYLINDER AREA		TOTAL OIL VOLUME	
		Cm ²		Cm ³	
Total	22	Clamping	Unclamping	Clamping	Unclamping
Swinging	8	2.51	4.52	5.52	9.94
Clamping	14				

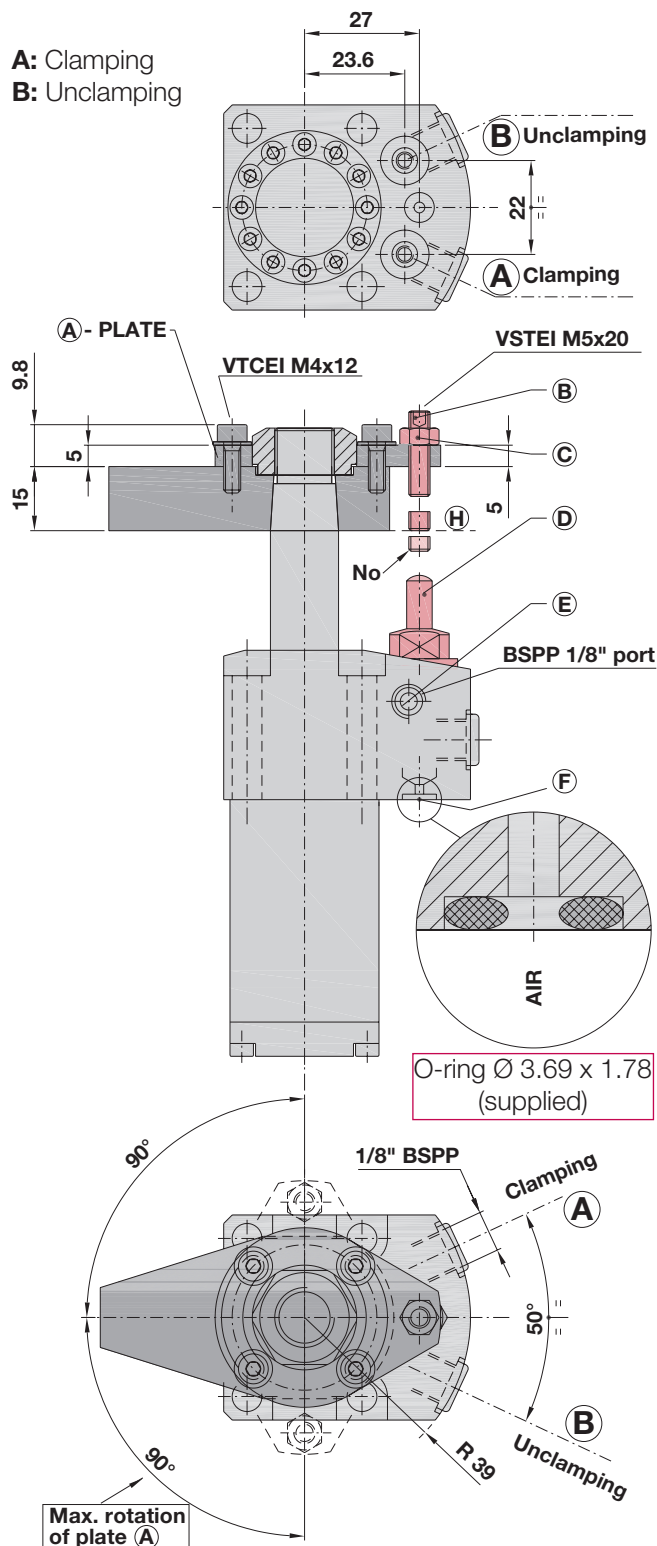
METAL WIPER
AVAILABLE
ON REQUEST

HYDROBLOCK
INNOVATIVE ENGINEERING

Last update 09/2010

SR16.0 FDV

DOUBLE-ACTING SWING CLAMPING CYLINDER WITH UPPER FLANGE AND CLAMP CLOSING CONTROL VALVE



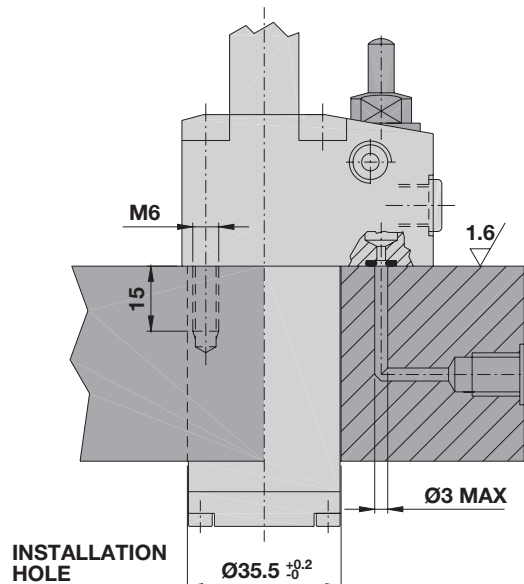
Supplied:

- > O-ring Ø 3.69 x 1.78
- > O-ring Ø 4.34 x 3.53
- > TCEI M6x40 UNI 5931 12.9 mounting screws

Material:

- > **Piston/rod:** Hardened nitrided steel.
- > **Body:** Nitrided free machining steel.
- > **Valve:** Stainless steel.

Installation dimensions with O-ring manifold mounting



Installation hole:

(Adjustment of the air-operated valve)

To adjust the screw for the clamp closing control valve, please proceed as follows:

- 1) Supply the cylinder with hydraulic pressure to move the clamping arm into clamping position.
- 2) Adjust the plate (A) to the exact radial position to ensure that the setscrew (B) is in line with the valve.
- 3) Supply the circuit with air at 1 - 6 bar through hole (F). The cap (D) moves in extended position and the air will escape from hole (E).
- 4) Tighten the setscrew (B) with the workpiece being clamped by the clamp until the air flow is interrupted. Then tighten the screw by another 2/4 turns (*) and lock it with the nut (C).

* The additional 2/4 turns serve for compensating thickness variations of rough surfaces.

Note: upon completion of the adjustment, the tip of the setscrew (B) must not project beyond the lower end of the clamp (level H).

Variants:

- > Metal wiper (*upon request*).
- > Safety clutch against overload during rotation (*upon request*).

**METAL WIPER
UPON
REQUEST!**

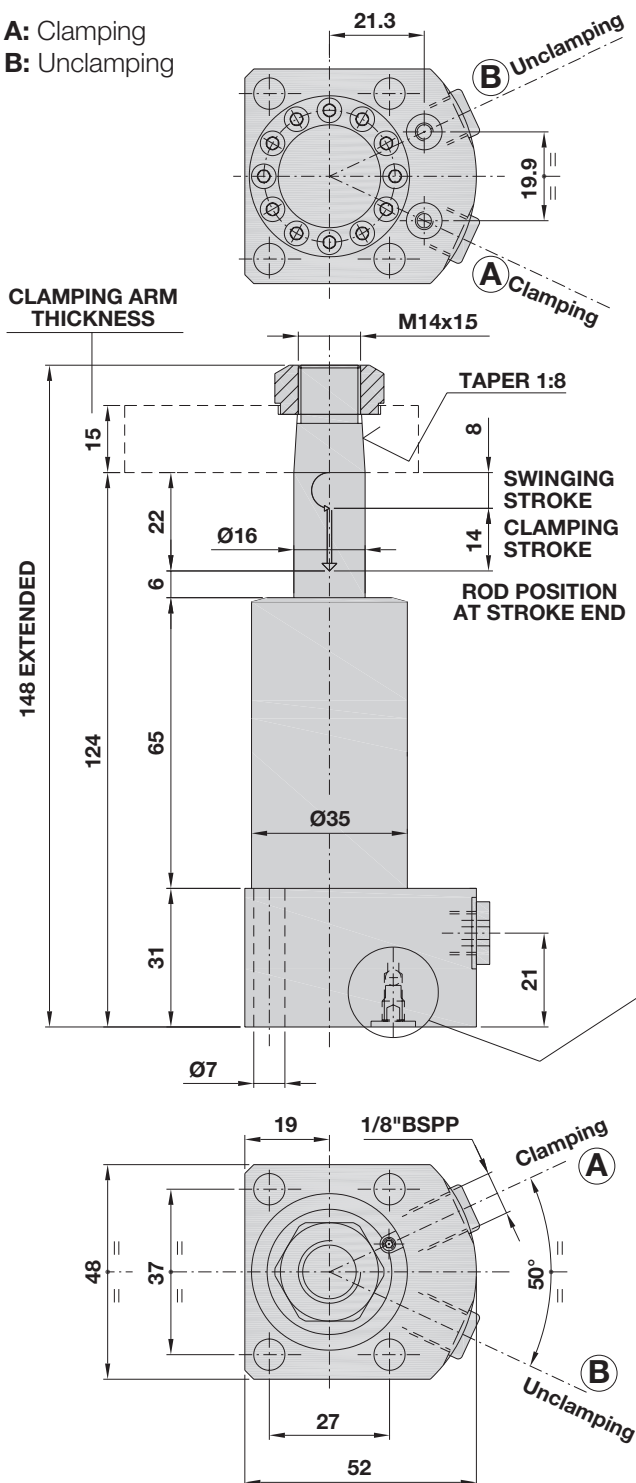
HYDROBLOCK
INNOVATIVE ENGINEERING

Last update 09/2010

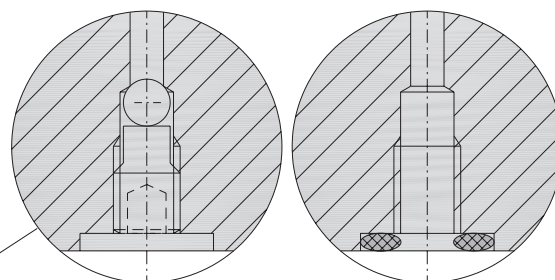
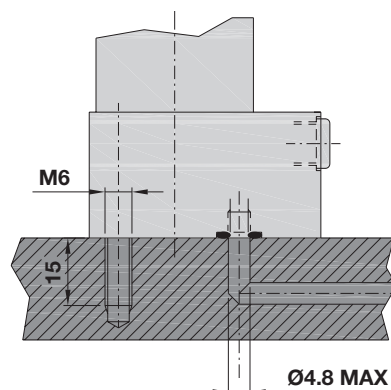
SR16.0 PD

DOUBLE-ACTING SWING CLAMPING CYLINDER WITH LOWER FLANGE

A: Clamping
B: Unclamping



Installation dimensions with O-ring manifold mounting



To use the O-ring ports, remove the plug and insert the O-rings Ø 6.07 x 1.78 (supplied)

Note : For ordering code, please refer to page 16.D
For accessories (clamping arms), see page 16.S1
For clamping force diagrams, see page 16.S2

Supplied:

- > TCEI M6x40 UNI 5931 12.9 mounting screws.
- > O-rings Ø 6.07 x 1.78

Variants:

- > Safety clutch against overload during rotation (*upon request*).
- > Metal wiper (*upon request*).

Material:

- > **Piston/rod:** Hardened nitrided steel.
- > **Body:** Nitrided free machining steel.

STROKE mm		EFFECTIVE CYLINDER AREA		TOTAL OIL VOLUME	
		Cm ²		Cm ³	
Total	22	Clamping	Unclamping	Clamping	Unclamping
Swinging	8	2.51	4.52	5.52	9.94
Clamping	14				

METAL WIPER
UPON
REQUEST!

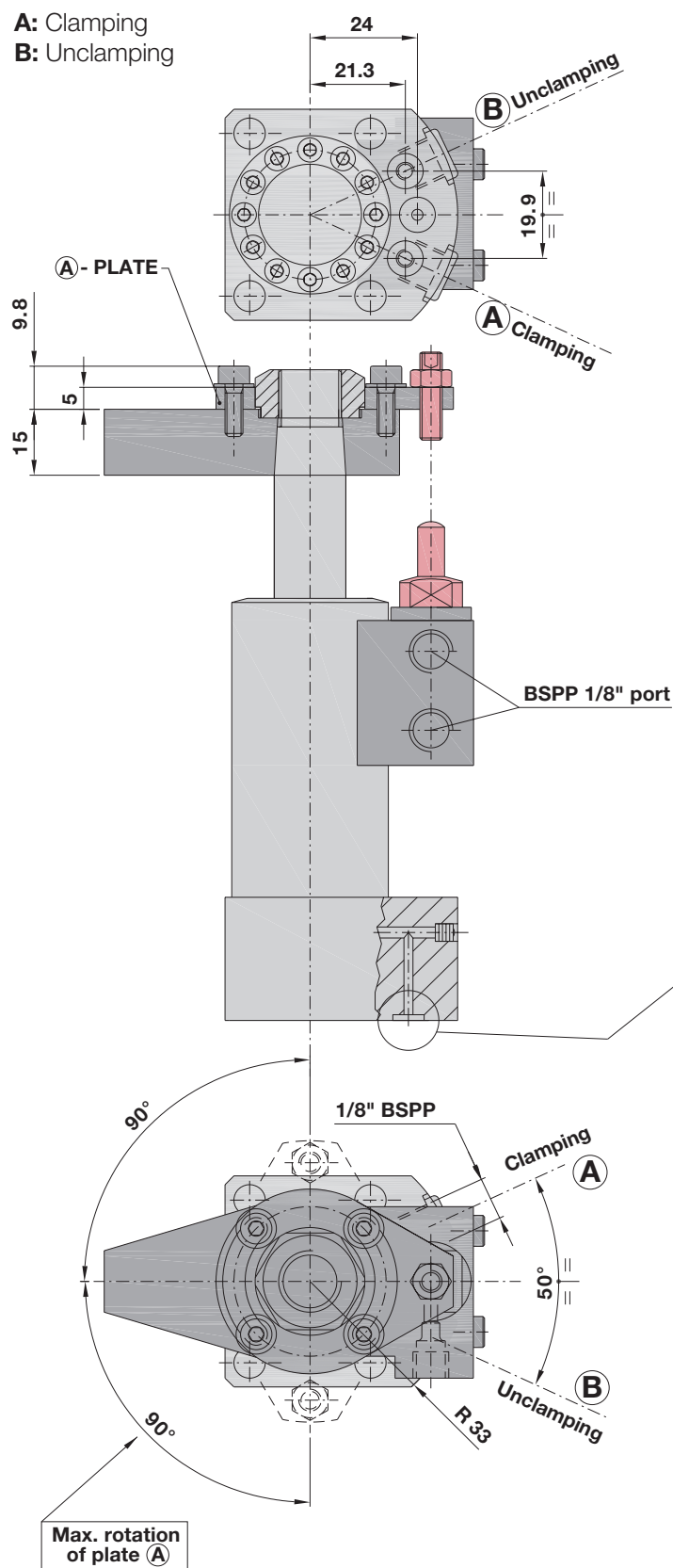

HYDROBLOCK
INNOVATIVE ENGINEERING

Last update 09/2010

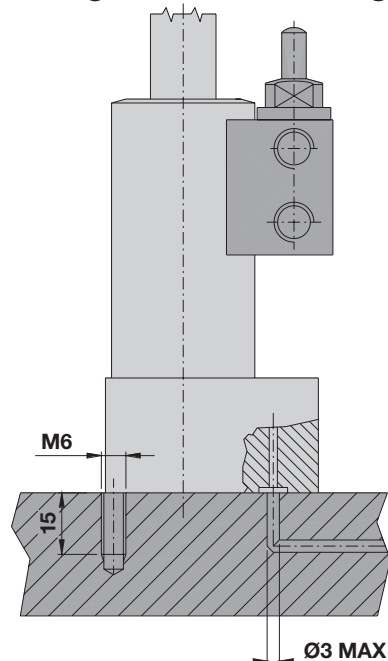
SR16.0 PDV

DOUBLE-ACTING SWING CLAMPING CYLINDER WITH LOWER FLANGE
AND CLAMP CLOSING CONTROL VALVE

A: Clamping
B: Unclamping



Installation dimensions with
O-ring manifold mounting



O-ring Ø 3.69 x 1.78 (supplied)

Supplied:

- > O-ring Ø 3.69 x 1.78
- > O-ring Ø 6.07 x 1.78
- > TCEI M6x40 UNI 5931 12.9 mounting screws.

Variants:

- > Metal wiper (*upon request*).
- > Safety clutch against overload during rotation (*upon request*).

Material:

- > **Piston/rod:** Hardened nitrided steel.
- > **Body:** Nitrided free machining steel.
- > **Valve:** Stainless steel.

Note: for the adjustment of the clamp closing control valve, please refer to page 2

METAL WIPER
UPON
REQUEST!

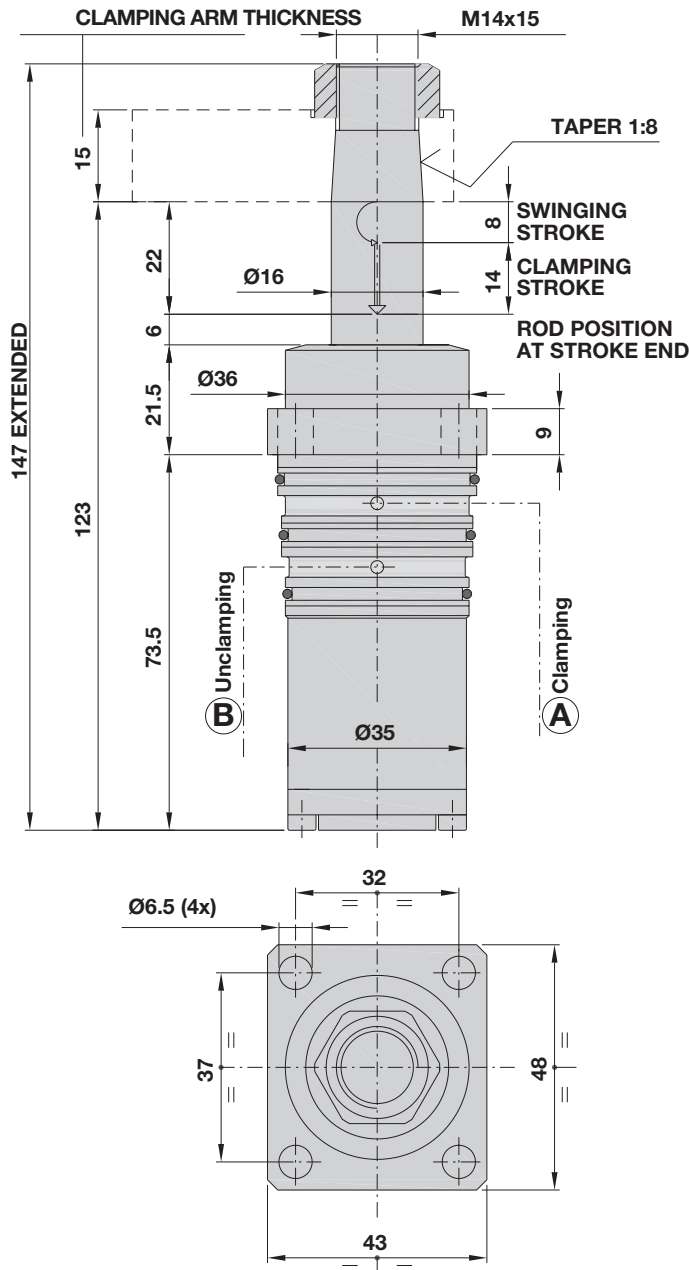

HYDROBLOCK
INNOVATIVE ENGINEERING

Last update 09/2010

SR16.0 CD

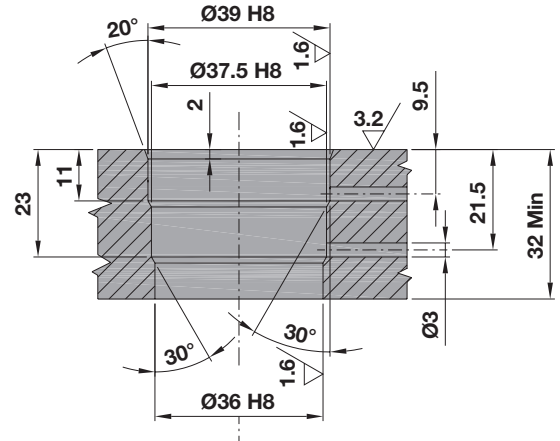
DOUBLE-ACTING SWING CLAMPING CYLINDER WITH CARTRIDGE BODY

A: Clamping
B: Unclamping

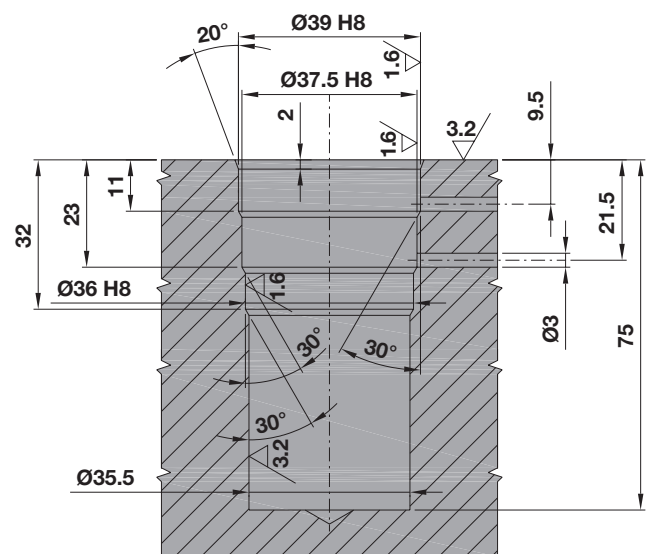


Installation dimensions

Cavity with crossing seat



Cavity with built-in seat



Supplied:

- > TC M6x20 UNI 5931 12.9 mounting.

Variants:

- > Safety clutch against overload during rotation (*upon request*).
- > Metal wiper (*upon request*).

Material:

- > **Piston/rod:** Hardened nitrided steel.
- > **Body:** Nitrided free machining steel.

Note: For ordering code, please refer to page 16.D
For accessories (clamping arms), see page 16.S1
For clamping force diagrams, see page 16.S2

STROKE mm		EFFECTIVE CYLINDER AREA		TOTAL OIL VOLUME	
		Cm ²		Cm ³	
Total	22	Clamping	Unclamping	Clamping	Unclamping
Swinging	8	2.51	4.52	5.52	9.94
Clamping	14				

METAL WIPER
UPON
REQUEST!

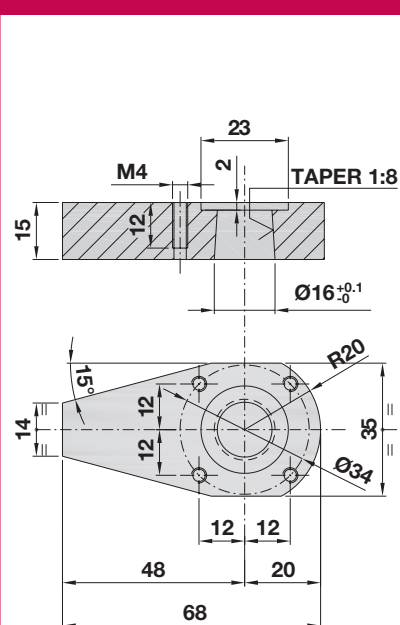

HYDROBLOCK
INNOVATIVE ENGINEERING

Last update 09/2010

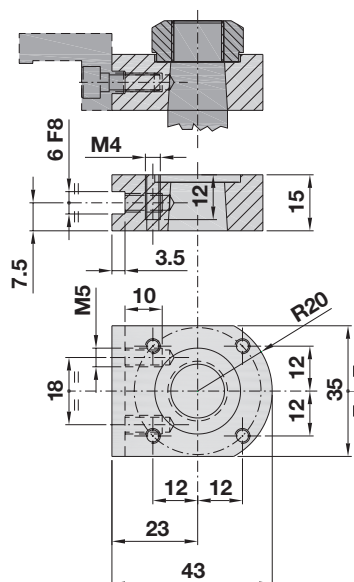
SR16 ACCESSORIES

S1

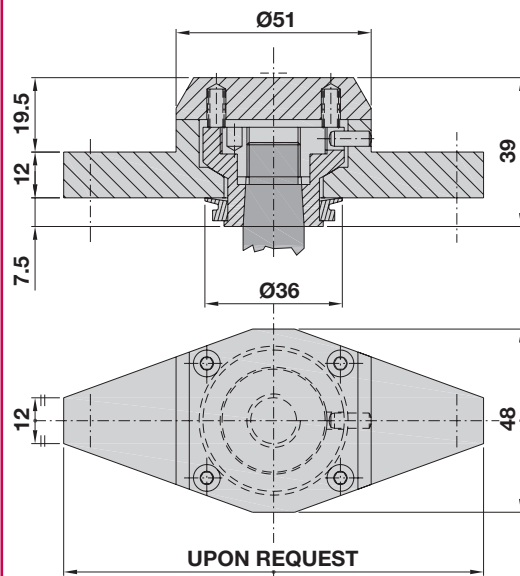
CLAMPING ARM 01.16



CLAMPING ARM 01.16

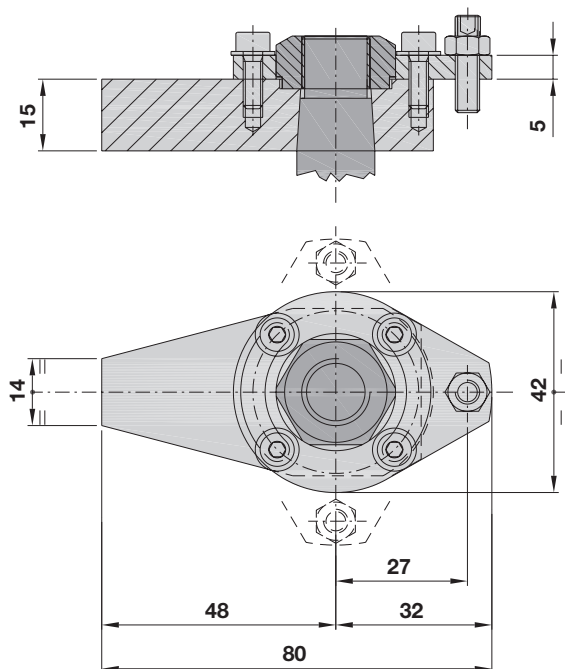


CLAMPING ARM 01.16



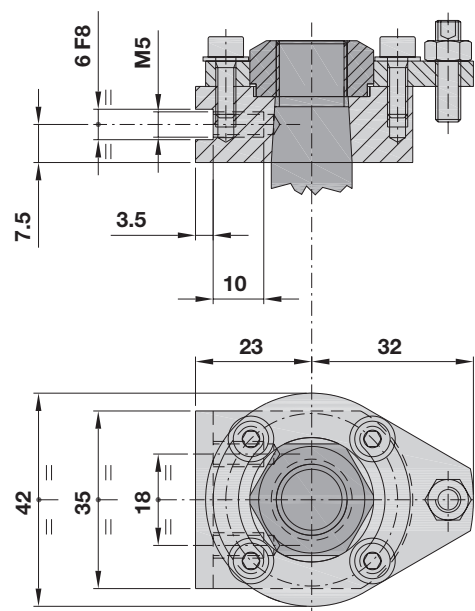
CLAMPING ARM 04.16

VERSION FOR CYLINDER WITH
CLAMP CLOSING CONTROL VALVE



CLAMPING ARM 05.16

VERSION FOR CYLINDER WITH
CLAMP CLOSING CONTROL VALVE



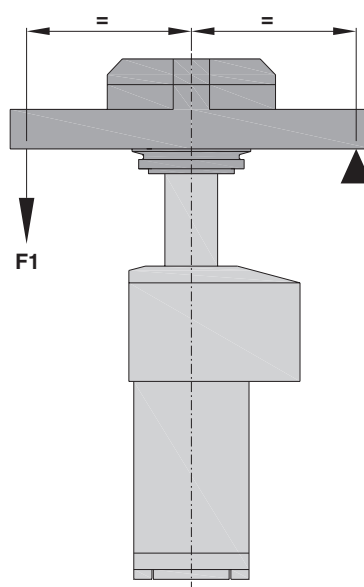
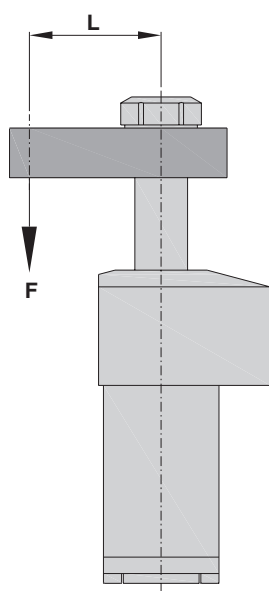
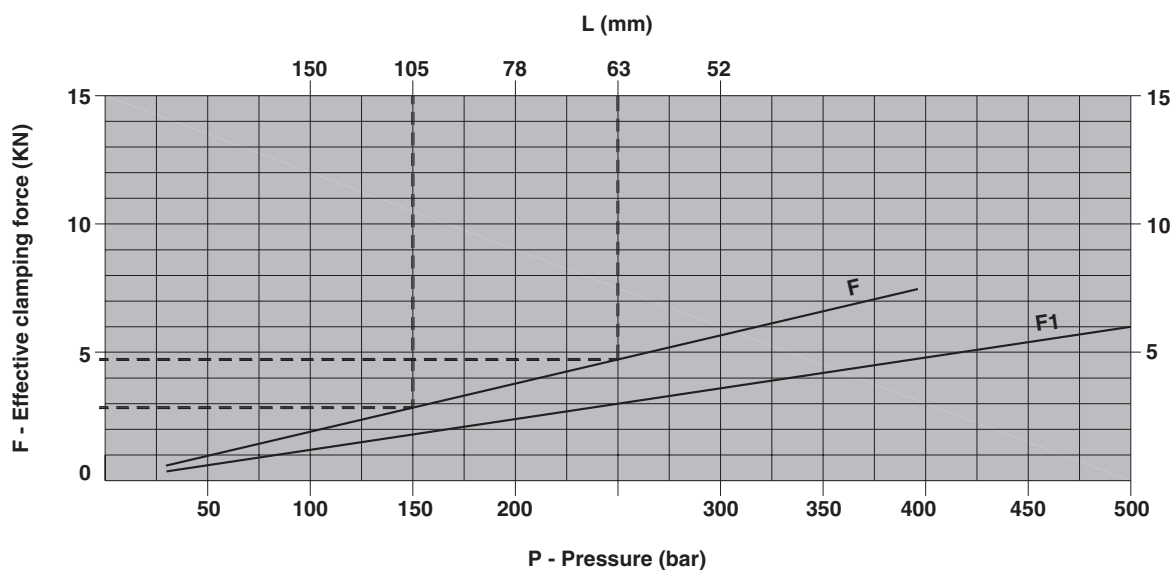
Material: C45 STEEL

SR16 DIAGRAM

S2

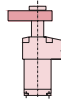
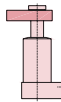
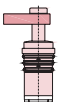
CLAMPING FORCE/PRESSURE RATIO

The diagram shows the effective clamping force **F** as a function of the operating pressure **P** and the recommended maximum clamping arm length **L**.



SR16

ORDERING CODE

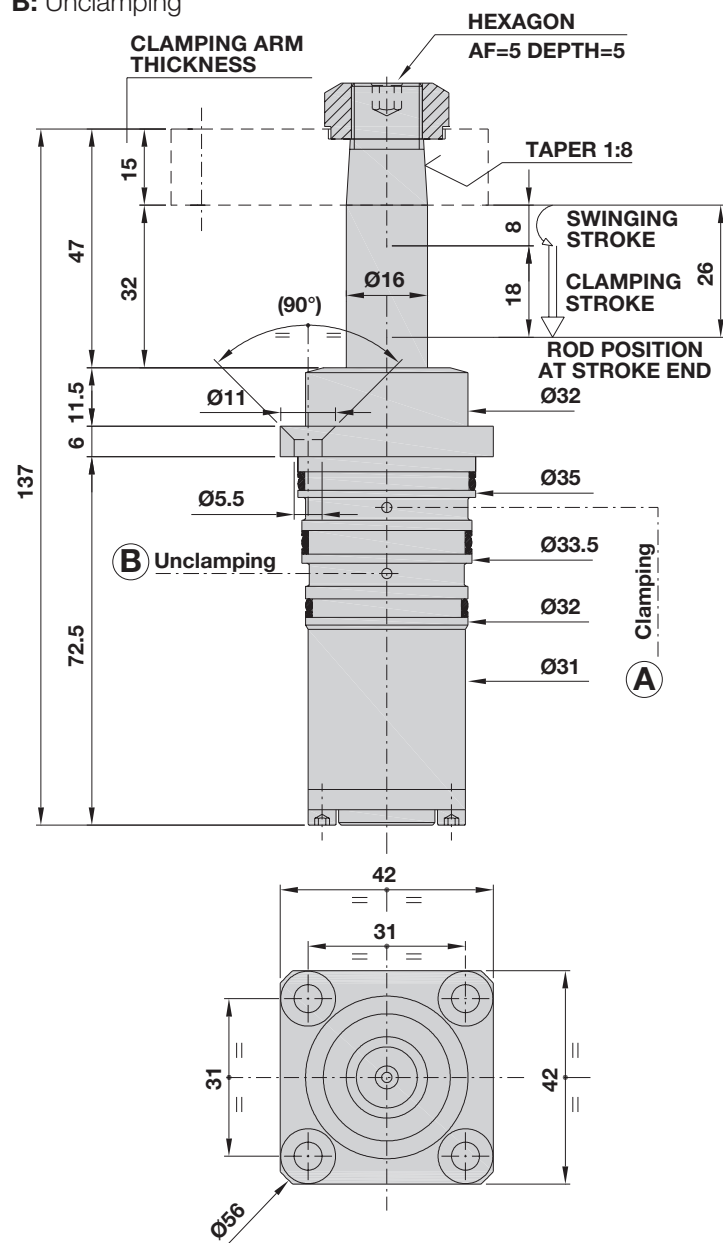
0: Standard version with stroke 22 (8r + 14b)		0
FD: Double-acting version with upper flange		FD
PD: Double-acting version with lower flange		PD
CD: Double-acting version with cartridge body		CD
L: Left-hand swinging		L
R: Right-hand swinging		R
0°-45°-60°-90°: Available swinging angles		0 - 45 - 60- 90
V: Version with clamp closing control valve (<i>upon request</i>)		V
F: Safety clutch against overload during rotation (<i>upon request</i>)		F
M: Metal wiper (<i>upon request</i>)		M

SR16.0 CDB

DOUBLE-ACTING SWING CLAMPING CYLINDER WITH CARTRIDGE BODY

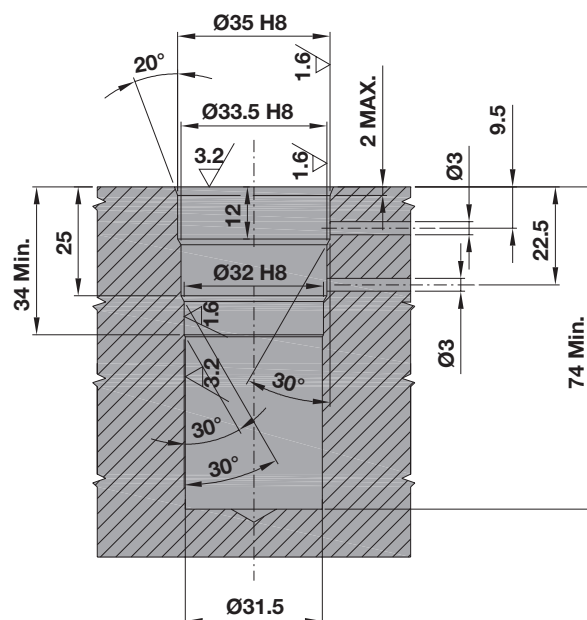
MAX. WORKING PRESSURE=350 BAR

A: Clamping
B: Unclamping

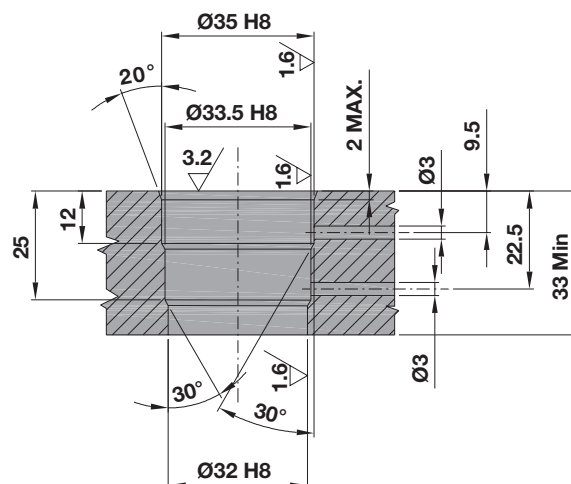


Installation dimensions

Cavity with built-in seat



Cavity with crossing seat



The compact cylinders of the SR16.0 CDB series are not equipped with the exclusive Hydroblock swing compensation system and cannot be provided with the safety clutch against overload during rotation.

However, the sturdy swinging system of extremely simple design ensures long service life and maximum reliability.

Supplied:

- > 4 TSPEI M5x16 UNI 5933 12.9 mounting screws.

Material:

- > **Piston/rod:** Hardened nitrided steel.
- > **Body:** Nitrided free machining steel.

STROKE mm		EFFECTIVE CYLINDER AREA		TOTAL OIL VOLUME	
		Cm ²		Cm ³	
Total	26	Clamping	Unclamping	Clamping	Unclamping
Swinging	8	1.13	3.14	2.9	8.2
Clamping	18				


HYDROBLOCK
INNOVATIVE ENGINEERING

Last update 09/2010

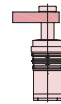
SR16.0 CDB

ORDERING CODE

0: Standard version with stroke 26 (8r + 18b)

0

CDB: Double-acting version with cartridge body



CDB

L: Left-hand swinging

L

R: Right-hand swinging

R

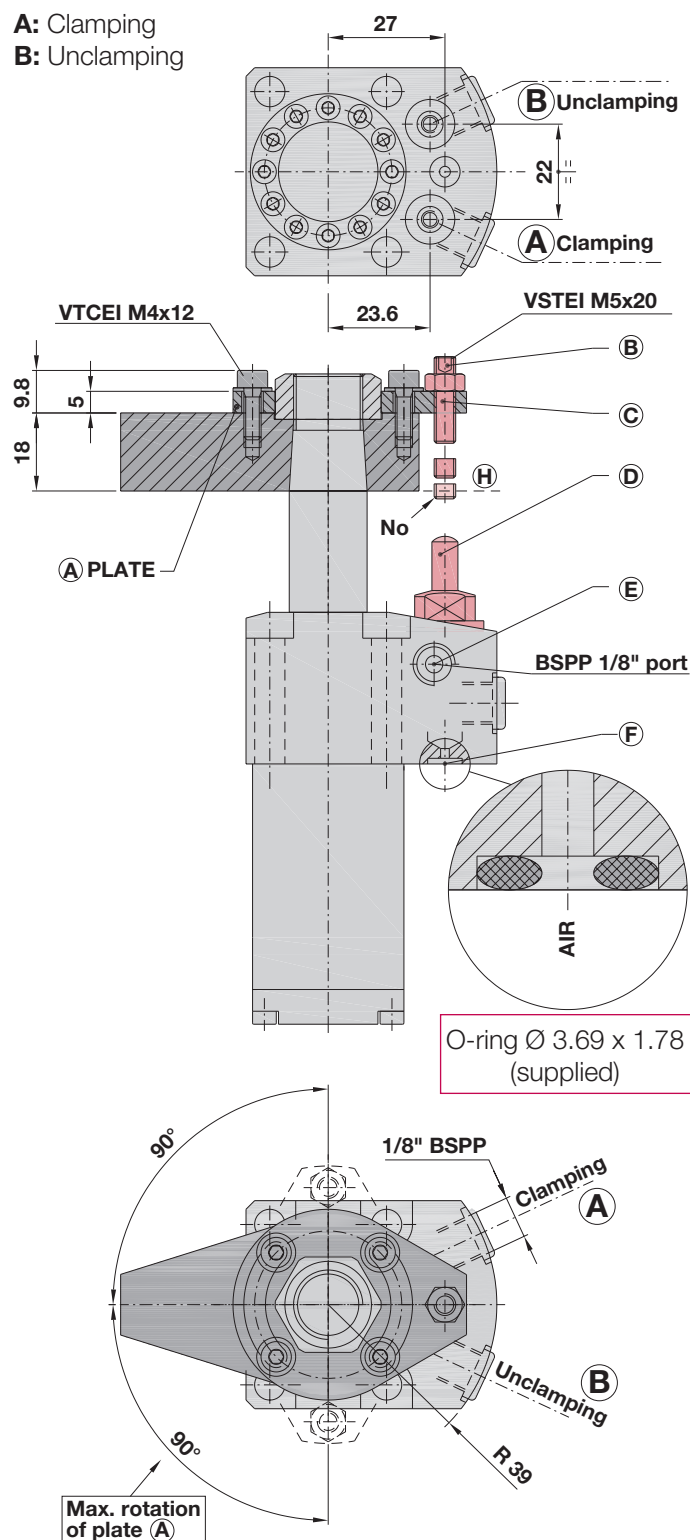
0°-45°-60°: Available swinging angles (*upon request*)

0 - 45 - 60

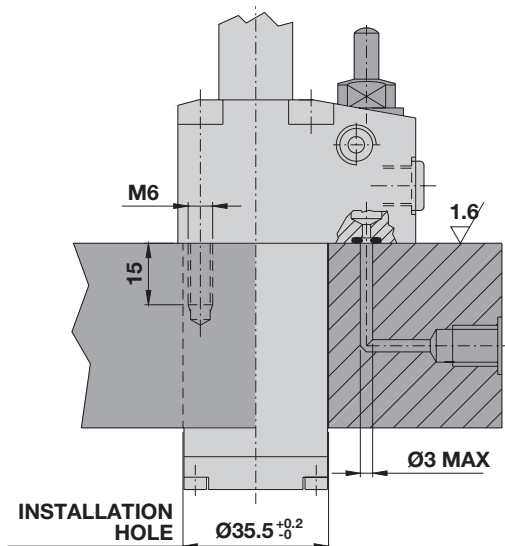
SR18.0 FDV

DOUBLE-ACTING SWING CLAMPING CYLINDER WITH UPPER FLANGE AND CLAMP CLOSING CONTROL VALVE

A: Clamping
B: Unclamping



Installation dimensions with O-ring manifold mounting



Installation hole:

(Adjustment of the air-operated valve)

To adjust the screw for the clamp closing control valve, please proceed as follows:

- 1) Supply the cylinder with hydraulic pressure to move the clamping arm into clamping position.
- 2) Adjust the plate (A) to the exact radial position to ensure that the setscrew (B) is in line with the valve.
- 3) Supply the circuit with air at 1 - 6 bar through hole (F). The cap (D) moves in extended position and the air will escape from hole (E).
- 4) Tighten the setscrew (B) with the workpiece being clamped by the clamp until the air flow is interrupted. Then tighten the screw by another 2/4 turns (*) and lock it with the nut (C).

The pressure switch will indicate that the pneumatic circuit is closed and release the machine for starting the working cycle.

* The additional 2/4 turns serve for compensating thickness variations of rough surfaces.

Note: upon completion of the adjustment, the tip of the setscrew (B) must not project beyond the lower end of the clamp (level H).

Variants:

- > Metal wiper (*upon request*).
- > Safety clutch against overload during rotation (*upon request*).

Supplied:

- > O-ring Ø 3.69 x 1.78
- > O-ring Ø 4.34 x 3.53
- > TCEI M6x40 UNI 5931 12.9 mounting screws.

Material:

- > **Piston/rod:** Hardened nitrided steel.
- > **Body:** Nitrided free machining steel.
- > **Valve:** Stainless steel.

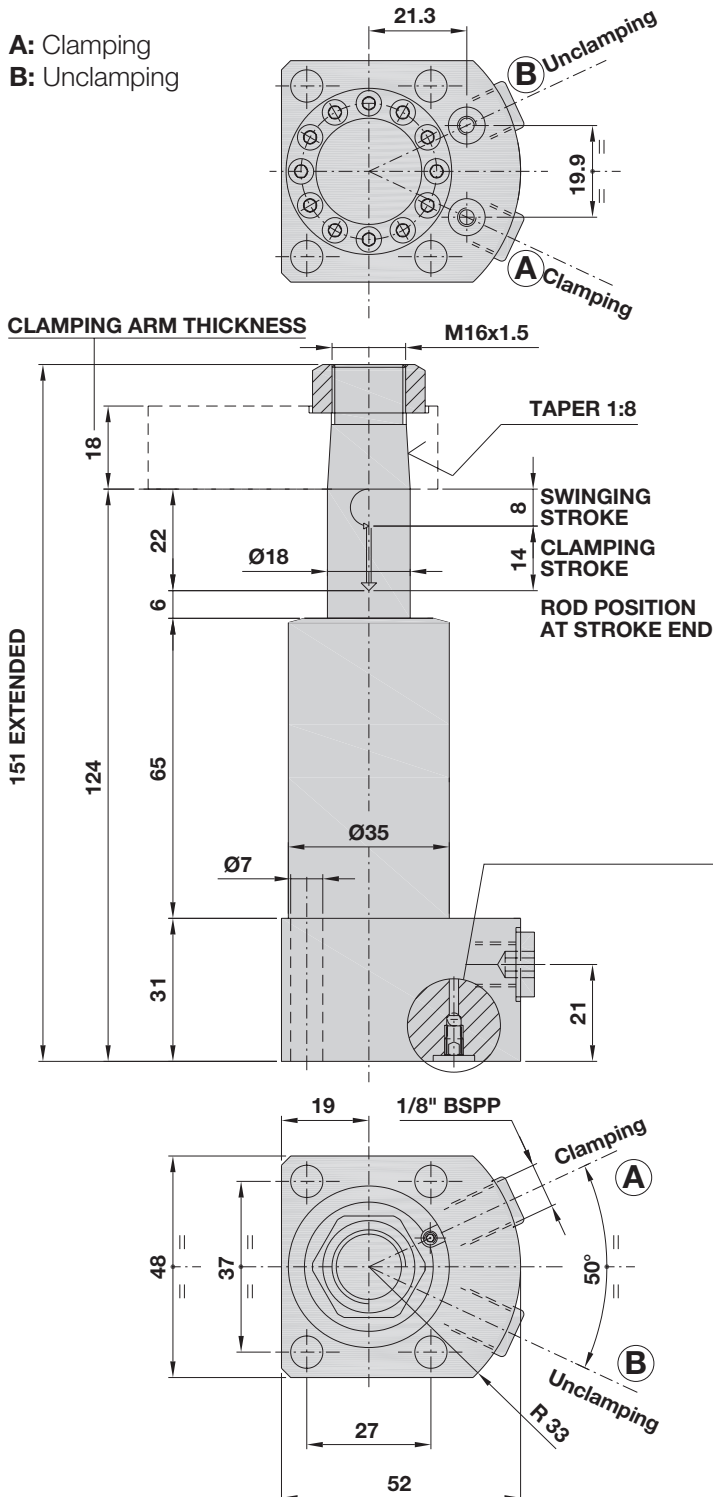
METAL WIPER
UPON
REQUEST!

HYDROBLOCK
INNOVATIVE ENGINEERING

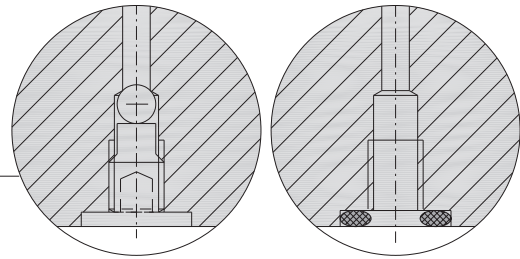
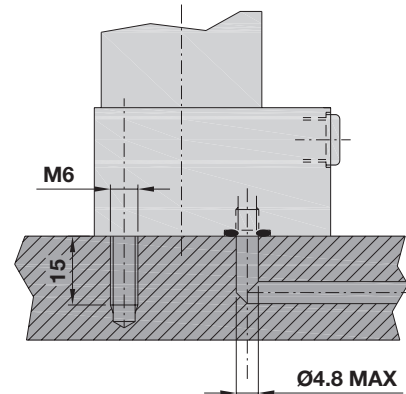
Last update 09/2010

DOUBLE-ACTING SWING CLAMPING CYLINDER WITH LOWER FLANGE

A: Clamping
B: Unclamping



Installation dimensions with O-ring manifold mounting



To use the O-ring ports, remove the plug and insert the O-rings Ø 6.07 x 1.78 (supplied)

Note: For ordering code, please refer to page 18.D
For accessories (clamping arms), see page 18.S1
For clamping force diagrams, see page 18.S2

Supplied:

- > O-rings Ø 6.07 x 1.78
- > TCEI M6x40 UNI 5931 12.9 mounting screws.

Variants:

- > Safety clutch against overload during rotation **(upon request).**
- > Metal wiper **(upon request).**

Material:

- > **Piston/rod:** Hardened nitrided steel.
- > **Body:** Nitrided free machining steel.

STROKE mm		EFFECTIVE CYLINDER AREA		TOTAL OIL VOLUME	
		Cm ²		Cm ³	
Total	22	Clamping	Unclamping	Clamping	Unclamping
Swinging	8	1.98	4.52	4.36	9.94
Clamping	14				

**METAL WIPER
UPON
REQUEST!**

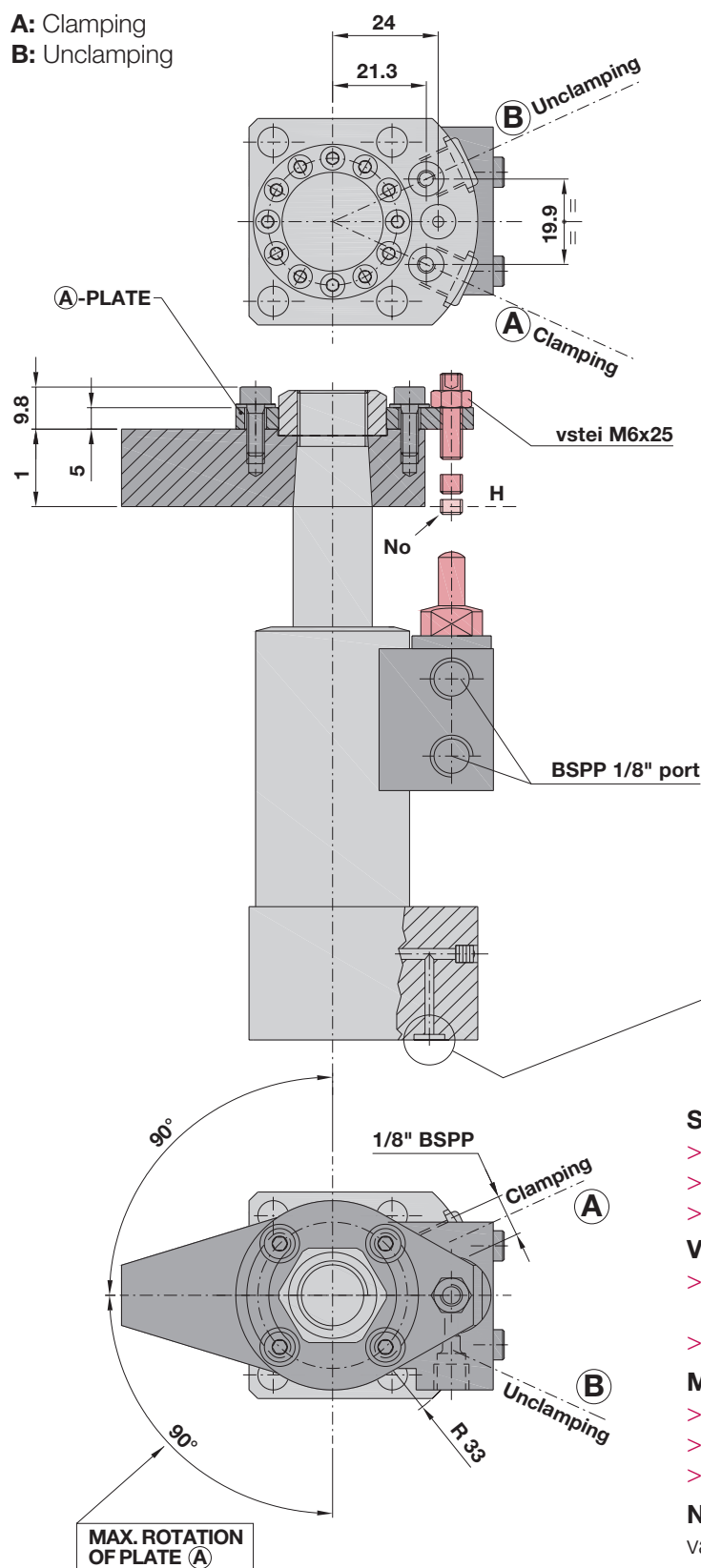


HYDROBLOCK
INNOVATIVE ENGINEERING

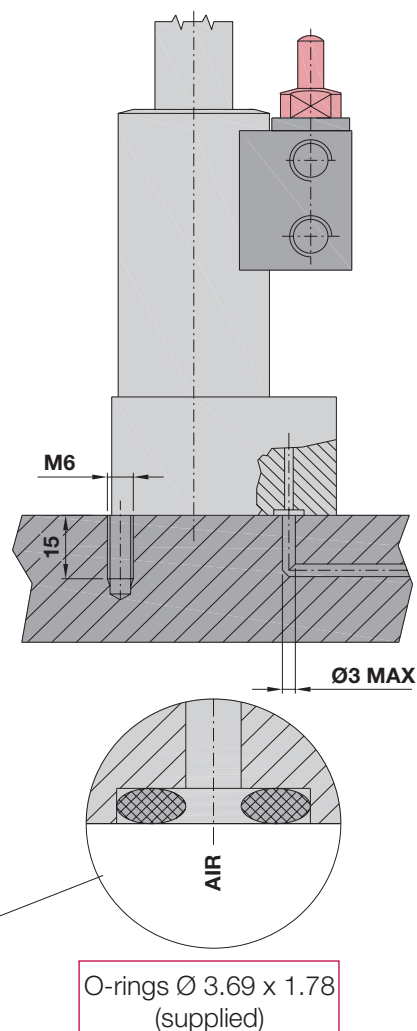
SR18.0 PDV

DOUBLE-ACTING SWING CLAMPING CYLINDER WITH LOWER FLANGE
AND CLAMP CLOSING CONTROL VALVE

A: Clamping
B: Unclamping



Installation dimensions with O-ring manifold mounting



Supplied:

- > O-ring Ø 3.69 x 1.78
- > O-ring Ø 6.07 x 1.78
- > TCEI M6x40 UNI 5931 12.9 mounting screws.

Variants:

- > Safety clutch against overload during rotation *(upon request)*.
- > Metal wiper *(upon request)*.

Material:

- > **Piston/rod:** Hardened nitrided steel.
- > **Body:** Nitrided free machining steel.
- > **Valve:** Stainless steel.

Note: for the adjustment of the clamp closing control valve, please refer to page 2

METAL WIPER
UPON
REQUEST!


HYDROBLOCK
INNOVATIVE ENGINEERING

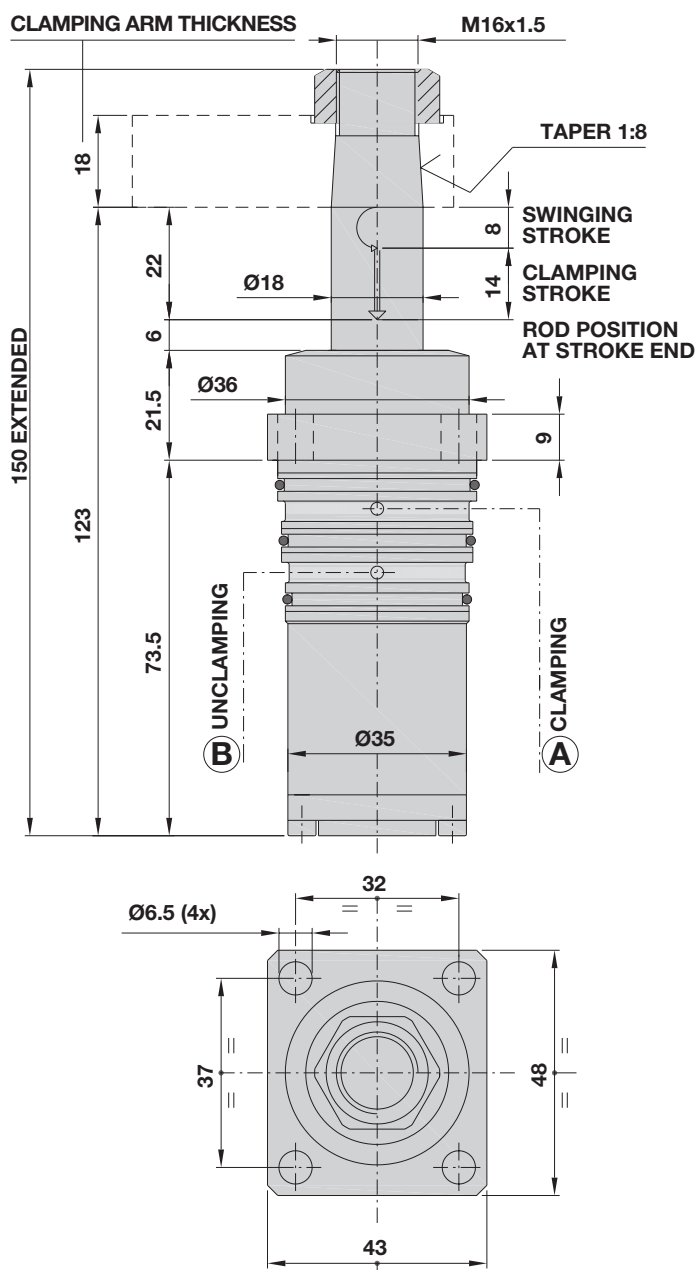
Last update 09/2010

SR18.0 CD

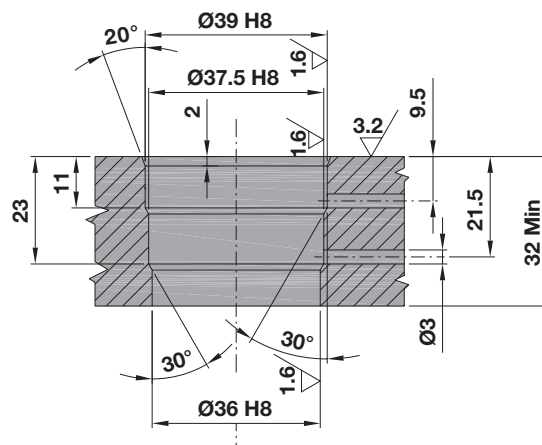
DOUBLE-ACTING SWING CLAMPING CYLINDER WITH CARTRIDGE BODY

A: Clamping
B: Unclamping

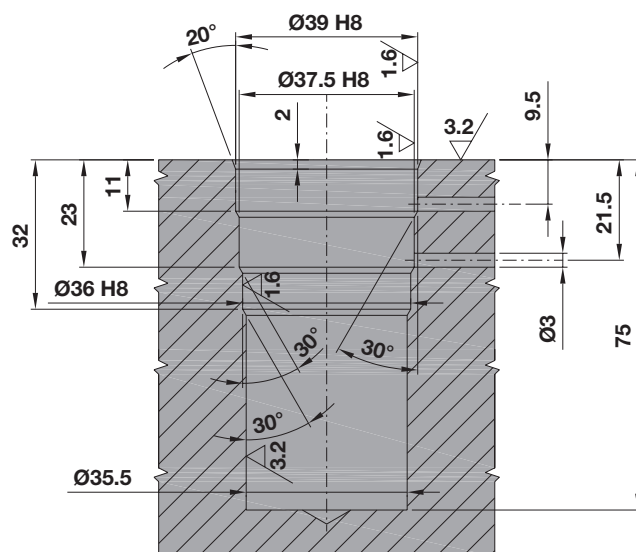
Installation dimensions



Cavity with crossing seat



Cavity with built-in seat



Supplied:

> TC M6x20 UNI 5931 12.9 mounting screws.

Variants:

- > Safety clutch against overload during rotation (*upon request*).
- > Metal wiper (*upon request*).


Material:

- > **Piston/rod:** Hardened nitrided steel.
- > **Body:** Nitrided free machining steel.

Note: For ordering code, please refer to page 18.D
For accessories (clamping arms), see page 18.S1
For clamping force diagrams, see page 18.S2

STROKE mm		EFFECTIVE CYLINDER AREA		TOTAL OIL VOLUME	
		Cm ²		Cm ³	
Total	22	Clamping	Unclamping	Clamping	Unclamping
Swinging	8	1.98	4.52	4.36	9.94
Clamping	14				

METAL WIPER
UPON
REQUEST!

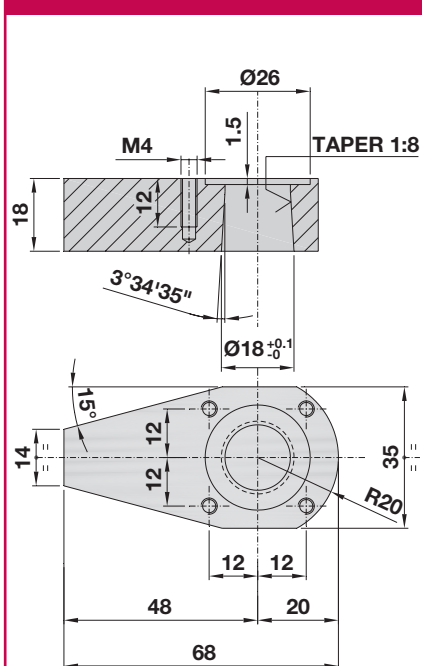

HYDROBLOCK
INNOVATIVE ENGINEERING

Last update 09/2010

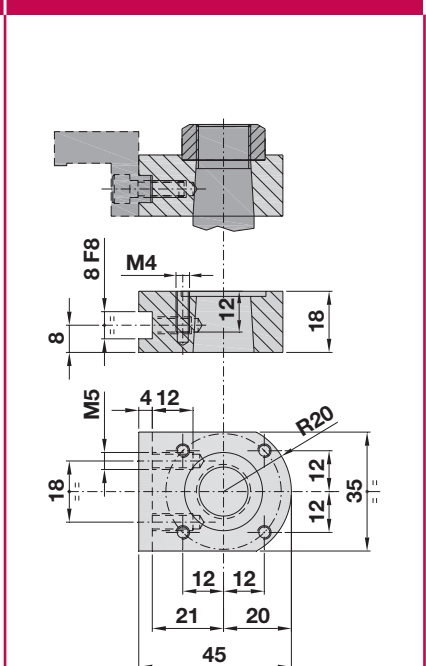
SR18 ACCESSORIES

S1

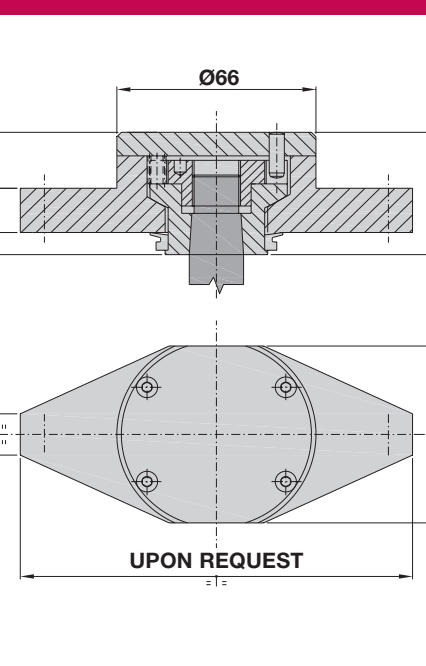
CLAMPING ARM 01.18



CLAMPING ARM 02.18

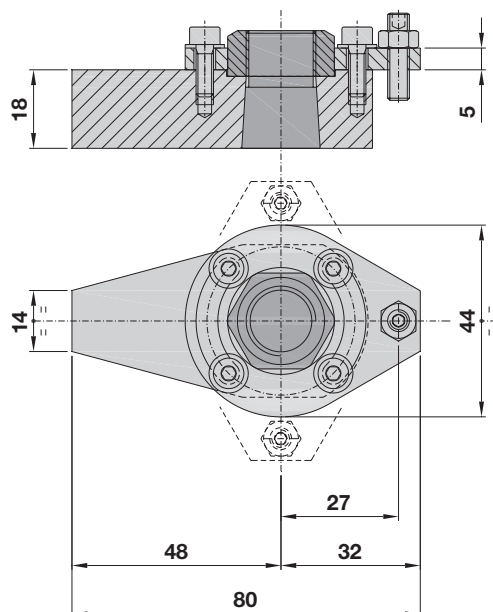


CLAMPING ARM 03.18



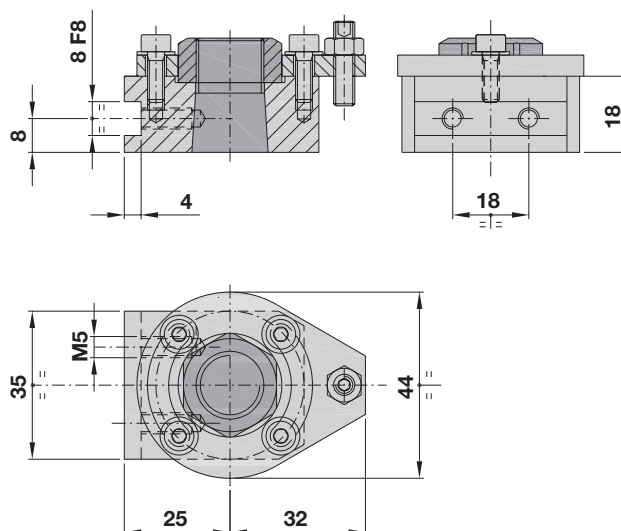
CLAMPING ARM 04.18

VERSION FOR CYLINDER WITH
CLAMP CLOSING CONTROL VALVE



CLAMPING ARM 05.18

VERSION FOR CYLINDER WITH
CLAMP CLOSING CONTROL VALVE



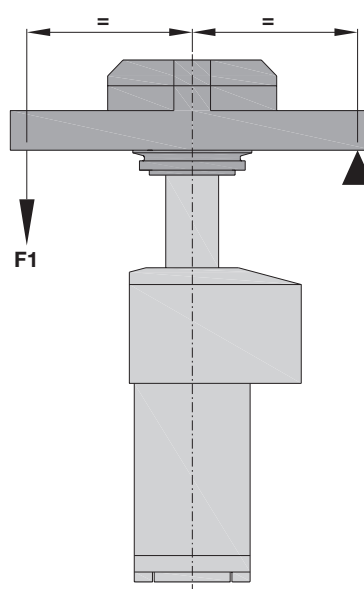
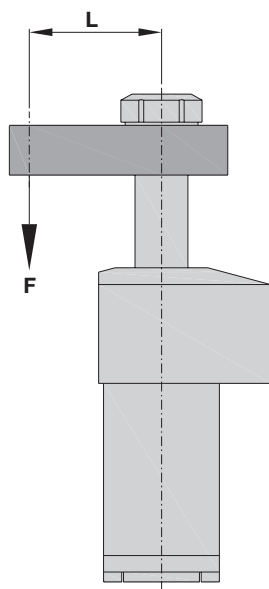
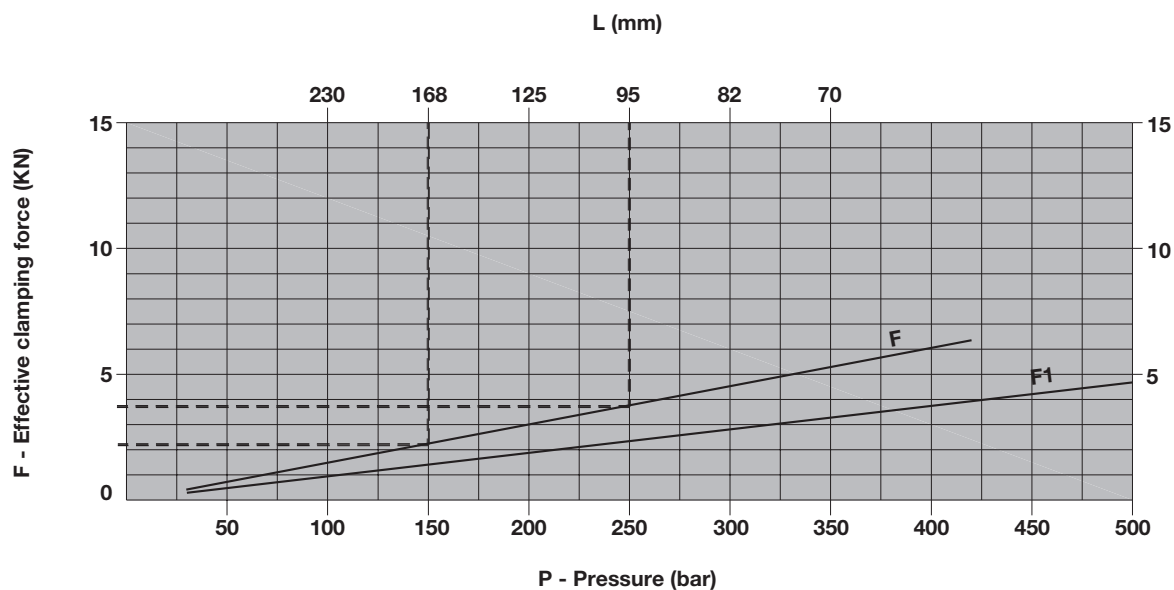
Material: C45 STEEL

SR18 DIAGRAM

S2

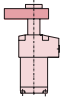
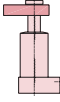
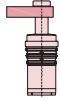
CLAMPING FORCE/PRESSURE RATIO

The diagram shows the effective clamping force **F** as a function of the operating pressure **P** and the recommended maximum clamping arm length **L**.



SR18

ORDERING CODE

0: Standard version with stroke 22 (8r + 14b)		0
FD: Double-acting version with upper flange		FD
PD: Double-acting version with lower flange		PD
CD: Double-acting version with cartridge body		CD
L: Left-hand swinging		L
R: Right-hand swinging		R
0°-45°-60°-90°: Available swinging angles		0 - 45 - 60 - 90
V: Version with clamp closing control valve (<i>upon request</i>)		V
F: Safety clutch against overload during rotation (<i>upon request</i>)		F
M: Metal wiper (<i>upon request</i>)		M

SR20.1 PS

SINGLE-ACTING SWING CLAMPING CYLINDER WITH LOWER FLANGE

ORDERING CODE

L: Left-hand swinging	L
R: Right-hand swinging	R
90°: Standard swinging angle	90
0°-45°-60°: Available swinging angles (<i>upon request</i>)	0 - 45 - 60
M: Metal wiper (<i>upon request</i>)	M

Single-acting swing clamping cylinder with rectangular foot equipped with in-line and O-ring ports.

Clamping is performed through port "A". As soon as the pressure is released, the clamping arm automatically returns into the initial position.

In the standard version, the cylinder is equipped with the safety clutch against overload during rotation.

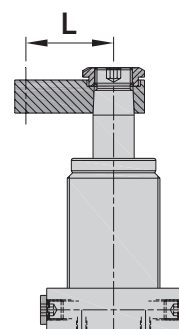
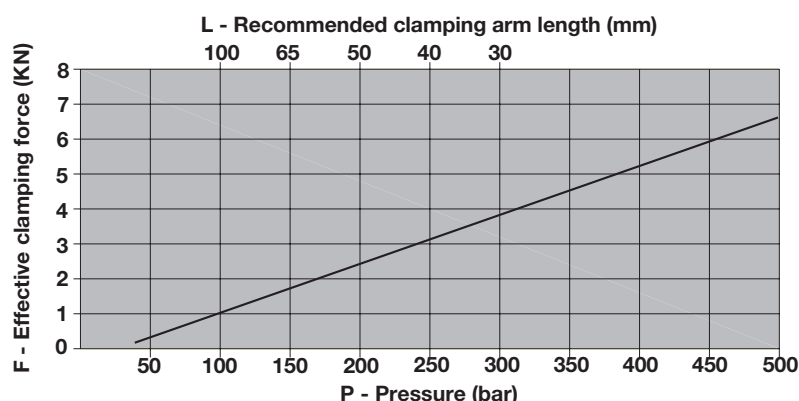
Right and left-hand swinging at a standard angle of 90°.

> Swinging angles of 60°, 45° or 0° are available (*upon request*).

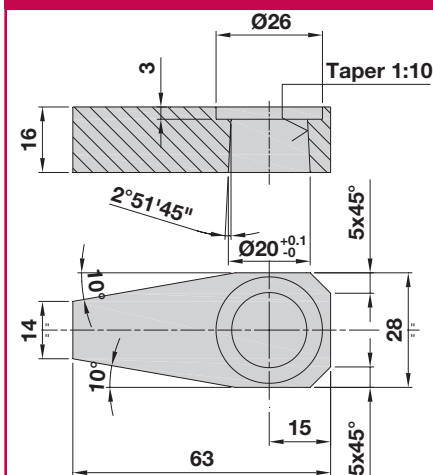
> Metal wiper available (*upon request*).

N.B. To avoid any damaging liquid or condensate pollution inside of the cylinder, we recommend using a proper venting circuit on the "B" port.

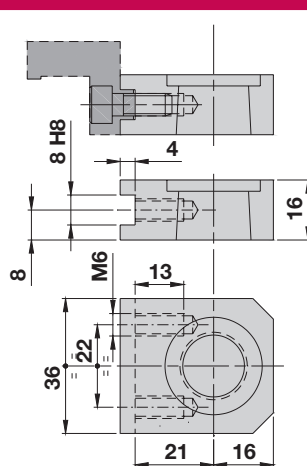
The diagram shows the effective clamping force **F** as a function of the operating pressure **P** and the recommended maximum clamping arm length **L**.



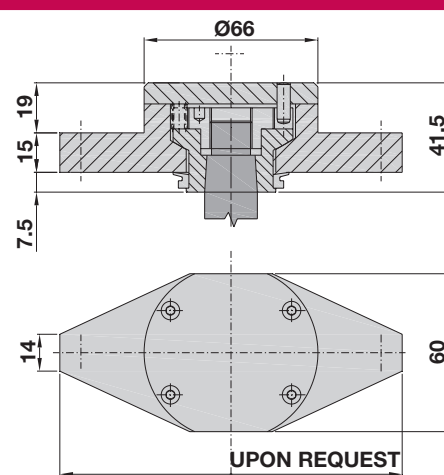
CLAMPING ARM 01.20



CLAMPING ARM 02.20



CLAMPING ARM 03.20



Material: C45 STEEL

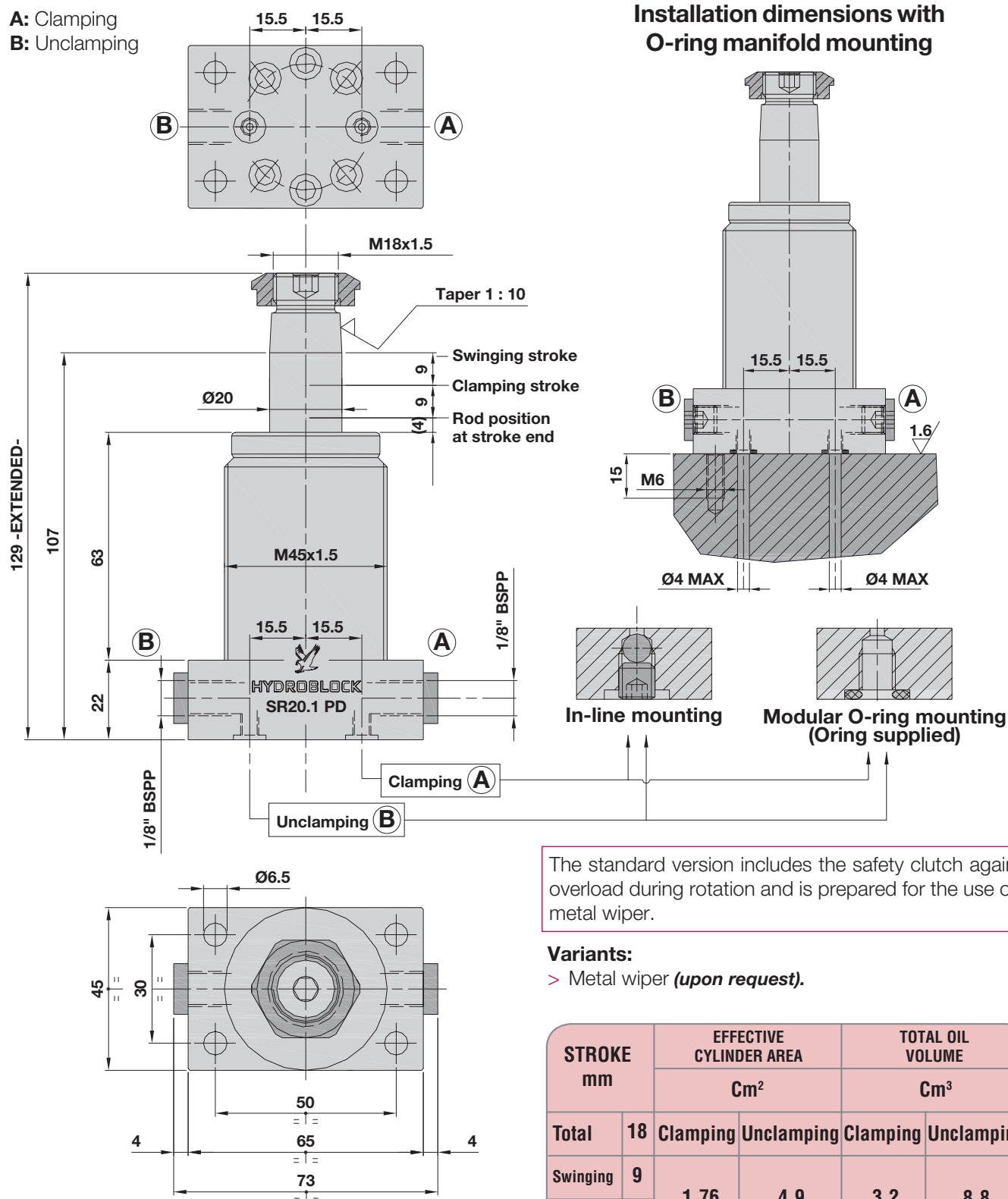
SR20.1 PD

DOUBLE-ACTING SWING CLAMPING CYLINDER WITH LOWER FLANGE

MAX. WORKING PRESSURE=500 BAR

A: Clamping
B: Unclamping

Installation dimensions with
O-ring manifold mounting



The standard version includes the safety clutch against overload during rotation and is prepared for the use of a metal wiper.

Variants:

> Metal wiper (*upon request*).

STROKE mm		EFFECTIVE CYLINDER AREA		TOTAL OIL VOLUME	
		Cm ²		Cm ³	
Total	18	Clamping	Unclamping	Clamping	Unclamping
Swinging	9	1.76	4.9	3.2	8.8
Clamping	9				

METAL WIPER
UPON
REQUEST!

HYDROBLOCK
INNOVATIVE ENGINEERING

Last update 09/2010

SR20.1 PD

DOUBLE-ACTING SWING CLAMPING CYLINDER WITH LOWER FLANGE

ORDERING CODE

L: Left-hand swinging	L
R: Right-hand swinging	R
90°: Standard swinging angle	90
0°-45°-60°: Available swinging angles (<i>upon request</i>)	0 - 45 - 60
M: Metal wiper (<i>upon request</i>)	M

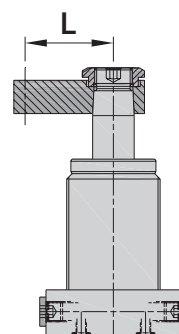
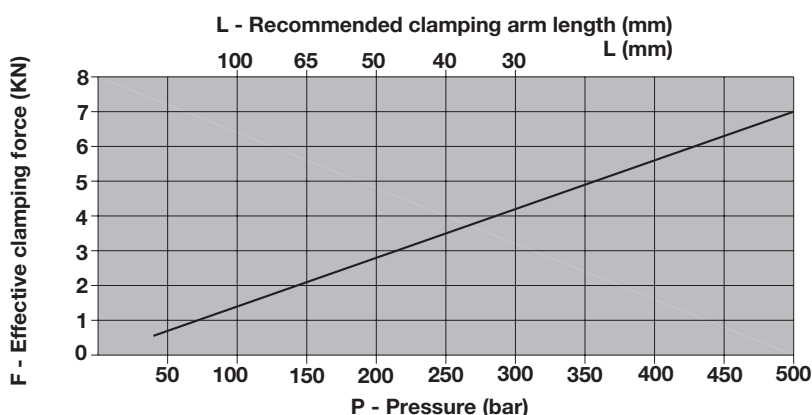
Double-acting swing clamping cylinder with rectangular foot equipped with in-line and O-ring ports. While clamping is performed through port "A", port "B" is applied for unclamping.

In the standard version, the cylinder is equipped with a safety clutch against overload during rotation. Right and left-hand swinging at a standard angle of 90°.

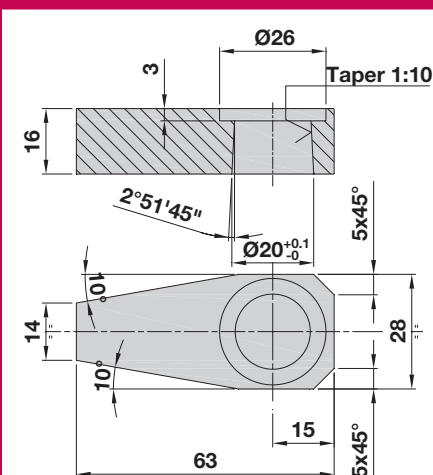
> Swinging angles of 60°, 45° or 0° are available (*upon request*).

> Metal wiper available (*upon request*).

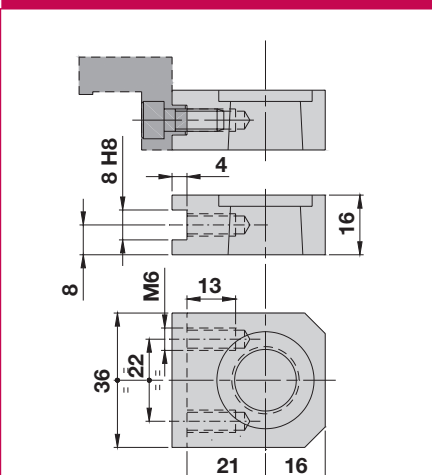
The diagram shows the effective clamping force **F** as a function of the operating pressure **P** and the recommended maximum clamping arm length **L**.



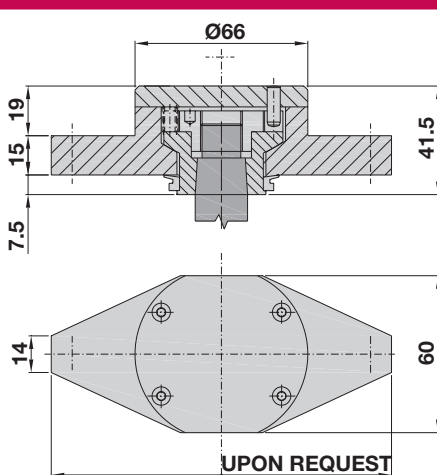
CLAMPING ARM 01.20



CLAMPING ARM 02.20



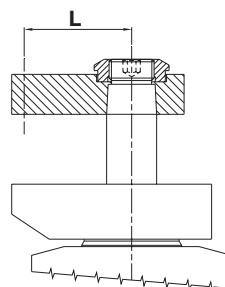
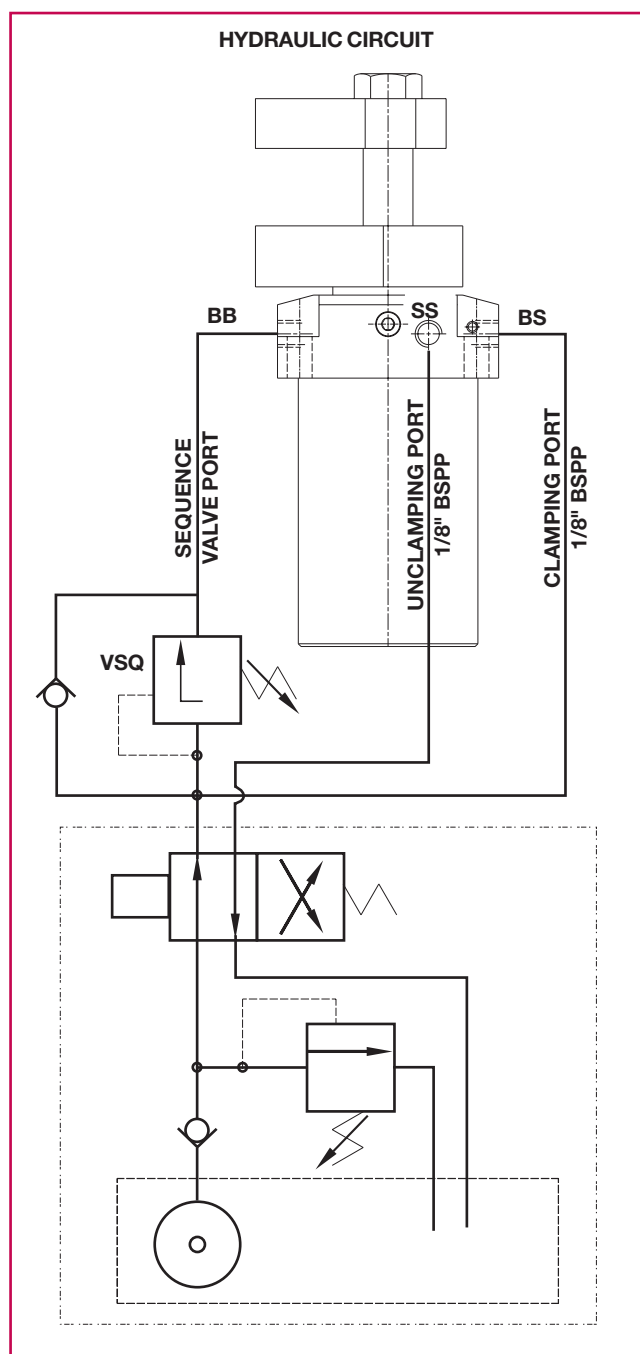
CLAMPING ARM 03.20



Material: C45 STEEL

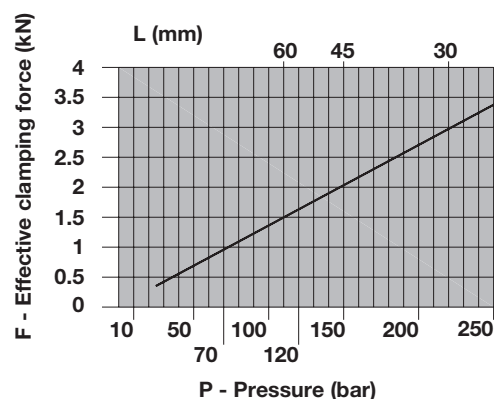
SRA20 FD

DOUBLE-ACTING SELF-ADJUSTING SWING CLAMPING CYLINDER WITH INTEGRATED HYDRAULIC SUPPORT

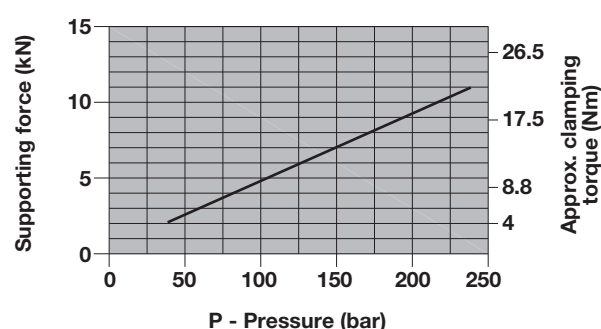


L = Recommended clamping arm length depending on the clamping pressure

CLAMPING FORCE/CLAMPING PRESSURE/CLAMPING ARM LENGTH DIAGRAM



CLAMPING PRESSURE/SUPPORTING FORCE/CLAMPING TORQUE DIAGRAM



Mode of operation

The mode of operation of SRA20/SRA20V double-acting self-adjusting swing clamping cylinders with integrated hydraulic support corresponds to conventional double-acting cylinders.

When pressure is supplied at the "BS" port and "SS" port is set on return to tank, the workpiece is clamped. By increasing the pressure, the external "VSQ" sequence valve is opened and the integrated work support is working through the "BB" port.

The clamped workpiece is thus not subjected to undesired load and tension, which would affect the machining quality.

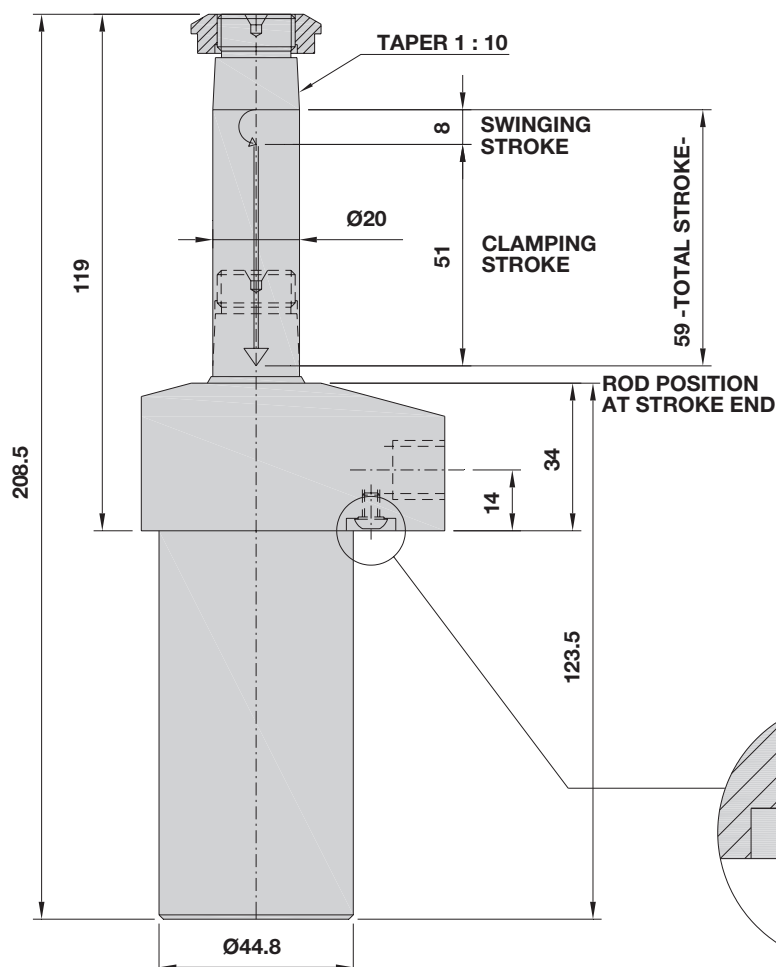
When pressure is supplied at the "SS" port and "BS" port is set on return to tank, the workpiece is unclamped.

SR20.59 FD

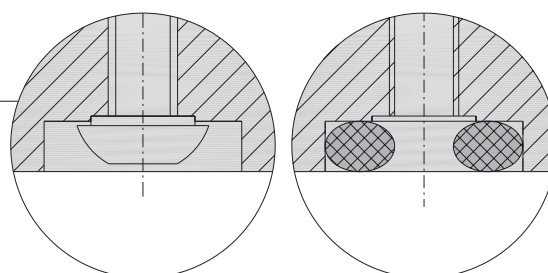
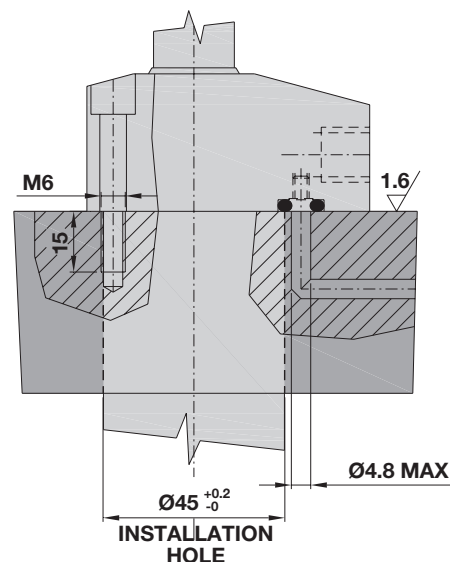
DOUBLE-ACTING SWING CLAMPING CYLINDER WITH UPPER FLANGE

MAX. WORKING PRESSURE=500 BAR

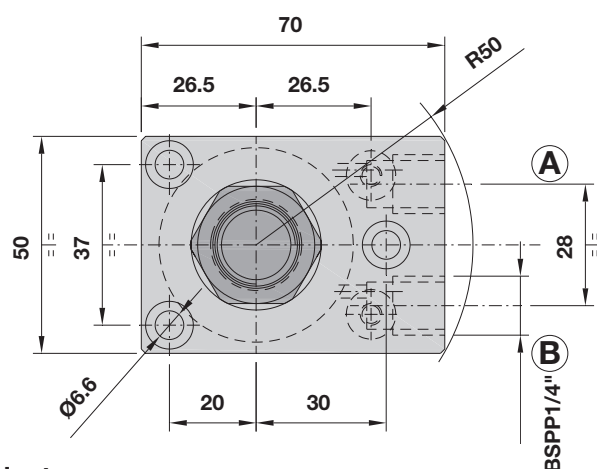
A: Clamping
B: Unclamping



Installation dimensions with O-ring manifold mounting



To use the O-ring ports, remove the plug and insert the O-rings Ø 4.34 x 3.53 (supplied)



Variants:

- > Safety clutch against overload during rotation (upon request).

Material:

- > Piston/rod: Hardened nitrided steel.
- > Body: Nitrided free machining steel.

Supplied:

- > TCEI M6x30 UNI 5931 K12 mounting screws
- > O-Rings Ø 4.34 x 3.53

STROKE mm		EFFECTIVE CYLINDER AREA		TOTAL OIL VOLUME	
		Cm ²		Cm ³	
Total	59	Clamping	Unclamping	Clamping	Unclamping
Swinging	8	1.76	4.9	10.4	28.9
Clamping	51				

SR20.59 FD

DOUBLE-ACTING SWING CLAMPING CYLINDER WITH UPPER FLANGE

ORDERING CODE

0: Standard version with stroke 59 (8r + 51b)

0

FD: Double-acting version with upper flange

FD

L: Left-hand swinging

L

R: Right-hand swinging

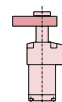
R

0°-45°-60°-90°: Available swinging angles (*upon request*)

0 - 45 - 60- 90

F: Safety clutch against overload during rotation (*upon request*)

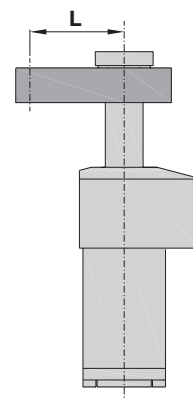
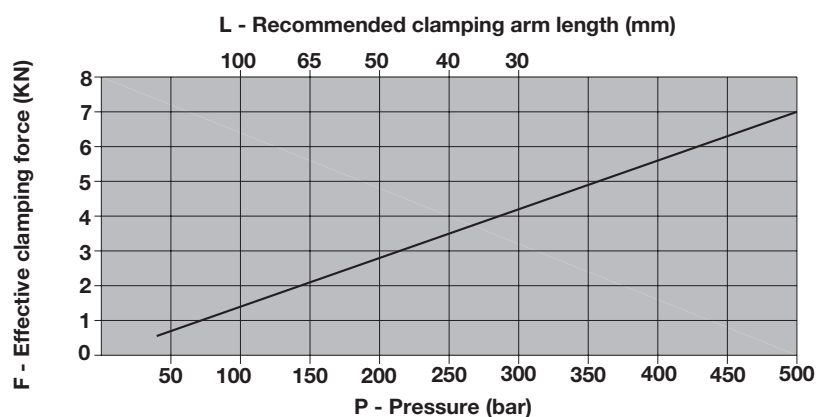
F



Clamping force/pressure ratio

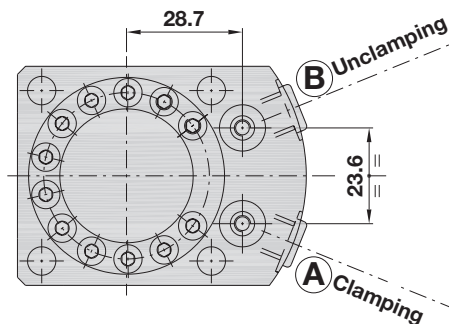
The diagram shows the effective clamping force **F** as a function of the operating pressure **P** and the recommended maximum clamping arm length **L**.

Note: Customized clamping arms are available on request.

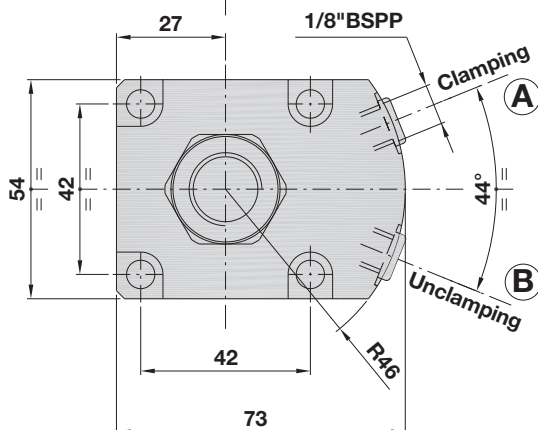
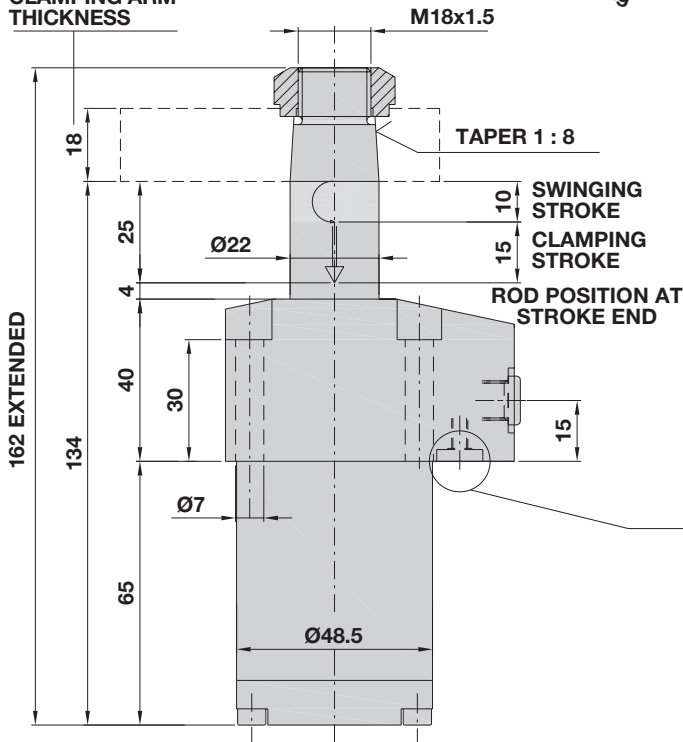


Material: C45 STEEL

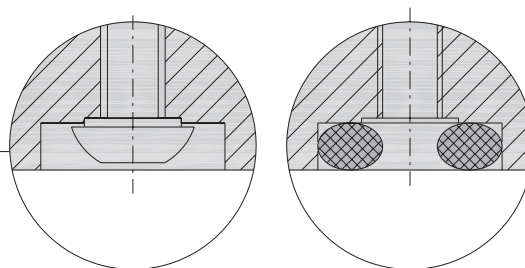
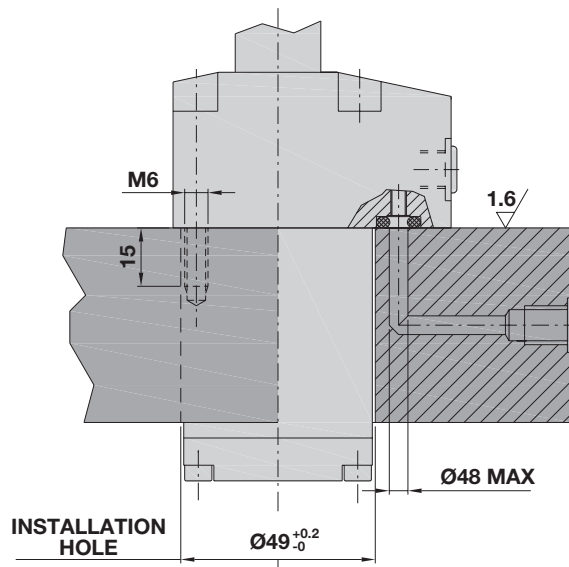
A: Clamping
B: Unclamping



CLAMPING ARM THICKNESS



Installation dimensions with O-ring manifold mounting



To use the O-ring ports, remove the plug and insert the O-rings Ø 4.34 x 3.53 (supplied)

Supplied:

- > TCEI M6x40 UNI 5931 12.9 mounting screws.
- > O-Rings Ø 4.34 x 3.53

Note : For ordering code, please refer to page 22.D
For accessories (clamping arms), see page 22.S1
For clamping force diagrams, see page 22.S2

STROKE mm		EFFECTIVE CYLINDER AREA		TOTAL OIL VOLUME	
		Cm ²		Cm ³	
Total	25	Clamping	Unclamping	Clamping	Unclamping
Swinging	10	5.27	9.07	13.17	22.6
Clamping	15				

Variants:

- > Safety clutch against overload during rotation (*upon request*).
- > Metal wiper (*upon request*).

Material:

- > **Piston/rod:** Hardened nitrided steel.
- > **Body:** Nitrided free machining steel.

**METAL WIPER
UPON
REQUEST!**

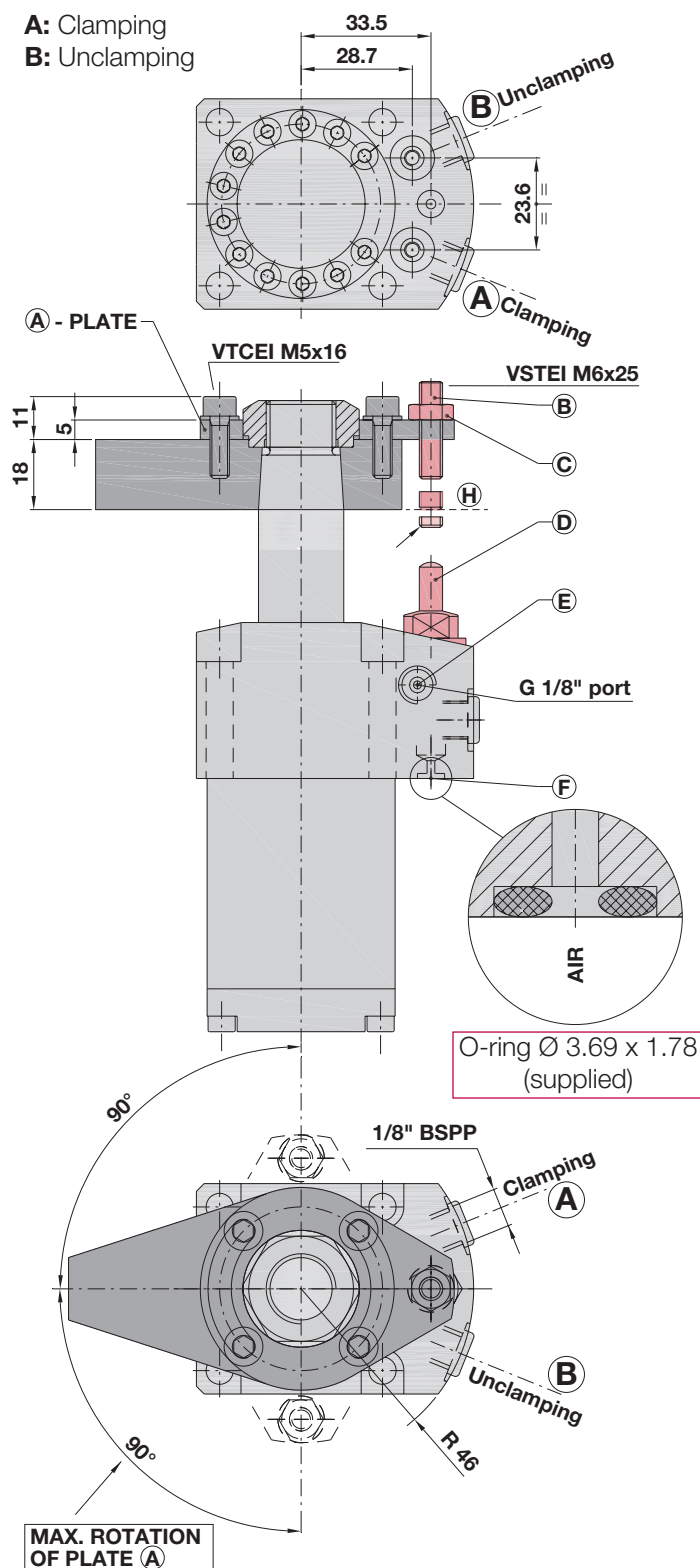


HYDROBLOCK
INNOVATIVE ENGINEERING

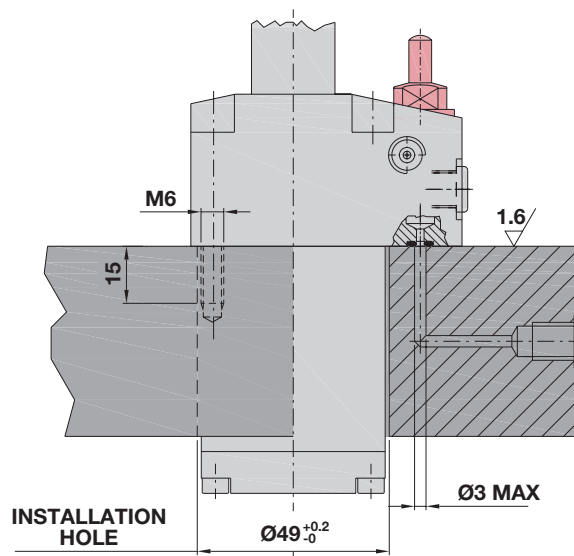
Last update 09/2010

SR22.0 FDV

DOUBLE-ACTING SWING CLAMPING CYLINDER WITH UPPER FLANGE AND CLAMP CLOSING CONTROL VALVE



Installation dimensions with O-ring manifold mounting



Installation hole:

(Adjustment of the air-operated valve)

To adjust the screw for the clamp closing control valve, please proceed as follows:

- 1) Supply the cylinder with hydraulic pressure to move the clamping arm into clamping position.
- 2) Adjust the plate (A) to the exact radial position to ensure that the setscrew (B) is in line with the valve.
- 3) Supply the circuit with air at 1 - 6 bar through hole (F). The cap (D) moves in extended position and the air will escape from hole (E).
- 4) Tighten the setscrew (B) with the workpiece being clamped by the clamp until the air flow is interrupted. Then tighten the screw by another 2/4 turns (*) and lock it with the nut (C).

* The additional 2/4 turns serve for compensating thickness variations of rough surfaces.

Note: upon completion of the adjustment, the tip of the setscrew (B) must not project beyond the lower end of the clamp (level H).

Variants:

- > Metal wiper (upon request).
- > Safety clutch against overload during rotation (upon request).

Supplied:

- > O-ring $\varnothing 3.69 \times 1.78$
- > O-ring $\varnothing 4.34 \times 3.53$
- > TCEI M6x40 UNI 5931 12.9 mounting screws

Material:

- > **Piston/rod:** Hardened nitrided steel.
- > **Body:** Nitrided free machining steel.
- > **Valve:** Stainless steel.

METAL WIPER
UPON
REQUEST!

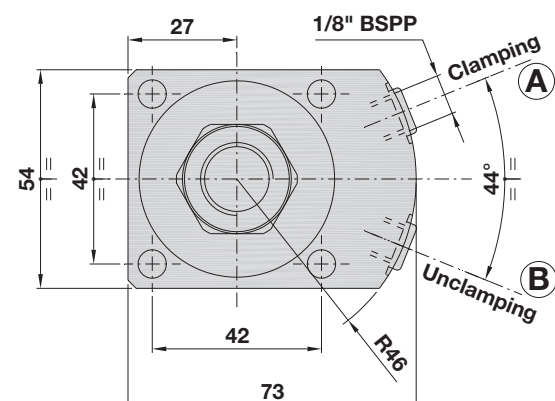
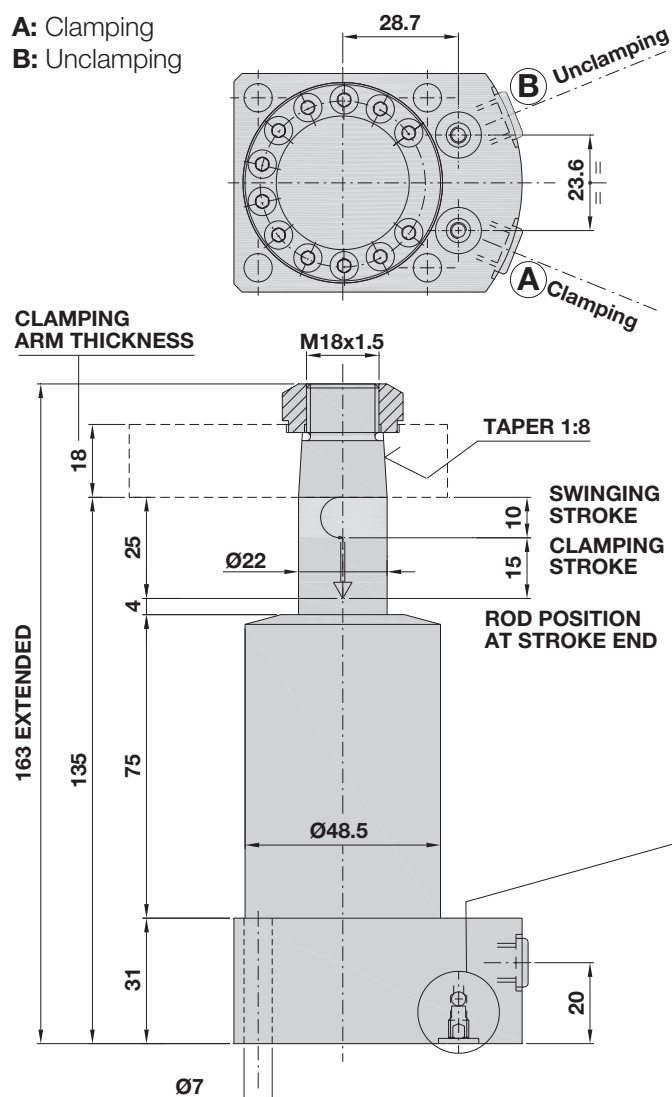

HYDROBLOCK
INNOVATIVE ENGINEERING

Last update 09/2010

SR22.0 PD

DOUBLE-ACTING SWING CLAMPING CYLINDER WITH LOWER FLANGE

A: Clamping
B: Unclamping



Supplied:

- > TCEI M6x40 UNI 5931 12.9 mounting screws.
- > O-rings Ø 6.75 x 1.78

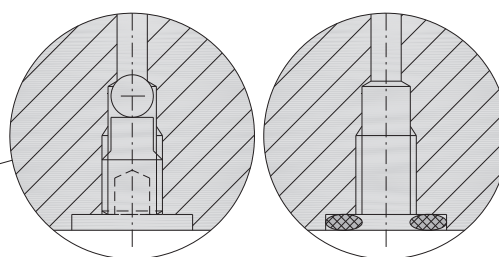
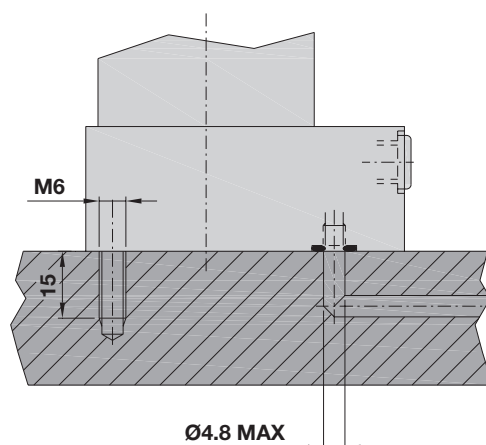
Variants:

- > Safety clutch against overload during rotation (*upon request*).
- > Metal wiper (*upon request*).

Material:

- > **Piston/rod:** Hardened nitrided steel.
- > **Body:** Nitrided free machining steel.

Installation dimensions with O-ring manifold mounting



To use the O-ring ports, remove the plug and insert the O-rings Ø 6.75 x 1.78 (supplied)

Note: For ordering code, please refer to page 22.D
For accessories (clamping arms), see page 22.S1
For clamping force diagrams, see page 22.S2

STROKE mm		EFFECTIVE CYLINDER AREA		TOTAL OIL VOLUME	
		Cm ²		Cm ³	
Total	25	Clamping	Unclamping	Clamping	Unclamping
Swinging	10	5.27	9.07	13.17	22.6
Clamping	15				

METAL WIPER
UPON
REQUEST!

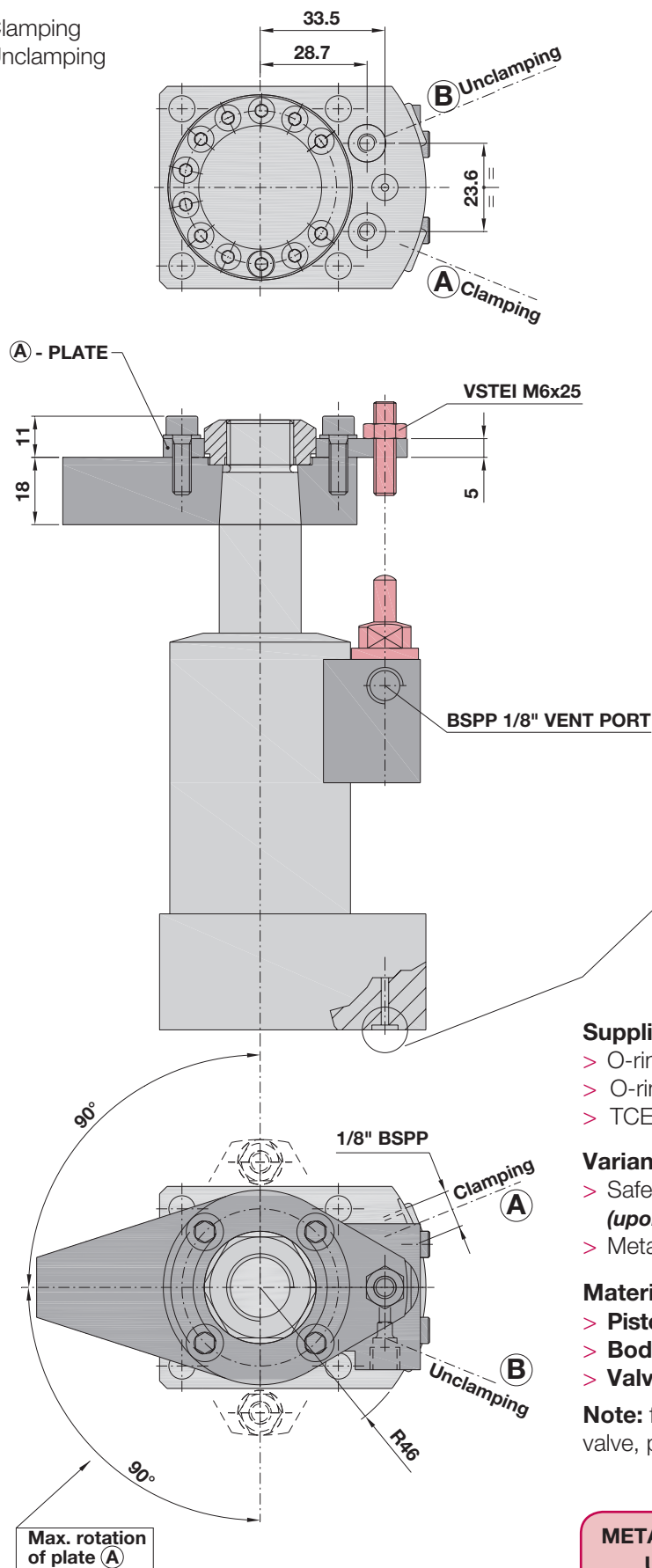
HYDROBLOCK
INNOVATIVE ENGINEERING

Last update 09/2010

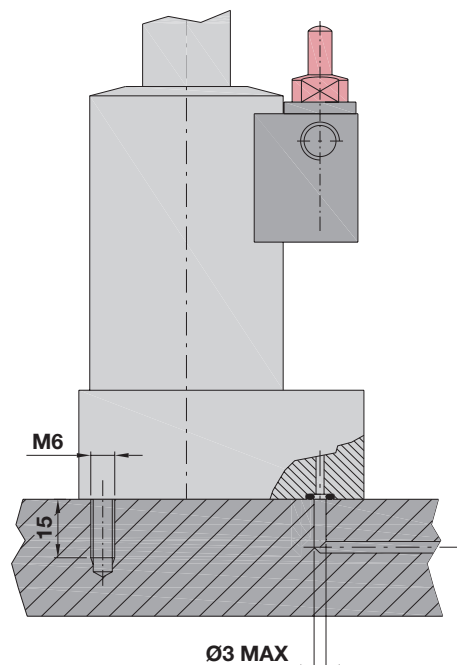
SR22.0 PDV

DOUBLE-ACTING SWING CLAMPING CYLINDER WITH LOWER FLANGE
AND CLAMP CLOSING CONTROL VALVE

A: Clamping
B: Unclamping



Installation dimensions with O-ring manifold mounting



O-ring Ø 3.69 x 1.78
(supplied)

Supplied:

- > O-ring Ø 3.69 x 1.78
- > O-ring Ø 6.75 x 1.78
- > TCEI M6x40 UNI 5931 12.9 mounting screws.

Variants:

- > Safety clutch against overload during rotation *(upon request)*.
- > Metal wiper *(upon request)*.

Material:

- > **Piston/rod:** Hardened nitrided steel.
- > **Body:** Nitrided free machining steel.
- > **Valve:** Stainless steel.

Note: for the adjustment of the clamp closing control valve, please refer to page 22.0/2

METAL WIPER
UPON
REQUEST!

HYDROBLOCK
INNOVATIVE ENGINEERING

Last update 09/2010

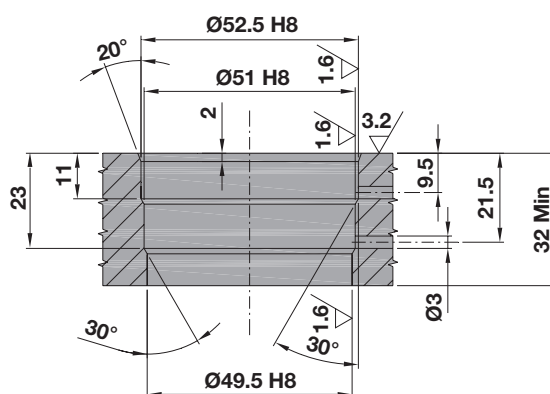
SR22.0 CD

DOUBLE-ACTING SWING CLAMPING CYLINDER WITH CARTRIDGE BODY

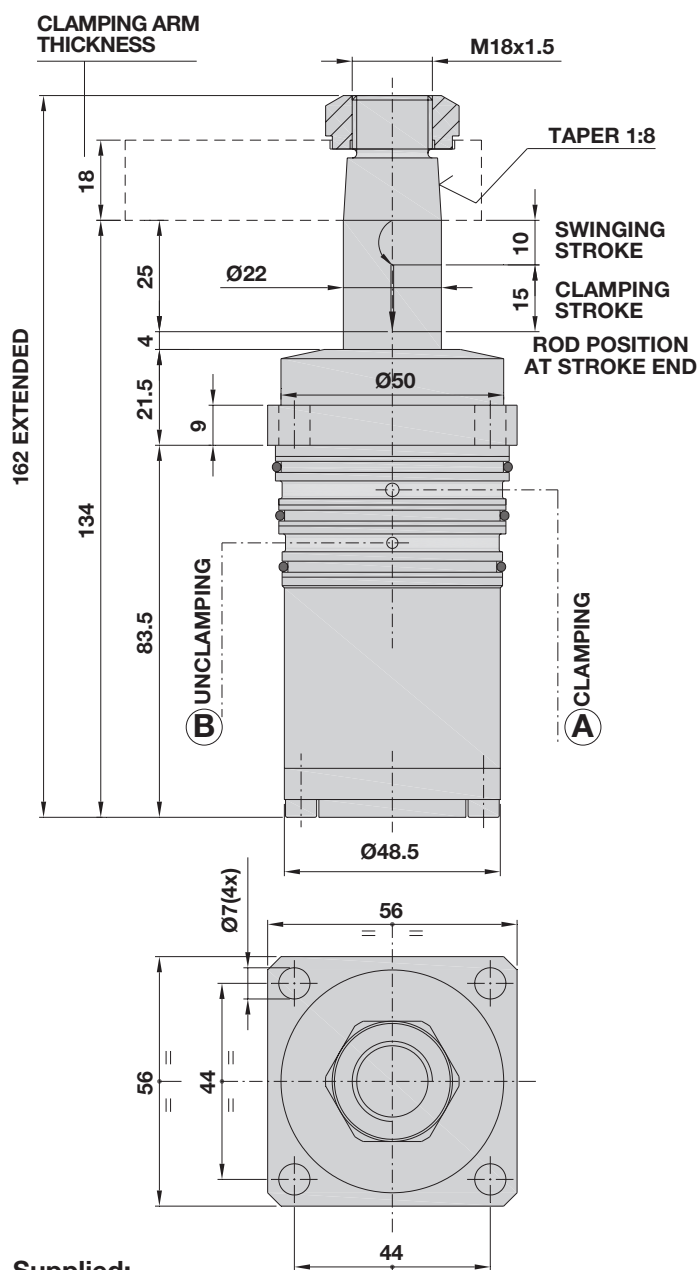
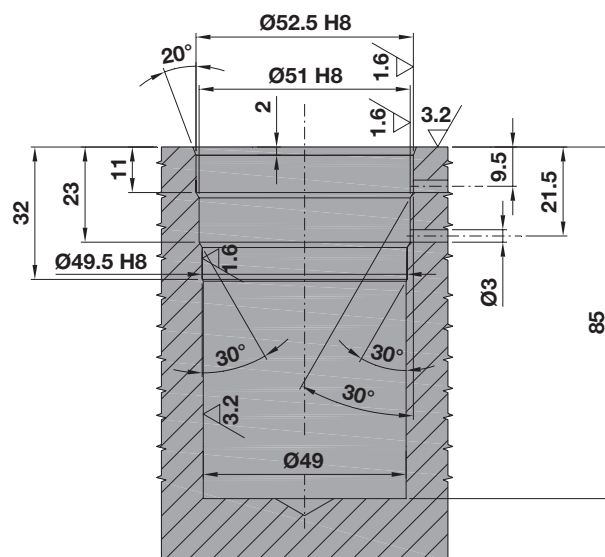
A: Clamping
B: Unclamping

Installation dimensions

Cavity with crossing seat



Cavity with built-in seat



Supplied:

- > TC M6x20 UNI 5931 12.9 mounting screws.

Variants:

- > Safety clutch against overload during rotation (*upon request*).
- > Metal wiper (*upon request*).

Material:

- > **Piston/rod:** Hardened nitrided steel.
- > **Body:** Nitrided free machining steel.

Note : For ordering code, please refer to page 22.D

For accessories (clamping arms), see page 22.S1

For clamping force diagrams, see page 22.S2

STROKE mm		EFFECTIVE CYLINDER AREA		TOTAL OIL VOLUME	
		Cm ²		Cm ³	
Total	25	Clamping	Unclamping	Clamping	Unclamping
Swinging	10	5.27	9.07	13.17	22.6
Clamping	15				

METAL WIPER
UPON
REQUEST!

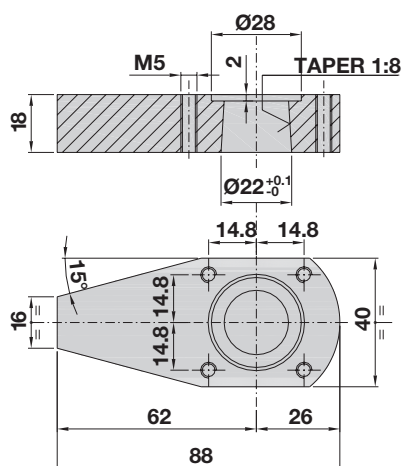

HYDROBLOCK
INNOVATIVE ENGINEERING

Last update 09/2010

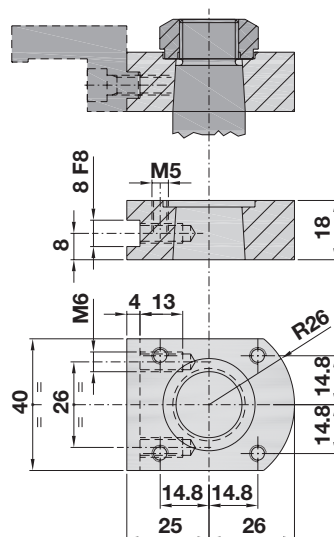
SR22 ACCESSORIES

S1

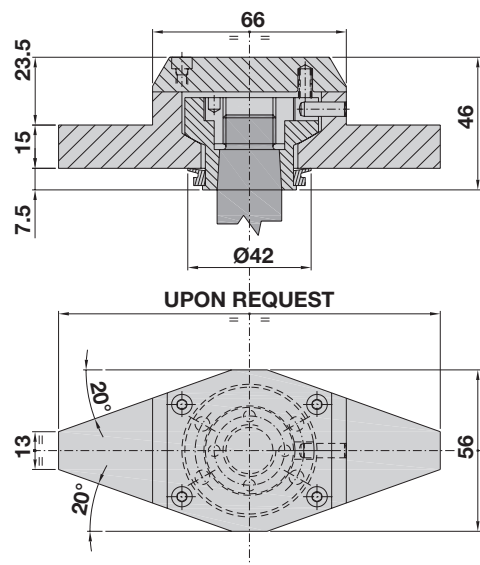
CLAMPING ARM 01.22



CLAMPING ARM 02.22

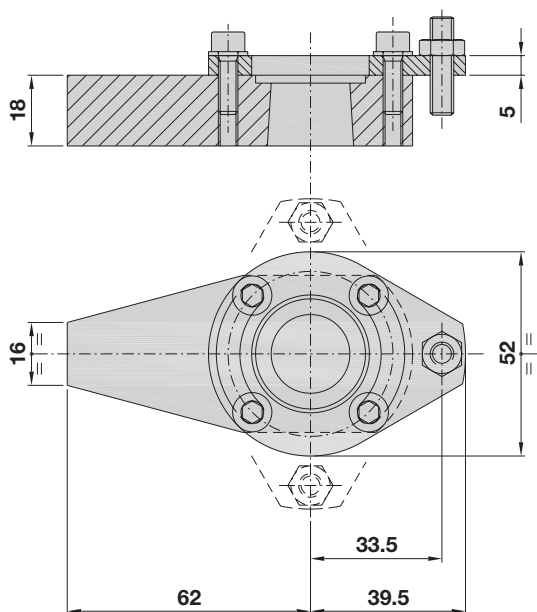


CLAMPING ARM 03.22



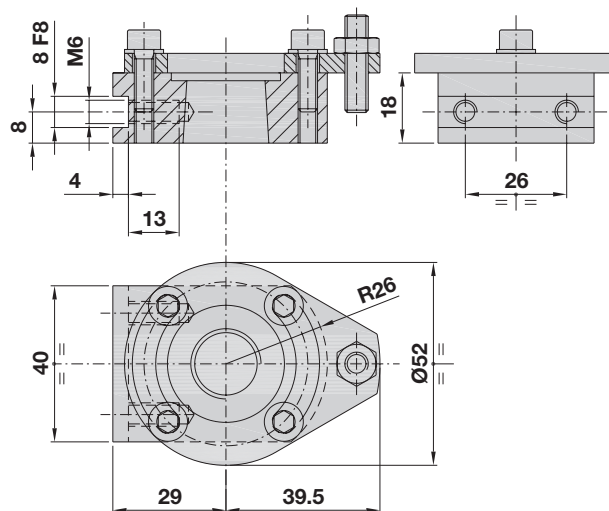
CLAMPING ARM 04.22

VERSION FOR CYLINDER WITH
CLAMP CLOSING CONTROL VALVE



CLAMPING ARM 05.22

VERSION FOR CYLINDER WITH
CLAMP CLOSING CONTROL VALVE



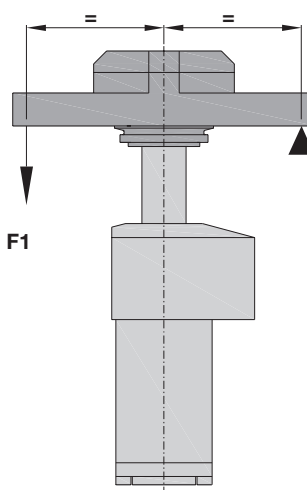
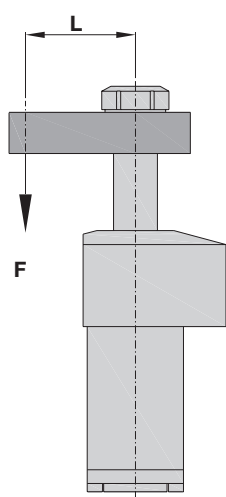
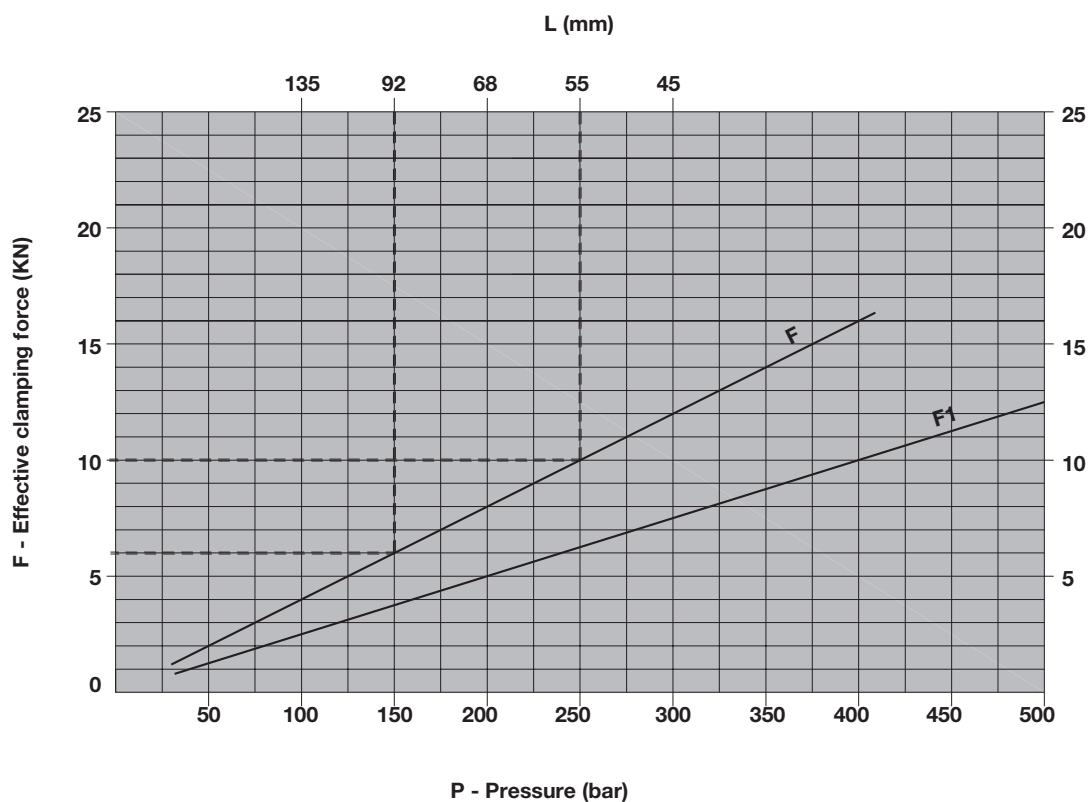
Material: C45 STEEL

SR22 DIAGRAM

S2

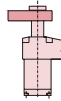
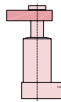
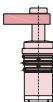
CLAMPING FORCE/PRESSURE RATIO

The diagram shows the effective clamping force **F** as a function of the operating pressure **P** and the recommended maximum clamping arm length **L**.



SR22

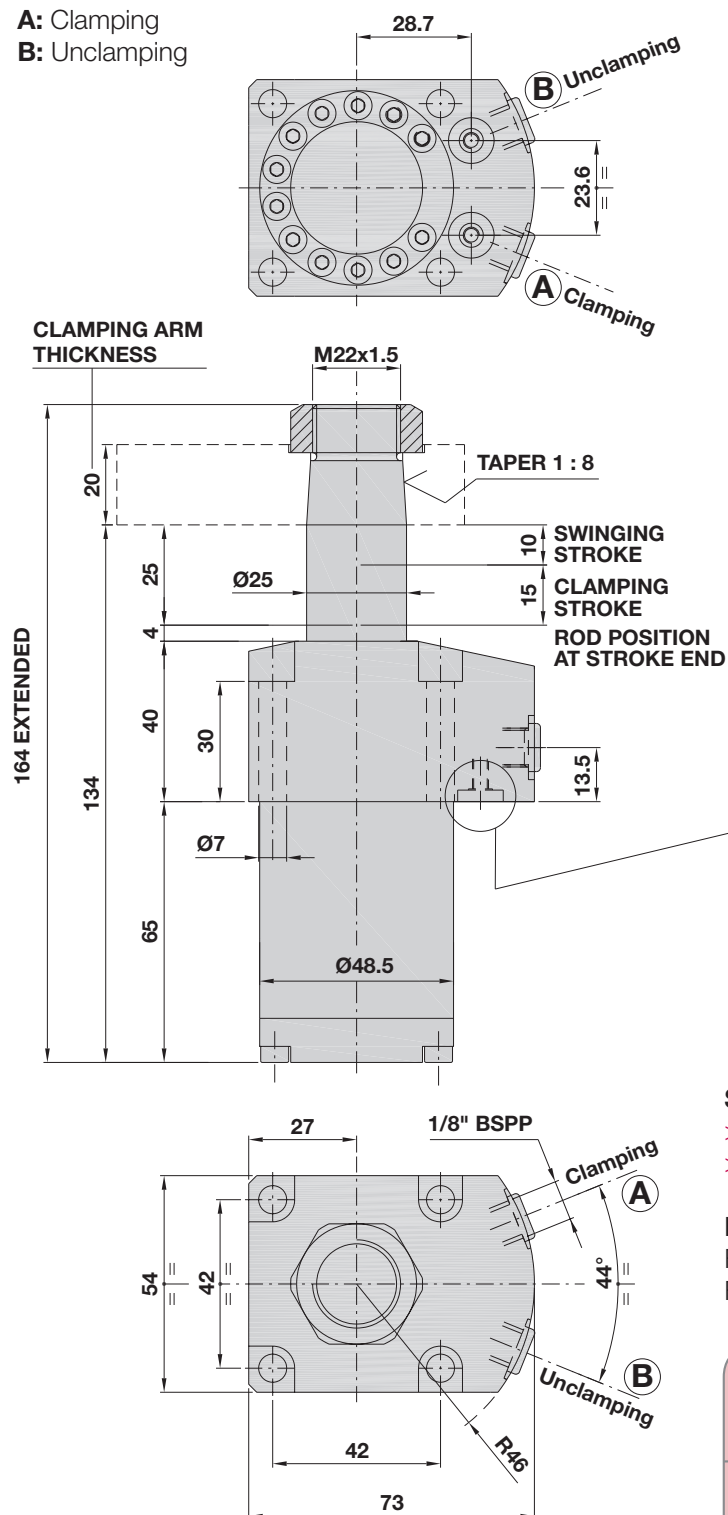
ORDERING CODE

0: Standard version with stroke 25 (10r + 15b)		0
FD: Double-acting version with upper flange		FD
PD: Double-acting version with lower flange		PD
CD: Double-acting version with cartridge body		CD
L: Left-hand swinging		L
R: Right-hand swinging		R
0°-45°-60°-90°: Available swinging angles		0 - 45 - 60 - 90
V: Version with clamp closing control valve (<i>upon request</i>)		V
F: Safety clutch against overload during rotation (<i>upon request</i>)		F
M: Metal wiper (<i>upon request</i>)		M

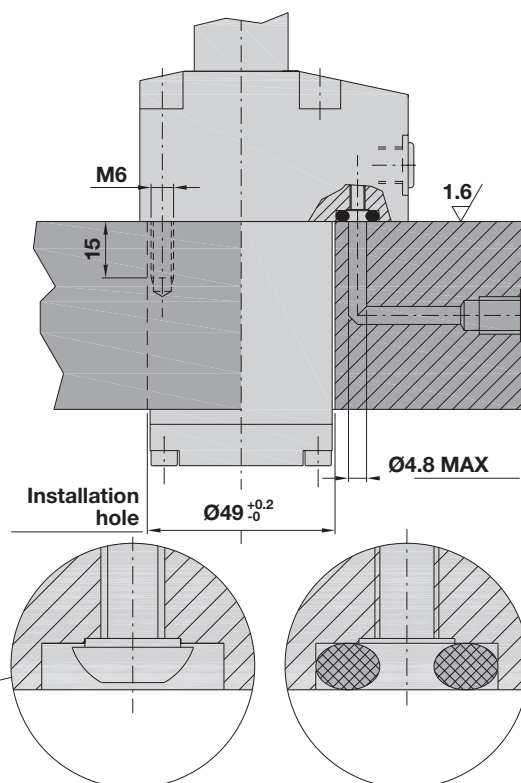
SR25.0 FD

DOUBLE-ACTING SWING CLAMPING CYLINDER WITH UPPER FLANGE

A: Clamping
B: Unclamping



Installation dimensions with O-ring manifold mounting



To use the O-ring ports, remove the plug and insert the O-rings Ø 4.34 x 3.53 (supplied)

Supplied:

- > TCEI M6x40 UNI 5931 12.9 mounting screws.
- > O-Rings Ø 4.34 x 3.53

Note : For ordering code, please refer to page 25.D
For accessories (clamping arms), see page 25.S1
For clamping force diagrams, see page 25.S2

Variants:

- > Safety clutch against overload during rotation (*upon request*).
- > Metal wiper (*upon request*).

Material:

- > **Piston/rod:** Hardened nitrided steel.
- > **Body:** Nitrided free machining steel.

STROKE mm		EFFECTIVE CYLINDER AREA		TOTAL OIL VOLUME	
		Cm ²		Cm ³	
Total	25	Clamping	Unclamping	Clamping	Unclamping
Swinging	10	4.17	9.07	10.4	22.6
Clamping	15				

METAL WIPER
UPON
REQUEST!

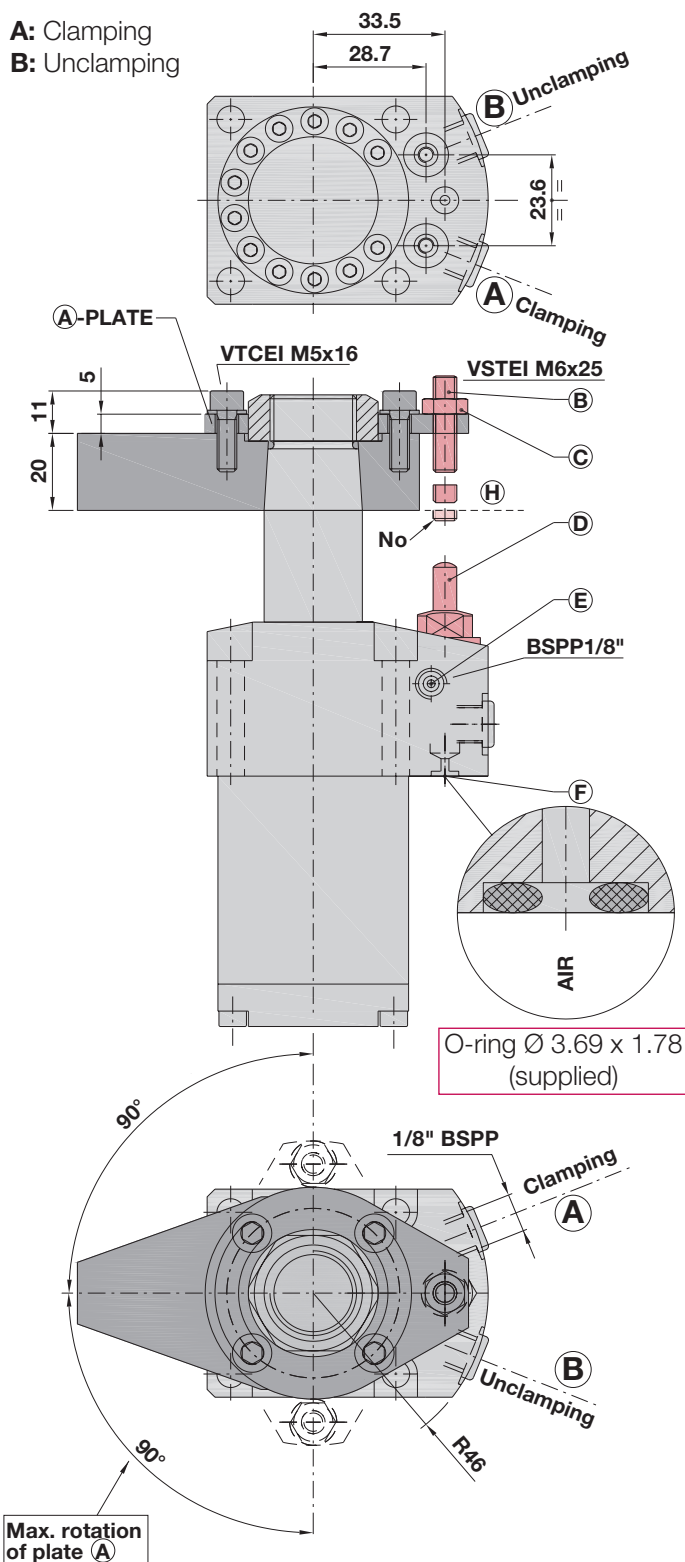

HYDROBLOCK
INNOVATIVE ENGINEERING

Last update 09/2010

SR25.0 FDV

DOUBLE-ACTING SWING CLAMPING CYLINDER WITH UPPER FLANGE AND CLAMP CLOSING CONTROL VALVE

A: Clamping
B: Unclamping



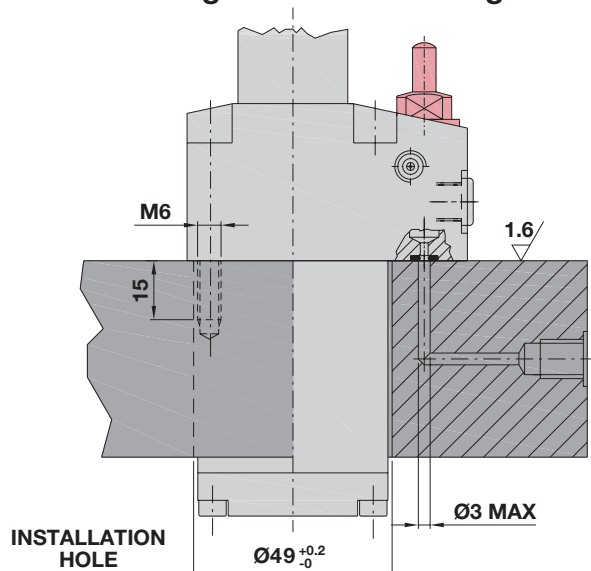
Supplied:

- > O-ring Ø 3.69 x 1.78
- > O-ring Ø 4.34 x 3.53
- > TCEI M6x40 UNI 5931 12.9 mounting screws

Material:

- > **Piston/rod:** Hardened nitrided steel.
- > **Body:** Nitrided free machining steel.
- > **Valve:** Stainless steel.

Installation dimensions with O-ring manifold mounting



Installation hole:

(Adjustment of the air-operated valve)

To adjust the screw for the clamp closing control valve, please proceed as follows:

- 1) Supply the cylinder with hydraulic pressure to move the clamping arm into clamping position.
 - 2) Adjust the plate (A) to the exact radial position to ensure that the setscrew (B) is in line with the valve.
 - 3) Supply the circuit with air at 1 - 6 bar through hole (F). The cap (D) moves in extended position and the air will escape from hole (E).
 - 4) Tighten the setscrew (B) with the workpiece being clamped by the clamp until the air flow is interrupted. Then tighten the screw by another 2/4 turns (*) and lock it with the nut (C).
- The pressure switch will indicate that the pneumatic circuit is closed and release the machine for starting the working cycle.

* The additional 2/4 turns serve for compensating thickness variations of rough surfaces.

Variants:

- > Metal wiper (*upon request*).
- > Safety clutch against overload during rotation (*upon request*).

Note: upon completion of the adjustment, the tip of the setscrew (B) must not project beyond the lower end of the clamp (level H).

METAL WIPER
AVAILABLE
ON REQUEST

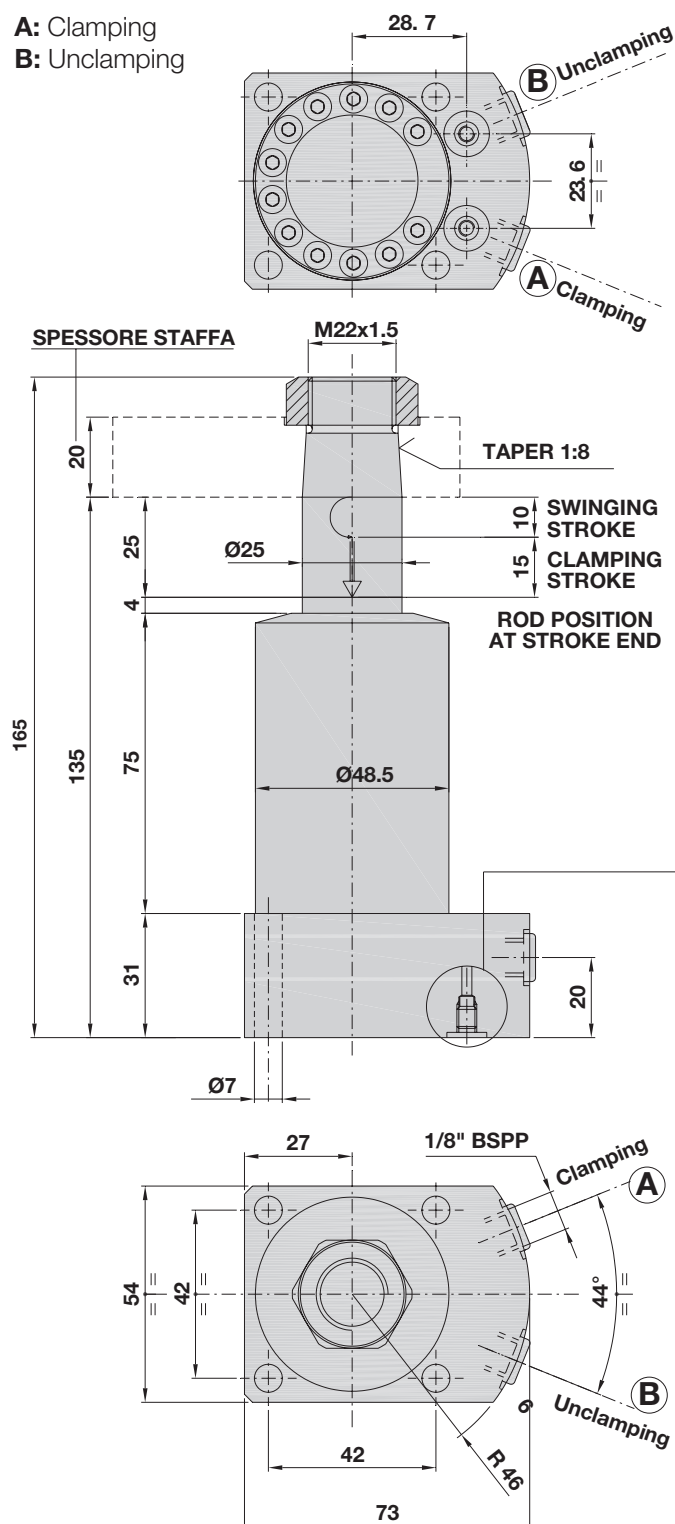

HYDROBLOCK
INNOVATIVE ENGINEERING

Last update 09/2010

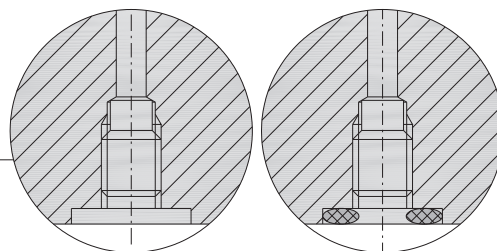
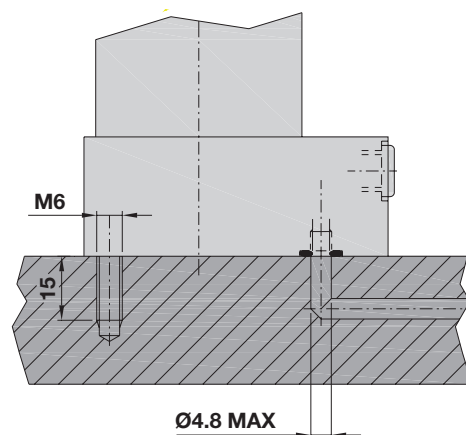
SR25.0 PD

DOUBLE-ACTING SWING CLAMPING CYLINDER WITH LOWER FLANGE

A: Clamping
B: Unclamping



Installation dimensions with O-ring manifold mounting



To use the O-ring ports, remove the plug and insert the O-rings Ø 6.75 x 1.78 (supplied)

Note: For ordering code, please refer to page 25.D
For accessories (clamping arms), see page 25.S1
For clamping force diagrams, see page 25.S2

Supplied:

- > TCEI M6x40 UNI 5931 12.9 mounting screws.
- > O-rings Ø 6.75 x 1.78

Variants:

- > Safety clutch against overload during rotation (*upon request*).
- > Metal wiper (*upon request*).

Material:

- > **Piston/rod:** Hardened nitrided steel.
- > **Body:** Nitrided free machining steel.

STROKE mm		EFFECTIVE CYLINDER AREA		TOTAL OIL VOLUME	
		Cm ²		Cm ³	
Total	25	Clamping	Unclamping	Clamping	Unclamping
Swinging	10	4.17	9.07	10.4	22.6
Clamping	15				

METAL WIPER
UPON
REQUEST!

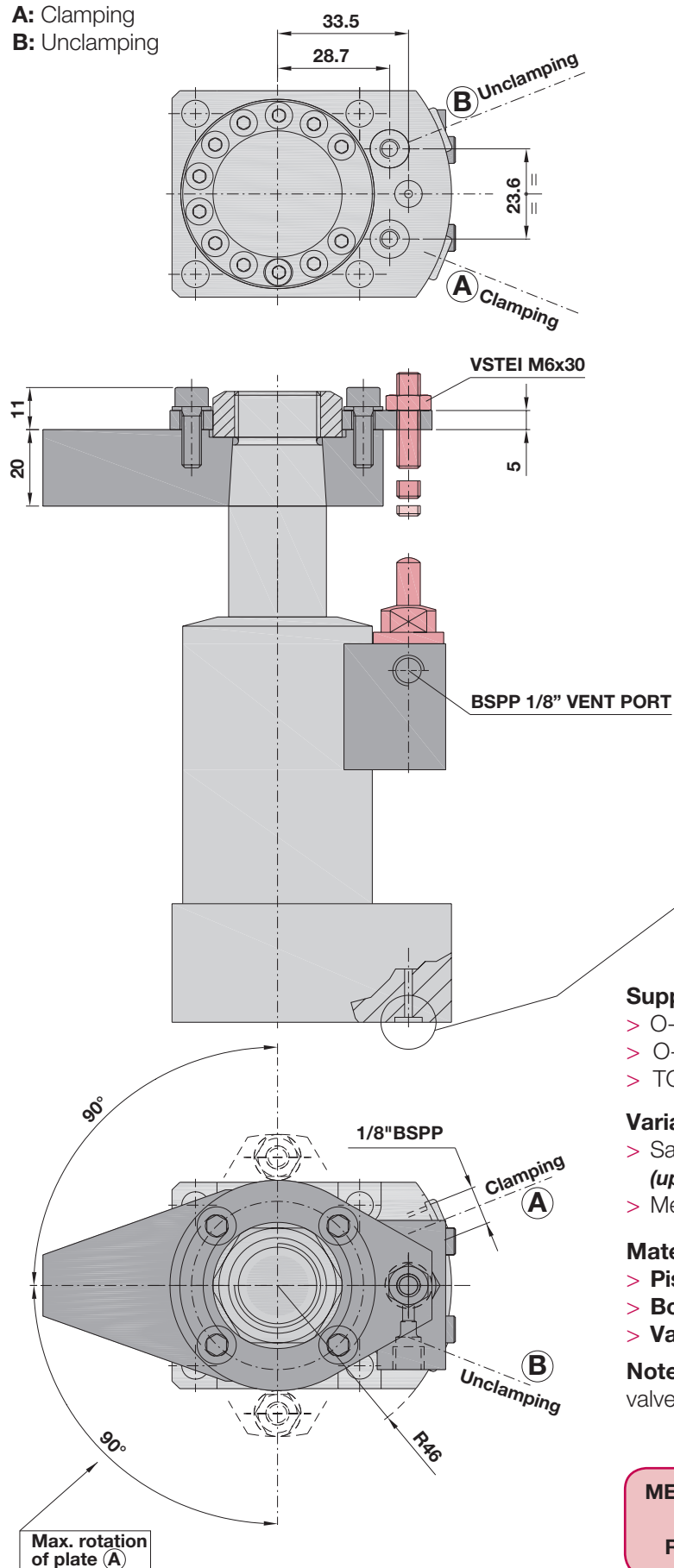

HYDROBLOCK
INNOVATIVE ENGINEERING

Last update 09/2010

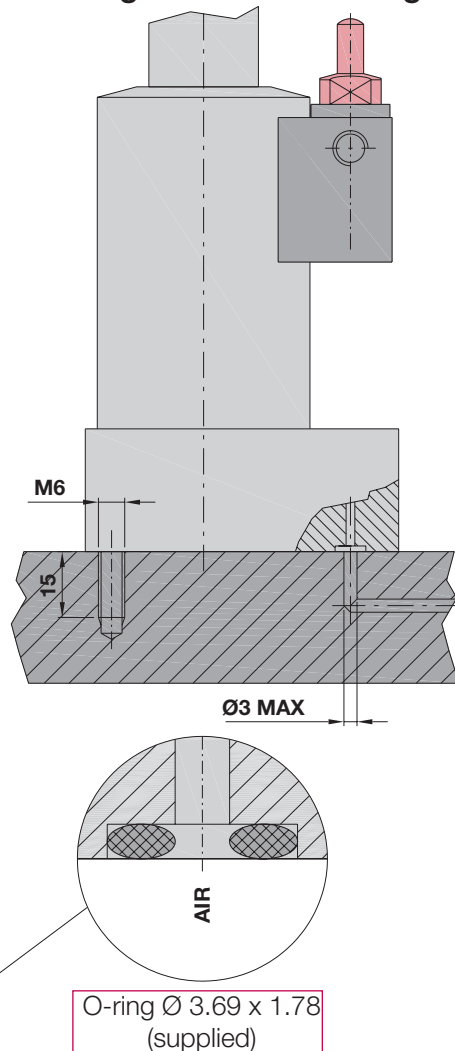
SR25.0 PDV

DOUBLE-ACTING SWING CLAMPING CYLINDER WITH LOWER FLANGE
AND CLAMP CLOSING CONTROL VALVE

A: Clamping
B: Unclamping



Installation dimensions with O-ring manifold mounting



Supplied:

- > O-ring Ø 3.69 x 1.78
- > O-ring Ø 6.75 x 1.78
- > TCEI M6x40 UNI 5931 12.9 mounting screws.

Variants:

- > Safety clutch against overload during rotation (*upon request*).
- > Metal wiper (*upon request*).

Material:

- > **Piston/rod:** Hardened nitrided steel.
- > **Body:** Nitrided free machining steel.
- > **Valve:** Stainless steel.

Note: for the adjustment of the clamp closing control valve, please refer to page 25.0/2

**METAL WIPER
UPON
REQUEST!**

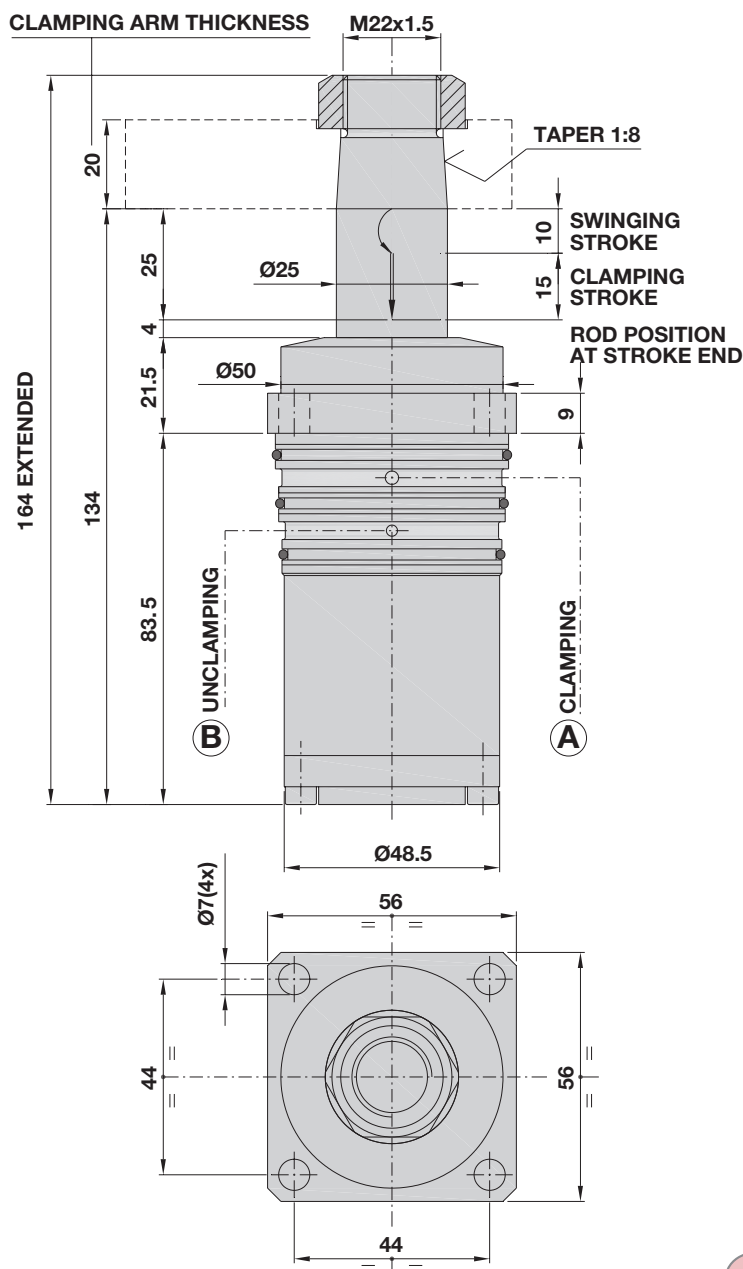
HYDROBLOCK
INNOVATIVE ENGINEERING

Last update 09/2010

SR25.0 CD

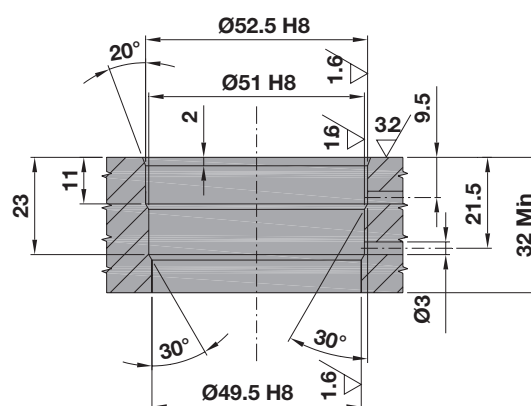
DOUBLE-ACTING SWING CLAMPING CYLINDER WITH CARTRIDGE BODY

A: Clamping
B: Unclamping

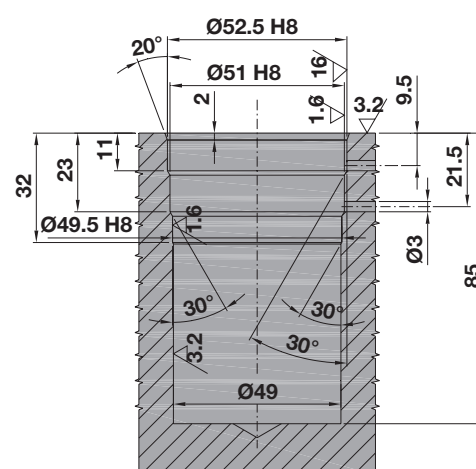


Installation dimensions

Cavity with crossing seat



Cavity with built-in seat



Supplied:

> TC M6x20 UNI 5931 12.9 mounting screws.

Variants:

- > Safety clutch against overload during rotation *(upon request)*.
- > Metal wiper *(upon request)*.


Material:

- > **Piston/rod:** Hardened nitrided steel.
- > **Body:** Nitrided free machining steel.

Note: For ordering code, please refer to page 25.D
For accessories (clamping arms), see page 25.S1
For clamping force diagrams, see page 25.S2

STROKE mm		EFFECTIVE CYLINDER AREA		TOTAL OIL VOLUME	
		Cm ²		Cm ³	
Total	25	Clamping	Unclamping	Clamping	Unclamping
Swinging	10	4.17	9.07	10.4	22.6
Clamping	15				

**METAL WIPER
UPON
REQUEST!**

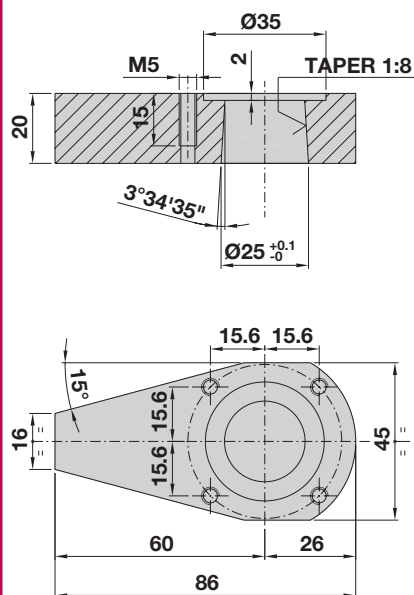

HYDROBLOCK
INNOVATIVE ENGINEERING

Last update 09/2010

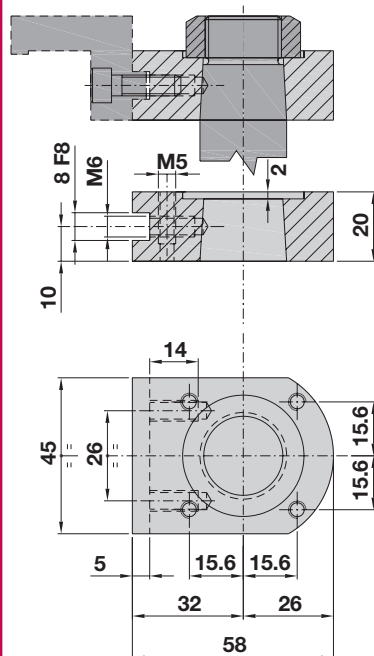
SR25 ACCESSORIES

S1

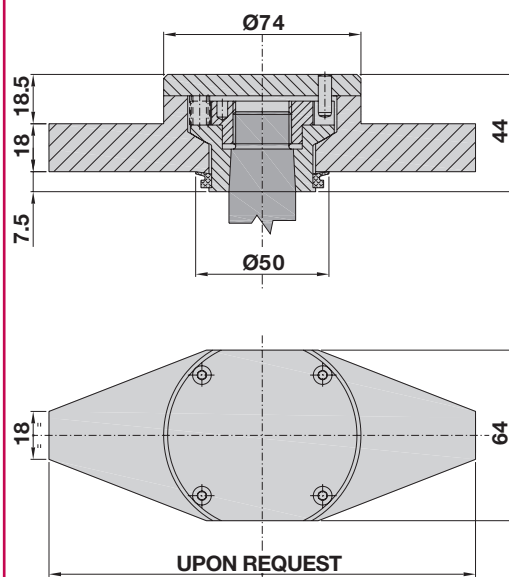
CLAMPING ARM 01.25



CLAMPING ARM 02.25

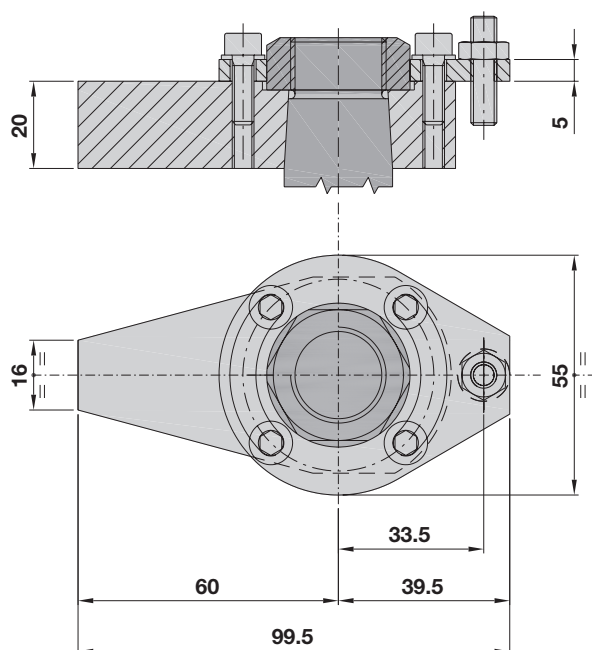


CLAMPING ARM 03.25



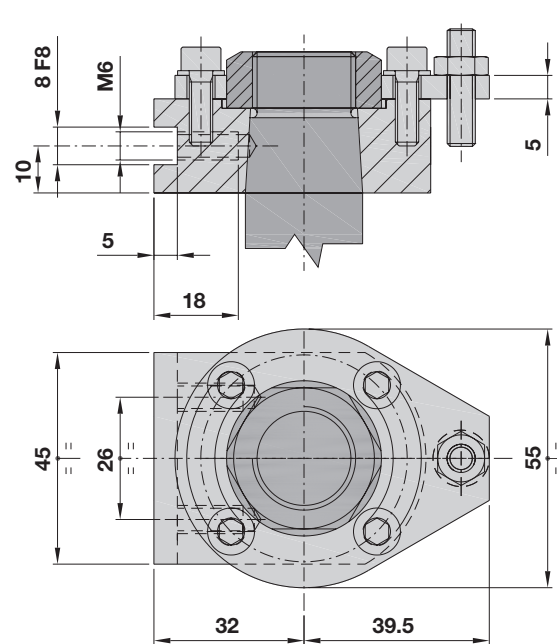
CLAMPING ARM 04.25

VERSION FOR CYLINDER WITH
CLAMP CLOSING CONTROL VALVE



CLAMPING ARM 05.25

VERSION FOR CYLINDER WITH
CLAMP CLOSING CONTROL VALVE



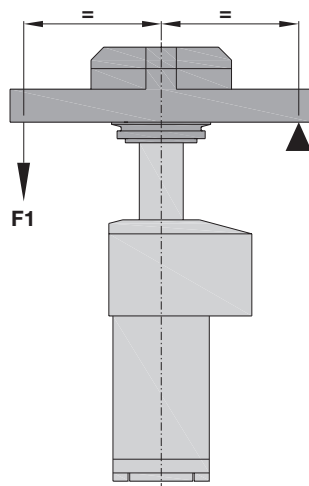
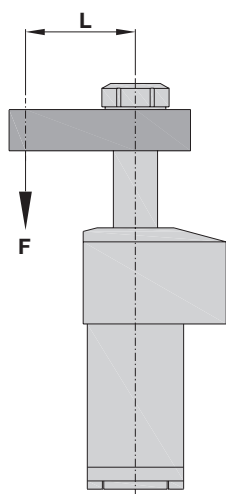
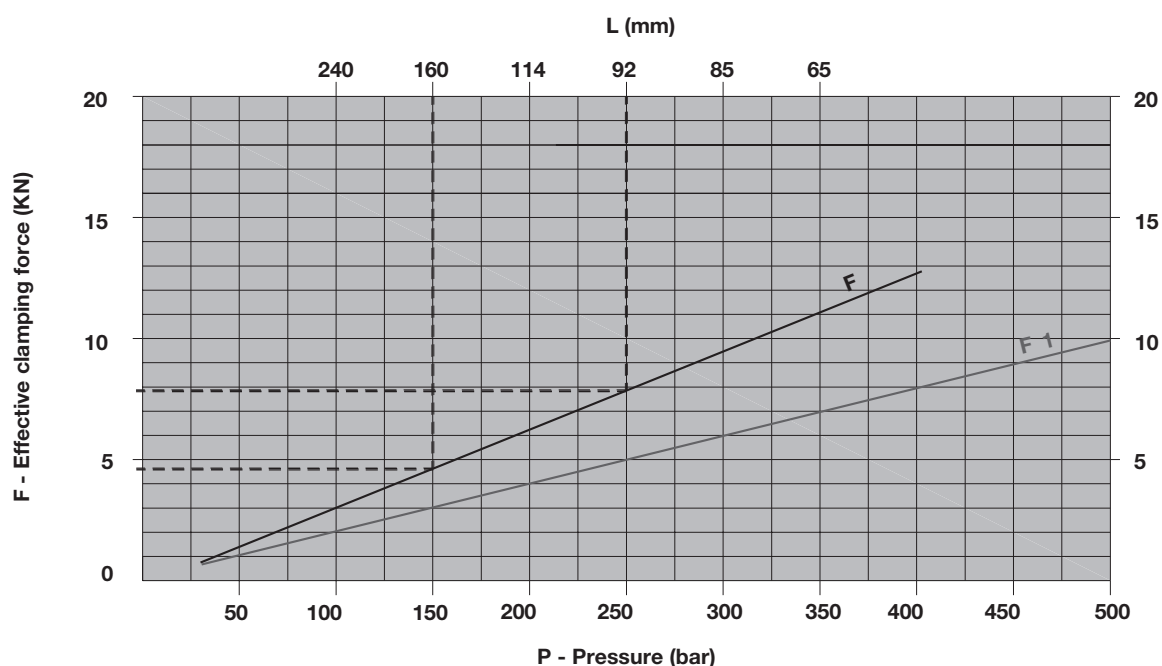
Material: C45 STEEL

SR25 DIAGRAM

S2




CLAMPING FORCE/PRESSURE RATIO

The diagram shows the effective clamping force **F** as a function of the operating pressure **P** and the recommended maximum clamping arm length **L**.



SR25

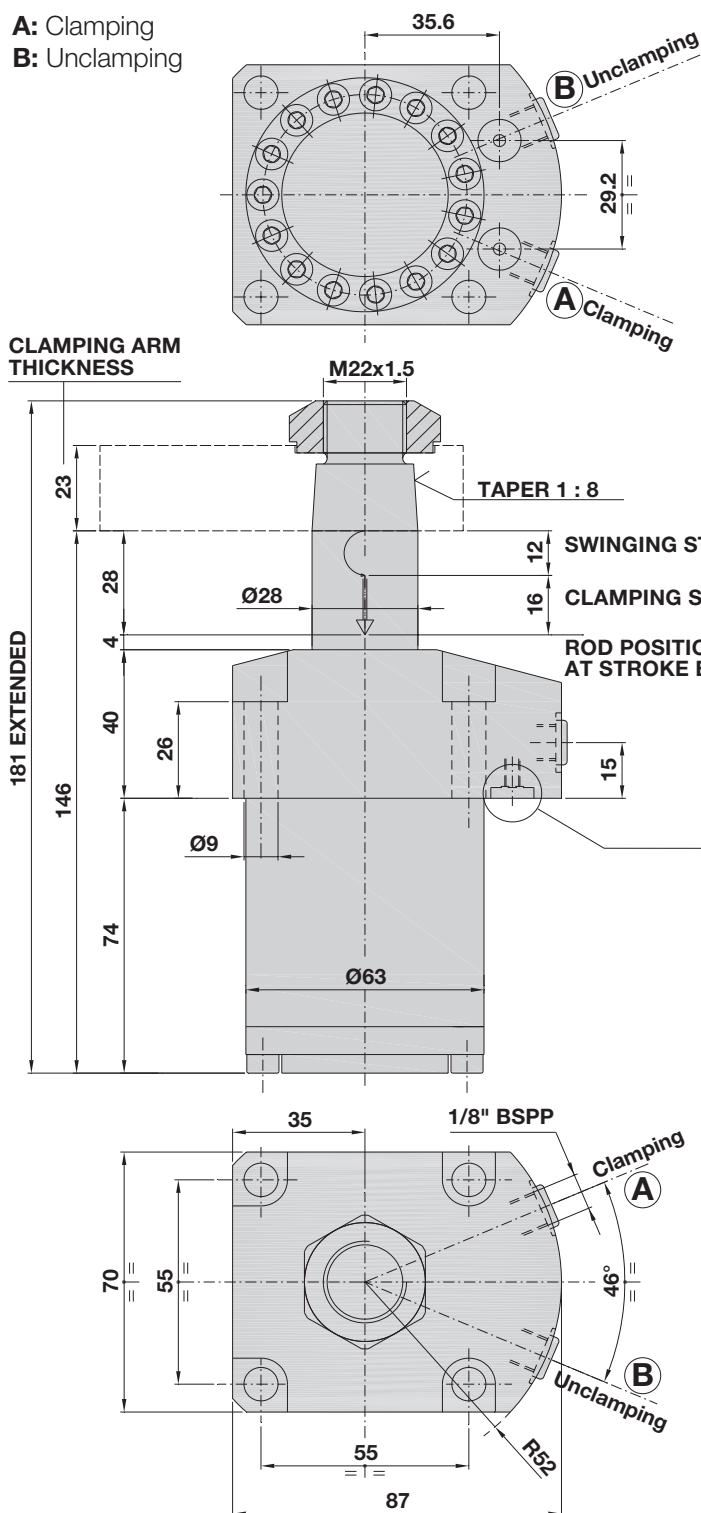
ORDERING CODE

0: Standard version with stroke 25 (10r + 15b)		0
FD: Double-acting version with upper flange		FD
PD: Double-acting version with lower flange		PD
CD: Double-acting version with cartridge body		CD
L: Left-hand swinging		L
R: Right-hand swinging		R
0°-45°-60°-90°: Available swinging angles		0 - 45 - 60- 90
V: Version with clamp closing control valve (<i>upon request</i>)		V
F: Safety clutch against overload during rotation (<i>upon request</i>)		F
M: Metal wiper (<i>upon request</i>)		M

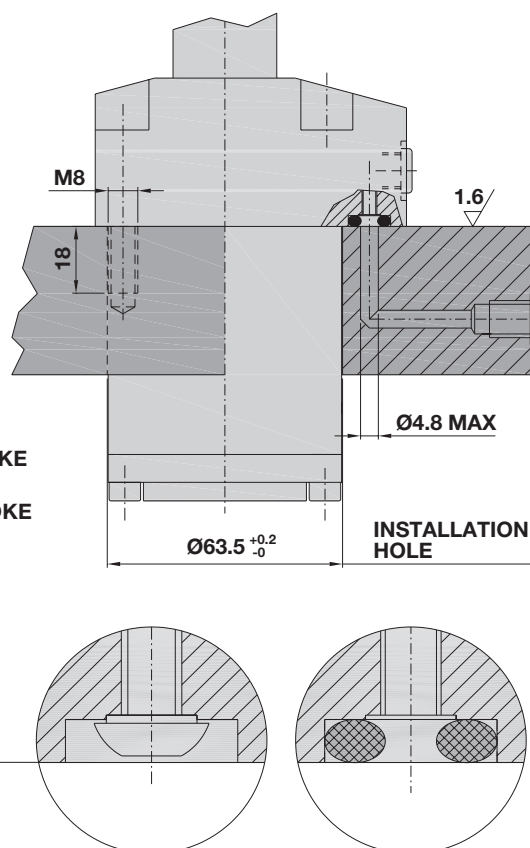
SR28.0 FD

DOUBLE-ACTING SWING CLAMPING CYLINDER WITH UPPER FLANGE

A: Clamping
B: Unclamping



Installation dimensions with O-ring manifold mounting



To use the O-ring ports, remove the plug and insert the O-rings Ø 4.34 x 3.53 (supplied)

Supplied:

- > TCEI M6x40 UNI 5931 12.9 mounting screws.
- > O-Rings Ø 4.34 x 3.53

Note : For ordering code, please refer to page 28.D
For accessories (clamping arms), see page 28.S1
For clamping force diagrams, see page 28.S2

STROKE mm		EFFECTIVE CYLINDER AREA		TOTAL OIL VOLUME	
		Cm ²		Cm ³	
Total	28	Clamping	Unclamping	Clamping	Unclamping
Swinging	12	9.75	15.9	27.3	44.5
Clamping	16				

Variants:

- > Safety clutch against overload during rotation *(upon request)*.
- > Metal wiper *(upon request)*.

Material:

- > **Piston/rod:** Hardened nitrided steel.
- > **Body:** Nitrided free machining steel.

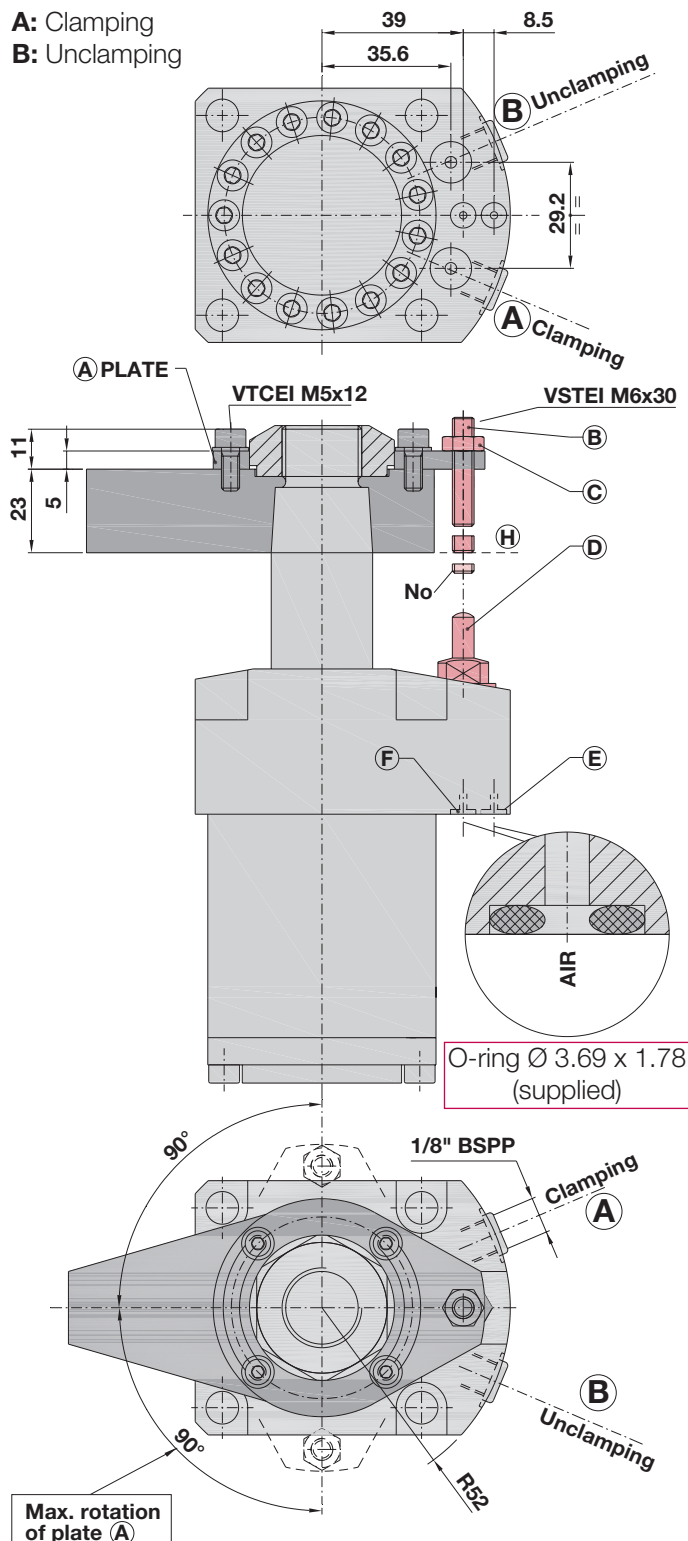
METAL WIPER
UPON
REQUEST!


HYDROBLOCK
INNOVATIVE ENGINEERING

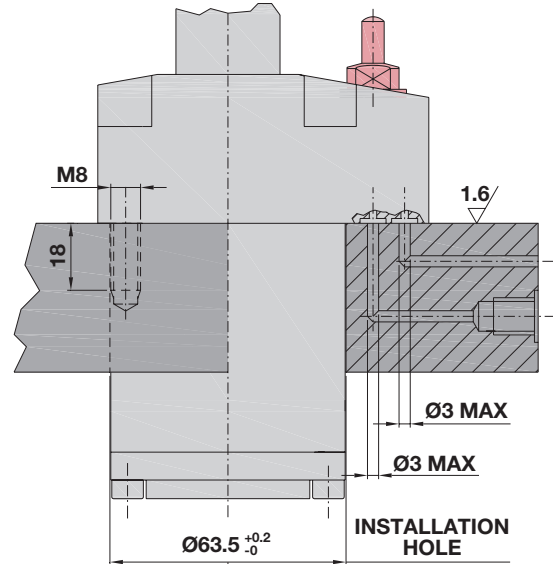
Last update 09/2010

DOUBLE-ACTING SWING CLAMPING CYLINDER WITH UPPER FLANGE AND CLAMP CLOSING CONTROL VALVE

A: Clamping
B: Unclamping



Installation dimensions with O-ring manifold mounting



Installation hole:

(Adjustment of the air-operated valve)

To adjust the screw for the clamp closing control valve, please proceed as follows:

- 1) Supply the cylinder with hydraulic pressure to move the clamping arm into clamping position.
- 2) Adjust the plate **(A)** to the exact radial position to ensure that the setscrew **(B)** is in line with the valve.
- 3) Supply the circuit with air at 1 - 6 bar through hole **(F)**. The cap **(D)** moves in extended position and the air will escape from hole **(E)**.
- 4) Tighten the setscrew **(B)** with the workpiece being clamped by the clamp until the air flow is interrupted. Then tighten the screw by another 2/4 turns (*) and lock it with the nut **(C)**.

* The additional 2/4 turns serve for compensating thickness variations of rough surfaces.

Variants:

- > Safety clutch against overload during rotation (**upon request**).
- > Metal wiper (**upon request**).

Note: upon completion of the adjustment, the tip of the setscrew **(B)** must not project beyond the lower end of the clamp **(level H)**.

Supplied:

- > O-ring Ø 3.69 x 1.78
- > O-ring Ø 4.34 x 3.53
- > TCEI M8x40 UNI 5931 12.9 mounting screws

Material:

- > **Piston/rod:** Hardened nitrided steel.
- > **Body:** Nitrided free machining steel.
- > **Valve:** Stainless steel.

**METAL WIPER
UPON
REQUEST!**

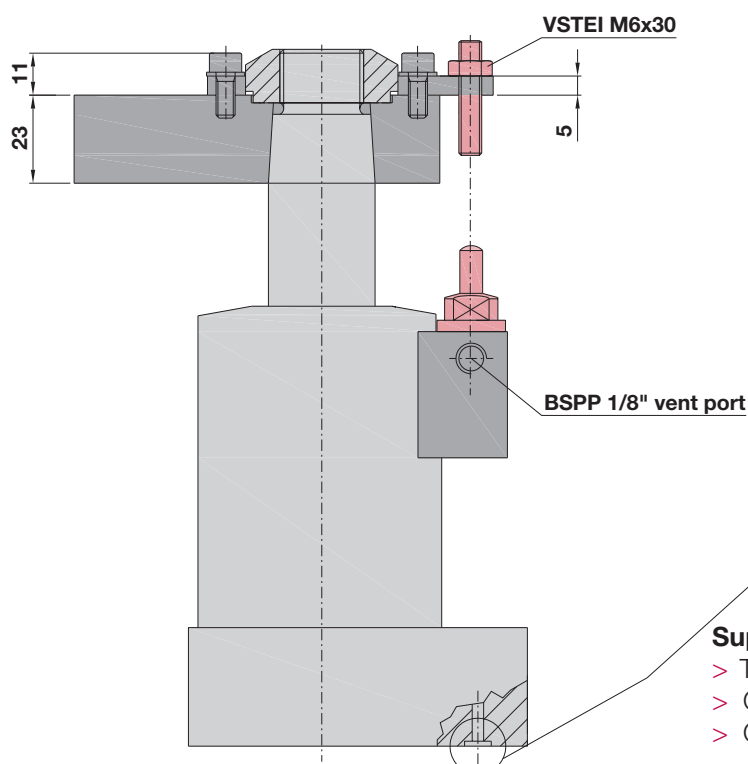
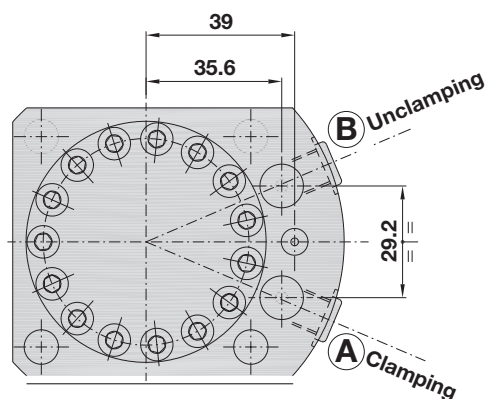


Last update 09/2010

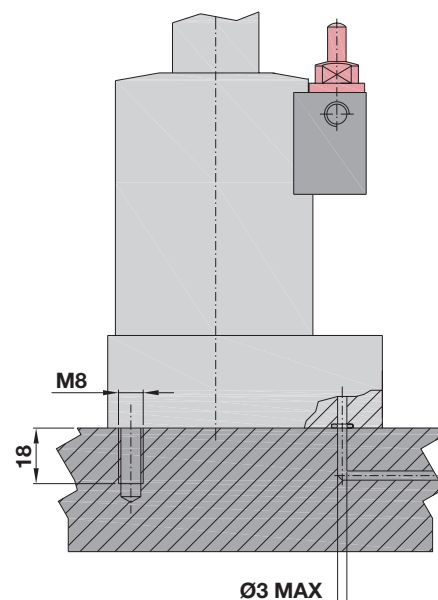
SR28.0 PDV

DOUBLE-ACTING SWING CLAMPING CYLINDER WITH LOWER FLANGE AND CLAMP CLOSING CONTROL VALVE

A: Clamping
B: Unclamping



Installation dimensions with O-ring manifold mounting



O-ring Ø 3.69 x 1.78 (supplied)

Supplied:

- > TCEI M8x40 UNI 5931 12.9 mounting screws.
- > O-ring Ø 3.69 x 1.78
- > O-ring Ø 6.75 x 1.78

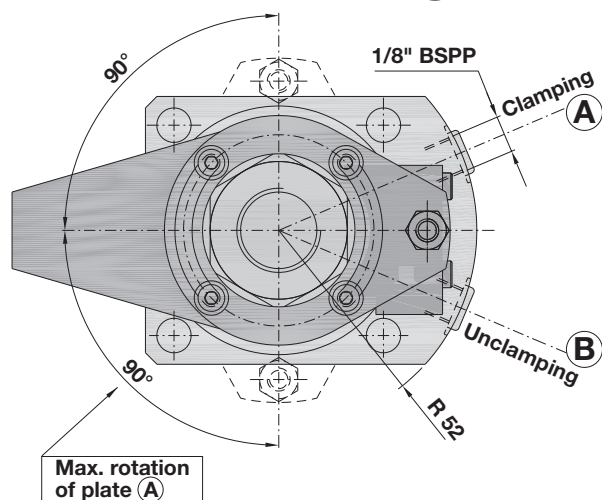
Variants:

- > Safety clutch against overload during rotation (*upon request*).
- > Metal wiper (*upon request*).

Material:

- > **Piston/rod:** Hardened nitrided steel.
- > **Body:** Nitrided free machining steel.
- > **Valve:** Stainless steel.

Note: for the adjustment of the clamp closing control valve, please refer to page 28.0/2



METAL WIPER
UPON
REQUEST!

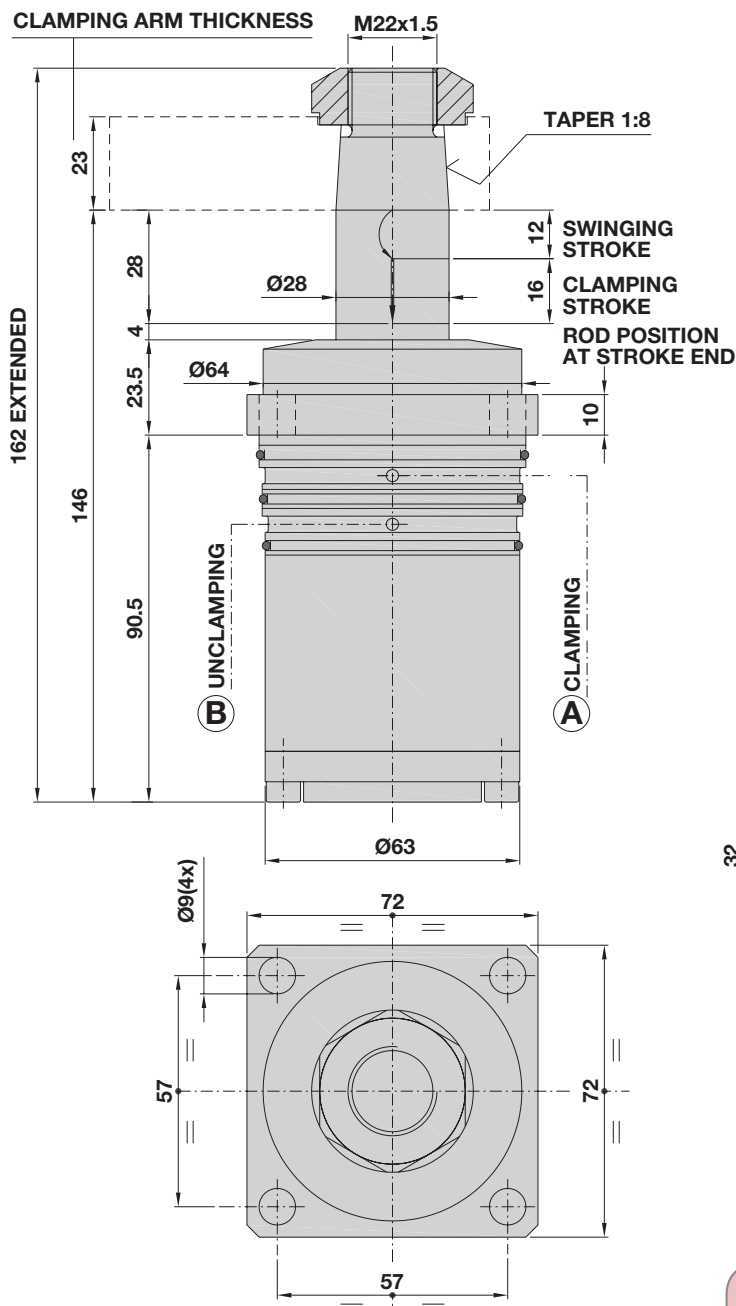
HYDROBLOCK
INNOVATIVE ENGINEERING

Last update 09/2010

SR28.0 CD

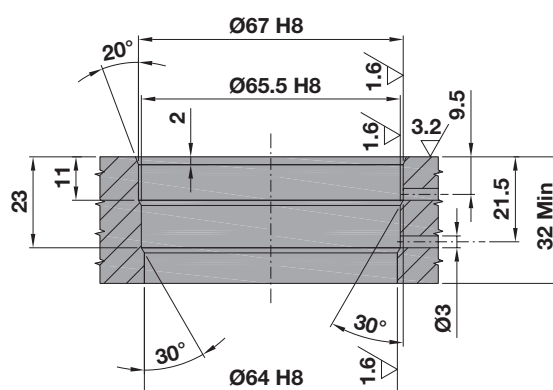
DOUBLE-ACTING SWING CLAMPING CYLINDER WITH CARTRIDGE BODY

A: Clamping
B: Unclamping

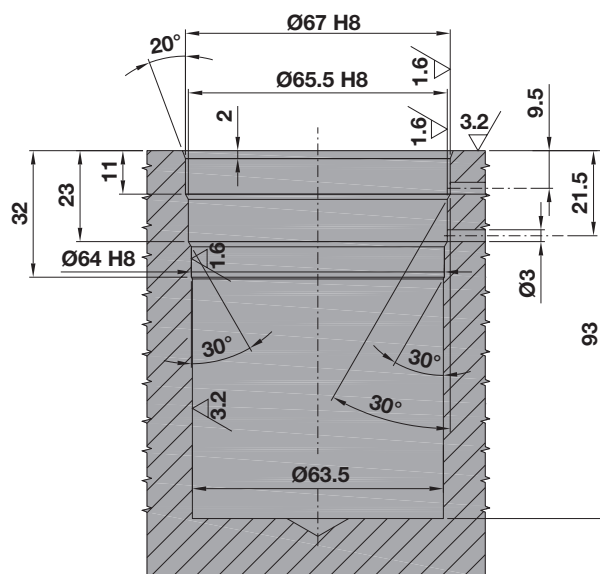


Installation dimensions

Cavity with crossing seat



Cavity with built-in seat



Supplied:

- > TC M8x25 UNI 5931 12.9 mounting screws.

Variants:

- > Safety clutch against overload during rotation (*upon request*).
- > Metal wiper (*upon request*).

Material:

- > **Piston/rod:** Hardened nitrided steel.
- > **Body:** Nitrided free machining steel.

Note: For ordering code, please refer to page 28.D
For accessories (clamping arms), see page 28.S1
For clamping force diagrams, see page 28.S2

STROKE mm		EFFECTIVE CYLINDER AREA		TOTAL OIL VOLUME	
		Cm ²		Cm ³	
Total	28	Clamping	Unclamping	Clamping	Unclamping
Swinging	12	9.75	15.9	27.3	44.5
Clamping	16				

METAL WIPER
UPON
REQUEST!

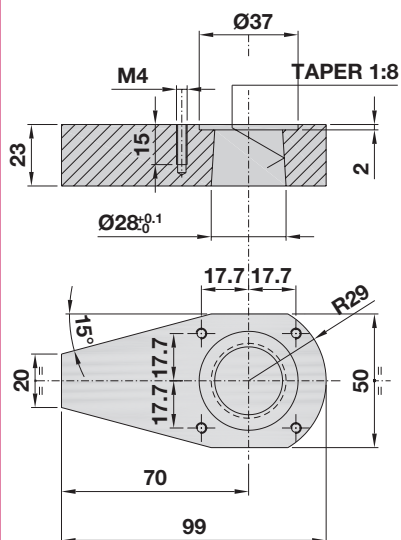

HYDROBLOCK
INNOVATIVE ENGINEERING

Last update 09/2010

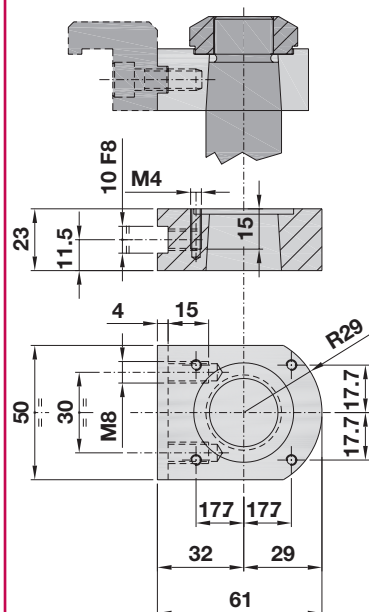
SR28 ACCESSORIES

S1

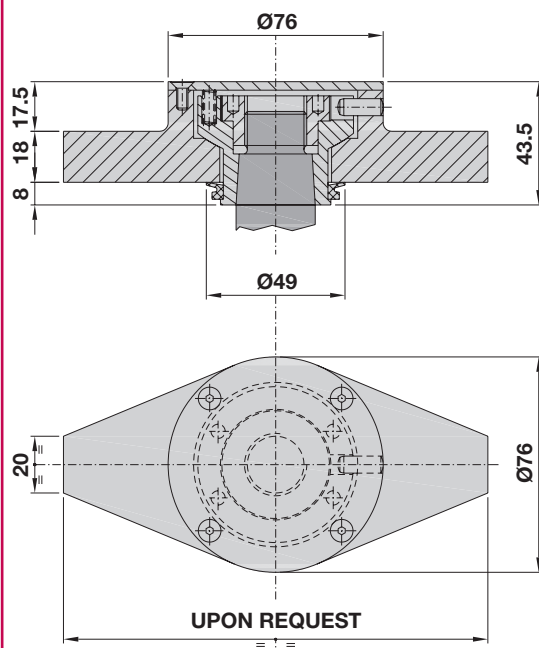
CLAMPING ARM 01.28



CLAMPING ARM 02.28

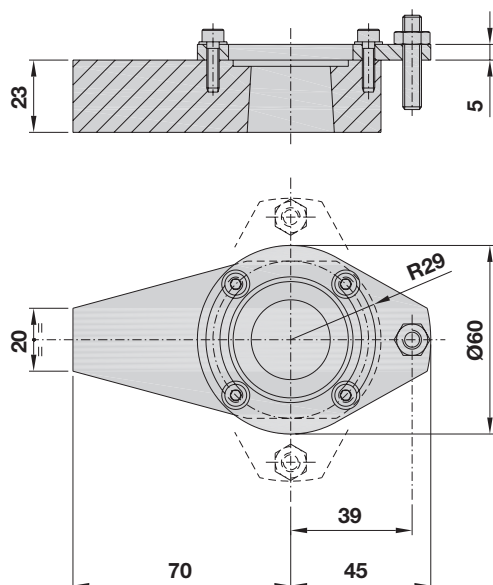


CLAMPING ARM 03.28



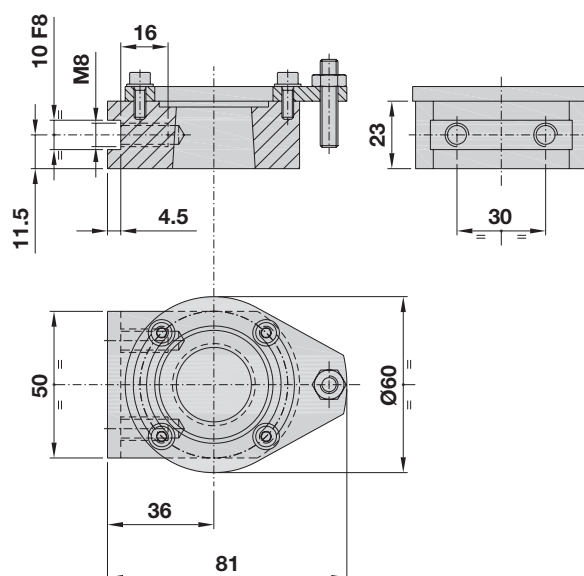
CLAMPING ARM 04.28

VERSION FOR CYLINDER WITH CLAMP CLOSING CONTROL VALVE



CLAMPING ARM 05.28

VERSION FOR CYLINDER WITH CLAMP CLOSING CONTROL VALVE



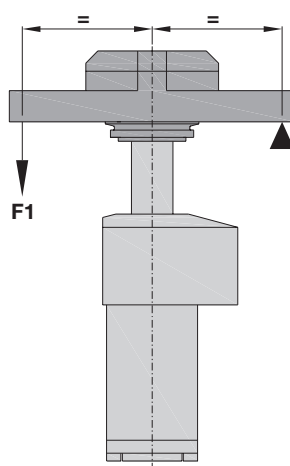
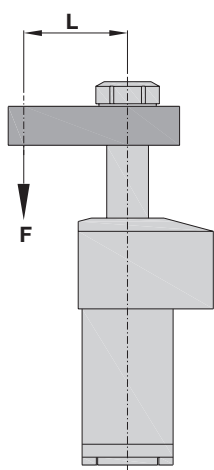
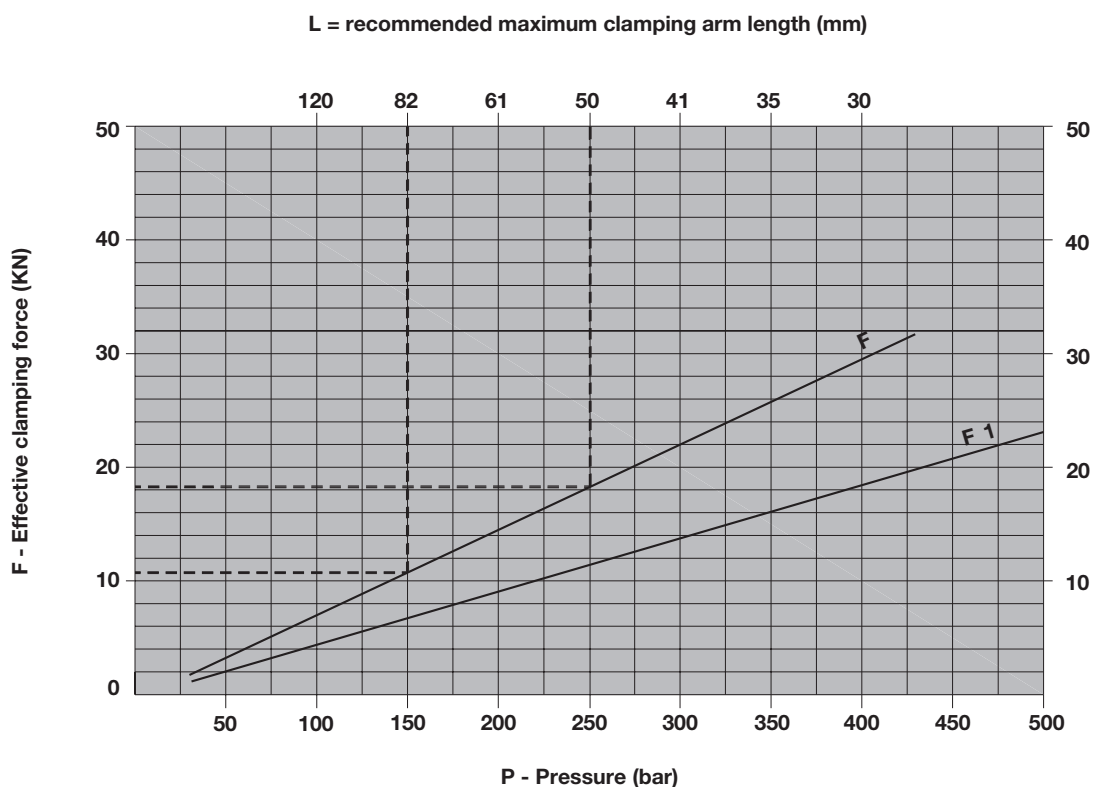
Material: C45 STEEL

SR28 DIAGRAM

S2




CLAMPING FORCE/PRESSURE RATIO

The diagram shows the effective clamping force **F** as a function of the operating pressure **P** and the recommended maximum clamping arm length **L**.



SR28

ORDERING CODE

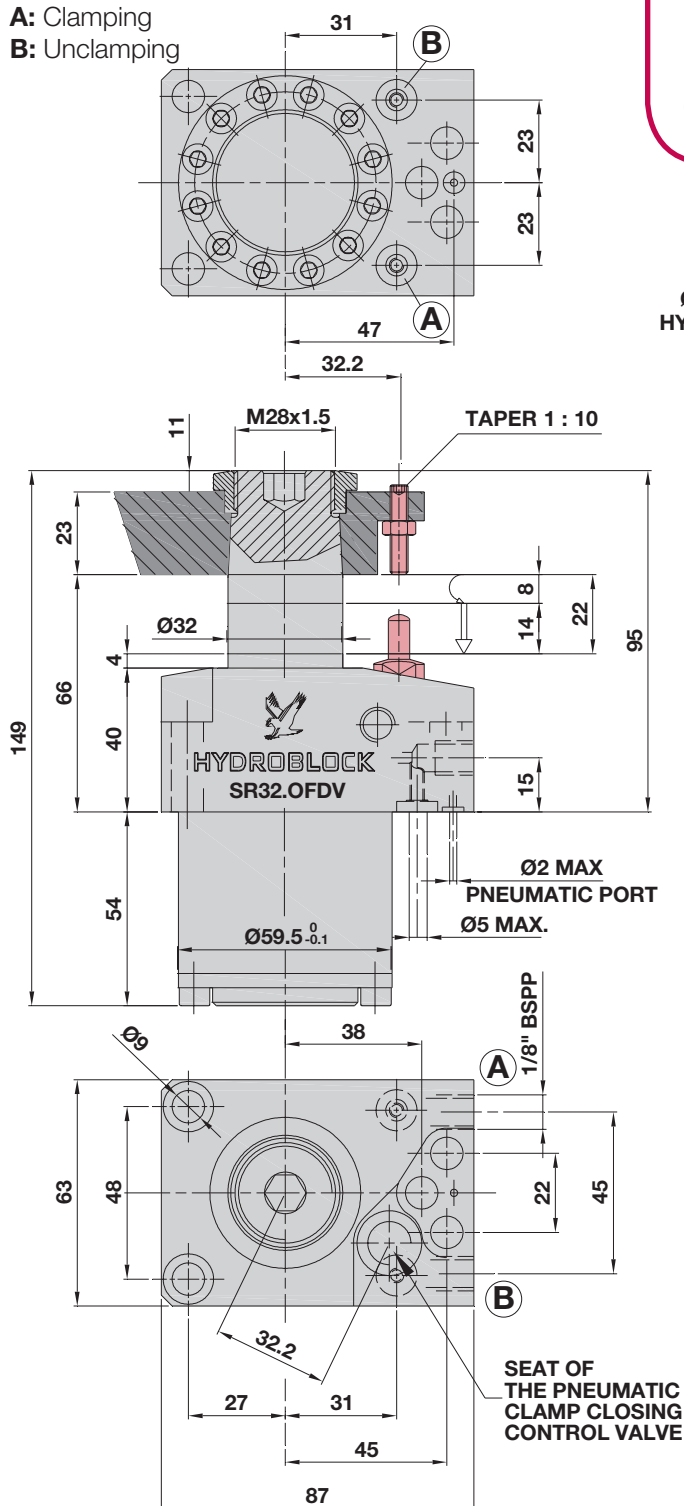
0: Standard version with stroke 28 (12r + 16b)		0
FD: Double-acting version with upper flange		FD
PD: Double-acting version with lower flange		PD
CD: Double-acting version with cartridge body		CD
L: Left-hand swinging		L
R: Right-hand swinging		R
0°-45°-60°-90°: Available swinging angles		0 - 45 - 60- 90
V: Version with clamp closing control valve (<i>upon request</i>)		V
F: Safety clutch against overload during rotation (<i>upon request</i>)		F
M: Metal wiper (<i>upon request</i>)		M

SR32.0 FDV

DOUBLE-ACTING SWING CLAMPING CYLINDER WITH UPPER FLANGE

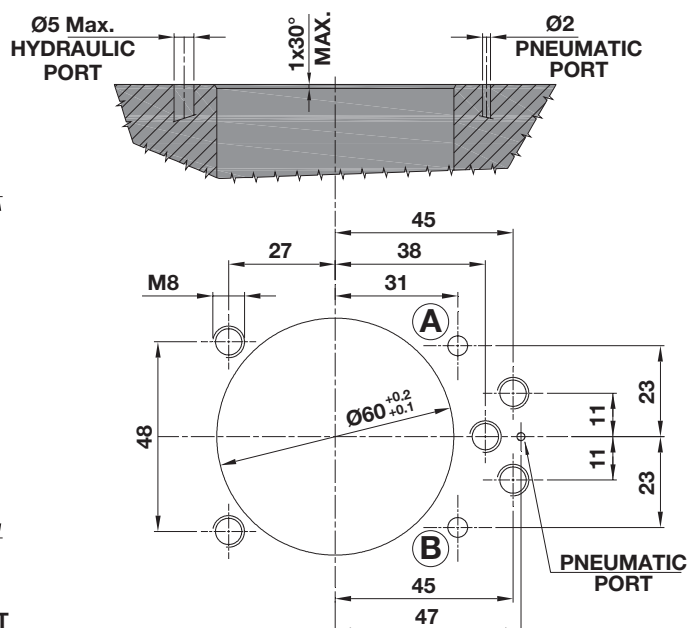
MAX. WORKING PRESSURE = 500 BAR

A: Clamping
B: Unclamping



Double acting swing clamping cylinder with upper mounting flange and in-line as well as O-ring connections.

SR32.0 FDV INSTALLATION



While clamping is performed through port "A" (regardless of whether the 1/8" in-line ports or the O-ring connections are used), port "B" is applied for unclamping.

The cylinders of this series are equipped with the **exclusive Hydroblock swing compensation system** and can be provided upon request with the safety clutch against overload during rotation.

The sturdy swinging system of special design ensures a long service life and maximum reliability.

Right and left-hand swinging at a standard angle of 90°. Swinging angles of 60°, 45° or 0° are available upon request.

Supplied:

- > TCEI M8x45 UNI 5931 12K mounting screws
- > 2 O-Rings 4017

Variants:

- > Metal wiper (*upon request*).
- > Safety clutch against overload during rotation (*upon request*).

Material:

- > **Piston/rod:** Hardened nitrided steel.
- > **Body:** Nitrided free machining steel.

STROKE mm		EFFECTIVE CYLINDER AREA		TOTAL OIL VOLUME	
		Cm ²		Cm ³	
Total	22	Clamping	Unclamping	Clamping	Unclamping
Swinging	8	4.52	12.56	9.95	27.6
Clamping	14				

METAL WIPER
UPON
REQUEST!


HYDROBLOCK
INNOVATIVE ENGINEERING

Last update 09/2010

SR32.0 FDV

DOUBLE-ACTING SWING CLAMPING CYLINDER WITH UPPER FLANGE

MAX. WORKING PRESSURE = 500 BAR

ORDERING CODE

0: Standard version with stroke 22 (8r + 14b)

0

FD: Double-acting version with upper flange

FD

L: Left-hand swinging

L

R: Right-hand swinging

R

0°-45°-60°: Available swinging angles

0 - 45 - 60

V: Version with clamp closing control valve (*upon request*)

V

F: Safety clutch against overload during rotation (*upon request*)

F

M: Metal wiper (*upon request*)

M

Clamping force/pressure ratio

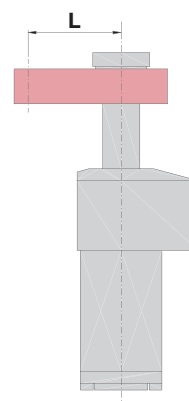
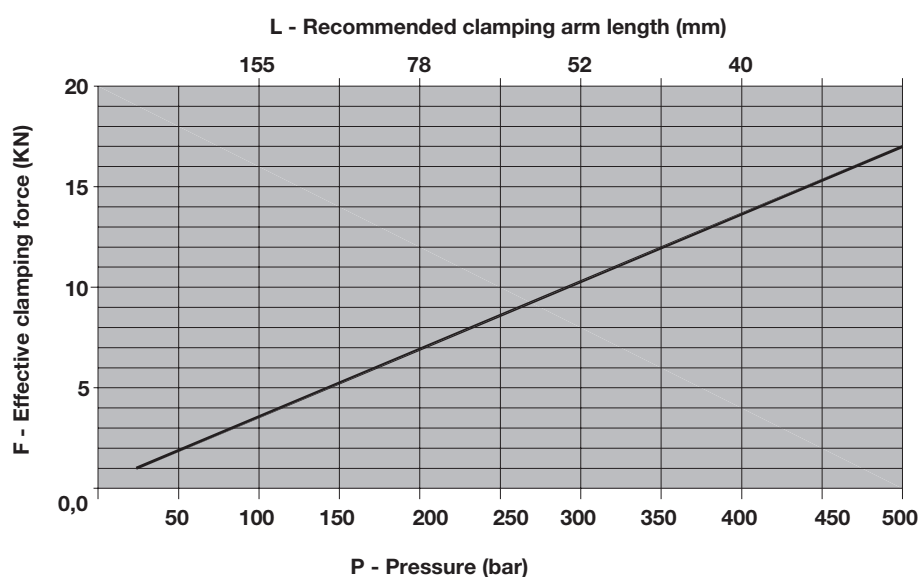
The diagram shows the effective clamping force **F** as a function of the operating pressure **P** and the recommended maximum clamping arm length **L**.

Note: When using hydraulic cylinders, make sure not to exceed the maximum dimensions and the maximum admissible weight of the clamping arm. Excessively high flow rates may cause too high cylinder

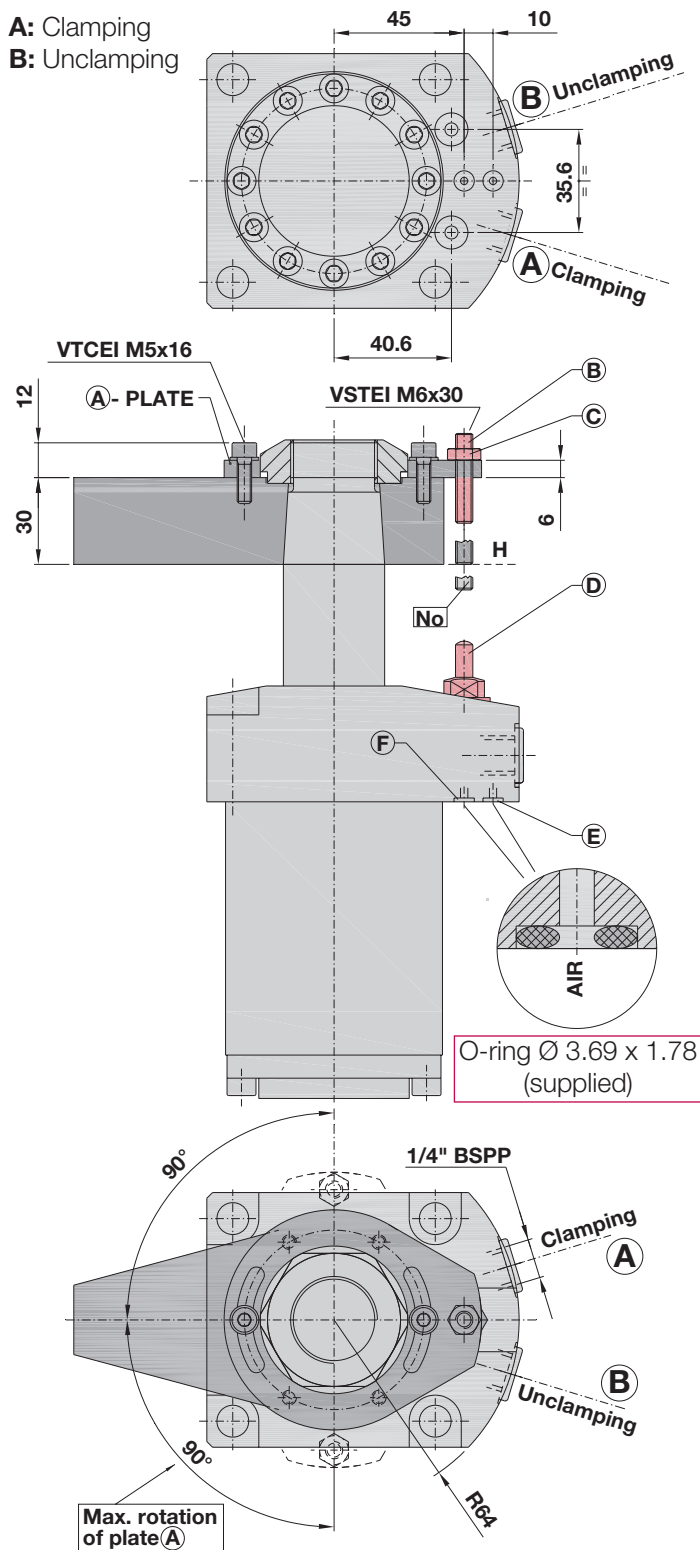
der speeds and affect the performance and reliability of the cylinder.

With high flow rates, use flow control valves in the pressure line only and not in the return line to avoid dangerous back-pressure acting on the cylinders, which may cause damage to the cylinder.

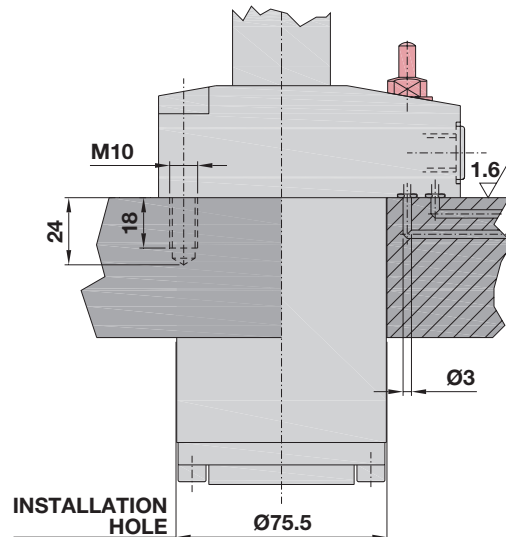
The ratio between the cylinder clamping area and the cylinder unclamping area may produce dangerous high pressure.



DOUBLE-ACTING SWING CLAMPING CYLINDER WITH UPPER FLANGE AND CLAMP CLOSING CONTROL VALVE



Installation dimensions with O-ring manifold mounting



Installation hole:

(Adjustment of the air-operated valve)

To adjust the screw for the clamp closing control valve, please proceed as follows:

- 1) Supply the cylinder with hydraulic pressure to move the clamping arm into clamping position.
- 2) Adjust the plate **(A)** to the exact radial position to ensure that the setscrew **(B)** is in line with the valve.
- 3) Supply the circuit with air at 1 - 6 bar through hole **(F)**. The cap **(D)** moves in extended position and the air will escape from hole **(E)**.
- 4) Tighten the setscrew **(B)** with the workpiece being clamped by the clamp until the air flow is interrupted. Then tighten the screw by another 2/4 turns (*) and lock it with the nut **(C)**.

* The additional 2/4 turns serve for compensating thickness variations of rough surfaces.

Variants:

- > **SR35.V FDV** type with Viton seals (*upon request*).
- > Safety clutch against overload during rotation (*upon request*).
- > Metal wiper (*upon request*).

Note: upon completion of the adjustment, the tip of the setscrew **(B)** must not project beyond the lower end of the clamp **(level H)**.

Supplied:

- > TCEI M10x45 UNI 5931 12.9 mounting screws
- > O-ring Ø 3.69 x 1.78
- > O-ring Ø 4.34 x 3.53

Material:

- > **Piston/rod:** Hardened nitrided steel.
- > **Body:** Nitrided free machining steel.
- > **Valve:** Stainless steel.

**METAL WIPER
UPON
REQUEST!**

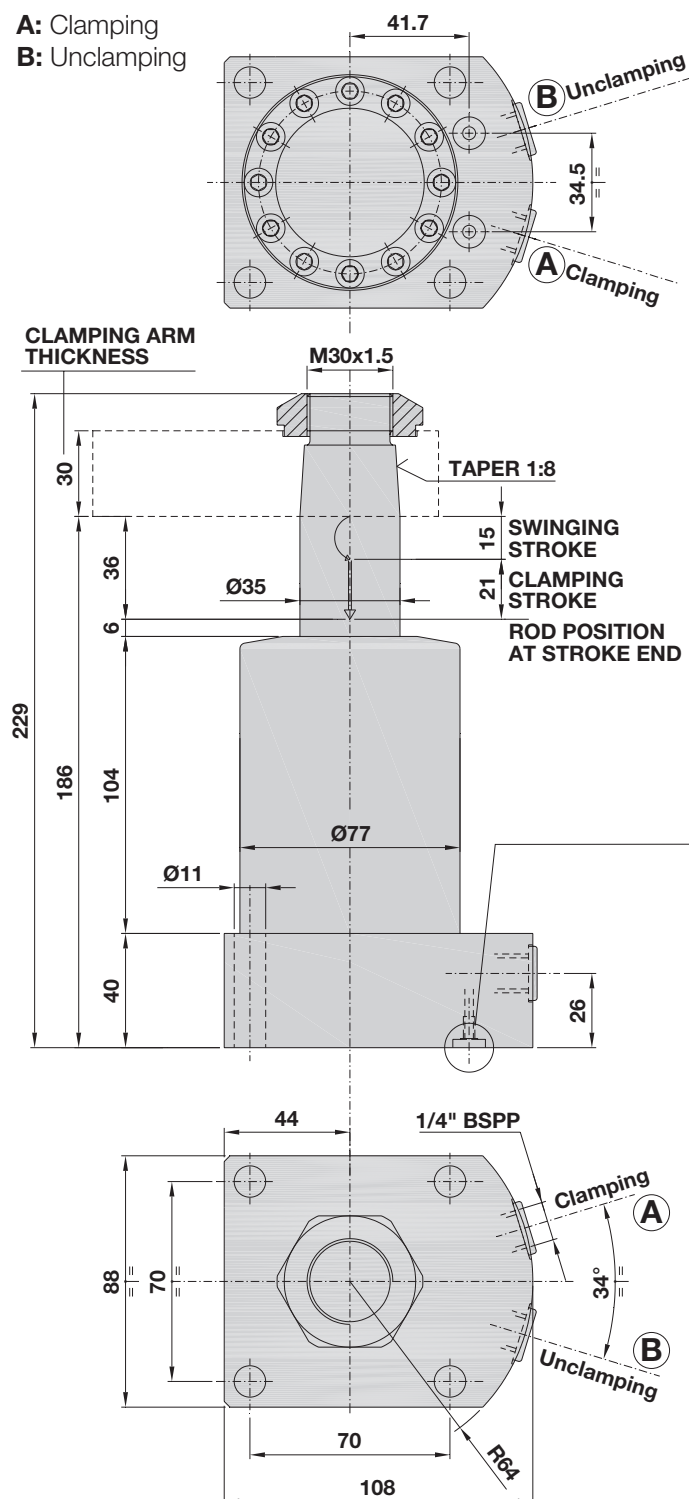


Last update 09/2010

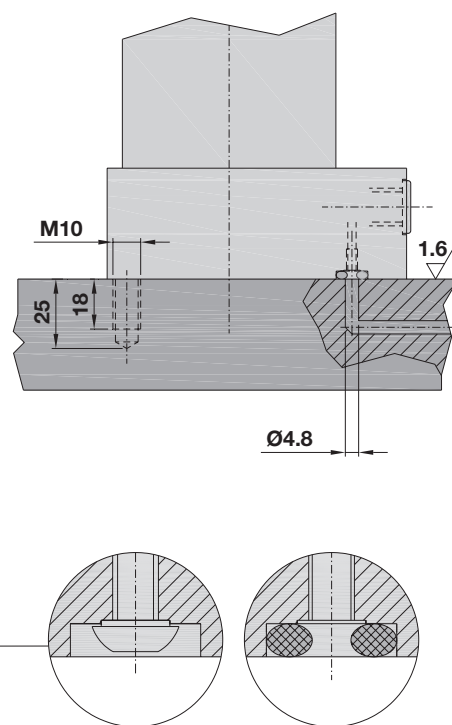
SR35.0 PD

DOUBLE-ACTING SWING CLAMPING CYLINDER WITH LOWER FLANGE

A: Clamping
B: Unclamping



Installation dimensions with O-ring manifold mounting



To use the O-ring ports, remove the plug and insert the O-rings $\varnothing 4.34 \times 3.53$ (supplied)

Variants:

- > Safety clutch against overload during rotation (*upon request*).
- > Metal wiper (*upon request*).

Note: For ordering code, please refer to page 35.D
For accessories (clamping arms), see page 35.S1
For clamping force diagrams, see page 35.S2

Supplied:


- > TCEI M10x55 UNI 5931 12.9 mounting screws.
- > O-rings $\varnothing 4.34 \times 3.53$

Material:

- > **Piston/rod:** Hardened nitrided steel.
- > **Body:** Nitrided free machining steel.

STROKE mm		EFFECTIVE CYLINDER AREA		TOTAL OIL VOLUME	
		Cm ²		Cm ³	
Total	36	Clamping	Unclamping	Clamping	Unclamping
Swinging	15	14.1	23.8	50.76	85.7
Clamping	21				

METAL WIPER
UPON
REQUEST!


HYDROBLOCK
INNOVATIVE ENGINEERING

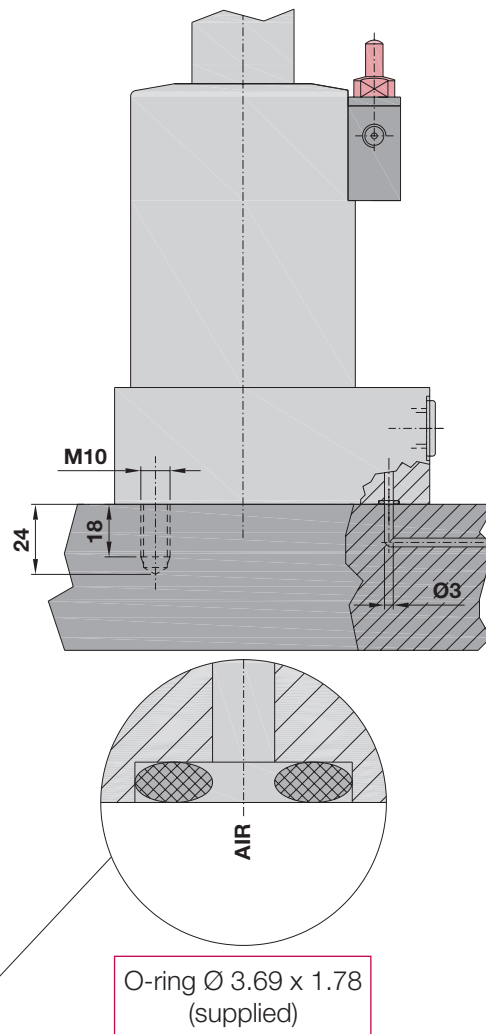
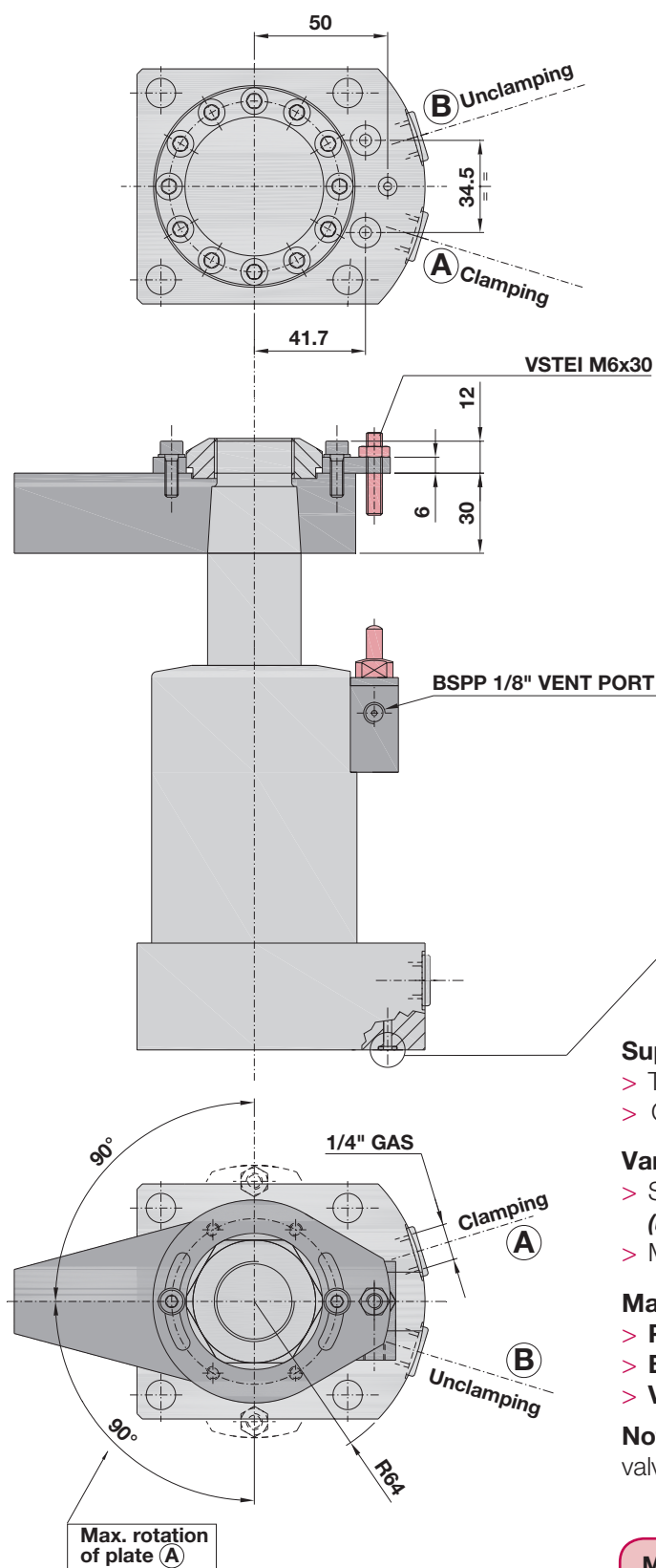
Last update 09/2010

SR35.0 PDV

DOUBLE-ACTING SWING CLAMPING CYLINDER WITH LOWER FLANGE
AND CLAMP CLOSING CONTROL VALVE

A: Clamping
B: Unclamping

Installation dimensions with O-ring manifold mounting



Supplied:

- > TCEI M10x55 UNI 5931 12.9 mounting screws.
- > O-ring Ø 3.69 x 1.78

Variants:

- > Safety clutch against overload during rotation (*upon request*).
- > Metal wiper (*upon request*).

Material:

- > **Piston/rod:** Hardened nitrided steel.
- > **Body:** Nitrided free machining steel.
- > **Valve:** Stainless steel.

Note: for the adjustment of the clamp closing control valve, please refer to page 35.0/2

**METAL WIPER
UPON
REQUEST!**

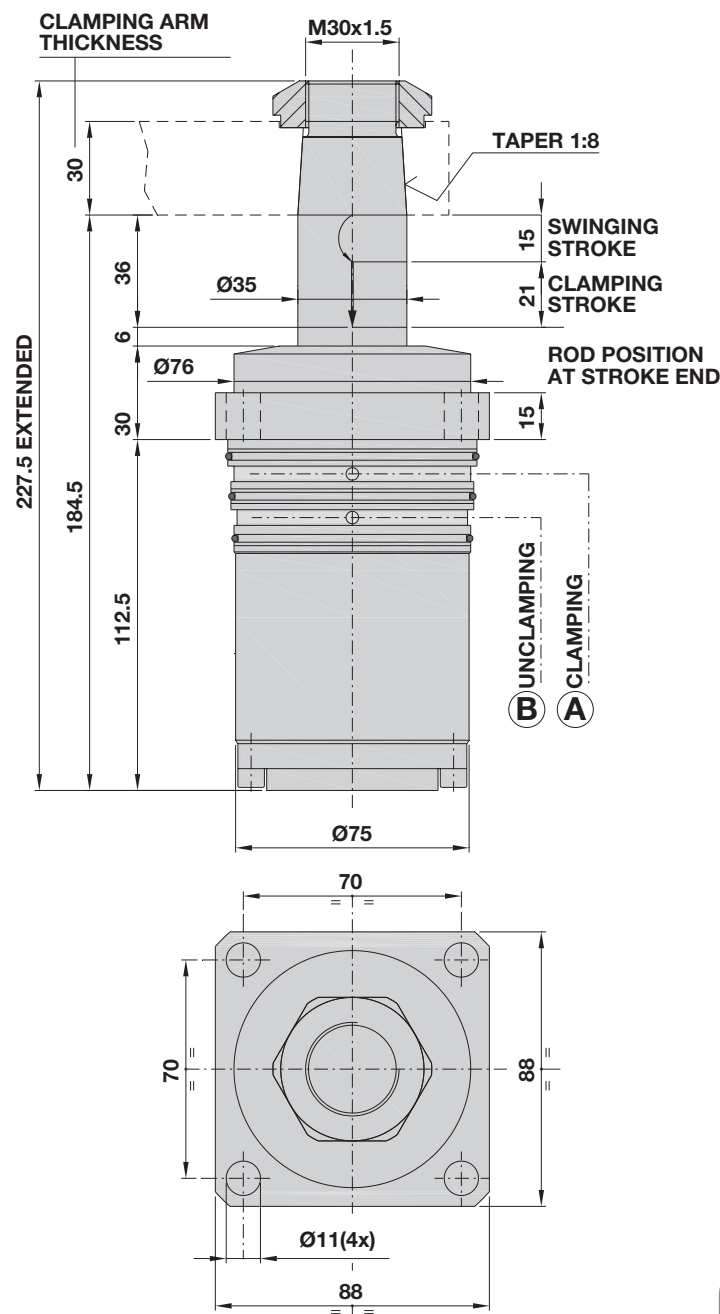
HYDROBLOCK
INNOVATIVE ENGINEERING

Last update 09/2010

SR35.0 CD

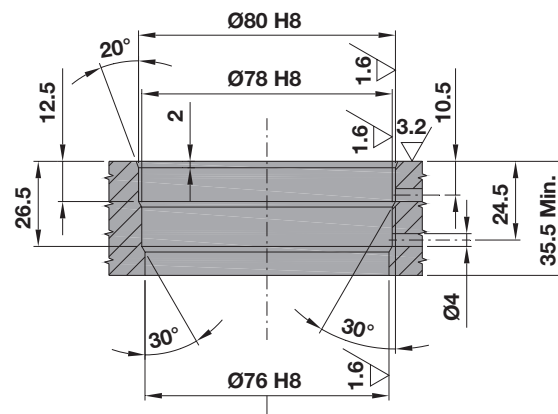
DOUBLE-ACTING SWING CLAMPING CYLINDER WITH CARTRIDGE BODY

A: Clamping
B: Unclamping

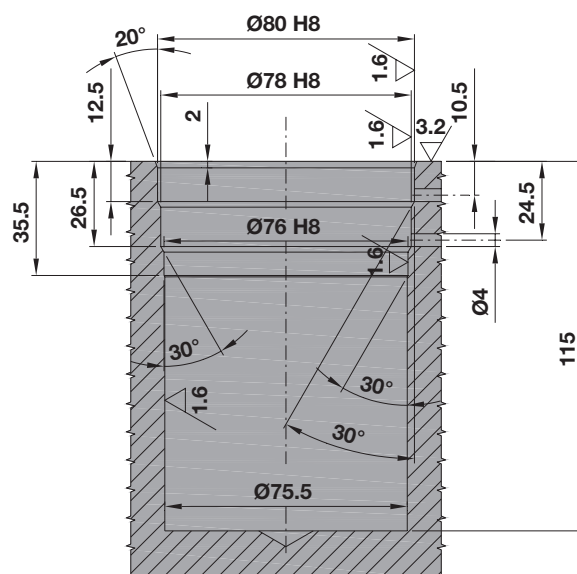


Installation dimensions

Cavity with crossing seat



Cavity with built-in seat



Note: For ordering code, please refer to page 35.D
For accessories (clamping arms), see page 35.S1
For clamping force diagrams, see page 35.S2

Supplied:

- > TCEI M10x30 UNI 5931 12.9 mounting screws.

Variants:

- > Safety clutch against overload during rotation (*upon request*).
- > Metal wiper (*upon request*).

Material:

- > **Piston/rod:** Hardened nitrided steel.
- > **Body:** Nitrided free machining steel.

STROKE mm		EFFECTIVE CYLINDER AREA		TOTAL OIL VOLUME	
		Cm ²		Cm ³	
Total	36	Clamping	Unclamping	Clamping	Unclamping
Swinging	15	14.1	23.8	50.76	85.7
Clamping	21				

METAL WIPER
UPON
REQUEST!

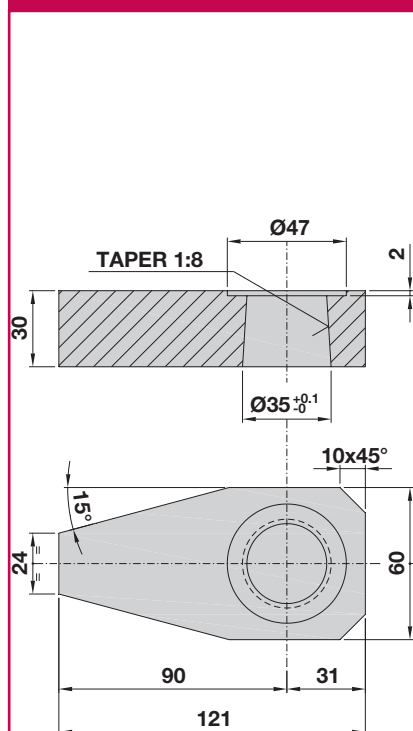

HYDROBLOCK
INNOVATIVE ENGINEERING

Last update 09/2010

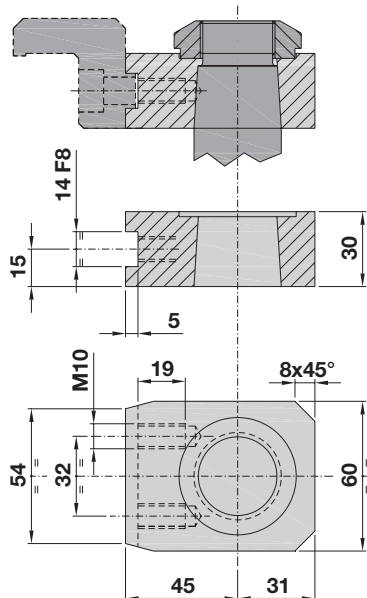
SR35 ACCESSORIES

S1

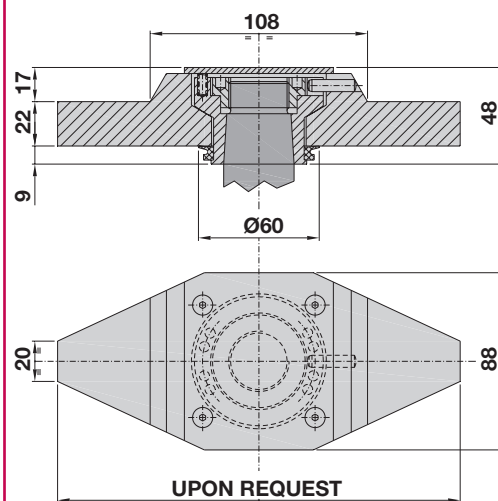
CLAMPING ARM 01.35



CLAMPING ARM 02.35

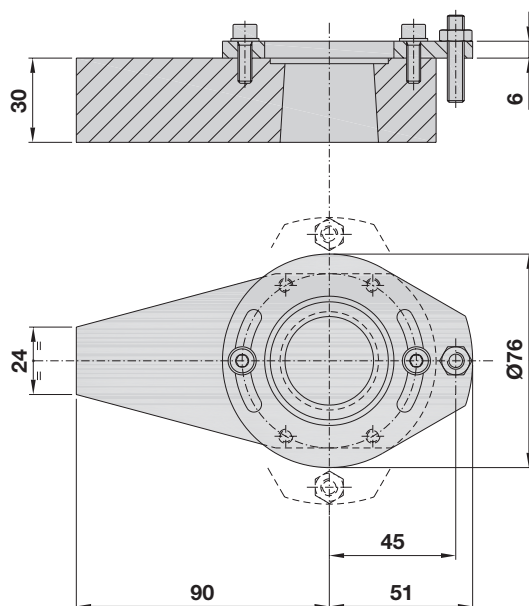


CLAMPING ARM 03.35



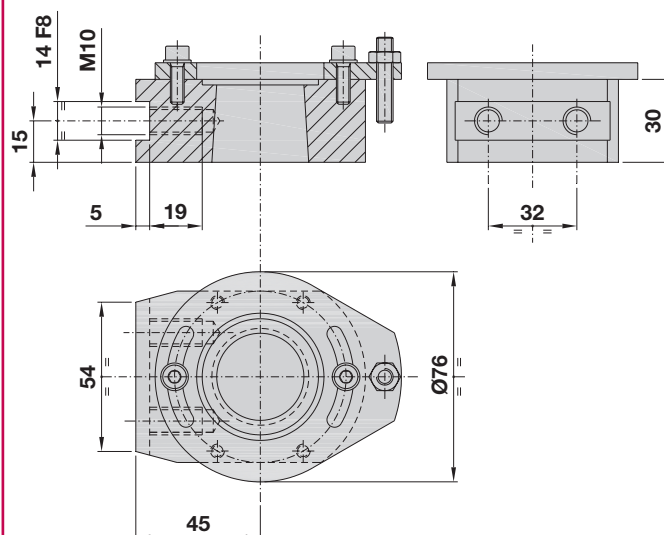
CLAMPING ARM 04.35

VERSION FOR CYLINDER WITH
CLAMP CLOSING CONTROL VALVE



CLAMPING ARM 05.35

VERSION FOR CYLINDER WITH
CLAMP CLOSING CONTROL VALVE



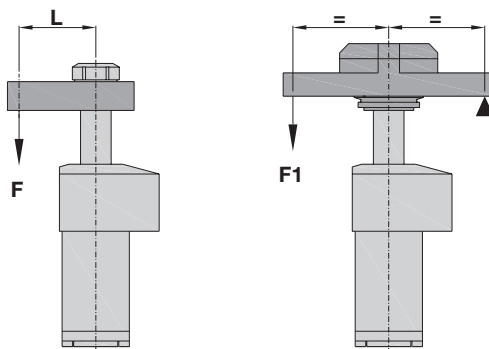
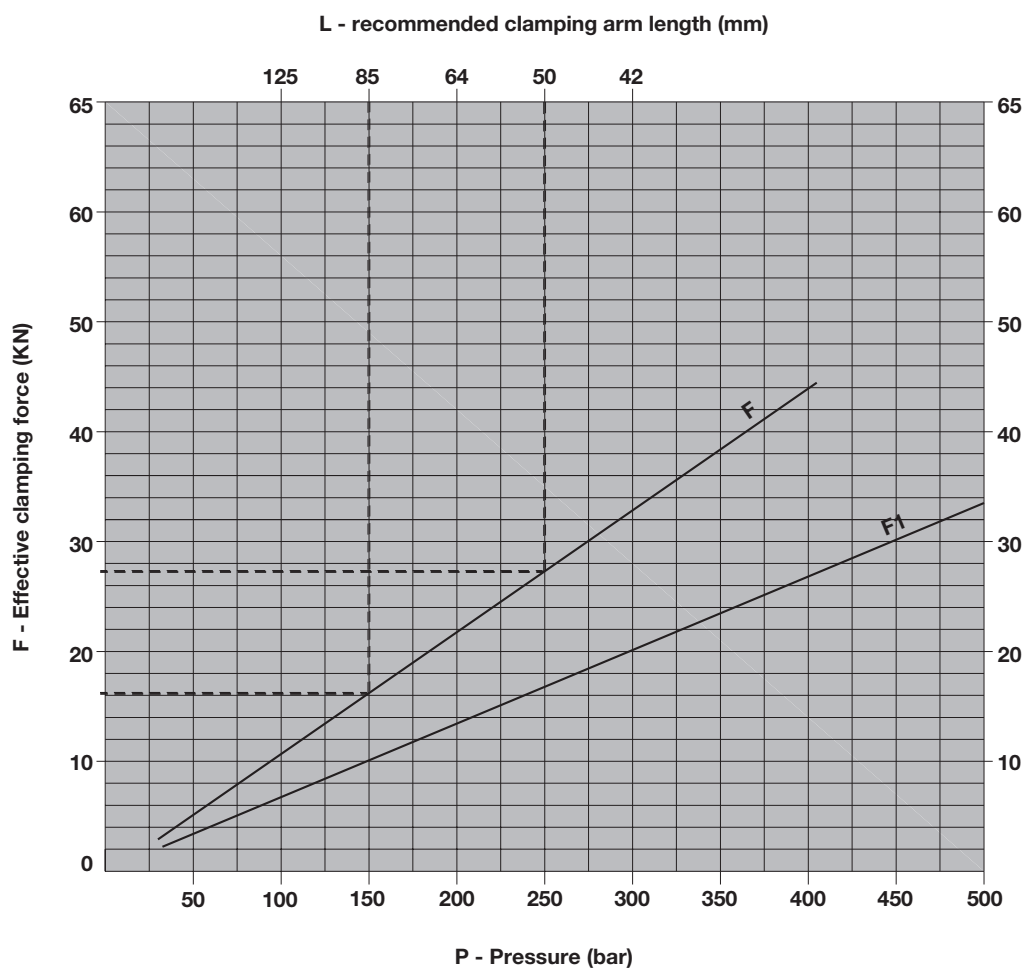
Material: C45 STEEL

SR35 DIAGRAM

S2




CLAMPING FORCE/PRESSURE RATIO

The diagram shows the effective clamping force **F** as a function of the operating pressure **P** and the recommended maximum clamping arm length **L**.



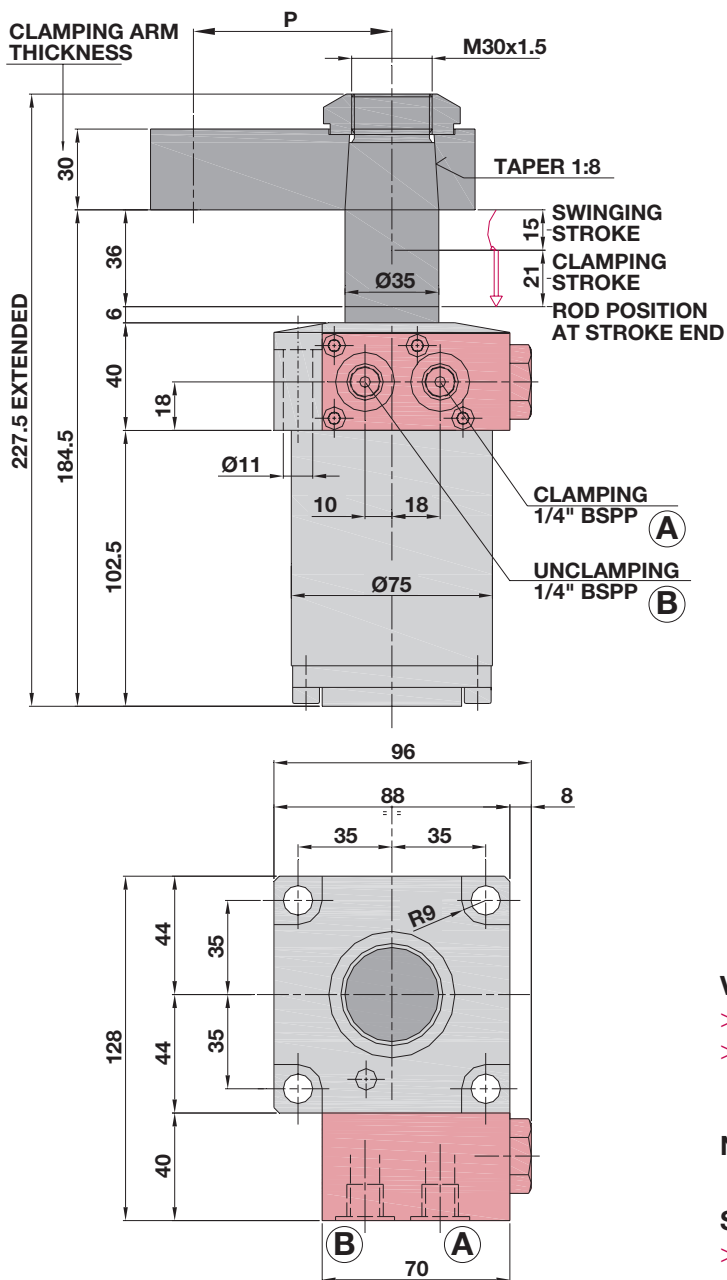
SR35

ORDERING CODE

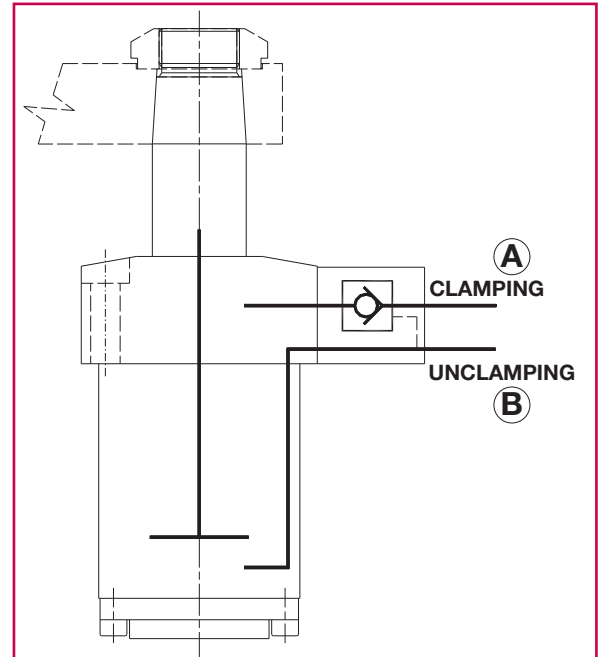
0: Standard version with stroke 36 (15r + 21b)		0
FD: Double-acting version with upper flange		FD
PD: Double-acting version with lower flange		PD
CD: Double-acting version with cartridge body		CD
L: Left-hand swinging		L
R: Right-hand swinging		R
0°-45°-60°-90°: Available swinging angles		0 - 45 - 60- 90
V: Version with clamp closing control valve (<i>upon request</i>)		V
F: Safety clutch against overload during rotation (<i>upon request</i>)		F
M: Metal wiper (<i>upon request</i>)		M

SR35 RPS

DOUBLE-ACTING SWING CLAMPING CYLINDER WITH UPPER FLANGE AND PILOT CHECK VALVE



A: Clamping
B: Unclamping



Variants:

- > **SR35.V RPS** type with VITON seals.
- > Safety clutch against overload during rotation (*upon request*).

Note : For ordering code, please refer to page 35RPS.D

Supplied:

- > 4 TCEI M106x45 UNI 5931 12.9 mounting screws.

Material:

- > **Piston/rod:** Hardened nitrided steel.
- > **Body:** Nitrided free machining steel.
- > **Valve block:** Free machining steel.

STROKE mm		EFFECTIVE CYLINDER AREA		TOTAL OIL VOLUME	
		Cm ²		Cm ³	
Total	36	Clamping	Unclamping	Clamping	Unclamping
Swinging	15	14.1	23.8	50.76	85.7
Clamping	21				

SR35 RPS

DOUBLE-ACTING SWING CLAMPING CYLINDER WITH UPPER FLANGE AND PILOT CHECK VALVE

ORDERING CODE

0: Standard double-acting version

0

L: Left-hand swinging

L

R: Right-hand swinging

R

0°-45°-60°-90°: Available swinging angles

0 - 45 - 60- 90

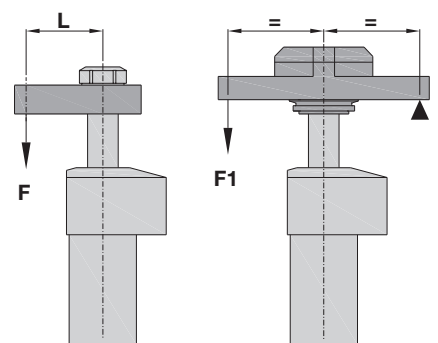
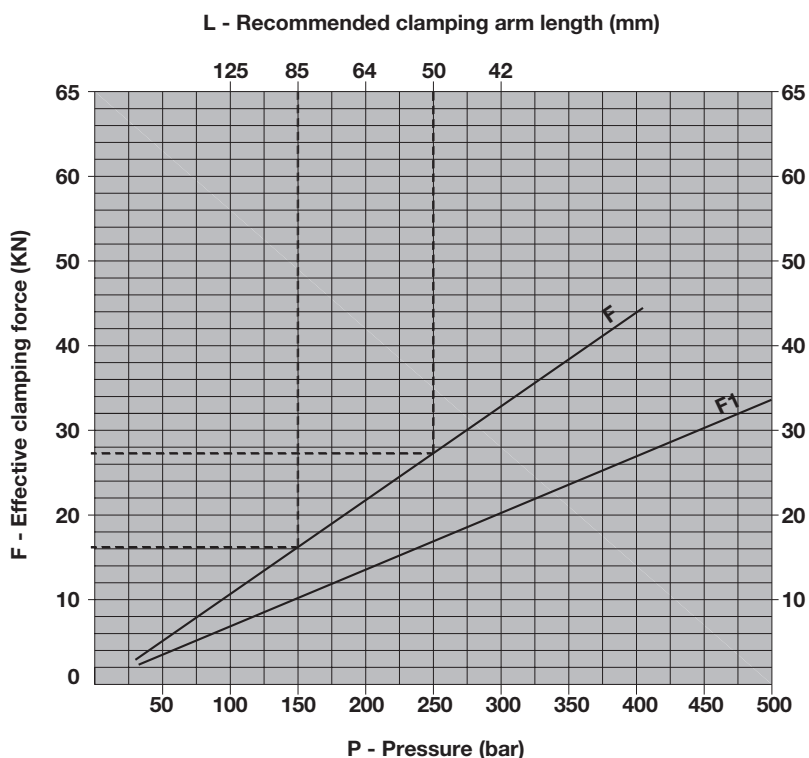
F: Safety clutch against overload during rotation (*upon request*)

F

N.B. Please refer to "SR35 Accessories S1" for more details.

Clamping force/pressure ratio

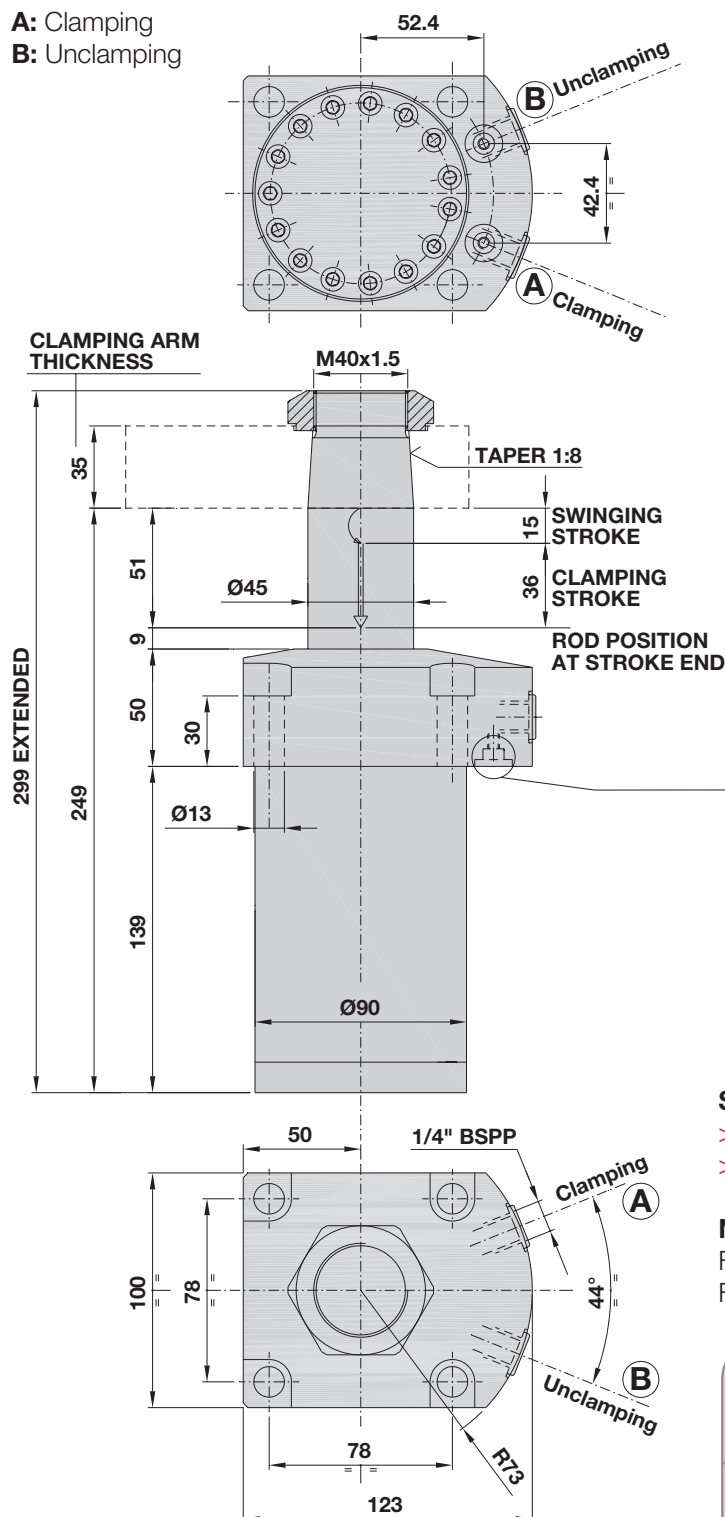
The diagram shows the effective clamping force **F** as a function of the operating pressure **P** and the recommended maximum clamping arm length **L**.



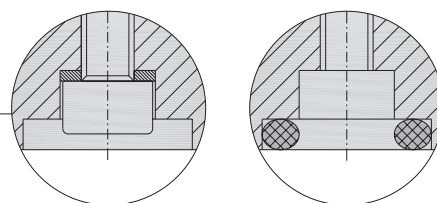
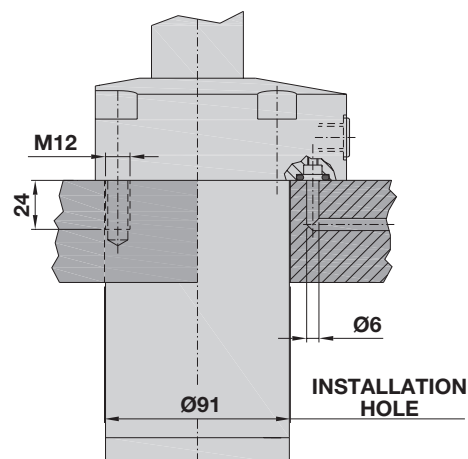
SR45.0 FD

DOUBLE-ACTING SWING CLAMPING CYLINDER WITH UPPER FLANGE

A: Clamping
B: Unclamping



Installation dimensions with O-ring manifold mounting



To use the O-ring ports, remove the plug and insert the O-rings Ø 9.12 x 3.53 (supplied)

Supplied:

- > TCEI M12x50 UNI 5931 12.9 mounting screws.
- > O-Rings Ø 9.12 x 3.53

Note : For ordering code, please refer to page 45.D
For accessories (clamping arms), see page 45.S1
For clamping force diagrams, see page 45.S2

Variants:

- > Safety clutch against overload during rotation (*upon request*).
- > Metal wiper (*upon request*).

Material:

- > **Piston/rod:** Hardened nitrided steel.
- > **Body:** Nitrided free machining steel.

STROKE mm		EFFECTIVE CYLINDER AREA		TOTAL OIL VOLUME	
		Cm ²		Cm ³	
Total	51	Clamping	Unclamping	Clamping	Unclamping
Swinging	15	17.3	33.2	88.2	169.3
Clamping	36				

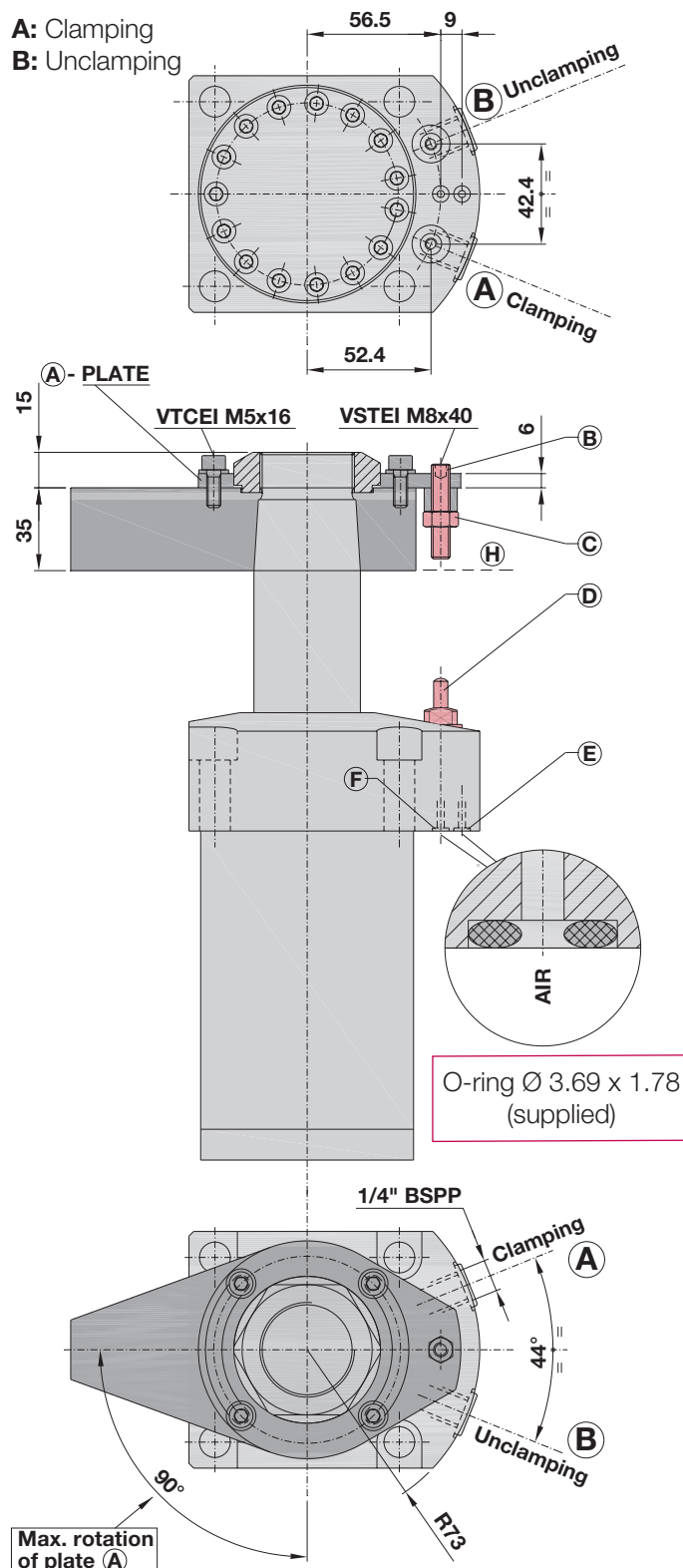
METAL WIPER
UPON
REQUEST!


HYDROBLOCK
INNOVATIVE ENGINEERING

Last update 09/2010

SR45.0 FDV

DOUBLE-ACTING SWING CLAMPING CYLINDER WITH UPPER FLANGE AND CLAMP CLOSING CONTROL VALVE



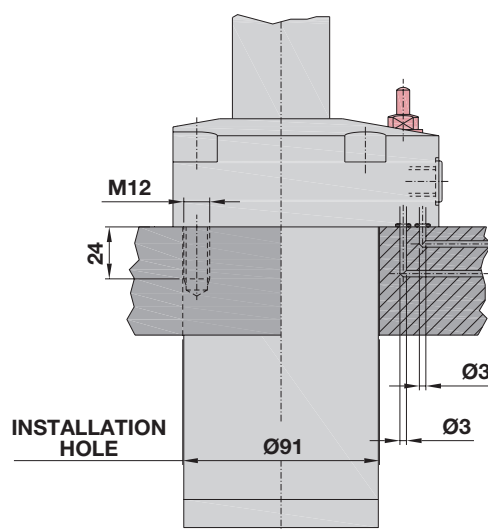
Supplied:

- > TCEI M12x50 UNI 5931 12.9 mounting screws.
- > O-ring Ø 3.69 x 1.78
- > O-ring Ø 9.12 x 3.53

Material:

- > **Piston/rod:** Hardened nitrided steel.
- > **Body:** Nitrided free machining steel.
- > **Valve:** Stainless steel.

Installation dimensions with O-ring manifold mounting



Installation hole:

(Adjustment of the air-operated valve)

To adjust the screw for the clamp closing control valve, please proceed as follows:

- 1) Supply the cylinder with hydraulic pressure to move the clamping arm into clamping position.
- 2) Adjust the plate (A) to the exact radial position to ensure that the setscrew (B) is in line with the valve.
- 3) Supply the circuit with air at 1 - 6 bar through hole (F). The cap (D) moves in extended position and the air will escape from hole (E).
- 4) Tighten the setscrew (B) with the workpiece being clamped by the clamp until the air flow is interrupted. Then tighten the screw by another 2/4 turns (*) and lock it with the nut (C).

* The additional 2/4 turns serve for compensating thickness variations of rough surfaces.

Note: upon completion of the adjustment, the tip of the setscrew (B) must not project beyond the lower end of the clamp (level H).

Variants:

- > Safety clutch against overload during rotation (*upon request*).
- > Metal wiper (*upon request*)

METAL WIPER
UPON
REQUEST!

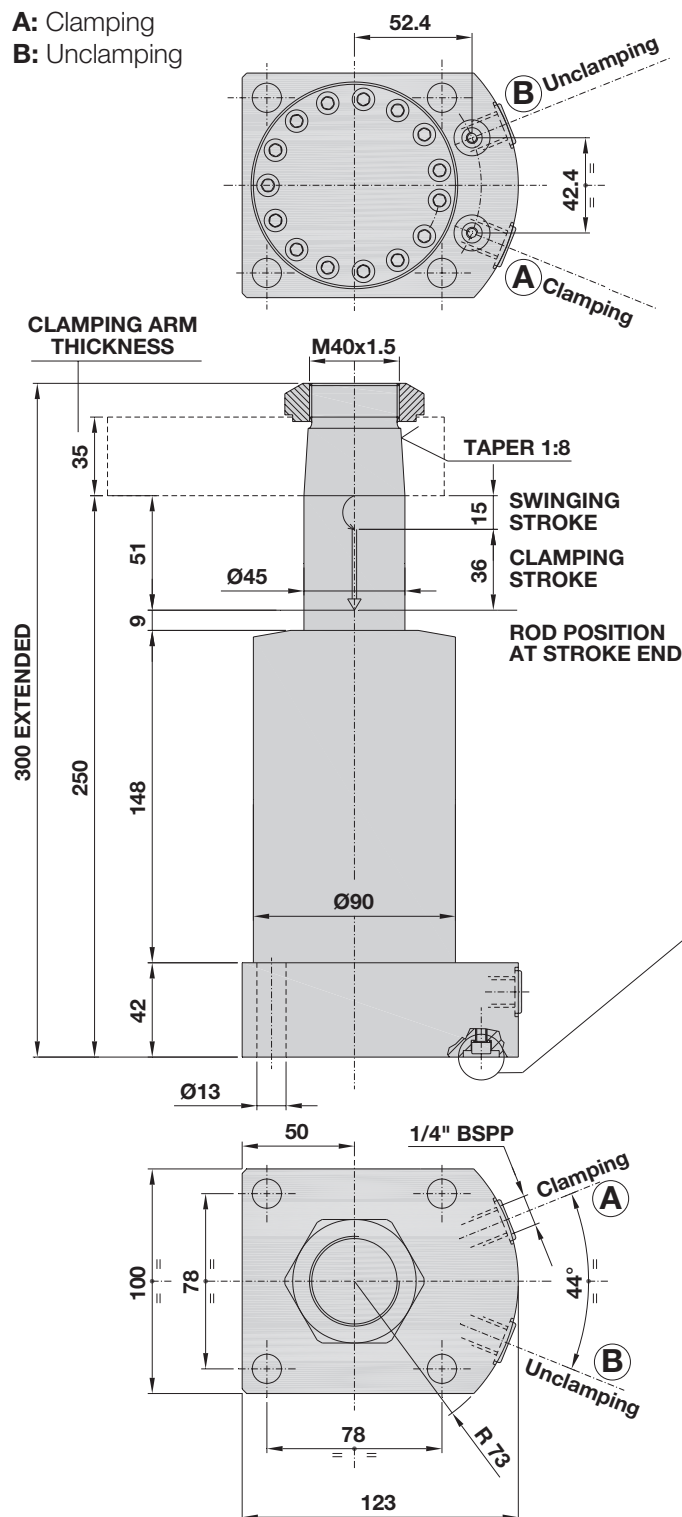

HYDROBLOCK
INNOVATIVE ENGINEERING

Last update 09/2010

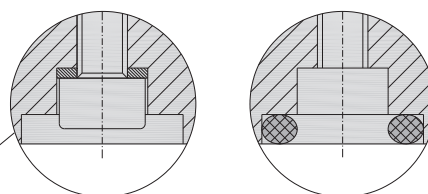
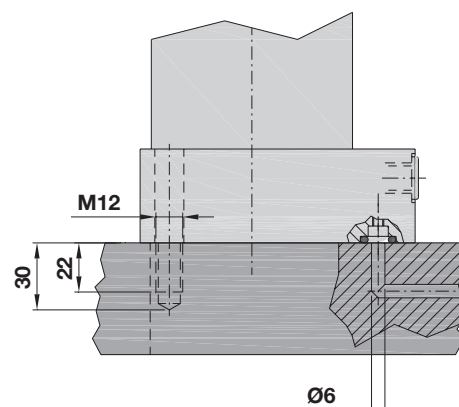
SR45.0 PD

DOUBLE-ACTING SWING CLAMPING CYLINDER WITH LOWER FLANGE

A: Clamping
B: Unclamping



Installation dimensions with O-ring manifold mounting



To use the O-ring ports, remove the plug and insert the O-rings Ø 4.34 x 3.53 (supplied)

Material:

- > **Piston/rod:** Hardened nitrided steel.
- > **Body:** Nitrided free machining steel.

Note: For ordering code, please refer to page 45.D
For accessories (clamping arms), see page 45.S1
For clamping force diagrams, see page 45.S2

STROKE mm		EFFECTIVE CYLINDER AREA		TOTAL OIL VOLUME	
		Cm ²		Cm ³	
Total	51	Clamping	Unclamping	Clamping	Unclamping
Swinging	15	17.3	33.2	88.2	169.3
Clamping	36				


Supplied:

- > TCEI M12x60 UNI 5931 12.9 mounting screws.
- > O-rings Ø 9.12 x 3.53

Variants:

- > Safety clutch against overload during rotation (*upon request*).
- > Metal wiper (*upon request*).

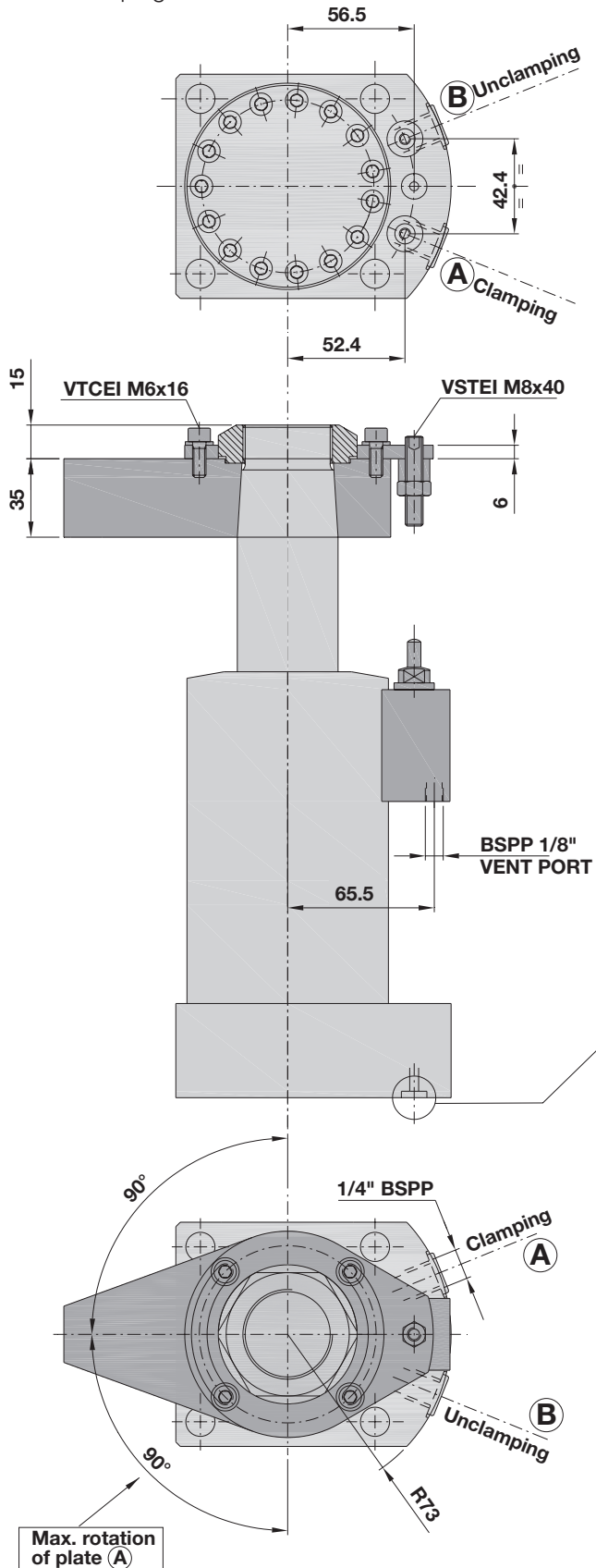
METAL WIPER
UPON
REQUEST!


HYDROBLOCK
INNOVATIVE ENGINEERING

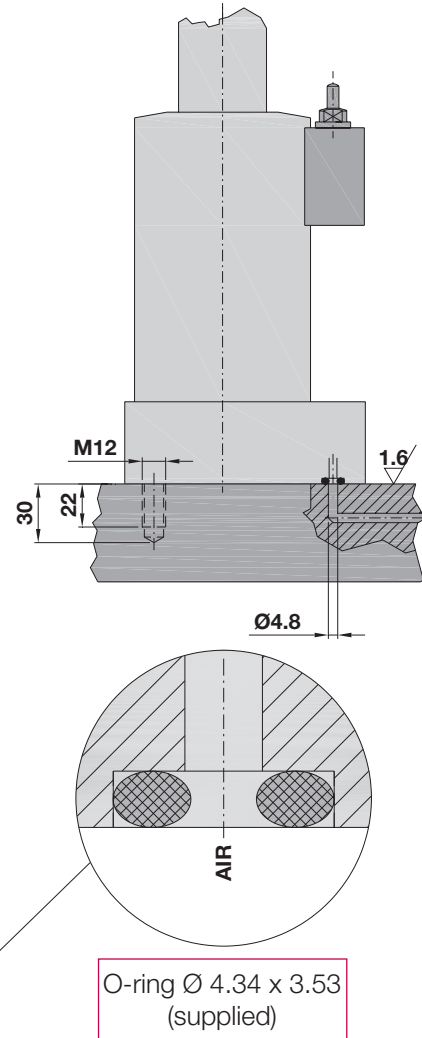
Last update 09/2010

DOUBLE-ACTING SWING CLAMPING CYLINDER WITH LOWER FLANGE AND CLAMP CLOSING CONTROL VALVE

A: Clamping
B: Unclamping



Installation dimensions with O-ring manifold mounting



Supplied:

- > O-ring Ø 4.34 x 3.538
- > TCEI M12x60 UNI 5931 12.9 mounting screws.

Variants:

- > Safety clutch against overload during rotation (*upon request*).
- > Metal wiper (*upon request*).

Material:

- > **Piston/rod:** Hardened nitrided steel.
- > **Body:** Nitrided free machining steel.
- > **Valve:** Stainless steel.

Note: for the adjustment of the clamp closing control valve, please refer to page 45.0/2

**METAL WIPER
AVAILABLE
ON REQUEST**

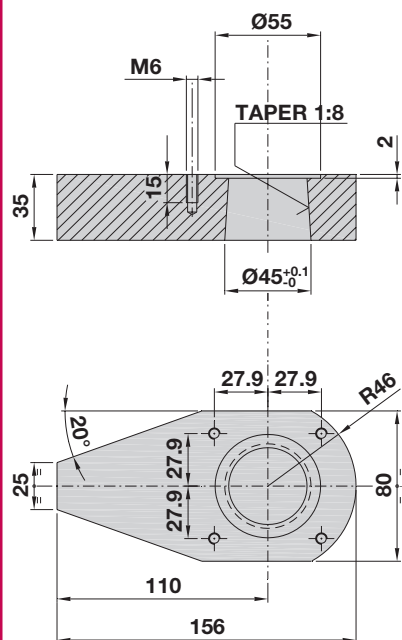


Last update 09/2010

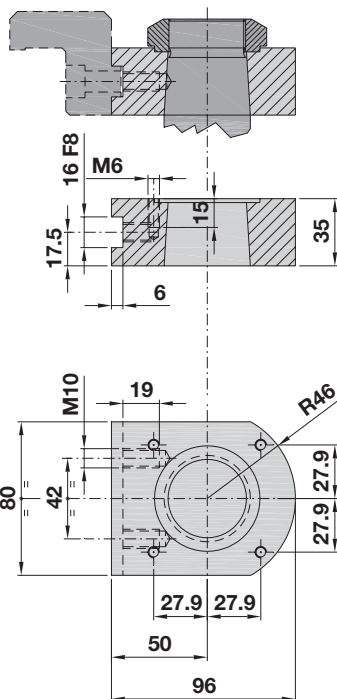
SR45 ACCESSORIES

S1

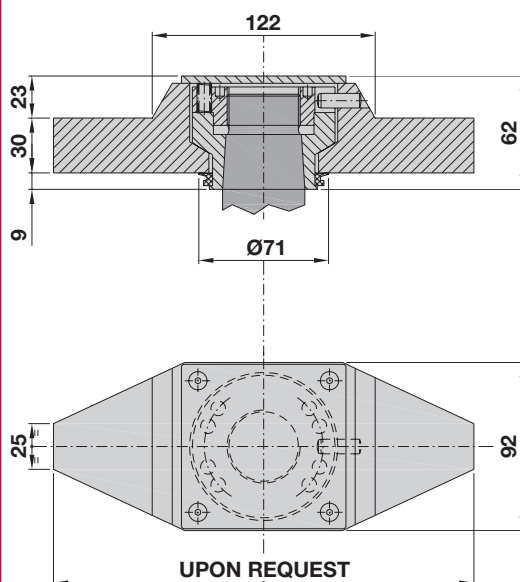
CLAMPING ARM 01.45



CLAMPING ARM 02.45

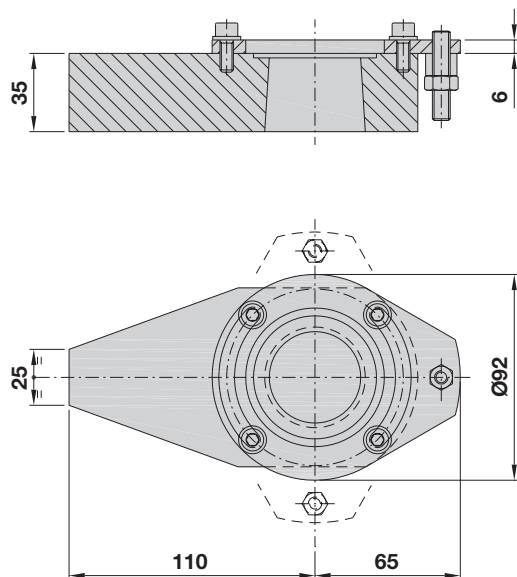


CLAMPING ARM 03.45



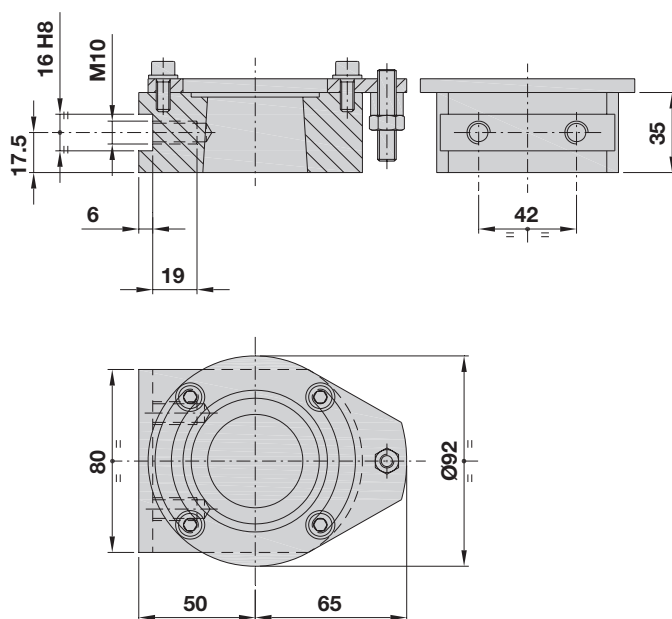
CLAMPING ARM 04.45

VERSION FOR CYLINDER WITH CLAMP CLOSING CONTROL VALVE



CLAMPING ARM 05.45

VERSION FOR CYLINDER WITH CLAMP CLOSING CONTROL VALVE



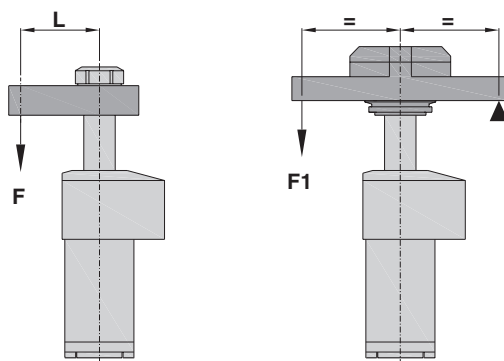
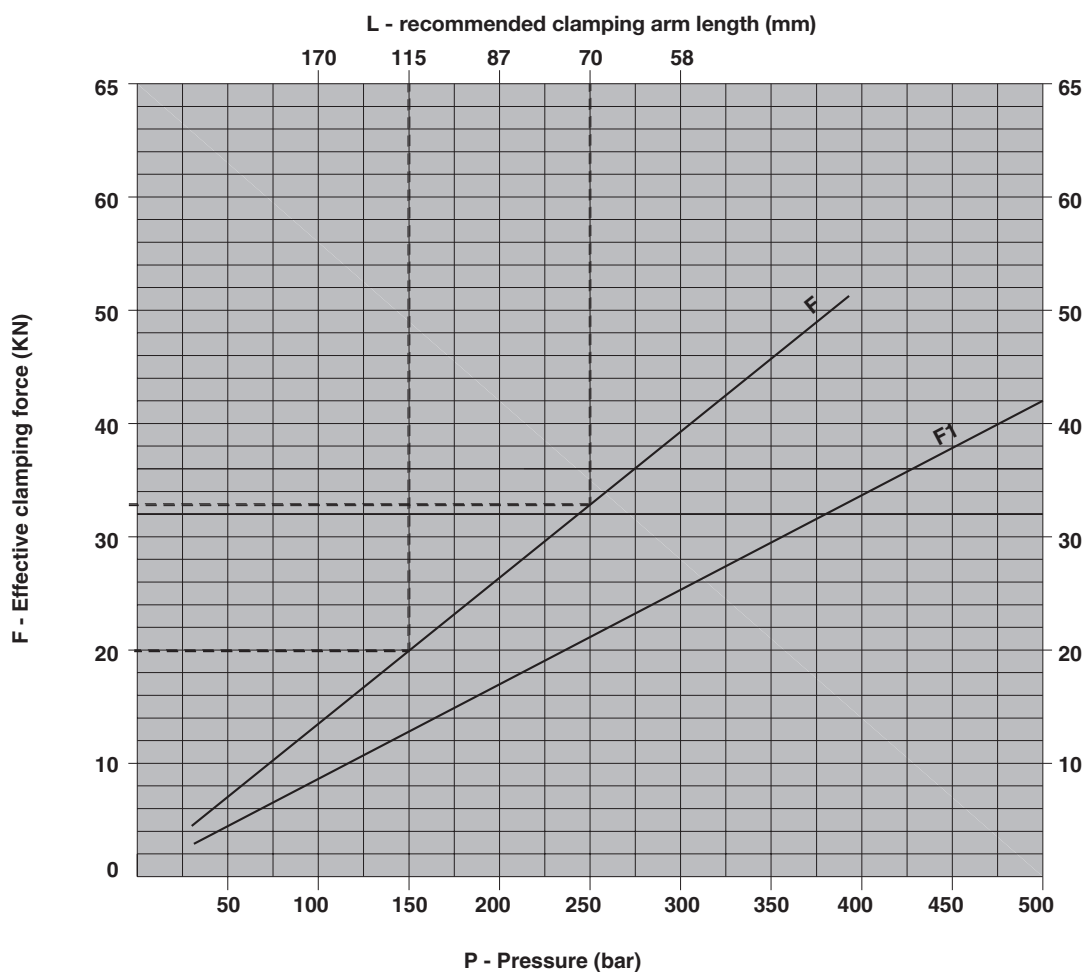
Material: C45 STEEL

SR45 DIAGRAM

S2



CLAMPING FORCE/PRESSURE RATIO

The diagram shows the effective clamping force **F** as a function of the operating pressure **P** and the recommended maximum clamping arm length **L**.



SR45

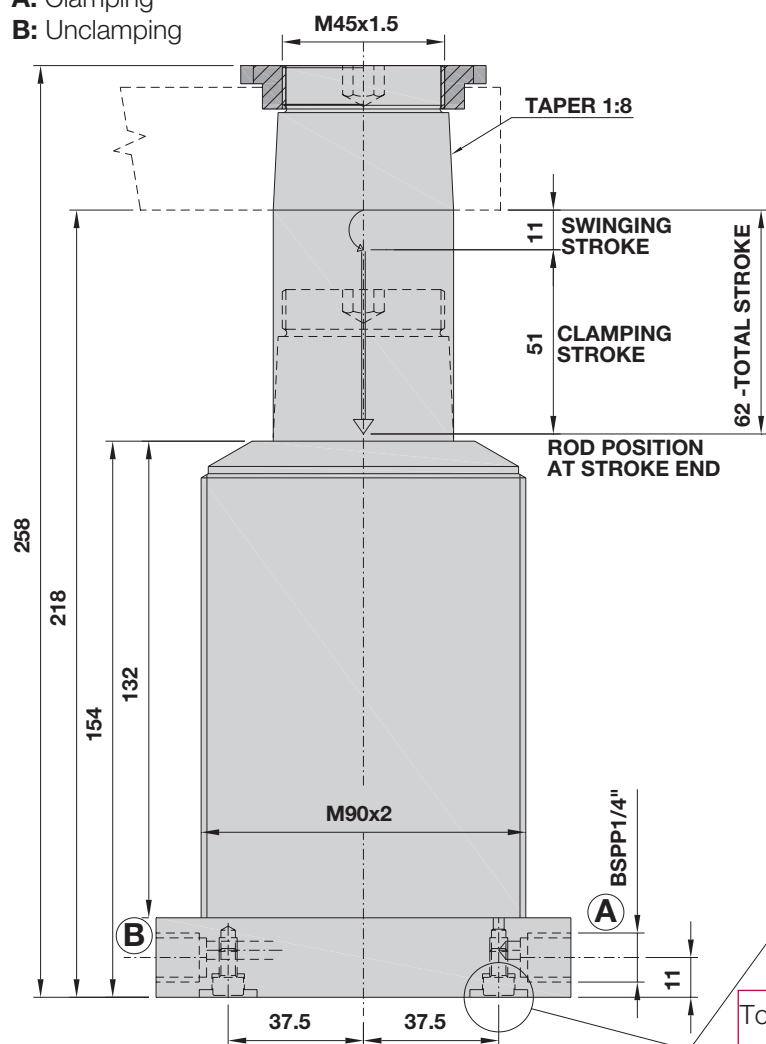
ORDERING CODE

0: Standard version with stroke 51 (15r + 36b)		0
FD: Double-acting version with upper flange		FD
PD: Double-acting version with lower flange		PD
L: Left-hand swinging		L
R: Right-hand swinging		R
0°-45°-60°-90°: Available swinging angles		0 - 45 - 60- 90
V: Version with clamp closing control valve (<i>upon request</i>)		V
F: Safety clutch against overload during rotation (<i>upon request</i>)		F
M: Metal wiper (<i>upon request</i>)		M

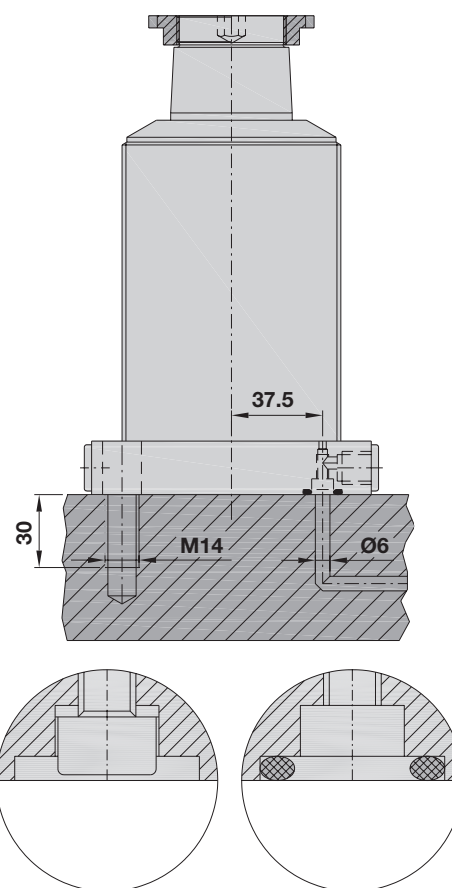
SR50.62 PD

DOUBLE-ACTING SWING CLAMPING CYLINDER WITH LOWER FLANGE

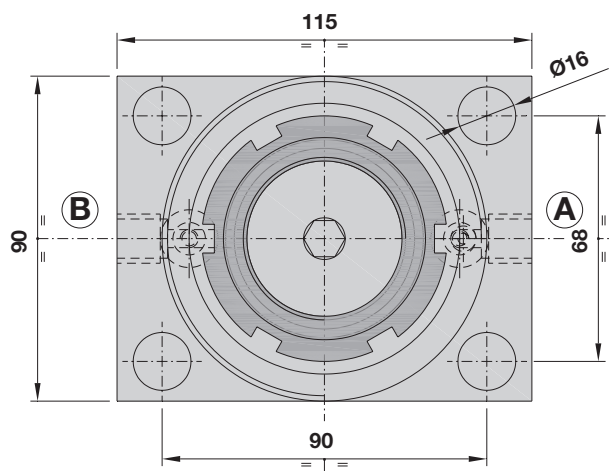
A: Clamping
B: Unclamping



Installation dimensions with O-ring manifold mounting



To use the O-ring ports, remove the plug and insert the 3043 O-rings Ø10.78 x 2.62 (supplied)



Material:

- > **Piston/rod:** Hardened nitrided steel.
- > **Body:** Nitrided free machining steel.

In **standard version**, these cylinders are equipped with the safety clutch against overload during rotation.

Supplied:

- > TCEI M14x50 UNI 5931 12.9 mounting screws.
- > 3043 O-rings Ø10.78 x 2.62

STROKE mm		EFFECTIVE CYLINDER AREA		TOTAL OIL VOLUME	
		Cm ²		Cm ³	
Total	62	Clamping	Unclamping	Clamping	Unclamping
Swinging	11	11.54	31.17	71.55	193.2
Clamping	51				

SR50.62 PD

DOUBLE-ACTING SWING CLAMPING CYLINDER WITH LOWER FLANGE

ORDERING CODE

0: Standard version with stroke 62 (11r + 51b)

0

FD: Double-acting version with upper flange

FD

L: Left-hand swinging

L

R: Right-hand swinging

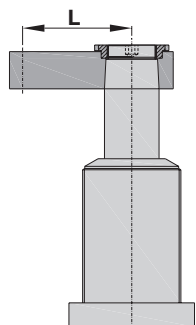
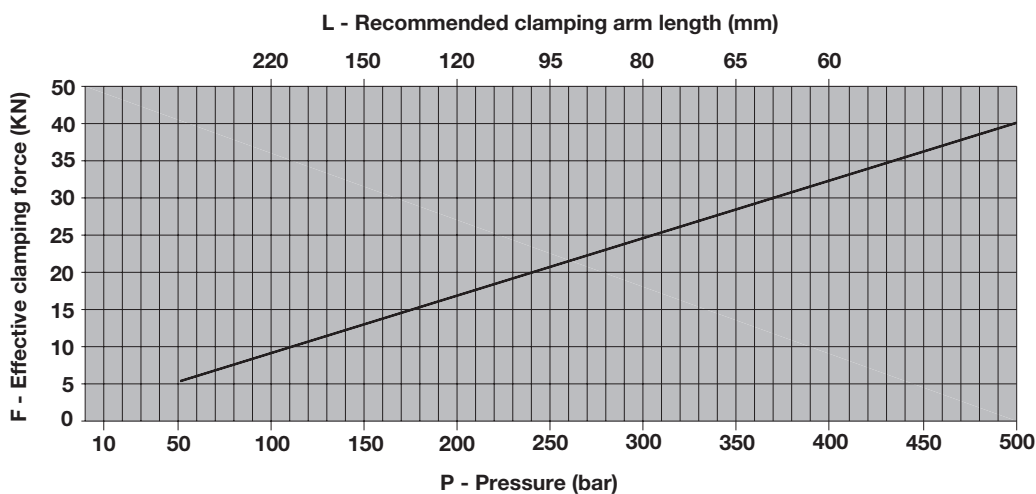
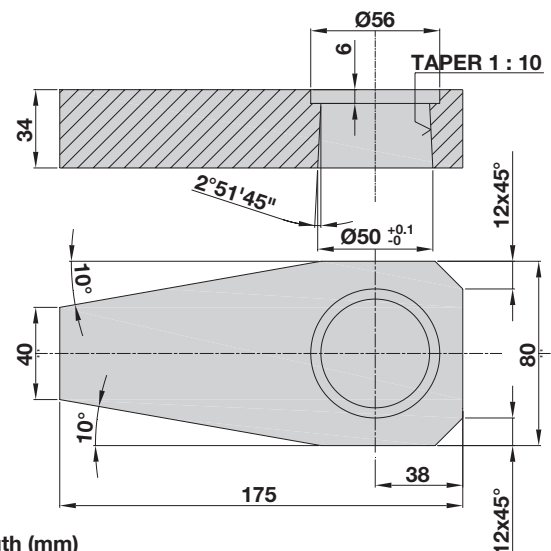
R

0°-45°-60°-90°: Available swinging angles

0 - 45 - 60- 90

Clamping force/pressure ratio

The diagram shows the effective clamping force **F** as a function of the operating pressure **P** and the recommended maximum clamping arm length **L**.





CG

CILINDRI A STAFFA VERTICALE

LINK CLAMP CYLINDER

HEBELSPANNER



CILINDRI A STAFFA VERTICALE

LINK CLAMP CYLINDER

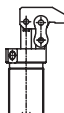
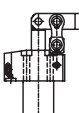
HEBELSPANNER

CG

CILINDRI A STAFFA VERTICALE

LINK CLAMP CYLINDER - HEBELSPANNER



MODELLO CILINDRO - CYLINDER TYPE ZYLINDERTYP		CG16.0 CG25FS CGF40.0 CGF50.0			
TIPOLOGIA CORPI DISPONIBILI AVAILABLE CYLINDER BODY VERSIONS VERFÜGBARE AUSFÜHRUNGEN DES ZYLINDERKÖRPERS	Filettato Threaded type Einschraubversion 	/	/	M40x1.5	M50x1.5
	Flangiato Upper flange Kopfflansch 	Sì Yes Ja	Sì Yes Ja	/	/
Versione a doppio effetto - Double-acting version Doppeltwirkende Ausführung		Sì Yes Ja	No No Nein	Sì Yes Ja	Sì Yes Ja
Versione a semplice effetto (ritorno a molla) Single-acting version (return spring) Einfachwirkende Ausführung (Federrückstellung)		No No Nein	Sì Yes Ja	Sì Yes Ja	Sì Yes Ja
Diametro stelo (mm) - Rod diameter (mm) Stangendurchmesser (mm)		16	25	12	20
Diametro pistone (mm) - Piston diameter (mm) Kolbendurchmesser (mm)		24	25	25	34
Corsa totale cilindro (mm) - Total cylinder stroke (mm) Zylinderhub insgesamt (mm)		24	32.5	18.5	24.5
Area cilindro in bloccaggio (cm²) Cylinder clamping area (cm²) Kolbenfläche beim Spannen (cm²)		4.5	4.9	4.9	9
Capacità olio in bloccaggio (cm³) Clamping oil volume (cm³) Ölvolumen beim Spannen (cm³)		10.8	15.9	9.1	22.2
Capacità olio in sbloccaggio (cm³) Unclamping oil volume (cm³) Ölvolumen beim Entspannen (cm³)		6	/	3.8	5.8
Pressione max. in lavoro (Bar) Maximum working pressure (bar) Maximaler Betriebsdruck (bar)		200	350	200	200
Forza nominale di bloccaggio alla pressione massima (Kn)* Nominal clamping force (kN)* Nennspannkraft (kN)*		9	17	9.8	18

(*) = VEDI GRAFICI SPECIFICI - (*) SEE PERFORMANCE DIAGRAMS
(*) SIEHE ENTSPRECHENDES LEISTUNGSDIAGRAMM

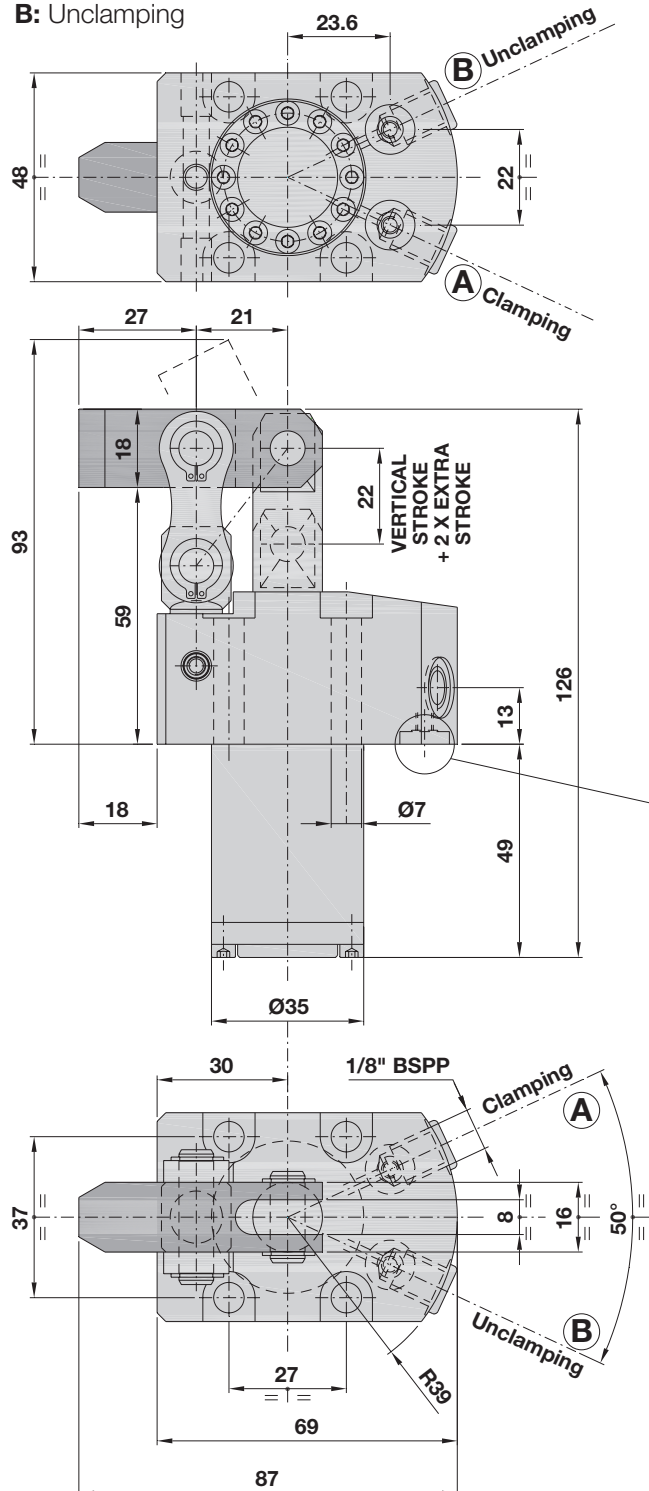
CG16.0 FD

DOUBLE-ACTING LINK CLAMP CYLINDER WITH UPPER FLANGE

MAX. WORKING PRESSURE = 200 BAR

A: Clamping

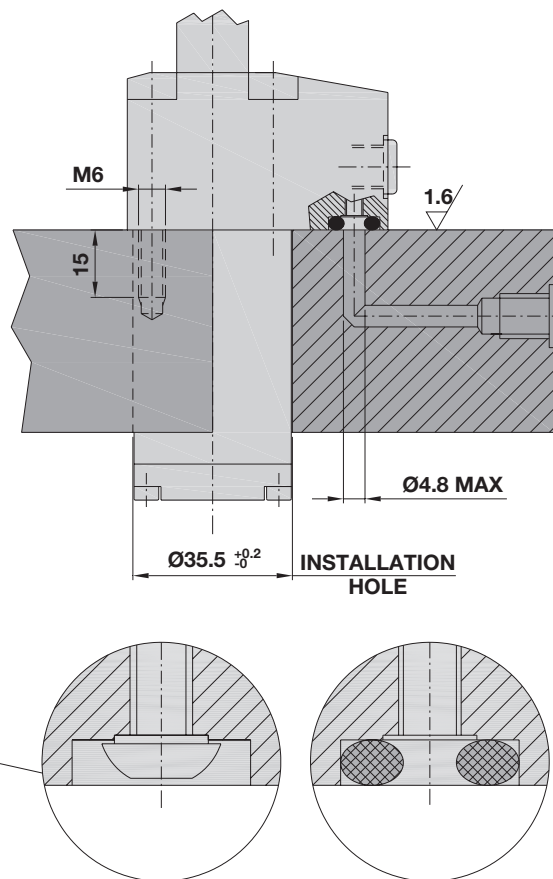
B: Unclamping



Material:

- > **Piston/rod:** Hardened nitrided steel.
- > **Body:** Nitrided free machining steel.
- > **Clamping arm:** C45 STEEL.

Installation dimensions with O-ring manifold mounting



To use the O-ring ports, remove the plug and insert the O-rings Ø 4.34 x 3.53 (supplied)

Supplied:

- > TCEI M6x40 UNI 5931 12.9 mounting screws.
- > O-rings Ø 4.34 x 3.53

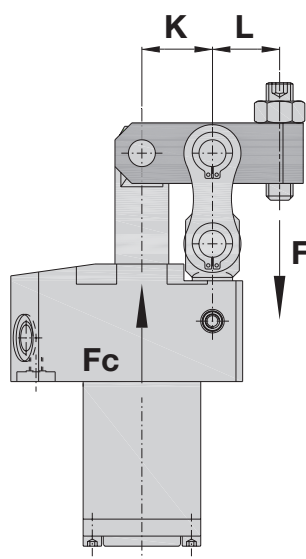
Note: Customized clamping arms are available on request.

STROKE mm		EFFECTIVE CYLINDER AREA		TOTAL OIL VOLUME	
		Cm ²		Cm ³	
Total	22	Clamping	Unclamping	Clamping	Unclamping
		4.52	2.51	9.95	5.5

CG16.0 FD

DOUBLE-ACTING LINK CLAMP CYLINDER WITH UPPER FLANGE

MAX. WORKING PRESSURE = 200 BAR



$$F_c = A \times P$$

$$F = F_c \times \frac{K}{L} \times 0.9$$

F = Clamping force on the workpiece

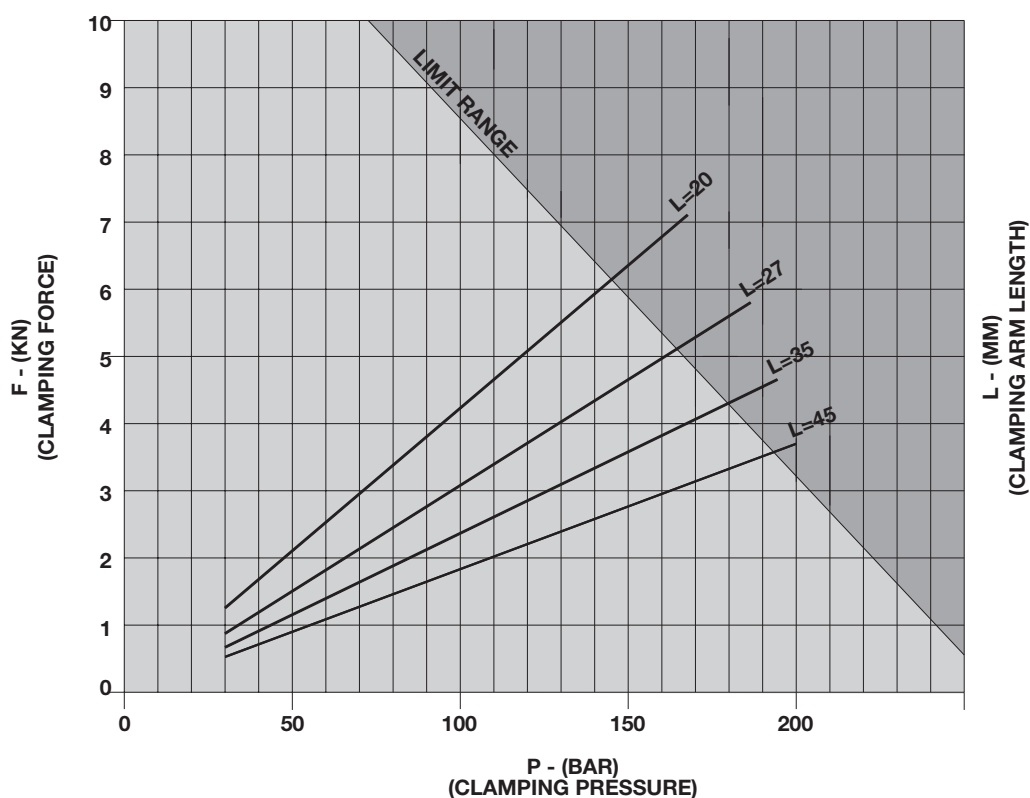
F_c = Cylinder force

K = 21 (mm)

L = Lever arm (mm)

A = Cylinder area (4,52 cm²)

P = Working pressure



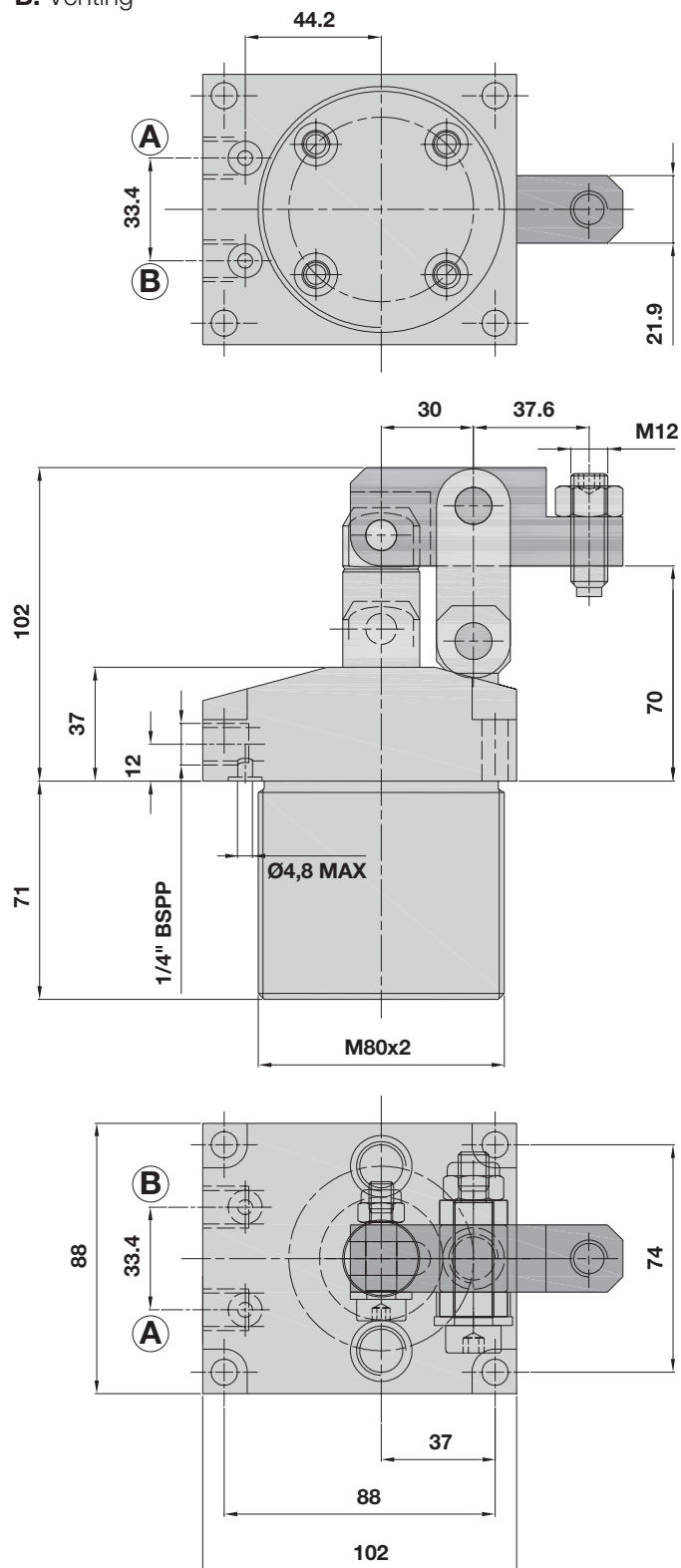
CG25 FS

SINGLE-ACTING LINK CLAMP CYLINDER WITH THREADED BODY

MAX. WORKING PRESSURE = 350 BAR

A: Clamping

B: Venting



The CG25 FS link clamp cylinder is a single-acting clamping cylinder with flanged body.

This extremely compact cylinder is designed for high clamping forces at low pressures.

The lever motion of the clamping arm ensures easy loading and unloading of the workpiece and makes it suitable for use in restricted space conditions.

The clamping happens through the G 1/4" **A** port.

The venting **B** port is provided with a removable filter plug to protect the inside of the cylinder.

To avoid any damaging liquid pollution inside of the cylinder, we recommend using a proper venting circuit on the B port. In this case, remove the filter plug.

Note: Due to the large clamping areas and the substantial load losses caused when a high number of cylinders are operated in complex hydraulic circuits, the opening cycle of single-acting cylinders may be slowed down and considerably affected. In order to ensure rapid and safe operating cycles, we recommend using double-acting cylinders for this type of application.

Upon request also available in double-acting version (code CG25 FD).

Supplied:

- > TCEI M8x35 UNI1593112.9 mounting screws
- > O-rings

Option:

Customized clamping arms are available on request.

STROKE mm	EFFECTIVE CYLINDER AREA		TOTAL OIL VOLUME	
	Cm ²		Cm ³	
	Clamping	Unclamping	Clamping	Unclamping
Total 32.5	4.9	/	16	/

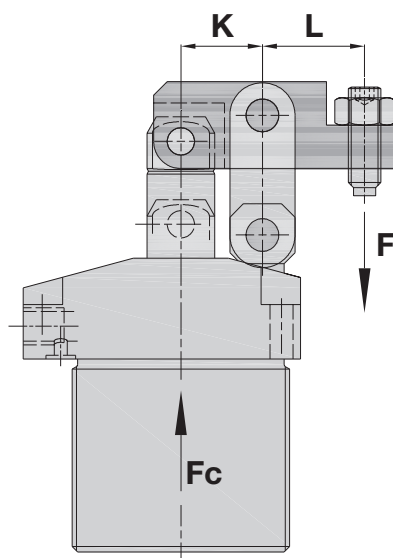
Material:

- > **Piston/rod:** Hardened, ground, nitrided steel.
- > **Cylinder body:** Nitrided free machining steel.
- > **Clamping arm:** C45 STEEL.

CG25 FS

SINGLE-ACTING LINK CLAMP CYLINDER WITH THREADED BODY

MAX. WORKING PRESSURE = 350 BAR



$$F_c = A \times P$$

$$F = F_c \times \frac{K}{L} \times 0.9$$

F = Clamping force on the workpiece

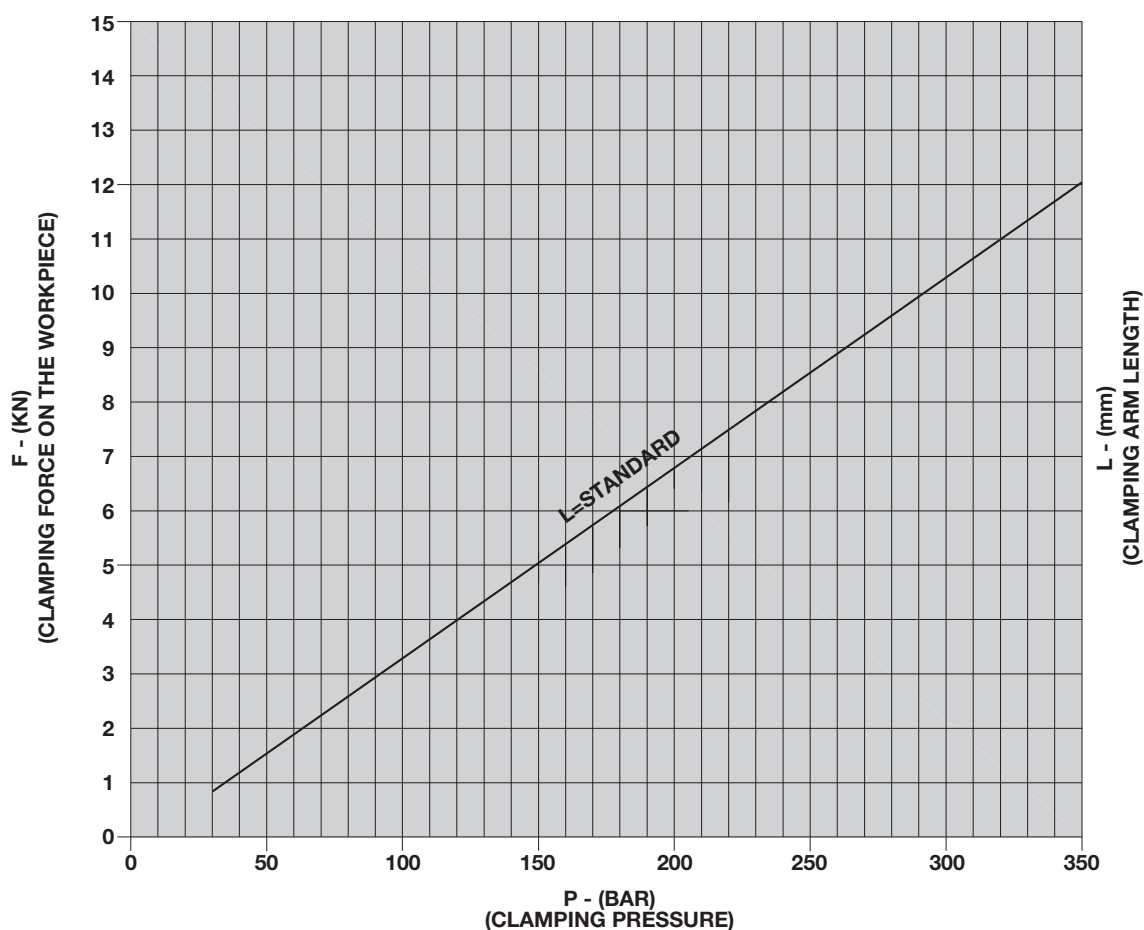
F_c = Cylinder force

K = 30 (mm)

L = Lever arm (mm)

A = Cylinder area (4,9 cm²)

P = Working pressure

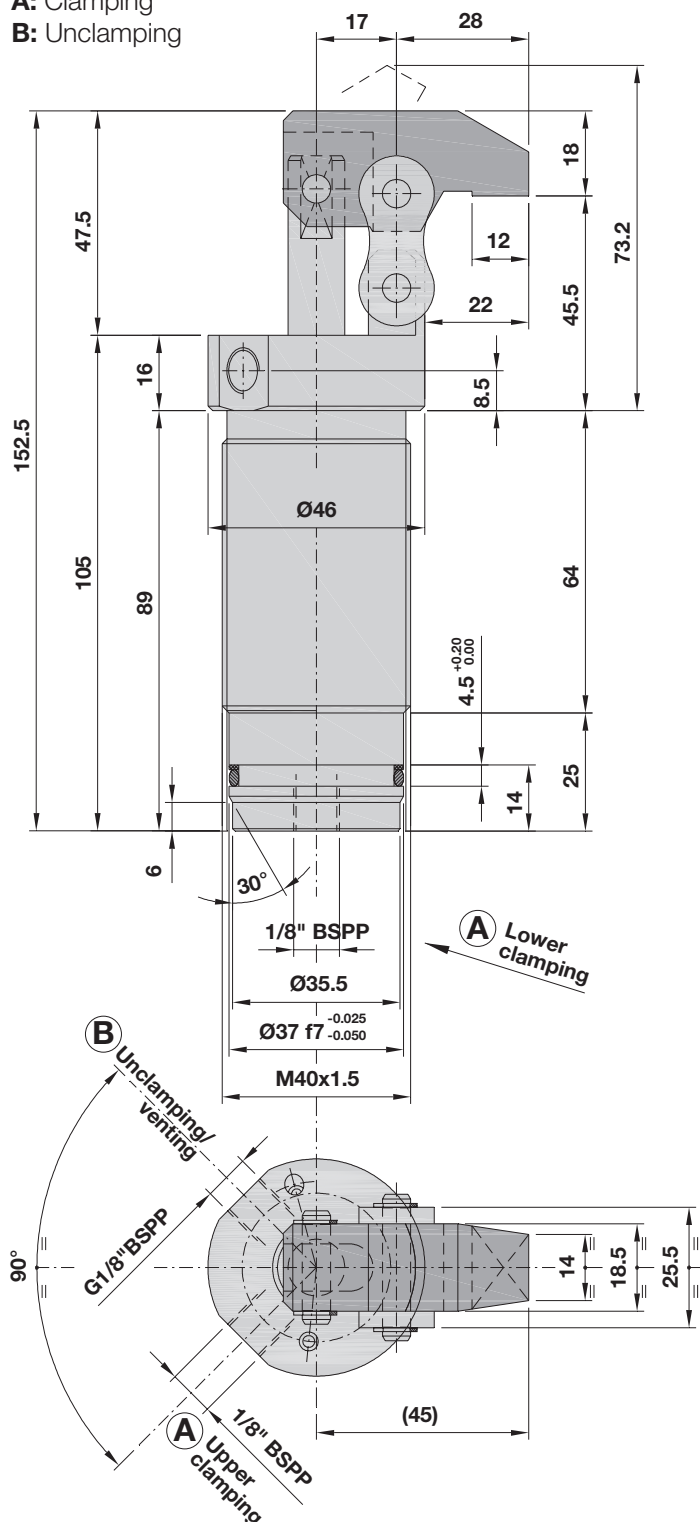


CGF40.0

SINGLE-/DOUBLE-ACTING LINK CLAMP CYLINDER WITH THREADED BODY

MAX. WORKING PRESSURE = 200 BAR

A: Clamping
B: Unclamping



Material:

- > **Piston/rod:** Hardened nitrided steel.
- > **Cylinder body:** Nitrided free machining steel.
- > **Clamping arm:** C45 STEEL.

The CGF40.0 link clamp cylinder is available in singleacting version with spring return (CGF40S) or as doubleacting hydraulic cylinder (CGF40D).

All cylinders of this type are provided with three 1/8" BSPP ports: two alternative **A** ports to clamp (on the bottom and upper body parts) and one **B** port to release the pressure.

With the single-acting type, the venting **B** port is provided with a removable filter plug to protect the inside of the cylinder.

To avoid any damaging liquid pollution inside of the cylinder, we recommend using a common venting circuit on the B port. In this case, remove the filter plug.

Note: Due to the large clamping areas and the substantial load losses caused when a high number of cylinders are operated in complex hydraulic circuits, the opening cycle of single-acting cylinders may be slowed down and even considerably affected. In order to ensure rapid and safe operating cycles, we recommend using double-acting cylinders in this case.

Variants:

- > **CGF40.0S:** Single-acting version with spring return.
- > **CGF40.0D:** Double-acting version.

Supplied:

- > 1 M40x1.5 ring nut

Option:

Customized clamping arms are available on request.

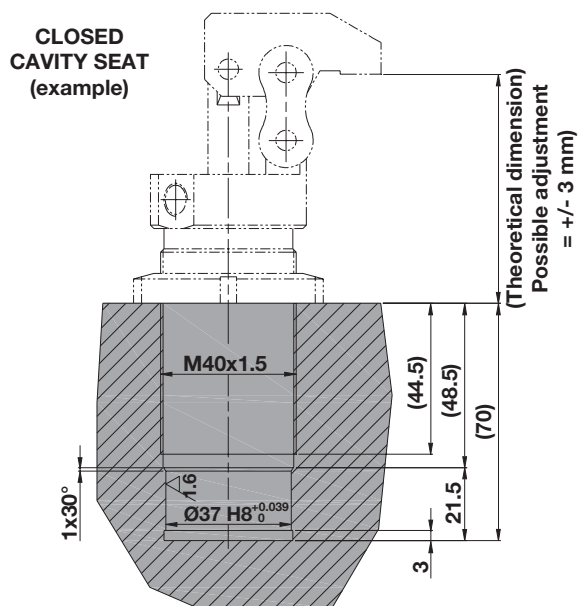
For mounting the cylinder in non-threaded holes, a second M40x1.5 threaded ring can be supplied upon request.

STROKE mm	EFFECTIVE CYLINDER AREA		TOTAL OIL VOLUME	
	Cm ²		Cm ³	
	Clamping	Unclamping	Clamping	Unclamping
Total 18.5	4.9	3.8	9.1	/

CGF40.0

SINGLE-/DOUBLE-ACTING LINK CLAMP CYLINDER WITH THREADED BODY

MAX. WORKING PRESSURE = 200 BAR



$$F_c = A \times P$$

$$F = F_c \times \frac{K}{L} \times 0.9$$

F = Clamping force on the workpiece

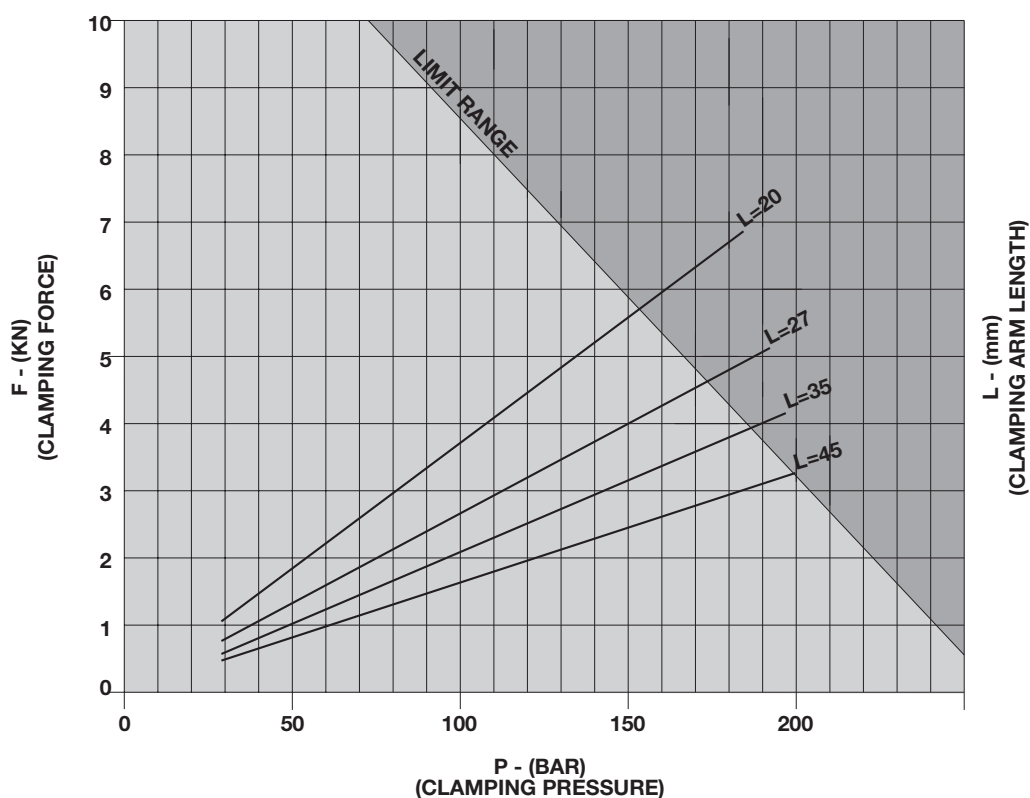
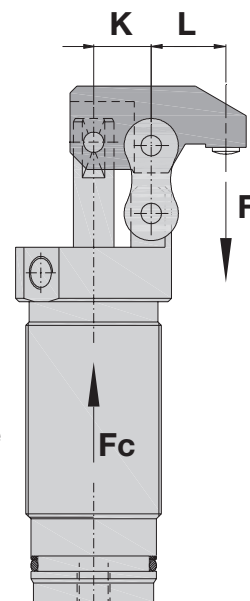
F_c = Cylinder force

K = 17 (mm)

L = Lever arm (mm)

A = Cylinder area (4,9 cm²)

P = Working pressure



HYDROBLOCK
INNOVATIVE ENGINEERING

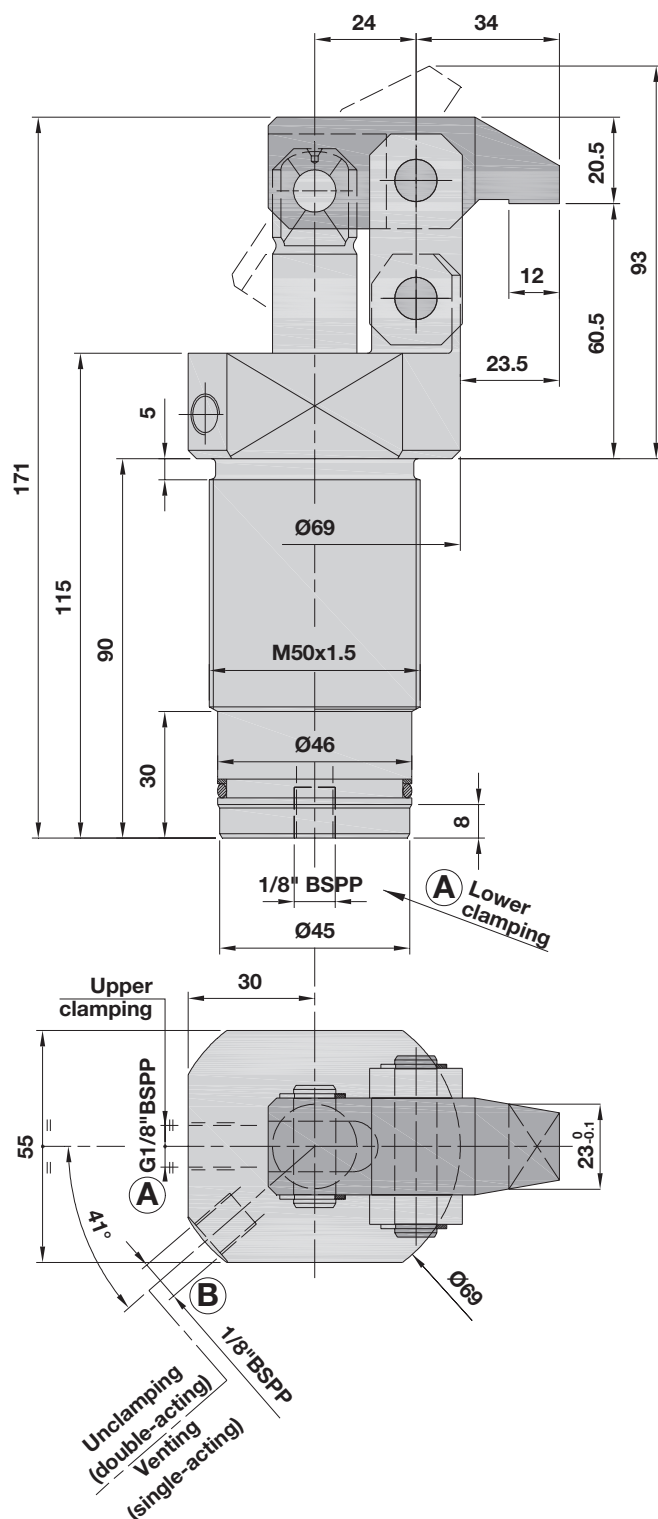
Last update 09/2010

CGF50.0

SINGLE-/DOUBLE-ACTING LINK CLAMP CYLINDER WITH THREADED BODY

MAX. WORKING PRESSURE = 200 BAR

A: Clamping
B: Unclamping/Venting



The compact CGF50.0 link clamp cylinder is designed for high clamping forces at low pressures.

The lever motion of the clamping arm ensures easy loading and unloading of the workpiece and makes it suitable for use in restricted space conditions.

The CGF50.0 link clamp cylinder with threaded body is available in single-acting version with spring return (CGF50S) or as double-acting hydraulic cylinder (CGF50D).

Thanks to the special design of the cylinder body, the single-acting version is suitable for closed cavity with builtin seat.

While clamping happens through the G 1/8" **A** port, port **B** is applied for unclamping in the double-acting version.

The venting B port of the double-acting version is provided with a removable filter plug to protect the inside of the

cylinder. To avoid any damaging liquid pollution inside of the cylinder, we recommend using a common venting circuit on the **B** port. In this case, remove the filter plug.

Note: Due to the large clamping areas and the substantial load losses caused when a high number of cylinders are operated in complex hydraulic circuits, the opening cycle of single-acting cylinders may be slowed down and even considerably affected. In order to ensure rapid and safe operating cycles, we recommend using double-acting cylinders in this case.

Supplied:

> 1 M50x1.5 ring nut

Option:

Customized clamping arms are available on request.

For mounting the cylinder in non-threaded holes, a second M50x1.5 threaded ring can be supplied upon request.

STROKE mm	EFFECTIVE CYLINDER AREA		TOTAL OIL VOLUME	
	Cm ²		Cm ³	
	Clamping	Unclamping	Clamping	Unclamping
Total 24.5	9	5.9	22.2	14.5

Material:

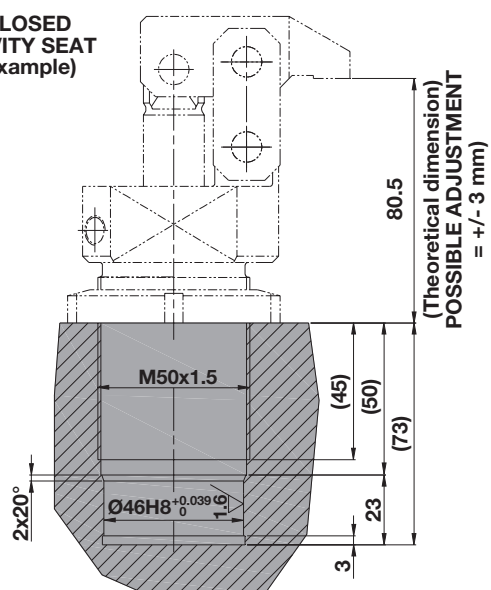
- > **Piston/rod:** Hardened nitrided steel
- > **Cylinder body:** Nitrided free machining steel
- > **Clamping arm:** C45 steel.

CGF50.0

DOUBLE-ACTING LINK CLAMP CYLINDER WITH UPPER FLANGE

MAX. WORKING PRESSURE = 200 BAR

CLOSED
CAVITY SEAT
(example)



$$F_c = A \times P$$

$$F = F_c \times \frac{K}{L} \times 0.9$$

F = Clamping force on the workpiece

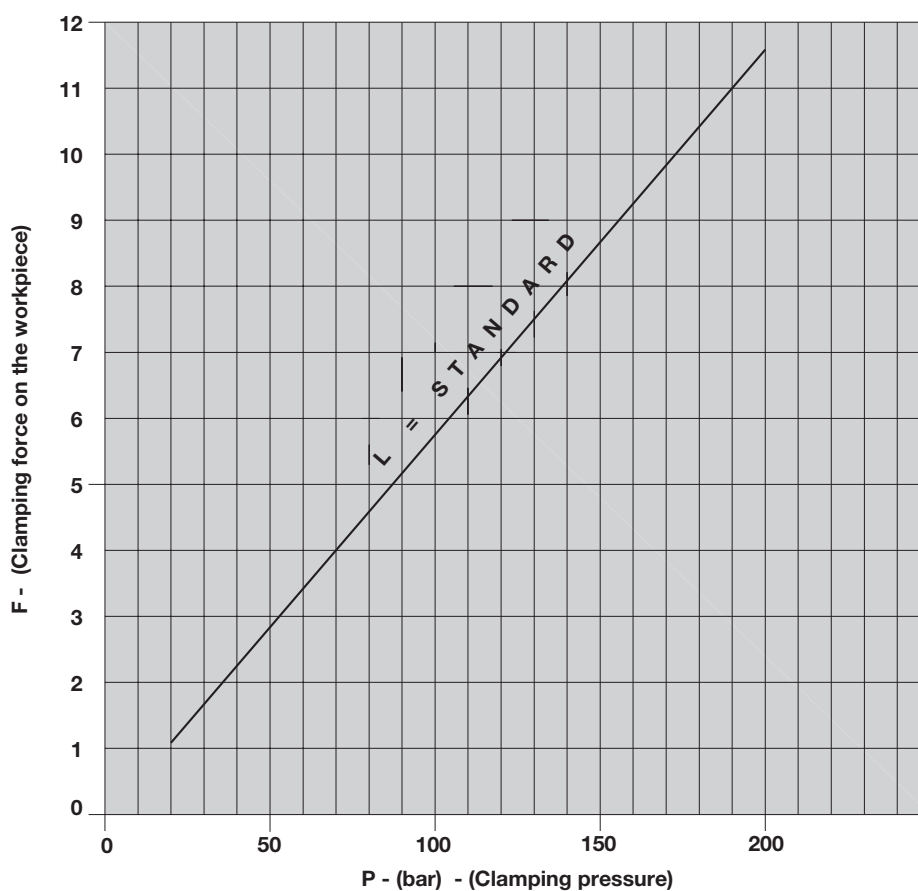
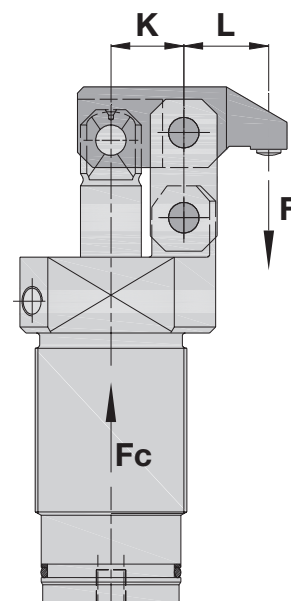
F_c = Cylinder force

K = 24 (mm)

L = Lever arm (mm)

A = Cylinder area (9 cm²)

P = Working pressure





CILINDRI TRAENTI E PREMENTI

DOUBLE ACTING PULL AND
PUSH-TYPE CYLINDERS

ZUG- UND DRUCKZYLINDER

BS
CT



CILINDRI TRAENTI E PREMENTI






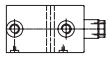
DOUBLE ACTING PULL AND
PUSH-TYPE CYLINDERS

ZUG- UND DRUCKZYLINDER

CILINDRI TRAENTI E PREMENTI

DOUBLE ACTING PULL AND PUSH-TYPE CYLINDERS

ZUG- UND DRUCKZYLINDER

MODELLO CILINDRO - CYLINDER TYPE - ZYLINDERTYP			CT16	CT22
TIPOLOGIA CORPI DISPONIBILI AVAILABLE CYLINDER BODY VERSIONS VERFÜGBARE AUSFÜHRUNGEN DES ZYLINDERKÖRPERS	Flangia - Upper flange - Kopfflansch		Sì Yes Ja	Sì Yes Ja
	Piede (a richiesta) - Lower flange (on request) Fußflansch (auf Anfrage)		*	*
	Cartuccia - Cartridge - Patrone		Sì Yes Ja	Sì Yes Ja
	Basetta - Block-type body - Blockkörper		/	/
Possibilità raschiatore metallico (solo optional) - Metal wiper (upon request only) Metallabstreifer (nur als Option verfügbar)			Sì - Yes Ja	Sì - Yes Ja
Pressione max. in lavoro (Bar) - Maximum working pressure (bar) Maximaler Betriebsdruck (bar)			500	500
Forza max. in spinta a 500 bar (Kn) - Maximum pushing force (kN) Maximale Druckkraft (kN)			22.1	44.4
Forza max. in trazione a 500 bar (Kn) - Maximum pulling force (kN) Maximale Zugkraft (kN)			12.3	25.8
Diametro stelo (mm) - Rod diameter (mm) - Stangendurchmesser (mm)			16	22
Diametro pistone (mm) - Piston diameter (mm) - Kolbendurchmesser (mm)			24	34
Corsa totale cilindro (mm) - Total cylinder stroke (mm) - Zylinderhub insgesamt (mm)			22	25
Area cilindro in spinta (cm²) - Cylinder pushing area (cm²) - Kolbenfläche/Druck (cm²)			4.52	9.07
Area cilindro in trazione (cm²) - Cylinder pulling area (cm²) - Kolbenfläche/Zug (cm²)			2.51	5.27
Capacità olio in spinta (cm³) - Pushing oil volume (cm³) - Ölvolumen/Druck (cm³)			10	22.6
Capacità olio in trazione (cm³) - Pulling oil volume (cm³) - Ölvolumen/Zug (cm³)			5.5	13.2

* = A RICHIESTA - * = ON REQUEST - * = AUF ANFRAGE

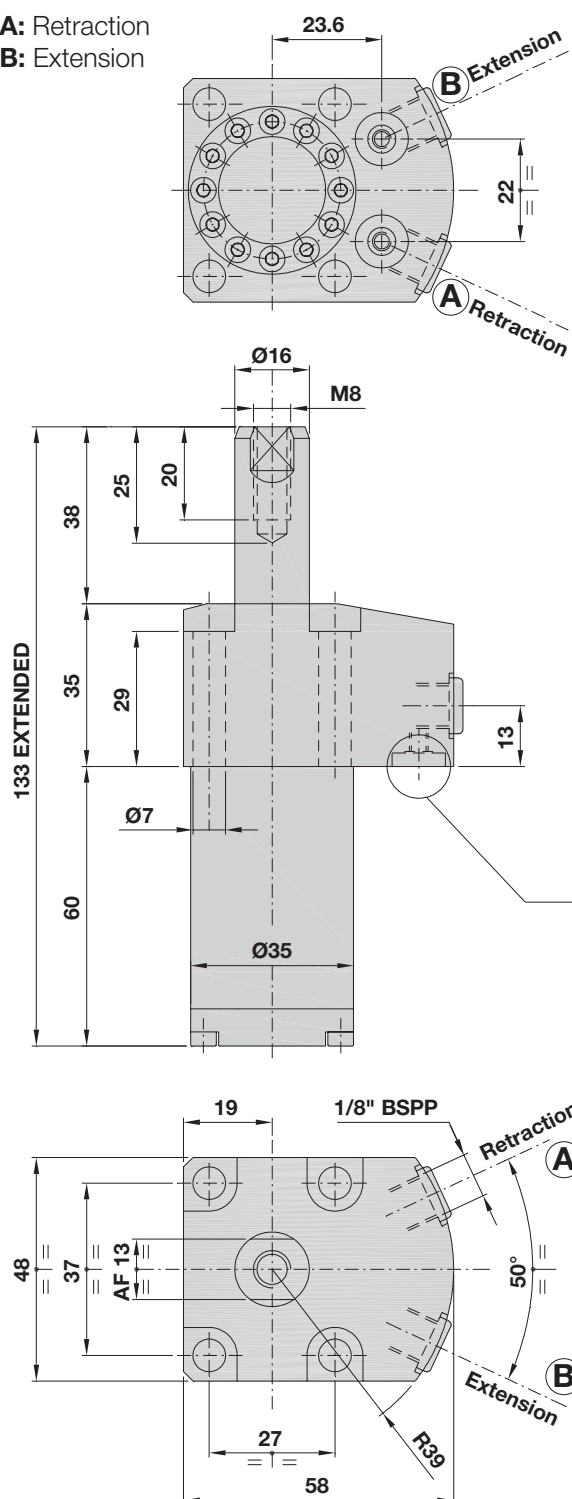


CT28	CT35	BS12	BS16	BS25	BS32	BS36
Si Yes Ja	Si Yes Ja	/	/	/	/	/
*	*	/	/	/	/	/
*	*	/	/	/	/	/
/	/	Si Yes Ja	Si Yes Ja	Si Yes Ja	Si Yes Ja	Si Yes Ja
Si - Yes Ja	Si - Yes Ja	No - No Nein	No - No Nein	No - No Nein	No - No Nein	No - No Nein
500	500	500	500	500	500	500
77.9	116.5	15.3	24	61.5	96.18	162.5
47.4	69	9.8	14.2	37.5	56.8	112.7
28	35	12	16	25	32	36
45	55	20	25	40	50	65
28	36	16	20	50	50	20
15.9	23.8	3.14	4.9	12.56	19.63	33.18
9.75	14.1	2	2.9	7.66	11.6	23
44.5	85.7	5	9.8	68.8	98.15	66.36
27.3	50.8	3.2	5.8	38.3	58	46

CT16.0 FD

DOUBLE-ACTING CLAMPING CYLINDER WITH UPPER FLANGE AND ANTIROTATION DEVICE

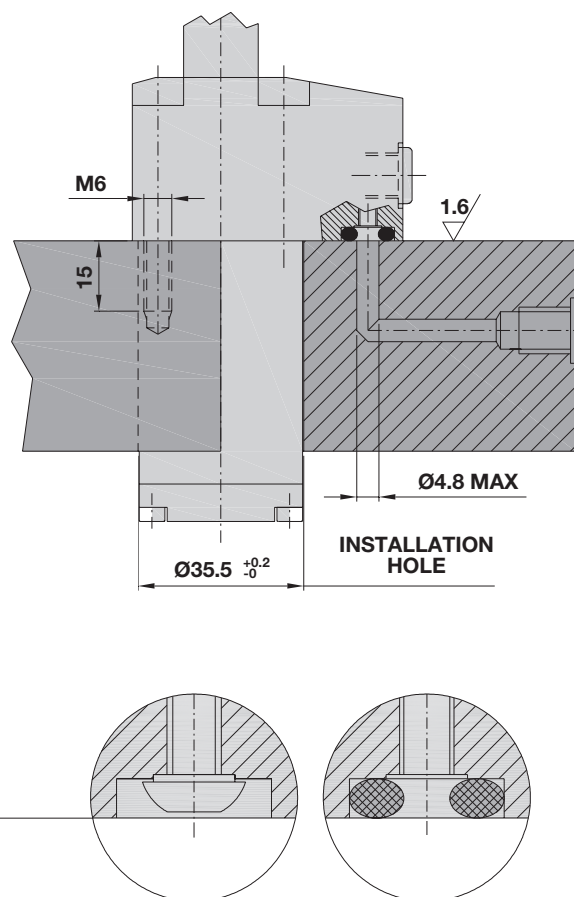
A: Retraction
B: Extension



Material:

- > **Piston/rod:** Hardened nitrided steel.
- > **Body:** Nitrided free machining steel.

Installation dimensions with O-ring manifold mounting



To use the O-ring ports, remove the plug and insert the O-rings Ø 4.34 x 3.53 (supplied)

Supplied:

- > TCEI M6x40 UNI 5931 12.9 mounting screws
- > O-rings Ø 4.34 x 3.53

Note: For ordering code, please refer to page CT-D

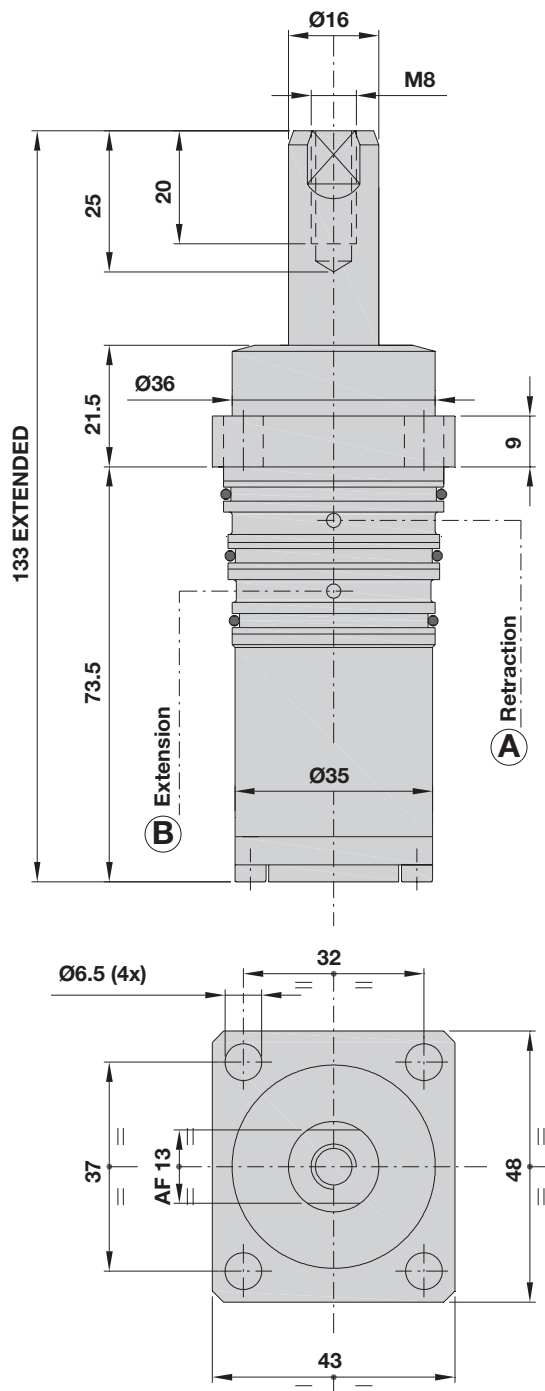
STROKE mm		EFFECTIVE CYLINDER AREA		TOTAL OIL VOLUME	
		Cm ²		Cm ³	
		Clamping	Unclamping	Clamping	Unclamping
Total	22	2.51	4.52	5.52	9.94

CT16.0 CD

DOUBLE-ACTING CLAMPING CYLINDER WITH CARTRIDGE BODY AND ANTIROTATION DEVICE

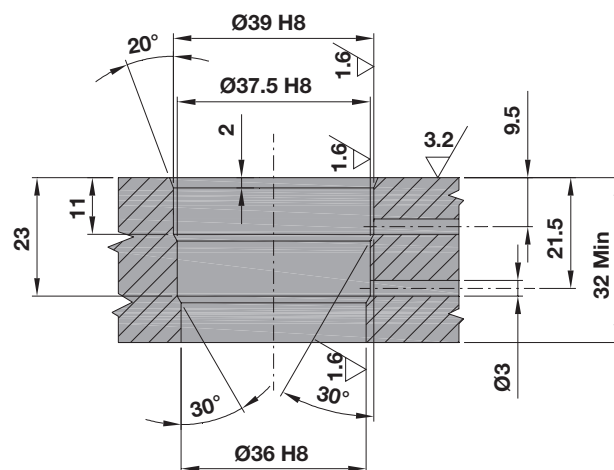
A: Retraction

B: Extension

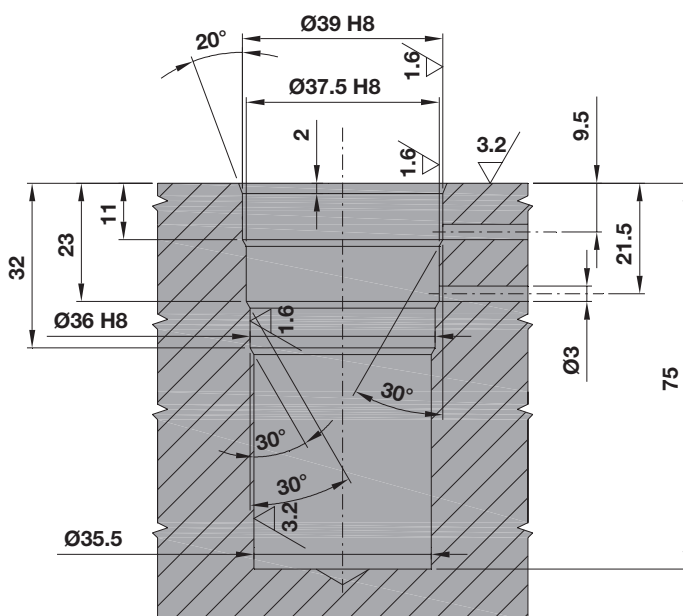


Installation dimensions

Cavity with crossing seat



Cavity with built-in seat



Supplied:

> TCEI M6x20 UNI 5931 12.9 mounting screws

Material:

> **Piston/rod:** Hardened nitrided steel.

> **Body:** Nitrided free machining steel.

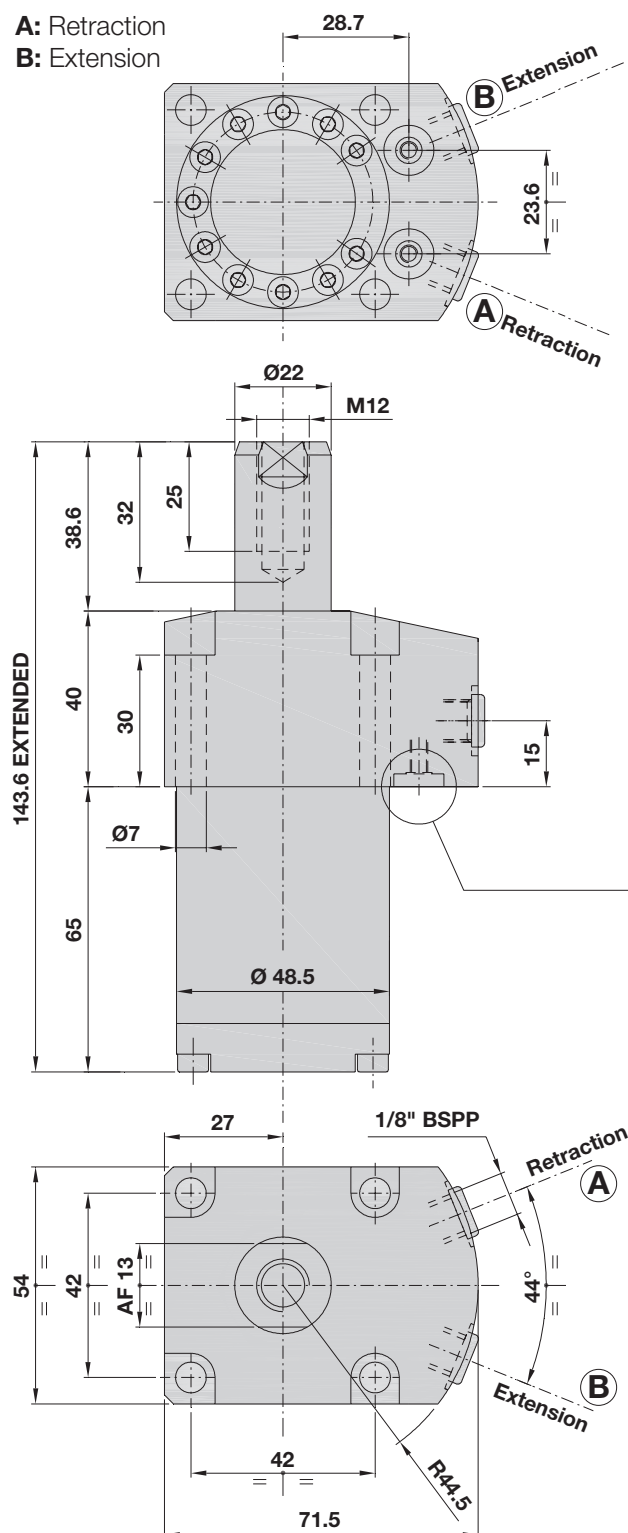
Note: For ordering code, please refer to page CT-D

STROKE mm		EFFECTIVE CYLINDER AREA		TOTAL OIL VOLUME	
		Cm ²		Cm ³	
Total	22	Clamping	Unclamping	Clamping	Unclamping
		2.51	4.52	5.52	9.94

CT22.0 FD

DOUBLE-ACTING CLAMPING CYLINDER WITH UPPER FLANGE AND ANTIROTATION DEVICE

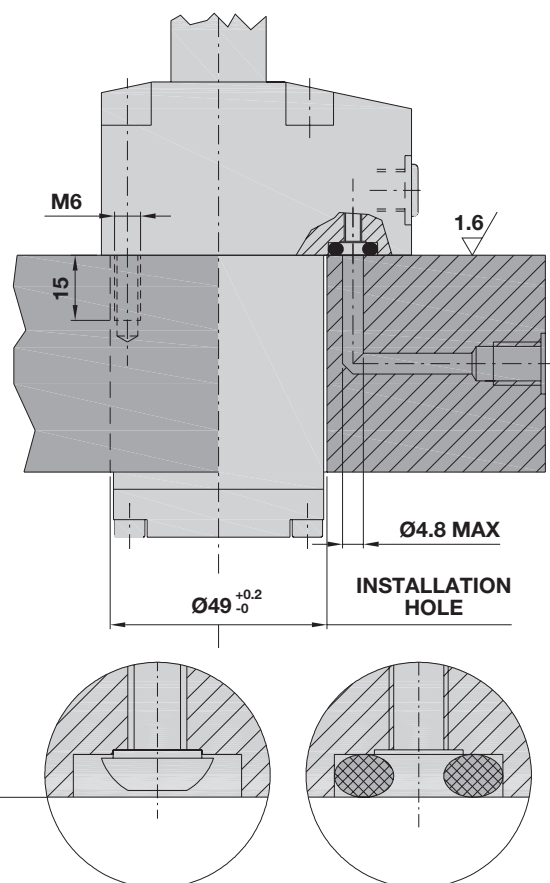
A: Retraction
B: Extension



Material:

- > **Piston/rod:** Hardened nitrided steel.
- > **Body:** Nitrided free machining steel

Installation dimensions with O-ring manifold mounting



To use the O-ring ports, remove the plug and insert the O-rings Ø 4.34 x 3.53 (supplied)

Supplied:

- > TCEI M6x40 UNI 5931 12.9 mounting screws.
- > O-rings Ø 4.34 x 3.53

Note : For ordering code, please refer to page CT-D

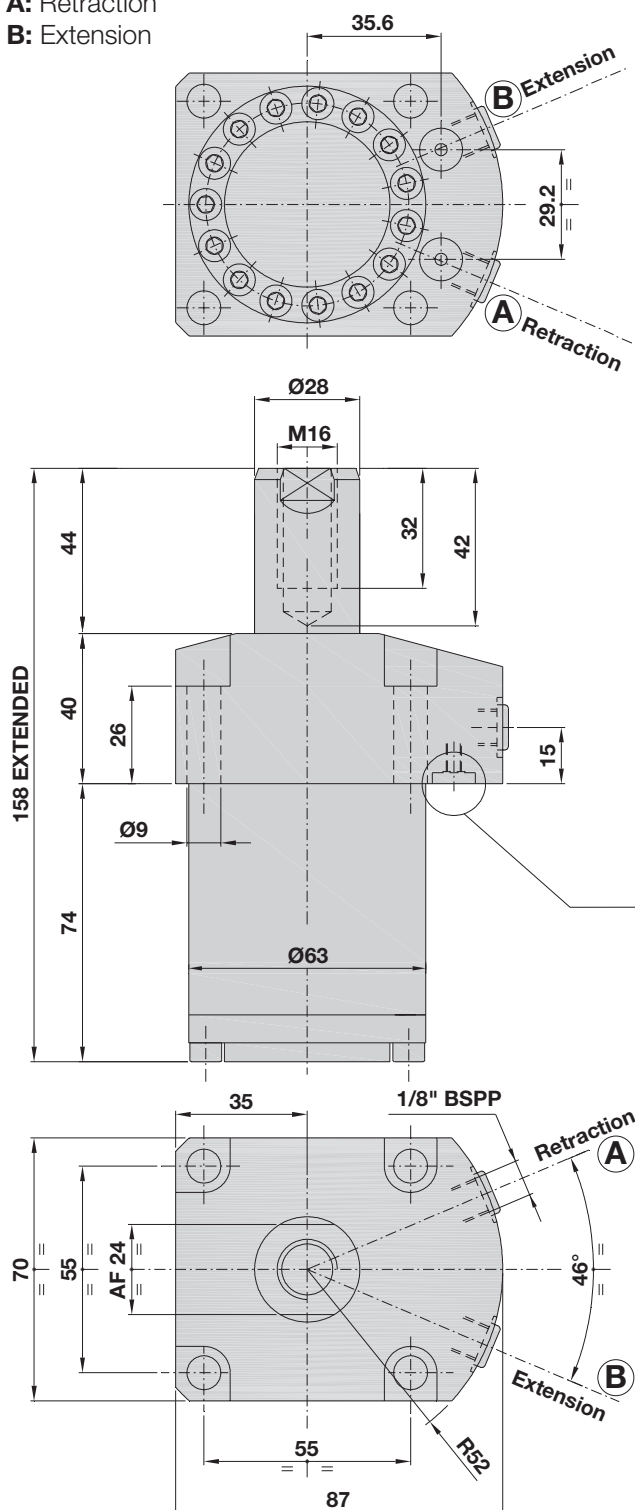
STROKE mm	EFFECTIVE CYLINDER AREA		TOTAL OIL VOLUME	
	Cm ²		Cm ³	
	Clamping	Unclamping	Clamping	Unclamping
Total 25	5.27	9.07	13.17	22.6

CT28.0 FD

DOUBLE-ACTING CLAMPING CYLINDER WITH UPPER FLANGE AND ANTIROTATION DEVICE

A: Retraction

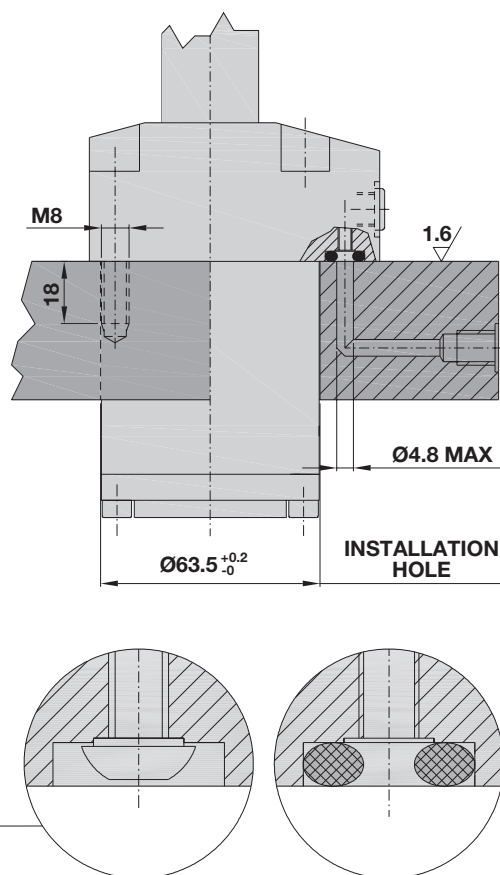
B: Extension



Material:

- > **Piston/rod:** Hardened nitrided steel.
- > **Body:** Nitrided free machining steel

Installation dimensions with O-ring manifold mounting



To use the O-ring ports, remove the plug and insert the O-rings Ø 4.34 x 3.53 (supplied)

Supplied:

- > TCEI M6x40 UNI 5931 12.9 mounting screws
- > O-rings Ø 4.34 x 3.53

Note : For ordering code, please refer to page CT-D

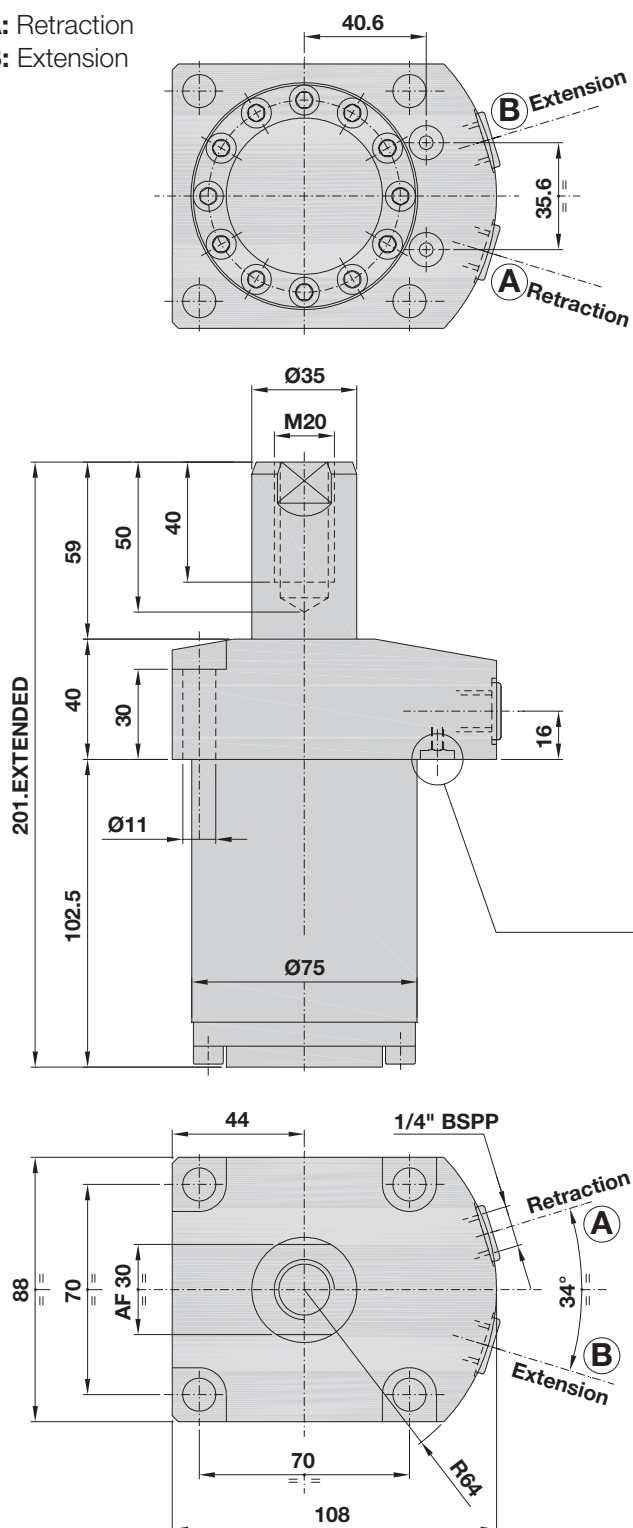
STROKE mm		EFFECTIVE CYLINDER AREA		TOTAL OIL VOLUME	
		Cm ²		Cm ³	
Total	28	Clamping	Unclamping	Clamping	Unclamping
		9.75	15.9	27.3	44.5

CT35.0 FD

DOUBLE-ACTING CLAMPING CYLINDER WITH UPPER FLANGE AND ANTIROTATION DEVICE

A: Retraction

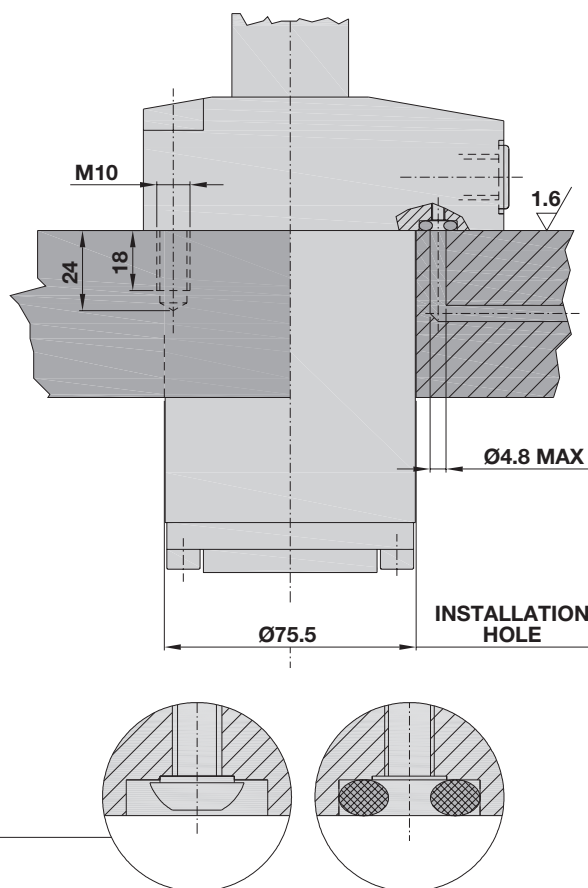
B: Extension



Material:

- > **Piston/rod:** Hardened nitrided steel.
- > **Body:** Nitrided free machining steel.

Installation dimensions with O-ring manifold mounting



To use the O-ring ports, remove the plug and insert the O-rings Ø 4.34 x 3.53 (supplied)

Supplied:

- > TCEI M10x45 UNI 5931 12.9 mounting screws.
- > O-rings Ø 4.34 x 3.53

Note : For ordering code, please refer to page CT-D

STROKE mm		EFFECTIVE CYLINDER AREA		TOTAL OIL VOLUME	
		Cm ²		Cm ³	
Total	36	Clamping	Unclamping	Clamping	Unclamping
		14.1	23.8	50.76	85.7

ORDERING CODE

CT: Double-acting cylinder	CT
16: Double-acting version of size 16	16
22: Double-acting version of size 22	22
28: Double-acting version of size 28	28
35: Double-acting version of size 35	35
0: Standard version (see table)	0
FD: Double-acting version with flange	FD
CD: Double-acting version with cartridge (only CT16 and CT 22)	CD

Cilindri disponibili

CYLINDER TYPE	STROKE (mm)	Version	
		FD	SI
CT16	22	CD	SI
CT22	25	FD	SI
		CD	SI
CT28	28	FD	SI
		CD	NO
CT35	36	FD	SI
		CD	NO

CT90SC

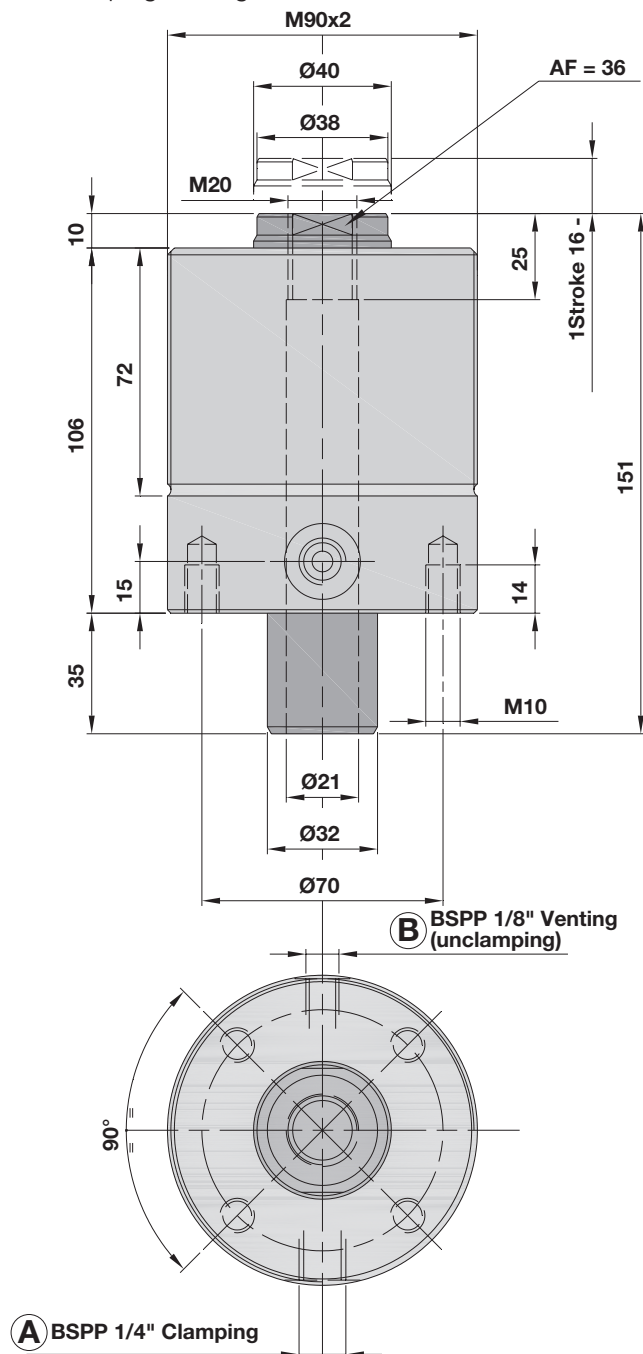
1

SINGLE- OR DOUBLE-ACTING CYLINDER WITH THREADED BODY AND HOLLOW ROD AND ANTIROTATION DEVICE

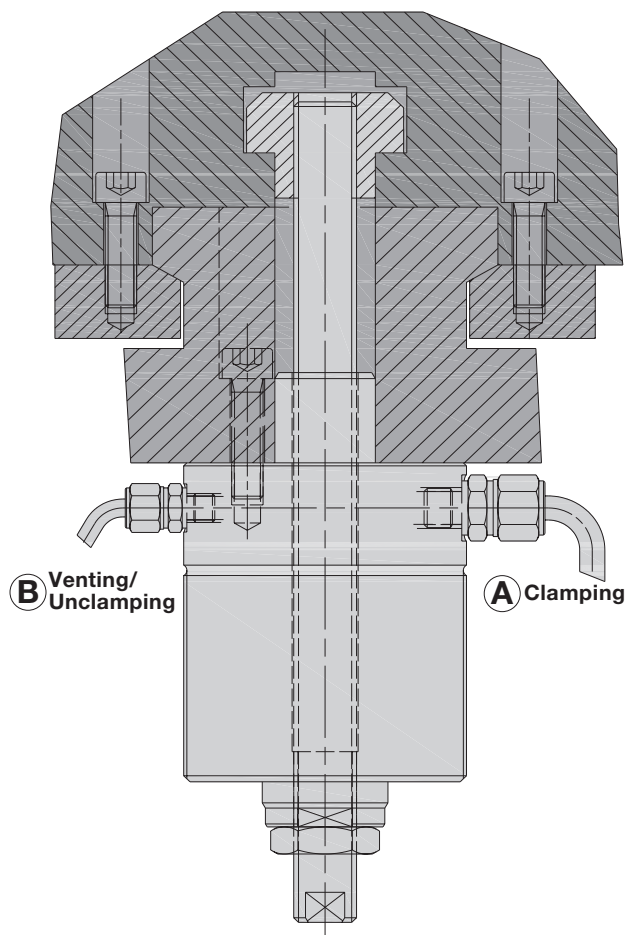
PRESSIONE MASSIMA=500BAR

A: Clamping

B: Unclamping/venting



Application example



These single- or double-acting cylinders with threaded body and hollow rod have been designed for compact axial clamping of workpieces, slides and columns, where high clamping forces are required.

Material:

- > **Piston/rod:** Hardened nitrided steel.
- > **Body:** Nitrided free machining steel.

Available versions:

- > **CT90SCS:** Single-acting version with spring return.
- > **CT90SCD:** Double-acting version.

CYLINDER	STROKE mm	EFFECTIVE CYLINDER AREA Cm ²		TOTAL OIL VOLUME Cm ³	
		Clamp.	Unclamp.	Clamp.	Unclamp.
CT90SCS	16	23.1	MECH.	37	MECH.
CT90SCD	32	23.1	18.6	74	59,5

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BS12

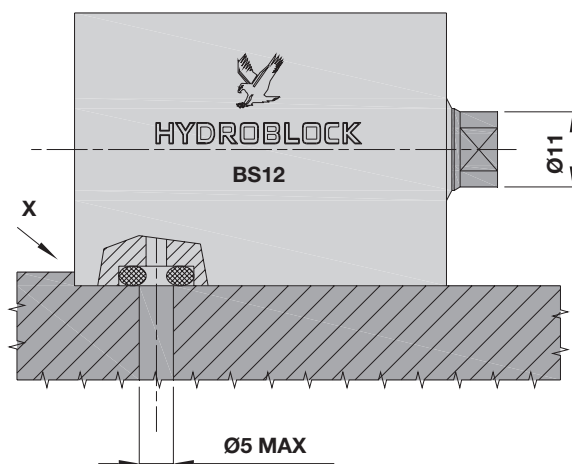
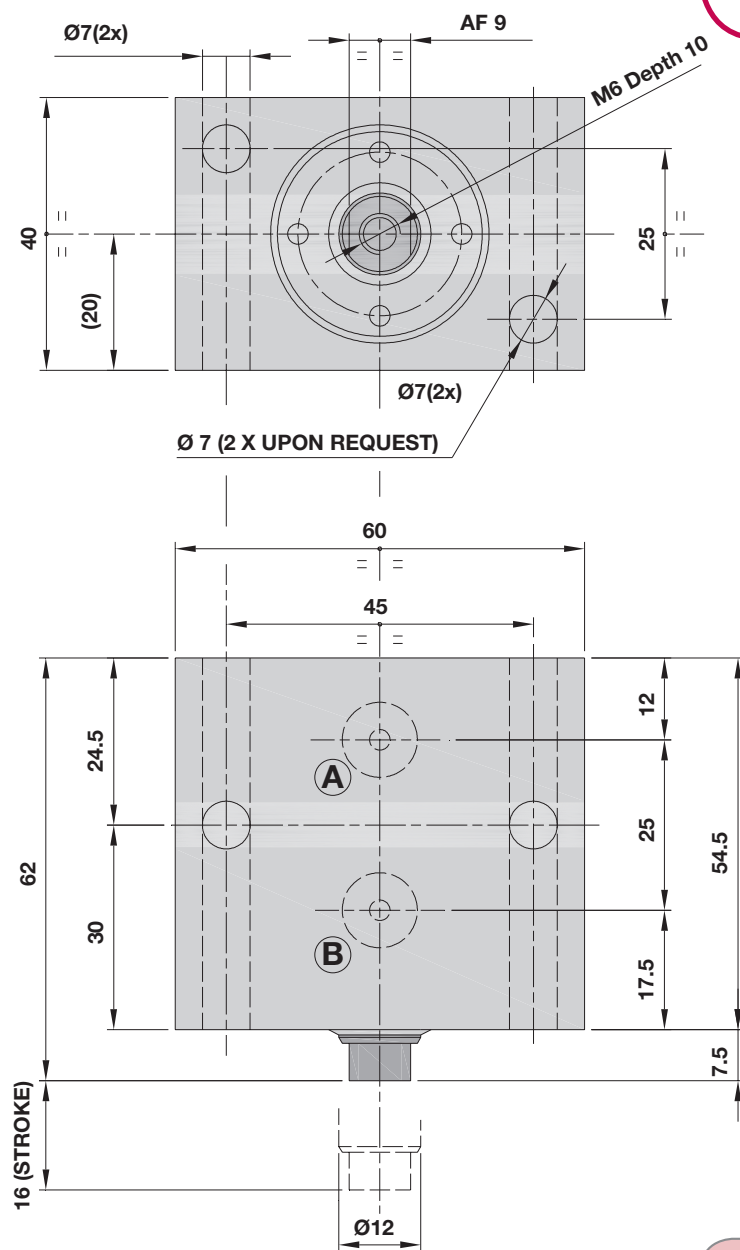
DOUBLE-ACTING BLOCK CYLINDER WITH FLANGE

MAX. WORKING PRESSURE = 500 BAR

A: Extension

B: Retraction

These compact and versatile cylinders are designed for various applications such as clamping, punching, positioning, riveting, mould extraction, etc.



Mounting instructions

The installation of a support (X in the figure) as block cylinder back-up is recommended in order to prevent shear loads from acting only on the mounting bolts.

Supplied:

- > TCEI M6x50 mounting screws
- > 2 O-rings

Material:

- > **Piston/rod:** Hardened nitrided steel.
- > **Body:** Free machining steel.

Note: Customized versions are available upon request. Please contact our technical office for special requirements regarding stroke or mounting conditions.

SERIES BS12 BLOCK CYLINDER				
STROKE	EFFECT. CYLINDER AREA/PUSHING	EFFECTIVE CYLINDER AREA/PUSHING	EFFECTIVE CYLINDER AREA/PULLING	EFFECTIVE CYLINDER AREA/PULLING
mm	Cm ²	Cm ³	Cm ²	Cm ³
16	3.14	5	2	3.2

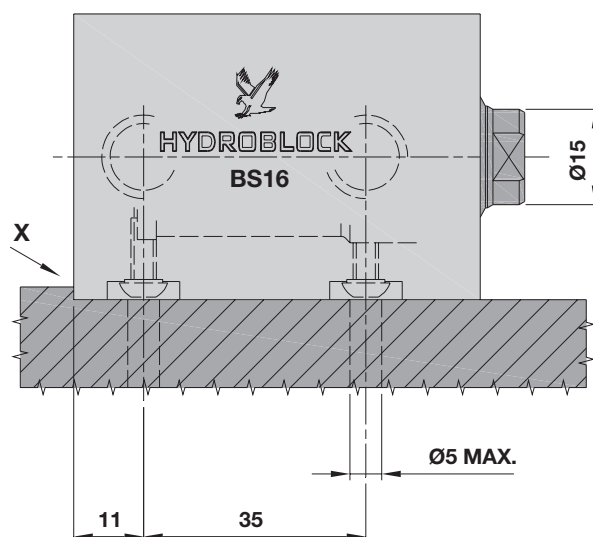
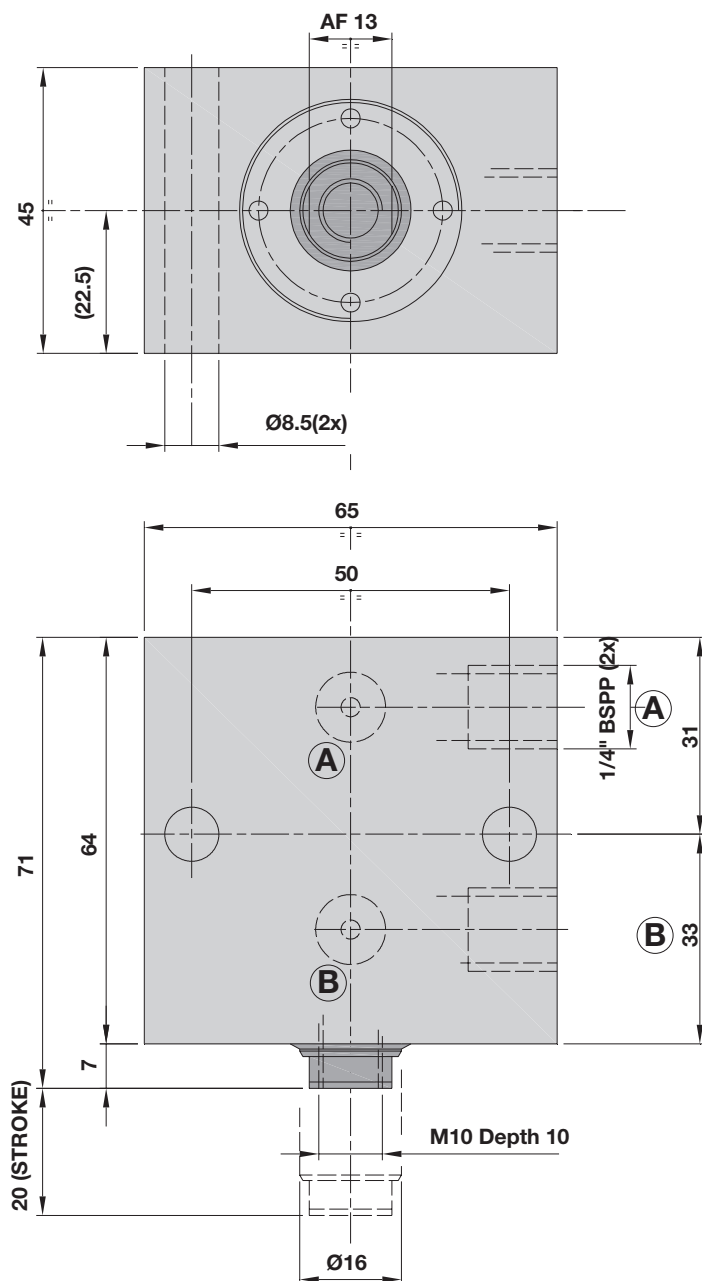
BS16

DOUBLE-ACTING BLOCK CYLINDER WITH IN-LINE AND O-RING PORTS

MAX. WORKING PRESSURE = 500 bar

A: Extension
B: Retraction

These compact and versatile cylinders are designed for various applications such as clamping, punching, positioning, riveting, mould extraction, etc.



Mounting instructions

The installation of a support (X in the figure) as block cylinder back-up is recommended in order to prevent shear loads from acting only on the mounting bolts.

Supplied:

- > TCEI M8x60 UNI 5931 12.9 mounting screws.
- > 2 O-rings

Material:

- > **Piston/rod:** Hardened nitrided steel.
- > **Body:** Free machining steel.

Note: Customized versions are available upon request.

Please contact our technical office for special requirements regarding stroke or mounting conditions.

SERIES BS16 BLOCK CYLINDER

STROKE	EFFECT. CYLINDER AREA/PUSHING	EFFECTIVE CYLINDER AREA/PUSHING	EFFECTIVE CYLINDER AREA/PULLING	EFFECTIVE CYLINDER AREA/PULLING
mm	Cm ²	Cm ³	Cm ²	Cm ³
20	4.91	9.82	2.9	5.8

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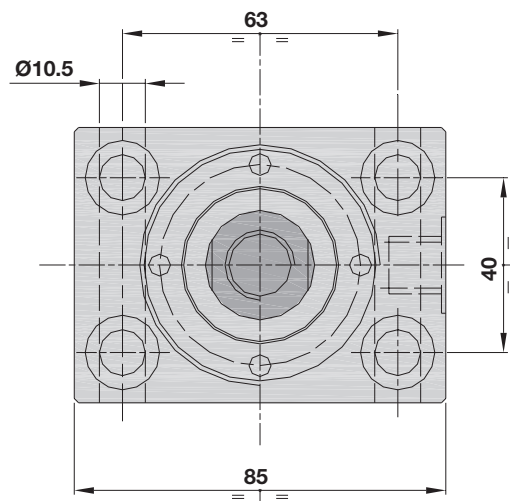
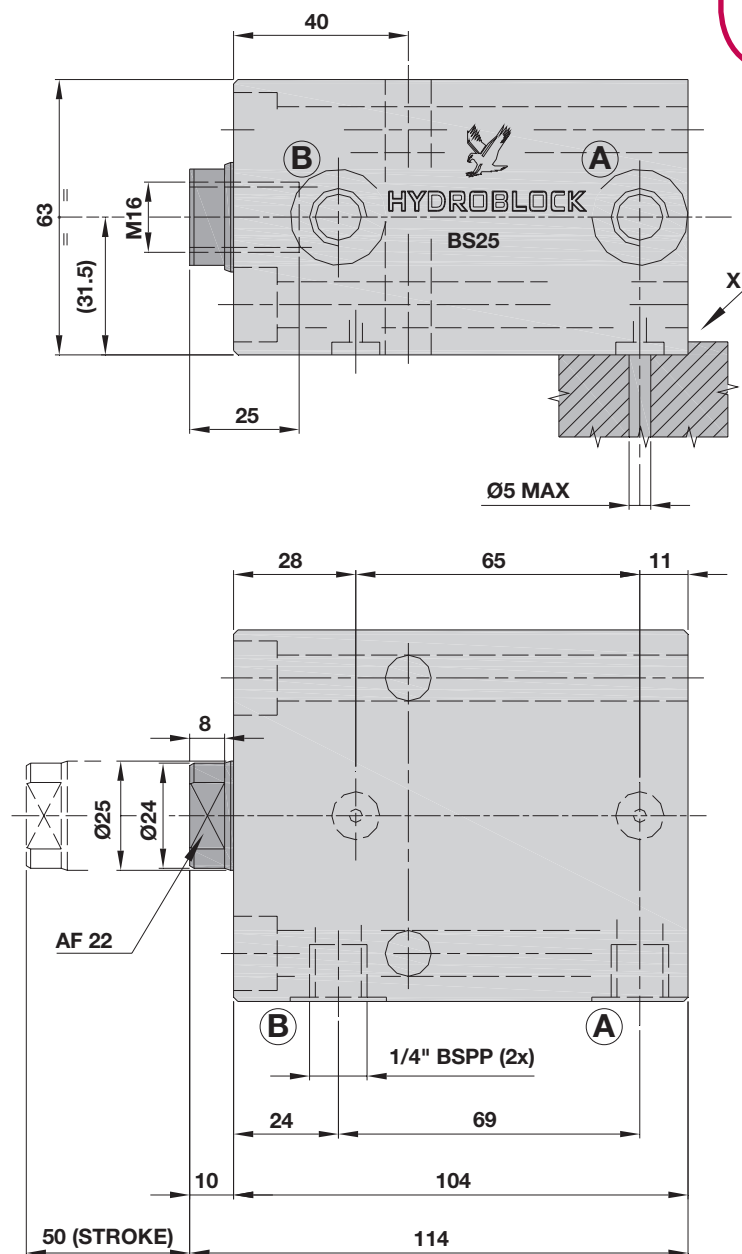
BS25

DOUBLE-ACTING BLOCK CYLINDER WITH IN-LINE AND O-RING PORTS

MAX. WORKING PRESSURE = 500 BAR

A: Extension
B: Retraction

These compact and versatile cylinders are designed for various applications such as clamping, punching, positioning, riveting, mould extraction, etc.



Mounting instructions

The installation of a support (X in the figure) as block cylinder back-up is recommended in order to prevent shear loads from acting only on the mounting bolts.

Supplied:

- > TCEI M10x85 UNI 5931 12.9 mounting screws.
- > 2 O-rings

Material:

- > **Piston/rod:** Hardened nitrided steel.
- > **Body:** Free machining steel.

Note: Customized versions are available upon request. Please contact our technical office for special requirements regarding stroke or mounting conditions.

SERIES BS25 BLOCK CYLINDER				
STROKE	EFFECT. CYLINDER AREA/PUSHING	EFFECTIVE CYLINDER AREA/PUSHING	EFFECTIVE CYLINDER AREA/PULLING	EFFECTIVE CYLINDER AREA/PULLING
mm	Cm ²	Cm ³	Cm ²	Cm ³
50	12.56	62.8	7.66	38.3

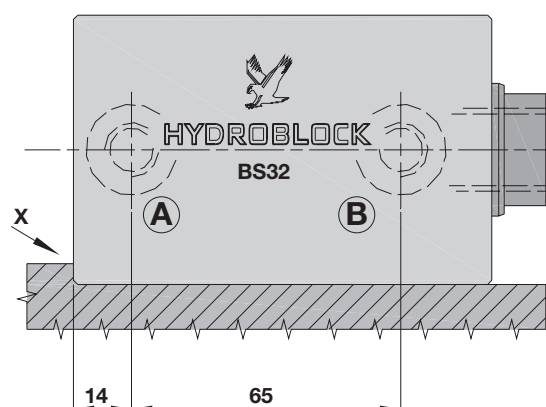
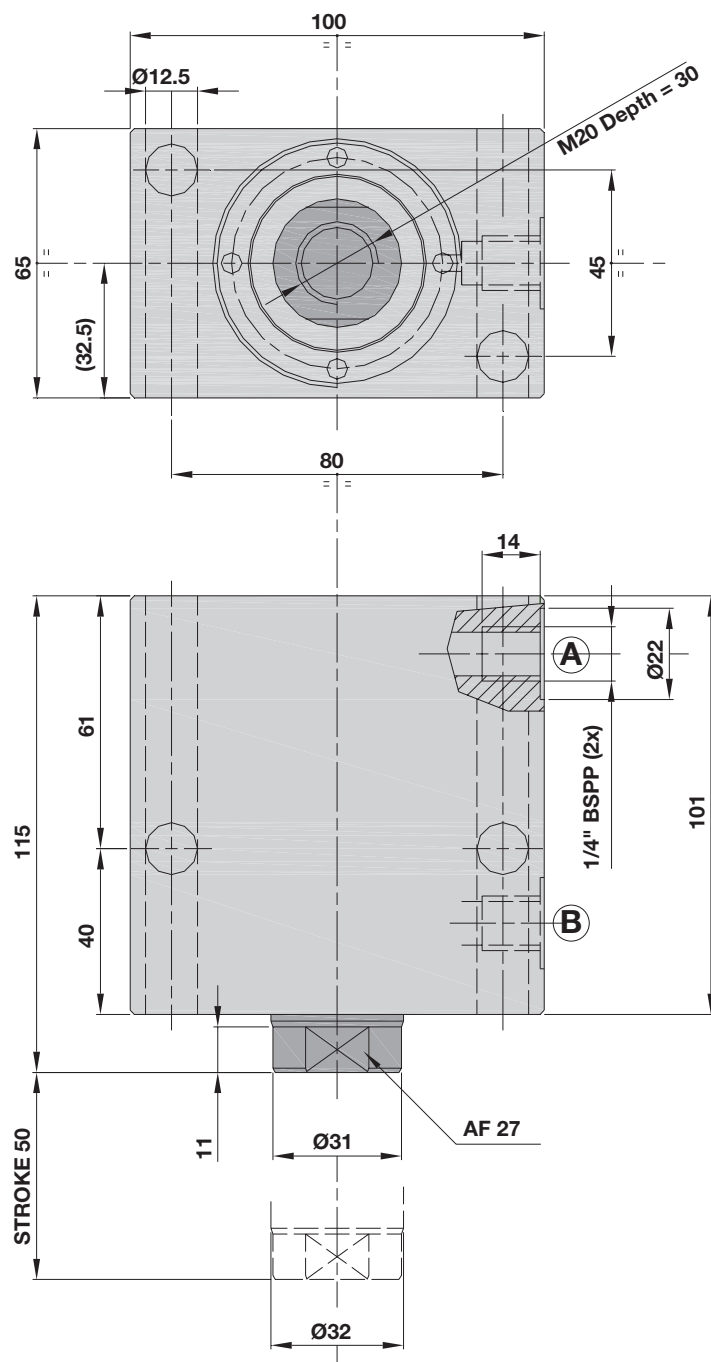
BS32

DOUBLE-ACTING BLOCK CYLINDER WITH 1/4" BSPP IN-LINE PORTS

MAX. WORKING PRESSURE = 500 BAR

A: Extension
B: Retraction

These compact and versatile cylinders are designed for various applications such as clamping, punching, positioning, riveting, mould extraction, etc.



Mounting instructions

The installation of a support (X in the figure) as block cylinder back-up is recommended in order to prevent shear loads from acting only on the mounting bolts.

Supplied:

- > 2 TCEI M10x85 UNI 5931 12.9 mounting screws
- > 2 O-rings

Material:

- > **Piston/rod:** Hardened nitrided steel.
- > **Body:** Free machining steel.

Note: Customized versions are available upon request.

Please contact our technical office for special requirements regarding stroke or mounting conditions.

SERIES BS32 BLOCK CYLINDER

STROKE	EFFECT. CYLINDER AREA/PUSHING	EFFECTIVE CYLINDER AREA/PUSHING	EFFECTIVE CYLINDER AREA/PULLING	EFFECTIVE CYLINDER AREA/PULLING
mm	Cm ²	Cm ³	Cm ²	Cm ³
50	19.63	98	11.6	58

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Last update 09/2010

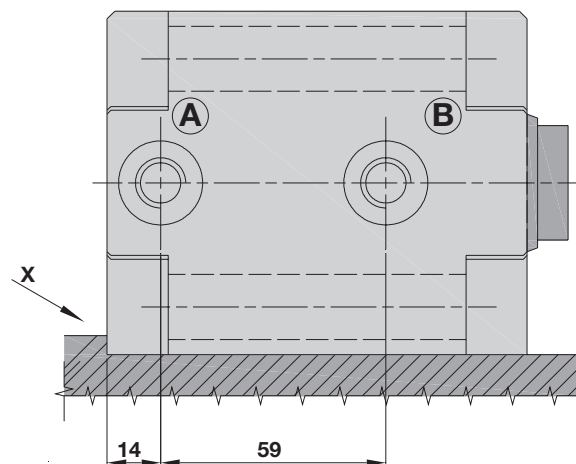
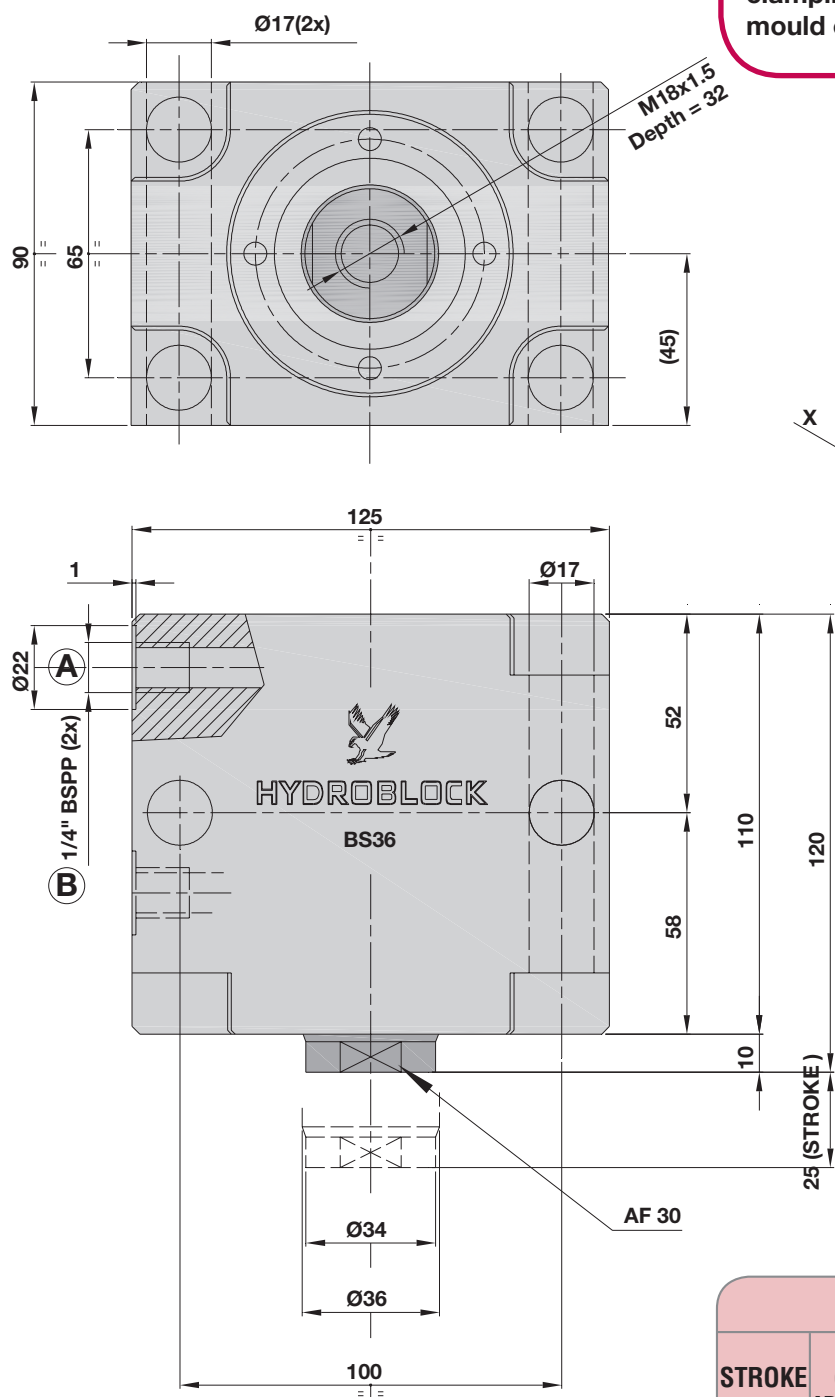
BS36

DOUBLE-ACTING BLOCK CYLINDER WITH 1/4" BSPP IN-LINE PORTS

MAX. WORKING PRESSURE = 500 BAR

A: Extension
B: Retraction

These compact and versatile cylinders are designed for various applications such as clamping, punching, positioning, riveting, mould extraction, etc.



Mounting instructions

The installation of a support (X in the figure) as block cylinder back-up is recommended in order to prevent shear loads from acting only on the mounting bolts.

Supplied:

- > 2 TCEI M16x110 UNI 5931 12.9 mounting screws
- > 2 O-rings

Material:

- > **Piston/rod:** Hardened nitrided steel.
- > **Body:** Free machining steel.

Note: Customized versions are available upon request. Please contact our technical office for special requirements regarding stroke or mounting conditions.

SERIES BS36 BLOCK CYLINDER				
STROKE	EFFECT. CYLINDER AREA/PUSHING	EFFECTIVE CYLINDER AREA/PUSHING	EFFECTIVE CYLINDER AREA/PULLING	EFFECTIVE CYLINDER AREA/PULLING
mm	Cm ²	Cm ³	Cm ²	Cm ³
25	33.18	83	23	57.5


HYDROBLOCK
 INNOVATIVE ENGINEERING

Last update 09/2010



CILINDRI FILETTATI

THREADED CYLINDERS

EINSCHRAUBZYLINDER

CF
—
CR



CILINDRI FILETTATI



THREADED CYLINDERS

EINSCHRAUBZYLINDER



CILINDRI FILETTATI

THREADED CYLINDERS - EINSCHRAUBZYLINDER

MODELLO CILINDRO - CYLINDER TYPE - ZYLINDERTYP			CF22	CF30
TIPOLOGIA CORPI DISPONIBILI AVAILABLE CYLINDER BODY VERSIONS VERFÜGBARE AUSFÜHRUNGEN DES ZYLINDERKÖRPERS	Filettato sporgente Threaded type, projecting Einschraubversion, überstehend		M22x1.5	M30x1.5
	Filettato ad incasso Threaded type, flush Einschraubversion, bündig		/	/
Versione con stelo filettato femmina - Rod with female thread Kolbenstange mit Gewindebohrung			Sì Yes Ja	Sì Yes Ja
Versione con stelo bombato - Version with crowned rod Version mit balliger Kolbenstange			Sì Yes Ja	Sì Yes Ja
Diametro stelo (mm) - Rod diameter (mm) - Stangendurchmesser (mm)			12	18
Diametro pistone (mm) - Piston diameter (mm) - Kolbendurchmesser (mm)				
Corsa totale cilindro (mm) - Total cylinder stroke (mm) - Zylinderhub insgesamt (mm)			5 e 10 5 and 10 5 und 10	7 e 12 7 and 12 7 und 12
Capacità olio (cm³) - Oil volume (cm³) - Ölvolumen (cm³)			12	18
Pressione max. in lavoro (Bar) - Maximum working pressure (bar) Maximaler Betriebsdruck (bar)			400	400



CF40	CF38	CF36E	CF48E	CF12C	CR12	CR22	CR26	CR30
------	------	-------	-------	-------	------	------	------	------

M40x1.5	/	/	/	/	/	/	/	/
/	M38x1.5	M36x1.5	M48x1.5	M32x1.5	M12x1.5	M22x1.5	M26x1.5	M30x1.5

Sì Yes Ja	No No Nein	Sì Yes Ja	Sì Yes Ja	No No Nein	Sì Yes Ja	Sì Yes Ja	Sì Yes Ja	Sì Yes Ja
Sì Yes Ja	Sì Yes Ja	No No Nein	No No Nein	Sì Yes Ja	Sì Yes Ja	Sì Yes Ja	Sì Yes Ja	Sì Yes Ja

25	20	19	31.6	12	5	12	16	20
		25	38	20	8			
15	3 e 4 3 and 4 3 und 4	23	23 e 32 23 and 32 23 und 32	14 e 18 14 and 18 14 und 18	5 e 10 5 and 10 5 und 10	10 e 25 10 and 25 10 und 25	12	15

25	20	19	31,6	12	5	12	16	20
----	----	----	------	----	---	----	----	----

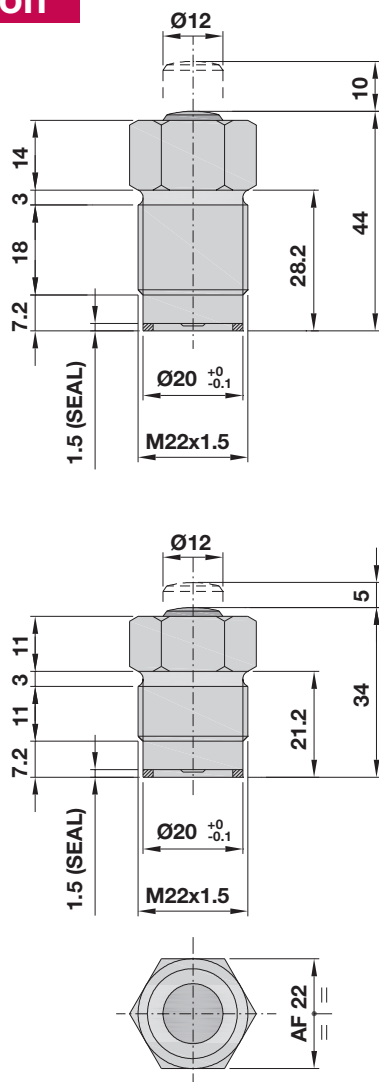
400	500	400	400	500	400	400	400	400
-----	-----	-----	-----	-----	-----	-----	-----	-----

CF22

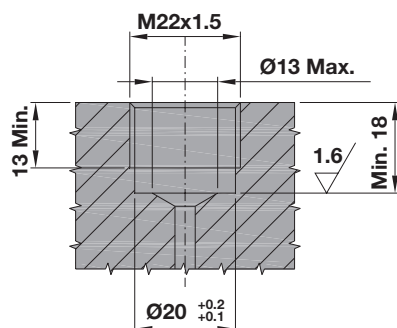
SINGLE-ACTING CYLINDER WITH THREADED BODY AND SPRING RETURN

MAX. WORKING PRESSURE = 500 BAR

A Version



Installation dimensions



Supplied:

- > Sealing washers.

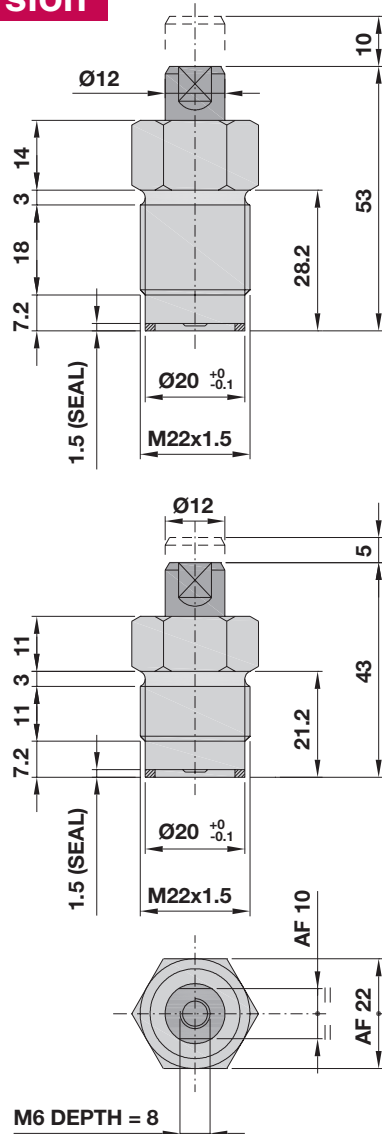
Variants:

- > **A:** Version without threaded rod.
- > **B:** Version with threaded rod.

Material:

- > **Piston/rod:** Hardened nitrided steel.
- > **Body:** Nitrided free machining steel.

B Version



Note: For ordering code, please refer to page CF-D

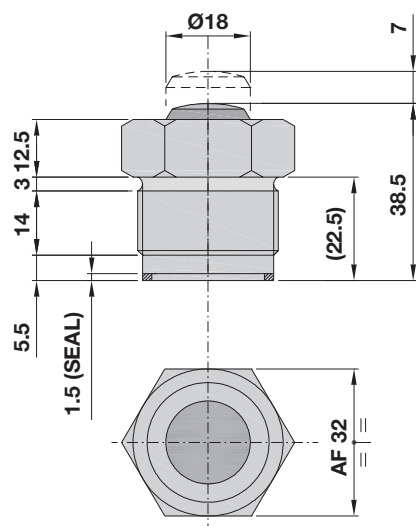
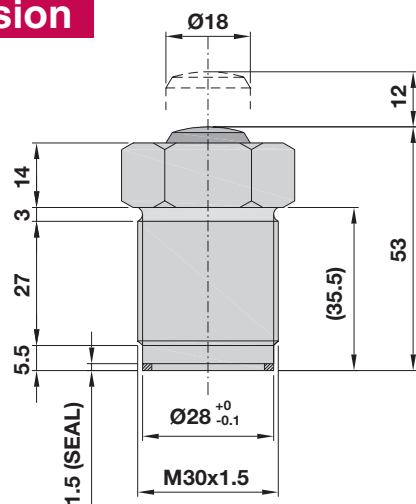
STROKE mm	EFFECTIVE CYLINDER AREA	OIL VOLUME
	Cm ²	Cm ³
5	1.13	0.565
10	1.13	1.13

CF30

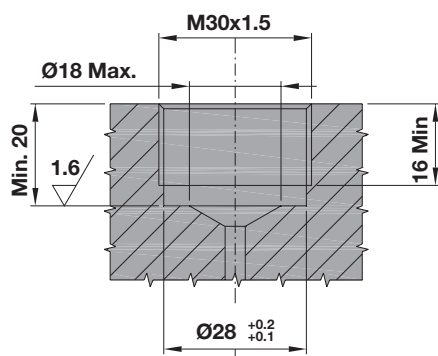
SINGLE-ACTING CYLINDER WITH THREADED BODY AND SPRING RETURN

MAX. WORKING PRESSURE = 500 BAR

A Version



Installation dimensions



Supplied:

- > Sealing washers.

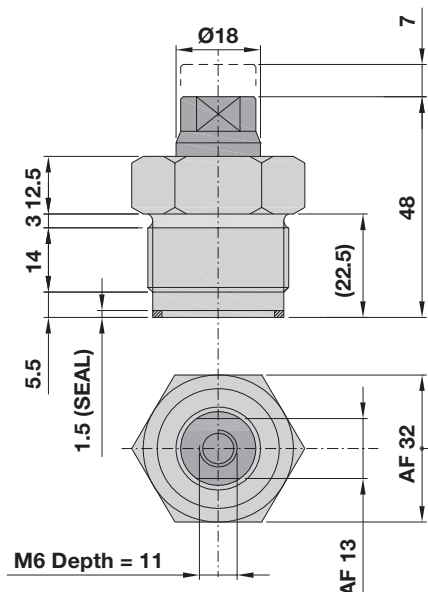
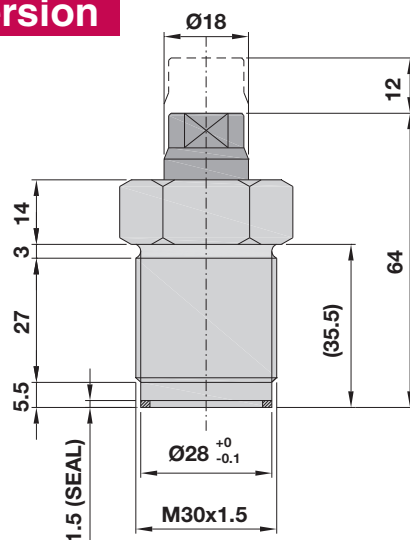
Variants:

- > **A:** Version without threaded rod.
- > **B:** Version with threaded rod.

Material:

- > **Piston/rod:** Hardened nitrided steel.
- > **Body:** Nitrided free machining steel.

B Version



Note: For ordering code, please refer to page CF-D

STROKE mm	EFFECTIVE CYLINDER AREA	OIL VOLUME
	Cm ²	Cm ³
7	2.54	1.78
12	2.54	3.05


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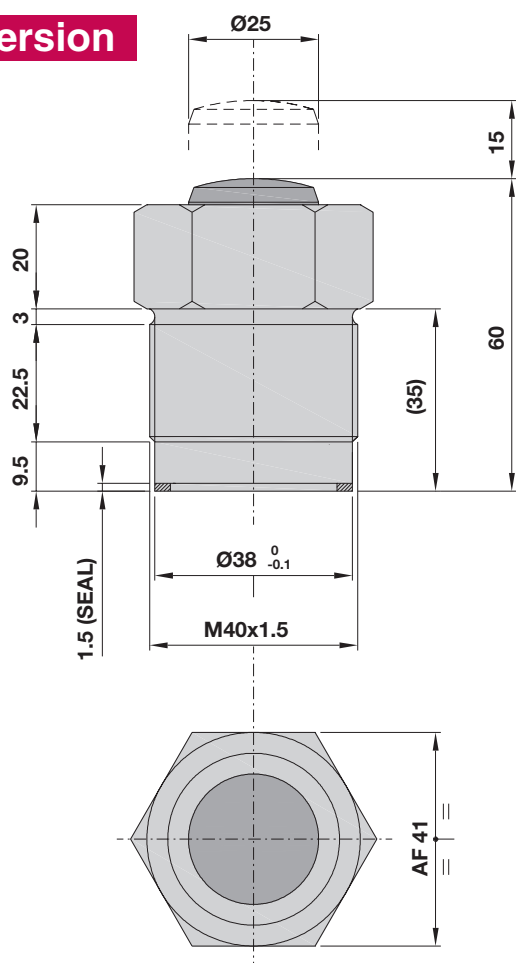
Last update 09/2010

CF40

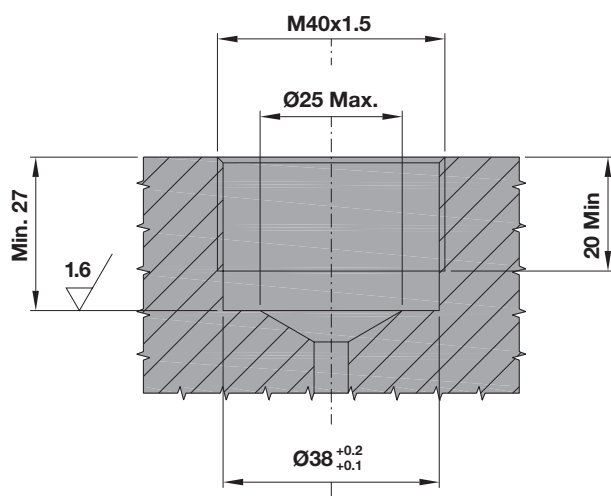
SINGLE-ACTING CYLINDER WITH THREADED BODY AND SPRING RETURN

MAX. WORKING PRESSURE = 500 BAR

A Version



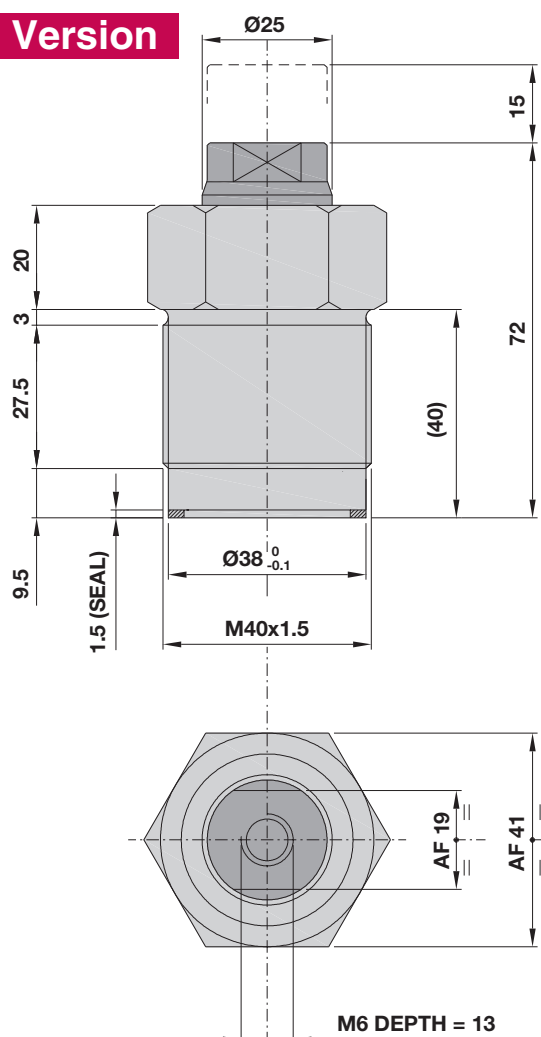
Installation dimensions



Material:

- > **Piston/rod:** Hardened nitrided steel.
- > **Body:** Nitrided free machining steel.

B Version



Supplied:

- > Sealing washers.

Variants:

- > **A:** Version without threaded rod.
- > **B:** Version with threaded rod.

Note: For ordering code, please refer to page CF-D

STROKE mm	EFFECTIVE CYLINDER AREA	OIL VOLUME
	Cm ²	Cm ³
15	4.9	7.35

ORDERING CODE

CF22: Threaded body M22x1.5, single-acting **22**

CF30: Threaded body M30x1.5, single-acting **30**

CF40: Threaded body M40x1.5, single-acting **40**

C: Stroke (see table below) **C**

A: Version without threaded rod **A**

B: Version with threaded rod **B**

Available cylinders

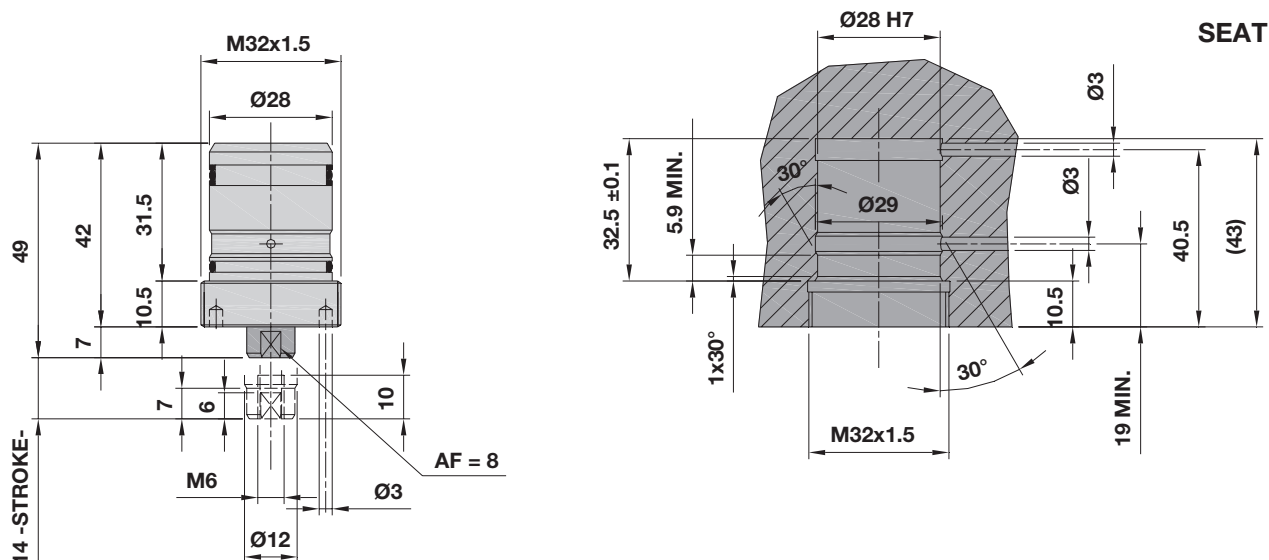
CYLINDER TYPE		STROKE				
		5	7	10	12	15
CF22	A	SI	/	YES	/	/
	B	SI	/	YES	/	/
CF30	A	/	YES	/	YES	/
	B	/	YES	/	YES	/
CF40	A	/	/	/	/	YES
	B	/	/	/	/	YES

CF12CM6

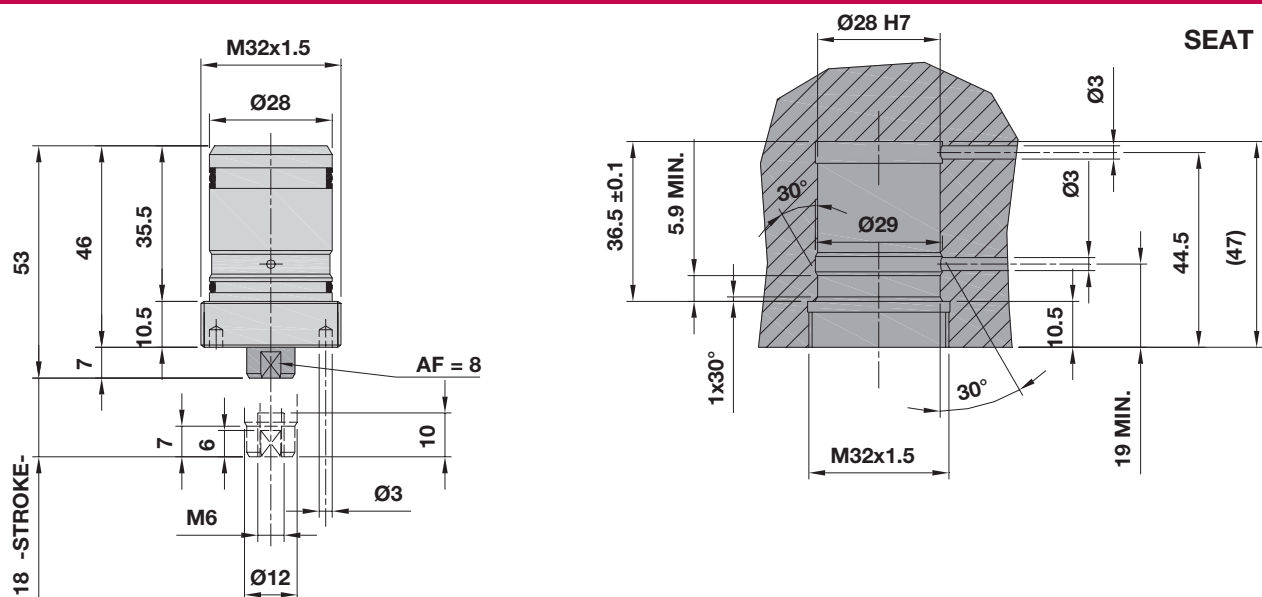
DOUBLE-ACTING CYLINDER WITH THREADED CARTRIDGE BODY

MAX. WORKING PRESSURE = 500 BAR

CF12.14CM6



CF12.18CM6



These double-acting cylinders with threaded cartridge body and plunging rod have been designed for compact axial clamping of workpieces that require high clamping forces combined with maximum stability during the clamping phase.

All variants are equipped with rod wiper as part of the standard supply.

Material:

- > **Piston/rod:** Hardened nitrided steel.
- > **Body::** Nitrided free machining steel.

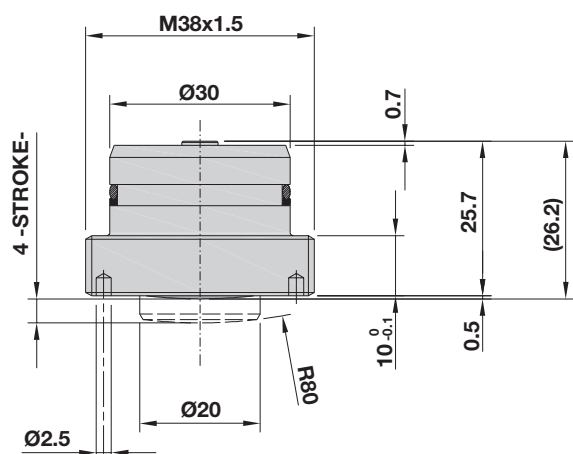
CYLINDER	STROKE mm	EFFECTIVE CYLINDER AREA Cm ²		OIL VOLUME Cm ³	
		Clamp.	Unclamp.	Clamp.	Unclamp.
CF12.14CM6	14	3.14	2	4.4	2.8
CF12.18CM6	18	3.14	2	5.7	3.6

CF38.0

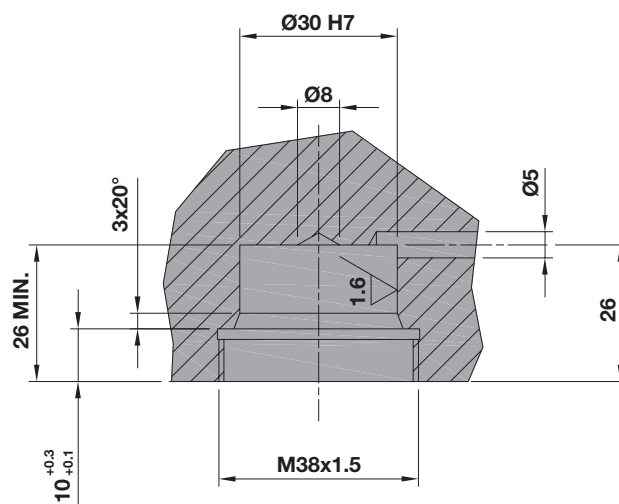
SINGLE-ACTING CYLINDER WITH THREADED CARTRIDGE BODY

MAX. WORKING PRESSURE = 500 BAR

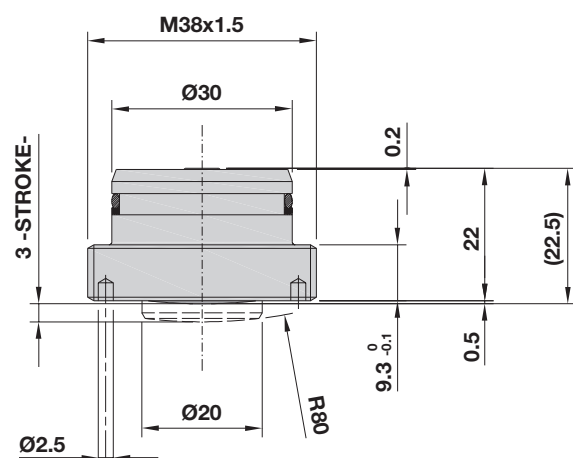
CF38.0 CYLINDER



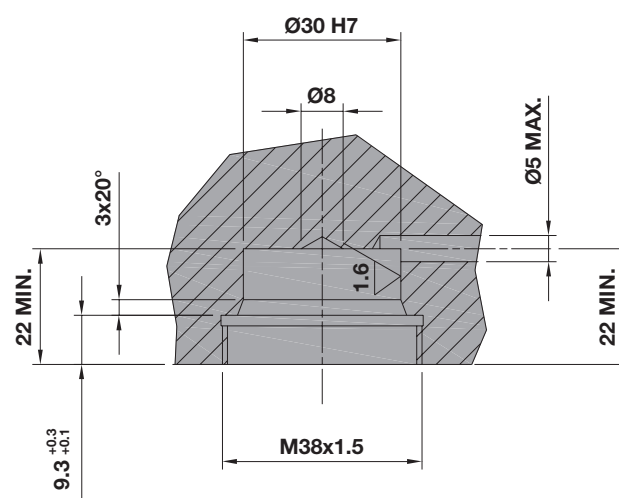
CF38.0 CYLINDER SEAT



CF38.3 CYLINDER



CF38.3 CYLINDER SEAT



These cylinders with threaded cartridge body have been designed for compact axial clamping of slides and columns in machines and equipment.

Thanks to the plunging piston, they ensure high clamping forces in compact applications, while the rod wiper and return spring are maintained.

Material:

- > **Piston/rod:** Hardened nitrided steel.
- > **Body:** Nitrided free machining steel.

Note: The CF38.3 model with a stroke reduced by 3 mm can be mounted in the seat of the CF38.0 cylinder type.

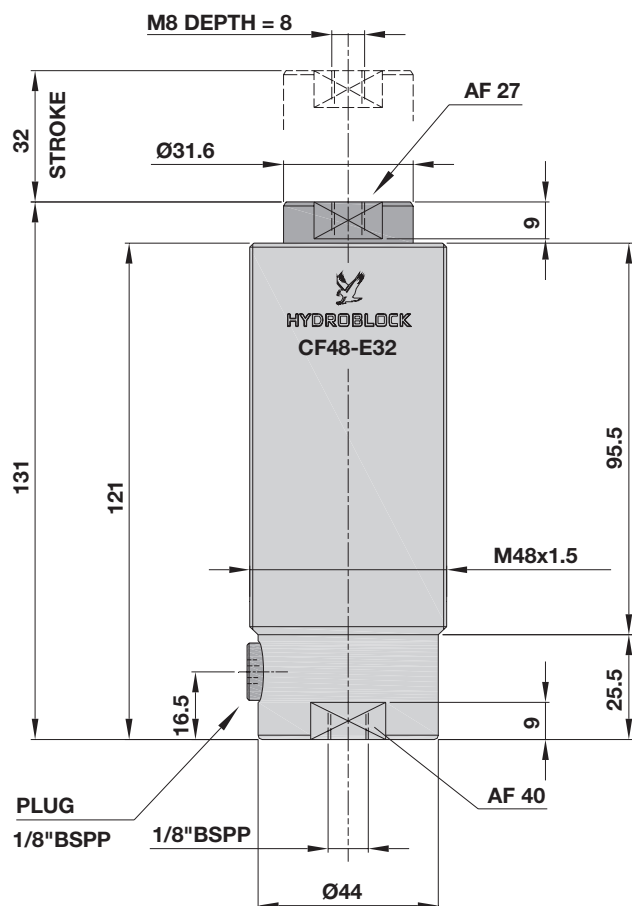
CYLINDER mm	EFFECTIVE CYLINDER AREA	OIL VOLUME
	Cm ²	Cm ³
4	3.14	1.26
3	3.14	0.95

CF48-E — CF36-E

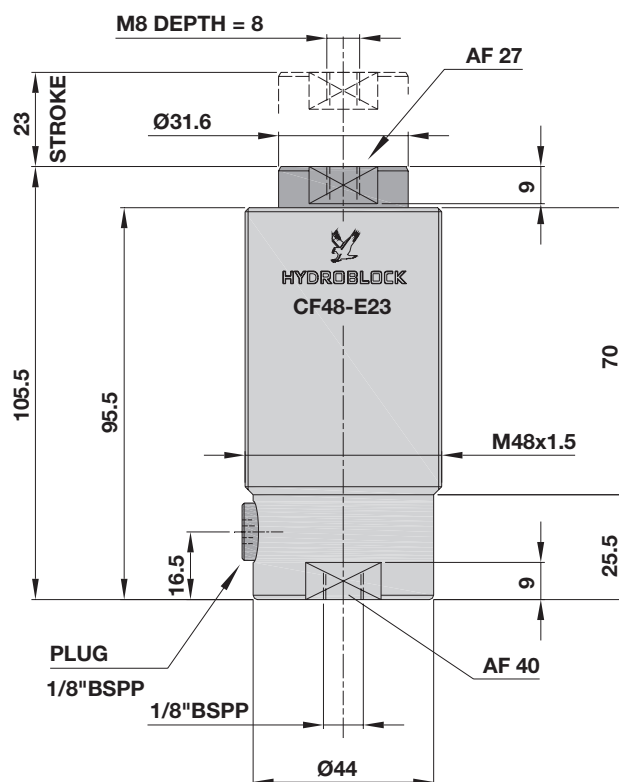
SINGLE-ACTING CYLINDER WITH THREADED BODY

MAX. WORKING PRESSURE = 400 BAR

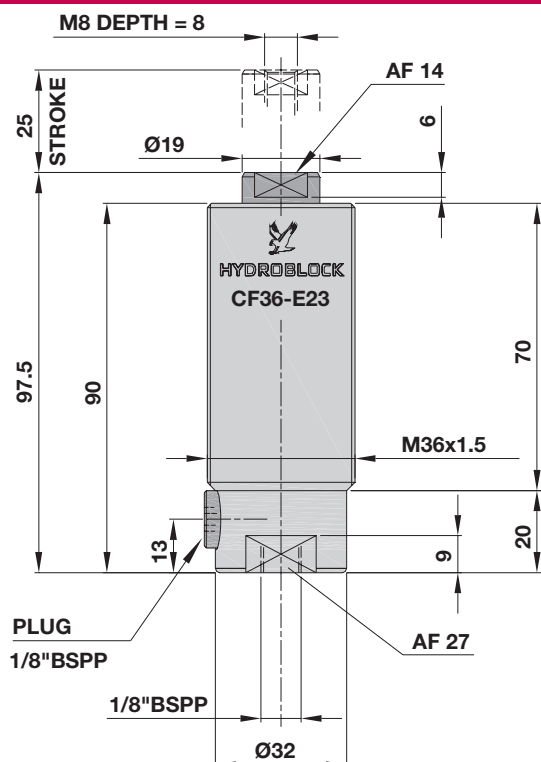
CF48-E32



CF48-E23



CF36-E23 CYLINDER



Single acting cylinder with threaded body, return spring and threaded rod.

Material:

- **Piston/rod:** Hardened nitrided steel.
- **Body:** Nitrided free machining steel.

CYLINDER	STROKE mm	EFFECTIVE CYLINDER AREA Cm ²	OIL VOLUME Cm ³
CF48-E23	23	11.3	26
CF48-E32	32	11.3	36
CF36-E23	23	4.9	11.3

CR12

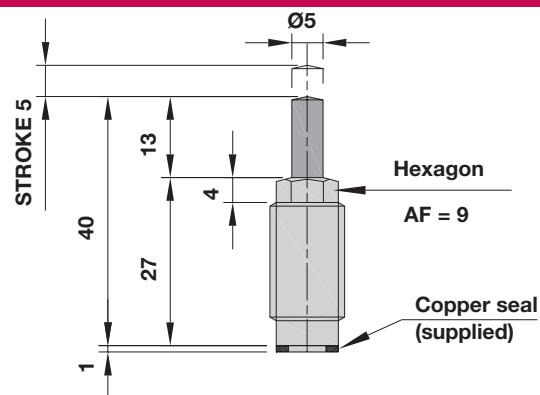
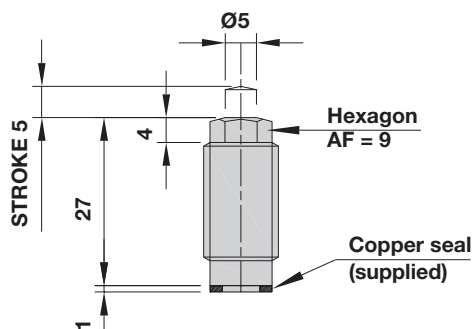
SINGLE-ACTING CYLINDER WITH THREADED CARTRIDGE BODY

MAX. WORKING PRESSURE = 400 BAR

A Version

CR12.5

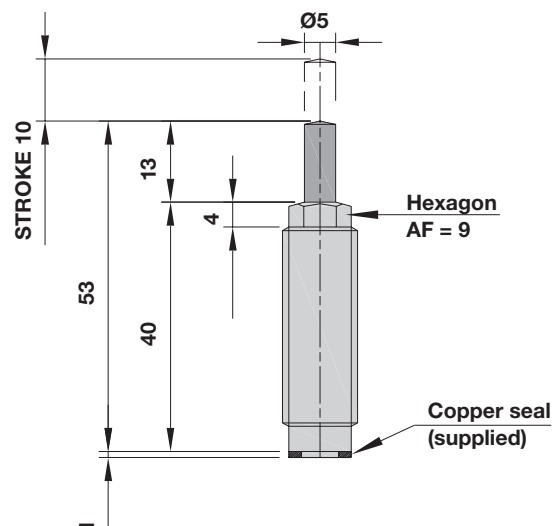
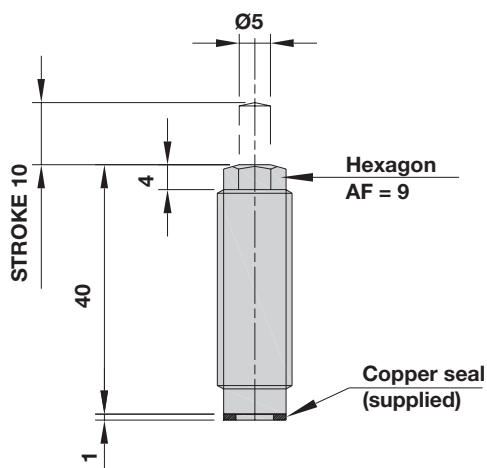
B Version



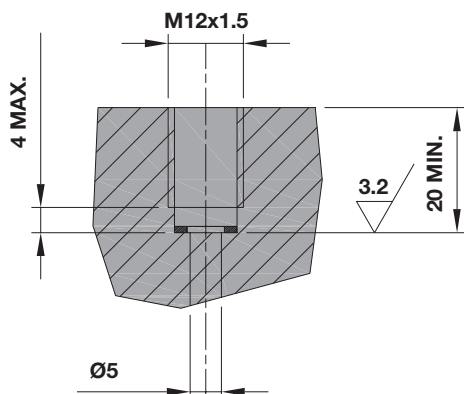
A Version

CR12.10

B Version



Cylinder seat



Material:

- > **Piston/rod:** Hardened nitrided steel.
- > **Body:** Nitrided free machining steel.

Note: Make sure not to overload the rod while the cylinder is in rest position.

Description:

The compact CR12 series single-acting cylinders with threaded cartridge body and plunging piston (A version) or projecting piston (B version) have been designed for axial clamping in limited space conditions, i.e. even for multiple clamping of small workpieces.

Due to the small size, this cylinder type is not equipped with the metal wiper and must not be subjected to pressurized cooling lubricant flows.

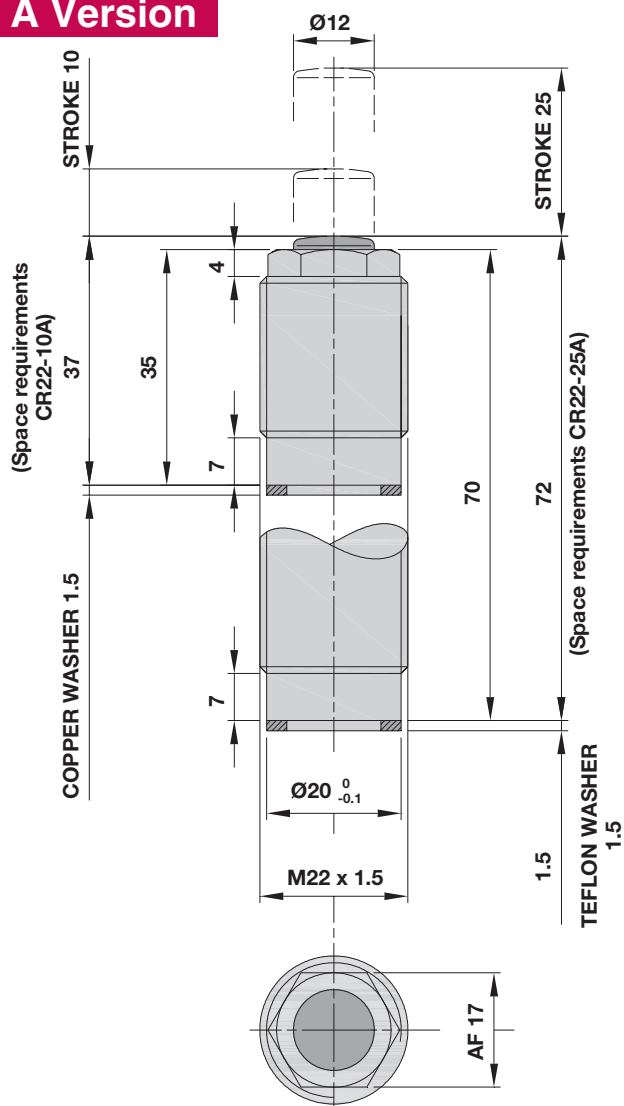
CYLINDER TYPE	STROKE mm	EFFECTIVE CYLINDER AREA Cm ²	OIL VOLUME Cm ³
CR12.5A	5	0.5	0.25
CR12.5B	5	0.5	0.25
CR12.10A	10	0.5	0.5
CR12.10B	10	0.5	0.5

CR22

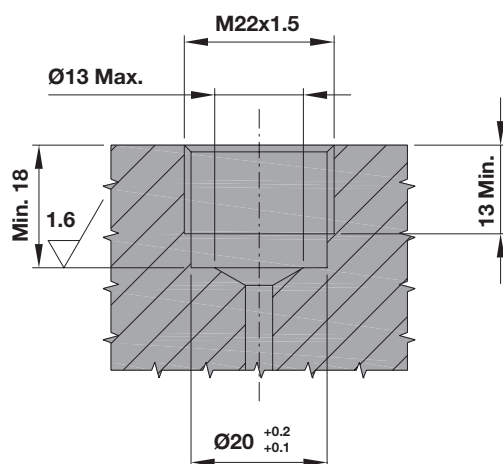
SINGLE-ACTING CYLINDER WITH THREADED BODY

MAX. WORKING PRESSURE = 400 BAR

A Version



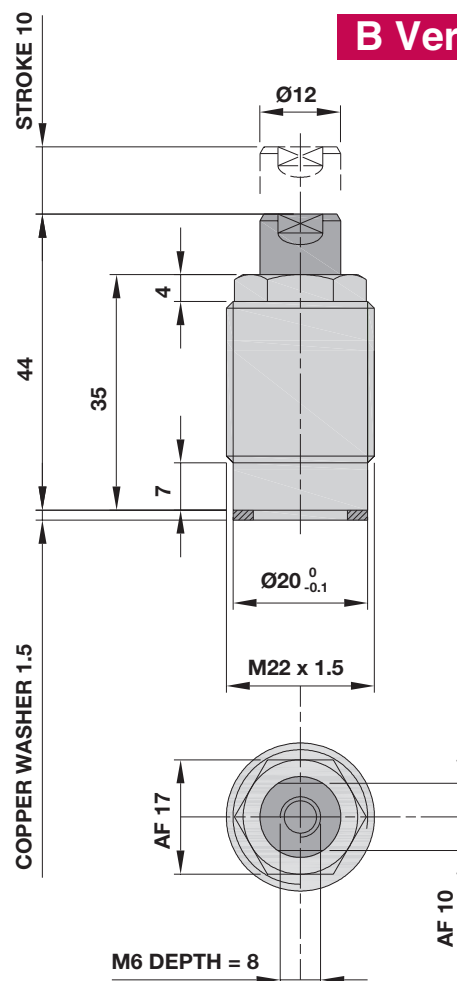
Installation dimensions



Variants:

- > **A:** Version without threaded rod.
- > **B:** Version with threaded rod.

B Version



Single-acting built-in cylinder with threaded body and return spring of compact design suitable for multiple clamping in limited space conditions.

Material:

- > **Piston/rod:** Hardened nitrided steel.
- > **Body:** Nitrided free machining steel.

Note: For ordering code, please refer to page CR-D

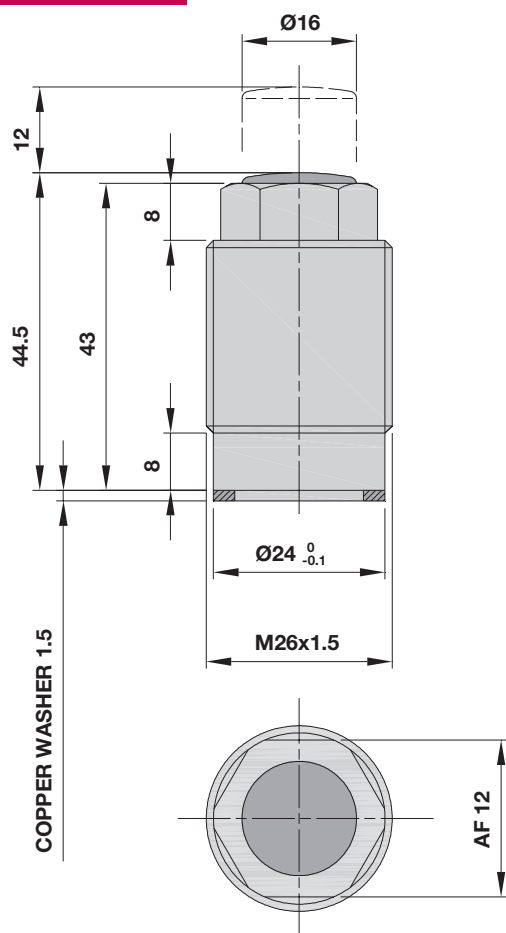
STROKE mm	EFFECTIVE CYLINDER AREA	OIL VOLUME
	Cm ²	Cm ³
10	1.13	1.13
25	1.13	2.8

CR26

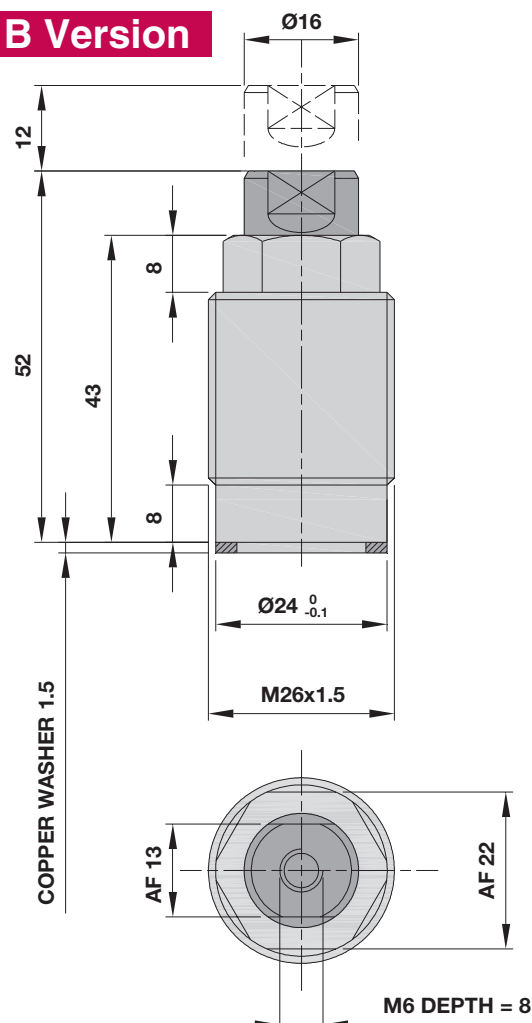
SINGLE-ACTING CYLINDER WITH THREADED BODY

MAX. WORKING PRESSURE = 400 BAR

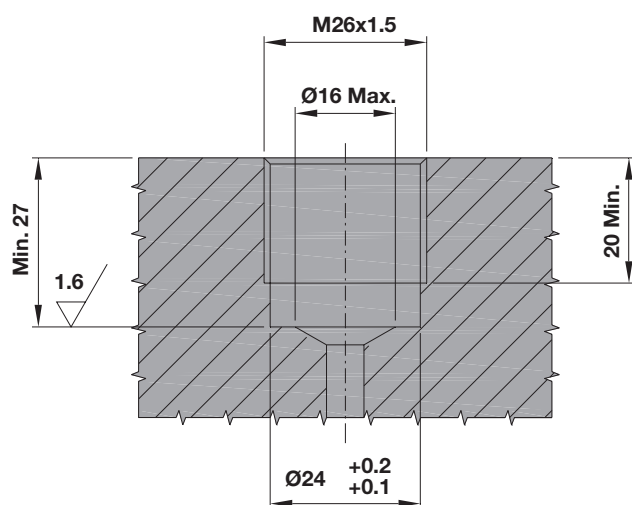
A Version



B Version



Installation dimensions



Variants:

- > **A:** Version without threaded rod.
- > **B:** Version with threaded rod.

Single-acting built-in cylinder with threaded body and return spring of compact design suitable for multiple clamping in limited space conditions.

Material:

- > **Piston/rod:** Hardened nitrided steel.
- > **Body:** Nitrided free machining steel.

Note: For ordering code, please refer to page CR-D

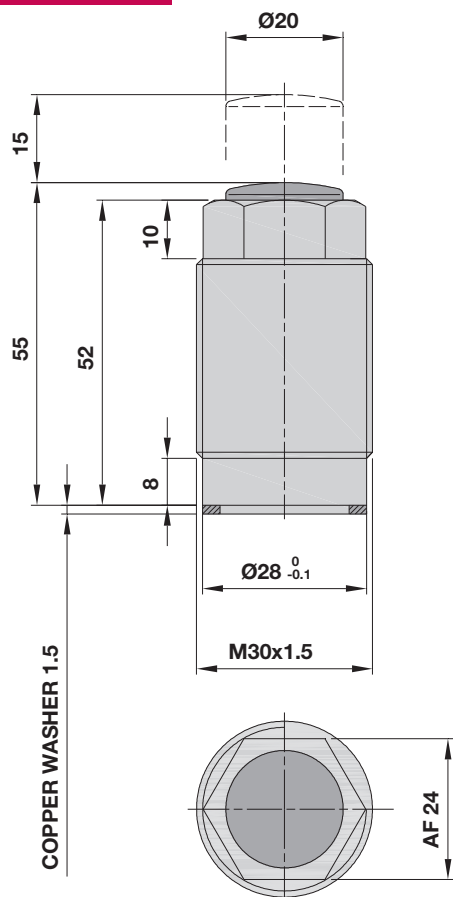
STROKE mm	EFFECTIVE CYLINDER AREA	OIL VOLUME
	Cm ²	Cm ³
12	2	2.4

CR30

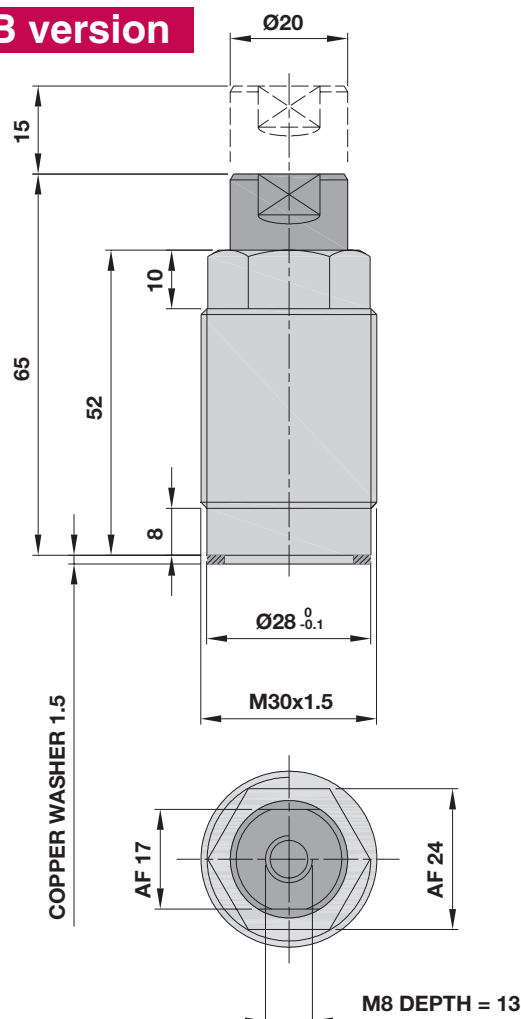
SINGLE-ACTING CYLINDER WITH THREADED BODY

MAX. WORKING PRESSURE = 400 BAR

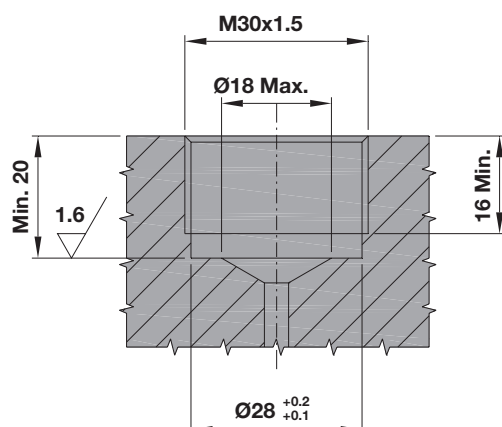
A version



B version



Installation dimensions



Variants:

- > **A:** Version without threaded rod.
- > **B:** Version with threaded rod.

Material:

- > **Piston/rod:** Hardened nitrided steel.
- > **Body:** Nitrided free machining steel.

Single-acting built-in cylinder with threaded body and return spring of compact design suitable for multiple clamping in limited space conditions.

Note: For ordering code, please refer to page CR-D

STROKE mm	EFFECTIVE CYLINDER AREA	OIL VOLUME
	Cm ²	Cm ³
15	3.14	4.7

ORDERING CODE

CR22: Threaded body M22x1.5, single-acting **22**

CR26: Threaded body M26x1.5, single-acting **26**

CR30: Threaded body M30x1.5, single-acting **30**

C: Stroke (*see table below*) **C**

A: Version without threaded rod **A**

B: Version with threaded rod **B**

Available cylinders

CYLINDER TYPE		STROKE			
		10	12	15	25
CR22	A	YES	/	/	YES
	B	YES	/	/	/
CR26	A	/	YES	/	/
	B	/	YES	/	/
CR30	A	/	/	YES	/
	B	/	/	YES	/



CILINDRI IRRIGIDITORI

HYDRAULIC WORK SUPPORTS

ABSTÜTZELEMENTE

IR



CILINDRI IRRIGIDITORI

IRF

HYDRAULIC WORK SUPPORTS





ABSTÜTZELEMENTE

CILINDRI IRRIGIDITORI

HYDRAULIC WORK SUPPORTS - ABSTÜTZELEMENTE

MODELLO CILINDRO - CYLINDER TYPE - ZYLINDERTYP

IRF16.2

TIPOLOGIA CORPI DISPONIBILI AVAILABLE CYLINDER BODY VERSIONS VERFÜGBARE AUSFÜHRUNGEN DES ZYLINDERKÖRPERS	Filettato - Threaded type - Einschraubversion		M30x1.5
	Cartuccia - Cartridge - Patrone		/
	Flangia - Upper flange - Kopfflansch		/
	Piede - Lower flange - Fußflansch		/
Versione ad accostamento idraulico - Version with hydraulic approach Version mit hydraulischer Anstellung			Sì Yes Ja
Versione normalmente estesa (a molla) - Normally extended rod (spring approach) Version mit ausgefahrener Grundstellung (Federanstellung)			No No Nein
Possibilità raschiatore metallico (solo optional) - Metal wiper (upon request only) Metallabstreifer (nur als Option verfügbar)			Sì Yes Ja
Diametro stelo (mm) - Rod diameter (mm) - Stangendurchmesser (mm)			16
Corsa totale cilindro (mm) - Total cylinder stroke (mm) - Zylinderhub insgesamt (mm)			9.7

Pressione max. in lavoro (Bar) - Maximum working pressure (bar) Maximaler Betriebsdruck (bar)	400
Forza di sostegno a 200Bar (Kn)* - Support force at 200 bar (kN)* Stützkraft bei 200 bar (kN)*	1.8

(*) = VEDI GRAFICI SPECIFICI - (*) SEE PERFORMANCE DIAGRAMS
 (*) SIEHE ENTSPRECHENDES LEISTUNGSDIAGRAMM



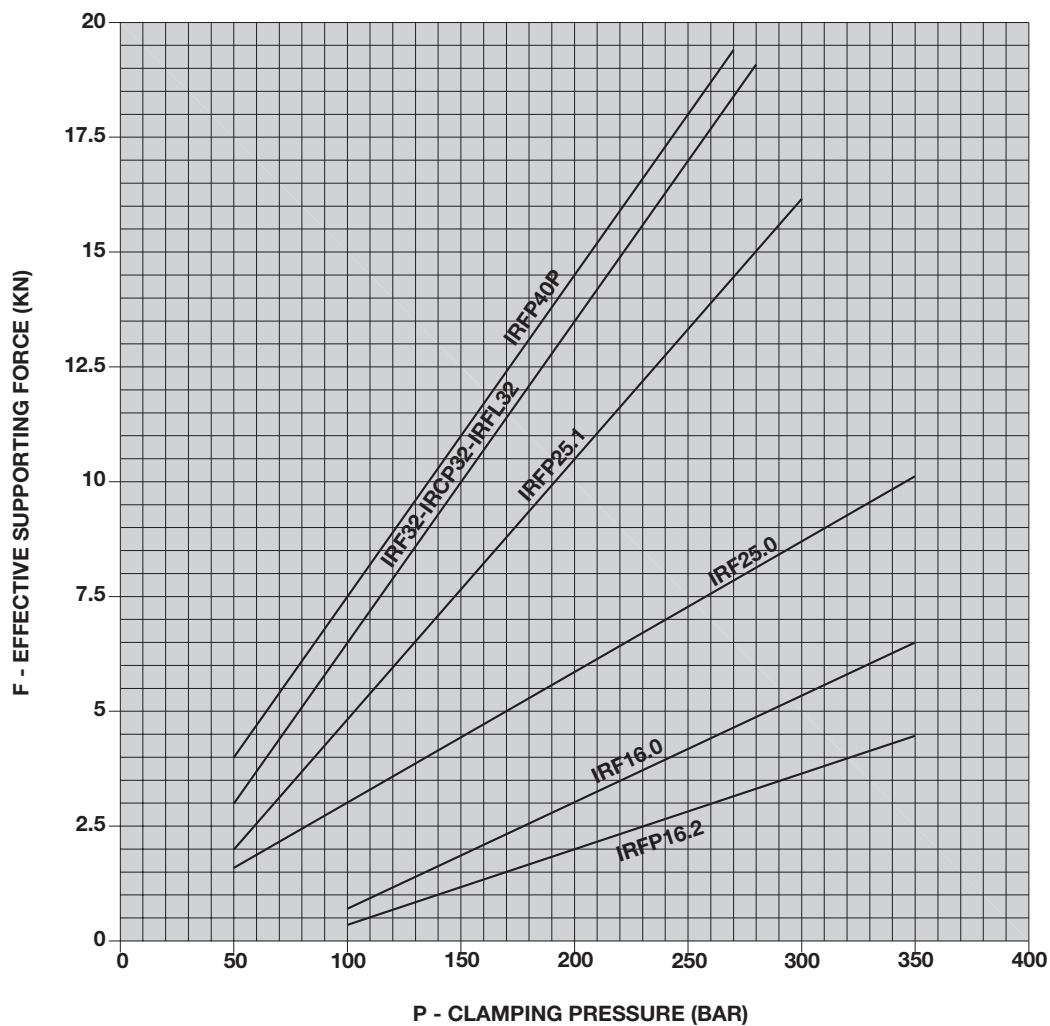
IRF16.0	IRF25.0	IRF25.1	IRF32	IRF40
M30x1.5	M42x1.5	M42x1.5	M50x1.5	/
/	/	/	Si Yes Ja	/
/	/	/	Si Yes Ja	/
/	/	/	/	Si Yes Ja
Si Yes Ja	Si Yes Ja	Si Yes Ja	Si Yes Ja	Si Yes Ja
Si Yes Ja	Si Yes Ja	Si Yes Ja	Si Yes Ja	No No Nein
Si Yes Ja	Si Yes Ja	Si Yes Ja	Si Yes Ja	Si Yes Ja
16	25	25	32	40
8	8	13	12	18
400	400	400	400	400
3	5.9	10.5	13.5	14.5

COMPARATIVE DIAGRAM OF THE PERFORMANCE OF DIFFERENT WORK SUPPORT TYPES DEPENDING ON THE CLAMPING PRESSURE

Hydraulic work supports are used as supporting elements to compensate vibrations and deflections of the workpiece during machining and serve as aligning elements when clamping complex workpieces that require more than 3 clamping points.

Note: When clamping the workpiece on the work support, make sure that the support force **F** is at least twice as high as the force produced by the clamping cylinder.

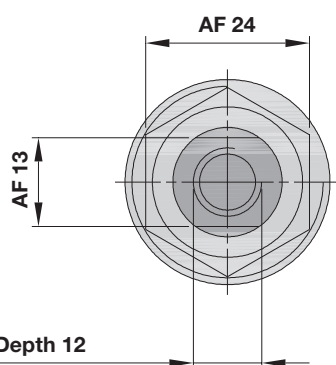
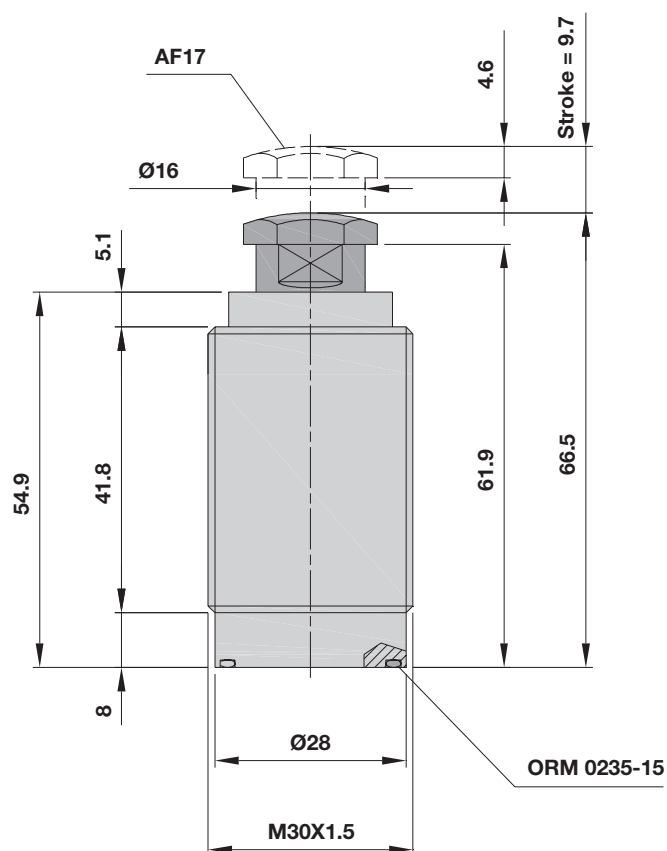
We recommend operating work supports in any case at high pressures to ensure a proper supporting capacity.



IRFP 16.2

HYDRAULIC WORK SUPPORT WITH THREADED BODY

MAX. WORKING PRESSURE = 400 BAR



Supplied:

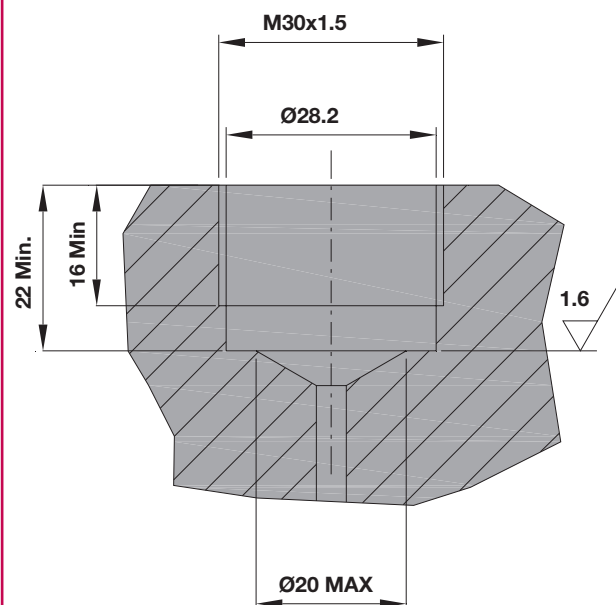
- > Metric O-ring 0235-15

Material:

- > **Rod:** Hardened nitrided steel.
- > **Body:** Nitrided free machining steel.

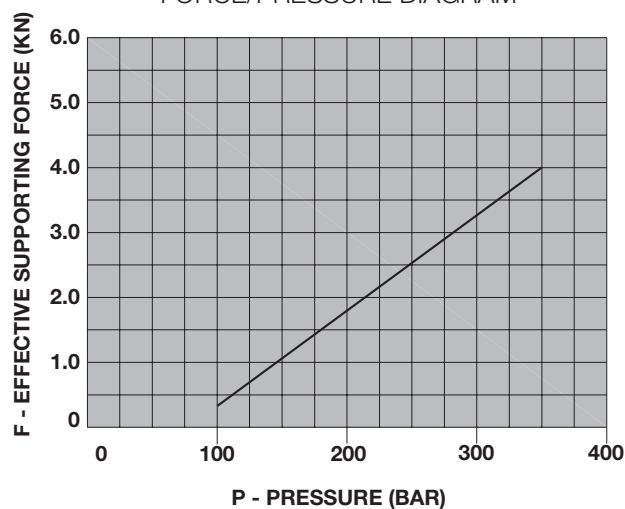
Note: For ordering code, please refer to page IR-D

Installation dimensions



This work support is only available in a version with normally retracted rod and hydraulic approach.

FORCE/PRESSURE DIAGRAM

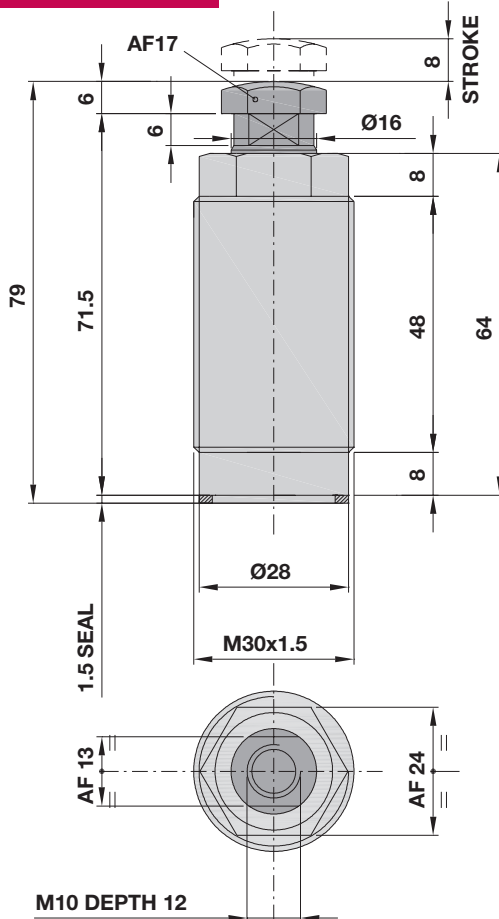


Note: The maximum admissible flow rate amounts to 1.5 l/min.

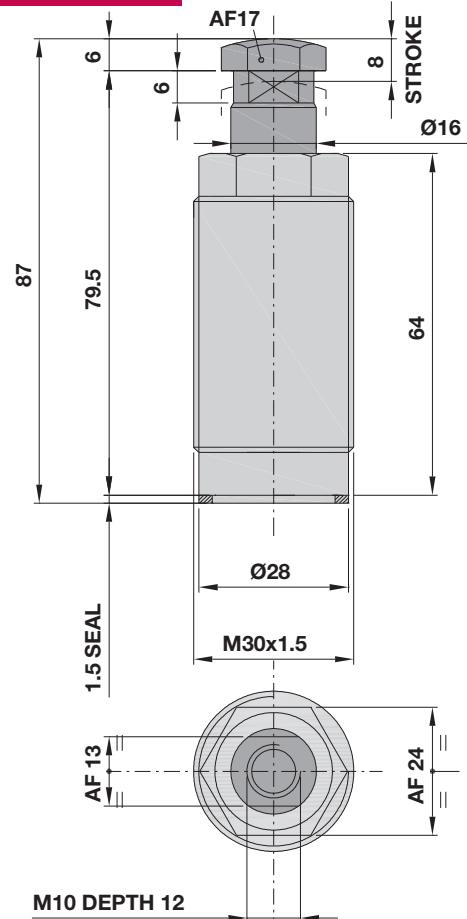
HYDRAULIC WORK SUPPORT WITH THREADED BODY

MAX. WORKING PRESSURE = 400 BAR

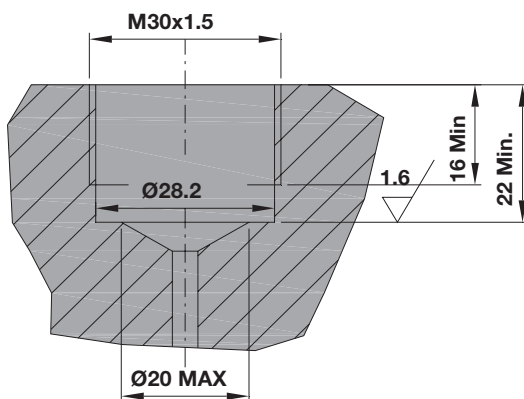
P Version



M Version



Installation dimensions



Variants:

- > **P:** Version with normally retracted rod and hydraulic approach.
- > **M:** Version with normally extended rod and spring approach.

Supplied:

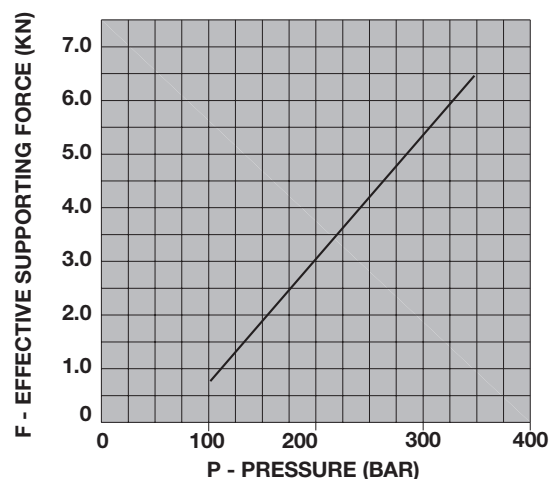
- > Sealing washer.

Material:

- > **Rod:** Hardened nitrided steel.
- > **Body:** Nitrided free machining steel.

Note: For ordering code, please refer to page IR-D

FORCE/PRESSURE DIAGRAM



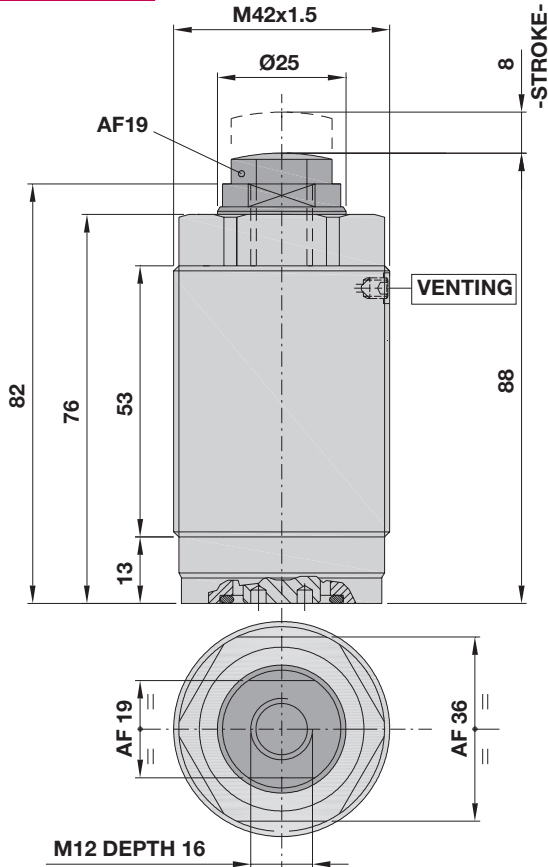
Note: The maximum admissible flow rate amounts to 1.5 l/min.

IRF 25.0

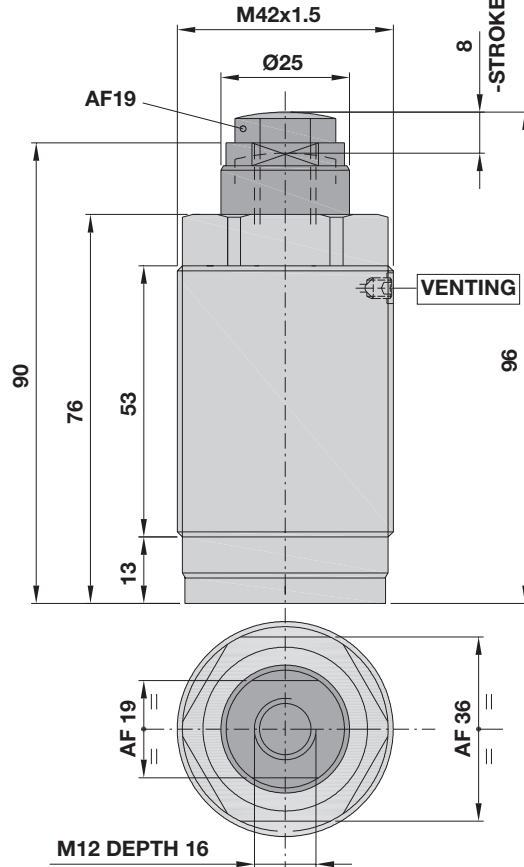
HYDRAULIC WORK SUPPORT WITH THREADED BODY

MAX. WORKING PRESSURE = 400 BAR

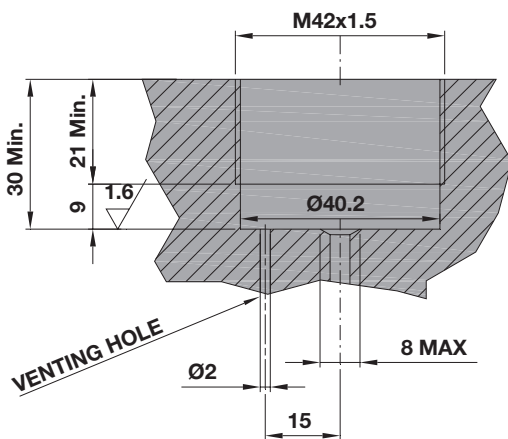
P Version



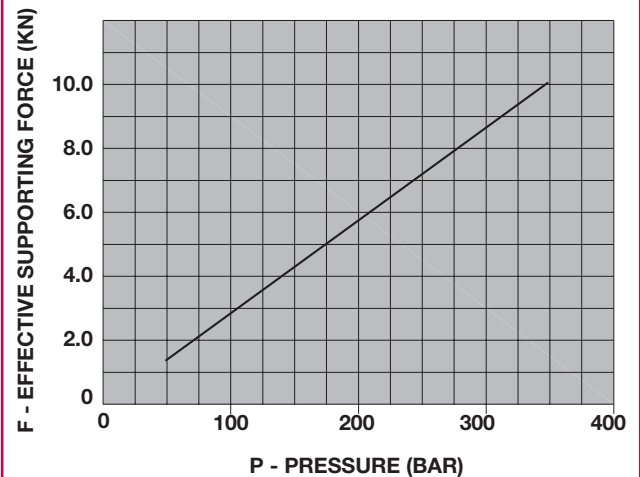
M version



Installation dimensions



FORCE/PRESSURE DIAGRAM



Variants:

- > **P:** Version with normally retracted rod and hydraulic approach.
- > **M:** Version with normally extended rod and spring approach.

Supplied:

- > O-ring seal 112

Material:

- > **Rod:** Hardened nitrided steel.
- > **Body:** Nitrided free machining steel.

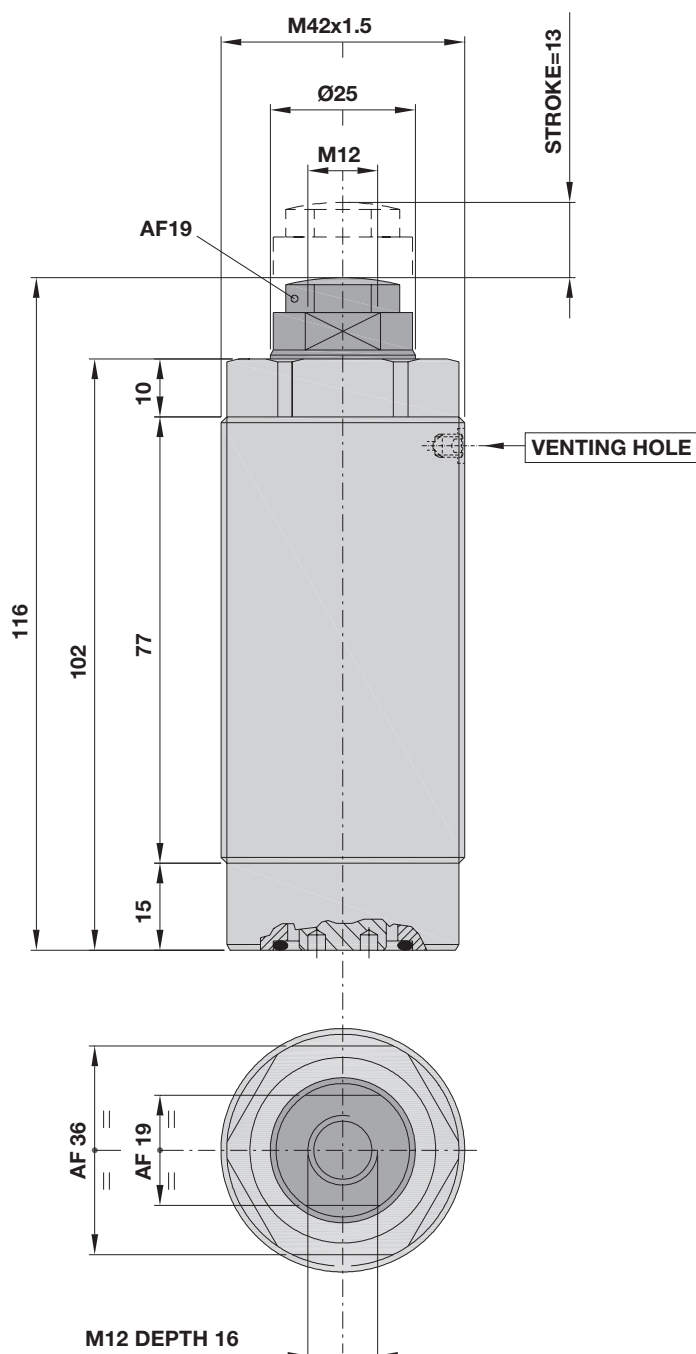
Note: The maximum admissible flow rate amounts to 2 l/min.

Note: For ordering code, please refer to page IR-D

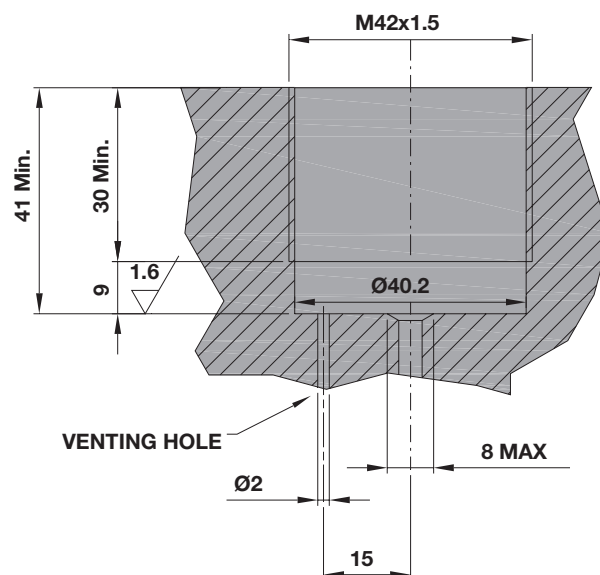
IRFP 25.1

HYDRAULIC WORK SUPPORT WITH THREADED BODY AND INCREASED STROKE

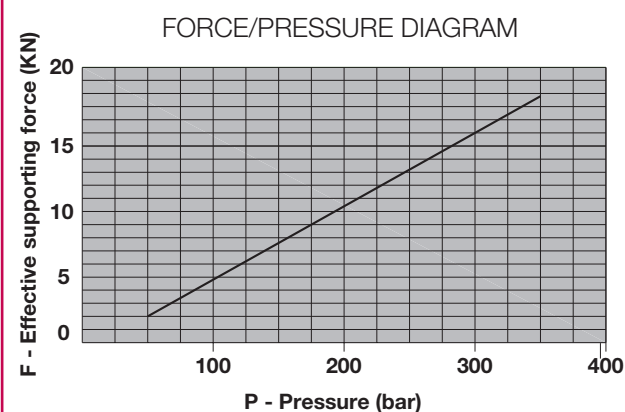
MAX. WORKING PRESSURE = 400 BAR



Installation dimensions



This work support is only available in a version with normally retracted rod and hydraulic approach.



Supplied:

- > O-ring seal 112

Material:

- > **Rod:** Hardened nitrided steel.
- > **Body:** Nitrided free machining steel.

Note: For ordering code, please refer to page IR-D

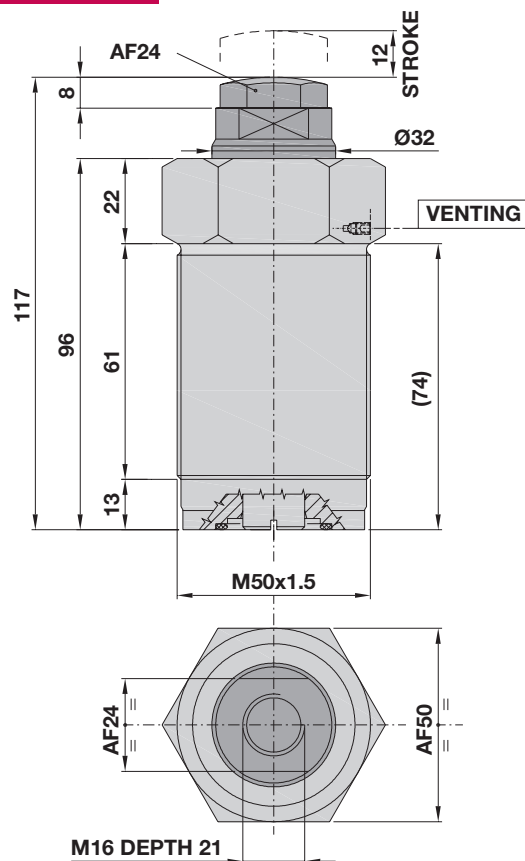
Note: The maximum admissible flow rate amounts to 2 l/min.

IRF 32.0

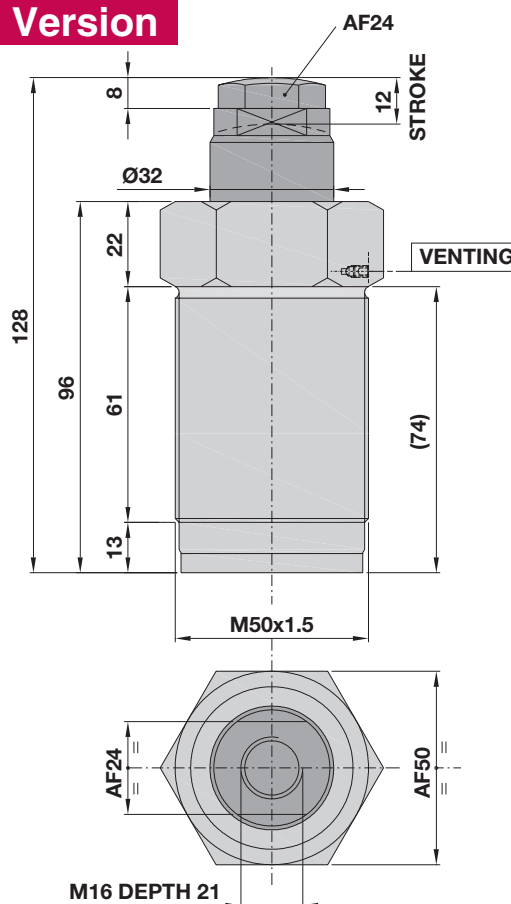
HYDRAULIC WORK SUPPORT WITH THREADED BODY

MAX. WORKING PRESSURE = 400 BAR

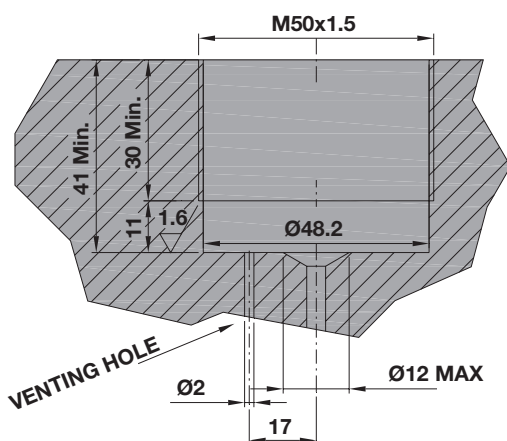
P Version



M Version



Installation dimensions



Variants:

- > **P:** Version with normally retracted rod and hydraulic approach
- > **M:** Version with normally extended rod and spring approach.

Supplied:

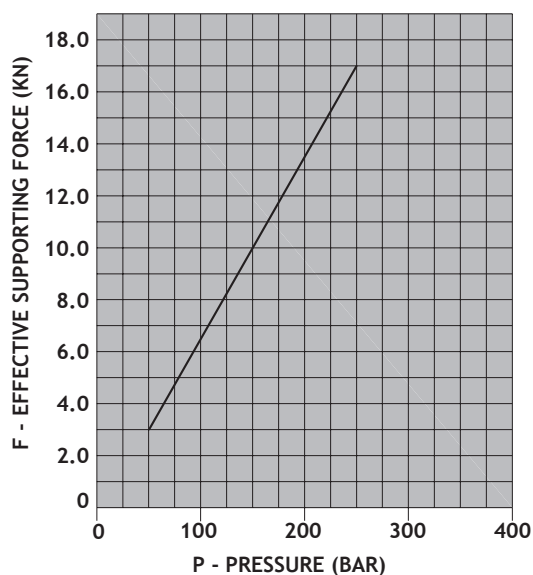
- > O-ring seal 119

Note: For ordering code, please refer to page IR-D

Material:

- > **Rod:** Hardened nitrided steel.
- > **Body:** Nitrided free machining steel.

FORCE/PRESSURE DIAGRAM

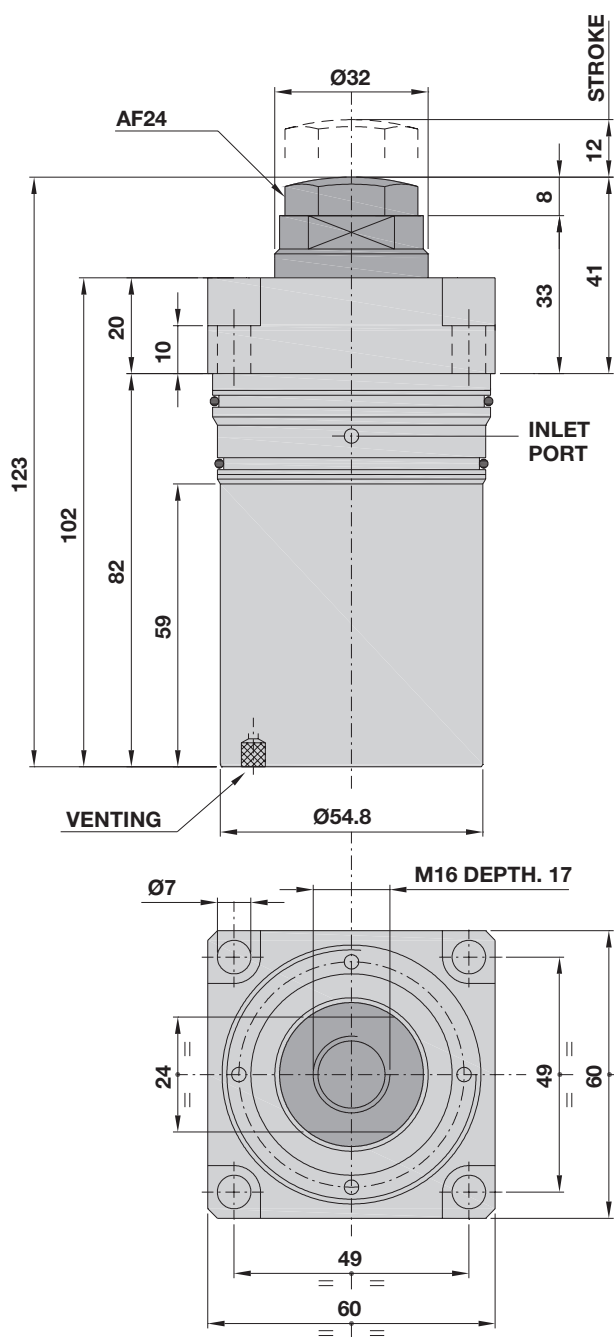


Note: The maximum admissible flow rate amounts to 2 l/min.

IRCP 32.0

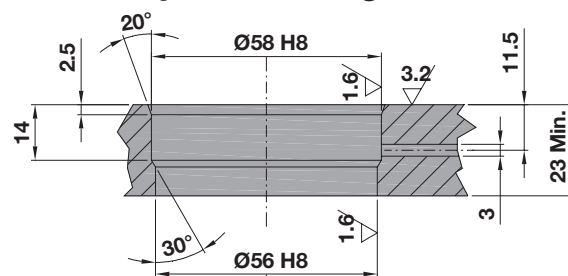
HYDRAULIC WORK SUPPORT WITH CARTRIDGE BODY

MAX. WORKING PRESSURE = 400 BAR

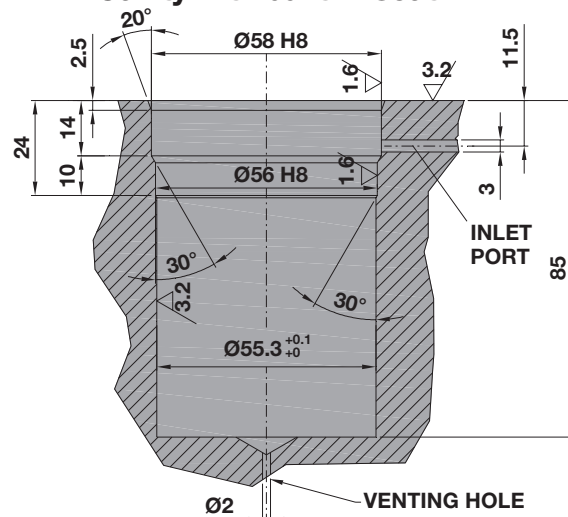


Installation dimensions

Cavity with crossing seat



Cavity with built-in seat



Version with normally retracted rod and hydraulic approach.

Supplied:

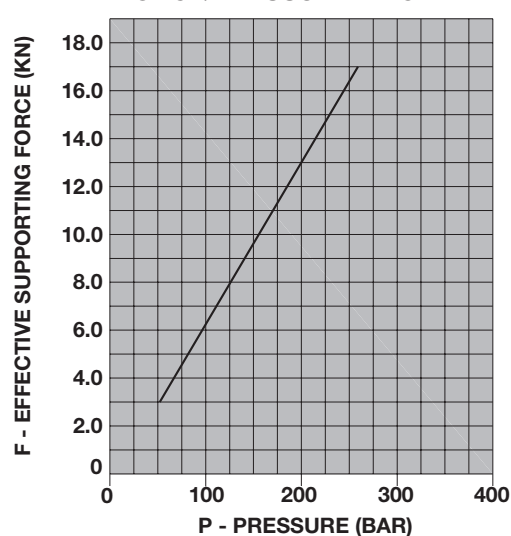
- > M6x20 12.9 UNI 5931 12.9. mounting screws.
- > Sealing rings.

Material:

- > **Rod:** Hardened nitrided steel.
- > **Body:** Nitrided free machining steel.

Note: For ordering code, please refer to page IR-D

FORCE/PRESSURE DIAGRAM

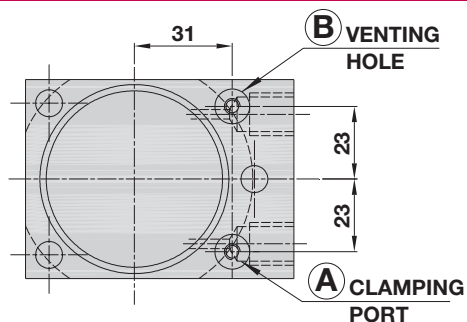


Note: The maximum admissible flow rate amounts to 2 l/min.

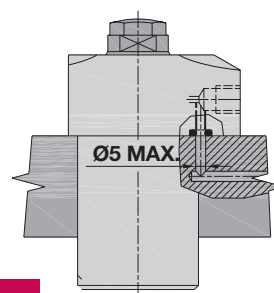
IRFL 32.0

HYDRAULIC WORK SUPPORT WITH UPPER FLANGE

MAX. WORKING PRESSURE = 400 BAR

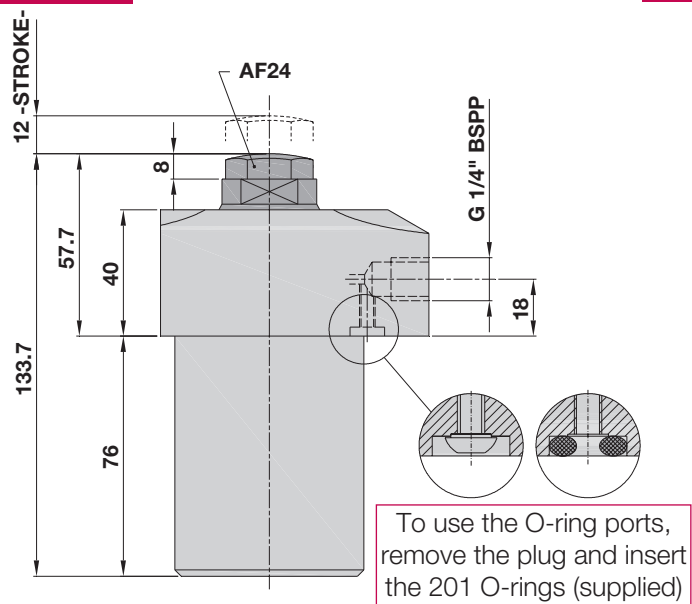


P Version

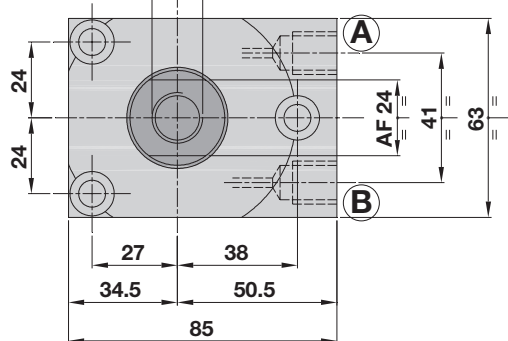


Installation dimensions

M Version



M16 DEPTH 21



A: Clamping
B: Venting

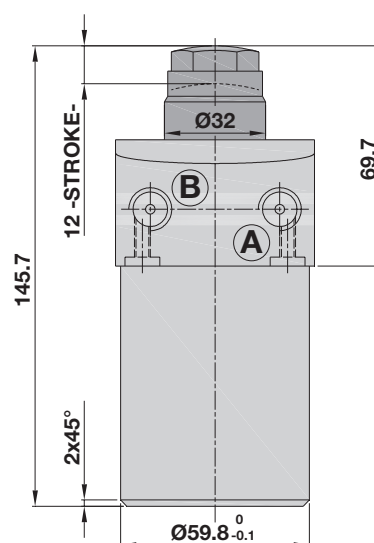
Variants:

- > **P:** Version with normally retracted rod and hydraulic approach.
- > **M:** Version with normally extended rod and spring approach.

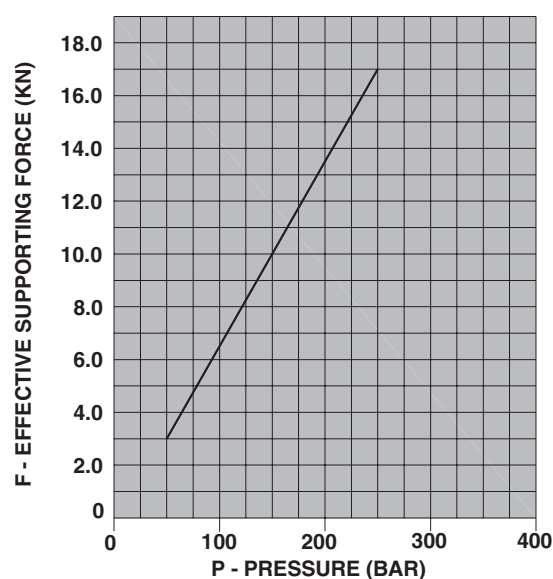
Supplied:

- > O-ring seal 2019.

Note: For ordering code, please refer to page IR-D



FORCE/PRESSURE DIAGRAM



Note: The maximum admissible flow rate amounts to 2 l/min.

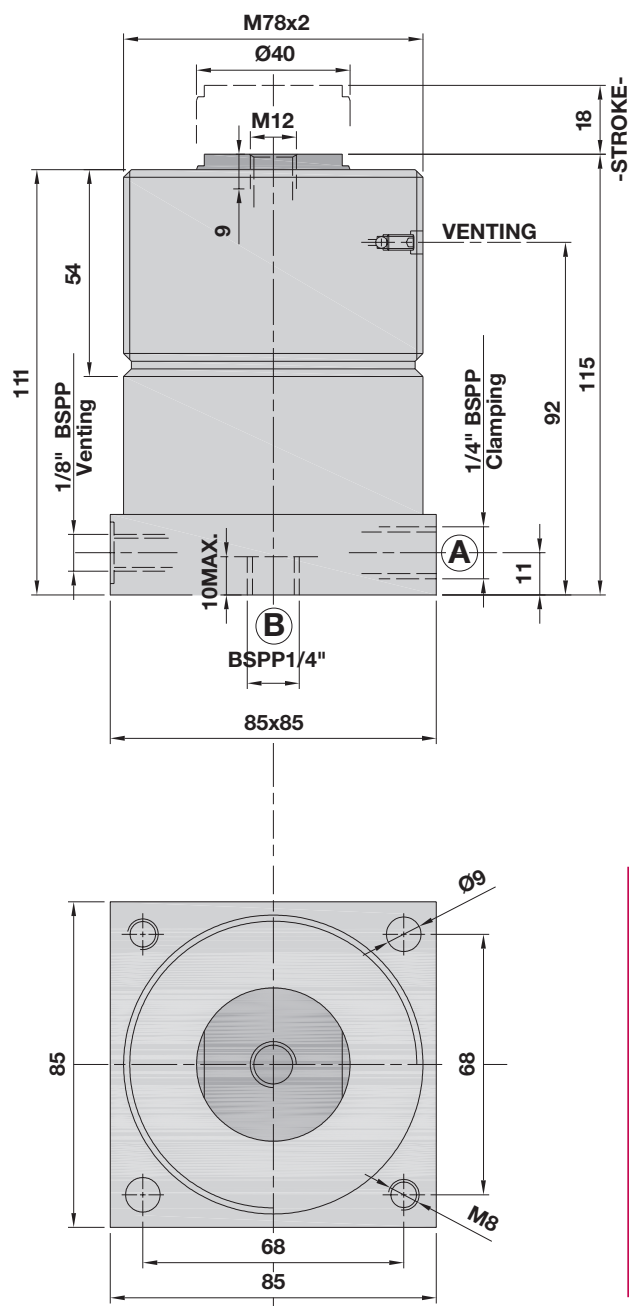
IRFP 40.0

HYDRAULIC WORK SUPPORT WITH LOWER FLANGE

MAX. WORKING PRESSURE = 400 BAR

A: Clamping

B: Clamping, alternative (*upon request*)



In standard version, the **IRFP40.0** work support is equipped with an “**A**” port (1/4" BSPP) for lateral supply.

A version with “**B**” port (1/4" BSPP) for supply from below is available upon request (type **IRFP40.1**).

The maximum admissible flow rate amounts to 2.5 l/min.

Version with normally retracted rod and hydraulic approach.

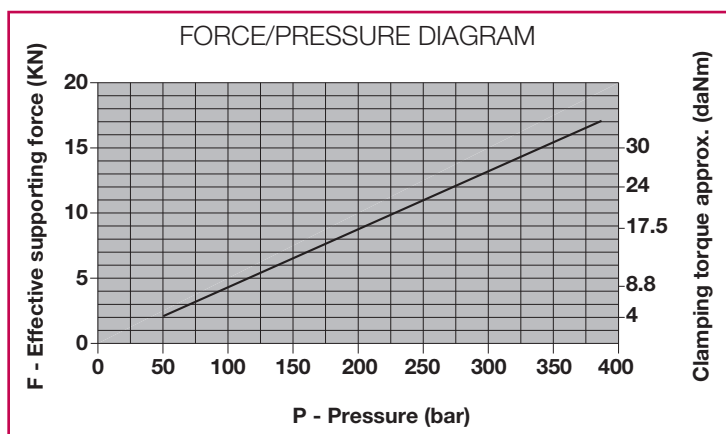
Supplied:

> M8x235 UNI 5931 12.9 mounting screws.

Material:

- > **Rod:** Hardened nitrided steel.
- > **Body:** Nitrided free machining steel.

Note: For ordering code, please refer to page IR-D



ORDERING CODE

IR: Hydraulic work support

IR

F: Version with threaded body

F

C: Version with cartridge body

C

FL: Version with flanged body

FL

P: Version with normally retracted rod and hydraulic approach

P

M: Version with normally extended rod and spring approach

M

Rod dimensions: (16-25-32-40)

16 - 25- 32 - 40

0 - 1 - 2: Version with variable stroke depending on the type size

0 - 1- 2

Available work supports

IR VERSION			P	M
F	C	FL		
16.0			YES	YES
16.2			YES	/
25.0			YES	YES
25.1			YES	/
32.0			YES	YES
	32		YES	/
		32	YES	YES
40			YES	/



COMPONENTI ED ACCESSORI

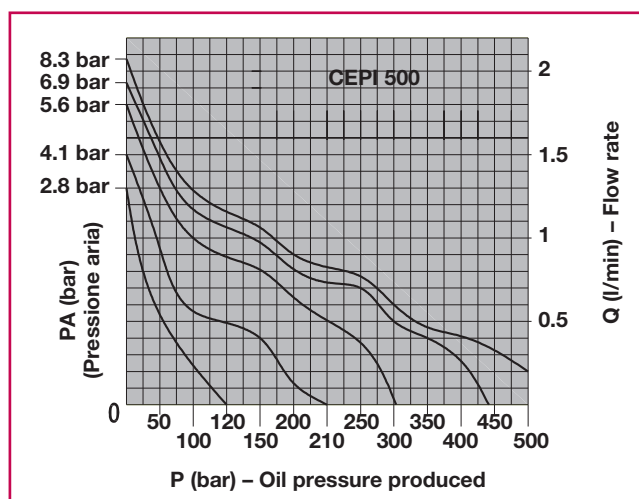
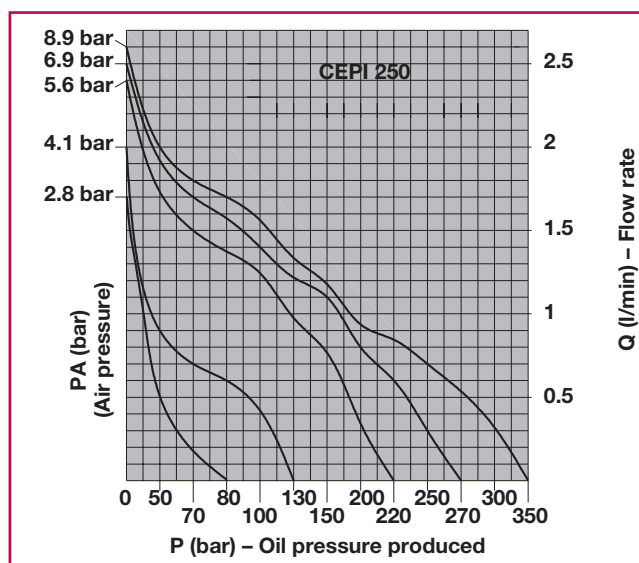
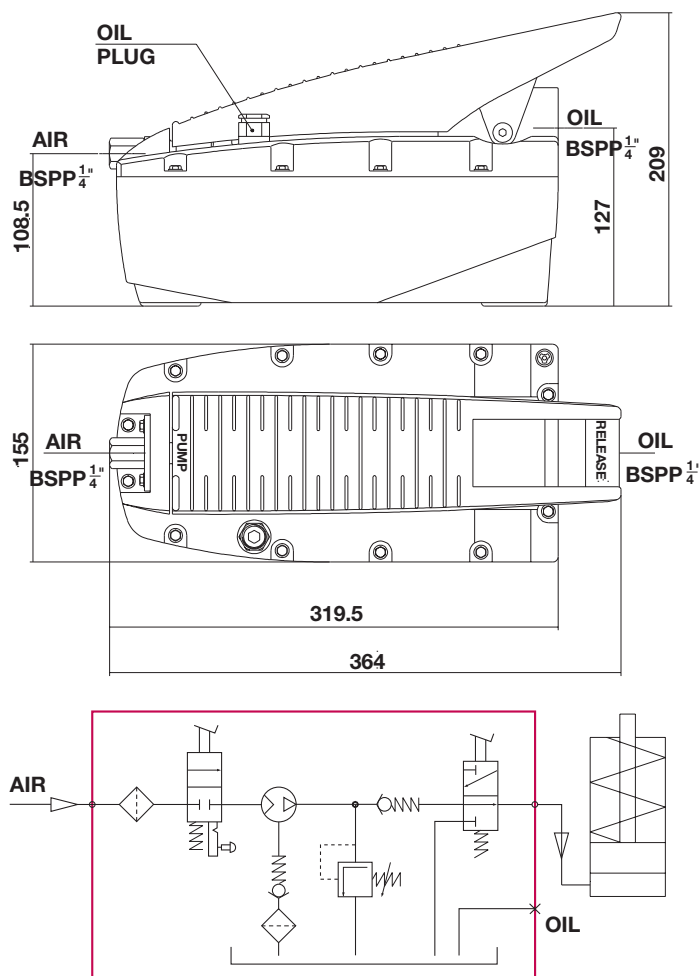
COMPONENTS AND ACCESSORIES
KOMPONENTEN UND ZUBEHÖR

HYDRAULIC
COMPONENTS

CEPI XXX SE

SINGLE-ACTING AIR/OIL BOOSTER UNITS

SE



Note: noise level (< 75 dbA)

TECHNICAL SPECIFICATIONS		
AVAILABLE VERSIONS	CEPI 250 SE	CEPI 500 SE
Max. flow rate (l/min)	2.2	1.4
Max. oil pressure (bar)	250	500
Min. air pressure (bar) (RECOMMENDED)	2.8	
Max. air pressure (bar)	10	
Oil tank volume (l)	2.4	
Effective oil volume (l)	2.1	
Empty weight (kg)	6.3	

CEPI air-oil booster units for single-acting cylinders are manually operated by means of a pedal switch with three positions: upon actuation of the **PUMP** pedal, the unit is automatically started and supplies the connected circuit with oil until the desired operating pressure is reached.

The supply air pressure has to be adjusted by means of a separate air service unit. It is not necessary to use lubricated air. When the pedal is in neutral position, a check valve, that is integrated into the unit, maintains the hydraulic pressure.

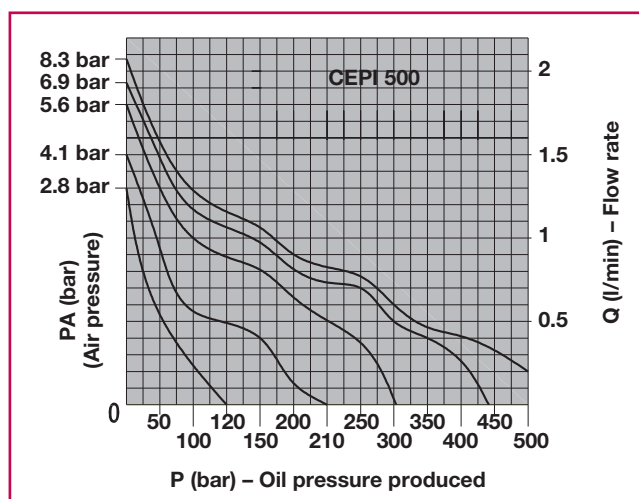
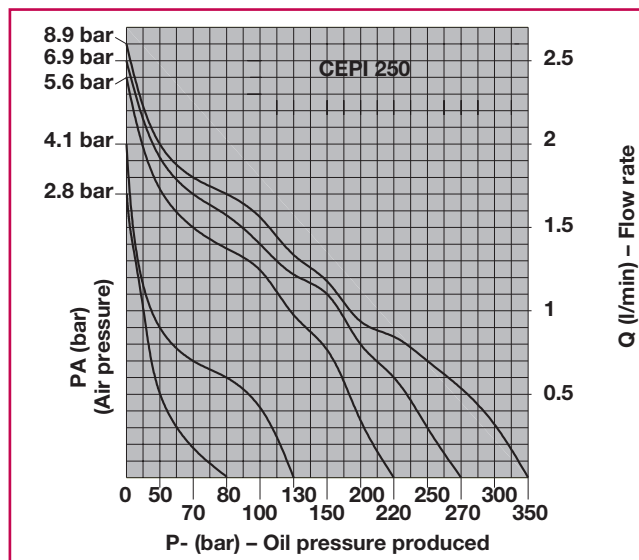
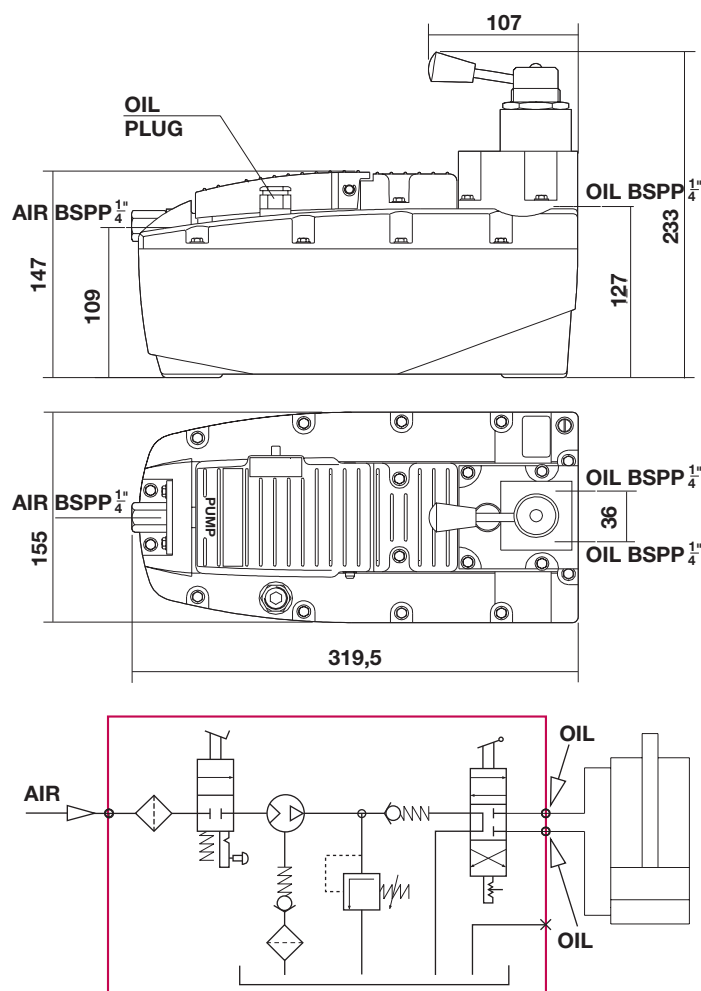
When pressing the **RELEASE** side of the pedal, the oil flows back into the tank. The CEPI air-oil booster unit can also be used for double-acting cylinders by installing a directional control valve.

Steel-plate tanks with a volume of 5 litres are available upon request.

CEPI XXX DE

DOUBLE-ACTING AIR/OIL BOOSTER UNITS

DE



Note: Low noise level (< 75 dbA)

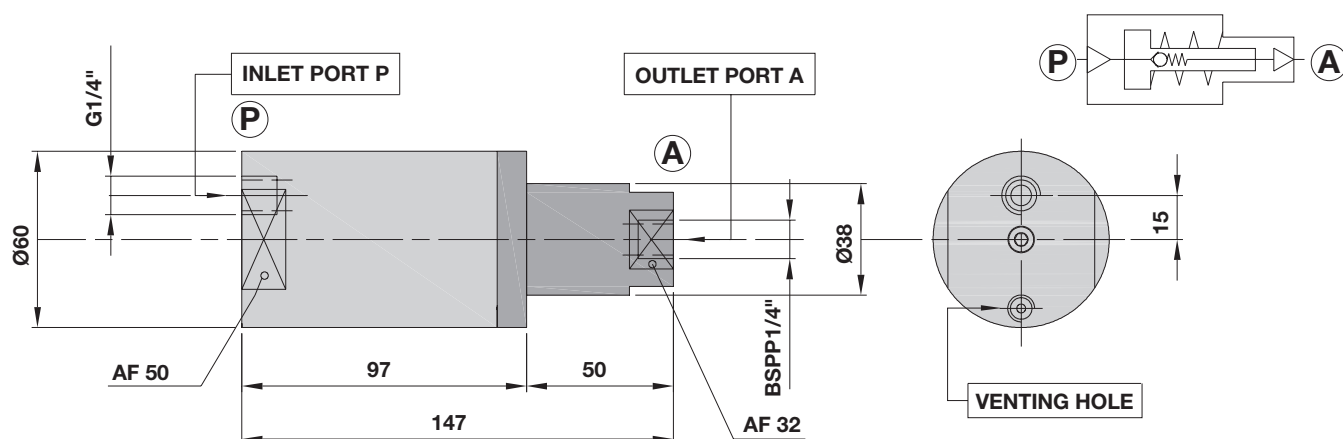
TECHNICAL SPECIFICATIONS		
AVAILABLE VERSIONS	CEPI 250 SE	CEPI 500 SE
Max. flow rate (l/min)	2.2	1.4
Max. oil pressure (bar)	250	500
Min. air pressure (bar) (RECOMMENDED)	2.8	
Max. air pressure (bar)	10	
Oil tank volume (l)	2.4	
Effective oil volume (l)	2.1	
Empty weight (kg)	6.8	

CEPI air-oil booster units for single- and double acting cylinders are manually operated by means of a pedal switch with three positions arranged upstream from the 4/3-ways directional control valve: upon actuation of the **PUMP** pedal, the unit is automatically started and supplies the connected circuit with oil until the desired operating pressure is reached. To invert the operating direction of the cylinders, release the pressure by means of the 4/3-ways directional control valve and change the lever orientation.

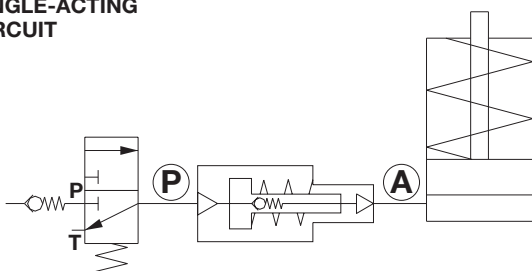
The supply air pressure has to be adjusted by means of a separate air service unit. It is not necessary to use lubricated air. When the valve actuating lever is in central position, the hydraulic pressure is maintained. Steel-plate tanks with a volume of 5 litres are available upon request.

MLP400

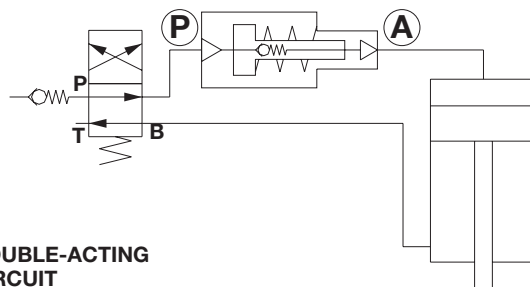
HYDRAULIC INTENSIFIER



SINGLE-ACTING CIRCUIT



DOUBLE-ACTING CIRCUIT

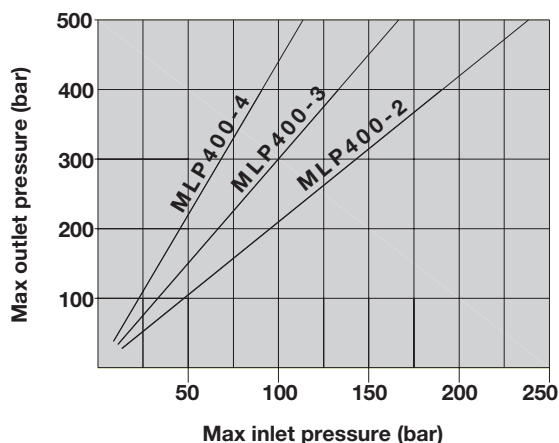


The MLP hydraulic intensifier converts the low working pressure of the hydraulic power unit into the higher pressure to satisfy the application requirements. The compact hydraulic intensifier is easy to mount and available with three different multiplication ratios with a maximum outlet pressure of 500 bar.

Single-acting operation with return spring.

When an appropriate directional control valve is installed, the MLP intensifier is suitable for single- or double-acting hydraulic cylinders.

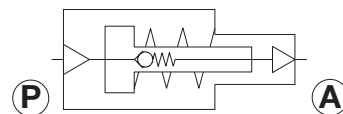
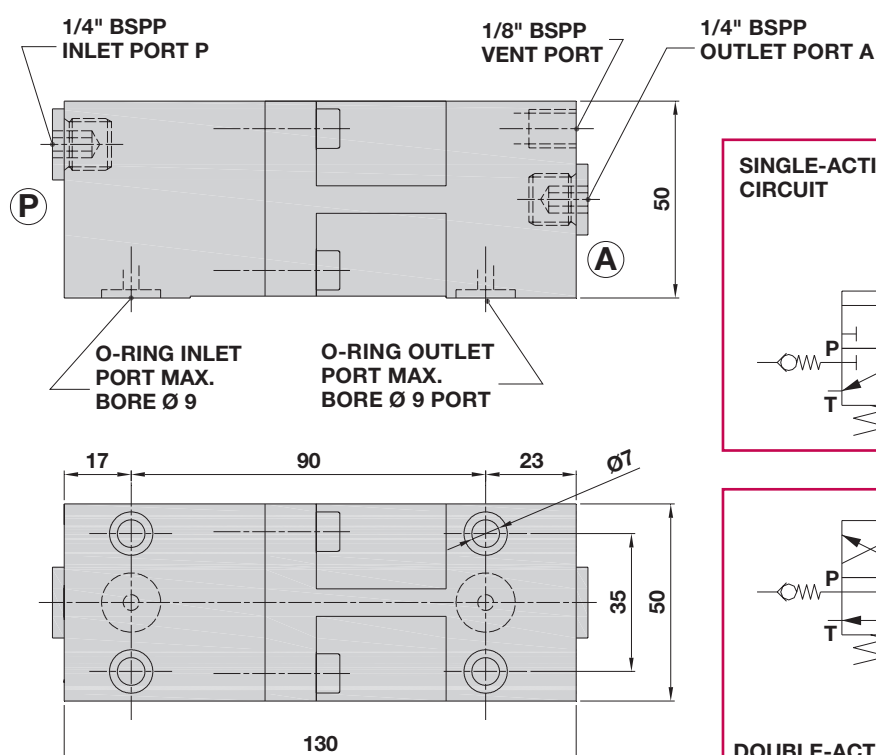
N.B. The MLP intensifier supplies a constant nominal flow capacity. For complex hydraulic circuits or high cylinder capacities, please contact our technical office.



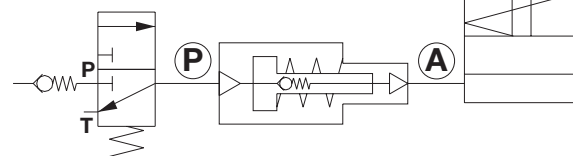
Hydraulic intensifier	MLP 400-2	MLP 400-3	MLP 400-4
Multiplication ratio	1:2.1	1:3	1:4.4
Effective outlet oil volume (cm ³)	8.4	8.4	5.1
Max. inlet pressure (bar)	238	166	112
Max. inlet flow rate	2 lt/min		
Max. outlet pressure (bar)	500		
Temperature	From +10°C up to +60°C		
Filter mesh	25 micron (or better)		
Weight (kg)	2.3		

MLP400-FL

HYDRAULIC INTENSIFIER



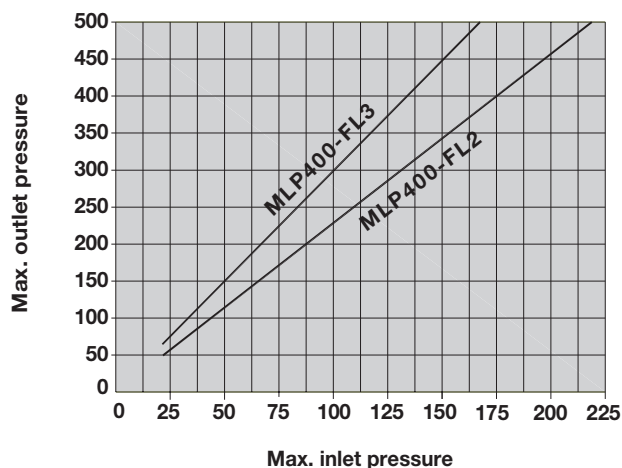
SINGLE-ACTING CIRCUIT



DOUBLE-ACTING CIRCUIT

The MLP 400-FL hydraulic intensifier converts the low working pressure of the hydraulic power unit into the higher pressure to satisfy the application requirements. This compact hydraulic intensifier can be connected with G1/4" BSPP ports or with O-rings for modular mounting through internal channels. Single-acting operation with return spring. When an appropriate directional control valve is installed, the MLP intensifier is suitable for single- or double-acting hydraulic cylinders.

Note: The MLP intensifier supplies a constant nominal flow capacity. For complex hydraulic circuits or high cylinder capacities, we recommend using the MLP intensifier combined with the URM-FL or URM-C filling system manifolds.



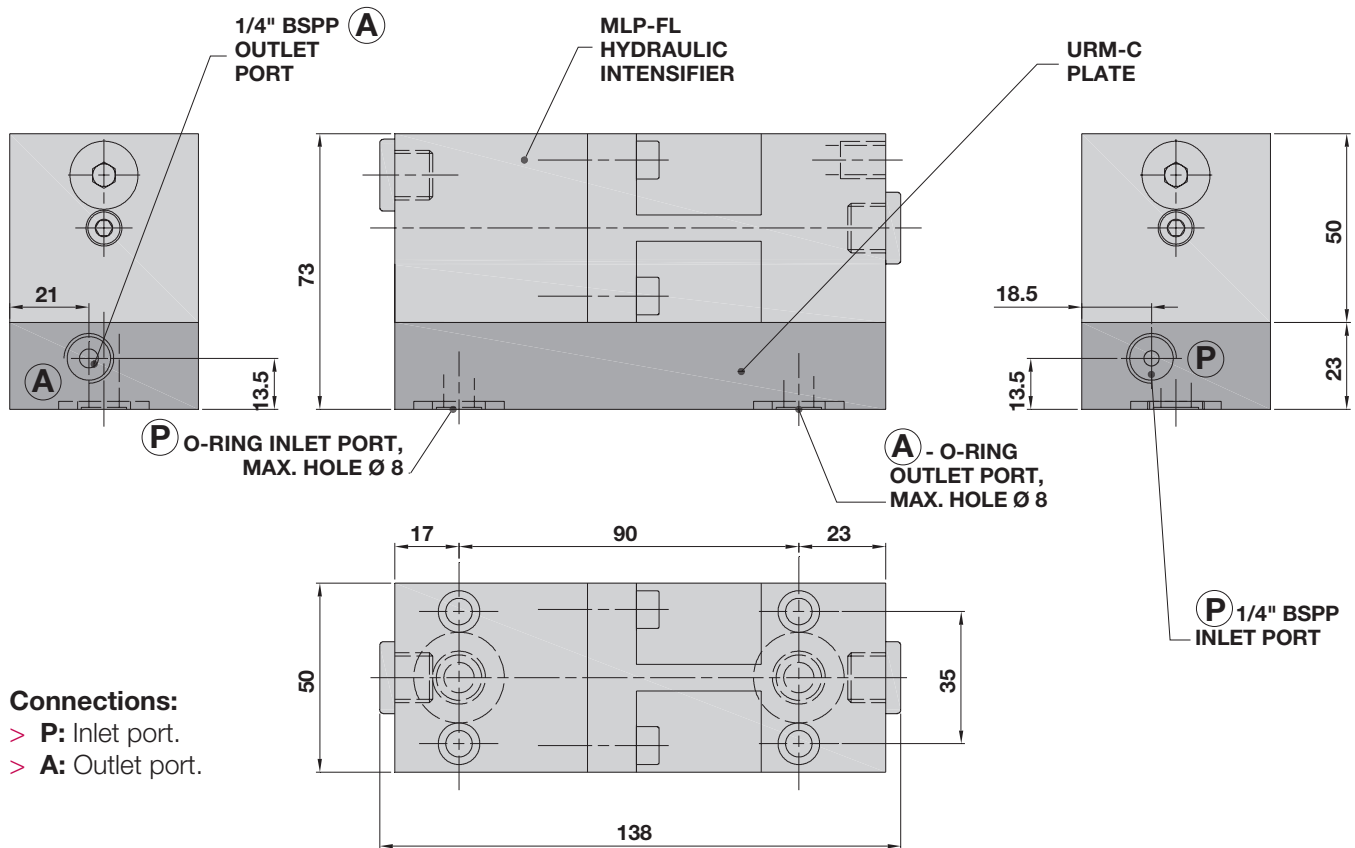
Supplied:

> 4 M6x60 UNI 5931 12.9 mounting screws.

Hydraulic intensifier	MLP 400-FL2	MLP 400-FL3
Multiplication ratio	1:2.3	1:3.1
Effective outlet oil volume (cm ³)	4.5	4.5
Max. inlet pressure (bar)	215	160
Max. inlet flow rate	2 lt/min	2 lt/min
Max. outlet pressure (bar)	500	500
Temperature	From +10°C up to +60°C	
Filter mesh	25 micron (or better)	25 micron (or better)
Weight (kg)	2.1	2.1

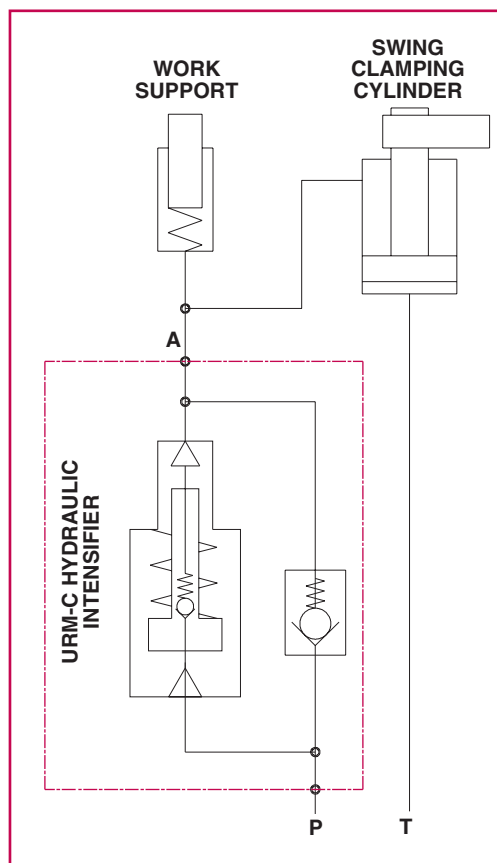
URM-C

HYDRAULIC INTENSIFIER WITH COMPACT FILLING MANIFOLD



Connections:

- > **P:** Inlet port.
- > **A:** Outlet port.



**HYDRAULIC
CIRCUIT
EXAMPLE**

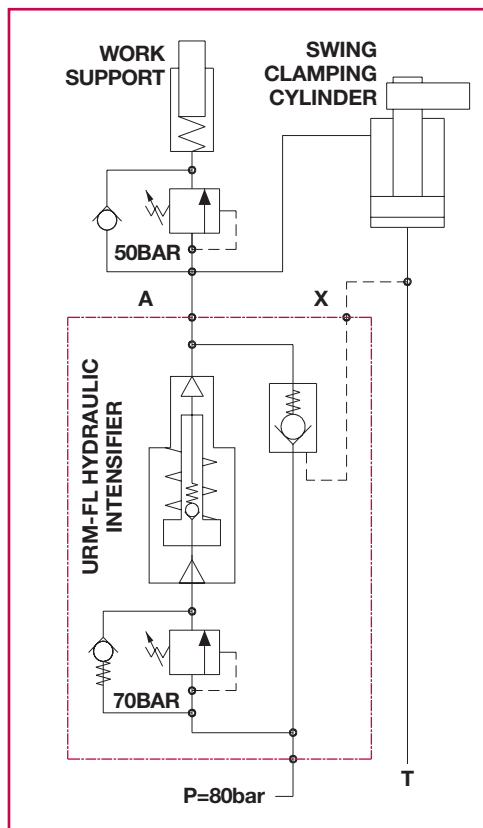
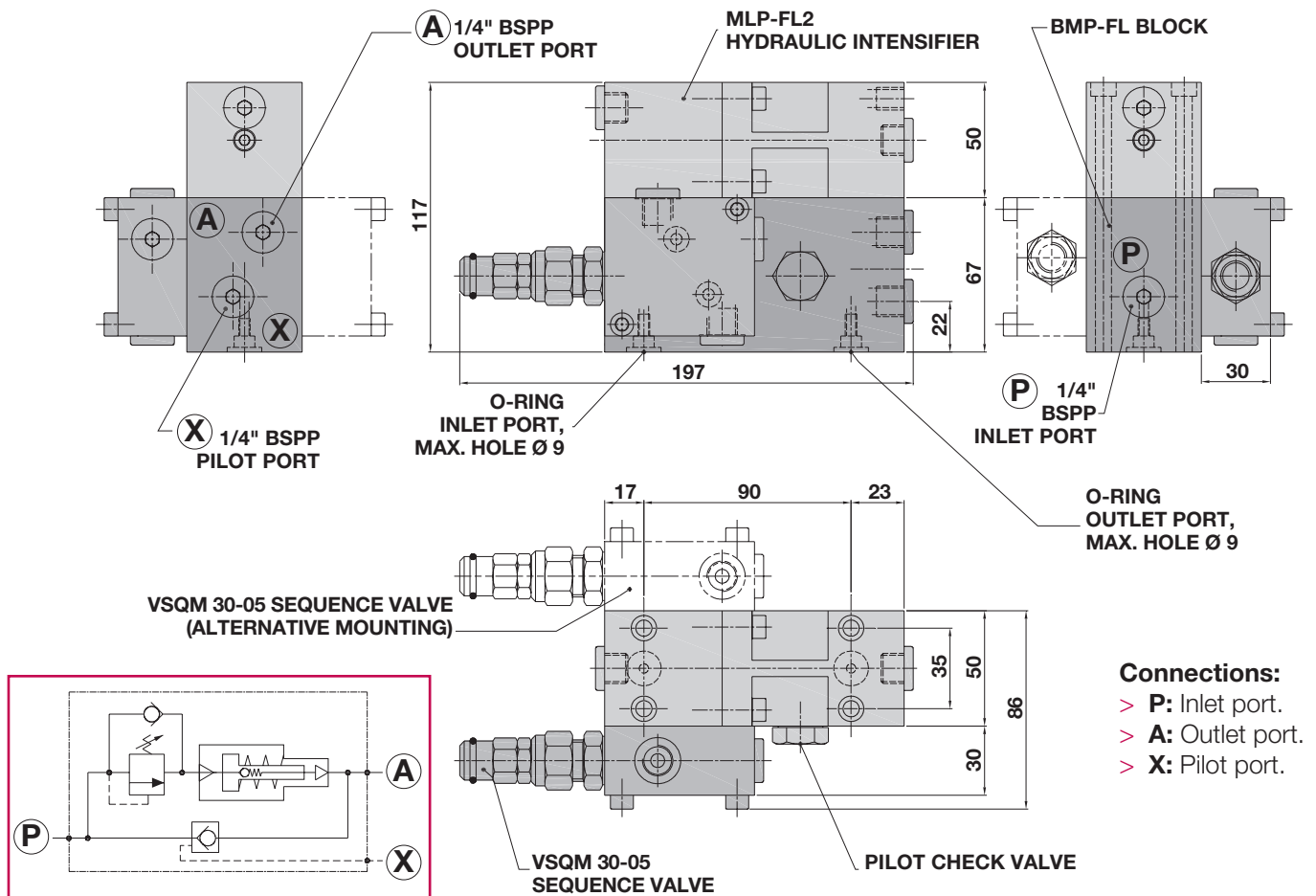
The MLP intensifier with **URM-C** filling manifold should be used when numerous cylinders are working in the hydraulic circuit. It can be easily mounted in-line by the 1/4" BSPP ports or by O-ring ports. The **URM-C** filling system manifold can be used instead of the **URM-FL** manifold unit. **The compact filling system manifold is provided with integrated small 100-micron filters to remove chips and burrs.** However, we recommend protecting all hydraulic components and systems by using appropriate oil filters as indicted in our catalogue. Please contact our technical office for more information.

Material:

- > **Intensifier body and plate:** Free machining steel burnished.
- > **Internal parts:** High-quality hardened steel.

URM-FL

HYDRAULIC INTENSIFIER WITH URM-FL FILLING MANIFOLD



**HYDRAULIC
CIRCUIT
EXAMPLE**

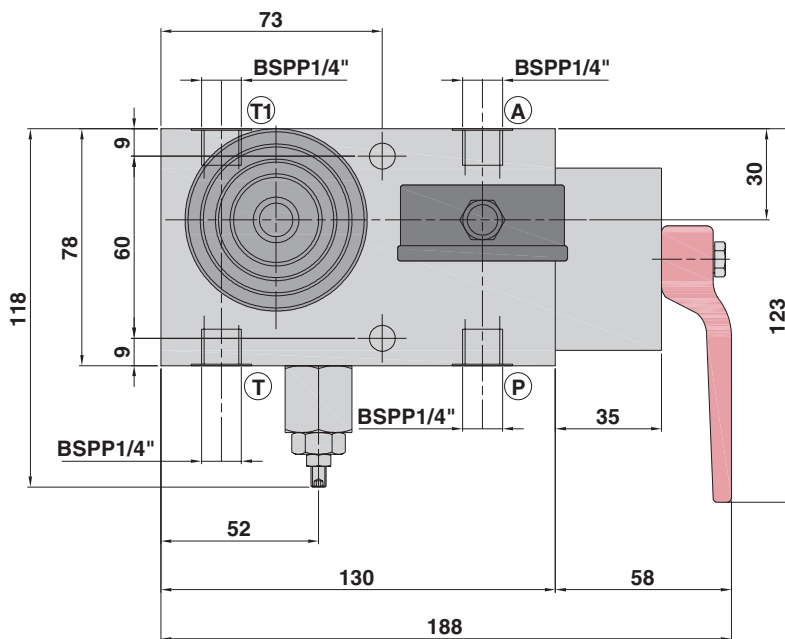
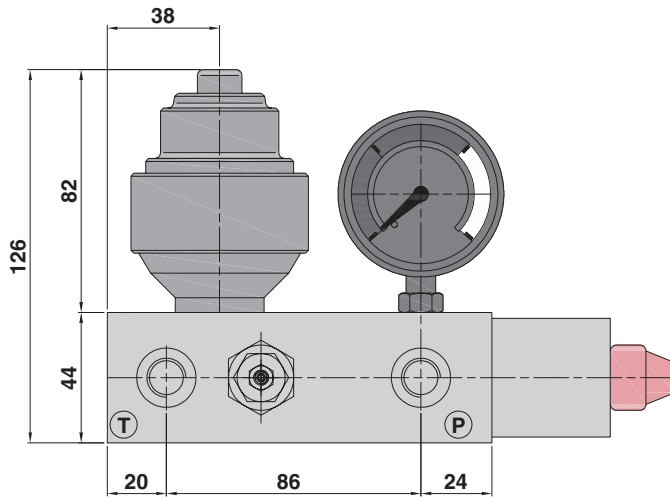
The MLP intensifier with **URM-FL** filling manifold should be used when numerous cylinders and sequence valves that cause high pressure drops are working in the hydraulic circuit. It can be easily mounted in-line by the 1/4" BSPP ports or by O-ring ports (max. hole Ø 9 mm). To ensure proper functioning of the URM-FL unit, the sequence valve should be adjusted close to the maximum working pressure of the hydraulic circuit with the inlet flow rate being reduced. Please contact our technical office for more information.

Material:

- > **Blocks, intensifier body and sequence valves:** Free machining steel burnished
- > **Internal parts:** High-quality hardened steel.
- > **Valve protection:** Zinc-plated.

UAP 100

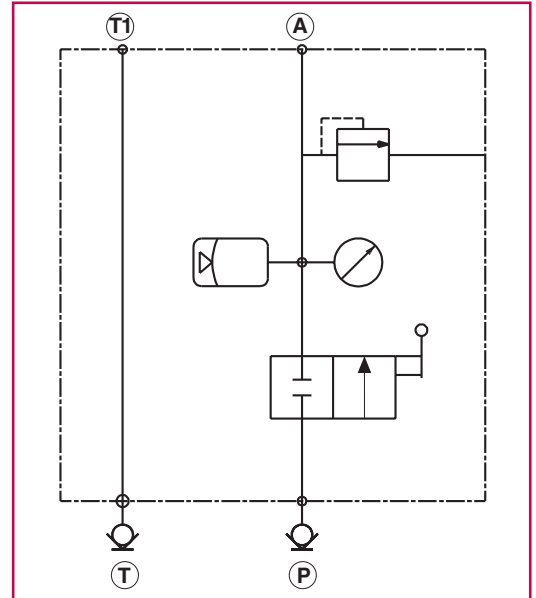
PRESSURE COUPLING UNIT WITH MANUAL OPERATION



Standad configuration of the UAP 100:

- > Pressure relief valve to protect the system against excess pressure.
- > Two-ways ball valve with manual lever operation.
- > Accumulator with a nominal volume of 0.040 litres and preloaded at 100 bar.
- > Glycerine bath pressure-gauge 0/250 bar.
- > 1/4" BSPP ports.

HYDRAULIC CIRCUIT



Manually operated pressure coupling unit for single- and double acting cylinders. This unit is used when the clamping equipment is separated from the hydraulic pressure generator, i.e. for manufacturing systems with pallet change or when a single pressure generator is applied for several clamping devices.

Material:

- > **Valve and cartridge body:**
Free machining steel Internal parts: High-quality.
- > **Internal parts:**
High-quality hardened steel.
- > **External protection:**
Valve body – burnished.
Cartridge body - zinc-plated.

Note: Accumulators with different volumes are available upon request. Pressure-gauge with different basic scale values can also be delivered on request.

GV ROTARY JOINTS

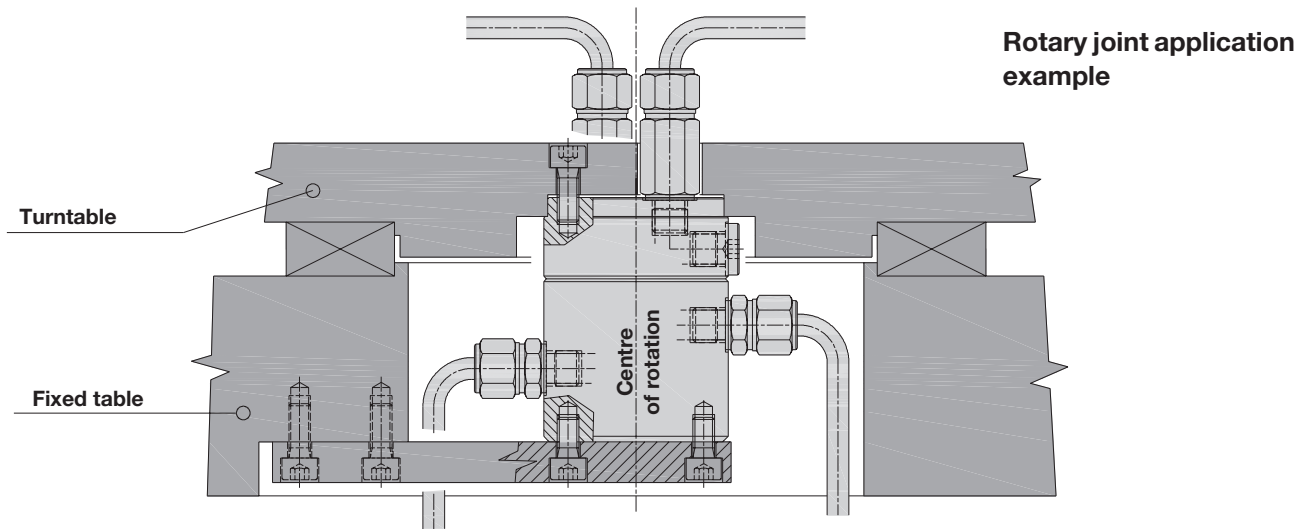
ROTARY JOINTS WITH MULTIPLE PASSAGES AND WITHOUT LEAKAGE RECIRCULATION

The GV series multiple passage rotary joints are designed to supply oil under pressure to rotating or swivelling fixtures (workholding). These joints have to be installed in the centre of rotation and fixed to both moving parts. A low torque is required for starting the rotational movement.

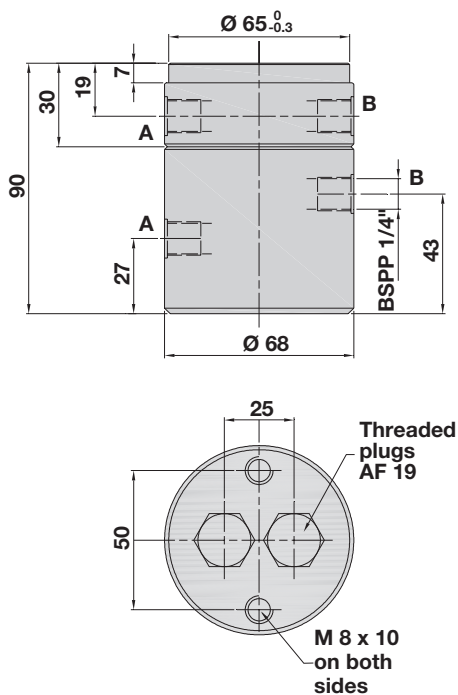
For the GV multiple passage rotary joints, leakage lines are not required as **no internal oil leakage occurs**.

To ensure a long service life of the internal seals, make sure to connect the rotary joint on all ports to the hydraulic supply. The operating temperature should not exceed 60°C. In addition, oil filters with a 10 micron filter mesh should be used.

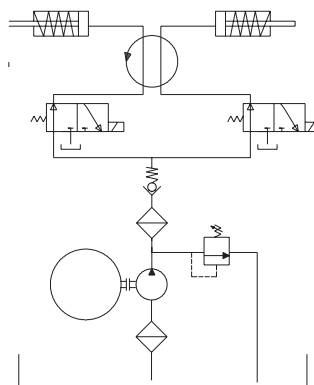
GV rotary joints are made of high quality steel subjected to stress-relieving heat treatment and ground. They should only be operated with hydraulic oil and must not be used with lubricating coolants.



GV2 - ROTARY JOINT with two passages



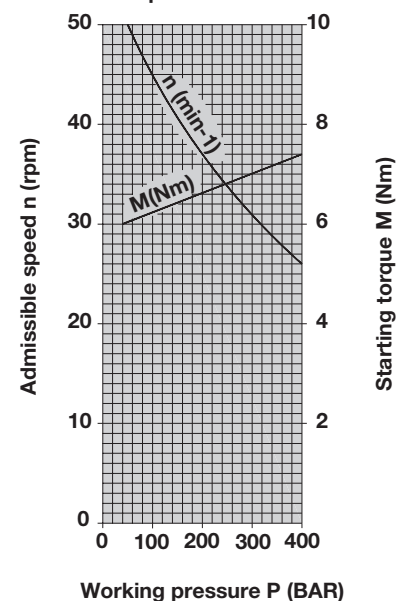
HYDRAULIC CIRCUIT



GV 2 TWO-PASSAGES ROTARY JOINT

Type of fixing	flanged, two M8x10 holes
Ports	1/4" BSPP
Angular speed	max. 50 rpm
Weight	2.3 kg

Max. admissible speed n depending on the starting torque M and the working pressure P



HYDROBLOCK
INNOVATIVE ENGINEERING

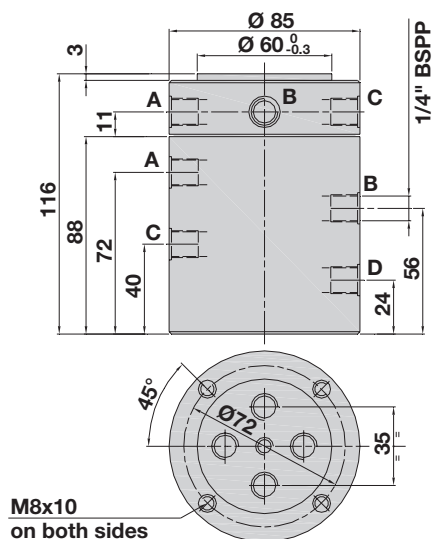
Last update 09/2010

GV4/GV6

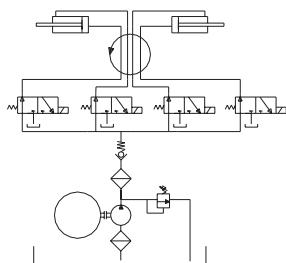
ROTARY JOINTS WITH MULTIPLE PASSAGES AND WITHOUT LEAKAGE RECIRCULATION

2

GV4 - ROTARY JOINT with four passages



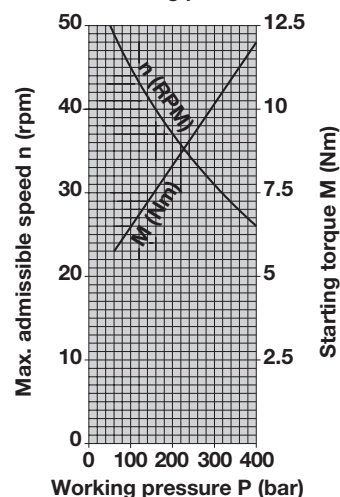
HYDRAULIC CIRCUIT



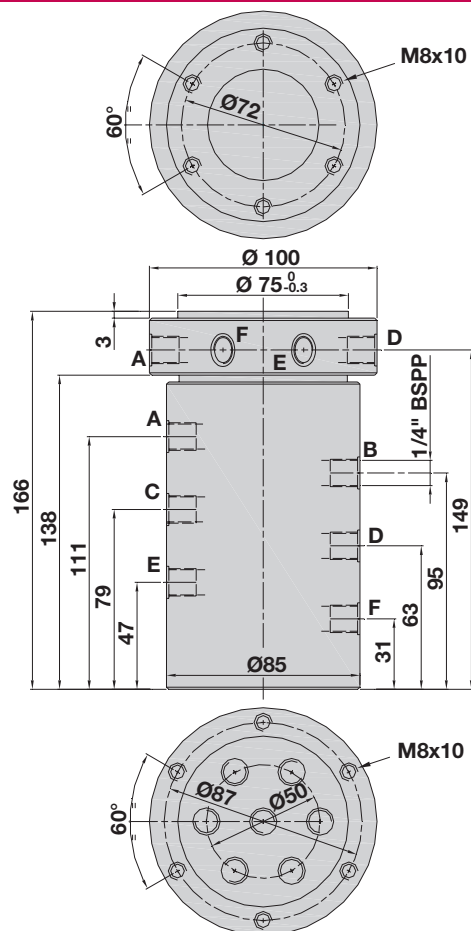
GV 4 FOUR-PASSAGES ROTARY JOINT

Type of fixing	flanged, 4 + 4 M8x10 holes
Ports	1/4" BSPP
Angular speed	max. 50 rpm
Weight	4.6 kg

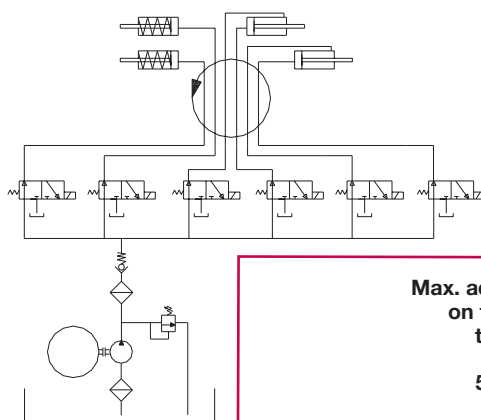
Max. admissible speed n depending on the starting torque M and the working pressure P



GV6 - ROTARY JOINT with six passages



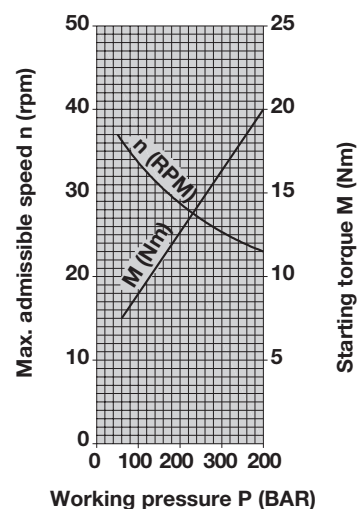
HYDRAULIC CIRCUIT



GV 6 SIX-PASSAGES ROTARY JOINT

Type of fixing	flanged, 6 + 6 M8x10 holes
Ports	1/4" BSPP
Angular speed	max. 40 rpm
Weight	6.7 kg

Max. admissible speed n depending on the starting torque M and the working pressure P

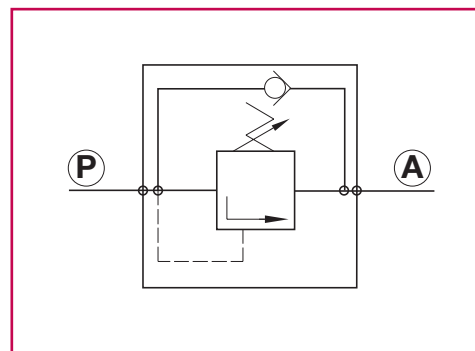
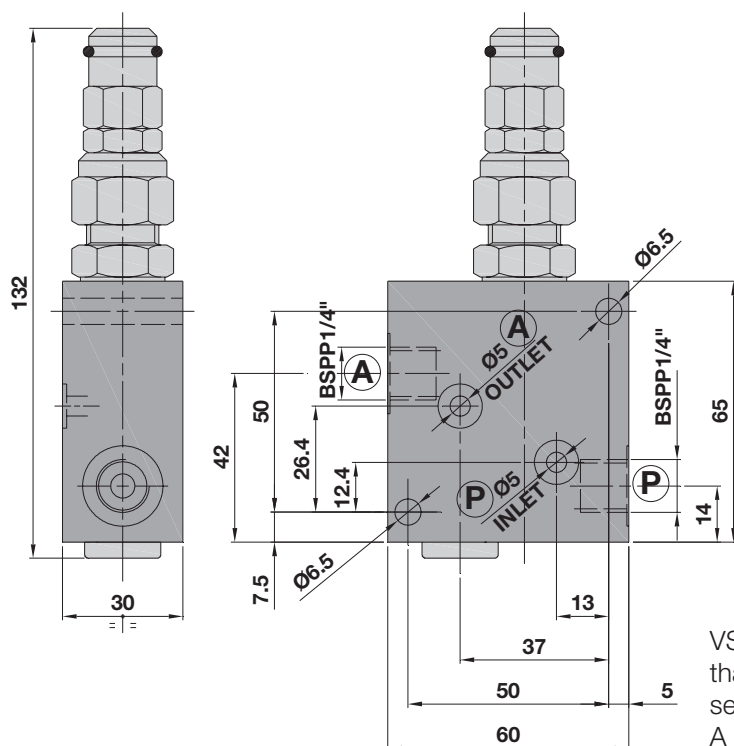


HYDROBLOCK
INNOVATIVE ENGINEERING

Last update 09/2010

VSQM30

SEQUENCE VALVE WITH FLANGE



P: Inlet Pressure

A: Cylinder port

VSQM sequence valves are used in hydraulic systems that require a specific pressure dependent priority or sequence of motions.

A check valve allows the free return flow when the operation is inverted.

These extremely compact valves can be mounted either with the supplied O-rings or in-line with the G1/4\"/>

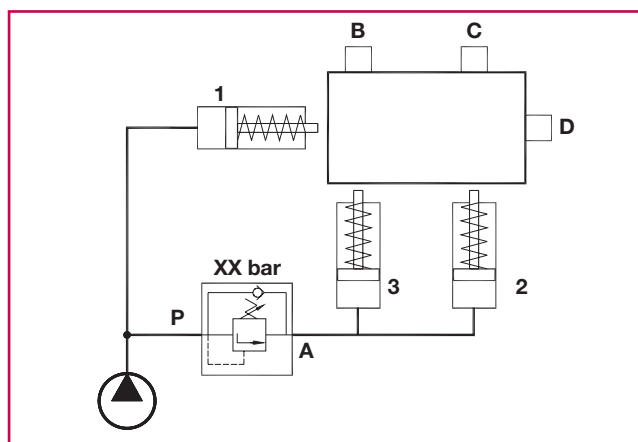
Upon request, various sequence valves can be assembled to modular system provided with a common "P" port.

Supplied:

- > TCEI M6x40 UNI 5931 12.9 mounting screws.
- > O-rings

Material:

- > **Valve and cartridge body:** Free machining steel.
- > **Internal parts:** High-quality hardened and ground steel.
- > **External protection:** Valve body – burnished
Cartridge body - zinc-plated.



Application example:

- 1) Cylinder no. 1 pushes the workpiece against the stop "D".
- 2) The pressure rises up to XX bar and opens the sequence valve.
- 3) Cylinders no. 2 and no. 3 push the workpiece against "B" and "C" stops.
- 4) The pressure uniformly increases in all cylinders, because the sequence valve is completely open.

VSQM30 SEQUENCE VALVE	
Type	DIRECTLY COMPENSATED
Mounting	IN-LINE OR MANIFOLD MOUNTING
Ports	OR2043 Ø 10.82 X 1.78 OR 1/4" BSPP DEPENDING ON THE REQUIREMENTS
Max. pressure	350 BAR
Weight	0.8 KG

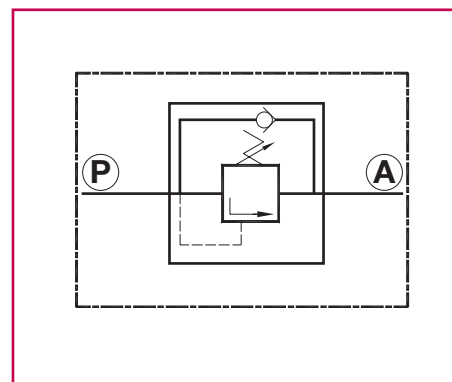
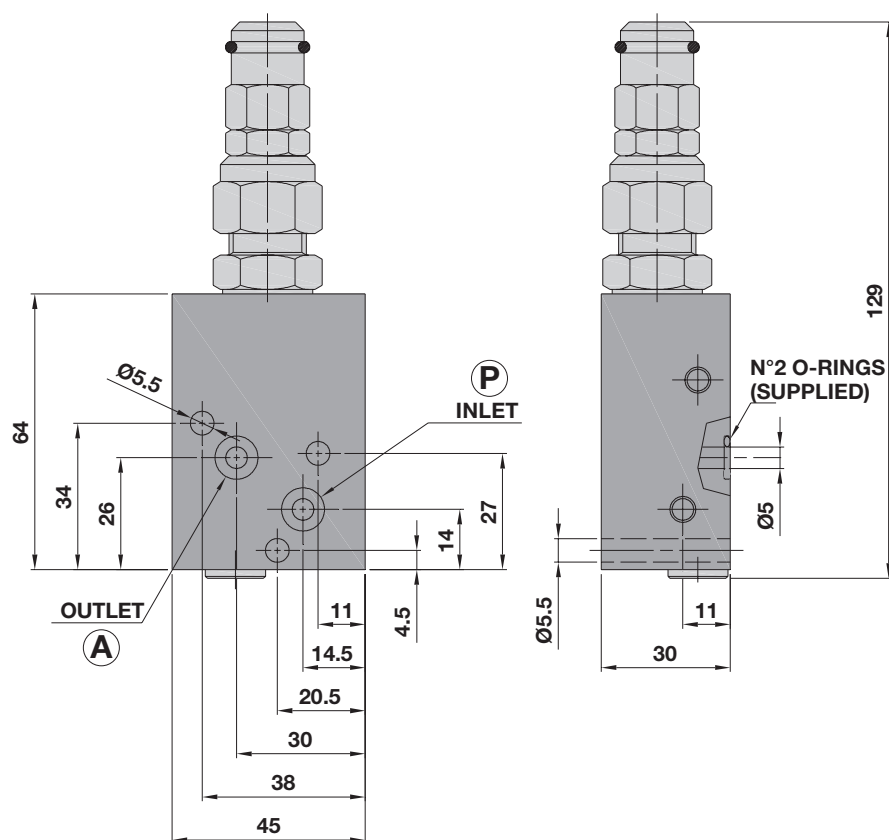
AVAILABLE VERSIONS		
CODE	ADJUSTMENT RANGE	PRESSURE INCREASE PER SCREW TURN (BAR)
05	5-50	10
10	30-100	20
20	50-220	40
35	80-350	80


HYDROBLOCK
 INNOVATIVE ENGINEERING

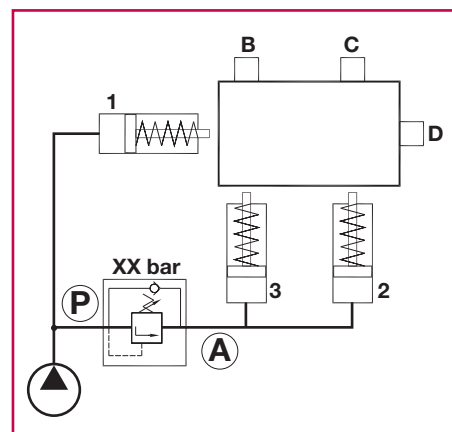
Last update 09/2010

VSQM30R

SEQUENCE VALVE WITH FLANGE



P: Inlet Pressure
A: Cylinder port



Supplied:

- > O-rings.
- > TCEI M5x40 UNI 5931 12.9 mounting screws.

Application example:

- 1) Cylinder no. 1 pushes the workpiece against the stop "D".
- 2) The pressure rises up to XX bar and opens the sequence valve.
- 3) Cylinders no. 2 and no. 3 push the workpiece against "B" and "C" stops.
- 4) The pressure uniformly increases in all cylinders, because the sequence valve is completely open.

Material:

- > **Valve and cartridge body:** Free machining steel.
- > **Internal parts:** High-quality hardened and ground steel.
- > **External protection:** Valve body – burnished
Cartridge body - zinc-plated.

VSQM30R SEQUENCE VALVE	
Type	DIRECTLY COMPENSATED
Mounting	IN-LINE OR MANIFOLD MOUNTING
Ports	FLANGED WITH OR 6.75 X 1.78
Max. pressure	350 BAR
Weight	0.75 KG

VSQM sequence valves are used in hydraulic systems that require a specific pressure dependent priority or sequence of motions.

A check valve allows the free return flow when the operation is inverted.

These extremely compact valves can be mounted directly on the clamping equipment.

The VSQM30R version is only suitable for manifold mounting with O-rings.

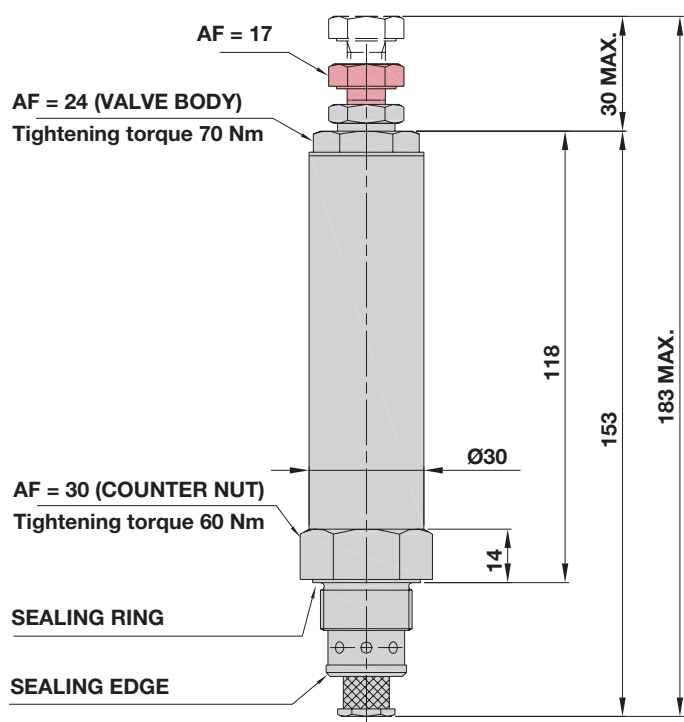
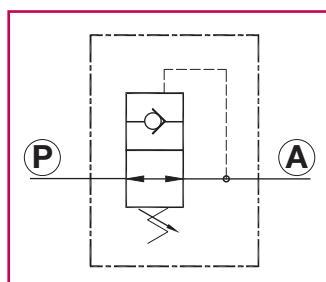
AVAILABLE VERSIONS		
CODE	ADJUSTMENT RANGE	PRESSURE INCREASE PER SCREW TURN (BAR)
05	5-50	10
10	30-100	20
20	50-220	40
35	80-350	80


HYDROBLOCK
 INNOVATIVE ENGINEERING

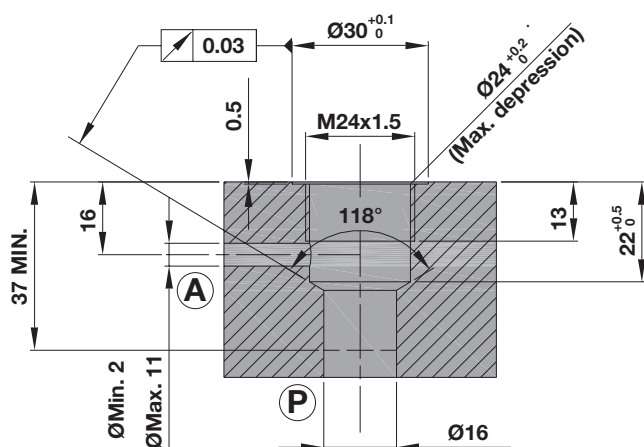
Last update 09/2010

VRPC3_1-HAWE

PRESSURE REDUCING VALVES



Valve seat



Material:

- > **Valve and cartridge body:** Free machining steel.
- > **Internal parts:** High-quality hardened and ground steel.

Diagram – adjustment of the minimum outlet pressure PA depending on the working pressure PP.

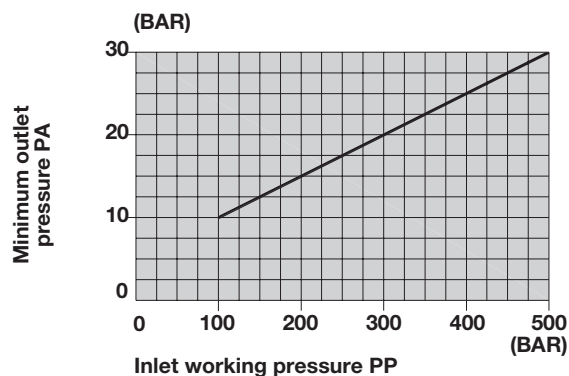
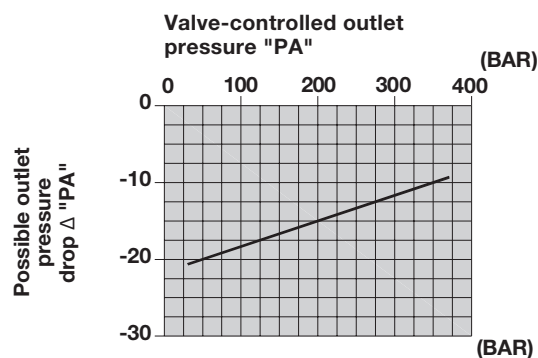


Diagram – possible outlet pressure drop Δ "PA" prior to the pressure setting



Description:

With this valve a reduced constant outlet pressure can be obtained at the **A** port as compared to the higher pressure at the **P** port.

In case of a pressure increase on the **A** port, the installation of a pressure relief valve on this line will be necessary.

Mounting instructions:

Before tightening the valve, unscrew the check nut (AF=30) completely. Tighten the valve body (AF=24) with a torque of 70 Nm.

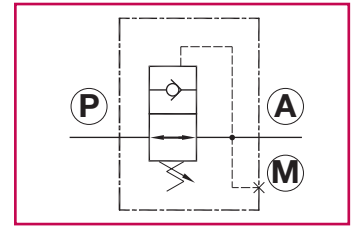
Then tighten the check nut (AF=30) with a torque of 60 Nm.

Proceed in reverse order for demounting.

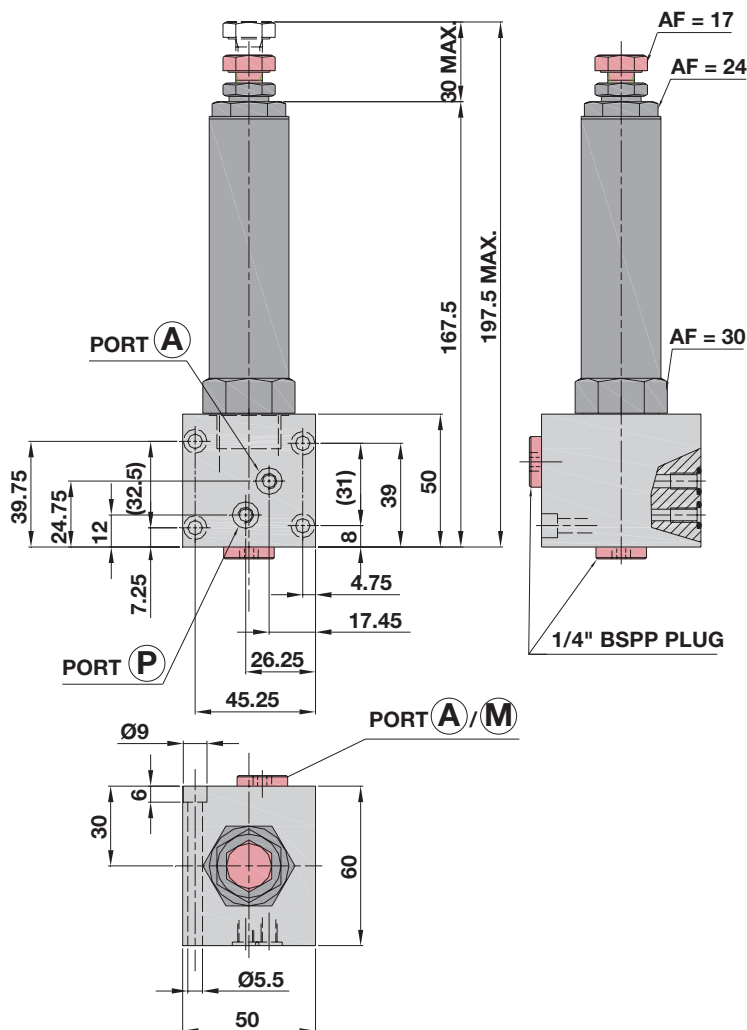
VRP3-1

PRESSURE REDUCING VALVES

- P** High pressure inlet port
- A** Reduced pressure outlet port
- M** Pressure-gauge port



VRP3-1FL



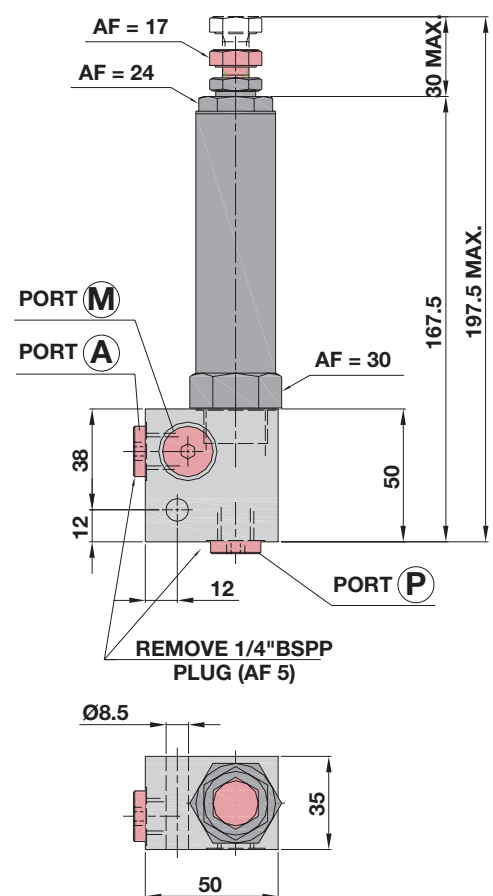
Supplied:

- > N°2 O-Ring 10x2
- > N°4 TCEI M5x60 UNI 5931 12.9 mounting screw.
- > N°2 1/4" BSPP plugs.

PRESSURE REDUCING VALVE

Type of mounting	in-inline or flanged
Ports	flanged with OR 106 Ø6.75x1.78 or in-line with 1/4" BSPP ports
Max. pressure	350 BAR
Weight	1.6 KG

VRP3-1



Supplied:

- > TCEI M8x50 UNI 5931 12.9 mounting screw
- > 3 1/4" BSPP plugs.

PRESSURE REDUCING VALVE

Type of mounting	in-line
Ports	in-line with 1/4" BSPP ports
Max. pressure	350 BAR
Weight	1.1 KG



HYDROBLOCK
INNOVATIVE ENGINEERING

Last update 09/2010

For technical specifications or performance data, please refer to table VRPC3-1.

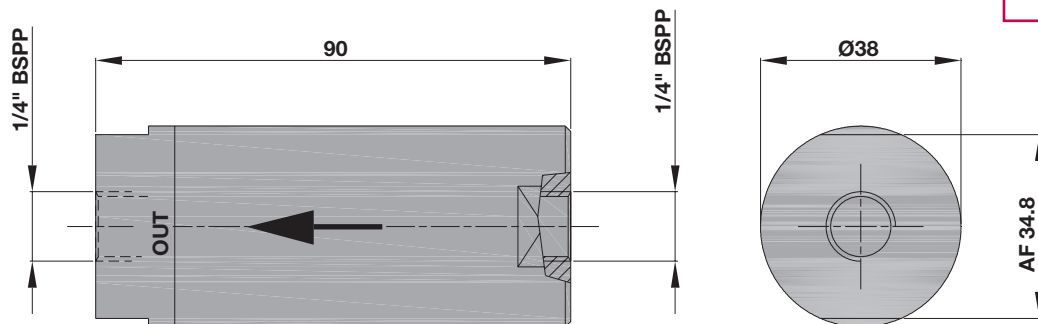
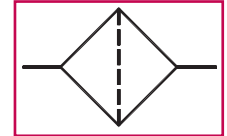
HYDRAULIC ELEMENTS

FILTIL141 - BIDIRECTIONAL WASHABLE FILTERS

Description:

These filters are designed for in-line mounting and bi-directional flow. The filter insert can be cleaned after intensive use of the component.

Note: In order to ensure the integrity of the components and a long service life, the flow direction indicated on the component must be observed!



Technical specifications:

- > **Filter capacity:** up to 8 l/min.
- > **Max. pressure:** 350 bar.
- > **Fluid:** hydraulic oil on mineral oil basis.
- > **Viscosity range:** from 5 to 500 cSt
- > **Temperature range:** from -20 to +80° C (Buna seals)
from -20 to +100° C (Viton seals)
- > **Standard filter mesh:** 10 micron.

Note: Filters with different filter mesh size and spare filter cartridges are available upon request.

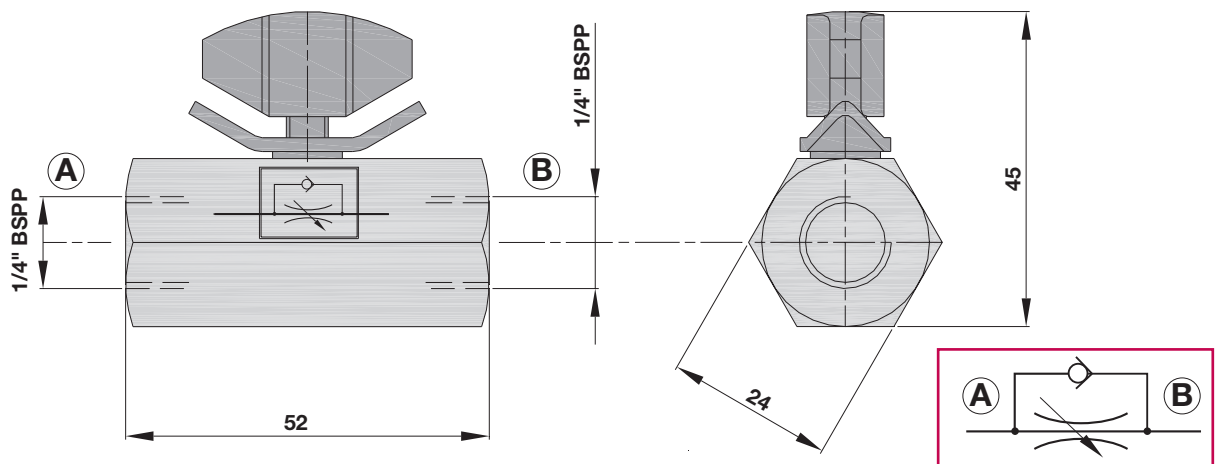
VRD11 - HAWE FLOW CONTROL VALVES

Description:

These valves allow the supply oil flow rate to be adjusted to the application-specific requirements (flow control from A to B), while the oil return flow (from B to A) is free.

Technical specifications:

- > **Max. flow rate:** 12 LT/1'
- > **Max. pressure:** 500 bar.



VRH1- HAWE

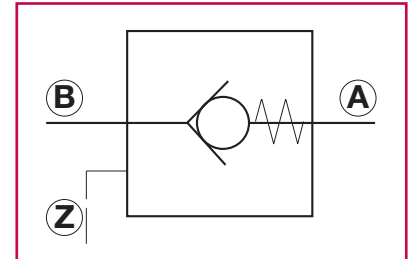
PILOT CHECK VALVE

Description:

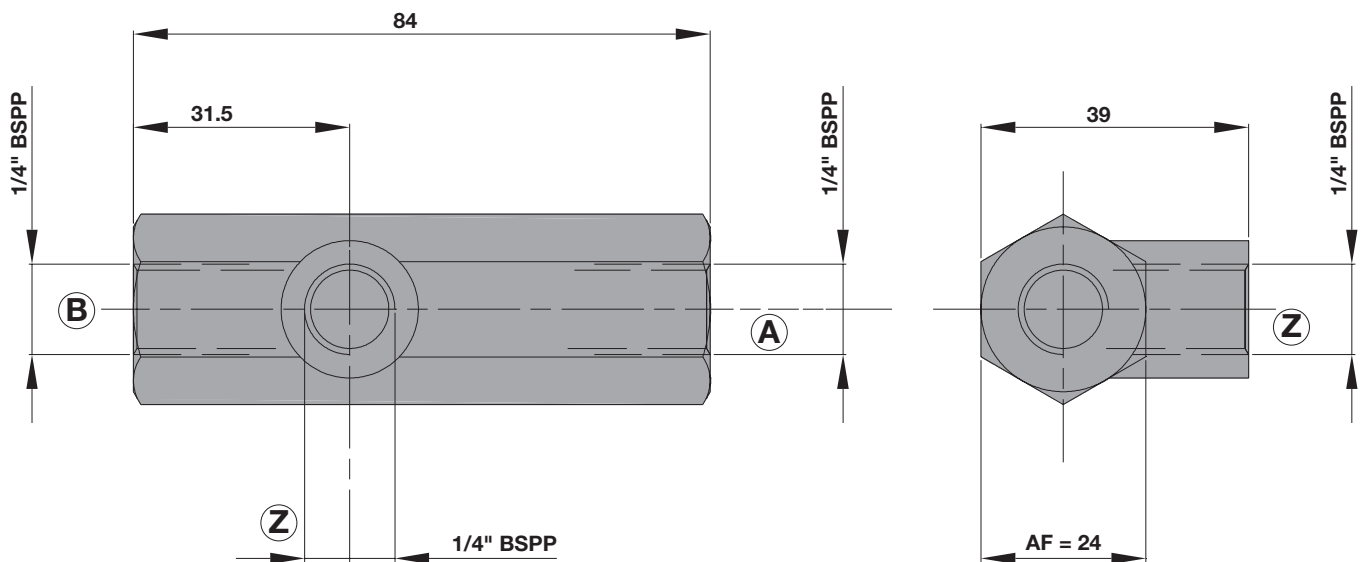
Thanks to the perfect design of seat and slide, there is virtually no leakage.

This valve ensures free flow in only one direction (from "B" to "A") and blocks the flow in opposite direction as long as no pressure is supplied on the "Z" pilot port.

When the pilot line is not pressurized, these valves operate like normal one-way check valves.



A: Cylinder outlet
B: Inlet pressure
Z: Unclamping control (pilot)



Application:

The VRH1 valves are used to block a cylinder or a part of the hydraulic circuit.

Material:

- > **Valve body:** Free machining steel.
- > **Slide:** High-quality hardened and ground steel.

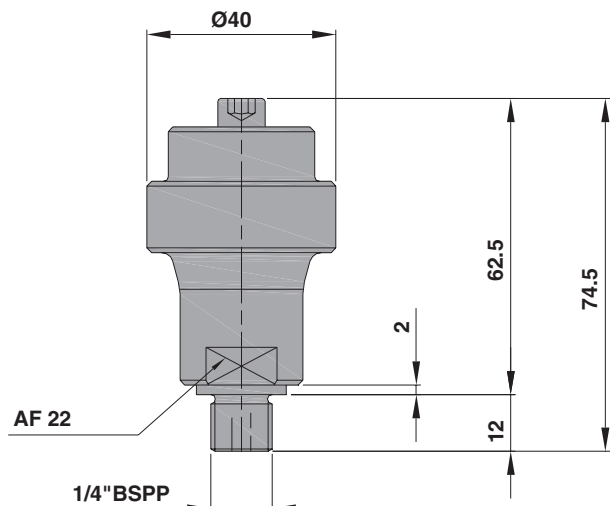
Technical specifications:

- > **Flow rate:** up to 15 l/min.
- > **Max. pressure:** 500 bar.
- > **Fluid:** hydraulic oil on mineral oil basis.
- > **Viscosity range:** from 22 to 100 cSt
- > **Temperature range:** from -20 to +80° C
- > **Filter mesh:** 25 micron or better are recommended.
- > **Pilot ratio:** 1: 2.7

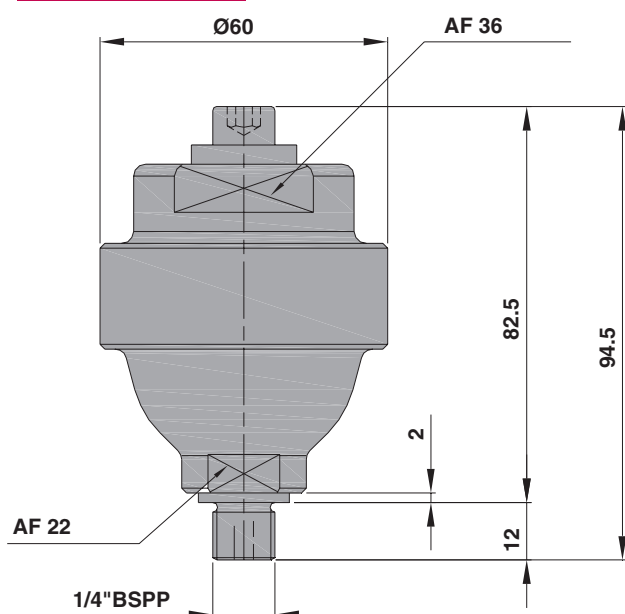
ACC13-1/4 — ACC40-1/4

HYDRAULIC ELEMENTS – DIAPHRAGM ACCUMULATORS - HAWE

ACC 13-1/4



ACC 40-1/4



Cautions:

Hydraulic systems equipped with diaphragm accumulators must be provided with a safety relief valve and a pressure gauge.

In addition, a shut-off valve is to be provided for discharging the accumulator for maintenance or repair purposes.

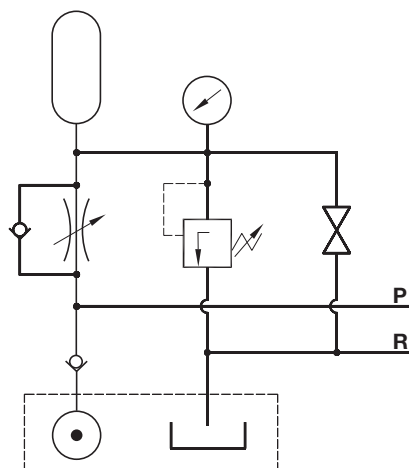
The minimum hydraulic pressure required to operate the accumulator should exceed the gas pressure by at least 10%.

Make sure not to exceed the indicated maximum pressure values.

Hydraulic accumulators are used in static clamping systems to compensate internal leakage or to minimize pressure variations caused by temperature changes.

Note: These accumulators cannot be used to compensate substantial external oil leakage. The cause of such leakage must be identified and eliminated!

Application example

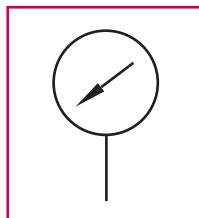
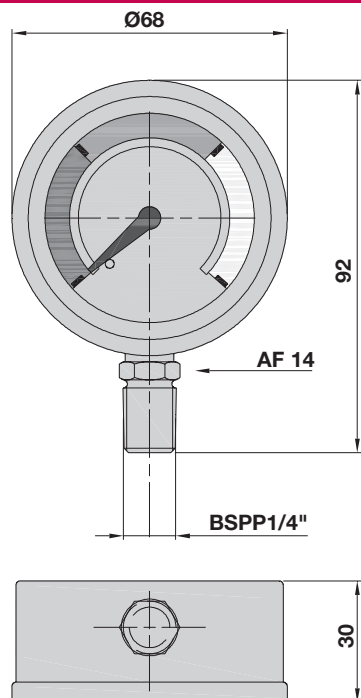


DIAPHRAGM ACCUMULATOR

ACCUMULATOR TYPE	ACC13-1/4	ACC40-1/4
Ports	1/4" BSPP male thread	1/4" BSPP male thread
Volume	13 cm ³	40 cm ³
Maximum oil pressure	500 bar	400 bar
Maximum gas pressure	250 bar	250 bar
Operating range	125-500 bar	125-400 bar
Operating temperature	-10 / +80°C	-10 / +80°C
Weight	0.3 Kg	0.7 Kg

HYDRAULIC ELEMENTS

MANR100-MANR160-MANR250-MANR400 -PRESSURE-GAUGES



Description:

Radial pressure-gauges in glycerine bath.
Stainless steel case.

Attention:

In order to avoid any damage to the pressure-gauges, make sure not to exceed the maximum pressure values indicated on the end scale!
The use of pressure-gauges with an end scale that is about 25% higher than the maximum circuit pressure is recommended.

	SCALE BAR
MANR 100	0 ÷ 100
MANR 160	0 ÷ 160
MANR 250	0 ÷ 250
MANR 400	0 ÷ 400

VIL1/4 IN - LINE BALL VALVES

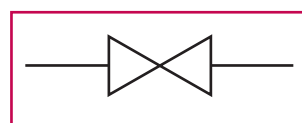
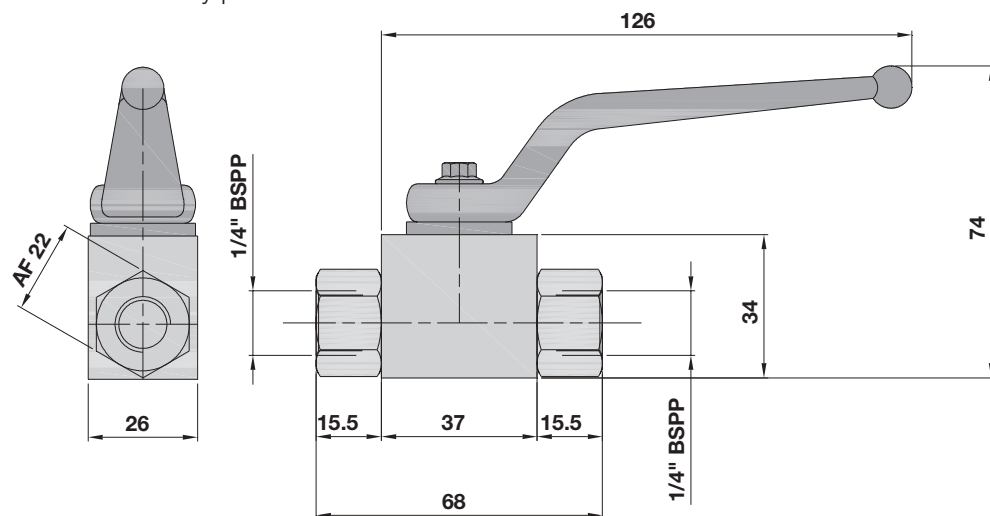
MAX. WORKING PRESSURE = 500 BAR

Description:

Thanks to the design of seat and slide, perfect sealing under pressure is ensured.
These ball valves are designed for inline mounting and can be installed in any position.

Material:

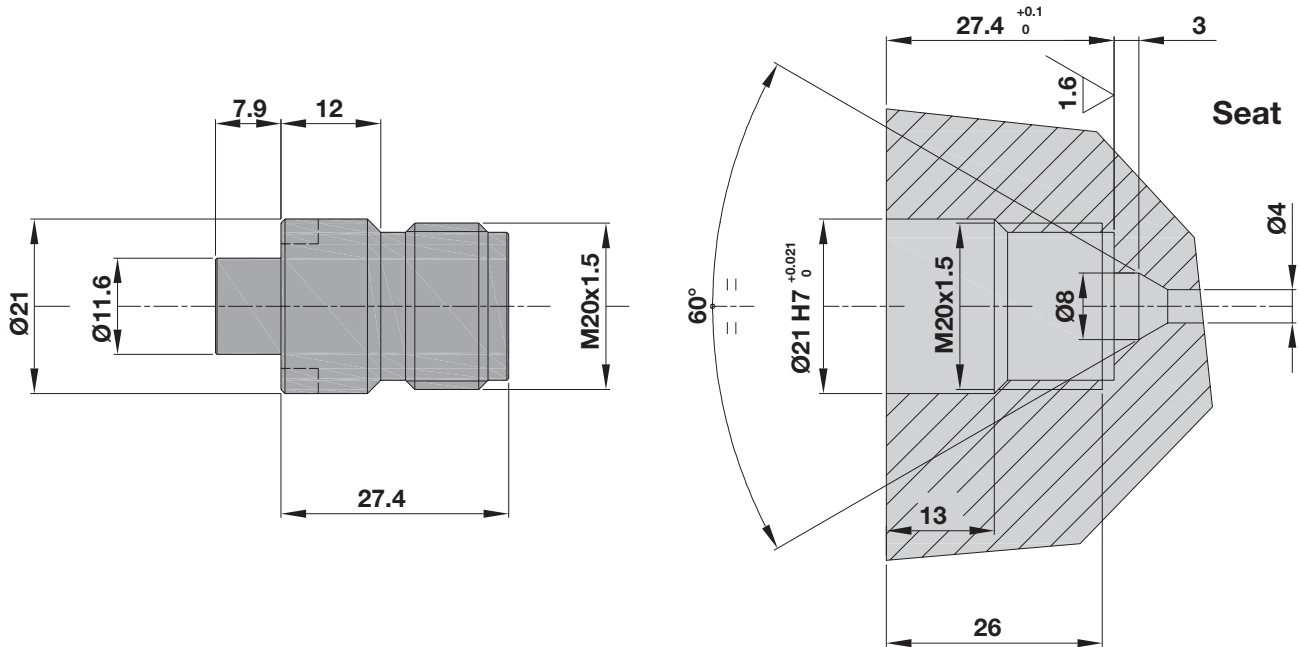
- > **Valve body:** Free machining steel.
- > **Slide:** High-quality hardened steel.
- > **Lever:** Light alloy.



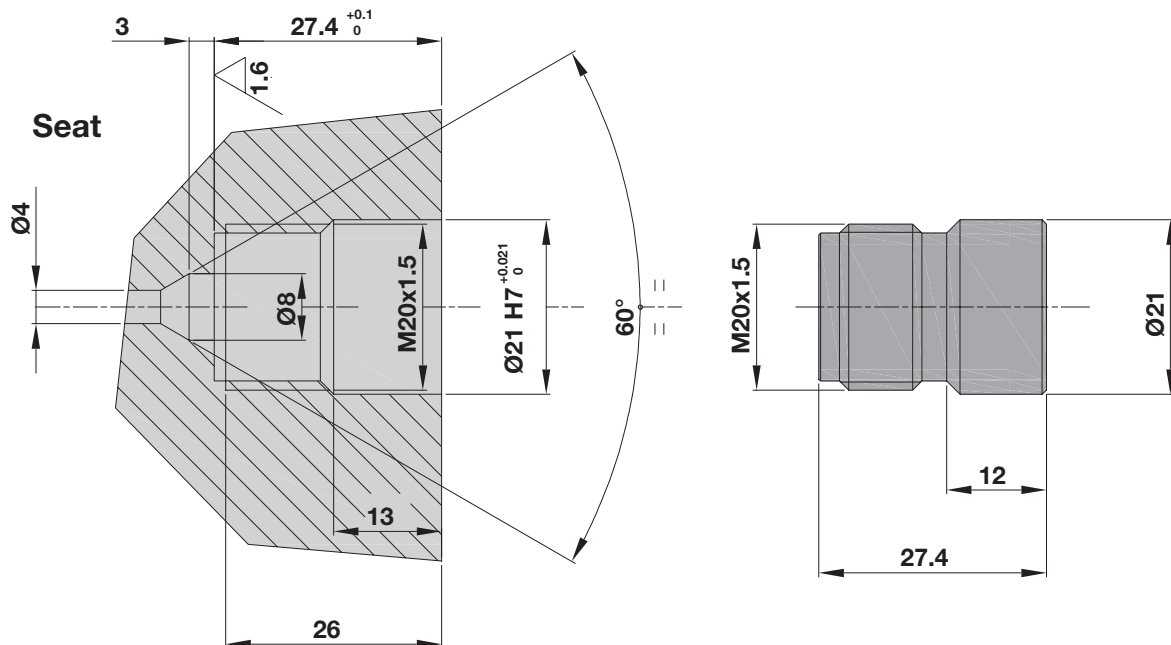
COIM4/COIF4

HYDRAULIC ELEMENTS - QUICK COUPLINGS

COIM4



COIF4



Technical specifications:

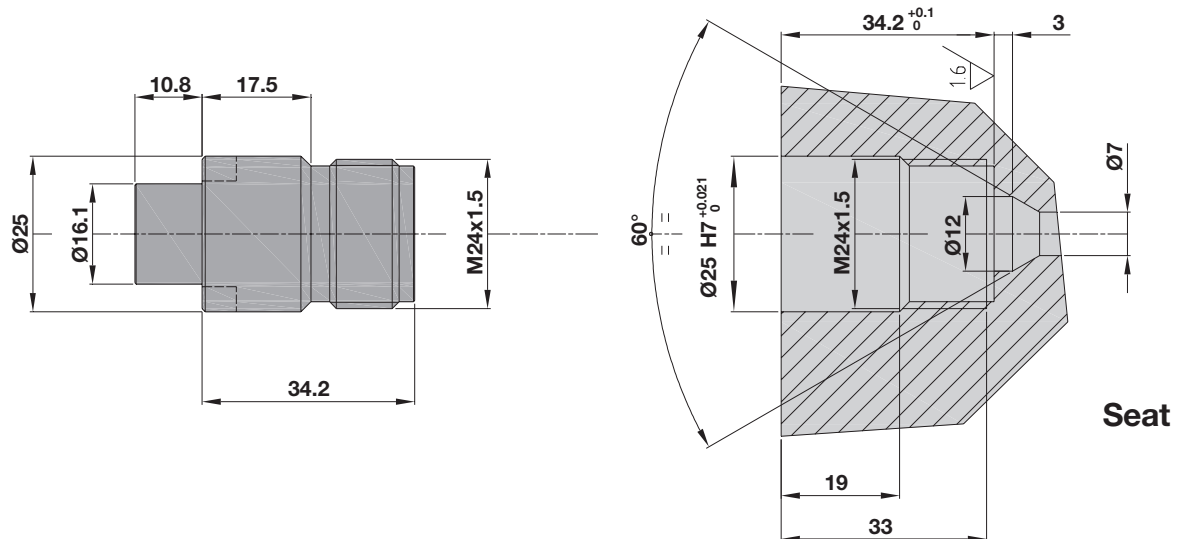
- > **Max. flow rate:** 8 l/min are recommended.
- > **Max. pressure:** 250 bar when coupled.
- > **Fluid:** hydraulic oil on mineral oil basis.
- > **Viscosity range:** from 32 to 46 cSt.
- > **Temperature range:** from -20 to +90° C.
- > **Filter mesh:** 25 micron or better are recommended.
- > **Axial tolerance:** +/- 0.04 mm.

Note: The COIM4 and COIF4 series quick couplings **CANNOT** be coupled when under pressure!

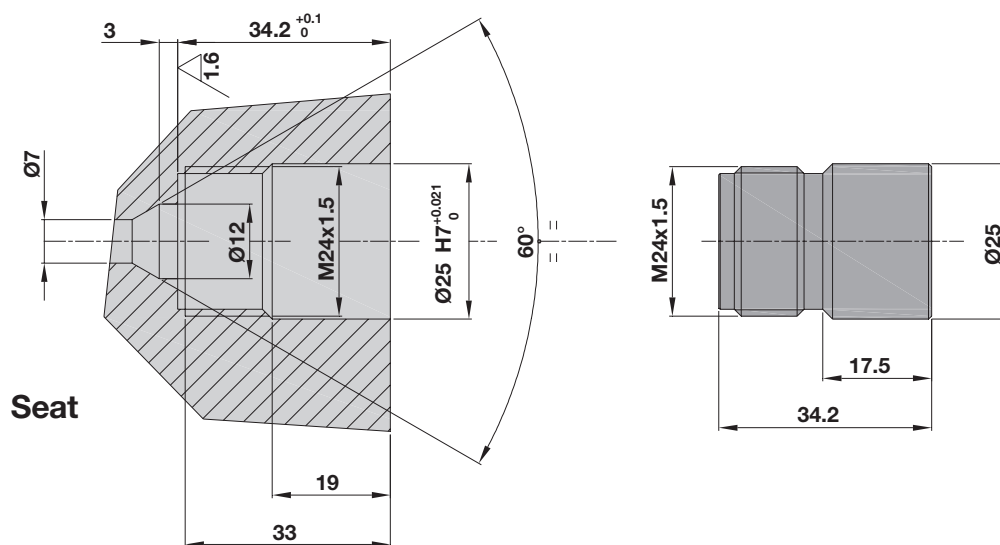
COIM7/COIF7

HYDRAULIC ELEMENTS - QUICK COUPLINGS

COIM7



COIF7



Technical specifications:

- > **Nominal flow rate:** 12 l/min
- > **Max. flow rate:** up to 24 l/min
- > **Max. admissible residual pressure during coupling:** 250 bar
- > **Max. admissible residual pressure when coupled:** 300 bar
- > **Max. admissible pressure at disconnected male coupling:** 300 bar
- > **Max. admissible pressure at disconnected female coupling:** 120 bar static
- > **Fluid:** hydraulic oil on mineral oil basis
- > **Viscosity range:** from 32 to 46 cSt
- > **Temperature range:** from -20 to +90° C
- > **Filter mesh:** 25 micron or better are recommended
- > **Axial tolerance:** +/- 0.04 mm

Note: The COIM7 and COIF7 series quick couplings **CAN** be coupled when under static pressure. No hydraulic flow must be generated during coupling!

COIM-COIF DIAGRAMS

QUICK COUPLINGS

GRAPHIC REPRESENTATION OF THE PRESSURE DROP OF QUICK COUPLINGS

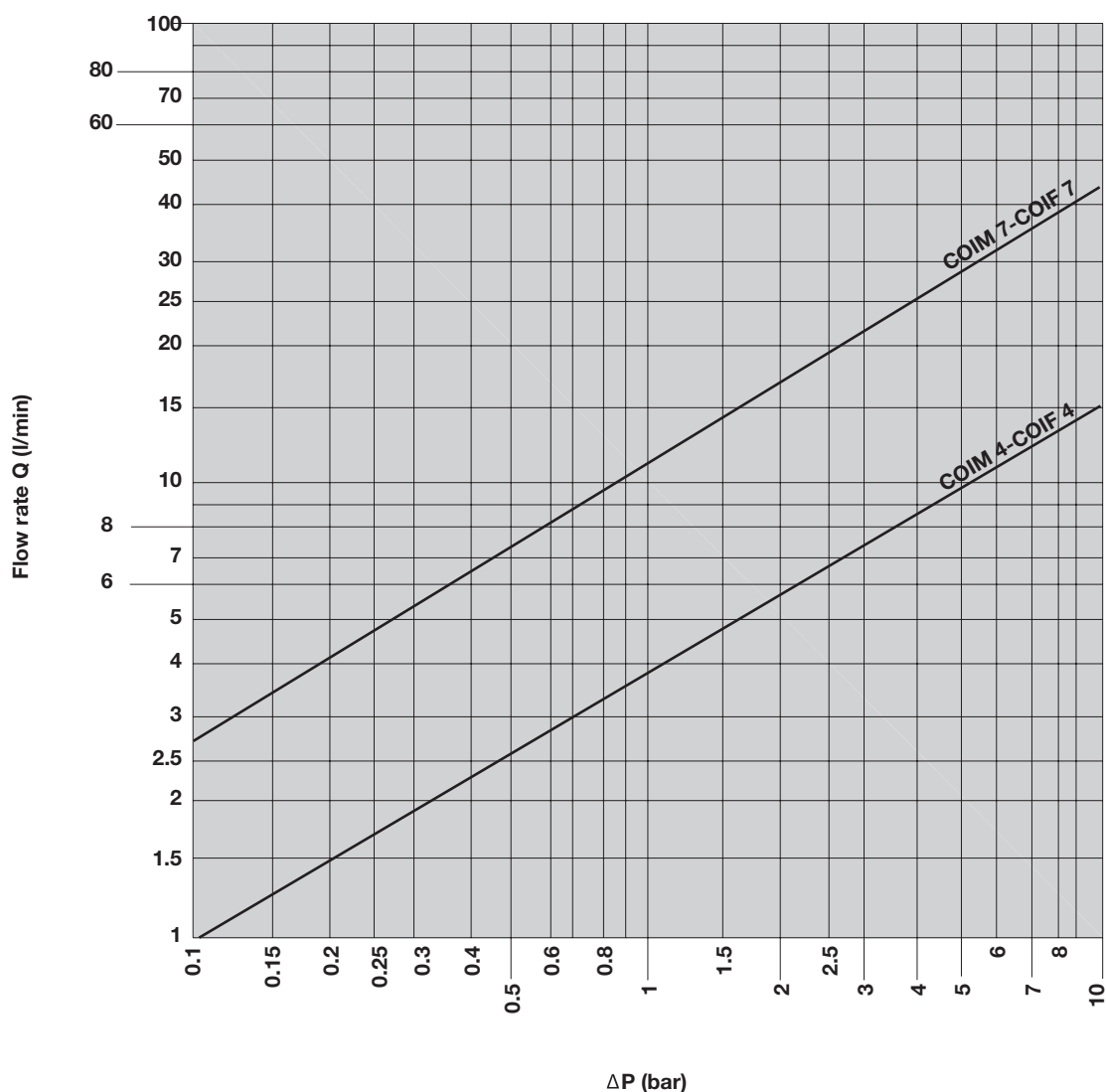
COIM-COIF 4 coupling - Max. flow rate: 8 l/min.

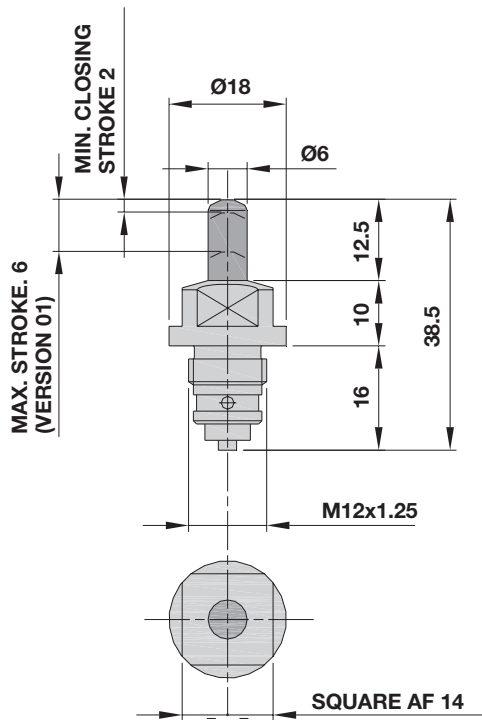
COIM-COIF 7 coupling - Max. flow rate 12 l/min/24 l/min.

> **Fluid:** ISO VG32 oil.

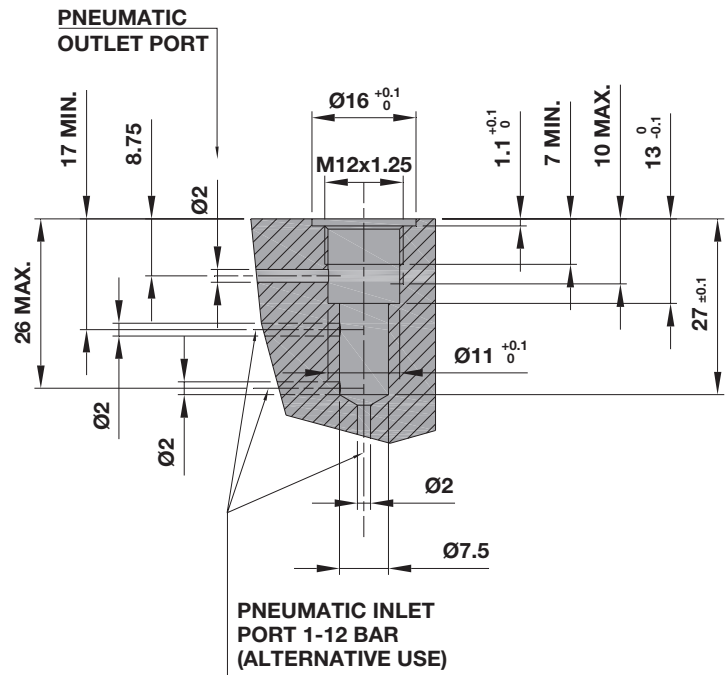
> **Temperature:** 40°C

> **Viscosity:** 28.8 – 35.2 mm²/sec.

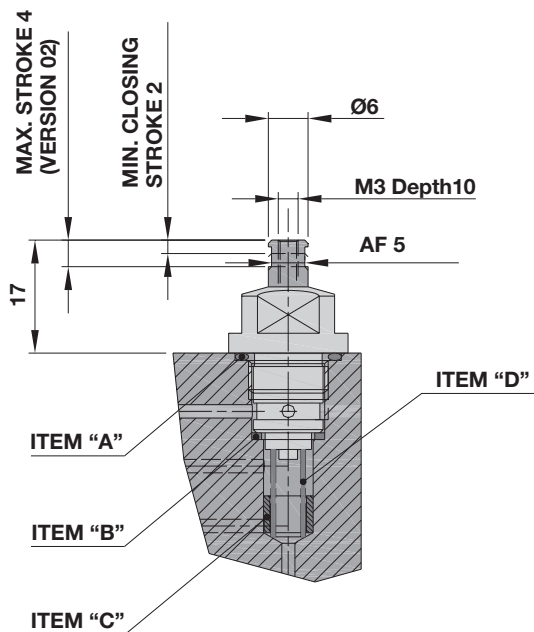




Valve seat in detail



Valve installation



The VCS cartridge valve is especially designed to be incorporated into HYDROBLOCK cylinders.

This simple, compact and reliable valve serves as clamp closing control valve when installed in series SR cylinders or as workpiece control valve in robotized automations.

This valve is designed to control the correct clamping of the workpiece.

Note: Never exceed the indicated maximum stroke of the valve as this could lead to severe damage.

We recommend using the CPV01 valve-saver cartridge.

Supplied:

- > 1 metric O-ring 0130-15, **item "A"**
- > 1 Teflon washer, **item "B"**
- > 1 spring guide, **item "C"**
- > 1 spring, **item "D"**

Material:

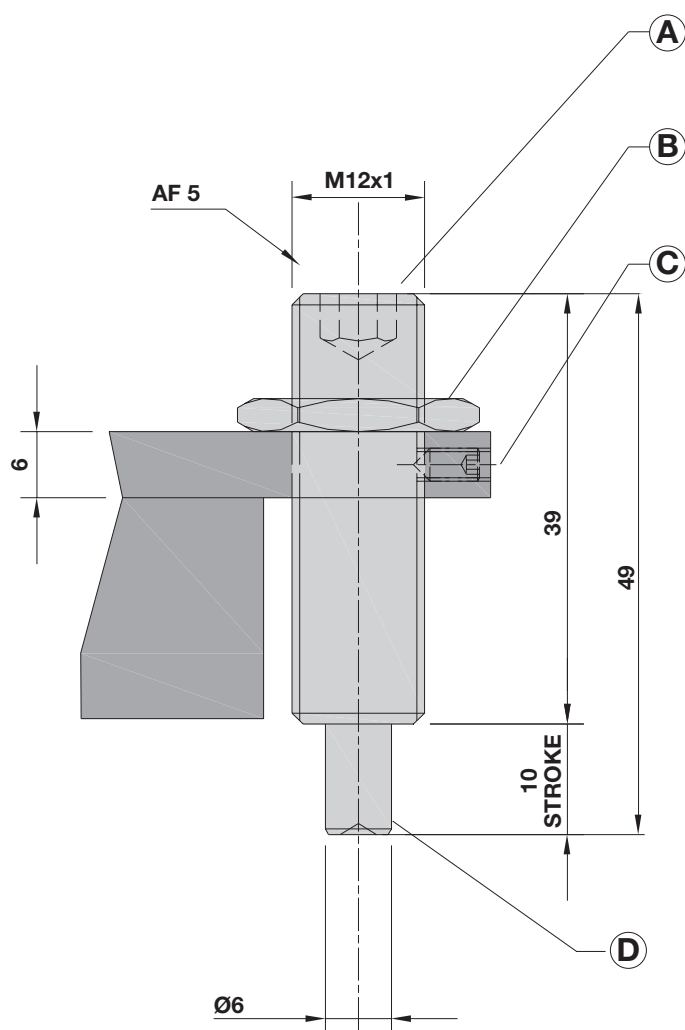
- > **Rod:** Stainless steel, lapped.
- > **Body:** Stainless steel, lapped.

Ordering code- VCS

- > **01:** clamp closing control valve.
- > **02:** workpiece control valve with threaded rod M3

CPV01

VALVE-SAVER CARTRIDGE



Upon request, the valve-saver cartridge is available for the entire swing clamping cylinder series.

With the CPV01 valve-saver cartridge, the enduser can clamp the cylinder without any workpiece being mounted in the fixture to check for proper functioning or for cleaning the installed fixture, while any risk of damage to the VCS01 clamp closing control valve due to excess stroke is excluded.

Mounting of the valve-saver cartridge:

The valve-saver cartridge is factory-mounted on HYDROBLOCK cylinders if ordered as an option.

However, retrofitting can also easily be carried out by the end user.

For mounting the clamp closing control valve-saver cartridge, a simple M12x1 threaded seat is required on the clamping arm ring plate.

Adjustment of the valve-saver cartridge:

To adjust the valve-saver cartridge by means of the hexagon socket wrench, please follow the instructions 1 to 4 given for the adjustment of the adjusting screws for the clamp closing control valve.

Upon completion of the adjustment, the pressure switch will indicate that the compressed air circuit is closed and enable the C.N.C. machine to start the machining cycle.

The valve-saver cartridge can compensate up to ring plate 10 mm of cylinder excess stroke.

For this reason, it is of prior importance to make

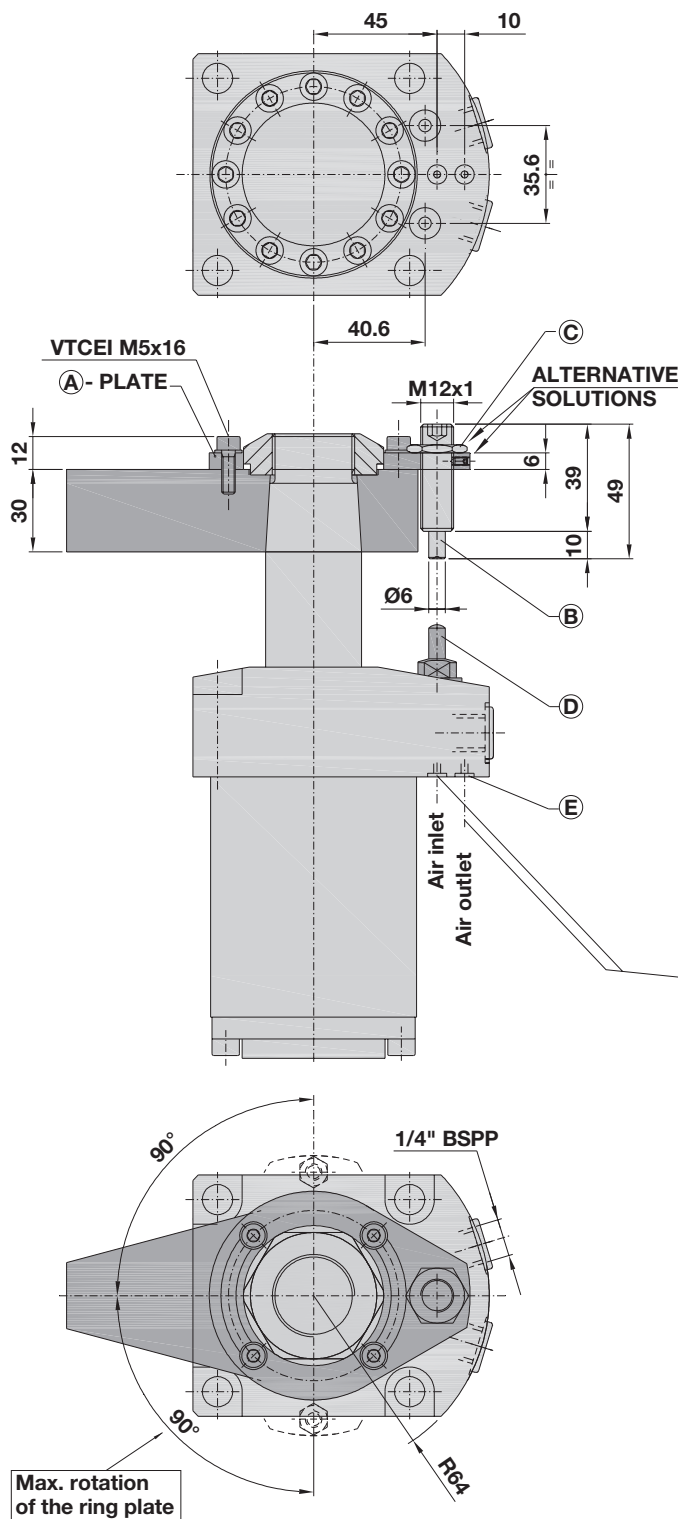
sure that the clamping stroke of the cylinder without the workpiece being mounted does not exceed the 10 mm excess stroke compensated by the valve-saver cartridge.

Note:

We recommend mounting the swing clamping cylinders such as to ensure that the clamping arm in clamping position is close to the lower limit stroke of the piston. In this case, the workpiece is properly and reliably clamped and perfect operation of the valve-saver cartridge is guaranteed.

CPV01

VALVE-SAVER CARTRIDGE INSTALLATION



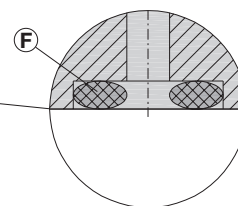
Example: Double-acting swing clamping cylinder with upper flange, clamp closing control valve and valvesaver cartridge.

Mounting of the valve-saver cartridge (air operated):

To adjust the valve-saver cartridge, please follow the instructions 1 to 4 given for the adjustment of the adjusting screws for the clamp closing control valve.

Upon completion of the adjustment, the pressure switch will indicate that the compressed air circuit is closed and enable the C.N.C. machine to start the machining cycle.

The valve-saver cartridge can compensate up to 10 mm of cylinder excess stroke. For this reason, it is of prior importance to make sure that the clamping stroke of the cylinder without the workpiece being mounted does not exceed the 10 mm excess stroke compensated by the valvesaver cartridge.



O-rings Ø 4.34x3.53 (supplied)

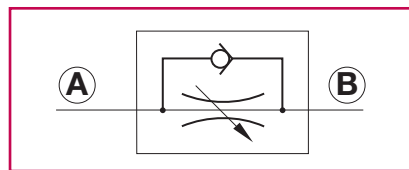
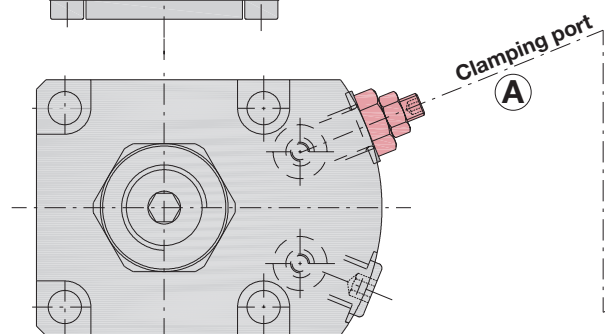
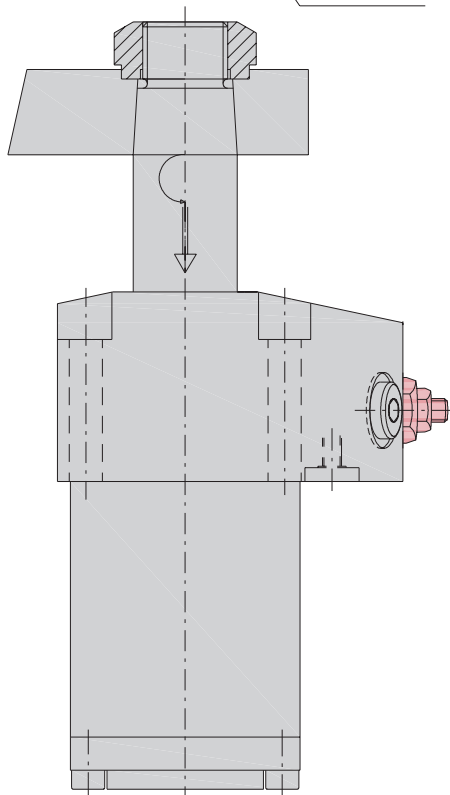
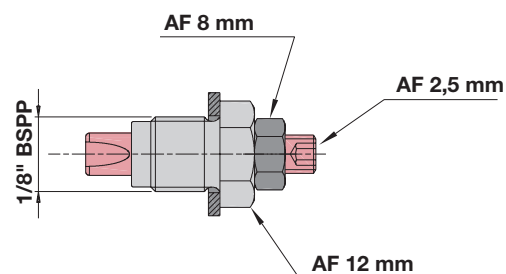
Note: We recommend mounting the swing clamping cylinders such as to ensure that the clamping arm in clamping position is close to the lower limit stroke of the piston. In this case, the workpiece is properly and reliably clamped and perfect operation of the valve-saver cartridge is guaranteed.

VRF18

CARTRIDGE-TYPE FLOW CONTROL VALVE FOR THE SR SWING CLAMPING CYLINDER SERIES

A→B: Controlled flow

B→A: Free flow



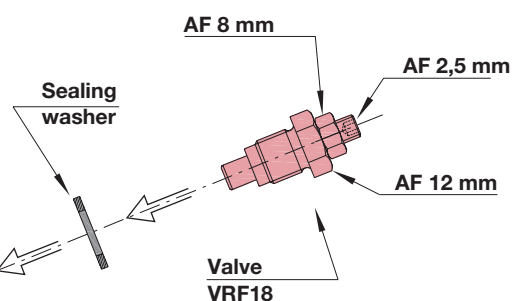
How to mount and adjust the flow control valve:

Mounting

- 1) Remove the G1/8" BSPP plug from the "A" port.
- 2) Insert the sealing washer (supplied) into the groove provided in the cylinder.
- 3) Mount the valve at the A port and manually tighten it until the mechanic stop is reached. Then tighten it with a wrench (AF 12 mm) at a torque of 10 N/m.

Adjustment

- 1) Unscrew the locknut (AF 8 mm) while holding the valve body with the wrench (AF 12 mm).
- 2) Turn the adjusting screw (AF 2,5 mm) clockwise (to reduce the flow rate) or counter-clockwise (to increase the flow rate), until the correct setting is obtained.
- 3) Tighten the locknut (AF 8 mm).



With the **VRF18** cartridge-type flow control valve, the end user can set the clamping speed of the cylinder directly at the fixture and choose the clamping sequence of the cylinders at the workpiece to be machined.

This valve can exclusively be used for cylinders of the FD and PD series and on the "A" clamping port only. When the cylinder is unclamped, the hydraulic oil flow is free.

Note: To avoid any damage to the sealing portions, the valve must be adjusted in unpressurized condition!

