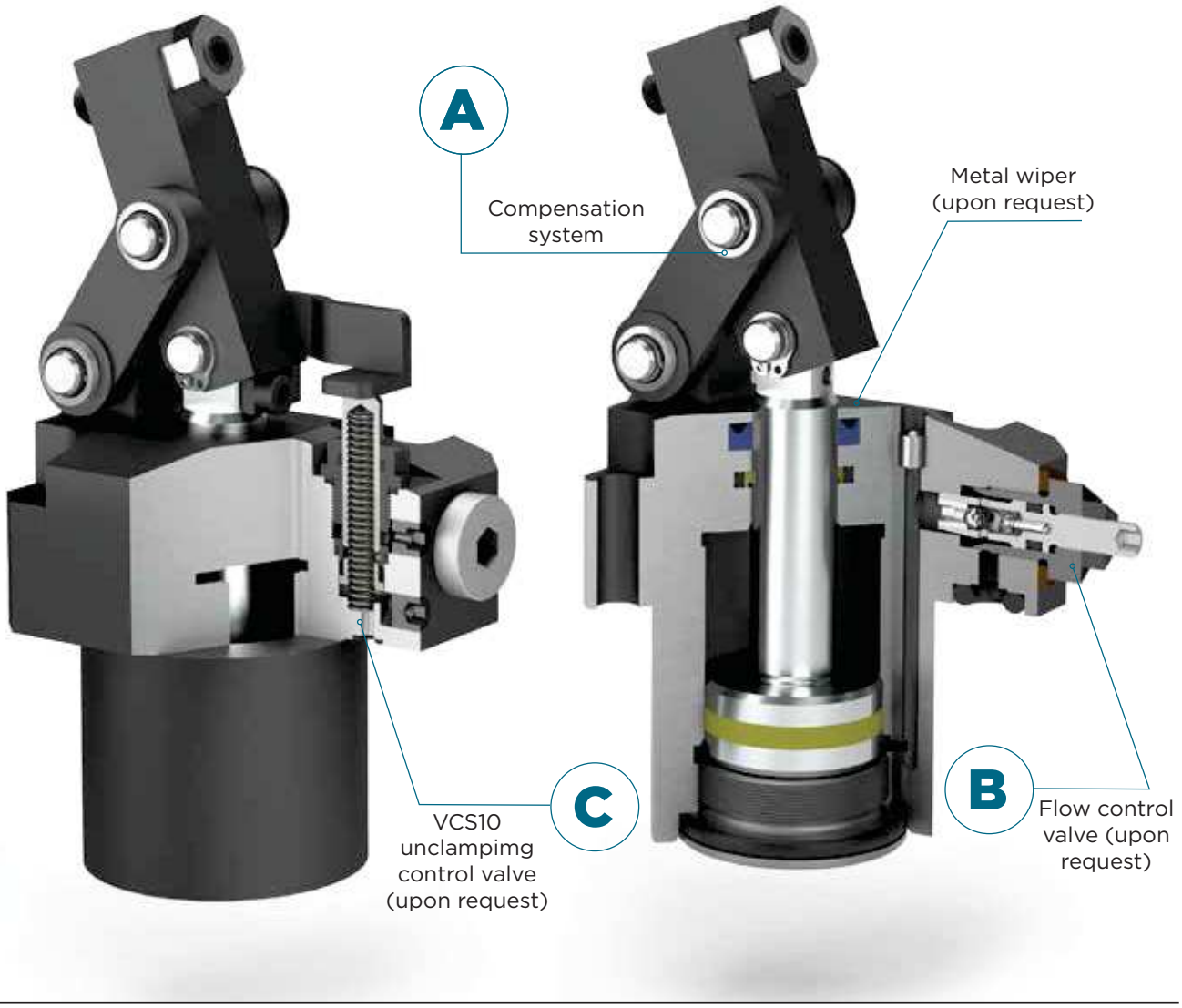
CG
LINK CLAMP CYLINDERS

LINK CLAMP CYLINDER
CG SERIES

CYLINDER TYPE		CG8.70	CG8.250	CG8.200	CG10.200	CG12.200	CG12.70
CYLINDER BODY TYPE	Threaded version 	No	No	No	No	No	No
	Cartridge 	Yes	Yes	Yes	Yes	Yes	No
	Upper flange 	No	No	No	No	No	Yes
Double-acting version		Yes	Yes	Yes	Yes	Yes	Yes
Single-acting version (spring return)		No	No	No	No	No	No
Rod diameter (mm)		8	8	8	10	12	12
Piston diameter (mm)		23	12	14	20	25	25
Total cylinder stroke (mm)		18.5	18.5	14	16	18.5	20.5
Piston clamping area (cm^2)		4.15	1.13	1.54	3.14	4.91	4.91
Piston unclamping area (cm^2)		3.65	0.63	1.04	2.35	3.78	3.78
Clamping oil volume (cm^3)		7.7	2.1	2.2	5	9.1	10.1
Unclamping oil volume (cm^3)		6.8	1.2	1.5	3.8	7	7.8
Maximum operating pressure (Bar)		70	250	200	200	200	70
Nominal clamping force (KN) at maximum operating pressure*		2.2	2.2	3	4	6.8	2.5

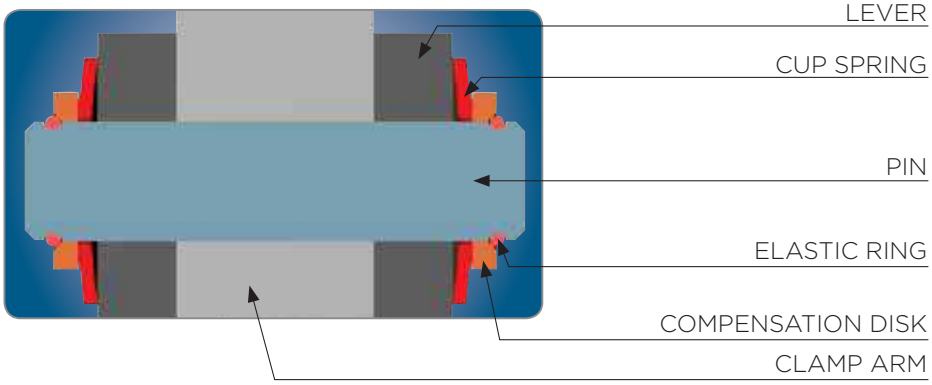
CYLINDER TYPE		CG 12.250	CG 16.200	CG 20.200	CGF 26.0	CGF 32.0	CGF 40.0	CGF 50.0
CYLINDER BODY TYPE	Threaded version 	No	/	/	Yes	M32x1.5	M40x1.5	M50x1.5
	Cartridge 	Yes	/	/	No	/	/	/
	Upper flange 	Yes	Yes	Yes	No	/	/	/
Double-acting version		Yes	Yes	Yes	No	No	Yes	Yes
Single-acting version (spring return)		No	No	Yes	Yes	Yes	Yes	Yes
Rod diameter (mm)		12	16	20	8	10	12	20
Piston diameter (mm)		16	24	34	14	20	25	34
Total cylinder stroke (mm)		24	24	24.5	14	15	19	24.5
Piston clamping area (cm^2)		2.01	4.52	9.08	1.54	3.14	4.91	9.08
Piston unclamping area (cm^2)		0.88	2.51	5.94	/	/	3.78	5.94
Clamping oil volume (cm^3)		4.8	10.8	22.2	2.2	4.7	9.3	22.2
Unclamping oil volume (cm^3)		2.1	6	14.6	/	/	7.2	14.6
Maximum operating pressure (Bar)		250	200	200	200	200	200	200
Nominal clamping force (KN) at maximum operating pressure*		3.7	8.8	13.9	3	4	6.8	13.9

CG
LINK CLAMP CYLINDERS

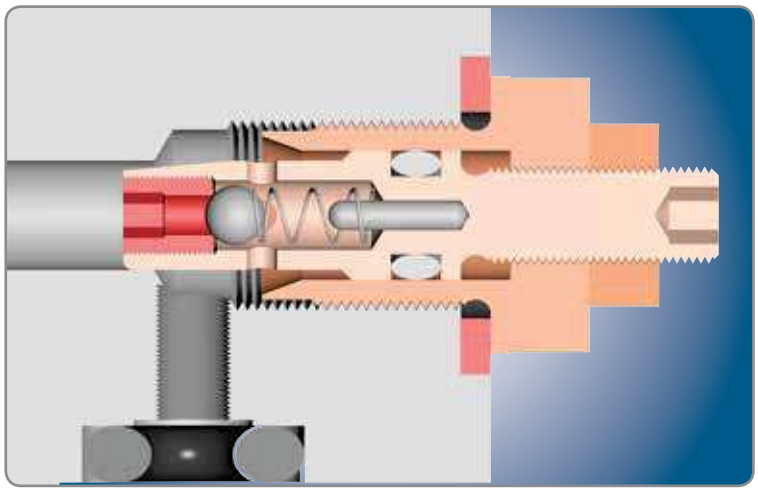


A. COMPENSATION SYSTEM

COMPENSATION SYSTEM

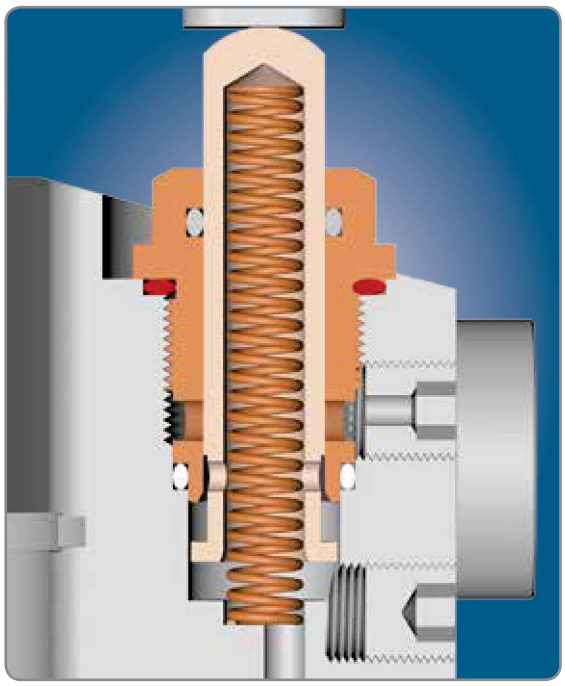


B. CYLINDER SWING SPEED CONTROL



Flow control valve for the clamping process. All standard cylinders are prepared for retrofitting the flow control valve (accessory delivered upon request).

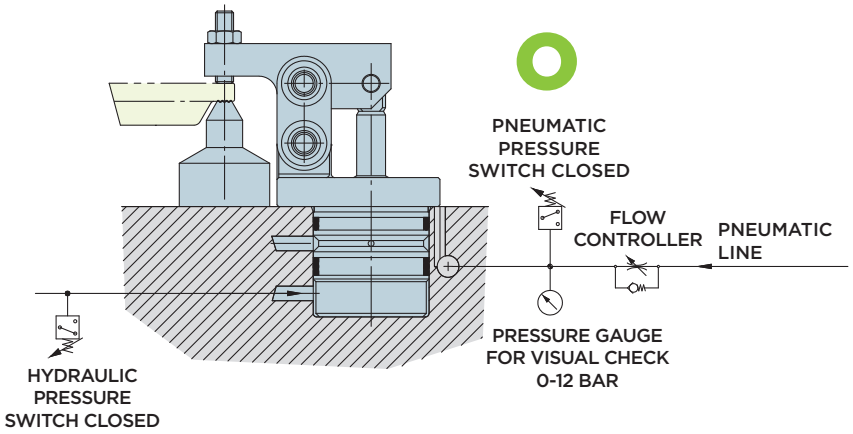
C. CYLINDER OPENING CONTROL FOR ROBOTIZED UNLOADING



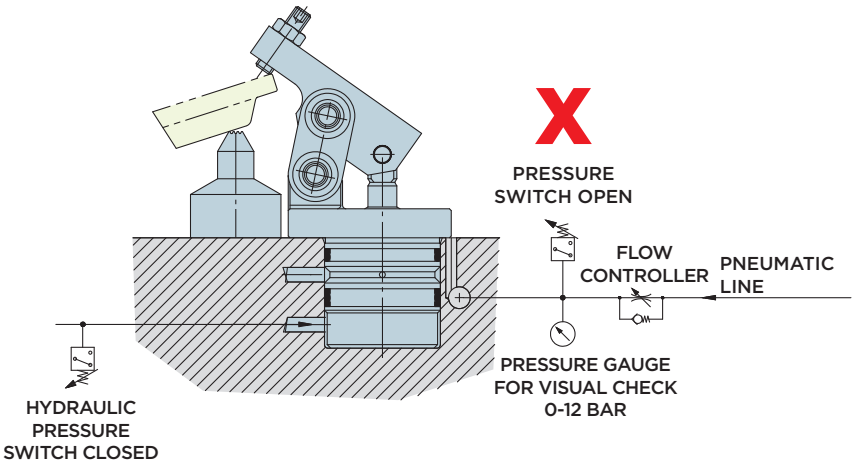
With link clamp cylinders equipped with the VCS clamp arm control valve (e.g. CG12.70 FDV), the opening position of the cylinder can be monitored, which gives maximum safety for robot-assisted workpiece loading/unloading. (see page 163)

CLAMP ARM CLOSING/OPENING CONTROL
SERIES CG

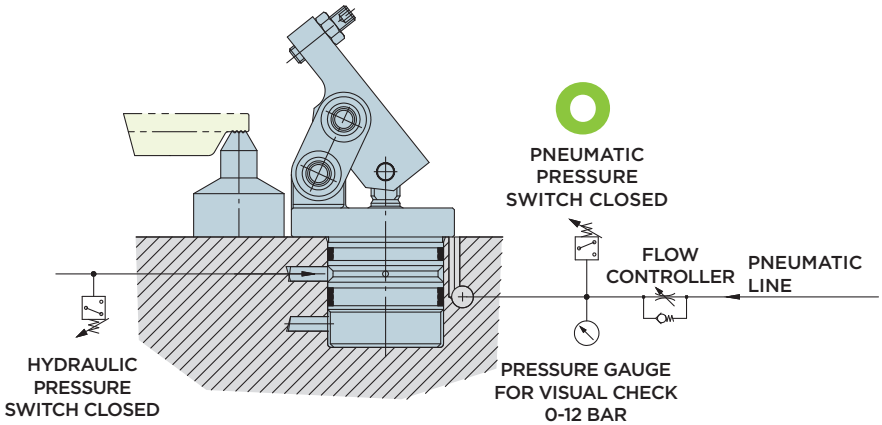
CLAMPED WORKPIECE



**WORKPIECE RELEASED/
INTERMEDIATE POSITION**



WORKPIECE UNCLAMPED

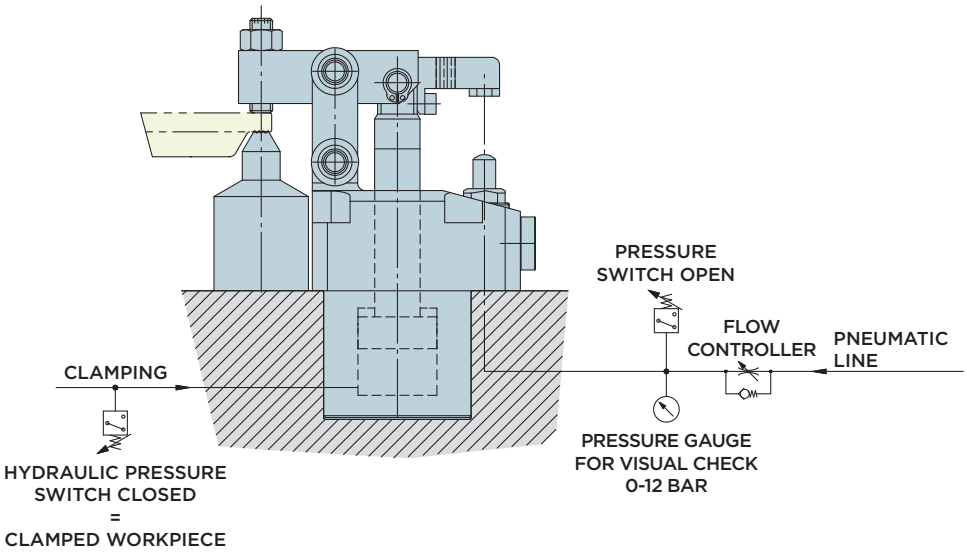


With link clamp cylinders equipped with a single integrated pneumatic supply channel, closing of the pneumatic line can only be ensured in the clamping and unclamping positions. The combined control of both hydraulic and pneumatic supply provides reliable monitoring of the clamp arm opening and closing positions, which gives maximum safety during robot-assisted unloading and perfect machining of the properly clamped workpiece. On the one hand, a combination of the pressure switch signal of the pneumatic supply line with the pressure switch signal of the hydraulic clamping line guarantees safe workpiece clamping and optimum machining conditions. On the other hand, combining the pressure switch signal of the pneumatic supply line with the pressure switch signal of the hydraulic unclamping line guarantees that the workpiece is unclamped and the cylinder is in open position, so that safe robot-assisted unloading of the machined workpiece is ensured. In ALL intermediate positions, NO WORKPIECE POSITIONING OR MACHINING is enabled. This solution simplifies the fixture circuit and eliminates the second pneumatic supply line: when designing and implementing the fixtures, certain machining steps can be omitted without affecting the safety of the line.

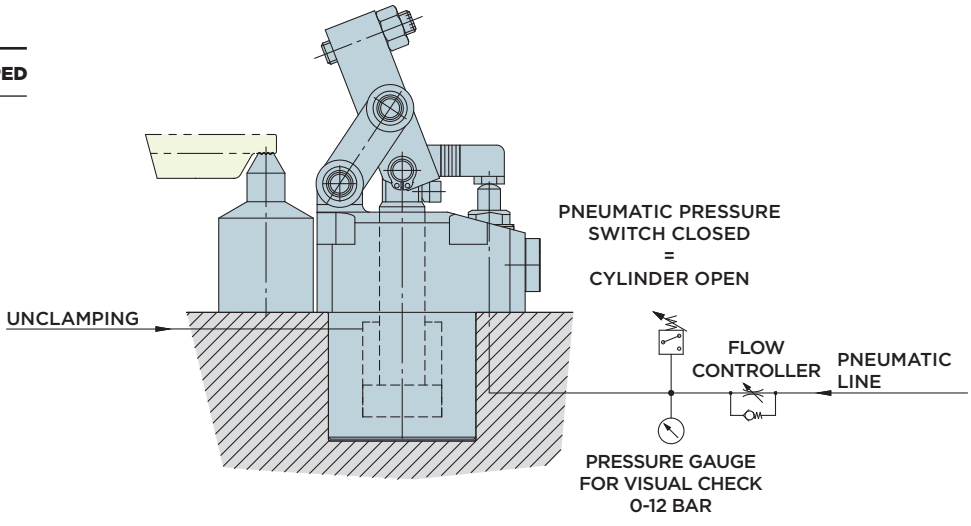
CLAMP ARM CLOSING/OPENING CONTROL
SERIES CG

With link clamp cylinders equipped with the VCS clamp arm control valve (e.g. CG12.70 FDV), the opening position of the cylinder can be monitored, which gives maximum safety for robot-assisted workpiece loading/unloading. Considering the cylinder type used, clamping of the workpiece can be monitored by the pressure switch of the hydraulic clamping line. With CG link clamp cylinders from HYDROBLOCK, clamping is ALWAYS performed using the large cylinder area and there is no risk of accidental opening of the pressurized cylinder. On the other hand, pneumatic control of the CYLINDER OPEN position is of FUNDAMENTAL importance, as the difference in the CG cylinder areas does NOT ENSURE complete opening of the cylinder, i.e. when leakage or oil is detected between the hydraulic lines. If necessary, a second pneumatic line will be provided upon request in order to monitor also the closed clamp arm position/clamped workpiece state.

CLAMPED WORKPIECE

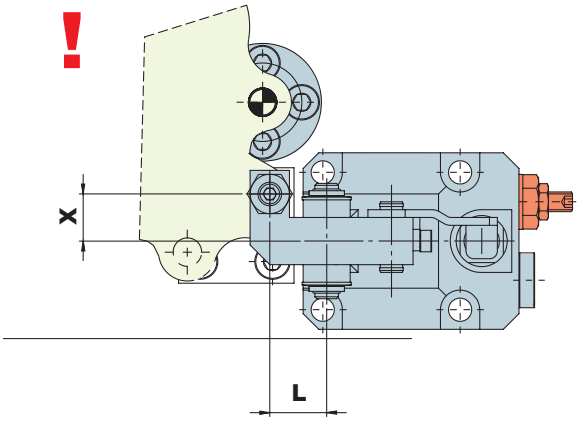


WORKPIECE UNCLAMPED

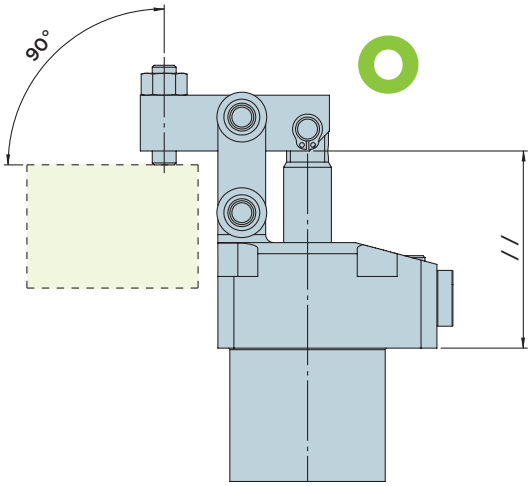


INSTALLATION INSTRUCTIONS
FOR LINK CLAMP CYLINDERS
CG SERIES

CORRECT CLAMP ARM INSTALLATION

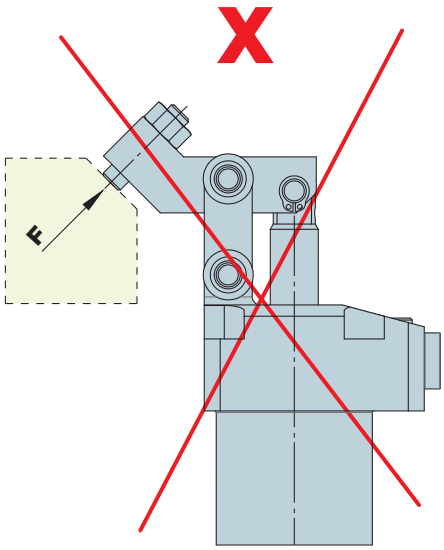


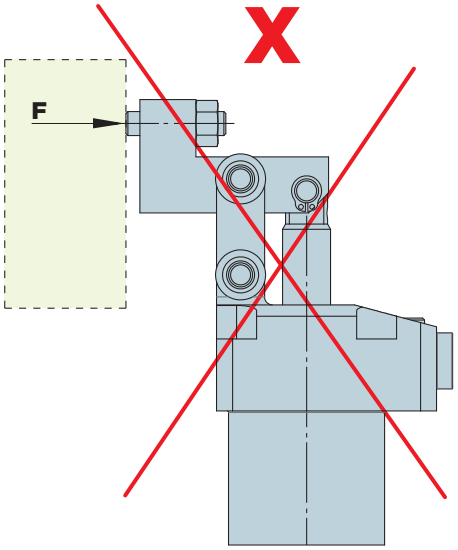
ATTENTION:
For special application requirements, it is also possible to use the clamp arm in a laterally off-set position relative to the cylinder. In this case, the operating pressures specified in the diagrams MUST be reduced. Please contact HYDROBLOCK for more detailed information.



The clamp arm should be dimensioned such as to ensure that it is arranged at right angles to the clamping point. In addition, the arm must be aligned in parallel to the surface of the clamped workpiece, as otherwise the manufacturing tolerances would be affected by undesired stress.

Improper use of the cylinder may lead to irreversible damage to the equipment.

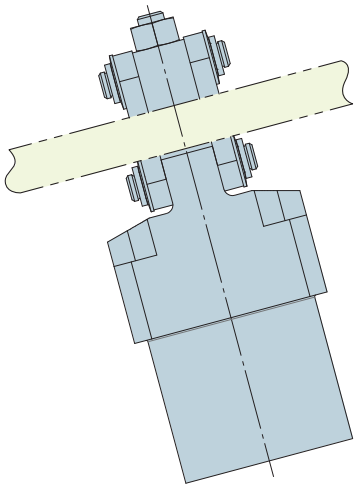




INSTALLATION INSTRUCTIONS
FOR LINK CLAMP CYLINDERS
CG SERIES

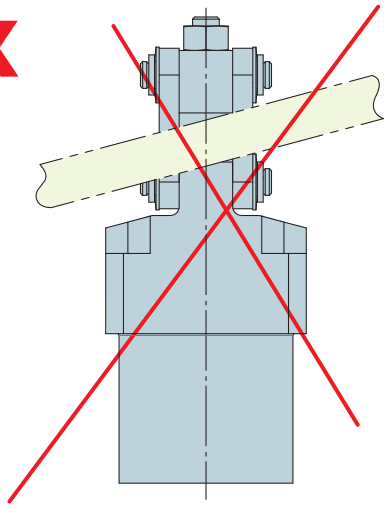
INSTALLATION ADVICE

O



If the workpiece needs to be clamped on an inclined surface, the cylinder must be installed at right angles to the surface.

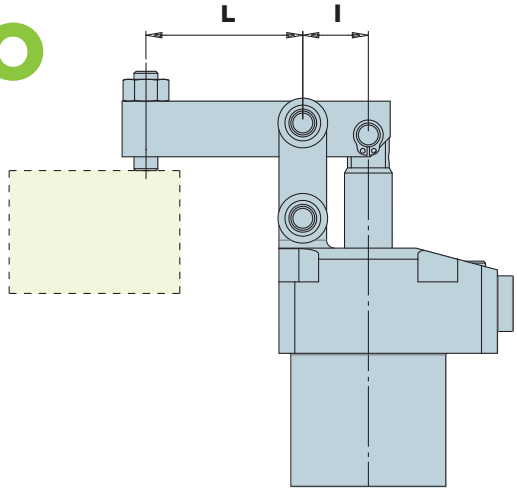
X



If the cylinder is installed at a different angle, the clamping forces would produce reaction forces that could damage the cylinder.

L > l

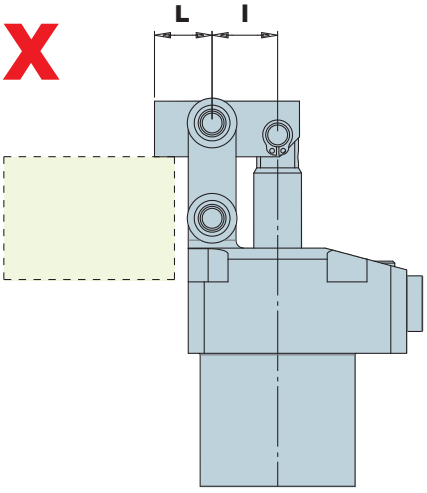
O



Please observe the clamping arm lengths and the fields of application specified in the catalogue. Whereas extremely long clamping arms could affect

L < l

X



correct workpiece removal, very short clamping arms could lead to premature wear or damage to the cylinder.

CLAMPING FORCE CALCULATION

The clamping force is determined by the clamp arm length and the operating pressure. The F clamping force can thus be calculated using the following formulas:

$$C = \frac{p \cdot S}{100} \qquad [kN]$$

$$F = \frac{k}{l} \cdot C \cdot \eta \qquad [kN]$$

k, l = Clamp arm dimensions [mm]
p = Pressure [bar]
S = Clamping area [cm²]
η = 0.9

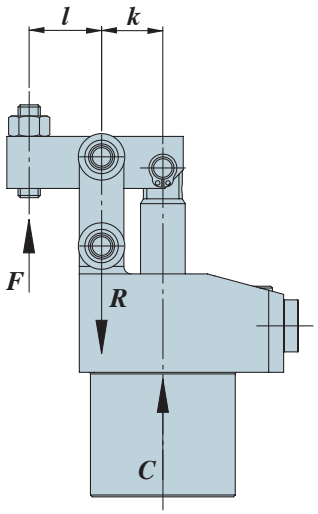
As a function of the operating pressure, the clamp arm length l should be limited to a minimum value. This length must not be exceeded to avoid damage to the cylinder.

$$l_{min} = \frac{k}{\frac{R_{max} \cdot 100}{p \cdot S \cdot \eta} - 1} \qquad [mm]$$

If the clamp arm dimensions are known, the maximum operating pressure is determined on the basis of the following formula:

$$p_{adm} = \frac{R_{max} \cdot 100}{S \cdot \eta \cdot \left(1 + \frac{k}{l}\right)} \qquad [mm]$$

With single-acting cylinders, the F_m spring force must be deducted from the force generated by the cylinder:



LINK CLAMP CYLINDERS: EFFECTIVE CLAMPING FORCE

In this case, the following formulas must be used:

$$C = \frac{p \cdot S}{100} - F_m \qquad [mm]$$

$$F = \frac{k}{l} \cdot C \cdot \eta \qquad [kN]$$

F_m = Spring force [kN]
k, l = Clamping arm dimensions [mm]
p = Pressure [bar]
S = Clamping area [cm^2]

$$l_{min} = \frac{k}{\frac{R_{max} \cdot 100}{p \cdot S \cdot \eta} - 1} \qquad [mm]$$

$$p_{adm} = \frac{R_{max} \cdot 100}{S \cdot \eta \cdot \left(1 + \frac{k}{l}\right)} \qquad [mm]$$

The constants to be used in the above formulas are specified in the table below:

	CG 8.70	CG 8.250	CG 8.200	CG 10.200	CG 12.200	CG 12.70	CG 12.250	CG 16.200	CG 20.200	CGF 26.0	CGF 32.0	CGF 40.0	CGF 50.0
Clamping area S (cm^2)	4.15	1.1	1.54	3.14	4.91	4.91	2.01	4.52	9.08	1.54	3.14	4.9	9
Max. operating pressure (bar)	70	250	200	200	200	70	250	200	200	200	200	200	200
Lever arm l (mm):	22	22	15	20	25	20	29	22	30	15	20	25	30
Lever length k (mm):	18.5	18.5	12.3	13.5	17	16.5	23.5	21	24	12.5	13.5	17	24
Performance η:	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9
Reaction R_{max} (kN):	5.2	5.2	7.4	11.1	15.6	6.3	8.8	11.2	17.5	7.4	11.1	15.6	17.5
Spring force F_m (kN):											0.34	0.40	0.82

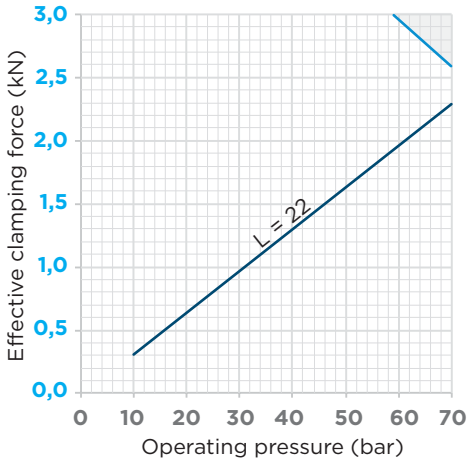
The shorter the clamp arm, the longer the reaction time R. Depending on the pressure p, there is a minimum length l_{min} at which the R_{max} limit value is reached. The cylinder-specific clamping force for different clamping arm lengths can be represented in a graph.

CG SERIES DOUBLE ACTING

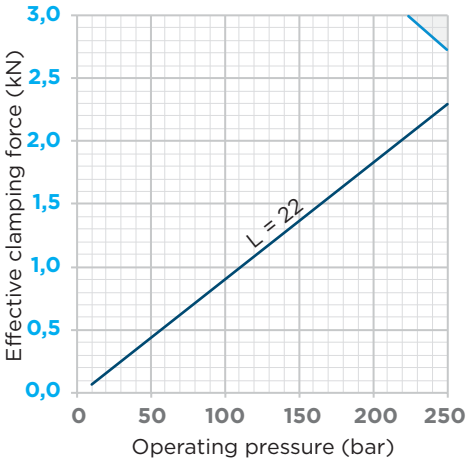
- EFFECTIVE CLAMPING FORCE

Effective clamping force

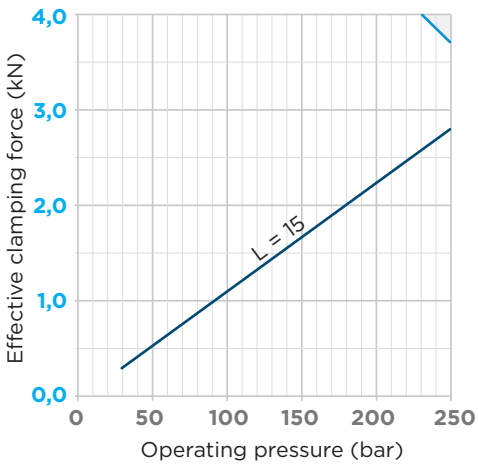
CG8.70



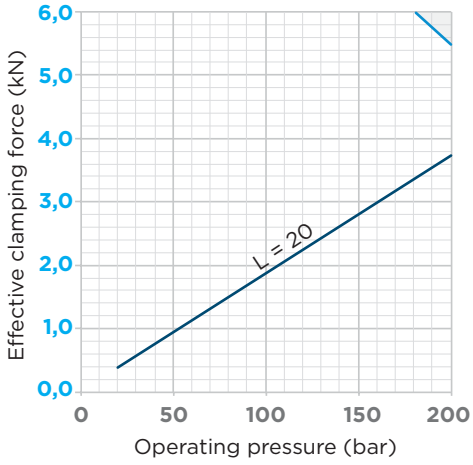
CG8.250



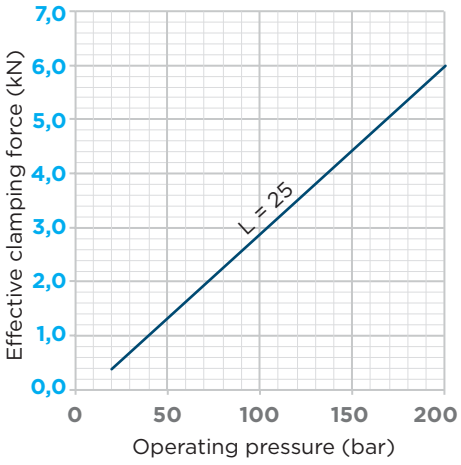
CG8.200



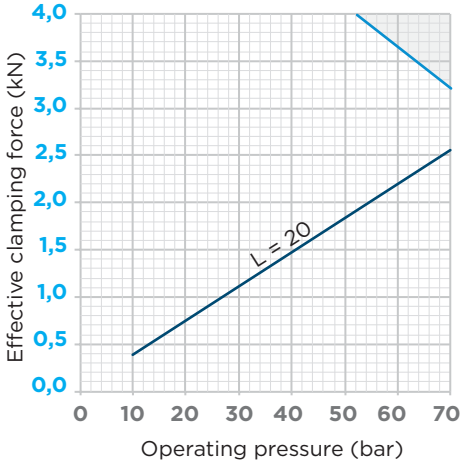
CG10.200



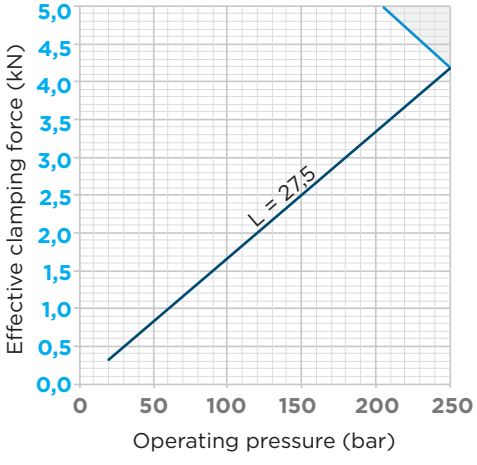
CG12.200



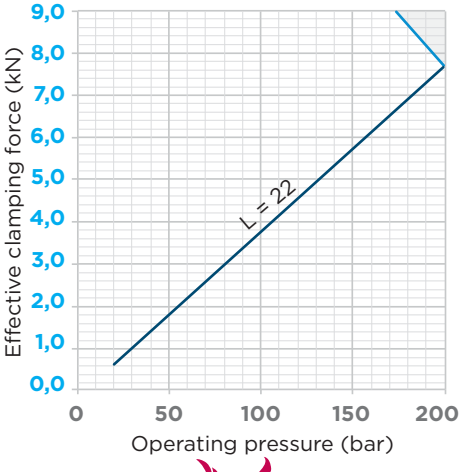
CG12.70



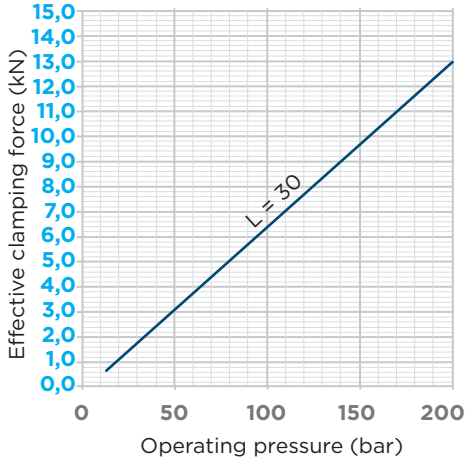
CG12.250



CG16.200



CG20.200

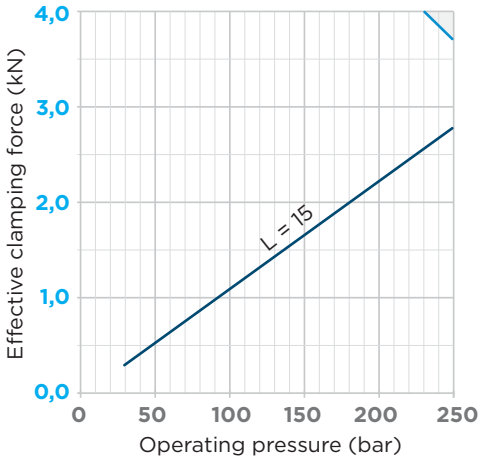


CGF SERIES SINGLE ACTING

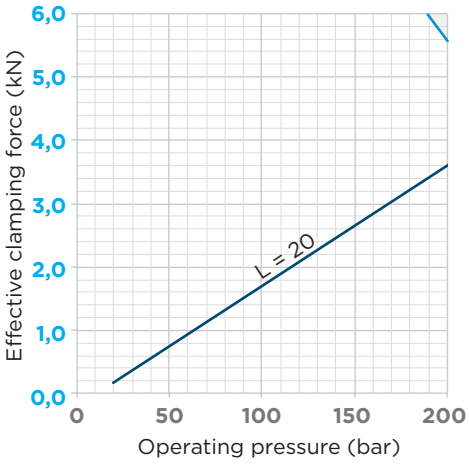
- EFFECTIVE CLAMPING FORCE

Effective clamping force

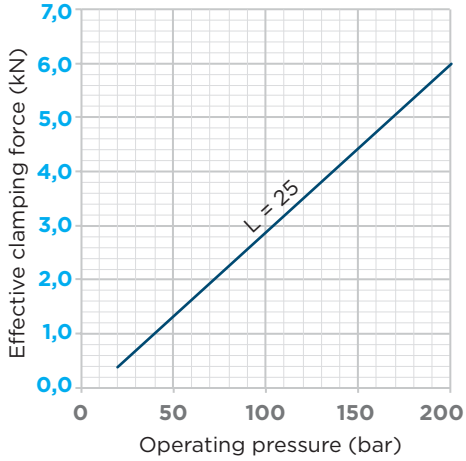
CGF26.0



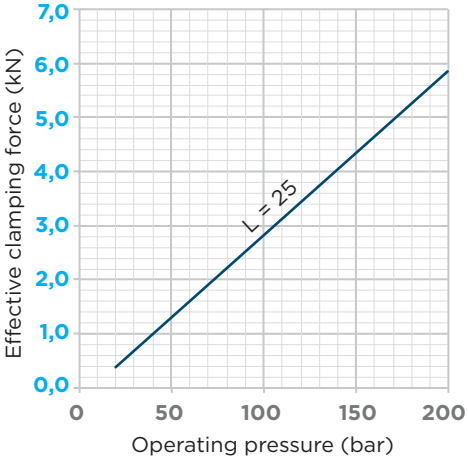
CGF32.0



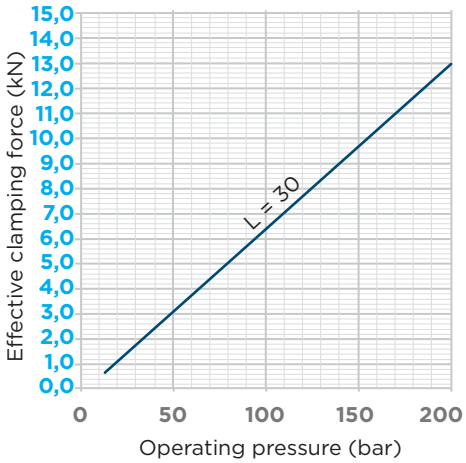
CGF40D



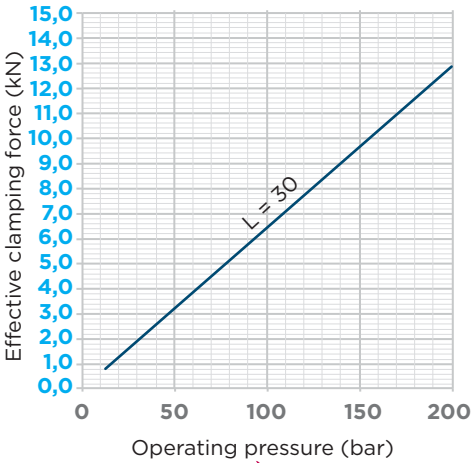
CGF40S



CGF50D



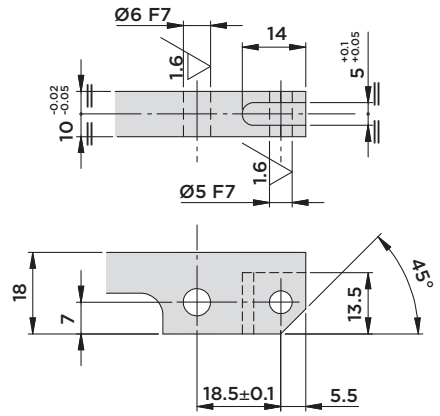
CGF50S



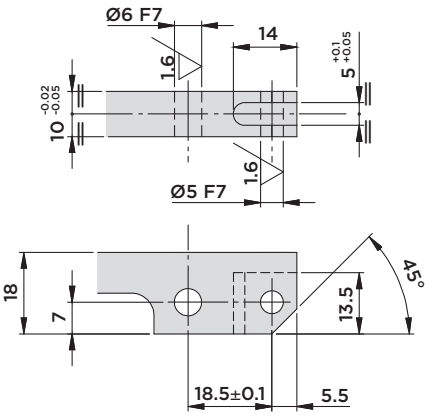
CG SERIES

- ACCESSORIES

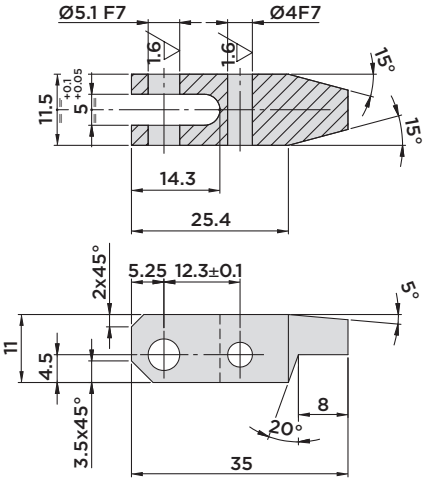
CLAMP ARM CG8.70



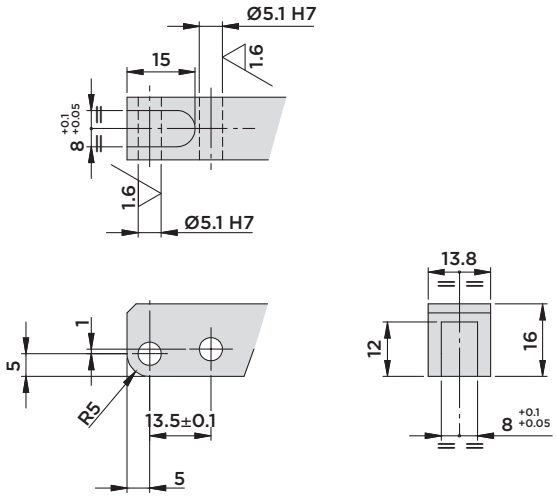
CLAMP ARM CG8.250



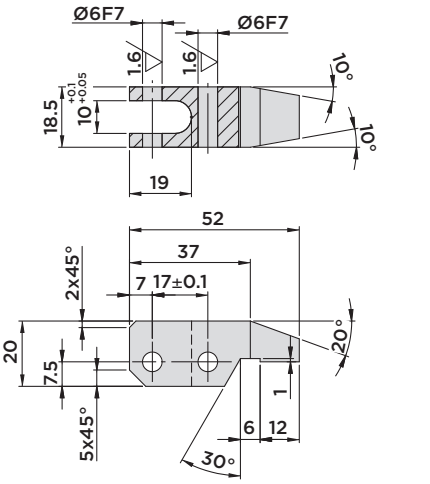
CLAMP ARM CG8.200 - CGF26.0



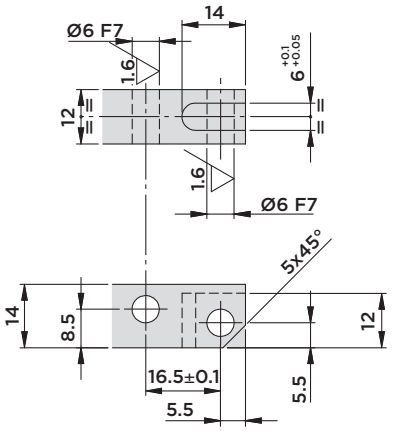
CLAMP ARM CG10.200



CLAMP ARM CG12.200



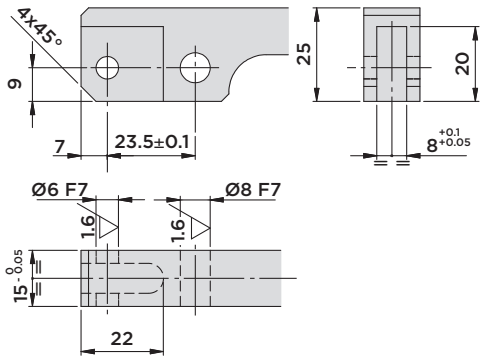
CLAMP ARM CG12.70



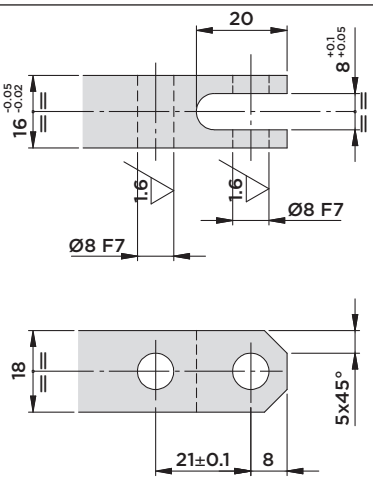
CG SERIES

- ACCESSORIES

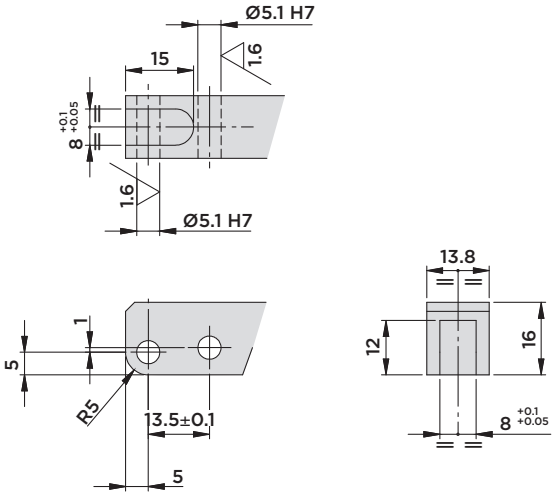
CLAMP ARM CG12.250 FM/FD/CD



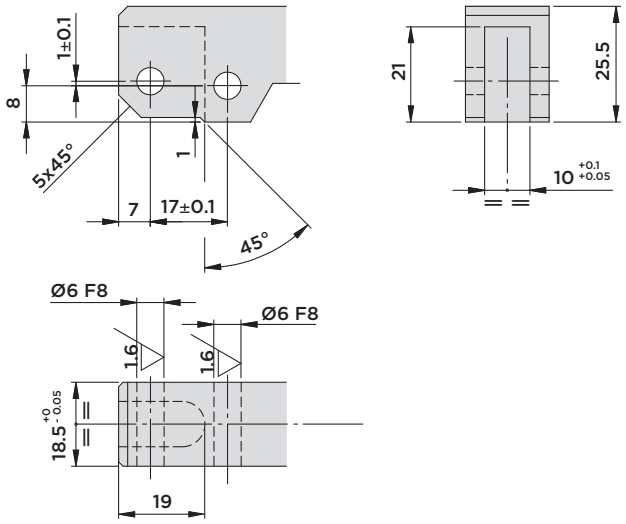
CLAMP ARM CG16.200



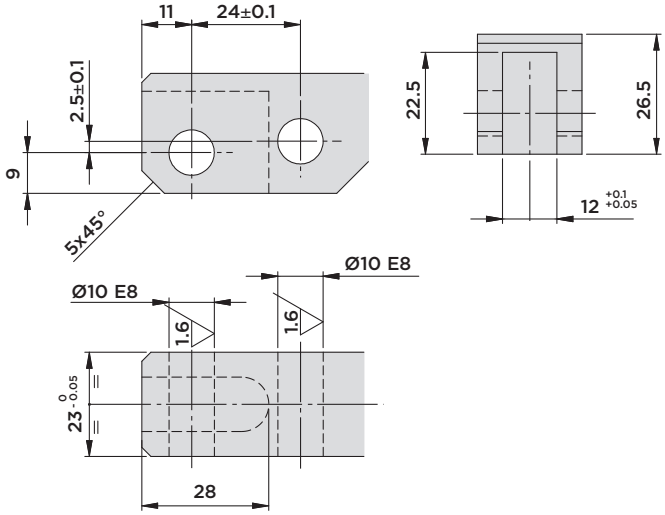
CLAMP ARM CGF32



CLAMP ARM CGF40



CLAMP ARM CGF50

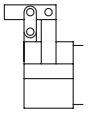


Material: C45

CG8.70

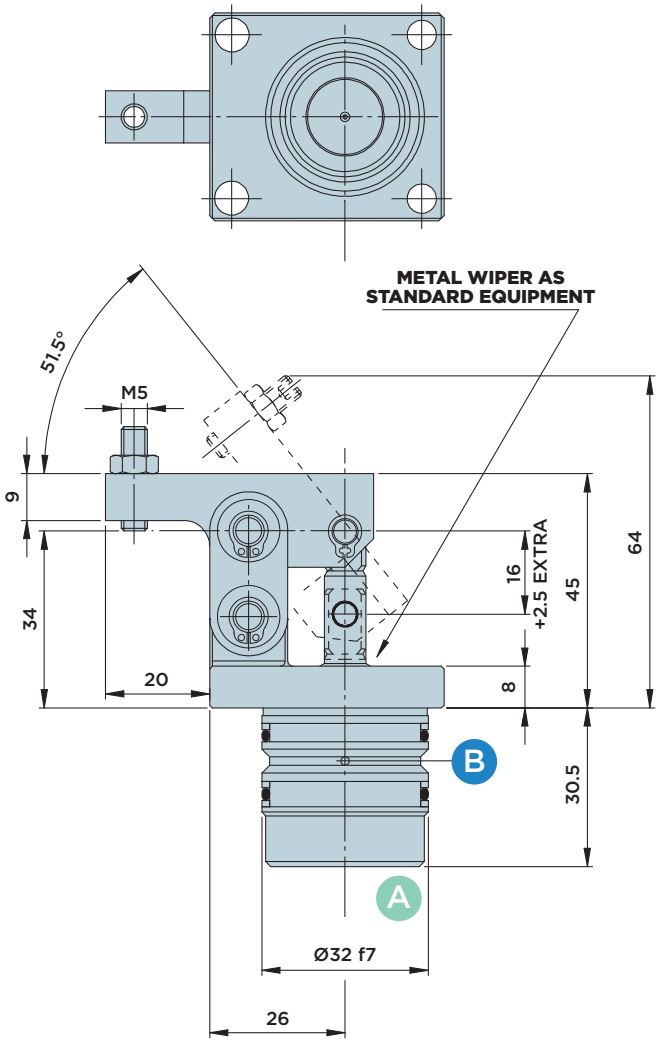
DOUBLE-ACTING **LINK CLAMP CYLINDER**

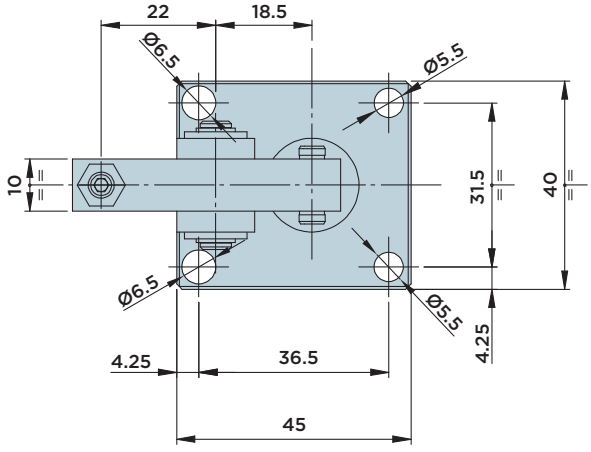
MAX. OPERATING PRESSURE = 70BAR



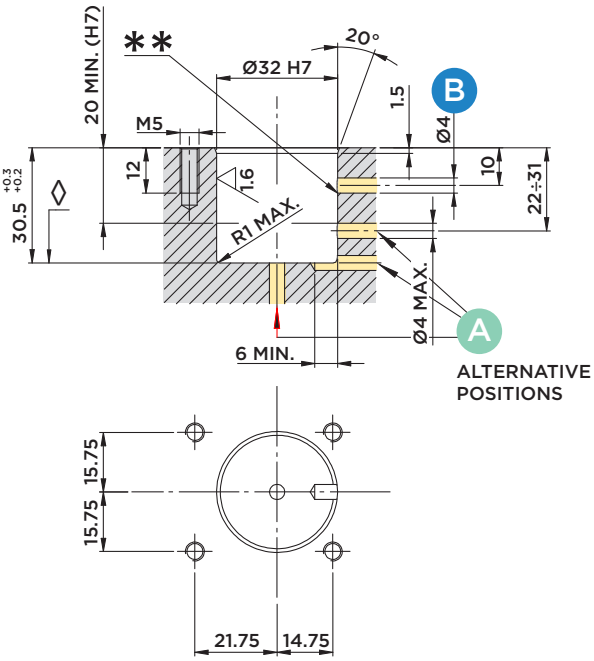
A : Clamping

B : Unclamping





INSTALLATION DIMENSIONS



◊ Piston contact surface

** Debur and round off any edges

CYLINDER WITHOUT COMPENSATION SYSTEM
If the clamp arm clearance needs to be compensated, please order the CG8.70V version with compensated clamp arm.

Included in the scope of supply:
- Mounting screws M5x16 DIN 912/12.9 grade.

Material:
- Piston/rod/bolts: Case-hardened steel, ground.
- Body: Free machining steel, nitrocarburized.
- Lever: Quenched and Tempered steel.
- Clamp arm: C45.

Options:
- Upon request, different clamp arm types can be manufactured to customer specification, mounted and commissioned.
- The link clamp cylinder can also be ordered without clamp arm (order no. CG8.70N).

STROKE mm		EFFECTIVE PISTON AREA		TOTAL OIL VOLUME	
		Cm²		Cm³	
		CLAMP.	UNCLAMP.	CLAMP.	UNCLAMP.
TOTAL	18.5	4.15	3.65	7.7	6.8

CG8.70 **V**

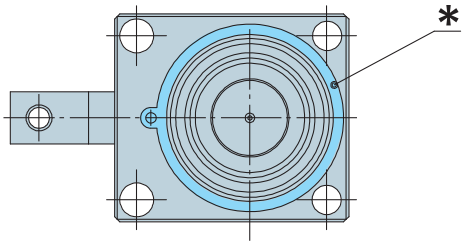
COMPENSATION SYSTEM

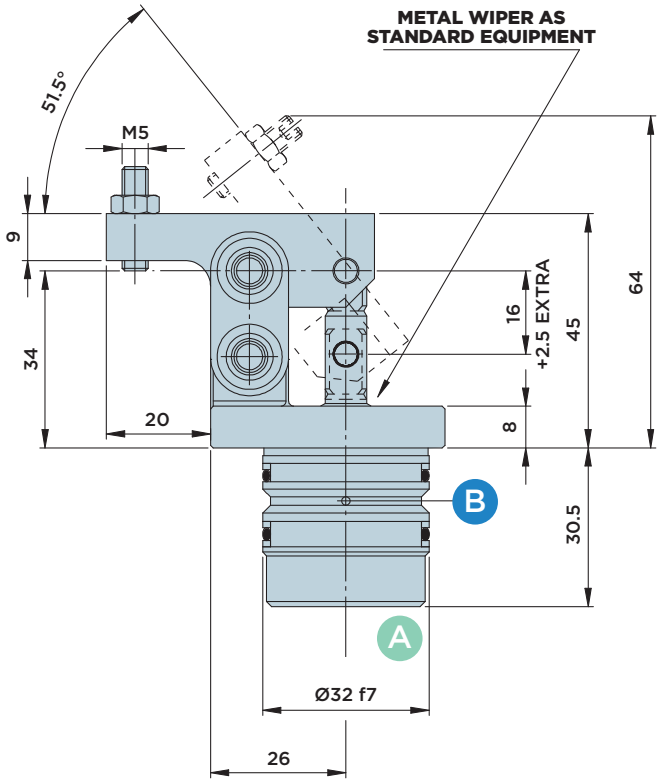
DOUBLE-ACTING **LINK CLAMP CYLINDER** WITH **COMPENSATION SYSTEM**

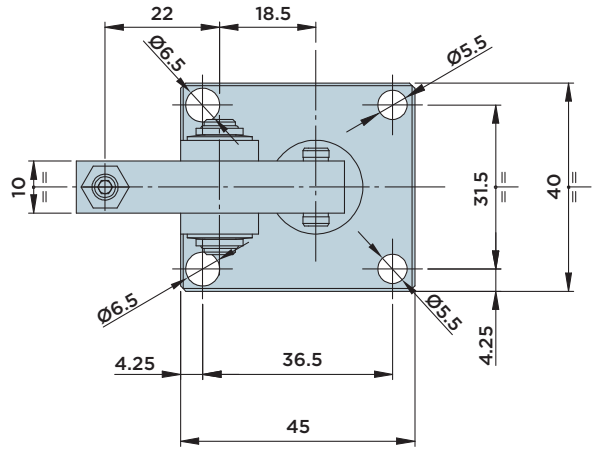
AND **PNEUMATIC VALVE FOR CLAMP ARM POSITION CONTROL**

A : Clamping

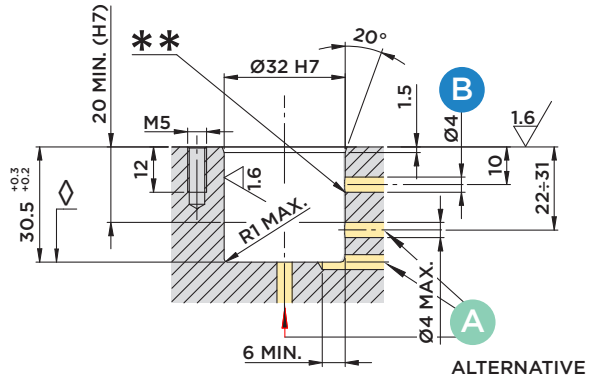
B : Unclamping

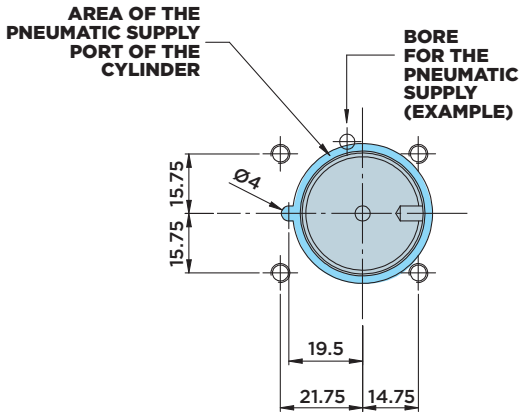






INSTALLATION DIMENSIONS





◊ Piston contact surface

** Debur and round off any edges

CYLINDER WITH COMPENSATION SYSTEM

If, for technical reasons, special clamps arms are manufactured in-house by the customer, HYDROBLOCK will be ready to mount these clamp arms to the cylinder free of charge (recommended solution) or to provide the mounting tool for the compensation system upon request.

Options:

- The link clamp cylinder can also be ordered without clamp arm (order no. CG8.70VN).

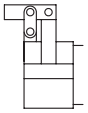
*** Pneumatic supply:**

The special channel integrated into the link clamp cylinder is designed for the most different supply connections. Only a simple supply bore must be provided at any position of the fixture for this purpose. In particular with extreme complex fixtures or supports it is recommended defining the position of the pneumatic line in the planning phase.

CG8.250

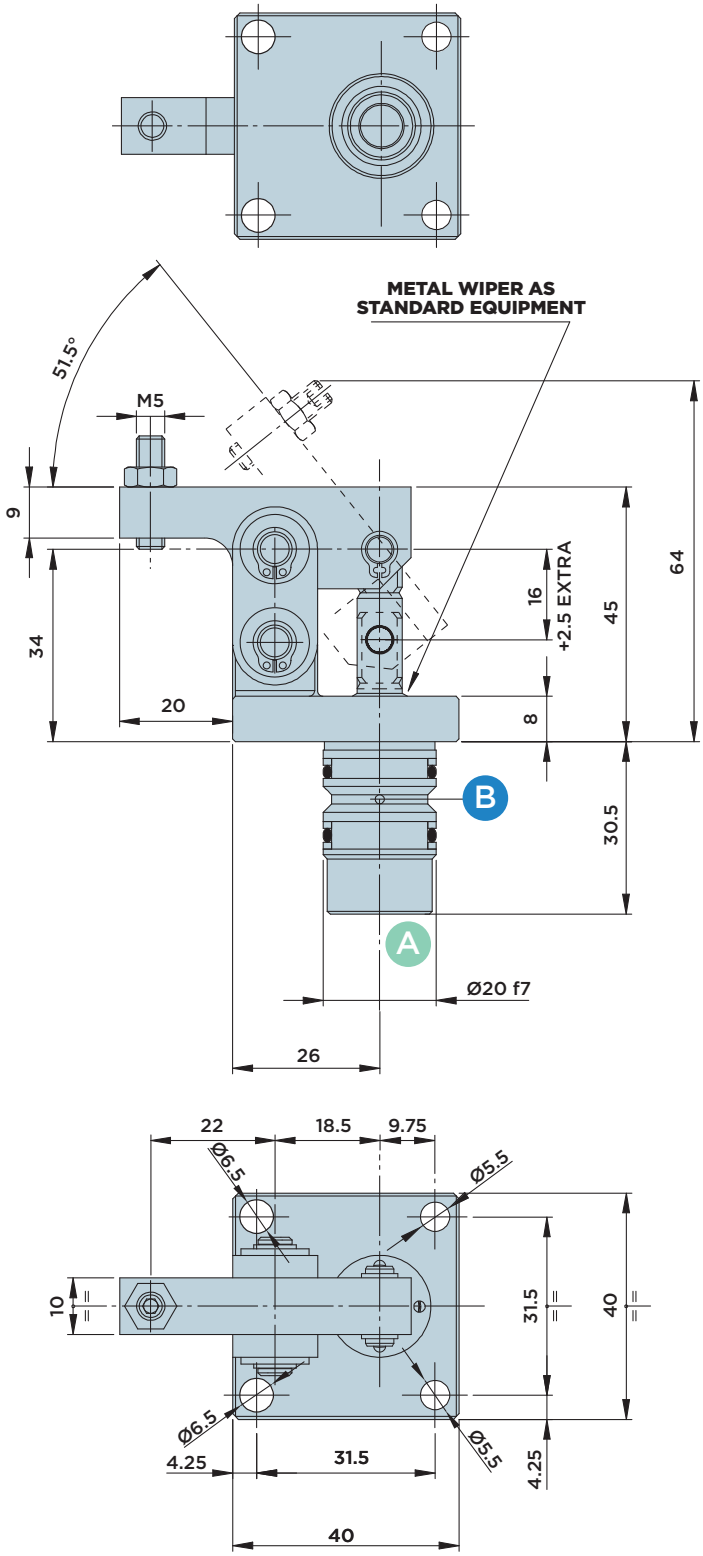
DOUBLE-ACTING **LINK CLAMP CYLINDER**

MAX. OPERATING PRESSURE = 250BAR

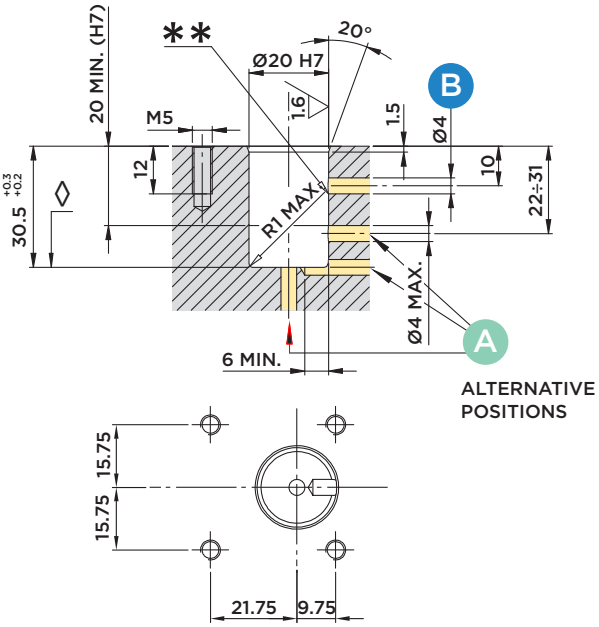


A : Clamping

B : Unclamping



INSTALLATION DIMENSIONS



◊ Piston contact surface

** Debur and round off any edges

CYLINDER WITHOUT COMPENSATION SYSTEM
If the clamp arm clearance needs to be compensated, please order the CG8.250V version with compensated clamp arm.

Included in the scope of supply:
- Mounting screws M5x16 DIN 912/12.9 grade

Material:
- Piston/rod/bolts: Case-hardened steel, ground.
- Body: Free machining steel, nitrocarburized.
- Lever: Quenched and Tempered steel.
- Clamp arm: C45.

Options:
- Upon request, different clamp arm types can be manufactured to customer specification, mounted and commissioned.
- The link clamp cylinder can also be ordered without clamp arm (order no. CG8.250N).

STROKE mm		EFFECTIVE PISTON AREA		TOTAL OIL VOLUME	
		Cm²		Cm³	
		CLAMP.	UNCLAMP.	CLAMP.	UNCLAMP.
TOTAL	18.5	1.13	0.63	2.1	1.2

CG8.250 V

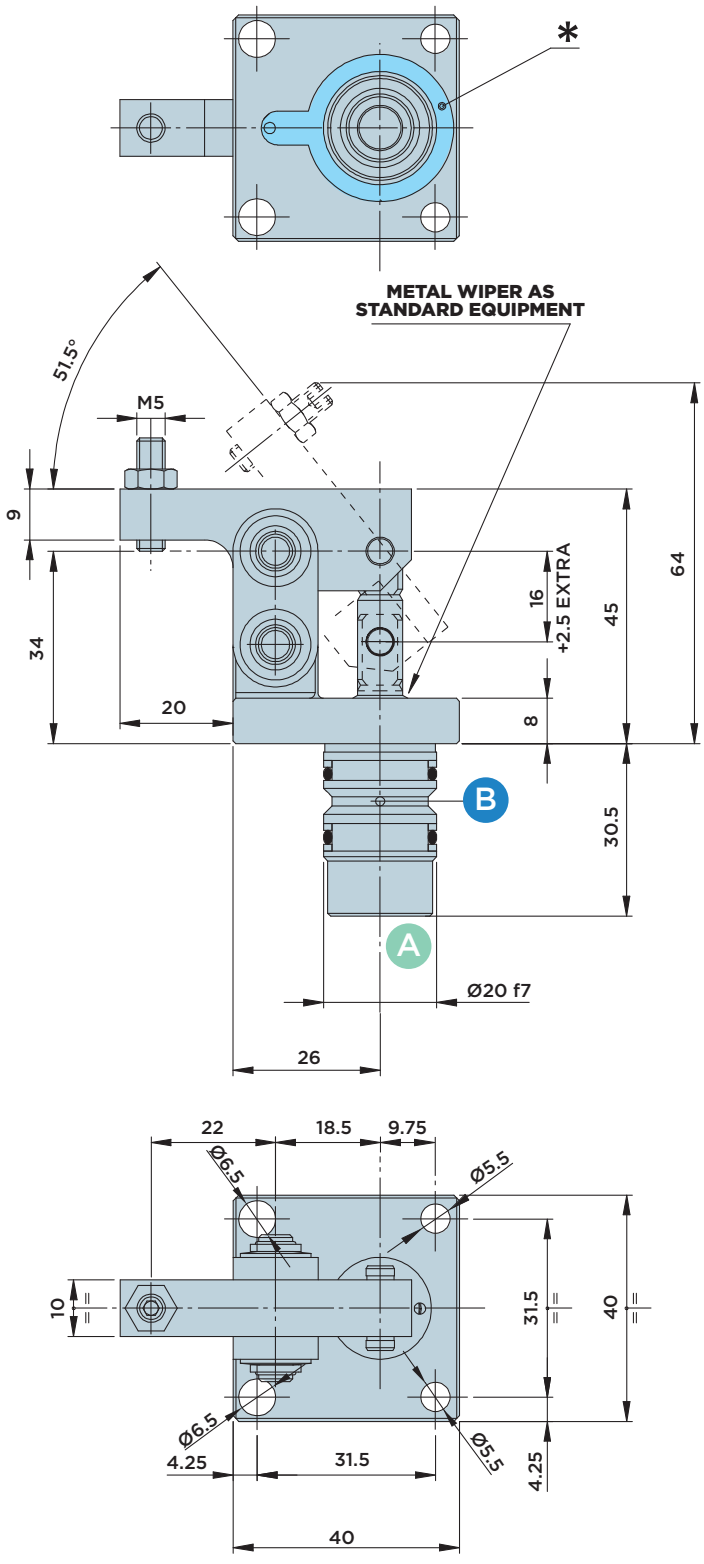
COMPENSATION SYSTEM

DOUBLE-ACTING **LINK CLAMP CYLINDER** WITH **COMPENSATION SYSTEM**

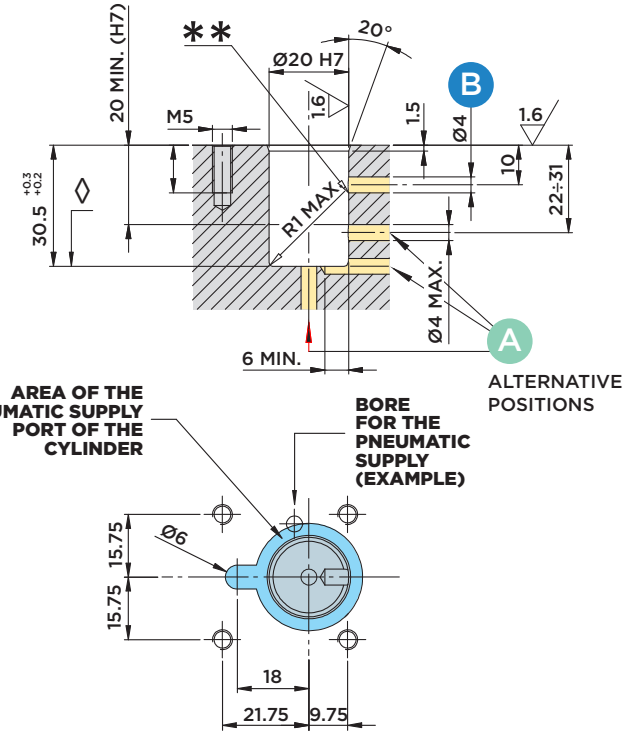
AND **PNEUMATIC VALVE FOR CLAMP ARM POSITION CONTROL**

A : Clamping

B : Unclamping



INSTALLATION DIMENSIONS



◊ Piston contact surface

** Debur and round off any edges

CYLINDER WITH COMPENSATION SYSTEM
If, for technical reasons, special clamps arms are manufactured in-house by the customer, HYDROBLOCK will be ready to mount these clamp arms to the cylinder free of charge (recommended solution) or to provide the mounting tool for the compensation system upon request.

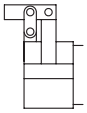
Options:
- The link clamp cylinder can also be ordered without clamp arm (order no. CG8.250VN).

* **Pneumatic supply:**
The special channel integrated into the link clamp cylinder is designed for the most different supply connections. Only a simple supply bore must be provided at any position of the fixture for this purpose. In particular with extreme complex fixtures or supports it is recommended defining the position of the pneumatic line in the planning phase.

CG8.200 **CD**

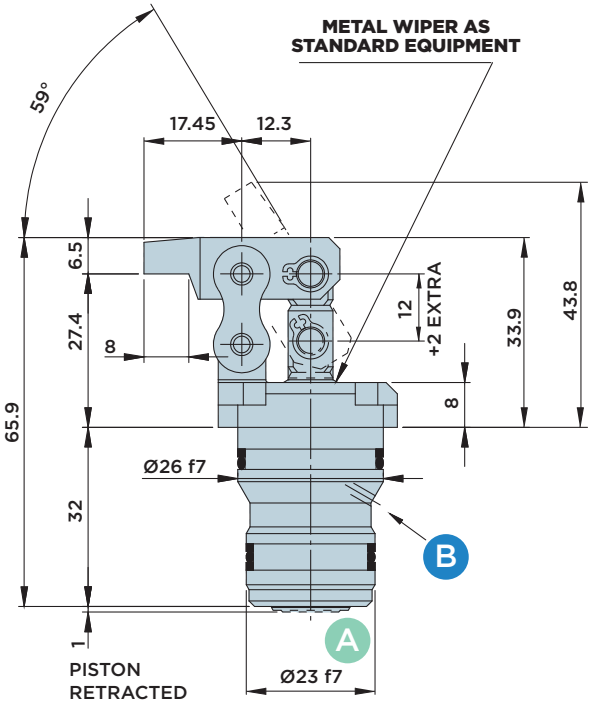
DOUBLE-ACTING **LINK CLAMP CYLINDER**

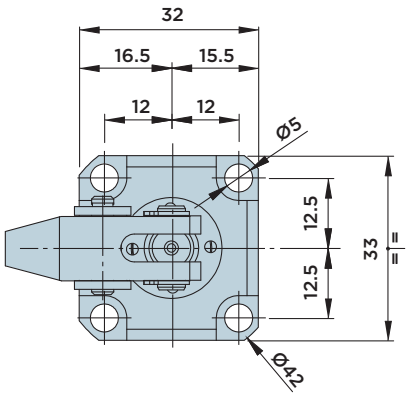
MAX. OPERATING PRESSURE = 200BAR



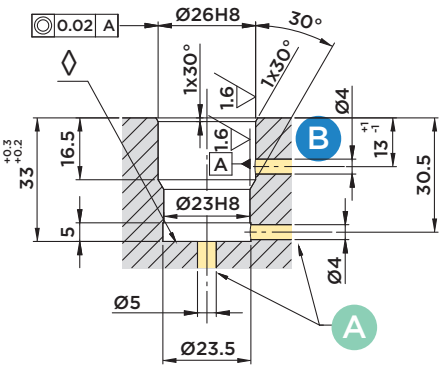
A : Clamping

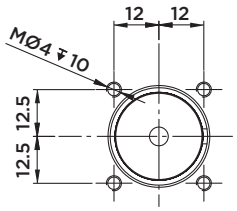
B : Unclamping





INSTALLATION DIMENSIONS





◊ Piston contact surface

Included in the scope of supply:
- Mounting screws M4x12 DIN 912/12.9 grade

Material:
- Piston/rod/bolts: Case-hardened steel, ground.
- Body: Free machining steel, nitrocarburized.
- Lever: Quenched and Tempered steel.
- Clamp arm: C45.

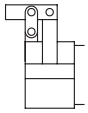
Options:
- Upon request, different clamp arm types can be manufactured to customer specification, mounted and commissioned.
- The link clamp cylinder can also be ordered without clamp arm (order no. CG8.200CDN).

STROKE mm		EFFECTIVE PISTON AREA		TOTAL OIL VOLUME	
		Cm²		Cm³	
		CLAMP.	UNCLAMP.	CLAMP.	UNCLAMP.
TOTAL	14	1.54	1.04	2.2	1.5

CG10.200 **CD**

DOUBLE-ACTING **LINK CLAMP CYLINDER**

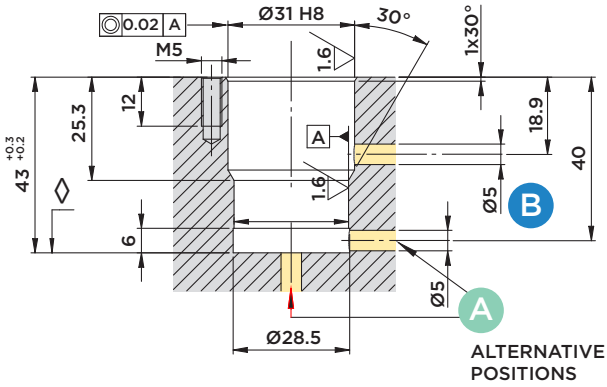
MAX. OPERATING PRESSURE = 200BAR

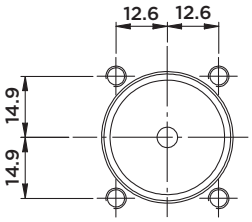


A : Clamping

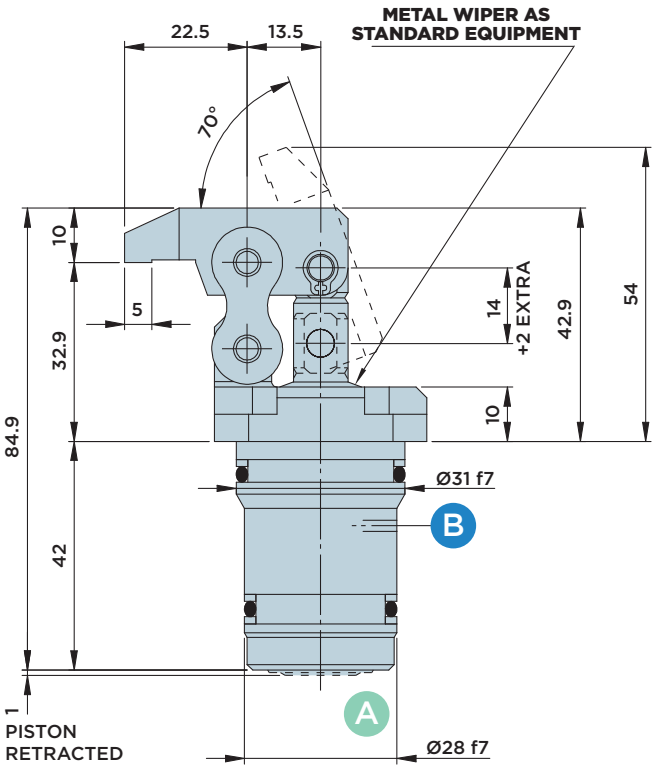
B : Unclamping

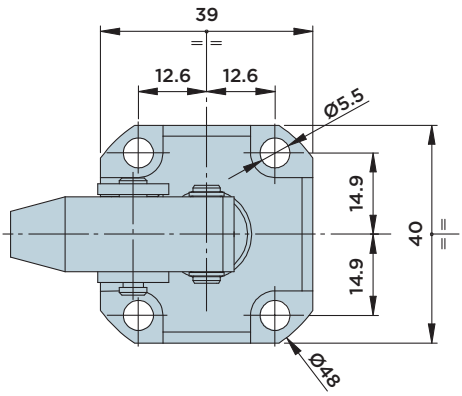
INSTALLATION DIMENSIONS





◊ Piston contact surface





Included in the scope of supply:

- Mounting screws M5x16 DIN 912/12.9 grade.

Material:

- Piston/rod/bolts: Case-hardened steel, ground.
- Body: Free machining steel, nitrocarburized.
- Lever: Commercial type.
- Clamp arm: C45.

Options:

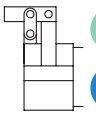
- Upon request, different clamp arm types can be manufactured to customer specification, mounted and commissioned.
- The link clamp cylinder can also be ordered without clamp arm (order no. CG10.200CDN).

STROKE mm		EFFECTIVE PISTON AREA		TOTAL OIL VOLUME	
		Cm^2		Cm^3	
		CLAMP.	UNCLAMP.	CLAMP.	UNCLAMP.
TOTAL	16	3.14	2.35	5	3.8

CG12.200 **CD**

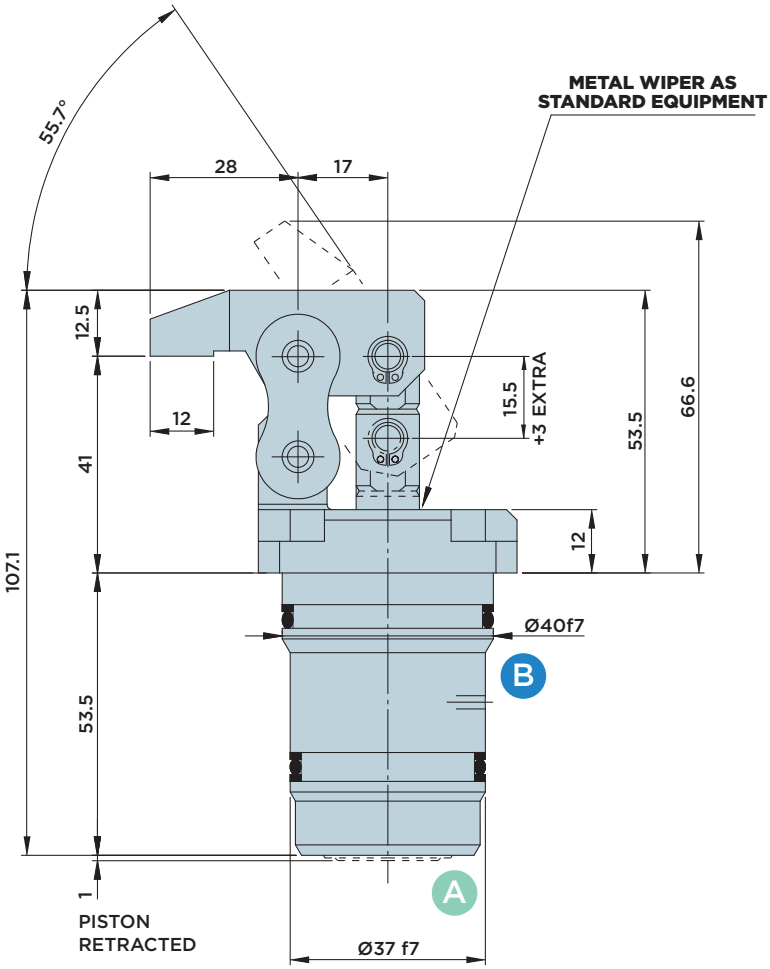
DOUBLE-ACTING **LINK CLAMP CYLINDER**

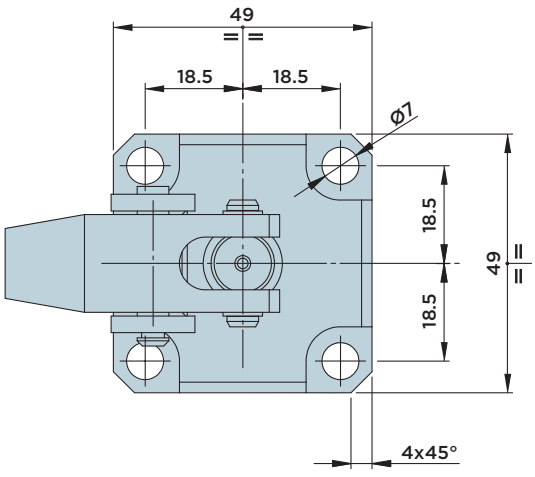
MAX. OPERATING PRESSURE = 200BAR



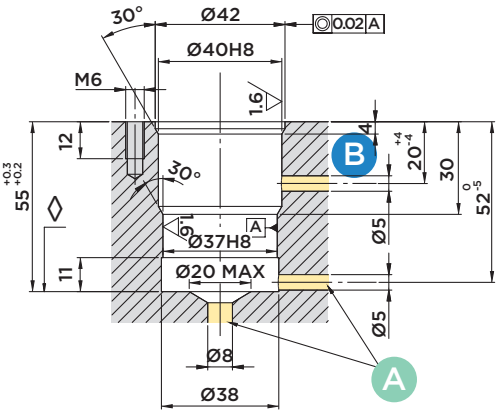
A : Clamping

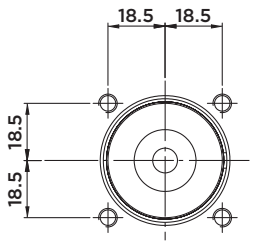
B : Unclamping





INSTALLATION DIMENSIONS





◊ Piston contact surface

Included in the scope of supply:

- Mounting screws M6x16 DIN 912/12.9 grade

Material:

- Piston/rod/bolts: Case-hardened steel, ground.
- Body: Free machining steel, nitrocarburized.
- Lever: Quenched and Tempered steel.
- Clamp arm: C45.

Options:

- Upon request, different clamp arm types can be manufactured to customer specification, mounted and commissioned.
- The link clamp cylinder can also be ordered without clamp arm (order no. CG12.200CDN).

STROKE mm		EFFECTIVE PISTON AREA		TOTAL OIL VOLUME	
		Cm²		Cm³	
		CLAMP.	UNCLAMP.	CLAMP.	UNCLAMP.
TOTAL	18.5	4.91	3.78	9.1	7

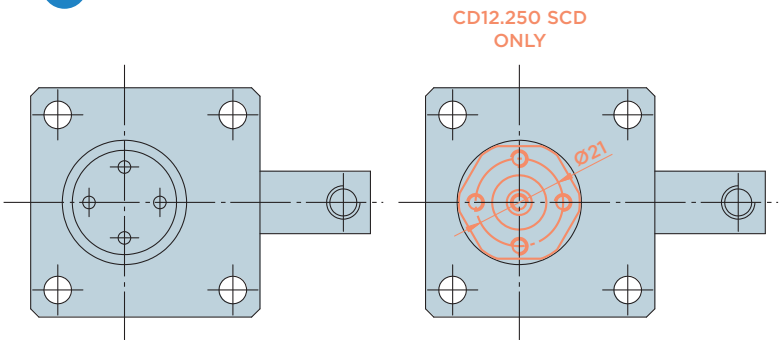
CG12.250 **CD**

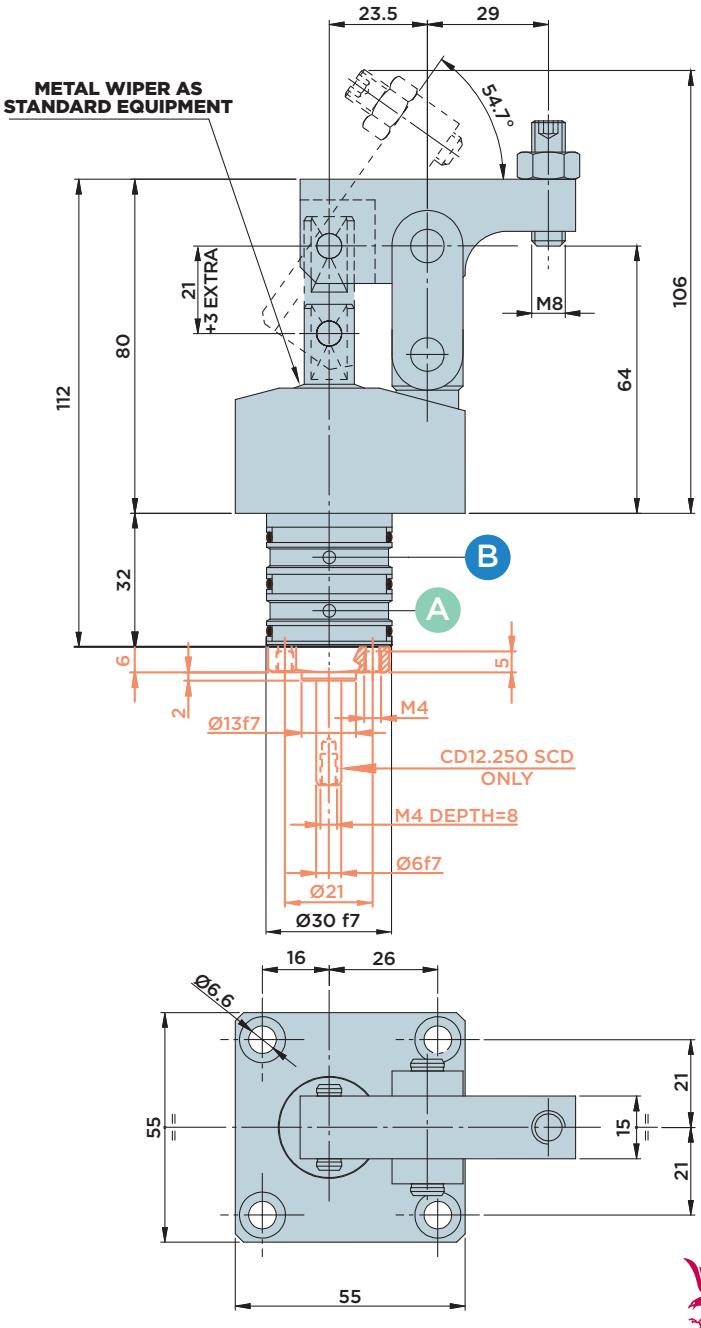
DOUBLE-ACTING **LINK CLAMP CYLINDER**

MAX. OPERATING PRESSURE = 250BAR

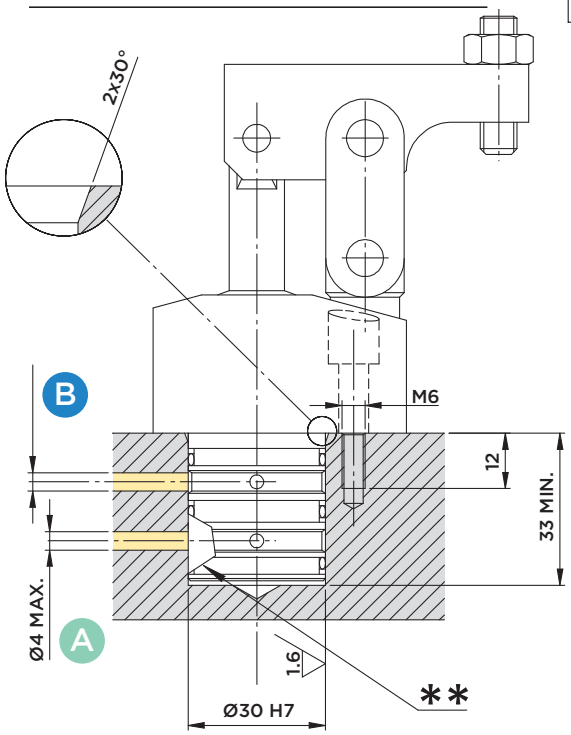
A : Clamping

B : Unclamping





INSTALLATION DIMENSIONS



** Debur and round off any edges

Included in the scope of supply:
- Mounting screws M6x25 DIN 912/12.9 grade.

Material:
- Piston/rod/bolts: Case-hardened steel, ground.
- Body: Free machining steel, nitrocarburized.
- Lever: Quenched and Tempered steel.
- Clamp arm: C45.

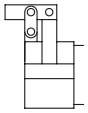
Options:
- Upon request, different clamp arm types can be manufactured to customer specification, mounted and commissioned.
- The link clamp cylinder can also be ordered without clamp arm (order no. CG12.250CDN).
- The cylinder is also available with position control sensor (order no. CG12.250SCD).
- The cylinder can also be ordered with position control sensor but without clamp arm (order no. CG12.250SCDN).

STROKE mm		EFFECTIVE PISTON AREA		TOTAL OIL VOLUME	
		Cm²		Cm³	
		CLAMP.	UNCLAMP.	BLOCC.	CLAMP.
TOTAL	24	2.01	0.88	4.8	2.1

CG12.250 **FD**

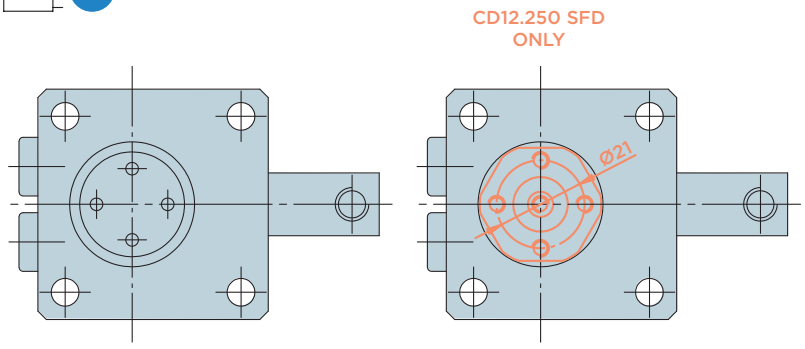
DOUBLE-ACTING **LINK CLAMP CYLINDER**

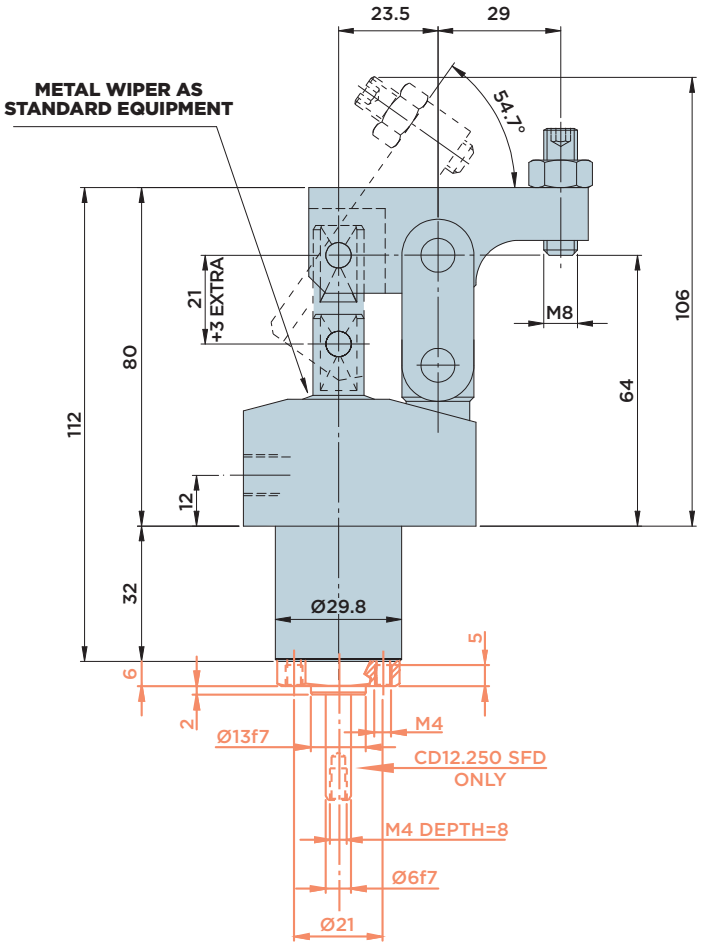
MAX. OPERATING PRESSURE = 250BAR

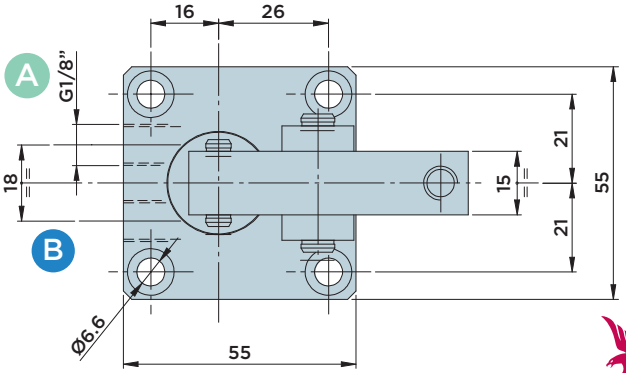


A : Clamping

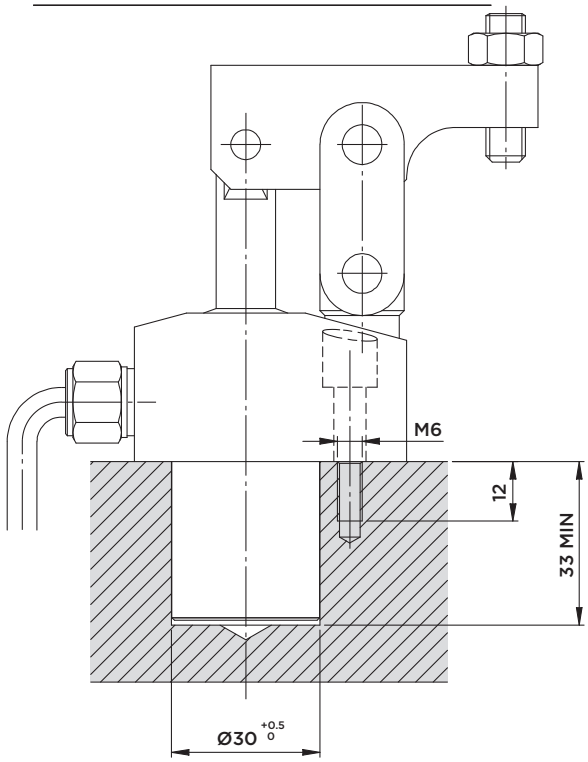
B : Unclamping







INSTALLATION DIMENSIONS



Included in the scope of supply:

- Mounting screws M6x25 DIN 912/12.9 grade.

Material:

- Piston/rod/bolts: Case-hardened steel, ground.
- Body: Free machining steel, nitrocarburized.
- Lever: Quenched and Tempered steel.
- Clamp arm: C45.

Options:

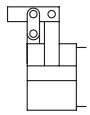
- Upon request, different clamp arm types can be manufactured to customer specification, mounted and commissioned.
- The link clamp cylinder can also be ordered without clamp arm (order no. CG12.250FDN).
- The cylinder is also available with position control sensor (order no. CG12.250SFD).
- The cylinder can also be ordered with position control sensor but without clamp arm (order no. CG12.250SFDN).

STROKE mm		EFFECTIVE PISTON AREA		TOTAL OIL VOLUME	
		Cm²		Cm³	
		CLAMP.	UNCLAMP.	CLAMP.	UNCLAMP.
TOTAL	24	2.01	0.88	4.8	2.1

CG12.250 **FM**

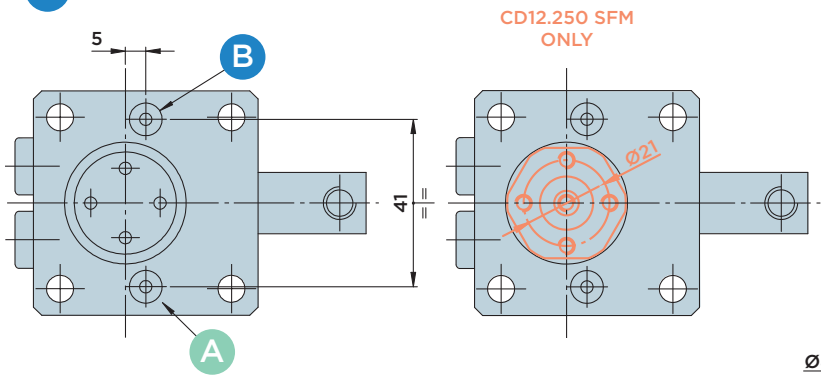
DOUBLE-ACTING **LINK CLAMP CYLINDER**

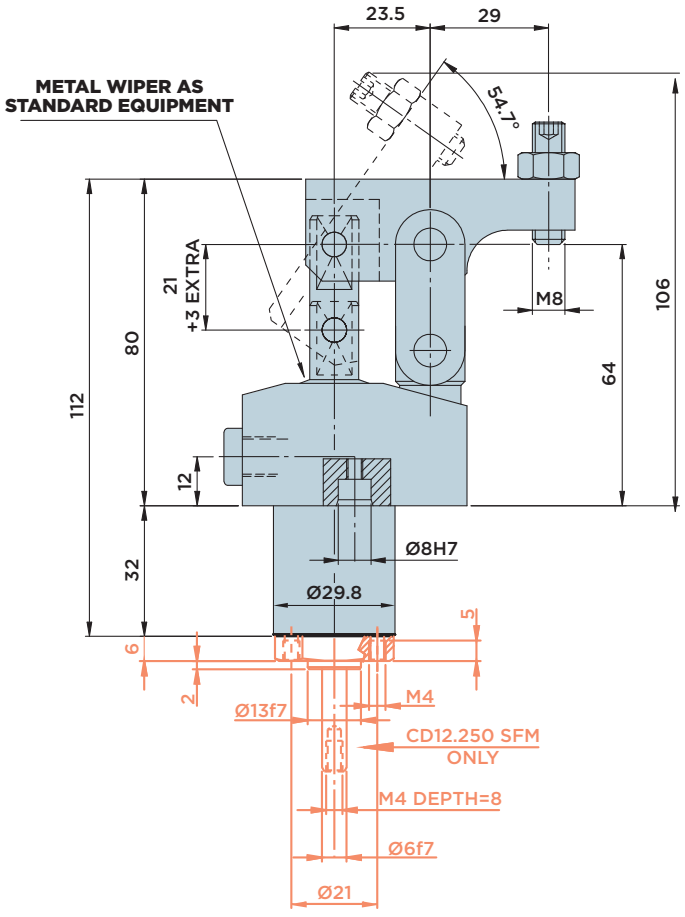
MAX. OPERATING PRESSURE = 250BAR

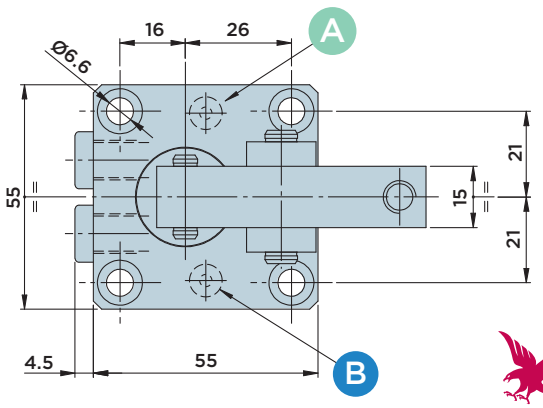


A : Clamping

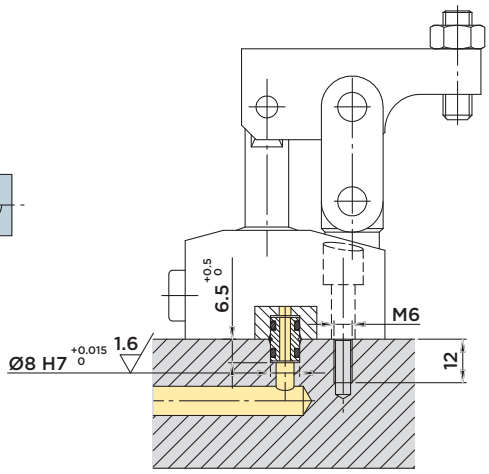
B : Unclamping

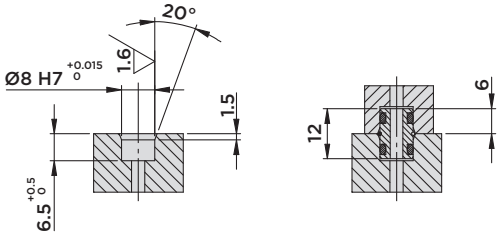






INSTALLATION DIMENSIONS





Included in the scope of supply:

- Mounting screws M6x25 DIN 912/12.9 grade.
- Hydraulic plug connector Ø8x12.

Material:

- Piston/rod/bolts: Case-hardened steel, ground.
- Body: Free machining steel, nitrocarburized.
- Lever: Quenched and Tempered steel.
- Clamp arm: C45.

Options:

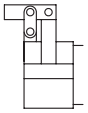
- Upon request, different clamp arm types can be manufactured to customer specification, mounted and commissioned.
- The link clamp cylinder can also be ordered without clamp arm (order no. CG12.250FMN).
- The cylinder is also available with position control sensor (order no. CG12.250SFM).
- The cylinder can also be ordered with position control sensor but without clamp arm (order no. CG12.250SFMN).

STROKE mm		EFFECTIVE PISTON AREA		TOTAL OIL VOLUME	
		Cm²		Cm³	
		CLAMP.	UNCLAMP.	CLAMP.	UNCLAMP.
TOTAL	24	2.01	0.88	4.8	2.1

CG12.70 **FD**

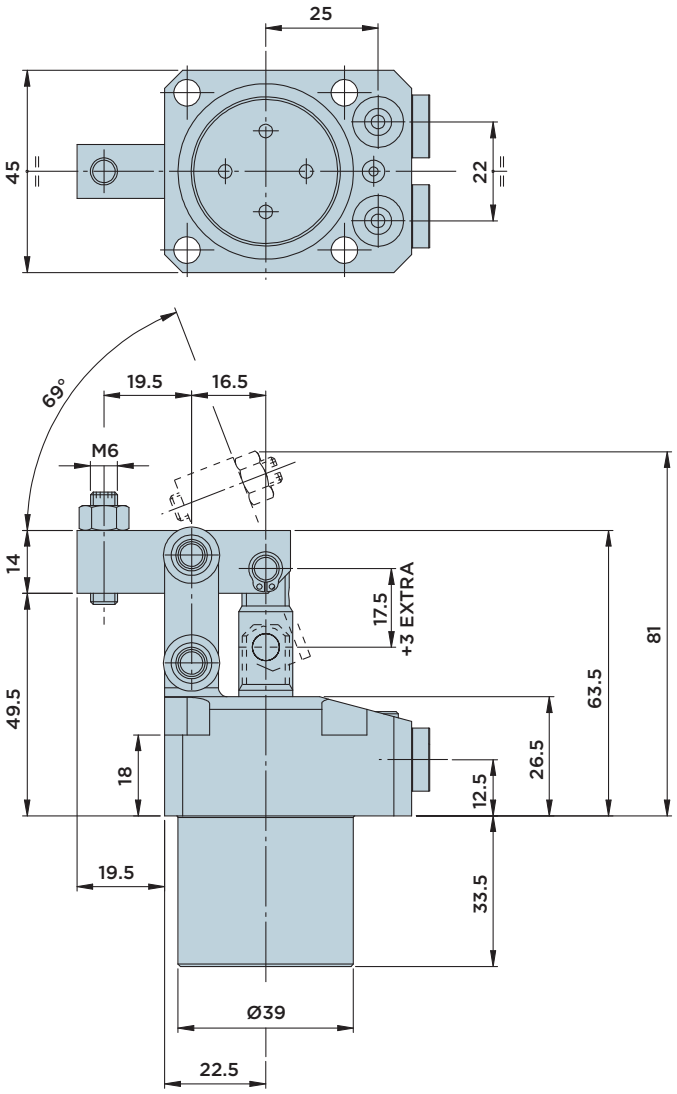
DOUBLE-ACTING **LINK CLAMP CYLINDER** WITH **COMPENSATION SYSTEM**

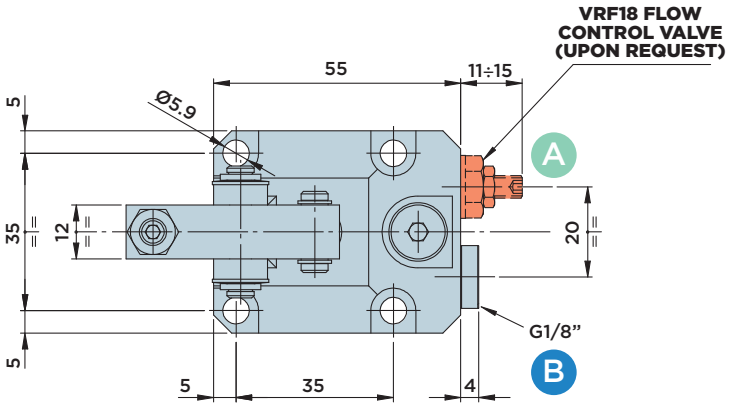
MAX. OPERATING PRESSURE = 70BAR



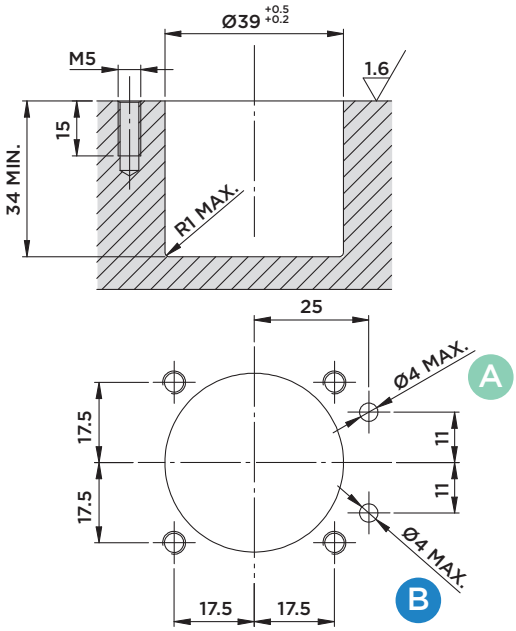
A : Clamping

B : Unclamping





INSTALLATION DIMENSIONS



CYLINDER WITH COMPENSATION SYSTEM
If, for technical reasons, special clamps arms are manufactured in-house by the customer, HYDROBLOCK will be ready to mount these clamp arms to the cylinder free of charge (recommended solution) or to provide the mounting tool for the compensation system upon request.

Included in the scope of supply:
- Mounting screws M5x30 DIN 912/12.9 grade.
- O-rings Ø4.34x3.53.

Material:
- Piston/rod/bolts: Case-hardened steel, ground.
- Body: Free machining steel, nitrocarburized.
- Lever: Quenched and Tempered steel.
- Clamp arm: C45.

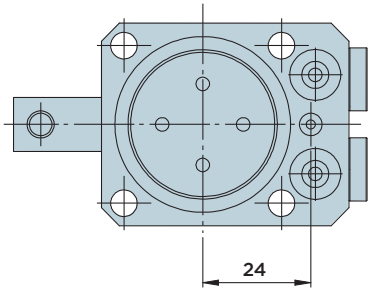
Options:
- Upon request, different clamp arm types can be manufactured to customer specification, mounted and commissioned.
- The link clamp cylinder can also be ordered without clamp arm (order no. CG12.70FDN).
- The link clamp cylinder can also be ordered without compensation system (order no. CG12.70FDR).
- The link clamp cylinder can also be ordered without clamp arm and without compensation system (order no. CG12.70FDRN).
- The link clamp cylinder can also be ordered with VRF18 flow control valve (order no. CG12.70FDS).

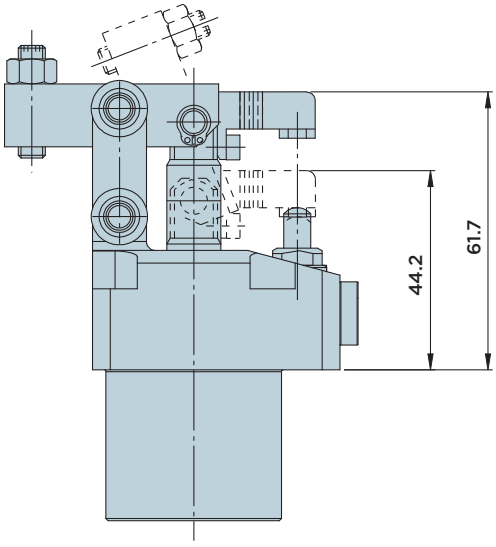
CG12.70 **FDV**

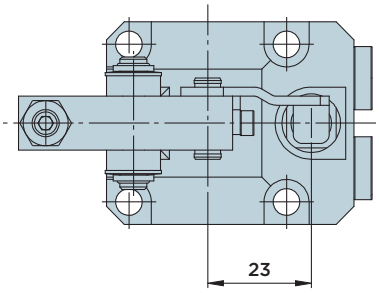
DOUBLE-ACTING **LINK CLAMP CYLINDER** WITH **COMPENSATION SYSTEM**
AND **CLAMP ARM POSITION CONTROL VALVE**

A : Clamping

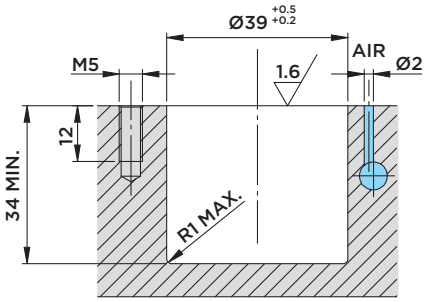
B : Unclamping

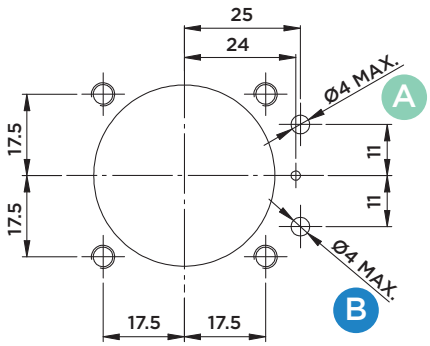






INSTALLATION DIMENSIONS





Included in the scope of supply:
- O-rings Ø3x1.

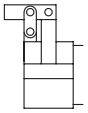
Options:
- Upon request, different clamp arm types can be manufactured to customer specification, mounted and commissioned.
- The link clamp cylinder can also be ordered without clamp arm (order no. CG12.70FDVN).
- The link clamp cylinder can also be ordered without compensation system (order no. CG12.70FDVR).
- The link clamp cylinder can also be ordered without clamp arm and without compensation system (order no. CG12.70FDVRN).
- The link clamp cylinder can also be ordered with VRF18 flow control valve (order no. CG12.70FDVS).

STROKE mm		EFFECTIVE PISTON AREA		TOTAL OIL VOLUME	
		Cm^2		Cm^3	
		CLAMP.	UNCLAMP.	CLAMP.	UNCLAMP.
TOTAL	20.5	4.91	3.78	10.1	7.8

CG16.200 **FD**

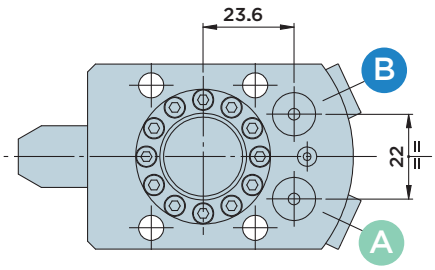
DOUBLE-ACTING **LINK CLAMP CYLINDER**

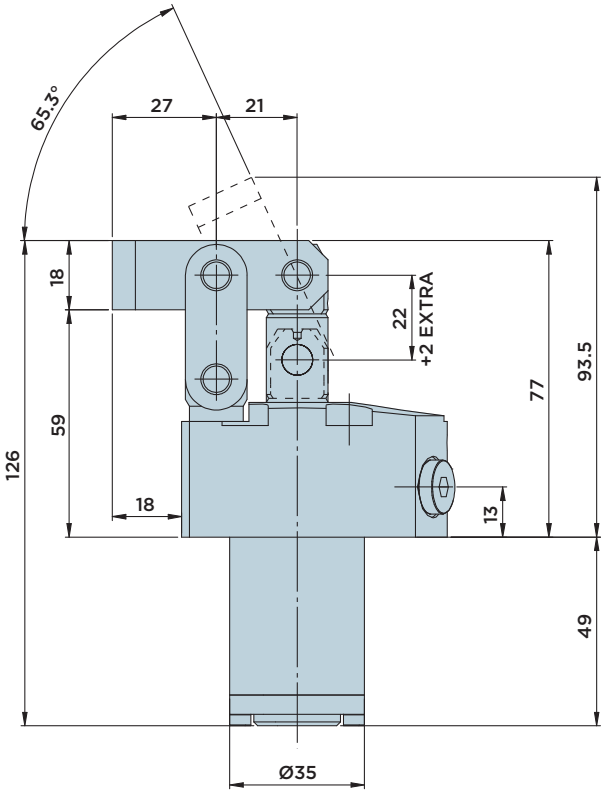
MAX. OPERATING PRESSURE = 200BAR

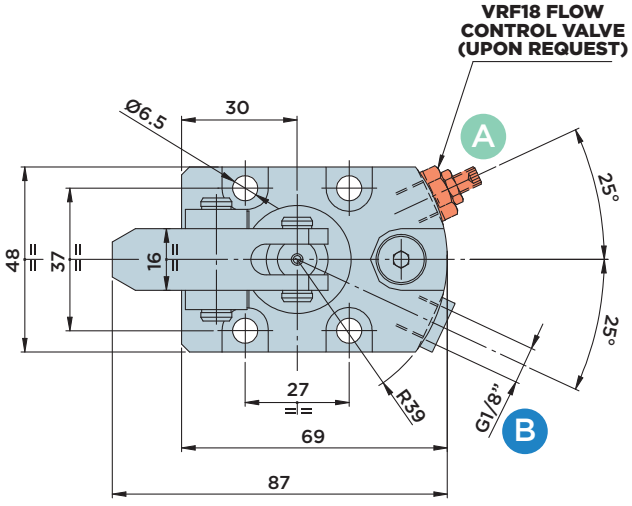


A : Clamping

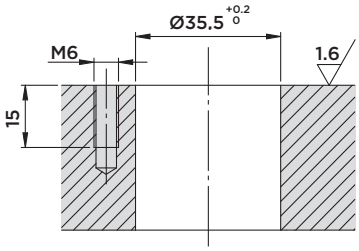
B : Unclamping

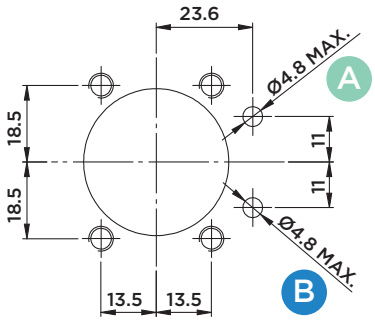






INSTALLATION DIMENSIONS





Included in the scope of supply:

- Mounting screws M6x40 DIN 912/12.9 grade.
- O-rings Ø4.34x3.53.

Material:

- Piston/rod/bolts: Case-hardened steel, ground.
- Body: Free machining steel, nitrocarburized.
- Lever: Quenched and Tempered steel.
- Clamp arm: C45.

Options:

- Upon request, different clamp arm types can be manufactured to customer specification, mounted and commissioned.
- The link clamp cylinder can also be ordered without clamp arm (order no. CG16.200FDN).
- The link clamp cylinder can also be ordered with VRF18 flow control valve (order no. CG16.200FDS).

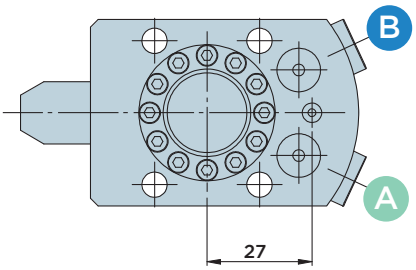
STROKE mm		EFFECTIVE PISTON AREA		TOTAL OIL VOLUME	
		Cm^2		Cm^3	
		CLAMP.	UNCLAMP.	CLAMP.	UNCLAMP.
TOTAL	24	4.52	2.51	10.8	6

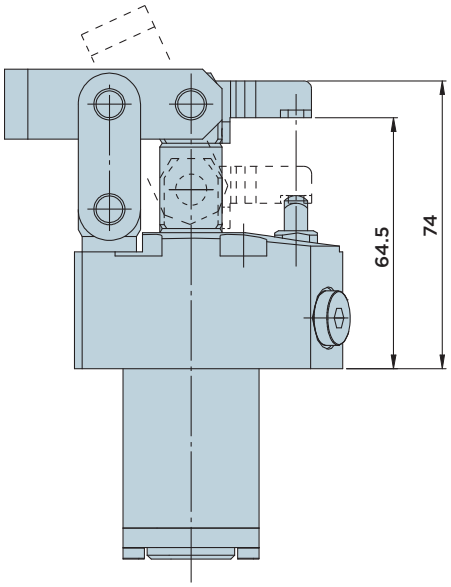
CG16.200 **FDV**

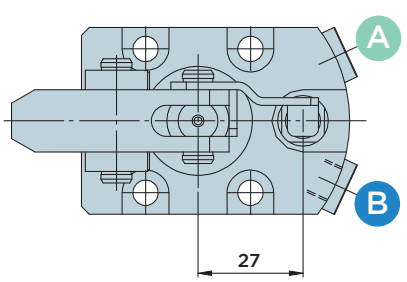
DOUBLE-ACTING **LINK CLAMP CYLINDER** WITH **CLAMP ARM POSITION CONTROL VALVE**

A : Clamping

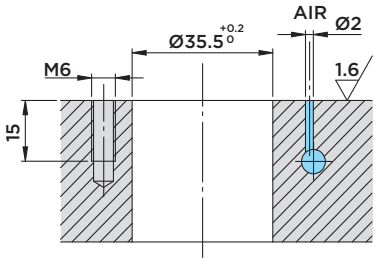
B : Unclamping

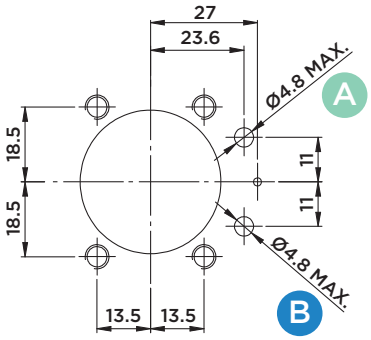






INSTALLATION DIMENSIONS





Included in the scope of supply:

- O-rings Ø3x1.

Options:

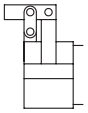
- The link clamp cylinder can also be ordered without clamp arm (order no. CG16.200FDVN).
- The link clamp cylinder can also be ordered with VRF18 flow control valve (order no. CG16.200FDVS).

STROKE mm		EFFECTIVE PISTON AREA		TOTAL OIL VOLUME	
		Cm^2		Cm^3	
		CLAMP.	UNCLAMP.	CLAMP.	UNCLAMP.
TOTAL	24	4.52	2.51	10.8	6

CG20.200 **FD**

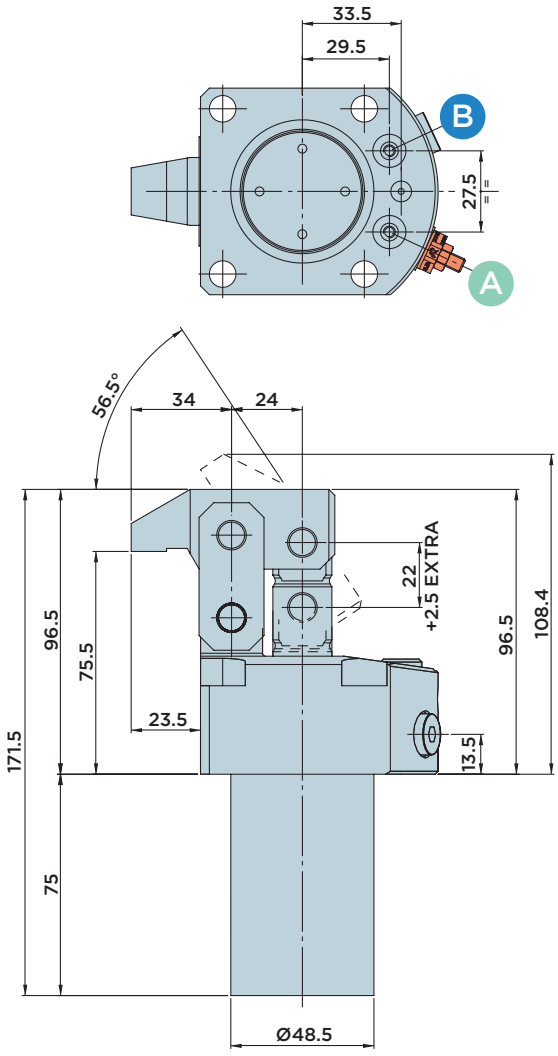
DOUBLE-ACTING **LINK CLAMP CYLINDER**

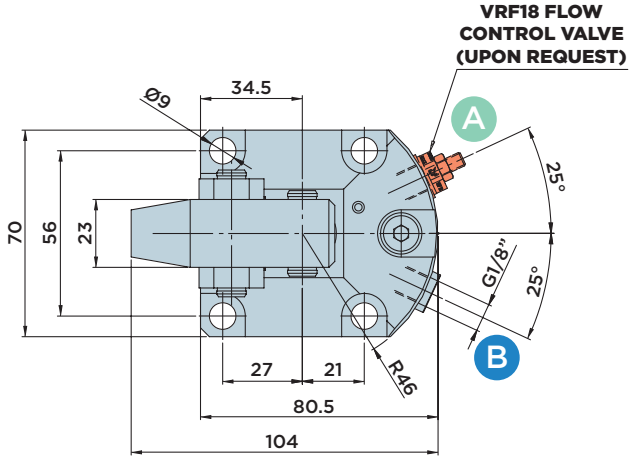
MAX. OPERATING PRESSURE = 200BAR



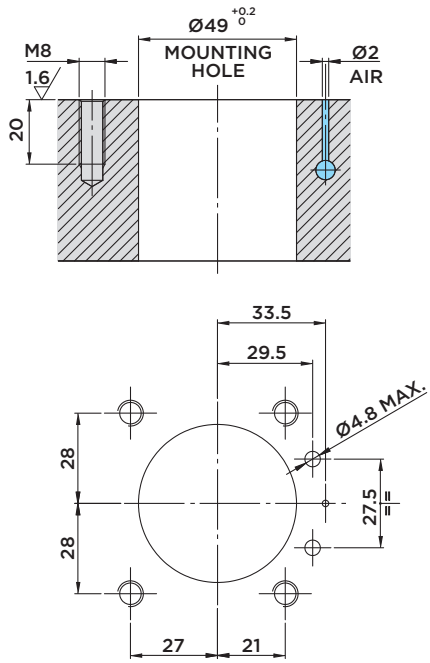
A : Clamping

B : Unclamping





INSTALLATION DIMENSIONS



Included in the scope of supply:

- Mounting screws M8x45 DIN 912/12.9 grade.
- O-rings Ø4.34x3.53

Material:

- Piston/rod/bolts: Case-hardened steel, ground.
- Body: Free machining steel, nitrocarburized.
- Lever: Quenched and Tempered steel.
- Clamp arm: C45.

Options:

- Upon request, different clamp arm types can be manufactured to customer specification, mounted and commissioned.
- The link clamp cylinder can also be ordered without clamp arm (order no. CG20.200FDN).
- The link clamp cylinder can also be ordered with VRF18 flow control valve (order no. CG20.200FDS).

STROKE mm		EFFECTIVE PISTON AREA		TOTAL OIL VOLUME	
		Cm²		Cm³	
		CLAMP.	UNCLAMP.	CLAMP.	UNCLAMP.
TOTAL	24.5	9.08	5.94	22.2	14.6

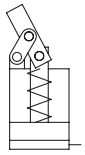
CG20.200 **FS**

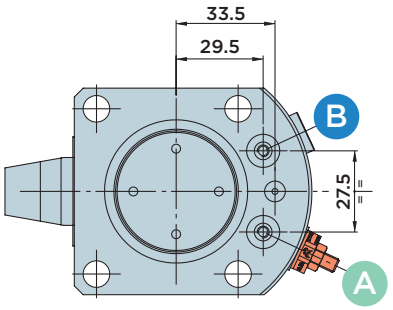
SINGLE-ACTING **LINK CLAMP CYLINDER**

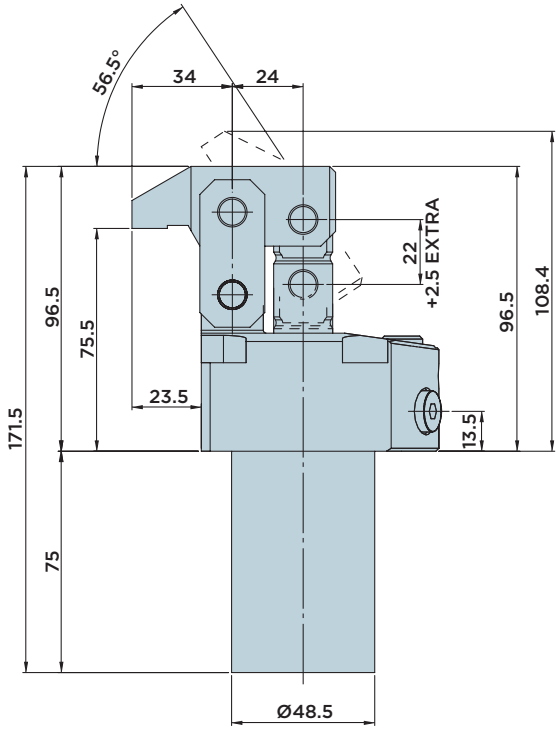
MAX. OPERATING PRESSURE = 200BAR

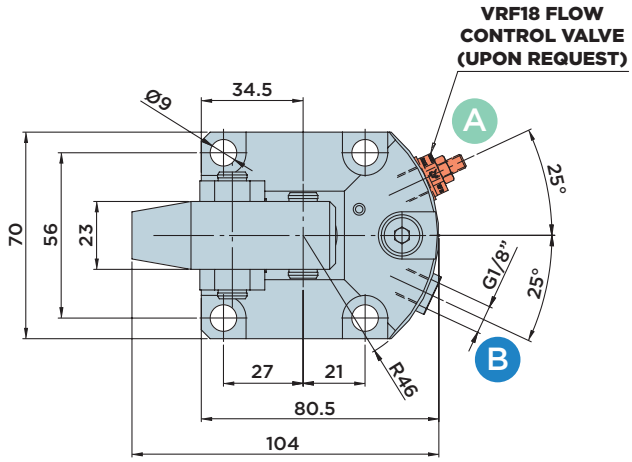
A : Clamping

B : Venting

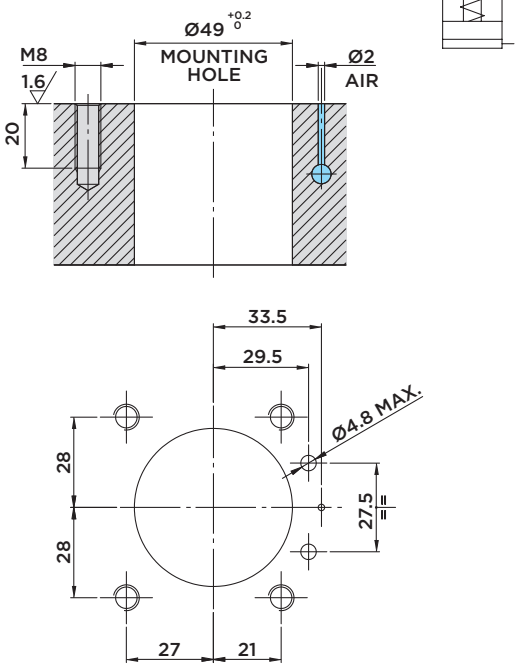








INSTALLATION DIMENSIONS



Included in the scope of supply:
- Mounting screws M8x45 DIN 912/12.9 grade.
- O-rings Ø4.34x3.53

Material:
- Piston/rod/bolts: Case-hardened steel, ground.
- Body: Free machining steel, nitrocarburized.
- Lever: Quenched and Tempered steel.
- Clamp arm: C45.

Options:
- Upon request, different clamp arm types can be manufactured to customer specification, mounted and commissioned.
- The link clamp cylinder can also be ordered without clamp arm (order no. CG20.200FSN).
- The link clamp cylinder can also be ordered with VRF18 flow control valve (order no. CG20.200FSS).

STROKE mm		EFFECTIVE PISTON AREA	TOTAL OIL VOLUME
		Cm^2	Cm^3
TOTAL	24.5	CLAMP.	CLAMP.
		9.08	22.2

LINK CLAMP CYLINDERS WITH THREADED BODY

CGF SERIES

HYDRAULIC
LINK CLAMP CYLINDERS

Hydraulic link clamps are extremely compact clamping cylinders that generate high clamping forces at low supply pressures.

The special clamp arm motion facilitates workpiece loading and unloading and is particularly suited for operation in extremely restricted space conditions.

Link clamp cylinders are available in single and double-acting version (except for the CGF32.0 that comes as a single-acting cylinder only).

Thanks to the special profile of the cylinder body, it can also be supplied in a closed seat by means of the 1/8“-BSPP “A” port at the bottom.

In the single-acting version, the upper “B” port is provided with an incorporated sintered filter designed to protect the cylinder chamber against the penetration of dust and chips.

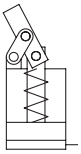
We recommend connecting a vent pipe that leads into an area that is free from fluids.

NOTE: Due to the large clamping surfaces and the substantial pressure losses in complex hydraulic circuits composed of numerous cylinders, it may take considerably longer time to unclamp single-acting cylinders or unclamping may not be possible at all. To ensure rapid and reliable operating cycles, we recommend using double-acting link clamp cylinders for this type of application.

CGF26.0

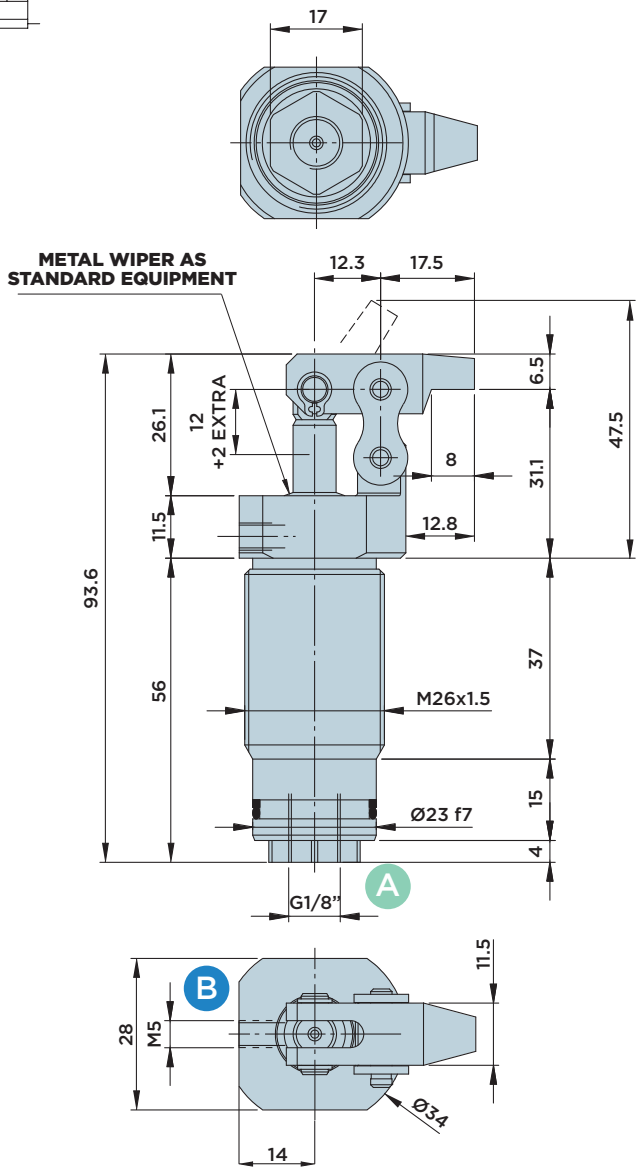
SINGLE-ACTING **LINK CLAMP CYLINDER**

MAX. OPERATING PRESSURE = 200BAR

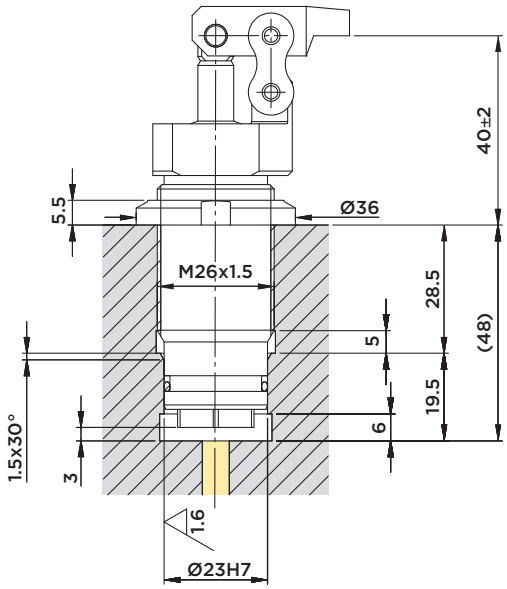


A : Clamping

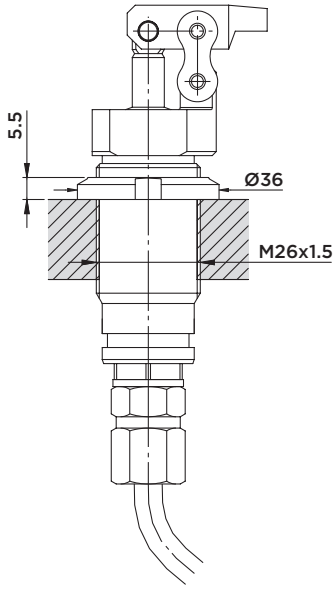
B : Venting



BLIND HOLE MOUNTING



THROUGH-HOLE MOUNTING



Included in the scope of supply:
- Ring nut M26x1.5.

Material:
- Piston/rod/bolts: Case-hardened steel, ground.
- Body: Free machining steel, nitrocarburized.
- Connecting link: Commercial type.
- Clamp arm: C45.

Options:
- Upon request, different clamp arm types can be manufactured to customer specification, mounted and commissioned.
- The link clamp cylinder can also be ordered without clamp arm (order no. CGF26.0N)

STROKE mm		EFFECTIVE PISTON AREA	TOTAL OIL VOLUME
		Cm^2	Cm^3
TOTAL	14	CLAMP.	CLAMP.
		1.54	2.2

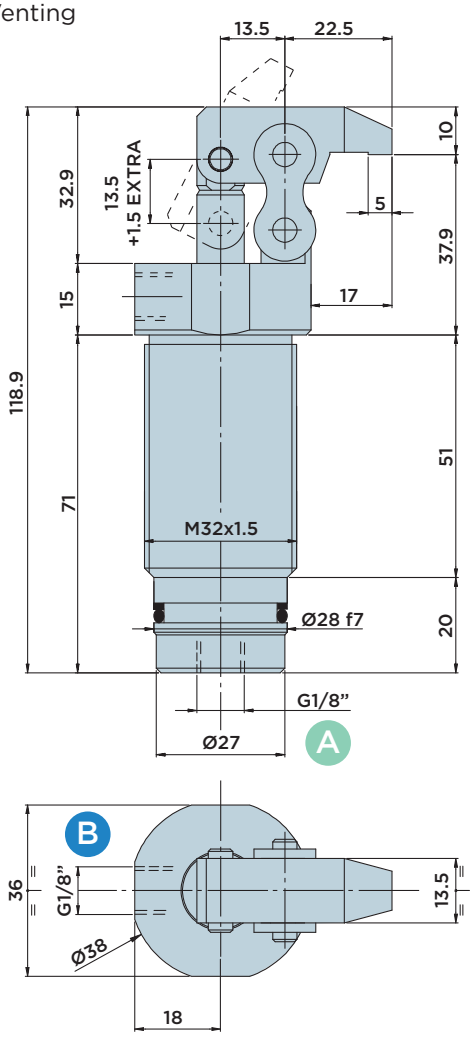
CGF32.0

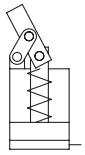
SINGLE-ACTING **LINK CLAMP CYLINDER**

MAX. OPERATING PRESSURE = 200BAR

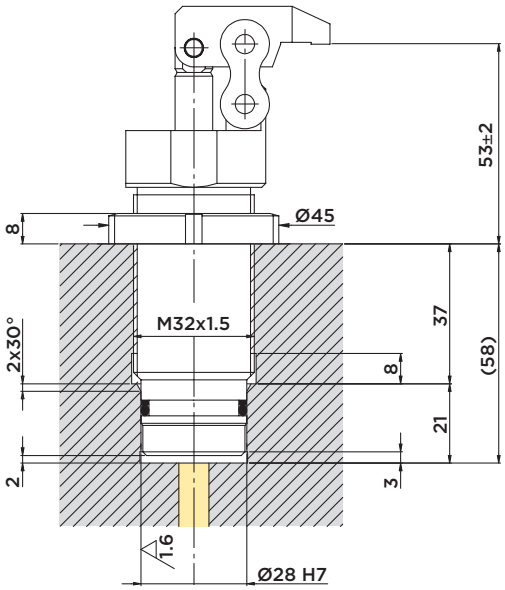
A : Clamping

B : Venting

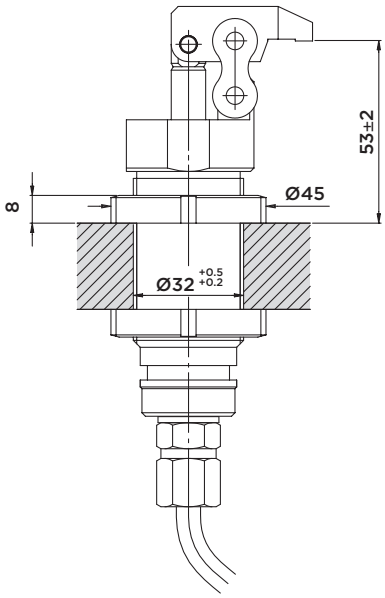




BLIND HOLE MOUNTING



THROUGH-HOLE MOUNTING



Included in the scope of supply:
- Ring nut M32x1.5.

Available upon request:
A second M32x1.5 ring nut for mounting in unthreaded through-holes can additionally be delivered.

Material:
- Piston/rod/bolts: Case-hardened steel, ground.
- Body: Free machining steel, nitrocarburized.
- Connecting link: Commercial type.
- Clamp arm: C45.

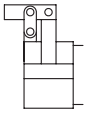
Options:
- Upon request, different clamp arm types can be manufactured to customer specification, mounted and commissioned.
- The link clamp cylinder can also be ordered without clamp arm (order no. CGF32.0N)

STROKE mm		EFFECTIVE PISTON AREA	TOTAL OIL VOLUME
		Cm^2	Cm^3
TOTAL	15	CLAMP.	CLAMP.
		3.14	4.7

CGF40.0 D

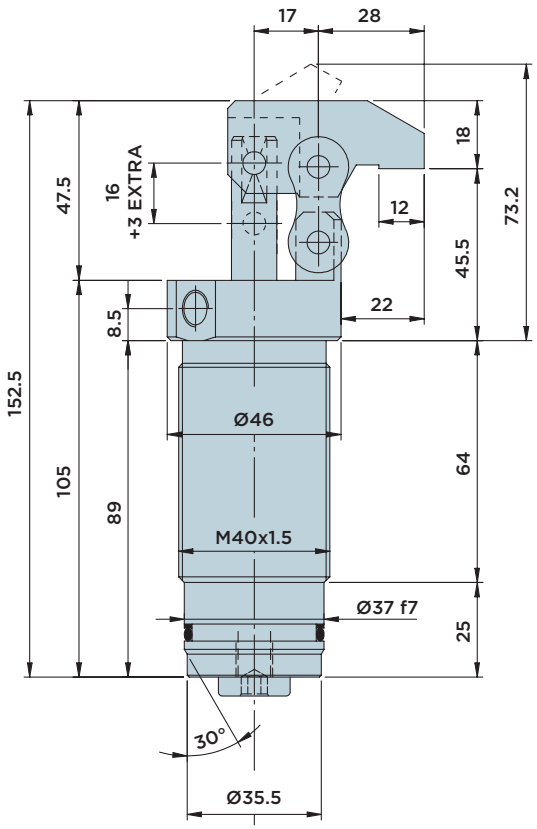
DOUBLE-ACTING **LINK CLAMP CYLINDER**

MAX. OPERATING PRESSURE = 200BAR

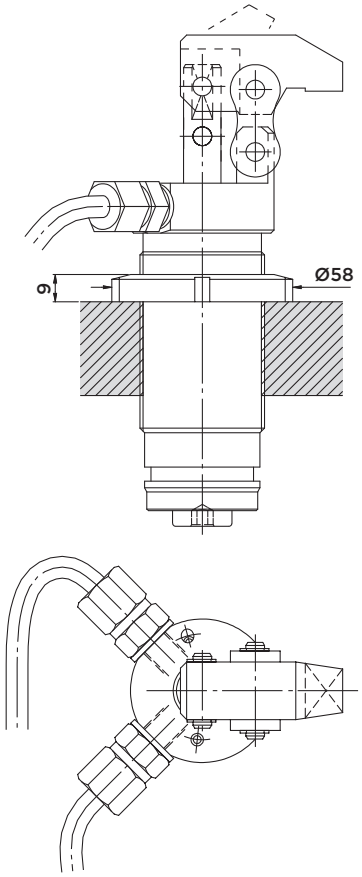


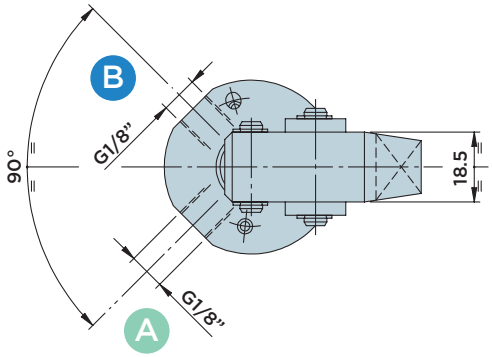
A : Clamping

B : Unclamping



INSTALLATION EXAMPLE





Options:

- Upon request, different clamp arm types can be manufactured to customer specification, mounted and commissioned.
- The link clamp cylinder can also be ordered without clamp arm (order no. CGF40.0DN)

Included in the scope of supply:

- Ring nut M40x1.5.

Available upon request:

A second M40x1.5 ring nut for mounting in unthreaded through-holes can additionally be delivered.

Material:

- Piston/rod/bolts: Case-hardened steel, ground.
- Body: Free machining steel, nitrocarburized.
- Connecting link: Commercial type.
- Clamp arm: C45.

STROKE mm		EFFECTIVE PISTON AREA		TOTAL OIL VOLUME	
		Cm^2		Cm^3	
		CLAMP.	UNCLAMP.	CLAMP.	UNCLAMP.
TOTAL	19	4.91	3.78	9.3	7.2

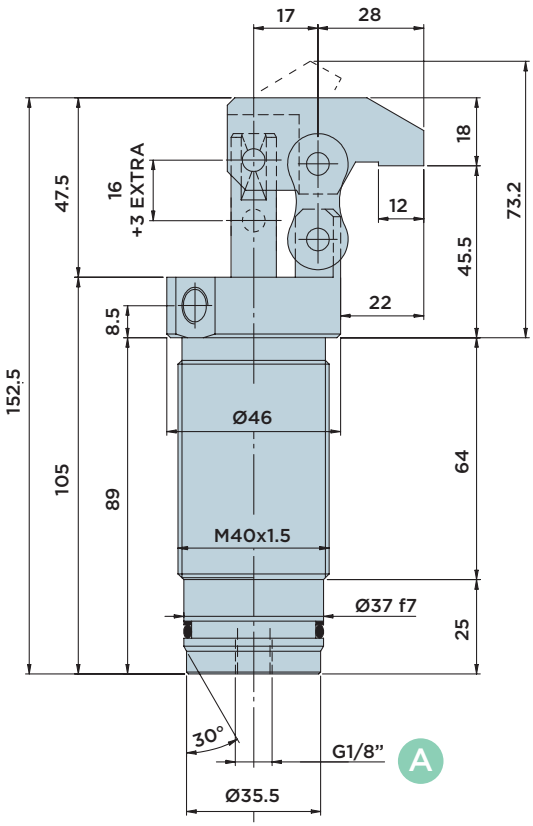
CGF40.0 S

SINGLE-ACTING **LINK CLAMP CYLINDER**

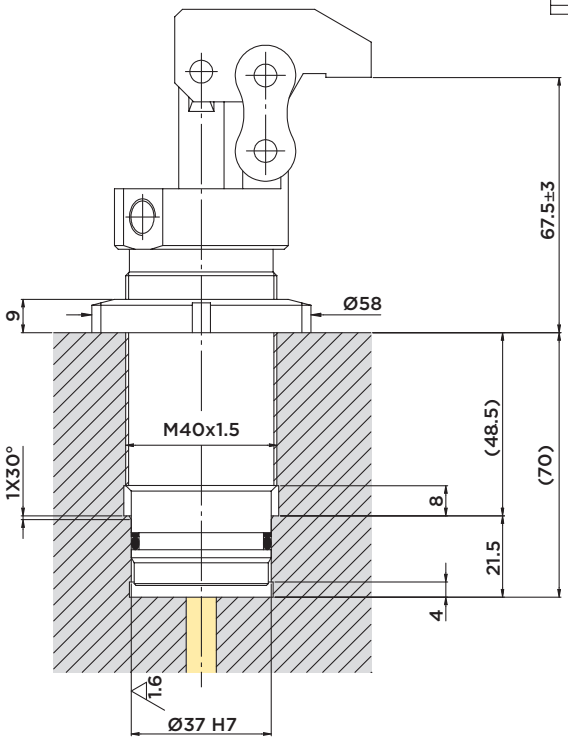
MAX. OPERATING PRESSURE = 200BAR

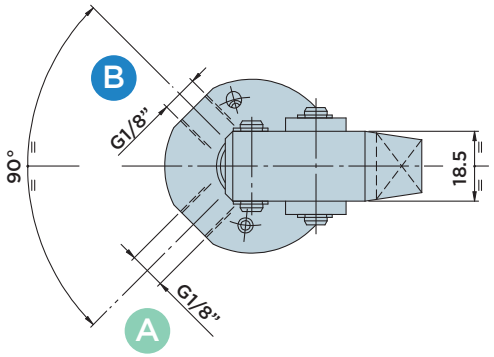
A : Clamping

B : Venting



INSTALLATION DIMENSIONS





Options:

- Upon request, different clamp arm types can be manufactured to customer specification, mounted and commissioned.
- The link clamp cylinder can also be ordered without clamp arm (order no. CGF40.0SN).

Included in the scope of supply:

- Ring nut M40x1.5.

Available upon request:

A second M40x1.5 ring nut for mounting in unthreaded through-holes can additionally be delivered.

Material:

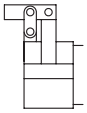
- Piston/rod/bolts: Case-hardened steel, ground.
- Body: Free machining steel, nitrocarburized.
- Connecting link: Commercial type.
- Clamp arm: C45.

STROKE mm		EFFECTIVE PISTON AREA	TOTAL OIL VOLUME
		Cm^2	Cm^3
TOTAL	19	CLAMP	CLAMP
		4.91	9.3

CGF50.0 D

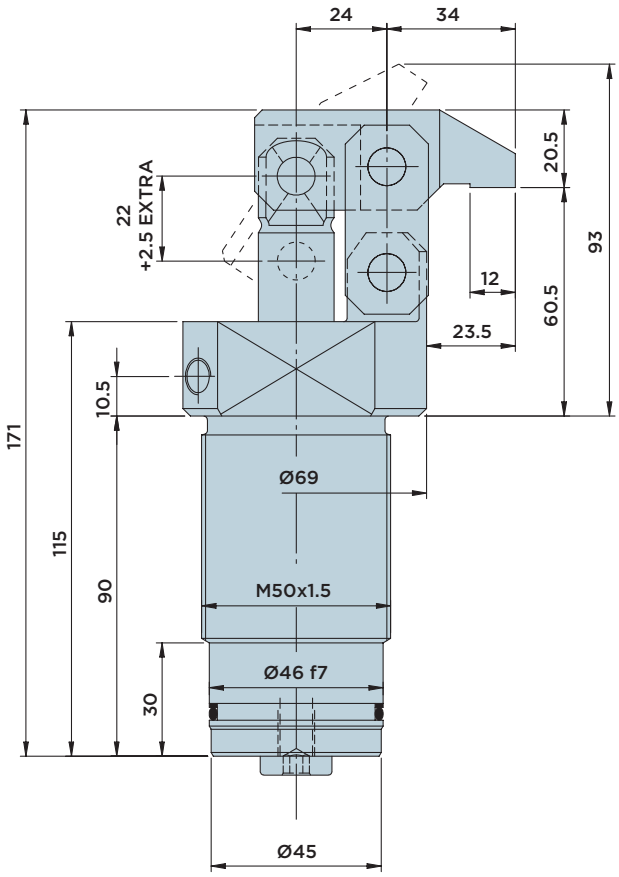
DOUBLE-ACTING **LINK CLAMP CYLINDER**

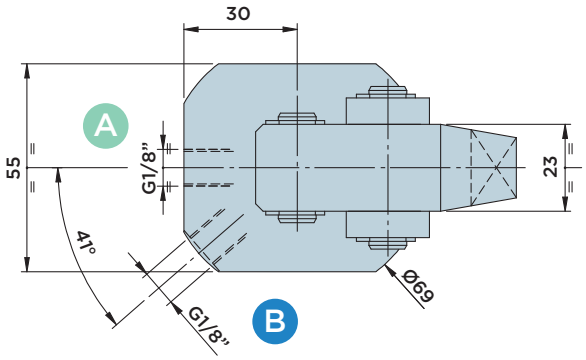
MAX. OPERATING PRESSURE = 200BAR



A : Clamping

B : Unclamping

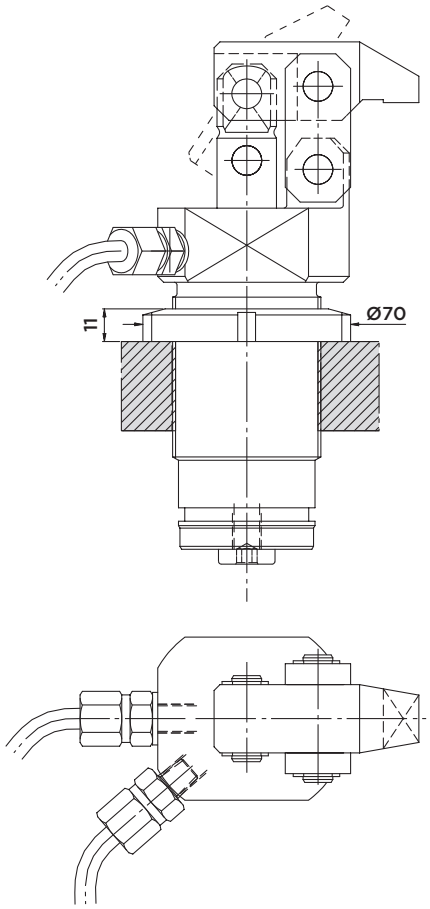




Options:

- Upon request, different clamp arm types can be manufactured to customer specification, mounted and commissioned.
- The link clamp cylinder can also be ordered without clamp arm (order no. CGF50.0DN).

INSTALLATION EXAMPLE



Included in the scope of supply:

- Ring nut M50x1.5.

Available upon request:

A second M40x1.5 ring nut for mounting in unthreaded through-holes can additionally be delivered.

Material:

- Piston/rod/bolts: Case-hardened steel, ground.
- Body: Free machining steel, nitrocarburized.
- Lever: Quenched and Tempered steel.
- Clamp arm: C45.

STROKE mm		EFFECTIVE PISTON AREA		TOTAL OIL VOLUME	
		Cm^2		Cm^3	
		CLAMP.	UNCLAMP.	CLAMP.	UNCLAMP.
TOTAL	24.5	9.08	5.94	22.2	14.6

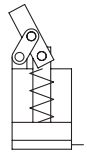
CGF50.0 S

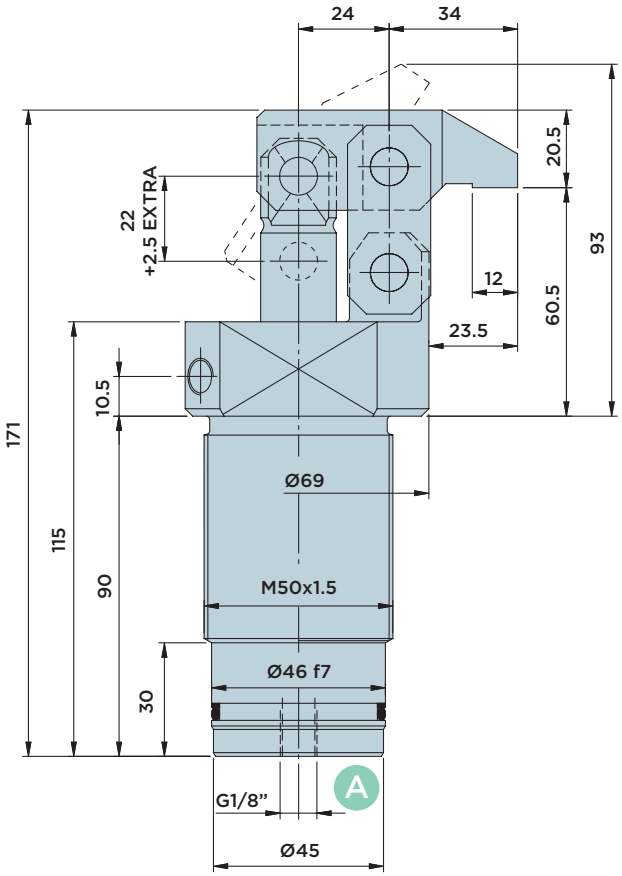
SINGLE-ACTING **LINK CLAMP CYLINDER**

MAX. OPERATING PRESSURE = 200BAR

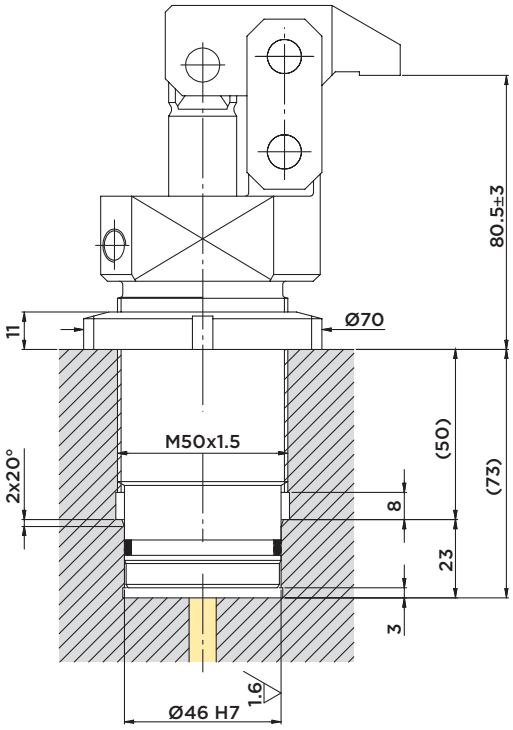
A : Clamping

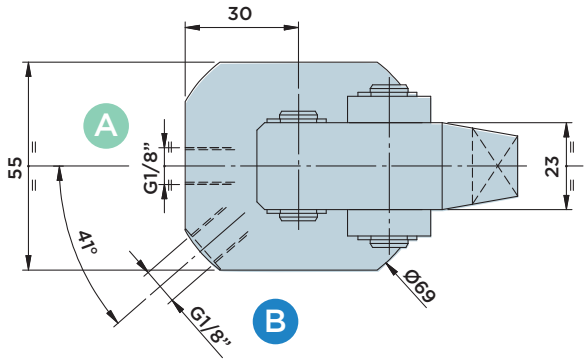
B : Venting





INSTALLATION DIMENSIONS





Options:

- Upon request, different clamp arm types can be manufactured to customer specification, mounted and commissioned.
- The link clamp cylinder can also be ordered without clamp arm (order no. CGF50.0SN).

Included in the scope of supply:

- Ring nut M50x1.5.

Available upon request:

A second M50x1.5 ring nut for mounting in unthreaded through-holes can additionally be delivered.

Material:

- Piston/rod/bolts: Case-hardened steel, ground.
- Body: Free machining steel, nitrocarburized.
- Lever: Quenched and Tempered steel.
- Clamp arm: C45.

STROKE mm		EFFECTIVE PISTON AREA	TOTAL OIL VOLUME
		Cm^2	Cm^3
TOTAL	24.5	CLAMP.	CLAMP.
		9.08	22.2