CG
LINK CLAMP CYLINDERS
## LINK CLAMP CYLINDER

### CG SERIES

<table>
<thead>
<tr>
<th>CYLINDER TYPE</th>
<th>CG8.70</th>
<th>CG8.250</th>
<th>CG8.200</th>
<th>CG10.200</th>
<th>CG12.200</th>
<th>CG12.70</th>
</tr>
</thead>
<tbody>
<tr>
<td>Threaded version</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td><strong>CYLINDER BODY TYPE</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Threaded version</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>Cartridge</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>Upper flange</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>Double-acting version</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Single-acting version (spring return)</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>Rod diameter (mm)</td>
<td>8</td>
<td>8</td>
<td>8</td>
<td>10</td>
<td>12</td>
<td>12</td>
</tr>
<tr>
<td>Piston diameter (mm)</td>
<td>23</td>
<td>12</td>
<td>14</td>
<td>20</td>
<td>25</td>
<td>25</td>
</tr>
<tr>
<td>Total cylinder stroke (mm)</td>
<td>18.5</td>
<td>18.5</td>
<td>14</td>
<td>16</td>
<td>18.5</td>
<td>20.5</td>
</tr>
<tr>
<td>Piston clamping area (cm³)</td>
<td>4.15</td>
<td>1.13</td>
<td>1.54</td>
<td>3.14</td>
<td>4.91</td>
<td>4.91</td>
</tr>
<tr>
<td>Piston unclamping area (cm³)</td>
<td>3.65</td>
<td>0.63</td>
<td>1.04</td>
<td>2.35</td>
<td>3.78</td>
<td>3.78</td>
</tr>
<tr>
<td>Clamping oil volume (cm³)</td>
<td>7.7</td>
<td>2.1</td>
<td>2.2</td>
<td>5</td>
<td>9.1</td>
<td>10.1</td>
</tr>
<tr>
<td>Unclamping oil volume (cm³)</td>
<td>6.8</td>
<td>1.2</td>
<td>1.5</td>
<td>3.8</td>
<td>7</td>
<td>7.8</td>
</tr>
<tr>
<td>Maximum operating pressure (Bar)</td>
<td>70</td>
<td>250</td>
<td>200</td>
<td>200</td>
<td>200</td>
<td>200</td>
</tr>
<tr>
<td>Nominal clamping force (KN) at maximum operating pressure*</td>
<td>2.2</td>
<td>2.2</td>
<td>3</td>
<td>4</td>
<td>6.8</td>
<td>2.5</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>CYLINDER TYPE</th>
<th>CG 12.250</th>
<th>CG 16.200</th>
<th>CG 20.200</th>
<th>CGF 26.0</th>
<th>CGF 32.0</th>
<th>CGF 40.0</th>
<th>CGF 50.0</th>
</tr>
</thead>
<tbody>
<tr>
<td>Threaded version</td>
<td>No</td>
<td>/</td>
<td>/</td>
<td>Yes</td>
<td>M32x1.5</td>
<td>M40x1.5</td>
<td>M50x1.5</td>
</tr>
<tr>
<td><strong>CYLINDER BODY TYPE</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Threaded version</td>
<td>No</td>
<td>/</td>
<td>/</td>
<td>Yes</td>
<td>No</td>
<td>/</td>
<td>/</td>
</tr>
<tr>
<td>Cartridge</td>
<td>Yes</td>
<td>/</td>
<td>/</td>
<td>No</td>
<td>/</td>
<td>/</td>
<td>/</td>
</tr>
<tr>
<td>Upper flange</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>No</td>
<td>/</td>
<td>/</td>
<td>/</td>
</tr>
<tr>
<td>Double-acting version</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>No</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Single-acting version (spring return)</td>
<td>No</td>
<td>No</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Rod diameter (mm)</td>
<td>12</td>
<td>16</td>
<td>20</td>
<td>8</td>
<td>10</td>
<td>12</td>
<td>20</td>
</tr>
<tr>
<td>Piston diameter (mm)</td>
<td>16</td>
<td>24</td>
<td>34</td>
<td>14</td>
<td>20</td>
<td>25</td>
<td>34</td>
</tr>
<tr>
<td>Total cylinder stroke (mm)</td>
<td>24</td>
<td>24</td>
<td>24.5</td>
<td>24.5</td>
<td>14</td>
<td>15</td>
<td>19</td>
</tr>
<tr>
<td>Piston clamping area (cm³)</td>
<td>2.01</td>
<td>4.52</td>
<td>9.08</td>
<td>1.54</td>
<td>3.14</td>
<td>4.91</td>
<td>9.08</td>
</tr>
<tr>
<td>Piston unclamping area (cm³)</td>
<td>0.88</td>
<td>2.51</td>
<td>5.94</td>
<td>/</td>
<td>/</td>
<td>3.78</td>
<td>5.94</td>
</tr>
<tr>
<td>Clamping oil volume (cm³)</td>
<td>4.8</td>
<td>10.8</td>
<td>22.2</td>
<td>2.2</td>
<td>4.7</td>
<td>9.3</td>
<td>22.2</td>
</tr>
<tr>
<td>Unclamping oil volume (cm³)</td>
<td>2.1</td>
<td>6</td>
<td>14.6</td>
<td>/</td>
<td>/</td>
<td>7.2</td>
<td>14.6</td>
</tr>
<tr>
<td>Maximum operating pressure (Bar)</td>
<td>250</td>
<td>200</td>
<td>200</td>
<td>200</td>
<td>200</td>
<td>200</td>
<td>200</td>
</tr>
<tr>
<td>Nominal clamping force (KN) at maximum operating pressure*</td>
<td>3.7</td>
<td>8.8</td>
<td>13.9</td>
<td>3</td>
<td>4</td>
<td>6.8</td>
<td>13.9</td>
</tr>
</tbody>
</table>
A. COMPENSATION SYSTEM

- LEVER
- CUP SPRING
- PIN
- ELASTIC RING
- COMPENSATION DISK
- CLAMP ARM

Metal wiper (upon request)

Flow control valve (upon request)

VCS10 unclamping control valve (upon request)

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)
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.
**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.**
Please observe the clamping arm lengths and the fields of application specified in the catalogue. Whereas extremely long clamping arms could affect 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 clamping force can thus be calculated using the following formulas:

\[
C = \frac{p \cdot S}{100} \quad [\text{kN}]
\]

\[
F = \frac{k}{l} \cdot C \cdot \eta \quad [\text{kN}]
\]

\(k, l\) = Clamp arm dimensions [mm]

\(p\) = Pressure [bar]

\(S\) = Clamping area [cm²]

\(\eta\) = 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.

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

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

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

With single-acting cylinders, the \(F_s\) 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:

\[ C = \frac{p \cdot S}{100} \cdot F_m \]  

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

\[ l_{\text{min}} = \frac{k}{R_{\text{max}} \cdot 100} \cdot \frac{p \cdot S \cdot \eta}{1} \]  

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

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

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

| Clamping area S (cm²) | 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 \( \eta \): | 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 \( R_{\text{max}} \) (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 \( l_{\text{min}} \) at which the \( R_{\text{max}} \) 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

Effective clamping force (kN) vs Operating pressure (bar)
**CGF SERIES**  SINGLE ACTING

- **EFFECTIVE CLAMPING FORCE**

---

**Effective clamping force**

**CGF26.0**

- Operating pressure (bar)
- Effective clamping force (kN)

**CGF32.0**

- Operating pressure (bar)
- Effective clamping force (kN)

**CGF40D**

- Operating pressure (bar)
- Effective clamping force (kN)

**CGF40S**

- Operating pressure (bar)
- Effective clamping force (kN)

**CGF50D**

- Operating pressure (bar)
- Effective clamping force (kN)

**CGF50S**

- Operating pressure (bar)
- Effective clamping force (kN)

---

HYDROBLOCK

03/2017
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

METAL WIPER AS STANDARD EQUIPMENT

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).

<table>
<thead>
<tr>
<th>STROKE mm</th>
<th>EFFECTIVE PISTON AREA</th>
<th>TOTAL OIL VOLUME</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Cm²</td>
<td>Cm³</td>
</tr>
<tr>
<td>CLAMP</td>
<td>UNCLAMP.</td>
<td>CLAMP.</td>
</tr>
<tr>
<td>TOTAL</td>
<td>18.5</td>
<td>4.15</td>
</tr>
</tbody>
</table>
CG8.70 V
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

METAL WIPER AS STANDARD EQUIPMENT

AREA OF THE PNEUMATIC SUPPLY PORT OF THE CYLINDER

BORE FOR THE PNEUMATIC SUPPLY (EXAMPLE)

CYLINDER WITH COMPENSATION SYSTEM
If, for technical reasons, special clamp 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

METAL WIPER AS STANDARD EQUIPMENT

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
<table>
<thead>
<tr>
<th>EFFECTIVE PISTON AREA</th>
<th>TOTAL OIL VOLUME</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cm²</td>
<td>Cm³</td>
</tr>
<tr>
<td>Clamp</td>
<td>1.13</td>
</tr>
<tr>
<td>Unclamp</td>
<td>0.63</td>
</tr>
<tr>
<td>Clamp</td>
<td>2.1</td>
</tr>
<tr>
<td>Unclamp</td>
<td>1.2</td>
</tr>
</tbody>
</table>

TOTAL 18.5
**CG8.250 V**

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

A : Clamping  
B : Unclamping

---

**INSTALLATION DIMENSIONS**

**METAL WIPER AS STANDARD EQUIPMENT**

**PISTON CONTACT SURFACE**

- **Debur and round off any edges**

---

**CYLINDER WITH COMPENSATION SYSTEM**

If, for technical reasons, special clamp 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

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).

<table>
<thead>
<tr>
<th>STROKE mm</th>
<th>EFFECTIVE PISTON AREA</th>
<th>TOTAL OIL VOLUME</th>
</tr>
</thead>
<tbody>
<tr>
<td>TOTAL</td>
<td>14</td>
<td></td>
</tr>
</tbody>
</table>
CG10.200 CD
DOUBLE-ACTING LINK CLAMP CYLINDER
MAX. OPERATING PRESSURE = 200 BAR

A : Clamping
B : Unclamping

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).

<table>
<thead>
<tr>
<th>STROKE mm</th>
<th>EFFECTIVE PISTON AREA</th>
<th>TOTAL OIL VOLUME</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>cm²</td>
<td>cm³</td>
</tr>
<tr>
<td>CLAMP</td>
<td>UNCLAMP</td>
<td>CLAMP. UNCLAMP.</td>
</tr>
<tr>
<td>TOTAL</td>
<td>16</td>
<td>3.14 2.35 5 3.8</td>
</tr>
</tbody>
</table>

Piston contact surface

Installation dimensions

Metal wiper as standard equipment

Piston retracted

03/2017

03/2017
DOUBLE-ACTING LINK CLAMP CYLINDER
MAX. OPERATING PRESSURE = 200BAR

A : Clamping
B : Unclamping

PISTON RETRACTED

METAL WIPER AS STANDARD EQUIPMENT

INSTALLATION DIMENSIONS

Included in the scope of supply:
- Mounting screws M6x16 DIN 912/12.9 grade
- 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).

<table>
<thead>
<tr>
<th>STROKE</th>
<th>EFFECTIVE PISTON AREA</th>
<th>TOTAL OIL VOLUME</th>
</tr>
</thead>
<tbody>
<tr>
<td>mm</td>
<td>cm²</td>
<td>cm³</td>
</tr>
<tr>
<td>TOTAL</td>
<td>18.5</td>
<td>4.91  3.78  9.1  7</td>
</tr>
</tbody>
</table>

PISTON contact surface
**CG12.250 CD**

**DOUBLE-ACTING LINK CLAMP CYLINDER**

MAX. OPERATING PRESSURE = 250BAR

- **A**: Clamping
- **B**: Unclamping

**METAL WIPER AS STANDARD EQUIPMENT**

**INSTALLATION DIMENSIONS**

### DEUBR and round off any edges

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

**Debur and round off any edges**

<table>
<thead>
<tr>
<th>STROKE mm</th>
<th>EFFECTIVE PISTON AREA</th>
<th>TOTAL OIL VOLUME</th>
</tr>
</thead>
<tbody>
<tr>
<td>TOTAL</td>
<td>CLAMP.</td>
<td>UNCLAMP.</td>
</tr>
<tr>
<td>24</td>
<td>2.01</td>
<td>0.88</td>
</tr>
</tbody>
</table>

**03/2017**

**HYDROBLOCK**

179
CG12.250 FD

DOUBLE-ACTING LINK CLAMP CYLINDER
MAX. OPERATING PRESSURE = 250BAR

A : Clamping
B : Unclamping

METAL WIPER AS STANDARD EQUIPMENT

CD12.250 SFD ONLY

INSTALLATION DIMENSIONS

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

<table>
<thead>
<tr>
<th>STROKE (mm)</th>
<th>EFFECTIVE PISTON AREA</th>
<th>TOTAL OIL VOLUME</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>CLAMP</td>
<td>UNCLAMP</td>
</tr>
<tr>
<td>TOTAL</td>
<td>24</td>
<td>2.01</td>
</tr>
</tbody>
</table>

Included in the scope of supply:
- Mounting screws M6x25 DIN 912/12.9 grade.
- 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).
CG12.250 FM
DOUBLE-ACTING LINK CLAMP CYLINDER
MAX. OPERATING PRESSURE = 250BAR

A: Clamping
B: Unclamping

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).

<table>
<thead>
<tr>
<th>STROKE</th>
<th>EFFECTIVE PISTON AREA</th>
<th>TOTAL OIL VOLUME</th>
</tr>
</thead>
<tbody>
<tr>
<td>mm</td>
<td>Cm²</td>
<td>Cm³</td>
</tr>
<tr>
<td>CLAMP</td>
<td>2.01</td>
<td>4.8</td>
</tr>
<tr>
<td>UNCLAMP</td>
<td>0.88</td>
<td>2.1</td>
</tr>
<tr>
<td>TOTAL</td>
<td>24</td>
<td>24</td>
</tr>
</tbody>
</table>

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

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).

<table>
<thead>
<tr>
<th>STROKE mm</th>
<th>EFFECTIVE PISTON AREA</th>
<th>TOTAL OIL VOLUME</th>
</tr>
</thead>
<tbody>
<tr>
<td>TOTAL</td>
<td>20.5</td>
<td>4.91</td>
</tr>
</tbody>
</table>

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).
**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).

---

<table>
<thead>
<tr>
<th>STROKE mm</th>
<th>EFFECTIVE PISTON AREA</th>
<th>TOTAL OIL VOLUME</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>CLAMP</td>
<td>UNCLAMP</td>
</tr>
<tr>
<td>TOTAL</td>
<td>4.52</td>
<td>2.51</td>
</tr>
</tbody>
</table>

---

03/2017
CG16.200 FDV
DOUBLE-ACTING LINK CLAMP CYLINDER WITH CLAMP ARM POSITION CONTROL VALVE

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).

<table>
<thead>
<tr>
<th>STROKE mm</th>
<th>EFFECTIVE PILOT AREA</th>
<th>TOTAL OIL VOLUME</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Cm²</td>
<td>Cm³</td>
</tr>
<tr>
<td>CLAMP</td>
<td>UNCLAMP.</td>
<td>CLAMP. UNCLAMP.</td>
</tr>
<tr>
<td>27</td>
<td>4.52</td>
<td>2.51</td>
</tr>
<tr>
<td>TOTAL</td>
<td>24</td>
<td>10.8</td>
</tr>
</tbody>
</table>

03/2017
**CG20.200 FD**

**DOUBLE-ACTING LINK CLAMP CYLINDER**

MAX. OPERATING PRESSURE = 200BAR

**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).

---

<table>
<thead>
<tr>
<th>STROKE mm</th>
<th>EFFECTIVE PISTON AREA</th>
<th>TOTAL OIL VOLUME</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>CLAMP</td>
<td>UNCLAMP</td>
</tr>
<tr>
<td>TOTAL</td>
<td>24.5</td>
<td>9.08</td>
</tr>
</tbody>
</table>

---

**HYDROBLOCK**
CG20.200 FS
SINGLE-ACTING LINK CLAMP CYLINDER
MAX. OPERATING PRESSURE = 200 BAR

A: Clamping
B: Venting

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).

<table>
<thead>
<tr>
<th>STROKE mm</th>
<th>EFFECTIVE PISTON AREA</th>
<th>TOTAL OIL VOLUME</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Cm²</td>
<td>Cm³</td>
</tr>
<tr>
<td>TOTAL</td>
<td>24.5</td>
<td>9.08</td>
</tr>
</tbody>
</table>
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.
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)

<table>
<thead>
<tr>
<th>STROKE mm</th>
<th>EFFECTIVE PISTON AREA</th>
<th>TOTAL OIL VOLUME</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Cm²</td>
<td>Cm³</td>
</tr>
<tr>
<td>TOTAL 14</td>
<td>1.54</td>
<td>2.2</td>
</tr>
</tbody>
</table>
CGF32.0
SINGLE-ACTING LINK CLAMP CYLINDER
MAX. OPERATING PRESSURE = 200BAR

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)

<table>
<thead>
<tr>
<th>STROKE mm</th>
<th>EFFECTIVE PISTON AREA</th>
<th>TOTAL OIL VOLUME</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Cm²</td>
<td>Cm³</td>
</tr>
<tr>
<td>TOTAL 15</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>3.14</td>
<td>4.7</td>
</tr>
</tbody>
</table>
CGF40.0 D

DOUBLE-ACTING LINK CLAMP CYLINDER
MAX. OPERATING PRESSURE = 200BAR

A : Clamping
B : Unclamping

INSTALLATION EXAMPLE

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.

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)

<table>
<thead>
<tr>
<th>STROKE mm</th>
<th>EFFECTIVE PISTON AREA</th>
<th>TOTAL OIL VOLUME</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Cm²</td>
<td>Cm³</td>
</tr>
<tr>
<td>TOTAL</td>
<td></td>
<td></td>
</tr>
<tr>
<td>CLAMP</td>
<td>4.91</td>
<td>9.3</td>
</tr>
<tr>
<td>UNCLAMP</td>
<td>3.78</td>
<td>7.2</td>
</tr>
</tbody>
</table>

03/2017
CGF40.0 S
SINGLE-ACTING LINK CLAMP CYLINDER
MAX. OPERATING PRESSURE = 200BAR

A : Clamping
B : Venting

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.

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).

<table>
<thead>
<tr>
<th>STROKE mm</th>
<th>EFFECTIVE PISTON AREA</th>
<th>TOTAL OIL VOLUME</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Cm²</td>
<td>Cm³</td>
</tr>
<tr>
<td>TOTAL</td>
<td>19</td>
<td>4.91</td>
</tr>
</tbody>
</table>

03/2017
**CGF50.0 D**

**DOUBLE-ACTING LINK CLAMP CYLINDER**

**MAX. OPERATING PRESSURE = 200BAR**

---

**INSTALLATION EXAMPLE**

**A** : Clamping  
**B** : Unclamping

---

**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.

---

**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).

---

<table>
<thead>
<tr>
<th>STROKE mm</th>
<th>EFFECTIVE PISTON AREA</th>
<th>TOTAL OIL VOLUME</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Clamp</td>
<td>Unclamp</td>
</tr>
<tr>
<td>TOTAL</td>
<td>24.5</td>
<td>9.08</td>
</tr>
</tbody>
</table>
**CGF50.0 S**

**SINGLE-ACTING LINK CLAMP CYLINDER**

**MAX. OPERATING PRESSURE = 200BAR**

- **A**: Clamping
- **B**: Venting

**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.

**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).

---

### INSTALLATION DIMENSIONS

<table>
<thead>
<tr>
<th>STROKE mm</th>
<th>EFFECTIVE PISTON AREA</th>
<th>TOTAL OIL VOLUME</th>
</tr>
</thead>
<tbody>
<tr>
<td>TOTAL</td>
<td>CLAMP.</td>
<td>CLAMP.</td>
</tr>
<tr>
<td></td>
<td>Cm²</td>
<td>Cm³</td>
</tr>
<tr>
<td>24.5</td>
<td>9.08</td>
<td>22.2</td>
</tr>
</tbody>
</table>