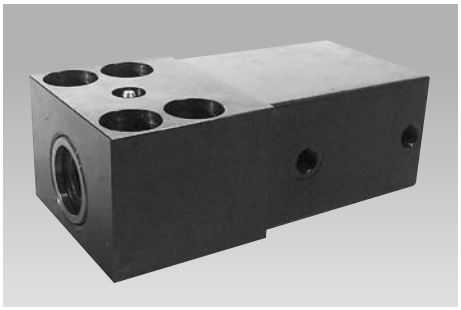
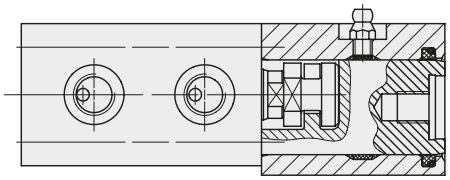
# Block Cylinder with Guide Housing

## max. operating pressure 500 bar, extending 500 bar steel block cylinder, 350 bar aluminium block cylinder, retracting 350 bar all versions





### Description

The hardened clamping bolt is located in a guide housing, and is connected to the flange-mounted block-cylinder by means of a coupling.

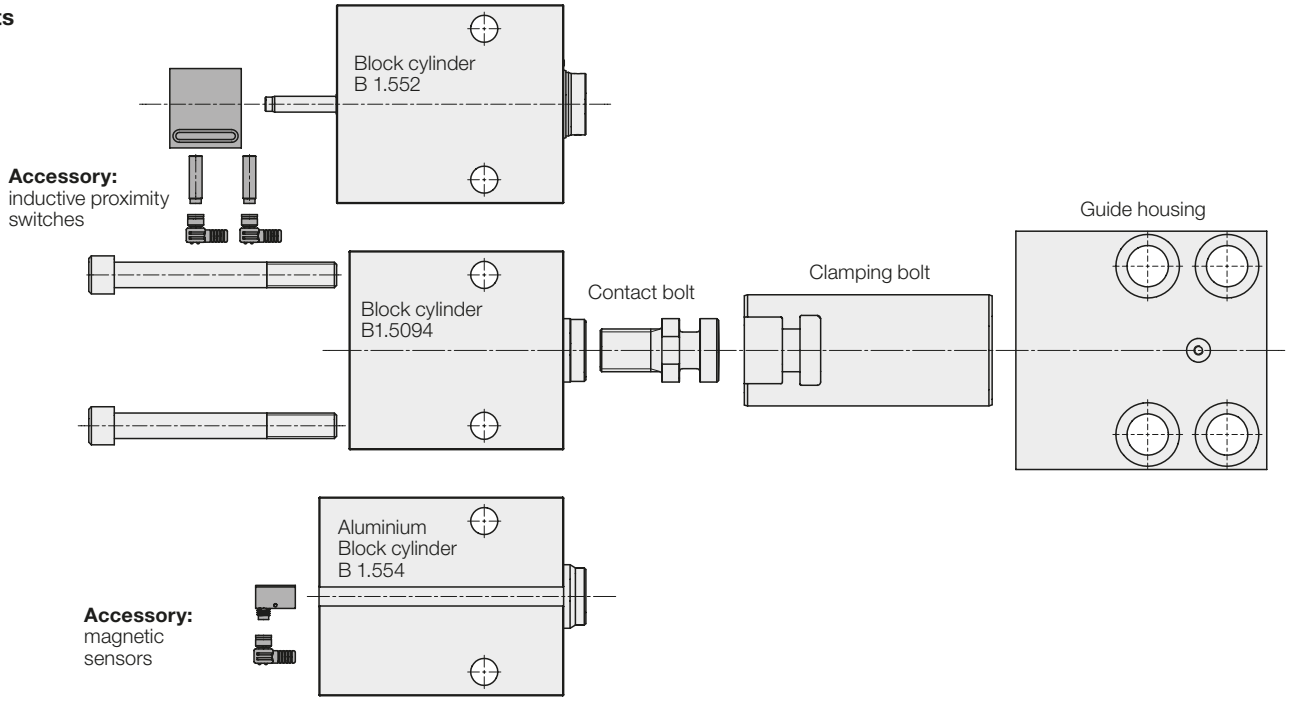
### The following variants are available

1. Block cylinder as per data sheet B1.5094 without position monitoring
2. Block cylinder as per data sheet B 1.552 with extended piston rod for position monitoring with inductive proximity switches.
3. Block cylinder as per data sheet B 1.554 with magnetic piston and aluminium housing for position monitoring with magnetic sensors.

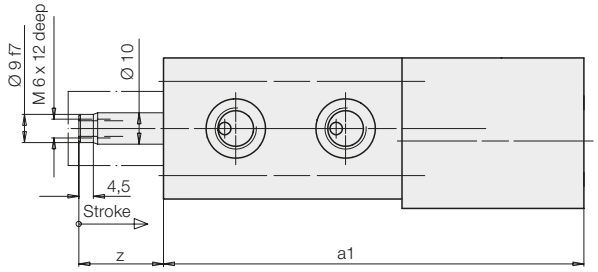
### Advantages

- 4 sizes with different strokes
- 3 block cylinder variants with and without position monitoring
- Standard FKM seals
- Max. environmental temperature as per version up to 150°C
- Position monitoring up to 120°C environmental temperature (see accessories)
- Separation of the function “force generation” and “guiding”
- Clamping bolt compensates high transverse forces
- Clamping bolts can be greased
- Cylinder piston protected by guide housing
- Guide housing protected by sturdy wiper
- The distance of the block cylinder to the effective point allows application in more arduous applications, e.g. welding fixtures
- Hydraulic ports and position monitoring can be mounted at the right-hand side or at the left-hand side

### Variants

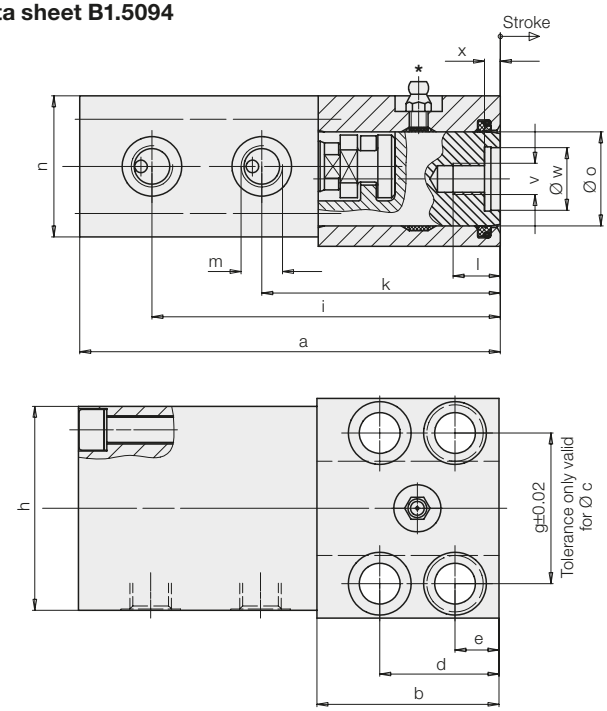


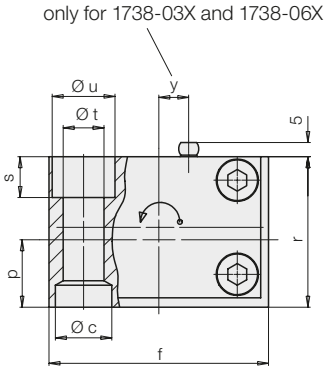
**Block cylinder as per data sheet B 1.552**
**with extended piston rod and guide housing**
**Accessory:** position monitoring see page 4




Max. operating pressure
Extend 500 bar
Retract 350 bar

**Block cylinder as per data sheet B1.5094**
**with guide housing**

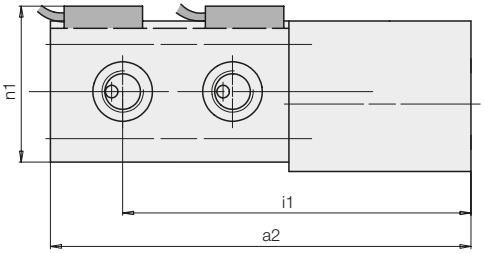



The block cylinder can be turned by 180°

Max. operating pressure
Extend 500 bar
Retract 350 bar

**Aluminium block cylinder as per data sheet B 1.554**
**with guide housing**
**Accessory:** magnetic sensors see page 5




Max. operating pressure 350 bar

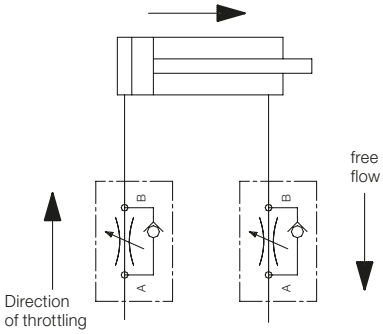
Important notes

**1. All variants**

The guide housing is equipped with a lubricating nipple, so that the clamping bolts can be lubricated with high-temperature grease according to the operating conditions. For this purpose the clamping bolt must be retracted in off-position. Lubrication intervals must be adapted to existing operating conditions.

**– Throttling of the flow rate**

Throttling has to be made in the oil supply line to the block cylinder to rule out a possible pressure intensification and thereby pressures over 350 bar. The hydraulic circuit diagram shows flow control valves which allow oil return from the block cylinder without any impediments.



## Dimensions block cylinder with guide housing

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Piston Ø | [mm] | 25 | 25 | 40 | 40 | 50 | 50 | 63 | 63 |
| Stroke | [mm] | 20 | 50 | 25 | 50 | 25 | 50 | 30 | 63 |
| a | [mm] | 122 | 182 | 157 | 207 | 190 | 240 | 227 | 293 |
| a1 | [mm] | 134 | 194 | 168 | 218 | 200 | 250 | 235 | – |
| a2 | [mm] | 136 | 196 | 174 | 224 | 207 | 257 | 246 | 312 |
| b | [mm] | 58 | 88 | 78 | 103 | 100 | 125 | 125 | 158 |
| Ø c H7 x depth | [mm] | 18/7 | 18/7 | 26/9 | 26/9 | 30/11 | 30/11 | 35/11 | 35/11 |
| d | [mm] | 38 | 38 | 46 | 46 | 58 | 58 | 75 | 75 |
| e | [mm] | 14 | 14 | 16 | 16 | 20 | 20 | 25 | 25 |
| f | [mm] | 70 | 70 | 95 | 95 | 120 | 120 | 150 | 150 |
| g | [mm] | 48 | 48 | 65 | 65 | 85 | 85 | 106 | 106 |
| h | [mm] | 65 | 65 | 85 | 85 | 100 | 100 | 125 | 125 |
| i | [mm] | 111 | 171 | 146 | 196 | 177 | 227 | 210 | 276 |
| i1 | [mm] | 118 | 178 | 153 | 203 | 186 | 236 | 220 | 286 |
| k | [mm] | 76 | 106 | 102 | 127 | 127 | 152 | 151 | 184 |
| l | [mm] | 18 | 18 | 25 | 25 | 30 | 30 | 40 | 40 |
| m | | G 1/4 | G 1/4 | G 1/4 | G 1/4 | G 1/4 | G 1/4 | G 1/2 | G 1/2 |
| n | [mm] | 45 | 45 | 63 | 63 | 75 | 75 | 95 | 95 |
| n1 | [mm] | 57 | 57 | 75 | 75 | 87 | 87 | 107 | 107 |
| Ø o | [mm] | 30 | 30 | 40 | 40 | 55 | 55 | 70 | 70 |
| p | [mm] | 21,5 | 21,5 | 28 | 28 | 37 | 37 | 49 | 49 |
| r | [mm] | 48 | 48 | 65 | 65 | 80 | 80 | 105 | 105 |
| s | [mm] | 13 | 13 | 18 | 18 | 20 | 20 | 25,5 | 25,5 |
| Ø t | [mm] | 13 | 13 | 17 | 17 | 21 | 21 | 26 | 26 |
| Ø u | [mm] | 20 | 20 | 26 | 26 | 32 | 32 | 40 | 40 |
| v | [mm] | M 10 | M 10 | M 16 | M 16 | M 20 | M 20 | M 27 | M 27 |
| Ø w H7 | [mm] | 20 | 20 | 32 | 32 | 40 | 40 | 50 | 50 |
| x | [mm] | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 |
| y | [mm] | 9,5 | 9,5 | - | - | 19 | 19 | - | - |
| z | [mm] | 27 | 57 | 32 | 57 | 32 | 57 | 37 | - |
| 4 off screws DIN 912-8.8* | [mm] | M 12 | M 12 | M 16 | M 16 | M 20 | M 20 | M 24 | M 24 |
| Required tightening torque | [Nm] | 86 | 86 | 210 | 210 | 410 | 410 | 710 | 710 |
| **Accessory,** for drill bushing DIN 179 | [mm] | A 12 x 12 | A 12 x 12 | A 17 x 16 | A 17 x 16 | A 21 x 20 | A 21 x 20 | A 26 x 20 | A 26 x 20 |
| **Part no.** | | **3300-285** | **3300-285** | **3300-287** | **3300-287** | **3300-288** | **3300-288** | **3300-289** | **3300-289** |

**Block cylinder with extended piston rod and guide housing**

| **Part no.** | | **1738-330** | **1738-336** | **1738-350** | **1738-356** | **1738-360** | **1738-366** | **1738-370** | |
|---|---|---|---|---|---|---|---|---|---|
| Max. clamping force at 500 bar F | [kN] | 20,6 | 20,6 | 58,9 | 58,9 | 94,2 | 94,2 | 152 | |
| Weight | [kg] | 2,5 | 3,9 | 5,7 | 7,7 | 7,6 | 10,5 | 14,8 | |

**Accessory,** position monitoring see page 4

**Block cylinder with guide housing**

| **Part no.** | | **1738-030** | **1738-036** | **1738-050** | **1738-056** | **1738-060** | **1738-066** | **1738-070** | **1738-076** |
|---|---|---|---|---|---|---|---|---|---|
| Max. clamping force at 500 bar F | [kN] | 24,5 | 24,5 | 62,8 | 62,8 | 98,5 | 98,5 | 156 | 156 |
| Weight | [kg] | 2,4 | 3,8 | 5,6 | 7,6 | 7,5 | 10,4 | 14,7 | 20,8 |

**Aluminium block cylinder with guide housing**

| **Part no.** | | **1738-130** | **1738-136** | **1738-150** | **1738-156** | **1738-160** | **1738-166** | **1738-170** | **1738-176** |
|---|---|---|---|---|---|---|---|---|---|
| Max. clamping force at 350 bar F | [kN] | 17,1 | 17,1 | 44 | 44 | 68,7 | 68,7 | 109,2 | 109,2 |
| Weight | [kg] | 2,14 | 2,36 | 4,4 | 5,9 | 5,74 | 8,05 | 12 | 16,1 |

**Accessory,** magnetic sensors see page 5

***** included in the delivery

**2. Block cylinder with extended piston rod**
Inductive position monitoring systems, which can be delivered as accessory, are not suitable for applications where coolants are used. Additional covers also have to be provided against swarf.

**3. Block cylinder with aluminium housing**
Please use only fittings with soft seals (see accessories page 5).

Block cylinders with aluminium housing are not suitable for operation of blanking and punching dies. Uncontrollable spikes and vibrations can appear which especially in the case of aluminium could cause a decrease in tool life.
Steel can influence the magnetic field of the magnetic piston and thereby the position of the switching points. If there is the same influence for each stroke (e.g. because of adjoining steel components) it can be compensated by displacing the magnetic sensors. But if the influence differs from stroke to stroke, as e.g. in the case of swarf, a cover has to be provided 30 mm over the magnetic sensors. Covers have to be provided to protect the cylinders against ferritic swarf.

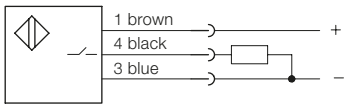
**Description**

The position monitoring will be screwed on the cylinder bottom and can also be mounted in a position rotated by 180°. Different versions are available according to the application conditions. A control cam is provided at the extended piston rod causing the activation of the proximity switches. The adjustment of the switching position is effected by a displacement of the proximity switches in the lateral groove.
The proximity switches are switched on in a stroke range of approx. 6 mm by means of the control cam. The minimum distance to the positions to be monitored depends on the switch type and is indicated in the table.

**Function**

1. Signal – unclamped position, i.e. piston rod is retracted
2. Signal – clamped position, i.e. piston rod is extended and is in the clamped area

**Electric circuit diagram**




**Important notes**

The position monitoring system is not suitable for applications where coolants are used. Additional covers also have to be provided against swarf.

**Designing – Application Conditions – Safety Measure**

Careful design is required, the corresponding application conditions and safety measures have to be planned and guaranteed.

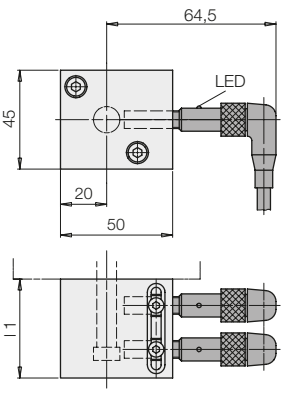
**Please do not hesitate to contact us for further information.**

**Technical data for inductive proximity switches**

| | |
|---|---|
| Voltage UB | 10 ... 30 V DC |
| Ripple | max. 15% |
| Switching function | closing |
| Basic technology | PNP |
| Material of housing | stainless steel |
| Code class according to DIN 40050 | IP 67 |

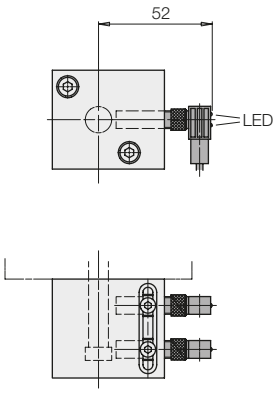
**Typ A**

Standard version



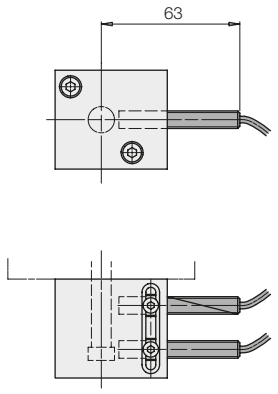

**Typ B**

Compact version




**Typ C**

for high environmental temperature

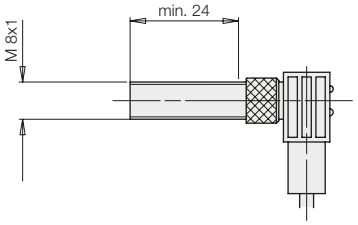



| | | Typ A | Typ B | Typ C |
|---|---|---|---|---|
| Environmental temperature TA | | – 25° ... +70°C | – 25° ... +70°C | – 25° ... +120°C |
| Min. distance of the switching positions | [mm] | 13 | 8 | 8 |
| Connection type | | Plug | Plug | Teflon cable 3 x 0.14 mm² |
| LED function display | | in the switch | iin the plug | No |
| Max. constant current | [mA] | 200 | 100 | 200 – ab 70°:100 |
| Nominal switch distance | [mm] | 1,5 | 1,5 | 2 |
| Short circuit proof | | Yes | Yes | No |
| Connection cable | [m] | 5 | 5 | 3 |
| **Proximity switch** | **Part no.** | **3829-077** | **3829-263** | **3829-087** |
| **Plug with cable** | **Part no.** | **3829-088** | **3829-099** | **–** |
| L1 complete | [mm] | 45 | 45 | 45 |
| **Position monitoring up to 30 mm total stroke** | **Part no.** | **0382-300** | **0382-301** | **0382-302** |
| L1 complete | [mm] | 65 | 65 | 65 |
| **Position monitoring up to 50 mm total stroke** | **Part no.** | **0382-310** | **0382-311** | **0382-312** |

**Position monitoring without proximity switches**

In case of use of own inductive proximity switches the switching unit M 8x1 is also available without proximity switches.

Required dimensions:




| | | | **Part no.** |
|---|---|---|---|
| Total stroke | [mm] | up to 30 | **0382-303** |
| Total stroke | [mm] | up to 50 | **0382-313** |

Compared with traditional reed switches the electronic magnetic sensors offer the following advantages:

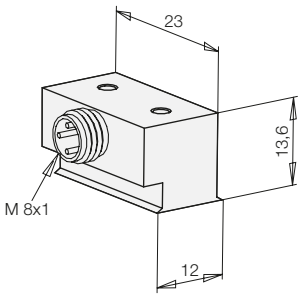
- Indifference to shock and vibration
- Bounce-free output signal
- Only one switching point
- Wear resistant
- Protection against reverse battery
- Protected against short circuits

Electric connection is made as per traditional inductive proximity switches; up to four magnetic sensors can be connected in series.

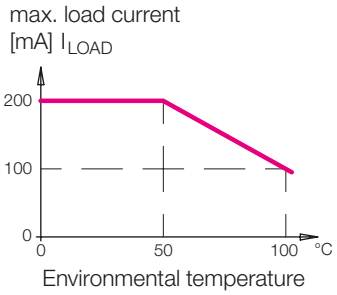
Minimum distance of the switching points: 6 mm.

**For further information about voltage supply for position controls see data sheet G 2.140.**

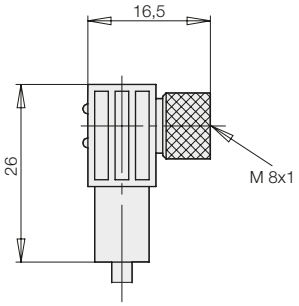
### Electronic magnetic sensor



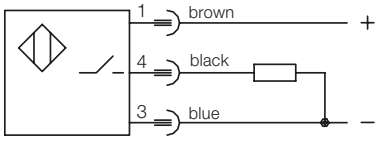

### Temperature curve



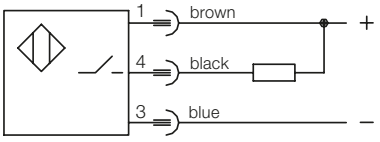

### Connecting cable with right angle plug




### Connecting scheme




pnp (+) switching




npn (–) switching

| Technical data | Electronic magnetic sensor | | Connecting cable with right angle plug | |
|---|---|---|---|---|
| Cylinder body material | aluminium black lacquered | | | |
| Voltage | 10 – 30 V DC | | 10 – 30 V DC | |
| Residual ripple | max. 10% | | | |
| Current load $I_{LOAD}$ | 200 mA – up to 50 °C<br>150 mA – at 75 °C<br>100 mA – at 100 °C | | | |
| Current consumption | < 15 mA | | | |
| Voltage drop (max. load) | < 2 V | | | |
| Protected against short circuits | yes | | | |
| Protection against reverse battery | installed | | | |
| Switching frequency | 1 kHz | | | |
| Switching hysteresis | 3 mm | | | |
| Protection as per DIN 40050 | IP 67 | | IP 67 | |
| Environmental temperature | –25 °C up to +100 °C | | –25 °C bis +90 °C | |
| Plug connection | M8-plug | | M8-plug | |
| LED | no | | Voltage (green)<br>Function display (yellow) | |
| Cable, length of cable | | | PUR, 5 m | |
| Output, interlock | **pnp** | **npn** | **pnp** | **npn** |
| **Part no. (1 off)** | **3829-234** | **3829-240** | **3829-099** | **3829-124** |

### Max. cylinder temperature

| Hydraulic fluid \ Cylinder temperature | with magnetic sensor | without magnetic sensor | |
|---|---|---|---|
| | | Perbunan | FKM |
| HLP | –25 ... +100 °C | –25 ... +100 °C | –20 ... +120 °C |
| HFD | | | –20 ... +120 °C |

### Further accessory

see data sheet G 2.140

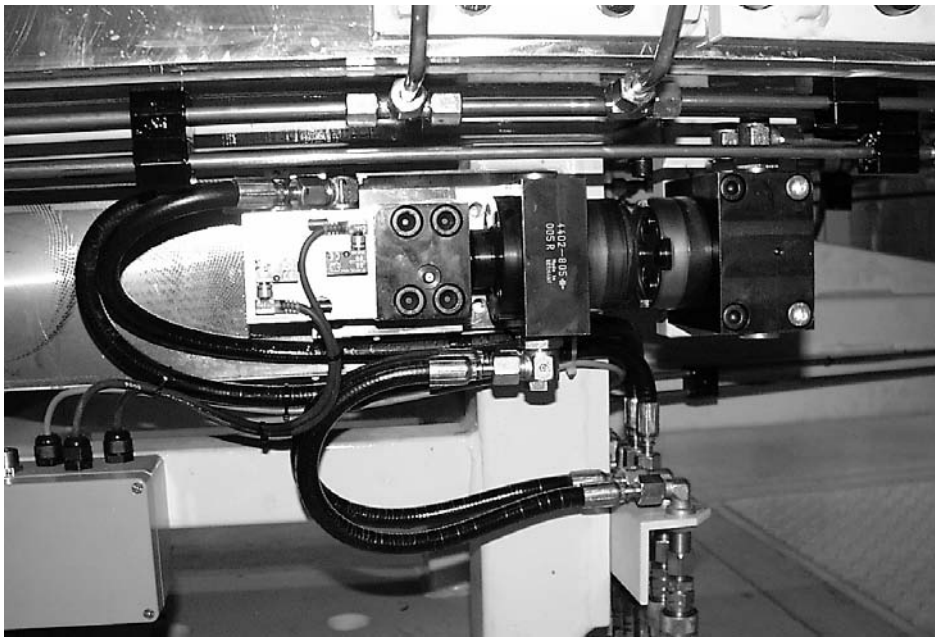
- Pin-and-socket connector
- Y-distributor
- Reversing plug
- Voltage regulator
- Straight tube male stud coupling with elastic sealing

| Type L | | | | | Part no. |
|---|---|---|---|---|---|
| D 8 L | ED for tube Ø 8 | G 1/4 | 250 bar | | **9208-131** |
| D 15 L | ED for tube Ø 15 | G 1/2 | 250 bar | | **9215-033** |

| Type S | | | | | Part no. |
|---|---|---|---|---|---|
| D 8 S | ED for tube Ø 8 | G 1/4 | 350 bar | | **9208-132** |
| D16 S | ED for tube Ø 16 | G 1/2 | 350 bar | | **9216-021** |

Other fittings see data sheet F 9.300

**Coupling fixture**



**Position monitoring**

Position monitoring with inductive proximity switches

Position monitoring
with magnetic sensors