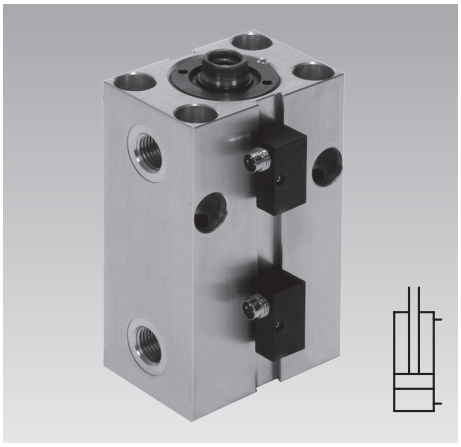
# Block Cylinders

## with aluminium or bronze housing for adjustable magnetic sensors, double acting, max. operating pressure 350 bar or 500 bar



### Application

Hydraulic block cylinders are universally used for all linear movements with high force requirements and very small dimensions.
With the adjustable magnetic sensors certain piston positions can be controlled exactly.

### Function

The double-acting function ensures high function safety as well as exactly calculable and repeatable stroke times.

### Description

The piston of these block cylinders is equipped with a ring-shaped magnet whose magnetic field actuates the sensor.
The cylinder housing is therefore made of a non-magnetisable material.
Two variants are available:

- 154X X**1**X High-tensile aluminium alloy
  max. operating pressure 350 bar
- 154X X**5**X High-tensile bronze alloy
  max. operating pressure 500 bar

The magnetic sensors are guided in dovetail slots and allow a continuous control of the piston position.

### Punching applications

- 154X X**1**X Block cylinder with aluminium housing
  **Not suitable for punching applications!**
- 154X X**5**X Block cylinder with bronze housing
  Suitable with the following restrictions:
  **– max. operating pressure 250 bar**
  **– only with external guide and tool stop**

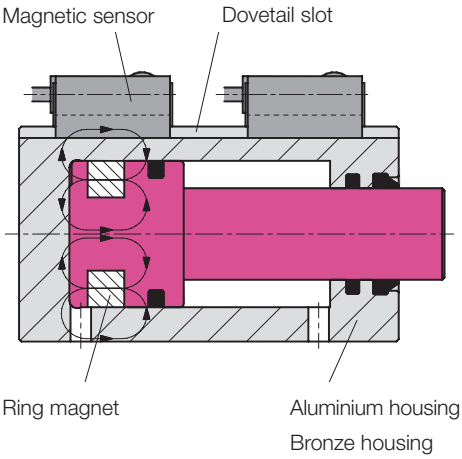
### Important notes

Block cylinders are intended exclusively for industrial applications and may only be operated with hydraulic oil.
They can generate very high forces to be absorbed by the fixture or the machine.
In the effective area of the piston rod there is the danger of crushing. The manufacturer of the fixture or the machine is obliged to provide effective protection devices.

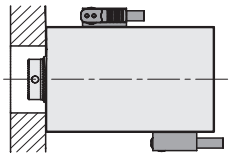
**Further notes see page 3.**

### Advantages

- 5 sizes with 3 stroke lengths
- Compact block design
- Same dimensions as block cylinder with steel housing, except for total length
- Multiple fixing possibilities
- Fixing screws counterbore
- Many connecting possibilities
- Magnetic sensors can be used up to 100 °C
- Fixing of the sensors at 2 sides possible
- Easy adjustment of switching point positions
- Piston rod case-hardened
- Stainless steel version optional
- Alternatively NBR or FKM seals
- Minimum leakage due to double rod seal
- Maintenance free

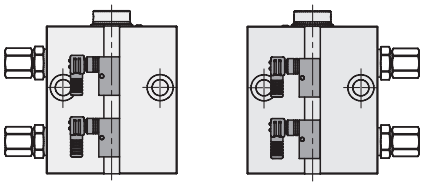



### Fixing possibilities



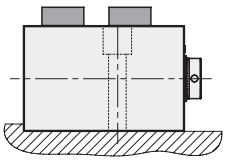
### Hydraulic connecting possibilities

**Pipe thread**

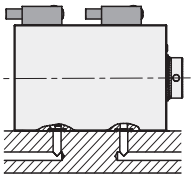


**Flange with O-ring sealing**

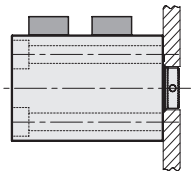
● **Broad side**



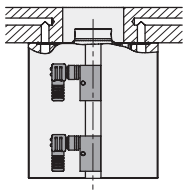
● **Broad side**



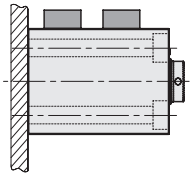
● **Rod side**



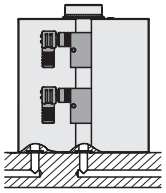
● **Rod side**



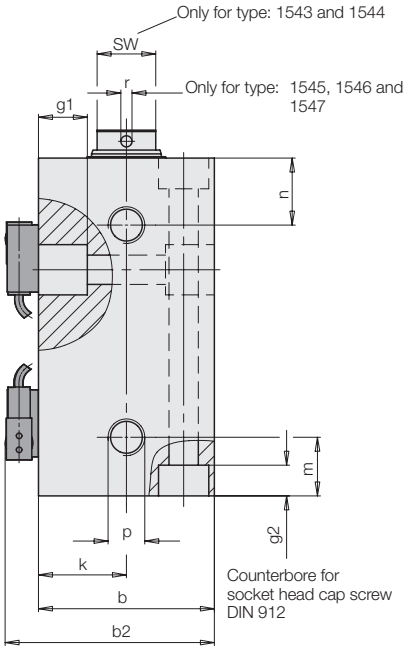
● **Bottom side**

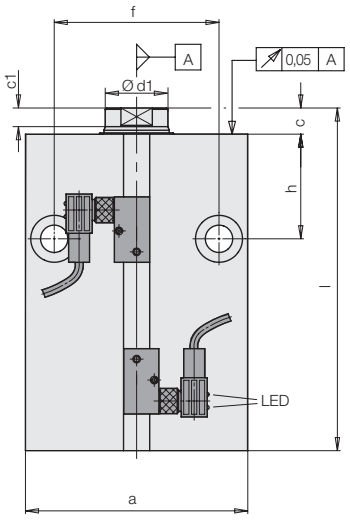


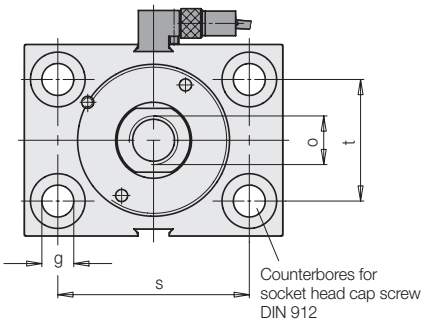
● **Bottom side**



# Pipe thread




**Accessories:**
**Magnetic sensors see page 7/8**

**Materials**

| | |
|---|---|
| Cylinder body | aluminium alloy (350 bar)<br>bronze alloy (500 bar) |
| Piston | case-hardening steel, hardened and ground or stainless steel hardened and ground |
| Threaded bushing | free-cutting steel or stainless steel, hardened and tempered |

**Use only fixing screws 8.8!**

| **Size** | | **1543** | **1544** | **1545** | **1546** | **1547** |
|---|---|---|---|---|---|---|
| **Piston Ø** | [mm] | **25** | **32** | **40** | **50** | **63** |
| **Piston rod Ø** | [mm] | **16** | **20** | **25** | **32** | **40** |
| | | | | | | |
| **Stroke +/– 0.7** | [mm] | **20** | **25** | **25** | **25** | **30** |
| Total length l +/– 0.8 | [mm] | 85 | 100 | 106 | 117 | 135 |
| **Aluminium housing max. 350 bar** | | | | | | |
| Weight | [kg] | 0.68 | 1.1 | 1.52 | 2.6 | 4.4 |
| **Part no.** (NBR) | | **1543513** | **1544513** | **1545513** | **1546513** | **1547513** |
| **Bronze housing max. 500 bar** | | | | | | |
| Weight | [kg] | 1.04 | 2.24 | 3.1 | 5.1 | 8.43 |
| **Part no.** (NBR) | | **1543553** | **1544553** | **1545553** | **1546553** | **1547553** |
| | | | | | | |
| **Stroke +/– 0.7** | [mm] | **50** | **50** | **50** | **50** | **63** |
| Total length l +/– 0.8 | [mm] | 115 | 125 | 131 | 142 | 168 |
| **Aluminium housing max. 350 bar** | | | | | | |
| Weight | [kg] | 0.9 | 1.37 | 1.94 | 3.1 | 5.45 |
| **Part no.** (NBR) | | **1543516** | **1544516** | **1545516** | **1546516** | **1547516** |
| **Bronze housing max. 500 bar** | | | | | | |
| Weight | [kg] | 1.94 | 2.8 | 3.7 | 6 | 11 |
| **Part no.** (NBR) | | **1543556** | **1544556** | **1545556** | **1546556** | **1547556** |
| | | | | | | |
| **Stroke +/– 0.7** | [mm] | **100** | **100** | **100** | **100** | **100** |
| Total length l +/– 0.8 | [mm] | 165 | 175 | 181 | 192 | 205 |
| **Aluminium housing max. 350 bar** | | | | | | |
| Weight | [kg] | 1.32 | 1.86 | 2.74 | 4.1 | 7.5 |
| **Part no.** (NBR) | | **1543519** | **1544519** | **1545519** | **1546519** | **1547519** |
| **Bronze housing max. 500 bar** | | | | | | |
| Weight | [kg] | 3.7 | 4 | 5.5 | 8.2 | 16.2 |
| **Part no.** (NBR) | | **1543559** | **1544559** | **1545559** | **1546559** | **1547559** |

| **Part-no. for pipe thread connection** | | |
|---|---|---|
| | **154X5XX** | NBR seals see chart |
| | **154XX2X** | FKM seals with aluminium housing |
| | **154XX6X** | FKM seals with bronze housing |
| | **154X4XX** | Stainless steel version |

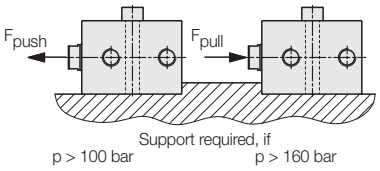
| Size | | | 1543 | 1544 | 1545 | 1546 | 1547 |
|---|---|---|---|---|---|---|---|
| **Piston Ø** | | **[mm]** | **25** | **32** | **40** | **50** | **63** |
| **Piston rod Ø** | | **[mm]** | **16** | **20** | **25** | **32** | **40** |
| Effective piston area | stroke to extend | [$cm^2$] | 4.91 | 8.04 | 12.56 | 19.63 | 31.17 |
| | stroke to retract | [$cm^2$] | 2.9 | 4.9 | 7.65 | 11.59 | 18.6 |
| Force to push at | 100 bar | [kN] | 4.91 | 8.04 | 12.56 | 19.63 | 31.17 |
| | 350 bar | [kN] | 17.1 | 28.1 | 43.9 | 68.7 | 109 |
| | 500 bar | [kN] | 24.5 | 40.2 | 62.8 | 98.1 | 155.8 |
| Force to pull at | 100 bar | [kN] | 2.9 | 4.9 | 7.65 | 11.59 | 18.6 |
| | 350 bar | [kN] | 10.1 | 17.1 | 26.7 | 40.5 | 65.1 |
| | 500 bar | [kN] | 14.5 | 24.5 | 38.2 | 57.9 | 93 |
| Oil volume | stroke to extend | [$cm^3$] | 4.91 | 8.04 | 12.56 | 19.63 | 31.17 |
| per 10 mm stroke | stroke to retract | [$cm^3$] | 2.9 | 4.9 | 7.65 | 11.59 | 18.6 |
| a | | [mm] | 65 | 75 | 85 | 100 | 125 |
| b | | [mm] | 45 | 55 | 63 | 75 | 95 |
| b2 | | [mm] | 57 | 67 | 75 | 87 | 107 |
| c | | [mm] | 7 | 10 | 10 | 10 | 14 |
| Ø d1 x c1 | | [mm] | 15x5 | 19x7.8 | 24x7.1 | 30.5x6.5 | 38.7x9.2 |
| f | | [mm] | 50 | 55 | 63 | 76 | 95 |
| g | | [mm] | 8.5 | 10.5 | 10.5 | 13 | 17 |
| g1 at both sides | | [mm] | 12 | 16 | 17 | 22 | -* |
| g2 at both sides | | [mm] | 9 | 11 | 11 | 13 | 17 |
| h | | [mm] | 33 | 38 | 40 | 44 | 50 |
| h1 | | [mm] | 40 | 42 | 44 | 47 | 60 |
| k | | [mm] | 22.5 | 27.5 | 31.5 | 37.5 | 47.5 |
| m | | [mm] | 18 | 20 | 21 | 21 | 26 |
| n | | [mm] | 18 | 22 | 24 | 27 | 26 |
| o x depth of thread | | [mm] | M10x15 | M12x15 | M16x25 | M20x30 | M27 x40 |
| p | | | G 1/4 | G 1/4 | G 1/4 | G 1/4 | G 1/2 |
| r | | [mm] | - | - | 4 | 4 | 4 |
| s | | [mm] | 50 | 55 | 63 | 76 | 95 |
| t | | [mm] | 30 | 35 | 40 | 45 | 65 |
| u +/– 0.05 | | [mm] | 1.1 | 1.1 | 1.1 | 1.1 | 1.3 |
| v1 | | [mm] | 4 | 5 | 6 | 6 | 8 |
| v2 | | [mm] | 4 | 4.5 | 4.5 | 6 | 6 |
| w +0.2 | | [mm] | 9.8 | 10.8 | 10.8 | 10.8 | 15.8 |
| x | | [mm] | 21.5 | 25 | 27 | 30 | 35 |
| y | | [mm] | 21 | 25 | 27 | 29.5 | 32 |
| SW | | [mm] | 13 | 17 | – | – | – |

***** Size 1547 without counterbores

## Important notes

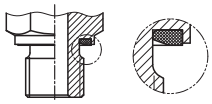
### Housing support

When fastened across the cylinder axis, block cylinders must be supported depending on the operating pressure.
Alternative: Keyway (see page 5)




### Fittings

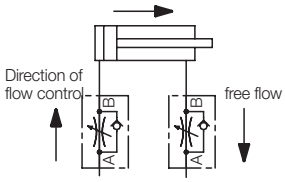
Use only fittings with elastic sealing instead of knife-edge sealing (see F 9.300).



DIN 3852 T11 form E and EN ISO 1179-2

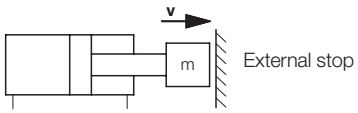
### Throttling of the flow rate

The throttling must take place in the supply line to avoid pressure intensification and thus pressures that exceed the maximum operating pressure.



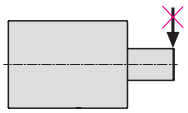

### Admissible dynamic load

The max. piston speed is 0.25 m/s. Without effective stroke end cushioning, a mass attached to the piston will move unbraked against the internal stop.
Therefore the following applies:
"For piston speeds exceeding 0.05 m/s and a mass greater than the dead weight of the cylinder, an external stop must be provided."




### Side loads

Side loads should be avoided because they cause more or less wear to the piston guide and thus produce ferritic mini-particles (see "Cleanness of the hydraulic oil").

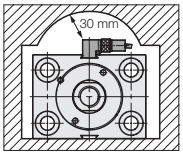


### Cleanness of the hydraulic oil

Ferritic swarf in the hydraulic oil are attracted by the permanent magnet at the piston, accumulate in the cylinder area and damage seals and guides. Flush all drilled channels, pipes and hoses thoroughly before start up.
Recommendation: High-pressure filter with 10 µm Filter fineness (see data sheet F 9.500).

### Influence of the magnetic field

Due to iron in the immediate vicinity of the block cylinder the magnetic field of the piston will be deflected. The switching points of the magnetic sensors must then be readjusted.
If no defined switching point can be adjusted, one can try again with stainless steel fixing screws.
With ferritic swarf, the conditions change from stroke to stroke. An exact adjustment is no longer possible. A cover with a minimum distance of 30 mm will help.

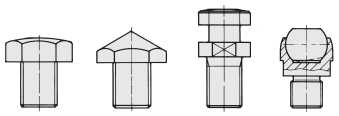



### Admissible operating temperature

| Magnetic sensor | 154X X1X NBR | 154X X2X FKM |
|---|---|---|
| **without** | –30…+100 °C | –20…+120 °C |
| **with** | –25…+100 °C | –20…+100 °C |

### Accessory - Contact bolts

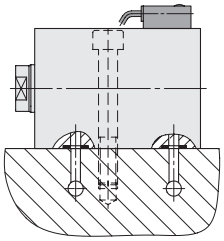
Different contact bolts see data sheet G 3.800.

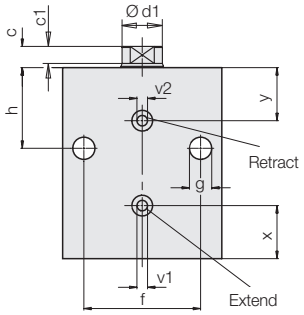


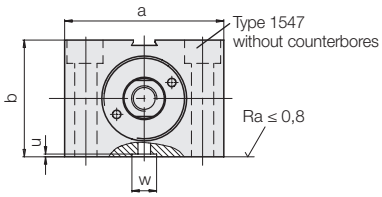
Other data see data sheet A 0.100

# Flange with O-ring sealing

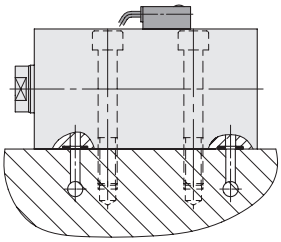
**Broad side K**
**Stroke 1 – 49 mm**
**2 cross holes**
**154X XXXK**

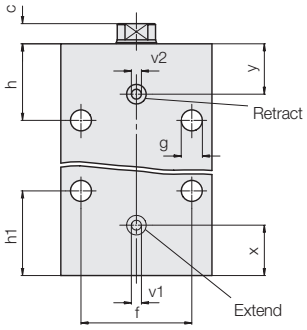


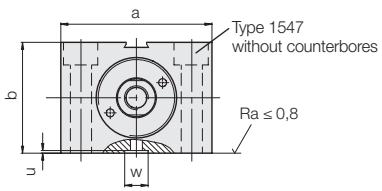


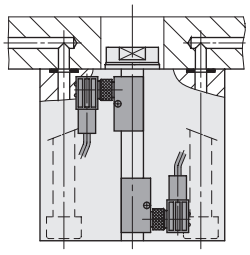

**Broad side L**
**from 50 mm stroke**
**4 cross holes**
**154X XXXL**

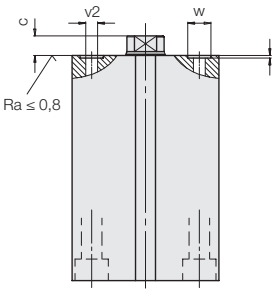


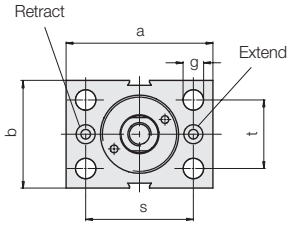


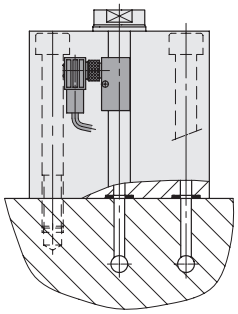

**Rod side S**
**All strokes**
**4 longitudinal holes**
**154X XXXS**

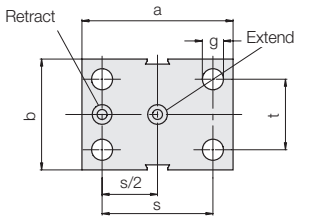


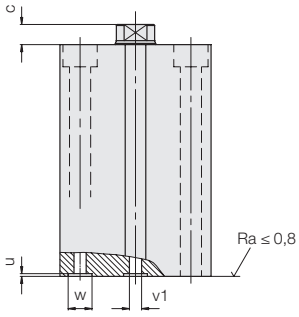



**Bottom side B**
**All strokes**
**4 longitudinal holes**
**154X XXXB**





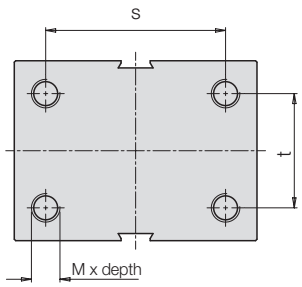




| **Size** | | **1543** | **1544** | **1545** | **1546** | **1547** |
|---|---|---|---|---|---|---|
| **Piston Ø** | [mm] | **25** | **32** | **40** | **50** | **63** |
| **Piston rod Ø** | [mm] | **16** | **20** | **25** | **32** | **40** |
| **Stroke +/– 0.7** | [mm] | **20** | **25** | **25** | **25** | **30** |
| Total length l +/– 0.8 | [mm] | 85 | 100 | 106 | 117 | 135 |
| **Aluminium housing max. 350 bar** | | | | | | |
| Weight | [kg] | 0.68 | 1.1 | 1.52 | 2.6 | 4.4 |
| **Part no.** (NBR) | | **1543513X** | **1544513X** | **1545513X** | **1546513X** | **1547513X** |
| **Bronze housing max. 500 bar** | | | | | | |
| Weight | [kg] | 1.04 | 2.24 | 3.1 | 5.1 | 8.43 |
| **Part no.** (NBR) | | **1543553X** | **1544553X** | **1545553X** | **1546553X** | **1547553X** |
| **Stroke +/– 0.7** | [mm] | **50** | **50** | **50** | **50** | **63** |
| Total length l +/– 0.8 | [mm] | 115 | 125 | 131 | 142 | 168 |
| **Aluminium housing max. 350 bar** | | | | | | |
| Weight | [kg] | 0.9 | 1.37 | 1.94 | 3.1 | 5.45 |
| **Part no.** (NBR) | | **1543516X** | **1544516X** | **1545516X** | **1546516X** | **1547516X** |
| **Bronze housing max. 500 bar** | | | | | | |
| Weight | [kg] | 1.94 | 2.8 | 3.7 | 6 | 11 |
| **Part no.** (NBR) | | **1543556X** | **1544556X** | **1545556X** | **1546556X** | **1547556X** |
| **Stroke +/– 0.7** | [mm] | **100** | **100** | **100** | **100** | **100** |
| Total length l +/– 0.8 | [mm] | 165 | 175 | 181 | 192 | 205 |
| **Aluminium housing max. 350 bar** | | | | | | |
| Weight | [kg] | 1.32 | 1.86 | 2.74 | 4.1 | 7.5 |
| **Part no.** (NBR) | | **1543519X** | **1544519X** | **1545519X** | **1546519X** | **1547519X** |
| **Bronze housing max. 500 bar** | | | | | | |
| Weight | [kg] | 3.7 | 4 | 5.5 | 8.2 | 16.2 |
| **Part no.** (NBR) | | **1543559X** | **1544559X** | **1545559X** | **1546559X** | **1547559X** |
| Spare O-rings | | 7x1.5 | 8x1.5 | 8x1.5 | 8x1.5 | 12.42x1.78 |
| **Part no.** (NBR) | | **3000342** | **3000343** | **3000343** | **3000343** | **3000335** |
| **Part no.** (FKM) | | **3001077** | **3000275** | **3000275** | **3000275** | **3001152** |

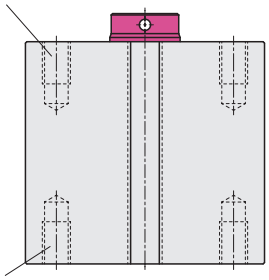
| | | |
|---|---|---|
| **Part-no. for flange type** | **154X5XXX** | Flange **K, L, S, B** (see above), NBR seals |
| | **154XX2XX** | FKM seals with aluminium housing |
| | **154XX6XX** | FKM seals with bronze housing |
| | **154X4XXX** | Stainless steel version |

**4 threads at the front to fix the housing C, D**

Instead of longitudinal holes and cross holes the block cylinders can be provided with 4 interior threads, alternatively at the rod side **C** or at the bottom side **D**.




**Rod side: 15XXXXXC**

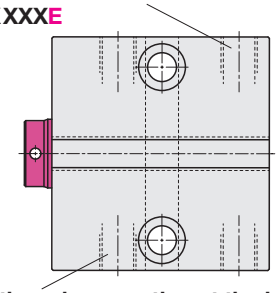


**Bottom side: 15XXXXXD**

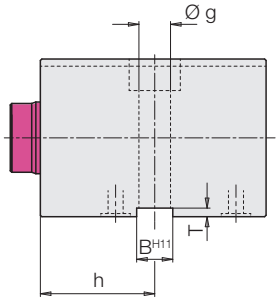
**Keyway to support the housing E, F, Q**

Block cylinders with keyway are supplied without longitudinal holes and with only one trapezoidal slot for the magnetic sensors.
For pipe thread connection, the position of the connecting threads has to be determined in advance (identification code **E** or **F** see drawing).
For flange-type connection K or L (see page 4) the identification code is **Q**.

**Pipe thread connection at the right side: 15XXXXXE**



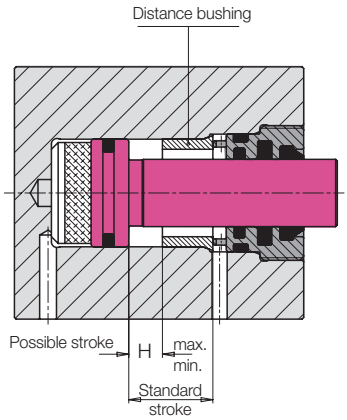
**Pipe thread connection at the left side: 15XXXXXF**




**Flange-type connection: 15XXXXXXQ**

**Stroke limitation by distance bushing H**

The extending piston stroke of block cylinders can be limited by installing a distance bushing. The minimum stroke should not be less than 1 mm. The maximum possible stroke starting from the the standard stroke is indicated in the below chart.




**Example: Possible stroke**
Block cylinder 1545516
Standard stroke 50 mm

**As per table:**
Hmin. = 1 mm
Hmax. = 50 – 3 = 47 mm

**Possible combinations of standard variants see page 6.**

| Basic type | Dimensions | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | 4 threads C, D | | | Keyway E, F, Q | | | | Stroke limitation H | |
| **Part no.** (page 2 to 4) | M x depth | s | t | $B^{H11}$ | T | Ø g | h | Hmin. | Hmax. |
| **1543XXXX** | M 8x12 | 50 | 30 | 10 | 2 | 8.5 | 33 | 1 | Standard stroke – 3 |
| **1544XXXX** | M 10x15 | 55 | 35 | 12 | 3 | 10.5 | 38 | 1 | Standard stroke – 3 |
| **1545XXXX** | M 10x15 | 63 | 40 | 12 | 3 | 10.5 | 40 | 1 | Standard stroke – 3 |
| **1546XXXX** | M 12x18 | 76 | 45 | 15 | 5 | 13 | 44 | 1 | Standard stroke – 4 |
| **1547XXXX** | M 16x24 | 95 | 65 | 20 | 5 | 17 | 50 | 1 | Standard stroke – 4 |

General tolerances as per DIN ISO 2768-mH

All dimensions in mm.

**Examples for ordering:**

**4 threads**

Block cylinder 1547513
(pipe thread connection)
with 4 threads M16 at the bottom side
**Part no. 1547513D**

Block cylinder 1547516
(pipe thread connection)
with 4 threads M16 at the rod side
**Part no. 1547516C**

Block cylinder 1547513B
(flange-type connection)
with 4 threads M16 at the bottom side
**Part no. 1547513BD**

**Keyway**

Block cylinder 1546523
(pipe thread connection)
with keyway and connecting thread at the right side
**Part no. 1546523E**

Block cylinder 1546513
(pipe thread connection)
with keyway and connecting thread at the left side
**Part no. 1546513F**

Block cylinder 1546556L
(flange-type connection)
with keyway
**Part no. 1546556LQ**

**Stroke limitation**

Block cylinder 1545513
(pipe thread connection)
with stroke limitation to 12 mm
**Part no. 1545513H12**

Block cylinder 1545519
(pipe thread connection)
with stroke limitation to 80 mm
**Part no. 1545519H80**

Block cylinder 1545556LQ
(flange-type connection)
with keyway and stroke limitation to 40 mm
**Part no. 1545556LQH40**

# Code for part numbers

**Code for part numbers of the basic versions***
(page 2 to 4)

**1 5 X X  X X X X**

**Piston diameter**
**43** = 25 mm
**44** = 32 mm
**45** = 40 mm
**46** = 50 mm
**47** = 63 mm

**Not applicable for pipe thread connection**

**Flange with O-ring sealing at the**
**K** = broad side with 2 cross holes, stroke 20 to 30 mm
**L** = broad side with 4 cross holes, stroke from 50 mm
**S** = rod side with 4 longitudinal holes
**B** = bottom side with 4 longitudinal holes

**Piston stroke**
**3** = 20 – 30 mm
**6** = 50 – 63 mm
**9** = 100 mm

**Seals**
**1** = NBR 350 bar
**2** = FKM 350 bar
**5** = NBR 500 bar
**6** = FKM 500 bar

**Piston and threaded bushing**
**4** = stainless steel
**5** = case-hardening steel and free-cutting steel

***) Important notes**
The code for part numbers enables the determination of the technical data with a known part number.
The code for part numbers is not suitable for selecting any variant. Only the versions as per the charts on page 2 or 4 are available as standard elements.
**Special variants are available on request.**

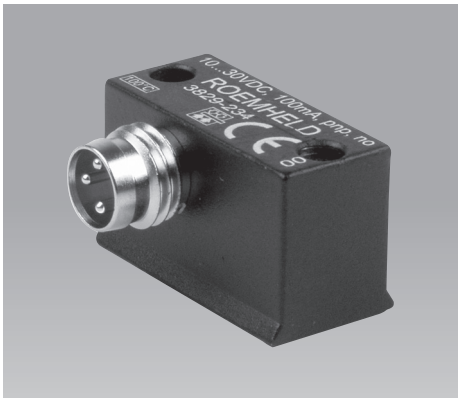
**Maximum available stroke lengths:**
Piston Ø 25 mm → up to 160 mm
Piston Ø 32, 40, 50 and 63 mm → up to 200 mm

**Code for part numbers of the standards variants and possible combinations**
Explanation of the identification codes and order examples see page 5

**1 5 X X  X X X X X X**

**Basic version**
(see above)

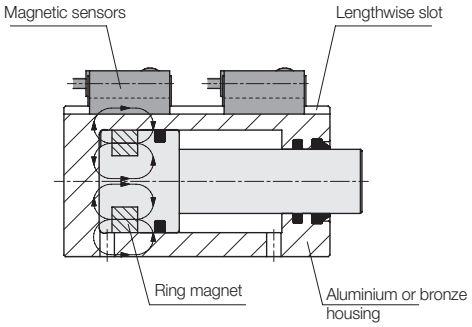
| | | | | | |
|---|---|---|---|---|---|
| **Pipe thread** | | | | | **Option** |
| | | **H** | | | + stroke limitation (e.g. H15) |
| 4 interior threads rod side | | **C** | **H** | | + stroke limitation |
| 4 interior threads bottom side | | **D** | **H** | | + stroke limitation |
| Keyway, connection at the right side | | **E** | **H** | | + stroke limitation |
| Keyway, connection at the left side | | **F** | **H** | | + stroke limitation |
| **Flange with O-ring sealing** | | | | | |
| Broad side | 20 to 30 mm stroke | **K** | **H** | | + stroke limitation |
| | from 50 mm stroke | **L** | **H** | | + stroke limitation |
| Rod side | | **S** | **H** | | + stroke limitation |
| Bottom side | | **B** | **H** | | + stroke limitation |
| Broad side | 20 to 30 mm stroke | **K** | **Q** | **H** | + keyway + stroke limitation |
| | from 50 mm stroke | **L** | **Q** | **H** | + keyway + stroke limitation |
| Rod side | | **S** | **C** | **H** | + 4 interior threads + stroke limitation |
| Bottom side | | **B** | **D** | **H** | + 4 interior threads + stroke limitation |




### Advantages

- Compact design, minimum space requirement
- Adjustable switching points by displacement of the sensor
- Monitoring of several positions
- Indifference to shock and vibration
- Bounce-free output signal
- Only one switching point
- Wear resistant
- Protected against reverse battery
- Protected against short circuits
- Sensor locking with 2 screws

### Function




### Application

Magnetic sensors are used for position monitoring of block cylinders and pneumatic swing clamps of the following data sheets:

- Block cylinders with aluminium or bronze housing B 1.554
- Block cylinder with guide housing B 1.738
- Pneumatic swing clamp J 7.202

### Monitoring of several positions

In the two lengthwise slots of the cylinder body several sensors can be fixed (depending on the length of the slot or the stroke).
In one slot, the minimum distance between the switching points is 6 mm; with two slots it is 3 mm.

### Influencing the magnetic field with adjacent, magnetisable components (e.g. steel parts)

In order to guarantee perfect functioning, it is recommended to maintain a distance of at least 25 to 30 mm between magnetic sensor and magnetisable components. The function is indeed possible with a smaller distance but this depends highly on the individual circumstances for fitting. Thus ordinary steel bolts can also normally be used for fastening the cylinder. In borderline cases, screws of non-magnetisable steel (e.g. VA screws) can cause an improvement in the magnetic field.

### Influencing the magnetic field with adjacent magnetic sensors

If several cylinders with magnetic sensors are installed directly adjacent to one another, the magnetic sensors can have a reciprocal influence and malfunctions occur. Troubles of functioning can occur. A magnetisable steel sheet can help, placed between the cylinders or magnetic sensors as a shield.

### Demands on voltage supply

Frequently a simple two-phase bridge connection is used, as it is often used for contactor or relay control. Such a connection is not suitable for voltage supply of position monitorings! In figure 1 the progression of the output voltage of such a connection is represented over time. You can recognise that the voltage obtains temporarily the zero point. An electronic system could not function correctly in this case. In addition, you see that the peak values of the voltage exceed considerably their mean value.

The electronic can be destroyed by too high peak spikes.

Usually voltmeters or multimeters measure the mean value of the voltage. The peak value is increased approx. by factor 1.5. A measure of quality of a d.c. voltage is the residual ripple. An ideal d.c.voltage, as it is generated by a battery, has a residual ripple of 0%, the above described two-phase bridge connection obtains a residual ripple of 48%. 10% is admissible!

The residual ripple can be improved by topping a sufficiently-designed capacitor. This is called “smoothing” of the voltage. But thereby the mean value of the d.c. voltage is increased. Therefore it is recommended to provide a “smoothed” voltage supply when planning an installation.

**Incorrect:** **Correct:**

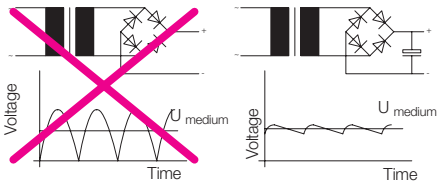



Figure 1: Generation of supply voltage

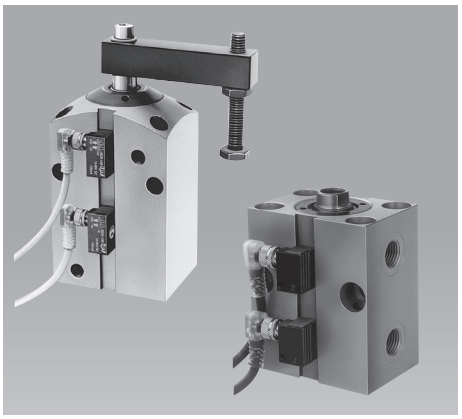
### Description / Function

Electronic magnetic sensors allow position monitoring of the pistons of cylinders with non-magnetisable housings (aluminium or bronze). An annular permanent magnet is fixed to the piston, and its magnetic field is detected by an electronic magnetic sensor.
The magnetic sensors are fixed outside in the lengthwise slots of the cylinder body. The switching points are adjustable by displacement of the magnetic sensors in the lengthwise slots of the body.

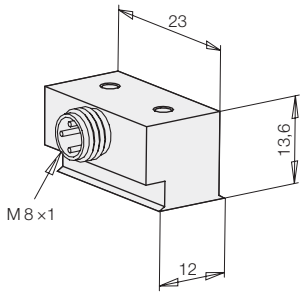
### Spikes

A danger for position monitorings are elements with high inductivity, which are operated with the same voltage supply as the position monitorings. Such elements, as e.g. solenoid valves, contactors and motors can generate high and high-energy peak spikes, which are transmitted by the voltage supply to the position monitorings.
Therefore critical elements have to be screened. For this purpose recovery diodes or RC-networks are indicated, which are mounted directly at the sources of interference. An alternative solution is the separated voltage supply for position monitorings and critical consumers.

### Application examples



### Dimensions



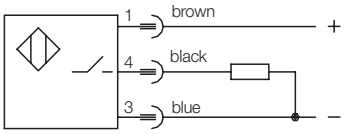

### Electric connection

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

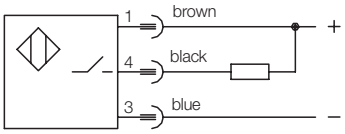
### Switching hysteresis of approx. 3 mm and path

This has to be considered already when adjusting the magnetic sensors. For static pistons, the magnetic sensor must always be pushed forward to the piston from the opposite direction.
Magnetic sensors with short path are available on request.

### Connecting scheme




**pnp = plus switching**

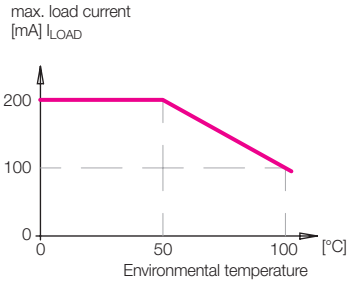



**npn = minus switching**

### Technical data

| | | |
|---|---|---|
| Body material | aluminium black anodised | |
| Voltage | 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 | |
| Environmental temperature | –25 °C up to +100 °C | |
| Port | M8 plug | |
| LED | no | |
| Output (interlock) | **pnp** | **npn** |
| **Part no. (1 off)** | **3829234** | **3829240** |

### Temperature curve




### Maximum operating temperature

- Magnetic sensor +100 °C
- Permanent magnet: +100 °C
- Connecting cable with right angle plug: +90 °C

Magnetic sensors for an operating temperature up to 120°C are available on request.

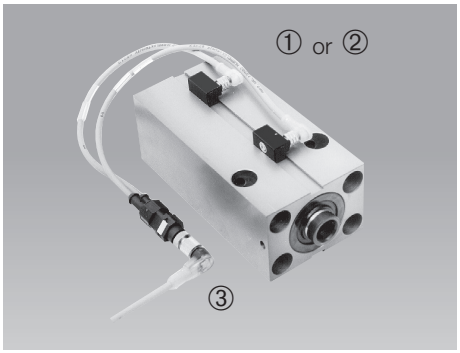
## Connecting cable

### With angle plug M8

### Technical data

| | | |
|---|---|---|
| Port | M8 plug, knee-type | |
| Voltage | 10 – 30 V DC | |
| Protection as per DIN 40050 | IP 67 | |
| Environmental temperature | – 25 °C to +90 °C | |
| LED: Voltage<br>Function display | (green)<br>(yellow) | |
| Cable, length of cable | PUR, 5 m | |
| Output (interlock) | **pnp** | **npn** |
| **Part no. (1 off)** | **3829099** | **3829124** |

### Y-distributor pnp




The Y-distributor allows connection of two proximity switches or magnetic sensors at a four-pole plug-type connector M12. For each cylinder only one cable has to be placed.
For easier adjustment of the switching points the right angle plugs M8 are equipped with two LEDs each, which indicate the operating voltage and the switching position. Plug-type connector M12 is equipped with three LEDs.

① Y-distributor with cable 0.3 m
with 2 right angle plugs M8 with 2 LED each and 1 plug-type connector M12 with 3 LED
**Part no. 3829 118**

② Y-distributor with cable 0.3 m
with 2 straight plugs M8 without LED and 1 plug-type connector M12 with 3 LED
**Part no. 3829 125**

③ Right angle plug M12 with 3 LED
5 m 4-wire cable for common connection of the Y-distributor
**Part no. 3829 106**

### With pnp angle plug M12


① Right angle plug M12 with 2 LED
3 m 3-wire cable for common connection of the Y-distributor
**Part no. 3829049**

② Straight plug M12 without LED
5 m 3-wire cable for common connection of the Y-distributor
**Part no. 3829078**

### Technical data

| | |
|---|---|
| Voltage | 10 – 30 V DC |
| Protection as per DIN 40050 | IP 67 |
| Environmental temperature | – 25 °C to +90 °C |
| LED: Voltage<br>Function display | (green)<br>(yellow) |