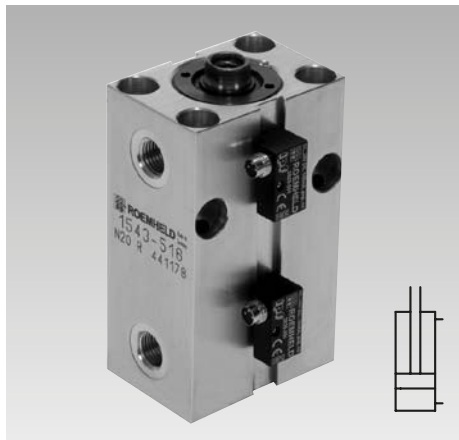




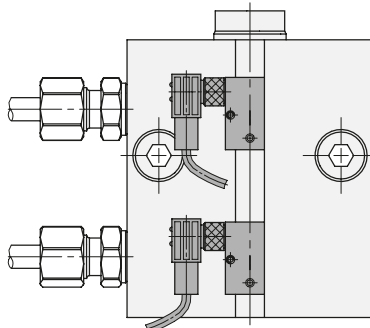
**Block Cylinder**

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

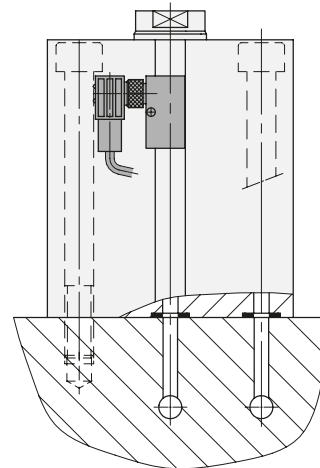


**Oil supply**

Versions with pipe thread  
see page 2



Manifold mounting with O-ring sealing  
see page 3



**Application**

Double-acting block cylinders with position monitoring are particularly suitable for automated installations, time and cycle-dependent clamping and unclamping.

**Description**

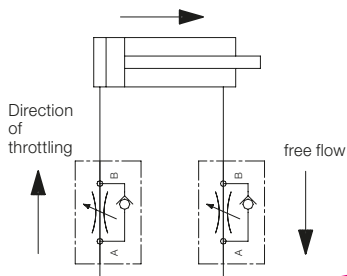
The position monitoring supplies the required information about the position of the piston. Monitoring is made by electronic sensors which detect the magnetic field of the magnetic piston. The switching points can be continuously adjusted by displacement of the switches in the slots.

**Advantages**

- Compact design
- Easy adjustment of switching point positions
- Same dimensions as the block cylinders as per data sheet B 1.5094, except for total length.
- Diverse mounting possibilities
- 3 standard stroke lengths

**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.



**Important notes**

**Please only use fittings with soft seals,** see page 4.

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.

Piston material: case-hardening steel, hardened  
Cylinder body material: anodized aluminium alloy

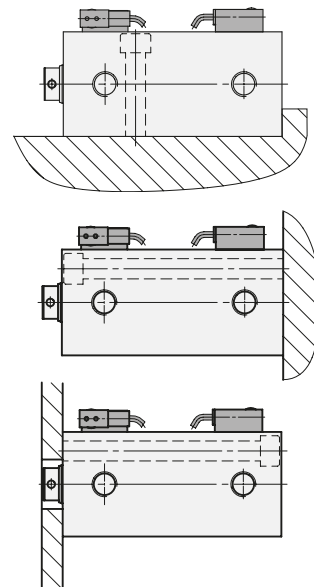
**Corrosion-resistant version is available on request**

**For part-nos. see page 2 bottom**

Max. cylinder temperature see page 4

Operating conditions, tolerances and other data see data sheet A 0.100.

**Fixing possibilities**

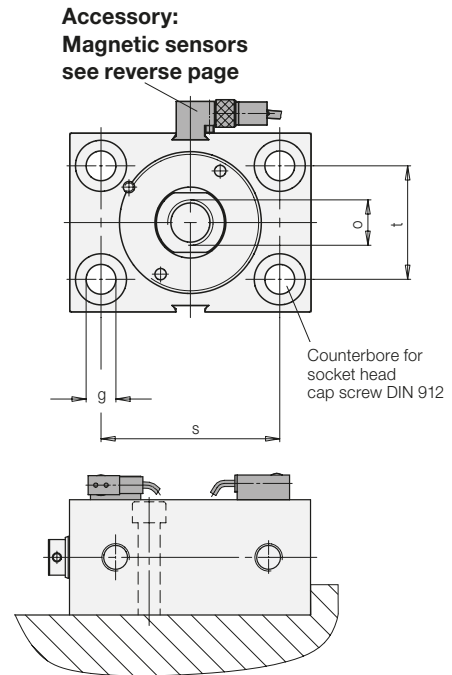
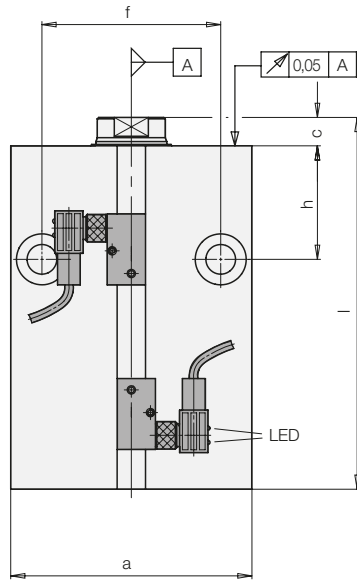
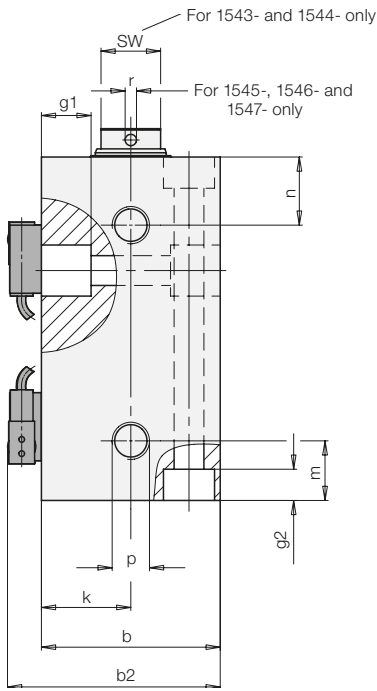


**Application example of mould construction**



Variants available:  
 ◆ Shorter stroke  
 ◆ Keyway  
 ◆ Internal thread instead of mounting holes in the body  
 Corrosion-resistant version available

## Versions with pipe thread



Cylinders must be backed up for operating pressures exceeding 160 bar.

|                             |                                      |          |          |          |          |          |
|-----------------------------|--------------------------------------|----------|----------|----------|----------|----------|
| Piston Ø D                  | [mm]                                 | 25       | 32       | 40       | 50       | 63       |
| Rod Ø d                     | [mm]                                 | 16       | 20       | 25       | 32       | 40       |
| Force to push               | at 100 bar [kN]                      | 4.9      | 8.0      | 12.5     | 19.6     | 31.2     |
|                             | at 350 bar [kN]                      | 17.1     | 28.1     | 44       | 68.7     | 109.2    |
| Force to pull               | at 100 bar [kN]                      | 2.9      | 4.9      | 7.7      | 11.6     | 18.6     |
|                             | at 350 bar [kN]                      | 10.1     | 17.1     | 26.8     | 40.5     | 65.1     |
| Oil volume per 10 mm stroke | Stroke to extend [cm <sup>3</sup> ]  | 4.91     | 8.05     | 12.56    | 19.63    | 31.17    |
|                             | Stroke to retract [cm <sup>3</sup> ] | 2.9      | 4.9      | 7.7      | 11.6     | 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       |
| 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       |
| 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]                                 | M10 x 15 | M12 x 15 | M16 x 25 | M20 x 30 | M27 x 40 |
| 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       |
| SW                          | [mm]                                 | 13       | 17       | —        | —        | —        |

|  |             |                 |                 |                 |                 |                 |
|--|-------------|-----------------|-----------------|-----------------|-----------------|-----------------|
| <b>Stroke ±1</b>                           | <b>[mm]</b> | <b>20</b>       | <b>25</b>       | <b>25</b>       | <b>25</b>       | <b>30</b>       |
| Total length l ±1                          | [mm]        | 85              | 100             | 106             | 117             | 135             |
| Weight                                     | [kg]        | 0.63            | 1.02            | 1.4             | 2.04            | 4.0             |
| <b>Part no. (without magnetic sensors)</b> |             | <b>1543-513</b> | <b>1544-513</b> | <b>1545-513</b> | <b>1546-513</b> | <b>1547-513</b> |

|  |             |                 |                 |                 |                 |                 |
|--|-------------|-----------------|-----------------|-----------------|-----------------|-----------------|
| <b>Stroke ±1</b>                           | <b>[mm]</b> | <b>50</b>       | <b>50</b>       | <b>50</b>       | <b>50</b>       | <b>63</b>       |
| Total length l ±1                          | [mm]        | 115             | 125             | 131             | 142             | 168             |
| Weight                                     | [kg]        | 0.85            | 1.28            | 1.90            | 2.90            | 5.05            |
| <b>Part no. (without magnetic sensors)</b> |             | <b>1543-516</b> | <b>1544-516</b> | <b>1545-516</b> | <b>1546-516</b> | <b>1547-516</b> |

|  |             |                 |                 |                 |                 |                 |
|--|-------------|-----------------|-----------------|-----------------|-----------------|-----------------|
| <b>Stroke ±1</b>                           | <b>[mm]</b> | <b>100</b>      | <b>100</b>      | <b>100</b>      | <b>100</b>      | <b>100</b>      |
| Total length l ±1                          | [mm]        | 165             | 175             | 181             | 192             | 205             |
| Weight                                     | [kg]        | 1.20            | 1.81            | 3.00            | 4.60            | 6.22            |
| <b>Part no. (without magnetic sensors)</b> |             | <b>1543-519</b> | <b>1544-519</b> | <b>1545-519</b> | <b>1546-519</b> | <b>1547-519</b> |

**Part no.**  
154X-4XX  
154X-X2X

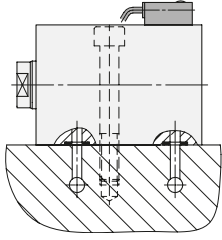
**Version**  
corrosion-resistant  
FKM seals see chart page 4

\* Type 1547 without counterbores

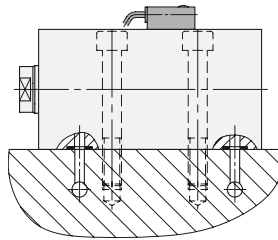
# Manifold mounting with O-ring sealing

Oil supply and O-ring sealing at:

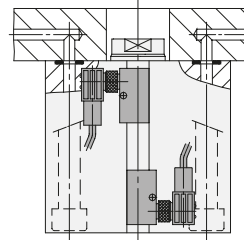
Broad side  
Stroke 20 – 30 mm  
**K**



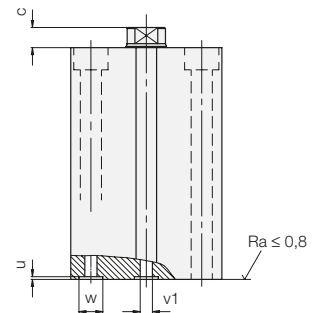
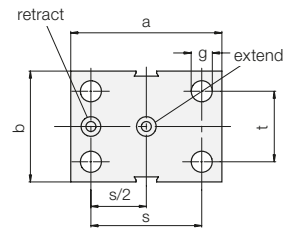
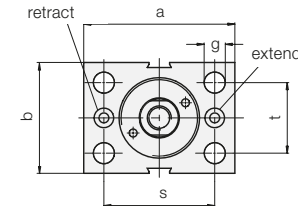
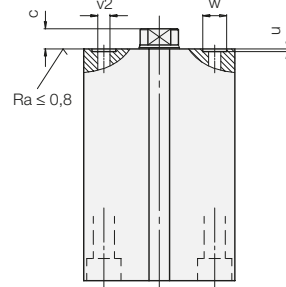
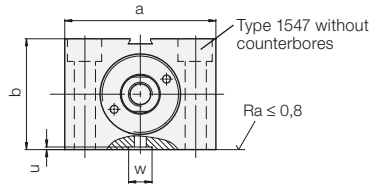
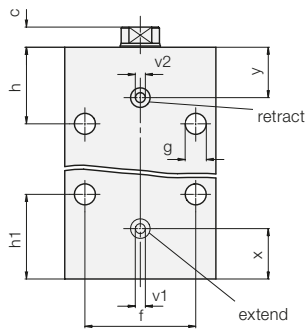
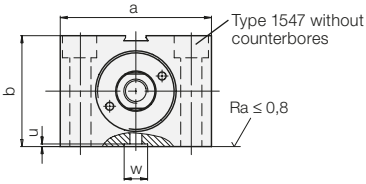
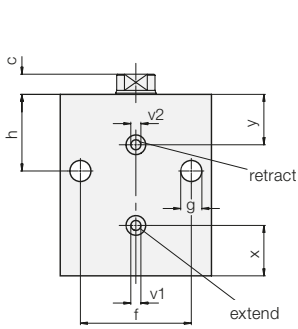
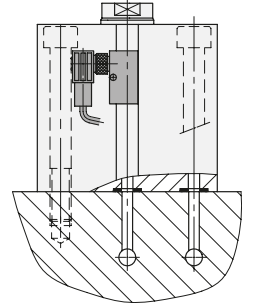
Broad side  
Stroke 50 – 100 mm  
**L**



Rod side  
**S**



Bottom side  
**B**



| Block Cylinder               |      | 1543-XXX        | 1544-XXX        | 1545-XXX        | 1546-XXX        | 1547-XXX        |
|------------------------------|------|-----------------|-----------------|-----------------|-----------------|-----------------|
| Piston Ø                     | [mm] | 25              | 32              | 40              | 50              | 63              |
| Rod Ø                        | [mm] | 16              | 20              | 25              | 32              | 40              |
| a                            | [mm] | 65              | 75              | 85              | 100             | 125             |
| b                            | [mm] | 45              | 55              | 63              | 75              | 95              |
| c                            | [mm] | 7               | 10              | 10              | 10              | 14              |
| f                            | [mm] | 50              | 55              | 63              | 76              | 95              |
| g                            | [mm] | 8.5             | 10.5            | 10.5            | 13              | 17              |
| h                            | [mm] | 33              | 38              | 40              | 44              | 50              |
| h1                           | [mm] | 40              | 42              | 44              | 47              | 60              |
| 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              |
| Dimensions O-ring            | [mm] | 7 x 1.5         | 8 x 1.5         | 8 x 1.5         | 8 x 1.5         | 12.42 x 1.78    |
| <b>Part no. spare O-ring</b> |      | <b>3000-342</b> | <b>3000-343</b> | <b>3000-343</b> | <b>3000-343</b> | <b>3000-335</b> |
| <b>Part no. O-ring (FKM)</b> |      | <b>3001-077</b> | <b>3000-275</b> | <b>3000-275</b> | <b>3000-275</b> | <b>3001-152</b> |

O-rings are included in delivery.

Other dimensions see page 2.

**Order:**

Please add the identification letters **K, L, S, or B** to the Part no. of the required block cylinder.

**Example of ordering:**

Double-acting block cylinder 1545-513 with oil supply at the broad side  
**Part no. 1545-513 K**

## Accessory: Magnetic sensors

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

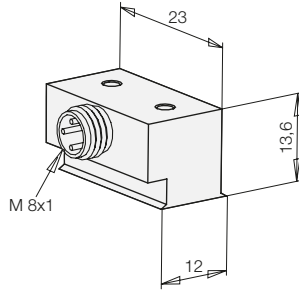
- Indifference to shock and vibration
- Bounce-free output signal
- Only one switching point
- Wear resistant
- Protection against reverse battery
- Protected against short circuits

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

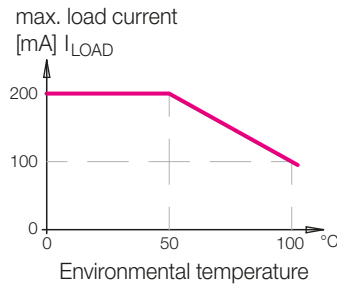
Minimum distance of the switching points: 6 mm.

**For further information about voltage supply for position controls see data sheet G 2.410.**

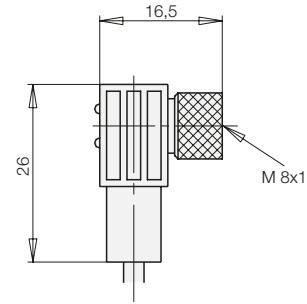
### Electronic magnetic sensor



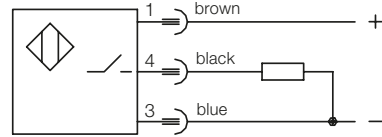
### Temperature curve



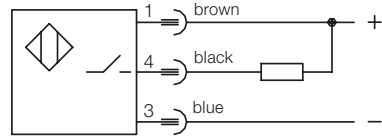
### Connecting cable with right angle plug



### Connecting scheme



pnp (+) switching



npn (-) switching

### Technical data

Cylinder body material

Voltage

Residual ripple

Current load  $I_{LOAD}$

Current consumption

Voltage drop (max. load)

Protected against short circuits

Protection against reverse battery

Switching frequency

Switching hysteresis

Protection as per DIN 40050

Environmental temperature

Plug connection

LED

Cable, length of cable

Output, interlock

**Part no. (1 off)**

### Electronic magnetic sensor

aluminium black lacquered

10 – 30 V DC

max. 10%

200 mA – up to 50 °C

150 mA – at 75 °C

100 mA – at 100 °C

< 15 mA

< 2 V

yes

installed

1 kHz

3 mm

IP 67

–25 °C up to +100 °C

M8 plug

no

### Connecting cable with right angle plug

10 – 30 V DC

IP 67

–25 °C up to +90 °C

M8 plug

Voltage (green)

Function display (yellow)

PUR, 5 m

**pnp**

**3829-234**

**npn**

**3829-240**

**pnp**

**3829-099**

**npn**

**3829-124**

### Note:

Electronic magnetic sensors for an environmental temperature of +120 °C or with short path are available on request.

### 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

### 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 |

Type L

D 8 L ED for tube Ø 8 G 1/4 250 bar

D 15 L ED for tube Ø 15 G 1/2 250 bar

**Part no.**

**9208-131**

**9215-033**

Type S

D 8 S ED for tube Ø 8 G 1/4 500 bar

D 16 S ED for tube Ø 16 G 1/2 500 bar

**Part no.**

**9208-132**

**9216-021**



Other fittings see data sheet F 9.300.