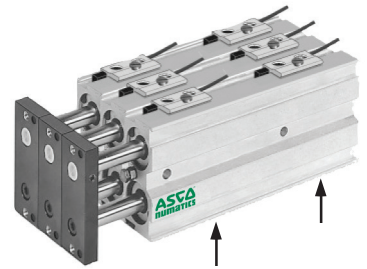


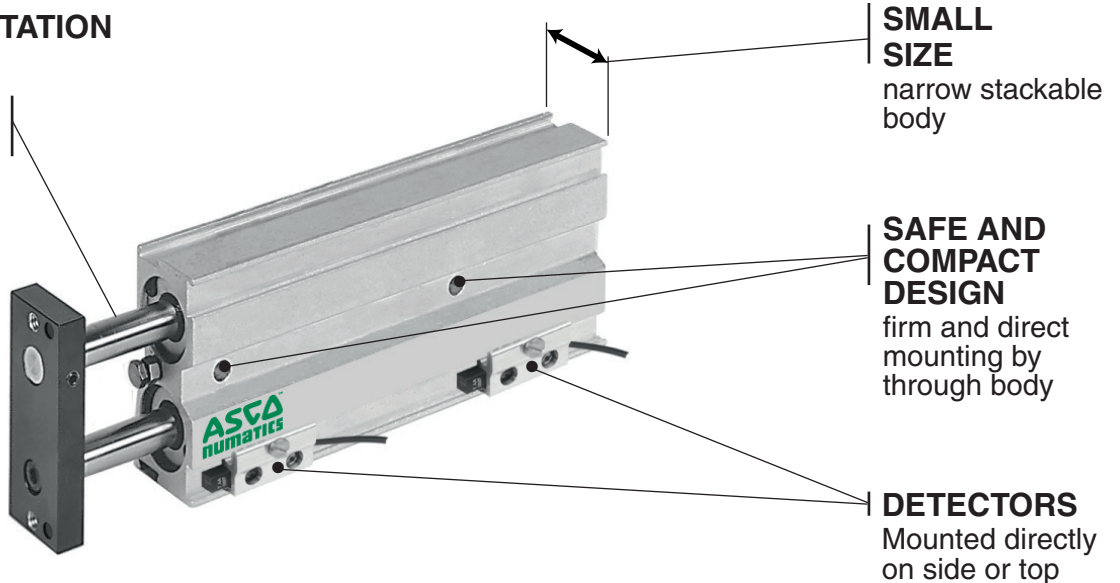
# TWIN ROD / TWIN PISTON AIR CYLINDERS WITH PLAIN OR BALL BEARINGS LINEAR GUIDE Types: P2L and P2B

- **INTEGRAL LINEAR AND ANTI-ROTATION GUIDES**
- **EASY MOUNTING**  
compact design, narrow body, stackable,  
ambidextrous, standard detector mountable in any  
position, adjustable stroke



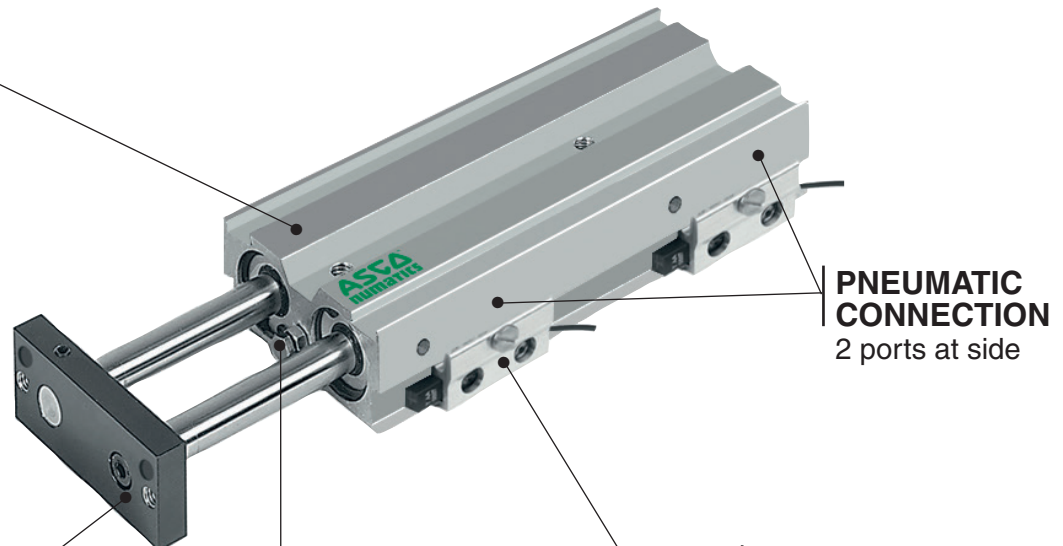
## RUGGED ANTI-ROTATION SYSTEM

by two integral rods in actuator, precision-machined



## HIGH PRECISION

with ball bearing linear guide version



## EASE OF INSTALLATION

integral flange with calibrated holes for precise adaptation load

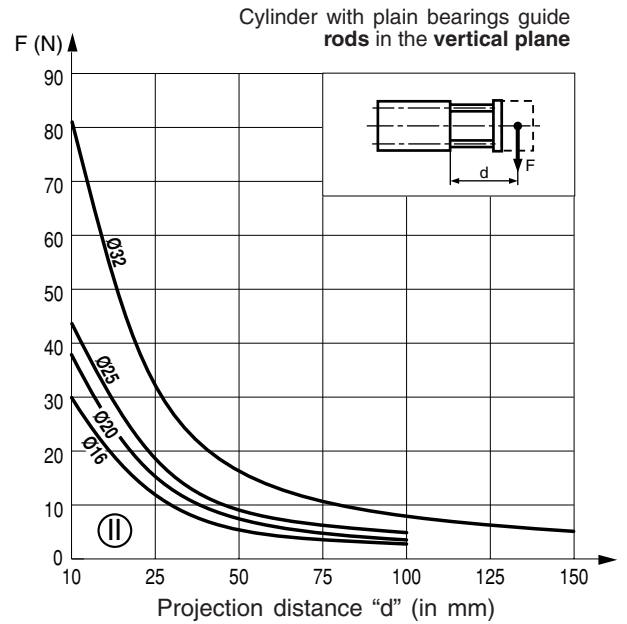
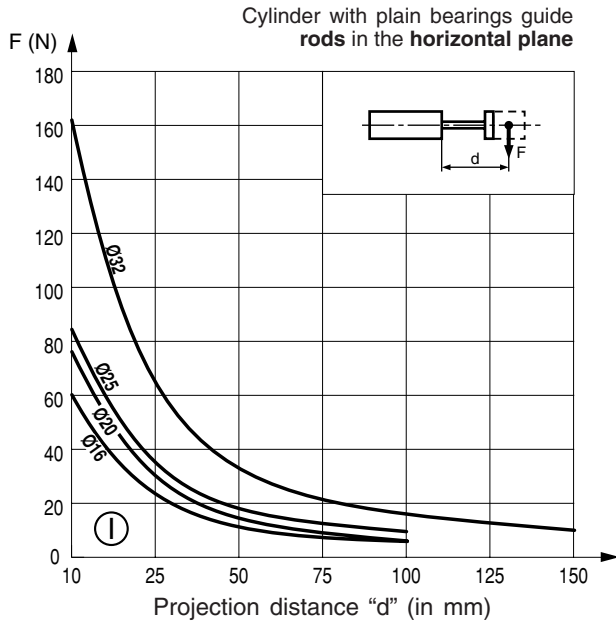
## QUIET AND USER FRIENDLY

adjustable stop with elastic cushioning reducing noise, adjustable stroke

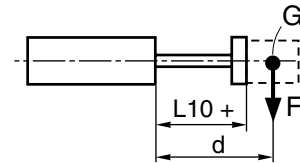
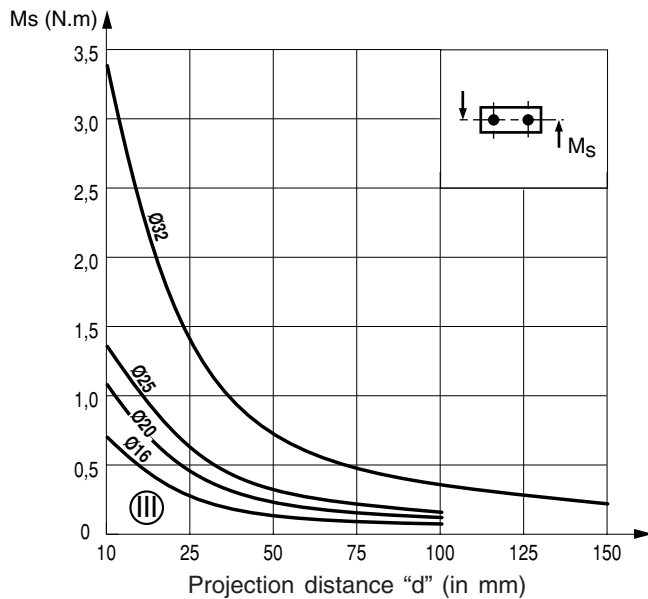
## POSITION MONITORING

by standard reed switch or electronic magnetic detectors "T" types (common to all cylinders)

● **MAXIMUM ADMISSIBLE LOAD "F" ON THE ROD END**



● **MAXIMUM ALLOWABLE MOMENTS "Ms" AT ROD END**

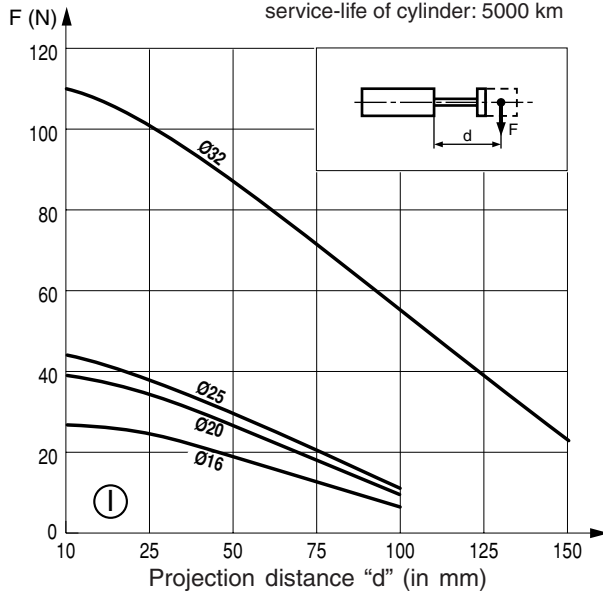


$d$  = the projection distance (in mm) corresponding to the dimension  $L10$  + the stroke length + the distance from the load centre of gravity ( $G$ ) to the mating surface of the cylinder flange

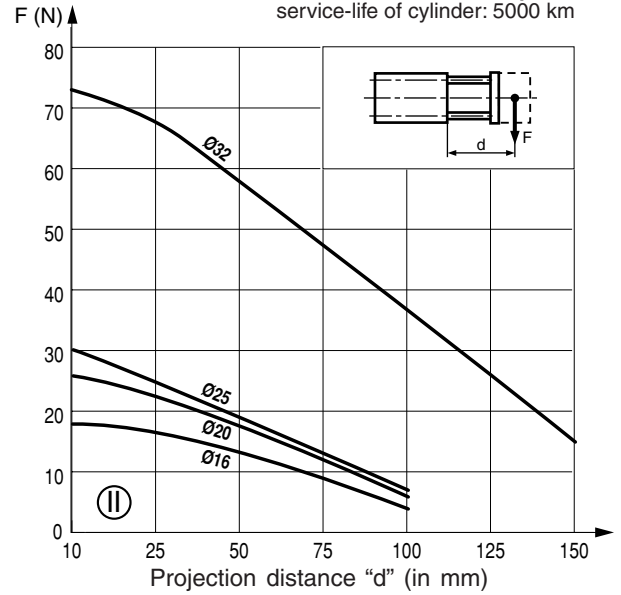
**Note:** the values in charts (I), (II) and (III) correspond to those in regular horizontal movement. In the event of vibration or jerky movement, **halve** the maximum allowable values.

● **MAXIMUM ADMISSIBLE LOAD "F" ON THE ROD END**

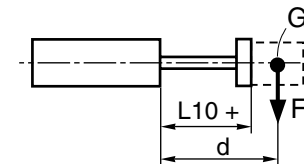
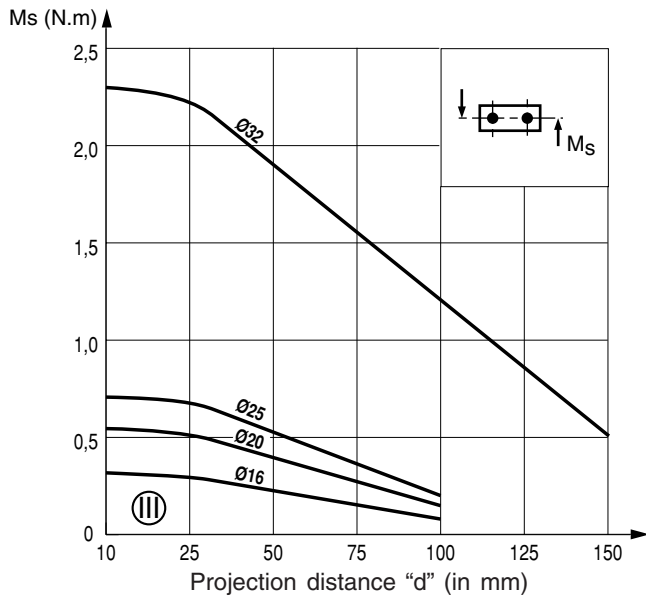
Cylinder with ball bearings guide rods in the **horizontal plane**  
service-life of cylinder: 5000 km



Cylinder with ball bearings guide rods in the **vertical plane**  
service-life of cylinder: 5000 km



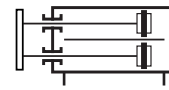
● **MAXIMUM ALLOWABLE MOMENTS "Ms" AT ROD END**



d = the projection distance (in mm) corresponding to the dimension L10 + the stroke length + the distance from the load centre of gravity (G) to the mating surface of the cylinder flange

**Note:** the values in charts (I), (II) and (III) correspond to those in regular horizontal movement. In the event of vibration or jerky movement, **halve** the maximum allowable values.

Whatever the stroke of the cylinder, its movement is only a small proportion of the travel (not more than 30 mm), it is necessary to reduce the maximum allowable torques and loads by multiplying the values taken from charts (I), (II) and (III) by coefficient 0.6. The curves allow for this reduction in performance.



## SPECIFICATION

|                     |   |
|---------------------|---|
| TYPE OF CYLINDER    | : double acting, double piston  |
| FLUID               | : air or neutral gas, filtered, lubricated or not   |
| PRESSURE            | : 2 to 7 bar  |
| AMBIENT TEMPERATURE | : + 5 °C, + 60 °C   |
| CUSHIONING          | : elastic   |
| MAXIMUM SPEED       | : 0,5 m/s   |
| MAX. STROKE         | : 100 mm (Ø16 ... 25) - 160 (Ø32)   |
| STROKE ADJUST RANGE | : nominal stroke +0 to -5 mm (retracted rods)   |
| POSITIONS CONTROL   | : with <a href="#">Reed switches</a> or <a href="#">electronic (magnetoresistant) detectors</a> |



## FORCE DEVELOPED BY CYLINDER

| Bore Ø (mm) | Rod Ø (mm) | Piston cross-section (cm <sup>2</sup> ) |      | Dynamic force developed (daN) as a function of input pressure (bar) |     |      |      |      |      |      |      |
|-------------|------------|---|------|---|-----|------|------|------|------|------|------|
|             |            |   |      | 1   |     | 3    |      | 5    |      | 7    |      |
|             |            |   |      | ●   | ○   | ●    | ○    | ●    | ○    | ●    | ○    |
| 16          | 8          | 4                                       | 3    | 3,4   | 2,5 | 11,3 | 8    | 16,7 | 13,6 | 26,4 | 18,6 |
| 20          | 10         | 6,3                                     | 4,7  | 5,6   | 4,3 | 18,2 | 13,8 | 27   | 23   | 40,8 | 32,3 |
| 25          | 12         | 9,8                                     | 7,55 | 8,5   | 6,5 | 27   | 20,9 | 45,1 | 36,4 | 66,6 | 50,4 |
| 32          | 16         | 16,1                                    | 12,1 | 13,1  | 10  | 45,2 | 32,8 | 77   | 58,2 | 109  | 79,5 |

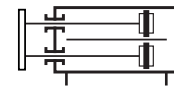
- Force developed with rod out (rod extending)
- Force developed with rod returned (rod retracting)

## CHOICE OF EQUIPMENT

| Bore Ø (mm) | CODES (1)               | RÉFÉRENCES (1) (2)            | Standard stroke (mm) |    |    |    |    |     |     | Ø Connection |       |
|-------------|-------------------------|-------------------------------|----------------------|----|----|----|----|-----|-----|--------------|-------|
|             |                         |                               | 10                   | 25 | 40 | 50 | 80 | 100 | 125 |              | 160   |
| 16          | 44750034 <sup>(1)</sup> | P2L 16 NA <sup>(1)</sup> - DM | ●                    | ●  | ●  | ●  | ●  | ●   |     |              | M5    |
| 20          | 44750035 <sup>(1)</sup> | P2L 20 NA <sup>(1)</sup> - DM | ●                    | ●  | ●  | ●  | ●  | ●   |     |              | M5    |
| 25          | 44750036 <sup>(1)</sup> | P2L 25 NA <sup>(1)</sup> - DM | ●                    | ●  | ●  | ●  | ●  | ●   |     |              | M5    |
| 32          | 44750037 <sup>(1)</sup> | P2L 32 NA <sup>(1)</sup> - DM | ●                    | ●  | ●  | ●  | ●  | ●   | ●   | ●            | G 1/8 |

- (1) State the stroke (in mm) preferably selecting the above standard strokes. Other strokes on request. Max. strokes capability: Ø 16-20-25: 100 mm, Ø 32 : 160 mm  
 (2) **Magnetic detectors are to be ordered separately**

## MOUNTING DETECTORS ON P2L (see following page)



## SPECIFICATION

|                     |  |
|---------------------|--|
| TYPE OF CYLINDER    | : double acting, double piston   |
| FLUID               | : air or neutral gas, filtered, lubricated or not  |
| PRESSURE            | : 2 to 7 bar   |
| AMBIENT TEMPERATURE | : + 5 °C, + 60 °C  |
| CUSHIONING          | : elastic  |
| MAXIMUM SPEED       | : 0,5 m/s  |
| MAX. STROKE         | : 100 mm (Ø16 ... 25) - 160 (Ø32)  |
| STROKE ADJUST RANGE | : nominal stroke +0 to -5 mm (retracted rods)  |
| POSITIONS CONTROL   | : with <a href="#">Reed switches</a> or <a href="#">electronic (magneto-resistant)</a> detectors |



## FORCE DEVELOPED BY CYLINDER

| Bore Ø (mm) | Rod Ø (mm) | Piston cross-section (cm²) |      | Dynamic force developed (daN) as a function of input pressure (bar) |     |      |      |      |      |      |      |
|-------------|------------|----------------------------|------|---|-----|------|------|------|------|------|------|
|             |            |                            |      | 1   |     | 3    |      | 5    |      | 7    |      |
|             |            |                            |      | ●   | ○   | ●    | ○    | ●    | ○    | ●    | ○    |
| 16          | 8          | 4                          | 3    | 3,4   | 2,5 | 11,3 | 8    | 16,7 | 13,6 | 26,4 | 18,6 |
| 20          | 10         | 6,3                        | 4,7  | 5,6   | 4,3 | 18,2 | 13,8 | 27   | 23   | 40,8 | 32,3 |
| 25          | 12         | 9,8                        | 7,55 | 8,5   | 6,5 | 27   | 20,9 | 45,1 | 36,4 | 66,6 | 50,4 |
| 32          | 16         | 16,1                       | 12,1 | 13,1  | 10  | 45,2 | 32,8 | 77   | 58,2 | 109  | 79,5 |

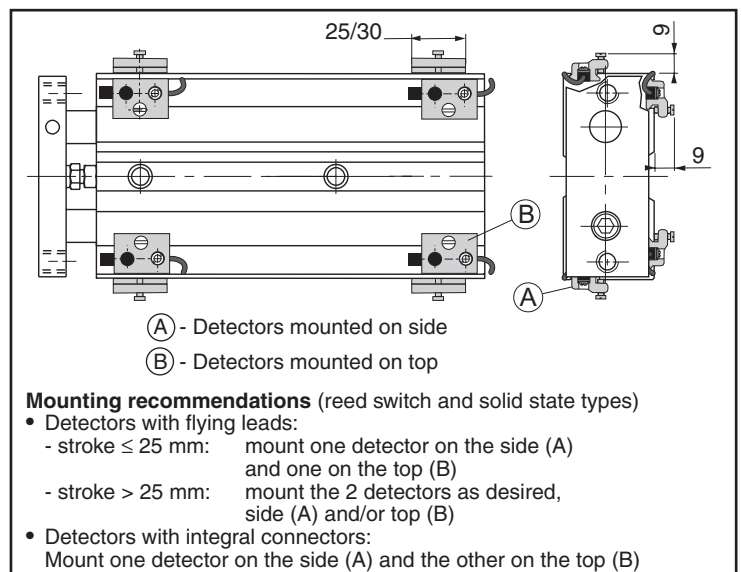
- Force developed with rod out (rod extending)
- Force developed with rod returned (rod retracting)

## CHOICE OF EQUIPMENT

| Bore Ø (mm) | CODES (1)               | RÉFÉRENCES (1) (2)            | Standard stroke (mm) |    |    |    |    |     |     |     | Ø Connection |       |
|-------------|-------------------------|-------------------------------|----------------------|----|----|----|----|-----|-----|-----|--------------|-------|
|             |                         |                               | 10                   | 25 | 40 | 50 | 80 | 100 | 125 | 160 |              |       |
| 16          | 44750030 <sup>(1)</sup> | P2B 16 NA <sup>(1)</sup> - DM | ●                    | ●  | ●  | ●  | ●  | ●   | ●   |     |              | M5    |
| 20          | 44750031 <sup>(1)</sup> | P2B 20 NA <sup>(1)</sup> - DM | ●                    | ●  | ●  | ●  | ●  | ●   | ●   |     |              | M5    |
| 25          | 44750032 <sup>(1)</sup> | P2B 25 NA <sup>(1)</sup> - DM | ●                    | ●  | ●  | ●  | ●  | ●   | ●   |     |              | M5    |
| 32          | 44750033 <sup>(1)</sup> | P2B 32 NA <sup>(1)</sup> - DM | ●                    | ●  | ●  | ●  | ●  | ●   | ●   | ●   | ●            | G 1/8 |

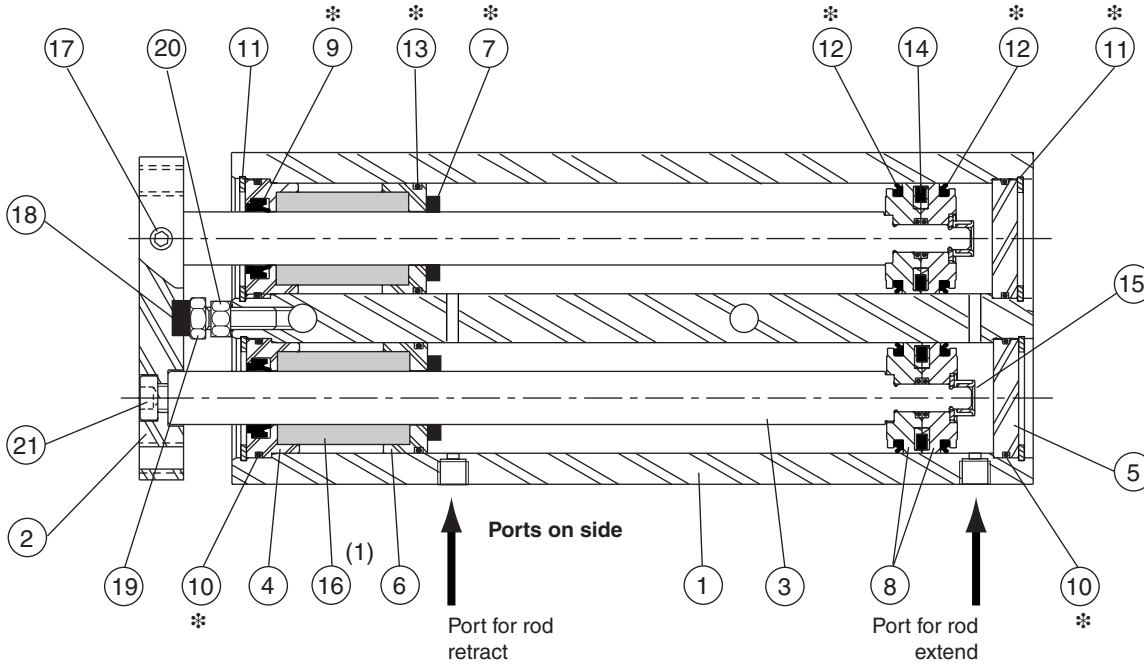
- (1) State the stroke (in mm) preferably selecting the above standard strokes. Other strokes on request. Max. strokes capability: Ø 16-20-25: 100 mm, Ø 32 : 160 mm  
 (2) Magnetic detectors are to be ordered separately

## MOUNTING DETECTORS ON P2L - P2B



**CONSTRUCTION - LOCATION OF AIR INLET PORTS**

• The air inlet ports are located on the side of the cylinder



| Item | Description         | Material                  |
|------|---------------------|---------------------------|
| 1    | Body                | Aluminium alloy           |
| 2    | Plate               | Aluminium alloy           |
| 3    | Piston rod          | Bearing steel hard chrome |
| 4    | Inner guide support | Aluminium alloy           |
| 5    | End plug            | Aluminium alloy           |
| 6    | Inner guide support | Aluminium alloy           |
| 7    | Elastic stop        | TPE*                      |
| 8    | Piston              | POM (polyacetal)          |
| 9    | Rod seal            | PUR (polyurethane)        |
| 10   | O-ring              | NBR (nitrile)             |
| 11   | Circlip             | Steel                     |

| Item              | Description          | Material                      |
|-------------------|----------------------|-------------------------------|
| 12                | Piston seal          | PUR (polyurethane)            |
| 13                | O-ring               | NBR (nitrile)                 |
| 14                | Magnet               | Ferrite                       |
| 15                | Nut                  | Steel                         |
| 16 <sup>(1)</sup> | Linear motion guide  | Steel (balls) / bronze (bush) |
| 17                | Hexsocket head screw | Steel                         |
| 18                | Elastic stop         | NBR (nitrile)                 |
| 19                | Adjustable stop      | Steel                         |
| 20                | Back-nut             | Steel                         |
| 21                | Hexsocket head screw | Steel                         |

(1) Plain bearing (P2L) or ball bearing (P2B) linear motion guides

\* (thermoplastic polyester elastomer)

**SPARE PARTS KITS**

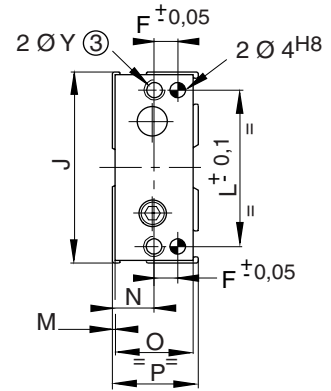
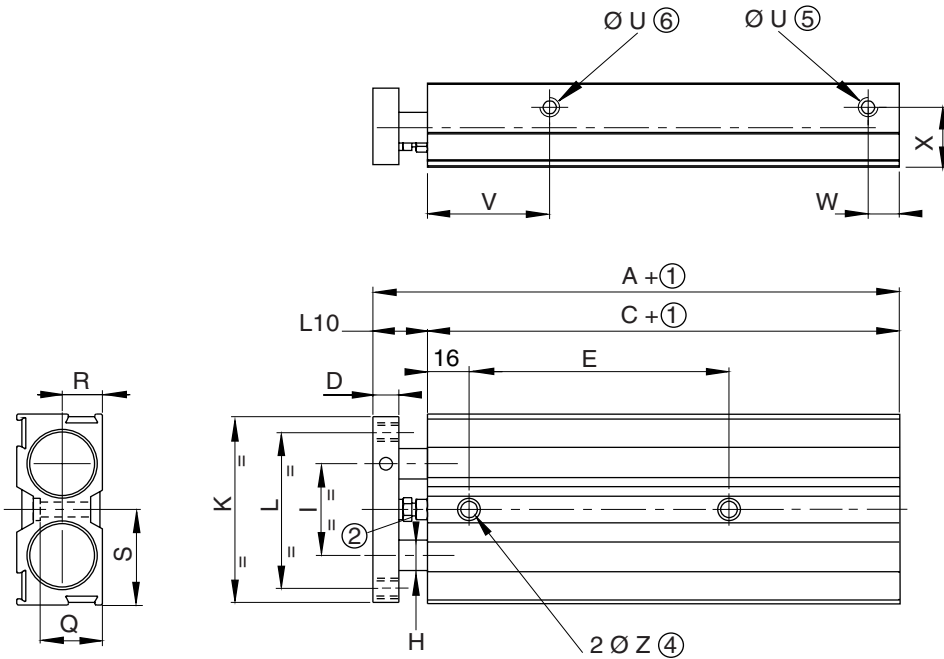
| CYLINDER BORE | Cylinder type P2B - P2L | CODES<br>(items marked with a *: 7 and 9 to 13) |
|---------------|-------------------------|---|
| 16            | Designed for detector   | 97802175  |
| 20            | Designed for detector   | 97802176  |
| 25            | Designed for detector   | 97802177  |
| 32            | Designed for detector   | 97802178  |

NOTE: For best results, use grease supplied in each kit. Supplementary tube available (11 cm<sup>3</sup>) on request, code: 97802100

**DIMENSIONS**

- ① : + 1 stroke (rod retracted)  
+ 2 strokes (rod extended)
- ② : Stroke adjustment
- ③ : Through hole
- ④ : Through hole  
- counterbore dia./depth (16 mm dia.)
- ⑤ : Ports for extension
- ⑥ : Ports for retraction
- ⊕ : 2 holes Ø 4 H8 for centering pins

Mounting of position detectors:  
see below



(mm)

| bore<br>(mm) | DIMENSIONS (mm)            |                            |    |                            |      |    |     |     |     |     |     |     |    |    |    |    | Screws recommended<br>for the cylinder<br>installation |   |
|--------------|----------------------------|----------------------------|----|----------------------------|------|----|-----|-----|-----|-----|-----|-----|----|----|----|----|--|---|
|              | A<br>(depending on stroke) | C<br>(depending on stroke) | D  | E (depending on stroke) ** |      |    |     |     |     |     |     | F   | H  | I  | J  | K  |  | L   |
|              |                            |                            |    | 10                         | 25   | 40 | 50  | 80  | 100 | 125 | 160 |     |    |    |    |    |  |   |
| 16           | 85,7                       | 67,2                       | 8  | 34,5                       | 34,5 | 42 | 47  | 75  | 85  | -   | -   | 6   | 8  | 24 | 52 | 50 | 42   | Ø 5 - Ø7,5 / 3,5<br>Ø 5,4<br>Ø 5,4<br>Ø 6,4 |
| 20           | 96,2                       | 77,2                       | 8  | 51                         | 38,5 | 46 | 51  | 81  | 91  | -   | -   | 7,5 | 10 | 30 | 63 | 61 | 52   |   |
| 25           | 101                        | 80                         | 10 | 57                         | 44,5 | 52 | 57  | 90  | 100 | -   | -   | 9   | 12 | 36 | 75 | 73 | 64   |   |
| 32           | 116,9                      | 92,1                       | 12 | 60                         | 75   | 90 | 100 | 130 | 150 | 175 | 210 | 11  | 16 | 44 | 98 | 88 | 72   |   |

| bore<br>(mm) | L10  | M | N    | O  | P    | Q    | R    | S    | U    | V    | W  | X    | Y  | Z (4)                                       |
|--------------|------|---|------|----|------|------|------|------|------|------|----|------|----|---|
| 16           | 18,5 | 1 | 10,5 | 19 | 24,5 | 16,5 | 10,5 | 26   | M5   | 37,5 | 10 | 17   | M5 | Ø 5 - Ø7,5 / 3,5<br>Ø 5,4<br>Ø 5,4<br>Ø 6,4 |
| 20           | 19   | 1 | 13   | 24 | 28   | 20,5 | 12,5 | 31,5 | M5   | 46   | 13 | 18,5 | M5 |   |
| 25           | 21   | 1 | 16   | 30 | 33   | 26,5 | 15,5 | 37,5 | M5   | 47   | 11 | 23,5 | M6 |   |
| 32           | 24,8 | 1 | 20   | 38 | 40   | 33,5 | 19,5 | 49   | G1/8 | 56,5 | 13 | 30   | M6 |   |

\*\* Dimensions for P2L/P2B with non-standard strokes.

| bore<br>(mm) | E (depending on stroke) |           |           |           |             |
|--------------|-------------------------|-----------|-----------|-----------|-------------|
|              | (0...11)                | (12...24) | (26...79) | (81...99) | (101...159) |
| 16           | 34,5                    | 47        | 22 + (8)  | 35 + (8)  | -           |
| 20           | 38,5                    | 51        | 26 + (8)  | 41 + (8)  | -           |
| 25           | 44,5                    | 57        | 32 + (8)  | 50 + (8)  | -           |
| 32           | 50 + (9)                | 50 + (9)  | 50 + (9)  | 50 + (9)  | 50 + (9)    |

(8) : + 1/2 stroke

(9) : + stroke

**WEIGHTS**

(kg)

| bore<br>(mm) | STROKE (mm) |       |       |       |       |       |       |       |
|--------------|-------------|-------|-------|-------|-------|-------|-------|-------|
|              | 10          | 25    | 40    | 50    | 80    | 100   | 125   | 160   |
| 16           | 0,280       | 0,320 | 0,360 | 0,380 | 0,460 | 0,510 | -     | -     |
| 20           | 0,440       | 0,490 | 0,540 | 0,580 | 0,690 | 0,760 | -     | -     |
| 25           | 0,660       | 0,740 | 0,810 | 0,860 | 1,020 | 1,120 | -     | -     |
| 32           | 1,160       | 1,280 | 1,400 | 1,480 | 1,720 | 1,880 | 2,080 | 2,360 |

