

# Actuators

## Cartridge Cylinders

Ø 6-16 mm



### CA - CAF Series

Pg. 15.3

## Mini Cylinders ISO 6432

Ø 8-25 mm



### Mini Series

Pg. 15.5

## Mini Stainless Steel ISO 6432

Ø 16-25 mm



### Mini Stainless Steel Series

Pg. 15.13

## Limited Space

Ø 32-63 mm



### A95 Series

Pg. 15.16

## Compact Cylinders

Ø 12-100 mm



### Q Series

Pg. 15.23

## ISO 15552 Cylinders

Ø 32-125 mm



### L Series

Pg. 15.36

## ISO 6431 Cylinders

Ø 160-320 mm



### E Series

Pg. 15.43

## ISO 15552 Cylinders

Ø 32-125 mm



### X Series

Pg. 15.45

## Stainless Steel ISO 15552

Ø 32-125 mm



### V Series

Pg. 15.50

## Twin Rod Cylinders

Ø 32-100 mm



### NHA Series

Pg. 15.53

## Compact Cylinders

Ø 20-100 mm



### W Series

Pg. 15.57

## Cylinder Accessories

ISO 6431 - ISO 15552 - ISO 21287



Pg. 15.65

## Guided Units

ISO 15552 - Ø 12-25 mm  
ISO 6431 VDMA - Ø 32-100 mm



Pg. 15.74

## Rodless Cylinders

Ø 16-63 mm



### R Series

Pg. 15.83

## Rotary Actuators

Ø 32-100 mm



### XR Series

Pg. 15.94

## Magnetic Position Sensing Switches



### Sensor

Pg. 15.97

PNEUMATIC ACTUATORS



**Actuators**

**CARTRIDGE CYLINDERS**



**TECHNICAL CHARACTERISTICS**



**Component Parts and Materials**

- 1 Steel plated rod jam nut
- 2 Brass rod bushing
- 3 Steel spring
- 4 303 Stainless steel piston rod
- 5 Polyurethane rod seal
- 6 Nickel plated brass body
- 7 Zinc plated steel locking screw



**Reference Standard**

- 1907/2006 REACH ✓
- 2011/65/CE RoHS ✓
- PED 2014/68/UE
- SILICON FREE
- ATEX 2014/34/UE



**Pressures**

- 2 bar (0.2 MPa) / 29 psi
- 7 bar (0.7 MPa) / 101.5 psi



**Temperatures**

- 0 °C / 32 °F (-20 °C / -4 °F with dry air)
- + 80 °C / 176 °F



**Media**

Filtered and lubricated or non-lubricated compressed air



**Functions**

Single acting threaded and non-threaded piston rod.



**Bores**

6 - 10 - 16 mm



**Standard Strokes**

5 - 10 - 15 mm



**Weight**

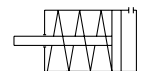
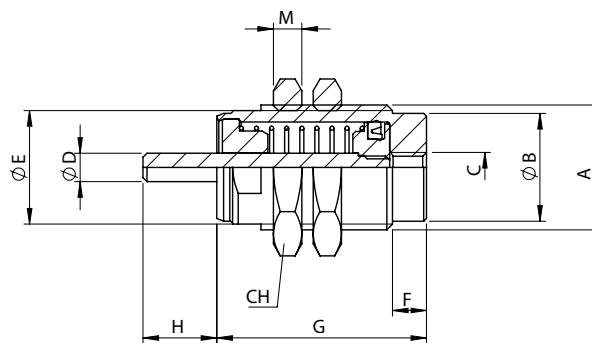
| Ø<br>mm | Stroke (mm) |        |      |
|---------|-------------|--------|------|
|         | 5           | 10     | 15   |
| 6       | 10 g        | 12.5 g | 15 g |
| 10      | 27 g        | 32 g   | 36 g |
| 16      | 71 g        | 78 g   | 87 g |

| Series                                     | Ø (mm)         | Stroke (mm)          |
|--|----------------|----------------------|
| <b>C A F</b>                               | <b>0 6</b>     | <b>0 0 1 0</b>       |
| ▲ CA Single acting non-threaded piston rod | 06<br>10<br>16 | 0005<br>0010<br>0015 |

| Ø (mm)    | Stroke (mm) |    |    |
|-----------|-------------|----|----|
|           | 5           | 10 | 15 |
| <b>6</b>  | ▲           | ▲  | ▲  |
| <b>10</b> | ▲           | ▲  | ▲  |
| <b>16</b> | ▲           | ▲  | ▲  |

**CA**

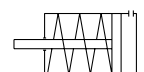
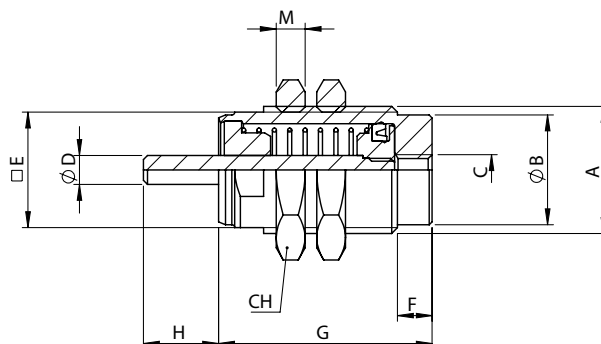
**SINGLE ACTING - NON-THREADED PISTON ROD**



| Ø         | A       | B   | C  | D | ØE | F | G Stroke |      |      | H    | M | CH |
|-----------|---------|-----|----|---|----|---|----------|------|------|------|---|----|
|           |         |     |    |   |    |   | 5        | 10   | 15   |      |   |    |
| <b>6</b>  | M10x1   | 8.5 | M5 | 3 | 9  | 5 | 19.5     | 26.5 | 33.5 | 8    | 3 | 14 |
| <b>10</b> | M15x1.5 | 13  | M5 | 5 | 14 | 5 | 21.5     | 28   | 35   | 10.5 | 4 | 19 |
| <b>16</b> | M22x1.5 | 19  | M5 | 5 | 20 | 6 | 24.5     | 30.5 | 37   | 13   | 5 | 27 |

**CAF**

**SINGLE-ACTING - THREADED PISTON ROD**

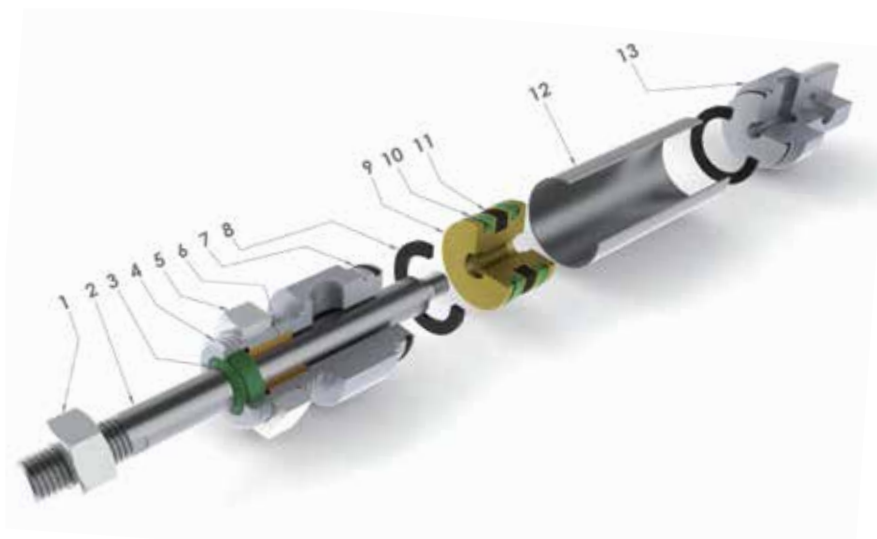


| Ø         | A       | B   | C  | D  | ØE | F | G Stroke |      |      | H    | M | CH | L  |
|-----------|---------|-----|----|----|----|---|----------|------|------|------|---|----|----|
|           |         |     |    |    |    |   | 5        | 10   | 15   |      |   |    |    |
| <b>6</b>  | M10x1   | 8.5 | M5 | M3 | 9  | 5 | 19.5     | 26.5 | 33.5 | 8    | 3 | 14 | 7  |
| <b>10</b> | M15x1.5 | 13  | M5 | M4 | 14 | 5 | 21.5     | 28   | 35   | 10.5 | 4 | 19 | 10 |
| <b>16</b> | M22x1.5 | 19  | M5 | M5 | 20 | 6 | 24.5     | 30.5 | 37   | 13   | 5 | 27 | 12 |

**MINI CYLINDERS - ISO 6432**



**TECHNICAL CHARACTERISTICS**



**Component Parts and Materials**

- 1 Zinc plated steel rod jam nut
- 2 303 Stainless steel piston rod
- 3 Polyurethane rod seal
- 4 Anodized aluminum end cap
- 5 Zinc plated mounting nut
- 6 Sintered bronze rod bearing
- 7 NBR o-ring seals
- 8 Neoprene bumper
- 9 Brass piston
- 10 Polyurethane piston seal
- 11 Bonded ferrite magnet
- 12 304 Stainless steel body
- 13 Anodized aluminum end cap



**Reference Standard**

|                             |                             |                   |                 |                    |
|-----------------------------|-----------------------------|-------------------|-----------------|--------------------|
| 1907/2006<br><b>REACH</b> ✓ | 2011/65/CE<br><b>RoHS</b> ✓ | PED<br>2014/68/UE | SILICON<br>FREE | ATEX<br>2014/34/UE |
|-----------------------------|-----------------------------|-------------------|-----------------|--------------------|



**Pressures**

- 1 bar (0.1 MPa) / 14.5 psi
- 10 bar (1 MPa) / 145 psi



**Temperatures**

- 0 °C / 32 °F (-20 °C / -4 °F with dry air)
- + 80 °C / 176 °F



**Media**

Filtered and lubricated or non-lubricated compressed air



**Functions**

Single acting magnetic or non-magnetic. Double acting single or double end rod, magnetic or non-magnetic, cushioned or non-cushioned.



**Bores**

- 8 - 10 - 12 - 16 - 20 - 25 mm



**Standard Strokes**

- from 10 to 320 mm


**FORCES, SPRING LOADS AND AIR CONSUMPTION**
**Extend and Retract Forces**

| Cylinder<br>∅ | Piston rod<br>∅ | Piston Area<br>mm <sup>2</sup> | Operating pressure<br>bar |    |     |     |     |     |     |     |     |     |
|---------------|-----------------|--------------------------------|---------------------------|----|-----|-----|-----|-----|-----|-----|-----|-----|
|               |                 |                                | 1                         | 2  | 3   | 4   | 5   | 6   | 7   | 8   | 9   | 10  |
|               |                 |                                | Output force<br>N         |    |     |     |     |     |     |     |     |     |
| 8             | 4               | Extend = 50.2                  | 5                         | 10 | 15  | 20  | 25  | 30  | 35  | 40  | 45  | 50  |
|               |                 | Retract = 37.7                 | 3                         | 6  | 9   | 12  | 15  | 18  | 21  | 24  | 27  | 30  |
| 10            | 4               | Extend = 78.5                  | 7                         | 14 | 21  | 28  | 35  | 42  | 49  | 56  | 63  | 70  |
|               |                 | Retract = 66                   | 6                         | 12 | 18  | 24  | 30  | 36  | 42  | 48  | 54  | 60  |
| 12            | 6               | Extend = 113                   | 10                        | 20 | 30  | 40  | 50  | 60  | 70  | 80  | 90  | 100 |
|               |                 | Retract = 85                   | 7.5                       | 15 | 22  | 30  | 37  | 45  | 52  | 60  | 68  | 75  |
| 16            | 6               | Extend = 200                   | 18                        | 36 | 54  | 72  | 90  | 108 | 126 | 144 | 162 | 180 |
|               |                 | Retract = 173                  | 16                        | 32 | 48  | 64  | 80  | 96  | 112 | 128 | 144 | 160 |
| 20            | 8               | Extend = 314                   | 28                        | 56 | 84  | 112 | 140 | 168 | 196 | 224 | 252 | 280 |
|               |                 | Retract = 264                  | 24                        | 48 | 72  | 96  | 120 | 144 | 168 | 192 | 216 | 240 |
| 25            | 10              | Extend = 490                   | 44                        | 88 | 132 | 176 | 220 | 264 | 308 | 352 | 396 | 440 |
|               |                 | Retract = 412                  | 36                        | 72 | 108 | 144 | 180 | 216 | 252 | 288 | 324 | 360 |

**Spring Loads**

| Cylinder<br>∅ | Spring load               | Stroke (mm)       |      |      |
|---------------|---------------------------|-------------------|------|------|
|               |                           | 10                | 25   | 50   |
|               |                           | Output force<br>N |      |      |
| 8             | Load of spring at rest    | 4.1               | 3.5  | 2.6  |
|               | Load of compressed spring | 4.5               | 4.5  | 4.5  |
| 10            | Load of spring at rest    | 4.1               | 3.5  | 2.6  |
|               | Load of compressed spring | 4.5               | 4.5  | 4.5  |
| 12            | Load of spring at rest    | 5.5               | 4.8  | 3.5  |
|               | Load of compressed spring | 6                 | 6    | 6    |
| 16            | Load of spring at rest    | 16.5              | 13.7 | 9    |
|               | Load of compressed spring | 18.3              | 18.3 | 18.3 |
| 20            | Load of spring at rest    | 19                | 15.5 | 9.5  |
|               | Load of compressed spring | 21.5              | 21.5 | 21.5 |
| 25            | Load of spring at rest    | 27                | 24   | 13.5 |
|               | Load of compressed spring | 29                | 29   | 29   |

**Air Consumption**

| Cylinder<br>∅ | Piston Rod<br>∅ | Piston Area<br>mm <sup>2</sup> | Operating pressure<br>bar                      |       |       |       |       |       |       |       |       |       |
|---------------|-----------------|--------------------------------|--|-------|-------|-------|-------|-------|-------|-------|-------|-------|
|               |                 |                                | 1  | 2     | 3     | 4     | 5     | 6     | 7     | 8     | 9     | 10    |
|               |                 |                                | Air consumption for each 10 mm of stroke<br>NI |       |       |       |       |       |       |       |       |       |
| 8             | 4               | Extend = 50.2                  | 0.001  | 0.002 | 0.002 | 0.003 | 0.003 | 0.004 | 0.004 | 0.005 | 0.005 | 0.006 |
|               |                 | Retract = 37.7                 | 0.001  | 0.001 | 0.002 | 0.002 | 0.002 | 0.003 | 0.003 | 0.003 | 0.003 | 0.004 |
| 10            | 4               | Extend = 78.5                  | 0.002  | 0.002 | 0.003 | 0.004 | 0.005 | 0.005 | 0.006 | 0.007 | 0.008 | 0.009 |
|               |                 | Retract = 66                   | 0.001  | 0.002 | 0.003 | 0.003 | 0.004 | 0.005 | 0.005 | 0.006 | 0.007 | 0.007 |
| 12            | 6               | Extend = 113                   | 0.002  | 0.003 | 0.005 | 0.006 | 0.007 | 0.008 | 0.009 | 0.010 | 0.011 | 0.012 |
|               |                 | Retract = 85                   | 0.002  | 0.003 | 0.003 | 0.004 | 0.005 | 0.006 | 0.007 | 0.008 | 0.009 | 0.009 |
| 16            | 6               | Extend = 200                   | 0.004  | 0.006 | 0.008 | 0.010 | 0.012 | 0.014 | 0.016 | 0.018 | 0.020 | 0.022 |
|               |                 | Retract = 173                  | 0.003  | 0.005 | 0.007 | 0.009 | 0.010 | 0.012 | 0.014 | 0.016 | 0.017 | 0.019 |
| 20            | 8               | Extend = 314                   | 0.006  | 0.009 | 0.013 | 0.016 | 0.019 | 0.022 | 0.025 | 0.028 | 0.031 | 0.035 |
|               |                 | Retract = 264                  | 0.005  | 0.008 | 0.011 | 0.013 | 0.016 | 0.018 | 0.021 | 0.024 | 0.026 | 0.029 |
| 25            | 10              | Extend = 490                   | 0.010  | 0.015 | 0.020 | 0.025 | 0.029 | 0.034 | 0.039 | 0.044 | 0.049 | 0.054 |
|               |                 | Retract = 412                  | 0.008  | 0.012 | 0.016 | 0.021 | 0.025 | 0.029 | 0.033 | 0.037 | 0.041 | 0.045 |

| Series | Ø (mm) | Stroke (mm) | Special version |
|--------|--------|-------------|-----------------|
|--------|--------|-------------|-----------------|

**M F**

**0 0 8**

**0 0 2 5**

**V S**

- ▲ **MB** Single acting - magnetic
- **MD** Single acting - magnetic  
Spring extend
- **MF** Double acting - magnetic
- **MFN** Double acting - magnetic - head cut  
port at 90°
- **MFx** Double acting - magnetic - head cut  
port on axis
- ◆ **MH** Double acting - cushioned - magnetic
- **MJ** Double acting - magnetic  
with double rod end
- ◆ **ML** Double acting - cushioned - magnetic  
with double rod end

008  
010  
012  
016  
020  
025

0010 0150  
0025 0160  
0050 0200  
0080 0250  
0100 0320  
0125

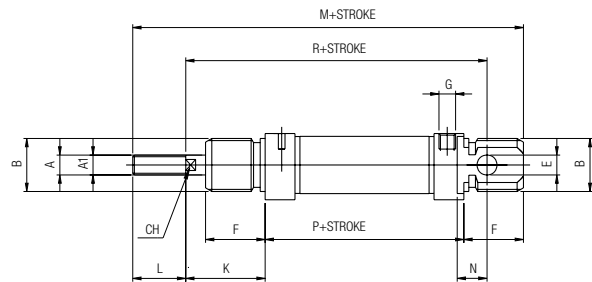
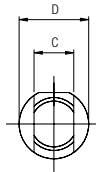
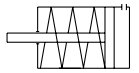
**VS** Rod Seals in FKM  
**V** Seals in FKM

Intermediate or longer strokes  
are available upon request.

| Ø (mm) | Stroke (mm) |      |      |    |     |     |     |     |     |     |  |
|--------|-------------|------|------|----|-----|-----|-----|-----|-----|-----|--|
|        | 10          | 25   | 50   | 80 | 100 | 125 | 160 | 200 | 250 | 320 |  |
| 8      | ▲●          | ▲●   | ▲●   | ●  | ●   | ●   |     |     |     |     |  |
| 10     | ▲●          | ▲●   | ▲●   | ●  | ●   | ●   |     |     |     |     |  |
| 12     | ▲●          | ▲●   | ▲●   | ●  | ●   | ●   | ●   | ●   | ●   | ●   |  |
| 16     | ▲■●○        | ▲■●○ | ▲■●○ | ●○ | ●○  | ●○  | ●○  | ●○  | ●○  | ●○  |  |
| 20     | ▲■●○        | ▲■●○ | ▲■●○ | ●○ | ●○  | ●○  | ●○  | ●○  | ●○  | ●○  |  |
| 25     | ▲■●○        | ▲■●○ | ▲■●○ | ●○ | ●○  | ●○  | ●○  | ●○  | ●○  | ●○  |  |

**MB**

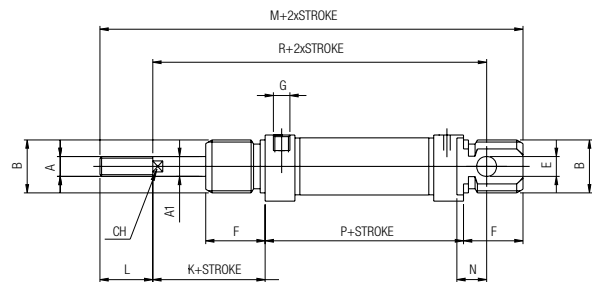
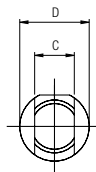
SINGLE ACTING - MAGNETIC



| Ø  | A        | A1 | B        | C  | D  | E | F  | G    | K  | L  | M   | N  | P  | R   | CH |
|----|----------|----|----------|----|----|---|----|------|----|----|-----|----|----|-----|----|
| 8  | M4       | 4  | M12x1.25 | 8  | 16 | 4 | 12 | M5   | 16 | 12 | 86  | 6  | 46 | 64  | -  |
| 10 | M4       | 4  | M12x1.25 | 8  | 16 | 4 | 12 | M5   | 16 | 12 | 86  | 6  | 46 | 64  | -  |
| 12 | M6       | 6  | M16x1.5  | 12 | 19 | 6 | 18 | M5   | 22 | 16 | 104 | 9  | 48 | 75  | 5  |
| 16 | M6       | 6  | M16x1.5  | 12 | 19 | 6 | 18 | M5   | 22 | 16 | 109 | 9  | 53 | 82  | 5  |
| 20 | M8       | 8  | M22x1.5  | 16 | 27 | 8 | 20 | 1/8G | 24 | 20 | 131 | 12 | 67 | 95  | 7  |
| 25 | M10x1.25 | 10 | M22x1.5  | 16 | 30 | 8 | 22 | 1/8G | 28 | 22 | 140 | 12 | 68 | 104 | 9  |

**MD**

SINGLE ACTING - MAGNETIC - SPRING EXTEND

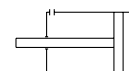
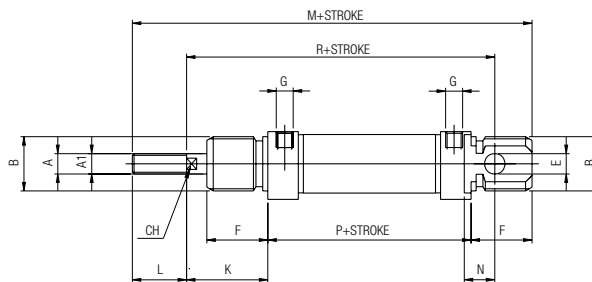
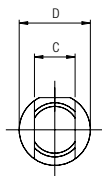


| Ø  | A        | A1 | B       | C  | D  | E | F  | G    | K  | L  | M     | N  | P    | R     | CH |
|----|----------|----|---------|----|----|---|----|------|----|----|-------|----|------|-------|----|
| 16 | M6       | 6  | M16x1.5 | 12 | 19 | 6 | 18 | M5   | 22 | 16 | 134.5 | 9  | 78.5 | 107.5 | 5  |
| 20 | M8       | 8  | M22x1.5 | 16 | 27 | 8 | 20 | 1/8G | 24 | 20 | 154   | 12 | 90   | 118   | 7  |
| 25 | M10x1.25 | 10 | M22x1.5 | 16 | 30 | 8 | 22 | 1/8G | 28 | 22 | 166   | 12 | 94   | 130   | 9  |



**MF**

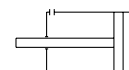
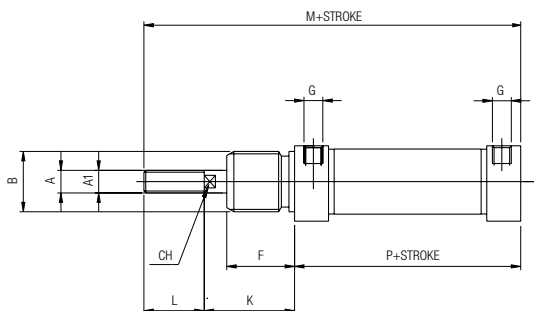
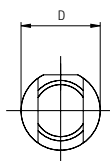
DOUBLE ACTING - MAGNETIC



| Ø  | A        | A1 | B        | C  | D  | E | F  | G    | K  | L  | M   | N  | P  | R   | CH |
|----|----------|----|----------|----|----|---|----|------|----|----|-----|----|----|-----|----|
| 8  | M4       | 4  | M12x1.25 | 8  | 16 | 4 | 12 | M5   | 16 | 12 | 86  | 6  | 46 | 64  | -  |
| 10 | M4       | 4  | M12x1.25 | 8  | 16 | 4 | 12 | M5   | 16 | 12 | 86  | 6  | 46 | 64  | -  |
| 12 | M6       | 6  | M16x1.5  | 12 | 19 | 6 | 18 | M5   | 22 | 16 | 104 | 9  | 48 | 75  | 5  |
| 16 | M6       | 6  | M16x1.5  | 12 | 19 | 6 | 18 | M5   | 22 | 16 | 109 | 9  | 53 | 82  | 5  |
| 20 | M8       | 8  | M22x1.5  | 16 | 27 | 8 | 20 | 1/8G | 24 | 20 | 131 | 12 | 67 | 95  | 7  |
| 25 | M10x1.25 | 10 | M22x1.5  | 16 | 30 | 8 | 22 | 1/8G | 28 | 22 | 140 | 12 | 68 | 104 | 9  |

**MFN**

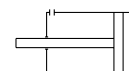
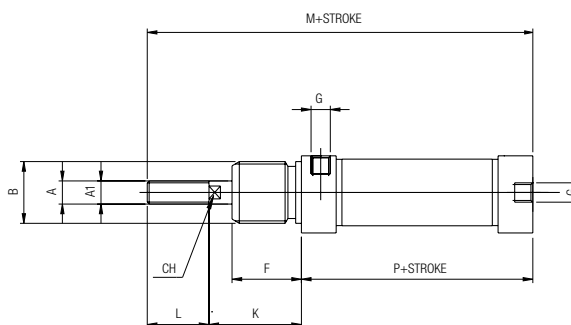
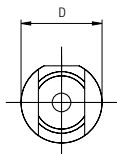
DOUBLE ACTING - MAGNETIC - HEAD CUT, PORT AT 90°



| Ø  | A        | A1 | B       | D  | G    | K  | L  | M     | P  | CH | F  |
|----|----------|----|---------|----|------|----|----|-------|----|----|----|
| 16 | M6       | 6  | M16x1.5 | 21 | M5   | 22 | 16 | 91.5  | 53 | 5  | 18 |
| 20 | M8       | 8  | M22x1.5 | 27 | 1/8G | 24 | 20 | 111.5 | 67 | 7  | 2  |
| 25 | M10x1.25 | 10 | M22x1.5 | 30 | 1/8G | 28 | 22 | 118.5 | 68 | 9  | 22 |

**MFX**

DOUBLE ACTING - MAGNETIC - HEAD CUT, PORT ON AXIS

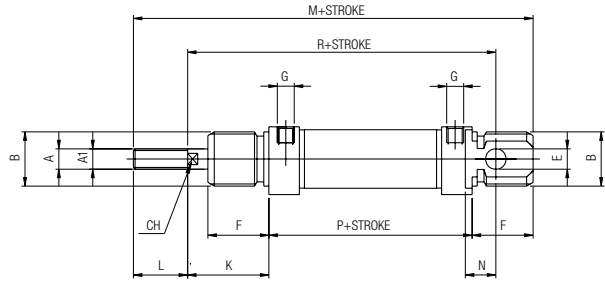
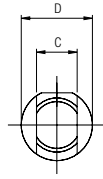
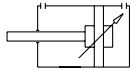


| Ø  | A        | A1 | B       | D  | G    | K  | L  | M     | P  | CH | F  |
|----|----------|----|---------|----|------|----|----|-------|----|----|----|
| 16 | M6       | 6  | M16x1.5 | 21 | M5   | 22 | 16 | 91.5  | 53 | 5  | 18 |
| 20 | M8       | 8  | M22x1.5 | 27 | 1/8G | 24 | 20 | 111.5 | 67 | 7  | 2  |
| 25 | M10x1.25 | 10 | M22x1.5 | 30 | 1/8G | 28 | 22 | 118.5 | 68 | 9  | 22 |



**MH**

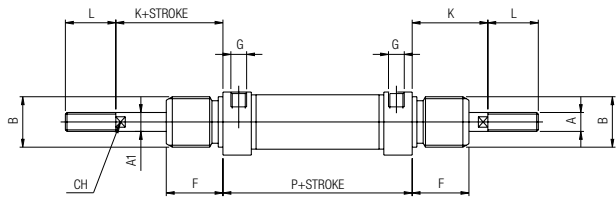
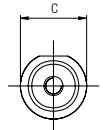
DOUBLE ACTING - CUSHIONED - MAGNETIC



| ∅  | A        | A1 | B       | C  | D  | E | F  | G    | K  | L  | M   | N  | P  | R   | CH |
|----|----------|----|---------|----|----|---|----|------|----|----|-----|----|----|-----|----|
| 16 | M6       | 6  | M16x1.5 | 12 | 21 | 6 | 18 | M5   | 22 | 16 | 109 | 9  | 53 | 82  | 25 |
| 20 | M8       | 8  | M22x1.5 | 16 | 27 | 8 | 20 | 1/8G | 24 | 20 | 131 | 12 | 67 | 95  | 7  |
| 25 | M10x1.25 | 10 | M22x1.5 | 16 | 30 | 8 | 22 | 1/8G | 28 | 22 | 140 | 12 | 68 | 104 | 9  |

**MJ**

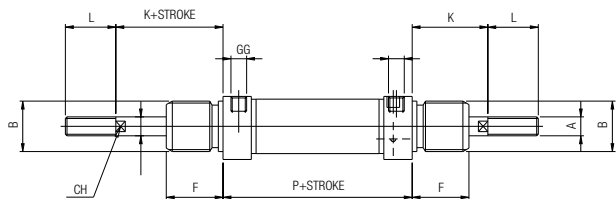
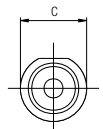
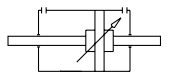
DOUBLE ACTING - MAGNETIC WITH DOUBLE ROD END



| ∅  | A        | A1 | B       | C  | F  | G    | K  | L  | P  | CH |
|----|----------|----|---------|----|----|------|----|----|----|----|
| 16 | M6       | 6  | M16x1.5 | 19 | 18 | M5   | 22 | 16 | 53 | 5  |
| 20 | M8       | 8  | M22x1.5 | 27 | 20 | 1/8G | 24 | 20 | 67 | 7  |
| 25 | M10x1.25 | 10 | M22x1.5 | 30 | 22 | 1/8G | 28 | 22 | 68 | 9  |

**ML**

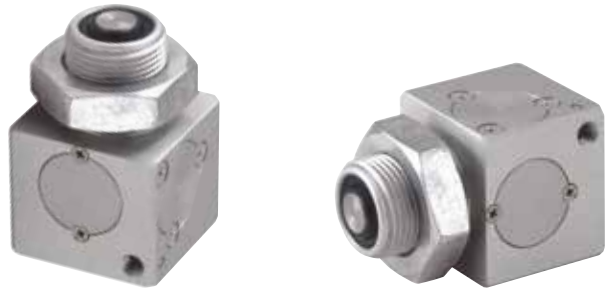
DOUBLE ACTING - CUSHIONED - MAGNETIC WITH DOUBLE ROD END



| ∅  | A        | A1 | B       | C  | F  | G    | K  | L  | P  | CH |
|----|----------|----|---------|----|----|------|----|----|----|----|
| 16 | M6       | 6  | M16x1.5 | 21 | 18 | M5   | 22 | 16 | 53 | 5  |
| 20 | M8       | 8  | M22x1.5 | 27 | 20 | 1/8G | 24 | 20 | 67 | 7  |
| 25 | M10x1.25 | 10 | M22x1.5 | 30 | 22 | 1/8G | 28 | 22 | 68 | 9  |

**PISTON ROD LOCK FOR MINI CYLINDERS - ISO 6432**

**TECHNICAL CHARACTERISTICS**



**How to Order**  
 The piston rod lock can be assembled only with ISO 6432 Ø 20 or 25 mm cylinders produced with an extended piston rod.  
 To identify cylinders with extended piston rods or piston rod locks, it is necessary to affix the letter "B" after the cylinder's series code.

**Reference Standard**

- 1907/2006 REACH ✓
- 2011/65/CE RoHS ✓
- PED 2014/68/UE
- SILICON FREE

**Pressures**  
**Without Pressures: LOCKED**

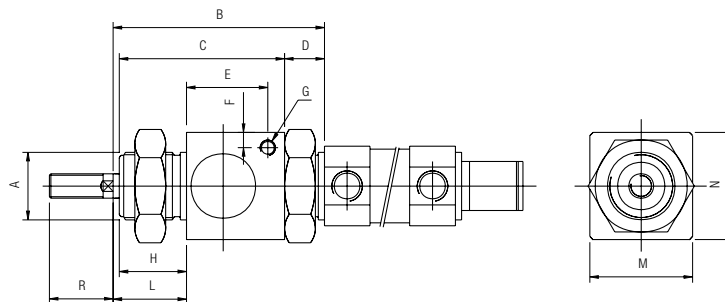
| Cylinder supply pressure    | Minimum release pressure |
|-----------------------------|--------------------------|
| 0 ÷ 7 bar<br>(0 ÷ 0.7 Mpa)  | 2.5 bar<br>(0.25 Mpa)    |
| 7 ÷ 10 bar<br>(0.7 ÷ 1 Mpa) | 3 bar<br>(0.3 Mpa)       |

**Temperatures**  
 0 °C / 32 °F (-20 °C / -4 °F with dry air)  
 + 80 °C / 176 °F

**Media**  
 Filtered and lubricated or non-lubricated compressed air

| Series     | Ø (mm)                               | Stroke (mm)   |
|------------|--------------------------------------|---|
| <b>M F</b> | <b>B</b>                             | <b>0 0 2 5</b>  |
|            | <b>B = Piston Rod Lock Assembled</b> | 0010 0150<br>0025 0160<br>0050 0200<br>0080 0250<br>0100 0320<br>0125 |
|            | 020<br>025                           | Intermediate or longer strokes are available upon request.            |

**MRL**  
 PISTON ROD LOCK

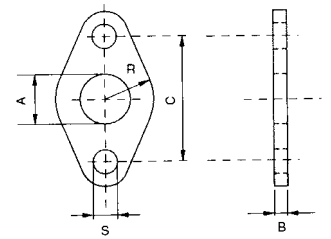


| Part No.       | Ø         | A       | B    | C  | D  | E  | F | G  | H  | L    | M  | N  | R  |
|----------------|-----------|---------|------|----|----|----|---|----|----|------|----|----|----|
| <b>MRL 020</b> | <b>20</b> | M22x1.5 | 68.5 | 54 | 13 | 27 | 5 | M5 | 22 | 23.5 | 34 | 35 | 23 |
| <b>MRL 025</b> | <b>25</b> | M22x1.5 | 69.5 | 54 | 13 | 27 | 5 | M5 | 22 | 24.5 | 34 | 35 | 26 |

ISO 6432 Mounting Accessories

**MFL**

FLANGE

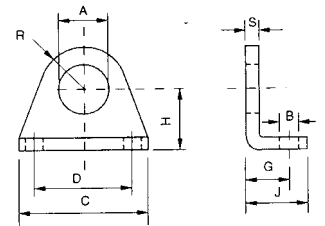


MATERIAL: Steel

| Part No. | ∅     | A  | B | C  | R  | S   |
|----------|-------|----|---|----|----|-----|
| MFL 008  | 8-10  | 12 | 3 | 30 | 9  | 4.5 |
| MFL 012  | 12-16 | 16 | 4 | 40 | 13 | 5.5 |
| MFL 020  | 20-25 | 22 | 5 | 50 | 19 | 6.6 |

**MPD**

FOOT

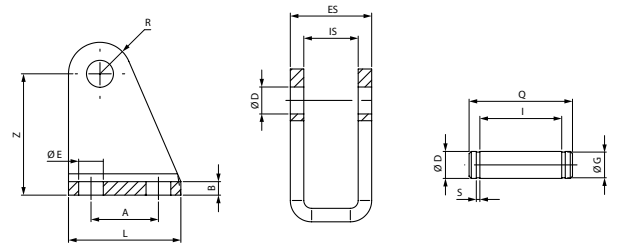


MATERIAL: Steel

| Part No. | ∅     | A  | B   | C  | D  | G  | H  | J  | R    | S |
|----------|-------|----|-----|----|----|----|----|----|------|---|
| MPD 008  | 8-10  | 12 | 4.5 | 35 | 25 | 11 | 16 | 16 | 10   | 3 |
| MPD 012  | 12-16 | 16 | 5.5 | 42 | 32 | 14 | 20 | 20 | 13.5 | 4 |
| MPD 020  | 20-25 | 22 | 6.6 | 54 | 40 | 17 | 25 | 25 | 18   | 5 |

**MCC**

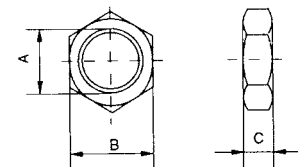
CLEVIS BRACKET WITH PIN



MATERIAL: Steel

| Code    | ∅     | A    | B   | R  | L  | Z  | IS  | ES | S   | I  | Q  | ØE  | ØD | ØG  |
|---------|-------|------|-----|----|----|----|-----|----|-----|----|----|-----|----|-----|
| MCC 008 | 8-10  | 12.5 | 2.5 | 5  | 22 | 24 | 8.1 | 13 | 0.8 | 14 | 18 | 4.5 | 4  | 2.3 |
| MCC 012 | 12-16 | 15   | 3   | 7  | 25 | 27 | 12  | 18 | 0.8 | 19 | 24 | 5.5 | 6  | 4   |
| MCC 020 | 20-25 | 20   | 4   | 10 | 32 | 30 | 16  | 24 | 0.9 | 25 | 30 | 6.5 | 8  | 7   |

**DA**



MOUNTING NUT

| Part No.          | A        | B  | C |
|-------------------|----------|----|---|
| ODA00 00 51 D5 ZI | M12x1.25 | 19 | 7 |
| ODA00 00 51 E3 ZI | M16x1.5  | 22 | 6 |
| ODA00 00 51 F6 ZI | M22x1.5  | 27 | 8 |

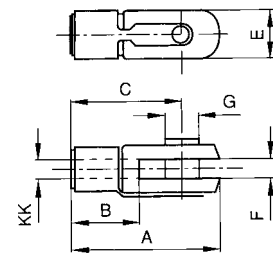
MATERIAL: Steel

ROD JAM NUT

| Part No.          | A        | B  | C   |
|-------------------|----------|----|-----|
| ODA00 00 51 B1 ZI | M4       | 7  | 3.2 |
| ODA00 00 51 B8 ZI | M6       | 10 | 5   |
| ODA00 00 51 C3 ZI | M8x1.25  | 13 | 6.5 |
| ODA00 00 51 C9 ZI | M10x1.25 | 17 | 8   |

**FC**

ROD CLEVIS WITH LOCKABLE PIN

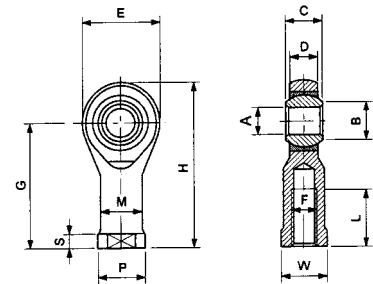


MATERIAL: Steel

| Part No.      | KK              | A  | B  | C  | E  | F  | G  |
|---------------|-----------------|----|----|----|----|----|----|
| <b>FC 008</b> | <b>M4</b>       | 21 | 8  | 16 | 8  | 4  | 4  |
| <b>FC 012</b> | <b>M6</b>       | 31 | 12 | 24 | 12 | 6  | 6  |
| <b>FC 020</b> | <b>M8</b>       | 42 | 16 | 32 | 16 | 8  | 8  |
| <b>FC 025</b> | <b>M10x1.25</b> | 52 | 20 | 40 | 20 | 10 | 10 |

**TF**

SELF-LUBRICATING SPHERICAL ROD EYE

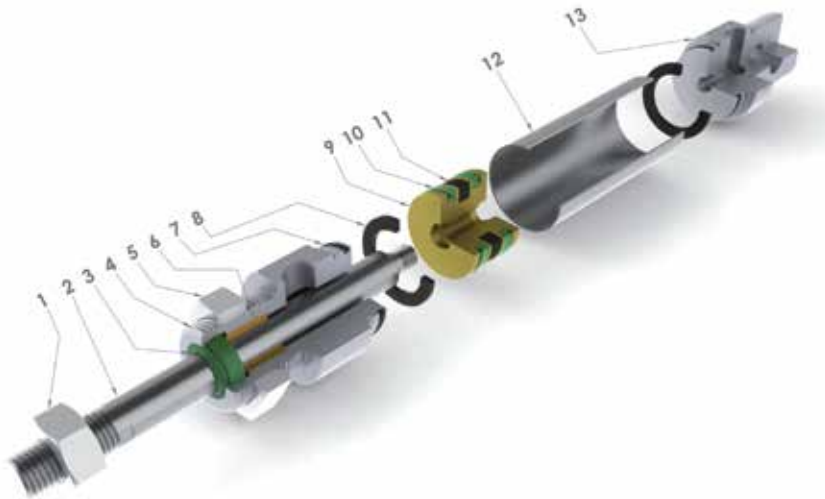


MATERIAL: Steel

| Part No.      | F               | A  | B    | C  | Ø Sphere | D          | E         | G         | H  | L         | M         | P         | S  | W          | Radial load |        | Weight |
|---------------|-----------------|----|------|--|----------|------------|-----------|-----------|----|-----------|-----------|-----------|--|------------|-------------|--------|--------|
|               |                 |    |      |  |          |            |           |           |    |           |           |           |  |            | Dynamic     | Static |        |
|               |                 | H7 | 0    | $\begin{matrix} 0 \\ -0.13 \end{matrix}$ |          | $\pm 0.13$ | $\pm 0.5$ | $\pm 0.5$ |    | $\pm 0.7$ | $\pm 0.7$ | $\pm 0.5$ | $\begin{matrix} +0.2 \\ -0.7 \end{matrix}$ | $\pm 0.25$ | kg          | kg     | g      |
| <b>TF 008</b> | <b>M4x0.7</b>   | 5  | 7.7  | 8  | 11.11    | 6          | 18        | 27        | 36 | 10        | 9         | 11        | 4  | 9          | -           | -      | -      |
| <b>TF 012</b> | <b>M6x1</b>     | 6  | 8.9  | 9  | 12.7     | 6.75       | 20        | 30        | 40 | 9         | 10        | 13        | 5  | 11         | 470         | 1.100  | 19     |
| <b>TF 020</b> | <b>M8x1.25</b>  | 8  | 10.4 | 12                                       | 15.88    | 9          | 24        | 36        | 48 | 12        | 12.5      | 16        | 5  | 14         | 780         | 1.900  | 36     |
| <b>TF 025</b> | <b>M10x1.25</b> | 10 | 12.9 | 14                                       | 19.05    | 10.5       | 28        | 43        | 57 | 15        | 15        | 19        | 6.5  | 17         | 1.200       | 3.100  | 88     |

**STAINLESS STEEL MINI CYLINDERS - ISO 6432**

**TECHNICAL CHARACTERISTICS**



**Component Parts and Materials**

- 1 304 Stainless steel rod jam nut
- 2 316 Stainless steel piston rod
- 3 Polyurethane rod seal
- 4 304 Stainless steel end cap
- 5 304 Stainless steel mounting nut
- 6 Sintered bronze rod bearing
- 7 NBR o-ring seals
- 8 Neoprene bumper
- 9 Brass piston
- 10 Polyurethane piston seal
- 11 Plastroferrite magnet
- 12 304 Stainless steel body
- 13 304 Stainless steel end cap



**Reference Standard**

- 1907/2006  
**REACH** ✓
- 2011/65/CE  
**RoHS** ✓
- PED  
2014/68/UE
- SILICON  
FREE
- ATEX  
2014/34/UE



**Pressures**

- 2 bar (0.2 MPa) / 29 psi
- 10 bar (0.7 MPa) / 145 psi



**Temperatures**

- 0 °C / 32 °F (-20 °C / -4 °F with dry air)
- + 80 °C / 176 °F



**Media**

Filtered and lubricated or non-lubricated compressed air.



**Functions**

- Double-acting magnetic.
- Double-acting without magnet.



**Bores**

- 16 - 20 - 25 mm



**Standard Strokes**

- from 10 to 320 mm

| Series | Ø (mm) | Stroke (mm) | Special version |
|--------|--------|-------------|-----------------|
|--------|--------|-------------|-----------------|

**M F I**

• MFI Double acting - magnetic

**0 1 6**

016  
020  
025

**0 0 2 5**

0010    0150  
0025    0160  
0050    0200  
0080    0250  
0100    0320  
0125

**V S**

VS Rod Seals in FKM  
V Seals in FKM

Intermediate or longer strokes are available upon request.

| Ø (mm) | Stroke (mm) |    |    |    |     |     |     |     |     |     |
|--------|-------------|----|----|----|-----|-----|-----|-----|-----|-----|
|        | 10          | 25 | 50 | 80 | 100 | 125 | 160 | 200 | 250 | 320 |
| 16     | •           | •  | •  | •  | •   | •   | •   | •   | •   | •   |
| 20     | •           | •  | •  | •  | •   | •   | •   | •   | •   | •   |
| 25     | •           | •  | •  | •  | •   | •   | •   | •   | •   | •   |

**Extend and Retract Forces**

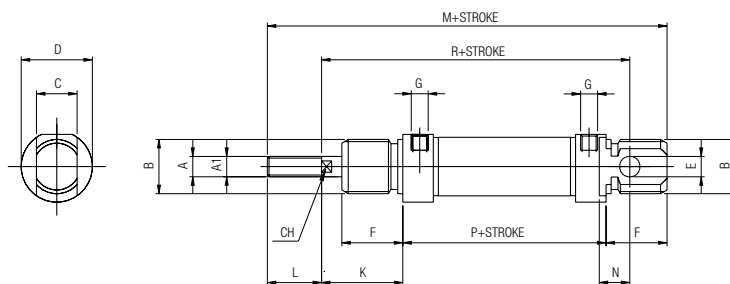
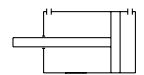
| Cylinder<br>Ø             | Piston Rod<br>Ø | Piston Area<br>mm <sup>2</sup> | Operating pressure<br>bar |    |     |     |     |     |     |     |     |     |
|---------------------------|-----------------|--------------------------------|---------------------------|----|-----|-----|-----|-----|-----|-----|-----|-----|
|                           |                 |                                | 1                         | 2  | 3   | 4   | 5   | 6   | 7   | 8   | 9   | 10  |
| <b>Output force<br/>N</b> |                 |                                |                           |    |     |     |     |     |     |     |     |     |
| 16                        | 6               | Extend = 200                   | 18                        | 36 | 54  | 72  | 90  | 108 | 126 | 144 | 162 | 180 |
|                           |                 | Retract = 173                  | 16                        | 32 | 48  | 64  | 80  | 96  | 112 | 128 | 144 | 160 |
| 20                        | 8               | Extend = 314                   | 28                        | 56 | 84  | 112 | 140 | 168 | 196 | 224 | 252 | 280 |
|                           |                 | Retract = 264                  | 24                        | 48 | 72  | 96  | 120 | 144 | 168 | 192 | 216 | 240 |
| 25                        | 10              | Extend = 490                   | 44                        | 88 | 132 | 176 | 220 | 264 | 308 | 352 | 396 | 440 |
|                           |                 | Retract = 412                  | 36                        | 72 | 108 | 144 | 180 | 216 | 252 | 288 | 324 | 360 |

**Air Consumption**

| Cylinder<br>Ø  | Piston Rod<br>Ø | Piston Area<br>mm <sup>2</sup> | Operating pressure<br>bar |       |       |       |       |       |       |       |       |       |
|--|-----------------|--------------------------------|---------------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
|  |                 |                                | 1                         | 2     | 3     | 4     | 5     | 6     | 7     | 8     | 9     | 10    |
| <b>Air consumption for each 10 mm of stroke<br/>NI</b> |                 |                                |                           |       |       |       |       |       |       |       |       |       |
| 16   | 6               | Extend = 200                   | 0.004                     | 0.006 | 0.008 | 0.010 | 0.012 | 0.014 | 0.016 | 0.018 | 0.020 | 0.022 |
|  |                 | Retract = 173                  | 0.003                     | 0.005 | 0.007 | 0.009 | 0.010 | 0.012 | 0.014 | 0.016 | 0.017 | 0.019 |
| 20   | 8               | Extend = 314                   | 0.006                     | 0.009 | 0.013 | 0.016 | 0.019 | 0.022 | 0.025 | 0.028 | 0.031 | 0.035 |
|  |                 | Retract = 264                  | 0.005                     | 0.008 | 0.011 | 0.013 | 0.016 | 0.018 | 0.021 | 0.024 | 0.026 | 0.029 |
| 25   | 10              | Extend = 490                   | 0.010                     | 0.015 | 0.020 | 0.025 | 0.029 | 0.034 | 0.039 | 0.044 | 0.049 | 0.054 |
|  |                 | Retract = 412                  | 0.008                     | 0.012 | 0.016 | 0.021 | 0.025 | 0.029 | 0.033 | 0.037 | 0.041 | 0.045 |

**MFI**

DOUBLE ACTING - MAGNETIC

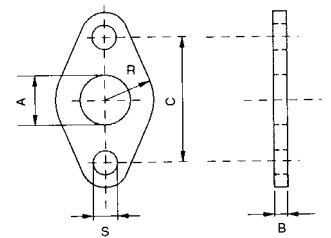


| Ø  | A        | A1 | B       | C  | D  | E | F  | G    | K  | L  | M   | N  | P  | R   | CH |
|----|----------|----|---------|----|----|---|----|------|----|----|-----|----|----|-----|----|
| 16 | M6       | 6  | M16x1.5 | 12 | 19 | 6 | 18 | M5   | 22 | 16 | 109 | 9  | 53 | 82  | 5  |
| 20 | M8       | 8  | M22x1.5 | 16 | 27 | 8 | 20 | 1/8G | 24 | 20 | 131 | 12 | 67 | 95  | 7  |
| 25 | M10x1.25 | 10 | M22x1.5 | 16 | 30 | 8 | 22 | 1/8G | 28 | 22 | 140 | 12 | 68 | 104 | 9  |

ISO 6432 Stainless Steel Mounting Accessories

**MFLI**

FLANGE

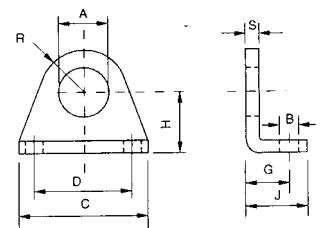


MATERIAL: Stainless Steel

| Part No.        | Ø            | A  | B | C  | R  | S   |
|-----------------|--------------|----|---|----|----|-----|
| <b>MFLI 016</b> | <b>16</b>    | 16 | 4 | 40 | 13 | 5.5 |
| <b>MFLI 020</b> | <b>20-25</b> | 22 | 5 | 50 | 19 | 6.6 |

**MPDI**

FOOT

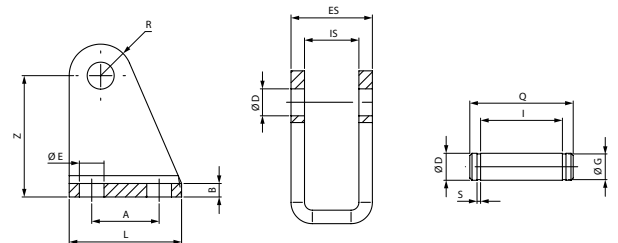


MATERIAL: Stainless Steel

| Part No.        | Ø            | A  | B   | C  | D  | G  | H  | J  | R    | S |
|-----------------|--------------|----|-----|----|----|----|----|----|------|---|
| <b>MPDI 016</b> | <b>16</b>    | 16 | 5.5 | 42 | 32 | 14 | 20 | 20 | 13.5 | 4 |
| <b>MPDI 020</b> | <b>20-25</b> | 22 | 6.6 | 54 | 43 | 17 | 25 | 25 | 18   | 5 |

**MCCI**

CLEVIS BRACKET WITH PIN



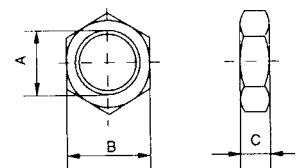
MATERIAL: Stainless Steel

| Code            | Ø            | A  | B | R  | L  | Z  | IS | ES | S   | I  | Q  | ØE  | ØD | ØG |
|-----------------|--------------|----|---|----|----|----|----|----|-----|----|----|-----|----|----|
| <b>MCCI 012</b> | <b>16</b>    | 15 | 3 | 7  | 25 | 27 | 12 | 18 | 0.8 | 19 | 24 | 5.5 | 6  | 4  |
| <b>MCCI 020</b> | <b>20-25</b> | 20 | 4 | 10 | 32 | 30 | 16 | 24 | 0.9 | 25 | 30 | 6.5 | 8  | 7  |

**DA**

MOUNTING NUTS

ROD JAM NUT



MATERIAL: Stainless Steel

| Part No.                 | A              | B  | C |
|--------------------------|----------------|----|---|
| <b>ODA00 00 43 E3 00</b> | <b>M16x1.5</b> | 22 | 6 |
| <b>ODA00 00 43 F6 00</b> | <b>M22x1.5</b> | 27 | 8 |

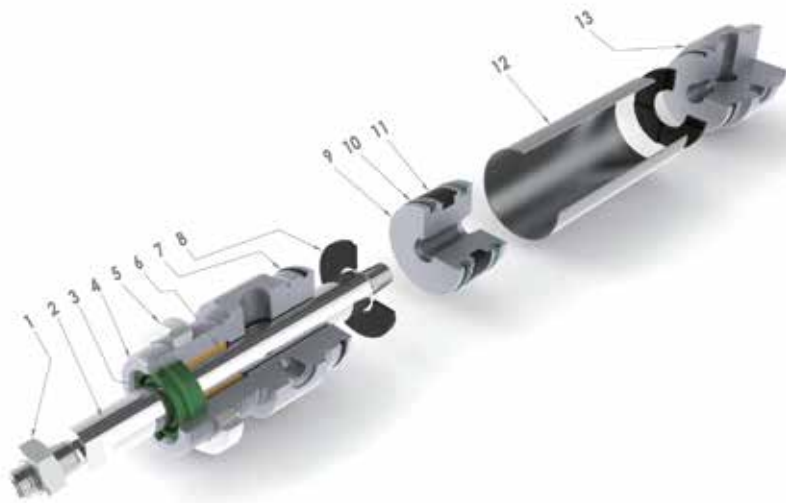
| Part No.                 | A               | B  | C   |
|--------------------------|-----------------|----|-----|
| <b>ODA00 00 43 B8 00</b> | <b>M6</b>       | 10 | 5   |
| <b>ODA00 00 43 C3 00</b> | <b>M8x1.25</b>  | 13 | 6.5 |
| <b>ODA00 00 43 C9 00</b> | <b>M10x1.25</b> | 17 | 8   |



**SERIES A95 - LIMITED SPACE CYLINDERS**



**TECHNICAL CHARACTERISTICS**



**Component Parts and Materials**

- 1 Zinc plated steel rod jam nut
- 2 Chrome plated steel piston rod
- 3 Polyurethane rod seal
- 4 Anodized aluminum end cap
- 5 Zinc plated mounting nut
- 6 Sintered bronze rod bearing
- 7 NBR o-ring seals
- 8 Neoprene bumper
- 9 Anodized aluminum piston
- 10 Polyurethane piston seal
- 11 Bonded ferrite magnet
- 12 304 Stainless steel body
- 13 Anodized aluminum end cap



**Reference Standard**

|                      |                      |                   |                 |                    |
|----------------------|----------------------|-------------------|-----------------|--------------------|
| 1907/2006<br>REACH ✓ | 2011/65/CE<br>ROHS ✓ | PED<br>2014/68/UE | SILICON<br>FREE | ATEX<br>2014/34/UE |
|----------------------|----------------------|-------------------|-----------------|--------------------|



**Pressures**

- 1 bar (0.1 MPa) / 14.5 psi
- 10 bar (1 MPa) / 145 psi



**Temperatures**

- 0 °C / 32 °F (-20 °C / -4 °F with dry air)
- + 80 °C / 176 °F



**Media**

Filtered and lubricated or non-lubricated compressed air.



**Functions**

Single acting magnetic or non-magnetic. Double acting single or double rod end, magnetic or non-magnetic, cushioned or non-cushioned.



**Bores**

- 32 - 40 - 50 - 63 mm



**Standard Strokes**

- from 10 to 500 mm


**FORCES, SPRING LOADS AND AIR CONSUMPTION**
**Extend and Retract Forces**

| Cylinder<br>∅ | Piston Rod<br>∅ | Piston Area<br>mm <sup>2</sup> | Operating pressure |     |     |      |      |      |      |      |      |      |
|---------------|-----------------|--------------------------------|--------------------|-----|-----|------|------|------|------|------|------|------|
|               |                 |                                | bar                |     |     |      |      |      |      |      |      |      |
|               |                 |                                | 1                  | 2   | 3   | 4    | 5    | 6    | 7    | 8    | 9    | 10   |
|               |                 |                                | Output force<br>N  |     |     |      |      |      |      |      |      |      |
| 32            | 12              | Extend = 804                   | 72                 | 144 | 216 | 288  | 360  | 432  | 504  | 576  | 648  | 720  |
|               |                 | Retract = 691                  | 62                 | 124 | 186 | 248  | 310  | 372  | 434  | 496  | 558  | 620  |
| 40            | 16              | Extend = 1257                  | 110                | 220 | 330 | 440  | 550  | 660  | 770  | 880  | 990  | 1100 |
|               |                 | Retract = 1056                 | 95                 | 190 | 285 | 380  | 475  | 570  | 665  | 760  | 855  | 950  |
| 50            | 20              | Extend = 1963                  | 175                | 350 | 525 | 700  | 875  | 1050 | 1225 | 1400 | 1575 | 1750 |
|               |                 | Retract = 1649                 | 148                | 296 | 444 | 592  | 740  | 888  | 1036 | 1184 | 1332 | 1480 |
| 63            | 20              | Extend = 3117                  | 280                | 560 | 840 | 1120 | 1400 | 1680 | 1960 | 2240 | 2520 | 2800 |
|               |                 | Retract = 2803                 | 250                | 500 | 750 | 1000 | 1250 | 1500 | 1750 | 2000 | 2250 | 2500 |

**Spring Loads**

| Cylinder<br>∅ | Spring load               | Stroke (mm)       |    |    |
|---------------|---------------------------|-------------------|----|----|
|               |                           | 10                | 25 | 50 |
|               |                           | Output force<br>N |    |    |
| 32            | Load of spring at rest    | 56                | 51 | 42 |
|               | Load of compressed spring | 60                | 60 | 60 |
| 40            | Load of spring at rest    | 60                | 55 | 44 |
|               | Load of compressed spring | 65                | 65 | 65 |
| 50            | Load of spring at rest    | 64                | 57 | 46 |
|               | Load of compressed spring | 68                | 68 | 68 |
| 63            | Load of spring at rest    | 65                | 58 | 47 |
|               | Load of compressed spring | 70                | 70 | 70 |

**Air Consumption**

| Cylinder<br>∅ | Piston Rod<br>∅ | Piston Area<br>mm <sup>2</sup> | Operating pressure                             |       |       |       |       |       |       |       |       |       |
|---------------|-----------------|--------------------------------|--|-------|-------|-------|-------|-------|-------|-------|-------|-------|
|               |                 |                                | bar  |       |       |       |       |       |       |       |       |       |
|               |                 |                                | 1  | 2     | 3     | 4     | 5     | 6     | 7     | 8     | 9     | 10    |
|               |                 |                                | Air consumption for each 10 mm of stroke<br>NI |       |       |       |       |       |       |       |       |       |
| 32            | 12              | Extend = 804                   | 0.016  | 0.024 | 0.032 | 0.040 | 0.048 | 0.056 | 0.064 | 0.072 | 0.080 | 0.088 |
|               |                 | Retract = 691                  | 0.014  | 0.021 | 0.028 | 0.035 | 0.041 | 0.048 | 0.055 | 0.062 | 0.069 | 0.076 |
| 40            | 16              | Extend = 1257                  | 0.025  | 0.038 | 0.050 | 0.063 | 0.075 | 0.088 | 0.101 | 0.113 | 0.126 | 0.138 |
|               |                 | Retract = 1056                 | 0.021  | 0.032 | 0.042 | 0.053 | 0.063 | 0.074 | 0.084 | 0.095 | 0.106 | 0.116 |
| 50            | 20              | Extend = 1963                  | 0.039  | 0.059 | 0.079 | 0.098 | 0.118 | 0.137 | 0.157 | 0.177 | 0.196 | 0.216 |
|               |                 | Retract = 1649                 | 0.033  | 0.049 | 0.066 | 0.082 | 0.099 | 0.115 | 0.132 | 0.148 | 0.165 | 0.181 |
| 63            | 20              | Extend = 3117                  | 0.062  | 0.094 | 0.125 | 0.156 | 0.187 | 0.218 | 0.249 | 0.281 | 0.312 | 0.343 |
|               |                 | Retract = 2803                 | 0.056  | 0.084 | 0.112 | 0.140 | 0.168 | 0.196 | 0.224 | 0.252 | 0.280 | 0.308 |

| Series | Ø (mm) | Stroke (mm) |
|--------|--------|-------------|
|--------|--------|-------------|

**A B**

**0 3 2**

**0 0 2 5**

- ▲ **AB** Single acting - magnetic
- ▲ **AD** Single acting - magnetic - spring extend
- **AF** Double acting - magnetic
- ◆ **AH** Double acting - cushioned - magnetic
- **AJ** Double acting - magnetic with double rod end
- ◆ **AL** Double acting - cushioned - magnetic with double rod end

032  
040  
050  
063

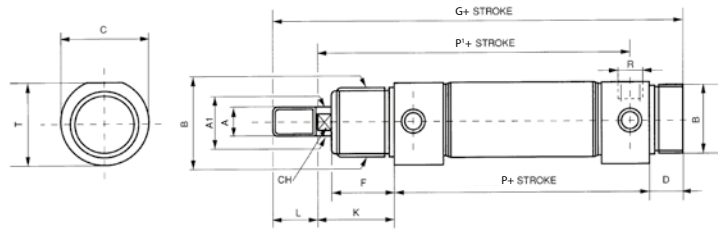
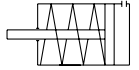
0010    0160  
0025    0200  
0050    0250  
0080    0320  
0100    0400  
0125    0500  
0150

Intermediate or longer strokes  
are available upon request.

| Ø (mm)    | Stroke (mm) |    |    |    |     |     |     |     |     |     |     |     |
|-----------|-------------|----|----|----|-----|-----|-----|-----|-----|-----|-----|-----|
|           | 10          | 25 | 50 | 80 | 100 | 125 | 160 | 200 | 250 | 320 | 400 | 500 |
| <b>32</b> | ▲●          | ▲◆ | ▲◆ | ◆  | ◆   | ◆   | ◆   | ◆   | ◆   | ◆   | ◆   | ◆   |
| <b>40</b> | ▲●          | ▲◆ | ▲◆ | ◆  | ◆   | ◆   | ◆   | ◆   | ◆   | ◆   | ◆   | ◆   |
| <b>50</b> | ▲●          | ▲◆ | ▲◆ | ◆  | ◆   | ◆   | ◆   | ◆   | ◆   | ◆   | ◆   | ◆   |
| <b>63</b> | ▲●          | ▲◆ | ▲◆ | ◆  | ◆   | ◆   | ◆   | ◆   | ◆   | ◆   | ◆   | ◆   |

**AB**

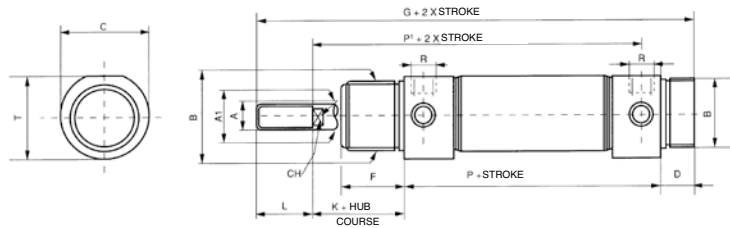
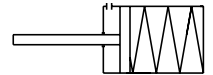
SINGLE ACTING - MAGNETIC



| ∅  | A        | A1 | B       | T    | C  | D  | F  | G   | K  | L  | P   | P <sup>1</sup> | CH | R        |
|----|----------|----|---------|------|----|----|----|-----|----|----|-----|----------------|----|----------|
| 32 | M10x1.25 | 12 | M30x1.5 | 36.5 | 38 | 14 | 30 | 168 | 38 | 20 | 96  | 125            | 10 | 1/8" GAS |
| 40 | M12x1.25 | 16 | M38x1.5 | 44   | 46 | 16 | 35 | 196 | 45 | 24 | 111 | 144            | 12 | 1/4" GAS |
| 50 | M16x1.5  | 20 | M45x1.5 | 55   | 57 | 18 | 38 | 220 | 50 | 32 | 120 | 158            | 16 | 1/4" GAS |
| 63 | M16x1.5  | 20 | M45x1.5 | 67.5 | 70 | 18 | 38 | 224 | 50 | 32 | 124 | 161            | 16 | 3/8" GAS |

**AD**

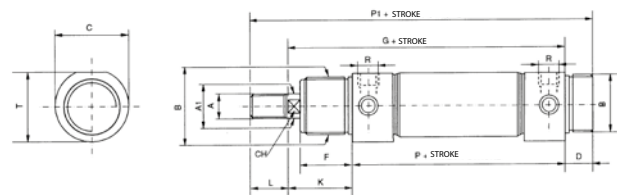
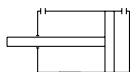
SINGLE ACTING - MAGNETIC - SPRING EXTEND



| ∅  | A        | A1 | B       | T    | C  | D  | F  | G   | K  | L  | P   | P <sup>1</sup> | CH | R        |
|----|----------|----|---------|------|----|----|----|-----|----|----|-----|----------------|----|----------|
| 32 | M10x1.25 | 12 | M30x1.5 | 36.5 | 38 | 14 | 30 | 168 | 38 | 20 | 96  | 125            | 10 | 1/8" GAS |
| 40 | M12x1.25 | 16 | M38x1.5 | 44   | 46 | 16 | 35 | 196 | 45 | 24 | 111 | 144            | 12 | 1/4" GAS |
| 50 | M16x1.5  | 20 | M45x1.5 | 55   | 57 | 18 | 38 | 220 | 50 | 32 | 120 | 158            | 16 | 1/4" GAS |
| 63 | M16x1.5  | 20 | M45x1.5 | 67.5 | 70 | 18 | 38 | 224 | 50 | 32 | 124 | 161            | 16 | 3/8" GAS |

**AF**

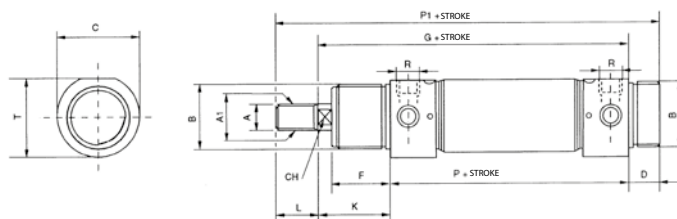
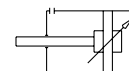
DOUBLE ACTING - MAGNETIC



| ∅  | A        | A1 | B       | T    | C  | D  | F  | G   | K  | L  | P   | P <sup>1</sup> | CH | R        |
|----|----------|----|---------|------|----|----|----|-----|----|----|-----|----------------|----|----------|
| 32 | M10x1.25 | 12 | M30x1.5 | 36.5 | 38 | 14 | 30 | 134 | 38 | 20 | 96  | 168            | 10 | 1/8" GAS |
| 40 | M12x1.25 | 16 | M38x1.5 | 44   | 46 | 16 | 35 | 156 | 45 | 24 | 111 | 196            | 12 | 1/4" GAS |
| 50 | M16x1.5  | 20 | M45x1.5 | 55   | 57 | 18 | 38 | 170 | 50 | 32 | 120 | 220            | 16 | 1/4" GAS |
| 63 | M16x1.5  | 20 | M45x1.5 | 67.5 | 70 | 18 | 38 | 174 | 50 | 32 | 124 | 224            | 16 | 3/8" GAS |

**AH**

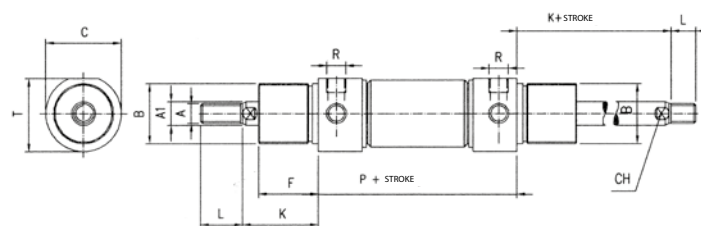
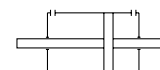
DOUBLE ACTING - CUSHIONED - MAGNETIC



| Ø  | A        | A1 | B       | T    | C  | D  | F  | G   | K  | L  | P   | P1  | CH | R       |
|----|----------|----|---------|------|----|----|----|-----|----|----|-----|-----|----|---------|
| 32 | M10x1.25 | 12 | M30x1.5 | 36.5 | 38 | 14 | 30 | 134 | 38 | 20 | 96  | 168 | 10 | 1/8"GAS |
| 40 | M12x1.25 | 16 | M38x1.5 | 44   | 46 | 16 | 35 | 156 | 45 | 24 | 111 | 196 | 12 | 1/4"GAS |
| 50 | M16x1.5  | 20 | M45x1.5 | 55   | 57 | 18 | 38 | 170 | 50 | 32 | 120 | 220 | 16 | 1/4"GAS |
| 63 | M16x1.5  | 20 | M45x1.5 | 67.5 | 70 | 18 | 38 | 174 | 50 | 32 | 124 | 224 | 16 | 3/8"GAS |

**AJ**

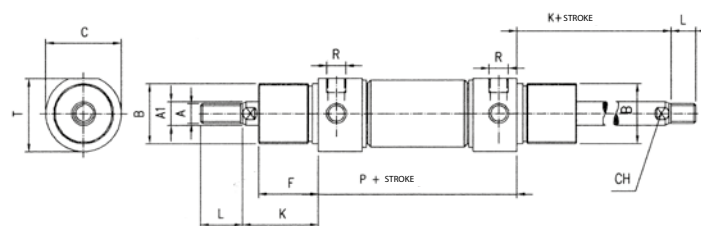
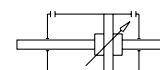
DOUBLE ACTING - MAGNETIC WITH DOUBLE ROD END



| Ø  | A        | A1 | B       | T    | C  | F  | K  | L  | P   | CH | R       |
|----|----------|----|---------|------|----|----|----|----|-----|----|---------|
| 32 | M10x1.25 | 12 | M30x1.5 | 36.5 | 38 | 30 | 38 | 20 | 96  | 10 | 1/8"GAS |
| 40 | M12x1.25 | 16 | M38x1.5 | 44   | 46 | 35 | 45 | 24 | 111 | 12 | 1/4"GAS |
| 50 | M16x1.5  | 20 | M45x1.5 | 55   | 57 | 38 | 50 | 32 | 120 | 16 | 1/4"GAS |
| 63 | M16x1.5  | 20 | M45x1.5 | 67.5 | 70 | 38 | 50 | 32 | 124 | 16 | 3/8"GAS |

**AL**

DOUBLE ACTING - CUSHIONED - MAGNETIC WITH DOUBLE ROD END

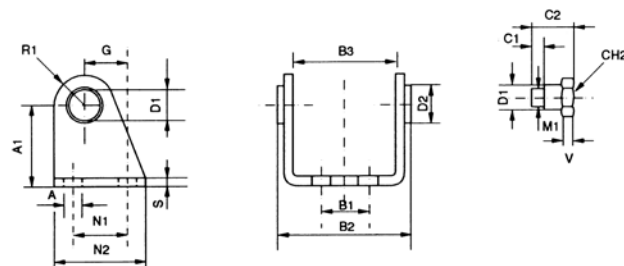


| Ø  | A        | A1 | B       | T    | C  | F  | K  | L  | P   | CH | R       |
|----|----------|----|---------|------|----|----|----|----|-----|----|---------|
| 32 | M10x1.25 | 12 | M30x1.5 | 36.5 | 38 | 30 | 38 | 20 | 96  | 10 | 1/8"GAS |
| 40 | M12x1.25 | 16 | M38x1.5 | 44   | 46 | 35 | 45 | 24 | 111 | 12 | 1/4"GAS |
| 50 | M16x1.5  | 20 | M45x1.5 | 55   | 57 | 38 | 50 | 32 | 120 | 16 | 1/4"GAS |
| 63 | M16x1.5  | 20 | M45x1.5 | 67.5 | 70 | 38 | 50 | 32 | 124 | 16 | 3/8"GAS |

**A95 Cylinder Mounting Accessories**

**ACC**

**CLEVIS BRACKET WITH PINS**

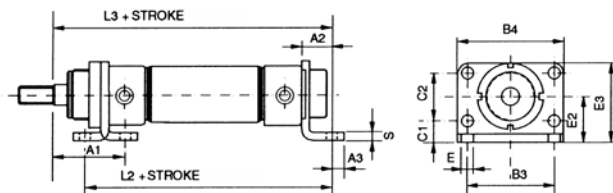


MATERIAL: Steel

| Part No.       | Ø         | D1 | D2 | A | A1 | G  | M1      | N1 | N2 | R1 | S | CH2 | B1 | B2   | B3   | V | C1 | C2   |
|----------------|-----------|----|----|---|----|----|---------|----|----|----|---|-----|----|------|------|---|----|------|
| <b>ACC 032</b> | <b>32</b> | 10 | 16 | 7 | 35 | 20 | M8x1    | 24 | 40 | 12 | 4 | 13  | 20 | 50.1 | 38.1 | 4 | 6  | 18   |
| <b>ACC 040</b> | <b>40</b> | 12 | 18 | 9 | 40 | 27 | M10x1   | 30 | 50 | 13 | 5 | 17  | 28 | 60.1 | 46.1 | 5 | 7  | 21.6 |
| <b>ACC 050</b> | <b>50</b> | 14 | 23 | 9 | 45 | 30 | M12x1.5 | 34 | 54 | 14 | 6 | 19  | 34 | 74.1 | 57.1 | 6 | 9  | 26.4 |
| <b>ACC 063</b> | <b>63</b> | 16 | 24 | 9 | 50 | 34 | M14x1.5 | 35 | 65 | 16 | 6 | 19  | 42 | 88.1 | 70.1 | 6 | 15 | 34   |

**APD**

**FOOT FLANGE**

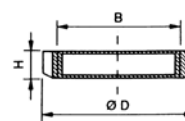


MATERIAL: Steel

| Part No.       | Ø         | E | E2 | E3 | C1 | C2 | L2  | L3  | B3 | B4 | S | A1 | A2 | A3 |
|----------------|-----------|---|----|----|----|----|-----|-----|----|----|---|----|----|----|
| <b>APD 032</b> | <b>32</b> | 7 | 28 | 49 | 14 | 28 | 124 | 148 | 52 | 66 | 4 | 48 | 14 | 7  |
| <b>APD 040</b> | <b>40</b> | 9 | 33 | 58 | 18 | 30 | 151 | 176 | 60 | 80 | 5 | 60 | 20 | 10 |
| <b>APD 050</b> | <b>50</b> | 9 | 40 | 70 | 20 | 40 | 160 | 190 | 70 | 90 | 6 | 64 | 20 | 10 |
| <b>APD 063</b> | <b>63</b> | 9 | 45 | 80 | 20 | 50 | 164 | 194 | 76 | 96 | 6 | 65 | 20 | 10 |

**AGT**

**MOUNTING NUT**

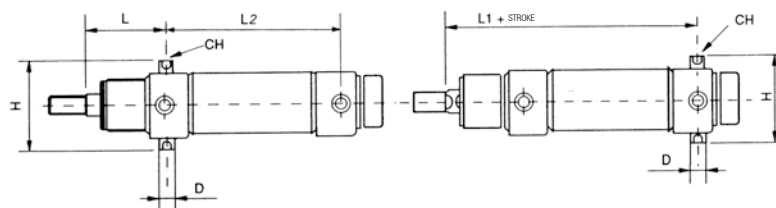


MATERIAL: Steel

| Part No.       | B              | D  | H |
|----------------|----------------|----|---|
| <b>AGT 032</b> | <b>M30x1.5</b> | 45 | 7 |
| <b>AGT 040</b> | <b>M38x1.5</b> | 50 | 8 |
| <b>AGT 050</b> | <b>M45x1.5</b> | 58 | 9 |

**APE**

**HEAD TRUNNION**



MATERIAL: Steel

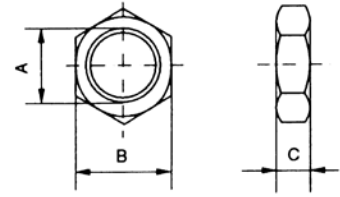
| Part No.       | Ø         | D  | H  | L1  | L2 | L  | CH |
|----------------|-----------|----|----|-----|----|----|----|
| <b>APE 032</b> | <b>32</b> | 10 | 51 | 125 | 78 | 47 | 5  |
| <b>APE 040</b> | <b>40</b> | 12 | 61 | 144 | 87 | 57 | 6  |
| <b>APE 050</b> | <b>50</b> | 14 | 75 | 158 | 96 | 62 | 6  |
| <b>APE 063</b> | <b>63</b> | 16 | 90 | 161 | 98 | 63 | 8  |

**DA**

ROD JAM NUT

MATERIAL: Steel

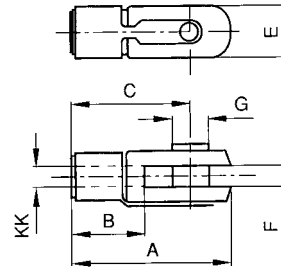
| Part No.                 | A               | B  | C |
|--------------------------|-----------------|----|---|
| <b>ODA00 00 51 C9 ZI</b> | <b>M10x1.25</b> | 17 | 8 |
| <b>ODA00 00 51 D5 ZI</b> | <b>M12x1.25</b> | 19 | 7 |
| <b>ODA00 00 51 E3 ZI</b> | <b>M16x1.5</b>  | 22 | 6 |



**FC**

ROD CLEVIS WITH LOCKABLE PIN

MATERIAL: Steel

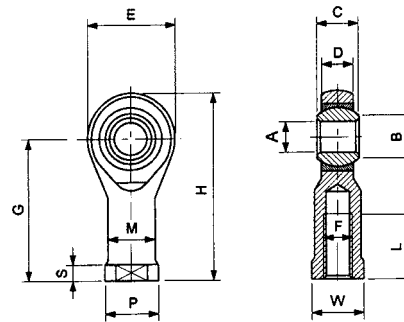


| Part No.      | KK              | A  | B  | C  | E  | F  | G  |
|---------------|-----------------|----|----|----|----|----|----|
| <b>FC 025</b> | <b>M10x1.25</b> | 52 | 20 | 40 | 20 | 10 | 10 |
| <b>FC 040</b> | <b>M12x1.25</b> | 62 | 24 | 48 | 24 | 12 | 12 |
| <b>FC 050</b> | <b>M16x1.5</b>  | 83 | 32 | 64 | 32 | 16 | 16 |

**TF**

SELF-LUBRICATING SPHERICAL ROD EYE

MATERIAL: Steel



| Part No.      | F               | A  | B    | C          | Ø Sphere | D      | E     | G     | H  | L     | M     | P     | S            | W      | Radial load |        | Weight |
|---------------|-----------------|----|------|------------|----------|--------|-------|-------|----|-------|-------|-------|--------------|--------|-------------|--------|--------|
|               |                 |    |      |            |          |        |       |       |    |       |       |       |              |        | Dynamic     | Static |        |
|               |                 | H7 | 0    | 0<br>-0.13 |          | ± 0.13 | ± 0.5 | ± 0.5 |    | ± 0.7 | ± 0.7 | ± 0.5 | +0.2<br>-0.7 | ± 0.25 | kg          | kg     | g      |
| <b>TF 025</b> | <b>M10x1.25</b> | 10 | 12.9 | 14         | 19.05    | 11.5   | 30    | 43    | 58 | 15    | 15    | 19    | 6.5          | 16     | 1.200       | 3.100  | 88     |
| <b>TF 040</b> | <b>M12x1.25</b> | 12 | 15.4 | 16         | 22.23    | 12.5   | 34    | 50    | 67 | 18    | 17.5  | 22    | 6.5          | 18     | 1.400       | 3.700  | 120    |
| <b>TF 050</b> | <b>M16x1.5</b>  | 16 | 19.3 | 21         | 28.58    | 15.5   | 42    | 64    | 85 | 24    | 22    | 27    | 8            | 24     | 2.500       | 6.300  | 240    |



**SERIES Q - COMPACT CYLINDERS**



**TECHNICAL CHARACTERISTICS**



**Component Parts and Materials**

- 1 303 Stainless steel piston rod (ø12-25)  
Chrome plated steel piston rod (ø32-100)
- 2 Anodized aluminum end cap
- 3 Zinc plated steel screw
- 4 Polyurethane rod seal
- 5 Sintered bronze rod bearing
- 6 NBR o-ring seals
- 7 Polyurethane piston seal
- 8 Bonded ferrite magnet
- 9 Aluminum piston
- 10 NBR o-ring seals
- 11 Zinc plated steel piston nut
- 12 Anodized aluminum body
- 13 Anodized aluminum end cap



**Reference Standard**

- 1907/2006 REACH ✓
- 2011/65/CE RoHS ✓
- PED 2014/68/UE
- SILICON FREE
- ATEX 2014/34/UE



**Pressures**

- 1 bar (0.1 MPa) / 14.5 psi
- 10 bar (0.7 MPa) / 145 psi



**Temperatures**

- 0 °C / 32 °F (-20 °C / -4 °F with dry air)
- + 80 °C / 176 °F



**Media**

Filtered and lubricated or non-lubricated compressed air.



**Functions**

- Single acting magnetic.
- Double-acting magnetic.
- Single or through piston rod magnetic.
- Antirotation magnetic.




**Bores**

from 12 to 100 mm



**Standard Strokes**

from 5 to 200 mm

| Series  | Version   | Ø (mm)   | Stroke (mm)   |
|---|---|--|---|
| <b>Q F</b>  |                              | <b>0 1 2</b>   | <b>0 0 2 5</b>  |
| <ul style="list-style-type: none"> <li>▲ <b>QB</b> Single acting - magnetic</li> <li>▲ <b>QD</b> Single acting - magnetic - spring extend</li> <li>● <b>QF</b> Double acting - magnetic</li> <li>● <b>QJ</b> Double acting - magnetic with double rod end</li> <li>◆ <b>QFA</b> Double acting - magnetic - anti rotation</li> </ul> | <ul style="list-style-type: none"> <li>= Standard female rod</li> <li><b>M</b> = Male rod (NO QFA)</li> </ul> | 012<br>016<br>020<br>025<br>032<br>040<br>050<br>063<br>080<br>100 | 0005    0050<br>0010    0060<br>0015    0080<br>0020    0100<br>0025    0125<br>0030    0150<br>0040    0200<br><br>Intermediate or longer strokes<br>are available upon request. |

| Ø (mm) | Stroke (mm) |    |    |    |    |    |    |    |    |    |     |     |     |     |
|--------|-------------|----|----|----|----|----|----|----|----|----|-----|-----|-----|-----|
|        | 5           | 10 | 15 | 20 | 25 | 30 | 40 | 50 | 60 | 80 | 100 | 125 | 150 | 200 |
| 12     | ▲◆          | ▲◆ | ◆  | ◆  | ◆  | ◆  | ◆  |    |    |    |     |     |     |     |
| 16     | ▲◆          | ▲◆ | ▲◆ | ▲◆ | ▲◆ | ◆  | ◆  |    |    |    |     |     |     |     |
| 20     | ▲◆          | ▲◆ | ▲◆ | ▲◆ | ▲◆ | ◆  | ◆  | ◆  |    |    |     |     |     |     |
| 25     | ▲◆          | ▲◆ | ▲◆ | ▲◆ | ▲◆ | ◆  | ◆  | ◆  | ◆  |    |     |     |     |     |
| 32     | ▲◆          | ▲◆ | ▲◆ | ▲◆ | ▲◆ | ◆  | ◆  | ◆  | ◆  | ◆  | ◆   | ◆   | ◆   | ◆   |
| 40     | ▲◆          | ▲◆ | ▲◆ | ▲◆ | ▲◆ | ◆  | ◆  | ◆  | ◆  | ◆  | ◆   | ◆   | ◆   | ◆   |
| 50     | ▲◆          | ▲◆ | ▲◆ | ▲◆ | ▲◆ | ◆  | ◆  | ◆  | ◆  | ◆  | ◆   | ◆   | ◆   | ◆   |
| 63     | ▲◆          | ▲◆ | ▲◆ | ▲◆ | ▲◆ | ◆  | ◆  | ◆  | ◆  | ◆  | ◆   | ◆   | ◆   | ◆   |
| 80     | ▲◆          | ▲◆ | ▲◆ | ▲◆ | ▲◆ | ◆  | ◆  | ◆  | ◆  | ◆  | ◆   | ◆   | ◆   | ◆   |
| 100    | ▲◆          | ▲◆ | ▲◆ | ▲◆ | ▲◆ | ◆  | ◆  | ◆  | ◆  | ◆  | ◆   | ◆   | ◆   | ◆   |

 **FORCES, SPRING LOADS AND AIR CONSUMPTION**

**Extend and Retract Forces**

| Cylinder<br>Ø | Piston Rod<br>Ø | Piston Area<br>mm <sup>2</sup> | Operating pressure |      |      |      |      |      |      |      |      |      |
|---------------|-----------------|--------------------------------|--------------------|------|------|------|------|------|------|------|------|------|
|               |                 |                                | bar                |      |      |      |      |      |      |      |      |      |
|               |                 |                                | 1                  | 2    | 3    | 4    | 5    | 6    | 7    | 8    | 9    | 10   |
|               |                 |                                | Output force<br>N  |      |      |      |      |      |      |      |      |      |
| 12            | 6               | Extend = 113                   | 10                 | 20   | 30   | 40   | 50   | 60   | 70   | 80   | 90   | 100  |
|               |                 | Retract = 85                   | 7.5                | 15   | 22   | 30   | 37   | 45   | 52   | 60   | 68   | 75   |
| 16            | 8               | Extend = 200                   | 18                 | 35   | 53   | 70   | 90   | 105  | 125  | 145  | 160  | 180  |
|               |                 | Retract = 150                  | 13                 | 26   | 40   | 53   | 65   | 80   | 95   | 105  | 120  | 130  |
| 20            | 10              | Extend = 314                   | 28                 | 55   | 85   | 110  | 140  | 170  | 195  | 220  | 250  | 280  |
|               |                 | Retract = 235                  | 21                 | 42   | 60   | 85   | 105  | 125  | 150  | 170  | 190  | 210  |
| 25            | 10              | Extend = 490                   | 44                 | 88   | 132  | 176  | 220  | 264  | 308  | 352  | 396  | 440  |
|               |                 | Retract = 412                  | 36                 | 72   | 108  | 144  | 180  | 216  | 252  | 288  | 324  | 360  |
| 32            | 12              | Extend = 804                   | 72                 | 144  | 216  | 288  | 360  | 432  | 504  | 576  | 648  | 720  |
|               |                 | Retract = 691                  | 62                 | 124  | 186  | 248  | 310  | 372  | 434  | 496  | 558  | 620  |
| 40            | 12              | Extend = 1257                  | 110                | 220  | 330  | 440  | 550  | 660  | 770  | 880  | 990  | 1100 |
|               |                 | Retract = 1144                 | 100                | 200  | 300  | 400  | 500  | 600  | 700  | 800  | 900  | 1000 |
| 50            | 16              | Extend = 1963                  | 175                | 350  | 525  | 700  | 875  | 1050 | 1225 | 1400 | 1575 | 1750 |
|               |                 | Retract = 1762                 | 155                | 310  | 465  | 620  | 775  | 930  | 1085 | 1240 | 1395 | 1550 |
| 63            | 16              | Extend = 3117                  | 280                | 560  | 840  | 1120 | 1400 | 1680 | 1960 | 2240 | 2520 | 2800 |
|               |                 | Retract = 2916                 | 260                | 520  | 780  | 1040 | 1300 | 1560 | 1820 | 2080 | 2340 | 2600 |
| 80            | 20              | Extend = 5027                  | 450                | 900  | 1350 | 1800 | 2250 | 2700 | 3150 | 3600 | 4050 | 4500 |
|               |                 | Retract = 4712                 | 420                | 840  | 1260 | 1680 | 2100 | 2520 | 2940 | 3360 | 3780 | 4200 |
| 100           | 25              | Extend = 7854                  | 700                | 1400 | 2100 | 2800 | 3500 | 4200 | 4900 | 5650 | 6360 | 7000 |
|               |                 | Retract = 7363                 | 660                | 1320 | 1980 | 2640 | 3300 | 3960 | 4620 | 5280 | 5940 | 6600 |

**Spring Loads**

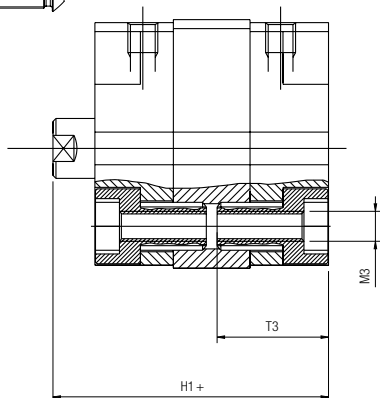
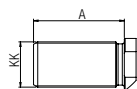
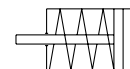
| Cylinder<br>Ø             | Spring load               | Stroke (mm) |      |      |      |      |
|---------------------------|---------------------------|-------------|------|------|------|------|
|                           |                           | 5           | 10   | 15   | 20   | 25   |
| <b>Output force<br/>N</b> |                           |             |      |      |      |      |
| <b>12</b>                 | Load of spring at rest    | 7.5         | 6.8  |      |      |      |
|                           | Load of compressed spring | 8           | 8    |      |      |      |
| <b>16</b>                 | Load of spring at rest    | 12.3        | 10.8 | 9.5  | 7.8  | 6.5  |
|                           | Load of compressed spring | 13.3        | 13.3 | 13.3 | 13.3 | 13.3 |
| <b>20</b>                 | Load of spring at rest    | 15.7        | 14   | 12.2 | 10.4 | 8.7  |
|                           | Load of compressed spring | 17.4        | 17.4 | 17.4 | 17.4 | 17.4 |
| <b>25</b>                 | Load of spring at rest    | 19.5        | 18.5 | 17.3 | 16   | 15   |
|                           | Load of compressed spring | 22          | 22   | 22   | 22   | 22   |
| <b>32</b>                 | Load of spring at rest    | 27.8        | 25.3 | 22.8 | 20.2 | 17.7 |
|                           | Load of compressed spring | 30          | 30   | 30   | 30   | 30   |
| <b>40</b>                 | Load of spring at rest    | 36.4        | 34   | 31.7 | 29.5 | 27   |
|                           | Load of compressed spring | 36          | 36   | 36   | 36   | 36   |
| <b>50</b>                 | Load of spring at rest    | 32          | 30.5 | 29   | 27.8 | 26.5 |
|                           | Load of compressed spring | 35          | 35   | 35   | 35   | 35   |
| <b>63</b>                 | Load of spring at rest    | 61          | 58.5 | 56.3 | 53.5 | 51.5 |
|                           | Load of compressed spring | 64.8        | 64.8 | 64.8 | 64.8 | 64.8 |
| <b>80</b>                 | Load of spring at rest    | 91.3        | 88   | 85   | 82   | 78.7 |
|                           | Load of compressed spring | 94          | 94   | 94   | 94   | 94   |
| <b>100</b>                | Load of spring at rest    | 150         | 145  | 140  | 134  | 129  |
|                           | Load of compressed spring | 156         | 156  | 156  | 156  | 156  |

**Air Consumption**

| Cylinder<br>Ø  | Piston Rod<br>Ø | Piston Area<br>mm <sup>2</sup> | Operating pressure<br>bar |       |       |       |       |       |       |       |       |       |
|--|-----------------|--------------------------------|---------------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
|  |                 |                                | 1                         | 2     | 3     | 4     | 5     | 6     | 7     | 8     | 9     | 10    |
| <b>Air consumption for each 10 mm of stroke<br/>NI</b> |                 |                                |                           |       |       |       |       |       |       |       |       |       |
| <b>12</b>  | <b>6</b>        | Extend = 113                   | 0.002                     | 0.003 | 0.005 | 0.006 | 0.007 | 0.008 | 0.009 | 0.010 | 0.011 | 0.012 |
|  |                 | Retract = 85                   | 0.002                     | 0.003 | 0.003 | 0.004 | 0.005 | 0.006 | 0.007 | 0.008 | 0.009 | 0.009 |
| <b>16</b>  | <b>8</b>        | Extend = 200                   | 0.004                     | 0.006 | 0.008 | 0.010 | 0.012 | 0.014 | 0.016 | 0.018 | 0.020 | 0.022 |
|  |                 | Retract = 150                  | 0.003                     | 0.005 | 0.006 | 0.008 | 0.009 | 0.011 | 0.012 | 0.014 | 0.015 | 0.017 |
| <b>20</b>  | <b>10</b>       | Extend = 314                   | 0.006                     | 0.009 | 0.013 | 0.016 | 0.019 | 0.022 | 0.025 | 0.028 | 0.031 | 0.035 |
|  |                 | Retract = 235                  | 0.005                     | 0.007 | 0.009 | 0.012 | 0.014 | 0.016 | 0.019 | 0.021 | 0.024 | 0.026 |
| <b>25</b>  | <b>10</b>       | Extend = 490                   | 0.010                     | 0.015 | 0.020 | 0.025 | 0.029 | 0.034 | 0.039 | 0.044 | 0.049 | 0.054 |
|  |                 | Retract = 412                  | 0.008                     | 0.012 | 0.016 | 0.021 | 0.025 | 0.029 | 0.033 | 0.037 | 0.041 | 0.045 |
| <b>32</b>  | <b>12</b>       | Extend = 804                   | 0.016                     | 0.024 | 0.032 | 0.040 | 0.048 | 0.056 | 0.064 | 0.072 | 0.080 | 0.088 |
|  |                 | Retract = 691                  | 0.014                     | 0.021 | 0.028 | 0.035 | 0.041 | 0.048 | 0.055 | 0.062 | 0.069 | 0.076 |
| <b>40</b>  | <b>12</b>       | Extend = 1257                  | 0.025                     | 0.038 | 0.050 | 0.063 | 0.075 | 0.088 | 0.101 | 0.113 | 0.126 | 0.138 |
|  |                 | Retract = 1144                 | 0.023                     | 0.034 | 0.046 | 0.057 | 0.069 | 0.080 | 0.092 | 0.103 | 0.114 | 0.126 |
| <b>50</b>  | <b>16</b>       | Extend = 1963                  | 0.039                     | 0.059 | 0.079 | 0.098 | 0.118 | 0.137 | 0.157 | 0.177 | 0.196 | 0.216 |
|  |                 | Retract = 1762                 | 0.035                     | 0.053 | 0.070 | 0.088 | 0.106 | 0.123 | 0.141 | 0.159 | 0.176 | 0.194 |
| <b>63</b>  | <b>16</b>       | Extend = 3117                  | 0.062                     | 0.094 | 0.125 | 0.156 | 0.187 | 0.218 | 0.249 | 0.281 | 0.312 | 0.343 |
|  |                 | Retract = 2916                 | 0.058                     | 0.087 | 0.117 | 0.146 | 0.175 | 0.204 | 0.233 | 0.262 | 0.292 | 0.321 |
| <b>80</b>  | <b>20</b>       | Extend = 5027                  | 0.101                     | 0.151 | 0.201 | 0.251 | 0.302 | 0.352 | 0.402 | 0.452 | 0.503 | 0.553 |
|  |                 | Retract = 4712                 | 0.094                     | 0.141 | 0.188 | 0.236 | 0.283 | 0.330 | 0.377 | 0.424 | 0.471 | 0.518 |
| <b>100</b>   | <b>25</b>       | Extend = 7854                  | 0.157                     | 0.236 | 0.314 | 0.393 | 0.471 | 0.550 | 0.628 | 0.707 | 0.785 | 0.864 |
|  |                 | Retract = 7363                 | 0.147                     | 0.221 | 0.295 | 0.368 | 0.442 | 0.515 | 0.589 | 0.663 | 0.736 | 0.810 |

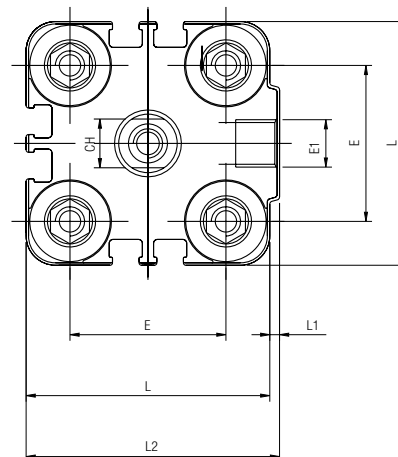
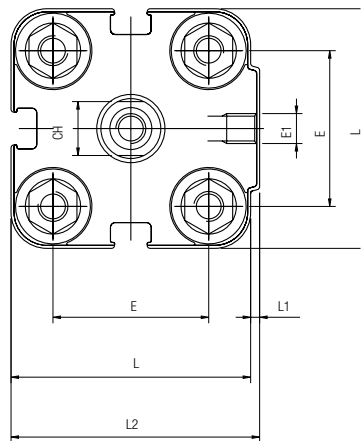
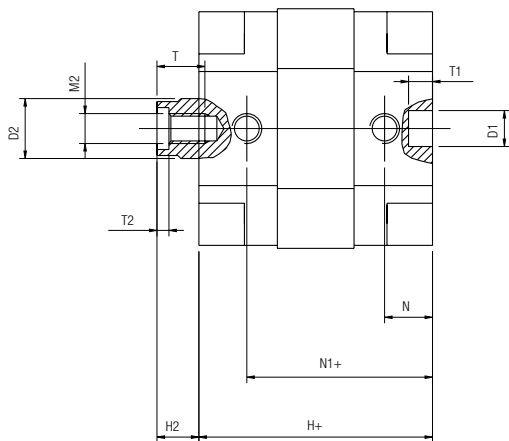
**QB**

SINGLE ACTING - MAGNETIC



Ø 12-16-20-25

Ø 32-40-50-63-80-100

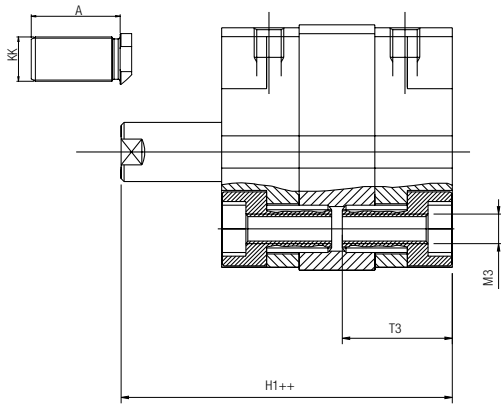
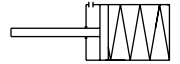


+ = Add Stroke

| Ø   | KK       | A  | T  | T1 | T2  | D1 | L   | E1   | M3  | T3   | M2  | H    | H2   | D2 | N    | N1   | L2   | E   | L1  | H1   | CH |
|-----|----------|----|----|----|-----|----|-----|------|-----|------|-----|------|------|----|------|------|------|-----|-----|------|----|
| 12  | M6       | 16 | 6  | 4  | 1.5 | 6  | 29  | M5   | M4  | 16   | M3  | 35   | 7.5  | 6  | 6.5  | 28.5 | 30   | 18  | 1   | 42.5 | 5  |
| 16  | M8       | 20 | 8  | 4  | 2   | 6  | 29  | M5   | M4  | 16   | M4  | 35   | 8.5  | 8  | 6.5  | 28.5 | 30   | 18  | 1   | 43.5 | 7  |
| 20  | M10X1,25 | 22 | 8  | 4  | 2   | 6  | 36  | M5   | M5  | 18.5 | M5  | 39   | 7    | 10 | 8    | 31   | 37.5 | 22  | 1.5 | 46   | 9  |
| 25  | M10X1,25 | 22 | 8  | 4  | 2   | 6  | 40  | M5   | M5  | 18.5 | M5  | 39   | 7    | 10 | 8    | 31   | 41.5 | 26  | 1.5 | 46   | 9  |
| 32  | M10X1,25 | 22 | 10 | 4  | 2.8 | 6  | 50  | G1/8 | M6  | 21.5 | M6  | 42   | 7    | 12 | 6.5  | 35.5 | 52   | 32  | 2   | 49   | 10 |
| 40  | M10X1,25 | 22 | 10 | 4  | 2.8 | 6  | 60  | G1/8 | M6  | 21.5 | M6  | 45.5 | 8.5  | 12 | 7.5  | 38   | 62.5 | 42  | 2.5 | 54   | 10 |
| 50  | M12X1,25 | 24 | 12 | 4  | 3.5 | 6  | 68  | G1/8 | M8  | 23.5 | M8  | 45.5 | 10   | 16 | 7.5  | 38   | 71   | 50  | 3   | 55.5 | 13 |
| 63  | M12X1,25 | 24 | 12 | 4  | 3.5 | 8  | 87  | G1/8 | M10 | 28.5 | M8  | 51   | 10.5 | 16 | 7.5  | 43.5 | 91   | 62  | 4   | 61.5 | 13 |
| 80  | M16X1,5  | 32 | 16 | 4  | 4.5 | 8  | 107 | G1/8 | M10 | 28.5 | M10 | 62   | 12   | 20 | 9.5  | 52.5 | 111  | 82  | 4   | 75   | 17 |
| 100 | M20X1,5  | 40 | 20 | 4  | 6   | 8  | 128 | G1/4 | M10 | 28.5 | M12 | 68   | 15.5 | 25 | 10.5 | 57.5 | 133  | 103 | 5   | 83.5 | 22 |

**QD**

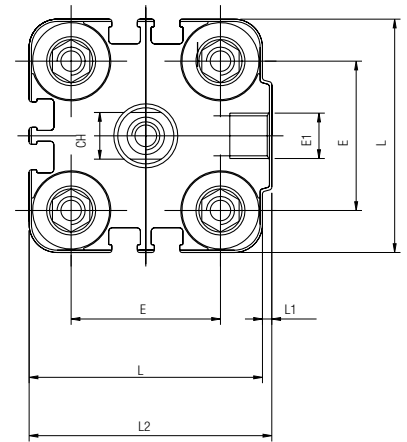
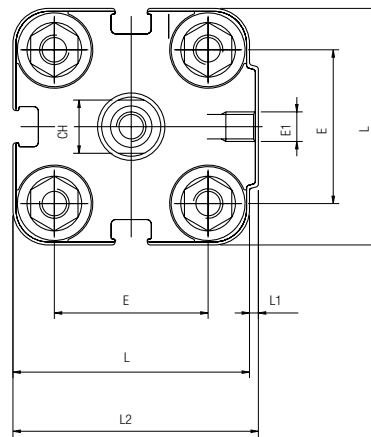
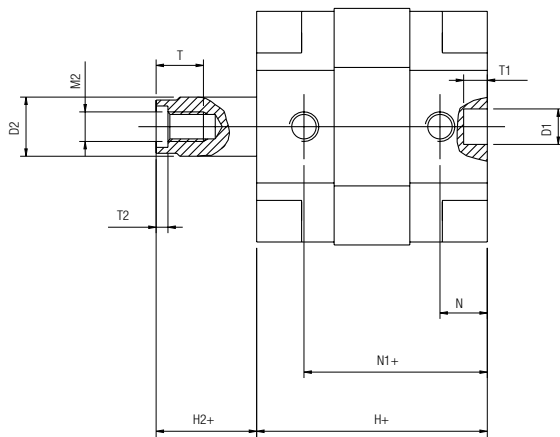
SINGLE ACTING - MAGNETIC - SPRING EXTEND



Ø 12-16-20-25



Ø 32-40-50-63-80-100

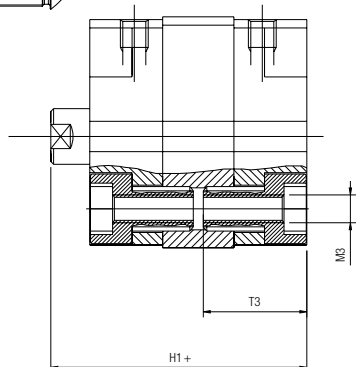
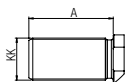
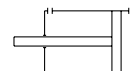


+ = Add Stroke      ++ = Double stroke dimension and add it

| Ø   | KK       | A  | T  | T1 | T2  | D1 | L   | E1   | M3  | T3   | M2  | H    | H2   | D2 | N    | N1   | L2   | E   | L1  | H1   | CH |
|-----|----------|----|----|----|-----|----|-----|------|-----|------|-----|------|------|----|------|------|------|-----|-----|------|----|
| 12  | M6       | 16 | 6  | 4  | 1.5 | 6  | 29  | M5   | M4  | 16   | M3  | 35   | 7.5  | 6  | 6.5  | 28.5 | 30   | 18  | 1   | 42.5 | 5  |
| 16  | M8       | 20 | 8  | 4  | 2   | 6  | 29  | M5   | M4  | 16   | M4  | 35   | 8.5  | 8  | 6.5  | 28.5 | 30   | 18  | 1   | 43.5 | 7  |
| 20  | M10X1,25 | 22 | 8  | 4  | 2   | 6  | 36  | M5   | M5  | 18.5 | M5  | 39   | 7    | 10 | 8    | 31   | 37.5 | 22  | 1.5 | 46   | 9  |
| 25  | M10X1,25 | 22 | 8  | 4  | 2   | 6  | 40  | M5   | M5  | 18.5 | M5  | 39   | 7    | 10 | 8    | 31   | 41.5 | 26  | 1.5 | 46   | 9  |
| 32  | M10X1,25 | 22 | 10 | 4  | 2.8 | 6  | 50  | G1/8 | M6  | 21.5 | M6  | 42   | 7    | 12 | 6.5  | 35.5 | 52   | 32  | 2   | 49   | 10 |
| 40  | M10X1,25 | 22 | 10 | 4  | 2.8 | 6  | 60  | G1/8 | M6  | 21.5 | M6  | 45.5 | 8.5  | 12 | 7.5  | 38   | 62.5 | 42  | 2.5 | 54   | 10 |
| 50  | M12X1,25 | 24 | 12 | 4  | 3.5 | 6  | 68  | G1/8 | M8  | 23.5 | M8  | 45.5 | 10   | 16 | 7.5  | 38   | 71   | 50  | 3   | 55.5 | 13 |
| 63  | M12X1,25 | 24 | 12 | 4  | 3.5 | 8  | 87  | G1/8 | M10 | 28.5 | M8  | 51   | 10.5 | 16 | 7.5  | 43.5 | 91   | 62  | 4   | 61.5 | 13 |
| 80  | M16X1,5  | 32 | 16 | 4  | 4.5 | 8  | 107 | G1/8 | M10 | 28.5 | M10 | 62   | 12   | 20 | 9.5  | 52.5 | 111  | 82  | 4   | 75   | 17 |
| 100 | M20X1,5  | 40 | 20 | 4  | 6   | 8  | 128 | G1/4 | M10 | 28.5 | M12 | 68   | 15.5 | 25 | 10.5 | 57.5 | 133  | 103 | 5   | 83.5 | 22 |

**QF**

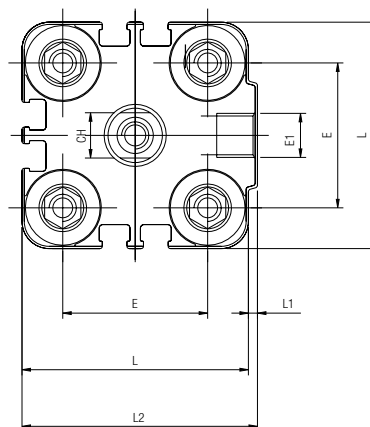
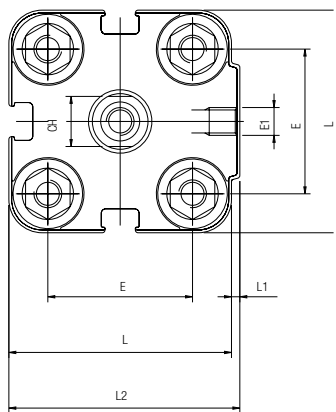
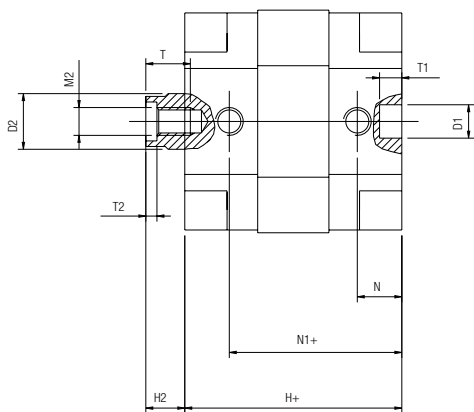
DOUBLE ACTING - MAGNETIC



Ø 12-16-20-25



Ø 32-40-50-63-80-100

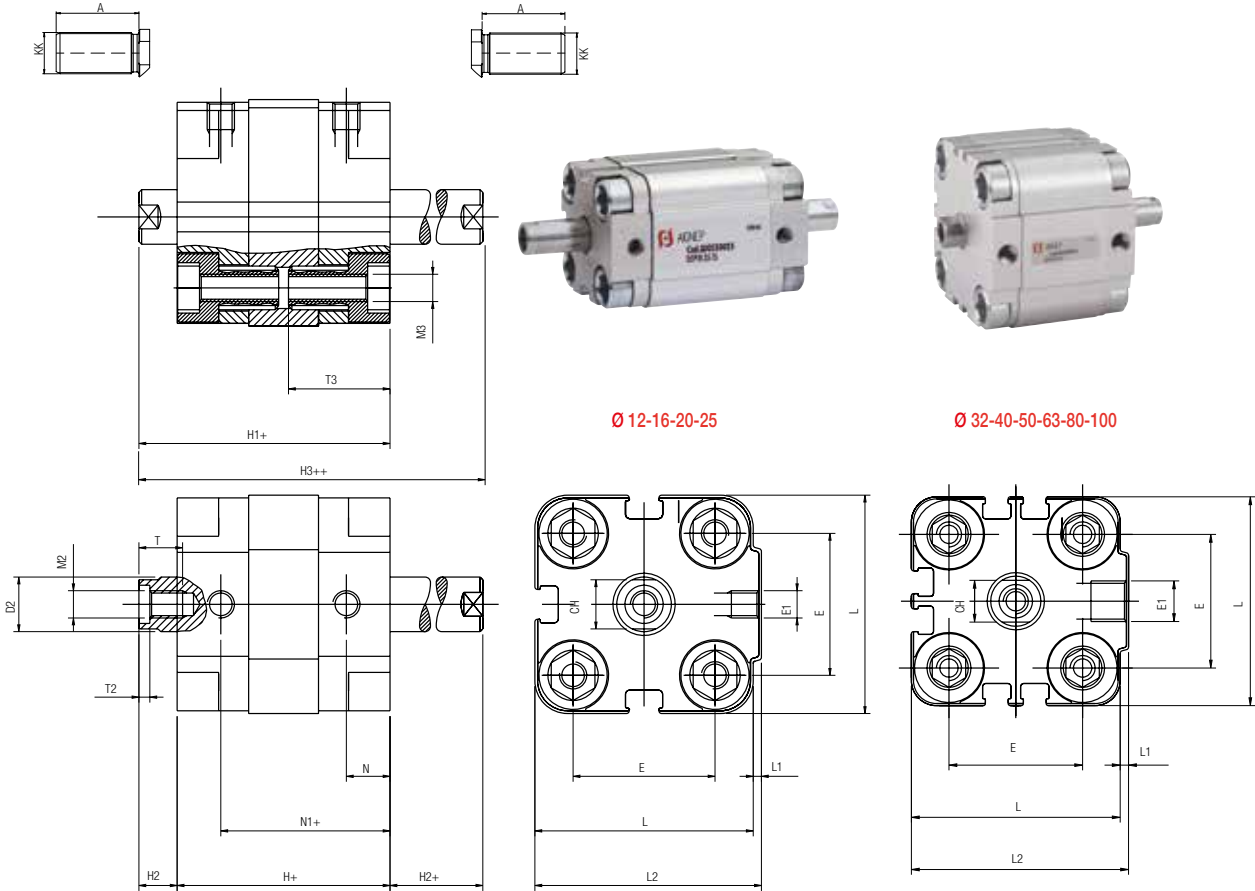
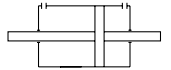


+ = Add Stroke

| Ø   | KK       | A  | T  | T1 | T2  | D1 | L   | E1   | M3  | T3   | M2  | H    | H2   | D2 | N    | N1   | L2   | E   | L1  | H1   | CH |
|-----|----------|----|----|----|-----|----|-----|------|-----|------|-----|------|------|----|------|------|------|-----|-----|------|----|
| 12  | M6       | 16 | 6  | 4  | 1.5 | 6  | 29  | M5   | M4  | 16   | M3  | 35   | 7.5  | 6  | 6.5  | 28.5 | 30   | 18  | 1   | 42.5 | 5  |
| 16  | M8       | 20 | 8  | 4  | 2   | 6  | 29  | M5   | M4  | 16   | M4  | 35   | 8.5  | 8  | 6.5  | 28.5 | 30   | 18  | 1   | 43.5 | 7  |
| 20  | M10X1,25 | 22 | 8  | 4  | 2   | 6  | 36  | M5   | M5  | 18.5 | M5  | 39   | 7    | 10 | 8    | 31   | 37.5 | 22  | 1.5 | 46   | 9  |
| 25  | M10X1,25 | 22 | 8  | 4  | 2   | 6  | 40  | M5   | M5  | 18.5 | M5  | 39   | 7    | 10 | 8    | 31   | 41.5 | 26  | 1.5 | 46   | 9  |
| 32  | M10X1,25 | 22 | 10 | 4  | 2.8 | 6  | 50  | G1/8 | M6  | 21.5 | M6  | 42   | 7    | 12 | 6.5  | 35.5 | 52   | 32  | 2   | 49   | 10 |
| 40  | M10X1,25 | 22 | 10 | 4  | 2.8 | 6  | 60  | G1/8 | M6  | 21.5 | M6  | 45.5 | 8.5  | 12 | 7.5  | 38   | 62.5 | 42  | 2.5 | 54   | 10 |
| 50  | M12X1,25 | 24 | 12 | 4  | 3.5 | 6  | 68  | G1/8 | M8  | 23.5 | M8  | 45.5 | 10   | 16 | 7.5  | 38   | 71   | 50  | 3   | 55.5 | 13 |
| 63  | M12X1,25 | 24 | 12 | 4  | 3.5 | 8  | 87  | G1/8 | M10 | 28.5 | M8  | 51   | 10.5 | 16 | 7.5  | 43.5 | 91   | 62  | 4   | 61.5 | 13 |
| 80  | M16X1,5  | 32 | 16 | 4  | 4.5 | 8  | 107 | G1/8 | M10 | 28.5 | M10 | 62   | 12   | 20 | 9.5  | 52.5 | 111  | 82  | 4   | 75   | 17 |
| 100 | M20X1,5  | 40 | 20 | 4  | 6   | 8  | 128 | G1/4 | M10 | 28.5 | M12 | 68   | 15.5 | 25 | 10.5 | 57.5 | 133  | 103 | 5   | 83.5 | 22 |

**QJ**

**SINGLE ACTING - MAGNETIC WITH DOUBLE ROD END**



+ = Add Stroke

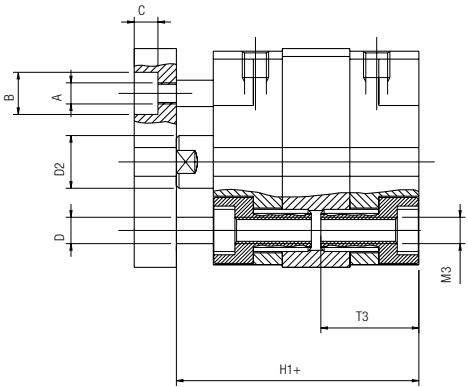
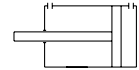
++ = Double stroke dimension and add it

| $\emptyset$ | KK       | A  | T  | M2  | T2  | D2 | L   | E1   | M3  | T3   | CH | H    | H2   | H3   | N    | N1   | L2   | E   | L1  | H1   |
|-------------|----------|----|----|-----|-----|----|-----|------|-----|------|----|------|------|------|------|------|------|-----|-----|------|
| 12          | M6       | 16 | 6  | M3  | 1.5 | 6  | 29  | M5   | M4  | 16   | 5  | 35   | 7.5  | 50   | 6.5  | 28.5 | 30   | 18  | 1   | 42.5 |
| 16          | M8       | 20 | 8  | M4  | 2   | 8  | 29  | M5   | M4  | 16   | 7  | 35   | 8.5  | 52   | 6.5  | 28.5 | 30   | 18  | 1   | 43.5 |
| 20          | M10X1,25 | 22 | 8  | M5  | 2   | 10 | 36  | M5   | M5  | 18.5 | 9  | 39   | 7    | 53   | 8    | 31   | 37.5 | 22  | 1.5 | 46   |
| 25          | M10X1,25 | 22 | 8  | M5  | 2   | 10 | 40  | M5   | M5  | 18.5 | 9  | 39   | 7    | 53   | 8    | 31   | 41.5 | 26  | 1.5 | 46   |
| 32          | M10X1,25 | 22 | 10 | M6  | 2.8 | 12 | 50  | G1/8 | M6  | 21.5 | 10 | 42   | 7    | 56   | 6.5  | 35.5 | 52   | 32  | 2   | 49   |
| 40          | M10X1,25 | 22 | 10 | M6  | 2.8 | 12 | 60  | G1/8 | M6  | 21.5 | 10 | 45.5 | 8.5  | 62.5 | 7.5  | 38   | 62.5 | 42  | 2.5 | 54   |
| 50          | M12X1,25 | 24 | 12 | M8  | 3.5 | 16 | 68  | G1/8 | M8  | 23.5 | 13 | 45.5 | 10   | 65.5 | 7.5  | 38   | 71   | 50  | 3   | 55.5 |
| 63          | M12X1,25 | 24 | 12 | M8  | 3.5 | 16 | 87  | G1/8 | M10 | 28.5 | 13 | 51   | 10.5 | 72   | 7.5  | 43.5 | 91   | 62  | 4   | 61.5 |
| 80          | M16X1,5  | 32 | 16 | M10 | 4.5 | 20 | 107 | G1/8 | M10 | 28.5 | 17 | 62   | 12   | 86   | 9.5  | 52.5 | 111  | 82  | 4   | 75   |
| 100         | M20X1,5  | 40 | 20 | M12 | 6   | 25 | 128 | G1/4 | M10 | 28.5 | 22 | 68   | 15.5 | 99   | 10.5 | 57.5 | 133  | 103 | 5   | 83.5 |



**QFA**

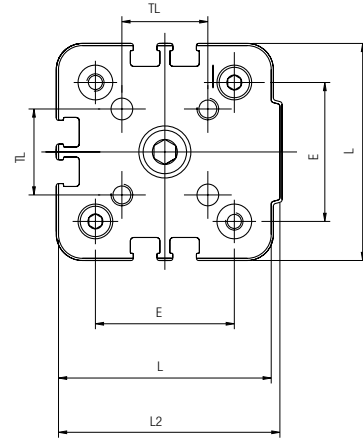
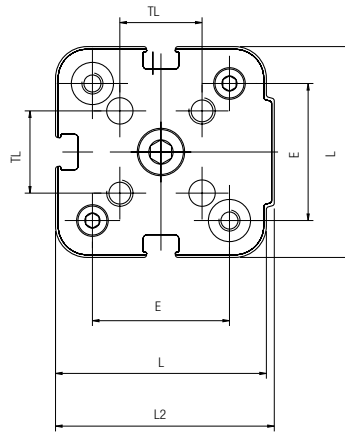
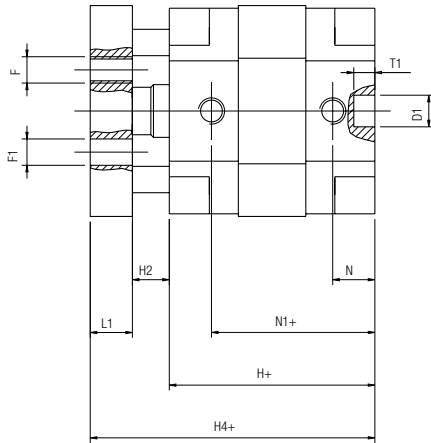
DOUBLE ACTING - MAGNETIC - ANTI ROTATION



Ø 12-16-20-25



Ø 32-40-50-63-80-100



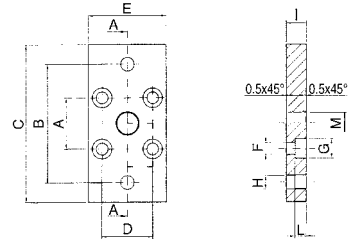
+ = Add Stroke

| Ø   | A  | B  | C   | D  | D1 | D2 | E   | F   | F1 | H    | H1   | H2   | H4   | L   | L1 | L2   | M3  | N    | N1   | T1 | T3   | TL   |
|-----|----|----|-----|----|----|----|-----|-----|----|------|------|------|------|-----|----|------|-----|------|------|----|------|------|
| 12  | M3 | 6  | 3.5 | 4  | 6  | 6  | 18  | M3  | 3  | 35   | 42.5 | 7.5  | 47.5 | 29  | 5  | 30   | M4  | 6.5  | 28.5 | 4  | 16   | 9.9  |
| 16  | M3 | 6  | 3.5 | 4  | 6  | 8  | 18  | M3  | 3  | 35   | 43.5 | 8.5  | 48.5 | 29  | 5  | 30   | M4  | 6.5  | 28.5 | 4  | 16   | 9.9  |
| 20  | M3 | 6  | 3.5 | 6  | 6  | 10 | 22  | M4  | 4  | 39   | 46   | 7    | 54   | 36  | 8  | 37.5 | M5  | 8    | 31   | 4  | 18.5 | 12   |
| 25  | M4 | 8  | 4.5 | 6  | 6  | 10 | 26  | M5  | 5  | 39   | 46   | 7    | 54   | 40  | 8  | 41.5 | M5  | 8    | 31   | 4  | 18.5 | 15.6 |
| 32  | M4 | 8  | 5.5 | 6  | 6  | 12 | 32  | M5  | 5  | 42   | 49   | 7    | 59   | 50  | 10 | 52   | M6  | 6.5  | 35.5 | 4  | 21.5 | 19.8 |
| 40  | M4 | 8  | 5.5 | 6  | 6  | 12 | 42  | M5  | 5  | 45.5 | 54   | 8.7  | 64   | 60  | 10 | 62.5 | M6  | 7.5  | 38   | 4  | 21.5 | 23.3 |
| 50  | M6 | 11 | 7   | 8  | 6  | 16 | 50  | M6  | 6  | 45.5 | 55.5 | 10.2 | 67.5 | 68  | 12 | 71   | M8  | 7.5  | 38   | 4  | 23.5 | 29.7 |
| 63  | M6 | 11 | 7   | 8  | 8  | 16 | 62  | M6  | 6  | 51   | 61.5 | 10.5 | 73.5 | 87  | 12 | 91   | M10 | 7.5  | 43.5 | 4  | 28.5 | 35.4 |
| 80  | M8 | 14 | 9   | 12 | 8  | 20 | 82  | M8  | 8  | 62   | 75   | 12   | 89   | 107 | 14 | 111  | M10 | 9.5  | 52.5 | 4  | 28.5 | 46   |
| 100 | M8 | 14 | 9   | 12 | 8  | 25 | 103 | M10 | 10 | 68   | 83.5 | 15.5 | 97.5 | 128 | 14 | 133  | M10 | 10.5 | 57.5 | 4  | 28.5 | 56.6 |

**SERIES Q Mounting Accessories**

**QFL**

FLANGE  
Ø 12-25

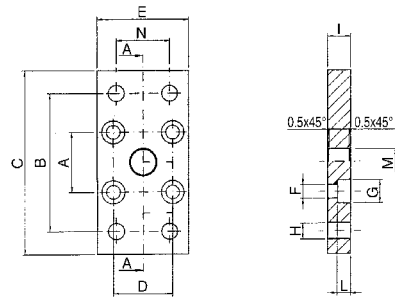


MATERIAL: Steel

| Part No. | Ø       | A  | B  | C  | D  | E  | F   | G  | H   | I  | L   | M  |
|----------|---------|----|----|----|----|----|-----|----|-----|----|-----|----|
| QFL 012  | 12 - 16 | 18 | 43 | 55 | 18 | 29 | 4.5 | 9  | 5.5 | 10 | 5.4 | 10 |
| QFL 020  | 20      | 22 | 55 | 70 | 22 | 36 | 5.5 | 10 | 6.6 | 10 | 5.4 | 12 |
| QFL 025  | 25      | 26 | 60 | 76 | 26 | 40 | 5.5 | 10 | 6.6 | 10 | 5.4 | 12 |

**QFL**

FLANGE  
Ø 32-100

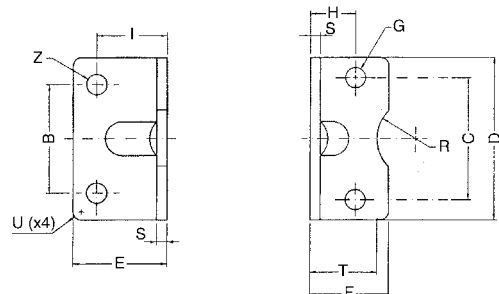


MATERIAL: Steel

| Part No. | Ø   | A   | B   | C   | D   | E   | F   | G  | H  | I  | L    | M  | N  |
|----------|-----|-----|-----|-----|-----|-----|-----|----|----|----|------|----|----|
| QFL 032  | 32  | 32  | 65  | 80  | 32  | 50  | 6.6 | 11 | 7  | 10 | 6.4  | 14 | 32 |
| QFL 040  | 40  | 42  | 82  | 102 | 42  | 60  | 6.6 | 11 | 9  | 10 | 6.4  | 14 | 36 |
| QFL 050  | 50  | 50  | 90  | 110 | 50  | 68  | 9   | 15 | 9  | 12 | 8.6  | 18 | 45 |
| QFL 063  | 63  | 62  | 110 | 130 | 62  | 87  | 11  | 15 | 9  | 15 | 10.6 | 18 | 50 |
| QFL 080  | 80  | 82  | 135 | 160 | 82  | 107 | 11  | 18 | 12 | 15 | 10.6 | 23 | 63 |
| QFL 100  | 100 | 103 | 163 | 190 | 103 | 128 | 11  | 18 | 14 | 15 | 10.6 | 28 | 75 |

**QCP**

LOW-RISE PEDESTAL  
Ø 12-32

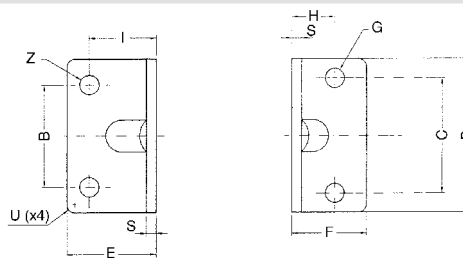


MATERIAL: Steel

| Part No. | Ø       | C  | B  | D  | E    | F    | G   | H  | I  | S | T  | R  | U | Z   |
|----------|---------|----|----|----|------|------|-----|----|----|---|----|----|---|-----|
| QCP 012  | 12 - 16 | 18 | 18 | 30 | 17.5 | 17.5 | 4.4 | 13 | 13 | 3 | 15 | 9  | 2 | 5.5 |
| QCP 020  | 20      | 22 | 22 | 36 | 22   | 22   | 5.4 | 16 | 16 | 4 | 17 | 10 | 2 | 6.6 |
| QCP 025  | 25      | 26 | 26 | 40 | 22   | 23   | 5.4 | 17 | 16 | 4 | 19 | 11 | 2 | 6.6 |
| QCP 032  | 32      | 32 | 32 | 50 | 26   | 24   | 6.6 | 16 | 18 | 5 | 20 | 12 | 2 | 6.6 |

**QPC**

LOW-RISE PEDESTAL  
Ø 40-100

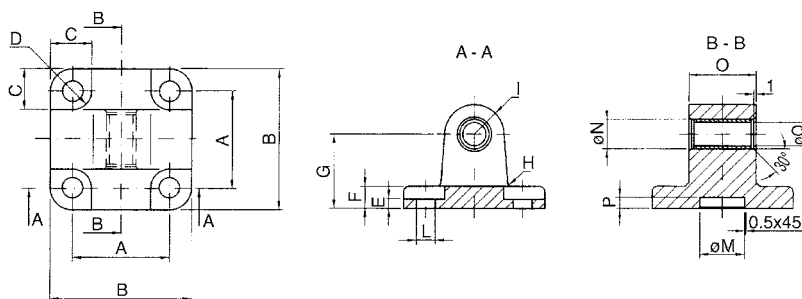


MATERIAL: Steel

| Part No. | Ø   | C   | B   | D   | E    | F    | G   | H    | I  | S | U | Z    |
|----------|-----|-----|-----|-----|------|------|-----|------|----|---|---|------|
| QCP 040  | 40  | 42  | 42  | 60  | 28   | 29.5 | 6.6 | 21.5 | 20 | 5 | 5 | 9    |
| QCP 050  | 50  | 50  | 50  | 68  | 32   | 30   | 9   | 22   | 24 | 6 | 5 | 9    |
| QCP 063  | 63  | 62  | 62  | 84  | 39   | 39   | 9   | 28.5 | 27 | 6 | 5 | 11   |
| QCP 080  | 80  | 82  | 82  | 102 | 36.5 | 36.5 | 11  | 24.5 | 30 | 8 | 5 | 11   |
| QCP 100  | 100 | 103 | 103 | 123 | 38.5 | 38.5 | 11  | 26.5 | 33 | 8 | 5 | 13.5 |

**QCM**

EYE BRACKET WITH SELF-LUBRICATING BUSHINGS

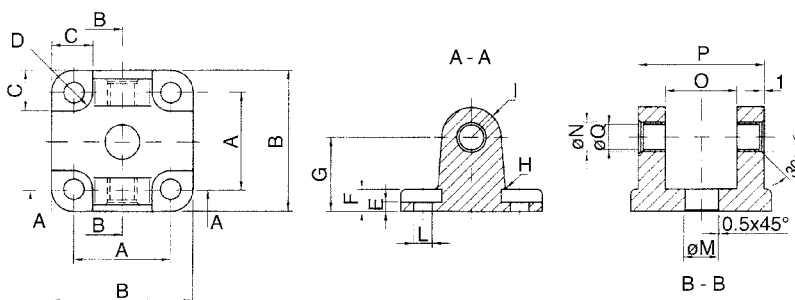


MATERIAL: Aluminium

| Part No. | Ø       | A  | B  | C  | D   | E   | F | G  | H | I | L   | M  | N  | O  | P | Q |
|----------|---------|----|----|----|-----|-----|---|----|---|---|-----|----|----|----|---|---|
| QCM 012  | 12 - 16 | 18 | 27 | 10 | 4.5 | 2.6 | 6 | 16 | 2 | 6 | 4.5 | 10 | 8  | 12 | 3 | 6 |
| QCM 020  | 20      | 22 | 34 | 11 | 5   | 2.6 | 6 | 20 | 2 | 8 | 5.5 | 12 | 10 | 16 | 3 | 8 |
| QCM 025  | 25      | 26 | 38 | 11 | 5   | 2.6 | 6 | 20 | 2 | 8 | 5.5 | 12 | 10 | 16 | 3 | 8 |

**QCF**

CLEVIS BRACKET WITH SELF-LUBRICATING BUSHINGS

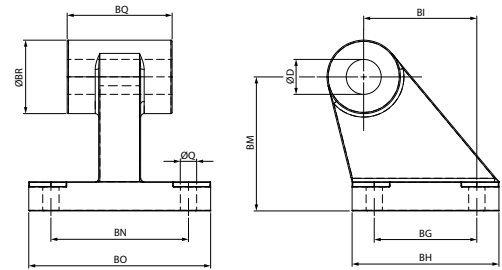


MATERIAL: Aluminium

| Part No. | Ø   | A   | B   | C    | D   | E   | F  | G  | H   | I    | L   | M  | N  | O  | P   | Q  |
|----------|-----|-----|-----|------|-----|-----|----|----|-----|------|-----|----|----|----|-----|----|
| QCF 032  | 32  | 32  | 48  | 13.5 | 5.5 | 5.5 | 9  | 22 | 2.5 | 10   | 6.6 | 14 | 12 | 26 | 45  | 10 |
| QCF 040  | 40  | 42  | 58  | 13.5 | 5.5 | 5.5 | 9  | 25 | 2.5 | 12.5 | 6.6 | 14 | 14 | 28 | 52  | 12 |
| QCF 050  | 50  | 50  | 66  | 15.5 | 7.5 | 6.5 | 11 | 27 | 2.5 | 12.5 | 9   | 18 | 14 | 32 | 60  | 12 |
| QCF 063  | 63  | 62  | 83  | 18   | 7.5 | 6.5 | 11 | 32 | 4   | 15   | 11  | 18 | 18 | 40 | 70  | 16 |
| QCF 080  | 80  | 82  | 102 | 19   | 9   | 10  | 13 | 36 | 4   | 15   | 11  | 23 | 18 | 50 | 90  | 16 |
| QCF 100  | 100 | 103 | 123 | 19   | 9   | 10  | 15 | 41 | 4   | 20   | 11  | 28 | 23 | 60 | 110 | 20 |

**VAS**

EYE BRACKET

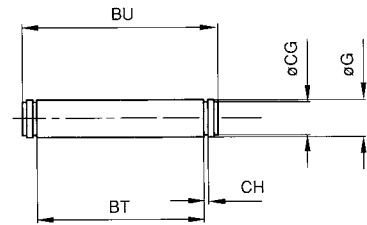


- MATERIAL: Aluminium
- MATERIAL: Stainless Steel

| Part No. ● | Part No. ■ | ∅   | Q   | BG | BH | BI | BM | BN | BO | BQ | BR |
|------------|------------|-----|-----|----|----|----|----|----|----|----|----|
| VAS 032    | VASI 032   | 32  | 6.6 | 18 | 31 | 21 | 32 | 38 | 51 | 26 | 20 |
| VAS 040    | VASI 040   | 40  | 6.6 | 22 | 35 | 24 | 36 | 41 | 54 | 28 | 22 |
| VAS 050    | VASI 050   | 50  | 9   | 30 | 45 | 33 | 45 | 50 | 65 | 32 | 26 |
| VAS 063    | VASI 063   | 63  | 9   | 35 | 50 | 37 | 50 | 52 | 67 | 40 | 30 |
| VAS 080    | VASI 080   | 80  | 11  | 40 | 60 | 47 | 63 | 66 | 86 | 50 | 30 |
| VAS 100    | VASI 100   | 100 | 11  | 50 | 70 | 55 | 71 | 76 | 96 | 60 | 38 |

**VPE**

PIN WITH RETAINER CLIPS

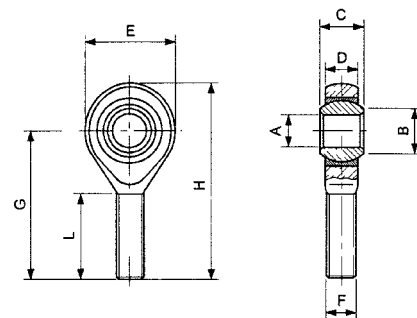


- MATERIAL: Steel
- MATERIAL: Stainless Steel

| Part No. ● | Part No. ■ | ∅   | G  | BT  | BU  | CG   | CH  |
|------------|------------|-----|----|-----|-----|------|-----|
| VPE 032    | VPEI 032   | 32  | 10 | 46  | 53  | 9.6  | 1.1 |
| VPE 040    | VPEI 040   | 40  | 12 | 53  | 60  | 11.5 | 1.1 |
| VPE 050    | VPEI 050   | 50  | 12 | 61  | 68  | 11.5 | 1.1 |
| VPE 063    | VPEI 063   | 63  | 16 | 71  | 78  | 15.2 | 1.1 |
| VPE 080    | VPEI 080   | 80  | 16 | 91  | 98  | 15.2 | 1.1 |
| VPE 100    | VPEI 100   | 100 | 20 | 111 | 118 | 19   | 1.3 |

**TM**

SPHERICAL ROD EYE WITH MALE THREAD



MATERIAL: Steel

| Part No. | F        | A  | B    | C  | ∅ Sphere | D    | E  | G  | H  | L  | Radial load |        | Weight |
|----------|----------|----|------|----|----------|------|----|----|----|----|-------------|--------|--------|
|          |          |    |      |    |          |      |    |    |    |    | Dynamic     | Static |        |
| TM 020   | M5x0.8   | 5  | 7.5  | 8  | 11.11    | 7.5  | 18 | 33 | 42 | 19 | 430         | 1000   | 13     |
| TM 032   | M6x1     | 6  | 8.9  | 9  | 12.7     | 7.5  | 20 | 36 | 46 | 21 | 470         | 1100   | 15     |
| TM 050   | M8x1.25  | 8  | 10.4 | 12 | 15.88    | 9.5  | 24 | 42 | 54 | 25 | 780         | 1900   | 34     |
| TM 080   | M10x1.5  | 10 | 12.9 | 14 | 19.05    | 11.5 | 30 | 48 | 63 | 28 | 1200        | 3100   | 70     |
| TM 100   | M12x1.75 | 12 | 15.4 | 16 | 22.23    | 12.5 | 34 | 54 | 71 | 32 | 1400        | 3700   | 110    |


**Extend and Retract Forces**

| Cylinder<br>∅ | Piston Rod<br>∅ | Piston Area<br>mm <sup>2</sup> | Operating pressure |       |       |       |       |       |       |       |       |       |
|---------------|-----------------|--------------------------------|--------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
|               |                 |                                | bar                |       |       |       |       |       |       |       |       |       |
|               |                 |                                | 1                  | 2     | 3     | 4     | 5     | 6     | 7     | 8     | 9     | 10    |
|               |                 |                                | Output force<br>N  |       |       |       |       |       |       |       |       |       |
| 32            | 12              | Extend = 804                   | 72                 | 144   | 216   | 288   | 360   | 432   | 504   | 576   | 648   | 720   |
|               |                 | Retract = 691                  | 62                 | 124   | 186   | 248   | 310   | 372   | 434   | 496   | 558   | 620   |
| 40            | 16              | Extend = 1257                  | 110                | 220   | 330   | 440   | 550   | 660   | 770   | 880   | 990   | 1100  |
|               |                 | Retract = 1056                 | 95                 | 190   | 285   | 380   | 475   | 570   | 665   | 760   | 855   | 950   |
| 50            | 20              | Extend = 1963                  | 175                | 350   | 525   | 700   | 875   | 1050  | 1225  | 1400  | 1575  | 1750  |
|               |                 | Retract = 1649                 | 148                | 296   | 444   | 592   | 740   | 888   | 1036  | 1184  | 1332  | 1480  |
| 63            | 20              | Extend = 3117                  | 280                | 560   | 840   | 1120  | 1400  | 1680  | 1960  | 2240  | 2520  | 2800  |
|               |                 | Retract = 2803                 | 250                | 500   | 750   | 1000  | 1250  | 1500  | 1750  | 2000  | 2250  | 2500  |
| 80            | 25              | Extend = 5027                  | 450                | 900   | 1350  | 1800  | 2250  | 2700  | 3150  | 3600  | 4050  | 4500  |
|               |                 | Retract = 4536                 | 405                | 810   | 1215  | 1620  | 2025  | 2430  | 2835  | 3240  | 3645  | 4050  |
| 100           | 25              | Extend = 7854                  | 700                | 1400  | 2100  | 2800  | 3500  | 4200  | 4900  | 5650  | 6360  | 7000  |
|               |                 | Retract = 7363                 | 660                | 1320  | 1980  | 2640  | 3300  | 3960  | 4620  | 5280  | 5940  | 6600  |
| 125           | 32              | Extend = 12270                 | 1104               | 2208  | 3312  | 4416  | 5520  | 6624  | 7728  | 8832  | 9936  | 11040 |
|               |                 | Retract = 11468                | 1032               | 2064  | 3096  | 4128  | 5160  | 6192  | 7224  | 8256  | 9288  | 10320 |
| 160           | 40              | Extend = 20096                 | 1774               | 3548  | 5322  | 7097  | 8871  | 10645 | 12419 | 14194 | 15968 | 17742 |
|               |                 | Retract = 18840                | 1663               | 3326  | 4990  | 6653  | 8316  | 9980  | 11643 | 13307 | 14970 | 16633 |
| 200           | 40              | Extend = 31440                 | 2772               | 5544  | 8316  | 11089 | 13861 | 16633 | 19406 | 22178 | 24950 | 27723 |
|               |                 | Retract = 30144                | 2661               | 5322  | 7984  | 10645 | 13307 | 15968 | 18629 | 21291 | 23952 | 26614 |
| 250           | 50              | Extend = 48750                 | 4331               | 8663  | 12995 | 17326 | 21658 | 25990 | 30322 | 34653 | 38985 | 43317 |
|               |                 | Retract = 46800                | 4158               | 8316  | 12475 | 16663 | 20792 | 24950 | 29109 | 33267 | 37426 | 41584 |
| 320           | 63              | Extend = 78872                 | 7097               | 14194 | 21291 | 28388 | 35485 | 42582 | 49679 | 56776 | 63873 | 70971 |
|               |                 | Retract = 76776                | 6822               | 13644 | 20466 | 27288 | 34110 | 40932 | 47754 | 54576 | 61398 | 68220 |

**Spring Loads**

| Cylinder<br>∅ | Spring load               | Stroke (mm)       |     |     |      |      |
|---------------|---------------------------|-------------------|-----|-----|------|------|
|               |                           | 25                | 50  | 75  | 80   | 100  |
|               |                           | Output force<br>N |     |     |      |      |
| 32            | Load of spring at rest    | 50                | 41  | 33  | 31.5 | 24.5 |
|               | Load of compressed spring | 58                | 58  | 58  | 58   | 58   |
| 40            | Load of spring at rest    | 52                | 43  | 34  | 32   | 25   |
|               | Load of compressed spring | 61                | 61  | 61  | 61   | 61   |
| 50            | Load of spring at rest    | 92                | 77  | 64  | 60   | 49   |
|               | Load of compressed spring | 110               | 110 | 110 | 110  | 110  |
| 63            | Load of spring at rest    | 92                | 77  | 64  | 60   | 49   |
|               | Load of compressed spring | 110               | 110 | 110 | 110  | 110  |
| 80            | Load of spring at rest    | 117               | 98  | 79  | 75   | 59   |
|               | Load of compressed spring | 138               | 138 | 138 | 138  | 138  |
| 100           | Load of spring at rest    | 117               | 98  | 79  | 75   | 59   |
|               | Load of compressed spring | 138               | 138 | 138 | 138  | 138  |

### Air Consumption

| Cylinder<br>∅                                  | Piston Rod<br>∅ | Piston Area<br>mm <sup>2</sup> | Operating pressure |       |       |       |       |       |       |       |       |       |
|--|-----------------|--------------------------------|--------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
|  |                 |                                | bar                |       |       |       |       |       |       |       |       |       |
|  |                 |                                | 1                  | 2     | 3     | 4     | 5     | 6     | 7     | 8     | 9     | 10    |
| Air consumption for each 10 mm of stroke<br>NI |                 |                                |                    |       |       |       |       |       |       |       |       |       |
| 32   | 12              | Extend = 804                   | 0.016              | 0.024 | 0.032 | 0.040 | 0.048 | 0.056 | 0.064 | 0.072 | 0.080 | 0.088 |
|  |                 | Retract = 691                  | 0.014              | 0.021 | 0.028 | 0.035 | 0.041 | 0.048 | 0.055 | 0.062 | 0.069 | 0.076 |
| 40   | 16              | Extend = 1257                  | 0.025              | 0.038 | 0.050 | 0.063 | 0.075 | 0.088 | 0.101 | 0.113 | 0.126 | 0.138 |
|  |                 | Retract = 1056                 | 0.021              | 0.032 | 0.042 | 0.053 | 0.063 | 0.074 | 0.084 | 0.095 | 0.106 | 0.116 |
| 50   | 20              | Extend = 1963                  | 0.039              | 0.059 | 0.079 | 0.098 | 0.118 | 0.137 | 0.157 | 0.177 | 0.196 | 0.216 |
|  |                 | Retract = 1649                 | 0.033              | 0.049 | 0.066 | 0.082 | 0.099 | 0.115 | 0.132 | 0.148 | 0.165 | 0.181 |
| 63   | 20              | Extend = 3117                  | 0.062              | 0.094 | 0.125 | 0.156 | 0.187 | 0.218 | 0.249 | 0.281 | 0.312 | 0.343 |
|  |                 | Retract = 2803                 | 0.056              | 0.084 | 0.112 | 0.140 | 0.168 | 0.196 | 0.224 | 0.252 | 0.280 | 0.308 |
| 80   | 25              | Extend = 5027                  | 0.101              | 0.151 | 0.201 | 0.251 | 0.302 | 0.352 | 0.402 | 0.452 | 0.503 | 0.553 |
|  |                 | Retract = 4536                 | 0.091              | 0.136 | 0.181 | 0.227 | 0.272 | 0.318 | 0.363 | 0.408 | 0.454 | 0.499 |
| 100  | 25              | Extend = 7854                  | 0.157              | 0.236 | 0.314 | 0.393 | 0.471 | 0.550 | 0.628 | 0.707 | 0.785 | 0.864 |
|  |                 | Retract = 7363                 | 0.147              | 0.221 | 0.295 | 0.368 | 0.442 | 0.515 | 0.589 | 0.663 | 0.736 | 0.810 |
| 125  | 32              | Extend = 12270                 | 0.245              | 0.368 | 0.491 | 0.614 | 0.736 | 0.859 | 0.982 | 1.104 | 1.227 | 1.350 |
|  |                 | Retract = 11468                | 0.229              | 0.344 | 0.459 | 0.573 | 0.688 | 0.803 | 0.917 | 1.032 | 1.147 | 1.261 |
| 160  | 40              | Extend = 20096                 | 0.402              | 0.603 | 0.804 | 1.005 | 1.206 | 1.407 | 1.608 | 1.809 | 2.010 | 2.211 |
|  |                 | Retract = 18840                | 0.377              | 0.565 | 0.754 | 0.942 | 1.130 | 1.319 | 1.507 | 1.696 | 1.884 | 2.072 |
| 200  | 40              | Extend = 31440                 | 0.628              | 0.942 | 1.256 | 1.570 | 1.884 | 2.198 | 2.512 | 2.826 | 3.140 | 3.454 |
|  |                 | Retract = 30144                | 0.603              | 0.904 | 1.206 | 1.507 | 1.809 | 2.110 | 2.412 | 2.713 | 3.014 | 3.316 |
| 250  | 50              | Extend = 48750                 | 0.981              | 1.472 | 1.963 | 2.453 | 2.948 | 3.434 | 3.925 | 4.415 | 4.906 | 5.400 |
|  |                 | Retract = 46800                | 0.942              | 1.413 | 1.884 | 2.355 | 2.826 | 3.297 | 3.768 | 4.239 | 4.710 | 5.181 |
| 320  | 63              | Extend = 78872                 | 1.610              | 2.411 | 3.215 | 4.020 | 4.820 | 5.626 | 6.430 | 7.234 | 8.038 | 8.843 |
|  |                 | Retract = 76776                | 1.545              | 2.320 | 3.100 | 3.863 | 4.630 | 5.408 | 6.181 | 6.954 | 7.726 | 8.450 |



*Light weight* ✓

*Low friction* ✓

*Clean design* ✓

*Adjustable cushion* ✓

*Long lasting quality* ✓

*Multiple versions for every application* ✓

*Aluminium piston* ✓

## **SERIE T**

Ø 32÷125

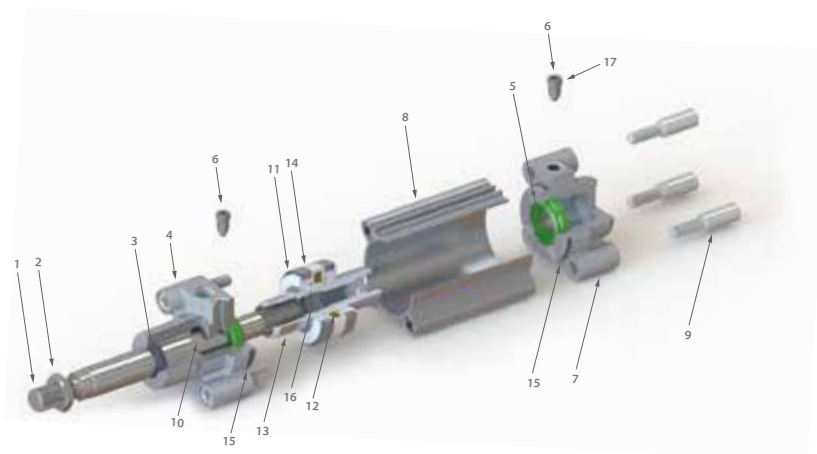
Serie T Aluminum profile with tie rods.







**TECHNICAL CHARACTERISTICS**



**Component Parts and Materials**

- 1 Chrome-plated Steel C40 piston rod
- 2 Zinc-plated steel nut
- 3 NBR rod seal
- 4 Aluminium front head
- 5 NBR cushion seal
- 6 Zinc-plated steel cushion screw
- 7 Aluminium rear head
- 8 Anodized Aluminium cylinder profile.
- 9 Zinc-plated screw
- 10 KU bushing
- 11 NBR piston seals
- 12 Plastroferrite magnet
- 13 Aluminium piston
- 14 Guide
- 15 NBR O-Ring (front head)
- 16 NBR O-Ring (piston)
- 17 NBR O-Ring (cushion screw)



**Reference Standard**

|                      |                      |                   |                 |                    |
|----------------------|----------------------|-------------------|-----------------|--------------------|
| 1907/2006<br>REACH ✓ | 2011/65/CE<br>RoHS ✓ | PED<br>2014/68/UE | SILICON<br>FREE | ATEX<br>2014/34/UE |
|----------------------|----------------------|-------------------|-----------------|--------------------|



**Recommended Sensors**

**DT**



**Pressures**

1 bar (0.1 MPa) / 14.5 psi  
 10 bar (0.7 MPa) / 145 psi  
**Starting pressure: 0,3 bar (0.03 MPa)**



**Temperatures**

0 °C / 32 °F (-20 °C / -4 °F with dry air)  
 + 80 °C / 176 °F



**Media**

Filtered and lubricated compressed air as well as non lubricated air.



**Functions**

Single acting magnetic or non-magnetic.  
 Double acting single or double end rod, magnetic or non-magnetic, cushioned or non-cushioned and tandem.



**Bores**

**from 32 to 125 mm**






**Standard Strokes**

**from 25 to 1000 mm**  
 Strokes on demand: up to 2700 mm

**FORCES, SPRING LOADS AND AIR CONSUMPTION**

See Pg. 15.34-15.35


| Serie  | Execution   | Ø<br>mm   | Stroke   | Version   | Choices   |
|--|---|---|--|---|---|
| <b>L H</b>   |                                        | <b>0 3 2</b>  | <b>0 0 2 5</b>   |      |    |
| <ul style="list-style-type: none"> <li>● <b>LH</b> Double acting - cushioned - magnetic</li> <li>▲ <b>LB</b> Single acting - magnetic</li> <li>● <b>LL</b> Double acting - cushioned - magnetic with double rod end</li> </ul> | <ul style="list-style-type: none"> <li>= Male rod</li> <li><b>B</b> Piston Rod Lock</li> <li><b>T</b> Tandem</li> </ul> | <ul style="list-style-type: none"> <li>032</li> <li>040</li> <li>050</li> <li>063</li> <li>080</li> <li>100</li> <li>125</li> </ul> | <ul style="list-style-type: none"> <li>0025</li> <li>0040</li> <li>0050</li> <li>0060</li> <li>0075</li> <li>0080</li> <li>0100</li> <li>0125</li> <li>0150</li> <li>0160</li> <li>0200</li> <li>0250</li> <li>0300</li> <li>0320</li> <li>0350</li> <li>0400</li> <li>0450</li> <li>0500</li> <li>0600</li> <li>0700</li> <li>0800</li> <li>0900</li> <li>1000</li> </ul> | <ul style="list-style-type: none"> <li>= Standard</li> <li><b>T</b> Tie rods</li> </ul> | <ul style="list-style-type: none"> <li>= Standard NBR</li> <li><b>PU</b> Polyurethane</li> <li><b>F</b> -40° Versione</li> <li><b>VS</b> Only Rod Seals in FKM</li> <li><b>IS</b> Stainless steel rod</li> <li><b>V</b> All FKM seals</li> <li><b>W</b> Water and chemical Version</li> <li><b>R</b> Metal Scraper (NBR)</li> <li><b>IVR</b> Corrosion resistant and chemical agents compatible.</li> </ul> |

Intermediate or higher strokes are available upon request Maximum stroke 2700 mm.

| Ø<br>mm    | Strokes<br>mm |    |    |    |    |    |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |      |
|------------|---------------|----|----|----|----|----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|------|
|            | 25            | 40 | 50 | 60 | 75 | 80 | 100 | 125 | 150 | 160 | 200 | 250 | 300 | 320 | 350 | 400 | 450 | 500 | 600 | 700 | 800 | 900 | 1000 |
| <b>32</b>  | ▲●            | ▲● | ▲● | ▲● | ▲● | ▲● | ▲●  | ●   | ●   | ●   | ●   | ●   | ●   | ●   | ●   | ●   | ●   | ●   | ●   | ●   | ●   | ●   | ●    |
| <b>40</b>  | ▲●            | ▲● | ▲● | ▲● | ▲● | ▲● | ▲●  | ●   | ●   | ●   | ●   | ●   | ●   | ●   | ●   | ●   | ●   | ●   | ●   | ●   | ●   | ●   | ●    |
| <b>50</b>  | ▲●            | ▲● | ▲● | ▲● | ▲● | ▲● | ▲●  | ●   | ●   | ●   | ●   | ●   | ●   | ●   | ●   | ●   | ●   | ●   | ●   | ●   | ●   | ●   | ●    |
| <b>63</b>  | ▲●            | ▲● | ▲● | ▲● | ▲● | ▲● | ▲●  | ●   | ●   | ●   | ●   | ●   | ●   | ●   | ●   | ●   | ●   | ●   | ●   | ●   | ●   | ●   | ●    |
| <b>80</b>  | ▲●            | ▲● | ▲● | ▲● | ▲● | ▲● | ▲●  | ●   | ●   | ●   | ●   | ●   | ●   | ●   | ●   | ●   | ●   | ●   | ●   | ●   | ●   | ●   | ●    |
| <b>100</b> | ▲●            | ▲● | ▲● | ▲● | ▲● | ▲● | ▲●  | ●   | ●   | ●   | ●   | ●   | ●   | ●   | ●   | ●   | ●   | ●   | ●   | ●   | ●   | ●   | ●    |
| <b>125</b> | ●             | ●  | ●  | ●  | ●  | ●  | ●   | ●   | ●   | ●   | ●   | ●   | ●   | ●   | ●   | ●   | ●   | ●   | ●   | ●   | ●   | ●   | ●    |

**MOST POPULAR VERSIONS**

L H  0 3 2 0 0 2 5



**STANDARD AUTOMATION**

-10 / +80 °C  
NBR SEALS - LOW FRICTION

L H  0 3 2 0 0 2 5 PU




**LONG LIFE**

-20 / +80 °C  
PU SEALS





L H  0 3 2 0 0 2 5 V




**HIGH TEMPERATURE AND CHEMICAL COMPATIBLE**

-10 / +150 °C  
FKM SEALS





L H  0 3 2 0 0 2 5 IS




**STAINLESS STEEL ROD**

-10 / +80 °C  
NBR SEALS - LOW FRICTION  
ROD: AISI 303



L H  0 3 2 0 0 2 5 F




**LOW TEMPERATURES**

-40 / +80 °C  
PU SEALS





L H  0 3 2 0 0 2 5 FR



**LOW TEMPERATURES WITH METAL SCRAPER**

-40 / +80 °C  
PU SEALS  
METAL SCRAPER

L H  0 3 2 0 0 2 5 W



**WATER AND CHEMICAL WASHING RESISTANT**

-10 / +60 °C  
PU SEALS - WATERPROOF  
ROD: AISI 303  
SPECIAL PAINTING




L H  0 3 2 0 0 2 5 IVR



**CORROSION RESISTANT AND CHEMICAL AGENTS COMPATIBLE**

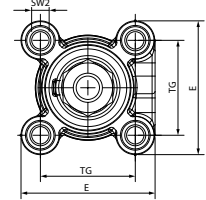
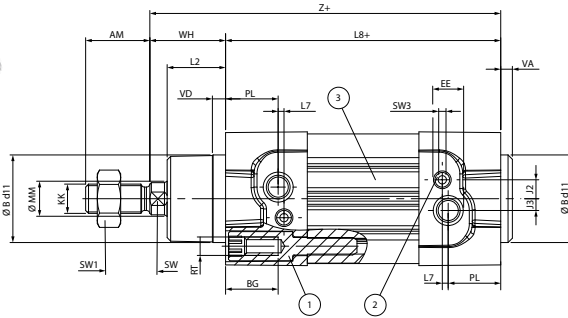
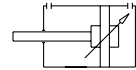
-10 / +150 °C  
FKM SEALS  
ROD: AISI 303  
SPECIAL PAINTING  
METAL SCRAPER





**LH**

DOUBLE ACTING - CUSHIONED - MAGNETIC

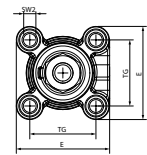
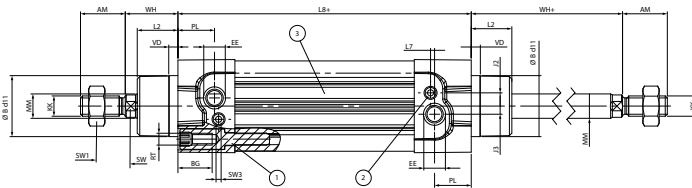
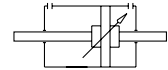


+ = Add Stroke

| Ø   | ØB d11 | VD   | VA | L2 | WH   | Ømm | SW | KK       | AM | SW1 | ZJ    | L8  | BG | RT  | SW2 | E   | TG   | EE   | PL   | J3  | J2   | L7  | SW3 |
|-----|--------|------|----|----|------|-----|----|----------|----|-----|-------|-----|----|-----|-----|-----|------|------|------|-----|------|-----|-----|
| 32  | 30     | 10   | 4  | 20 | 26   | 12  | 10 | M10X1.25 | 22 | 17  | 120   | 94  | 18 | M6  | 6   | 46  | 32.5 | G1/8 | 18   | 4   | 6.5  | 2   | 2.5 |
| 40  | 35     | 10.5 | 4  | 22 | 30   | 16  | 13 | M12X1.25 | 24 | 19  | 135   | 105 | 18 | M6  | 6   | 54  | 38   | G1/4 | 17.5 | 3.5 | 8    | 5.8 | 2.5 |
| 50  | 40     | 11.5 | 4  | 28 | 37   | 20  | 17 | M16X1.5  | 32 | 22  | 143   | 106 | 20 | M8  | 8   | 64  | 46.5 | G1/4 | 20.5 | 7   | 10   | 2   | 4   |
| 63  | 45     | 15   | 4  | 29 | 37   | 20  | 17 | M16X1.5  | 32 | 22  | 158   | 121 | 20 | M8  | 8   | 74  | 56.5 | G3/8 | 22   | 11  | 8.5  | 4   | 4   |
| 80  | 45     | 15.7 | 4  | 35 | 46   | 25  | 22 | M20X1.5  | 40 | 30  | 174   | 128 | 19 | M10 | 6   | 94  | 72   | G3/8 | 22   | 11  | 8.5  | 4   | 4   |
| 100 | 55     | 19.2 | 4  | 38 | 51.5 | 25  | 22 | M20X1.5  | 40 | 30  | 189.5 | 138 | 19 | M10 | 6   | 111 | 89   | G1/2 | 26   | 9   | 12.5 | 5   | 4   |
| 125 | 60     | 20   | 6  | 50 | 65   | 32  | 27 | M27X2    | 54 | 41  | 225   | 160 | 21 | M12 | 8   | 135 | 110  | G1/2 | 30   | 9   | 12.5 | 2.5 | 4   |

**LL**

DOUBLE ACTING - CUSHIONED - MAGNETIC WITH DOUBLE ROD END



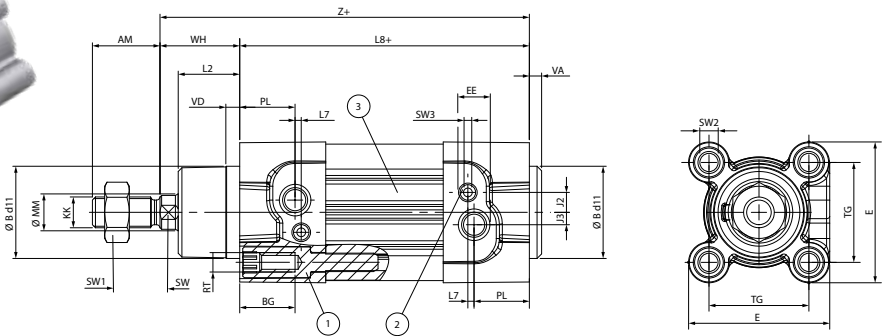
+ = Add Stroke

| Ø   | ØB d11 | VD   | VA | L2 | WH   | Ømm | SW | KK       | AM | SW1 | ZJ    | L8  | BG | RT  | SW2 | E   | TG   | EE   | PL   | J3  | J2   | L7  | SW3 |
|-----|--------|------|----|----|------|-----|----|----------|----|-----|-------|-----|----|-----|-----|-----|------|------|------|-----|------|-----|-----|
| 32  | 30     | 10   | 4  | 20 | 26   | 12  | 10 | M10X1.25 | 22 | 17  | 120   | 94  | 18 | M6  | 6   | 46  | 32.5 | G1/8 | 18   | 4   | 6.5  | 2   | 2.5 |
| 40  | 35     | 10.5 | 4  | 22 | 30   | 16  | 13 | M12X1.25 | 24 | 19  | 135   | 105 | 18 | M6  | 6   | 54  | 38   | G1/4 | 17.5 | 3.5 | 8    | 5.8 | 2.5 |
| 50  | 40     | 11.5 | 4  | 28 | 37   | 20  | 17 | M16X1.5  | 32 | 22  | 143   | 106 | 20 | M8  | 8   | 64  | 46.5 | G1/4 | 20.5 | 7   | 10   | 2   | 4   |
| 63  | 45     | 15   | 4  | 29 | 37   | 20  | 17 | M16X1.5  | 32 | 22  | 158   | 121 | 20 | M8  | 8   | 74  | 56.5 | G3/8 | 22   | 11  | 8.5  | 4   | 4   |
| 80  | 45     | 15.7 | 4  | 35 | 46   | 25  | 22 | M20X1.5  | 40 | 30  | 174   | 128 | 19 | M10 | 6   | 94  | 72   | G3/8 | 22   | 11  | 8.5  | 4   | 4   |
| 100 | 55     | 19.2 | 4  | 38 | 51.5 | 25  | 22 | M20X1.5  | 40 | 30  | 189.5 | 138 | 19 | M10 | 6   | 111 | 89   | G1/2 | 26   | 9   | 12.5 | 5   | 4   |
| 125 | 60     | 20   | 6  | 50 | 65   | 32  | 27 | M27X2    | 54 | 41  | 225   | 160 | 21 | M12 | 8   | 135 | 110  | G1/2 | 30   | 9   | 12.5 | 2.5 | 4   |

- ① = Socket head screw with female thread for mounting attachments.
- ② = Adjustment screw for adjustable end-position cushioning.
- ③ = Slot for proximity sensor.

**LB**

SINGLE ACTING - MAGNETIC



+ = Add Stroke

| Ø   | ØB d11 | VD   | VA | L2 | WH   | Ømm | SW | KK       | AM | SW1 | ZJ    | L8  | BG | RT  | SW2 | E   | TG   | EE   | PL   | J3  |
|-----|--------|------|----|----|------|-----|----|----------|----|-----|-------|-----|----|-----|-----|-----|------|------|------|-----|
| 32  | 30     | 10   | 4  | 20 | 26   | 12  | 10 | M10X1.25 | 22 | 17  | 145   | 119 | 18 | M6  | 6   | 46  | 32.5 | G1/8 | 18   | 4   |
| 40  | 35     | 10.5 | 4  | 22 | 30   | 16  | 13 | M12X1.25 | 24 | 19  | 160   | 130 | 18 | M6  | 6   | 54  | 38   | G1/4 | 17.5 | 3.5 |
| 50  | 40     | 11.5 | 4  | 28 | 37   | 20  | 17 | M16X1.5  | 32 | 22  | 168   | 131 | 20 | M8  | 8   | 64  | 46.5 | G1/4 | 20.5 | 7   |
| 63  | 45     | 15   | 4  | 29 | 37   | 20  | 17 | M16X1.5  | 32 | 22  | 183   | 146 | 20 | M8  | 8   | 74  | 56.5 | G3/8 | 22   | 8   |
| 80  | 45     | 15.7 | 4  | 35 | 46   | 25  | 22 | M20X1.5  | 40 | 30  | 199   | 153 | 19 | M10 | 6   | 94  | 72   | G3/8 | 22   | 11  |
| 100 | 55     | 19.2 | 4  | 38 | 51.5 | 25  | 22 | M20X1.5  | 40 | 30  | 214.5 | 163 | 19 | M10 | 6   | 111 | 89   | G1/2 | 26   | 9   |

KEY

① = Socket head screw with female thread for mounting attachments.

② = Adjustment screw for adjustable end-position cushioning.

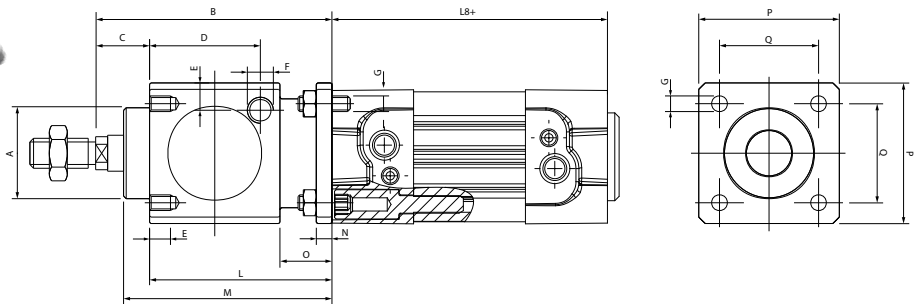
③ = Slot for proximity sensor.

**SERIES L - WITH PISTON ROD LOCK ISO 15552 / 6431**

**LHB**

DOUBLE ACTING - CUSHIONED - MAGNETIC WITH PISTON ROD LOCK

LLB: AVAILABLE DOUBLE ROD END



| Ø   | A    | B   | C  | D     | E    | F     | G   | H  | L   | M    | N  | O  | P   | Q    | L8  |
|-----|------|-----|----|-------|------|-------|-----|----|-----|------|----|----|-----|------|-----|
| 32  | 30   | 86  | 26 | 33.25 | 9    | 1/8"G | M6  | 8  | 60  | 67.5 | 6  | 20 | 47  | 32.5 | 94  |
| 40  | 34.5 | 100 | 30 | 42.5  | 9    | 1/8"G | M6  | 8  | 70  | 80   | 6  | 20 | 54  | 38   | 105 |
| 50  | 40   | 127 | 37 | 58    | 12.5 | 1/8"G | M8  | 12 | 90  | 100  | 8  | 24 | 65  | 46.5 | 106 |
| 63  | 45   | 127 | 37 | 59    | 17.5 | 1/8"G | M8  | 12 | 90  | 100  | 8  | 24 | 75  | 56.5 | 121 |
| 80  | 45   | 156 | 46 | 69    | 17.5 | 1/4"G | M10 | 16 | 110 | 120  | 12 | 32 | 95  | 72   | 128 |
| 100 | 55   | 161 | 51 | 69    | 20   | 1/4"G | M10 | 16 | 110 | 120  | 12 | 32 | 114 | 89   | 138 |
| 125 | 60   | 205 | 65 | 84.5  | 19   | 1/4"G | M12 | 20 | 140 | 156  | 20 | 45 | 138 | 110  | 160 |



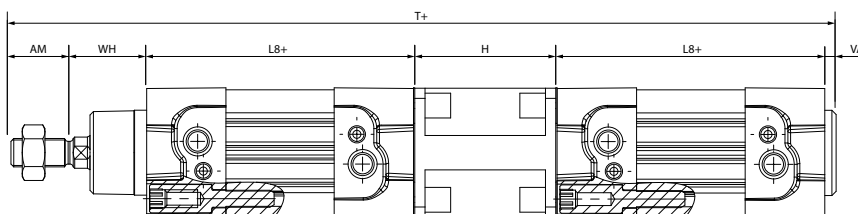
Pressures

Without Pressures:  
**LOCKED**

| Cylinder Supply Pressure | Minimum release pressure |
|--------------------------|--------------------------|
| 0 ÷ 7 bar (0 ÷ 0.7 Mpa)  | 2.5 bar (0.25 Mpa)       |
| 7 ÷ 10 bar (0.7 ÷ 1 Mpa) | 3 bar (0.3 Mpa)          |

**SERIES L - TANDEM ISO 15552/ 6431**
**LHT**

TANDEM DOUBLE ACTING - MAGNETIC



| $\varnothing$ | VA | WH   | AM | LB  | H   | T     |
|---------------|----|------|----|-----|-----|-------|
| 32            | 4  | 26   | 22 | 94  | 55  | 295   |
| 40            | 4  | 30   | 24 | 105 | 55  | 323   |
| 50            | 4  | 37   | 32 | 106 | 68  | 353   |
| 63            | 4  | 37   | 32 | 121 | 68  | 383   |
| 80            | 4  | 46   | 40 | 128 | 92  | 438   |
| 100           | 4  | 51.5 | 40 | 138 | 92  | 463.5 |
| 125           | 6  | 65   | 54 | 160 | 120 | 565   |

For further information please contact our technical department.

**SERIES E - CYLINDER ISO 6431**



**TECHNICAL CHARACTERISTICS**



**Functions**

Double acting single or double end rod, magnetic or non-magnetic.



**Reference Standard**

- 1907/2006  
**REACH** ✓
- 2011/65/CE  
**RoHS** ✓
- PED  
2014/68/UE
- SILICON  
FREE
- ATEX  
2014/34/UE



**Pressures**

**1 bar** (0.1 MPa) / 14.5 psi  
**10 bar** (0.7 MPa) / 145 psi



**Temperatures**

**0 °C / 32 °F** (-20 °C / -4 °F with dry air)  
**+ 80 °C / 176 °F**



**Media**

Filtered and lubricated or non-lubricated compressed air.

**FORCES, SPRING LOADS AND AIR CONSUMPTION**

See Pg. 15.34-15.35

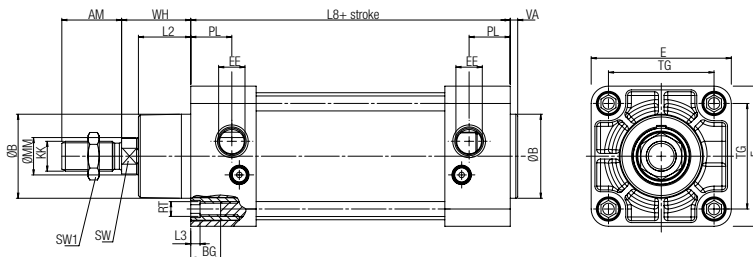
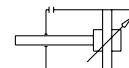
| Serie  | Ø (mm)                   | Stroke (mm)  | Mounting type  | Special version  |
|--|--------------------------|--|--|--|
| <b>E H</b>   | <b>1 6 0</b>             | <b>0 0 2 5</b>   | <b>T</b>   | <b>V S</b>   |
| ▲ <b>EH</b> Double acting - cushioned - magnetic<br>▲ <b>EL</b> Double Acting - cushioned - magnetic with double rod end | 160<br>200<br>250<br>320 | 0025    0320<br>0050    0350<br>0075    0400<br>0080    0450<br>0100    0500<br>0125    0600<br>0150    0700<br>0160    0800<br>0200    0900<br>0250    1000<br>0300 | <b>T</b> Anodized aluminium tube round profile with tie rods | <b>VS</b> Only Rod Seals in FKM<br><b>IS</b> Stainless steel rod<br><b>V</b> All FKM seals<br><b>R</b> Metal Scraper (160-200-250) |

Intermediate or longer strokes are available upon request.  
Maximum stroke 2700 mm.

| Ø (mm)     | Stroke (mm) |    |    |    |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |      |
|------------|-------------|----|----|----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|------|
|            | 25          | 50 | 75 | 80 | 100 | 125 | 150 | 160 | 200 | 250 | 300 | 320 | 350 | 400 | 450 | 500 | 600 | 700 | 800 | 900 | 1000 |
| <b>160</b> | ▲           | ▲  | ▲  | ▲  | ▲   | ▲   | ▲   | ▲   | ▲   | ▲   | ▲   | ▲   | ▲   | ▲   | ▲   | ▲   | ▲   | ▲   | ▲   | ▲   | ▲    |
| <b>200</b> | ▲           | ▲  | ▲  | ▲  | ▲   | ▲   | ▲   | ▲   | ▲   | ▲   | ▲   | ▲   | ▲   | ▲   | ▲   | ▲   | ▲   | ▲   | ▲   | ▲   | ▲    |
| <b>250</b> | ▲           | ▲  | ▲  | ▲  | ▲   | ▲   | ▲   | ▲   | ▲   | ▲   | ▲   | ▲   | ▲   | ▲   | ▲   | ▲   | ▲   | ▲   | ▲   | ▲   | ▲    |
| <b>320</b> | ▲           | ▲  | ▲  | ▲  | ▲   | ▲   | ▲   | ▲   | ▲   | ▲   | ▲   | ▲   | ▲   | ▲   | ▲   | ▲   | ▲   | ▲   | ▲   | ▲   | ▲    |

**EH T**

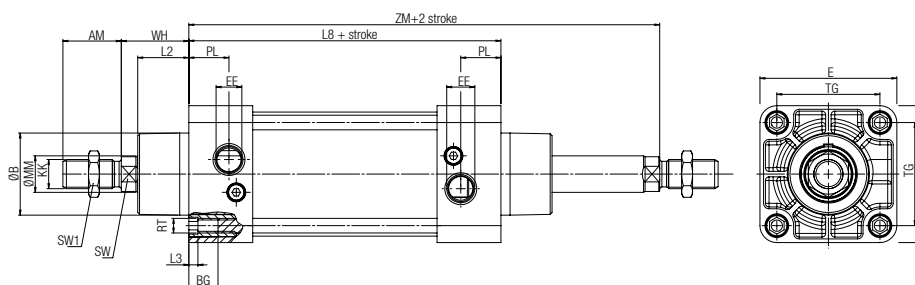
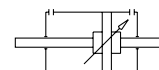
DOUBLE ACTING - CUSHIONED - MAGNETIC



| Ø   | Ø B | VA | L2 | WH  | Ø mm | SW | KK    | A  | L8  | BG | RT  | E   | TG  | EE   | PL | L3 | ZM  | SW1 |
|-----|-----|----|----|-----|------|----|-------|----|-----|----|-----|-----|-----|------|----|----|-----|-----|
| 160 | 65  | 6  | 55 | 80  | 40   | 36 | M36X2 | 72 | 180 | 24 | M16 | 180 | 140 | G3/4 | 29 | 0  | 340 | 55  |
| 200 | 75  | 6  | 60 | 95  | 40   | 36 | M36X2 | 72 | 180 | 24 | M16 | 220 | 175 | G3/4 | 29 | 0  | 370 | 55  |
| 250 | 90  | 10 | 75 | 105 | 50   | 46 | M42X2 | 84 | 200 | 25 | M20 | 275 | 220 | G1"  | 31 | 0  | 410 | 65  |
| 320 | 110 | 10 | 90 | 120 | 63   | 55 | M48X2 | 96 | 220 | 30 | M24 | 350 | 270 | G1"  | 30 | 0  | 460 | 75  |

**EL T**

DOUBLE ACTING - CUSHIONED - MAGNETIC WITH DOUBLE ROD END

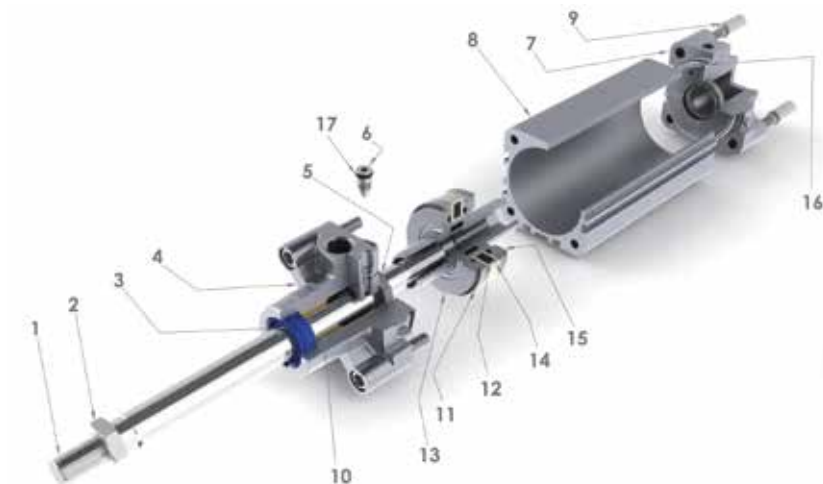


| Ø   | Ø B | VA | L2 | WH  | Ø mm | SW | KK    | A  | L8  | BG | RT  | E   | TG  | EE   | PL | L3 | ZM  | SW1 |
|-----|-----|----|----|-----|------|----|-------|----|-----|----|-----|-----|-----|------|----|----|-----|-----|
| 160 | 65  | 55 | 55 | 80  | 40   | 36 | M36X2 | 72 | 180 | 24 | M16 | 180 | 140 | G3/4 | 29 | 0  | 340 | 55  |
| 200 | 75  | 60 | 60 | 95  | 40   | 36 | M36X2 | 72 | 180 | 24 | M16 | 220 | 175 | G3/4 | 29 | 0  | 370 | 55  |
| 250 | 90  | 75 | 75 | 105 | 50   | 46 | M42X2 | 84 | 200 | 25 | M20 | 275 | 220 | G1"  | 31 | 0  | 410 | 65  |
| 320 | 110 | 90 | 90 | 120 | 63   | 55 | M48X2 | 96 | 220 | 30 | M24 | 350 | 270 | G1"  | 30 | 0  | 460 | 75  |





**TECHNICAL CHARACTERISTICS**



**Component Parts and Materials**

- 1 Chrome plated C40 steel piston rod
- 2 Zinc plated steel jam nut
- 3 Polyurethane rod seal or FKM
- 4 Aluminum end cap
- 5 Polyurethane cushion seals or FKM
- 6 Zinc plated steel cushion adjustment screw
- 7 Aluminum end cap
- 8 Anodized aluminum body
- 9 Zinc plated steel screws
- 10 Sintered bronze rod bearing
- 11 Polyurethane piston seals or FKM
- 12 Plastroferrite magnet
- 13 Aluminum piston
- 14 Support magnet
- 15 Aluminum piston
- 16 NBR o-ring seals or FKM
- 17 NBR o-ring seals or FKM



**Reference Standard**

- 1907/2006 REACH ✓
- 2011/65/CE RoHS ✓
- PED 2014/68/UE
- SILICON FREE
- ATEX 2014/34/UE



**Pressures**

- 1 bar (0.1 MPa) / 14.5 psi
- 10 bar (0.7 MPa) / 145 psi



**Temperatures**

- 0 °C / 32 °F (-20 °C / -4 °F with dry air)
- + 80 °C / 176 °F



**Media**

Filtered and lubricated or non-lubricated compressed air.



**Functions**

Single acting magnetic or non-magnetic. Double acting single or double end rod, magnetic or non-magnetic, cushioned or non-cushioned and tandem.



**Bores**

from 32 to 125 mm



**Standard Strokes**

from 25 to 1000 mm  
Strokes on demand: up to 2700 mm

**FORCES, SPRING LOADS AND AIR CONSUMPTION**

See Pg. 15.34-15.35

| Series | Ø (mm) | Stroke (mm) | Special version |
|--------|--------|-------------|-----------------|
|--------|--------|-------------|-----------------|

**X H**

**0 3 2**

**0 0 2 5**

**V S**

- ▲ **XB** Single acting - magnetic
- **XH** Double acting - cushioned - magnetic
- **XL** Double acting - cushioned - magnetic with double rod end

- 032
- 040
- 050
- 063
- 080
- 100
- 125

- 0025
- 0050
- 0075
- 0080
- 0100
- 0125
- 0150
- 0160
- 0200
- 0250
- 0300
- 0320
- 0350
- 0400
- 0450
- 0500
- 0600
- 0700
- 0800
- 0900
- 1000

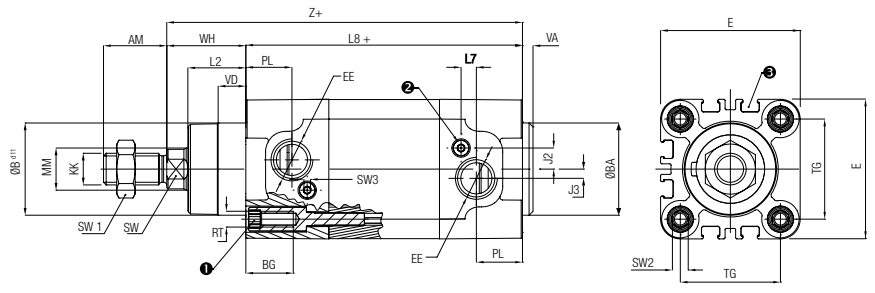
- VS** Only Rod Seals in FKM
- IS** Stainless steel rod
- V** All FKM seals
- R** Metal Scraper

Intermediate or longer strokes are available upon request. Maximum stroke 2700 mm.

| Ø (mm) | Stroke (mm) |    |    |    |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |      |
|--------|-------------|----|----|----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|------|
|        | 25          | 50 | 75 | 80 | 100 | 125 | 150 | 160 | 200 | 250 | 300 | 320 | 350 | 400 | 450 | 500 | 600 | 700 | 800 | 900 | 1000 |
| 32     | ▲●          | ▲● | ▲● | ▲● | ▲●  | ●   | ●   | ●   | ●   | ●   | ●   | ●   | ●   | ●   | ●   | ●   | ●   | ●   | ●   | ●   | ●    |
| 40     | ▲●          | ▲● | ▲● | ▲● | ▲●  | ●   | ●   | ●   | ●   | ●   | ●   | ●   | ●   | ●   | ●   | ●   | ●   | ●   | ●   | ●   | ●    |
| 50     | ▲●          | ▲● | ▲● | ▲● | ▲●  | ●   | ●   | ●   | ●   | ●   | ●   | ●   | ●   | ●   | ●   | ●   | ●   | ●   | ●   | ●   | ●    |
| 63     | ▲●          | ▲● | ▲● | ▲● | ▲●  | ●   | ●   | ●   | ●   | ●   | ●   | ●   | ●   | ●   | ●   | ●   | ●   | ●   | ●   | ●   | ●    |
| 80     | ▲●          | ▲● | ▲● | ▲● | ▲●  | ●   | ●   | ●   | ●   | ●   | ●   | ●   | ●   | ●   | ●   | ●   | ●   | ●   | ●   | ●   | ●    |
| 100    | ▲●          | ▲● | ▲● | ▲● | ▲●  | ●   | ●   | ●   | ●   | ●   | ●   | ●   | ●   | ●   | ●   | ●   | ●   | ●   | ●   | ●   | ●    |
| 125    | ●           | ●  | ●  | ●  | ●   | ●   | ●   | ●   | ●   | ●   | ●   | ●   | ●   | ●   | ●   | ●   | ●   | ●   | ●   | ●   | ●    |

**XB**

SINGLE ACTING - MAGNETIC



+ = Add Stroke

| Ø   | ØB d11 | VD   | VA | L2 | WH   | Ømm | SW | KK       | AM | SW1 | ZJ    | L8  | BG | RT  | SW2 | E   | TG   | EE   | PL   | J3  |
|-----|--------|------|----|----|------|-----|----|----------|----|-----|-------|-----|----|-----|-----|-----|------|------|------|-----|
| 32  | 30     | 10   | 4  | 20 | 26   | 12  | 10 | M10X1.25 | 22 | 17  | 145   | 119 | 18 | M6  | 6   | 46  | 32.5 | G1/8 | 18   | 4   |
| 40  | 35     | 10.5 | 4  | 22 | 30   | 16  | 13 | M12X1.25 | 24 | 19  | 160   | 130 | 18 | M6  | 6   | 54  | 38   | G1/4 | 17.5 | 3.5 |
| 50  | 40     | 11.5 | 4  | 28 | 37   | 20  | 17 | M16X1.5  | 32 | 22  | 168   | 131 | 20 | M8  | 8   | 64  | 46.5 | G1/4 | 20.5 | 7   |
| 63  | 45     | 15   | 4  | 29 | 37   | 20  | 17 | M16X1.5  | 32 | 22  | 183   | 146 | 20 | M8  | 8   | 74  | 56.5 | G3/8 | 22   | 8   |
| 80  | 45     | 15.7 | 4  | 35 | 46   | 25  | 22 | M20X1.5  | 40 | 30  | 199   | 153 | 19 | M10 | 6   | 94  | 72   | G3/8 | 22   | 11  |
| 100 | 55     | 19.2 | 4  | 38 | 51.5 | 25  | 22 | M20X1.5  | 40 | 30  | 214.5 | 163 | 19 | M10 | 6   | 111 | 89   | G1/2 | 26   | 9   |

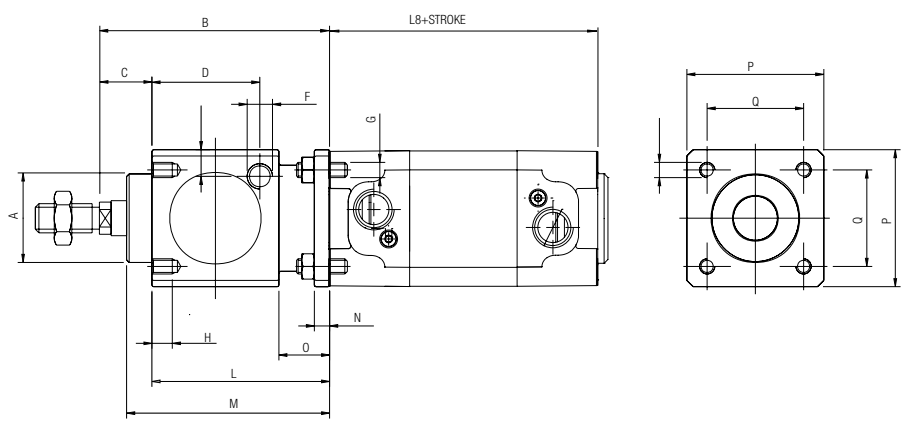
- KEY**
- ① = Socket head screw with female thread for mounting attachments.
  - ② = Adjustment screw for adjustable end-position cushioning.
  - ③ = Slot for proximity sensor.

**SERIES X - WITH PISTON LOCK ISO 15552**

**XHB**

DOUBLE ACTING - CUSHIONED - MAGNETIC WITH PISTON ROD LOCK

**XLB:** AVAILABLE DOUBLE ROD END



| Ø   | A    | B   | C  | D     | E    | F     | G   | H  | L   | M    | N  | O  | P   | Q    | L8  |
|-----|------|-----|----|-------|------|-------|-----|----|-----|------|----|----|-----|------|-----|
| 32  | 30   | 86  | 26 | 33.25 | 9    | 1/8"G | M6  | 8  | 60  | 67.5 | 6  | 20 | 47  | 32.5 | 94  |
| 40  | 34.5 | 100 | 30 | 42.5  | 9    | 1/8"G | M6  | 8  | 70  | 80   | 6  | 20 | 54  | 38   | 105 |
| 50  | 40   | 127 | 37 | 58    | 12.5 | 1/8"G | M8  | 12 | 90  | 100  | 8  | 24 | 65  | 46.5 | 106 |
| 63  | 45   | 127 | 37 | 59    | 17.5 | 1/8"G | M8  | 12 | 90  | 100  | 8  | 24 | 75  | 56.5 | 121 |
| 80  | 45   | 156 | 46 | 69    | 17.5 | 1/4"G | M10 | 16 | 110 | 120  | 12 | 32 | 95  | 72   | 128 |
| 100 | 55   | 161 | 51 | 69    | 20   | 1/4"G | M10 | 16 | 110 | 120  | 12 | 32 | 114 | 89   | 138 |
| 125 | 60   | 205 | 65 | 84.5  | 19   | 1/4"G | M12 | 20 | 140 | 156  | 20 | 45 | 138 | 110  | 160 |



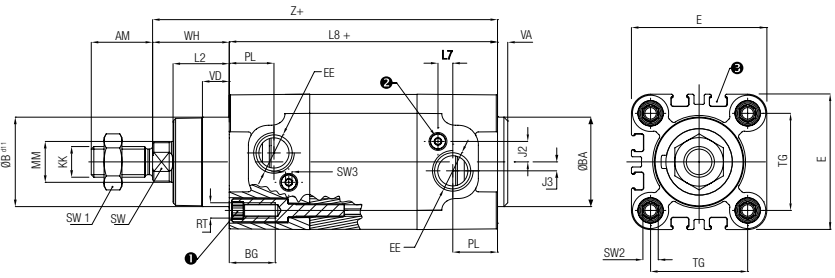
Pressures

Without Pressures:  
**LOCKED**

| Cylinder Supply Pressure | Minimum release pressure |
|--------------------------|--------------------------|
| 0 ÷ 7 bar (0 ÷ 0.7 Mpa)  | 2.5 bar (0.25 Mpa)       |
| 7 ÷ 10 bar (0.7 ÷ 1 Mpa) | 3 bar (0.3 Mpa)          |

**XH**

DOUBLE ACTING - CUSHIONED - MAGNETIC

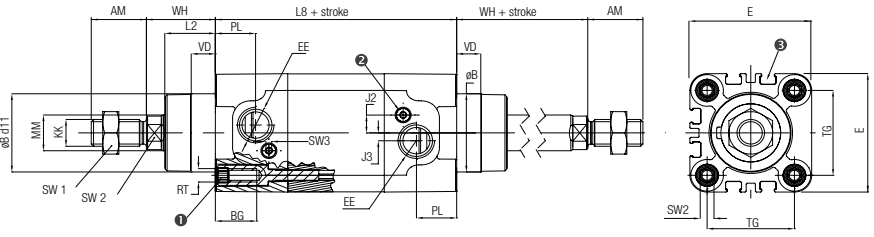


+ = Add Stroke

| Ø   | ØB d11 | VD   | VA | L2 | WH   | Ømm | SW | KK       | AM | SW1 | ZJ    | L8  | BG | RT  | SW2 | E   | TG   | EE   | PL   | J3  | J2   | L7  | SW3 |
|-----|--------|------|----|----|------|-----|----|----------|----|-----|-------|-----|----|-----|-----|-----|------|------|------|-----|------|-----|-----|
| 32  | 30     | 10   | 4  | 20 | 26   | 12  | 10 | M10X1.25 | 22 | 17  | 120   | 94  | 18 | M6  | 6   | 46  | 32.5 | G1/8 | 18   | 4   | 6.5  | 2   | 2.5 |
| 40  | 35     | 10.5 | 4  | 22 | 30   | 16  | 13 | M12X1.25 | 24 | 19  | 135   | 105 | 18 | M6  | 6   | 54  | 38   | G1/4 | 17.5 | 3.5 | 8    | 5.8 | 2.5 |
| 50  | 40     | 11.5 | 4  | 28 | 37   | 20  | 17 | M16X1.5  | 32 | 22  | 143   | 106 | 20 | M8  | 8   | 64  | 46.5 | G1/4 | 20.5 | 7   | 10   | 2   | 4   |
| 63  | 45     | 15   | 4  | 29 | 37   | 20  | 17 | M16X1.5  | 32 | 22  | 158   | 121 | 20 | M8  | 8   | 74  | 56.5 | G3/8 | 22   | 11  | 8.5  | 4   | 4   |
| 80  | 45     | 15.7 | 4  | 35 | 46   | 25  | 22 | M20X1.5  | 40 | 30  | 174   | 128 | 19 | M10 | 6   | 94  | 72   | G3/8 | 22   | 11  | 8.5  | 4   | 4   |
| 100 | 55     | 19.2 | 4  | 38 | 51.5 | 25  | 22 | M20X1.5  | 40 | 30  | 189.5 | 138 | 19 | M10 | 6   | 111 | 89   | G1/2 | 26   | 9   | 12.5 | 5   | 4   |
| 125 | 60     | 20   | 6  | 50 | 65   | 32  | 27 | M27X2    | 54 | 41  | 225   | 160 | 21 | M12 | 8   | 135 | 110  | G1/2 | 30   | 9   | 12.5 | 2.5 | 4   |

**XL**

DOUBLE ACTING - CUSHIONED - MAGNETIC WITH DOUBLE ROD END



+ = Add Stroke

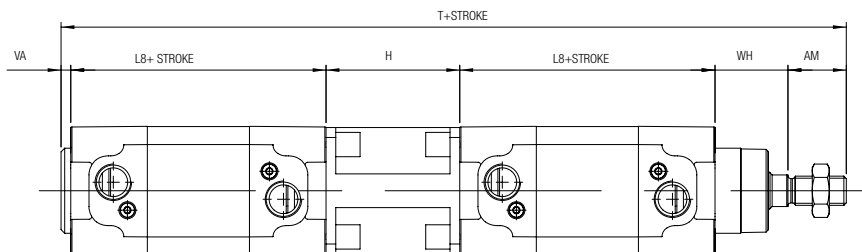
| Ø   | ØB d11 | VD   | VA | L2 | WH   | Ømm | SW | KK       | AM | SW1 | ZJ    | L8  | BG | RT  | SW2 | E   | TG   | EE   | PL   | J3  | J2   | L7  | SW3 |
|-----|--------|------|----|----|------|-----|----|----------|----|-----|-------|-----|----|-----|-----|-----|------|------|------|-----|------|-----|-----|
| 32  | 30     | 10   | 4  | 20 | 26   | 12  | 10 | M10X1.25 | 22 | 17  | 120   | 94  | 18 | M6  | 6   | 46  | 32.5 | G1/8 | 18   | 4   | 6.5  | 2   | 2.5 |
| 40  | 35     | 10.5 | 4  | 22 | 30   | 16  | 13 | M12X1.25 | 24 | 19  | 135   | 105 | 18 | M6  | 6   | 54  | 38   | G1/4 | 17.5 | 3.5 | 8    | 5.8 | 2.5 |
| 50  | 40     | 11.5 | 4  | 28 | 37   | 20  | 17 | M16X1.5  | 32 | 22  | 143   | 106 | 20 | M8  | 8   | 64  | 46.5 | G1/4 | 20.5 | 7   | 10   | 2   | 4   |
| 63  | 45     | 15   | 4  | 29 | 37   | 20  | 17 | M16X1.5  | 32 | 22  | 158   | 121 | 20 | M8  | 8   | 74  | 56.5 | G3/8 | 22   | 11  | 8.5  | 4   | 4   |
| 80  | 45     | 15.7 | 4  | 35 | 46   | 25  | 22 | M20X1.5  | 40 | 30  | 174   | 128 | 19 | M10 | 6   | 94  | 72   | G3/8 | 22   | 11  | 8.5  | 4   | 4   |
| 100 | 55     | 19.2 | 4  | 38 | 51.5 | 25  | 22 | M20X1.5  | 40 | 30  | 189.5 | 138 | 19 | M10 | 6   | 111 | 89   | G1/2 | 26   | 9   | 12.5 | 5   | 4   |
| 125 | 60     | 20   | 6  | 50 | 65   | 32  | 27 | M27X2    | 54 | 41  | 225   | 160 | 21 | M12 | 8   | 135 | 110  | G1/2 | 30   | 9   | 12.5 | 2.5 | 4   |

- KEY**
- ① = Socket head screw with female thread for mounting attachments.
  - ② = Adjustment screw for adjustable end-position cushioning.
  - ③ = Slot for proximity sensor.

**SERIES X - TANDEM ISO 15552**

**XHT**

TANDEM DOUBLE ACTING - MAGNETIC



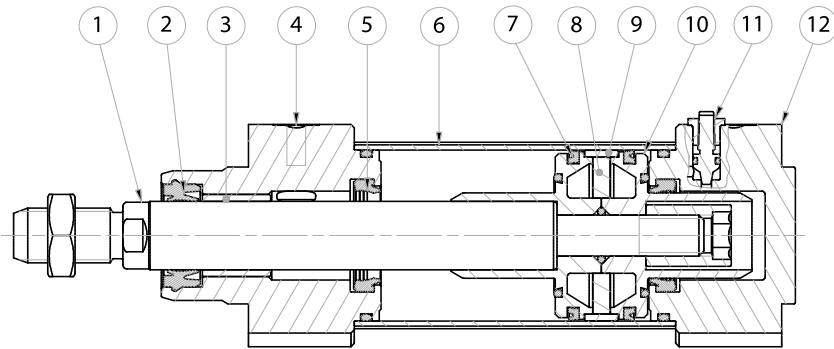
| ∅   | VA | WH   | AM | LB  | H   | T     |
|-----|----|------|----|-----|-----|-------|
| 32  | 4  | 26   | 22 | 94  | 55  | 295   |
| 40  | 4  | 30   | 24 | 105 | 55  | 323   |
| 50  | 4  | 37   | 32 | 106 | 68  | 353   |
| 63  | 4  | 37   | 32 | 121 | 68  | 383   |
| 80  | 4  | 46   | 40 | 128 | 92  | 438   |
| 100 | 4  | 51.5 | 40 | 138 | 92  | 463.5 |
| 125 | 6  | 65   | 54 | 160 | 120 | 565   |

For further information please contact our technical department.

**SERIES V - STAINLESS STEEL - ISO 15552**



**TECHNICAL CHARACTERISTICS**



**Component Parts and Materials**

- 1 316 stainless steel piston rod
- 2 Rod seal
- 3 Sinterized bronze bushing
- 4 304 Stainless steel end cap
- 5 PU seal
- 6 304 stainless steel tube
- 7 Piston seal
- 8 Bonded ferrite magnet
- 9 Piston wear band
- 10 Aluminium piston
- 11 316 stainless steel cushion adjustment screw
- 12 304 stainless steel end cap



**Reference Standard**

- 1907/2006 REACH ✓
- 2011/65/CE RoHS ✓
- PED 2014/68/UE
- SILICON FREE



**Pressures**

- 1 bar (0.1 MPa) / 14.5 psi
- 10 bar (0.7 MPa) / 145 psi



**Temperatures**

- 0 °C / 32 °F (-20 °C / -4 °F with dry air)
- + 80 °C / 176 °F



**Media**

Filtered and lubricated or non-lubricated compressed air.



**Functions**

Double-acting cushioned magnetic  
Single or through piston rod.



**Bores**

from 32 to 125 mm



**Standard Strokes**

from 25 to 1000 mm

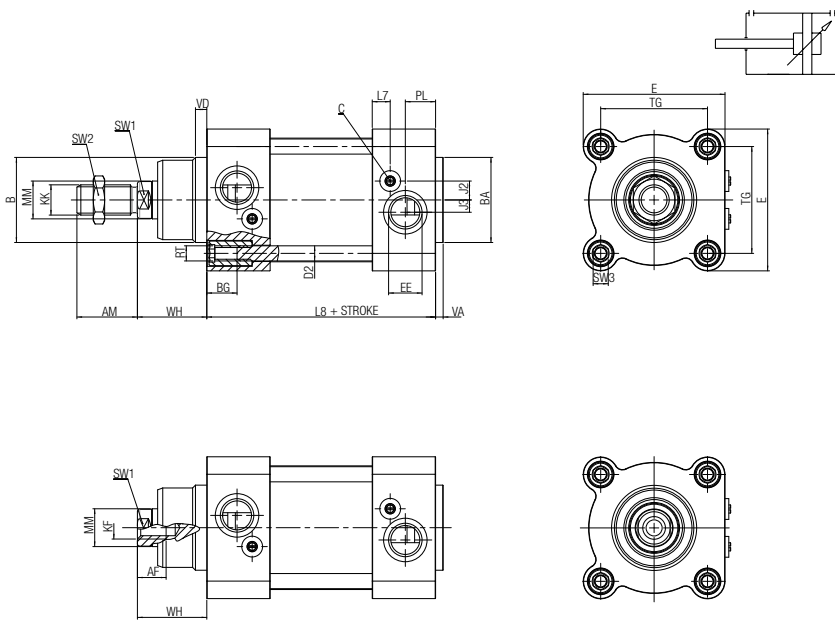
**FORCES, SPRING LOADS AND AIR CONSUMPTION**

See Pg. 15.34-15.35

| Series   | Ø (mm)   | Stroke (mm)   | Special version  |
|--|--|---|--|
| <b>V H I</b>   | <b>0 3 2</b>   | <b>0 0 2 5</b>  | <b>V S</b>   |
| <p>▲ <b>VHI</b> Double acting - cushioned - magnetic (AISI 304)</p> <p>▲ <b>VLI</b> Double acting - cushioned - magnetic with double rod end (AISI 304)</p> <p>▲ <b>VHJ</b> Double acting - cushioned - magnetic (AISI 316) (On request)</p> | <p>032</p> <p>040</p> <p>050</p> <p>063</p> <p>080</p> <p>100</p> <p>125</p> | <p>0025</p> <p>0050</p> <p>0075</p> <p>0080</p> <p>0100</p> <p>0125</p> <p>0150</p> <p>0160</p> <p>0200</p> <p>0250</p> <p>0300</p> <p>0320</p> <p>0350</p> <p>0400</p> <p>0450</p> <p>0500</p> <p>0600</p> <p>0700</p> <p>0800</p> <p>0900</p> <p>1000</p> <p>Intermediate or longer strokes are available upon request. Maximum stroke 2700 mm.</p> | <p><b>VS</b> Only Rod Seals in FKM</p> <p><b>V</b> All FKM seals</p> |

| Ø (mm)     | Stroke (mm) |    |    |    |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |      |
|------------|-------------|----|----|----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|------|
|            | 25          | 50 | 75 | 80 | 100 | 125 | 150 | 160 | 200 | 250 | 300 | 320 | 350 | 400 | 450 | 500 | 600 | 700 | 800 | 900 | 1000 |
| <b>32</b>  | ▲           | ▲  | ▲  | ▲  | ▲   | ▲   | ▲   | ▲   | ▲   | ▲   | ▲   | ▲   | ▲   | ▲   | ▲   | ▲   | ▲   | ▲   | ▲   | ▲   | ▲    |
| <b>40</b>  | ▲           | ▲  | ▲  | ▲  | ▲   | ▲   | ▲   | ▲   | ▲   | ▲   | ▲   | ▲   | ▲   | ▲   | ▲   | ▲   | ▲   | ▲   | ▲   | ▲   | ▲    |
| <b>50</b>  | ▲           | ▲  | ▲  | ▲  | ▲   | ▲   | ▲   | ▲   | ▲   | ▲   | ▲   | ▲   | ▲   | ▲   | ▲   | ▲   | ▲   | ▲   | ▲   | ▲   | ▲    |
| <b>63</b>  | ▲           | ▲  | ▲  | ▲  | ▲   | ▲   | ▲   | ▲   | ▲   | ▲   | ▲   | ▲   | ▲   | ▲   | ▲   | ▲   | ▲   | ▲   | ▲   | ▲   | ▲    |
| <b>80</b>  | ▲           | ▲  | ▲  | ▲  | ▲   | ▲   | ▲   | ▲   | ▲   | ▲   | ▲   | ▲   | ▲   | ▲   | ▲   | ▲   | ▲   | ▲   | ▲   | ▲   | ▲    |
| <b>100</b> | ▲           | ▲  | ▲  | ▲  | ▲   | ▲   | ▲   | ▲   | ▲   | ▲   | ▲   | ▲   | ▲   | ▲   | ▲   | ▲   | ▲   | ▲   | ▲   | ▲   | ▲    |
| <b>125</b> | ▲           | ▲  | ▲  | ▲  | ▲   | ▲   | ▲   | ▲   | ▲   | ▲   | ▲   | ▲   | ▲   | ▲   | ▲   | ▲   | ▲   | ▲   | ▲   | ▲   | ▲    |

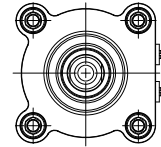
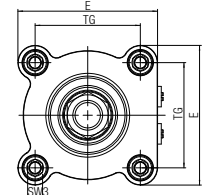
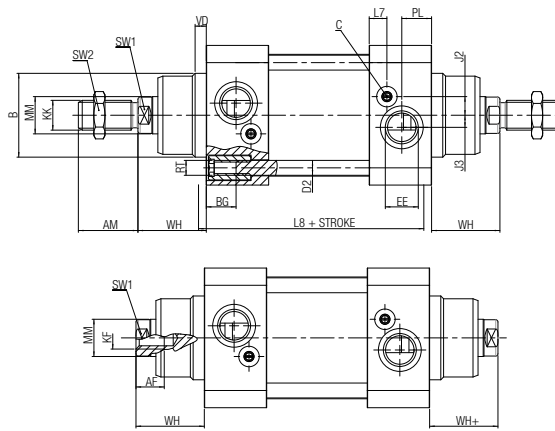
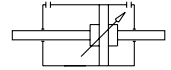
**VHI**  
DOUBLE ACTING - CUSHIONED - MAGNETIC



| Ø          | AM | AF | ØB(d11) | ØBA (d11) | BG | ØD2 | E   | EE    | J2  | J3  | KF  | KK       | L2   | L7  | L8+ | Ømm | PL | RT  | SW1 | SW2 | SW3 | TG   | VA | VD | WH |
|------------|----|----|---------|-----------|----|-----|-----|-------|-----|-----|-----|----------|------|-----|-----|-----|----|-----|-----|-----|-----|------|----|----|----|
| <b>32</b>  | 22 | 12 | 30      | 30        | 16 | 6   | 48  | G1/8" | 6.6 | 5.3 | M6  | M10x1.25 | 18   | 7.2 | 94  | 12  | 13 | M6  | 10  | 17  | 6   | 32.5 | 4  | 5  | 26 |
| <b>40</b>  | 24 | 12 | 35      | 35        | 16 | 6   | 52  | G1/4" | 8.5 | 5   | M8  | M12x1.25 | 22   | 9.2 | 105 | 16  | 14 | M6  | 13  | 19  | 6   | 38   | 4  | 5  | 30 |
| <b>50</b>  | 32 | 16 | 40      | 40        | 16 | 8   | 65  | G1/4" | 8   | 6   | M8  | M16x1.5  | 25.5 | 9   | 106 | 20  | 14 | M8  | 17  | 24  | 8   | 46.5 | 4  | 6  | 37 |
| <b>63</b>  | 32 | 16 | 45      | 45        | 16 | 8   | 75  | G3/8" | 10  | 6.5 | M10 | M16x1.5  | 26   | 9.5 | 121 | 20  | 16 | M8  | 17  | 24  | 8   | 56.5 | 4  | 6  | 37 |
| <b>80</b>  | 40 | 20 | 45      | 45        | 18 | 10  | 95  | G3/8" | 8   | 8   | M10 | M20x1.5  | 32   | 11  | 128 | 25  | 16 | M10 | 22  | 30  | 10  | 72   | 4  | 7  | 46 |
| <b>100</b> | 40 | 20 | 55      | 55        | 18 | 10  | 115 | G1/2" | 15  | 7   | M12 | M20x1.5  | 38   | 12  | 138 | 25  | 18 | M10 | 22  | 30  | 10  | 89   | 4  | 7  | 51 |
| <b>125</b> | 54 | 32 | 60      | 60        | 20 | 12  | 140 | G1/2" | 13  | 7   | M16 | M27x2    | 46   | 12  | 160 | 32  | 18 | M12 | 27  | 41  | -   | 110  | 6  | 10 | 65 |

**VLI**

DOUBLE ACTING - CUSHIONED - MAGNETIC WITH DOUBLE ROD END



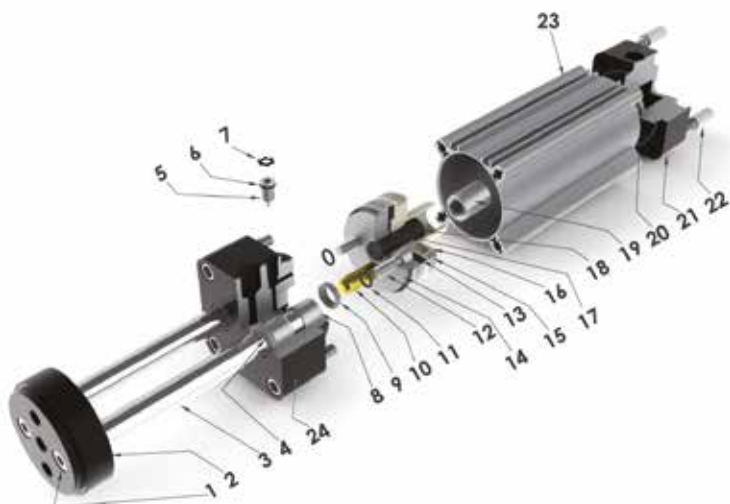
| Ø          | AM | AF | ØB (d11) | BG | ØD2 | E   | EE    | J2  | J3  | KF  | KK       | L2   | L7  | L8+ STROKE | Ømm | PL | RT  | SW1 | SW2 | SW3 | TG   | VA | VD | WH | WH |
|------------|----|----|----------|----|-----|-----|-------|-----|-----|-----|----------|------|-----|------------|-----|----|-----|-----|-----|-----|------|----|----|----|----|
| <b>32</b>  | 22 | 12 | 30       | 16 | 6   | 48  | G1/8" | 6.6 | 5.3 | M6  | M10x1.25 | 18   | 7.2 | 94         | 12  | 13 | M6  | 10  | 17  | 6   | 32.5 | 4  | 5  | 26 | 26 |
| <b>40</b>  | 24 | 12 | 35       | 16 | 6   | 52  | G1/4" | 8.5 | 5   | M8  | M12x1.25 | 22   | 9.2 | 105        | 16  | 14 | M6  | 13  | 19  | 6   | 38   | 4  | 5  | 30 | 30 |
| <b>50</b>  | 32 | 16 | 40       | 16 | 8   | 65  | G1/4" | 8   | 6   | M8  | M16x1.5  | 25.5 | 9   | 106        | 20  | 14 | M8  | 17  | 24  | 8   | 46.5 | 4  | 6  | 37 | 37 |
| <b>63</b>  | 32 | 16 | 45       | 16 | 8   | 75  | G3/8" | 10  | 6.5 | M10 | M16x1.5  | 26   | 9.5 | 121        | 20  | 16 | M8  | 17  | 24  | 8   | 56.5 | 4  | 6  | 37 | 37 |
| <b>80</b>  | 40 | 20 | 45       | 18 | 10  | 95  | G3/8" | 8   | 8   | M10 | M20x1.5  | 32   | 11  | 128        | 25  | 16 | M10 | 22  | 30  | 10  | 72   | 4  | 7  | 46 | 46 |
| <b>100</b> | 40 | 20 | 55       | 18 | 10  | 115 | G1/2" | 15  | 7   | M12 | M20x1.5  | 38   | 12  | 138        | 25  | 18 | M10 | 22  | 30  | 10  | 89   | 4  | 7  | 51 | 51 |
| <b>125</b> | 54 | 32 | 60       | 20 | 12  | 140 | G1/2" | 13  | 7   | M16 | M27x2    | 46   | 12  | 160        | 32  | 18 | M12 | 27  | 41  | -   | 110  | 6  | 10 | 65 | 65 |



**SERIES NHA - TWIN ROD CYLINDER - ISO 15552**



**TECHNICAL CHARACTERISTICS**



**Component Parts and Materials**

- 1 Galvanized steel fixing screw
- 2 Anodized aluminium tooling plate
- 3 Chromium plated steel or stainless steel piston rods
- 4 Polyurethane rod seal
- 5 Galvanized steel cushion adjustment screw
- 6 NBR o-ring
- 7 Steel elastic ring
- 8 Steel bearing
- 9 Polyurethane cushion seal
- 10 Brass cushion spear
- 11 NBR o-ring
- 12 Galvanized steel fixing screw
- 13 Bonded ferrite magnet
- 14 Aluminium front piston
- 15 Polyurethane piston seal
- 16 Acetal resin piston
- 17 NBR o-ring
- 18 Steel grub screw
- 19 Galvanized steel nut
- 20 Polyurethane cushion seal
- 21 Die-cast aluminium end cap
- 22 Galvanized steel fixing screw
- 23 Anodized aluminium tube
- 24 Die-cast aluminium end cap



**Reference Standard**

|                             |                             |                   |                 |                    |
|-----------------------------|-----------------------------|-------------------|-----------------|--------------------|
| 1907/2006<br><b>REACH</b> ✓ | 2011/65/CE<br><b>RoHS</b> ✓ | PED<br>2014/68/UE | SILICON<br>FREE | ATEX<br>2014/34/UE |
|-----------------------------|-----------------------------|-------------------|-----------------|--------------------|



**Pressures**

**1 bar** (0.1 MPa) / 14.5 psi  
**10 bar** (0.7 MPa) / 145 psi



**Temperatures**

**0 °C / 32 °F** (-20 °C / -4 °F with dry air)  
**+ 80 °C / 176 °F**



**Media**

Filtered and lubricated or non-lubricated compressed air.



**Functions**

Double-acting cushioned magnetic.  
Single or through piston rod magnetic.



**Bores**

**from 32 to 100 mm**



**Standard Strokes**

**from 25 to 500 mm**  
Strokes on demand.

| Series  | Ø (mm)                                 | Stroke (mm)   | Mounting type   | Special version               |
|---|--|---|---|-------------------------------|
| <b>N H A</b>  | <b>0 3 2</b>                           | <b>0 0 2 5</b>  | <b>G</b>  | <b>I S</b>                    |
| <p>▲ <b>NHA</b> Double acting - cushioned - magnetic</p> <p>▲ <b>NLA</b> Double acting - double rod cushioned magnetic</p> <p>▲ <b>NQA</b> Double acting - cushioned - magnetic with double rod end</p> | 032<br>040<br>050<br>063<br>080<br>100 | 0025 0200<br>0050 0250<br>0080 0320<br>0100 0350<br>0125 0400<br>0160 | <b>G</b> Anodized aluminium tube lobed profile with slots | <b>IS</b> Stainless steel rod |
| Intermediate or longer strokes are available upon request.  |  |   |   |                               |

| Ø (mm)     | Stroke (mm) |    |    |     |     |     |     |     |     |     |     |     |
|------------|-------------|----|----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
|            | 25          | 50 | 80 | 100 | 125 | 160 | 200 | 250 | 320 | 350 | 400 | 500 |
| <b>32</b>  | ▲           | ▲  | ▲  | ▲   | ▲   | ▲   | ▲   | ▲   | ▲   |     |     |     |
| <b>40</b>  | ▲           | ▲  | ▲  | ▲   | ▲   | ▲   | ▲   | ▲   | ▲   | ▲   |     |     |
| <b>50</b>  | ▲           | ▲  | ▲  | ▲   | ▲   | ▲   | ▲   | ▲   | ▲   | ▲   |     |     |
| <b>63</b>  | ▲           | ▲  | ▲  | ▲   | ▲   | ▲   | ▲   | ▲   | ▲   | ▲   | ▲   |     |
| <b>80</b>  | ▲           | ▲  | ▲  | ▲   | ▲   | ▲   | ▲   | ▲   | ▲   | ▲   | ▲   | ▲   |
| <b>100</b> | ▲           | ▲  | ▲  | ▲   | ▲   | ▲   | ▲   | ▲   | ▲   | ▲   | ▲   | ▲   |

**FORCES AND AIR CONSUMPTION**
**Extend and Retract Forces**

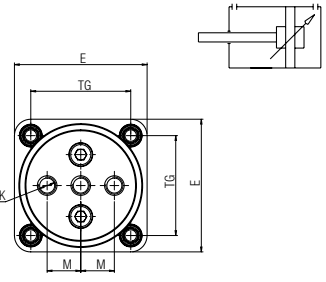
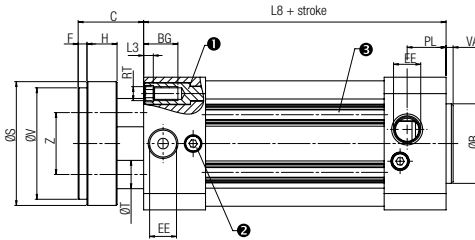
| Cylinder<br>Ø | Piston Rod<br>Ø | Piston Area<br>mm <sup>2</sup> |                   | Operating pressure |      |      |      |
|---------------|-----------------|--------------------------------|-------------------|--------------------|------|------|------|
|               |                 |                                |                   | bar                |      |      |      |
|               |                 |                                |                   | 1                  | 2    | 3    | 4    |
|               |                 |                                |                   | Output force<br>N  |      |      |      |
| <b>32</b>     | <b>8</b>        | 100.48                         | Extend = 804      | 72                 | 144  | 215  | 287  |
|               |                 |                                | Retract = 703.52  | 54                 | 108  | 161  | 215  |
| <b>40</b>     | <b>10</b>       | 157                            | Extend = 1257     | 110                | 220  | 330  | 440  |
|               |                 |                                | Retract = 1100    | 84                 | 168  | 252  | 336  |
| <b>50</b>     | <b>12</b>       | 226.08                         | Extend = 1963     | 175                | 350  | 526  | 701  |
|               |                 |                                | Retract = 1736.92 | 135                | 270  | 404  | 539  |
| <b>63</b>     | <b>16</b>       | 401.92                         | Extend = 3117     | 280                | 560  | 840  | 1120 |
|               |                 |                                | Retract = 2715.08 | 206                | 413  | 619  | 826  |
| <b>80</b>     | <b>20</b>       | 628                            | Extend = 5027     | 450                | 900  | 1350 | 1800 |
|               |                 |                                | Retract = 4399    | 336                | 673  | 1009 | 1345 |
| <b>100</b>    | <b>20</b>       | 628                            | Extend = 7854     | 700                | 1400 | 2100 | 2800 |
|               |                 |                                | Retract = 7226    | 589                | 1177 | 1766 | 2355 |

**Air Consumption**

| Cylinder<br>Ø | Piston Rod<br>Ø | Piston Area<br>mm <sup>2</sup> |                   | Operating pressure                             |       |       |       |
|---------------|-----------------|--------------------------------|-------------------|--|-------|-------|-------|
|               |                 |                                |                   | bar  |       |       |       |
|               |                 |                                |                   | 1  | 2     | 3     | 4     |
|               |                 |                                |                   | Air consumption for each 10 mm of stroke<br>NI |       |       |       |
| <b>32</b>     | <b>8</b>        | 100.48                         | Extend = 804      | 0.016  | 0.032 | 0.048 | 0.064 |
|               |                 |                                | Retract = 703.52  | 0.012  | 0.024 | 0.036 | 0.048 |
| <b>40</b>     | <b>10</b>       | 157                            | Extend = 1257     | 0.025  | 0.050 | 0.075 | 0.100 |
|               |                 |                                | Retract = 1100    | 0.019  | 0.038 | 0.057 | 0.075 |
| <b>50</b>     | <b>12</b>       | 226.08                         | Extend = 1963     | 0.039  | 0.079 | 0.118 | 0.157 |
|               |                 |                                | Retract = 1736.92 | 0.030  | 0.060 | 0.091 | 0.121 |
| <b>63</b>     | <b>16</b>       | 401.92                         | Extend = 3117     | 0.062  | 0.125 | 0.187 | 0.249 |
|               |                 |                                | Retract = 2715.08 | 0.046  | 0.092 | 0.139 | 0.185 |
| <b>80</b>     | <b>20</b>       | 628                            | Extend = 5027     | 0.100  | 0.201 | 0.301 | 0.402 |
|               |                 |                                | Retract = 4399    | 0.075  | 0.151 | 0.226 | 0.301 |
| <b>100</b>    | <b>20</b>       | 628                            | Extend = 7854     | 0.157  | 0.314 | 0.471 | 0.628 |
|               |                 |                                | Retract = 7226    | 0.132  | 0.264 | 0.396 | 0.528 |

**NHA**

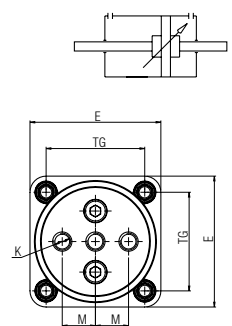
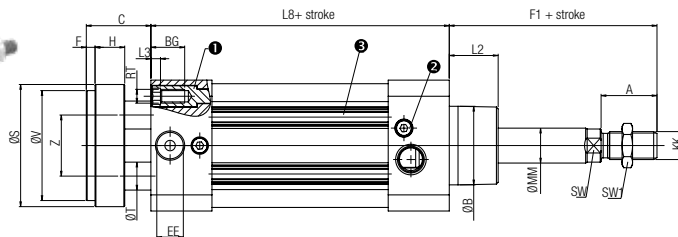
DOUBLE ACTING - CUSHIONED - MAGNETIC



| Ø   | Ø B<br>d11 | C  | E   | F | H  | K   | M     | S   | T  | V   | Z  | F1 | VA | L2 | WH   | Ømm | SW | KK       | L8  | BG | RT  | E   | TG   | EE   | PL | L3 | ZM  |
|-----|------------|----|-----|---|----|-----|-------|-----|----|-----|----|----|----|----|------|-----|----|----------|-----|----|-----|-----|------|------|----|----|-----|
| 32  | 30         | 26 | 47  | 4 | 15 | M6  | 9.5   | 35  | 8  | 32  | 18 | 48 | 4  | 20 | 26   | 12  | 10 | M10X1.25 | 94  | 16 | M6  | 47  | 32.5 | G1/8 | 14 | 5  | 146 |
| 40  | 35         | 30 | 53  | 4 | 15 | M8  | 11.25 | 45  | 10 | 40  | 22 | 54 | 4  | 22 | 30   | 16  | 13 | M12X1.25 | 105 | 16 | M6  | 53  | 38   | G1/4 | 16 | 5  | 165 |
| 50  | 40         | 37 | 65  | 5 | 18 | M8  | 15    | 55  | 12 | 50  | 26 | 69 | 4  | 28 | 37   | 20  | 17 | M16X1.5  | 106 | 16 | M8  | 65  | 46.5 | G1/4 | 21 | 5  | 180 |
| 63  | 45         | 37 | 75  | 5 | 22 | M10 | 19    | 70  | 16 | 63  | 35 | 69 | 4  | 28 | 37   | 20  | 17 | M16X1.5  | 121 | 16 | M8  | 75  | 56.5 | G3/8 | 22 | 5  | 195 |
| 80  | 45         | 46 | 95  | 5 | 22 | M12 | 25    | 85  | 20 | 80  | 40 | 86 | 4  | 34 | 46   | 25  | 22 | M20X1.5  | 128 | 18 | M10 | 95  | 72   | G3/8 | 23 | 6  | 220 |
| 100 | 55         | 51 | 115 | 5 | 22 | M12 | 35    | 105 | 20 | 100 | 50 | 91 | 4  | 38 | 51.5 | 25  | 22 | M20X1.5  | 138 | 18 | M10 | 115 | 89   | G1/2 | 26 | 6  | 240 |

**NLA**

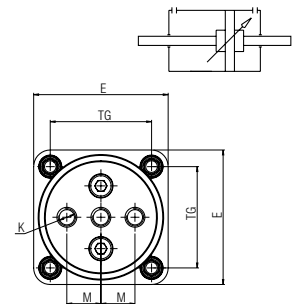
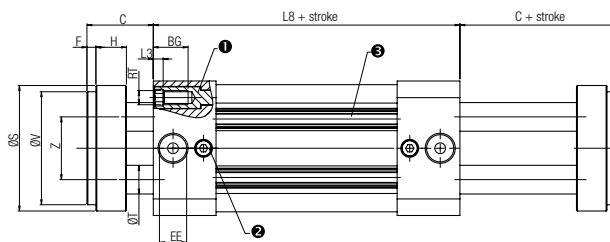
DOUBLE ACTING - DOUBLE ROD - CUSHIONED - MAGNETIC



| Ø   | A  | Ø B<br>d11 | C  | E   | F | H  | K   | M     | S   | T  | V   | Z  | F1 | VA | L2 | WH   | Ømm | SW | KK       | L8  | BG | RT  | E   | TG   | EE   | PL | L3 | ZM  |
|-----|----|------------|----|-----|---|----|-----|-------|-----|----|-----|----|----|----|----|------|-----|----|----------|-----|----|-----|-----|------|------|----|----|-----|
| 32  | 22 | 30         | 26 | 47  | 4 | 15 | M6  | 9.5   | 35  | 8  | 32  | 18 | 50 | 4  | 20 | 26   | 12  | 10 | M10X1.25 | 94  | 16 | M6  | 47  | 32.5 | G1/8 | 14 | 5  | 146 |
| 40  | 24 | 35         | 30 | 53  | 4 | 15 | M8  | 11.25 | 45  | 10 | 40  | 22 | 54 | 4  | 22 | 30   | 16  | 13 | M12X1.25 | 105 | 16 | M6  | 53  | 38   | G1/4 | 16 | 5  | 165 |
| 50  | 32 | 40         | 37 | 65  | 5 | 18 | M8  | 15    | 55  | 12 | 50  | 26 | 69 | 4  | 28 | 37   | 20  | 17 | M16X1.5  | 106 | 16 | M8  | 65  | 46.5 | G1/4 | 21 | 5  | 180 |
| 63  | 32 | 45         | 37 | 75  | 5 | 22 | M10 | 19    | 70  | 16 | 63  | 35 | 69 | 4  | 28 | 37   | 20  | 17 | M16X1.5  | 121 | 16 | M8  | 75  | 56.5 | G3/8 | 22 | 5  | 195 |
| 80  | 40 | 45         | 46 | 95  | 5 | 22 | M12 | 25    | 85  | 20 | 80  | 40 | 86 | 4  | 34 | 46   | 25  | 22 | M20X1.5  | 128 | 18 | M10 | 95  | 72   | G3/8 | 23 | 6  | 220 |
| 100 | 40 | 55         | 51 | 115 | 5 | 22 | M12 | 35    | 105 | 20 | 100 | 50 | 91 | 4  | 38 | 51.5 | 25  | 22 | M20X1.5  | 138 | 18 | M10 | 115 | 89   | G1/2 | 26 | 6  | 240 |

**NQA**

DOUBLE ACTING - CUSHIONED - MAGNETIC WITH DOUBLE ROD ENDS



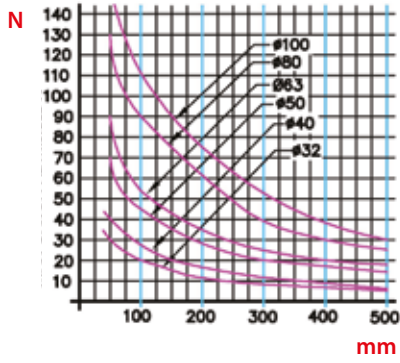
| Ø   | Ø B<br>d11 | C  | E   | F | H  | K   | M     | S   | T  | V   | Z  | F1 | VA | L2 | WH   | Ømm | SW | KK       | L8  | BG | RT  | E   | TG   | EE   | PL | L3 | ZM  |
|-----|------------|----|-----|---|----|-----|-------|-----|----|-----|----|----|----|----|------|-----|----|----------|-----|----|-----|-----|------|------|----|----|-----|
| 32  | 30         | 26 | 47  | 4 | 15 | M6  | 9.5   | 35  | 8  | 32  | 18 | 48 | 4  | 20 | 26   | 12  | 10 | M10X1.25 | 94  | 16 | M6  | 47  | 32.5 | G1/8 | 14 | 5  | 146 |
| 40  | 35         | 30 | 53  | 4 | 15 | M8  | 11.25 | 45  | 10 | 40  | 22 | 54 | 4  | 22 | 30   | 16  | 13 | M12X1.25 | 105 | 16 | M6  | 53  | 38   | G1/4 | 16 | 5  | 165 |
| 50  | 40         | 37 | 65  | 5 | 18 | M8  | 15    | 55  | 12 | 50  | 26 | 69 | 4  | 28 | 37   | 20  | 17 | M16X1.5  | 106 | 16 | M8  | 65  | 46.5 | G1/4 | 21 | 5  | 180 |
| 63  | 45         | 37 | 75  | 5 | 22 | M10 | 19    | 70  | 16 | 63  | 35 | 69 | 4  | 28 | 37   | 20  | 17 | M16X1.5  | 121 | 16 | M8  | 75  | 56.5 | G3/8 | 22 | 5  | 195 |
| 80  | 45         | 46 | 95  | 5 | 22 | M12 | 25    | 85  | 20 | 80  | 40 | 86 | 4  | 34 | 46   | 25  | 22 | M20X1.5  | 128 | 18 | M10 | 95  | 72   | G3/8 | 23 | 6  | 220 |
| 100 | 55         | 51 | 115 | 5 | 22 | M12 | 35    | 105 | 20 | 100 | 50 | 91 | 4  | 38 | 51.5 | 25  | 22 | M20X1.5  | 138 | 18 | M10 | 115 | 89   | G1/2 | 26 | 6  | 240 |

**KEY**  
 ① = Socket head screw with female thread for mounting attachments.  
 ② = Adjustment screw for adjustable end-position cushioning.  
 ③ = Slot for proximity sensor.

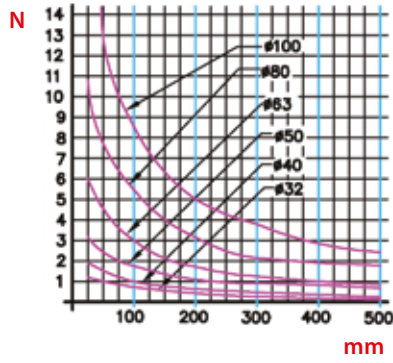
**NHA CYLINDER LOAD CHARTS**



**Transverse Moment**



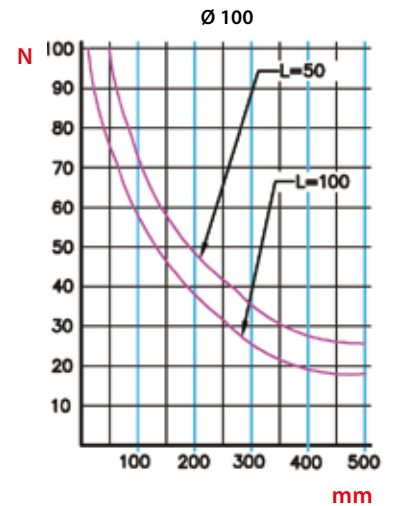
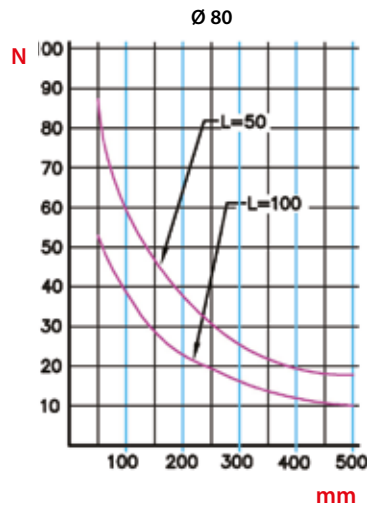
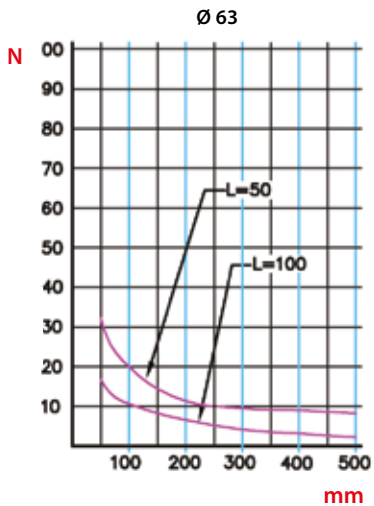
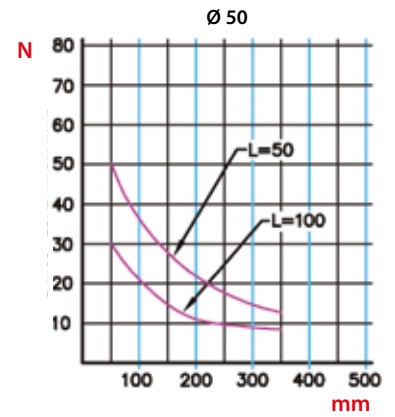
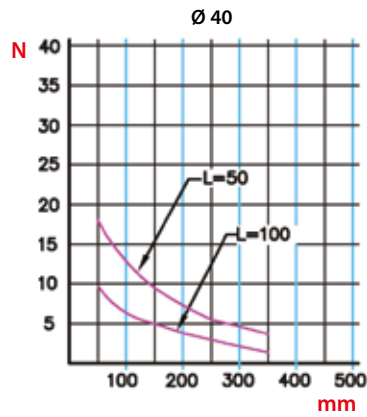
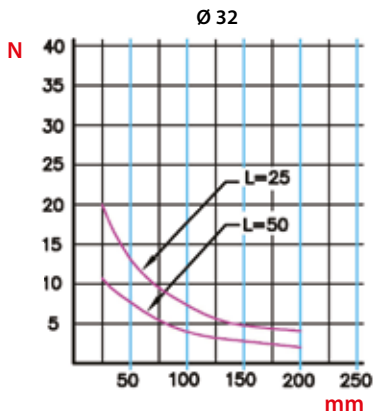
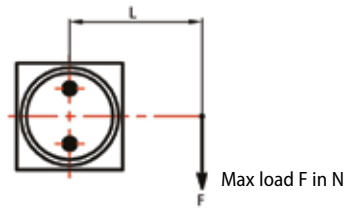
**Torsional Moment**



**N**  
Max admitted load  
**mm**  
Stroke



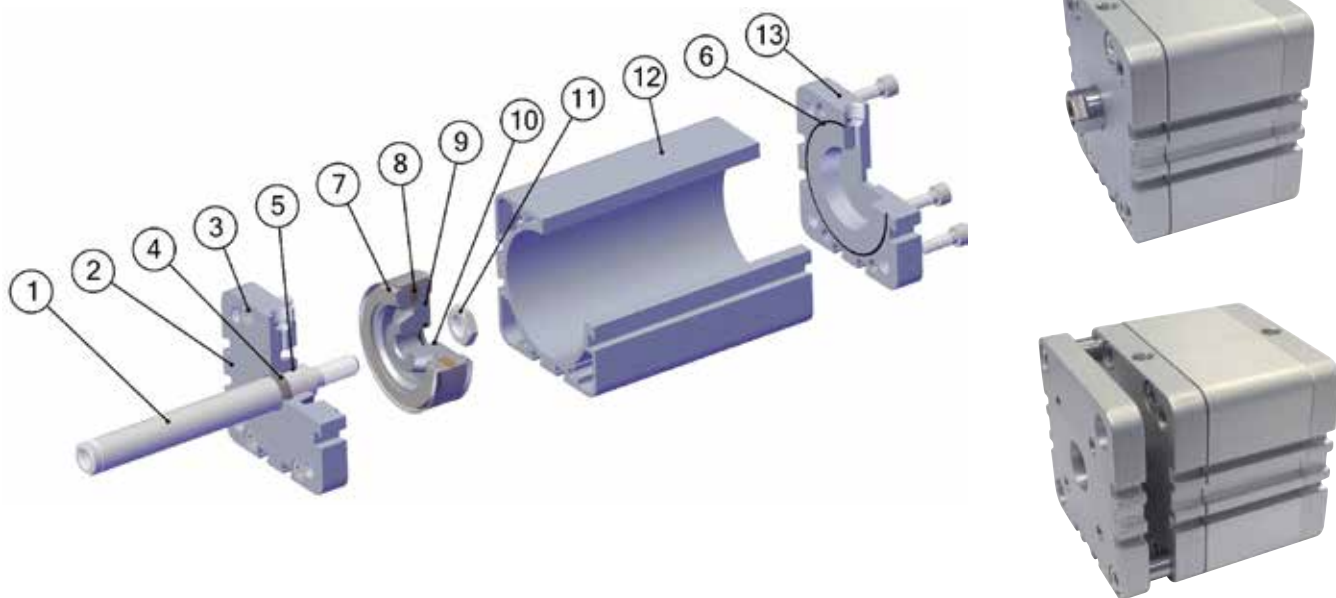
**Maximum Transverse and Torsional Loads by bore**



**SERIES W - COMPACT CYLINDERS - ISO 21287**



**TECHNICAL CHARACTERISTICS**



**Component Parts and Materials**

- 1 (ø12-25) 303 Stainless steel piston rod  
(ø32-100) chrome plated steel piston rod
- 2 Anodized aluminum end cap
- 3 Zinc plated steel screw
- 4 Polyurethane rod seal
- 5 Sintered bronze rod bearing
- 6 NBR o-ring seals
- 7 Polyurethane piston seal
- 8 Bonded ferrite magnet
- 9 Aluminum piston
- 10 NBR o-ring seals
- 11 Zinc plated steel piston nut
- 12 Anodized aluminum body
- 13 Anodized aluminum end cap



**Reference Standard**

|                             |                             |                   |                 |                    |
|-----------------------------|-----------------------------|-------------------|-----------------|--------------------|
| 1907/2006<br><b>REACH</b> ✓ | 2011/65/CE<br><b>RoHS</b> ✓ | PED<br>2014/68/UE | SILICON<br>FREE | ATEX<br>2014/34/UE |
|-----------------------------|-----------------------------|-------------------|-----------------|--------------------|



**Pressures**

**1 bar** (0.1 MPa) / 14.5 psi  
**10 bar** (0.7 MPa) / 145 psi



**Temperatures**

**0 °C / 32 °F** (-20 °C / -4 °F with dry air)  
**+ 80 °C / 176 °F**



**Media**

Filtered and lubricated or non-lubricated compressed air.



**Functions**

Single and double-acting magnetic.  
Single, through piston rod and anti rotation.



**Bores**

from 20 to 100 mm



**Standard Strokes**

from 5 to 200 mm



**FORCES, SPRING LOADS AND AIR CONSUMPTION**

**Extend and Retract Forces**


| Cylinder<br>∅    | Piston Rod<br>∅ | Piston Area<br>mm <sup>2</sup> | Operating pressure |      |      |      |      |      |      |      |      |      |
|------------------|-----------------|--------------------------------|--------------------|------|------|------|------|------|------|------|------|------|
|                  |                 |                                | bar                |      |      |      |      |      |      |      |      |      |
|                  |                 |                                | 1                  | 2    | 3    | 4    | 5    | 6    | 7    | 8    | 9    | 10   |
| Output force (N) |                 |                                |                    |      |      |      |      |      |      |      |      |      |
| 20               | 10              | Extend = 314                   | 28                 | 55   | 85   | 110  | 140  | 170  | 195  | 220  | 250  | 280  |
|                  |                 | Retract = 235                  | 21                 | 42   | 60   | 85   | 105  | 125  | 150  | 170  | 190  | 210  |
| 25               | 10              | Extend = 490                   | 44                 | 88   | 132  | 176  | 220  | 264  | 308  | 352  | 396  | 440  |
|                  |                 | Retract = 412                  | 36                 | 72   | 108  | 144  | 180  | 216  | 252  | 288  | 324  | 360  |
| 32               | 12              | Extend = 804                   | 72                 | 144  | 216  | 288  | 360  | 432  | 504  | 576  | 648  | 720  |
|                  |                 | Retract = 691                  | 62                 | 124  | 186  | 248  | 310  | 372  | 434  | 496  | 558  | 620  |
| 40               | 12              | Extend = 1257                  | 110                | 220  | 330  | 440  | 550  | 660  | 770  | 880  | 990  | 1100 |
|                  |                 | Retract = 1144                 | 100                | 200  | 300  | 400  | 500  | 600  | 700  | 800  | 900  | 1000 |
| 50               | 16              | Extend = 1963                  | 175                | 350  | 525  | 700  | 875  | 1050 | 1225 | 1400 | 1575 | 1750 |
|                  |                 | Retract = 1762                 | 155                | 310  | 465  | 620  | 775  | 930  | 1085 | 1240 | 1395 | 1550 |
| 63               | 16              | Extend = 3117                  | 280                | 560  | 840  | 1120 | 1400 | 1680 | 1960 | 2240 | 2520 | 2800 |
|                  |                 | Retract = 2916                 | 260                | 520  | 780  | 1040 | 1300 | 1560 | 1820 | 2080 | 2340 | 2600 |
| 80               | 20              | Extend = 5027                  | 450                | 900  | 1350 | 1800 | 2250 | 2700 | 3150 | 3600 | 4050 | 4500 |
|                  |                 | Retract = 4712                 | 420                | 840  | 1260 | 1680 | 2100 | 2520 | 2940 | 3360 | 3780 | 4200 |
| 100              | 25              | Extend = 7854                  | 700                | 1400 | 2100 | 2800 | 3500 | 4200 | 4900 | 5650 | 6360 | 7000 |
|                  |                 | Retract = 7363                 | 660                | 1320 | 1980 | 2640 | 3300 | 3960 | 4620 | 5280 | 5940 | 6600 |

**Spring Loads**

| Cylinder<br>∅    | Spring load               | Stroke (mm) |      |      |      |      |
|------------------|---------------------------|-------------|------|------|------|------|
|                  |                           | 5           | 10   | 15   | 20   | 25   |
| Output force (N) |                           |             |      |      |      |      |
| 20               | Load of spring at rest    | 15.7        | 14   | 12.2 | 10.4 | 8.7  |
|                  | Load of compressed spring | 17.4        | 17.4 | 17.4 | 17.4 | 17.4 |
| 25               | Load of spring at rest    | 19.5        | 18.5 | 17.3 | 16   | 15   |
|                  | Load of compressed spring | 22          | 22   | 22   | 22   | 22   |
| 32               | Load of spring at rest    | 27.8        | 25.3 | 22.8 | 20.2 | 17.7 |
|                  | Load of compressed spring | 30          | 30   | 30   | 30   | 30   |
| 40               | Load of spring at rest    | 36.4        | 34   | 31.7 | 29.5 | 27   |
|                  | Load of compressed spring | 36          | 36   | 36   | 36   | 36   |
| 50               | Load of spring at rest    | 32          | 30.5 | 29   | 27.8 | 26.5 |
|                  | Load of compressed spring | 35          | 35   | 35   | 35   | 35   |
| 63               | Load of spring at rest    | 61          | 58.5 | 56.3 | 53.5 | 51.5 |
|                  | Load of compressed spring | 64.8        | 64.8 | 64.8 | 64.8 | 64.8 |
| 80               | Load of spring at rest    | 91.3        | 88   | 85   | 82   | 78.7 |
|                  | Load of compressed spring | 94          | 94   | 94   | 94   | 94   |
| 100              | Load of spring at rest    | 150         | 145  | 140  | 134  | 129  |
|                  | Load of compressed spring | 156         | 156  | 156  | 156  | 156  |

**Air consumption**

| Cylinder<br>∅                                 | Piston Rod<br>∅ | Piston Area<br>mm <sup>2</sup> | Operating pressure |       |       |       |       |       |       |       |       |       |
|---|-----------------|--------------------------------|--------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
|   |                 |                                | bar                |       |       |       |       |       |       |       |       |       |
|   |                 |                                | 1                  | 2     | 3     | 4     | 5     | 6     | 7     | 8     | 9     | 10    |
| Air consumption for each 10 mm of stroke (NI) |                 |                                |                    |       |       |       |       |       |       |       |       |       |
| 20  | 10              | Extend = 314                   | 0.006              | 0.009 | 0.013 | 0.016 | 0.019 | 0.022 | 0.025 | 0.028 | 0.031 | 0.035 |
|   |                 | Retract = 235                  | 0.005              | 0.007 | 0.009 | 0.012 | 0.014 | 0.016 | 0.019 | 0.021 | 0.024 | 0.026 |
| 25  | 10              | Extend = 490                   | 0.010              | 0.015 | 0.020 | 0.025 | 0.029 | 0.034 | 0.039 | 0.044 | 0.049 | 0.054 |
|   |                 | Retract = 412                  | 0.008              | 0.012 | 0.016 | 0.021 | 0.025 | 0.029 | 0.033 | 0.037 | 0.041 | 0.045 |
| 32  | 12              | Extend = 804                   | 0.016              | 0.024 | 0.032 | 0.040 | 0.048 | 0.056 | 0.064 | 0.072 | 0.080 | 0.088 |
|   |                 | Retract = 691                  | 0.014              | 0.021 | 0.028 | 0.035 | 0.041 | 0.048 | 0.055 | 0.062 | 0.069 | 0.076 |
| 40  | 12              | Extend = 1257                  | 0.025              | 0.038 | 0.050 | 0.063 | 0.075 | 0.088 | 0.101 | 0.113 | 0.126 | 0.138 |
|   |                 | Retract = 1144                 | 0.023              | 0.034 | 0.046 | 0.057 | 0.069 | 0.080 | 0.092 | 0.103 | 0.114 | 0.126 |
| 50  | 16              | Extend = 1963                  | 0.039              | 0.059 | 0.079 | 0.098 | 0.118 | 0.137 | 0.157 | 0.177 | 0.196 | 0.216 |
|   |                 | Retract = 1762                 | 0.035              | 0.053 | 0.070 | 0.088 | 0.106 | 0.123 | 0.141 | 0.159 | 0.176 | 0.194 |
| 63  | 16              | Extend = 3117                  | 0.062              | 0.094 | 0.125 | 0.156 | 0.187 | 0.218 | 0.249 | 0.281 | 0.312 | 0.343 |
|   |                 | Retract = 2916                 | 0.058              | 0.087 | 0.117 | 0.146 | 0.175 | 0.204 | 0.233 | 0.262 | 0.292 | 0.321 |
| 80  | 20              | Extend = 5027                  | 0.101              | 0.151 | 0.201 | 0.251 | 0.302 | 0.352 | 0.402 | 0.452 | 0.503 | 0.553 |
|   |                 | Retract = 4712                 | 0.094              | 0.141 | 0.188 | 0.236 | 0.283 | 0.330 | 0.377 | 0.424 | 0.471 | 0.518 |
| 100   | 25              | Extend = 7854                  | 0.157              | 0.236 | 0.314 | 0.393 | 0.471 | 0.550 | 0.628 | 0.707 | 0.785 | 0.864 |
|   |                 | Retract = 7363                 | 0.147              | 0.221 | 0.295 | 0.368 | 0.442 | 0.515 | 0.589 | 0.663 | 0.736 | 0.810 |

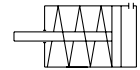
| Series   | Version   | Ø (mm)       | Stroke (mm)    |      |
|--|---|--------------|----------------|------|
| <b>W B</b>   |  | <b>0 2 0</b> | <b>0 0 2 5</b> |      |
| ▲ <b>WB - WBM</b> Single acting - magnetic                                 | = Standard female rod   | 020          | 0005           | 0060 |
| ▲ <b>WD - WDM</b> Single acting - magnetic - spring extend                 | <b>M</b> = Male rod (NO WFA)  | 025          | 0010           | 0080 |
| ● <b>WF - WFM</b> Double acting - magnetic                                 |   | 032          | 0015           | 0100 |
| ● <b>WJ - WJM</b> Double acting - cushioned - magnetic with double rod end |   | 040          | 0020           | 0125 |
|  |   | 050          | 0025           | 0150 |
|  |   | 063          | 0030           | 0160 |
| # <b>WFA</b> Double acting - magnetic - anti rotation                      |   | 080          | 0040           | 0200 |
|  |   | 100          | 0050           |      |

Intermediate or longer strokes are available upon request.

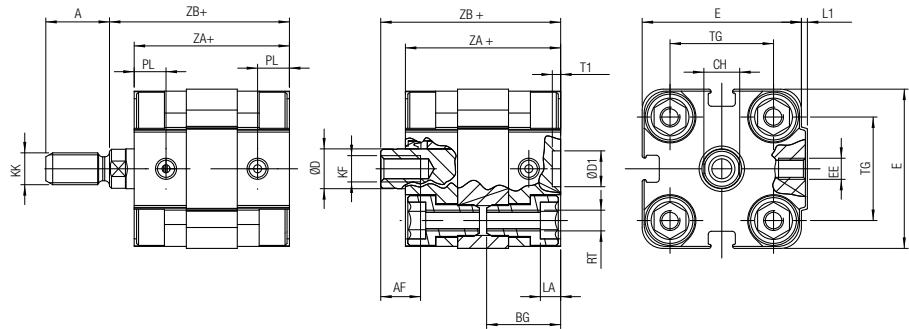
| Ø (mm) | Stroke (mm) |     |     |     |     |    |    |    |    |    |     |     |     |     |
|--------|-------------|-----|-----|-----|-----|----|----|----|----|----|-----|-----|-----|-----|
|        | 5           | 10  | 15  | 20  | 25  | 30 | 40 | 50 | 60 | 80 | 100 | 125 | 150 | 200 |
| 20     | ▲●#         | ▲●# | ▲●# | ▲●# | ▲●# | ●# | ●# | ●# |    |    |     |     |     |     |
| 25     | ▲●#         | ▲●# | ▲●# | ▲●# | ▲●# | ●# | ●# | ●# |    |    |     |     |     |     |
| 32     | ▲●#         | ▲●# | ▲●# | ▲●# | ▲●# | ●# | ●# | ●# | ●# | ●# | ●   | ●   | ●   |     |
| 40     | ▲●#         | ▲●# | ▲●# | ▲●# | ▲●# | ●# | ●# | ●# | ●# | ●# | ●   | ●   | ●   |     |
| 50     | ▲●#         | ▲●# | ▲●# | ▲●# | ▲●# | ●# | ●# | ●# | ●# | ●# | ●   | ●   | ●   | ●   |
| 63     | ▲●#         | ▲●# | ▲●# | ▲●# | ▲●# | ●# | ●# | ●# | ●# | ●# | ●   | ●   | ●   | ●   |
| 80     | ▲●#         | ▲●# | ▲●# | ▲●# | ▲●# | ●# | ●# | ●# | ●# | ●# | ●   | ●   | ●   | ●   |
| 100    | ▲●#         | ▲●# | ▲●# | ▲●# | ▲●# | ●# | ●# | ●# | ●# | ●# | ●   | ●   | ●   | ●   |

**WB - WBM**

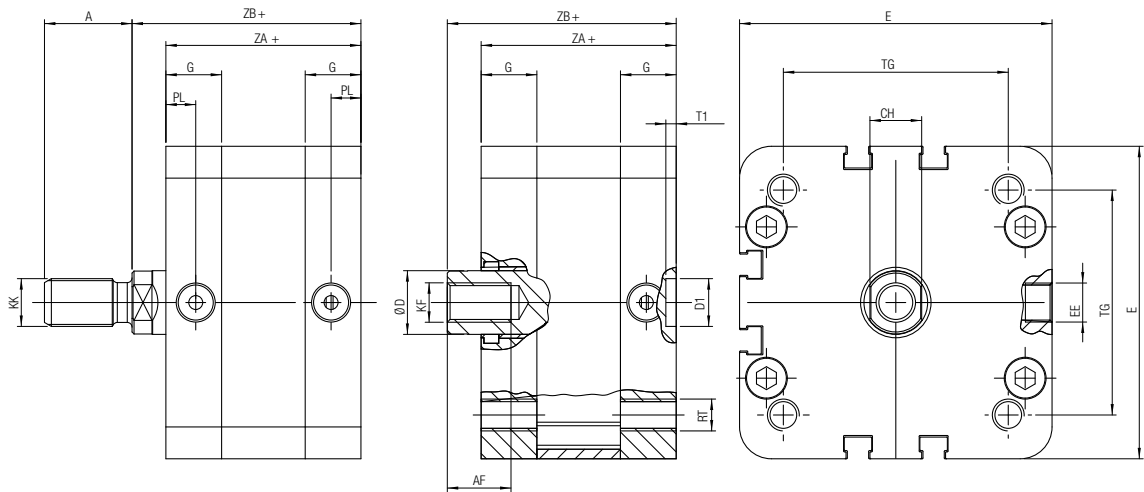
SINGLE ACTING - MAGNETIC



Ø 20-25



Ø 32-40-50-63-80-100



\* Like UNITOP

+ = Add Stroke

| Ø          | Ø D | E    | L1  | A  | KK       | CH | AF | KF  | BG   | LA | RT  | G    | TG   | EE   | PL  | Ø D1 | T1  | ZA+ | ZB+  |
|------------|-----|------|-----|----|----------|----|----|-----|------|----|-----|------|------|------|-----|------|-----|-----|------|
| <b>*20</b> | 10  | 36   | 1.5 | 16 | M8x1.25  | 9  | 10 | M6  | 18.5 | 5  | M5  | -    | 22   | M5   | 8   | *6   | *4  | *39 | *45  |
| <b>*25</b> | 10  | 40   | 1.5 | 16 | M8x1.25  | 9  | 10 | M6  | 18.5 | 5  | M5  | -    | 26   | M5   | 8   | *6   | *4  | 39  | 45.5 |
| <b>32</b>  | 12  | 49   | -   | 19 | M10x1.25 | 10 | 12 | M8  | -    | -  | M6  | 14.5 | 32.5 | G1/8 | 7.5 | 9    | 2.1 | 44  | 51   |
| <b>40</b>  | 12  | 55   | -   | 19 | M10x1.25 | 10 | 12 | M8  | -    | -  | M6  | 15   | 38   | G1/8 | 7.5 | 9    | 2.1 | 45  | 52   |
| <b>50</b>  | 16  | 68   | -   | 22 | M12x1.25 | 13 | 16 | M10 | -    | -  | M8  | 14.5 | 46.5 | G1/8 | 7.5 | 12   | 2.6 | 45  | 53   |
| <b>63</b>  | 16  | 78.5 | -   | 22 | M12x1.25 | 13 | 16 | M10 | -    | -  | M8  | 14   | 56.5 | G1/8 | 7.5 | 12   | 2.6 | 49  | 57.5 |
| <b>80</b>  | 20  | 98   | -   | 28 | M16x1.5  | 17 | 20 | M12 | -    | -  | M10 | 15.5 | 72   | G1/8 | 7.5 | 12   | 2.6 | 54  | 64   |
| <b>100</b> | 25  | 120  | -   | 28 | M16x1.5  | 22 | 20 | M12 | -    | -  | M10 | 20   | 89   | G1/8 | 7.5 | 12   | 2.6 | 67  | 77   |

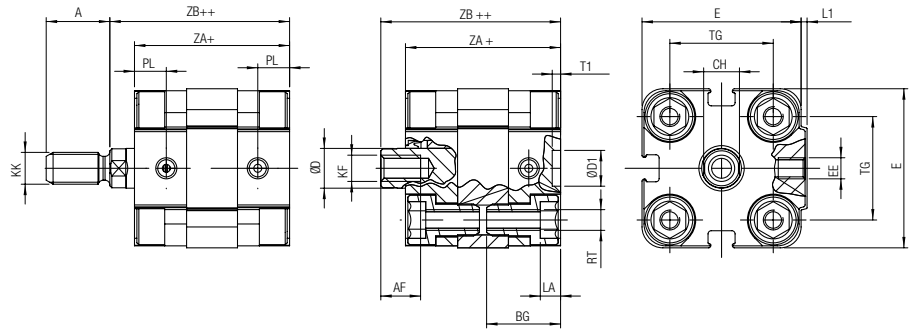


**WD - WDM**

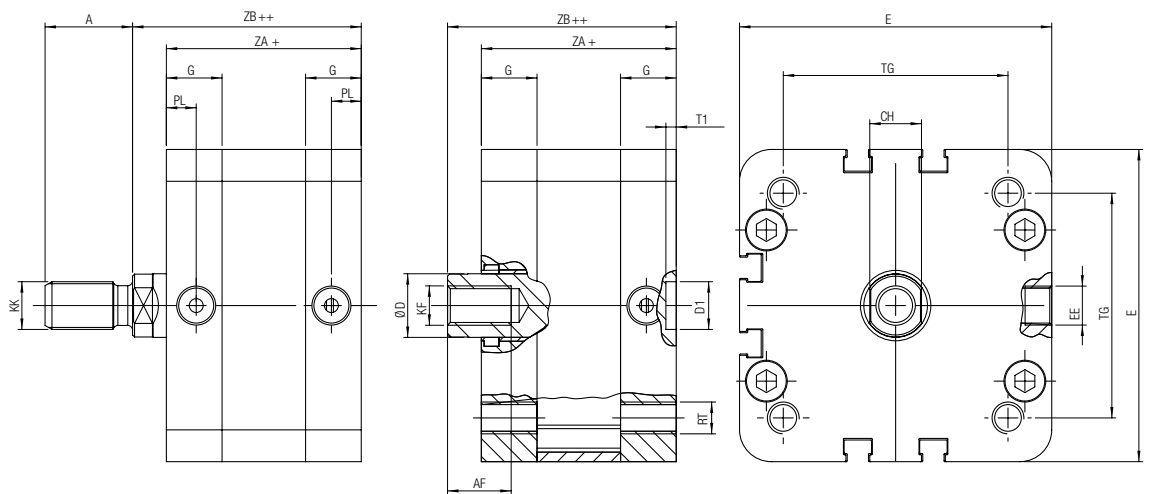
SINGLE ACTING - MAGNETIC - SPRING EXTEND



Ø 20-25



Ø 32-40-50-63-80-100



\* Like UNITOP

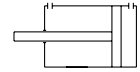
+ = Add Stroke

++ = Double stroke dimension and add it

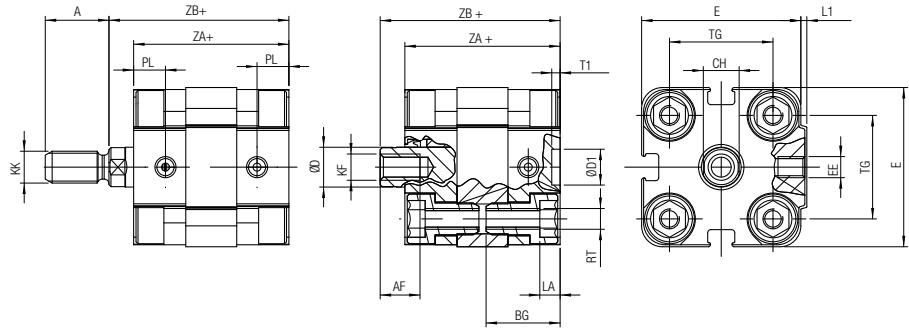
| Ø   | Ø D | E    | L1  | A  | KK       | CH | AF | KF  | BG   | LA | RT  | G    | TG   | EE   | PL  | Ø D1 | T1  | ZA+ | ZB++ |
|-----|-----|------|-----|----|----------|----|----|-----|------|----|-----|------|------|------|-----|------|-----|-----|------|
| *20 | 10  | 36   | 1.5 | 16 | M8x1.25  | 9  | 10 | M6  | 18.5 | 5  | M5  | -    | 22   | M5   | 8   | *6   | *4  | *39 | *45  |
| *25 | 10  | 40   | 1.5 | 16 | M8x1.25  | 9  | 10 | M6  | 18.5 | 5  | M5  | -    | 26   | M5   | 8   | *6   | *4  | 39  | 45.5 |
| 32  | 12  | 49   | -   | 19 | M10x1.25 | 10 | 12 | M8  | -    | -  | M6  | 14.5 | 32.5 | G1/8 | 7.5 | 9    | 2.1 | 44  | 51   |
| 40  | 12  | 55   | -   | 19 | M10x1.25 | 10 | 12 | M8  | -    | -  | M6  | 15   | 38   | G1/8 | 7.5 | 9    | 2.1 | 45  | 52   |
| 50  | 16  | 68   | -   | 22 | M12x1.25 | 13 | 16 | M10 | -    | -  | M8  | 14.5 | 46.5 | G1/8 | 7.5 | 12   | 2.6 | 45  | 53   |
| 63  | 16  | 78.5 | -   | 22 | M12x1.25 | 13 | 16 | M10 | -    | -  | M8  | 14   | 56.5 | G1/8 | 7.5 | 12   | 2.6 | 49  | 57.5 |
| 80  | 20  | 98   | -   | 28 | M16x1.5  | 17 | 20 | M12 | -    | -  | M10 | 15.5 | 72   | G1/8 | 7.5 | 12   | 2.6 | 54  | 64   |
| 100 | 25  | 120  | -   | 28 | M16x1.5  | 22 | 20 | M12 | -    | -  | M10 | 20   | 89   | G1/8 | 7.5 | 12   | 2.6 | 67  | 77   |

**WF - WFM**

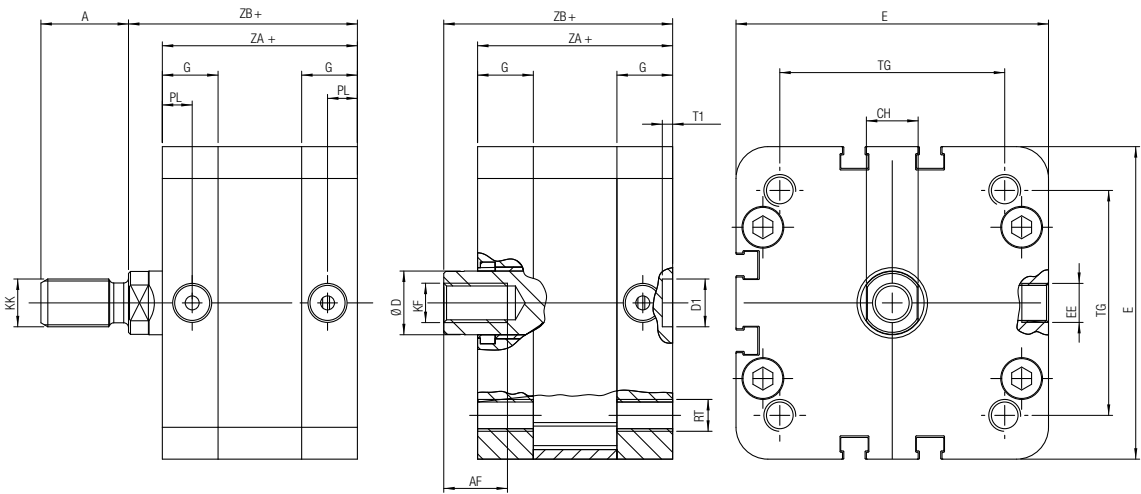
DOUBLE ACTING - MAGNETIC



Ø 20-25



Ø 32-40-50-63-80-100



\* Like UNITOP

+ = Add Stroke

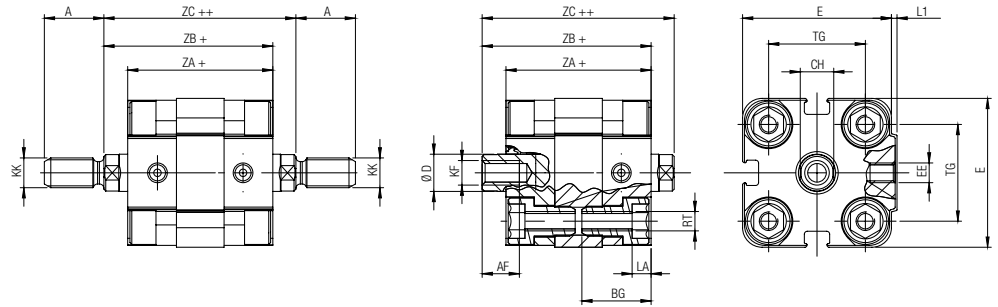
| Ø          | Ø D | E    | L1  | A  | KK       | CH | AF | KF  | BG   | LA | RT  | G    | TG   | EE   | PL  | Ø D1 | T1  | ZA+ | ZB+  |
|------------|-----|------|-----|----|----------|----|----|-----|------|----|-----|------|------|------|-----|------|-----|-----|------|
| <b>*20</b> | 10  | 36   | 1.5 | 16 | M8x1.25  | 9  | 10 | M6  | 18.5 | 5  | M5  | -    | 22   | M5   | 8   | *6   | *4  | *39 | *45  |
| <b>*25</b> | 10  | 40   | 1.5 | 16 | M8x1.25  | 9  | 10 | M6  | 18.5 | 5  | M5  | -    | 26   | M5   | 8   | *6   | *4  | 39  | 45.5 |
| <b>32</b>  | 12  | 49   | -   | 19 | M10x1.25 | 10 | 12 | M8  | -    | -  | M6  | 14.5 | 32.5 | G1/8 | 7.5 | 9    | 2.1 | 44  | 51   |
| <b>40</b>  | 12  | 55   | -   | 19 | M10x1.25 | 10 | 12 | M8  | -    | -  | M6  | 15   | 38   | G1/8 | 7.5 | 9    | 2.1 | 45  | 52   |
| <b>50</b>  | 16  | 68   | -   | 22 | M12x1.25 | 13 | 16 | M10 | -    | -  | M8  | 14.5 | 46.5 | G1/8 | 7.5 | 12   | 2.6 | 45  | 53   |
| <b>63</b>  | 16  | 78.5 | -   | 22 | M12x1.25 | 13 | 16 | M10 | -    | -  | M8  | 14   | 56.5 | G1/8 | 7.5 | 12   | 2.6 | 49  | 57.5 |
| <b>80</b>  | 20  | 98   | -   | 28 | M16x1.5  | 17 | 20 | M12 | -    | -  | M10 | 15.5 | 72   | G1/8 | 7.5 | 12   | 2.6 | 54  | 64   |
| <b>100</b> | 25  | 120  | -   | 28 | M16x1.5  | 22 | 20 | M12 | -    | -  | M10 | 20   | 89   | G1/8 | 7.5 | 12   | 2.6 | 67  | 77   |

**WJ - WJM**

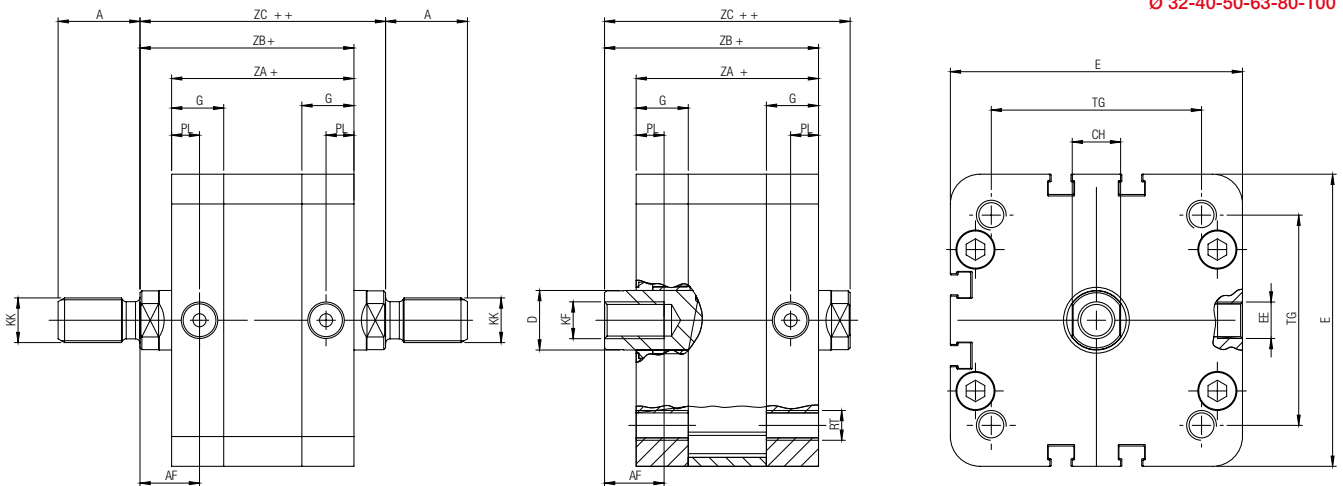
DOUBLE ACTING - MAGNETIC WITH DOUBLE ROD END



Ø 20-25



Ø 32-40-50-63-80-100



\* Like UNITOP

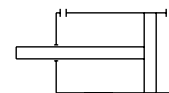
+ = Add Stroke

++ = Double stroke dimension and add it

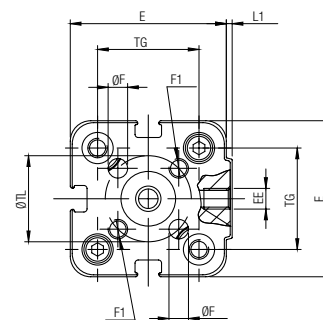
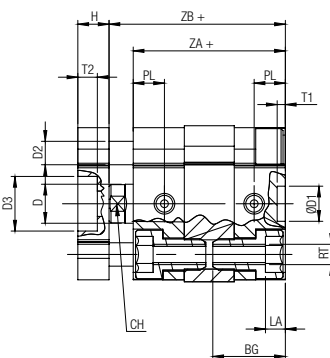
| Ø   | Ø D | E    | L1  | A  | KK       | CH | AF | KF  | BG   | LA | RT  | G    | TG   | EE   | PL  | ZA+ | ZB+  | ZC++ |
|-----|-----|------|-----|----|----------|----|----|-----|------|----|-----|------|------|------|-----|-----|------|------|
| *20 | 10  | 36   | 1.5 | 16 | M8x1.25  | 9  | 10 | M6  | 18.5 | 5  | M5  | -    | 22   | M5   | 8   | *39 | *45  | *51  |
| 25  | 10  | 40   | 1.5 | 16 | M8x1.25  | 9  | 10 | M6  | 18.5 | 5  | M5  | -    | 26   | M5   | 8   | 39  | 45.5 | 51.5 |
| 32  | 12  | 49   | -   | 19 | M10x1.25 | 10 | 12 | M8  | -    | -  | M6  | 14.5 | 32.5 | G1/8 | 7.5 | 44  | 51   | 58   |
| 40  | 12  | 55   | -   | 19 | M10x1.25 | 10 | 12 | M8  | -    | -  | M6  | 15   | 38   | G1/8 | 7.5 | 45  | 52   | 59   |
| 50  | 16  | 68   | -   | 22 | M12x1.25 | 13 | 16 | M10 | -    | -  | M8  | 14.5 | 46.5 | G1/8 | 7.5 | 45  | 53   | 61   |
| 63  | 16  | 78.5 | -   | 22 | M12x1.25 | 13 | 16 | M10 | -    | -  | M8  | 14   | 56.5 | G1/8 | 7.5 | 49  | 57.5 | 66   |
| 80  | 20  | 98   | -   | 28 | M16x1.5  | 17 | 20 | M12 | -    | -  | M10 | 15.5 | 72   | G1/8 | 7.5 | 54  | 64   | 74   |
| 100 | 25  | 120  | -   | 28 | M16x1.5  | 22 | 20 | M12 | -    | -  | M10 | 20   | 89   | G1/8 | 7.5 | 67  | 77   | 87   |

**WFA**

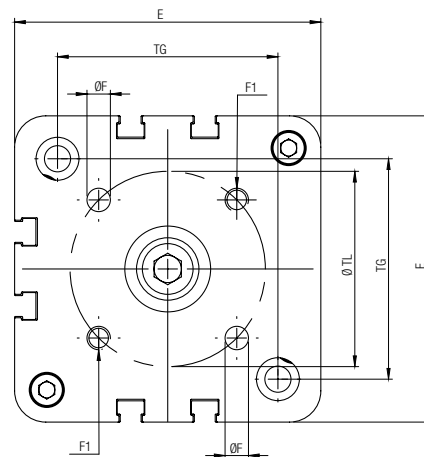
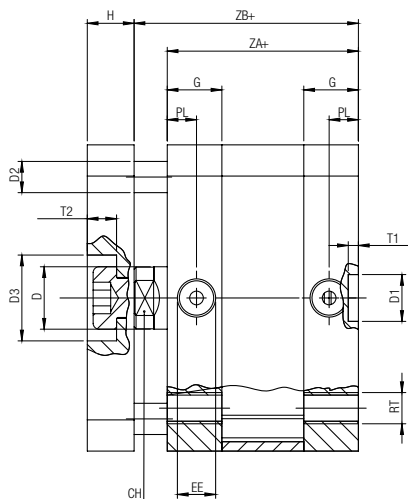
DOUBLE ACTING - MAGNETIC - ANTI ROTATION



Ø 20-25



Ø 32-40-50-63-80-100



\* Like UNITOP

+ = Add Stroke

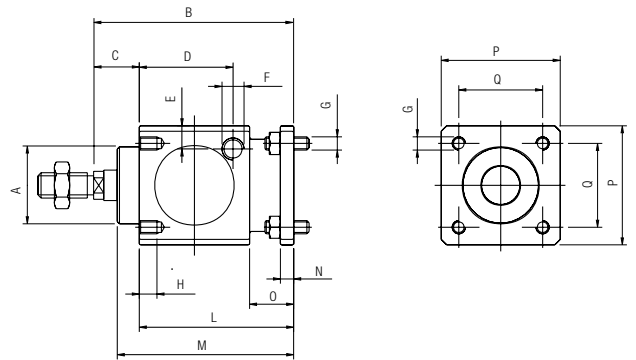
| Ø          | Ø D | E    | L1  | CH | AF | KF  | BG   | LA | RT  | G    | TG   | EE   | PL  | Ø D1 | T1  | Ø TL | H  | Ø F | F1  | D2 | D3   | T2   | ZA+ | ZB+  |
|------------|-----|------|-----|----|----|-----|------|----|-----|------|------|------|-----|------|-----|------|----|-----|-----|----|------|------|-----|------|
| <b>*20</b> | 10  | 36   | 1.5 | 9  | 10 | M6  | 18.5 | 5  | M5  | -    | 22   | M5   | 8   | *6   | *4  | 17   | 8  | 4   | M4  | 6  | 10.5 | 5    | *39 | *45  |
| <b>*25</b> | 10  | 40   | 1.5 | 9  | 10 | M6  | 18.5 | 5  | M5  | -    | 26   | M5   | 8   | *6   | *4  | 22   | 8  | 5   | M5  | 6  | 14   | 5    | 39  | 45.5 |
| <b>32</b>  | 12  | 49   | -   | 10 | 12 | M8  | -    | -  | M6  | 14.5 | 32.5 | G1/8 | 7.5 | 9    | 2.1 | 28   | 10 | 5   | M5  | 6  | 17   | 6    | 44  | 51   |
| <b>40</b>  | 12  | 55   | -   | 10 | 12 | M8  | -    | -  | M6  | 15   | 38   | G1/8 | 7.5 | 9    | 2.1 | 33   | 10 | 5   | M5  | 6  | 17   | 6    | 45  | 52   |
| <b>50</b>  | 16  | 68   | -   | 13 | 16 | M10 | -    | -  | M8  | 14.5 | 46.5 | G1/8 | 7.5 | 12   | 2.6 | 42   | 12 | 6   | M6  | 8  | 22   | 7.5  | 45  | 53   |
| <b>63</b>  | 16  | 78.5 | -   | 13 | 16 | M10 | -    | -  | M8  | 14   | 56.5 | G1/8 | 7.5 | 12   | 2.6 | 50   | 12 | 6   | M6  | 8  | 22   | 7.5  | 49  | 57.5 |
| <b>80</b>  | 20  | 98   | -   | 17 | 20 | M12 | -    | -  | M10 | 15.5 | 72   | G1/8 | 7.5 | 12   | 2.6 | 65   | 14 | 8   | M8  | 12 | 24   | 10.5 | 54  | 64   |
| <b>100</b> | 25  | 120  | -   | 22 | 20 | M12 | -    | -  | M10 | 20   | 89   | G1/8 | 7.5 | 12   | 2.6 | 80   | 14 | 10  | M10 | 12 | 24   | 10.5 | 67  | 77   |

**CYLINDER ACCESSORIES FOR ISO 6431 - ISO 15552 - ISO 21287**

Screw included.

**VRL**

PISTON ROD LOCK

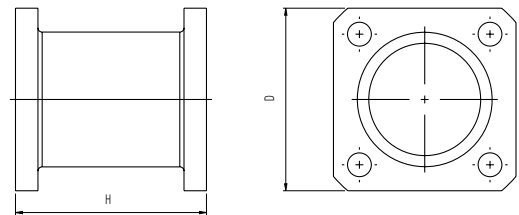


MATERIAL: Aluminium

| Part No. | Ø   | A    | B   | C  | D     | E    | F     | G   | H  | L   | M    | N  | O  | P   | Q    |
|----------|-----|------|-----|----|-------|------|-------|-----|----|-----|------|----|----|-----|------|
| VRL 032  | 32  | 30   | 86  | 26 | 33.25 | 9    | 1/8"G | M6  | 8  | 60  | 67.5 | 6  | 20 | 47  | 32.5 |
| VRL 040  | 40  | 34.5 | 100 | 30 | 42.5  | 9    | 1/8"G | M6  | 8  | 70  | 80   | 6  | 20 | 54  | 38   |
| VRL 050  | 50  | 40   | 127 | 37 | 58    | 12.5 | 1/8"G | M8  | 12 | 90  | 100  | 8  | 24 | 65  | 46.5 |
| VRL 063  | 63  | 45   | 127 | 37 | 59    | 17.5 | 1/8"G | M8  | 12 | 90  | 100  | 8  | 24 | 75  | 56.5 |
| VRL 080  | 80  | 45   | 156 | 46 | 69    | 17.5 | 1/4"G | M10 | 16 | 110 | 120  | 12 | 32 | 95  | 72   |
| VRL 100  | 100 | 55   | 161 | 51 | 69    | 20   | 1/4"G | M10 | 16 | 110 | 120  | 12 | 32 | 114 | 89   |
| VRL 125  | 125 | 60   | 205 | 65 | 84.5  | 19   | 1/4"G | M12 | 20 | 140 | 156  | 20 | 45 | 138 | 110  |

**VFT**

JOINING FLANGE

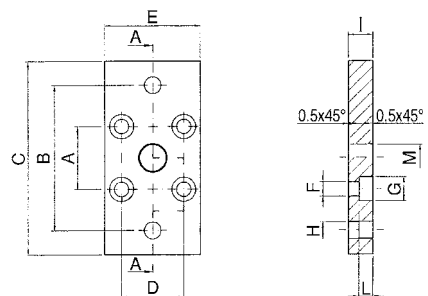


MATERIAL: Aluminium

| Part No. | Ø   | H   | D   |
|----------|-----|-----|-----|
| VFT 032  | 32  | 55  | 45  |
| VFT 040  | 40  | 55  | 52  |
| VFT 050  | 50  | 68  | 65  |
| VFT 063  | 63  | 68  | 75  |
| VFT 080  | 80  | 92  | 95  |
| VFT 100  | 100 | 92  | 115 |
| VFT 125  | 125 | 120 | 140 |

**QFL**

FLANGE

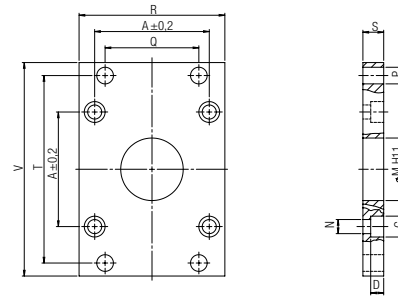


MATERIAL: Steel

| Part No. | Ø     | A  | B  | C  | D  | E  | F   | G  | H   | I  | L   | M  |
|----------|-------|----|----|----|----|----|-----|----|-----|----|-----|----|
| QFL 012  | 12-16 | 18 | 43 | 55 | 18 | 29 | 4.5 | 9  | 5.5 | 10 | 5.4 | 10 |
| QFL 020  | 20    | 22 | 55 | 70 | 22 | 36 | 5.5 | 10 | 6.6 | 10 | 5.4 | 12 |
| QFL 025  | 25    | 26 | 60 | 76 | 26 | 40 | 5.5 | 10 | 6.6 | 10 | 5.4 | 12 |

**VFL**

FLANGE

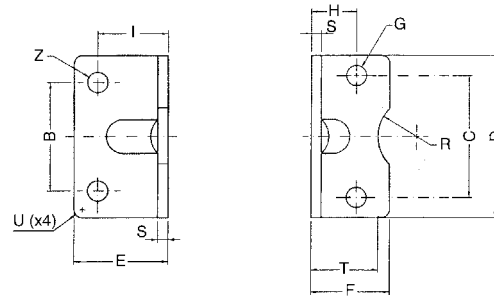


- MATERIAL: Steel
- MATERIAL: Stainless Steel
- SCREW: DIN6912

| Part No. ● | Part No. ■ | ∅   | ∅ M | P  | S  | D    | C    | N    | A    | Q   | R   | T   | V   |
|------------|------------|-----|-----|----|----|------|------|------|------|-----|-----|-----|-----|
| VFL 032    | VFLI 032   | 32  | 30  | 7  | 10 | 5    | 10.5 | 6.5  | 32.5 | 32  | 45  | 64  | 80  |
| VFL 040    | VFLI 040   | 40  | 35  | 9  | 10 | 5    | 11   | 6.5  | 38   | 36  | 52  | 72  | 90  |
| VFL 050    | VFLI 050   | 50  | 40  | 9  | 12 | 5.5  | 15   | 8.5  | 46.5 | 45  | 65  | 90  | 110 |
| VFL 063    | VFLI 063   | 63  | 45  | 9  | 12 | 5.5  | 15   | 8.5  | 56.5 | 50  | 75  | 100 | 120 |
| VFL 080    | VFLI 080   | 80  | 45  | 12 | 16 | 8    | 18   | 10.5 | 72   | 63  | 95  | 126 | 150 |
| VFL 100    | VFLI 100   | 100 | 55  | 14 | 16 | 8    | 18   | 10.5 | 89   | 75  | 115 | 150 | 170 |
| VFL 125    | -          | 125 | 60  | 16 | 20 | 9.5  | 20   | 13.5 | 110  | 90  | 140 | 180 | 205 |
| VFL 160    | -          | 160 | 65  | 18 | 20 | 10.5 | 26   | 17   | 140  | 115 | 180 | 230 | 260 |
| VFL 200    | -          | 200 | 75  | 22 | 25 | 12.5 | 26   | 17   | 175  | 135 | 220 | 270 | 300 |
| VFL 250    | -          | 250 | 90  | 26 | 25 | 14.5 | 33   | 22   | 220  | 165 | 285 | 330 | 400 |
| VFL 320    | -          | 320 | 110 | 33 | 30 | 15   | 39   | 26   | 270  | 200 | 350 | 400 | 470 |

**QCP**

LOW-RISE PEDESTAL  
∅ 12-25

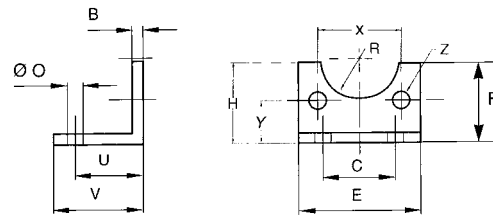


MATERIAL: Steel

| Part No. | ∅       | C  | B  | D  | E    | F    | G   | H  | I  | S | T  | R  | U | Z   |
|----------|---------|----|----|----|------|------|-----|----|----|---|----|----|---|-----|
| QCP 012  | 12 - 16 | 18 | 18 | 30 | 17.5 | 17.5 | 4.4 | 13 | 13 | 3 | 15 | 9  | 2 | 5.5 |
| QCP 020  | 20      | 22 | 22 | 36 | 22   | 22   | 5.4 | 16 | 16 | 4 | 17 | 10 | 2 | 6.6 |
| QCP 025  | 25      | 26 | 26 | 40 | 22   | 23   | 5.4 | 17 | 16 | 4 | 19 | 11 | 2 | 6.6 |

**VCP**

LOW RISE PEDISTAL

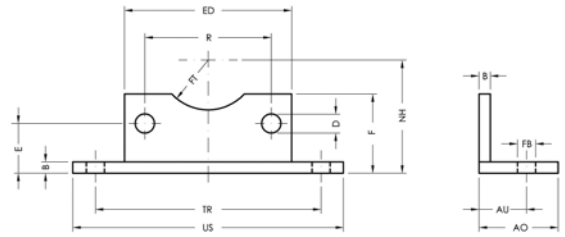


- MATERIAL: Steel
- MATERIAL: Stainless Steel

| Part No. ● | Part No. ■ | ∅   | B  | C   | E   | F   | O    | U  | V   | R    | Z  | X    | Y     | H   |
|------------|------------|-----|----|-----|-----|-----|------|----|-----|------|----|------|-------|-----|
| VCP 032    | VCPI 032   | 32  | 4  | 32  | 45  | 30  | 7    | 24 | 35  | 15   | 7  | 32.5 | 15.75 | 32  |
| VCP 040    | VCPI 040   | 40  | 4  | 36  | 52  | 30  | 10   | 28 | 36  | 17.5 | 7  | 38   | 17    | 36  |
| VCP 050    | VCPI 050   | 50  | 5  | 45  | 65  | 36  | 10   | 32 | 47  | 20   | 9  | 46.5 | 21.75 | 45  |
| VCP 063    | VCPI 063   | 63  | 5  | 50  | 75  | 35  | 10   | 32 | 45  | 22.5 | 9  | 56.5 | 21.75 | 50  |
| VCP 080    | VCPI 080   | 80  | 6  | 63  | 95  | 47  | 12   | 41 | 55  | 22.5 | 11 | 72   | 27    | 63  |
| VCP 100    | VCPI 100   | 100 | 6  | 75  | 115 | 53  | 14.5 | 41 | 57  | 27.5 | 11 | 89   | 26.5  | 71  |
| VCP 125    | VCPI 125   | 125 | 8  | 90  | 140 | 70  | 16.5 | 45 | 70  | 30   | 14 | 110  | 35    | 90  |
| VCP 160    | -          | 160 | 9  | 115 | 180 | 115 | 18   | 60 | 75  | 32.5 | 18 | 140  | 45    | 115 |
| VCP 200    | -          | 200 | 12 | 135 | 220 | 135 | 21   | 70 | 100 | 37.5 | 18 | 175  | 47.5  | 135 |
| VCP 250    | -          | 250 | 14 | 165 | 270 | 165 | 26   | 75 | 100 | 45   | 22 | 220  | 55    | 165 |

**VCB**

LARGE LOW RISE PEDISTAL  
Ø 32-100

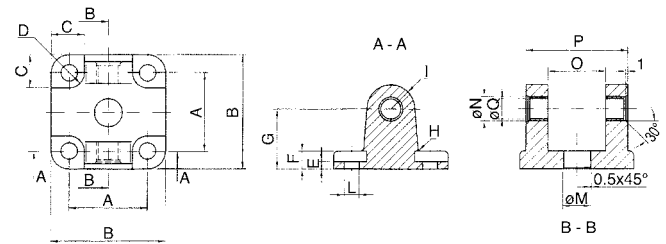


MATERIAL: Steel

| Part No.   | Ø   | US  | ED  | F  | AO | B | TR  | E     | D    | FT   | NH | R    | AU | FB   |
|------------|-----|-----|-----|----|----|---|-----|-------|------|------|----|------|----|------|
| VCB 032 NE | 32  | 79  | 45  | 30 | 30 | 5 | 65  | 15.75 | 6.5  | 15   | 32 | 32.5 | 18 | 6.5  |
| VCB 040 NE | 40  | 90  | 55  | 30 | 30 | 5 | 75  | 17    | 6.5  | 17.5 | 36 | 38   | 18 | 6.5  |
| VCB 050 NE | 50  | 110 | 65  | 35 | 35 | 5 | 90  | 21.75 | 8.5  | 20   | 45 | 46.5 | 21 | 8.5  |
| VCB 063 NE | 63  | 120 | 75  | 35 | 35 | 5 | 100 | 21.75 | 8.5  | 22.5 | 50 | 56.5 | 21 | 8.5  |
| VCB 080 NE | 80  | 153 | 95  | 45 | 45 | 6 | 128 | 27    | 10.5 | 22.5 | 63 | 72   | 27 | 10.5 |
| VCB 100 NE | 100 | 178 | 115 | 45 | 45 | 6 | 148 | 26.5  | 10.5 | 27.5 | 71 | 89   | 27 | 10.5 |

**VCF**

CLEVIS BRACKET WITH  
SELF-LUBRICATING BUSHINGS

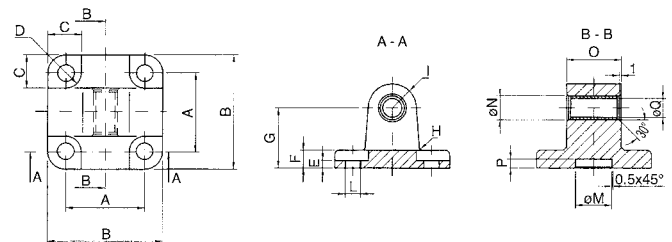


● MATERIAL: Aluminium  
■ MATERIAL: Stainless Steel

| Part No. ● | Part No. ■ | Ø   | B  | E   | G  | T   | Z  | CM | MR |
|------------|------------|-----|----|-----|----|-----|----|----|----|
| VCF 032    | VCFI 032   | 32  | 9  | 45  | 10 | 45  | 22 | 26 | 10 |
| VCF 040    | VCFI 040   | 40  | 9  | 52  | 12 | 52  | 25 | 28 | 12 |
| VCF 050    | VCFI 050   | 50  | 11 | 65  | 12 | 60  | 27 | 32 | 12 |
| VCF 063    | VCFI 063   | 63  | 11 | 75  | 16 | 70  | 32 | 40 | 16 |
| VCF 080    | VCFI 080   | 80  | 14 | 95  | 16 | 90  | 36 | 50 | 16 |
| VCF 100    | VCFI 100   | 100 | 14 | 115 | 20 | 110 | 41 | 60 | 20 |
| VCF 125    | VCFI 125   | 125 | 20 | 140 | 25 | 130 | 50 | 70 | 25 |
| VCF 160    | VCFI 160   | 160 | 20 | 180 | 30 | 170 | 55 | 90 | 25 |
| VCF 200    | VCFI 200   | 200 | 25 | 220 | 30 | 170 | 60 | 90 | 25 |

**QCM**

EYE BRACKET WITH  
SELF-LUBRICATING BUSHINGS



MATERIAL: Aluminium

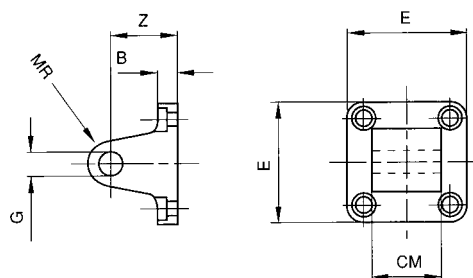
| Part No. | Ø       | A  | B  | C  | D   | E   | F | G  | H | I | L   | M  | N  | O  | P | Q |
|----------|---------|----|----|----|-----|-----|---|----|---|---|-----|----|----|----|---|---|
| QCM 012  | 12 - 16 | 18 | 27 | 10 | 4.5 | 2.6 | 6 | 16 | 2 | 6 | 4.5 | 10 | 8  | 12 | 3 | 6 |
| QCM 020  | 20      | 22 | 34 | 11 | 5   | 2.6 | 6 | 20 | 2 | 8 | 5.5 | 12 | 10 | 16 | 3 | 8 |
| QCM 025  | 25      | 26 | 38 | 11 | 5   | 2.6 | 6 | 20 | 2 | 8 | 5.5 | 12 | 10 | 16 | 3 | 8 |

## VCM

### EYE BRACKET



- MATERIAL: Aluminium
- MATERIAL: Stainless Steel
- ◆ MATERIAL: Iron



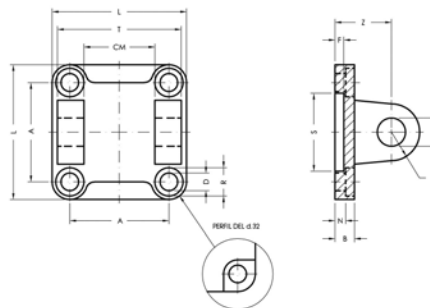
| Part No. ● | Part No. ■ | Part No. ◆  | Ø   | B  | E   | G  | Z  | CM  | MR |
|------------|------------|-------------|-----|----|-----|----|----|-----|----|
| VCM 032    | VCM1 032   | VCMZ 032 NE | 32  | 9  | 45  | 10 | 22 | 26  | 10 |
| VCM 040    | VCM1 040   | VCMZ 040 NE | 40  | 9  | 52  | 12 | 25 | 28  | 12 |
| VCM 050    | VCM1 050   | VCMZ 050 NE | 50  | 11 | 65  | 12 | 27 | 32  | 12 |
| VCM 063    | VCM1 063   | VCMZ 063 NE | 63  | 11 | 75  | 16 | 32 | 40  | 16 |
| VCM 080    | VCM1 080   | VCMZ 080 NE | 80  | 14 | 95  | 16 | 36 | 50  | 16 |
| VCM 100    | VCM1 100   | VCMZ 100 NE | 100 | 14 | 115 | 20 | 41 | 60  | 20 |
| VCM 125    | VCM1 125   | VCMZ 125 NE | 125 | 20 | 140 | 25 | 50 | 70  | 25 |
| VCM 160    | VCM1 160   | VCMZ 160 NE | 160 | 20 | 180 | 30 | 55 | 90  | 25 |
| VCM 200    | VCM1 200   | VCMZ 200 NE | 200 | 25 | 220 | 30 | 60 | 90  | 25 |
| VCM 250    | -          | VCMZ 250 NE | 250 | 25 | 270 | 40 | 70 | 110 | 40 |

## VCH

### CLEVIS BRACKET



- MATERIAL: Aluminium
- ◆ MATERIAL: Iron



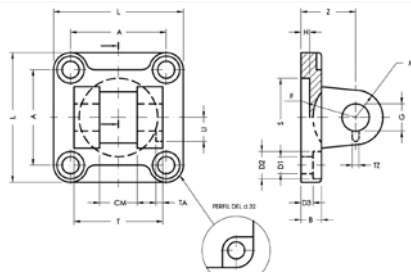
| Part No. | Part No. ◆  | Ø   | A    | L   | D   | R  | N   | B  | S  | F | Z  | G  | M  | CM  | T   |
|----------|-------------|-----|------|-----|-----|----|-----|----|----|---|----|----|----|-----|-----|
| VCH 032  | VCHZ 032 NE | 32  | 32.5 | 45  | 6.6 | 11 | 5.5 | 9  | 30 | 5 | 22 | 10 | 10 | 26  | 45  |
| VCH 040  | VCHZ 040 NE | 40  | 38   | 52  | 6.6 | 11 | 5.5 | 9  | 35 | 5 | 25 | 12 | 12 | 28  | 52  |
| VCH 050  | VCHZ 050 NE | 50  | 46.5 | 65  | 9   | 15 | 6.5 | 11 | 40 | 5 | 27 | 12 | 12 | 32  | 60  |
| VCH 063  | VCHZ 063 NE | 63  | 56.5 | 75  | 9   | 15 | 6.5 | 11 | 45 | 5 | 32 | 16 | 16 | 40  | 70  |
| VCH 080  | VCHZ 080 NE | 80  | 72   | 95  | 11  | 18 | 10  | 14 | 45 | 5 | 36 | 16 | 16 | 50  | 90  |
| VCH 100  | VCHZ 100 NE | 100 | 89   | 115 | 11  | 18 | 10  | 14 | 55 | 5 | 41 | 20 | 20 | 60  | 110 |
| VCH 125  | VCHZ 125 NE | 125 | 110  | 140 | 14  | 20 | 10  | 20 | 60 | 7 | 50 | 25 | 25 | 70  | 130 |
| VCH 160  | VCHZ 160 NE | 160 | 140  | 180 | 18  | 26 | 10  | 20 | 65 | 7 | 55 | 30 | 25 | 90  | 170 |
| VCH 200  | VCHZ 200 NE | 200 | 175  | 220 | 18  | 26 | 11  | 25 | 75 | 7 | 60 | 30 | 25 | 90  | 170 |
| VCH 250  | VCHZ 250 NE | 250 | 220  | 270 | 22  | 33 | 11  | 25 | 90 | - | 70 | 40 | 40 | 110 | 200 |

## VCD

### NARROW CLEVIS BRACKET



- MATERIAL: Aluminium
- ◆ MATERIAL: Iron

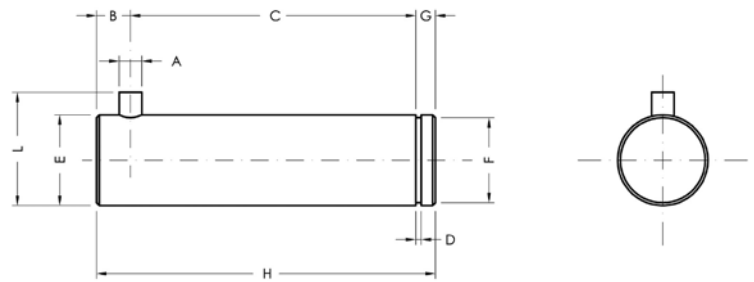


| Part No. ● | Part No. ◆  | Ø   | L   | T   | CM | A    | Z  | H | B  | D3  | S  | G  | MR | D1  | D2 | TA | TZ  | LI   | F  |
|------------|-------------|-----|-----|-----|----|------|----|---|----|-----|----|----|----|-----|----|----|-----|------|----|
| VCD 032    | VCDZ 032 NE | 32  | 45  | 34  | 14 | 32.5 | 22 | 5 | 9  | 5.5 | 30 | 10 | 10 | 6.6 | 11 | 3  | 3.3 | 11.5 | 17 |
| VCD 040    | VCDZ 040 NE | 40  | 52  | 40  | 16 | 38   | 25 | 5 | 9  | 5.5 | 35 | 12 | 12 | 6.6 | 11 | 4  | 4.3 | 12   | 20 |
| VCD 050    | VCDZ 050 NE | 50  | 65  | 45  | 21 | 46.5 | 27 | 5 | 11 | 6.5 | 40 | 16 | 14 | 9   | 15 | 4  | 4.3 | 14   | 22 |
| VCD 063    | VCDZ 063 NE | 63  | 75  | 51  | 21 | 56.5 | 32 | 5 | 11 | 6.5 | 45 | 16 | 18 | 9   | 15 | 4  | 4.3 | 14   | 25 |
| VCD 080    | VCDZ 080 NE | 80  | 95  | 65  | 25 | 72   | 36 | 5 | 14 | 10  | 45 | 20 | 20 | 11  | 18 | 4  | 4.3 | 16   | 30 |
| VCD 100    | VCDZ 100 NE | 100 | 115 | 75  | 25 | 89   | 41 | 5 | 14 | 10  | 55 | 20 | 22 | 11  | 18 | 4  | 6.3 | 16   | 32 |
| VCD 125    | VCDZ 125 NE | 125 | 140 | 97  | 37 | 110  | 50 | 7 | 20 | 10  | 60 | 30 | 25 | 14  | 20 | 6  | 6.3 | 24   | 42 |
| VCD 160    | -           | 160 | 180 | 122 | 43 | 140  | 55 | 7 | 20 | 10  | 65 | 35 | 30 | 18  | 26 | 6  | 6.3 | 26.5 | 46 |
| VCD 200    | -           | 200 | 220 | 122 | 43 | 175  | 60 | 7 | 25 | 11  | 75 | 35 | 30 | 18  | 26 | 6  | 6.3 | 26.5 | 49 |



**VPS**

**PIN WITH ANTI-ROTATION AND RETAINER CLIP FOR VCD CLEVIS BRACKET**

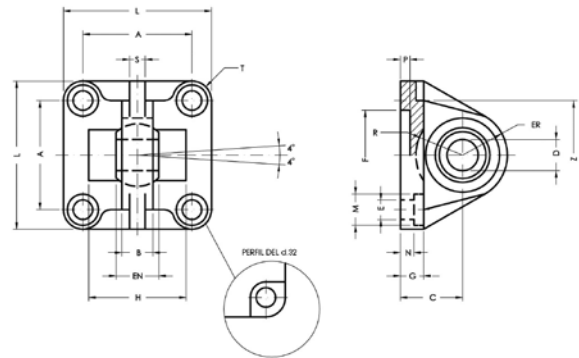


- MATERIAL: Steel
- MATERIAL: Stainless Steel

| Part No. ● | Part No. ■ | ∅         | A | C    | D   | E  | F    | G | H   | L  | B   |
|------------|------------|-----------|---|------|-----|----|------|---|-----|----|-----|
| VPS 032    | VPSI 032   | 32        | 3 | 32.5 | 1.1 | 10 | 9.6  | 4 | 41  | 14 | 4.5 |
| VPS 040    | VPSI 040   | 40        | 4 | 38   | 1.1 | 12 | 11.5 | 4 | 48  | 16 | 6   |
| VPS 050    | VPSI 050   | 50        | 4 | 43   | 1.1 | 16 | 15.2 | 5 | 60  | 20 | 6   |
| VPS 063    | VPSI 063   | 63        | 4 | 49   | 1.1 | 16 | 15.2 | 5 | 60  | 20 | 6   |
| VPS 080    | VPSI 080   | 80        | 4 | 63   | 1.3 | 20 | 19   | 6 | 75  | 24 | 6   |
| VPS 100    | VPSI 100   | 100       | 4 | 73   | 1.3 | 20 | 19   | 6 | 85  | 24 | 6   |
| VPS 125    | VPSI 125   | 125       | 6 | 94   | 1.6 | 30 | 28.6 | 7 | 110 | 36 | 9   |
| VPS 160    | -          | 160 - 200 | 6 | 119  | 1.6 | 35 | 33   | 7 | 135 | 41 | 9   |

**VCS**

**EYE BRACKET WITH SPHERIC ROD EYE**

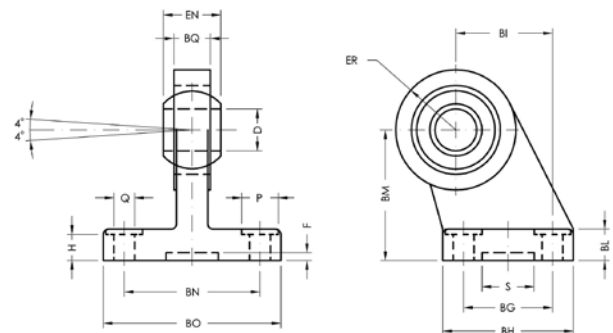


- MATERIAL: Aluminium
- MATERIAL: Stainless Steel
- ◆ MATERIAL: Iron

| Part No. ● | Part No. ■ | Part No. ◆  | ∅   | A    | B    | C  | D  | EN | ER   | F  | G  | E    | L   | M  | N   | P | H  | R  | S  | Z    | T    |
|------------|------------|-------------|-----|------|------|----|----|----|------|----|----|------|-----|----|-----|---|----|----|----|------|------|
| VCS 032    | VCSI 032   | VCSZ 032 NE | 32  | 32.5 | 10.5 | 22 | 10 | 14 | 16   | 30 | 9  | 6.6  | 45  | 11 | 5.5 | 5 | -  | -  | 4  | 32.5 | 6.25 |
| VCS 040    | VCSI 040   | VCSZ 040 NE | 40  | 38   | 12   | 25 | 12 | 16 | 19   | 35 | 9  | 6.6  | 52  | 11 | 5.5 | 5 | -  | -  | 6  | 39   | 7    |
| VCS 050    | VCSI 050   | VCSZ 050 NE | 50  | 46.5 | 15   | 27 | 16 | 21 | 21   | 40 | 11 | 9    | 65  | 15 | 6.5 | 5 | 51 | 18 | 8  | 47   | 9.25 |
| VCS 063    | VCSI 063   | VCSZ 063 NE | 63  | 56.5 | 15   | 32 | 16 | 21 | 24   | 45 | 11 | 9    | 75  | 15 | 6.5 | 5 | -  | -  | 8  | 52   | 9.25 |
| VCS 080    | VCSI 080   | VCSZ 080 NE | 80  | 72   | 18   | 36 | 20 | 25 | 28.5 | 45 | 14 | 11   | 95  | 18 | 10  | 5 | 72 | 24 | 10 | 67   | 11.5 |
| VCS 100    | VCSI 100   | VCSZ 100 NE | 100 | 89   | 18   | 41 | 20 | 25 | 30   | 55 | 14 | 11   | 115 | 18 | 10  | 8 | -  | -  | 10 | 77   | 13   |
| VCS 125    | VCSI 125   | VCSZ 125 NE | 125 | 110  | 25   | 50 | 30 | 37 | 40   | 60 | 20 | 13.5 | 140 | 20 | 10  | 7 | -  | -  | 13 | 98   | 15   |
| VCS 160    | -          | -           | 160 | 140  | 28   | 55 | 35 | 43 | 45   | 65 | 20 | 18   | 180 | 26 | 10  | 7 | -  | -  | 14 | 130  | 20   |
| VCS 200    | -          | -           | 200 | 175  | 28   | 60 | 35 | 43 | 48   | 75 | 25 | 18   | 220 | 26 | 11  | 7 | -  | -  | 14 | 155  | 22.5 |

**VADZ**

**EYE BRACKET WITH SPHERIC ROD EYE**

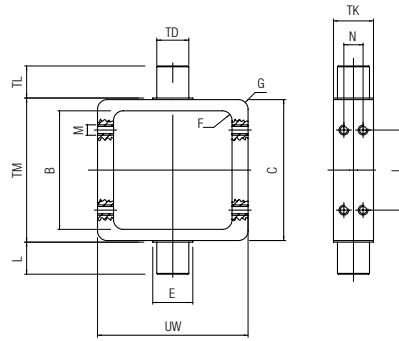


MATERIAL: Steel  
TREATMENT: Black Cataphoresis

| Part No.    | ∅   | Q    | P  | BG | BH | BI | BL | BM | BN | BO  | EN | ER | BQ   | D  | H    | S  | F |
|-------------|-----|------|----|----|----|----|----|----|----|-----|----|----|------|----|------|----|---|
| VADZ 032 NE | 32  | 6.6  | 11 | 18 | 31 | 21 | 10 | 32 | 38 | 51  | 14 | 15 | 10.5 | 10 | 8.5  | 20 | 3 |
| VADZ 040 NE | 40  | 6.6  | 11 | 22 | 35 | 24 | 10 | 36 | 41 | 54  | 16 | 18 | 12   | 12 | 8.5  | 20 | 3 |
| VADZ 050 NE | 50  | 9    | 15 | 30 | 45 | 33 | 12 | 45 | 50 | 65  | 21 | 20 | 15   | 16 | 10.5 | 20 | 3 |
| VADZ 063 NE | 63  | 9    | 15 | 35 | 50 | 37 | 12 | 50 | 52 | 67  | 21 | 23 | 15   | 16 | 10.5 | 20 | 3 |
| VADZ 080 NE | 80  | 11   | 18 | 40 | 60 | 47 | 14 | 63 | 66 | 86  | 25 | 27 | 18   | 20 | 11.5 | 20 | 3 |
| VADZ 100 NE | 100 | 11   | 18 | 50 | 70 | 55 | 15 | 71 | 76 | 96  | 25 | 30 | 18   | 20 | 12.5 | 20 | 3 |
| VADZ 125 NE | 125 | 13.5 | 20 | 60 | 90 | 70 | 20 | 90 | 94 | 124 | 37 | 40 | 25   | 30 | 17   | 20 | 3 |

**XCN**

INTERMEDIATE  
ADJUSTABLE TRUNNION  
MOUNT

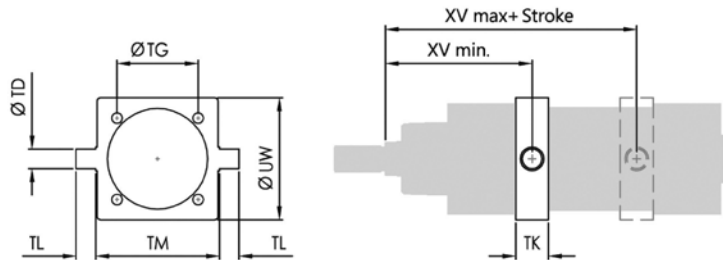


MATERIAL: Steel

| Part No.       | Ø          | UW  | B   | C   | TD | E  | F | G | TK | I   | TL | M   | N  | TM  |
|----------------|------------|-----|-----|-----|----|----|---|---|----|-----|----|-----|----|-----|
| <b>XCN 032</b> | <b>32</b>  | 65  | 45  | 50  | 12 | -  | 5 | 4 | 20 | 28  | 12 | M5  | 7  | 50  |
| <b>XCN 040</b> | <b>40</b>  | 75  | 53  | 62  | 16 | 20 | 5 | 5 | 20 | 32  | 16 | M5  | 8  | 63  |
| <b>XCN 050</b> | <b>50</b>  | 90  | 64  | 74  | 16 | 20 | 6 | 6 | 20 | 40  | 16 | M6  | 8  | 75  |
| <b>XCN 063</b> | <b>63</b>  | 100 | 74  | 88  | 20 | 25 | 6 | 6 | 25 | 50  | 20 | M6  | 12 | 90  |
| <b>XCN 080</b> | <b>80</b>  | 130 | 93  | 109 | 20 | 25 | 7 | 7 | 25 | 64  | 20 | M8  | 12 | 110 |
| <b>XCN 100</b> | <b>100</b> | 140 | 110 | 130 | 25 | 30 | 8 | 8 | 30 | 80  | 25 | M8  | 15 | 132 |
| <b>XCN 125</b> | <b>125</b> | 150 | 134 | 155 | 25 | 30 | 8 | 8 | 30 | 100 | 25 | M10 | 15 | 160 |

**VCNT**

INTERMEDIATE FIXED  
TRUNNION MOUNT

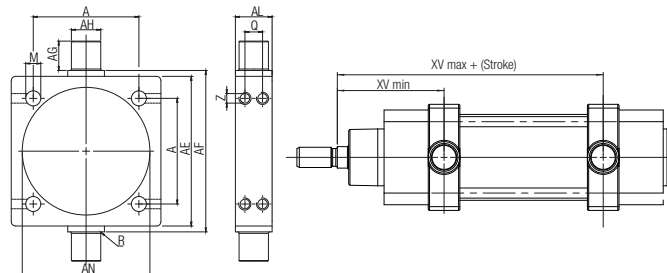


MATERIAL: Steel

| Part No.        | Ø          | TD | TG   | TK | TL | TM  | UW  | XV min | XV max | RT  |
|-----------------|------------|----|------|----|----|-----|-----|--------|--------|-----|
| <b>VCNT 032</b> | <b>32</b>  | 12 | 32.5 | 15 | 12 | 50  | 46  | 61.5   | 84.5   | M6  |
| <b>VCNT 040</b> | <b>40</b>  | 16 | 38   | 20 | 16 | 63  | 59  | 71.5   | 93.5   | M6  |
| <b>VCNT 050</b> | <b>50</b>  | 16 | 46.5 | 20 | 16 | 75  | 69  | 78.5   | 101.5  | M8  |
| <b>VCNT 063</b> | <b>63</b>  | 20 | 56.5 | 25 | 20 | 90  | 84  | 84.5   | 110.5  | M8  |
| <b>VCNT 080</b> | <b>80</b>  | 20 | 72   | 25 | 20 | 110 | 102 | 94.5   | 125.5  | M10 |
| <b>VCNT 100</b> | <b>100</b> | 25 | 89   | 30 | 25 | 132 | 125 | 107    | 133    | M10 |
| <b>VCNT 125</b> | <b>125</b> | 25 | 110  | 32 | 25 | 160 | 155 | 126    | 163    | M12 |
| <b>VCNT 160</b> | <b>160</b> | 32 | 140  | 40 | 32 | 200 | 190 | 149    | 191    | M16 |
| <b>VCNT 200</b> | <b>200</b> | 32 | 175  | 40 | 32 | 250 | 240 | 164    | 206    | M16 |
| <b>VCNT 250</b> | <b>250</b> | 40 | 220  | 50 | 40 | 320 | 296 | 187    | 223    | M20 |

**VCNL**

INTERMEDIATE TRUNNION  
FOR SMOOTH TIE-RODS

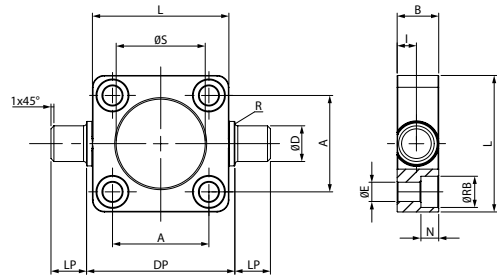


MATERIAL: Steel

| Part No.        | Ø          | TD | TG   | TK | TL | TM  | UW  | XV min | XV max |
|-----------------|------------|----|------|----|----|-----|-----|--------|--------|
| <b>VCNL 032</b> | <b>32</b>  | 12 | 32.5 | 15 | 12 | 50  | 46  | 61.5   | 84.5   |
| <b>VCNL 040</b> | <b>40</b>  | 16 | 38   | 20 | 16 | 63  | 59  | 71.5   | 93.5   |
| <b>VCNL 050</b> | <b>50</b>  | 16 | 46.5 | 20 | 16 | 75  | 69  | 78.5   | 101.5  |
| <b>VCNL 063</b> | <b>63</b>  | 20 | 56.5 | 25 | 20 | 90  | 84  | 84.5   | 110.5  |
| <b>VCNL 080</b> | <b>80</b>  | 20 | 72   | 25 | 20 | 110 | 102 | 94.5   | 125.5  |
| <b>VCNL 100</b> | <b>100</b> | 25 | 89   | 30 | 25 | 132 | 125 | 107    | 133    |
| <b>VCNL 125</b> | <b>125</b> | 25 | 110  | 32 | 25 | 160 | 155 | 126    | 163    |
| <b>VCNL 160</b> | <b>160</b> | 32 | 140  | 40 | 32 | 200 | 190 | 149    | 191    |
| <b>VCNL 200</b> | <b>200</b> | 32 | 175  | 40 | 32 | 250 | 240 | 164    | 206    |

**VCNF**

FRONT - REAR HINGE

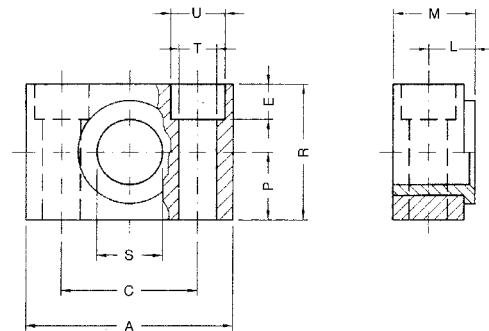


MATERIAL: Steel

| Part No.        | Ø          | A    | L   | DP  | LP | D  | S  | B  | R   | I    | E    | RB   | N  |
|-----------------|------------|------|-----|-----|----|----|----|----|-----|------|------|------|----|
| <b>VCNF 032</b> | <b>32</b>  | 32,5 | 46  | 50  | 12 | 12 | 30 | 14 | 1   | 6,5  | 6,5  | 10,5 | 6  |
| <b>VCNF 040</b> | <b>40</b>  | 38   | 59  | 63  | 16 | 16 | 35 | 19 | 1,5 | 9    | 6,5  | 10,5 | 6  |
| <b>VCNF 050</b> | <b>50</b>  | 46,5 | 69  | 75  | 16 | 16 | 40 | 19 | 1,6 | 9    | 8,5  | 13,5 | 8  |
| <b>VCNF 063</b> | <b>63</b>  | 56,5 | 84  | 90  | 20 | 20 | 45 | 24 | 1,6 | 11,5 | 8,5  | 13,5 | 8  |
| <b>VCNF 080</b> | <b>80</b>  | 72   | 102 | 110 | 20 | 20 | 45 | 24 | 1,6 | 11,5 | 10,5 | 16,5 | 10 |
| <b>VCNF 100</b> | <b>100</b> | 89   | 125 | 132 | 25 | 25 | 55 | 29 | 2   | 14   | 10,5 | 16,5 | 10 |
| <b>VCNF 125</b> | <b>125</b> | 110  | 150 | 160 | 25 | 25 | 60 | 30 | 2   | 15   | 13,5 | 20   | 12 |

**VSI**

SUPPORT BLOCK FOR INTERMEDIATE TRUNNION

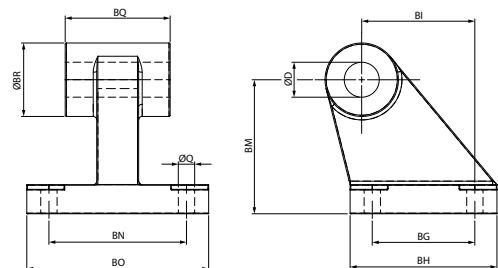


MATERIAL: Steel

| Part No.       | Ø                | A   | M    | R  | P  | C  | S  | L    | U  | T   | E  |
|----------------|------------------|-----|------|----|----|----|----|------|----|-----|----|
| <b>VSI 032</b> | <b>32</b>        | 46  | 18   | 30 | 15 | 32 | 12 | 10,5 | 11 | 6,6 | 7  |
| <b>VSI 040</b> | <b>40 - 50</b>   | 55  | 21   | 36 | 18 | 36 | 16 | 12   | 15 | 9   | 9  |
| <b>VSI 063</b> | <b>63 - 80</b>   | 65  | 23   | 40 | 20 | 42 | 20 | 13   | 18 | 11  | 11 |
| <b>VSI 100</b> | <b>100 - 125</b> | 75  | 28,5 | 50 | 25 | 50 | 25 | 16   | 20 | 14  | 13 |
| <b>VSI 160</b> | <b>160 - 200</b> | 92  | 40   | 60 | 30 | 60 | 32 | 22,5 | 26 | 18  | 17 |
| <b>VSI 250</b> | <b>250</b>       | 140 | 56   | 70 | 35 | 90 | 40 | 31   | 33 | 22  | 20 |

**VAS**

EYE BRACKET

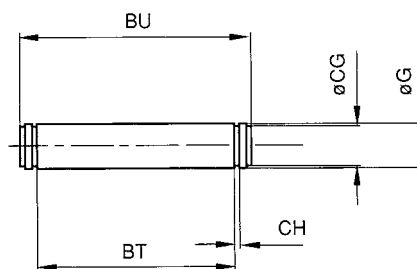


- MATERIAL: Aluminium
- ♦ MATERIAL: Stainless Steel

| Part No. •     | Part No. ■      | Ø          | Q   | BG | BH  | BI  | BM  | BN  | BO  | BQ | BR | Ø  |
|----------------|-----------------|------------|-----|----|-----|-----|-----|-----|-----|----|----|----|
| <b>VAS 032</b> | <b>VASI 032</b> | <b>32</b>  | 6,6 | 18 | 31  | 21  | 32  | 38  | 51  | 26 | 20 | 10 |
| <b>VAS 040</b> | <b>VASI 040</b> | <b>40</b>  | 6,6 | 22 | 35  | 24  | 36  | 41  | 54  | 28 | 22 | 12 |
| <b>VAS 050</b> | <b>VASI 050</b> | <b>50</b>  | 9   | 30 | 45  | 33  | 45  | 50  | 65  | 32 | 26 | 12 |
| <b>VAS 063</b> | <b>VASI 063</b> | <b>63</b>  | 9   | 35 | 50  | 37  | 50  | 52  | 67  | 40 | 30 | 16 |
| <b>VAS 080</b> | <b>VASI 080</b> | <b>80</b>  | 11  | 40 | 60  | 47  | 63  | 66  | 86  | 50 | 30 | 16 |
| <b>VAS 100</b> | <b>VASI 100</b> | <b>100</b> | 11  | 50 | 70  | 55  | 71  | 76  | 96  | 60 | 38 | 20 |
| <b>VAS 125</b> | <b>VASI 125</b> | <b>125</b> | 14  | 60 | 90  | 70  | 90  | 94  | 124 | 70 | 45 | 25 |
| <b>VAS 160</b> | -               | <b>160</b> | 14  | 88 | 126 | 97  | 115 | 118 | 156 | 90 | 63 | 30 |
| <b>VAS 200</b> | -               | <b>200</b> | 18  | 90 | 130 | 105 | 135 | 122 | 162 | 90 | 63 | 30 |

## VPE

PIN WITH  
RETAINER CLIPS

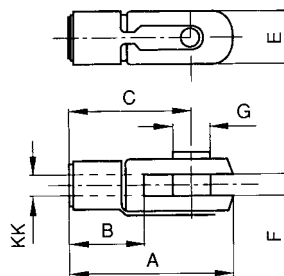


- MATERIAL: Steel
- MATERIAL: Stainless Steel

| Part No. ● | Part No. ■ | Ø         | G  | BT    | BU  | CG   | CH   |
|------------|------------|-----------|----|-------|-----|------|------|
| VPE 032    | VPEI 032   | 32        | 10 | 46    | 53  | 9.6  | 1.1  |
| VPE 040    | VPEI 040   | 40        | 12 | 53    | 60  | 11.5 | 1.1  |
| VPE 050    | VPEI 050   | 50        | 12 | 61    | 68  | 11.5 | 1.1  |
| VPE 063    | VPEI 063   | 63        | 16 | 71    | 78  | 15.2 | 1.1  |
| VPE 080    | VPEI 080   | 80        | 16 | 91    | 98  | 15.2 | 1.1  |
| VPE 100    | VPEI 100   | 100       | 20 | 111   | 118 | 19   | 1.3  |
| VPE 125    | VPEI 125   | 125       | 25 | 132   | 139 | 23.9 | 1.3  |
| VPE 160    | VPEI 160   | 160 - 200 | 30 | 171.5 | 178 | 28.6 | 1.6  |
| VPE 250    | -          | 250       | 40 | 202   | 211 | 37.5 | 1.85 |
| VPE 320    | -          | 320       | 45 | 222   | 236 | 42.5 | 1.85 |

## FC

ROD CLEVIS WITH LOCKABLE PIN



- MATERIAL: Steel
- MATERIAL: Stainless Steel

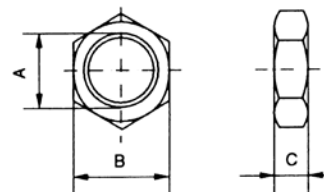
| Part No. ● | Part No. ■ | KK       | A   | B  | C   | E  | F  | G  |
|------------|------------|----------|-----|----|-----|----|----|----|
| FC 020     | *FCI 020   | M8x1.25  | 42  | 16 | 32  | 16 | 8  | 8  |
| FC 025     | *FCI 025   | M10x1.25 | 52  | 20 | 40  | 20 | 10 | 10 |
| FC 040     | *FCI 040   | M12x1.25 | 62  | 24 | 48  | 24 | 12 | 12 |
| FC 050     | *FCI 050   | M16x1.5  | 83  | 32 | 64  | 32 | 16 | 16 |
| FC 080     | *FCI 080   | M20x1.5  | 105 | 40 | 80  | 40 | 20 | 20 |
| *FC 125    | *FCI 125   | M27x2    | 148 | 56 | 110 | 55 | 30 | 30 |
| *FC 160    | *FCI 160   | M36x2    | 188 | 72 | 144 | 70 | 35 | 35 |
| *FC 250    | -          | M42x2    | 232 | 84 | 168 | 85 | 42 | 42 |
| *FC 320    | -          | M48x2    | 265 | 96 | 192 | 96 | 50 | 50 |

\* With pin and seeger.

## DA

ROD JAM NUT

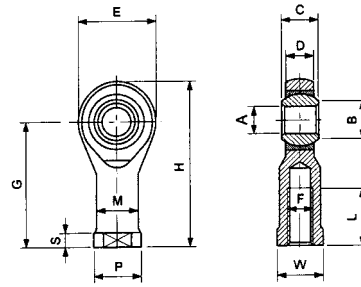
MATERIAL: Steel



| Part No.          | A        | B  | C   |
|-------------------|----------|----|-----|
| ODA00 00 51 C3 ZI | M8x1.25  | 13 | 6.5 |
| ODA00 00 51 C9 ZI | M10x1.25 | 17 | 8   |
| ODA00 00 51 D5 ZI | M12x1.25 | 19 | 7   |
| ODA00 00 51 E3 ZI | M16x1.5  | 22 | 6   |
| ODA00 00 51 F2 ZI | M20x1.5  | 30 | 9   |
| ODA00 00 51 G8 ZI | M27x2    | 41 | 12  |
| EDA00 00 51 I6 ZI | M36x2    | 55 | 14  |
| EDA00 00 51 L0 ZI | M42x2    | 65 | 20  |
| EDA00 00 51 DG ZI | M48x2    | 75 | 24  |

**TF**

SELF-LUBRICATING  
SPHERICAL ROD END

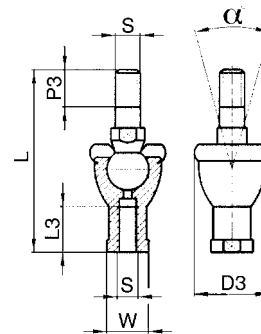


MATERIAL: Steel

| Part No. | F        | A                            | B    | C                               | ∅ Sphere | D      | E     | G     | H   | L     | M     | P     | S     | W      | Radial load |        | Weight |
|----------|----------|------------------------------|------|---------------------------------|----------|--------|-------|-------|-----|-------|-------|-------|-------|--------|-------------|--------|--------|
|          |          |                              |      |                                 |          |        |       |       |     |       |       |       |       |        | Dynamic     | Static |        |
|          |          | <sup>0</sup> / <sub>H7</sub> | 0    | <sup>0</sup> / <sub>-0.13</sub> |          | ± 0.13 | ± 0.5 | ± 0.5 |     | ± 0.7 | ± 0.7 | ± 0.5 | ± 0.7 | ± 0.25 | kg          | kg     | g      |
| TF 020   | M8x1.25  | 8                            | 10.4 | 12                              | 15.88    | 9      | 24    | 36    | 48  | 12    | 12.5  | 16    | 5     | 14     | 780         | 1.900  | 36     |
| TF 025   | M10x1.25 | 10                           | 12.9 | 14                              | 19.05    | 11.5   | 30    | 43    | 58  | 15    | 15    | 19    | 6.5   | 16     | 1.200       | 3.100  | 88     |
| TF 040   | M12x1.25 | 12                           | 15.4 | 16                              | 22.23    | 12.5   | 34    | 50    | 67  | 18    | 17.5  | 22    | 6.5   | 18     | 1.400       | 3.700  | 120    |
| TF 050   | M16x1.5  | 16                           | 19.3 | 21                              | 28.58    | 15.5   | 42    | 64    | 85  | 24    | 22    | 27    | 8     | 24     | 2.500       | 6.300  | 240    |
| TF 080   | M20x1.5  | 20                           | 24.4 | 25                              | 34.93    | 18.5   | 50    | 77    | 102 | 30    | 27.5  | 34    | 10    | 30     | 3.700       | 8.300  | 430    |
| TF 125   | M27x2    | 28                           | 32.3 | 35                              | 47.59    | 26     | 66    | 103   | 136 | 41    | 37    | 46    | 14    | 41     | 7.100       | 14.200 | 1.120  |
| TF 160   | M36x2    | 35                           | -    | 43                              | -        | -      | -     | 125   | -   | 56    | -     | 58    | -     | -      | -           | -      | 1.600  |
| TF 250   | M42x2    | 40                           | -    | 49                              | -        | -      | -     | 142   | -   | 60    | -     | 65    | -     | -      | -           | -      | 2.800  |
| TF 320   | M48x2    | 50                           | -    | 60                              | -        | -      | -     | 162   | -   | 65    | -     | 75    | -     | -      | -           | -      | 5.000  |

**TS**

SELF-ALIGNING ROD END  
COUPLER

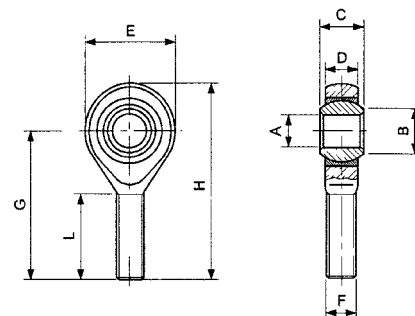


MATERIAL: Steel

| Part No. | S        | L    | L3 | W  | P3 | D3 | α°  | (kN) |
|----------|----------|------|----|----|----|----|-----|------|
| TS 020   | M8x1.25  | 65   | 16 | 14 | 12 | 20 | 30° | 3.5  |
| TS 025   | M10x1.25 | 74.5 | 18 | 17 | 15 | 28 | 30° | 5    |
| TS 040   | M12x1.25 | 84   | 20 | 19 | 17 | 32 | 30° | 6.7  |
| TS 050   | M16x1.5  | 112  | 27 | 22 | 23 | 40 | 22° | 7.8  |
| TS 080   | M20x1.5  | 133  | 38 | 30 | 25 | 45 | 15° | 10   |

**TM**

SPHERICAL ROD END WITH MALE  
THREAD



MATERIAL: Steel

| Part No. | F        | A  | B    | C  | ∅     | D    | E  | G  | H  | L  | Radial load |        | Weight |
|----------|----------|----|------|----|-------|------|----|----|----|----|-------------|--------|--------|
|          |          |    |      |    |       |      |    |    |    |    | Dynamic     | Static |        |
| TM 020   | M5x0.8   | 5  | 7.5  | 8  | 11.11 | 7.5  | 18 | 33 | 42 | 19 | 430         | 1000   | 13     |
| TM 032   | M6x1     | 6  | 8.9  | 9  | 12.7  | 7.5  | 20 | 36 | 46 | 21 | 470         | 1100   | 15     |
| TM 050   | M8x1.25  | 8  | 10.4 | 12 | 15.88 | 9.5  | 24 | 42 | 54 | 25 | 780         | 1900   | 34     |
| TM 080   | M10x1.5  | 10 | 12.9 | 14 | 19.05 | 11.5 | 30 | 48 | 63 | 28 | 1200        | 3100   | 70     |
| TM 100   | M12x1.75 | 12 | 15.4 | 16 | 22.23 | 12.5 | 34 | 54 | 71 | 32 | 1400        | 3700   | 110    |

**GUIDE UNITS**



**TECHNICAL CHARACTERISTICS**



**Reference Standard**

1907/2006  
**REACH** ✓

2011/65/CE  
**RoHS** ✓

PED  
2014/68/UE

SILICON  
FREE

ISO 6431 VDMA  
(from 32 to 100)

ISO 6432  
(from 20 to 25)

ISO 15552  
(from 32 to 100)



**Bores**

from 12 to 100 mm



**Standard Strokes**

from 50 to 500 mm

Series

Ø (mm)

Stroke (mm)

**M L C U B**

**0 1 2**

**0 0 5 0**

- ◆ **MLCUB** Guide unit "U" with self lubricating sintered bronze bushings
- **MLCHB** Guide unit "H" with self lubricating sintered bronze bushings
- **MLCHC** Guide unit "H" with recirculating ball sleeves
- **VLCUB** Guide unit "U" with self lubricating sintered bronze bushings
- **VLCHB** Guide unit "H" with self lubricating sintered bronze bushings
- **VLCHC** Guide unit "H" with recirculating ball sleeves

- 012
- 020
- 025
- 032
- 040
- 050
- 063
- 080
- 100

- 0050
- 0100
- 0160
- 0200
- 0250
- 0320
- 0400
- 0500

Intermediate or longer strokes are available upon request.

| Ø (mm)  | Stroke (mm) |     |     |     |     |     |     |     |
|---------|-------------|-----|-----|-----|-----|-----|-----|-----|
|         | 50          | 100 | 160 | 200 | 250 | 320 | 400 | 500 |
| 12 - 16 | ◆○          | ◆○  | ◆○  | ◆○  | ○   |     |     |     |
| 20      | ◆○          | ◆○  | ◆○  | ◆○  | ○   |     |     |     |
| 25      | ◆○          | ◆○  | ◆○  | ◆○  | ○   |     |     |     |
| 32      | ●■          | ●■  | ●■  | ●■  | ●■  | ●■  | ●■  | ●■  |
| 40      | ●■          | ●■  | ●■  | ●■  | ●■  | ●■  | ●■  | ●■  |
| 50      | ●■          | ●■  | ●■  | ●■  | ●■  | ●■  | ●■  | ●■  |
| 63      | ●■          | ●■  | ●■  | ●■  | ●■  | ●■  | ●■  | ●■  |
| 80      | ●           | ●   | ●   | ●   | ●   | ●   | ●   | ●   |
| 100     | ●           | ●   | ●   | ●   | ●   | ●   | ●   | ●   |

**MAXIMUM LOADS**

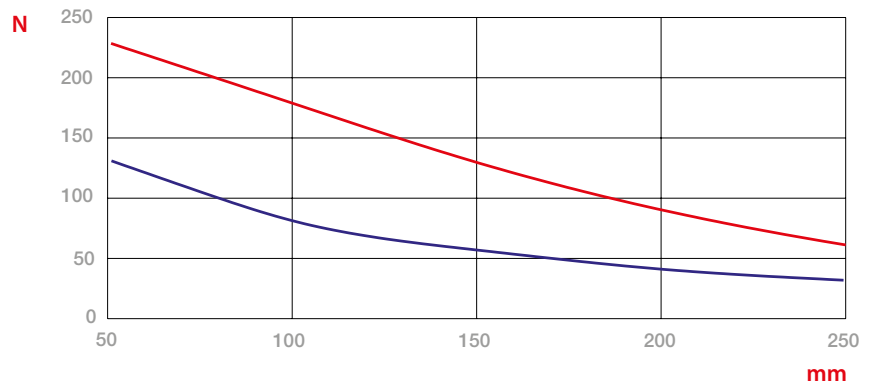
**N**  
Max load

**mm**  
Stroke

**Art. MLCHB**

Guide units with self lubricating sintered bronze bushings

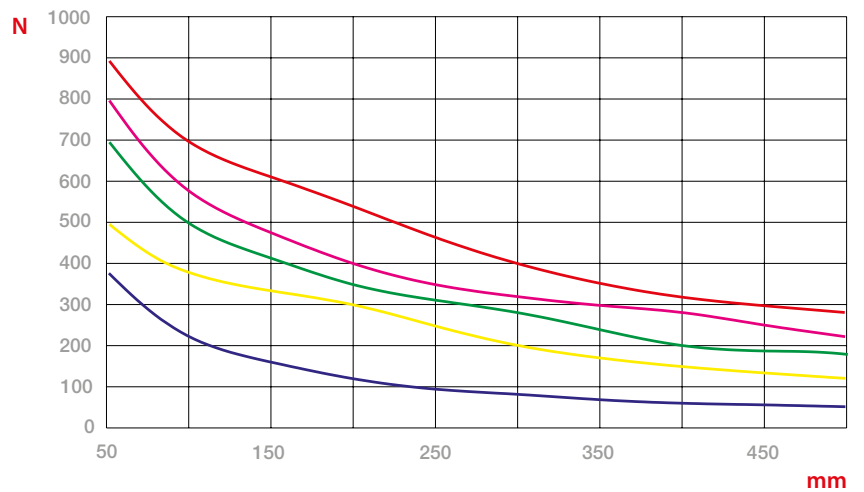
- 020 - 025
- 012 - 016



**Art. VLCHB**

Guide units with self lubricating sintered bronze bushings

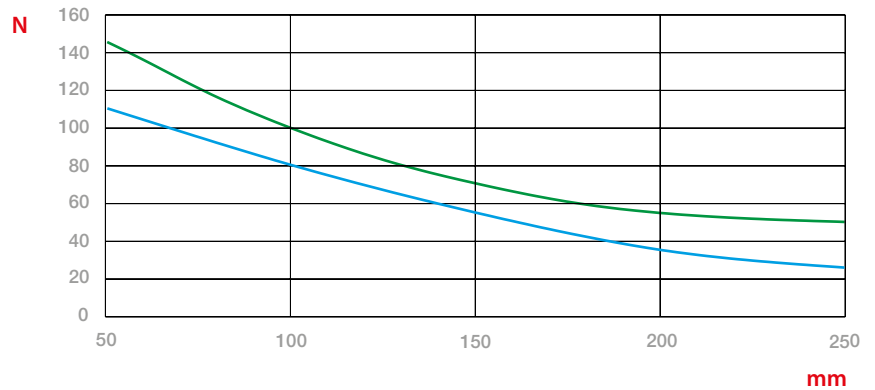
- 080 - 0100
- 063
- 050
- 040
- 032



**Art. MLCHC**

Guide units with recirculating ball bearing

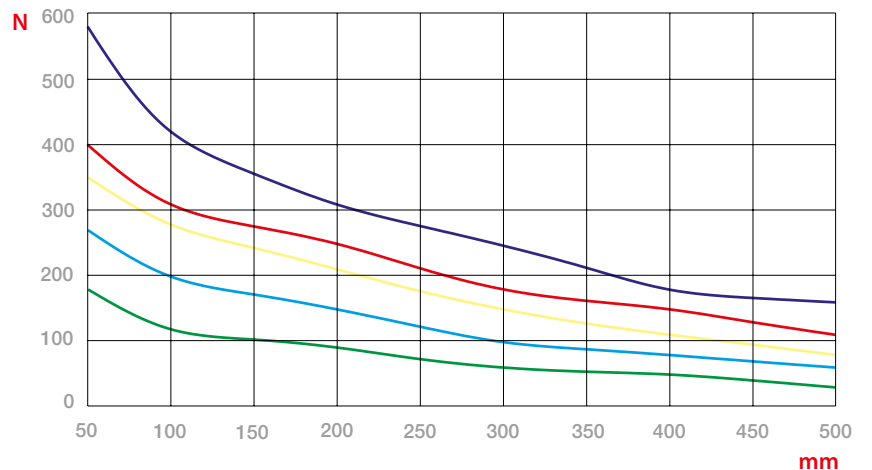
- 020 - 025
- 012 - 016



**Art. VLCHC**

Guide units with recirculating ball bearing

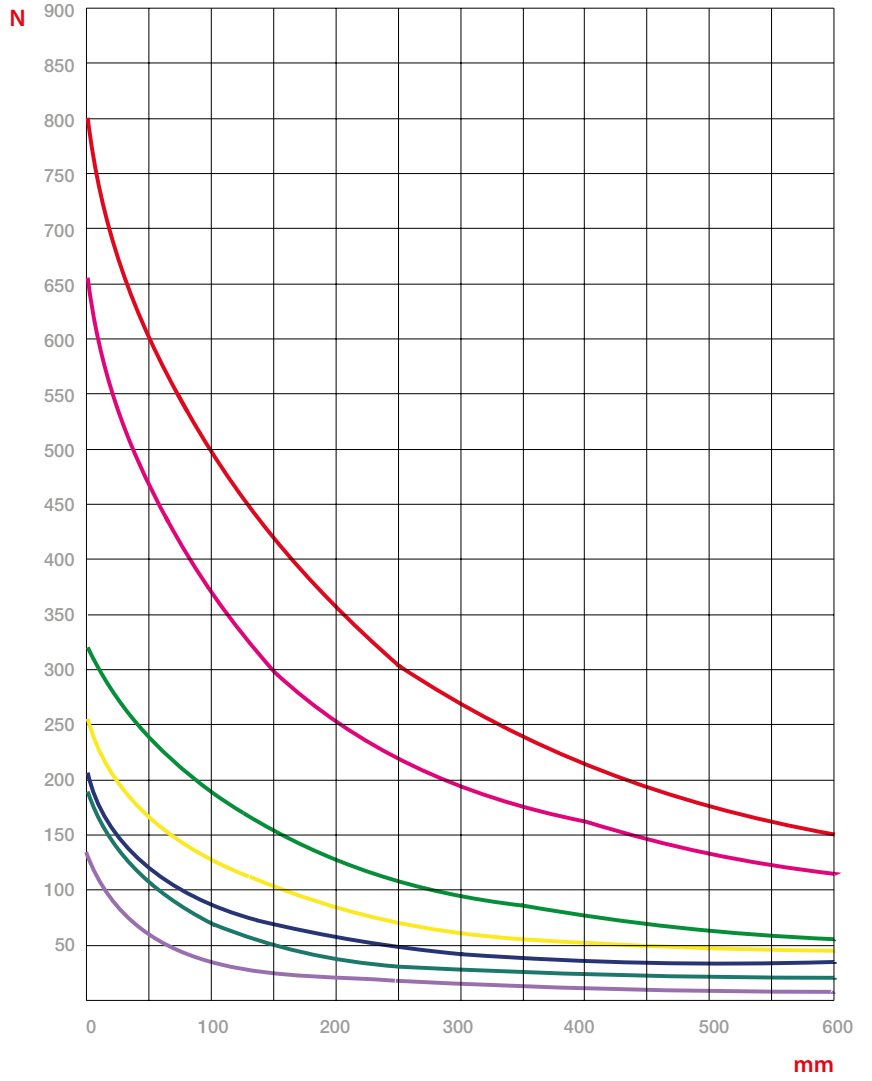
- 080 - 0100
- 063
- 050
- 040
- 032



**Art. VLCUB**

Guide units with self lubricating sintered bronze bushings

- Ø100
- Ø80
- Ø63
- Ø50
- Ø40
- Ø20-25-32
- Ø16

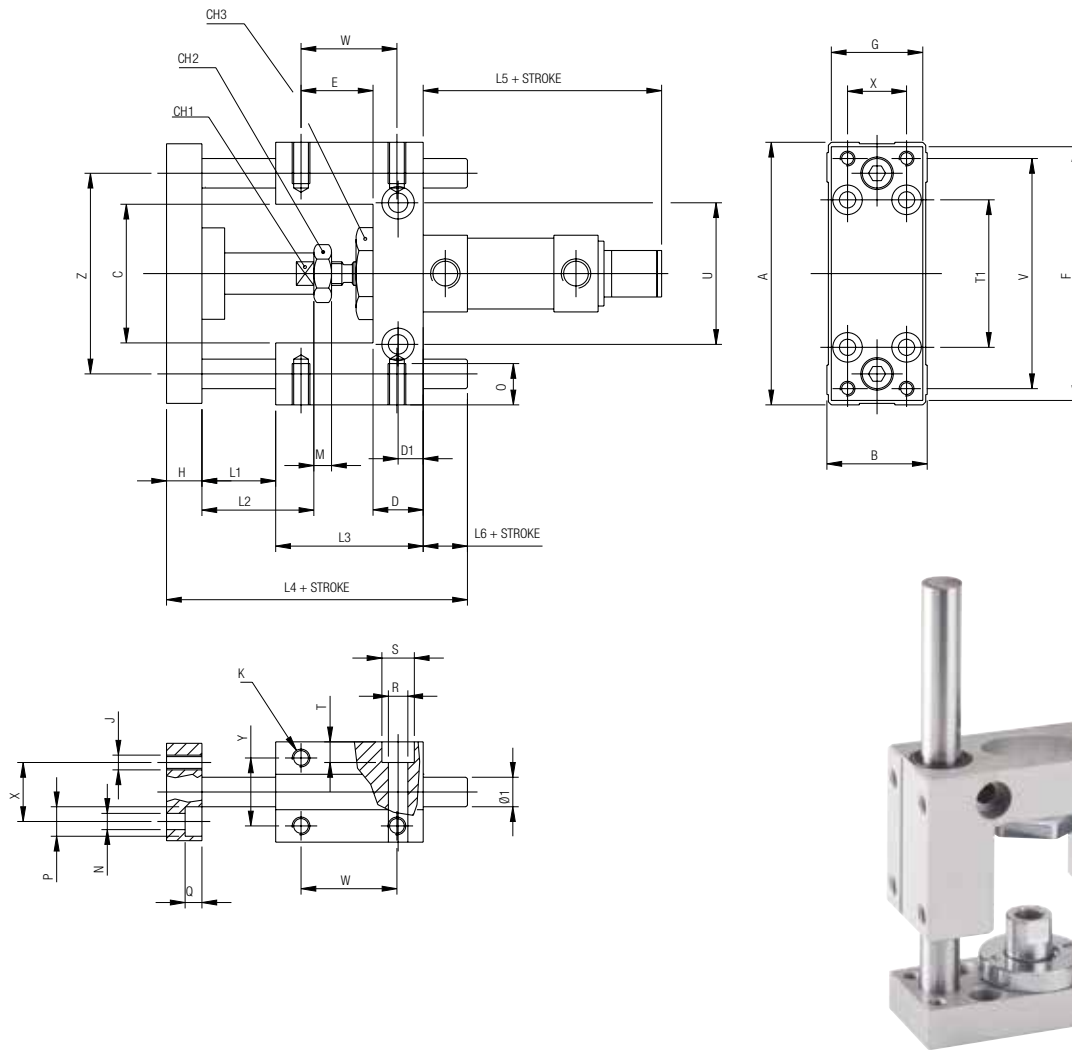




**MLCUB**

GUIDE UNIT "U" WITH SELF-LUBRICATING SINTERED BRONZE BUSHINGS

ISO 6432



| Ø       | A  | B  | C  | CH1 | CH2 | CH3 | D  | D1   | E     | F  | G  | H  | Ø1 | J  | K  | L1 | L2 | L3 | L4   | L5 | L6   |
|---------|----|----|----|-----|-----|-----|----|------|-------|----|----|----|----|----|----|----|----|----|------|----|------|
| 12 - 16 | 69 | 30 | 30 | 8   | 10  | 24  | 12 | 5.5  | 19.5  | 66 | 29 | 10 | 10 | M4 | M4 | 3  | 15 | 38 | 66.5 | 73 | 15.5 |
| 20      | 79 | 34 | 37 | 12  | 13  | 27  | 17 | 8.75 | 24.25 | 78 | 32 | 12 | 12 | M5 | M6 | 5  | 18 | 48 | 83   | 87 | 18   |
| 25      | 79 | 34 | 37 | 12  | 17  | 27  | 17 | 8.75 | 24.25 | 78 | 32 | 12 | 12 | M5 | M6 | 5  | 18 | 48 | 83   | 91 | 18   |

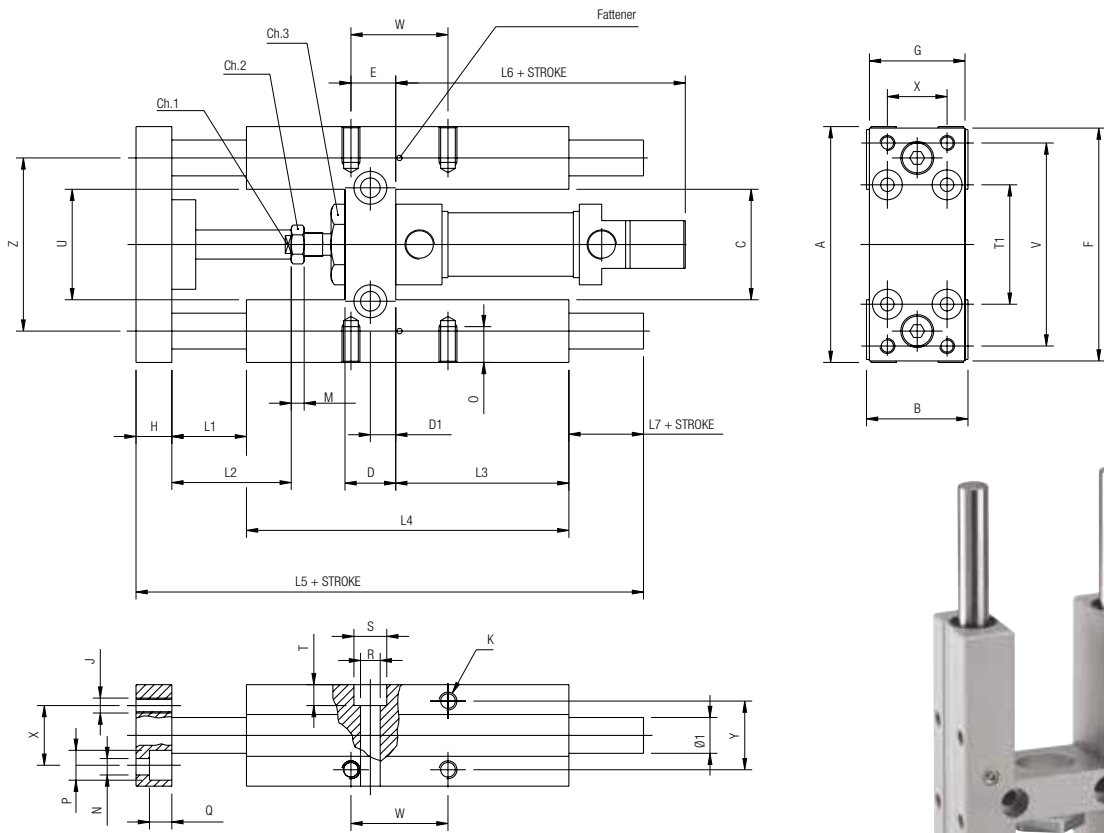
| Ø       | M | N   | O | P   | Q   | R   | S  | T   | T1 | U  | V  | W    | X  | Y  | Z    |
|---------|---|-----|---|-----|-----|-----|----|-----|----|----|----|------|----|----|------|
| 12 - 16 | 6 | 4.5 | 6 | 7.5 | 4.5 | 5.5 | 9  | 5.5 | 32 | 24 | 58 | 25   | 18 | 22 | 49.5 |
| 20      | 8 | 5.5 | 9 | 10  | 7.5 | 6.5 | 11 | 6.5 | 38 | 38 | 68 | 32.5 | 20 | 23 | 58   |
| 25      | 8 | 5.5 | 9 | 10  | 7.5 | 6.5 | 11 | 6.5 | 38 | 38 | 68 | 32.5 | 20 | 23 | 58   |

| Ø (mm)  | Stroke (mm) |     |     |     |
|---------|-------------|-----|-----|-----|
|         | 50          | 100 | 160 | 200 |
| 12 - 16 | ▲           | ▲   | ▲   | ▲   |
| 20      | ▲           | ▲   | ▲   | ▲   |
| 25      | ▲           | ▲   | ▲   | ▲   |

**MLCHB**

GUIDE UNIT "H" WITH SELF-LUBRICATING SINTERED BRONZE BUSHINGS

**ISO 6432**



| Ø            | A  | B  | C  | CH1 | CH2 | CH3 | D  | D1  | E  | F  | G  | H  | Ø1 | J  | K  | L1 | L2 | L3 | L4  | L5    | L6 |
|--------------|----|----|----|-----|-----|-----|----|-----|----|----|----|----|----|----|----|----|----|----|-----|-------|----|
| <b>12-16</b> | 69 | 30 | 30 | 8   | 10  | 24  | 12 | 6   | 8  | 66 | 29 | 10 | 10 | M4 | M4 | 25 | 18 | 46 | 68  | 123.5 | 73 |
| <b>20</b>    | 79 | 34 | 37 | 12  | 13  | 27  | 17 | 8.5 | 15 | 78 | 32 | 12 | 12 | M5 | M6 | 25 | 40 | 58 | 108 | 166   | 87 |
| <b>25</b>    | 79 | 34 | 37 | 12  | 17  | 27  | 17 | 8.5 | 15 | 78 | 32 | 12 | 12 | M5 | M6 | 25 | 40 | 58 | 108 | 166   | 91 |

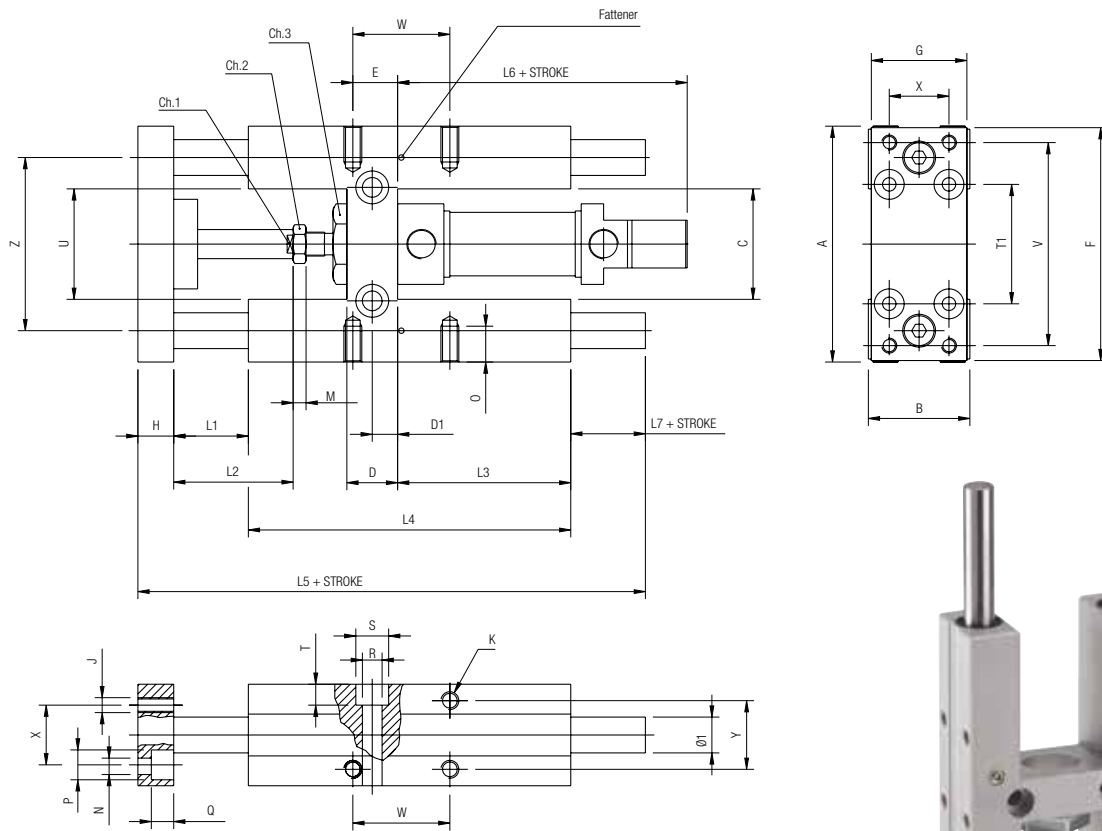
| Ø            | L7 | M | N   | O | P  | Q   | R   | S  | T   | T1 | U  | V  | W    | X  | Y  | Z    |
|--------------|----|---|-----|---|----|-----|-----|----|-----|----|----|----|------|----|----|------|
| <b>12-16</b> | 12 | 6 | 4.5 | 6 | 8  | 4.5 | 5.5 | 9  | 5.5 | 32 | 24 | 58 | 18   | 18 | 22 | 49.5 |
| <b>20</b>    | 10 | 8 | 5.5 | 9 | 10 | 7.5 | 6.5 | 11 | 6.5 | 38 | 38 | 68 | 32.5 | 20 | 23 | 58   |
| <b>25</b>    | 10 | 8 | 5.5 | 9 | 10 | 7.5 | 6.5 | 11 | 6.5 | 38 | 38 | 68 | 32.5 | 20 | 23 | 58   |

| Ø (mm)       | Stroke (mm) |     |     |     |     |
|--------------|-------------|-----|-----|-----|-----|
|              | 50          | 100 | 160 | 200 | 250 |
| <b>12-16</b> | ▲           | ▲   | ▲   | ▲   | ▲   |
| <b>20</b>    | ▲           | ▲   | ▲   | ▲   | ▲   |
| <b>25</b>    | ▲           | ▲   | ▲   | ▲   | ▲   |

**MLCHC**

GUIDE UNIT "H" WITH RECIRCULATING BALL BEARING SLEEVES

ISO 6432



| Ø       | A  | B  | C  | CH1 | CH2 | CH3 | D  | D1  | E  | F  | G  | H  | Ø1 | J  | K  | L1 | L2 | L3 | L4  | L5    | L6 |
|---------|----|----|----|-----|-----|-----|----|-----|----|----|----|----|----|----|----|----|----|----|-----|-------|----|
| 12 - 16 | 69 | 30 | 30 | 8   | 10  | 24  | 12 | 6   | 8  | 66 | 29 | 10 | 10 | M4 | M4 | 25 | 18 | 46 | 68  | 123.5 | 73 |
| 20      | 79 | 34 | 37 | 12  | 13  | 27  | 17 | 8.5 | 15 | 78 | 32 | 12 | 12 | M5 | M6 | 25 | 40 | 58 | 108 | 166   | 87 |
| 25      | 79 | 34 | 37 | 12  | 17  | 27  | 17 | 8.5 | 15 | 78 | 32 | 12 | 12 | M5 | M6 | 25 | 40 | 58 | 108 | 166   | 91 |

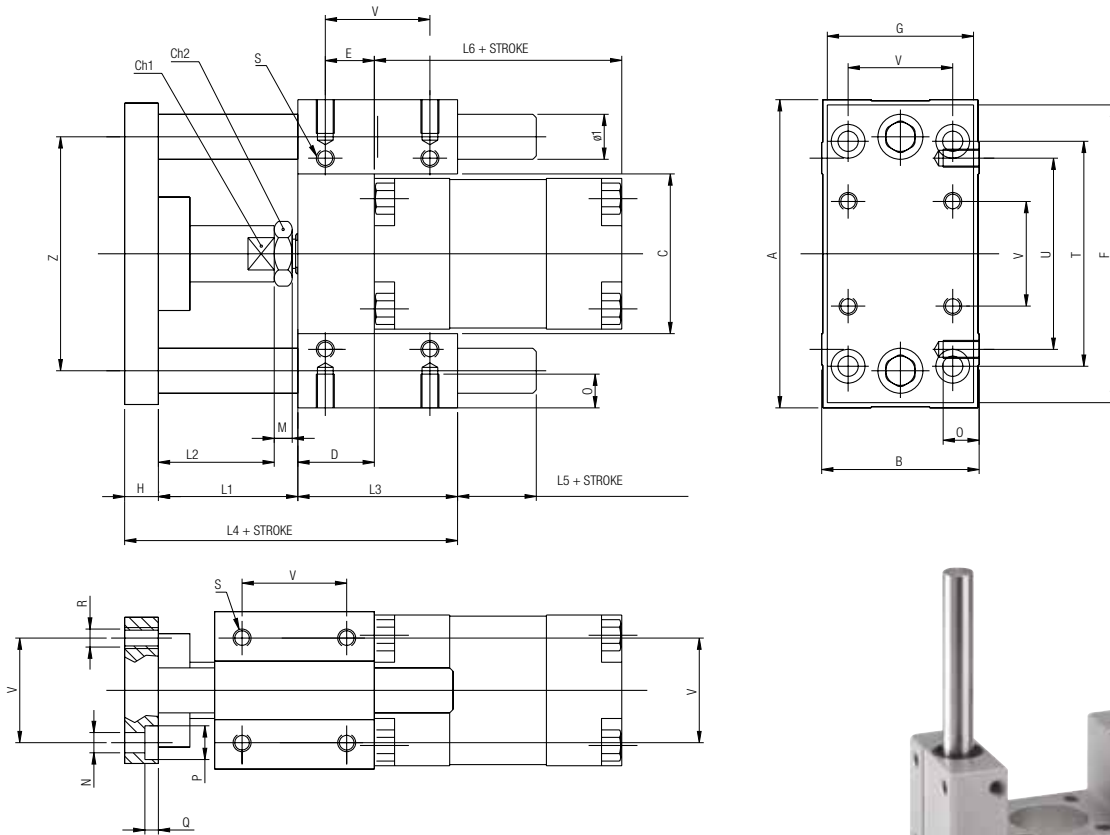
| Ø       | L7 | M | N   | O | P  | Q   | R   | S  | T   | T1 | U  | V  | W    | X  | Y  | Z    |
|---------|----|---|-----|---|----|-----|-----|----|-----|----|----|----|------|----|----|------|
| 12 - 16 | 12 | 6 | 4.5 | 6 | 8  | 4.5 | 5.5 | 9  | 5.5 | 32 | 24 | 58 | 18   | 18 | 22 | 49.5 |
| 20      | 10 | 8 | 5.5 | 9 | 10 | 7.5 | 6.5 | 11 | 6.5 | 38 | 38 | 68 | 32.5 | 20 | 23 | 58   |
| 25      | 10 | 8 | 5.5 | 9 | 10 | 7.5 | 6.5 | 11 | 6.5 | 38 | 38 | 68 | 32.5 | 20 | 23 | 58   |

| Ø (mm)  | Stroke (mm) |     |     |     |     |
|---------|-------------|-----|-----|-----|-----|
|         | 50          | 100 | 160 | 200 | 250 |
| 12 - 16 | ▲           | ▲   | ▲   | ▲   | ▲   |
| 20      | ▲           | ▲   | ▲   | ▲   | ▲   |
| 25      | ▲           | ▲   | ▲   | ▲   | ▲   |

**VLCUB**

GUIDE UNIT "U" WITH SELF-LUBRICATING SINTERED BRONZE BUSHINGS

ISO 15552



| Ø  | A   | B  | C    | CH1 | CH2 | D  | E    | F   | G  | H  | Ø1 | L1 | L2 | L3 | L4  | L5 | L6  | M | N   | O  |
|----|-----|----|------|-----|-----|----|------|-----|----|----|----|----|----|----|-----|----|-----|---|-----|----|
| 32 | 97  | 49 | 51   | 15  | 17  | 17 | 9.25 | 93  | 45 | 12 | 12 | 42 | 25 | 48 | 102 | 18 | 97  | 8 | 6.6 | 12 |
| 40 | 115 | 58 | 58.5 | 15  | 19  | 21 | 11   | 112 | 55 | 12 | 16 | 43 | 24 | 58 | 113 | 17 | 109 | 7 | 6.6 | 12 |
| 50 | 137 | 70 | 70.2 | 20  | 24  | 25 | 18.8 | 134 | 65 | 15 | 20 | 49 | 30 | 59 | 123 | 20 | 110 | 6 | 9   | 16 |
| 63 | 152 | 85 | 85.2 | 20  | 24  | 25 | 15.3 | 147 | 80 | 15 | 20 | 49 | 30 | 76 | 140 | 21 | 125 | 6 | 9   | 16 |

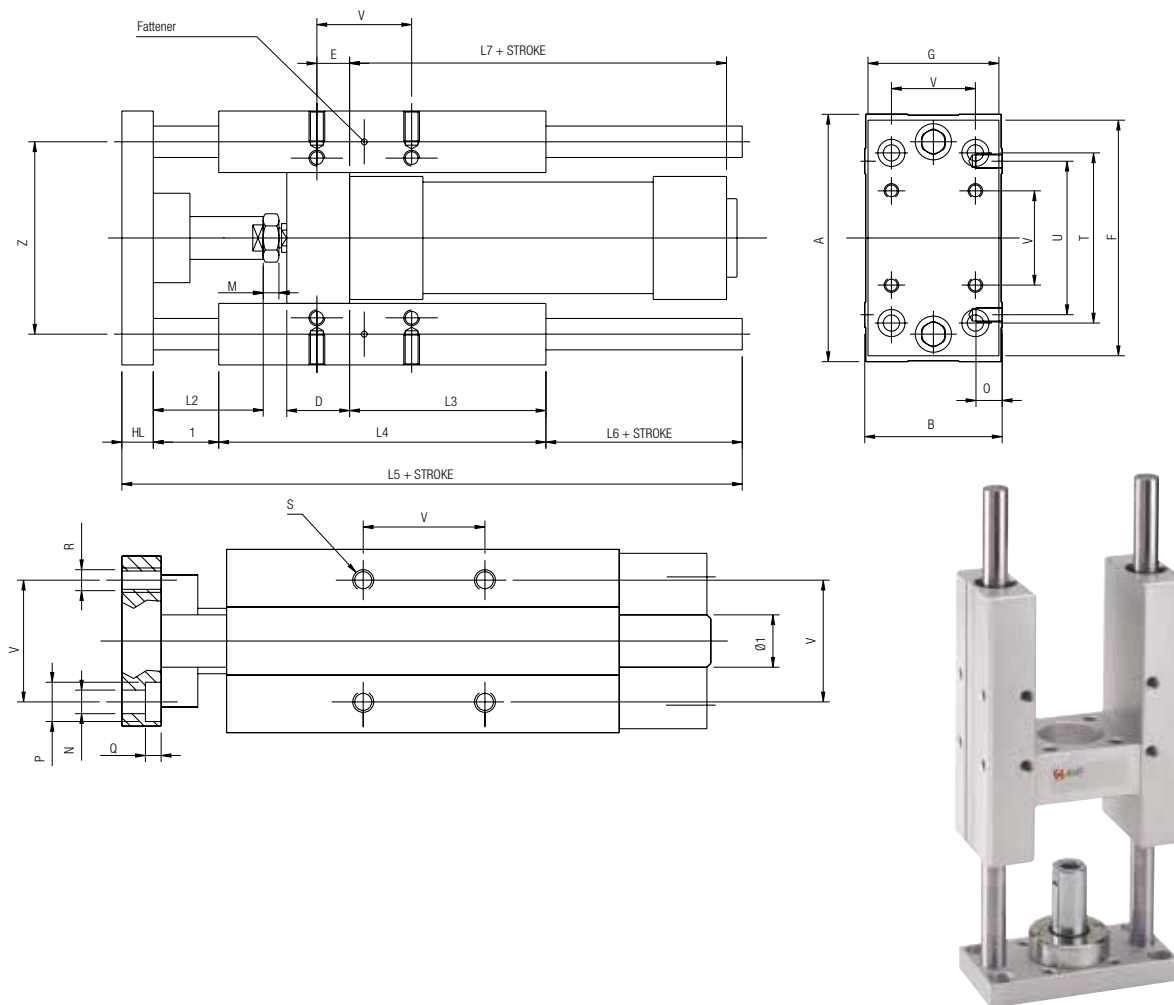
| Ø  | P  | Q   | R  | S  | T   | U   | V    | Z   |
|----|----|-----|----|----|-----|-----|------|-----|
| 32 | 11 | 6.5 | M6 | M6 | 78  | 61  | 32.5 | 74  |
| 40 | 11 | 6.5 | M6 | M6 | 84  | 69  | 38   | 87  |
| 50 | 15 | 8.5 | M8 | M8 | 100 | 85  | 46.5 | 104 |
| 63 | 15 | 9   | M8 | M8 | 105 | 100 | 56.5 | 119 |

| Ø (mm) | Stroke (mm) |     |     |     |     |     |     |     |
|--------|-------------|-----|-----|-----|-----|-----|-----|-----|
|        | 50          | 100 | 160 | 200 | 250 | 320 | 400 | 500 |
| 32     | ▲           | ▲   | ▲   | ▲   | ▲   | ▲   | ▲   | ▲   |
| 40     | ▲           | ▲   | ▲   | ▲   | ▲   | ▲   | ▲   | ▲   |
| 50     | ▲           | ▲   | ▲   | ▲   | ▲   | ▲   | ▲   | ▲   |
| 63     | ▲           | ▲   | ▲   | ▲   | ▲   | ▲   | ▲   | ▲   |

**VLCHB**

GUIDE UNIT "H" WITH SELF-LUBRICATING SINTERED BRONZE BUSHINGS

ISO 15552



| Ø   | A   | B   | C     | CH1 | CH2 | D  | E    | F   | G   | H  | Ø1 | L1 | L2 | L3  | L4  | L5  | L6 | L7  | M | N   | O  |
|-----|-----|-----|-------|-----|-----|----|------|-----|-----|----|----|----|----|-----|-----|-----|----|-----|---|-----|----|
| 32  | 97  | 49  | 51    | 15  | 17  | 24 | 4.3  | 93  | 45  | 12 | 12 | 25 | 42 | 75  | 125 | 187 | 25 | 97  | 8 | 6.6 | 12 |
| 40  | 115 | 58  | 58.2  | 15  | 19  | 28 | 11   | 112 | 55  | 12 | 16 | 25 | 42 | 80  | 140 | 207 | 30 | 109 | 7 | 6.6 | 12 |
| 50  | 137 | 70  | 70.2  | 20  | 24  | 34 | 18.8 | 134 | 65  | 15 | 20 | 25 | 50 | 78  | 148 | 223 | 35 | 110 | 6 | 9   | 16 |
| 63  | 152 | 85  | 85.2  | 20  | 24  | 34 | 15.3 | 147 | 80  | 15 | 20 | 25 | 50 | 106 | 178 | 243 | 25 | 125 | 6 | 9   | 16 |
| 80  | 189 | 105 | 105.5 | 26  | 30  | 50 | 25   | 180 | 100 | 20 | 25 | 25 | 50 | 111 | 195 | 267 | 27 | 133 | 9 | 11  | 20 |
| 100 | 213 | 130 | 130.5 | 26  | 30  | 55 | 30   | 206 | 120 | 20 | 25 | 25 | 50 | 128 | 218 | 290 | 27 | 144 | 9 | 11  | 20 |

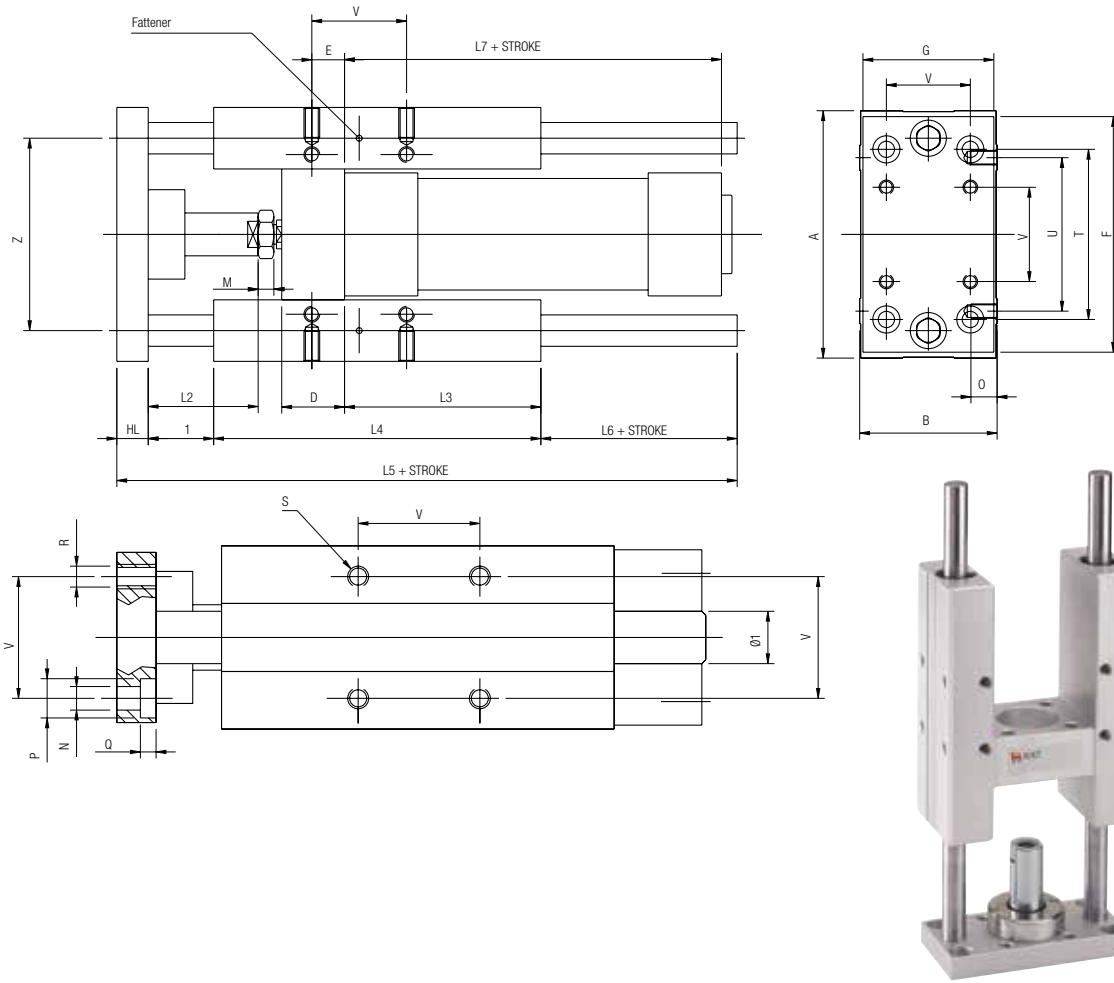
| Ø   | P    | Q   | R   | S   | T   | U   | V    | Z   |
|-----|------|-----|-----|-----|-----|-----|------|-----|
| 32  | 11   | 6.5 | M6  | M6  | 78  | 61  | 32.5 | 74  |
| 40  | 11   | 6.5 | M6  | M6  | 84  | 69  | 38   | 87  |
| 50  | 15   | 8.5 | M8  | M8  | 100 | 85  | 46.5 | 104 |
| 63  | 15   | 9   | M8  | M8  | 105 | 100 | 56.5 | 116 |
| 80  | 18   | 11  | M10 | M10 | 130 | 130 | 72   | 148 |
| 100 | 16.5 | 11  | M10 | M10 | 150 | 150 | 89   | 173 |

| Ø (mm) | Stroke (mm) |     |     |     |     |     |     |     |
|--------|-------------|-----|-----|-----|-----|-----|-----|-----|
|        | 50          | 100 | 160 | 200 | 250 | 320 | 400 | 500 |
| 32     | ▲           | ▲   | ▲   | ▲   | ▲   | ▲   | ▲   | ▲   |
| 40     | ▲           | ▲   | ▲   | ▲   | ▲   | ▲   | ▲   | ▲   |
| 50     | ▲           | ▲   | ▲   | ▲   | ▲   | ▲   | ▲   | ▲   |
| 63     | ▲           | ▲   | ▲   | ▲   | ▲   | ▲   | ▲   | ▲   |
| 80     | ▲           | ▲   | ▲   | ▲   | ▲   | ▲   | ▲   | ▲   |
| 100    | ▲           | ▲   | ▲   | ▲   | ▲   | ▲   | ▲   | ▲   |

**VLCHC**

GUIDE UNIT "H" WITH RECIRCULATING BALL BEARING SLEEVES

ISO 15552



| Ø   | A   | B   | C     | CH1 | CH2 | D  | E    | F   | G   | H  | Ø1 | L1 | L2 | L3  | L4  | L5  | L6 | L7  | M | N   | O  |
|-----|-----|-----|-------|-----|-----|----|------|-----|-----|----|----|----|----|-----|-----|-----|----|-----|---|-----|----|
| 32  | 97  | 49  | 51    | 15  | 17  | 24 | 4.3  | 93  | 45  | 12 | 12 | 25 | 42 | 75  | 125 | 187 | 25 | 97  | 8 | 6.6 | 12 |
| 40  | 115 | 58  | 58.2  | 15  | 19  | 28 | 11   | 112 | 55  | 12 | 16 | 25 | 42 | 80  | 140 | 207 | 30 | 109 | 7 | 6.6 | 12 |
| 50  | 137 | 70  | 70.2  | 20  | 24  | 34 | 18.8 | 134 | 65  | 15 | 20 | 25 | 50 | 78  | 148 | 223 | 35 | 110 | 6 | 9   | 16 |
| 63  | 152 | 85  | 85.2  | 20  | 24  | 34 | 15.3 | 147 | 80  | 15 | 20 | 25 | 50 | 106 | 178 | 243 | 25 | 125 | 6 | 9   | 16 |
| 80  | 189 | 105 | 105.5 | 26  | 30  | 50 | 25   | 180 | 100 | 20 | 25 | 25 | 50 | 111 | 195 | 267 | 27 | 133 | 9 | 11  | 20 |
| 100 | 213 | 130 | 130.5 | 26  | 30  | 55 | 30   | 206 | 120 | 20 | 25 | 25 | 50 | 128 | 218 | 290 | 27 | 144 | 9 | 11  | 20 |

| Ø   | P    | Q   | R   | S   | T   | U   | V    | Z   |
|-----|------|-----|-----|-----|-----|-----|------|-----|
| 32  | 11   | 6.5 | M6  | M6  | 78  | 61  | 32.5 | 74  |
| 40  | 11   | 6.5 | M6  | M6  | 84  | 69  | 38   | 87  |
| 50  | 15   | 8.5 | M8  | M8  | 100 | 85  | 46.5 | 104 |
| 63  | 15   | 9   | M8  | M8  | 105 | 100 | 56.5 | 116 |
| 80  | 18   | 11  | M10 | M10 | 130 | 130 | 72   | 148 |
| 100 | 16.5 | 11  | M10 | M10 | 150 | 150 | 89   | 173 |

| Ø (mm) | Strokes (mm) |     |     |     |     |     |     |     |
|--------|--------------|-----|-----|-----|-----|-----|-----|-----|
|        | 50           | 100 | 160 | 200 | 250 | 320 | 400 | 500 |
| 32     | ▲            | ▲   | ▲   | ▲   | ▲   | ▲   | ▲   | ▲   |
| 40     | ▲            | ▲   | ▲   | ▲   | ▲   | ▲   | ▲   | ▲   |
| 50     | ▲            | ▲   | ▲   | ▲   | ▲   | ▲   | ▲   | ▲   |
| 63     | ▲            | ▲   | ▲   | ▲   | ▲   | ▲   | ▲   | ▲   |
| 80     | ▲            | ▲   | ▲   | ▲   | ▲   | ▲   | ▲   | ▲   |
| 100    | ▲            | ▲   | ▲   | ▲   | ▲   | ▲   | ▲   | ▲   |

**SERIES R - RODLESS CYLINDERS WITH INTERNAL GUIDING**



**TECHNICAL CHARACTERISTICS**



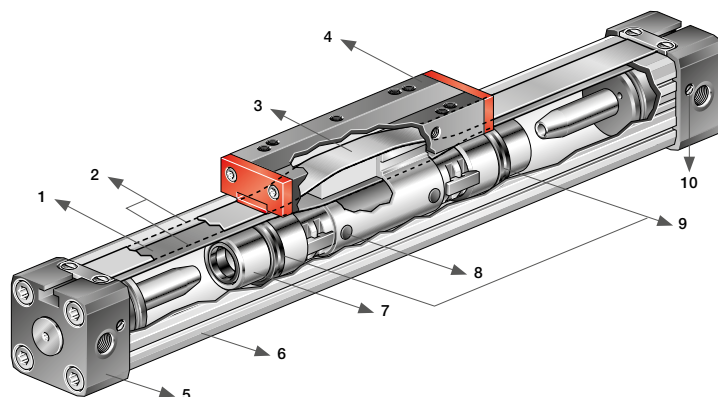
**Reference Standard**

- 1907/2006  
**REACH** ✓
- 2011/65/CE  
**RoHS** ✓
- PED  
2014/68/UE
- SILICON  
FREE



**Component Parts and Materials**

- 1 Inner sealing band
- 2 Magnet strip
- 3 Outer sealing band
- 4 Internally guided carriage (anodized aluminum)
- 5 Anodized aluminum end caps
- 6 Profile tube with slots for position sensing switches (anodized aluminum)
- 7 Piston
- 8 Magnets
- 9 NBR piston seals
- 10 Cushion adjustment screw



**Pressures**

**0.5 bar** (0.05 MPa) / 7.3 psi  
**8 bar** (0.8 MPa) / 116 psi



**Temperatures**

- 10 °C / 14 °F  
+ 80 °C / 176 °F



**Media**

Filtered and lubricated or non-lubricated compressed air.



**Functions**

Rodless cylinder - double acting cushioned magnetic.



**Bores**

**from 16 to 63 mm**



**Strokes**

**Ø 16** From 100 to 4400 mm.  
**Ø 25-63** From 100 to 5700 mm.



**Advantages**

- Occupies 50% less space than a traditional cylinder
- Forces are generated equally from both pistons
- Strokes up to > 5700 mm
- Standard cushions come with 3 ports in each end cap
- Fast acceleration and high piston velocity
- Offers design flexibility
- Lubricated or non-lubricated air supply

\* Note: Before changing operation from lubricated to non lubricated air the cylinder has to be disassembled, cleaned, newly greased and reassembled.



**Recommended Sensors**

**DT**



**Sensor adapter - 016 / 25**

**DSTR025**

| Series    | Ø (mm)                                | Stroke (mm)              |
|-----------|---------------------------------------|--------------------------|
| <b>RH</b> | <b>016</b>                            | <b>0100</b>              |
| <b>RH</b> | Rodless cylinder cushioned - magnetic |                          |
|           | 016                                   | <b>Ø (mm)</b>            |
|           | 025                                   | <b>Stroke (mm)</b>       |
|           | 032                                   | 16      100 to 4400      |
|           | 040                                   | 25 - 63      100 to 5700 |
|           | 050                                   |                          |
|           | 063                                   |                          |



**Forces and Moments**

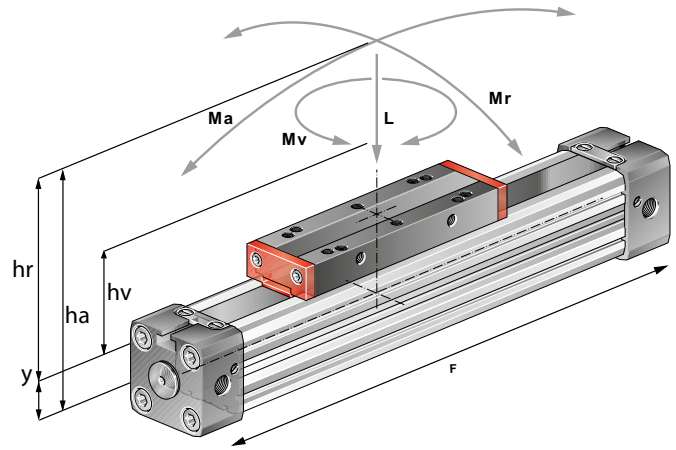
The tables below show the maximum values based on light, shock-free duty and at a speed of  $v \leq 0.45$  m/sec. Maximum pressure 6 bar. Avoid exceeding the values in dynamic operations, even for short periods of time.

Note: Resulting forces could lead to exceeding the values. In case of undefinable situations the above maximum values should be reduced by 10–20 %.

$$\frac{Ma}{Ma_{max}} + \frac{Mr}{Mr_{max}} + \frac{Mv}{Mv_{max}} + \frac{L}{L_{max}} \leq 1$$

**Formulas**

$Ma = F \times ha$   
 $Mr = F \times hr$   
 $Mv = F \times hv$



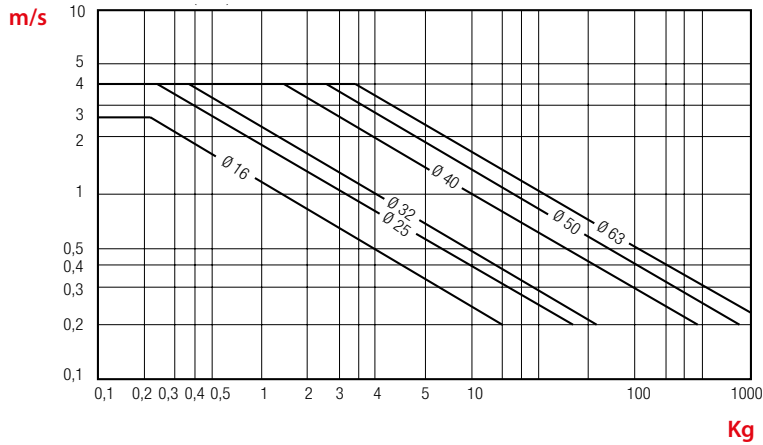
**Forces and Torque**

| Cylinder |    | Force     | Cushioning | Allowable load | Maximum allowable bending moments |           | Maximum allowable torque |
|----------|----|-----------|------------|----------------|-----------------------------------|-----------|--------------------------|
| Ø        | Y  | N - 6 bar | mm         | N              | Nm                                |           | Nm                       |
|          |    | F         | S          | RH             | Ma axial                          | Mr radial | Mv central               |
| 16       | 9  | 110       | 15         | 120            | 4                                 | 0.3       | 0.5                      |
| 25       | 14 | 250       | 21         | 300            | 15                                | 1         | 3.0                      |
| 32       | 18 | 420       | 26         | 450            | 30                                | 2         | 4.5                      |
| 40       | 22 | 640       | 32         | 750            | 60                                | 4         | 8.0                      |
| 50       | 28 | 1000      | 32         | 1200           | 115                               | 7         | 15.0                     |
| 63       | 36 | 1550      | 40         | 1650           | 200                               | 8         | 24.0                     |



**Note:**

- If the limits above are exceeded shock absorbers are required.
- For piston speeds of more than  $\leq 1$  m/s viton seals are recommended.
- For piston speeds  $\leq 0.1$  m/s (NBR),  $\leq 0.2$  m/s (FKM) slow speed lubrication is required.
- Maximum life will be achieved when piston speeds do not exceed 1 m/s.a

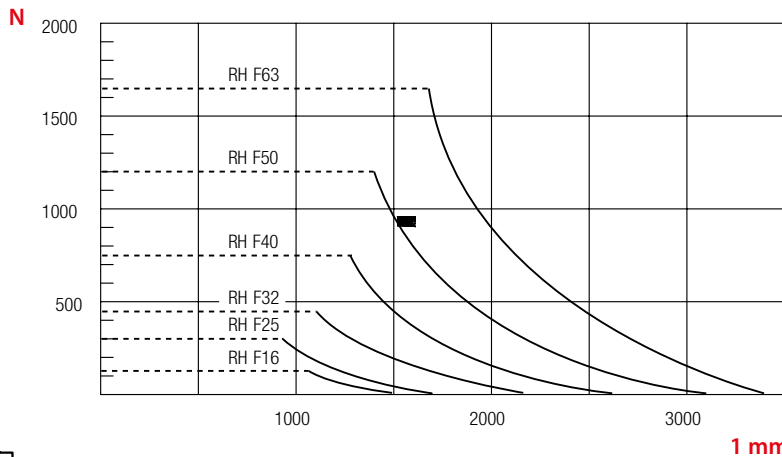
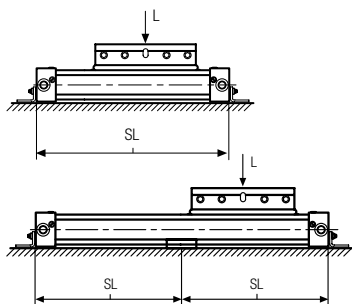


**m/s**  
 Piston  
**Kg**  
 Mass



**Deflection Graph**

- Calculated deflections without support of 0.5 – 1 mm allow exceeding of supporting distance.
- Calculated deflections without support of 1mm – maximum 1.5 mm require reduction of the supporting distance.



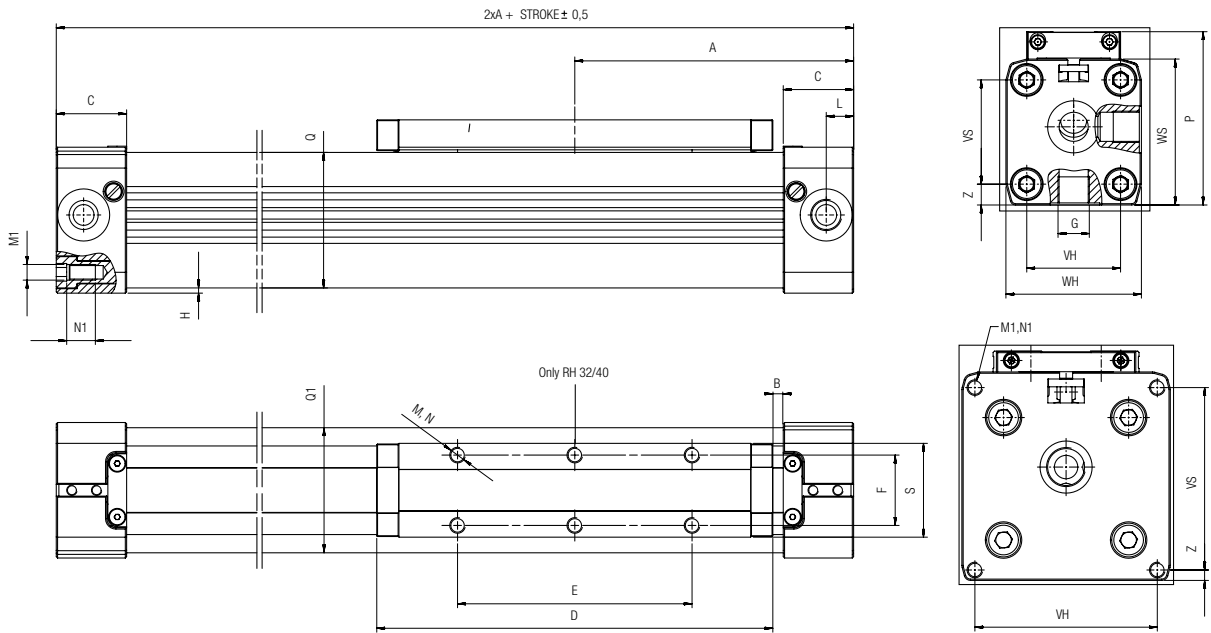
**N**  
 Load  
**1 mm**  
 Deflection

Distances SL of mounting with deflection 1 mm.



**RH**

**RODLESS CYLINDER - CUSHIONED - MAGNETIC**



| Ø  | A   | B    | C    | D   | E   | F    | G    | H    | L    | M  | M1 | N  | N1  | P     | QxQ1    | S    | VS | VH | WS  | WH  | Z    |
|----|-----|------|------|-----|-----|------|------|------|------|----|----|----|-----|-------|---------|------|----|----|-----|-----|------|
| 16 | 65  | 15.5 | 15   | 69  | 36  | 16.5 | M5   | 1.0  | 5.5  | M4 | M3 | 7  | 7.0 | 36.5  | 24.5x25 | 22.0 | 18 | 18 | 27  | 27  | 4.5  |
| 25 | 100 | 21.0 | 23   | 111 | 65  | 25.0 | G1/8 | 2.0  | 8.5  | M5 | M5 | 10 | 12  | 52.5  | 36x36   | 33.0 | 27 | 27 | 40  | 40  | 6.5  |
| 32 | 125 | 22.0 | 27   | 152 | 90  | 27.0 | G1/4 | 2.0  | 10.5 | M6 | M6 | 7  | 14  | 66.5  | 52x51   | 36.0 | 40 | 36 | 56  | 52  | 8.0  |
| 40 | 150 | 44.0 | 30   | 152 | 90  | 27.0 | G1/4 | 6.75 | 15.0 | M6 | M6 | 10 | 17  | 80.0  | 58.5x59 | 36.4 | 54 | 54 | 69  | 72  | 9.0  |
| 50 | 175 | 42.0 | 33.0 | 200 | 110 | 27.0 | G1/4 | 0.5  | 11.7 | M6 | M6 | 6  | 18  | 88.0  | 77x78   | 56.0 | 70 | 70 | 80  | 80  | 4.0  |
| 63 | 215 | 47.5 | 50   | 235 | 155 | 36.0 | G3/8 | 1.5  | 25.0 | M8 | M8 | 15 | 18  | 123.0 | 102x102 | 50.0 | 78 | 78 | 106 | 106 | 14.5 |

**SERIES RHV - RODLESS CYLINDERS WITH "V" EDGE SLIDE SYSTEM**

**TECHNICAL CHARACTERISTICS**

**Reference Standard**

- 1907/2006 **REACH** ✓
- 2011/65/CE **RoHS** ✓
- PED 2014/68/UE
- SILICON FREE



**Pressures**

0.5 bar (0.05 MPa) / 7.3 psi  
8 bar (0.8 MPa) / 116 psi

**Temperatures**

- 10 °C / 14 °F  
+ 80 °C / 176 °F

**Media**

Filtered and lubricated or non-lubricated compressed air.

**Functions**

Rodless cylinder - double acting cushioned magnetic.

**Bores**

from 25 to 50 mm

**Standard Strokes**

From 100 to 5700 mm

**Advantages**

- High load carrying capacity
- Heavy duty bearing housing
- Ground and hardened guide rail
- Low friction bearings
- Quiet and smooth running

**Recommended Sensors**

DT

**Sensor adapter - 016 / 25**

DSTR025

| Series                                    | Ø (mm)                   | Stroke (mm)         |
|---|--------------------------|---------------------|
| <b>R H V</b>                              | <b>0 2 5</b>             | <b>0 1 0 0</b>      |
| RHV Rodless cylinder cushioned - magnetic | 025<br>032<br>040<br>050 | From 100 to 5700 mm |

**Forces and Torque**

| Cylinder | A    | B    | C/D/E/F | G    | H    | I    | Load forces max   |     | Axial moments max | Radial moments max |
|----------|------|------|---------|------|------|------|-------------------|-----|-------------------|--------------------|
|          |      |      |         |      |      |      | Moment forces max |     | Ma                | Mr                 |
|          |      |      |         |      |      |      | La.               | Lr. | Mv                |                    |
|          | mm   | mm   | mm      | mm   | mm   | mm   | N                 | Nm  | Nm                |                    |
| 25       | 53.0 | 20.5 | *       | 38.0 | 40.0 | 40.0 | 1400              | 50  | 14                |                    |
| 32       | 64.0 | 26.0 | *       | 55.5 | 58.0 | 58.0 | 3100              | 165 | 65                |                    |
| 40       | 72.5 | 28.0 | *       | 54.5 | 67.5 | 67.5 | 3100              | 250 | 90                |                    |
| 50       | 88.5 | 28.0 | *       | 58.5 | 67.5 | 67.5 | 3100              | 250 | 90                |                    |

\* Dimensions according design.



**Forces and Moments**

- 1 The moments in the chart on the previous page ( $M_a$  max,  $M_r$  max,  $M_v$  max) relate to the guided rail center. The load force  $L$  is the sum of all individual forces related to the common center of mass. The center of mass can be placed inside or outside the surface area of the carriage.
- 2 Normally the carriage would experience a dynamic load which has to be considered while the necessary piston force ( $F$ ) and load capacity of the ballguided system. Use the following formula when calculating:

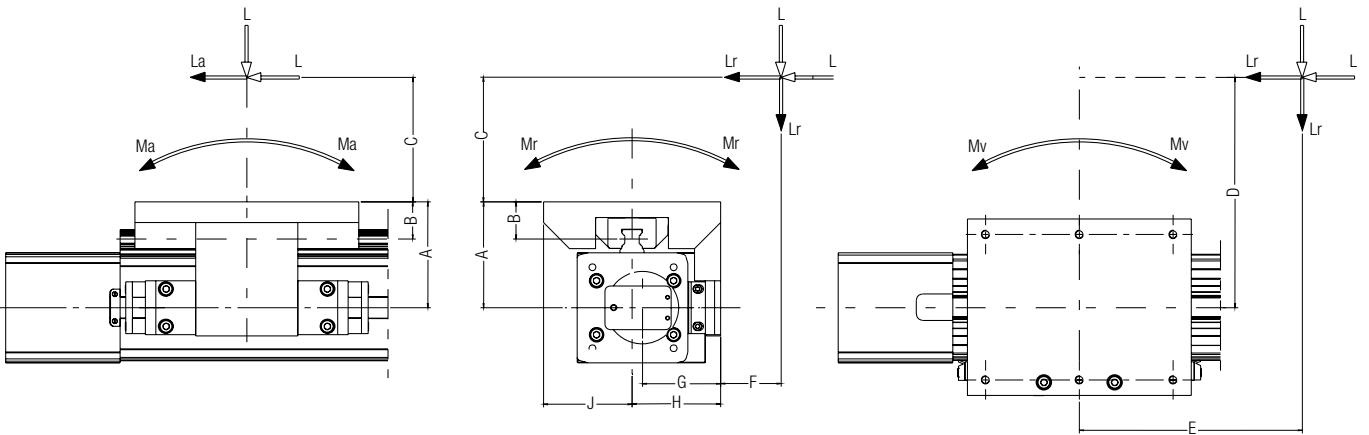
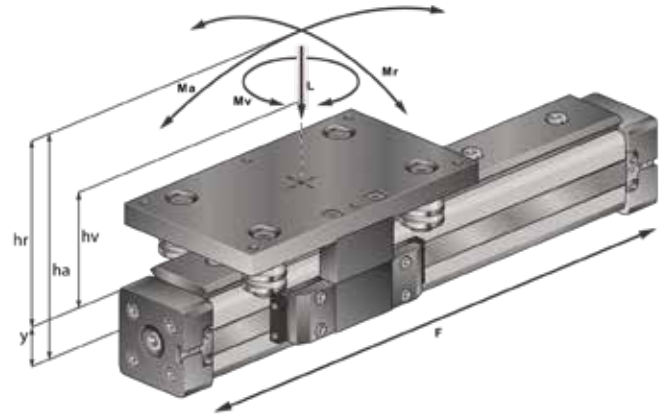
$$\frac{M_a}{M_{a_{max}}} + \frac{M_r}{M_{r_{max}}} + \frac{M_v}{M_{v_{max}}} + \frac{L}{L_{max}} \leq 1$$

**Formulas**

$$M_a = F \times h_a$$

$$M_r = F \times h_r$$

$$M_v = F \times h_v$$

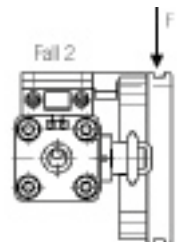
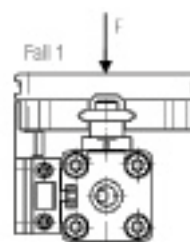
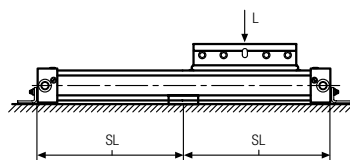
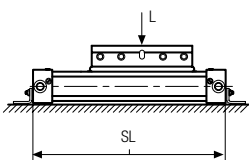
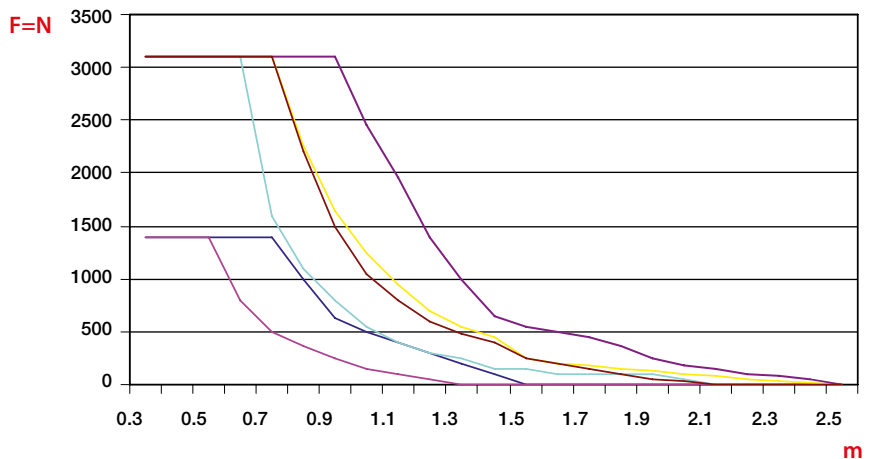


**Deflection Graph**

- Calculated flexures without a 0.5 – 1 mm support allow the exceeding of distances between the supports.
- Calculated flexures without a 1mm to a maximum 1.5 mm support require reduction of the distances between the supports.

**F=N** Load  
**m** Distance SL

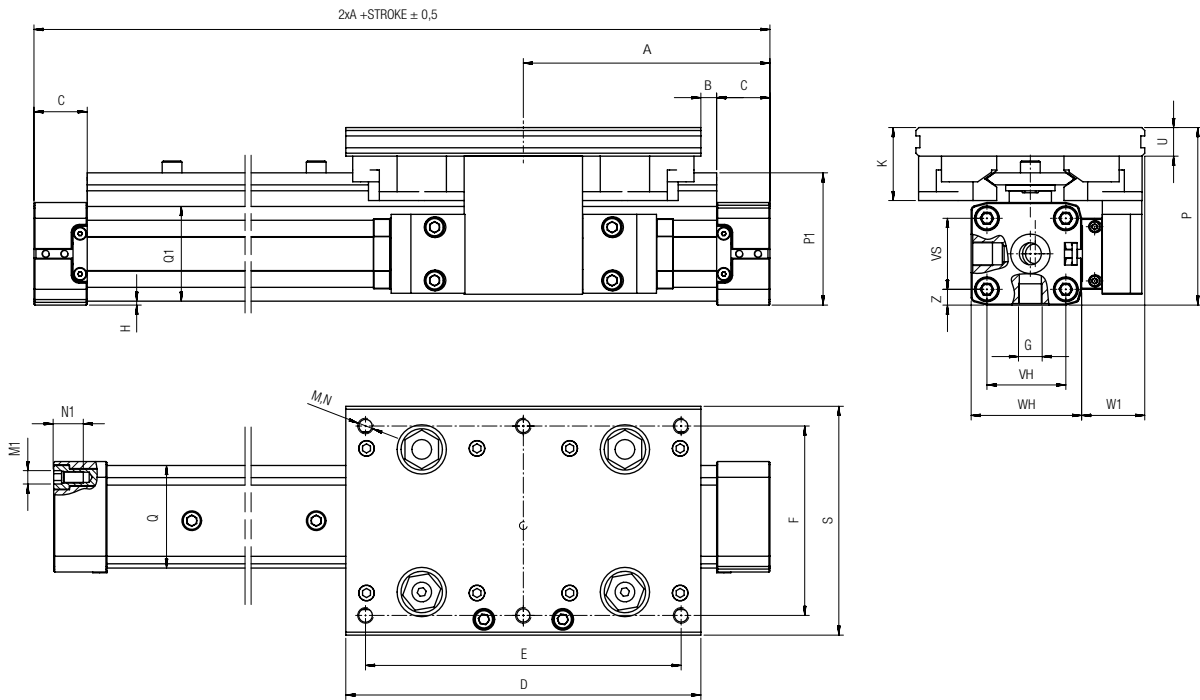
- RHV25/25 Fall 1
- RHV25/25 Fall 2
- RHV32/44 Fall 1
- RHV32/44 Fall 2
- RHV40/60 Fall 1
- RHV40/60 Fall 2



Distances SL of mounting with a flexure valve of 1 mm.

**RHV**

RODLESS CYLINDER - CUSHIONED - MAGNETIC



| Ø         | A   | B   | C  | D   | E   | F   | G   | H    | K    | M  | N    | M1 | N1 | P     | P1   | QxQ1      | S   | U    | VH | VS | WS | W1   | Z   |
|-----------|-----|-----|----|-----|-----|-----|-----|------|------|----|------|----|----|-------|------|-----------|-----|------|----|----|----|------|-----|
| <b>25</b> | 100 | 9.5 | 23 | 135 | 120 | 65  | 1/8 | 2.0  | 29.5 | M6 | 11   | M5 | 10 | 74.0  | 56.8 | 36 x 36   | 80  | 11   | 27 | 27 | 40 | 22   | 6.5 |
| <b>32</b> | 125 | 8.0 | 27 | 180 | 160 | 96  | 1/4 | 2.0  | 37   | M8 | 14.5 | M6 | 14 | 90.0  | 64.5 | 52 x 48   | 116 | 14.5 | 40 | 36 | 56 | 32   | 8.0 |
| <b>40</b> | 150 | 0   | 30 | 240 | 216 | 115 | 1/4 | 6.75 | 39   | M8 | 16.5 | M6 | 17 | 108.5 | 84.0 | 58.5 x 59 | 135 | 16.5 | 54 | 54 | 69 | 34.5 | 9.0 |
| <b>50</b> | 175 | 22  | 33 | 240 | 216 | 115 | 1/4 | 1.0  | 39   | M8 | 16.5 | M6 | 18 | 122.0 | 97.5 | 77 x 78   | 135 | 16.5 | 70 | 70 | 80 | 31   | 5.0 |

**SERIES RHL - RODLESS CYLINDERS - EXTERNALLY GUIDED**



**TECHNICAL CHARACTERISTICS**



**Reference Standard**

- 1907/2006  
**REACH**
- 2011/65/CE  
**RoHS**
- PED  
2014/68/UE
- SILICON  
FREE



**Pressures**

**0.5 bar** (0.05 MPa) / 7.3 psi  
**8 bar** (0.8 MPa) / 116 psi



**Temperatures**

- 10 °C / 14 °F  
+ 80 °C / 176 °F



**Media**

Filtered and lubricated or non-lubricated compressed air.



**Functions**

Rodless cylinder - double acting cushioned magnetic.



**Bores**

from Ø 32 to Ø 63 mm



**Standard Strokes**

From 100 to 5700 mm



**Advantages**

- Ability to accept high loads and moments in all directions.
- High tolerance to shock loads and vibrations.
- Highly resistant to wear and corrosion.
- Quiet functioning.
- Guiding elements are interchangeable.



**Recommended Sensors**

**DT**



**Sensor adapter - 016 / 25**

**DSTR025**

| Series                                    | Ø (mm)                   | Stroke (mm)         |
|---|--------------------------|---------------------|
| <b>R H L</b>                              | <b>0 3 2</b>             | <b>0 1 0 0</b>      |
| RHL Rodless cylinder cushioned - magnetic | 032<br>040<br>050<br>063 | From 100 to 5700 mm |

**Forces and Torque**

| Cylinder  | Max. zul. Last L | Max. L a, L r, L v | Max. Ma | Max. Mr | Max. Mv |
|-----------|------------------|--------------------|---------|---------|---------|
|           | N                | N                  | Nm      | Nm      | Nm      |
| <b>32</b> | 760              | 760                | 39      | 15      | 39      |
| <b>40</b> | 1330             | 1330               | 99      | 35      | 99      |
| <b>50</b> | 1600             | 1600               | 170     | 58      | 170     |
| <b>63</b> | 2770             | 2770               | 315     | 105     | 317     |



**Forces and Moments**

- 1 The moments in the chart on the previous page ( $M_a$  max,  $M_r$  max,  $M_v$  max) relate to the guided rail center. The load force  $L$  is the sum of all individual forces related to the common center of mass. The center of mass can be placed inside or outside the surface area of the carriage.
- 2 Normally the carriage would experience a dynamic load which has to be considered while the necessary piston force ( $F$ ) and load capacity of the ballguided system. Use the following formula when calculating:

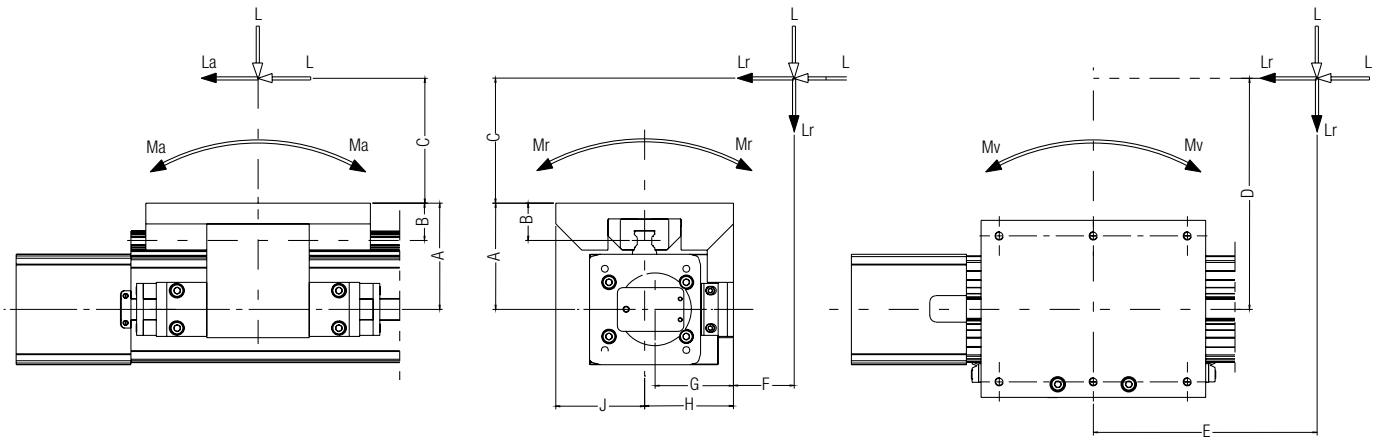
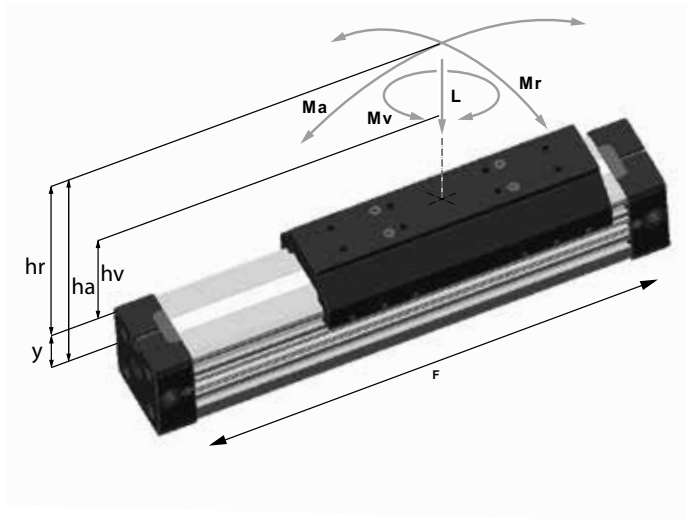
$$\frac{M_a}{M_{a_{max}}} + \frac{M_r}{M_{r_{max}}} + \frac{M_v}{M_{v_{max}}} + \frac{L}{L_{max}} \leq 1$$

**Formulas**

$$M_a = F \times h_a$$

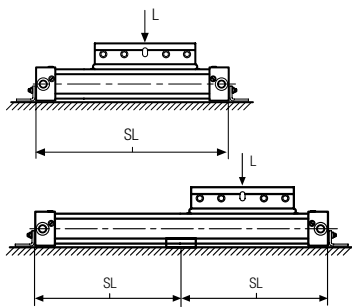
$$M_r = F \times h_r$$

$$M_v = F \times h_v$$



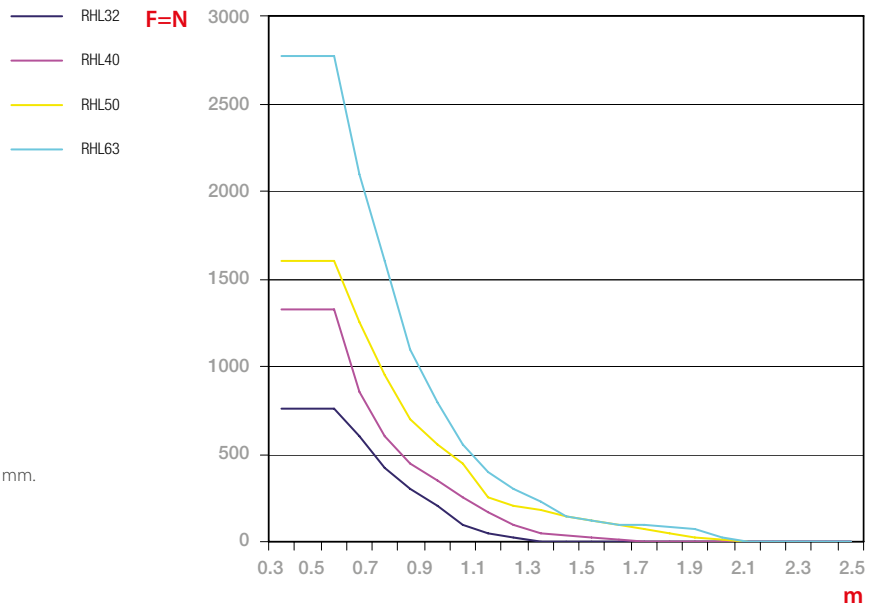
**Deflection Graph**

- Calculated flexures without a 0.5 – 1 mm support allow the exceeding of distances between the supports.
- Calculated flexures without a 1mm to a maximum 1.5 mm support require reduction of the distances between the supports.



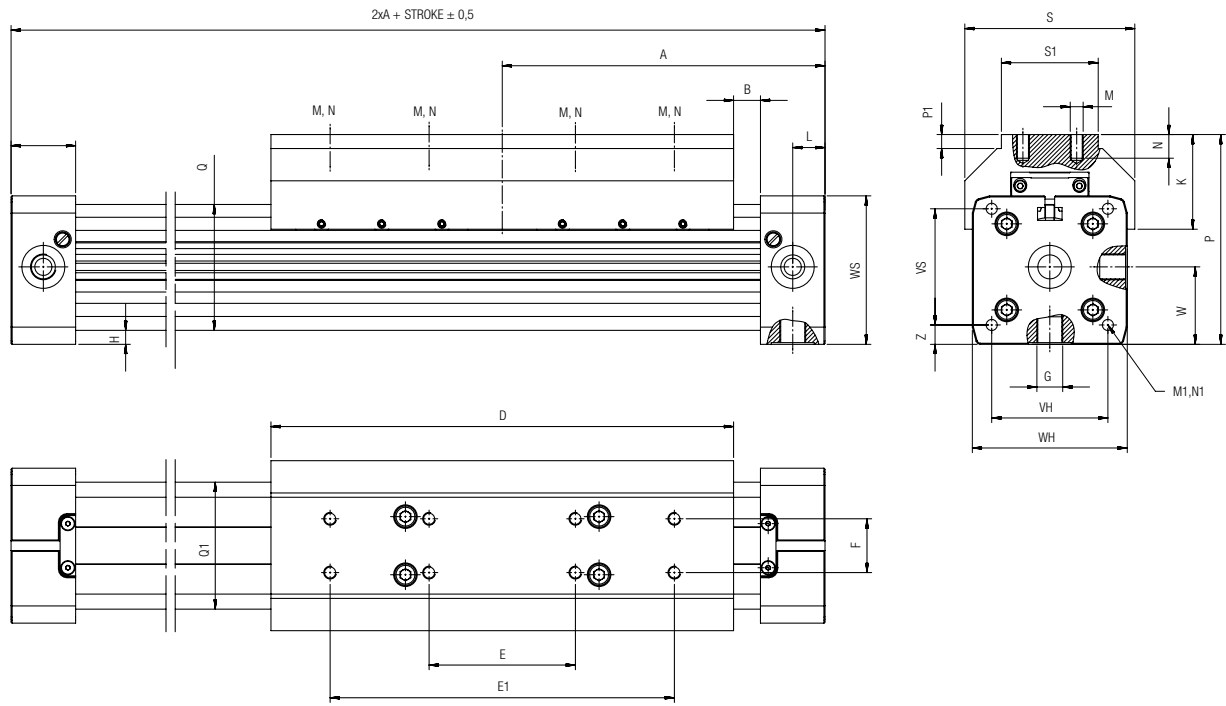
Distances SL of mounting with a flexure valve of 1 mm.

|            |             |
|------------|-------------|
| <b>F=N</b> | <b>m</b>    |
| Load       | Distance SL |



**RHL**

**RODLESS CYLINDER - CUSHIONED - MAGNETIC**

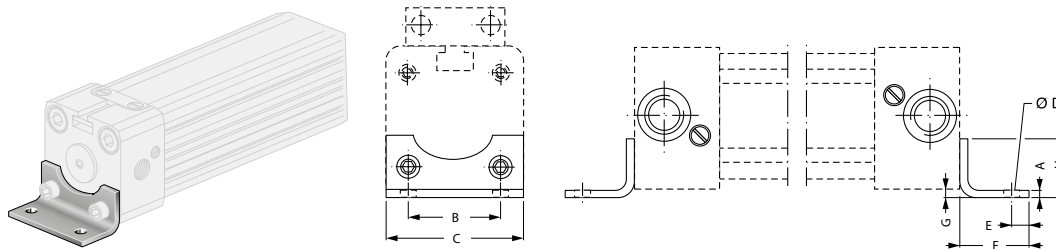


| Ø         | A   | B    | C  | D   | E   | E1  | F  | G   | H   | K    | L    | M  | N  | M1 | N1 | P    | P1  | QxQ1    | S   | S1 | VH | VS | W    | WH  | WS  | Z    |
|-----------|-----|------|----|-----|-----|-----|----|-----|-----|------|------|----|----|----|----|------|-----|---------|-----|----|----|----|------|-----|-----|------|
| <b>32</b> | 125 | 22   | 27 | 152 | 60  | 120 | 25 | 1/4 | 2.0 | 42.5 | 10.5 | M5 | 10 | M6 | 14 | 81.5 | 6.5 | 52x51   | 66  | 40 | 36 | 40 | 30   | 52  | 56  | 8    |
| <b>40</b> | 150 | 12.5 | 30 | 215 | 68  | 160 | 25 | 1/4 | 7.0 | 44   | 15   | M8 | 10 | M6 | 17 | 97.5 | 6.5 | 58.5x59 | 79  | 45 | 54 | 54 | 36   | 72  | 69  | 9    |
| <b>50</b> | 175 | 17.5 | 33 | 250 | 84  | 190 | 25 | 1/4 | 0.5 | 48.5 | 11.7 | M8 | 10 | M6 | 18 | 110  | 6.5 | 77x78   | 92  | 50 | 70 | 70 | 43.5 | 80  | 80  | 4    |
| <b>63</b> | 215 | 6.5  | 55 | 320 | 120 | 240 | 25 | 3/8 | 1.5 | 56   | 25   | M8 | 14 | M8 | 18 | 137  | 5.0 | 102x102 | 116 | 50 | 78 | 78 | 62.5 | 106 | 106 | 14.5 |

**SERIES R ACCESSORIES**

**RCP**

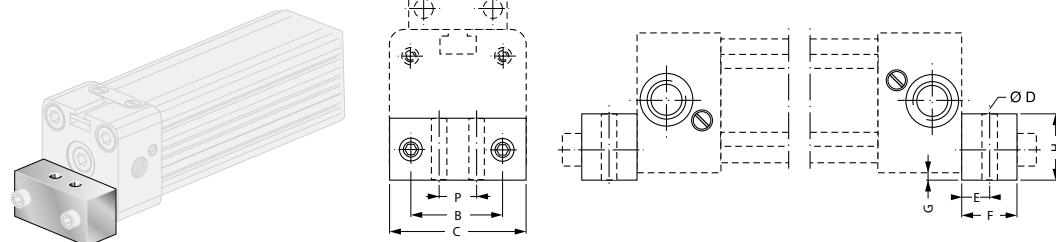
FOOT MOUNT  
Ø 16-25 mm



| Part No.       | Ø         | A   | B  | C  | D   | E   | F  | G   | H    |
|----------------|-----------|-----|----|----|-----|-----|----|-----|------|
| <b>RCP 016</b> | <b>16</b> | 1.5 | 18 | 26 | 3.6 | 4.0 | 14 | 1.5 | 12.5 |
| <b>RCP 025</b> | <b>25</b> | 2.5 | 27 | 40 | 5.5 | 6.0 | 22 | 2   | 18   |

**RCP**

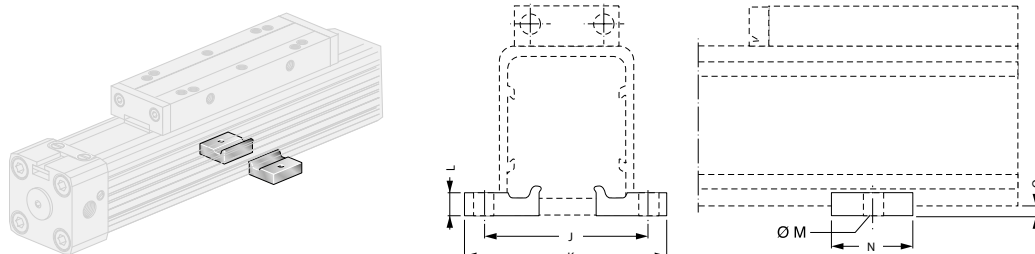
FOOT MOUNT  
Ø 32-63 mm



| Code           | Ø         | B  | C   | D   | E    | F  | G | H  | P  |
|----------------|-----------|----|-----|-----|------|----|---|----|----|
| <b>RCP 032</b> | <b>32</b> | 36 | 51  | 6,5 | 8    | 24 | 4 | 20 | 20 |
| <b>RCP 040</b> | <b>40</b> | 54 | 71  | 9   | 11,5 | 24 | 2 | 20 | 30 |
| <b>RCP 050</b> | <b>50</b> | 70 | 80  | 9   | 12,5 | 25 | 1 | 25 | 45 |
| <b>RCP 063</b> | <b>63</b> | 78 | 105 | 11  | 15   | 30 | 2 | 40 | 48 |

**RCN**

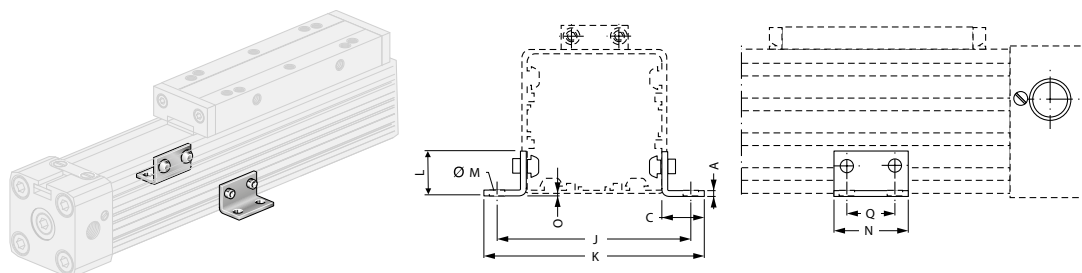
INTERMEDIATE SUPPORT  
BRACKET  
Ø 16-25 mm



| Part No.       | Ø         | J    | K    | L | M     | N  | O |
|----------------|-----------|------|------|---|-------|----|---|
| <b>RCN 016</b> | <b>16</b> | 41.5 | 53.5 | 5 | Ø 5.5 | 20 | 3 |
| <b>RCN 025</b> | <b>25</b> | 48.5 | 60   | 6 | Ø 5.5 | 20 | 4 |

**RCN**

INTERMEDIATE SUPPORT  
BRACKET  
Ø 32-63 mm

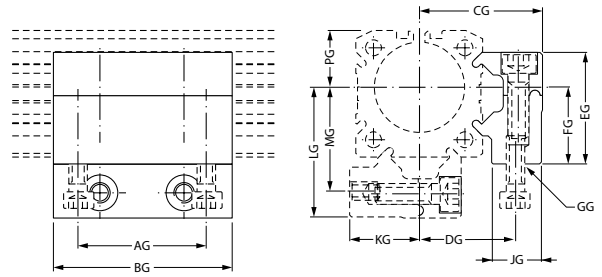
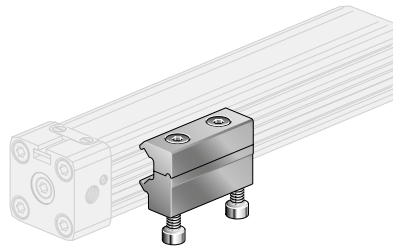


| Part No.       | Ø         | A | C  | J   | K   | L  | M   | N  | O   | Q  |
|----------------|-----------|---|----|-----|-----|----|-----|----|-----|----|
| <b>RCN 032</b> | <b>32</b> | 5 | 20 | 82  | 91  | 30 | 4.5 | 45 | 6   | 30 |
| <b>RCN 040</b> | <b>40</b> | 5 | 20 | 90  | 99  | 25 | 4.5 | 45 | 8.5 | 30 |
| <b>RCN 050</b> | <b>50</b> | 5 | 35 | 123 | 148 | 35 | 6.5 | 45 | 1   | 30 |
| <b>RCN 063</b> | <b>63</b> | 5 | 35 | 147 | 172 | 35 | 6.5 | 45 | 3.5 | 30 |



**RCNG**

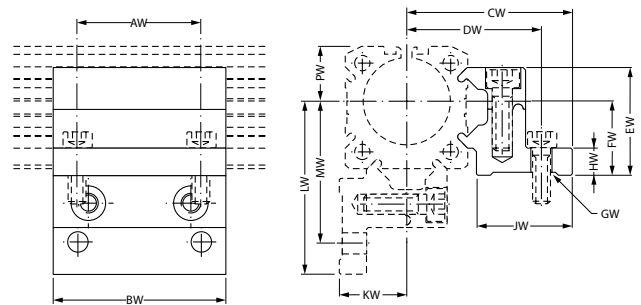
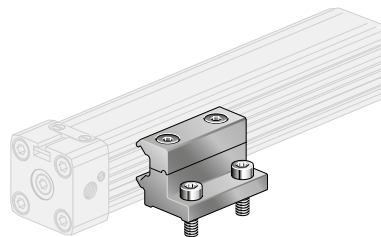
INTERMEDIATE SUPPORT BRACKET



| Part No.        | ∅         | AG   | BG   | CG   | DG   | EG   | FG   | GG | JG   | KG   | LG   | MG   | PG   |
|-----------------|-----------|------|------|------|------|------|------|----|------|------|------|------|------|
| <b>RCNG 016</b> | <b>16</b> | 18.0 | 30.0 | 27.5 | 18.4 | 21.0 | 15.0 | M4 | 11.5 | 13.9 | 29.0 | 19.7 | 10.8 |
| <b>RCNG 025</b> | <b>25</b> | 36.0 | 50.0 | 34.5 | 27.0 | 31.3 | 22.0 | M5 | 14.0 | 20.0 | 36.5 | 29.0 | 16.0 |
| <b>RCNG 032</b> | <b>32</b> | 36.0 | 50.0 | 41.8 | 34.2 | 39.0 | 30.0 | M6 | 14.0 | 27.6 | 47.0 | 39.5 | 21.5 |

**RCNN**

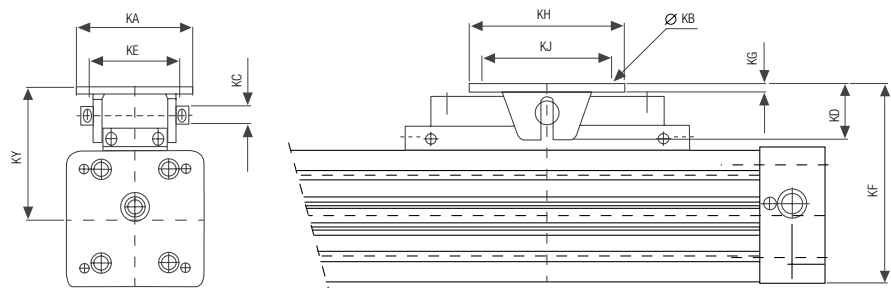
INTERMEDIATE SUPPORT BRACKET



| Part No.        | ∅         | AW   | BW   | CW   | DW   | EW   | FW   | GW    | HW   | JW   | KW   | LW   | MW   | PW   |
|-----------------|-----------|------|------|------|------|------|------|-------|------|------|------|------|------|------|
| <b>RCNN 016</b> | <b>16</b> | 18.0 | 30.0 | 37.0 | 32.5 | 21.0 | 15.0 | ∅ 4.5 | 6.0  | 22.4 | 13.9 | 38.0 | 32.9 | 10.8 |
| <b>RCNN 025</b> | <b>25</b> | 36.0 | 50.0 | 47.5 | 40.0 | 31.3 | 22.0 | ∅ 5.5 | 10.0 | 26.0 | 20.0 | 49.5 | 42.0 | 16.0 |
| <b>RCNN 032</b> | <b>32</b> | 36.0 | 50.0 | 56.0 | 47.5 | 39.0 | 30.0 | ∅ 6.5 | 10.0 | 28.5 | 27.6 | 61.0 | 52.5 | 21.5 |

**RCOL**

ARTICULATED CARRIAGE



| Part No.        | ∅         | KA | KB | KD   | KE | KF          | KG  | KH  | KJ  | KY        |
|-----------------|-----------|----|----|------|----|-------------|-----|-----|-----|-----------|
| <b>RCOL 016</b> | <b>16</b> | 26 | M4 | 10   | 10 | 46.5 - 47.5 | 3.0 | 28  | 20  | 33        |
| <b>RCOL 025</b> | <b>25</b> | 38 | M5 | 19   | 16 | 71.5 - 73.5 | 3.5 | 40  | 30  | 51.5      |
| <b>RCOL 032</b> | <b>32</b> | 62 | M6 | 28   | 25 | 94.5 - 96.5 | 6.0 | 60  | 46  | 66.5      |
| <b>RCOL 040</b> | <b>40</b> | 62 | M6 | 28   | 25 | 108 - 110   | 6.0 | 60  | 46  | 73.5      |
| <b>RCOL 050</b> | <b>50</b> | 90 | 9  | 43.7 | 70 | 135 - 150   | 6.4 | 120 | 100 | 95 - 110  |
| <b>RCOL 063</b> | <b>63</b> | 90 | 9  | 43.7 | 70 | 155 - 170   | 6.4 | 120 | 100 | 102 - 117 |

**SERIES XR - ROTARY ACTUATORS - ISO 15552**



**TECHNICAL CHARACTERISTICS**



Male output shaft



Female output shaft



**Reference Standard**

- 1907/2006  
**REACH** ✓
- 2011/65/CE  
**RoHS** ✓
- PED  
2014/68/UE
- SILICON  
FREE
- ATEX  
2014/34/UE



**Pressures**

**1 bar** (0.1 MPa) / 14.5 psi  
**10 bar** (0.7 MPa) / 145 psi



**Temperatures**

**0 °C / 32 °F** (-20 °C / -4 °F with dry air)  
**+ 80 °C / 176 °F**



**Media**

Filtered and lubricated or non-lubricated compressed air.



**Functions**

Double acting - cushioned - magnetic with male output shaft.  
Double acting - cushioned - magnetic with female output shaft.



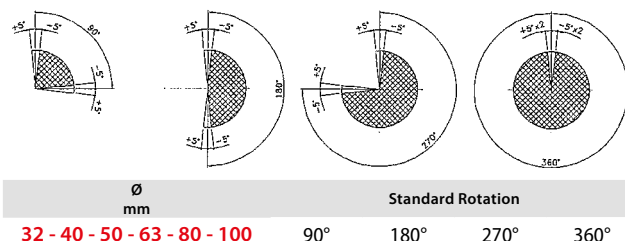
**Bores**

from 32 to 100 mm

| Series  | Ø (mm)            | Rotation            |
|---|-------------------|---------------------|
| <b>X R M</b>  | <b>0 3 2</b>      | <b>0 9 0</b>        |
| <b>XRM</b> Rotary Actuator with Male Output Shaft and Angle Adjustment +/- 5°   | 032<br>040<br>050 | 90°<br>180°<br>270° |
| <b>XRF</b> Rotary Actuator with Female Output Shaft and Angle Adjustment +/- 5° | 063<br>080<br>100 | 360°                |



**Adjustable angle**

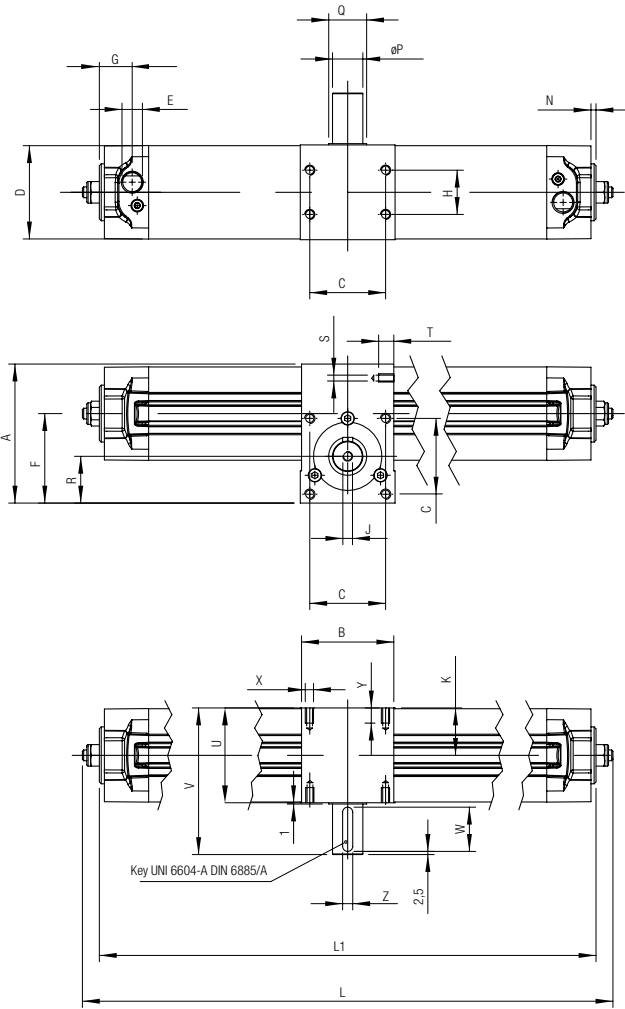


**Torque at 1 bar**

| Ø mm       | Nm    |
|------------|-------|
| <b>32</b>  | 1.2   |
| <b>40</b>  | 2.25  |
| <b>50</b>  | 3.9   |
| <b>63</b>  | 7.3   |
| <b>80</b>  | 15.7  |
| <b>100</b> | 26.35 |

**CRM**

ROTARY ACTUATOR WITH MALE OUTPUT SHAFT AND ANGLE ADJUSTMENT +/- 5°



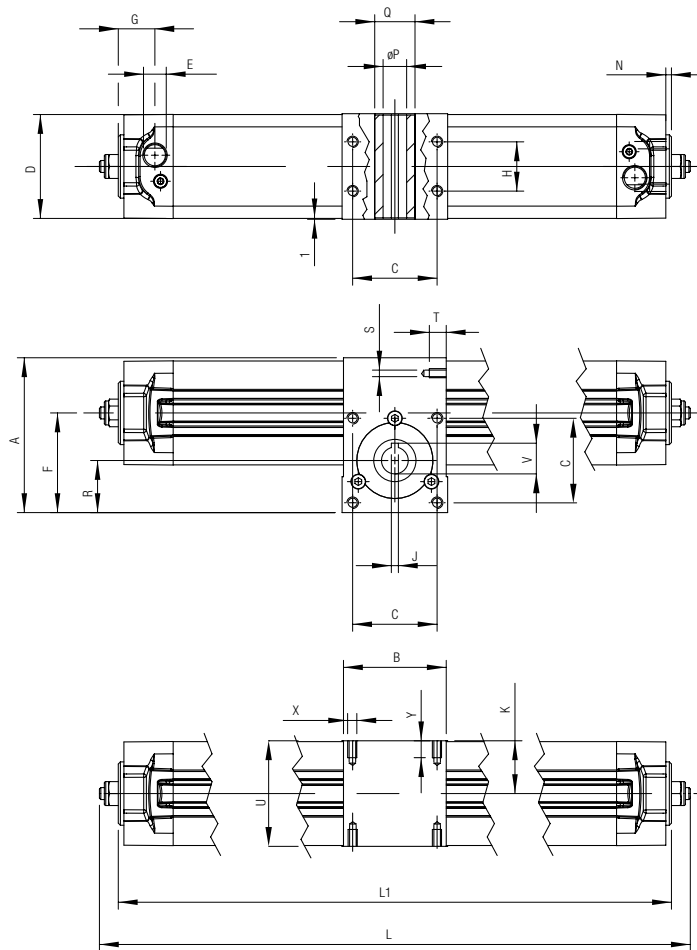
| Ø<br>mm | Rotation |     |      |     |      |     |      |     |
|---------|----------|-----|------|-----|------|-----|------|-----|
|         | 90°      |     | 180° |     | 270° |     | 360° |     |
|         | L        | L1  | L    | L1  | L    | L1  | L    | L1  |
| 32      | 232      | 213 | 279  | 260 | 326  | 307 | 373  | 354 |
| 40      | 274      | 254 | 330  | 310 | 387  | 367 | 464  | 424 |
| 50      | 301      | 276 | 364  | 339 | 427  | 402 | 489  | 464 |
| 63      | 343      | 320 | 418  | 395 | 493  | 470 | 567  | 544 |
| 80      | 416      | 386 | 515  | 485 | 614  | 584 | 713  | 683 |
| 100     | 449      | 418 | 556  | 525 | 662  | 631 | 769  | 738 |

Dimensions L and L1 for rotations.

| Ø   | A     | B   | C  | D   | E     | F    | G    | H  | J   | K    | N | P  | Q  | R    | S  | T  | U   | V   | W  | X   | Y  | Z  |
|-----|-------|-----|----|-----|-------|------|------|----|-----|------|---|----|----|------|----|----|-----|-----|----|-----|----|----|
| 32  | 71.5  | 50  | 33 | 46  | 1/8 G | 46.5 | 22   | 18 | M5  | 25   | 4 | 14 | 25 | 25   | M5 | 9  | 50  | 81  | 25 | M6  | 10 | 5  |
| 40  | 82    | 60  | 40 | 54  | 1/4 G | 54.5 | 21.5 | 22 | M5  | 30   | 4 | 14 | 25 | 30   | M5 | 10 | 60  | 91  | 25 | M6  | 10 | 5  |
| 50  | 94    | 70  | 50 | 64  | 1/4 G | 60.5 | 24.5 | 25 | M6  | 32.5 | 4 | 19 | 30 | 32.5 | M6 | 8  | 65  | 106 | 35 | M8  | 13 | 6  |
| 63  | 110   | 75  | 60 | 74  | 3/8 G | 70.8 | 26   | 35 | M8  | 37.5 | 4 | 24 | 30 | 37   | M8 | 10 | 75  | 116 | 35 | M8  | 13 | 8  |
| 80  | 142   | 99  | 80 | 94  | 3/8 G | 93.5 | 26   | 50 | M8  | 49.5 | 4 | 28 | 45 | 50   | M9 | 12 | 99  | 150 | 45 | M10 | 16 | 8  |
| 100 | 156.5 | 115 | 80 | 111 | 1/2 G | 99   | 30   | 60 | M10 | 57.5 | 4 | 38 | 50 | 54   | M9 | 17 | 115 | 166 | 45 | M10 | 16 | 10 |

**XRF**

ROTARY ACTUATOR WITH FEMALE OUTPUT SHAFT AND ANGLE ADJUSTMENT +/- 5°

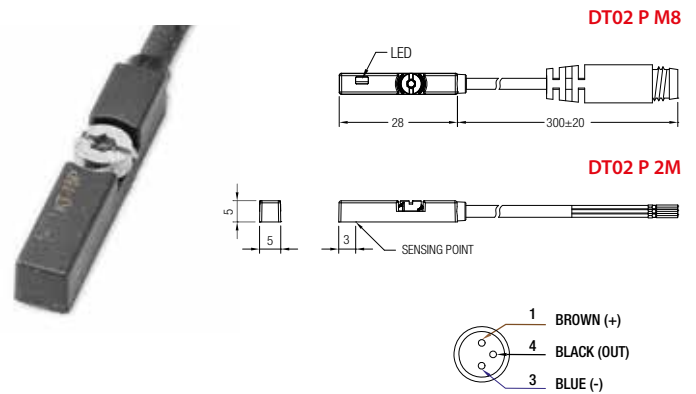
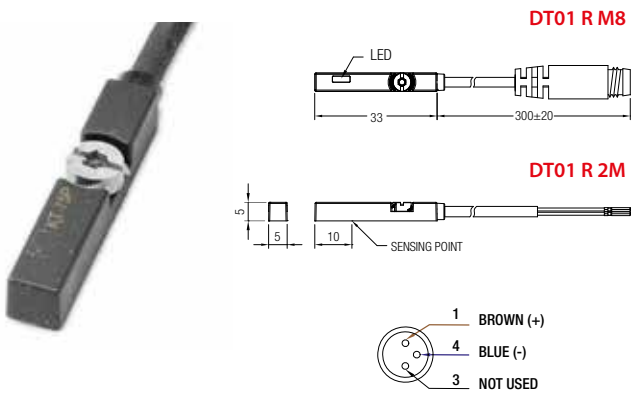


| Ø mm | Rotation |     |      |     |      |     |      |     |
|------|----------|-----|------|-----|------|-----|------|-----|
|      | 90°      |     | 180° |     | 270° |     | 360° |     |
|      | L        | L1  | L    | L1  | L    | L1  | L    | L1  |
| 32   | 232      | 213 | 279  | 260 | 326  | 307 | 373  | 354 |
| 40   | 274      | 254 | 330  | 310 | 387  | 367 | 464  | 424 |
| 50   | 301      | 276 | 364  | 339 | 427  | 402 | 489  | 464 |
| 63   | 343      | 320 | 418  | 395 | 493  | 470 | 567  | 544 |
| 80   | 416      | 386 | 515  | 485 | 614  | 584 | 713  | 683 |
| 100  | 449      | 418 | 556  | 525 | 662  | 631 | 769  | 738 |

Dimensions L and L1 for rotations.

| Ø   | A     | B   | C  | D   | E     | F    | G    | H  | J | K    | N | ØP | Q  | R    | S  | T  | U   | V    | X   | Y  |
|-----|-------|-----|----|-----|-------|------|------|----|---|------|---|----|----|------|----|----|-----|------|-----|----|
| 32  | 71.5  | 50  | 33 | 46  | 1/8 G | 46.5 | 22   | 18 | 5 | 25   | 4 | 14 | 25 | 25   | M5 | 9  | 50  | 16.3 | M6  | 10 |
| 40  | 82    | 60  | 40 | 54  | 1/4 G | 54.5 | 21.5 | 22 | 5 | 30   | 4 | 14 | 25 | 30   | M5 | 10 | 60  | 16.3 | M6  | 10 |
| 50  | 94    | 70  | 50 | 64  | 1/4 G | 60.5 | 24.5 | 25 | 6 | 32.5 | 4 | 19 | 30 | 32.5 | M6 | 8  | 65  | 21.8 | M8  | 13 |
| 63  | 110   | 75  | 60 | 74  | 3/8 G | 70.8 | 26   | 35 | 6 | 37.5 | 4 | 19 | 30 | 37   | M8 | 10 | 75  | 21.8 | M8  | 13 |
| 80  | 142   | 99  | 80 | 94  | 3/8 G | 93.5 | 26   | 50 | 8 | 49.5 | 4 | 24 | 45 | 50   | M9 | 12 | 99  | 27.3 | M10 | 16 |
| 100 | 156.5 | 115 | 80 | 111 | 1/2 G | 99   | 30   | 60 | 8 | 57.5 | 4 | 28 | 50 | 54   | M9 | 17 | 115 | 31.3 | M10 | 16 |

**SERIES DT - MAGNETIC SWITCHES**

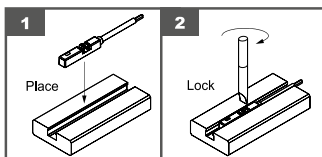


|                         | Part No.<br><b>DT01 R 2M</b> | Part No.<br><b>DT01 R M8</b>        |
|-------------------------|------------------------------|-------------------------------------|
| Connection              | ∅ 2.8 - 2 WIRE<br>PU - 2MT   | ∅ 2.8 - 2 WIRE<br>PU - M8 CONNECTOR |
| Switching logic         | SPST. Normally open          |                                     |
| Sensor type             | Reed Switch                  |                                     |
| Voltage Range           | 5÷240V DC/AC                 |                                     |
| Switching current       | 100 mA max                   |                                     |
| Contact rating          | 10W max                      |                                     |
| Max voltage drop        | 0.3V                         |                                     |
| Output status indicator | RED LED                      |                                     |
| Operating frequency     | 200 Hz                       |                                     |
| Working temperature     | -10 / + 70 °C<br>14 / 158 °F |                                     |
| Shock                   | 30 G                         |                                     |
| Vibration               | 9 G                          |                                     |
| Protection degree       | IEC 60529 IP67               |                                     |
| Protection Circuit      | NO                           |                                     |

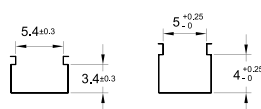
|                         | Part No.<br><b>DT02 P 2M</b>      | Part No.<br><b>DT02 P M8</b>        |
|-------------------------|-----------------------------------|-------------------------------------|
| Connection              | ∅ 2.8 - 3 WIRE<br>PU - 2MT        | ∅ 2.8 - 3 WIRE<br>PU - M8 CONNECTOR |
| Switching logic         | Solid State Output. Normally open |                                     |
| Sensor type             | PNP Current Sourcing              |                                     |
| Voltage Range           | 10÷28V DC                         |                                     |
| Switching current       | 80 mA max                         |                                     |
| Contact rating          | 2W max                            |                                     |
| Max voltage drop        | 10mA @ 24 V DC max                |                                     |
| Max voltage drop        | 1.5V max                          |                                     |
| Leakage current         | 0.05mA max                        |                                     |
| Output status indicator | RED/GREEN LED                     |                                     |
| Operating frequency     | 1000 Hz                           |                                     |
| Magnetic requirement    | 50 Gauss                          |                                     |
| Working temperature     | -10 / + 60 °C<br>14 / 140 °F      |                                     |
| Shock                   | 50 G                              |                                     |
| Vibration               | 9 G                               |                                     |
| Protection degree       | IEC 60529 IP67                    |                                     |



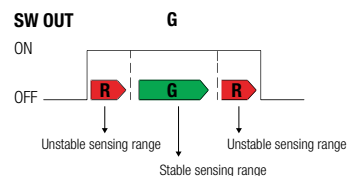
**Quick Installation**



Common cylinder slot dimensions



Dual color LED allows more precise positioning.



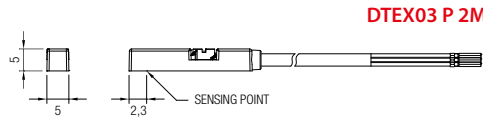
**SERIES DTEX - ATEX SWITCHES**



CE ATEX APPROVAL  
(Baseefa14ATEX0118)



II 3GDEx ic IIB T4 Gc (-10°C ≤ Ta ≤ +70°C)  
Ex ic IIB T135 °C Dc (-10°C ≤ Ta ≤ +70°C)

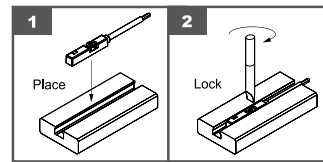


**DTEX03 P 2M**

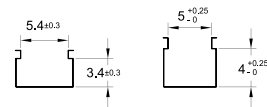
|                         |                                       |
|-------------------------|---------------------------------------|
|                         | <b>Part No.</b><br><b>DTEX03 P 2M</b> |
|                         |                                       |
| Connection              | ∅ 2.8 - 3WIRE<br>PU - 2 MT            |
| Switching logic         | Solid State Output. Normally open     |
| Sensor type             | PNP Current Sourcing                  |
| Voltage Range           | 10÷28 V DC                            |
| Switching current       | 200 mA max                            |
| Contact rating          | 5.5 W max                             |
| Max voltage drop        | 10 mA @ 24 V DC max                   |
| Max voltage drop        | 1.5 V @ 50mA max                      |
| Leakage current         | 0.05 mA max                           |
| Output status indicator | RED YELLOW                            |
| Operating frequency     | 1000 Hz                               |
| Magnetic requirement    | 50 Gauss                              |
| Working temperature     | -10 / + 70 °C<br>14 / 158 °F          |
| Shock                   | 50 G                                  |
| Vibration               | 9 G                                   |
| Protection degree       | IEC 60529 IP67                        |



**Quick Installation**

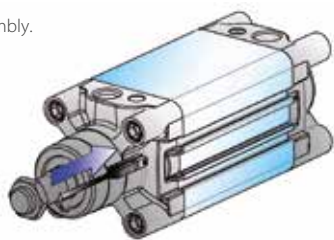


**Common cylinder slot dimensions**

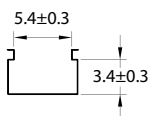


**SERIES DSL - MAGNETIC SWITCHES**

DSL sensor lengthwise assembly.



Common cylinder slot dimensions



|                                  | Part No.<br><b>DSL1 C 225</b> | Part No.<br><b>DSL1 M8</b>            | Part No.<br><b>DSL4 N 225</b> | Part No.<br><b>DSL4 M8</b>            |
|----------------------------------|-------------------------------|---------------------------------------|-------------------------------|---------------------------------------|
| Image                            |                               |                                       |                               |                                       |
| Circuit diagram                  |                               |                                       |                               |                                       |
| Connection                       | 2 WIRE<br>PVC - 2.5 MT        | 2 WIRE<br>PVC - 0.3 MT - M8 CONNECTOR | 3 WIRE<br>PVC - 2.5 MT        | 3 WIRE<br>PVC - 0.3 MT - M8 CONNECTOR |
| Switching logic                  | N.O.                          |                                       |                               |                                       |
| Sensor type                      | REED                          | REED                                  | PNP - HALL                    | PNP - HALL                            |
| Voltage Range                    | 3-130 V AC/DC                 | 3-130 V AC/DC                         | 10-30 V DC                    | 10-30 V DC                            |
| Max current at 25°C (77 °F)      | 50 mA                         | 50 mA                                 | 200 mA                        | 200 mA                                |
| Max power/Resistive load         | 10 W                          | 10 W                                  | 6 W                           | 6 W                                   |
| Max voltage drop                 | 3.2 V                         | 3.2 V                                 | 0.8 V                         | 0.8 V                                 |
| Output status indicator          | YELLOW LED                    |                                       |                               |                                       |
| Response time                    | 0.5 ms max                    | 0.5 ms max                            | 0.2 ms max                    | 0.2 ms max                            |
| Decay time                       | 0.1 ms max                    |                                       |                               |                                       |
| Electric life (resistive load)   | 4x10 <sup>7</sup>             |                                       |                               |                                       |
| Working temperature              | -20 / + 70 °C<br>-4 / 158 °F  |                                       |                               |                                       |
| Protection degree                | IP 68                         |                                       |                               |                                       |
| Short circuit                    | NO                            |                                       |                               |                                       |
| Type of mounting to the cylinder | Longitudinal only             |                                       |                               |                                       |

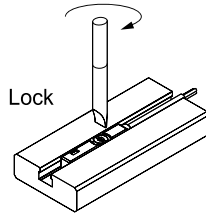
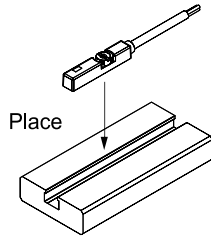
**BRACKET FOR DSL TO USE WITH MINI CYLINDERS ISO 6432 AND A95 SERIES CYLINDERS**

| Part No.       | Ø         | F = Ø   | A  | B | Part No.       | Ø         | F = Ø   | A  | B |
|----------------|-----------|---------|----|---|----------------|-----------|---------|----|---|
| <b>MFX 008</b> | <b>8</b>  | 9.4 mm  | 14 | 8 | <b>AFX 032</b> | <b>32</b> | 33.5 mm | 14 | 8 |
| <b>MFX 010</b> | <b>10</b> | 11.3 mm | 14 | 8 | <b>AFX 040</b> | <b>40</b> | 41.5 mm | 14 | 8 |
| <b>MFX 012</b> | <b>12</b> | 13.3 mm | 14 | 8 | <b>AFX 050</b> | <b>50</b> | 52 mm   | 14 | 8 |
| <b>MFX 016</b> | <b>16</b> | 17.3 mm | 14 | 8 | <b>AFX 063</b> | <b>63</b> | 65 mm   | 14 | 8 |
| <b>MFX 020</b> | <b>20</b> | 21.3 mm | 14 | 8 |                |           |         |    |   |
| <b>MFX 025</b> | <b>25</b> | 26.3 mm | 14 | 8 |                |           |         |    |   |

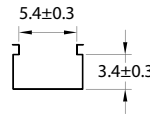


**SERIES DSH - MAGNETIC SWITCHES**

DSH sensors with axial or long inserting slot.



Common cylinder slot dimensions



Part No.  
**DSH2 R 2F 20**

Part No.  
**DSH2 R 2F M8**

Part No.  
**DSH4 H 3F 20**



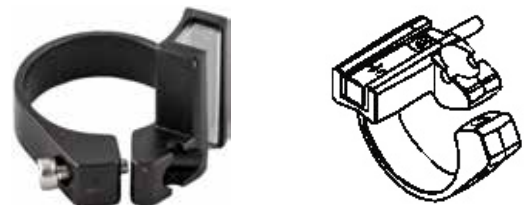
Part No.  
**DSH4 H 3F M8**



|                                  |                              |                                       |                               |                                       |
|----------------------------------|------------------------------|---------------------------------------|-------------------------------|---------------------------------------|
| Circuit diagram                  |                              |                                       |                               |                                       |
| Connection                       | 2 WIRE<br>PVC - 2 MT         | 2 WIRE<br>PVC - 0.3 MT - M8 CONNECTOR | 3 WIRE<br>PUR - 2 MT          | 3 WIRE<br>PUR - 0.3 MT - M8 CONNECTOR |
| Switching logic                  | N.O.                         |                                       |                               |                                       |
| Sensor type                      | REED                         | REED                                  | PNP - HALL                    | PNP - HALL                            |
| Voltage Range                    | 5-120 V AC/DC                | 5-120 V AC/DC                         | 10-30 V DC                    | 10-30 V DC                            |
| Max current at 25°C (77 °F)      | 100 mA                       |                                       |                               |                                       |
| Max power/Resistive load         | 10 W                         | 10 W                                  | -                             | -                                     |
| Max voltage drop                 | < 5 V                        | < 5 V                                 | < 2.5 V                       | < 2.5 V                               |
| Output status indicator          | YELLOW LED                   |                                       |                               |                                       |
| Response time                    | 0.5 ms max                   | 0.5 ms max                            | -                             | -                                     |
| Decay time                       | 0.1 ms max                   | 0.1 ms max                            | < 30 ms                       | < 30 ms                               |
| Electric life (resistive load)   | 10 <sup>7</sup>              | 10 <sup>7</sup>                       | INFINITE                      | INFINITE                              |
| Working temperature              | -20 / + 70 °C<br>-4 / 158 °F |                                       | -25 / + 85 °C<br>-13 / 185 °F |                                       |
| Protection degree                | IP 67                        |                                       |                               |                                       |
| Short circuit                    | NO                           |                                       |                               |                                       |
| Type of mounting to the cylinder | Axial and longitudinal       |                                       |                               |                                       |

**BRACKET FOR DSH TO USE WITH MINI CYLINDERS ISO 6432**

| Part No.       | Ø         | F = Ø   |
|----------------|-----------|---------|
| <b>MFH 012</b> | <b>12</b> | 13.3 mm |
| <b>MFH 016</b> | <b>16</b> | 17.3 mm |
| <b>MFH 020</b> | <b>20</b> | 21.3 mm |
| <b>MFH 025</b> | <b>25</b> | 26.3 mm |





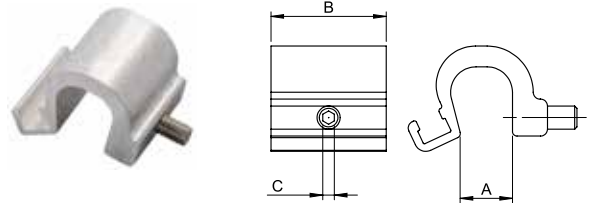
**BRACKET FOR CYLINDERS WITH TIE RODS**



**EXF**

BRACKET FOR DSL - DSH - DT SENSORS

| Part No.      | Ø               | A    | B  | C   |
|---------------|-----------------|------|----|-----|
| <b>EXF032</b> | 32 - 40         | 7,5  | 25 | 2   |
| <b>EXF050</b> | 50 - 63         | 11,3 | 25 | 2,5 |
| <b>EXF080</b> | 80 - 100 - 125  | 15,3 | 25 | 2,5 |
| <b>EXF160</b> | 160 - 200 - 250 | 20   | 25 | 2,5 |



**EXTENSION MAGNETIC FOR SWITCHES**

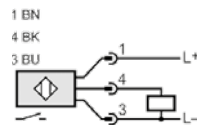
**EXF**

BRACKET FOR DSL - DSH - DT SENSORS

| Part No.           | Lunghezza - Length - Länge - Longueur - Longitud - Comprimento |
|--------------------|--|
| <b>PX 2000 PUR</b> | 2 MT   |
| <b>PX 5000 PUR</b> | 5 MT   |



Circuit diagram



**SENSOR DC ADAPTER**

**DC**

SENSOR DC ADAPTER



**DC 00 001**



**DC 10 001**

**Directive 2014/34/UE (ATEX)**

The Pneumatic Cylinders: Cartridge, Mini Cylinders ISO 6432, Stainless steel Mini Cylinders, A95, Compact (Q - W), Short Stroke (B), Series X ISO 15552, Series E ISO 6431, Twin-piston rod Series NHA ISO 15552 and Series P ISO 15552 show the following features:





**II 2 GD c T6 -20°C<Tamb<80°C**

**II 2 GD:** Device for surface installations (II = do not use device in mining) with presence of gas, vapors of powders of category 2 (equipment with high safety factor since it excludes danger of explosion, even in case of damage; it can be used in areas with possible explosive environments).

**c:** Devices are constructively safe

**T6 – 10°C<Tamb<60°C:** Surface temperature class and additional marking for T usage environment.



|    |               | <b>TECHNICKÁ INŠPEKCIA, a.s.</b><br><b>CEOC</b><br>INTERNATIONAL   |       |                                     |               |  |  |
|---|---------------|--|-------|-------------------------------------|---------------|--|--|
| <b>SLOVENSKÁ REPUBLIKA</b><br><b>ACKNOWLEDGEMENT OF RECEIPT</b><br><b>no. 564/5/2015</b>  |               |  |       |                                     |               |  |  |
| Technická inšpekcia, a. s.,<br>Trnavská cesta 56, 821 01 Bratislava<br>Notified body: 1354,   |               |  |       |                                     |               |  |  |
| <b>confirms, that Technical File Documentation</b><br>prepared by<br><b>Aignep S.p.A.</b><br><b>Via Don G. Bazzoli 34, 25070 Blone (BS), Italy</b>  |               |  |       |                                     |               |  |  |
| has been received and stored according to the Directive 94/9/EC (ATEX) on<br>equipment and protective systems intended for use in potentially explosive atmospheres   |               |  |       |                                     |               |  |  |
| <b>Scope of Ex Equipment:</b><br><b>Cylinders</b><br>Types: Cartridge Cylinders, Mini Cylinders ISO 6432, Mini Cylinders inox,<br>A95 Cylinders, Compact Cylinders, Short Stroke Cylinders,<br>Cylinders X ISO 15552, Cylinders E ISO 6431,<br>Twin Piston Rod Cylinders NHA ISO 15552, Cylinders P ISO 15552 |               |  |       |                                     |               |  |  |
| Classification:  II 2 GD c T6 - 20°C<Tamb<80°C   |               |  |       |                                     |               |  |  |
| <b>Technical File Documentation</b>   |               |  |       |                                     |               |  |  |
| <table border="1"> <thead> <tr> <th>Doc. no.</th> <th>Issue</th> </tr> </thead> <tbody> <tr> <td>Technical Book According to 94/9/EC</td> <td>10/3/15 Rev.0</td> </tr> </tbody> </table>  |               | Doc. no.   | Issue | Technical Book According to 94/9/EC | 10/3/15 Rev.0 |  |  |
| Doc. no.  | Issue         |  |       |                                     |               |  |  |
| Technical Book According to 94/9/EC   | 10/3/15 Rev.0 |  |       |                                     |               |  |  |
| Technical documentation will be stored for 10 years until March 25 <sup>th</sup> , 2025.  |               |  |       |                                     |               |  |  |
| Bratislava, March 25 <sup>th</sup> , 2015   |               | On behalf of Technická inšpekcia, a.s.<br><br>Ing. Dušan Konický<br>General Director |       |                                     |               |  |  |
|    |               |  |       |                                     |               |  |  |
| <b>271018</b><br>PDOKA1-41  |               |  |       |                                     |               |  |  |

See Instructions and Certificate at:

**WWW.AIGNEP.COM**