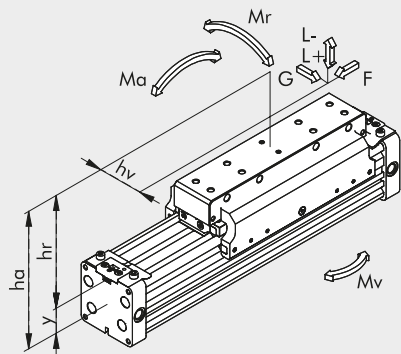




# DIMENSIONING - FORCE AND TORQUE



| Bore | Centre Distance<br>Y | Cushioning stroke<br>[mm] | Actual Force<br>F at 6 bar [N] | G [N] | Max. load<br>L + [N] | Max. load<br>L - [N] | Ma max<br>[Nm] | Mr max<br>[Nm] | Mv max<br>[Nm] |
|------|----------------------|---------------------------|--------------------------------|-------|----------------------|----------------------|----------------|----------------|----------------|
| 50   | 30.4                 | 39                        | 850                            | 1100  | 1400                 | 1100                 | 100            | 40             | 100            |
|      |                      |                           |                                |       |                      |                      |                |                |                |
|      |                      |                           |                                |       |                      |                      |                |                |                |
|      |                      |                           |                                |       |                      |                      |                |                |                |

**N.B.:** When the cylinder is subjected simultaneously to torque and force, keep to the following equations, where the lengths have to be given in metres.

$$Ma = F \times ha \quad Mr = L \times hv + G \times hr \quad Mv = F \times hv$$

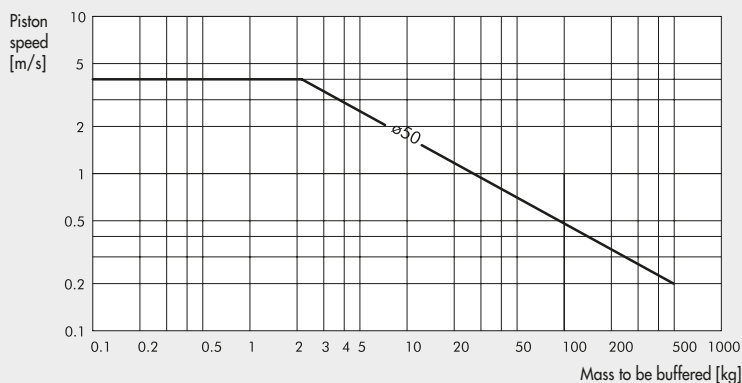
$$\frac{Mv}{Mv_{max}} \leq 1; \quad \frac{L}{L_{max}} \leq 1; \quad \frac{Ma}{Ma_{max}} + \frac{Mr}{Mr_{max}} + 0.22 \times \frac{Mv}{Mv_{max}} + 0.4 \frac{L}{L_{max}} \leq 1$$

# DIAGRAM OF SPEED AND MAXIMUM CUSHIONABLE LOAD

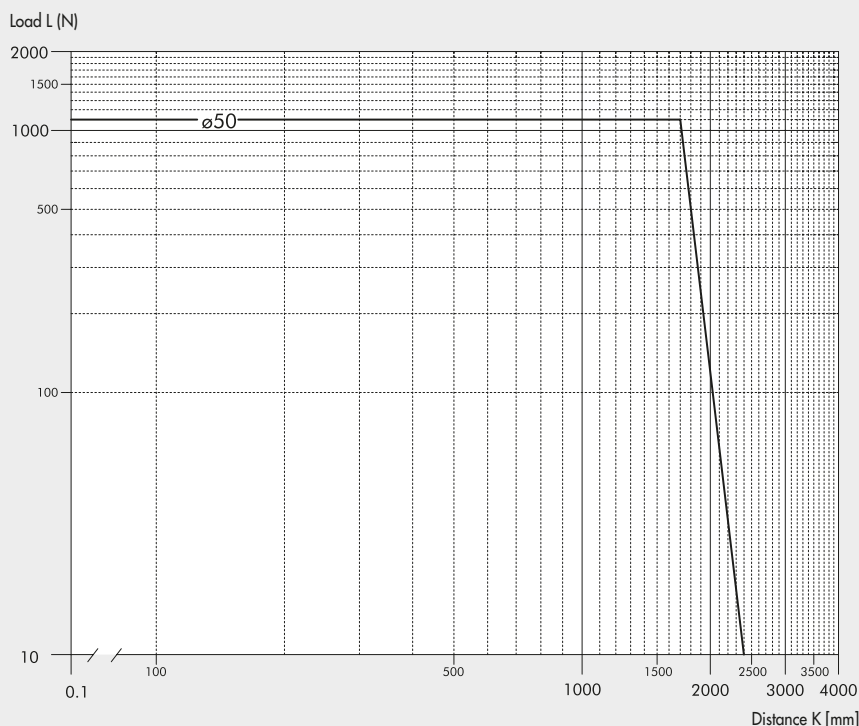
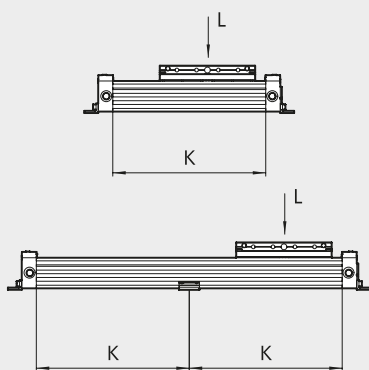
For the cylinder to reach the end-of-stroke position without intense or repeated impact which would damage it, it is necessary to annul the kinetic energy of the moving mass and the work generated.

The maximum cushionable load depends on the traversing speed and the absorption of the air buffer supplied standard with the various cylinders.

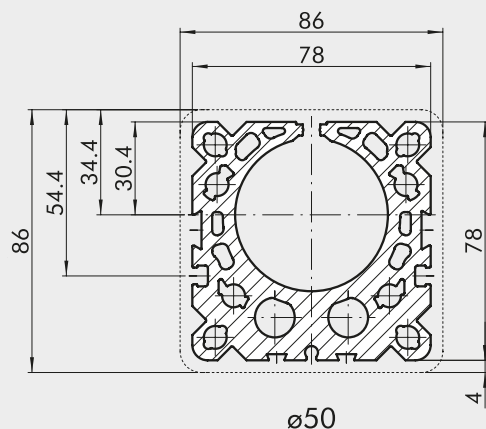
The diagram shows the speeds and cushionable mass for the various diameters at a pressure of 6 bar.



# MAXIMUM LOAD ACCORDING TO THE DISTANCE BETWEEN SUPPORTS



## ACTUATORS



RODLESS CYLINDER WITH "V" GUIDE SERIES PU

Technical drawing of the 277 hydraulic cylinder, showing front, side, and perspective views with dimensions and port locations.

**Front View Dimensions:**

- Overall width: 120
- Port spacing: 6,2
- Port diameter: M8
- Port depth: 11
- Port type: G1/4
- Port location: 20
- Port diameter: 6,2
- Port spacing: 20
- Port diameter: 19
- Port spacing: 135
- Port diameter: 90,5
- Port spacing: 60
- Port diameter: 108

**Side View Dimensions:**

- Overall height: 225
- Port spacing: 6,2
- Port diameter: M8
- Port depth: 11
- Port type: G1/4
- Port location: 20
- Port diameter: 6,2
- Port spacing: 20
- Port diameter: 19
- Port spacing: 135
- Port diameter: 90,5
- Port spacing: 60
- Port diameter: 108

**Perspective View Dimensions:**

- Overall width: 120
- Port spacing: 6,2
- Port diameter: M8
- Port depth: 11
- Port type: G1/4
- Port location: 20
- Port diameter: 6,2
- Port spacing: 20
- Port diameter: 19
- Port spacing: 135
- Port diameter: 90,5
- Port spacing: 60
- Port diameter: 108

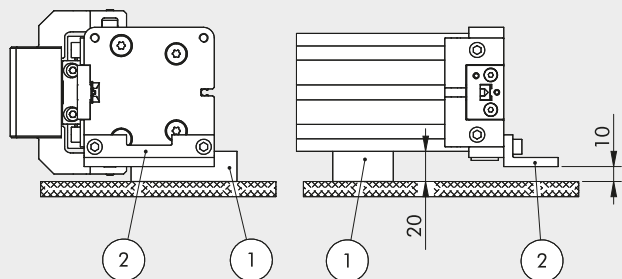
**Port Locations:**

- 1 and 6 feed the left-hand chamber from the left side
- 4 feeds the left-hand chamber from the right side
- 2, 3 and 5 feed the right-hand chamber from the right side

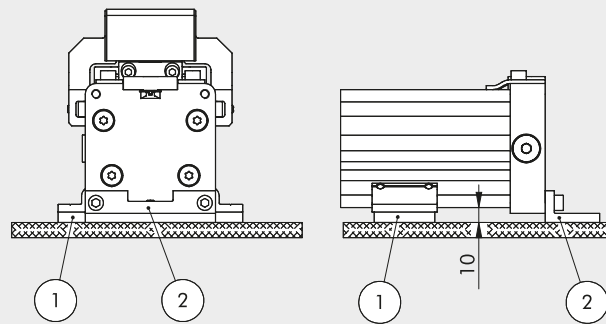
1 and 6 feed the left-hand chamber from the left side  
4 feeds the left-hand chamber from the right side  
2, 3 and 5 feed the right-hand chamber from the right side  
NOTE: 3, 4, 5 and 6 are closed with threaded caps

## ASSEMBLY DIAGRAMS

277 (horizontal)



277/278 (vertical)



### HORIZONTAL LAYOUT

0950504052 Intermediate support code (1)

0950504041 Leg code (2)

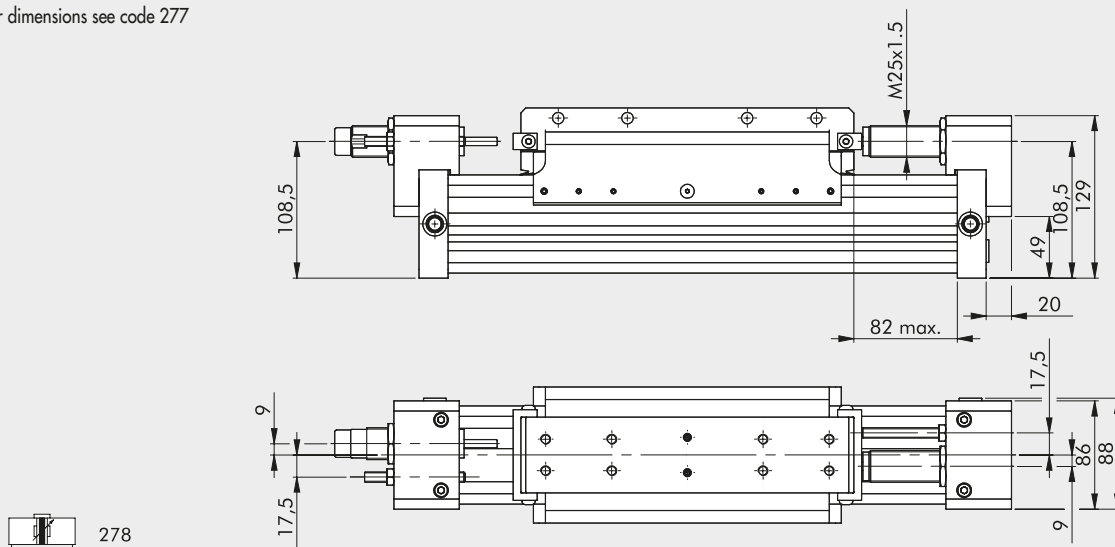
### VERTICAL LAYOUT

0950507038 Intermediate support code (1)

0950504041 Leg code (2)

## DIMENSIONS VERSION WITH ADJUSTABLE LIMIT SWITCH AND SHOCK ABSORBERS

NOTE: For other dimensions see code 277



| Ø  | Cushioning stroke [mm] | Max. cushioned force |              | Max. impact force [N] | Max. thrust force [N] |
|----|------------------------|----------------------|--------------|-----------------------|-----------------------|
|    |                        | For stroke [J]       | For hour [J] |                       |                       |
| 50 | 25                     | 65                   | 70000        | 5550                  | 1500                  |

For graphs to help choose shock absorbers see page A1.173.

## KEY TO CODES

| CYL | 27<br>TYPE          | 7                                                                                                                                                    | 3                                               | 50<br>BORE | 0100<br>STROKE      | C | P<br>GASKETS           |
|-----|---------------------|------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------|------------|---------------------|---|------------------------|
|     | 27 Rodless cylinder | 7 Double acting cushioned magnetic with "V" guide<br>8 Double acting cushioned magnetic with "V" guide + adjustable limit switch and shock absorbers | 3 Magnetic<br>4 No stick-slip<br>5 Non-magnetic | 50         | from 100 to 5600 mm |   | P Polyurethane gaskets |

■ For speeds lower than 0.2 m/s, to prevent surging. Use no-lubricated air only.

# RODLESS CYLINDER WITH BALL RECIRCULATING GUIDE SERIES PU



Series PU rodless cylinders have an internal strip for longitudinal tightness made of polyurethane (PU) with a harmonic steel wire core. This solution gives excellent air tightness values. It is particularly suitable for high-speed and highly cyclical applications, even with long strokes.

The external strip, which merely provides protection against foreign bodies entry, is made of harmonic steel. The anodized aluminium cylinder liner has a T-slot on either side for housing the retracting sensors.

Cylinder control solenoid valves can also be housed in these slots and secured by means of plates and screws (see page A1.54).

A hardened and tempered steel guide is firmly connected to the side of the liner to increase overall performance. This gives the following features:

- very high load capacity with forces acting in any direction and no transmission to the cylinder carriage;
- ball recirculation pads constructed using special technology that makes them very silent during movement of the guide and gives very long maintenance time intervals; lubrication must be performed every 2000 km or once a year, using type 2 grease, preferably with a lithium soap base;
- extra-sturdy carriage support with numerous load fixing holes and centring pin holes;
- stroke range 100-2470 mm with 1 mm intervals.

One version has shock absorbers + adjustable limit switches.

These can also be added at a later stage by purchasing the relevant kit.



| TECHNICAL DATA               |     |                                                                                                          |
|------------------------------|-----|----------------------------------------------------------------------------------------------------------|
| Operating pressure           | bar | 1 to 8                                                                                                   |
|                              | MPa | 0.1 to 0.8                                                                                               |
|                              | psi | 14.5 to 116                                                                                              |
| Temperature range            | °C  | -10 to +80                                                                                               |
|                              | °F  | 14 to 176                                                                                                |
| Fluid                        |     | 50 µm unlubricated filtered air lubrication, if used, must be continuous                                 |
| Bores                        | mm  | Ø 50                                                                                                     |
| Type of construction         |     | Double-acting rodless cylinder with direct transmission system                                           |
| Strokes                      | mm  | from 100 to 2470 with 1 interval                                                                         |
| Threaded ports               |     | G1/4"                                                                                                    |
| Assembly                     |     | As required                                                                                              |
| Recommended speed            | m/s | <2                                                                                                       |
| Max. speed with decelerators | m/s | <2                                                                                                       |
| Weight                       |     | See cylinder "General technical data" at the beginning of the chapter                                    |
| Notes                        |     | For speeds lower than 0.2 m / s to prevent surging, use the version No stick-slip and non-lubricated air |

## COMPONENTS

### For version 275

- ① CYLINDER: see components of rodless cylinders - series PU
- ② GUIDE: hardened steel
- ③ PAD: steel with hardened ball circulation
- ④ SLIDE SUPPORT: anodized aluminium

### For version 276

Besides the details specified above:

- ⑤ END-OF-STROKE STUD PIN: zinc-plated steel, complete with 2 zinc-plated nuts for fixing
- ⑥ SHOCK ABSORBER: burnished steel, complete with 2 zinc-plated or burnished nuts for fixing
- ⑦ DECELERATOR SUPPORT: anodized aluminium
- ⑧ BRACKET: hardened-and-tempered and zinc-plated steel

