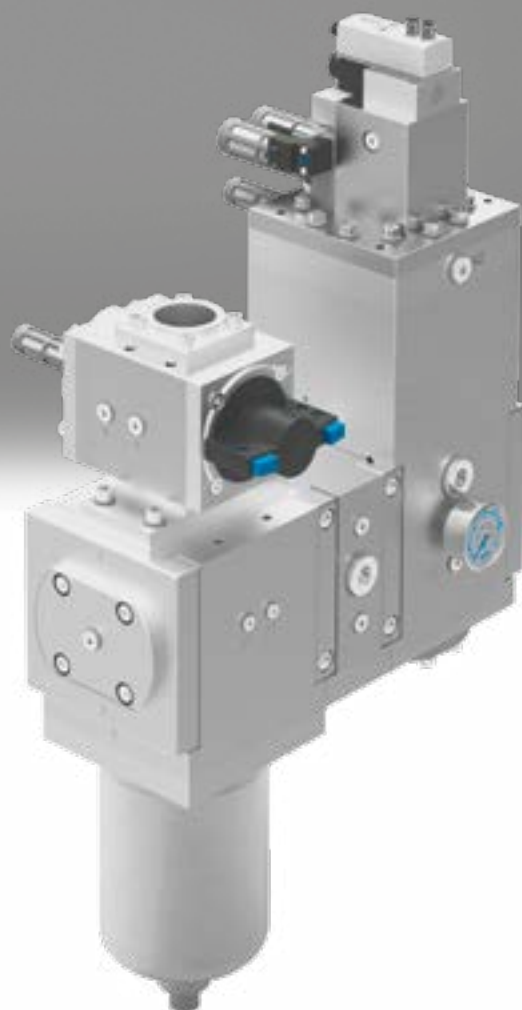
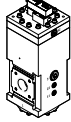
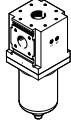





## Pneumatic components for high-pressure applications

**FESTO**



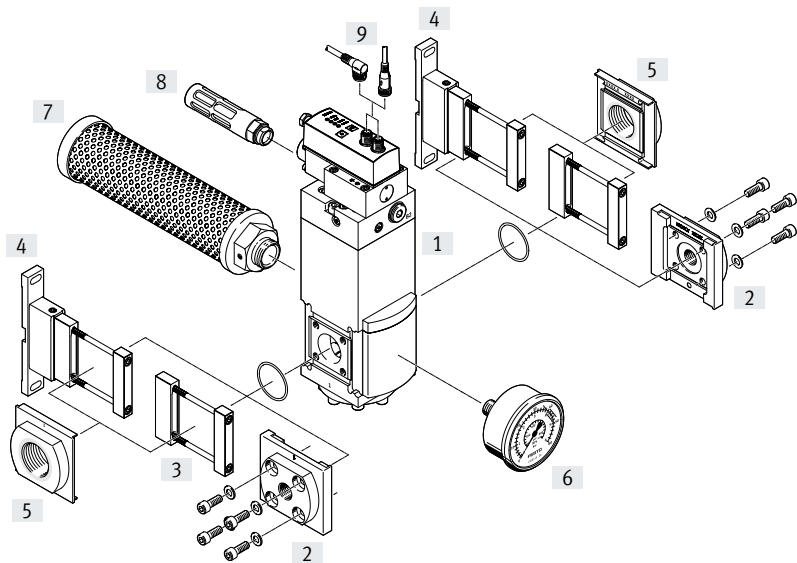
Product range overview

| Function  | Version  | Type | Size  | Pneumatic connection 1, 2        |                                  | → Page |
|---|--|------|---|----------------------------------|----------------------------------|--------|
|   |  |      |   | Direct                           | With connecting plate/flange     |        |
| Service unit components   | <b>Electric pressure regulator</b>   |      |   |                                  |                                  |        |
|   |   | PREL | 90  | –                                | G1/4, G1/2, G3/4, G1, G1 1/4     | 3      |
|   |  |      | 186   | –                                | G1/4, G1 1/4, G1 1/2, G2, G2 1/2 |        |
|   | <b>Micro filter</b>  |      |   |                                  |                                  |        |
|   |   | PFML | 90  | –                                | G1/4, G1/2, G3/4, G1, G1 1/4     | 19     |
|   |  |      | 186   | –                                | G1/4, G1 1/4, G1 1/2, G2, G2 1/2 |        |
|   | <b>On/off valve</b>  |      |   |                                  |                                  |        |
|   |   | PVEL | 124   | –                                | SAE flange                       | 26     |
|   | <b>Branching module</b>  |      |   |                                  |                                  |        |
|   |  | PMBL | 90  | –                                | G1/4, G1/2, G3/4, G1, G1 1/4     | 30     |
| 186   |  |      | –   | G1/4, G1 1/4, G1 1/2, G2, G2 1/2 |                                  |        |
| Valves  | <b>Proportional pressure regulator</b>   |      |   |                                  |                                  |        |
|  | VPPL   | –    | <ul style="list-style-type: none"> <li>• Mounted on electric pressure regulator PREL</li> <li>• G1/4</li> </ul> | –                                | 12                               |        |

## Peripherals overview

### Accessories

Size 90



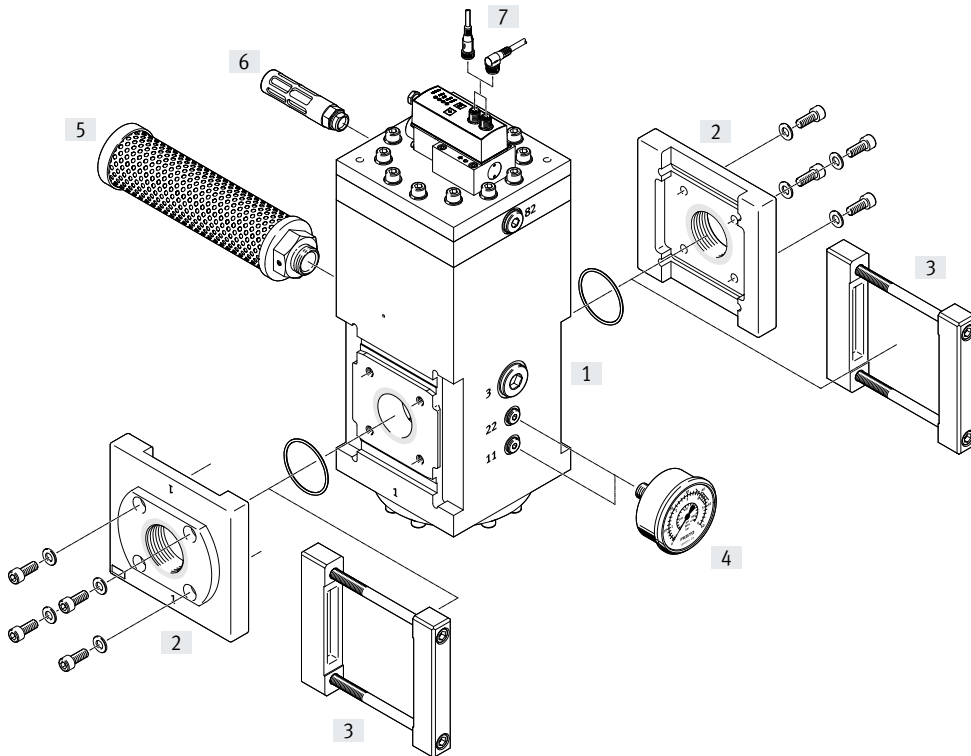
#### Mounting attachments and accessories

|     |                                      | → Page/Internet |
|-----|--------------------------------------|-----------------|
| [1] | Electric pressure regulators<br>PREL | 7               |
| [2] | Connecting plate<br>PAML-CP          | 36              |
| [3] | Module connector<br>PAML-MK          | 39              |
| [4] | Mounting bracket<br>PAML-MB          | 41              |
| [5] | Connecting plate<br>PAML-CP...-G114  | 36              |
| [6] | Pressure gauge<br>PAGL               | 43              |
| [7] | Silencer<br>U-G1-HD-SA               | On request      |
| [8] | Silencer<br>U-3/8-B                  | 45              |
| [9] | Connecting cable<br>NEBU-M12         | 45              |

## Peripherals overview

### Accessories

Size 186



#### Mounting attachments and accessories

|     |                                      | → Page/Internet |
|-----|--------------------------------------|-----------------|
| [1] | Electric pressure regulators<br>PREL | 7               |
| [2] | Connecting plate<br>PAML-CP          | 36              |
| [3] | Module connector<br>PAML-MK          | 39              |
| [4] | Pressure gauge<br>PAGL               | 43              |
| [5] | Silencer<br>U-G1-HD-SA               | On request      |
| [6] | Silencer<br>U-1/2-B                  | 45              |
| [7] | Connecting cable<br>NEBU-M12         | 45              |

## Type codes

|      |                             |  |
|------|-----------------------------|--|
| 001  | Series                      |  |
| PREL | Electric pressure regulator |  |

|     |      |  |
|-----|------|--|
| 002 | Size |  |
| 90  | 90   |  |

|     |                            |  |
|-----|----------------------------|--|
| 003 | Pressure application range |  |
| HP3 | Up to 50 bar               |  |

|     |                                      |  |
|-----|--------------------------------------|--|
| 004 | Setpoint input for individual valves |  |
| V1  | 0 ... 10 V                           |  |
| A4  | 4 ... 20 mA                          |  |

|     |                     |  |
|-----|---------------------|--|
| 005 | Electrical output 1 |  |
| V   | 0 ... 10 V          |  |
| A   | 4 ... 20 mA         |  |

|     |                           |  |
|-----|---------------------------|--|
| 006 | Pressure regulation range |  |
| 20  | Up to 20 bar              |  |
| 40  | Up to 40 bar              |  |

|     |                |  |
|-----|----------------|--|
| 007 | Regulator type |  |
| C   | Piloted        |  |

|     |  |  |
|-----|--|--|
| 008 | Regulator exhausting                                   |  |
| F   | Integrated return flow function with secondary exhaust |  |

|     |                    |  |
|-----|--------------------|--|
| 009 | Control element    |  |
| X   | Proportional valve |  |

|     |                  |  |
|-----|------------------|--|
| 010 | Overall accuracy |  |
| S1  | 1%               |  |
| S2  | 2%               |  |

|     |           |  |
|-----|-----------|--|
| 011 | Variant   |  |
| 2   | Variant 2 |  |
| 3   | Variant 3 |  |
| 4   | Variant 4 |  |
| 5   | Variant 5 |  |
| 8   | Variant 8 |  |

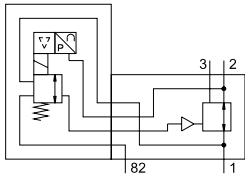
## Type codes



| 001  | Series                               |
|------|--------------------------------------|
| PREL | Electric pressure regulator          |
| 002  | Size                                 |
| 186  | 186                                  |
| 003  | Pressure application range           |
| HP3  | Up to 50 bar                         |
| 004  | Setpoint input for individual valves |
| V1   | 0 ... 10 V                           |
| A4   | 4 ... 20 mA                          |
| 005  | Electrical output 1                  |
| V    | 0 ... 10 V                           |
| A    | 4 ... 20 mA                          |

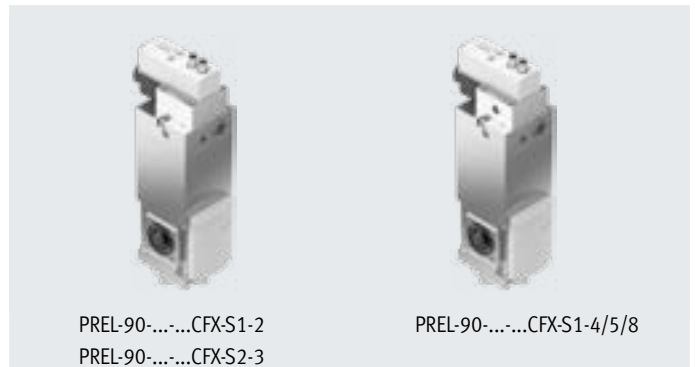
| 006 | Pressure regulation range                              |
|-----|--|
| 40  | Up to 40 bar   |
| 007 | Regulator type   |
| C   | Piloted  |
| 008 | Regulator exhausting                                   |
| F   | Integrated return flow function with secondary exhaust |
| 009 | Control element  |
| X   | Proportional valve                                     |
| 010 | Variant  |
| 1   | Variant 1  |

## Datasheet

Function  
PREL-90/186-...-...CFX, proportional valve




-  - Temperature range  
+5 ... +50°C
-  - Operating pressure  
0 ... 50 bar



The output pressure of the electric pressure regulator PREL is determined by the proportional pressure regulator VPPL via an integrated pressure sensor and compared internally to the setpoint value. In case of deviations, the VPPL controls the regulator of the PREL until the output

pressure reaches the setpoint value. In the initial position (no setpoint specification), the output pressure is reduced with the vent seat fully open.

- Slow pressure rise from 0.6 bar/s in the case of a setpoint value specification up to 8 bar, then 4.4 bar/s
- Connection options for pressure gauge on the front and the rear, one each for the operating and output pressure

 **Note**  
The electric pressure regulator PREL can only be operated together with the proportional pressure regulator VPPL. The technical data for the proportional pressure regulator VPPL can be found from page 12 onwards.

| General technical data          |   |            |
|---------------------------------|---|------------|
| Size                            | 90  | 186        |
| Nominal width DN                | 24  | 45         |
| Pneumatic connection 3          | G1  |            |
| Pneumatic connection 11, 22     | G1/4  |            |
| Pneumatic connection 82         | G3/8  | G1/2       |
| Actuation type                  | Electrical  |            |
| Design                          | Electrically adjustable pressure regulator  |            |
| Regulator function              | Constant output pressure with primary pressure compensation and secondary venting |            |
| Type of mounting                | On service unit<br>With accessories   |            |
| Mounting position               | Vertical  |            |
| Pressure regulation range [bar] | 0.5 ... 20 <sup>1)</sup>  | –          |
|                                 | 0.6 ... 40 <sup>2)</sup>  | 0.4 ... 40 |
|                                 | 2 ... 40 <sup>2)</sup>  | –          |
| Max. pressure hysteresis [bar]  | –   | 0.1        |

- 1) Due to the design, the output pressure is limited to 17.5 bar.  
2) Due to the design, the output pressure is limited to 37.5 bar.

## Datasheet

| Electrical data              |        | PREL...-V1-A             | PREL...-V1-V | PREL...-A4-A          |
|------------------------------|--------|--------------------------|--------------|-----------------------|
| Electrical connection        | IN     | M12 plug, 5-pin, A-coded |              |                       |
|                              | OUT    | M12 plug, 5-pin, A-coded |              |                       |
| Nominal operating voltage    | [V DC] | 24                       |              |                       |
| Analogue input signal range  | [V]    | 0 ... 10                 | 0 ... 10     | –                     |
|                              | [mA]   | –                        | –            | 4 ... 20              |
| Analogue output signal range | [V]    | –                        | 0 ... 10     | –                     |
|                              | [mA]   | 4 ... 20                 | –            | 4 ... 20              |
| Setpoint/actual values       | [V]    | Voltage type 0 ... 10    |              | –                     |
|                              | [mA]   | –                        | –            | Current type 4 ... 20 |

| Operating and environmental conditions                     |       |   |
|--|-------|---|
| Operating pressure   | [bar] | 0 ... 50                                  |
| Operating medium   |       | Compressed air to ISO 8573-1:2010 [7:4:4] |
|  |       | Inert gases                               |
| LABS (PWIS) conformity                                     |       | VDMA24364 zone III                        |
| Ambient temperature  | [°C]  | +5 ... +50                                |
| Temperature of medium                                      | [°C]  | +5 ... +50                                |
| Storage temperature  | [°C]  | –10 ... +60                               |
| Corrosion resistance class CRC <sup>1)</sup>               |       | 2   |
| CE marking (see declaration of conformity) <sup>2)</sup>   |       | To EU Pressure Equipment Directive        |
| UKCA marking (see declaration of conformity) <sup>2)</sup> |       | UK regulations for pressure equipment     |
| Food-safe <sup>2)</sup>                                    |       | See supplementary material information    |
| Certification  |       | Special Equipment Type Test Certification |

1) Corrosion resistance class CRC 2 to Festo standard FN 940070

Moderate corrosion stress. Indoor applications in which condensation can occur. External visible parts with primarily decorative surface requirements that are in direct contact with the surrounding industrial environment.

2) Additional information: [www.festo.com/catalogue/prel](http://www.festo.com/catalogue/prel) → Support/Downloads.

| Weight [g]                  |  |              |
|-----------------------------|--|--------------|
| Size                        |  | 90   186     |
| Electric pressure regulator |  | 6100   37100 |

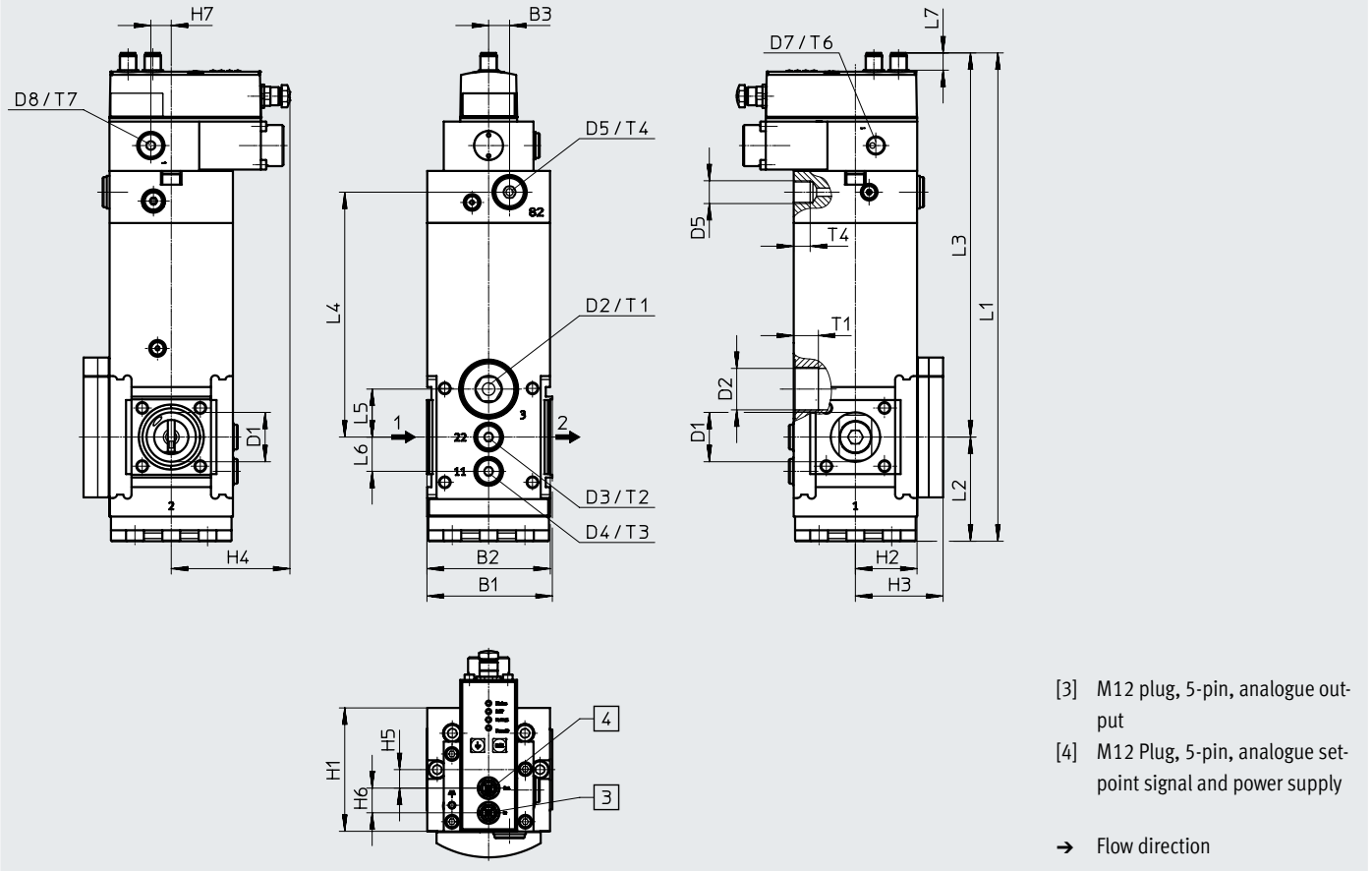
| Materials         |  |  |
|-------------------|--|--|
| Housing           |  | Anodised aluminium                           |
| Spring            |  | Spring steel                                 |
| Bottom cover      |  | Anodised aluminium                           |
| Seals             |  | NBR  |
| Note on materials |  | RoHS-compliant                               |
|                   |  | Contains paint-wetting impairment substances |



Datasheet

Dimensions – Size 90

Download CAD data → [www.festo.com](http://www.festo.com)



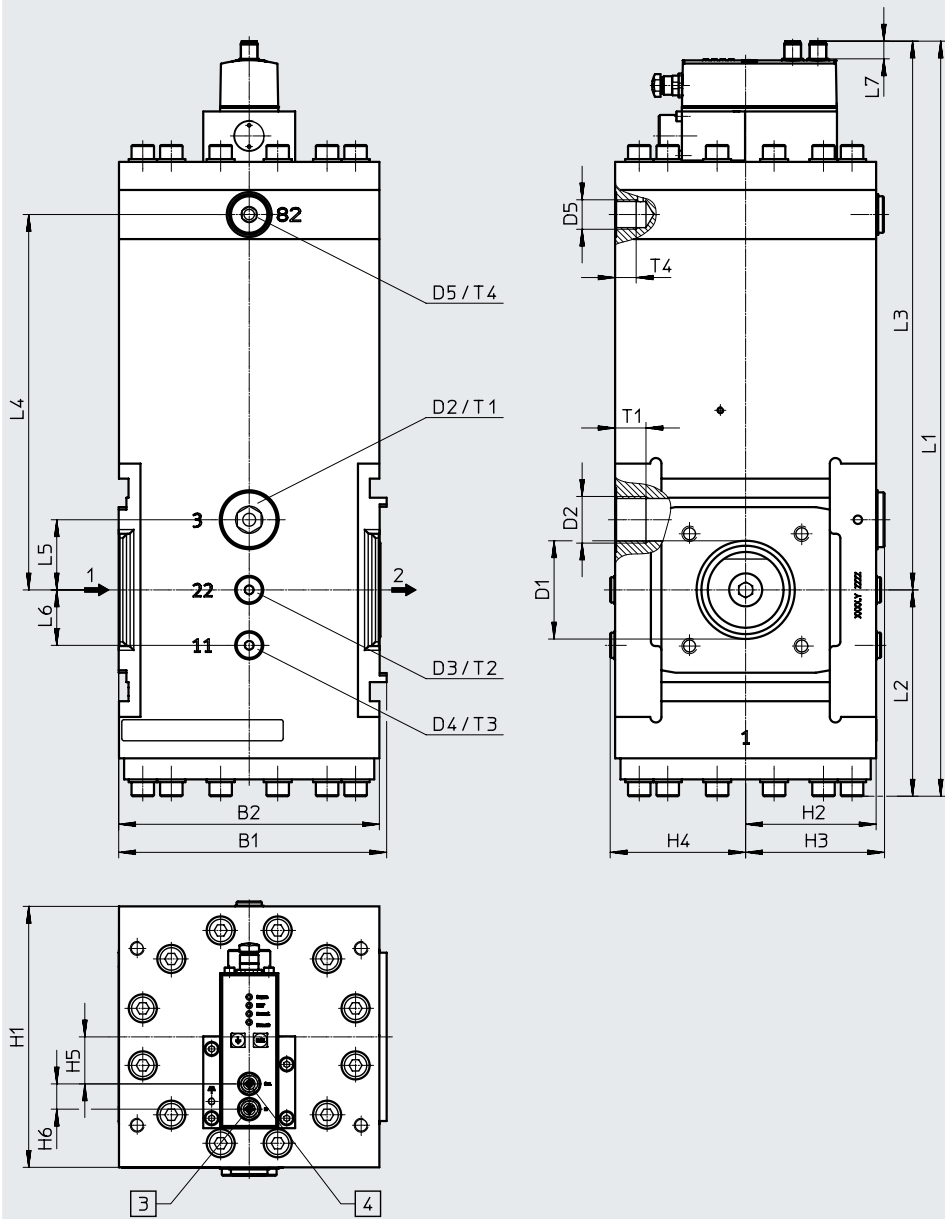
| Type                     | B1   | B2 | B3    | D1<br>∅ | D2 | D3   | D4   | D5   | D7   | D8   | H1 | H2  | H3  | H4  | H5   | H6 | H7    |
|--------------------------|------|----|-------|---------|----|------|------|------|------|------|----|-----|-----|-----|------|----|-------|
| PREL-90-...CFX-...-2/3   | 91.5 | 90 | ~15.3 | 36      | G1 | G1/4 | G1/4 | G3/8 | -    | -    | 90 | ~45 | ~64 | ~87 | 13.5 | 18 | ~14.9 |
| PREL-90-...CFX-...-4/5/8 |      |    |       |         |    |      |      |      | G1/4 | G1/4 |    |     |     |     |      |    |       |

| Type                     | L1   | L2 | L3   | L4   | L5  | L6  | L7    | T1 | T2 | T3 | T4 | T6 | T7 |
|--------------------------|------|----|------|------|-----|-----|-------|----|----|----|----|----|----|
| PREL-90-...CFX-...-2/3   | ~356 | 76 | ~280 | ~179 | ~35 | ~25 | ~12.6 | 18 | 12 | 12 | 12 | -  | -  |
| PREL-90-...CFX-...-4/5/8 |      |    |      |      |     |     |       |    |    |    |    | 12 | 12 |

Datasheet

Dimensions – Size 186

Download CAD data → [www.festo.com](http://www.festo.com)



- [3] M12 plug, 5-pin, analogue output
- [4] M12 Plug, 5-pin, analogue set-point signal and power supply

→ Flow direction

| Type                 | B1  | B2  | D1<br>∅ | D2 | D3   | D4   | D5   | H1  | H2 | H3 | H4   | H5   | H6 |
|----------------------|-----|-----|---------|----|------|------|------|-----|----|----|------|------|----|
| PREL-186-...-40CFX-1 | 191 | 186 | 70      | G1 | G1/4 | G1/4 | G1/2 | 186 | 93 | 99 | 96.5 | 33.5 | 18 |

| Type                 | L1   | L2   | L3   | L4    | L5 | L6   | L7    | T1 | T2 | T3 | T4 |
|----------------------|------|------|------|-------|----|------|-------|----|----|----|----|
| PREL-186-...-40CFX-1 | ~537 | ~147 | ~390 | 267.5 | 50 | 39.5 | ~12.6 | 18 | 12 | 12 | 14 |

## Datasheet

**Ordering data – Size 90**

With proportional pressure regulator VPPL

| Pressure regulation range [bar]   | Setpoint input (input) | Actual value (output) | Part no. | Type                        |
|---|------------------------|-----------------------|----------|-----------------------------|
| <b>Without external auxiliary pilot air</b>                                   |                        |                       |          |                             |
| 0.5 ... 20 <sup>1)</sup>  | 0 ... 10 V             | 4 ... 20 mA           | 1709128  | PREL-90-HP3-V1-A-20CFX-S1-2 |
|   |                        | 0 ... 10 V            | 1709129  | PREL-90-HP3-V1-V-20CFX-S1-2 |
|   | 4 ... 20 mA            | 4 ... 20 mA           | 1709130  | PREL-90-HP3-A4-A-20CFX-S1-2 |
| 0.6 ... 40 <sup>2)</sup>  | 0 ... 10 V             | 4 ... 20 mA           | 1709131  | PREL-90-HP3-V1-A-40CFX-S2-3 |
|   |                        | 0 ... 10 V            | 1709132  | PREL-90-HP3-V1-V-40CFX-S2-3 |
|   | 4 ... 20 mA            | 4 ... 20 mA           | 1709133  | PREL-90-HP3-A4-A-40CFX-S2-3 |
| <b>With external auxiliary pilot air</b>                                      |                        |                       |          |                             |
| 0.5 ... 20 <sup>1)</sup>  | 0 ... 10 V             | 4 ... 20 mA           | 1709134  | PREL-90-HP3-V1-A-20CFX-S1-4 |
|   |                        | 0 ... 10 V            | 1709135  | PREL-90-HP3-V1-V-20CFX-S1-4 |
|   | 4 ... 20 mA            | 4 ... 20 mA           | 1709136  | PREL-90-HP3-A4-A-20CFX-S1-4 |
| <b>With external auxiliary pilot air, with 2 bar offset in setpoint input</b> |                        |                       |          |                             |
| 2 ... 40 <sup>2)</sup>  | 0 ... 10 V             | 4 ... 20 mA           | 1709137  | PREL-90-HP3-V1-A-40CFX-S1-5 |
| <b>With external auxiliary pilot air</b>                                      |                        |                       |          |                             |
| 0.6 ... 40 <sup>2)</sup>  | 0 ... 10 V             | 4 ... 20 mA           | 1910439  | PREL-90-HP3-V1-A-40CFX-S1-8 |

1) Due to the design, the output pressure is limited to 17.5 bar.

2) Due to the design, the output pressure is limited to 37.5 bar.

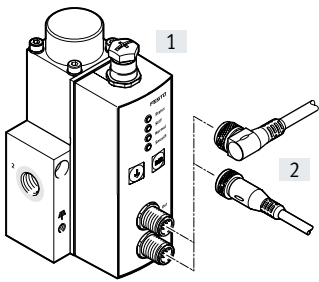
**Ordering data – Size 186**

With proportional pressure regulator VPPL

| Pressure regulation range [bar]             | Setpoint input (input) | Actual value (output) | Part no. | Type                      |
|---|------------------------|-----------------------|----------|---------------------------|
| <b>Without external auxiliary pilot air</b> |                        |                       |          |                           |
| 0.4 ... 40                                  | 0 ... 10 V             | 4 ... 20 mA           | 1709211  | PREL-186-HP3-V1-A-40CFX-1 |
|   |                        | 0 ... 10 V            | 1709212  | PREL-186-HP3-V1-V-40CFX-1 |
|   | 4 ... 20 mA            | 4 ... 20 mA           | 1709213  | PREL-186-HP3-A4-A-40CFX-1 |

## Peripherals overview and type codes

### Accessories



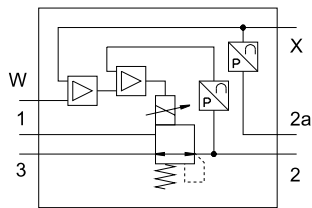
|     |  | → Page/Internet |
|-----|--|-----------------|
| [1] | Proportional pressure regulators<br>VPPL | 13              |
| [2] | Connecting cable<br>NEBU-M12             | 45              |



### Type codes

|            |   |  |
|------------|---|--|
| <b>001</b> | <b>Series</b>   |  |
| VPPL       | Proportional pressure regulator                                 |  |
| <b>002</b> | <b>Nominal width [mm]</b>                                       |  |
| 3          | 3   |  |
| <b>003</b> | <b>Mounting method</b>  |  |
|            | Standard  |  |
| Q          | Flange  |  |
| <b>004</b> | <b>Directional control valve type</b>                           |  |
|            | None  |  |
| L          | In-line valve   |  |
| <b>005</b> | <b>Valve function</b>   |  |
| 3          | 3/3-way valve, normally closed                                  |  |
| <b>006</b> | <b>Pneumatic connection</b>                                     |  |
|            | Flange  |  |
| G14        | G1/4  |  |
| Z          | Flange/thread combination for connection 1 (external pilot air) |  |
| <b>007</b> | <b>Lower pressure value of control range</b>                    |  |
| 0L         | 0 bar   |  |
| 2L         | 2 bar   |  |

|            |  |  |
|------------|--|--|
| <b>008</b> | <b>Upper pressure value of control range</b> |  |
| 20H        | 20 bar                                       |  |
| 40H        | 40 bar                                       |  |
| <b>009</b> | <b>Setpoint input for individual valves</b>  |  |
| A4         | 4 ... 20 mA                                  |  |
| V1         | 0 ... 10 V                                   |  |
| <b>010</b> | <b>Electrical output 1</b>                   |  |
| A          | 4 ... 20 mA                                  |  |
| V          | 0 ... 10 V                                   |  |
| <b>011</b> | <b>Overall accuracy</b>                      |  |
| S1         | 1 %  |  |
| <b>012</b> | <b>Variant</b>                               |  |
| 1          | Variant 1                                    |  |
| 2          | Variant 2                                    |  |
| 3          | Variant 3                                    |  |
| 4          | Variant 4                                    |  |
| 5          | Variant 5                                    |  |
| 6          | Variant 6                                    |  |
| 7          | Variant 7                                    |  |
| 8          | Variant 8                                    |  |

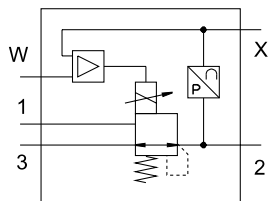
## Datasheet

 Function  
 Flanged valve


-  - Temperature range  
+5 ... +50°C
-  - Operating pressure  
0 ... 50 bar



In-line valve




The output pressure of the electric pressure regulator PREL is determined by the proportional pressure regulator VPPL via an integrated pressure sensor and compared internally to the set-point value. In case of deviations, the VPPL controls the regulator of the PREL until the output pressure reaches the setpoint value.

In the initial position (no setpoint specification), the output pressure is reduced with the vent seat fully open. The proportional pressure regulator VPPL is available in three versions:

- Flanged valve VPPL-3Q-3
- Flanged valve with external pilot air supply VPPL-3Q-3-Z
- In-line valve VPPL-3L-3

 **Note**

The flanged valve with and without external pilot air supply can only be operated together with the electric pressure regulator PREL.

 **Safety instructions**

Safety position for VPPL: if the power supply cable is interrupted, the outlet pressure drops to 0 bar.

**General technical data**

| Design                                       | Flanged valve VPPL-3Q-3                       |            | Flanged valve with external pilot air supply VPPL-3Q-3-Z |              |              | In-line valve VPPL-3L-3 |            |      |
|--|---|------------|--|--------------|--------------|-------------------------|------------|------|
|  | -0L20H  | -0L40H     | -0L20H   | -0L40H       | -2L40H       | -G14-0L20H              | -G14-0L40H |      |
| Type   |   |            |  |              |              |                         |            |      |
| Nominal size pressurisation/<br>exhaust [mm] | 3.0   |            |  |              |              |                         |            |      |
| Pneumatic connection 1                       | Flange  | Flange     | Flange, G1/4   | Flange, G1/4 | Flange, G1/4 | G1/4                    | G1/4       |      |
| Pneumatic connection 2, 3                    | Flange  | Flange     | Flange   | Flange       | Flange       | G1/4                    | G1/4       |      |
| Actuation type                               | Electrical                                    |            |  |              |              |                         |            |      |
| Design                                       | Directly actuated piston regulator            |            |  |              |              |                         |            |      |
| Type of mounting                             | With through-hole                             |            |  |              |              |                         |            |      |
| Mounting position                            | Any, preferably upright                       |            |  |              |              |                         |            |      |
| Pressure regulation range [bar]              | 0.2 ... 20                                    | 0.4 ... 40 | 0.2 ... 20   | 0.4 ... 40   | 2 ... 40     | 0.2 ... 20              | 0.4 ... 40 |      |
| Max. pressure hysteresis                     | [MPa]   | 0.01       | 0.04   | 0.01         | 0.04         | 0.04                    | 0.01       | 0.04 |
|  | [bar]   | 0.1        | 0.4  | 0.1          | 0.4          | 0.4                     | 0.1        | 0.4  |
|  | [psi]   | 1.45       | 5.8  | 1.45         | 5.8          | 5.8                     | 1.45       | 5.8  |
| Valve function                               | 3-way proportional pressure regulator, closed |            |  |              |              |                         |            |      |
| Exhaust air function                         | Cannot be throttled                           |            |  |              |              |                         |            |      |
| Reset method                                 | Mechanical spring                             |            |  |              |              |                         |            |      |
| Type of control                              | Direct  |            |  |              |              |                         |            |      |
| Sealing principle                            | Soft  |            |  |              |              |                         |            |      |

**Characteristic flow rate values**

| Standard nominal flow rate $q_{nN}^{1)}$ [l/min] |      |
|--|------|
| In main flow direction 1 → 2                     | 245  |
| in flow direction 2 → 3                          | 282  |
| C value [l/s*bar]                                |      |
| In main flow direction 1 → 2                     | 0.8  |
| b value  |      |
| In main flow direction 1 → 2                     | 0.25 |

 1) Measured at  $p_1 = 6$  bar and  $p_2 = 5$  bar,  $\Delta p = 1$  bar

## Datasheet

| Electrical data   |        | VPPL...-V1-A                   | VPPL...-V1-V | VPPL...-A4-A          |
|---|--------|--------------------------------|--------------|-----------------------|
| Electrical connection                                     | IN     | M12 plug, 5-pin, A-coded       |              |                       |
|   | OUT    | M12 plug, 5-pin, A-coded       |              |                       |
| Electrical connection, diagnostic interface <sup>1)</sup> |        | Socket, M12, 5-pin, A-coded    |              |                       |
| Operating voltage range                                   | [V DC] | 21.6 ... 27.6                  |              |                       |
| Analogue input signal range                               | [V]    | 0 ... 10                       | 0 ... 10     | –                     |
|   | [mA]   | –                              | –            | 4 ... 20              |
| Analogue output signal range                              | [V]    | –                              | 0 ... 10     | –                     |
|   | [mA]   | 4 ... 20                       | –            | 4 ... 20              |
| Setpoint/actual values                                    | [V]    | Voltage type 0 ... 10          |              | –                     |
|   | [mA]   | –                              | –            | Current type 4 ... 20 |
| Degree of protection                                      |        | IP65                           |              |                       |
| Duty cycle  | [%]    | 100                            |              |                       |
| Switching time off  | [ms]   | 654                            |              |                       |
| Switching time on   | [ms]   | 428                            |              |                       |
| Reverse polarity protection                               |        | For all electrical connections |              |                       |
| Short circuit current rating                              |        | No                             |              |                       |
| Max. cable length   | [m]    | 30                             |              |                       |
| Display type  |        | LED indicator                  |              |                       |
| Max. electrical power consumption                         | [W]    | 26.7                           |              |                       |
| Residual ripple   | [%]    | 10                             |              |                       |

1) Diagnostics interface covered with a protective cap, for use only by Festo service staff.

| Accuracy                |        | VPPL...-0L20H | VPPL...-0L40H/2L40H |
|-------------------------|--------|---------------|---------------------|
| Linearity error         | [% FS] | ±0.5          | ±1                  |
| Temperature coefficient | [%/K]  | 0.04          |                     |
| Repetition accuracy     | [% FS] | ±0.5          | ±1                  |

| Operating and environmental conditions   |   |
|--|---|
| Operating pressure   | [bar] 0 ... 50                            |
| Operating medium   | Compressed air to ISO 8573-1:2010 [7:4:4] |
|  | Inert gases                               |
| Note on the operating/pilot medium Lubricated operation not possible             |   |
| Ambient temperature  | [°C] +5 ... +50                           |
| Temperature of medium  | [°C] +5 ... +50                           |
| Storage temperature  | [°C] –10 ... +60                          |
| Corrosion resistance class CRC <sup>1)</sup> 2                                   |   |
| CE marking, (see declaration of conformity) <sup>2)</sup> To EU EMC Directive    |   |
| UKCA marking (see declaration of conformity) <sup>2)</sup> To UK EMC regulations |   |

1) Corrosion resistance class CRC 2 to Festo standard FN 940070

Moderate corrosion stress. Indoor applications in which condensation can occur. External visible parts with primarily decorative surface requirements that are in direct contact with the surrounding industrial environment.

2) For information about the area of use, see the EC declaration of conformity at: [www.festo.com/catalogue/vppl](http://www.festo.com/catalogue/vppl) → Support/Downloads.

If the devices are subject to usage restrictions in residential, commercial or light-industrial environments, further measures for the reduction of the emitted interference may be necessary.

| Weight [g]                      |      |
|---------------------------------|------|
| Proportional pressure regulator | 1100 |

Datasheet

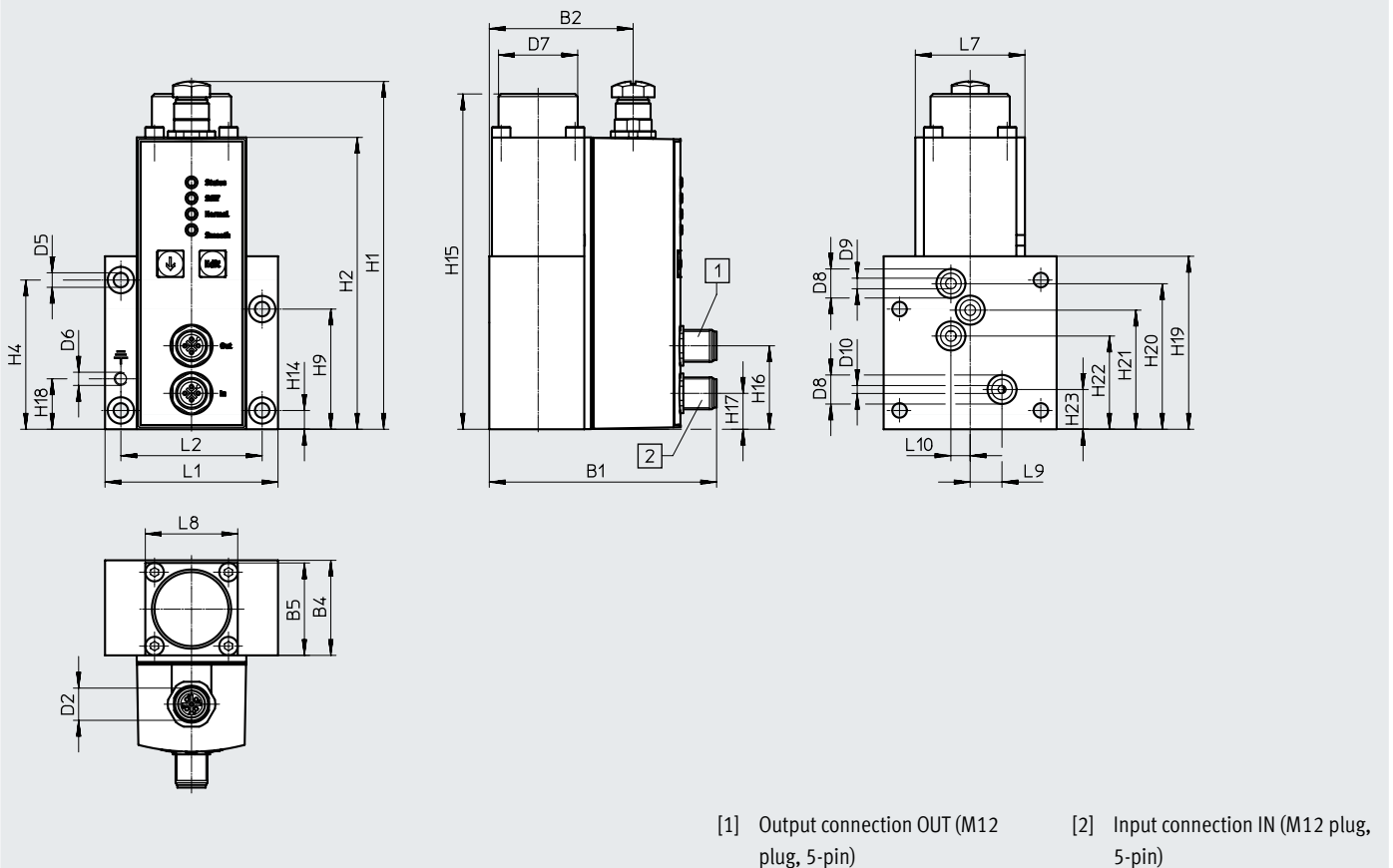
| Materials         |  |
|-------------------|--|
| Housing           | Anodised wrought aluminium alloy             |
| Note on materials | RoHS-compliant                               |
|                   | Contains paint-wetting impairment substances |

| Pin allocation           |     |                                       |  |
|--------------------------|-----|---------------------------------------|--|
| M12 plug, 5-pin, A-coded | Pin | Output connection OUT<br>Actual value | Input connection IN<br>Setpoint value/power supply |
|                          | 1   | Not assigned                          | 24 V DC  |
|                          | 2   | Analogue OUT+ (actual value)          | Analogue IN+ (setpoint value)                      |
|                          | 3   | Not assigned                          | 0 V  |
|                          | 4   | Analogue OUT- (actual value)          | Analogue IN- (setpoint value)                      |
|                          | 5   | Functional earth                      | Functional earth                                   |

Dimensions – Flanged valve

Download CAD data → [www.festo.com](http://www.festo.com)

VPPL-3Q-3



| Type      | B1   | B2   | B4 | B5 | D2  | D5<br>∅ | D6 | D7<br>∅ | D8<br>∅ | D9<br>∅ | D10<br>∅ |
|-----------|------|------|----|----|-----|---------|----|---------|---------|---------|----------|
| VPPL-3Q-3 | 86.1 | 54.5 | 36 | 35 | M12 | 5.5     | M5 | 30      | 11      | 4       | 3        |

| Type      | H1  | H2    | H4   | H9   | H14 | H15 | H16  | H17  | H18  | H19  |
|-----------|-----|-------|------|------|-----|-----|------|------|------|------|
| VPPL-3Q-3 | 132 | 110.5 | 56.5 | 45.5 | 7.1 | 127 | 31.5 | 13.5 | 19.1 | 65.5 |

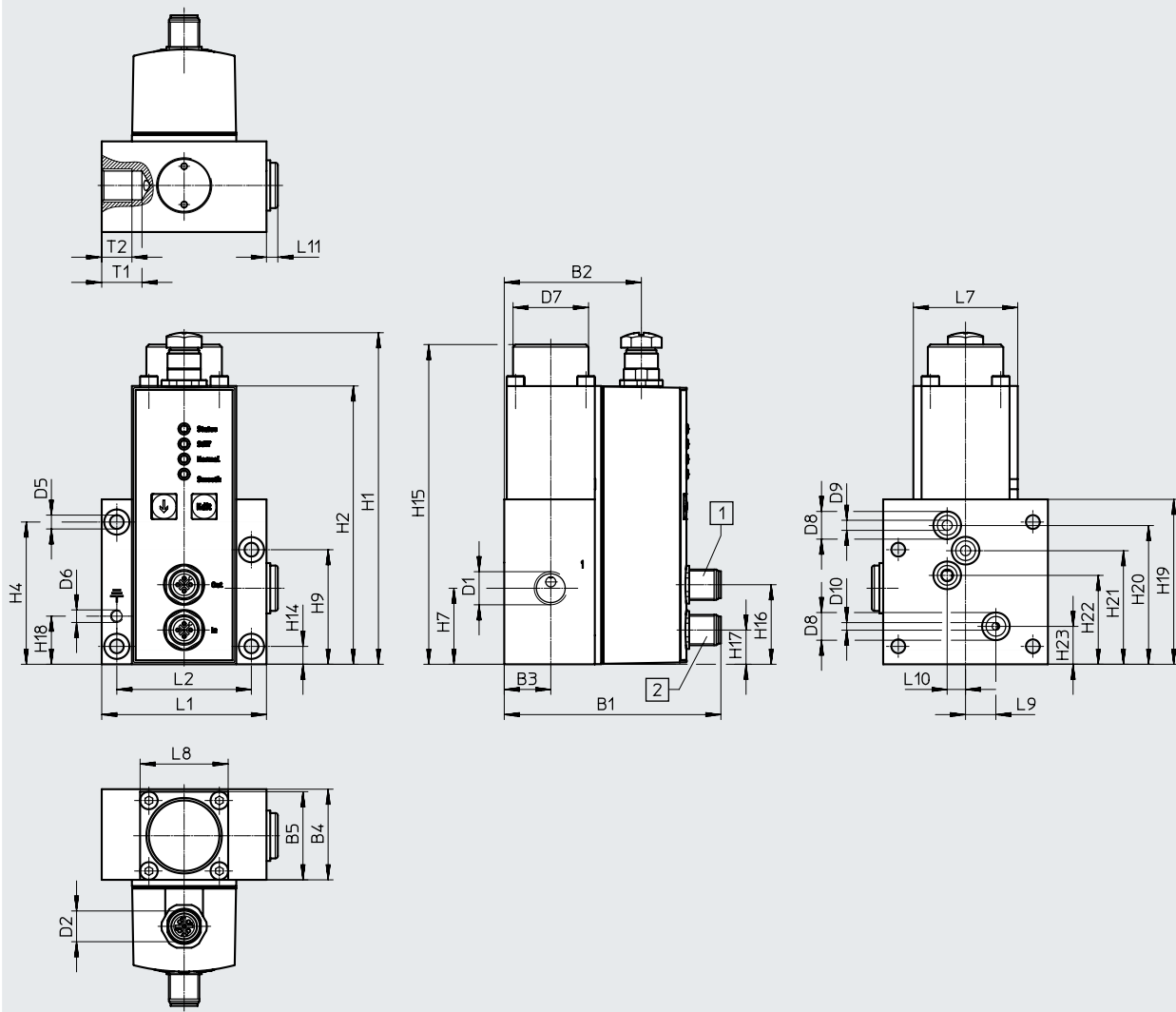
| Type      | H20  | H21  | H22  | H23   | L1   | L2   | L7   | L8 | L9    | L10 |
|-----------|------|------|------|-------|------|------|------|----|-------|-----|
| VPPL-3Q-3 | 55.2 | 45.1 | 35.3 | 15.05 | 65.5 | 53.5 | 41.5 | 35 | 12.05 | 7.3 |

Datasheet

Dimensions – Flanged valve with external pilot air

Download CAD data → [www.festo.com](http://www.festo.com)

VPPL-3Q-3-Z



- [1] Output connection OUT (M12 plug, 5-pin)
- [2] Input connection IN (M12 plug, 5-pin)

| Type        | B1   | B2   | B3   | B4 | B5 | D1   | D2  | D5<br>∅ | D6 | D7<br>∅ | D8<br>∅ | D9<br>∅ | D10<br>∅ |
|-------------|------|------|------|----|----|------|-----|---------|----|---------|---------|---------|----------|
| VPPL-3Q-3-Z | 86.1 | 54.5 | 18.5 | 36 | 35 | G1/4 | M12 | 5.5     | M5 | 30      | 11      | 4       | 3        |

| Type        | H1  | H2    | H4   | H7   | H9   | H14 | H15 | H16  | H17  | H18  | H19  | H20  |
|-------------|-----|-------|------|------|------|-----|-----|------|------|------|------|------|
| VPPL-3Q-3-Z | 132 | 110.5 | 56.5 | 30.2 | 45.5 | 7.1 | 127 | 31.5 | 13.5 | 19.1 | 65.5 | 55.2 |

| Type        | H21  | H22  | H23   | L1   | L2   | L7   | L8 | L9    | L10 | L11 | T1 | T2 |
|-------------|------|------|-------|------|------|------|----|-------|-----|-----|----|----|
| VPPL-3Q-3-Z | 45.1 | 35.3 | 15.05 | 65.5 | 53.5 | 41.5 | 35 | 12.05 | 7.3 | 4.5 | 16 | 12 |

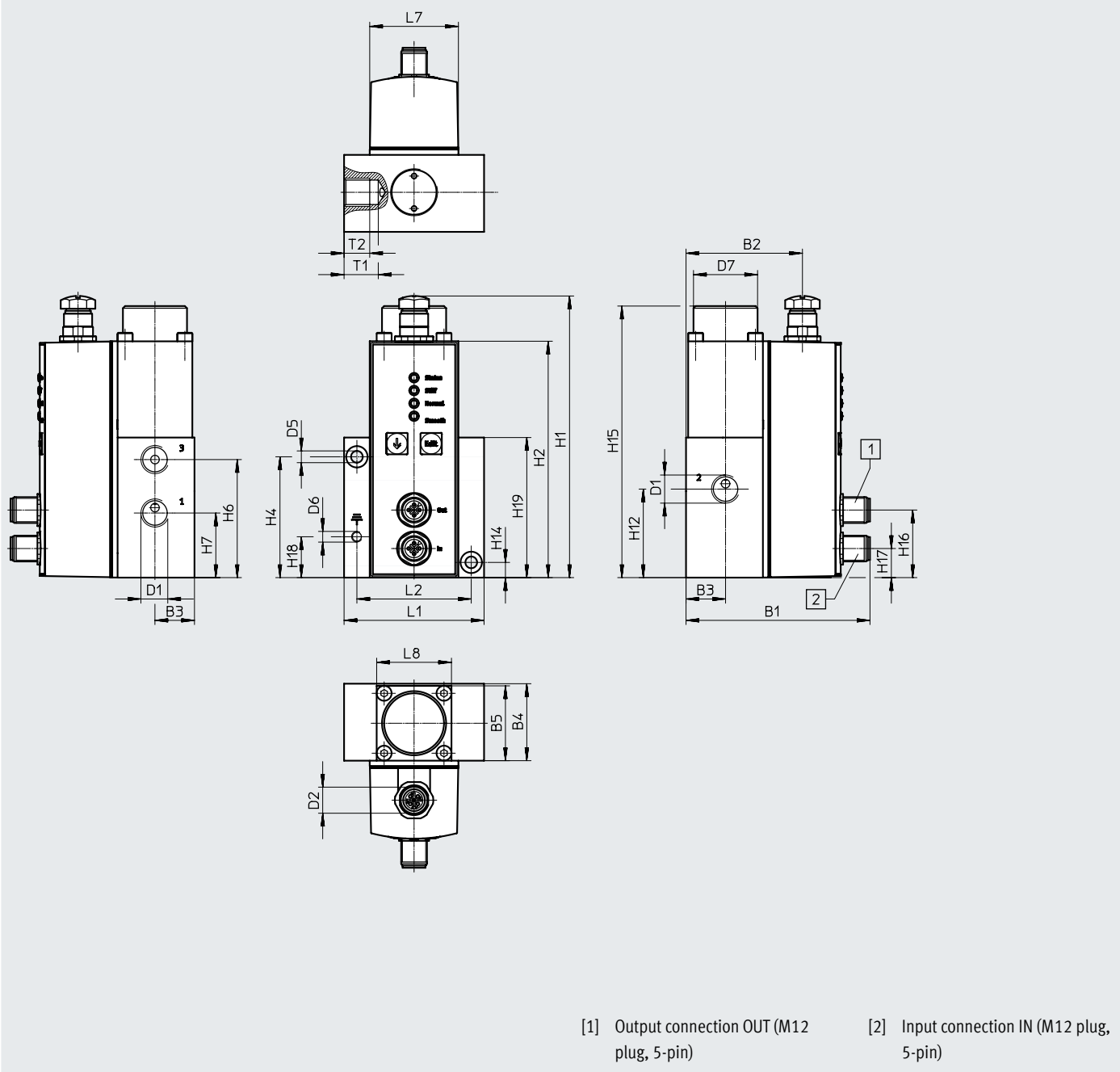


Datasheet

Dimensions – In-line valve

Download CAD data → [www.festo.com](http://www.festo.com)

VPPL-3L-3-G14



| Type          | B1   | B2   | B3   | B4 | B5 | D1   | D2  | D5<br>∅ | D6 | D7<br>∅ |
|---------------|------|------|------|----|----|------|-----|---------|----|---------|
| VPPL-3L-3-G14 | 86.1 | 54.5 | 18.5 | 36 | 35 | G1/4 | M12 | 5.5     | M5 | 30      |

| Type          | H1  | H2    | H4   | H6   | H7   | H12  | H14 | H15 | H16  |
|---------------|-----|-------|------|------|------|------|-----|-----|------|
| VPPL-3L-3-G14 | 132 | 110.5 | 56.5 | 55.2 | 30.2 | 41.4 | 7.1 | 127 | 31.5 |

| Type          | H17  | H18  | H19  | L1   | L2   | L7   | L8 | T1 | T2 |
|---------------|------|------|------|------|------|------|----|----|----|
| VPPL-3L-3-G14 | 13.5 | 19.1 | 65.5 | 65.5 | 53.5 | 41.5 | 35 | 16 | 12 |

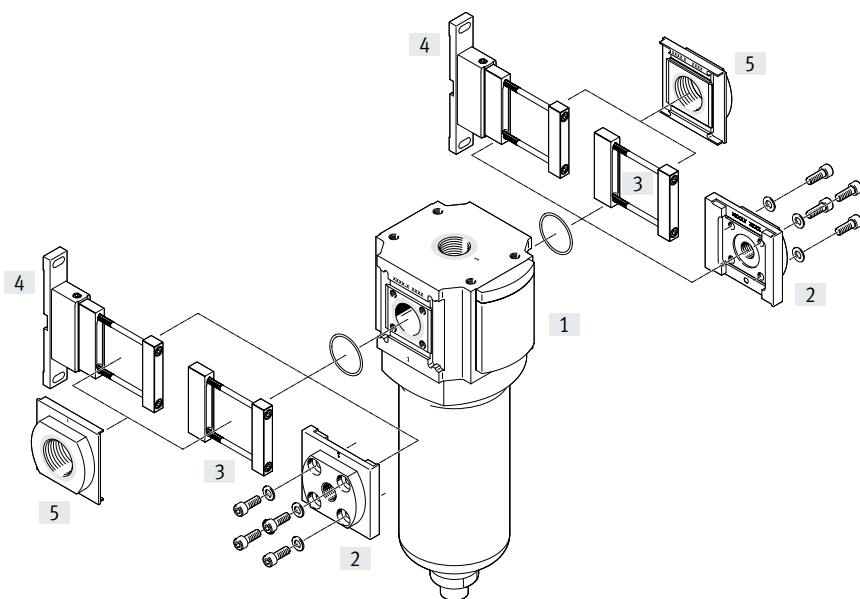
Datasheet

| Ordering data                                |                                 |                                 |                        |                       |          |                               |
|--|---------------------------------|---------------------------------|------------------------|-----------------------|----------|-------------------------------|
| Pneumatic connection                         | For electric pressure regulator | Pressure regulation range [bar] | Setpoint value (input) | Actual value (output) | Part no. | Type                          |
| 1  |                                 |                                 |                        |                       |          |                               |
| <b>Flanged valve</b>                         |                                 |                                 |                        |                       |          |                               |
| Flange                                       | PREL-90-...-20CFX-S1-2          | 0.2 ... 20                      | 0 ... 10 V             | 4 ... 20 mA           | 1635984  | VPPL-3Q-3-0L20H-V1-A-S1-2     |
|  |                                 |                                 | 0 ... 10 V             | 0 ... 10 V            | 1635987  | VPPL-3Q-3-0L20H-V1-V-S1-2     |
|  |                                 |                                 | 4 ... 20 mA            | 4 ... 20 mA           | 1635990  | VPPL-3Q-3-0L20H-A4-A-S1-2     |
|  | PREL-186-...-40CFX-1            | 0.4 ... 40                      | 0 ... 10 V             | 4 ... 20 mA           | 1635973  | VPPL-3Q-3-0L40H-V1-A-S1-1     |
|  |                                 |                                 | 0 ... 10 V             | 0 ... 10 V            | 1635978  | VPPL-3Q-3-0L40H-V1-V-S1-1     |
|  |                                 |                                 | 4 ... 20 mA            | 4 ... 20 mA           | 1635981  | VPPL-3Q-3-0L40H-A4-A-S1-1     |
|  | PREL-90-...-40CFX-S2-3          | 0.4 ... 40                      | 0 ... 10 V             | 4 ... 20 mA           | 1635985  | VPPL-3Q-3-0L40H-V1-A-S1-3     |
|  |                                 |                                 | 0 ... 10 V             | 0 ... 10 V            | 1635979  | VPPL-3Q-3-0L40H-V1-V-S1-3     |
|  |                                 |                                 | 4 ... 20 mA            | 4 ... 20 mA           | 1691730  | VPPL-3Q-3-0L40H-A4-A-S1-3     |
| <b>Flanged valve with external pilot air</b> |                                 |                                 |                        |                       |          |                               |
| Flange, G1/4                                 | PREL-90-...-20CFX-S1-4          | 0.2 ... 20                      | 0 ... 10 V             | 4 ... 20 mA           | 1635975  | VPPL-3Q-3-Z-0L20H-V1-A-S1-4   |
|  |                                 |                                 | 0 ... 10 V             | 0 ... 10 V            | 1635988  | VPPL-3Q-3-Z-0L20H-V1-V-S1-4   |
|  |                                 |                                 | 4 ... 20 mA            | 4 ... 20 mA           | 1635991  | VPPL-3Q-3-Z-0L20H-A4-A-S1-4   |
|  | PREL-90-...-40CFX-S1-8          | 0.4 ... 40                      | 0 ... 10 V             | 4 ... 20 mA           | 1910709  | VPPL-3Q-3-Z-0L40H-V1-A-S1-8   |
|  | PREL-90-...-40CFX-S1-5          | 2 ... 40                        | 0 ... 10 V             | 4 ... 20 mA           | 1635982  | VPPL-3Q-3-Z-2L40H-V1-A-S1-5   |
| <b>In-line valve</b>                         |                                 |                                 |                        |                       |          |                               |
| G1/4   | 0.2 ... 20                      | 0.2 ... 20                      | 0 ... 10 V             | 4 ... 20 mA           | 1635986  | VPPL-3L-3-G14-0L20H-V1-A-S1-6 |
|  |                                 |                                 | 0 ... 10 V             | 0 ... 10 V            | 1635989  | VPPL-3L-3-G14-0L20H-V1-V-S1-6 |
|  |                                 |                                 | 4 ... 20 mA            | 4 ... 20 mA           | 1635992  | VPPL-3L-3-G14-0L20H-A4-A-S1-6 |
|  | 0.4 ... 40                      | 0.4 ... 40                      | 0 ... 10 V             | 4 ... 20 mA           | 1635977  | VPPL-3L-3-G14-0L40H-V1-A-S1-7 |
|  |                                 |                                 | 0 ... 10 V             | 0 ... 10 V            | 1635980  | VPPL-3L-3-G14-0L40H-V1-V-S1-7 |
|  |                                 |                                 | 4 ... 20 mA            | 4 ... 20 mA           | 1635983  | VPPL-3L-3-G14-0L40H-A4-A-S1-7 |

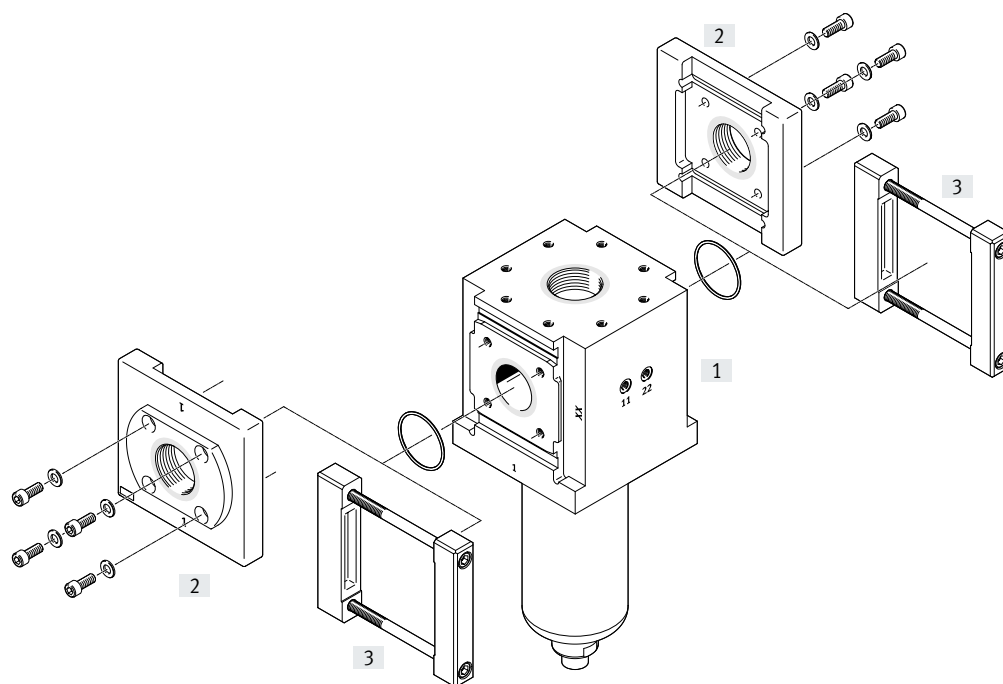
## Peripherals overview

### Accessories

Size 90



Size 186



### Mounting attachments and accessories

|     |                                      | → Page/Internet |
|-----|--------------------------------------|-----------------|
| [1] | Micro filter<br>PFML                 | 21              |
| [2] | Connecting plate<br>PAML-CP          | 36              |
| [3] | Module connector<br>PAML-MK          | 39              |
| [4] | Mounting bracket<br>PAML-MB          | 41              |
| [5] | Connecting plate<br>PAML-CP-...-G114 | 36              |

## Type codes

|             |              |
|-------------|--------------|
| <b>001</b>  | Series       |
| <b>PFML</b> | Micro filter |

|            |        |
|------------|--------|
| <b>002</b> | Size   |
| <b>90</b>  | 90 mm  |
| <b>186</b> | 186 mm |

|            |                            |
|------------|----------------------------|
| <b>003</b> | Pressure application range |
| <b>HP3</b> | Up to 50 bar               |

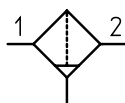
|            |                |
|------------|----------------|
| <b>004</b> | Flow rate      |
|            | Standard       |
| <b>H</b>   | High flow rate |




|            |                     |
|------------|---------------------|
| <b>005</b> | Grade of filtration |
| <b>A</b>   | 0.01 µm             |

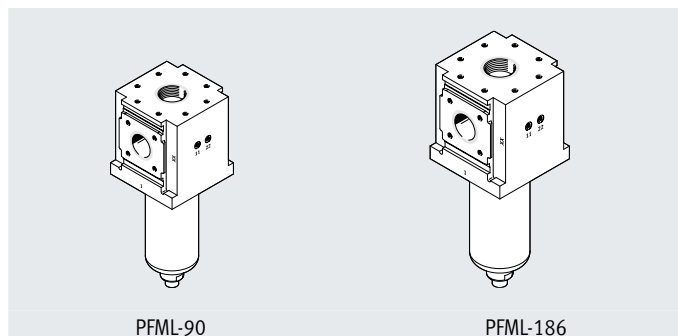
|            |           |
|------------|-----------|
| <b>006</b> | Bowl type |
| <b>ST</b>  | Steel     |

## Datasheet

Function  
Manual condensate drain



-  - Flow rate  
3406 ... 138233 l/min
-  - Temperature range  
+5 ... +60°C
-  - Operating pressure  
0 ... 50 bar



PFML-90

PFML-186

Micro filter with filter cartridges made from thermally fused microfibre borosilicate and stable polyester fibres. Direction of flow through the filter cartridges is from the inside to the outside.

Condensate drain via connecting thread G1/2 underneath the filter bowl, differential pressure sensing via two connecting threads G1/8 each on the front and the rear.

Alternative pneumatic connection 1 at the top of the housing via an internal thread.

On/off valves PVEL can be connected to the alternative connection 1 at the top of the micro filter via double nipples or directly using special connecting plates.

| General technical data                    |   |                  |                    |
|---|---|------------------|--------------------|
| Size                                      | 90  | 186              |                    |
| Type                                      | PFML-90-HP3-AST                           | PFML-186-HP3-AST | PFML-186-HP3-H-AST |
| Design                                    | Fibre filter                              |                  |                    |
| Type of mounting                          | In-line installation                      |                  |                    |
| Mounting position                         | Vertical ±5°                              |                  |                    |
| Grade of filtration [µm]                  | 0.01                                      |                  |                    |
| Filter efficiency [%]                     | 99.99998                                  |                  |                    |
| Air purity class at the output            | Compressed air to ISO 8573-1:2010 [1:4:2] |                  |                    |
| Condensate drain                          | Manual                                    |                  |                    |
| Max. condensate volume [cm <sup>3</sup> ] | 200                                       |                  | 400                |
| Volume                                    | 3   |                  | 6.7                |

| Operating and environmental conditions                     |  |                  |                    |
|--|--|------------------|--------------------|
| Size   | 90   | 186              |                    |
| Type   | PFML-90-HP3-AST  | PFML-186-HP3-AST | PFML-186-HP3-H-AST |
| Operating pressure [bar]                                   | 0 ... 50   |                  |                    |
| Operating medium   | Compressed air to ISO 8573-1:2010 [2:4:4]<br>Inert gases |                  |                    |
| Note on the operating/pilot medium                         | Lubricated operation not possible                        |                  |                    |
| LABS (PWIS) conformity                                     | VDMA24364 zone III                                       |                  |                    |
| Ambient temperature [°C]                                   | +5 ... +60   |                  |                    |
| Temperature of medium [°C]                                 | +5 ... +60   |                  |                    |
| Storage temperature [°C]                                   | -10 ... +60  |                  |                    |
| Corrosion resistance class CRC <sup>1)</sup>               | 2  |                  |                    |
| CE marking (see declaration of conformity) <sup>2)</sup>   | To EU Pressure Equipment Directive                       |                  |                    |
| UKCA marking (see declaration of conformity) <sup>2)</sup> | UK regulations for pressure equipment                    |                  |                    |
| Food-safe <sup>2)</sup>                                    | See supplementary material information                   |                  |                    |

1) Corrosion resistance class CRC 2 to Festo standard FN 940070

Moderate corrosion stress. Indoor applications in which condensation can occur. External visible parts with primarily decorative surface requirements that are in direct contact with the surrounding industrial environment.

2) For information about the area of use, see the EC declaration of conformity at: [www.festo.com/catalogue/pfml](http://www.festo.com/catalogue/pfml) → Support/Downloads.

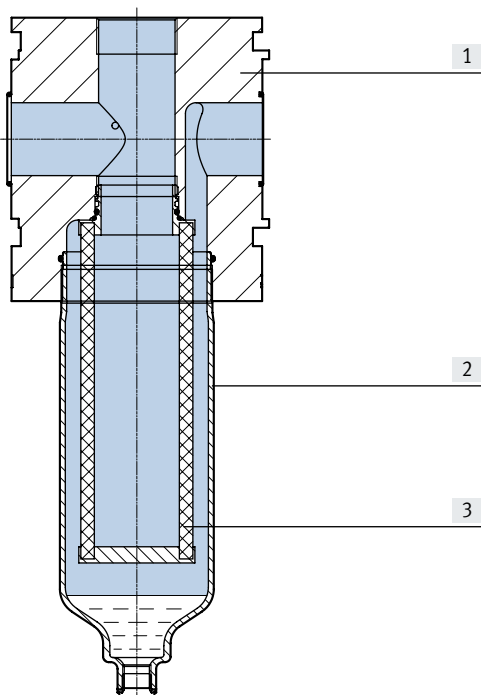
## Datasheet

| Standard flow rate $q_n$ [l/min]                           |                   | 90              |                  | 186                |  |
|--|-------------------|-----------------|------------------|--------------------|--|
| Size   |                   | PFML-90-HP3-AST | PFML-186-HP3-AST | PFML-186-HP3-H-AST |  |
| Max. standard flow rate $q_{n\ max}$ for air quality class | At $p_1 = 6$ bar  | 10220           | 10220            | 18980              |  |
|  | At $p_1 = 20$ bar | 30683           | 30683            | 56983              |  |
|  | At $p_1 = 25$ bar | 37916           | 37916            | 70416              |  |
|  | At $p_1 = 30$ bar | 45266           | 45266            | 84066              |  |
|  | At $p_1 = 35$ bar | 52500           | 52500            | 97500              |  |
|  | At $p_1 = 40$ bar | 59850           | 59850            | 111150             |  |
|  | At $p_1 = 45$ bar | 67083           | 67083            | 124583             |  |
|  | At $p_1 = 50$ bar | 74433           | 74433            | 138233             |  |
| Min. standard flow rate $q_{n\ min}$ for air quality class | At $p_1 = 6$ bar  | 3406            | 3406             | 6326               |  |
|  | At $p_1 = 20$ bar | 10227           | 10227            | 18994              |  |
|  | At $p_1 = 25$ bar | 12638           | 12638            | 23472              |  |
|  | At $p_1 = 30$ bar | 15088           | 15088            | 28022              |  |
|  | At $p_1 = 35$ bar | 17500           | 17500            | 32500              |  |
|  | At $p_1 = 40$ bar | 19950           | 19950            | 37050              |  |
|  | At $p_1 = 45$ bar | 22361           | 22361            | 41527              |  |
|  | At $p_1 = 50$ bar | 24811           | 24811            | 46077              |  |

| Weight [g]   |  | 90              |                  | 186                |  |
|--------------|--|-----------------|------------------|--------------------|--|
| Size         |  | PFML-90-HP3-AST | PFML-186-HP3-AST | PFML-186-HP3-H-AST |  |
| Micro filter |  | 7700            | 17900            | 21000              |  |

### Materials

Sectional view

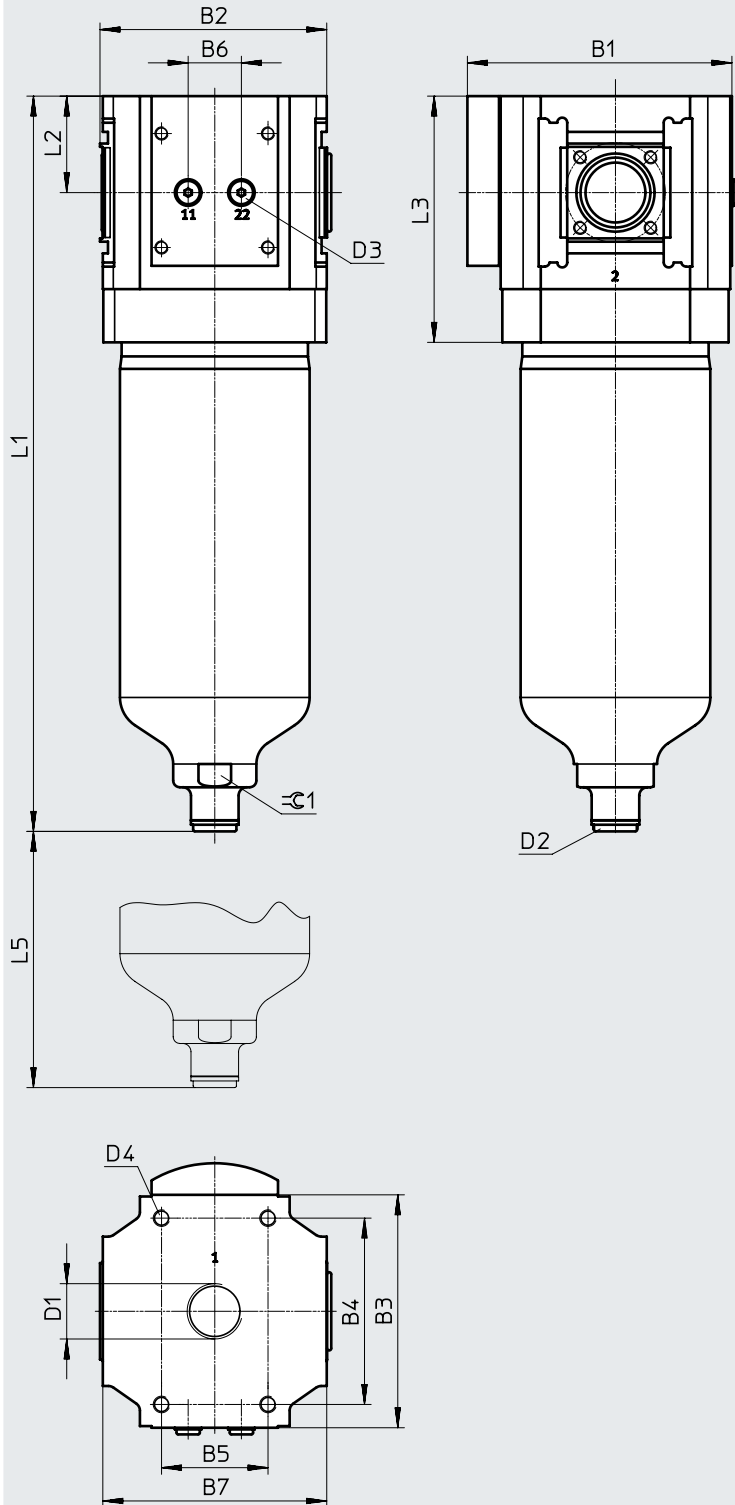


| Micro filter      |         |  |
|-------------------|---------|--|
| [1]               | Housing | Wrought aluminium alloy                      |
| [2]               | Bowl    | High-alloy stainless steel                   |
| [3]               | Filter  | Borosilicate fibre                           |
| -                 | Seals   | NBR  |
| Note on materials |         | RoHS-compliant                               |
|                   |         | Contains paint-wetting impairment substances |

Datasheet

Dimensions – Size 90

Download CAD data → [www.festo.com](http://www.festo.com)

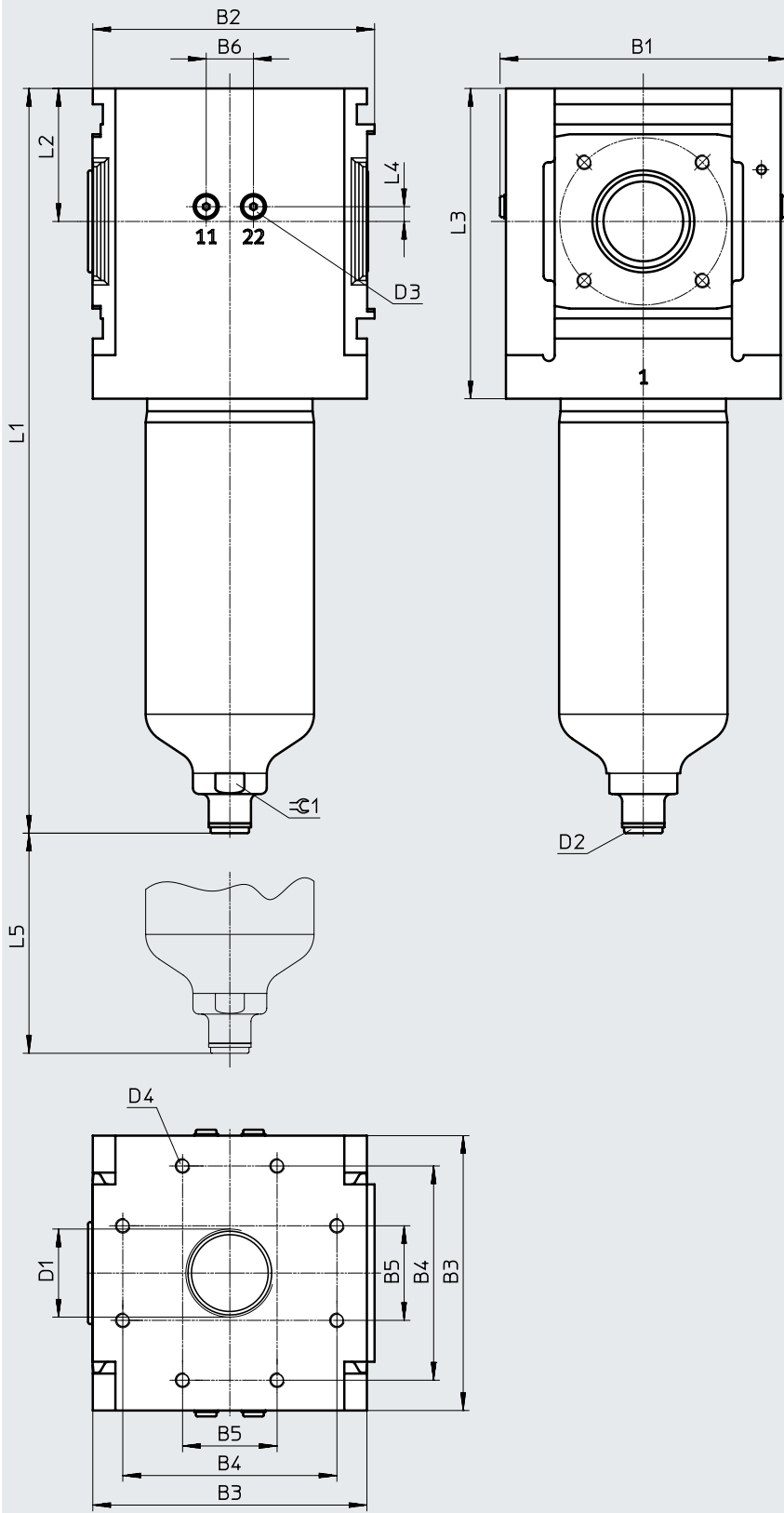


| Type            | B1  | B2  | B3  | B4  | B5 | B6 | B7  | D1 | D2   | D3   | D4  | L1  | L2 | L3  | L5<br>min. | ≅ 1 |
|-----------------|-----|-----|-----|-----|----|----|-----|----|------|------|-----|-----|----|-----|------------|-----|
| PFML-90-HP3-AST | 159 | 137 | 140 | 112 | 64 | 32 | 135 | G1 | G1/2 | G1/8 | M10 | 442 | 58 | 148 | 210        | 46  |

Datasheet

Dimensions – Size 186

Download CAD data → [www.festo.com](http://www.festo.com)



| Type               | B1  | B2  | B3  | B4  | B5 | B6 | D1 | D2   | D3   | D4  | L1  | L2 | L3  | L4 | L5  | ≅ 1 |
|--------------------|-----|-----|-----|-----|----|----|----|------|------|-----|-----|----|-----|----|-----|-----|
| PFML-186-HP3-AST   | 194 | 191 | 186 | 145 | 64 | 32 | G2 | G1/2 | G1/8 | M10 | 504 | 90 | 210 | 10 | 210 | 46  |
| PFML-186-HP3-H-AST |     |     |     |     |    |    |    |      |      |     | 522 |    |     |    | 200 |     |



## Datasheet

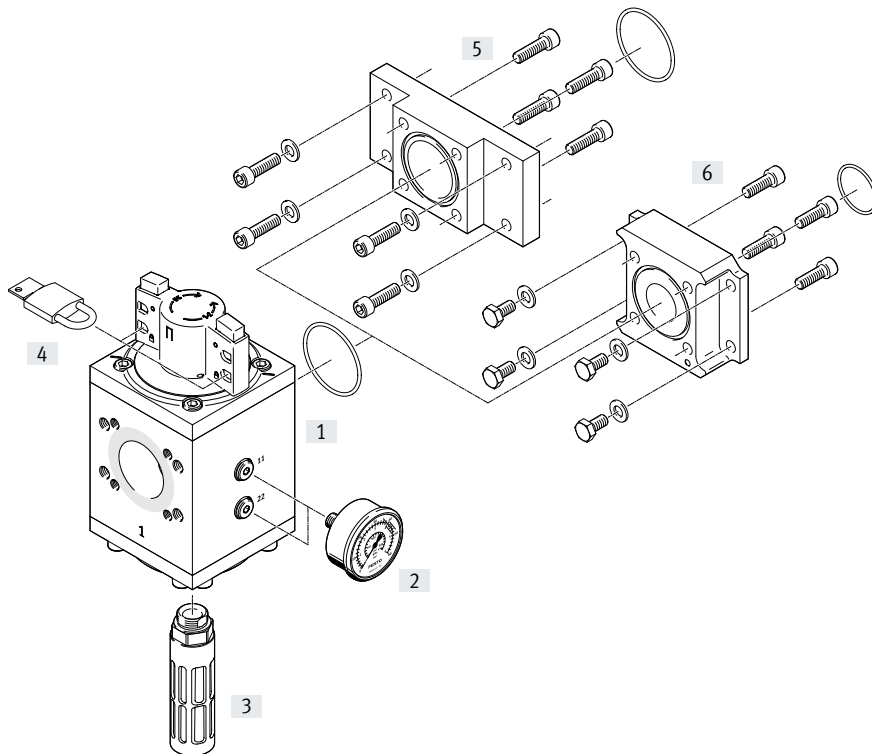
| <b>Ordering data</b> |          |                 |          |                    |
|----------------------|----------|-----------------|----------|--------------------|
| Flow rate            | Size 90  |                 | Size 186 |                    |
|                      | Part no. | Type            | Part no. | Type               |
| Standard             | 1612487  | PFML-90-HP3-AST | 1364705  | PFML-186-HP3-AST   |
| High flow rate       | -        | -               | 1624062  | PFML-186-HP3-H-AST |

| <b>Ordering data – Accessories</b> |          |               |
|------------------------------------|----------|---------------|
| Flow rate                          | Part no. | Type          |
| <b>Filter cartridges</b>           |          |               |
| Standard                           | 1334716  | PFEL-G2-A     |
| High flow rate                     | 1471578  | PFEL-G212-H-A |

## Peripherals overview and type codes

### Accessories

Size 124



#### Mounting attachments and accessories

|     |  | → Page/Internet |
|-----|--|-----------------|
| [1] | On/off valve<br>PVEL   | 27              |
| [2] | Pressure gauge<br>PAGL   | 43              |
| [3] | Silencer<br>U-1/2-B  | 45              |
| [4] | Padlock (only for PVEL-H-124-HP3)<br>LRVS-D  | 45              |
| [5] | Connecting plate kit (for alternative connection at the top of the micro filter PFML-186)<br>PAML-CP-186-HP3-E1  | On request      |
| [6] | Connecting plate module (for alternative connection at the top of the micro filter PFML-90)<br>PAML-CP-90-HP3-E1 | On request      |

#### Type codes

| 001  | Series                 |
|------|------------------------|
| PVEL | On/off valve, L series |

| 002 | Type of actuation      |
|-----|------------------------|
| H   | Manually actuated      |
| P   | Pneumatically actuated |

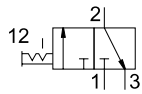
| 003 | Size |
|-----|------|
| 124 | 124  |

| 004 | Pressure application range |
|-----|----------------------------|
| HP3 | Up to 50 bar               |

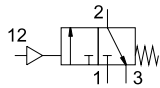
## Datasheet

### Function



PVEL-H, manually actuated



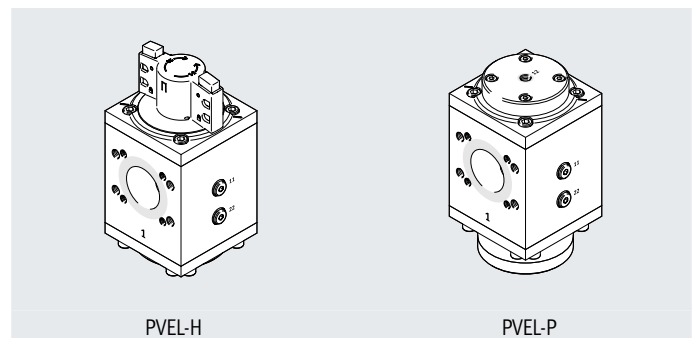
PVEL-P, pneumatically actuated



The PVEL-H has a detenting intermediate position which enables slow pressurisation (slow start) of the system. A mark on the top cover indicates the position of the rotary knob for the slow

-  - Temperature range  
-10 ... +60°C
-  - Operating pressure  
0 ... 50 bar

start. In the closed state, the PVEL-H can be locked using up to 4 padlocks. The PVEL-P is switched by an external pneumatic signal. The on/off valve PVEL-P does not have an internal slow-start function. A slow switch-on can be



PVEL-H

PVEL-P

achieved by throttling the pilot air build-up.

- Connection options for pressure gauge on the front and the rear, one each for the operating and output pressure
- Interface for SAE flange 2 1/2"

| General technical data |  |                                   |
|------------------------|--|-----------------------------------|
| Type                   | PVEL-H   | PVEL-P                            |
| Nominal width DN       | 54   |                                   |
| Pneumatic connection 3 | G1/2   |                                   |
| Pilot air port 12      | –  | G1/4                              |
| Actuation type         | Manual   | Pneumatic                         |
| Design                 | Piston spool   |                                   |
| Type of mounting       | In-line installation                                     |                                   |
| Mounting position      | Any  |                                   |
| Actuator lock          | Rotary knob with detent, can be locked using accessories | –                                 |
| Valve function         | 3/2-way valve, bistable                                  | 3/2-way valve, closed, monostable |
| Exhaust air function   | Cannot be throttled                                      |                                   |
| Reset method           | Force-pilot operated                                     | Mechanical spring                 |
| Type of control        | Direct   |                                   |
| Pilot air supply       | –  | External                          |
| Sealing principle      | Soft   |                                   |

| Operating and environmental conditions                     |  |          |
|--|--|----------|
| Type   | PVEL-H   | PVEL-P   |
| Operating pressure [bar]                                   | 0 ... 50   |          |
| Pilot pressure [bar]                                       | –  | 9 ... 50 |
| Operating medium   | Compressed air to ISO 8573-1:2010 [7:4:4]<br>Inert gases                                   |          |
| Note on the operating/pilot medium                         | Lubricated operation possible (in which case lubricated operation will always be required) |          |
| LABS (PWIS) conformity                                     | VDMA24364 zone III   |          |
| Ambient temperature [°C]                                   | +5 ... +50   |          |
|  | +41 ... +122   |          |
| Temperature of medium [°C]                                 | +5 ... +50   |          |
| Storage temperature [°C]                                   | -10 ... +60  |          |
| Corrosion resistance class CRC <sup>1)</sup>               | 2  |          |
| CE marking (see declaration of conformity) <sup>2)</sup>   | To EU Pressure Equipment Directive   |          |
| UKCA marking (see declaration of conformity) <sup>2)</sup> | UK regulations for pressure equipment  |          |
| Food-safe <sup>2)</sup>                                    | See supplementary material information   |          |

- 1) Corrosion resistance class CRC 2 to Festo standard FN 940070  
Moderate corrosion stress. Indoor applications in which condensation can occur. External visible parts with primarily decorative surface requirements that are in direct contact with the surrounding industrial environment.
- 2) Additional information: [www.festo.com/catalogue/pvel](http://www.festo.com/catalogue/pvel) → Support/Downloads.

### Note

Additional variants, e.g. for safety-oriented applications or with low pilot pressure, available on request.

## Datasheet

| Weight [g]   |        |        |
|--------------|--------|--------|
| Type         | PVEL-H | PVEL-P |
| On/off valve | 5900   | 6900   |

| Materials         |  |
|-------------------|--|
| Housing           | Wrought aluminium alloy                      |
| Piston spool      | Wrought aluminium alloy                      |
| Rotary knob       | POM  |
| Seals             | NBR  |
|                   | PU   |
| Note on materials | RoHS-compliant                               |
|                   | Contains paint-wetting impairment substances |

### Dimensions – Size 124

Download CAD data → [www.festo.com](http://www.festo.com)

PVEL-H

[1] In switching position "Exhausting 3 → 2" up to 4 padlocks can be attached for the actuator lock 1. To do this, press the button(s) and attach the padlock(s).

\* Interface for SAE flange 2 1/2"

→ Flow direction

| Type   | B1  | B2   | B3  | B4  | B5   | D1<br>∅ | D3   | D4   | D5   | D6     |
|--------|-----|------|-----|-----|------|---------|------|------|------|--------|
| PVEL-H | 124 | 65.5 | 131 | 124 | 88.9 | 54      | G1/2 | G1/4 | G1/4 | M12x18 |

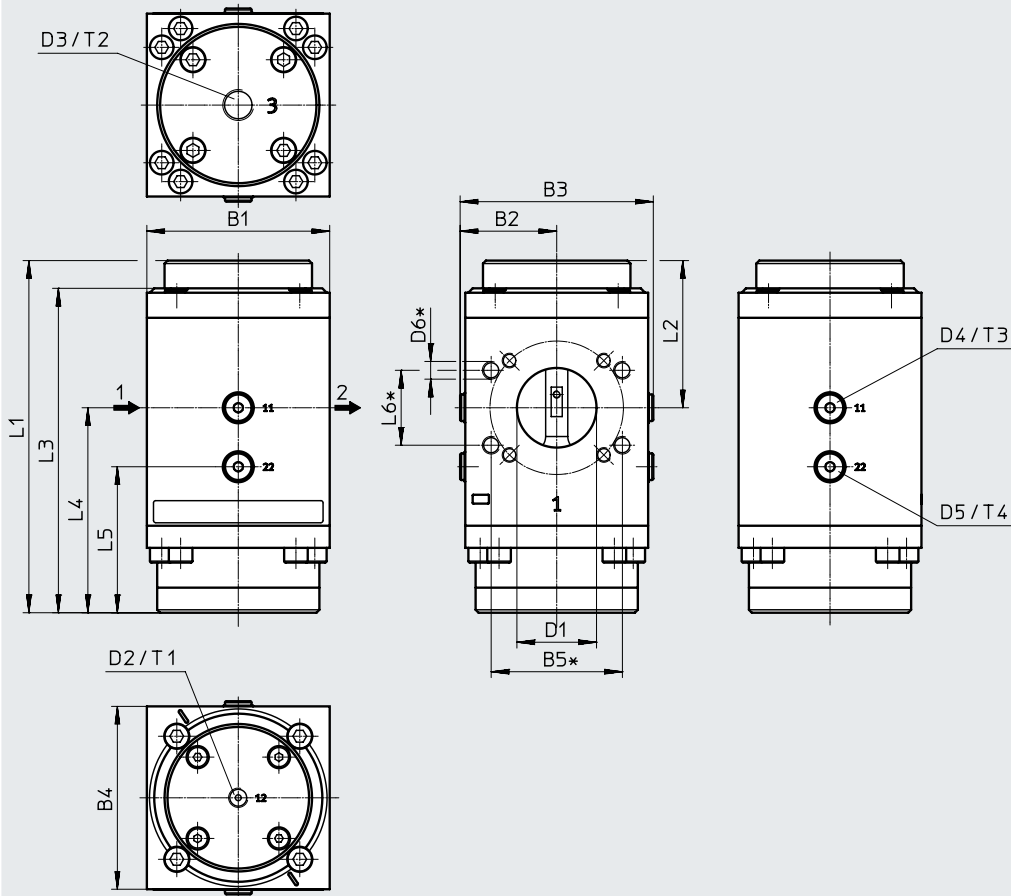
| Type   | L1   | L2  | L3  | L4  | L5 | L6   | T2 | T3 | T4 |
|--------|------|-----|-----|-----|----|------|----|----|----|
| PVEL-H | ~255 | 148 | 188 | 107 | 67 | 50.8 | 14 | 12 | 12 |

Datasheet

Dimensions – Size 124

Download CAD data → [www.festo.com](http://www.festo.com)

PVEL-P



\* Interface for SAE flange 2 1/2"

→ Flow direction

| Type   | B1  | B2   | B3  | B4  | B5   | D1<br>∅ | D2   | D3   | D4   | D5   | D6     |
|--------|-----|------|-----|-----|------|---------|------|------|------|------|--------|
| PVEL-P | 124 | 65.5 | 131 | 124 | 88.9 | 54      | G1/4 | G1/2 | G1/4 | G1/4 | M12x18 |

| Type   | L1   | L2  | L3  | L4  | L5 | L6   | T1 | T2 | T3 | T4 |
|--------|------|-----|-----|-----|----|------|----|----|----|----|
| PVEL-P | ~239 | 100 | 220 | 139 | 99 | 50.8 | 12 | 17 | 12 | 12 |

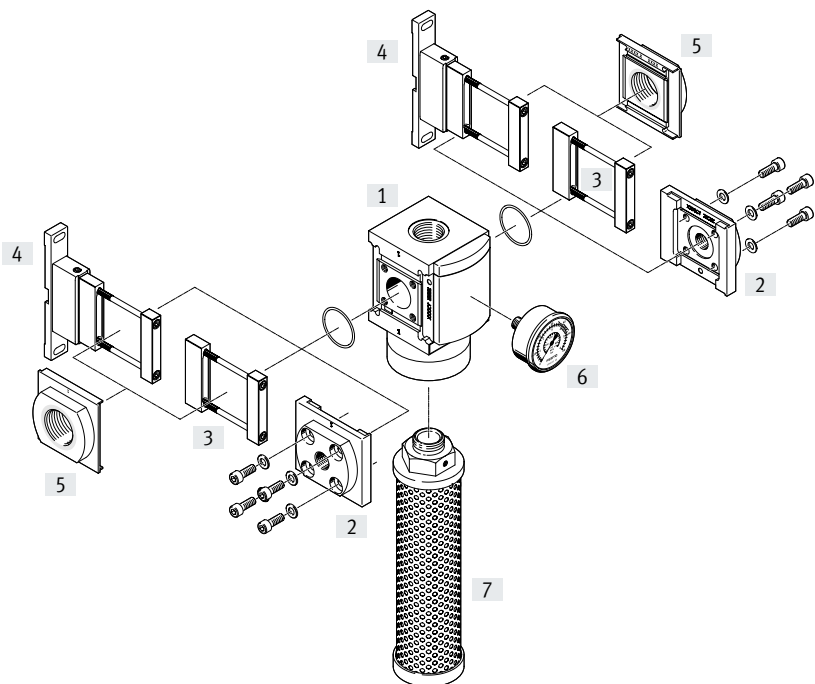
Ordering data

| Actuation type | Part no. | Type           |
|----------------|----------|----------------|
| Manual         | 1629207  | PVEL-H-124-HP3 |
| Pneumatic      | 1629205  | PVEL-P-124-HP3 |

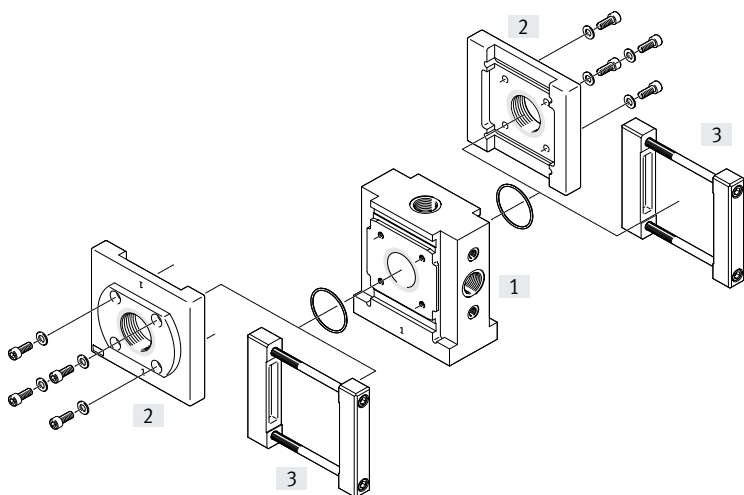
## Peripherals overview

### Accessories

Size 90



Size 186



### Mounting attachments and accessories

|     |   | → Page/Internet |
|-----|---|-----------------|
| [1] | Branching modules<br>PMBL                       | 32              |
| [2] | Connecting plate<br>PAML-CP                     | 36              |
| [3] | Module connector<br>PAML-MK                     | 39              |
| [4] | Mounting bracket<br>PAML-MB                     | 41              |
| [5] | Connecting plate<br>PAML-CP...-G114             | 36              |
| [6] | Pressure gauge<br>PAGL                          | 43              |
| [7] | Silencer (only for PMBL-90-HP3-E)<br>U-G1-HD-SA | On request      |

## Type codes

| 001  | Series           |
|------|------------------|
| PMBL | Branching module |

| 002 | Size   |
|-----|--------|
| 90  | 90 mm  |
| 186 | 186 mm |

| 003 | Pressure application range |
|-----|----------------------------|
| HP3 | Up to 50 bar               |

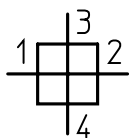
| 004 | Additional function            |
|-----|--------------------------------|
|     | None                           |
| E   | Pneumatically actuated exhaust |

| 005 | Width      |
|-----|------------|
|     | Standard   |
| H   | Half width |

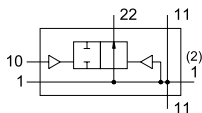
## Datasheet

Function  
Standard



- - Temperature range  
+5 ... +60°C
- - Operating pressure  
0 ... 50 bar

With exhaust function  
(PFML-90-HP3-E)



- Compressed air distributor with various connections
- Can be used as an intermediate distributor for varying compressed air qualities
- Support for auxiliary modules

### Outlets PMBL-90-HP3

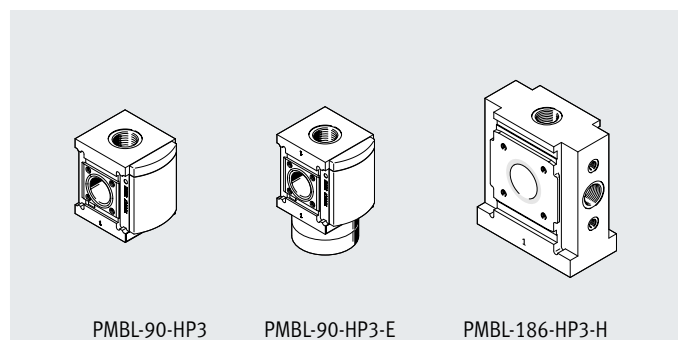
- Female thread G1 at top and bottom
- Female thread G1/4 at the rear and front (rear cover plate), sealed with blanking plug

### Outlets PMBL-90-HP3-E

- Female thread G1 at top, rear and bottom (exhaust port)
- Female thread G1/4 at the front (rear cover plate), sealed with blanking plug

### Outlets PMBL-186-HP3-H

- Female thread G1 at top, bottom and front
- Female thread G1/4 at front (2x) and rear



PMBL-90-HP3

PMBL-90-HP3-E

PMBL-186-HP3-H

| General technical data                   |                      |  |                  |
|--|----------------------|--|------------------|
| Size                                     | 90                   |  | 186              |
| Type                                     | PMBL-90-HP3          | PMBL-90-HP3-E  | PMBL-186-HP3-H   |
| Nominal width DN                         | 36                   | 36   | 54               |
| Pneumatic connection 3, 4                | G1                   | –  | G1               |
| Pneumatic connection 11                  | –                    | G1   | –                |
| Pilot air port, exhaust function 10      | –                    | G1/4   | –                |
| Silencer connection, exhaust function 22 | –                    | G1   | –                |
| Design                                   | Branching module     | Branching module with exhaust function via integrated 2/2-way valve. | Branching module |
| Type of mounting                         | In-line installation |  |                  |
| Mounting position                        | Any                  |  |                  |

| Operating and environmental conditions                     |   |   |   |
|--|---|---|---|
| Size   | 90  |   | 186                                       |
| Type   | PMBL-90-HP3                               | PMBL-90-HP3-E                             | PMBL-186-HP3-H                            |
| Operating pressure [bar]                                   | 0 ... 50                                  |   |   |
| Pilot pressure [bar]                                       | –   | 0 ... 50                                  | –   |
| Operating medium   | Compressed air to ISO 8573-1:2010 [–:–:–] | Compressed air to ISO 8573-1:2010 [7:4:4] | Compressed air to ISO 8573-1:2010 [–:–:–] |
| Note on the operating/pilot medium                         | Lubricated operation not possible         |   |   |
| LABS (PWIS) conformity                                     | VDMA24364 zone III                        |   |   |
| Ambient temperature [°C]                                   | +5 ... +60                                |   |   |
| Temperature of medium [°C]                                 | +5 ... +60                                |   |   |
| Storage temperature [°C]                                   | –10 ... +60                               |   |   |
| Corrosion resistance class CRC <sup>1)</sup>               | 2   |   |   |
| CE marking (see declaration of conformity) <sup>2)</sup>   | To EU Pressure Equipment Directive        |   |   |
| UKCA marking (see declaration of conformity) <sup>2)</sup> | UK regulations for pressure equipment     |   |   |
| Food-safe <sup>2)</sup>                                    | See supplementary material information    |   |   |

1) Corrosion resistance class CRC 2 to Festo standard FN 940070

Moderate corrosion stress. Indoor applications in which condensation can occur. External visible parts with primarily decorative surface requirements that are in direct contact with the surrounding industrial environment.

2) Additional information: [www.festo.com/catalogue/pmb1](http://www.festo.com/catalogue/pmb1) → Support/Downloads.



## Datasheet

| Characteristic flow rate values                  |             |               |                |
|--|-------------|---------------|----------------|
| Size   | 90          |               | 186            |
| Type   | PMBL-90-HP3 | PMBL-90-HP3-E | PMBL-186-HP3-H |
| Standard nominal flow rate $q_{N^{(1)}}$ [l/min] |             |               |                |
| In main flow direction 1 → 2                     | 49000       | 49000         | 117240         |
| In exhaust direction 2 → 3                       | –           | 13000         | –              |

 1) Measured at  $p_1 = 6$  bar and  $p_2 = 5$  bar,  $\Delta p = 1$  bar

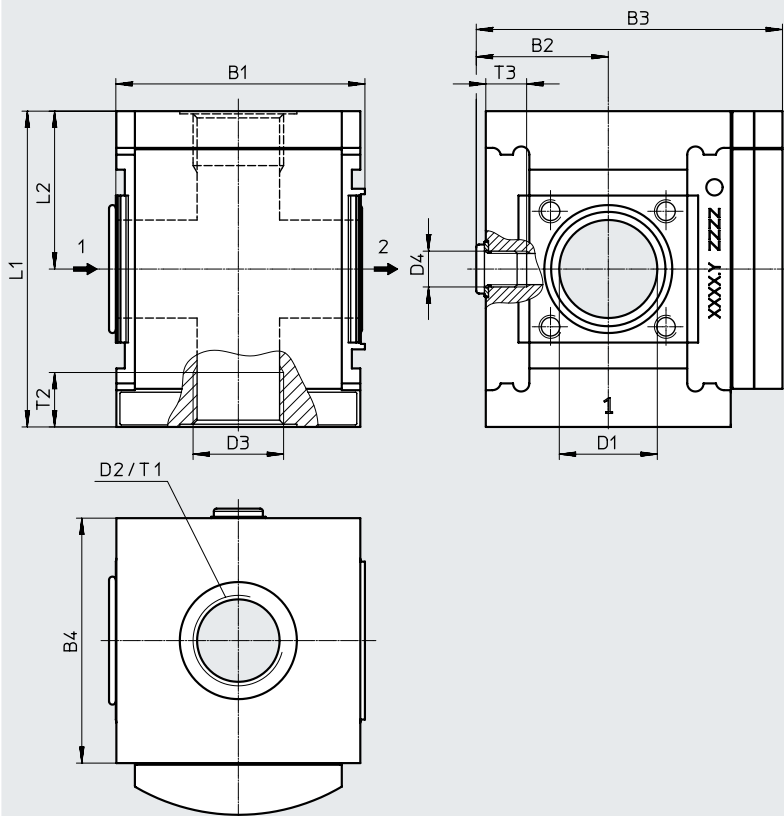
| Weight [g]       |             |               |                |
|------------------|-------------|---------------|----------------|
| Size             | 90          |               | 186            |
| Type             | PMBL-90-HP3 | PMBL-90-HP3-E | PMBL-186-HP3-H |
| Branching module | 2000        | 2600          | 7500           |

| Materials         |  |               |                |
|-------------------|--|---------------|----------------|
| Size              | 90   |               | 186            |
| Type              | PMBL-90-HP3                                  | PMBL-90-HP3-E | PMBL-186-HP3-H |
| Housing           | Wrought aluminium alloy                      |               |                |
| Seals             | NBR  |               |                |
|                   | –  | PU            | –              |
| Note on materials | RoHS-compliant                               |               |                |
|                   | Contains paint-wetting impairment substances |               |                |

## Dimensions – Size 90

 Download CAD data → [www.festo.com](http://www.festo.com)

PMBL-90-HP3



→ Flow direction

| Type        | B1  | B2  | B3   | B4 | D1<br>∅ | D2 | D3 | D4   | L1  | L2 | T1 | T2 | T3 |
|-------------|-----|-----|------|----|---------|----|----|------|-----|----|----|----|----|
| PMBL-90-HP3 | ~92 | ~49 | ~113 | 90 | 36      | G1 | G1 | G1/4 | 116 | 58 | 20 | 20 | 15 |

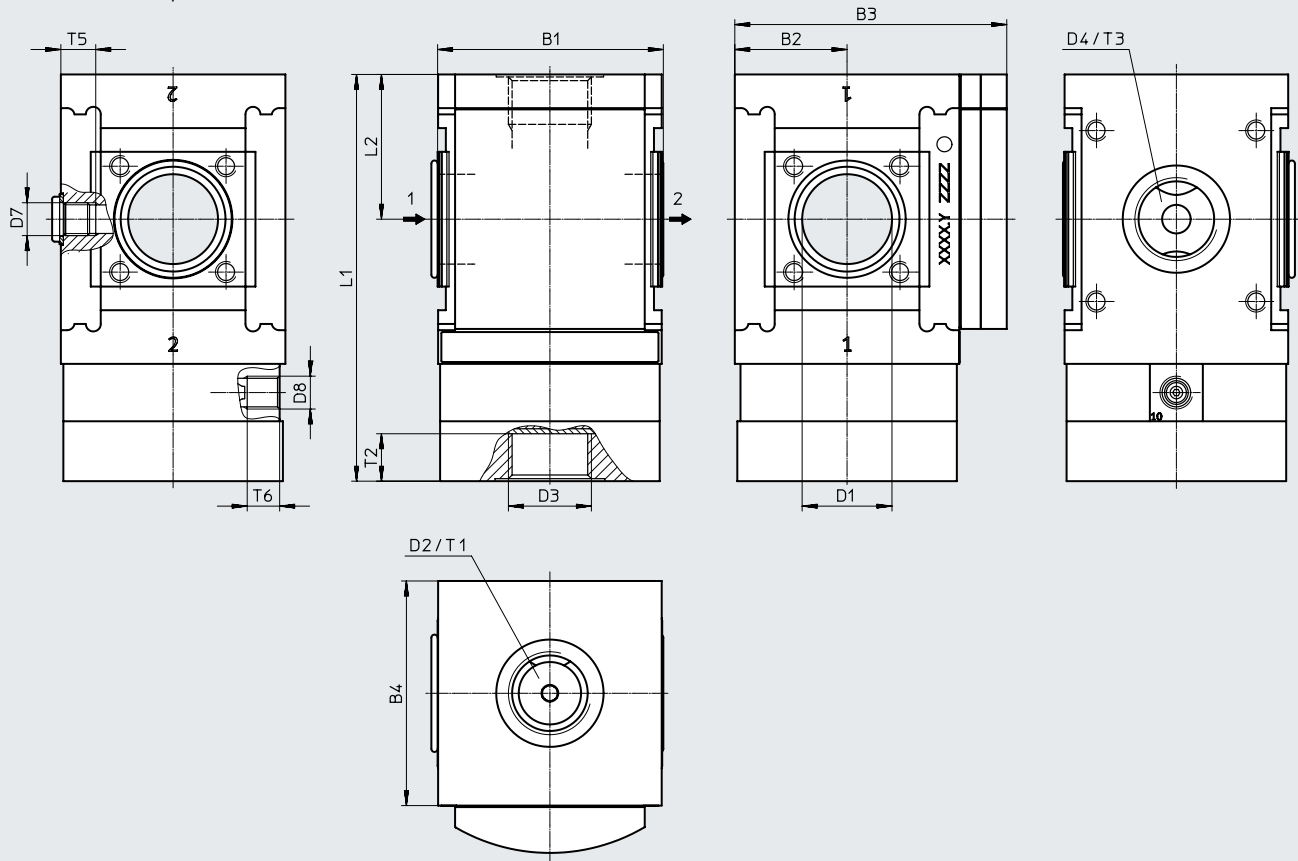
Datasheet

Dimensions – Size 90

Download CAD data → [www.festo.com](http://www.festo.com)

PMBL-90-HP3-E

Illustration without cover plate



→ Flow direction

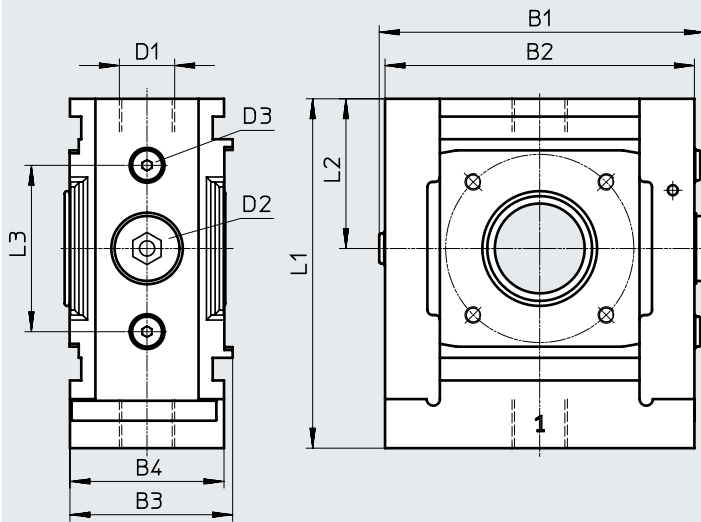
| Type          | B1 | B2 | B3  | B4 | D1      | D2 | D3 | D4 | D7   | D8   | L1  | L2 | T1 | T2 | T3 | T5 | T6 |
|---------------|----|----|-----|----|---------|----|----|----|------|------|-----|----|----|----|----|----|----|
| PMBL-90-HP3-E | 90 | 45 | 109 | 90 | 36<br>∅ | G1 | G1 | G1 | G1/4 | G1/4 | 163 | 58 | 20 | 19 | 20 | 14 | 13 |

Datasheet

Dimensions – Size 186

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PMBL-186-HP3-H



| Type           | B1  | B2  | B3 | B4 | D1 | D2 | D3   | L1  | L2 | L3  |
|----------------|-----|-----|----|----|----|----|------|-----|----|-----|
| PMBL-186-HP3-H | 196 | 186 | 98 | 93 | G1 | G1 | G1/4 | 210 | 90 | 100 |



Ordering data

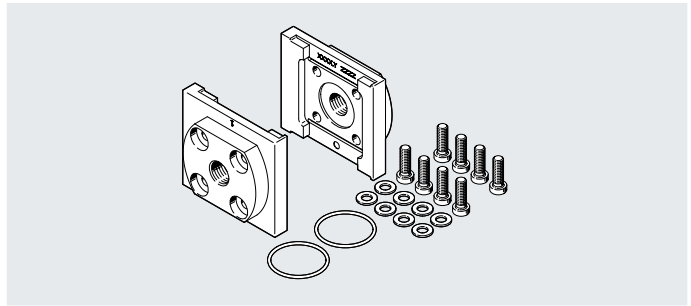
| Function              | Size 90  |               | Size 186 |                |
|-----------------------|----------|---------------|----------|----------------|
|                       | Part no. | Type          | Part no. | Type           |
| Standard              | 1401366  | PMBL-90-HP3   | 1609073  | PMBL-186-HP3-H |
| With exhaust function | 2663892  | PMBL-90-HP3-E | -        | -              |

## Accessories

### Connecting plate PAML-CP

With internal thread for connecting fittings/pipes

-  - Temperature range  
+5 ... +60°C
-  - Operating pressure  
0 ... 50 bar



#### General technical data

|                           |      |      |      |    |        |      |        |        |    |        |
|---------------------------|------|------|------|----|--------|------|--------|--------|----|--------|
| Size                      | 90   |      |      |    |        | 186  |        |        |    |        |
| Nominal width DN          | 36   |      |      |    |        | 54   |        |        |    |        |
| Pneumatic connection 1, 2 | G1/4 | G1/2 | G3/4 | G1 | G1 1/4 | G1/4 | G1 1/4 | G1 1/2 | G2 | G2 1/2 |

#### Operating and environmental conditions

|  |  |             |
|--|--|-------------|
| Operating pressure                           | [MPa]                                      | 0 ... 5     |
|  | [bar]                                      | 0 ... 50    |
|  | [psi]                                      | 0 ... 725   |
| Operating medium                             | Compressed air to ISO 8573-1:2010 [---:--] |             |
| LABS (PWIS) conformity                       | VDMA24364-B2-L                             |             |
| Ambient temperature                          | [°C]                                       | +5 ... +60  |
| Temperature of medium                        | [°C]                                       | +5 ... +60  |
| Storage temperature                          | [°C]                                       | -10 ... +60 |
| Corrosion resistance class CRC <sup>1)</sup> | 2  |             |
| Food-safe <sup>2)</sup>                      | See supplementary material information     |             |

1) Corrosion resistance class CRC 2 to Festo standard FN 940070

Moderate corrosion stress. Indoor applications in which condensation can occur. External visible parts with primarily decorative surface requirements that are in direct contact with the surrounding industrial environment.

2) Additional information: [www.festo.com/catalogue/paml](http://www.festo.com/catalogue/paml) → Support/Downloads.

#### Materials

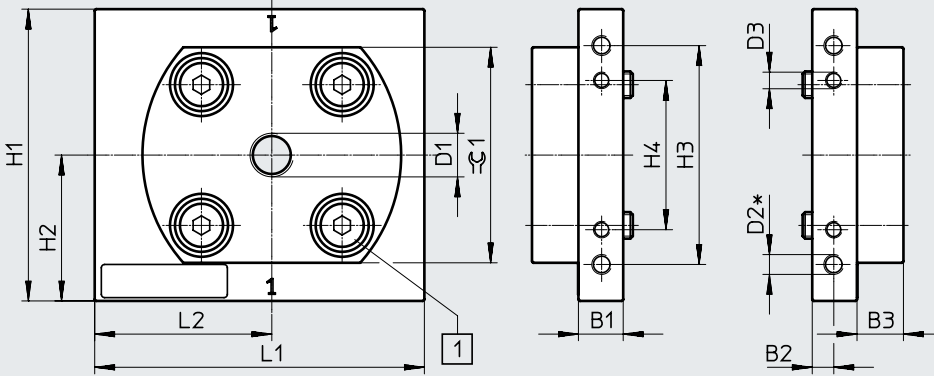
|                   |                         |
|-------------------|-------------------------|
| Connecting plate  | Wrought aluminium alloy |
| Screws            | Stainless steel         |
| Seals             | NBR                     |
| Note on materials | RoHS-compliant          |

Accessories

Dimensions – Size 90

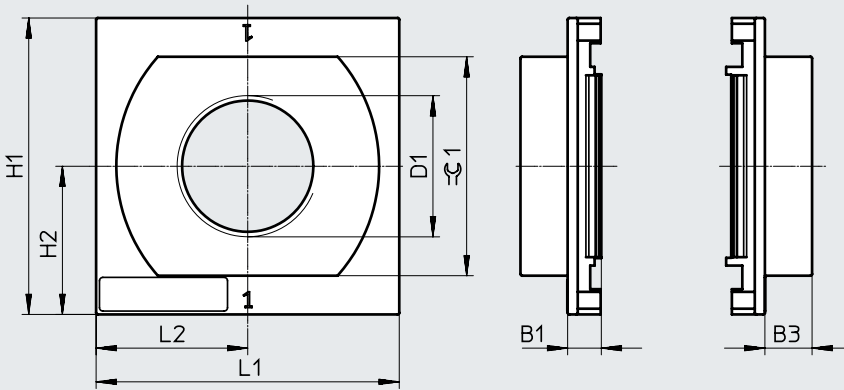
Download CAD data → [www.festo.com](http://www.festo.com)

PAML-CP-90-HP3-G14/G12/G34/G1



[1] Socket head screw M8x25

PAML-CP-90-HP3-G114



**Note**

A module connector PAML-MK-90-HP3 or a mounting bracket PAML-MB-90-HP3 is required for mounting.

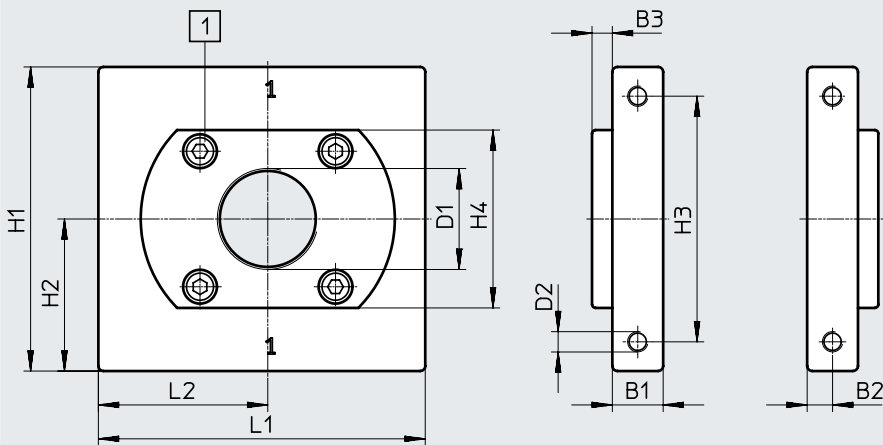
| Type                | B1   | B2  | B3 | D1     | D2 <sup>1)</sup> | D3   | H1 | H2 | H3 | H4 | L1  | L2  | ±0.1 |
|---------------------|------|-----|----|--------|------------------|------|----|----|----|----|-----|-----|------|
| PAML-CP-90-HP3-G14  | 13.5 | 6.5 | 14 | G1/4   | M6x10            | M5x9 | 88 | 44 | 66 | 45 | ~99 | ~53 | 65   |
| PAML-CP-90-HP3-G12  |      |     |    | G1/2   |                  |      |    |    |    |    |     |     |      |
| PAML-CP-90-HP3-G34  |      |     |    | G3/4   |                  |      |    |    |    |    |     |     |      |
| PAML-CP-90-HP3-G1   |      |     |    | G1     |                  |      |    |    |    |    |     |     |      |
| PAML-CP-90-HP3-G114 | 10   | -   | -  | G1 1/4 | -                | -    | -  | -  | -  | 90 | 45  | -   |      |

1) Thread for mounting the service unit on a wall without mounting bracket

Accessories

Dimensions – Size 186

Download CAD data → [www.festo.com](http://www.festo.com)



[1] Socket head screw M10x30



| Type                 | B1 | B2 | B3     | D1     | D2  | H1  | H2 | H3  | H4  | L1  | L2  |
|----------------------|----|----|--------|--------|-----|-----|----|-----|-----|-----|-----|
| PAML-CP-186-HP3-G14  | 30 | 15 | 12     | G1/4   | M12 | 180 | 90 | 145 | 105 | 193 | 100 |
| PAML-CP-186-HP3-G114 |    |    |        | G1 1/4 |     |     |    |     |     |     |     |
| PAML-CP-186-HP3-G112 |    |    |        | G1 1/2 |     |     |    |     |     |     |     |
| PAML-CP-186-HP3-G2   |    |    |        | G2     |     |     |    |     |     |     |     |
| PAML-CP-186-HP3-G212 |    |    | G2 1/2 | 25     |     |     |    |     |     |     |     |

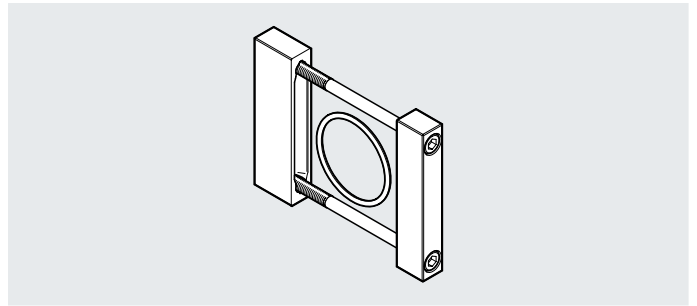
| Ordering data |                      |            |          |                      |
|---------------|----------------------|------------|----------|----------------------|
| Size          | Pneumatic connection | Weight [g] | Part no. | Type                 |
| 90            | G1/4                 | 800        | 1651540  | PAML-CP-90-HP3-G14   |
|               | G1/2                 | 770        | 1651541  | PAML-CP-90-HP3-G12   |
|               | G3/4                 | 750        | 1651542  | PAML-CP-90-HP3-G34   |
|               | G1                   | 730        | 1651543  | PAML-CP-90-HP3-G1    |
|               | G1 1/4               | 500        | 1448978  | PAML-CP-90-HP3-G114  |
| 186           | G1/4                 | 4700       | 1629300  | PAML-CP-186-HP3-G14  |
|               | G1 1/4               | 4600       | 1629296  | PAML-CP-186-HP3-G114 |
|               | G1 1/2               | 4500       | 1629297  | PAML-CP-186-HP3-G112 |
|               | G2                   | 4400       | 1629298  | PAML-CP-186-HP3-G2   |
|               | G2 1/2               | 4900       | 1629299  | PAML-CP-186-HP3-G212 |

## Accessories

### Module connector PAML-MK

For connecting individual service unit components to form service units

-  - Temperature range  
+5 ... +60°C
-  - Operating pressure  
0 ... 50 bar



| General technical data |    |     |
|------------------------|----|-----|
| Size                   | 90 | 186 |
| Nominal width DN       | 36 | 54  |

| Operating and environmental conditions       |  |             |
|--|--|-------------|
| Operating pressure                           | [MPa]                                      | 0 ... 5     |
|  | [bar]                                      | 0 ... 50    |
|  | [psi]                                      | 0 ... 725   |
| Operating medium                             | Compressed air to ISO 8573-1:2010 [---:--] |             |
| LABS (PWIS) conformity                       | VDMA24364-B2-L                             |             |
| Ambient temperature                          | [°C]                                       | +5 ... +60  |
| Temperature of medium                        | [°C]                                       | +5 ... +60  |
| Storage temperature                          | [°C]                                       | -10 ... +60 |
| Corrosion resistance class CRC <sup>1)</sup> | 2  |             |
| Food-safe <sup>2)</sup>                      | See supplementary material information     |             |

1) Corrosion resistance class CRC 2 to Festo standard FN 940070

Moderate corrosion stress. Indoor applications in which condensation can occur. External visible parts with primarily decorative surface requirements that are in direct contact with the surrounding industrial environment.

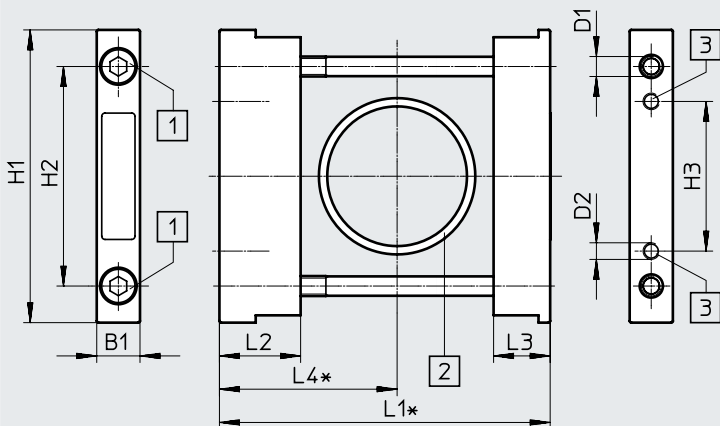
2) Additional information: [www.festo.com/catalogue/paml](http://www.festo.com/catalogue/paml) → Support/Downloads.

| Materials         |                         |
|-------------------|-------------------------|
| Module connector  | Wrought aluminium alloy |
| Screws            | Stainless steel         |
| Seals             | NBR                     |
| Note on materials | RoHS-compliant          |

Accessories

Dimensions – Size 90

Download CAD data → [www.festo.com](http://www.festo.com)



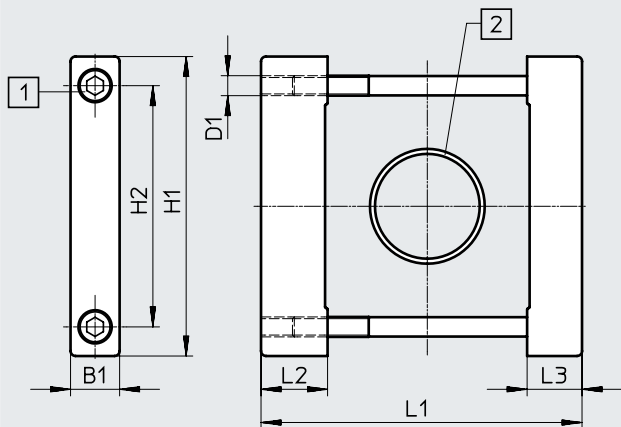
- [1] Socket head screw M6x85
- [2] O-ring 42x2.5
- [3] Thread for mounting the service unit component on a wall

| Type           | B1 | D1 | D2   | H1 | H2 | H3 | L1 <sup>1)</sup> | L2   | L3 | L4 <sup>1)</sup> |
|----------------|----|----|------|----|----|----|------------------|------|----|------------------|
| PAML-MK-90-HP3 | 13 | M6 | M5x9 | 88 | 66 | 45 | 99               | 24.4 | 17 | ~53              |

1) Dimension in mounted state

Dimensions – Size 186

Download CAD data → [www.festo.com](http://www.festo.com)



- [1] Socket head screw M12x160
- [2] O-ring 63x3

| Type            | B1   | D1  | H1  | H2  | L1 <sup>1)</sup> | L2 | L3 |
|-----------------|------|-----|-----|-----|------------------|----|----|
| PAML-MK-186-HP3 | 29.5 | M12 | 180 | 145 | 193              | 40 | 33 |

1) Dimension in mounted state

Ordering data

| Size | Weight [g] | Part no.       | Type                   |
|------|------------|----------------|------------------------|
| 90   | 150        | <b>1367005</b> | <b>PAML-MK-90-HP3</b>  |
| 186  | 1300       | <b>1629377</b> | <b>PAML-MK-186-HP3</b> |





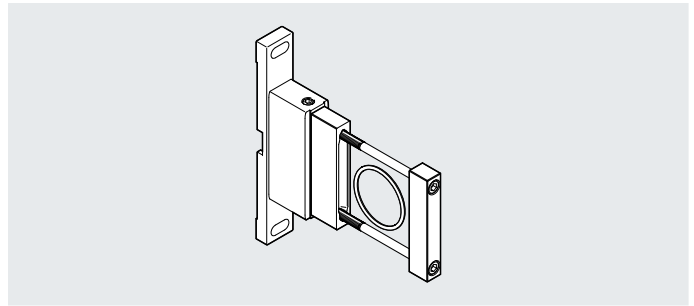
## Accessories

### Mounting bracket PAML-MB

For mounting service units on a wall and for connecting individual service unit components to form service units

- Fast hooking and unhooking

-  - Temperature range  
+5 ... +60°C
-  - Operating pressure  
0 ... 50 bar



| General technical data                       |       |  |
|--|-------|--|
| Size   |       | 90   |
| Nominal width DN                             |       | 36   |
| Operating and environmental conditions       |       |  |
| Operating pressure                           | [MPa] | 0 ... 5                                    |
|  | [bar] | 0 ... 50                                   |
|  | [psi] | 0 ... 725                                  |
| Operating medium                             |       | Compressed air to ISO 8573-1:2010 [---:--] |
| LABS (PWIS) conformity                       |       | VDMA24364-B2-L                             |
| Ambient temperature                          | [°C]  | +5 ... +60                                 |
| Temperature of medium                        | [°C]  | +5 ... +60                                 |
| Storage temperature                          | [°C]  | -10 ... +60                                |
| Corrosion resistance class CRC <sup>1)</sup> |       | 2  |
| Food-safe <sup>2)</sup>                      |       | See supplementary material information     |

1) Corrosion resistance class CRC 2 to Festo standard FN 940070

Moderate corrosion stress. Indoor applications in which condensation can occur. External visible parts with primarily decorative surface requirements that are in direct contact with the surrounding industrial environment.

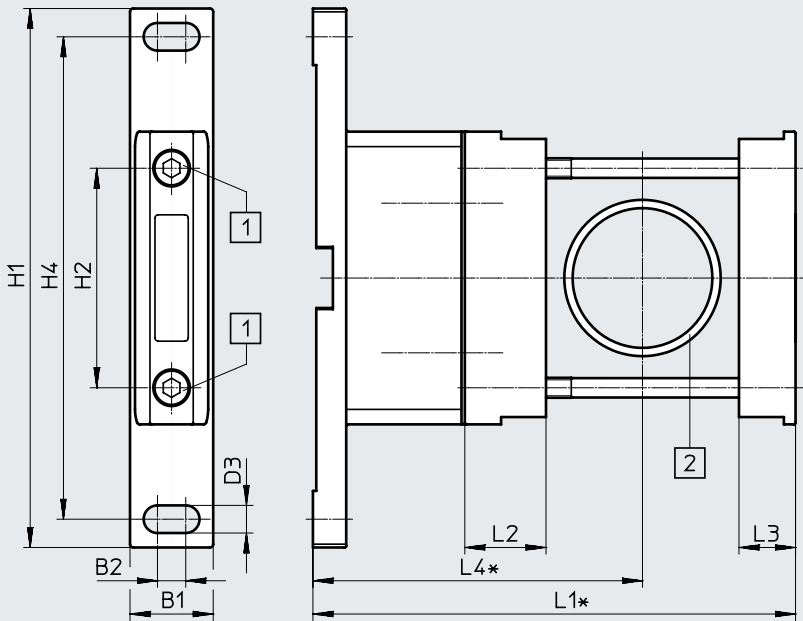
2) Additional information: [www.festo.com/catalogue/paml](http://www.festo.com/catalogue/paml) → Support/Downloads.

| Materials         |                         |
|-------------------|-------------------------|
| Bracket           | Wrought aluminium alloy |
| Module connector  | Wrought aluminium alloy |
| Screws            | Stainless steel         |
| Seals             | NBR                     |
| Note on materials | RoHS-compliant          |

Accessories

Dimensions – Size 90

Download CAD data → [www.festo.com](http://www.festo.com)



- [1] Socket head screw M5x18
- [2] O-ring 42x2.5

| Type           | B1 | B2  | D3  | H1  | H2 | H4  | L1 <sup>1)</sup> | L2   | L3 | L4 <sup>1)</sup> |
|----------------|----|-----|-----|-----|----|-----|------------------|------|----|------------------|
| PAML-MB-90-HP3 | 25 | 8.5 | 8.3 | 162 | 66 | 145 | ~145             | 24.4 | 17 | ~99              |

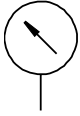
1) Dimension in mounted state



Ordering data

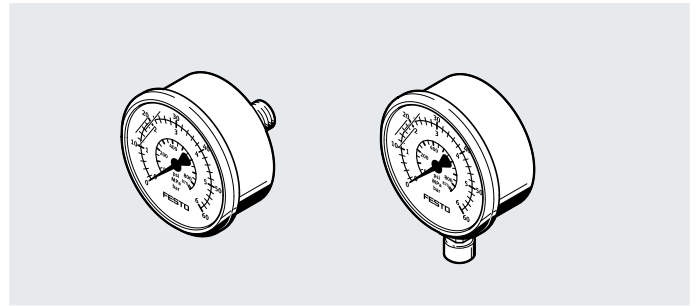
| Size | Weight [g] | Part no.       | Type                  |
|------|------------|----------------|-----------------------|
| 90   | 300        | <b>1367323</b> | <b>PAML-MB-90-HP3</b> |

## Accessories

## Pressure gauge PAGL



-  - Temperature range  
0 ... +60°C
-  - Operating pressure  
0 ... 60 bar



| Technical data                         |                                     |
|--|-------------------------------------|
| Nominal size                           | 63                                  |
| Pneumatic connection                   | G1/4                                |
| Operating medium                       | Inert gases<br>Neutral fluids       |
| Note on the operating/<br>pilot medium | No oxygen<br>No acetylene           |
| Design                                 | Bourdon tube pressure gauge         |
| Conforms to standard                   | EN 837-1                            |
| Type of mounting                       | In-line installation                |
| Connection position                    | Centred, rear<br>Radial, underneath |
| Ambient temperature [°C]               | 0 ... +60                           |
| Temperature of medium [°C]             | 0 ... +60                           |
| Storage temperature [°C]               | -40 ... +70                         |
| Measurement accuracy class             | 1.6                                 |
| Continuous load factor                 | 0.75                                |
| Intermittent load factor               | 0.66                                |
| Degree of protection                   | IP65                                |
| Weight [g]                             | 80                                  |

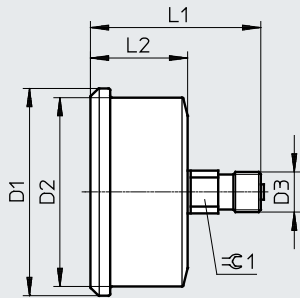
| Materials  |                        |
|--|------------------------|
| Nominal size   | 63                     |
| Pneumatic connection                                     | G1/4                   |
| Housing  | Steel (colour: silver) |
| Inspection window  | PS                     |
| Screwed trunnion/<br>materials in contact with the media | Brass                  |
| Note on materials  | RoHS-compliant         |

## Accessories

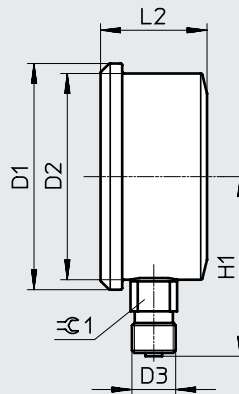
### Dimensions

Download CAD data → [www.festo.com](http://www.festo.com)

PAGL-HP3-63-60-G14



PAGL-HP3-63-60-G14-RC

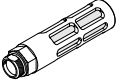



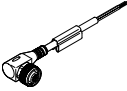
| Type                  | D1<br>∅ | D2<br>∅ | D3   | H1<br>±0.5 | L1<br>±0.5 | L2<br>±0.5 | ≅ 1 |
|-----------------------|---------|---------|------|------------|------------|------------|-----|
| PAGL-HP3-63-60-G14    | 68      | 62      | G1/4 | –          | 56         | 32         | 14  |
| PAGL-HP3-63-60-G14-RC |         |         |      | 54         | –          |            |     |

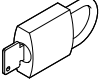
### Ordering data

| Nominal size | Pneumatic connection | Operating pressure | Display range                   |               | Connection position | Part no.       | Type                         |
|--------------|----------------------|--------------------|---------------------------------|---------------|---------------------|----------------|------------------------------|
|              |                      |                    | Outer scale                     | Inner scale   |                     |                |                              |
| 63           | G1/4                 | 0 ... 60 bar       | 0 ... 60 bar and<br>0 ... 6 MPa | 0 ... 870 psi | Centred, rear       | <b>1166938</b> | <b>PAGL-HP3-63-60-G14</b>    |
|              |                      |                    |                                 |               | Radial, underneath  | <b>1908519</b> | <b>PAGL-HP3-63-60-G14-RC</b> |

## Accessories

| Ordering data – Silencer U  |              |                      | Datasheets → Internet: u |                |
|---|--------------|----------------------|--------------------------|----------------|
|   | Description  | Pneumatic connection | Part no.                 | Type           |
|  | For PREL-90  | G3/8                 | <b>6843</b>              | <b>U-3/8-B</b> |
|   | For PREL-186 | G1/2                 | <b>6844</b>              | <b>U-1/2-B</b> |
|   | For PVEL     | G1                   | <b>151990</b>            | <b>U-1-B</b>   |

| Ordering data – Connecting cable NEBU-M12   |                        |                 |                  | Datasheets → Internet: nebu |                             |
|---|------------------------|-----------------|------------------|-----------------------------|-----------------------------|
|   | Electrical connection  | Number of wires | Cable length [m] | Part no.                    | Type                        |
|  | M12x1, straight socket | 5               | 2.5              | <b>541330</b>               | <b>NEBU-M12G5-K-2.5-LE5</b> |
|   |                        |                 | 5                | <b>541331</b>               | <b>NEBU-M12G5-K-5-LE5</b>   |
|   |                        |                 | 10               | <b>554038</b>               | <b>NEBU-M12G5-K-10-LE5</b>  |
|  | M12x1, angled socket   | 5               | 2.5              | <b>567843</b>               | <b>NEBU-M12W5-K-2.5-LE5</b> |
|   |                        |                 | 5                | <b>567844</b>               | <b>NEBU-M12W5-K-5-LE5</b>   |

| Ordering data – Padlock LRV5-D  |            |               |               |
|---|------------|---------------|---------------|
|   | Weight [g] | Part no.      | Type          |
|  | 120        | <b>193786</b> | <b>LRV5-D</b> |