

# Technical Information

## Cleanfit CPA871

Flexible retractable process assembly for water, wastewater, chemical industry and heavy industry



### Application

Cleanfit CPA871 is a flexible process retractable assembly for applications with standard 12 mm sensors for pH and redox.

The assembly was developed to guarantee maximum safety in:

- Water and wastewater including sea water
- Chemical industry
- Oil and gas
- Electricity and energy
- Hazardous areas
- Primaries and metals

### Your benefits

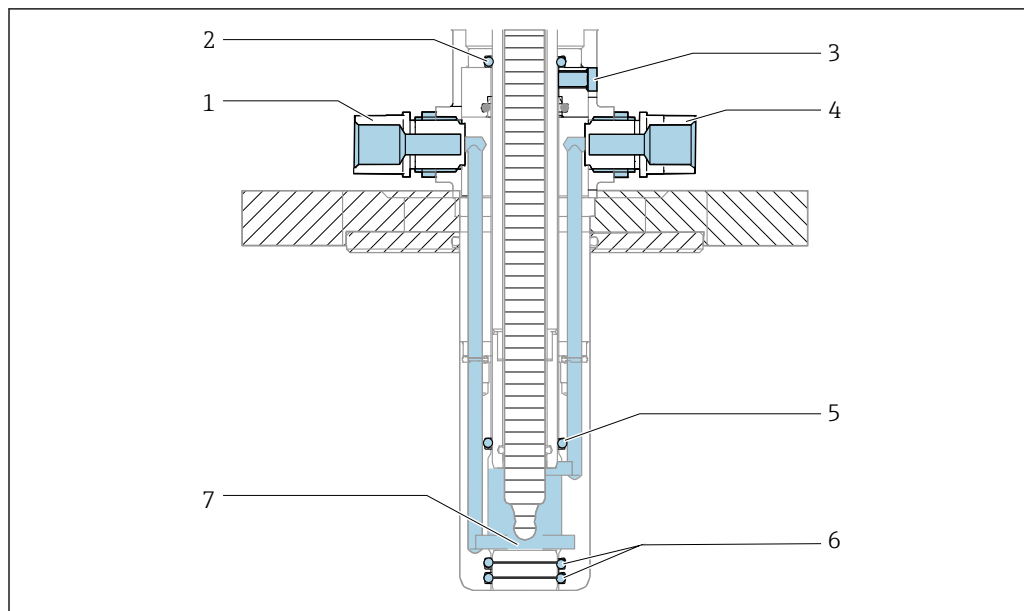
- Maximum operational safety: Intelligent functions ensure that the assembly is not inserted into the process without the sensor or unintentionally retracted from the process if the assembly is in measuring position.
- Suitable for demanding applications: The optional immersion chamber eliminates problems associated with media that form buildup.
- Robust assembly design: The metallic support housing ensures that the service chamber is mechanically stable.
- Flexible in adapting to your process: A wide range of process connections and materials in contact with the medium; for corrosive media and hazardous areas also.

## Function and system design

### Operating principle

With the Cleanfit CPA871 retractable assembly, you can carry out pH, ORP and other measurements reliably using suitable sensors. You can remove, clean, sterilize or calibrate/adjust the sensors without interrupting the process.

The assembly can be installed in both vessels and pipes.



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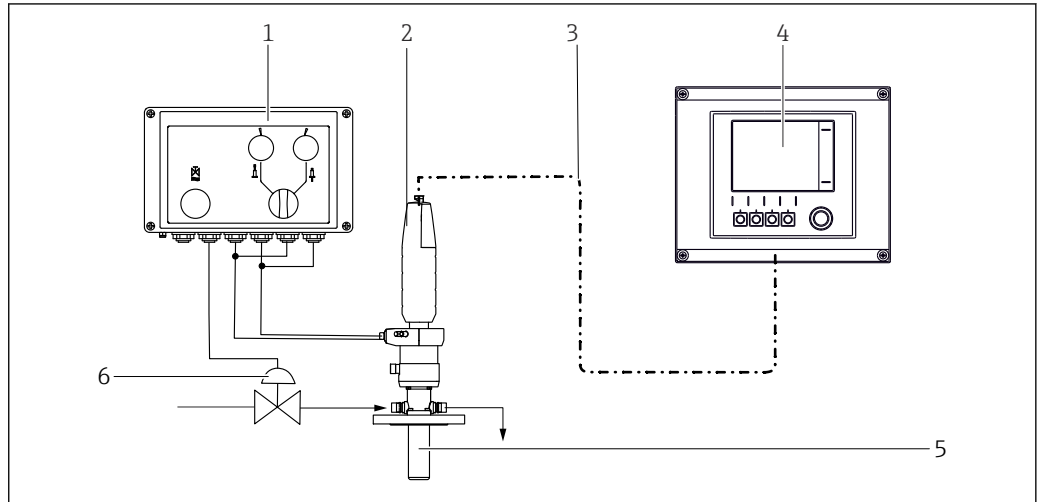
 1 Sealing system, assembly in service position

- 1 Rinse chamber, inlet
- 2 Seal drive (1 x O-ring)
- 3 Leakage hole
- 4 Rinse chamber, outlet
- 5 Seal, rinse chamber (1 x O-ring)
- 6 Process seal (2 x O-ring)
- 7 Rinse chamber

The assembly is open to the process during insertion/retraction; the rinse connections must either be pipe-fitted or sealed.

The assembly has a pin seal. This seals the assembly from the process in the relevant limit position.

## Measuring system

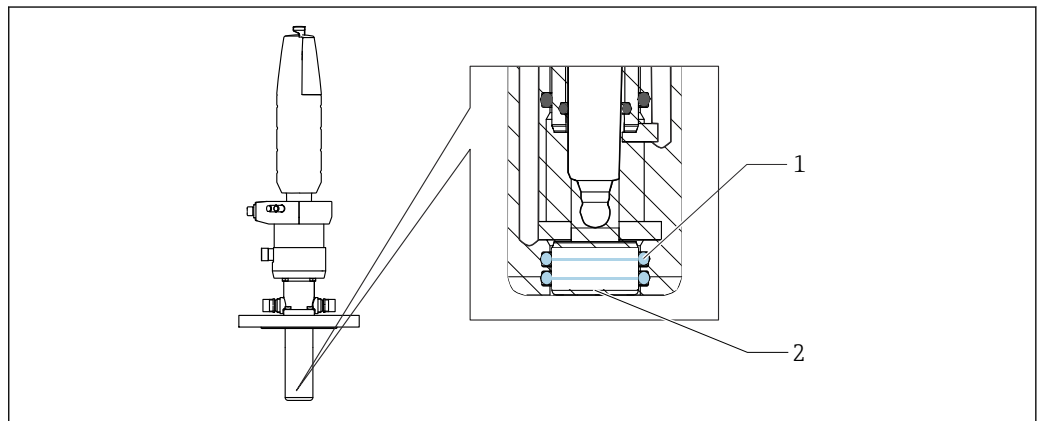


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### 2 Example of a measuring system

- 1 Air-Trol CYC10 switching unit
- 2 Cleanfit CPA871 assembly
- 3 Measuring cable CYK10
- 4 Liquiline CM44x transmitter
- 5 Sensor (in assembly)
- 6 Valve (example)

## Process seal



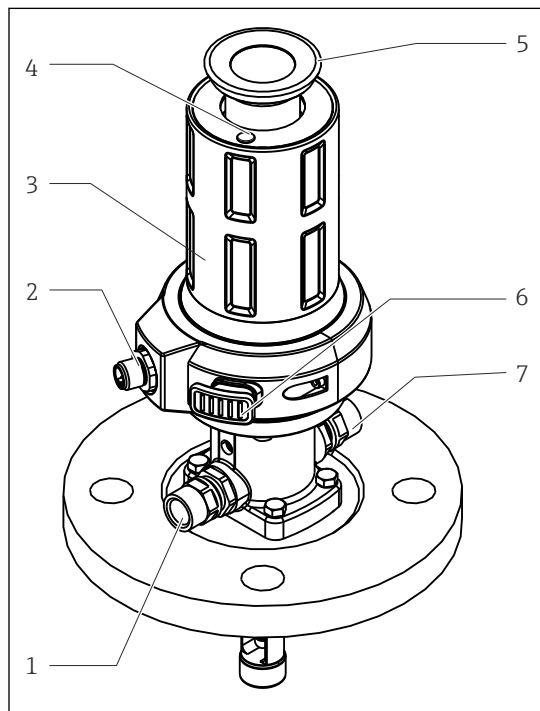
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### 3 Process seal, assembly in service position

- 1 Process seal (2 x O-ring)
- 2 Pin

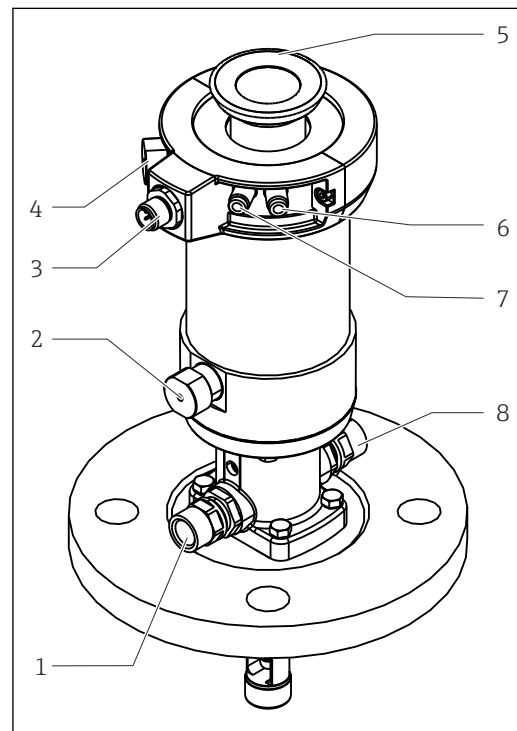
## Elements

The assembly is available with a manual or pneumatic drive.



 4 Assembly with manual drive (without protection cap)

- 1 Rinse connection
- 2 Connection for limit position switch
- 3 Manual drive (fulcrum shaft)
- 4 Unlocking button (service position)
- 5 Fastening ring for protective cap
- 6 Unlocking button (measuring position)
- 7 Rinse connection



 5 Assembly with pneumatic drive (without protective cap)

- 1 Rinse connection
- 2 Automatic limit position lock, process
- 3 Connection for limit position switch
- 4 Automatic limit position lock, service
- 5 Fastening ring for protective cap
- 6 Pneumatic connection (move to measuring position)
- 7 Pneumatic connection (move to service position)
- 8 Rinse connection

## Design

The retractable assembly has a modular design and can therefore be flexibly adapted to a wide array of applications.

A choice of two chamber systems is available for the assembly:

- Standard version or
- Immersion chamber version

It is possible to choose between the following strokes for the electrode guide:

- 36 mm (1.42 in) for standard version and immersion chamber version
- 78 mm (3.07 in) for standard version

## Dependability

### Safety function

#### Locking mechanism without sensor

If a sensor is not installed, the assembly can be moved from the service position to the measuring position.

#### Manual or pneumatic drive

The sensor can be driven both manually and pneumatically. The manual drive can be used for process pressures up to 8 bar (116 psi). The pneumatic drive can be used for process pressures up to 16 bar (232 psi).

#### Limit position locking if compressed air fails

If the compressed air fails in pneumatic assemblies, the assembly remains in the position previously selected.

**Limit position locking with manual drive**

For position locking, the manual version has an unlocking button in both the measuring position and the service position.

**Impossible to remove sensor in the measuring position**

The protection cap for covering the sensor has the following functions:

- Mechanical sensor safety
- Prevents sensor removal in the assembly measuring position

The bottom part of the protection cap is partly inserted into the drive and cannot be opened as a result.

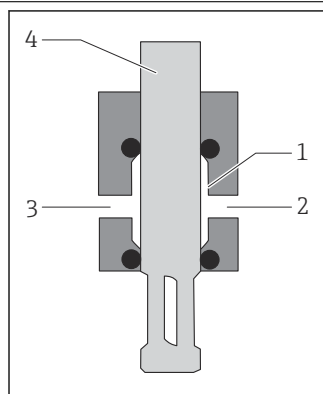
**Limit position detection**

The limit positions can be indicated by an inductive sensor. In the case of assemblies with a pneumatic drive, the service and measuring position of the sensor are detected inductively and reported to connected systems (only for the measuring position in the case of the manual drive assembly).

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**Immersion chamber**

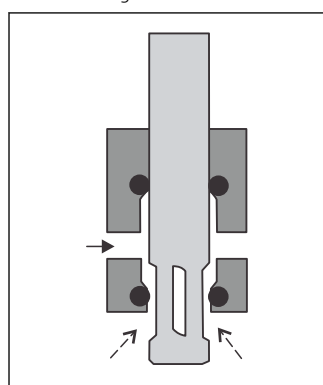
The special immersion chamber version is the perfect solution when the sensor descends to greater immersion depths in media that cause buildup and media with a tendency to form condensation. In the process medium, the sensor guide containing the installed sensor is almost completely surrounded by the service chamber. This means that there is minimal contact with the medium. The seals are thus protected from damage when the sensor is moving from measuring to service position.

**Service chamber**

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- 1 Service chamber
- 2 Service chamber outlet
- 3 Service chamber inlet
- 4 Sensor guide

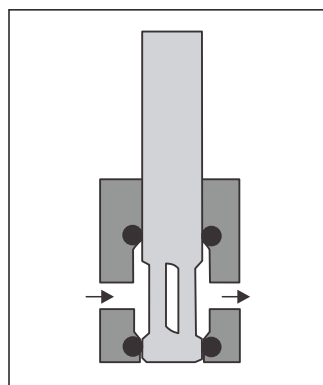
In measuring position, the service chamber is separated from the process by the process seals and sensor guide. No process medium can get into the service chamber.



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When the assembly is moving from measuring to service position (or the other way around), the service chamber is no longer separated from the process. Now process medium can get into the service chamber.

To prevent this, you can rinse the service chamber with a sealing medium via the service chamber inlet. This also means that process medium, which may contain solid particles, does not need to be removed via the service chamber.



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In service position, the service chamber is separated from the process.

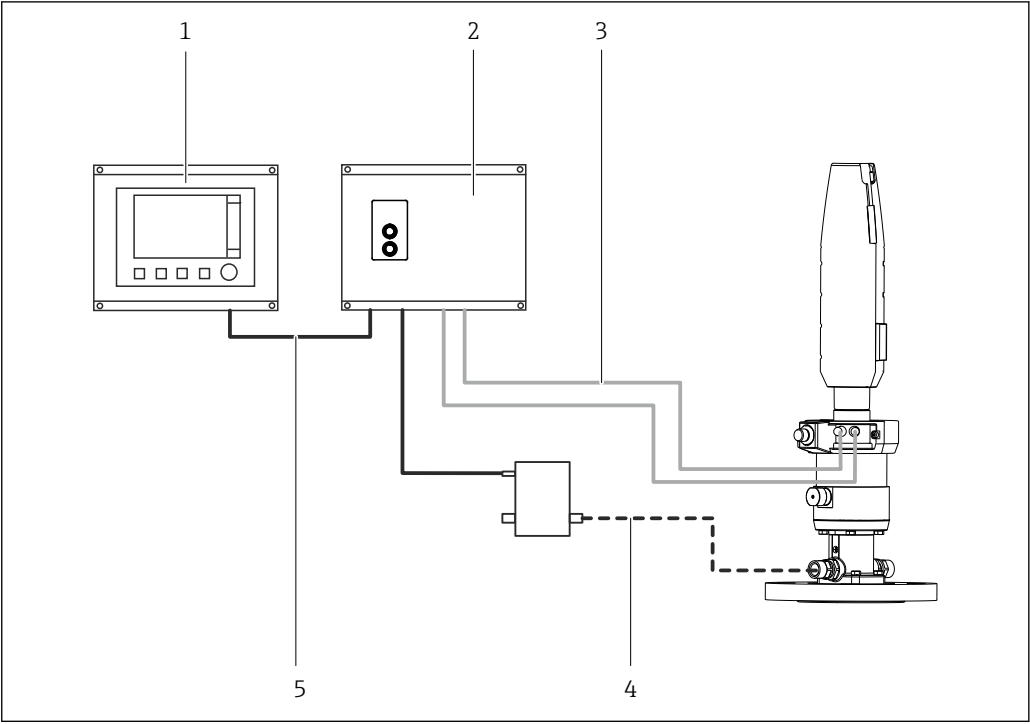
Cleanfit Control

Cleaning automation

Cleanfit Control CYC25 converts electrical signals into pneumatic signals. Signals coming from the relays or outputs of the transmitter are used to control pneumatically-operated retractable assemblies or pumps. Pilot valves are used for this purpose.

Cleanfit Control CYC25 allows automatic cleaning of sensors installed in retractable assemblies. This means that sensor performance can be maintained at a high level without any interruption to the process.

It is the function of the Cleanfit Control CYC25 to integrate the actuators into the cleaning program. That is why the actuators, i.e. assembly, valves and pumps, are not connected directly via the relays to the Liquiline CM44x. Instead they are connected to the Cleanfit Control CYC25. The 24V DC power supply to these actuators, as well as the compressed air supply, are provided by the customer.



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6 Cleaning control with Cleanfit Control

- 1 Liquiline CM44x
- 2 Cleanfit Control CYC25
- 3 Pneumatic connection
- 4 Cleaning medium
- 5 Electrical connection

Installation

Sensor selection

Depending on the assembly version.

|                                   |                       |                  |
|-----------------------------------|-----------------------|------------------|
| Short version                     | Gel electrodes, ISFET | 120 mm (4.7 in)  |
|                                   | Gel electrodes, ISFET | 225 mm (8.9 in)  |
|                                   | KCl electrode         | 225 mm (8.9 in)  |
| Long version                      | Gel electrodes, ISFET | 225 mm (8.9 in)  |
|                                   | Gel electrodes, ISFET | 360 mm (14.2 in) |
| Immersion chamber version (short) | Gel electrodes, ISFET | 225 mm (8.9 in)  |
|                                   | KCl electrode         | 360 mm (14.2 in) |
| Immersion chamber version (long)  | Gel+KCl               | 360 mm (14.2 in) |

|                                |                                                          |                                      |
|--------------------------------|----------------------------------------------------------|--------------------------------------|
| <b>Limit position switches</b> | Switching element function:                              | NAMUR NC contact (inductive)         |
|                                | Switching distance:                                      | 1.5 mm (0.06 ")                      |
|                                | Nominal voltage:                                         | 8 V                                  |
|                                | Switching frequency:                                     | 0 to 5000 Hz                         |
|                                | Housing material:                                        | Stainless steel                      |
|                                | Output interface terminals                               | NAMUR                                |
|                                | Limit position switches (inductive conductivity sensors) | Pepperl+Fuchs NJ1,5-6,5-15-N-Y180094 |

## Environment

|                                                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
|--------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Ambient temperature range</b>                 | -10 to 70 °C (14 to 158 °F)                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| <b>Storage temperature</b>                       | -10 to 70 °C (14 to 158 °F)                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| <b>Degree of protection</b>                      | IP66                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| <b>Vibration resistance and shock resistance</b> | <p>Sinusoidal similar to DIN EN IEC 60068-2-6</p> <ul style="list-style-type: none"> <li>■ 2-8.4 Hz, 7.5 mm peak</li> <li>■ 8.4-2000 Hz, 5 g peak</li> </ul> <p>Broadband noise similar to DIN EN IEC 60068-2-64</p> <ul style="list-style-type: none"> <li>■ 10-200 Hz, 0.01 g<sup>2</sup>/Hz</li> <li>■ 8200-2000 Hz, 0.003 g<sup>2</sup>/Hz</li> <li>■ Total: 2.70 g rms</li> </ul> <p>Shocks (half-sine) similar to DIN EN IEC 60068-2-2</p> <p>30 g, 6 ms</p> |

## Process

|                                                                                                                                                                                                                                                                         |                                                                                     |                                     |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------|
| <b>Process temperature range</b>                                                                                                                                                                                                                                        | <b>For all materials except PVDF, PVDF conductive and PP</b>                        |                                     |
|                                                                                                                                                                                                                                                                         | -10 to 140 °C (14 to 284 °F)                                                        |                                     |
|                                                                                                                                                                                                                                                                         | <b>PVDF and PVDF conductive</b>                                                     |                                     |
|                                                                                                                                                                                                                                                                         | -10 to <sup>100</sup> / <sub>90</sub> °C (14 to <sup>212</sup> / <sub>194</sub> °F) |                                     |
| <b>Process pressure range</b>                                                                                                                                                                                                                                           | <b>PP</b>                                                                           |                                     |
|                                                                                                                                                                                                                                                                         | 0 to 60 °C (32 to 140 °F)                                                           |                                     |
|                                                                                                                                                                                                                                                                         | Pneumatic drive                                                                     | 16 bar (232 psi) to 140 °C (284 °F) |
|                                                                                                                                                                                                                                                                         | Manual drive<br>(PP version may vary)                                               | 8 bar (116 psi) to 140 °C (284 °F)  |
|  The service life of the seals is reduced if process temperatures are constantly high or if SIP is used. The other process conditions may also reduce the service life of the seals. |                                                                                     |                                     |

Process pressure for pneumatic drive

| Materials               | Basic version                       | Immersion chamber version           |
|-------------------------|-------------------------------------|-------------------------------------|
| 1.4404, Alloy C22, PEEK | 16 bar (232 psi) to 140 °C (284 °F) | 16 bar (232 psi) to 140 °C (284 °F) |
| PVDF, PVDF conductive   | 16 bar (232 psi) to 100 °C (212 °F) | 4 bar (58 psi) to 90 °C (194 °F)    |
| PP (polypropylene)      | 6 bar (87 psi) to 20 °C (68 °F)     | -                                   |

-  The service life of the seals is reduced if process temperatures are constantly high or if SIP is used. The other process conditions may also reduce the service life of the seals.
-  Depending on the version, the process pressure must be reduced to insert/retract the assembly.

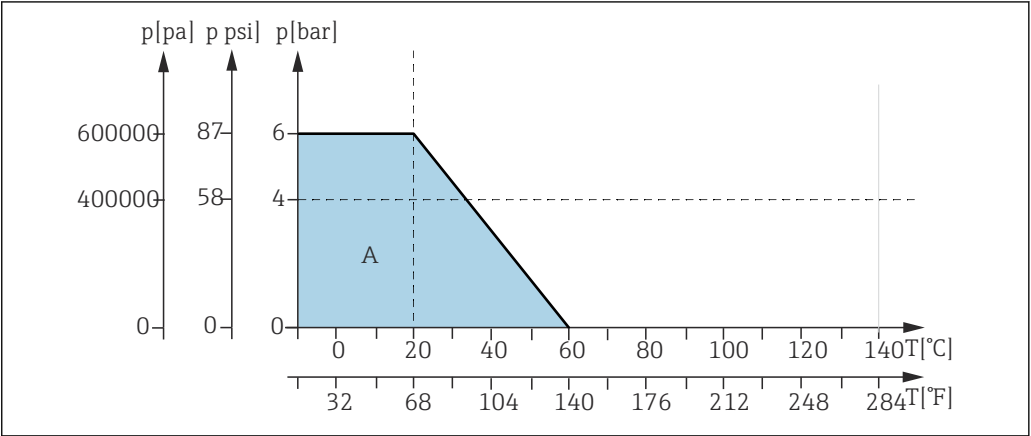
Process pressure for manual drive

| Materials               | Basic version                      | Immersion chamber version          |
|-------------------------|------------------------------------|------------------------------------|
| 1.4404, Alloy C22, PEEK | 8 bar (116 psi) to 140 °C (284 °F) | 8 bar (116 psi) to 140 °C (284 °F) |
| PVDF, PVDF conductive   | 8 bar (116 psi) to 100 °C (212 °F) | 4 bar (58 psi) to 90 °C (194 °F)   |
| PP (polypropylene)      | 6 bar (87 psi) to 20 °C (68 °F)    | -                                  |

-  The service life of the seals is reduced if process temperatures are constantly high or if SIP is used. The other process conditions may also reduce the service life of the seals.

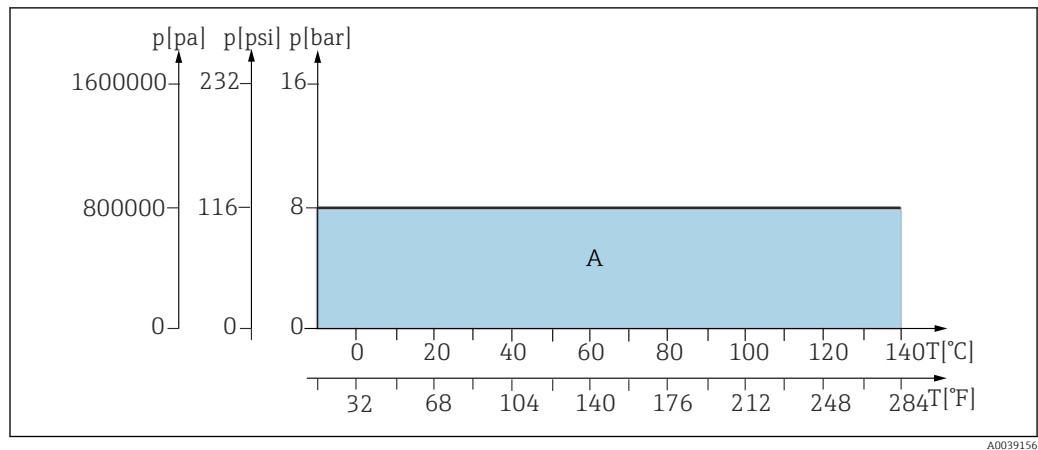
Pressure-temperature ratings

Manual and pneumatic drive, insertion/retraction up to 6 bar



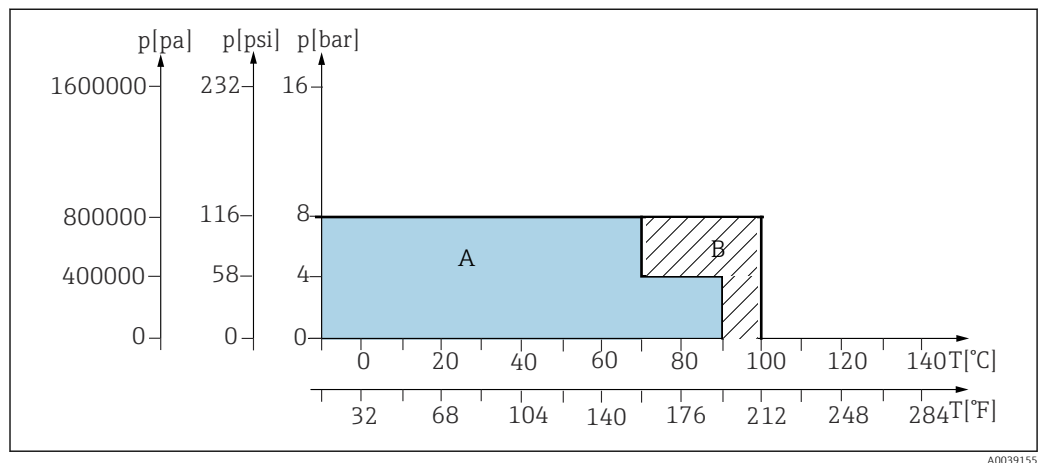
 7 Pressure/temperature ratings for basic version for the material PP (CPA871\~\*\*\*\*\*H\*\*\*\*\*)  
A Basic version

Manual drive, insertion/retraction up to 8 bar



8 Pressure temperature ratings for basic and immersion chamber version for materials 1.4404, Alloy C22 and PEEK

A Basic and immersion chamber version



9 Pressure temperature ratings for basic version for materials PVDF and conductive PVDF

A Immersion chamber version

B Basic version

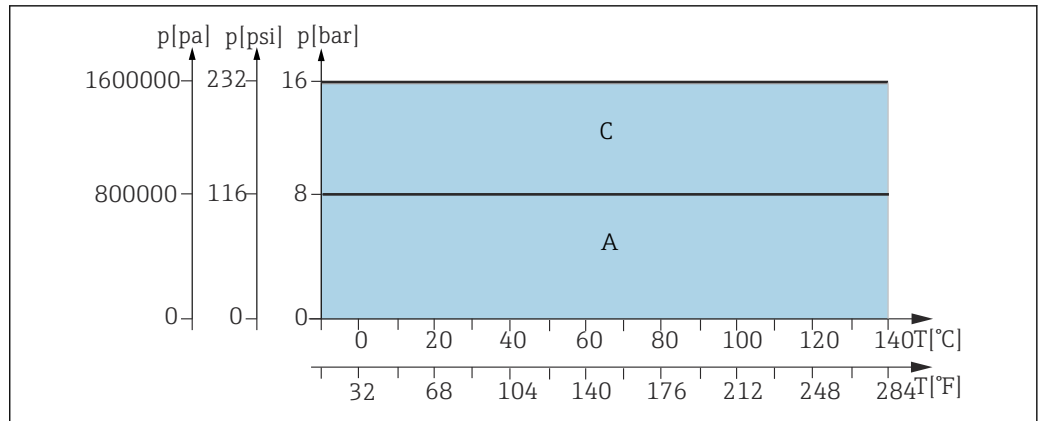
Pneumatic drive, insertion/retraction up to 8 bar (static pressure resistance up to 16 bar)

#### NOTICE

Process seal can be damaged if the pressure during insertion/retraction is too high.

Medium escaping from the assembly

- Assembly insertion/retraction at 8 bar.

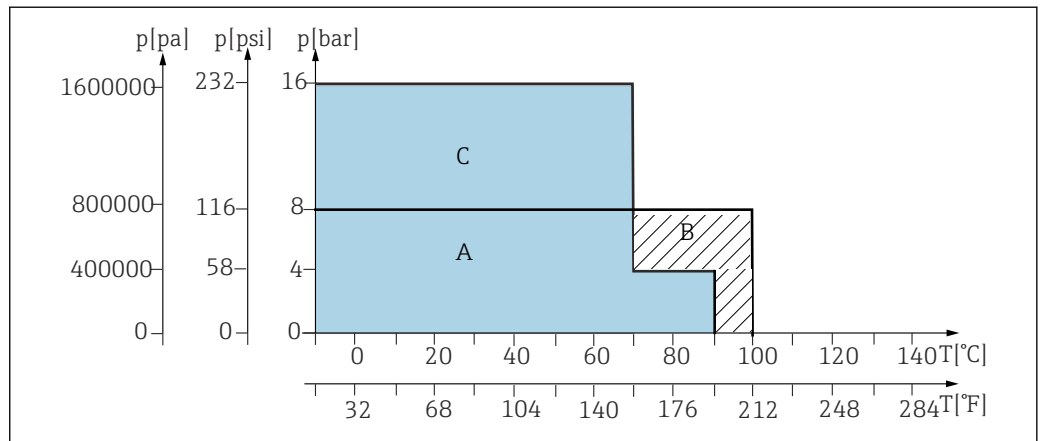


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10 Pressure/temperature ratings for basic and immersion chamber version for 1.4404, Alloy C22 and PEEK materials (CPA871-\*\*G/H\*\*\*\*\* )

A Basic and immersion chamber version

C Static range, assembly insertion/retraction not permitted



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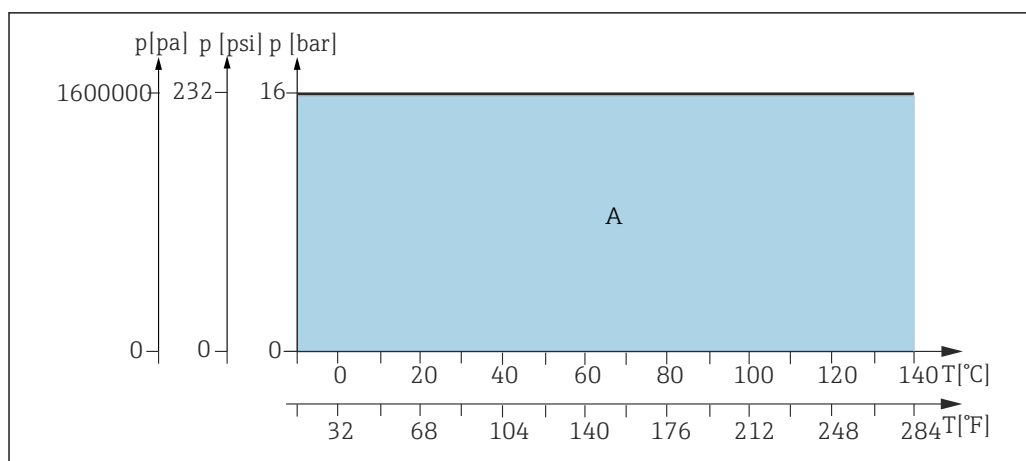
11 Pressure/temperature ratings for basic version for PVDF and conductive PVDF materials (CPA871-\*\*G/H\*\*\*\*\* )

A Immersion chamber version

B Basic version

C Static range, assembly insertion/retraction not permitted

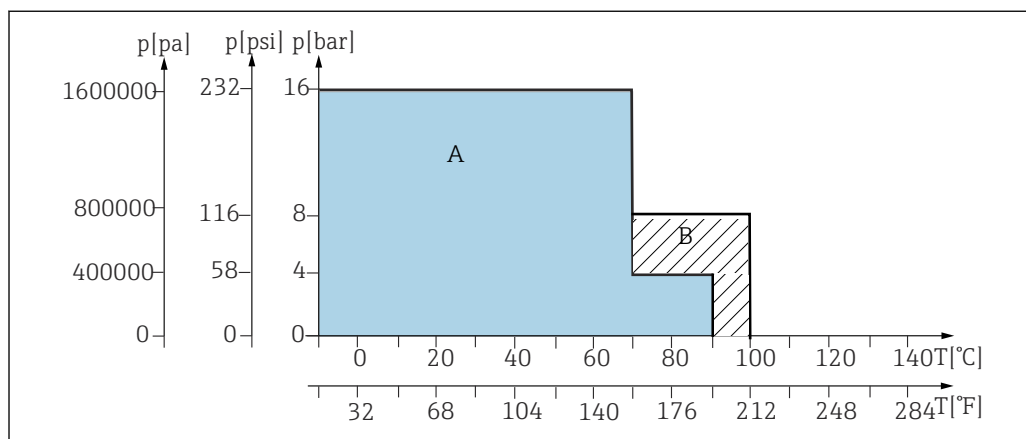
Pneumatic drive, insertion/retraction up to 16 bar



A0039157

12 Pressure/temperature ratings for basic and immersion chamber version for 1.4404, Alloy C22 and PEEK materials (CPA871-\*\*E/F\*\*\*\*\*)

A Basic and immersion chamber version



A0039162

13 Pressure/temperature ratings for basic version for PVDF and conductive PVDF materials (CPA871-\*\*E/F\*\*\*\*\*)

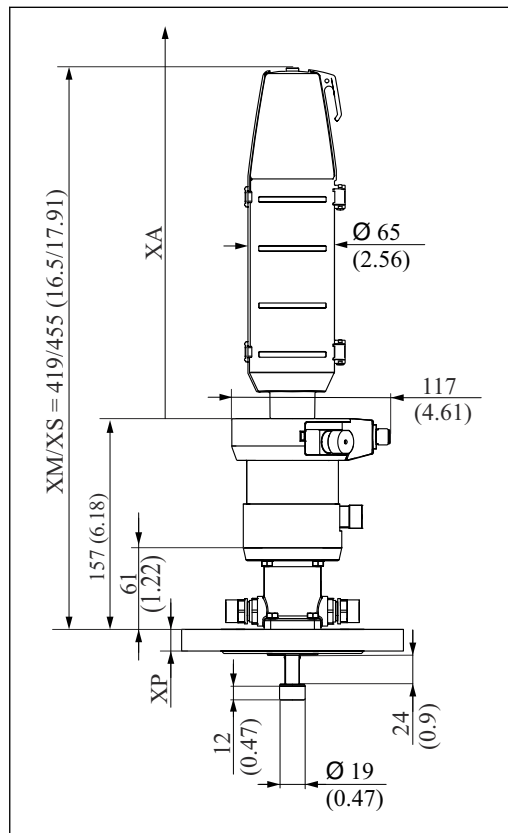
A Immersion chamber version

B Basic version

## Mechanical construction

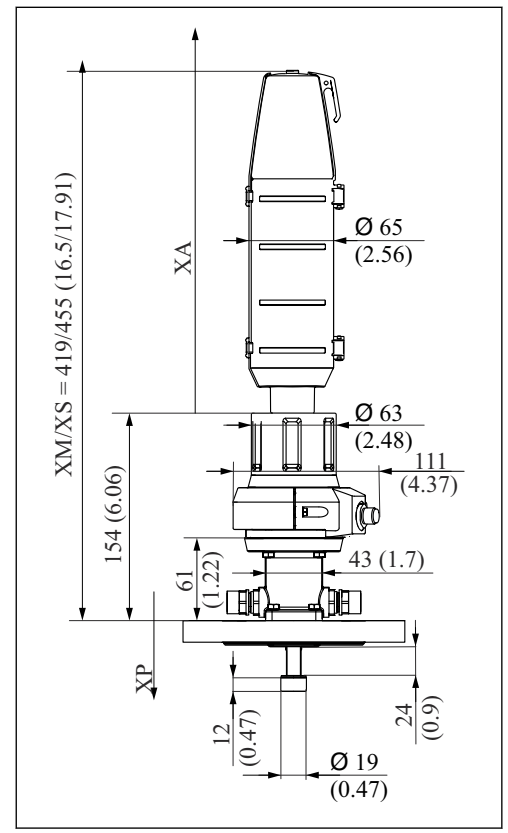
### Design, dimensions

#### Short version



A0023894

14 Pneumatic drive, short version, dimensions in mm (in)



A0023897

15 Manual drive, short version, dimensions in mm (in)

*XM Assembly in measuring position*

*XS Assembly in service position*

*XP Height of particular process connection (see table below)*

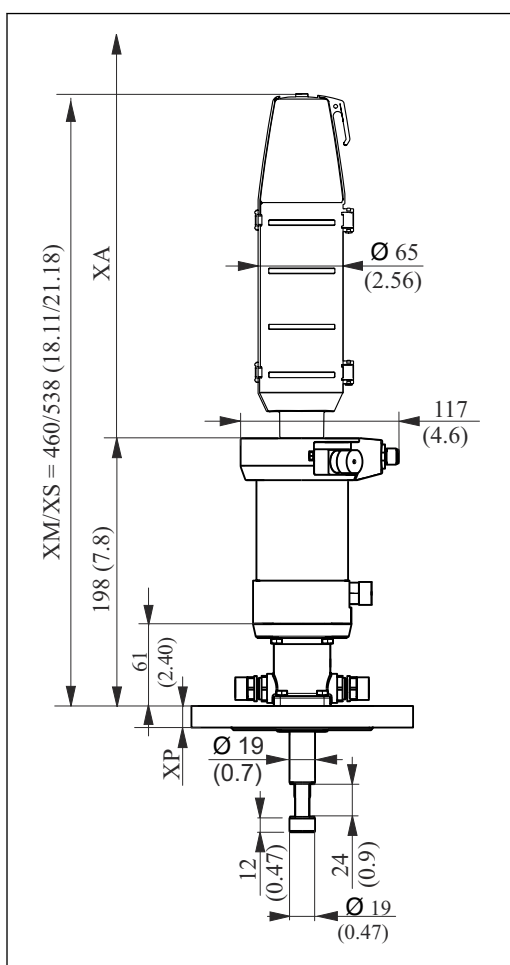
*XA Necessary mounting distance for sensor replacement*

A free path length XA above the drive is required to replace the sensors:

XA is 280 mm (11.02 in) for 120 mm sensors

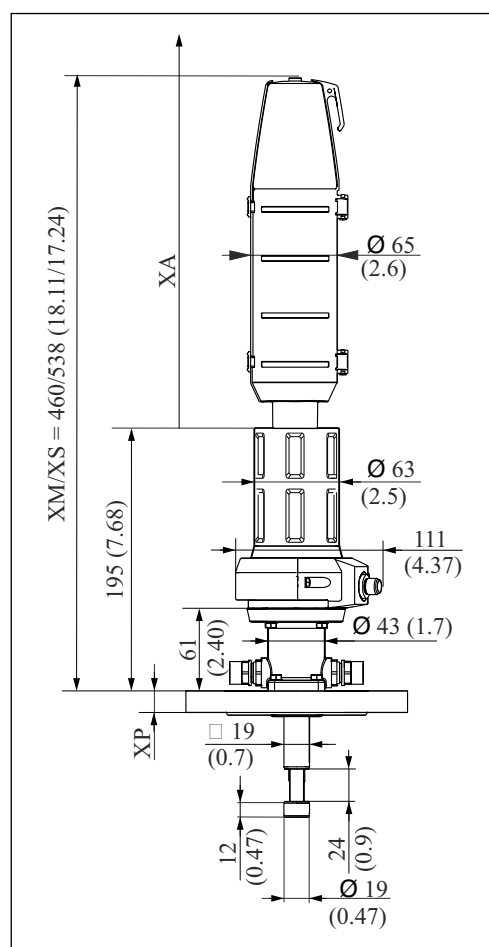
XA is 408 mm (15.94 in) for 225 mm sensors

## Long version



A0023895

16 Pneumatic drive, long version, dimensions in mm (in)



A0023898

17 Manual drive, long version, dimensions in mm (in)

*XM Assembly in measuring position*

*XS Assembly in service position*

*XP Height of particular process connection (see table below)*

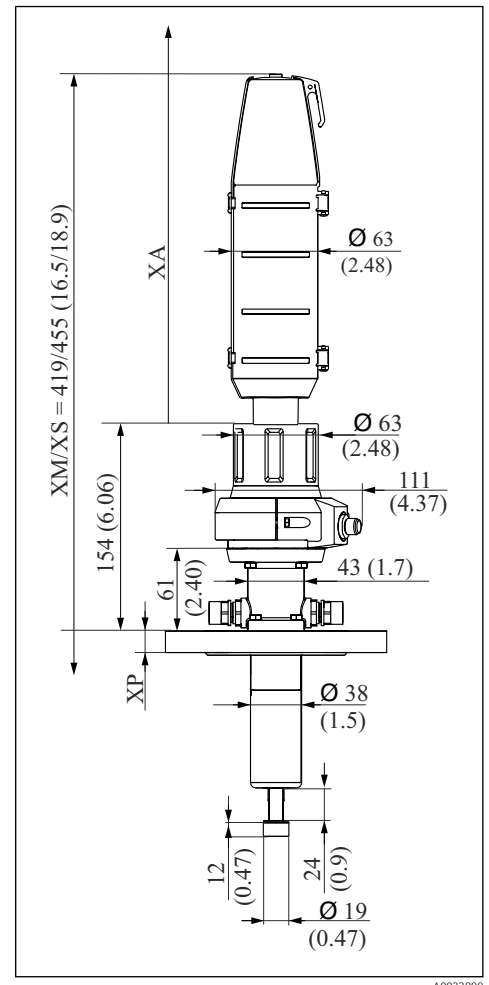
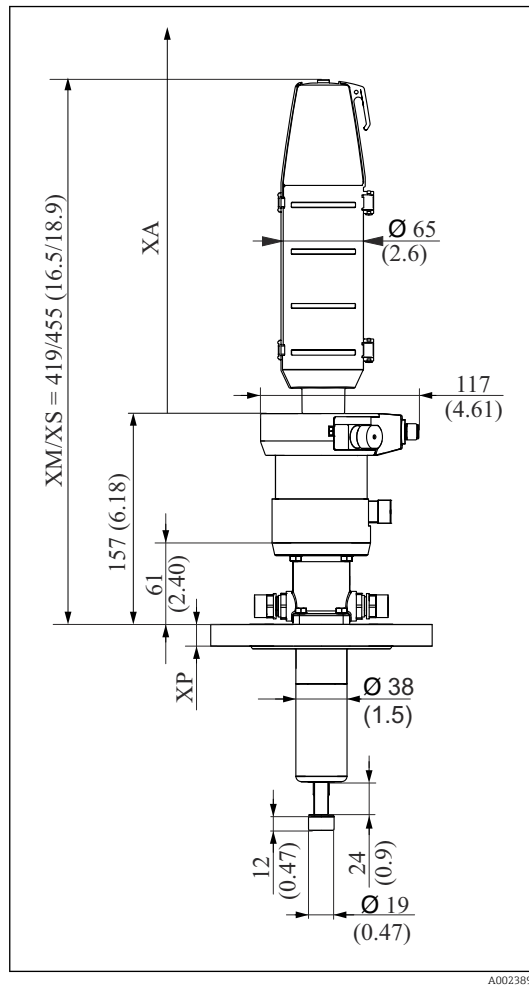
*XA Necessary mounting distance for sensor replacement*

A free path length XA above the drive is required to replace the sensors:

XA is 360 mm (14.17 in) for 225 mm sensors

XA is 582 mm (22.91 in) for 360 mm sensors including KCl

## Immersion chamber version



18 Immersion chamber version with pneumatic drive, dimensions in mm (in)

19 Immersion chamber version with manual drive, dimensions in mm (in)

*XM Assembly in measuring position*

*XS Assembly in service position*

*XP Height of particular process connection (see table below)*

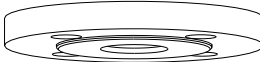
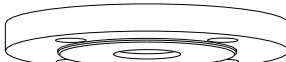
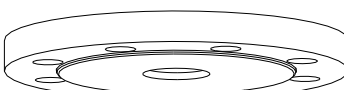
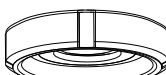
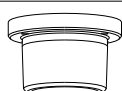
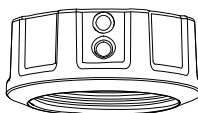
*XA Necessary mounting distance for sensor replacement*

A free path length XA above the drive is required to replace the sensors:

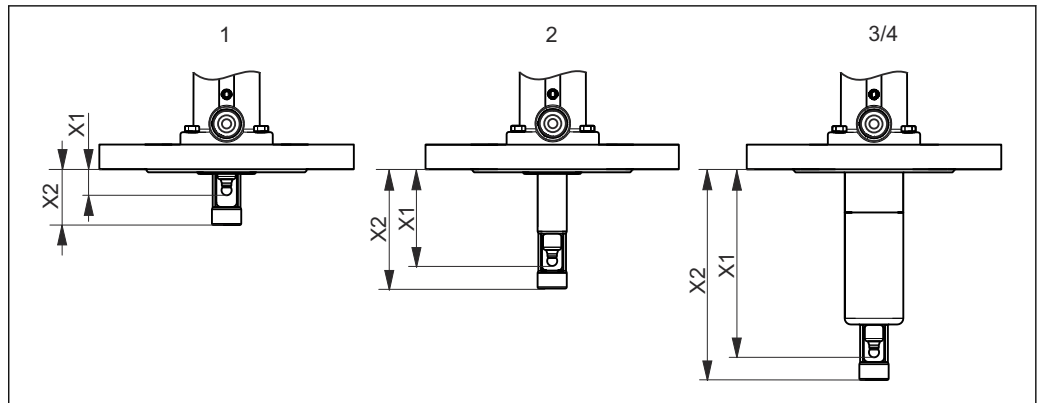
XA is 280 mm (11.02 in) for 225 mm sensors

XA is 570 mm (22.44 in) for 360 mm sensors

## Process connection height

| Process connection                                                                                                                                                                                                                                                                     |                                                                                                   | Height XP in mm (in)                   |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------|----------------------------------------|
| <b>CB</b> Clamp 2"<br>ISO 2852, ASME BPE-2012                                                                                                                                                                                                                                          | <br>A0024100   | 16 (0.63)                              |
| <b>FA</b> Flange DN 40 PN16, EN 1092-1                                                                                                                                                                                                                                                 | <br>A0024102    | 18 (0.71)                              |
| <b>FB</b> Flange DN 50 PN16, EN 1092-1                                                                                                                                                                                                                                                 | <br>A0024103    | 18 (0.71)                              |
| <b>FC</b> Flange DN 80 PN10, EN 1092-1                                                                                                                                                                                                                                                 | <br>A0024104    | 20 (0.79)                              |
| <b>FD</b> Flange 2" 150 lbs, ASME B16.5                                                                                                                                                                                                                                                | <br>A0024105    | 19.1 (0.75)                            |
| <b>FE</b> Flange 3" 150 lbs, ASME B16.5                                                                                                                                                                                                                                                | <br>A0024106    | 23.8 (0.94)                            |
| <b>FF</b> 10K50, JIS B2220                                                                                                                                                                                                                                                             | <br>A0024107  | 16 (0.63)                              |
| <b>MA</b> Dairy fitting DN 50 DIN 11851                                                                                                                                                                                                                                                | <br>A0024109  | 15.5 (0.61)                            |
| <b>MB</b> Dairy fitting DN 65 DIN 11851                                                                                                                                                                                                                                                | <br>A0024110  | 15.5 (0.61)                            |
| <b>HB</b> Thread NPT 1½"                                                                                                                                                                                                                                                               | <br>A0024111 | 40.5 (1.57)                            |
| <b>NA</b> DN 25 G1¼" female thread <ul style="list-style-type: none"> <li>▪ Thread ISO 228 G1¼</li> <li>▪ Compatible with hook wrench, DIN 1810 flat face</li> </ul> <b>NOTICE</b><br><b>Mounting with pipe wrench causes damage.</b><br>► Use a hook wrench for mounting and removal. | <br>A0054908  | 31.1 (1.22)<br>(Union nut 22.5 (0.89)) |

## Immersion depths



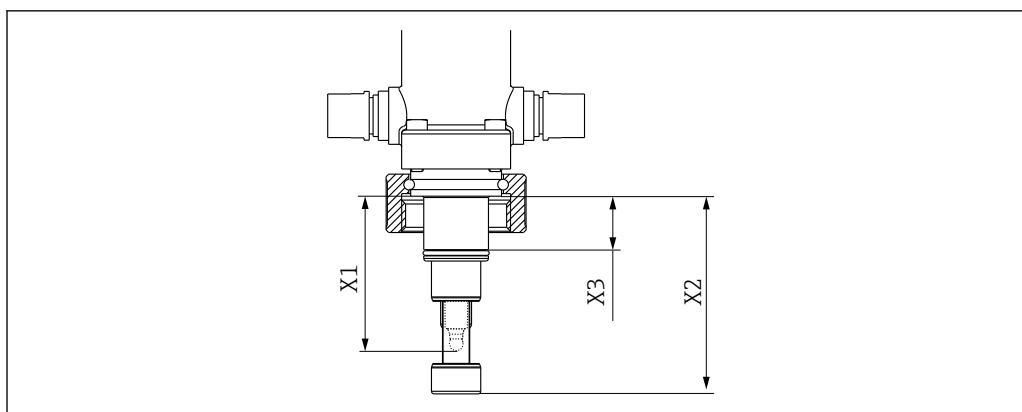
A0023893

20 Immersion depths in mm (in)

- 1 Short stroke, 36 mm (1.42 in)
- 2 Long stroke, 78 mm (3.07 in)
- 3 Immersion chamber version, 99 mm (3.89 in) / 36 mm (1.42 in)
- 4 Long immersion chamber version, 151 mm (5.94 in) / 36 mm (1.42 in)

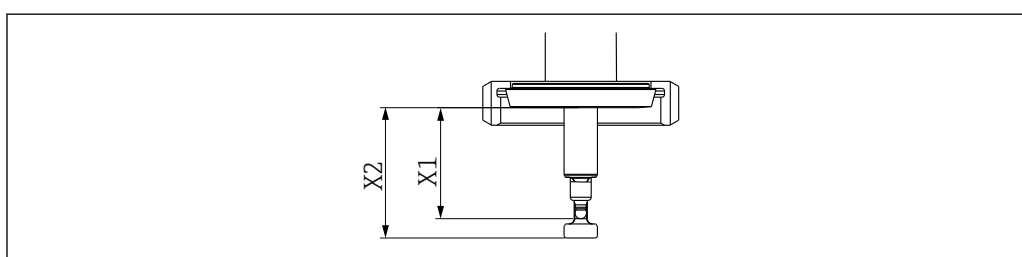
## Versions

| Process connection                           |    | 1           | 2           | 3            | 4            |
|----------------------------------------------|----|-------------|-------------|--------------|--------------|
| <b>CB</b> Clamp ISO 2852<br>ASME BPE-2012 2" | X1 | 14.9 (0.59) | 61.0 (2.40) | 119.9 (4.72) | 171.9 (6.76) |
|                                              | X2 | 34.2 (1.35) | 75.7 (2.98) | 134.6 (5.30) | 186.6 (7.35) |
| <b>FA</b> Flange DN 40<br>EN 1092-1          | X1 | 14.9 (0.59) | 61.0 (2.40) | 119.9 (4.72) | 171.9 (6.76) |
|                                              | X2 | 34.2 (1.35) | 75.7 (2.98) | 134.6 (5.30) | 186.6 (7.35) |
| <b>FB</b> Flange DN 50<br>EN 1092-1          | X1 | 14.9 (0.59) | 61.0 (2.40) | 119.9 (4.72) | 171.9 (6.76) |
|                                              | X2 | 34.2 (1.35) | 75.7 (2.98) | 134.6 (5.30) | 186.6 (7.35) |
| <b>FC</b> Flange DN 80<br>EN 1092-1          | X1 | 12.9 (0.51) | 59.0 (2.32) | 117.9 (4.64) | 169.9 (6.69) |
|                                              | X2 | 32.2 (1.27) | 73.7 (2.90) | 132.6 (5.22) | 184.6 (7.27) |
| <b>FD</b> Flange 2" 150 lbs<br>ASME B16.5    | X1 | 13.8 (0.54) | 59.9 (2.36) | 118.9 (4.68) | 170.9 (6.73) |
|                                              | X2 | 33.1 (1.30) | 74.6 (2.94) | 133.6 (5.26) | 185.6 (7.30) |
| <b>FE</b> Flange 3" 150 lbs<br>ASME B16.5    | X1 | -           | -           | 114.1 (4.49) | 166.1 (6.54) |
|                                              | X2 | -           | -           | 128.8 (5.07) | 180.8 (7.11) |
| <b>FF</b> Flange 10K50<br>JIS B2220          | X1 | 14.4 (0.57) | 61.3 (2.41) | 120.2 (4.73) | 172.2 (6.78) |
|                                              | X2 | 33.7 (1.33) | 76.0 (2.99) | 134.9 (5.31) | 186.9 (7.36) |
| <b>HB</b> Thread NPT 1½"                     | X1 | -           | 63.0 (2.48) | 121.9 (4.80) | 173.9 (6.85) |
|                                              | X2 | -           | 77.7 (3.06) | 136.6 (5.38) | 188.6 (7.40) |
| <b>MA</b> Dairy fitting<br>DN 50 DIN 11851   | X1 | 15.4 (0.61) | 61.5 (2.42) | 120.4 (4.74) | 172.4 (6.79) |
|                                              | X2 | 34.7 (1.37) | 76.2 (3.00) | 135.1 (5.32) | 187.1 (6.37) |
| <b>MB</b> Dairy fitting<br>DN 65 DIN 11851   | X1 | 15.4 (0.61) | 61.5 (2.42) | 120.4 (4.74) | 172.4 (6.79) |
|                                              | X2 | 34.7 (1.37) | 76.2 (3.00) | 135.1 (5.32) | 187.1 (6.37) |
| <b>NA</b> thread ISO 228<br>G 1¼             | X1 | -           | 61.5 (2.42) | -            | -            |
|                                              | X2 | -           | 76.2 (3.00) | -            | -            |
|                                              | X3 | -           | 20.6 (0.81) | -            | -            |



A0039342

21 Immersion depth in mm (in) for process connection NA thread ISO 228 G1 1/4



A0048452

22 Immersion depth in mm (in) for process connection MA and MB thread

#### Rinse chamber volume

|                          | Volume cm <sup>3</sup> (in <sup>3</sup> ) (max.) | Volume cm <sup>3</sup> (in <sup>3</sup> ) (min.) |
|--------------------------|--------------------------------------------------|--------------------------------------------------|
| Single chamber           | 12.02 (0.73)                                     | 2.81 (0.17)                                      |
| Immersion chamber, short | 15.75 (0.96)                                     | 6.73 (0.41)                                      |
| Immersion chamber, long  | 17.14 (1.05)                                     | 8.12 (0.5)                                       |

#### Weight

Depends on version:

Pneumatic drive: 3.8 to 6 kg (8.4 to 13.2 lbs) depending on version

Manual drive: 3 to 4.5 kg (6.6 to 9.9 lbs) depending on version

#### Materials

| In contact with medium                               |                                                                                                         |
|------------------------------------------------------|---------------------------------------------------------------------------------------------------------|
| Seals:                                               | EPDM / FKM / FFKM                                                                                       |
| Immersion tube, process connection, service chamber: | Stainless steel 1.4404 (AISI 316L) Ra < 0.76 / PEEK / Alloy C22 Ra < 0.76 / PVDF / conductive PVDF / PP |
| Rinse connections:                                   | Stainless steel 1.4404 (AISI 316L) or Alloy C22                                                         |
| Not in contact with medium                           |                                                                                                         |
| Manual drive:                                        | Stainless steel 1.4301 (AISI 304) or 1.4404 (AISI 316L), PPS CF15 plastics, PBT, PP                     |
| Pneumatic drive:                                     | Stainless steel 1.4301 (AISI 304) or 1.4404 (AISI 316L), PBT plastics, PP                               |

#### Rinse connections

Surface finish may vary depending on the manufacturing process.

## Certificates and approvals

Current certificates and approvals for the product are available at [www.endress.com](http://www.endress.com) on the relevant product page:

1. Select the product using the filters and search field.
2. Open the product page.
3. Select **Downloads**.

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### Additional certification

#### **DGRL- 2014/68/EU / PED- 2014/68/EU**

The assembly has been manufactured according to good engineering practice as per Article 4, Paragraph 3 of the Pressure Equipment Directive 2014/68/EU and is therefore not required to bear the CE label.

#### **ATEX - 2014/34/EU**

The assembly does not fall within the scope of the directive. However, if conditions for safe use are adhered to, it may be deployed in the hazardous area.

The following test certificates, attestations and declarations (e.g., certificates of conformity) are available for the product depending on the selected version:

- Inspection certificate 3.1
- Roughness test
- FDA 21 CFR
- CRN

## Ordering information

### Ordering instructions

Create the order code for the assembly as follows:

1. Is the assembly used in the hazardous or non-hazardous area?
2. Select the drive type and the limit position switches.
3. Select the type of service chamber.
4. What material should the wetted seals be made of?
5. What material should the wetted surfaces be made of?
6. Select the suitable process connection.
7. Which connections should the service chamber have?

Order the accessories as follows:

- If you wish to order the accessories together with the assembly, then use the accessory code of the product structure.
- If you only wish to order accessories, then use the order numbers from the "Accessories" section.

### Product page

[www.endress.com/cpa871](http://www.endress.com/cpa871)

### Product Configurator

1. **Configure:** Click this button on the product page.
  2. Select **Extended selection**.
    - ↳ The Configurator opens in a separate window.
  3. Configure the device according to your requirements by selecting the desired option for each feature.
    - ↳ In this way, you receive a valid and complete order code for the device.
  4. **Add to cart:** Add the configured product to the shopping cart.
-  For many products, you also have the option of downloading CAD or 2D drawings of the selected product version.
5. **CAD:** Open this tab.
    - ↳ A drawing window is displayed. You have a choice between different views. You can download these in selectable formats.

### Scope of delivery

The scope of delivery comprises:

- Ordered version of assembly
- Operating Instructions

## Accessories

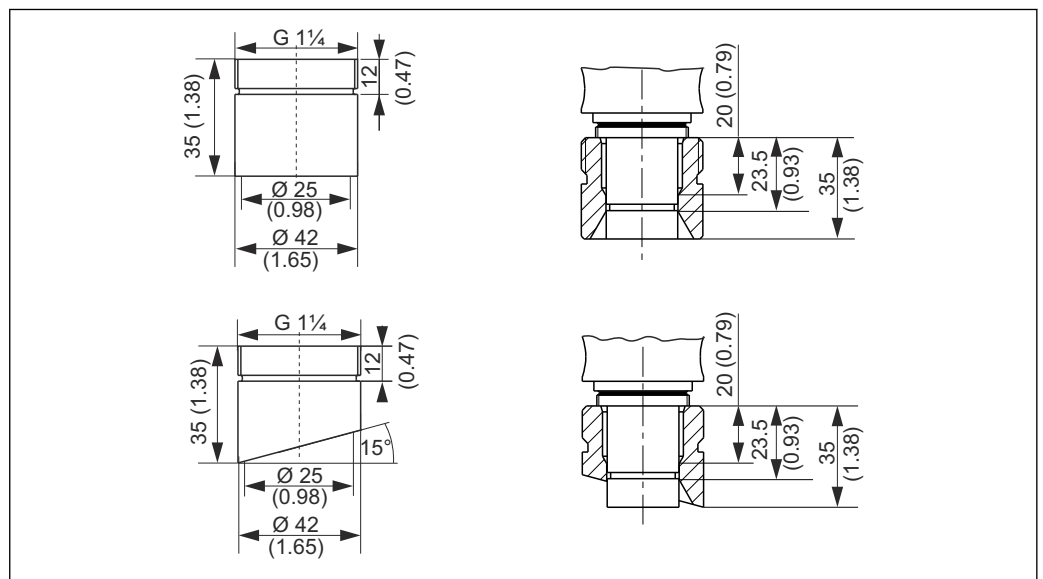
The following are the most important accessories available at the time this documentation was issued.

Listed accessories are technically compatible with the product in the instructions.

1. Application-specific restrictions of the product combination are possible.  
Ensure conformity of the measuring point for the application. This is the responsibility of the operator of the measuring point.
2. Pay attention to the information in the instructions for all products, particularly the technical data.
3. For accessories not listed here, please contact your Service or Sales Center.

The following accessories can be ordered via the product structure or the XPC0003 spare part structure:

- Weld-in adapter G1¼, straight, 35 mm, 1.4435 (AISI 316 L), safety nozzle
- Weld-in adapter G1¼, angled, 35 mm, 1.4435 (AISI 316 L), safety nozzle



A0028744

23 Weld-in adapter (safety nozzle), dimensions in mm (in)

- Dummy plug G1¼, 1.4435 (AISI 316 L), FPM
- Sensor dummy 120 mm, 1.4435 (AISI 316 L), Ra = 0.38 µm
- Sensor dummy 225 mm, 1.4435 (AISI 316 L), Ra = 0.38 µm
- Sensor dummy 360 mm, 1.4435 (AISI 316 L), Ra = 0.38 µm
- Kit, seals for non-wetted parts
- Kit, FKM seals, G1¼, wetted parts
- Kit, FKM seals, immersion chamber version, wetted parts
- Kit, seal, wetted, EPDM
- Kit, seal, wetted, FKM
- Kit, seal, FFKM, basic, wetted
- Cable, plug-in, limit switch, M12, 5 m
- Cable, plug-in, limit switch, M12, 10 m
- Tool in case for installation/removal
- Kit, Klüber Paraliq GTE 703 lubricant (60g)
- Output interface terminals, version: CPA871-620-R7  
NAMUR terminals for limit position switches
  - Operation of 8V DC feedback signals on 24V DC devices
  - Suitable for top-hat rail mounting

## Device-specific accessories

## Sensors

*pH sensors***Memosens CPS11E**

- pH sensor for standard applications in process and environmental engineering
- Digital with Memosens 2.0 technology
- Product Configurator on the product page: [www.endress.com/cps11e](http://www.endress.com/cps11e)



Technical Information TI01493C

**Orbisint CPS11**

- pH sensor for process technology
- With dirt-repellent PTFE diaphragm
- Product Configurator on the product page: [www.endress.com/cps11](http://www.endress.com/cps11)



Technical Information TI00028C

**Memosens CPS31E**

- pH sensor for standard applications in drinking water and swimming pool water
- Digital with Memosens 2.0 technology
- Product Configurator on the product page: [www.endress.com/cps31e](http://www.endress.com/cps31e)



Technical Information TI01574C

**Memosens CPS41E**

- pH sensor for process technology
- With ceramic junction and KCl liquid electrolyte
- Digital with Memosens 2.0 technology
- Product Configurator on the product page: [www.endress.com/cps41e](http://www.endress.com/cps41e)



Technical Information TI01495C

**Ceraliquid CPS41**

- pH electrode with ceramic junction and KCl liquid electrolyte
- Product Configurator on the product page: [www.endress.com/cps41](http://www.endress.com/cps41)



Technical Information TI00079C

**Memosens CPS61E**

- pH sensor for bioreactors in life sciences and for the food industry
- Digital with Memosens 2.0 technology
- Product Configurator on the product page: [www.endress.com/cps61e](http://www.endress.com/cps61e)



Technical Information TI01566C

**Memosens CPS71E**

- pH sensor for chemical process applications
- Digital with Memosens 2.0 technology
- Product Configurator on the product page: [www.endress.com/cps71e](http://www.endress.com/cps71e)



Technical Information TI01496C

**Ceragel CPS71**

- pH electrode with reference system including ion trap
- Product Configurator on the product page: [www.endress.com/cps71](http://www.endress.com/cps71)



Technical Information TI00245C

**Memosens CPS91E**

- pH sensor for heavily polluted media
- Digital with Memosens 2.0 technology
- Product Configurator on the product page: [www.endress.com/cps91e](http://www.endress.com/cps91e)



Technical Information TI01497C

**Orbipore CPS91**

- pH electrode with hole junction for media with high dirt load
- Product Configurator on the product page: [www.endress.com/cps91](http://www.endress.com/cps91)



Technical Information TI00375C

*ORP sensors***Memosens CPS12E**

- ORP sensor for standard applications in process and environmental engineering
- Digital with Memosens 2.0 technology
- Product Configurator on the product page: [www.endress.com/cps12e](http://www.endress.com/cps12e)



Technical Information TI01494C

**Orbisint CPS12**

- ORP sensor for process technology
- Product Configurator on the product page: [www.endress.com/cps12](http://www.endress.com/cps12)



Technical Information TI00367C

**Memosens CPS42E**

- ORP sensor for process technology
- Digital with Memosens 2.0 technology
- Product Configurator on the product page: [www.endress.com/cps42e](http://www.endress.com/cps42e)



Technical Information TI01575C

**Ceraliquid CPS42**

- ORP electrode with ceramic junction and KCl liquid electrolyte
- Product Configurator on the product page: [www.endress.com/cps42](http://www.endress.com/cps42)



Technical Information TI00373C

**Memosens CPS72E**

- ORP sensor for chemical process applications
- Digital with Memosens 2.0 technology
- Product Configurator on the product page: [www.endress.com/cps72e](http://www.endress.com/cps72e)



Technical Information TI01576C

**Ceragel CPS72**

- ORP electrode with reference system including ion trap
- Product Configurator on the product page: [www.endress.com/cps72](http://www.endress.com/cps72)



Technical Information TI00374C

*pH ISFET sensors***Memosens CPS47E**

- ISFET sensor for pH measurement
- Digital with Memosens 2.0 technology
- Product Configurator on the product page: [www.endress.com/cps47e](http://www.endress.com/cps47e)



Technical Information TI01616C

**Memosens CPS77E**

- Sterilizable and autoclavable ISFET sensor for pH measurement
- Digital with Memosens 2.0 technology
- Product Configurator on the product page: [www.endress.com/cps77e](http://www.endress.com/cps77e)



Technical Information TI01396

*Combined pH/ORP sensors***Memosens CPS16E**

- pH/ORP sensor for standard applications in process technology and environmental engineering
- Digital with Memosens 2.0 technology
- Product Configurator on the product page: [www.endress.com/cps16e](http://www.endress.com/cps16e)



Technical Information TI01600C

**Memosens CPS76E**

- pH/ORP sensor for process technology
- Digital with Memosens 2.0 technology
- Product Configurator on the product page: [www.endress.com/cps76e](http://www.endress.com/cps76e)



Technical Information TI01601C

**Memosens CPS96E**

- pH/ORP sensor for heavily polluted media and suspended solids
- Digital with Memosens 2.0 technology
- Product Configurator on the product page: [www.endress.com/cps96e](http://www.endress.com/cps96e)



Technical Information TI01602C

*Conductivity sensors***Memosens CLS82E**

- Hygienic conductivity sensor
- Digital with Memosens 2.0 technology
- Product Configurator on the product page: [www.endress.com/cls82e](http://www.endress.com/cls82e)



Technical Information TI01529C



The sensor is suitable for the assembly with the following sensor lengths: 120 mm (4.7 in), 215 mm (8.5 in) and 360 mm (14.2 in)

*Oxygen sensors***Oxymax COS22E**

- Sterilizable sensor for dissolved oxygen
- Digital with Memosens 2.0 technology
- Product Configurator on the product page: [www.endress.com/cos22e](http://www.endress.com/cos22e)



Technical Information TI00446C



The sensor is suitable for the assembly with the following sensor lengths: 120 mm (4.7 in), 215 mm (8.5 in) and 360 mm (14.2 in)

**Oxymax COS22**

- Sterilizable sensor for dissolved oxygen
- With Memosens technology or as an analog sensor
- Product Configurator on the product page: [www.endress.com/cos22](http://www.endress.com/cos22)



Technical Information TI00446C

*Absorption sensor***OUSBT66**

- NIR absorption sensor for the measurement of cell growth and biomass
- Sensor version suitable for pharmaceutical industry
- Product Configurator on the product page: [www.endress.com/ousbt66](http://www.endress.com/ousbt66)



Technical Information TI00469C



The assembly can only be used with the absorption sensor with the optical path lengths 5 mm (0.2 in) and 10 mm (0.39 in).

**Service-specific accessories**

**Cleaning and calibration systems**

**Air-Trol CYC10**

- Pneumatic control unit for Cleanfit retractable assemblies
- Prepared for use in hazardous areas
- Product Configurator on the product page: [www.endress.com/cyc10](http://www.endress.com/cyc10)



Technical Information TI00038C

**Cleanfit Control CYC25**

- Converts electrical signals into pneumatic signals to control pneumatically-operated retractable assemblies or pumps in conjunction with Liquiline CM44x
- Wide range of control options
- Product Configurator on the product page: [www.endress.com/cyc25](http://www.endress.com/cyc25)



Technical Information TI01231C

**Liquiline Control CDC90**

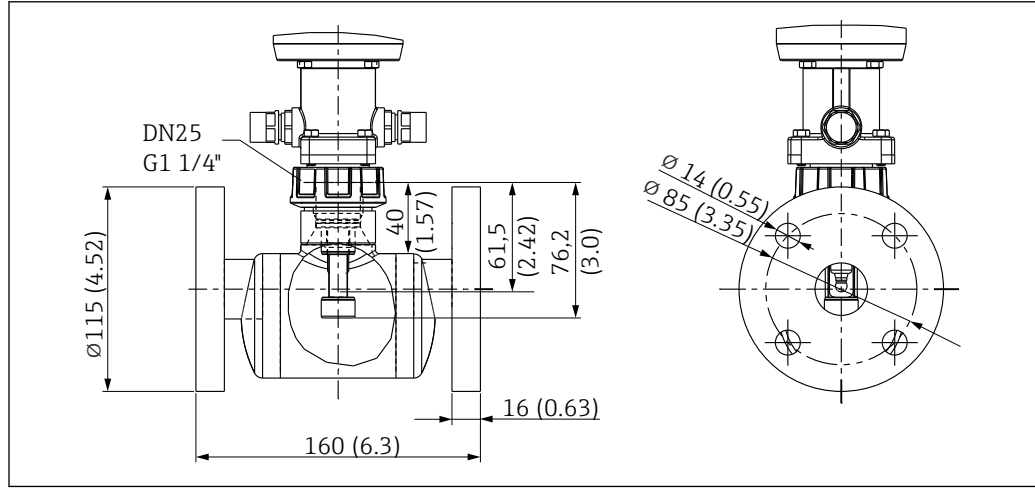
- Fully automatic cleaning and calibration system for pH and ORP measuring points in all industries
- Cleaned, validated, calibrated and adjusted
- Product Configurator on the product page: [www.endress.com/cdc90](http://www.endress.com/cdc90)



Technical Information TI01340C

**Flow vessel**

- Flange DN 25 ISO 1092-2 PN16
- Material: stainless steel 1.4404 (AISI 316 L)
- Can be ordered with assembly with G 1 1/4" process connection CPA871-+++C+ANA++NI or as spare part XPC0003-V+QI



24 Dimensions in mm (in)

**i** Dummy plug is available for maintenance purposes

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**Installation material for  
rinse connections**

**Kit, water filter**

- Water filter (dirt trap) 100 µm, complete, incl. angle bracket
- Order No. 71390988

**Pressure reducer kit**

- Complete, incl. manometer and angle bracket
- Order No. 71390993

**Hose connection set G $\frac{1}{4}$ , DN 12**

- 1.4404 (AISI 316L) 2 x
- Order No. 51502808

**Hose connection set G $\frac{1}{4}$ , DN 12**

- PVDF (2 x)
- Order No. 50090491



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[www.addresses.endress.com](http://www.addresses.endress.com)

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