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LENNTECH
WATER TREATMENT SOLUTIONS

Technical Information
CYA251

Flow assembly for nitrate/SAC, turbidity and oxygen sensors

Application

The Flowfit CYA251 is a universal flow assembly for:
- Wastewater treatment plants:
  - Treatment and monitoring of process water
  - Monitoring of wastewater
- Drinking water and process water:
  - Treatment and monitoring of process water
  - Filter monitoring and filter backflushing
- All industrial utilities:
  - Treatment and monitoring of process water
  - Cooling water monitoring

It is suitable for:
- Nitrate/SAC: all measuring ranges
- Oxygen: all measuring ranges
- Turbidity: medium and high measuring ranges

Your benefits

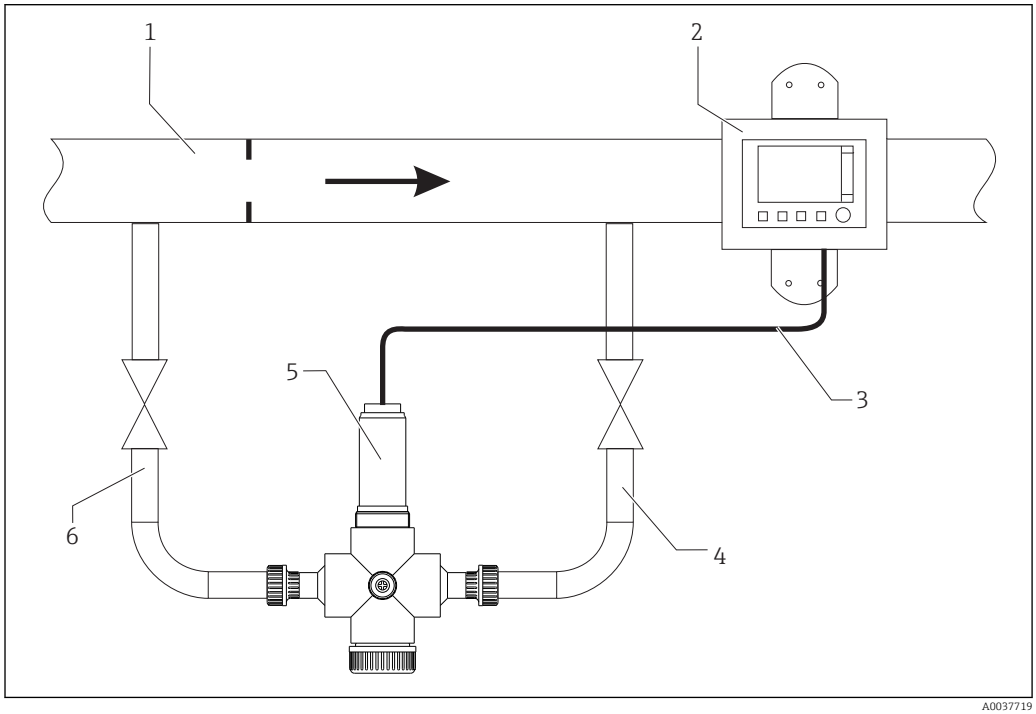
- Easy to adapt to your system: process connections available for almost all pipe diameters.
- Different installation options: suitable for pipe- and wall-mounting.
- Fast measured values: shorter sensor response times thanks to low internal volume.
- Easy and safe maintenance: automatic sensor cleaning without interrupting the process.
- Robust design: suitable for process pressures up to 6 bar (87 psi).

Endress+Hauser
People for Process Automation

Function and system design

Measuring system

A complete measuring system comprises:
- Flowfit CYA251 flow assembly
- Transmitter, e.g. Liquiline CM442
- 40 mm sensor, e.g. CUS50D
- Measuring cable



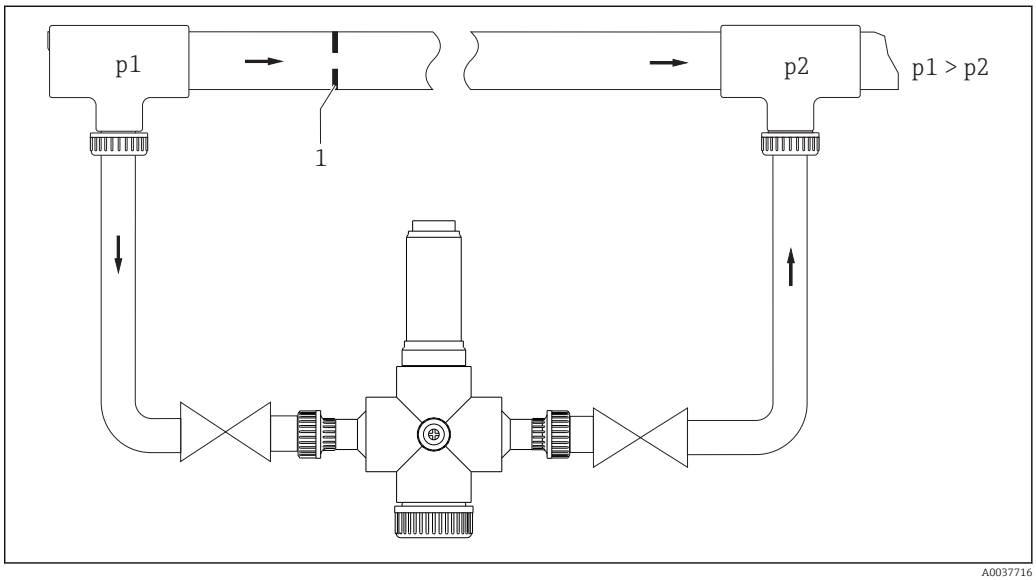
1 Example of a measuring system

1 Process pipe
2 Liquiline CM442 transmitter
3 Measuring cable
4 Return line with shut-off valve
5 Flow assembly CYA251 with 40 mm sensor
6 Inlet with shut-off valve

Installation

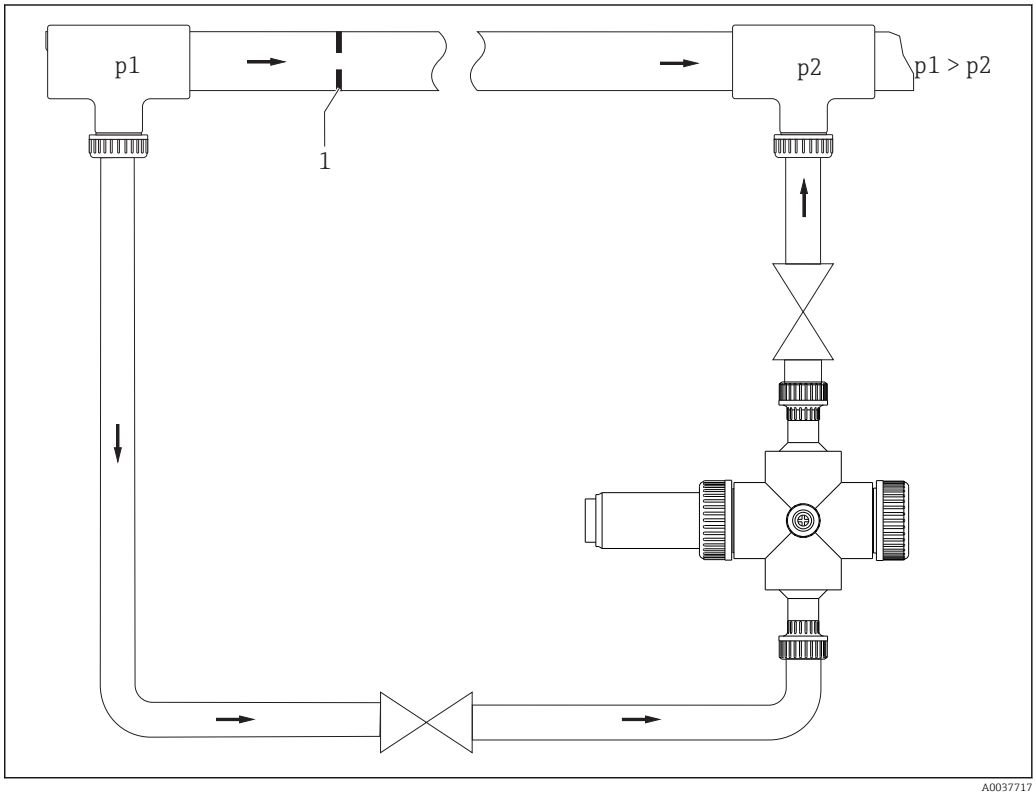
Installation instructions

To achieve flow through the assembly with a bypass, pressure p1 must be higher than pressure p2. This can be achieved by installing an orifice plate in the main pipe.



2 *Connection example with bypass and orifice plate in the main pipe*

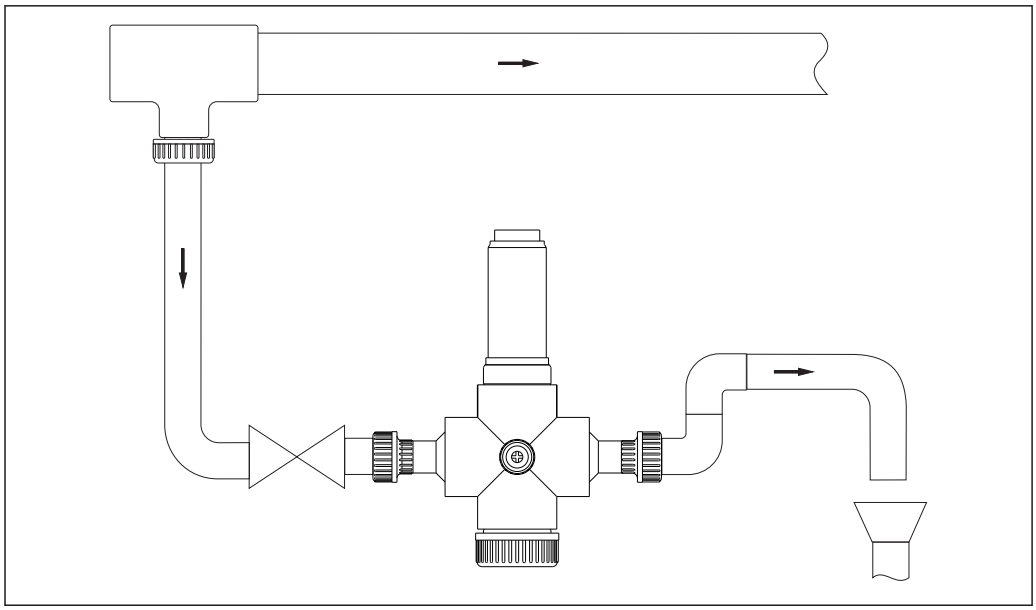
1 Orifice plate



3 *Connection example involving a bypass and an orifice plate in the main pipe (assembly rotated by 90°, inlet at bottom)*

1 Orifice plate

No measures to increase pressure are required for branch pipes that branch off from the main pipe.



4 *Connection example involving an open outlet*

The inlet and outlet connection of the flow assembly are always identical.

The inlet and outlet side are not specified by the flow assembly and can therefore be selected to suit the particular application.

The flow assembly is designed for connection to pipes and hoses.

Required at point of installation:

Required components	Application
2 shut-off valves	Bypass solution
1 shut-off valve	Solution with open outlet
Orifice plate in the main pipe	Bypass solution
Dirt filter (500 µm or finer)	If the medium contains coarse particles of dirt
Pressure-reducing valve	If the medium pressure exceeds the permitted value
Wall holder unit to secure the assembly	Hose connection
Pipe or hose connections to the assembly	All versions

Environment

Ambient temperature

0 to 60 °C (32 to 140 °F)

Storage temperature

0 to 60 °C (32 to 140 °F)

Process

Process temperature

0 to 60 °C (32 to 140 °F)

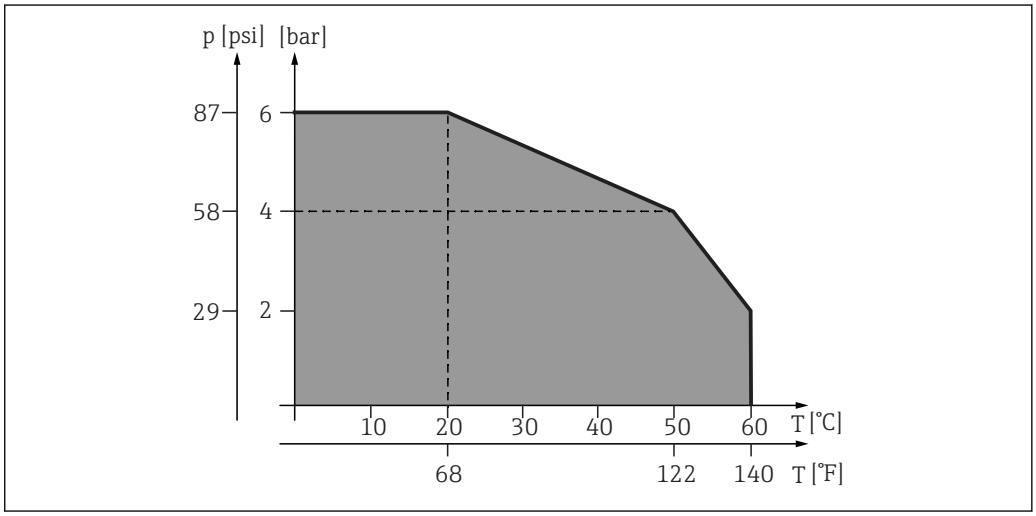
Process pressure

Maximum 6 bar (87 psi) at 20 °C (68 °F)

Maximum 4 bar (58 psi) at 50 °C (122 °F)

Maximum 2 bar (29 psi) at 60°C (140°F)

Pressure/temperature ratings



5 Pressure/temperature ratings

Flow

Depending on the sensor used and the sensor's properties. The data are based on water.

Typical values: For oxygen sensors approx. 200 l/h (53 gal/hr)
For turbidity and UV sensors approx. 100 l/h (26.5 gal/hr)

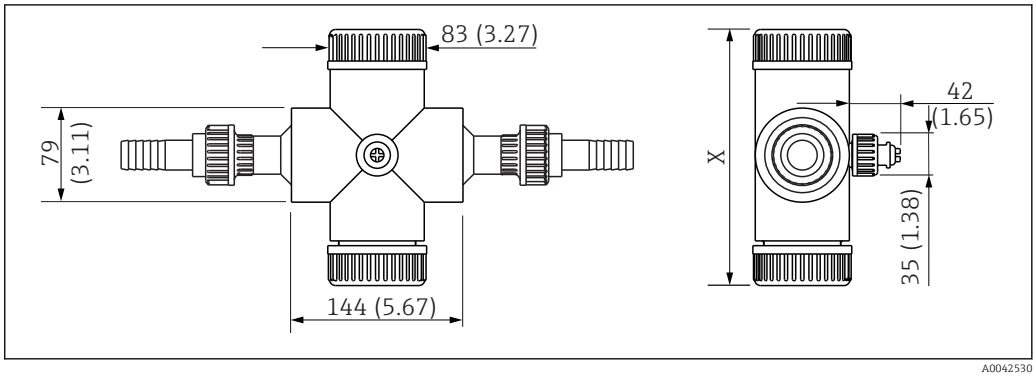
Minimum value: Depends on the parameter to be measured but must be such that representative measured values are still delivered.

Maximum value: It is not recommended to operate above 300 l/h (80 gal/hr).

Mechanical construction

Dimensions

Dimensions of assembly body

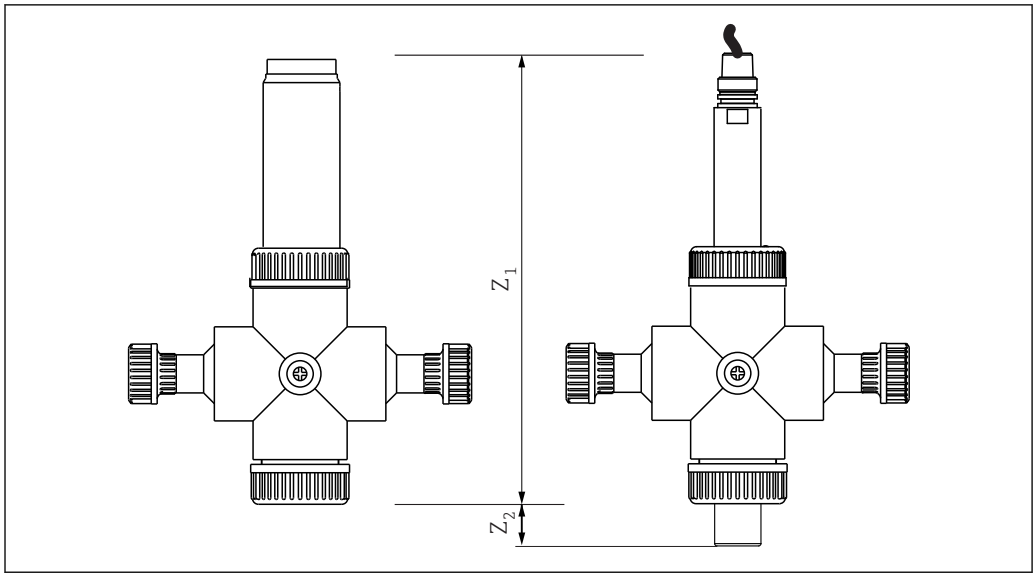


6 Dimensions of basic device in mm (in)

X for CAS80E (with clamping ring): 220 mm (8.66 in)

X for all other sensors: 217 mm (8.54 in)

Dimensions with adapter

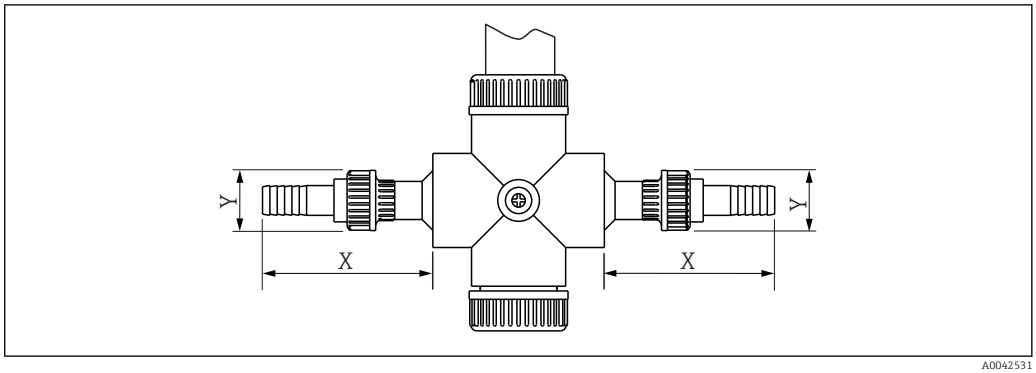


7 Adapter in standard version (left) and version for CAS80E (right)

Dimensions with adapter depending on version ordered in mm (in)

Sensor adapter	Z_1	Z_2
CAS51D 2 mm (0.08 in)	468 (18.43)	-
CAS51D 8 mm (0.31 in)	471 (18.54)	-
CAS51D 40 mm (1.57 in)	477 (18.78)	-
COS51D **COS41**	284 (11.18)	-
COS61D **COS61** **COS31**	326 (12.83)	-
CUS51D	332 (13.07)	-
CUS50D	360 (14.2)	-
CAS80E 2 mm (0.079 in) (sensor extends out past adapter)	490 mm (19.29 in)	-
CAS80E 10 mm (0.39 in) (sensor extends out past adapter)	513 mm (20.2 in)	3 mm (0.12 in)
CAS80E 50 mm (1.97 in) (sensor extends out past adapter)	533 mm (20.98 in)	23 mm (0.91 in)

Dimensions of process connections



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Connections	X	Y
Female thread NPT ¾"	83 (3.27)	50.5 (1.99)
Female thread G ¾	83 (3.27)	50.5 (1.99)
Adhesive tap DN20/d25	83 (3.27)	50.5 (1.99)
Flange ANSI 1"	50 (1.97)	115 (4.53)
Hose D20	137 (5.39)	50.5 (1.99)
Male thread G1¼	61 (2.40)	44.5 (1.75)
Adhesive tap DN50/d63	0 (0)	63 (2.48)

Weight

1.5 to 1.8 kg (3.3 to 4.0 lbs), depending on version

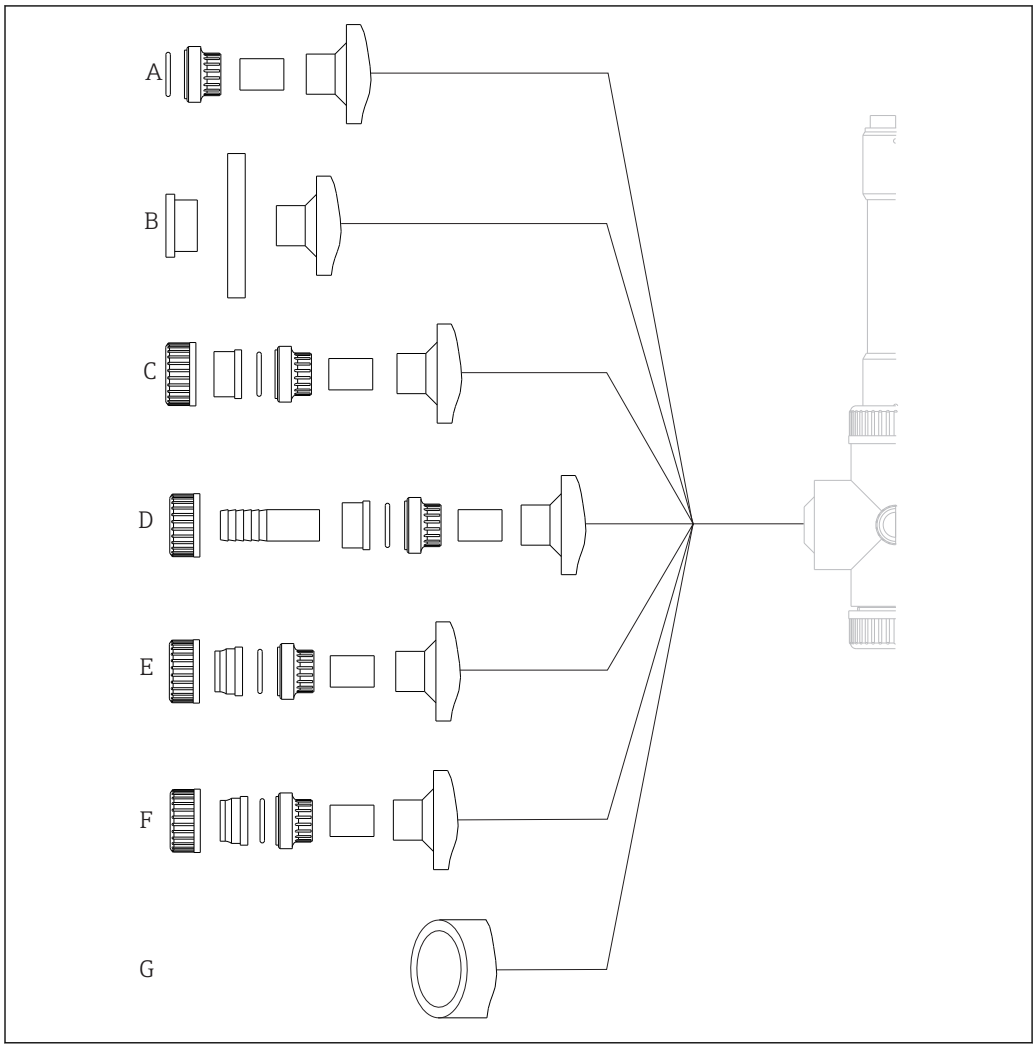
Materials

O-rings	EPDM
Flange (not in contact with medium)	PP
Flow vessel, process connections, adapter, union nut	PVC
Check valve	Plastic
Clamping ring for CAS80E (not in contact with medium)	1.4404

Information according to REACH Regulation (EC) 1907/2006 Art. 33/1):

The PVC parts of the assembly contain the SVHC substance DOTE (CAS 15571-58-1) with more than 0.1 % (w/w).

Process connection



A Male thread G1¼, PVC
B Flange ANSI 1", PP black
*C Adhesive tap DN20/d25 (threaded D25), PVC **
*D Hose D20 PVC ***
E Female thread G ¾", PVC
F Female thread NPT ¾", PVC
*G Adhesive tap DN50/d63 ****

Item	Designation	Suitable for
C *	Adhesive tap for PVC pipe	PVC pipe with OD 25 mm (0.98 in)
D **	Hose connection	Hose with DN 20 mm (0.78 in)
G ***	Adhesive tap for PVC pipe	PVC pipe with OD 63 mm (2.48 in)

Ordering information

Product page

www.endress.com/cya251

Product Configurator

On the product page there is a **Configure** button to the right of the product image.

1. Click this button.
   ↳ The Configurator opens in a separate window.
2. Select all the options to configure the device in line with your requirements.
   ↳ In this way, you receive a valid and complete order code for the device.
3. Export the order code as a PDF or Excel file. To do so, click the appropriate button on the right above the selection window.

For many products you also have the option of downloading CAD or 2D drawings of the selected product version. Click the **CAD** tab for this and select the desired file type using picklists.

Scope of delivery

The delivery comprises:
- Flow assembly in the version ordered (including the selected sensor adapters and process connections)
- Accessories ordered
- Adapter with check valve (for optional cleaning only, 6 mm (0.24 in) connection for compressed air)
- 1 tube of lubricant (for O-rings)
- Operating Instructions

When the flow assembly is delivered, the cleaning port and cleaning connection are fitted with dummy plugs.

Accessories

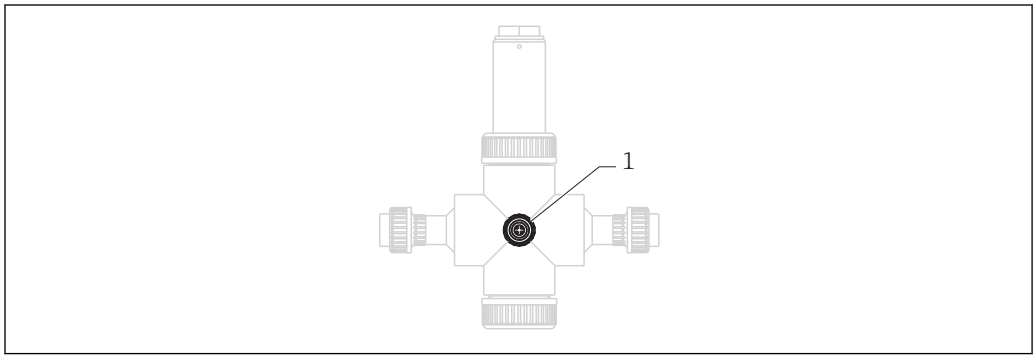
The following are the most important accessories available at the time this documentation was issued.

▶ For accessories not listed here, please contact your Service or Sales Center.

Device-specific accessories

Cleaning nozzle

- For automatic sensor cleaning
- For sensor CAS51D (2 mm (0.08 in) or 8 mm (0.31 in) gap)
  For sensor CAS80E (2 mm (0.08 in)10 mm (0.39 in)
  Order number: 71144328
- For sensor CAS51D (40 mm (1.57 in) gap) and CAS80E (50 mm (1.97 in) gap)
  Order number: 71144330
- For sensor CUS51D, COS51D, COS61D, COS61, COS31, COS41
  Order number: 71144331
- For sensor CUS50D
  Order number: 71424819

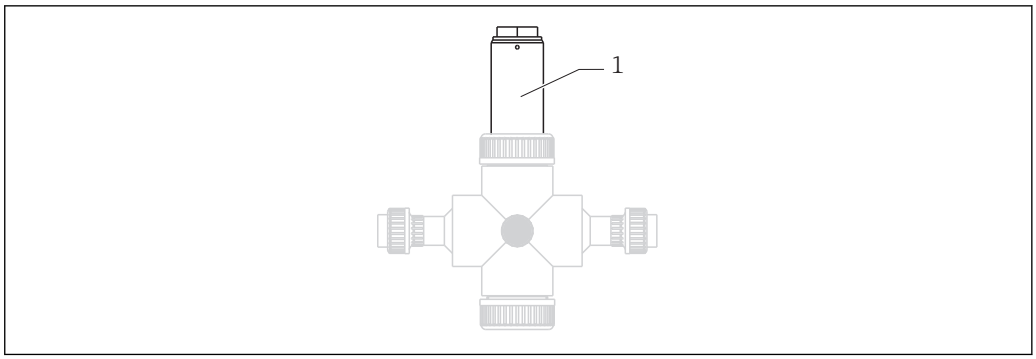


8 CYA251 with cleaning nozzle

1 Cleaning nozzle

Sensor adapter

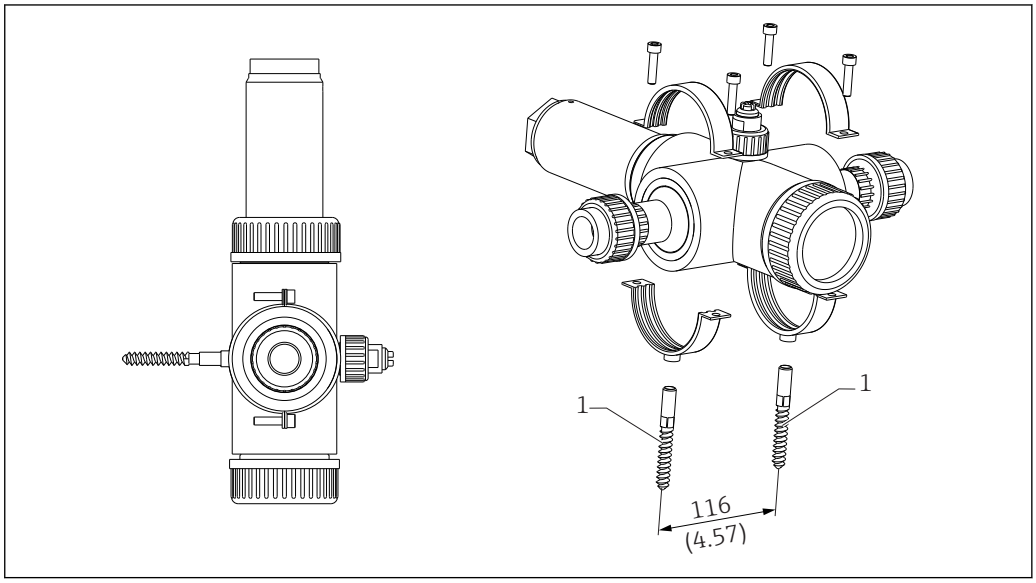
- Adapter for installing the following sensors:
- For sensor COS61D, COS61, COS31
  Order number: 71144333
- For sensor COS41, COS51D
  Order number: 71144334
- For sensor CUS50D
  Order number: 71420151
- For sensor CUS51D
  Order number: 71144335
- For sensor CAS51D (2 mm (0.08 in) gap)
  Order number: 71144337
- For sensor CAS51D (8 mm (0.31 in) gap)
  Order number: 71144338
- For sensor CAS51D (40 mm (1.57 in) gap)
  Order number: 71144340
- For sensor CUS52D
  Order number: 71248647
- For sensor CAS80E
  Order number: 71475982



9 CYA251 with sensor adapter

1 Sensor adapter

Wall holder unit
- Wall mounting kit for CYA251
- Order number: 71144369



10 Wall mounting kit, dimensions in mm (in)

1 Hanger bolt STST 10 × 60 mm

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