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Operating Instructions
CUY52

Solid state reference and calibration vessel for turbidity sensor CUS52D

Endress+Hauser
People for Process Automation

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1 About this document

1.1 Safety information

Structure of information	Meaning
DANGER **Causes (/consequences)** If necessary, Consequences of non-compliance (if applicable) ▶ Corrective action	This symbol alerts you to a dangerous situation. Failure to avoid the dangerous situation **will** result in a fatal or serious injury.
WARNING **Causes (/consequences)** If necessary, Consequences of non-compliance (if applicable) ▶ Corrective action	This symbol alerts you to a dangerous situation. Failure to avoid the dangerous situation **can** result in a fatal or serious injury.
CAUTION **Causes (/consequences)** If necessary, Consequences of non-compliance (if applicable) ▶ Corrective action	This symbol alerts you to a dangerous situation. Failure to avoid this situation can result in minor or more serious injuries.
NOTICE **Cause/situation** If necessary, Consequences of non-compliance (if applicable) ▶ Action/note	This symbol alerts you to situations which may result in damage to property.

1.2 Symbols

- Additional information, tips
- Permitted
- Recommended
- Not permitted or not recommended
- Reference to device documentation
- Reference to page
- Reference to graphic
- Result of an individual step

1.2.1 Symbols on the device

- Do not dispose of products bearing this marking as unsorted municipal waste. Instead, return them to the manufacturer for disposal under the applicable conditions.
- Reference to device documentation

1.3 Documentation

The following manuals, which complement these Operating Instructions, can be found on the product pages on the Internet:

Technical Information CUY52, TI01154C

2 Basic safety instructions

2.1 Requirements for the personnel

- Installation, commissioning, operation and maintenance of the measuring system may be carried out only by specially trained technical personnel.
- The technical personnel must be authorized by the plant operator to carry out the specified activities.
- The electrical connection may be performed only by an electrical technician.
- The technical personnel must have read and understood these Operating Instructions and must follow the instructions contained therein.
- Faults at the measuring point may only be rectified by authorized and specially trained personnel.

Repairs not described in the Operating Instructions provided must be carried out only directly at the manufacturer's site or by the service organization.

2.2 Intended use

CUY52 solid state reference and/or calibration vessel are designed for turbidity sensor CUS52D.

Any use other than that intended puts the safety of people and the measuring system at risk. Therefore, any other use is not permitted.

The manufacturer is not liable for harm caused by improper or unintended use.

2.3 Workplace safety

As the user, you are responsible for complying with the following safety conditions:
- Installation guidelines
- Local standards and regulations
- Regulations for explosion protection

2.4 Operational safety

Before commissioning the entire measuring point:

1. Verify that all connections are correct.
2. Ensure that electrical cables and hose connections are undamaged.
3. Do not operate damaged products, and protect them against unintentional operation.

4. Label damaged products as defective.

During operation:

- If faults cannot be rectified,
  take products out of service and protect them against unintentional operation.

2.5 Product safety

The product is designed to meet state-of-the-art safety requirements, has been tested, and left the factory in a condition in which it is safe to operate. The relevant regulations and international standards have been observed.

3 Incoming acceptance and product identification

3.1 Incoming acceptance

1. Verify that the packaging is undamaged.
   ↳ Notify the supplier of any damage to the packaging.
   Keep the damaged packaging until the issue has been resolved.
2. Verify that the contents are undamaged.
   ↳ Notify the supplier of any damage to the delivery contents.
   Keep the damaged goods until the issue has been resolved.
3. Check that the delivery is complete and nothing is missing.
   ↳ Compare the shipping documents with your order.
4. Pack the product for storage and transportation in such a way that it is protected against impact and moisture.
   ↳ The original packaging offers the best protection.
   Make sure to comply with the permitted ambient conditions.

If you have any questions, please contact your supplier or your local Sales Center.

3.2 Product identification

3.2.1 Nameplate

The nameplate provides you with the following information on your device:
- Manufacturer identification
- Extended order code
- Serial number
- Safety information and warnings

- Compare the information on the nameplate with the order.

3.2.2 Identifying the product

Product page

www.endress.com/CUY52

Interpreting the order code

The order code and serial number of your product can be found in the following locations:
- On the nameplate
- In the delivery papers

Obtaining information on the product

1. Go to www.endress.com.
2. Page search (magnifying glass symbol): Enter valid serial number.
3. Search (magnifying glass).
   ↳ The product structure is displayed in a popup window.
4. Click the product overview.
   ↳ A new window opens. Here you fill information pertaining to your device, including the product documentation.

Manufacturer address

Endress+Hauser Conducta GmbH+Co. KG
Dieselstraße 24
70839 Gerlingen
Germany

3.3 Scope of delivery

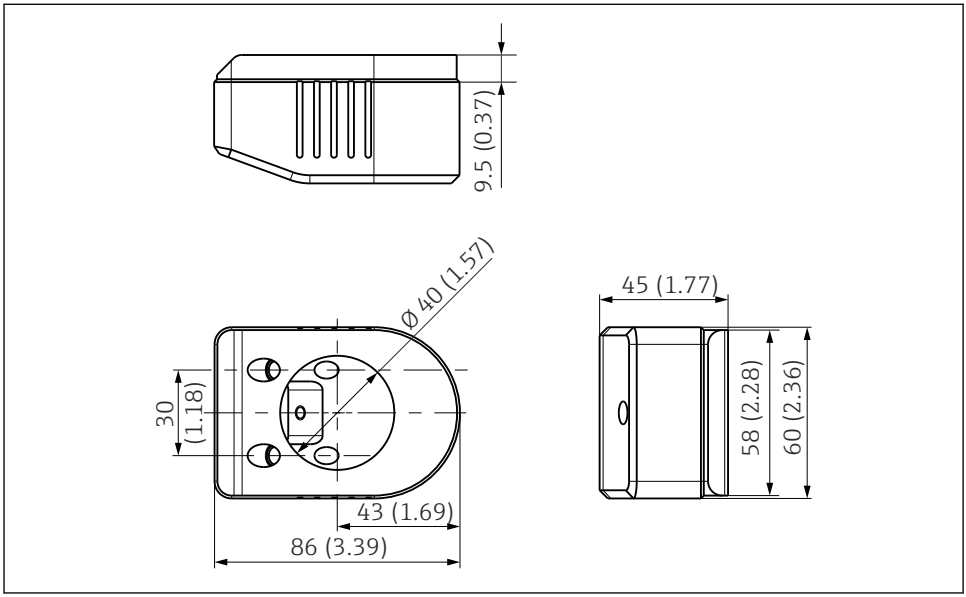
The scope of delivery includes:
- The solid state reference and/or the calibration vessel in the version ordered
- Operating Instructions CUY52

If you have any questions, please contact your supplier or your local sales center.

4 Mounting

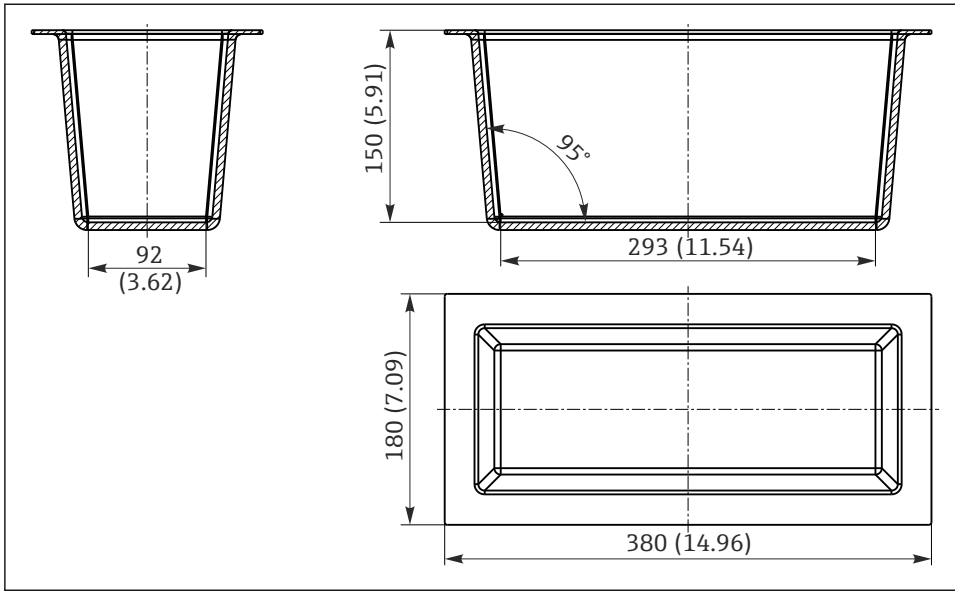
4.1 Dimensions

4.1.1 Solid state reference



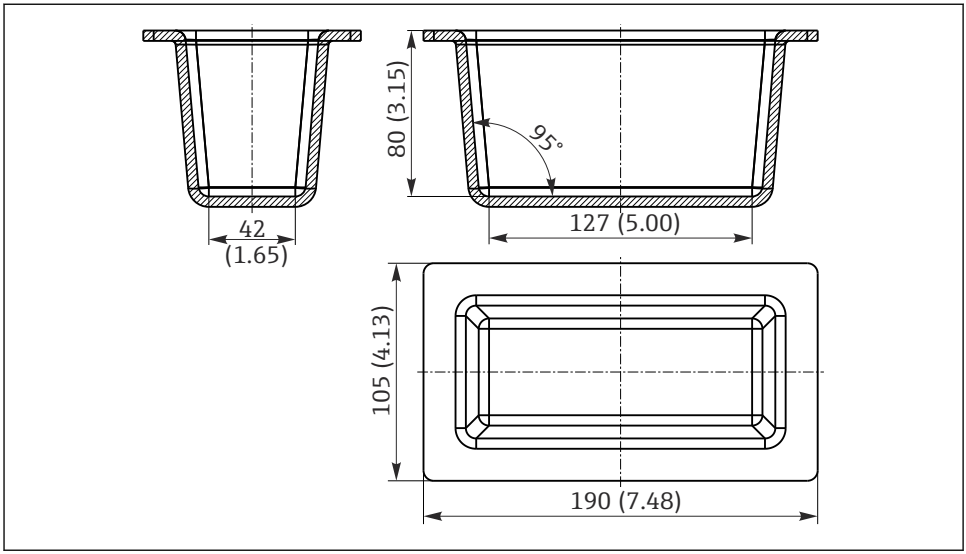
1 Dimensions in mm (in)

4.1.2 Large calibration vessel



2 Dimensions in mm (in)

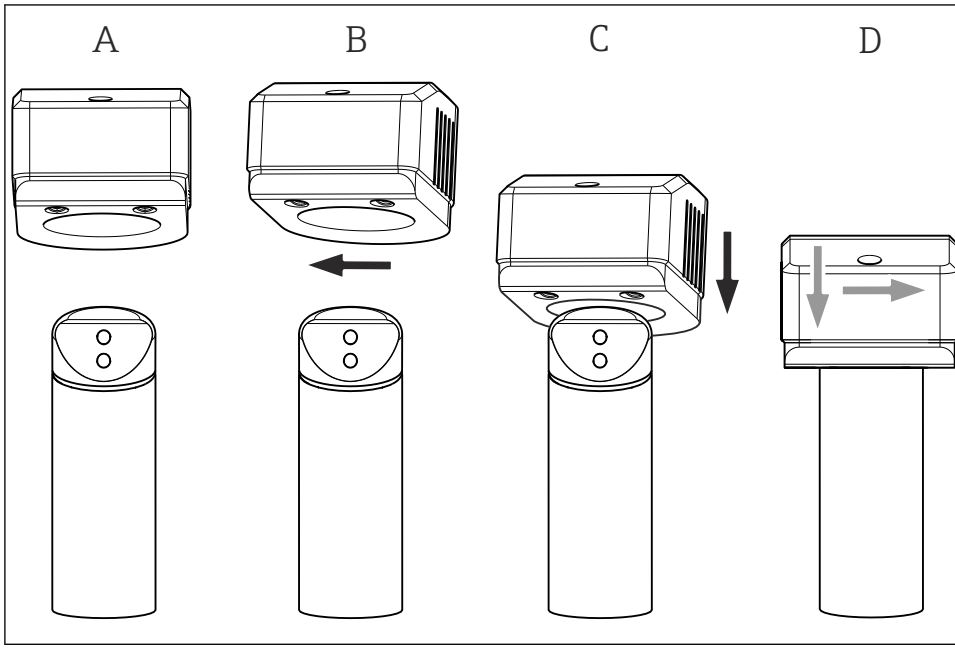
4.1.3 Small calibration vessel



3 Dimensions in mm (in)

5 Commissioning

5.1 Solid state reference



4 *Fitting the solid state reference on the sensor*

Preparation:

1. Clean the sensor.
2. Fix the sensor in place (e.g. with a laboratory stand).
3. Turn the solid state reference slightly (→ 4, B), fit it gently on the sensor (C).
4. Slide the solid state reference into the final position (D).

Function check:

1. Enable the factory calibration on the transmitter.
2. Read the measured value at the transmitter (depending on the signal filter settings, it can take 2 to 25 seconds until the correct measured value appears).

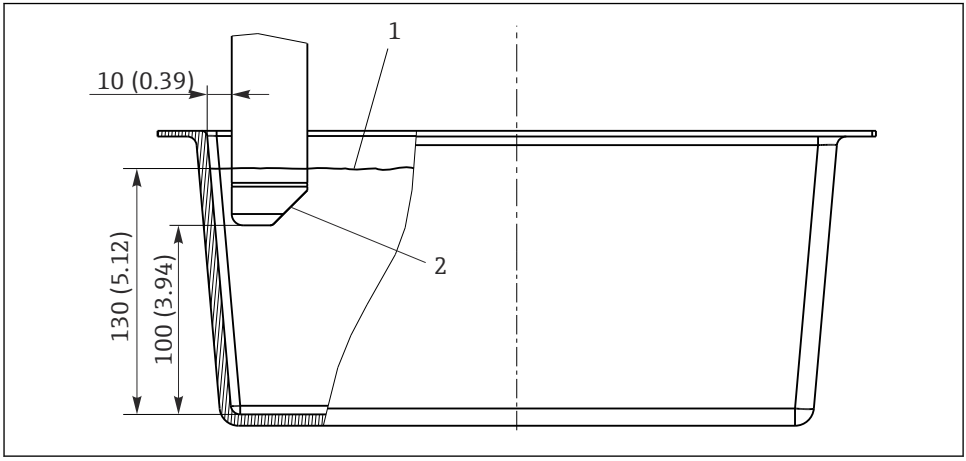
3. Compare the measured value with the reference value on the solid state reference.
   ↳ The sensor is working correctly if the value deviation is within the imprinted tolerance.

If you activate a calibration data record, other measured values will result. Therefore, always select the factory calibration (formazine) when checking the function with the solid state reference.

5.2 Large calibration vessel

The large calibration vessel is recommended for measurements or calibration operations in the low turbidity range (< 200 FNU). The design and material selection enable measurements without wall effects. The calibration vessel can therefore be used to calibrate/adjust the sensor with ultrapure water.

To avoid measuring errors caused by wall effects, position the sensor as follows:



5 Sensor position, dimensions in mm (inch)

Recommendations for laboratory stand:

Length of stand:	250 mm (9.84 in), 12 mm (0.47 in) diameter
Stand plate:	300 x 150 x 15 mm with bore at the front
Universal stand clamp:	Stainless steel, span 0 to 80 mm (0 to 3.14 in)

5.3 Small calibration vessel

WARNING

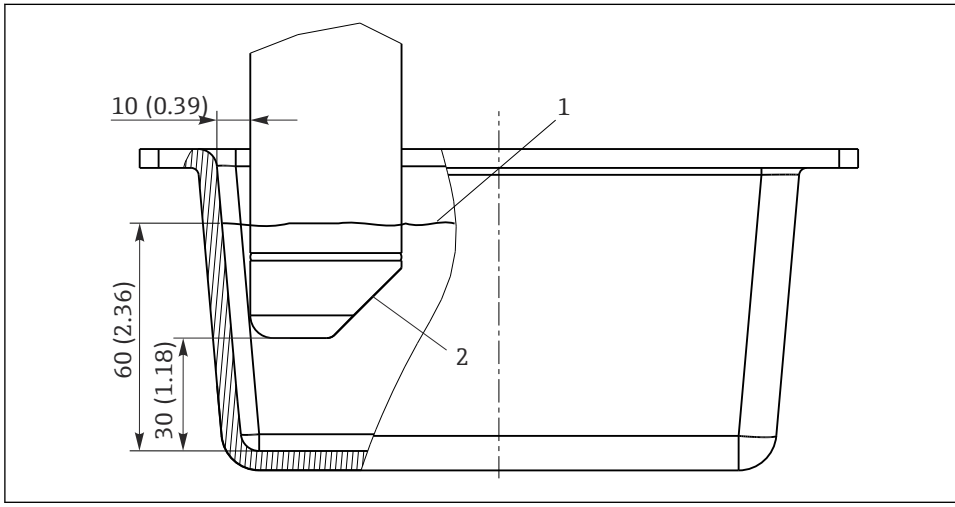
Formazine is carcinogenic

May cause sensitization by inhalation or skin contact!

- Do not swallow.
- Do not inhale steam/aerosol.
- Avoid contact with the eyes and skin.
- Wear protective goggles and protective gloves.
- Consult doctor in the event of an accident or if you feel unwell.

The small calibration vessel is recommended for measurements or calibration operations of liquids with a higher turbidity (200 to 1000 FNU). Use formazine standards for calibrations in accordance with ISO 7027.

To avoid measuring errors caused by wall effects, position the sensor as follows:



6 Sensor position, dimensions in mm (inch)

Stir the liquid with a magnetic stirrer to ensure the medium is homogeneous. Position the agitator as far away as possible from the sensor.

Recommendations for laboratory stand:	
Length of stand:	250 mm (9.84 in), 12 mm (0.47 in) diameter
Stand plate:	300 x 150 x 15 mm with bore at the front
Universal stand clamp:	Stainless steel, span 0 to 80 mm (0 to 3.14 in)

Recommendations for magnetic stirrer:	
Motor power, output:	9 W
Speed range:	0/50 to 150 rpm
Stirrer length:	80 mm (3.14 in)
H_2O stirring volume:	Max. 20 l (5.28 gal)

6 Maintenance

6.1 Solid state reference

The solid state reference is an optical instrument and must be treated accordingly. Store the solid state reference in the original packaging in such a way that it is protected from dust and damp.

Recommendation: Return the solid state reference every two years for maintenance → 15.

6.2 Calibration vessels

Clean the calibration vessels after each use. To protect the vessels from environmental influences, store them in the original packaging in such a way that they are protected from dust and light.

7 Repair

7.1 General notes

The repair and conversion concept provides for the following:
- The product has a modular design
- Spare parts are grouped into kits which include the associated kit instructions
- Only use original spare parts from the manufacturer
- Repairs are carried out by the manufacturer's Service Department or by trained users
- Certified devices can only be converted to other certified device versions by the manufacturer's Service Department or at the factory
- Observe applicable standards, national regulations, Ex documentation (XA) and certificates

1. Carry out the repair according to the kit instructions.
2. Document the repair and conversion and enter, or have entered, in the Life Cycle Management tool (W@M).

7.2 Spare parts

Device spare parts that are currently available for delivery can be found on the website:

https://portal.endress.com/webapp/SparePartFinder

- Quote the serial number of the device when ordering spare parts.

7.3 Return

The product must be returned if repairs or a factory calibration are required, or if the wrong product was ordered or delivered. As an ISO-certified company and also due to legal regulations, Endress+Hauser is obliged to follow certain procedures when handling any returned products that have been in contact with medium.

To ensure the swift, safe and professional return of the device:

- Check the website www.endress.com/support/return-material for information on the procedure and general conditions.

7.4 Disposal

If required by the Directive 2012/19/EU on waste electrical and electronic equipment (WEEE), the product is marked with the depicted symbol in order to minimize the disposal of WEEE as unsorted municipal waste. Do not dispose of products bearing this marking as unsorted municipal waste. Instead, return them to the manufacturer for disposal under the applicable conditions.

8 Technical data

8.1 Performance characteristics

8.1.1 Solid state reference

Approx. 4.0 ±1.5 FNU/NTU

8.2 Environment

8.2.1 Ambient temperature

0 to 55 °C (32 to 131 °F)

8.2.2 Storage temperature

0 to 60 °C (32 to 140 °F) in the original packaging

8.3 Mechanical construction

8.3.1 Dimensions

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8.3.2 Weight

Calibration vessel, large:	Approx. 512 g
Calibration vessel, small:	Approx. 136 g
Solid state reference:	Approx. 232 g

8.3.3 Materials

Calibration vessels:	ABS black
Solid state reference:	POM black

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