TI00432C/07/EN/14.19
71460318
2019-01-07

Technical Information
Flexdip CYA112

Immersion assembly for water and wastewater

Application

- Water and wastewater
- Plant construction

Your benefits

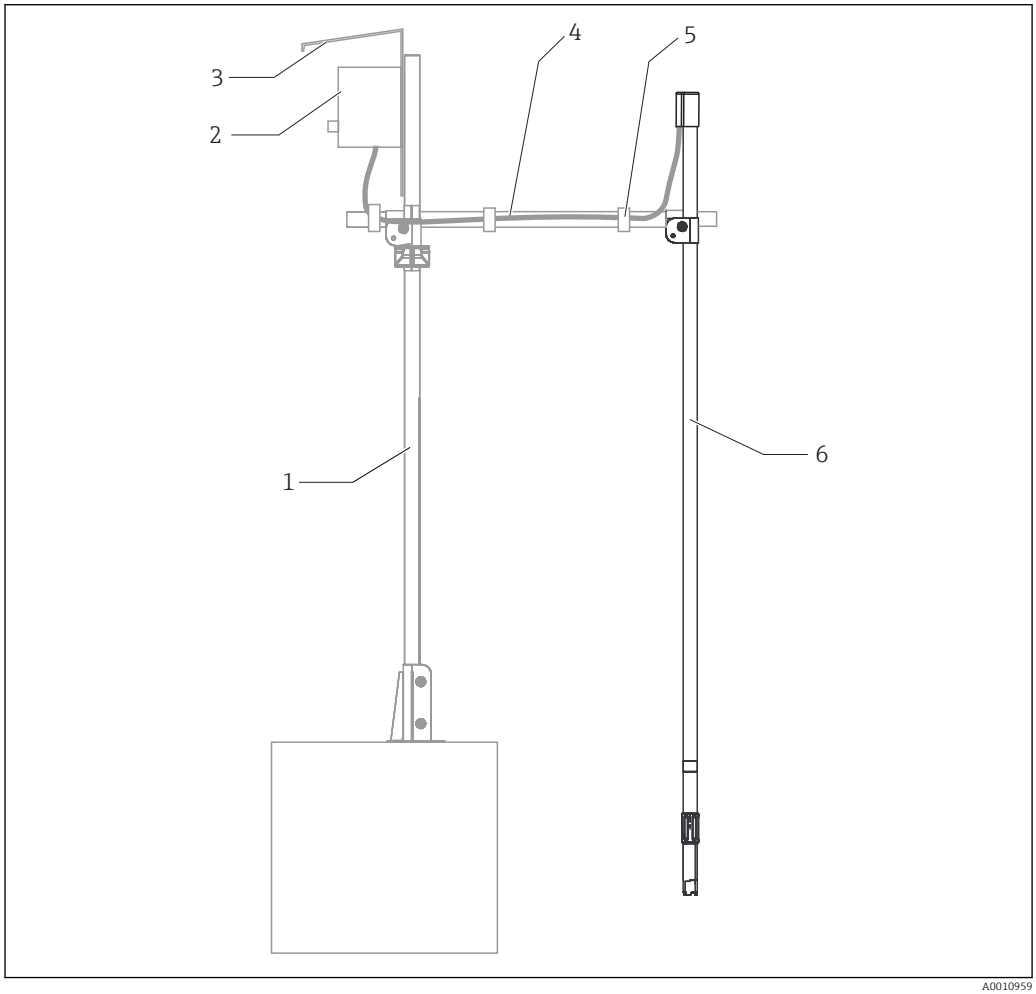
- The modular system enables optimum configuration for every place of measurement.
- Variable assembly length from 600 to 3 600 mm (23.6 to 141.7 in) in increments of 600 mm (23.6 in)
- Available in stainless steel V4A or PVC
- Quick fastener for:
  - fast installation and replacement of Memosens sensors with a non-contact plug-in head
  - twist-free installation of fixed-cable sensors
  - alignment of sensors
- Easy to install and service

Endress+Hauser
People for Process Automation

Function and system design

Measuring system

A complete measuring system consists of:
- CYA112 assembly
- CYH112 holder
- Transmitter, e.g. Liquiline CM44
- Sensor, e.g. CUS71D



1 Measuring system with CYA112 assembly

1 Main pipe of CYH112 holder
2 Transmitter
3 Protective cover
4 Transverse pipe of CYH112 holder
5 Cable ties
6 CYA112 assembly

Versions

The assembly consists of the following components:
- Immersion tube
- Connecting pipe (for the sensor)
- Sensor adapter
- Quick fastener
- Accessories

The assembly can be fitted and mounted depending on the ambient conditions. Please note the following:

- Standard version
  The immersion tube has an outer diameter of 40 mm (1.6 in). It is used for fixed installation or with a pendulum holder. (The pendulum holder is part of the CYH112 holder system)
- With chain retainer
  The immersion tube is suspended from a chain at the top by hooking it into a multifunctional clamp ring and a stainless steel bracket. (The chain is part of the CYH112 holder system)
- With float
  The immersion tube (PVC) is fitted with a float. Combined with a pendulum holder, the float is used for varying water levels. (The pendulum holder is part of the CYH112 holder system)

The CYH112 holder system is particularly suitable for use with the assembly, and has been specially designed for this assembly.

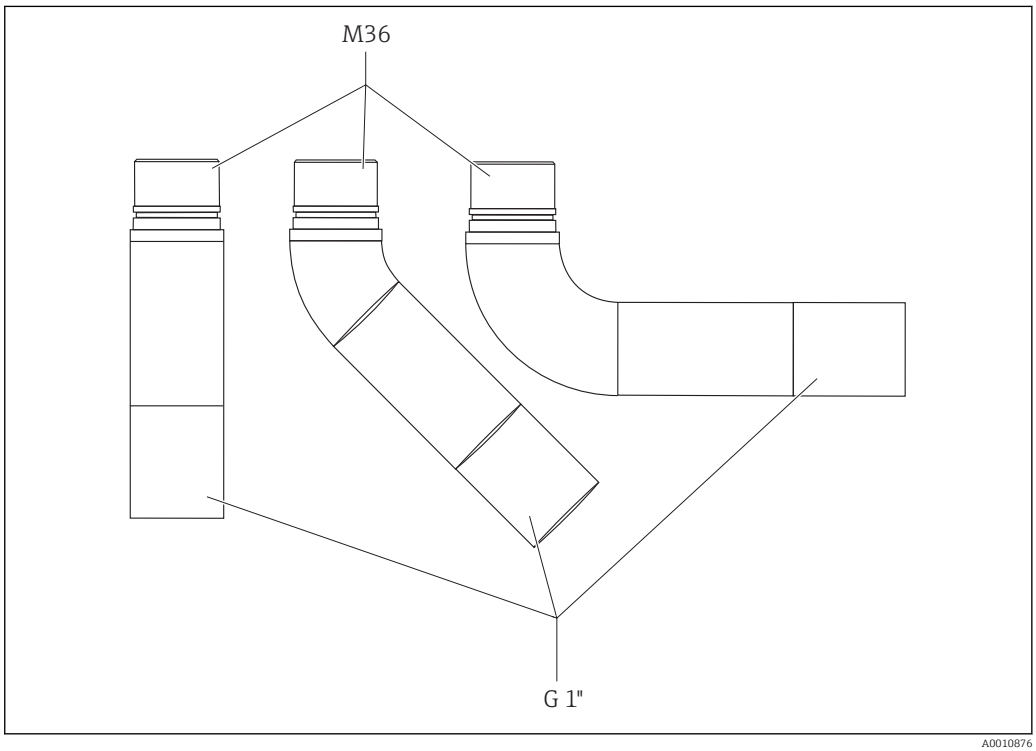
Stainless steel version

Available lengths	From 600 mm (23.6 in), are delivered in pieces measuring 600 mm (23.6 in) and 1 200 mm (47.2 in)
Maximum length	3 600 mm (141.7)
Thread	M36 male thread G1" female thread
Type of installation	Primarily for fixed installation, the assembly can also be used with a chain retainer up to 1 200 mm (47.2 in)

The threaded joints are sealed with an O-ring.

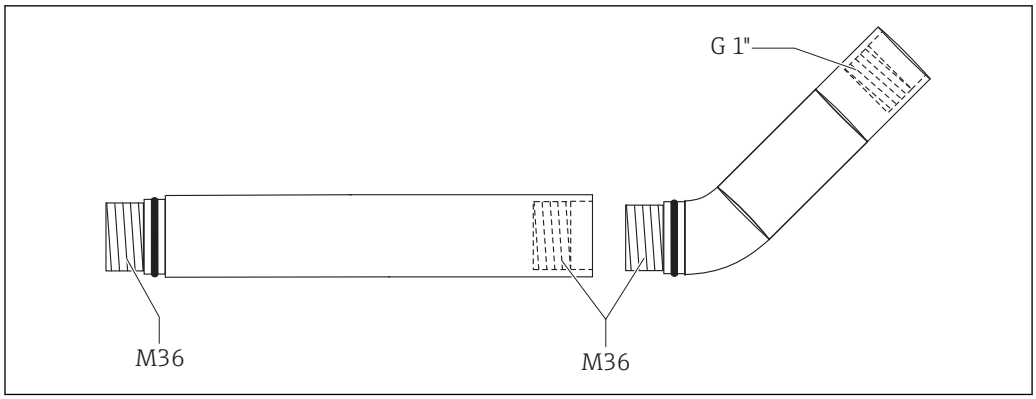
Connecting pipes have a G1" thread for the sensors. Various sensor adapters are available (NPT ¾", G ¾", Pg 13.5) for sensors with other threads.

Sensor adapter → 16



2 *Connecting pipe 0°, 45° and 90° (from left to right)*

A connecting pipe is screwed onto the end of the immersion tube. An O-ring seals the pipes against the medium.



3 Example of immersion tube with screw-in connecting pipe

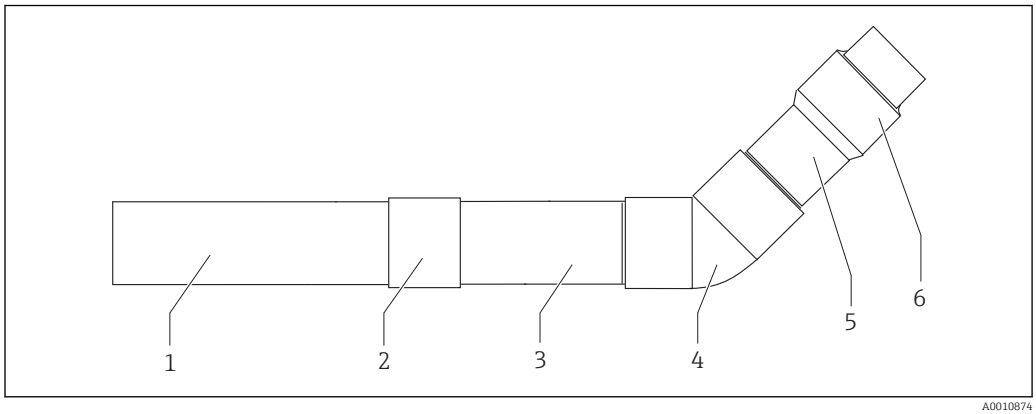
PVC version

Available lengths	From 600 mm (23.6 in), are delivered in pieces measuring 600 mm (23.6 in) and 1 200 mm (47.2 in)
Maximum length	2 400 mm (94.5)

Immersion tubes measuring up to 1 200 mm (47.2 in), straight or with 45° connecting pipe, are ready to install on delivery. Tubes longer than 1 200 mm (47.2 in) must be glued by the client on site. The necessary materials (glue (depending on the version), cleaning cloths, adhesive fitting) are included in the delivery.

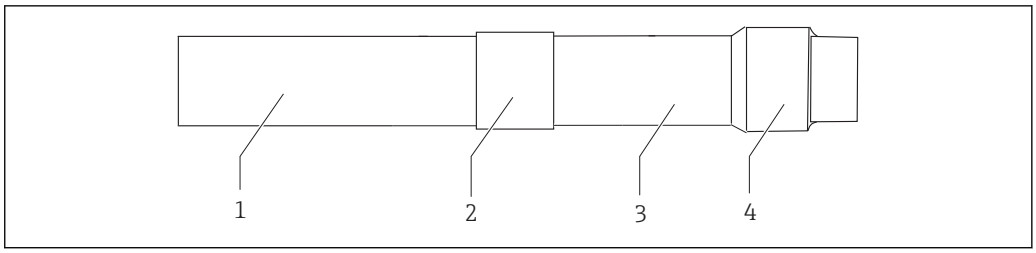
In the case of the chain retainer, the PVC assemblies are fitted with stainless steel weights for stabilization purposes (prevent buoyancy).

- Use 1 weight for an immersion tube measuring 600 mm (23.6 in), use 2 weights for an immersion tube measuring 1 200 mm (47.2 in).



4 PVC pipe connection 1 800 mm (70.9 in), 45°

1 Immersion tube
2 Adhesive fitting
3 Immersion tube
4 Adhesive fitting 45°
6 Sensor adapter G 1"



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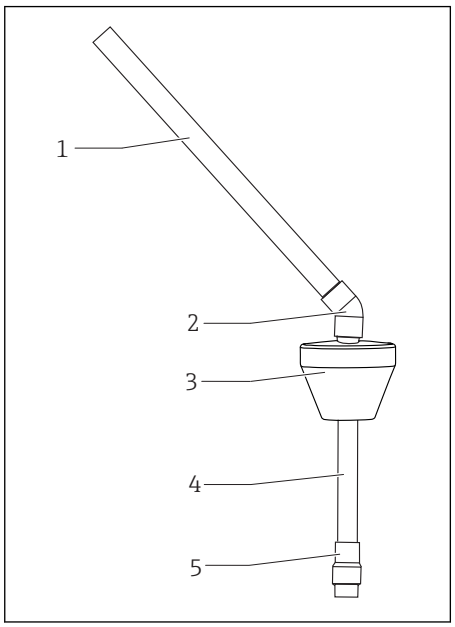
5 PVC pipe connection 1 800 mm (70.9 in), straight

1 Immersion tube
2 Adhesive fitting
3 Immersion tube
4 Sensor adapter G 1"

Version with float

The assembly with a float is only available as a PVC version. The immersion depth of the sensors (depending on the sensor) is 600 mm (23.6 in). The assembly is preferably operated with the CYH112 pendulum holder. The installation is performed on site at the customer's premises. The float version does not contain any weights. This version is designed to compensate for varying water/ wastewater levels.



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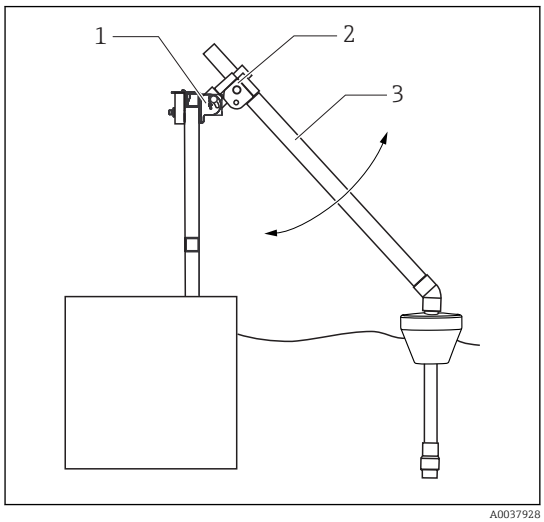
6 Version with float

1 Immersion tube PVC
2 Adhesive fitting 45°
3 Float
4 Immersion tube
5 Sensor adapter G 1"



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7 Float with pendulum holder

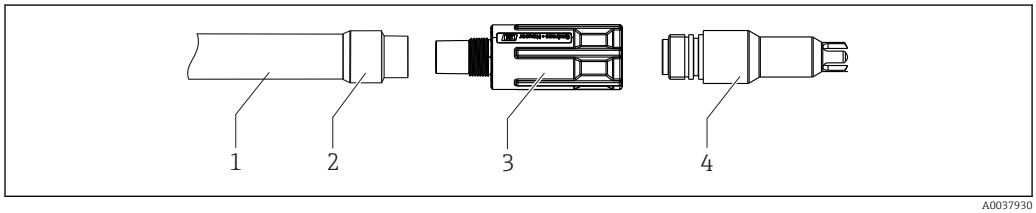
1 Pendulum holder
2 Cross clamp
3 Assembly with float

Immersion tube length (item 1)	Maximum stroke (difference in level)
600 mm (23.6 in)	400 mm (15.8 in)
1 200 mm (47.2 in)	1 000 mm (39.4 in)
1 800 mm (70.9 in)	1 600 mm (63 in)
2 400 mm (94.5 in)	2 200 mm (86.6 in)

Quick fastener (optional)

The quick fastener enables:
- Quick and easy installation and replacement of Memosens sensors with an inductive plug-in connection. When using sensors with a fixed cable connection, it is not necessary to untwist the connecting cables.
- The alignment of the installed sensors

The quick fastener is installed between the sensor and the assembly.

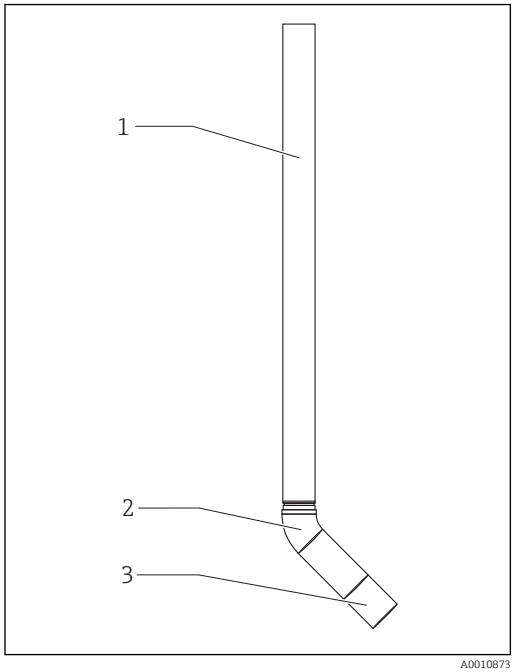


8 Quick fastener

1 Immersion tube
2 Sensor adapter G 1"
3 Quick fastener
4 Sensor adapter Pg 13.5

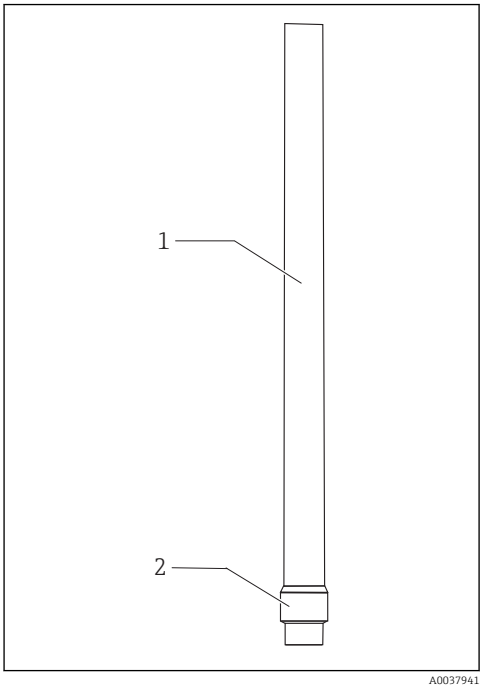
Examples

Immersion tube, standard



9 CYA112, angled with sensor adapter G 1"

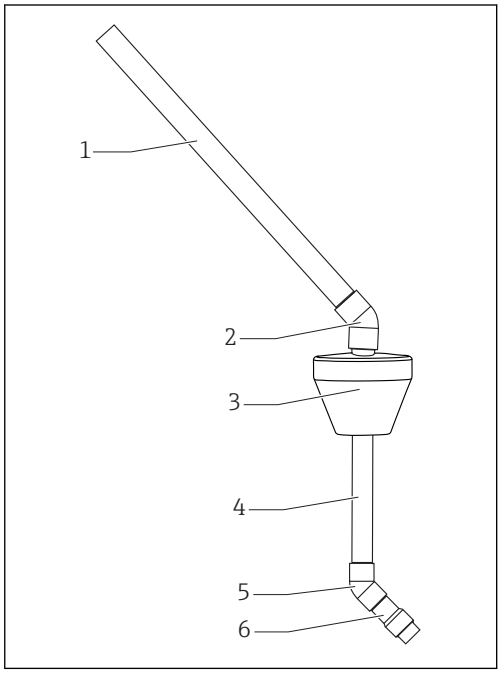
1 Stainless steel immersion tube 600 mm (23.6 in)
2 Stainless steel 45° connecting pipe
3 Sensor adapter G 1"



10 CYA112, straight with sensor adapter G 1"

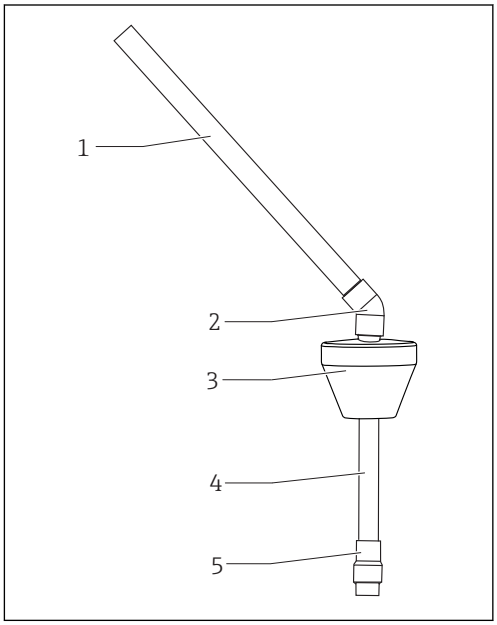
1 PVC immersion tube 600 mm (23.6 in)
2 Sensor adapter G 1"

Immersion tube, float



11 CYA112 with float

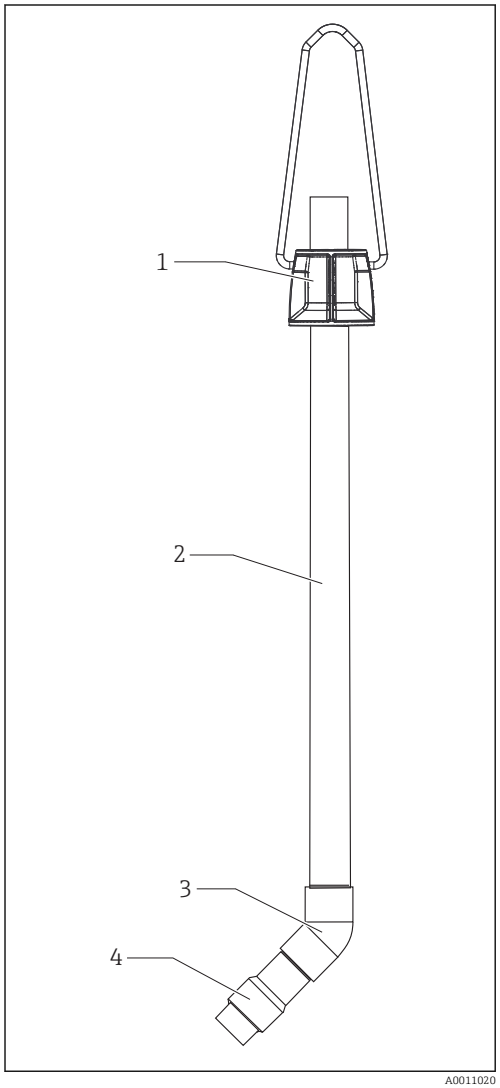
1 *Immersion tube*
2 *Adhesive fitting 45°*
3 *Float*
4 *Immersion tube*
5 *Adhesive fitting 45°*
6 *Sensor adapter G 1"*



12 CYA112 with float

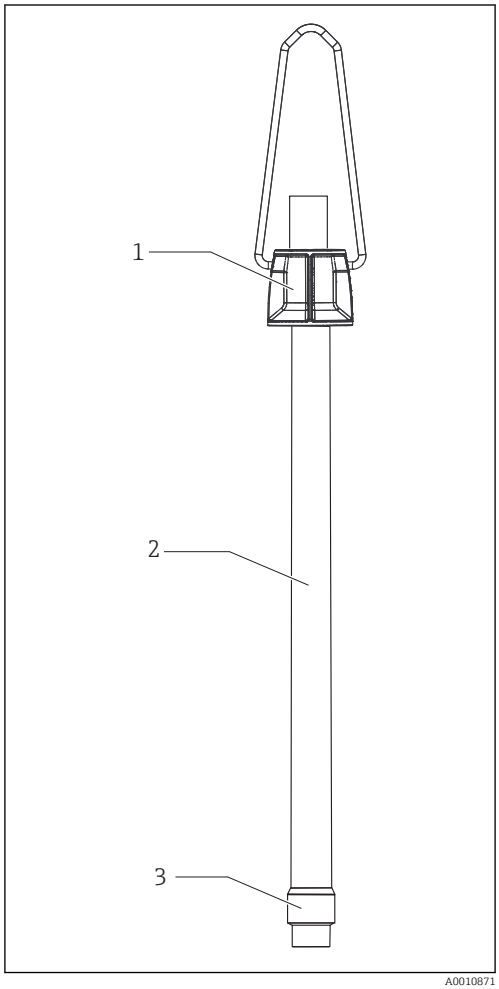
1 *PVC immersion tube*
2 *Adhesive fitting 45°*
3 *Float*
4 *Immersion tube*
5 *Sensor adapter G 1"*

Immersion tube, chain



13 CYA112, angled with chain retainer

1 Multifunctional clamp ring with bracket
2 PVC immersion tube 1200 mm (47.2 in)
3 Adhesive fitting 45°
4 Sensor adapter G 1"



14 CYA112, straight with chain retainer

1 Multifunctional clamp ring with bracket
2 PVC immersion tube 1200 mm (47.2 in)
3 Sensor adapter G 1"

Power supply

Potential equalization

Potential equalization must be implemented at the place of installation. All electrically conductive parts must be interconnected.

For use in hazardous areas:
- There must be an electrically conductive connection between the immersion tube side of the assembly and the holder/fastener.
- If the assembly is secured using a chain and retaining bracket, a separate conductor for potential matching must be routed alongside the measuring cable.
- If sensors have accessible metal surfaces, these sensors must be included in the potential equalization system as indicated in the Operating Instructions for the sensor in question.

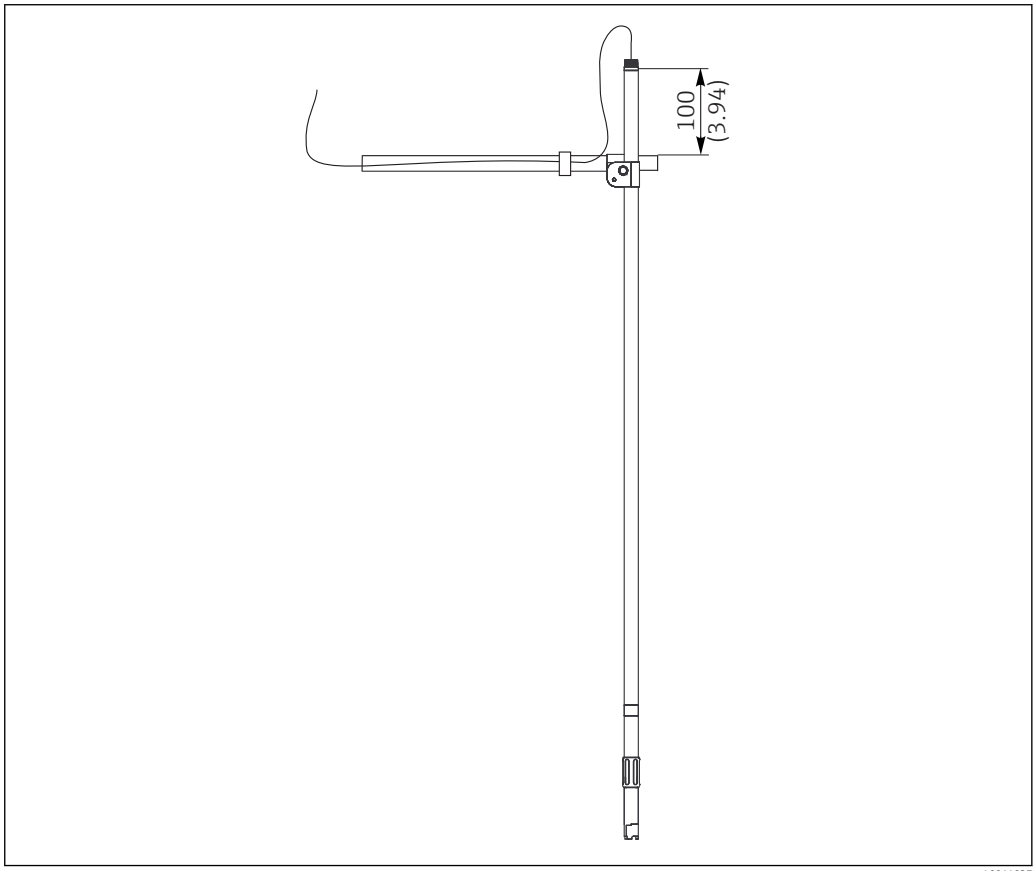
Installation

Mounting location

- Select the mounting location so that a sufficient distance from fixed installations is maintained, and the sensor cannot be damaged even when the medium is moving.
- For fixed installation, the retaining point must be selected in a way that guarantees the proper operation and maintenance of the assembly.
- The immersion tube must protrude over the retaining point by at least 100 mm (3.94 in).

Installation instructions

- Potential equalization must be implemented at the place of installation.
- All electrically conductive parts must be interconnected.

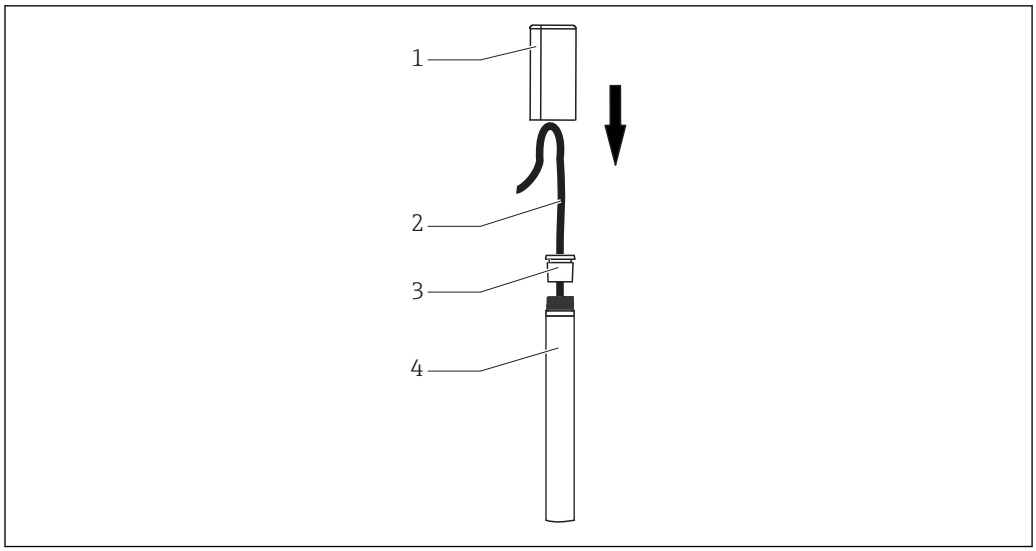


15 Retaining point (shown without splash protection cap). Dimensions: mm (in)

Mounting the sensor

Preparation:

1. Screw or glue the connecting pipe onto the immersion tube.
2. Where necessary, screw the sensor adapter onto the connection pipe.



16 Cable routing

1 Splash protection cap
2 Sensor cable
3 Rubber plug
4 Immersion tube

Mounting Memosens sensors

1. Route the sensor cable through the immersion tube.
2. Connect the sensor cable to the sensor.
3. Screw the sensor into the adapter or the connecting pipe.
4. Shorten the tip of the rubber plug to match the cable diameter.
5. Fit the rubber plug onto the sensor cable.
6. Press the rubber plug onto the immersion tube.
7. Route the sensor cable downwards in a loop (do not bend).
8. Fit the splash protection cap.
   ↳ The splash protection cap is fixed in place by the lip of the rubber plug.

Mounting sensors with a fixed cable

1. Route the sensor cable through the immersion tube.
2. Screw the sensor into the adapter or the connecting pipe.
3. In doing so, turn the assembly and not the sensor to ensure that the sensor cable is not twisted.
4. Shorten the tip of the rubber plug to match the cable diameter.
5. Fit the rubber plug onto the sensor cable.
6. Press the rubber plug onto the immersion tube.
7. Route the sensor cable downwards in a loop (do not bend).
8. Fit the splash protection cap.
   ↳ The splash protection cap is fixed in place by the lip of the rubber plug.

Environment

Ambient temperature range	-20 to 60 °C (-4 to 140 °F)

Process

Process temperature range

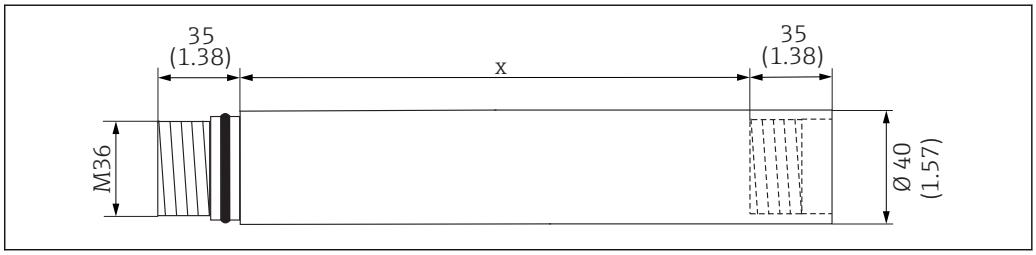
0 to 60 °C (32 to 140 °F)

Process pressure range

Unpressurized installation

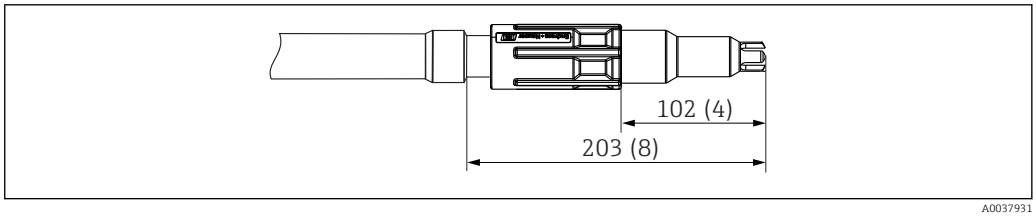
Mechanical construction

Design, dimensions



17 *Immersion tube, stainless steel version*

x Variable length



18 *Dimensions of mounted quick fastener with sensor adapter Pg 13.5. Engineering unit: mm (in)*

Dimensions

Immersion tube (PVC)	Ø 40 mm (1.6 in), lengths: 600 mm (23.6 in), 1 200 mm (47.2 in), 1 800 mm (70.9 in), 2 400 mm (94.5)
Immersion tube (stainless steel)	Ø 40 mm (1.6 in), lengths: 600 mm (23.6 in), 1 200 mm (47.2 in), 1 800 mm (70.9 in), 2 400 mm (94.5), 3 600 mm (141.7 in)

Weight

- Immersion tube (PVC)
  - Length 600 mm (23.6 in): 0.3 kg (0.7 lb)
  - Length 1 200 mm (47.2 in): 0.6 kg (1.3 lb)
  - Length 1 800 mm (70.9 in): 0.95 kg (2.1 lb)
  - Length 2 400 mm (94.5): 1.3 kg (2.8 lb)
- Immersion tube (stainless steel)
  - Length 600 mm (23.6 in): 0.6 kg (1.3 lb)
  - Length 1 200 mm (47.2 in): 1.2 kg (2.6 lb)
  - Length 1 800 mm (70.9 in): 1.8 kg (4.0 lb)
  - Length 2 400 mm (94.5): 2.4 kg (5.3 lb)
  - Length 3 600 mm (141.7 in): 3.5 kg (7.7 lb)
- Multifunctional clamp ring: 0.15 kg (0.33 lb)
- Weight for PVC immersion tube: 0.32 kg (0.71 lb)

Materials

Immersion tube:	Stainless steel 1.4404 (AISI 316 L) or PVC
Connecting pipe:	Stainless steel 1.4404 (AISI 316 L) or PVC
Weld-on threads:	Stainless steel 1.4571 (AISI 316 Ti) or PVC
Sensor adapter:	POM - GF
Quick fastener:	POM - GF

Multifunctional clamp ring:	PA 6
Cap for pipe end:	PE
Chain bracket:	Stainless steel 1.4571 (AISI 316 Ti) or 1.4404 (AISI 316 L)
O-rings:	EPDM
Float, yellow:	EVA (until mid-2012 approximately)
Float, black:	EPP (from mid-2012 approximately)

Certificates and approvals

Ex approval

The stainless steel version of the CYA112 assembly (CYA112-**21*2**) may also be used in the hazardous area in Zone 1 and 2.

It does not have special Ex identification labeling, as the assembly does not have a potential ignition source of its own and ATEX Directive 2014/34/EU therefore does not apply.

If sensors have accessible metal surfaces, these sensors must be included in the potential equalization system as indicated in the Operating Instructions for the sensor in question.

Ordering information

Scope of delivery

The scope of delivery comprises:
- Ordered version of assembly
- Operating Instructions

▶ If you have any queries:
Please contact your supplier or local sales center.

Product page

www.endress.com/cya112

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.

Accessories

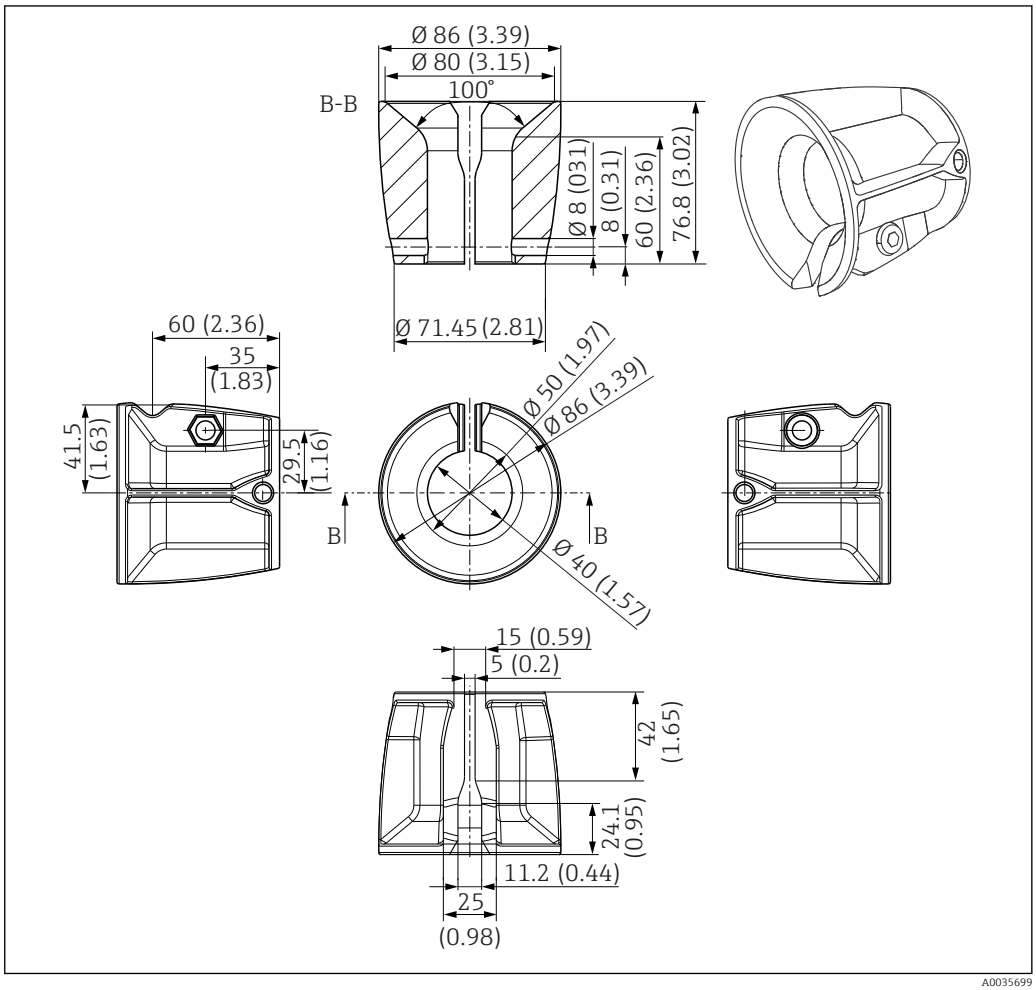
The following are the most important accessories available at the time this documentation was issued.

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

Flexdip CYH112
- Modular holder system for sensors and assemblies in open basins, channels and tanks
- For Flexdip CYA112 water and wastewater assemblies
- Can be affixed anywhere: on the ground, on the coping stone, on the wall or directly onto railings.
- Stainless steel version
- Product Configurator on the product page: www.endress.com/cyh112

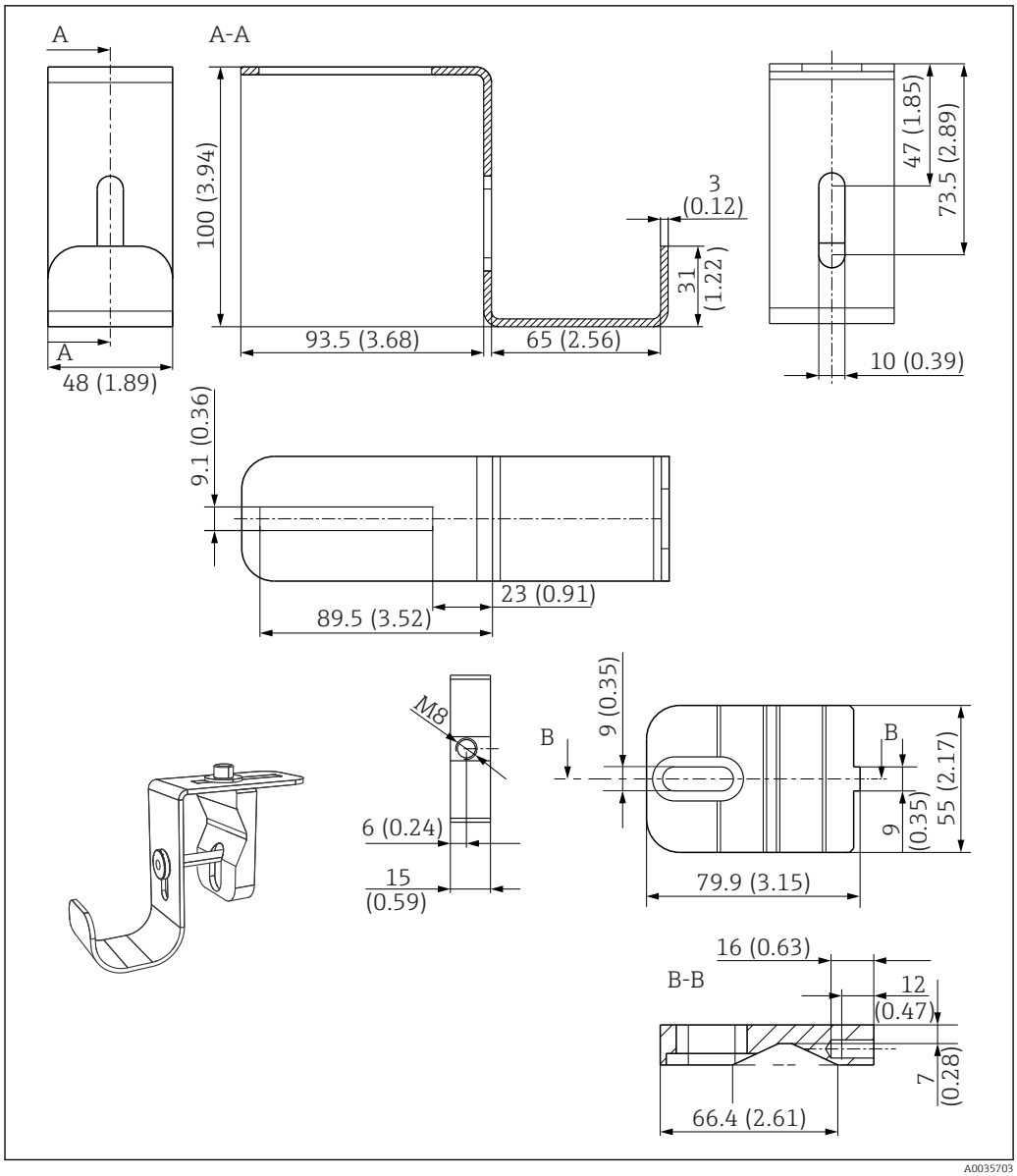
Technical Information TI00430C

Multifunctional clamp ring
- In the case of a chain retainer, the rear multifunctional clamp ring keeps the chain fixed in place.
- In the case of the main pipe and transverse pipe, adjust the working height on the main pipe with the multifunctional clamp ring.
- The multifunctional clamp ring acts as an anti-slip lock on transverse pipes, main pipes and on assemblies.
- Material: PA 6
- Order number: 71092049



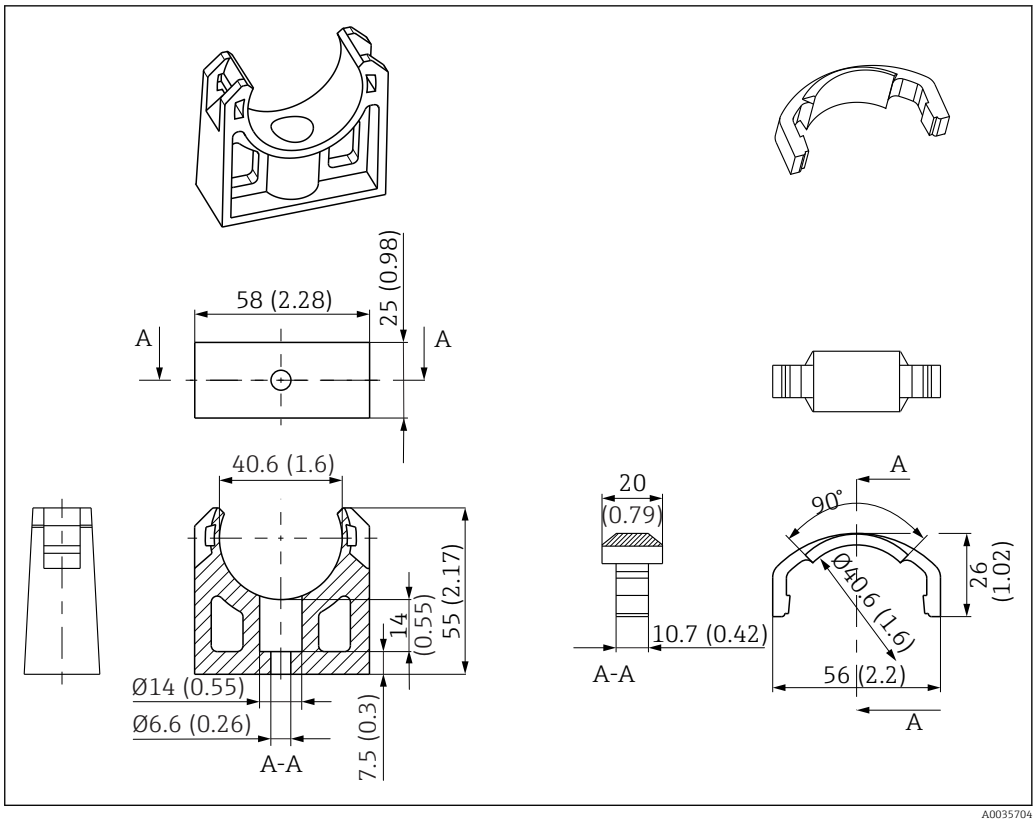
19 *Multifunctional clamp ring. Dimensions: mm (in)*

Immersion pipe tray
- Is used to hold the immersion pipe during maintenance work
- Material: stainless steel 1.4404 (AISI 316L)
- Order number: 71092054



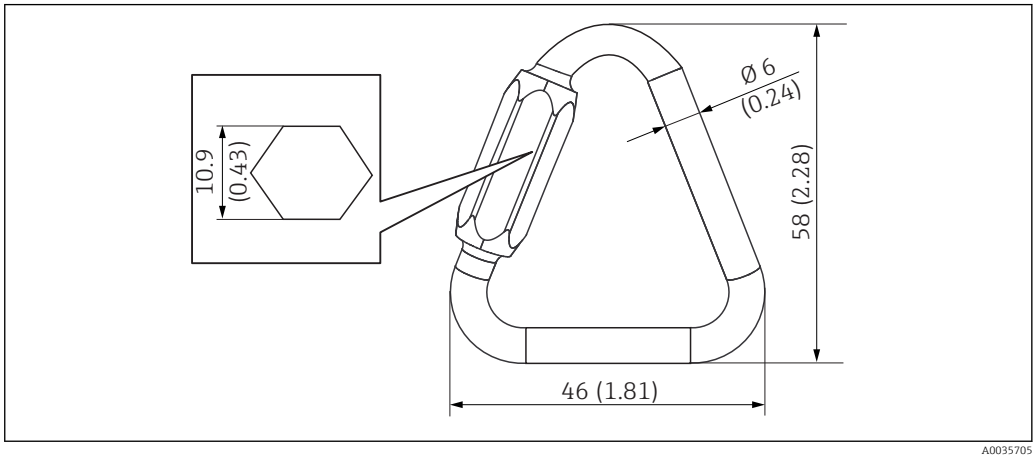
20 Immersion pipe tray. Dimensions: mm (in)

Wall holder set
- 2 pipe clamps D 40
- Material: PE
- 1 worm drive hose clip for height adjustment
- Order number: 71132469



21 *Pipe clamp. Dimensions: mm (in)*

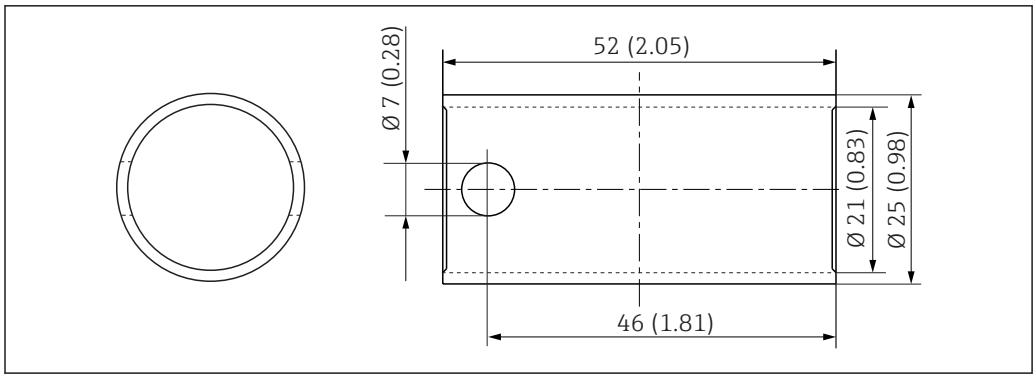
Triangular carabiner
- Is used to secure the chain
- Material: stainless steel, quality V4A
- Order number: 71092052



22 *Triangular carabiner. Dimensions: mm (in)*

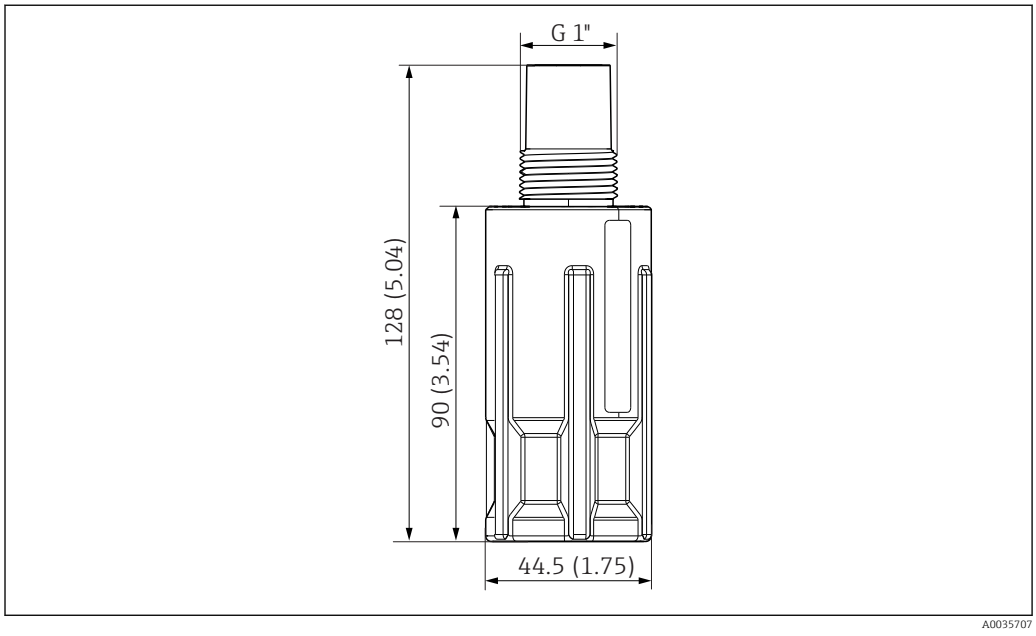
Hook-and-loop cable ties (set of 4)
- Is used to secure the cables
- Material: PE/PA (polyethylene/polyamide)
- Order number: 71092051

Mounting tool
- Tool to remove the quick fastener
- Material: stainless steel V4A
- Order number: 71093438



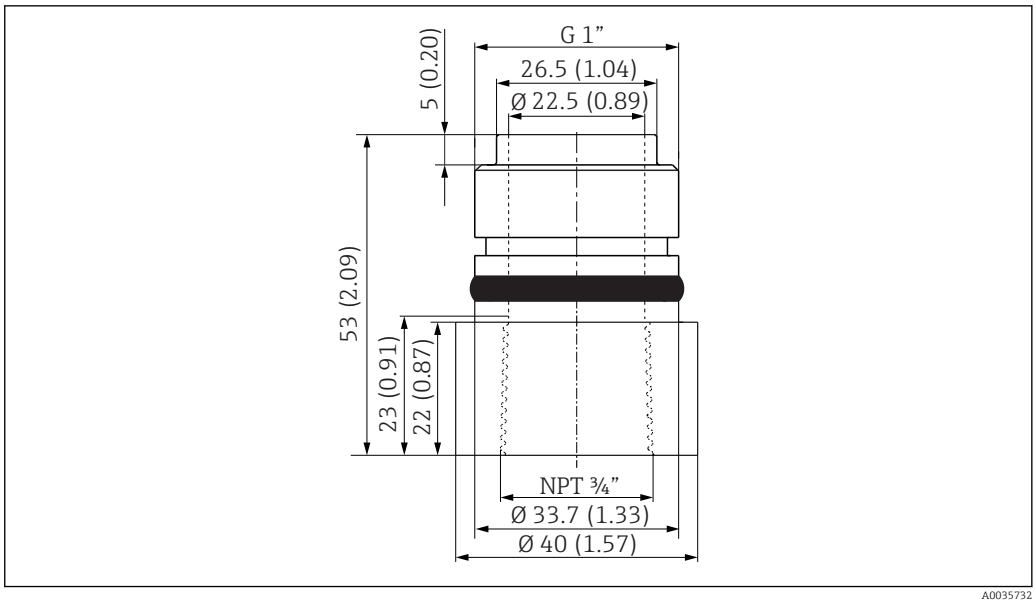
23 Mounting tool. Dimensions: mm (in)

Quick fastener
- For quick and easy installation and replacement of sensors
- Material: POM - GF
- Including mounting tool 71093438
- Order number: 71093377



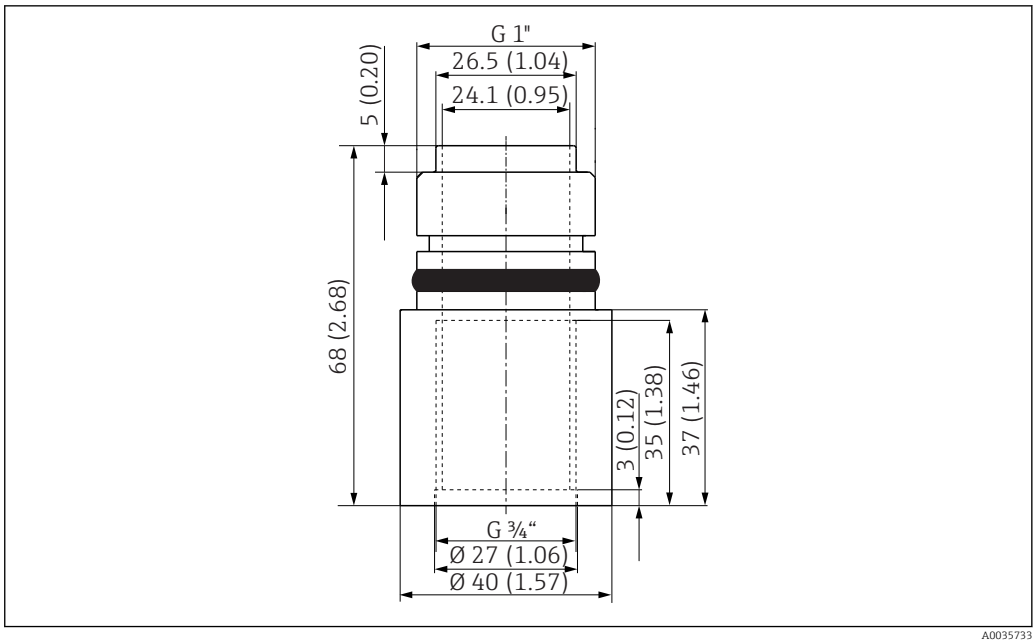
24 Quick fastener. Dimensions: mm (in)

Sensor adapter NPT ¾"
- Sensor adapter from G 1" to NPT ¾"
- Material: POM - GF
- Order number: 71093382



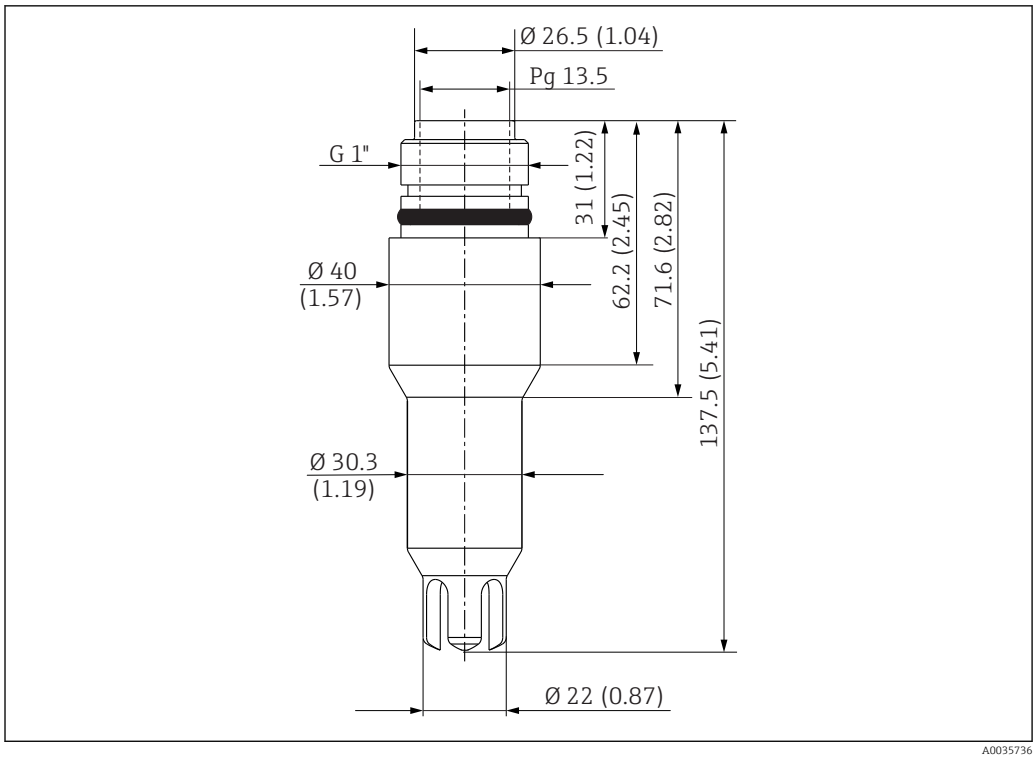
25 Sensor adapter G 1" to NTP ¾". Dimensions: mm (in)

Sensor adapter G ¾"
- Sensor adapter from G 1" to G ¾"
- Material: POM - GF
- Order number: 71093383



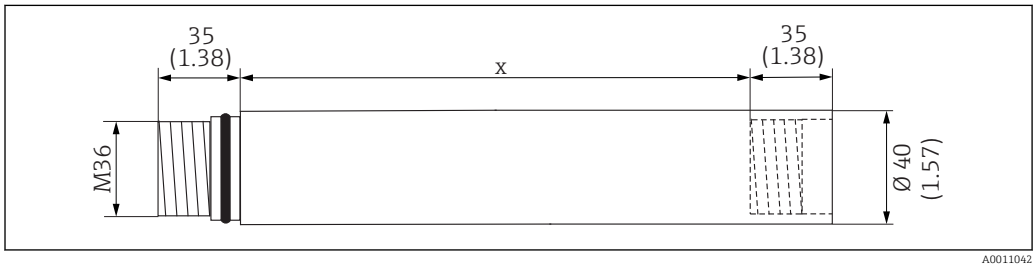
26 Sensor adapter G 1" to G ¾". Dimensions: mm (in)

Sensor adapter Pg 13.5
- Sensor adapter from G 1" to Pg 13.5
- Material: POM - GF
- Order number: 71093384



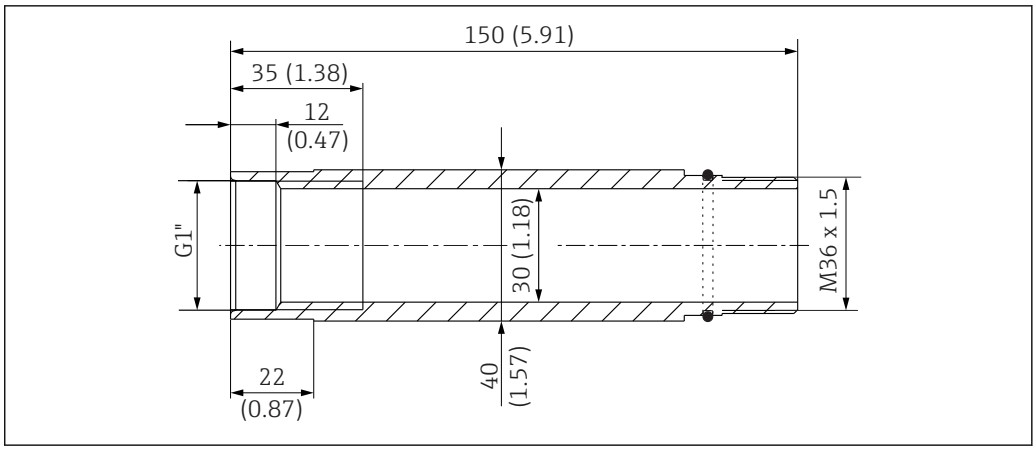
27 Sensor adapter G 1" to Pg 13.5. Engineering unit: mm (in)

Immersion tube
- Connection thread: M36
- Material: stainless steel
- Length x = 600 mm (23.6 in) order number: 71073767
- Length x = 1 200 mm (47.3 in) order number: 71073706



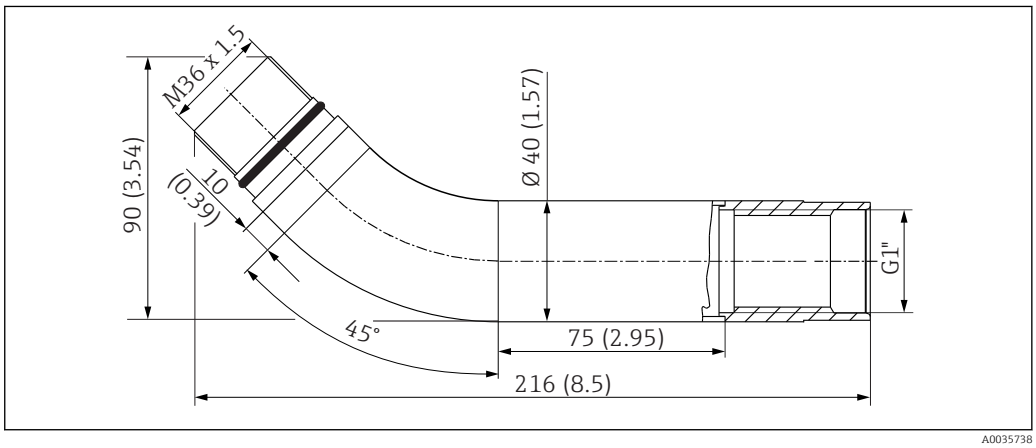
28 Immersion tube. Dimensions: mm (in)

Straight connecting pipe for immersion tube
- M36 to G 1"
- Material: stainless steel
- Order number: 71073768



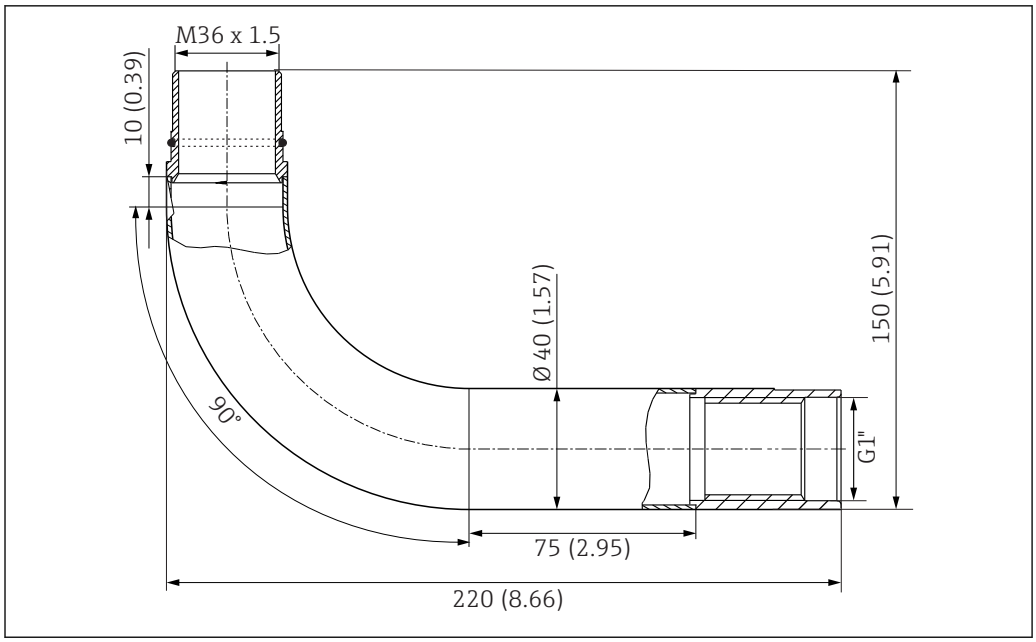
29 Straight connecting pipe. Dimensions: mm (in)

45° connecting pipe for immersion tube
- M36 to G 1"
- Material: stainless steel
- Order number: 71073769



30 45 ° connecting pipe. Dimensions: mm (in)

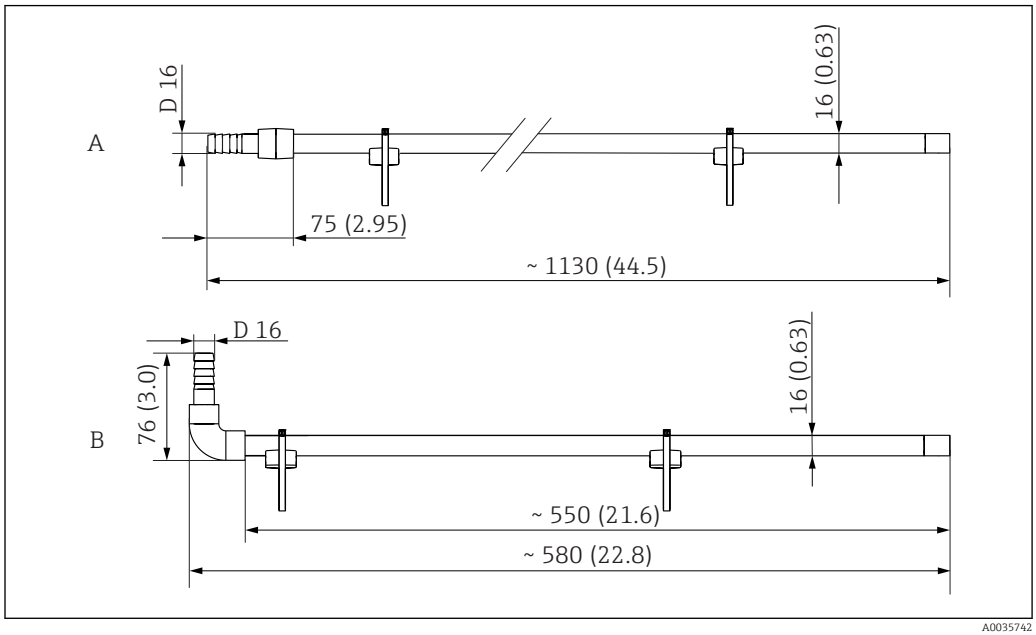
90° connecting pipe for immersion tube
- M36 to G 1"
- Material: stainless steel
- Order number: 71073770



31 90 ° connecting pipe. Dimensions: mm (in)

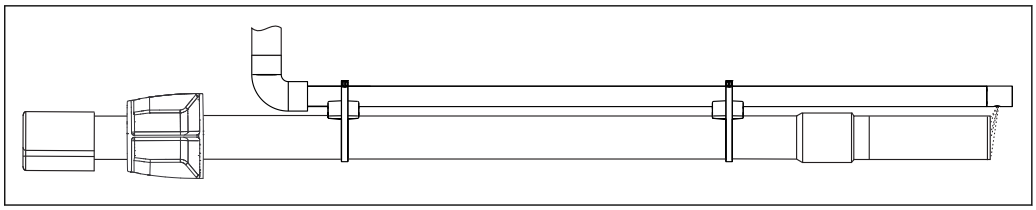
Spray cleaning for CYA112 for mounting on immersion tube

- Version in 600 mm (23.6) and 1 200 mm (47.2 in)
- For CYA112 assembly version: 600 to 2 400 mm, straight
- Material:
  - Pipe: PVC-U
  - Spacer: PA
  - Worm drive hose clips: stainless steel 1.4401 (AISI 316)
- Order number for 600 mm (23.6) version: 71158245
- Order number for 1 200 mm (47.2 in) version: 71158246



32 Spray cleaning for CYA112. Dimensions: mm (in)

A Version: 1200 mm (47.4 in)
B Version: 600 mm (23.6 in)



33 *Example of mounted spray cleaning*

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