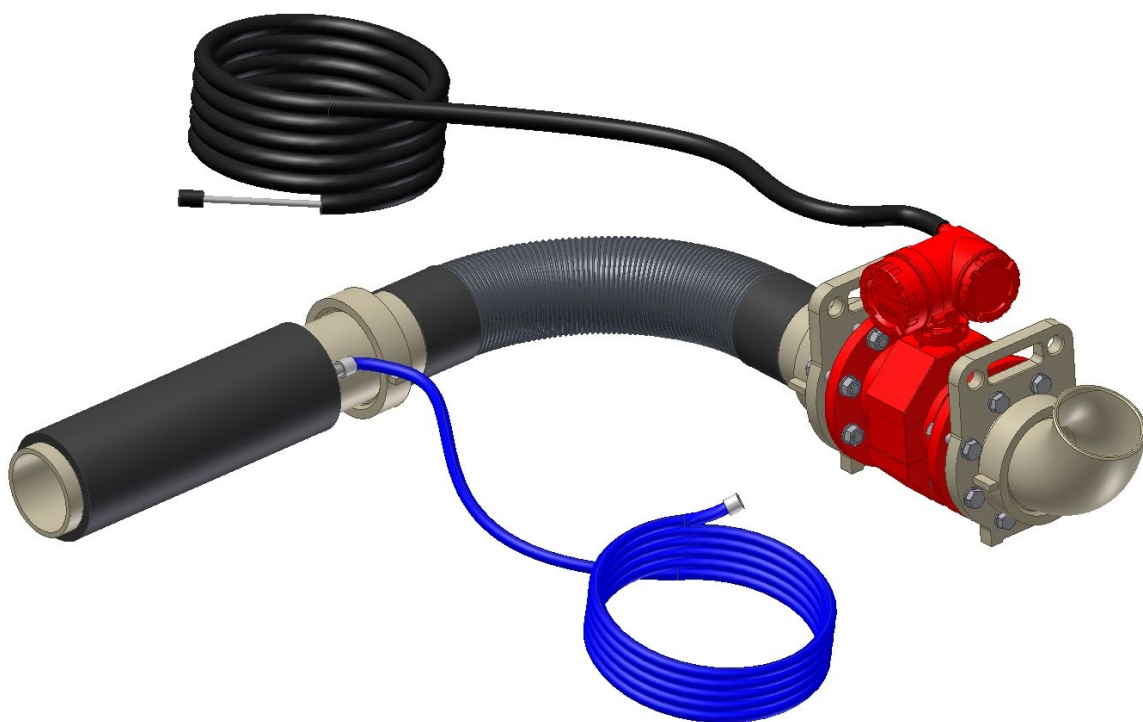


Technical information

Portable flow measurement



Imprint

STEBATEC AG
Mattenstrasse 6a
CH-2555 Brugg

Phone 032 366 95 95
E-Mail info@stebatec.ch
Web <http://www.stebatec.ch>

It is important to us to produce a great product together with optimal documentation. For this, we need your help. If you see any room for improvement in relation to the present product or the operating instructions, please do not hesitate to let us know at the email address info@stebatec.ch.

List of changes

Date	Version	Description	Autor
18.12.2024	V1.0	First version	Patrick Favri

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1 Introduction

The portable flow measurement is suitable for temporary measurements in a variety of structures.



Figure 1: Portable flow measurement

2 Fields of application

- Determination of foreign water
- Rainwater measurement
- Inspection of existing measuring points
- Freight collection, compatible with automatic samplers and online analysers



The multi-sensor bend can be used to measure the following values, in addition to the flow rate:

- CSB
- Conductivity
- temperature
- pH value

The bend also has a sampling connection.

Figure 2: Multi-sensor bend

2.1 Advantages

MID	Robust, proven measuring method
Measurement error	< 1%, controllable, self-calibrating
Measuring range	0.1 – 500 l/s
Fast installation	Installation time 5 - 15 min.

- No on-site device settings required
- Installation possible without entering the pit
- Emergency ventilation when it rains, to clear the sewer cross-section
- Data transmission via mobile radio to ARAbella online
- Buffering of data in the event of an interruption

3 Technical structure

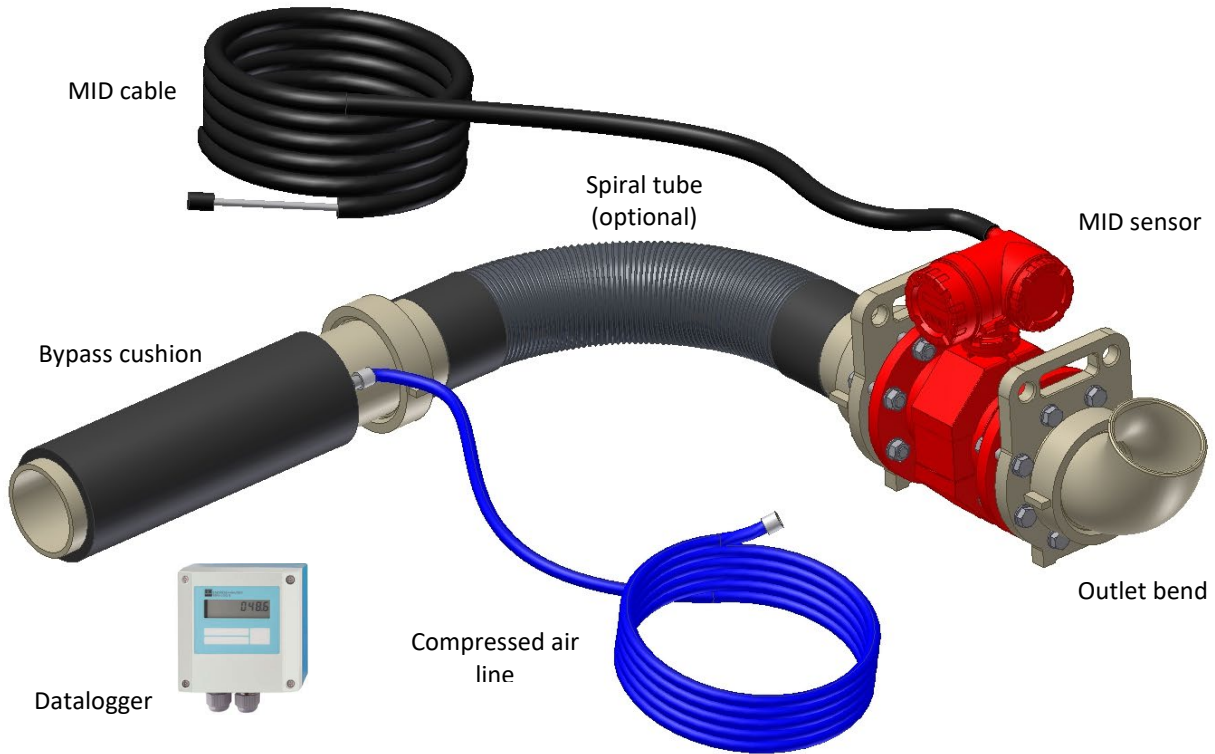


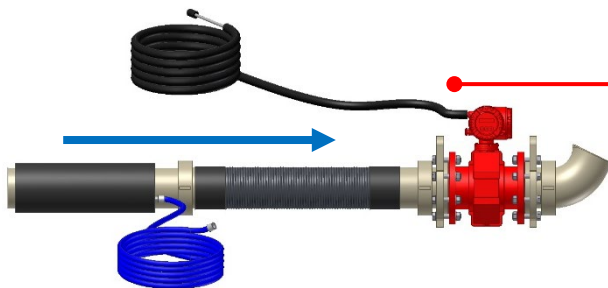
Figure 3: Portable flow measurement

3.1 How it works

The flow rate is measured using a highly accurate, portable magnetic-inductive measuring device. The measuring device can normally be integrated into the existing infrastructure without structural modifications.

The inflatable bypass cushion seals the channel so that the medium is directed through the measuring system. There, the discharge elbow creates a backwater to completely fill the measuring probe.

The 'Portable' measures bidirectionally, i.e. it also considers quantities flowing in the opposite direction.



When assembling the measuring unit, make sure that the MID measurement is placed so that the MID cable is placed against the flow direction.

Figure 4: Flow direction

The connection components can be combined as required depending on the application. It is important that the measuring transducer is always operated when full.

Nominal diameter of portable [mm]	Connection range [mm]	Measuring range [l/s] at 1m accumulation
80	125 – 250	0.1 – 15
100	125 – 250 or 200 – 500	0.16 – 20
150	200 – 500	0.35 – 40
250	300 – 600	0.98 – 110
350	400 – 800	1.92 – 200
500	700 – 1200	3.93 – 350

Table 1: Available system sizes

Accumulation from upper edge of outlet [mm]	DN 100mm Flow rate [l/s]	DN 150mm Flow rate [l/s]	DN 200mm Flow rate [l/s]	DN 250mm Flow rate [l/s]	DN 300mm Flow rate [l/s]	DN 350mm Flow rate [l/s]	DN 500mm Flow rate [l/s]
200	8	22	40	60	90	120	250
500	15	32	60	95	140	190	350
800	18	40	79	120	175	240	530
1000	20	45	85	135	195	285	600

Table 2: Reference values for accumulation / flow

3.2 Specifications

Pipe wall material	Polypropylene (PP)
Protection class	IP 68
Ex certification	ATEX II 2GD EEx de, wiring EEx e
Seal material	EPDM
Temperature range	Measuring medium -20°C – 80°C Ambient -20°C – 60°C
MID lining	Hard rubber

4 Installation

Zur A lifting device (e.g. cable winch, block and tackle or crane) is recommended for safe installation in pits and channels. This allows the operating personnel to manoeuvre the measuring device in the channel.

Care should be taken to avoid setting the device down too hard or bumping it, to prevent damage to the protective coating and the system.

Cables and hoses must be secured to prevent pulling and kinking. If any visible damage is detected, the system must not be used any longer and STEBATEC must be informed immediately.

Any sharp edges or other pointed objects that could protrude into the duct and damage the bypass bag must be removed beforehand.

When dismantling, the compressed air must be released from the bypass bag. No persons may remain in the pit until the backflow generated by the measuring device has dissipated.

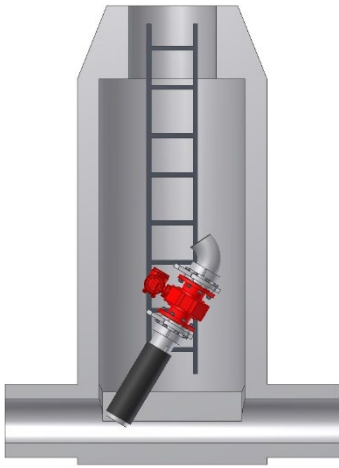
4.1 Installation procedure



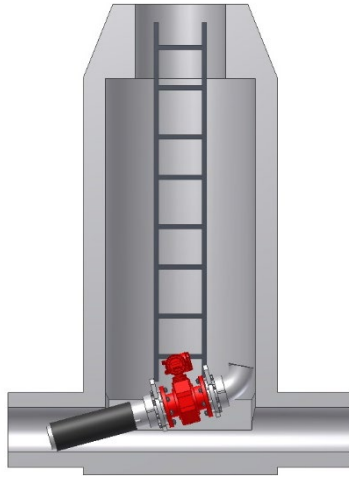
Prepare the measuring unit above the pit. Roll up the cable and hose. Attach safety ropes.

Stand the measuring unit upright and lower it by the ropes. Avoid pulling on the cable/hose.

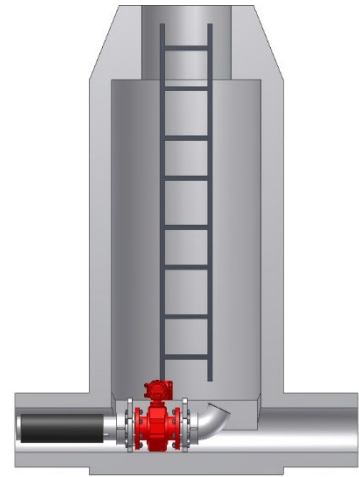
Take particular care in narrow places not to damage the protective coating.



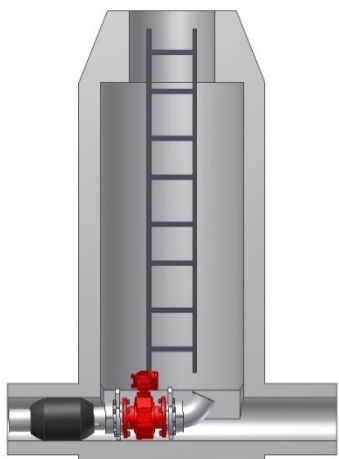
Thread the measuring unit into the sewer pipe using the ropes.



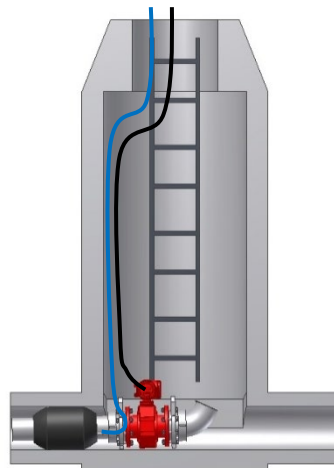
Carefully lower the measuring unit until it is horizontal.



Move the measuring unit to its final position.



Inflate the bypass cushion



Lay the MID cable, compressed air supply and safety ropes in the pit.



Depending on the on-site situation, place the measuring case and compressor and connect the MID cable and the compressed air supply.

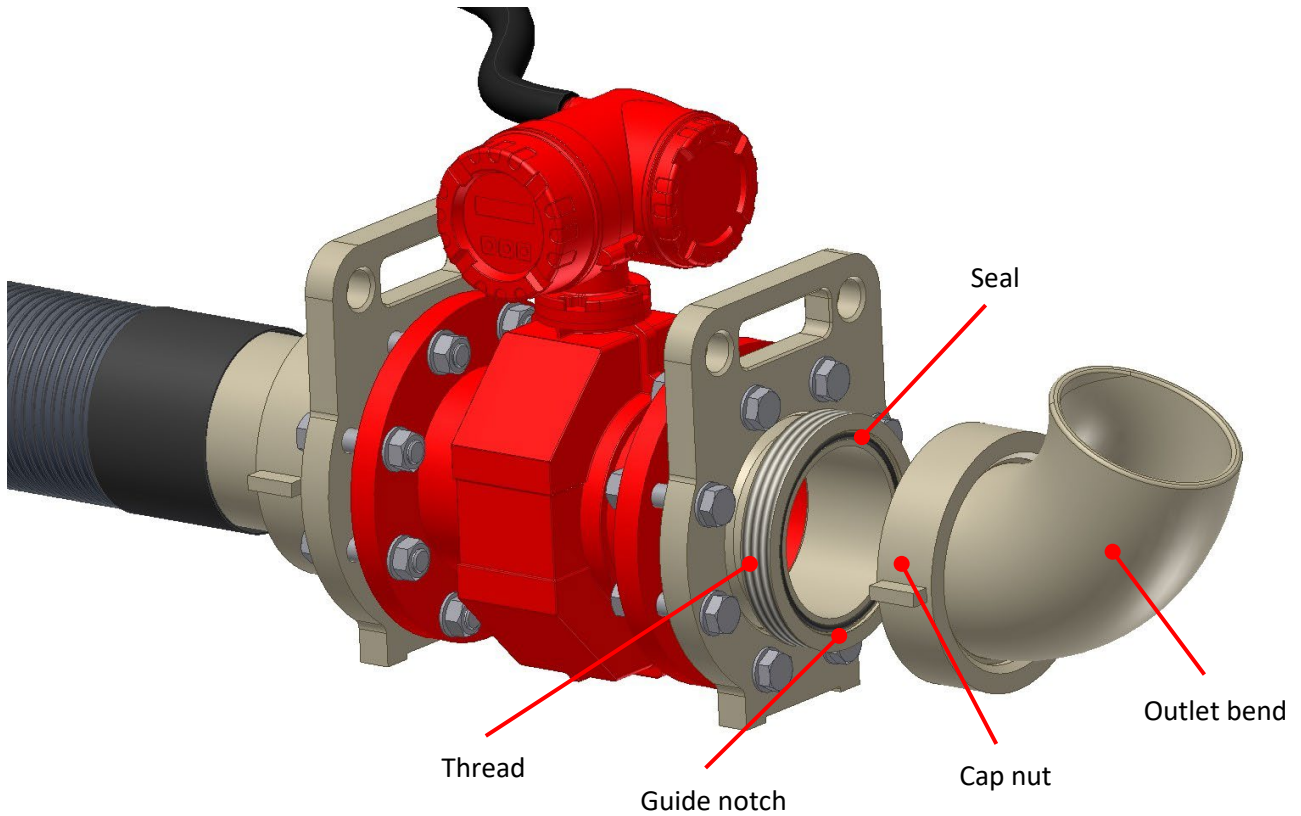


Figure 5: Installation of outlet bend

The assembly system with the cap nut is very easy to assemble, even in the tightest of spaces. The guide notch allows the outlet bend to be screwed on easily, even 'blind', in poor visibility conditions.

4.2 Installation options



Note

Use of the flex hose may increase maintenance and risk of clogging.

4.2.1 Seal the drain

To avoid the use of two measuring devices at two inlets to a pit, the 'portable' system can be used to seal the drain.

The MID can be filled completely by means of a flexible hose or, in the case of a large pipe, with the overflow bend.

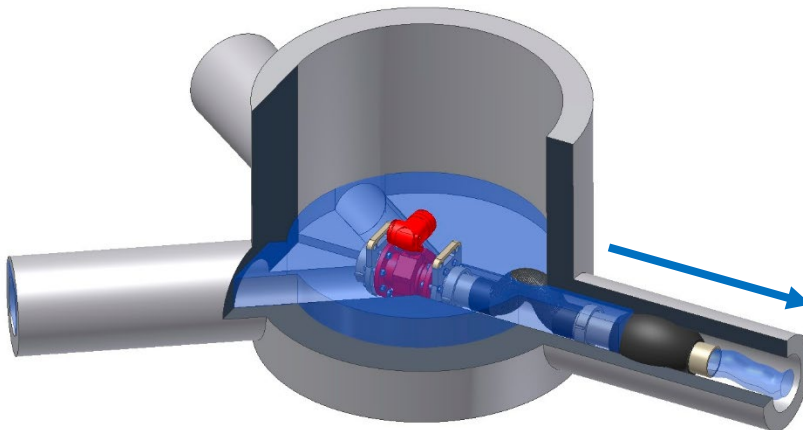


Figure 6: 'Seal drain' variant flex hose

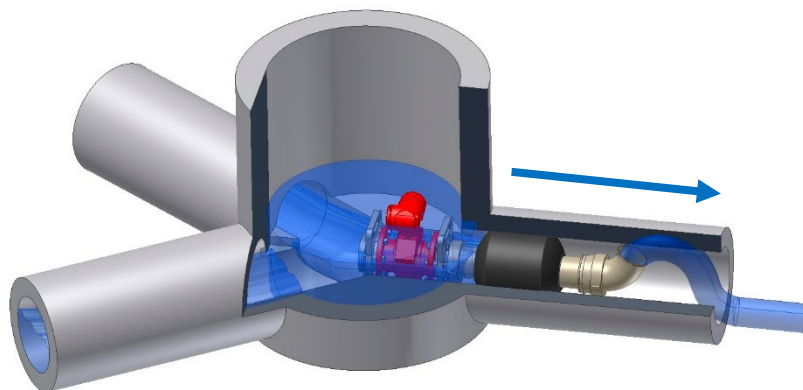


Figure 7: 'Seal drain' variant drain elbow

4.2.2 Limited space

Either create enough space between the berms through structural adjustments or install the measuring device over the berm using a flexible hose.

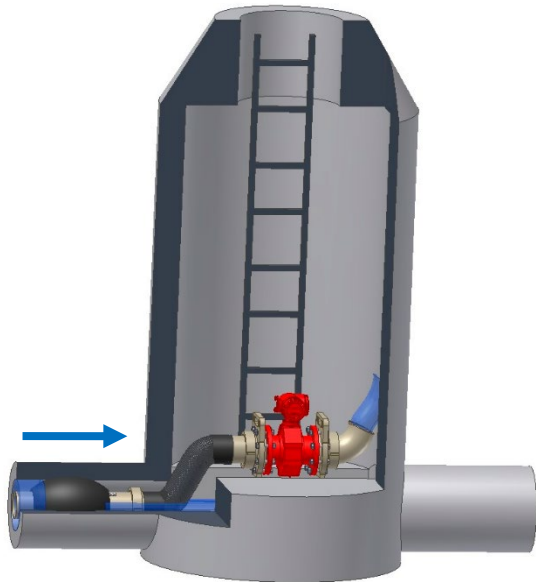


Figure 8: Variant 'Limited space'

4.2.3 Little accumulation

If the channel is to be filled with as little water as possible, place the MID deeper using a flexible hose, depending on the installation options.

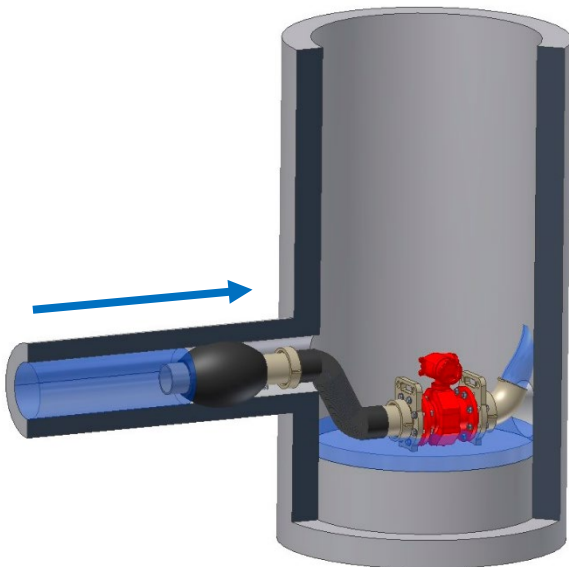


Figure 9: Variant 'Minimal accumulation'

4.2.4 Retaining wall with emergency overflow

The retaining wall prevents uncontrolled backflow and allows the connection of measuring devices to very large or individually shaped channels. The 'floodability' of the retaining wall prevents the backflow in the sewer system from becoming too great.



Figure 10: Variant 'Retaining wall with emergency overflow'



Warning

To achieve full filling, the water in the sewer must be forced through the pipe at higher pressure. To prevent an accident, pay attention to the water level and the backwater in front of the measuring point.

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