Rigid suction lances RSL
Foot valves FV

Installation and operating instructions

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GRUNDFOS

Original installation and operating instructions

These installation and operating instructions describe the Grundfos rigid suction lance RSL and the Grundfos foot valve FV.

Sections 1-3 give the information necessary to be able to install the product in a safe way.

Sections 4-9 give important information about the product as well as information on service and disposal of the product.

CONTENTS

Prior to installation, read this document. Installation and operation must comply with local regulations and accepted codes of good practice.

1. General information

1.1 Target group

This document is intended for the operating company and the users. It contains general instructions that must be observed before installation and during operation and maintenance of the product. The responsible staff must read these instructions prior to any work on the product.

1.1.1 Qualification and training

The persons responsible for the tasks described in this document must be appropriately qualified.

1.1.2 Obligations of the operating company

- Observe the local safety regulations.
- Keep the installation and operating instructions available at the installation location at all times.
- Coordinate the preparation of the installation location observing section *7. Technical data*.
- Ensure that the users are trained for their tasks.
- Provide the stipulated safety equipment and personal protective equipment.
- Arrange regular maintenance.

1.1.3 Obligations of the user

- Observe the recognised health and safety regulations as well as the local accident prevention regulations.
- Wear protective equipment in accordance with local health and safety regulations when working on the product and handling chemicals.
- Read and understand this document.

1.2 Symbols used in this document

A blue or grey circle with a white graphical symbol indicates that an action must be taken.

A red or grey circle with a diagonal bar, possibly with a black graphical symbol, indicates that an action must not be taken or must be stopped.

If these instructions are not observed, it may result in malfunction or damage to the equipment.

Tips and advice that make the work easier.

1.3 Safe operation

When working with chemicals, the accident prevention regulations applicable at the installation site must be applied.

Observe the chemical manufacturer's safety data sheets when handling chemicals.

When working on the product or connections and lines, always wear protective clothing (e.g. safety goggles and gloves). The system must be pressureless.

Only operate the system if all lines are connected correctly.

If safe operation is no longer possible, the product must be taken out of operation and secured against unintentional operation.

This is the case in the following situations:

- If the product is visibly damaged.
- If the product does not seem operational.
- After long periods of storage under unfavourable conditions.

2. Installing the product

2.1 Safety instructions

The product must only be installed by authorised and qualified persons.

When working with chemicals, the accident prevention regulations applicable at the installation site must be applied.

Observe the chemical manufacturer's safety data sheets when handling chemicals.

When working on the product or connections and lines, always wear protective clothing (e.g. safety goggles and gloves). The system must be pressureless.

Observe section *3.1 Handling the product*.

Wipe up spilled liquid immediately to avoid slipping hazard.

2.2 Location

- The installation location must be protected from rain, humidity, condensation, direct sunlight and dust.
- The installation location must have sufficient lighting to ensure safe operation.
- Observe the permissible ambient conditions. See section *7.1 Mechanical data*.

2.3 Hydraulic connection

Read section *2.1 Safety instructions*.

2.3.1 Conditions for installation

- Proper functioning can only be guaranteed when using Grundfos accessories.
- For suction height and line diameter, see the technical data of the dosing pump.

2.3.2 Notes for installation

- Shorten hoses and pipes at right angles.
- Make sure that there are no loops or kinks in the hoses.
- Keep the inlet line of the dosing pump as short as possible.
- Route the inlet line up towards the inlet valve of the dosing pump.
- Observe the installation instructions in the manual of the dosing pump.

2.3.3 Connecting the hose (RSL and FV up to 60 l/h)

1. Push union nut (2) and tensioning ring (3) onto hose (1).
2. Insert cone part (4) fully into the hose.
3. Put the cone part with hose onto the threaded connection of the RSL / FV.
4. Tighten the union nut manually. Do not use tools.
   – If using a PTFE gasket, retighten the union nut after 2-5 operating hours.

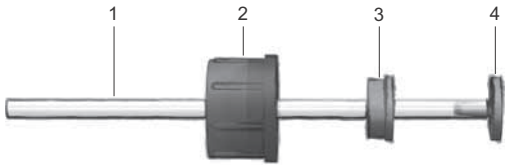

Fig. 1 Hydraulic connection

2.3.4 Connecting a hose (RSL and FV up to 460 l/h)

For details on connection types, see section *4.4 Identification*.

1. Make sure that the system is pressureless.
2. Install hose connector (1) with union nut (2) at the threaded connection of the RSL / FV.
   – Make sure that the gasket is placed correctly.
   – Tighten the union nut manually. Do not use tools.
3. If using a PTFE gasket, retighten the union nut after 2-5 operating hours.
4. For RSL:
   – Push hose clamp (3) over hose (4).
   – Push hose (4) completely onto hose connector (1) and tighten hose clamp (3).
5. For FV:
   – Push hose (4) completely onto hose connector (1).
   – Do not use the hose clamp (3). The hose clamp material can react chemically with the dosing medium.

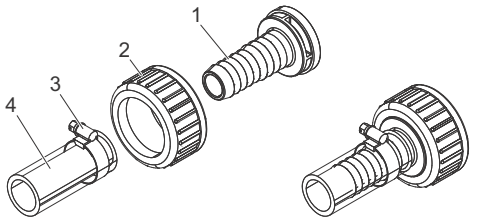

Fig. 2 Hydraulic connection

2.3.5 Establishing a glued or welded pipe connection (RSL and FV up to 460 l/h)

For details on connection types, see section *4.4 Identification*.

1. Make sure that the system is pressureless.
2. Push union nut (2) over pipe (3).
3. For PVC pipe:
   Glue inlay (1) to end of pipe (3) according to the pipe manufacturer's specification.
4. For PVDF pipe:
   Weld inlay (1) to end of pipe (3) according to the pipe manufacturer's specification.
5. Install the pipe with union nut (2) at the threaded connection of the RSL / FV.
   – Make sure that the gasket is placed correctly.
   – Tighten the union nut manually. Do not use tools.
6. If using a PTFE gasket, retighten the union nut after 2-5 operating hours.

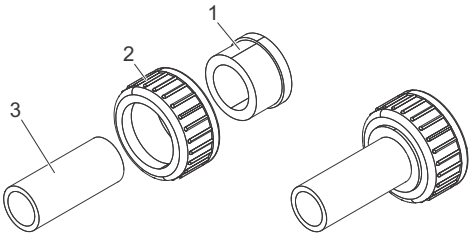

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Fig. 3 Hydraulic connection

2.3.6 Connecting a threaded pipe (RSL and FV up to 460 l/h)

For details on connection types, see section *4.4 Identification*.

1. Make sure that the system is pressureless.
2. Push union nut (2) over pipe (3).
3. Apply appropriate sealing material to thread of inlay (1).
4. Screw inlay (1) on end of pipe (3).
5. Install the pipe with union nut (2) at the threaded connection of the RSL / FV.
   – Make sure that the gasket is placed correctly.
   – Tighten the union nut manually. Do not use tools.
6. If using a PTFE gasket, retighten the union nut after 2-5 operating hours.

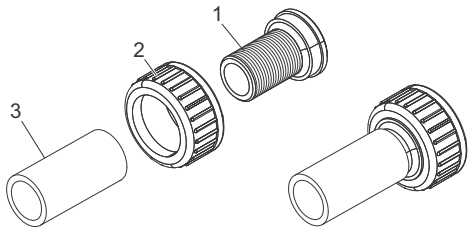

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Fig. 4 Hydraulic connection, type A7

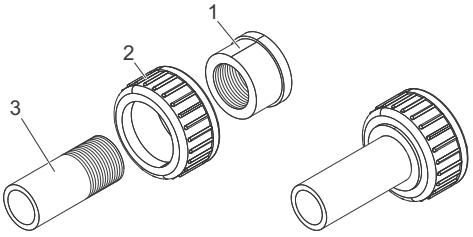

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Fig. 5 Hydraulic connection, type A1, A3

2.4 Electrical connection of level indication

In order to monitor the filling level of the container, a two-step level indication (low-level signal, tank-empty signal) can be connected to the pump or other downstream devices.

Observe the manuals of the downstream devices.

2.4.1 Signal connection with round plug

All SMART Digital pumps and the DDI 222 digital dosing pump are connected with round plugs.

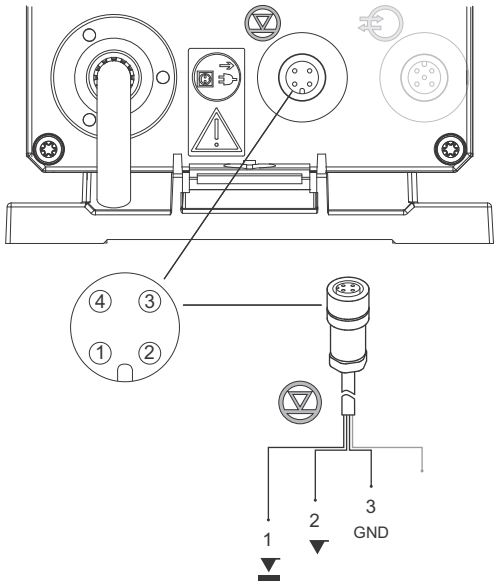

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Fig. 6 Signal connection with round plug

Level signals: low level and tank empty

Function	Pins		
	1/white	2/green	3/brown
Low level	X		GND
Tank empty		X	GND

2.4.2 Signal connection with flat plug

RSL and FV are supplied with round plugs. An adapter is required for connection to the dosing pumps DMX 221 and DMH with AR control.

Product number of the adapter: 96635010

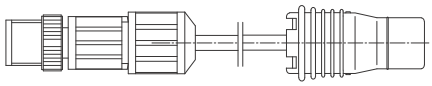

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Fig. 7 Flat plug

2.4.3 Changing the contact type

Rigid suction lances and foot valves with two-step level indication have two signal outputs. Both are factory-set to contact type NO.

A symbol on the floater indicates the contact type. The active contact type setting is indicated by the symbol on the current top side of the floater.

Symbol	Description
	Contact type NO (normally open) Closing with falling liquid level
	Contact type NC (normally closed) Opening with falling liquid level

The contact type can be changed by turning the floater upside down (180 °). If the contact type is set to NC, a cable break provokes a tank-empty signal.

Changing the contact type (RSL and FV up to 60 l/h)

1. Remove the floater sidewards.
2. Turn the floater upside down (180 °) and attach it again.
   – The active contact type setting is indicated by the symbol on the current top side of the floater.
3. Adjust the signal inputs of the downstream devices (pump) accordingly. Observe the manuals of the downstream devices.

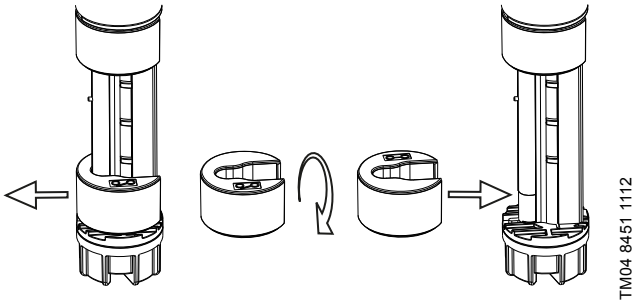

Fig. 8 Changing the contact type (RSL and FV up to 60 l/h)

Changing the contact type (RSL up to 460 l/h)

1. Remove locking ring (1).
2. To remove inlet (2), use a small slotted-screw driver and carefully perform steps (A) to (C).
3. Remove locking rings (4).
4. Remove floaters (3).
5. Turn the floaters upside down (180 °) and insert them again.
   – The active contact type setting is indicated by the symbol on the current top side of the floater.
6. Install locking rings (4) with nipples (5) pointing towards floaters (3).
7. To install inlet (2) again, carefully perform steps (D) and (E).
8. Install locking ring (1) again with nipples (5) pointing down.
9. Adjust the signal inputs of the downstream devices (pump) accordingly. Observe the manuals of the downstream devices.

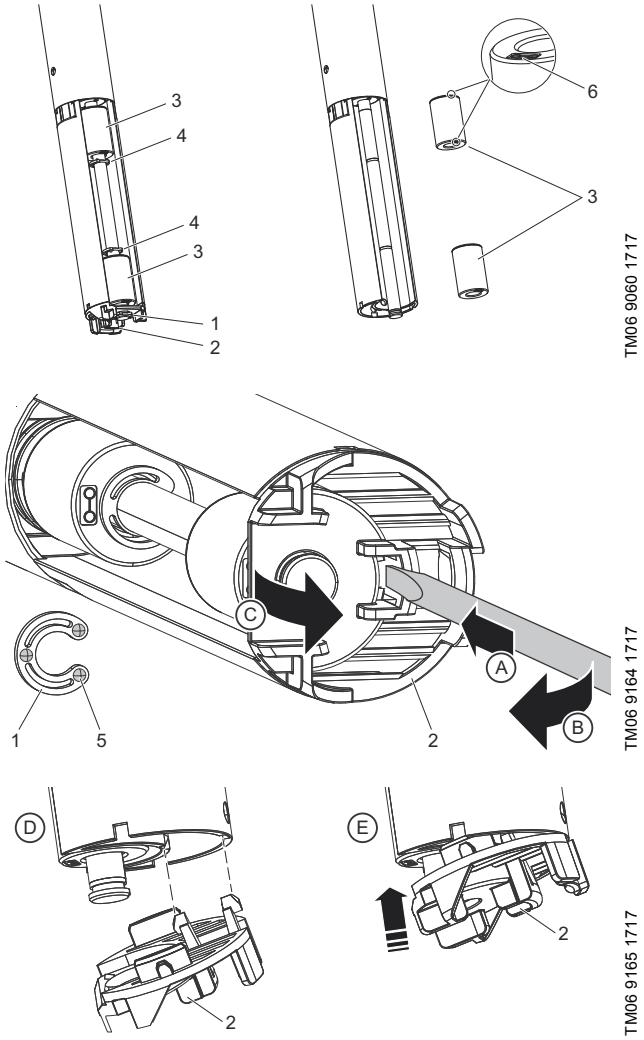

Fig. 9 Changing the contact type (RSL up to 460 l/h)

Pos.	Description
1	Locking ring
2	Inlet with strainer
3	Floater
4	Locking ring
5	Nipple
6	Contact type symbol
A-E	Steps to remove and install the inlet

2.5 Container connection

The following container connection is only possible for RSL and for FV with level indication.

2.5.1 Connecting the suction lance

If not connecting to a Grundfos tank with threaded hole, perform the steps in the respective section:

- *2.5.3 Connecting to an exchangeable container*
- *2.5.4 Connecting the suction lance to a container without opening*

1. If present, remove the screw cap from threaded hole (3).
2. Insert the suction lance into threaded hole (3).
3. Loosen clamping ring connection (1).
4. Screw adapter screw (2) into threaded hole (3) and tighten it manually.
5. Adapt the immersion depth of the suction lance to the container height.
   – Make sure that the suction lance inlet has enough distance to the bottom of the container to avoid suction of sediments.
6. Tighten clamping ring connection (1) manually.
7. If required, remove the blind plugs and use connections (4) and (5) to insert the deaeration line (5) of the pump and the overflow line (4) of the multi-function valve or pressure relief valve into the container.
8. If required, install an emission protection kit to avoid gas emission. Observe the separate installation instruction delivered with the emission protection kit. See section *8.3 Emission protection kits*.

Do not immerse the return flow lines into the dosing medium.

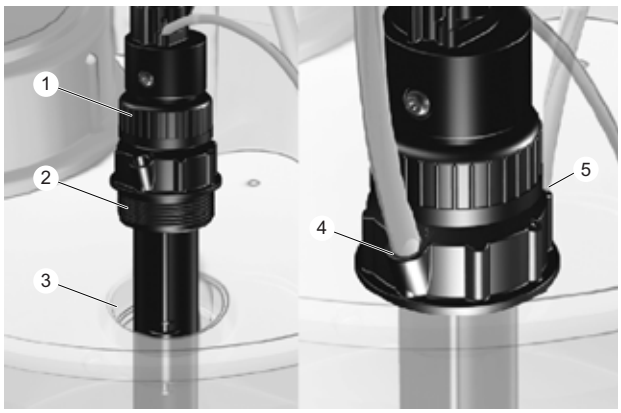

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Fig. 10 Inserting the suction lance

Pos.	Description
1	Clamping ring connection
2	Adapter screw
3	Threaded hole
4	Overflow line connection
5	Deaeration line connection

2.5.2 Connecting the foot valve with level indication

If not connecting to a Grundfos tank with threaded hole, perform the steps in the following section:

- *2.5.3 Connecting to an exchangeable container*

1. If present, remove the screw cap from threaded hole (3).
2. Insert the dosing line into the appropriate hole in container cap (2).
3. Insert the foot valve into threaded hole (3).
   – Make sure that the weight at the bottom of the foot valve is placed at the bottom of the container.
   – Make sure that the foot valve is in an upright position.
4. If required, use connections (4) and (5) to insert deaeration line (5) of the pump and overflow line (4) of the multi-function valve or pressure relief valve into the container.

Do not immerse the return flow lines into the dosing medium.

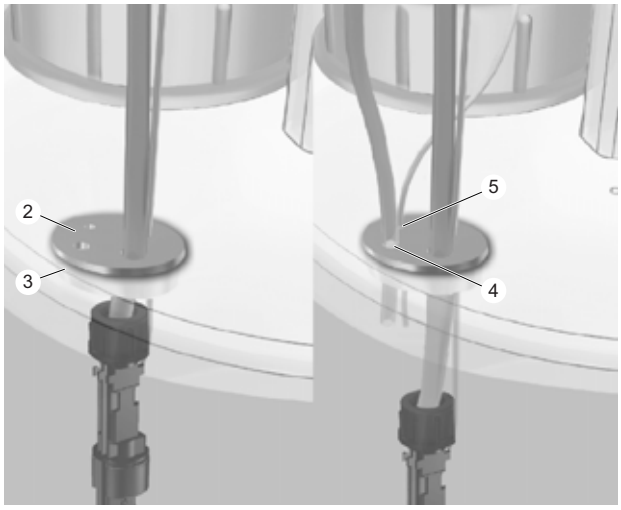

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Fig. 11 Inserting the foot valve

Pos.	Description
2	Container cap
3	Threaded hole
4	Overflow line connection
5	Deaeration line connection

2.5.3 Connecting to an exchangeable container

For this kind of installation an adapter is required. See section *8.1 Adapters for exchangeable containers*.

1. Install the adapter at the container.
2. For suction lance connection, proceed according to section *2.5.1 Connecting the suction lance*.
3. For foot valve connection, proceed according to section *2.5.2 Connecting the foot valve with level indication*.

2.5.4 Connecting the suction lance to a container without opening

1. Cut a hole with a diameter of 60 mm into the container top surface and insert the suction lance.
2. Use the counter nut to fix the suction lance in the hole. See section *8.2 Counter nut for container connection diameter 60 mm*.
3. For suction lance connection, proceed according to section: *2.5.1 Connecting the suction lance*.

3. Handling and storing the product

3.1 Handling the product

- Make sure that the product is not exposed to any point load during the transport.
- Avoid strong impacts.
- Observe the permissible ambient conditions. See section *7.1 Mechanical data*.

3.2 Storing the product

- Observe the permissible ambient conditions. See section *7.1 Mechanical data*.
- The storage location must be protected from rain, humidity, condensation, direct sunlight and dust.

4. Product introduction

4.1 Intended use

The rigid suction lance RSL and the foot valve FV are suitable for the following applications:

- Extraction of chemicals from unpressurised containers.
- Monitoring of liquid level in the chemical container (versions with two-step level indication).

The rigid suction lance RSL and the foot valve FV are suitable for liquid, non-abrasive, non-flammable and non-combustible media.

Observe the freezing point and boiling point of the medium.

Make sure that parts in contact with the medium are resistant to the medium under operating conditions.

The product must not be used for any other purpose than the one mentioned above.

4.1.1 Improper operating methods

The operational safety of the product is only guaranteed, if it is used in accordance with section *4.1 Intended use*.

The product must not be used for:

- operation in potentially explosive areas
- frozen media or gases
- crystallising media

4.2 Function

Rigid suction lances RSL and foot valves FV can have the following functions:

- extracting the dosing medium from a container
- filtering the dosing medium to protect the pump from soiling
- preventing backflow of the dosing medium by means of a non-return valve
- indicating a low level of dosing medium or an empty tank by means of two float switches
- connecting an exchangeable container.

4.3 Product description

4.3.1 RSL and FV up to 60 l/h

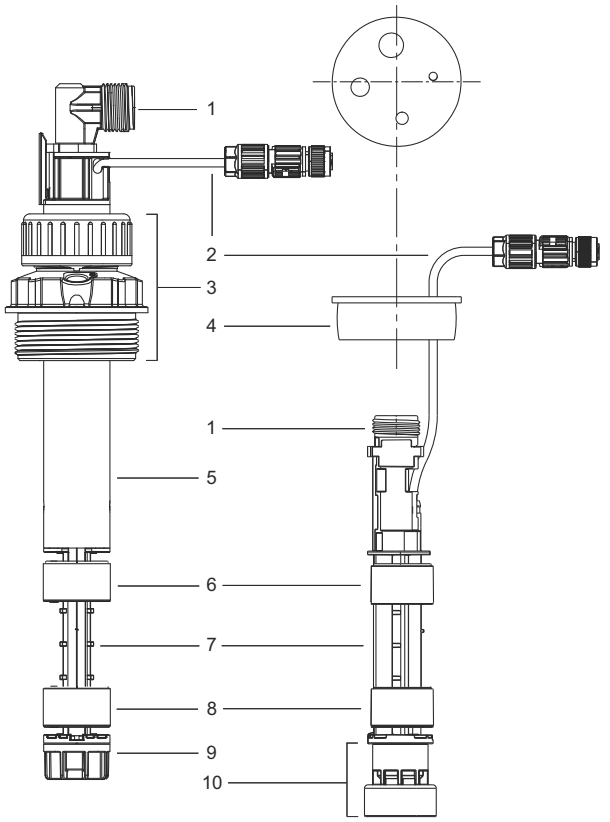


Fig. 12 Left: RSL. Right: FV with level indication

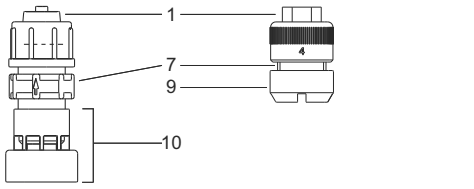


Fig. 13 Left: FV, plastic. Right: FV without level indication, stainless steel

Pos.	Description
1	Dosing line connection
2	Signal cable with plug
3	Tank connection, slidable
4	Tank cap, slidable
5	Protective tube with hose
6	Float switch, low-level
7	Valve body
8	Float switch, empty tank
9	Inlet with strainer
10	Inlet with strainer and weight

4.3.2 RSL and FV up to 460 l/h

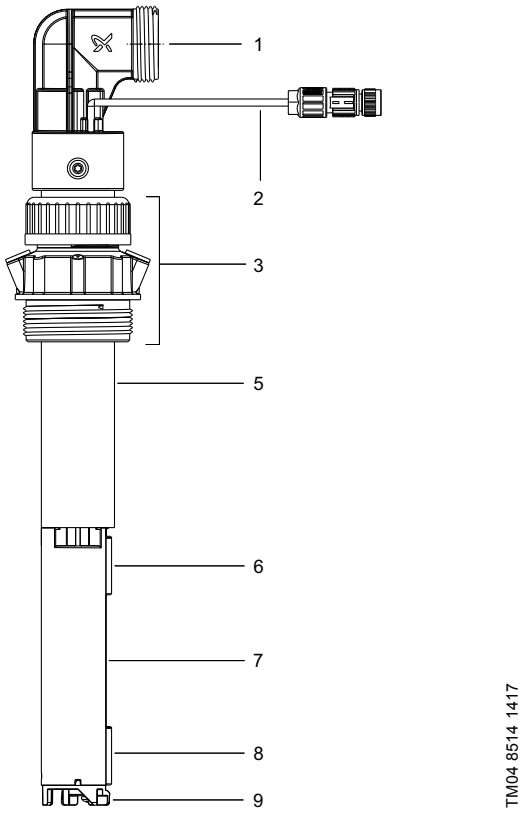


Fig. 14 RSL with level indication

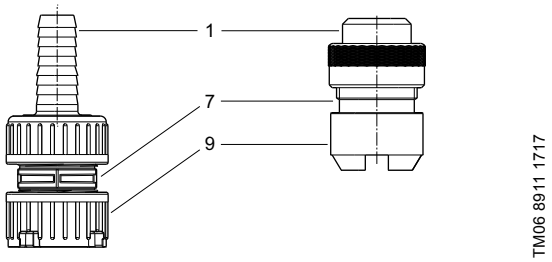


Fig. 15 Left: FV, plastic. Right: FV without level indication, stainless steel

Pos.	Description
1	Dosing line connection
2	Signal cable with plug
3	Tank connection, slidable
5	Protective tube with hose
6	Float switch, low-level
7	Valve body
8	Float switch, empty tank
9	Inlet with strainer

4.4 Identification

4.4.1 Type key of rigid suction lances RSL

The type key is designed for the precise identification of the product and not for configuration purposes. It can be found on the product packaging.

Example: **RSL-0500-2L-G5/8 PE/V,E/C U2**

Product type	
RSL-0500-2L-G5/8 PE/V,E/C U2	
RSL	Rigid suction lance

Maximum immersion depth [mm]	
RSL-**0500**-2L-G5/8 PE/V,E/C U2	

Level indication	
RSL-0500-**2L**-G5/8 PE/V,E/C U2	
NL	Without level indication
2L	Two-step level indication (low-level signal, tank-empty signal)

Connection size	
RSL-0500-2L-**G5/8** PE/V,E/C U2	
G5/8	Up to 60 l/h: External thread G 5/8" with groove for O-ring
G5/4	Up to 460 l/h: External thread G 5/4" with groove for O-ring

Material of enclosure, connection, float switch	
RSL-0500-2L-G5/8 **PE**/V,E/C U2	
PE	High-density polyethylene (HDPE)
PV	Polyvinylidene fluoride (PVDF)

Gasket material	
RSL-0500-2L-G5/8 PE/**V,E**/C U2	
V,E	FKM and EPDM gaskets are enclosed
T	Gasket material PTFE

Valve ball material	
RSL-0500-2L-G5/8 PE/V,E/**C** U2	
C	Ceramics

Dosing line connection	
RSL-0500-2L-G5/8 PE/V,E/C **U2**	
U2	Union nut G 5/8" with parts for hose connection 4/6 mm, 6/9 mm, 6/12 mm, 9/12 mm
U7	Union nut G 5/8" with parts for hose connection 0.17" x 1/4"; 1/4" x 3/8"; 3/8" x 1/2"
U3	Union nut G 5/4" with parts for hose connection 19 mm or 20 mm or glued pipe connection 25 mm
A7	Union nut G 5/4" with threaded connection 3/4" NPT external thread
X	No connections included

4.4.2 Type key of foot valves FV

The type key is designed for the precise identification of the product and not for configuration purposes. It can be found on the product packaging.

Example: **FV-2L-G5/8 PE/V,E/C U2**

Product type	
FV-2L-G5/8 PE/V,E/C U2	
FV	Foot valve

Level indication	
FV-**2L**-G5/8 PE/V,E/C U2	
NL	Without level indication
2L	Two-step level indication (low-level signal, tank-empty signal)

Connection size	
FV-2L-**G5/8** PE/V,E/C U2	
G5/8	Up to 60 l/h: External thread G 5/8" with groove for O-ring
G5/4	Up to 460 l/h: External thread G 5/4" with groove for O-ring

Material of enclosure, connection, float switch	
FV-2L-G5/8 **PE**/V,E/C U2	
PE	High-density polyethylene (HDPE)
PV	Polyvinylidene fluoride (PVDF)
SS	Stainless steel 1.4571, 1.4435, 1.4305

Gasket material	
FV-2L-G5/8 PE/**V,E**/C U2	
V,E	FKM and EPDM gaskets are enclosed
T	Gasket material PTFE

Valve ball material	
FV-2L-G5/8 PE/V,E/**C** U2	
C	Ceramics
SS	Stainless steel 1.4401

Dosing line connection	
FV-2L-G5/8 PE/V,E/C **U2**	
U2	Union nut G 5/8" with parts for hose connection 4/6 mm, 6/9 mm, 6/12 mm, 9/12 mm
U7	Union nut G 5/8" with parts for hose connection 0.17" x 1/4"; 1/4" x 3/8"; 3/8" x 1/2"
A	Union nut G 5/8" with threaded connection Rp 1/4" internal thread
V	Union nut G 5/8" with threaded connection 1/4" NPT internal thread
U3	Union nut G 5/4" with parts for hose connection 19 mm or 20 mm or glued pipe connection 25 mm
A7	Union nut G 5/4" with threaded connection 3/4" NPT external thread
A1	Union nut G 5/4" with threaded connection Rp 3/4" internal thread
A3	Union nut G 5/4" with threaded connection 3/4" NPT internal thread
X	No connections included

5. Maintaining the product

5.1 Safety instructions

The product must only be serviced by authorised and qualified persons.

When working with chemicals, the accident prevention regulations applicable at the installation site must be applied.

Observe the chemical manufacturer's safety data sheets when handling chemicals.

When working on the product or connections and lines, always wear protective clothing (e.g. safety goggles and gloves). The system must be pressureless.

Observe section *3.1 Handling the product*.

Wipe up spilled liquid immediately to avoid slipping hazard.

Clean the strainer of the foot valve or suction lance regularly, depending on the degree of pollution.

5.2 Maintenance

Clean the strainer,

- if it is soiled
- if the suction performance drops.

5.2.1 Cleaning the strainer (RSL up to 60 l/h and all FV)

1. Read section *5.1 Safety instructions*.
2. Empty the RSL or FV and the complete suction side of the dosing system and flush it with a suitable non-hazardous liquid.
3. Shut down the dosing system.
4. For RSL or FV with level indication:
   – Disconnect the signal line from the pump or downstream device.
5. Take the RSL or FV out of the container.
6. Empty the RSL or FV.
7. Unscrew the inlet (1) and clean it.
8. Flush the strainer from the inside to the outside.
   – Before reassembling make sure, that all parts are clean, dry and undamaged.
9. Reassemble and install the product in reverse order.

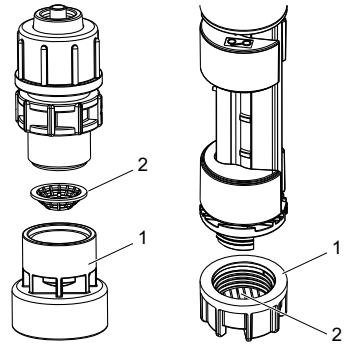


Fig. 16 Left: FV up to 60 l/h. Right: RSL up to 60 l/h

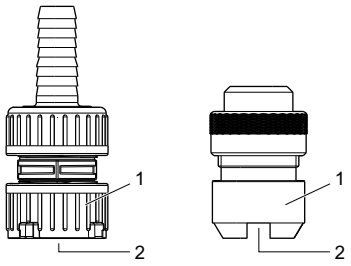


Fig. 17 Left: FV up to 460 l/h, plastic. Right: FV, stainless steel

Pos.	Description
1	Inlet
2	Strainer

5.2.2 Cleaning the strainer (RSL up to 460 l/h)

1. Read section *5.1 Safety instructions*.
2. Empty the RSL and the complete suction side of the dosing system and flush it with a suitable non-hazardous liquid.
   – If a deaeration line is installed properly from the pump to the container, you can close the outlet of the pump and open the deaeration valve. Then you can take the inlet of the RSL out of the dosing medium and run the pump with full stroke frequency to remove most of the dosing medium from the RSL and the inlet line of the pump.
3. Shut down the dosing system.
4. Disconnect the signal line from the pump or downstream device.
5. Take the RSL out of the container.
6. Empty the RSL.
7. Remove locking ring (1).
8. To remove inlet (2), use a small slotted-screw driver and carefully perform steps (A) to (C).
9. Leave the floater in position.
   – Observe that the orientation of the floater determines the contact type. See section *2.4.3 Changing the contact type*.
10. Clean the inlet and the included strainer.
    – Flush the strainer from the inside to the outside.
    – Before reassembling make sure, that all parts are clean, dry and undamaged.
11. To install inlet (2) again, carefully perform steps (D) and (E).
12. Install locking ring (1) again with nipples (5) pointing down.

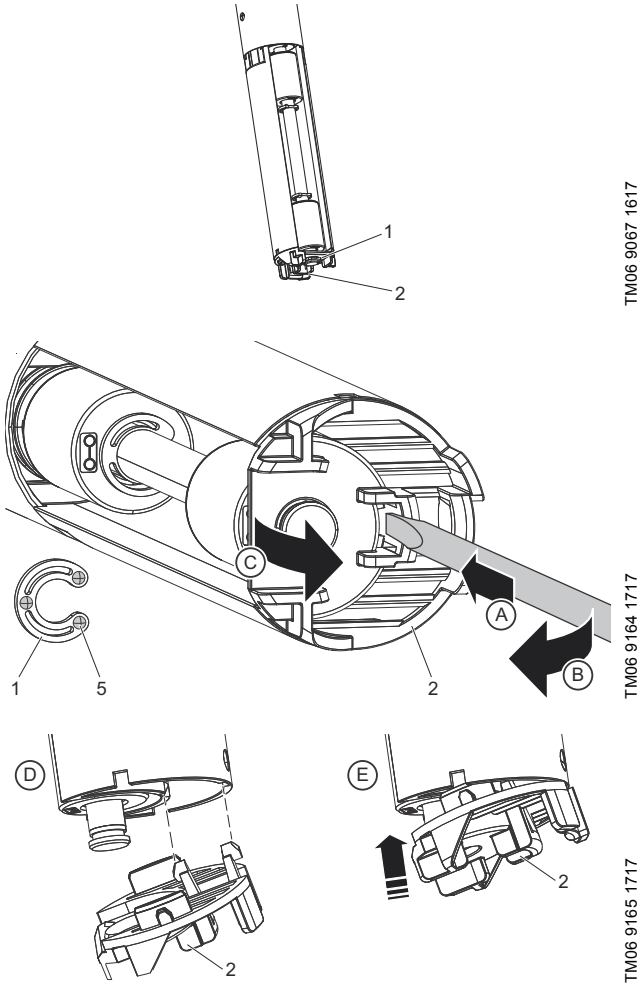


Fig. 18 Cleaning the strainer (RSL up to 460 l/h)

Pos.	Description
1	Locking ring
2	Inlet with strainer
5	Nipple
A-E	Steps to remove and install the inlet

5.3 Repair

Rigid suction lances and foot valves cannot be repaired.

6. Fault finding

Fault	Possible cause	Possible remedy
Too low flow or no flow	Strainer is soiled.	Clean the strainer.
	Pump is switched off.	Switch on the pump.
	Suction line is installed incorrectly.	Check the suction line and connection. Install correctly.
	Internal diameter of suction line is too small.	Use a suction line with larger internal diameter.
	Suction line is not tight.	Check the suction line and connections. Eliminate any leaks.
Low-level or empty indication does not work	Signal line is not connected to the pump.	Connect the signal line to the pump.
	Contact type is set incorrectly.	Adapt setting of contact type (see section *2.4.3 Changing the contact type*).
	Reed switch is defective.	Replace the foot valve or suction lance.

7. Technical data

7.1 Mechanical data

Data		RSL / FV		FV
Material of enclosure:		PE	PVDF	SS
Max. flow rate (connection size G 5/8)[1]	[l/h]	60		
	[gph]	15.85		
Max. flow rate (connection size G 5/4)[1]	[l/h]	460		
	[gph]	121.5		
Max. pressure[2]	[bar]	2		
	[psi]	29		
Max. media temperature	[°C]	45	45	80
Min. media temperature	[°C]	0	0	-10
Max. ambient temperature	[°C]	45		
Min. ambient temperature	[°C]	0	0	-10
Max. storage temperature	[°C]	45		
Min. storage temperature	[°C]	0	0	-10

1) Liquids with viscosity similar to water

2) Applies to the inside of the suction installation. The container must be unpressurised.

7.1.1 Weight without packaging

Data				
Material of enclosure:		PE	PVDF	SS
RSL (connection size G5/8)	[kg]	0.28 - 0.4	0.43 - 0.62	-
RSL (connection size G5/4)	[kg]	0.67 - 0.97	-	-
FV (connection size G5/8)	[kg]	0.11 - 0.26	0.13 - 0.28	0.18
FV (connection size G5/4)	[kg]	0.15	0.20	0.80

7.2 Electrical data (for products with two-step level indication)

Data		RSL / FV	
Material of enclosure:		PE	PVDF
Length of included signal cable[1]	[m]	5	
Type of included signal cable		LIY2Y	
Max. voltage of reed switches	[V]	48	
Max. current of reed switches	[A]	0.5	
Max. load of reed switches	[VA]	10	

1) For suction lances the indicated cable length is measured starting from the valve body

7.3 Dimensions

7.3.1 RSL up to 60 l/h

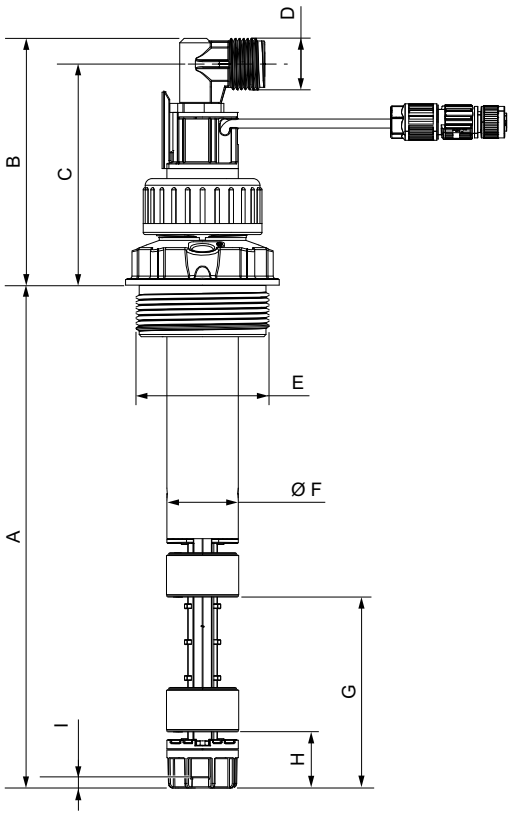


Fig. 19 RSL with / without level indication

A	B	C	D	E	ØF	G	H	I
[mm]	[mm]	[mm]	[inch]	[inch]	[mm]	[mm]	[mm]	[mm]
400 500 570 690 820 980 1100 1200	110	99	G 5/8	G 2	32	85	25	4.5

7.3.2 FV up to 60 l/h

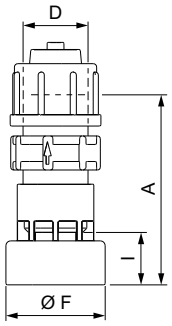


Fig. 20 FV without level indication, PE/PVDF

A	D	ØF	I
[mm]	[inch]	[mm]	[mm]
67.5	G 5/8	35	19

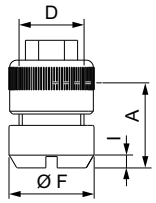


Fig. 21 FV without level indication (stainless-steel version)

A	D	ØF	I
[mm]	[inch]	[mm]	[mm]
30	G 5/8	30	4

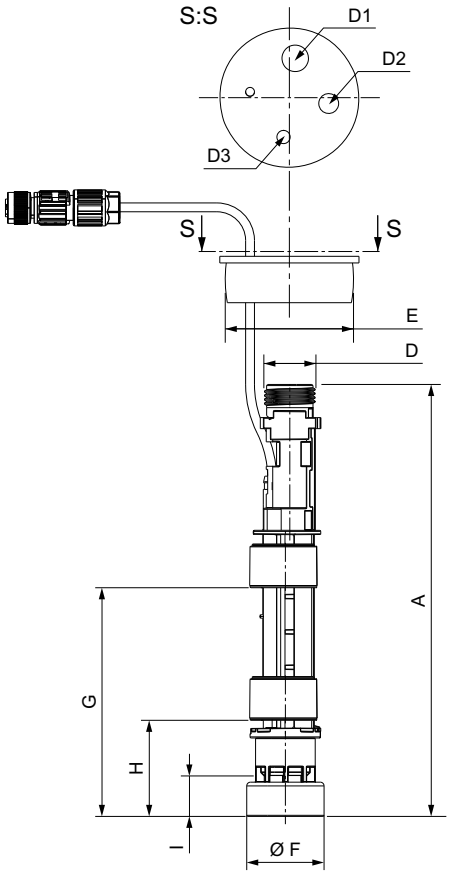


Fig. 22 FV with level indication

A	D	D1/D2/D3	E	ØF	G	H	I
[mm]	[inch]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]
196	G 5/8	12/9/6	58	35	103.5	43.5	19

7.3.3 RSL up to 460 l/h

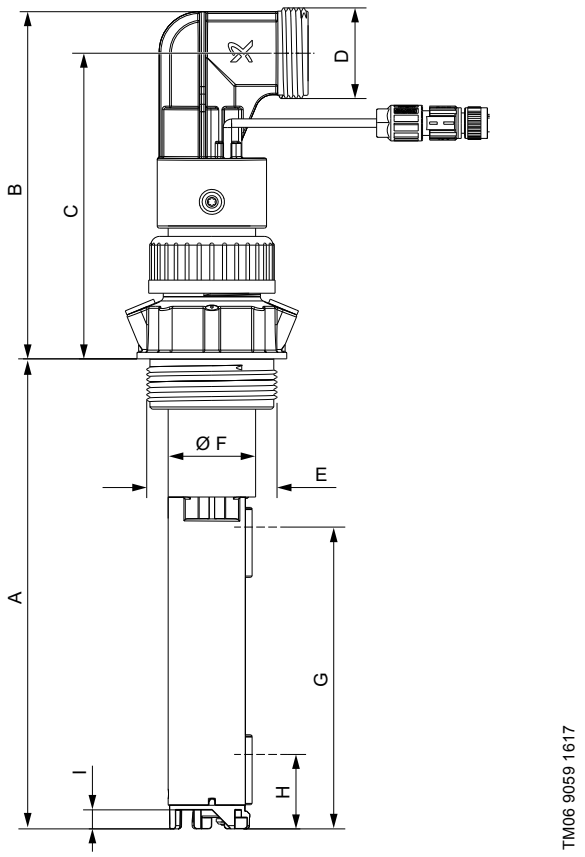


Fig. 23 RSL with / without level indication

A	B	C	D	E	ØF	G*	H*	I
[mm]	[mm]	[mm]	[inch]	[inch]	[mm]	[mm]	[mm]	[mm]
500 690 980 1200	159	140	G 5/4	G 2	40	138	34	8.7

* Switching level for water

7.3.4 FV up to 460 l/h

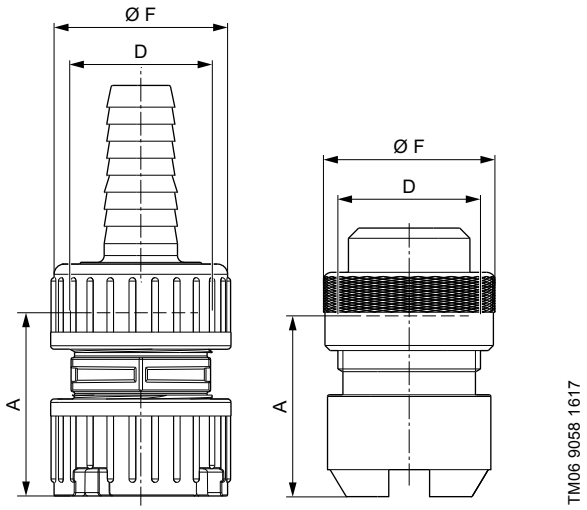


Fig. 24 Left: FV, PE/PVDF. Right: FV, stainless steel.

Material	A	D	ØF
	[mm]	[inch]	[mm]
PE/PVDF	57	G 5/4	53
SS	57	G 5/4	50

7.4 Required immersion depth for Grundfos tanks without threaded connection

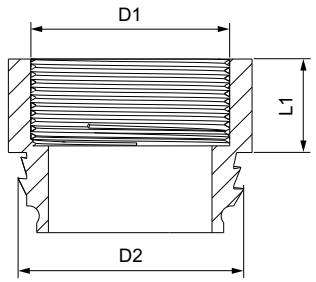
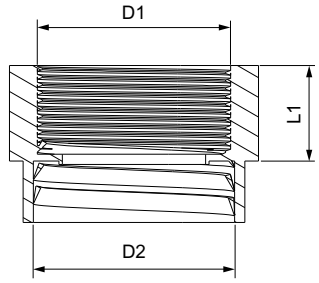
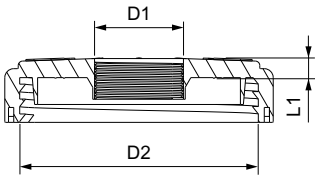
Container type	Volume [l]	Required immersion depth [mm]
Grundfos cylindrical tank	40	400
	1000	1200
Grundfos square tank	100	470

7.5 Required immersion depth for exchangeable containers

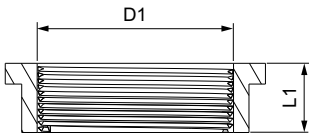
Container type	Volume [l]	Required immersion depth [mm]
L-ring drum (blue)	120	820
	220	980
Steel drum (standard)	216	980
Standard jerrycan according to EN 12712/12713	12, 33 (large opening)	400
	25, 30, 33	500
	60	690
IBC (Intermediate Bulk Container)	all	1200

8. Accessories

8.1 Adapters for exchangeable containers

Dimensional drawing	Dimensions D1 [inch]	Dimensions D2	Dimensions L1 [mm]	Description	Material, colour	Product No.
 TM04 8490 0612	G 2	2" NPT	31	Adapter for containers with 2" NPT threaded opening	PVC, grey	98156690
	G 2	S 70 x 6	28	Adapter for drums with S 70 x 6 coarse thread (MAUSER 2")	PE, blue	98071171
	G 2	S 56 x 4	28	Adapter for drums with S 56 x 4 coarse thread (TriSure®)	PE, orange	98071172
 TM04 8491 0612	G 2	CCS 46 x 4	28	Adapter for jerrycans with opening of approx. 36 mm, according to EN 12713	PE, green	98071173
	G 2	CCS 60 x 6	28	Adapter for jerrycans with opening of approx. 45 mm, according to EN 12713	PE, yellow	98071174
	G 2	CCS 70 x 6	31	Adapter for jerrycans with opening of approx. 57 mm, according to EN 12713	PE, brown	98071175
	G 2	ASTM 63	28	Adapter for US containers with bung hole of 63 mm (ASTM International)	PE, white	98071176
 TM04 8493 0612	G 2	S 160 x 7	12.8	Adapter for IBC (Intermediate Bulk Container) with opening of 150 mm	PE, black	98071177

8.2 Counter nut for container connection diameter 60 mm

Dimensional drawing	Dimensions D1 [inch]	Dimensions L1 [mm]	Description	Material, colour	Product No.
 TM04 8492 0612	G 2	21	Counter nut for containers with opening of 60 mm (without thread), e.g. 100-litre square tank or 1000-litre cylindrical tank	PVC, grey	98071170

8.3 Emission protection kits

Rigid suction lances can be retrofitted with emission protection kits.

Two variants are available:

- Emission protection kit with snifting valve: no gas can escape from the container, but air can be drawn in.
- Emission protection kit for use with filter: gas can escape from the container and air can be drawn in. The kit can be connected to a filter by means of a 4/6 mm hose.

Emission protection kits include:

- Gasket for the tank adapter
- Snifting valve or hose nipple 4/6 mm (hose is not included)
- Gasket for the cable outlet.

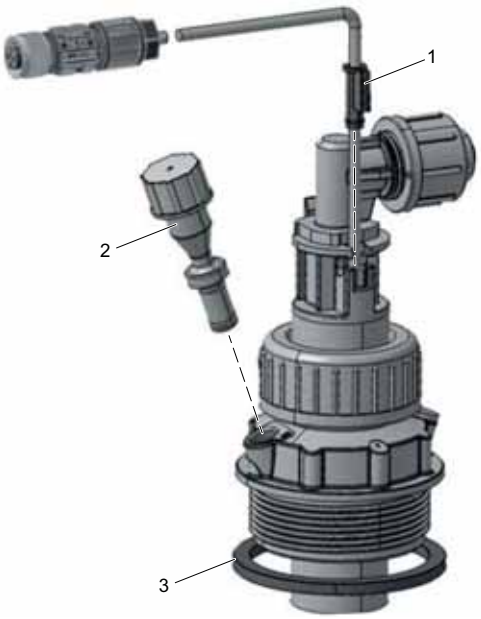


Fig. 25 Emission protection kit

Pos.	Description
1	Gasket for the cable outlet
2	Air valve
3	Gasket for the tank adapter

8.3.1 Order data

Variant	Product No.
Emission protection kit with snifting valve	98071178
Emission protection kit for use with filter	98071179

9. Disposing of the product

This product or parts of it must be disposed of in an environmentally sound way:

1. Use the public or private waste collection service.
2. If this is not possible, contact the nearest Grundfos company or service workshop.

Subject to alterations.

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