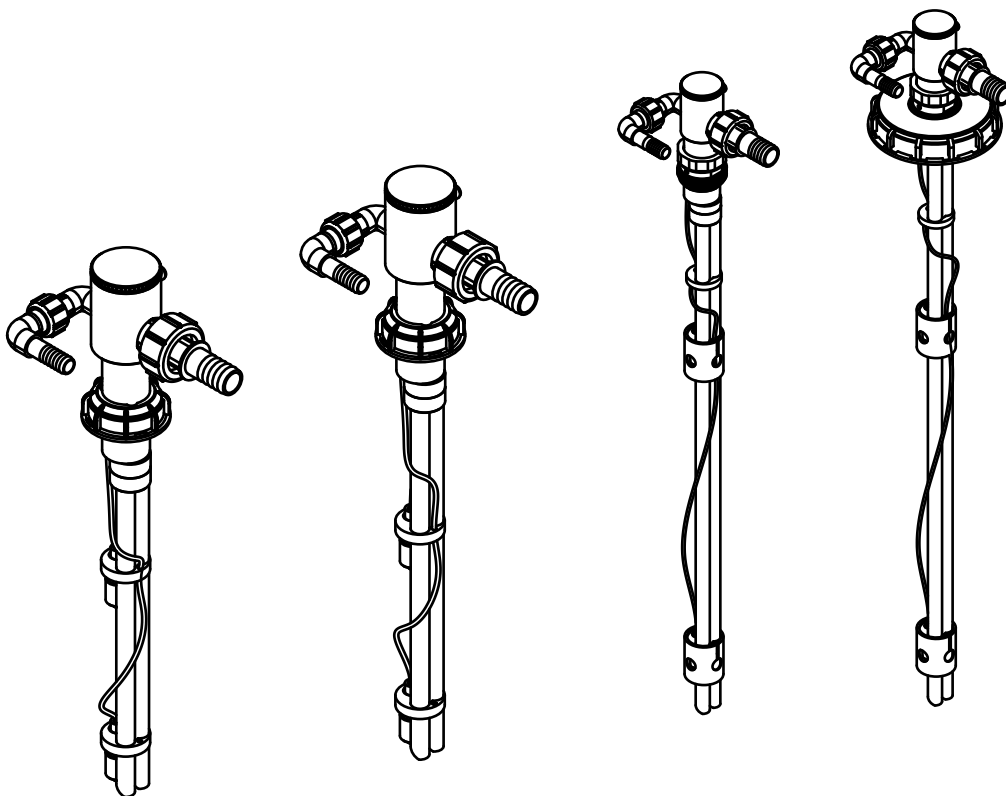


Assembly and operating instructions

PP Universal suction lance

for motor-driven metering pumps

EN



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Please carefully read these operating instructions before use. · Do not discard.
The operator shall be liable for any damage caused by installation or operating errors.
The latest version of the operating instructions are available on our homepage.

General non-discriminatory approach

In order to make it easier to read, this document uses the male form in grammatical structures but with an implied neutral sense. It is aimed equally at both men and women. We kindly ask female readers for their understanding in this simplification of the text.

Supplementary information

➔ Please read the supplementary information in its entirety.

Information



This provides important information relating to the correct operation of the unit or is intended to make your work easier.

Warning information

Warning information includes detailed descriptions of the hazardous situation, see ➔ *Chapter 2.1 'Labelling of Warning Information' on page 6.*

The following symbols are used to highlight instructions, links, lists, results and other elements in this document:

More symbols

Symbol	Description
1. ➔	Action, step by step.
⇒	Outcome of an action.
➔	Links to elements or sections of these instructions or other applicable documents.
■	List without set order.
[Button]	Display element (e.g. indicators). Operating element (e.g. button, switch).
'Display /GUI'	Screen elements (e.g. buttons, assignment of function keys).
CODE	Presentation of software elements and/or texts.

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1 Introduction

General

A ProMinent universal suction lance (in short: universal suction lance) made of polypropylene (PP) in 4 sizes for use in canisters, drums or tanks. The universal suction lance is configured as standard with return, ventilation function and 2-stage level monitoring. The height-adjustable level switch and threaded connectors ensure that it can be flexibly adapted to the process or the height of the storage tank. In addition, the length of the suction tube can easily be shortened by the customer. A PTFE non-return valve is incorporated and prevents the suction line from running dry. The universal suction lance is supplied with all additional components and packaged in cardboard.

Description	Use	Suction connector	Return connector	Pressure hose nozzle connection components	Part number
Suction lance	20-litre canister	DN 20	DN 10	DN 10, DN 15, DN 20	1039206
Suction lance	20...60-litre canister	DN 20	DN 10	DN 10, DN 15, DN 20	1038817
Suction lance	200-litre drum	DN 25	DN 15	DN 10, DN 15, DN 20, DN 25	1039397
Suction lance	1000-litre IBC container	DN 25	DN 15	DN 10, DN 15, DN 20, DN 25	1039399
Suction lance, FDA	20-litre canister	DN 20	DN 10	DN 10, DN 15, DN 20	1046668
Suction lance, FDA	20...60-litre canister	DN 20	DN 10	DN 10, DN 15, DN 20	1046670
Suction lance, FDA	200-litre drum	DN 25	DN 15	DN 10, DN 15, DN 20, DN 25	1046671
Suction lance, FDA*	1000-litre IBC container	DN 25	DN 15	DN 10, DN 15, DN 20, DN 25	1046672

* = The lid must be modified with the suction lance, FDA. ↪ *Chapter 6 'IBC screw lid, remove the vent plug, part number 1046672' on page 19*

Product description

Material version: PP with integral EPDM seals and FPM seals supplied separately for replacement

Suction connector: The suction connector is not supplied ready mounted. The DN 10, DN 15, DN 20, DN 25 fittings and pressure hose nozzles (not for canisters) plus EPDM seal form part of the scope of delivery.

Return connector: The return connector is not supplied ready mounted. The DN 10 and DN 15 (PP) fittings and pressure hose nozzles and a blanking plug (EPDM) and seal (EPDM) form part of the scope of delivery.

Level: The level switches are protected by tube sections with drum and container lances. The universal suction lance level output is in the form of an M12 plug. Please order the cable to the level connector on ProMinent® metering pumps or to a PLC Programmable Logic Controller or terminal box separately.

Applications:

- For solenoid and motor-driven metering pumps with connector width DN 10 ... DN 20 and capacity 20 l/h ... 250 l/h
- Conventional, water-like feed chemicals with a viscosity of up to 100 mPas
- Vertical use in canisters, drums or Intermediate Bulk Containers (IBC)

Electrical accessories:

Cable to connect the universal suction lance's level switch to ProMinent® metering pumps. Cable to connect the universal suction lance's level switch to external control systems (e.g. PLC Programmable Logic Controller or terminal box).

Description	Cable length	Order number
Round plug coupling for 3-pin M12 round plug	2 metres	1040962
	5 metres	1040963
Round plug coupling for M12 open-end	1.1 metres	1009873
	5 metres	1022537

Scope of delivery:

The universal suction lance always comprises:

- Suction lance (assembled)
- Connection parts / Spare parts

1.1 Physiological safety of the wetted materials

The physiological safety of the materials used comply with the FDA guidelines listed here for all suction lances mentioned in these operating instructions.

Material	FDA Directive
PP	21CFR177.1520
PTFE	21CFR177.1550
PVDF	21CFR177.2510
EPDM	21CFR177.2600
FKM	21CFR177.2600

2 Safety and Responsibility

2.1 Labelling of Warning Information

Introduction

These operating instructions provide information on the technical data and functions of the product. These operating instructions provide detailed warning information and are provided as clear step-by-step instructions.

The warning information and notes are categorised according to the following scheme. A number of different symbols are used to denote different situations. The symbols shown here serve only as examples.



DANGER!

Nature and source of the danger

Consequence: Fatal or very serious injuries.

Measure to be taken to avoid this danger.

Description of hazard

- Denotes an immediate threatening danger. If the situation is disregarded, it will result in fatal or very serious injuries.



WARNING!

Nature and source of the danger

Possible consequence: Fatal or very serious injuries.

Measure to be taken to avoid this danger.

- Denotes a possibly hazardous situation. If the situation is disregarded, it could result in fatal or very serious injuries.



CAUTION!

Nature and source of the danger

Possible consequence: Slight or minor injuries. Material damage.

Measure to be taken to avoid this danger.

- Denotes a possibly hazardous situation. If the situation is disregarded, it could result in slight or minor injuries. May also be used as a warning about material damage.



NOTICE!

Nature and source of the danger

Damage to the product or its surroundings.

Measure to be taken to avoid this danger.

- Denotes a possibly damaging situation. If the situation is disregarded, the product or an object in its vicinity could be damaged.



Type of information

Hints on use and additional information.

Source of the information. Additional measures.

- *Denotes hints on use and other useful information. It does not indicate a hazardous or damaging situation.*

2.2 Users' qualifications



WARNING!

**Danger of injury with inadequately qualified personnel!
The operator of the plant / device is responsible for ensuring that the qualifications are fulfilled.**

If inadequately qualified personnel work on the unit or loiter in the hazard zone of the unit, this could result in dangers that could cause serious injuries and material damage.

- All work on the unit should therefore only be conducted by qualified personnel.
- Unqualified personnel should be kept away from the hazard zone

Training	Definition
Instructed personnel	An instructed person is deemed to be a person who has been instructed and, if required, trained in the tasks assigned to him/her and possible dangers that could result from improper behaviour, as well as having been instructed in the required protective equipment and protective measures.
Trained user	A trained user is a person who fulfils the requirements made of an instructed person and who has also received additional training specific to the system from ProMinent or another authorised distribution partner.
Trained qualified personnel	A qualified employee is deemed to be a person who is able to assess the tasks assigned to him and recognize possible hazards based on his/her training, knowledge and experience, as well as knowledge of pertinent regulations. The assessment of a person's technical training can also be based on several years of work in the relevant field.
Electrician	Electricians are deemed to be people, who are able to complete work on electrical systems and recognize and avoid possible hazards independently based on his/her technical training and experience, as well as knowledge of pertinent standards and regulations. Electricians should be specifically trained for the working environment in which they are employed and know the relevant standards and regulations. Electricians must comply with the provisions of the applicable statutory directives on accident prevention.
Customer Service department	Customer Service department refers to service technicians, who have received proven training and have been authorised by ProMinent to work on the system.



Note for the system operator

The pertinent accident prevention regulations, as well as all other generally acknowledged safety regulations, must be adhered to!

2.3 Intended use

Intended use:

- Only use the universal suction lance for liquid metering chemicals.
- Only use the universal suction lance after it has been correctly installed in accordance with the technical data and specifications contained in the operating instructions.
- Observe the general limitations with regard to viscosity limits, chemical resistance and density: refer also to the ProMinent resistance list (in the product catalogue or at www.prominent.com)!

Any other uses or modifications are prohibited.



CAUTION!

Unsuitable media

No not use the universal suction lance for flammable or radioactive media.

Note that the universal suction lance is not gas-tight when using with strongly gaseous media.

2.4 General safety notes



WARNING!

Danger from hazardous substances!

Possible consequence: Fatal or very serious injuries.

Please ensure when handling hazardous substances that you have read the latest safety data sheets provided by the manufacture of the hazardous substance. The actions required are described in the safety data sheet. Check the safety data sheet regularly and replace, if necessary, as the hazard potential of a substance can be re-evaluated at any time based on new findings.

The system operator is responsible for ensuring that these safety data sheets are available and that they are kept up to date, as well as for producing an associated hazard assessment for the workstations affected.



NOTICE!

Unauthorised access

Ensure that there can be no unauthorised access to the device



Dangers in the event of failure to observe the safety notes

Non-observance of the safety notes can have dangerous consequences for staff, the environment and the system per se. Failure to observe the safety notes can result in the following dangers:

- The failure of key system functions*
- The failure of prescribed maintenance methods.*
- Harm to personnel owing to electrical and mechanical and chemical effects*
- Environmental damage by the escape of substances harmful to health.*



Working in a safety-conscious manner

Observe the safety notes, existing national regulations on health safety and accident prevention and all the operator's internal occupational, operational and safety rules and regulations.

Safety notes for the operator / user



NOTICE!

Safety notes for the operator / user

Design the system in such a way that any hazardous substances that escape in the event of damage can be diverted so that the hazardous substances are not dangerous to the environment or harmful to health. It is mandatory that statutory regulations are observed. Rule out damage from electrical power (please refer for details to regulations issued by local energy supply companies among others).

Safety notes for maintenance, inspection and installation work



Safety notes for maintenance, inspection and installation work

It is the responsibility of the operator to ensure that all maintenance, inspection and installation work is undertaken by authorised and qualified specialist personnel. Ensure that all personnel is adequately trained in addition to reading these operating instructions.

Only perform all work on the universal suction lance when the system is switched off.

Decontaminate components of the suction lance that contain media harmful to health.

Start up all safety and protection again as soon as work is completed.

3 Transport and storage

- **User qualification:** instructed user, see ↪ *Chapter 2.2 'Users' qualifications' on page 7*

The suction lances are delivered in special cardboard packaging and should also be transported in this packaging:

- The packaging material can be recycled
- Store universal suction lances in a fully drained and cleaned state.
- Note the ambient conditions.

Permissible storage, operating and ambient conditions:

- All types: + 5 °C ... 60 °C All types: < 95 % relative air humidity (non-condensing)
- Note the storage, operating and ambient conditions for your feed chemical that can be found on the product data sheet.

4 Assembly/Installation

- **User qualification, mechanical installation:** trained qualified personnel, see [Chapter 2.2 'Users' qualifications' on page 7](#)
- **User qualification, hydraulic installation:** trained qualified personnel, see [Chapter 2.2 'Users' qualifications' on page 7](#)
- **User qualification, electrical installation:** electrical technician, see [Chapter 2.2 'Users' qualifications' on page 7](#)

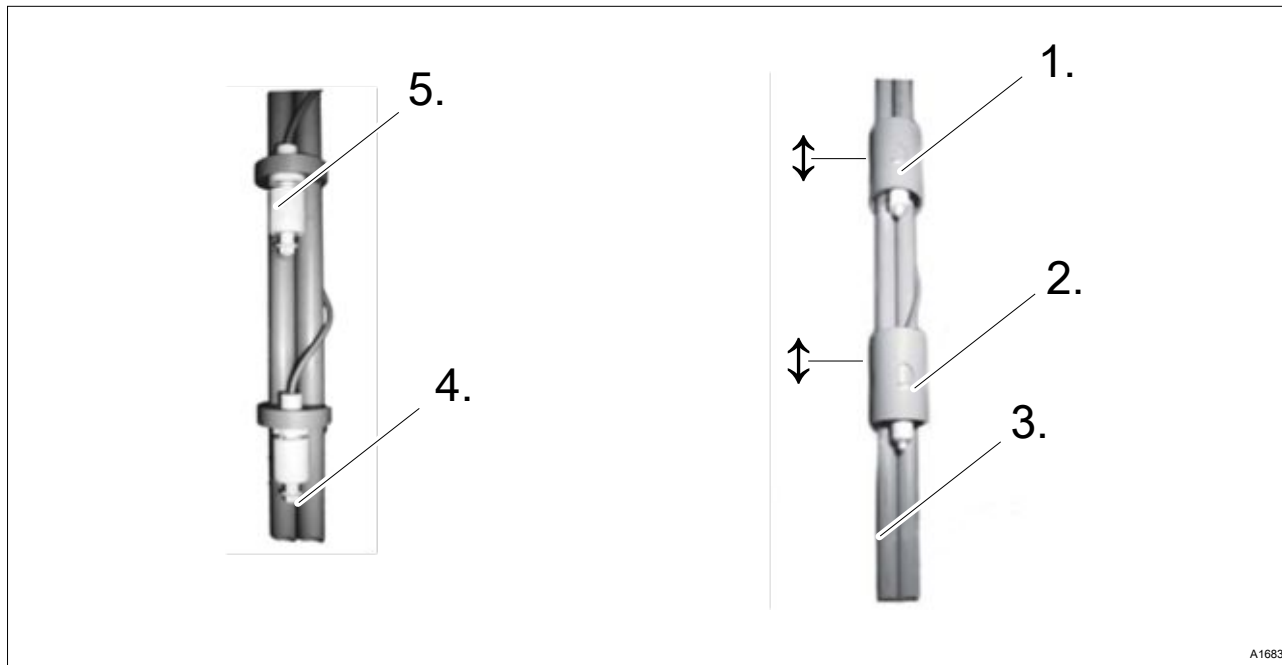


Fig. 1: Components of the universal suction lance

1. Level switch, pre-warning signal
2. Level switch, switching-off signal
3. Suction tubes
4. Suction tubes
5. Level switch, pre-warning signal

4.1 Assembly, mechanical

1. ➤ Prevent the storage tanks from tipping over and mechanical damage
2. ➤ Place the storage tank (20 or 60 litre canister, 200 litre drum or 1000 litre IBC) under the universal suction lance
3. ➤ Remove the original cover of the storage tank
4. ➤ Shorten the universal suction lance's suction tubes, see Fig. 1, depending on the storage tank size to the required dimension
5. ➤ Push the level switch on the two universal suction lance's suction tubes, see Fig. 1, into the desired position. Maintain a minimum spacing of around 1 cm
6. ➤ Secure the level switch with screws to prevent it from slipping. To move the level switch, loosen the screws, move the level switch and re-tighten the screws
7. ➤ You can adjust and fix the immersion depth of the universal suction lance using the integral threaded connectors.
8. ➤ You can insert the universal suction lance into the relevant opening in the storage tank

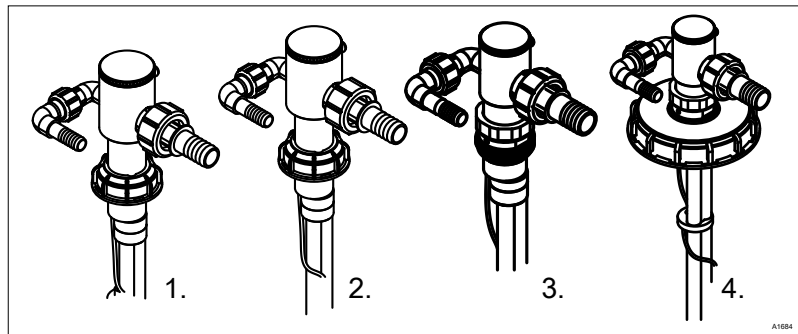


Fig. 2: Universal suction lance cover

1. Screw cover, 20-litre canister
 2. Screw canisters, 20 ...60-litre canister
 3. Adjustable drum threaded connector with seal, 200-litre drum
 4. IBC threaded connector with seal, 1000-litre IBC container
- 9.** ▶ You can screw the cover of the universal suction lance onto the storage tank, or screw the universal suction lance into the opening in the storage tank, see Fig. 2.

Dimensions and adjustment ranges

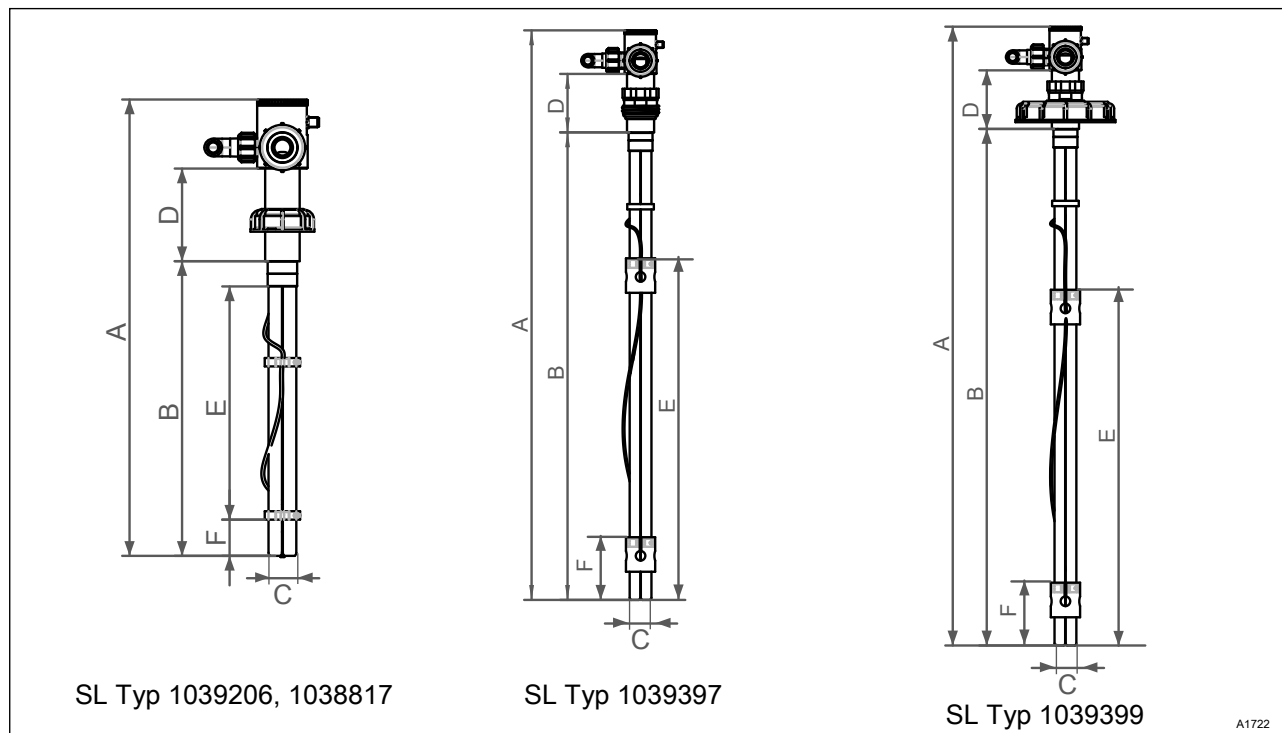


Fig. 3: Dimensions and adjustment ranges

Use	Adjustment ranges, all dimensions in mm						Part number
	A	B*, max/min	C	D	E, max/min	F, max/min	
20-litre canister	542	450/370	41	80	300/120	240/55	1039206
20...60-litre canister	584	490/410	41	80	345/120	300/55	1038817
200-litre drum	1,072	955/900	55	50	820/185	750/70	1039397
1000-litre IBC container	1,162	1045/990	55	50	910/160	830/70	1039399
20-litre canister, FDA	542	450/370	41	80	300/120	240/55	1046668
20...60 litre canister	584	490/410	41	80	345/120	300/55	1046670
200-litre drum, FDA	1,072	955/900	55	50	820/185	750/70	1046671
1000 litre IBC container, FDA	1,162	1045/990	55	50	910/160	830/70	1046672

B* maximum and minimum installation depth

A=Total length, B=Immersion depth, C=Immersion tube diameter, D=Threaded connector adjustment range, E= Adjustment range for level switch warning, F= Adjustment range for level switch shut-down

4.2 Installation, hydraulic

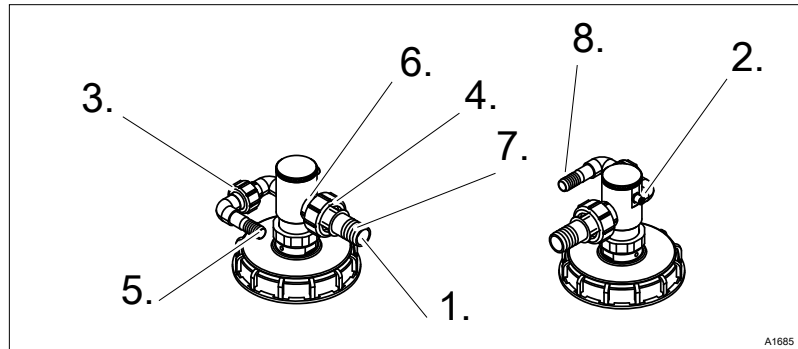


Fig. 4: Universal suction lance connectors

1. Suction connector
2. Return connector
3. Union nut
4. Union nut
5. Return connector
6. Suction connector
7. Pressure hose nozzle
8. Pressure hose nozzle

1. ➤ Using the union nut, connect the suction line to the pressure hose nozzle on the suction connector.

The adapters (DN10 ... DN25) for the threaded connectors are supplied.

2. ➤ To connect the return line to a relief valve on the dosing head of a motor-driven metering pump or to a metering system, connect the pressure hose nozzle supplied to the screw part of the universal suction lance using the union nut.

The nominal width of the pressure hose nozzle has to match the data provided by the metering pump manufacturer.

3. ➤ If the return is not connected, insert the blanking plug supplied into the union nut to seal the universal suction lance to the environment. Then tightly screw the union nut onto the screw part of the universal suction lance.

4.3 Installation, electrical

- Screw the connecting cable for motor-driven metering pumps or Programmable Logic Controllers onto the M12x1 plug in the head area of the suction lance

Assign the 4-pin M12 plug bearing the code A in accordance with the wiring diagram

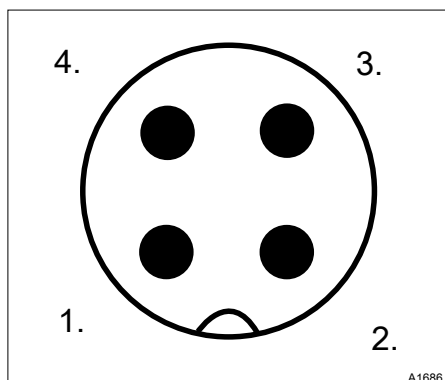


Fig. 5: PIN view

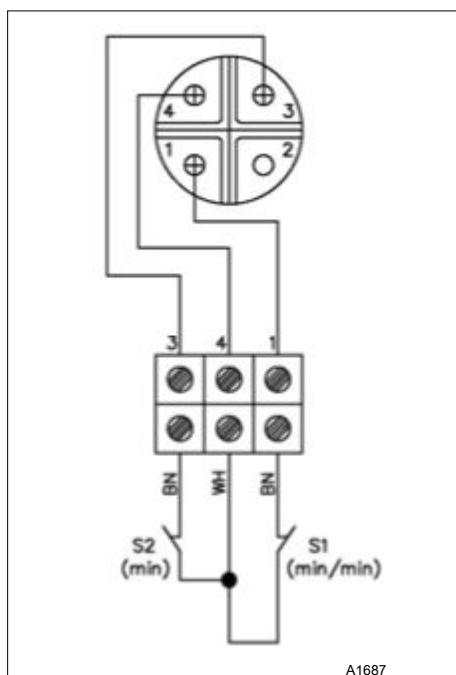
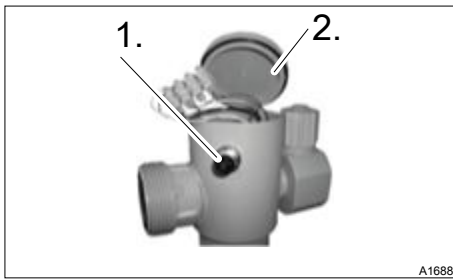


Fig. 6: PIN assignment

Function	Pin	Wire colour of level switch cable	Wire colour of ProMinent cable M12 open-end Part numbers 1009873, 1022537
Minimum limit stop	1	brown	brown
Not assigned	2	white	white
Minimum pre-warning	3	brown	blue
Mass	4	white	black

Level switch electrical data

Switch output	approx. 10 W / 12 VA
Switching current	approx. 0.5 A
Power supply	<= 48 V AC/DC
Degree of protection	IP 67
Switching function	NC



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Fig. 7: Cable connections



Cable connections are routed between the level switches and the M12 x 1 plug (1) in line with the wiring diagram in the head of the universal suction lance under the removable cover (2) (with O-ring).

5 Commissioning and maintenance

5.1 Commissioning

- **User qualification, commissioning:** trained qualified personnel, see [Chapter 2.2 'Users' qualifications'](#) on page 7



WARNING!

Danger from hazardous substances!

Possible consequence: Fatal or very serious injuries.

Please ensure when handling hazardous substances that you have read the latest safety data sheets provided by the manufacture of the hazardous substance. The actions required are described in the safety data sheet. Check the safety data sheet regularly and replace, if necessary, as the hazard potential of a substance can be re-evaluated at any time based on new findings.

The system operator is responsible for ensuring that these safety data sheets are available and that they are kept up to date, as well as for producing an associated hazard assessment for the workstations affected.

1. Check whether the seals are correctly inserted into the two threaded connectors
2. Tighten all threaded connectors until hand tight, approx. 1 Nm
3. Make sure that the hose connectors are tight in the pressure hose nozzles and check that they are leak-tight.
Enable the suction-side function of the motor-driven metering pump
4. Secure the hose using the hose clamps
5. Starting torque for canister/drum: Refer to the information provided by the container supplier

5.2 Maintenance

- **User qualification, commissioning:** trained user, see [Chapter 2.2 'Users' qualifications'](#) on page 7



WARNING!

Danger from hazardous substances!

Possible consequence: Fatal or very serious injuries.

Please ensure when handling hazardous substances that you have read the latest safety data sheets provided by the manufacture of the hazardous substance. The actions required are described in the safety data sheet. Check the safety data sheet regularly and replace, if necessary, as the hazard potential of a substance can be re-evaluated at any time based on new findings.

The system operator is responsible for ensuring that these safety data sheets are available and that they are kept up to date, as well as for producing an associated hazard assessment for the workstations affected.

—▶ Check seals and replace if necessary. Interval: As required.

6 IBC screw lid, remove the vent plug, part number 1046672

- **User qualification, commissioning:** trained user, see [Chapter 2.2 'Users' qualifications'](#) on page 7

Depending on the application, it may be necessary to replace the screw lid with the suction lance for IBC containers with FDA approval (part number 1046672). This replacement must be done on site. When replacing the lid, the screw lid (without FDA approval) is removed from the suction lance. The screw lid fitted to your IBC container then has to be modified for fitting to the suction lance, as shown in the installation instructions below.

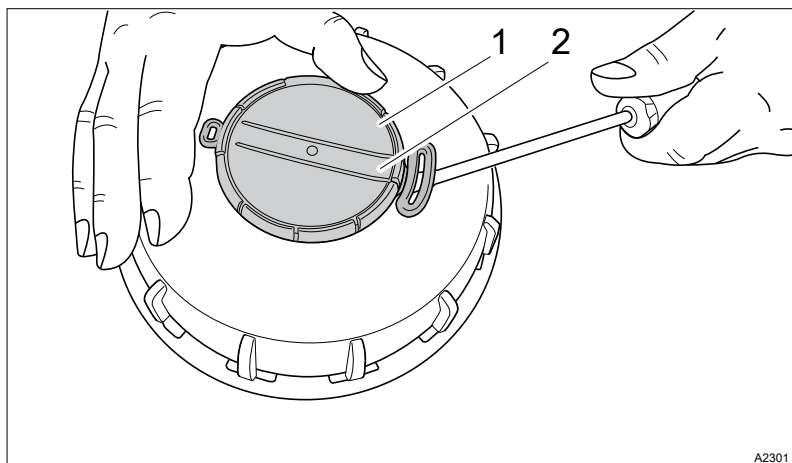


Fig. 8: Screw lid (2) locking mechanism (1).

- Use a screwdriver to lift the protective lid's (2) locking mechanism (1) from the screw lid.

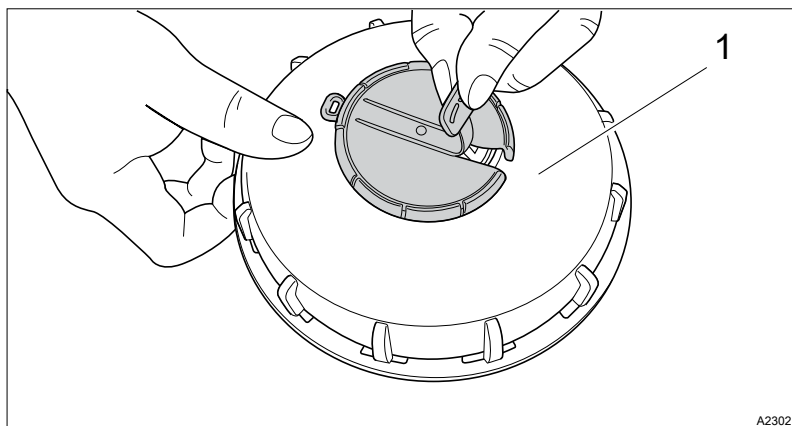


Fig. 9: Removing the locking mechanism.

- Manually remove the locking mechanism of the protective lid from the screw lid (1).

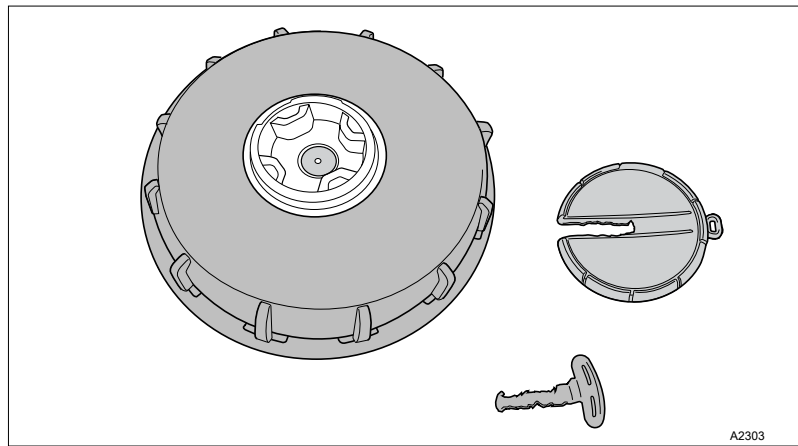


Fig. 10: Removing the protective lid.

3. You can now remove the protective lid from the screw lid.

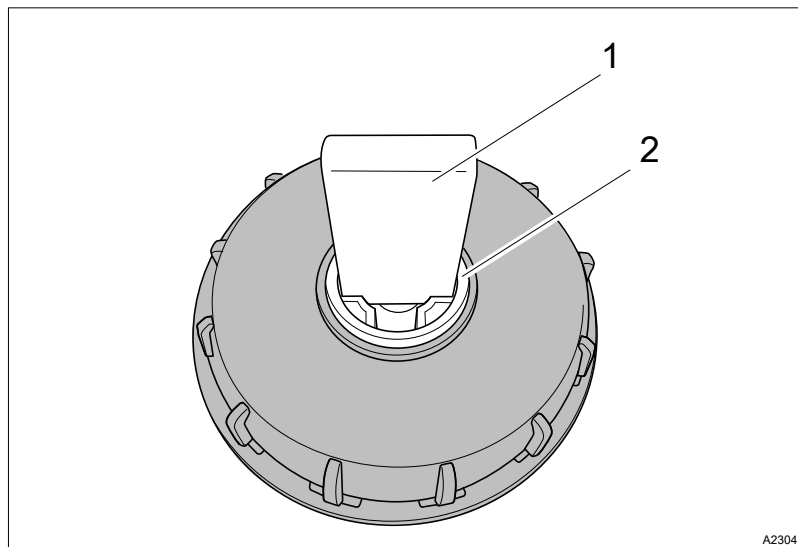


Fig. 11: Loosen the vent plug (2).

4. Loosen the vent plug (2). Use a screw driver or another flat tool (1) for this.

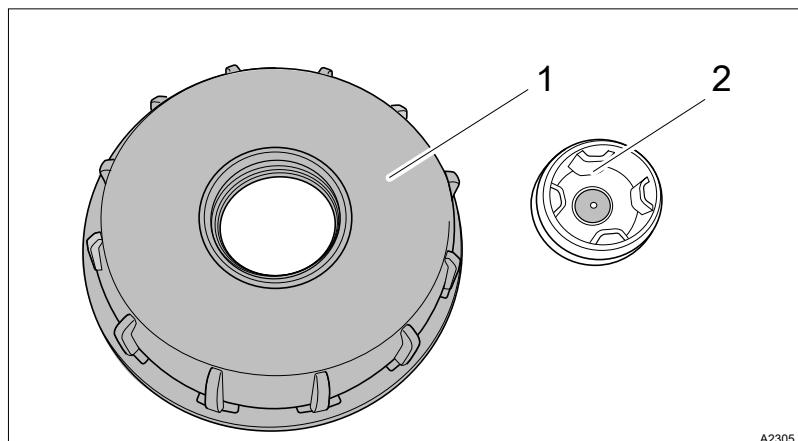


Fig. 12: Vent plug (2).

5. Now remove the bleed plug (2).

⇒ You can now insert the suction lance through the modified screw lid (1).

7 Disposal of Used Parts

- **User qualification:** instructed user, see [Chapter 2.2 'Users' qualifications'](#) on page 7



NOTICE!

Regulations governing the disposal of used parts

- Note the national regulations and legal standards that currently apply in your country

The manufacturer will take back decontaminated used units providing they are covered by adequate postage.

Decontaminate the unit before returning it for repair. To do so, remove all traces of hazardous substances. Refer to the Material Safety Data Sheet for your feed chemical.

A current Declaration of Decontamination is available to download on the ProMinent website.

8 Technical data

Permissible storage, operating and ambient conditions:

- All types: +5°C ... 60°C All types: < 95 % relative air humidity (non-condensing)
- Note the storage, operating and ambient conditions for your feed chemical that can be found on the product data sheet.

Viscosity: 0.8 ... 100 mPas

Level switch electrical data:

- Switch output: approx. 10 W / 12 VA
- Switching current: approx. 0.5 A
- Degree of protection: IP 67
- Switching function: NC

9 Connecting parts

Universal suction lance: Part nos. 1039206, 1038817, 1046668 and 1046670 for 20-litre and 20 ... 60- litre canisters

Connecting parts:

- Union nut, G 1 1/4, DN20, PP
- Pressure hose nozzle, Ø25, DN20, PP
- Pressure hose nozzle with reduction, DN20/DN15, PP
- Pressure hose nozzle with reduction, DN20/DN10, PP
- Return connector set with bend, DN10/DN10

Replacement seals:

- O-ring, M 28.17 - 3.53, FPM-A, DN20
- O-ring, M 15.54 - 2.62, FPM-A, DN10

Dummy washer:

- Union nut, Ø16, PP
- Dummy plug, Ø16, PP

Universal suction lance: Part nos. 1039397, 1039399, 1046671 and 1046672 for 200 litre drum and 1000- litre IBC

Connecting parts:

- Pressure hose nozzle, Ø32, DN25, PP
- Union nut, G 1 1/2, DN25, PP
- Pressure hose nozzle with reduction, DN25/DN20, PP
- Pressure hose nozzle with reduction, DN25/DN15, PP
- Pressure hose nozzle with reduction, DN25/DN10, PP
- Return connector set with bend, DN15/DN10
- Return connector set with bend, DN15/DN15

Replacement seals:

- O-ring, M 20.22 - 3.53, FPM-A, DN15
- O-ring, M 32.93 - 3.53, FPM-A, DN25

Dummy washer:

- Union nut, Ø20, PP
- Dummy plug, Ø20, PP

10 Drawings

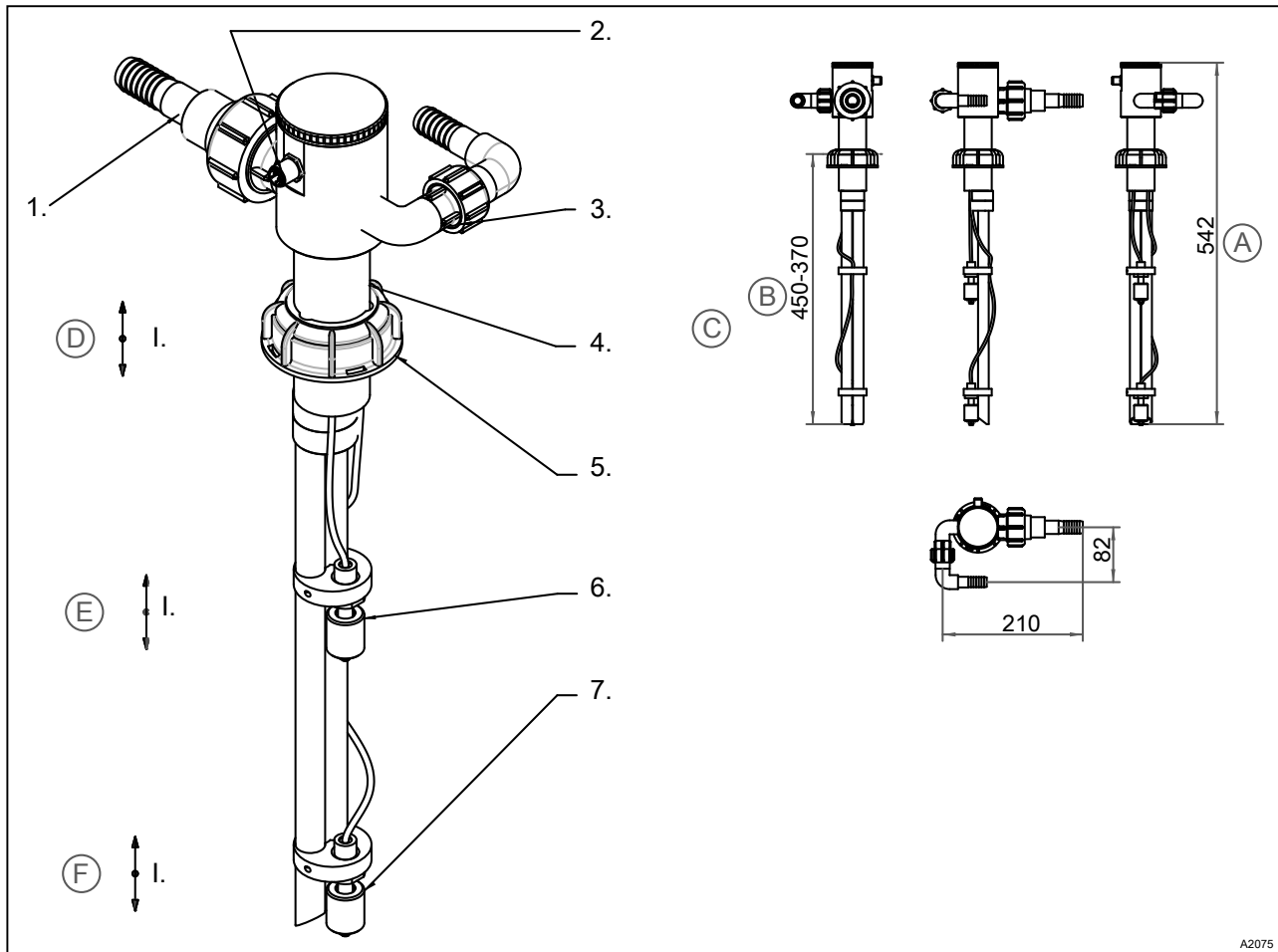


Fig. 13: Suction lance DN20 PP M12 for 20-litre canister

- | | |
|--|--|
| <ul style="list-style-type: none"> I. Adjustment range 1. Suction connector with hose nozzle, DN20 / DN15 / DN10 2. Connector, level switch, round plug, M12 coupling 3. Return connector with hose nozzle and dummy plug, DN 10 | <ul style="list-style-type: none"> 4. Immersion tube, diameter max. 41 mm 5. Screw lid with bleed valve, adjustable and self-locking 6. Level switch for pre-warning signal, adjustable 7. Level switch for switching-off signal, adjustable |
|--|--|

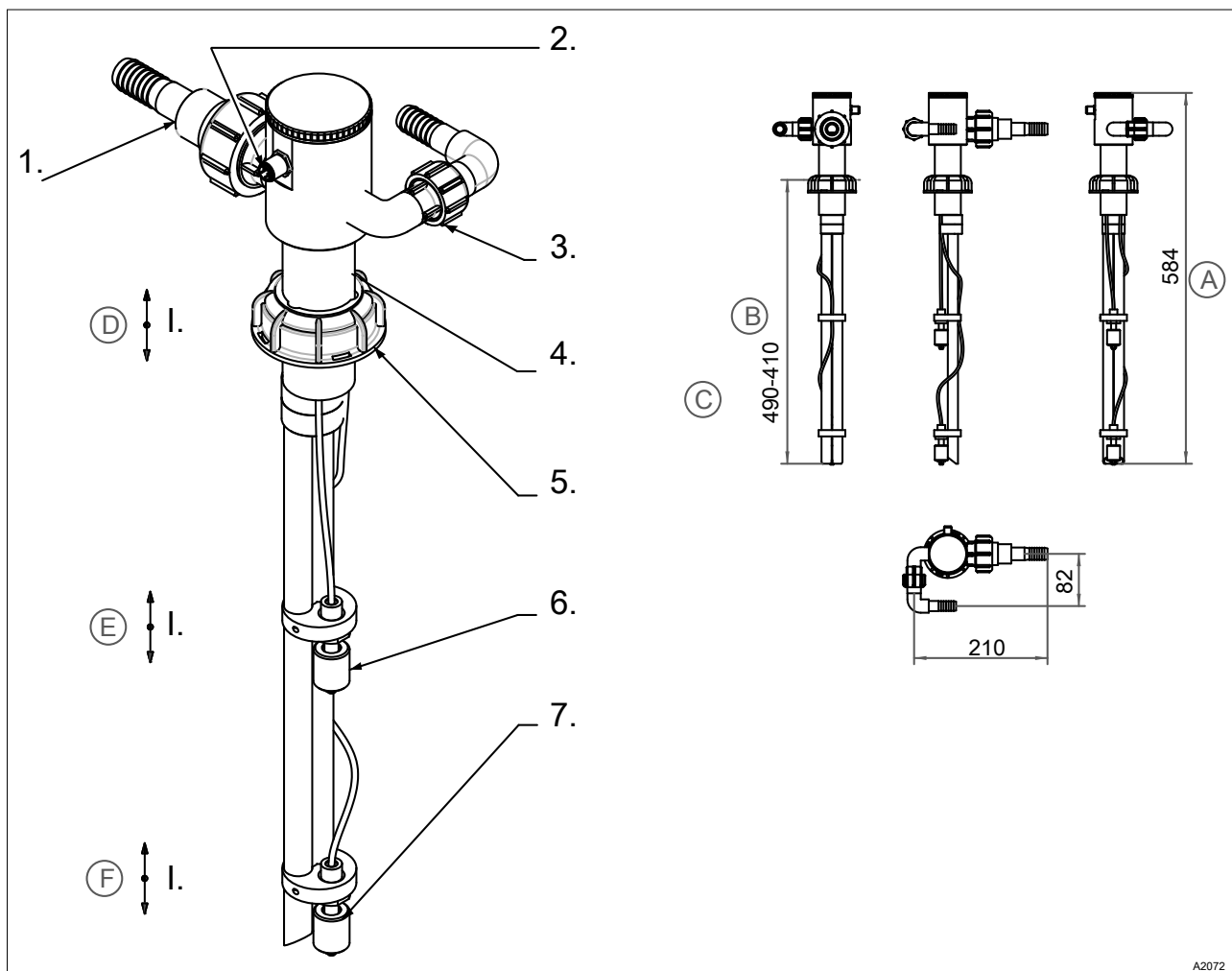


Fig. 14: Suction lance DN20 PP M12 for 20 - 60 litre canister

- | | | | |
|----|---|----|---|
| I. | Adjustment range | 4. | Immersion tube, diameter max. 41 mm |
| 1. | Suction connector with hose nozzle, DN20 / DN15 / DN10 | 5. | Screw lid with bleed valve, adjustable and self-locking |
| 2. | Return connector with hose nozzle and dummy plug, DN 10 | 6. | Level switch for pre-warning signal, adjustable |
| 3. | Connector, level switch, round plug, M12 coupling | 7. | Level switch for switching-off signal, adjustable |

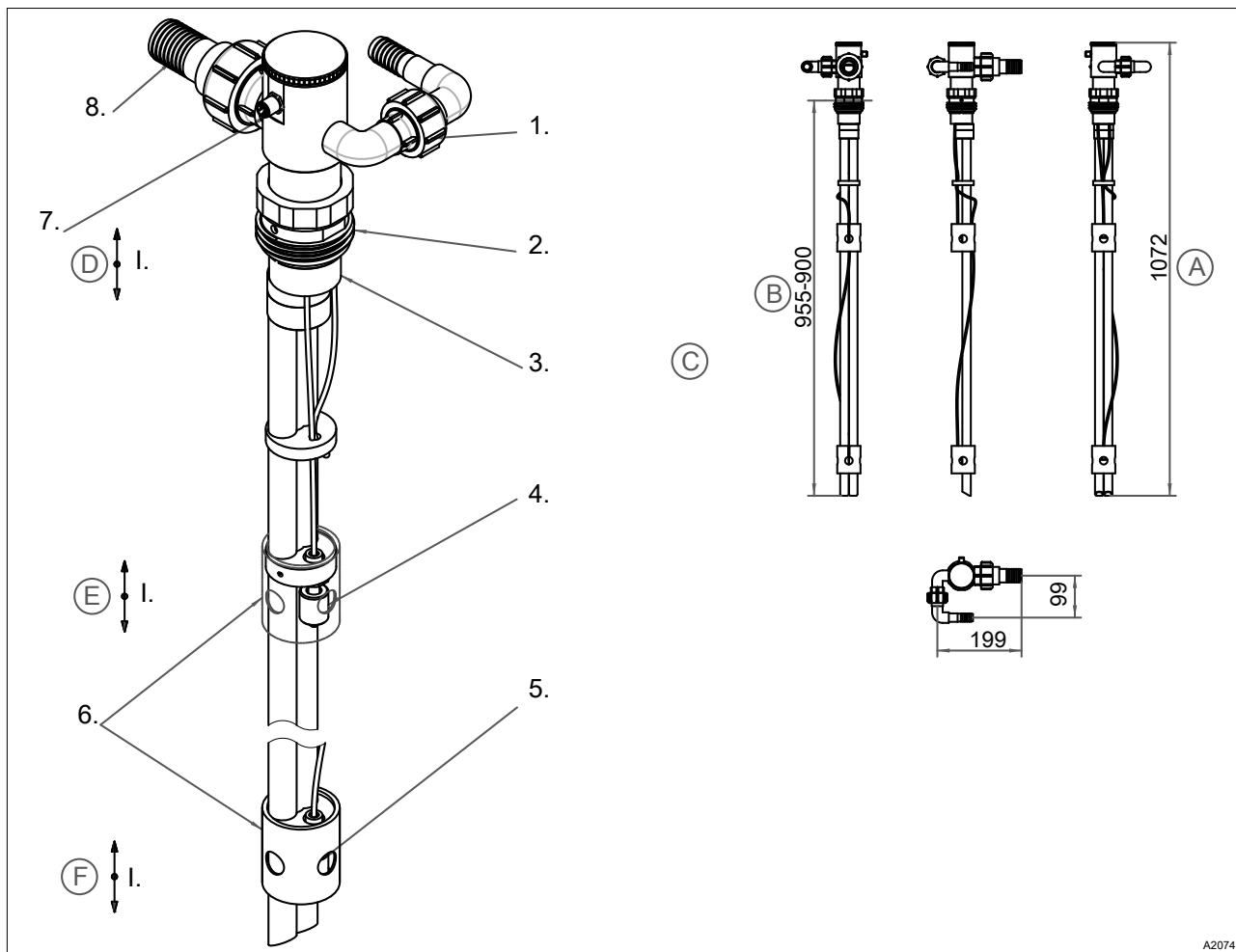


Fig. 15: Suction lance DN25 PP M12 for 200 litre drum

- | | |
|--|---|
| <ul style="list-style-type: none"> I. Adjustment range 1. Return connector with hose nozzle and dummy plug, DN15 / DN10 2. Drum threaded connector S70x6, with seal, adjustable and self-locking 3. Immersion tube, diameter max. 51mm 4. Level switch for pre-warning signal, adjustable | <ul style="list-style-type: none"> 5. Level switch for switching-off signal, adjustable 6. Level switch protective tube, diameter max. 55 mm 7. Level switch connector, round plug, M12 coupling 8. Suction connector with hose nozzle, DN25 / DN20 / DN15 / DN10 |
|--|---|

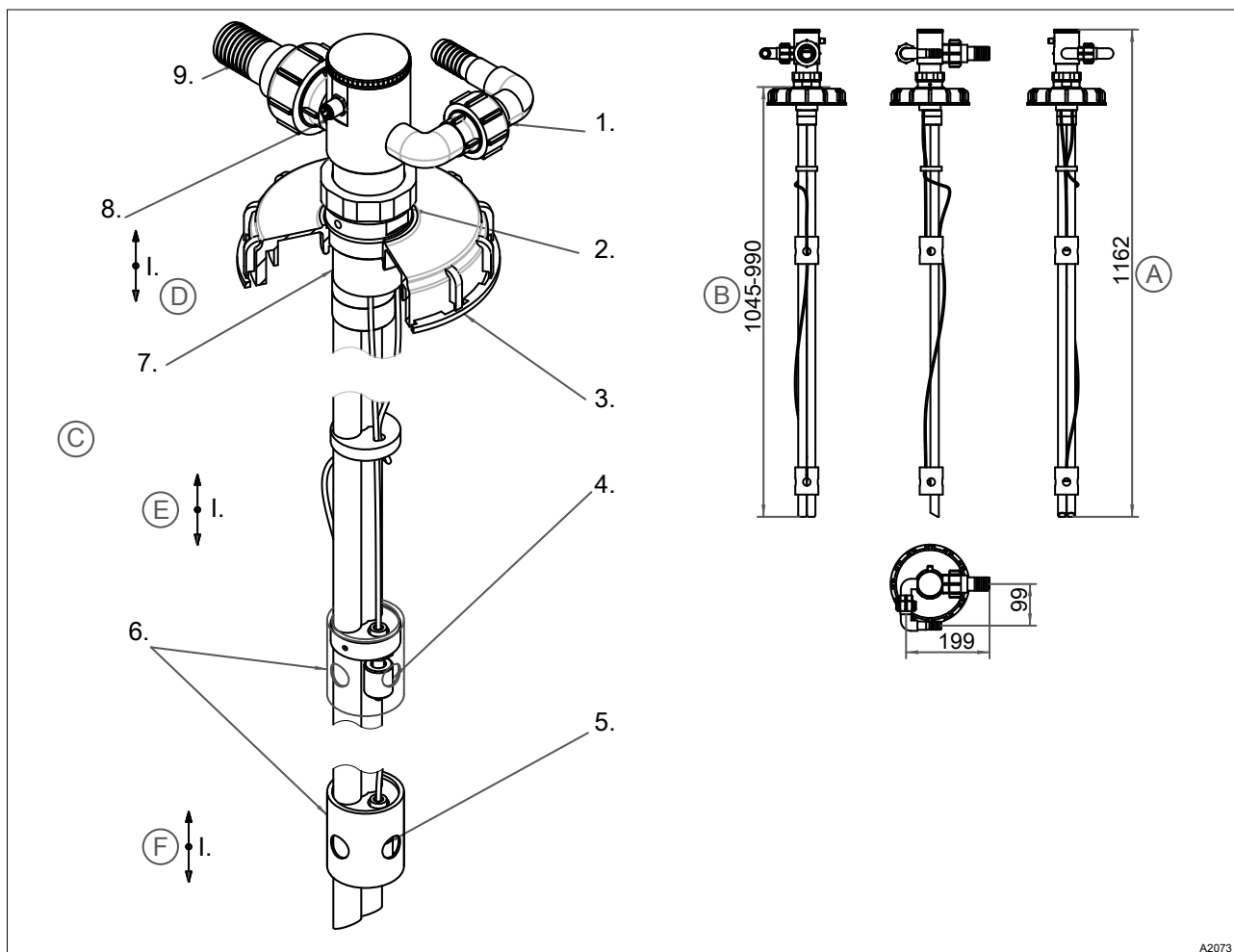


Fig. 16: DN25 PP M12 for IBC 1000-litres

- | | |
|--|--|
| <ul style="list-style-type: none"> I. Adjustment range 1. Return connector with hose nozzle and dummy plug, DN15 / DN10 2. G2" IBC threaded connector with seal, adjustable and self-locking 3. Screw lid, DN150 4. Level switch for pre-warning signal, adjustable 5. Level switch for switching-off signal, adjustable | <ul style="list-style-type: none"> 6. Level switch protective tube, diameter max. 55 mm 7. Immersion tube, diameter max. 51mm 8. Level switch connector, round plug, M12 coupling 9. Suction connector with hose nozzle, DN25 / DN20 / DN15 / DN10 |
|--|--|

11 Wiring diagram

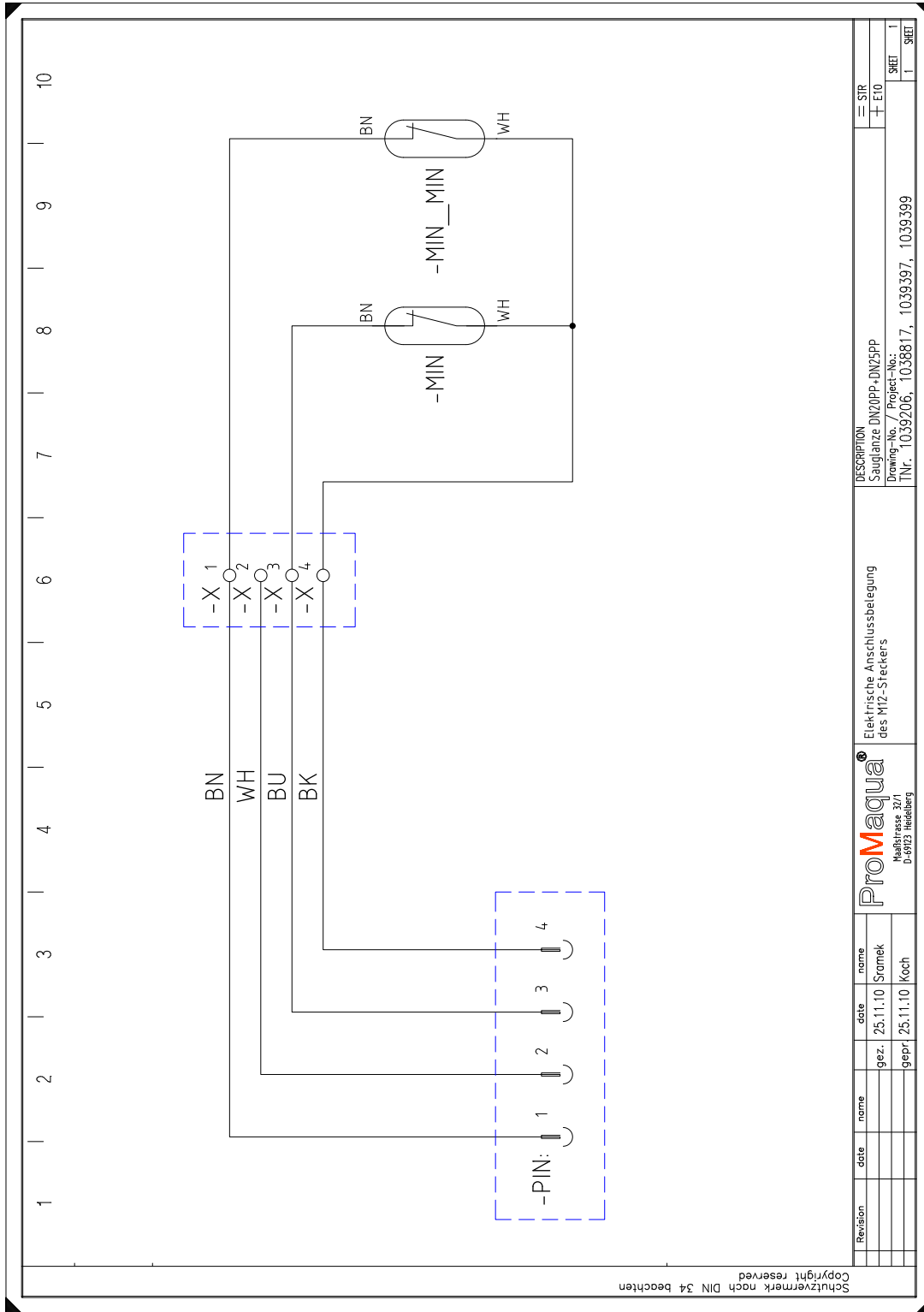


Fig. 17: Wiring diagram



ProMinent GmbH
Im Schuhmachergewann 5 - 11
69123 Heidelberg, Germany
Telephone: +49 6221 842-0
Fax: +49 6221 842-419
Email: info@prominent.com
Internet: www.prominent.com

985004, 2, en_GB