

SCALA1

Installation and operating instructions



SCALA1

English (GB)

Installation and operating instructions	4
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English (GB) Installation and operating instructions

Original installation and operating instructions

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1. General information

This appliance can be used by children aged from 8 years and above and persons with reduced physical, sensory or mental capabilities or lack of experience and knowledge if they have been given supervision or instruction concerning use of the appliance in a safe way and understand the hazards involved.

Children shall not play with the appliance. Cleaning and user maintenance shall not be made by children without supervision.



Read this document before you install the product. Installation and operation must comply with local regulations and accepted codes of good practice.

1.1 Hazard statements

The symbols and hazard statements below may appear in Grundfos installation and operating instructions, safety instructions and service instructions.



DANGER

Indicates a hazardous situation which, if not avoided, will result in death or serious personal injury.



WARNING

Indicates a hazardous situation which, if not avoided, could result in death or serious personal injury.



CAUTION

Indicates a hazardous situation which, if not avoided, could result in minor or moderate personal injury.

The hazard statements are structured in the following way:



SIGNAL WORD

Description of the hazard

Consequence of ignoring the warning

- Action to avoid the hazard.

1.2 Notes

The symbols and notes below may appear in Grundfos installation and operating instructions, safety instructions and service instructions.



Observe these instructions for explosion-proof products.



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.



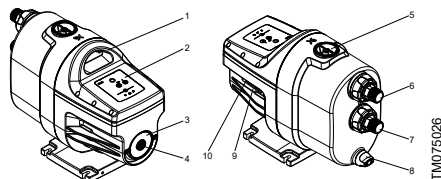
Tips and advice that make the work easier.

1.3 Target group

These installation and operating instructions are intended for professional as well as non-professional users.

2. Product introduction

2.1 Product description of SCALA1



Pos.	Description
1	Lifting handle
2	Operating panel
3	Nameplate
4	Plug for access to pump shaft
5	Priming plug
6	Outlet connection
7	Inlet connection
8	Drain plug
9	External input connection
10	Twin connection

2.2 Intended use



Only use the product according to the specifications stated in these installation and operating instructions.

The product is suitable for pressure boosting of clean water in domestic water-supply systems.

2.3 Pumped liquids

DANGER

Explosion risk

Death or serious personal injury



- Do not use the product for flammable liquids such as diesel oil, petrol or similar liquids. The product must only be used for water.

WARNING

Electric shock

Death or serious personal injury



- Do not use the product for aggressive liquids. The product must only be used for water.

WARNING

Toxic material

Death or serious personal injury



- Do not use the product for toxic liquids. The product must only be used for water.



If the water contains sand, gravel or other debris, there is a risk of pump blockage and pump damage. Install a filter on the inlet side or apply a floating strainer to protect the pump.

The product is suitable for pumping clean, thin, non-aggressive and non-explosive liquids without solid particles or fibres.

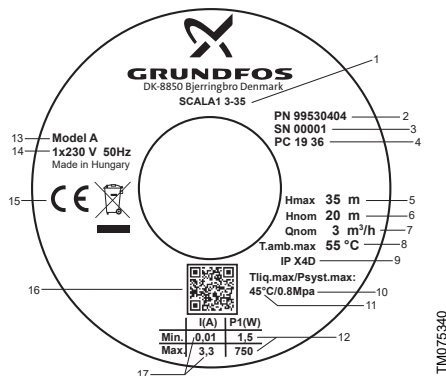
The product is designed for fresh water with a maximum chloride content of 50 ppm and a free chlorine content below 0.2 ppm.

Examples of liquids:

- clean water
- rainwater.

2.4 Identification

2.4.1 Nameplate for SCALA1



Example of nameplate

Pos.	Description
1	Type designation
2	Product number
3	Serial number
4	Production code (year and week)
5	Max. head
6	Nominal head
7	Nominal flow rate
8	Max. ambient temperature
9	Enclosure class
10	Max. operating pressure
11	Max. liquid temperature
12	Minimum and maximum rated power
13	Model
14	Voltage and frequency
15	Approvals
16	Product QR code
17	Minimum and maximum rated current

2.4.2 Type key for SCALA1

Example:

SCALA1 . 5- . 25 . 1x230V . 50 Hz . SCHUKO

Code	Designation
SCALA1	Type range
3	
5	Max. flow rate [m³/h]
25	
35	
45	Max. head [m]
55	
1 × 230V	
1 × 115V	Voltage [V]
50 Hz	
60 Hz	Frequency [Hz]
Schuko (Type E/F)	
No plug	
Thailand (Type O)	
Australia (Type I)	
UK (Type G)	Plug type
US (Type NEMA 5-15, NEMA 6-15)	
Argentina (Type I)	

3. Receiving the product

3.2 Scope of delivery

The box contains the following items:

- 1 Grundfos SCALA1 pump
- 1 quick guide
- 1 safety instructions booklet.

4. Installation requirements

4.1 Location

The product can be installed both indoors and outdoors.

The installation location must be protected from rain, humidity, condensation, direct sunlight and dust.

Please observe the following:

- Install the product to enable easy inspection, maintenance, and service.
- We recommend that you place the product as close as possible to the liquid to be pumped.
- We recommend that you install the product near a drain or in a drip tray connected to a drain in order to lead away possible condensation from cold surfaces.

4.1.1 Installation of the product in a frosty environment

Protect the product from freezing if it is to be installed outdoors where frost may occur.

4.1.2 Minimum space

The pump requires a minimum space of 495 × 225 × 340 mm (19.5 × 8.9 × 13.4 inches).

Even though the pump does not require much space, we recommend that you leave enough space for service and maintenance access.

4.2 Maximum system pressure



Make sure that the system in which the pump is installed is designed for the maximum pump pressure.



When installing a non-return valve in the plumbing system, make sure that the system has an expansion tank at the water heater and that the pressure-relief valve in the water heater is plumbed to a drain. Carry out the installation in accordance with local regulations.

The maximum inlet pressure depends on the head at the actual duty point. The sum of the inlet pressure and the head must not exceed the maximum system pressure.

We recommend installing a pressure-relief valve to protect the pump so that the outlet pressure does not exceed the maximum system pressure.

5. Mechanical installation

WARNING

Electric shock

Death or serious personal injury



- Switch off the power supply before you start any work on the product. Make sure that the power supply cannot be switched on accidentally.

WARNING

Electric shock

Death or serious personal injury



- Mount the product horizontally to avoid condensation in the electrical insulation inside the control box.

WARNING

Chemical hazard

Death or serious personal injury



- Before the pump is used for supplying drinking water, flush the pump thoroughly with clean water.

WARNING

Biological hazard

Death or serious personal injury



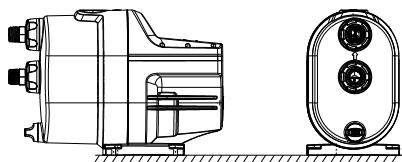
- Before the pump is used for supplying drinking water, flush the pump thoroughly with clean water.

5.1 Positioning and mounting the product



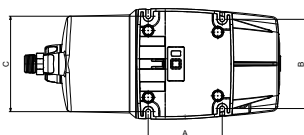
Always place the product in a horizontal position. A higher inclination can cause electric shock due to condensation in the electrical insulation inside the control box.

1. Place the product in a horizontal position with a maximum inclination angle of $\pm 5^\circ$. The base plate must face downwards.
2. Fasten the product to a solid horizontal foundation by means of screws through the holes in the base plate.



TM075005

Horizontal foundation



TM075004

Base plate

Pos.	[mm (in)]
A	135 (5.3)
B	163 (6.4)
C	174 (6.9)

5.2 Connecting the pipe system



Make sure that the pump is not stressed by the pipe system.

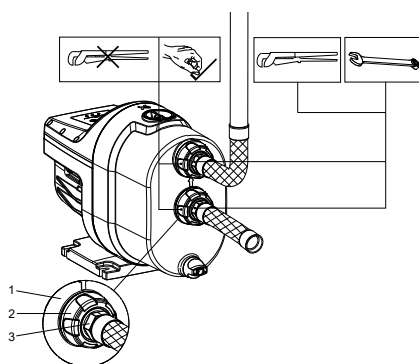


Always loosen and tighten the union nuts on the inlet and outlet ports by hand. Damage to the inlet and outlet parts increases the risk of leakage.



We recommend that you install isolating valves on the inlet and outlet side of the pump.

1. Turn the union nuts by hand to loosen the inlet and outlet ports.
2. Seal the pipe fittings with thread sealing tape.
3. Carefully screw the inlet and outlet connections onto pipe fittings using a pipe wrench or a similar tool. Keep the union nut on the pipe fitting if you have removed it from the pump. The pump is equipped with flexible connections, $\pm 5^\circ$, to facilitate the connection of inlet and outlet pipes.
4. Fasten the connections to the inlet and outlet ports by holding the connection with one hand and tightening the union nut with the other hand.



TM075341

Inlet pipe with a gradual upward slope towards the pump

Example:

Pos.	Description
1	Inlet and outlet port
2	Union nut
3	Pipe fitting

5.2.1 Inlet and outlet pipes

Follow these general precautions when connecting the inlet and outlet pipes.

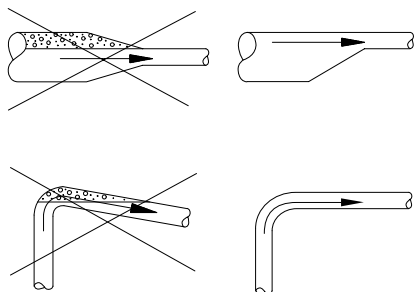


Do not let the pump support the pipes. Use pipe hangers or other supports at proper intervals to provide pipe support near the pump.



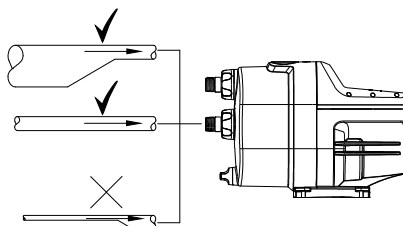
The internal diameter of the pipes must never be smaller than the diameter of the pump ports.

- Install the pipes so that air pockets are avoided, especially on the inlet side of the pump.
- Use eccentric reducers with the tapered side down.
- Make sure the pipes are as straight as possible to avoid unnecessary bends and fittings. We recommend long-radius 90° pipe bends to decrease friction loss.
- Run the inlet pipe as direct as possible and, ideally, make sure that the length is at least ten times the pipe diameter.
- If possible, run a horizontal inlet line. We recommend a gradual upward slope for pumps operating in suction-lift conditions.
- A short pipe must be of the same diameter as the inlet port or larger.
- A long pipe must be one or two sizes larger than the inlet port, depending on the length.



TM040338

Recommended pipe installation to avoid friction and air pockets

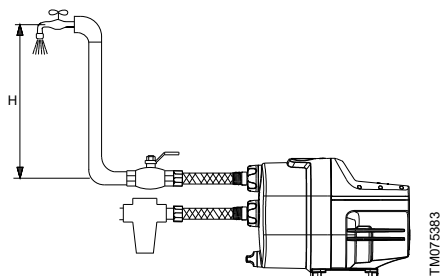


TM075387

Correct pipe sizing for connection to the pump inlet or outlet

5.2.2 Maximum tapping point

We recommend that you install the unit so that the height between the unit and the highest tapping point does not exceed the values shown in the table below.



Maximum tapping point

Model	Maximum height [m]
3-25	10
3-35	15
3-45	20
5-25	10
5-35	15
5-55	25

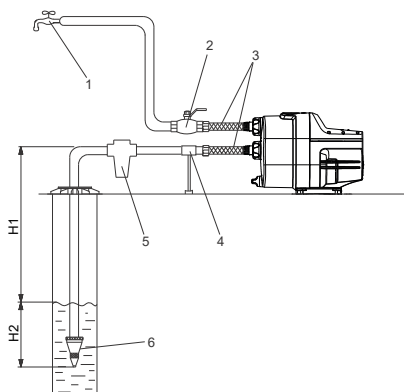
In case the highest tapping point is higher than the values in this table, the external input may be used.

5.3 Installation examples

We recommend that you follow the installation examples.

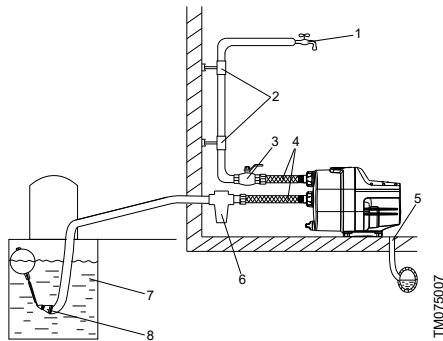
Valves are not supplied with the pump.

5.3.1 Suction from a well



Pos.	Description
1	Highest tapping point
2	Isolating valve
3	Flexible hoses
4	Pipe support
5	Inlet filter
6	Foot valve with strainer
H1	Maximum suction lift: 8 m (26.2 ft)
H2	Inlet pipe must be submerged at least 0.5 m (1.64 ft)

5.3.2 Suction from a tank

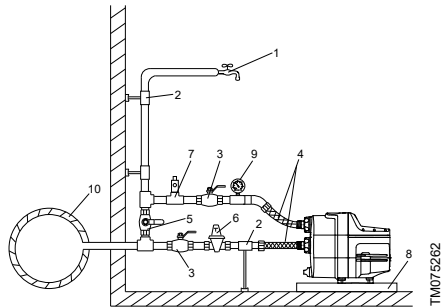


Pos.	Description
1	Highest tapping point
2	Pipe hangers
3	Isolating valve
4	Flexible hoses
5	Drain to sewer
6	Inlet filter
7	Freshwater tank
8	Foot valve with strainer
9	Minimum 1-degree inclination

5.3.3 Mains water pressure boosting



In some countries, boosting from the city water mains is prohibited. Please follow local regulations regarding this application.

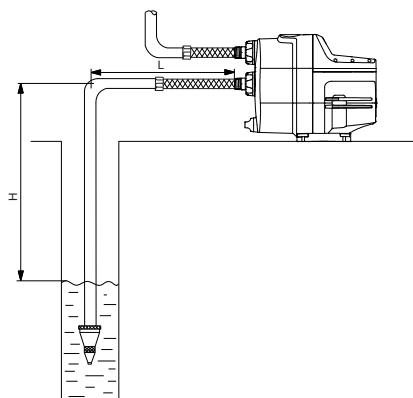


Mains water pressure boosting, SCALA1

Pos.	Description
1	Highest tapping point
2	Pipe hangers and supports
3	Isolating valves
4	Flexible hoses
5	Bypass valve
6	Optional pressure-reducing valve on the inlet side if the system pressure can exceed 8 bar (115 psi).
7	Optional pressure relief valve on the outlet side if the installation cannot withstand the outlet pressure.
8	Drip tray. Install the pump on a small stand to prevent the ventilation holes from being flooded.
9	Pressure gauge
10	Mains water pipe

5.3.4 Inlet pipe length

The overview below shows the different possible inlet pipe lengths, depending on the vertical pipe length. The overview is only intended as a guide.



TM075259

Inlet pipe length

DN 32		DN 40	
H [m (ft)]	L [m (ft)]	H [m (ft)]	L [m (ft)]
0 (0)	68 (223)	0 (0)	207 (679)
3 (10)	43 (141)	3 (10)	129 (423)
6 (20)	17 (56)	6 (20)	52 (171)
7 (23)	9 (30)	7 (23)	26 (85)
8 (26)	0 (0)	8 (26)	0 (0)

Pre-conditions:

Maximum flow velocity: 1 l/s (16 gpm).

Inside roughness of pipes: 0.01 mm (0.0004 in).

Size	Inside pipe diameter [mm (in)]	Pressure loss [mm (psi/ft)]
DN 32	28 (1.1)	0.117 (5/100)
DN 40	35.2 (1.4)	0.0387 (1.6/100)

6. Electrical connection

WARNING

Electric shock

Death or serious personal injury



- Switch off the power supply before you start any work on the product. Make sure that the power supply cannot be switched on accidentally.

WARNING

Electric shock

Death or serious personal injury



- In case of an insulation fault, the fault current may be a DC or pulsating DC. Observe national legislation about requirements for and selection of Residual Current Device (RCD) when installing the product.



All electrical connections must be carried out by qualified persons in accordance with local regulations.



If the power cable is damaged, it must be replaced by the manufacturer, the manufacturer's service partner or a similarly qualified person.



Make sure that the electrical installation supports the rated current [A] of the product. See the nameplate of this product.

6.3 Motor protection

The pump incorporates current- and temperature-dependent motor protection. If the pump is blocked or otherwise overloaded, the built-in thermal switch will cut out. When the motor has cooled sufficiently, it will restart automatically.

No external motor protection is required.

7. Starting up the product

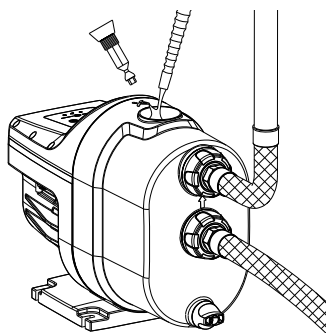


Do not turn on the power supply until the pump has been filled with liquid.

7.1 Priming the product

1. Unscrew the priming plug and pour at least 1.7 litres (0.45 gallons) of water into the pump housing.
2. Screw the priming plug on again.

Example:



TM075342

Priming the pump



If the suction depth exceeds 6 m (20 ft), it may be necessary to prime the pump more than once.



Always tighten priming and drain plugs by hand.

7.2 Starting up the pump

After installing and priming, follow the following steps to start up the pump.

1. Prime the pump according to the priming instructions.
2. Open all isolating valves.
3. Open the tapping point that is the highest or furthest away from the pump to let out air trapped in the system.
4. Turn on the pump's power supply. All the symbols on the operating panel will light up briefly. The **Stop** icon remains on.
5. Press the **Start/Stop** button to start the pump. If there is a suction lift, it may take up to five minutes before the pump delivers water depending on the length and diameter of the inlet pipe.
6. When the water flows through the tapping point without air, close the tapping point. The pump will stop after approx. 10 seconds.
7. The startup is now completed, and the pump is ready for operation.

7.3 Operation

7.3.1 Normal operation

When water is consumed in the water supply system, the pump starts if the starting conditions of the pump are fulfilled. This happens, for example, when a tap is opened, making the pressure in the system drop.

The pump stops when the consumption stops, that is when the tap is closed.

Open pipe systems

When using the pump in an open pipe system, it must be ensured that the water can be diverted to prevent potential flooding or property damage in case of an accidental startup.

7.3.2 Starting and stopping conditions



To ensure optimal performance, the cut-in pressure is set by Grundfos. It is therefore not possible to adjust the cut-in pressure.

Starting conditions

The pump starts when at least one of the following conditions is fulfilled:

- The flow is higher than Q_{min} (1.5 l/min).
- The pressure is lower than p_{start} .

Stopping conditions

The pump stops with a time delay of 10 seconds when both of the following conditions are fulfilled:

- The flow is lower than Q_{min} (1.5 l/min).
- The pressure is higher than p_{start} .

The p_{start} values are shown in Technical data.

7.4 Shaft seal run-in

The shaft seal faces are lubricated by the pumped liquid. A slight leakage from the shaft seal of up to 10 ml per day or 8 to 10 drops per hour may occur.

Under normal conditions, the leaking liquid will evaporate. As a result, no leakage will be detected.

When the pump is started for the first time, or when the shaft seal has been replaced, a certain run-in period is required before the leakage is reduced to an acceptable level. The time required for this depends on the operating conditions, that is, every time the operating conditions change, a new run-in period will be started.

Leaking liquid will drain through the drain holes in the motor flange.

Install the product in such a way that leakage cannot cause undesirable collateral damage.

8. Control functions

8.1 Operating panel



TM075407

The following alarm lights indicate an issue with installation:

Symbol	Description
	Leakage in the system.
	Dry running or water shortage.
	The maximum runtime has been exceeded.

Symbol	Description
	Grundfos Eye: The indicator light shows the operating status of the product.
	Start/Stop: Press the button to make the product ready for operation or to start and stop the product. Start: If you press the button when the product is stopped, the product starts if no other functions with higher priority have been enabled. Stop: If you press the button when the product is running, the product always stops.
	The pump is stopped. The stop icon will light up on the display.
	Bluetooth connect button enables communication with Grundfos GO. The connection indicator light will light up when the connection to Grundfos GO is established.
	Reset the pump alarms.

8.2 Auto reset

This function allows the pump to automatically check if the operating conditions are back to normal. If the operating conditions are back to normal, the alarm indication will be reset automatically.

The factory setting is on.

The **Auto reset** function works as follows:

Alarm	Auto-reset action	Configurable	Default
Dry running	The pump will attempt four restarts at 25-minute intervals. If not successful, this cycle will be repeated after 12 hours.	Yes	On
	In twin configuration Duty/Assist, there is no reset if only one pump is in dry-running alarm. If both pumps are in dry running, the reset will be staggered.		
	In twin configuration Duty/Standby, the pump will attempt to restart immediately independent of the second pump.		
Micro-leakage detection (anti-cycling)	This function will attempt to reset after 12 hours, and the pump will return to normal operation.	Yes	On
Max. runtime	None	Fixed disabled	
Missed twin pump	Auto reset is performed by the system when communication is reestablished.	Fixed enabled	

8.3 Dry-running protection



If a dry-running alarm has been activated, the cause should be identified before the pump is restarted to prevent damage to the pump.

The unit incorporates dry-running protection that automatically stops the pump in case of dry-running. The dry-running protection functions differently during priming and operation.

8.3.1 Dry-running during priming

If the unit does not detect pressure and flow within 5 minutes after it has been connected to a power supply, and the pump has started, the dry-running alarm is activated.

8.3.2 Dry-running during operation

If the unit does not detect pressure and flow within 40 seconds during normal operation, the dry-running alarm is activated.

8.3.3 Resetting of dry-running alarm

If the dry-running alarm has been activated, the pump can be restarted manually by pressing [Reset]. If the unit does not detect pressure and flow within 40 seconds after restarting, the dry-running alarm is reactivated.

This protection is always **ON**.



Dry-running or water shortage.

8.4 Micro-leakage detection

Note: This function was previously called anti-cycling. It has been renamed to micro-leakage detection.

If there is a minor leakage in the system, or a tap has not been closed entirely, the unit will start and stop the pump periodically. To avoid cycling, the micro-leakage detection of the unit will stop the pump and indicate an alarm. The micro-leakage detection can be configured in Grundfos GO.

Off

If the pump starts 40 times in a fixed pattern, an indicator light will signal cycling. The pump will remain in normal operation.

On

If the pump starts and stops in a fixed pattern, there is a leakage in the system. The pump stops, Grundfos Eye is flashing red and an indicator light is on.

The factory setting for this function is on.



Leakage in the system.

8.5 Maximum runtime

This function is a timer that can turn off the pump if it runs continuously for a certain amount of time. This time period can be adjusted via Grundfos GO.

Off

The pump will run depending on the operating conditions disregarding the continuous operation.

On

The pump will stop after the specified period of continuous operation, and it will show the alarm **Maximum runtime exceeded**. This alarm will always need to be reset manually.

The factory setting for this function is off.



Maximum runtime exceeded.

9. Setting the product

9.1 Initial setup with Grundfos GO

9.1.1 Startup wizard on Grundfos GO

The product is designed for Bluetooth communication with Grundfos GO.

Once you have connected your product to Grundfos GO, a startup wizard appears. Follow the instructions to make your settings.

Grundfos GO enables you to set functions and gives you access to status overviews, technical product information and current operating parameters.

9.1.2 Connecting to Grundfos GO

Before connecting the product to Grundfos GO, the Grundfos GO app must be downloaded to your smartphone or tablet. Grundfos GO is free of charge and available for iOS and Android devices.

The connection can be started either from the operating panel or Grundfos GO. If you have several products installed, we recommend starting the connection from the operating panel.

1. Open Grundfos GO on your device. Make sure that Bluetooth is enabled.
Your device must be within reach of the product to establish Bluetooth connection.
2. Press the Bluetooth **CONNECT** button on Grundfos GO.
3. Press the connect button on the operating panel. The blue LED above the connect button is flashing until your device is connected. Once the connection is established, the LED will be permanently on.
Grundfos GO is now loading the data for the product.

9.2 Expert settings

Grundfos GO allows you to enable additional conditions for pump operation.

9.2.1 External input

This pump allows connection of external input as an additional condition to the pump operation.

External input may be beneficial in the following situations:

- level switch in roof tank filling to stop the pump when the tank is full
- inlet pressure switch to stop the pump in case of raised inlet pressure
- moisture detection switch in irrigation applications to run the pump only when the ground is dry.

External input must be 24 V digital input and can be connected through the opening on the pump housing. The cable length is limited to 30 m.



External input can only be set with Grundfos GO.

9.2.1.1 Setting the external input

WARNING

Electric shock

Death or serious personal injury

- Switch off the power supply before you start any work on the product. Make sure that the power supply cannot be switched on accidentally.



WARNING

Electric shock

Death or serious personal injury

- In case of an insulation fault, the fault current may be a DC or pulsating DC. Observe national legislation about requirements for and selection of Residual Current Device (RCD) when installing the product.



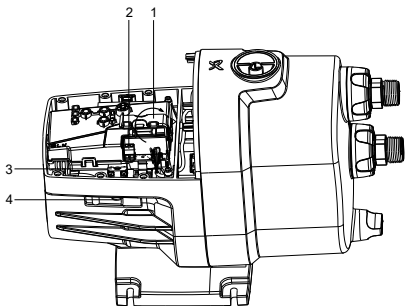
All electrical connections must be carried out by qualified persons in accordance with local regulations.



If the power cable is damaged, it must be replaced by the manufacturer, the manufacturer's service partner or a similarly qualified person.



Make sure that the electrical installation supports the rated current [A] of the product. See the nameplate of this product.



TM075384

Connecting external input

Pos.	Description
1	Lid on PCB cover
2	Terminals
3	Cable clip
4	Cable gland

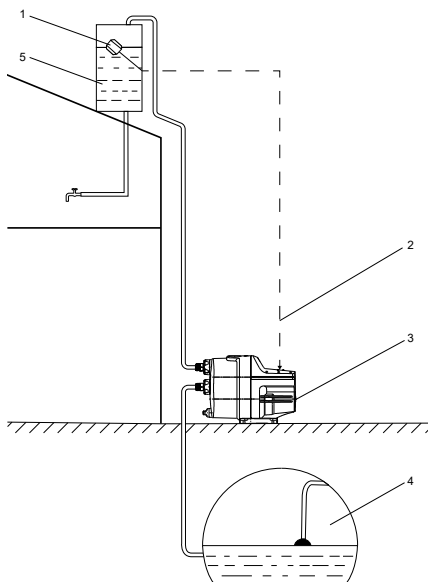
1. Remove the screws and lift the pump cover.
2. Open the lid on the PCB cover.
3. Pull the cable through the gland and the clip.
4. Connect to the terminals.
5. Fix the clip to hold the cable in place.
6. Close the lid.
7. Return the pump cover and screw it in place.
8. Switch on the pump and connect with Grundfos GO.

9.2.1.2 Roof tank filling

In the installation below, the level switch is used to signal the pump to run when the water level in the tank drops.

The example below shows the float switch in the input closed position. In this case, the pump must not run, and Grundfos GO settings indicate that the input is closed.

If you exceed the maximum tapping point of the pump, the external input must run on input only.



TM075330

Pos.	Description
1	Float switch
2	External input (switch) cable
3	Pump
4	Water source (tank)
5	Roof tank

9.2.2 Calendar function

The operation of SCALA1 can be scheduled in the calendar function of the Grundfos GO app.

This function determines when the pump is allowed to run and when not. It is particularly beneficial for irrigation and agriculture purposes, where the pump must be active only within a certain period of time.

9.2.2.1 Enabling calendar function

To enable this function, go to Grundfos GO and follow these steps:

1. Connect to the pump.
2. Go to **Scheduling**.
3. Press **Save schedule**.

The pump will now run on demand, but only within the time period set in the calendar function.



When the pump has been stopped by the calendar function, it will be indicated on the operating panel by a permanently yellow Grundfos Eye.

9.2.3 Performance modes

Different performance modes can be selected for SCALA1. Selecting the correct mode is dependent on the installation.

There are 3 performance modes for SCALA1:

- self-priming
- air handling
- positive inlet.

The default mode is self-priming, which will be the desired mode for most installations.

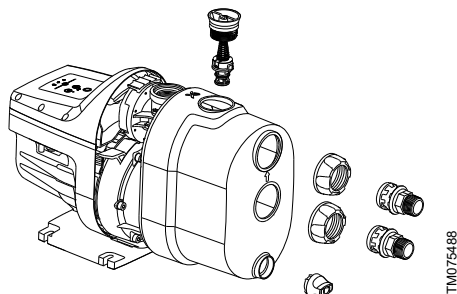
Performance mode	Description	Benefits
Self-priming	The self-priming valve is fully opened.	Best performance and lowest noise level in suction applications.
Air handling ¹⁾	When there is air in the installations, it can accumulate in the hydraulics. Partially closing the self-priming valve can provide assistance.	Improves the pump's capability to handle air in the water.
Positive inlet	If the installation has a positive inlet pressure, the pump is always primed, and the self-priming valve can be fully closed.	Removes sound associated with self-priming valve movement in installations with positive inlet pressure.

¹⁾ This performance mode will result in some performance loss and a slight increase in noise level. Refer to technical data for more information.

9.2.3.1 Selecting the performance mode

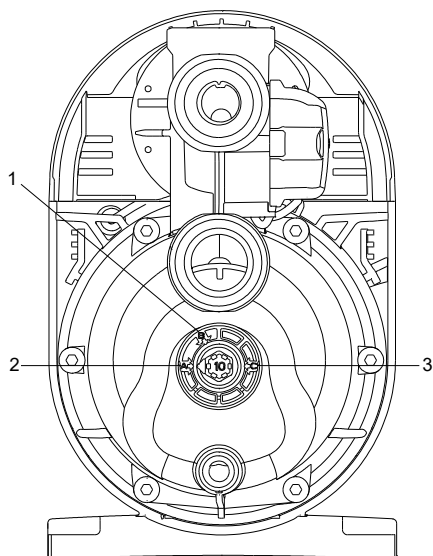
If the performance mode needs to be changed from the default setting, follow these steps:

1. Remove the pump cover.
 - a. Unscrew and remove the priming plug from the pump.
 - b. Loosen and remove the inlet and outlet connections from the pump.
 - c. Loosen and pull away the pump cover to remove it from the pump.
4. Return the pump cover and reconnect the priming plug and connections.



Remove the pump cover

2. Locate the performance mode knob.
3. Using a size 10 hexagon key, turn the knob to the desired selection.



Turn the knob to select performance mode

Pos.	Description
1	Air handling
2	Self-priming
3	Positive inlet

9.3 Resetting to factory settings

To reset the pump to factory settings via the operating panel:

1. Press and hold the **Start/Stop** and **Reset** buttons simultaneously for 5 seconds.



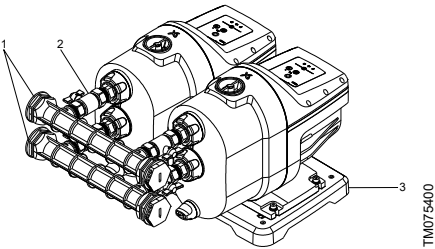
Start/Stop button



Reset button

It is also possible to reset to factory settings in Grundfos GO.

10. SCALA1 twin booster configuration



SCALA1 twin booster system

Pos.	Description
1	Inlet and outlet manifolds
2	Isolating valves
3	Twin base plate
Not pictured: communication cable and fixing screws	

SCALA1 can be easily set as a twin booster system by using the accessory set and Grundfos GO.

In the twin setup, the two SCALA1 pumps communicate together via a cable included in the accessory set.

The twin booster system is beneficial when the water flow demand is higher or a system with a standby pump is required.

Once connected, a priority will be assigned automatically to the pumps.

In the twin booster configuration, an operating panel on one pump will act as system operating panel, meaning that all actions done on this operating panel will be propagated to the other pump in the system.

All the alarms and functions of the pump are also available for the twin system.

10.1 Operating modes and parameters

Once SCALA1 is installed as a twin booster system, it can run in two different operating modes.

Duty/Standby

In the **Duty/Standby** operating mode, only one pump will run at a time in the twin system. This means that the maximum performance of the system will be the same as the maximum performance of a single SCALA1 unit. In case one pump fails to start, the other one will run. The pumps will switch priority at the start based on the alternation settings.

Duty/Assist

Running in the **Duty/Assist** operating mode brings more flow on the outlet side, as both pumps can run at the same time. A pump with an assigned priority will start first and, in case it cannot deliver the necessary flow, the second pump will start. In case one pump fails to start, the system will continue running with one pump. The pumps will switch priority at the start based on the alternation settings.

Alternation can be set based on runtime or number of starts. This is done through Grundfos GO, either in the initial setup or through the **Settings** menu on the **Dashboard** screen.



No Alternation is only available for selection when operating in the **Duty/Assist** mode.

10.2 Setting SCALA1 twin booster system

WARNING

Electric shock

Death or serious personal injury



- Switch off the power supply before you start any work on the product. Make sure that the power supply cannot be switched on accidentally.

WARNING

Electric shock

Death or serious personal injury



- In case of an insulation fault, the fault current may be a DC or pulsating DC. Observe national legislation about requirements for and selection of Residual Current Device (RCD) when installing the product.



All electrical connections must be carried out by qualified persons in accordance with local regulations.



If the power cable is damaged, it must be replaced by the manufacturer, the manufacturer's service partner or a similarly qualified person.



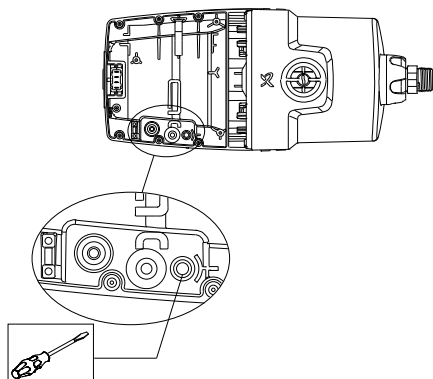
Make sure that the electrical installation supports the rated current [A] of the product. See the nameplate of the product.

Twin base plate, manifolds and communication cable are available in the SCALA twin accessory set.

To enable the twin operation of two SCALA1 pumps, follow the steps below.

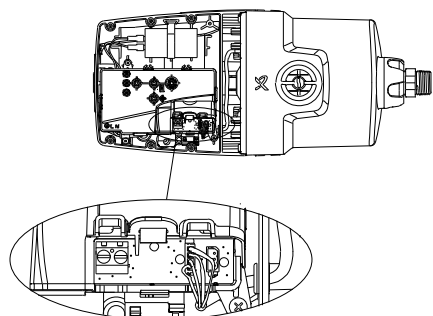
1. Position both pumps on the twin base plate without fastening them.
2. Open the cover of both pumps by removing the screws.

3. Punch open the vacant hole/slot on the side of the pump housing and pull one end of the communication cable through the hole.



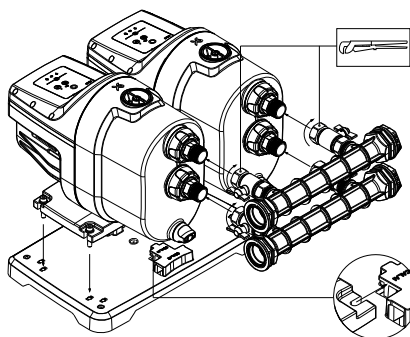
Punch hole for communication cable

4. Plug in the communication cable in the control board of the pump.



Connect communication cable

5. Connect the other end of the communication cable to the second pump according to the instructions in steps 2 to 4.
6. Fasten both pumps to the base plate.
7. Connect the inlet and outlet manifolds to both pumps.
8. Prime both pumps according to the priming instructions.



Fasten pumps to base plate and connect inlet and outlet manifolds

9. Follow the startup instructions.
10. Connect to Grundfos GO and follow the initial setup screen.
11. Press the **Connect** button on the operating panel of one of the pumps to establish the connection between the twin pumps.
12. Follow the instructions in Grundfos GO for setting the twin booster system.

TM086548

TM086549

TM075386

10.2.1 Setting SCALA1 twin booster with Grundfos GO

Setting the twin booster with Grundfos GO can be done in two ways:

- initial setup: run on first connection, or through the **Assist** menu in **Dashboard**.
- **Settings** menu in **Dashboard**.

Choose the correct parameters for:

- operating mode
- alternation type
- alternation value.

Examples:

- If the SCALA1 booster system is set as Duty/Standby with alternation on the number of starts = 1, this means that every time the system starts a different pump is running.
- If the SCALA1 booster system is set as Duty/Standby with alternation on the number of starts = 5, this means that pump 1 will start first for 5 times before switching the priority to pump 2.
- If the SCALA1 booster system is set as Duty/Assist with alternation on runtime = 5 hours, this means that pump 1 will start first every time until the system reaches 5 hours of operating time. Then the priority will be swapped between pumps.

Range and default values for alternation

	Minimum	Default	Maximum	Resolution
Alternation of starts and stops	1	1	100	1
Alternation runtime [h]	0.5	5	100	0.5

11. Service

WARNING

Electric shock

Death or serious personal injury



- Switch off the power supply before you start any work on the product. Make sure that the power supply cannot be switched on accidentally.

WARNING

Chemical hazard

Death or serious personal injury



- Make sure that the product has only been used for water. If the product has been used for pumping aggressive liquids, flush the system with clean water before you start work on the product.

WARNING

Biological hazard

Death or serious personal injury



- Make sure that the product has only been used for water. If the product has been used for pumping aggressive liquids, flush the system with clean water before you start work on the product.

WARNING

Pressurised system

Death or serious personal injury



- Before dismantling the pump, drain the system or close the isolating valves on both sides of the pump. Slowly loosen the drain plug and unpressurise the system.

CAUTION

Impurities in the water

Minor or moderate personal injury



- Before the pump is used for supplying drinking water, flush the pump thoroughly with clean water.
- Use spare parts approved by Grundfos.



Only qualified persons are allowed to service the pump.

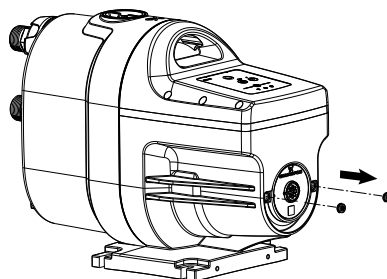
11.1 Maintenance

The pump is maintenance-free, but we recommend that you check and clean the condensation plugs and integrated non-return valve once per year or as needed.

11.1.1 Cleaning of condensation plugs

1. Remove the condensation plugs carefully with a suitable tool, for example, a small screwdriver.
2. Rinse the condensation plugs with water.
3. Reinsert the condensation plugs carefully by pressing them in place with a finger.

Example:



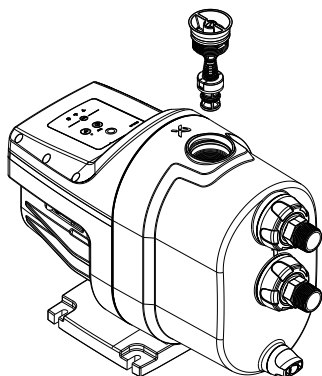
TMO75337

Cleaning the condensation plugs

11.1.2 Cleaning of the integrated non-return valve

1. Turn off the power supply and disconnect the power plug.
2. Shut off the water source.
3. Open the tap to release the pressure in the pipe system.
4. Close the isolating valves and/or drain the pipes.
5. Gradually open and remove the priming plug. The plug and non-return valve are one unit.
6. Clean the integrated non-return valve with warm water and a soft brush.
7. Assemble the components in reverse order.

Example:



Integrated non-return valve

TM075336

11.2 Customer service information

For further information on service parts, see Grundfos Product Center on www.product-selection.grundfos.com.

11.3 Service kits

For further information on service kits, see Grundfos Product Center at www.product-selection.grundfos.com.

12. Starting up after standstill

WARNING

Electric shock

Death or serious personal injury



- Switch off the power supply before you start any work on the product. Make sure that the power supply cannot be switched on accidentally.

WARNING

Electric shock

Death or serious personal injury



- Check that the product is intact and not cracked. Especially if the product was not drained before standstill or was exposed to frost.

CAUTION

Impurities in the water

Minor or moderate personal injury



- Before the pump is used for supplying drinking water, flush the pump thoroughly with clean water.

If the product has been standing still for a period of time, for example, during winter, follow these instructions before startup.

1. Check that the product is intact and not cracked. Especially if the product was not drained before standstill or has been exposed to frost.
2. Check that the pump is not blocked by following the deblocking instructions.
3. Before the pump is used for supplying drinking water, flush the pump thoroughly with clean water.
4. If the pump has been drained, it must be filled with liquid before startup. Follow the priming instructions.
5. Follow the startup instructions. The pump will remember the controller settings even if it is turned off.

12.1 Deblocking the pump

WARNING

Electric shock

Death or serious personal injury



- Switch off the power supply before you start any work on the product. Make sure that the power supply cannot be switched on accidentally.

WARNING

Moving parts

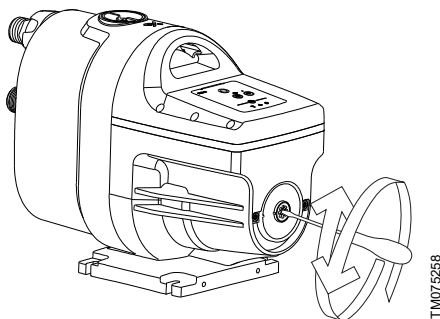
Death or serious personal injury



- Make sure that the product cannot start unexpectedly while deblocking the pump shaft.

1. Remove the plug incorporated in the end cover. Use a suitable tool to remove the plug.
2. Deblock the pump shaft if it has seized up as a result of inactivity.

Example:



Deblocking the pump

13. Taking the product out of operation

WARNING

Electric shock

Death or serious personal injury



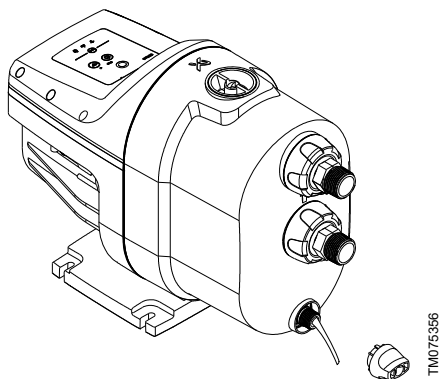
- Switch off the power supply before you start any work on the product. Make sure that the power supply cannot be switched on accidentally.

If the product is taken out of operation for a period of time, for example, during winter, it must be disconnected from the power supply and placed in a dry location.

Follow these steps:

1. Disconnect the product from the power supply.
2. Open a tap to release the pressure in the pipe system.
3. Close the isolating valves and drain the pipes.
4. Gradually loosen the drain plug to release the pressure in the product.
5. Drain the product by removing the drain plug.
6. Store the product according to the recommended storing conditions.

Example:



Draining the pump

14. Storage



The storage location must be protected from rain, humidity, condensation, direct sunlight and dust.



The product is not frost resistant. Store the product in a frost-free location.



Drain the product before storage.

If the product is to be stored for a certain period of time, for example, during winter, drain it by removing the drain plug and store the product indoors in a dry location.

Temperature range during storing must be from -40 to 70 °C (-40 to 158 °F).

Maximum relative humidity during storage: 95 % RH.

15. Fault finding



CAUTION

Hot surface

Minor or moderate personal injury

- Do not run the pump continuously with a closed inlet or outlet valve.



CAUTION

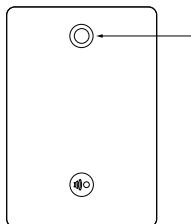
Hot or cold liquid

Minor or moderate personal injury

- Make sure that escaping hot or cold liquid does not cause injury to persons or damage to the equipment.




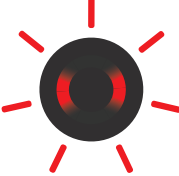


15.1 Grundfos Eye SCALA1

Grundfos Eye indicates the operating conditions of the motor on the motor operating panel.



TM085776

Grundfos Eye indicator light

Grundfos Eye	Cause	Remedy
	No lights are on.	Power off The motor is not running.
	Two opposite green indicator lights are permanently on.	Power on The motor is not running.
	Two opposite green indicator lights are rotating.	Power on The motor is running. The indicator lights are rotating in the direction of rotation of the motor when seen from the non-drive end.
	Two opposite red indicator lights are flashing simultaneously.	Alarm The motor has stopped.
	Two opposite yellow lights are permanently on.	The pump was stopped by: <ul style="list-style-type: none"> external input calendar function twin communication failure (only SCALA1).
	Two yellow and two green lights are permanently on.	The pump is performing a self-test.

15.2 The pump does not start

Grundfos Eye:
No lights are on.



Cause	Remedy
The fuses in the electrical installation have blown.	<ul style="list-style-type: none"> Replace the fuses if they are blown. Check the electrical installation.
The earth leakage circuit breaker or the voltage-operated circuit breaker has tripped.	<ul style="list-style-type: none"> Reset the circuit breaker.
No power supply.	<ol style="list-style-type: none"> Switch on the power supply. Check for blown fuses in the electrical installation. Check the cables and cable connections for defects and loose connections. Contact the power supply authorities.

15.3 The pump does not start

Grundfos Eye:
Two opposite green indicator lights are permanently on.



Cause	Remedy
The difference between the SCALA1 unit and the tapping point is too large.	<ul style="list-style-type: none"> Adjust the installation or select a SCALA1 unit with a higher head.

15.4 The pump is not running, and the indicator light for dry running and water shortage is on

Grundfos Eye:
Two opposite red indicator lights are flashing simultaneously.



The indicator light for dry running and water shortage is on.



Cause	Remedy
Dry running or water shortage.	<ul style="list-style-type: none"> Check the water source, and prime the pump.
Impurities are blocking the inlet pipe.	<ul style="list-style-type: none"> Clean the inlet pipe.
The foot or non-return valve is blocked in a closed position.	<ul style="list-style-type: none"> Clean, repair or replace the foot or non-return valve.
Leakage in the inlet pipe.	<ul style="list-style-type: none"> Repair the inlet pipe.
Air in the inlet pipe or the pump.	<ul style="list-style-type: none"> Prime the inlet pipe and the pump. Check the inlet conditions of the pump.

15.5 The pump starts and stops too frequently

Grundfos Eye:
Two opposite green indicator lights are rotating.



Cause	Remedy
Leakage in the inlet pipe or air in the water.	<ul style="list-style-type: none"> Restore the water supply or repair the inlet pipe.
A tap has not been closed entirely after use.	<ul style="list-style-type: none"> Check that all taps have been closed.
Minor leakage in the system.	<ul style="list-style-type: none"> Check the system for leakages.

15.6 The pump does not stop

Grundfos Eye:

Two opposite green indicator lights are rotating.



Cause	Remedy
The pump cannot deliver the necessary discharge pressure.	<ul style="list-style-type: none"> Replace the pump.
The existing pipes are leaking or defective.	<ul style="list-style-type: none"> Repair the pipes.
The non-return valve is blocked or missing.	<ul style="list-style-type: none"> Clean the valve or fit a non-return valve.

15.7 Insufficient pump performance

Grundfos Eye:

Two opposite green indicator lights are rotating.



Cause	Remedy
The pump inlet pressure is too low.	<ul style="list-style-type: none"> Check the pump inlet conditions.
The pump is undersized.	<ul style="list-style-type: none"> Replace the pump with a larger pump.
Inlet pipe, inlet strainer or pump are partially blocked by impurities.	<ul style="list-style-type: none"> Clean the inlet pipe or the pump.
Leakage in the inlet pipe.	<ul style="list-style-type: none"> Repair the inlet pipe.
Air in the inlet pipe or the pump.	<ul style="list-style-type: none"> Prime the inlet pipe and the pump. Check the pump inlet conditions.

15.8 The pump is not running

The pump has been stopped by external input or calendar function.

Grundfos Eye:

Two opposite yellow lights are permanently on.



Cause	Remedy
The water level has exceeded its maximum level and triggered an overflow alarm.	<ul style="list-style-type: none"> Check the water level in the tank, and reset the pump manually by switching the button on the back of the pump from 1-Alarm D on to 0-Alarm D off. Determine the root cause of the alarm. Switch the button on the back of the pump to 1-Alarm D on to return to normal operation when the issue has been resolved.

15.9 The pump is not running, and the indicator light for exceeded maximum runtime is on

Grundfos Eye:

Two opposite red indicator lights are flashing simultaneously.



The indicator light for exceeded maximum runtime is on.



Cause	Remedy
The pump has been running for a long time and the maximum runtime has been exceeded.	<ul style="list-style-type: none"> Check the installation for leakage and reset the alarm.

15.10 The pump is not running, and the indicator light for leakage in the system is on

Grundfos Eye:

Two opposite red indicator lights are flashing simultaneously.



The leakage indicator light is on.



Cause	Remedy
The internal non-return valve is defective or blocked in completely or partially open position.	<ul style="list-style-type: none"> Clean, repair or replace the non-return valve.
A small leakage is detected by the micro-leakage detection. Alarm is on.	<ul style="list-style-type: none"> Make sure that all taps are closed, and check the system for leakages.

15.11 The pump is not running and Grundfos Eye is flashing red

Grundfos Eye:

Two opposite red indicator lights are flashing simultaneously.



Cause	Remedy
The shaft seal is seized up.	<ul style="list-style-type: none"> Dismantle the pump. Remove the impurities.
The pump is blocked by impurities.	<ul style="list-style-type: none"> Inspect the pump for signs of blockage, and remove any impurities.
Overheating due to seized-up or choked-up pump.	<ul style="list-style-type: none"> Contact your pump supplier.
Too low or too high supply voltage.	<ul style="list-style-type: none"> Check the supply voltage and correct the fault, if possible.

15.12 The pump is running and the motor shows a red indicator light

Grundfos Eye:

Two opposite green indicator lights are rotating.



The leakage indicator light is on.



Cause	Remedy
The non-return valve is not properly closed or the pipe system is leaking. This happens when cycling alarm and/or leakage alarm are disabled.	<ul style="list-style-type: none"> Check and repair the pipe system, or clean, repair or replace the non-return valve.
Small continuous consumption.	<ul style="list-style-type: none"> Make sure that all taps are closed. Check the system for leakages.

15.13 The pump cuts out during operation

Grundfos Eye:

Two opposite red indicator lights are flashing simultaneously.



Cause	Remedy
Overheating caused by one of the following: <ul style="list-style-type: none"> overloaded motor seized-up motor or pump. 	<ul style="list-style-type: none"> Contact your pump supplier.
The voltage is too low.	<ul style="list-style-type: none"> Check the supply voltage and correct the fault, if possible.

15.14 Electric shock



All electrical connections must be carried out by qualified persons in accordance with local regulations.

Cause	Remedy
Defective earth connection.	<ul style="list-style-type: none"> Connect the earth connection to the pump according to local regulations.

15.15 Twin booster system fault finding

In twin configurations, the same fault finding applies. SCALA1 alarms act in the following way:

- Dry-running alarm: The pump alarm: stops one pump first and then the other in case of dry running.
- Max. runtime: System alarm: stops the entire system.
- Cycling protection: System alarm: stops the entire system.

15.15.1 Pumps deliver different performances

Grundfos Eye:

Two opposite green indicator lights are rotating.



Cause	Remedy
Two different models of SCALA1 are connected.	<ul style="list-style-type: none"> Connect the same size of models.

15.15.2 Only one pump is operating in the twin-pump system

Grundfos Eye:

Two opposite yellow lights are permanently on.



TM075021

Cause	Remedy
Communication failure.	<ul style="list-style-type: none"> Check the system and each pump using the fault finding above. Check or replace the communication cable for twin setup.

15.16 Resetting fault indications

A fault indication can be reset in one of the two following ways:

- Eliminate the fault cause and reset the pump manually by pressing the **Reset** button.
- Enable the **Auto reset** function.

Example:



If the fault disappears by itself, the pump will attempt to reset automatically, and the fault indication will disappear. The fault indication will still be visible in the Grundfos GO alarm log.

16. Technical data

16.1 Operating conditions

SCALA1						
	3-25	3-35	3-45	5-25	5-35	5-55
Max. ambient temperature	55 °C (131 °F)	55 °C (131 °F)	55 °C (131 °F)	55 °C (131 °F)	55 °C (131 °F)	55 °C (131 °F)
Max. liquid temperature	45 °C (113 °F)	45 °C (113 °F)	45 °C (113 °F)	45 °C (113 °F)	45 °C (113 °F)	45 °C (113 °F)
Maximum system pressure [bar (psi)]	8 (116)	8 (116)	8 (116)	8 (116)	8 (116)	8 (116)
Maximum inlet pressure [bar (psi)]	5 (72.5)	4 (58)	3 (43.5)	5 (72.5)	4 (58)	2 (29)
Max. head [m (ft)] 50 Hz	25 (82)	36 (118.1)	44 (144.3)	26 (85.3)	40 (131.2)	52 (170.6)
Max. head [m (ft)] 60 Hz	25 (82)	35 (114.8)	46 (150)	27 (85.3)	-	55 (180)
Nominal head [m (ft)]	15 (49.2)	20 (65.6)	25 (82)	15 (49.2)	20 (65.6)	25 (82)
Nominal flow [m ³ /h (gpm)]	3.00 (12.19)	3.72 (16.38)	3.59 (15.80)	4.80 (21.12)	4.92 (21.66)	5.33 (23.48)
IP rating	X4D	X4D	X4D	X4D	X4D	X4D
Pumped liquids	Clean water	Clean water	Clean water	Clean water	Clean water	Clean water
Noise level [db(A)]	< 55	< 55	< 55	< 55	< 55	< 55
Frequency of starts and stops	25 per hour	25 per hour	25 per hour	25 per hour	25 per hour	25 per hour
Start pressure (pstart) [bar (psi)]	1.2 (17.4)	1.5 (21.8)	2.2 (31.9)	1.2 (17.4)	1.5 (21.7)	2.8 (40.6)

16.2 Mechanical data

Pipe connections are R1" or NPT1".

16.3 Electrical data

All variants have insulation class F.

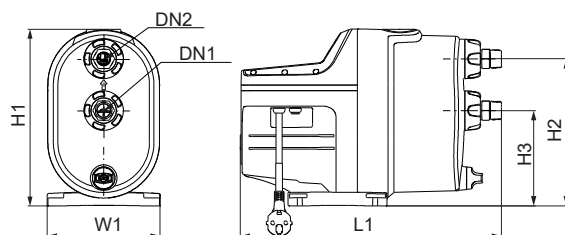
50 Hz

Pump type	Voltage [V]	P1 [W (hp)]	P2 [W (hp)]	n [rpm]	I _n [A]	I _{start} [A]	Standby power [W]
SCALA1 3-25	1 × 230	550 (0.74)	360 (0.50)	2850	2.58	13.0	1.5
SCALA1 3-35	1 × 230	720 (0.97)	450 (0.60)	2800	3.27	13.0	1.5
SCALA1 3-45	1 × 230	910 (1.23)	580 (0.80)	2800	4.10	17.0	1.5
SCALA1 5-25	1 × 230	650 (0.88)	425 (0.60)	2850	3.00	13.0	1.5
SCALA1 5-35	1 × 230	890 (1.19)	450 (0.60)	2800	3.60	20.0	1.5
SCALA1 5-55	1 × 230	1200 (1.62)	780 (1.00)	2850	5.38	26.0	1.5

60 Hz

Pump type	Voltage [V]	P1 [W (hp)]	P2 [W (hp)]	n [rpm]	I _n [A]	I _{start} [A]	Standby power [W]
SCALA1 3-25	1 × 230	540 (0.72)	350 (0.50)	3450	2.37	13.0	1.5
	1 × 115	560 (0.75)	350 (0.50)	3450	5.10	29.5	1.5
SCALA1 3-35	1 × 230	650 (0.88)	470 (0.60)	3400	2.76	13.0	1.5
	1 × 115	650 (0.88)	470 (0.60)	3400	5.71	29.5	1.5
SCALA1 3-45	1 × 230	870 (1.17)	570 (0.80)	3350	3.72	15.5	1.5
	1 × 115	950 (1.28)	590 (0.80)	3400	8.62	40.0	1.5
SCALA1 5-25	1 × 230	600 (0.80)	420 (0.60)	3450	2.60	13.0	1.5
	1 × 115	610 (0.82)	450 (0.60)	3450	5.70	29.5	1.5
SCALA1 5-55	1 × 230	1250 (1.68)	810 (1.10)	3450	5.25	22.5	1.5
	1 × 115	1250 (1.68)	860 (1.10)	3450	11.57	64.0	1.5

16.4 Dimensions and weights



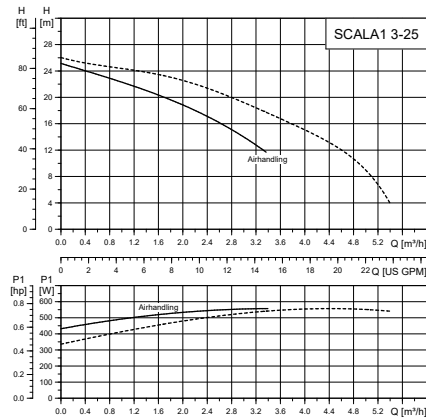
TM075267

Pos.	H1 [mm] [inch]	H2 [mm] [inch]	H3 [mm] [inch]	L1 [mm] [inch]	W1 [mm] [inch]
SCALA1 (all variants)	316 12.4	263 10.4	171 6.7	466 18.4	202 8.0

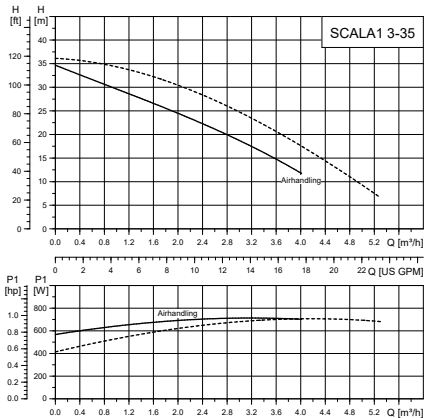
Weight

SCALA1 3-25	SCALA1 3-35	SCALA1 3-45	SCALA1 5-25	SCALA1 5-35	SCALA1 5-55
[kg]	[kg]	[kg]	[kg]	[kg]	[kg]
[lb]	[lb]	[lb]	[lb]	[lb]	[lb]
11	12	12	12	12	14
24.2	26.4	26.4	26.4	26.4	30.8

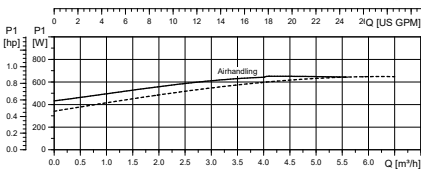
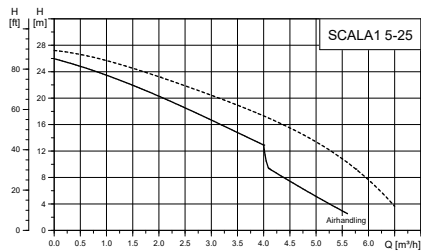
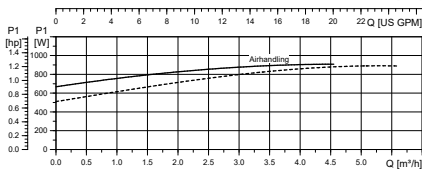
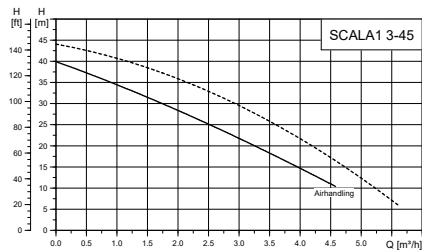
16.5 Air handling mode performance curves



TM075233

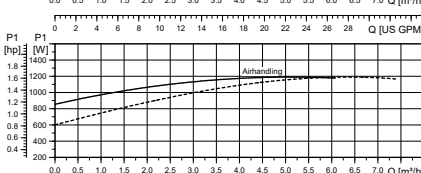
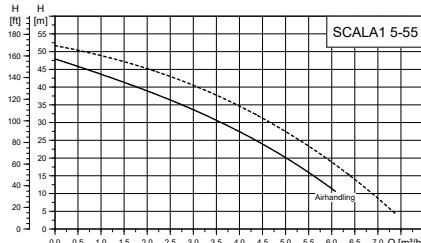
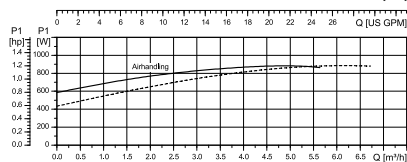
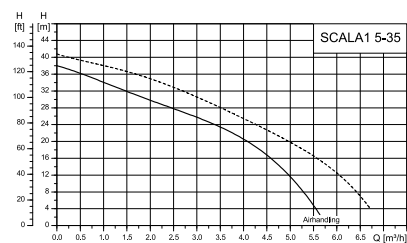


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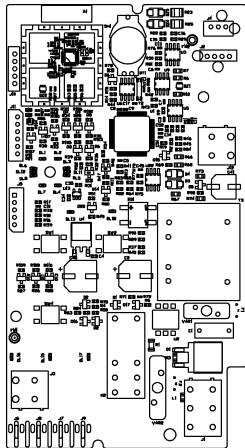
17. Approvals

17.1 Bluetooth technology information

Frequency of operation	2400 – 2483.5 MHz (ISM band)
Modulation Type	GFSK
Data Rate	1 Mbps
Transmit power	5 dBm EIRP with internal antenna

For Brazil only: This pump has a BLE ANT board equipped with Bluetooth technology with these specifications.

17.2 FCC/ISED general requirements



TM075015

FCC ID:OG3-SCALA1, IC:10447A-SCALA1

This device complies with FCC and ISED radiation exposure limits set forth for an uncontrolled environment. This device must be installed and operated with a minimum distance of 20 cm (7.87 inches) between the radiator and your body. This transmitter must not be co-located or operated in conjunction with any other antenna or transmitter.

FCC

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions:



1. This device may not cause harmful interference, and
2. This device must accept any interference received, including interference that may cause undesired operation.



Changes or modifications made to this equipment not expressly approved by Grundfos may void the user's authority to operate this equipment.

ISED

This device complies with ISED's license-exempt RSSs. Operation is subject to the following two conditions:



1. This device may not cause harmful interference, and
2. This device must accept any interference received, including interference that may cause undesired operation.



Changes or modifications made to this equipment not expressly approved by Grundfos may void the user's authority to operate this equipment.

The radio transmitters FCC ID: OG3-SCALA1 and IC:10447A-SCALA1 have been approved by FCC and ISED to operate with the antenna integrated into the device. Other antenna types are strictly prohibited for use with this device.

18. 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.
3. Dispose of the waste battery through the national collective schemes. If in doubt, contact your local Grundfos company.



The crossed-out wheellie bin symbol on a product means that it must be disposed of separately from household waste. When a product marked with this symbol reaches its end of life, take it to a collection point designated by the local waste disposal authorities.

The separate collection and recycling of such products will help protect the environment and human health.

See also end-of-life information at www.grundfos.com/product-recycling.

18.1 Disposing of hazardous or toxic materials

WARNING

Chemical hazard

Death or serious personal injury

- Observe the material safety data sheet of the dosing medium.
- Wear protective clothing when working on the dosing head, connections or lines.
- Rinse the parts that have been in contact with the dosing medium.
- Collect and dispose of all chemicals in a way that is not harmful to persons or the environment.



The materials used in DMX pumps do not pose any health risk to the person handling them. To identify the specific materials, check the type key on the product nameplate and read the explanation in the section Type key.

Observe also the product recycling page on <http://www.grundfos.com/products/product-sustainability/dmx.html>

19. Document quality feedback

To provide feedback about this document, scan the QR code using your phone's camera or a QR code app.



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99735528 04.2024

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