SCALA

Installation and operating instructions
Original installation and operating instructions.

These installation and operating instructions describe Grundfos SCALA domestic water supply pumps.

Sections 1-4 give the information necessary to be able to unpack, install and start up the product in a safe way.

Sections 5-14 give important information about the product, as well as information on service, fault finding and disposal of the product.

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

Warning
This product can be used by children of eight years and up and persons with reduced physical, sensory or mental capabilities or lack of experience and knowledge if they are under supervision or have been instructed in the safe use of the product and understand the hazards involved.

Children must not play with the product.

Cleaning and maintenance of the product must not be made by children without supervision.

This pump has been evaluated for use with water only.

Warning
Risk of electric shock.

This pump has a grounding conductor and grounding-type attachment plug. To reduce the risk of electric shock, be certain that the pump is connected only to a properly grounded, grounding-type receptacle.

Note
Notes or instructions that make the job easier and ensure safe operation.

1. General information

1.1 Target group
These installation and operating instructions are intended for professional installers.

1.2 Symbols used in this document

Warning
If these safety instructions are not observed, it may result in personal injury.

Warning
If these instructions are not observed, it may lead to electric shock with consequent risk of serious personal injury or death.

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

2. Receiving the product

2.1 Inspecting the product
Check that the product received is in accordance with the order. Check that the voltage and frequency of the product match voltage and frequency of the installation site. See section 6.4.1 Nameplate.

2.2 Scope of delivery
The box contains the following items:
• 1 Grundfos SCALA pump
• 1 quick guide
• 1 safety instructions booklet.
3. Installing the product

3.1 Location
The pump can be installed indoors or outdoors, but it must not be exposed to frost.
We recommend that you install the pump near a drain or in a drip tray connected to a drain in order to lead away possible condensation from cold surfaces.

3.1.1 Minimum space
The pump can be installed in small spaces such as a cupboard. It requires a minimum space of 430 x 215 x 325 mm (17 x 8.5 x 12.8 inches).
Even though the pump does not require much space, we recommend that you leave enough space for service and maintenance access.

3.1.2 Installing the product in frosty environment
If the pump is to be installed outdoors where frost may occur, enclose it completely in insulating material to keep it from freezing.

3.2 System sizing

Warning
The system in which the pump is incorporated must be designed for the maximum pump pressure.
The pump is factory-set to three bar outlet pressure which can be adjusted according to the system in which it is incorporated.
The tank precharge pressure is 1.25 bar (18 psi).

3.3 Mechanical installation

Warning
Before starting any work on the product, make sure that the power supply has been switched off and that it cannot be accidentally switched on.

3.4 Foundation
Fasten the pump to a solid horizontal foundation by means of screws through the holes in the base plate. See fig. 1.

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>130 mm</td>
</tr>
<tr>
<td>B</td>
<td>181 mm</td>
</tr>
<tr>
<td>C</td>
<td>144 mm</td>
</tr>
</tbody>
</table>

Fig. 1 Base plate

3.4.1 Pipework
Make sure that the pump is not stressed by the pipework. The pumps are equipped with flexible connections, ± 5 °, to facilitate the connection of inlet and outlet pipes. The inlet and outlet ports can be loosened by turning the union nuts by hand.

Caution Always loosen and tighten inlet and outlet union nuts by hand.

1. Carefully screw the inlet and outlet connections on to the inlet and outlet ports using a pipe wrench or similar tool.
2. Then fit the connections to the inlet and outlet holding the connections with one hand, and tightening the union nuts with the other hand. See fig. 2.

Fig. 2 How to fit the connections

3.4.2 How to reduce noise in the installation
Vibrations from the pump may be transferred to the surrounding structure and create noise in the 20-1000 Hz spectrum, also called the bass spectrum.
Correct installation using a vibration-damping rubber pad, flexible hoses and correctly placed pipe hangers for rigid pipes can reduce the noise experienced by up to 50 %. See fig. 3.
Place pipe hangers for the rigid pipes close to the connection of the flexible hose.

Fig. 3 How to reduce noise in the installation
3.5 Installation examples

Fittings, hoses and valves are not supplied with the pump.

3.5.1 Mains water pressure boosting

![Diagram of Mains water pressure boosting](image1.png)

**Fig. 4** Mains water pressure boosting

<table>
<thead>
<tr>
<th>Pos.</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Highest tapping point</td>
</tr>
<tr>
<td>2</td>
<td>Pipe hangers and supports</td>
</tr>
<tr>
<td>3</td>
<td>Isolating valves</td>
</tr>
<tr>
<td>4</td>
<td>Flexible hoses</td>
</tr>
<tr>
<td>5</td>
<td>Bypass valve</td>
</tr>
<tr>
<td>6</td>
<td>Optional pressure-reducing valve on the inlet side if the inlet pressure can exceed 10 bar (145 psi)</td>
</tr>
<tr>
<td>7</td>
<td>Optional pressure-relief valve on the outlet side if the installation cannot stand up to a pressure of 6 bar (85 psi)</td>
</tr>
<tr>
<td>8</td>
<td>Drip tray. Install the pump on a small stand to avoid the ventilation holes from being flooded.</td>
</tr>
<tr>
<td>9</td>
<td>Pressure gauge</td>
</tr>
<tr>
<td>10</td>
<td>Mains water pipe</td>
</tr>
</tbody>
</table>

3.5.2 Suction from a well

![Diagram of Suction from a well](image2.png)

**Fig. 5** Suction from a well

<table>
<thead>
<tr>
<th>Pos.</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Highest tapping point</td>
</tr>
<tr>
<td>2</td>
<td>Isolating valve</td>
</tr>
<tr>
<td>3</td>
<td>Inlet filter. If the water can contain sand, gravel or other debris, please install a filter on the inlet side to protect the pump and installation.</td>
</tr>
<tr>
<td>4</td>
<td>Foot valve with strainer</td>
</tr>
<tr>
<td>H1</td>
<td>Maximum suction lift is 8 m (29 ft)</td>
</tr>
</tbody>
</table>

3.5.3 Suction from freshwater tank

![Diagram of Suction from freshwater tank](image3.png)

**Fig. 6** Suction from freshwater tank

<table>
<thead>
<tr>
<th>Pos.</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Highest tapping point</td>
</tr>
<tr>
<td>2</td>
<td>Pipe hangers</td>
</tr>
<tr>
<td>3</td>
<td>Isolating valve</td>
</tr>
<tr>
<td>4</td>
<td>Flexible hoses</td>
</tr>
<tr>
<td>5</td>
<td>Drain to sewer</td>
</tr>
<tr>
<td>6</td>
<td>Foot valve with strainer</td>
</tr>
<tr>
<td>7</td>
<td>Freshwater tank</td>
</tr>
</tbody>
</table>

**H2** Inlet pipe must be submersed at least 0.5 m (1.64 ft)
3.6 Suction pipe length

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

![Fig. 7 Suction pipe length](image)

<table>
<thead>
<tr>
<th>DN 32</th>
<th>DN 40</th>
</tr>
</thead>
<tbody>
<tr>
<td>H [m (ft)]</td>
<td>L [m (ft)]</td>
</tr>
<tr>
<td>0 (0)</td>
<td>68 (223)</td>
</tr>
<tr>
<td>3 (10)</td>
<td>43 (141)</td>
</tr>
<tr>
<td>6 (20)</td>
<td>17 (56)</td>
</tr>
<tr>
<td>7 (23)</td>
<td>9 (30)</td>
</tr>
<tr>
<td>8 (26)</td>
<td>0 (0)</td>
</tr>
</tbody>
</table>

Preconditions:
Maximum flow velocity: 1 l/s (16 gpm)
Inside roughness of pipes: 0.01 mm (0.0004 inch).

3.7 Electrical connection

3.7.1 Plug connection

WARNING
Check that the voltage and frequency of the product match voltage and frequency of the installation site.

WARNING
If the power supply cable is damaged, it must be replaced by the manufacturer, his service agent or similarly qualified persons in order to avoid hazard.

WARNING
As a precaution, the product must be connected to a socket with earth connection.

We recommend that you fit the permanent installation with an earth leakage circuit breaker (ELCB) with a tripping current < 30 mA.

The pump incorporates current and temperature dependent motor protection.

3.7.2 Connections without plug

WARNING
The electrical connection must be carried out by an authorised electrician in accordance with local regulations.

WARNING
Before making any connections in the product, make sure that the power supply has been switched off and that it cannot be accidentally switched on.

The product must be connected to an external mains switch with a contact gap of at least 3 mm [0.12 inch] in all poles.

4. Starting up the product

4.1 Priming the pump

1. Unscrew the priming plug and pour minimum 1.7 litres (0.45 gallons) of water into the pump housing. See fig. 8.
2. Screw the priming plug on again.

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.

4.2 Starting the pump

1. Open a tap to prepare the pump for venting.
2. Insert the power plug into the socket or turn on the power supply and the pump will start.
3. When water flows without air, close the tap.
4. Open the highest tapping point in the installation, preferably a shower.
5. Adjust the pressure to the required pressure by means of the buttons.
6. Close the tapping point.

Startup has been completed.
4.3 Shaft seal run-in
The shaft-seal faces are lubricated by the pumped liquid, meaning that there may be a certain amount of leakage from the shaft seal.
When the pump is started up 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.
Under normal conditions, the leaking liquid will evaporate. As a result, no leakage will be detected.

5. Storing and handling the product
5.1 Handling
Caution Take care not to drop the pump as it may break.

5.2 Storing
In case the pump is to be stored for a period of time, drain it and store it in a dry location.
Temperature range during storing must be -40 to 70 °C (104 to 158 °F).

5.3 Winterizing
If the pump is going to be out of operation during the winter and can be exposed to frost, it must be disconnected from the power supply and winterized.
Proceed as follows:
1. Stop the pump by means of the on/off button .
2. Disconnect the power supply.
3. Open a tap to release the pressure in the pipe system.
4. Close the isolating valves and/or drain the pipes.
5. Gradually loosen the priming plug to release the pressure in the pump.
6. Remove the drain plug to drain the pump. See fig. 9.

Fig. 9 Draining the pump

5.3.1 Startup after the winter
Check that the pump is not blocked by following the steps in section 9.1 Deblocking the pump.
See section 4. Starting up the product.

6. Product introduction
6.1 Product description

Fig. 10 Grundfos SCALA pump

<table>
<thead>
<tr>
<th>Pos.</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Air valve for built-in pressure tank</td>
</tr>
<tr>
<td>2</td>
<td>Operating panel. See section 7. Control functions.</td>
</tr>
<tr>
<td>3</td>
<td>Nameplate. See section 6.4.1 Nameplate.</td>
</tr>
<tr>
<td>4</td>
<td>Plug for access to pump shaft. See section 9.1 Deblocking the pump.</td>
</tr>
<tr>
<td>5</td>
<td>Priming plug. See section 4.1 Priming the pump.</td>
</tr>
<tr>
<td>6</td>
<td>Outlet opening. With ± 5 ° flexible connection. See section 3.4.1 Pipework.</td>
</tr>
<tr>
<td>7</td>
<td>Inlet opening. With ± 5 ° flexible connection. See section 3.4.1 Pipework.</td>
</tr>
<tr>
<td>8</td>
<td>Drain plug. See section 5.3 Winterizing</td>
</tr>
<tr>
<td>9</td>
<td>Ventilation holes. Must not be flooded.</td>
</tr>
</tbody>
</table>

6.2 Application
The pump is suitable for pressure boosting of fresh water in domestic water supply systems.

6.3 Pumped liquids
The pump is designed for clean fresh water and chlorinated water < 300 ppm.
6.4 Identification

6.4.1 Nameplate

Fig. 11 Example of nameplate

<table>
<thead>
<tr>
<th>Pos.</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Type designation</td>
</tr>
<tr>
<td>2</td>
<td>Product number</td>
</tr>
<tr>
<td>3</td>
<td>Serial number</td>
</tr>
<tr>
<td>4</td>
<td>Production code (year and week)</td>
</tr>
<tr>
<td>5</td>
<td>Maximum head</td>
</tr>
<tr>
<td>6</td>
<td>Minimum head</td>
</tr>
<tr>
<td>7</td>
<td>Rated head</td>
</tr>
<tr>
<td>8</td>
<td>Rated flow rate</td>
</tr>
<tr>
<td>9</td>
<td>Maximum ambient temperature</td>
</tr>
<tr>
<td>10</td>
<td>IP class</td>
</tr>
<tr>
<td>11</td>
<td>Maximum operation pressure</td>
</tr>
<tr>
<td>12</td>
<td>Maximum liquid temperature</td>
</tr>
<tr>
<td>13</td>
<td>Minimum and maximum rated power</td>
</tr>
<tr>
<td>14</td>
<td>Model</td>
</tr>
<tr>
<td>15</td>
<td>Voltage and frequency</td>
</tr>
<tr>
<td>16</td>
<td>Approvals</td>
</tr>
<tr>
<td>17</td>
<td>Minimum and maximum rated current</td>
</tr>
</tbody>
</table>

6.4.2 Type key

<table>
<thead>
<tr>
<th>Type range:</th>
<th>SCALA1 Economy</th>
<th>SCALA2 Comfort</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rated flow rate [m³/h]</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Maximum head [m]</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Material code:

A: Standard

Supply voltage:

K: 1 x 200-240 V, 50/60 Hz
M: 1 x 208-230 V, 60 Hz
V: 1 x 115 V, 60 Hz
W: 1 x 100-115 V, 50/60 Hz

Motor:

C: High-efficiency motor with frequency converter

Mains cable and plug:

A: Cable with plug, IEC type I, AS/NZS3112, 2 m
B: Cable with plug, IEC type B, NEMA 5-15P, 6 ft
C: Cable with plug, IEC, type E&F, CEE7/7, 2 m
D: Cable without plug, 2 m
G: Cable with plug, IEC type G, BS1363, 2 m
H: Cable with plug, IEC type I, IRAM 2073, 2 m
J: Cable with plug, NEMA 6-15P, 6 ft

Controller:

D: Integrated frequency converter

Thread:

A: R 1° EN 1.4308
C: NPT 1° EN 1.4308
E: R 1° composite material
F: NPT 1° composite material

Material code:

A: Standard

Supply voltage:

K: 1 x 200-240 V, 50/60 Hz
M: 1 x 208-230 V, 60 Hz
V: 1 x 115 V, 60 Hz
W: 1 x 100-115 V, 50/60 Hz

Motor:

C: High-efficiency motor with frequency converter

Mains cable and plug:

A: Cable with plug, IEC type I, AS/NZS3112, 2 m
B: Cable with plug, IEC type B, NEMA 5-15P, 6 ft
C: Cable with plug, IEC, type E&F, CEE7/7, 2 m
D: Cable without plug, 2 m
G: Cable with plug, IEC type G, BS1363, 2 m
H: Cable with plug, IEC type I, IRAM 2073, 2 m
J: Cable with plug, NEMA 6-15P, 6 ft

Controller:

D: Integrated frequency converter

Thread:

A: R 1° EN 1.4308
C: NPT 1° EN 1.4308
E: R 1° composite material
F: NPT 1° composite material
7. Control functions

7.1 Menu overview, SCALA2

7.1.1 Pressure indicator, SCALA2

The pressure indicator shows the required outlet pressure from 1.5 to 5.5 bars (22 to 80 psi) in 0.5 bar (7.5 psi) intervals. The illustration below shows a pump set to 3 bar (44 psi) indicated by two green lights and a pump set to 3.5 bar (51 psi) indicated by one green light.

<table>
<thead>
<tr>
<th>BAR</th>
<th>PSI</th>
<th>Water column [m]</th>
<th>kPa</th>
<th>MPa</th>
</tr>
</thead>
<tbody>
<tr>
<td>5.5</td>
<td>80</td>
<td>55</td>
<td>550</td>
<td>0.55</td>
</tr>
<tr>
<td>5.0</td>
<td>73</td>
<td>50</td>
<td>500</td>
<td>0.50</td>
</tr>
<tr>
<td>4.5</td>
<td>65</td>
<td>45</td>
<td>450</td>
<td>0.45</td>
</tr>
<tr>
<td>4.0</td>
<td>58</td>
<td>40</td>
<td>400</td>
<td>0.40</td>
</tr>
<tr>
<td>3.5</td>
<td>51</td>
<td>35</td>
<td>350</td>
<td>0.35</td>
</tr>
<tr>
<td>3.0</td>
<td>44</td>
<td>30</td>
<td>300</td>
<td>0.30</td>
</tr>
<tr>
<td>2.5</td>
<td>36</td>
<td>25</td>
<td>250</td>
<td>0.25</td>
</tr>
<tr>
<td>2.0</td>
<td>30</td>
<td>20</td>
<td>200</td>
<td>0.20</td>
</tr>
<tr>
<td>1.5</td>
<td>22</td>
<td>15</td>
<td>150</td>
<td>0.15</td>
</tr>
</tbody>
</table>

**Note**

The pressure settings 4.5, 5.0 and 5.5 bar (65, 73 and 80 psi) require a minimum positive inlet pressure which is maximum 4 bar (58 psi) lower than the required outlet pressure.

*Example: If the required outlet pressure is 5 bar, the minimum inlet pressure must be 1 bar (14.5 psi).*

7.1.2 Indicator lights, SCALA2

<table>
<thead>
<tr>
<th>Indications</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Operating indications</td>
<td>The operating panel is locked</td>
</tr>
<tr>
<td>Power supply failure</td>
<td>The pump is blocked, e.g. the shaft seal has seized up</td>
</tr>
<tr>
<td>Leakage in the system</td>
<td>Dry-running or water shortage*</td>
</tr>
<tr>
<td>The maximum pressure has been exceeded</td>
<td>The maximum runtime has been exceeded</td>
</tr>
<tr>
<td>The temperature is outside the range</td>
<td>* For fault number 4, dry-running, the pump will try to reset automatically in a sequence of three attempts within the first minute. After this, eight attempts within an hour and repeatedly once every 24 hours. For the remaining faults, 1, 2, 3, 5, 6 and 7, the pump will reset whenever the cause has disappeared or been remedied. For further information about system status, see section 12.1 Grundfos Eye operating indications.</td>
</tr>
</tbody>
</table>
8. Operating the controller

8.1 Setting the outlet pressure
Adjust the outlet pressure by pressing .

8.2 Locking and unlocking the operating panel
The operating panel can be locked, which means that the buttons do not function and no settings can be changed accidentally.

How to lock the operating panel
1. Hold down the  buttons simultaneously for three seconds.
2. The operating panel is locked when  symbol lights up.

How to unlock the operating panel
1. Hold down the  buttons simultaneously for three seconds.
2. The operating panel is unlocked when  symbol turns off.

8.3 Expert settings, SCALA2

- Note: Expert settings are for installers only.

The expert setting menu allows the installer to toggle between the functions auto reset, anti cycling and maximum continuous operating time.

Auto reset
This function allows the pump to automatically reset the alarms when operating conditions are back to normal.

Anti cycling
This function monitors the stops and starts of the pump and will give an alarm if the pump starts too frequently. If the pump starts and stops too frequently, there is a leakage in the system and the pump will show alarm 3.

- Leakage in the system.

Maximum continuous operating time
This function is a timer that will turn off the pump if it runs continuously for 30 minutes. If the pump exceeds the running time of 30 minutes, it will show alarm 6.

- Maximum runtime exceeded.

8.3.1 Accessing the expert settings
Proceed as follows:
1. Hold down the  button for five seconds.
2. The  symbol will start flashing to indicate that the expert settings are active.

The pressure indicator now acts as the expert "menu". A flashing green diode is the cursor. Move the cursor using the  buttons, and toggle the selection on or off using the  button. The diode for each setting will light up when the setting is active.

- Move cursor up
- Move cursor down
- Toggle settings

8.4 Resetting to factory settings
The pump can be reset to factory setting by pressing the  buttons simultaneously for five seconds.

9. Starting up the product after shutdown or standstill

9.1 Deblocking the pump
The end cover incorporates a plug which can be removed by means of a suitable tool. This makes it possible to deblock the pump shaft if it has seized up as a result of inactivity.

Warning
Before starting any work on the product, make sure that the power supply has been switched off and that it cannot be accidentally switched on.

The end cover incorporates a plug which can be removed by means of a suitable tool. This makes it possible to deblock the pump shaft if it has seized up as a result of inactivity.

9.2 Controller settings
The pump will remember the controller settings even if it is turned off.

9.3 Priming
If the pump has been drained, it must be filled with liquid before startup. See section 4. Starting up the product.
10. Servicing the product

**Warning**
Before starting any work on the product, make sure that the power supply has been switched off and that it cannot be accidentally switched on.

10.1 Maintaining the product

10.1.1 Insect filter
The pump has an insect filter to prevent insects from nesting in the pump.
The filter is placed on the bottom and can easily be removed and cleaned with a stiff brush. See fig. 17.
Clean the insect filter once a year or as needed.

![Fig. 17 Insect filter](image)

10.1.2 Inlet and outlet valves
The pump is maintenance-free, but we recommend that you check and clean the inlet and outlet non-return valves once a year or as needed.

![Fig. 18 SCALA pump](image)

To remove the inlet non-return valve, follow the steps below:
1. Turn off the power supply and disconnect the power plug.
2. Shut off the water source.
3. Open a 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. See fig. 18 (pos. 5). The plug and non-return valve are one unit.
6. Clean the non-return valve with warm water and a soft brush.
7. Assemble the components in reverse order.

To remove the outlet non-return valve, follow the steps below:
1. Turn off the power supply and disconnect the power plug.
2. Shut off the water source.
3. Open a 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. See fig. 18 (pos. 5).
6. Clean the non-return valve with warm water and a soft brush.
7. Assemble the components in reverse order.

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

10.3 Service kits
For further information on service kits, see Grundfos Product Center on www.grundfos.com.

11. Taking out of operation
For further information on how to take the product out of operation, see end-of-life documentation on www.grundfos.com.
12. Fault finding the product

12.1 Grundfos Eye operating indications

<table>
<thead>
<tr>
<th>Grundfos Eye</th>
<th>Indication</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="image" alt="No lights on icon" /></td>
<td>No lights on.</td>
<td>Power off. The pump is not running.</td>
</tr>
<tr>
<td><img src="image" alt="Two opposite green indicator lights running in the direction of rotation of the pump icon" /></td>
<td>Two opposite green indicator lights running in the direction of rotation of the pump.</td>
<td>Power on. The pump is running.</td>
</tr>
<tr>
<td><img src="image" alt="Two opposite green indicator lights at a 45 ° angle is the icon used throughout this document for pump running icon" /></td>
<td>Two opposite green indicator lights at a 45 ° angle is the icon used throughout this document for pump running.</td>
<td>Power on. The pump is running.</td>
</tr>
<tr>
<td><img src="image" alt="Two opposite green indicator lights permanently on icon" /></td>
<td>Two opposite green indicator lights permanently on.</td>
<td>Power on. The pump is not running.</td>
</tr>
<tr>
<td><img src="image" alt="Two opposite red indicator lights flashing simultaneously icon" /></td>
<td>Two opposite red indicator lights flashing simultaneously.</td>
<td>Alarm. The pump has stopped.</td>
</tr>
<tr>
<td><img src="image" alt="Two opposite red indicator lights is the icon used throughout this document for pump stopped icon" /></td>
<td>Two opposite red indicator lights is the icon used throughout this document for pump stopped.</td>
<td>Alarm. The pump has stopped.</td>
</tr>
</tbody>
</table>

12.2 Fault resetting

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

- When you have eliminated the fault cause, reset the pump manually by pressing the button. The pump will then revert to normal duty.
- If the fault disappears by itself, the pump will attempt to reset automatically and the fault indication will disappear if automatic reset is successful.
### 12.3 Fault finding chart

**Warning**

*Before starting fault finding, switch off the power supply.*

*Make sure that the power supply cannot be accidentally switched on.*

<table>
<thead>
<tr>
<th>Fault</th>
<th>Grundfos Eye</th>
<th>Indicator light</th>
<th>Automatic reset</th>
<th>Cause</th>
<th>Remedy</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. The pump is not running.</td>
<td>![Image]</td>
<td>![Image]</td>
<td>![Image]</td>
<td>a) Power supply failure</td>
<td>Switch on the power supply. Check the cables and cable connections for defects and loose connections and check for blown fuses in the electrical installation.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>b) The power supply is out of prescribed voltage range</td>
<td>Check the power supply and the pump nameplate. Reestablish the power supply within the prescribed voltage range.</td>
</tr>
<tr>
<td></td>
<td>![Image]</td>
<td>![Image]</td>
<td>![Image]</td>
<td>c) The shaft seal has seized up</td>
<td>See section 9. <em>Starting up the product after shutdown or standstill.</em></td>
</tr>
<tr>
<td></td>
<td>![Image]</td>
<td>![Image]</td>
<td>![Image]</td>
<td>d) The pump is blocked by impurities</td>
<td>See section 9. <em>Starting up the product after shutdown or standstill.</em> Contact Grundfos Service if the problem persists.</td>
</tr>
<tr>
<td></td>
<td>![Image]</td>
<td>![Image]</td>
<td>![Image]</td>
<td>e) Dry running</td>
<td>Check the water source, and prime the pump.</td>
</tr>
<tr>
<td></td>
<td>![Image]</td>
<td>![Image]</td>
<td>![Image]</td>
<td>f) The maximum runtime has been exceeded</td>
<td>Check the installation for leakage and reset the alarm.</td>
</tr>
<tr>
<td></td>
<td>![Image]</td>
<td>![Image]</td>
<td>![Image]</td>
<td>g) The internal non-return valve is defective or blocked in completely or partly open position</td>
<td>Clean, repair or replace the non-return valve. See section 10. <em>Servicing the product.</em></td>
</tr>
<tr>
<td>2. The pump is running.</td>
<td>![Image]</td>
<td>![Image]</td>
<td>![Image]</td>
<td>a) Leakage from the pipework, or the non-return valve not properly closed due to impurities</td>
<td>Check and repair the pipework, or clean, repair or replace the non-return valve.</td>
</tr>
<tr>
<td></td>
<td>![Image]</td>
<td>![Image]</td>
<td>![Image]</td>
<td>b) Small continuous consumption</td>
<td>Check the taps and reconsider the usage pattern (ice machines, water evaporators for air-conditioning, etc.).</td>
</tr>
<tr>
<td></td>
<td>![Image]</td>
<td>![Image]</td>
<td>![Image]</td>
<td>c) The temperature is below freezing point</td>
<td>Consider protecting the pump and the installation against frost.</td>
</tr>
<tr>
<td>3. Pump performance is insufficient.</td>
<td>![Image]</td>
<td>![Image]</td>
<td>![Image]</td>
<td>a) The pump inlet pressure is too low</td>
<td>Check the inlet conditions of the pump.</td>
</tr>
<tr>
<td></td>
<td>![Image]</td>
<td>![Image]</td>
<td>![Image]</td>
<td>b) The pump is undersized.</td>
<td>Replace the pump with a bigger pump.</td>
</tr>
<tr>
<td></td>
<td>![Image]</td>
<td>![Image]</td>
<td>![Image]</td>
<td>c) The inlet pipe, the inlet strainer or the pump is partly blocked by impurities</td>
<td>Clean the inlet pipe or the pump.</td>
</tr>
<tr>
<td></td>
<td>![Image]</td>
<td>![Image]</td>
<td>![Image]</td>
<td>e) Air in inlet pipe or the pump</td>
<td>Prime the inlet pipe and the pump. Check the inlet conditions of the pump.</td>
</tr>
<tr>
<td></td>
<td>![Image]</td>
<td>![Image]</td>
<td>![Image]</td>
<td>f) The required outlet pressure is too low for the installation</td>
<td>Increase the pressure setting (arrow up).</td>
</tr>
<tr>
<td></td>
<td>Yes</td>
<td>![Image]</td>
<td>![Image]</td>
<td>g) The maximum temperature has been exceeded - the pump is running at reduced performance</td>
<td>Check the cooling conditions. Protect the pump against direct sunlight or any nearby heat sources.</td>
</tr>
<tr>
<td>Fault</td>
<td>Indicator light</td>
<td>Automatic reset</td>
<td>Cause</td>
<td>Remedy</td>
<td></td>
</tr>
<tr>
<td>-------</td>
<td>----------------</td>
<td>-----------------</td>
<td>-------</td>
<td>--------</td>
<td></td>
</tr>
<tr>
<td>4. System overpressure.</td>
<td><img src="image1" alt="Indicator light" /></td>
<td><img src="image2" alt="Indicator light" /></td>
<td>a) The maximum pressure has been exceeded - the inlet pressure is higher than 6 bar, 0.6 MPa (85 psi)</td>
<td>Check the inlet conditions.</td>
<td></td>
</tr>
<tr>
<td></td>
<td><img src="image3" alt="Indicator light" /></td>
<td><img src="image4" alt="Indicator light" /></td>
<td>b) The maximum pressure has been exceeded - equipment elsewhere in the system causes a high pressure at the pump (e.g. water heater or defective safety equipment)</td>
<td>Check the installation.</td>
<td></td>
</tr>
<tr>
<td>5. The pump can be reset, but runs only for a few seconds.</td>
<td><img src="image5" alt="Indicator light" /></td>
<td><img src="image6" alt="Indicator light" /></td>
<td>a) Dry running or water shortage</td>
<td>Check the water source, and prime the pump.</td>
<td></td>
</tr>
<tr>
<td></td>
<td><img src="image7" alt="Indicator light" /></td>
<td><img src="image8" alt="Indicator light" /></td>
<td>b) The inlet pipe is blocked by impurities</td>
<td>Clean the inlet pipe.</td>
<td></td>
</tr>
<tr>
<td></td>
<td><img src="image9" alt="Indicator light" /></td>
<td><img src="image10" alt="Indicator light" /></td>
<td>c) The foot or non-return valve is blocked in closed position</td>
<td>Clean, repair or replace the foot or non-return valve.</td>
<td></td>
</tr>
<tr>
<td></td>
<td><img src="image11" alt="Indicator light" /></td>
<td><img src="image12" alt="Indicator light" /></td>
<td>d) Leakage in the inlet pipe</td>
<td>Repair the inlet pipe.</td>
<td></td>
</tr>
<tr>
<td></td>
<td><img src="image13" alt="Indicator light" /></td>
<td><img src="image14" alt="Indicator light" /></td>
<td>e) Air in the inlet pipe or the pump</td>
<td>Prime the inlet pipe and the pump. Check the inlet conditions of the pump.</td>
<td></td>
</tr>
<tr>
<td>6. The pump can be reset, but starts repeatedly, immediately after stopping.</td>
<td><img src="image15" alt="Indicator light" /></td>
<td><img src="image16" alt="Indicator light" /></td>
<td>a) The internal non-return valve is defective or blocked in completely or partly open position.</td>
<td>Clean, repair or replace the non-return valve.</td>
<td></td>
</tr>
<tr>
<td></td>
<td><img src="image17" alt="Indicator light" /></td>
<td><img src="image18" alt="Indicator light" /></td>
<td>b) The tank precharge pressure is not correct.</td>
<td>Adjust the tank precharge pressure to 70 % of the required outlet pressure.</td>
<td></td>
</tr>
</tbody>
</table>
13. Technical data

13.1 Operating conditions

Maximum ambient temperature:
- 1 x 208-230 V, 60 Hz: 45 °C (113 °F)
- 1 x 115 V, 60 Hz: 45 °C (113 °F)
- 1 x 200-240 V, 50/60 Hz: 55 °C (131 °F)

Maximum liquid temperature: 45 °C (113 °F)

Maximum system pressure: 10 bar, 1 MPa (145 psi)

Maximum head: 45 m (147 ft)

IP rating: X4D (outdoor installation)

Pumped liquid: Clean water

Noise level: < 45 dB(A)

13.2 Mechanical data

Pipe connections are R 1" or NPT 1".

13.3 Electrical data

<table>
<thead>
<tr>
<th>Type</th>
<th>Supply voltage [V]</th>
<th>Frequency [Hz]</th>
<th>I_{max.} [A]</th>
<th>P_{1} [W]</th>
<th>Stand-by power [W]</th>
</tr>
</thead>
<tbody>
<tr>
<td>SCALA2</td>
<td>1 x 200-240</td>
<td>50/60</td>
<td>2.3 - 2.8</td>
<td>550</td>
<td>2</td>
</tr>
<tr>
<td>SCALA2</td>
<td>1 x 208-230</td>
<td>60</td>
<td>2.3 - 2.8</td>
<td>550</td>
<td>2</td>
</tr>
<tr>
<td>SCALA2</td>
<td>1 x 115</td>
<td>60</td>
<td>5 - 5.7</td>
<td>560</td>
<td>2</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Type</th>
<th>Supply voltage [V]</th>
<th>Frequency [Hz]</th>
<th>Plug</th>
</tr>
</thead>
<tbody>
<tr>
<td>SCALA2</td>
<td>1 x 200-240</td>
<td>50/60</td>
<td>IEC, type E &amp; F</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>IEC, type I</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>IEC, type G</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>None</td>
</tr>
<tr>
<td>SCALA2</td>
<td>1 x 208-230</td>
<td>60</td>
<td>NEMA 6-15P</td>
</tr>
<tr>
<td>SCALA2</td>
<td>1 x 115</td>
<td>60</td>
<td>IEC, type B, NEMA 5-15P</td>
</tr>
</tbody>
</table>

13.3.1 Dimensions and weights

<table>
<thead>
<tr>
<th>Type</th>
<th>H1 [mm]</th>
<th>H2 [mm]</th>
<th>H3 [mm]</th>
<th>W1 [mm]</th>
<th>L1 [mm]</th>
<th>Weight [kg]</th>
</tr>
</thead>
<tbody>
<tr>
<td>SCALA2</td>
<td>302</td>
<td>234</td>
<td>114</td>
<td>193</td>
<td>403</td>
<td>10</td>
</tr>
<tr>
<td></td>
<td>11.9</td>
<td>9.2</td>
<td>4.5</td>
<td>7.6</td>
<td>15.9</td>
<td>22</td>
</tr>
</tbody>
</table>

14. Disposal

This product has been designed with focus on the disposal and recycling of materials. The following disposal values apply to all variants of Grundfos SCALA pumps:
- minimum 85 % for recycling
- maximum 10 % for incineration
- maximum 5 % for depositing.

Values are percent of total weight.

This product or parts of it must be disposed of in an environmentally sound way according to local regulations.

Subject to alterations.