AmeriWater
The Water Purification Specialists

Operation & Maintenance Manual

SCALA2 Booster Pump

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98-2039 Rev A
Manufactured With Pride in the USA

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1 PUMP SPECIFICATIONS

1.1 Theory of Operation

The SCALA2 pump is a compact, self-priming water supply system with integrated speed control to allow the pump performance to increase with increasing demand. The pump starts automatically when water is used and stops when it is not. The pump pressurizes feed water to the water system components. A pressure regulator maintains an inlet pressure of less than 40 PSI.

NOTE: **Please read the Operation Manual before operating or servicing the system.** Contact AmeriWater Customer Service with any questions at 1-800-535-5585 Monday through Friday 8:00 a.m. to 5:00 p.m. eastern standard time. For after-hours emergencies follow the instructions on the recorded message. Our on-call technician will return your call as soon as possible. This Operation Manual should be kept near the system and used as a reference and troubleshooting guide.

1.2 Models

Models	Description
0080701	PUMP, BOOSTER SCALA,SINGLE 1HP,110V
0080702	PUMP, BOOSTER SCALA,SINGLE 1HP,220V

1.3 Technical Specifications

Models	Height (ins)	Width (ins)	Depth (ins)
0080701	15	25 ¼	9.5
0080702	15	25 ¼	9.5

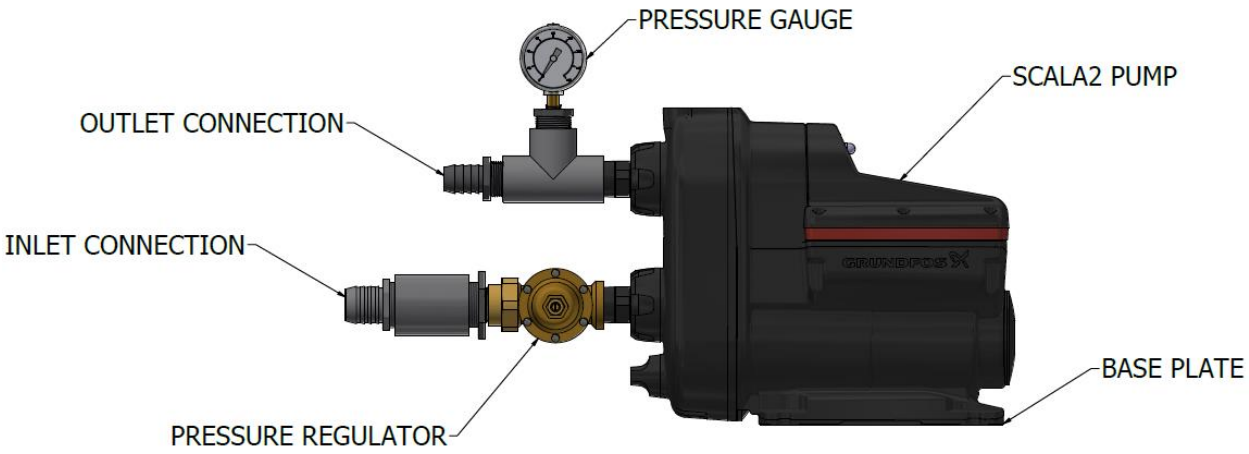
Item	Specification
Water temperature range	32 °F to 113 °F
Ambient temperature range	32 °F to 113 °F
Storage temperature range	-40 °F to 140 °F
Max operating pressure	145 psi
Max flowrate	20 GPM
Operating noise level	$\leq$ 53 dB(A)

1.4 Electrical Safety and Supply Requirements

Component	Electrical Supply
0080701	(1) 115 V, 60 Hz, 4.9 A, Single phase
0080702	(1) 208-230 V, 60 Hz, 2.8 A, Single phase

Risk of electric shock: This pump is supplied with a grounding conductor and grounding type attachment plug. To reduce the risk of electric shock, be certain that it is connected only to a properly grounded electrical circuit equipped with a ground fault interrupter device. The operating voltage and frequency are marked on the nameplate. Make sure that the motor is suitable for the electricity supply on which it will be used.

2 COMPONENT IDENTIFICATION



The pressure regulator is designed to reduce incoming water pressure. This regulator has a built-in thermal expansion bypass feature. This feature prevents downstream pressure from rising to more than 10 psi above the supply pressure.

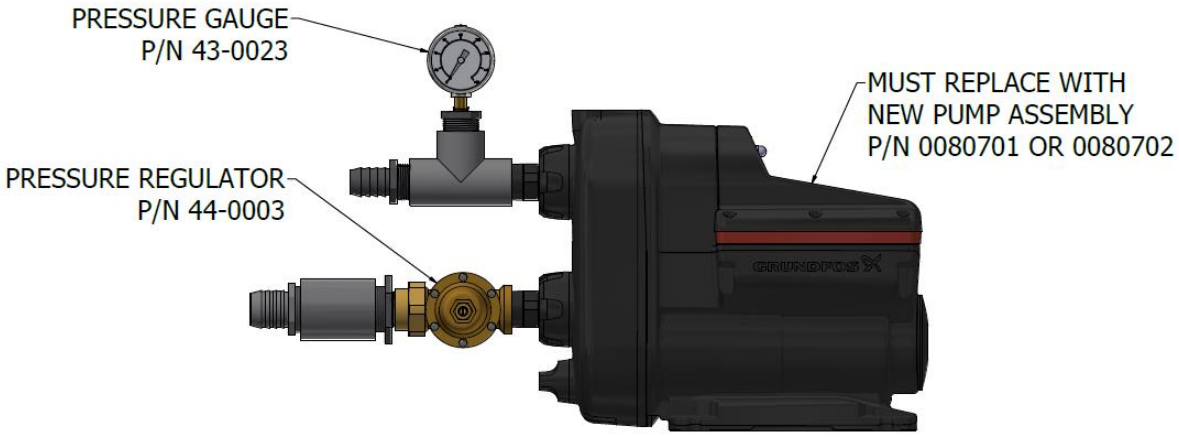
The pressure regulator has been factory preset to 40 psi.

"DO NOT ADJUST PRESSURE". Failure to comply using a higher pressure will result in damage to the pump.

2.1 Connections

Models	Inlet Connection	Outlet Connection
0080701	1 ¼" Hose Barb	1" Hose Barb
0080702	1 ¼" Hose Barb	1" Hose Barb

2.2 REPLACEMENT PARTS



3 INSTALLATION & START-UP

WARNING: The installation and operation should be in accordance with local regulations and accepted codes of good practice.

1. Always mount the pump on the base plate with horizontal suction and discharge ports.
2. Place the pump system on solid, level foundation and secure with screws through the holes in the base plate. Do not start the pump until it has been filled with water.
3. Unscrew the priming plug and pour minimum 0.5 gallons of water into the pump housing.

4. Screw the priming plug on again.

CAUTION: Always tighten priming and drain plugs by hand.

5. Connect the 1 ¼" hose barb (inlet) to a water source and the 1" hose barb (outlet) to the water system with a hose and hose clamps.
6. Open a tap or sample port to prepare the pump for venting.
7. Connect the mains supply cable of the pump to the electricity supply. When the cable is connected, the Grundfos Eye should illuminate and the pump will start.
8. When water flows without air, close the tap or sample port.
9. Open the highest tapping point in the installation.
10. Adjust the pressure setpoint to the required pressure by means of the UP/DOWN buttons.
11. Close the tapping point. Startup has been completed

4 PUMP CONTROLS

The SCALA2 pump has an intelligent controller with the following integrated features: speed-controlled drive, tank, sensors, and non-return valves.

To prevent motor burnout, the SCALA2 pump will stop automatically under the following conditions: running dry, water shortage, excessive temperature, or blocked pump. The pump has an automatic reset function, allowing the pump to attempt to restart in five-minute intervals up to 8 times after an alarm occurs, then every 24 hours after that.

Figure 1 – Operating Panel

Symbol	Description
	Grundfos Eye This shows the operating status of the pump. See Section 4.1.1 for more information.
	ON / OFF button This makes the pump ready for operation or starts and stops the pump.
	UP / DOWN button Buttons used to increase or decrease the outlet pressure.
Reset	**RESET button** Button used to reset alarms.
	Pressure indicator Indicates the required outlet pressure. See Section 4.1.2 for more information.
Stop	**Stop indicator** Indicates that the pump has been stopped manually.
	Lock indicator Indicates that the operating panel is locked.
1	**Indicator 1** Power supply failure.

2	**Indicator 2** The pump is blocked, for instance the shaft seal has seized up.
3	**Indicator 3** Leakage in the system.
4	**Indicator 4** Dry running or water shortage. Pump must be reset manually.
5	**Indicator 5** The maximum pressure has been exceeded or the setpoint cannot be reached.
6	**Indicator 6** The maximum runtime has been exceeded.
7	**Indicator 7** The temperature is outside the range.

4.1.1 Grundfos® Eye

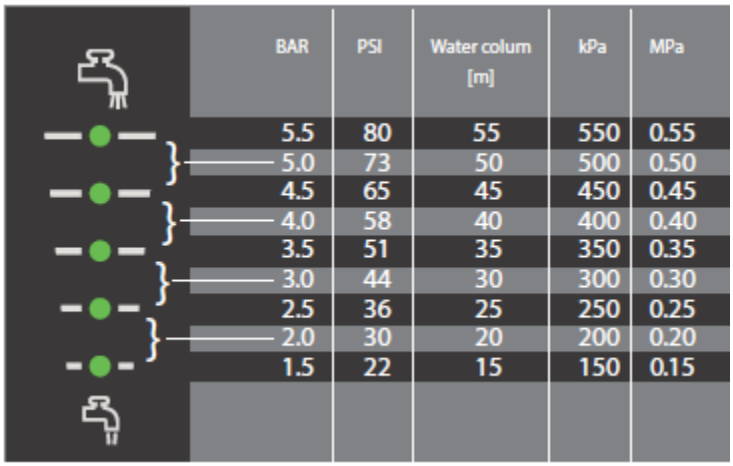
The operating condition of the pump is indicated by the Grundfos® Eye. See **Figure 2** for a list of possible indications the pump.

Grundfos Eye	Indication	Description
	No lights are on.	The power is off. The pump is not running.
	Two opposite green indicator lights running in the direction of rotation of the pump.	The power is on. The pump is running.
	Two opposite green indicator lights at a 45 ° angle is the icon used throughout this document for pump running.	The power is on. The pump is running.
	Two opposite green indicator lights permanently on.	The power is on. The pump is not running.
	Two opposite red indicator lights flashing simultaneously.	Alarm. The pump has stopped.
	Two opposite red indicator lights is the icon used throughout this document for pump stopped.	Alarm. The pump has stopped.

Figure 2 - Grundfos® Eye Indicators

4.1.2 Pressure Indicator

The pressure indicator shows the required outlet pressure of the pump.



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

4.2 Expert Settings

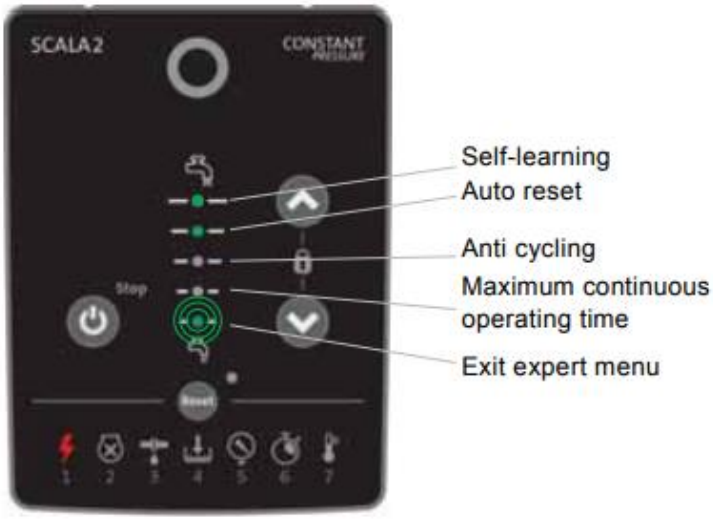
The expert setting menu allows the installer to toggle between the following functions: self-learning, auto reset, anti cycling, and maximum continuous operating time.

To view or modify the Expert settings, proceed as follows:

1. Hold down the RESET button for 5 seconds.

2. Indicator 1 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 UP/DOWN buttons, and toggle the selection on or off using the RESET button. The diode for each setting will light up when the setting is active.



Function	Default	Description
Self-learning	On	**On** If the pump cannot reach the user-defined pressure setpoint, the self-learning function will automatically adjust the setpoint. The pump will lower the setpoint to either 65, 51, or 36 psi. The self-learned setpoint is indicated on the operating panel by one flashing green light. After every 24 hours, the pump will automatically attempt to revert to the original user-defined setpoint. If this is not possible, the pump will again return to the self-learned setpoint. The pump will continue to operate with the self-learning setpoint, until the user-defined setpoint can be reached. **Off** If you set the self-learning function to off and the pump is unable to reach the desired setpoint, the pump will show alarm 5.
Auto reset	On	**On** 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. **Off** All alarms must be reset manually by means of the RESET button.
Anti cycling	Off	This function monitors the starts and stops of the pump. **Off** If the pump starts 40 times in a fixed pattern, there will be an alarm. The pump will remain in operation as normal. **On** If the pump starts and stops in a fixed pattern, there is a leakage in the system, and the pump will stop and show alarm 3.
Maximum continuous operating time	Off	This function is a timer that can turn off the pump if it runs continuously for 30 minutes. **Off** If the pump exceeds the running time of 30 minutes, the pump will run depending on the flow. **On** If the pump exceeds the running time of 30 minutes, the pump will stop after 30 minutes of continuous operation, and it will show alarm 6. This alarm will always need to be reset manually.

4.2.1 Resetting to Factory Settings

The pump can be reset to factory setting by pressing and holding the **DOWN** and **RESET** buttons simultaneously for 5 seconds.

5 FAULT FINDING

CAUTION: This section provides general details for diagnosing possible faults that may occur during normal operation. Some of the remedial actions can only be carried out by qualified personnel. Do not attempt to carry out any action if it involves inspecting / replacing an electrical / mechanical component without first contacting AmeriWater for advice. Please be aware that the unit / system may still be under pressure and contain water at scalding temperature under certain fault conditions. When investigating any alarm, take appropriate precautions to prevent possible injury. NEVER attempt to dismantle the unit under these conditions. Always contact AmeriWater for advice.

5.1 Fault Finding Chart for Grundfos® SCALA2 Pump

Fault	Grundfos Eye	Indicator Light	Automatic Reset	Cause	Remedy
The pump is not running.		-	-	Power supply failure.	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.
			Yes	The power supply is out of prescribed voltage range.	Check the power supply and the pump nameplate. Reestablish the power supply within the prescribed voltage range.
			No	The shaft seal has seized up or the pump is blocked by impurities	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.
			Yes	Dry running.	Check the water source, and prime the pump.
			No	The maximum runtime has been exceeded.	Check the installation for leakage and reset the alarm.
			No	The internal non-return valve is defective or blocked in completely or partly open position.	Clean, repair or replace the non-return valve.
The pump is running.			-	1. Leakage from the pipe system, or the non-return valve is not properly closed due to impurities. 2. Small continuous consumption.	1. Check and repair the pipe system, or clean, repair or replace the non-return valve. 2. Check the taps and reconsider the usage pattern (ice machines, water evaporators for air-conditioning, etc.).
			-	The temperature of the pump and water is below 37 °F.	Consider protecting the pump and the installation against frost.
The pump performance is insufficient.		-	-	1. The pump inlet pressure is too low. 2. The pump is undersized. 3. The inlet pipe, the inlet strainer or the pump is partly blocked by impurities. 4. There is a leakage in the inlet pipe.	1. Check the inlet conditions of the pump. 2. Replace the pump with a bigger pump. 3. Clean the inlet pipe or the pump. 4. Repair the inlet pipe. 5. Prime the inlet pipe and the pump. Check the inlet conditions of the pump. 6. Increase the pressure setting (arrow up).

				5. There is air in the inlet pipe or the pump. 6. The required outlet pressure is too low for the installation.	
			Yes	The maximum temperature has been exceeded and the pump is running at reduced performance.	Check the cooling conditions. Protect the pump against direct sunlight or any nearby heat sources.
System overpressure.			Yes	1. The setpoint is set too high. The difference between the outlet pressure and the inlet pressure must not exceed 51 psi. 2. The maximum pressure has been exceeded, the inlet pressure is higher than 87 psi. 3. The maximum pressure has been exceeded. Equipment elsewhere in the system causes a high pressure at the pump, for example water heater or defective safety equipment.	1. Reduce the pressure to a new setpoint (maximum 51 psi + positive inlet pressure). 2. Check the inlet conditions. 3. Check the installation.
You can reset the pump, but it runs only for a few seconds.			Yes	1. Dry running or water shortage. 2. The inlet pipe is blocked by impurities. 3. The foot or non-return valve is blocked in closed position. 4. There is a leakage in the inlet pipe. 5. Air in the inlet pipe or the pump.	1. Check the water source, and prime the pump. 2. Clean the inlet pipe. 3. Clean, repair or replace the foot or non-return valve. 4. Repair the inlet pipe. 5. Prime the inlet pipe and the pump. Check the inlet conditions of the pump.
You can reset the pump, but it starts repeatedly, immediately after stopping.			No	1. The internal non-return valve is defective or blocked in completely or partly open position. 2. The tank precharge pressure is not correct.	1. Clean, repair or replace the non-return valve. 2. Adjust the tank precharge pressure to 70% of the required outlet pressure.

5.2 Alarms and Events

If the pump does not start when the fault has been corrected, or if the fault cannot be corrected, contact AmeriWater or Grundfos for further information.

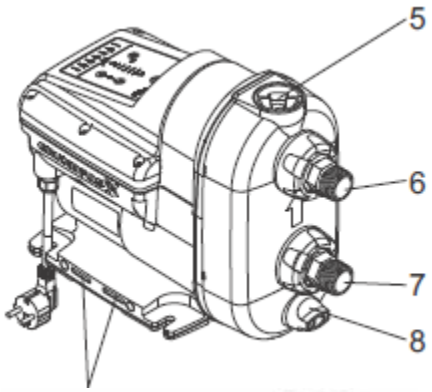
6 MAINTENANCE

It is recommended to periodically check and clean the non-return valves and to keep the SCALA2 pump clean, including keeping the ventilation holes free of dust.

The pump has a debris filter to protect the pump. The filter is placed on the bottom and can easily be removed and cleaned with a stiff brush. Clean the debris filter once a year or as needed.

To remove the inlet or 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.
6. Remove the drain plug and drain the pump.
7. Unscrew the union nut holding the inlet connection. Depending on the installation type, it may be necessary to remove the pipes from both the inlet and outlet connections.
8. Pull out the inlet connection.
9. Pull out the inlet and outlet non-return valve.
10. Clean the non-return valve with warm water and a soft brush.
11. Assemble the components in reverse order.



TAKING PUMP OUT OF OPERATION

If the pump is taken out of operation for a period of time, for example during the winter, it must be disconnected from the power supply and placed in a dry location. 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.
7. It is recommend to store the pump indoors in a dry location. Due to humidity, the disconnected pump must not be left outside for a longer period of time.

START-UP AFTER A LONG TIME OF INACTIVITY

If the pump has been drained, it must be filled with liquid before start-up. See section 3 for start-up instructions.

CALIFORNIA PROPOSITION 65

⚠ WARNING

This product can expose you to chemicals such as vinyl chloride (used in the production of PVC) or Nickel (used in the production of stainless steel), that are known to the State of California to cause cancer. For more information go to www.P65Warnings.ca.gov.

Dear Valued Customer,

California Proposition 65 (Prop 65) is the Safe Water and Toxic Enforcement Act of 1986. The State of California began enforcing amendments to California Prop 65 at the end of August 2018. Prop 65 requires manufacturers to provide a clear and reasonable warning to residents of California about chemicals used in products that they purchase that are included on the Prop 65 Chemical List. The chemicals included on the list are chemicals that are known to the State of California to cause cancer, birth defects, or other reproductive harm. One such chemical is Vinyl Chloride, a compound used to produce Polyvinyl Chloride (PVC). The AmeriWater system you have purchased may contain PVC or stainless steel parts.

While warnings are only required in the State of California, AmeriWater has initiated the use of Prop 65 labeling for all products to ensure compliance with California regulations. Please note that the above warning does not necessarily mean that the product that you have purchased is unsafe. Products that have been cleared for market by FDA have been determined to be safe and effective by the United States Food and Drug Administration. The warning is simply a requirement by the State of California. If you wish to obtain additional information, please visit: p65warnings.ca.gov. You may also contact your AmeriWater representative if you have any questions.

Thank you for your understanding and we look forward to continuing to serve you.