FireSAFE+

Residential range, Grundfos firefighting system

Installation and operating instructions

FireSAFE+ Residential range
Installation and operating instructions
(all available languages)
http://net.grundfos.com/qr/i/93070260

GRUNDFOS

FireSAFE+

Original installation and operating instructions

Table of contents

1. General information

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 installers and for the operators of the product.

We recommend that installation is carried out by skilled persons with technical qualifications required by the specific legislation in force.

1.4 General safety warnings

Keep these installation and operation instructions at the installation site for future reference. Read this document before you install, commission and verify the product.

Children and persons with reduced physical, sensory, or mental capabilities or those lacking of experience and knowledge must not use the product, unless they are under supervision or have been instructed on the use of the product by a person responsible for their safety.

Children must not play with the product.

Cleaning and user maintenance must not be performed by children.

The user is responsible for periodic inspection of the product, at a recommended interval of no more than 12 months.

The use of this product requires experience and knowledge of the product.

Grundfos recommend that the system design, installation and maintenance of the product be carried out by engineers holding UKAS accredited certification (FIRAS/ LPCB/IFCC).

2. Product introduction

2.1 Product description

The Grundfos FireSAFE+ (Safe Active Firefighting Equipment) Residential range can be used in a variety of residential sprinkler and water mist applications, such as:

- apartments
- houses (up to 4 storeys)
- homes with multiple occupancy
- sheltered accommodation
- student accommodation
- single room protection
- small hotels
- care homes.

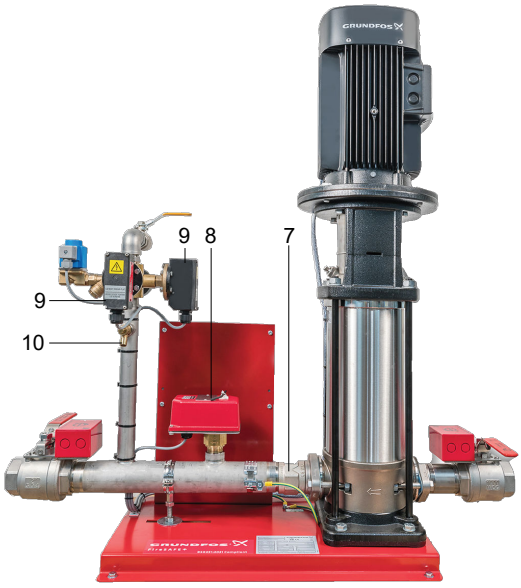
The product is designed to comply with the following requirements:

- BS 9251:2021 - Fire sprinkler systems for domestic and residential occupancies. Code of practice.
- EN 16925:2018 - Fixed firefighting systems. Automatic residential sprinkler systems. Design, installation, and maintenance.

To complete a BS 9251:2021 or EN 16925:2018 compliant system, you need to fit a flow switch. The flow switch can be a normally closed or normally open type. Grundfos only recommends the use of flow switches that are approved by fire standards.

Additionally, a battery backup module to sustain the buzzer alarm in the event of extended local power loss is available from RS. See section Power loss alarm backup.

Key components



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Key components

Pos.	Description
1	CRI pump
2	Monitored lockable ball valve
3	Controller with LEDs and buttons
4	Pressure gauge
5	1/2" BSP solenoid valve
6	1" BSP test line
7	Non-return valve
8	Flow switch LPCB approved
9	Pressure switch LPCB approved
10	Drain point

CRI pump

The pump is part of the CRI range of horizontal pumps manufactured by Grundfos. The pump is available in various sizes within the product range.

For more information, see the pump data booklet.

Pressure gauge

The pressure gauge shows the system pressure and can be used to fine-tune the pressure switch setting.

The range of the gauge is 0-10 bar or 0-145 psi.

The pressure gauge with range of 0-16 bar and 0-25 bar is also available.

LCPB approved pressure switch

The product is operated directly with two independent pressure switches. You must adjust both pressure switches to meet the site-specific requirements. See section Pressure switch setting.

Stainless steel manifold

The manifold includes:

- integral non-return valve to prevent back flow
- drain cock to tap off pressure when servicing
- cooling line solenoid valve 1/2" with Y strainer
- flow test connection from 1" BSP lockable valve
- outlet port for system connection
- LPCB approved flow switch
- pressure switch and pressure gauge connection with shut off to test or repair pressure gauge without draining.

Controller

The PCB in the controller controls all functions of the product and interactions with the operating panel.

Related information

2.2.2 Integration of signals
2.3.1 Power loss alarm backup
5.2 Electrical connection
7.5 Pressure switch setting

2.2 Intended use

2.2.1 Modes of operation

The product has been specifically designed to operate automatically and to assist system designers and installers in complying with the BS and EN standards, as well as integrating key system signals and monitoring system conditions.

The product has the following modes of operation:

- jockey mode: pressure switch detected, system pressure maintenance
- possible fire mode: dual pressure switch detected fire, flow switch failure
- fire mode: flow switch confirmed fire
- auto test mode: weekly test
- manual test mode: test triggered manually.

All activities are logged in the memory of the product. You can extract the data via a USB device in report formats.

Jockey mode

The product supplies water, usually from a water storage tank, via a riser system within the building to a system of sprinkler heads.

If the system pressure decays enough to activate one or both pressure switches, the pump will run in jockey mode for a programmable period of time (factory set at 10 seconds) until the system pressure is restored.

The maximum number of maintenance cycles, excess consumption within a seven-day period before the system registers this as a fault is programmable up to a maximum of 30 starts (factory set at 10 starts/week). It can also be programmed off, but this is the responsibility of the installer or the user. This cycle count excludes the weekly automatic tests of the pump.

When the maximum maintenance cycles are exceeded, the **FAULT** LED on the operating panel and the fault output are activated and must be reset manually. The product operation is not impaired.

Possible fire mode

Following a jockey mode operation, the product monitors the pressure switches during a small programmable period of time. If the pressure switches remain active or reactivate during this period, the pump runs in possible fire mode.

The pump runs in possible fire mode until it is manually stopped via the restoration of system pressure and by pressing and holding the **UP** and **DOWN** buttons on the operating panel. Possible fire mode activates the **FAULT** LED and screen text on the operating panel and the fault output. The product operation is not impaired.

In possible fire mode, the cooling line is active, protecting the pump from a potential no-flow condition. A fire alarm signal will not be generated, so the fire brigade will not be contacted. A fault alarm will be raised.

Fire mode

If a sprinkler head activates, the resulting flow in the system will trigger the system flow switch to report a water flow to the product, which in turn will put the pump into fire mode.

The pump runs in fire mode until it is manually stopped by restoring the system pressure, resulting in the end of the flow signal, and by pressing and holding the **UP** and **DOWN** buttons on the operating panel. Fire mode activates the **FIRE!** LED and screen text on the operating panel and the fire output.

Auto test mode

The product performs a weekly automatic test to ensure that it is fault-free and the pump is available on demand. During this test, the cooling line valve opens, releasing a small amount of water, which causes a system pressure drop. This activates both pressure switches, and then the pump runs to restore the pressure and both pressure switches are deactivated.

The auto test result is recorded in the auto test log file. If an auto test fails, the **FAULT** LED on the operating panel and the fault output are activated and must be reset manually. Investigation of the problem must also be required.

Manual test mode

Auto test can be replicated at any time; this is called manual test.

2.2.2 Integration of signals

The product has been specifically designed to power and relay digital signals. The signals can come from any source, but Grundfos recommends that the following important signals are used:

- flow switch
- low water level switch.

According to BS 9251:2021, only the flow switch device is allowed to determine the presence of a fire and activate fire mode. Some water flow switches incorporate an adjustable delay option. This must be optimised with the programmable delay in the PCB, the jockey cycle setting and the site conditions to prevent activating the fire alarm unnecessarily or delaying fire activation. Consult the documentation supplied with your device.

The low water level switch device gives a warning once the water storage capacity has been reduced below the low-level mark. The signal must be present for more than the programmable delay in the settings (factory set at 3 seconds) before the PCB activates the output.

The digital inputs are supplied with a current limited 12 VDC voltage, which can be applied to digital switching devices. Upon switching, the digital inputs are coupled to the volt-free outputs.

Voltage-wetted inputs negate the requirement for an additional power source to supply the digital signalling device.

2.3 Features

2.3.1 Power loss alarm backup

A rechargeable NiMH battery can optionally be fitted to extend the life of the audible alarm in the event of a power failure.

- Fit on PCB, see the wiring diagram in section Electrical connection
- RS part number: 176-9373

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Battery

Related information

5.2 Electrical connection

2.3.2 Annual service reminder

At the end of every 12-month period, the **SERVICE** LED is activated to remind the user that the product is due its yearly service and annual BS 9251:2021 test. See section Annual inspection and test checklist.

The annual service reminder can be configured.

Related information

9.3 Annual inspection and test checklist

2.3.3 Excessive pump operation and leak detection

If the pump is activated more than 10 times in any seven-day period, the system is considered to have a leak and require maintenance. The fault output and the **FAULT** LED are activated. This can be reset. See section Operating panel.

The excessive pump operation and leak detection can be configured.

Related information

8.2 Operating panel

2.3.4 Mains power monitoring and PCB internal fuse monitoring

On the application of mains electrical power, the **POWER** LED on the operating panel illuminates and the fault output moves to its healthy position.

Upon failure of the mains power or the PCB internal fuse, the LED extinguishes, the fault relay moves to its unhealthy position and after more than two hours without power, the internal buzzer activates for one second every 30 minutes. This will continue until the mains power is restored or the internal battery fails. The loss and restoration of the mains power are recorded in the data logs.

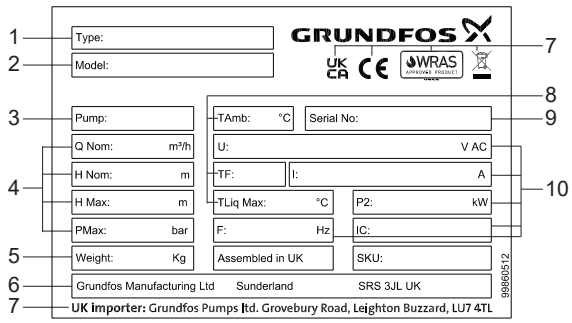
2.3.5 Cooling line settings

The cooling line characteristics can be programmed through the USB route and the settings file. Grundfos have approved one setting that suits all pump models. Any changes to this are the installer's or user's responsibility.

2.4 Identification

2.4.1 Nameplate

The product has a silver nameplate attached to the base frame.



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Nameplate

Pos.	Description
1	Product name
2	Pump type
3	Pump part number
4	Performance data
5	Weight
6	Address of manufacturer
7	Approvals
8	Temperature data
9	Model, Factory, Date code, Serial number
10	Electrical data

2.4.2 Type key

Example: FireSAFE+ CRI 3 5 R A DOL U3 S F F

Code	Explanation	Designation
FireSAFE+		System type
CRI	CM, CR, CRI	Pump type
3	1, 3, 5, 10, 15, 20, 32	Rated flow
5	1-15	Number of impellers
R	D: domestic R: residential	Range
A	A: standard X: non-stand	Construction
DOL	DOL: direct-on-line SS: soft start VSD: variable speed drive	Starting method
U3	U1: 1 × 230 V 50 Hz U3: 3 × 400 V 50 Hz	Main supply voltage
S	S: single M: multi pack	Packaging format
F	X: not fitted F: fitted	Flow switch
F	X: not fitted F: fitted	Cooling line

3. Receiving the product

3.1 Transporting the product

WARNING
Harm of body
Minor or moderate personal injury
- Wear safety shoes and safety gloves when moving the product.

CAUTION
Falling objects
Minor or moderate personal injury
- Secure the product during transportation to prevent it from tilting or falling.
- Do not stack the product.

3.2 Inspecting the product

Upon receipt of the product, it must be immediately unpacked and inspected.

Any damage must be reported to the supplier within seven days or sooner in writing. The installation and operating instructions must be studied carefully before any installation. Installation and operation must be in accordance with local regulations and accepted codes of practice.

Do not operate the product until it is correctly installed in the system pipework and make sure that the controller front cover is secured in place.

1. Make sure that the product corresponds to the order and that accessories, if any, are not missing.
2. Make sure that the packaging is intact.

3.3 Scope of delivery

The following components are supplied within the package:

- FireSAFE+ Residential range
- warning labels
- stop operation sticker
- FireSAFE+ Residential range, installation and operating instructions
- CR, CRI, CRN, quick guide
- CR, CRI, CRN, installation and operating instructions

3.4 Handling and lifting the product

The product is supplied from the factory in a cardboard box which will be mounted on a wooden pallet suitable for handling by forklift equipment.

WARNING
Harm of body
Death or serious personal injury
- Wear safety shoes and safety gloves when moving the product.

CAUTION
Harm of body
Minor or moderate personal injury
- Use lifting equipment.

The weight and size of the product requires the use of certified lifting equipment for safe handling. Observe the weight indicated on the package label before selecting the lifting method. Do not stack items on top of the product. Do not drop the pallet.

The weight of the product can be found in section Installation dimensions.

Related information

4.4 Installation dimensions

4. Installation requirements

The inlet and outlet pipework must be the same size or larger than the product inlet and outlet ports, as a smaller size may result in reduced pump performance or increased system resistance leading to a reduced flow.

Support the installation inlet and outlet pipework properly before connecting it to the product so that the product is not under stress.

The pipework installation to and from the product must be in accordance with local water authority regulations, best industry practice and design recommendations in the installation standard requirements.

The electrical installation of the product must be in accordance with the latest issue of the I.E.E. regulations and the installation standard requirements.

4.1 Location

Careful consideration must be given to the location of the product. The following are minimum requirements.

The product must ideally be placed in a location where the LEDs on the operating panel can readily be seen and the internal buzzer heard without obstruction.

These primary warning and alarm events must be available to be observed and heard. Alternative system provision must be made for alerting the inhabitants to the product warnings and alarms.

The product must be protected against extreme temperatures. Provision to maintain the operating conditions of the product needs to be made within the overall system design.

The product must be sited in a dry, well-ventilated, and frost-free position, where it will not be subjected to extreme temperatures.

The product may be located outdoors in a weather-, frost- and rodent-proof enclosure with adequate ventilation, especially during hot weather. All pipework subject to freezing conditions must be adequately protected.

The product must not be installed in an unventilated small space. Make sure that adequate ventilation is available for the motor.

To carry out maintenance and service of the product satisfactorily, the area must have adequate lighting.

Make sure that the product is positioned to allow access for examination and service. The product must be left with the minimum space of 50 cm all around and 100 cm in front. Adequate drainage facilities and protection from water damage in the immediate vicinity of the product must be provided.

4.2 Operating environment

The product must not be used in an environment which is classified as hazardous, as it could provide a source of ignition and therefore cause an explosion by flame path.

Grundfos disclaim any responsibility for using the product to pump liquids that poses health hazards through touch, ingestion or inhalation of fumes or gases emitted by the liquid.

4.3 Water storage tanks and mains water connection

With the permission of the Water Utility company, it may be possible to connect the product directly to the town water mains with a dedicated inlet pipe. The diameter of the pipe must match the pump inlet as an absolute minimum. Sufficient flow must be measured to prove availability to prevent any cavitation. Suitable backflow prevention devices as per byelaws and regulations must be included.

In situations where the town mains supply cannot be utilised directly, a water storage tank must be installed between the incoming mains water supply and the product. The water storage tank must have a type AB air gap and be supplied and installed in accordance with the water byelaws and regulations.

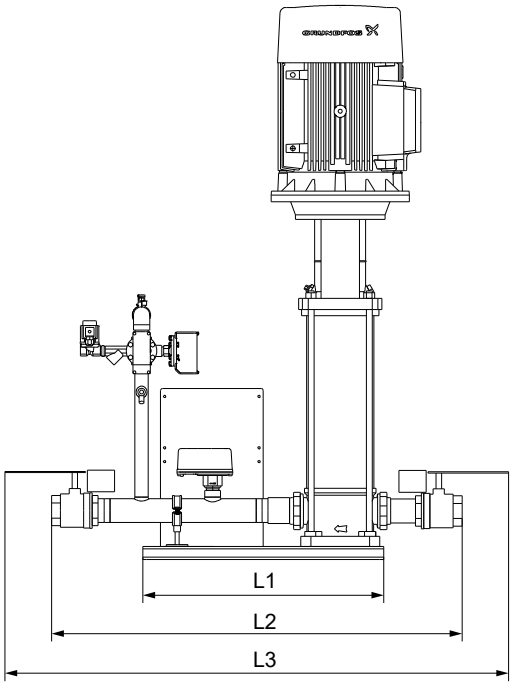
Make sure that the water storage tank has adequate capacity to meet or exceed the demand. Sizing of water storage tanks must be according to relevant installation standards. Refer to the standard requirements.

4.4 Installation dimensions

All products must be installed so that the pump is in the horizontal plane. The product must be placed on a solid surface that will not transmit the small amount of vibration generated by the rotation of the pump.

The product must be fitted with the minimum space of 50 cm all around for ventilation and 100 cm in front for service access.

The base must be connected to the floor with suitable anchor points.



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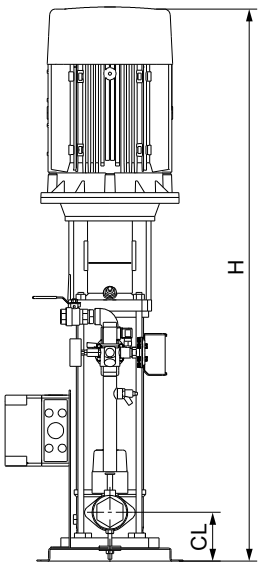

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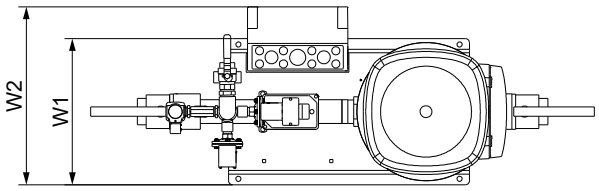

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1-ph, 220-230 V 50 Hz

Model	Length			Width	Height	Pipework centerline height	Suction diameter	Delivery diameter	Unit weight	Product code
Type	L1 (mm)	L2 (mm)	L3 (mm)	W1 (mm)	H (mm)	CL (mm)	(inch)	(inch)	(kg)	
CRI 5-5	610	930	1120	370	612	82	1.25"	1.25"	80	92856363
CRI 5-12	610	930	1120	370	908	82	1.25"	1.25"	98	92856365
CRI 5-15	610	930	1120	370	988	82	1.25"	1.25"	100	92856369
CRI 10-3	610	987	1218	370	714	113	1.5"	1.5"	74	92856391
CRI 10-4	610	987	1218	370	784	113	1.5"	1.5"	76	92856392
CRI 10-5	610	987	1218	370	814	113	1.5"	1.5"	81	92856393
CRI 10-6	610	987	1218	370	844	113	1.5"	1.5"	82	92856395
CRI 15-2	610	1049	1285	370	776	123	2"	2"	83	92856399

3-ph, 380-415 V 50 Hz

Model	Length				Width		Height	Pipework centerline height	Suction diameter	Delivery diameter	Unit weight		Standard product code	SS product code
Type	L1 (mm)	L2 (mm)	L3 (mm)	W1 (mm)	DOL W2 (mm)	SS W 2 (mm)	H (mm)	CL (mm)	(inch)	(inch)	DOL (kg)	SS (kg)		
CRI 10-6	610	987	1218	370	450	511	844	113	1.5"	1.5"	81	87	92856400	92856444
CRI 10-7	610	987	1218	370	450	511	893	113	1.5"	1.5"	87	93	92856402	92905648
CRI 10-8	610	987	1218	370	450	511	923	113	1.5"	1.5"	88	94	92856404	●
CRI 10-9	610	987	1218	370	450	511	953	113	1.5"	1.5"	89	95	92856405	●
CRI 10-10	610	987	1218	370	450	511	1020	113	1.5"	1.5"	102	108	●	●
CRI 10-12	610	987	1218	370	450	511	1080	113	1.5"	1.5"	104	110	●	92856451
CRI 10-14	610	987	1218	370	450	511	1191	113	1.5"	1.5"	123	129	●	●
CRI 15-2	610	1049	1285	370	450	511	774	123	2"	2"	85	91	●	●
CRI 15-3	610	1049	1285	370	450	511	840	123	2"	2"	88	94	92856409	●
CRI 15-4	610	1049	1285	370	450	511	922	123	2"	2"	101	107	92856410	●
CRI 15-5	610	1049	1285	370	450	511	967	123	2"	2"	103	109	92856411	●
CRI 15-6	610	1049	1285	370	450	511	1063	123	2"	2"	121	127	92856412	92856457
CRI 15-7	610	1049	1285	370	450	511	1108	123	2"	2"	122	128	92856413	●
CRI 15-8	610	1049	1285	370	450	511	1141	123	2"	2"	134	140	92856414	92856461
CRI 15-9	610	1049	1285	370	450	511	1184	123	2"	2"	135	141	●	●
CRI 15-12	610	1049	1285	370	-	511	1499	123	2"	2"	-	191	-	92856468
CRI 20-7	610	1039	1275	370	450	511	1018	123	2"	2"	123	129	92856442	●
CRI 20-10	610	1039	1275	370	-	511	1411	123	2"	2"	-	188	-	92856465
CRI 20-17	610	1039	1275	370	-	511	1770	123	2"	2"	-	228	-	92856470

-: Not applicable

●: On request.

5. Installation

5.1 Mechanical installation

CAUTION
Harm of body
Minor or moderate personal injury

- Wear safety shoes and safety gloves.
- Use lifting equipment.
- Do not overtighten the connections.
- All mechanical connections must be carried out by qualified and authorised persons in accordance with the installation standard requirements and the relevant codes of practice.

Place the product on a solid, flat and level foundation that can support the weight of the product when it is filled with water.

Make sure that the foundation does not transmit harmful noise and vibration created by the product. Avoid installing the product in loft spaces.

Check that the supply voltage and frequency correspond to the values stated on the nameplate.

All electrical connections must be carried out by qualified and authorised electricians in accordance with the wiring diagram supplied within the product or this manual, the latest I.E.E. regulations and in accordance with the installation standard requirements.

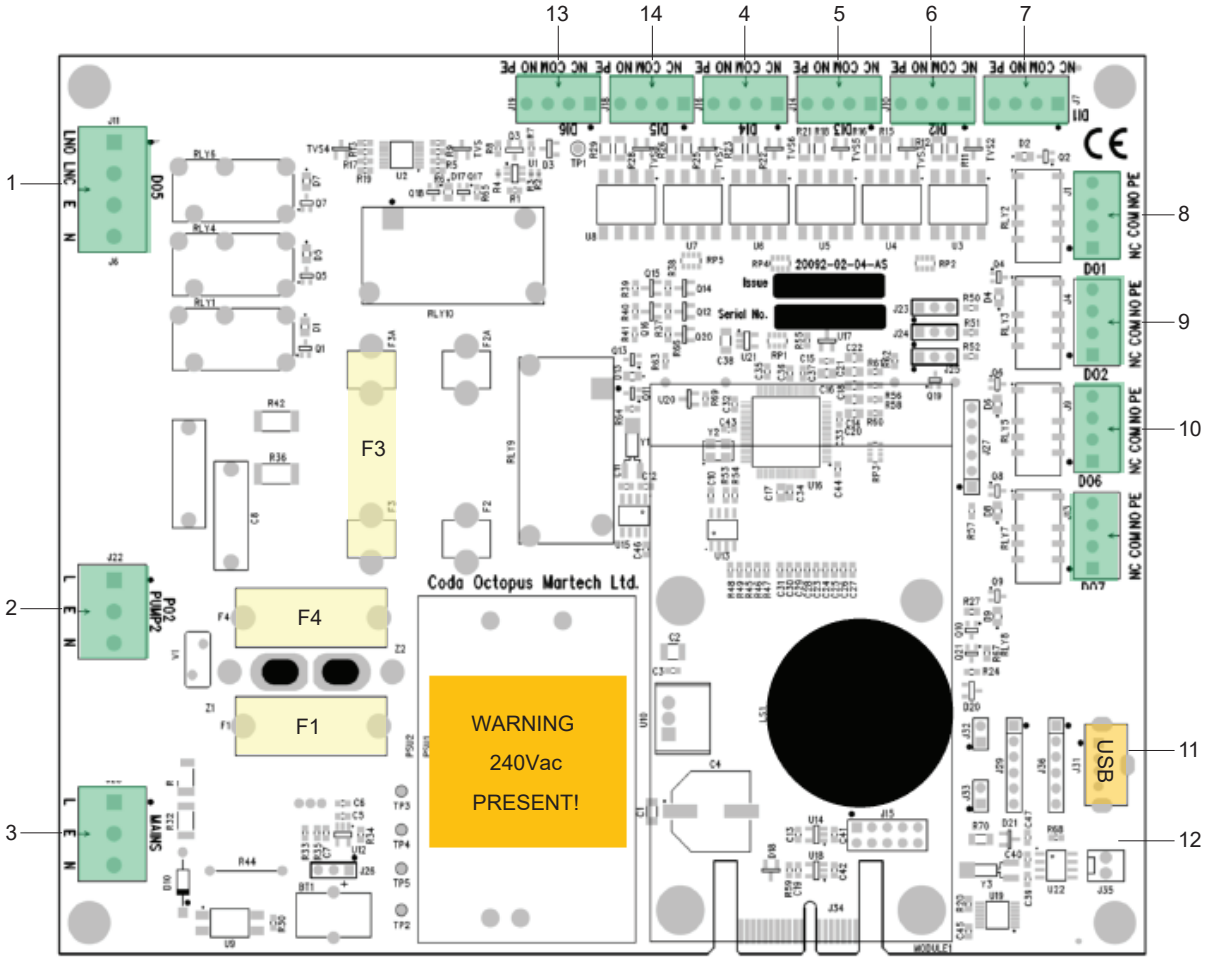
Always use the recommended fuse size. See section Operating conditions.

If repair is required, contact Grundfos.

5.2 Electrical connection

WARNING
Electric shock
Death or serious personal injury

- The product must be earthed and provided with protection against indirect contact in accordance with local regulations.
- Only use Residual Current Breaker with Over-Current (RCBO).
- Always comply with local regulations.

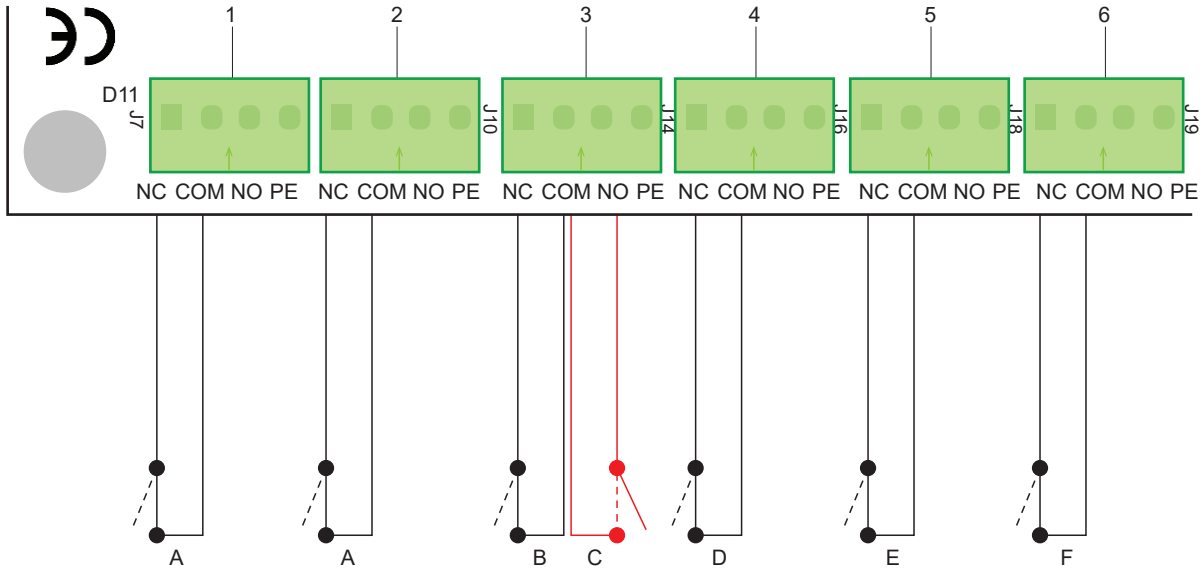


Pos.	Description	Remark
1	Cooling line valve	LNC, E & N, normally closed valve. LNO, E & N, normally open valve. 240 VAC, 5 A maximum.
2	Pump 2	LEN, 240 VAC, 13 A maximum.
3	Mains Input	LEN, 240 VAC, 15 A.
4	Water level input	COM-NC switch to open on low water condition.
5	Flow switch input	NC-COM switch to open on flow, close on no flow. NO-COM switch to close on flow, open on no flow. In this configuration, the COM-NC contacts must also be linked.
6	Pressure SW2 input	COM-NC switch to open on low pressure, close on high pressure. Voltage wetted, 12 VDC on COM terminal.
7	Pressure SW1 input	COM-NC switch to open on low pressure, close on high pressure. Voltage wetted, 12 VDC on COM terminal.
8	Fire alarm output	COM-NO closes when in fire mode condition. COM-NC opens when in fire mode condition. Outputs volt free change-over contacts, maximum 5 A.
9	Fault output	COM-NC closes on fault or power failure condition. COM-NO opens on fault or power failure condition. Outputs volt free change-over contacts, maximum 5 A.
10	Low water output	COM-NO closes on low water condition. COM-NC opens on low water condition. Outputs volt free change-over contacts, maximum 5 A.
11	USB	USB type A port
12	Optional backup battery	J35 – extends the life of the buzzer after power loss.
13	Monitored valve	COM-NO closes on valve open condition. COM-NC opens on valve closed condition. Outputs volt free change-over contacts, maximum 5 A.
14	Phase monitor (3-ph) only	COM-NC closes on phase not healthy condition. COM-NO opens on phase healthy condition. Outputs volt free change-over contacts, maximum 5 A.
F1	PCB fuse	Factory fitted with fuse 500 mA(T)
F3	Pump fuse	Factory fitted with fuse 15 A(T)
F4	Cooling line valve fuse	Factory fitted with fuse 500 mA(T)

PCB is visible when the lid folded downwards for installation. Some circuit boards (PCB) may have additional components or connectors fitted, which are not used.

Do not overtighten the terminals. Overtightening may damage the terminals.

- The maximum torque value for the power terminals is 0.5 Nm.
- The maximum torque value for the signal terminals is 0.25 Nm.



Sensor wiring detail

Pos.	Description
1	Pressure 1
2	Pressure 2
3	Flow
4	Low water
5	Phase monitor
6	Monitored valve

Pos.	Description
A	Pressure switch, normally closed, opens on pressure drop
B	Flow switch standard
C	Flow switch ALT [1)]
D	Level switch, normally closed, opens on low water
E	Phase monitor, normally closed, opens on 3-ph mains fault
F	Monitored valve, normally closed, opens on monitored valve fault

1) For correct operation and compliance with BS9251-2021, dual pressure sensors, a flow switch and a monitored ball valve must be fitted.
If a low water sensor, phase monitor (3-ph variants only) or monitored valve is not required, each input must be linked across to prevent alarms.
Flow switch input can be wired NC-COM where the flow switch opens on flow (closed when no flow is present).
Flow switch input can also be wired NO-COM where the flow switch closes on flow. In this configuration, the COM-NC contacts must also be linked.

Related information

2.3.1 Power loss alarm backup
12.1 Operating conditions

5.3 Installation checklist

During the installation phase, do not apply mains power or water to the product.

Step	Done	Activity	Action/check/notes
1	☐	Fully read and study this manual.	
2	☐	Unpack, inspect for completeness and any damage.	Report to supplier or customer.
3	☐	Check that the installation location meets all the requirements in this manual and the latest applicable standard.	
4	☐	Transport the product to the chosen location.	See section Handling and lifting the product.
5	☐	Test proposed location of product for suitability, fit, access and ventilation.	50 cm all around and 100 cm in front.
6	☐	Make wall or floor fixings.	Recommended.
7	☐	Remove the four screws retaining the controller front cover. Lift and remove the controller front cover. Place it gently to avoid damage.	
8	☐	Locate and fasten down the product as required.	Recommended.
9	☐	Make the inlet port connections to the water supply.	Do not turn on water. Union type connection is recommended.
10	☐	Make the outlet port connections to the sprinkler riser.	Do not turn on water. Union type connection is recommended.
11	☐	Wire digital inputs from water storage tank to the cabinet through suitable glands. Label wires. Perform continuity check.	The wiring diagram can be found in this manual. Maximum wire CSA (cross-section area) = 0.5 mm^2.
12	☐	Attach the optional back up battery to J35. See section Electrical connection.	The battery can be attached to the metal work with a cable tie and stick base or other means.
13	☐	Wire digital outputs through the cabinet suitable glands. Label wires. Perform continuity check.	The wiring diagram can be found in this manual. Make sure that there are no voltages on the digital input wires from other sources. Maximum wire CSA = 0.5 mm^2.
14	☐	Reinstall the controller front cover.	
15	☐	Connect the other end of the electrical power cable to the mains power supply. This must be a lockable isolator. Lock off the isolator to ensure that the mains power cannot be applied to the product.	Do not connect mains power to the product. Make sure that the mains power cannot be applied and is locked OFF. System must be earthed.
16	☐	Review all the above actions, if the commissioning phase does not follow immediately after, reinstall the controller front cover and screws. Leave the product in a safe condition.	The product must be isolated electrically and hydraulically.
17	☐	System is ready to be commissioned.	

Related information

3.4 Handling and lifting the product

5.2 Electrical connection

6. Commissioning the product

WARNING
Electric shock
Death or serious personal injury

- Make sure that all protective coverings are held securely in their correct positions and all electrical fittings, cables, and enclosures are intact and suitably electrically isolated from human touch during operation before you connect the power to the product.

CAUTION
Pressurised system
Minor or moderate personal injury

- Make sure that all protective coverings are held securely in their correct positions before you repressurise the product.

Do not attempt to start the pump until the system has been filled with water and both the pump and the system have been primed or vented.

Running the pump dry may permanently damage it. This will not be covered by warranty.

6.1 Commissioning checklist

Before the commissioning phase starts, make sure that the installation checklist has been completed and check the state of the mains power and water supplied to the product.

Step	Done	Activity	Action/check/notes
1	☐	Fully read and study this manual.	
2	☐	Check that the installation location meets all the requirements in this manual and the latest applicable standard.	
3	☐	Check that the mains power and water to the product are both OFF.	Make sure that both are OFF and cannot be accidentally turned ON.
4	☐	If necessary, remove the four screws retaining the controller front cover. Lift and remove the controller front cover. Place it gently to avoid damage.	
5	☐	Inspect the installation. Check that everything in the installation checklist has been completed.	Check that the water storage tank is full, and the capacity is correct.
6	☐	Check that the factory setting of the pressure switch is according to the design calculations for the system. Make note of any differences for correction later. See step 11.	This may require further adjustment of the pressure switch later.
7	☐	Close the system isolating valve on the outlet side of the product. Open the system isolating valve on the inlet side of the product. Apply water to the product.	
8	☐	Prime the pump and the whole system as necessary. Open the outlet isolating valve. Inspect for leaks.	Refer to pump installation and operating instructions for guidance. Fix any leaks.
9	☐	Check or inspect all supplementary wiring. If changing the settings, insert the USB device with the settings file on. Reinstall the controller front cover and review all the above actions. Apply the mains power. The PCB will detect and apply the settings automatically upon power up.	
10	☐	Pump will start with a jockey cycle and pressurise the system. If necessary, prime or vent the system again. Check that the pressure gauge value is as expected. Inspect for any leaks.	Fix any leaks.
11	☐	Tune the pressure switch setting for the system against the gauge reading and the designed pressure setting by draining off water and allowing the product to respond observing values on gauge.	See section Pressure switch setting.
12	☐	Check that the digital inputs give the expected outputs when activated. • Low water level input -> Fault output Y / N (ring answer) • Flow switch input -> Fire! output Y / N (ring answer)	Optimise any delay on flow switch with delay in programmed. See section Setting the product.
13	☐	Remove the controller front cover. Remove the USB device. Reinstall the controller front cover with the four screws.	
14	☐	Set the auto weekly test time and annual service reminder.	See section Operating panel.
15	☐	Clean up area and ensure safe for user. Mains isolator is in the ON position. Isolating valves are in the OPEN position. Put system into operation. Clear any faults.	See section Operating panel.
16	☐	System is ready for verification.	

Related information

7. Setting the product
7.5 Pressure switch setting
8.2 Operating panel

6.2 System verification checklist

Before the system is signed off and handed over to the customer, the performance of the whole system must be verified.

Step	Done	Activity	Action/check/notes
1	☐	Fully read and study this manual.	
2	☐	Inspect the installation. Check that everything in the installation and commissioning checklist has been completed.	
3	☐	Check that the system is active, pressurised and fault free.	
4	☐	Partly open a drain point to create a very slow pressure drop.	Pressure maintenance function test.
5	☐	Observe the pressure decaying and the point at which the system reacts on the pressure gauge.	Check values against installation requirement. Change as necessary. Repeat as necessary.
6	☐	Close the drain point and seal the system. Observe that the product restores the system pressure and returns to a healthy state.	Observe the LEDs on the operating panel.
7	☐	Activate the low water switch. Observe the LEDs on the operating panel. • The **FAULT** LED is ON. • When the low water switch signal is stopped, the **FAULT** LED goes OFF.	Low water test.
8	☐	Activate the flow switch. Observe the LEDs on the operating panel. • The **PUMP** and **FIRE!** LEDs come ON. • Press and hold the **UP** and **DOWN** buttons to stop.	Fire alarm mode continuous operation.
9	☐	Check that the digital inputs give the expected outputs when activated: • Low water level input -> Fault output Y / N (ring answer) • Flow switch input -> Fire! output Y / N (ring answer)	
10	☐	Clear all active faults.	See section Operating panel.
11	☐	System should return to healthy operation state. Run manual test to check the cooling line operation.	See section Operating panel.
12	☐	Use the USB device to record the system parameters. Check off all the values and logs. Check that the time and date are current. Update if required.	
13	☐	Ensure that the **Stop system after fire activation** sticker is in a clearly visible location on the product.	
14	☐	Clean up the area and ensure that it is safe for the user. Mains isolator is locked in the ON position. Isolating valves are locked in the OPEN position.	Inform customer and any monitoring services that the system is operational. Handover this manual.
15	☐	System is ready to use.	

Related information

8.2 Operating panel

7. Setting the product

CAUTION
Pressurised system
Minor or moderate personal injury
- Wear safety glasses.

The product is factory-configured with standard settings that are suitable for most installations. These settings must be verified on site by the commissioning engineer. Where required, these settings can be changed.

The USB configuration feature is intended for use by qualified installers only.
Changing the settings incorrectly could result in the system failing to operate correctly.

USB device requirements:
- formatted FAT32
- storage capacity of 1-65 GB
- no other files on the device
- only use root directory (no folders).

7.1 Programming settings

The process is only for qualified electrical persons.

1. Isolate the mains power from the product. Follow a safe isolation procedure before working on the product.
2. Remove the controller front cover and place it on a soft surface to prevent scratching.
3. Insert the USB device containing the updated settings.txt or timedate.txt file into the USB port.
   No need to use both files.
4. Reinstall the controller front cover.
5. Connect the mains power to the product. Wait about 30 seconds for the product to beep.
6. Isolate the mains power from the product. Follow a safe isolation procedure before working on the product.
7. Remove the controller front cover and the USB device.
8. Reinstall the controller front cover.
9. Connect the mains power to the product. Wait 1 minute and reinsert the USB device to take a copy of the data logs for confirmation.
10. Isolate the mains power from the product. Follow a safe isolation procedure before working on the product.
11. Remove the controller front cover and the USB device.
12. Check the configuration, time and date with a laptop. Make sure that they are as expected.
13. Reassemble the controller front cover.

Two text files are available from your local Grundfos agent for customising the product.

- settings.txt - allows all programmable parameters to be adjusted
- timedate.txt - allows only the time and date to be adjusted.

The text files are pre-formatted and allow for the customisation of settings by editing the values with a laptop or PC in the Windows Notepad editor. The files can be transferred to the product via a USB device.

The text files must follow the file pre-formatting exactly.

Additional or missing characters and spaces are not permitted and may prevent correct operation. All text after the semi-colon (;) are comments only and are not used by the system.

After either of the files have been used, the file type on the USB device will be changed to .old. To reuse the files, simply change the file type back to .txt. This is a safety feature to prevent accidental reuse.

Related information

7. Setting the product

7.2 Extracting data logs

The process is only for qualified electrical persons.

1. Isolate the mains power from the product. Follow a safe isolation procedure before working on the product.
2. Remove the controller front cover and place it on a soft surface to prevent scratching.
3. Insert the USB device into the USB port.
4. Reinstall the controller front cover.
5. Connect the mains power to the product. Wait about 30 seconds for the product to beep.
6. Isolate the mains power from the product. Follow a safe isolation procedure before working on the product.
7. Remove the controller front cover and the USB device.
8. Reassemble the controller front cover.

After performing the above process, four files are now on the USB device.

- Pump run log: records pressure switch and flow switch activation.
- Auto test log: records the results of automatic and manual tests.
- Fault log: records the cycle history, number and name of the fault.
- Configuration log: records the service date, last power cycle, usage summary and settings.

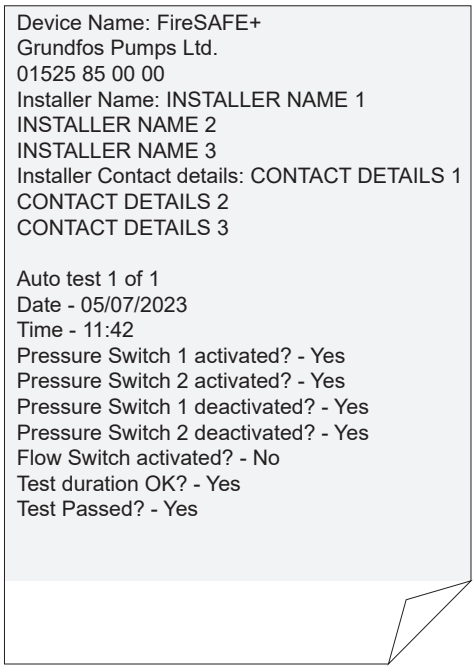
The name of these files has a date and time stamp on them. See the examples of log files below.

```
Device Name: FireSAFE+
Grundfos Pumps Ltd.
01525 85 00 00
Installer Name: INSTALLER NAME 1
INSTALLER NAME 2
INSTALLER NAME 3
Installer Contact details: CONTACT DETAILS 1
CONTACT DETAILS 2
CONTACT DETAILS 3

Jockey/Fire mode run 1 of 8
Date - 05/07/2023
Time - 11:39
Pressure Switch 1 activated? - Yes
Pressure Switch 2 activated? - Yes
Flow Switch activated? - No
Jockey/Fire mode run 2 of 8
Date - 05/07/2023
Time - 11:40
Pressure Switch 1 activated? - No
Pressure Switch 2 activated? - No
Flow Switch activated? - Yes
```

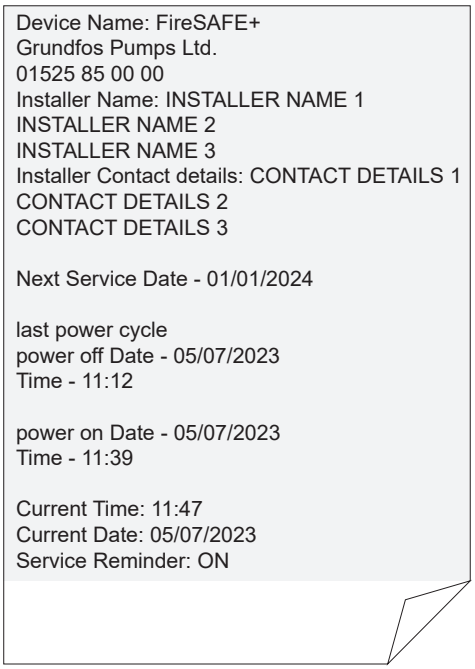
TM084797

Pump run log



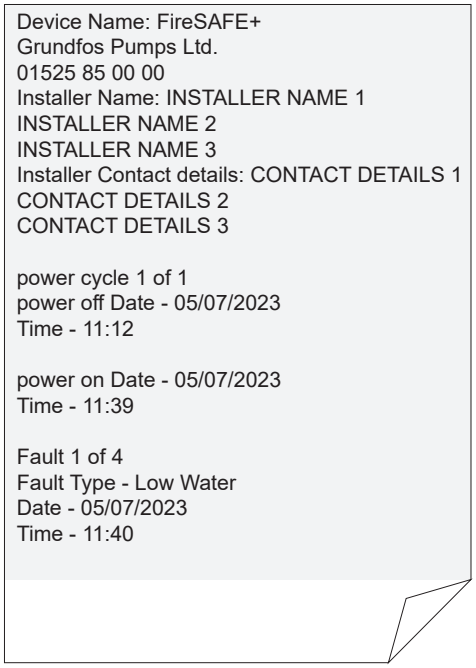
TM084798

Auto test log



TM085461

Configuration log



TM084799

Fault log

Related information

7. Setting the product

7.3 Updating the software

The process is only for qualified electrical persons.

1. Isolate the mains power from the product. Follow a safe isolation procedure before working on the product.
2. Remove the controller front cover and place it on a soft surface to prevent scratching.
3. Insert the USB device with the updated software and settings.txt file into the USB port.
4. Press and hold the **UP** button.
5. Reinstall the controller front cover.
6. Connect the mains power to the product. Wait until the blue LED flashes, and then release the **UP** button.
7. Wait about 60 seconds for the product to beep.
8. Isolate the mains power from the product. Follow a safe isolation procedure before working on the product.
9. Remove the controller front cover and the USB device.
10. Reinstall the controller front cover.
11. Connect the mains power to the product. Wait 1 minute and reinsert the USB device to take a copy of the data logs for confirmation.
12. Isolate the mains power from the product. Follow a safe isolation procedure before working on the product.
13. Remove the controller front cover and the USB device.
14. Check the configuration, time and date with a laptop. Make sure that they are as expected.
15. Reassemble the controller front cover.

7.4 Factory settings

The product is set with the below values. The time and date is programmed in the factory and supported by an internal battery. However, if the product is not connected to a power supply for more than four weeks, the time and date must be checked and possibly updated.

These settings are suitable for most installations, but the system designer must confirm, and the installer must verify the operation.

We do not recommend to adjusting the parameters, as they may impact the compliance of the product to standard. Contact Grundfos.

Description	Factory default value	Range
Current time	{{Time}}	
Current date	{{Date}}	
Service reminder	ON	ON or OFF
Service interval	12 months	1-12 months
Low water delay	3 seconds	0-60 seconds
Excessive operation limit	10 starts per week	0-30 starts per week
Jockey pump duration	10 seconds	5-120 seconds
Flow switch delay	3 seconds	0-25 seconds
Pressure switch delay	0 seconds	0-10 seconds
Fire mode wait	5 seconds	1-30 seconds
Device name	FireSAFE+ Grundfos Pumps Ltd. 01525 85 00 00	Customisable [2)]
Installer name	Installer name 1 Installer name 2 Installer name 3	Customisable [2)]
Installer contact details	Contact details 1 Contact details 2 Contact details 3	Customisable [2)]
Auto test duration	60 seconds	60-600 seconds
Auto test open	5 seconds	1-90 seconds
Auto test period	7 days	1-30 days
Cooling line duration	5 seconds	0-60 seconds
Cooling line cycles	30 times per hour	1-60 times per hour

2) Can be programmable up to 21 characters per line and maximum three lines.

7.5 Pressure switch setting

WARNING
Electric shock
Death or serious personal injury
- Removing the pressure switch case exposes the user to electrical voltage and must only be carried out by authorised or competent persons.

The pressure switches are factory set to 1 bar over closed valve pressure of the pump.

The factory setting may not be ideal for the site application. This can be adjusted. The operating range of the pressure switches are 0.7 - 14 bar and 2-42 bar.

The pressure switch is located on the instrument manifold. You can remove the top cover screws to get access to it.

TM084801

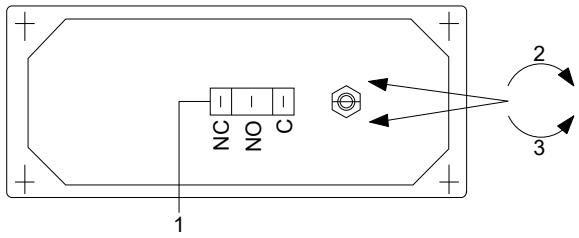
Pressure switch

Use a socket or nut spinner to make the adjustment.

You need to adjust two pressure switches per set.

Set the system to the desired pressure. Adjust the nuts until the microswitch triggers.

The triggering can also be verified by using a multi-meter to confirm if the contacts are open or closed while adjusting the nuts.



TM086117

Adjusting pressure switch

Pos.	Description
1	Pressure switch contacts
2	To decrease operating pressure
3	To increase operating pressure

8. Operation

WARNING
Electric shock
Death or serious personal injury

- The product must be earthed and provided with protection against indirect contact in accordance with local regulations.
- Only use Residual Current Breaker with Over-Current (RCBO).
- Always comply with local regulations.

CAUTION
Pressurised system
Minor or moderate personal injury

- Wear safety glasses.

After completion of the installation, commissioning and verification checklists, the product is ready for operation. The product has been designed for automatic operation with the minimum of user input.

The user has the following options:

- Test the pump.
- Perform the manual auto test.
- Silence sounder.
- Stop the pump (if in possible fire mode for fire mode).
- Emergency start into fire mode.
- Clear faults (not logs).
- Reset or set service reminder.
- Set the auto test time.

Periodic visual inspection for **SERVICE** and **FAULT** LEDs is required.

Related information

8.2 Operating panel

8.1 User inspection

It is the responsibility of the customer to inspect the product in addition to any service contract to ensure the safety and correct operation of the set during the interim period between service visits. The product must be inspected at regular intervals of no more than six months.

This can be done by the user, following the checklist below.

Step	Activity	Action/check/notes
1	Check that there are no leaks or corrosion from the system pipework. Inspect as far as possible.	Report as necessary. Schedule maintenance visit.
2	Check that the **FAULT** or **SERVICE** LED on the operating panel is not lit.	See section Fault finding. Schedule a service or maintenance visit.

Any large deviations from the system designed settings must be investigated for a possible fault. If any faults are found, check the symptoms in section Fault finding first, and if necessary, contact the facilities manager or installer in the first instance.

Related information

11. Fault finding

8.2 Operating panel

TM086187

Operating panel with visual screen

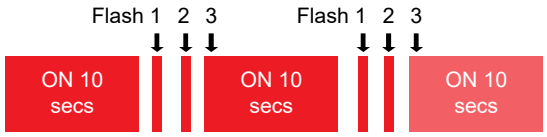
Button press functions

Function	Button	Action
Run pump	Press and hold **HOME** and **OK** for 5 secs	Runs pump for duration of jockey mode.
Manual test	Press and hold **HOME** and **BACK** for 1-2 secs	Initiates manual weekly test.
Silence sounder	Press and hold **OK** for 1-2 secs	Silence sounder.
Stop pump	Press and hold **UP** and **DOWN** for > 10 secs	Stops pump when in possible fire mode or fire mode if pressure and flow signals stop.
Emergency start	Press and hold **OK** and **BACK** for > 10 secs	Initiates emergency start in fire mode.
Clear faults	Use **UP** and **DOWN** to scroll through faults, hold **OK** to clear	Clears faults.
Service reminder	Press and hold **HOME** to check service date, clear in menu	Sets or resets the service reminder for another period.
Software version	Press and hold **HOME** to show on the screen	Shows currently installed version.

LED operation

LED	Function
PUMP	ON = pump running
FAULT	ON, two flashes = auto test failure ON, three flashes = low water ON, four flashes = pressure switch 1 failure ON, five flashes = pressure switch 2 failure ON, six flashes = excessive operation ON, nine flashes = cooling line failure ON, ten flashes = possible fire mode
FIRE!	ON, flashing = fire mode
SERVICE	ON = service required
TESTING	ON = cooling line open ON = auto test in progress ON = writing to or from USB
POWER	ON = mains power available

How to count the flashes



TM084796

9. Servicing the product

DANGER
Magnetic field
Death or serious personal injury
- Do not handle the motor or rotor if you have a pacemaker.

WARNING
Electric shock
Death or serious personal injury
- Isolate the mains power from the product.
- Wait at least five minutes before starting any work on the product.
- Make sure that the power supply cannot be accidentally reconnected.
- Check that the operating panel is intact before spraying water or any non-abrasive, non-solvent cleaning solution on the product.
- Any work must only be carried out by skilled and qualified personnel.

WARNING
Electric shock
Death or serious personal injury
- Do not remove the PCB enclosures, PCB components, motor terminal box cover, electrical cables, or any other electrical protective covering without first ensuring that the electrical supply is suitably isolated and cannot be switched back on.

CAUTION
Hot surface
Minor or moderate personal injury
- Do not touch the hot surface.

CAUTION
Harm of body
Minor or moderate personal injury
- Wear safety shoes and safety gloves.

CAUTION
Pressurised system
Minor or moderate personal injury
- Wear safety glasses.

9.1 User maintenance

There are no user-serviceable parts in the product.

9.2 Annual inspection and test

Grundfos recommends that the full fire protection system is tested and inspected every 12 months. This includes the product and ensures that the system remains in first class working order. This is also a requirement within installation standards.

The product must be tested annually by suitably qualified and competent personnel.

The below checklist lists the implied activities that must be completed at each service and annual test. Other activities are required according to the system design and any fault rectification required.

If any maintenance work is required, the water and electricity supply must be isolated prior to commencing work.

The building will be without the fire protection provided by the product during this period and alternative measures must be considered. The owner of the building and any inhabitants must be informed of this.

Make sure that any outgoing signals from the product are not going to cause activation of:
- fire alarms or beacons
- fire alarm control panel
- fire service response or fire monitoring service response
- any other warning or monitoring devices installed (such as SMS to mobile device).

Consideration must be given to contacting any response services beforehand and informing them of the service and annual test activity of the product.

Before removing the terminal box cover from the electric motor, or before removing or dismantling the pump or motor, make sure that the electricity supply to the PCB has been suitably isolated and cannot be switched on.

Once all maintenance work is completed, make sure that the isolating valves are opened fully, locked in the open position and that the electricity supply to the product is restored, and locked in the ON position.

Check that the correct system pressure is achieved. Inform the necessary people that the system has been restored.

9.3 Annual inspection and test checklist

Step	Done	Activity	Action/check/notes
1	☐	Inspect the operating panel for any LED fault indications. Investigate and resolve any fault conditions first.	See section Fault finding.
2	☐	Isolate the mains power from the product. Follow a safe isolation procedure before working on the product.	
3	☐	Remove the four screws retaining the controller front cover. Lift and remove the controller front cover. Place it gently to avoid damage. General inspection for loose fittings, pump fixings, cabinet fixings. General inspection for leaks, corrosion, and damage.	Fix any leaks. Report any corrosion. For leaks from pump shaft seal, see pump installation and operating instructions.
4	☐	Check that the solenoid coil is secured on the cooling line valve. Check that the cooling line valve to drain or tank is clear. Isolate the power from the product. Isolate inlet, and make provision for small amounts of spillage. Remove and clean the Y strainer pre-cooling line valve. Replace the Y strainer and clean up.	
5	☐	Inspect all external electrical wiring for wear and tear, nicks, breaks, exposed conductors, poor fitting or termination and so on. Check pressure switch terminals for corrosion and check if the connector is fully engaged.	Repair or replace as necessary.
6	☐	Inspect all internal electrical wiring for wear and tear, nicks, breaks, exposed conductors, poor fitting or termination and so on. Check pressure switch terminals for corrosion and check if the connector is fully engaged.	Repair or replace as necessary.
7	☐	Access the PCB and inspect the PCB, fuses, and wiring.	Repair any wiring. For fuses, see section Spare parts list.
8	☐	Inspect for leaks and repair.	Fix any leaks.
9	☐	Reassemble the product. Review all the above actions and then follow a safe isolation procedure for safe re-energisation. Supply the mains power to the product.	
10	☐	Perform annual system test.	As per installation standard requirements.
11	☐	Check that the product responds to the pressure drop, and enters: • system pressure maintenance mode (jockey mode) • possible fire mode Check that the flow switch enables fire mode.	See section Operating panel. To exit the possible fire mode, restore the system pressure and press and hold the **UP** and **DOWN** buttons. To exit the fire mode, stop flow signal and press and hold the **UP** and **DOWN** buttons.
12	☐	Check that the digital inputs give the expected outputs when activated. • Low water level input -> Fault output Y / N (ring answer) • Flow switch input -> Fire! output Y / N (ring answer)	
13	☐	Perform manual auto test to test the cooling line.	
14	☐	With the USB device, take a copy of the product log files and inspect. Check the time and date, and update if required.	
15	☐	Set the pump test time, if desired.	See section Operating panel.
16	☐	Reset or set the annual service reminder.	See section Operating panel.
17	☐	Clean up area and ensure safe for user. Mains isolator is locked in the ON position. Isolating valves are locked in the OPEN position. Clear any faults.	See section Operating panel.
18	☐	System is ready to operate.	Inform customer that the system is operational. Handover this manual.

Related information

8.2 Operating panel

9.4 Spare parts

11. Fault finding

9.4 Spare parts

Conduct Grundfos Service for spare parts and advice regarding the product.

10. Storage

When the product is delivered to site, place the product into a dust-, moisture- and frost-free area which is secured to prevent unauthorised interference.

10.1 Frost protection

The product must be protected from freezing conditions. The product may require trace heating or lagging. If the product is being stored during periods of frost, it must be drained to avoid damage. Remove all drain and vent plugs and allow the pump to drain. Do not install the plugs until the product is to be used again.

The pump must be vented or primed before it is started again. Loosen, but do not remove the priming screw until water flows from the hole.

11. Fault finding

Fault event, LED	Fault detected	Remedy
POWER LED not illuminated.	No power to the product.	• Check that the mains power is available to the product and voltage is in range. See section Operating conditions. • Check that the power cable termination at PCB end is electrically sound. See section Electrical connection. • Check that the voltage is available on PCB terminals. See section Electrical connection. • Check the PCB fuse F1.
FAULT LED flashing 2 times.	Auto test failure. • Only one pressure switch has activated. One or both of the pressure switches have not deactivated. • Pump could not restore the pressure within the given time period.	• Check that both pressure switches are set to the same value. See section Pressure switch setting. • Check that the wiring is folded to the side and not affecting the pressure switch setting when the lid is screwed down. • Check that the inlet pressure is not greater than pressure switch setting. • Check that the pressure switch setting includes the inlet pressure allowance. See section Pressure switch setting. • Check that the pressure switch wiring is on the right terminals and secured. See section Pressure switch setting. • Check that the pressure switch wiring to the PCB terminals is correct. See section Electrical connection. • Check the pressure switch wiring continuity. See sections Pressure switch setting and Electrical connection. • Check the pump operation and fuse F3. See section Electrical connection. • Check the pump wiring connections to PCB and pump. See section Electrical connection. • Check that the auto test settings are suitable for site. See sections Programming settings and Extracting data logs.
FAULT LED flashing 3 times.	Low water signal. • Low water level in tank has been detected or the low water input is not being used and has not been linked out.	• Check the water level in tank and top up as necessary. • Check the reason why the water level is not being maintained. • Check that the level switch is operational, not stuck open. • Check that the low water level switch is linked out if not in use. See section Electrical connection. • Check that the wiring to PCB is not broken. See section Electrical connection. • Check that the termination at PCB end is electrically sound. See section Electrical connection. • Change low water delay value in the controller to something more suitable. See section Extracting data logs.
FAULT LED flashing 4 times.	Pressure switch 1 failure. • During auto test or jockey mode, pressure switch 1 is failed.	• Check that both pressure switches are set to the same value. • Check that the wiring is folded to the side and not affecting the pressure switch setting when the lid is screwed down. • Check that the inlet pressure is not greater than pressure switch setting. • Check that the pressure switch setting includes inlet pressure allowance. See section Pressure switch setting. • Check that the pressure switch wiring is on the right terminals and secured. See section Pressure switch setting. • Check the pressure switch wiring continuity. See sections Pressure switch setting and Electrical connection. • Check the pressure switch wiring to the PCB terminals. See section Electrical connection.
FAULT LED flashing 5 times.	Pressure switch 2 failure. • During auto test or jockey mode, pressure switch 2 is failed.	
FAULT LED flashing 6 times.	Excess consumption or leak. • Pump starts has exceeded the weekly programable value.	• Check that both pressure switches are set to the same value. • Check that the wiring is folded to the side and not affecting the pressure switch setting when the lid is screwed down. • Check for any system leaks. • Check that the non-return valve is holding pressure. • Check that the cooling line is holding pressure. • Increase the number of excess starts allowed. See section Programming settings.

Fault event, LED	Fault detected	Remedy
FAULT LED flashing 9 times.	Cooling line failure. • During auto test, neither pressure switches are activated.	• Check that the cooling line is working, and perform the manual test. See section Operating panel. • Check that the cooling line Y strainer is not blocked. • Check the cooling line fuse F4. See section Electrical connections. • Check that the cooling line solenoid coil is secured on valve. • Check that the inlet pressure is not greater than pressure switch setting. See section Pressure switch setting. • Check that the pressure switch setting includes the inlet pressure allowance. See section Pressure switch setting. • Check or change the cooling line settings with USB device. See section Extracting data logs.
FAULT LED flashing 10 times.	Possible fire mode. • Both pressure switches have detected a pressure drop within a short time following a jockey cycle. • Flow switch has not detected a flow.	• Check the flow switch operation. Check that a flow switch has been fitted. See section Electrical connection. • Check the flow switch wiring continuity and that the termination at PCB end is electrically sound. • Check the system for large leaks. • Check that the non-return valve is holding pressure. • Check that the cooling line valve is holding pressure.
SERVICE LED ON.	Service due. • Service timer indicates that the service is due.	• Perform the 12-month service and Inspection. See section Annual inspection and test. • Reset the service timer. See section Operating panel.

For more specific details, take a copy of the log files for analysis.

For system operation problems, see the dedicated sections for diagnosis. Contact your system installer or Grundfos for anything else.

Related information

5.2 Electrical connection

7.1 Programming settings

7.2 Extracting data logs

7.5 Pressure switch setting

8.2 Operating panel

9.2 Annual inspection and test

12.1 Operating conditions

11.1 Pump does not reach the duty point but continues to run

Pump does not reach the duty point but continues to run until it goes into the possible fire mode.

Cause	Remedy
The water getting into the pump is not enough.	• Check that the inlet isolating valve is fully open.
There is air trapped in the pump and/or system.	• Bleed the air from the pump and/or system.
The demand from the system is small or there is a leak.	• Check the system for demand or fix the leak.
The pump installed for demand is incorrect.	• Check the product nameplate and make sure that the pump matches the performance required.

11.2 Pump does not reach the duty point

Pump does not reach the duty point while running and shuts off.

Cause	Remedy
The settings for the pressure switches are too low.	• Check that the settings of the pressure switches are not too low. • Check that the product is suitable for duty point required.
The pressure switch is faulty.	• Replace the pressure switch.

11.3 Pump delivers correct pressure but does not stop with no demand

Pump delivers correct pressure but does not stop with no demand and enters possible fire mode or fire mode.

Cause	Remedy
The settings for the pressure switches are too high.	• Check that the settings of the pressure switches are not too high.
The pressure switch is faulty.	• Replace the pressure switch.
The demand from the system is small or there is a leak.	• Check the system for demand or fix the leak.
The non-return valve or cooling line is not sealing properly.	• Stop the pump to check if the system is holding pressure.

11.4 Pump does not start

Pump does not start, **FAULT** LED is ON, buzzer is ON.

Cause	Remedy
The pump or the pump fuse is faulty.	• Check the pump and pump fuse.
The wiring is faulty.	• Check the pump wiring.

11.5 Pump on but no sprinkler head activated

When possible fire mode is engaged, the pump is on but no sprinkler head is activated.

Cause	Remedy
A leak in the system causes the pressure to drop and engages the possible fire mode.	• Find and fix the leak.
The settings for the pressure switches are too high.	• Check that the settings of the pressure switches are not too high.
Software setting issue.	• Check the settings with a USB device. • Reset the system.

12. Technical data

12.1 Operating conditions

Description	Values
Electrical supply	230 V / 400 V +6 % / -10 %
PCB fuse	F1, 500 mA(T)
Pump fuse	F2, 20 A
Cooling line valve fuse	F4, 500 mA(T)
Electrical load	See section Electrical requirement
Pollution degree	3
Noise level	< 65 dB(A) at full speed
Liquid temperature	3-90 °C
Ambient temperature	3-40 °C
Relative humidity	Up to 95 % non-condensing
Altitude	Up to 2 km above the sea level
Usage	Indoor (outdoor, subject to restrictions found)
Type of protection	Class 1 (earthed) equipment
Equipment type	Stationary, fixed equipment
Construction type	Fixed construction, no moveable part
EMC environment	B (light industrial, commercial, and residential)
Pressure switch	Bailey & Mackey Ltd. Range: 0.7 - 14 bar and 2-42 bar
Pressure gauge range	0-10 bar, 0-16 bar and 0-28 bar
Maximum inlet pressure	10 bar
Pump generated pressure	See section Pressures and flows

Related information

12.2 Electrical requirement

12.3 Pressures and flows

12.2 Electrical requirement

1-ph models

Model	Start up current (A)	Full load current (A)	Motor power (kWh)
FireSAFE+ CRI 5-5	11.8	1.9	0.75
FireSAFE+ CRI 5-12	46.2	14	2.2
FireSAFE+ CRI 5-15	46.2	14	2.2
FireSAFE+ CRI 10-3	28.9	7.4	1.1
FireSAFE+ CRI 10-4	38.6	9.9	1.5
FireSAFE+ CRI 10-5	46.2	14	2.2
FireSAFE+ CRI 10-6	46.2	14	2.2
FireSAFE+ CRI 15-2	46.2	14	2.2

3-ph models

Model	Start up current (A)		Full load current (A)	Motor power (kWh)
	DOL	SS		
FireSAFE+ CRI 10-6	42.3	16.9	4.6	2.2
FireSAFE+ CRI 10-7	58	23.2	6.3	3
FireSAFE+ CRI 10-8	58	23.2	6.3	3
FireSAFE+ CRI 10-9	58	23.2	6.3	3
FireSAFE+ CRI 10-10	87.7	35.1	7.9	4
FireSAFE+ CRI 10-12	87.7	35.1	7.9	4
FireSAFE+ CRI 10-14	129.8	51.9	11	5.5
FireSAFE+ CRI 15-2	42.3	16.9	4.6	2.2
FireSAFE+ CRI 15-3	58	23.2	6.3	3
FireSAFE+ CRI 15-4	87.7	35.1	7.9	4
FireSAFE+ CRI 15-5	87.7	35.1	7.9	4
FireSAFE+ CRI 15-6	129.8	51.9	11	5.5
FireSAFE+ CRI 15-7	129.8	51.9	11	5.5
FireSAFE+ CRI 15-8	131	52.4	14.4	7.5
FireSAFE+ CRI 15-9	131	52.4	14.4	7.5
FireSAFE+ CRI 15-12	-	58.5	20.3	11
FireSAFE+ CRI 20-7	131	52.4	14.4	7.5
FireSAFE+ CRI 20-10	-	58.5	20.3	11
FireSAFE+ CRI 20-17	-	120.6	33.5	18.5

12.3 Pressures and flows

See product data sheets for pump curves.

1-ph models

Model	Nominal head (bar)	Nominal flow (l/min)	Closed valve head (bar)
FireSAFE+ CRI 5-5	2.13	96.67	3.14
FireSAFE+ CRI 5-12	5.44	96.67	7.83
FireSAFE+ CRI 5-15	6.62	96.67	9.71
FireSAFE+ CRI 10-3	2.15	166.7	2.94
FireSAFE+ CRI 10-4	2.86	166.7	3.91
FireSAFE+ CRI 10-5	3.61	166.7	4.9
FireSAFE+ CRI 10-6	4.21	166.7	5.83
FireSAFE+ CRI 15-2	1.98	283.33	2.75

3-ph models

Model	Nominal head (bar)	Nominal flow (l/min)	Closed valve head (bar)
FireSAFE+ CRI 10-6	2.13	96.67	3.14
FireSAFE+ CRI 10-7	5.44	96.67	7.83
FireSAFE+ CRI 10-8	6.62	96.67	9.71
FireSAFE+ CRI 10-9	2.15	166.7	2.94
FireSAFE+ CRI 10-10	2.86	166.7	3.91
FireSAFE+ CRI 10-12	3.61	166.7	4.9
FireSAFE+ CRI 10-14	4.21	166.7	5.83
FireSAFE+ CRI 15-2	1.98	283.3	2.75
FireSAFE+ CRI 15-3	3.25	283.33	4.19
FireSAFE+ CRI 15-4	4.39	283.33	5.57
FireSAFE+ CRI 15-5	5.43	283.33	6.92
FireSAFE+ CRI 15-6	6.6	283.33	8.3
FireSAFE+ CRI 15-7	7.64	283.33	9.66
FireSAFE+ CRI 15-8	8.82	283.33	11.08
FireSAFE+ CRI 15-9	9.86	283.33	12.45
FireSAFE+ CRI 15-12	13.29	283.33	16.57
FireSAFE+ CRI 20-7	8.01	350	10.1
FireSAFE+ CRI 20-10	11.57	350	14.51
FireSAFE+ CRI 20-17	19.89	350	24.71

13. Product manuals

Product	Document type	QR code	Publication number
FireSAFE+	Brochure		93027426
CR, CRI, CRN	Installation and operating instructions		96462123
CR, CRI, CRN (50 Hz)	Data booklet		99301179

All the above documents can also be found on the Grundfos Product Centre website at: *www.grundfos.com/uk*.

14. Decommissioning, dismantling and disposal

14.1 Decommissioning the product

Decommissioning is the process of taking the product out of service for any of the following reasons:

- replacing with another product
- upgrading the product
- removing the system altogether.

14.2 Dismantling the product

WARNING
Electric shock
Death or serious personal injury

- Isolate the mains power from the product.
- Wait at least five minutes before starting any work on the product.
- Make sure that the power supply cannot be accidentally reconnected.
- Any work must only be carried out by skilled and qualified persons.

CAUTION
Description of hazard
Minor or moderate personal injury

- Wear safety shoes and safety gloves.

Always make sure that adequate provision is made to capture any water drained from the system and the product when dismantling.
Always make sure that adequate water spill protection for flooring and so on is in place before dismantling and draining any part of the system or the product.

Appropriate PPE must be worn:

- foot protection – safety boots. EN ISO 20345:2011.
- eye protection – safety glasses. EN166-1F.
- basic hand protection – gloves. EN388.

Make sure that any outgoing signals from the product will not activate:

- fire alarms or beacons
- fire alarm control panel
- fire service response or fire monitoring service response
- any other warning or monitoring devices installed (such as SMS to mobile device).

Consideration must be given to contacting any response services beforehand and informing them of the decommissioning and dismantling of the product.

1. Isolate the power supply and ensure that it cannot be turned back on.
2. Disconnect the power supply from the product.
3. Press and hold the **OK** button on the operating panel to silence the internal buzzer.
4. Close the system isolating valve on the inlet side of the product.
5. Remove the four screws holding the controller front cover in place.
6. Lift off the controller front cover and place the cover in a safe place out of the way.
7. The sprinkler system may still be pressurised from the product internal non-return valve to the sprinkler head. Drain the water from the system drain point; beware of pressure in the system. Close the system isolating valve on the outlet side of the product.
8. Drain the product and system pipework from the point chosen to disconnect the product on the inlet side of the product.
9. Dismantle the pipework and base or wall fixings.
10. Remove the set with appropriate handling equipment and procedures.

14.3 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.

The crossed-out wheelie 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*.

GB: EU declaration of conformity

For products with CE marking on the nameplate.

We, Grundfos, declare under our sole responsibility that products (1) declared below are in conformity with the relevant union harmonisation legislation (2), harmonised standards or other technical specifications (3).

This declaration of conformity refers to the Grundfos document: 93070260

If a product consists of several components each with a separate declaration, all relevant declarations are included in the package.

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FireSAFE+ (Residential) (1)

Union harmonisation legislation (2)

Harmonised standards or other technical specifications (3)

- **EU/2023/1230** (Machinery)
  EN ISO 12100:2010, EN ISO 12100:2010
- **2014/35/EU** (Low Voltage)
  EN 60335-1:2012+A14:2019, EN 60335-2-41:2003+A2:2010
- **2014/30/EU** (EMC)
  EN 55014-1:2017+A11:2020, EN 55014-1:2021, EN 55014-2:2021, EN 61000-3-2:2014, EN 61000-3-2:2019+A1:2021, EN 61000-3-3:2013+A1:2019+A2:2021+AC:2022, EN 61000-6-2:2005+AC:2005, EN 61000-6-2:2019
- **2011/65/EU** and **2015/863/EU** (Restriction of the Use of Certain Hazardous Substances in Electrical and Electronic Equipment Regulations)
  EN IEC 63000:2018

Sunderland, 30/May/2024

Ryan Appleby
Engineering Manager

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UK declaration of conformity

UK declaration of conformity

We, Grundfos, declare under our sole responsibility that the products to which the declaration below relates, are in conformity with UK regulations, standards and specifications to which conformity is declared, as listed below:

Valid for Grundfos products:

FireSAFE+ (Residential)

- **Supply of Machinery (Safety) Regulations 2008/1597**
  Standard used: BS EN ISO 12100:2010, BS EN 809:1998+A1:2009
- **Electrical Equipment (Safety) Regulations 2016/1101**
  Standards used: BS EN 60335-1:2012+A15:2021, BS EN 60335-2-41:2003+A2:2010
- **Electromagnetic Compatibility Regulations 2016**
  Standards used: BS EN 55014-1:2017+A11:2020, BS EN IEC 55014-2:2021, BS EN IEC 61000-3-2:2019+A1:2021, BS EN 61000-3-3:2013+A2:2021, BS EN 61000-6-1:2007, BS EN 6100-6-3:2007+A1:2011
- **The Restriction of the Use of Certain Hazardous Substances in Electrical and Electronic Equipment Regulations 2012/3032**
  Standards used: BS EN IEC 63000:2018

This Declaration of Conformity is valid together with Grundfos publication number 93070260.

Sunderland, 30/May/2024

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