

Boss Direct G4



ENG Installation and operating manual

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1. Warranty

The Flamco warranty on equipment supplied covers manufacturing defects, under our standard terms and conditions of sale, where items with a proven manufacturing defect are replaced at the point of sale.

In some circumstances it will be appropriate for an engineer visit to review or inspect the product under warranty. For all engineer visits, requested under alleged warranty, a purchase order is required to cover work and time that is deemed to be outside of the warranty agreement. If no recognised commissioning, by a Qualified Person, has taken place, then the warranty may be null and void. If the unit is identified with a manufacturing defect within the warranty period, then no charge is made for correcting the defect.

Flamco reserve the right to supply a replacement product in lieu of an engineer visit. Removal and reinstallation costs, along with consequential losses are not covered by this warranty agreement.

Flamco equipment is manufactured to order and is marked with a unique serial number, allowing traceability to both individual model configurations and the date of manufacture. The warranty, against manufacturing defects, is for 30 months from date of manufacture or 2 years from date of confirmed commissioning, whichever is sooner.

For the warranty to be valid it is also taken that there is an appropriate safety valve on the wider system protecting the equipment. That the equipment is undamaged at the time of installation. That the equipment is not exposed to adverse environmental conditions. That the equipment is stored and installed in a frost-free area. That these operating and maintenance instructions are followed. That the equipment is used for the purpose for which it was designed.

An extended warranty is available by purchasing a separate Flamco service agreement.

Service Agreement	Standard Warranty	Extended Warranty
3 year contract	2 years	1 year
5 year contract	2 years	3 years

For general Terms and Conditions of this sale, see General Conditions of Sale Flamco Group on the Flamco website in link below:

<https://flamcogroup.com/ex-en/page/terms-and-conditions>

1.1 Conditions of warranty



It is a requirement of your local water authority to disclose the installation location.

To make this easy, you must register your product, activate your warranty and register with your local water authority on our website at:

<https://flamcogroup.com/warranty-registration>



Failing to disclose the installation location of this product with your local water authority will lead to invalidation of The Flamco warranty described above.

Warranty claims or queries can be directed to:

Service Department service@flamco.co.uk

Flamco Limited +44 (0) 1744 744 744

Washway Lane

St Helens

Merseyside

WA10 6PB

2. Liability

All technical specifications, data and instructions for executable actions and contained herein are correct at time of publication. This information is the result of our current findings and experience to the best of our knowledge. We reserve the right to make technical changes subject to the future development of the Flamco product referred to in this publication. Hence no rights may be derived from technical data, descriptions and illustrations. Technical pictures, drawings and graphs do not necessarily correspond to the actual assemblies or parts as delivered. Drawings and pictures are not to scale and contain symbols for simplification.

3. Copyright

All documentation is protected by copyright. Distribution or other forms of reproduction of documents, even extracts, exploitation or notification of the contents hereof is not permitted, where not otherwise specified. Infringements are liable to prosecution and payment of compensation. We reserve the right to exercise all intellectual property rights.

4. About this manual

The following pages list the information, specifications, measures and technical data that allow the relevant personnel to use this product safely and for the intended purpose.

Responsible persons or those engaged by them carrying out the required services must read this manual attentively and understand it.

Such services include:

Storage, transportation, installation, electrical installation, commissioning and re-starting, operation, maintenance, inspection, repair and dismantling.

Where the product is to be used in plants/facilities which are not required to comply with local or harmonised regulations, this document is purely for informative and reference purposes.

As this unit may be subject to unlimited inspection from the local water authority at all times, this manual must be kept in the immediate vicinity of the installed unit, at least within the confines of the operations room. Installation classification 2 according to the Annex R of 60730-1

Disregard or lack of attention to the information and measures contained in this manual may pose a hazard to people, animals, the environment and tangible assets. Failure to observe the safety regulations and the neglect of other safety measures may lead to significant consequential loss

4.1 Conventions symbols in this manual



WARNING – Important safety related information intended to prevent injury and/or damage to the equipment, system or property.



IMPORTANT - Important information intended to ensure that the equipment functions correctly



USEFUL – Useful information which may be helpful, but is not necessarily required for the unit to function correctly.

4.2 Typography

This manual makes use of different typography to identify different types of information.

Italics

Key words and phrases

(Round Brackets)

Used to identify a button on the digital controller

[Square Brackets]

A parameter on the digital controller

<Inequality symbols>

A message/fault code displayed on the digital controller

4.3 Where to find more information?

For the Quick Start Guide and further documentation in various languages, visit:
www.flamcogroup.com/manuals

For further information please visit the Flamco Limited Website at the following URL:
www.flamco.co.uk

Alternatively, to contact other Flamco locations, please see the contact page in Appendix 4: Contact

5 Safety

This equipment is intended to fill and/or top-up sealed water-based heating and cooling systems, in which temperature-induced changes in the volume of the system water (the heat transferring agent) is governed by a separate expansion vessel and safety relief valve.

This product is suitable and appropriate for the operation in heat generating systems according to BS7074, BSEN 12828, BSEN 12952 and BSEN 12953.

The Principal / Operator, will need to consult with a local authorities on any additional safety measures that are required.

5.1 Incoming goods

The items delivered must be compared against the items listed on the shipping note and inspected for conformity. If not in line with the documentation or if the delivery is incorrect in another way, the product must not be used. The goods may also be warehoused in their packaging. Once it has been removed from its packaging, the equipment must be put in position, observing standard safety procedures.



Always check the unit for damage and appropriate markings according to Appendix2: Markings in this manual.

5.2 Operations location

The responsible person carries the responsibility over the designated plant room that meets all the requirements stated above.

Definition: Room which meets the applicable European and local regulations, standards and relevant technical rules and guidelines of the professional associations for this field of application. For the use of the Boss Direct G4 as prescribed in this manual these rooms generally contain equipment for thermal generation and distribution, water heating/cooling and top-up, power source and distribution, such as measuring, control engineering, control technology and IT. Access for unqualified and untrained persons must be restricted or forbidden

Unit Internal access

The unit internals can be accessed for service or repair, by a Qualified Person. The unit can only be accessed by using a specialized tool. Any attempts to access the internals of the unit without the correct equipment will invalidate the Flamco Warranty and will be classified as use in an improper manner, according to our General Conditions of Sale.

5.3 Electrical

Electrical equipment inspections, routine inspection

Without prejudice to the considerations of the insurer/Operator, it is recommended that the electrical equipment of the Boss Direct G4 be inspected and documented together with the heating/cooling unit no less than every 18 months (see also DIN EN 60204-1 2007).

Emergency- STOP / Emergency-OFF

To conform with directive 2006/42/EG an EMERGENCY-STOP facility is to be made available during installation.

Preferably, use a grounded wall socket for the power supply to the unit. The socket must stay accessible. If the unit is directly connected to the power supply, make sure the power supply line is provided with:

- a high-sensitivity differential switch (30mA) (residual current device RCD)
- a mains isolator switch with a contact gap of at least 3 mm.

When additional security measures with EMERGENCY-OFF devices are required according to the design and operation of the heat generator, these are to be installed on-site.

Obvious misuse

- Operation at incorrect voltage and/or frequency.
- Use in inappropriate system designs.
- Use of unpermitted installation materials.

Other hazards

- Overload of construction parts by the presence of unpredictable extreme values.
- Operational continuity at risk in the case of changed, non-permissible ambient conditions.
- Operational continuity at risk in the case of safety-control parts being taken out of service or malfunctioning.

5.4 Staff qualification**Definitions:**

- Operator: A person or legal entity who is the owner of the product and uses the aforementioned product, or is nominated to use it, under the terms of a contractual agreement.
- Principal: The legally and commercially responsible party in the execution of construction projects. Legally and commercially liable client in the commission of building projects.
- Responsible person: The representative appointed to act by the main contractor or operator.
- Qualified person (QP): A Qualified Person must have undergone advanced technical training and have sufficient experience to independently perform complicated tasks or work associated with residual hazards. Such experience will in each instance refer to a specific specialism, e.g. maintenance, working on electrical systems, systems mechanic for wholesome water (potable), sealed heating/cooling and air conditioning technology. In preparation for impending work, a Qualified Person must be able to correctly estimate the feasibility, risks and hazards as well as the equipment required. A Qualified Person is expected to be able to understand complex, minimally prepared plans and descriptions, and to obtain missing and required detailed information by suitable means.

The product must be installed by a Qualified Person with regard to the following relevant requirements:

- The Health and Safety Regulations
- Building Regulations
- IEE Regulations
- Water Supply (Water Fittings) Regulations
- Water By-laws (Scotland)
- Any other by-laws or planning requirements.

All Flamco products should be installed by a Qualified Person with the relevant qualifications to carry out the required services and be physically and psychologically capable. The area of responsibility, competence and supervision of personnel is the duty of the Operator.

Operating instructions are transferred by Flamco representatives or others assigned by them during delivery negotiations or on demand.

Training for the required services, installation, dismantling, commissioning, operation, inspection, maintenance and repair are part of the training / further education for service engineers of the Flamco branch offices or named service contractors.

These training courses cover information on required installation conditions, but not their implementation.

On-site services include transportation, the preparation of an operations room with the requisite foundation engineering to accommodate the system, and the requisite hydraulic and electrical connections, the electrical installation for the power source of the expansion automat and installation of the signal leads for the IT equipment.

Required service	Professional group example	Relevant qualifications example
Storage transportation	Logistics, transport, warehousing	Transport and warehousing specialist
Assembly, disassembly, repairs, maintenance. Re-commissioning after adding or changing components. Inspection.	Installation and building services	HVAC specialist
First commissioning of configured control unit (generic), re-commissioning after power cut, operation (work on the terminal and Flextronic control unit)		People with operations room clearance with knowledge gleaned from this guide.
Electrical installation	Electrical engineering	Specialist in electrical engineering/ installation
Initial and re-inspection of electrical systems		Qualified person (QP) with certification in Electrical engineering.
Inspection before commissioning and re-inspection of pressure equipment	Installation and building services engineering performed in the context of technical inspection	Qualified person (QP)

6 Product description

The Boss Direct G4 is the most compact, wall-mounted, pressurisation unit in the portfolio. The function of this pressurisation unit is to provide a means of automated water filling and top-up to sealed heating and cooling systems. The equipment is designed to provide periodic water top-up to compensate for minor losses in system pressure (e.g. slow leaks, air venting, etc.).

The Boss Direct G4 is the latest in pumpless digital pressurisation technology for light commercial and residential buildings. It's a slim, wall-mounted pumpless top-up pressurisation unit, with a top-up flow rate of up to 14 l/min depending on the mains or boosted mains, water pressure. It is designed to be connected directly to a building's incoming water supply using the included flexible hose. It is there to fill and maintain the pressure of a heating or chilled water system without the need for a pump.

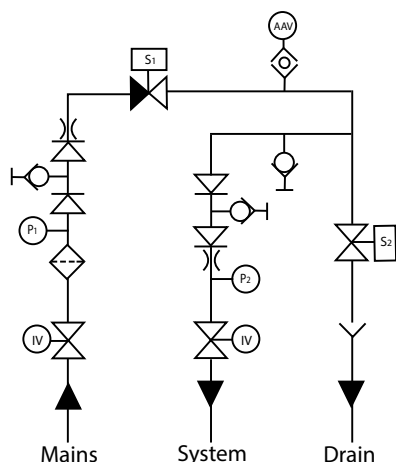


This equipment is not designed to cope with sudden, substantial, losses of system pressure (e.g. manual draining) or major water losses (e.g. large leaks). The equipment is also not intended to be used for water boosting (potable) applications.

6.1 Operating principle

The following schematic shows the internal arrangement of the pressurisation unit:

1. Water enters the unit via the mains connection, isolation valve (IV) and through the back-flow preventor.
2. Pressure sensors (P1 & P2) monitor the pressure in the mains water supply system and in the heating or cooling system.
3. A solenoid inlet valve (S1) and a drain valve (S2) are activated when topping up is required.
4. The automatic air-vent (AAV) removes free air before it enters the sealed heating system.
5. Once the top up cycle is finished, the remaining water in the unit is removed by opening of the drain valve (S2), to prevent legionella build up.
6. A filter on the mains supply to the unit is already installed. Where debris from the supply pipe is expected, it is recommended to install an additional filter or Y-strainer on the mains water supply to the unit.



Icon	Description
IV	Isolation valve
P1	Pressure sensor to measure mains water pressure
P2	Pressure sensor to measure heating system pressure
S1	Valve to control mains water inlet, normally closed (NC)
S2	Valve to control drain outlet, normally open (NO)
AAV	Automatic float air vent
Y	Tundish

6.2 Technical datasheet

WRAS approval number	KUKreg4: 2202704 WRAS: 2203331
General	
Size of the unit (Height x Width x Depth)	359mm x 225mm x 141mm
Dry weight	4 kg
Connection details	
Cold water inlet	15mm Compression
System outlet	15mm Compression
Drain (via Tundish)	22mm Compression & 32mm PP push fit & 32mm PP solvent weld
Maximum inlet pressure	6 Bar
Maximum cold fill pressure	5.7 Bar
Maximum design pressure	PN10
Nominal flow rate (at 2 Bar)	14l/min
Electrical details	
Supply voltage	110/230 Volt
Frequency	50 Hz
Full load current	1 Amp
Fuse rating	5 Amp
Maximum load BMS relays	5 Amp
Protection class	IP44
Environmental data	
Power consumption (Standby)	2 W
Power consumption (Filling)	19,4 W
Operation conditions	
Maximum temperature at inlet:	45°C
Maximum temperature at outlet:	90°C
Ambient temperature range:	5°C / 45°C
Storage conditions	
Temperature	5°C / 45°C
Humidity	60....70% relative humidity, non-considering



Keep the unit in a locked, frost free and dry area, protect the unit from solar & thermal radiation, vibration, from electrically conductive gases, explosive gas mixtures and aggressive atmosphere.

7 Installation requirements

The Boss Direct G4 is a wall mounted unit and should be installed at a suitable eye level, where the screen is easy to read and maintenance remains practical and possible. The wall of the set-up location for the Boss Direct G4 must be such that stability is guaranteed and maintained. For general assembly instructions and commissioning steps of the product, see Boss Direct G4 Quick Start Guide in link below:

<https://flamcogroup.com/manuals/flexfiller-direct>

All Flamco products should be installed by a Qualified Person with regard to the relevant requirements described in section 5.4: "Staff qualification". Check that the installation and other actions prior to use have been carried out in full (e.g. power supply available and connected, functioning or active fuses, seal tightness of the equipment). Any damage or loss incurred through incorrect commissioning by an unapproved engineer will not be covered by the warranty.



The following conditions must be met before starting the commissioning process. Failure to meet these conditions may result in injury or damage to the equipment, system and/or property.

Conditions	
1.	This equipment is designed to be installed in an indoor environment. The unit must be installed in a frost free environment, away from precipitation and water sprays/jets.
2.	The heating/cooling system is fitted with an appropriate safety valve and expansion vessel.
3.	Non-return valves, pressure reducing valves and RPZ valves must <u>not</u> be installed between the pressurisation unit and the heating/cooling system. These devices will prevent the pressure sensor from reading the system pressure.
4.	It is essential to have the pressurisation unit and the associated system expansion vessel connected to the system at the same point, to provide a neutral pressure reading. This point of connection should be in the system return header, on the suction side of the circulation pump.
5.	All necessary pipe/electrical connections have been made to a local standard.
6.	Refer to the appropriate datasheet for the maximum working pressure and temperature of the pressurisation unit. The conditions at the point of connection to the system must not exceed these values.
7.	The expansion vessel is pre-charged to the correct pressure (equal to Boss Direct G4 fill set-pressure)



It is advisable to fill the heating/cooling system prior to commissioning. If this is not possible, the Boss Direct G4 can be used to fill the system after commissioning. Depending on the size of the system, this may take a considerable amount of time.

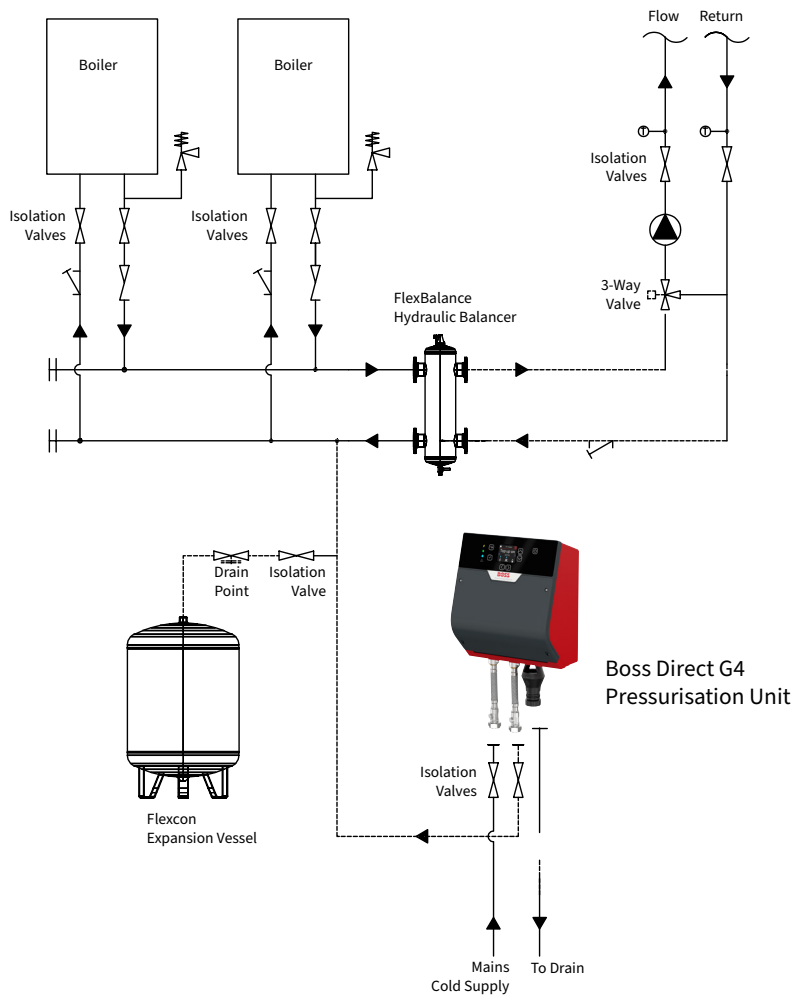


A mains cable is provided with the unit. A mains cable length of 1,5 meter may not be exceeded if replacement of a cable is necessary.



Two WRAS approved flexible hoses with isolation valves are provided with the unit. It is essential for the maintenance of this unit to use hoses provided.

7.1 Installation diagram



7.2 Clearance requirements

Clearance guidelines for service and repair.



7.3 Hydraulic connections

From the “Manual-mode” in the controller menu, a testing routine can be triggered to check if the device is set up correctly and working accordingly. Each actuator (valve) can be operated separately with a maximum run-time of 2 minutes.

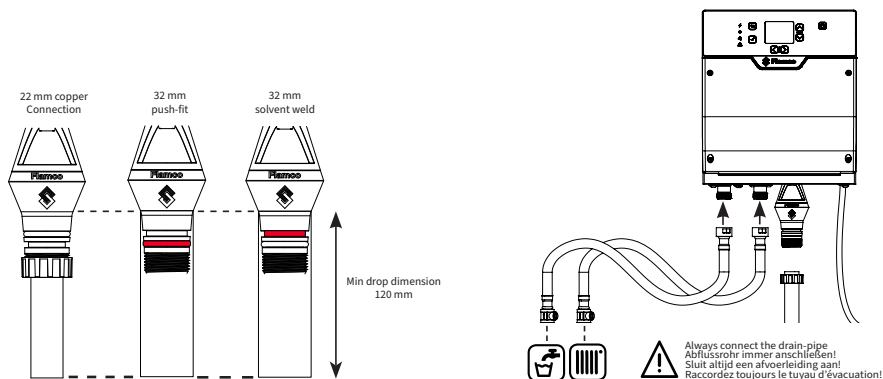


The mains water and sealed system connection to the unit must be made using the flexible hoses with isolation valves provided.

The drain always has to be connected. There are 3 options to connect the drain:

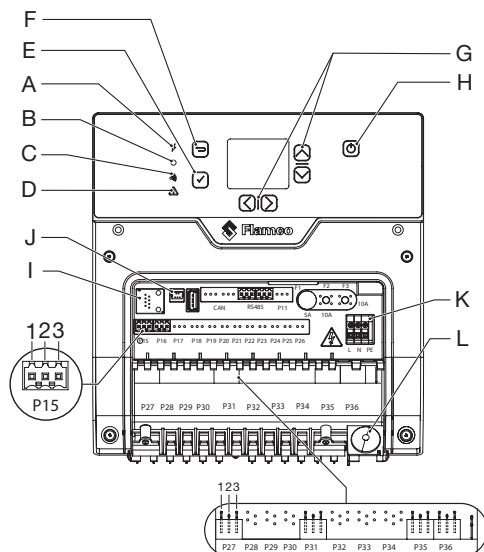
- With a 22mm copper pipe
The plastic nut provided will secure the pipe in place and create a sealed connection
- With a 32mm push-fit PP pipe
The O-ring provided on the tundish will create a sealed connection with the pipe if positioned in the lower groove on the tundish, see image below.
- With a 32mm solvent weld PP pipe
The O-ring provided on the tundish will create a sealed connection with the pipe if positioned in the higher groove on the tundish, see image below.

Drain connection options



7.4 Controller

A clarification of menu icons, function and location can be found in Appendix 1: Icon library.



Identification	Description	Pinout
A	Power indicator (orange=power)	
B	Status indicator (green=ok automat running)	
C	Bluetooth Not Available	
D	Error/alarm (red=alarm/error active)	
E	Confirm button	
F	Return button	
G	Navigation buttons	
H	Screen on/of (hold 8 sec for powerdown)	
I	Not Available	
J	USB-A software update + logging	
CAN	Not Available	

RS485	Modbus/Bacnet/HFC over RS485	1 B+
		2 B-
		3 GND
F1	Fuse 1 (P31&P32) 5x20 5A	
F2	Fuse 2 (P33&P35) 5x20 10AT	
F3	Fuse 2 (P34&P36) 5x20 10AT	
B	Mains power connector	1 L
		2 N
		3 PE
L	Mains grommet	
P11	Not Available	
P15	SELV, System pressure 0-5V	1 +VDC
		3 signal
		3 GND
P16	SELV, Inlet pressure 0-5V	1 +VDC
		3 signal
		3 GND
P17	Not Available	
P18	Not Available	
P19	Not Available	
P20	Not Available	
P21	Not Available	
P22	Not Available	
P23	Not Available	
P24	Not Available	
P25	Not Available	
P26	Not Available	
P27	Fault contact, VFC 1	1 NO
		2 COM
		3 NC
P28	Not Available	

P29	Not Available	
P30	Not Available	
P31	Power, V3 inlet solenoid valve	1 PE
		2 L
		3 N
P32	Not Available	
P33	Not Available	
P34	Not Available	
P35	Power, V1 Drain valve	1 PE
		2 L
		3 N
P36	Not Available	

7.5 Connectivity options

Connectivity options	Designated use
Standard USB (USB-A)	For saving the offline log and the configuration parameters. The second option for this port is to update the firmware of the controller (to download a new control SW)
RS-485	The primary designation is to connect the Boss Direct G4 to internet (via Gateway and HFC protocol). Alternatively – BMS via Modbus Alternatively – BMS via bacnet (only one out of three options at the same time)

8 Electrical installation

The provision of power supply, (protective) ground wire connection and line protection must be made in accordance with the local regulations (responsible power company) and the applicable National standards. The required electrical information can be found on the product label at the side of the Boss Direct G4, the terminal plan (labelling) and in "Appendix 3." Terminal plan. The Boss Direct G4 has been supplied with the correct power supply cable and it is highly recommended to use the cable provided.



All electrical connections should be carried out by a qualified and authorized electrician in accordance with the latest issue of the IET regulations. The equipment must be earthed. It is strongly recommended that a high sensitivity differential switch (30mA) (residual current device RCD) is fitted on the incoming electrical supply.



Do not remove covers without first ensuring that the electrical supply is suitably isolated and cannot be switched on.



Do not attempt to supply electricity to the equipment unless the protective covers are correctly fitted and held securely in place.



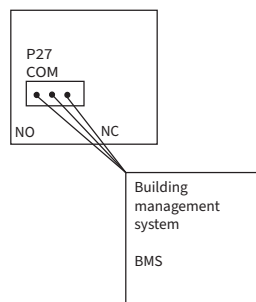
Cables connected to the controller volt free contacts may be supplied from another source and may remain live after the unit is isolated. These must be isolated elsewhere. The user or the installer is responsible for the installation of the correct earthing and protection according to valid national and local standards. All operations must be carried out by a qualified electrician

The Flamco equipment must be connected to a mains isolator switch with a contact gap of at least 3 m. It is recommended the switch should be installed within 2m of the equipment.

8.1 Alarm installation

The installation, data processing and commissioning must be performed by a Qualified Person. The appropriate national standards, regulations and rules must be followed.

- Additional cables are not included or supplied by Flamco
- Flamco recommends the use of twisted single pair shielded cable.
- The termination resistor has a value of 120 Ohm.
- The maximum permissible length of cables is 30m.



If controller powered down, then the P27 is normally open
 If controller is powered up, then the P27 is normally closed
 If controller is in error, then the P27 is normally open



For additional information on how to connect the Boss Direct to the internet or BMS, see Flextronic connectivity guide.

9 Operation

Once commissioned, the pressurisation unit should operate without any user intervention. Under normal operating conditions, the display will show the current system pressure in Bar.

For an overview of the main operation screens, see image below.

A clarification of menu icons, function and location can be found in Appendix 1: Icon library

Home screen

While the unit is filling, the display will show the current status of the unit and its actuators (valves). The system to which the unit is connected, is monitored and the icon in the top right corner signifies its status.

Idle screen

When the unit is not active for a period of 30 seconds (standby), the display will show the total top up amount in litres over a period of 28 days and the date of the next service.

Maintenance screen

Tapping the right arrow button ">" will show additional parameters like the set pressure, mains pressure, legionella setting & duration and controller serial number.

Warning screen

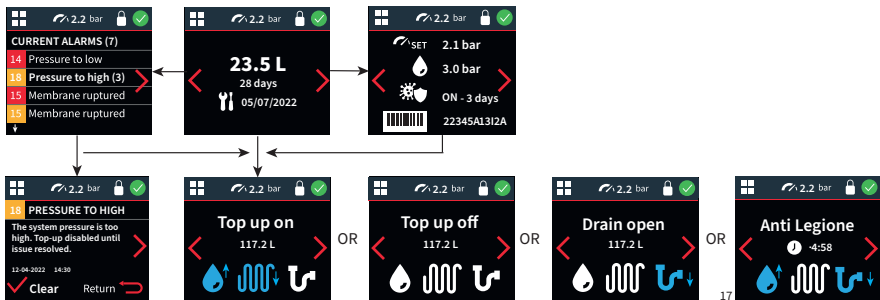
Shows every active warning since the last time the warning screen has been cleared.

If the pressurisation unit is showing a fault code on the Home screen display, tapping the left arrow button "<" will reveal the active fault message(s). The user can see an extended explanation of the fault and by pressing the tick-button "✓" whilst on the selected fault.

To resolve the fault, simply click the tick-button "✓" again and the fault will be cleared.

To exit the extended explanation screen without resolving the fault, press the return- button "↵".

When the fault condition is not resolved it will return on the display. Please use the troubleshooting guide in Appendix 4 to resolve each fault accordingly.



9.1 Shut-down procedure

The pressurisation unit must be shut-down during any of the following scenarios:

- Work is being carried out on the system.
- Work is being carried out on the pressurisation unit
- The heating/cooling system is being flushed

To shut down the pressurisation unit, please follow the steps below:

1. Isolate the electrical power supply to the pressurisation unit
2. Isolate the mains water supply from the pressurisation unit with the isolation valve in the hose
3. Isolate the pressurisation unit from the system using the isolation valve in the hose



If it is anticipated that the unit will be out of commission for more than 24 hours, it is advisable to disconnect the hoses from the unit.

9.2 Restarting

After long periods of downtime

If this downtime was planned or scheduled, turn OFF the control unit and close off the isolating valve to the system and the isolating valve to the top-up line. After that, decompress and then drain the water area.

We recommend you carry out maintenance before restarting (see chapter 10: Maintenance).

Use the commissioning records for restarting and check especially for changes that can lead to other operating conditions of the expansion automat (e.g. system pressure).

If the power supply has failed

The controller display will show a system reboot warning, this can be removed in the warning screen. The target parameters and default settings for pressure and top-up will remain unchanged, meaning automatic operation will resume automatically when power is restored (control unit ON). Extraordinary system operating conditions (e.g. cooling to below the default setting) may fall outside the permitted settings of the device (and expansion vessel of the system).



Please ensure that when the system cools down or warms up, the minimum or maximum system pressure does not exceed or fall below the permitted operating pressure.

Check the Boss Direct G4 operation once power supply has been restored and, if necessary, set the actual date and time values (overview menu options).

10 Maintenance

Electrical supply must be disconnected prior to conducting any maintenance. Please refer to chapter 9.1 “Shut-down procedure” and follow the steps.



It is forbidden to alter or use non-original components or replacement parts without authorisation. Such acts may result in serious personal injury and endanger operational safety. They will also render any claim for damages against product liability void.

It is recommended to contact Flamco Customer Service (See Appendix 4: Contact) for carrying out these services.

Maintenance and repairs

Maintenance and repairs may only be carried out when the system is shut down or if the Boss Direct G4 is not required to monitor or operate. The power supply must remain off for the period of the work.

The pressurisation equipment must be taken out of service and guarded against unintentional re-starting until the maintenance work is finished. Note that the safety circuits and data transmissions made whilst shutting down could trigger the safety chain or lead to false information to a connected BMS. Existing instructions for the heating or cooling unit as a whole must be observed. To stop hydraulic components, block the relevant sections and drain them using the available drain connections, and relieve the pressure.



When restarting the system some logical errors may arise that are self-acknowledging or required to be manually acknowledged.

Unlocking advanced features can be done by using the following login code: 4330.



Improper use of the advanced features can result in a non-functional device. Only service engineers should use the advanced features.

10.1 Maintenance intervals

Due to variations in operating conditions, and the varying loads placed on pressurisation units, it is not feasible to provide accurate predictions of component lifespan. The most effective method of maintenance is to inspect the pressurisation unit for early signs of component failure and take action accordingly.

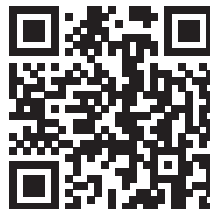


Maintenance has to be executed by a Qualified Person, the maintenance protocol should be followed.



A digital service log can be filled out to store the information at time of Maintenance. For digital service log, see link below or QR code on the right side of this page.

<https://flamcogroup.com/service-log>



The following maintenance procedures should be performed at least once a year:

Maintenance procedure	
1.	Interrogate the controller alarm log to help direct the inspection. The log will show any warnings or alarms that have occurred since first commissioning the unit.
2.	Follow chapter 9.1: " Shut down procedure", then continue with the steps below.
3.	Depressurize and drain the Boss Direct G4 unit.
4.	Check the filter on the mains inlet for any debris. If needed, remove the filter with pliers, rinse under the tap and place it back into the mains inlet side before continuing with the following steps.
5.	Check the valves and connections for any traces of leakage or malfunction.
6.	Check the connections for any signs of corrosion.
7.	Check the wiring for any signs of wear and tear. Signs of overheating, loose wiring, etc. Any signs of damage requires a replacement of the wiring.
8.	Follow the startup procedure in chapter 9.2: "Restarting"
9.	Check the controller for warnings and alarms and clear all before finishing maintenance.
10.	Reset the maintenance date on the Flextronic controller. To do so, Log in on the controller and clear the maintenance warning in the warning screen. The maintenance date will then automatically switch to the next required maintenance date.



5 Years after first commissioning, the Boss Direct G4 will need an annual service to reset the reminders for the annual service. It is the homeowners responsibility to book the annual service to reset the controller.

10.2 Visual inspection

A basic visual inspection will highlight the majority of potential faults on a pressurisation unit. It is recommended to perform a visual inspection annually. However, due to the simplicity of performing these checks, frequent inspections are encouraged.

- Check the digital display for fault codes
- Check for signs of leakage (e.g. water, mineral deposits, corroded components/cabinet)
- Check flexible hoses for signs of degradation (e.g. cracks)
- Check that the pressure reading on the digital display corresponds to the actual system pressure (read off another gauge)

10.3 Interrogate controller

The Flextronic controller keeps a log of the number of valve actuations and total hours activation time for each valve, as well as the number of alarm activations and power interruptions. It is advisable to take a note of these figures when servicing the unit, as they may be helpful in diagnosing potential issues.

10.4 Test unit operation

The best way to test the operation of the pressurisation unit is to drain some water from the system, creating a pressure loss, allowing the pressure to drop slowly. Once the pressure falls below the minimum pressure level setting ([COLD FILL] – [DIFFERENTIAL]) the valves should be activated. As soon as the valves activate, close the drain point and allow the system pressure to rise. Once the [COLD FILL] pressure is reached, the valves should be deactivated and the internal air break vents through the drain connection.



An digital service log can be filled out to store the information at time of Maintenance. For digital service log, see link or QR in chapter 10: "Maintenance intervals".

11 Decommissioning / Dismantling

At the end of the service life or at planned shut-down of the equipment, please refer to chapter: 9.1 "Shut-down procedure" and follow the steps. The unit is separated from the power supply. The hydraulic system connection and top-up connection should be closed off.























































Water areas should first be made pressure-less and drained according with the applicable local rules. This water may be chemically treated, contain antifreeze or other additives.














Further processing of the construction parts should be carried out in agreement with the required waste management service provider.

Appendix 1. Icon library

	Icon	Description	Location
1.		Home	
2.		Accept/Confirm	
3.		Arrow left & right	
4.		System OK	
5.		System at fault	
7.		Menu	
8.		Language	  
9.		Date & time	  
10.		Date	   
11.		Time	   
12.		Manual	
13.		Summary	
14.		System pressure	 
15.		Set pressure/ Cold fill pressure	 
16.		Expansion vessel	 

17.		Mains supply	 
18.		System connection	
19.		Drain connection	
20.		Legionella protection	 
21.		Serial number	 
22.		Settings	
23.		General settings	 
24.		System info	 
25.		Service info	
26.		Maintenance	 
27.		Next maintenance	
28.		Fault log	 
29.		Active hours	 
30.		Log in/ Log out	
31.	 	Account	
32.		VFC relay	  
33.		Advanced settings (RS485, anti legionella, etc)	  

34.		Manual mode Login required to activate manual mode (Chapter 10)	 
35.		Factory settings reset Login required to activate manual mode (Chapter 10)	  
36.		Firmware update Login required to activate manual mode (Chapter 10)	  

Appendix 2. Markings

Productlabel

BOSS™
Powered by Flamco

Boss Direct G4

Inlet pressure

Delivery pressure


Max. design pressure

Ambient temp.

Fluid temp.

Date of manufacture

Electrical data






www.flamcogroup.com/manuals

Article code:

Flamco B.V. | Almere | The Netherlands | flamcogroup.com

Flamco Ltd. | St. Helens | United Kingdom | flamcogroup.co.uk

Warranty label



Flamco

Conditional warranty

Please register your product, activate your warranty and register with your local water authority on our website at:

<https://flamcogroup.com/warranty-registration>





Box label

BOSS™
Powered by Flamco

Boss Direct G4

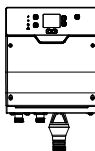
Digital Pumpsless Pressuration Unit




8 712874 201019

Flamco: 20101

www.flamcogroup.co.uk - St. Helens - United Kingdom

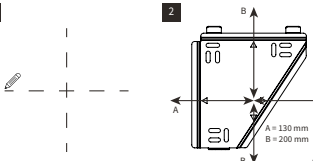


Bracket label



Flamco

- 1 The centre of the unit can be determined by drawing a vertical and horizontal line on the wall. A distance of A (130 mm) and B (200 mm) is required to ensure a safe space around the unit when installed.
- 2 The bracket can be positioned by aligning the arrows shown on the bracket with the horizontal and vertical lines drawn on the wall. After this alignment, the position of the fixing holes can be marked.



Voltage warning label

Attention, high voltage! Opening by qualified personnel only.
Disconnect the unit from the power supply before opening it.

Achtung, gefährliche Spannung! Nur vom Fachpersonal zu öffnen.
Vor dem Öffnen des Gerätes spannungsfrei schalten.



Appendix 3. Troubleshooting guide



Please note that incorrect set-up conditions can lead to repeated errors and inhibit the intended use.

Error #	Notification	Problem	Solution
Warnings			
64	High pressure	The isolation valve at the bottom of the unit is closed.	Open the isolation valves at the bottom of the unit.
		The system pressure has risen above High pressure setpoint.	Decrease system pressure using a suitable drain point
		The expansion vessel has failed or lost its pre-charge.	Check the expansion vessel pre-charge and re-charge if necessary
		The expansion vessel is undersized.	Review the expansion vessel selection (on our website at: https://flamcogroup.com/en/page/support/tools)
		The high pressure set point is too low.	Review the system specifications
65	Amount top-up water too much	A large amount of water has been lost from the system.	Check system for leaks or traces of water loss.
		The unit is undersized for the system.	Review unit selection
66	Low pressure	The isolation valve at the bottom of the unit is closed.	Open the isolation valves at the bottom of the unit.
		The system pressure has fallen below the Low pressure set point.	Increase system pressure using a filling loop, or enable the system fill option.
		The Low pressure set point is too high.	Review the system specifications.
		Continuous low pressure can indicate a leak in the system.	Check system for leaks or traces of water loss.
67	Number of refills within certain time exceeded	A large amount of water has been lost from the system.	Check system for leaks or traces of water loss.
		The unit is undersized for the system.	Review unit selection
		Flood limit time is too short.	Consult Flamco
68	Supply pressure too low	The isolation valve at the bottom of the unit is closed.	Open the isolation valves at the bottom of the unit.
		The mains water supply to the unit has been isolated.	Turn on the mains water supply.
		The mains water pressure is poor.	Consult Flamco

70	Supply pressure sensor no signal	The pressure sensor is not connected.	Check for loose wiring on the pressure sensor.
		The pressure sensor has failed.	Replace pressure sensor
71	Supply pressure sensor short circuit	The pressure output range is out of detectable area. Sensor needs calibrating	Consult Flamco
		The pressure sensor has failed.	Replace pressure sensor.
72	Self-learning correction error	System too small for the unit	Check if the system meets the size requirements for the unit.
		System has no flexibility for pressure changes	Place an expansion vessel in the system.
		System pipe diameter is too small	Check the connection requirements of the unit. Do not connect the unit to pipes smaller than the suggested connection diameter.
73	Manual mode	Manual mode is activated. The valves can now be manually activated.	No action needed, the warning will disappear once manual mode is exited.
74	Maximum top-up time exceeded	A large amount of water has been lost from the system.	Check system for leaks or traces of water loss.
		The unit is undersized for the system.	Review unit selection
		Flood limit time is too short.	Consult Flamco
75	No top-up flow	The mains water supply to the unit has been isolated.	Turn on the mains water supply.
		The isolation valve at the bottom of the unit is closed.	Open the isolation valves at the bottom of the unit.
76	Maintenance 1 is due	The unit is due an annual service.	Contact Flamco service engineer.
77	Maintenance 2 is due	The unit is due an annual service.	Contact Flamco service engineer.
78	Maintenance 3 is due	The unit is due an annual service.	Contact Flamco service engineer.
79	Maintenance 4 is due	The unit is due an annual service.	Contact Flamco service engineer.
80	System fill is active. Press V to stop.	System is being topped up from empty	Press the tick button on the controller to stop System fill function
81	System fill is on hold. Press V to start.	System has paused top up because top up time has exceeded fill time.	If continuing system filling is required, Press the tick button on the controller to start System fill function again.
82	Anti-legionella flush running	The unit is cleaning the pipes by flushing water to the drain.	No action needed, this procedure lasts approximately 2 minutes. Thereafter the unit will continue normal operation.

83	Device restarted	The unit has been unplugged and was unable to top-up during this time.	Clear warning on screen. The warning should not come back.
		The unit has lost mains power due to power cut and was unable to top-up during this time.	Check for other warnings that resulted due to prevention of top-up.
88	Manual system fill is active	System is being topped up manually.	No action needed. Warning will disappear once the manual system fill mode is exited.

Error #	Notification	Problem	Solution
Alarms			
0	Low pressure	The isolation valve at the bottom of the unit is closed.	Open the isolation valves at the bottom of the unit.
		The system pressure has fallen below the Low pressure set point	Increase system pressure using a filling loop, or enable the SYSTEM FILL option.
		The Low pressure set point is too high	Review the system specifications
		Continuous low pressure can indicate a leak in the system.	Check system for leaks or traces of water loss.
1	Low pressure lockout	The system pressure has fallen far below the low pressure set point and is close to 0. Possible leakage.	Activate manual fill to top up if no leakage is detected.
2	System pressure sensor no signal	The pressure sensor is not connected.	Check for loose wiring on the pressure sensor.
		The pressure sensor has failed.	Replace pressure sensor
3	System pressure sensor short circuit	The pressure output range is out of detectable area. Sensor needs calibrating.	Consult Flamco
		The pressure sensor has failed.	Replace pressure sensor
4	High pressure	The isolation valve at the bottom of the unit is closed.	Open the isolation valves at the bottom of the unit.
		The system pressure has risen above High pressure setpoint.	Decrease system pressure using a suitable drain point.
		The expansion vessel has failed or lost its pre-charge.	Check the expansion vessel pre-charge and re-charge if necessary.
		The expansion vessel is undersized.	Review the expansion vessel selection (on our website at: https://flamcogroup.com/ex-en/page/support/tools)
		The high pressure set point is too low.	Review the system specifications.

5	System fill timer expired	System has stopped top up because top up time has exceeded fill time.	If continuing system filling is required, start System fill function again.
6	Safety valve triggered	The system pressure has risen above safety valve pressure.	Unit will not top up until pressure has dropped below cold fill pressure.
7	Vessel pre-charge pressure changed	The expansion vessel has failed or lost its pre-charge.	Check the expansion vessel pre-charge and re-charge if necessary.

Flamco Limited
Washway Lane
UK-WA10 6PB St. Helens, Merseyside
United Kingdom
+44 17 447 447 44
info@flamco.co.uk
www.flamcogroup.com

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