DUTYPOINT

PUMPS | SYSTEMS | SERVICING | KNOW-HOW

QUANTUM Q4

Installation and operating manual

DUTYPOINT.COM

CE UK CA

CONTENTS

1. WARRANTY

The Dutypoint 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 the 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.

Dutypoint reserves 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.

Dutypoint 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 the date of manufacture or 2 years from the 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 Dutypoint service agreement.

Service agreement	Standard warranty	Extended warranty
3-year contract	2 years	1 year
5-year contract	2 years	3 years

For more information, discuss your project with our service team on 01452 300590.

It is a requirement of your local water authority to disclose the installation location. Failing to disclose the installation location of this product with your local water authority will lead to the invalidation of the Dutypoint warranty.

Warranty claims or queries can be directed to our service department at service@dutypoint.com or by calling 01452 300590.

2. LIABILITY

All technical specifications, data and instructions for executable actions and contained herein are correct at the 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 Dutypoint 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

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 in 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.

Disregarding 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.

Underline	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

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) are 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 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.

5.2 OPERATIONS LOCATION

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

Definition
Plant 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 Quantum Q4 as prescribed in this manual, these rooms generally contain equipment for thermal generation and distribution, water heating/cooling and top-up, power sources 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 specialised tool. Any attempts to access the internals of the unit without the correct equipment will invalidate the Dutypoint warranty and will be classified as used 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 Quantum Q4 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 an incorrect voltage and/or frequency
- Use of 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 clients 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 byelaws (Scotland)
- Any other byelaws or planning requirements

All Dutypoint 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 Dutypoint representatives or others assigned by them during delivery negotiations or on demand.

On-site services include transportation, the preparation of an operations room with the requisite foundation engineering to accommodate the system, 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 component, inspection	Installation and building services	HVAC specialist
First commissioning of the configured control unit (generic), re-commissioning after a power cut, operation (work on the terminal and control unit)	Installation and building services	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	Electrical engineering	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 Quantum Q4 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.).

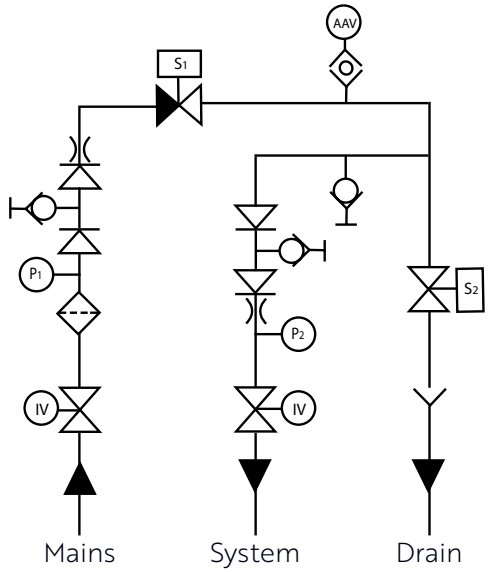
The Quantum Q4 is the latest in pumpless digital pressurisation technology for light commercial and residential buildings. It's a slim, wall-mounted pumpless top-up pressurisation unit, with a top-up flow rate of up to 14 l/min depending on the mains or boosted mains, water pressure. It is designed to 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 preventer.
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 the drain valve (S2), to prevent legionella buildup.
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
P_1	Pressure sensor to measure mains water pressure
P_2	Pressure sensor to measure heating system pressure
S_1	Valve to control mains water inlet, normally closed (NC)
S_2	Valve to control drain outlet, normally open (NO)
AAV	Automatic float air vent
Y	Tundish

6.2 TECHNICAL DATASHEET

APPROVAL NUMBERS

WRAS	2203331
Kiwa (KUKreg4)	2202704

GENERAL

Size of the unit (height x width x depth)	359 mm x 225 mm x 141 mm
Dry weight	4 kg

CONNECTION DETAILS

Cold water inlet	15 mm compression
System outlet	15 mm compression
Drain (via tundish)	22 mm compression 32 mm PP push fit 32 mm 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)	14 l/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, electrically conductive gases, explosive gas mixtures and an aggressive atmosphere.

7. INSTALLATION REQUIREMENTS

The Quantum Q4 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 Quantum Q4 must be such that stability is guaranteed and maintained.

All Dutypoint 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

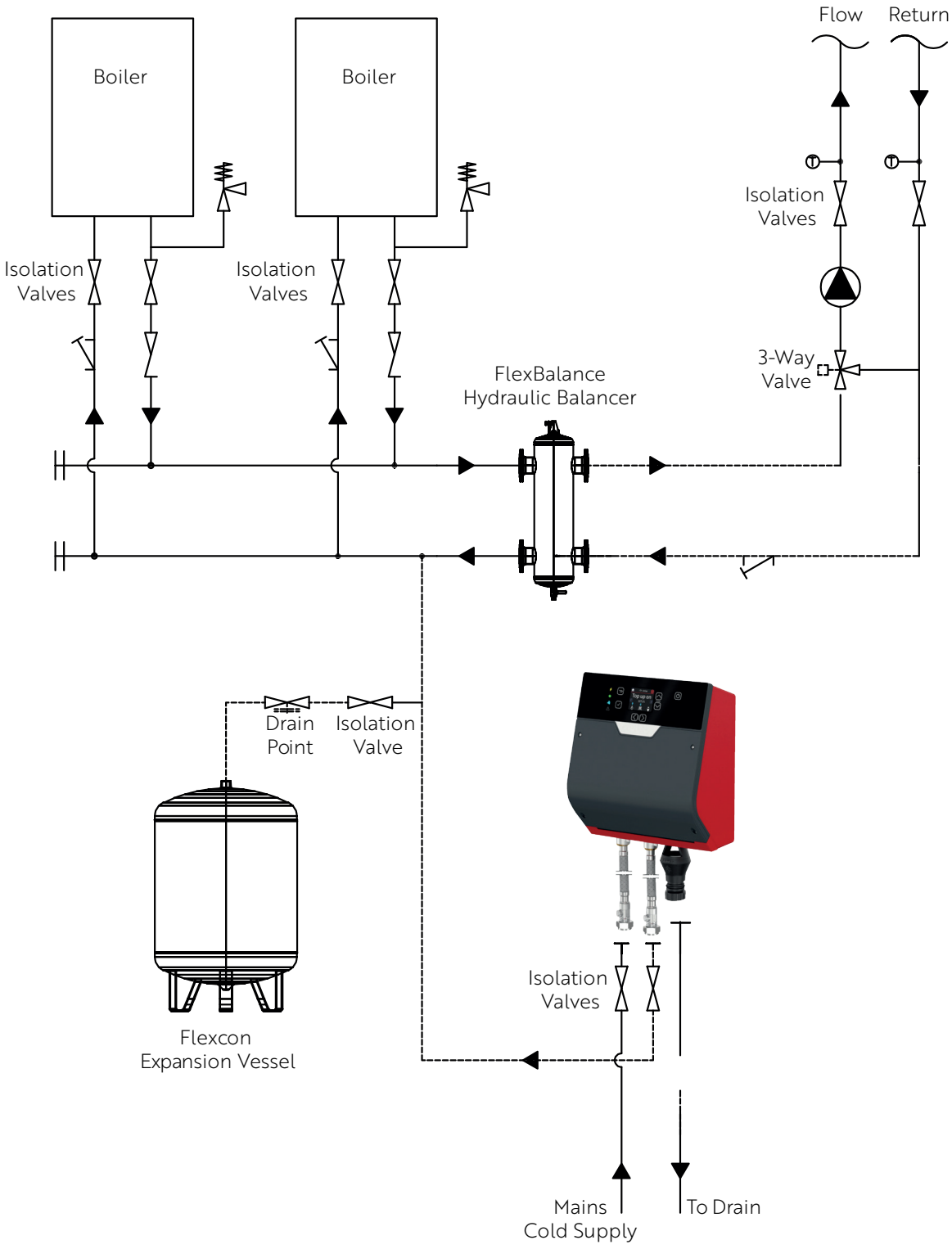
1. This equipment is designed to be installed in an indoor environment. The unit must be installed in a frost-free environment, away from precipitation and water sprays/jets.
2. The heating/cooling system is fitted with an appropriate safety valve and expansion vessel.
3. Non-return valves, pressure-reducing valves and RPZ valves must **not** 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 Quantum Q4 fill set-pressure).

It is advisable to fill the heating/cooling system prior to commissioning. If this is not possible, the Quantum Q4 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 meters may not be exceeded if the 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 the hoses provided.

7.1 INSTALLATION DIAGRAM



7.2 CLEARANCE REQUIREMENTS

Clearance guidelines for service and repair:

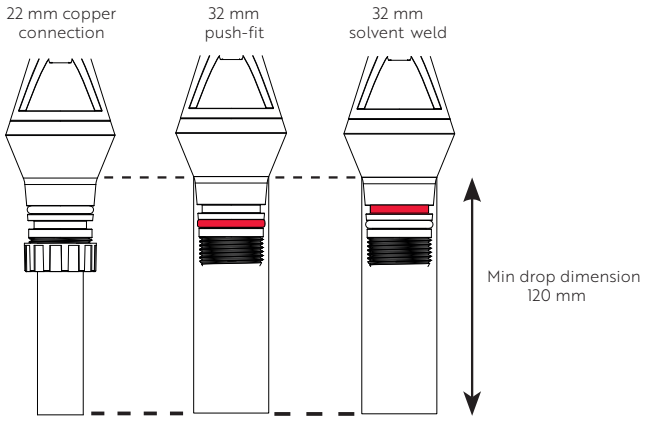
7.3 HYDRAULIC CONNECTIONS

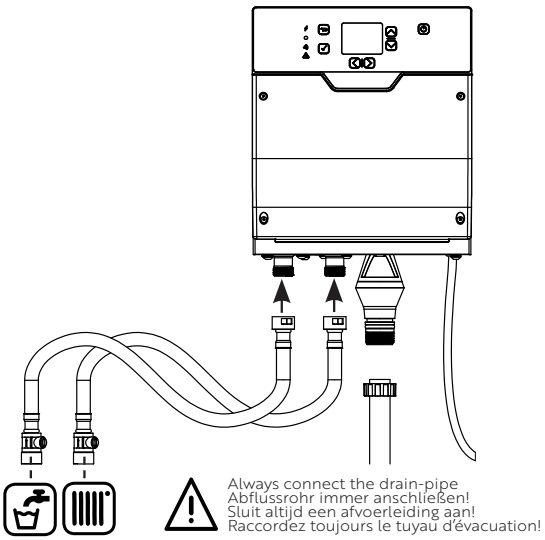
From the "Manual Mode" in the controller menu, a testing routine can be triggered to check if the device is set up correctly and working accordingly. Each actuator (valve) can be operated separately with a maximum run-time of 2 minutes.

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:

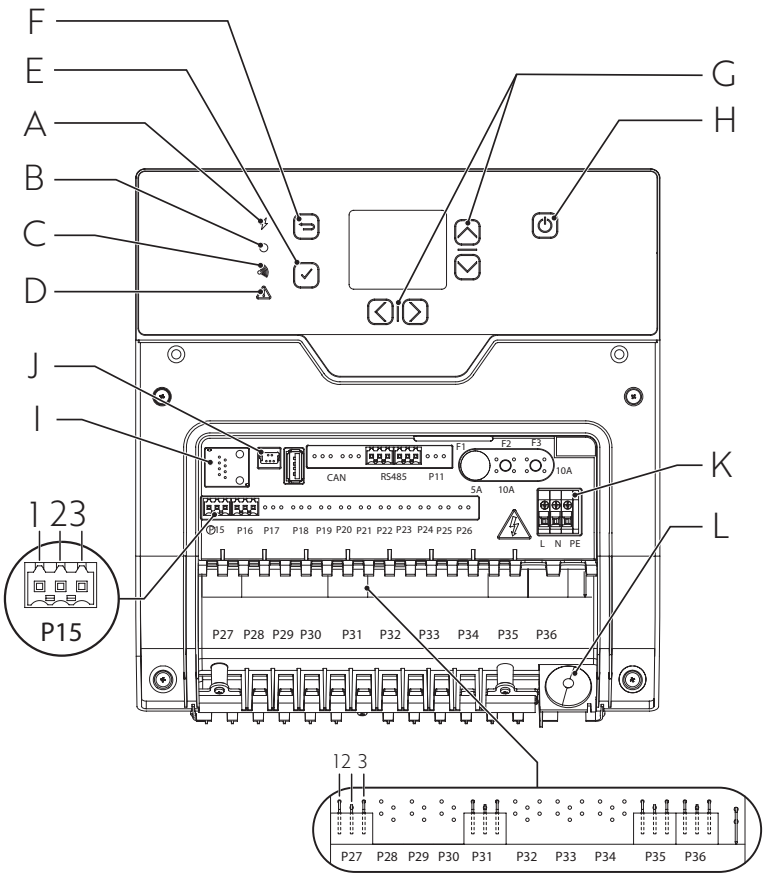
- **With a 22 mm copper pipe:** The plastic nut provided will secure the pipe in place and create a sealed connection
- **With a 32 mm push-fit PP pipe:** The O-ring provided on the tundish will create a sealed connection with the pipe if positioned in the lower groove on the tundish, see the image below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





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 availible	
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)	

Identification	Description	Pinout
I	Not availible	
J	USB-A software update + logging	
CAN	Not availible	
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 availible	
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 availible	
P18	Not availible	
P19	Not availible	
P20	Not availible	
P21	Not availible	
P22	Not availible	
P23	Not availible	
P24	Not availible	
P25	Not availible	
P26	Not availible	
P27	Fault contact, VFC 1	1 NO, 2 COM, 3 NC
P28	Not availible	
P29	Not availible	
P30	Not availible	

Identification	Description	Pinout
P31	Power, V3 inlet solenoid valve	1 L, 2 N, 3 PE
P32	Not availible	
P33	Not availible	
P34	Not availible	
P35	Power, V1 Drain valve	1 L, 2 N, 3 PE
P36	Not availible	

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 Quantum Q4 to the 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 Quantum Q4, the terminal plan (labelling) and in "Appendix 2." Terminal plan. The Quantum Q4 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 authorised 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 Dutypoint 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 2 m of the equipment.

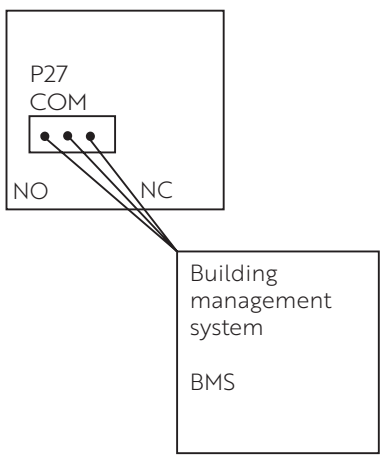
Alarm installation
The installation, data processing and commissioning must be performed by a Qualified Person. The appropriate national standards, regulations and rules must be followed.

- Additional cables are not included or supplied by Dutypoint
- Dutypoint 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 30 m

If the controller is powered down, then the P27 is normally open.

If the controller is powered up, then the P27 is normally closed.

If the controller is in error, then the P27 is normally open.



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 the 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.

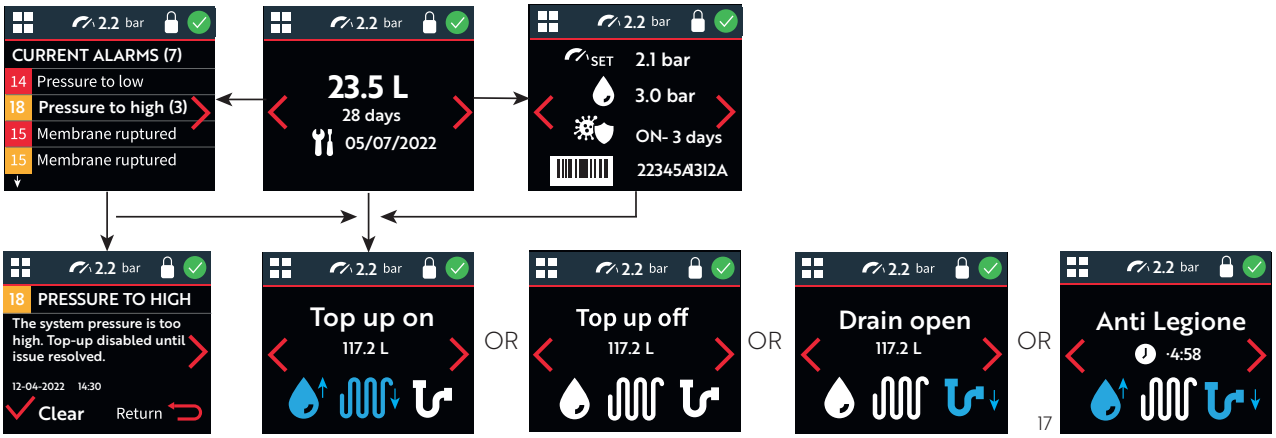
Warning screen
Shows every active warning since the last time the warning screen has been cleared.

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 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 2 to resolve each fault accordingly.



Unit A, Quedgeley West Business Park, Gloucester GL2 4PA
dutypoint.com | + 44 (0) 1452 300110 | enquiries@dutypoint.com

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 Quantum Q4 operation once the power supply has been restored and, if necessary, set the actual date and time values (overview menu options).

10. MAINTENANCE

The 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 our service team on 01452 300590 to carry out these services.

Maintenance and repairs
Maintenance and repairs may only be carried out when the system is shut down or if the Quantum Q4 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 e-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 arouse that are self-acknowledging or require to be manually acknowledged.

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.

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. Depressurise and drain the Quantum Q4 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 Quantum Q4 will need an annual service to reset the reminders for the annual service. It is the homeowner's 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, and 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.

11. DECOMMISSIONING/DISMANTLING

At the end of the service life or at the 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 to the applicable local rules. This water may be chemically treated, and 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	
6		Menu	
7		Language	
8		Date & time	
9		Date	
10		Time	
11		Manual	
12		Summary	
13		System pressure	
14		Set pressure/cold fill pressure	
15		Expansion vessel	
16		Mains supply	
17		System connection	
18		Drain connection	
19		Legionella protection	

	Icon	Description	Location
20		Serial number	
21		Settings	
22		General settings	
23		System info	
24		Service info	
25		Maintenance	
26		Next maintenance	
27		Fault log	
28		Active hours	
29		Log in/log out	
30		Account	
31		VFC relay	
32		Advanced settings (RS485, anti legionella, etc)	
33		Manual mode Login required to activate manual mode (Chapter 10)	
34		Factory settings reset Login required to activate manual mode (Chapter 10)	
35		Firmware update Login required to activate manual mode (Chapter 10)	

APPENDIX 2. TROUBLESHOUTING 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	1. The isolation valve at the bottom of the unit is closed. 2. The system pressure has risen above high-pressure setpoint. 3. The expansion vessel has failed or lost its pre-charge. 4. The **high-pressure** set point is too low.	1. Open the isolation valves at the bottom of the unit. 2. Decrease system pressure using a suitable drain point. 3. Check the expansion vessel pre-charge and re-charge if necessary. 4. Review the system specifications.
65	Amount top-up water too much	1. A large amount of water has been lost from the system. 2. The unit is undersized for the system.	1. Check system for leaks or traces of water loss. 2. Review unit selection
66	Low pressure	1. The isolation valve at the bottom of the unit is closed. 2. The system pressure has fallen below the low-pressure set point. 3. The Low pressure set point is too high. 4. Continuous low pressure can indicate a leak in the system.	1. Open the isolation valves at the bottom of the unit. 2. Increase system pressure using a filling loop, or enable the **system fill** option. 3. Review the system specifications. 4. Check system for leaks or traces of water loss.
67	Number of refills within certain time exceeded	1. A large amount of water has been lost from the system. 2. The unit is undersized for the system. 3. Flood limit time is too short.	1. Check system for leaks or traces of water loss. 2. Review unit selection. 3. Consult Dutypoint.
68	Supply pressure too low	1. The isolation valve at the bottom of the unit is closed. 2. The mains water supply to the unit has been isolated. 3. The mains water pressure is poor.	1. Open the isolation valves at the bottom of the unit. 2. Turn on the mains water supply. 3. Consult Dutypoint.
70	Supply pressure sensor no signal	1. The pressure sensor is not connected. 2. The pressure sensor has failed.	1. Check for loose wiring on the pressure sensor. 2. Replace pressure sensor

Error #	Notification	Problem	Solution
71	Supply pressure sensor short circuit	1. The pressure output range is out of detectable area. Sensor needs calibrating. 2. The pressure sensor has failed.	1. Consult Dutypoint. 2. Replace pressure sensor.
72	Self-learning correction error	1. System too small for the unit. 2. System has no flexibility for pressure changes. 3. System pipe diameter is too small.	1. Check if the system meets the size requirements for the unit. 2. Place an expansion vessel in the system. 3. 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	1. A large amount of water has been lost from the system. 2. The unit is undersized for the system. 3. Flood limit time is too short.	1. Check system for leaks or traces of water loss. 2. Review unit selection. 3. Consult Dutypoint
75	No top-up flow	1. The mains water supply to the unit has been isolated. 2. The isolation valve at the bottom of the unit is closed.	1. Turn on the mains water supply. 2. Open the isolation valves at the bottom of the unit.
76	Maintenance 1 is due	The unit is due an annual service.	Contact Dutypoint service engineer.
77	Maintenance 2 is due	The unit is due an annual service.	Contact Dutypoint service engineer.
78	Maintenance 3 is due	The unit is due an annual service.	Contact Dutypoint service engineer.
79	Maintenance 4 is due	The unit is due an annual service.	Contact Dutypoint 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.

Error #	Notification	Problem	Solution
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	1. The unit has been unplugged and was unable to top up during this time. 2. The unit has lost mains power due to power cut and was unable to top-up during this time.	1. Clear warning on screen. The warning should not come back. 2. Check for other warnings that resulted due to prevention of top-ups.
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.
		Alarms	
0	Low pressure	1. The isolation valve at the bottom of the unit is closed. 2. The system pressure has fallen below the low-pressure set point. 3. The low-pressure set point is too high. 4. Continuous low pressure can indicate a leak in the system.	1. Open the isolation valves at the bottom of the unit. 2. Increase system pressure using a filling loop, or enable the SYSTEM FILL option. 3. Review the system specifications. 4. 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	1. The pressure sensor is not connected. 2. The pressure sensor has failed.	1. Check for loose wiring on the pressure sensor. 2. Replace pressure sensor.
3	System pressure sensor short circuit	1. The pressure output range is out of detectable area. Sensor needs calibrating. 2. The pressure sensor has failed.	1. Consult Dutypoint. 2. Replace pressure sensor.
4	High pressure	1. The isolation valve at the bottom of the unit is closed. 2. The system pressure has risen above high-pressure setpoint. 3. The expansion vessel has failed or lost its pre-charge. 4. The **high-pressure** set point is too low.	1. Open the isolation valves at the bottom of the unit. 2. Decrease system pressure using a suitable drain point. 3. Check the expansion vessel pre-charge and re-charge if necessary. 4. Review the system specifications.

Error #	Notification	Problem	Solution
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.

TALK TO THE TEAM

01452 300110
ENQUIRIES@DUTYPOINT.COM
DUTYPOINT.COM