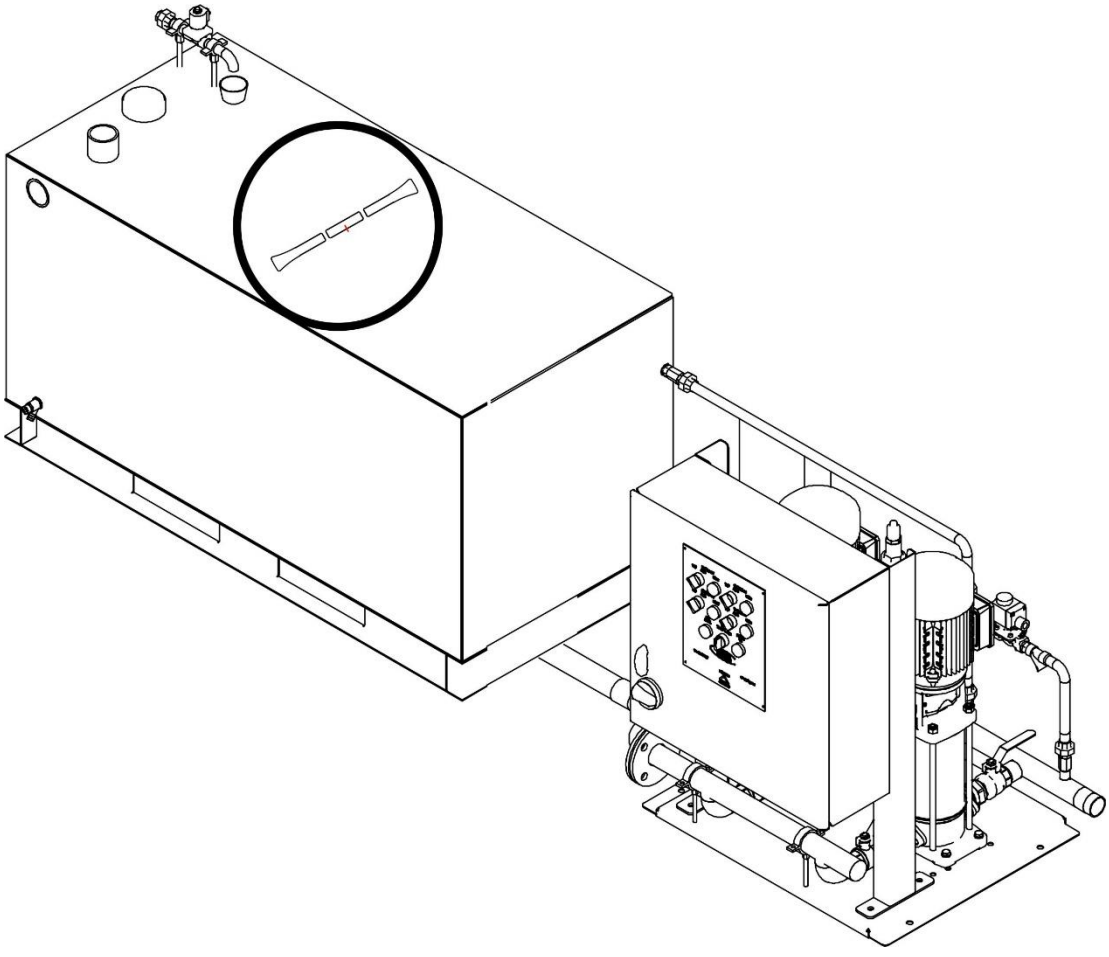
FILL SPILL PRESSURISATION SYSTEM

Operating & Maintenance

Original Instructions

Dated: 19.11.2020 – Revision: 1



Ref: OM0006

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1). Introduction:

The information contained within this manual is intended for the installer/user of this equipment to safely install & operate the products mentioned.

The products are to be installed by a competent person who is familiar with all the required and relevant regulations.

Failure to install/operate or maintain the equipment in accordance with these instructions could cause harm, injury to persons or damage to property.

Failure to install/operate/maintain the equipment according to the Operating & Maintenance instructions could invalidate the warranty as provided by KGN Pillinger.

No liability can be accepted for damage or operation disorders due to neglect, misuse, modification or use of equipment other than for its intended application.

This information should be read in conjunction with the manufacturers O&M.

QR Code:
The codes are scannable via a smart phone or tablets camera to retrieve specific product details in support of these instructions.

2). Warnings for the Safety of People & Equipment:

DANGER:
Failure to observe this caution may result in injury and/or damage to equipment.

ELECTRIC SHOCK:
Failure to observe this warning may result electric shock.

WARNING:
Failure to observe this warning may cause damage/injury to property, environment or person(s).

3). Overview:

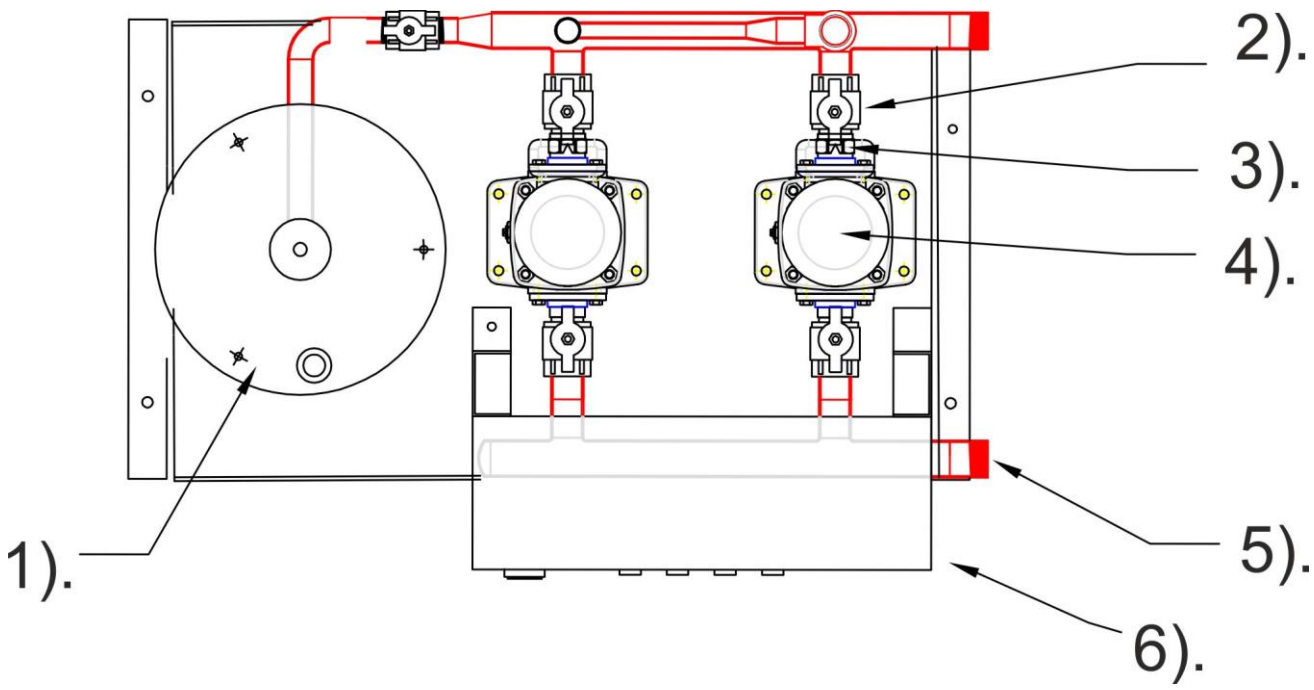
KGN Pillinger Range of 'Fill Spill' units are designed for maintaining pressure on larger sealed systems and built with 304 stainless steel tanks for longevity.

Features

- Multiple pumps configuration.
- Multiple BMS volt free contacts.
- Stainless steel base frame/skid.
- 316L stainless steel pipework as standard.
- Bespoke control panel for custom features and functions.
- Bespoke stainless-steel tank built to size with all connections.
- Can be incorporated with other circulation and dosing equipment.
- Inverter drive fitting available to achieve constant pressure control.
- Remote telemetry system available to send fault signal alert via Voice or SMS text.
- Tank includes thermal spheres to reduce evaporation and assist in calming water at high temperature.
- Anti-vibration mounts and flexible connections offered as standard to reduce noise throughout the building.
- Can be supplied packaged with the tank on a common base fame or separate with interconnecting pipework between the tank and the pump set.

4). Main Component Listing – *Fill Spill Pressurisation System*

Ref	Component
1	Pressure Vessel
2	Discharge Isolator
3	Non Return Value
4	Multistage Pump(s)
5	Inlet manifold
6	Control Panel



5). Storage & Handling:

Failure to properly lift & support these sets can result in serious personal injury and/or equipment damage. The appropriate rated lifting devices and methods must be used for & during lifting operations.

- The product must be stored in a covered and dry location, free from dirt, heat and vibrations.
- The product must be stored at an ambient temperature between: 5°c to 40°c.
- Do not place heavy weights on packaged products as this may cause damage.
- If the equipment is to be stored for any length of time all liquids within the pumps should be drained and the vent and bleed plugs removed and safely stored.

6). Operating Limits:

The KGN Fill Spill System is designed for use on sealed heating and chilled systems, where the thermal expansion and contraction directly affects the fluid system volume.

This equipment is intended for use on balanced sealed heating and chilled systems where a closely maintained pressure is required.

Water based, sealed heating and chilled systems are in accordance with BS EN 12828:2003.

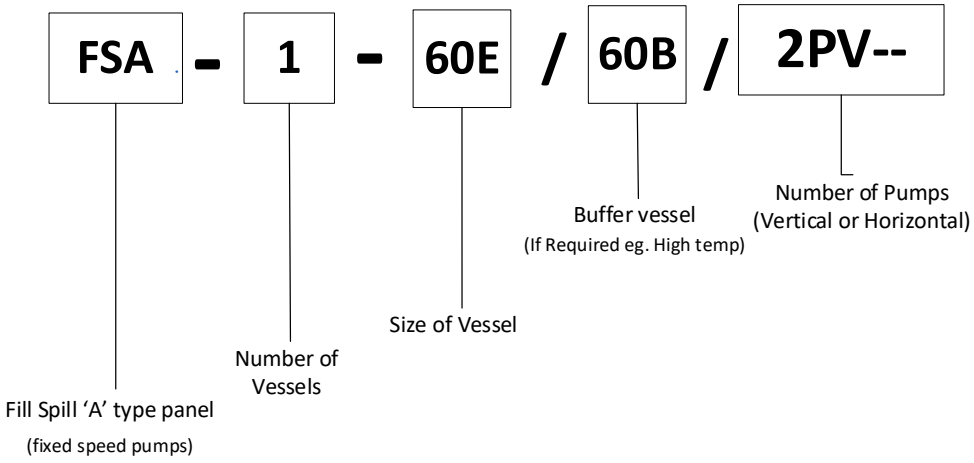
For system temperatures exceeding 105 °C additional rules and regulations may apply, please contact your system designer for confirmation.

Noise emissions:

Exposure to excessive noise can cause permanent hearing damage. It is the end users' responsibility to identify the required legal requirements, ensuring the appropriate safety equipment (PPE) is applied and noise control is in place.

7). Product Identification Code(s).

All KGN Pillinger Fill Spill pressurisation set are identified by the below coding, each product will have this clearly affixed to the set:



8). Installation

- Prior to installation the fill spill pressurisation set should be thoroughly checked for any damage during transportation and reported immediately to KGN Pillinger and not installed.
- The unit is required to be installed in a ventilated, dry frost-free position, allowing enough clearance on all sides and front to enable general maintenance.
- A suitable drain point must be located within a practical distance of the spill vessel(s). In a service or fail condition it may be necessary to drain the fluid content of the spill vessel(s).

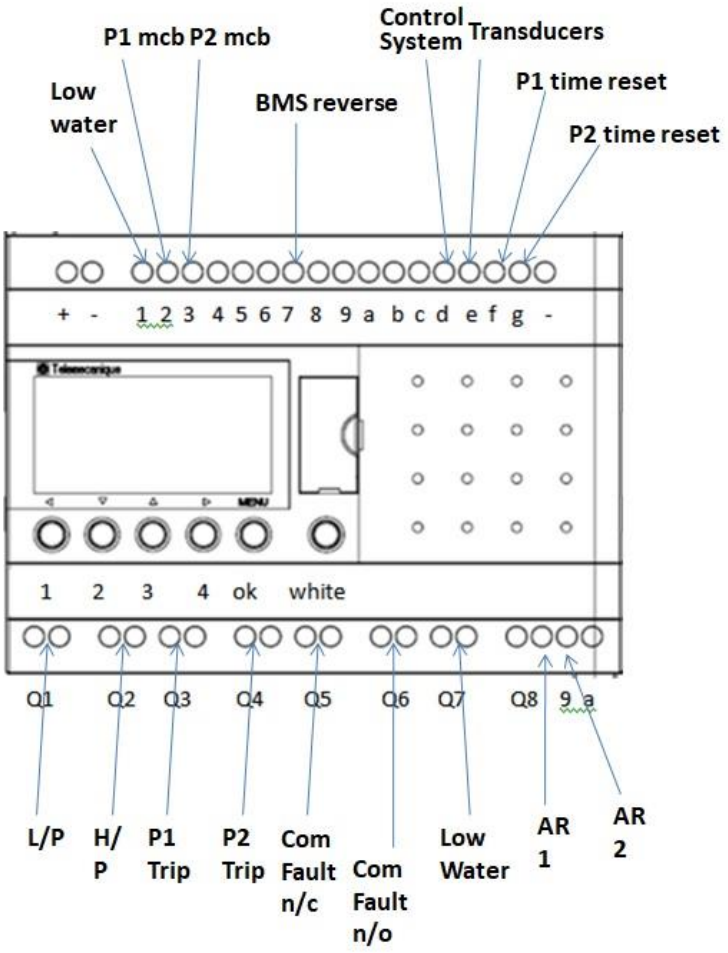
WARNING:
Directive 2006/42/EC requires an emergency stop facility is made available on the main power switch to the control unit.
This separates the phases and neutral lines.

Electrical Connections

All electrical connections must be made by a qualified electrical in accordance with all local regulations and standards.

- The incoming supply must be sized to carry the motor full load current of the pump (as shown on duty plate).
- All electrical connections should be sized, installed and protected in accordance with the requirements of the latest safety standards and any other current local rules and regulations.
- Where additional Emergency Stop facilities are required, these are to be installed onsite and do not form part of the equipment supplied.
- **It's essential that this equipment is earth bonded to the building earth system.**

Controller Connections



9). Commissioning

If the pumping equipment is not installed, operated and maintained correctly it can lead to failure, void warranty and cost time and money.

The commissioning of the set assures all systems and components of the equipment supplied are installed, tested, operated and maintained according to the operational requirements of the system.

The commissioning process comprises of a set of engineering philosophies and procedures that inspect and test every operational component of the equipment, from individual functions such as instrumentation and control logic, through to the full operation of the system.

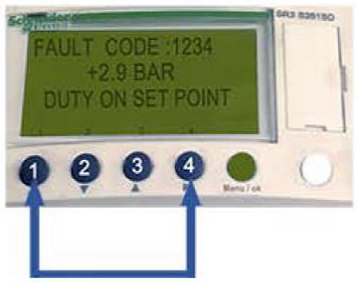
The main objective of commissioning is to provide the safe and orderly handover of the unit to the customer, guaranteeing its operability in terms of performance, reliability and safety.

We recommend the unit is commissioned and subsequently serviced biannually by a fully trained KGN Pillinger engineer.

Zelio PLC Set-up guide

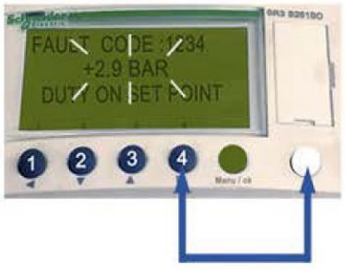
1. **Press buttons 1+4 together to display then cycle through set point windows.**

   >DUTY ON
   >DUTY OFF
   > LOW PRESSURE
   >HIGH PRESSURE
   >SPILL PRESSURE ON/OFF
   >ASSIST PUMP ON/OFF

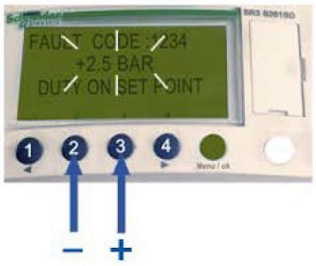


2. To adjust the set point at any stage of the cycle press buttons 4+white together.

The value on screen should be flashing.



3. Push buttons 2 to decrease & increase the desired value.

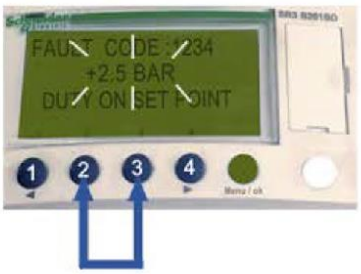


4.Press the menu/ok green button to accept the change.

5. Use buttons 1 + 4 to continue cycle & return to normal display window

6. Push buttons 2 + 3 together to access spill window 2 of 2

Assist on, 1 of 2 then press (2+3) to get assist off, 2 of 2
Duty on, 1 of 2 then press (2+3) to get duty off, 2 of 2



Spill on, 1 of 2 then press (2+3) to get spill off, 2 of 2

10). Operation

- The Fill-Spill System is designed to control and maintain the pressure within the pre-set design parameters in large, sealed, heating (or cooling) systems.
- The closed 'Spill Tank' will be sized to accommodate the expansion requirements of the system.
- The water in a sealed system will expand on heating thus increasing pressure, and contract on cooling thus decreasing pressure. This option is specifically designed to continuously monitor the system pressure and automatically carry out the necessary adjustments required to maintain the system pressure within the pre-set limits.
- During the heating cycle, if the increased pressure in the system reaches the upper limit, a pressure switch will enable the 'Spill Valve' to energise, discharging the excess water into the 'Spill Tank', at a low level (below the water surface level).
- On cooling, if a substantial drop in the system pressure is detected, the booster set will operate under the dictates of a pressure switch or transducer to pump water from the 'Spill Tank' into the system and re-establish the pressure to within the pre-set parameters.
- Low level electrodes (or float switches) in the 'Spill Tank' will monitor the water level within the tank to enable the fill solenoid (if fitted) to top up the tank and to protect the pumps from running dry if there is insufficient water available.
- Volt free contacts will be available, within the control panel to interface with any boiler/chiller to prevent operation in the event of a high or low pressure situation occurring.

11). Product Specific Manuals

For further details please refer to the specific manufacturer product manual available via QR code(s) below or via https://kgnpillinger.co.uk/download-centre/

Manufacturers/ products are identifiable by their product name plates located on the individual product

Multistage Pump(s).
Scan the code with your smart device camera
(or click the link above) to be directed to the product specific operating manual for further in-depth details.

Further 3rd Party Products

12). Maintenance

Do not touch any live parts for at least 8 minutes after switching off the power.

The electrical system must be isolated prior to carrying out any works.

WARNING

Failure to maintain the unit(s) may result in partial or complete failure and cause damage to property.

- The unit is constructed using low maintenance components throughout and should not require any day to day maintenance. The following is the recommended frequency for various maintenance tasks.

- Other items, such as security of fixings, terminations, plant room mechanisms and accessories are not specified, but should be carried out as a matter of course, as on any other piece of equipment.

We recommend the unit is inspected frequently and serviced biannually by a fully trained and qualified - KGN Pillinger engineer.

Annual Checks:

1. Check for signs of water leakage.
2. Check that the motor(s) run without over heating
3. Check for undue noise or vibrations.
4. Check that the vessel gas pre charge is at the correct pressure.

13). Written Scheme of Examination – PSSR2000

"A Written Scheme of Examination (WSE), is a legal document required prior to use of Pressure Systems. This is legislated by UK regulations detailed in Pressure System Safety Regulations (PSSR) 2000. It details items within a Pressure System that necessitate examination by a competent person"

Accumulator vessels are classed as a pressure system under this regulation.

Where the vessel has a pressure volume product greater than 250 bar litres, a WSE is required.

This is calculated by: Bar/Litre = Maximum Working Pressure (Bar) x Volume of vessel (Litres).

This regulation imposes a legal requirement on the user/maintainer to have the equipment inspected by a competent company on a regular basis as a mandatory duty under parts 7 & 8 of the regulations.

A supplier / installer may not fall under the category of user / maintainer, however they are still obliged to inform the user / maintainer of their legal and mandatory duties under the HSE Regulation.

KGN Pillinger recommend that any vessel(s) larger than 250bar/ litres should have a working test carried out every 6 months and a thorough examination every 24 months.

14). General Fault-Finding Guidance:

FAULT	POSSIBLE CAUSE	RECOMMENDED ACTION
Pump(s) fails to start:	1). Power supply failure. 2). MCB tripped. 3). Low water level	Reinstate incoming power supply. MCB tripped. Reinstate water supply.
Pump(s) fail to stop:	1). System pressure low due to large leak. 2). Set point set too high.	Switch unit off, repair leak if required. Lower set point.
Pump(s) switches on and off quickly:	1). Vessel Pre-charge may be leaking. 2). Mechanical stress on pump.	Replace the seal. Support the pipe work.
Pumps start frequently:	1). If newly installed, air may still be present within pipework. 2). Vessel pre-charge is set incorrect.	The system requires bleeding to remove air. The vessels pre-charge requires adjustment to appropriate level.

Disposal:

This product and its associated parts must be disposed of in accordance with local regulations, including all packaging.

K.G. Norman Ltd – t/a KGN Pillinger

Unit 3, 214 Purley Way, Croydon, CR0 4XG - UK

15). EC Declaration of Conformity

CE

EC DECLARATION OF CONFORMITY

We hereby declare that the following KGN Pillinger (KG Norman Ltd) manufactured products:

Type A, AV, EV, SE, FSA, CAT5 & UPOD

are produced in accordance with the below provisions laid down by the:

MACHINERY Directive (2006/42/EC)
LOW VOLTAGE Directive (2014/30/EU)
EMC Directive (2014/65/EU)

& conforms to the below technical standards:
EN ISO 12100:2010 - EN 809+A1:2009 – EN 61000-6-1:2007 – EN 61000-6-2:2005
EN 61000-6-3:2007+A1:2011 - EN 60204-1:2006+A1:2009

Christopher Norman
Director

For & on behalf of
KGN Pillinger
CROYDON
03/01/2020