
3750 Pulpress pressurisation unit

Installation and operating instructions

File No: 37.858uk
Date: september 02, 2016
Supersedes: 37.858uk
Date: october 05, 2015

—

—

—

—

contents

1.0	ce conformities	4
2.0	Preface	4
3.0	Introduction	4
4.0	Warnings symbols	4
5.0	Instructions for safe use	4
6.0	Typical chilled–water sealed system	5
7.0	Typical lthw sealed system – max. 100°C	5
8.0	Typical mthw sealed system – max. 120°C	6
9.0	Storage	6
10.0	Limitations	6
11.0	Protection	6
12.0	General notes	6
13.0	Installation	6
	13.1 Mechanical	6
	13.2 Electrical	6
14.0	Safety regulations	7
15.0	Commissioning	7
16.0	Operation	7
17.0	Heating system	7
18.0	Chiller systems	7
19.0	Controller functions	8
20.0	User interface	9
21.0	Statistics	9
22.0	Parameters	10
23.0	Warnings and alarms	11
24.0	Maintenance checks	13
25.0	Fault finding chart	13

please read all these notes carefully,

1.0 ce conformities

Ivd	bs en 61010-1
Low voltage switchgear	bs en 60439-1
Safety of machinery	bs en iso 12100-1&2
Safety of machinery	bs en 60204-1
Electromagnetic compatibility	
Harmonic emissions	bs en 61000-3-2
Electrostatic discharge	bs en 61000-4-2
Radiated rf immunity	bs en 61000-4-3
Fast transient bursts	bs en 61000-4-4
Voltage surges	bs en 61000-4-5
Conducted rf immunity	bs en 61000-4-6
Voltage dips	bs en 61000-4-11
Generic immunity	bs en 61000-6-1
Generic immunity	bs en 61000-6-2
Generic emissions	bs en 61000-6-3
Generic emissions	bs en 61000-6-4
Safety of stationary circulation pumps for heating and service water installations	bs en 60335-2-51

2.0 preface

- 1 The 3750 Pulpress pressurisation unit has been designed for ease of setting and operation
- 2 All packaged pump systems are pre-wired and fully tested, both hydraulically and electrically, prior to dispatch.
- 3 All parameter data has been entered into the controller in accordance with the system criteria. Once on-site connections have been made, and all pre-checks carried out, the system is ready for commissioning.
- 4 During commissioning if system conditions are found to vary from those set out in the design criteria, the parameters can be easily changed

3.0 introduction

- 1 This installation and operation manual contains specific information regarding safe installation and operation of the 3750 Pulpress pressurisation unit. These instructions must be read and understood by anyone responsible for the installation and maintenance of this equipment.
- 2 Prior to power being applied, it is essential that all pre-commissioning procedures are carried out in full.
- 3 Operators and installers must familiarise themselves with the operation and controls of the equipment.

4.0 warnings symbols



Safety instruction where an electrical hazard is involved.




Safety instruction where non-compliance would affect safety.



Safety instruction relating to safe operation of the equipment. (attention)

5.0 instructions for safe use

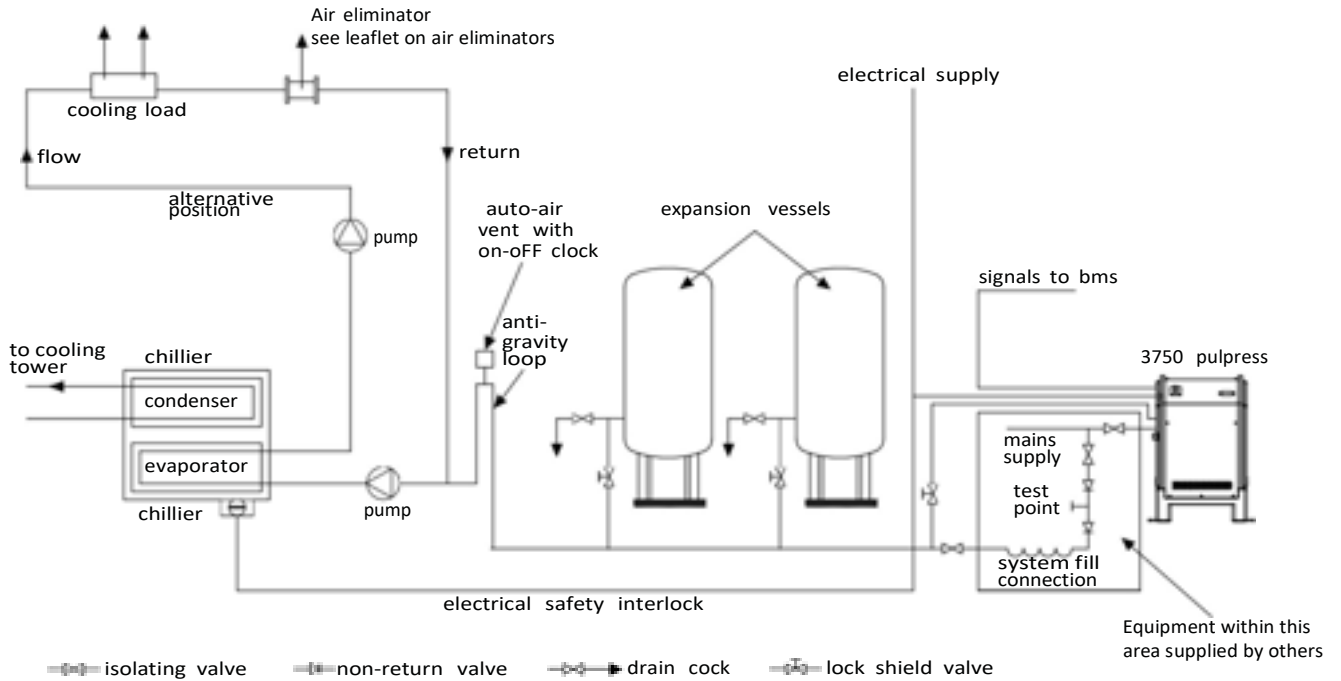
- 1 This equipment has been designed for the pressurisation of sealed heating, chilled water and closed condenser water systems to the operating conditions shown.
- 2 No installation of this equipment should take place until this installation, operation and maintenance instructions has been studied and understood by the person responsible.
- 3 Handling, transportation and installation of this equipment shall only be undertaken with the proper use of lifting gear.
- 4 The set shall not be used for any purpose other than that for which it was designed and sized.
- 5  The set shall **not be operated with the cover removed and the cover interlocked isolator overridden.**

note:

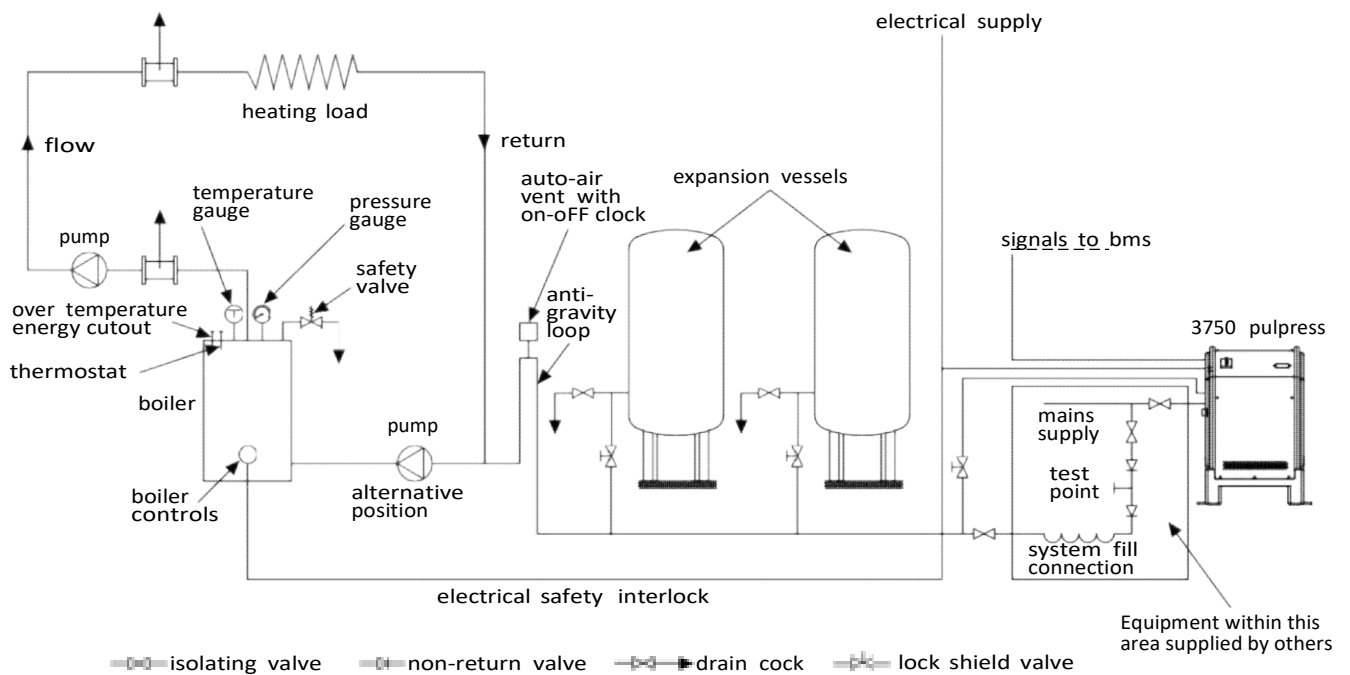


During normal operation the pumps will only generate pressures sufficient to satisfy system demand. However, abnormal running conditions may cause closed valve pressures to be experienced.

6.0 typical chilled-water sealed system



7.0 typical lthw sealed system – max. 100°C



8.0 typical mthw sealed system – max. 120°C

The arrangement of the mthw scheme is similar to the lthw system above but has, in addition, an intermediate vessel installed between the expansion vessels and the system connection. The volume of water contained in this vessel ensures that the return temperatures at the boiler are not transferred to the expansion vessel, where damage to the diaphragm would otherwise occur.

warning notes:

- 1 Packed-gland circulating pumps must **not** be used in sealed systems.
- 2 Water treatment must **not** be added to the system via the 3750 Pulpress break tank.
- 3 No part of the set, expansion vessel, intermediate vessel or connecting pipe is to be lagged.
- 4 Precautions should be taken to ensure that Lock Shield Valves are protected against unauthorised closure.

9.0 storage

Store in a dry place. Protect against dirt, damage and frost.

10.0 limitations

- 1 Maximum system working pressure: 10 bar.
- 2 Maximum flow temperature 120°C.
- 3 Electrical supplies: 1 phase, 50 or 60 Hz, 220 or 240 volts.
- 4 Power supply fluctuation: +/- 10% maximum.
- 5 Humidity non-condensing: 80% rh up to 31°C decreasing linearly to 50% rh at 40°C.
- 6 Ambient temperature: -5°C to 40°C.
- 7 Water supply pressure 0.8 bar minimum to 6.8 bar maximum with ballcock fully open.
- 8 System fill pressure:
 - 8.1 Low pressure pump(s) – 0.5 to 2.5 bar.
 - 8.2 Medium pressure pump(s) – 1.5 to 5.5 bar.
- 9 Maximum water temperature for expansion vessels:
 - 9.1 Continuous – 70°C above this intermediate vessels must be used.
 - 9.2 Intermittent – 100°C.
- 10 Maximum total boiler rating – refer to graph pu3750.

11.0 protection

The set must be protected from the formation of condensation. If there is a likelihood of condensation forming on or in the control panel then an anti-condensation heater should be fitted. Contact our service department for details.

12.0 general notes

- 1 The sets comprise one or two pumps operating on a duty/stand-by arrangement.
- 2 Each set is sized to BS7074 and custom built for a specific application, any change in the system conditions shown may necessitate a change in the design or settings.
- 3 System must be completely flushed out, to remove any metal particles, dirt etc, which may damage the set.
- 4 The system should be pressure tested, to eliminate leaks.
- 5 Under no circumstances must any attempt be made to introduce water treatment to the system via the break-tank.
- 6 No part of the set, connecting pipe or expansion vessel(s) are to be lagged.
- 7 Fill the system via the quick-fill connection. **Do not use the set to fill the system.**

13.0 installation

13.1 mechanical

- 1 Install the set on a flat and even surface.
- 2 Site set with sufficient space to the front, left and right sides of the unit for maintenance purposes.
- 3 Connect the cold water mains supply, via a stopcock, to the ballcock in the break tank. (Water supply pressure 0.8 bar minimum with ballcock fully open).
- 4 Arrange break tank overflow pipe to discharge into a convenient drain in line with clause 30 of the Water supply By-laws 1989 edition.
- 5 Make a connection from the set to the return side of the boiler and suction side of the circulating pump(s). If intermediate vessels are provided these should be fitted in this connection with the set and expansion vessels connected to the bottom of the vessel and the system to the top of the vessel. A manual air vent should be fitted in the pipe work close to the top of the vessel, see general arrangement drawing provided. Ensure pump(s) are vented by loosening the vent cap on top of the delivery branch of the pump. Care must be taken not to over tighten the system or water inlet connections.
- 6 Never dry run the pump.
- 7 For wall mounting, wall structure will need to be determined to select appropriate fasteners. Ensure there are no pipes or electrical cables running behind where the wall bracket is to be secured.

13.2 electrical

- 1 The power supply required is 240 volt +/-10%, 1 phase, 50 Hz or 60 Hz to suit motors fitted.
- 2 The incoming supply should be connected to the door interlocked isolator from a local 10 amp switched fused spur and if possible an elcb unit.

- All incoming cable glands should be ip54 rated as a minimum.
- Wire the set control systems (see enclosed wiring diagram) from the volt free terminals to the boiler control system.
- Boiler/chiller interlock provided via normally open volt free contact.
- The set must be **efficiently earthed**.
- Turn on the water supply feeding the 3750 Pulpress unit and fill the breaktank.
- Check pumps are primed by loosening cap on the delivery side of the pump—let water escape until no air is present, replace caps and pressurize to the ambient temperature set pressure. “Never dry run the pumps”.
- With cover interlock isolating switch in the off position switch on the power supply to the unit.



attention

It is the user's or certified electrician's responsibility to ensure correct earthing and protection in accordance with applicable national and local requirements and standards.

important safety information

- The voltage on the 3750 Pulpress unit is dangerous when it is connected to the mains. Incorrect installation of the set may lead to material damage or serious injury or death. Consequently, you must comply with the instructions in this manual as well as the local rules and safety regulations.
- Touching the electrical parts may be fatal, even after the mains supply has been disconnected, wait at least 4 minutes.
- The installation must be fused and isolated correctly.
- Covers and cable entries must be fitted.

14.0 safety regulations

- The 3750 Pulpress unit must be disconnected from the mains if repair work is to be carried out. Check the mains supply has been disconnected and the necessary time has passed (4 minutes).
- The correct protective earthing of the equipment must be established, the user must be protected against supply voltage, and the set must be protected against overload in accordance with applicable national and local regulations.
- RCDs (elcb relays), multiple protective earthing or earthing can be used as extra protection, provided that local safety regulations are complied with.

15.0 commissioning

- Fill the system with water via the quick fill connector. It is essential that all air in the system is allowed to escape freely through automatic air vents and radiator bleeds, failure to remove air could result in a system malfunction.

16.0 operation

Turn the main isolating switch to the 'On' position. The system pressure will be displayed on the digital readout. The unit will automatically maintain pressure in the system as set out in the design criteria and will only operate when the pressure falls between the system fill pressure and the pump cut-in pressure.

17.0 heating system

Start the boiler(s). The water from the system will flow into the vessel(s) and the system pressure will rise slowly and settle at a pressure below the maximum pressure shown on the nameplate. If the boiler safety valve lifts, check the valve setting and the system details, against the ordering specification for the 3750 Pressurisation unit.

18.0 chiller systems

When the chiller(s) are started the water contracts as it cools and the 3750 pressurisation unit will pass water from the tank via the pump, to bring the pressure up to the ambient temperature setting pressure. When the chiller is switched off the expanding water will pass into the expansion vessel, the pressure will rise and settle at a pressure below the maximum pressure shown on the nameplate.

note

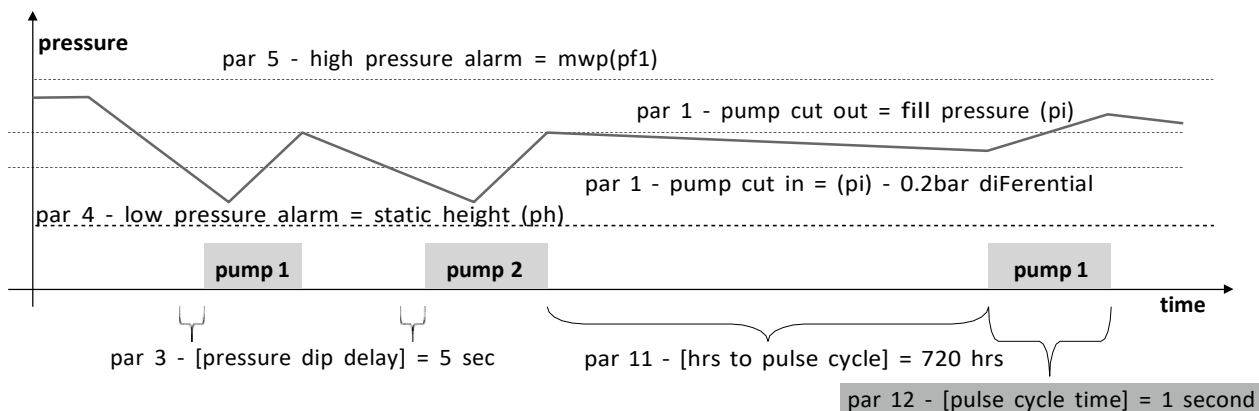
On chiller sets, the highest system pressure will occur when the system is at ambient temperature after operation, whereas on heating sets the highest pressure occurs at maximum system operating temperature.

If the system pressure falls due to a slow leak, water in the expansion vessel(s) will run back into the systems.

If the system leakage continues causing a drop in pressure below the initial system pressure the pump(s) will start to restore the initial system pressure.

In the event of a leak exceeding the pump(s) capacity then, providing the set's volt free contacts have been wired accordingly, the boiler burners will be shut down and the circulating pumps are stopped. The system should then be closed down and the leak rectified.

19.0 controller functions



Pressure dip delay

No message required, no alert. Should not start the pump until value **parameter [pressure dip delay]** seconds have passed without the pressure coming back to the set point.

Digital display

Showing system pressure, warning codes, alarm codes and pump run indication.

Pump test

When the controller is in the normal mode (not programming).
 When the up .A button is pressed and held for 3 seconds Pump 1 will run and continue to run until the button is released.

When the down T button is pressed and held for 3 seconds Pump 2 will run and continue to run until the button is released. This will enable the pumps to be tested manually.

Hours run meter(s)

This cannot be reset, showing the number of hours the pump has been running. (Max. 999 hours).

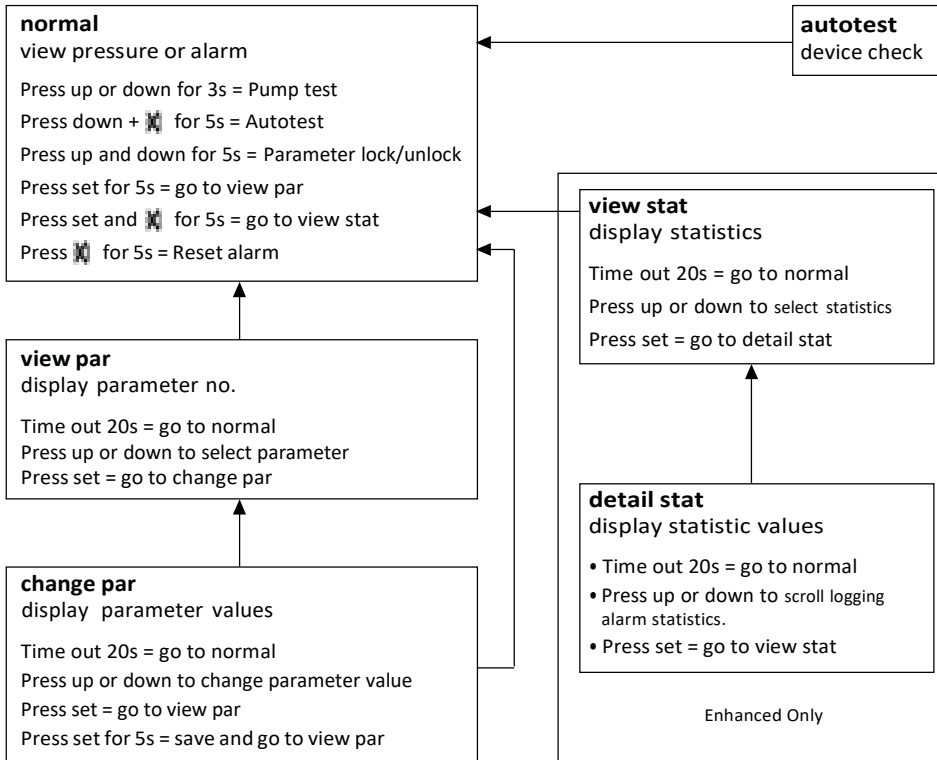
Pump auto cycle

On two pump sets pumps will auto-cycle increasing service interval time.

Alarm

Audible alarms on error condition with mute.

20.0 user interface



21.0 statistics

number	name	type
from s01 to s30	Alarm logging [30]	num
s31	Pump 1 run time – hrs	num
s32	Pump 2 run time – hrs	num

s01 Most recent alarm



s30 Oldest alarm

Lines "---" = no alarm registered

22.0 parameters

0 = no 1 = nc

par no.	parameter	type	default	min	max	inc	unit of measure	device mode
1	Fill pressure (Pi)	dec	2.5	1	24.9	1	Bar/25	All
2	Pump cut in (Pi-0.2bar)	dec	0.2	0	5.0	1	Bar/25	All
3	Pressure – dip delay	num	5	0	100	1	Seconds	All
4	Low pressure alarm (Ph)	dec	2.2	0	24.9	1	Bar/25	All
5	High pressure alarm (Pf1)	dec	4.0	1	24.9	1	Bar/25	All
6	Max pump run time	num	15	1	990	1	Minutes	All
7	nc no alarm relay	num	1*	0	1	1	Numeric	All
8	Excessive no. of starts	num	15	1	99	1	Numeric	Enhanced
9	Excessive starts – minutes	num	60	1	720	1	Minutes	Enhanced
10	Service – months	num	12	1	99	1	Numeric	Enhanced
11	hrs after which the pump pulse cycle starts – adjustable in p12	num	720	1	8640	1	Hours	Enhanced
12	Pulse cycle time	num	1	1	99	1	Seconds	Enhanced
13	nc no lpr relay	num	1*	0	1	1	Numeric	Enhanced
14	nc no hpr relay	num	1*	0	1	1	Numeric	Enhanced
15	nc no pf1 relay	num	0*	0	1	1	Numeric	Enhanced
16	nc no pf2 relay	num	0*	0	1	1	Numeric	Enhanced
17	nc no run pump 1 relay	num	0*	0	1	1	Numeric	Enhanced
18	nc no run pump 2 relay	num	0*	0	1	1	Numeric	Enhanced
19	nc no lll relay	num	0*	0	1	1	Numeric	Enhanced
20	nc no hll relay	num	0*	0	1	1	Numeric	Enhanced
21	nc no est relay	num	0*	0	1	1	Numeric	Enhanced
22	nc no comm/power relay	num	0*	0	1	1	Numeric	Enhanced
23	n/a	num	2	1	30	1	Days	n/a
24	n/a	num	2	1	60	1	Minutes	n/a
25	n/a	num	0*	0	1	1	Numeric	n/a
26	Lux – digital	num	6	0	7	1	Numeric	All
27	Number of pumps	num	2	1	2	1	Numeric	All
28	Device_on_off	num	1	0	1	1	Numeric	All
29	Address	num	1	1	247	1	Numeric	All
30	ext_relay	num	0	0	1	1	Numeric	All
99	Firmware release	num	xx.xx	--	--	--	Decimal	All

note: (enhanced only)

Parameter 28 indicates the start-up or stand-by status of the controller (1 = on, 0 = Stand-by)

Parameter 29 indicates the address of the controller when it is connected in the MODbus mode, (1 to 247).

Parameter 30 indicates the communication mode: 0 = external relay board present, therefore rs485 mode enabled.

1 = MODbus mode enabled. When the external relay board is connected to the MODbus enabled controller please refer to drawing number px10899 for controller setting instructions.