
STOKVIS

ENERGY SYSTEMS

ECONOPRESS EPI & EPII PRESSURISATION SET

**INSTALLATION
OPERATION & MAINTENANCE
DOCUMENTATION**

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EPIM AUG2000

THE ECONOPRESS SEALED SYSTEM RANGE.

ECONOPRESS I & II enclosed Pressurisation Units are ideal for maintaining pressure in sealed heating or chilled water systems, automatically pumping water into systems to maintain initial cold fill pressure.

Econopress units are designed for floor standing or wall mounting and can be provided packaged with diaphragm expansion vessels to provide a complete factory assembled pressurisation system.

Within the powder coated sheet steel enclosure, the Econopress unit includes a mains feed break tank fitted with ball valve and overflow connection supplying water to the pressurising pump(s). System pressure is monitored by a close differential pressure switch that controls the duty pump, feeding water into the system as required, to maintain the initial cold fill pressure. Twin pump units incorporate a second pressure control which operates the standby pump if the duty pump fails to maintain pressure.

A small diaphragm vessel is fitted to provide a pressure cushion and prevent unnecessary pump starts.

For single system units, high and low pressure alarm switches are incorporated within the unit with the necessary controls.

Econopress units are supplied complete, fully pre-piped and internally wired, requiring only mains cold water inlet, overflow and system connections to be made.

The electrical supply required for standard units is single phase, with 3 phase available as an alternative.

Econopress units are supplied in 3 option levels denoted A, B & C and available as EP I (single pump) or EP II (twin duty/ stand-by).

Standard units are suitable for systems with a fill pressure of up to 3 bar, a high-pressure option (EP I HP & EP II HP) is available for system fill pressure of up to 7 bar.

PACKAGED UNITS.

Econopress I & II single system Pressurisation Units are available fully packaged with suitably sized diaphragm expansion vessels.

Where packaged equipment is specified then the Econopress unit and the vessel are arranged as a single assembly.

Packaging comprises a steel support base and / or mounting brackets (zinc plated or painted white gloss dependent upon size), interconnecting pipework incorporating isolating valves, expansion vessel(s) with drain valve(s).

Auto air vents are included as necessary and the configurations are designed to eliminate the need for an anti-gravity loop as the site connection pipework runs horizontally or downwards away from the packaged unit. Systems packaged with larger vessels are available on request.

TWIN SYSTEMS.

For some applications savings in cost and space requirements can be made by using one Econopress Pressurisation Unit to serve 2 independent closed circuit systems, each provided with a separate expansion vessel.

The units include separate connections (with non-return valves included within the enclosure) for each system and are suffixed EP I DS & EP II DS.

Both systems operate at the same cold fill pressure.

Option levels are the same as for single system units.

High and low pressure alarm switches are not mounted within the Econopress enclosure but are ordered separately and supplied loose for site fitting and wiring.

STORAGE.

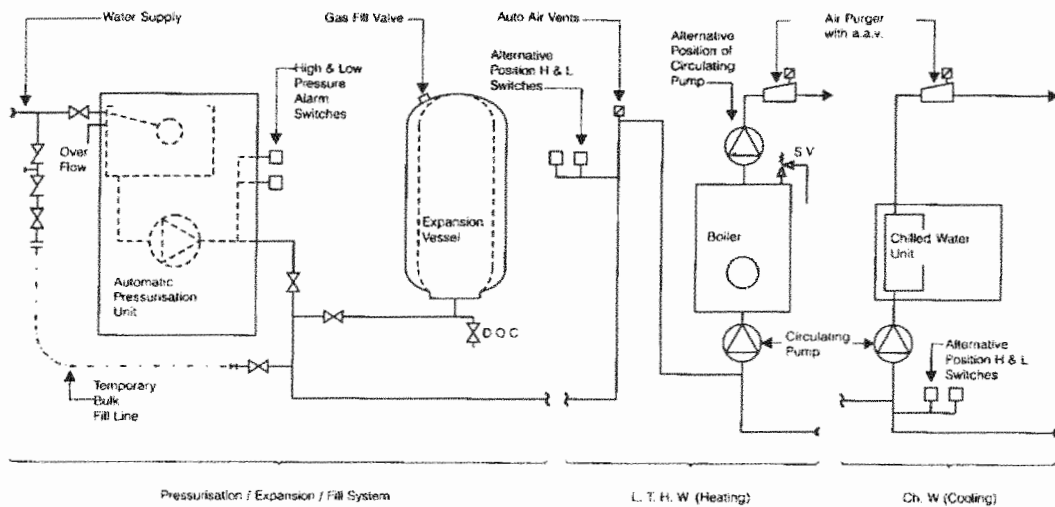
Units are normally dispatched from the Works fully assembled, although in some cases, particularly for export models, certain ancillary parts may be dismantled and packed with the unit.

Units are normally packed to protect against transit damage only and must be stored in a weather protected area, and protected against dust, damp, builder's debris etc. We do not advise leaving the unit outdoors even if sheeted over.

On delivery to site check over the equipment for completeness and damage, but preferably do not remove the packaging, as this will give some degree of protection against site dust, etc. Ensure however that the delivery is complete as advised on the packing note sent with the goods.

PLEASE NOTE THAT THE DESIGN OF MANY MODERN PUMPS DOES NOT ALWAYS PERMIT EFFECTIVE DRAINING OF ALL TEST WATER. IT IS IMPERATIVE THEREFORE THAT UNITS ARE PROTECTED FROM FROST AT ALL TIMES, EVEN BEFORE INSTALLATION. STOKVIS WILL NOT ACCEPT WARRANTY CLAIMS IN RESPECT OF FROST DAMAGE.

INSTALLATION.



Non-packaged EP units can be installed either on a smooth level surface, or alternatively back fixed to a suitable wall or other vertical surface in an area which is dry, well ventilated and frost free.

Once the unit has been placed in position and fixed the following connections have to be made :

- Connect mains water supply to ball valve in tank. The BS1212 Part 2 ball valve fitted is of a high pressure type and the water supply should be taken from the rising main or boosted supply. All new pipework should be flushed out before connecting to the unit.
- Provide an overflow connection from the break tank in accordance with water byelaws.
- A relief valve must be fitted usually on the boiler.
- Connect the unit system connection to the heating system neutral point. This is normally on the return to the boiler/ chiller, but on the suction side of the circulating pumps if these are mounted on the return. The connection must be made through a union and lockshield valve, so that the unit can be isolated, if necessary, and to aid commissioning.
- It is normal to provide an air purger with an automatic air vent in the main flow from the boiler plant to assist removal of air from the system. It is recommended to fit automatic air vents at the system high points to prevent air build-up and eliminate manual venting.

If the unit is supplied as part of a packaged system, then no further connection or valving is required. However if the unit has been purchased as separate components, then each item, e.g. EP unit & vessel must be connected to the system as described above, and suitable isolating valves incorporated between each item of equipment and the system. In addition, drain cocks must be fitted to each individual piece of equipment to be drained down independent of the main system.

-Connect a double pole switched 13 amp fused single phase mains supply at 230V 1 phase 50 Hz to the terminals in the control section of the unit (fused at 13 amp).

(Optional 3 phase unit requires a suitable 3 phase supply). All supplies must comply with current IEE regulations.

-Electrical connections will be required to the fault/indication circuits as shown on the wiring diagram to which reference should be made dependent upon the option level to which the equipment has been supplied. All units incorporate a set of volt free contacts to shut down the boiler/ chiller on pressure alarm; these should be linked into the control circuit, so as to shut down the boiler/ chiller in the event of an alarm condition. The high-pressure switch can be arranged to cut off the pressurisation unit. It is essential that the low-pressure switch is not connected in a manner to shut off the pressurisation unit.

-External pipework connections to the unit should be supported so as not to stress the unit pipework connections. Any parts removed for transit must be refitted.

The above in conjunction with the drawings should enable the unit to be installed ready for commissioning, however, if you require advice or assistance please do not hesitate to ask our technical support staff for guidance.

If we are to commission the unit, please ensure that all electrical, water and other connections are made, and that power and water are available before calling us to site and that the system is filled in advance. This will save unnecessary journeys, delays and expense.

COMMISSIONING.

Before commencing the commissioning procedures detailed below, ensure that the system is full, and has been vented by using the temporary connection. The unit is not designed for initial filling due to its limited flow capacity.

Ensure that the unit break tank is full to the water line. Prime the pump by removing the plug at the top of the pump body and allow water to flood through. When air has been expelled, replace plug.

Check that the pre-charge in both the unit pressure vessel and the system expansion vessel(s) are correct. This check must be carried out with no water in the vessels.

Close the isolating valve between the unit and the system, and switch on the unit, with the pump selected in auto. The pump should run up to the cut out pressure and stop. Crack open the system isolating valve and observe the pressure gauge on the unit. Note the pressure at which the pump starts and adjust this pressure if required to suit the system fill pressure determined from the design data. Close the system isolating valve.

Lower the pressure within the unit, by draining away water and note the pressure at which the system low pressure cut out switch operates. Run the pump in hand, thereby raising the pressure; note the pressure at which the system high-pressure switch operates. Check that this pressure is correct and that the burner/chiller shut down contacts operate correctly.

EPII units have an additional pump. On initial switch on at low pressure, the standby pump will run to the cutout pressure and stop, whereupon the duty pump will start to run to its cutout pressure. On falling pressure the duty pump will start at its cut-in pressure. Should this fail to start then pressure will fall further until the standby pump starts. Note that only one pump ever operates at one time.

Open the valves to the system and switch on the unit in auto. The unit will run if required to bring the system up to the fill pressure. If the pressure in the system is already higher than the fill pressure, drain some water from the system until the unit operates, then close the drain point, and allow the unit to switch off. This ensures that the correct fill pressure has been achieved. Commissioning of the unit is now complete.

Please note Stokvis cannot accept any warranty claim in respect of units that have not been commissioned in accordance with the above procedure, nor for units where the settings vary from our recommendations.

MAINTENANCE.

Stokvis EP units have been designed to be easy to maintain, thus ensuring trouble free operation.

On two pump units the duty pump selector switch should be turned on a regular basis, to equalise wear and to exercise the standby pump.

At regular intervals, but at least every six months, the following points should be checked.

1. Bleed a little water from the system when at ambient temperature, and check that the pump cut-in and cut-out pressures are as shown in the table of settings attached. On two pump units continue to bleed water from the system, at a flow rate greater than approx. 0.75 gallons/ min, once the duty pump has started. This will cause the standby pump to start. Once the

standby pump has started close the bleed and allow the pressure to rise, noting the pressure at which the pumps switch off. If necessary adjust the pressure switch(es) to achieve the correct pressure settings. Check that the pump(s) run, without excessive noise and vibration and do not leak from the mechanical seal, either when running or stationary

2. Using the isolating valves provided within the unit, isolate the system from the sensing line, bleed off a few drops of water from the sensing line having first switched pump(s) off. The pressure within the sensing line will drop, as indicated by the pressure gauge. Check that the switch resets before cold fill pressure is reached.

Close the valve between the unit and system and expansion vessels. Run the pump in hand control, raising the pressure and check that the system high pressure alarm switch operates at the correct pressure. Switch off the pump and open the isolating valve. If necessary adjust the pressure switch(es) to achieve the correct pressure settings.

3. Check the precharge pressure in both the units pressure vessel and the system expansion vessel(s).

Isolate and drain all water from vessels before checking pre-charge at the schrader valve, with a suitable pressure gauge. When checking the pre-charge pressure, note if any water vapour is exhausted from the schrader valve. If this is the case, then the vessel diaphragm has become perforated, and either the diaphragm (or the complete vessel if it is a fixed diaphragm type), must be replaced.

4. Check over all electrical equipment, check operation of relays, MCBs, lamps switches etc. Check all terminals are tight. Generally clean within the enclosure.

5. Check operation of unit ball valve, ensuring valve will open and close drip tight. Lubricate the fulcrum and or strip and clean if necessary. Check inside break tank for any debris or sediment and if necessary drain tank and clean out. If large amounts of sediment are found regularly, check the system for leakage.

6. Generally check over and clean the exterior of the unit, at the same time checking for leaks.

<u>GENERAL DATA</u>	EP I	EP II
Duty Pump Cut In Pressure	Adjustable to suit system between 10-50 psig	
Duty Pump Cut Out Pressure	2 psig above duty pump cut in pressure	
Standby Pump Cut In pressure	N/A	2 psig below duty pump cut in pressure
Standby Pump Cut Out pressure	N/A	2 psig above standby pump cut in pressure
EP Vessel Precharge Pressure	2 psig below low pressure alarm cut in pressure	
System Vessel Precharge Pressure	2 psig below low pressure alarm cut in pressure	
Low Pressure Alarm Cut In Pressure	2 psig below lowest pump cut in pressure	
High Pressure Alarm Cut In Pressure	To suit system requirements	
Motor Full Load Current (amp)	2.2A	2.2A
Power Supply Requirements	240/1/50 Fused 13A	240/1/50 Fused 13A

ECONOPRESS DIAPHRAGM EXPANSION VESSELS.

The diaphragm expansion vessels are used for containing expansion water in sealed heating, chilled water and HWS systems.

The vessel contains a cylindrical flexible rubber diaphragm, which forms the water space, preventing water contact with the welded steel shell. As the gas space surrounds the diaphragm, shell corrosion is eliminated. The diaphragm is removable for internal examination or replacement and is retained by corrosion resistant upper and lower flanges.

Precharge pressure adjustment is carried out using the Schrader valve fitted to the vessel shell.

ECONOPRESS DIAPHRAGM EXPANSION VESSEL SIZING GUIDE.

To size the Econopress Diaphragm Expansion Vessel reference should be made to BS7074, part 2 for low and medium temperature hot water systems and part 3 for chilled and condenser systems.

You will require the following information:

- Total system water contents
- Flow/ return temperatures
- System static head above pressurisation unit
- Cold fill pressure
- Boiler/chiller rating
- Maximum allowable system pressure at the vessel

Note:

For guidance only, where the water contents is not known it can be estimated based on the following figures:

- LPHW systems allow 12 litre per kW
- Chilled water systems allow 18 litre per kW

Limitations:Max. system temperature 95 °C
Max system pressure less than 7 bar
System filled with water only