



ECONOPRESS EPI/EPII PRESSURISATION UNITS

TECHNICAL
DOCUMENTATION

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EPI 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 generally as indicated later on in this manual.

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.

USING ECONOPRESS PRESSURISATION UNITS.

The advantages of pressurising heating systems in relation to conventional open vented systems are considerable. These include:

-Virtual elimination of corrosion because of a complete lack of contact between air and water within the system.

-The possibility of operating at a higher temperature, resulting in a reduction in pipe size and radiator area.

-Pressurising an existing open system can allow extension of the system mains thereby offering greater economies.

In many situations, especially where flat roofs are used, the location of a feed and expansion tank in a high and also frost-protected position, can be unsightly and expensive.

The Econopress sealed system equipment is compact and can be located conveniently in the boiler house. Savings in both capital and maintenance costs are possible.

The basis of the system is the sealed, pre-charged expansion vessel, which replaces the conventional high level feed and expansion tank.

Although the sizing of the vessel is important as it controls the relationship between fill pressure and maximum operating pressure, the vessel sizing is straightforward.

The vessels are normally sited adjacent to the boiler(s), connected into the return side of the heating system, but on the suction side of the circulating pump, if this is fitted in the return.

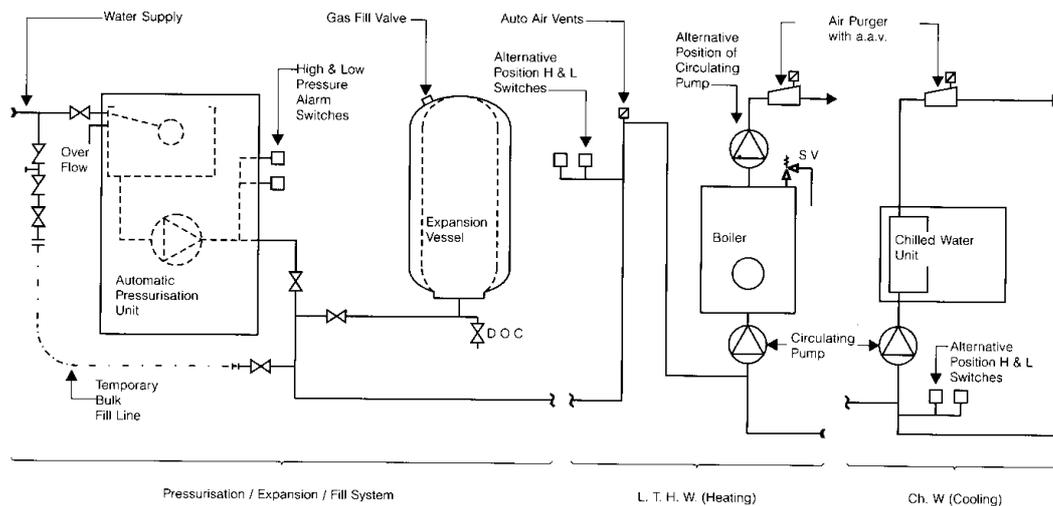
The automatic pressure filler unit should also be connected at this point. These compact units serve to maintain the cold fill pressure by replacing the water lost by leakage. The system can be pressurised above atmosphere when cold by the fill unit, and run at any desired pressure, limited only by the structural requirements of the boiler etc.

On a sealed system a relief valve must be fitted usually on the boiler and also pressure switches, one for high and one for low pressure.

These are connected to shut down the boiler if the pressure goes outside design limits, and 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.

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.

Similar advantages will be realised by using Econopress Sealed Systems for chilled water circuits associated with refrigeration and air-conditioning systems.



ECONOPRESS I & II

LEVEL A STANDARD TECHNICAL SPECIFICATION

- Single regenerative pressurisation pump with impeller and wearplate/cover in copper alloy, stainless steel shaft and carbon ceramic mechanical seal (twin duty/standby pumps on Econopress II)
- Single phase TEFC induction motor with thermal protection, class f insulation, IP44 (minimum) enclosure and sealed for life ball bearings.
- Plastic break tank with ½” BS1212 Part 2 ball valve (type A air gap) and overflow.
- Expansion vessel(s) diaphragm type with “ Schrader” valve pressure adjustment.
- High quality sheet steel enclosure, white gloss finish with removable lower front cover for pump access/ maintenance, hinged top front cover for controls access.
- System pressure gauge (to BS 1780).
- 5 litre expansion vessel (epoxy coated water space) to BS4814.
- Incoming supply isolator (door interlocked).
- Pump control pressure switch.
- Integral low pressure alarm pressure switch (except DS model)
- Integral high pressure alarm pressure switch (except DS model)
- Common high/low pressure alarm volt free contact (except DS model)
- Complete factory pre-wired.
- All interconnecting pipework with pump non-return valve(s).
- Compliance with Heath & Safety executive PM5 requirements (on all units where high and low pressure alarm switches are fitted).
- All units individually tested and set up to your specified system details (if required) before dispatch.
- Manual selector switch for duty pump (Econopress II only)

LEVEL B, ADDITIONAL SPECIFICATION TO LEVEL A.

- Control MCB
- Individual Pump MCB
- 1 phase or 3 phase (3 phase unit has pump contactor starter(s) with thermal overload)
- Auto/ manual switch
- Pump fault volt free contacts (common pump fault volt free contacts on Econopress II)
- Mains on lamp
- Common fault lamp
- Provision for connection of low and high-pressure alarm switches for each system (DS model only)
- System 1 and 2 individual pressure fault lamp and volt free contacts (DS model only)

LEVEL C, ADDITIONAL SPECIFICATION TO LEVEL A.

- Control MCB
- Individual Pump MCB
- 1 phase or 3 phase (3 phase unit has pump contactor starter(s) with thermal overload)
- Auto/ manual switch
- Individual pump run and trip volt free contacts.
- Individual low and high-pressure alarm volt free contacts (replaces common volt free contacts from level A)
- Mains on lamp
- Individual pump run and trip lamps
- Individual low and high pressure warning lamps.
- Provision for connection of remote low and high-pressure alarm switches for each system (DS model only)
- Automatic duty pump sequence change Econopress II only)

ADDITIONAL OPTIONS AVAILABLE ON LEVEL C UNITS ONLY.

- Break tank low level alarm lamp, pump cut off and volt free contacts.
- Frequency of starts, monitor lamp, reset push button, volt free contacts.
- Alarm sounder and muting button.
- Pump hours run meter(s)

ECONOPRESS I & II PERFORMANCE SPECIFICATION.

| MODEL | | Econopress I & II (standard) | Econopress I HP & II HP (high pressure) | Econopress I DS & II DS (twin systems) | Econopress I HP/DS & II HP/DS (high pressure for twin systems) |
|--------------------------------|---------|------------------------------|---|---|---|
| Maximum fill pressure | (Bar) | 3.0 | 7.0 | 3.0 <small>Both systems must have the same fill pressure</small> | 7.0 <small>Both systems must have the same fill pressure</small> |
| Pressure gauge | (Bar) | 0-7 | 0-11 | 0-7 | 0-11 |
| Motor rating | (kW) | 0.33 | 0.37 | 0.33 | 0.37 |
| Motor full load current (amps) | 1 phase | 2.5 | 2.8 | 2.5 | 2.8 |
| | 3 phase | 0.9 | 1.4 | 0.9 | 1.4 |
| Motor starting current (% flc) | 1 phase | 400 | 400 | 400 | 400 |
| | 3 phase | 500 | 500 | 500 | 500 |
| Dry weight (kg) | EPI | 50 | 53 | 50 | 53 |
| | EPII | 54 | 60 | 54 | 60 |
| Maximum working weight (kg) | EPI | 64 | 67 | 64 | 67 |
| | EPII | 69 | 75 | 69 | 75 |
| Width | (mm) | 690 | 690 | 690 | 690 |
| Depth | (mm) | 380 | 380 | 380 | 380 |
| Height | (mm) | 865 | 865 | 865 | 865 |

ECONOPRESS DIAPHRAGM EXPANSION VESSELS.

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

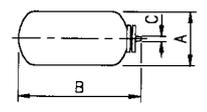
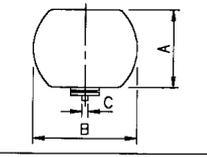
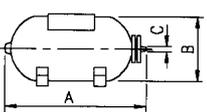
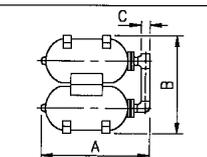
The vessel contains a cylindrical flexible rubber diaphragm, which forms the water space, preventing water contact with the welded steel shell. As the gas space surrounds the diaphragm, shell corrosion is eliminated. The diaphragm is removable for internal examination or replacement and is retained by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

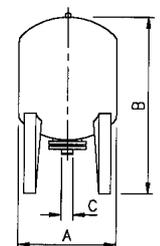
Precharge pressure adjustment is carried out using the Schrader valve fitted to the vessel shell.

STANDARD TECHNICAL SPECIFICATION.

| | |
|---|-------------------|
| -Maximum operating pressure | 7.0 bar |
| -Hydraulic test pressure | 10.5 bar |
| -Maximum temperature in vessel (e.g. HWS) | 70 °C |
| -Maximum temperature (sealed system) | 100 °C |
| -Shell material | mild steel |
| -Diaphragm material | butyl rubber |
| -Diaphragm retaining flanges (5-500 ltr.) | stainless steel |
| -Diaphragm retaining flanges (>500 ltr.) | zinc coated steel |
| -Finish | gloss enamel |
| -WRc listing | most sizes |
| -Maximum glycol concentration | 20% |

Please contact our sales department for details of higher pressure and/or larger vessels.

| TYPE | SIZE ltr | A mm | B mm | C mm | DRY WEIGHT |
|---|-------------|---------|---------|---------------|---------------|
|  | 5 | 160 | 320 | 3/4" BSP MALE | 2.3kg |
|  | 16 | 325 | 305 | 1" BSP MALE | 5.3kg |
|  | 20 | 525 | 270 | 1" BSP MALE | 7.5kg |
|  | 40 | 525 | 540 | 28mm COMP. | 17kg |

| TYPE | SIZE ltr | A mm | B mm | C mm | DRY WEIGHT |
|--|-------------|---------|---------|---------------|---------------|
|  | 60 | 380 | 850 | 1" BSP MALE | 18kg |
| | 100 | 450 | 1050 | 1" BSP MALE | 34kg |
| | 200 | 550 | 1300 | 1.5" BSP MALE | 64kg |
| | 300 | 630 | 1450 | 1.5" BSP MALE | 74kg |
| | 500 | 780 | 1600 | 1.5" BSP MALE | 125kg |
| | 750 | 750 | 2200 | 1.5" BSP MALE | 225kg |
| | 1000 | 800 | 2430 | 2" BSP MALE | 300kg |

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:

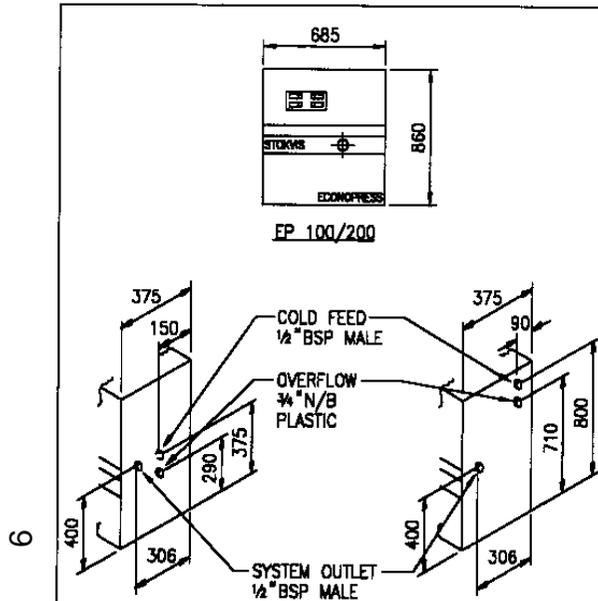
- Total system water contents
- Flow/ return temperatures
- System static head above pressurisation unit
- Cold fill pressure
- Boiler/chiller rating
- Maximum allowable system pressure at the vessel

Note:

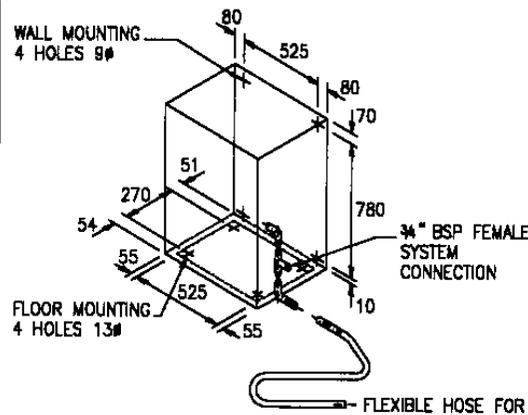
For guidance only, where the water contents is not known it can be estimated based on the following figures:

- 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

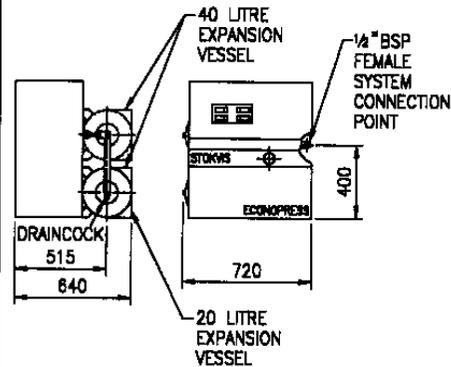


EPI / EPII MAKE UP UNIT DETAILS
see below for fixing details

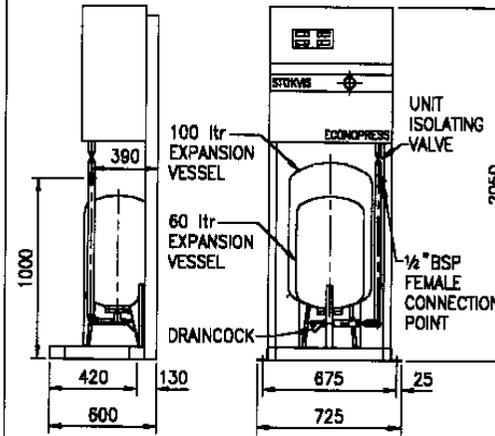


KIT FORMAT FOR WALL OR FLOOR MOUNTING COMBINATIONS

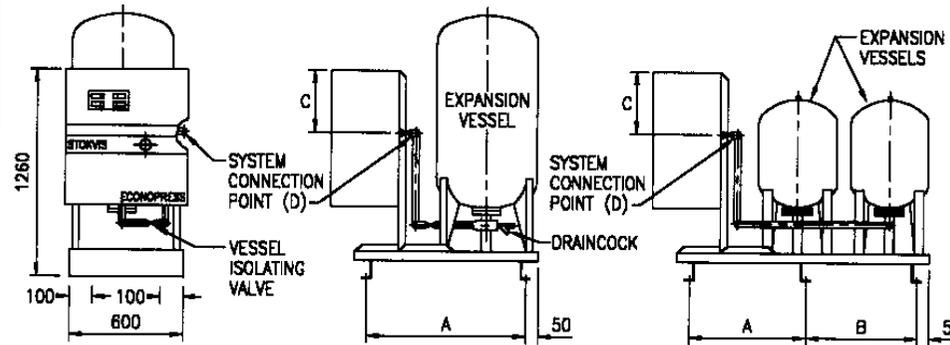
FLEXIBLE HOSE FOR CONNECTION TO EXPANSION VESSEL



EPI / EPII PACKAGED WITH 20 OR 40 VESSEL



EPI / EPII PACKAGED WITH 60 OR 100 VESSEL



| TYPE | SIZE | A | B | C | HEIGHT | LENGTH | WIDTH | D |
|------------|---------|-----|-----|-----|--------|--------|-------|------|
| EPI / EPII | 1 x 200 | 900 | - | 460 | 1450 | 1130 | 780 | 3/4" |
| | 1 x 300 | - | - | | 1600 | | | |
| | 1 x 500 | - | - | | 1750 | | | |
| EPI / EPII | 2 x 60 | 650 | 600 | 460 | 1150 | 1480 | 780 | 1/2" |
| | 2 x 100 | - | - | | 1200 | | | 1/2" |
| | 2 x 200 | 775 | 725 | | 1450 | | | 3/4" |
| | 2 x 300 | - | - | | 1580 | | | |
| | 2 x 500 | 985 | 985 | | 1730 | | | |
| EPI / EPII | 1 x 750 | 940 | - | 675 | 2310 | 2300 | 800 | 750 |

EPI / EPII PACKAGED WITH 1 x 200 - 500 OR 2 x 60 - 500 VESSEL

ACCESSORIES
Ask for further details

- AUTOMATIC AIR VENTS
- SEALED SYSTEM PRESSURE GAUGES
- AIR PURGERS
- SAFETY VALVES

B Size 750 Added 10-1-84

REVISIONS

| DRAWN | DATE | CHECKED | DATE |
|-------|------|---------|------|
| | | | |

SCALE N.T.S.

ECONOPRESS I & II
PACKAGED PRESSURISATION
UNIT LAYOUT DETAILS
SEM/9B

STOKVIS

R.S. STOKVIS & SONS LTD
POOL ROAD
WEST MOLESEY
SURREY, KT8 2HN

DRAWING No. STK-DPM-E-EPR-020A