



**ECONOPLATE “E2 SW” SERIES  
STEAM TO WATER  
PACKAGED  
PLATE HEAT EXCHANGER**

**TECHNICAL  
DOCUMENTATION**

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## STOKVIS ECONOPLATE E2 SW SERIES

### STEAM TO WATER PACKAGED PLATE HEAT EXCHANGER

#### GENERAL DESCRIPTION

The Stokvis Econoplate E2 SW series of packaged plate heat exchangers is available in three ranges covering a total of some 24 units with outputs ranging from 50kW to 750kW when fed with steam at 130<sup>0</sup>C.

The Econoplate E2 SW series units are designed to provide hot water instantaneously, without the need for storage, up to their maximum rated output or for LTHW heating systems.

All of the units are built around an epoxy coated chassis containing the heat exchanger. This heat exchanger is constructed from a number of gasketed stainless steel plates which can be readily added to thus enabling the output capacity of an existing unit to be increased.

Plate Heat Exchangers have low water content and low thermal inertia making them ideal for use in systems with varying heat outputs. The Econoplate E2 SW series units are supplied with fast acting 2 port motorised steam control valves fitted to the primary circuit. This valve is modulated by a purpose built PID controller which senses the secondary water temperature and opens or closes the valve in response.

For hot water service usage a secondary hot water service return pump and non return valve can also be supplied fitted and wired to the unit as an option.

In addition to the PID controller the control panel on the E2 SW series plate heat exchanger also contains all functional indicator lamps, a control fuse, an output fuse, high and low temperature alarm indication, common volt free temperature alarm terminals and high temperature lockout, extra low voltage external interlock circuit, 4-20 mA flow temperature indication, a 7 day time clock for either 2 temperatures of operation or a single temperature and off, per day. Alternatively the extra low voltage "external time clock" circuit can be used for operation at 2 temperatures or for single temperature and off.

The Econoplate units are fully assembled and factory wired for ease of installation leaving only the electrical supply and primary steam/condensate and secondary water circuits to be connected on site.

## INSTALLATION

The steam supply is connected to the 2 port valve, the condensate return to the lower steel screwed connection. The steam supply must be controlled such that the maximum operating conditions are not exceeded. A pressure reducing valve should be used to achieve these conditions where necessary.

The condensate must be removed using an appropriate steam trap set. The type selected should ensure that condensate can drain continuously & freely from the heat exchanger without any sub cooling. Ball float type steam traps generally fulfil these requirements.

Other additional equipment required is for high limit protection of the secondary circuit. A mechanical type of system is recommended which will cut of the steam supply in the event of a failure of the control system or a loss of power.

For hot water service units, the cold water feed is connected to the bottom horizontal bronze connection, the hot water service flow to the top bronze connection.

For LTHW units, the system return is connected to the bottom horizontal bronze connection, the flow is connected to the top bronze connection.

When operating, secondary recirculation must be maintained at all times, either around the installation or locally to the Econoplate. For hot water service units a connection is provided in the bronze cold feed casting for this purpose, or alternatively into the top of the recirculation pump if supplied.

## ELECTRICAL DETAILS

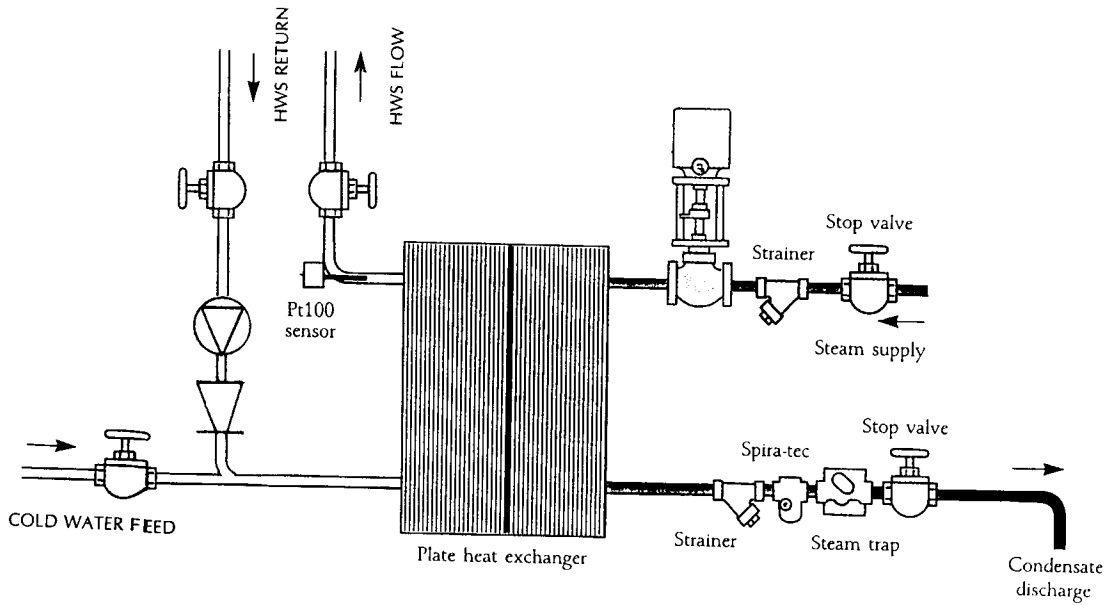
E2A Range::	240V single phase : full load current (HWS recirculation pump fitted) 0.5amp
E2B Range:	240V single phase : full load current (HWS recirculation pump fitted) 0.6amp
E2C Range:	240V single phase : full load current (HWS recirculation pump fitted) 0.6amp/phase

## ALARMS

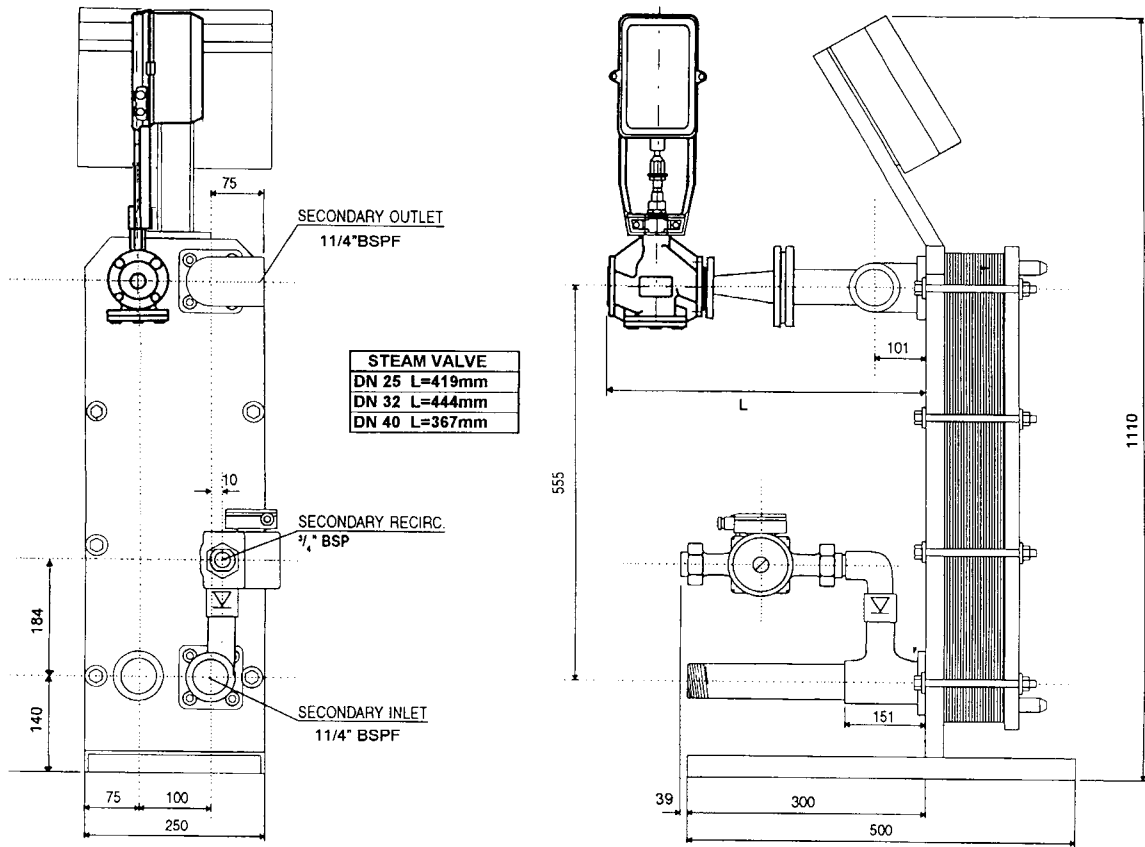
**HIGH TEMPERATURE ALARM** - If the temperature measured by the sensor rises more than 10<sup>0</sup>C above the higher set point the LCD display indicates the fault, if this persists the common temperature alarm relay is energised and the alarm lamp is lit. The controller will automatically turn off all the pumps and close the valve if this occurs.

**LOW TEMPERATURE ALARM** - If the temperature measured by the sensor falls more than 20<sup>0</sup>C below the current set point the LCD display indicates the fault, if this persists the common temperature alarm relay is energised and the alarm lamp is lit. Both alarms can be adjusted from these factory settings, and various alternative alarm modes can also be selected.

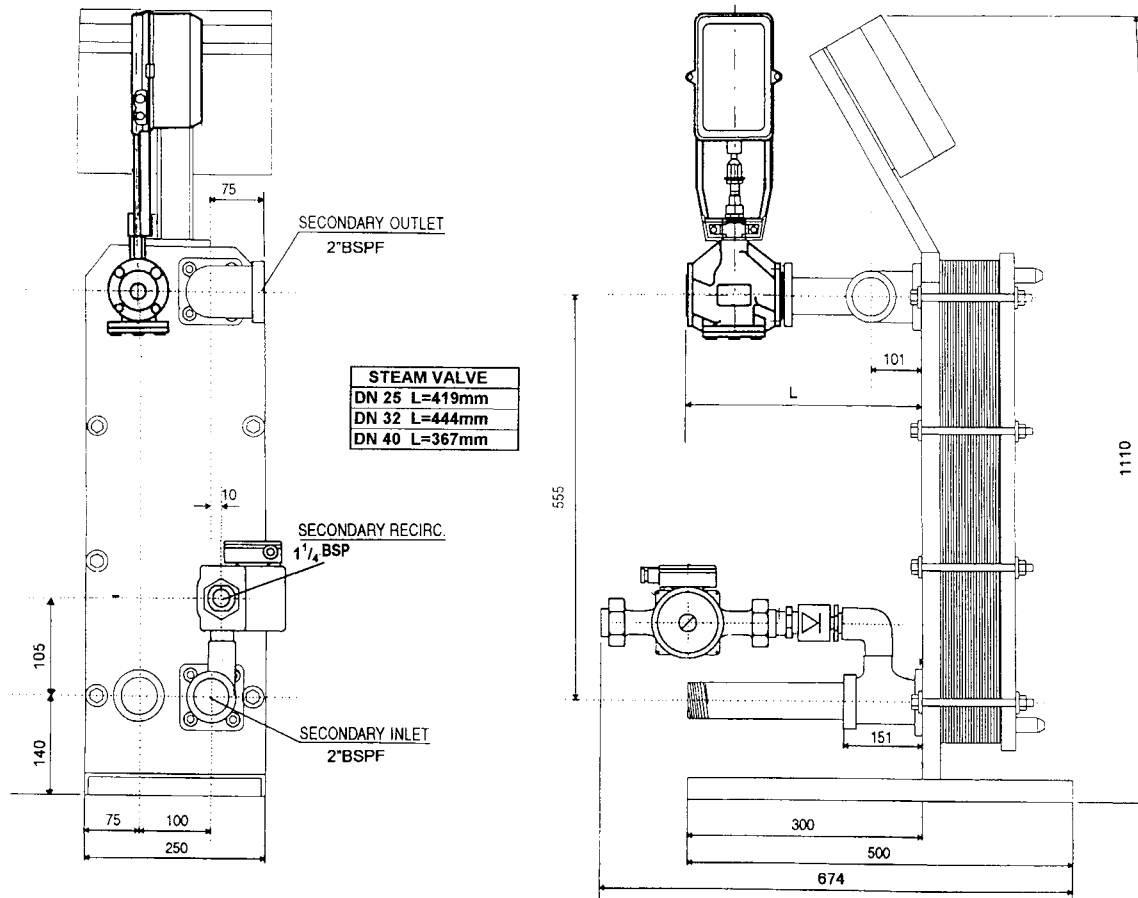
**TYPICAL INSTALLATION OF ECONOPLATE E2 SW PLATE HEAT EXCHANGER FOR HOT WATER SERVICE.**



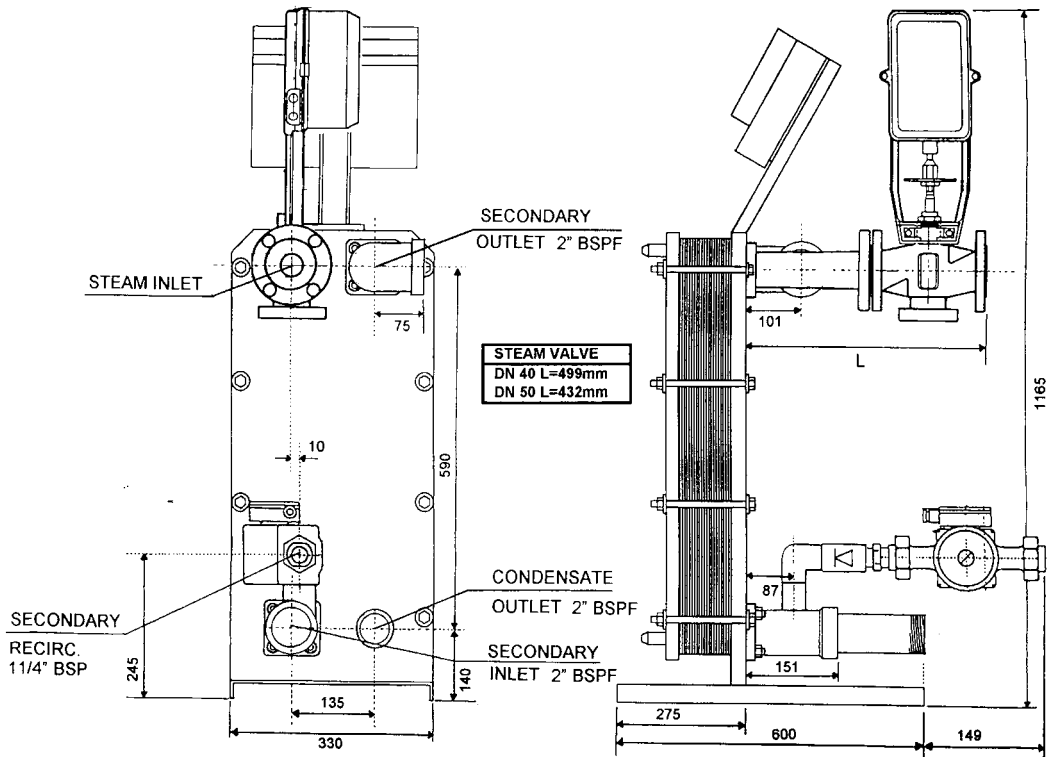
**ASSEMBLY DETAILS : E2A**



**ASSEMBLY DETAILS :E2B.**



**ASSEMBLY DETAILS :E2C.**



## TECHNICAL SPECIFICATION

### E2A RANGE

- Chassis Plate. : epoxy coated steel 25mm thick.
- Front Plate. : epoxy coated steel 20mm thick.
- Heat Exchanger Plate. : 316 grade stainless steel.
- Plate Gaskets. : EPDM.
- Retaining bolts. : 16mm carbon steel.
- Maximum secondary operating pressure. : 6 bar.
- Maximum primary operating temperature. : 130<sup>0</sup>C
- Secondary inlet. : Bronze 1<sup>1</sup>/<sub>2</sub>" BSPF.
- Secondary outlet. : Bronze 1<sup>1</sup>/<sub>2</sub>" BSPF.
- Hot water service return. : Bronze 1" BSPF (<sup>3</sup>/<sub>4</sub>" BSP when HWS secondary pump fitted).
  
- Primary steam connection. : Various PN16.
- Primary condensate connection. : 1<sup>1</sup>/<sub>2</sub>" BSP.
- HWS Secondary pump (optional). : UP20-45N, 1 phase, 115 Watt. (complete with bronze non return valve).
- Control valve. : 2 port, Cast Iron, PN16.
- Valve Actuator. : 240V, modulating, motor open/motor close.

- CONTROL PANEL : Polycarbonate enclosure.
- : Electronic PID temperature controller.
- : 7 day time clock control of 2 temperature settings and/or one temperature/ off, per day.
- : Safety extra low voltage circuit for external "clock" control of 2 temperatures or one temperature and off.
- : Safety extra low voltage circuit for external interlock
- : Adjustable high limit and low limit temperature alarms, temp alarm lamp, common volt free temp. alarm and selectable high temp. lockout modes. Functional indication of :pump enabled, valve opening or closing.
- : LCD display of day and time, secondary flow temperature and any faults.
- : 4-20 mA output of secondary flow temperature.
- : Pump mode selection including duplex pump duty share.
- : Full menu driven interrogation of parameters and operating modes.
- : 500mA control fuse, 10A output fuse

WEIGHT: 140Kg (Maximum)  
HEIGHT: 1110mm

LENGTH: 644mm (Maximum)\*  
WIDTH: 250mm\*  
\*(excluding optional secondary pump)

## TECHNICAL SPECIFICATION

### E2B RANGE

-Chassis Plate.	: epoxy coated steel 25mm thick.
-Front Plate.	: epoxy coated steel 25mm thick.
-Heat Exchanger Plate.	: 316 grade stainless steel.
-Plate Gaskets.	: EPDM.
-Retaining bolts.	: 16mm carbon steel.
-Maximum secondary operating pressure.	: 6 bar.
-Maximum primary operating temperature.	: 130 <sup>0</sup> C
-Secondary inlet.	: Bronze 2" BSPF.
-Secondary outlet.	: Bronze 2" BSPF.
-Hot water service return.	: Bronze 1 <sup>1</sup> / <sub>4</sub> " BSP.
-Primary steam connection.	: Various PN16.
-Primary condensate connection.	: 1 <sup>1</sup> / <sub>2</sub> " BSP.
-HWS Secondary pump (optional).	: UPS32-55B, 1 phase, 145 Watt. (complete with bronze non return valve).
-Control valve.	: 2 port, Cast Iron, PN16.
-Valve Actuator.	: 240V, modulating, motor open/motor close.

-CONTROL PANEL	: Polycarbonate enclosure.
	: Electronic PID temperature controller.
	: 7 day time clock control of 2 temperature settings and/or one temperature/ off, per day.
	: Safety extra low voltage circuit for external "clock" control of 2 temperatures or one temperature and off.
	: Safety extra low voltage circuit for external interlock
	: Adjustable high limit and low limit temperature alarms, temp alarm lamp, common volt free temp. alarm and selectable high temp. lockout modes. Functional indication of :pump enabled, valve opening or closing.
	: LCD display of day and time, secondary flow temperature and any faults.
	: 4-20 mA output of secondary flow temperature.
	: Pump mode selection including duplex pump duty share.
	: Full menu driven interrogation of parameters and operating modes.
	: 500mA control fuse, 10A output fuse

WEIGHT: 150Kg (Maximum)  
HEIGHT: 1110mm

LENGTH: 644mm (Maximum)\*  
WIDTH: 250mm\*  
\*(excluding optional  
secondary pump)



## TECHNICAL SPECIFICATION

### E2C RANGE

- Chassis Plate. : epoxy coated steel 25mm thick.
- Front Plate. : epoxy coated steel 25mm thick.
- Heat Exchanger Plate. : 316 grade stainless steel.
- Plate Gaskets. : EPDM.
- Retaining bolts. : 20mm carbon steel.
- Maximum secondary operating pressure. : 6 bar.
- Maximum primary operating temperature. : 130<sup>0</sup>C
- Secondary inlet. : Bronze 2" BSPF.
- Secondary outlet. : Bronze 2" BSPF.
- Hot water service return. : Bronze 1<sup>1</sup>/<sub>4</sub>" BSP.
- Primary steam connection. : Various PN16.
- Primary condensate connection. : 2" BSP.
- HWS Secondary pump : UPS32-55B, 1 phase, 145 Watt.  
(optional). (complete with bronze non return valve).
- Control valve. : 2 port, Cast Iron, PN16.
- Valve Actuator. : 240V, modulating, motor open/motor close.

- CONTROL PANEL : Polycarbonate enclosure.
- : Electronic PID temperature controller.
- : 7 day time clock control of 2 temperature settings and/or one temperature/ off, per day.
- : Safety extra low voltage circuit for external "clock" control of 2 temperatures or one temperature and off.
- : Safety extra low voltage circuit for external interlock
- : Adjustable high limit and low limit temperature alarms, temp alarm lamp, common volt free temp. alarm and selectable high temp. lockout modes. Functional indication of :pump enabled, valve opening or closing.
- : LCD display of day and time, secondary flow temperature and any faults.
- : 4-20 mA output of secondary flow temperature.
- : Pump mode selection including duplex pump duty share.
- : Full menu driven interrogation of parameters and operating modes.
- : 500mA control fuse, 10A output fuse

WEIGHT: 160Kg (Maximum)  
HEIGHT: 1165mm

LENGTH: 774mm (Maximum)\*  
WIDTH: 330mm\*  
\*(excluding optional secondary pump)

PERFORMANCE DATA FOR HOT WATER SERVICE

ECONOPLATE E2A AND E2B

Model Designation	E2A SW7	E2A SW11	E2A SW13	E2A SW17	E2A SW19	E2A SW23	E2A SW25	E2B SW29	E2B SW33
Secondary Flow Rate @ 60°C litres/minute	14.3	28.7	43.1	57.0	71.8	86.2	100.5	114.8	129.2
Secondary p.d kPa	10	15	20	21	25	25	27	27	26
Primary Steam Flow Rate kg/second	0.023	0.046	0.069	0.092	0.115	0.138	0.161	0.184	0.207
Primary steam connection PN16	DN25	DN25	DN25	DN32	DN32	DN40	DN40	DN40	DN40
Heat Load kW	50	100	150	200	250	300	350	400	450
Primary Pressure Drop kPa	8	24	56	38	62	38	53	68	90

NOTES

1. Figures are based on a steam supply pressure of 1.7 bar gauge and a temperature of 130°C.
2. Cold water feed temperature is 10°C.
3. Secondary flow resistances are at the maximum flow rates. Units with alternative pressure drop figures can be supplied.
4. 130° C is the recommended maximum steam temperature.

PERFORMANCE DATA FOR HOT WATER SERVICE

ECONOPLATE E2C(L)

Model Designation	E2C SW21L	E2C SW23L	E2C SW25L	E2C SW27L	E2C SW29L	E2C SW31L
Secondary Flow Rate @ 60 <sup>0</sup> C litres/minute	143.6	157.9	172.3	186.7	201.0	215.4
Secondary p.d kPa	20	20	20	20	20	20
Primary Steam Flow Rate kg/second	0.230	0.253	0.276	0.299	0.322	0.345
Primary steam connection PN16	DN50	DN50	DN50	DN50	DN50	DN50
Heat Load kW	500	550	600	650	700	750
Primary Pressure Drop kPa	45	51	63	69	86	107

NOTES

1. Figures are based on a steam supply pressure of 1.7 bar gauge and a temperature of 130<sup>0</sup>C.
2. Cold water feed temperature is 10<sup>0</sup>C.
3. Secondary flow resistances are at the maximum flow rates. Units with alternative pressure drop figures can be supplied.
4. 130<sup>0</sup> C is the recommended maximum steam temperature.
5. Plate configuration: steam S4/S2, OLS + XLD, water S3/S1, XLS + OLD.

PERFORMANCE DATA FOR LTHW SYSTEMS

ECONOPLATE E2B(L) AND E2C(L)

Model Designation	E2B SW9L	E2B SW17L	E2B SW27L	E2B SW35L	E2B SW47L	E2C SW25L	E2C SW29L	E2C SW35L	E2C SW41L
Secondary Flow Rate (82/71°C) litres/second	1.09	2.18	3.26	4.35	5.44	6.52	7.61	8.70	9.78
Secondary p.d kPa	30	30	30	32	32	40	40	40	40
Primary Steam Flow Rate kg/second	0.023	0.046	0.069	0.092	0.115	0.138	0.161	0.184	0.207
Primary steam connection PN16	DN25	DN25	DN25	DN32	DN32	DN40	DN40	DN40	DN40
Heat Load kW	50	100	150	200	250	300	350	400	450
Primary Pressure Drop kPa	8	20	50	32	54	37	49	64	81

NOTES

1. Figures are based on a steam supply pressure of 1.7 bar gauge and a temperature of 130°C.
2. The LTHW details are for an 82°C flow with a 71°C return temperature. Other conditions can be catered for.
3. Secondary flow resistances are at the maximum flow rates. Units with alternative pressure drop figures can be supplied.
4. 130°C is the recommended maximum steam temperature.
5. Plate configuration for E2C: Steam S4/S2 OLS + XLD, Water S3/S1 OLS + XLD.

