

TDS 160303

RANGE

150 - 1430kW

RS TURBOFLOW

PLATE HEAT EXCHANGERS

**16 Models: P020, P040, P080, P100,
P125, P250, P300, P450, P650**

For DHW and district heating

For chilled water, pool and sea water

For combined heat & power

For instantaneous demand

Brazed heat exchangers also available



ISO
14001

OHSAS
18001

ISO 9001

EXPRESSO

RANGE 30-700kW PHE / 300-6000lts VESSEL

PACKAGED PLATE HEAT EXCHANGER WITH BUFFER STORAGE

Efficient and hygienic - Compact design

Rapid heat recovery

Constant legionella protection

"Mini Espresso" available for large
domestic/small commercial applications



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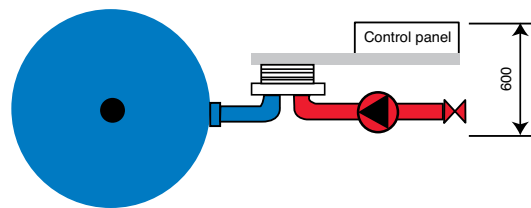
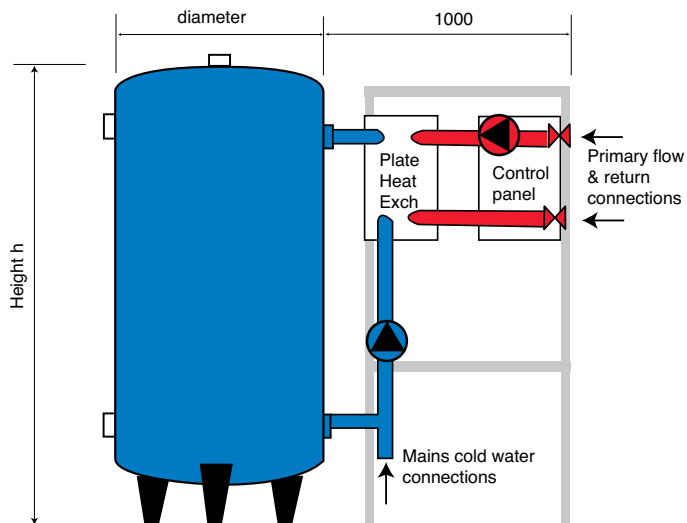
EXPRESSO

PACKAGED PLATE HEAT EXCHANGER WITH BUFFER STORAGE

CONNECTIONS

DHW Output in Litres/hour					
Secondary connections on C20 Buffer Vessel and TURBOFLOW package					
model	secondary flow & return	secondary cold feed	spare connection	vessel drain	primary flow & return
300 litres	32mm	32mm	32mm	20mm	32mm
500 litres	32mm	32mm	32mm	20mm	32mm
750 litres	32mm	32mm <td 32mm	20mm	32mm	
1000 litres	32mm	32mm	32mm	20mm	32mm

Connections may vary on 1500 litre & 2000 litre vessels



PERFORMANCE

STORAGE INPUT kW	Peak DHW Output in 10 mins						DHW Output in 1hr						Recovery time in minutes					
	300	500	750	1000	1500	2000	300	500	750	1000	1500	2000	300	500	700	1000	1500	2000
30	354	534	759	984	1434	1884	774	954	1170	1395	1845	2295	36	60	89	120	180	240
50	414	594	819	1044	1494	1944	1134	1314	1539	1764	2214	2664	21	35	52	70	105	140
75	486	666	891	1116	1566	2016	1566	1746	1971	2196	2646	3096	14	23	35	46	69	92
100	558	738	963	1188	1638	2088	1998	2178	2403	2628	3078	3528	11	18	26	35	53	70
150	696	876	1101	1326	1776	2226	2826	3006	3231	3456	3906	4356	8	12	18	24	36	48
200	846	1026	1251	1476	1926	2376	3726	3906	4131	4356	4806	5256	6	9	14	18	27	36
250	984	1164	1389	1614	2064	2514	4554	4734	4959	5184	5634	6084	5	8	11	14	21	28
300	1128	1308	1533	1758	2208	2658	5418	5598	5823	6048	6498	6948	4	6	9	12	18	24
350	1272	1452	1677	1902	2352	2802	6282	6462	6687	6912	7362	7812	3	5	8	10	15	20
400	1416	1596	1821	2046	2496	2946	7146	7326	7551	7776	8226	8676	3	5	7	9	14	18
700	2280	2460	2685	2910	3369	3810	12330	12510	12735	12960	13410	13860	2	3	4	5	8	10

SPECIFICATION

- One AISI 316L stainless steel TURBOFLOW plate heat exchanger, working pressure 10BARS,
- One C20 vertical AISI 316L stainless steel buffer vessel, working pressure 8BARS and complete with high grade polyurethane foam insulation and hard finish polyester jacket,
- One control & limit thermostat; one Master Control Panel with pump overload protection & BMS enable & lock-out facilities,
- One enamel painted package on a steel frame and pipework including the following,
- One set of buffer vessel mountings with one temperature & pressure relief valve, one high output automatic air eliminator, one anti-vacuum plug, one drain valve & one thermometer,
- One primary pump/flow pack with isolating valves,
- One secondary pump/flow pack with isolating valves & pressure relief valve,
- One secondary distribution pump/flow pack with isolating valves, non-return valve & thermometer.

OPTIONS & DELIVERY DETAILS

- One duplex primary pump flow pack with sequence control within the Master Control Panel,
 - One primary 3-way valve control,
 - One primary solenoid dead shut-off valve operating in conjunction with the high temperature limit
- PLEASE NOTE THAT THE PACKAGE IS COMPLETED & TESTED AT THE ATLANTIC WORKS, then split for delivery and site access (see separate dimensions) into the following elements :-
- One C20 buffer vessel with mountings,
 - One frame with TURBOFLOW & Master Control Panel with mechanical & electrical connections,
 - One secondary distribution pump/flow pack (loose with trailing wires) from the Master Control Panel.

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Selecting EXPRESS'O PACKAGES

In many buildings, peak DHW occurs infrequently and for 10 minutes or less. At other times, base demand is much lower-

See DHW daily demand and table A.

The X Express'o package, with 3 seconds reaction, can meet peak demand by using its storage and by borrowing space heating boilerplant.

Take a Tourist 3-star Hotel with space heating load of 150kW, 46 bedrooms - bath/shower/basin, kitchen -4 sinks, ablutions - 4 basins.

Peak Demand Calculations (using CIBSE B4)

46 x bath/shower	x 12 =	552
4 x sink	x 22 =	88
46 x basin	x 5 =	230
4 x basin	x 5 =	20
	total	890

total: 890 demand units
= 2.4 l/s from Table B4.20
PEAK 10 minute demand =
2.4 x 60 x 10 = 1,440 litres at 60°C.

PRACTICAL DEMAND UNITS

Basin (spray)	1.5
Basin (tap)	5
Bath (private)	12
Bath (luxury)	25
Shower (private)	5
Shower (luxury)	12
Sink (15mm tap)	11
Sink (20 mm tap)	22

From EXPRESS'O performance table, 5 packages are possible:-
 400kW/300L, 350kW/500L, 300kW/750L, 200kW/1000L, 30kW/1500L

Pattern of hot water demand

TABLE A Type of building	% base/peak hot water demand
Swimming pools	100
Leisure centres	100
Conference hotels	50
Deluxe hotels	50
Tourist hotels	30
Guest Houses	30
Hospital wards	30
Elderly persons home	30
Restaurants	30
Schools	10
Deluxe apartments	10
Deluxe houses	10
Apartments	0
Houses	0
Offices	0

Now calculate MAXIMUM HOURLY DEMAND

= PEAK DEMAND for 10 minutes + BASE DEMAND for 50 minutes

Using Table A, Max Hourly Demand = 1,440 + 1,440 x 0.3 x 5 = 3600ltrs

From EXPRESS'O performance table, 6 packages are possible:-
 200kW/300L, 200kW/500L, 200kW/750L, 200kW/1000L,
 150kW/1500L, 150kW/2000

As both PEAK DEMAND & MAXIMUM HOURLY DEMAND must be met, 6 packages remain possible:- 400kW/300L, 350kW/750L, 300kW/750L, 200kW/1000L, 150kW/1500L, 150kW/2000L.

Selection relates to space heating boiler power of 150kW; 40% can be borrowed for 10 minutes for DHW = 0.4 x 150 = 60 kW.

Most economic selection will probably be EXPRESS'O 200kW/1000L and boilerplant equal to :-

Space heating	= 150kW
EXPRESS'O	= 140kW (60kW borrowed)
Total	= 290kW (+ margin if desired)

Simultaneous Demand Data For Design

Demand Units	0	50	100	150	200	250	300	350	400	450	500	550	600	650	700	750	800	850	900	950
0	0.0	0.3	0.5	0.6	0.8	0.9	1.0	1.2	1.3	1.4	1.5	1.6	1.7	1.9	2.0	2.1	2.2	2.3	2.4	2.5
1000	2.6	2.7	2.8	2.9	3.0	3.1	3.2	3.3	3.4	3.5	3.6	3.7	3.8	3.9	4.0	4.1	4.2	4.3	4.4	4.5
2000	4.6	4.7	4.8	4.9	5.0	5.1	5.1	5.2	5.3	5.4	5.5	5.6	5.7	5.8	5.9	6.0	6.1	6.2	6.3	6.4
3000	6.4	6.5	6.6	6.7	6.8	6.9	7.0	7.1	7.2	7.3	7.4	7.4	7.5	7.6	7.7	7.8	7.9	8.0	8.1	8.2
4000	8.3	8.3	8.4	8.5	8.6	8.7	8.8	8.9	9.0	9.1	9.1	9.2	9.3	9.4	9.5	9.6	9.7	9.8	9.8	9.9
5000	10.0	10.1	10.2	10.3	10.4	10.5	10.5	10.6	10.7	10.8	10.9	11.0	11.1	11.2	11.2	11.3	11.4	11.5	11.6	11.7

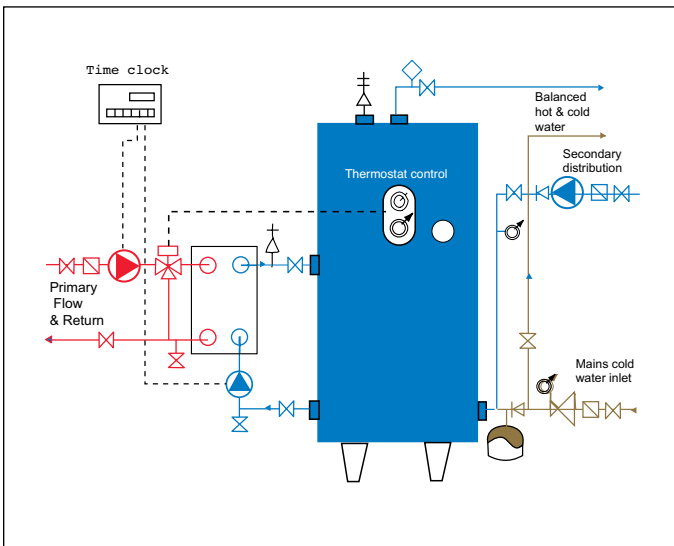
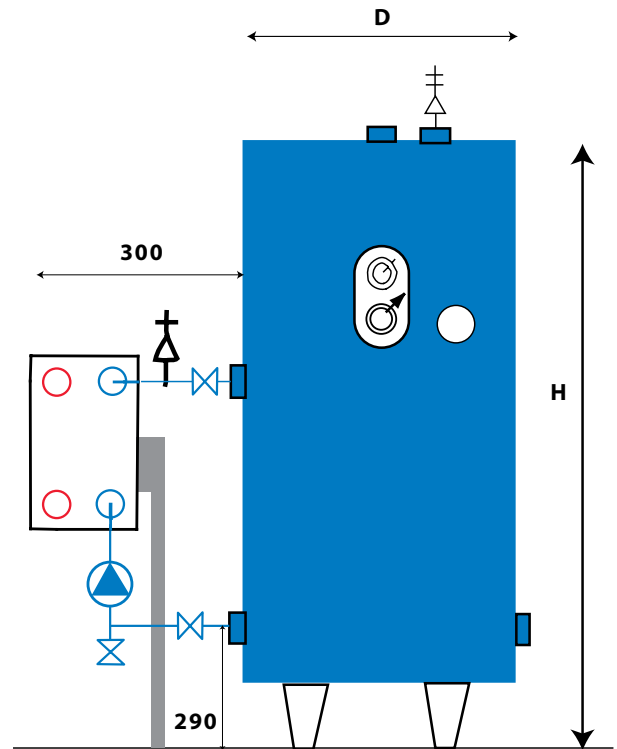
Source: CIBSE Guide B4.20 Design demand (Litres/second)

MX MINI-EXPRESSO

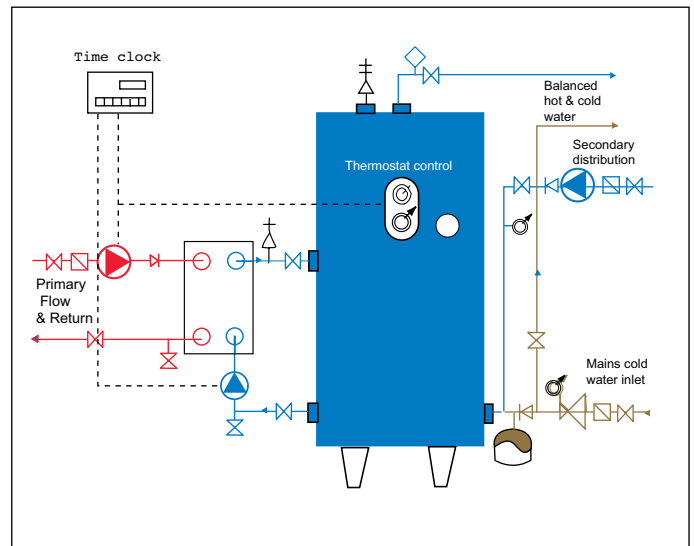
PLATE HEAT EXCHANGER WITH BUFFER STORAGE FOR LARGE DOMESTIC & SMALL COMMERCIAL APPLICATIONS

PERFORMANCE

DHW Output in Litres/hour					
Primary at 80°C, Secondary at 60°C					
STORAGE	200	300	500	750	1000
INPUT kW					
30	684	774	954	1170	1395
50	1044	1134	1314	1539	1764
70	1404	1494	1674	1908	2133
90	1764	1854	2034	2277	2502
Domestic Performance - based on number of bathrooms with standard fittings - for luxury bathrooms multiply by 3					
STORAGE	200	300	500	750	1000
INPUT kW					
30	3	4	5	7	9
50	4	5	6	8	10
70	5	6	7	9	11
90	6	7	8	9	12



Pump Control from in-built thermostat



Diverting valve control from in built thermostat

SPECIFICATION

- One AISI 316L stainless steel TURBOFLOW plate heat exchanger, working pressure 10BARS.
- One C20 vertical AISI 316L stainless steel buffer vessel, working pressure 8BARS and complete with high grade polyurethane foam insulation to class ASTM D 1692 & rigid polyester jacket,
- One mini control panel (on C20-200 & C20-300 vessels) with built-in control & limit thermostats, temperature control knob and thermometer. On larger vessels - 500 to 1000 litres - there are combined control and limit thermostats and a thermometer inserted in the vessel or supplied loose.
- One set of buffer vessel mountings with one temperature & pressure relief valve, one automatic air eliminator, one anti-vacuum plug, one drain valve.
- One secondary pump/flow pack with isolating valves, 6BAR pressure relief valve and drain valve

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CASE STUDIES



THE RITZ, LONDON

1400kW hot water plate heat exchangers

Four RS Turboflow plate heat exchangers were installed in 1986 at the prestigious international 5-star Ritz Hotel in Piccadilly, London W1 to provide abundant hot water to all the bedroom suites, the reception rooms and the kitchens. The installation was completely satisfactory with minimum maintenance for over 20 years.

The supply of abundant hot water at all hours of day and night is absolutely critical. The Turboflow plate heat exchanger has met the requirement speedily and effectively over the past 20 years. They were fitted, adjusted and commissioned by ATLANTIC engineers within a minimum interruption of a few hours.



HIGHGROVE LEISURE CENTRE, HILLINGDON

RS Turboflow plate heat exchangers

The swimming pool at Highgrove Leisure Centre in Ruislip has been recently upgraded to the latest standards including a new pool heating system supplied by Atlantic. The Leisure centre has undergone a £5.5million refurbishment funded by London Borough of Hillingdon and includes new reception area, changing rooms, disabled facilities and gym.

The focus is the upgrade of the 2000m² pool which has been re-tiled and has a new filtration system. Aqua Process Engineers of London installed Atlantic's high efficiency RS Turboflow plate heat exchangers to fine tune the heat into the pool. The 33m main Pool (29°C) and Learner Pool (30°C) - are maintained at steady temperature. Each pool water is returned to a filter then pumped through an Atlantic RS Turboflow plate heat exchanger where it receives precise re-heating to match the pool heat loss.



EXETER UNIVERSITY FORUM PROJECT

Two R22-225kW and one R-22-500 kW year round gas condensing pre-mix modulating boilers. Alongside the boilers, are two 37kW mini-Expresso plate heat exchangers each fitted with a 2500 litre highly insulated domestic hot water storage.

This project forms a new centre-piece for the University of Exeter's famously hilly Steetham Campus. Working with nature's features on the site, a green corridor will connect the Forum with the wider landscape. Central to the scheme is an undulating timber grid-shell roof, which shelters and unifies a series of new student-focused spaces within. The fluid form respects the views from the city to Dartmoor.

All the boilers have substantial turn down ratio and low NO_x levels which earn maximum points on the BREEAM scale.



Diana, Princess of Wales Hospital, Grimsby
Expresso



SAS Radisson Hotel, Manchester Airport
Expresso



St Wilfrids C of E School, Blackburn
Expresso