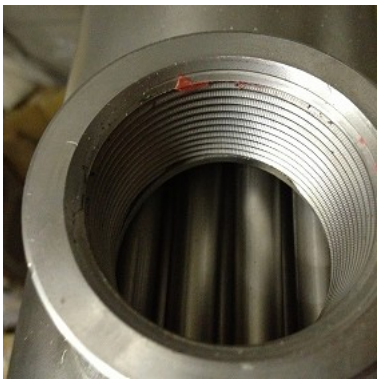
T ST EXH S

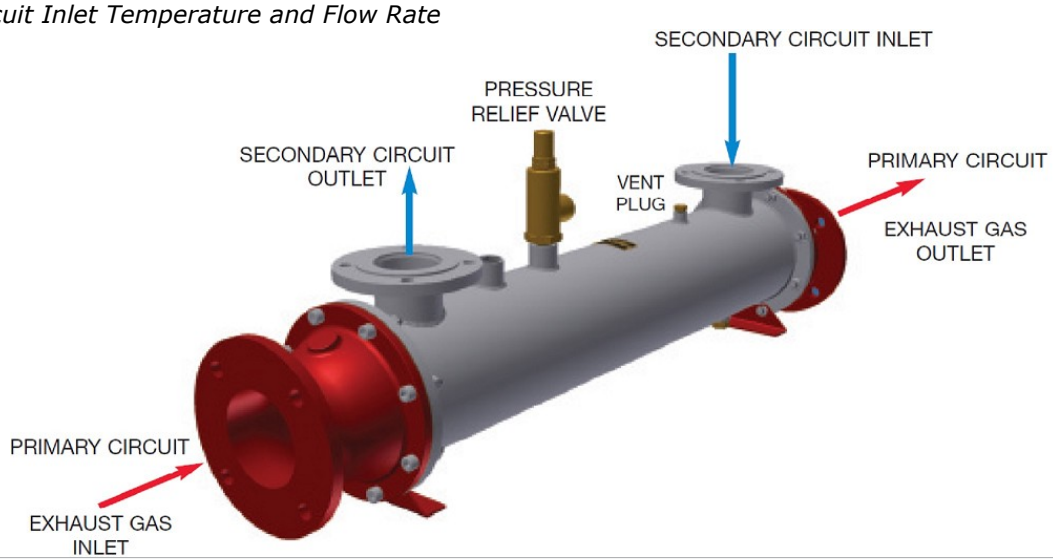
Exhaust Gas Heat Exchangers



These heat exchangers are designed to remove thermal energy from the exhaust gas of natural gas, diesel and bio-fuel engines and transfer it to the water circuit. The extracted heat can be used for space heating, domestic hot water and any industrial process that requires hot water.

- Standard range available.
- Suitable for engines up to 1MW.
- Fully welded stainless steel construction for reliability and durability.
- Compact and highly efficient design for ease of installation.
- Used in conjunction with T PLATE heat exchanger for jacket water, charge air, fuel and oil coolers, T ST EXH S units can easily reclaim up to 60% of waste heat from an engine.
- To dissipate energy if not recovered look at T FIN products.

Given the following information, our thermal engineers can recommend a unit specific to your requirements:
Fuel type
Exhaust Gas Mass Flow Rate
Exhaust Gas Inlet Temperature
Water Circuit Inlet Temperature and Flow Rate



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Typical examples of exhaust gas heat exchanger performance
The figures below are a general guide only and are not based on any particular natural gas engine. They assume an air/fuel ratio of 10.23: 1 by volume, a fuel consumption of 0.34m3/kWh (measured at 1.013 bar and 15°C) and an exhaust gas temperature of 600°C and a water inlet temperature of 80°C.

Type	Gen Set rating		Performance		
	Typical Engine power kW	Exhaust gas flow kg/h	Exhaust gas outlet temp °C	Heat recovery kW	Exhaust gas pressure drop kPa
EXH 60/754	16	72	210	9,5	2,5
EXH 60/932	16	72	170	10,5	2,9
EXH 90/962	32	144	210	19	2,5
EXH 90/1164	32	144	170	21	2,9
EXH 90/1672	32	144	120	23	3,5
EXH 114/992	60	270	210	35	2,3
EXH 114/1194	60	270	170	39	2,5
EXH 114/1702	60	270	120	43	3,1
EXH 140/1032	90	402	210	52	2,2
EXH 140/1234	90	402	170	57	2,5
EXH 140/1742	90	402	120	65	3,0
EXH 170/1082	140	630	210	82	2,3
EXH 170/1284	140	630	170	90	2,5
EXH 170/1792	140	630	120	101	3,1
EXH 220/1152	250	1.122	210	147	2,4
EXH 220/1354	250	1.122	170	160	2,6
EXH 220/1862	250	1.122	120	181	3,1
EXH 270/1232	400	1.800	210	236	2,5
EXH 270/1434	400	1.800	170	256	2,7
EXH 270/1942	400	1.800	120	288	3,2
EXH 320/1332	600	2.700	210	353	2,4
EXH 320/1534	600	2.700	170	380	2,6
EXH 320/2042	600	2.700	120	425	3,2

100kPa-1 bar

For larger sizes contact our sales department.
Maximum working gas side pressure 0.5 bar
Maximum working water side pressure 4 bar
Maximum working gas side temperature 700°C
Maximum working water side temperature 110°C

European Pressure Equipment Directive
This range of products fall within Article 3 Paragraph 3 (Sound Engineering Practice) and do not require CE marking.

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Combined Heat Recovery Performance Table
This table shows the heat that can be removed from different types of heat exchanger, for further info contact our technical department.

Type	Gen Set rating kva	Jacket Water kW	Engine Oil kW	Charge Air Cooler kW	Exhaust Gas kW	Total Reclaimed Energy
2"	16	5	2	2,5	11,5	20,5
3"	32	10	4	5	23	41
4"	60	18	7	9	43	77
5"	90	27	10	14	65	115
6"	140	42	15	21	101	179
8"	250	75	28	38	181	321
10"	400	120	44	60	288	512
12"	600	180	66	90	425	761

Above figures are used as a guide only, optimised design available on request.

Installation
The heat exchanger must be installed horizontally and levelled accurately, with the primary circuit (tubeside) being installed through the tubes and the secondary circuit (shellside) being installed over the tubes. The heat exchanger should only be connected in "counter flow" with the secondary circuit (shellside) connections always being positioned on top. Alternative installations may also be acceptable; consultation with the technical department for acceptance should be made prior to installation. It is very important that the secondary circuit is fully vented via the vent plug fitted in order to prevent any aeration taking place which can cause corrosion of the tubes. If ethylene glycol or any other heat transfer fluid is to be utilised within the secondary circuit, adequate mixing should be performed prior to filling of the heat exchanger. If temperature control sensors are fitted to either the primary or secondary circuits of the heat exchanger, they should be fitted to the inlet circuit and not the outlet circuit in order to provide accurate temperature readings. The pressure relief valve should not be removed or tampered with.

Operation
Adequate provision should be made to ensure that in the event of the primary circuit being shutdown, the secondary circuit continues to operate for a period of time to enable the dispersal of residual heat to an acceptable level, preventing any damage to the heat exchanger. Adequate provision should also be made to ensure that the secondary circuit pumps are in continual operation whenever the primary circuit is in operation. Provision should also be made to ensure that any valves or ancillary equipment associated to either the primary or secondary side of the heat exchanger can not be accidentally turned off, therefore preventing flow through the heat exchanger.

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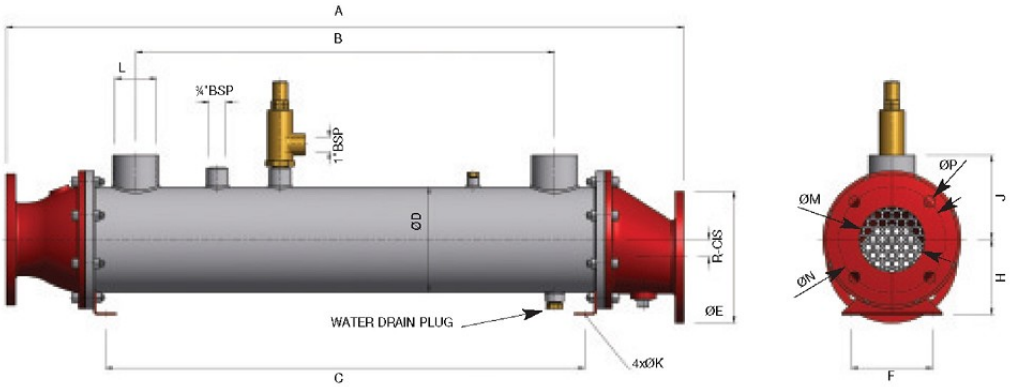
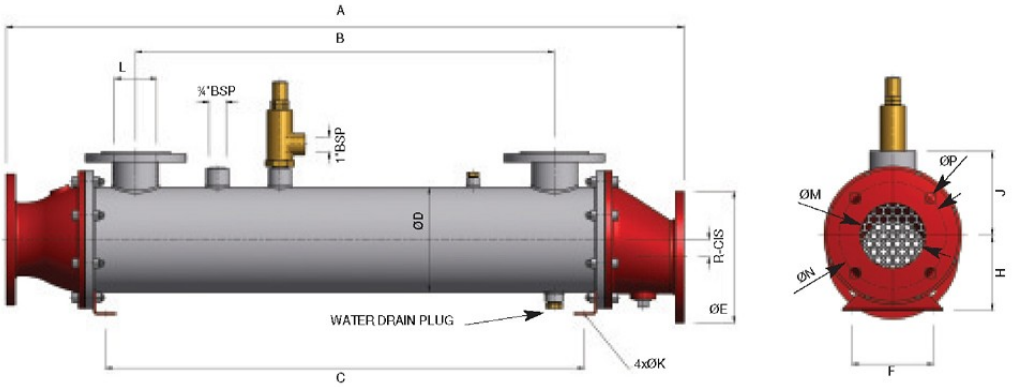


	A	D	L	M	Kgs
	mm	mm	BSP	mm	
EXH 60/754	754	603	RP¾"	34	10
EXH 60/932	932	603	RP¾"	34	12
EXH 90/962	962	89	RP1"	54	18
EXH 90/1164	1164	89	RP1"	54	20
EXH 90/1672	1672	89	RP1"	54	27
EXH 114/992	992	114	RP1½"	66	24
EXH 114/1194	1194	114	RP1½"	66	28
EXH 114/1702	1702	114	RP1½"	66	42
EXH 140/1032	1032	141	RP2"	82	36
EXH 140/1234	1234	141	RP2"	82	39
EXH 140/1742	1742	141	RP2"	82	51



	A	D	L	M	Kgs
	mm	mm	Flange	mm	
EXH 170/1082	1082	168	DN60*	104	51
EXH 170/1284	1284	168	DN60*	104	53
EXH 170/1792	1792	168	DN60*	104	75
EXH 220/1152	1152	219	DN80*	130	85
EXH 220/1354	1354	219	DN80*	130	98
EXH 220/1862	1862	219	DN80*	130	121
EXH 270/1232	1232	273	DN100*	154	132
EXH 270/1434	1434	273	DN100*	154	146
EXH 270/1942	1942	273	DN100*	154	181
EXH 320/1332	1332	324	DN150*	204	190
EXH 320/1534	1534	324	DN150*	204	208
EXH 320/2042	2042	324	DN150*	204	262

*Flange specification in accordance with BS EN1092 - 1:2007 (BS 4504-6)

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