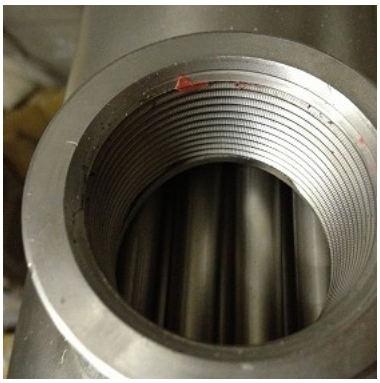
T ST EXH S

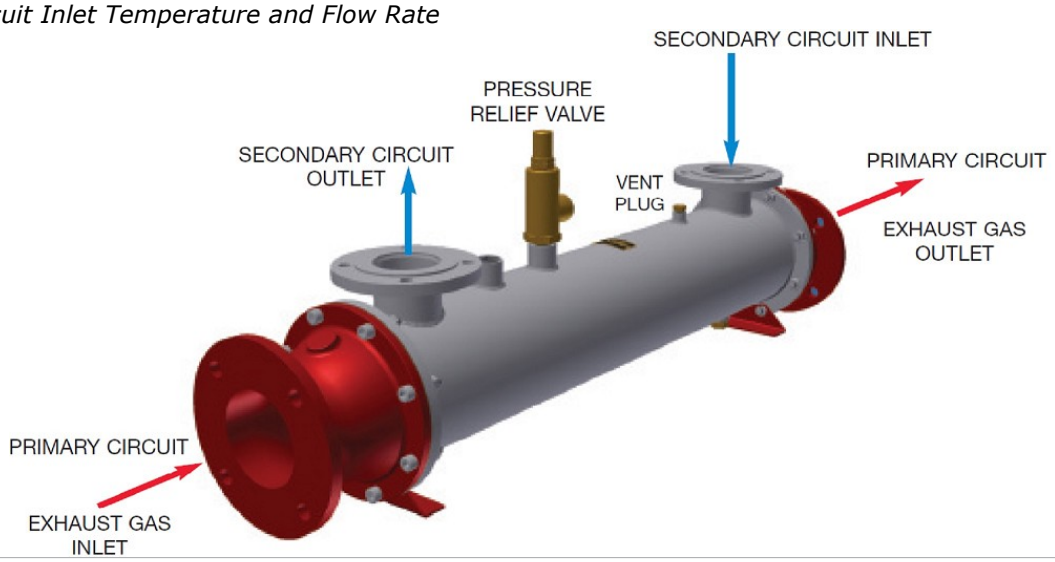
Exhaust Gas Heat Exchangers



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	Typical Engine Power kW	Exhaust gas flow kg/min	Exhaust gas outlet temp °C	Heat recovery kW	Exhaust gas pressure drop kPa
00060-00754	16	1.2	210	9.5	1.6
00060-00932	16	1.2	170	11.5	1.8
00090-00962	32	2.4	210	19	1.5
00090-01164	32	2.4	170	21	1.7
00090-01672	32	2.4	120	23	2.2
00114-01032	60	4.5	210	35	1.3
00114-01194	60	4.5	170	39	1.4
00114-01702	60	4.5	120	43	1.8
00140-01032	90	6.7	210	53	1.2
00140-01234	90	6.7	170	58	1.4
00140-01742	90	6.7	120	65	1.8
00170-01082	140	10.5	210	82	1.3
00170-01284	140	10.5	170	90	1.4
00170-01792	140	10.5	120	101	1.9
00220-01152	250	18.7	210	147	1.3
00220-01354	250	18.7	170	161	1.4
00220-01862	250	18.7	120	181	1.8
00270-01232	400	30.0	210	236	1.3
00270-01434	400	30.0	170	256	1.4
00270-01942	400	30.0	120	288	1.8
00320-01332	600	45.0	210	353	1.3
00320-01534	600	45.0	170	388	1.5
00320-02042	600	45.0	120	425	1.9
00380-01670	950	70.0	170	604	1.4
00380-02180	950	70.0	120	670	1.9

For larger sizes contact our sales department.

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	Engine Power kW	Jacket Water kW	Engine Oil kW	Charge Air Cooler kW	Exhaust Gas kW	Total Reclaimed Energy kW
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
15"	950	280	104	142	670	1205

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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Engine exhaust operator

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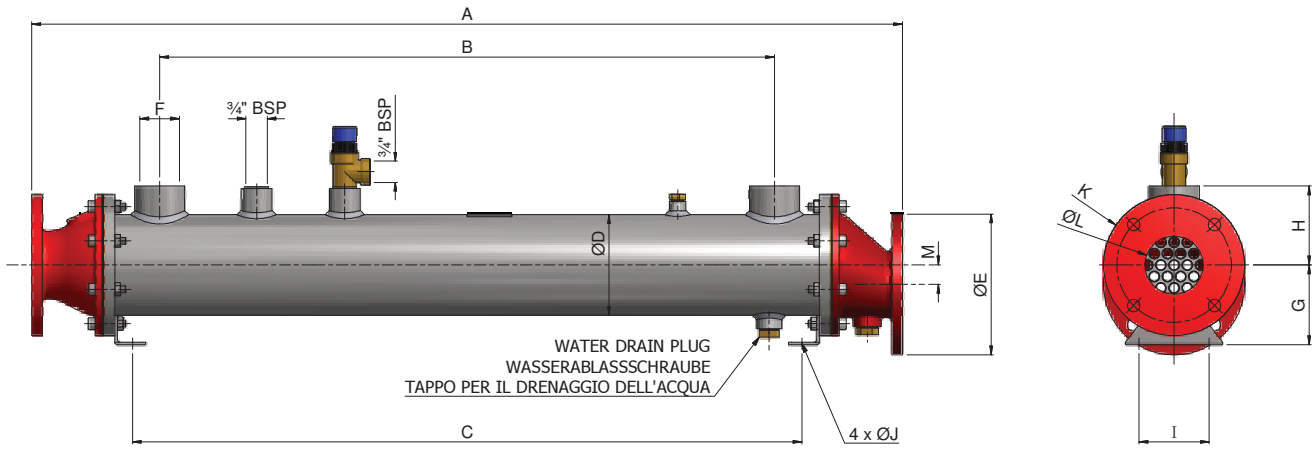

Type	A	B	C	D	E	F	G	H	I	J	K	L	M	kg
	mm	mm	mm	mm	mm	BSP	mm	mm	mm	mm		mm	mm	
00060-00754	750	550	588	60.3	100	¾"	65	55	60	9	DN25	34	12	10
00060-00932	928	728	766	60.3	100	¾"	65	55	60	9	DN25	34	12	12
00090-00962	960	718	760	88.9	140	1"	75	75	60	9	DN50	54	16	18
00090-01164	1162	920	962	88.9	140	1"	75	75	60	9	DN50	54	16	20
00090-01672	1670	1428	1470	88.9	140	1"	75	75	60	9	DN50	54	16	27
00114-01032	990	698	760	114.3	160	1½"	90	90	80	9	DN65	66	22	25
00114-01194	1192	900	962	114.3	160	1½"	90	90	80	9	DN65	66	22	29
00114-01702	1700	1408	1470	114.3	160	1½"	90	90	80	9	DN65	66	22	40
00140-01032	1030	688	760	141.3	190	2"	105	105	100	11	DN80	82	26	36
00140-01234	1232	890	962	141.3	190	2"	105	105	100	11	DN80	82	26	39
00140-01742	1740	1398	1470	141.3	190	2"	105	105	100	11	DN80	82	26	51

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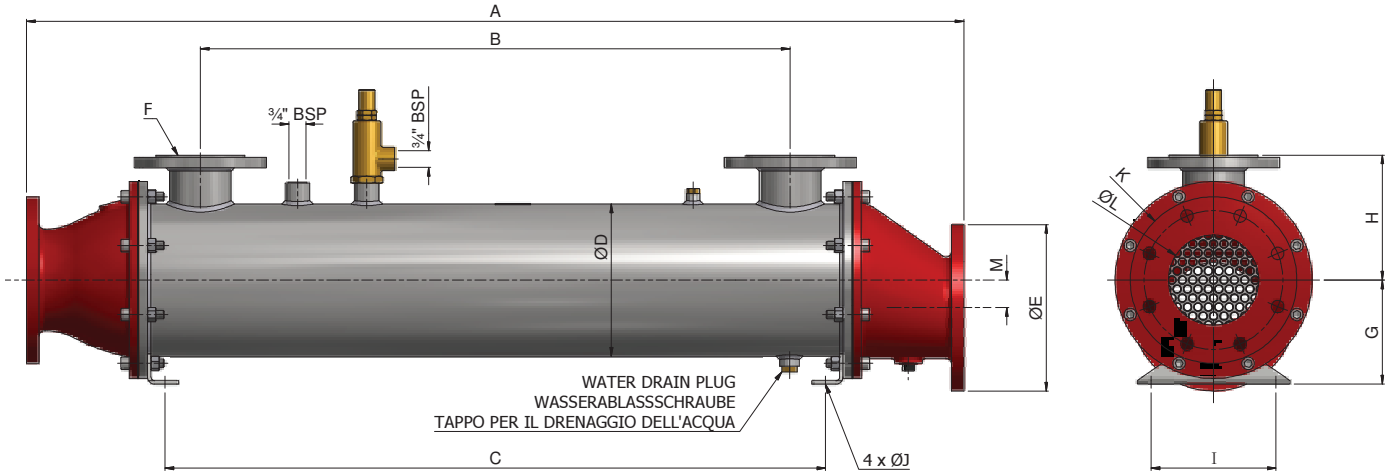

Type	A	B	C	D	E	F	G	H	I	J	K	L	M	kg
	mm	mm	mm	mm	mm		mm	mm	mm	mm		mm	mm	
00170-01082	1080	668	760	168.3	210	DN65	120	140	130	11	DN100	104	28	48
00170-01284	1282	870	962	168.3	210	DN65	120	140	130	11	DN100	104	28	55
00170-01792	1790	1378	1470	168.3	210	DN65	120	140	130	11	DN100	104	28	72
00220-01152	1150	648	750	219	240	DN80	150	180	180	14	DN125	130	40	89
00220-01354	1352	850	952	219	240	DN80	150	180	180	14	DN125	130	40	98
00220-01862	1860	1358	1460	219	240	DN80	150	180	180	14	DN125	130	40	125
00270-01232	1230	608	750	273	265	DN100	180	220	250	14	DN150	154	55	132
00270-01434	1432	810	952	273	265	DN100	180	220	250	14	DN150	154	55	146
00270-01942	1940	1318	1460	273	265	DN100	180	220	250	14	DN150	154	55	185
00320-01332	1330	538	736	324	320	DN125	220	260	300	18	DN200	204	55	190
00320-01534	1532	740	938	324	320	DN125	220	260	300	18	DN200	204	55	208
00320-02042	2040	1248	1446	324	320	DN125	220	260	300	18	DN200	204	55	268
00380-01670	1670	740	912	406.4	375	DN150	280	320	350	18	DN250	254	70	319
00380-02180	2180	1248	1420	406.4	375	DN150	280	320	350	18	DN250	254	70	404

Flange ‘F’ to BS EN 1092-1:2007 - PN6.
Flange ‘K’ to BS EN 1092-1:2007 - PN6.

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