

Exhaust Gas Heat Exchangers

Selection Guidance

- 1: From the exhaust gas heat exchanger range shown on page 4, first identify the engine size and then select the unit that will cool the exhaust gas to the desired outlet temperature and recover the required amount of heat.
- 2: As a general guide, the heat exchanger length determines the gas temperature reduction and the diameter determines the pressure drop.
- 3: For diesel powered engines, the exhaust gas temperature should not fall below 180°C, as below this temperature, soot deposits can build up inside the heat exchanger, reducing efficiency and necessitating cleaning to restore performance.
- 4: At temperatures below 180°C, condensation will occur, so the materials used downstream of the heat exchanger must be chosen accordingly.
- 5: Always specify the gas mass flow, preferably in kg/min. Volume flows should be avoided because without also stating the pressure and temperature at which they are measured, they are meaningless. Temperatures can be given in Celsius, but if any calculations are to be made involving the universal gas laws, absolute temperatures in Kelvin must be used. To convert from Celsius to Kelvin, add 273.
- 6: It should be noted that adding an exhaust gas heat exchanger to an existing system will reduce the gas volume and velocity after the heat exchanger, thus reducing the back pressure through the silencer and the rest of the system. Typically, this reduction will be more than the back pressure through the heat exchanger, meaning that the addition of a heat exchanger to an existing system will often reduce the total system back pressure.
- 7: The target gas pressure drop through the heat exchanger should be about half the total back pressure permitted by the engine manufacturer. Consideration should also be given to the silencer. When specifying, ensure the supplier has the actual gas inlet temperature and the mass flow in kg/min, in addition to noise reduction requirements. Please note that for any gas flow through a particular silencer, back pressure will be proportional to the absolute gas temperature in Kelvin.

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Application Choice

Bowman exhaust gas heat exchangers are available in a choice of three ranges to suit the requirements of the application:

Without end covers

This option enables the unit to be connected directly into the installation pipework.

Straight end covers

With PN6 flange connections on the end covers these units provide installation flexibility for using on a wide range of applications.

Right angle end covers

Designed to provide a more compact installation which can often reduce pipework, these end covers can be rotated to suit exhaust gas pipework.

