

CHALWYN

**Exhaust Temperature Valves
(Mechanical)**

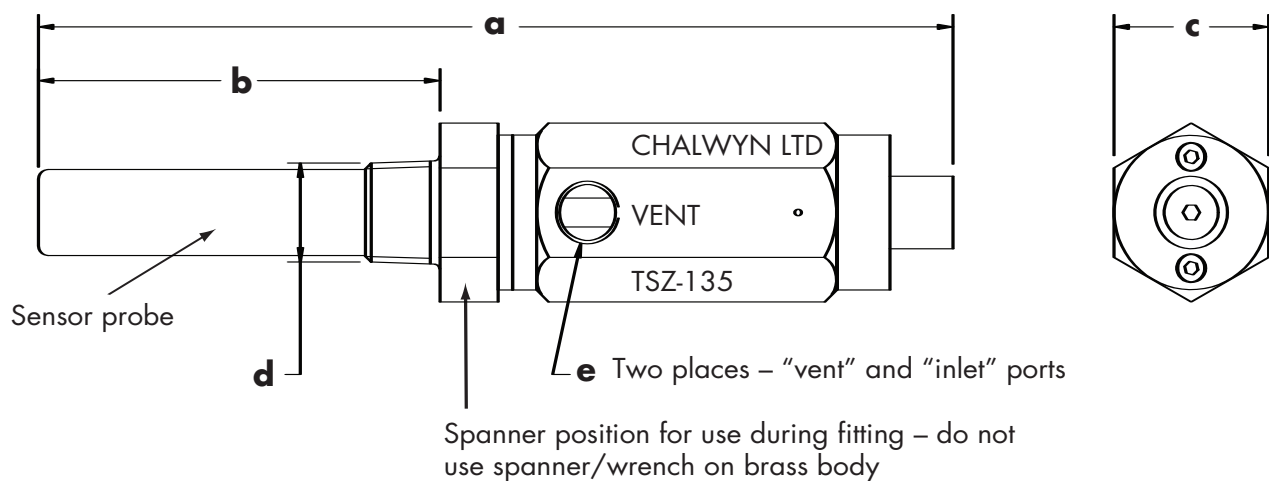
**INSTALLATION, OPERATION
& MAINTENANCE**

Valve Number	
TSZ-135	TSZ-150
TSZ-200	TSZ-275
TSZ-392	

DESCRIPTION

Non-electrical temperature valves manufactured in corrosion resistant materials and designed to monitor the exhaust gas temperature of diesel engines fitted with exhaust cooling systems. These valves are suitable for zone 1 hazardous area applications and are intended for incorporation into diesel engine oil pressure (or air pressure) operated shut down control systems. Operation is by the valve tripping to vent control system pressure once the preset temperature is exceeded. Details and overall dimensions are given below.

Value Type	Nominal Trip Setting	Dimensions (mm)			Thread	
		a	b	c	d	e
TSZ-135	135° C	189	83	32	1/2bspt	1/4bsp
TSZ-150	150° C	189	83	32	1/2bspt	1/4bsp
TSZ-200	200° C	189	83	32	1/2bspt	1/4bsp
TSZ-275	275° F	189	83	32	1/2npt	1/4npsc
TSZ-392	392° F	189	83	32	1/2npt	1/4npsc



APPLICATION

Used in conjunction with a flow restrictor and a fuel shut down valve* or an intake air shut down valve*, this product provides a simple high exhaust temperature engine automatic shut down system. Alternatively it can be combined with a number of other Chalwyn components to engineer a more complex shut down system also including for example high coolant temperature, engine over-speed and low engine oil pressure.

Notes:

- A.** The fuel shut down valve* and/or air intake shut down valve* to be set at a trip pressure within the range 10 psi (0.7 bar) to 30 psi (2 bar).
- B.** The maximum oil or air pressure applied to the ports of the valve not to exceed 120psi (8.25 bar).

INSTALLATION

Fit the valve into the engine exhaust system immediately downstream of the exhaust cooling system. Ensure that the valve's sensor probe is fully exposed to the exhaust gas stream. **IMPORTANT NOTE:** When tightening the valve into position, or removing the valve, apply spanner loads only to the stainless steel hexagon section and NOT the brass body.

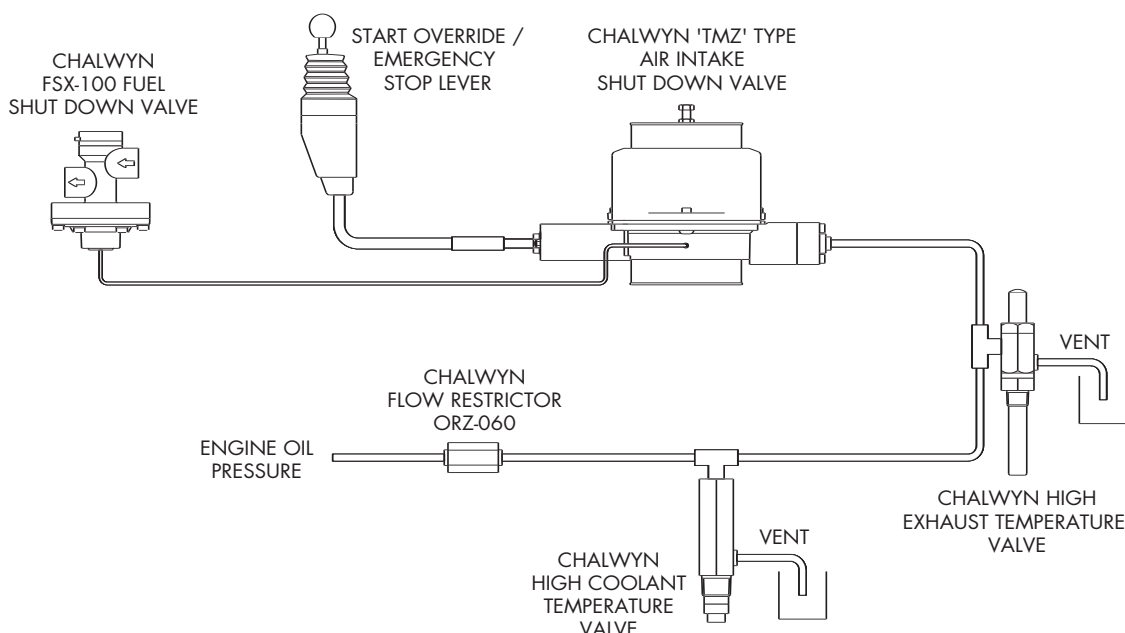
Use suitably rated tube of between 6 and 8 mm. bore to connect the valve into the oil [or air] pressure operated engine shut down control system. A suitable flow restrictor must be fitted into the pressure feed line to the valve. For a typical oil pressure operated system Chalwyn flow restrictor ORZ-060 (or ORZ-061) is recommended. To increase system sensitivity restrictors ORZ-040 or ORZ-041 are available. For complex air operated systems a variable restrictor allowing a degree of system "tuning" may be necessary.

For engine oil pressure operated systems the "vent" port of the valve must be connected to a position on the engine to allow any vented oil to freely drain back into the engine. A connection into the rocker cover would be an example of one suitable arrangement. For air systems the "vent" may be released as appropriate to atmospheric pressure.

It is VERY IMPORTANT that the various components in the shut down control system are correctly sequenced. The pressure supply must initially be fed through the flow restrictor. The pressure line must then be taken to each valve in turn. The recommended method of connection is via a "T" fitting mounted directly onto the valve. The pressure feed is then finally piped to the engine shut down valve[s]. All pipe-work in the control system should generally be kept as short and direct as possible but must comply with the sequence outlined above. A typical circuit example is shown below.

The valve is factory set to trip within $\pm 1^\circ\text{C}$ of the nominal trip temperature. It should be noted however that variations in installation detail, including the trip pressure of the associated shut down valve, may give rise to small variation in the actual shut down temperature. Once installed, and prior to putting the system into service, a check should be carried out as given under **"MAINTENANCE - Monthly"**. Where a high degree of accuracy in the shut down temperature is required, the check listed under **"MAINTENANCE - Yearly"** should also be completed. If there is an unacceptable delay in shut down, the sensitivity can be adjusted by fitting a smaller flow restrictor into the system. Additionally it is possible to make small adjustments to the Chalwyn temperature valve (see Page 4).

EXAMPLE OF TYPICAL INSTALLATION



OPERATION

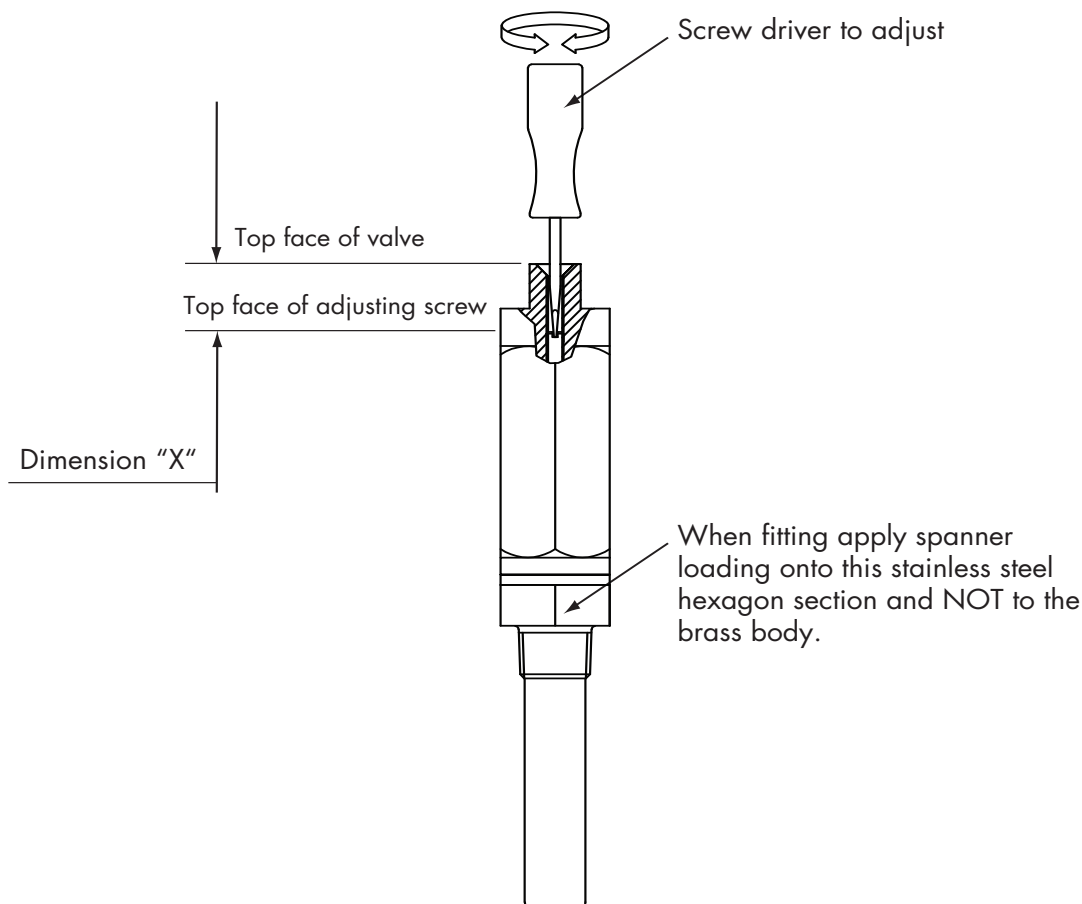
If installed into a control circuit that includes automatic shut down on low engine oil pressure, a special engine start procedure is necessary. For further details see the Chalwyn technical publication supplied with the relevant Chalwyn intake air or fuel shut down valve.

ADJUSTMENT

Before attempting any adjustment, start engine and break the vent line from the installed valve. At an exhaust gas temperature of a degree or so below the required shut down temperature, a small amount of oil should start to drip from the vent. This should increase to a steady flow at the required trip temperature. This indicates that the valve is either adjusted correctly or at most requires only minimal adjustment. In this case before adjustment check the circuit is correctly piped up, a suitable sized restrictor is installed and the controlled engine shut down valve is set to a trip pressure of 0.7 bar (10psi) or greater. If this fails to resolve the problem adjust the valve as follows.

Remove M5 countersunk screw and M5 grub screw as shown below. Use screwdriver to adjust setting. Wind in to increase setting. Wind out to reduce. **IMPORTANT NOTE.** Do not adjust dimension "X" outside of range $X = 12\text{mm}$ to $X = 20\text{mm}$.

After adjustment fit and tighten the M5 grub screw to lock the adjuster screw in position. Refit and tighten the M5 countersunk screw.



MAINTENANCE

Monthly:

Check for and rectify any leakage.

With the engine running at low to medium speed, crack open the control system pipework at the TSZ valve sufficiently to vent the control circuit pressure. Ensure this results in a rapid automatic shut down of the engine. Where applicable take the necessary precautions to avoid spillage of hot engine oil.

Yearly:

Remove temperature valve from engine exhaust but leave fully piped into the engine shut down system. Arrange to heat valve by installing into a dry block temperature calibrator or use other suitable means to heat the probe. Run engine at low to medium speed whilst gradually increasing the temperature of the valve probe. Check that engine shut down occurs at required temperature.

IMPORTANT NOTE: Extreme care is required when working on an operating engine. These checks must only be carried out under the supervision of properly qualified and experienced staff and all necessary safety precautions taken

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