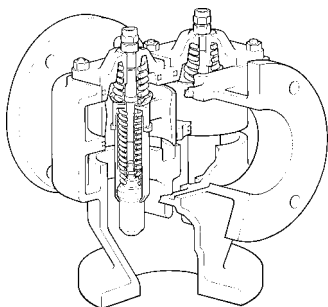
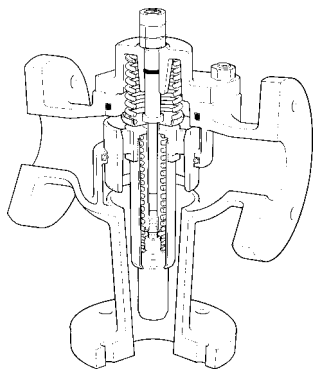


Type 58 Control Valve

Installation and Maintenance Instructions



- 1. Installation*
- 2. Operation*
- 3. Maintenance*
- 4. Available Spares*

1. Installation

General

1 Unless otherwise stated, all identity numbers refer to Fig. 8.

Details of spare parts available are shown on Fig. 9. See Section D.

2 When despatched the Spirax Sarco Type 58 Control Valve is completely assembled ready for installation and is fitted with a sensor (18), most suitable for the temperature given on the order.

For details of the sensors available see Section A 6.

Serial Numbers

3 All Type 58 Control Valves bear a serial number which is stamped on the nameplate fixed to the cover (3) and should be noted in all contacts with the manufacturer.

General Arrangement

4 The Type 58 Control Valve should be fitted in a vertical position with the Port O at the bottom. For ease of maintenance an isolating valve should be fitted in the line serving each port, although for clarity these are not shown on the recommended installation layouts.

Recommended Installation

a As a diversion valve to control the temperature of the cooling water and lubricating oil serving a diesel engine.

Fig. 1 shows a typical layout.

b As a mixing valve to control the minimum

return water temperature to a hot water boiler in a low temperature hot water heating system (93°C maximum).

Fig. 2 shows a typical layout for one boiler. Where two or more boilers are used in parallel it is advisable to fit a separate Type 58 Control Valve to each boiler as is shown in Fig. 3.

Alternatively one or more Type 58 Valves may be fitted as Fig. 4 to serve a range of boilers.

Pipeline Stress

5 It is important that line stresses such as can be caused by expansion or inadequate supporting of the pipe, are not imposed on the valve body.

Temperature Range

6 The sensor (18) is available in a choice of temperature settings as shown in the table. Types A, B, C, D and E are the standard and type X is non-standard. In each case the temperature at which the valve commences to move is stamped on the bottom end of each sensor (18). In addition the type of sensor fitted to each valve is shown by the letter A, B, C, D, E or X stamped on the nameplate fixed to the cover (3). Where an X sensor is fitted the letter X on the nameplate will be followed by the temperature setting and in all cases full movement of the valve, opening port Z and closing port X will occur at a temperature 8/9°C higher.

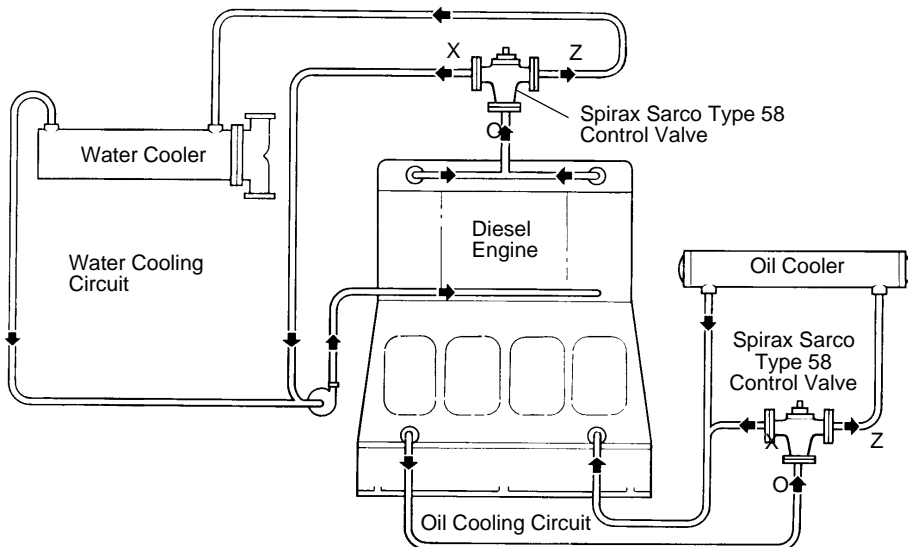


Fig. 1 Typical Installation on Diesel Engine

Type	Port Z Commences to Open	Full Flow to Z
A	57°C	66°C
B	63°C	71°C
C	74°C	82°C
D	82°C	91°C
E	40°C	49°C
X	Non-standard, see paragraph 6	

Port Identification

The valve ports are marked O,X,Z.

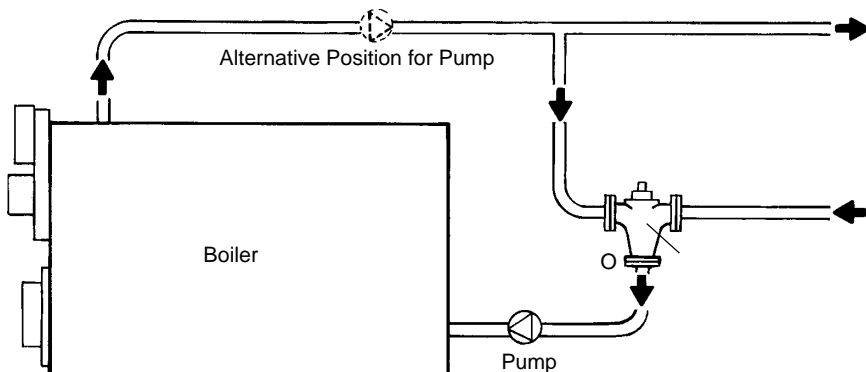


Fig. 2 Single Boiler Application

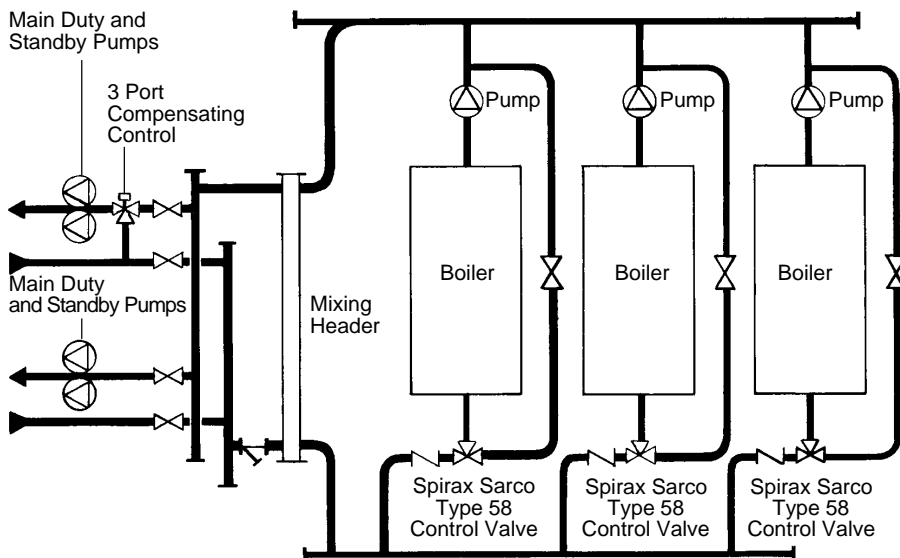


Fig. 3 Multiboiler Installation with Separate Type 58 on each Boiler

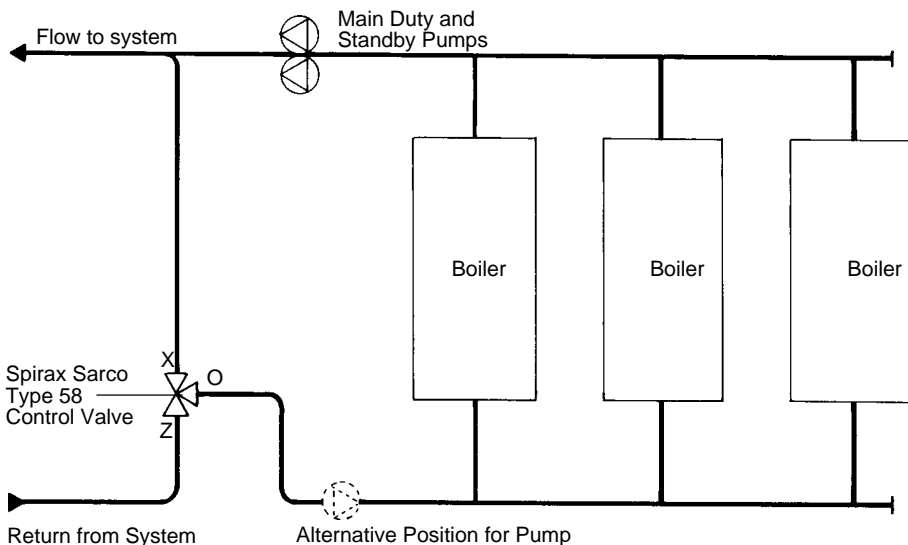


Fig. 4 Multiboiler Installation served by one Type 58 Control Valve

2. Operation

Adjustment

7 After the Type 58 Control Valve has been put into service and allowed to settle down, if it is found that it is controlling at a slightly different temperature to that required, it may be adjusted over a small range as follows:

Using a 16mm A/F spanner hold the adjustment nut (1) and slacken the lock nut (2). Now using a screw-driver in the slot provided to prevent the rod turning, the adjustment nut (1) and lock nut (2) may be repositioned up to a maximum of $\pm 2\text{mm}$ as shown on Fig. 5.

Turning the nuts clockwise to bring the end of the rod up to a maximum of 2mm above the top face of the adjustment nut will raise the temperature.

Normal setting
top of rod
flush with top
of adjustment
nut (1)

Setting for
maximum
temperature
increase

Setting for
maximum
temperature
decrease

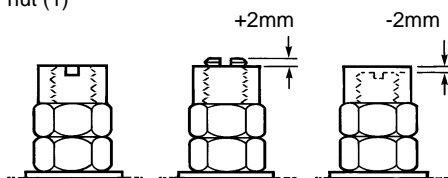


Fig. 5

Fail Safe Device

8 In the event of failure of the sensor (18) allowing a substantial rise in water temperature, a temperature sensitive fuse will come into operation at approximately 95°C mechanically putting the piston into the position where full flow will be through port Z.

In this position the valve can be operated manually, see Section B 10.

To replace or re-set the fail safe device see Section C 17.

9 The safety fuse is provided by forming the main valve operating rod in two sections male (9) and female (13) which are joined together by solder having a known melting point.

The melting of the solder allows the two sections to separate under the power of the overload spring (6) which will override the piston assembly opening the valve fully to port Z.

Manual Operation

10 If by failure of the sensor or for some other reason the fail safe device has operated releasing the temperature sensitive fuse as described in Section B 8, it is now possible to manually operate the valve as follows:

Using a 16mm A/F spanner hold the adjustment nut (1) and slacken the lock nut (2). Unscrew and remove both these nuts completely from the rod, invert and replace them as shown in Fig. 6.

By turning the inverted adjustment nut (1) the piston can now be moved to any intermediate position to give the required fluid temperature and if desired may be locked in position using the lock nut (2).

To repair or replace the fail safe device see Section C 17.

Temperature Override

11 If it is seen that the adjustment nut (1) and lock nut (2) assembly rises with the rod clear of the top face of the cover (3) as in Fig. 7, it is an indication that the sensor is being subjected to a temperature in the excess of normal but not sufficiently high to bring the fail safe device into operation.

Under normal operation the expanding sensor (18) bears against the plug (16) pulling the piston assembly down to open the cooler port 11. If the system cannot cope with the load or if for some reason, such as dirt, the piston travel is restricted then overload of the sensor is avoided by allowing the rod assembly to rise up against the overload spring (6).

The cause of the overload should be immediately investigated.

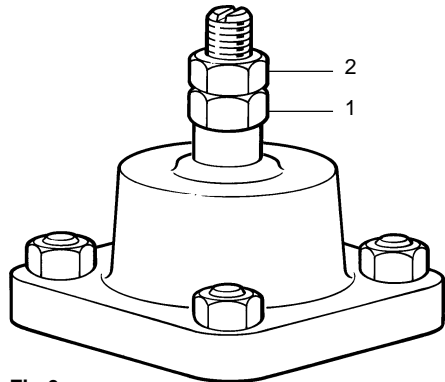


Fig 6

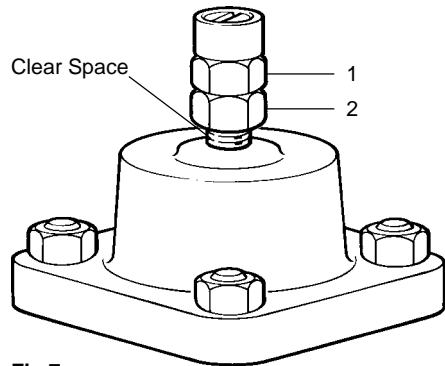


Fig 7

3. Maintenance

Inspection

12 At least once a year the working parts should be removed for inspection. This can be done without uncoupling the valve body (5) from the pipework as follows but the valve should be isolated or the system drained.

- a** Undo nuts (4) and remove cover (3) by levering up evenly with two screw drivers, using the slots provided. Do not damage 'O' ring (7).
- b** The working parts are all attached to the cover (3) and may now be inspected and any scale cleaned off.

Check that piston (8) is seating on machined face on cover (3). If not, it is either due to dirt, which should be cleaned off, or the safety fuse (9) is no longer 'set'. If the latter should be the case, repair or replace as detailed in Section C 17.

13 Without dismantling further, immerse the sensor (18) in water which is about 7°C hotter than the temperature stamped on its end and see that the piston (8) moves. If there is no movement replace the sensor (18) as described in section C 16.

14 Remove any scale adhering to the inside of the valve body, taking care not to damage the seal (11). Make sure that the face on which the piston (8) seats is clean.

If piston sealing ring (11) is worn (that is, if it is level with or below the groove into which it fits) prise out the old one and fit a new seal, shortening it with a razor blade until there is a gap of 1.5mm between the two ends.

15 Re-fit the cover (3) complete with working parts into the body taking care not to damage 'O' ring (7) or piston sealing ring (11). Replace and tighten nuts (4). **Nuts (4) should not be overtightened. The joint is sealed by 'O' ring (7) not by tightening nuts.**

Should water leak either from the joint between the cover (3) and the valve body or from underneath lock nut (2) this shows that one of the 'O' rings (7) or (19) has been damaged and must be replaced.

To Replace Sensor

16 If the sensor (18) has to be replaced, proceed as follows after isolating the valve and/or draining the system:

- a** Undo lock nut (12) using a 42mm A/F box spanner and unscrew sensor tube (14) a 'C' spanner in the slot provided if necessary. Remove retaining spring (17) and remove old sensor (18).

- b** To re-assemble drop new sensor (18) into tube (14) and replace retaining spring (17) on top of sensor.

Screw tube (14) back into piston (8) until it is just possible to move sensor capsule between 2mm and 3mm against the retaining spring (17) before it comes into contact with plug (16). This operation should be done at ambient

temperature. The sensor system is now correctly positioned and the sensor tube (14) should be locked by tightening the lock nut (12).

After tightening check the movement once more.

To Re-set or Replace Fail Safe Device

17 If safety fuse has operated for any reason it can be either re-set or replaced as follows:

- a** Isolate the valve and/or drain the system.
- b** Remove cover (3) complete with working parts as described in Section C 12.

- c** Remove sensor (18) as described in Section C 16.

- d** Hold hexagon plug (16) in vice and unscrew assembly from plug using 16mm A/F spanner on locknut (2) being careful to keep the powerful return spring (10) under compression by pushing against cover (3). Then undo adjustment nut (1) and lock nut (2) and remove safety fuse assembly including spring (6).

- e** Either replace with a new safety fuse or remake the old safety fuse as follows:

- f** Place safety fuse assembly in boiling water for a few minutes. Lift out and immediately push tube (13) as far as possible on to internal rod (9). Allow to cool. This is almost always satisfactory. If, however, it is evident that, due to extreme over-heating, solder has been lost and more is required, Fry's No. 9 solder should be used. This becomes plastic at 95°C approximately.

- g** As an alternative a replacement fail safe assembly consisting of rod (9) 'O' ring (19) and tube (13) can be purchased from Spirax Sarco Ltd. See Section D.

- h** To re-assemble, fit rod (9) into cover (3) taking care to include spring (6) and checking that 'O' ring (19) is in good condition. Screw on locknut (2) and adjustment nut (1) compressing overload spring (6) until the end of the rod (9) is flush with face of adjustment nut (1). Lock two nuts (1) and (2) together.

- i** Hold hexagon plug (16) in vice as before. Place return spring (10) and spring plate (15) in position and firmly screw rod (9) and tube (13) on to plug (16).

- j** Should it be found in operation that the reassembled unit is controlling at a slightly different temperature from the original, it may be adjusted over a small range as described in Section B 7.

Sizes DN 50 & 80

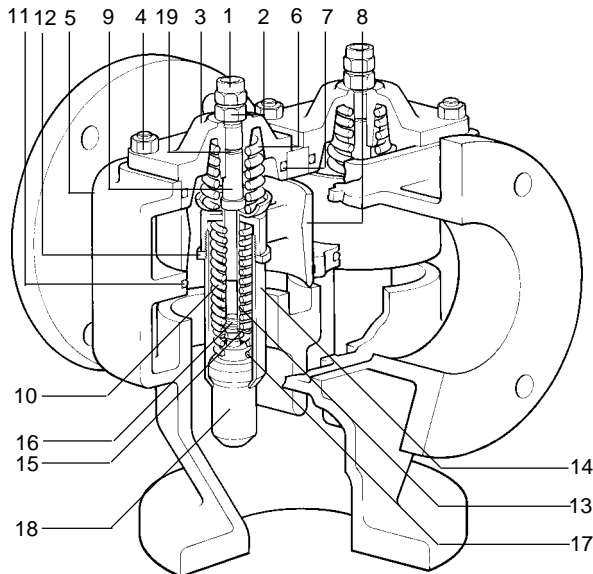
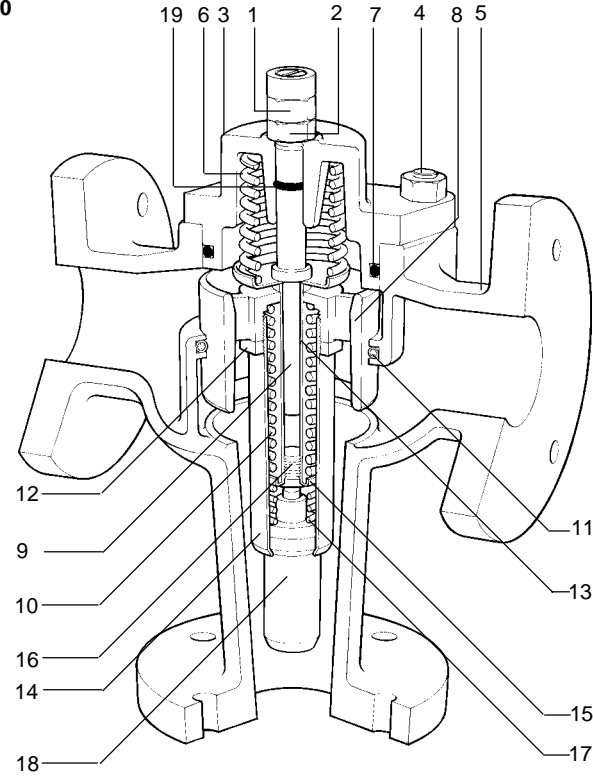


Fig. 8

Size DN100

4. Available Spares

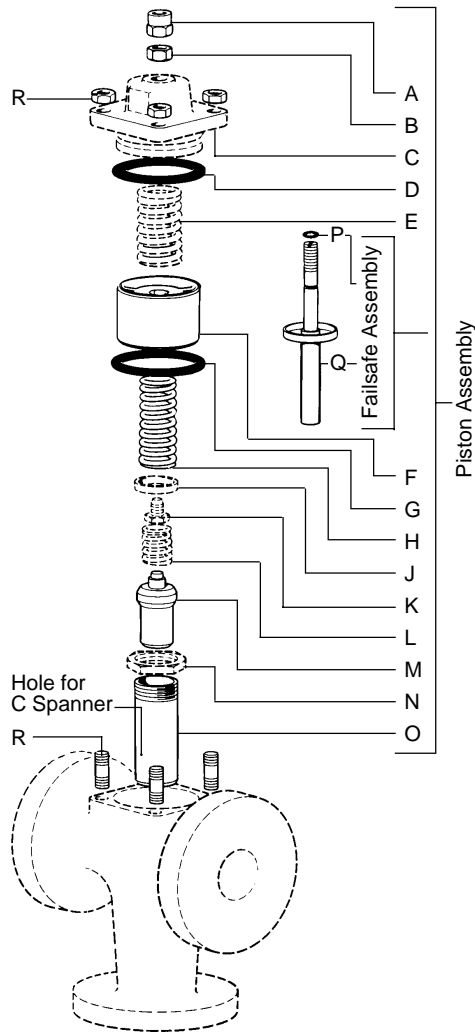


Fig 9

The spare parts available are shown in heavy outline. Parts drawn in broken line are not supplied as spares.

AVAILABLE SPARE

Piston Assembly	A,B,C,D,E,F,G,H
(State temperature range)	J,K,L,M,N,O,P,Q
Failsafe Assembly	P,Q
Sensor	M
Adjustment Nuts	A,B
Set of Sealing Rings	D,G,P
Set of Cover Studs and Nuts (set of 4)	R

How to Order

Always order spares by using the description given in the column headed Available Spare and stating the size, type and temperature range of the valve.

Example: 1 — Piston Assembly, temperature range A for 50mm Spirax Sarco Type 58 Control Valve.
