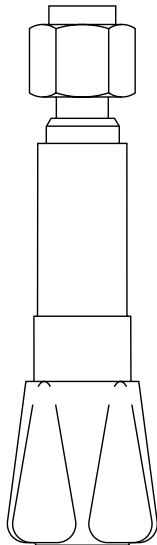


**Manual Actuator
- Knob Adjustment
Installation and Maintenance Instructions**



- 1. Safety information*
- 2. General product information*
- 3. Installation*
- 4. Display adjustment*
- 5. Manual actuator operation*
- 6. Maintenance*

1. Safety information

Safe operation of this product can only be guaranteed if it is properly installed, commissioned, used and maintained by qualified personnel (see Section 1.11) in compliance with the operating instructions. General installation and safety instructions for pipeline and plant construction, as well as the proper use of tools and safety equipment must also be complied with.

1.1 Intended use

Referring to the Installation and Maintenance Instructions, name-plate and Technical Information Sheet, check that the product is suitable for the intended use/application. The products comply with the requirements of the European Pressure Equipment Directive 97/23/EC and fall within category 'SEP'. It should be noted that products within this category are required by the directive not to carry the CE mark.

- i) The products have been specifically designed for use on steam, water, compressed air and other non-hazardous fluids which are in Group 2 of the above mentioned Pressure Equipment Directive. The products' use on other fluids may be possible but, if this is contemplated, Spirax Sarco should be contacted to confirm the suitability of the product for the application being considered.
- ii) Check material suitability, pressure and temperature and their maximum and minimum values. If the maximum operating limits of the product are lower than those of the system in which it is being fitted, or if malfunction of the product could result in a dangerous overpressure or overtemperature occurrence, ensure a safety device is included in the system to prevent such over-limit situations.
- iii) Determine the correct installation situation and direction of fluid flow.
- iv) Spirax Sarco products are not intended to withstand external stresses that may be induced by any system to which they are fitted. It is the responsibility of the installer to consider these stresses and take adequate precautions to minimise them.
- v) Remove protection covers from all connections and protective film from all name-plates, where appropriate, before installation on steam or other high temperature applications.

1.2 Access

Ensure safe access and if necessary a safe working platform (suitably guarded) before attempting to work on the product. Arrange suitable lifting gear if required.

1.3 Lighting

Ensure adequate lighting, particularly where detailed or intricate work is required.

1.4 Hazardous liquids or gases in the pipeline

Consider what is in the pipeline or what may have been in the pipeline at some previous time. Consider: flammable materials, substances hazardous to health, extremes of temperature.

1.5 Hazardous environment around the product

Consider: explosion risk areas, lack of oxygen (e.g. tanks, pits), dangerous gases, extremes of temperature, hot surfaces, fire hazard (e.g. during welding), excessive noise, moving machinery.

1.6 The system

Consider the effect on the complete system of the work proposed. Will any proposed action (e.g. closing isolation valves, electrical isolation) put any other part of the system or any personnel at risk?

Dangers might include isolation of vents or protective devices or the rendering ineffective of controls or alarms. Ensure isolation valves are turned on and off in a gradual way to avoid system shocks.

1.7 Pressure systems

Ensure that any pressure is isolated and safely vented to atmospheric pressure. Consider double isolation (double block and bleed) and the locking or labelling of closed valves. Do not assume that the system has depressurised even when the pressure gauge indicates zero.

1.8 Temperature

Allow time for temperature to normalise after isolation to avoid danger of burns.

1.9 Tools and consumables

Before starting work ensure that you have suitable tools and/or consumables available. Use only genuine Spirax Sarco replacement parts.

1.10 Protective clothing

Consider whether you and/or others in the vicinity require any protective clothing to protect against the hazards of, for example, chemicals, high/low temperature, radiation, noise, falling objects, and dangers to eyes and face.

1.11 Permits to work

All work must be carried out or be supervised by a suitably competent person. Installation and operating personnel should be trained in the correct use of the product according to the Installation and Maintenance Instructions.

Where a formal 'permit to work' system is in force it must be complied with. Where there is no such system, it is recommended that a responsible person should know what work is going on and, where necessary, arrange to have an assistant whose primary responsibility is safety.

Post 'warning notices' if necessary.

1.12 Handling

Manual handling of large and/or heavy products may present a risk of injury. Lifting, pushing, pulling, carrying or supporting a load by bodily force can cause injury particularly to the back. You are advised to assess the risks taking into account the task, the individual, the load and the working environment and use the appropriate handling method depending on the circumstances of the work being done.

1.13 Residual hazards

In normal use the external surface of the product may be very hot. If used at the maximum permitted operating conditions the surface temperature of some products may reach temperatures of 350°C.

Many products are not self-draining. Take due care when dismantling or removing the product from an installation (refer to 'Maintenance instructions').

1.14 Freezing

Provision must be made to protect products which are not self-draining against frost damage in environments where they may be exposed to temperatures below freezing point.

1.15 Disposal

Unless otherwise stated in the Installation and Maintenance Instructions, this product is recyclable and no ecological hazard is anticipated with its disposal providing due care is taken.

1.16 Returning products

Customers and stockists are reminded that under EC Health, Safety and Environment Law, when returning products to Spirax Sarco they must provide information on any hazards and the precautions to be taken due to contamination residues or mechanical damage which may present a health, safety or environmental risk. This information must be provided in writing including Health and Safety data sheets relating to any substances identified as hazardous or potentially hazardous.

— 2. General product information —

The manual actuator is a device that enables the 2 and 3-port self-acting control valve range to be actuated by hand, either on its own or coupled to an actuator (i.e. by using a twin sensor adapter).

Designed for use with the following available control valve options

Normally-open 2-port control valves:

BX, SB, KA51, KB51, KC51, NS, BMF, KA31, KA33, KB31, KB33, BM, KA43, KB43 and KC43.

Normally-closed 2-port control valves:

BXRA, SBRA, KX51, KY51, NSRA, BMFRA, KX31, KX33, KY31, KY33, BMRA, KX43 and KY43.

Mixing or diverting 3-port control valves:

TW (gunmetal) and TW (cast iron).

Before coupling this device the pushrod needs to be fully retracted and the indicator showing 'Max' on the scale sleeve - see Figure 1.

Note: It is imperative that this device is always utilised in conjunction with the Spirax Sarco range of self-acting control valves and ancillaries.

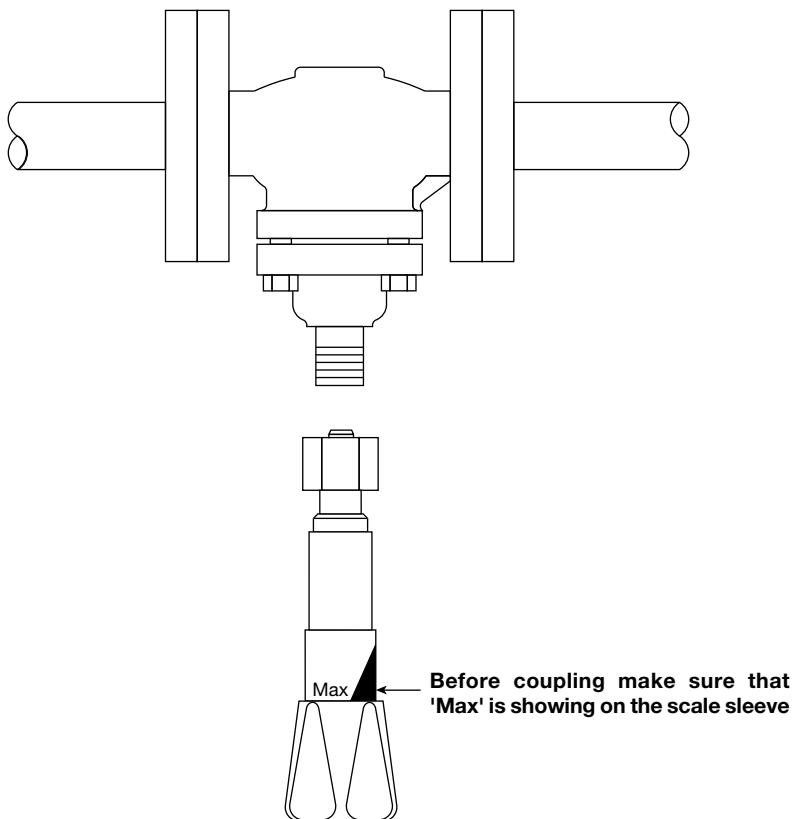
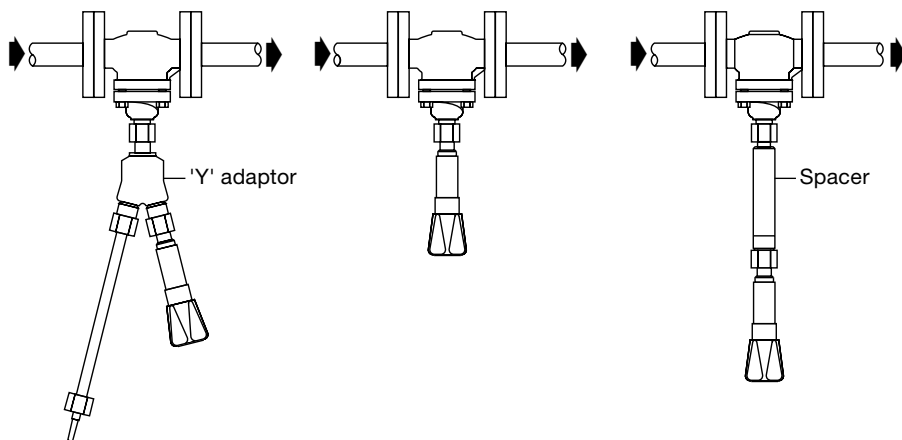


Fig. 1

3. Installation

Ensure that the supply line is isolated and the pressure relieved before fitting or removing this actuator, the manual actuator should only be used with Spirax Sarco range of control valves and ancillaries and that proper heed is paid to the 'Safety information', Section 1. The manual actuator can then simply be coupled directly onto the control valve, spacer or twin sensor adaptor (Figure 2) via the coupling nut and operated as described in Section 5.

Note: Location of manual/automatic SA control systems are recommended for fitment vertically below the process line, as shown below.



Fitment to valve via a 'Y' adaptor

Manually override of the SA control system. i.e. Interrupt the production process without interfering with the normal control settings.

Fitment to valve direct

Manual control for stand alone use or commissioning of installation.

Spacer piece

To extend the maximum operating temperature of the valve. (See valve technical information sheets for details).

Fig. 2 Configuration of the manual actuator on 'Y' adaptors, direct to valve and spacer piece

4. Display adjustment

The adjustment head (Fig. 3) enables the operative to extend or retract the pushrod, which opens or closes the valve being operated.

Assuming that the adjustment knob is at the stop position with the pushrod fully retracted and hence the scale indicator showing 'Max' before it is fitted to the valve or adaptor piece, ensure that the supply line is isolated and the pressure relieved before fitting or removing the actuator.

After setting, if desired, the drive screw can be disengaged by prising cap 'B' with a small flat bladed screwdriver, via the slot provided, remove the 3 mm A/F allen headed drive screw 'C' and stow in the knob, then replace the black cap 'B'.

The adjustment knob will now spin freely without changing the setting.

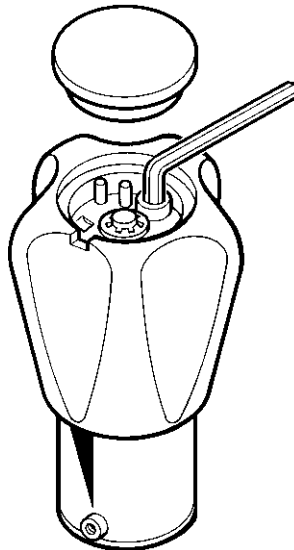
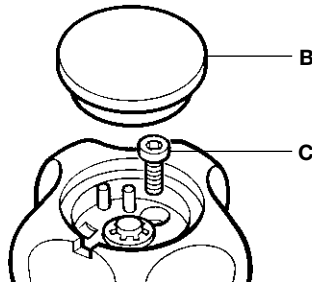


Fig. 3

5. Manual actuator operation

Operation of the manual actuator in relation to normally-open 2-port control valves:

2-port control valves:

When the actuator knob is rotated clockwise (Figure 4) the valve head will move towards its seat and fully close the valve.

The scale sleeve will indicate that the adjustment is moving towards the minimum position.

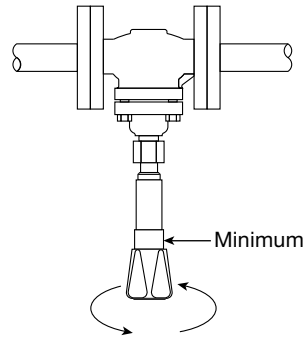


Fig. 4

Operation of the manual actuator in relation to normally-closed 2-port control valves:

2-port control valves:

The valve will be closed when the actuator adjustment knob is set at maximum (Figure 5 - pushrod fully retracted).

As the actuator is adjusted toward its minimum position the valve will open until it reaches the end of its travel and hence fully open.

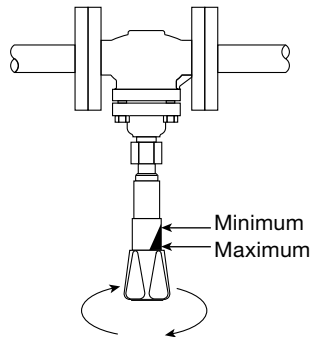


Fig. 5

Operation of the manual actuator in relation to mixing or diverting 3-port control valves:

3-port control valves:

In the case of 3-port control valves, Figure 6, the porting and operation of the system is the key to how the actuator will affect the position of the valve mechanism (i.e. mixing or diverting, and the corresponding piping of the appropriate ports).

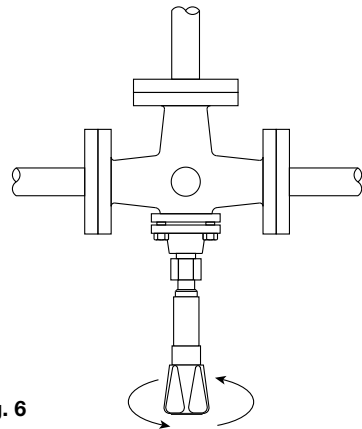


Fig. 6

6. Maintenance

There are no serviceable parts.