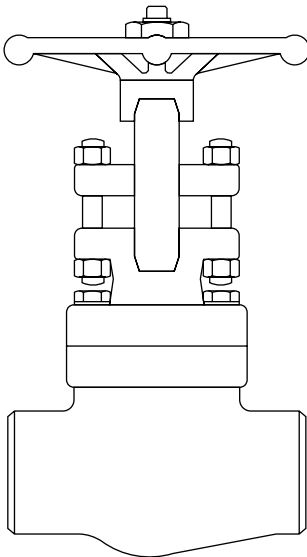


A3S

Bellows Sealed Stop Valve
Installation and Maintenance Instructions



1. *General safety information*
2. *General product information*
3. *Installation*
4. *Commissioning*
5. *Operation*
6. *Maintenance*
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— 1. *General safety information* —

Safe operation of the unit can only be guaranteed if it is properly installed, commissioned and maintained by a qualified person (see Section 11 of the attached Supplementary Safety Information) 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.

Warning

The body gaskets contain a thin stainless steel support ring which may cause physical injury if not handled and disposed of carefully.

Isolation

Consider whether closing isolating valves will put any other part of the system or personnel at risk. Dangers might include; isolation of vents and protective devices or alarms. Ensure isolation valves are turned off in a gradual way to avoid system shocks.

Pressure

Before attempting any maintenance consider what is or may have been in the pipeline. Ensure that any pressure is isolated and safely vented to atmospheric pressure before attempting to maintain the product, this is easily achieved by fitting Spirax Sarco depressurisation valves type DV (see separate literature for details). Do not assume that the system is depressurised even when a pressure gauge indicates zero.

Temperature

Allow time for temperature to normalise after isolation to avoid the danger of burns and consider whether protective clothing (including safety glasses) is required.

Disposal

The product is recyclable. No ecological hazard is anticipated with the disposal of this product providing due care is taken.

— 2. General product information —

2.1 General description

A screwed and socket weld bellows sealed, in-line stop valve for use on steam, gas, liquid, condensate and water systems.

Note: For additional information see Technical Information Sheet, TI-P132-09.

2.2 Sizes and pipe connections

½", ¾", 1", 1¼", 1½" and 2".

Screwed BSP (BS 21 parallel) and NPT connections.

Socket weld connections to BS 3799 and ANSI B 16.11.

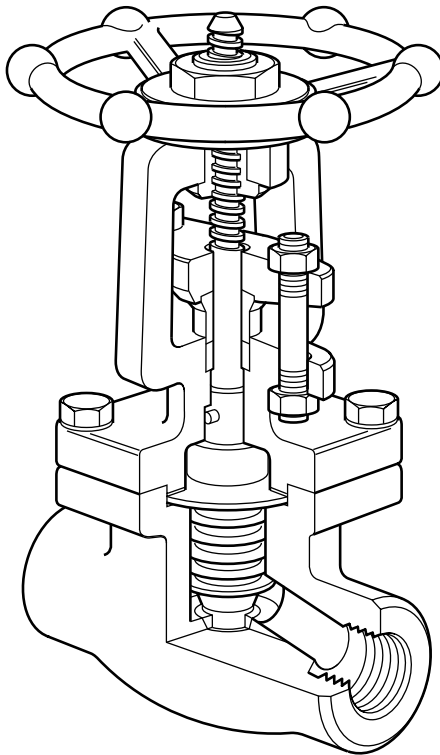
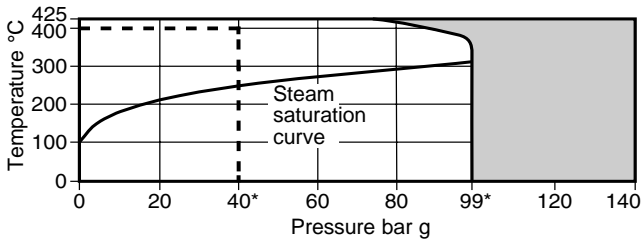



Fig. 1 A3S bellows sealed stop valve

2.3 Limiting conditions

Body design conditions	Class 800	
PMA - Maximum allowable pressure	136 bar g	(1 972 psi g)
TMA - Maximum allowable temperature	425°C	(797°F)
PMO - Maximum operating pressure	99 bar g	(1 435 psi g)
PMO - Maximum operating pressure - for extended bellows life	40 bar g	(580 psi g)
TMO - Maximum operating temperature	400°C	(752°F)
Designed for a maximum cold hydraulic test pressure of:	212 bar g	(3 074 psi g)

2.4 Operating range (Class 800)



 This product must not be used in this region.

- - - Operating restrictions to conform to BS 5352.

* PMO Maximum operating pressure recommended for saturated steam.

3. Installation

Note: Before actioning any installation observe the 'Safety information' in Section 1.

Wherever practicable, valves should be installed where there is adequate space available so that they can be conveniently operated and maintained.

Before installing a valve, check to ensure that size, pressure rating, materials of construction, end connections, etc. are suitable for the service conditions of the particular application.

Care must be taken to ensure that all dirt which may have accumulated in the valve during storage is removed before installation, maintain cleanliness during installation since the introduction of dirt can result in damage to the valve seats and operating mechanism.

To minimise the danger of abrasive particles damaging the seats, pipeline strainers should be fitted upstream of the valves.

Install the valve in the direction of flow given by the arrow on the body with the handwheel in a suitable position. The preferred position is with the spindle vertical. The valve can be installed from the vertical to the horizontal plane (see Fig. 2 below).

Do not mount the valve upside down.

When installed on steam systems a suitable steam trap should be fitted immediately upstream of the isolation valve. This will ensure drainage of the pipe when the valve is closed, and will prevent damage of the valve due to waterhammer. The drain trap should be either a ball float (FT) or thermodynamic (TD) type. Correct condensate drainage of all upstream pipework is also vital.

Valves should be installed into the line in the fully closed position. If welding into the line care must be taken to ensure that the temperature of the seat zone does not exceed 350°C - 400°C (662°F - 752°F). Always open the valve to the half open position.

Always open valves slowly to avoid system shocks.

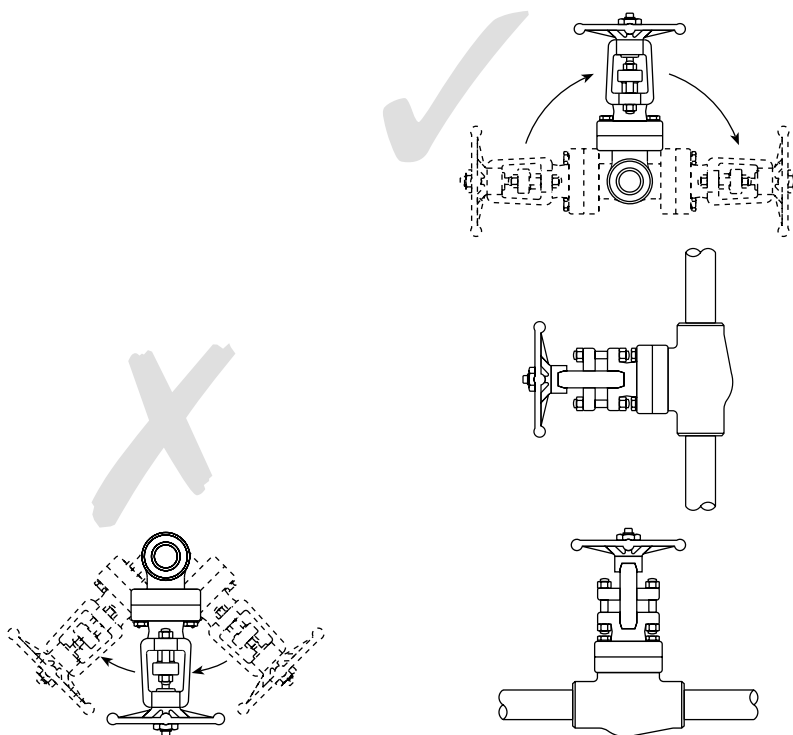


Fig. 2 **Incorrect installation**

Correct installation

4. Commissioning

After installation or maintenance ensure that the system is fully functioning. Carry out tests on any alarms or protective devices.

5. Operation

The A3S bellows sealed isolation valve plays an important role in the conservation of energy by eliminating fugitive stem seal emissions.

The valve is operated manually by a handwheel. Special care must be taken to ensure that the movement is made in the correct direction.

To open the valve fully, it is recommended to turn the handwheel clockwise until the shaft is raised to the maximum position, and then lower the shaft by giving the wheel an $\frac{1}{8}$ to $\frac{1}{4}$ turn anticlockwise to remove any backlash. This is to prevent the possibility of attempting to force open a valve which is already fully open, resulting in damage to the stem, bellows unit or other components.

6. Maintenance

Note: Before actioning any maintenance program observe the 'Safety information' in Section 1.

Warning

The body gaskets contain a thin stainless steel support ring which may cause physical injury if not handled and disposed of carefully.

6.1 General information

As with all mechanical devices, regular maintenance is the most efficient means of ensuring continued operational efficiency.

Regular scheduled inspection of all valves is essential especially on valves which are operated only occasionally.

6.2 How to change the bellows assembly and body gaskets:

- Unscrew the 4 body bolts (8) and remove the valve bonnet (2). The body gasket (7b) is immediately accessible and can be replaced without further dismantling.
- Ensure gasket faces are clean (body and upper bellows ring face) before fitting new gasket.
- To replace the bonnet gasket (7a) and the bellows assembly (6) unscrew the bellows assembly anticlockwise from the stem (16). The bonnet gasket is immediately accessible and can be replaced having ensured the sealing faces are clean.
- Make sure the anti-rotation pin on the stem is still engaged in the groove in the bonnet.
- Now screw the bellows assembly (a new one if required) fully on to the stem in a clockwise direction. Make sure the gaskets are in the correct position.
- Unscrew the bellows $\frac{1}{2}$ to $\frac{3}{4}$ turn. (This is to give the assembly flexibility).
- Replace the bonnet and tighten the body bolts (8) evenly to the recommended torque, see Table 1.

After 24 hours in service, retighten body bolts.

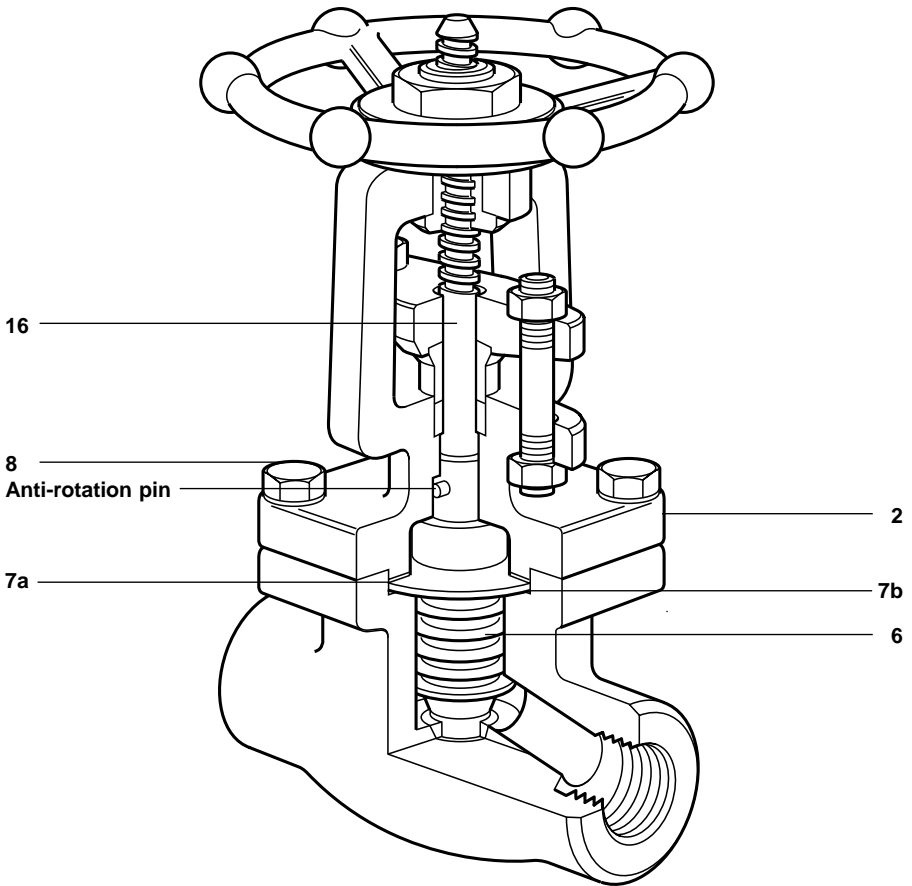




Fig. 3

Table 1 Recommended tightening torques

Item no.		or mm		N m	(lbf ft)
8	1/2"	17 A/F	M10	40 - 50	(30 - 36)
	3/4"	17 A/F	M10	40 - 50	(30 - 36)
	1"	19 A/F	M12	70 - 90	(50 - 65)
	1 1/4"	19 A/F	M12	70 - 90	(50 - 65)
	1 1/2"	22 A/F	M14	110 - 130	(80 - 95)
	2"	24 A/F	M16	160 - 190	(115 - 138)

7. Spare parts

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

Available spares

Set of bonnet and body gaskets

7a and 7b

Disc and bellows assembly

5, 6

How to order spares

Always order spares by using the description given in the column headed 'Available spares' and state the size and type of the valve.

Example: 1 - Disc and bellows assembly plus 1 - Set of bonnet and body gaskets for a 1" Spirax Sarco A3S bellows sealed stop valve having screwed BSP connections.

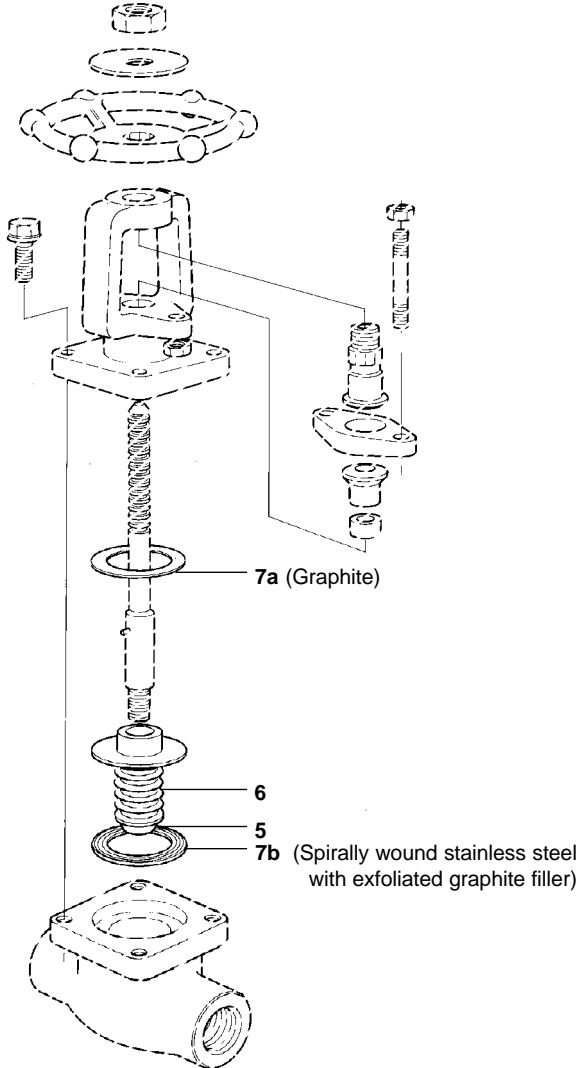


Fig. 4