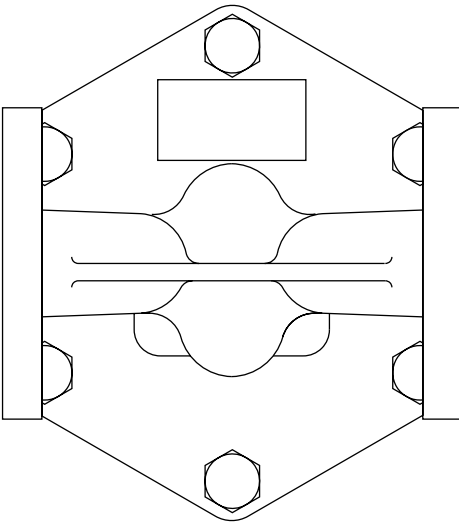


CA44, CA44S, CA46 and CA46S
Air and Gas Traps
Installation and Maintenance Instructions



- 1. General
safety information*
- 2. General
product information*
- 3. Installation*
- 4. Commissioning*
- 5. Operation*
- 6. Maintenance*
- 7. Spare parts*

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 cover gasket and the main valve gasket (DN40 and 50) 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.

Viton - CA44 and CA46 main valve cone:

If the the main valve cone (made of Viton) has been subjected to a temperature approaching 315°C (599°F) or higher it may have decomposed and formed hydrofluoric acid. Avoid skin contact and inhalation of any fumes as the acid will cause deep skin burns and damage the respiratory system.

Disposal

These products are recyclable. No ecological hazard is anticipated with the disposal of these products providing due care is taken, EXCEPT:

Viton - CA44 and CA46 main valve cone:

- Waste parts can be landfilled, when in compliance with National and Local regulations.
- Waste parts can be incinerated, but a scrubber must be used to remove Hydrogen Fluoride, which is evolved from the product and with compliance to National and Local regulations.
- Parts are insoluble in aquatic media.

— 2. General product information —

2.1 General description

CA44

DN15 and 20 Flanged

The CA44 is a carbon steel ball float air and gas trap. It is available with a soft valve cone and has horizontal flanged connections. The cover will be drilled and tapped ½" BSP or NPT for the purpose of fitting a balance line.

Body and cover castings are produced by a TÜV approved foundry.

CA44S

DN15, 20, 25, 40, 50 Flanged and 1" screwed/socket weld

The CA44S is a carbon steel ball float air and gas trap. It is available with a metal valve cone and has horizontal flanged, screwed or socket weld connections. With exception to the DN40 and 50, the cover will be drilled and tapped ½" BSP or NPT for the purpose of fitting a balance line (also available for the socket weld version). The cover on the DN40 and 50 will be drilled and tapped ¾" BSP or NPT.

Body and cover castings are produced by a TÜV approved foundry.

CA46

DN15 and 20 Flanged

The CA46 is an austenitic stainless steel ball float air and gas trap. It is available with a soft valve cone and has horizontal flanged connections. The cover will be drilled and tapped ½" BSP or NPT for the purpose of fitting a balance line.

Body and cover castings are produced by a TÜV approved foundry.

CA46S

DN15, 20, 25, 40 and 50 Flanged

The CA46S is an austenitic stainless steel ball float air and gas trap. It has a metal valve cone and is available with horizontal flanged connections. With exception to the DN40 and 50, the cover will be drilled and tapped ¾" BSP or NPT for the purpose of fitting a balance line. The cover on the DN40 and 50 will be drilled and tapped ¾" BSP or NPT.

Body and cover castings are produced by a TUV approved foundry.

Note:

For additional information see the following Technical Information Sheets:

Product	Size and connection	Material	Section	TI reference
CA44	DN15 - 20 Flanged	Carbon steel	Section 2.2	TI-P148-02
	DN15 - 25 Flanged	Carbon steel	Section 2.2	TI-P148-02
CA44S	DN40 - 50 Flanged	Carbon steel	Section 2.2	TI-P148-03
	1" Screwed	Carbon steel	Section 2.2	TI-P148-23
CA46	DN15 - 20 Flanged	Austenitic stainless steel	Section 2.3	TI-P148-04
CA46S	DN15 - 25 Flanged	Austenitic stainless steel	Section 2.3	TI-P148-04
	DN40 - 50 Flanged	Austenitic stainless steel	Section 2.3	TI-P148-07

2.2 CA44 and CA44S - Carbon steel

Fig. 1
CA44 and CA44S
 DN15 and 20
 DIN flange

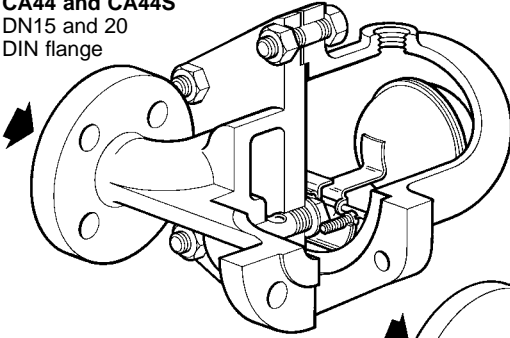
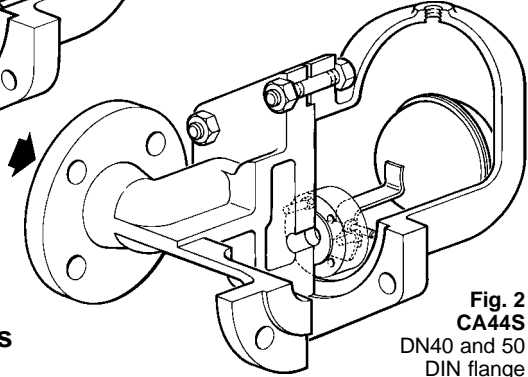


Fig. 2
CA44S
 DN40 and 50
 DIN flange



Sizes and pipe connections

CA44

DN15 and 20 flanged

CA44S

1" screwed BSP or NPT with BSP or NPT balance line.

1" socket weld BS 3799 class 3000 with NPT or socket weld balance line.

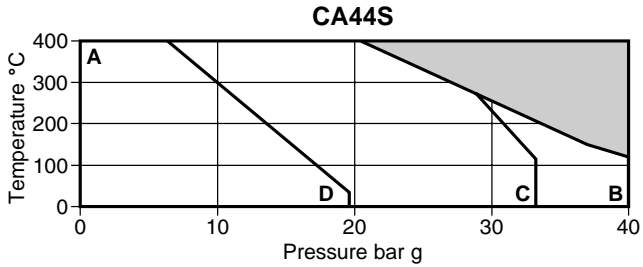
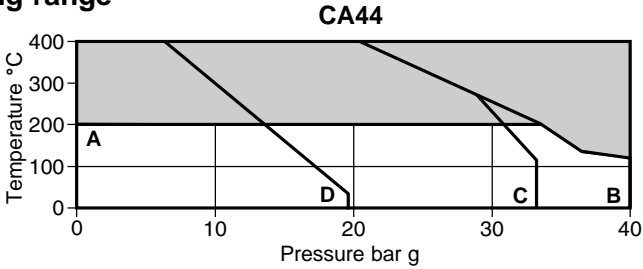
DN15, 20, 25, 40 and 50 flanged

Standard flanges are BS 4504 PN40 with DIN face-to-face dimensions and BS 1560 class ANSI 150, ANSI 300 and JIS/KS 20K with extended face-to-face dimensions. On request ANSI 150 and 300 flanges with drilled and tapped bolt holes with DIN face-to-face dimensions can be provided. PN and JIS/KS flanges will be provided with BSP balance line and ANSI flanges with an NPT balance line.

Limiting conditions

Maximum body design conditions	PN40	
PMA - Maximum allowable pressure	40 bar g	(580 psi g)
TMA - Maximum allowable temperature	400°C	(752°F)
PMO - Maximum operating pressure	40 bar g	(580 psi g)
TMO - Maximum operating temperature	400°C	(752°F)
ΔPMX - Maximum differential pressure	32 bar g	(464 psi g)
	0°C	(32°F)
Minimum operating temperature	Screwed	60 bar g (870 psi g)
	Socket weld	60 bar g (870 psi g)
Designed for a maximum cold hydraulic test pressure of:	PN40	60 bar g (870 psi g)
	ANSI 300	60 bar g (870 psi g)
	ANSI 150	30 bar g (435 psi g)
	JIS/KS 20K	60 bar g (870 psi g)

Operating range



The product must not be used in this region.

A - B Flanged BS 4504 PN40, ANSI 300, screwed and socket weld

A - C Flanged JIS/KS 20K

A - D Flanged ANSI 150

△ **PMX - Maximum differential pressure**

Depending on the specific gravity of the liquid being drained.

Trap	Specific gravity				
	1.0	0.9	0.8	0.7	0.6
	Maximum differential pressure bar (psi)				
CA44	32.0 (464.00)	32.0 (464.00)	29.0 (420.50)	20.0 (290.00)	12.0 (174.00)
CA44S-4.5	4.5 (65.25)	4.5 (65.25)	4.5 (65.25)	3.4 (49.30)	2.0 (29.00)
CA44S-10	10.0 (145.00)	9.5 (137.75)	6.8 (98.60)	5.5 (79.75)	3.4 (49.30)
CA44S-14	14.0 (203.00)	14.0 (203.00)	11.0 (159.50)	8.0 (116.00)	5.0 (72.50)
CA44S-21	21.0 (304.50)	19.0 (275.50)	15.0 (217.50)	10.0 (145.00)	6.5 (94.25)
CA44S-32	32.0 (464.00)	30.0 (435.00)	23.0 (333.50)	16.5 (239.25)	10.0 (145.00)

2.3 CA46 and CA46S - Austenitic stainless steel

Fig. 3
CA46 and CA46S
 DN15 and 20
 DIN flange

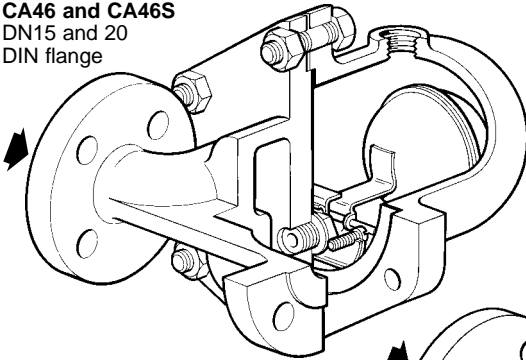
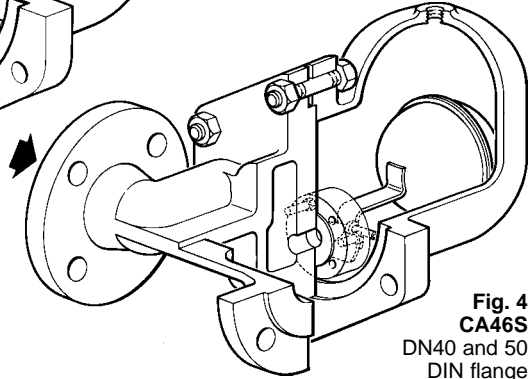


Fig. 4
CA46S
 DN40 and 50
 DIN flange



Sizes and pipe connections

CA46

DN15 and 20 flanged

CA46S

DN15, 20, 25, 40 and 50 flanged

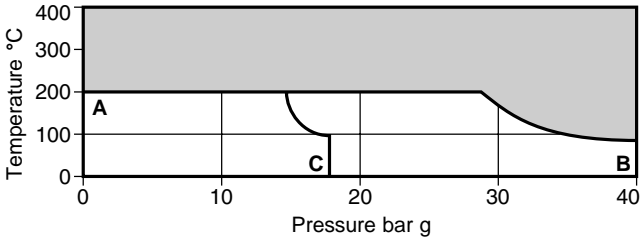
Standard flanges are BS 4504 PN40 with DIN face-to-face dimensions and BS 1560 class ANSI 150 and 300 and JIS/KS 20K with drilled and tapped bolt holes with DIN face-to-face dimensions. PN and JIS/KS flanges will be provided with BSP balance line and ANSI flanges with an NPT balance line.

Limiting conditions

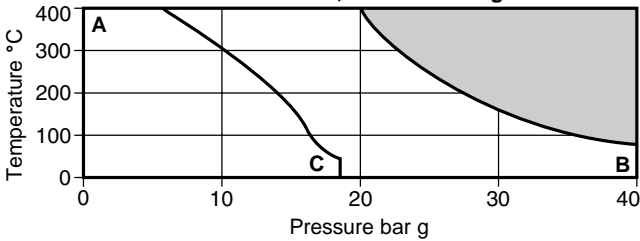
Maximum body design conditions	PN40	
PMA - Maximum allowable pressure	40 bar g	(580 psi g)
TMA - Maximum allowable temperature	400°C	(752°F)
PMO - Maximum operating pressure	40 bar g	(580 psi g)
TMO - Maximum operating temperature	400°C	(752°F)
ΔPMX - Maximum differential pressure	32 bar g	(464 psi g)
Minimum operating temperature	0°C (32°F)	
Designed for a maximum cold hydraulic test pressure of:	PN40	60 bar g (870 psi g)
	ANSI 300	60 bar g (870 psi g)
	ANSI 150	30 bar g (435 psi g)
	JIS/KS 20K	49 bar g (710.5 psi g)

Operating range

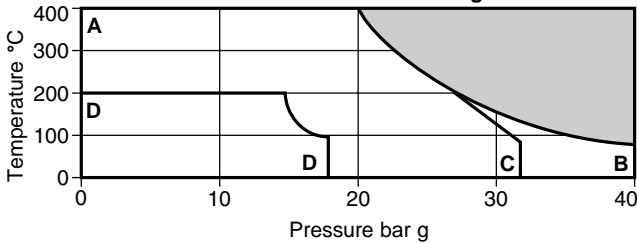
CA46 - DN15 and 20 flanged



CA46S - DN15, 20 and 25 flanged



CA46S - DN40 and 50 flanged



The product must not be used in this region.

A - B Flanged BS 4504 PN40 and ANSI 300

A - C Flanged ANSI 150 (DN15, 20 and 25 only) and JIS/KS 20K

D - D Flanged ANSI 150 (DN40 and 50 only)

△ PMX - Maximum differential pressure

Depending on the specific gravity of the liquid being drained.

Trap	Specific gravity				
	1.0	0.9	0.8	0.7	0.6
	Maximum differential pressure bar (psi)				
CA44	32.0 (464.00)	32.0 (464.00)	29.0 (420.50)	20.0 (290.00)	12.0 (174.00)
CA44S-4.5	4.5 (65.25)	4.5 (65.25)	4.5 (65.25)	3.4 (49.30)	2.0 (29.00)
CA44S-10	10.0 (145.00)	9.5 (137.75)	6.8 (98.60)	5.5 (79.75)	3.4 (49.30)
CA44S-14	14.0 (203.00)	14.0 (203.00)	11.0 (159.50)	8.0 (116.00)	5.0 (72.50)
CA44S-21	21.0 (304.50)	19.0 (275.50)	15.0 (217.50)	10.0 (145.00)	6.5 (94.25)
CA44S-32	32.0 (464.00)	30.0 (435.00)	23.0 (333.50)	16.5 (239.25)	10.0 (145.00)

3. Installation

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

Referring to the Installation and Maintenance Instructions, name-plate and Technical Information Sheet, check that the product is suitable for the intended installation:

- 3.1** Check materials, pressure and temperature and their maximum values. If the maximum operating limit of the product is lower than that of the system in which it is being fitted, ensure that a safety device is included in the system to prevent overpressurisation.
- 3.2** Determine the correct installation situation and the direction of fluid flow.
- 3.3** Remove protective covers from all connections.
- 3.4** The trap should be fitted in the horizontal plane with the inlet at the top so that the float mechanism is free to rise and fall in a vertical plane.
The trap must be fitted below what it is draining. Point the arrow on the name-plate downwards. One of the advantages of the float trap for draining air systems is that no air bleed is required for satisfactory operation. However, because the trap has no air bleed it could under some circumstances become air or gas locked.
Make sure that the balance line is piped back to the upstream side.
A balance line is essential for the correct operation of this product.
For convenience of maintenance it is recommended that a union is fitted in the balance line near to the trap cover.

Note: If the trap is to discharge to atmosphere ensure it is to a safe place, the discharging fluid may be at a temperature of 100°C (212°F).

4. Commissioning

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

5. Operation

The CA44(S) and CA46(S) float traps are continuous discharge traps, removing liquid from air and gas systems. As soon as liquid enters the main chamber of the trap, the float rises and the lever mechanism attached to it opens the main valve - keeping the system drained of liquid at all times. When air or gas arrives, the float drops and shuts the main valve tightly against the seat. The balance line is necessary to prevent the trap from becoming air locked. Float traps are renowned for their instantaneous load handling capability, clean tight shut-off and resistance to waterhammer and vibration.

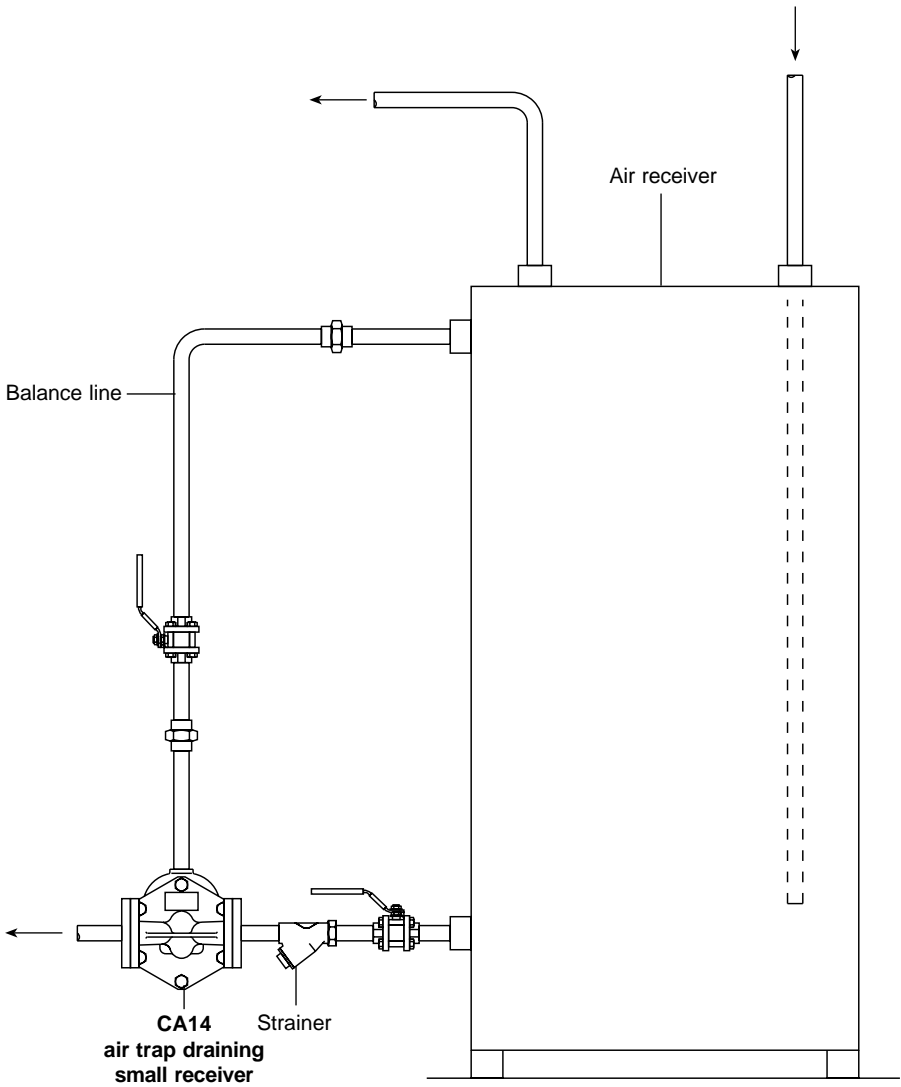


Fig. 5 Installation with balance line arrangement

6. Maintenance

Note:

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

Warning

The cover gasket and the main valve gasket (DN40 and 50) contains a thin stainless steel support ring which may cause physical injury if not handled and disposed of carefully.

Servicing:

- With suitable isolation, repairs can be carried out with the trap in the pipeline.
- When reassembling, make sure that all joint faces are clean and the dowel locates in the cover.

How to fit the main valve assembly (CA44S and CA46S):

- Undo the cover bolts (2) and lift off the cover.
- Remove the float assembly (8 + 9 CA44 and CA46 only) by extracting the pivot pin (16).
- Remove the support (14), pivot frame (15) and the valve seat (5) by unscrewing the set screws (7).
- Ensure seat/gasket faces are clean and dry.
- Fit a new valve seat (5) into the body using a new gasket (6).
- Attach the support frame (14) and pivot frame (15) to body with assembly set screws (7) but do not tighten.
- Fit the float arm (8) to the pivot frame (15) using the pin (16) and by moving the complete assembly, centre the valve head (9) onto the seat orifice.
- Tighten the assembly set screws (7) to the recommended torque (see Table 1).
- Check the operation by raising and lowering the float (8) several times making sure that the valve head is centering properly on the seat (5).
- Make sure that all joint faces are clean and refit the cover, ensuring the dowel locates in the cover, by using a new gasket (3) and apply a thin coating of an anti-seize compound to the cover bolts (2).
- Tighten the cover bolts (2) uniformly to the recommended torques (see Table 1).
- Open up the isolating valve slowly until the full system pressure is achieved.
- Check for leaks.

How to fit valve cone (CA44 and CA46):

- Withdraw the pivot pin (6) to release the float and lever. Push out the soft valve cone (9) and replace with a new one.
- Reassemble the float and lever into the pivot frame (15) and replace the pin (16).
- Check the operation by raising and lowering the float (8) several times making sure that the valve head is centering properly on the seat (5).
- Make sure that all joint faces are clean and refit the cover, ensuring the dowel locates in the cover, by using a new gasket (3) and apply a thin coating of an anti-seize compound to the cover bolts (2).
- Tighten the cover bolts (2) uniformly to the recommended torques (see Table 1).
- Open up the isolating valve slowly until the full system pressure is achieved.
- Check for leaks.

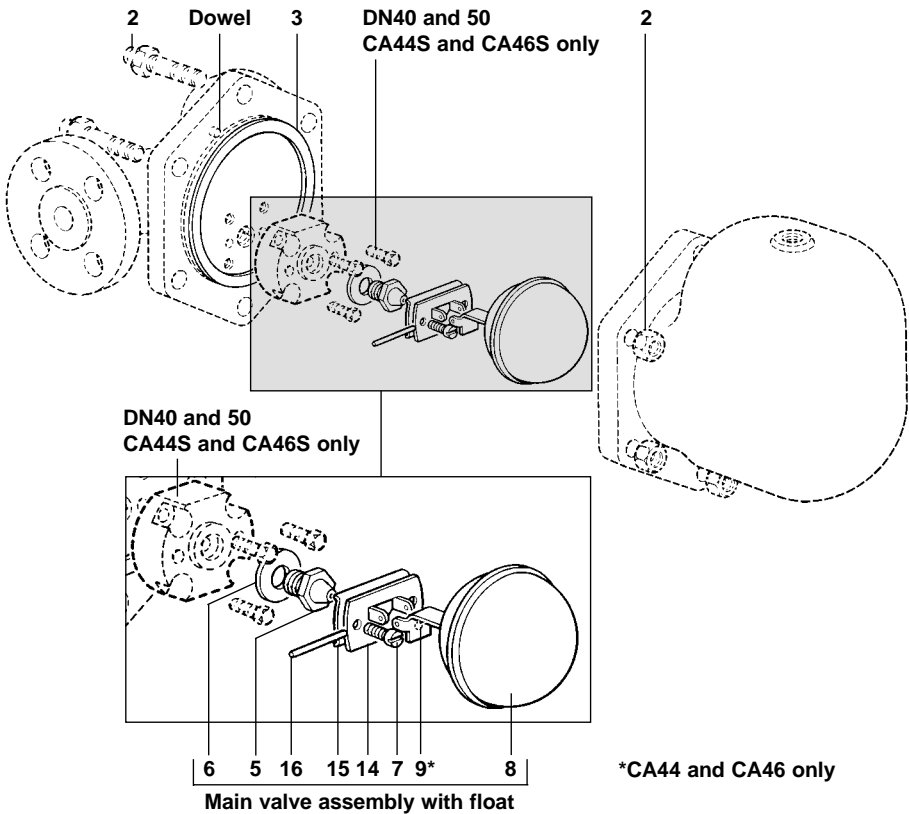




Fig. 6 CA44S and CA46S DN40 and 50

Note: The trap shown is the DN40 and 50 CA44S/CA46S. However the type of internals and the method of maintenance is no different from that used in the smaller sizes of CA44(S) & CA46 (S).

Table 1 Recommended tightening torques

Item	Size	or		N m	(lbf ft)
					
2	DN15 to DN25	17 A/F	M10 x 60	19 - 22	(14 - 16)
	DN40	24 A/F	M16 x 85	60 - 66	(44 - 48)
	DN50 (CA44S and CA46S)	24 A/F	M16 x 85	80 - 88	(56 - 65)
5		17 A/F	M12 x 8	50 - 55	(37 - 40)
7		Cheesehead	M5 x 20	2.5 - 2.8	(1.8 - 2.1)
19	DN40	10 A/F	M6 x 20	10 - 12	(7 - 9)
	DN50	13 A/F	M8 x 20	20 - 24	(15 - 17)

7. Spare parts

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

Available spares

Soft valve cone	CA44 and CA46 (packet of 3)	9
Main valve assembly with float*	CA44 and CA46	5, 6, 7, 8+9, 14, 15, 16
	CA44S and CA46S	5, 6, 7, 8, 14, 15, 16
Complete set of gaskets	(packet of 3 sets)	3, 6

*The CA44 and CA46 use a soft Viton valve head, where as the CA44S and CA46S use a stainless steel valve head.

Note: The trap shown is the DN40 and 50 CA44S/CA46S. However the type of internals and the method of maintenance is no different from that used in the smaller sizes of CA44(S) & CA46 (S).

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 trap.

Example: 1 - Main valve assembly for a Spirax Sarco DN25, CA46S-32 air and gas trap.

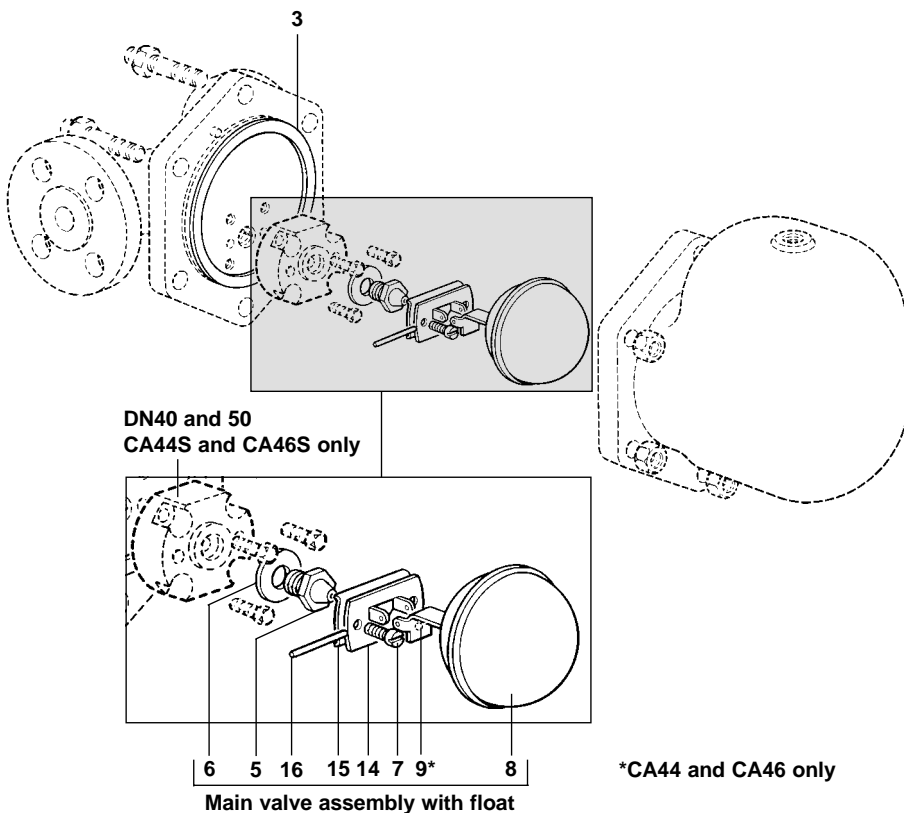


Fig. 7 CA44S and CA46S DN40 and 50 (see note under 'Available spares')