7. Replacement of spares (1)

Section 7 covers the replacement of the following spares:- cover gasket, inlet swing check valve, spring and actuator arm and floats.

Important - safety note

Please read Section 1.12 regarding the safe lifting of this product before actioning any installation or maintenance procedure.
Before any installation or maintenance procedure, always ensure that all steam or condensate lines are isolated.
Ensure any residual internal pressure in the product or connecting lines is carefully relieved. Also ensure any hot parts have cooled to prevent risk of injury from burns.
Always wear appropriate safety clothing before carrying out any installation or maintenance work.
When dismantling this product, care should be taken to prevent injury from the snap action mechanism.
Always handle with care.

7.1 Replacement of cover gasket

Please ensure the safety recommendations are observed before commencing with any maintenance of this product.

To fit the new cover gasket

1. Disconnect all connections to the cover. Remove the cover bolts using the correct size socket, then carefully slide the cover assembly away from the body (a minimum withdrawal distance of 250 mm for the APT14 or 275 mm for the APT14HC and APT14SHC will be needed). Lift the cover assembly to a bench or other convenient working surface and clamp securely, avoiding contact with the gasket face.
2. Gently remove used gasket material from the body and cover, being careful not to damage the gasket sealing faces.
3. Carefully fit a new gasket (item 2) into the existing body (See Figure 19).
4. **Refit the cover assembly to the body,** ensuring the gasket faces are carefully aligned and no parts of the gasket are trapped or pinched outside the sealing areas. To ensure accurate alignment of the cover and body, it is recommended the lower part of the cover's gasket seal is located into the body first. The top part of the seal can then be easily aligned.
5. Refit the cover bolts ensuring they are sequentially tightened in opposing pairs, gradually increasing torque to 63 ± 5 N m (46.5 ± 4 lbf ft).

Bolt size	Socket size	Tightening torque
M12 x 45	19 mm A/F	63 ± 5 N m (46.5 ± 4 lbf ft)

6. Carefully reconnect the motive steam supply and the exhaust lines to the connections marked (S) and (E). The APT14, APT14HC or APT14SHC is now ready to recommission.
7. Make sure that the Spirax Sarco motive supply strainer (with 100 mesh screen) is reinstated to the motive supply connection (item 28, Figure 20).

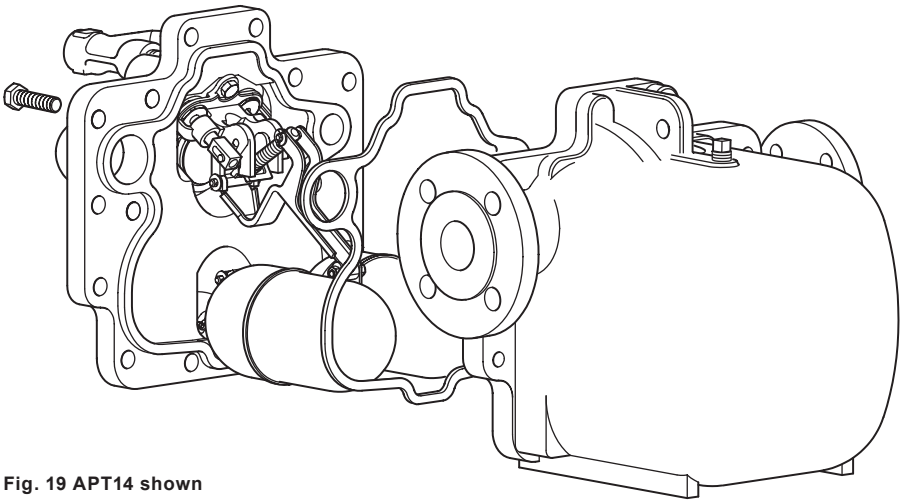


Fig. 19 APT14 shown

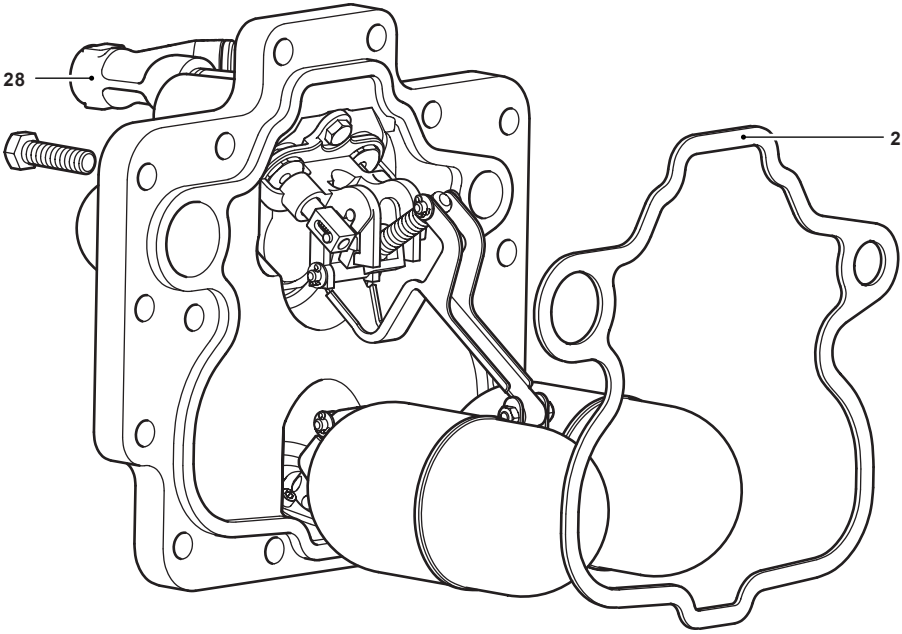


Fig. 20 APT14 shown

7.2 Replacement of inlet swing check valve

Please ensure the safety recommendations are observed before commencing with any maintenance of this product.

To replace the inlet swing check valve

1. Remove the cover and old gasket (see cover gasket replacement procedure, Section 7.1).
2. Lift the cover assembly to a bench or other convenient working surface and clamp securely, avoiding contact with the gasket face.
3. Carefully remove the circlip, washer and the inlet valve spring (item 27) from the end of the steam inlet valve (item 17).
4. Remove the three M8 bolts that secure the pump mechanism bracket using the 13 mm A/F socket.
5. Lift away the pump bracket assembly (See Figure 20). This will allow access to the inlet swing check valve (item 12).
6. The swing check valve flap can now easily be withdrawn.
7. Fit a new flap, ensuring the face of the check valve flap and seat are clean and free from damage.
8. **Reassembly is the opposite to removal.**
9. Tighten the three M8 bolts using the 13 mm A/F socket to 18 ± 2 N m (13 ± 1.5 lbf ft).

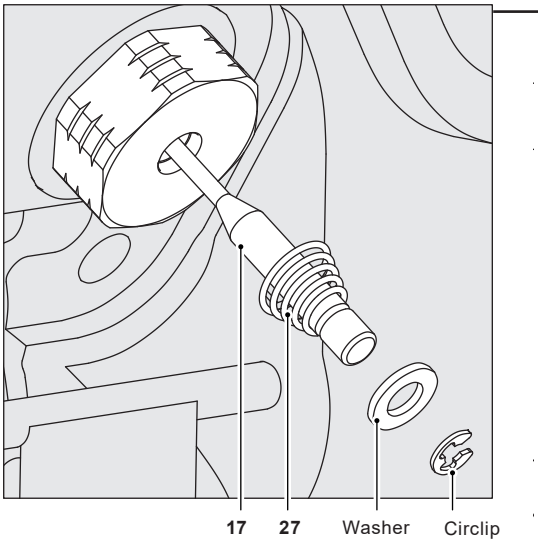


Fig. 21 APT14 shown

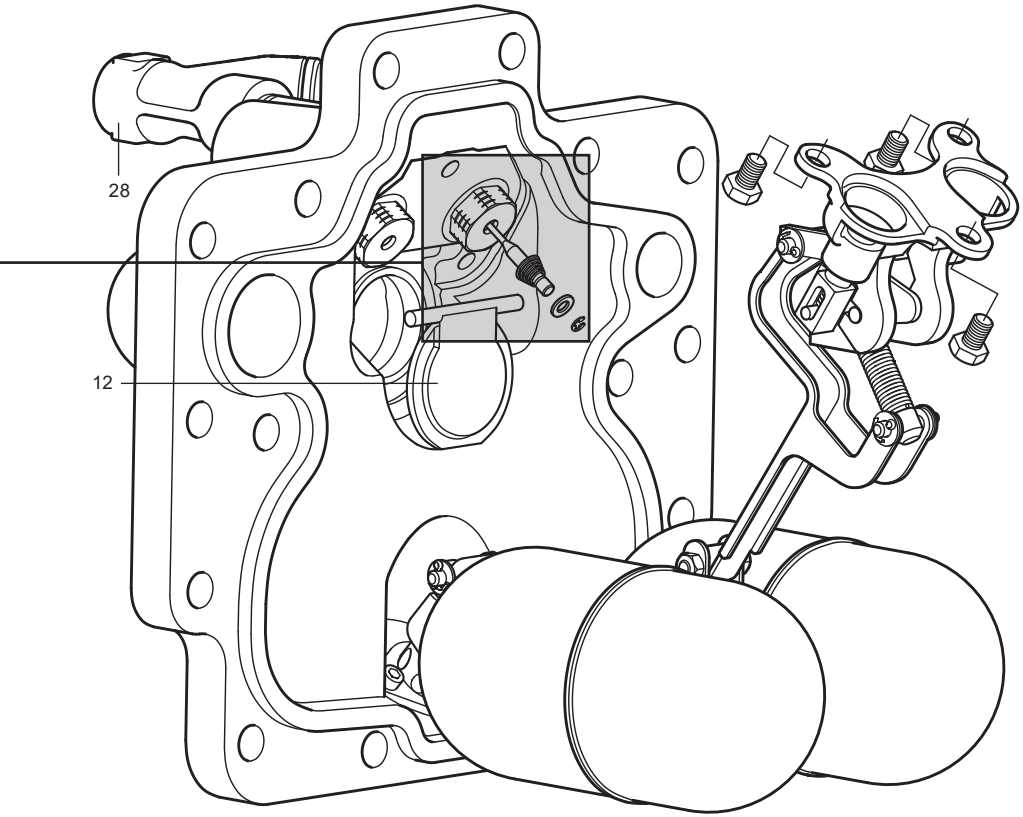
10. It is important to ensure a new circlip is refitted to the steam inlet valve.

11. With the mechanism fully assembled, refit the cover assembly to the body, ensuring the gasket faces are carefully aligned and no parts of the gasket are trapped or pinched outside the sealing areas. To ensure accurate alignment of the cover and body, it is recommended the lower part of the cover's gasket seal is located into the body first. The top part of the seal can then be easily aligned.

12. Refit the cover bolts ensuring they are sequentially tightened in opposing pairs, gradually increasing torque to 63 ± 5 N m (46.5 ± 4 lbf ft).

13. Carefully reconnect the motive steam supply and the exhaust lines to the connections marked (S) and (E). The APT14, APT14HC or APT14SHC is now ready to recommission.

14. Make sure that the Spirax Sarco motive supply strainer (with 100 mesh screen) is reinstated to the motive supply connection (item 28, Figure 21).



7.3 Replacement of spring and actuator arm

Please ensure the safety recommendations are observed before commencing with any maintenance of this product.

To replace the spring and actuator arm

1. Remove the cover and old gasket (see cover gasket replacement procedure, Section 7.1).
2. Lift the cover assembly to a bench or other convenient working surface and clamp securely, avoiding contact with the gasket face.
3. Ensure the floats are at the bottom of their travel.
4. Remove split pins, washers, and shafts (X and Y) from the top spring pivot and pump pivot points (See Figure 22).
5. Remove the spring and anchor assembly.
6. Draw the actuator arm with the exhaust valve downwards within its slots until it becomes free. It may be necessary to slide the exhaust valve (item 18) backwards against its internal spring to free it from the pump bracket guide (item 13), see Figure 22.
7. Remove the exhaust valve from the actuator arm (item 24, shown in Figure 23) being careful not to damage or lose the small exhaust valve compression spring.
8. The spring assembly and actuator arm can both be replaced.

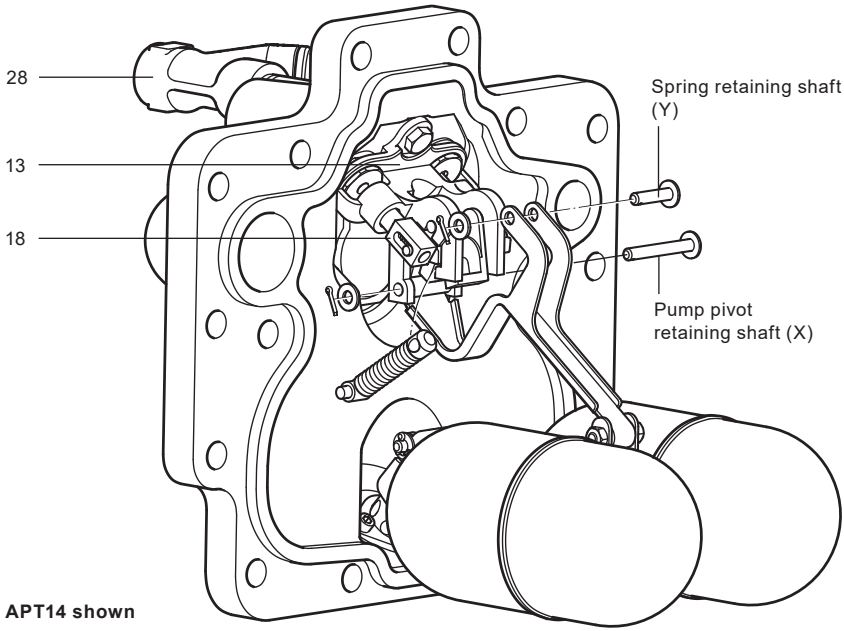


Fig. 22 APT14 shown

9. **Fitting the new spring assembly and actuator arm is the opposite to removal.** Remember to compress the small spring within the exhaust valve (item 18) before refitting to the spigot of the new actuator arm.

10. Ensure the actuator is correctly aligned and located within the slots of the pump bracket (item 13) (see Figure 22).

11. Once this is correctly located, ensure the exhaust valve can slide easily within its guides.

12. Always use new split pins and washers when refitting the spring retaining shaft (Y) and pump pivot shaft (X).

13. With the mechanism fully assembled, reposition the cover assembly with the body, ensuring the gasket faces are carefully aligned and no parts of the gasket are trapped or pinched outside the sealing areas. To ensure accurate alignment of the cover and body, it is recommended the lower part of the cover's gasket seal is located into the body first. The top part of the seal can then be easily aligned.

14. Refit the cover bolts ensuring they are sequentially tightened in opposing pairs, gradually increasing torque to 63 ± 5 N m (46.5 ± 4 lbf ft).

15. Carefully reconnect the motive steam supply and the exhaust lines to the connections marked (S) and (E). The APT14, APT14HC or APT14SHC is now ready to recommission.

16. Make sure that the Spirax Sarco motive supply strainer (with 100 mesh screen) is reinstated to the motive supply connection (item 28, Figure 22).

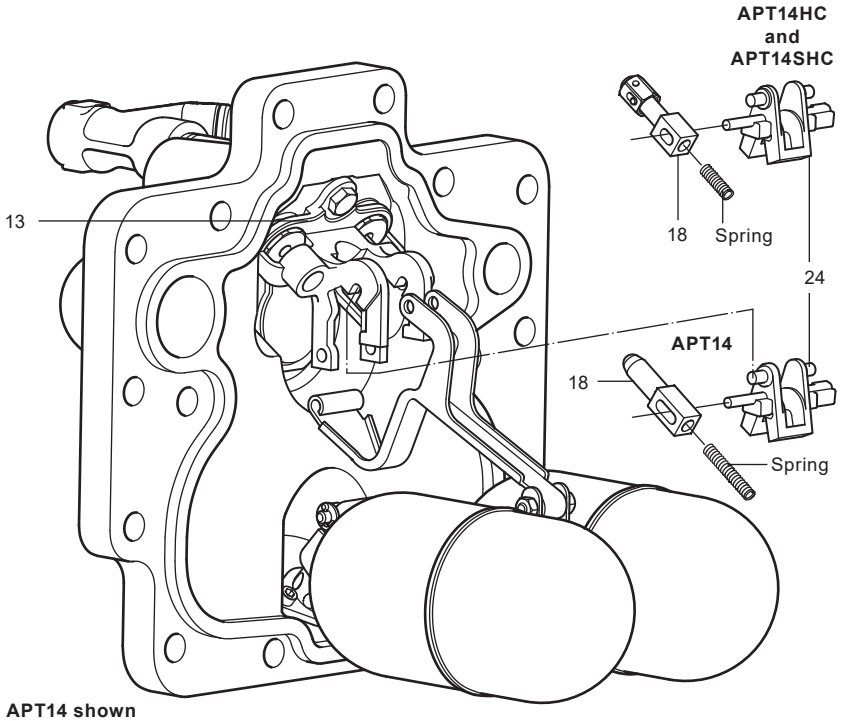


Fig. 23 APT14 shown

7.4 Replacement of floats

Please ensure the safety recommendations are observed before commencing with any maintenance of this product.

To replace the float and upper/lower levers

1. Remove the cover and old gasket (see cover gasket replacement procedure, Section 7.1).
2. Lift the cover assembly to a bench or other convenient working surface and clamp securely, avoiding contact with the gasket face.
3. Remove a split pin and washer from one side of the spring retaining shaft (Y) (See Figure 24).
4. Remove a split pin and washer from one side of pump pivot retaining shaft (X).
5. Carefully slide the shafts out from their respective positions observing the orientation of the spring and actuator arm (item 14, 24) within the pump bracket (item 13) as these will need to be refitted later.
6. Remove a split pin and washer from one side of the trap 1st stage valve retaining shaft (W).
7. Remove a split pin and washer from one side of the trap pivot retaining shaft (V).
8. The floats and lever assembly can now be removed and discarded as the replacement floats and levers are supplied fully assembled in the spares kit.
9. **Assembly is the opposite to removal.** Always fit new split pins and washers.

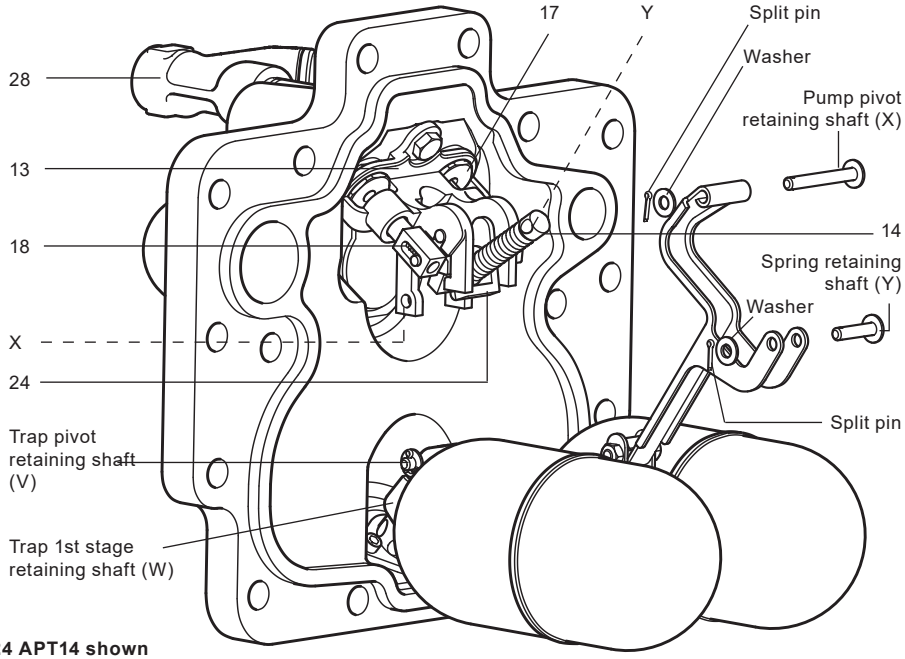


Fig. 24 APT14 shown

10. It is easier to fit the replacement shafts in the following sequence:- (See Figure 25).

V. Trap pivot ..... shaft length 38 mm for both APT14, APT14HC and APT14SHC
W. Trap 1st stage valve ... shaft length 38 mm for both APT14, APT14HC and APT14SHC
X. Pump pivot ..... shaft length 52 mm for both APT14, APT14HC and APT14SHC
Y. Spring retainer ..... shaft length 30 mm for both APT14, APT14HC and APT14SHC
leaving the spring retaining shaft until after the spring and actuator arm have been correctly aligned and located within the slot of the pump bracket (item 13).
Ensure the spigot of the actuator arm is correctly engaged with the exhaust valve.

11. When all the shafts have been secured using new split pins and washers, move the floats to their upper and lower limits to ensure the mechanism operates smoothly and the spring and actuator arm snaps over to operate the motive steam inlet and exhaust valves (items 17, 18).
Note: The mechanism has been designed to be adjustment-free, simplifying the fitting of new parts. If after assembly the mechanism does not operate correctly, check all the parts are assembled and aligned as per the diagram.

12. With the mechanism fully assembled, refit the cover assembly to the body, ensuring the gasket faces are carefully aligned and no parts of the gasket are trapped or pinched outside the sealing areas. To ensure accurate alignment of the cover and body, it is recommended the lower part of the cover's gasket seal is located into the body first. The top part of the seal can then be easily aligned.

13. Refit the cover bolts ensuring they are sequentially tightened in opposing pairs, gradually increasing torque to 63 ± 5 N m (46.5 ± 4 lbf ft).

14. Carefully reconnect the motive steam supply and the exhaust lines to the connections marked (S) and (E). The APT14, APT14HC or APT14SHC is now ready to recommission.

15. Make sure that the Spirax Sarco motive supply strainer (with 100 mesh screen) is reinstated to the motive supply connection (item 28, Figure 24).

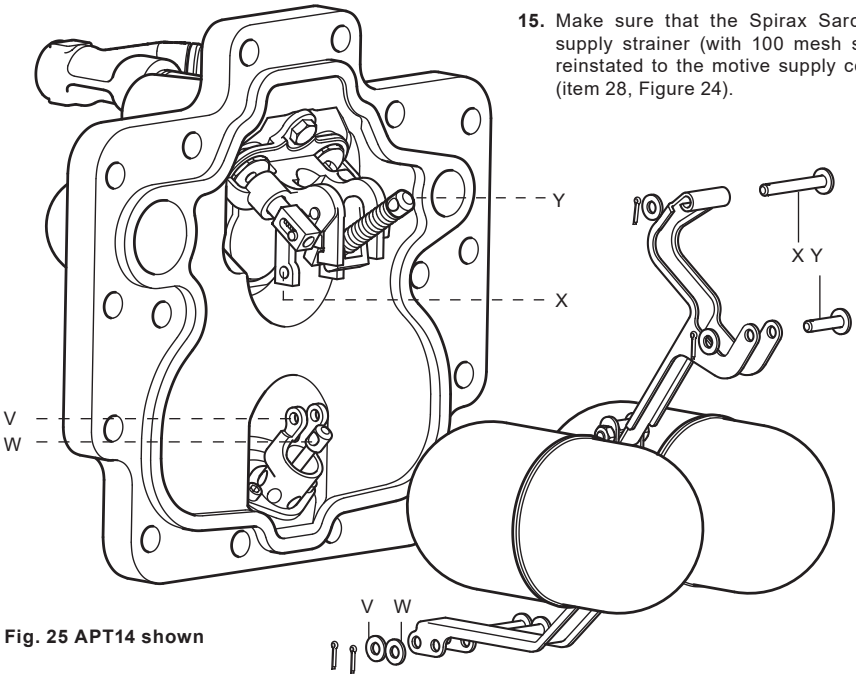


Fig. 25 APT14 shown

8. Replacement of spares (2)

Section 8 covers the replacement of the following spares:- trap (and outlet check valve APT14 only) mechanism and steam inlet / exhaust valves and seats.

Important - safety note

Please read Section 1.12 regarding the safe lifting of this product before actioning any installation or maintenance procedure.
Before any installation or maintenance procedure, always ensure that all steam or condensate lines are isolated.
Ensure any residual internal pressure in the product or connecting lines is carefully relieved. Also ensure any hot parts have cooled to prevent risk of injury from burns.
Always wear appropriate safety clothing before carrying out any installation or maintenance work.
When dismantling this product, care should be taken to prevent injury from the snap action mechanism.
Always handle with care.

8.1 Replacement of trap (and outlet check valve - APT14 only) mechanism

Please ensure the safety recommendations are observed before commencing with any maintenance of this product.

To fit the new trap (and outlet check valve - APT14) mechanism

1. Disconnect all connections to the cover. Remove the cover bolts using a 19 mm A/F socket, then carefully slide the cover assembly away from the body (a minimum withdrawal distance of 250 mm for the APT14 or 275 mm for the APT14HC and APT14SHC will be needed). Lift the cover assembly to a bench or other convenient working surface and clamp securely, avoiding contact with the gasket face.
2. Gently remove used gasket material from the body and cover being careful not to damage the gasket sealing faces.
3. Carefully fit a new gasket (item 2) into the existing body.
4. Remove split pin, washer and shaft from the trap pivot (V) (See Figure 25).
5. Remove split pin, washer and shaft from the trap 1st stage valve (W).
6. The floats and levers (items 5, 6 ,7) can now be swung out of the way leaving access to the trap and check valve assembly.
7. Using the 4 mm Allen key unscrew the two M5 cap screws (item 21).
8. The whole trap (and check valve assembly APT14 only) can now be carefully withdrawn from the cover.
9. There are no serviceable parts within this assembly; the replacement spares kit contains all new parts.
10. Before fitting a new mechanism, clean the trap housing bore within the cover ensuring any sludge or scale is carefully removed and the 'O' ring sealing face is free from dirt.
11. **Assembly is the opposite to removal,** to ease fitting, the new 'O' ring must be lubricated with rubber lubricating emulsion such as International Products Corporation P-80.
12. Tighten the two M5 cap screws (item 21) to 5 ± 1 N m (4 ± 0.7 lbf ft).

13. Refit the two shafts (V and W) (length 38 mm) - remembering to use new split pins and washers - to the trap housing (item 9) and trap 1st stage valve (item 22).

14. Move the floats to their upper and lower limits to ensure the trap mechanism operates smoothly and both the 1st stage and 2nd stage valves (items 22, 8) slide smoothly within their guides.

15. With the mechanism fully assembled, refit the cover assembly to the body, ensuring the gasket faces are carefully aligned and no parts of the gasket are trapped or pinched outside the sealing areas. To ensure accurate alignment of the cover and body, it is recommended the lower part of the cover's gasket seal is located into the body first. The top part of the seal can then be easily aligned.

16. Refit the cover bolts ensuring they are sequentially tightened in opposing pairs, gradually increasing torque to 63 ± 5 N m (46.5 ± 4 lbf ft).

Bolt size	Socket size	Tightening torque
M12 x 45	19 mm A/F	63 ± 5 N m (46.5 ± 4 lbf ft)

17. Carefully reconnect the motive steam supply and the exhaust lines to the connections marked (S) and (E). The APT14, APT14HC or APT14SHC is now ready to recommission.

18. Make sure that the Spirax Sarco motive supply strainer (with 100 mesh screen) is reinstated to the motive supply connection (item 28).

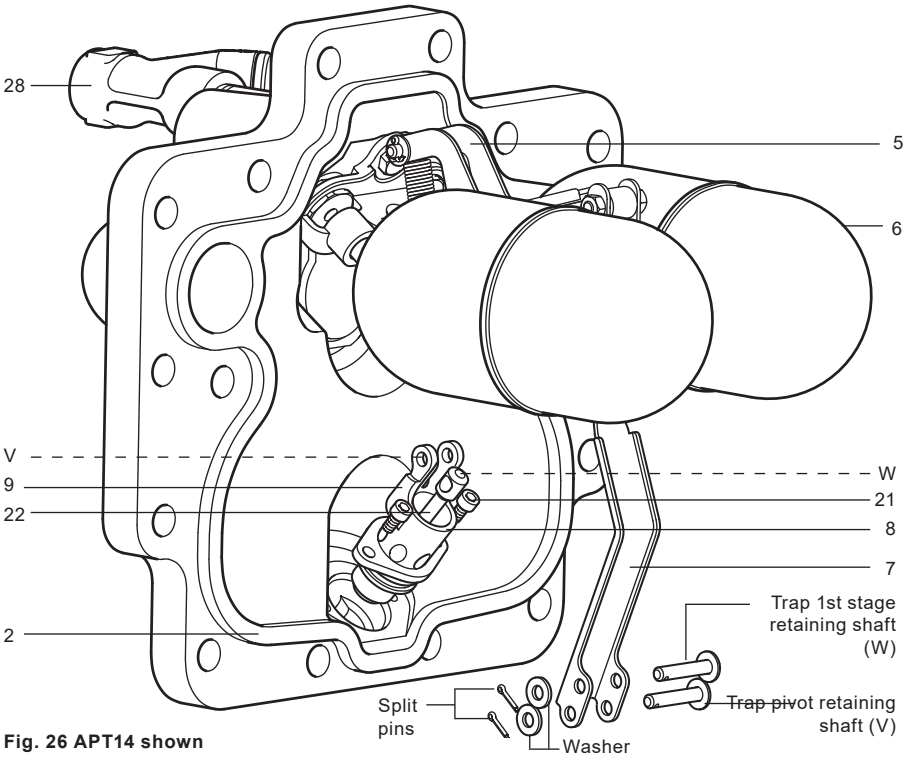


Fig. 26 APT14 shown