PUBCO FLUSH VALVE – MAINTENANCE AND SERVICING

The Pubco flush valve is a simple mechanical flushing device that is designed to withstand high intensity usage. With care and proper maintenance the valve should provide a very long service life.

The valve body and main casting components are made from certified gunmetal or red brass (85 to 88% copper). This provides the best possible life for the body, seats and inner valve components as the nominal zinc content is 5%. In stable waters this should give a service life of 20 to 30 years.

The brass and rubber components do wear in time and a full range of spare parts are available for all models manufactured since 1945. A full service facility is provided at our premises and a complete overhaul of the valve can generally be completed within a 24 hour period.

Obtain a valve drawing and parts listing from our web site (pubco.com.au) to enable identification of the components

FLUSH ADJUSTMENT

The valve can be regulated externally to give the required quantity of water. The adjustment screw is located at an angle adjacent to the main flush cap. To obtain a shorter flush turn the adjusting screw anti-clockwise and visa versa for a longer flush. The adjustment should only be made in 1/6th turns and it is important not to adjust fully down as it will result in a continuous flush. The screw should also not be turned out more than one turn as it can be removed.

ROUTINE MAINTENANCE

The valve will not require any maintenance for a number of years. The only routine maintenance should be to check for satisfactory lubrication of the operating stem o-ring. A dry o-ring will lead to difficult operation and perhaps a non-return of the operating stem. Use a good quality silicon based o-ring lubricant such as Dow Corning “molykote III”. This is available from Pubco.

SERVICING

The need for servicing arises when the valve fails to provide the correct flush quantity or becomes irregular in operation.

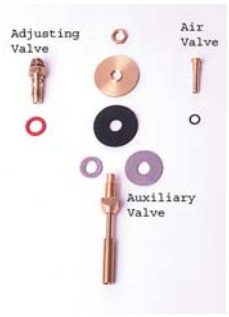
A. Always check that the valve has an adequate water supply. Check that the stop valve is open to the correct position for the static pressure level.
B. Check that the adjusting screw is approximately in the middle of its range and adjust for the correct flush quantity. If the adjustment is at its limit or non-responsive a change of internal rubber or brass components will probably be required.
C. Always check the valve body for damage due to striking or other deformations. It is a common occurrence and a damaged cylinder will lead to either total jamming of the inner valve (usually in an open situation) or an irregular operation where the valve occasionally remains open. Damaged valve bodies and seats can be re-machined in most cases.

TROUBLE-SHOOTING

When it has been determined that the adjusting valve is correctly set and the flush valve is still not functioning properly it will be necessary to isolate the water supply, remove the flush cap and examine the internal components.
Ensure the stop valve is turned off and effectively shutting off the water supply to the valve.
The stop valve should not require servicing for approximately 20 years but eventually new seals or a new stop valve cap assembly will be required. These are shown on page 2.
Remove the flush cap and inspect the inner valve components for damaged seats or for lodgement of contamination on the seats or rubber washers.

The Pubco flush valve is a mechanical device that has some important and reasonably close fitting tolerances. The valve can be damaged with carelessness and the casting components are relatively soft, being 85 to 88% copper.

- Don't strike or drop the valve or components.
- Don't over-tighten threads.
- Don't retain the valve body or components in a vice (except with the utmost care).
- Don't use stilsons.
- Don't score seats.
- Use the correct sized ring spanners, adjustable wrenches or small multigrips. Flat jawed drainers spanners should be used on the coupling nuts.



Flush too short or no operation

Possible cause	Action
The bucket washer is worn and allowing rapid by-pass of water into the auxiliary valve chamber.	Replace the bucket washer.
The auxiliary valve stem is worn or bent and therefore not allowing proper tilt of the auxiliary valve during operation. (evident under higher pressures)	Replace the auxiliary valve, or replace the auxiliary valve stem and sleeve as a pair.
The operating stem is worn or not fully closing against the body handle boss and therefore not allowing proper tilt of the auxiliary valve during operation.	Replace the operating stem and ensure the auxiliary valve is tilting correctly.
Adjusting valve is worn or not capable of restricting by-pass. (not a common problem.)	Replace the adjusting valve.

Flush too long or continuous.

Possible cause	Action
Check that the inner valve is capable of sliding easily within the cylinder and able **to fall under its own weight**	Change the bucket washer. Check the valve cylinder for damage or build-up of deposits.
Adjusting valve or passages are restricted or blocked.	Clear passages or replace adjusting valve.
Damaged, worn, or contaminated auxiliary valve rubber washer or damaged seat on the main valve stem.	Replace rubber washer. Re-machine or replace main valve stem and seat component.

Leaking water into the pan.

Possible cause	Action
Main valve rubber washer damaged, worn or contaminated.	Replace
Auxiliary valve rubber washer damaged, worn or contaminated	Replace
Seat on the main valve stem damaged or not sound.	Re-machine or replace
Damaged cylinder	Re-machine.

Changing inner valve seals.

- Remove the flush cap and withdraw the inner valve assembly. Examine carefully for damage to seats and cylinder and check for any contamination lodged on the seat or on the rubbers.
- Examine the cylinder wall for any build-up of water or electrolytic deposits. Look carefully because these can be located at the base of the cylinder where the casting's sliding surfaces are normally at rest. Build-up can be removed by light rubbing with steel wool, emery paper or scraper. A slight wearing on the cylinder wall can occur where the main valve stem is normally at rest. This only occurs after a long service life and normally will not adversely effect the valve operation.

Main valve assembly

- Remove the brass nut and separate the main valve body from the main valve stem. This may be difficult in some cases and should only be achieved without damaging the components. Holding the main valve body and striking the base of the main valve stem squarely with wood or fibre is satisfactory.
- Clean the seats of any deposits or rubber matter being careful not to score any of the flat surfaces. Contamination must be removed to ensure a parallel seat is maintained.
- It is recommended to place a smear of o-ring lubricant on the top and bottom face of the bucket washer to provide an initial seal between the washer and casting machined surfaces.
- Re-assemble components. Do not over-tighten as this will deform the flat sealing washer.
- Insert the assembly into the cylinder and ensure that **it will fall under its own weight.**

Auxiliary valve assembly

- Check the auxiliary valve stem and sleeve for excessive play. More than 1 ½ mm of play at the end of the sleeve is excessive and can lead to poor operation of the valve, particularly at higher pressures. When changing the stem and sleeve ensure the stem is well tightened into the guide. In 2009 a stainless pin was introduced instead of the sleeve and should not require replacement. This is in all new hydraulically operated valves.
- The rubber washer is accessed by removing the lock nut and unscrewing the square section guide. Clean the cap surface of all rubber deposits and other matter, being careful not to score the surface. Cleaning is important as the washer surface must be parallel.
- Re-assemble, firstly by screwing the guide against the brass or stainless steel washer and slightly tightening. Over tightening will lead to rubber deformations. Secondly, holding the guide and auxiliary valve cap in the same relative position, tighten the lock nut against the cap. This procedure will ensure that the guide is not further tightened against the rubber washer.

Auxiliary valve assembly (con't)

- Replace the auxiliary valve onto the main valve assembly and gently tap the top of the auxiliary valve to form a seat in the rubber.

Cap sealing gasket

- The cap fibre has been replaced with a polyethylene gasket on all new valves since 2000. This part is now in the washer kit as well as the red fibre washer. It is very important that **only one gasket is used** because two gaskets interfere with the valves' operation. The plastic gaskets' advantage is that it does not expand and seal as tightly as the red fibre and is easier to undo in the future. It will only seal if the two surfaces are sound. If there is leakage, when using the plastic seal, replace it with the fibre and wait for it to expand and seal. When using the red fibre washer it is always best to soak it for 5 minutes before tightening.

Handle assembly

There are two types of handle assembly.

- O-ring type which is in valves manufactured after 1965 and which requires o-ring lubricant.
- Felt washer and gland type. Lubrication is ordinary grease saturated into the felt.

The same operating stems are used in the direct push in-wall valve.

In both cases inspect the operating stem for excessive end wear and ensure that the springs are fully clamped over the boss on the operating stem and gland in the case of the felt washer type.
It is important that the operating stem is able to travel fully up to and against the body handle boss. This ensures the correct and full tilt of the auxiliary valve and this travel must be checked particularly after replacing the felt washer.
The handle nut should be inspected for wear at the point where the handle is retained by the nut. Wear here will reduce the effective throw of the operating stem.
The operating stem should be inspected for wear at the point where the handle works in a cam like manner. Wear will reduce the effective throw as above and anti-scuffing paste is used here to provide lubrication.

More brochures

There are other maintenance and servicing guides available for the hydraulic valves. Please see that section of our website (pubco.com.au).