

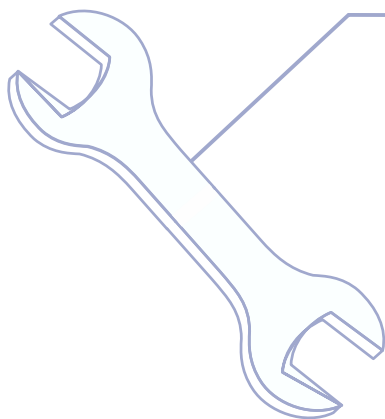


5" SUPAFLO
PRESSURE ONLY
RAIL CAR RELIEF
VALVE

MAINTENANCE
MANUAL

0R4/XXXX00130A
0R4/XXXX00130B

MM044 REV01 -22.05.2014



Maintenance



IMPORTANT:

Please read the instructions in full prior to commencing work on the valve.

The SUPAFLO valve is a spring-loaded device.
Exercise caution during maintenance and wear the appropriate PPE.

A test rig is required to set the spring to the desired pressure. It is strongly recommended that the procedures in this manual are carried out by a “qualified person”.

Part number

0R4/XXXX00130A, 0R4/XXXX00130B

Manual Contents

- Full Disassembly
- Full Assembly

Tooling required

- 5/32” Torque wrench
- 1/4” Torque wrench
- 24MM torque wrench
- Pressure test rig
- Thread lubricant eg. Rocol
- Blue 243 Loctite
- Bench press (Minimum 1 tonne).
- Water testing ring: Part number 400/7498.
- Valve adjustment tool: Part number FIX/A/0015/21
- Cap locator: Part number FIX/A/0015/4
- Adaptor: Part number FIX/A/0015/1

Consumable parts required

- Seal Kit - Refer to Fort Vale for part number.
- Further components may be required, subject to wear and condition. Please refer to Fort Vale data sheet reference USREL141, USREL142, USREL143, and USREL144 for more information. Data sheets are available on the Fort Vale website.

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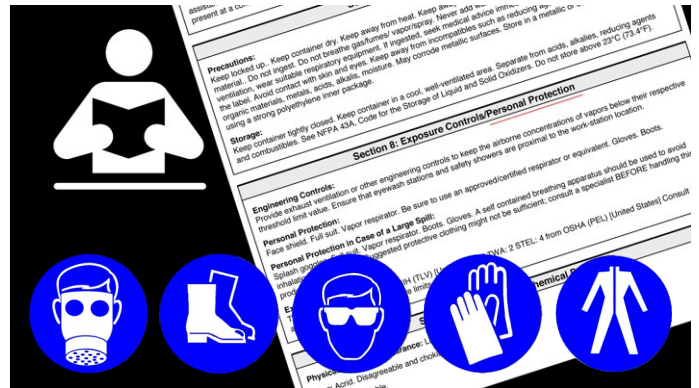
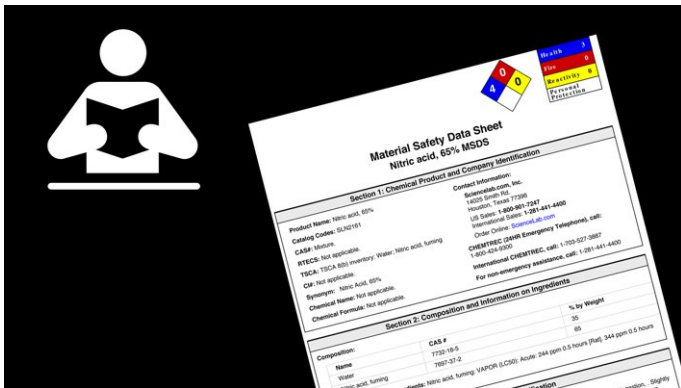


Important Safety Notice

BEFORE ATTEMPTING DISASSEMBLY OR REMOVAL OF ANY FORT VALE COMPONENT, ALWAYS DEPRESSURIZE AND DRAIN ANY PIPING SYSTEMS.

Prior to commencing any remedial work :

Prior to handling the valve, ascertain the last product carried and ensure that the valve has been correctly decontaminated. Obtain a Material Safety Data Sheet for the last product carried and observe all the Health and Safety advice, particularly with regards to P.P.E. (Personal Protection Equipment)



Risk assessment and hazard assessment

Fort Vale recommends a full and comprehensive risk and hazard assessment in accordance with national or local legislation prior to servicing a valve. Not all service environments are the same and basic instructions may need to be incorporated into the safe procedures for use of the end user. See examples below:

- Correct use of personal protection equipment when working with compressed gases
- Correct use of personal protection equipment when working with low temperature components
- Correct use of personal protection equipment when working with heavy components and the use of lifting equipment
- Training and competence of personnel conducting pressure testing

Servicing of valves should be conducted by a “Qualified Person”

The term “qualified person” relates to a person familiar with the installation, assembly, operation, applications and limitations of the component. The person should have the qualifications corresponding to their responsibilities, such as instruction and awareness to comply with all operational, regional and in-company regulations and requirements.

Limitations of use/Mis-use

Please observe the maximum allowable working pressure and the minimum/maximum allowable temperature range and ensure that the valve is not operated outside these limitations. Use/operation outside these limits is at the risk of the user and Fort Vale shall bear no responsibility for such actions.

Servicing

Fort Vale components are manufactured for longevity under normal and compatible working conditions. It is the responsibility of the user to take into account the working conditions of the valve and to implement a regular service schedule based upon individual circumstances. In addition, a thorough visual inspection of the valve should be made at regular intervals to check for correct operation and signs of corrosion. It must be noted that working at extremes of temperature and/or pressure will reduce the operational life of the valve between services.

AFTER ANY REMEDIAL WORK, ENSURE THAT THE VALVE IS LEAK TESTED PRIOR TO RETURNING TO SERVICE.

During service or testing, if any problem arises that cannot be resolved with the use of this Maintenance Manual, please contact Fort Vale for further advice and assistance.

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5" Supaflo pressure only rail car relief valve

Full Disassembly

IMPORTANT

This section details full disassembly of the 5" Supaflo pressure only rail car relief valve.

Depending upon the reason for disassembly, every step may not be required.

Damaged, worn or corroded components should be replaced.

Please refer to the relevant 5" Supaflo pressure only rail car relief valve data sheet for a full list of individual components/spare parts.



Identify the valve, it will be laser marked with a 0R4 suffixed part number. If unsure please contact – sales@fortvale.com

Use a sharp edged tool to detach the stainless steel plug.



Remove the stainless steel plug.



Cut the TIR wire and remove it by feeding it through the cable nipple.



Remove the cable nipple.



Use a 1/4" torque wrench or Allen key and loosen the three lift stops and remove.



Prepare press by placing the cap locator FIX/A/0015/4 on the bed. (A minimum of 1 tonne press is required).

Attach adaptor, part no. FIX/A/0015/1 to the ram of the press.



Place the inverted valve onto the cap locator using the lifting points to locate on the kidney slots of the fixture FIX/A/0015/4.

Slide the assembly towards the location pin on the press bed.



Lower the ram slowly ensuring that the ram does not touch the valve bore and allow it to lower the pressure plate free from the main body.

Unscrew the main body from the cap fully by rotating the body counter clockwise.

CAUTION:

The valve is under spring load.
Exercise caution and wear the appropriate PPE.



Slowly release the ram to allow it to take the load of the spring until the spring is released completely.



Once the spring is fully extended retract the ram completely allowing full access to the valve. Remove the main body. Inspect the main body for any damage.



Remove the pressure plate. Inspect the pressure plate for any damage.



Remove the spring. Inspect the spring for any damage.



Remove the top cap. Inspect the top cap for any damage.



Grip the pressure plate in a soft jaws vice and loosen the bolts using a 5/32" torque wrench.



Place the part on a bench and remove the bolts by using a 5/32" torque wrench or Allen wrench.



Remove the inner pressure plate from the outer.



Remove the o ring. It is always recommended to change the o ring once the valve has been in service.

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5" Supaflo pressure only rail car relief valve

Full Assembly

IMPORTANT

This section details full assembly of the 5" Supaflo pressure only rail car relief valve.

Where consumables, such as o rings are removed, it is always recommended to fit new when re-assembling.

Damaged, worn or corroded components should be replaced.

Please refer to the relevant 5" Supaflo pressure only rail car relief valve data sheet for a full list of individual components/spare parts.





Ensure that all parts are clean and free from debris.



Locate the O ring in to the outer pressure plate as shown.



Check the inner pressure plate for any damage. If the inner pressure plate is satisfactory, place the outer pressure plate over the inner pressure plate.



Align the holes in the outer pressure plate with the holes in the inner pressure plate.



Apply blue Loctite 243 on the bolts. Locate and nip the bolts using a 5/32" torque wrench in a diametrically opposite sequence.



Check that the o ring is evenly clamped by the pressure plate.



Set the 5/32" torque wrench to 7Nm (5.16 lb ft) and torque the bolts in a diametrically opposed sequence. The pressure plate is now complete. Place the assembly in a safe place until required for the main body assembly.



Select cap locator, part number FIX/A/0015/4.



Apply Rocol on the thread of the top cap. Lubricating assists thread engagement between the body and the cap.



Place the cap onto the cap locator. Use the lifting points to locate in to the kidney slots of cap locator.



Place the spring set in to the cap. Ensure the spring is located inside the groove of the top cap.



Ensure that the springs are lined up with start points alternating at 180° as shown.



Locate the pressure plate assembly on top of the spring. Ensure the pressure plate groove is located in the spring.



Apply Rocol on the 4 segments of the body tube. Lubricating assists smooth movement of the pressure plate.



Place the main body over the pressure plate and spring.



Slide the assembly towards the location pin on the press bed. Push the cap locator forward aligning the groove and the locating pin on the bottom of the press. This locates the assembly in the centre of the press and improves the alignment of the ram and the bore. Please refer P29.



Bring the ram down ensuring not to touch the bore.

CAUTION:
The valve is under spring load.
Exercise caution and wear the appropriate PPE.



Continue lowering the ram until it has pushed the pressure plate free from the seal face, allowing the body to be lowered and screwed in to the cap. Ensure this gap exists throughout the entire circumference to avoid damaging the pressure plate o ring.



Rotate the body until it is engaged fully with the final thread.

Slowly release the ram and remove completely. Invert the valve. Main valve assembly is complete and the valve can now be set to the required pressure.



Pressure testing rig.

Note:

It is strongly recommended that this test rig is used only by a "qualified person".

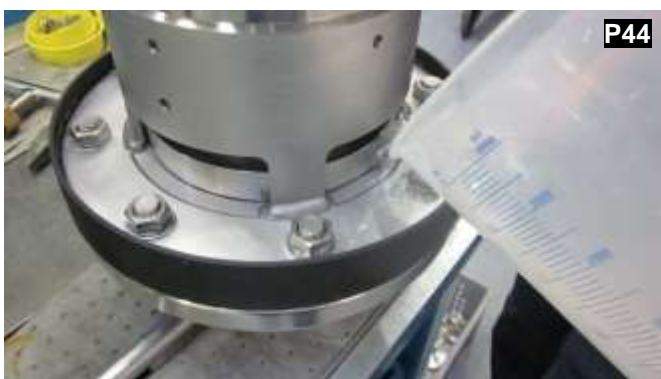
Pressure test rig can be purchased from Fort Vale.



Place the valve on the adaptor plate and using a 24mm torque wrench tighten the M16 nuts in a diametrically opposed sequence to a torque of 70Nm (51.6 lb ft.)



Locate the water testing ring. Part number 400/7498.



Pour soapy water between the pressure plate and the leak test ring.

Test the valve to check the initial pressure prior to setting. Determine if the valve pressure needs to be increased or decreased to meet the required set pressure.



To adjust the pressure to the required setting use rail relief valve adjusting tool (FIX/A/0015/21).

The following procedure assumes that the set pressure of the valve is 75PSIG.

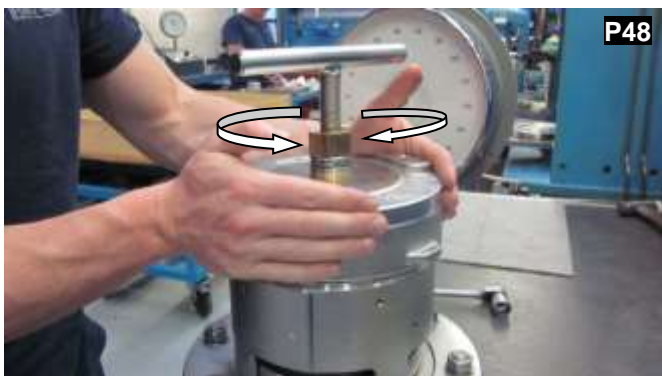


Locate the relief valve adjusting tool through the hole of the top cap all the way through the valve into the pressure plate. Engage the 5/16"UNF thread of the fixture onto the 5/16"UNF thread hole in the pressure plate.

Once the fixture is fully engaged with the pressure plate, tighten the brass jacking nut, this will lift the pressure plate leaving the top cap free to spin.

Note:

MAKE SURE THAT THE SUPPLY IS OFF WHILE ADJUSTING THE PRESSURE



If the valve pressure is below 75PSI rotate the fixture/top cap clockwise, if the valve pressure is above 75 PSI rotate fixture/top cap counter-clockwise accordingly. Remove fixture, apply soapy water and measure pressure. Repeat procedure iteratively until a pressure of 75 PSI is achieved.

Once 75 PSI is achieved, reduce the test rig pressure by 10% to 67.5PSI. Apply soapy water and ensure there are no bubbles. This confirms the valve resealed.

NOTE: If there are more than 3 threads showing it could be indicative of a strong spring, please consult Fort Vale.



Remove the water testing ring. Remove the valve from the test rig.

Apply blue loctite 243 on the lift stop threads.

CAUTION: MAKE SURE ALL PRESSURE FROM THE TEST RIG IS EXHAUSTED



Use a 1/4" torque wrench set at 18NM (13.27lb ft) to secure the 3 cap head bolts.



Locate the cable nipple



Locate the cable into the gripper as shown.



Attach the securing cable by feeding the wire through the cable nipple (As shown).



Feed the wire back into the gripper lock.



Cut the wire after ensuring that the remainder of the wire is pulled enough to make the loop tight.



P58

Locate the stainless steel plug.



P59

The procedure is now complete.



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