



Diamond Series 3 Actuated Pressure Relief Valve Maintenance Instructions

S3 PRV Spares Kits:

Valve Size	Spares Kit Pt No.	This Kit
1.0"	KP3R10_____	_____
1.5"	KP3R15_____	_____
2.0"	KP3R20_____	_____
2.5"	KP3R25_____	_____
3.0"	KP3R30_____	_____
4.0"	KP3R40_____	_____

IMPORTANT

Please read carefully before commencing work on this valve:

1. Ensure that the process line pressure is zero and fully drained and that pneumatic and power supplies are off and isolated. Remove the valve from the process line prior to dissmantling, if possible. Follow your safety procedures at all times.
2. When operating the valve open and closed ensure that fingers are clear of moving parts to avoid entrapment / injury.
3. Gaskets and seals should be stored away from UV light to increase shelf life.
4. Ensure that pipes and connections are properly aligned before mounting the valve in position to avoid undue stress and leakage.
5. Always operate the valve open and closed several times before use to ensure correct function.
6. The user should adopt a maintenance programme for valves depending on frequency of use and application particulars. DPL recommends seal replacement at least every two years.

Dismantling Procedures - use the drawing on page 3 when following these procedures.

The valve does not need to be fully dismantled and the pressure setting should not need re-setting when following the seal replacement procedure below. A soft jaw vice may be needed to hold parts of the valve while un-screwing others. When holding parts in a vice use only sufficient pressure to hold the item in place, excessive force may cause damage.

Dismantling - Seal Replacement Procedure:

1. Hold the actuator body item 24, unscrew and remove cap item 22. It may be necessary to use the holes located in the side of items 22 and 24 for the use of a c-spanner to aid un-screwing.
2. Remove pin and clip items 20 / 21 and lift off piston item 23.
3. Hold valve body item 1 and gradually undo the four hex-head body bolts item 10 from flange item 9, un-screw each bolt one turn at a time so that they are unscrewed evenly. Remove the bolts when done.
4. The top half of the valve assembly (the bonnet assembly) can now be lifted away from body item 1. Make sure that the body O ring item 6 is also removed from the body.
5. Lay the bonnet assembly on it's side and place a suitable diameter screw driver shaft through the hole in the spindle shaft (hole for item 20). Hold this in place and using an adjustable spanner, carefully unscrew the seat seal retaining screw (at the other end of the valve) item 5. It may be necessary to use a soft jaw vice to hold the spindle shaft / screwdriver in place if too tight to unscrew by hand.
6. The seat seal assembly including item 4 and item 3 can now be removed. Next carefully slide the body plate item 7 along the valve spindle to reveal the spindle seal item 28 and spindle bush item 27 which can now be removed.
7. All of the seals mentioned above are included in seal kits that are available from DPL. The seals can now be replaced accordingly. A small ammount of food grade, process compatible grease should be used to help fit new seals in place. Grease will also help hold the body "O" ring item 6 in place and avoid damage on re-assembly.
8. Please follow the dismantling procedure in reverse order to re-assemble the valve in conjunction with the "Important Re-assmby Notes" given on page 2. Alternatively, continue to step 9 below to fully dismantle the valve.

Full Dismantling Procedure - Continue from step 8 above:

9. Please note that this procedure will involve releasing the spring tension and thus loosing the pressure relief setting. The procedure for re-setting the relief pressure is shown on page 2 of this document.
10. Hold the bonnet assembly in a soft jaw vice holding on flange item 9. Unscrew and remove actuator body item 24, use a C spanner if needed.
11. Using an adjustable spanner, undo and remove the lock-nut item 14. Next, un-screw and remove the pressure adjusting screw item 16. Lift out the top bearing item 15, spring item 13 and valve spindle item 2. The valve is now fully dismantled.
12. Please follow the dismantling procedure in reverse order to re-assemble the valve in conjunction with the "Important Re-assmby Notes" given on page 2.





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Use the itemised valve drawing on page 3 of this document when following these procedures.

Important Re-assembly Notes:

When re-assembling, ensure all parts are correctly located as per the General Assembly Drawing shown on page 3. Do not forget to use a small amount of food grade, process compatible grease when re-fitting seals. When re-assembling the bonnet assembly into the valve body, ensure that the body O ring item 6 is correctly located. When replacing the four bolts item 10 be sure to tighten each bolt one turn at a time before moving on to the next to ensure level seating between the flange item 9 and body item 1. Make sure there are no gaps between the flange item 9 and body flange item 1 as this could indicate incorrect assembly or that the body O ring has become trapped. Valves that exhibit problems such as damage or assembly irregularities should not be used. Contact DPL for further assistance if required.

Pressure Setting Adjustment Procedure

Please Note: A calibrated pressure gauge and hydrostatic test rig / hand pump is required to carry out this procedure. If the valve is welded in place and the valve body can not be removed from the process line, a spare valve body will be needed to re-set the pressure setting. Alternatively contact DPL to arrange our factory re-setting service.

1. Ensure that the important safety precautions have been followed from page 1 of this document prior to removing the valve from the process line.
2. Place the valve in a soft jaw vice, holding on actuator body item 24, use only sufficient pressure to hold the assembly in place, excessive force may cause damage. Unscrew and lift off cap item 22. It may be necessary to use the holes located in the side of items 22 and 24 for the use of a c-spanner to aid un-screwing.
3. Remove pin and clip items 20 / 21 and lift off piston item 23.
4. Hold the valve body flange items 1 & 9 firmly in the soft jaw vice. Unscrew and remove actuator body item 24, use a C spanner if needed.
5. Remove the valve assembly from the vice and secure the valve inlet (depicted on page 3) to your hydrostatic pressure test rig.
6. Hold the adjuster screw item 16 in place with a suitable spanner and loosen the lock-nut item 14 (with a second spanner). Unscrew the locknut item 14 clear of the bonnet body to allow room for adjustment.
7. Apply water pressure to the valve inlet via the hydrostatic test rig, slowly increasing the pressure until the valve seat lifts. Note the relief pressure at this point.
8. The adjuster screw item 16 can now be rotated clockwise to increase the relief pressure or anti-clockwise to decrease.
9. Once the desired relief pressure is reached, the adjuster screw should be held in place with the spanner and the locknut item 14 re-tightened down to ensure that the adjuster screw item 16 is locked in place.
10. Release the pressure from the hydrostatic test rig making sure the pressure is zero before removing the valve from the rig.
11. Replace the actuator body, piston, pin, clip and cap items 24, 23, 20, 21 & 22 by following the stages from section 4 above in reverse order.
12. Remove the valve assembly from the vice and once more secure the valve inlet to your hydrostatic pressure test rig. With the test rig pressure at zero, keep fingers clear of body item 1 and open and close the valve several times by applying and removing air pressure to the actuator air inlet.
13. Apply water pressure via the hydrostatic test rig once more to ensure that the relief pressure is correct. If adjustment is required, follow the procedure once more to make the adjustment.



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General Assembly Drawing.

To be used in conjunction with procedures described on pages 1 & 2:

