



# Diamond Single Seat Valve

## INSTALLATION AND OPERATING INSTRUCTIONS IMPORTANT - PLEASE READ CAREFULLY BEFORE INSTALLING YOUR VALVE

### INSTALLATION

A process system can generally be associated with many varying conditions such as water hammer, pressure shock, vibration and thermal expansion due to temperature change. Stress and strain within the pipeline will result and unless such conditions are allowed for at the system design and installation stages, the valve and pipe assembly may be damaged. When installing the valve into a pipe assembly system, careful consideration must be made to ensure good alignment and adequate support for the weight of the valve and pipe assembly by means of framework and pipe clip fasteners. For future maintenance, always make allowance for pipe movement within the pipe assembly (by releasing clips etc) to allow access to the valve seals / coupling seals.

**IMPORTANT** Do not put fingers / hands inside the valve bodies when the valve is operated open / closed as this may lead to entrapment / crushing as the seat moves up / down (see page 2 diagram).

### ATEX / EQUIVALENT UK REGULATIONS

Please refer to the separate document titled “*Single Seat Valves Installation & Maintenance: ATEX Directive 2014/34/EU & The Equipment & Protective Systems Intended for Use in Potentially Explosive Atmospheres Regulations 2016 SI 1107*” which is to be used in conjunction with this document when installing or maintaining valves that support the “Ex” symbol. This additional information is essential to the safe operation of your valve in hazardous environments.

**CONNECTING PIPEWORK MUST BE EARTHED.**

### VALVES WITH COUPLING FITTINGS

If the valve is fitted with end connections the valve does not require dismantling prior to installation.

### VALVES WITH PLAIN ENDS FOR BUTT WELDING

It is preferable that the ports on this type of valve are fitted with couplings. As with all valves of this type, to allow for future maintenance it is advisable not to weld both the upper and the lower bodies into a pipe assembly. It is strongly recommended that the upper body ports are of a coupling type so that this part of the valve body can be separated from the manifold/line to allow maintenance of the lower seat seal. If welding the valve body directly into the pipeline, the valve should be partly dismantled and all seal components removed from the valve body. This will prevent heat damage to the valve seals and other internal components. Gas backed TIG welding is recommended, a minimum weld bead should be produced to minimise the risk of heat distortion within the valve body.

Alternately the DPL design will also enable the top body to be welded in line and the lower body be attached to the line with fittings, provided the body can be detached and moved aside to allow access to the bottom seat seals. Page 2 shows the dismantling procedure for welding the valve body in-line.

### **IMPORTANT**

No attempt should be made to dismantle the actuator cylinder further than described in these instructions. The actuator cylinder houses a powerful spring held under compression that could cause serious harm if tampered with.

**The Pressure Equipment Directive 2014/68/EU & The UK Pressure Equipment (Safety) Regulations 2016 SI 1105:** Sound Engineering Practise (SEP) applies to this product for non-group 1 use and at pressures not exceeding 10 bar.



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### VALVE DISMANTLING PROCEDURE FOR WELDING THE LOWER BODY IN LINE

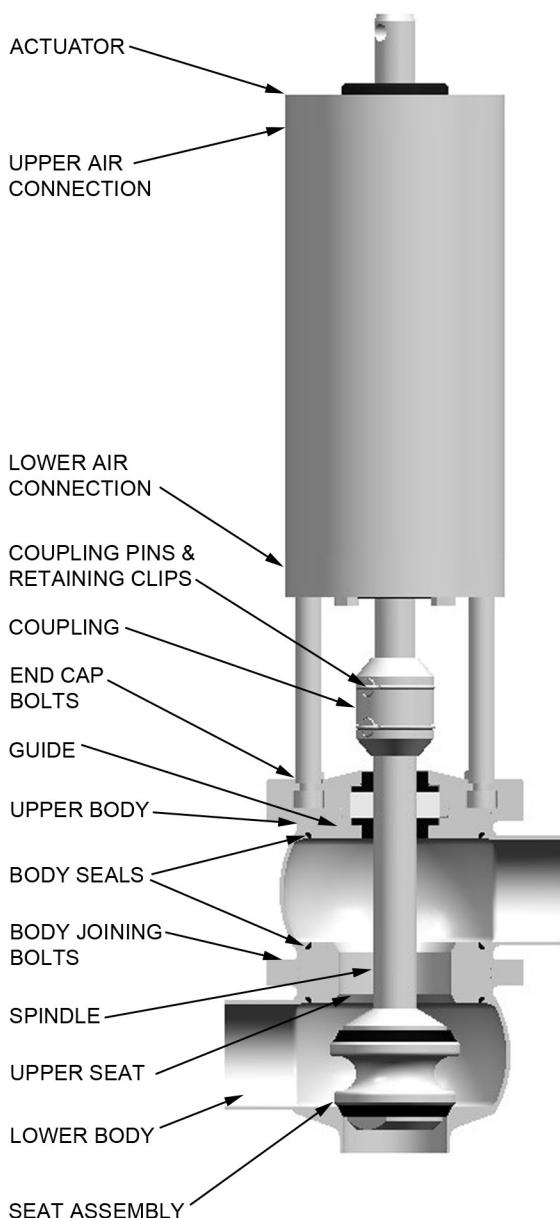
#### NORMALLY CLOSED VALVES ONLY (spring pushing down)

The following procedure to remove the actuator from the valve involves actuating the valve (using compressed air) to the closed position. Great care must be taken when introducing air pressure to the actuator. During pneumatic operation the central valve shaft / actuator shaft / seat assembly will move. Hands / fingers / loose clothing should be kept away from moving parts wherever possible during actuation. Refer to the valve assembly drawing on this page whilst following the procedure below.

1. Locate a suitable airline feed with a 5.5 bar supply pressure. Ensure that the airline pressure is zero, then connect to the lower air connection of the valve actuator. Keeping fingers clear of the valve, apply air pressure to the actuator. The valve will open. The 5.5 bar supply pressure should be maintained during the procedure that follows.
2. For single body valves: - Using an appropriate size spanner, undo and remove the valve body End Cap Bolts. Lift off the actuator taking with it the spindle, guide and seat assembly as one unit.
3. For double body valves: - Using an appropriate size spanner, undo and remove the 4 bolts that join the valve bodies together (Body Joining Bolts). Lift off the actuator and the upper valve body assembly, taking with it the spindle, guide and seat assembly.
4. Check that the body seals came out with the assembly when removed. The lower valve body can now be welded in place using your company welding procedures.
5. On completion, allow to cool. Clean the welds and seating areas and reassemble the valve following the above procedure in reverse order, to include the following points: Ensure the 'O' ring body seals are correctly located on the guide. Food grade, process compatible grease can help hold the seals in position. Tighten bolts evenly, a little at a time so as to ensure even compression of the body seals. Ensure that hands/fingers are clear of the valve when disconnecting the airline supply. The valve spindle / seat assembly / coupling will move returning the valve seat to the normally closed position.

#### NORMALLY OPEN VALVES ONLY (spring pushing up)

Use the same procedure as described above but no air supply is required, the valve does not need to be air actuated.





# Diamond Single Seat Valve

## INSTALLATION AND OPERATING INSTRUCTIONS IMPORTANT - PLEASE READ CAREFULLY BEFORE INSTALLING YOUR VALVE

### VALVE DISMANTLING PROCEDURE FOR WELDING THE UPPER BODY IN LINE

#### NORMALLY CLOSED VALVES ONLY (spring pushing down)

The following procedure to remove the actuator from the valve involves actuating the valve (using compressed air) to the closed position. Great care must be taken when introducing air pressure to the actuator. During pneumatic operation the central valve shaft / actuator shaft / seat assembly will move. Hands / fingers / loose clothing should be kept away from moving parts wherever possible during actuation. Refer to the valve assembly drawing on this page whilst following the procedure below.

1. Locate a suitable airline feed with a 5.5 bar supply pressure. Ensure that the airline pressure is zero, then connect to the lower air connection of the valve actuator. Keeping fingers clear of the valve, apply air pressure to the actuator. The valve will open. The 5.5 bar supply pressure should be maintained during the procedure that follows.
2. Using an appropriate size spanner, undo and remove the 4 bolts that join the valve bodies together (Body Joining Bolts). Lift off the actuator and the upper valve body assembly, taking with it the spindle, guide and seat assembly. Remove the body seals from the body / guide.
3. Keeping fingers / hands clear of the valve, remove the air pressure from the lower air connection. The valve will return to the normally closed position (spring pushing down).
4. Remove the lower retaining clip from the coupling, as shown on page 2, and then remove the pin.
5. Using an appropriate size spanner, undo and remove the end cap bolts. Lift off the actuator taking with it the spindle coupling. Pull through the seat / spindle assembly. The guide, upper seat and body seals can now be removed. The upper valve body can now be welded in place using your company welding procedures.
6. On completion, allow to cool. Clean the welds and and reassemble the valve following the above procedure in reverse order, to include the following points:

Ensure the 'O' ring body seals are correctly located on the guide and upper seat. Food grade, process compatible grease can help hold the seals in position. Tighten bolts evenly on assembly, a little at a time so as to ensure even compression of the body seals. Ensure that hands/fingers are clear of the valve when connecting or disconnecting the airline supply. Check the coupling pins and retaining clips are put back safely in place the correct way around.

#### NORMALLY OPEN VALVES ONLY (spring pushing up)

Follow the procedure above with the following exceptions:

- a. Skip section 1, normally open valves do not need to be actuated to the open position.
- b. At section 3, keeping fingers / hands clear of the valve and apply air pressure to the upper air connection to move the seat assembly to the closed position. Air pressure should be maintained while following sections 4, 5 & 6.

#### IMPORTANT

Pressure test your valve following dismantling, prior to use, where ever possible. Follow your in-house test procedures. Maximum operating pressure is as follows: 1.0" Valves: 10 Bar. 1.5" to 3.0" Valves: 7 Bar. 4.0" Valves: 4.5 Bar.

### SINGLE SEAT VALVE SPARES KITS

The user should establish a maintenance programme dependant upon the product and frequency of use. Spares kits (part numbers below) with full maintenance instructions are available from DPL.

Valve Size:	Single body Spares Kit Part No.	Double Body Spares Kit Part No.	* Suffix denotes seal material:
1.0"	KSVS10*	KSVD10*	E - EPDM
1.5"	KSVS15*	KSVD15*	N - Nitrile
2.0"	KSVS20*	KSVD20*	S - Silicone
2.5"	KSVS25*	KSVD25*	V - Viton
3.0"	KSVS30*	KSVD30*	P - PTFE
4.0"	KSVS40*	KSVD40*	



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