SINGLE DOOR NON RETURN VALVE

INSTRUCTION MANUAL ON INSTALLATION OPERATION AND MAINTENANCE

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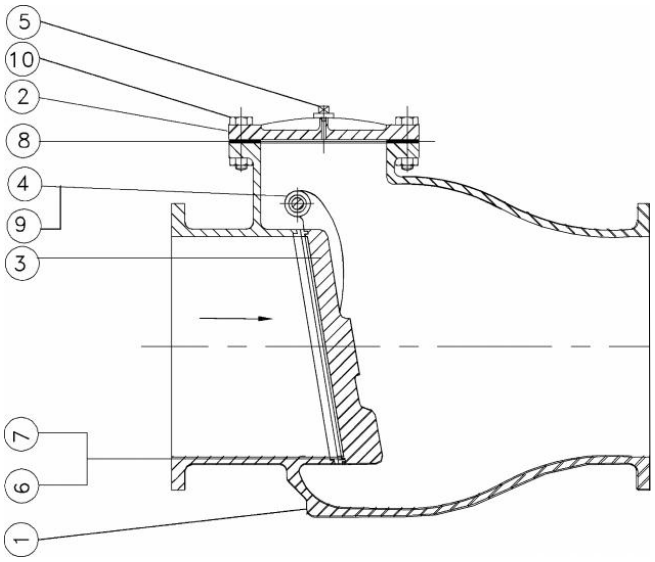
INTRODUCTION -



Durga make single door non return valves are generally manufactured as per IS-5312 PART 1, and BS- 5153, standard for constructional features, dimension and material of construction. The single door non return valve also comes in various combinations of material and seating arrangement as per customer requirements. The non-return valves are also supplied with optional accessories such as bypass arrangement, oil-dashpot, counterweight, etc. as per specific requirement of the customer.

PARTS IDENTIFICATION	
01	BODY
02	COVER
03	DISC
04	HINGE PIN
05	AIR NIPPLE
06	BODY SEAT RING
07	DISC FACE SEAL
08	BONNET GASKET
09	BUSH
10	BOLTS, STUD & NUTS

Durga make non return valves are designed to achieve non slum characteristics due to flow dynamics' generated within the body cavity of the non-return valve.

The door of the non-return valve is hinged pin. Body ring is force fitted, machined and scrapped to get lapping finish for achieving leak tightness. Bypass arrangement is provided specifically if required by purchaser and same is as prescribed in IS-5312 Part -1.

INSPECTION ON RECEIPT, HANDLING -

At receipt of the product, ensure that there is no transit damages to the product received, especially on valve flanges, door / diaphragm ring faces etc. Also to be ensured that parts and accessories are received as per ordered scope of supply.

Use the safe lifting devices (e.g. slings, hoists, hook etc.) of adequate capacity.

Do not pass the slings through the weak parts of the product / accessory. (E.g. By-pass bends – when it is assembled on the valve).

The valve should be transported so that the inlet side flange rests on the horizontal floor.

Support the valve properly during transportation to avoid toppling handle the product carefully – do not push, drag, drop from height. If damages, short supply or wrong supply are observed, report the same immediately to the contact person mentioned in this manual.

STORAGE & PRESERVATION

If the valve has to be stored at site before installation, store it on horizontal level surface in dry and clean atmosphere. Store the products in well-covered sheds, protected from sun, rain and dust. In the instance if the valve is required to be stored for long duration, ensure that rust preventive should be applied on the machined corrodible surfaces. It is advisable to give a coat of grease on seat rings during the storage period. Keep the seat rings away dusty atmosphere.

VALVE ASSEMBLY BEFORE INSTALLATION -

Before taking the single door non return valve for pipe installation, make sure that it is cleaned from inside and outside and there are no foreign or metallic objects sticking on to its sealing elements. Also clean the valve interior passages to remove any foreign matter & rust preventive on machined surfaces. Ensure that the entire rust preventive on the machined surface in the flow area is removed, before the valve is put in pipe-line.

Valves should be installed in the pipeline, only after verifying the sealing ability of valve. This can be done by examination of the seat surfaces for freedom from surface damages, scratch marks / dent marks as well as uniform mating of body diaphragm rings and door rings. If abnormalities of this type are observed, contact DVPL.

Single Door Non Return Valves are designed to generally operate in horizontal pipe lines or in vertical pipe lines when the flow is upwards – unless otherwise pre specified by the customer. Operate the door of single door non return valve manually from full close to full open and full open to full close. Ensure that there is no undue resistance / friction in the operation. Before connecting valve & pipeline flanges, ensure that they do not have parallel, angular and

radial gaps. While fitting the valve in pipeline, ensure that diagonally opposite bolts is simultaneously & uniformly tightened orientation of hinge pin of the valve, while fitting in the pipe-line must be horizontal. This can be ensured by checking verticality of edges of top & bottom drilled flange holes with a plumb line.

CHECKS FOR THE PIPE-LINE BEFORE INSTALLATION

Clean the pipeline shell thoroughly flashed out so that it does not contain any foreign matters which may damage the valve internals. Avoid parallel, radial and angular mismatch between connecting flanges of valve and the pipeline.

Upstream and downstream piping should be adequately supported and anchored (if required) in such a way that the piping system does not impose any forces & moments on the valve body and the hydraulic thrust arising due to valve closure is carried & sustained by valve supports. Valve flanges are not designed to carry any external loads and moments arising due to pipe expansions / contractions. It is advisable to use flange adapter assembly, after the valve to facilitate valve dismantling and to prevent any undue loads being transmitted to valve flange. Provide suitable concrete block for supporting the valves. It is advisable to install a support for the valve at bottom to prevent any sagging to be caused by weight of the valve.

Ensure that pipeline flanges are parallel and are mating the valve flange without leaving any parallel, angular or radial gap between the flanges. Do not over-tighten the flange bolts / nuts to make the flanges parallel forcefully. That may develop undue stresses in the valve flanges & body leading their deformation& malfunctioning. If the single door non return valves are supplied with by-pass arrangement. Ensure the by-pass arrangement on the valve is intact. Maximum flow velocity in the pipe-line should not exceed 4 m/s.

COMMISSIONING PRE-COMMISSIONING CHECKS -

Ensure manually that the valve operates smoothly. Flow direction of the valve matches with that in the pipeline. The entire pipe flange bolting is properly tightened. Surge protection devices (if any) are operative

COMMISSIONING

Open the by-pass valve across the valve (if provided). Flushing the pipe-line with water. Ensure that there is no leakage through flange gaskets. Now the valve is commissioned for its operation.

OPERATION

By-pass valve (if provided) – keep it open while every start / stop cycle of the pump. Once the single door non return valve is closed, the by-pass valve may be kept closed till next operation of the valve.

MAINTENANCE & TROUBLE SHOOTING

SL. NO.	CHECKING PARAMETER	METHOD OF CHECKING	FREQUENCY OF CHECKING	PROBABLE REASSON	ACTION TO BE TAKEN
1.	Leakage through valve seat	Visual	During Operational	1) External object caught between door face & body ring. 2) Orientation of hinge is not horizontal in pipe line.	1) The external object has to be removed by flushing and if it does not work, open the flange joint to reach the object and remove manually. 2) The orientation of the hinge has to cross checked and necessary alignment is to be done.
2.	Condition of Door faces	Visual/ Feeler Gauge	During overhauling	Worn out/ Deformed or damaged Seat faces.	Replacement of Faces is to be done.
3.	Noise / Vibration while Cleaning & Opening.	Feel	During Operation	In adequate Support inadequately fixed pipeline valves.	Support upstream & downstream piping & Valve properly.

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