緯凡金屬股份有限公司
TRANSWORLD STEEL ENTERPRISE CO., LTD

Operation
&
Maintenance
Manual

Product Name: Two Piece Ball Valve

Product Type: Series R301, R502, R701

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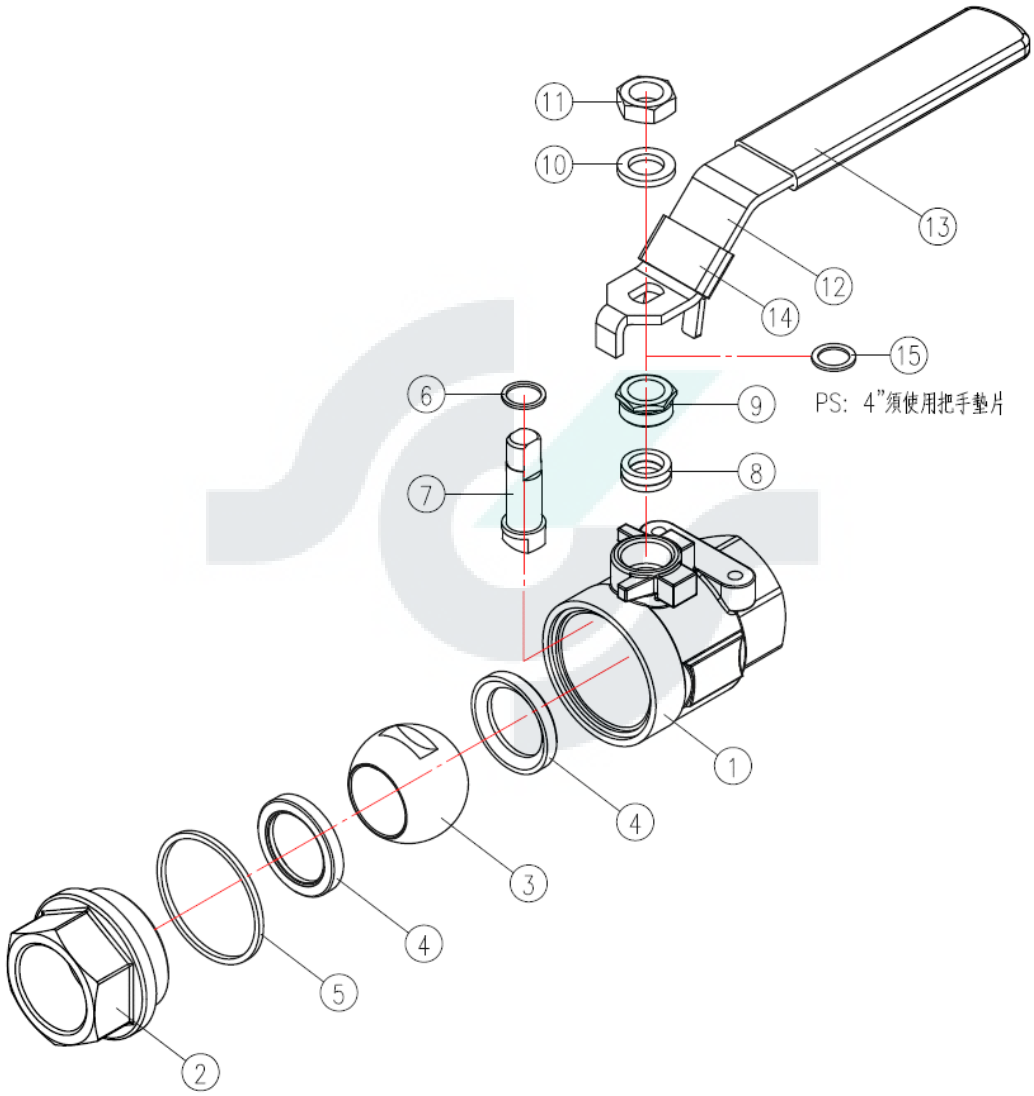
INSTALLATION & MAINTENANCE MANUAL

For Series R301、R502、R701

1. Product Structure

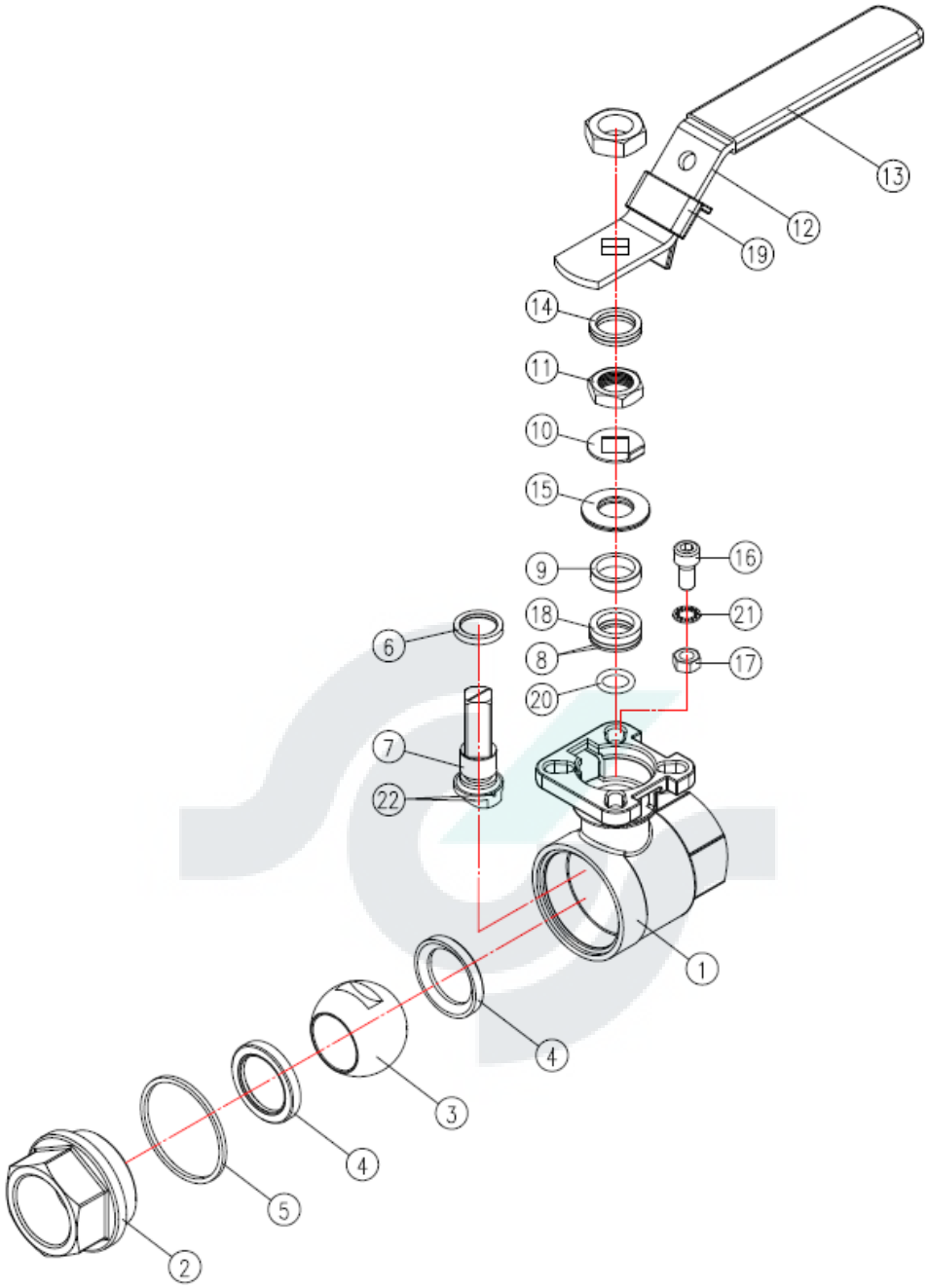
TAWD Two Piece Ball Valves are made of stainless steel, The ball valve will open or shut off flow on most liquids and gases quickly and easily and is suitable for just about any application where a simple on/off action is needed.

Series R301



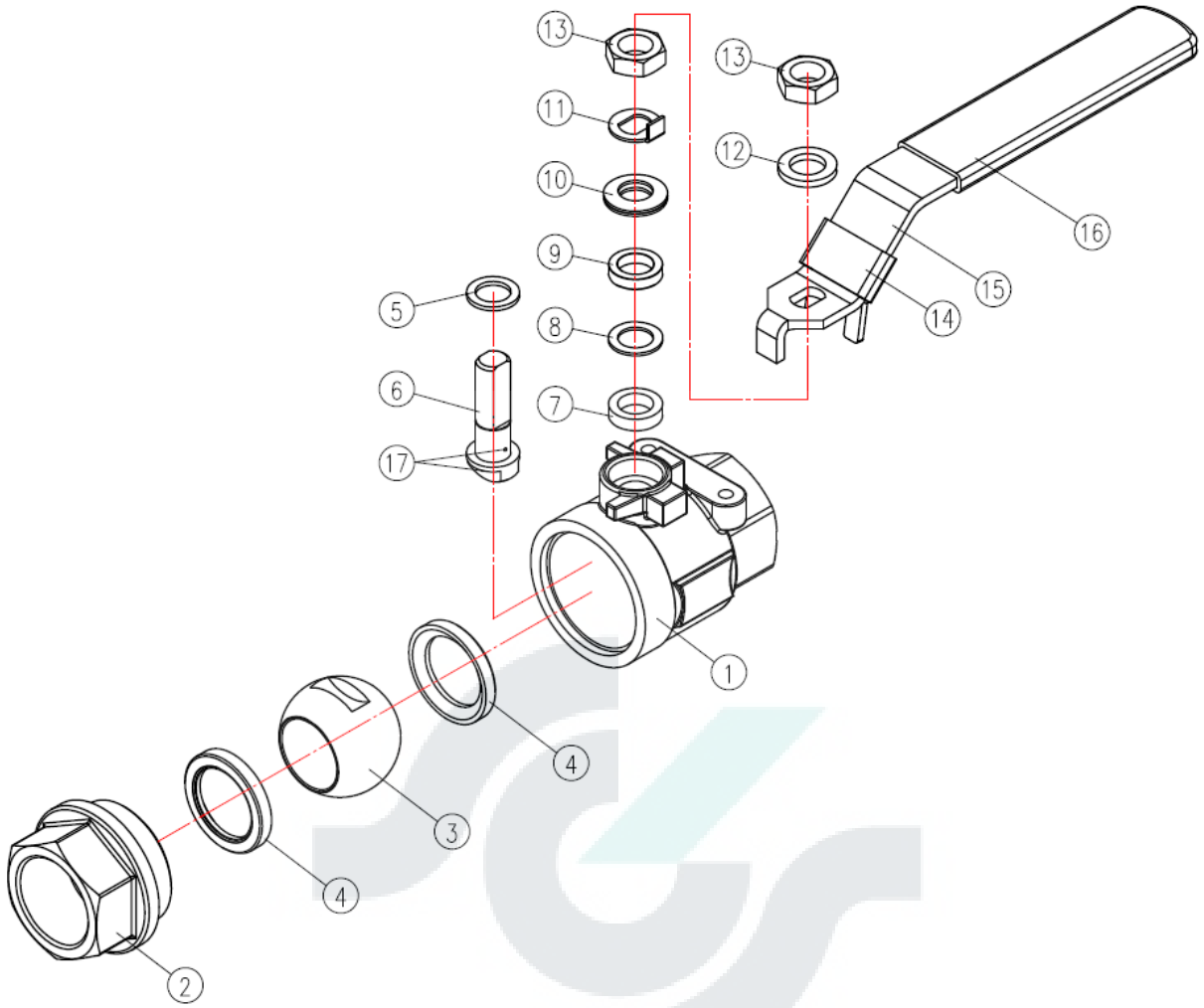
No.	Part Name	No.	Part Name	No.	Part Name
1	Body	**6**	Thrust Washer	**11**	Stem Nut
2	End cap	**7**	Stem	**12**	Handle
3	Ball	**8**	Gland Packing	**13**	Handle Cover
4	Seat	**9**	Gland Bush	**14**	Locking Device
5	Joint Gasket	**10**	Stem Washer	**15**	Handle Washer

Series R502



No.	Part Name	No.	Part Name	No.	Part Name
1	Body	**9**	Gland Bush	**17**	Pin Nut
2	End cap	**10**	Stop washer	**18**	Gland Packing
3	Ball	**11**	Stem Nut	**19**	Locking Device
4	Seat	**12**	Handle	**20**	O-Ring
5	Joint Gasket	**13**	Handle Cover	**21**	Washer
6	Thrust Washer	**14**	Stem Washer	**22**	Anti-static Device
7	Stem	**15**	Belleville Washer	**23**	
8	Gland Packing	**16**	Stop Pin	**24**	

Series R701



No.	Part Name	No.	Part Name	No.	Part Name
1	Body	**7**	Stem Packing	**13**	Stem Nut
2	End cap	**8**	Stem Packing	**14**	Locking Device
3	Ball	**9**	Follower	**15**	Handle
4	Seat	**10**	Belleville Washer	**16**	Handle Cover
5	Thrust Washer	**11**	Tab Washer	**17**	Anti-static Device
6	Stem	**12**	Stem Washer	**18**	

2. USE

Life of valve can be prolonged if the valve is used within the rated range, in accordance with pressure, temperature, and corrosion parameters.

3. Manual Operation

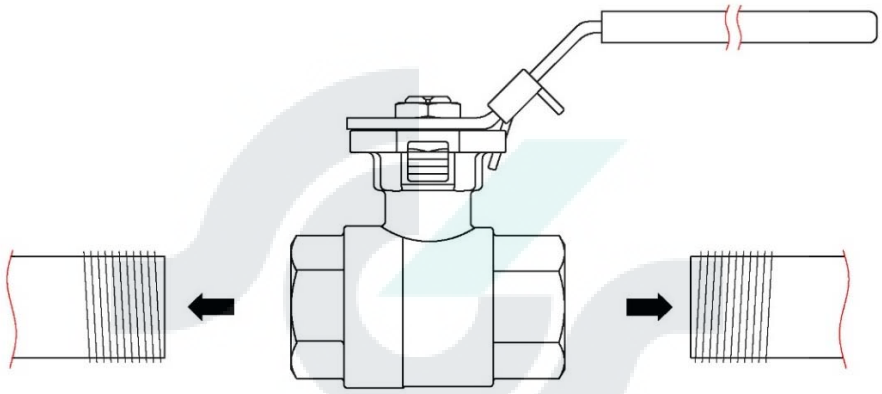
The valve's open or closed state is altered by giving the lever a quarter-turn (90-degrees).

— Valve in Open Position: The lever is parallel to the valve or pipeline.

— Valve in Closed Position: The lever is perpendicular to the valve or pipeline.

4. General Information for Installation

- To avoid damaging the internal components, such as the seats and ball, the pipeline must be flushed, free of dirt, burrs, and welding residues before installing the valve.
- Before installation, carefully check the nameplate to ensure valve type, size, seat material and the pressure-temperature grade are suitable to the condition of pipeline.
- The valve installed on the pipeline. For media flow requirements of the valve, confirm the upstream and downstream accordance with the direction of valve to be installed.
- Use suitable thread sealing material such as Teflon, and screw ball valve body to the pipeline.
- Apply wrench only on the hexagon of the valve ends. Tightening by using the valve body or lever can seriously damage the valve.
- In some applications, screwed valves are back welded on site, these valves must be treated as per instructions for weld end valves before back welding.



(Figure 1)

5. Maintenance and Normal Trouble

Most ball valve problems are caused by incorrect installation of the valve or incorrectly installed parts, but causes of ball valve failure may also include:

No.	Problem	Cause Analysis	Solution
1	Valve leaks during installation	Improper transportation and lifting may result in valve damage.	Only transport the ball valve by suitable means, do not drop it.
2	Valve leaks during installation	Both ends of the valve are lacking blind flanges.	According to the requirements of pipeline design.
3	Valve leaks during installation	The valve is misaligned with the pipeline.	According to the plant and pipeline installation standards.
4	Leakage between the sealing surface	Dirty sealing surface or the sealing surface damaged.	Remove dirt or replace it.
5	Leakage at stem packing	Insufficient packing pressure or prolonged use can lead to damage to the packing material.	Tighten the bolts evenly to compact the packing or replace packing.

(Table 1)

6. Maintenance and Repair

	**OPENING THE VALVE UNDER PRESSURE CAN BE DEADLY. DISMANTLING THE VALVE MUST BE COOLED DOWN AND PRESSURE-FREE. HEAD PROTECTION, PROTECTION GLASSES AND SAFETY SHOES ARE MANDATORY.**

6.1 Caution ! Ball valve may be residual fluid in the ball cavity when closed.

If the valve has been used to control hazardous media, it must be decontaminated before disassembly. It is recommended that the following steps are taken for safe removal and reassembly.

- Relieve the line pressure.
- Place valve in half-open position and flush the line to remove any hazardous material from the valve.
- All persons involved in the removal and disassembly of the valve should wear the proper Protective clothing, such as face shield, gloves, etc.

6.2 Replacing the thrust washer, packing, and seats

- Before replacing the thrust washer and the packing, the pipeline must be de-pressurized.
- Take-off the valve from the pipeline.
- Place valve in its' fully open position.
- Take-off end cap with proper equipment (machine).
- Close the valve and remove the seat, body seals and ball.
- Remove the valve stem nut, handle, gland nut and remove the valve stem through the body cavity.
- Remove the stem trust washer from the stem cavity.
- Examine all metallic sealing surfaces such as ball, stem and end cap for damage, if the ball or stem is excessively damaged, ball and stem need to be replaced.

6.3 Re-assembling

Having assured that all critical surfaces and components have been inspected, cleaned and or replaced, re-assemble can be begun.

- Place new trust washer on stem and install the stem.
- Re-install gland nut and tighten.
- Lightly lubricate seats and body seals using a lubricant.
- Re-install end cap.
- Re-install handle and secure with stem nut.

6.4 Remark：

Series R701 is an integrated design (body and end cap welded together), It is NOT able to disassemble and clean the valve, and also NOT able to replace the thrust washer, packing and seats.

7. Safety Notice

	**THE EQUIPMENT IS SUBJECT TO PRESSURE, RISK OF SEVERE INJURY OR DEATH. HANDLE CAREFULLY.**
	**DO NOT EXCEED THE MAXIMUM PERMISSIBLE PRESSURE.**

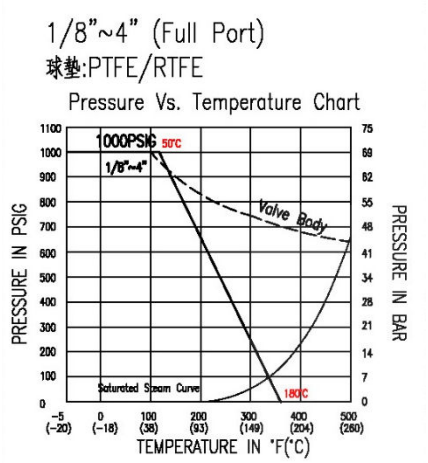
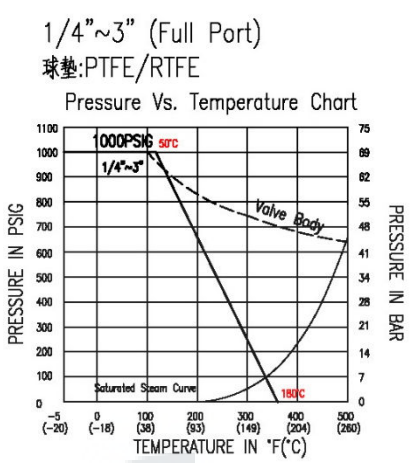
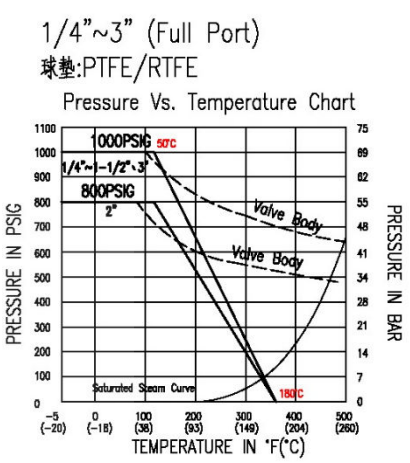
- Installation work must only be performed by trained personnel.
- Use appropriate protective gear as specified in plant operator's guidelines.
- Choose the installation location and suitable means, the ball valve cannot be used as a foothold or climbing aid.
- Do NOT apply external force to the ball valve.
- Inside diameter of the piping must correspond to the nominal diameter of the ball valve.
- When laying pipelines, it is essential to protect the ball valve body from lateral and bending forces, as well as the influence of vibrations and tension.
- Only mount the ball valve between matching aligned pipelines.
- Do NOT connect the system before valve pipeline installation to the earthing connection has been inspected, examined, and approved by the client.
- The pipeline should be free of any potentially explosive environments.
- Do NOT allow dust layers on the transportation media as it could charge the valve during high velocity of transportation. The flammable material shall be prohibited to be used on the valve.
- Use only in accordance with the specifications. (Refer Table 2)
- Any servicing work and repairs not described in the installation, operating and maintenance instructions must not be performed without consulting the manufacturer first.

8. Transportation and Storage

- Transport the ball valve using appropriate methods; throwing or dropping is prohibited.
- Dispose of packaging materials in accordance with relevant local or national disposal regulations/environmental protection laws.

9. Appendix

— Pressure-Temperature Chart

Series R301	Series R502	Series R701
		

(Table 2)