	Manual		Document Number: SP81-MA-3006
	Title: TV-11 Manually Operated Cryogenic Globe Valve Installation, Operation, and Maintenance Manual		Initial Release Date: 3/22/1996
		Revision:	Letter: B

TV-11

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1. INSTALLATION

The valve must be disassembled prior to installation to prevent damage to soft goods during welding. Item numbers are shown in the parts diagram, Figure 1.

1.1. Valve Disassembly

- Remove Bonnet Bolts (11).
- Pull Bonnet (10) vertically upward until Stem (5) can be removed from slot in Barrel (21).
- Remove the Barrel (which has the plug attached; parts 36) from Valve Body (1); care should be taken not to drop Barrel into Valve Body as the PCTFE Seal Disc (36) could be damaged.
- Remove Bonnet Face O-Ring (15) and store in a clean area until ready to reassemble.

CAUTION: Assembly may contain equipment plated with nickel. Cleaning with acids or other caustic solutions will remove plating and void warranty.

1.2. Welding


- Prepare connection on equipment on which valve will be installed.
- Position Valve Body to equipment and weld in place.

CAUTION: All Valve Bodies are 304L Stainless Steel. Therefore, care should be taken not to over-heat Valve Body beyond that required for normal welding.

CAUTION: When the valve is to be installed in a vacuum jacketed system, care should be taken in the jacket design to prevent forces on the Bonnet of the Valve caused by differential contraction rates (thermal loads) between the inner process line and the vacuum jacket. Contact PHPK for assistance.

1.3. Valve Reassembly

- Allow Valve Body to cool after welding.
- Clean Bonnet Face O-Ring and the O-Ring groove on the Valve Body.

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- Apply a very thin film of Halocarbon 25-5S or Krytox®¹ Grease to the o-ring and replace in groove.
¹Krytox® is a registered trademark of DuPont.
- Reassemble valve in reverse order of instruction given in Section 1.1.
 - During reassembly, Bonnet Bolts should be tightened to 90 in-lb (7.5 ft-lb).

2. OPERATION

- To open valve, rotate Handwheel (4) counterclockwise until valve stem reaches internal stop.
- To close valve, rotate Handwheel clockwise until valve seats.

CAUTION: Valve should be closed *by hand only*. Excessive torque applied to handwheel using levers or other mechanical devices can damage seal disc or other internal parts of valve.

3. MAINTENANCE

With proper care, the Valve Assembly should require very little maintenance; however, as with all cryogenic equipment, thorough inspection of the system should be performed periodically to ensure continued, reliable operation.


3.1. O-RING REPLACEMENT

3.1.1. Gland Nut O-Rings

- Gland Nut O-Rings (7,8) can be replaced by first removing the Handwheel as follows:
 - Remove the Handwheel Nut (2) and Handwheel Nut Lock Washer (3) by turning counterclockwise while holding the Stem (5) by the wrench flats.
 - Remove Handwheel (4) in the same manner as the Handwheel Nut.
- Remove the Gland Nut (6) from Stem by turning Gland Nut counterclockwise and sliding it off the end of the Stem.
- Slide Bonnet Bearing (9) off the handwheel end of the Stem. Clean and reinstall.
- Remove O-Rings from Gland Nut, taking care not to damage O-Rings grooves during removal.
- Clean O-Ring grooves.
- Apply a very thin film of Halocarbon 25-5S or Krytox® Grease to the new O-Rings and install them.
- Reassemble the Valve in reverse order of this section's instructions.

3.1.2. Bonnet Face O-Ring

- The Bonnet Face O-Ring (15) can be replaced by first removing the Bonnet per the instruction given in Section 1.1.

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- Remove O-Ring from Bonnet Face, taking care not to damage the O-Ring groove during removal.
- Clean O-Ring groove.
- Apply a very thin film of Halocarbon 25-5S or Krytox® Grease to the new O-Ring and install it.
- Reassemble valve per Section 1.3 instructions.

3.2. SEAL DISC REPLACEMENT

- The Seal Disc (36) is replaced by first removing the Barrel (21) and plug assembly per Section 1.1 instructions.
- Remove the Seal Disc from the Barrel and replace it.
- Reassemble valve per Section 1.3 instructions.

4. PRESSURE RATINGS

TV-11 valves from ¼” to 1” tube are designed for a maximum allowable working pressure (MAWP) of 600 psig for temperatures up to 120°F.

Valves are individually tested to the customer-specified required pressure. Not all valves are tested to the MAWP.

5. CONTACT INFORMATION

PHPK Technologies
2111 Builders Place
Columbus, OH 43204

Tel (614) 486-4750
Fax (614) 486-4950

www.phpk.com

6. REPLACEMENT PARTS

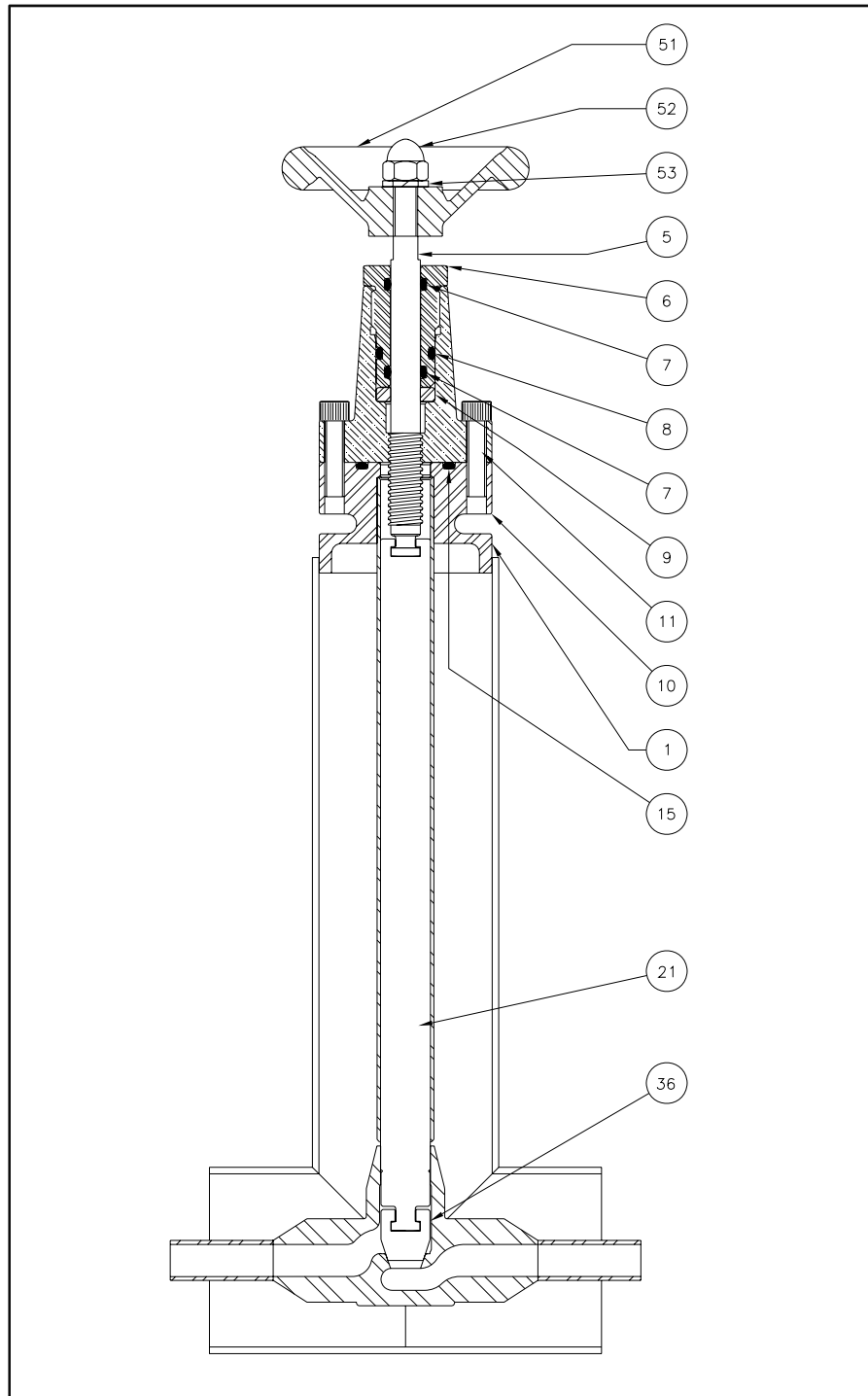


Figure 1 – Parts Diagram


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Table 1 – Parts List, ¼” to 1” Tube Valves

Item	Description	Qty	Part Number
1	Valve Body	1	customer specified
5	Stem	1	81-400-010
6	Gland Nut	1	81-390-010
7	O-Ring, Gland Nut Inner (Viton® ¹)	*2	11-02-2110
8	O-Ring, Gland Nut Outer (Viton® ¹)	*1	11-02-2113
9	Bonnet Bearing	1	81-320-490
10	Bonnet Housing	1	81-320-010
11	Bolt, Bonnet (Niflor™ ² Coated)	6	81-541-020
15	O-Ring, Bonnet Face (Viton® ¹)	*1	11-02-2121
21	Barrel	1	81-430-010
36	Seal Disc (Neoflon® ³ M-400H)	*1	81-480-010
51	Handwheel	1	81-420-010
52	Nut, Handwheel	1	FAS-70981
53	Lock Washer, Handwheel	1	FAS-71065
95	Soft Goods Spare Parts Kit	1	81-901-010
96	O-Ring Grease (Halocarbon 25-5S or Krytox® ⁴)	*1	11-06-0001

* Recommended spare item.

¹Viton® is a registered trademark of DuPont for a fluoroelastomer.

²Niflor™ is a trademark of Atotech USA for a composite coating of PTFE and electroless nickel.

³Neoflon® is a registered trademark of Daikin for PCTFE; Kel-F® 81 is a registered trademark of 3M for PCTFE.

⁴Krytox® is a registered trademark of DuPont.