

VP526A Three-Way High Pressure Water Valve

Service Data

General

Description

The VP526A Three-Way High Pressure Water Valve is a three-way mixing valve with an integral pneumatic actuator used in fan coil units having hot and/or chilled water coils.

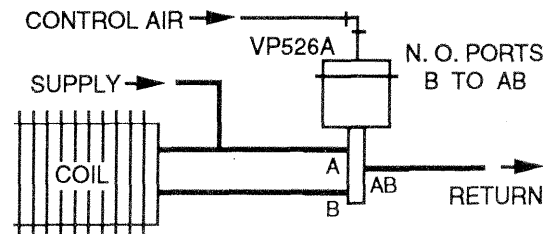
Three design modifications have been made to this valve, each designated by a series number, which is separated from the model number by a dash or space (VP526A1001 3).

The production dates of these modifications are as follows:

Series No.	Mfg. Date
1	Prior to 1971
2	1971 through 1976
3	1977 to present

Application

The VP526A is used to bypass water around the coil (Fig. 1). It is controlled by a pneumatic thermostat to vary the temperature of the air discharged from the unit according to the temperature sensed by the thermostat. Models with 2 to 5 psi (14 to 34 kPa) or 8 to 11 psi (55 to 76 kPa) operating spring ranges are used in systems where the VP526A is sequenced with another valve or other control function.



C2726

Fig. 1. Typical Piping Diagram.

Operation

Minimum control air from the temperature controller closes Port A and opens Port B providing full flow through the coil.

As the air pressure increases into the operating range, the valve plug moves away from the upper seat, which bypasses some water back to the system reducing the flow through the coil. When the air pressure exceeds the operating range, the valve is closed to Port B and open to Port A, bypassing all flow back to the system,

Specifications

Valve Sizes:

- 3/8 in. for 1/2 in. O.D. tube
- 1/2 in. for 5/8 in. O.D. tube

Capacity Index (Cv):

- 3/8 in. valve: 1.0 or 1.6 Cv
- 1/2 in. valve: 1.6 or 2.5 Cv

Body Pressure Rating:

250 psi (1734 kPa) maximum

Controlled Medium Temperature:

35 to 250F (2 to 121C)

Close-Off Rating:

Refer to Figure 2

Operating Ranges:

Refer to Figure 2

Maximum Safe Air Pressure:

30 psi (207 kPa)

Maximum Diaphragm Temperature:

230F (110C)

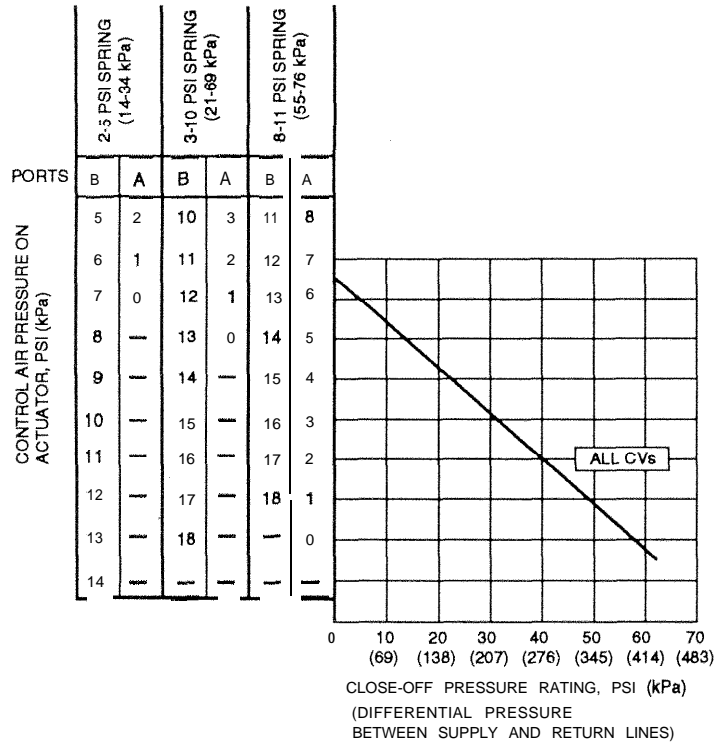


Fig. 2. Close-Off Ratings.

Maintenance

Inspection

Check valves for signs of leakage around the stem, bonnet, or connections.

Cleaning

Remove all dirt and grease accumulation from the valve assembly. A recommended cleaning solvent is Chlorothene or Vythene (containing trichloroethane, inhibited I-I-1) available at most office supply stores.

! WARNING !

Permanent damage to the respiratory system or skin tissue can result from careless handling of solvents. Use in a well-ventilated area. Employ special care in the handling and use of solvents to avoid prolonged inhalation and/or contact with the skin.

Operational Check

With the valve piped as in Figure 1 and hot or chilled water available at the valve, adjust the thermostat setting above the present room temperature. The temperature at the coil and discharge air should increase for heating applications with direct acting thermostat or cooling applications with reverse acting thermostat.

Adjust the setpoint below room temperature. The coil and discharge air temperature should decrease.

The valve operation should be smooth and occur within the valve operating spring range CI psi (7 kPa).

Troubleshooting

Special Tools

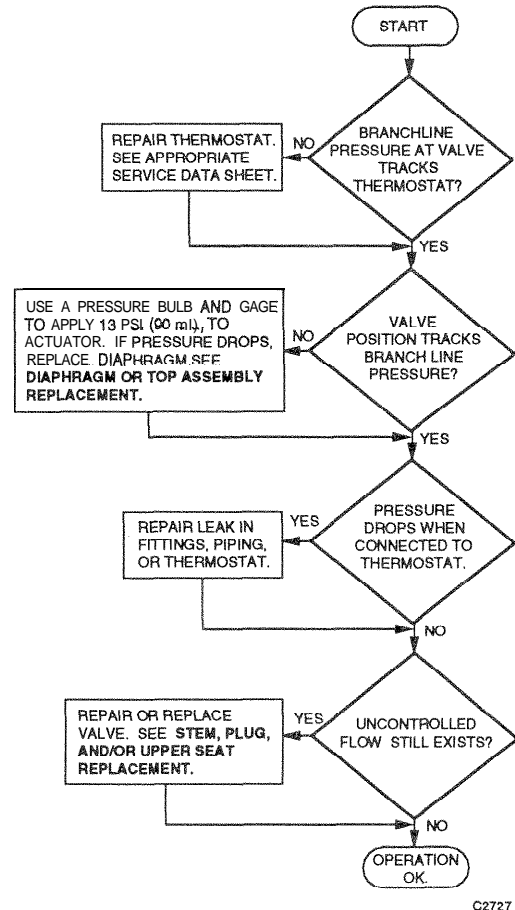
Pressure bulb and gage assembly, consisting of:

1. Pressure bulb, MQP852.
2. Gage, 0 to 30 psi, 305965.
3. "T" fitting (1/4 x 1/4 barb x 1/8 FPT), MJP1614B.
4. Tubing (11/32 O.D. x 5/32 I.D.), MQP853

Procedure

If there is evidence of stem sticking or leakage around the stem or bonnet, repack the valve.

If flow through valve is uncontrollable, refer to Figure 3.



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Fig. 3. Uncontrolled Flow Troubleshooting Flowchart.

Repair

Special Tools

1. Thin open-end wrench (Series 1 and 2):
1-1/4 in. CCT638 for valve bonnet, 1/2-in. O. D.
(3/8-in. nominal) valve.
1-1/2 in. CCT641 for valve bonnet, 5/8-in. O. D.
(1/2-in. nominal) valve
2. Thermostat key, 301572A-00605, to remove
tamperproof cover mounting screw on some models.
3. Upper valve-seat removal tool:
CCT3843 for 1/2-in. O. D. (3/8-in. nominal) valves.
CCT3833 for 5/8-in. O. D. (1/2-in. nominal) valves.

Diaphragm or Top Assembly Replacement

The diaphragm can be replaced in all models, however it is recommended that the entire top assembly be replaced with either the standard top assembly or the vandalism shield (top) assembly which are interchangeable.

CAUTION

Plastic clips on interim connector are easily broken during disassembly. It is recommended that the top assembly be replaced.

To replace diaphragm:

1. Disconnect air tubing from actuator.
2. Use small screwdriver to remove retainer or thermostat key to remove tamperproof screw from side of cover (Fig. 4 or 5). Twist cover counterclockwise and lift off top assembly.
3. Remove nut and male adapter to separate connector and diaphragm from cover or very gently push tabs towards center and push down on connector until the connector and diaphragm separate from cover.
4. Roll leaky diaphragm off connector and install new diaphragm.
5. Reassemble top assembly and reconnect to bonnet assembly (Series 1 and 2) or base (Series 3).
6. Reconnect air tubing and perform operational test.

To replace top assembly:

1. Disconnect air tubing from actuator.
2. Use small screwdriver to remove retainer or thermostat key to remove tamperproof screw from side of cover (Fig. 4 or 5). Twist cover counterclockwise and lift off top assembly.
3. Install replacement top assembly, connect tubing, and perform operational check (see MAINTENANCE).

Repacking Procedure

This procedure requires the use of Repack Kit 14003297-001.

1. Remove system air and water pressure. Disconnect air tubing from actuator.
2. Use small screwdriver to remove retainer or thermostat key to remove tamperproof screw from side of cover (Fig. 4 or 5). Twist cover counterclockwise and lift off top assembly.
3. Remove cup and spring by sliding cup to disengage stem from captive hole in cup.
4. a. Series 1 or 2—unscrew and lift packing nut off stem.
b. Series 3—unscrew base and lift off stem. Lift packing gland off stem.
5. Remove packing from bonnet.
6. Clean bonnet and packing nut or gland with Chlorothene or Vythene.



Permanent damage to the respiratory system or skin tissue can result from careless handling of solvents. Use in a well-ventilated area. Employ special care in the handling and use of solvents to avoid prolonged inhalation and/or contact with the skin.

7. Inspect stem to be sure it is straight and free of scratches. Replace stem (order separately) if necessary (see STEM, PLUG, AND/OR UPPER SEAT REPLACEMENT).
8. Use parts and new lubricant from kit to replace spring, spacers, and packings in the order shown in Figures 4 and 5.
9. Replace packing nut or packing gland and base.
10. Replace spring, cup, and top assembly. Make sure that the cup captive hole engages the stem.
11. Restore air and water pressure to system and make operational check (see MAINTENANCE).

Stem, Plug, and/or Upper Seat Replacement

1. Remove air and water pressure. Disconnect air tubing from actuator.
2. Use small screwdriver to remove retainer or thermostat key to remove tamperproof screw from side of cover (Fig. 4 or 5). Twist cover counterclockwise and lift off top assembly.
3. Remove cup and spring by sliding cup to disengage stem from captive hole in cup.
4. a. Series 1 or 2—unscrew and lift packing nut off stem.
b. Series 3—unscrew base and lift off stem. Lift packing gland off stem.
5. Use a thin open-end wrench to unscrew bonnet. Lift bonnet off stem.
6. Remove packing from bonnet.
7. Clean bonnet and packing nut or gland with Chlorothene or Vythene.



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8. Use upper valve seat removal tool to remove the upper valve seat (Fig. 6).
9. Lift out plug and stem assembly.
10. Inspect stem to be sure it is free of scratches and straight. Inspect plug and upper and lower seats for damage. Use new plug, stem, and/or upper seat when reassembling if necessary. If the lower seat is damaged, replace the complete valve assembly.
11. If necessary to replace plug or stem, remove “C” clip from bottom of stem. Slide plug off stem discarding tension washer and washer. Also remove and discard O-ring, tension washer, washer, and “C” clip from above plug.
12. Reassemble plug and stem assembly using new stem and/or plug with new O-ring, “C” clips, tension washers, and washers.
NOTE: The convex surface of the tension washers must be in contact with the plug.
13. Reassemble valve and perform operational check (see MAINTENANCE).

Parts and Accessories

Parts

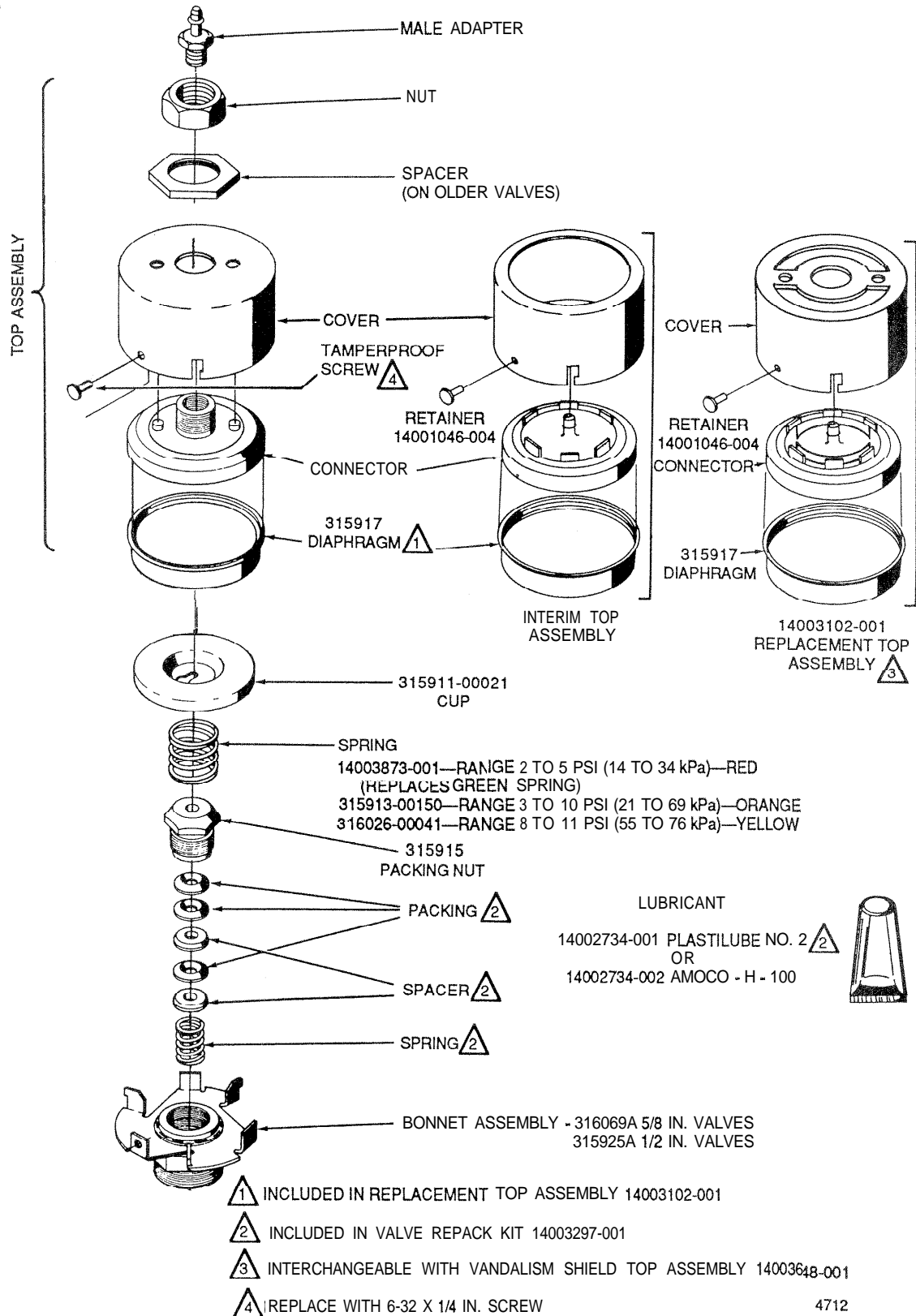
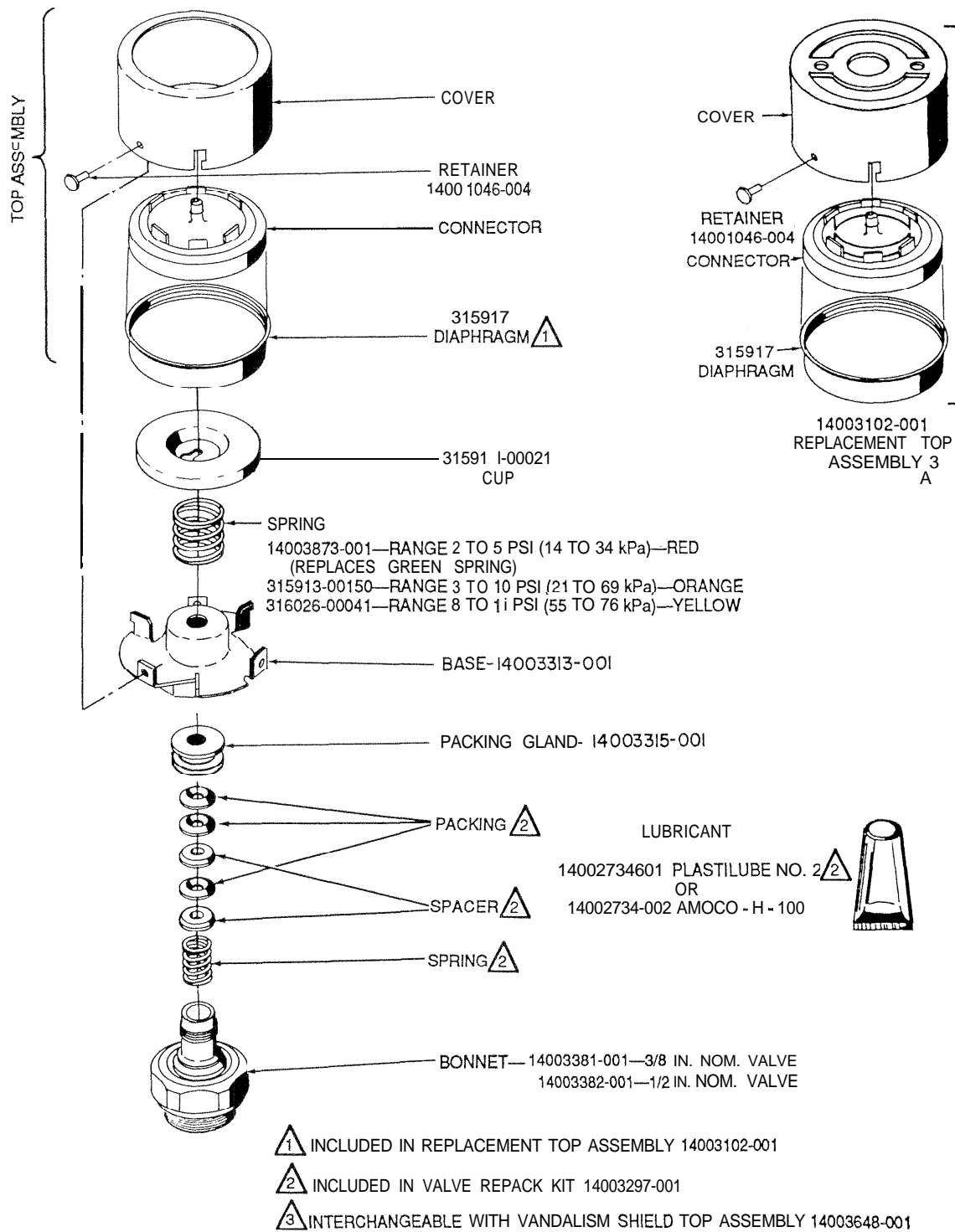
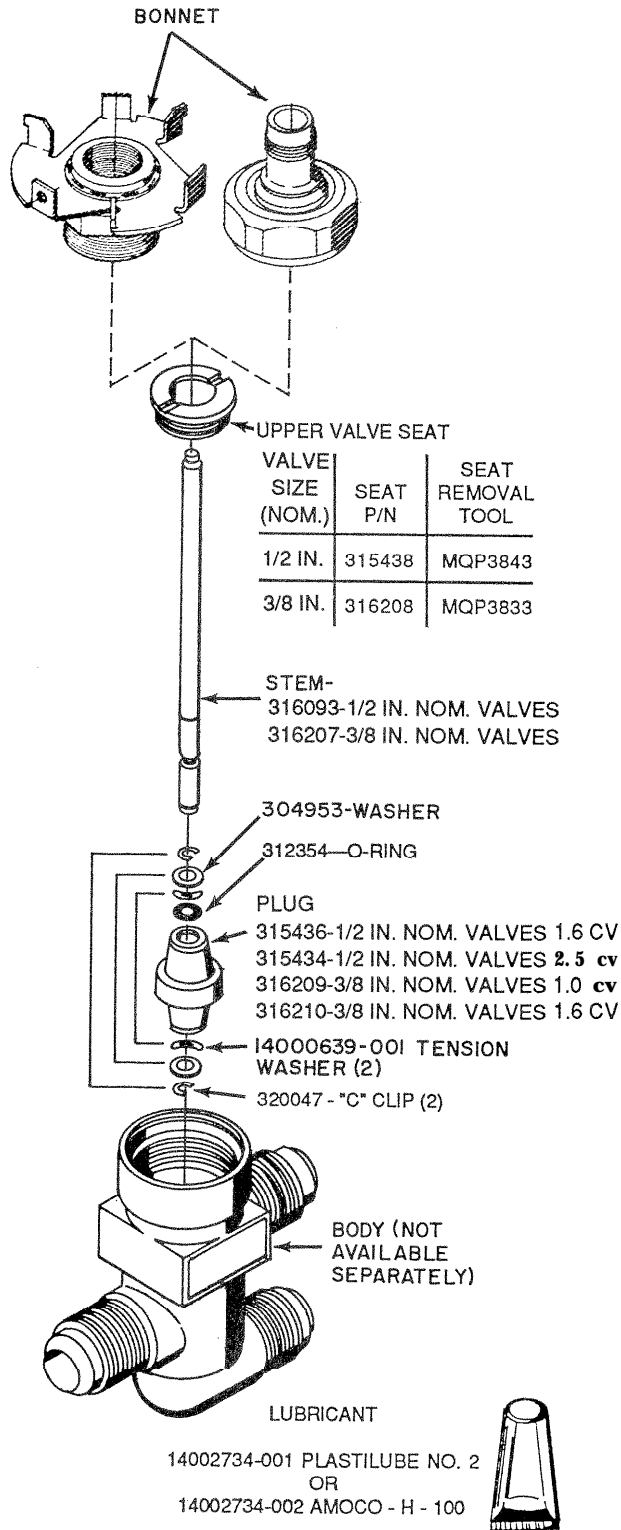


Fig. 4. Exploded View of Series 1 and 2 VP526A Valve Packing and Top.



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Fig. 5. Exploded View of Series 3 VP526A Valve Packing and Top.



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Fig. 6. Exploded View of VP526A Valve Body and Stem Assembly,

Accessories

Position Indicator (Fig. 7) 14001101-001.

Vandalism Shield Top Assembly (Fig. 8) 14003648-001.

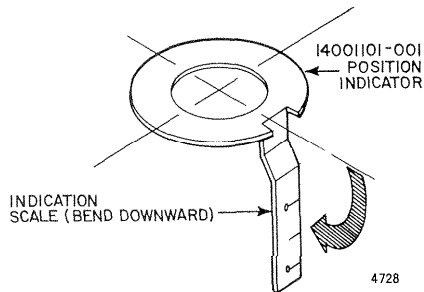


Fig. 7. Position Indicator.

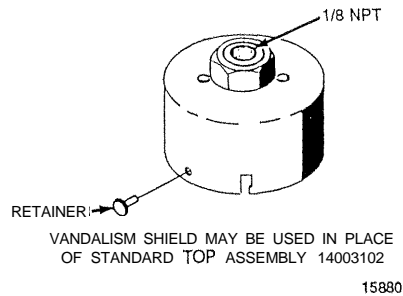


Fig. 8. Vandalism Shield Top Assembly.

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