SHERWOOD
a harsco company

# "YVA" SERIES LINE VALVES
# TECHNICAL SPECIFICATIONS

## IMPORTANT!

This specification is intended for use with **"YVA" Series Line Valve Assemblies**.
**MAKE SURE YOU ARE USING THE CORRECT SPECIFICATION!**

## REFERENCE DATA:

**Pressure**
Proof: 25,000 PSIG Minimum
Test: System Service Pressure up to 6000 PSIG Maximum

**Temperature - Storage**
Minimum: -65 F
Maximum: 155 F

**Temperature - Operating**
Minimum: -50 F
Maximum: 120 F

**Cycle Life:**
Minimum: 5000 cycles

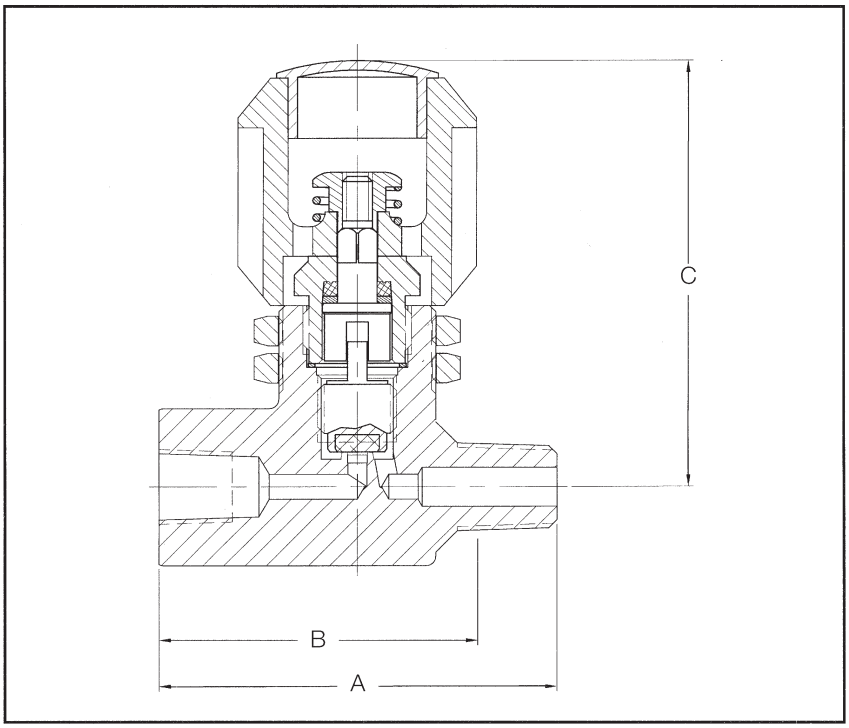
## CONFORMS TO ALL REQUIREMENTS OF:

MIL-DTL-2E DOD
Specification for Gas Cylinder Valves

CGA V-9
Standard for Gas Cylinder Valves

CGA S - 1.1
Standard for Pressure Relief Devices

CGA V-1
Compressed Gas Cylinder Valve
Outlet and Inlet Connections




**"YVA" SERIES LINE VALVES**
(See Repair Section for detail parts breakdown)

## TORQUE VALUES FOR "YVA" SERIES LINE VALVES

| Description | Torque |
|---|---|
| Operating Torque @ 0 PSIG Inlet Pressure | 1 - 2 in. lb. |
| Closing Torque @ 2000 PSIG Inlet Pressure | 2 - 3 in. lbs. |
| Bonnet Installation Torque | 25 to 30 ft. lbs. |
| Stem Nut Installation Torque | Nut Flush with top of Stem |



T-CG02DD97

## MATERIALS OF CONSTRUCTION FOR "YVA" SERIES LINE VALVES

| Part Description | Material of Construction |
|---|---|
| Body | Forging Brass UNS Alloy #37700, Chrome Plated |
| Bonnet | Free Machining Brass, UNS ASTM B-16-53, Chrome Plated |
| Gasket | Copper |
| Handwheel | Lexan® |
| Handwheel Cap | Lexan® |
| Lower Plug | Leaded Naval Brass, UNS Alloy #C34200 |
| Lower Plug Seat | Nylon: Zytel® 101 or Celanese 1000-11 |
| Packing (3506-18) | Viton® |
| Packing (3506-7) | Virgin Teflon® |
| Panel Mount Nut (as required) | Free Machining Brass, UNS Alloy #36000, Chrome Plated |
| Spring | Type 302 Stainless Steel, Passivated |
| Stem | Aluminum Silicon Bronze Alloy # 708-8, Nickel Plated |
| Stem Nut | Free Machining Brass, UNS Alloy 36000 |

## FLOW AND DIMENSIONS FOR "YVA" SERIES LINE VALVES: FOR ALL OUTLET TYPES

| | | | |
|---|---|---|---|
| FLOW DATA | Seat Orifice Diameter (inches) | | 0.120 |
| | Flow Constant: Cv - Full Open | | 0.284 |
| | Flow CFM @ 2000 PSIG Inlet | | 280 |
| APPROXIMATE DIMENSIONS (INCHES) FOR ALL INLET TYPES | Overall Length | (A) | 2.50 |
| | Length of Valve Installed in Line* | (B) | 2.11 |
| | Centerline of Inlet to Top of Handwheel | (C) | 2.70 |

* Valves with tapered threaded inlets are calculated to 7 ¾ threads engagement.



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# "YVA" SERIES LINE VALVES REPAIR INSTRUCTIONS

**IMPORTANT!**

This procedure is intended for use with **YVA Series Line Valve Assemblies**.
**MAKE SURE YOU ARE USING THE CORRECT PROCEDURE!**

READ THIS INSTRUCTION SHEET COMPLETELY BEFORE PROCEEDING.
These instructions are intended for people familiar with compressed gas equipment and applications.
**IF YOU ARE NOT FAMILIAR WITH THIS EQUIPMENT, STOP.**

Refer to **Figure 1.0** for a detail drawing and **Table 1.0** for a complete parts list breakdown for all of the YVA SERIES LINE VALVE ASSEMBLIES.

## DISASSEMBLY

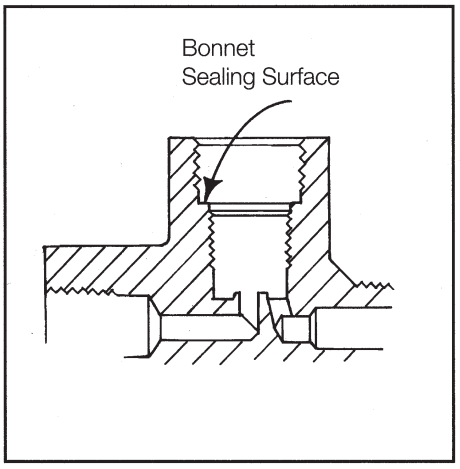
**⚠WARNING**

If the **Valve Assembly** is still installed in the system, verify that the system is not pressurized before making repairs. **Valve Assembly** components can be propelled out of the **Valve Body** if the **Bonnet** or **Pressure Relief Device** is removed while the system is still pressurized.

Place the **Valve Assembly** into a **Vise** or similar **Holding Fixture**. Do not damage the inlet and outlet threads. The **Holding Fixture** must securely grip the **Valve Body** on the sides so no damage is done to the internal bores, external threads or outlet.

### A. CHAMBER

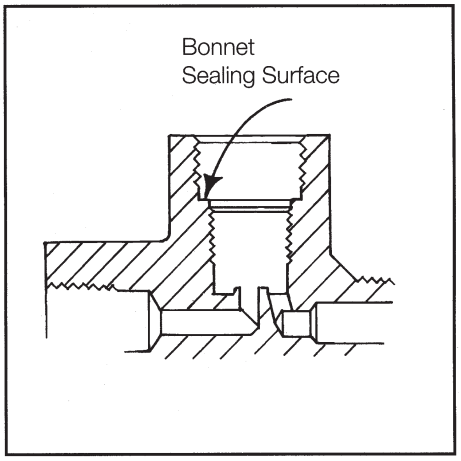
1. Remove the **Handwheel Cap** by inserting a thin straight bladed **Screw Driver** under the lip and gently prying it up.
2. Remove the **Stem Nut** from the **Stem** using a straight bladed **Screw Driver**.
3. Remove the **Spring** and the **Handwheel** from the **Stem**.
4. Using a **$^{11}/_{16}$" Socket** or **Hex Box Wrench** loosen the **Bonnet** by turning it counter clockwise.
5. Remove the **Bonnet** and **Stem** as a unit by lifting the **Stem** out of the **Body**.
6. Carefully remove the **Gasket** from the **Valve** chamber. Be careful not to scratch the **Bonnet** sealing area in the valve **Body**.
7. Remove the **Bonnet** from the **Stem** by pulling the **Bonnet** and the **Stem** apart.
8. Remove the two (2) **Packings** from the **Stem**.
9. Use the **Stem** to remove the **Lower Plug** from the **Valve** chamber, by turning it counter clockwise.
10. Remove the **Lower Plug** from the **Valve** chamber.




BONNET SEALING SURFACE
ON VALVE BODY

## INSPECTION OF VALVE COMPONENTS

1. **Valve Body** - Inspect the **Valve Body** chamber bore for dirt, debris and damage.
   a. Where possible, blow out the **Valve Body** chamber using clean, dry compressed air or Nitrogen to remove any foreign particles.
   b. Inspect the **Bonnet** sealing surface for damage or scratches.
   c. If the **Valve Body** is damaged, do not attempt to repair. Order a new **Valve Assembly**.
2. **Bonnet** - Inspect the **Bonnet** for damage to the sealing surface or the external threads. If the sealing surface or the threads are damaged, replace the **Bonnet**.
3. **Lower Plug** - Always discard.
4. **Packings** - Always discard.
5. **Panel Mount Nuts** - Inspect for damage. Replace as required.
6. **Stem** - Examine the **Stem** for straightness. If the **Stem** is twisted or bent, replace the **Stem**.




BONNET SEALING SURFACE
ON VALVE BODY

## ASSEMBLY

**⚠WARNING**

The "YVA" SERIES LINE VALVES can be used in the medical industry and in oxygen saturated environments. ALL PARTS MUST be clean, free of oil, chips and other contaminant particles before beginning assembly. CONTAMINANT PARTICLES CAN IGNITE IN THE PRESENCE OF OXYGEN.

### A. CHAMBER

**NOTE:** This valve requires no lubrication on any internal components except for the **Lower Plug**, the **Gasket** and the 3506-7 and the 3506-18 **Packings**. The lubrication used on these parts MUST be oxygen compatible. Sherwood recommends use of Christo-lube® MCG111, Fluorolube® GR362, Krytox® 240AB or an equivalent lubricant.

1. Put a dab of lubricant onto the threads on the **Lower Plug**. (See NOTE above for approved lubricants.)
2. Being careful not to scratch the **Bonnet** sealing surface in the **Valve Body**, install the **Lower Plug** into the chamber of the **Body**.
3. Tighten the **Lower Plug** using the **Stem** as a driver until it is snug in the **Valve** chamber.
4. Lightly lubricate the **Gasket** and place it into the **Valve Body**, making sure it lies flat on the ledge inside the **Valve Body**. (See NOTE above for approved lubricants.)

5. Install the **Stem** into the **Valve Body** making sure the slot on the **Stem** lines up with the tang on the **Lower Plug**.
6. Place a lightly lubricated 3506-18 **Packing** onto the **Stem.** (See NOTE on previous page for approved lubricants.)
7. Place a lightly lubricated 3506-7 **Packing** onto the **Stem.** (See NOTE on previous page for approved lubricants.)
8. Install the **Bonnet** over the **Stem** and engage one thread of the **Bonnet** into the **Body,** by hand.
9. Tighten the **Bonnet** to 25 - 30 ft. lbs. using a **$^{11}/_{16}$" Socket** and a **Torque Wrench.**

**NOTE:** A properly calibrated **Torque Wrench** MUST be used to tighten the **Bonnet**. Excessive tightening will damage the **Bonnet** threads and prematurely wear the **Packings**.

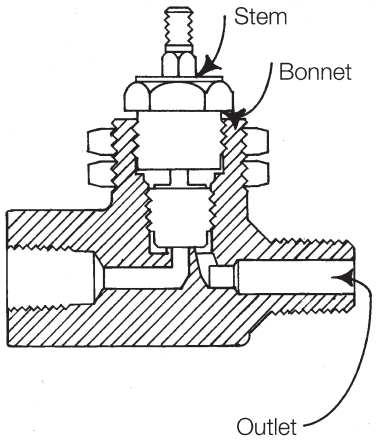
10. The **Handwheel** and **Stem Nut** will be installed after the **Valve Assembly** is tested.

## TESTING OF ASSEMBLED VALVE

1. Thoroughly test each repaired **Valve Assembly** by inserting and tightening the **Valve Assembly** into a suitable test fixture. Pressurize the **Valve Assembly** with the proper gas to the working pressure of the system.

**⚠CAUTION**

Commercial or household detergents should NEVER be used as a leak detection solution. These products may contain ammonia, phosphates, or other chemicals which are harmful to copper alloys and can initiate stress corrosion cracking of these alloys. Only approved solutions, such as **Snoop®**, **Sherlock®**, or equivalent solutions should be used.




LEAK CHECK AREAS FOR
"YVA" LINE VALVES

2. With the outlet suitably plugged, open the **Valve Assembly** slowly by turning the **Stem** counter clockwise. Check the **Bonnet Threads** and **Stem** areas for leaks using a proper leak detection solution.
3. Close the **Valve Assembly** by turning the **Handwheel** clockwise. Remove the outlet plug and check for seat leakage through the outlet using a proper leak detection solution.
4. If any leakage is detected, in the open or closed position, make necessary repairs before using the **Valve Assembly**.

## FINAL ASSEMBLY

1. Place the **Handwheel**, the **Spring** and the **Stem Nut** onto the **Stem**.
2. Tighten the **Stem Nut** using a straight bladed **Screw Driver** until the **Stem Nut** is flush with the top of the **Stem**.

## PARTS LIST

### IMPORTANT!

Sherwood manufactures many different types of YVA Series Line Valve Assemblies. The valves are generally the same, except for the body. SHERWOOD DOES NOT REPLACE VALVE BODIES. If the body is damaged, replace the entire Valve Assembly. Table 1.0 below lists the COMMON replacement parts for repairing **"YVA" Series Line Valve Assemblies**. Table 2.0 below lists the replacement parts for SPECIFIC Valve Assemblies. If there is **ANY QUESTION** as to the correct replacement part number, call Sherwood Customer Service at (716)-283-1010 with the following information:

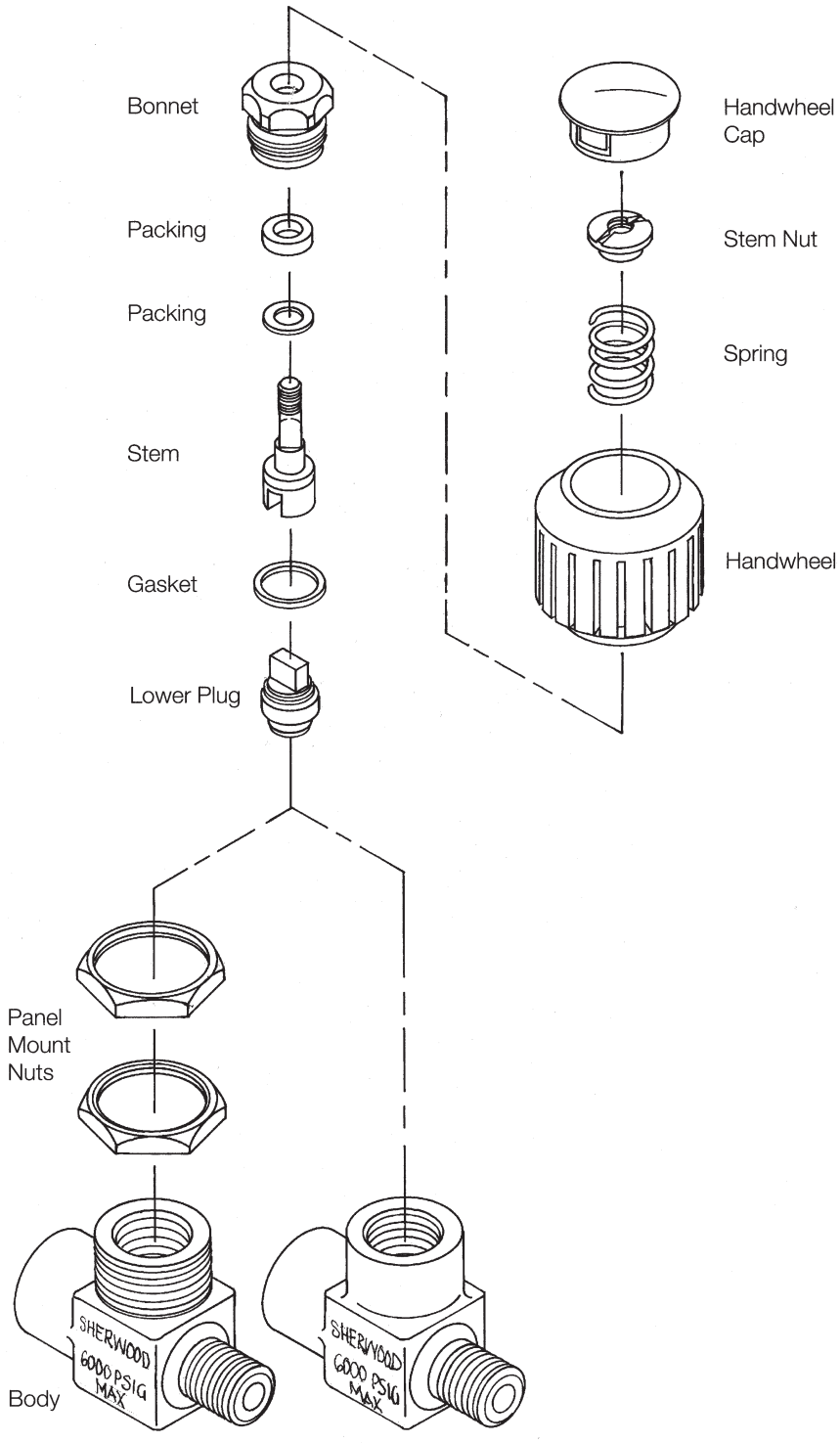
- The part number of the **Valve Assembly** being repaired.
- Type of system to be used.

**TABLE 1.0 "YVA" SERIES LINE VALVES COMMON PARTS LIST**

| Quantity | Name | Part Number |
|---|---|---|
| 1 | Bonnet | 1-3506-14 |
| 1 | Gasket | 3506-10 |
| 1 | Handwheel | 1389-2D |
| 1 | Handwheel Cap | 1389-4 |
| 1 | Lower Plug | 3506-9 |
| 2 | Panel Mount Nuts | See Table 2.0 below |
| 1 | Packing | 3506-18 |
| 1 | Packing | 3506-7 |
| 1 | Spring | 19-3506-11 |
| 1 | Stem | 9-3506-12 |
| 1 | Stem Nut | 1-3506-8 |

**TABLE 2.0 "YVA" SERIES LINE VALVE SPECIFIC PARTS LIST**

| Part Number | Panel Mount Nuts |
|---|---|
| YVA3010 | None |
| YVA3010A | 9-3011A |
| YVA3011 | None |
| YVA3011A | 9-3011A |




## FIGURE 1.0 "YVA" SERIES LINE VALVE ASSEMBLY