SHERWOOD
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"YVB" SERIES VALVES
TECHNICAL SPECIFICATIONS

IMPORTANT!

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

REFERENCE DATA:

Pressure

Proof: 12,000 PSIG Minimum

Test: Cylinder Service Pressure or 3000 PSIG (whichever is less)

Temperature - Storage

Minimum: -65 F
Maximum: 155 F

Temperature - Operating

Minimum: -50 F
Maximum: 120 F

Cycle Life:

Minimum: 5000 cycles

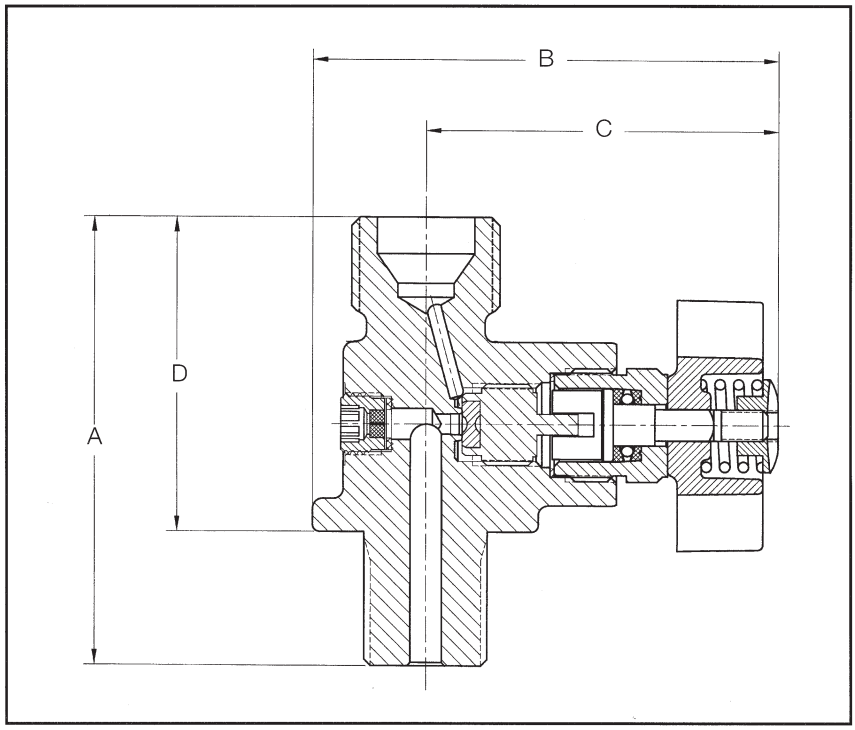
CONFORMS TO ALL REQUIREMENTS OF:

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



"YVB" SERIES VALVES
(See Repair Section for detail parts breakdown)

TORQUE VALUES FOR "YVB" SERIES VALVES

Description	Torque
Operating Torque @ 0 PSIG Inlet Pressure	1 in. lb.
Closing Torque @ 2000 PSIG Inlet Pressure	1 - 2 in. lbs.
Bonnet Installation Torque	25 to 30 ft. lbs.
Pressure Relief Device Installation Torque	50 to 65 in. lbs.
Stem Nut Installation Torque	Nut Flush with top of Stem

T-CG02EE97

MATERIALS OF CONSTRUCTION FOR "YVB" SERIES 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
Filter (as required)	Sintered Bronze - 40 micron
Filter Retainer (as required)	Free Machining Brass UNS Alloy #36000
Gasket	Copper
Handwheel	Lexan®
Lower Plug	Leaded Naval Brass, UNS Alloy #C34200
Lower Plug Seat	Nylon: Zytel® 101 or Celanese 1000-11
O-ring	Viton®
Packing	Virgin Teflon®
Pressure Relief Device Assembly	
Body	Free Machining Brass UNS Alloy #36000 (with 212° F or 165° F fusible metal for backed devices)
Rupture Disc	Nickel Alloy 201
Retainer Gasket	Nylon: Zytel® 101 or Celanese 1000-11
Spring	Type 302 Stainless Steel, Passivated
Stem	Aluminum Silicon Bronze Alloy # 708-8, Nickel Plated
Stem Nut	Free Machining Brass, UNS Alloy 36000

INLET O-RING FOR STRAIGHT THREADED "YVB" SERIES VALVES

Size	Material	Part Number
0.625 UNF	Buna	G208A
	Teflon®	G208T
0.750 UNF	Buna-N	G210A9
	Teflon®	G210T

FLOW AND DIMENSIONS FOR "YVB" SERIES VALVES: CGA OUTLET NUMBER 540

FLOW DATA	Seat Orifice Diameter (inches)		0.120
	Flow Constant: Cv - Full Open		0.102
	Flow CFM @ 2000 PSIG Inlet		100.4
APPROXIMATE DIMENSIONS (INCHES) FOR ALL INLET TYPES	Overall Height	(A)	2.71
	Overall Width	(B)	2.83
	Centerline to Face of Handwheel Nut	(C)	2.15
	Height of Valve Installed in Cylinder*	(D)	1.90

* Valves with tapered threaded inlets are calculated to 7¾ threads engagement. Valves with straight threaded inlets are measured from top of the cylinder to the top of the Valve.

T-CG02EE97

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"YVB" SERIES VALVES REPAIR INSTRUCTIONS

IMPORTANT!

This procedure is intended for use with **YVB Series 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 3.0** for a complete parts list breakdown for all of the YVB SERIES VALVE ASSEMBLIES.

DISASSEMBLY

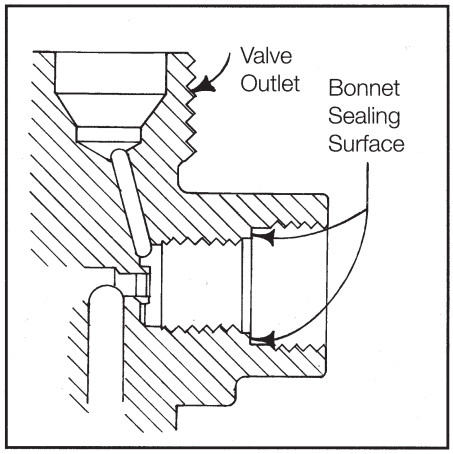
⚠WARNING

If the **Valve Assembly** is still in the cylinder, verify that the cylinder 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 cylinder 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 **Stem Nut** from the **Stem** using a straight bladed **Screw Driver.**
2. Remove the **Spring** and the **Handwheel** from the **Stem.**
3. Using a **$^{11}/_{16}$" Socket** or **Hex Box Wrench** loosen the **Bonnet** by turning it counter clockwise.
4. Remove the **Bonnet** and **Stem** as a unit by lifting the **Stem** out of the **Body.**
5. Carefully remove the **Gasket** from the **Valve** chamber. Be careful not to scratch the **Bonnet** sealing area in the valve **Body.**
6. Remove the **Bonnet** from the **Stem** by pulling the **Bonnet** and the **Stem** apart.
7. Remove the two (2) **Packings** and the **O-ring** from the **Stem.**



BONNET SEALING SURFACE ON VALVE BODY

8. Use the **Stem** to remove the **Lower Plug** from the **Valve** chamber, by turning it counter clockwise.
9. Remove the **Lower Plug** from the **Valve** chamber.
10. If required, remove the **Inlet O-ring** from the **Valve** inlet. (See **Table 3.0** to determine if the **Valve Assembly** being repaired contains an **Inlet O-ring.)**

B. PRESSURE RELIEF DEVICE (PRD)

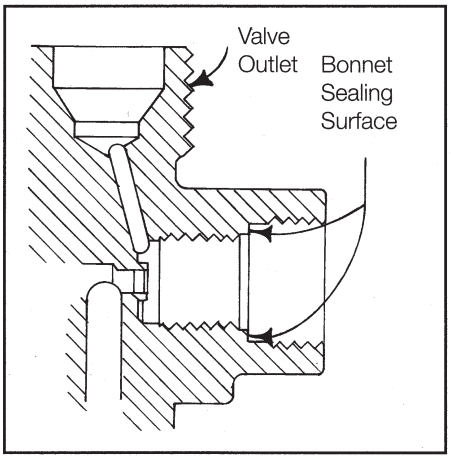
1. Remove the **Pressure Relief Device** by turning it counter clockwise using the tool indicated below.
   a. If the **Plug** is slotted, use the proper size straight bladed **Screw Driver.**
   b. If the **Plug** is internal hex broached, use a **$^3/_{16}$" Allen Wrench.**
   c. If the **Plug** is an external hex, use a **$^3/_8$" Socket** or **Hex Box Wrench.**
   d. If the **Plug** is **Torx®** broached, use a **Torx #30** Driver.

NOTE: The **Rupture Disc** and the **Gasket** may remain in the **Valve Body** after the **Plug** is removed.

2. If the **Rupture Disc** and the **Gasket** remain in the **Valve Body,** use a sharp pointed instrument inserted into the CENTER of the **Rupture Disc** and carefully pry up to remove them from the **Valve Body.** Do not damage the sealing surface on the **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.**



BONNET SEALING SURFACE
ON VALVE BODY

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. **O-ring** - Always discard.
4. **Lower Plug** - Always discard.
5. **Inlet O-ring** - Inspect for damage. Replace as required.
6. **Pressure Relief Device**
   a. **Rupture Disc** - Always discard.
   b. **Gasket** - Always discard.
   c. **Plug** - Discard the Plug regardless of its style. Sherwood now supplies replacement **Pressure Relief Devices** only as a complete assembly, which includes the **Plug, Rupture Disc** and **Gasket.**
7. **Packings** - Always discard.
8. **Stem** - Examine the **Stem** for straightness. If the **Stem** is twisted or bent, replace the **Stem.**

ASSEMBLY

⚠WARNING

The "YVB" SERIES VALVES are 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 G010H **O-ring.** 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 lays 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 **Packing,** flat side down, onto the **Stem.**
7. Place a lightly lubricated **O-ring** onto the **Stem.** (See NOTE above for approved lubricants.)
8. Place another **Packing,** flat side up, onto the **Stem.**
9. Install the **Bonnet** over the **Stem** and engage one thread of the **Bonnet** into the **Body,** by hand.
10. Using a **$^{11}/_{16}$" Socket** and a **Torque Wrench** tighten the **Bonnet** to 25 - 30 ft. lbs.

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.**

11. Place the **Handwheel,** the **Spring** and the **Stem Nut** onto the **Stem.**
12. Tighten the **Stem Nut** using a straight bladed **Screw Driver** until the **Stem Nut** is flush with the top of the **Stem.**
13. Install the **Inlet O-ring** onto the **Valve inlet,** if required.

B. PRESSURE RELIEF DEVICE

1. Sherwood now supplies replacement **Pressure Relief Devices** only as a complete assembly, which includes a **Plug, Rupture Disc** and **Gasket.** Follow instructions below for both types of **Pressure Relief Devices.**

Torx Broached (flush) type assembly - Part Number 6513MF-XX*
External Hex type assembly - Part number 9-4000-60-XX*

* See Table 1.0 for correct replacement part number

TABLE 1.0 PRESSURE RELIEF DEVICE SELECTION CHART FOR YVB SERIES VALVES

-XX SUFFIX	CYLINDER SERVICE PRESSURE	DISC RUPTURE RANGE PSIG AT 160° F		RUPTURE DISC STAMPING	PRESSURE RELIEF DEVICE REPLACEMENT PART NUMBER	
		MINIMUM	MAXIMUM		CG-1 WITH NO FUSE METAL	CG-4 WITH FUSE METAL
-28	1800	2700	3000	3000	9-4000-60-28	6513MF-28
-32	2015	3025	3360	3360	9-4000-60-32	6513MF-32
-38	2400	3600	4000	4000	9-4000-60-38	6513MF-38
-48	3000	4500	5000	5000	9-4000-60-48	6513MF-48

NOTE: A **Valve Assembly** used for liquid gases, such as carbon dioxide and nitrous oxide, must not contain fusible metal in the **Plug** in accordance with the Compressed Gas Association (Publication S-1.1). This style **Plug** (with no fuse metal) will be an external hex style with radial exhaust ports located on the hex sides of the **Plug.**

NOTE: All flush type **Pressure Relief Devices** with fusible metal will have a small hole drilled through the center of the fuse metal. This is a leak detection hole, and in no way compromises the integrity and purpose of the fuse metal.

2. Screw the **Pressure Relief Device** into the safety port until hand tight.
3. Tighten the **Pressure Relief Device** to the torque indicated using the tool specified below:

TABLE 2.0 PRESSURE RELIEF DEVICE TORQUE REQUIREMENTS

Type	Part #	Torque	Tool
Torx broached (flush)	6513MF-XX	50-65 in. lbs.	Torque Wrench with T30 Torx Driver attachment
External Hex	9-4000-60-XX	80-100 in. lbs.	Torque Wrench with Hex Socket attachment

NOTE: A properly calibrated **Torque Wrench** MUST be used to tighten the **Pressure Relief Device.** Over-tightening will damage the **Disc** in the **Pressure Relief Device.**

TESTING OF ASSEMBLED VALVE

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

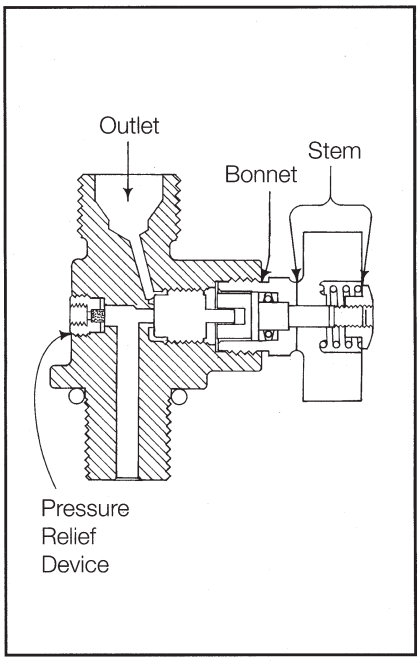
⚠CAUTION

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.

2. With the outlet suitably plugged, open the **Valve Assembly** slowly by turning the **Handwheel** counter clockwise. Check the **Bonnet Threads, Stem** and **Pressure Relief Device** 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.**



LEAK CHECK AREAS
FOR "YVB" VALVES

PARTS LIST

IMPORTANT!

Sherwood manufactures many different types of YVB Series 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 3.0 below lists the COMMON replacement parts for repairing **"YVB" Series Valve Assemblies.** Table 4.0 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 cylinder to be used.

TABLE 3.0 COMMON PARTS LIST FOR "YVB" SERIES VALVES

Quantity	Name	Part Number
1	Bonnet	1-3506-14
1	Filter	See Table 4.0 below
1	Filter Plug Retainer	See Table 4.0 below
1	Gasket	3506-10
1	Handwheel	See Table 4.0 below
1	Inlet O-ring	See Table 4.0 below
1	Label	See Table 4.0 below
1	Lower Plug	See Table 4.0 below
1	O-ring	G010H
2	Packings	3506-13
1	Pressure Relief Device	See Table 1.0 on page 120
1	Spring	See Table 4.0 below
1	Stem	9-3506-12
1	Stem Nut	1-3506-8

TABLE 4.0 SPECIFIC PARTS LIST FOR "YVB" SERIES VALVE

Part Number	Filter	Filter Plug Retainer	Spring	Lower Plug	Handwheel	Inlet O-ring
YVB5454-XX-62	3738-5	5454-2	19-3506-11	3506-9	6521S	None
YVB5454-XX-62G	None	None	19-3506-11	3506-9	6521S	None
YVB5454-XX-62GMS	3738-5	5454-2	19-3506-11	3506-9	6521S	None
YVB5454-XX-62MSR	3738-5	5454-2	19-3506-11	3506-9	6521S	None
YVB5454-XX-62MSS	3738-5	5454-2	3506-11A	3506-9	1389-2D	None
YVB5454-XX-75	None	None	19-3506-11	3506-9	6521S	None
YVB5454-XX-75G	None	None	19-3506-11	3506-9	6521S	G210J
YVB5454-32-75K	None	None	19-3506-11	3506-9K	6521S	None
YVB5454-48-75K	None	None	19-3506-11	3506-9K	6521S	None
YVB5454-XX-75MSR	None	None	19-3506-11	3506-9	6521S	None

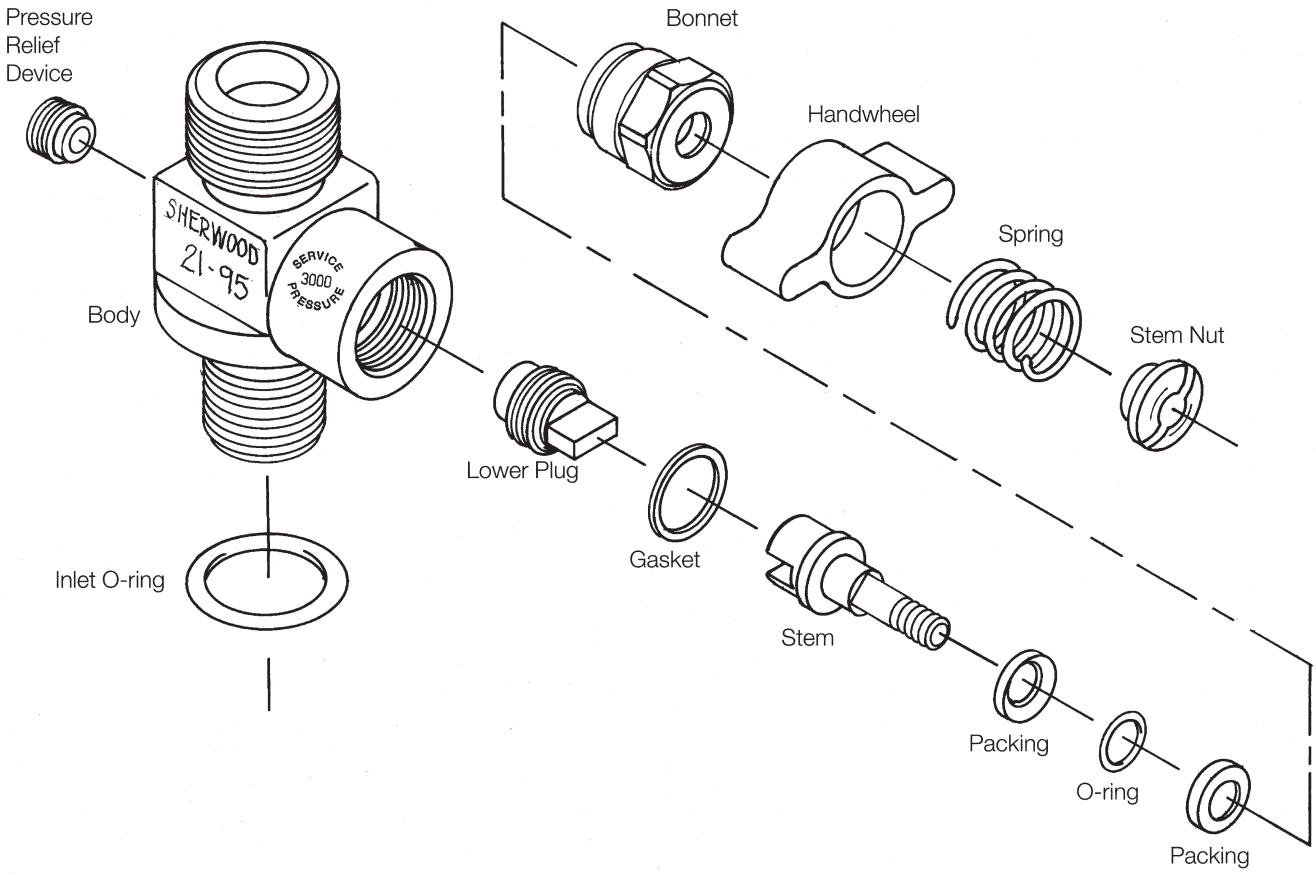


FIGURE 1.0 "YVB" SERIES VALVE ASSEMBLY