Sherwood Valve LLC

All Safe, Inc.
Sherwood Master Distributor
Toll Free: 866-958-3473
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Email: info@allsafe.net
www.allsafenet

GLOBAL VALVES

EVERY COUNTRY
EVERY CUSTOMER
EVERY CODE

GV SERIES
Industrial and Chrome Plated Precision Valves

SHERWOOD GLOBAL VALVE FEATURES

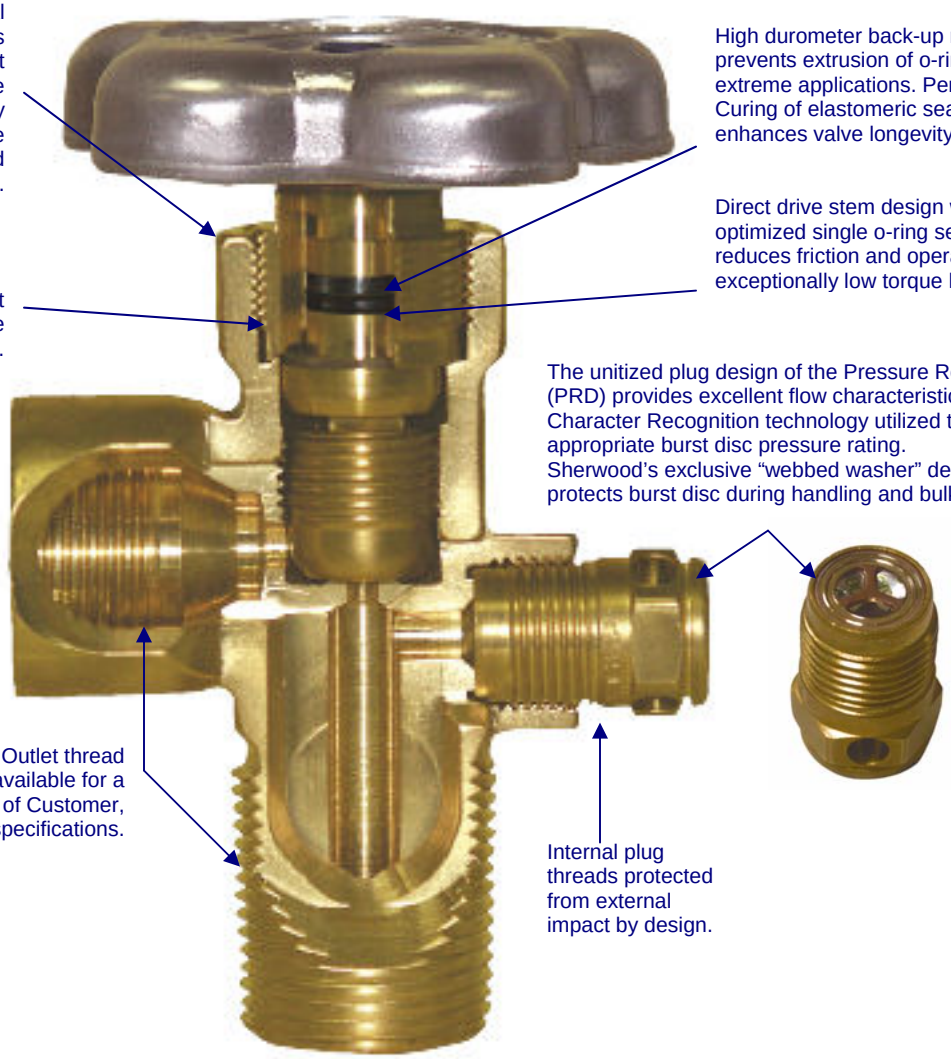
Durable forged brass body, precisely machined internal components and design elements meet the most stringent International valve performance standards. Automated assembly and testing processes ensure exceptional quality. All Sherwood GV valves are 100% leak tested.

High durometer back-up ring prevents extrusion of o-ring in extreme applications. Peroxide Curing of elastomeric seals enhances valve longevity.

Direct drive stem design with optimized single o-ring seal reduces friction and operates at exceptionally low torque levels.

Metal-to-metal seal below bonnet threads prevents pressure accumulation at top of valve body.

The unitized plug design of the Pressure Relief Device (PRD) provides excellent flow characteristics. Optical Character Recognition technology utilized to verify appropriate burst disc pressure rating. Sherwood's exclusive "webbed washer" design protects burst disc during handling and bulk shipment.



Inlet and Outlet thread configurations are available for a broad spectrum of Customer, Country and Code specifications.

Internal plug threads protected from external impact by design.

STANDARDS CONFORMANCE

CGA V-9	Standard for Gas Cylinder Valves
CGA S1.1	Standard for Pressure Relief Devices
CGA V-1	Compressed Gas Cylinder Valve Outlet and Inlet Specifications
ISO 10297	International Standard for Cylinder Valves Design Specifications
EN 849	International Standard for Cylinder Valves Design Specifications
AS2473	Australian Standard for Compressed Gas Cylinder Valves
TPED	Transportable Pressure Equipment Directive Modules B & D

DESIGN SPECIFICATIONS

Maximum Working Pressure	6,000 PSIG	413 BAR
Burst Pressure	15,000 PSIG	1,035 BAR
Operating Temperature	Min: -50°F Max: 130°F	-45°C 55°C
Storage Temperature	Min: -65°F Max: 155°F	-54°C 68°C
Leak Rate Internal/External	$1X10^{-3}$ atm cc/s	
Minimum Cycle Life	2000 Cycles	
Cv Flow Factor	Standard: CO2 / Manifold:	.690 1.23

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GV SERIES O-RING SEAL DESIGN INDUSTRIAL VALVES

Gas Service @120ºF	CGA Outlet	Outlet Thread Size	Inlet Thread Size	Sherwood Part Number
Air				
0 psi TO 3,000 psi	346	.825 – 14 NGO RH Ext.	½ - 14 NGT	GV34641-XX
			¾ - 14 NGT	GV34661-XX
			1-11½ NGT	GV34681-XX
			.750 – 16 UNF	GV34651-XX-75
			1.125 – 12 UNF	GV34651-XX
3,001 psi TO 5,500 psi	347 (long nipple)	.825 – 14 NGO RH Ext.	¾ - 14 NGT	GV34761-XX
5,501 psi TO 7,500 psi	702	1.125 – 14 NGO RH Int.	¾ - 14 NGT	GV70261-XX
Argon				
0 psi TO 3,000 psi	580	.965 – 14 NGO RH Int.	½ - 14 NGT	GV58041-XX
			¾ - 14 NGT	GV58061-XX
			1-11½ NGT	GV58081-XX
			.750 – 16 UNF	GV58051-XX-75
			1.125 – 12 UNF	GV58051-XX
3,001 psi TO 5,500 psi	680	1.045 – 14 NGO RH Int.	¾ - 14 NGT	GV68061-XX
5,501 psi TO 7,500 psi	677	1.030 – 14 NGO LH Ext.	¾ - 14 NGT	GV67761-XX
Carbon Dioxide				
0 psi TO 3,000 psi	320	.825 – 14 NGO RH Ext.	½ - 14 NGT	GV32041-XX
			¾ - 14 NGT	GV32061-XX
			1-11½ NGT	GV32081-XX
			.750 – 16 UNF	GV32051-XX-75
			1.125 – 12 UNF	GV32051-XX
Carbon Monoxide				
0 psi TO 3,000 psi	350	.825 – 14 NGO LH Ext.	½ - 14 NGT	GV35045-XX
			¾ - 14 NGT	GV35065-XX
			1-11½ NGT	GV35085-XX
			.750 – 16 UNF	GV35055-XX-75
			1.125 – 12 UNF	GV35055-XX
3,001 psi TO 5,500 psi	695	1.045 – 14 NGO LH Int.	¾ - 14 NGT	GV69565-XX
5,501 psi TO 7,500 psi	703	1.125 – 14 NGO LH Int.	¾ - 14 NGT	GV70365-XX
Helium				
0 psi TO 3,000 psi	580	.965 – 14 NGO RH Int.	½ - 14 NGT	GV58041-XX
			¾ - 14 NGT	GV58061-XX
			1-11½ NGT	GV58081-XX
			.750 – 16 UNF	GV58051-XX-75
			1.125 – 12 UNF	GV58051-XX
3,001 psi TO 5,500 psi	680	1.045 – 14 NGO RH Int.	¾ - 14 NGT	GV68061-XX
5,501 psi TO 7,500 psi	677	1.030 – 14 NGO LH Ext.	¾ - 14 NGT	GV67761-XX
Hydrogen				
0 psi TO 3,000 psi	350	.825 – 14 NGO LH Ext.	½ - 14 NGT	GV35045-XX
			¾ - 14 NGT	GV35065-XX
			1-11½ NGT	GV35085-XX
			.750 – 16 UNF	GV35055-XX-75
			1.125 – 12 UNF	GV35055-XX
3,001 psi TO 5,500 psi	695	1.045 – 14 NGO LH Ext.	¾ - 14 NGT	GV69565-XX
5,501 psi TO 7,500 psi	703	1.125 – 14 NGO LH Int.	¾ - 14 NGT	GV70365-XX
Krypton				
0 psi TO 3,000 psi	580	.965 – 14 NGO RH Int.	½ - 14 NGT	GV58041-XX
			¾ - 14 NGT	GV58061-XX
			1-11½ NGT	GV58081-XX
			.750 – 16 UNF	GV58051-XX-75
			1.125 – 12 UNF	GV58051-XX
3,001 psi TO 5,500 psi	680	1.045 – 14 NGO RH Int.	¾ - 14 NGT	GV68061-XX
5,501 psi TO 7,500 psi	677	1.030 – 14 NGO LH Ext.	¾ - 14 NGT	GV67761-XX

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Gas Service @120ºF	CGA Outlet	Outlet Thread Size	Inlet Thread Size	Sherwood Part Number
Neon				
0 psi TO 3,000 psi	580	.965 – 14 NGO RH Int.	½ - 14 NGT	GV58041-XX
			¾ - 14 NGT	GV58061-XX
			1-11½ NGT	GV58081-XX
			.750 – 16 UNF	GV58051-XX-75
			1.125 – 12 UNF	GV58051-XX
3,001 psi TO 5,500 psi	680	1.045 – 14 NGO RH Int.	¾ - 14 NGT	GV68061-XX
5,501 psi TO 7,500 psi	677	1.030 – 14 NGO LH Ext.	¾ - 14 NGT	GV67761-XX
Nitrogen				
0 psi TO 3,000 psi	580	.965 – 14 NGO RH Int.	½ - 14 NGT	GV58041-XX
			¾ - 14 NGT	GV58061-XX
			1-11½ NGT	GV58081-XX
			.750 – 16 UNF	GV58051-XX-75
			1.125 – 12 UNF	GV58051-XX
3,001 psi TO 5,500 psi	680	1.045 – 14 NGO RH Int.	¾ - 14 NGT	GV68061-XX
5,501 psi TO 7,500 psi	677	1.030 – 14 NGO LH Ext.	¾ - 14 NGT	GV67761-XX
Nitrous Oxide				
0 psi TO 3,000 psi	326	.825 – 14 NGO RH Ext.	½ - 14 NGT	GV32641-XX
			¾ - 14 NGT	GV32661-XX
			1-11½ NGT	GV32681-XX
			.750 – 16 UNF	GV32651-XX-75
			1.125 – 12 UNF	GV32651-XX
Oxygen				
0 psi TO 3,000 psi	540	.903 – 14 NGO RH Ext.	½ - 14 NGT	GV54041-XX
			¾ - 14 NGT	GV54061-XX
			1-11½ NGT	GV54081-XX
			.750 – 16 UNF	GV54051-XX-75
			1.125 – 12 UNF	GV54051-XX
3,001 psi TO 4,000 psi	577	.960 – 14 NGO RH Ext..	¾ - 14 NGT	GV57761-XX
4,001 psi TO 5,500 psi	701	1.103 – 14 NGO RH Ext.	¾ - 14 NGT	GV70161-XX
Sulfur Hexafluoride				
0 psi TO 3,000 psi	590	.965 – 14 NGO LH Int.	½ - 14 NGT	GV59041-XX
			¾ - 14 NGT	GV59061-XX
			1-11½ NGT	GV59081-XX
			.750 – 16 UNF	GV59051-XX-75
			1.125 – 12 UNF	GV59051-XX
Xenon				
0 psi TO 3,000 psi	580	.965 – 14 NGO RH Int.	½ - 14 NGT	GV58041-XX
			¾ - 14 NGT	GV58061-XX
			1-11½ NGT	GV58081-XX
			.750 – 16 UNF	GV58051-XX-75
			1.125 – 12 UNF	GV58051-XX
3,001 psi TO 5,500 psi	680	1.045 – 14 NGO RH Int.	¾ - 14 NGT	GV68061-XX
5,501 psi TO 7,500 psi	677	1.030 – 14 NGO LH Ext.	¾ - 14 NGT	GV67761-XX

OPTIONS

4 & 7 & 24 threads oversize inlets: To order, add -4 or -7 or -24 to the end of the part number.
e.g. GV35061-XX becomes GV35061-XX-7

Chrome Plating: To order, add letter “A” after letters GV in the part number.
e.g. GV34661-XX becomes GVA34661-XX

Lexan® polycarbonate handwheels: To order, add suffix LX to the end of the part number.
e.g. GV34661-XX becomes GV34661-XXLX

Fusible backed pressure relief devices in 165°F or 212°F nominal melting temperatures:
To order, change 1 in the part number to 4 (165°F) or to 5 (212°F).
e.g. GV35061-XX becomes GV35064-XX for 165°F, or GV35065-XX for 212°F

NOTE: GV valves are not approved for CNG service.
Not all valves are available in all configurations. Contact factory for availability.
Orders may be subject to minimum quantities.

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SELECTION OF PRESSURE RELIEF DEVICES

-XX	CYLINDER SERVICE PRESSURE			DISC RUPTURE RANGE PSIG @ 160°F		PRESSURE RELIEF DEVICE		
	D.O.T. Spec 3A, 3AA, 3AL Cylinders PSIG	D.O.T. Exemption Cylinders PSIG	International Cylinders BAR	Min	Max	CG-1 Frangible Disc No Fuse Metal	CG-4 ** Frangible Disc 165°F Fuse Metal	CG-5 ** Frangible Disc 212°F Fuse Metal
-26	1665			2500	2775	P625-19N9-26	P625-19**X**9-26M	P625-19**X**9-26W
-28	1800			2700	3000	P625-19N9-28	P625-19**X**9-28M	P625-19**X**9-28W
-32	2015			3025	3360	P625-19N9-32	P625-19**X**9-32M	P625-19**X**9-32W
-35	2265			3400	3775	P625-19N9-35	P625-19**X**9-35M	P625-19**X**9-35W
-38	2400			3600	4000	P625-19N9-38	P625-19**X**9-38M	P625-19**X**9-38W
-39			200	3915	4350	P625-19N9-39	P625-19**X**9-39M	P625-19**X**9-39W
-43	2670			4005	4450	P625-19N9-43	P625-19**X**9-43M	P625-19**X**9-43W
-46	2900			4350	4833	P625-19N9-46	P625-19**X**9-46M	P625-19**X**9-46W
-47	2950			4425	4917	P625-19N9-47	P625-19**X**9-47M	P625-19**X**9-47W
-48	3000		230	4500	5000	P625-19N9-48	P625-19**X**9-48M	P625-19**X**9-48W
-50		3600		4860	5600	P625-19N9-50	P625-19**X**9-50M	P625-19**X**9-50W
-55	3500/3600			5250	5833	P625-19N9-55	P625-19**X**9-55M	P625-19**X**9-55W
-63	4000			6000	6665	P625-19N9-63	P625-19**X**9-63M	P625-19**X**9-63W
-65		4500		6075	6750	P625-19N9-65	P625-19**X**9-65M	P625-19**X**9-65W
-71		5000		6750	7500	P625-19N9-71	P625-19**X**9-71M	P625-19**X**9-71W
-78	5000			7500	8333	P625-19N9-78	P625-19**X**9-78M	P625-19**X**9-78W
-85		6000		8100	9000	P625-19N9-85	P625-19**X**9-85M	P625-19**X**9-85W
-95	6000			9000	10000	P625-19N9-95	P625-19**X**9-95M	P625-19**X**9-95W

****Copper Disc must be used for Hydrogen Service** **X = N for Nickel Disc or C for Copper Disc**

MATERIALS OF CONSTRUCTION FOR GV SERIES INDUSTRIAL AND CHROME PLATED VALVES

Description	Part Number	Materials of Construction
Body	N/A	Forged Brass UNS Alloy #37700/Chrome Plating when applicable.
Bonnet	1400-2	Free Machining Brass UNS Alloy #36000/Chrome Plating when applicable.
Handwheel	1919A	Aluminum A380
Handwheel Nut	1251-6	Steel Class 8, Zinc Plating
Lower Plug	1400-4/1400-4A	Leaded Naval Brass C48500
Lower Plug Seat	1400-13/1400-13A	Nylon Zytel 101
PRD	See Chart Above	Plug: Free Machining Brass UNS Alloy #36000/ Chrome Plating when applicable. Rupture Disc: Nickel Alloy 201; Copper UNS 22000 Webbed Seal Gasket: Copper Dead Soft C11000
Stem	1400-3	Free Machining Brass UNS Alloy #36000
O-Ring	G011EP	Ethylene Propylene
Back up O-Ring	1400-9A	Ethylene Propylene
Thrust Washer	1251-5	Delrin 500 AF

INLET O-RING FOR STRAIGHT THREADED GV SERIES INDUSTRIAL AND CHROME PLATED VALVES

Size	Part Number	Material	Part Number	Material
0.625 UNF	G208A	Buna	G208T	Teflon
0.750 UNF	G210-9	Buna-N	G210-T	Teflon
1.125 UNF	G216A	Buna 70 Durometer		

LUBRICANTS

Christo-Lube MCG-111	Used in valves for all Industrial Gas Applications
Turmoxygen LC027	Used in valves for Oxygen Service

TORQUE VALUES FOR GV SERIES INDUSTRIAL AND CHROME PLATED VALVES

Closing Torque @ 5400 PSIG Inlet Pressure	20-30 in. lbs.
Operating Torque @ 5400 PSIG Inlet Pressure	10-20 in. lbs.
Bonnet Installation Torque	50-60 ft. lbs.
Handwheel Nut Installation Torque	15-35 in. lbs.
PRD Installation Torque	25-35 ft. lbs.

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REPAIR INSTRUCTIONS FOR GV SERIES INDUSTRIAL AND CHROME PLATED VALVES

DISASSEMBLY OF VALVE

1. Place the valve assembly into a vise or similar holding fixture, taking care not to damage the inlet or outlet threads. The holding fixture must securely grip the valve body on the wrench flats so that no damage is done to the internal bores, external threads, outlet, or pressure relief device.
2. Chamber
    a. Using a 13 mm socket, remove the handwheel nut from the handwheel by turning it counter clockwise.
    b. Remove the handwheel from the stem square.
    c. Using an 11/16” socket wrench or hex box wrench, remove the bonnet by turning it counter clockwise. The stem subassembly with o-ring and back-up o-ring may remove with the bonnet. If not, remove the stem subassembly from the valve after the bonnet.
    d. Being careful not to scratch the bonnet sealing surface in the valve body, use a square drive to remove the lower plug from the valve chamber, by turning it counter clockwise.
3. Pressure Relief Device
    a. Being careful not to scratch the sealing surface of the valve body, remove the pressure relief device by turning it counter clockwise using a 5/8” hex box wrench or socket.

INSPECTION OF VALVE AND COMPONENTS

1. Valve Body
    a. Inspect the valve body chamber for dirt, debris or damage. Where possible, blow out the valve body chamber using clean, dry, Compressed Air or Nitrogen to remove any foreign particles.
    b. If the valve body is damaged, do not attempt to repair. Order a new valve assembly.
2. Components
    a. Always discard the bonnet and stem subassembly and the lower plug. Order replacement parts. **NOTE**: The lower plug replacement must correspond with the valve body and its relative application. For example, standard valves have a .125” or .156” through hole in the body which uses a nylon seat diameter that is relative to that size, part number 1400-40. Carbon dioxide and manifold valves – except for oxygen – have a .272” through hole in the body and use a nylon seat that is relative to that size, part number 1400-40A.
    b. Handwheels should only be reused if in good condition. Discard handwheels if damaged.
    c. Inspect the pressure relief device threads for damage. Inspect the rupture disc and the webbed washer for scratches. Discard this component if damaged and order replacement parts.

ASSEMBLY OF VALVE

1. Chamber
    a. Apply 3 dabs of lubricant around the perimeter of the lower plug threads, approximating the size of a pencil eraser for each. Locate lubricant toward the lower most threads closest to the crimped seat but using care not to get lubricant on the nylon seat. **NOTE**: Use Turmoxygen LC027 lubricant for oxygen service. Use Christo-Lube MCG-111 lubricant for all other gas applications.
    b. Being careful not to damage the bonnet sealing surface in the valve body, install the new lower plug into the chamber, seat first and tighten using a square drive until it is fully seated.
    c. Engage the new bonnet and stem subassembly into the valve body and hand tighten by turning clockwise. Rotate stem square until it becomes engaged in the lower plug.
    d. Using an 11/16” hex torque wrench, tighten the bonnet to 50-60 ft. lbs. **NOTE**: A properly calibrated torque wrench must be used. Over torquing will damage the bonnet.
    e. Place the handwheel over the stem square. Thread the handwheel nut onto the stem thread and tighten to 15-35 in. lbs.
    f. To ensure free and smooth operation, open and close the valve several times by turning the handwheel.
2. Pressure Relief Device (PRD)
    a. **NOTE**: Refer to CGA S-1.1 latest edition to select the correct pressure relief device type according to the cylinder pressure and application.
    b. Thread the proper pressure relief device on the PRD port until hand tight.
    c. Using a 5/8” socket and a calibrated torque wrench, tighten the PRD to 25-35 ft. lbs. Over torquing will damage the PRD.

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.
2. Pressurize the valve assembly with an inert gas to the working pressure of the cylinder of intended use.
3. With outlet suitably plugged, open the valve assembly by turning the handwheel counter clockwise. Using leak detection solution or equipment, check the bonnet, stem, and PRD for leaks.
4. Close the valve assembly by turning the handwheel clockwise. Remove the outlet plug and check for seat leakage through the outlet using proper leak detection solution or equipment.
5. If any leakage is detected, in the open or the closed position, the necessary repairs must be made before using the valve assembly.

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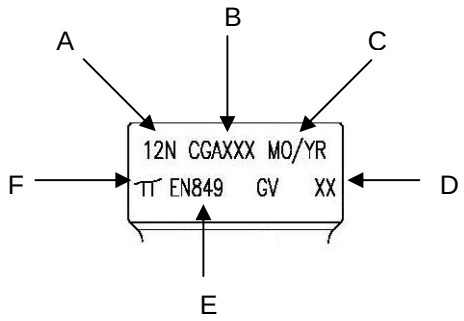
STAMPING CROSS REFERENCE FOR GV SERIES INDUSTRIAL AND CHROME PLATED VALVES



A. Inlet Thread Designation

B. Outlet Specification

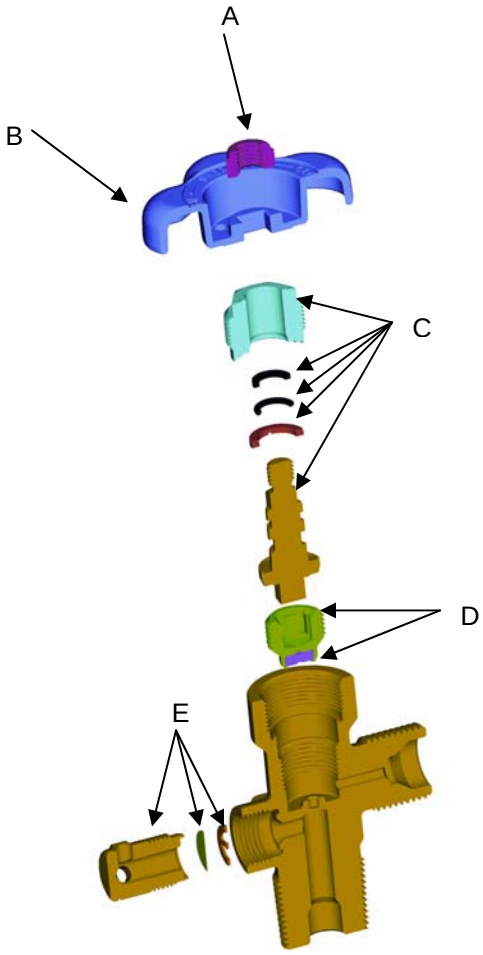
C. Month/Year of Manufacture

D. Week of Calendar Year

E. International Standard for Cylinder Valve Design Specifications

F. Regulatory Approval (PI Mark)

PARTS BREAKDOWN FOR GV SERIES INDUSTRIAL AND CHROME PLATED VALVES



A.	Handwheel Nut	**1251-6**
B.	Handwheel	**1919A**
C.	Bonnet and Stem Assembly *Includes:* Bonnet Back-Up O-ring O-ring Thrust Washer Stem	**1400-30-100 (Oxygen)** **1400-30-101 (All Others)**
D.	Lower Plug and Seat Assembly *Includes:* Lower Plug Seat	**1400-40 (Standard)** **1400-40A (CO2/Manifold)**
E.	Pressure Relief Device *Includes:* Plug Rupture Disc Webbed Seal Washer	**P625-19X9-XX**

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All Safe is a national compressed gas cylinder and valve distributor, full service DOT authorized hydrostatic test facility, and fire protection provider with over 30 years of experience. Our services include cylinder recertification, refurbishing and recycling. As a stocking distributor with unique technical expertise we sell a broad selection of valves, cylinders, and fire protection supplies. We maintain a large inventory to quickly fulfill most orders. All Safe is a leading test facility and compressed gas equipment supplier serving the entire U.S. and certain international markets.

For ordering information or to receive a quote contact All Safe, Inc.

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