REGO®

REGO 10 YEAR WARRANTY

L-102 Catalog

LP-Gas & Anhydrous Ammonia Equipment

MADE IN THE USA

Determining the Age of Products

All RegO products are mechanical devices that will eventually become inoperative due to wear, contaminants, corrosion and aging of components made of material such as metal and rubber.

The environment and conditions of use will determine the safe service life of these products. Periodic inspection and maintenance are essential.

Because RegO products have a long and proven record of quality and service, LP-Gas dealers may forget the hazards that can occur because products are used beyond their safe service life.

The life of a product is determined by the environment in which it "lives." The LP-Gas dealer knows better than anyone what this environment is.

Since 1960, most RegO products are identified with an alphabetical code indicating the month and the year they were manufactured.

Check the product for this code to determine age. If valves or regulators are repainted, take care to keep the date code clear for later identification and inspection.

1960 to 1985 — Two-Letter Date Code

First letter in date code is the month

A — January	G — July
B — February	H — August
C — March	I — September
D — April	J — October
E — May	K — November
F — June	L — December

Relief valves used on ASME tanks carry a numerical code indicating month and year such as 1-75 means January, 1975.

Second letter in date code is the year

R — 1960	A — 1969	J — 1978
S — 1961	B — 1970	K — 1979
T — 1962	C — 1971	L — 1980
U — 1963	D — 1972	M— 1981
V — 1964	E — 1973	N — 1982
W— 1965	F — 1974	O — 1983
X — 1966	G — 1975	P — 1984
Y — 1967	H — 1976	Q — 1985
Z — 1968	I — 1977	

EXAMPLE: DL = April of 1980

From 1985 to 1990 — Digit Date Code

A

First digit in date code is the month

1 — January	7 — July
2 — February	8 — August
3 — March	9 — September
4 — April	10 — October
5 — May	11 — November
6 — June	12 — December

Second 2 digits in date code are the year

86 — 1986	89 — 1989
87 — 1987	90 — 1990
88 — 1988	

EXAMPLE: 5-87 = May of 1987

After 1990 — Digit-Letter-Digit Date Code

First digit in date code is the month

1 — January	7 — July
2 — February	8 — August
3 — March	9 — September
4 — April	10 — October
5 — May	11 — November
6 — June	12 — December

Letter in date code is the week

A — 1st week
B — 2nd week
C — 3rd week
D — 4th week
E — 5th week

Second 2 digits in date code are the year

91 — 1991	97 — 1997
92 — 1992	98 — 1998
93 — 1993	99 — 1999
94 — 1994	00 — 2000
95 — 1995	01 — 2001
96 — 1996	02 — 2002
03 — 2003	etcetera. . .

EXAMPLE: 6A16 = First week of June, 2016

Regulator Color Coding

RegO Domestic first stage, second stage, single stage, and integral twin stage LP-Gas regulators are easy to identify. In addition to the standard part number marking which indicates the proper application, each regulator is color coded to help minimize misapplication in the field that can lead to accidents and costly service callbacks.The color coding system is standard on all 404, LV404, 2302,LV2302, 2403, 2503, LV4403, and LV5503 series domestic LP-Gas regulators manufactured after May of 1986.

Classic Gold	Indicates a single stage regulator that is designed to be used alone in single stage systems.
Brilliant Red	Denotes a first stage high pressure regulator, normally used in two-stage applications in conjunction with a select brown second stage regulator.
Select Brown	Signifies second stage low pressure regulators, designed for use in two-stage systems in conjunction with a brilliant red high pressure regulator — also signifies integral twin stage regulators designed to provide benefits of two-stage regulation in one compact unit.
Select Blue	Indicates a second stage 2 PSIG delivery pressure regulator and a line pressure regulator downstream to reduce 2 PSIG to appliance pressure
Green	High pressure pounds to pounds anhydrous ammonia regulator.

Limited 10 Year Warranty and Limitation Of Liability

LIMITED 10 YEAR WARRANTY

RegO warrants to the original purchasers the products and repair kits manufactured by it to be free from defects in materials and workmanship under normal use and service for a period of 10 years from the date of manufacture. If within thirty days after buyer's discovery of what buyer believes is a defect, buyer notifies in writing and ships the product to RegO at 100 RegO Drive, Elon, NC 27244, RegO, at its option, and within forty-five days of receipt , will repair, replace F.O.B. point of manufacture, or refund the purchase price of that part or product found by RegO to be defective. Failure of buyer to give such written notice and ship the product within thirty days shall be deemed an absolute and unconditional waiver of any and all claims of buyer arising out of such defect.

This warranty does not extend to any product or part that is not installed and used after installation in accordance with RegO's printed instructions, all applicable state and local regulations, and all applicable national standards, such as those promulgated by NFPA, DOT and ANSI. This warranty does not extend to any product or part that has been damaged by accident, misuse, abuse, failure to maintain, or neglect, nor does it extend to any product or part which has been modified, altered, disassembled, or repaired in the field. This warranty does not cover any cosmetic issues, such as scratches, dents, marring, fading of colors or discoloration.

Except as expressly set forth above, and subject to the limitation of liability below, RegO MAKES NO OTHER WARRANTY, EXPRESS OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE, with respect to its products and parts, whether used alone or in combination with others. RegO disclaims all warranties not stated herein.

LIMITATION OF LIABILITY

RegO's total liability for any and all losses and damages arising out of any cause whatsoever shall in no event exceed the purchase price of the products or parts in respect of which such cause arises, whether such cause be based on theories of contract, negligence, strict liability, tort or otherwise.

RegO shall not be liable for incidental, consequential or punitive damages or other losses. RegO shall not be liable for, and buyer assumes any liability for, all personal injury and property damage connected with the handling, transportation, possession, further manufacture, other use or resale of products, whether used alone or in combination with any other products or materials.

From time to time buyers might call to ask RegO for technical advice based upon limited facts disclosed to RegO. If RegO furnishes technical advice to buyer, whether or not at buyer's request, with respect to application, further manufacture or other use of the products and parts, RegO shall not be liable for such technical advice or any such advice provided to buyer by any third party and buyer assumes all risks of such advice and the results thereof.

NOTE: Some states do not allow the exclusion or limitation of incidental, consequential or punitive damages, so the above limitation or exclusion may not apply to you. The warranty gives you specific legal rights, and you may have other rights that vary from State to State. The portions of this limited warranty and limitation of liability shall be considered severable and all portions which are not disallowed by applicable law shall remain in full force and effect.

WARNING

All RegO products are mechanical devices that will eventually become inoperative due to wear, corrosion and aging of components made of material such as rubber, etc. The environment and conditions of use will determine the safe service life of these products. Periodic inspection and maintenance are essential to avoid serious injury and property damage.

Many RegO products are manufactured components which are incorporated by others on or in other products or systems used for storage, transport, transfer and otherwise for use of toxic, flammable and dangerous liquids and gases. Such substances must be handled by experienced and trained personnel only, using accepted governmental and industrial safety procedures.

NOTICE TO USERS OF PRODUCTS

The Limited Warranty stated above is a factory warranty to the first purchasers of RegO products. Since most users have purchased these products from RegO distributors, the user must within thirty (30) days after the user's discovery of what user believes is a defect, notify in writing and return the product to the distributor from whom he purchased the product/part. The distributor may or may not at the distributor's option choose to submit the product/parts to RegO, pursuant to this Limited Warranty. Failure by buyer to give such written notice within thirty (30) days shall be deemed an absolute and unconditional waiver of buyer's claim for such defects. Acceptance of any alleged defective product/parts by RegO's distributor for replacement or repairs under the terms of RegO's Limited Warranty in no way determines RegO's obligations under this Limited Warranty.

Because of a policy of continuous product improvement, RegO reserves the right to change designs, materials or specifications without notice.

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Foreword

This catalog describes a complete line of equipment available from RegO® for use with Liquid Propane (LP)-Gas and anhydrous ammonia (NH_3). The following points are important to know for proper use of the catalog:

1. Illustrations and drawings of individual products are representative of "product groups" and all products within a product group are similar in construction.

2. Materials used for construction of products in this catalog are suitable for rated service pressure at temperatures of -40°F to +165°F, unless otherwise specified.

3. Products in this catalog are only intended for use in LP-Gas and/or anhydrous ammonia service as follows.

   a."A" or "AA" prefix — Products with this prefix are suitable for NH_3 service (i.e., contain no brass parts).

   b."AA" prefix on relief valves — These valves are NOT suitable for use with LP-Gas service. These are of partial aluminum materials and are listed by Underwriters Laboratories (UL) for NH_3 service only.

   c.All other products including "A" prefix are suitable for use with LP-Gas & NH_3 service.

   d.SS" prefix—Hydrostatic relief valve with this prefix are suitable for NH3 and LP-Gas service (i.e., they have stainless steel materials).

4. We manufacture valves and adapters designed to be used on LP-Gas and Anhydrous Ammonia systems, we do not design systems or consult in system design. For this type of information consult a professional Engineer.

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Caution

Do not use any product contained in this catalog with any service commodity other than LP-Gas or NH3. If you have a need for use of another application, contact RegO, 100 RegO Drive, Elon, NC 27244, (336) 449-7707 ecii@regoproducts.com before proceeding.

Proper application, installation and maintenance of products in this catalog are essential. Users of these products should obtain further information if there are any doubts or questions.

Warning

All RegO products are mechanical devices that will eventually become inoperative due to wear, corrosion and aging of components made of materials such as rubber. The environment and conditions of use will determine the safe service life of these products. Periodic inspection and maintenance are essential to avoid serious injury and property damage.

Many RegO products are manufactured for storage, transport, transfer and use of toxic flammable and dangerous liquids and gases. Such substances should be handled by experienced and trained personnel only, using accepted governmental and industrial safety procedures. Never vent LP-Gas near any possible source of ignition.

Notice

Installation, usage, and maintenance of all RegO products must be in compliance with all RegO instructions as well as requirements and provisions of NFPA #54, NFPA#58, DOT, ANSI, and all applicable federal, state, provincial and local standards, codes, regulations, and laws.

Inspection and maintenance on a periodic basis is essential. Installation and maintenance should be performed only by qualified personnel.

Be sure all instructions are read and understood before installation, operation and service.

Filters

RegO LP-Gas equipment is designed to operate in a system free from contamination. A variety of in-line filters are commercially available to the LP-Gas industry for installation in domestic systems.
The use of an in-line filter should be considered when other system components may be unclean and the system contaminated by rust, scale, dirt, debris or other foreign material.

RegO Regulator Dependability

When RegO LP-Gas Regulators are properly installed, safe, precise, trouble-free service is the result.

Dependability is built into every regulator ... the result of rigid standards of quality control and close tolerance machining. And this has been true for more than 90 years.

RegO Products are manufactured from the finest materials, and assembled and tested using procedures second to none.

All give you a product that provides accurate gas delivery under varying pressure ranges and load conditions.

RegO LP-Gas Regulators are UL listed and comply with applicable code requirements.

RegO Products offer a complete line of LP-Gas Regulators with capacities for almost every application.

RegO Regulator Selection

In order to properly size the RegO Regulator, find the total load of the installation. The total load is calculated by adding up the input ratings (BTU or CFH) of all appliances in the installation. Input ratings may be obtained from the nameplates on the appliances or from the manufacturers' literature.

Determine the type of regulation needed referring to the chart below.

Type of System	Maximum Load	Suggested Regulator
First Stage in a Two Stage System	1,500,000	LV3403TR
	2,500,000	LV4403SR Series LV4403TR Series
Second Stage in a Two Stage System	450,000	LV3403B Series
		LV3403BR Series
	935,000	LV4403B Series
		LV4403BD Series
	1,600,000	LV5503B4/B6
	2,300,000	LV5503B8
Second Stage in a 2 PSIG System	1,000,000	LV4403Y4/Y46R
	2,200,000	LV5503Y6/Y8
Integral Twin Stage	450,000	LV404B34/39 Series
	525,000	LV404B4/B9 Series
Integral Twin Stage 2 PSIG Delivery	800,000	LV404Y9
	650,000	LV404Y39
Automatic Changeover	400,000	7525B34 Series
	450,000	7525B4 Series

* See catalog page for inlet and delivery specifications.

Now determine which regulator in the Series would be most suitable. Turn to the individual product pages and refer to the Performance Curves. Check the performance of the regulator with your actual load conditions at the minimum LP-Gas inlet pressure for the regulator. Use the pressure corresponding to your lowest winter temperatures shown in the chart below or refer to the delivery pressure of your first stage regulator.

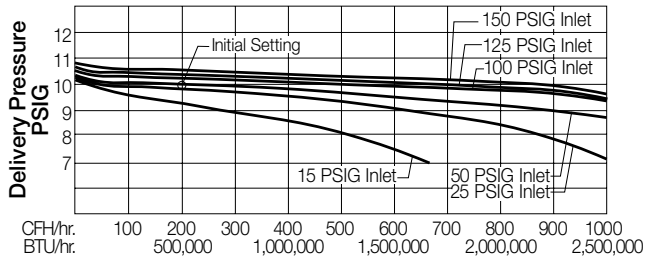
Temperature		Approx. Pressure (PSIG)		Temperature		Approx. Pressure (PSIG)	
°F	°C	Propane	Butane	°F	°C	Propane	Butane
-40	-40	3.6		40	4	72	3.0
-30	-34	8		50	10	86	6.9
-20	-29	13.5		60	16	102	12
-10	-23	23.3		70	21	127	17
0	-18	28		80	27	140	23
10	-12	37		90	32	165	29
20	-7	47		100	38	196	36
30	-1	58		110	43	220	45

Example for a First Stage Regulator

1. Assume a load of 500,000 BTU's per hour.
2. Assume a minimum delivery pressure of 9.5 PSIG.
3. Assume a minimum tank pressure of 15 PSIG.
4. For these conditions, refer to chart for the LV4403TR Series, First Stage Regulator, shown below.
5. Find the line on the chart corresponding to the lowest anticipated winter tank pressure (note that each performance line corresponds to and is marked with a different inlet pressure in PSIG).
6. Draw a vertical line upward from the point of assumed load (500,000 BTU's per hour) to intersect with the line corresponding to the lowest tank pressure.
7. Read horizontally from the intersection of these lines to the delivery pressure at the left side of the chart. In this example the delivery pressure will be 9.7 PSIG. Since the delivery pressure will be 9.7 PSIG at the maximum load conditions and lowest anticipated tank pressure, the regulator will be sized properly for the demand.

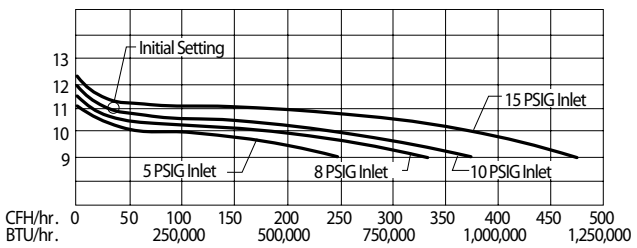
Example for a Second Stage Regulator

LV4403TR Series First Stage Regulator



1. Assume load of 250,000 BTU's per hour.
2. Assume a minimum delivery pressure of 10" w.c.
3. Assume a minimum inlet pressure of 10 PSIG.
4. For these conditions, refer to chart for the LV4403B Series, Second Stage Regulator, shown below.
5. Find the line on the chart corresponding to the anticipated inlet pressure.
6. Draw a vertical line upward from the point of assumed load (250,000 BTU's per hour) to intersect with the line corresponding to the lowest inlet pressure.
7. Read horizontally from the intersection of these lines to the delivery pressure at the left side of the chart. In this example the delivery pressure will read 10.6" w.c. Since the delivery pressure will be 10.6" w.c. at the maximum load condition and lowest anticipated inlet pressure, the regulator is sized properly for the demand.

LV4403B Series Second Stage Regulator



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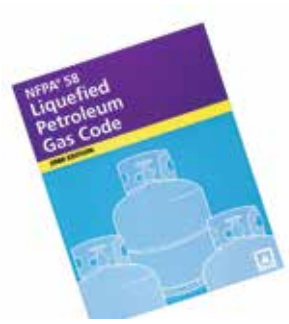
Safety Warnings



Purpose

In its continuing quest for safety, RegO publishes a series of bulletins explaining the hazards associated with the use, misuse, and aging of LP-Gas valves and regulators. It is hoped that these factual bulletins will make clear to LP-Gas dealer managers and service personnel, that the utmost care and attention must be used in the installation, inspection, and maintenance of these products, or problems could occur which would result in injuries and property damage.

The National Fire Protection Association NFPA 58 Liquefied Petroleum Gas Code - 2017 Edition states in Section 4.4 Qualification of Personnel; "Persons whose duties fall within the scope of this code shall be provided with training that is consistent with the scope of their job activities and that includes proper handling and emergency response procedures... Refresher training shall be provided at least every 3 years, initial and subsequent training shall be documented". These "RegO Safety Warnings" may be useful in training new employees and reminding older employees of hazards that can occur. It is recommended that all employees complete the Propane Education Research Council's Certified Employee Training Program.

Nature of Warnings

It is recognized that warnings should be as brief as possible, but the factors involved in regulator failures are not simple. They need to be fully understood so that proper maintenance programs can be established. If there is a simple warning, it would be:

> Inspect regulators regularly as outlined in this safety warning and replace as required per these recommendations. When all of these recommendations are followed, the recommended service life of an RegO regulator (except single stage) manufactured after 1995 is 25 years. The recommended service life of all other RegO regulators is 15 years.

LP-Gas Regulators

> This bulletin applies most particularly to permanent LP-Gas installations of cylinders and tanks. The warnings also apply in most cases to portable installations of recreational vehicles, barbecue grills, etc.
> This bulletin is not intended to be an exhaustive treatment of the subject of regulators and certainly does not cover all safety practices that should be followed in the installation and maintenance of LP-Gas systems.

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It should not be necessary to remind readers of this bulletin that regulators must be installed in strict conformance with NFPA Pamphlets 54 and 58, and all other applicable codes and regulations. Codes, regulations and manufacturer's recommendations have been developed by experts with many years of experience in the LP-Gas industry.

Failure to fully follow these codes, regulations and recommendations could result in hazardous installations.

Pamphlet 58 states "All regulators for outdoor installations, except regulators used for portable industrial applications, shall be designed, installed or protected so their operation will not be affected by the elements (freezing rain, sleet, snow, ice, mud or debris). This protection may be integral with the regulator."

Failed and/or Inoperative Regulators

Failed regulators can cause three kinds of hazards:
- High pressure LP-Gas in a system downstream of the regulator; and
- Leaks of LP-Gas to atmosphere from the regulator itself.
- Loss of pressure due to a "freeze-up" in the orifice.

High Pressure LP-Gas in a System

Anything that prevents a regulator from regulating properly could result in high pressure gas at the regulator outlet and thus in a system.

High pressure gas into piping and appliances could cause piping leaks and damage to appliance burner controls with the potential for fires and explosions.

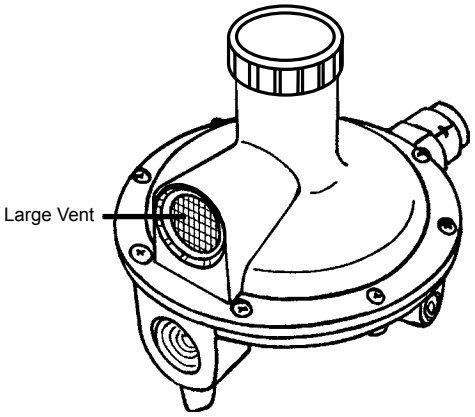
The Causes of High Pressure Gas in a System are:

1. Regulator vents that are clogged or obstructed.

Vents must be clear and fully open at all times.

Many regulators are equipped with a pressure relief valve which discharges to atmosphere through the vent. Ice, snow drifts, dirt, bugs, paint, or other foreign material can clog the vents.

An obstructed vent may prevent the pressure relief valve from operating properly.



Regulators should be installed with the vent facing down or protected so their operation will not be affected by the elements. In cases where the regulator vent is equipped with a discharge tube, the outlet of this tube must be facing down. The vents and/or discharge tubes must be protected from the elements and must be equipped with a screen to prevent bugs from obstructing the opening.

Action Required: Regulators should be properly installed and regularly inspected when tanks or cylinders are filled. If vents are clogged or the screen is missing, they must be cleaned or replaced. If the vent screen is missing and there is evidence of foreign material around the vent, the regulator should be replaced.

2. Foreign material lodging between the regulator nozzle and seat disc:

When this occurs, the regulator can remain open, allowing high pressure gas into the system.

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This material can come from system piping between the container shut-off valve and the regulator. Chips created during piping installation or dirty piping can create this hazard. Corrosion inside of copper pigtails and piping can cause problems. This can occur particularly when LP-Gas contains high sulphur or excessive moisture.

Action Required: Make sure regulator inlet piping is clean at the time of installation. Periodic checks should be made to ensure piping remains clean without corrosion. Never use old pigtails on new LP-Gas installations. Old pigtails can also work harden and crack if they have been bent and twisted several times.

3. Wrong regulator installed for the application:

The proper regulator must be used for each system.

For example, installation of high pressure regulators not designed to reduce gas pressure to an appliance requirement of 11" w.c. will cause a hazard. Installing a regulator undersized for the load can cause improper combustion at the appliance burner with a potential for carbon monoxide poisoning.

Action Required: Make sure the regulator is correct for each application and test the system with a pressure gauge or a manometer.

4. Failure to external mechanical parts due to corrosion:

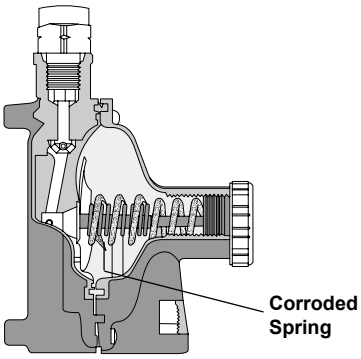
Adjusting springs and relief valve springs can rapidly corrode if exposed to salt air or industrial pollution. Even moisture condensation on these springs can cause them to rust and fail.

Failure of these springs will result in failure of the regulator to control the pressure.

With the vent of a regulator facing down, corrosion products from the springs could clog the regulator vent screen blocking the vent.

Action Required: Regulator inspection for corrosion should be made according to the guidelines listed below:

- For underground installations subject to submersion, the regulator should be inspected **every** time the container is filled.
- For known corrosive atmospheres of salt air or chemical pollution, the regulator should be inspected at least once a year.

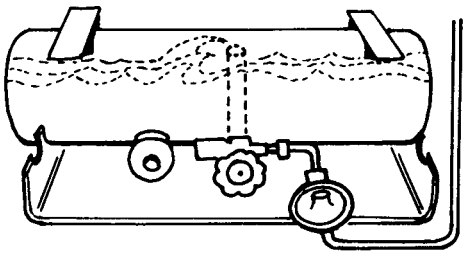


- For other applications, the regulator should be inspected every 3 years.**If any corrosion is evident, replace the regulator.**

It is essential that the regulator bonnet cap be tightly in place at all times to prevent the entrance of water, bugs, dirt, etc. Foreign material can cause the regulator to function improperly with potentially hazardous results.

5. Liquid propane in the regulator:

This can occur on recreational vehicles, unless the regulator is installed substantially higher than the container shut-off valve. Here, sloshing propane could get into the regulator with the resulting high pressure downstream of the regulator. It could also occur on stationary installations if the regulator is installed below the shut-off valve and the container is over-filled.



Action Required: Be careful of regulator installation and never overfill any LP-Gas container.

Leaks of LP-Gas to Atmosphere

While the occurrences of leaking regulators are rare, they can and do occur with a potential for fires and explosions.

These leaks can be caused by:

1. Corrosion of the relief valve spring or foreign material on the seat disc which causes the relief valve to open, will cause LP-Gas to escape through the regulator vent, as well as permitting high pressure into the system.

Action Required: Regulator inspection for corrosion should be made according to the guidelines listed below:

- For underground installations subject to submersion, the regulator should be inspected **every** time the container is filled.
- For known corrosive atmospheres of salt air or chemical pollution, the regulator should be inspected at least once a year.
- For other applications, the regulator should be inspected every 3 years.

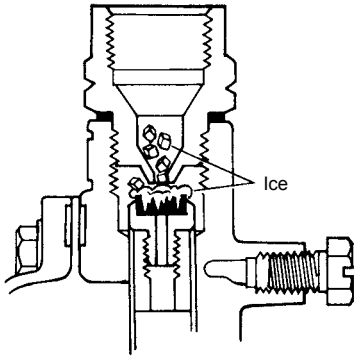
If any corrosion is evident, replace the regulator.

2. Bad piping connections at the regulator inlet and outlet. This can occur at the time of installation where connections are loose or the regulator may have been overstressed by excessive wrenching. It is important that proper wrenches, both on the piping and on the regulator inlet and outlet, be used when connecting the system piping, and that the regulator die cast body is not cracked by wrenching the pipe too deeply into the body.

Action Required: Always test for leaks at time of installation and inspect for leaks if there is reason to believe that pipe connections could cause a hazard.

Loss of Pressure

Freeze-up inside the regulator.



This will prevent the regulator from regulating properly.

Regulator freeze-ups occur because there is excessive moisture in the gas. Freeze-ups can also occur in pigtails that are kinked or bent where free flow of the LP-Gas is restricted. These freeze-ups can occur when the moisture, gas flow and temperature combine to create a hazardous condition. Freeze-ups can occur at temperatures above 32˚F.

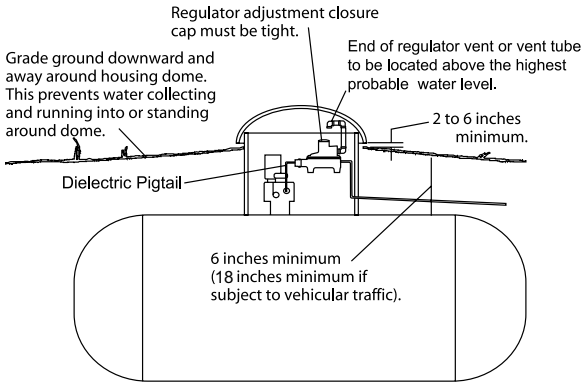
Action Required: All LP-Gas should be checked for moisture content prior to delivery to consumers and proper amounts of anhydrous methanol added if the gas cannot be returned to the supplier. Any container suspected of having excessive moisture should be treated with the proper amount of methanol.

Underground Installations

Special hazards can occur if regulators are not properly installed in underground systems. Water, dirt, mud and insects can get into the regulator if the bonnet cap is not tightly in place and the vent is not protected with a proper vent tube, opening above any potential water level.

Most problems occur because the waterproof dome on the buried storage tank does not extend above the ground level sufficiently to keep out water and mud.

Refer to NPGA No. 401.



Note: Water mark left in housing dome at level above regulator vent, or end of vent tube requires replacement of regulator. Then correct installation.

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Customer Safety

Since regulators are often used by consumers without previous knowledge of the hazards of LP-Gas, and the LP-Gas dealers are the only ones who have direct contact with the consumers,

It is the dealer's responsibility to make sure that his customers are properly instructed in safety matters relating to their installation.

At the very minimum, it is desirable that these customers:

1. **Know the odor of LP-Gas and what to do in case they smell gas. Use the NPGA "Scratch 'n Sniff" leaflet.**
2. **Are instructed to never tamper with the system.**
3. **Know that when protective hoods are used to enclose regulators and/or valves, that these hoods must be closed, but not locked.**
4. **Keep snow drifts from covering regulators.**
5. **Know the location of the cylinder or tank shut-off valve in emergencies.**

General Warning

All RegO Products are mechanical devices that will eventually become inoperative due to wear, contaminants, corrosion and aging of components made of materials such as metal and rubber. As a general recommendation,Regulators should be replaced in accordance with all of the recommendations outlined in this safety warning. The recommended service life of a regulator is one of many factors that must be considered in determining when to replace a regulator.

The environment and conditions of use will determine the safe service life of these products. Periodic inspection and maintenance are essential.

Because RegO Products have a long and proven record of quality and service, LP-Gas dealers may forget the hazards that can occur because a regulator is used beyond its safe service life. Life of a regulator is determined by the environment in which it "lives." The LP-Gas dealer knows better than anyone what this environment is.

NOTE: There is a developing trend in state legislation and in proposed national legislation to make the owners of products responsible for replacing products before they reach the end of their safe useful life. LP-Gas dealers should be aware of legislation which could affect them.

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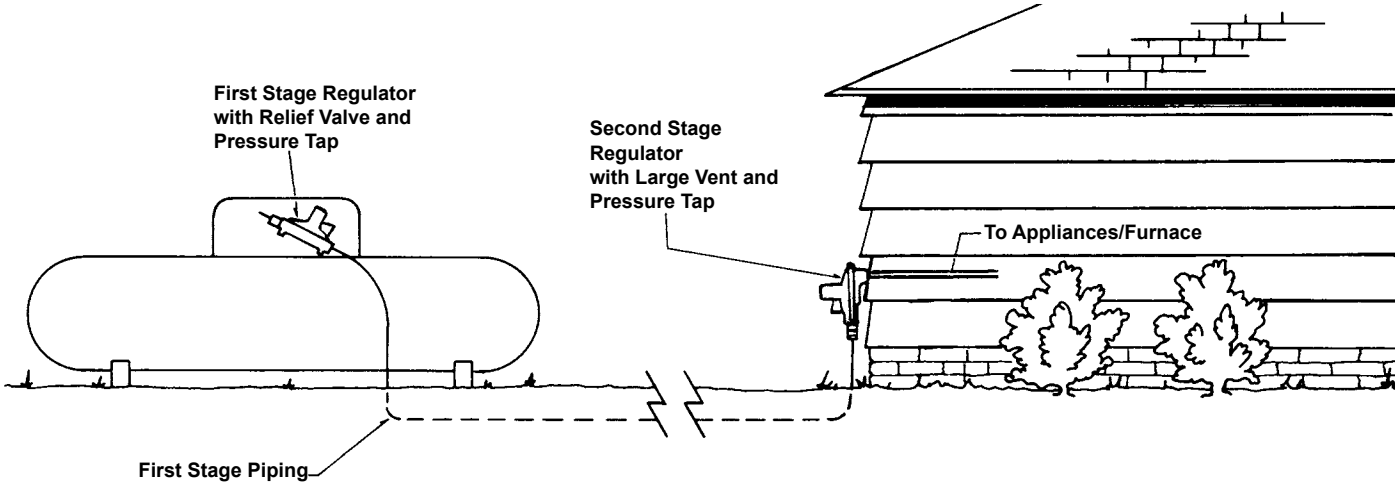
Advantages of Two-Stage Regulation



The regulator is truly the heart of an LP-Gas installation. It must compensate for variations in tank pressure from as low as 8 PSIG to 220 PSIG – and still deliver a steady flow of LP-Gas at 11" w.c. to consuming appliances. The regulator must deliver this pressure despite a variable load from intermittent use of the appliances.

Though a single-stage system may perform adequately in many installations, the use of a two-stage system offers the ultimate in pin-point regulation. Two-stage regulation can result in a more profitable LP-Gas operation for the dealer resulting from less maintenance and fewer installation callbacks – and there is no better time than now for installing RegO Regulators in two-stage systems.

Uniform Appliance Pressure

The installation of a two-stage system – one high pressure regulator at the container to compensate for varied inlet pressures, and one low pressure regulator at the building to supply a constant delivery pressure to the appliances – helps ensure maximum efficiency and trouble-free operation year-round. It is important to note that while pressure at the appliances can vary up to 4" w.c. using single-stage systems, two-stage systems keep pressure variations within 1" w.c. New high-efficiency appliances require this closer pressure control for proper ignition and stable, efficient operation. In fact, one major manufacturer requires the use of two-stage systems with their appliances.

Reduced Freeze-ups/Service Calls

Regulator freeze-up occurs when moisture in the gas condenses and freezes on cold surfaces of the regulator nozzle. The nozzle becomes chilled when high pressure gas expands across it into the regulator body. This chilling action is more severe in single-stage systems as gas expands from tank pressure to 11" w.c. through a single regulator nozzle.

Two-stage systems can greatly reduce the possibility of freeze-ups and resulting service calls as the expansion of gas from tank pressure to 11" w.c. is divided into two steps, with less chilling effect at each regulator. In addition, after the gas exits the first-stage regulator and enters the first-stage transmission line, it picks up heat from the line, further reducing the possibility of second-stage freeze-up.

Service calls for pilot outages and electronic ignition system failures are also reduced as a result of more uniform appliance pressure from two-stage systems.

Economy of Installation

In a single-stage system, transmission line piping between the container and the appliances must be large enough to accommodate the required volume of gas at 11" w.c. In contrast, the line between the first and second stage regulators in two-stage systems can be much smaller as it delivers gas at 10 PSIG to the second-stage regulator. Often the savings in piping cost will pay for the second regulator.

As an additional benefit, single-stage systems can be easily converted to two-stage systems using existing supply lines when they prove inadequate to meet added loads. This is the least expensive and best method of correcting the problem.

Allowance for Future Appliances

A high degree of flexibility is offered in new installations of two-stage systems. Appliances can be added later to the present load – provided the high pressure regulator can handle the increase – by the addition of a second low pressure regulator. Since appliances can be regulated independently, demands from other parts of the installation will not affect their individual performances.

Size The System Correctly

Prior to installing your two-stage system, be sure the system pipe and tubing is properly sized. Proper sizing will help ensure constant delivery pressure to the appliances during fluctuating loads at all times. Just as important, be sure the RegO Regulators you choose are capable of handling the desired load. This is another advantage of two-stage systems – they are capable of handling much more BTU's/hr. than single-stage systems. The RegO "LP-Gas Serviceman's Manual" provides complete information on pipe sizing and proper regulator selection.

Replace Pigtails
If you are replacing an old regulator, remember to replace the copper pigtail. The old pigtail may contain corrosion which can restrict flow. In addition, corrosion may flake off and wedge between the regulator orifice and seat disc – preventing proper lock-up.

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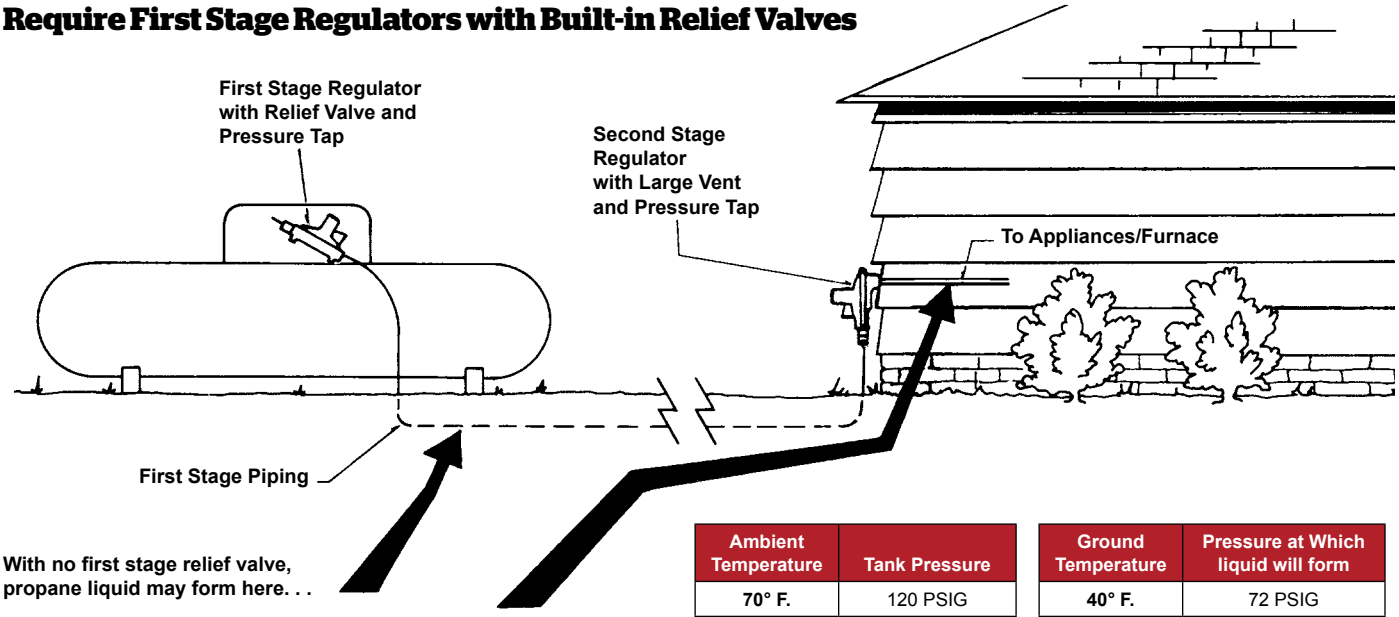
Require First Stage Regulators with Built-in Relief Valves



Resulting in sudden pressure surge due to flashing into vapor here! First stage relief can prevent liquid from forming in first stage piping during periods with no gas demand! ! !

Ambient Temperature	Tank Pressure
70° F.	120 PSIG
80° F.	140 PSIG
90° F.	165 PSIG

Ground Temperature	Pressure at Which liquid will form
40° F.	72 PSIG
50° F.	86 PSIG
60° F.	102 PSIG

Pressure at which liquid can form at various temperatures.

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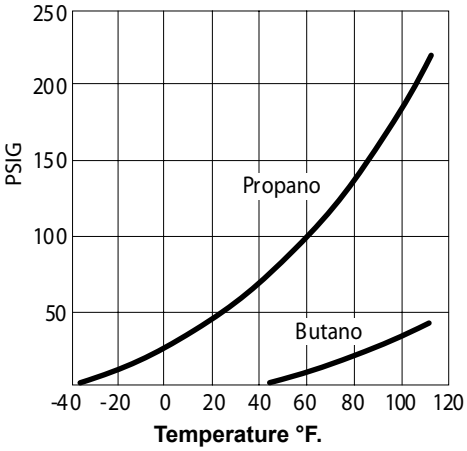
Vapor Pressures of LP-Gases



The Problem

Many modern LP-Gas appliances are equipped with pilotless ignition systems. Water heaters and older appliances use pilot lights, but it has become a common practice for energy conscious homeowners to shut-off the pilot when leaving home for extended periods of time. In each instance, there is **no gas demand at all** for extended periods.

The Consequences

If the first stage regulator fails to lock-up tight, usually as a result of a worn seat disc or foreign material lodged between nozzle and seat disc, pressure will build-up in the first stage piping – possibly to a level that approaches tank pressure. Combining this with warm ambient temperatures and cool ground, **propane liquid may form** in the first stage piping.

When gas demand resumes, this liquid may pass through the second stage regulator into the appliances and furnace. NOTE – the second stage regulator will not relieve the pressure in first stage piping. The rapid vaporization of the liquid may cause a rapid pressure surge that could seriously damage critical components of the appliance and furnace controls.

A fire or explosion could occur as a consequence.

The Solution

RegO LV4403 Series First Stage Regulators with Built-In Relief Valves reduce the possibility of this serious hazard in two stage applications. The built-in relief valve is designed to vent as needed and reduce the possibility of first stage piping pressure from becoming high enough to form liquid.

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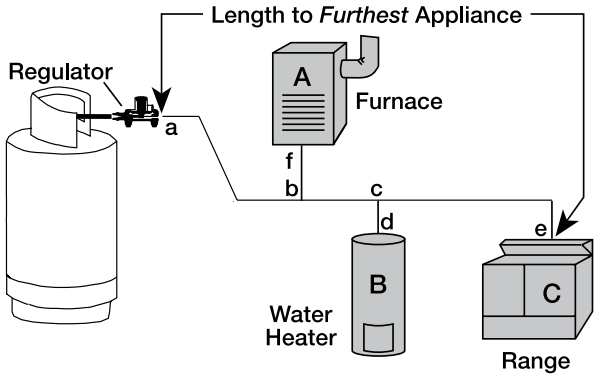
Pipe and Tubing Selection Guide

Use the following simple method to ensure the selection of the correct sizes of piping and tubing for LP-Gas vapor systems. Piping between the first and second stage is considered, as well as lower pressure (2 PSIG) piping between the 2 PSIG second stage or integral twin stage regulator and the line pressure regulator; and low pressure (inches of water column) piping between second stage, single stage, or integral twin stage regulators and appliances. The information supplied below is from NFPA 54 (National Fuel Gas Code) Appendix C, and NFPA 58 (Liquefied Petroleum Gas Code) Chapter 15; it can also be found in CETP (Certified Employee Training Program) published by the Propane Education and Research Council "Selecting Piping and Tubing" module 4.1.8. These illustrations are for demonstrative purposes, they are not intended for actual system design.

Instructions:

1. Determine the total gas demand for the system by adding up the BTU/hr input from the appliance nameplates and adding demand as appropriate for future appliances.
2. For second stage or integral twin stage piping:
   - A. Measure length of piping required from outlet of regulator to the appliance *furthest away.* <u>*No other length is necessary to do the sizing.*</u>
   - B. Make a simple sketch of the piping, as shown.
   - C. Determine the capacity to be handled by each section of piping. For example, the capacity of the line between a and b must handle the total demand of appliances A, B, and C; the capacity of the line from c to d must handle only appliance B, etc.
   - D. Using Table 3 select proper size of tubing or pipe for each section of piping, using values in BTU/hr for the length determined from step #2-A. If exact length is not on chart, use next longer length. Do not use any other length for this purpose! Simply select the size that shows at least as much capacity as needed for each piping section.
3. For piping between first and second stage regulators
   - A. For a simple system with only one second stage regulator, merely measure length of piping required between outlet of first stage regulator and inlet of second stage regulator. Select piping or tubing required from Table 1.
   - B. For systems with multiple second stage regulators, measure length of piping required to reach the second stage regulator that is furthest away. Make a simple sketch, and size each leg of piping using Table 1, 2, or 3 using values shown in column corresponding to the length as measured above, same as when handling second stage piping.

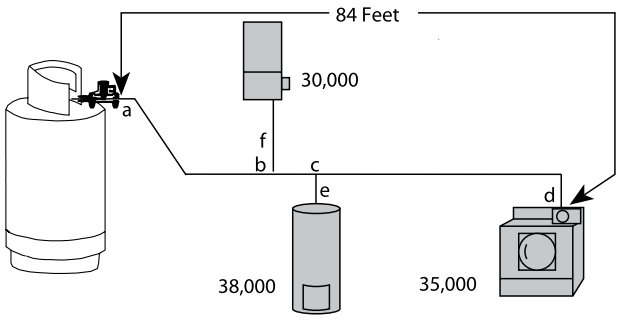


Example 1

Determine the sizes of piping or tubing required for the twin-stage LP-Gas installation shown.

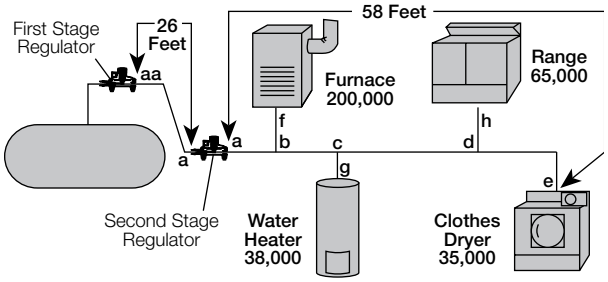
Total piping length = 84 feet (use Table 3 @90 feet)

From a to b, demand = 38,000 + 35,000 + 30,000
= 103,000 BTU/hr; use ¾" pipe or ¾" tubing
From b to c, demand = 38,000 + 35,000
= 73,000 BTU/hr; use ½" pipe or ⅝" tubing
From c to d, demand = 35,000 BTU/hr; use ½" pipe or ½" tubing
From c to e, demand = 38,000 BTU/hr; use ½" pipe or ½" tubing
From b to f, demand = 30,000 BTU/hr; use ½" pipe or ½" tubing



Example 2.

Determine the sizes of piping or tubing required for the two-stage LP-Gas installation shown.



Total first stage piping length = 26 feet; first stage regulator setting is 10 PSIG (use Table 1 or 2 @ 30 feet)

From aa to a, demand = 338,000 BTU/hr; use ½" pipe, ½" tubing, or ½" T plastic pipe.

Total second stage piping length = 58 feet (use Table 3 @ 60 feet)

From a to b, demand = 338,000 BTU/hr; use 1" pipe
From b to c, demand = 138,000 BTU/hr; use ¾" pipe or ⅝" tubing
From c to d, demand = 100,000 BTU/hr; use ½" pipe or ⅝" tubing
From d to e, demand = 35,000 BTU/hr; use ½" pipe or ½" tubing
From b to f, demand = 200,000 BTU/hr; use ¾" pipe
From c to g, demand = 38,000 BTU/hr; use ½" pipe or ½" tubing
From d to h, demand = 65,000 BTU/hr; use ½" pipe or ½" tubing

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Example 3

Determine the sizes of piping or tubing required for the 2 PSI LP-Gas installation shown.

Total first stage piping length = 26 feet; first stage regulator setting is 10psig (use Table 1 or 2 @ 30 feet)
Total 2 PSI Piping Length = 19 ft. (use Table 4 @ 20 ft. or Table 6 @ 20 ft.)

From aa to a, demand= 338,000 BTU
use ⅜" CSST or ½" copper tubing or ½" pipe

From Regulator a to each appliance:
From a to b, demand= 65,000 BTU; length = 25 ft. (Table 5),
use ½" CSST
From a to c, demand= 200,000 BTU; length = 30 ft. (Table 5)
use 1" CSST
From a to d, demand= 38,000 BTU; length = 21 ft.* (Table 5)
use ⅜" CSST *use 25 ft. column
From a to e, demand= 35,000 BTU; length = 40 ft. (Table 5)
use ½" CSST

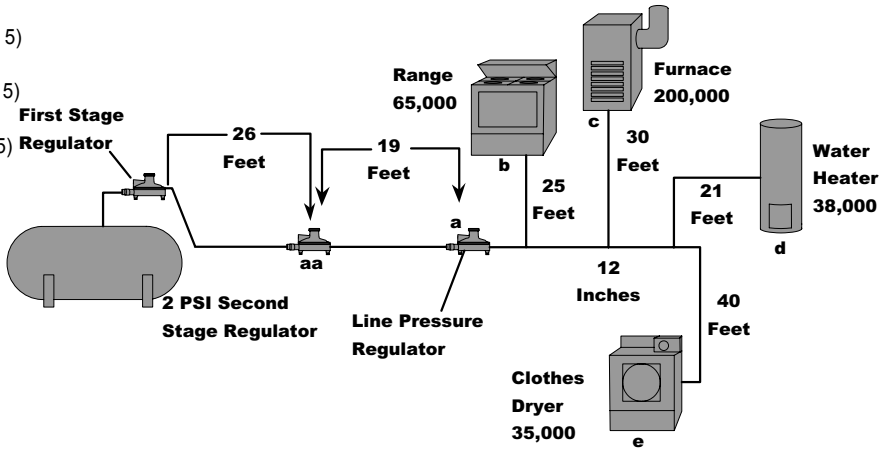

Table 1 - First Stage Tubing or Pipe Sizing * 10 PSIG Inlet with a 1 PSIG Pressure Drop (Between First and Second Stage Regulators)
Maximum capacity of pipe or tubing in thousands of BTU/hr of undiluted LP-Gases (Propane) (Based on 1.50 Specific Gravity Gas)

Size of Pipe or Copper Tubing, Inches		Length of Pipe or Tubing in Feet*																	
		10	20	30	40	50	60	70	80	90	100	125	150	175	200	250	300	350	400
Copper Tubing (O.D.)	⅜	513	352	283	242	215	194	179	166	156	147	131	118	109	101	90	81	75	70
	½	1,060	727	584	500	443	401	369	343	322	304	270	244	225	209	185	168	155	144
	⅝	2,150	1,480	1,190	1,020	901	816	751	699	655	619	549	497	457	426	377	342	314	292
	¾	3,760	2,580	2,080	1,780	1,570	1,430	1,310	1,220	1,150	1,080	959	869	799	744	659	597	549	511
Pipe Size	½	3,320	2,280	1,830	1,570	1,390	1,260	1,160	1,080	1,010	956	848	768	706	657	582	528	486	452
	¾	6,950	4,780	3,840	3,280	2,910	2,640	2,430	2,260	2,120	2,000	1,770	1,610	1,480	1,370	1,220	1,100	1,020	945
	1	13,100	9,000	7,229	6,180	5,480	4,970	4,570	4,250	3,990	3,770	3,340	3,020	2,780	2,590	2,290	2,080	1,910	1,780
	1 ¼	26,900	18,500	14,800	12,700	11,300	10,200	9,380	8,730	8,190	7,730	6,850	6,210	5,710	5,320	4,710	4,270	3,930	3,650
	1 ½	40,300	27,700	22,200	19,000	16,900	15,300	14,100	13,100	12,300	11,600	10,300	9,300	8,560	7,960	7,060	6,400	5,880	5,470
	2	77,600	53,300	42,800	36,600	32,500	29,400	27,100	25,200	23,600	22,300	19,800	17,900	16,500	15,300	13,600	12,300	11,300	10,500

* Notes: Total length of piping from outlet of first stage regulator to inlet of second stage regulator (or to inlet of second stage regulator furthest away)
1) To allow 2 PSIG pressure drop, multiply total gas demand by 0.707 and use capacities from table.
2) For different first stage pressures, multiply total gas demand by the following factor and use capacities from table.
Example: 1,000,000 BTU load at 5 PSI: 1,000,000 (1.12) = 1,120,000 BTU then use chart based on 1,120,000 BTU

First Stage Pressure PSIG	Multiply By	Data Calculated per NFPA # 54 and NFPA # 58
20	0.844	
15	0.912	
5	1.120	

Table 2 - First Stage Polyethylene Plastic Tubing or Pipe Sizing *
10 PSIG Inlet with a 1 PSIG Pressure Drop (Between First and Second Stage Regulators)
Maximum capacity of polyethylene pipe or tubing in thousands of BTU/hr of undiluted LP-Gases (Propane)
(Based on 1.50 Specific Gravity Gas)

Size of Plastic Tubing or Pipe		Length of Pipe or Tubing in Feet*																			
NPS	SDR	10	20	30	40	50	60	70	80	90	100	125	150	175	200	225	250	275	300	350	400
½ T	7.00			762	653	578	524	482	448	421	397	352	319	294	273	256	242	230	219	202	188
½	9.33			2,140	1,840	1,630	1,470	1,360	1,260	1,180	1,120	990	897	826	778	721	681	646	617	567	528
¾	11.00			2,390	3,670	3,260	2,950	2,710	2,530	2,370	2,240	990	897	826	778	721	681	646	617	567	528
1 T	11.00			5,230	4,470	3,960	3,590	3,300	3,070	2,880	2,720	2,410	2,190	2,010	1,870	1,760	1,660	1,580	1,500	1,380	1,290
1	11.00			7,740	6,630	5,870	5,320	4,900	4,560	4,270	4,040	3,580	3,240	2,980	2,780	2,600	2,460	2,340	2,230	2,050	1,910
1 ¼	11.00			13,420	11,480	10,180	9,220	8,480	7,890	7,400	6,990	6,200	5,620	5,170	4,810	4,510	4,260	4,050	3,860	3,550	3,300
1 ½	11.00			20,300	17,300	15,400	13,900	12,800	11,900	11,200	10,600	9,360	8,480	7,800	7,260	6,810	6,430	6,110	5,830	5,360	4,990
2	11.00			36,400	31,200	27,600	25,000	23,000	21,400	20,100	19,000	16,800	15,200	14,000	13,000	12,200	11,600	11,000	10,470	9,640	8,970

* Note: Total length of piping from outlet of first stage regulator to inlet of second stage regulator (or to inlet of second stage regulator furthest away)
T = Tube Size

First Stage Pressure PSIG	Multiply By	Data Calculated per NFPA # 54 and NFPA # 58
20	0.844	
15	0.912	
5	1.120	

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Table 3 - Second Stage or Integral Twin Stage Tubing or Pipe Sizing *
11-In. Water Column Inlet with a 0.05-In. Water Column Drop
Maximum capacity of pipe or tubing in thousands of BTU/hr of undiluted LP-Gases (Propane) (Based on 1.50 Specific Gravity Gas)

Size of Pipe or Copper Tubing, Inches		Length of Pipe or Tubing in Feet*																	
		10	20	30	40	50	60	70	80	90	100	125	150	175	200	250	300	350	400
Copper Tubing (O.D.)	⅜	45	31	25	21	19	17	16	15	14	13	11	10	NA	NA	NA	NA	NA	NA
	½	93	64	51	44	39	35	32	30	28	27	24	21	20	18	16	15	14	13
	⅝	188	129	104	89	79	71	66	61	57	54	48	44	40	37	33	30	28	26
	¾	329	226	182	155	138	125	115	107	100	95	84	76	70	65	58	52	48	45
Pipe Size	½	291	200	160	137	122	110	NA	101	NA	94	89	84	74	67	62	58	51	46
	¾	608	418	336	287	255	231	NA	212	NA	197	185	175	155	140	129	120	107	97
	1	1,150	787	632	541	480	434	NA	400	NA	372	349	330	292	265	243	227	201	182
	1 ¼	2,350	1,620	1,300	1,110	985	892	NA	821	NA	763	716	677	600	543	500	465	412	373
	1 ½	3,520	2,420	1,940	1,660	1,480	1,340	NA	1,230	NA	1,140	1,070	1,010	899	814	749	697	618	560
	2	6,790	4,660	3,750	3,210	2,840	2,570	NA	2,370	NA	2,200	2,070	1,950	1,730	1,570	1,440	1,340	1,190	1,080

* Note: Total length of piping from outlet of regulator to appliance furthest away. Data Calculated per NFPA # 54 and NFPA # 58

Table 4 - Maximum Capacity of CSST *
2 PSIG and a Pressure Drop of 1 PSIG (Between 2 psig Service and Line Pressure Regulator)
In Thousands of BTU/hr of undiluted LP-Gases (Propane) (Based on 1.50 Specific Gravity Gas)

Size	EDH** Flow Designation	Length of Tubing in Feet*													
		10	25	30	40	50	75	80	100	150	200	250	300	400	500
⅜	13	426	262	238	203	181	147	140	124	101	86	77	69	60	53
	15	558	347	316	271	243	196	189	169	137	118	105	96	82	72
½	18	927	591	540	469	420	344	333	298	245	213	191	173	151	135
	19	1,110	701	640	554	496	406	393	350	287	248	222	203	175	158
¾	23	1,740	1,120	1,030	896	806	663	643	578	477	415	373	343	298	268
	25	2,170	1,380	1,270	1,100	986	809	768	703	575	501	448	411	355	319
1	30	4,100	2,560	2,330	2,010	1,790	1,460	1,410	1,260	1,020	880	785	716	616	550
	31	4,720	2,950	2,690	2,320	2,070	1,690	1,630	1,450	1,180	1,020	910	829	716	638

* Notes:
(1) Table does not include effect of pressure drop across the line regulator. If regulator loss exceeds ½ psi (based on 13-in. water column outlet pressure).
DO NOT USE THIS TABLE. Consult with regulator manufacturer for pressure drops and capacity factors. Pressure drops across a regulator may vary with flow rate.
(2) **CAUTION**: Capacities shown in table can exceed maximum capacity for a selected regulator. Consult with regulator or tubing manufacturer for guidance.
(3) Table includes losses for four 90-degree bends and two end fittings. Tubing runs with a larger number of bends and/or fittings shall be increased by an equivalent length of tuing according to the following equation; L-1.3n where L is additional length (ft) of tubing and n is the number of additional fittings and/or bends.
**EHD - Equivalent Hydraulic Diameter - A measure of the relative hydraulic efficiency between different tubing sizes. The greater the value of EHD, the greater the gas capacity of the tubing. Data Calculated per NFPA # 54 and NFPA # 58

Table 5 - Maximum Capacity of CSST *
11-in. Water Column and a Pressure Drop of 0.05-in. Water Column (Between Second Stage (Low Pressure) Regulator and Appliance Shutoff Valve)
In Thousands of BTU/hr of undiluted LP-Gases (Propane)
(Based on 1.50 Specific Gravity Gas)

Size	EDH** Flow Designation	Length of Tubing in Feet*																
		5	10	15	20	25	30	40	50	60	70	80	90	100	150	200	250	300
⅜	13	72	50	39	34	30	28	23	20	19	17	15	15	14	11	9	8	8
	15	99	69	55	49	42	39	33	30	26	25	23	22	20	15	14	12	11
½	18	181	129	104	91	82	74	64	58	53	49	45	44	41	31	28	25	23
	19	211	150	121	106	94	87	74	66	60	57	52	50	47	36	33	30	26
¾	23	355	254	208	183	164	151	131	118	107	99	94	90	85	66	60	53	50
	25	426	303	248	216	192	177	153	137	126	117	109	102	98	75	69	61	57
1	30	744	521	422	365	325	297	256	227	207	191	178	169	159	123	112	99	90
	31	863	605	490	425	379	344	297	265	241	222	208	197	186	143	129	117	107

* Notes:
Table includes losses for four 90-degree bends and two end fittings. Tubing runs with a larger number of bends and/or fittings shall be increased by an equivalent length of tubing according to the following equation; L-1.3n where L is additional length (ft) of tubing and n is the number of additional fittings and/or bends.
**EHD - Equivalent Hydraulic Diameter - A measure of the relative hydraulic efficiency between different tubing sizes. The greater the value of EHD, the greater the gas capacity of the tubing. Data Calculated per NFPA # 54 and NFPA # 58

Table 6 - Copper Tubing or Schedule 40 Pipe Sizing *
2 PSIG Inlet with a 1 PSIG Pressure Drop (Between 2 PSIG Service and Line Pressure Regulator)
In Thousands of BTU/hr of undiluted LP-Gases (Propane) (Based on 1.50 Specific Gravity Gas)

Size of Pipe or Copper Tubing, Inches		Length of Pipe or Tubing in Feet*																							
		10	20	30	40	50	60	70	80	90	100	125	150	175	200	250	300	350	400	450	500	550	600	650	700
Copper Tubing (O.D.)	⅜	413	284	228	195	173	157	144	134	126	119	105	95	88	82	72	66	60	56	53	50	47	45	43	41
	½	852	585	470	402	356	323	297	276	259	245	217	197	181	168	149	135	124	116	109	103	97	93	89	86
	⅝	1,730	1,190	956	818	725	657	605	562	528	498	442	400	368	343	304	275	253	235	221	209	198	189	181	174
	¾	3,030	2,080	1,670	1,430	1,270	1,150	1,060	983	922	871	772	700	644	599	531	481	442	411	386	365	346	330	316	304
Pipe Size	½	2,680	1,840	1,480	1,260	1,120	1,010	934	869	815	770	682	618	569	529	469	425	391	364	341	322	306	292	280	269
	¾	5,590	3,850	3,090	2,640	2,340	2,120	1,950	1,820	1,700	1,610	1,430	1,290	1,190	1,110	981	889	817	760	714	674	640	611	585	562
	1	10,500	7,240	5,820	4,980	4,410	4,000	3,680	3,420	3,210	3,030	2,690	2,440	2,240	2,080	1,850	1,670	1,540	1,430	1,350	1,270	1,210	1,150	1,100	1,060
	1 ¼	21,600	14,900	11,900	10,200	9,060	8,210	7,550	7,020	6,590	6,230	5,250	5,000	4,600	4,280	3,790	3,440	3,160	2,940	2,760	2,610	2,480	2,360	2,260	2,170
	1 ½	32,400	22,300	17,900	15,300	13,600	12,300	11,300	10,500	9,880	9,330	8,270	7,490	6,890	6,410	5,680	5,150	4,740	4,410	4,130	3,910	3,710	3,540	3,390	3,260
	2	62,400	42,900	34,500	29,500	26,100	23,700	21,800	20,300	19,000	18,000	15,900	14,400	13,300	12,300	10,900	9,920	9,120	8,490	7,960	7,520	7,140	6,820	6,530	6,270

* Note: Maximum undiluted propane capacities listed are based on a 2-psig setting and a 1-psi pressure drop. Capacities in 1000 BTU/hr.
Data Calculated per NFPA # 54 and NFPA # 58

RegO Regulator Designs

RegO LP-Gas Regulators have been designed to give outstanding performance and dependability with a minimum of maintenance.

Nozzle Orifice
Replaceable and precision machined to prevent scoring of the seat disc.

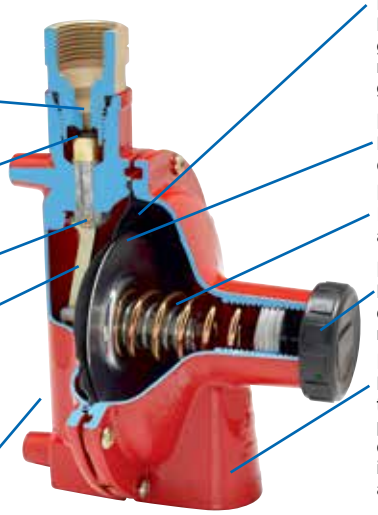
Seat Disc
Replaceable, resilient construction gives sure closing at lock up pressure. Straight line seat disc to nozzle operation provides even seat disc wear and positive lock up.

Pivot Pin
Fully enclosed in regulator body.

Control Linkage
Provides quick response to diaphragm movement; moves directly perpendicular to nozzle orifice to meter gas flow, gives positive closure and reduces seat disc wear.

Built-In Pressure Tap
Provides a convenient way to check downstream pressure on both high and low pressure models.

Body & Bonnet
Painted, heavy-duty zinc resists corrosion and gives long-life protection, even under "salty air" conditions.



Molded Diaphragm Assembly
Molded synthetic rubber with a tough, flexible fabric gives a super sensitive response in a temperature range of -40˚ to +165˚F. Molded diaphragm seals in a groove between the body and bonnet.

Diaphragm Plate
Rigid diaphragm plate transmits pressure variations to control linkage.

Relief Valve
It is built in and tamper resistant. Large bonnet vent allows high capacity relief on second stage regulators.

Bonnet Cap
Bonnet cap incorporates travel stop to help control downstream pressure in the unlikely event of a regulator malfunction.

Large Bonnet Vent
Large vent is equipped with protective screen and threaded for ¾" F. NPT vent piping. Large vent helps prevent ice from building up and blocking the vent during inclement weather. The regulator should be installed with vent down and the vent protected against blockage.

REGO 25 YEAR SILVER SERVICE LIFE

Laser Engraved Bonnet
New bonnet design features laser- engraved information that is easy to see and matches available stickers for gas check and record keeping. *Patent Pending

Easy to Turn Adjusting Screw
We redesigned our adjusting screw to be easily turned.

⅛" pressure plug ports
Our ⅛" pressure plug ports conform to 7/16" hex wrenches.

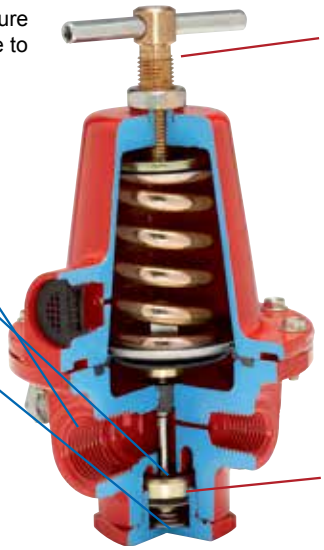
Typical of the 1580 Industrial High Pressure Regulators

The pounds-to-pounds, industrial regulator gives higher delivery pressure as tank pressure decreases, thus permitting full use of the gas in the tank. Most units are field adjustable to meet changing conditions.

Connections
Machined and threaded into the body forging; also includes ¼" NPT pressure gauge ports.

Seat Disc
Synthetic rubber assembly attached directly to the diaphragm assembly to ensure proper movement and regulation.

Back Cap Spring
Provides added upward force to help provide a positive lock-up.



Adjusting Assembly
Large handle with lock-nut release allows easy resetting of delivery pressure.

Integral O-Ring
Minimizes tendency to vibrate or hum under extreme loads.

Sensitivity

In those cases where there is a choice of delivery pressure ranges, the **lowest** spring range which will fulfill your requirements is recommended because the sensitivity of a regulator decreases as the range of the adjusting spring increases.

Relief Valves

Most high pressure regulators are not equipped with integral relief valves. For certain applications where it is desirable to protect equipment downstream of the regulator, relief valves must be installed in the line.

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Compact First Stage Regulators LV3403TR

Ideal for use as a first stage regulator on any domestic size ASME or DOT container in propane gas installations requiring up to 1,500,000 BTU's per hour. The regulator is factory set to reduce container pressure to an intermediate pressure of approximately 10 PSIG.

UL LISTED

Ordering Information

Part Number	Inlet Connection	Outlet Connection	Orifice Size	Factory Delivery Pressure	Bonnet Vent Position	Vapor Capacity BTU/hr Propane*
LV3403TR	¼" F.NPT	½" F.NPT	7/32"	10 PSIG	Over Outlet	1,500,000
LV3403TRV9					9:00	

* Maximum flow based on inlet pressure 20 PSIG higher than the regulator setting and delivery pressure 20% lower than the regulator setting and delivery pressure 20% lower than the setting.

LV3403TR

High Pressure First Stage Regulators LV4403SR and TR Series

Provides accurate first stage regulation in two-stage bulk tank systems. Reduce tank pressure to an intermediate pressure of 5 to 10 PSIG. Also used to supply high pressure burners for applications like industrial furnaces or boilers. Also incorporated in multiple cylinder installations.

UL LISTED

Ordering Information

Part Number	Inlet Connection	Outlet Connection	Orifice Size	Factory Delivery Pressure	Adjustment Range* (PSIG)	Integral Relief Included	Vapor Capacity BTU/ hr Propane**
LV4403SR4	½" F. NPT	½" F. NPT	¼"	5	1-5	Yes	2,500,000
LV4403TR4				10	5-10		
LV4403SR9	F. POL			5	1-5		
LV4403TR9				10	5-10		
LV4403SR96		¾" F.NPT		5	1-5		
LV4403TR96				10	5-10		

* When used for final stage pressure control, must either incorporate integral relief valve or separate relief valve should be specified in accordance with NFPA Pamphlet 58.

** Maximum flow based on inlet pressure 20 PSIG higher than the regulator setting and delivery pressure 20% lower than the setting.

LV4403 Series

A

Low Pressure Second Stage Regulators - Standard Settings LV4403B Series

Designed to reduce first stage pressure of 5 to 20 PSIG down to burner pressure, normally 11" w.c. Ideal for medium commercial installations, multiple cylinder installations and normal domestic loads.

UL LISTED

Ordering Information

Part Number	Inlet Connection	Outlet Connection	Orifice Size	Factory Delivery Pressure	Adjustment Range	Bonnet Vent Position	Vapor Capacity BTU/hr. Propane**
LV4403B4	½" F. NPT	½"	#28 Drill	11" w.c. at 10 PSIG Inlet	9" to 13" w.c.	Over Inlet	935,000
LV4403B46		¾" F. NPT					
LV4403B46R*							
LV4403B66	¾" F. NPT						
LV4403B66R*							

* Backmount design

** Maximum flow based on 10 PSIG inlet and 9" w.c. delivery pressure.

LV4403B Series

Dielectric Second Stage Regulators
LV4403BD Series

RegO's Dielectric second stage regulators are designed to reduce first stage pressure normally 10PSIG down to burner pressure, normally 11" w.c. and are ideal for medium commercial installations, multiple cylinders installations and normal domestic loads.

RegO Dielectric second stage regulators are engineered to isolate potential electrical current from metallic piping before entering a building. The use of a separate dielectric union is not necessary because the regulator contains a dielectric union as part of the inlet assembly. Available in both SAE Flare and F.NPT inlet connection.

LV4403BD Series

Ordering Information

Part Number	Inlet Connection	Outlet Connection	Inlet Material	Orifice Size	Factory Delivery Pressure	Adjustment Range	Bonnet Vent Position	Vapor Capacity BTU/ hr Propane
⅜" M. Flare = 3								
LV4403B3D	⅜" M Flare	½" F. NPT		# 28 Drill	11" w.c. at 10 PSIG Inlet	9" to 13" w.c.	Over Inlet	935,000
LV4403B36D		¾" F. NPT						
LV4403B3RD*		½" F. NPT						
LV4403B36RAD**		¾" F. NPT		3/16"				1,000,000
LV4403B36RABD***								
½" M. Flare = 1								
LV4403B1D	½" M Flare	½" F. NPT	Brass	# 28 Drill	11" w.c. at 10 PSIG Inlet	9" to 13" w.c.	Over Inlet	935,000
LV4403B16D		¾" F. NPT						
LV4403B16RD*								
LV4403B16RAD**				3/16"				
LV4403B16RABD***								1,000,000
⅝" M.Flare = 5								
LV4403B5D	⅝" M Flare	½" F. NPT	Brass	# 28 Drill	11" w.c. at 10 PSIG Inlet	9" to 13" w.c.	Over Inlet	935,000
LV4403B56D		¾" F. NPT						
LV4403B56RD*								
LV4403B56RAD**				3/16"				
LV4403B56RABD***								1,000,000
½"- ¾" F. NPT	**Female Union**							
LV4403B4D	½" F.NPT	½" F.NPT	Brass & Plated Steel	# 28 Drill	11" w.c. at 10 PSIG Inlet	9" to 13" w.c.	Over Inlet	935,000
LV4403B46D		¾" F. NPT						
LV4403B66D	¾" F. NPT							
LV4403B46RD*	½" F. NPT							
LV4403B66RD*	¾" F. NPT							
LV4403B66RAD**				3/16"				
LV4403B66RABD***								1,000,000

* Backmount Design.
** Right Angle Design
***Right Angle with Bracket
Maximum flow based on 10 PSIG inlet and 9" w.c. delivery pressure.

A

Low Pressure Second Stage Regulators - Special Settings LV4403H Series

Designed to reduce first stage pressure of 5 to 10 PSIG down to pressure higher than 11" water column, the actual pressure setting is specified in the table below. These regulators are designed for installations where the appliances require pressures greater than 11 inches w.c.

UL LISTED

LV4403H Series

Ordering Information

Part Number	Inlet Connection	Outlet Connection	Orifice Size	Delivery Pressure at 10 PSIG Inlet	Adjustment Range Inches w.c.	Bonnet Vent Position	Vapor Capacity BTU/ hr. Propane**
LV4403H222	¼" F.NPT	½" F.NPT	7/32"	22" w.c.	15-35	Inlet	700,000
LV4403H414	½" F.NPT		#28	14" w.c.	12.5-19		
LV4403H420				20" w.c.	15-35		
LV4403H4614		¾" F.NPT		14" w.c.	12.5-19		
LV4403H4620				20" w.c.	15-35		
LV4403H6614	¾" F.NPT			14" w.c.	12.5-19		

* Maximum flow based on 10 PSIG inlet 20% drop in delivery pressure (5/1/08)

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Compact "Back-Mount" Regulator LV3403BR Series

The LV3403BR Back Mount Regulator is designed to reduce first stage pressure of 5-10 PSIG down to burner pressure normally 11" w.c. Designed as a second stage regulator for smaller applications with flow requirements up to 450,000 BTU/hr. and are ideal for homes, mobile homes, and cottages.

UL LISTED

Ordering Information

Part Number	Inlet Connection	Outlet Connection	Orifice Size	Factory Delivery Pressure	Adjustment Range	Bonnet Vent Position	Vapor Capacity BTU/hr *
LV3403B44R	½" F.NPT	½" F.NPT	7/32"	11" w.c. At 10 PSIG Inlet	9" to 13" w.c.	Over Inlet	450,000
LV3403B46R		¾" F.NPT					

* Maximum flow based on 10 PSIG inlet and 9" w.c. delivery pressure.

LV3403BR Series

Compact Second Stage Regulator for LP-Gas LV3403B4

The LV3403B4 is designed to reduce first stage pressure of 5-20 PSIG down to burner pressure normally 11" w.c. Designed as a second stage regulator for smaller applications with flow requirements up to 450,000 BTU's/hr, they are ideal for homes, mobile homes, and cottages.

UL LISTED

Ordering Information

Part Number	Inlet Connection	Outlet Connection	Orifice Size	Factory Delivery Pressure	Adjustment Range	Bonnet Vent Position	Vapor Capacity BTU/hr *
LV3403B4	½" F.NPT	½" F.NPT	7/32"	11" w.c. At 10 PSIG Inlet	9" to 13" w.c.	Inlet	450,000
LV3403B4V3						3:00	
LV3403B4V0						Outlet	
LV3403B4V9						9:00	

* Maximum flow based on 10 PSIG Inlet 9" w.c. delivery pressure

LV3403B4 Series

A

Low Pressure Second Stage Regulators LV4403B66RA Series

Designed to reduce first stage pressure of 5 to 20 PSIG down to burner pressure, normally 11" w.c. Ideal for medium commercial installations, vapor meter installations and normal domestic loads.

UL LISTED

Ordering Information

Part Number	Inlet Connection	Outlet Connection	Orifice Size	Factory Delivery Pressure	Adjustment Range	Bonnet Vent Position	Vapor Capacity BTU/hr. Propane*
LV4403B66RA	¾" F. NPT	¾" F. NPT	3/16"	11" w.c. at 10 PSIG Inlet	9" to 13" w.c.	Over Inlet	1,000,000
LV4403B66RAB**							

* Maximum flow is based on 10 PSIG inlet and 9" w.c. delivery pressure.
** Mounting Bracket Included.

w/ Mounting Bracket

LV4403B66RA Series

Low Pressure Second Stage Regulators - Standard Settings LV5503B Series

Designed to reduce first stage pressure of 5 to 20 PSIG down to burner pressure,normally 11" w.c. Ideal for larger commercial and industrial applications, multiple cylinder installations and large domestic systems.

UL LISTED

Ordering Information

Part Number	Inlet Connection	Outlet Connection	Orifice Size	Factory Delivery Pressure	Adjustment Range	Bonnet Vent Position	Vapor Capacity BTU/hr. Propane
LV5503B4	½" F. NPT	¾" F. NPT	¼"	11" w.c. at 10 PSIG Inlet	9" - 13" w.c.	Over Inlet	1,600,000
LV5503B6	¾" F. NPT						
LV5503B8		1" F. NPT	9/32"				2,300,000

Maximum flow is based on 10 PSIG inlet and 9" w.c. delivery pressure.

LV5503B Series

Low Pressure Second Stage Regulators - Special Settings
LV5503H Series

Designed to reduce first stage pressure of 5 to 20 PSIG down to burner pressure,normally 11" w.c. Ideal for larger commercial and industrial applications, multiple cylinder installations and large domestic systems.

UL LISTED

LV5503H Series

Ordering Information

Part Number	Inlet Connection	Outlet Connection	Orifice Size	Factory Delivery Pressure @ 10 PSIG Inlet	Adjustment Range Inches w.c.	Bonnet Vent Position	Vapor Capacity BTU/ hr.* Propane
LV5503H414	½" F. NPT	¾" F. NPT	¼"	14" w.c.	7-16	Inlet	1,600,000
LV5503H614	¾" F. NPT						
LV5503H620				20" w.c.	11-28		
LV5503H620V						Outlet	
LV5503H640				40"w.c.	28-84	Inlet	
LV5503H640V						Outlet	
LV5503H814		1" F. NPT	9/32"	14" w.c.	7-16	Inlet	2,300,000
LV5503H820				20" w.c.	11-28		
LV5503H840				40" w.c.	28-84		

Maximum flow is based on 10 PSIG inlet 20% drop in delivery pressure (5/1/08)

A

Second Stage Regulators for 2 PSI Systems LV4403Y and LV5503Y Series

Designed to reduce first stage pressure of 10 PSIG down to 2 PSIG. A line pressure regulator is required downstream to reduce the 2 PSIG to a nominal 11" w.c.

UL LISTED

LV5503Y Series

LV4403Y Series

Ordering Information

Part Number	Inlet Connection	Outlet Connection	Orifice Size	Adjustment Range	Bonnet Vent Position	Vapor Capacity BTU/hr. Propane***
LV4403Y4	½" F. NPT	½" F. NPT	¼"	2 PSIG @ 10 PSIG Inlet	Over Inlet	1,000,000
LV4403Y46R*	½" F. NPT	¾" F. NPT	¼"	2 PSIG @ 10 PSIG Inlet	Over Inlet	1,000,000
LV5503Y6	¾" F. NPT	¾" F. NPT	¼"	2 PSIG @ 10 PSIG Inlet	Over Inlet	2,200,000
LV5503Y8	¾" F. NPT	1" F. NPT	9/32"	2 PSIG @ 10 PSIG Inlet	Over Inlet	2,200,000

Maximum flow is based on 10 PSIG inlet pressure and 1.5 PSIG delivery pressure.

Low Pressure Second Stage Tobacco Barn Regulator LV5503G4 Series

Especially developed for drying barns in the tobacco industry. The LV5503G4 regulator will supply a steady and constant flow of fuel to as many as 12 to 20 burners throughout the barn.

UL LISTED

LV5503G4 Series

Ordering Information

Part Number	Inlet Connection	Outlet Connection	Orifice Size	Factory Delivery Pressure	Adjustment Range	Bonnet Vent Position	Vapor Capacity BTU/hr. Propane*
LV5503G4	½" F. NPT	¾" F. NPT	¼"	15" w.c. at 15 PSIG Inlet	8" - 18" w.c.	Above Inlet	1,750,000

Maximum flow is based on 15 PSIG inlet pressure and 13" w.c. delivery pressure.

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Compact Twin Stage Regulators
LV404B4 and LV404B9 Series

This compact two-stage regulator is designed to reduce container pressure down to 11" w.c. delivery pressure. It is ideal for "on-site" cylinder applications, mobile homes and average domestic service including small ASME and 100 to 420 pound DOT cylinders.

404PE

LV404B4

LV404B4V9

LV404B9

Ordering Information

Part Number	Inlet Connection	Outlet Connection	Orifice Size	Factory Delivery Pressure	Adjustment Range 2nd Stage	Bonnet Vent Position 1st Stage	Bonnet Vent Position 2nd Stage	Capacity BTU/hr. Propane*	Accessories
									1st Stage Vent Pipe-Away
LV404B4	¼" F. NPT	½" F. NPT	3/16"	11" w.c. at 100 PSIG Inlet	9" - 13" w.c.	Down	Over Outlet	525,000	404PE
LV404B4V9						9 o'clock	9 o'clock		
LV404B46		¾" F. NPT				Down	Over Outlet		
LV404B46V9						9 o'clock	9 o'clock		
LV404B9	F. POL	½" F. NPT				Down	Over Outlet		
LV404B9V9						9 o'clock	9 o'clock		
LV404B96		¾" F. NPT				Down	Over Outlet		
LV404B96V9						9 o'clock	9 o'clock		

Maximum flow is based on 25 PSIG inlet pressure and 9" w.c. delivery pressure.

New Compact Twin Stage Regulators for LP-Gas LV404B34 & LV404B39 Series

The compact twin-stage regulator is designed to reduce container pressure down to 11" w.c. delivery pressure. It is ideal for "on site" container applications such as homes, mobile homes and cottages for average domestic service; including small ASME tanks and 100-420 pound DOT cylinders.

Ordering Information

Part Number	Inlet Connection	Outlet Connection	Orifice Size	Factory Delivery Pressure	Adjustment Range 2nd Stage	Bonnet Vent Position 1st stage **	Bonnet Vent Position 2nd stage**	Vapor Capacity BTU/hr *
LV404B34	¼" F.NPT	½" F.NPT	7/32"	11" w.c. @ 100 Psig Inlet	9" to 13"w..c.	Rear	Outlet	450,000
LV404B39	F.POL							
LV404B34V9	¼" F.NPT					Left	9:00	
LV404B39V9	F.POL							

* Maximum flow based on 10 PSIG Inlet 9" w.c. delivery pressure
** Other vent positions available upon request

LV404B39

LV404B34

Twin Stage Automatic Changeover Regulators 7525B Series

These combination automatic changeover, two stage regulators are especially suitable for homes, mobile homes, cottages, construction and other portable two cylinder installations. Empty containers may be replaced without interrupting customer's gas service.

Ordering Information

Automatic Changeover Regulator	Inlet	Outlet	Pigtails	Bracket	Capacity BTU/hr. Propane
7525B34	¼" Inverted Flare	½" F. NPT	912FA20	2302-31	400,000
7525B34			912FS20		
7525B4			912FA20	2503-22	450,000
7525B4			912FS20		

Maximum flow is based on 25 PSIG inlet pressure and 9" w.c. delivery pressure.

7525B34

7525B4

Two PSIG Delivery Pressure Twin-Stage Regulators LV404Y9 & Compact LV404Y39

SPECIAL 2 PSIG DELIVERY pressure twin stage regulator is designed to reduce container pressure down to 2 PSIG. A line pressure regulator is required downstream to reduce the 2 PSIG to a nominal 11" w.c.

UL LISTED

Ordering Information

Part Number	Inlet Connection	Outlet Connection	Orifice Size	Factory Delivery Pressure (PSIG)	Adjustment Range (PSIG)	Bonnet Vent Position 1st Stage	2 PSIG Bonnet Vent Position	Capacity BTU/HR*
LV404Y9	F.POL (CGA 510)	½" F.NPT	7/32"	2	1.8 to 2.5	Down	Outlet	800,000
LV404Y39								650,000

Maximum flow is based on 25 PSIG inlet pressure and 1.5 PSIG delivery pressure.

LV404Y39

LV404Y9

Two Stage Regulator Outfits 5807, 5808, 5820 Series

These outfits contain the equipment required to provide two-stage regulation.

UL LISTED

Ordering Information

Kit Number	1st Stage Regulator Included		2nd Stage Regulator Included		Bracket Included	Pigtail Included	Capacity BTU/hr. Propane
	Part Number	Inlet x Outlet Female	Part Number	Inlet x Outlet F. NPT			
5807	LV4403TR9	POL x ½" NPT	LV4403B4	½" x ½"	2503-22	913PS12	935,000
5808			LV4403B46R	½" x ¾"	Not Required		
5820	LV4403TR96	POL x ¾" NPT	LV4403B66R	¾" x ¾"			

913PS12

2503-22

LV4403TR9

LV4403B Series

Twin Stage Regulator Outfits 5828 and 5832

This outfit contains the equipment required to provide twin-stage regulation.

UL LISTED

Ordering Information

Kit Number	Twin Stage Regulator Included	Inlet F. NPT	Outlet F. NPT	Pigtails Included	Capacity BTU / hr. Propane
5828	LV404B4	¼"	½"	912JS12	525,000
5832	LV404B34V9				400,000

912JS12

2503-22

LV404B4

LV404B34V9

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Automatic Changeover Regulator Outfits 5726B34, 5727B34, 5754B4, 5755B4

This outfit contains the equipment required to provide twin-stage regulation.

UL LISTED

Ordering Information

Kit Number	Automatic Changeover Regulator Included	Inlet	Outlet	Pigtails Included-2	Bracket Included	Capacity BTU/hr. Propane
5726B34	7525B34	¼" Inverted Flare	½" F. NPT	912FA20	2302-31	400,000
5727B34	7525B34			912FS20		
5754B4	7525B4			912FA20	2503-22	450,000
5755B4	7525B4			912FS20		

912FA20

7525B4

Compact Regulators 302 Series

These compact regulators are designed for smaller outdoor grills and fish cookers. It is intended for use on small portable appliances that use 100,000 BTU's/hr. or less. It may not be used on fixed pipe systems per NFPA 58, 1995 edition.

UL LISTED

Ordering Information

Part Number	Type	Inlet Connection	Outlet Connection	Orifice Size	Factory Delivery Pressure	Adjustment Range	Bonnet Vent Position	Vapor Capacity BTU/hr. Propane*
302	Single Stage	¼" F. NPT	3/8" F. NPT	No. 50 Drill	11" w.c. at 100 PSIG inlet	9-13" w.c.	Small Vent Above Inlet	125,000
302V		¼" F. NPT					Drip Lip Above Inlet	
302V9		¼" F. NPT					Drip Lip at 9 o'clock	
302V9LS		Soft POL w/o orifice						

Maximum flow is based on 25 PSIG inlet pressure and 9" w.c. delivery pressure.

302

302V

High Pressure Industrial / Commercial Pounds-to-Pounds Regulators 597F Series

Designed to reduce propane gas container pressure down to between 3 and 100 PSIG. Ideal for liquid or vapor service, they can be used in a variety of applications including salamander heaters, weed burning torches, fish cookers, tar pot heaters, and other industrial type services.

UL LISTED

Ordering Information

Part Number	Adjustment Method	Inlet Connection	Outlet Connection	Recommended Delivery Pressure Range (PSIG)	Capacity Determined at Set Pressure of PSIG*	Capacity BTU/hr. Propane**
597FA	Tee Handle	¼" NPT	¼" NPT	1-15	10	1,750,000
597FB				10-30	20	3,000,000
597FC				20-45	30	3,500,000
597FD				40-100	40	4,500,000

* Set pressure established at 100 PSIG inlet and a flow of 250,000 BTU/hr.
** Capacity determined at actual delivery pressure 20% less than set pressure with inlet pressure 20 PSIG higher than the set pressure.

597F

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High Pressure Industrial / Commercial Pounds-to-Pounds Regulators 1580V and AA1580V Series

Designed to reduce LP-Gas and anhydrous ammonia container pressures to between 3 and 125 PSIG. Precision-built with a multi-million BTU capacity, the 1580V series is perfect for such big, tough jobs as crop dryers, asphalt batch mixing plants, road building "tar wagons", heat treating and other large industrial and commercial loads. It's also ideal as a first stage regulator in large multiple operations. The AA1580V series is ideal for use in anhydrous ammonia applications such as blue print machines and heat treating.

UL LISTED

1580V

Ordering Information

Part Number	Service	Adjustment Method	Inlet & Outlet Connections	Recommended Delivery Pressure Range (PSIG)	A Width	B Height (max.)	Capacity Determined at Set Pressure of PSIG*	Capacity**
1584VN	LP-Gas	Tee Handle	½" F. NPT	3-30	2 15/16"	4⅞"	20	7,000,000 BTU/hr. LPG
1584VL				25-50			30	10,000,000 BTU/hr. LPG
1584VH				45-125			60	10,000,000 BTU/hr. LPG
AA1584VW	NH3			3-25			20	4,500 CFH NH_3
AA1584VL				20-50			30	4,800 CFH NH_3
AA1584VH				45-125			60	5,100 CFH NH_3
1586VN	LP-Gas		¾" F. NPT	3-30	3 ½"	7"	20	7,500,000 BTU/hr. LPG
1586VL				25-50			30	14,000,000 BTU/hr. LPG
1586VH				45-125			60	14,000,000 BTU/hr. LPG
AA1586VW	NH3			3-25			20	7,700 CFH NH_3
AA1586VL				20-50			30	
AA1586VH				45-125			60	8,900 CFH NH_3
1588VN	LP-Gas		1" F. NPT	3-30			20	7,500,000 BTU/hr. LPG
1588VL				25-50			30	14,000,000 BTU/hr. LPG
1588VH				45-125			60	14,000,000 BTU/hr. LPG

* Set pressure is established with 100 PSIG inlet pressure and a flow of 500,000 BTU/hr. propane for 1580V Series, and 180 CFH/hr. NH_3 for AA1584V and AA1586V Series.

** Capacity determined at 100 PSIG inlet, set pressure noted on chart at 20% drop.

NOTE: Care must be taken to prevent re-liquification of propane at normal temperatures by heat tracing or other effective means. Use of a relief valve upstream or downstream of these regulators is recommended in accordance with NFPA 58.

A

High Pressure / High Temperature Industrial / Commercial Pounds-to-Pounds Regulators X1584V, X1586V, and X1588V Series

Designed to reduce LP-Gas container pressures to between 3 and 50 PSIG. Ideal for crop drying, heat treating, asphalt batch mixing and other large industrial and commercial load application utilizing high temperature LP-Gas or high temperature atmosphere under conditions up to 300ºF. Also ideal as a first stage regulator in large multiple operations.

UL LISTED

X1584

Ordering Information

Part Number	Service	Adjustment Method	Width	Height	Inlet & Outlet Connections	Recommended Delivery Pressure Range (PSIG)	Capacity Determined at Set Pressure of PSIG*	Capacity BTU/hr. Propane**
X1584VN	LP-Gas	Tee Handle	2⅞"	8⅞"	½" F. NPT	3-30	20	7,000,000
X1584VL						25-50	30	10,000,000
X1586VN			3 5/16"	6⅞"	¾" F. NPT	3-30	20	7,500,000
X1586VL						25-50	30	14,000,000
X1588VN					1" F. NPT	3-30	20	7,500,000
X1588VL						25-50	30	14,000,000

* Set pressure is established with 100 PSIG inlet pressure and a flow of 500,000 BTU/hr. propane.
** Capacity determined at 100 PSIG inlet, set pressure noted on chart at 20% drop.
NOTE: Care must be taken to prevent re-liquification of propane at normal temperatures by heat tracing or other effective means. Use of a relief valve upstream or downstream of these regulators is recommended in accordance with NFPA 58.

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Vapor Relief Valves
3139 Series

Designed for use as a relief valve on high pressure regulators to comply with NFPA 58 5.1.1 "High-pressure regulators with a rated capacity of more than 500,000 BTU/hr where permitted to be used on two stage systems shall incorporate an integral relief valve or shall have a separate relief valve."

3139-18 3139-26 3139-38

Part Number	Set Pressure	Regulator Settings	Connection Size	Height	Width	Flow Capacity at 120% of Set Pressure (SCFH Propane)	Pipe Away Adapter
3139-18	18 PSIG	10 PSIG	¼" M. NPT	2 27/32"	1 1/16"	1357*	B-009412-2B
3139-26	26 PSIG	15 PSIG				1725**	
3139-38	38 PSIG	20 PSIG				2304***	

* Flow recorded at 21.6 PSI inlet pressure for this valve. ** Flow recorded at 31.2 PSI inlet pressure for this valve. *** Flow recorded at 45.6 PSI inlet pressure for this valve.

Copper Pigtails 912 and 913 Series

Straight Pigtails Ordering Information

Connections	Approximate Length	Part Number		
		¼" Tube		⅜" Tube
		⅞" Hex Short Nipple	1⅛" Hex Long Nipple	⅞" Hex Short Nipple
M.POL x M.POL	5"	-	½"	913JS05
	12"	912PS12	-	913PS12
	20"	912PS20	912PA20	913PS20
	30"	912PS30	-	913PS30
	36"	912PS36	912PA36	913PS36
	48"	912PS48	912PA48	913PS48
¼" Inverted Flare x M.POL	12"	912FS12	-	-
	20"	912FS20	912FA20	-
	30"	912FS30	-	-
	36"	912FS36	-	-
¼" M.NPT x M.POL	5"	-	-	913JS05
	12"	912JS12	-	-
	20"	912JS20	-	-
	36"	912JS36	-	-
½" M.NPT x M.Pol	12"	-	-	913LS12
½" M.NPT x ⅜" M.NPT	12"	-	-	913KL12

Bent Pigtails Ordering Information

Connections	Approximate Length	Part Number	Type/Degree of Bend
		⅜" Tube	
		⅞" Hex Short Nipple	
¼" M. NPT x M. POL	5"	913JS05A	90°
M. POL x M. POL		913PS05A	
	12"	913PS12G	270° Right Hand
		913PS12H	270° Left Hand
		913PS12S	360°

Pigtails are available in a variety of connections, sizes and styles. Care should always be taken in selecting the proper pigtail for a particular application.

Note: RegO recommends a new pigtail be installed with every new and replaced regulator.

913PS12

Dielectric Pigtails

UL LISTED

D912

Part Number	Approximate Length	Tube	Connections
D912P12	12"	¼"	M.POL x M.POL
D912P20	20"		
D912P30	30"		
D912J12	12"		¼" M.NPT x M.POL
D912J20	20"		
D912J30	30"		
D913P12	12"	⅜"	M.POL x M.POL
D913P20	20"		
D913P30	30"		
D913J12	12"		¼" M.NPT x M.POL
D913J20	20"		
D913J20	30"		

Inlet Fittings

Part Number	Description
970	Hard nose POL with wrench nut.
970AX	Hard nose POL with wrench nut and excess flow.
970AXS	Soft nose POL with wrench nut and excess flow.
970WXS	
3199W	Heavy duty hard nose POL with wrench nut and excess flow.
970AW	Soft nose POL with Handwheel.
970HT	Soft nose POL with Handwheel and 60 DMS orifice.
970S	Soft nose POL with wrench nut and 60 DMS orifice.

These inlet fittings are available for assembly into either first stage of single stage regulators. All have ¼" M. NPT connections and are machined from brass.

3199W

970 970AX 970AXS 970AW 970HT 970S

Brackets

RegO Brackets are especially designed for use in installing RegO Regulators in applications requiring the use of a bracket.

Part Number	Material	For Use With Regulator Model:
2302-31	Cadmium Plated Steel	LV3403, LV404B34, LV404B39
2503-22		LV404B4 LV404B9 Series,LV5503 Series LV4403 Series
2503-19	Aluminum	

2503-19 2503-22 2302-31

Manifolds

Tee Check Manifolds

1350R and 1450R

For use in systems that require uninterrupted gas service during cylinder exchange. Especially for summer cottages, mobile homes and single appliance loads.

Part Number	Inlet Connections	Outlet Connection
1350R	F. POL	M. POL
1450R	¼" Inverted Flare	¼" M. NPT

1350R

1450R

Multiple Cylinder Manifolds

1350E and 1450E

Use with suitable pigtails to connect multiple cylinders together. Ideal for loads that require more than one cylinder to be in service at a time.

Part Number	Inlet Connections	Outlet Connection
1350E	F. POL	M. POL
1450E	¼" Inverted Flare	¼" M. NPT

1450E

1350E

A

Adjustable Flexible Vent Kit

Part Number	Flex Tubing Length	Reusable End Connectors	90° Elbow	Mounting Bracket
LV960-48	48" (4 feet)	2	1	3
LV960-72	72" (6 feet)			4
LV960-120	120" (10 feet)			5

LV960

Test Kits

Low Pressure Test Set

2434A Series

This kit provides the equipment necessary for checking regulator delivery pressure (low pressure) at the appliances. The basic set contains a 2424A-2 low pressure gauge and a 3 foot — 3/16" O.D. flexible synthetic rubber tube. Adapters are also available.

Part Number	Contents	Adapters	Adapter size
2434A	Test Kit	1328	⅜" OD
		1331	½" OD
		1332	⅝" OD

2434A

1328 Adapter

Water Manometer Kit

1212 Kit

The water manometer kit is especially suited for use with low pressure LP-Gas systems. It is ideal for pressure checks downstream of the low pressure regulator and at the appliances.

Part Number	Description
1212 KIT	Flexible Tube Water Manometer Kit

1212 KIT

High Pressure Gauge Adapter

2962

Designed for testing high pressure lines. Adapter has 0 to 300 PSIG gauge. A bleeder valve allows you to bleed down to correct pressure during pressure tests.

Part Number	Inlet Connection	Outlet Connection	Pressure Gauge Range (PSIG)
2962	Soft Nose M. POL	F. POL	0 - 300

2962

Adhesive Warning Labels

These adhesive warning labels are intended for application as close as possible to the LP-Gas regulator once the regulator has been installed.

Part Number	Description
LV4403-400	Adhesive Warning Label

DANGER **WARNING**

LP-GAS IS EXTREMELY FLAMMABLE AND EXPLOSIVE

AVOID SERIOUS INJURY AND PROPERTY DAMAGE. IF YOU SEE, SMELL, OR HEAR ESCAPING GAS... EVACUATE AREA IMMEDIATELY! CALL YOUR LOCAL FIRE DEPARTMENT! DO NOT ATTEMPT TO REPAIR. DO NOT STORE IN BUILDING OR ENCLOSED AREA. DO NOT USE ON HOT AIR BALLOONS OR AIRCRAFT.

Insist that your LP-Gas dealer regularly inspect and maintain this installation and properly instruct you in safety matters.

Make sure ice, snow drifts, dirt, bugs and other foreign material do not obstruct vent passage-ways and openings. The vent opening must have a screen installed. If screen is missing, call your gas dealer for immediate examination and replacement.

DO NOT REMOVE, DEFACE OR OBLITERATE THIS LABEL.
DO NOT FILL CONTAINER UNLESS THIS LABEL IS READABLE.

ADDITIONAL SAFETY INFORMATION IS AVAILABLE FROM

ECII Engineered Controls International, Inc.

Printed in U.S.A. 04-0994-1189
Part Number LV4403-400

100 RegO Drive PO Box 247 Elon College, NC 27244 USA Phone (336) 449-7707 Fax (336) 449-6594 www.regoproducts.com

LV4403-400

DANGER **READ THIS FIRST** **WARNING**

LP-GAS IS EXTREMELY FLAMMABLE AND EXPLOSIVE

AVOID SERIOUS INJURY AND PROPERTY DAMAGE. IF YOU SEE, SMELL OR HEAR ESCAPING GAS...EVACUATE AREA IMMEDIATELY! CALL YOUR LOCAL FIRE DEPARTMENT! DO NOT ATTEMPT TO REPAIR. DO NOT STORE IN BUILDING OR ENCLOSED AREA. DO NOT USE ON HOT AIR BALLOONS OR AIRCRAFT.

Make sure you are thoroughly trained before you attempt any regulator installation or maintenance. Improper conditions or procedures can cause accidents resulting in property damage and personal injury.

Become thoroughly familiar with NPGA Safety Pamphlet 306 "LP-Gas Regulator and Valve Inspections & Maintenance" and RegO Safety Warning "LP-Gas Regulators" found in the regulator section of the L-500 & L-102 Catalogs. Follow its recommendations.

Know and understand NFPA Pamphlet 58 "Liquefied Petroleum Gas Code", which is the law in many states. This publication is available from NFPA, Batterymarch Park, Quincy, MA 02269. Following its requirements is essential in the safe use of LP-Gas. Section 4.4 states: "Persons who transfer liquid LP-Gas, who are employed to transport LP-Gas, or whose primary duties fall within the scope of this code shall be trained in proper handling procedures. Refresher training shall be provided at least every three years and shall be documented."

Pamphlet 58 also states that "All regulators for outdoor installations, except regulators used for portable industrial applications, shall be designed, installed or protected so their operation will not be affected by the elements (freezing rain, sleet, snow, ice, mud or debris). This protection may be integral with the regulator."

Vents must be clear and fully open at all times. An obstructed vent will prevent the regulator from functioning properly and may result in property damage and personal injury.

Regulators should be installed with the vent facing down or otherwise covered for protection.

Twin-Stage Regulators should be installed completely under cover and/or with screened vent pipe away adapters that position both vents in a down position without obstructing flow through the vents.

Make sure piping is clean and free from foreign material (such as dirt, corrosion, chips, pipe joint compound, etc.) Always replace the pigtail when replacing a regulator. Thread sealant used on piping must be compatible with LP-Gas.

Make sure the use and location of the regulator(s) as a component(s) of the LP-Gas system to be installed is proper. (Avoid misusing LP-Gas equipment.) See the following RegO publications: L-500 & L-102 Catalogs and the LP-Gas Serviceman's manual.

For underground installations, make sure that water, mud, dirt, and insects cannot get into the regulator, and that the regulator is easily accessible for regulator maintenance. Follow NPGA Bulletin 401. See RegO Safety Warning "LP-Gas Regulators" found in the regulator section of the L-500 & L-102 Catalogs.

Check regulator and installation for leaks following NFPA #54 and NPGA Bulletin 403 "Pressure Testing and Leak Checking LP-Gas Piping Systems".

In selecting a label for posting at the installation site, consider RegO part number 2403-400 along with your own, NPGA's and others.

Remember to instruct the owner/user/customer in safety matters concerning LP-Gas and this equipment. See RegO Safety Warning "LP-Gas Regulators" found in the regulator section of the L-500 & L-102 Catalogs.

RegO requests that this information be forwarded to your customers. Additional copies are available from RegO and your authorized RegO Distributor.

REGO

Printed in USA 08A-0910-0390
Part number LV4403-500

Elon, N.C. 27244 U.S.A. Phone (336) 449-7707 Fax (336) 449-6594 www.regoproducts.com

LV4403-500

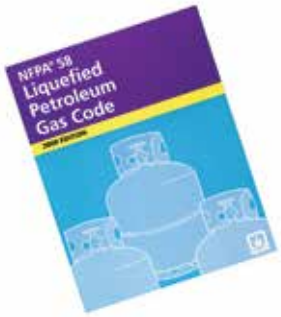
Warning Notice

The following warning information, Part Number LV4403-500, is included with each shipment of regulators to the first purchaser of the product from the factory.

This information is intended to be forwarded throughout the product distribution chain. Additional copies are available from RegO and Authorized Product Distributors.

A

Safety Warnings



Purpose

In its continuing quest for safety, RegO publishes a series of bulletins explaining the hazards associated with the use, misuse, and aging of LP-Gas valves and regulators. It is hoped that these factual bulletins will make clear to LP-Gas dealer managers and service personnel, that the utmost care and attention must be used in the installation, inspection, and maintenance of these products, or problems could occur which would result in injuries and property damage.

The National Fire Protection Association NFPA 58 Liquified Petroleum Gas Code - 2017 Edition states in Section 4.4 Qualification of Personnel; "Persons whose duties fall within the scope of this code shall be provided with training that is consistent with the scope of their job activities and that includes proper handling and emergency response procedures... Refresher training shall be provided at least every 3 years, initial and subsequent training shall be documented". These "RegO Safety Warnings" may be useful in training new employees and reminding older employees of hazards that can occur. It is recommended that all employees complete the Propane Education Research Council's Certified Employee Training Program.

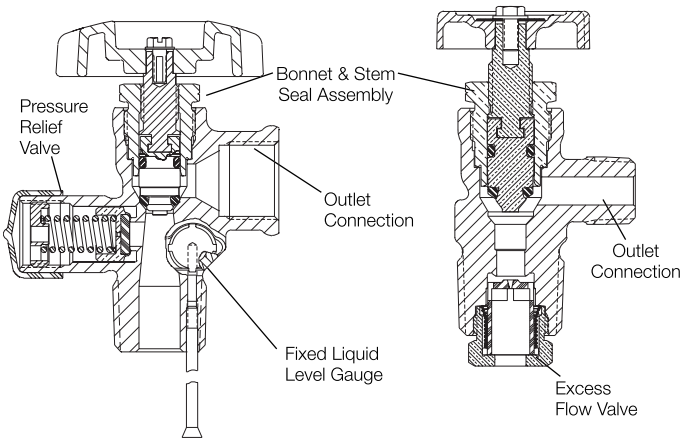
Nature of Warnings

It is recognized that warnings should be as brief as possible, but the factors involved in cylinder valve failure are many because of the multiple functions the valve serves. If there is any simple warning, it would be:

> Check cylinder valves for leaking components every time cylinders are filled.

B

The bulletin is not intended to be an exhaustive treatment of the subject of cylinder valves and certainly does not cover all safety practices that should be followed in installation, operation and maintenance of LP-Gas systems which include cylinder valves.



LP-Gas Cylinder Valves

These valves are mounted in DOT cylinders, and are intended to provide one or more of the following functions:

1. Vapor service shut-off
2. Liquid service shut-off (with excess flow valve)
3. Liquid filling
4. Pressure relief
5. Fixed liquid level gauge

These functions, although simple, are extremely critical in the safe operation of an LP-Gas cylinder system.

> Abuse of these valves, failure to follow a good installation and maintenance program and attempting to use cylinder valves beyond their normal service life can result in extremely hazardous conditions.

Important Factors:

1. Installation: It should not be necessary to remind the readers that cylinder valves must be installed and used in strict conformance with NFPA Pamphlet 58, and all other applicable codes and regulations. Codes, regulations and manufacturers' recommendations have been developed by experts with many years of experience in the LP-Gas industry in the interest of safety for users of LP-Gas and all personnel servicing LP-Gas systems. Failure to fully follow these codes, regulations and recommendations could result in hazardous installations.

2. The bonnet and stem seal assembly of a cylinder valve are extremely critical, since any malfunction could cause external leakage and spillage. Check bonnet to see that it is in proper position. If there is any doubt about tightness of threaded connection between bonnet and body, valve must be repaired in accordance with manufacturers' repair instructions before cylinder is filled. Handwheel must be in good condition, stem threads must not be worn or damaged and bonnet must be properly assembled. This area should be examined each time the cylinder if filled. A leakage test should be conducted while the shut-off valve is in the open position during filling.

3. The cylinder outlet connection is usually a female POL. Threads must be free of dents, gouges and any indication of excessive wear. Seating surface inside this connection must be smooth and free of nicks and scratches to ensure a gas tight seal when connected to a male POL cylinder adapter. Cylinder adapter must spin on freely all the way, without indication of drag, roughness or excessive looseness, and must then be tightened with a wrench. Connection must be checked for leakage.

4. The pressure relief valve is of critical importance: Its proper operation is vital in avoiding excessive pressures during emergencies, such as overfilling or exposure to excessive heat. No repair of this device is allowable. Relief valve should be visually inspected and checked for leaks each time the cylinder is returned for filling. All flow passages must be clean and free of foreign material.

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Entire assembly must be free of dents, distortion or other indications of damage. If relief valve appears too contaminated or damaged, the cylinder valve must be replaced. (Caution: Eye protection must be used when examining relief valves under pressure.)

5. The liquid service shut-off valve, with excess flow valve provided on some cylinder valves, is also of critical importance. The excess flow valve must be periodically tested for proper performance, in addition to the inspection of the shut-off valve.

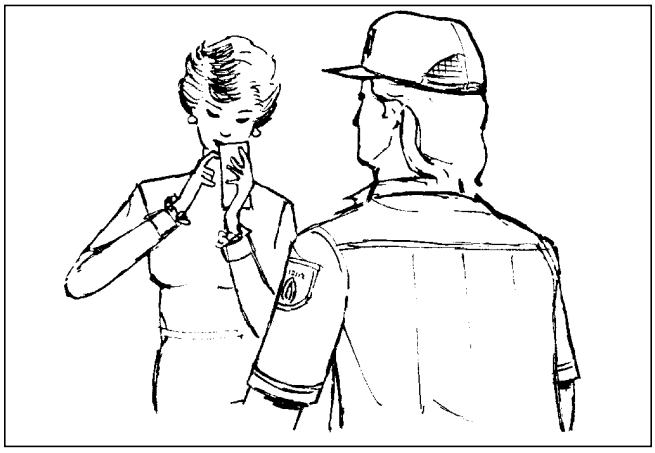
6. The fixed liquid level gauge on a cylinder valve is, when present, essential to prevent overfilling the cylinder. The gauging valve must operate freely, venting vapor when loosened, and sealing gas-tight easily when tightened with the fingers. Gauge valves meant for use with a socket key or screwdriver must also seal easily without excessive torque. The fixed liquid level gauge diptube must be of the proper length, and be in proper position. Periodic test should be conducted by weighing the cylinder after filling, to determine that it does not contain more than the allowable amount of LP-Gas. This check should be done periodically, and any time there is suspicion that the gauge diptube may be damaged or broken.

Do Not Overfill Cylinders

Do not fill a cylinder without first repairing or replacing the cylinder valve, as required, if any defect is noted.

While not required by codes, it is recommended that a plug or suitable protection be inserted in the POL outlet of the cylinder valve at all times except during filling and while connected for use. This will guard against discharge of gas should the handwheel be inadvertently opened while the cylinder is in storage or transit. This is highly advisable for small cylinders that could be transported inside an automobile or trunk. It is important that proper wrenches and adapters be used when filling, servicing and installing cylinder valves in order to avoid damage to the valve or associated piping.

Since cylinders are often used by consumers without previous knowledge of the hazards of LP-Gases and the LP-Gas dealers are the only ones who have direct contact with the consumers, **it is the dealers' responsibility to make sure that his customers are properly instructed in safety matters relating to their installation.**



At the very minimum, it is desirable that these customers:

1. Know the odor of LP-Gas and what to do in case they smell gas. Use of the NPGA "Scratch 'n Sniff" leaflet could be productive.

2. Are instructed never to tamper with the system.

3. Know that when protective hoods are used to enclose regulators and/or valves, that these hoods must be closed, but not locked.

4. Know the location of the cylinder shut-off valve in emergencies.

B

General Warning

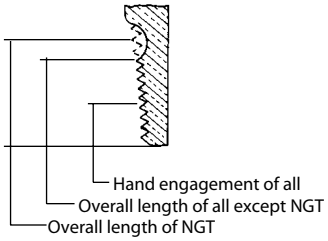
All RegO Products are mechanical devices that will eventually become inoperative due to wear, contaminants, corrosion and aging of components made of materials such as metal and rubber.

The environment and conditions of use will determine the safe service life of these products. Periodic inspection and maintenance are essential. Because RegO Products have a long and proven record of quality and service, LP-Gas dealers may forget the hazards that can occur because a cylinder valve is used beyond its safe service life. Life of a cylinder valve is determined by the environment in which it "lives". The LP-Gas dealers know better than anyone what this environment is. NOTE: There is a developing trend in state legislation and in proposed national legislation to make the owners of products responsible for replacing products before they reach the end of their safe useful life. LP-Gas dealers should be aware of legislation which could affect them.

Cylinder Valve Threads

Because of the many thread forms available on equipment used in the LP-Gas industry today, the maze of letters, numbers and symbols which make up various thread specifications becomes confusing. To help eliminate some of this confusion, a brief explanation of some of the more widely used thread specifications is shown below.

Inlet Connections

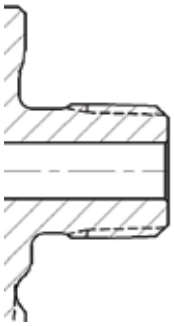


NGT and NPT Threads
The NGT (National Gas Taper) thread is the commonly used valve-to-cylinder connection. The male thread on the valve has about two more threads at the large end than the NPT in order to provide additional fresh threads if further tightening is necessary. Additionally, the standard ¾" NGT valve inlet provides the greater tightness at the bottom of the valve by making the valve threads slightly straighter than the standard taper of ¾" per foot in NPT connections. In all other respects NPT and NGT threads are similar.

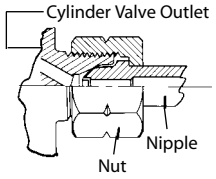
Outlet Connections

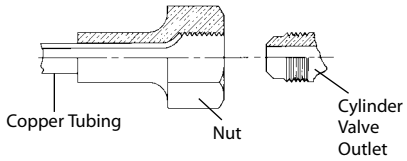
CGA Outlets
The CGA (Compressed Gas Association) outlets are standard for use with various compressed gases. The relation of one of these outlets to another is fixed so as to minimize undesirable connections. They have been designed to prevent the interchange of connections which may result in a hazard.

3/8"-18 NPT Thread Connection
This connection is also used for vapor or liquid withdrawal. It has a 3⁄8" diameter thread, and 18 threads per inch, National Pipe Taper Outlet form.

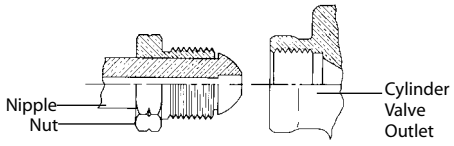


CGA 555
CGA 555 is the standard cylinder valve outlet connection for liquid withdrawal of butane and/or propane. Thread specification is .903" – 14 NGO – LH – EXT, which means .903" diameter thread, 14 threads per inch, National Gas Outlet form, left-hand external thread.





CGA 182, or SAE Flare
This connection ensures a leak-tight joining of copper tubing to brass parts without the need for brazing or silver soldering. The common size used on LP-Gas valves and fittings is 3⁄8" SAE (Society of Automotive Engineers) flare. Although this connection is referred to as a 3⁄8", because 3⁄8" OD tubing is used, the thread actually measures 5⁄8". The specifications are .625 – 18 UNF – 2A – RH – EXT, which means .625" diameter thread, 18 threads per inch, Unified Fine Series Class 2 Tolerances, right-hand, external thread.



CGA 510 or POL
Most widely used in this industry, POL is the common name for the standard CGA 510 connection. Thread specification is .885" – 14 NGO – LH – INT, meaning .885" diameter thread, 14 threads per inch, National Gas Outlet form, left-hand internal thread. RegO POL outlet connections for LP-Gases conform to this standard.

B

General Information
The wide acceptance of RegO Cylinder Valves is based on their reliable performance as well as their reputation for engineering and manufacturing excellence.

Together with thorough testing, these efforts result in years of trouble-free service. RegO Cylinder Valves are listed by Underwriters' Laboratories and approved by the Bureau of Explosives for pressure relief valve operation, wherever applicable. See section on relief valves for important information.

Reliability
RegO Cylinder Valves are built with attention to each detail: Beginning with comprehensive inspection of forgings and machined parts, and ending with intense quality testing on each individual valve prior to shipment.

Every valve must pass a stringent and comprehensive underwater leakage test. Additionally, valves with pressure reliefs are tested for proper pressure and operation, including reseating to ensure proper opening and closing at required pressures. Those equipped with excess flow checks are tested for compliance with published closing specifications, and tested to ensure minimum leakage after closing.

Instructions for the Proper Use and Applications of RegO Cylinder Valves

1. Containers and pipe line should be cleaned thoroughly before valves are installed. Large particles of solid foreign matter can cut the seating surface of any resilient seat disc, causing the valve to leak. Care must be exercised in inserting valves into lines or containers to avoid damaging or exerting pressure against pressure relief valves and outlet connections. Use a minimum amount of a suitable luting compound on the cylinder valve threads only. Excess amounts of luting compound can foul the operating parts of the valves.

Heavy-Duty Valve Stem Seals
RegO Cylinder Valves utilize seat discs and stem seals which resist deterioration and provide the kind of reliable service required for LP-Gas utilization. Diaphragm or O-Ring stem seals are available. Valves with diaphragm stem seals are recognized for their heavy-duty body design and are suitable for use in cylinders up to 200 lbs. propane capacity.

O-Ring type stem seals are the most widely accepted in the industry. The simple, economical and long life design features a tapered and confined nylon seat disc which provides positive, hand-tight closings, and a faster filling cylinder valve.

Pressure Relief
RegO Valves have full-capacity "pop action" pressure reliefs with start to discharge settings starting at 375 PSIG.

A Valve for Every Need
RegO Cylinder Valves are available for all LP-Gas services; a wide choice for domestic, commercial, industrial, RV, motor fuel, and lift truck applications.

Valves are available with a combination of options such as pressure reliefs, liquid level gauges, and liquid withdrawal tubes. Also available for special applications are plumber's pot valves, tamper resistant valves for field service, and dual valves for simultaneous liquid and vapor service.

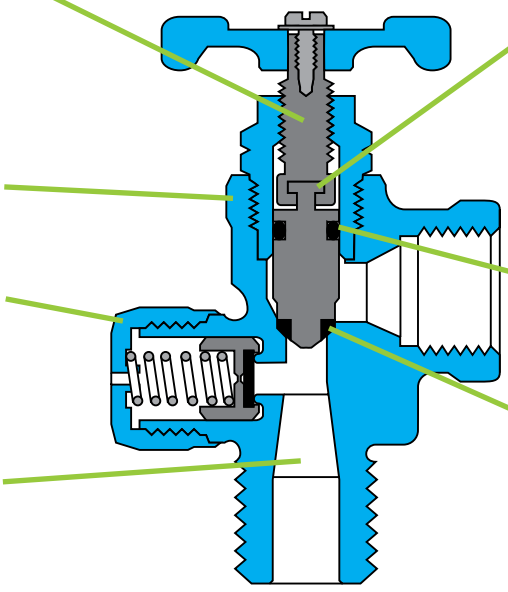
2. Do not use excessive force in opening or closing the valves. The seat disc and diaphragm materials permit the valves to be opened and closed easily by hand. Never use a wrench on wheel handle valves.

3. When the design of the piping installation allows liquid to be locked between two valves, a hydrostatic relief valve must be installed in the line between the two valves. The pressures which can develop due to temperature increase in a liquid full line are tremendous and can cause rupture of the line or damage to the valves.

4. The valves are designed to withstand normal atmospheric temperatures. They should not, however, be subjected to abnormally high temperatures.

B

Design Features of RegO Cylinder Valves



Valve Stems On 901, 9101, 9102 and 9103 Valves
Are machined with a double lead thread for quick opening and closing as well as high lift.

Forged Brass Body

Pressure Relief
Provides quick discharge of excess pressure. Relief seat disc is special resilient composition rubber.

Tapered Seat Openings On 9101,9102 and 9103 Valves
Permit increased flow rates resulting in faster charging.

Back Seat On 901, 9101, 9102 and 9103 Valves
Is metal-to-metal seating to provide added protection against leakage while the valve is open. Back seat the valve while in operation.

O-Rings
For positive leak-proof seals under temperature and pressure variations.

Seat Disc
Is a tapered nylon in a fully confined seat to ensure easy, leak-free, positive shutoffs. Seat disc also provides a separate swivel action to minimize scoring by impurities.

Heavy-Duty Cylinder Valves for Vapor Withdrawal
9103 Series

This heavy duty cylinder valve is designed for vapor withdrawal of DOT cylinders up to 100 lbs. propane capacity. It is used in domestic hookups and industrial commercial installations.

UL LISTED

9103D

Ordering Information

Part Number	Container Connection	Service Connection	Fixed Liquid Level Vent Valve	Dip Tube Length w/ Deflector	Pressure Relief Valve Setting	For Use in Cylinders w/Propane Capacity Up To:	Approximate Filling Rate Liquid Flow, GPM				Accessories
							Pressure Drop Across Valves				POL Plug
							10 PSIG	25 PSIG	50 PSIG	100 PSIG	
*9103D10.6	¾" M NGT	F. POL (CGA 510)	Yes	10.6"	375 PSIG	100 lbs.	12.7	20.3	29.0	41.3	N970P
*9103D11.6				11.6"							

* 72 Orifice low emission version is also available.

Tamper-Resistant Cylinder Valve with Outlet Check for Vapor Withdrawal 9103T9F

This valve is designed for vapor withdrawal from and protection of DOT cylinders up to 100 lbs. propane capacity. Ideal for cylinders used in the field by construction crews, utility repair men and plumbers.

UL LISTED

9103T9F

Ordering Information

Part Number	Container Connection	Service Connection	Fixed Liquid Level Vent Valve Style	Pressure Relief Valve Setting	For Use in Cylinders w/Propane Capacity Up To:	Approximate Filling Rate Liquid Flow, GPM			
						Pressure Drop Across Valves			
						10 PSIG	25 PSIG	50 PSIG	100 PSIG
9103T9F	¾" M. NGT	F. POL (CGA 510)	None	375 PSIG	100 lbs.	5.0	7.6	10.7	14.9

NOTE: These valves incorporate an excess flow valve.
Refer to L-500/Section F, for complete information regarding selection, operation and testing of excess flow valves.

B

Cylinder Valve for RV and Small ASME System Vapor Withdrawal 9106CO

Designed especially for vapor withdrawal service in small ASME containers with surface area up to 23.8 square feet. UL flow capacity is 645 SCFM/air.

UL LISTED

9106CO

Ordering Information

Part Number	Container Connection	Service Connection	Fixed Liquid Level Vent Valve Style	Pressure Relief Valve Setting	For Use In Cylinders w/ Propane Capacity Up To	Flow Capacity SCFM/Air
9106CO	¾" M. NGT	F. POL (CGA 510)	none	312 PSIG	ASME Tanks*	645

* Surface area up to 23.8 square feet.

Cylinder Valve for Liquid Withdrawal
9107K8A

Equipped with excess flow valves and liquid withdrawal tubes, they are designed for liquid withdrawal of DOT cylinders up to 100 lbs. propane capacity. They are most often used with heavy BTU loads found in industrial uses.

UL LISTED

9107K8A

Ordering Information

Part Number	Container Connection	Service Connection	Fixed Liquid Level Vent Valve	Dip Tube Length	Liquid Withdrawal Tube Length
*9107K8A	¾" M. NGT	CGA 555	Included	11.6"	44"

* 72 Orifice low emission version is also available.

Pressure Relief Valve Setting	For Use in Cylinders w/ Propane Capacity Up To:	Approximate Filling Rate Liquid Flow, GPM				Closing Flow (LP-Gas)*		
		Pressure Drop Across Valves				Vapor		Liquid
		10 PSIG	25 PSIG	50 PSIG	100 PSIG	25 PSIG Inlet	100 PSIG Inlet	
375 PSIG	100 lbs.	3.3	5.4	7.7	11.1	525 SCFH	1,000 SCFH	1.7 GPM

*Closing flows based on ⅜" O.D. withdrawal tube 44" long or less attached.

IMPORTANT: ¼" O.D. pigtails or POL connections for ¼" O.D. pigtails should not be used with these valves.

NOTES: To ensure proper functioning and maximum protection from excess flow valves, the cylinder valve should be fully opened and backseated when in use. These valves incorporate an excess flow valve. Refer to L-500 / Section F, for complete information regarding selection, operation and testing of excess flow valves.

Service Valves for ASME and DOT Containers or Vapor Fuel Line Applications
901C1, 9101C, 9101D, 9101R and PT9102 Series

Designed for vapor withdrawal service on ASME and DOT containers or in fuel line applications. Since none of these valves have an integral pressure relief valve, they may only be used as an accessory valve on containers that have an independent pressure relief valve sufficient for that container's capacity.

UL LISTED

B

Ordering Information

Part Number	Bonnet Style	Container Connection	Service Connection	Fixed Liquid Level Vent Valve	Approximate Filling Rate Liquid Flow, GPM				Ready To Go™
					Pressure Drop Across Valve				
					10 PSIG	25 PSIG	50 PSIG	100 PSIG	
901C1	Standard	¾" M. NGT	F. POL CGA 510	No	5.3	8.2	10.8	14.2	NA
9101C1					8.8	12.4	15.8	21.7	
*9101D11.1				Yes	8.6	12.7	16.3	22.3	
*9101D11.7									
9101R1	MultiBonnet			No	7.6	11.7	15.2	20.6	NA
*9101R11.1				Yes					
*9101R11.7									No
9102D11.1									Plugged
9102R11.7									
*PT9102R1				No					Yes
*PT9102R11.1				Yes					
*PT9102R11.7									

* 72 Orifice low emission version is also available.
Note: Since these valves have no integral pressure relief valve, they can be used on any container with an independant relief device sufficient for that tank's capacity.

901C1

9101R1

PT9102

9101D

Service Valves for ASME Motor Fuel Containers
901C, 9101H, and 9101Y Series

Designed specifically for vapor or liquid withdrawal service on ASME motor fuel containers. Since none of these valves have an integral pressure relief valve, they may only be used as an accessory valve on containers that have an independent pressure relief valve sufficient for that container's capacity.

The integral excess flow valve found in all these service valves helps prevent excessive product loss in the event of fuel line rupture.

When installed for liquid withdrawal, the 9101H6 has provisions for attachment of a liquid withdrawal tube. All other valves must be installed in containers that have provisions for a separate liquid withdrawal.

To ensure proper functioning and maximum protection from integral excess flow valves, these service valves should be fully opened and backseated when in use.

LISTED

901C5

9101H5

9101Y5H

9101H6

Ordering Information

Part Number	Container Connection	Service Connection	Liquid Withdrawal Connection	Closing Flow (LP-Gas)		
				Vapor		
				25 PSIG Inlet (SCFH)	100 PSIG Inlet (SCFH)	Liquid GPM
901C3	¾"M. NGT	F. POL CGA 510	None	350***	605***	1.5***
901C5				550***	1050***	2.6***
9101H3		⅜" SAE Flare		430**	800**	1.5**
9101H5*				765**	1300**	3.6**
9101H6*			¼" NPT	550****	1050****	2.6****
9101Y5H*		60° Angle ⅜" SAE Flare	None	765**	1300**	3.6**

B

* Heavy-duty models
** Based on ⅜" O.D. pigtail, 20" long or less, connected to valve outlet. For greater lengths, the pigtail must have a larger O.D.
*** Same as (**). In addition, ¼" O.D. pigtails or POL connections for ¼" O.D. should not be used with this valve.
**** Based on ⅜" O.D. pigtail; 20" long or less, connected to valve outlet. Also based on ¼" pipe size dip tube, 42" long or less, attached to special inlet connection. For longer pigtail lengths, the diameter of the pigtail must be increased.
NOTE: These valves incorporate an excess flow valve. Refer to L-500/Section F, for complete information regarding selection, operation and testing of excess flow valves.

"Dual" Cylinder Valve for Simultaneous Liquid and Vapor Withdrawal
8556

This dual cylinder valve was designed especially for industrial uses. It increases the cylinder's flexibility by permitting DOT cylinders up to 100 lbs. propane capacity to be used interchangeably or simultaneously for either liquid or vapor withdrawal.

LISTED

8556

Ordering Information

Part Number	Container Connection	Service Connection		Fixed Liquid Level Vent Valve Style	Liquid Withdrawal Tube Length
		Vapor	Liquid		
8556	¾" M. NGT	F. POL (CGA 510)	CGA 555	None	44"

Pressure Relief Valve Setting	For Use in Cylinders w/Propane Capacity Up To:	Approximate Filling Rate Liquid Flow, GPM				Liquid Closing Flow* (LP-Gas)
		Pressure Drop Across Valves				
		10 PSIG	25 PSIG	50 PSIG	100 PSIG	
375 PSIG	100 lbs.	6.6	10.0	14.5	21.0	2.3 GPM

* To ensure proper functioning and maximum protection from integral excess flow valves, the cylinder valve should be fully opened and backseated when in use.
NOTE: These valves incorporate an excess flow valve. Refer to L-500/Section F, for complete information regarding selection, operation and testing of excess flow valves.

REGO 100 RegO Dr. Elon, NC 27244 USA www.regoproducts.com +1 (336) 449-7707

Service Valves for DOT Fork Lift Containers 9101P5 and 9101P6 Series

Designed specifically for vapor or liquid withdrawal service on DOT fork lift containers. Valves with 1.5 GPM closing flow are for use in small and medium size lift truck applications, while those with 2.6 GPM closing flow are for large lift trucks. Since none of these valves have an integral pressure relief valve, they may only be used as an accessory valve on containers that have an independent pressure relief valve sufficient for that cylinder's capacity.

The integral excess flow valve found in all these service valves helps prevent excessive product loss in the event of fuel line rupture.

When installed for liquid withdrawal, the 9101P6 Series has provisions for attachment of a liquid withdrawal tube. The 9101P5 Series must be installed in containers that have provisions for a separate liquid withdrawal.

To ensure proper functioning and maximum protection for integral excess flow valves, these service valves should be fully opened and backseated when in use.

UL LISTED

9101P5
9101P5H

9101P6
9101P6H

Ordering Information

Part Number	Container Connection	Service Connection	Liquid Withdrawal Connection	Closing Flow (LP-Gas)			Approximate Filling Rate Liquid Flow, GPM				Accessories		
				Vapor			Pressure Drop Across Valve				ACME Check Connectors		
				25 PSIG Inlet (SCFH)	100 PSIG Inlet (SCFH)	Liquid (GPM)	10 PSIG	25 PSIG	50 PSIG	100 PSIG	Male	Female	Cap
9101P5	¾" M. NGT	⅜" M. NPT	None	430	900	1.5	5.0	7.6	10.7	14.9	7141M	7141F	**7141M-40** or **7141FP**
9101P5H				550	1050	2.6							
9101P6			¼" NPT	430	900	1.5	4.5	7.2	10.3	14.8			
9101P6H				550	1050	2.6							

Note: These valves incorporate an excess flow valve. Refer to L-500/Section F, for complete information regarding selection, operation and testing of excess flow valves.

B

Cylinder Valve for Propylene Service 9104PT and 9104PPA

Designed for vapor withdrawal from and protection of DOT cylinders up to 100 lbs. propylene capacity with pressure ratings such as 4B-260, 4BA-260, and 4BW-260 cylinders.

UL LISTED

9104PT

9104PPA

Ordering Information

Part Number	Container Connection	Service Connection	Fixed Liquid Level Vent Valve Style	Dip Tube Length*	Pressure Relief Valve Setting	For use in Cylinders w/ Propylene Capacity up to:
9104PPA	¾" M.NPT	F.POL - (CGA 510)	N/A	N/A	435 PSIG	100lbs
*9104PT10.1			Knurled	10.0"		
*9104PT10.7				10.7"		

* Valve can be ordered with other dip tube lengths. Specify required length when ordering. X = diptube size

Adhesive Warning Labels
901-400 and 903-400

These adhesive warning labels are intended for application as close as possible to the cylinder valve and/or service valve.

The basic information contained on the label is intended for the benefit of the user of the valves and is not intended to be an “all-inclusive” product warning.

These labels are printed on a heavy duty material with pressure sensitive adhesive backing. The ultra-violet ink stands up well when exposed to the enviroment.

Part Number	
901-400	Adhesive Label Primarily for Fork Lift Cylinders
903-400	Adhesive Label Primarily for Small DOT Cylinders
903-500	Adhesive Label Primarily for Cylinder and Service Valves

DANGER — LP-GAS IS EXTREMELY FLAMMABLE AND EXPLOSIVE KEEP CYLINDER OUT OF THE REACH OF CHILDREN — WARNING

AVOID SERIOUS INJURY AND PROPERTY DAMAGE. IF YOU SEE, SMELL, OR HEAR THIS HISS OF ESCAPING GAS... IMMEDIATELY GET AWAY FROM THIS CYLINDER! CALL YOUR LOCAL FIRE DEPARTMENT! DO NOT ATTEMPT TO REPAIR. DO NOT USE OR STORE IN BUILDING OR ENCLOSED AREA. FOR OUTDOOR USE ONLY.

This container is filled with highly flammable LP-Gas under pressure. A serious fire or explosion can result from leaks and misuse or mishandling of the container and its valves. Do not move, hold or lift the container by any of its valves. Do not expose to fire or temperature above 120°F (49°C). Do not over fill.

This container incorporates a pressure relief valve. The pressure relief valve can expel a large jet of LP-Gas into the air if the container is (1) exposed to high temperatures over 120°F (49°C) or (2) overfilled and exposed to a temperature higher than the temperatures at the time it was filled.

The pressure relief valve is equipped with a protective cover. The protective cover must remain in place at all times except when inspecting the valve. CAUTION... Use eye protection. If dust, dirt, moisture or other foreign material collect in the valve, it may not function properly to prevent container rupture or minimize product loss after opening.

Each time the container is filled, the pressure relief valve must be checked to ensure that it is completely unobstructed and that it has no physical damage. If there is any doubt about the condition of the valve, the container must be removed from service and the pressure relief valve must be replaced.

Only trained personnel should be permitted to fill this container. Before the container is filled for the first time, it must be purged of air. The total liquid volume of LP-Gas must never exceed the amount designated by applicable filling density regulations for this container.

Make sure the protective cap is in place on the ACME threaded filler valve at all times. Never insert a screwdriver or other tool into the valve as it can damage the seal or guide and cause an uncontrolled leak.

Do not allow any overfill. If the fixed liquid level gauge is used during filling, filling should stop the moment a white LP-Gas cloud is emitted from its bleed hole. Keep the vent close tightly at all other times. Each time the container is filled, it must be checked for leaks (with a leak detection solution...leaks cause bubbles to grow).

Do not disconnect or connect this container without first reading the instructions accompanying the vehicle or appliance with which this container is intended to be used. CAUTION... No smoking while connecting or disconnecting this container.

Make sure the service valve is shut of tightly before beginning to assemble or disassemble the coupling. Liquid LP-Gas may flow or leak from the coupling. This liquid can cause skin burns, frost bite and other serious injury in addition to those caused by fire and explosion. CAUTION... Wear proper skin and eye protection. Any gasket or o-ring in the coupling must be routinely checked for wear and replaced as required.

After connecting the coupling, make sure the connection is leak tight. Check for leaks with a leak detection solution (leaks cause bubbles to grow). If the connection leaks after tightening, close the service valve, disconnect the coupling and remove from service.

When not in use, keep the service shut-off valve closed. When in use, keep the service valve fully open. Keep this equipment out to the reach of children.

This container must be used only in compliance with all applicable laws and regulations, including National Fire Protection Association Publication #58, which is the law in many states. A copy of this publication may be obtained by writing NFPA, Batterymarch Park, Quincy, MA 02269.

DO NOT REMOVE, DEFACE OR OBLITERATE THIS LABEL.
DO NOT FILL THIS CONTAINER UNLESS THIS LABEL IS READABLE.

ADDITIONAL SAFETY INFORMATION IS AVAILABLE FROM: REGO — Elon, NC 27244 USA • www.regoproducts.com, Phone (336) 449-7707 • Fax (336) 449-6594 — Printed in U.S.A. 04-0414-0386 Warning 901-400

901-400

DANGER! — LP-GAS IS EXTREMELY FLAMMABLE AND EXPLOSIVE KEEP CYLINDER OUT OF THE REACH OF CHILDREN — WARNING!

AVOID SERIOUS INJURY AND PROPERTY DAMAGE. IF YOU SEE, SMELL, OR HEAR THIS HISS OF ESCAPING GAS... IMMEDIATELY GET AWAY FROM THIS CYLINDER! CALL YOUR LOCAL FIRE DEPARTMENT! DO NOT ATTEMPT TO REPAIR. DO NOT USE OR STORE IN BUILDING OR ENCLOSED AREA. FOR OUTDOOR USE ONLY.

This cylinder contains highly flammable LP-Gas under pressure. A serious fire or explosion can result from leaks and misuse or mishandling of the cylinder and its valve. **Do not carry, hold or lift the cylinder by its valve. Do not expose to fire or temperatures above 120°F (49°C).**

The Cylinder Valve incorporates a Shut-Off Valve and Pressure Relief Valve. The Pressure Relief Valve can expel a large jet of LP-Gas into the air if the cylinder is (1) exposed to high temperatures - over 120°F (49°C), or (2) overfilled and exposed to a temperature higher than the temperature at the time it was filled.

Never attempt to fill this cylinder yourself. Do not tamper with it or attempt repairs.

Only trained LP-Gas Dealer personnel should be permitted to fill this cylinder and to repair or replace its valve. Each time the cylinder is filled, the entire Cylinder Valve must be checked for leaks (with a leak detection solution... leaks cause bubbles to grow). The Shut-Off Valve and Fixed Liquid Level Gauge (if incorporated) must be checked for proper operation. The Pressure Relief Valve must be checked to ensure that is it completely unobstructed and that it has no physical damage. **CAUTION...** eye protection must be worn when examining relief valve. This valve cannot be repaired. If it is obstructed, the entire cylinder valve must be replaced.

The Shut-Off Valve may require periodic repair or replacement.

Before the cylinder is filled for the first time, it must be purged of air.

Total liquid volume must never exceed the amount designated by DOT for this cylinder.

If the cylinder has a Fixed Liquid Level Gauge, filling should stop the moment a white LP-Gas cloud is emitted from it's bleed hole. Keep the Vent Valve closed tightly at all other times.

Keep this cylinder firmly secured in an upright position at all times. Do not lay it on its side during transport, storage or use. In other than an upright position, liquid LP-Gas may flow or leak. This liquid can cause skin burns, frostbite and other serious injuries in addition to those caused by fire or explosion.

When not in use: Close the Shut-Off Valve. Insert a protective plug (P.O.L. plug) into the Cylinder Valve outlet. (CAUTION...counterclockwise thread.) The P.O.L. plug must be inserted whenever the cylinder is stored, manually moved, or transported by vehicle.

WHEN MAKING CONNECTIONS TO AN APPLIANCE:

1. Do not use this cylinder without first reading the instructions accompanying the appliance with which this cylinder is intended to be used.
2. Before connecting the Cylinder Valve outlet connection to an appliance, make sure the connection does not contain dirt or debris. These may cause the connection to leak or may impair the functioning of the regulator, creating a hazardous condition.
3. When connecting the Cylinder Valve outlet to an appliance (CAUTION... counterclockwise thread), make sure the connection is tight. Check for leaks with a high quality leak detection solution (leaks cause bubbles to grow). If the connection leaks after tightening, close cylinder valve, disconnect it from the appliance, insert the P.O.L. plug and immediately return the cylinder, with the Cylinder Valve attached to your LP-Gas Dealer for examination.

This cylinder must be used only in compliance with all applicable laws and regulations, including National Fire Protection Association Publication #58, which is the law in many states. A copy of this Publication may be obtained by writing NFPA, Batterymarch Park, Quincy, MA 02269.

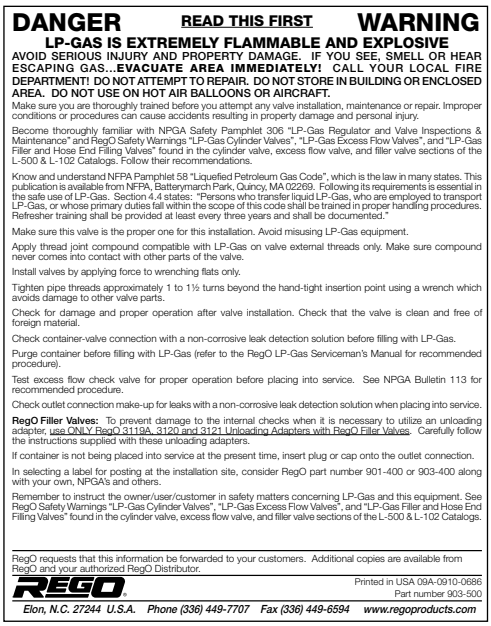
DO NOT REMOVE, DEFACE OR OBLITERATE THIS LABEL! DO NOT FILL THIS CYLINDER UNLESS THIS LABEL IS READABLE!

ADDITIONAL SAFETY INFORMATION IS AVAILABLE FROM: REGO — Elon, NC 27244 USA • www.regoproducts.com, Phone (336) 449-7707 • Fax (336) 449-6594 — Printed in U.S.A. 06-0414-0384 Warning 903-400

903-400

The following warning information, Part Number 903-500, is included with each shipment of cylinder valves and service valves to the first purchaser of the product from the factory.

This information is intended to be forwarded throughout the product distribution chain. Additional copies are available from RegO and Authorized Product Distributors.



DANGER READ THIS FIRST **WARNING**

LP-GAS IS EXTREMELY FLAMMABLE AND EXPLOSIVE

AVOID SERIOUS INJURY AND PROPERTY DAMAGE. IF YOU SEE, SMELL OR HEAR ESCAPING GAS...EVACUATE AREA IMMEDIATELY! CALL YOUR LOCAL FIRE DEPARTMENT! DO NOT ATTEMPT TO REPAIR. DO NOT STORE IN BUILDING OR ENCLOSED AREA. DO NOT USE ON HOT AIR BALLOONS OR AIRCRAFT.

Make sure you are thoroughly trained before you attempt any valve installation, maintenance or repair. Improper conditions or procedures can cause accidents resulting in property damage and personal injury.

Become thoroughly familiar with NPGA Safety Pamphlet 306 “LP-Gas Regulator and Valve Inspections & Maintenance” and RegO Safety Warnings “LP-Gas Cylinder Valves”, “LP-Gas Excess Flow Valves”, and “LP-Gas Filler and Hose End Filling Valves” found in the cylinder valve, excess flow valve, and filler valve sections of the L-500 & L-102 Catalogs. Follow their recommendations.

Know and understand NFPA Pamphlet 58 “Liquefied Petroleum Gas Code”, which is the law in many states. This publication is available from NFPA, Batterymarch Park, Quincy, MA 02269. Following its requirements is essential in the safe use of LP-Gas. Section 4.4 states: “Persons who transfer liquid LP-Gas, who are employed to transport LP-Gas, or whose primary duties fall within the scope of this code shall be trained in proper handling procedures. Refresher training shall be provided at least every three years and shall be documented.”

Make sure this valve is the proper one for this installation. Avoid misusing LP-Gas equipment.

Apply thread joint compound compatible with LP-Gas on valve external threads only. Make sure compound never comes into contact with other parts of the valve.

Install valves by applying force to wrenching flats only.

Tighten pipe threads approximately 1 to 1½ turns beyond the hand-tight insertion point using a wrench which avoids damage to other valve parts.

Check for damage and proper operation after valve installation. Check that the valve is clean and free of foreign material.

Check container-valve connection with a non-corrosive leak detection solution before filling with LP-Gas.

Purge container before filling with LP-Gas (refer to the RegO LP-Gas Serviceman’s Manual for recommended procedure).

Test excess flow check valve for proper operation before placing into service. See NPGA Bulletin 113 for recommended procedure.

Check outlet connection make-up for leaks with a non-corrosive leak detection solution when placing into service.

RegO Filler Valves: To prevent damage to the internal checks when it is necessary to utilize an unloading adapter, use ONLY RegO 3119A, 3120 and 3121 Unloading Adapters with RegO Filler Valves. Carefully follow the instructions supplied with these unloading adapters.

If container is not being placed into service at the present time, insert plug or cap onto the outlet connection.

In selecting a label for posting at the installation site, consider RegO part number 901-400 or 903-400 along with your own, NPGA’s and others.

Remember to instruct the owner/user/customer in safety matters concerning LP-Gas and this equipment. See RegO Safety Warnings “LP-Gas Cylinder Valves”, “LP-Gas Excess Flow Valves”, and “LP-Gas Filler and Hose End Filling Valves” found in the cylinder valve, excess flow valve, and filler valve sections of the L-500 & L-102 Catalogs.

RegO requests that this information be forwarded to your customers. Additional copies are available from RegO and your authorized RegO Distributor.

REGO — Printed in USA 09A-0910-0686 Part number 903-500

Elon, N.C. 27244 U.S.A. Phone (336) 449-7707 Fax (336) 449-6594 www.regoproducts.com

903-500

B

RegO Multivalve® Assemblies

General Information

RegO Multivalves® were pioneered in the 1930's. By combining several valve functions in one unit, Multivalves® made possible new and more practical tank designs (fewer openings and smaller, less cumbersome protective hoods). They received immediate acceptance.

The Multivalve® design has kept pace with changing industry needs over the years. They are as popular as ever; still keeping fabricating costs down and reducing operating expenses for the LP-Gas dealer.

RegO Multivalves® Reduce the Cost of Fabrication by

- Combining several valve functions in one less expensive body.
- Reducing the number of threaded openings in ASME containers.
- Diminishing the size and cost of protective hoods.
- Providing generous sized wrenching bosses for quick, easy installation.

RegO Multivalves® Reduce LPG Dealer Expenses by

- Permitting on-site filling of 100 lb. to 420 lb. DOT cylinders, thus eliminating cylinder return and interrupted customer service.
- Providing well-placed hose connections for easy filling.
- Allowing ample space for secure attachment and easy removal of the regulator.
- Providing substantial savings of bonnet repairs on valves with the MultiBonnet.®

RegO Multivalves® Satisfy Customer Demands for Tough, Safe Equipment with These Features

Heavy-Duty Valve Stem Seals —

- Tapered nylon disc in a fully confined seat resists deterioration and provides hand-tight closings over a long service life.

Comprehensive Testing —

- Every Multivalve® must pass a stringent underwater leakage test prior to shipment.
- Multivalves® with pressure relief valves are individually tested and adjusted to ensure proper pressure settings.
- Those equipped with excess flow checks are tested for compliance with published closing specifications and for leakage after closing.

Pressure Relief Valves and Other Devices —

- Multivalves® equipped with integral pressure relief devices employ full-capacity, "pop-action" reliefs with set pressures of 250 psig for ASME use and 375 psig for DOT cylinders.

Double Back-Check Filler Valves —

- Multivalves® with filling connections have double backcheck safety. If the upper check ceases to function, the lower stand-by check will continue to protect the filling connection from excessive leakage.

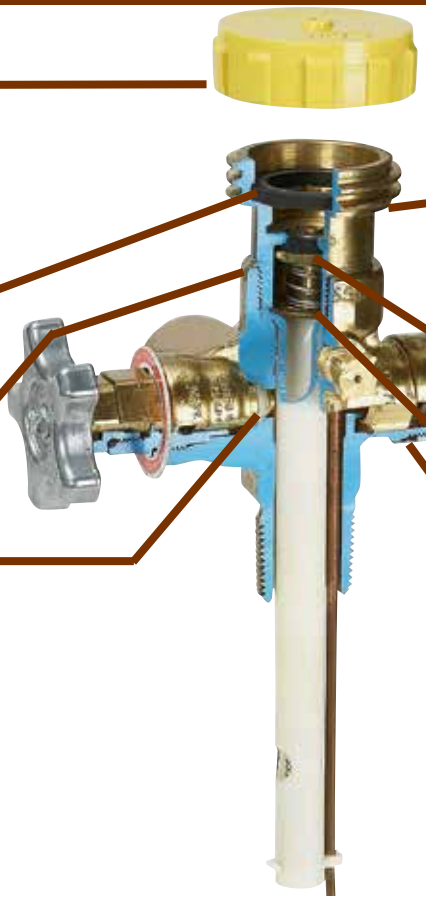
Ease of Maintenance —

- Standardization of parts makes it possible for one repair kit to maintain the bonnet assemblies of RegO cylinder valves, service valves, motor fuel valves, and Multivalves®.

RegO Multivalves® fit every LP-Gas need.

- Wide selection of Multivalves® for domestic, commercial, and industrial needs are available.
- Multivalves® may be ordered with pressure relief, liquid level tube, filler valve, vapor equalizing valve, internal pipe connections, liquid filling and withdrawal connections, and ¼" NPT tapped opening for pressure gauge with or without steel plug.

Design Features of RegO Multivalves®



Seal Cap
Molded from tough, resilient plastic to protect threads and internal working parts. Designed to protect the filler opening against dirt and other foreign materials. Also acts as a secondary pressure seal.

Long Wearing Gasket
Permits leak-free, hand-tight connection of the hose coupling to the filler valve.

Forged Brass Body

MultiBonnet®
Designed to allow quick and easy repair of bonnet packings on Multivalves® on active propane systems.

UL Shear Point
Provides for a shear just below the ACME threads to protect the container in case of a pullaway while the hose is connected. The ACME connection should shear off on an angle pull, leaving the body and check assembly of the valve still in place.

Filler Seat Disc
Fabricated of special synthetic composition and made extra thick for longer life.

Valve Guide
A precision machined "stem" to ensure positive alignment

"Pop Action" Pressure Relief
Provides quick release of excess pressure. Relief seat disc is special resilient composition rubber designed to resist bonding to the valve seat even after years of service.

C

RegO Multibonnet® Assemblies

Design Features of the MultiBonnet®

Handwheel
Aluminum die cast handwheel.

Non-Rising Stem
Designed to allow easy backseating and long service life.

Upper Packing Assembly
Contains both internal and external o-rings. Provides leak resistant performance.

Internal O-ring

Lower Bonnet and Stem Assembly
Machined brass construction offers durability to bonnet design.

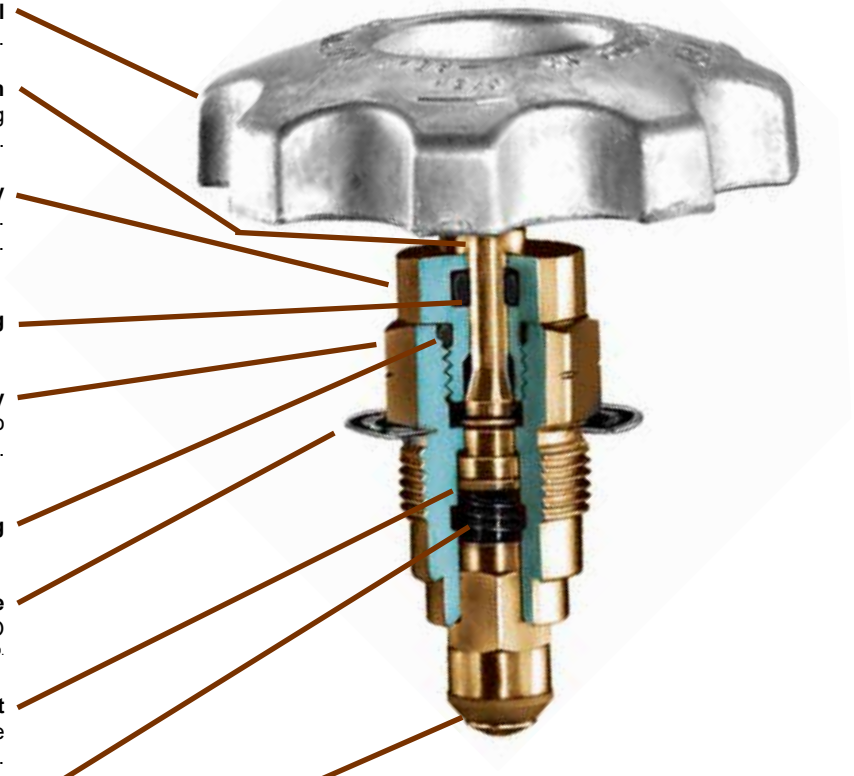
External O-ring

Nameplate
Provides easy identification of the RegO MultiBonnet®.

Teflon Backseat
Provides for upper packing isolation when valve is fully open.

Machined Double Lead Threads
Provides for quick opening and closing of the valve.

Shut-off Seat Disc
Tapered nylon disc is retained in a fully confined seat that helps ensure positive shut-offs.



The MultiBonnet® is designed to allow quick and easy repair of bonnet packings in certain Multivalves® and service valves on active propane systems. It allows you to repair valve bonnet stem o-ring leaks in minutes, without interrupting gas service to your customers.

- Eliminates the need to evacuate tanks or cylinders to repair the MultiBonnet® packing.
- Two section design allows repair of MultiBonnet® assemblies on active propane systems without interruption in gas service or shutting off appliances downstream. This helps to prevent time consuming relighting of pilots, special appointments, and call backs.
- Cost of replacing the MultiBonnet® packing is only 1/3 as much as replacing a complete bonnet assembly—not including time cost savings, which can be substantial.
- Available on certain new Multivalves® and service valves as well as repair assemblies for many existing RegO valves.
- UL listed as a component of valve assembly.

Here's How The MultiBonnet® Works

- When the valve is fully open, only the lower stem will rise and backseat against the teflon washer which isolates the upper packing.
- This allows you to remove the upper packing nut, which contains the o-rings, and replace it while the valve is fully open and gas service not interrupted.

ASME Multivalves® for Vapor Withdrawal G8475RL Series Valves with Presto-Tap PG8475, PT7556 Series Valves

These Multivalves® are designed for use in single opening ASME containers equipped with a 2½" M. NPT riser. They can be used with underground ASME containers up to 639 sq. ft. surface area, and above ground ASME containers up to 192 sq. ft. surface area. A separate opening is required for liquid withdrawal. The MultiBonnet® is standard on this valve.

UL LISTED

PG8575RV

Liquid Filling Rates

Part Number	Approximate Filling Rate Liquid Flow, GPM			
	Pressure Drop Across Valve			
	10 PSIG	25 PSIG	50 PSIG	100 PSIG
G8475RL	42	72	98	125
G8475RLW				
PG8475RL				

Ordering Information

Part Number	Container Connection	Service Connection	Filling Connection	Relief Valve Height	Vapor Equalizing Connection		Float Gauge Flange Opening	Fixed Liquid Level Vent Valve	Dip Tube Length	Pressure Relief Valve				For use in containers w/ surface area up to:
					Size	UL Listed Closing Flow				Setting	Part Number	Flow Capacity		
												UL	ASME	
G8475RL	2½" F. NPT	F. POL (CGA 510)	1¾" M. ACME	6¾"	1¼" M. ACME	4200 CFH @ 100 PSIG	Fits "JUNIOR" size	Yes	30"*	250 PSIG	M3131G	2020 SCFM, air	1939 SCFM, air	83 sp ft. above ground
														276 sp ft. under ground
*G8475RLW				8½"							MV3132G	3995 SCFM, air	n/a	192 sq ft. above ground
														639 sp ft. under ground

*Dip tube not installed, may be cut by customer to desired length.
** 72 Orifice low emission version is also available.

C

ASME Multivalves® for Vapor Withdrawal 8593AL

These Multivalves® provide vapor withdrawal and filling of ASME containers. A separate pressure relief valve is required in addition to this valve. The MultiBonnet® is standard on this valve.

UL LISTED

8593AL

Liquid Filling Rates

Part Number	Approximate Filling Rate Liquid Flow, GPM			
	Pressure Drop Across Valve			
	10 PSIG	25 PSIG	50 PSIG	100 PSIG
8593AL16.0	42	72	98	125

Ordering Information

Part Number	Container Connection	Service Connection	Filling Connection	Vapor Equalizing Connection		Fixed Liquid Level Vent Valve Style	Dip Tube Length	For Use In Containers w/ Surface Area Up To:
				Connection Size	UL Listed Closing Flow			
8593AL16.0	1½" M. NPT	F. POL (CGA 510)	1¾" M. ACME	1¼" M. ACME	4200 CFH at 100 PSIG	Knurled	16"*	**

*Dip tube not installed, may be cut by customer to desired length.
**Since these Multivalves® have no integral pressure relief valves, they can be used on any ASME container with an independent relief device sufficient for that tank's capacity.

DOT Multivalve® for Liquid Withdrawal
8555DL

These Multivalves® permit liquid withdrawal from DOT cylinders with up to 100 lbs. propane capacity. They eliminate unnecessary cylinder handling when servicing high volume loads and allow on-site filling into the vapor space without interrupting gas service.

UL LISTED

8555DL

Liquid Filling Rates

Part Number	Approximate Filling Rate Liquid Flow, GPM			
	Pressure Drop Across Valve			
	10 PSIG	25 PSIG	50 PSIG	100 PSIG
****8555DL11.6	8	23	34	42

Ordering Information

Part Number	Container Connection	Service Connection	Filling Connection	Fixed Liquid Level Vent Valve Style	Dip Tube Length w/ Deflector	Liquid Withdrawal Tube Length	Pressure Relief Valve Setting	For Use In Cylinders w/ Propane Capacity Up To:	Liquid Closing Flow (LP-Gas)***
****8555DL11.6	¾" M. NGT	CGA 555*	1¾" M. ACME	Knurled	11.6"	44"	375 PSIG	100 lbs. **	1.7 GPM

* Use adapter 12982 to connect to pipe threads.
** Per CGA Pamphlet S-1.1.
*** To ensure proper functioning and maximum protection from integral excess flow valves, the cylinder valve should be fully opened and backseated when in use.
****72 orifice low emission version is also available.

DOT & ASME Multivalves® for Vapor Withdrawal
6555R, 8555D and 8555R Series

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These Multivalves® permit vapor withdrawal. They allow for container filling without interrupting gas service.

The 6555R Series is designed for ASME containers with up to 25 ft² surface area or 60 gallons water capacity.

The 8555D and 8555R Series are designed for DOT cylinders with up to 200 lbs. propane capacity.

UL LISTED

8555R

Liquid Filling Rates

Part Number	Approximate Filling Rate Liquid Flow, GPM			
	Pressure Drop Across Valve			
	10 PSIG	25 PSIG	50 PSIG	100 PSIG
**6555D Series	8	23	34	42
**6555R Series				
**8555D Series				
**8555R Series				

Ordering Information

Part Number	Bonnet Style	Application	For Use In Containers with Size Up To:	Dip Tube Length w/ Deflector	Container Connection	Service Connection	Filling Connection	Fixed Liquid Level Vent Valve	Pressure Relief Valve		
									Setting	Flow Capacity*	
										UL Listing	ASME
**6555R10.6	MultiBonnet®	ASME Containers	25 ft² surface area or 60 gallons water capacity	10.6"	¾" M. NGT	F. POL (CGA 510)	1¾" M. ACME	Yes	250 PSIG	793 SCFM, air	700 SCFM, air
**6555R11.6	MultiBonnet®			11.6"							
**6555R12.0	MultiBonnet®			12.0"							
**8555D10.6	Standard	DOT Cylinders	200 lbs. Propane **	10.6"					375 PSIG	n/a	n/a
**8555R10.6	MultiBonnet®										
**8555D11.6	Standard			11.6"							
**8555R11.6	MultiBonnet®										

*Per CGA Pamphlet S-1.1.
**72 orifice low emission version is also available.

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DOT and ASME Multivalves® for Vapor Withdrawal 6532, 6533, 6542, 6543 Series and PT6542, PT6543 Series with Presto-Tap®

These Multivalves® permit vapor withdrawal from ASME containers up to 50 sq. ft. surface area and DOT containers up to 420 lbs. propane capacity. They allow on-site cylinder filling without interrupting gas service.

UL LISTED

Liquid Filling Rates

Part Number	Approximate Filling Rate -- Liquid Flow, GPM			
	Pressure Drop Across Valve			
	10 PSIG	25 PSIG	50 PSIG	100 PSIG
6532A12.0/6532R12.0	11	16	23	28
6542A12.0/6542R12.0	23	32	46	57
6533A10.5/6533R10.5	11	16	23	28
6533A11.7/6533R11.7				
6543A11.1/6543R11.1	23	32	46	57
6543A11.7/6543R11.7				
PT6542A12.0/6542R12.0				
PT6543A11.1/6543R11.1				
PT6543A11.7/6543R11.7				

PT6543R

Ordering Information

Part Number	Bonnet Style	Application	Container Connection	Service Connection	Filling Connection	Fixed Liquid Level Vent Valve Style	Dip Tube Length with Deflector	Pressure Relief Valve Setting	For Use In Cylinders w/Propane Capacity Up To:**	UL Flow Capacity @ 120% of set pressure SCFM (air)	Ready To Go™
6532A12.0	Standard	ASME*	¾" M. NGT	F. POL (CGA 510)	1¾" M. ACME	Knurled	12.0"	250 PSIG	-	1180	Plugged
6532R12.0	MultiBonnet®										
6542A12.0	Standard		1" M. NGT							1530	Yes
PT6542A12.0											
6542R12.0	MultiBonnet®										Plugged
PT6542R12.0											Yes
6533A10.5	Standard	DOT	¾" M. NGT				10.5"	375 PSIG	420 lbs. Propane	-	Plugged
6533R10.5	MultiBonnet®										
6533A11.7	Standard						11.7"				
6533R11.7	MultiBonnet®										
6543A11.1	Standard		1" M. NGT				11.1"				Yes
PT6543A11.1											
6543R11.1	MultiBonnet®										Plugged
PT6543R11.1											Yes
6543A11.7	Standard						11.7"				Plugged
PT6543A11.7											Yes
6543R11.7	MultiBonnet®										Plugged
PT6543R11.7											Yes

** Per CGA Pamphlet S-1.1.

C

ASME Multivalves® for Vapor Withdrawal
7556R

These compact Multivalves® are especially suited for vapor withdrawal of ASME containers where compact groupings of components are necessary. Separate filler valves and pressure relief valves are required.

UL LISTED

PT7556R

PT7556 R Multivalve®

Especially suited for vapor withdrawal of ASME containers where compact groups of components are necessary. Separate filler valves and pressure relief valves are required

Ordering Information

Part Number	Container Connection	Service Connection	Vapor Equalization Connection		Fixed Liquid Level Vent Valve	Dip Tube Length	Ready to Go™
			Connection Size	UL Listed Closing Flow			
7556R12.0	¾" M. NGT	F. POL (CGA 510)	1¼" M. ACME	4200 CFH @ 100 PSIG	Yes	12"**	Plugged
PT7556R12.0							Yes

* Since these Multivalves® have no integral pressure relief valves, they can be used on any ASME container with an independant relief device sufficent for that tank's capacity.
** Other tube lengths available.

Adhesive Warning Label

The following warning information, Part Number 903-500, is included with each shipment of Multivalve® Assemblies to the first purchaser of the product from the factory.

This information is intended to be forwarded throughout the product distribution chain. Additional copies are available from RegO and Authorized Product Distributors.

DANGER READ THIS FIRST **WARNING**

LP-GAS IS EXTREMELY FLAMMABLE AND EXPLOSIVE

AVOID SERIOUS INJURY AND PROPERTY DAMAGE. IF YOU SEE, SMELL OR HEAR ESCAPING GAS...**EVACUATE AREA IMMEDIATELY!** CALL YOUR LOCAL FIRE DEPARTMENT! DO NOT ATTEMPT TO REPAIR. DO NOT STORE IN BUILDING OR ENCLOSED AREA. DO NOT USE ON HOT AIR BALLOONS OR AIRCRAFT.

Make sure you are thoroughly trained before you attempt any valve installation, maintenance or repair. Improper conditions or procedures can cause accidents resulting in property damage and personal injury.

Become thoroughly familiar with NPGA Safety Pamphlet 306 "LP-Gas Regulator and Valve Inspections & Maintenance" and RegO Safety Warnings "LP-Gas Cylinder Valves", "LP-Gas Excess Flow Valves", and "LP-Gas Filler and Hose End Filling Valves" found in the cylinder valve, excess flow valve, and filler valve sections of the L-500 & L-102 Catalogs. Follow their recommendations.

Know and understand NFPA Pamphlet 58 "Liquefied Petroleum Gas Code", which is the law in many states. This publication is available from NFPA, Batterymarch Park, Quincy, MA 02269. Following its requirements is essential in the safe use of LP-Gas. Section 4.4 states: "Persons who transfer liquid LP-Gas, who are employed to transport LP-Gas, or whose primary duties fall within the scope of this code shall be trained in proper handling procedures. Refresher training shall be provided at least every three years and shall be documented."

Make sure this valve is the proper one for this installation. Avoid misusing LP-Gas equipment.

Apply thread joint compound compatible with LP-Gas on valve external threads only. Make sure compound never comes into contact with other parts of the valve.

Install valves by applying force to wrenching flats only.

Tighten pipe threads approximately 1 to 1½ turns beyond the hand-tight insertion point using a wrench which avoids damage to other valve parts.

Check for damage and proper operation after valve installation. Check that the valve is clean and free of foreign material.

Check container-valve connection with a non-corrosive leak detection solution before filling with LP-Gas.

Purge container before filling with LP-Gas (refer to the RegO LP-Gas Serviceman's Manual for recommended procedure).

Test excess flow check valve for proper operation before placing into service. See NPGA Bulletin 113 for recommended procedure.

Check outlet connection make-up for leaks with a non-corrosive leak detection solution when placing into service.

RegO Filler Valves: To prevent damage to the internal checks when it is necessary to utilize an unloading adapter, use ONLY RegO 3119A, 3120 and 3121 Unloading Adapters with RegO Filler Valves. Carefully follow the instructions supplied with these unloading adapters.

If container is not being placed into service at the present time, insert plug or cap onto the outlet connection.

In selecting a label for posting at the installation site, consider RegO part number 901-400 or 903-400 along with your own, NPGA's and others.

Remember to instruct the owner/user/customer in safety matters concerning LP-Gas and this equipment. See RegO Safety Warnings "LP-Gas Cylinder Valves", "LP-Gas Excess Flow Valves", and "LP-Gas Filler and Hose End Filling Valves" found in the cylinder valve, excess flow valve, and filler valve sections of the L-500 & L-102 Catalogs.

RegO requests that this information be forwarded to your customers. Additional copies are available from RegO and your authorized RegO Distributor.

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Printed in USA 09A-0910-0686
Part number 903-500

Elon, N.C. 27244 U.S.A. Phone (336) 449-7707 Fax (336) 449-6594 www.regoproducts.com

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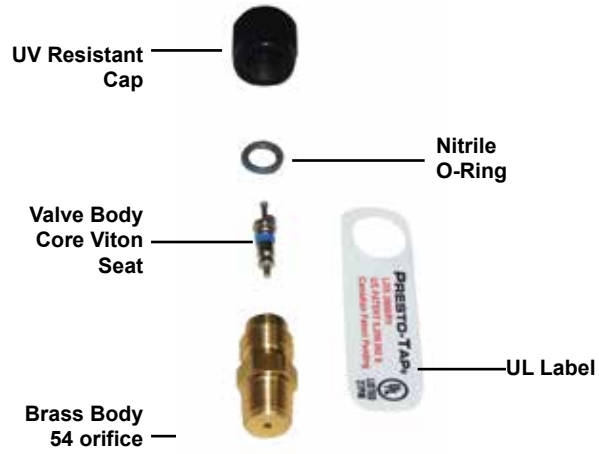
DOT and ASME Multivalves® Info Page

Patented LDS200RV Design Features



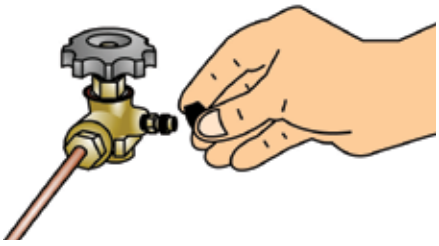
US Patent # 6,209,562

The Patented Presto-Tap LDS2000RV pressure fitting is designed to be one of the most cost efficient and simplest methods to quickly and easily perform system pressure checks.

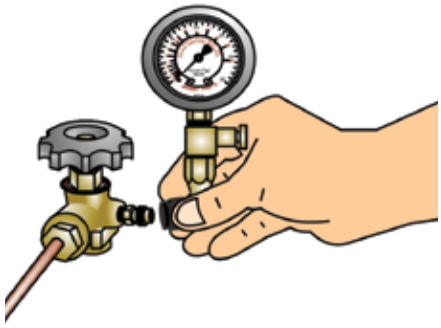
- Patented & UL Listed.
- Provides instant ROI after only one use.
- Will reduce fugitive emissions by up to 90%.
- Can be installed into valves, regulators & appliances.
- Eliminates the need to break the system to perform a leak test.

Presto-Tap System Leak Test Procedure

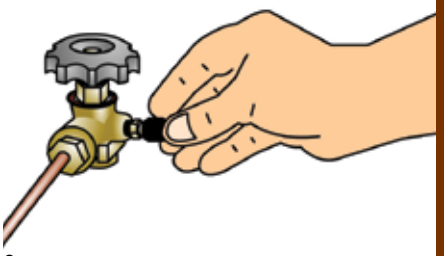
The Presto-Tap fitting installed into the test port located on the downstream side of the service valve is designed to allow quick and easy access when performing a system leak test. It eliminates the need to break the system to install expensive test block apparatus. The following PT9102R series service valve shown here, illustrates how to use the Presto-Tap fitting to perform a high-pressure system leak test. This same procedure applies to the PT7556R, PG8475, PT6542 and PT6543 series valves not shown here that carry the same feature.



1
Remove Gas Tight Cap from pressure fitting.



2
Attach 300 LB Gauge to pressure fitting. Perform System Leak Test Per NFPA 58 - Your Company Policy.



3
Once the system has been leak tested successfully simply remove the 300 LB gauge and replace and snug the Gas Tight Cap.

PG8475RL Series

PT7556 Series

PT9102R Series

PT6543 Series
PT6542 Series

Only trained qualified personnel should perform leak testing. As for any LP-Gas installation, service or repair it is required that time be taken to ensure safety and all federal, state and local regulations are met.

Safety Warning – LP-Gas Pressure Relief Valves

Purpose

In its continuing quest for safety, RegO is publishing safety warning bulletins explaining the hazards associated with the use, misuse and aging of RegO Products. LP-Gas dealer managers and service personnel must realize that the failure to exercise the utmost care and attention in the installation, inspection and maintenance of these products can result in personal injury and property damage.

The National Fire Protection Association NFPA 58 Liquified Petroleum Gas Code - 2017 Edition states in Section 4.4 Qualification of Personnel; "Persons whose duties fall within the scope of this code shall be provided with training that is consistent with the scope of their job activities and that includes proper handling and emergency response procedures... Refresher training shall be provided at least every 3 years, initial and subsequent training shall be documented". These "RegO Safety Warnings" may be useful in training new employees and reminding older employees of hazards that can occur. It is recommended that all employees complete the Propane Education Research Council's Certified Employee Training Program.

This Warning Bulletin should be provided to all purchasers of RegO and all personnel using or servicing these products. Additional copies are available from RegO and your Authorized RegO Distributor.

⚠ WARNING

What You Must Do:

- **Read This Entire Warning**
- **Install Properly**
- **Inspect Regularly**

Scope

This bulletin applies to pressure relief valves installed on stationary, portable and cargo containers and piping systems utilized with these containers. This bulletin is not intended to be an exhaustive treatment of this subject and does not cover all safety practices that should be followed in the installation and maintenance of LP-Gas systems. Each LP-Gas employee should be provided with a copy of NPGA Safety Pamphlet 306 "LP-Gas Regulator and Valve Inspection and Maintenance" as well as the NPGA "LP-Gas Training Guidebooks" relating to this subject.

Warnings should be as brief as possible. If there is a simple warning, it is:

Inspect pressure relief valves regularly. Replace unsafe or suspect valves immediately. Use common sense.

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Inspect Regularly

A pressure relief valve discharges when some extraordinary circumstance causes an over pressure condition in the container. If a pressure relief valve is known to have discharged, the relief valve, as well as the entire system, should be immediately and thoroughly inspected to determine the reason for the discharge. In the case of discharge due to fire, the valve should be removed from service and replaced.

Relief valves should be inspected each time the container is filled but no less than once a year. If there is any doubt about the condition of the valve, it must be replaced.

Eye protection must be worn when performing inspection on relief valves under pressure. Never look directly into a relief valve under pressure or place any part of your body where the relief valve discharge could impact it. In some cases a flashlight and a small mirror are suggested to assist when making visual inspections.

To Properly Inspect A Pressure Relief Valve, Check For:

1. **A rain cap.** Check protective cap located in valve or at end of pipeaway for a secure fit. Protective caps help protect the relief valve against possible malfunction caused by rain, sleet, snow, ice, sand, dirt, pebbles, insects, other debris and contamination. **REPLACE DAMAGED OR MISSING CAPS AT ONCE AND KEEP A CAP IN PLACE AT ALL TIMES.**

2. **Open weep holes.** Dirt, ice, paint and other foreign particles can prevent proper drainage from the valve body. **IF THE WEEP HOLES CANNOT BE CLEARED, REPLACE THE VALVE.**

3. **Deterioration and corrosion on relief valve spring.** Exposure to high concentrations of water, salt, industrial pollutants, chemicals and roadway contaminants could cause metal parts to fail. **IF THE COATING ON THE RELIEF VALVE SPRING IS CRACKED OR CHIPPED, REPLACE THE VALVE.**

4. **Physical damage.** Ice accumulations and improper installation could cause mechanical damage. **IF THERE ARE ANY INDICATIONS OF DAMAGE, REPLACE THE VALVE.**

5. **Tampering or readjustment.** Pressure relief valves are factory set to discharge at specified pressures. **IF THERE ARE ANY INDICATIONS OF TAMPERING OR READJUSTMENT, REPLACE THE VALVE.**

6. **Seat leakage.** Check for leaks in the seating area using a noncorrosive leak detection solution. **REPLACE THE VALVE IF THERE IS ANY INDICATION OF LEAKAGE.** Never force a relief valve closed and continue to leave it in service. This could result in damage to the valve and possible rupture of the container or piping on which the valve is installed.

7. **Corrosion and contamination. REPLACE THE VALVE IF THERE ARE ANY SIGNS OF CORROSION OR CONTAMINATION ON THE VALVE.**

8. **Moisture, foreign particles or contaminants in the valve.**Foreign material such as paint, tar or ice in relief valve parts can impair the proper functioning of the valves. Grease placed in the valve body may harden over time or collect contaminants, thereby impairing the proper operation of the relief valve. **DO NOT PLACE GREASE IN THE VALVE BODY. REPLACE THE VALVE IF THERE ARE ANY INDICATIONS OF MOISTURE OR FOREIGN MATTER IN THE VALVE.**

9. **Corrosion or leakage at container connection.** Check container to valve connection with a non-corrosive leak detection solution. **REPLACE THE VALVE IF THERE IS ANY INDICATION OF CORROSION OR LEAKAGE AT THE CONNECTION BETWEEN THE VALVE AND CONTAINER.**

CAUTION: Never plug the outlet of a pressure relief valve. Any device used to stop the flow of a properly operating pressure relief valve that is venting an overfilled or overpressurized container - raises serious safety concerns!

D

Replace Pressure Relief Valves In 10 Years Or Less

The safe useful life of pressure relief valves can vary greatly depending on the environment in which they live.

Relief valves are required to function under widely varying conditions. Corrosion, aging of the resilient seat disc and friction all proceed at different rates depending upon the nature of the specific environment and application. Gas impurities, product misuse and improper installations can shorten the safe life of a relief valve.

Predicting the safe useful life of a relief valve obviously is not an exact science. The conditions to which the valve is subjected will vary widely and will determine its useful life. In matters of this kind, only basic guidelines can be suggested. For example, the Compressed Gas Association Pamphlet S-1.1 Pressure Relief Device Standards — Cylinders, section 9.1.1 requires all cylinders used in industrial motor fuel service to have the cylinder's pressure relief valves replaced by new or unused relief valves within twelve years of the date of manufacture of cylinder and within each ten years thereafter. The LP-Gas dealer must observe and determine the safe useful life of relief valves in his territory. The valve manufacturer can only make recommendations for the continuing safety of the industry.

WARNING: Under normal conditions, the useful safe service life of a pressure relief valve is 10 years from the original date of manufacture. However, the safe useful life of the valve may be shortened and replacement required in less than 10 years depending on the environment in which the valve lives. Inspection and maintenance of pressure relief valves is very important. Failure to properly inspect and maintain pressure relief valves could result in personal injuries or property damage.

For Additional Information Read:

1. CGA Pamphlet S-1.1 Pressure Relief Standards - Cylinders, Section 9.1.1.

2. RegO Catalog L-500.

3. RegO Warning # 8545-500.

4. NPGA Safety Pamphlet 306 "LP-Gas Regulator and Valve Inspection and Maintenance" and "LP-Gas Training Guidebooks".

5. NFPA # 58, "Storage and Handling of Liquefied Petroleum Gases".

6. NFPA # 59, "LP-Gases at Utility Gas Plants".

7. ANSI K61.1 Safety Requirements for Storage and Handling of Anhydrous Ammonia.

Requirements for Pressure Relief Valves
Every container used for storing or hauling LP-Gas and anhydrous ammonia must be protected by a pressure relief valve. These valves must guard against the development of hazardous conditions which might be created by any of the following:

Hydrostatic pressures due to overfilling or the trapping of liquid between two points.

High pressures resulting from exposure of the container to excessive external heat.

High pressures due to the use of incorrect fuel.

High pressures due to improper purging of the container.

Consult NFPA Pamphlet #58 for LP-Gas and ANSI #K61.1 for anhydrous ammonia, and/or any applicable regulations governing the application and use of pressure relief valves.

Operation of Pressure Relief Valves
Pressure relief valves are set and sealed by the manufacturer to function at a specific "start-to-discharge" pressure in accordance with regulations. This set pressure, marked on the relief valve, depends on the design requirement of the container to be protected by the relief valve. If the container pressure reaches the start-to-discharge pressure, the relief valve will open a slight amount as the seat disc begins to move slightly away from the seat. If the pressure continues to rise despite the initial discharge through the relief valve, the seat disc will move to a full open position with a sudden "pop". This sharp popping sound is from which the term "pop-action" is derived.

D

Whether the relief valve opens a slight amount or pops wide open, it will start to close if the pressure in the container diminishes. After the pressure has decreased sufficiently, the relief valve spring will force the seat disc against the seat tightly enough to prevent any further escape of product. The pressure at which the valve closes tightly is referred to as the "re-seal" or "blow-down" pressure. Generally, the re-seal pressure will be lower than the start-to-discharge pressure.The re-seal pressure can be, and in most cases is, adversely affected by the presence of dirt, rust, scale or other foreign particles lodging between the seat and disc. They interfere with the proper mating of the seat and disc and the pressure in the container will usually have to decrease to a lower pressure before the spring force embeds foreign particles into the resilient seat disc material and seals leak-tight. The degree by which the presence of dirt decreases the re-seal pressure, is, of course, dependent on the size of the interfering particles.

Once particles have been trapped between the disc and seat, the start-to-discharge pressure is also affected. For example, the pressure relief valve will start-to-discharge at some pressure lower than its original start-to-discharge pressure. Again, the pressure at which the valve will start to discharge is dependent on the size of the foreign particles.

In the case of a pressure relief valve that has opened very slightly due to a pressure beyond its start-to-discharge setting, the chances of foreign material lodging between the seat and disc is negligible although the possibility is always present. If the relief valve continues to leak at pressures below its start-to-discharge setting it must be replaced.

Relief valves which have "popped" wide open must also be checked for foreign material lodged between the seat and disc, as well as for proper reseating of the seat and disc. Continued leakage at pressures below the start-to-discharge setting indicate the relief valve must be replaced.

The pressure at which a pressure relief valve will start to discharge should never be judged by the reading of the pressure gauge normally furnished on the container.

The reasons for this are two-fold:

If the relief valve is called upon to open, the resulting discharge produces an increased vaporization of the product in the container with the result that the liquid cools to a certain extent and the vapor pressure drops. A reading taken at this time would obviously not indicate what the pressure was when the relief valve opened.

The pressure gauges usually on most containers provide somewhat approximate readings and are not intended to provide an indication of pressure sufficiently accurate to judge the setting of the relief valve.

Repair and Testing

RegO Pressure Relief Valves are tested and listed by Underwriters Laboratories, Inc., in accordance with NFPA Pamphlet #58. Construction and performance of RegO Pressure Relief Valves are constantly checked at the factory by U.L. inspectors. Therefore, testing of RegO Pressure Relief Valves in the field is not necessary.

Any pressure relief valve which shows evidence of leakage, other improper operation or is suspect as to its performance must be replaced immediately using approved procedures.

Pipe-Away Adapters

Pipe-away adapters are available for most RegO Pressure Relief Valves, where it is required or desirable to pipe the discharge above or away from the container. Each adapter is designed to sever if excessive stress is applied to the vent piping – thus leaving the relief valve fully operative.

Weep hole deflectors are available on larger relief valves. These deflectors provide protection against flame impinging on adjacent containers which could occur from ignition of LP-Gas escaping through the relief valve drain hole when the valve is discharging.

Selection of RegO Pressure Relief Valves For ASME Containers

The rate of discharge required for a given container is determined by the calculation of the surface area of the container as shown in "Chart A" for LP-Gas and "Chart B" for anhydrous ammonia. See page D9.

Setting - The set pressure of a pressure relief valve depends upon the design pressure of the container. Refer to NFPA Pamphlet #58 for more information.

Selection of RegO Pressure Relief Valves for DOT Containers

To determine the proper relief valve required for a given DOT container, refer to the information shown with each pressure relief valve in the catalog. This information will give the maximum size (pounds water capacity) DOT container for which the relief valve has been approved.

Setting - The standard relief valve setting for use on DOT cylinders is 375 PSIG.

REGO 100 RegO Dr. Elon, NC 27244 USA www.regoproducts.com +1 (336) 449-7707

Ordering RegO Pressure Relief Valves

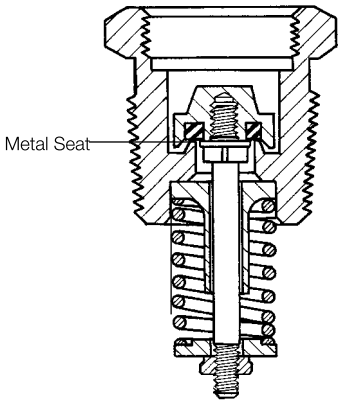
When ordering RegO Pressure Relief Valves, be sure you are certain that it will sufficiently protect the container as specified in the Foreword section, NFPA Pamphlet #58 and any other applicable standards or specifications.

All adapters, protective caps and deflectors must be ordered separately, unless specified otherwise.

Part Number Explanation

Products carrying an "A" or "AA" prefix contain no brass parts and are suitable for NH3. Hydrostatic relief valves carrying an "SS" prefix are of stainless steel construction and are suitable for use with NH3. The products are also suitable for use with LP-Gas service except relief valves carrying an "AA" prefix. These are of partial aluminum construction and are listed by U.L. for NH3 service only.

Safety Information - Relief Valves Don't Last Forever



RegO Relief Valve for lift truck containers

The internal spring is protected from external contamination but the other external parts must be protected with a cap. Circular rubber seat disc ring seats on brass shoulder approximately 3⁄64" wide.

This article was prepared by the engineers of RegO products, after technical consultation with valve manufacturers and other industry sources. Its purpose is to alert and remind the LP-Gas industry of the importance of proper maintenance of pressure relief valves. It applies most particularly to separate relief valves with emphasis on lift truck and motor fuel containers where the hazards of contamination are greatest.

Since the beginning of our industry, manufacturers of equipment and distributors of LP-Gas have worked diligently to provide a safe environment for employees and consumers. The history of the industry testifies to the success of their efforts.

But the industry is now entering its sixth decade and equipment installed years ago is failing because of age. Every year, additional equipment will fail unless it is replaced. Pressure relief valves are no exception. The valve manufacturers and LP-Gas dealers are naturally concerned about this situation.

Causes of Relief Valve Failure

A relief valve is designed to have a safe useful life of many years, but that life will vary greatly depending on the environment in which it "lives." To attempt to estimate the safe useful life of a relief valve and the effect of environment on its performance, a brief discussion of the materials used and the nature of its performance should be helpful.

Relief valve bodies are generally made of brass or steel. Springs are made from various spring wires which are plated or painted, or made of stainless steel. Valve seat discs are made of synthetic rubber compounds which will remain serviceable in an atmosphere of LP-Gas. Relief valve stems, guides, etc. are generally made from brass or stainless steel.

Relief valves, over the years, may not function properly in several ways:

They may leak at pressures below the set pressure.

They may open and fail to properly reseat.

They may open at higher than the set pressure.

These failures to function properly are due primarily to four "environmental" conditions:

1. Corrosion of metal parts (particularly springs) which result in the component parts failing to perform.
2. Deterioration of the synthetic rubber seat disc material.
3. Clogging or "cementing" of the movable relief valve components so that their movement is restricted.
4. Debris on the valve seat after the relief valve opens, effectively preventing the valve from reseating.

Corrosion is caused by water, corrosive atmospheres of salt and industrial pollutants, chemicals, and roadway contaminants. High concentrations can attack the metal parts vigorously. No suitable metals are totally resistant to such corrosion.

Synthetic rubber and seat disc materials can also be attacked by impurities in the gas and corrosive atmospheres, particularly those with sulphur dioxide. There are no suitable rubber materials which resist all contaminants.

"Cementing" of relief valve parts has been caused by normal industrial atmospheres containing particles of dirt, iron oxide, metal chips, etc. combined with water, oil, or grease. Ice collecting in recessed valves could cause relief valves to fail to open. Paint and tar in relief valves also cause failure to function properly.

Debris on valve seats which prevents reseating can occur whenever the valve collects material in the relief valve opening which is not blown out when the relief valve opens.

Inspection of Relief Valves
Unfortunately many of the above problems may not be easily observed because of the compact nature of some relief valve designs.

A casual visual inspection of a relief valve may not necessarily disclose a potential hazard. On the other hand, a visual inspection will often disclose leakage, corrosion, damage, plugging and contamination.

If additional light is required, a flashlight should be used.

If there is any doubt about the condition of the valve, or if there is a suspicion that the valve has not been protected by a cap for some time, it should be replaced before refilling the container.

Eye protection must be used when examining relief valves under pressure.

Smaller Relief Valves
The industry's requirement for a small full-flow safety relief valve challenged design engineers some years ago:

The valve must be leakproof before operating and must reseat leakproof each time after each operation. The only known satisfactory seat disc materials to accomplish this have been special synthetic rubber compounds.

- Valve discharge settings are relatively high and require high spring loads to keep the valve closed.
- Because of the small interior diameter of the valve, the round metal seating area is small.

All of these parameters may result in the development of a significant indentation in the rubber seat disc after some years. The seat disc may have a tendency to cling to the metal seat. This may result in the relief valve not opening at the set pressure as the seat disc ages.

Tests have been conducted on small LP-Gas relief valves of all the U.S. valve manufacturers. Valves over 10 years old were removed from service and tested to determine at what pressure the valves discharged. In many of the valves, the pressure required to open the valve exceeded the set pressure.

Because of the critical importance of proper functioning of relief valves, common sense and basic safety practice dictate that small relief valves should be replaced in about 10 years.

Some larger relief valves on bulk storage tanks can be replaced with rebuilt valves obtained from the manufacturers. Small relief valves cannot be rebuilt economically, thus, new valves are required. Most LP-Gas dealers find it impractical and costly to test relief valves and field repairing of relief valves is not sanctioned by the manufacturers, Underwriter's Laboratories, or ASME.

Use of Protective Caps

Many of the problems that cause inoperative relief valves could be prevented if proper protective caps were kept in place at all times.

Collection of debris would be prevented. Contamination caused by corrosive atmospheres would be reduced. Water collection in the valves would be eliminated. Relief valves protected with caps from the time of installation in the container would obviously have a much longer safe useful life, but they still should be replaced at some time because of the gradual deterioration of the rubber seat disc due to age alone.

NFPA 58 requires that protective caps must be kept in place as a protective cover on some relief valves. This is a mandatory requirement on several types of relief valves. The fact that use of caps may make inspection more time consuming should not be viewed as a reason for either not using the caps, or not making required periodic inspections.

In the event a relief valve has been used without the required cap, the relief valve should be thoroughly inspected and the required cap placed on the relief valve. If damage is noted to the relief valve, it should be replaced and the replacement valve should be capped. Relief valves with pipe-away adapters or deflectors used on lift truck containers have been found choked with debris. Inspection of relief valves with deflectors can only be accomplished by removing the deflector.

Similarly, larger relief valves with vent stacks have been found choked with debris and water. Valves have failed because springs rusted through. The weep hole was plugged. It was obvious that the relief valves had not been inspected in many years. These conditions must be alleviated by periodic inspections and replacement of relief valves as needed.

Summary Recommendations
Predicting the safe useful life of a relief valve is obviously not an exact science. The conditions to which the valve is subjected will vary widely and will largely control its life. In matters of this kind, only basic guidelines can be suggested. The LP-Gas dealer must observe and determine the safe useful life of relief valves in his territory. The valve manufacturers can only make recommendations for the continuing safety of the industry:

1. Make sure proper protective caps are in place at all times. Do not release a container for service or fill a container unless it has a protective cap in place.
2. Replace relief valves periodically, at least every 10 years. Every relief valve has the month and year of manufacture stamped on the valve. This is most particularly true of small separate relief valves.
3. Carefully inspect valves each time before the container is filled. Replace valves showing any signs of contamination, corrosion, damage, plugging, leakage, or any other problem. Eye protection must be used when examining relief valves under pressure.

Minimum Required Rate of Discharge for Pressure Relief Valves Used on ASME Containers

Chart A — Minimum Required Rate of Discharge for LP-Gas Pressure Relief Valves Used on ASME Containers

From NFPA Pamphlet #58, Appendix D (1986).

Minimum required rate of discharge in cubic feet per minute of air at 120% of the maximum permitted start-to-discharge pressure for pressure relief valves to be used on containers other than those constructed in accordance with Interstate Commerce Commission specification.

Surface Area Sq. Ft.	Flow Rate SCFM Air	Surface Area Sq. Ft.	Flow Rate SCFM Air	Surface Area Sq. Ft.	Flow Rate SCFM Air	Surface Area Sq. Ft.	Flow Rate SCFM Air	Surface Area Sq. Ft.	Flow Rate SCFM Air	Surface Area Sq. Ft.	Flow Rate SCFM Air	Surface Area Sq. Ft.	Flow Rate SCFM Air
20 or less	626	85	2050	150	3260	230	4630	360	6690	850	13540	1500	21570
25	751	90	2150	155	3350	240	4800	370	6840	900	14190	1550	22160
30	872	95	2240	160	3440	250	4960	380	7000	950	14830	1600	22740
35	990	100	2340	165	3530	260	5130	390	7150	1000	15470	1650	23320
40	1100	105	2440	170	3620	270	5290	400	7300	1050	16100	1700	23900
45	1220	110	2530	175	3700	280	5450	450	8040	1100	16720	1750	24470
50	1330	115	2630	180	3790	290	5610	500	8760	1150	17350	1800	25050
55	1430	120	2720	185	3880	300	5760	550	9470	1200	17960	1850	25620
60	1540	125	2810	190	3960	310	5920	600	10170	1250	18570	1900	26180
65	1640	130	2900	195	4050	320	6080	650	10860	1300	19180	1950	26750
70	1750	135	2990	200	4130	330	6230	700	11550	1350	19780	2000	27310
75	1850	140	3080	210	4300	340	6390	750	12220	1400	20380		
80	1950	145	3170	220	4470	350	6540	800	12880	1450	20980		

Surface area =Total outside surface area of container in square feet.

When the surface area is not stamped on the name plate or when the marking is not legible, the area can be calculated by using one of the following formulas:

1. Cylindrical container with hemispherical heads. Area (in sq. ft.) = overall length (ft.) x outside diameter (ft.) x 3.1416.
2. Cylindrical container with semi-ellipsoidal heads. Area (in sq. ft.) = overall length (ft.) + .3 outside diameter (ft.) x outside diameter (ft.) x 3.1416.
3. Spherical container. Area (in sq. ft.) = outside diameter (ft.) squared x 3.1416.

Flow Rate SCFM Air = Required flow capacity in cubic feet per minute of air at standard conditions, 60ºF. and atmospheric pressure (14.7 psia).

The rate of discharge may be interpolated for intermediate values of surface area. For containers with total outside surface area greater than 2000 square feet, the required flow rate can be calculated using the formula, Flow Rate-SCFM Air = 53.632 $A^{0.82}$ Where A = total outside surface area of the container in square feet.

D

Chart B — Minimum Required Rate of Discharge for Anhydrous Ammonia Pressure Relief Valves Used on ASME Containers

From ANSI K61.1-1981, Appendix A (1981).

Minimum required rate of discharge in cubic feet per minute of air at 120% of the maximum permitted start-to-discharge pressure for pressure relief valves to be used on containers other than those constructed in accordance with United States Department of Transportation cylinder specifications.

Surface Area Sq. Ft.	Flow Rate SCFM Air	Surface Area Sq. Ft.	Flow Rate SCFM Air	Surface Area Sq. Ft.	Flow Rate SCFM Air	Surface Area Sq. Ft.	Flow Rate SCFM Air	Surface Area Sq. Ft.	Flow Rate SCFM Air	Surface Area Sq. Ft.	Flow Rate SCFM Air	Surface Area Sq. Ft.	Flow Rate SCFM Air
20	258	95	925	170	1500	290	2320	600	4200	1350	8160	2100	11720
25	310	100	965	175	1530	300	2380	650	4480	1400	8410	2150	11950
30	360	105	1010	180	1570	310	2450	700	4760	1450	8650	2200	12180
35	408	110	1050	185	1600	320	2510	750	5040	1500	8900	2250	12400
40	455	115	1090	190	1640	330	2570	800	5300	1550	9140	2300	12630
45	501	120	1120	195	1670	340	2640	850	5590	1600	9380	2350	12850
50	547	125	1160	200	1710	350	2700	900	5850	1650	9620	2400	13080
55	591	130	1200	210	1780	360	2760	950	6120	1700	9860	2450	13300
60	635	135	1240	220	1850	370	2830	1000	6380	1750	10090	2500	13520
65	678	140	1280	230	1920	380	2890	1050	6640	1800	10330		
70	720	145	1310	240	1980	390	2950	1100	6900	1850	10560		
75	762	150	1350	250	2050	400	3010	1150	7160	1900	10800		
80	804	155	1390	260	2120	450	3320	1200	7410	1950	11030		
85	845	160	1420	270	2180	500	3620	1250	7660	2000	11260		
90	885	165	1460	280	2250	550	3910	1300	7910	2050	11490		

Surface area = Total outside surface area of container in square feet.

When the surface area is not stamped on the name plate or when the marking is not legible, the area can be calculated by using one of the following formulas:

1. Cylindrical container with hemispherical heads. Area (in sq. ft.) = overall length (ft.) x outside diameter (ft.) x 3.146.
2. Cylindrical container with other than hemispherical heads. Area (in sq. ft.) = overall length (ft.) + .3 outside diameter (ft.) x outside diameter (ft.) x 3.1416.
3. Spherical container. Area (in sq. ft.) = outside diameter (ft.) squared x 3.1416.

Flow Rate SCFM Air = Required flow capacity in cubic feet per minute of air at standard conditions, 60°F. and atmospheric pressure (14.7 psia).

The rate of discharge may be interpolated for intermediate values of surface area. For containers with total outside surface area greater than 2,500 square feet, the required flow rate can be calculated using the formula, Flow Rate-SCFM Air = 22.11 $A^{0.82}$ where A = outside surface area of the container in square feet.

Conversion Factor

ft^2	x 0.092 903	= m^2
SCFM	x 0.028 317	= m^3/min
ft	x 0.304 8	= m

"Pop-Action" Pressure Relief Valves

General Information

The "Pop-Action" design permits the RegO Pressure Relief Valve to open slightly to relieve moderately excessive pressure in the container. When pressure increases beyond a predetermined point, the valve is designed to "pop" open to its full discharge capacity, reducing excess pressure quickly. This is a distinct advantage over ordinary valves which open gradually over their entire range, allowing excessive pressure to develop before the relief valve is fully open. All RegO internal, semi-internal, and external relief valves incorporate this "Pop-Action" design.

Relief Valves in this catalog are only intended for use in LP-Gas or anhydrous ammonia service. Do not use any other service commodity. If you have an application other than conventional LP-Gas or anhydrous ammonia service, contact RegO before proceeding.

Fully Internal "Pop-Action" Pressure Relief Valves for Transports and Bobtail Delivery Vehicles A8434 and A8436 Series

Designed specifically for use as a primary relief valve on ASME cargo tanks for transportation and bobtails with 2" and 3" F.NPT couplings.

UL LISTED

A8434-SERIES

Ordering Information

Part Number	Start To Discharge Setting PSIG	A Container Connection	B Overall Height (Approx.)	C Height Above Coupling (Approx.)	UL (At 120% of Set Pressure)	ASME (At 120% of Set Pressure)	LP-Gas	NH_3	Propylene	Protective Cap (Included)
A8434G	250	2" M. NPT	9 1/16"	½"	3700	3456	Yes	Yes	No	A8434-11B
A8434N	265					3659				
A8436G	250	3" M. NPT	17⅞"	¾"	10210	9598				A8436-11B
A8436N	265					9839				
VA8436G	250				-	9596		No	Yes	
VA8436N	265					9839				

* Per NFPA Pamphlet #58, Appendix D. Area shown is for UL or ASME flow rating—whichever is larger.

Semi-Internal "Pop-Action" Pressure Relief Valves for ASME Portable Containers 7583, 8684 and 8685 Series

Designed for use as a primary relief valve on ASME containers such as 250, 500 and 1,000 gallon tanks. Underwriters' Laboratories lists containers systems on which these types of valves are mounted outside the hood without additional protection, if mounted near the hood and fitted with a protective cap.

UL LISTED

7583G

Ordering Information

Part Number	Start To Discharge Setting PSIG	A Container Connection M. NPT	B Overall Height (Approx.)	C Height Above Coupling (Approx.)	D Wrench Hex Section	Flow Capacity SCFM/Air		Protective Cap (Included)
						UL (At 120% of Set Pressure)	ASME (At 120% of Set Pressure)	
7583G	250	¾"	8 3/16"	1 1/16"	1¾"	1980	1806	7583-40X
8684G		1"	9⅜"	1 5/16"	1⅞"	2620	2565	8684-40
8685G		1¼"	11 1/16"	1 1/16"	2⅜"	4385	4035	7585-40X

D

Fully Internal "Pop-Action" Pressure Relief Valves for Motor Fuel Containers 8543, 8544 and 8546 Series

8543 Series relief valves are designed for use as a primary relief valve in larger ASME motor fuel containers such as on buses, RV's, trucks and construction equipment.

8544 Series relief valves are designed for use as a primary relief valve in smaller ASME and DOT motor fuel containers such as on tractors, lift trucks, cars and taxicabs.

Ordering Information

Part Number	Container Type	Start To Discharge Setting PSIG	A Container Connection M. NPT	B Overall Height (Approx.)	C Height Above Coupling (Approx.)	D Hex Wrenching Section	Flow Capacity SCFM/Air****		Protective Cap (Included)	Accessories
							UL (At 120% of Set Pressure)	ASME (At 120% of Set Pressure)		Pipeaway Adapter
8546G	ASME	250	¾"	4½"	15/16"	1 1/16"	723	651	11565-26	8546-11
8544G			1"	5 7/16"	⅞"	1 5/16"	1020	936	7544-41G	7544-11A*
8543G			1¼"			1 11/16"	1465	1400	7543-40C	7543-10**
8546T		312	¾"	4½"	15/16"	1 1/16"	880	792	11565-26	8546-11
8544T			1"	5 7/16"	⅞"	1 5/16"	1282	1158	7544-41	7544-11A
8543T			1¼"			1 11/16"	1990	1731	7543-40C	7543-10**
8544A375T	DOT	375	1"			1 5/16"	NA	1384	7544-41G	7544-11A
8544K							1545***	NA	7544-41	7544-11A

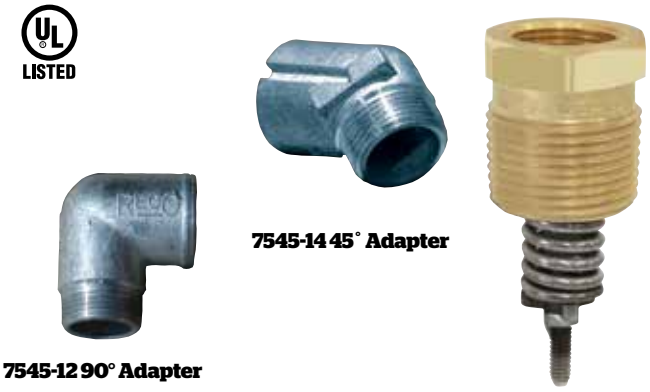
* 1" M. NPT outlet connection.
** 1¼" M. NPT outlet connection.
*** Rating also applies to DOT requirements.
**** Flow rates shown are for bare relief valves. Adapters and pipeaway will reduce flow as discussed in the Foreword section.

D

Fully Internal "Pop-Action" Pressure Relief Valve for DOT Fork Lift Cylinders 8545AK

Designed specifically for use as a primary relief valve on forklift cylinders, the 8545AK reduces the possibility of improper functioning of the relief mechanism due to foreign material build up. All guides, springs, stem and adjusting components are located inside the cylinder - removed from the direct exposure of foreign materials and debris from the atmosphere.

NFPA Pamphlet #58 requires that:
"All containers used in industrial truck (including forklift truck cylinders) service shall have the container pressure relief valve replaced by a new or unused valve within 12 years of the date of manufacture of the container and each 10 years thereafter."



Ordering Information

Part Number	Container Type	Start To Discharge Setting PSIG	Container Connection M. NPT	Flow Capacity SCFM/Air**	Accessories (Order Separately)		
				(RegO Rated at 480 PSIG	Protective Cap	Deflectors***	
						45° Elbow	90° Elbow
8545AK	Dot	375	¾"	400*	11557-19	7545-14	**7545-12**

* Classified by U.L. in accordance with Compressed Gas Association Pamphlet S-1.1 Pressure Device Standards for Cylinders. Meets requirements for use on DOT containers with 262 pounds or less weight of water or 109 pounds or less of LP-Gas.
** Flow rates are shown for bare relief valves. Adapters and pipeaways will reduce flow as discussed in the Foreword section.
*** Order protective cap #8545-41 or 7545-40.

Semi-Internal "Pop-Action" Pressure Relief Valves for Large Storage Containers

Designed especially for use as a primary relief valve on large stationary storage containers, these low profile relief valves are generally mounted in half couplings. However, they are designed so that the inlet ports clear the bottom of a full 2" coupling. This ensures that the relief valve should always be capable of maximum flow under emergency conditions.

UL LISTED

7534

Ordering Information

Part Number	Start To Discharge Setting PSIG	Container Connection M. NPT	Flow Capacity SCFM/Air*		Accessories	
			UL (At 120% of Set Pressure)	ASME (At 120% of Set Pressure)	Protective Cap	Pipeaway Adapter
7534B	125	2"	6,025	-	7534-40X	7534-20**
7534G***	250		11,675	10,422		

* Flow rates shown are for bare relief valves. Adapters and pipeaways will reduce flow as discussed in the the Foreword section.
** 3" F. NPT outlet connection.
*** Other seat materials are available.

External "Pop-Action" Pressure Relief Valves for ASME Containers and Bulk Plant Installations AA3126, AA3130, 3131, 3132, 3133, 3135, AA3135, and A3149 Series

Designed for use as a primary relief valve on ASME above ground and underground containers, bulk plant installations and skid tanks. The 3131 Series may also be used as a primary or secondary relief valve on DOT cylinders, or as a hydrostatic relief valve. All working components of these relief valves are outside the container connection, so the valves must be protected from physical damage.

D

3135-10

3132-10

UL LISTED

3135

A3149

AA3135

W3132G

Ordering Information

Part Number	Start To Discharge Setting PSIG	A Container Connection M. NPT	B Overall Height (Approx.)	C Wrench Hex Section	Flow Capacity SCFM/Air (a)		Accessories			
					UL (At 120% of Set Pressure)	ASME (At 120% of Set Pressure)	Protective Cap	Pipeaway Adapter		Weep Hole Deflector
								Part Number	Outlet Size	
AA3126L030	30	½"	2⅜"	⅞"	(b)	-	9103-54	AA3126-10	½" M. NPT	-
A3149L055	55	2½"	10½"	4⅛"	2608(c)	-	3149-40	(h)		Included (j)
A3149L200	200				8770 (c)	-				
AA3126L250	250	½"	2⅜"	⅞"	277 (c)	-	9103-54	AA3126-10	½" M. NPT	-
3131G		¾"	3 7/16"	1¾"	2060	1939	3131-41 (g)	-		
AA3130UA250					2045	1838	11557-110	AA3131-10	1" F. NPT	
W3132G		1"	6 1/32"	2⅜"	3340	-	3132-54 (g)	3132-10	1¼" F. NPT	3133-11
3132G		1¼"			4130	-		-		
T3132G					3790	-		3132-10	1¼" F. NPT	
MV3132G					3995	-		-		
3135G			5 21/32"	2 11/16"	5770	-	3135-54 (g)	3135-10	2" F. NPT	
AA3135UA250			6 13/32"		6430	6341	AA3135-40PR	AA3135-10		
3133G		1½"	5 15/16"	3⅛"	6080	-	3133-54 (g)	3133-10		
A3149MG		2½"	10½"	4⅛"	10390	-	3149-40	(h)		Included (j)
A3149G						9153				
AA3130UA265	265	¾"	3 7/16"	1¾"	2125	1912	11557-110	AA3131-10	1" F. NPT	-
AA3135UA265		1¼"	6 13/32"	2 1/16"	6615	6703	AA3135-40PR	AA3135-10	2" F. NPT	3133-11
AA3126L312	312	½"	2⅜"	⅞"	330 (c)	-	9103-54	AA3126-10	½" M. NPT	-

(a) Flow rates shown are for bare relief valves. Adapters and pipeaways will reduce flow as discussed in the Foreword section.
(b) Not UL or ASME rated. .059 square inch effective area.
(c) Not UL or ASME rated. RegO rated at 120% of set pressure.
(g) Cap supplied with chain.
(h) Outlet 3½-8N (F) thread, will accept 3" M. NPT pipe thread.
(j) Weep hole deflector is Part No. A3134-11B.

External "Pop-Action" Supplementary Pressure Relief Valves for Small ASME Containers and DOT Cylinders 3127 and 3129 Series

Designed for use as a supplementary relief valve on small ASME above ground and underground containers. They may also be used as a primary or secondary relief device on DOT cylinders, or as hydrostatic relief valves.

All working components of these relief valves are outside the container connection, so the valves must be protected from physical damage.

UL LISTED

3129-10 Pipe Away Adapter

3127 Series

Ordering Information

Part Number	Container Type	Start To Discharge Setting PSIG	A Container Connection M. NPT	B Overall Height (Approx.)	C Wrench Hex Section	Flow Capacity SCFM/Air		Suitable for Tanks w/Surface Area Up To:*	Accessories		
						UL (At 120% of Set Pressure)	RegO Rated at 480 PSIG***		Protective Cap	Pipeaway Adapter	
										Part Number	Outlet Size
3127G	ASME	250	¼"	1 31/32"	⅞"	295	-	-	9103-54	-	
3129G			½"	2 19/32"	1⅛"	465			3129-40P	3129-10	½" F. NPT
3127K	DOT	375	¼"	1 31/32"	⅞"	-	450	100 lbs./Propane	9103-54	-	
3129K			½"	2 19/32"	1⅛"		780	200 lbs./Propane	3129-40P	3129-10	½" F. NPT

* Flow rates shown are for bare relief valves. Adapters and pipeaways will reduce flow as discussed in the Foreword section.

** Not UL or ASME rated. RegO rated at 480 PSIG.

*** Meets DOT requirements.

External Hydrostatic Relief Valves 3125, 3127, 3129, SS8001, SS8002, SS8021 and SS8022 Series

Designed especially for the protection of piping and shut-off valves where there is a possibility of trapping liquid LP-Gas or anhydrous ammonia. They may be installed in pipelines and hoses located between shut-off valves or in the side boss of RegO shut-off valves.

UL LISTED

Ordering Information

Part Number	Start To Discharge Setting PSIG	Valve Body Material	Container Connection M. NPT	Height (Approx.)	Wrench Hex Section	Accessories	
						Protective Cap	Pipeaway Adapter or Threads
SS8001G	250	Stainless Steel	¼"	⅞"	11/16"	-	-
SS8002G			½"		⅞"		
SS8021G			¼"	1⅜"	11/16"		¼" NPSM Thrds
SS8022G			½"		⅞"		⅜" NPT Thrds
3127G		Brass	¼"	1 31/32"		9103-54	-
3129G			½"	2 19/32"	1⅛"	3129-40P	3129-10*
3127H	275		¼"	1 31/32"	⅞"	9103-54	-
3129H			½"	2 19/32"	1⅛"	3129-40P	3129-10*
3127P	300		¼"	1 31/32"	1⅛"	9103-54	-
3129P			½"	2 19/32"		3129-40P	3129-10*
SS8022P		Stainless Steel		1⅜"	⅞"	-	⅜" NPT Thrds
3127J	350	Brass	¼"	1 31/32"	⅞"	9103-54	-
3129J			½"	2 19/32"	1⅛"	3129-40P	3129-10*
SS8001J		Stainless Steel	¼"	⅞"	11/16"	-	-
SS8002J			½"		⅞"		
SS8021J			¼"	1⅜"	11/16"		¼" NPSM Thrds
SS8022J			½"		⅞"		⅜" NPT Thrds
3127K	375	Brass	¼"	1 31/32"		9103-54	-
3129K			½"	2 19/32"	1⅛"	3129-40P	3129-10*
3125L	400		¼"	1 9/16"	⅝"	3125-40P	-
3127L				1 31/32"	⅞"	9103-54	
3129L			½"	2 19/32"	1⅛"	3129-40P	3129-10*
SS8001L		Stainless Steel	¼"	⅞"	11/16"	-	-
SS8002L			½"		⅞"		
SS8021L			¼"	1⅜"	11/16"		¼" NPSM Thrds
SS8022L			½"		⅞"		⅜" NPT Thrds
3127U	450	Brass	¼"	1 31/32"		9103-54	-
3129U			½"	2 19/32"	1⅛"	3129-40P	3129-10*
SS8001U		Stainless Steel	¼"	⅞"	11/16"	-	-
SS8002U			½"		⅞"		
SS8021U			¼"	1"	11/16"		¼" NPSM Thrds
SS8022U			½"		⅞"		⅜" NPT Thrds

3125 Series (.161 Orifice)
3127 Series (.274 Orifice)
3129 Series (.386 Orifice)

SS8022G

* ½" F. NPT outlet connection.

DuoPort® Pressure Relief Valve Manifolds for Small Storage Containers 8542 Series

Designed especially for use as a primary relief device on smaller stationary storage containers, with 2" NPT threaded couplings. These manifolds allow servicing or replacement of either of the two relief valves without evacuating the container or loss of service. The operating lever selectively closes off the entrance port to the relief valve being removed while the remaining valve provides protection for the container and its contents. The rating of each manifold is based on actual flow through the manifold and a single pressure relief valve, taking friction loss into account. It is not merely the rating of the relief valve alone.

UL LISTED

8542

Ordering Information

Part Number	Start to Discharge Setting PSIG	Application		Container Connection M. NPT	Relief Valve Included				Flow Capacity SCFM/Air** (at 120% of set pressure)	
					Quantity	Part Number	Inlet Connection M. NPT	Accessories Pipeaway Adaptors	UL Rating (at 120% of set Pressure)	ASME Rating (at 120% of set Pressure)
8542G	250	Yes	No	2"	2	3135MG	1¼"	3135-10*	5250 (1)	NA
8542AG									NA	5549 (1)
AA8542UA250	265	No	Yes			AA3135MUA250		AA3135-10*	6430 (1)	6341 (1)
AA8542UA265						AA3135MUA265			6615 (1)	6703 (1)

* 2" F. NPT outlet connection.

** Flow rating based on number of relief valves indicated in parenthesis ( ). Flow rates shown are for bare relief valves. Adapters and pipeaways will reduce flow rates as discussed in the Foreword section.

D

Delta Port Relief Valve Manifolds 8530/AA8530 Series

Designed especially for use as a primary relief device on large stationary pressurized storage containers, the base is supplied with a two-inch NPT threaded container connection. These manifolds incorporate an additional relief valve, not included in the flow rating, allowing for servicing or replacement of any one of the relief valves without evacuating the container. The hand-wheel on the manifold selectively closes off the entrance port to the relief valve being removed while the remaining relief valves provide protection for the container and its contents. All manifold flow ratings are based on flow through the relief valves after one has been removed for service or replacement.

8533AG

Ordering Information

Part Number	Start to Discharge Setting PSIG	Application		Container Connection M.NPTF	Relief Valve				ASME Flow Rating SCFM (air) @ 120% of Set Pressure *
		LPG	NH3		Qty.	Part Number	Inlet Connection M.NPT	Accessories Pipe-away Adapter**	
8532AG	250	Yes	No	2"	2	3135MG	1¼"	3135-10	5,549 (1)
8533AG					3				11,098 (2)
AA8532MA250		No	Yes		2	AA3135MA250		AA3135-10	6,341 (1)
AA8533MA250					3				12,682 (2)
AA8532MA265	265				2	AA3135MA265			6,615 (1)
AA8533MA265					3				13,230 (2)

* Flow rating based on number of relief valves indicated in parentheses ( ).
Flow rates shown are for bare relief valves. Adapters and pipe-always will reduce flow rates as discussed in forwarding information in L-500 catalog. ** 2" F. NPT outlet connection

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Multiport™ Pressure Relief Valve Manifold Assemblies for Large Storage Containers A8560, A8570 and AA8570 Series

Designed especially for use as a primary relief device on large stationary pressurized storage containers with flanged openings. These manifolds incorporate an additional relief valve, not included in the flow rating, allowing for servicing or replacement of any one of the relief valves without evacuating the container. The handwheel on the manifold selectively closes off the entrance port to the relief valve being removed while the remaining relief valves provide protection for the container and its contents. All manifold flow ratings are based on flow through the relief valves after one has been removed for service or replacement.

UL LISTED

A8560
A8570

Bolt Stud and Nut Assemblies

Part Number	Consists of	For Use With:	For Connection To:	Number Required
7560-55	1-Bolt Stud and Nut	All RegO Multiports™	Modified 3" - 300# and 4"-ANSI 300# Welding Neck Flange	8
7560-56			Manhold Cover Plate	

Ordering Information

Part Number	Start To Discharge Setting PSIG	Application		Container Flange Connection	Relief Valve				Flow Capacity SCFM/Air** At 120% of Set Pressure	
		LP-Gas	NH_3		Quantity	Part Number	Inlet Connection M. NPT	Accessories Pipeaway Adapters	UL Rating	ASME Rating
A8563G	250	Yes	Yes	3"-300#*	3	A3149MG	2½"	****	18,500 (2)	Not Applicable
A8564G					4				27,750 (3)	
A8573G				4"-300#	3				18,500 (2)	
A8574G					4				27,750 (3)	
A8563AG				3"-300#*	3	A3149G			Not Applicable	18,300 (2)
A8564AG					4					27,400 (3)
A8573AG				4"-300#	3					18,300 (2)
A8574AG					4					27,400 (3)

* For use with modified 300# ANSI flange with 4" port.

** Flow rating based on number of relief valves indicated in parentheses ( ). Flow rates shown are for bare relief valves. Adapters and pipeaways will reduce flow rates as discussed in the Foreword section.

*** 2" F. NPT outlet connection.

**** Outlet 3½-8N (F) thread, will accept 3" M. NPT pipe thread.

D

Adhesive Warning Label

The following warning information, Part Number 8545-500, is included with each shipment of pressure relief valves and relief valve manifolds to the first purchaser of the product from the factory.

This information is intended to be forwarded throughout the product distribution chain. Additional copies are available from RegO and Authorized Product Distributors.

DANGER **READ THIS FIRST** **WARNING**

LP-GAS IS EXTREMELY FLAMMABLE AND EXPLOSIVE

AVOID SERIOUS INJURY AND PROPERTY DAMAGE. IF YOU SEE, SMELL OR HEAR ESCAPING GAS...EVACUATE AREA IMMEDIATELY! CALL YOUR LOCAL FIRE DEPARTMENT! DO NOT ATTEMPT TO REPAIR. DO NOT STORE IN BUILDING OR ENCLOSED AREA. DO NOT USE ON HOT AIR BALLOONS OR AIRCRAFT.

Make sure you are thoroughly trained before you attempt any pressure relief installation or maintenance. Improper conditions or procedures can cause accidents resulting in property damage and personal injury.

Become thoroughly familiar with NPGA Safety Pamphlet 306 "LP-Gas Regulator and Valve Inspections & Maintance" and RegO Safety Warning "Pressure Relief Valves" found in the relief valve section of the L-500 & L-102 Catalogs. Follow its recommendations.

Know and understand NFPA Pamphlet 58 "Liquefied Petroleum Gas Code", which is the law in many states. This publication is available from NFPA, Batterymarch Park, Quincy, MA 02269. Following its requirements is essential in the safe use of LP-Gas. Section 4.4 states: "Persons who transfer liquid LP-Gas, who are employed to transport LP-Gas, or whose primary duties fall within the scope of this code shall be trained in proper handling procedures. Refresher training shall be provided at least every three years and shall be documented."

Make sure this valve is the proper one for this installation. Avoid misusing LP-Gas equipment. Flow rates in the charts are for bare relief valves found in the relief valve section of the L500 & L102 Catalogs. The addition of deflectors, pipeaway adapters and piping will restrict the flow. To properly protect any container, the total system flow must be sufficient to relieve pressure at the pressure setting of the relief valve in accordance with all applicable codes.

Use only RegO adapters on RegO relief valves. Adapters not designed specifically for piping away RegO relief valves, such as those with 90° turns or reduced internal diameters, will decrease flow dramatically. These should never be used as they can cause the relief valve to chatter and eventually destroy itself.

Apply thread joint compound compatible with LP-Gas on valve external threads only. Make sure compound never comes into contact with other parts of the valve.

Install valves by applying force to wrenching flats only.

Tighten pipe threads approximately 1 to 1½ turns beyond the hand-tight insertion point using a wrench which avoids damage to other valve parts.

Check for damage after valve installation. Check that the pressure relief valve is clean and free of foreign material. Make sure protective cap is properly in place.

Check that there are no leaks with a non-corrosive leak detection solution before filing with LP-Gas.

Purge container before filling with LP-Gas (refer to the RegO LP-Gas Serviceman's Manual for recommended procedure.)

In selecting a label for posting at the installation site, consider RegO part number 901-400 along with your own, NPGA's and others.

Remember to instruct the owner/user/customer in safety matters concerning LP-Gas and this equipment. See RegO Safety Warning "Pressure Relief Valves" found in the relief valve section of the L-500 & L-102 Catalogs.

RegO requests that this information be forwarded to your customers. Additional copies are available from RegO and your authorized RegO Distributor.

REGO

Printed in USA 07A-0910-0386
Part number 8545-500

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8545-500

D

Safety Warnings

Purpose

In its continuing quest for safety, RegO publishes a series of bulletins explaining the hazards associated with the use, misuse, and aging of LP-Gas valves and regulators. It is hoped that these factual bulletins will make clear to LP-Gas dealer managers and service personnel, that the utmost care and attention must be used in the installation, inspection, and maintenance of these products, or problems could occur which would result in injuries and property damage.

The National Fire Protection Association NFPA 58 Liquified Petroleum Gas Code - 2017 Edition states in Section 4.4 Qualification of Personnel; "Persons whose duties fall within the scope of this code shall be provided with training that is consistent with the scope of their job activities and that includes proper handling and emergency response procedures. Refresher training shall be provided at least every 3 years, initial and subsequent training shall be documented". These "RegO Safety Warnings" may be useful in training new employees and reminding older employees of hazards that can occur. It is recommended that all employees complete the Propane Education Research Council's Certified Employee Training Program.

Nature of Warnings

It is recognized that warnings should be as brief as possible, but factors involved in filler valve and filling valves failure are not simple. They need to be fully understood so that proper procedures and maintenance can be used to prevent accidents. If there is a simple warning, it would be:

Loosen filling valve from filler valve very slowly.
If there is a leak, know procedure to follow.

This bulletin is not intended to be an exhaustive treatment of the subject of filler valves and certainly does not cover all safety practices that should be followed in the installation, operation and maintenance of LP-Gas systems, which include filler and filling valves.

Hose-End Filling Valves With ACME Connectors

Hose-end valves must never be dragged over the ground or dropped or banged into the truck when the hose is reeled in.

They could open accidentally or they could be damaged. Dragging will cause abnormal wear and eventual valve failure. Foreign material will lodge in the connector which can cause failure of the filler valve.

To prevent hazardous conditions, operators should follow this procedure on every filling application:

Always wear gloves and eye protection.

Check for foreign material in hose-end valve and the filler valve, and if present, remove with extreme care. If material cannot be safely removed, do not proceed with filling and replace valve.

Make sure the ACME connector spins on easily by hand.

If leak is noticed when filling is started, stop the operation and correct the leaking condition.

After filling, bleed the gas trapped between the filler valve and hose-end valve by using the vent on the hose-end valve or by slightly loosening coupling nut to vent the gas before disconnecting.

If gas does not stop venting, then filler valve or hose-end valve is leaking. Do not disconnect filling connector. This is a hazardous situation and your company procedure for handling this problem must be carefully followed.

Make sure your company has such a procedure. Inspection of Filling Valves with Handwheel

Valves should be inspected at least once a month to be sure that the valve handle is tight and not damaged, that the stem is not bent and that there is no "play" in the threads in the bonnet. "Play" will normally not be noticed if the valve is under pressure.

The ACME threads should be examined for wear, dents or nicks and the seating area should be clean and smooth.

Loosen slowly. If gas continues to vent, retighten ACME connector and follow company emergency procedures.

Inspection of Quick Acting Filling Valves

Valves should be inspected daily to make sure locking mechanism functions properly.

The ACME threads should be examined for wear, dents or nicks and the seating area should be clean and smooth.

The retaining ring on the filler connection should be examined to make sure it is properly holding the female ACME rotating nut or handle so as to keep the surface that seats on the filler valve gasket protected.

If any problems are evident, valves should be immediately replaced or repaired.

Larger Filler and Filling Valves

For 2¼" and 3¼" valves with ACME connections, use only the special wrenches designed for the purpose.

Do not use pipe wrenches or hammers to tighten the connections. All of the previous warnings about the smaller valves also apply here.

General Warning

All RegO products are mechanical devices that will eventually become inoperative due to wear, contaminants, corrosion and aging components made of materials such as rubber and metal. The environment and conditions of use will determine the safe service life of these products. Periodic inspection and maintenance are essential. Because RegO products have a long and proven record of quality and service, LP-Gas dealers may forget the hazards that can occur because a filler valve or a filling valve is used beyond its safe service life. Life of these valves is determined by the environment in which they "live." The LP-Gas dealer knows better than anyone what this environment is. Note: There is a developing trend in state legislation and in proposed national legislation to make the owner of products responsible for replacing products before they reach the end of their safe useful life. LP-Gas dealers should be aware of the legislation which could affect them.

Quick-Acting Minimum Loss Hose-End Valves for Bobtail Delivery Trucks and Dispensing Stations A7793A and A7797A

Designed to vastly reduce the amount of product vented when disconnecting bobtail delivery trucks, dispensing systems and anhydrous ammonia nurse tanks. These valves provide instant, full-on flow at the flip of a handle. Shut-off is instant and the handle locks for added protection. This "top of the line" hose-end valve is a fully contained unit that does not require additional filling adapters or connectors.

UL LISTED

A7793

Ordering Information

Part Number	Inlet Connection (F. NPT)	Outlet Connection (F. ACME)	Locking Handle	Flow at 1 PSIG (Cv) Pressure Drop* (GPM/ Propane)
A7793A	¾"	1 ¾"	Yes	16.0
A7797A	1"	1 ¾"	Yes	16.0

* To obtain approximate flow at other than 1 PSIG pressure drop, multiply flow in table by square root of pressure drop. Example: A7797 @ 9 PSIG = 16.0 x√9 = 48.0 GPM/propane. For NH_3 flow, multiply propane flow by .90.

Quick-Acting Hose-End Valves for Bobtail Delivery Trucks and Dispensing Stations A7707L and A7708L

Designed especially for safe operator handling of LP-Gas in bobtail delivery truck, dispensing systems and anhydrous ammonia nurse tank service.

These valves provide instant, full-on flow at the flip of the handle and provide instant positive shut-off with a handle lock for added protection.

UL LISTED

A7707L

A7708L

Ordering Information

Part Number	Body Design	Inlet & Outlet Connection (F. NPT)	Locking Handle	Flow at 1 PSIG Pressure Drop (Cv) (GPM/Propane)**	Accessories		
					Filling Connectors**		
					Extended	Compact	
					Steel	Brass	Steel
A7707L	Straight	1"	Yes	18.0	A7575L4	3175A	A3175A
A7708L	Angle			22.0			

* To obtain approximate flow at other than 1 PSIG pressure drop, multiply flow in table by square root of pressure drop. Example: A7708L @ 9 PSIG = 22.0 x√9 = 66.0 GPM/propane. For NH_3 flow, multiply propane flow by .90.

** See appropriate catalog section for additional information.

New 2" ACME Low Emission Hose End Valve for Loading Bobtails and Transports A7914A

The A7914A Low Emission valve is designed to reduce the amount of product vented when disconnecting bobtail and transport loading hoses. This valve provides a full-on flow when pressing the release trigger and the lifting of an easy grip handle. Lowering the handle will immediately stop flow and lock the lever in the closed position. This valve can be used with any standard 3¼" Male ACME connector, or our 6588LE and 6589LE minimum loss filler valves.

UL LISTED

A7914A

Ordering Information

Part Number	Inlet Connection	Outlet Connection	Locking Handle	Flow at (Cv) Pressure Drop GPM Propane	
				1 PSIG	10 PSIG
A7914A	2" F.NPT	3¼" F.Acme	Yes	55	174

*To obtain approximate flow at other than 1 PSIG drop, multiply flow in table by square root of pressure drop. Example A7914 @ 9PSIG drop = 55 X √9 = 165 GPM /propane

Quick-Acting Valves for Crop Driers and Charging Manifold Hoses 7554 Series

7554S Series valves provide instant shut-off and fast opening control on LP-Gas crop driers. They are also ideal for charging manifold hoses, stationary fuel transfer hoses and other applications requiring quick, positive shut-off. They are not for use with delivery truck hoses because the handle could snag on the ground and open the valve as the hose is reeled back to the truck.

7554L Series valves feature a locking handle device to help prevent accidental opening of the valve. It is ideal for all the same applications as the 7554S Series and may be used on delivery trucks as it incorporates the locking handle design.

Both valve series must be installed so that flow through the valve is opposite to that of a conventional globe valve. This allows the inlet flow to assist in closing the valve and prevents the valve from being opened by high pump pressures.

LISTED

7554S

7554LV

Ordering Information

Part Number	Inlet & Outlet Connection (F. NPT)	Locking Handle	Flow At 1 PSIG (Cv) Pressure Drop* (GPM/Propane)
7554SAV	½"	No	7.3
7554LAV		Yes	
7554SV	¾"	No	11.3
7554LV		Yes	

* To obtain approximate flow at other than 1 PSIG pressure drop, multiply flow in table by square root of pressure drop. Example: 7554LV @ 9 PSIG = 11.5 X $\sqrt{9}$ = 34.5 GPM/propane.

Quick-Acting Valves for Cylinder Charging Hoses 7053T and 7901T Series

Designed primarily for use on cylinder charging hoses to provide fast, convenient shut-off and fast opening.

These valves must be installed so that flow through the valve is in the opposite direction to that of a conventional globe valve. This allows the inlet flow to assist in closing the valve, and even more important, helps prevent the valve from being forced open by high pump pressure.

LISTED

7901T

Ordering Information

Part Number	Inlet Connection (F. NPT)	Outlet Connection (F. NPT)	Body Material	Flow At 1 PSIG (CV) Pressure Drop* (GPM/Propane)
7901T	¼"	¼"	Brass	1.95
7901TA	⅜"	⅜"		
7901TB	½"	¼"		
7901TC		½"		
7053T				

* To obtain approximate flow at other than 1 PSIG pressure drop, multiply flow in table by square root of pressure drop. Example: 7901T @ 9 PSIG =$\sqrt{1.95}$ x 9 = 5.85 GPM/propane. For NH3 flow, multiply propane flow by .90.

Quick-Acting Valves for Dispensing Hoses 7901TL Series

Designed primarily for use on dispensing hoses to provide safe, convenient shut-off and fast opening. These valves feature a locking handle device to help prevent accidental opening of the valve.

LISTED

7901TL Series

Ordering Information

Part Number	Inlet Connection (F. NPT)	Outlet Connection (F. NPT)	Body Material	Flow At 1 PSIG (CV) Pressure Drop* (GPM/Propane)
7901TLA	⅜"	⅜"	Brass	1.95
7901TLB	½"	¼"		
7901TLC		½"		

* To obtain approximate flow at other than 1 PSIG pressure drop, multiply flow in table by square root of pressure drop. Example: 7901T @ 9 PSIG = 1.95 x $\sqrt{9}$ = 5.85 GPM/propane. For NH3 flow, multiply propane flow by .90.

"V"-Ring Seal Globe and Angle Valve Information

General Information

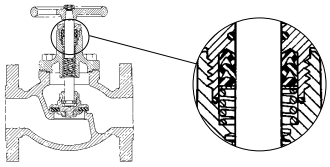
RegO Globe and Angle Valves are designed and manufactured especially to meet the rigid requirements of the LP-Gas industry. The high quality construction and wide variety of sizes and styles also make them highly suited to many other industries such as anhydrous ammonia, chemical and petrochemical.

These ductile iron valves are available in both threaded and flanged connections. Threaded connections are available in ½" F. NPT to 3" F. NPT sizes. Flanged connections are available in 1½", 2" and 3" pipe sizes.

The ductile iron used in these valves has a 60,000 PSIG tensile strength which closely approaches that of steel castings. Its yield strength of 45,000 PSIG and elongation of 15% is also comparable to that of steel castings. These material features ensure the ability of the valve body to withstand impact, wrenching stresses and thermal shock. This ductile iron conforms to ASTM specification A395.

RegO globe and angle valves are designed for working pressures up to 400 PSIG WOG and for operating temperatures from -40° F. to +160° F.

"V"-Ring Stem Seal



The "V"-ring spring-loaded pressure seal used in these RegO globe and angle valves is the most effective stem seal yet developed. It should not be confused with conventional valve stem packing where the seal is obtained by compressing the packing around the stem by means of a packing gland with resultant hard operation and frequent packing replacement.

The wax like surface of the teflon "V"-ring seal and consequent low friction ensures leak-tight performance for an indefinite period where periodic retightening of the packing is not required and the seal provides extra long service life.

In the RegO "V"-ring design, the seal is effected by the pressure expanding the "V"-shape of the seal, forcing it against the stem and bonnet surfaces to prevent leakage. The higher the pressure within the valve, the more effective the seal becomes. A spring loaded washer under the "V"-rings keeps them in an expanded position to ensure an effective seal under low pressure conditions. A wiper ring, located above the seal, keeps the seal free from grit, and/or other foreign material that may hamper operation.

Installation and Operation Note

Containers and pipe lines should be thoroughly cleaned before globe and angle valves are installed. Large particles of solid foreign matter can permanently damage the seating surface in the valve body, causing the valve to leak. Use a minimum amount of a suitable pipe dope on the male connecting threads as excess amounts may fall off and be carried into the valve, causing damage to the seat or other operating parts.

It is totally unnecessary to use excess force in opening or closing RegO valves. The type of seat disc material used and the general design of these valves permits them to be opened and closed easily. Proper valve operation insures unusually long life.

> Wrenches must never be used to operate valves equipped with handwheels and designed for hand operation.

Downstream Accessory Boss

These RegO valves incorporate a plugged ¼" F. NPT boss on the downstream side of the body for attaching either a hydrostatic relief valve or vent valve. Boss size on the 2" and 3" valves has been increased to allow a ¾" drilling for accommodation of a standard by-pass valve or jumper lines.

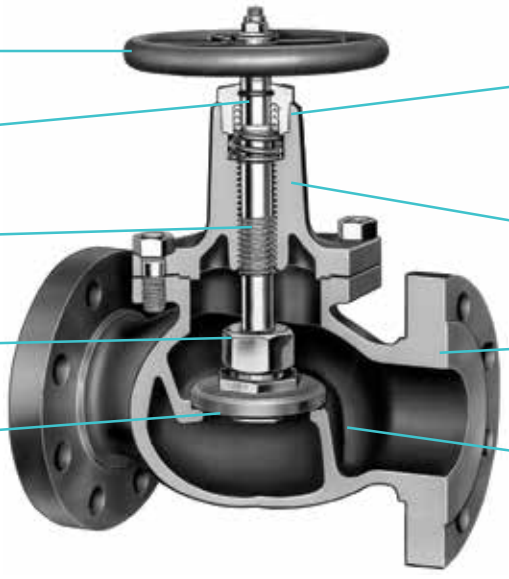
> Hydrostatic Relief—When the design of the piping installation is such that liquid may be locked between two shut-off valves, a hydrostatic relief valve should be installed in the lines between the valves. The pressures which can develop due to temperature increase in a liquid fill line are tremendous and can easily damage the valves or piping unless a hydrostatic relief valve is installed.

> Vent Valve—If the globe or angle valve is used as a shut-off valve on a loading hose, a vent valve should be installed in the downstream boss to allow liquid trapped beyond the shut-off valve to be vented before disconnecting the hose coupling.

Replace Gate Valves with Flanged Valves

Except for standard flange sizes, RegO Flanged Globe and Angle Valves are smaller and lighter than contemporary valves, thus reducing price and shipping costs and making them far easier to install. RegO face-to-face flange dimensions conform to gate valve dimensions, making replacement of most gate or plug valves with RegO valves simple and easy.

General Features



"V"-Ring Seal Globe and Angle Valves for Bulk Storage Containers, Transports, Bobtails and Plant Piping A7500 Series and TA7500 Series

Specifically designed to ensure positive shut-off and long, maintenance free service life in liquid or vapor service on bulk storage containers, transports, bobtails, cylinder filling plants and plant piping.

The high quality construction and wide variety of sizes make them highly suited for use with LP-Gas, anhydrous ammonia and in the chemical and petrochemical industries.

UL LISTED


A7517AP


TA7034


A7513AP


A7505AP


A7514AP


A7518FP


A7517FP

Ordering Information

Part Number				Inlet and Outlet Connection	Port Diameter	Flow at 1 PSIG Pressure Drop (Cv) (GPM/Propane)***		Accessories	
Buna N Seat Discs		Teflon Seat Discs*						Hydrostatic Relief Valve	Vent Valve
Globe	Angle	Globe	Angle			Globe	Angle		
-	-	TA7034P	TA7034LP	½" F. NPT	¾"	10.0	14.8	SS8001U	TSS3169
A7505AP	A7506AP	TA7505AP	TA7506AP	¾" F. NPT		12.0	17.7		
A7507AP	A7508AP	TA7507AP	-	1" F. NPT	1"	17.8	22.0		
A7509BP	A7510BP	TA7509BP	TA7510BP	1¼" F. NPT	1¼"	36.5	54.0		
A7511AP	A7512AP	TA7511AP	TA7512AP	1½" F. NPT	1½"	43.0	55.5		
A7511FP	-	TA7511FP	-	1½" Flange**		46.0	-		
A7513AP	A7514AP	TA7513AP		2" F. NPT	2"	75.0	88.5		
A7513FP	A7514FP	TA7513FP	TA7514FP	2" Flange**		78.0	133.0		
A7517AP	A7518AP	TA7517AP	-	3" F. NPT	3⅛"	197.0	303.0		
A7517FP	A7518FP	TA7517FP	-	3" Flange**					

* Teflon seat discs on valves built to order.

* * 300# ANSI R.F. Flange.

* * * To obtain approximate flow at other than 1 PSIG pressure drop, multiply flow in chart by square root of pressure drop. Example: 7514FP @ 9 PSIG = 133 x$\sqrt{9}$ = 399 GPM/propane. For NH_3 flow, multiple propane flow by .90.

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2" & 3" Globe/Angle valves with Built-in Automatic Back Check HA7513AP/HA7514AP and HA7517AP/HA7518AP

Designed for use in conjunction with our 6588LE and 6589LE low emission filler valves installed on bobtails and transports. The valves are designed to stop flow out of the container when the hand- wheel is closed. They incorporate an automatic integral back check that is designed to allow flow back into the container to prevent liquid from becoming trapped between the 6588/89LE and the closed globe/ angle valve.

UL LISTED


HA7514AP


HA7513AP

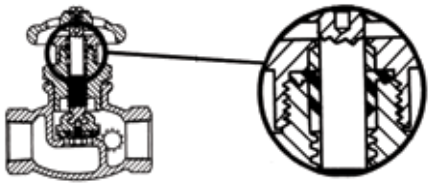
Ordering Information

Part Number		Inlet/Outlet Connection	Port Diameter	Flow at 1 PSIG Pressure drop GPM Propane	
Globe	Angle			Globe	Angle
HA7513AP	HA7514AP	2" -FNPT	2"	75.0	88.5
HA7517AP	HA7518AP	3"-FNPT	3½"	197.0	303.0

Flange Seal Globe and Angle Valve Information

General Information

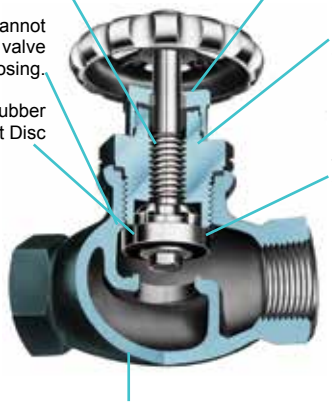
Globe and Angle Valves, incorporating the synthetic rubber flange seal design, operate on the same principle as the "V"-ring valves. Gas pressure in the valve is exerted against the synthetic rubber flange, forcing it tightly against the stem.



Leak-tight performance is assured and periodic adjustment is not required. The synthetic rubber construction provides smooth operating performance with long service life.
These valves all incorporate a plugged ¼" NPT side boss on the downstream side of the valve that can be equipped with a hydrostatic relief valve or vent valve.

Please be familiar with the "Installation and Operation Note" and "Downstream Accessory Boss" section of the "V"-ring valve design general information before ordering these valves.

General Features



Valve body made of shell molded ductile iron. Highly resistant to cracking or fracturing from wrenching, dropping or hammer blows. Bonnet and seal cap are steel on "A" prefix valves.

Flange Seal Globe and Angle Valves for Bulk Storage Containers, Filling Hoses and Plant Piping 7704, 7705 and 7706 Series

E

Designed to ensure positive shut-off and long maintenance-free service life in liquid or vapor service. Ideally suited for use on cylinder charging manifolds, truck filling hoses, bulk storage containers and plant piping.

The high quality construction and wide variety of sizes make them highly suited for use with LP-Gas, anhydrous ammonia and in the chemical and petrochemical industries.

UL LISTED

7706 P

A7704P

Ordering Information

Part Number		Inlet & Outlet Connection (F. NPT)	Flow at 1 PSIG Pressure Drop (Cv) (GPM/Propane)*		Accessories	
Globe	Angle		Globe	Angle	Hydrostatic Relief Valve	Vent Valve
7704P	7704LP	½"	7.3	12.3	SS8001J or SS8001L	TSS3169
A7704P	A7704LP					
7705P	7706P	¾"	11.5	17.7		
A7705P	A7706P					

* To obtain approximate flow at other than 1 PSIG pressure drop, multiply flow in table by square root of pressure drop. Example: A7704LP @ 9 PSIG =12.3 x $\sqrt{9}$ = 36.9 GPM/propane. For NH_3 flow, multiply propane flow by .90.

Flange Seal Liquid Transfer Angle Valves for Bulk Storage Containers 7550 and 7551 Series

Designed especially for liquid transfer of LP-Gas from consumer bulk storage containers when used with a Chek-Lok® or equipped with an integral excess flow valve. May also be used for vapor LP-Gas service.

In NH3 applicator tanks they may be used as a vapor bleeder valve or as a liquid withdrawal valve when installed in a coupling with a dip pipe.

These liquid transfer valves are equipped with an integral excess flow valve for liquid transfer directly from the tank fitting, or without an integral excess flow for LP-Gas transfer through a Check-Lok®.

When equipped with an integral excess flow valve (7550PX), the valve should be mounted in a forged steel 3000 lb. half coupling. When mounted in a 1¼" x ¾" NPT reducing coupling, the ¾" female thread in this coupling must be full length — equivalent to a forged steel 3000 lb. half coupling.

The excess flow valve will not function properly if these specifications are not met. Refer to the Warning Bulletin in the Excess Flow Valve Section of this catalog.

UL LISTED

7550P

7550PX

Ordering Information

Part Number	Inlet Connection (M. NPT)	Outlet Connection (F. NPT)	Integral Excess Flow	Flow at 1 PSIG (Cv) Pressure Drop* (GPM/Propane)	Excess Flow Approximate Closing Flow** (GPM/Propane)	Accessories	
						Hydrostatic Relief Valve	Vent Valve
7550P	¾"	¾"	No	13.3	-	3127U	3165
A7550P						SS8001J	TSS3169
7550PX			Yes	-	16.0	3127U	3165
A7550PX						SS8001J	TSS3169
7551P		½"	No	8.9	-	3127U	3165
A7551P						SS8001J	TSS3169

* To obtain approximate flow at other than 1 PSIG pressure drop, multiply flow in table by square root of pressure drop. Example: 7550P @ 9 PSIG = 13.3 x $\sqrt{9}$ = 39.9 GPM/propane. For NH_3 flow, multiple propane flow by .90.

* * For NH_3 flow, multiply propane flow by .90.

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Tank Car Angle Valves for Railroad Tank Cars TA7894P

Designed especially for transfer of LP-Gas and anhydrous ammonia in railroad tank car service.

The combined heavyweight ductile iron castings and precision machining provide ruggedness and superior performance in working pressures up to 400 PSIG.

UL LISTED

AAR Approval #E-149515

TA7894P

Ordering Information

Part Number	Inlet Connection	Outlet Connection (F.NPT)	Flow At 1 PSIG (Cv) Pressure Drop	Accessories	
				Hydrostatic Relief Valve	Vent Valve
TA7894P	Tank Car Flange	2"	112	SS8001U	TSS3169

* To obtain approximate flow at other than 1 PSIG pressure drop, multiply flow in table by square root of pressure drop. Example: TA7894P @ 9 PSIG = 112 x $\sqrt{9}$ = 336 GPM/propane. For NH_3 flow, multiply propane flow by .90.

High Capacity Liquid Withdrawal Valves For NH3
A8012 Series

The A8012 Series is designed especially for use as a high capacity liquid withdrawal valve on anhydrous ammonia nurse tanks or risers.

This valve incorporates an integral excess flow valve; when the valve is in operation the handwheel must be completely open and back-seated to allow the excess flow valve to function properly as explained in the excess flow section of our L-500 and L-102 catalogs.

UL LISTED

CE 0036

A8012D

Ordering Information

Part Number	Inlet Connection	Outlet Connection	Approximate Closing Flow GPM	Accessories for NH3 Use	
				Hydrostatic Relief Valve	Vent Valve
A8012D	1½" M.NPT	1¼" F.NPT	72 GPM NH_3*	SS8001J	TSS3169
A8012C			45 GPM NH_3*		

* When installed in a horizontally flowing system.

Multipurpose Valve for Filling of NH3 Containers
A8016DBC

Designed specifically for use as a manual filler valve on anhydrous ammonia applicator tanks. This valve incorporates an integral back check valve.

UL LISTED

A8016DBC

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Ordering Information

Part Number	Inlet Connection	Filling Connection	Filling Capacity at 20 PSIG Pressure Drop GPM/NH_3	Accessories	
				Hydrostatic Relief Valve	Vent Valve
A8016DBC	1¼"	1¾"	95	SS8001J	TSS3169

Multipurpose Valve for Filling of NH3 Containers
A8016DP

Designed specifically for use as a manual valve or vapor equalizing valve on anhydrous ammonia applicator and nurse tanks.

This valve incorporates an integral excess flow valve. When product is required, the valve must be completely open and backseated to allow the excess flow valve to function properly as explained in the excess flow section of this catalog.

UL LISTED

A8016DP

Ordering Information

Part Number	Inlet Connection (M. NPT)	Filling Connection (M. ACME)	Filling Capacity At 20 PSIG Pressure Drop GPM/NH3*	Approximate Excess Flow Closing Flows		Accessories	
				Liquid* GPM/NH3	Vapor** CFH/NH3	Hydrostatic Relief Valve	Vent Valve
A8016DP	1¼"	1¾"	95	44	24,000	SS8001J	TSS3169

* Determined at 9.5 to 12 PSIG differential.

** Determined at 100 PSIG inlet.

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Multipurpose Valves for Liquid Withdrawal of LP-Gas and NH_3 Containers A8017D & A8020D

Designed especially for use as a high capacity liquid withdrawal valve on LP-Gas and anhydrous ammonia containers.

These valves incorporate an integral excess flow valve. When product is required, the valve must be completely open and backseated to allow the excess flow valve to function properly as explained in the excess flow valve section of this catalog.

The A8017DH is equipped with a soft seated automatic differential back pressure check valve in the seat disc assembly. This allows any pressure build up in the liquid transfer line in excess of 10-15 psig above the container pressure to flow back into the container. The transfer hose is protected against excessive liquid or vapor pressure entrapment, which adds materially to the useful life of flexible hose. In addition to increasing hose service life, the equalizing valve adds substantially to the operating safety of liquid transfer systems.

UL LISTED

A8017DP

A8020D

Ordering Information

Part Number	Inlet Connection (M. NPT)	Outlet Connection (F. NPT)	Approximate Excess Flow Liquid Closing Flow** (GPM/Propane)	Accessories	
				Hydrostatic Relief Valve	Vent Valve
A8017DH*	1¼"	1"	49	Not Required	TSS3169
A8017DP			55	SS8001J	
A8017DLP		¾"	49		
A8020D	1¼"	1"	78	SS8001J	TSS3169

* Built-in back pressure check valve incorporated into shut-off valve.
* * Determined at 11.5 to 13.5 PSIG differential for ¾" outlet and 9 to 12 PSIG differential for 1" outlet. For NH_3 flow, multiply by .90.

Multipurpose Valve for Filling and Liquid Transfer of NH_3 Containers A8018DP

Designed primarily for use as a combination filler and liquid withdrawal valve on three-opening applicator tanks or on nurse tanks.

This valve incorporates an integral excess flow valve. When product is required, the valve must be completely open and backseated to allow the excess flow valve to function properly as explained in the excess flow valve section of this catalog.

UL LISTED

A8018DP

Ordering Information

Part Number	Inlet Connection (M. NPT)	Outlet Connection (F. NPT)	Filling Connection (M.ACME)	Filling Capacity At 20 PSIG Pressure Drop GPM/NH3	Approximate Excess Flow Liquid Closing Flow GPM/NH3	Accessories	
						Hydrostatic Relief Valve	Vent Valve
A8018DP	1¼"	1"	1¾"	74	50	SS8001J	TSS3169

* Determined at 9 to 12 PSIG differential.

Multipurpose Filler Valves 8118P and 8117

Designed primarily for use as a Multipurpose valve with combination filler valve and manual shutoff valve for the outlet connection of the valve for use on LP-Gas containers.

This valve incorporates an integral excess flow valve. When product is required, the valve must be completely open and back seated to allow the excess flow valve to function properly as explained in the excess flow valve section of the RegO L-102 or L-500 catalogs.

CE 0036

8118P

Ordering Information

Part Number	Inlet Connection	Outlet Connection	Filler Connection	Plug	Filling Capacity at 20 PSIG Pressure Drop	Excess Valve Closing Flow SCFH at 100 PSIG
8117	1¼" M.NPT	¾" F. NPT	1¾" M.ACME	No	82 GPM	19,300
8118P		1" F. NPT		Yes		

Adhesive Warning Labels

The following warning information, Part Number 903-500, is included with each shipment of Quick-Acting and Tank Car Valves to the first purchaser of the product from the factory.

This information is intended to be forwarded throughout the product distribution chain. Additional copies are available from RegO and Authorized Product Distributors.

DANGER **READ THIS FIRST** **WARNING**

LP-GAS IS EXTREMELY FLAMMABLE AND EXPLOSIVE

AVOID SERIOUS INJURY AND PROPERTY DAMAGE. IF YOU SEE, SMELL OR HEAR ESCAPING GAS...EVACUATE AREA IMMEDIATELY! CALL YOUR LOCAL FIRE DEPARTMENT! DO NOT ATTEMPT TO REPAIR. DO NOT STORE IN BUILDING OR ENCLOSED AREA. DO NOT USE ON HOT AIR BALLOONS OR AIRCRAFT.

Make sure you are thoroughly trained before you attempt any valve installation, maintenance or repair. Improper conditions or procedures can cause accidents resulting in property damage and personal injury.

Become thoroughly familiar with NPGA Safety Pamphlet 306 "LP-Gas Regulator and Valve Inspections & Maintenance" and RegO Safety Warnings "LP-Gas Cylinder Valves", "LP-Gas Excess Flow Valves", and "LP-Gas Filler and Hose End Filling Valves" found in the cylinder valve, excess flow valve, and filler valve sections of the L-500 & L-102 Catalogs. Follow their recommendations.

Know and understand NFPA Pamphlet 58 "Liquefied Petroleum Gas Code", which is the law in many states. This publication is available from NFPA, Batterymarch Park, Quincy, MA 02269. Following its requirements is essential in the safe use of LP-Gas. Section 4.4 states: "Persons who transfer liquid LP-Gas, who are employed to transport LP-Gas, or whose primary duties fall within the scope of this code shall be trained in proper handling procedures. Refresher training shall be provided at least every three years and shall be documented."

Make sure this valve is the proper one for this installation. Avoid misusing LP-Gas equipment.

Apply thread joint compound compatible with LP-Gas on valve external threads only. Make sure compound never comes into contact with other parts of the valve.

Install valves by applying force to wrenching flats only.

Tighten pipe threads approximately 1 to 1½ turns beyond the hand-tight insertion point using a wrench which avoids damage to other valve parts.

Check for damage and proper operation after valve installation. Check that the valve is clean and free of foreign material.

Check container-valve connection with a non-corrosive leak detection solution before filling with LP-Gas.

Purge container before filling with LP-Gas (refer to the RegO LP-Gas Serviceman's Manual for recommended procedure).

Test excess flow check valve for proper operation before placing into service. See NPGA Bulletin 113 for recommended procedure.

Check outlet connection make-up for leaks with a non-corrosive leak detection solution when placing into service.

RegO Filler Valves: To prevent damage to the internal checks when it is necessary to utilize an unloading adapter, use ONLY RegO 3119A, 3120 and 3121 Unloading Adapters with RegO Filler Valves. Carefully follow the instructions supplied with these unloading adapters.

If container is not being placed into service at the present time, insert plug or cap onto the outlet connection.

In selecting a label for posting at the installation site, consider RegO part number 901-400 or 903-400 along with your own, NPGA's and others.

Remember to instruct the owner/user/customer in safety matters concerning LP-Gas and this equipment. See RegO Safety Warnings "LP-Gas Cylinder Valves", "LP-Gas Excess Flow Valves", and "LP-Gas Filler and Hose End Filling Valves" found in the cylinder valve, excess flow valve, and filler valve sections of the L-500 & L-102 Catalogs.

RegO requests that this information be forwarded to your customers. Additional copies are available from RegO and your authorized RegO Distributor.

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Printed in USA 09A-0910-0686
Part number 903-500

Elon, N.C. 27244 U.S.A. Phone (336) 449-7707 Fax (336) 449-6594 www.regoproducts.com

903-500

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Safety Warnings

Purpose

In its continuing quest for safety, RegO publishes a series of bulletins explaining the hazards associated with the use, misuse, and aging of LP-Gas valves and regulators. It is hoped that these factual bulletins will make clear to LP-Gas dealer managers and service personnel, that the utmost care and attention must be used in the installation, inspection, and maintenance of these products, or problems could occur which would result in injuries and property damage.

The National Fire Protection Association NFPA 58 Liquified Petroleum Gas Code - 2017 Edition states in Section 4.4 Qualification of Personnel; "Persons whose duties fall within the scope of this code shall be provided with training that is consistent with the scope of their job activities and that includes proper handling and emergency response procedures... Refresher training shall be provided at least every 3 years, initial and subsequent training shall be documented". These "RegO Safety Warnings" may be useful in training new employees and reminding older employees of hazards that can occur. It is recommended that all employees complete the Propane Education Research Council's Certified Employee Training Program.

Nature of Warnings

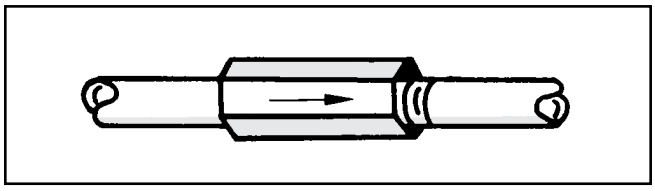
It is recognized that warnings should be as brief as possible, but the factors involved in excess flow valve failures to perform are not simple. They need to be fully understood. If there is a simple warning, it would be:

Make sure that the excess flow valve really closes when the flow exceeds normal transfer flow.

This bulletin is not intended to be an exhaustive treatment of excess flow valves, and certainly does not cover all safety practices that should be followed in installation, operation and maintenance of LP-Gas systems which include excess flow valves.

Selection and Installation

The selection of a given closing rating of an excess flow valve involves an analysis of the complete piping system and is beyond the scope of this bulletin.



It is sufficient to say that an excess flow valve must be installed in the correct direction and will close only if the flow of liquid or vapor exceeds its designed closing rating. Many valves have been installed with closing ratings considerably higher than any flow that could be obtained by a downstream rupture in piping or hoses and thus give none of the protection for which they are intended.

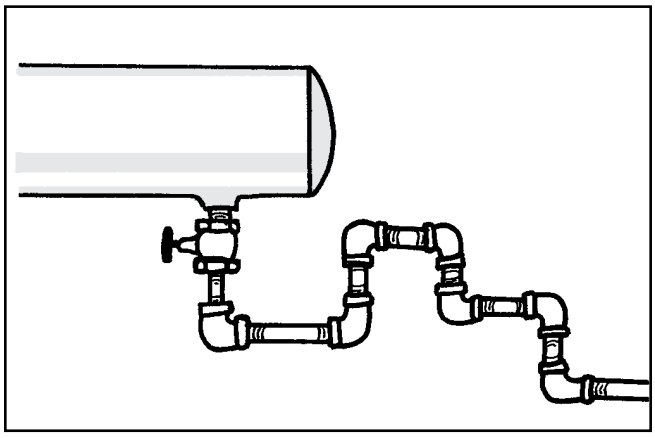
RegO provides excess flow valves with a number of closing ratings. RegO obviously can take no responsibility for the proper selection or correct installation of any valve.

Excess flow valves do not provide complete shut-off because there is a bleed at the check to permit pressure equalization.

Causes of Failure to Close

Installers, LP-Gas plant managers and service personnel should be aware that the excess flow valves may not close if these conditions are present.

1. The piping system restrictions (due to pipe length, branches, reduction in pipe size or number of other valves) decrease the flow rate to less than the valve's closing flow.



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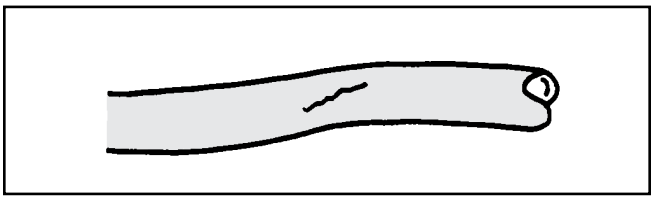
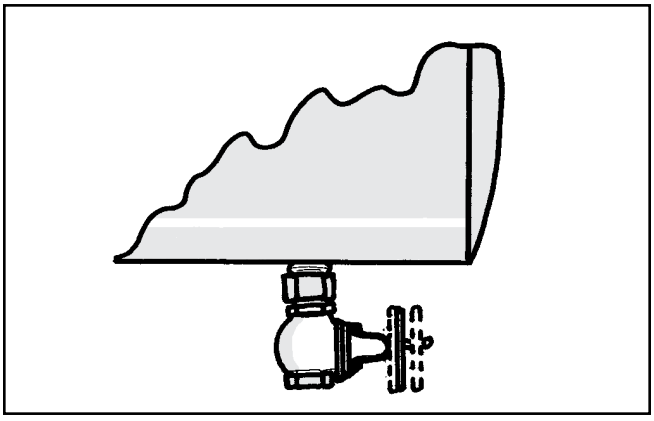
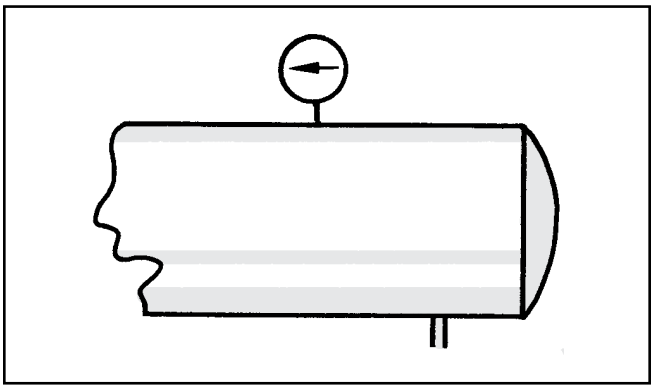
2. The break or damage to the downstream line is not large enough to allow enough flow to close the valve.



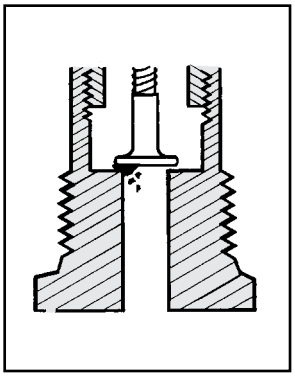
3. A shut-off valve in the line is only partially open and will not allow enough flow to close the excess flow valve.



4. LP-Gas pressure upstream of the excess flow valve, particularly due to low temperature, is not high enough to produce a closing flow rate.



5. Foreign matter (such as welding slag, scale or sludge) is lodged in the valve and prevents closing.



Because of these limitations, it is good industry practice to NOT rely entirely on excess flow valves for protection. Installation of emergency shut-off valves with remote controls is recommended in addition to excess flow valves.

Testing

The National Propane Gas Association Safety Bulletin #113-78 states:

> "In order to test an excess flow valve in a piping system, the flow through the valve must be made to exceed the valve's closing rating. This testing should only be attempted by trained personnel familiar with the process. If no one at the facility has experience in proper testing, outside expert help should be obtained. The exact procedure used may vary with the installation, advisability of gas discharge and availability of equipment.

In general, most testing makes use of the fact that excess flow valves are "surge sensitive" and will close quicker under a sudden flow surge than under steady flow. A sufficient surge can often be created by using a quick open/close valve to control sudden, momentary flow into a tank or piping section containing very low pressure. An audible click from the excess flow valve (and corresponding stoppage of flow) indicates its closure.

> A test involving venting gas to the atmosphere is hazardous and may be impractical, or illegal.

Any test of any excess flow valve will not prove that the valve will close in an emergency situation, due to reasons cited before. This test will only check the valve's condition, and the flow rate sizing for those test conditions."

General Warning

All RegO products are mechanical devices that will eventually become inoperative due to wear, contaminants, corrosion and aging of components made of materials such as metal and rubber.

The environment and conditions of use will determine the safe service life of these products. Periodic testing at least once a year when tank pressures are low and maintenance, as required, are essential.

Because RegO products have a long and proven record of quality and service, LP-Gas dealers may forget the hazards that can occur because an excess flow valve is used beyond its safe service life. Life of an excess flow valve is determined by the environment in which it "lives". The LP-Gas dealer knows better than anyone what this environment is.

NOTE: There is a developing trend in state legislation and in proposed national legislation to make the owners of products responsible for replacing products before they reach the end of their safe useful life. LP-Gas dealers should be aware of legislation which could effect them.

Troubleshooting Excess Flow Valve Installations

Periodical Inspections for Excess Flow Valves

> Excess flow valves should be tested and proven at the time of installation and at periodic intervals not to exceed one year. CAUTION: Testing an excess flow valve in the summer when tank pressures are high will not prove that the same valve will also function under low pressure conditions in the winter. Once a year testing should be conducted during the winter.

The test should include a simulated break in the line by the quick opening of a shut-off valve at the farthest point in the piping that the excess flow valve is intended to protect. If the excess flow valve closes under these conditions, it is reasonable to assume that it will close in the event of accidental breakage (clean break) of the piping at any point closer to the excess flow valve.

The National Propane Gas Association Safety Bulletin Number 113-78 states:

> In order to test an excess flow valve in a piping system, the flow through the valve must be made to exceed the valve's closing rating. This testing should only be attempted by trained personnel familiar with the process. If no one at the facility has experience in proper testing, outside expert help should be obtained. The exact procedure used may vary with the installation, advisability of gas discharge and availability of equipment.

In general, most testing makes use of the fact that excess flow valves are "surge sensitive" and will close quicker under sudden flow surge than under steady flow. A sufficient surge can often be created by using a quick open/close valve to control sudden, momentary flow into a tank or piping section containing very low pressure. An audible click from the excess flow valve (and corresponding stoppage of flow) indicates its closure.

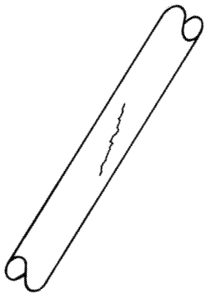
> A test involving venting gas to the atmosphere is hazardous and may be impractical or illegal.

Any test of any excess flow valve will not prove that the valve will close in an emergency situation, due to reasons cited before. This test will only check the valve's condition and the flow rate sizing for those test conditions.

What prevents excess flow valves from closing when the line breaks?

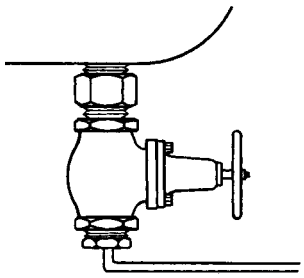
For one or a combination of the following reasons, excess flow valves have been prevented from closing in emergencies:

1. Not a Clean Break



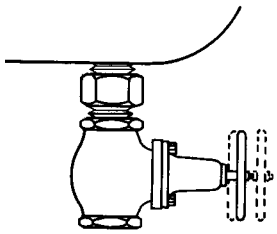
Hoses with a split or tear, and pipe lines not completely severed may be emitting LP-Gas in an amount insufficient to cause an "excess" flow. The amount of LP-Gas which can escape through such breaks may be even less than the flow during normal transfer service and under these conditions the excess flow valve could not be expected to close.

2. Line Restriction Too Great



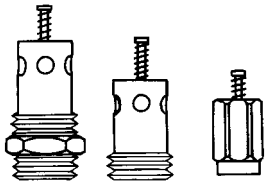
An excess flow valve installed in a tank outlet will not close if the line beyond it is reduced or if the flow is otherwise restricted by too many fittings or too long a run because the line is incapable of passing the amount of LP-Gas necessary to create an "excess" flow. This condition should be corrected when testing a system by simulating a break at the farthest possible point and replacing any restrictive hose, pipe or fittings.

3. Improper Operating Practice



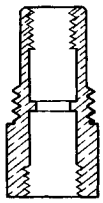
A restriction can also be imposed upon the excess flow valve by an improperly opened valve at the tank outlet. The shutoff valve should be either fully opened or fully closed. If "throttled," the valve could reduce the amount of LP-Gas passing through the excess flow valve in a sufficient amount to keep it from closing. Throttling operations should not be performed in the lines being protected by excess flow valves.

4. Improper Selection



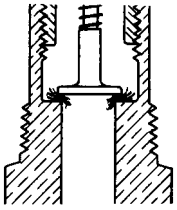
The many types of excess flow valves available are designed for specific jobs. The excess flow valve selected should remain open during normal flow but close at "excess" flow. An inspection which simulates a line break prior to start-up operations will determine if the proper valve has been selected.

5. Tampering with Excess Flow Valves



Sometimes an operator, annoyed with frequent closures of an excess flow valve with too low a rating, has mutilated the valve and forgotten to replace it with a properly rated excess flow valve. A pre-test of the system would reveal this and allow the excess flow valve to be replaced.

6. Impurities in the Line



Dirt, weld slag, broken drill taps, and various other foreign objects have been found jammed between the valve disc and valve seat to prevent excess flow valves from closing. A pre-test of the system would also discover this.

The Limitations of Excess Check Valves for LP-Gas

Excess flow check valves have been of help in limiting gas loss in many incidents involving breakage of hoses and transfer piping. Thus, they do provide a useful safety function in LP-Gas systems. However, there have also been transfer system accidents where excess flow valves have been ineffective in controlling gas loss due to a variety of conditions and to the inherent limitations of these valves. This bulletin explains what protection excess flow valves can offer, points out conditions which can interfere with that protection, and offers suggestions for effective excess flow valve installation.

An excess flow valve is a protective device to help control the discharge of product in the event of complete breakage of pipe lines or hose rupture. However, an excess flow valve can only offer limited protection from gas discharge, because it will only close under those conditions which cause the flow through the valve to exceed its rated closing flow, and even when closed it necessarily allows some "bleed" past the valve.

An excess flow valve is not designed to close and thus may not provide protection, if any of the following conditions are present:

1. The piping system restrictions (due to pipe length, branches, reduction in pipe size, or number of other valves) decrease the flow rate to less than the valve's closing flow. (Valve should be selected by closing flow rating — not just by pipe size).

2. The break or damage to the downstream line is not large enough to allow enough flow to close the valve.

3. A shut-off valve in the line is only partially open and will not allow enough flow to close the excess flow valve.

4. LP-Gas pressure upstream of the excess flow valve, particularly due to low temperature, is not high enough to produce a closing flow rate.

5. Foreign matter (such as welding slag) is lodged in the valve and prevents its closing.

6. A buildup of process material (sludge), which may be found in LP-Gas, may occur over a period of time and cause the valve to stick open.

7. The piping break or damage occurs upstream of an in-line excess flow valve, so the escaping product is not passing through the valve.

8. The flow through the valve is in the wrong direction. (Excess flow valves only respond to flow in one direction.)

9.The excess flow valve has been damaged, or is otherwise not in operating condition.

Because of these limitations of excess flow valves, they should not be relied upon as the only means of controlling the escape of product in the event of piping damage. When possible, shut-off protection by quick closing valves, with shut-off controls accessible in spite of likely line damage, should be provided in addition to, or instead of excess flow valves.

Where excess flow valves are installed, they should be checked to see that:

1. They are installed in the correct direction — the arrow on the valve indicates the shut-off direction.

2. The flow rating on the valve is proper for the installation. The rating must be above the normal system flow, but not higher than necessary to prevent "nuisance" closing in normal conditions. If the manufacturer's catalog information is not sufficient, the valve suppliers can provide sizing assistance.

3. In-line excess flow valves are installed so likely piping damage will occur downstream of the valve and will not separate the valve from the upstream piping.

When the excess flow valves can be examined separate from the line (before the installation or if removed for system maintenance), they should be checked to see that the parts are in good condition and that the poppet can be pushed fully closed.

Testing of Excess Flow Valves

In order to test an excess flow valve in a piping system, the flow through the valve must be made to exceed the valve's closing rating.

This testing should only be attempted by trained personnel familiar with the process. If no one at the facility has experience in proper testing, outside expert help should be obtained. The exact procedure used may vary with the installation, advisability of gas discharge, and availability of equipment.

In general, most testing makes use of the fact that excess flow valves are "surge sensitive" and will close quicker under a sudden flow surge than under steady flow. A sufficient surge can often be created by using a quick-closing valve to control sudden, momentary flow into a tank or piping section containing very low pressure. An audible click from the excess flow valve (and corresponding stoppage of flow) indicates its closure.

A test involving venting gas to the atmosphere is hazardous and may be impractical, or illegal.

Any test of any excess flow valve will not prove that the valve will close in an emergency situation, due to reasons cited before. This test will only check the valve's condition, and the flow rate sizing for those test conditions.

For additional information on excess flow valves and other means of shut-off protection, contact RegO and refer to NFPA 58.

Prepared by
NATIONAL PROPANE GAS ASSOCIATION
The purpose of this bulletin is to set forth general safety practices for the installation, operation, and maintenance of LP-Gas equipment. It is not intended to be an exhaustive treatment of the subject, and should not be interpreted as precluding other procedures which would enhance safe LP-Gas operations. The National Propane Gas Association assumes no liability for reliance on the contents of this bulletin.

REGO 100 RegO Dr. Elon, NC 27244 USA www.regoproducts.com +1 (336) 449-7707

Excess Flow Valves

General Information
RegO Excess Flow Valves have been designed, developed, and manufactured for a wide variety of industry needs for more than three decades.

Throughout the years, those concerned with installing and operating bulk plant facilities have looked to RegO products with confidence for reliable, long-lasting valves as required by the National Fire Protection Association (NFPA) Standards 58 and 59, as well as any state, provincial, and local regulations.

It is a responsibility we have not taken lightly. RegO products continue to not only assess the most effective designs, but anticipate and meet the industry's changing requirements. Toward that goal, RegO products include over fifty different types and sizes of excess flow valves (most of which are listed by Underwriters Laboratories) to meet the needs of the LP-Gas and anhydrous ammonia industries.

An Explanation and Warning
An excess flow valve is a spring-loaded check valve which will close only when the flow of fluid through the valve generates sufficient force to overcome the power of the spring holding it open. Each valve has a closing rating in gallons per minute and CFH/air.

The selection of a proper closing rating is critical. It requires a technical understanding of the flow characteristics of the piping system, including restrictions of the piping and other valves and fittings downstream of the excess flow valve.

System designers and operating people must understand why an excess flow valve, which remains open in normal operations, may fail to close when an accident occurs.

Warning: A downstream break in piping or hoses may not result in sufficient flow to close the valve.

How They Work
Excess flow valves permit the flow of liquid or vapor in either direction. This flow is controlled in only one direction (the direction of the arrow stamped on the valve). If the flow in that direction exceeds a predetermined rate (shown in this catalog for each valve), the valve automatically closes.

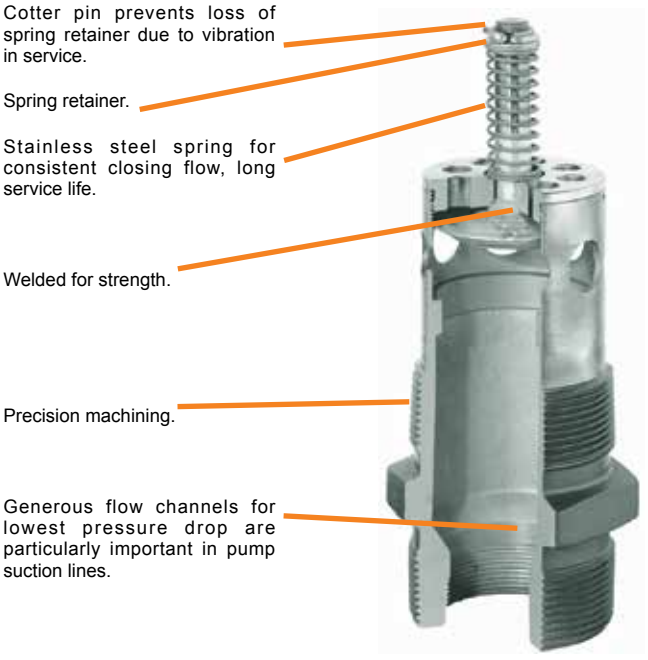
The valve disc is held in the open position by a spring. When the flow creates a pressure drop across the valve disc that overcomes the preset load on the spring, the valve disc moves to the closed position. It remains closed until the force on both sides of the valve disc are approximately equal (a small bleed hole in the disc of each valve permits equalization), then the spring automatically reopens the valve. When a line is completely broken, the pressure cannot equalize and the excess flow valve remains closed until the line is repaired. Because the bleed hole in each valve disc permits equalization of pressure, excess flow valves do not provide a 100 percent type shut-off.

Proper Installation
Since excess flow valves depend on flow in order to close, the line downstream of the excess flow valve should be large enough not to excessively restrict the flow. If the piping is too small, unusually long or restricted by too many elbows, tees and other fittings, consideration should be given to the use of larger size pipe fittings.

An excess flow valve in a pump suction line cannot be expected to close in the case of a clean break in the line beyond the pump, as the pump constitutes too great a restriction, even if running.

Good piping practices dictate the selection of an excess flow valve with a rated closing flow of approximately 50 percent greater than the anticipated normal flow. This is important because valves which have a rated closing flow very close to the normal flow may chatter or slug closed when surges in the line occur during normal operation, or due to the rapid opening of a control valve.

All installations must be in accordance with NFPA Standards 58 and 59, as well as state, provincial and local regulations.



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Excess Flow Valves for Liquid or Vapor Service
1519C Series

Designed for top mounting in storage tank manhole covers for liquid or vapor applications. The tapped inlet allows for an optional 1" NPT dip pipe connection to withdraw liquid from the top of the tank.

The 1519C4 is designed for installation in long line or branch piping applications.

UL LISTED

1519C2

1519C4

Ordering Information

Part Number	A Inlet Connection NPT	B Outlet Connection F. NPT	C Wrench Hex Flats	D Effective Length (Approx.)	E Threaded End to Port	Approximate Closing Flows**		
						Liquid (GPM Propane)	Vapor SCFH (Propane)	
							25 PSIG Inlet	100 PSIG Inlet
1519C2	1½" Male*	1"	2¼"	2 1/16"	2 11/16"	25	5,000	8,800
1519C4	2" Female	2"	3"	4 9/16"	-	170	28,590	48,600

* 1" Female Dip Pipe Connection

** Based on horizontal installation of excess flow valve. Flows are slightly more when valves are installed with outlet up; slightly less when installed with outlet down.
NOTE: Multiply flow rate by .94 to determine liquid butane flow.

F

Excess Flow Valves for Liquid or Vapor Line Service
1519A Series, 1519B Series and A1519 Series

Designed for top installation, in any position, in liquid or vapor service lines. They are intended for long lines or branch piping where tank mounted excess flow valves cannot suffice.

UL LISTED

1519A2, 1519A3, 1519A4, 1519B4, A1519A2, A1519A4, A1519B4

A1519A6

Ordering Information

Part Number	Brass or Steel	A Inlet Connection NPT	B Outlet Connection F. NPT	C Wrench Hex Flats	D Effective Length (Approx)	Approximate Closing Flows*		
						Liquid (GPM Propane)	Vapor SCFH (Propane)	
							25 PSIG Inlet	100 PSIG Inlet
1519A2	Brass	1"	1"	1¾"	3½"	25	5,000	8,800
A1519A2	Steel							
1519A3	Brass	1½"	1½"	2¼"	4"	60	11,500	20,200
1519A4	Brass	2"	2"	3"	4 9/16"	100	19,000	34,500
A1519A4	Steel				4 13/16"			
1519B4	Brass				4 9/16"	133	27,700	50,300
A1519B4	Steel				4 13/16"			
A1519A6	Steel	3"	3"	4"	6 27/32"	225	45,000	82,000

* Based on horizontal installation of excess flow valve. Flows are slightly more when valves are installed with outlet up; slightly less when installed with outlet down.

NOTE: Multiply flow rate by .94 to determine liquid butane flow and by .90 to determine liquid anhydrous ammonia flow.

Excess Flow Valves for Liquid or Vapor 3272 Series, 3282 Series, 3292 Series, A3272 Series, A3282 Series, A3292 Series, 7574 and 12472

Designed for liquid or vapor use for filling, withdrawal and vapor equalizing in container or line applications. They are intended for long lines or branch piping where tank-mounted excess flow valves are inadequate.

UL LISTED

3282A

Ordering Information

NOTE: Multiply flow rate by .94 to determine liquid butane flow and by .90 to determine liquid anhydrous ammonia flow.

Part Number	Brass or Steel	A Inlet Connection (M. NPT)	B Outlet Connection (F. NPT)	C Wrench Hex Flats	D Effective Length (Approx.)	Approximate Closing Flow*		
						Liquid (GPM Propane)	Vapor SCFH (Propane)	
							25 PSIG Inlet	100 PSIG Inlet
12472	Brass	¾"	¾"	1⅜"	1 7/16"	4	1,050	1,700
3272E					1 5/16"	10	2,100	3,700
3272F						15	2,800	5,000
3272G						20	3,700	6,900
A3272G	Steel				1⅜"			
3282A	Brass	1¼"	1¼"	2"	1 7/16"	30	5,850	10,000
3282B						40	7,600	13,600
3282C						50	9,000	16,300
A3282C	Steel				1⅝"			
7574	Brass	1½"	1½"	2¼"	1⅞"	90	15,200	28,100
7574L						70	14,000	25,000
3292A		2"	2"	2⅞"	2"	75	14,200	24,800
A3292A	Steel			3"				
3292B	Brass			2⅞"		100	18,100	32,700
A3292B	Steel			3"				
A3292C						122	22,100	37,600

* Based on horizontal installation of excess flow valve. Flows are slightly more when valves are installed with outlet up; slightly less when installed with outlet down.

F

Excess Flow Valve for Autogas Dispensing Systems 3272H

Especially designed for high flow/high differential dispensing systems. Can also be used for filling, liquid withdrawal, and vapor equalizing in container or line applications.

UL LISTED

3272H

Ordering Information

Part Number	Inlet Connection	Outlet Connection	Wrench Hex Flats	Effective Length (Approx.)	Liquid (GPM Propane)
3272H	¾"	¾"	1⅜"	1⅜"	29

Excess Flow Valves for Container Service
A7537 Series, A7539 Series, A8523 and A8525

Designed for mounting in threaded full or half couplings in container installations. They may be used for filling, withdrawal or vapor equalizing applications. The exceptionally low pressure drop makes them ideal for pump suction lines. If a riser pipe to the vapor space is used with these valves, the minimum inside diameter of the riser pipe must be at least two times the valve thread size in order not to restrict flow to the side inlet ports.

UL LISTED

A7537N4

Ordering Information

Part Number	For Use With This Type Coupling	A Inlet Connection M. NPT	B Outlet Connection NPT	C Wrench Hex Flats	D Effective Length (Approx.)	Approximate Closing Flow*		
						Liquid (GPM Propane)	Vapor SCFH (Propane)	
							25 PSIG Inlet	100 PSIG Inlet
A8523	Half	¾"	¾" Male	1⅛"	1¾"	15	5,170	8,800
A8525	Half	1¼"	1¼" Male	1¾"	2⅛"	35	12,540	21,560
A7537L4	Half	2"	2" Male and 1¼" Female	2⅝"	2½"	75	13,000	25,600
A7537L4F	Full							
A7537N4	Half					125	25,000	42,500
A7537N4F	Full							
A7537P4	Half					150	30,500	52,000
A7537P4F	Full							
A7539R6	Half	3"	3" Male and 2" Female	3¾"	3⅛"	150	32,100	55,500
A7539R6F	Full							
A7539T6	Half					200	39,400	68,300
A7539T6F	Full							
A7539V6	Half					250	51,100	88,700
A7539V6F	Full							

F

* Based on horizontal installation of excess flow valve. Flows are slightly more when valves are installed with outlet up; slightly less when installed with outlet down.

Excess Flow Valves for Vapor or Liquid
A2137 Series and 2139 Series

Designed especially for filling, withdrawing or vapor equalizing in half and full coupling installations. Ideal for container service where welded-in dip pipes are not provided. For vapor use, mount in the bottom opening with a threaded dip pipe. For liquid use, mount in the top opening with a threaded dip pipe. These may also be installed in pipe lines provided the connection is made to the male inlet thread and not the female dip pipe connection.

UL LISTED

A2137

Ordering Information

Part Number	A Inlet Connection NPT	B Outlet Connection F. NPT	C Wrench Hex Flats	D Effective Length (Approx.)	Approximate Closing Flows***		
					Liquid (GPM Propane)	Vapor SCFH (Propane)	
						25 PSIG Inlet	100 PSIG Inlet
A2137	2"*	2" Male and 1¼" Female	2 7/16"	1 9/16"	50	10,000	17,000
A2137A					70	14,000	25,000
2139	3"**	3" Male and 2" Female	3½"	1¾"	125	26,500	46,000
2139A					160	32,700	57,200

* 1¼" F. NPT Dip Pipe Connection
** 2" F. NPT Dip Pipe Connection
*** Based on horizontal installation of excess flow valve. Flows are slightly more when valves are installed with outlet up; slightly less when installed with outlet down.

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Excess Flow Valves for Flange Mounting in Container Service
A3500 Series and A4500 Series

Designed for mounting in flanged tank connections with internal threads in the bottom of a container. They may be used in filling, withdrawal or vapor equalizing application. They provide high flow capacity with low pressure drop to minimize pump inlet line cavitation.

If a riser pipe to the vapor space is used with these excess flow valves, the minimum inside diameter of the riser pipe must be at least two times the valve thread size in order not to restrict flow to the side inlet ports.

Flange mounted excess flow valves are readily accessible for servicing and completely enclosed and protected in event of fire. Because there is no direct connection between external piping and the valve, stresses imposed on piping will not affect the excess flow valve.

UL LISTED

A3500L4

Ordering Information

Part Number	A Inlet Connection NPT	B For Installation	C Effective Thread (Approx.)	D Threaded End To Port	Approximate Closing Flows*		
					Liquid (GPM Propane)	Vapor SCFH (Propane)	
						25 PSIG Inlet	100 PSIG Inlet
A3500L4	2"	Slotted Body	¾"	1 15/16"	75	13,000	22,500
A3500N4					125	25,000	42,500
A3500P4					150	30,500	52,000
A3500R6	3"		1"	1 9/16"	150	32,100	55,500
A3500T6					200	39,400	68,300
A3500V6					250	51,100	88,700
A4500Y8	4"		1 1/16"	1 15/16"	500	89,000	154,000

NOTE: Multiply flow rate by .94 to determine liquid butane flow and by .90 to determine liquid anhydrous ammonia flow.
* Based on horizontal installation of excess flow valve. Flows are slightly more when valves are installed with outlet up; slightly less when installed with outlet down.

F

Excess Flow Valves for Liquid or Vapor Withdrawal
2723C and A8013D Series

These valves are designed for bottom mounting in consumer storage tanks for liquid service. They may also be top mounted for vapor service. These valves are designed especially for use with RegO globe and angle valves.

UL LISTED

A8013D

2723C

Ordering Information

Part Number	A. Inlet Connection M. NPT	B. Outlet Connection NPT	C. Wrench Hex Flats	D. Effective Length (Approx.)	E. Threaded End To Port	Approximate Closing Flow**		
						Liquid (GPM Propane)	Vapor SCFH (Propane)	
							25 PSIG Inlet	100 PSIG Inlet
A8013D	1¼"	¾"	1¾"	1 3/32"	-	39	8,700	14,700
A8013DA		1"		1 3/16"		44		
A8013DB		1¼"		1 7/32"		55	10,900	19,300
2723C	1¼"	¾"	1 11/16"	1 5/16"	1 15/16"	20	3,900	6,900

* ¾" F. NPT Dip Pipe Connection
** Based on horizontal installation of excess flow valve. Flows are slightly more when valves are installed with outlet up; slightly less when installed with outlet down.

NOTE: Multiply flow rate by .94 to determine liquid butane flow and by .90 to determine liquid anhydrous ammonia flow.

Excess Flow Valve for Pressure Gauges
2884D

Designed for container use in pressure gauge installations to minimize excess gas discharge in the event the pressure gauge is sheared. A suitable shut-off valve should be installed between this valve and the pressure gauge to allow convenient gauge replacement.

UL LISTED

2884D

Ordering Information

Part Number	A. Inlet Connection M. NPT	B. Outlet Connection F. NPT	C. Wrench Hex Flats	D. Effective Length (Approx.)	E. Threaded End To Port	Approximate Closing Flow*		
						Liquid (GPM Propane)	Vapor SCFH (Propane)	
							25 PSIG Inlet	100 PSIG Inlet
2884D	¾"	¼"	1 1/16"	11/16"	15/16"	N/A	60	110

* Based on horizontal installation of excess flow valve. Flows are slightly more when valves are installed with outlet up; slightly less when installed with outlet down.

NOTE: Multiply flow rate by .94 to determine liquid butane flow.

Excess Flow Valve for DOT Cylinders
3199W

Designed for use on portable systems with vapor or liquid including torches, heaters, lead melting burners, tar and asphalt burners, wallpaper steamers and other applications involving portable DOT cylinders. The POL inlet attaches directly to the cylinder valve and the outlet mounts to the regulator.

UL LISTED

3199W

Ordering Information

Part Number	A. Inlet Connection	B. Outlet Connection	C. Wrench Hex Flats	D. Effective Length (Approx.)	Approximate Closing Flow*		
					Liquid (GPM Propane)	Vapor SCFH (Propane)	
						25 PSIG Inlet	100 PSIG Inlet
3199W	Male POL	¼"	⅞"	2 7/16"	.95	265	500

* Based on horizontal installation of excess flow valve. Flows are slightly more when valves are installed with outlet up; slightly less when installed with outlet down.
NOTE: Multiply flow rate by .94 to determine liquid butane flow.

Chek-Lok® Excess Flow Valves
7590U and 7591U Series

Chek-Lok® Excess Flow Valves are designed to provide a convenient means of withdrawing liquid from stationary containers prior to moving the container. The Chek-Lok® permits one transfer shut-off valve with an adapter to be used interchangeably on a number of tanks.

The 7590U and 7591U Chek-Loks® are also designed for use on permanent installations provided the excess flow valve is sized properly for the system and piping. NOTE: In some cases, it may be necessary to use an in-line excess flow valve to protect the downstream piping. This valve is not recommended for use as a liquid source for pumps.

UL LISTED

7590U with Cap

Ordering Information

Chek-Lok® Number	Inlet Connection	Outlet Connection	A. Body Wrench Hex Flats	B. Approximate Effective Length	C. Cap Wrench Hex Flats	Approximate Closing Flow, Liquid GPM (Propane)*
7590U	¾" M. NPT	1 5/8" UNF	1¾"	1 7/16"	1 5/16"	20
7591U	1¼" M. NPT		1¾"	1⅞"		35

* Based on horizontal installation of excess flow valve. Flows are slightly more when valves are installed with outlet up, and slightly less when installed with outlet down.
Note: Multiply flow rate by .94 to determine liquid butane flow.

Chek-Lok® Excess Flow Valves

Designed to provide a convenient means of withdrawing liquid from stationary containers prior to moving the container.

NFPA Pamphlet 58 standards require: 1) containers with 125 gallons water capacity, or more, have a connection for liquid evacuation which is at least ¾" NPT, and 2) containers designed for stationary use, have no more propane than 5% of their water capacity in liquid form during transportation. These rules apply to containers manufactured after July 1, 1961.

The Chek-Lok® permits one transfer shut-off valve with an adapter to be used interchangeably on a number of tanks. With a Chek-Lok® on each tank and a high capacity RegO 7550P Series transfer valve and adapter on all your service and delivery trucks – the need for individual transfer valves is eliminated. This provides a substantial savings without sacrificing safety.

Chek-Lok® Operation

Instructions to Open Chek-Lok®

1. Loosen cap to vent any accumulated LP-Gas from the Chek-Lok. After venting stops, remove the cap. If venting does not stop, retighten the cap and use other approved means to withdraw liquid from the container.

   NOTE: Use a suitable size wrench when removing the cap and adapter from the Chek-Lok. Do not allow the Chek-Lok to un-thread from the tank during removal. When necessary, use a second wrench to secure the Chek-Lok in position.

2. Before beginning withdrawal, securely connect a RegO 7550P angle valve or suitable shut-off valve to the adapter. Fully open the shut-off valve – the valve's handwheel must be fully opened before connecting adapter to tank.

3. Completely thread the adapter and shut-off valve assembly onto the Chek-Lok by turning adapter's coupling nut clockwise until it is tight. Immediately close the shut-off valve. Listen for an audible click to signal that the Chek-Lok has opened and is actuated for liquid withdrawal. The flow can now be controlled by the transfer valve.

4. Check the coupling nut and adapter assembly for leaks using a suitable leak detection solution.

   If the Chek-Lok fails to open after following this procedure, the pressure downstream of the shut-off valve should be increased to equalize pressure in the Chek-Lok. It is simple to equalize pressures using vapor from either the vapor return valve or service valve, or from a hose end valve connected to the delivery truck.

Instructions to Close Chek-Lok®

1. To re-lock the Chek-Lok, container pressure must be in excess of 35 PSIG. Close shut-off valve and disconnect the hose or piping.

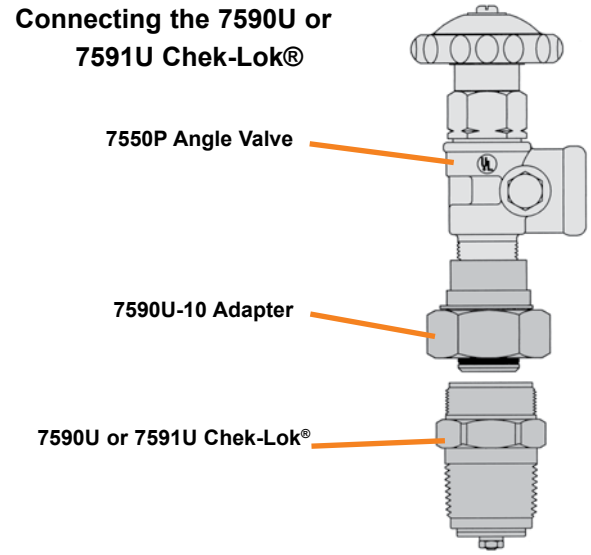
2. Open shut-off valve fully. Liquid discharging to the atmosphere should cause the excess flow feature of the Chek-Lok to close, provided tank pressure is 35 PSIG or more.

   If, for any reason, the excess flow valve does not close, the shut-off valve must be closed immediately and must not be removed until the system can be evacuated and the unit repaired.

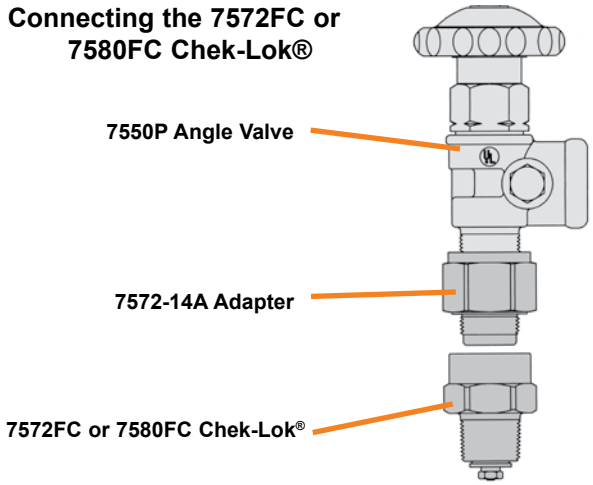
3. After the excess flow valve closes, remove the Adapter and Shut-Off Valve Assembly.

4. Clean face of Chek-Lok and install the Cap with a gasket. IMPORTANT: Only use the proper Chek-Lok Cap. Do not use a standard pipe cap.

Connecting the 7590U or 7591U Chek-Lok®



Connecting the 7572FC or 7580FC Chek-Lok®

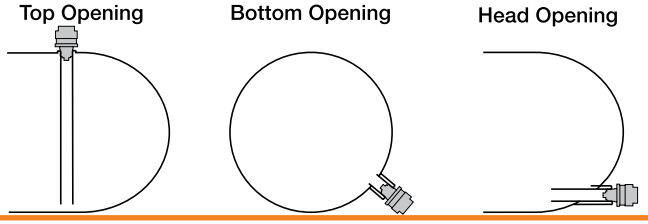


In the absence of a 7550P transfer valve, a ¾" A7505A Globe Valve or A7506AP Angle Valve may be used. Follow the above procedures using the 7572C-15A adapter instead of the 7572C-14A. Use a RegO 7550P without an adapter in an emergency only.

CAUTION: Always wear approved protective gloves when working with the Chek-Lok®. Do not vent LP-Gas near possible source of ignition.

Chek-Lok® Mounting

Chek-Lok® Valves may be either top mounted with a dip tube or bottom mounted. For bottom mounting, it is preferable to position the coupling in the head or slightly off of the bottom. This helps prevent the accumulation of sludge, etc. around the valve which could affect the proper operation of the excess flow valve.



F

Chek-Lok® Liquid Evacuation Adapter for 7590U and 7591U Valves
7590U-20

Designed specifically for use with RegO 7590U and 7591U Chek-Lok® Excess Flow Valves. Adapter's operating handle opens and closes equalizing stem in the Chek-Lok® valve. Eliminates gas flow through Chek-Lok® valve when installing or removing adapter. Use of RegO adapter ensures proper connections and opening of the check mechanism.

UL LISTED

7590U-20

Ordering Information

Adapter Number	Inlet Connection	Outlet Connection	A Wrench Hex Flats	B Approximate Length
7590U-20	1⅝-12 UNF	¾"	1¾"	4³⁄₁₆"

7580F-20 Liquid Evacuation Adapter for older design 7572FC and 7580FC Chek-Lok® Valves

Designed specifically for use with RegO 7572FC and 7580FC Chek-Lok® Excess Flow Valves. The adapter's operating handle opens and closes the equalizing stem in these older style Check-Lok® valves. This adapter is designed to eliminate the need for gas to flow from the Chek-Lok® when the adapter is installed or removed. A shutoff valve, such as a full port ball valve must be installed at the outlet of the 7580F-20.

UL LISTED

7580F-20

Ordering Information

Adapter Number	Inlet Connection	Outlet Connection	Approximate Length	Wrench Hex Flats
7580F-20	¾" M.NPT	¾" F. NPT	4⁹⁄₃₂"	1⅜"

F

Union Style Adapters for 7590U and 7591U Valves

The 7590U-10 adapter must be used to connect to the 7590U and 7591U Chek-Lok. This insures a proper connection to open the check mechanism. A built-in nylon gasket provides a gas tight seal.

UL LISTED

7590U-10

Ordering Information

Adapter Number	Inlet Connection	Outlet Connection	A. Wrench Hex Flats	B. Approximate Length
7590U-10	1⅝" UNF	¾" F. NPT	1¾"	1⅞"

Adapters for 7572FC and 7580FC Valves

These adapters must be used to connect to the 7572FC and 7580FC Chek Loks to open the check mechanism properly. A built in nylon gasket provides a gas tight seal.

UL LISTED

7572C-14A
For Transfer Valves

7572C-15A
For Globe and Angle Valves

Ordering Information

Adapter Number	Inlet Connection	Outlet Connection	A. Wrench Hex Flats	B. Approximate Effective Length
7572C-14A	¾" M. NPT	¾" F. NPT	1⅜"	1"
7572C-15A		¾" M. NPT		¾"

Double-Check Filler Valves

General Information

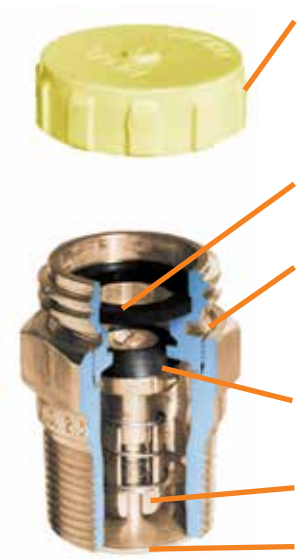
RegO Double-Check Filler Valves incorporate a resilient upper check valve, normally designated as a filler valve, and a lower check valve, commonly called a back pressure check valve. Available in a range of sizes to cover virtually all LP-Gas storage containers, these valves are UL listed and meet NFPA standards, as well as other safety requirements.

Flow of liquid into the storage container opens both check valves. When flow stops, they both are designed to close automatically to permit the operator to disconnect the hose coupling. The automatic closing action also helps prevent the discharge of container contents in the event of hose failure. The lower back pressure check affords extra protection by restricting the discharge if the upper check fails to function properly due to accidents or other causes.

The double back check construction allows emergency inspection, repair, or replacement of the upper fill assembly without removing product from the container. When the upper filler valve body is removed, the lower back check valve provides a seal, permitting only some leakage, allowing a new upper filler valve body to be installed.

Spare Gasket Ordering Information

ACME	Part Number
1¼"	A2797-20R
1¾"	A2697-20R
2¼"	A3184-8R
3¼"	A3194-8R



Seal cap made of tough, resilient molded plastic. Protects threads and internal working parts. Caps are designed to contain normal tank pressures, and must be kept on valves at all times.

Long-wearing gasket permits hand-tight connection of cap and hose coupling.

Safety groove is designed to shear below the ACME thread, leaving the valve seats closed and unaffected if the delivery truck pulls away with the hose connected.

Seat disc of special synthetic composition is extra thick for longer life.

Valve guide is precision machined to ensure positive seal.

Exclusive swing-away lower back check valve for extra fast filling is provided on Models L6579 and 6587. Differs from conventional design by swiveling to a vertical position when opened.

Double-Check Filler Valves for Large DOT and ASME Tanks L6579 Series and L7579 Series

F

Designed to provide fast filling of large motor fuel and ASME domestic tanks. The 6579 Series incorporates a swing-away lower check which greatly reduces pressure drop across the valve. This lower pressure drop promotes faster filling rates and greater efficiency resulting in more profitable operations.

UL LISTED

7579P

L7579

L6579

Ordering Information

Part Number		A. ACME Hose Connection	B. Tank Connection M. NPT	C. Wrench Hex Flats	D. Effective Length (Approx.)	Propane Liquid Capacity at Various Differential Pressures (GPM)				
Basic	With Cap & Lanyard					5 PSIG	10 PSIG	25 PSIG	50 PSIG	75 PSIG
L7579	L7579C	1¾"	1¼"	1⅞"	1 27/32"	50	70	111	157	192
7579P*	-				2 1/32"	37	52	82	116	142
L6579**	L6579C**				1 27/32"	78	110	174	246	301
L6579										

* Incorporates ¾ F. NPT dip pipe connection

** Swing-away lower back check valve design for higher filling rate. NOTE: Multiply flow rate by .94 to determine liquid butane capacity.

New Low Emission Filler Valve with Manual Shutoff Feature 7501L & 7502L

RegO Manual Double-Back Check filler valves that incorporate a resilient upper check and a **manual shutoff feature**. When filling a container from a delivery truck, this valve will allow flow into the container through the upper and lower check, when the manual lever is in the open position. When flow stops both the upper and lower checks will close; the lever is then turned to the closed position, the hose-end valve can then be removed from the filler valve.

Designed for fast filling of larger DOT cylinders and ASME domestic containers; the 7501L and 7502L feature a manual shutoff in addition to upper and lower back checks.

LISTED

CE 0036

7502L

7501L

Ordering Information

Part Number	Container Connection	ACME Hose Connection	Propane Liquid Capacity at Various Differential Pressures		
			15 PSIG	25 PSIG	50 PSIG
7501L	1¼" M.NPT	1¾" M.ACME	62 GPM	90 GPM	6125 GPM6
7502L					

Combination Filler and Overfill Protection Device (OPD) Low Emissions SF7647V Series

This combined filler valve and overfill protection device is designed to provide fast filling and protection against overfilling of Vertical above ground small bulk type containers. The SF7647V Series offers good fill rates and an overfill prevention device that will stop* the flow of product into the container when the liquid level reaches 80-83% of its capacity.

CE 0036

SF7647V

Ordering Information

Part Number	Propane Liquid Capacity at 20 PSIG differential pressure gallons/minute	Propane Liquid Capacity at 30 PSIG differential pressure gallons/minute	Propane Liquid Capacity at 50 PSIG differential pressure gallons/minute
SF7647V11.0	19	24	50
SF7647V11.1			

F

Combination Low Emission Filler and Overfill Protection Device (OPD) SFL7579V Series

The SFL7579V Series filler valve is for use on ASME containers. This combined filler valve and overfill protection device is designed to provide fast filling and protection against overfilling of vertical and horizontal above ground LPG containers. This is typically installed in the top of horizontal containers.

Note:

- Must be installed in a vertical position.
- Depending on the application this valve is designed to be used in conjunction with another device such as a fixed liquid level gauge or float gauge in low emission transfer systems.

CE 0036

SFL7579V

Ordering Information

Part Number**	ACME Hose Connection	Tank Connection M.NPTF	Wrench Hex Flats	Length A*	Propane Liquid Capacity at Various Differential Pressures GPM			
					1 PSI	25 PSI	50 PSI	75 PSI
SFL7579V13.8	1¾" Male	1¼"	1⅞"	14.43"	23	49	54	66
SFL7579V13.0				13.63"				
SFL7579V12.3				12.93"				
SFL7579V11.1				11.73"				
SFL7579V10.6				11.23"				

* Distance from center thread to float at closure.
** Suffix number indicates dip tube length (Fixed liquid level gauge) different lengths available upon request.

F

Double Check Low Emission Filler Valves for Forklift and DOT Containers 7647 Series

Designed to provide fast filling of forklift, motor fuel, and recreational vehicle tanks.

UL LISTED

Lanyard and Cap

7647SC

7647DC

Ordering Information

Part Number	A Hose Connection	B Tank Connection M. NPT	C Wrench Flats	D Effective Length (Approx.)	Propane Liquid Capacity at Various Differential Pressures (GPM)**				
					10 PSIG	20 PSIG	30 PSIG	40 PSIG	50 PSIG
7647DC	1¾" ACME + F. POL	¾"	1⅝"	$2^{9}/_{16}$"	14	20	24	27	50
7647SC*	1¾" ACME		1¾"	$1^{11}/_{16}$"*					

* Large 1¾" hex wrench flats.
** Multiply flow rate by .94 to determine liquid butane capacity.

Double Check Filler Valves for Delivery Truck Tanks and Large Storage Containers 7579S, 6587EC and 3197C

Designed to provide fast filling of bobtails, transports and large bulk storage tanks.

The 6587EC incorporates a swing-away lower check which greatly reduces pressure drop across the valve. This lower pressure drop promotes faster filling rates and greater efficiency resulting in more profitable operations.

Ordering Information

Part Number	A. ACME Hose Connection	B. Tank Connection M. NPT	C. Wrench Hex Flats	D. Effective Length (Approx.)	Propane Liquid Capacity at Various Differential Pressures (GPM)				
					5 PSIG	10 PSIG	25 PSIG	50 PSIG	75 PSIG
7579S	1¾"	1½"	2"	2 1/16"	44	62	98	139	170
6587EC*	2¼"	2"	2⅞"	4⅜"	92	130	206	291	356
3197C	3¼"	3"	4"	6½"	148	210	332	470	575

* Swing-away lower back check valve design for higher filling rates.
NOTE: Multiply flow rate by .94 to determine liquid butane capacity.

Single Check Filler Valves for Storage Tanks with Supplementary Back Check Valves 3174C, 3194C and 6584C

F

Designed for use with RegO Back Check Valves to provide fast filling of bulk storage tanks. Also may be used as a spare or replacement part.

These single check filler valves must never be installed directly into container couplings. They must be used with the appropriate back check valve to comply with NFPA Pamphlet #58.

Ordering Information

Part Number	ACME Hose Connection	Outlet Connection M. NPT	Wrench Hex Flats	Propane Liquid Capacity at Various Differential Pressures (GPM)				For Use With Back Check Valve:
				5 PSIG	10 PSIG	25 PSIG	50 PSIG	
3174C	1¾"	1¼"	1 11/16"	23	33	52	74	3176
6584C*	2¼"	2"	2⅜"	156	220	348	492	A3186
3194C	3¼"	3"	3½"	147	208	329	465	A3196

* Stem Assembly designed for higher filling rates.
NOTE: Multiply flow rate by .94 to determine liquid butane capacity.

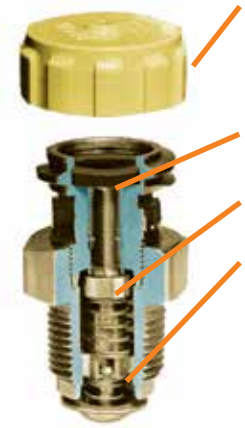
REGO 100 RegO Dr. Elon, NC 27244 USA www.regoproducts.com +1 (336) 449-7707

Vapor Equalizing Valves

General Information

RegO Vapor Equalizing Valves consist of an upper back check valve and lower excess flow valve. In the closed position, the attachment of a vapor hose coupling with its projecting nozzle, opens the back check valve to permit flow in either direction. The lower excess flow valve is designed to close automatically when flow out of the container being filled exceeds the rated capacity. The valve closes automatically when the coupling is removed. Like the double-check filler valves, the vapor equalizing valves utilize a two-piece body construction. The lower excess flow valve will permit some leakage when the upper back check valve is removed for emergency repairs or replacement.

RegO Vapor Equalizing Valves are designed for use in both ASME and DOT containers.



Seal cap made of tough, resilient molded plastic. Protects threads and internal working parts. Caps are designed to contain normal tank pressures, and must be kept on valves at all times.

Long-wearing gasket permits hand-tight connection of cap and hose coupling.

Seat disc of special synthetic composition is extra thick for longer life.

Valve guide is precision machined to ensure positive seal.

Spare Gasket Ordering Information

ACME	Part Number
1¼"	A2797-20R
1¾"	A2697-20R

Double Check Vapor Equalizing Valves for ASME and DOT Containers 7573 Series and 3183AC

F

Designed to facilitate loading operations by providing equalization of pressures in the supply and storage containers. The supplementary excess flow valve closes when the flow from the container being filled exceeds a predetermined rate.

The 7573 Series is designed for use in bulk delivery systems and motor fuel containers. The 3183AC is designed for use in delivery trucks and other large containers.

UL LISTED

7573 Series

Ordering Information

Part Number		A. ACME Hose Connection	B. Tank Connection M. NPT	C. Wrench Hex Flats	D. Effective Length (Approx.)	Approx. Closing Flow at 100 PSIG Inlet Pressure (SCFH/Propane)
Basic	W/ Chain & Cap					
7573D	7573DC	1¼"	¾"	1⅜"	1 15/32"	4,100
-	3183AC	1¾"	1¼"	2"	2 29/32"	10,000

Single Check Vapor Equalizing Valves for ASME and DOT Containers with Supplementary Excess Flow Valves

Designed for use with RegO Excess Flow Valves to facilitate loading operations by providing equalization of pressures in the supply and storage containers. Also may be used as a spare or replacement part. These vapor equalizing valves must never be installed directly into container couplings. They must be used with the appropriate excess flow valve to comply with NFPA Pamphlet #58.

UL LISTED

3170

Ordering Information

Part Number		A. ACME Connection	B. Tank Connection M.NPT	C. Wrench Hex Flats	D. Effective Length (Approx.)	Approximate Closing Flow at 100 PSIG Inlet Pressure (SCFH/Propane Vapor)	For Use With Excess Flow Valve:
Basic	With Cap & Chain						
3170	-	1¼"	¾"	1¼"	1 7/16"	7.600	3272E
-	3180C	1¾"	1¼"	1 11/16"	1½"	10,000	3282A

General Information

RegO Back Pressure Check Valves are designed to allow flow in one direction only. The check, normally held in the closed position by a spring, precludes the possibility of flow out of the container. When flow starts into the container, the pressure overcomes the force of the spring to open the check. When the flow stops or reverses, the check closes.

Metal-to-metal seats will allow slight leakage after closure. These valves will restrict the escape of container contents in the event of accidental breakage of the piping or fittings.

F

Back Pressure Valves for Container or Line Applications 3146 Series, 3176 Series, A3186, A3187S, A3196, and A3276BC

Designed to provide protection of a container opening when desired flow is always into the vessel. May be used in line applications where flow must be limited to one direction.

When used with the appropriate single check filler valve, the combination forms a double check filler valve suitable for use in filling of bulk storage tanks.

UL LISTED

A3198S

A3187S

3146 Series, 3176 Series, A3186, A3196

A3276BC

Ordering Information

Part Number		A Inlet Connection F. NPT	B Outlet Connection M. NPT	C Wrench Hex Flats	D Effective Length (approx.)	Propane Liquid Capacity at various differential pressures (GPM)			
Brass	Steel					5 PSIG	10 PSIG	25 PSIG	50 PSIG
3146	A3146	¾"	¾"	1⅜"	1 15/16"	11	16	25	36
3146S*									
3176	A3176	1¼"	1¼"	2"	1 13/32"	28	40	63	89
	A3276BC*				2⅛"	32	45	73	103
	A3186	2"	2"	3"	2⅜"	124	175	276	391
	A3187S* **	2" M & 1¼" F	2" M & 1¼" F	2⅜"	1 27/32"	60	110	225	350
	A3196	3"	3"	4"	3 7/32"	297	420	664	939
	A3198S* **	3" M & 2" F	3" M & 2" F	3½"	3¼"	210	290	400	

*Soft seat version.
**The 1¼" and 2" outlet connections are for a standpipe when installed inside of a container.
NOTE: Multiply flow rate by .94 to determine liquid butane capacity and by .90 to determine liquid anhydrous ammonia capacity.

Swing-Away Back Pressure Check Valves for Container or Line Applications 6586D and A6586D

Designed to provide protection of a container opening when desired flow is always into the vessel. May also be used in the line applications where flow must be limited to one direction.

When used with the appropriate single check filler valve, the combination forms a double check filler valve suitable for use in filling of bulk storage tanks.

The swing-away check offers more efficient flow rates than conventional designs. It swivels open vertically to reduce pressure drop across the valve and improves flow rates.

UL LISTED

6586D

Ordering Information

Part Number		A. Inlet Connection F. NPT	B. Outlet Connection M. NPT	C. Wrench Hex Flats	D. Effective Length (Approx.)	Propane Liquid Capacity at Various Differential Pressures (GPM)			
Brass	Steel					5 PSIG	10 PSIG	25 PSIG	50 PSIG
6586D		2"	2"	2¾"	2 1/32"	190	270	420	600
	A6586D			2⅞"					

NOTE: Multiply flow rate by .94 to determine liquid butane capacity.

Back Pressure Check Valves for Flanged Installation A3400L4 and A3400L6

Designed to provide high flow capacity and allow more efficient tank filling than conventional designs. The unobstructed throat area reduces flow turbulence through the valve, thereby reducing pressure drop. Large flow channels and spacious side ports ensure ample capacity for the most demanding high capacity filling operations.

The valve is designed for installation in internally threaded flanges in container bottoms.

UL LISTED

A3400L6

Ordering Information

Part Number	A. Flange Connection M. NPT	B. Wrench Hex Flats	C. Overall Length	D. Threaded End To Port	Propane Liquid Capacity at Various Differential Pressures (GPM)			
					5 PSIG	10 PSIG	25 PSIG	50 PSIG
A3400L4	2"	Slotted	5¼"	1 5/16"	223	316	500	707
A3400L6	3"		5 9/32"	1 5/16"	424	600	949	1342

NOTE: For installation in flange tank connections with internal threads, see the "Flanged Installation in Container" section under "Excess Flow Valves."
Multiply flow rate by .94 to determine liquid butane capacity and by .90 for liquid anhydrous ammonia capacity.

F

Adhesive Warning Label 7572-400

The following warning information, Part Number 903-500, is included with each shipment of Excess Flow, Check, Filler and Vapor Equalizing Valves to the first purchaser of the product from the factory.

This information is intended to be forwarded throughout the product distribution chain. Additional copies are available from RegO and Authorized Product Distributors.

DANGER READ THIS FIRST **WARNING**

LP-GAS IS EXTREMELY FLAMMABLE AND EXPLOSIVE

AVOID SERIOUS INJURY AND PROPERTY DAMAGE. IF YOU SEE, SMELL OR HEAR ESCAPING GAS...EVACUATE AREA IMMEDIATELY! CALL YOUR LOCAL FIRE DEPARTMENT! DO NOT ATTEMPT TO REPAIR. DO NOT STORE IN BUILDING OR ENCLOSED AREA. DO NOT USE ON HOT AIR BALLOONS OR AIRCRAFT.

Make sure you are thoroughly trained before you attempt any valve installation, maintenance or repair. Improper conditions or procedures can cause accidents resulting in property damage and personal injury.

Become thoroughly familiar with NPGA Safety Pamphlet 306 "LP-Gas Regulator and Valve Inspections & Maintenance" and RegO Safety Warnings "LP-Gas Cylinder Valves", "LP-Gas Excess Flow Valves", and "LP-Gas Filler and Hose End Filling Valves" found in the cylinder valve, excess flow valve, and filler valve sections of the L-500 & L-102 Catalogs. Follow their recommendations.

Know and understand NFPA Pamphlet 58 "Liquefied Petroleum Gas Code", which is the law in many states. This publication is available from NFPA, Batterymarch Park, Quincy, MA 02269. Following its requirements is essential in the safe use of LP-Gas. Section 4.4 states: "Persons who transfer liquid LP-Gas, who are employed to transport LP-Gas, or whose primary duties fall within the scope of this code shall be trained in proper handling procedures. Refresher training shall be provided at least every three years and shall be documented."

Make sure this valve is the proper one for this installation. Avoid misusing LP-Gas equipment.

Apply thread joint compound compatible with LP-Gas on valve external threads only. Make sure compound never comes into contact with other parts of the valve.

Install valves by applying force to wrenching flats only.

Tighten pipe threads approximately 1 to 1½ turns beyond the hand-tight insertion point using a wrench which avoids damage to other valve parts.

Check for damage and proper operation after valve installation. Check that the valve is clean and free of foreign material.

Check container-valve connection with a non-corrosive leak detection solution before filling with LP-Gas.

Purge container before filling with LP-Gas (refer to the RegO LP-Gas Serviceman's Manual for recommended procedure).

Test excess flow check valve for proper operation before placing into service. See NPGA Bulletin 113 for recommended procedure.

Check outlet connection make-up for leaks with a non-corrosive leak detection solution when placing into service.

RegO Filler Valves: To prevent damage to the internal checks when it is necessary to utilize an unloading adapter, use ONLY RegO 3119A, 3120 and 3121 Unloading Adapters with RegO Filler Valves. Carefully follow the instructions supplied with these unloading adapters.

If container is not being placed into service at the present time, insert plug or cap onto the outlet connection.

In selecting a label for posting at the installation site, consider RegO part number 901-400 or 903-400 along with your own, NPGAs and others.

Remember to instruct the owner/user/customer in safety matters concerning LP-Gas and this equipment. See RegO Safety Warnings "LP-Gas Cylinder Valves", "LP-Gas Excess Flow Valves", and "LP-Gas Filler and Hose End Filling Valves" found in the cylinder valve, excess flow valve, and filler valve sections of the L-500 & L-102 Catalogs.

RegO requests that this information be forwarded to your customers. Additional copies are available from RegO and your authorized RegO Distributor.

REGO

Printed in USA 09A-0910-0686
Part number 903-500

Elon, N.C. 27244 U.S.A. Phone (336) 449-7707 Fax (336) 449-6594 www.regoproducts.com

903-500

The 7572-400 adhesive warning label is intended for application as close as possible to the Chek-Lok® once the Chek-Lok® is installed.

The basic information contained on the label is intended for the benefit of the user of the Chek-Lok® and is not intended to be an "all-inclusive" product warning.

This label is printed on a heavy duty material with pressure sensitive adhesive backing. The ultra-violet ink stands up well when exposed to the environment.

Part Number	Description
7572-400	Adhesive Warning Label

DANGER **WARNING**

LP-GAS IS EXTREMELY FLAMMABLE AND EXPLOSIVE

AVOID SERIOUS INJURY AND PROPERTY DAMAGE. IF YOU SEE, SMELL, OR HEAR ESCAPING GAS... EVACUATE AREA IMMEDIATELY! CALL YOUR LOCAL FIRE DEPARTMENT! DO NOT ATTEMPT TO REPAIR. DO NOT STORE IN BUILDING OR ENCLOSED AREA. DO NOT USE ON HOT AIR BALLOONS OR AIRCRAFT.

CAUTION!

Use this CHEK-LOK® connection only for liquid evacuation before moving tank in accordance with NFPA Pamphlet 58, which is the law in many states. This publication is available from NFPA, Batterymarch Park, Quincy, MA 02269. Read and follow RegO product instruction number 7572FC-301.

DO NOT REMOVE, DEFACE OR OBLITERATE THIS LABEL.
DO NOT FILL THIS CONTAINER UNLESS THIS LABEL IS READABLE.

ADDITIONAL SAFETY INFORMATION IS AVAILABLE FROM

REGO

Printed in U.S.A. 05-0114-0386
Part Number 7572-400

Elon, N.C. 27244 U.S.A. Phone (336) 449-7707 Fax (336) 449-6594 www.regoproducts.com

7572-400

F

Purpose

In its continuing quest for safety, RegO publishes a series of bulletins explaining the hazards associated with the use, misuse, and aging of LP-Gas valves and regulators. It is hoped that these factual bulletins will make clear to LP-Gas dealer managers and service personnel, that the utmost care and attention must be used in the installation, inspection, and maintenance of these products, or problems could occur which would result in injuries and property damage.

The National Fire Protection Association NFPA 58 Liquified Petroleum Gas Code - 2017 Edition states in Section 4.4 Qualification of Personnel; "Persons whose duties fall within the scope of this code shall be provided with training that is consistent with the scope of their job activities and that includes proper handling and emergency response procedures... Refresher training shall be provided at least every 3 years, initial and subsequent training shall be documented". These "RegO Safety Warnings" may be useful in training new employees and reminding older employees of hazards that can occur. It is recommended that all employees complete the Propane Education Research Council's Certified Employee Training Program.'

Nature of Warnings

It is recognized that warnings should be as brief as possible, but the factors involved in internal valve and excess flow valve failures to perform are not simple. They need to be fully understood. If there is a simple warning, it would be:

> Make sure that the internal valve's excess flow feature really closes when the flow exceeds rated closing flow, and that the valve will shut-off.

This bulletin is not intended to be an exhaustive treatment of internal valves, and certainly does not cover all safety practices that should be followed in installation, operation and maintenance of LP-Gas systems, which include internal valves.

> Internal valves must be closed on Cargo Vehicles when traveling on public roads and highways. The valve should only be open when pumping. Per MC 330 or 331, internal valves must also be equipped with remote closure system when used on transports or bobtails.

There are two types of internal valves being used on storage tanks, transports and bobtails — spring loaded internal valves and differential pressure internal valves. They both provide positive shut-off when product is not being withdrawn and may include excess flow protection for the system during transfer operations.

Spring Loaded Internal Valves

Spring loaded internal valves are manually opened by levers, by means of fuse linked cable mechanisms or pneumatic or hydraulic actuators. They incorporate an excess flow feature that will close the valve when the flow through the valve exceeds its rate of flow. These valves should never be locked open by means of wires, chains, pegs or other devices.

Testing

Testing should be completed on a periodic basis.

1. To check operation of a spring loaded valve, activate the remote control to close the valve while unit is pumping. If the meter indicator flow continues, the valve should be repaired immediately.

2. Testing excess flow feature.
The National Propane Gas Association Safety Bulletin #113-78 states: "In order to test an excess flow valve in a piping system, the flow through the valve must be made to exceed the valve's closing rating."

> This testing should only be attempted by trained personnel familiar with the process. If no one at the facility has experience in proper testing, outside expert help should be obtained.

The exact procedure used may vary with the installation, advisability of gas discharge and availability of equipment.

In general, most testing makes use of the fact that the excess flow valves are "surge sensitive" and will close quicker under a sudden flow surge than under steady flow. A sufficient surge can often be created by using a quick open/close valve to control sudden, momentary flow into a tank or piping section containing very low pressure. An audible click from the excess flow valve (and corresponding stoppage of flow) indicates its closure.

> A test involving venting gas to the atmosphere is hazardous and may be impractical, or illegal.

Any test of any excess flow valve will not prove that the valve will close in an emergency situation, due to reasons cited before. This test will only check the valves condition, and the flow rate sizing for those test conditions.

3. Tight Shut-Off — A test should be made to ensure the internal valve will give a gas tight seal when the valve is in the closed position. This will require removal of all product downstream from the internal valve, to ensure the valve will give 100% seal when in the closed position. If the internal valve does not give 100% seal the valve should be repaired immediately.

Pressure Differential Internal Valves (Flomatics®)

Pressure differential valves (Flomatics®) open by pump pressure and close when the pump stops.These valves must never be locked open by means of wires, chains, pegs or other devices.

Testing

Testing should be completed on a periodic basis.

1. To check operation of a differential pressure internal valve activate the remote control shut-off valve while the unit is pumping. If the meter indicates that flow continues the valve should be repaired immediately.

2. Since the differential pressure internal valve requires at least 18 psi to open and 8 psi over container pressure to keep open, a test may be performed to check for closure. With the PTO disengaged, connect delivery hose to a container with very low pressure. Then with hose end valve open, engage PTO. The internal valve should remain closed, no flow should be detected through the meter. If flow continues through the meter the valve should be repaired immediately.

3. Tight Shut-Off — A test should be made to ensure the internal valve will give a gas tight seal when the valve is in the closed position. First ensure the pump prime valve is closed by turning clockwise until it seats. Then with the valve closed (PTO disengaged) the product downstream from the internal valve will have to be safely removed. If the internal valve does not give 100% seal, the valve should be repaired immediately.

General Warning

All RegO Products are mechanical devices that will eventually become inoperative due to wear, contaminants, corrosion and aging of components made of materials such as metal and rubber.

The environment and conditions of use will determine the safe service life of these products. Periodic testing at least once a year when tank pressures are low and maintenance, as required, are essential.

Because RegO products have a long and proven record of quality and service, LP-Gas dealers may forget the hazards that can occur because an excess flow valve is used beyond its safe service life. Life of an excess flow valve is determined by the environment in which it “lives’’. The LP-Gas dealer knows better than anyone what this environment is.

NOTE: There is a developing trend in state legislation and in proposed national legislation to make the owners of products responsible for replacing products before they reach the end of their safe useful life. LP-Gas dealers should be aware of legislation which could effect them.

A3200 Series

General Information

Manual Internal Valves are designed for a variety of uses in LP-Gas and anhydrous ammonia service. In addition, accessories allow most of them to be actuated manually, by cable or with air.

Installation, usage and maintenance of this product must be in compliance with all RegO instructions, as well as requirements and provisions of NFPA # 58, DOT, ANSI, and all applicable federal, state, provincial, and local standards, codes, regulations and laws.

These valves must remain in the closed position except during product transfer. A line break downstream of the pump may fail to actuate the excess flow valve as the pump may limit flow. If break occurs in the system, or the excess flow closes, immediately shut down the system.

Inspection and maintenance on a periodic basis is essential. Installation and maintenance must be performed only by qualified personnel.
Be sure all instructions are read and understood before installation and operation of these valves.

How The Valves Work

Refer to the drawings. View “A’’ shows the valve held closed without leakage by tank pressure and the valve’s closing spring. Actuation of the operating handle alone does not open the valve, it only allows pressure to equalize between the inlet and outlet of the valve by rapid bleeding of the product downstream. This equalized pressure then allows the valve to open via the internal spring.

The valve opens by moving the handle to mid-point, see view “B’’. This position allows the actuator to put the equalizing portion of the valve stem in the pilot opening, allowing more product to bleed downstream than if the handle was fully open.

In a few seconds, the tank and downstream pressure will be nearly equal. The excess flow spring will push the main poppet to the open position, see view “C’’, the handle should then be moved to the fully open position.

If at first, the handle is quickly moved to the fully opened position, the pilot valve allows a small amount of bleed downstream, but much less than during rapid bleed (view “B’’). This results in a longer pressure equalizing time before the main valve can open.

NOTE: The main poppet will not open until outlet pressure approximates tank pressure!

Once the main poppet is open, flow greater than the excess flow rating, or a sufficient surge in flow, forces the main poppet closed against the excess flow spring, as seen in view “D’’. The pilot valve in this position is open and allows a small amount of bleed downstream, but much less than during rapid bleed (view “B’’).

When the operating handle is moved to the closed position, the valve closes and a leak-tight seal is re-established as seen in view “A”.

NOTE: To provide excess flow protection, the flow rating of the pump, piping, valves, fittings, and hose on the inlet and outlet sides of the valve must be greater than the flow rating of the valve. Any restrictions that reduce the flow to less than the excess flow valve rating will result in the excess flow valve not operating when required.

Valve Operation and Precautions

1. Valve must be opened before starting pump, and before opening valve on pump outlet.

2. Leave pumping system “wet’’ to avoid drying of seals and to reduce time involved in opening valve. Drain piping only when required by codes or safe operating practices.

3. When piping is dry or at lower pressure than the tank, open valve half-way for a few seconds to allow line pressure to equalize before fully opening the valve handle. The main poppet may not open immediately if the handle is placed in the open position too quickly.

4. Flow surges may close the built-in excess flow valve and should be avoided. If the valve slams shut, immediately stop the pump, close the nearest downstream valve, and move handle to midpoint position to equalize pressure until valve reopens with a click, then restart pump and open downstream valve slowly.

5. Always keep valve closed except during product transfer.

6. Completely open all valves during pumping. Partially closed or throttle type valves may prevent excess flow valve from closing when required, even in a properly designed piping system.

7. All personnel must be aware of remote closure locations and their operation in case of emergency. They must also be aware of the equalizing opening through which bleeding can occur after the excess flow valve closes. If this bleed is not stopped by closing a downstream valve, a hazard may occur.

8. Never, under any circumstances, permanently wire open the operating handle of the internal valve.

Cable Control System

The cable control system employed must meet the requirements and be in accordance with the provisions of NFPA #58, DOT, ANSI, and all applicable federal, state, provincial and local codes.

Troubleshooting

1. Internal Valve Will Not Open. Causes may be excess leakage downstream, pump engaged too quickly, excessive wear of valve, or ice freezing of poppet.
When there is excessive volume downstream, a greater amount of time is required to equalize tank and downstream pressure.
To determine if the pilot seat is opening, install a pressure gauge downstream of valve outlet, open any hand valves between valve and pressure gauge, and open valve. Pilot seat is not opening if pressure does not build up to tank pressure. Perform this test with pump off. A broken internal part may cause pilot seat not to open.
If operating handle rotates past the full open position, there is internal malfunctioning, and the valve must be disassembled and repaired.

2. Premature Valve Closure.
First, check to see that operating lever is properly connected and fully opens valve. Premature closure may also be a result of engaging pump too quickly, sudden line surges, an underrated excess flow spring or an obstructed inlet port.

3. Valve Will Not Close.
Usually a result of faulty or sticking actuator. First, check the actuator to see that it works freely by disconnecting it from valve handle and cycling it several times. Also, operate valve handle manually. If it sticks in the open position, replace the packing and bushings. This should free the operating mechanism providing the valve has no internal damage.

4. Low Flow Capacity
Downstream piping may be too small and/or long, screen or strainer may be plugged, possible restriction downstream, or a bypass valve stuck in the open position are causes of low flow. Also, the bypass valve may be set too low and prematurely opening. Check for high differential pressure across the bypass valve. If bypass valve is open, the differential across the valve should not exceed 5 to 6 psig.

Potential problems may be eliminated with preventive internal valve maintenance. Perform the following steps once a month:

1. Check to see that the operating lever moves freely and smoothly. There should be no leakage around the lower stem or seal housing. Leakage requires replacement of the seal housing packing. A sticking lever indicates trapped foreign material or mechanism wear.

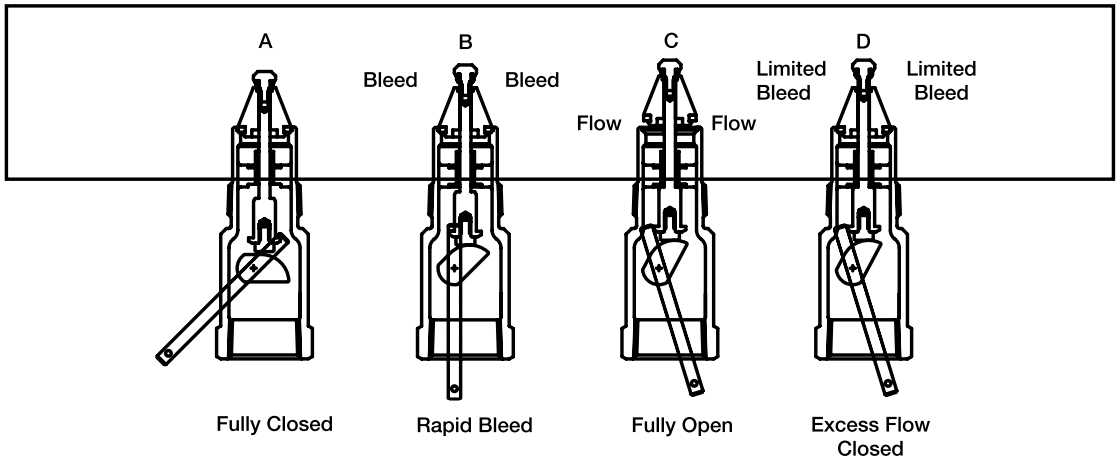
2. Check both seat discs for tight closure. Close valve and exhaust downstream pressure. Be sure piping is warmed to an ambient temperature. Close the first downstream valve and note pressure buildup between the closed valves with a pressure gauge. If leakage occurs, replace both seat discs.

3. Inspect, clean and oil all operating controls. Check controls to see that they open fully, but do not overtravel the valve operating lever. See that they work freely to close the valve. Worn parts should be replaced.

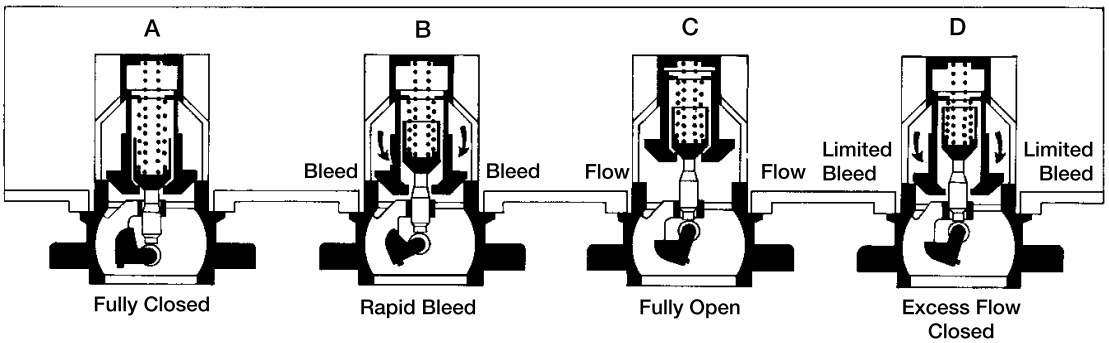
4. Remove valve if the tank is to be steam cleaned. Heat may damage the valve's seals.

5. Valve is not designed for water service. After tank is hydrostatically tested, immediately remove all water and allow tank to thoroughly dry out before installing valve.

A3209D Series, 1¼" Straight
A3209DT Series, 1¼" Straight
A3211D Series 1½ Straight
A3212R Series, 2" Straight
A3212R T Series 2" Tee Body
A3213D Series, 3" Straight
A3213DT Series 3" Tee Body



A3219FA Series, 4" Flanged



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1¼" Threaded Internal Valve for Small Capacity Pumping Systems and Bobtail Vapor Equalization A3209D & A3209DT Series

Designed primarily for use with LP-Gas and anhydrous ammonia as a main valve on small capacity pumping systems, NH3 nurse tanks and in-line installations. It may also be installed in the vapor equalizing opening on bobtail delivery trucks. Installation is quick and easy, and it fits in both full and half couplings, as well as, in-line applications. The valve may be actuated manually by hand or cable.

LISTED

A3209PA

A3209DT

A3209D

A3209PAF

A3209TL

Ordering Information

Part Number	Inlet Connection M. NPT	Outlet Connection F. NPT	Closing Flow		LP-Gas Vapor Capacity** (SCFH/Propane)		Accessories	
			LP-Gas	NH3	25 PSIG	100 PSIG	Thermal Latch	Pneumatic Actuators
A3209D050	1¼"	1¼"	50	45	13,300	22,900	A3209TL	A3209PA A3209PAF
A3209D080	1¼"	1¼"	80	72	15,700	26,700		
A3209DT050*	1¼"	1¼"	50	45	13,300	22,900		
A3209DT080*	1¼"	1¼"	80	72	15,700	26,700		

* T-Body Design

1¼" Threaded Internal Valve with Electric Actuator for Small Capacity Pumping Systems and Bobtail Vapor Equalization A3209E Series

Application

Designed primarily for use with LP-Gas and anhydrous ammonia as a main valve on small capacity pumping systems, NH3 nurse tanks and in-line installations. It may also be installed in the vapor equalizing opening on bobtail delivery trucks. Installation is quick and easy, and it fits in both full and half couplings, as well as, in-line applications. The valve may be actuated manually by hand or cable.

A3209E

Ordering Information

Part Number	Inlet Connection M. NPT	Outlet Connection F. NPT	Voltages	Closing Flow		LP-Gas Vapor Capacity** (SCFH/Propane)	
				LP-Gas	NH3	25 PSIG	100 PSIG
EA3209D050	1¼"	1¼"	12/24 VDC	50	45	13,300	22,900
EA3209D080	1¼"	1¼"		80	72	15,700	26,700
EA3209DT050*	1¼"	1¼"		50	45	13,300	22,900
EA3209DT080*	1¼"	1¼"		80	72	15,700	26,700

* T-Body Design
**Data for full flow in half coupling.

G

Straight Through 1½" Internal Valve
A3211D Series

Designed primarily for use with LP-Gas and anhydrous ammonia as a main valve on pumping systems, and in-line installations. Installation is quick and easy and it fits in both full and half couplings, as well as, in-line applications. The valve may be opened manually by hand or pneumatic actuator.

UL LISTED

A3211D

Ordering Information

Part Number	Inlet M.NPT	Outlet F.NPT	Closing Flow GPM				LP-Gas Vapor Capacity (SCFH/Propane)		Accessories	
			Half Coupling		Full Coupling					
			LP-Gas	NH_3	LP-Gas	NH_3	25 PSIG Inlet	100 PSIG Inlet	Thermal Latch	Pneumatic Actuator
A3211D080	1½"	1½"	80	72	63	67	15,700	26,700	A3209TL	A3209PAF
A3211D110	1½"	1½"	110	99	84	76	N/A	N/A		

3" Flanged Internal Valves for Bobtail Delivery Trucks, Transports and Large Stationary Storage Containers A3217A & A3217DA

Designed primarily for LP-Gas and anhydrous ammonia filling and/or withdrawal on MC331 bobtail delivery trucks, transports and stationary storage tanks with flanged pumps or piping. Installation is quick and easy, and the valve may be operated manually by cable or pneumatically. Lever available on right or left side to allow for installation without the use of an extra pulley.

UL LISTED

A3217AR

A3217ARPA and A3217ALPA Pneumatic Actuators
These Pneumatic Actuators are designed specifically for use with the A3217 Series 3" Internal Valves. The diaphragm design provides a convenient means of opening and closing the valve from a remote location, using either air or nitrogen.

Ordering Information

Part Number		Operating Lever Position	Inlet Connection	Outlet Connection	Closing Flow GPM		Accessories	
							Pneumatic Actuator	
					LP-Gas	NH_3	Right Operation	Left Operation
Single Flange								
A3217AR160	A3217AL160	Right or Left	3" 300# ANSI RF Modified Flange*	3" 300# ANSI RF Flange	160	145	A3217ARPA A3217RA	A3217ALPA A3217LA
A3217AR210	A3217AL210				210	190		
A3217AR260	A3217AL260				260	236		
A3217AR410	A3217AL410				410	372		
A3217AR510	A3217AL510				510	459		
Double Flange								
A3217DAR160	A3217DAL160	Right or Left	3" 300# ANSI RF Modified Flange*	3" 300# ANSI RF Flange	160	145	A3217ARPA A3217RA	A3217ALPA A3217LA
A3217DAR210	A3217DAL210				210	190		
A3217DAR260	A3217DAL260				260	236		
A3217DAR410	A3217DAL410				410	372		
A3217DAR510	A3217DAL510				510	459		

* Valve supplied with 16 nuts and 8 studs for mounting.
**Modified bore=4⅝" diameter with 5¾" diameter raised face.

4” Flanged Internal Valve for Transports and Large Stationary Storage Tanks A3219 Series

Designed primarily for LP-Gas and anhydrous ammonia service on MC331 transport pressure vessels and large stationary storage tanks. Installation is quick and easy, and it fits in most existing tank flanges. The valve may be actuated manually or pneumatically.

Use of the A3219RT Remote Thermal Release with this valve is suggested to provide a remote means of mechanical closure along with thermal protection, as required by DOT.

LISTED

A3219FA

A3219FPA

A3219FPA Pneumatic Actuator
The A3219FPA Pneumatic Actuator is designed especially for use with the A3219FA Series Flanged Internal Valves. The diaphragm type A3219FPA provides a convenient means of opening and closing the valve from a remote location, using either air or nitrogen, on LP-Gas and NH3 transport trailers and stationary tanks.

A3219RA

Ordering Information

Part Number*	Inlet Connection	Outlet Connection	Closing Flow GPM***		Accessories	
			LP-Gas	NH3	Pneumatic Actuator	Remote Thermal Release
A3219FA400L	4” 300# ANSI RF Modified Flange**	4” 300# ANSI RF Flange	400	360	A3219FPA A3219RA	A3219RT (2)
A3219FA600L			600	540		
A3219FA600W					-	A3219W
A3219FA400W			400	360		

* Valve supplied with 16 nuts and 8 studs for mounting.
** Modified bore = 5 7/8” diameter with 7” diameter raised face.
*** Other closing flows available

G

Remote Thermal Release for DOT MC331 Pressure Vessel A3219RT

Designed especially for use with Internal Valves installed in DOT MC331 pressure vessels. The A3219RT provides a remote means of mechanical closure along with thermal protection, as required by DOT MC331.
The A3219RT is connected by cable to the internal valve(s) on the vessel. In the event of extreme heat (over 212° F.), the fuse link will melt, causing the spring to contract and pull the cable. When properly installed the cable will trip the internal valve release lever(s) allowing the connected handle(s) to move to the closed position.

LISTED

A3219RT

Ordering Information

Part Number	For Use With	Release Temperature	Spring Load		Minimum Number Required By MC331
			Fully Extended	After 4” Travel	
A3219RT	Internal Valves	212° F.	≈100 lbs.	≈50 lbs.	2

Remote Cable Controls for Internal Valves 3200C and 3200L

The 3200C Remote Cable Kit is designed especially for use with the 3200L Remote Operating Lever to operate internal valves from a remote location.
The internal valve is opened by pulling back the remote operation lever and closed by returning the lever to its original position. A remote release is provided to close the internal valve from a different remote location.

UL LISTED

3200L

Ordering Information

Part Number	Description	Contents
3200C	Remote Cable Kit	100 Foot Cable, 6 Cable Clamps, Quick Link, Sign, Fuse Link, Steel Nut and Bolt
3200L	Operating Lever	Lever Assembly

Threaded Internal Valves For Bobtail Delivery Trucks, Transports and Stationary Storage Tanks A3213D Series

Designed primarily for use with LP-Gas and anhydrous ammonia for liquid withdrawal; vapor transfer or vapor equalization of bobtail delivery trucks, transports, stationary storage tanks, and in-line installations. The valve may be operated manually by cable or pneumatically.

UL LISTED

A3213D Series

A3213RA

A3213PA

A3213TL

Ordering Information

Part Number	Inlet Connection M.NPT	Outlet Connections F.NPT	Closing Flow Half Coupling (GPM)		Closing Flow Full Coupling (GPM)		Vapor Closing Flow (SCFH)		Accessories		
			LPG	NH_3	LPG	NH_3	25 PSIG Inlet	100 PSIG Inlet	Pneumatic Actuator	Rotary Actuator	Thermal Latch
A3213D150	3”	3”	150	135	125	113	26,900	45,900	A3213PA	A3213RA	A3213TL
A3213D200			200	180	160	144	32,300	55,100			
A3213D300			300	270	250	225	50,500	86,500			
A3213D400			400	360	325	293	71,400	121,300			
A3213DT150*			150	135	125	113	26,900	45,900			
A3213DT200*			200	180	160	144	32,300	55,100			
A3213DT300*			300	250	250	225	50,500	86,500			
A3213DT400*			400	325	325	293	71,400	121,300			

* T-body design

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Threaded Internal Valves For Bobtail Delivery Trucks, Transports and Stationary Storage Tanks A3212 Series

Designed primarily for use with LP-Gas and anhydrous ammonia for liquid withdrawal; vapor transfer or vapor equalization of bobtail delivery trucks, transports, stationary storage tanks, and in-line installations. The valve may be operated manually by cable or pneumatically.

UL LISTED

A3212R Series

Ordering Information

Part Number	Inlet Connection M. NPT	Outlet Connection F. NPT	Closing Flow (GPM) Half Coupling		Closing Flow (GPM) Full Coupling		A	B	C	Accessories		
			LP-Gas	NH3	LP-Gas	NH3				Thermal Latch	Pneumatic Actuator	Rotary Actuator
A3212R 105	2"	2"	105	95	65	59	$1^{9}/_{16}$"	$4^{11}/_{16}$"	$3^{45}/_{64}$"	A3213TL	*A3213PA	A3212RA
A3212R T105		2" T-body						$4^{15}/_{16}$"				
A3212R 175		2"	175	158	100	90		$4^{11}/_{16}$"				
A3212R T175		2" T-body						$4^{15}/_{16}$"				
A3212R 250		2"	250	225	130	117		$4^{11}/_{16}$"				
A3212R T250		2" T-body						$4^{15}/_{16}$"				

* For the old A3212A Series please use the A3212PA Pneumatic Actuator

Flomatic® Internal Valves for Bobtail Delivery Trucks, Transports and Large Stationary Storage Tanks A7883FK

Designed primarily for LP-Gas and anhydrous ammonia liquid withdrawal on MC331 bobtail delivery trucks, transports and large stationary storage containers with flanged connections. The valve is fully automatic, opening and closing as the pump is turned on or off.

UL LISTED

A7883FK

Ordering Information

Part Number	Inlet Connection ANSI Flange	Outlet Connection ANSI Flange	Strainer Width	Base Width	Overall Height (Approx.)	Height from Indicator to Base	Accessories (included with Flomatic®)	
							Filter	3-Way Valve
A7883FK	3"-300#**	3"-300#	4¾"	8¼"	10⅞"	$4^{13}/_{16}$"	A7884-201	A7853A

*Supplied with A7853A 3-way valve, A7884-201 filter, studs, nuts and gaskets.
**With $4^{13}/_{16}$" diameter bore.
***With $5^{13}/_{16}$" diameter bore.

¼" Three-Way Quick-Acting Valve A7853A

UL LISTED

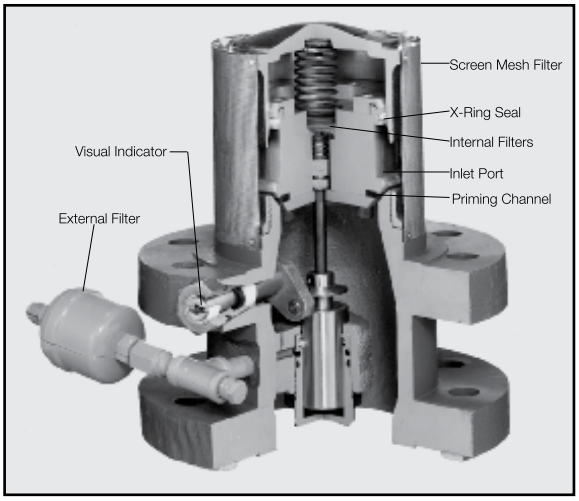
A7853A ¼" Three-Way Quick-Acting Valve

Ordering Information

Part Number	Flange Type	A	B	C	D	Accessories	
						Pneumatic Actuator	3-Way Valve
A7853A	T-1 Steel Carbon Steel	$4^{13}/_{16}$"	5¾"	6⅝"	8¼"	A7853PAF	A7853PA

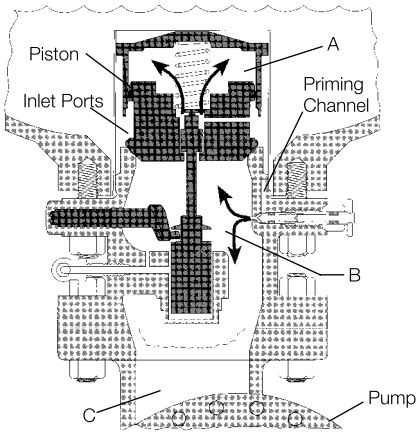
*Supplied with A7853A 3-way valve, A7884-201 filter, studs, nuts and gaskets.
**With $4^{13}/_{16}$" diameter bore.
***With $5^{13}/_{16}$" diameter bore.

Flomatic® Internal Valve Operation



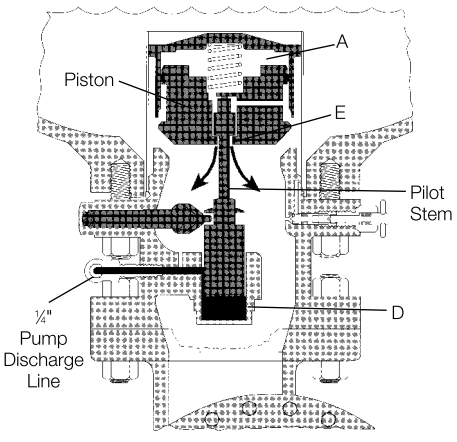
1. Normally Closed
When the valve is closed, liquid flows into the INLET PORTS, through a channel in the PISTON, and into area A. It also flows down through the PRIMING CHANNEL in the valve body, into area B beneath the valve seat, and into area C to prime the PUMP.

1



2. Pump On – Valve Opening
When the pump is started, differential pressure transmits through the ¼" piping into chamber D. lifting the PILOT STEM. This opens the seat between the stem and piston at E. Pump suction then evacuates the tank pressure in area A, which becomes equal to the pump suction pressure.

2

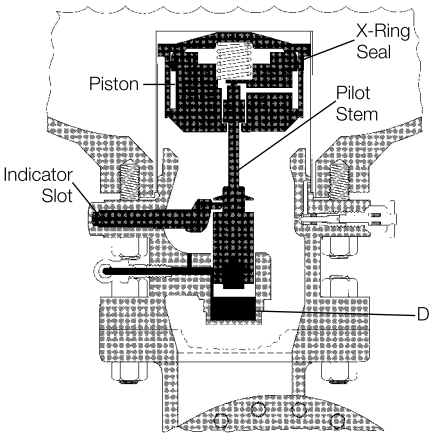


General Information
RegO piston type Flomatic Internal Valves are normally closed and use pressure differential to provide completely automatic service. Mounted directly between the tank body and pump, the Flomatic® uses the pressure differential developed by the pump to open the valve and it closes automatically when the differential no longer exists.

This means the RegO Flomatic opens when the pump is on and closes when the pump is shut off – fully automatic.

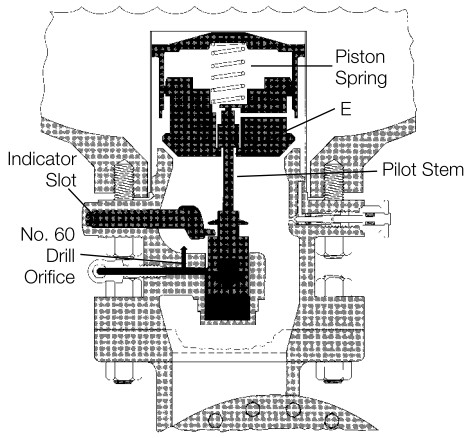
3. Pump On – Valve Open
The force below the pilot stem forces the piston up to open the valve; rotating the INDICATOR SLOT to its vertical (valve open) position. Pump differential pressure in area D holds the PILOT STEM and PISTON open. Approximately 20 psig pump differential pressure is required to open the valve; approximately 8 psig differential pressure will hold the valve open.

3



4. Pump Off – Valve Closes
With the pump shut off, the pressure in area D which holds the valve open, bleeds out through the #60 DRILL ORIFICE. This loss of pressure permits the SPRING to push the PILOT STEM down to reseat at point E. Since pressures are equal above and below the PISTON, with no sustaining pressure in area D, the SPRING forces the valve closed. The INDICATOR SLOT rotates to the horizontal (valve closed) position.

4



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On-The-Job Service Guide for the Flomatic® Valve

Introduction
Efficient, profitable transport and delivery truck operations depend on keeping the equipment working safely and efficiently under changing conditions. It is important to know how to eliminate expensive delays by handling unloading problems as they arise.

The purpose of this technical guide is to provide basic information on the Flomatic® valve, along with simple, appropriate steps to follow in the event things go wrong.

The Flomatic® valve is mounted on the bottom of your transport or delivery truck tank, with the pump mounted immediately downstream. When the pump starts to push the liquid down the piping, the Flomatic® Valve opens automatically, allowing you to unload the tank, and closes when the pump stops pushing. It takes at least 20 pounds per square inch of "push" at the pump to open the valve.

Your flanged Flomatic® valve has an indicating shaft on it that shows whether it's open or closed (Figure 1). If the indicating shaft is horizontal, the valve is closed. If it's vertical, the valve is open.

A threaded type, diaphragm-operated Flomatic® valve has an indicating shaft on the bottom, covered by a clear plastic hood. The indicating shaft projects down when the valve is closed and is concealed when the valve is open (Figure 2).

Important Facts About Pressure
When handling propane or anhydrous ammonia, storage and transport tank pressures vary from about 20 pounds per square inch or less when it's cold to 200 pounds per square inch or more in hot weather (Figure 3). If you're hauling butane, tank pressures will be 50 pounds per square inch or less.

The transport or delivery truck tank pressure may be higher than the storage tank pressure when you are ready to unload (Figure 4). This is because your rig may have been freshly loaded at the terminal or bulk plant without a vapor equalizing line and hasn't had time to get back to normal. Also, the storage tank pressure tends to drop when a lot of LP-Gas is being used.

Troubleshooting on the Job
O.K. So you follow your procedures, hook up your hoses, open the required valves and start your pump. The indicating shaft on the Flomatic® valve moves to the open position and the liquid goes in to storage. Great! You're happy and so is the boss, and so are we.

But, let's say you do these things, start the pump and the liquid doesn't move. Now, how do you find out what is wrong?

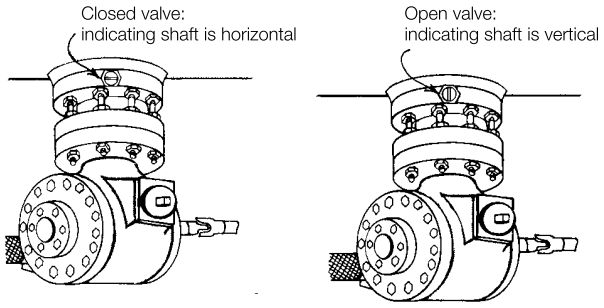

Figure 1. Flanged Flomatic Valve

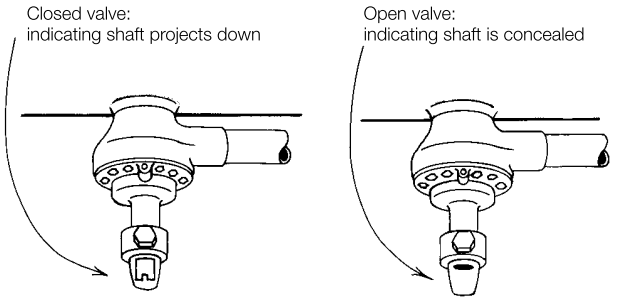

Figure 2. Threaded, Diaphragm-operated Flomatic Valve

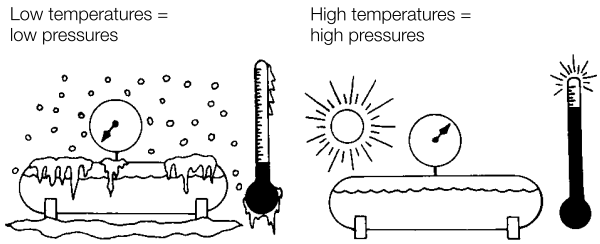

Figure 3. Weather Conditions Affect Pressure

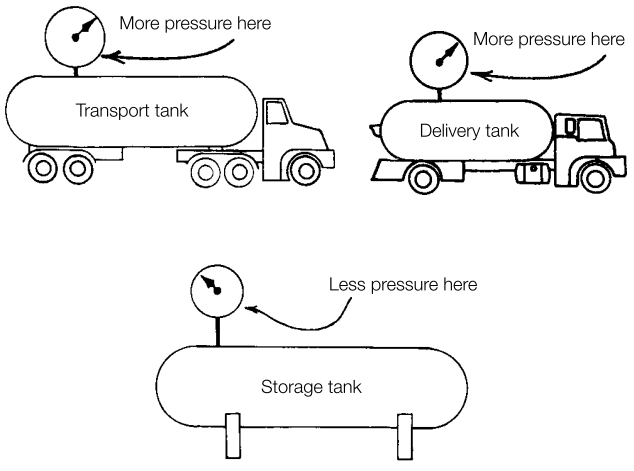

Figure 4. Unloading Conditions Affect Pressure

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Step 1
Immediately shut down the pump so you don't cause possible damage to the seals or valves. Next:

1. Check all manual valves in the system to make certain they are open or closed as required for proper operation.

2. Check the liquid level in the transport or delivery tank. If the level is low, it may slow the transfer rate.

3. Check to ensure that the pump rotates normally when power is applied. If not, inspect and repair as needed the power takeoff, universal joints, drive shaft and clutch, etc.

4. Make sure the lever is straight out on the ¼" operating valve in the line between the pump discharge line and the Flomatic® valve (Figure 5). If it isn't, the Flomatic® valve will remain closed.

5. Make certain the priming valve on the side of the Flomatic® valve is open (Figure 6).

6. Ice in the system may prevent proper operation, as will a collapsed or kinked sensing line or a clogged sensing line filter. If you found the trouble within STEP 1, just start the pump and continue unloading, If not, proceed accordingly.

a. New Models with T-handle: To adjust to the proper position, push in the end of the valve stem and tighten the needle valve clockwise until it seats. Then, turn counterclockwise 1½ turns.

b. Old Models with Plug: To adjust to the proper position, carefully remove the plug. A small amount of liquid LP-Gas may be discharged when plug is loosened. Insert a small screwdriver and tighten the needle valve clockwise until it seats. Then turn it counterclockwise 1 turn only. **CAUTION: Do not open needle valve more than 1 turn as it might blow out!**

c. Threaded Models with Internal Priming Channel. The internal priming channel normally self-actuates. To be sure the system is primed, remove the plastic hood and push the travel indicator up about ⅛" and hold for at least 15 seconds.

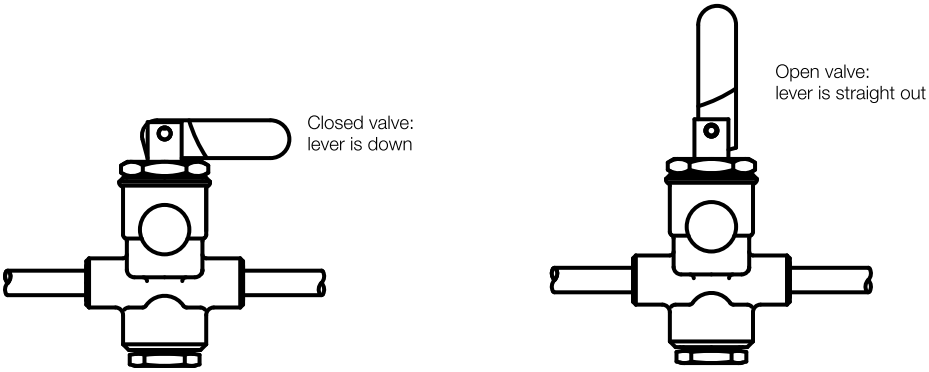

Figure 5. Operating Lever Positions

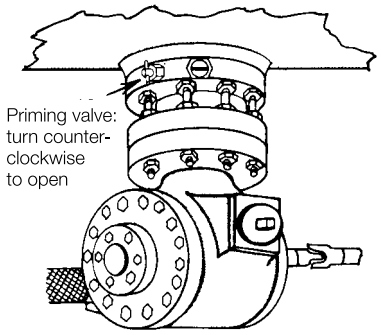

Figure 6. Priming Procedures

For Transport Trailer Trucks Only (Figure 7a)
1. Check the difference between the pressure in your transport and the storage tank. If there's 15 or 20 pounds per square inch more pressure in the transport tank than in the storage tank, chances are the Flomatic® valve won't open. This is because the pump can't develop enough "push."

If you have a good bypass valve on your rig to send the extra liquid back into the tank, you can merely close the liquid shut-off valve in the discharge line and restart your pump (Figure 8a). Now, the Flomatic® indicating shaft should move to the open position (see Figures 1 and 2).

2. Slowly open the liquid shut-off valve in the discharge line and the liquid will start to move out of the transport. If the Flomatic® valve indicating shaft starts to move toward the closed position once you've opened this liquid shut-off valve all the way, throttle the valve for a while until the transport tank pressure drops to where the Flomatic® valve indicating shaft will stay open. Then, open the liquid shut-off valve all the way until you finish unloading.

Step 2

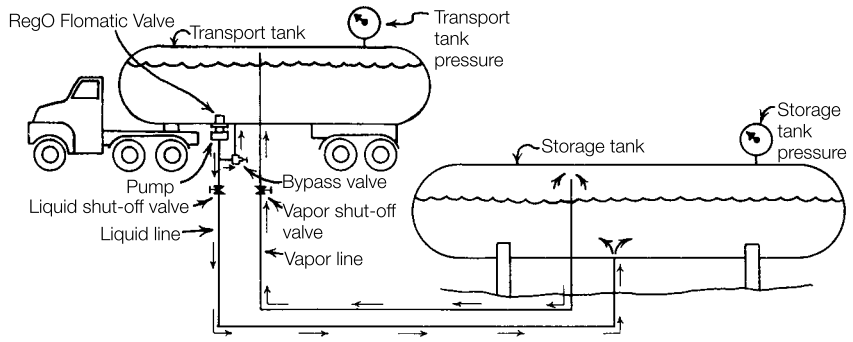

Figure 7a. Unloading Diagram of Transport Trailer Truck
The liquid flows out of the transport tank through the Flomatic® valve, into the pump and through the delivery hose to the storage tank. The vapor line allows vapor to flow from storage back to the transport so that the storage tank pressure won't build up too much and make the pump work harder than necessary.

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3. If your pump system doesn't have a bypass valve, the liquid shut-off valve in the discharge line should be left partially open when you restart the pump. Just be sure that the pump is pushing at least 20 pounds per square inch, so the Flomatic® valve can open.

Don't worry about how much it may slow up your loading speed when you pinch down the liquid shut-off valve to get the Flomatic® valve open. Your pump is running at constant RPM and will move liquid at almost the same rate, even when pushing harder. (It's a lot like using engine braking on a downhill grade, except, in this case, the pump keeps the liquid moving at a constant flow rate.)

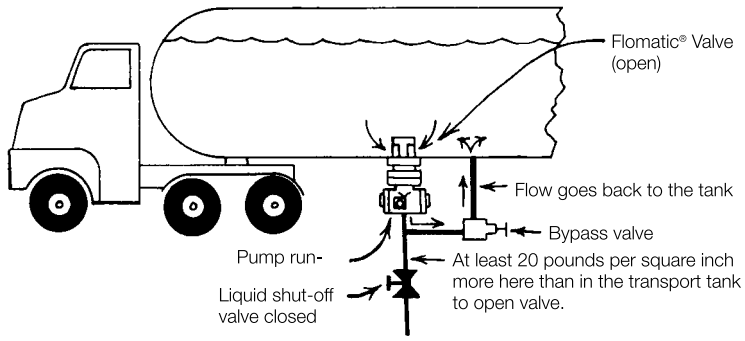


Figure 8a. Unloading Diagram of Transport Trailer Truck with Back-to-tank Bypass Valve
You must have a separate back-to-tank bypass valve if the pump is to be run with the liquid shut-off valve closed.

For Delivery Trucks Only (Figure 7b)

1. Check the pump bypass piping. If your truck is equipped with a manual bypass valve, close it and try the pump again. (Figure 8b). If the Flomatic® valve indicating shaft moves to the open position, the problem is that the pump can't develop 20 pounds per square inch or more to "push'' open the Flomatic® valve with the bypass valve open. You can prevent this in the future by not opening the manual bypass valve too wide.

2. If the delivery truck is not equipped with a manual bypass valve, merely start the pump. Slowly close the shut-off valve between the back-to-tank bypass valve and tank. If the Flomatic® valve indicating shaft moves to the open position as you close the valve, the back-to-tank bypass valve may be stuck open, adjusted too low, or the spring may be broken. **CAUTION: Don't close the shut-off valve all the way, because excessive pressures and pump damage may occur.**

3. If the Flomatic® valve indicating shaft remains in the closed position, the problem is either in the pump or the Flomatic® valve.

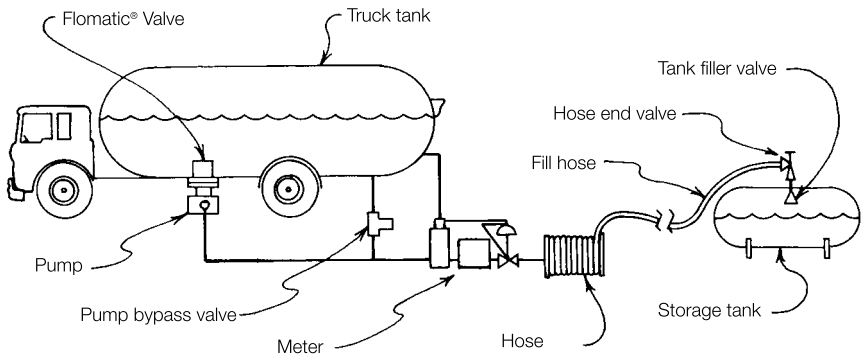


Figure 7b. Unloading Diagram of Delivery Truck
The liquid flows out of the truck tank, through the Flomatic® valve and into the pump, where it is then pushed through the meter and delivery hose into the storage tank. The liquid normally enters the vapor space of the storage tank to minimize pressure buildup, so a vapor equalizing line is usually not needed. The back-to-tank bypass valve opens to divert excess pump capacity back to the truck tank, preventing the pump from creating too much pressure.

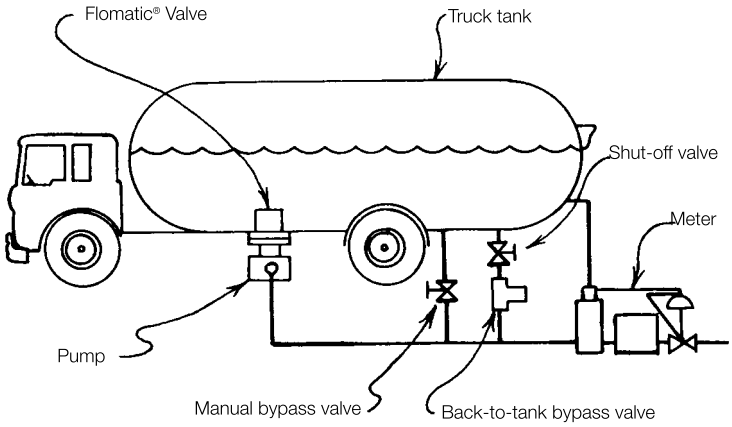


Figure 8b. Unloading Diagram of Delivery Truck with Manual Bypass Valve

USE EXTREME CARE AT ALL TIMES WHEN WORKING AROUND YOUR VEHICLE!
Watch out for drive shafts and moving parts. It is common knowledge that serious injury can result if any part of one's body or clothing is caught in moving machinery.

If you manually open the Flomatic® valve, you are responsible for safely unloading the liquid and closing the valve when you're through. If this procedure is being followed, under no circumstances must the valve be left unattended. The valve must never be permanently held in the open position.

If you are not able to cause the Flomatic® valve indicating shaft to move to the open position after completing the preceding steps, a complete detailed diagnosis will have to be made.

In the meantime, you can actuate the flanged Flomatic® valve by using a special wrench and attempt to unload manually (Figure 9).

If you still can't unload by following the preceding steps, it is suggested that you unload by an alternate method, such as through the valve normally used for liquid filling.

In any event, if you haven't solved the problem and the unit still doesn't operate properly, immediately take it out of service, have a complete analysis made and repair as needed.

Be sure to obtain and keep available for quick referral the Manufacturers' Operation and Service Manuals for the valves, pump, meter and all operating equipment in the system.

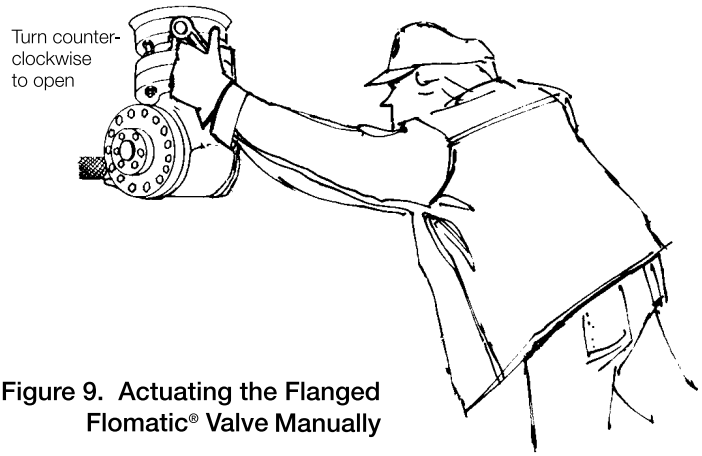


Figure 9. Actuating the Flanged Flomatic® Valve Manually

Pumping System Troubleshooting Guide

Introduction

Most LP-Gas and anhydrous ammonia systems use pumps to move liquid from one location to another. Unloading transport trailer tanks into plant storage, loading delivery trucks, filling bulk tanks, engine fuel tanks, portable cylinders, etc. and pressurizing LP-Gas vaporizers are only a few of many such applications. A well-designed and properly installed pumping system will perform well for some time, but eventually problems occur requiring attention.

Finding out what is wrong, and getting it working again, can be a time-consuming and confusing experience, unless one knows clearly how to proceed.

The purpose for this technical guide is to provide simple, step-by-step guidelines for correcting LP-Gas and anhydrous ammonia pumping difficulties.

The procedure includes a preliminary checklist to help find out if the difficulty can be corrected without taking anything apart. Then, it shows how to zero in on more serious problems by using a few pressure gauges to pinpoint the cause.

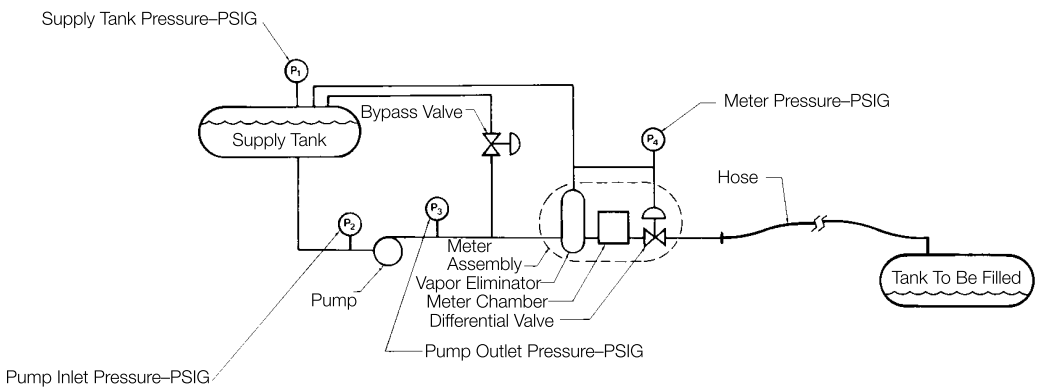
It is recommended that the pumping system be equipped for easy pressure gauge installation before trouble occurs. Small manual shutoff valves can be installed at proper locations, with plugs inserted in the outlets.

This would allow pressure gauges to be put in easily without removing the LP-Gas or anhydrous ammonia from the system at the time trouble occurs, saving a lot of time and unnecessary expense. Pressure gauges should be installed temporarily at the time the system is first installed, and pressure readings recorded while the system is working properly. Then, in many cases, merely comparing pressures with original readings may tell what the trouble is.

NOTE: The figure below shows where pressure gauges should be installed. Pressure gauge readings from the original tests should be recorded for each gauge.

It is recommended that the pressure gauges not be used continuously, because vibrations and the ravages of weather cause their damage or ruin. Therefore, as soon as the initial tests are complete, it is best to (1) close the shutoff valves, (2) remove the gauges, (3) plug the valves and (4) keep the gauges in a safe place, ready for troubleshooting when really needed. It is easier to diagnose a problem if the original test results are available, but don't panic if they aren't. You can still solve the problem without this information, but it requires more time and effort.

Pump System Schematic



A

Tank Pressure doesn't change

Pump Inlet Pressure decreases

Pump Outlet Pressure doesn't change

The trouble is most likely somewhere in the inlet line. It could be:

1. The pump may be running at a speed too low to develop proper differential pressure.
2. An inlet strainer is clogged.
3. A valve is partially closed somewhere in the inlet line.
4. Ice has formed either in the bottom of the supply tank or somewhere in the inlet line. This is common particularly when the tank has been hydrostatically tested or purged with steam, and not completely drained and dehydrated.
5. If a Flomatic® valve is used, it may not be opening for a number of reasons.
   a. Pressure in the tank to be filled may be considerably less than that in the supply tank, making it impossible for the pump to develop sufficient differential pressure to open the valve (Simply throttle a manual valve on the discharge line to cause the pump to develop enough differential pressure to open the Flomatic® valve. As the pressure in the tank to be filled goes up, it will be possible to re-open the valve in the discharge line.)
   b. The pump by-pass valve may be blocked open or have broken or damaged parts, preventing the pump from developing sufficient differential pressure to open the Flomatic® valve. (Pump outlet pressure must rise at least 21 PSI to open the Flomatic® Valve.)
   c. The Flomatic® strainer, filter, three-way valve or other element in the actuating line is clogged, or the activating line is kinked.
   d. The Flomatic® valve internal parts may be damaged or worn. (Refer to Installation Manual #A7884F-301 for flanged valves or #L-451 for diaphragm-type threaded valves for repair instructions.)
6. If an internal valve is used, the main valve may not be opening due to insufficient equalization time, broken or damaged valve parts, valve lever in closed position or insufficient excess flow sizing.

NOTE: Meter pressure is not needed for this condition.

B

Tank Pressure doesn't change

Pump Inlet Pressure doesn't change

Pump Outlet Pressure goes up a little

The trouble is most likely related to the pump or by-pass valve. It could be:

1. The pump may have excessively worn parts.
2. The internal by-pass valve in the pump may be blocked open by foreign material, or may have broken or damaged parts.
3. The back-to-tank by-pass valve may be blocked open by foreign material, or may have broken or damaged parts.
4. The manual by-pass valve, is so-equipped, may be open.

NOTE: Meter pressure is not needed for this condition.

Pumping System Troubleshooting Guide

Be sure to obtain and keep available for quick referral the Manufacturer's Operation and Service Manuals for the valves, pump, meter and all operating equipment in the system.

To avoid delays, maintain a complete stock of recommended spare parts on hand for quick repairs.

Follow the steps as shown. Don't assume the answer is known beforehand, or skip any applicable steps. Rather, be thorough and methodical and in most instances, you will solve the problem. On the other hand, if you have done all of this and still haven't worked out your problem. feel free to call your local distributor or RegO

direct. We will do our best to help. Perhaps, between us, we will be able to solve your problem and add something new to the procedure which could help everyone in the future.

Pumping System Troubleshooting Chart

BASIC ASSUMPTION

The pumping system did work OK, but now the transfer rate is considerably less, or the system won't pump at all.

PRELIMINARY REVIEW

1. Check the supply tank liquid level. The transfer rate could be considerably reduced if the level is low, due to vapor bubbles in the line, because of insufficient liquid head, or a vortex effect in the tank. Remember, reduction in the pumping rate from these causes will be more extreme in cold weather when tank pressures are low.
2. Examine the pump drive to make sure the pump is rotating properly. Inspect for loose drive belts, damaged or broken flexible couplings or universal joints, broken drive keys and damaged or inoperative power take-off or pump clutch, etc.
3. If the system is equipped with the Flomatic® Valve:

   a Make sure the three-way valve handle is straight out, allowing the valve to open.

   b. Check the position indicator on the Flomatic Valve when the pump is running. If the indicator shows that the valve is open, the trouble **must** be downstream of the valve.

   c. Make sure the priming valve is open, allowing pressure to equalize between the tank and pump inlet.

4. If the system is equipped with internal valves, make sure the operating lever moves to a full open position. Repair if needed.
5. Make sure all valves in the system are either open or closed as required for normal operation. Check each valve in sequence, starting from the supply tank, making sure that no valve element is missed

If the cause of the problem has not been determined during preliminary review, it will be necessary to conduct diagnostic tests, using pressure gauges at key points in the system. (See Introduction, Page 1.)

DIAGNOSTIC TESTS

Open all valves as required for proper pumping operation. Gauges should show tank pressure, pump inlet pressure, pump outlet pressure and meter pressure to be equal.

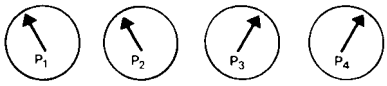
Start the pump and observe all pressure gauges. Match results with conditions A, B, C, or D. Follow the appropriate steps.

FINAL RESULTS

Make repairs or adjustments as needed, and test the system's operation. Record a new set of test pressures for future reference, and order replacements for all spare parts used.

The system is now ready to return to service.

C



Tank Pressure doesn't | Pump Inlet Pressure doesn't change | Pump Outlet Pressure rises substantially | Meter Pressure rises substantially

The trouble is most likely in the meter vapor eliminator or meter differential valve. It could be:

1. The meter's vapor eliminator may be malfunctioning. If the valve at the outlet of the vapor eliminator does not seat when the vapors have been purged, the differential valve downstream of the meter will not open. Such failure could be caused by a damaged vapor eliminator valve seat, foreign material blocking the vapor eliminator valve, a leak in the ball float, or a jammed or binding linkage between the ball and valve.
2. The diaphragm could be ruptured, or other parts could be damaged or broken in the differential valve downstream of the meter.

D

Tank Pressure doesn't change | Pump Inlet Pressure doesn't change | Pump Outlet Pressure rises substantially | Meter Pressure doesn't change

The problem is most likely somewhere downstream of the pump. Look for a closed valve, or some type of blockage in the discharge line. It could be:

1. The meter strainer may be clogged.
2. A back check valve at the inlet of the meter may be blocked, closed, or jammed.
3. The meter rotor may be jammed by foreign material, preventing it from moving properly, which would prevent or retard flow.
4. The drive key on the meter gears may be sheared. (In this case, flow would actually be moving through the meter but not registering.)
5. The differential valve downstream of the meter may be closed due to damage, foreign material or ice.
6. If screw type hose fittings are used, it is extremely important that they be installed properly. If not, it is possible that a flap of rubber may be cut from the inside diameter of the hose, acting as a back check. It can flap across the discharge line, effectively stopping the flow.
7. Check the hose nozzle valve, if so equipped. In some brands, a bent handle or other defect may prevent the inner valve from opening sufficiently to allow a proper amount of flow.
8. The problem could be in the valve assemblies in the tank to be filled.

   If you are dealing with a delivery truck application, move to another tank and see whether the problem still exists. If not, it may be a problem with one specific tank, rather than the pumping system.

9. Some delivery trucks are equipped with a quick-acting valve immediately upstream, of the hose reel. **Make sure** that this valve is open.
10. Some delivery trucks are equipped with excess flow valves between the meter and hose reel. Improper sizing, a weak spring, or other valve damage can cause this valve to close prematurely, effectively stopping the flow.
11. If, with a delivery truck system, the flow reduced considerably while the tank is being filled, it is possible that the back-to-tank by-pass valve is not set high enough to compensate for vapor pressure buildup in the tank being filled. This can be solved merely by adjusting the by-pass valve as a slightly higher level. **Warning**: Do not raise the back-to-tank by-pass setting high enough to cause the internal relief valve in the pump to actuate. If this should happen, it could cause excessive cavitation, loss of capacity and premature pump wear.

FINAL RESULTS

Make repairs or adjustments as needed, and test the system's operation. Record a new set of test pressures for future reference, and order replacements for all spare parts used. The system now is ready to return to service.

Extended Type Hose Couplings for Vapor and Liquid Service
A7571 and A7575 Series

Designed especially for liquid filling and vapor equalization of LP-Gas and anhydrous ammonia. The limited travel of the handle on the tailpiece minimizes spin-off, encouraging cautious removal to properly bleed off trapped product to ensure closure of the filler valve and hose end valve. The ACME threads are machined on a rugged steel insert which is permanently cast in the aluminum handle, providing for durability under repeated use.

UL LISTED

A7571 Series

A7575 Series

Ordering Information

Part Number	Type of Service	A. Hose Connection (M. NPT)	B. Coupling Connection (F. ACME)	C. Approx. Length
A7575L2*	Liquid	½"	1¾"	7"
A7575L3		¾"		
A7575L4		1"		
A7575L5**		1¼"		
A7571LA	Vapor	½"	1¼"	
A7571LB		¾"		

* Includes 7199-33 adapter, shipped loose.
** Includes A7575L5-1 adapter, shipped loose.

Short Type Hose Couplings for Vapor and Liquid Service
3171, 3175, 3181, 3185 and 3195 Series

H

3175 Series

A3185 Series

UL LISTED

3171A Series

3191 Series

Ordering Information

Part Number	Material	Style	A. Hose Connection (M. NPT)	B. Coupling Connection (F. ACME)	C. Tailpiece Bore	D. Hose End To Nut	E. Overall Length
3175B	Brass	A	½"	1¾"	35/64"	1 13/16"	2 11/16"
3175			¾"		¾"		
3175A			1"		15/16"		
3185		B	1¼"	2¼"	1 3/16"	2 11/16"	3¾"
3195	Brass Nut & Steel Nipple		2"	3¼"	⅞"	2¼"	3⅝"
A3175	Steel	A	¾"	1¾"	¾"	2"	2⅛"
A3175A			1"		⅞"	2¼"	3⅛"
A3185		B	1¼"	2¼"	1¼"	2⅛"	3 3/16"
A3195			2"	3¼"	1⅞"	2¼"	3⅝"
3171	Brass	C	⅜"	1¼"	⅜"	1 17/32"	2 13/32"
3171A			½"		31/64"		
3181			¾"	1¾"	¾"	1 3/16"	2 11/16"
3181A			1"		¾"	1⅞"	2¾"
3191		D	1¼"	2¼"	1 3/16"	2⅛"	3 3/16"

ACME Check Connectors for Lift Trucks 7141F and 7141M

These brass connectors are especially designed to join the carburetor fuel line to the service valve on lift truck cylinders. Sturdy, long lasting ACME threads allow quick, hand-tight assembly that provides for quick and simple cylinder replacement. Back checks automatically close in each connector when disconnected.

The 7141M couples directly to the service valve. An integral O-ring is designed to seal before the internal check opens, aiding in product loss prevention. A gasket at the ACME thread is a secondary seal when the connectors are tightened together. The connector fits RegO lift truck cylinder filling adapters for fast, convenient filling.

The 7141F accepts fuel line adapter and couples directly to the 7141M. The O-ring seal in the 7141M is designed to seal before the internal check opens to allow product to pass through the connection. The knurled coupling eases threading and the ACME threads provide rapid effortless make-up, even against LP-Gas pressure.

NOTE: Refer to the "Cylinder and Service Valves" section of the L-500 catalog for additional information.

UL LISTED

7141M

7141F

Ordering Information

Part Number	Application	A. Inlet	B. Outlet	Protective Cap*	
				Rubber	Brass
7141M	Service Valve	⅜" F. NPT	1¼" M. ACME	7141M-40	7141FP
7141F	Fuel Line	1¼" F. ACME	¼" F. NPT	-	-

* Recommended to minimize foreign material entering valves which could result in leakage.

H

Unloading Adapters for Container Evacuation 3119A, 3120 and 3121

Designed to provide an efficient means of evacuating an LP-Gas container for relocation or repair. They thread directly onto the 1¾" ACME male hose connection of RegO Filler Valves used on RegO Double Check Filler Valves and Multivalves®.

The unloading adapters can be used to withdraw liquid provided the container is equipped with a dip pipe extending from the filler valve to the bottom of the container.

UL LISTED

3120

3121

3119A

Ordering Information

Part Number	Style	A. Filler Valve Connection	B. Hose Connection
3119A	In-Line	1 ¾" F. ACME	1¾" M. ACME
3120	Angle		¾" F. NPT
3121			

Left Hand Thread ACME Connectors for Vapor Withdrawal Industrial Cylinders 7142LF and 7142LM

These brass connectors are especially designed to join the carburetor **vapor fuel** line to the service valve on industrial cylinders especially designed for and used on propane fueled lawn mowers. Sturdy long lasting ACME **left hand** threads provides for quick hand tight assembly that provides for quick and simple cylinder replacement.

7142LM

7142LF

Ordering Information

Part Number	Application	Inlet	Outlet	Protective Cap
7142LM	Vapor Service Valve	⅜" F.NPT	1¼" M.ACME –left hand	7141M-40
7142LF	Vapor Fuel Line	1¼" F.ACME –left hand	¼" F.NPT	-

REGO 100 RegO Dr. Elon, NC 27244 USA www.regoproducts.com Phone (336) 449-7707

Filler Hose Adapters
3179B, 7577V and 7576

These adapters are designed with minimal flow restriction and recommended for use on the outlet of the LP-Gas delivery truck filler hose. If the controlled bleed off of the connection indicates the filler valve on the tank being filled has failed to close, the hose adapter should be left in place on the filler valve and disconnection should be made at the regular filler hose coupling. (Repair of the filler valve must be made as soon as possible). An integral check valve in these adapters helps prevent further loss of product. The standard filler valve cap should be attached to these adapters when left on the container.

UL LISTED

3179B

7577V

Ordering Information

Part Number	Built-in Vent Valve	A Filler Valve Connection	B Hose Connection
7577V	Yes	1¾" F. ACME	1¾" M. ACME
3179B	No		
7576	Yes		

7576

POL Plugs

Highly recommended for installation in LP-Gas cylinder valve POL outlets whenever the service line is disconnected or when the cylinder is being transported.

When properly installed, the POL plug is designed to prevent contamination of the valve outlet and guards against product leakage if the cylinder valve is accidentally opened.

UL LISTED

N970P

10538P
(Has hole for attaching wire to prevent loss of plug)

Ordering Information

Part Number	Material	Connection
N970P	Cycolac	M. POL (CGA 510)
10538P	Brass	
3705RC		

3¼" M.ACME X 2" M.NPT Adapter with Vent Valve & Integral Screen
5769HVB

Designed to prevent debris from impeding the action of valves and components of LPG piping systems at bulk plants and industrial plants.

UL LISTED

5769HVB

Ordering Information

Part Number	Style	Gasket Qty	Vent Valve	Hex Size	Thread	"A" Length
5769H	1	1	-	3¼"	2" M.NPT	2.875
5769K	1	1		3½"	3" M.NPT	3.625
5769M	2	2		3¼"	3¼" ACME	2.750
5769HVB	1	1	3165CBT		2" M.NPT	3.150
5769VSS	1	1	TSS3169			3.150

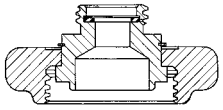
H

Caps and Reducers

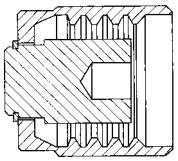
Ordering Information

Cap With Chain & Ring		Cap Only Part Number	Material	Thread Connection
Part Number	Ring Fits Pipe Size Up To:			
3144-91	¾"	3144-9P	ABS	1¼" F. ACME
3174-91		3174-9P		1¾" F. ACME
3174-93	1¼"			
A8016-93		A8016-9P	Nylon	
1708C	¾"	-	Brass	F. POL (CGA 510)
7141FP	-			1¼" F. ACME
3175P	1¼"			1¾" F. ACME
A3175P	-		Steel	
3184-90			Brass	2¼" F. ACME
3194-90				3¼" F. ACME
-		5776*		
A3184-90		-	Steel	2¼" F. ACME
A3194-90				3¼" F. ACME
-		A5776*		
907FP	1"	-	Brass	$1^{15}/_{16}$" F. ACME
3194-90G	-			3¼" ACME
3194-90GS	Adjustable Cable			
3194-91L				
3194-91S				
3194-91V				
A3194-91L			Steel	
A3194-91S				
A3194-91V				
5778	3¼ F. ACME		Brass	2¼" M. ACME

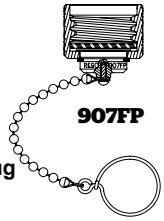
* Reduces to 1¾" M. ACME



A5776
Reducer Coupling

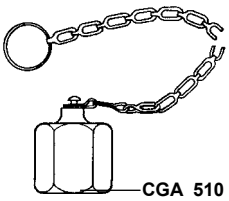


7141FP Cap Plug

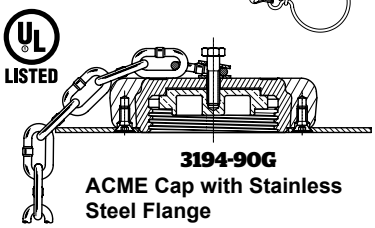


907FP

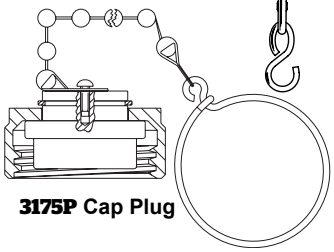
1708C POL Cap



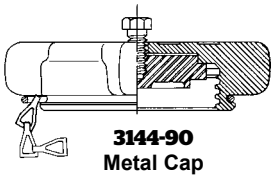
CGA 510



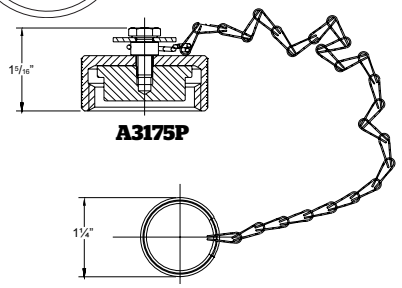
3194-90G
ACME Cap with Stainless Steel Flange



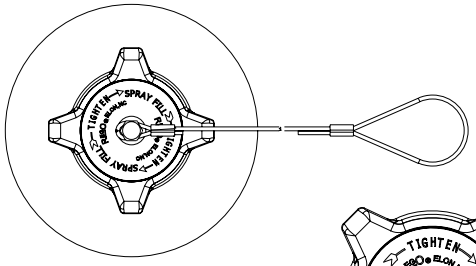
3175P Cap Plug



3144-90
Metal Cap



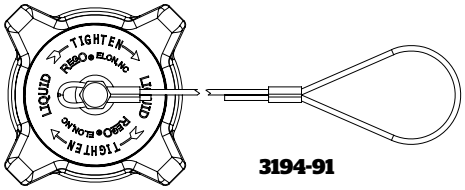
A3175P



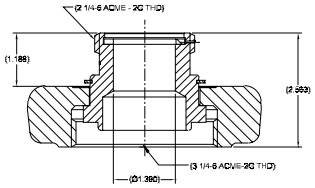
3194-90GS

3194-91L

L=Liquid (Red)
S=Spray Fill (Yellow)
V=Vapor (Yellow)



3194-91



5778

ACME Plugs

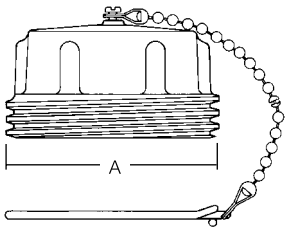
Specifically designed to withstand the everyday abuse given to hose end valves on delivery trucks and hose end couplings on risers in bulk plants, these rugged plugs protect the coupling tip as well as prevent the entrance of dirt, dust, snow and rain. They also prevent possible gas contamination from these same sources. The heavily ribbed outer surface permits hand-tight make-up.

These plugs are available in a choice of four sizes which may be used with liquid as well as vapor type couplings. As a convenience, the nylon plugs have a retaining chain and ring to prevent loss during a transfer operation.

All are suitable for LPG or anhydrous ammonia service except the brass 5765PR, which is for LP-Gas only.

Not intended for use as pressure closures.

LISTED



C5763N

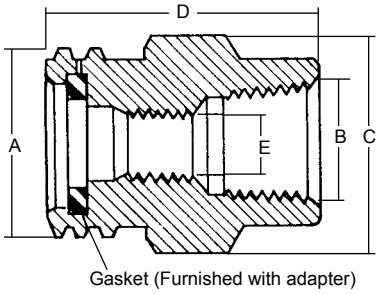
Ordering Information

Part Number	Material	A (M. ACME)	Chain & Ring Fits Pipe Size Up To:
C5763N	Nylon	1¼"	¾"
C5765N		1¾"	1¼"
5765PR	Brass		Not Applicable
C5767N	Nylon	2¼"	1¼"
C5769N		3¼"	2"

ACME Adapters

Ordering Information

Part Number	Material	A M. ACME	B F.NPT	C Hex	D Overall Length	E Diameter	For Spare Gasket Order Part No.
5764A	Brass	1¾"	¼"	1¾"	1¾"	13/32"	A2697-20R
5764B			⅜"		1 23/32"	9/16"	
5764C			½"		1¼"	11/16"	
5764D			¾"		1 9/32"	29/32"	
5764E			1"		1 5/16"		
5766E		2¼"	1"	2¼"	2 "	1 3/32"	A3184-8R
5766F			1¼"			1⅜"	
5768G		3¼"	1½"	3¼"	1¾"	1 11/16"	A3194-8R
A5764D	Steel	1¾"	¾"	1¾"	2 3/16"	⅞"	A2697-20R
A5764E			1"				
A5768H		3¼"	2"	3¼"	1 13/16"	1 15/16"	A3194-8R



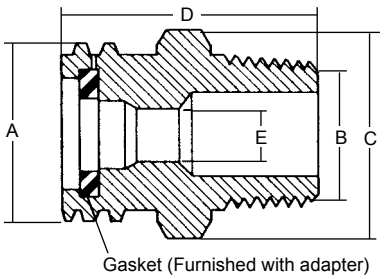
Gasket (Furnished with adapter)

ACME x Female NPT

UL LISTED

Ordering Information

Part Number	Material	A M. ACME	B M. NPT	C Hex	D Overall Length	E Diameter	For Spare Gasket Order Part No.
5763D	Brass	1¼"	¾"	1¼"	1¾"	½"	A2797-20R
5765D		1¾"	¾"	1¾"	1 23/32"	29/32"	A2697-20R
5765E			1"		2 3/32"		
5765F			1¼"				
5767F		2¼"	1¼"	2¼"	2⅜"	1 3/16""	A3184-8R
5767G			1½"			1⅜"	
5767H			2"	2⅜"	2 7/16"	1 25/64"	
5769K		3¼"	3"	3½"	3⅝"	2⅛"	A3194-8R
A5765C	Steel	1¾"	½"	1¾"	2 3/16"	17/32"	A2697-20R
A5765D			¾"			11/16"	
A5765E			1"			57/64"	
A5765F			1¼"				
A5767F		2¼"	1¼"	2¼"	2⅜"	1¼"	A3184-8R
A5769H		3¼"	2"	3¼"	2⅞"	1 15/16"	A3194-8R
A5769K			3"	4"	3 13/16"		

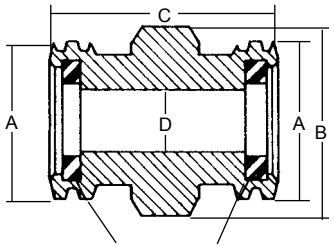


Gasket (Furnished with adapter)

ACME x Male NPT

Ordering Information

Part Number	Material	A M. ACME	B Hex	C Overall Length	D Diameter	For Spare Gasket Order Part No.
5765M	Brass	1¾"	1¾"	2 "	29/32"	A2697-20R
5767M		2¼"	2¼"	2 1/16"	1 "	A3184-8R
5769M		3¼"	3¼"	2 5/16"	1 25/64"	A3194-8R



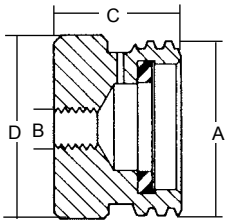
Gasket (Furnished with adapter)

ACME x ACME

Ordering Information

Part Number	Material	A M. ACME	B F. NPT	C Overall Length	D Diameter	For Spare Gasket Order Part No.
A5764W	Steel	1¾"	⅜"*	1¼"	1¾"	2697-20
5764W	Brass					

* ⅜" -16 UNC Thread.



ACME x Miscellaneous
(Recommended for securing hose-end valve when not in use).

H

Low Emission ACME Connector For Transports and Bobtails
6588LE & 6589LE

Designed to provide fast filling of bobtails, transports and large bulk storage tanks while providing for low emission of LPG when disconnecting.

6588 Series

Ordering Information

Part Number	ACME Connection	Outlet Connection M.NPT	Wrench Flats	Hydrostatic Relief Valve	Propane Capacity at Various Differential Pressures (GPM)		
					5 PSIG	10 PSIG	25 PSIG
6588LE	3¼"	2"	3½"	3125L	138	223	349
6589LE	3¼"	3"		3125L			

Copper Pigtails

Straight Pigtails

Ordering Information

Connections	Approximate Length	Part Number		
		¼" Tube		⅜" Tube
		⅞" Hex Short Nipple	1⅛" Hex Long Nipple	⅞" Hex Short Nipple
M.POL x M.POL	5"	-	-	913PS05
	12"	912PS12		913PS12
	20"	912PS20	912PA20	913PS20
	30"	912PS30	-	913PS30
	36"	912PS36	912PA36	913PS36
	48"	912PS48	912PA48	913PS48
¼" Inverted Flare x M.POL	12"	912FS12	-	-
	20"	912FS20	912FA20	-
	30"	912FS30	-	-
	36"	912FS36	-	-
¼" M.NPT x M.POL	5"	-	-	913JS05
	12"	912JS12	-	913JS12
	20"	912JS20	912JA20	913JS20
	36"	912JS36	-	-
½" M.NPT x M.Pol	12"	-	-	913LS12
½" M.NPT x ⅜" M.NPT	12"	-	-	913KL12

UL LISTED

912JS12

Bent Pigtails

Ordering Information

Connections	Approximate Length	Part Number	Type/Degree of Bend
		⅜" Tube	
		⅞" Hex Short Nipple	
¼" M. NPT x M. POL	5"	913JS05A	90°
		913PS05A	
M. POL x M. POL	12"	913PS12G	270° Right Hand
		913PS12H	270° Left Hand
		913PS12S	360°

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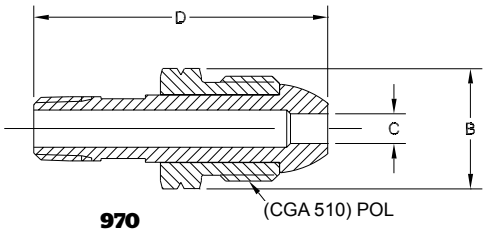
Male POL Swivel Adapters



970
Hard Nose POL

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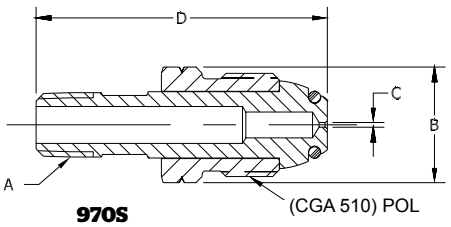
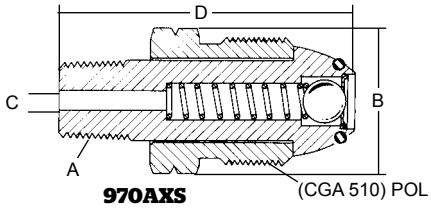
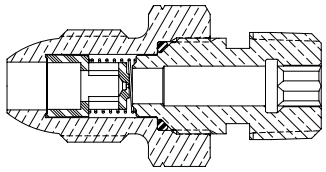


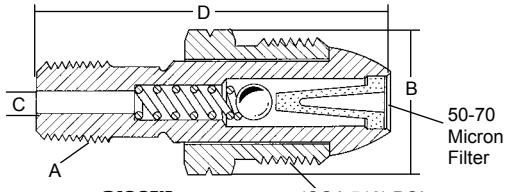
970S
Soft Nose POL w/60 DMS Orifice



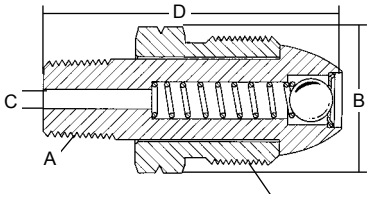
970AXS
Soft Nose POL w/Excess Flow



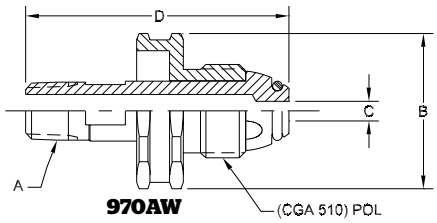
3188 Series



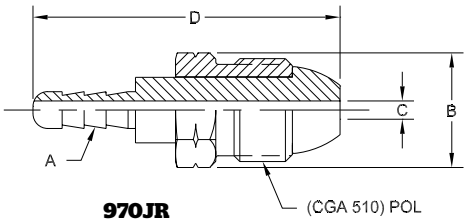
3199W
Heavy Duty Hard Nose POL w/Excess Flow



970AX
Hard Nose POL w/Excess Flow



970AW
970HT
Soft Nose POL w/Handwheel



970JR
Hard Nose POL w/Hose Barb Connection

H

Ordering Information

Part Number	Material	A Outlet Thread	B Hex	C Drill	D Overall Length	Vapor at 100 PSIG Inlet (SCFH)	Liquid (GPM)
970	Brass	¼" M. NPT	⅞"	¼"	2 15/32"	-	-
970S				.040" orifice			
970AX				⅛"		404	1.10
970AXS							
970AWXS							
3199W				5/32"	2 7/16"	450	0.95
970AW			1⅜"	3/16"	2 15/32"	-	-
970HT				.040" orifice			
970JR		¼" Hose Barb	⅞"	5/32"	2⅝"		
3188A		½" M. NPT	1⅛"	9/32"	2½"	350	.95
3188B						700	1.9
3188C						1180	2.9

Note: All nipples incorporate wrench hex section.

CGA 555 Swivel Adapters

Ordering Information

Part Number	Material	A Outlet Thread	B Hex	C Drill	D Overall Length
12982	Brass	¼" M. NPT	1⅛"	3/16"	1⅞"

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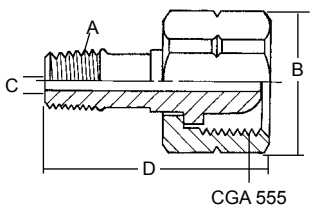
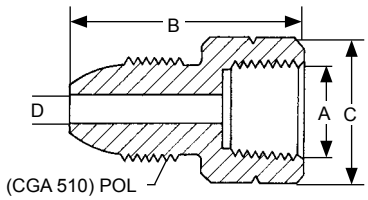


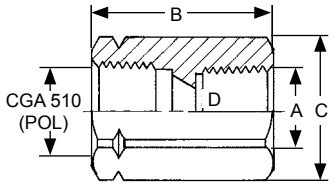
POL Adapters



Male POL x Female NPT

Ordering Information

Part Number	Material	A M. ACME	B	C Hex	D Diameter
2906A	Brass	¼"	1 11/32"	⅞"	9/32"
2906G		½"	2"	1⅛"	

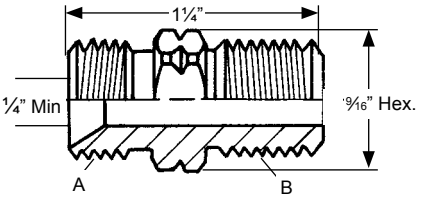


Female POL x Female NPT and Female POL

Ordering Information

Part Number	Material	A	B	C Hex	D Diameter
5760A	Brass	¼" F.NPT	1⅝"	1⅛"	13/32"
5760B		⅜" F.NPT			
5760C		½" F.NPT			7/16"
5760D		¾" F.NPT	1⅞"	1⅜"	13/32"
5760S		POL (CGA 510)	2⅛"	1⅛"	

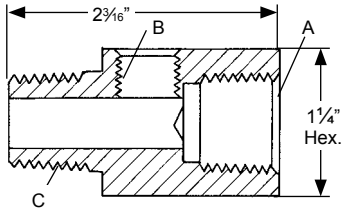
Hose Adapter
For use with fuel gases (LP-Gas, Acetylene).



Ordering Information

Part Number	Material	A	B
1300	Brass	9/16-18UNF (L.H.)	¼" M. NPT

Pressure Gauge Adapter



Ordering Information

Part Number	Material	A	B	C
1494-1	Brass	½" F. NPT	¼" F. NPT	½" M. NPT

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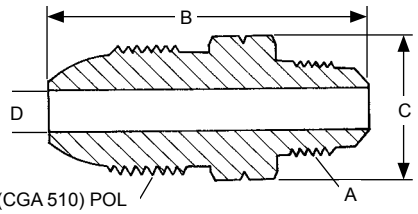
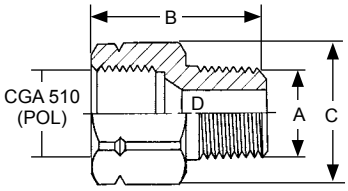


Male POL x Male NPT and SAE Flare

Ordering Information

Part Number	Material	A	B	C Hex	D Diameter
2906D	Brass	⅜" M. NPT	2 5/64"	⅞"	11/32"
2906F		⅜" SAE Flare	2 3/32"		9/32"
2906E		½" SAE Flare	2 9/32"		



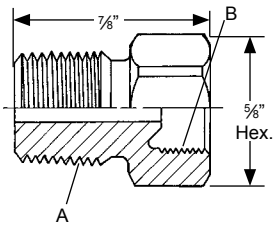
Female POL x Male NPT

Ordering Information

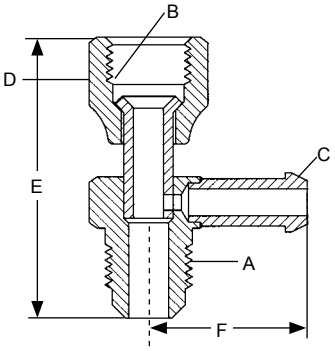
Part Number	Material	A	B	C Hex	D Diameter
5761A	Brass	¼" M.NPT	1⅝"	1⅛"	3/16"
5761B		⅜" M.NPT			13/32"
5761C		½" M.NPT			7/16"
5761D		¾" M.NPT			

Ordering Information

Part Number	Material	A	B
15774-1	Brass	¼" M. NPT	¼" Female Inverted Flare



Female Inverted Flare x Male NPT



Ordering Information

Part Number	Material	A	B	C	D	E	F
1328	Brass	⅜" SAE Male Flare	⅜" SAE Female Flare	⅜" Hose Barb	13/16"	2"	1⅛"
1331		½" SAE Male Flare	½" SAE Female Flare		1'	2⅛"	1¼"
1332		⅝" SAE Male Flare	⅝" SAE Female Flare		1⅛"	2½"	

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REGO 100 RegO Dr. Elon, NC 27244 USA www.regoproducts.com Phone (336) 449-7707

1” Rotogages® for Large Mobile and Stationary Containers A9090 Series

Rotogages® are designed to provide an accurate determination of LP-Gas or anhydrous ammonia container contents. They mount in a standard 1” NPT coupling on large mobile or stationary containers.

To operate the Rotogages®, the vent valve is opened and the dip tube rotated slowly from the container vapor space to the liquid space. The difference in appearance of the discharge indicates when the liquid level is reached. Dial readings then indicate the percentage of product in the container.

Tubes for use with A9090 Series Rotogages
Cut to length required.

Service	Part Number
Up to 48”	A9091-M24.0
Up to 72”	A9091-M36.0
Up to 96”	A9091-M48.0
Up to 120”	A9091-M60.0
Up to 144”	A9091-M72.0

LISTED

Rotogage® Assembly

A9091-18LX

Rotogage® Dials

Ordering Information

Part Number	Service	Container Size
A9091-18L	LP-Gas	All Sizes
A9091-18LX*	LP-Gas	Over 1200 U.S. gallons
A9091-18N	NH_3	All Sizes

* Dial permits higher filling level, per NFPA 58,

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1” Rotogages® for Large Mobile and Stationary Containers

For Small Mobile or Stationary Containers
A9091R and A9092R Series

LISTED

Ordering Information

Part Number		For Container Inside Diameter			
					
		Ellipsoidal Heads		Hemispherical Heads	
For Mobile or Stationary Containers	For Stationary Containers Only	Side Mounted	End Mounted	Side Mounted	End Mounted
A9091R	-	30” - 45”	30” - 75”	30” - 45”	30” - 45”
A9092R	-	46” - 61”	76” - 108”	46” - 61”	46” - 61”
A9093TS*	A9093RS	62” - 79”	109” - 147”	62” - 79”	62” - 79”
A9094TS*	A9094RS	80” - 99”	-	80” - 99”	80” - 99”
A9095TS*	A9095RS	100” - 147”	-	100” - 147”	100” - 147”

* Supported Design
NOTE: The dip tube must be cut to the required length(½” of container inside diameter minus 5¾”).

¾" Rotogages® for Small Stationary and Mobile LP-Gas Containers 2070 Series

Rotogages® are designed to provide accurate determination of LP-Gas container contents. They may be end or side mounted in a standard ¾" NPT coupling on stationary or mobile containers. To guarantee accurate measurement, they should not be used on stationary containers that exceed 60" I.D. or on mobile containers, subject to vibration, with an I.D. of more than 24".

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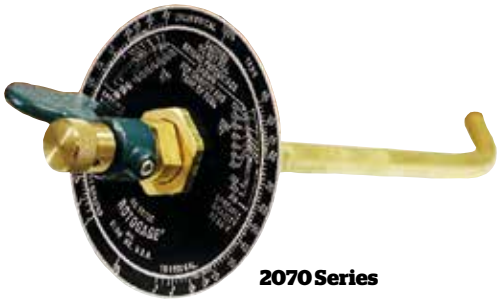

2070 Series

Ordering Information

Part Number		For Containers with Inside Diameter	Tank Connection	Valve Seat Orifice
Rotogage®	Dip Tube			
2070C0	2071-L25.7	Up to 40"	¾ M. NPT	No. 54 Drill Size
	2071-L39.7	Up to 60"		

NOTE: The dip tube must be cut to the required length (½ of container inside diameter minus ½"), when mounted on center line of tank.

Pull-Away Valves for Transfer Operations A2141 Series

Designed especially to provide pull-away protection for LP-Gas and anhydrous ammonia transfer operations including transport and delivery truck loading and unloading, engine fuel container filling and miscellaneous cylinder filling operations. When properly fastened to the inlet end of the discharge hose, the valve is designed to stop gas escape from both upstream and downstream lines in the event of a pull-away. An excessive tension pull causes the valve to automatically separate, closing two internal back pressure checks. Only a few cubic centimeters of gas escape at the instant of separation.

It is recommended that a convenient means be provided to safely remove the pressure from the line upstream of each coupling half to enable reassembly of the valve. To reassemble, simply push the male half firmly into the female half until the retaining balls slip into the retaining groove. Check for leaks after reassembly.

NOTE: It is recommended that pull-away valves be maintained and safety tested perodically to confirm that they will separate properly in the event of a pull-away. Lubrication every six months is essential to the pull-away's operation. Dry nitrogen or other inert gas is suggested as a source of pressure for pull-away tests.

If the A2141 pull-away valve is going to be stored for a period of time, A2141 Series such as in seasonal applications, it is recommended that it be sprayed with a good grade of rust-preventive machine oil, and covered to protect it from moisture.

UL LISTED

A2141A6

A2141A10

Ordering Information

Part Number	Inlet/Outlet Connections NPT F.	Disconnect Force Approx-lbs	Reconnect Force Approx-lbs	Length Of Valve	LP-Gas Liquid Flow Capacity at Various Differential Pressures (GPM)*			
					5 PSIG	10 PSIG	25 PSIG	50 PSIG
A2141A6	¾"	130	80	3⅞"	11	16	25	36
A2141A6L**								
A2141A8	1"	75	50	4⁹⁄₁₆"	21	30	47	67
A2141A8L**								
A2141A10	1¼"	160	25	5⅝"	52	75	120	170
A2141A16	2"	300	50	14⁵⁄₁₆""	250	350	550	750

* To Determine NH_3 liquid flow capacity, multiply by .90.

LP-Gas Emergency Shut-Off Valves (ESV's)

Why and how they should be used for Bobtail Filling and Transport Unloading.

General Information

The primary purpose of Emergency Shut-Off Valves in bobtail filling and transport unloading is to allow quick shut-off of liquid and vapor flow in the event there is an accidental pull-away of a truck or a hose rupture, both of which could cause a fire.

> A system using Emergency Shut-Off Valves will not prevent some spillage of liquid and vapor, but the total system should be constructed so this spillage will be kept to a minimum.

This can be accomplished either by making possible, quick action by the driver or plant personnel in closing the valves by manual remote or pneumatic remote actuation; or in case of a pull-away, by automatic closing of the liquid valve by means of a cable connected to the liquid hose.

By minimizing the presence of liquid and vapor, the chance of a fire or explosion will be reduced. In case of a fire, thermal links at the valves or at other appropriate locations could close the valves and prevent further release of liquid and vapor.

The valve closing systems will be discussed later in this section. The user should decide which system is most appropriate, depending on the piping configuration and the general layout of the filling/unloading area.

ESV Application for Bobtail Loading and Transport Unloading

A very important function of the typical LP-Gas storage plant is to transfer LP-Gas into bobtails for delivery to customers. How efficiently and rapidly these bobtails can be filled often determines the number of customers that can be served each day, as well as how many bobtails are required to satisfactorily serve all customers. Therefore, the selection of an ESV for the bobtail liquid loading line should be done with care so as to maximize efficiency in filling and have year-round dependability.

The RegO 2" (A6016) and 3" (A6024) liquid ESVs have a full open port so that the restrictions of flow would be no more than you would expect through an equivalent length of schedule 80 pipe. To improve the overall efficiency of the system, the valves were designed as an operating valve so it could replace an existing globe or angle valve already installed at the end of the fixed piping. Thus, installing a RegO ESV could actually result in a more efficient pumping operation than the existing system.

Equally important in the consideration of an ESV is its performance in an emergency, especially bobtail pull-aways. Therefore, when selecting the proper ESV for bobtail filling, also consider the dependability of performance, and simplicity of operation and maintenance.

The RegO ESVs clearly indicate to the operator its open or closed position. It allows full manual control by the operator and provides means for remote operation in emergencies from either in front of the valve or in the rear.

No complicated systems of pulleys and cables are necessary since direct, straight pulls will close the valve. Means are even provided to secure a length of cable to the transfer hose so as to produce an automatic closing in the event the driver pulls away without disconnecting the hose.

NFPA Provisions (2014)

> The pertinent provisions of NFPA Pamphlet 58, as they apply to Emergency Shut-Off Valves and how they are to be installed are below (for complete information refer to NFPA 58):.

Section 5.12.2.3 requires that emergency shutoff valves be approved and incorporate all the following means of closing: (1) Automatic shutoff through thermal (fire) actuation, (2) Manual shutoff from a remote location, (3) Manual shutoff at the installed location.

Section 5.12.2.4 states where fusible elements are used; the melting point cannot exceed 250°F (121°C).

This provision sets for the basic criteria for the emergency shutoff valve, a key valve in the protection of many liquid transfer operations. Actuating means for remote control may be electrical, mechanical or pneumatic.

Many systems use a pneumatic system where the tubing itself acts as a fusible element releasing the pressure holding the valve open. With respect to the feature of manual shutoff at the installed location, it is recommended that this valve be operated occasionally. Also, the system should be tested periodically to determine that it will function properly.

Section 6.12.1 covers new and existing installations, stationary container storage systems with an aggregate water capacity of more than 4000 gal (15.1m³) utilizing a liquid transfer line that is 1½ in. (39 mm) or larger and pressure equalizing lines 1¼ in (32 mm) or larger, must be equipped with emergency shutoff valves.

Section 6.12.2 describes where an emergency shutoff valve must be installed in the transfer lines of the fixed piping transfer system within 20 ft (6m) of lineal pipe from the nearest end of the hose or swivel-type piping connections.

Section 6.12.5 covers installations where there are two or more liquid or vapor lines with hoses or swivel-type piping connected of the sizes designated in 6.12.1, an emergency shutoff valve or a backflow check valve, where allowed, must be installed in each leg of the piping.

Section 6.12.6 states the requirements for thermal protection; emergency shutoff valves must be installed so that the temperature-sensitive element in the valve, or a supplemental temperature-sensitive element that operates at a maximum temperature or 250°F (121°C) that is connected to actuate the valve. It also states maximum distance this can be which is not more than 5ft (1.5m) from the nearest end of the hose or swivel-type piping connected to the line in which the valve is installed.

Section 6.12.7 requires that the temperature-sensitive elements of emergency shutoff valves cannot be painted, or can they have any ornamental finishes applied after manufacture.

Section 6.12.8 emergency shutoff valves or backflow check valves must be installed in the fixed piping in manner to protect them so that any breaks resulting from a pull will occur on the hose or swivel-type piping side of the connection; allowing the valves and piping on the plant side of the connection to remain intact.

Section 6.12.9 emergency shutoff valves that are required to be installed in accordance with 6.12.2, that a means must be incorporated to actuate the emergency shutoff valves in the event of a break of the fixed piping resulting from pulling of the hose.

Section 6.12.10 states that all emergency shutoff valves required by the code be annually tested for the functions required in 5.12.2.3 (2) Manual shutoff from a remote location, (3) Manual shutoff at the installed location; the results of the test are documented.

Section 6.12.12 requires that new and existing emergency shutoff valves shall comply with 6.12.12.1 through 6.12.12.3 below.

Section 6.12.12.1 requires that the emergency shutoff valve shall have at least one clearly identified and accessible manually operated remote shutoff device.

Section 6.12.12.2 states that the remote shutoff device for an emergency shutoff valve must be located not less than 25ft (7.6m) or more than 100 ft. (30 m) in the path away from the emergency shutoff valve.

Section 6.12.12.3 describes the requirements when an emergency shutoff valve is used in place of an internal valve in compliance with 5.7.4.2(D) (2) the remote shutoff device have to be installed in accordance with 6.11.4 and 6.11.5.

> The provisions above and others covered in NFPA 58 can assist in determining how bobtail filling and transport unloading stations are to be configured. The diagrams shown here offer general information, they should not be used as an installation guide.

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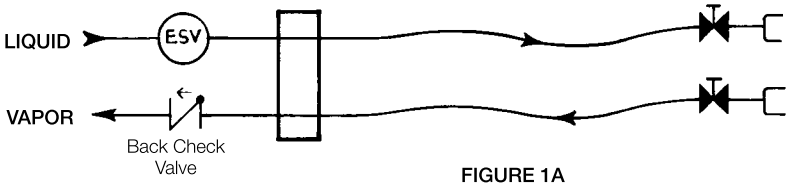

FIGURE 1A
Bobtail Filling Only

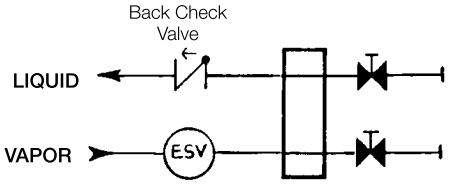

FIGURE 1B
Transport Unloading Only

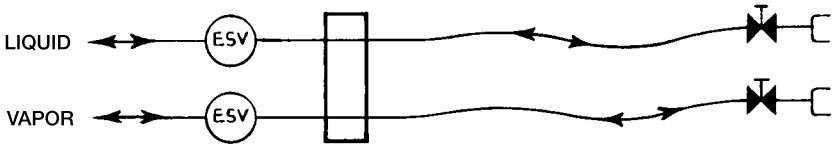

FIGURE 1C
Combined Bobtail Filling
and Transport Unloading

Installation Compliance with NFPA Requirements

A valve that is approved as an ESV may be installed in the fixed piping up to a distance of 20 feet (along the pipe) from the point where the transfer hose is attached to the fixed piping.

However, when the ESV is located more than five feet from the end of the fixed piping, an additional fusible element must be installed within five feet of the point of attachment of the hose, and be connected to the ESV valve in such a manner that it will cause the ESV to close in the event of a fire.

The ideal location of the ESV is as close to the end of the fixed piping as possible. This position eliminates the need for an additional fusible element and cable, and it may also permit the elimination of a restrictive valve already installed at the end of the fixed piping.

To this point, our comments have been principally concerned with ESV protection of the liquid line at bulk plants because this is the area of greatest potential danger in the event of a pull-away or hose rupture.

However, regulations also require an ESV in the vapor transfer line when the vapor hose is 1¼" or larger. A helpful rule of thumb in determining whether or not an ESV control valve is required in your vapor system is this: If the vapor flow is out of the storage tank, an ESV is required. ESV systems are designed to protect the storage tank contents against uncontrolled release.

Therefore, a bobtail loading system could use a 1¼" or larger back pressure check valve in the vapor system since the flow of vapor is always from the bobtail being filled back to the storage tank. To improve transfer rates, the use of the RegO 6586D back check valve at this location would provide protection at minimum pressure drop.

If the bobtail vapor line is also used when unloading transports, then the RegO A6010 ESV should be used. The A6010 provides thermal protection, manual closing and a remote emergency closing system similar to the RegO 2" liquid ESV, A6016.

Remote Control Systems

Usually in transfer loading operations, the valve handles and cables are located in close proximity to the area of greatest potential danger during an emergency. Therefore, each bobtail filling system or transport unloading system should have installed in it at least one readily accessible, alternate remote operating device.

A6010, A6016, A6024 ESVs

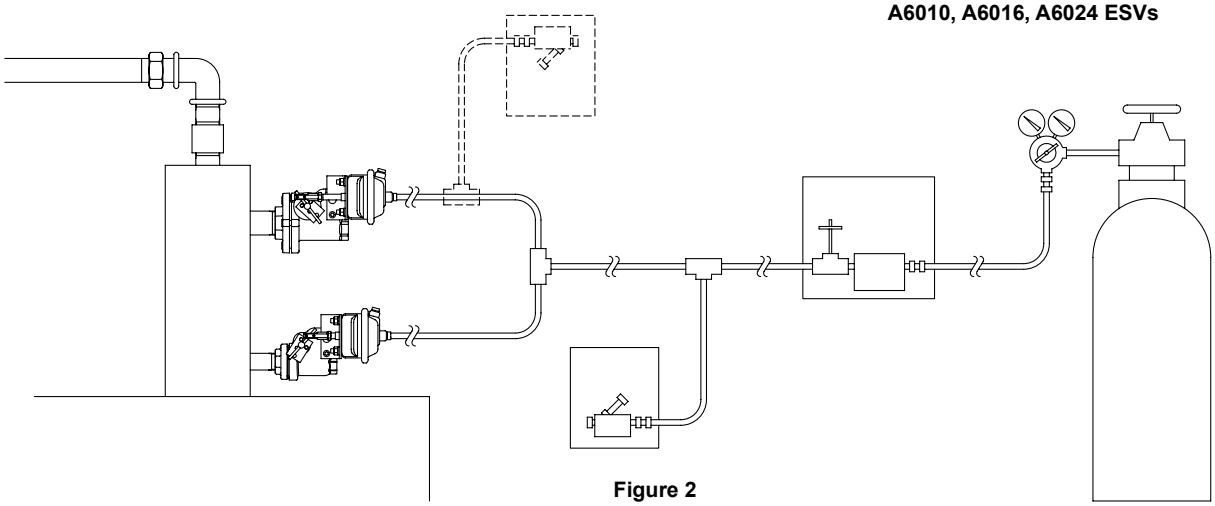

Figure 2
RegO ESV's with Remote Pneumatic and Transfer Hose Cable Release Systems Typical Installation

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2" & 3" Swing-Check ESVs for Bulk Plants
A6016 Series and A6024 Series

Designed for installation in liquid transfer lines at LP-Gas or Anhydrous Ammonia bulk plants to provide for quick shut-off of liquid or vapor flow in the event of an accidental pull-away, line break, or hose rupture.


A6016


A6024

Ordering Information

Part Number	Seat	Inlet and Outlet Connections	Liquid Flow Capacity at 10 PSIG Drop (GPM)	Accessories		
				Remote Close Pneumatic	Remote Open/Close Pneumatic	Remote Open/Close Rotary
VA6016	Viton	2" F.NPT	711 (LP-Gas) 640 (NH_3)	6016--60D	6016-60C	6016RA
A6016	Buna-N	2" F.NPT				
VA6024	Viton	3" F.NPT	1325 (LP-Gas) 1173 (NH_3)			
A6024	Buna-N	3" F.NPT				

1¼" Swing-Check ESV for Bulk Plants
VA6010 and A6010

Designed for installation in liquid or vapor transfer lines at LP-Gas or Anhydrous Ammonia bulk plants to provide for quick shut-off of liquid or vapor flow in the event of an accidental pull-away, line break, or hose rupture.


6016RA


A6010


6016-60D


6016-60C

Ordering Information

Part Number	Seat	Inlet and Outlet Connections	Accessories			Liquid Flow Capacity @ 10 PSIG Pressure Drop (GPM)
			Remote Pneumatic Close	Remote Pneumatic Open/Close	Rotary Actuator	
VA6010	Viton	1¼" F. NPT	6016-60D	6016-60C	6016RA	259 (LP-Gas) 233 (NH_3)
A6010	Buna-N	1¼" F. NPT				

Flanged Swing-Check ESVs for Bulk Plants
FA6010, FA6016 and FA6024

Designed for installation in liquid transfer lines at LP-Gas or Anhydrous Ammonia bulk plants to provide for quick shut-off of liquid or vapor flow in the event of an accidental pull-away, line break, or hose rupture.


FA6010


FA6016


FA6024

Ordering Information

Part Number	Seat	Inlet and Outlet Connections	Liquid Flow Capacity at 10 PSIG Drop (GPM)	Accessories		
				Remote Close Pneumatic	Remote Open/ Close Pneumatic	Remote Open/ Close Rotary
FVA6010	Viton	1¼" - 300# ANSI RF Flange	233 (NH_3) 259 (LP-Gas)	FA6016-60D	*	6016RA
FA6010	Buna-N	1¼" - 300# ANSI RF Flange				
FVA6016	Viton	2" - 300# ANSI RF Flange	640 (NH_3) 711 (LP-Gas)		6016-60C	
FA6016	Buna-N	2" - 300# ANSI RF Flange				
FVA6024	Viton	3" - 300# ANSI RF Flange	1173 (NH_3) 1325 (LP-Gas)			
FA6024	Buna-N	3" - 300# ANSI RF Flange				

* Not Available

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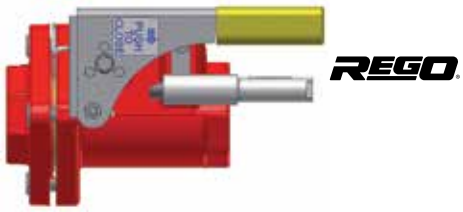
ESV Pneumatic Controls

RegO Emergency Shut-Off Valves modified for remote pneumatic shutdown operation retain all the operating features of the standard valves.

Once equipped with pneumatic cylinders and then pressurized, the pneumatic cylinder piston rod disengages from a striker plate, allowing the ESV to be manually opened and the striker plate to act as a latch and hold the valve open. Release of the control system pressure for any reason closes the ESV for fail-safe operation.



A6016 with 6016-60D Remote Close Actuator

6016PN-50 Pneumatic Remote Control Kit

Control kit with components for connecting and charging the pneumatic controls from a source of compressed gas (air or nitrogen) to a RegO liquid or vapor ESV. Includes charging valves with low pressure indicator, operating valves, 100 feet of ¼" plastic tubing and tube fittings.

Ordering Information

Part Number	Description
6016-60D	Cylinder assembly kit to convert 6016 ESVs to pneumatic shutdown.
6016PN-50	Pneumatic remote shutdown system kit, complete with 100' of tubing, fittings, 1 charging valve assembly and 1 remote shutdown valve assembly
6016PN-80	Bypass kit for pneumatic actuators.
7605A-BT	100' roll of ¼" pneumatic tubing.
7605AP-16	¼" tubing tee, with nuts.
7605AP-15	⅛" NPT x ¼" tubing, straight connector.
7606RM	Remote Close Cable Kit

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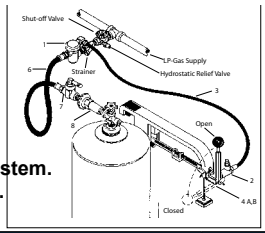
Hydraulic Automatic Cylinder Filling System 7194MD and 7194HD

Designed to provide accurate, economical filling of LP-Gas, DOT and fork lift cylinders by weight. Filling stops automatically as the total weight of the cylinder reaches the amount pre-set on the scale. One individual can efficiently handle up to four cylinder filling operations simultaneously to maximize profits, increase efficiency and allow servicing of more customers.



Hydraulic self-contained system.
No external power required.

Ordering Information

Hydraulic System Components

Key No.	Description	Size	Part No.
Assembly for Fairbanks-Morse. Includes items 1 thru 8 below.			7194MD
Assembly for Howe. Includes items 1 thru 8			7194HD
1	Propane Control Valve	½" NPT Female, with ⅛" NPT Female Hydraulic Connection	7177
2	Master Cylinder, with Actuator Lever	⅛" NPT Hydraulic Connection	7188
3	Hydraulic Hose Assembly	3/16" I.D. with ⅛" NPT Male Ends, 43½" Overall Length	7194-1
1-3	Valve, Cylinder and Hose Assembly for Fairbanks-Morse Scales	-	7188MS
1-3	Valve, Cylinder and Hose Assembly for Howe Scales	-	7188HS
4A	Bracket Kit for Fairbanks Morse Scales, Complete with Screws, Washers, Nuts and Instructions	-	7194M-3A
4B	Bracket Kit for Howe Scales, Complete with Screws, Washers, Nuts and Instructions	-	7194H-3
5	Can of Hydraulic Fluid, Complete with Filling Spout	1½ ounce	7188-21
6	Propane Filling Hose Assembly	½" I.D., with ½" NPT Male Ends. 50½" Overall Length	7193D
7	Quick-acting Shut Off Valve	½" NPT Inlet X ¼" NPT Outlet	7901TB
8*	Soft Nose Cylinder Connector	¼" NPT Male X POL Male	7193D-10L

3" Heavy Duty Swing Check with Flow Indicator A7624

This back check valve is designed to provide required back flow protection for the unloading riser in the bulk plant's transfer area. It is designed specifically for pipeline installation and is suitable for LP-Gas and anhydrous ammonia service. Product flow moves the swing check to the open position, when flow stops the spring loaded swing check closes.

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A7624

Ordering Information

Part Number	For Use With:	Inlet & Outlet Connections	Liquid Capacity at 10 PSIG Drop GPM
A7624	LPG & NH3	3" F.NPT	1325-GPM(LPG) 1173-GPM(NH3)

2" Heavy Duty Swing Check with Flow Indicator A7616

This back check valve is designed to provide required back flow protection for the unloading riser in the bulk plant's transfer area. It is designed specifically for pipeline installation and is suitable for LP-Gas and anhydrous ammonia service. Product flow moves the swing check to the open position, when flow stops the spring loaded swing check closes.

UL LISTED

A7616

Ordering Information

Part Number	For Use With:	Inlet & Outlet Connections	Liquid Capacity at 10 PSIG Drop GPM
A7616	LPG & NH3	2" F.NPT	711-GPM(LPG) 640-GPM(NH3)

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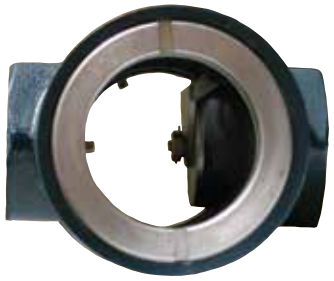
Sight Flow Indicators for Bulk Plants A7794 and A7796

Designed to promote maximum pump efficiency, these indicators enable bulk plant operators to visually inspect liquid flow conditions. With glass on both sides of the indicator, flow can be observed from either side, even under some poor light conditions. The integral swing check also serves as a back-check valve to prevent reverse flow and product loss if the hose fails in a loading operation.

By installing an indicator on the upstream side of the plant pump, suction conditions can be observed and the pump speed adjusted to obtain the maximum possible flow rate without cavitation. Additionally, if an indicator is installed in the piping at the loading rack, just ahead of the loading hose, the operator can maintain a constant check on pump conditions.

Both installations are designed to allow for observation to provide maximum pump efficiency and ensure safe plant pump operation.

In compressor operations a sight flow indicator installed in the liquid line will give a visual indication when the tank car or transport is emptied. Compressor operation can then be immediately reversed to start recovery of the vapor.



A7794

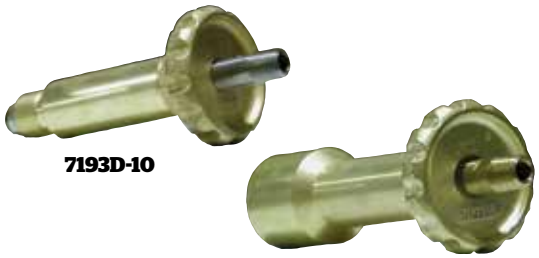
Ordering Information

Part Number	A Inlet/Outlet Connections	B Length
A7794	2" F. NPT	5¾"
A7796	3" F. NPT	7⅞"

Hose End Adapters for DOT Cylinder Filling 7193D-10 and 7193U-10

Designed to provide quick and easy filling of DOT cylinders with POL or Type I connections. This adapter may be used with hydraulic and electric automatic systems or with manual systems in conjunction with a RegO 7901TB Quick Acting Shut-Off Valve.

These filling connectors have an extended connection on the handwheel, which makes it possible to connect the loading hose to valves on cylinders with fixed collars. The handwheel is well outside the collar for easy operation.



7193D-10

7193U-10

Ordering Information

Part Number	Applications	Inlet Connection	Outlet Connection	Materials
7193D-10	Filling of DOT Cylinders with POL Connections	¼" M. NPT	M. POL (CGA 510)	Brass & Stainless Steel
7193U-10	Filling of DOT Cylinders with Type I Connections		Type 1 Connection (1 5/16" F. ACME)	Brass

Connector for DOT Cylinder Filling Adapter 7193T-10

The 7193T-10 Connector is designed for use on the 7193D-10 Filling Adapters. Connector allows quick connection to the Type I 1 5/16" M. ACME threads for operators that fill both POL and Type I valves.

7193T-10

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Ordering Information

Part Number	Applications	Inlet Connection	Outlet Connection	Materials
7193T-10	Converts 7193D-10 Adapters from POL to a Type 1 Connection	F. POL CGA 510	Type 1 Connection (1 5/16" F. ACME)	Brass

New Patented Low Emission Hose End Safety Adapter 7193D-10L

Low Emission Adapter (1.18 cc at disconnect) designed to provide quick and easy filling of DOT cylinders with POL connections with minimal release of product on disconnect. This adapter may be used with dispensing systems in conjunction with RegO 7901T Series Quick Acting Shut-Off Valve. Balanced, light weight design for filling into 20 # - 200 # cylinders.

7193D-10L Series

Ordering Information

Part Number	Application	Inlet Connection	Outlet Connection	Materials
7193D-10L	Filling of DOT cylinders with POL Connections	¼" M. NPT	M. POL (CGA 510)	Brass & Stainless Steel

New Patented Low Emission Hose End Safety Adapter 7193U-10L

Low Emission Adapter (1.18 cc at disconnect) designed to provide quick and easy filling of DOT cylinders with Type 1 connections with minimal release of product on disconnect. This adapter may be used for dispensing systems in conjunction with RegO 7901T Series Quick Acting Shut-Off Valve. Balanced, light weight design for filling into 20 # - 200 # Cylinders

7193U-10L Series

Ordering Information

Part Number	Application	Inlet Connection	Outlet Connection	Materials
7193U-10L	Filling of DOT cylinders with Type 1 Connections	¼" M. NPT	Type 1 Connection (1 5/16) F. ACME	Brass

Hose End Adapter for Lift Truck Cylinder Filling
7193L-10A

The 7193L-10A is designed to provide quick and easy attachment of the filling hose to DOT cylinders equipped with RegO 7141M check connectors.

The 1¼" ACME outlet threads facilitate rapid make-up. When connected, back-checks in the adapter and check connector automatically open. Low pressure drop between the two ensures high filling rates. An integral check closes when disconnected, eliminating the need to close any valves manually to disconnect the charging hose.

Because a leak-tight seal is formed before the integral check opens or closes, product loss is kept to an absolute minimum when connecting or disconnecting the loading hose.

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7193L-10A

Ordering Information

Part Number	Application	Inlet Connection	Outlet Connection	Body Material	Accessories
					Adapter
7193L-10A	Filling of Fork Lift Cylinders*	¼" M. NPT	1¼" F. ACME	Brass	**5760A**

*The 7193L-10A is intended to be permanently attached to the filling hose.
A 5760A adapter enables the 7193L-10A to be attached to the POL connection on the 7193D-10 at regular cylinder filling stations to allow for occasional filling of fork lift cylinders.

Lever Operated Hose End Adapter for Fork Lift Cylinder Filling
7193K-10B

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Designed to drastically reduce labor and time when continuously filling large numbers of lift truck cylinders equipped with RegO 7141M check connectors.

Rapid make-up is accomplished by simply slipping the adapter yoke behind the hex wrenching section of the 7141M connector and depressing the lever. When the cylinder is filled, the adapter is easily disengaged by releasing the operating lever. When connected, back checks in the adapter and connector automatically open. An integral check closes when disconnected, eliminating the need to close any valves manually on the filling manifold to disconnect the charging hose. The shut-off valve on the container must be closed after filling.

Because a leak-tight seal is formed before the checks close, product loss is kept to an absolute minimum when connecting or disconnecting the loading hose.

The 7193K-10B is intended to be permanently attached to the filling hose.

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7193K-10B

Ordering Information

Part Number	Application	Inlet Connection	Outlet Connection	Materials
7193K-10B	Lever Operated for Quick Filling of Fork Lift Cylinders	¼" F. NPT	Quick Disconnect Yoke*	Brass and Steel

* For use with RegO 7141M check connector.

Combination Valve for Bulk Storage Containers
A2805C

Designed for installation on bulk storage containers, this valve combines a pressure gauge mounting and provision for a fixed tube liquid level gauge.

The shut-off valve prevents the pressure gauge from being subjected to constant pressure, thereby prolonging its life and accuracy. The valve may be closed, and the vent valve opened to vent pressure from the gauge to permit replacement.

For fixed liquid level gauging, the valve can be mounted at the maximum permitted filling level. When equipped with a dip tube threaded ⅛" M.NPT, it can be installed at any convenient level.

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A2805C

Ordering Information

Part Number	Container Connection	Service Connection	Liquid Level Vent
A2805C	¾" M. NPT	¼" F. NPT for Gauge Mounting	Tee Handle

*Has ⅛" F. NPT opening for installing separate dip tube.

Gritrol Fuel Line Filters
12802

Designed especially for use in liquid motor fuel lines to trap foreign material which otherwise may damage precision components in the LP-Gas carburetion system. These filters incorporate an integral sintered metal filter element in a straight through design.

12802

Ordering Information

Part Number	Inlet Connection	Outlet Connection
12802	¼" F. NPT	¼" M. NPT

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Vent Valves 3165C, 3165D, 3165S and TSS3169

Especially designed to bleed off liquid or vapor pressures trapped in transfer lines. When installed in the downstream boss of RegO globe and angle valves used at the end of a liquid transfer hose, the bleeder valve allows for the controlled venting of the product and indicates to the operator that the valves are closed and he can disconnect the coupling. They may also be used as a fixed liquid level gauge where the dip tube is part of the container.

The 3165C, 3165S and TSS3169 incorporates a No 54 drill size orifice The 3165D incorporates a No 72 drill size orifice.

An optional instruction plate with "Stop Filling When Liquid Appears" may be ordered for use with these valves.

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3165C

3165S

TSS3169

Ordering Information

Part Number	Service	Connection	Actuation	Accessories
				Warning Plate Kit
3165C	LP-Gas Only	¼" M. NPT	Ribbed	2550-40P
3165D				
3165S			Slotted	
TSS3169	LP-Gas & NH_3		Tee Handle	

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Fixed Liquid Level Gauges 3165 Series and TA3169F

Especially designed to provide a visible warning when containers are filled to the maximum permitted filling level. At the start of the filling operation, with the vent stem opened, the valve discharges vapor. When the maximum permitted filling level is reached, the valve discharges liquid. The 3165CF*, 3165CF12.0, 3165SF12.0 and TA3169F12.0 incorporate a No 54 drill orifice; the 3165DF* and 3165DF12.0 incorporate a No 72 drill orifice. They all are normally furnished with a 12" 3/16" OD dip tube.

An optional instruction plate with "Stop Filling When Liquid Appears" may be ordered for use with these valves.

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3165CF12.0
3165DF12.0

TA3169F12.0

Ordering Information

Part Number	Service	Connection	Actuation	Dip Tube Length	Accessories
					Warning Plate Kit
3165CF*	LP-Gas Only	¼" M. NPT	Ribbed	*	2550-40P
3165DF*				12"	
3165CF12.0					
3165DF12.0					
3165SF12.0			Slotted		
TA3169F12.0	LP-Gas & NH_3		Tee Handle		

Spanner Wrench for ACME Connectors 3195-50

This aluminum spanner wrench is especially designed for use with 2¼" and 3¼" ACME couplings, adapters and caps.

3195-50

Ordering Information

Part Number	For Use With ACME Connector Size
3195-50	2¼" & 3¼"

Pressure Gauges

Especially designed in a variety of sizes and construction for the LP-Gas and anhydrous ammonia industry.

612-PG

5575

Ordering Information

Part Number	Service	Case Material	Maximum Pressure	Inlet Connection M.NPT	Case Size	Increment Divisions
2434A-2*	LP-Gas Only	Steel	35" w.c. and 20 oz. (Dual)	¼"	2½"	1" w.c. and 1 oz.
2434-2**						
3226A-3			30 PSIG		2"	½ PSI
2411		Brass				
5575			60 PSIG			1 PSI
5547		Steel				
5576		Brass	100 PSIG			2 PSI
1286		Steel				
948		Brass	300 PSIG		2"	5 PSI
948B		Steel				
A8060	NH_3 and LP-Gas		60 PSIG		2½"	5 lb.
A8150			150 PSIG			
A8400			400 PSIG			
612-PG	LP-Gas Only		0-300 PSI	⅛"	1½"	30 PSI
612-G2					2"	5 PSI

* ¼" Hose Connection
** ⅛" M. NPT Connection

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Needle Valves 1224, 1316 and 1318

These valves are high quality, “true” throttling valves. Unlike most so-called needle valves, both the body seat and stem are tapered to provide fine, precise control over a wide range of adjustment without stem galling.

The 1224 may be used as a small, inexpensive shut-off valve between a pressure gauge and bulk storage container to allow for convenient gauge replacement.

The 1316 and 1318 provide taper pipe thread by left hand hose connection threads and are useful in a wide range of torch and fuel burner applications where an accurate throttling action is required.

UL LISTED

1224

Ordering Information

Part Number	A. Inlet Connection	B. Outlet Connection	C. Height	D. Length
1224WA	¼” M. NPT	¼” M. NPT	1 9/16”	1¾”
1316WA	9/16” - 18 L.H.	⅛” M. NPT		
1318WA		¼” M. NPT		

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Cross Reference by Part Number

Cross Reference by Part Number

L-102 Catalog

LP-Gas & Anhydrous Ammonia Equipment

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