RR 407 Pressure Relief Valves
Owner's Manual
GA71000 to GA75130

Reclosing pressure valve that safely and reliably relieves excess pressure that would otherwise create a hazardous condition in a tank car. Approved by the Association of American Railroads.

Patent Number 9,121,523

12/6/2019

Table of Contents

Technical Data 3

Exploded View of Product (Teflon Lined and Coated 75 PSIG) 4

Exploded View of Product (Teflon Lined and Coated 165 PSIG) 5

Exploded View of Product (165 PSIG Unlined) 6

Safety 7

- General Safety Information 7
- Product Storage 7
- Product Handling 7
- Disposal Requirements 7

Installation Instructions 8

Operation Instructions 9

Maintenance Instructions 9

Test Instructions 13

Troubleshooting & Repair Guide 14

Replacement Parts 15

Warranty 15

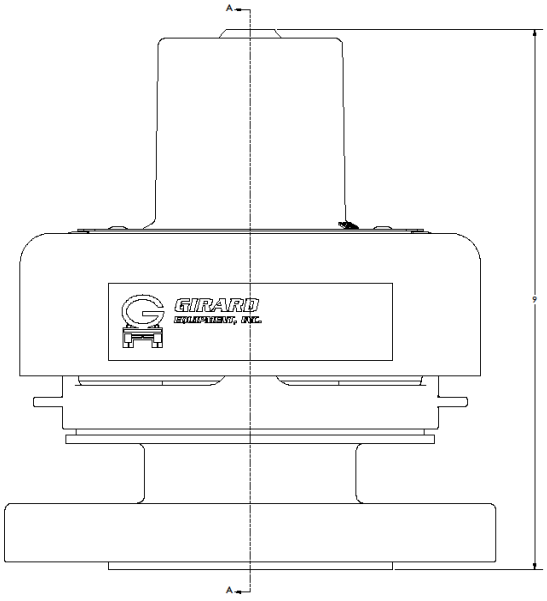
Contact Information 15

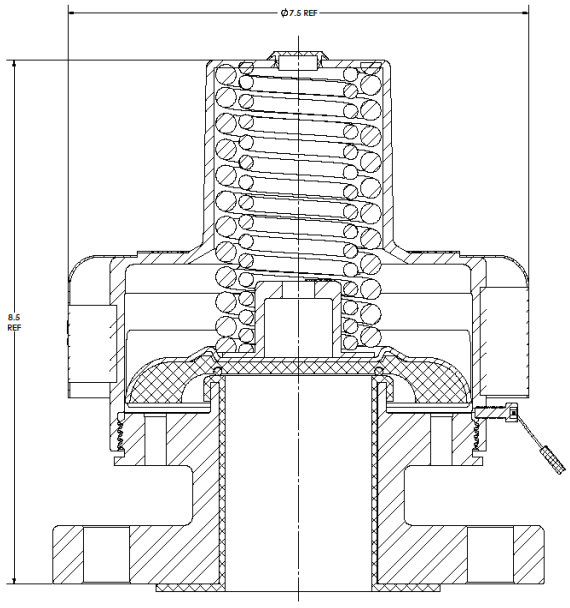
Appendix 1 16

Technical Data

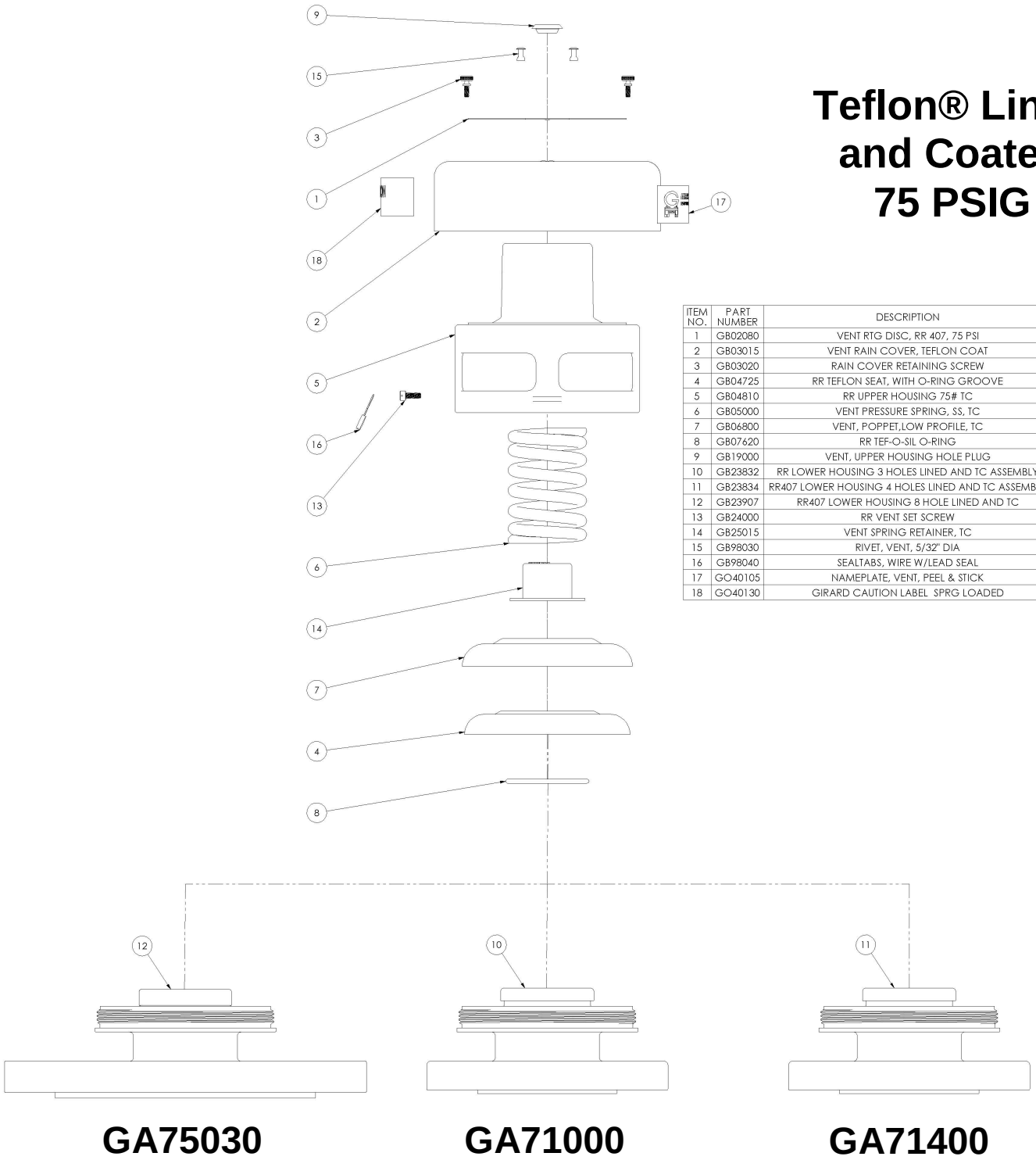
1) AAR Approval #E172101, see Appendix 1
2) Overall Height : 9”
3) Set Pressure : 75 ± 3 PSIG 165 ± 5 PSIG
4) Flow Capacity : 8586 SCFM at 85 PSIG 13355 SCFM at 182 PSIG
5) External spring design.
6) All components constructed from corrosion resistant 316 stainless steel (Hastelloy® available)
7) Mounts to AAR standard 4 hole 6¼” bolt circle, 3 hole 5½” bolt circle, or 8 hole 10¼” bolt circle as displayed in Appendix E of the AAR M-1002 manual.
8) Raised face designed with serrations in accordance with ASME B16.5 to ensure proper gasket seal for non-Teflon® lined models (flat and tongue and groove available)
9) Tef-O-Sil (Teflon® encapsulated O-Ring) seals are compatible with all ladings for packing groups 1 & 2, up to 200°F.
10) Constructed from castings hand poured in the USA.

    Note: Teflon® liner in housing is non-removable.





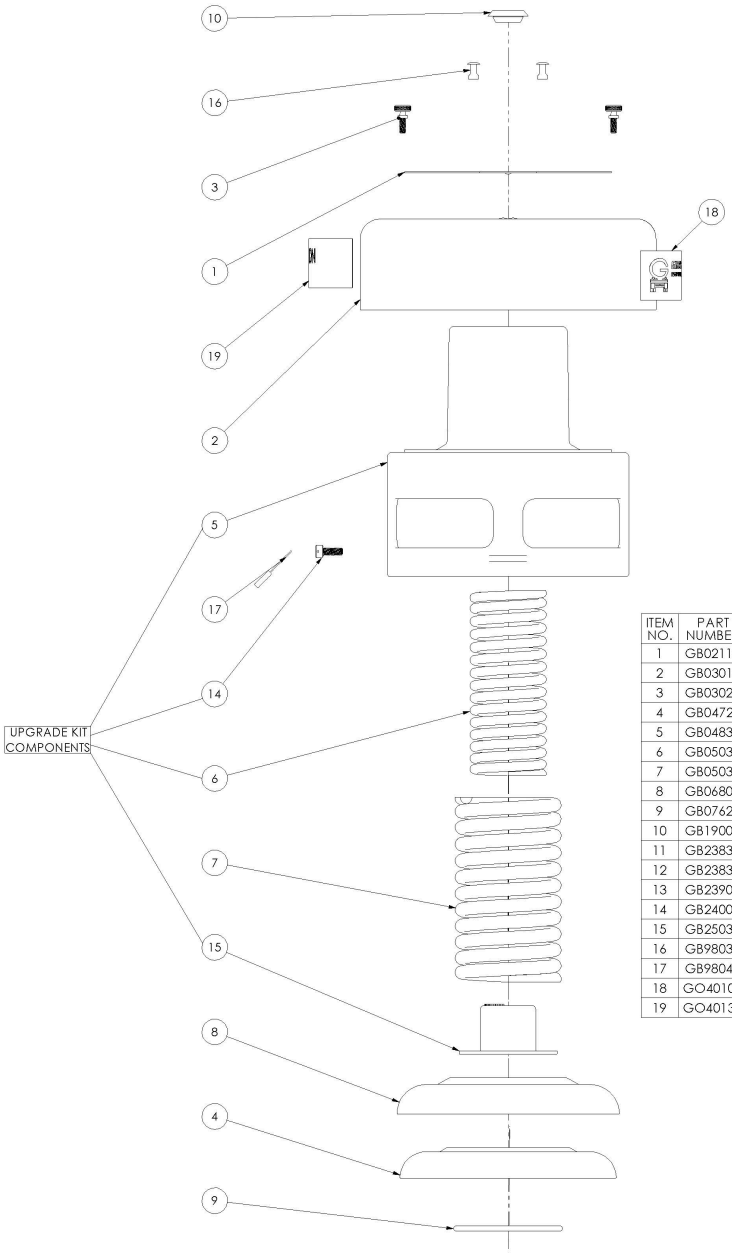
Exploded View of Product



Teflon® Lined and Coated 75 PSIG

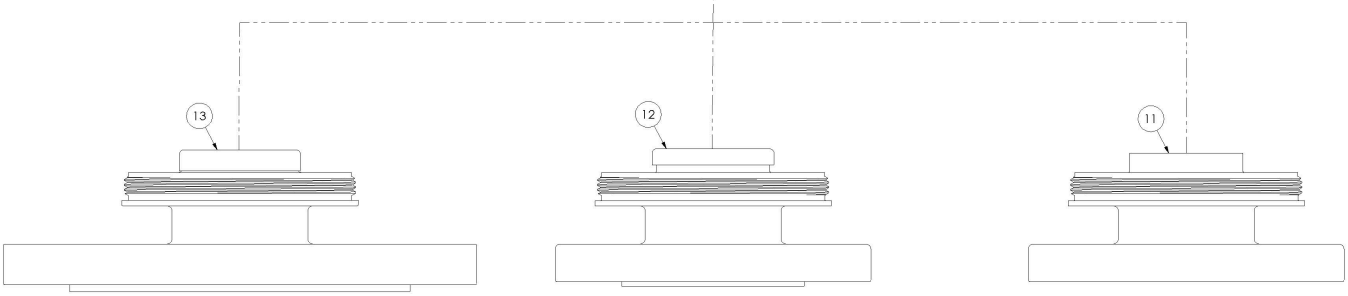
ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	GB02080	VENT RTG DISC, RR 407, 75 PSI	1
2	GB03015	VENT RAIN COVER, TEFLON COAT	1
3	GB03020	RAIN COVER RETAINING SCREW	2
4	GB04725	RR TEFLON SEAT, WITH O-RING GROOVE	1
5	GB04810	RR UPPER HOUSING 75# TC	1
6	GB05000	VENT PRESSURE SPRING, SS, TC	1
7	GB06800	VENT, POPPET,LOW PROFILE, TC	1
8	GB07620	RR TEF-O-SIL O-RING	1
9	GB19000	VENT, UPPER HOUSING HOLE PLUG	1
10	GB23832	RR LOWER HOUSING 3 HOLES LINED AND TC ASSEMBLY	1
11	GB23834	RR407 LOWER HOUSING 4 HOLES LINED AND TC ASSEMBLY	1
12	GB23907	RR407 LOWER HOUSING 8 HOLE LINED AND TC	1
13	GB24000	RR VENT SET SCREW	1
14	GB25015	VENT SPRING RETAINER, TC	1
15	GB98030	RIVET, VENT, 5/32" DIA	4
16	GB98040	SEALTABS, WIRE W/LEAD SEAL	1
17	GO40105	NAMEPLATE, VENT, PEEL & STICK	1
18	GO40130	GIRARD CAUTION LABEL SPRG LOADED	1

Exploded View of Product



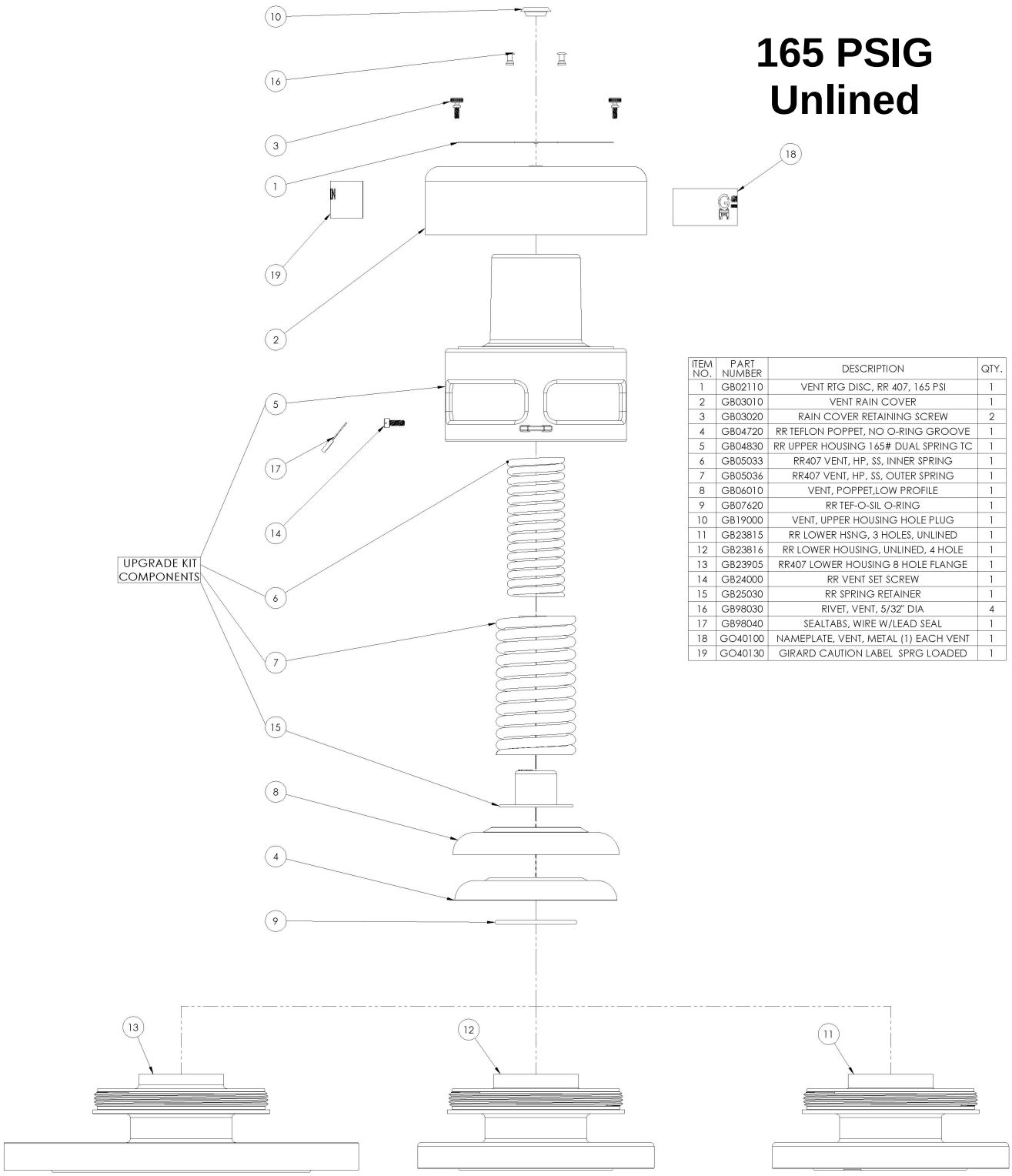
Teflon® Lined and Coated 165 PSIG

ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	GB02110	VENT RTG DISC, RR 407, 165 PSI	1
2	GB03015	VENT RAIN COVER, TEFLON COAT	1
3	GB03020	RAIN COVER RETAINING SCREW	2
4	GB04725	RR TEFLON SEAT, WITH O-RING GROOVE	1
5	GB04832	RR UPPER HOUSING 165# DUAL SPRING TC	1
6	GB05034	RR407 VENT, HP, SS, INNER SPRING, TC	1
7	GB05037	RR407 VENT, HP, SS, OUTER SPRING, TC	1
8	GB06800	VENT, POPPET,LOW PROFILE, TC	1
9	GB07620	RR TEF-O-SIL O-RING	1
10	GB19000	VENT, UPPER HOUSING HOLE PLUG	1
11	GB23832	RR LOWER HOUSING, 3 HOLES, LINED, TC	1
12	GB23834	RR407 LOWER HOUSING 4 HOLES LINED AND TC ASSEMBLY	1
13	GB23907	RR407 LOWER HOUSING 8 HOLE LINED AND TC	1
14	GB24000	RR VENT SET SCREW	1
15	GB25032	RR SPRING RETAINER TC	1
16	GB98030	RIVET, VENT, 5/32" DIA	4
17	GB98040	SEALTABS, WIRE W/LEAD SEAL	1
18	GO40105	NAMEPLATE, VENT, PEEL & STICK	1
19	GO40130	GIRARD CAUTION LABEL SPRG LOADED	1



GA75130 **GA74000** **GA74300**

Exploded View of Product



ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	GB02110	VENT RTG DISC, RR 407, 165 PSI	1
2	GB03010	VENT RAIN COVER	1
3	GB03020	RAIN COVER RETAINING SCREW	2
4	GB04720	RR TEFLON POPPET, NO O-RING GROOVE	1
5	GB04830	RR UPPER HOUSING 165# DUAL SPRING TC	1
6	GB05033	RR407 VENT, HP, SS, INNER SPRING	1
7	GB05036	RR407 VENT, HP, SS, OUTER SPRING	1
8	GB06010	VENT, POPPET,LOW PROFILE	1
9	GB07620	RR TEF-O-SIL O-RING	1
10	GB19000	VENT, UPPER HOUSING HOLE PLUG	1
11	GB23815	RR LOWER HSNG, 3 HOLES, UNLINED	1
12	GB23816	RR LOWER HOUSING, UNLINED, 4 HOLE	1
13	GB23905	RR407 LOWER HOUSING 8 HOLE FLANGE	1
14	GB24000	RR VENT SET SCREW	1
15	GB25030	RR SPRING RETAINER	1
16	GB98030	RIVET, VENT, 5/32" DIA	4
17	GB98040	SEALTABS, WIRE W/LEAD SEAL	1
18	GO40100	NAMEPLATE, VENT, METAL (1) EACH VENT	1
19	GO40130	GIRARD CAUTION LABEL SPRG LOADED	1

GA75110* **GA74008*** **GA74323***

*** Teflon® coated version available upon request**

Safety

General Safety Information

WARNING: **This device is under extremely high pressure that could cause serious injury or death.** Follow maintenance instructions as set forth in this manual to avoid serious injury. Do not attempt to disassemble the device unless you have been properly trained by a Girard Equipment representative. Tamper proof seal tab has been installed to prevent disassembly by unauthorized personnel.

Product Storage

- Temperature Range: -40° F to 250° F
- Humidity Range: N/A
- Altitude Range: N/A

Store device upright, in its original container, to maintain a dust-free environment. Stored valves are required to be retested every six months. The initial test date will be listed on the valve certificate.

Product Handling

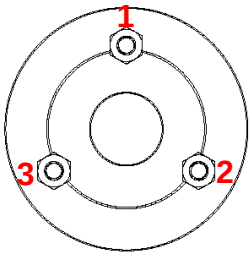
Follow OSHA practices for lifting of heavy objects.

Disposal Requirements

WARNING: **Due to spring pressure, authorized personnel must disassemble the device before disposal. Use extreme caution. If authorized personnel are not present, please contact Girard Equipment.**

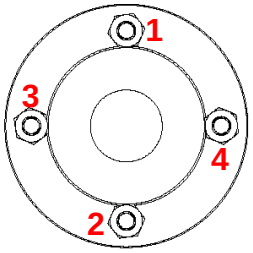
Installation Instructions

1) Remove valve from packaging.
2) Insert new, clean gasket.
3) Align the valve with the AAR tank mounting flange.
4) Girard Equipment recommends using new, lubricated stainless steel studs and nuts to bolt device to tank car.



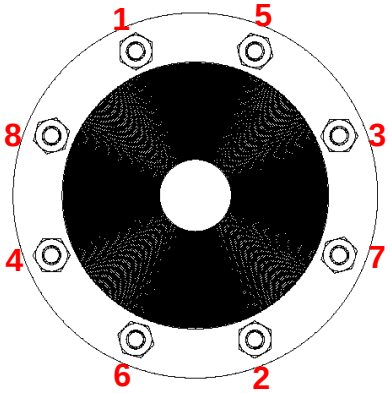
Torque Value: **45** ft/lbs of torque +/- 10 ft/lbs.

***Note**:* This is a guideline; customer needs to perform their own torque study or follow gasket manufacturer recommendation.



Torque Value: **45** ft/lbs of torque +/- 10 ft/lbs.

***Note**:* This is a guideline; customer needs to perform their own torque study or follow gasket manufacturer recommendation.



Torque Value: **125** ft/lbs of torque +/- 10 ft/lbs.

***Note**:* This is a guideline; customer needs to perform their own torque study or follow gasket manufacturer recommendation.

Operation Instructions

No instructions are needed during the operation. This safety relief valve opens and reseats automatically.

Maintenance Instructions

***WARNING*: This device is under extremely high pressure that could cause serious injury or death. Do not attempt to disassemble this device unless you have been properly trained by a Girard Equipment representative. Tamper proof seal tab has been installed to prevent disassembly by unauthorized personnel. Follow all installation, maintenance and repair instructions to avoid injury.**

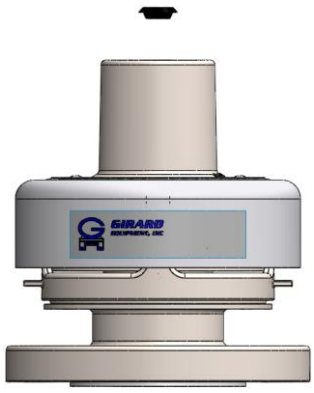
Teflon® Liners for Housing and Poppet

The lower housing liner and poppet liner are not user removable items. Visually inspect these items for cracks, corrosion, pitting, or general wear before beginning reassembly of the valve. Check condition of threads and original fit with upper housing. Please contact your Girard Equipment Representative for information regarding replacement of the liners.

O-Ring Maintenance

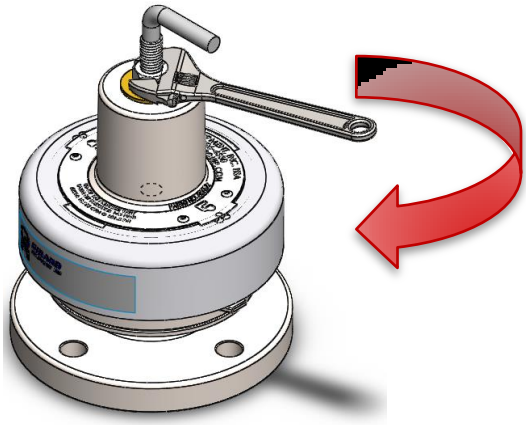
O-Ring should be replaced at time of regular maintenance and requalification, or if device fails an in-service STD (Start to Discharge) pressure test. To replace O-Ring:

1) Remove GB19000 plug.



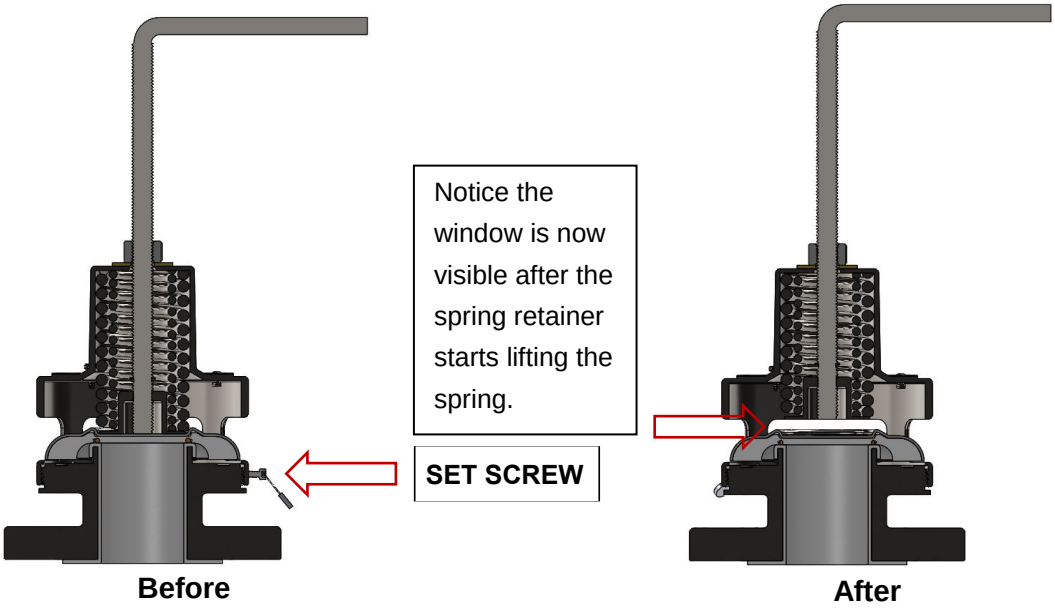
2) Insert Girard GB45002 T-wrench into the spring retainer through plug hole.

3) Ensure male thread on tool is fully engaged into GB25010 spring retainer (minimum 5 complete turns). Ideally, the tool should bottom out on the pressure poppet or stop rotating in place.



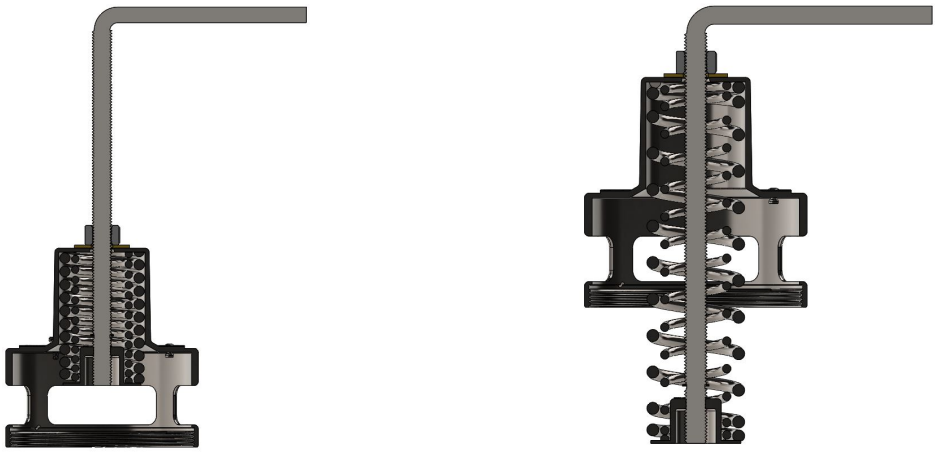
Note: If unable to get 5 complete turns into the spring retainer, stop and send to Girard Equipment.

4) Tighten GB06040 nut by rotating clockwise with a wrench. After a few turns, this should start to raise the spring retainer and spring(s).

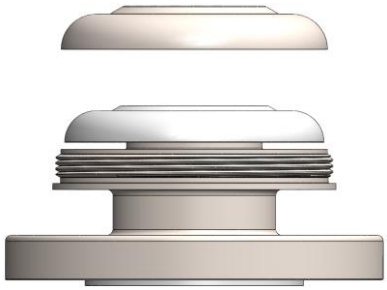


5) With the T-wrench in place, loosen the GB24000 set screw from the upper housing first, then begin unscrewing the upper housing from the lower housing. After a few turns, the upper housing will detach. Lift and remove the upper housing including the spring(s), spring retainer, and T-wrench together as one unit.

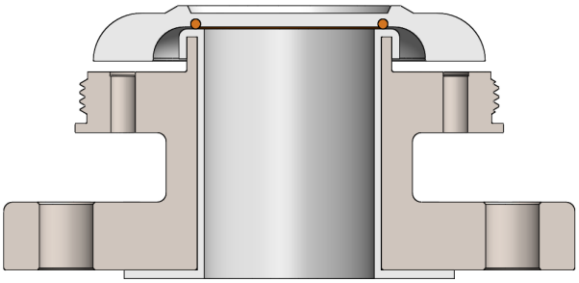
6) **USE CAUTION:** Spring(s) under pressure. To remove the spring(s) from the upper housing, carefully and slowly turn the top nut counterclockwise to lower the T-wrench and spring retainer and slowly relax the spring(s) until they are in their free length uncompressed state. Unscrew the spring retainer from the T-wrench and remove the spring(s). Qualify spring(s) by visual inspection by checking for cracks, pitting, or peeling of the coating. If such coating defects are found, blast with glass beads until removed. Spring can then be reused. For better chemical protection, send to Girard Equipment for Teflon re-coating.



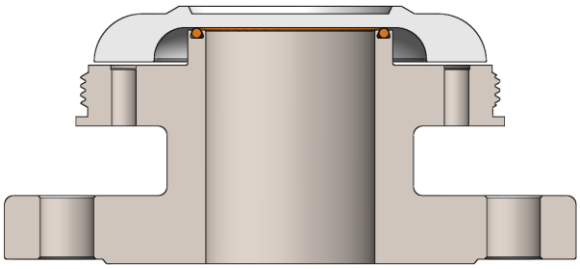
7) Remove the poppet from lower housing.



8) For unlined valves, remove Teflon® poppet and replace the O-Ring. The O-Ring will be located in the lower housing for unlined coated or uncoated valves. For lined valves, remove the Teflon® poppet which includes the O-ring and replace with the poppet and O-Ring assembly.



Lined Lower Housing



Unlined Lower Housing

9) Re-assemble following steps 1-8 in reverse order.

Note: The upper housing should be screwed all the way down. If the valve is opening too high, compress spring(s) per Step 4, turn the upper housing counterclockwise 1/8 turn to 1/2 turn max and re-test. After re-assembly, the set screw should be tightened back in place. Reinstall new wire seal tab (part GB98040).

Test Instructions

Refer to test instructions in AAR M-1002, Appendix A.

1. Install valve on test bench using a suitable gasket.
2. Slowly apply pressure to the valve until the STD (Start to Discharge) pressure is reached and the valve opens (this is just to cycle the valve once before actual testing begins). Reduce pressure.
3. Slowly apply pressure to the valve until the STD pressure is reached and the valve opens. Adjust the valve as necessary to be within the tolerance specified in Table 1. Record the STD pressure.

   (To adjust valve: If STD pressure is too high, loosen the 10-32 set screw on the side of the upper housing. Use t-wrench to compress spring(s) per Step 4 in the Maintenance section, then back off the upper housing from the lower housing by rotating 1/8 turn counterclockwise, up to a maximum of 1/2 turn. Retighten the 10-32 set screw and remove t-wrench. **WARNING**: **Spring is under pressure. Use caution when adjusting upper housing.**)
4. Drop pressure to 150 psi and wait until the gauge shows that the pressure drop has stopped, then hold for 30 seconds and check pressure. This is the VTP (Vapor tight pressure) and must be in tolerance with Table 1 criteria. Record the VTP.
5. Repeat steps 2 through 4 two more times so that three sets of STD and VTP readings are recorded. However, if continued adjustment is necessary to be within the STD tolerance, begin again at step 2 until three sets of data are recorded without needing adjustment.

TABLE 1						
NOMINAL STD (PSIG) [1]	TOLERANCE (+/-) (PSIG)	MIN. STD (PSIG)	MAX. STD (PSIG)	MIN. VTP (PSIG)	GAUGE RANGE (PSIG) [2]	MAX. GAUGE INCREMENT (PSIG) [2]
75	3	72	78	60	0-150	1
165	5	160	170	132	0-300	1

*1: Valves should be set or reset to NOMINAL STD pressure.

*2: Digital or dial gauges of greater range may be used if accuracy and sensitivity levels are equal to or better than required above.

6. If valve meets required test pressure, install set screw (hand tighten, then torque 1/4 a turn) and seal wire. Insert upper housing hole plug. Record data and complete certificate.

Troubleshooting & Repair Guide

If device fails STD (Start to Discharge) Test:

1. Replace O-Ring.
2. Clean ceiling of poppet with Scotch-Brite™ pad.

If device fails to reseat:

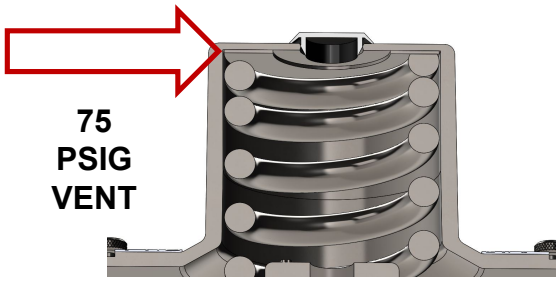
Clean ceiling of poppet with Scotch-Brite™ pad.

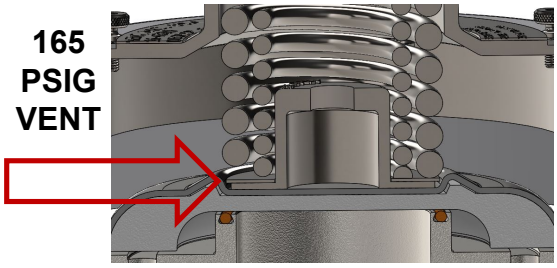
If device doesn't seal properly:

1. Wipe sealing area with clean rag.
2. Install new gasket or O-Ring.
3. If problem cannot be corrected, contact a Girard Equipment representative.

If STD pressure does not fall within range:

If STD pressure is too low, spacer shims (part #: GB25040) can be ordered and installed by authorized and qualified personnel only. Limit no more than 5 shims per vent.





Personnel must have received training by Girard Equipment, Inc. prior to ordering spacer shims or security screw removal tools. If STD pressure is still too low, contact Girard Equipment.

If STD pressure is too high, back off upper housing 1/8 to a maximum of 1/2 of a turn.

Replacement Parts

O-Rings for unlined valves:

VITON-A	VITON-B	TEF-O-SIL	VITON EXTREME	VITON-GF	CHEMRAZ
GB07610	GB07615	GB07620	GB07630	GB07640	GB07650

EPDM	BUNA-N	BUNA-N FDA	VITON-ETP 600S	VITON-GFS
GB07660	GB07670	GB07675	GB07680	GB07685

O-Ring and Poppet Assembly for lined valves:

VITON-A	VITON-B	TEF-O-SIL	VITON EXTREME	VITON-GF	EPDM	BUNA-N FDA
GB04732	GB4734	GB04728	GB04736	GB04738	GB04740	GB04742

Gaskets:

Teflon® Envelope	GM32150, GM22100
Durlon® 9000	GM32170, GM22130, GX99187

*For additional materials and options, contact Girard Equipment's Engineering Department.

Warranty

All goods manufactured by Girard Equipment, Inc. from "genuine" Girard parts are warranted to be free from defects and will be replaced free of charge if failure occurs within 5 years of date of shipment, provided that these parts have been used in accordance with seller's recommendations. Our liability in any case shall be limited to the sale price of the product and will not extend to any consequential damage.

Contact Information

GIRARD EQUIPMENT, INC.

4360 Old Dixie Hwy
Vero Beach, FL 32967
(908) 862-6300

www.GirardEquip.com

Appendix 1

APPLICATION FOR RENEWAL OF APPROVAL FOR PRESSURE RELIEF DEVICES, VALVES, CLOSURES, AND FITTINGS

1. AAR APPROVAL No. E-17210
2. Date of Application 8/14/15
3. Previous AAR Approval PRD129510
4. Applicant: GIRARD EQUIPMENT, INC.
5. Address: 4360 OLD DIXIE HWY, VERO BEACH, FL 32967
6. Drawing No. SEE LIST BELOW 7. Latest rev. SEE BELOW 8. Date of latest rev. 8/13/15 (VARIES)
9. Description of device: PRESSURE RELIEF DEVICE 10. Device ID No. SEE DRAWING LIST BELOW

CERTIFICATION: The subject device is **unchanged** from the previous approval, and conforms with the latest revision of AAR Specifications for Tank Cars, Appendix A. The device conforms with drawing listed above.

11. By: Glen Harn Title: ENGINEERING MANAGER

If device is **changed** since latest approval, fill in the following blanks

12. Reference Previous Drawing / New Drawing / If on Service Trial

Reference Previous Drawing	New Drawing	If on Service Trial
No. ____ Rev. ____ Date ____	No. ____ Rev. ____ Date ____	S.T. No. ____
No. ____ Rev. ____ Date ____	No. ____ Rev. ____ Date ____	S.T. No. ____
No. ____ Rev. ____ Date ____	No. ____ Rev. ____ Date ____	S.T. No. ____

SEE ATTACHED SHEET

13. New drawing supersedes previous one ☑ or does not obsolete it ☐

	CHANGES	REASONS FOR CHANGES
14. a.	ADDED LOWER HOUSINGS	COMPATABLE WITH MORE CONNECTION TYPES
b.	ADDED O-RING CONFIGS	COMPATABLE WITH MORE CHEMICALS
c.	IMPROVED SPRING DESIGN	LONGER SPRING LIFE
d.		

(if needed use supplemental sheet)

15. Normal operational effect of changes of device: NONE

16. Drawing submitted with this application: YES

CERTIFICATION: The above data is correct and conforms with AAR Specifications for Tank Cars, Appendix A. The device conforms with drawing listed above.

17. By: Glen Harn Title: ENGINEERING MANAGER

APPROVAL AAR Tank Car Committee:

Date Approved: 3/7/2014 Kenneth B Dorn

(Signature) on behalf of Committee

Form AAR 4-7 8/1/2014