



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

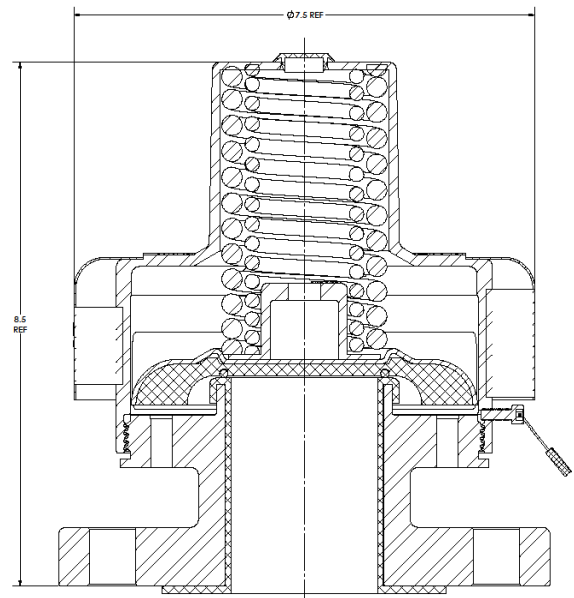
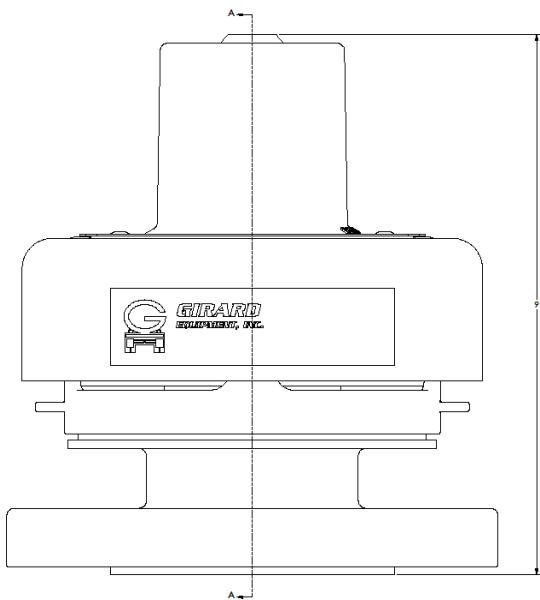
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Technical Data

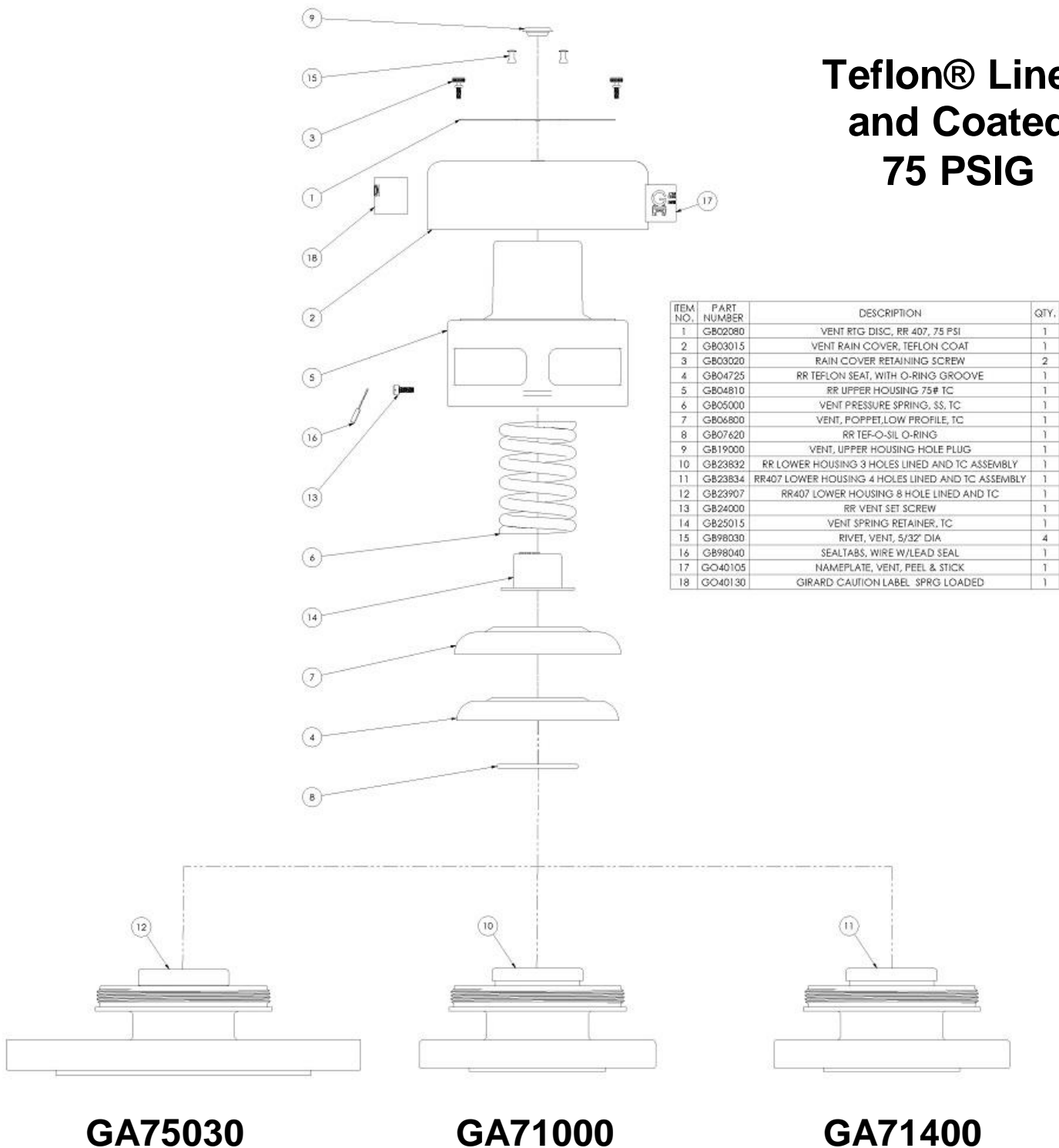
- 1) AAR Approval #E172101, see Appendix A of this manual
- 2) Overall Height : 9"
- 3) Set Pressure : 75 ± 3 PSIG 165 ± 5 PSIG
- 4) Flow Capacity : 8586 SCFM at 85 PSIG 13355 SCFM at 182 PSIG
- 5) External spring design.
- 6) All components constructed from corrosion resistant 316 stainless steel (Hastelloy® 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.
- 10) Constructed from castings hand poured in the USA.

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



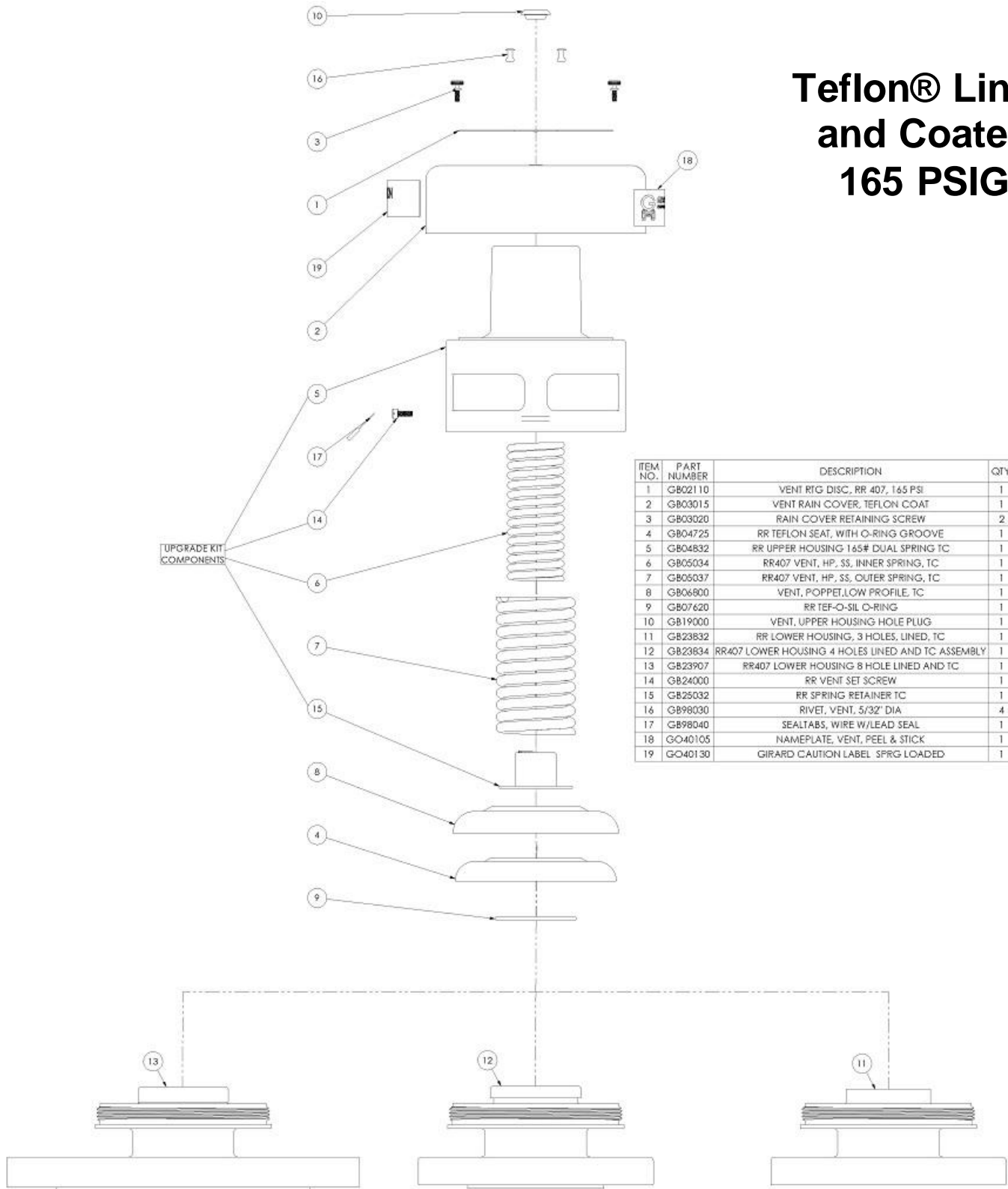
Exploded View of Product

Teflon® Lined and Coated 75 PSIG



Exploded View of Product

**Teflon® Lined
and Coated
165 PSIG**



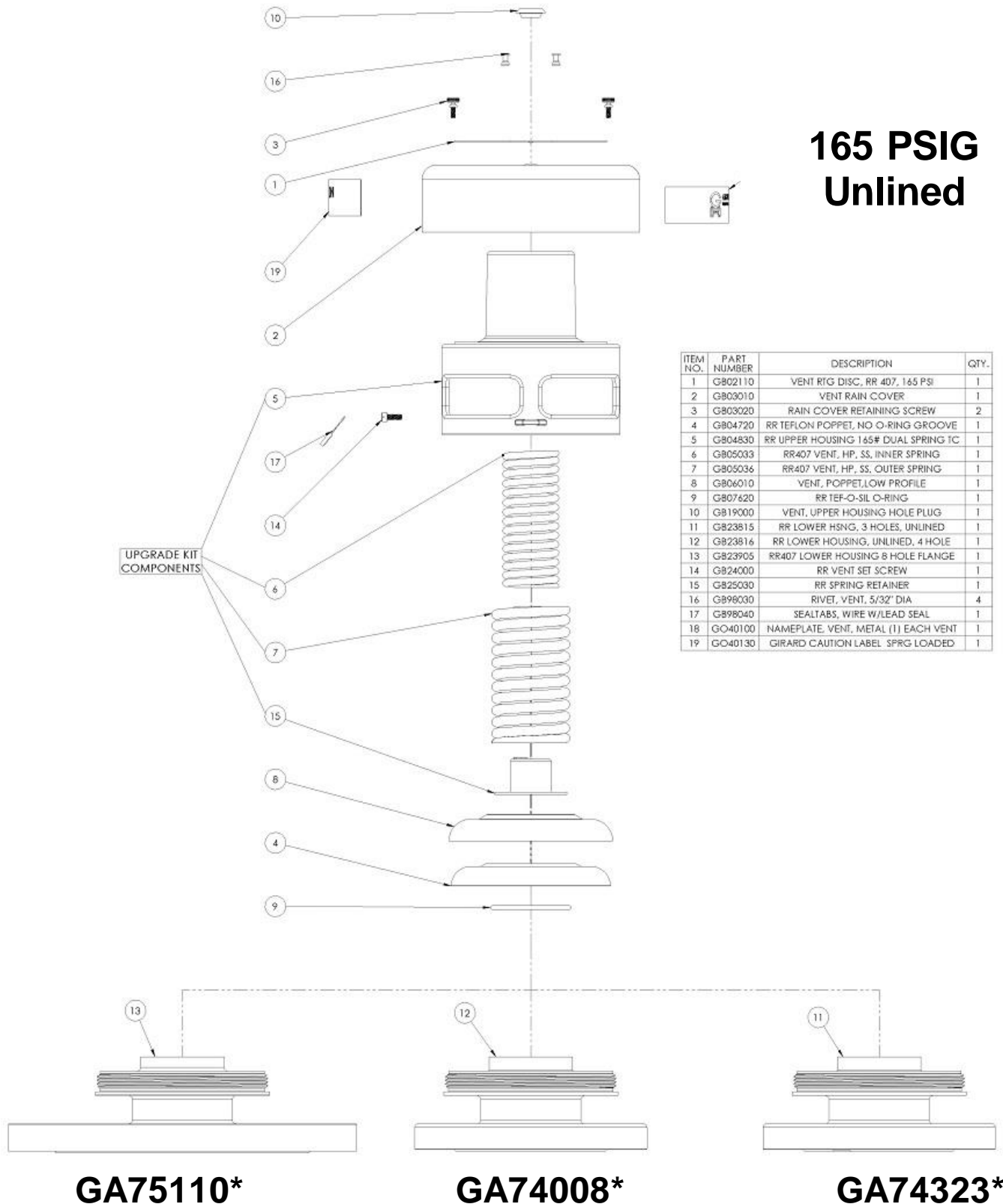
ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	GB02110	VENT RTG DISC, RR 407, 165 PSI	1
2	GB03015	VENT RAIN COVER, TEFLON COAT	1
3	GB03020	RAIN COVER RETAINING SCREW	2
4	GB04725	RR TEFLON SEAT, WITH O-RING GROOVE	1
5	GB04832	RR UPPER HOUSING 145# DUAL SPRING TC	1
6	GB05034	RR407 VENT, HP, SS, INNER SPRING, 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



* 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



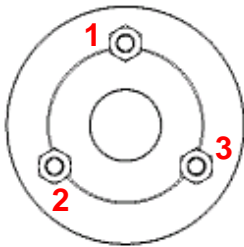
WARNING: Due to spring pressure, authorized personnel must disassemble the device before disposal. Use extreme caution. If authorized personnel are not present, please contact Girard Equipment.

Installation Instructions



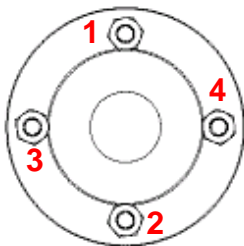
For AAR approved repair facilities only. If the repair facility is not an AAR approved repair facility, the vent must be sent to Girard Equipment, Inc. for repair.

- 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.



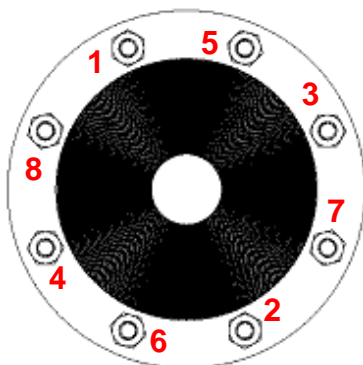
Torque Value: **45** ft/lbs of torque +/- 10 ft/lbs.

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



For AAR approved repair facilities only. If the repair facility is not an AAR approved repair facility, the vent must be sent to Girard Equipment, Inc. for repair.



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.

If cracked pressure relief valve stems or cracked springs are found during maintenance or qualification inspections, the valve, service history, and valve repair history should be reviewed with Girard Equipment, Inc. to determine the cause of failure.

After any repair is made, the repair facility must perform a bench test and leak test. The records of those tests must be kept.

Teflon® Liners for Housing and Poppet

Visually inspect both the housing liner (non-removable) and poppet liner for cracks, corrosion, pitting, or any metal showing through from underneath before beginning reassembly of the valve. If any of the above signs of wear are discovered, please contact your Girard Equipment Representative for information regarding replacement/repair of the liners.

Threads

Check condition of threads and original fit with upper housing. In addition, threads should be inspected for excessive wear, corrosion, pitting, or any other defect.

Rating Disc

When repairing this vent in a facility other than Girard Equipment, the existing station stencil (GIRA) must remain on the rating disc for traceability. If the facility is not an AAR approved repair facility, the vent must be sent to Girard Equipment, Inc. for repair.

Barcode Label (AAR PRV) Maintenance

Vents are required to have an AAR PRV barcode label attached. If any repair is done that requires the barcode label cable to be cut, a new barcode label will need to be attached by the repair facility. However, the entire existing AAR CID number will remain on the barcode label for traceability. The repair facility will update the following items on the barcode label to reflect repairs/changes and their facility information. **Repairs and barcode label maintenance may only be done by an AAR approved repair facility.**

Removal of the AAR Barcode Label and Security Cable

To remove the AAR PRV barcode label, cut the Girard Equipment security cable and remove the barcode label. The AAR CID will remain the same on the replacement barcode label so be sure to keep the existing label or note the AAR CID. If the 316 stainless steel barcode plate will be reused, keep it as well.

Replacement of the AAR Barcode Label and Security Cable

A new AAR PRV barcode label must be prepared by the repair facility as described below and attached to a 316 stainless steel barcode plate. The barcode plate is then attached to the vent using a security cable, which is threaded through the holes of the barcode plate, through one security tab on the housing, and through the eyelet of one of the set screws.

- Tank Car PRV: Change the part number, if applicable.
- O-Ring/Seal: Change the O-Ring/Seal type, if applicable.
- Facility Code: The repair facility will enter their facility code here.

The AAR CID should NOT be changed. It will remain the same for the life of the vent.



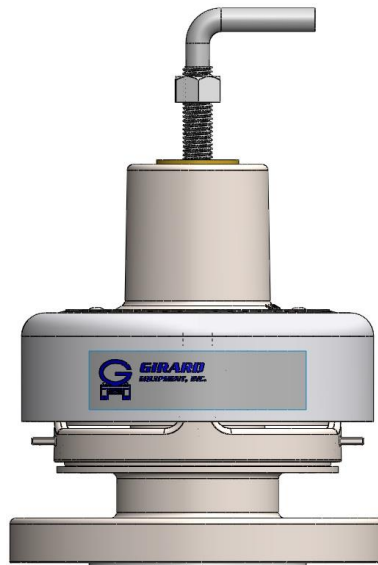
O-Ring Maintenance

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:

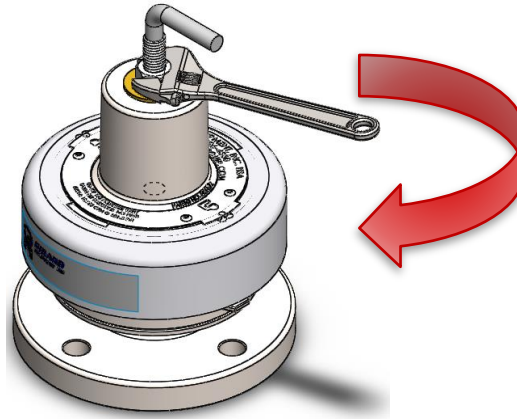
- 1) Remove GB19000 plug.



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

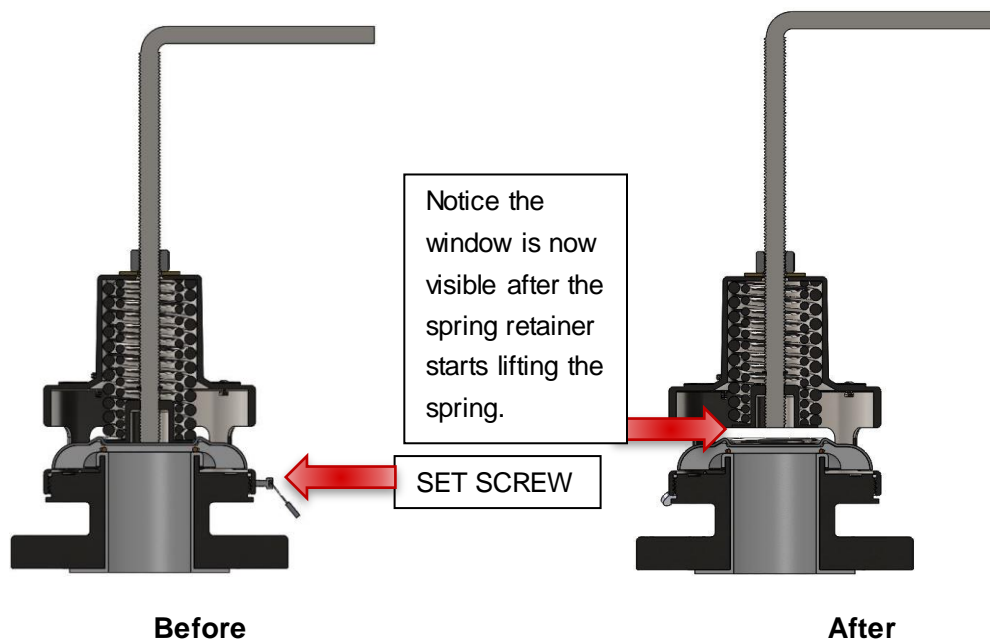


- 3) Ensure male thread on tool is fully engaged into GB25010 spring retainer (minimum 5 complete turns). Ideally, the tool should bottom out on the pressure poppet or stop rotating in place.

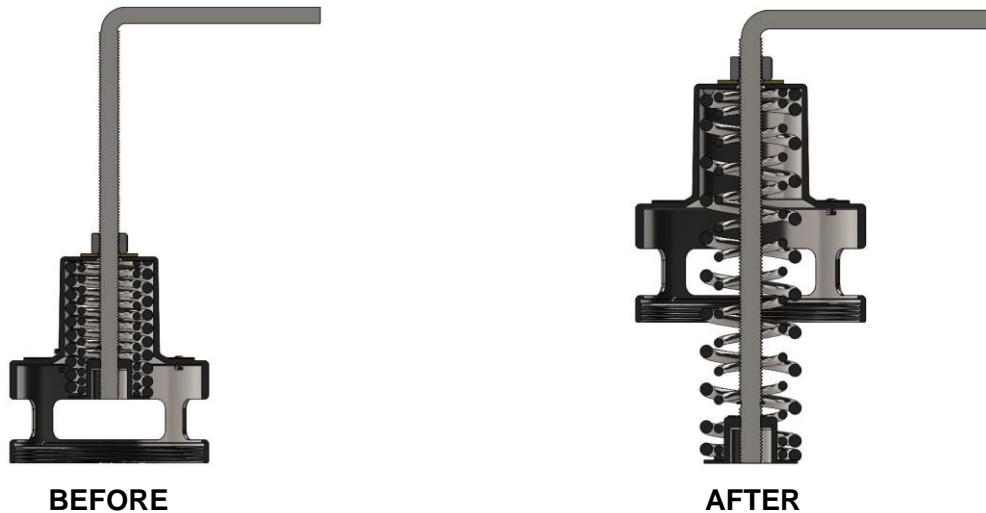


Note: If unable to get 5 complete turns into the spring retainer, stop and send to Girard Equipment.

- 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).



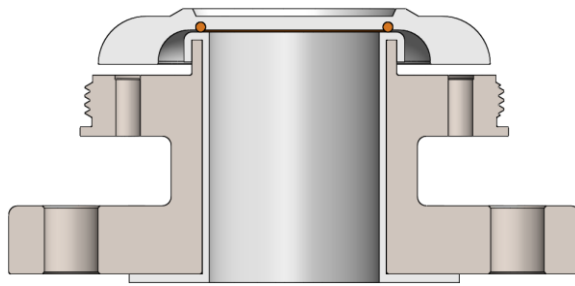
- 5) With the T-wrench in place, loosen the GB24000 set screw from the upper housing first, then begin unscrewing the upper housing from the lower housing. After a few turns, the upper housing will detach. Lift and remove the upper housing including the spring(s), spring retainer, and T-wrench together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



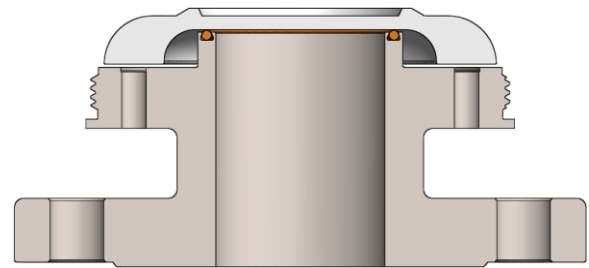
- 7) Remove the poppet from lower housing.



- 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).

- 10) After re-assembly, the vent must be tested and a new AR PRV barcode label must be prepared and attached to the vent.

Test Instructions



For AAR approved repair facilities only. If the repair facility is not an AAR approved repair facility, the vent must be sent to Girard Equipment, Inc. for repair.

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 $\frac{1}{4}$ turn) and seal wire. Insert upper housing hole plug. Record data and complete certificate.
7. After the vent has passed testing, a new AAR PRV barcode label must be attached to the vent. See the Barcode Label (AAR PRV) Maintenance section above.

Troubleshooting & Repair Guide



For AAR approved repair facilities only. If the repair facility is not an AAR approved repair facility, the vent must be sent to Girard Equipment, Inc. for repair.

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 reseal:

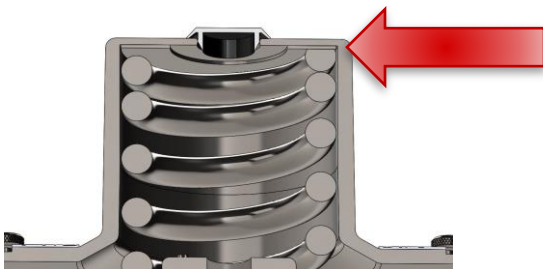
1. Clean ceiling of poppet with Scotch-Brite™ pad.

If device doesn't seal properly:

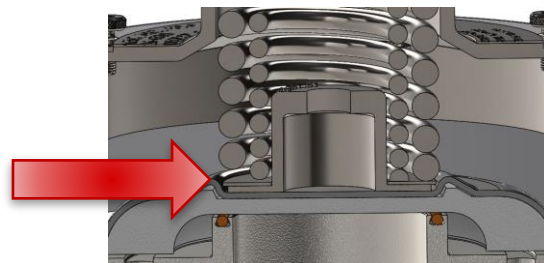
1. Wipe sealing area with clean rag.
2. Install new gasket or O-Ring.
3. If problem cannot be corrected, contact a Girard Equipment representative.

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.



75 PSIG VENT



165 PSIG 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



For AAR approved repair facilities only. If the repair facility is not an AAR approved repair facility, the vent must be sent to Girard Equipment, Inc. for repair.

New valves and fittings must be traceable to the original location at which the valve or fitting was applied.

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

Note: 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 10 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.

3455 Airport West Drive
Vero Beach, FL 32960
(800) 526-4330

www.GirardEquip.com



Appendix A

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

1. AAR APPROVAL No. E172101
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

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

SEE ATTACHED SHEET

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

CHANGES

REASONS FOR CHANGES

- | | |
|------------------------------------|---|
| 14. a. <u>ADDED LOWER HOUSINGS</u> | a. <u>COMPATABLE WITH MORE CONNECTION TYPES</u> |
| b. <u>ADDED O-RING CONFIGS</u> | b. <u>COMPATABLE WITH MORE CHEMICALS</u> |
| c. <u>IMPROVED SPRING DESIGN</u> | c. <u>LONGER SPRING LIFE</u> |
| d. _____ | 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: 3/7/2017 Kurt Dory
(Signature) on behalf of Committee

Form AAR 4-7 8/1/2014