INSTALLATION, OPERATION AND MAINTENANCE GUIDE
SERIES 4000 MARSH HAWK

This document contains the recommended procedures for installing, operating and maintaining a Series 4000 Marsh Hawk Tank Relief Vent. Read and understand this document prior to installing, operating or maintaining the Series 4000 Marsh Hawk TRV. Replaces May 2010 Installation and Maintenance Guide. Suitable for use with all Marsh Hawk TRVs manufactured since August 2011.

NOTE: INFORMATION REQUIRED FOR SUCCESSFUL INSTALLATION

CAUTION: INFORMATION IF NOT FOLLOWED MAY RESULT IN DAMAGE OR INSTALLATION FAILURE

WARNING: INFORMATION IF NOT FOLLOWED MAY RESULT IN INJURY OR DEATH

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PART A: INSTALLING MARSH HAWK TRV

NOTE: THE MARSH HAWK TRV REQUIRES AN 8" API 12F FLANGE CONNECTION. IF MOUNTING DIRECTLY ON A TANK ROOF WITHOUT SPOOL, NOZZLE OR RISER, THE DEEP-SET NATURE OF HATCH MAY PRECLUDE INSTALLING FASTENERS ON THE INTERIOR OF THE TANK. IN THIS CASE, A MARSH HAWK TRV BOLT RING, PART# *HR-F-8P-STUDS-ASM* WILL BE REQUIRED -- SEE SECTION A2 FOR INSTALLATION NOTES. ADAPTER SPOOLS TO MOUNT TO OTHER API AND ANSI CONNECTIONS ARE AVAILABLE. SEE OUR WEBSITE FOR MORE INFORMATION ON SPOOLS AND RISERS.

A1 MARSH HAWK TRV INSTALLATION

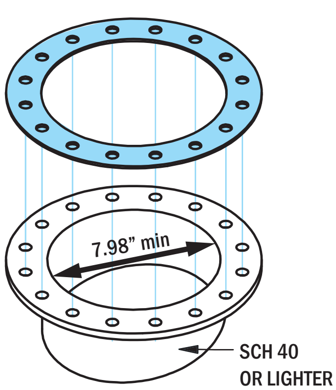
TOOLS

» 3/4 Box or Socket Wrench (torque wrench recommended)

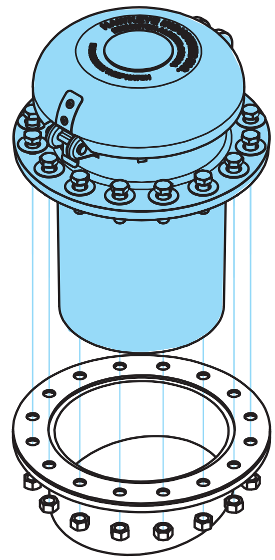
PARTS REQUIRED

» 1 Marsh Hawk TRV
» 1 8" API Tank Gasket
» 16 1/2 UNC x 1-3/4 Bolts & Nuts

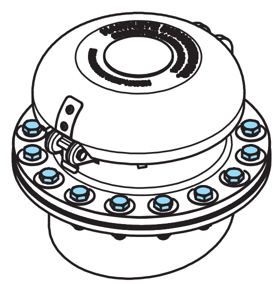
1. Place Tank Gasket on the 8" API Tank Flange and align holes.

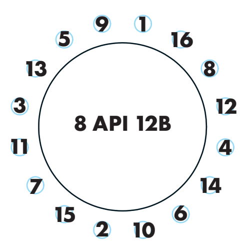


2. Mount Marsh Hawk on base gasket and align holes.



3. Fasten with the supplied 1/2 UNC Bolts and Nuts with the 3/4 Box or Socket Wrench. Use washers on the Marsh Hawk side of the bolted connection. Install hand-tight, then torque to *14 ft-lbs.* Installation torques over the recommended value may reduce long-term sealing performance. Follow bolting pattern below.





A2 INSTALLATION WITH BOLT RING

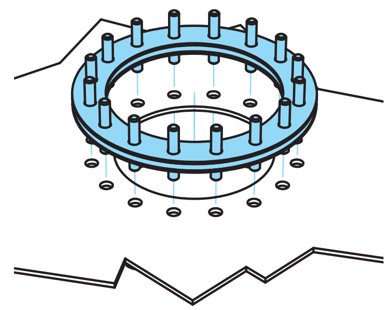
TOOLS

» 3/4 Box or Socket Wrench (torque wrench recommended)

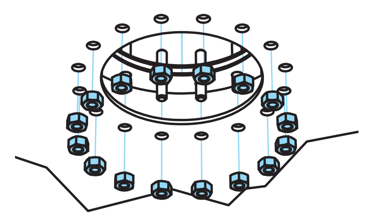
PARTS REQUIRED

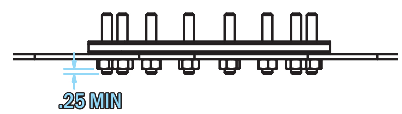
» 1 Marsh Hawk TRV
» 2 8" API Tank Gasket
» 1 Bolt Ring, c./w studs & nuts

1. Align and place bolt ring on the 8" API Tank Opening, ensuring gaskets are in place on both sides of the bolt ring.

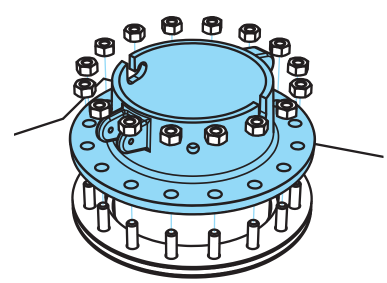


2. Install underside nuts ensuring a minimum 1/4" of thread is exposed on the stud when nuts are secured. Install hand tight, then torque to *14 ft-lbs.* Follow bolting pattern in A1, step 3.

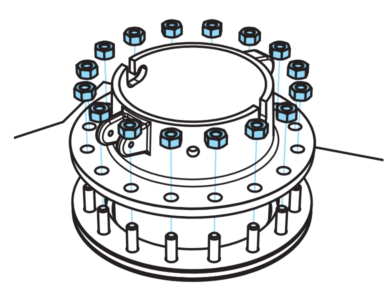




3. Align studs with holes in Marsh Hawk TRV mounting flange and drop into place.



4. Install remaining nuts. Install hand-tight, then torque to *14 ft-lbs.* Installation torques over the recommended value may reduce long-term sealing performance Follow bolting pattern in A1 step 3.



A3 DE-ICING SYSTEM INSTALLATION

TOOLS

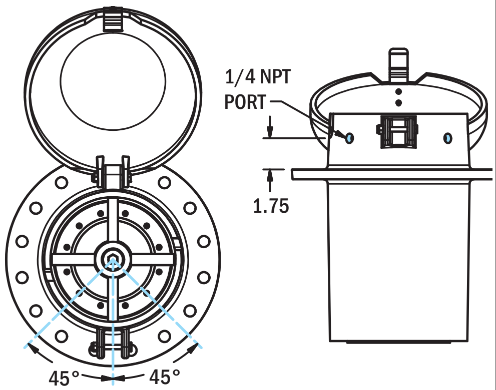
» 5/8 Box Wrench

PARTS REQUIRED

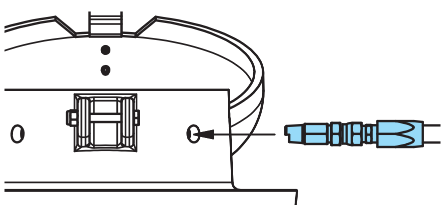
» 1 De-Icing system

» Quick Coupling / Anti Freeze Pump

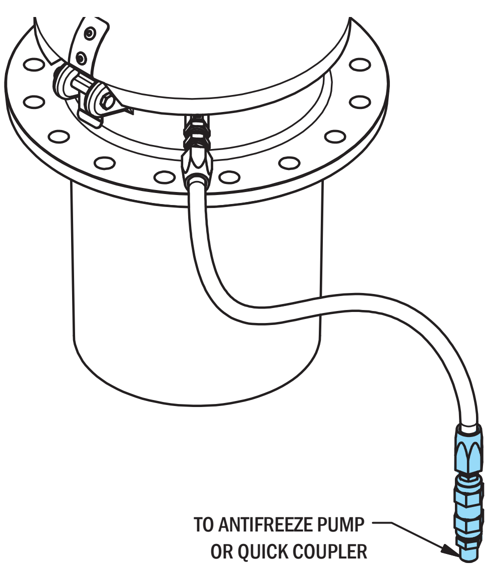
1. If the Marsh Hawk does not have the ¼ NPT ports shown below, drill and tap a port in one of these locations.



2. Thread the ¼ NPT nozzle into the port and tighten until the nozzle flat is facing down into the Marsh Hawk with the word "TOP" facing upwards.



3. Run the hose to an easily accessible location or to your antifreeze injection system. The free end of the De-icing System can be connected directly to an antifreeze injection system or can be equipped with quick connect fittings to a portable antifreeze pump. Refer to C4 for gasket/antifreeze agent compatibility.

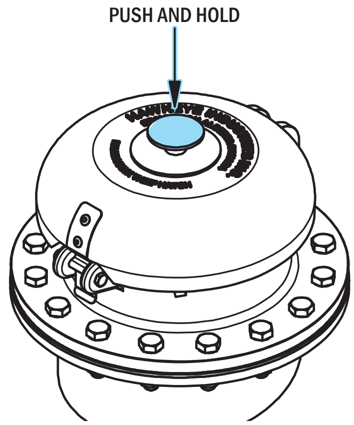


PART B: OPERATING MARSH HAWK TRV

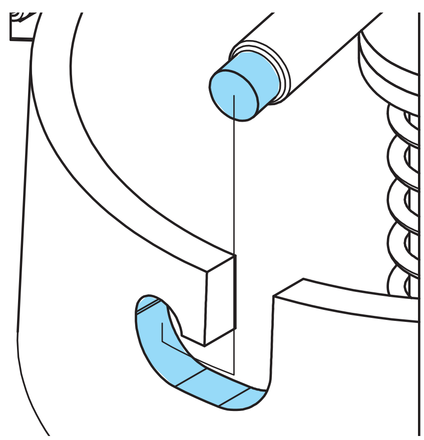
B1 SPIDER CAGE (INTERNALS) REMOVAL

WARNING: DO NOT REMOVE SPIDER CAGE WHILE THE TANK IS UNDER PRESSURE.

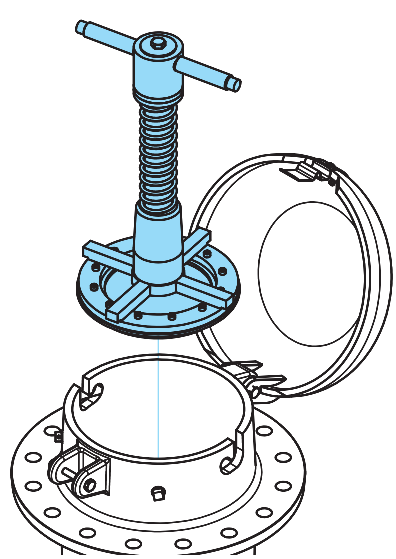
1. Relieve the tank pressure by pressing down on the pre-relief button (if equipped) until flow through the vent is no longer heard or felt, or by opening a secondary pressure relief valve.



2. Remove the Spider Cage assembly by pressing down on spring retainer and rotating counter clockwise to disengage for J-slot. Keep two hands on the Spider Cage in case there is residual pressure in the tank.



3. Lift the Spider Cage assembly straight out of the hatch body.



B2 PRESSURE SPACER ADJUSTMENT

NOTE: ACTIVATION PRESSURE SHOULD BE 2 - 4 OZSI BELOW THE EXPECTED OPERATING PRESSURE, AND SHOULD NOT EXCEED THE THE DESIGN PRESSURE OF THE TANK.

TOOLS

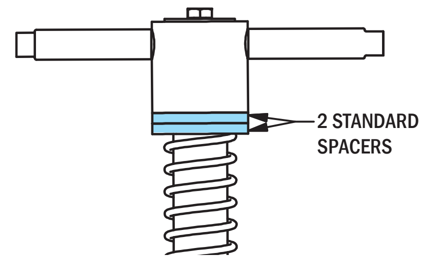
» 1/2 Box Wrench

PARTS REQUIRED

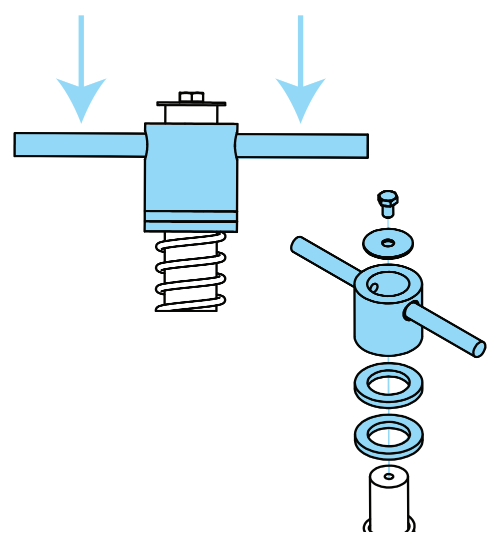
» 2 ozsi and 1 ozsi Pressure Spacers (As Required)

1. Remove the Spider Cage as per A2.

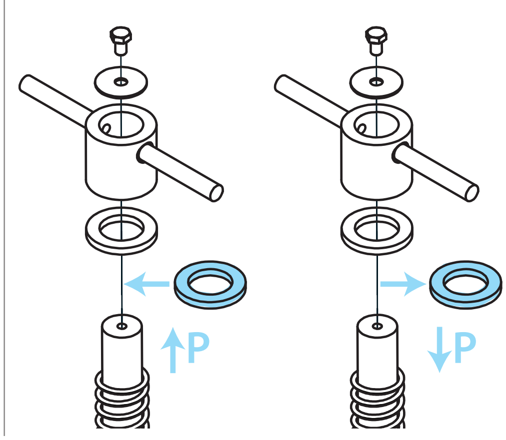
2. Determine the current pressure setting. The spring installed without any spacers will have a pressure setting of 2 ozsi. Each 0.11" and standard (0.22") spacer installed increase the pressure setting by 1 ozsi and 2 ozsi respectively. E.G. two 0.22" spacers are installed –> 2 ozsi + 2 * 2 ozsi = 6 ozsi



3. Use spring retainer to compress the spring. Remove the retainer screw with the 1/2 wrench, and remove the spring retainer.



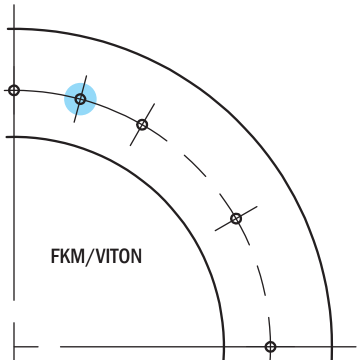
4. Add or remove pressure spacers to increase or decrease activation pressure, respectively. Follow direction in reverse to reassemble the thief hatch.

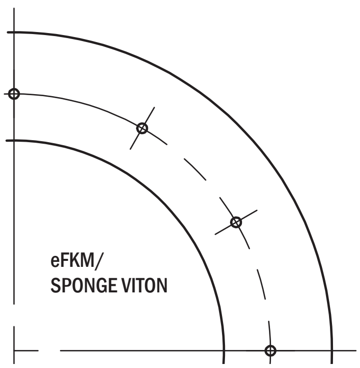


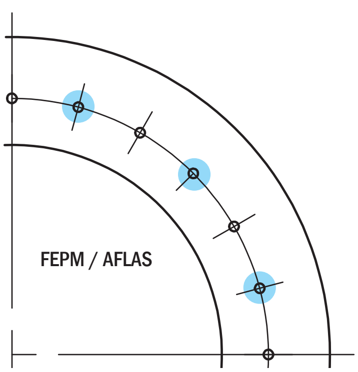
PART C: MAINTAINING MARSH HAWK TRV

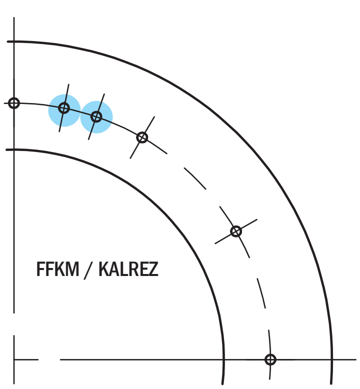
C1 REPLACING PRESSURE / VACUUM GASKET

Hawkeye offers four gasket material options for the Marsh Hawk TRV: FKM (Viton) [Standard], FEPM (Aflas), eFKM (Sponge Viton), and FFKM (Kalrez). Gasket materials are identified using ID holes stamped into the bolt circle of the gasket, and marked with paint.

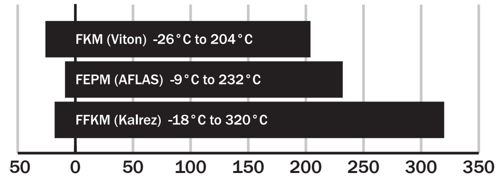








Please ensure the selected gasket materials are suitable for the your application prior to ordering a replacement gasket. Call us for more information. The operating temperatures below are for information only.



TOOLS

» 9/64 Allen Key

PARTS REQUIRED

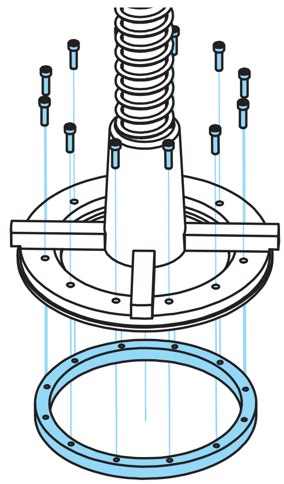
» 1× Replacment Gasket

» Hawkeye Severe Service 4561 sealant (VCST-0000)

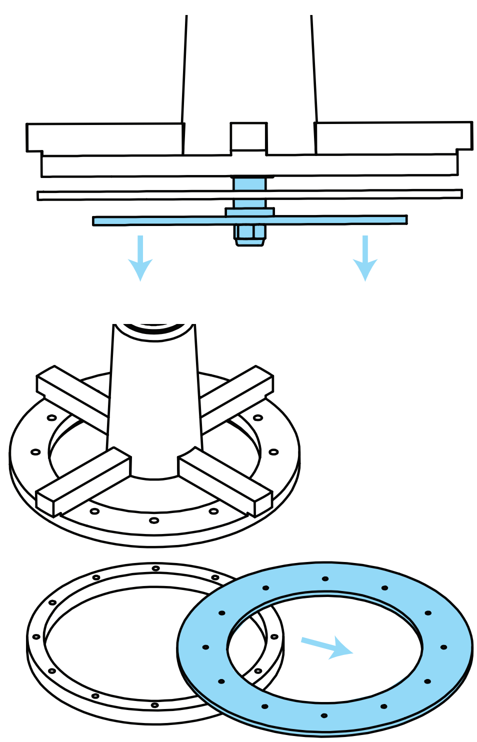
» Retaining Compound (Loctite Green 680 or eq.)

1. Remove the Spider Cage as per A2.

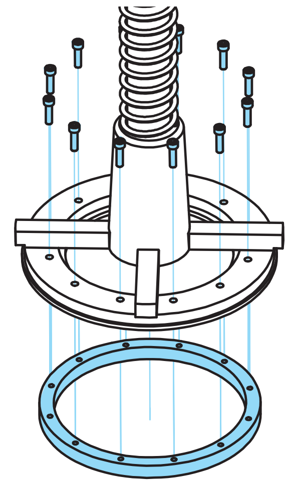
2. Remove the 12 #8-32 NC Socket Head Cap Screws with the 9/64 Allen wrench, freeing the gasket retaining ring.



3. Using light pressure, push the vacuum plate out of the way, and slide the gasket around it and off of the Spider Cage.



4. Place a drop of green retaining compound in each hole of the retaining ring. Align holes on new gasket with holes on Spider Cage and retaining ring. Replace the 12 #8-32 NC Socket Head Cap screws, torquing to 10 in-lb (5 in-lb for sponge gaskets). Reapply sealant on gasket surfaces, per Part C2, step 7.



C2 INSPECTION AND RE-LUBRICATION

Generally, the more active the vent action of the TRV, the more frequent re-lubrication should be performed. Specific re-lubrication requirements are application specific, and are determined by the following variables:

» Chemical Exposure

» Elevated Pressure

» High Flow Velocity

» Elevated Temperature

» Utilization (i.e. TRV is used as primary relief)

NOTE: HAWKEYE SEVERE SERVICE 4561 SEALANT IS FACTORY-APPLIED AT THE TIME OF ASSEMBLY. RE-LUBRICATION USING THE SAME PRODUCT IS STRONGLY RECOMMENDED FOR FIELD RE-LUBRICATION.

Factory applied sealant has the following properties:

» Excellent seal and release properties

» -57°C to 204°C operating temperature

» Moisture-resistant

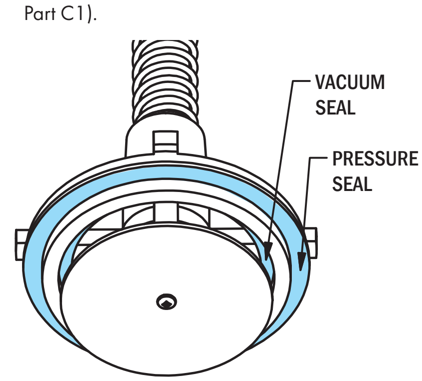
» Non-toxic an odorless

PARTS REQUIRED

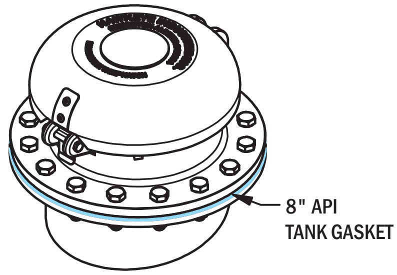
» Hawkeye Severe Service 4561 sealant (VCST-0000)

1. Remove the Spider Cage as per A2.

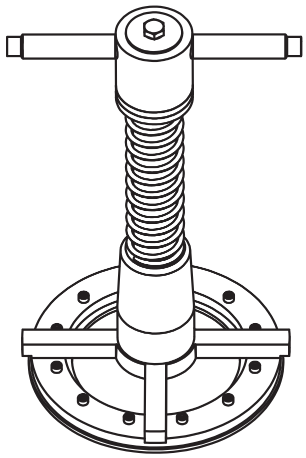
2. Inspect the pressure and vacuum seals. Look for signs of wear, cracking, swelling, dryness, pitting, tearing and improper positioning. Replace if damaged (See Part C1).



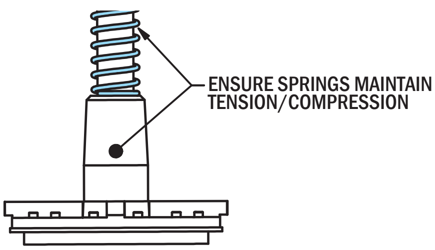
3. Inspect the 8" API tank gasket. Look for signs of wear, cracking, swelling, dryness, pitting, tearing and improper positioning. Ensure that the bolts are tight and the gasket is adequately compressed to prevent leakage. Replace if damaged.



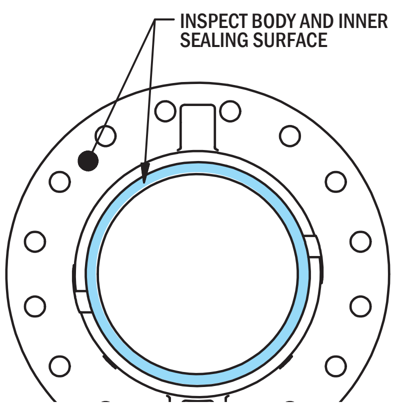
4. Inspect the Spider Cage. Ensure that all of the parts are present and assembled as shown above. All bolts and screws should be snug.



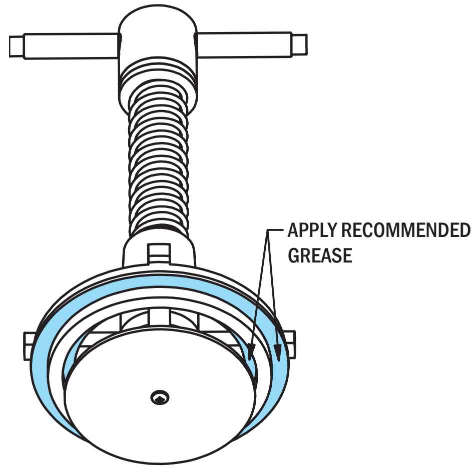
5. Inspect the springs. They should be under tension/ compression at all times and should therefore hold the vacuum pallet against the vacuum seal and the spring retainer against the top washer. If the vacuum pallet does not stay closed on its own or the pressure spring is loose when assembled, the springs have lost their temper and should both be replaced. In severe conditions Inconel springs may be required.



6. Inspect the Marsh Hawk body and inner sealing surface. Look for signs of pitting, corrosion and wear. Replace if damaged.



7. If everything clears inspection, apply the recommended grease in an even coating on both the pressure and vacuum seals as shown above.



8. Replace the Spider Cage and inject antifreeze agent (Spider Cage removal in reverse)

C3 TROUBLESHOOTING

PROBLEM: Vent is Leaking of Frequently Opening	
Symptom Of	*Solution*
Unlubricated Pressure / Vacuum Seal	Perform the inspection and re-lubrication procedures detailed in C2. Ensure antifreeze agents (if used) are compatible with gasket material (see C4)
Worn or Damaged Pressure Vacuum Seal	
Set pressure set too close to operating pressure	Ensure that the set pressure of the Marsh Hawk is sufficiently above the operating pressure of the tank. Set pressure should be 2 - 4 ozsi over operating pressure.

PROBLEM: Vent is not opening	
Symptom Of	*Solution*
Debris blocking action	Open lid and ensure the vent cavity is clear of debris and obstructions. If debris accumulates, consider adding a TRV Mesh Screen.
Stuck Pressure or Vacuum Pallet	Remove the Spider Cage assembly per B1 to ensure the pressure and vacuum pallets are free to move and are free from ice. Ensure antifreeze agents (if used) are compatible with gasket material (see C4)
Set pressure set too far from operating pressure	Ensure that the set pressure of the Marsh Hawk is sufficiently below the desired relieving pressure and the design pressure of the tank.

C4 ANTIFREEZE SOLUTIONS

It is not recommended to use any kind of antifreeze solution on a normally operating Marsh Hawk TRV, even as a preventative measure unless there is evidence of the valve icing up.

If antifreeze solutions are used, they must be compatible with the gasket materials. Consult the chart below to gauge general compatibility of common antifreeze agents and Marsh Hawk TRV gasket materials. This list is not exhaustive.

CAUTION: USING A NON-RECOMMENDED ANTI-FREEZE AGENT CAN CAUSE THE MARSH HAWK TRV TO FAIL TO OPERATE CORRECTLY, BY EITHER VENTING CONTINUOUSLY OR SEALING CLOSED.

	GASKET MATERIAL		
ANTIFREEZE SOLUTION	**FKM & eFKM**	**FEPM**	**FFKM**
Methanol	4	1	1
Ethanol	3	1	1
Isopropanol	1	1	1
Ethylene Glycol	1	1	1

1 - Satisfactory 2 - Fair 3 - Doubtful 4 - Avoid

PROUDLY CANADIAN

2110 70 Ave NW
Edmonton, AB, Canada T6P 1N6
Toll Free: (800) 910-4295
Phone: (780) 490-4295
Fax: (780) 490-4290
www.hawk-eye.com

Printed in Canada.