Installation, Operation, and Maintenance

RuptureGuard™ Pressure Relief System Option

For Use with Water-Cooled CenTraVac™ Chillers

CDHF
CDHG
CVHE
CVHF
CVHG
CVHL
CVHM
CVHS

X39641081090

⚠ SAFETY WARNING

Only qualified personnel should install and service the equipment. The installation, starting up, and servicing of heating, ventilating, and air-conditioning equipment can be hazardous and requires specific knowledge and training. Improperly installed, adjusted or altered equipment by an unqualified person could result in death or serious injury. When working on the equipment, observe all precautions in the literature and on the tags, stickers, and labels that are attached to the equipment.

March 2022

CTV-SVX06J-EN

TRANE TECHNOLOGIES

Introduction

Read this manual thoroughly before operating or servicing this unit.

Warnings, Cautions, and Notices

Safety advisories appear throughout this manual as required. Your personal safety and the proper operation of this machine depend upon the strict observance of these precautions.

The three types of advisories are defined as follows:

⚠WARNING	Indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury.
⚠CAUTION	Indicates a potentially hazardous situation which, if not avoided, could result in minor or moderate injury. It could also be used to alert against unsafe practices.
NOTICE	Indicates a situation that could result in equipment or property-damage only accidents.

Important Environmental Concerns

Scientific research has shown that certain man-made chemicals can affect the earth's naturally occurring stratospheric ozone layer when released to the atmosphere. In particular, several of the identified chemicals that may affect the ozone layer are refrigerants that contain Chlorine, Fluorine and Carbon (CFCs) and those containing Hydrogen, Chlorine, Fluorine and Carbon (HCFCs). Not all refrigerants containing these compounds have the same potential impact to the environment. Trane advocates the responsible handling of all refrigerants-including industry replacements for CFCs and HCFCs such as saturated or unsaturated HFCs and HCFCs.

Important Responsible Refrigerant Practices

Trane believes that responsible refrigerant practices are important to the environment, our customers, and the air conditioning industry. All technicians who handle refrigerants must be certified according to local rules. For the USA, the Federal Clean Air Act (Section 608) sets forth the requirements for handling, reclaiming, recovering and recycling of certain refrigerants and the equipment that is used in these service procedures. In addition, some states or municipalities may have additional requirements that must also be adhered to for responsible management of refrigerants. Know the applicable laws and follow them.

⚠ WARNING

Proper Field Wiring and Grounding Required!

Failure to follow code could result in death or serious injury.

All field wiring MUST be performed by qualified personnel. Improperly installed and grounded field wiring poses FIRE and ELECTROCUTION hazards. To avoid these hazards, you MUST follow requirements for field wiring installation and grounding as described in NEC and your local/state/national electrical codes.

⚠ WARNING

Personal Protective Equipment (PPE) Required!

Failure to wear proper PPE for the job being undertaken could result in death or serious injury. Technicians, in order to protect themselves from potential electrical, mechanical, and chemical hazards, MUST follow precautions in this manual and on the tags, stickers, and labels, as well as the instructions below:

- **Before installing/servicing this unit, technicians MUST put on all PPE required for the work being undertaken (Examples; cut resistant gloves/sleeves, butyl gloves, safety glasses, hard hat/bump cap, fall protection, electrical PPE and arc flash clothing). ALWAYS refer to appropriate Safety Data Sheets (SDS) and OSHA guidelines for proper PPE.**
- **When working with or around hazardous chemicals, ALWAYS refer to the appropriate SDS and OSHA/GHS (Global Harmonized System of Classification and Labelling of Chemicals) guidelines for information on allowable personal exposure levels, proper respiratory protection and handling instructions.**
- **If there is a risk of energized electrical contact, arc, or flash, technicians MUST put on all PPE in accordance with OSHA, NFPA 70E, or other country-specific requirements for arc flash protection, PRIOR to servicing the unit. NEVER PERFORM ANY SWITCHING, DISCONNECTING, OR VOLTAGE TESTING WITHOUT PROPER ELECTRICAL PPE AND ARC FLASH CLOTHING. ENSURE ELECTRICAL METERS AND EQUIPMENT ARE PROPERLY RATED FOR INTENDED VOLTAGE.**

⚠ WARNING

Follow EHS Policies!

Failure to follow instructions below could result in death or serious injury.

- **All Trane personnel must follow the company's Environmental, Health and Safety (EHS) policies when performing work such as hot work, electrical, fall protection, lockout/tagout, refrigerant handling, etc. Where local regulations are more stringent than these policies, those regulations supersede these policies.**
- **Non-Trane personnel should always follow local regulations.**

⚠ WARNING

Refrigerant May Be Under Positive Pressure!

Failure to follow instructions below could result in an explosion which could result in death or serious injury or equipment damage.

System contains refrigerant and may be under positive pressure; system may also contain oil. Recover refrigerant to relieve pressure before opening the system. See unit nameplate for refrigerant type. Do not use non-approved refrigerants, refrigerant substitutes, or non-approved refrigerant additives.

NOTICE

Equipment Damage!

Mixing refrigerants or oils could result in equipment damage including bearing damage, introduction of acids into the chiller, or continuous purge pump-out in high-head/high ambient applications.

CenTraVac™ chillers are manufactured with different refrigerant/oil systems: 1) chillers using R-123 refrigerant and OIL00022 compressor oil, and 2) chillers using R-514A refrigerant and various Trane POE-based compressor oils.

Always verify proper refrigerant and oil for your chiller. Do NOT mix refrigerants and oils.

This *Installation, Operation, and Maintenance* manual applies to CenTraVac™ chillers with two different refrigerant and compressor oil systems:

- R-123 refrigerant and OIL00022 compressor oil
- R-514A refrigerant and Trane OIL00379/OIL00380 compressor oil

Important: *Verify proper refrigerant and compressor oil for your chiller before proceeding!*

Note: *This manual applies to model CDHF, CDHG, CVHE, CVHF, CVHG, CVHL, CVHM, and CVHS CenTraVac™ chillers.*

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Trademarks

All trademarks referenced in this document are the trademarks of their respective owners.

Revision History

- Updated Notices and Refrigerant oil types for R-514A chiller.
- Added Instructions for post-service compressor air-run procedures for R-514A chiller.

Table of Contents

General Information

⚠ WARNING

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NOTICE

Compressor Damage!

POE oil is hygroscopic – it absorbs water directly from the air. This water is nearly impossible to remove from the compressor oil and can result in compressor failures.

To prevent POE oil from absorbing water, the system should not remain open for longer than necessary. When open, dry nitrogen should flow through the piping. Only new oil containers should be used for service and maintenance. Always use the smallest container size required for the job requirements. Always leave the oil container tightly sealed until time of use. Do not reuse oil that has been opened.

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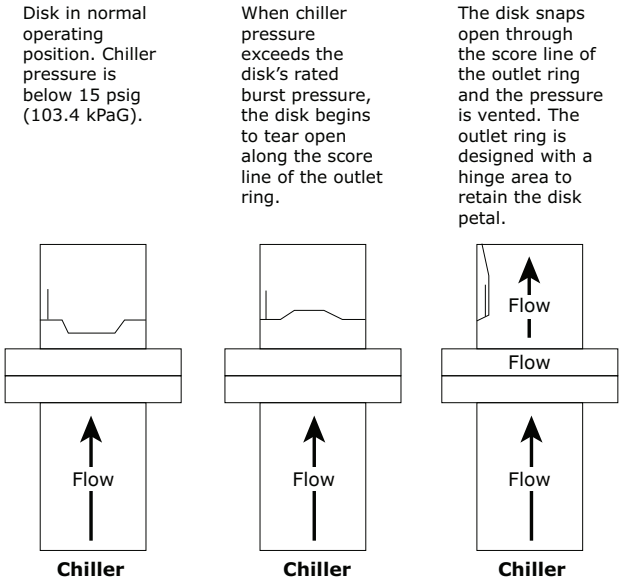
Important: *Verify proper refrigerant and compressor oil for your chiller before proceeding!*

Note: *This manual applies to model CDHF, CDHG, CVHE, CVHF, CVHG, CVHL, CVHM, and CVHS CenTraVac chillers.*

The Trane RuptureGuard™ refrigerant containment system replaces the carbon rupture disk on chillers. The RuptureGuard™ consists of a solid-metal, (non-fragmenting) reverse-buckling rupture disk and automatically re-seating relief valve with selectable inlet and outlet adapter flanges. The relief valve and the rupture disk are rated at the chiller's maximum working pressure level. If the chiller's refrigerant pressure exceeds the rupture disk burst rating, the disk bursts, releasing pressure to the relief valve. The relief valve vents the pressure down to a safe level and then re-seats, thus minimizing the amount of refrigerant vented to the atmosphere. The following figure illustrates the operation of a reverse buckling rupture disk. For more information on unit operation, refer to "Operation," p. 22.

Figure 1. Reverse buckling rupture disk (top view)



Note: *Figure shows top view; RuptureGuard™ is to be installed horizontally.*

Receiving

Upon receipt of the unit, inspect the shipping crate for signs of visible damage. Report any damage or shortage to the carrier and note it on the delivery receipt.

Unit must be stored in its original shipping crate in a dry, secure place prior to its installation and use.

Figure 2. RuptureGuard shipping crate

Unpacking

NOTICE

Rupture Disk Damage!

Failure to follow instructions below could result in rupture disk damage.

The reverse buckling disk cassette comes installed in the relief valve body. This is a fragile, precision device. Extreme care must be taken when unpacking, handling and installing the RuptureGuard assembly. If any damage is visible, the disk MUST be replaced.

Unpack the carton containing the RuptureGuard™ valve/disk assembly and optional inlet and outlet adapter flanges.

Important: *The surface of the rupture disk is extremely fragile and the domed portion of the disk should never be touched! Any dent, dimple, or imperfection is an indication that the disk is damaged and should be replaced.*

Figure 3. Three-inch (76.2 mm) RuptureGuard valve assembly (partially unpacked)

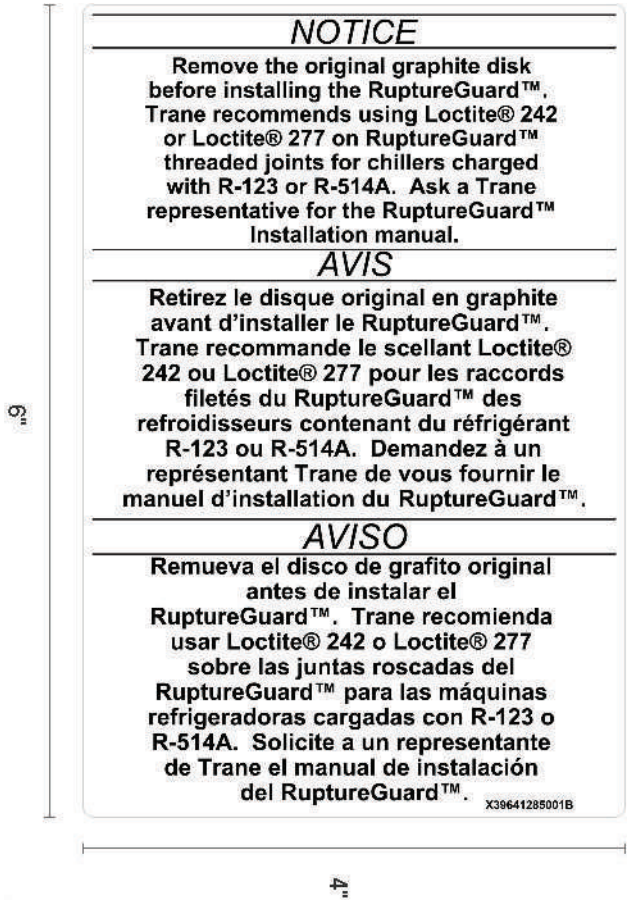
Figure 4. Four-inch (101.6 mm) RuptureGuard valve assembly with spool piece (partially unpacked)

Figure 5. Four-inch (101.6 mm) RuptureGuard valve assembly (*without* spool piece) (partially unpacked)

Note: *Four-inch (101.6 mm) RuptureGuard™ valve assembly (*without *spool piece) is used ONLY with 250E Heat Recovery CenTraVac™ chillers; some models may require additional parts (i.e., thread-reducing flange, stud, and nut).*

Compare the parts received to the following packing lists and ensure that all parts have been received. If any parts are missing, contact the supplier using telephone number provided on the packing list.

Figure 6. Tag included on 3-in. (76.2 mm) RuptureGuard and 4-in. (101.6 mm) RuptureGuard (*without* spool piece)



Note: *Four-inch (101.6 mm) RuptureGuard™ valve assembly (*without *spool piece) is used ONLY with 250E Heat Recovery CenTraVac™ chillers; some models may require additional parts (i.e., thread-reducing flange, stud, and nut).*

Overview

When moving the flanged rupture/relief valve assembly, keep it in a horizontal position and utilize flat work surfaces capable of supporting the weight of the completed valve assembly (approximately 28 lb [12.7 kg] for the 3 in. [76.2 mm] valve assembly, 67 lb [30.4 kg] for the 4 in. [101.6 mm] valve with spool piece, and 40 lb [18.1 kg] for the 4 in. [101.6 mm] valve assembly [*without* spool piece]).

Notes:

- *While assembling the valve, keep in mind the desired finished orientation of the ID plate, pressure gauge, excess flow valve, and pressure switch (optional).*
- *Four-inch (101.6 mm) RuptureGuard™ valve assembly (*without *spool piece) is used ONLY with 250E Heat Recovery CenTraVac™ chillers; some models may require additional parts (i.e., thread-reducing flange, stud, and nut).*

After aligning the bolt holes with the holes in the valve body, insert the bolts with nuts, and tighten in an alternating/crossing pattern in equal steps.

Notes:

- For 3/8-16 Grade 5 bolts*, final torque required is 12 to 18 ft·lb (16.3 to 24.4 N·m).*
- For 5/8-11 Grade 5 bolts*, final torque required is 135 to 165 ft·lb (183.0 to 223.7 N·m).*

Figure 7. Three-inch (76.2 mm) RuptureGuard valve assembly kit contents

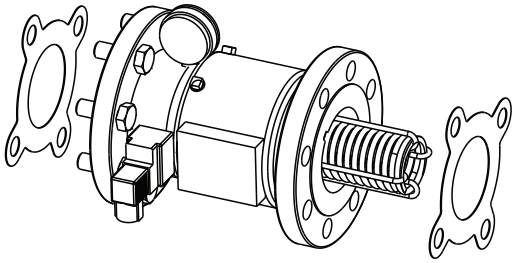


Table 1. Three-inch (76.2 mm) RuptureGuard valve assembly kit contents

Quantity	Item Description	Received
1	3 IN. RUPTUREGUARD VALVE ASSEMBLY	
1	· VALVE; RELIEF; 3 IN. RESEATABLE RELIEF	—
1	· CONTROL; HIGH-PRESSURE; 10 OP/6 CL	—
1	· EXCESS FLOW VALVE W/SLEEVE	—
1	· GAUGE; 0–60 PSI	—
2	GASKET; FLANGE, 0.031 THK X 5.00OD X 3.68 ID	
8	SCREW; HEX, 5/8-11 X 2.25, HEX CAP	
1	BAG; FLAT, 9W OPNG X 12.50 LG X 3MIL W/TRANE LOGO	
1	LABEL; LOGOS, NAMEPLATE	
1	LITERATURE CTV-SVX06F-EN	
1	TAG; NOTE - PIPE THREAD SEALANT	
1	GASKET; RUBBER; 0.125T X 5.25 OD X 3.75 ID[a] [b]	
4	WASHER; 0.375 ID X 0.875 OD X 0.083 THK[a][b]	
4	SCREW; 3/8-16 X 1.75, HEX CAP[a][b]	

[a] This item will be used if the chiller flange has ONLY four holes.
[b] If the casting has two different hole sizes in the flange, rubber gaskets MUST be used with the 3/8-in. (9.5-mm) fasteners.

Figure 8. Four-inch (101.6 mm) RuptureGuard valve assembly with spool piece kit contents

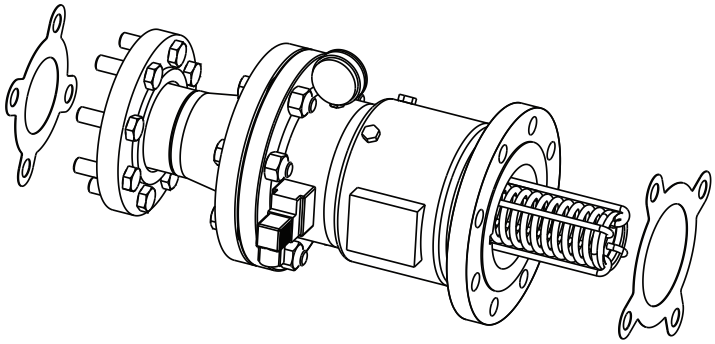
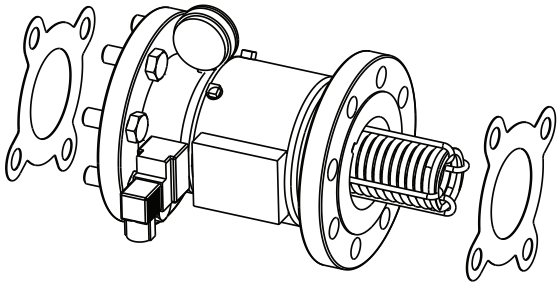


Table 2. Four-inch (101.6 mm) RuptureGuard valve assembly with spool piece kit contents

Quantity	Item Description	Received
1	4 IN. RUPTUREGUARD VALVE ASSEMBLY WITH SPOOL PIECE	
1	· ASSEMBLY/SPOOL PIECE; FLANGE, 4 IN.	—
1	· VALVE; RELIEF; 4 IN. RESEATABLE RELIEF	—
1	· CONTROL; HIGH-PRESSURE; 10 OP/6 CL	—
1	· EXCESS FLOW VALVE W/SLEEVE	—
1	· GAUGE; 0–60 PSI	—
1	· GASKET; FLANGE, 0.031 THK X 6.00OD X 4.82 ID	—
8	· NUT; HEX; 0.62-11	—
8	· SCREW; HEX, 5/8-11 X 2.75, HEX CAP	—
1	GASKET; FLANGE, 0.031 THK X 6.00OD X 4.82 ID	
1	GASKET; FLANGE, 0.031 THK X 5.00OD X 3.68 ID	
8	SCREW; HEX, 5/8-11 X 2.25, HEX CAP	
1	BAG; FLAT, 9W OPNG X 12.50 LG X 3MIL W/TRANE LOGO	
1	LABEL; LOGOS, NAMEPLATE	
1	LITERATURE CTV-SVX06F-EN	
1	GASKET; RUBBER; 0.125T X 5.25 OD X 3.75 ID[a]	
4	WASHER; 0.375 ID X 0.875 OD X 0.083 THK[a]	
4	SCREW; 3/8-16 X 2.25, HEX CAP[a]	

[a] This item will be used if the chiller flange has ONLY four holes. Rubber gaskets are NOT for use on flanges with 5/8-in. (15.9-mm) threaded holes.

Figure 9. Four-inch (101.6 mm) RuptureGuard valve assembly (*without* spool piece) kit contents



Note: *Four-inch (101.6 mm) RuptureGuard™ valve assembly (*without *spool piece) is used ONLY with 250E Heat Recovery CenTraVac™ chillers; some models may require additional parts (i.e., thread-reducing flange, stud, and nut).*

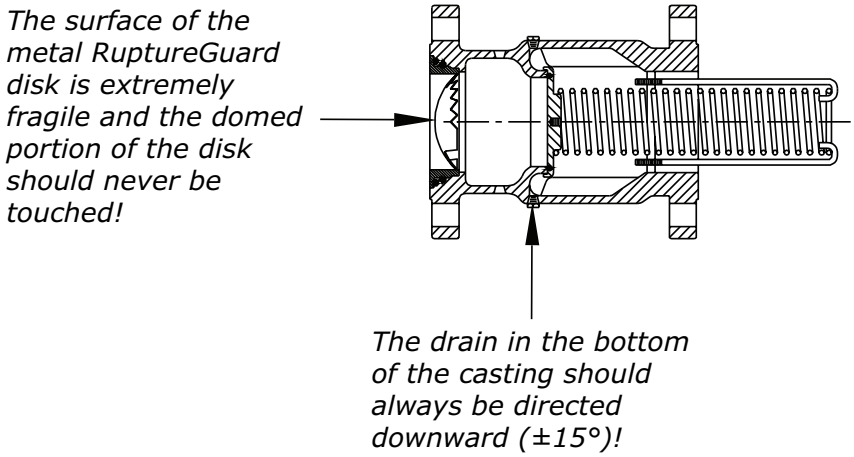
Table 3. Four-inch (101.6 mm) RuptureGuard valve assembly (*without* spool piece) kit contents

Quantity	Item Description	Received
1	4 IN. RUPTUREGUARD VALVE ASSEMBLY (*WITHOUT* SPOOL PIECE)	
1	· VALVE; RELIEF; 4 IN. RESEATABLE RELIEF	—
1	· CONTROL; HIGH-PRESSURE; 10 OP/6 CL	—
1	· EXCESS FLOW VALVE W/SLEEVE	—
1	· GAUGE; 0–60 PSI	—
2	GASKET; FLANGE, 0.031 THK X 6.00OD X 4.82 ID	
8	SCREW; HEX, 5/8-11 X 2.25, HEX CAP	
1	BAG; FLAT, 9W OPNG X 12.50 LG X 3MIL W/TRANE LOGO	
1	LABEL; LOGOS, NAMEPLATE	
1	LITERATURE CTV-SVX06F-EN	
1	TAG; NOTE - PIPE THREAD SEALANT	
1	GASKET; RUBBER; 0.13T X 6.75 OD X 4.38 ID[a]	
4	SCREW; 3/8-16 X 1.75, HEX CAP[a]	

Note: Four-inch RuptureGuard valve assembly (*without* spool piece) is used ONLY with 250E Heat Recovery CenTraVac chillers; some models may require additional parts (i.e., thread-reducing flange, stud, and nut).

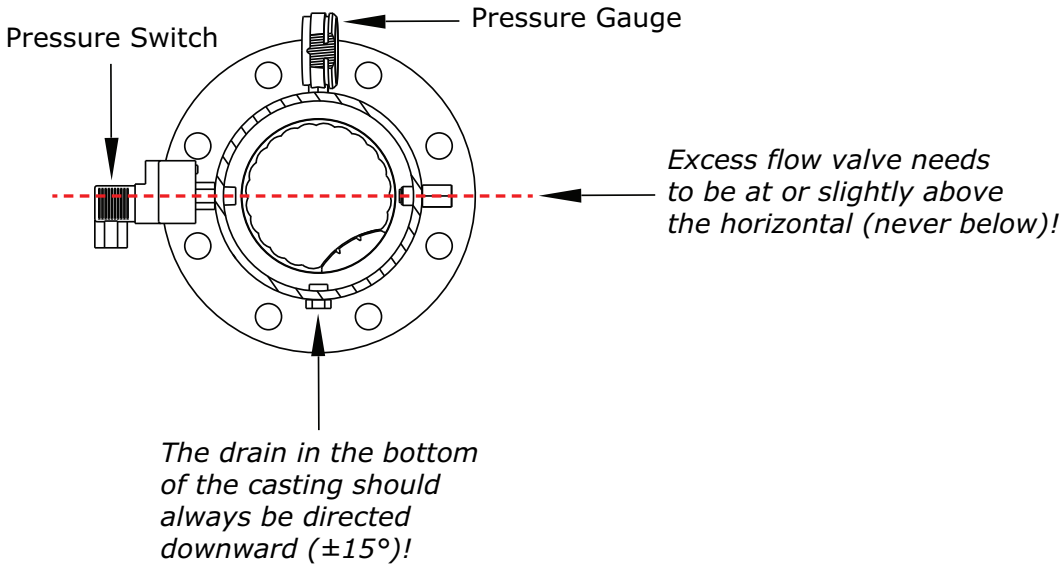
[a] This item will be used if the chiller flange has ONLY four holes. Rubber gaskets are NOT for use on flanges with 5/8-in. (15.9-mm) threaded holes.

Figure 10. Side view of RuptureGuard assembly



Note: *Positioning of RuptureGuard™ pressure switch, pressure gauge, and excess flow valves is in the RuptureGuard™ interspace. The excess flow valve should be positioned horizontally.*

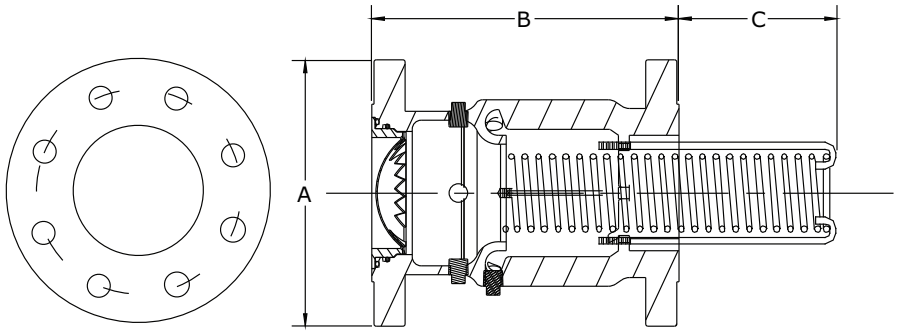
Figure 11. Correct RuptureGuard orientation



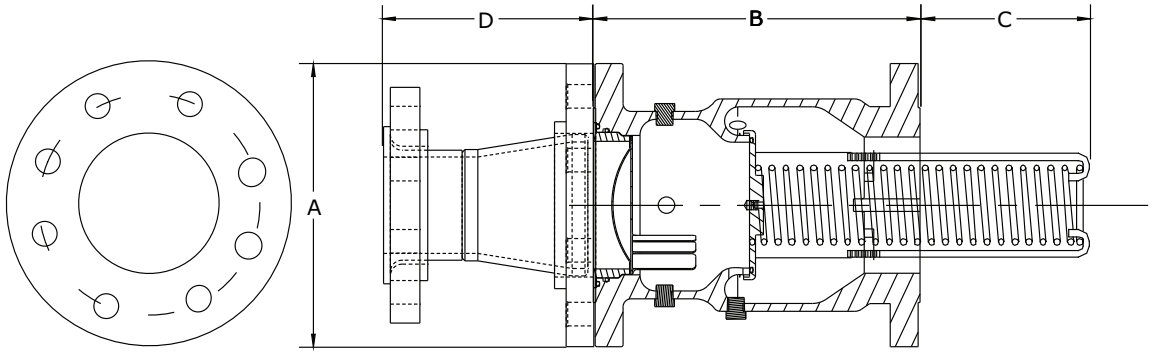
Note: *Port orientation may vary.*

Figure 12. RuptureGuard dimensions

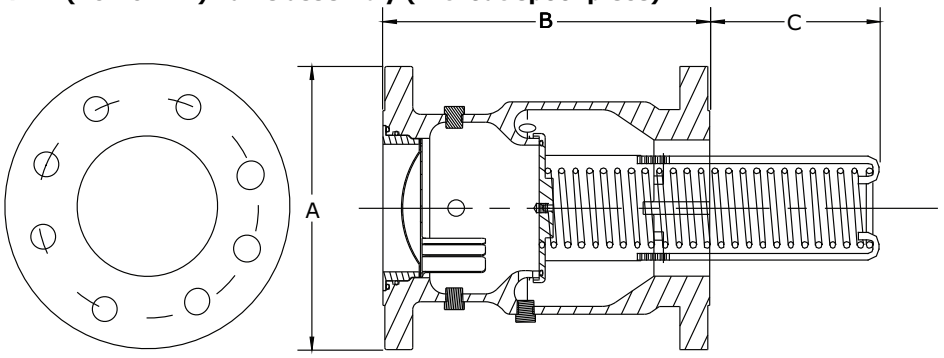
3-in. (76.2 mm) valve assembly



4-in. (101.6 mm) valve assembly with spool piece



4-in. (101.6 mm) valve assembly (*without* spool piece)[a]



(a) Four-inch (101.6 mm) RuptureGuard valve assembly (*without* spool piece) is used ONLY with 250E Heat Recovery CenTraVac chillers; some models may require additional parts (i.e., thread-reducing flange, stud, and nut).

Table 4. RuptureGuard dimensions

	Dimensions, in. (mm)				Weight, lb (kg)
	A	B	C	D	
3 in. (76.2 mm) valve assembly	7.5 (190.5)	8.7 (221.0)	4.0 (101.6)	—	28 (12.7)
4 in. (101.6 mm) valve assembly with spool piece	9.0 (228.6)	10.3 (261.6)	5.0 (127.0)	6.75 (171.45)	67 (30.4)
4 in. (101.6 mm) valve assembly (*without* spool piece)[a]	9.0 (228.6)	10.3 (261.6)	5.0 (127.0)	—	40 (18.1)

Note: All dimensions are nominal.

[a] Four-inch (101.6 mm) RuptureGuard valve assembly (*without* spool piece) is used ONLY with 250E Heat Recovery CenTraVac chillers; some models may require additional parts (i.e., thread-reducing flange, stud, and nut).

Installation

The installation of the Trane® RuptureGuard™ refrigerant containment valve should be performed by qualified personnel familiar with the operation of centrifugal water chillers. All instructions should be read and understood before the installation is performed.

Important: IMPROPER INSTALLATION WHICH RESULTS IN REWORK WILL LIKELY RESULT IN STARTUP DELAYS AND BACKCHARGES TO THE INSTALLING CONTRACTOR. Contact local Trane® Service for supervision and/or questions to avoid installation issues and potential leaks.

Preparing the Chiller

⚠ WARNING

Hazardous Voltage w/Capacitors!

Failure to disconnect power and discharge capacitors before servicing could result in death or serious injury.

Disconnect all electric power, including remote disconnects and discharge all motor start/run capacitors before servicing. Follow proper lockout/tagout procedures to ensure the power cannot be inadvertently energized. For variable frequency drives or other energy storing components provided by Trane or others, refer to the appropriate manufacturer's literature for allowable waiting periods for discharge of capacitors. Verify with a CAT III or IV voltmeter rated per NFPA 70E that all capacitors have discharged.

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Connection to the Chiller

Installation of the RuptureGuard™ requires opening the refrigerant side of the chiller to atmosphere. To prevent the release of refrigerant, the installation of the RuptureGuard should be done prior to unit evacuation or charging.

1. Move the RuptureGuard™ assembly to the vicinity of the chiller vent line.

⚠ WARNING

Improper Unit Lift!

Failure to properly lift unit in a LEVEL position could result in unit dropping and possibly crushing operator/technician which could result in death or serious injury, and equipment or property-only damage.

Test lift unit approximately 24 inches (61 cm) to verify proper center of gravity lift point. To avoid dropping of unit, reposition lifting point if unit is not level.

Note: *On model CDHF, CDHG, CVHE, CVHF, CVHG, and CVHL CenTraVac™ chillers, the chiller will be prepared for one of two installation methods, depending upon what size valve is applied.*

2. Attach the pre-assembled RuptureGuard™ to the chiller flange connection using one of the following two methods: "Three-inch (76.2 mm) RuptureGuard Installation," p. 15 or "Four-inch (101.6 mm) RuptureGuard Installation," p. 16. Be sure to provide adequate support for the valve.
3. The chiller flanges for all sizes EXCEPT 250E Heat Recovery are 3 in. (76.2 mm) (see Figure 13, p. 14); the 250E Heat Recovery chiller flange is 4 in. (101.6 mm) (see Figure 14, p. 14).

Figure 13. Three-inch (76.2 mm) chiller flange, in. (mm)

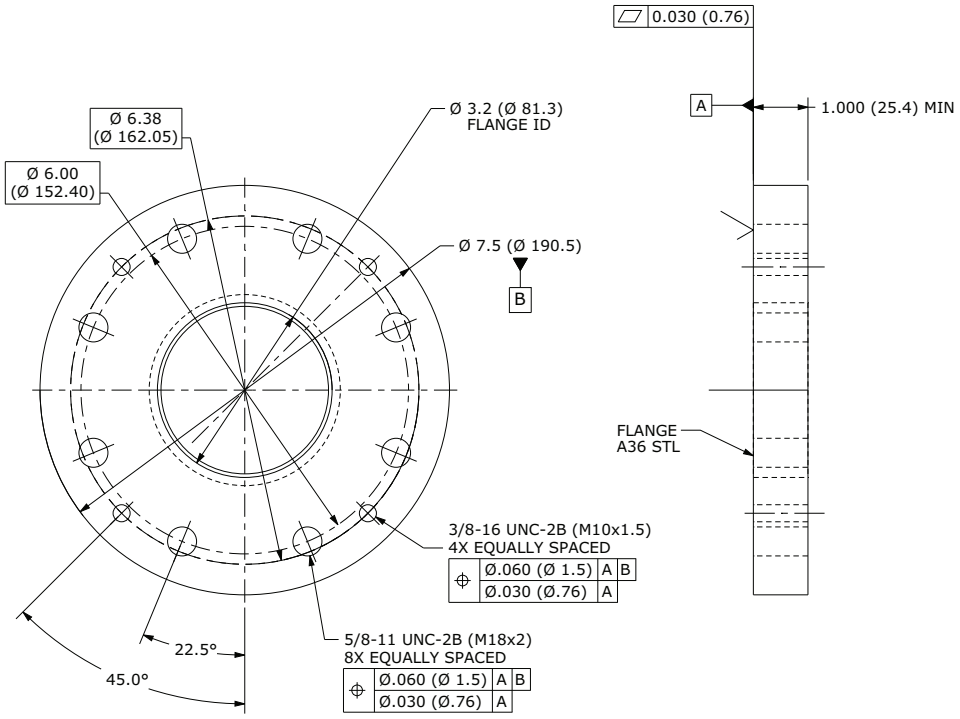
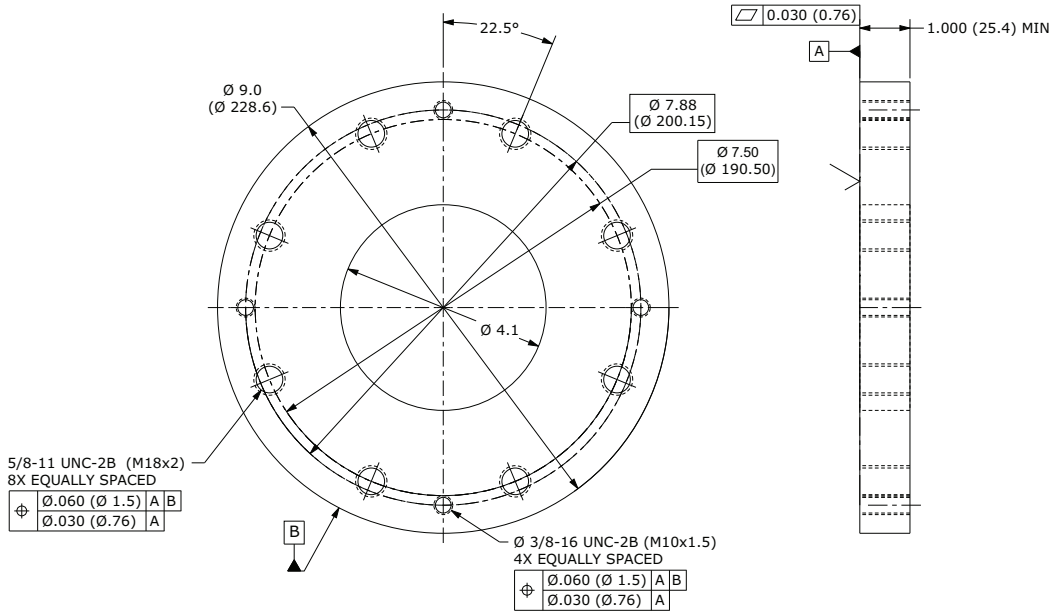


Figure 14. Four-inch (101.6 mm) chiller flange (250E Heat Recovery chiller only), in. (mm)



General Requirements

Install the RuptureGuard™ in horizontal position. The RuptureGuard™ must be oriented with flow in the direction of the arrow on the valve body or nameplate. The RuptureGuard™ must not be subjected to external stresses such as those developed by misaligned piping, unsupported piping, or misaligned mating flanges.

In some chiller configurations, the RuptureGuard™ may not bolt directly to the chiller flange. Locally sourced and approved piping may be required between the chiller and the RuptureGuard™.

Important: *Steel piping MUST be used between the chiller flange and RuptureGuard™.*

To prevent water, refrigerant and/or other debris such as rust from hindering the operation of the valve, a drip leg should be installed immediately after or downstream of the RuptureGuard™.

Three-inch (76.2 mm) RuptureGuard Installation

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Equipment Damage!

Mixing refrigerants or oils could result in equipment damage including bearing damage, introduction of acids into the chiller, or continuous purge pump-out in high-head/high ambient applications.
CenTraVac™ chillers are manufactured with different refrigerant/oil systems: 1) chillers using R-123 refrigerant and OIL00022 compressor oil, and 2) chillers using R-514A refrigerant and various Trane POE-based compressor oils.
Always verify proper refrigerant and oil for your chiller. Do NOT mix refrigerants and oils.

This *Installation, Operation, and Maintenance* manual applies to CenTraVac™ chillers with two different refrigerant and compressor oil systems:

- R-123 refrigerant and OIL00022 compressor oil
- R-514A refrigerant and Trane OIL00379/OIL00380 compressor oil

Important: *Verify proper refrigerant and compressor oil for your chiller before proceeding!*

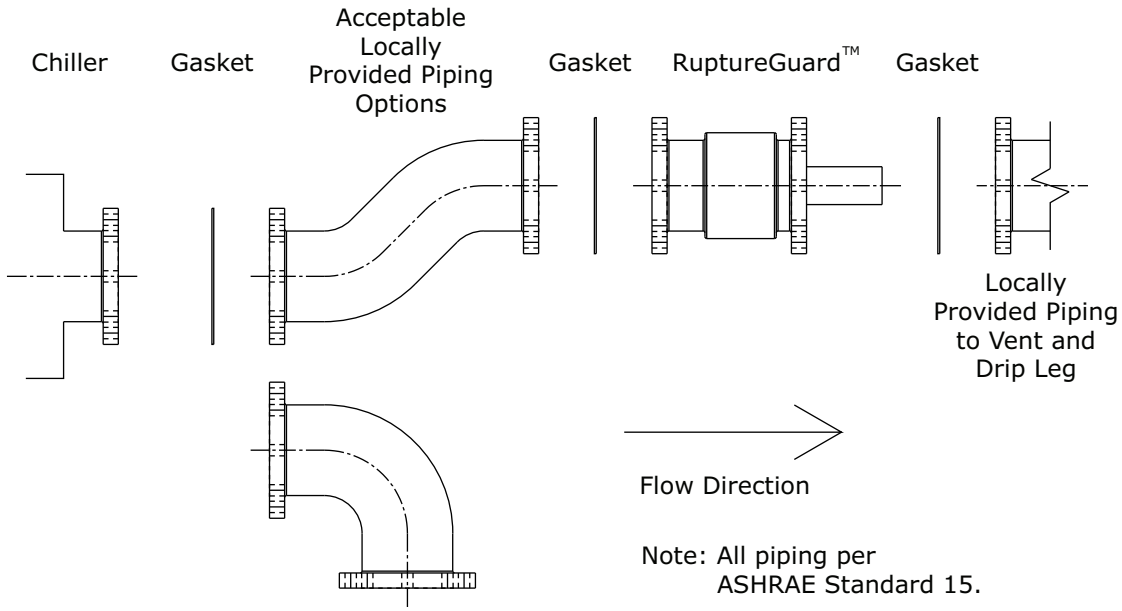
Note: *This manual applies to model CDHF, CDHG, CVHE, CVHF, CVHG, CVHL, CVHM, and CVHS CenTraVac™ chillers.*

For a new chiller, release the nitrogen holding charge from the chiller to the outdoors. Remove the factory installed vent flange.

Important: Remove and discard the carbon rupture disk and gaskets. If it is not to be used for flange adaptation, discard the chiller vent pipe nipple. Remove and save the compression fitting for the purge exhaust connection and relocate the purge exhaust line downstream of the RuptureGuard™.

Note: *The original vent flange bolts are too long for installing the RuptureGuard™ to the chiller flange, so new bolts of the proper threaded length, size, and strength (Grade 5 or better) are required.*

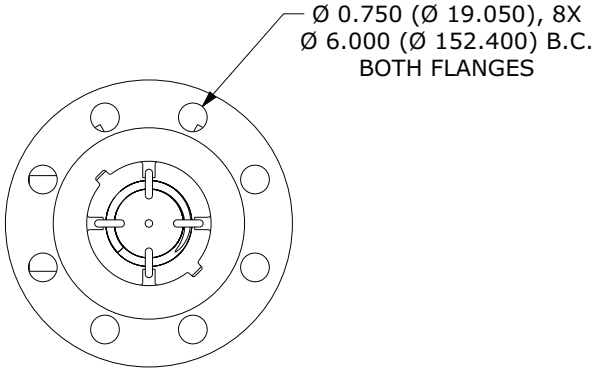
Figure 15. Three-inch (76.2 mm) RuptureGuard mounting



Notes:

- *Where space permits, the 3-in. (76.2 mm) RuptureGuard™ can be bolted directly to the chiller flange.*
- *Adaptations may occur in the field-fabricated vent piping system installation due to variations on specific job sites. It may be necessary to fabricate an elbow, spool adapter, off-set, or other component to accommodate these variations. Follow all instructions in this manual and contact your local Trane representative with any questions.*

Figure 16. Three-inch (76.2 mm) RuptureGuard flange, in. (mm)



Four-inch (101.6 mm) RuptureGuard Installation

⚠ WARNING

Refrigerant May Be Under Positive Pressure!

Failure to follow instructions below could result in an explosion which could result in death or serious injury or equipment damage.

System contains refrigerant and may be under positive pressure; system may also contain oil. Recover refrigerant to relieve pressure before opening the system. See unit nameplate for refrigerant type. Do not use non-approved refrigerants, refrigerant substitutes, or non-approved refrigerant additives.

NOTICE

Equipment Damage!

Mixing refrigerants or oils could result in equipment damage including bearing damage, introduction of acids into the chiller, or continuous purge pump-out in high-head/high ambient applications.

CenTraVac™ chillers are manufactured with different refrigerant/oil systems: 1) chillers using R-123 refrigerant and OIL00022 compressor oil, and 2) chillers using R-514A refrigerant and various Trane POE-based compressor oils.

Always verify proper refrigerant and oil for your chiller. Do NOT mix refrigerants and oils.

This *Installation, Operation, and Maintenance* manual applies to CenTraVac™ chillers with two different refrigerant and compressor oil systems:

- R-123 refrigerant and OIL00022 compressor oil
- R-514A refrigerant and Trane OIL00379/OIL00380 compressor oil

Important: *Verify proper refrigerant and compressor oil for your chiller before proceeding!*

Note: *This manual applies to model CDHF, CDHG, CVHE, CVHF, CVHG, CVHL, CVHM, and CVHS CenTraVac™ chillers.*

NOTICE

Equipment Damage!

Failure to follow instructions below could result in equipment damage.

Follow oil use instructions for post-service compressor air-run procedures.

For post-service compressor air-run procedures on CenTraVac™ chillers that use R-514A refrigerant and POE oil:

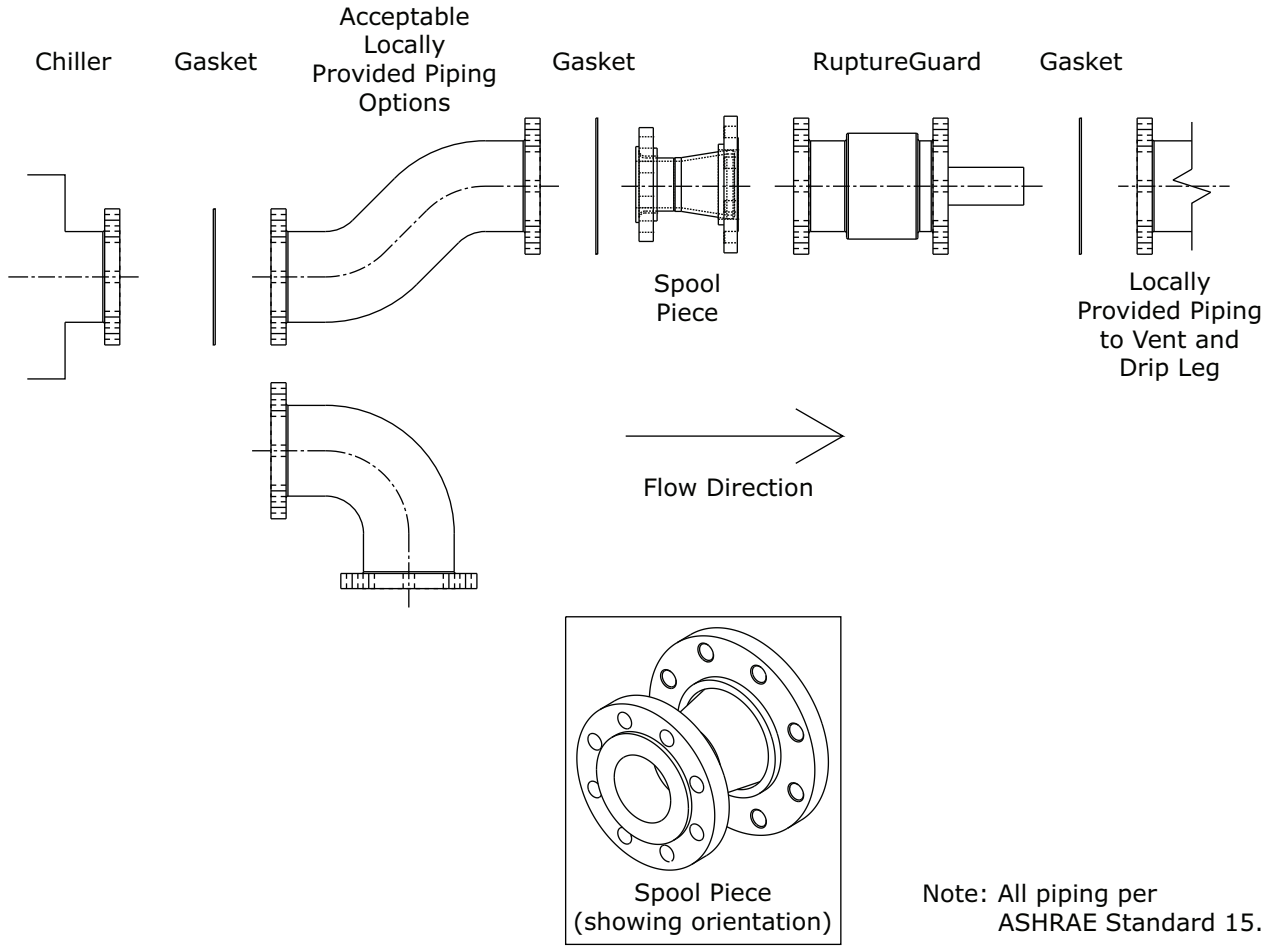
1. Use Trane OIL00381/OIL00382 compressor oil for the air-run procedure.
2. Upon completion of the air-run procedure, drain the OIL00381/OIL00382 from the sump.
3. After unit final assembly and evacuation, refill the sump with Trane OIL00379/OIL00380.

For a new chiller, release the nitrogen holding charge from the chiller to the outdoors. Remove the factory installed vent flange.

Important: Remove and discard the carbon rupture disk, gaskets, and bolts. Relocate purge exhaust line discharge downstream of the RuptureGuard™.

Note: *The RuptureGuard™ does not need to be installed directly against the chiller flange. Trane recommends that the RuptureGuard™ be installed as close to the chiller as is practical, but it can be installed farther away to avoid interference with the chiller's shell and/or insulation.*

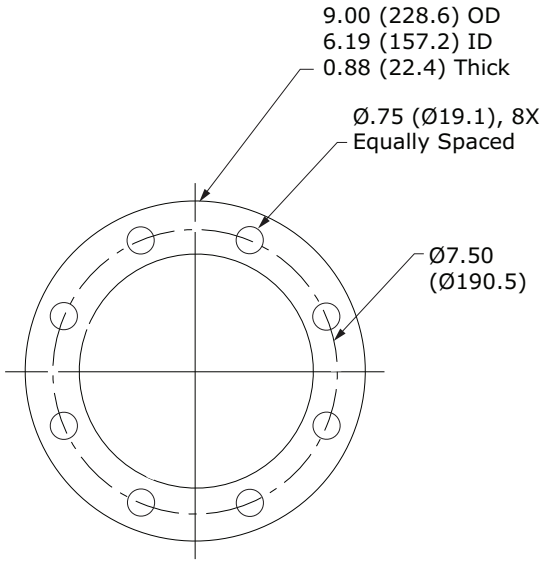
Figure 17. Four-inch (101.6 mm) RuptureGuard mounting, to 3-in. (76.2 mm) chiller flange



Notes:

- *Adaptations may occur in the field-fabricated vent piping system installation due to variations on specific job sites. It may be necessary to fabricate an elbow, spool adapter, off-set, or other component to accommodate these variations. Follow all instructions in this manual and contact your local Trane representative with any questions.*
- *If a customer-supplied adapter is needed for the configuration, the spool piece may not be required.*
- *Four-inch (101.6 mm) RuptureGuard™ valve assembly (*without *spool piece) is used ONLY with 250E Heat Recovery CenTraVac™ chillers; some models may require additional parts (i.e., thread-reducing flange, stud, and nut).*

Figure 18. Four-inch (101.6 mm) RuptureGuard flange, in. (mm)



Connection to External Vent Line and Drip Leg

NOTICE

Equipment Damage!

Failure to follow instructions below could result in equipment damage.

All vent lines must be equipped with a drip leg of sufficient volume to hold the expected accumulation of water and/or refrigerant. The drip leg must be drained periodically to assure that it does not overflow and allow fluid to flow into the horizontal portion of the vent line. Trane assumes no responsibility for equipment damage caused by insufficient drainage of drip leg.

With RuptureGuard™ installed horizontally, the drain plug downstream of the valve relief plug and nearest to the bottom of the valve body should be piped to the drip leg in the vent line (refer to the following figure). This will allow the removal of any condensate formed within the valve body.

Provisions, such as installing a set of flanges (refer to the following figure) or other disconnect means, must be made in the discharge vent piping. This will allow the piping downstream of the valve to be easily removed for an annual inspection, to replace the metal RuptureGuard™ disk, or for any other servicing need.

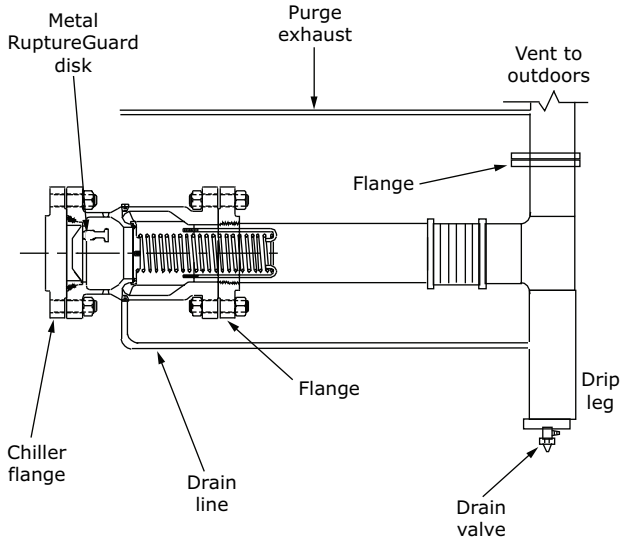
1. Connect the discharge of the valve assembly to the vent line connected to the outdoors.

   Note: *The rated flow capacity of the RuptureGuard™ disk/valve assembly is based on having straight pipe extending past the spring mechanism downstream of the valve. Make sure there are no crosses (a derate on the rated flow capacity for this configuration is published in* Engineering Bulletin: RuptureGuard Selection Guide *[E/CTV-EB-10]), elbows, tees, or any other obstructions within the first 9 in. (22.86 cm) of valve discharge. Refer to the chiller installation manual, ASHRAE Standard 15, national, state, and local codes for additional requirements on piping rupture disk and relief valve vent lines.*

2. With the RuptureGuard™ installed horizontally, remove the drain plug downstream of the valve relief plug and nearest to the bottom of the valve body and pipe a drain line to the drip leg in the vent line.

   Important: *The purge exhaust line MUST be connected to the downstream side piping to vent purge exhaust out the vent line to the outdoors; it may need to be extended to the drip leg (refer to the following figure). Field-acquired tubing may be required to extend to the field-supplied vent piping, depending on distance. Do NOT create a U-trap in the purge exhaust line; this line MUST be sloped from purge (highest point toward field-supplied piping, lower point toward connection) to allow proper draining of any condensation.*

Figure 19. RuptureGuard external vent line and drip leg (not provided)



Important: *The purge exhaust line MUST be connected to the downstream side piping to vent purge exhaust out the vent line to the outdoors; it may need to be extended to the drip leg. Field-acquired tubing may be required to extend to the field-supplied vent piping, depending on distance. Do NOT create a U-trap in the purge exhaust line; this line MUST be sloped from purge (highest point toward field-supplied piping, lower point toward connection) to allow proper draining of any condensation.*

Notes:

- *Use Loctite® 242 or Loctite® 277 on all threaded joints on chillers charged with refrigerant; use of other pipe thread sealants is NOT recommended. Ensure all threaded pipe joints are properly cleaned and prepared before assembly. An alternative to the use of Loctite® is to thread and weld the inlet adapter to the pipe. Care must be taken to ensure that the flange mating surface remains flat. Do NOT weld on the Inlet Adapter flange while connected to the RuptureGuard™.*
- *The drip leg is REQUIRED. The drip leg should be a minimum of 1 gal (3.8 L) capacity and must be drained periodically for proper chiller purge operation.*

Install Pressure Gauge and Excess Flow Valve

1. Screw the 1/4-in. (6.4 mm) NPT pressure gauge and 1/4-in. (6.4 mm) NPT excess flow valve into the threaded ports located in the disk-valve interspace of the valve body.

   Note: *The excess flow valve must be installed to maintain the downstream side of the rupture disk at atmospheric pressure to assure proper operating conditions for the disk. Mount the excess flow valve as close to horizontal as possible (see). Do NOT use vertical ports for the excess flow valve.*

2. If required, screw the 1/4-in. (6.4 mm) NPT pressure switch in the remaining threaded port.

   Note: *Use Loctite® 242 or Loctite® 277 on ALL threaded joints on chillers charged with refrigerant; use of other pipe thread sealants is NOT recommended. Ensure all threaded pipe joints are properly cleaned and prepared before assembly. An alternative to the use of Loctite® is to thread and weld the Inlet Adapter to the pipe. Care must be taken to ensure that the flange mating surface remains flat. Do NOT weld on the Inlet Adapter flange while connected to the RuptureGuard™.*

Pressure Switch

A calibrated pressure switch, used to signal a disk rupture, comes standard with each RuptureGuard™ (installation is optional). When a disk ruptures, the pressure inside the valve holder section increases to the chiller pressure. The increased pressure changes the position of the switch's SPDT contacts. See "Specifications," p. 23 for detailed switch ratings.

The use of the binary output signal from the switch is specific to each application. Some typical ways the switch output can be used are:

- provide the switching action to activate a local or remote audible or visual alarm.
- provide an alarm contact closure to a building management system, such as Tracer™.
- wired in series with other safety controls to shut down pumps, boilers or other ancillary system components that may be contributing to the high pressure condition.

Leak Test

1. Leak test the RuptureGuard™ installation using dry nitrogen and soap; pressure test the RuptureGuard™ at 5 psig (34.5 kPaG).
2. Finalize with 5 psig (34.5 kPaG) dry nitrogen until chiller commissioning.

Installation Complete Checklist

☐ All parts received; if not, contact supplier using telephone number listed in the packing lists.

☐ For a new chiller, release the nitrogen holding charge from the chiller to the outdoors.

- ☐ Carbon rupture disk and gaskets removed and discarded.
- ☐ Proper adapters utilized with proper sealant (Loctite® 242 or Loctite® 277) or welded.
- ☐ Excess flow valve installed horizontally; refer to figures in “Overview,” p. 7.
- ☐ Pressure gauge installed; refer to figures in “Overview,” p. 7.
- ☐ Pressure switch installed (when selected); refer to figures in “Overview,” p. 7.
- ☐ Purge discharge line connected to the downstream side piping to vent purge exhaust out the vent line to the outdoors and no u-traps created in this line.
- ☐ Drip leg and drain present.
- ☐ Pressure test RuptureGuard™ installation using 5 psig (34.5 kPaG) dry nitrogen.
- ☐ Chiller nitrogen holding charge applied (5 psig [34.5 kPaG]).

Operation

The rupture disk monitors the pressure inside the chiller. If the pressure exceeds the disk's burst setting, the disk ruptures, allowing the chiller pressure to enter the valve holder compartment upstream of the relief valve. If the pressure is above the pressure setting of the relief valve, the valve will open, allowing only the amount of refrigerant to escape to keep the pressure within safe operating limits.

The excess flow valve maintains the downstream side of the rupture disk at atmospheric pressure to assure proper operating conditions for the disk. When the disk bursts, the rapid pressure increase causes the excess flow valve to seal and the valve holder area becomes pressurized.

A disk rupture will be indicated by a pressure reading on the gauge and the pressure switch contacts will close. The pressure switch is an optional accessory (see components figures in "Overview," p. 7).

It is recommended that the RuptureGuard™ be visually inspected.

The vent line drip leg must be periodically checked for accumulation of water or refrigerant. Drain any accumulation that may be present into an evacuated, properly labeled vessel and dispose of in accordance with local, state and federal codes.

Maintenance

Metal RuptureGuard Disk Replacement

The easiest way to remove the metal RuptureGuard™ disk from the valve assembly is to carefully pierce the dome with a screwdriver. Gently pull the disk out of the body of the valve by using the hinge area on the other side of the disk's dome. Avoid scratching the interior of the valve body.

Specifications

Relief Valve

- Rating at 15 psig ±5% (103.4 kPaG ±5%)
- Bubble tight reseat at 13 psig (89.6 kPaG)
- Stainless steel valve body
- Stainless steel valve spring, spring hooks and valve plug
- O-rings compatible with the specific refrigerant in use
- Valve body flange connections
  - 3-in. (76.2 mm) valve
    - 3-in. (76.2 mm) Trane® flange
    - 3-in. (76.2 mm) 150# ANSI flange, Ø.75 in. (4x) @6.00 in. B.C. (Ø19.1 mm [4X] @152.74 mm B.C.)
  - 4-in. (101.6 mm) valve
    - 4-in. (101.6 mm) 150# ANSI flange, Ø.75 in. (8X) @7.50 in. B.C. (Ø19.1 mm [8X] @190.5 mm B.C.)

Rupture Disk

- Burst rating of 15 psig ±2 psig (103.4 kPaG ±13.8 kPaG) at 115°F (46.1°C)
- Nickel disk construction with stainless steel cassette body

Weight

- 3-in. (76.2 mm) Valve Only—28 lb (12.7 kg)
- 4-in. (101.6 mm) Valve Only—40 lb (18.1 kg)
- Spool piece—27 lb (12.2 kg)

Pressure Switch

Trip at 11 psig (75.8 kPaG), reset at 8 psig (55.2 kPaG), SPDT contacts rated at 5A at 220V

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