Installation, Operation, and Maintenance

Trane Rental Services

Heat Exchangers

⚠ 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.

December 2023 **SRV-SVX03J-EN**

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.

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 Labeling 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.**

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Revision History

- Added Dimensional Data Chapter.
- Updated Temperatures Out of Range, Cooling Tower Conversion, and Temperatures topics in the Application and Consideration chapter.

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Model Number Description

Temporary Heat Exchangers

Trane Rental Services (TRS) temporary heat exchangers are modified for indoor and outdoor use and are mounted on a steel base with a protective frame that permits lifting and placement with a forklift or crane. Freeze protection must be provided by the customer for outdoor use in low ambient temperatures.

The unit features ANSI 300 flange connections. The unit is shipped with adapters to allow grooved pipe connections and a manifold fitted with pressure and temperature gauges.

Digit 1, 2 — Rental Services

RS = Rental Service

Digit 3, 4 — Heat Exchanger

XX = Heat Exchanger

Digit 5, 6, 7, 8 — Nominal Tonnage

0100 = 0075 Tons
0150 = 0150 Tons
0250 = 0300 Tons
0500 = 0500 Tons

Digit 9, 10 — Design Sequence

F0
F1
F2

Digit 11, 12 — Incremental Designator

AA

General Information

Overview

⚠WARNING

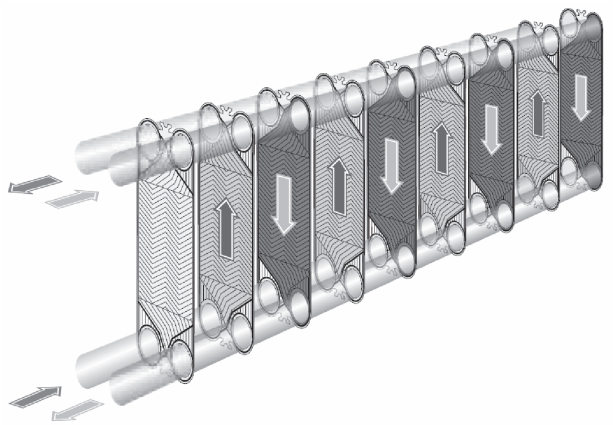
Proper Operation!

Failure to take these precautions could result in death or serious injury or possible equipment or property-only damage.

Any persons installing, operating, maintaining, or working in the vicinity of a heat exchanger must be properly instructed to do so safely. The user is responsible for taking precautions including, but not limited to:

- **Adhering to national and local safety regulations**
- **Ensuring the heat exchanger is only operated in perfect condition**
- **Performing required maintenance**
- **Only operating the heat exchanger at temperatures, pressures, and with flow medias that are within the allowable limits of the heat exchanger**

This IOM includes proper handling, installation, and maintenance of Trane Rental Services temporary heat exchangers. The temporary heat exchangers are plate and frame type and provide fluid-to-fluid heat exchange in chilled/hot water applications. The primary function of a heat exchanger is to allow heat transfer from one water loop to another without letting the two water loops come in direct contact.



Through a series of contoured plates and gaskets, the two fluid loops are provided with a large amount of surface area to perform an exchange of heat, but are kept completely separate to avoid mixing of the two loops.

Identification

Each heat exchanger is provided with a stamped nameplate which includes:

- Serial No.
- Model No.
- Permissible Pressures
- Permissible Temperatures
- Test Pressure
- Compression Dimensions

Heat Exchanger Plates

- Chevron pattern plates
- For use with relatively clean media (low viscosity and high operating pressures)
- Stainless Steel 316

Gaskets

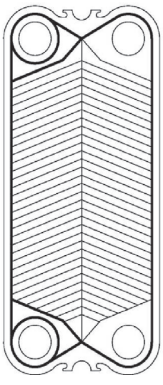
⚠WARNING

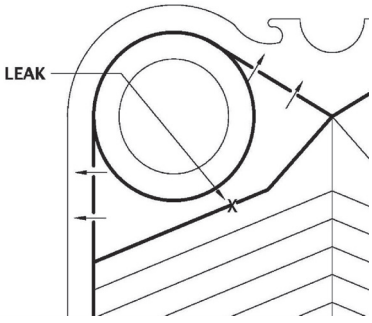
High Operating Pressures!

Failure to follow instructions below could cause gasket failure, which could result in death or serious injury or equipment or property-only damage.
Operate with correct temperatures, pressures, or flow media to avoid internal leaks, mixing fluids, and sudden release of contents under high pressure due to gasket failure.

Gaskets contain the flow medias inside the heat exchanger and isolate the two flow medias from each other. The sections that isolate the two medias are double gaskets which create a leakage cavity. If there is an internal leak, the leak can escape outside of the heat exchanger via grooves in the intermediate gasket. Internal leaks can easily be identified. The gasket material is nitrile rubber (NBR). Their attachment to the plates is glueless.

Important: *Do not subject the heat exchanger to thermal or mechanical shock as this could lead to premature gasket failure.*





Application Considerations

Temporary heat exchangers have many uses that can complement a rental chiller or cooling tower, or be used to temporarily take the place of a non-functioning heat exchanger:

Temperatures Out of Range

If cooling is required, but temperatures are too high to allow the use of a standard chiller, a heat exchanger may be used. The chiller can operate at its standard temperatures while the customer process can operate at high temperatures needed for proper operation.

Flow Out of Range

If a process requires cooling, but the flow rate is too low or too high for a standard chiller of corresponding tonnage, a heat exchanger can allow the chiller to operate at a flow rate meeting specification while the customer process operates at its optimal flow rate.

Cooling Tower Conversion

If an application requires a closed-loop fluid cooler, a rental heat exchanger can be used in combination with an open-loop cooling tower to perform the same function.

Incompatible Fluids

If a process requires the cooling of a fluid not suitable for use in a standard chiller, contact Trane Rental Services. A heat exchanger can be used in combination with a rental chiller to provide cooling to the fluid without requiring it to actually pass through the evaporator.

Selection Procedure

Temperatures

Fluid temperatures permitted in the rental heat exchangers are limited by the gasket material. The NBR gasket material has operating temperature limits of 14°F to 250°F (-10°C to 121°C).

Fluid

Fluids allowed through TRS heat exchangers are determined on a case by case basis. In all cases, compatibility is checked against the gasket material (NBR) and the plate material (Stainless Steel 316).

Pressure and Pressure Drop

For applications up to 150 psi, TRS heat exchangers may be used in combination with our flexible rental hose. Temporary heat exchangers being used without flexible rental hose are rated for a maximum operating pressure of 300 psi.

The pressure drop due to friction loss through the heat exchanger is dependent on the fluid type and the flow rate and can be provided upon request.

Flow

There is a wide range of flows allowed. See the specifications for each product for approximate minimum and maximum flows. Minimum and maximum flows are also dependent on fluid type and can be provided upon request.

Form for Performing a Selection

To have a selection performed to verify performance in a specific application, please provide the following information in the format below.

Table 1. Cold side

Parameter	Value
Fluid Type and Concentration (i.e. 30% propylene glycol)	
Estimated Heat Load (i.e. Tons / Btuh)	
Must have two out of three below, or three out of three if solving for hot side	
Inlet Temperature (°F / °C)	
Outlet Temperature (°F / °C)	
Flow Rate (i.e. gpm)	

Note: Connected to a chiller, cooling tower, or other cold water supply.

Table 2. Hot side

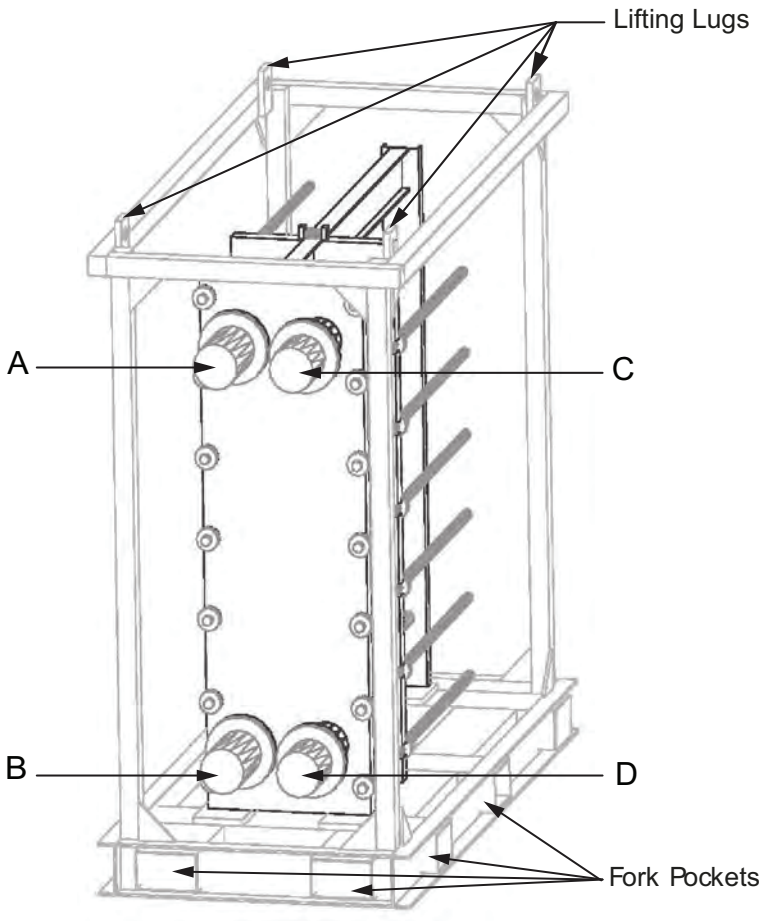
Parameter	Value
Fluid Type and Concentration (i.e. 30% propylene glycol)	
Estimated Heat Load (i.e. Tons / Btuh)	
Must have two out of three below, or three out of three if solving for cold side	
Inlet Temperature (°F/°C)	
Outlet Temperature (°F/°C)	
Flow Rate (i.e. gpm)	

Note: Connected to the process or customer loop requiring cooling.

General Data

Table 3. General data

Specification	RSXX							
	0100F0	**0100F2**	**0150F1**	**150F2**	**0250F0**	**0250F2**	**0500F0**	**0500F2**
Gasket Material	Nitrile (NBR)							
Plate Material	Stainless Steel 316							
Heat Exchanger Surface Area (ft^2)	490.4	807.97	496.97	689.04	1059.17	1961.61	2083.03	4068.82
Inlet Size (in) / Qty	4-inch / 2	4-inch / 2	6-inch / 2					
Outlet Size (in) / Qty	4-inch / 2	4-inch / 2	6-inch / 2					
Inlet / Outlet Type	Victaulic or ANSI300 Flange							
Maximum Operating Pressure (psi)	300							
Nominal Flow (gpm)	240	240	500	500	600	600	1200	1200
Nominal Pressure Drop (psi)	14.11 (Hot Side) 14.12 (Cold Side)	3.82 (Hot Side) 3.92 (Cold Side)	9.32 (Hot Side) 7.07 (Cold Side)	4.41 (Hot Side) 4.43 (Cold Side)	8.03 (Hot Side) 7.83 (Cold Side)	5.67 (Hot Side) 5.75 (Cold Side)	9.76 (Hot Side) 9.73 (Cold Side)	8.86 (Hot Side) 8.86 (Cold Side)
Approximate Max Flow Assuming Water (gpm)	1100	700	1400	1400	1540	1800	1540	1800
Min / Max Fluid Temperature (F° / C°)	14°F / 210°F or -10°C / 99°C							
Internal Volume (ft^3)	1.735 (Hot Side) 1.735 (Cold Side)	2.99 (Hot Side) 2.99 (Cold Side)	2.601 (Hot Side) 2.604 (Cold Side)	7.04 (Hot Side) 7.04 (Cold Side)	5.318 (Hot Side) 5.407 (Cold Side)	9.97 (Hot Side) 9.97 (Cold Side)	10.459 (Hot Side) 10.548 (Cold Side)	20.07 (Hot Side) 20.07 (Cold Side)
Length	8' 8"	7' 1"	8' 0"	8' 0"	9' 4"	10' 1"	11' 4"	13'
Width	4' 3"	3' 5"	4' 0"	4' 0"	4' 3"	3' 6"	4' 3"	3' 6"
Height	7' 10"	6' 11"	7' 0"	7' 9"	8'6"	7' 6"	8' 6"	8' 6"
Shipping Weight (lbs)	5,150	4,900	6,450	8,100	8,100	8,700	9,850	12,800
Operating Weight (lbs) (potable water)	5,370	5,500	6,840	9,200	8,800	10,300	11,150	15,600
Lifting	Fork or Crane							



Connection Point	Desig Sequence		
	F0	F1	F2
A	Cold Water Outlet	Hot Water Inlet	Hot Water Inlet
B	Cold Water Inlet	Hot Water Outlet	Hot Water Outlet
C	Hot Water Inlet	Cold Water Outlet	Cold Water Outlet
D	Hot Water Outlet	Cold Water Inlet	Cold Water Inlet

Dimensional Data

Figure 1. RSXX0100F0

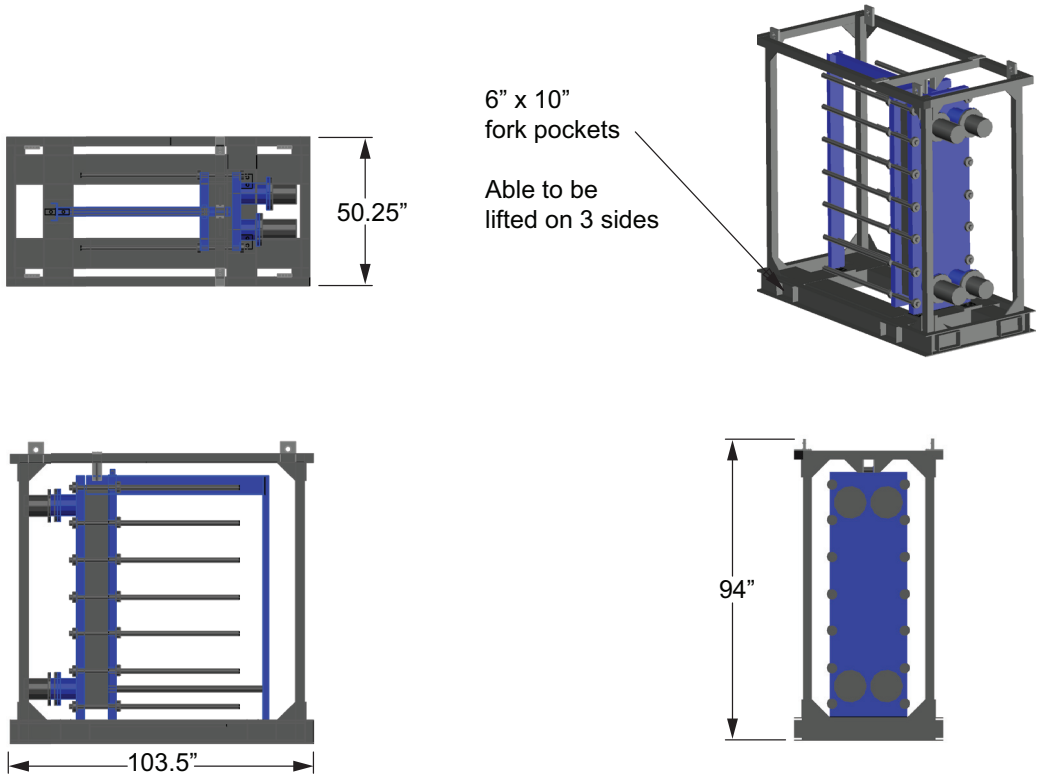


Figure 2. RSXX0100F2

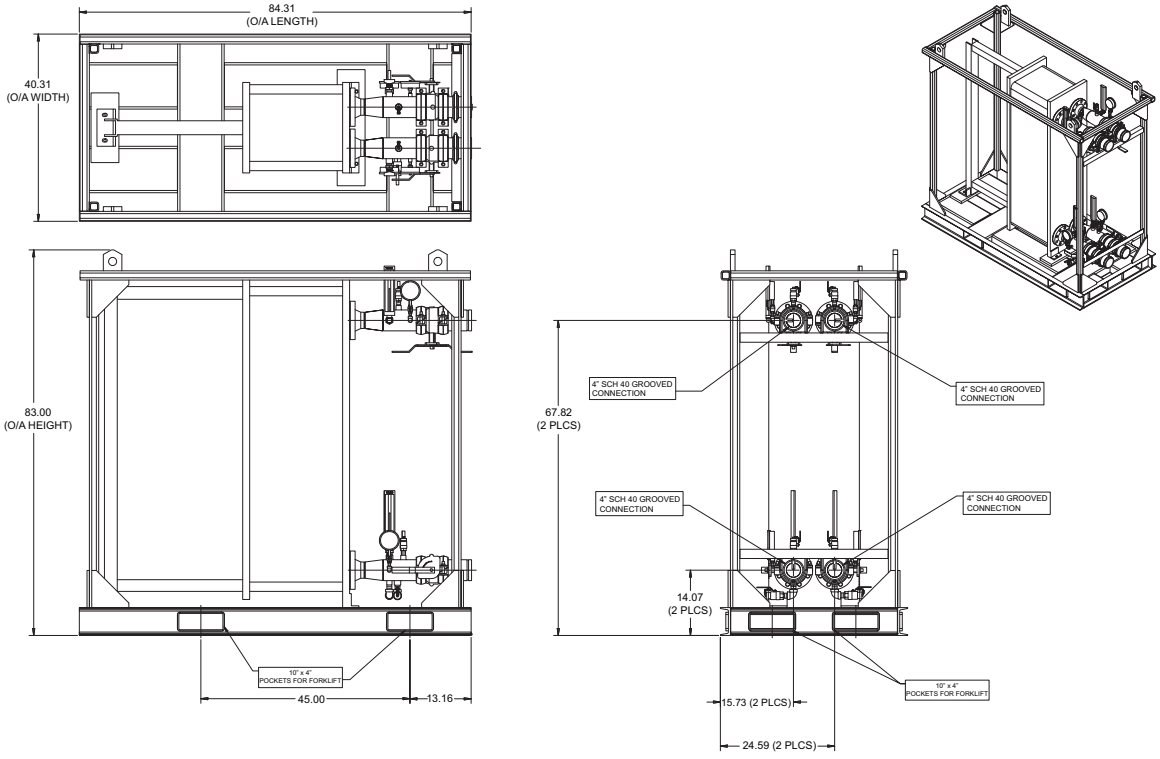


Figure 3. RSXX0150F1

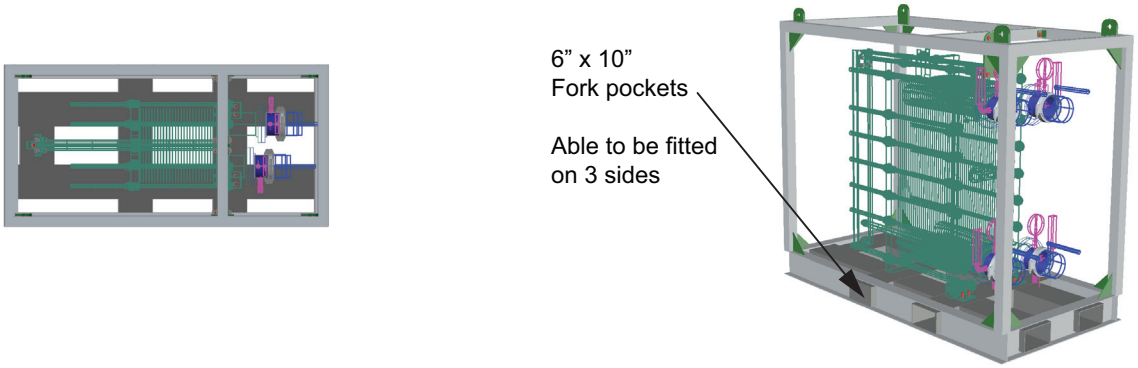


Figure 4. RSXX0150F2

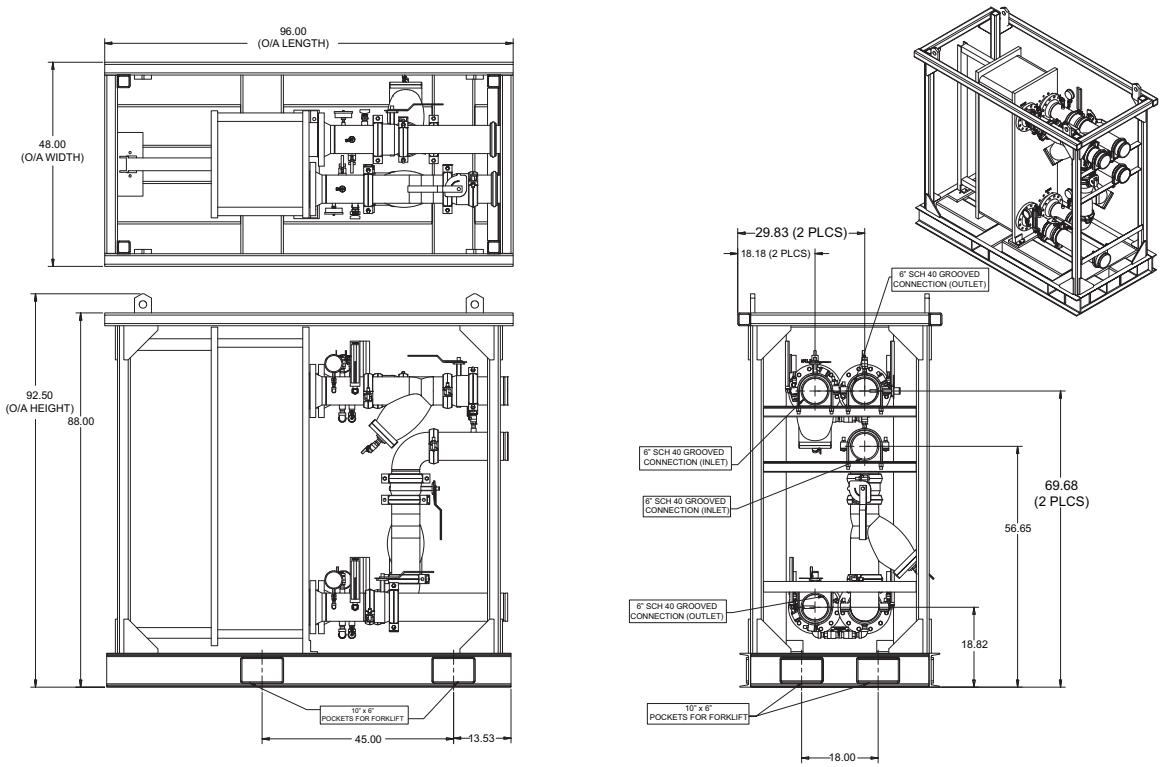


Figure 5. RSXX0250F0

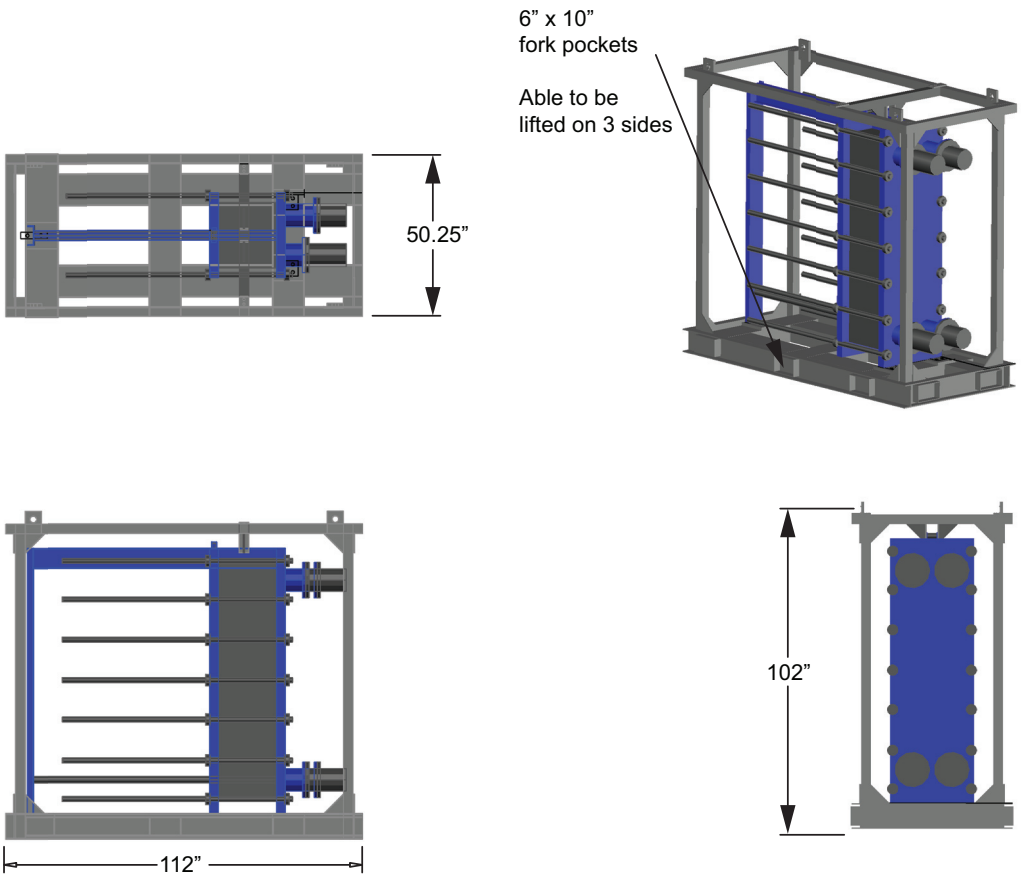


Figure 6. RSXX0250F2

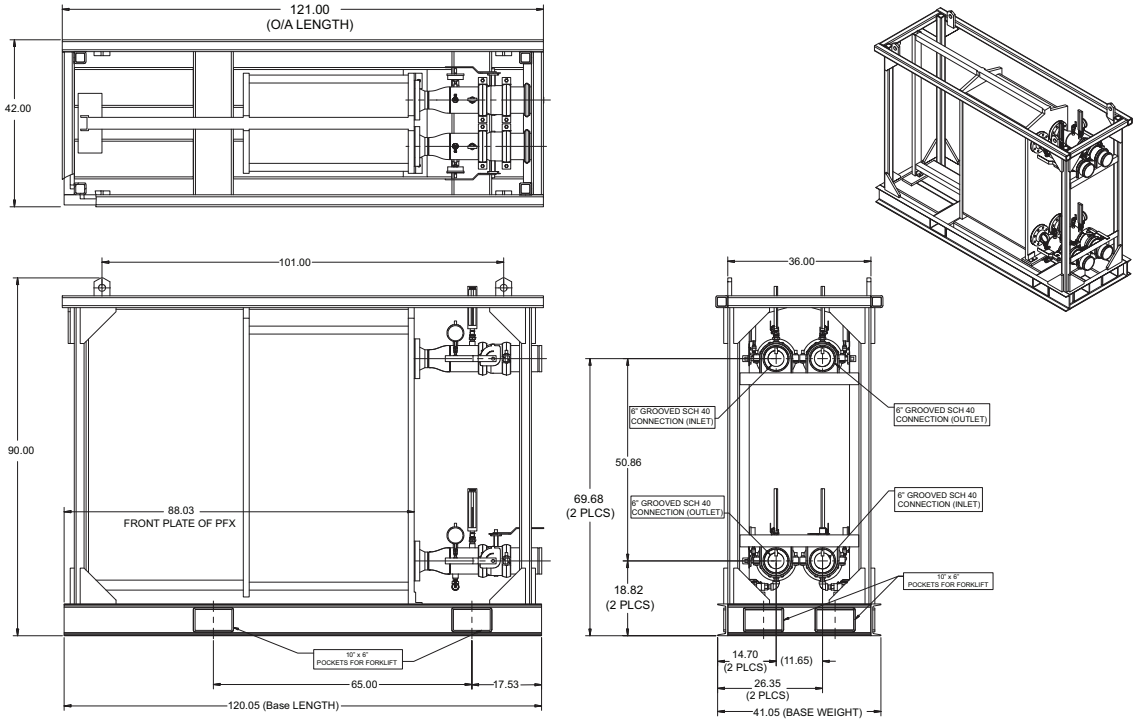


Figure 7. RSXX0500F0

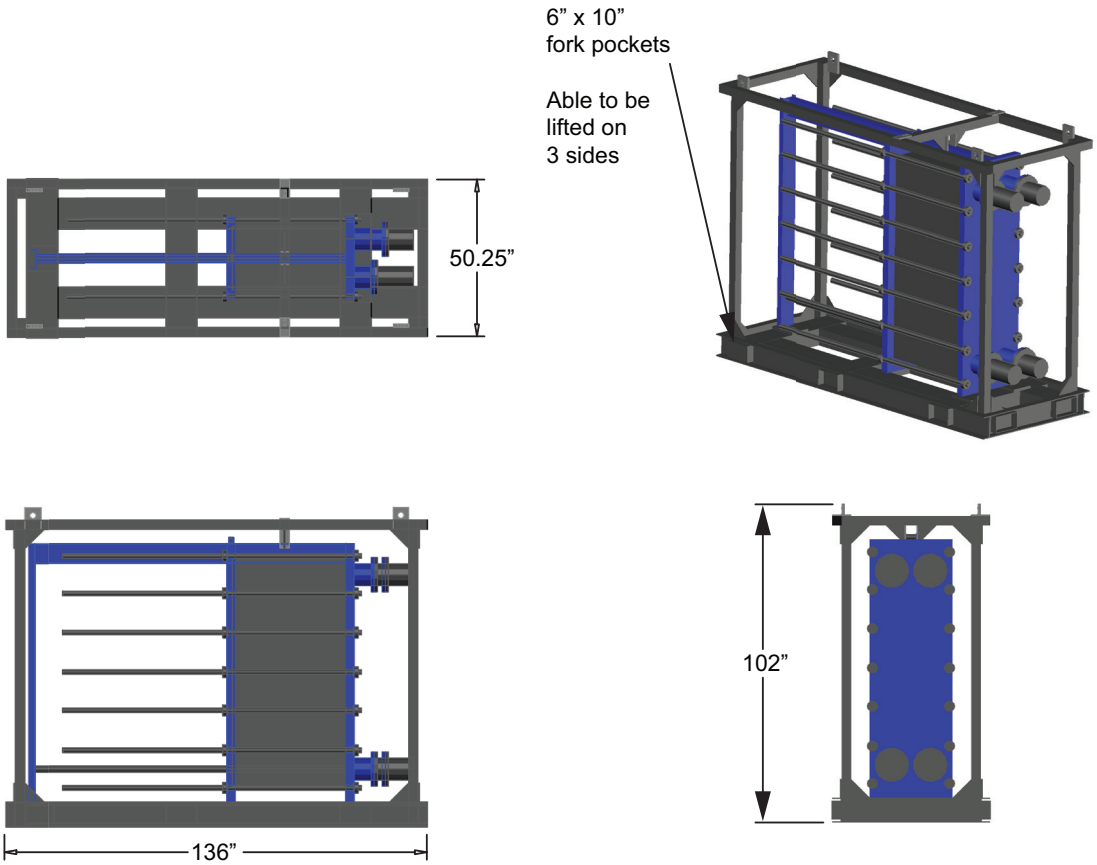
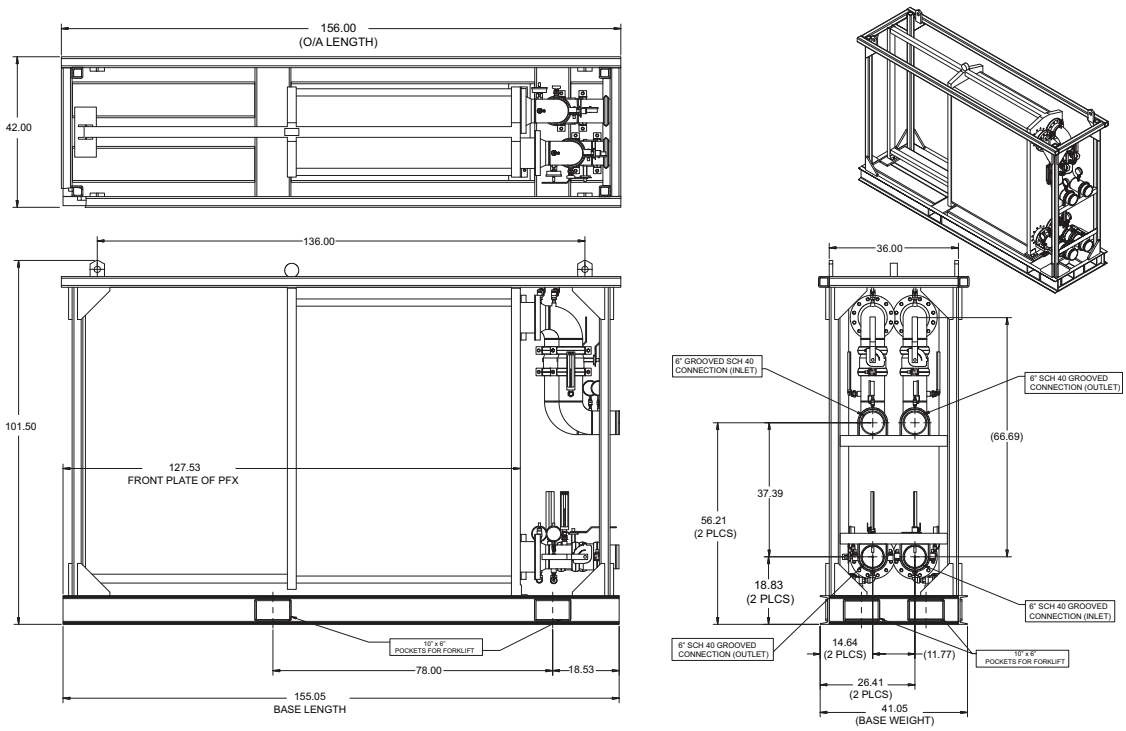


Figure 8. RSXX0500F2



Installation and Decommission

Please read the entire contents of this section before attempting off-loading or installation.

Off-Loading

⚠WARNING

Heavy Objects!

Failure to properly lift unit could result in death or serious injury or possible equipment or property-only damage.
Any forklift, crane, and straps or chains used must be capable of supporting the weight of the unit.

Inspect the unit before unloading and/or installing. If there is any damage, contact Trane Rental Services.

If using a crane:

- Confirm the crane and any straps or chains being used are able to support the weight of the unit.
- When attaching any straps or chains used for lifting, connect them only to the four lifting lugs provided at each corner of the unit.
- Do not use the lifting lugs mounted on the heat exchanger. Only use the lugs if required to remove the heat exchanger from the base.
- Consult Trane Rental Services before attempting to remove the heat exchanger from the surrounding base and frame.

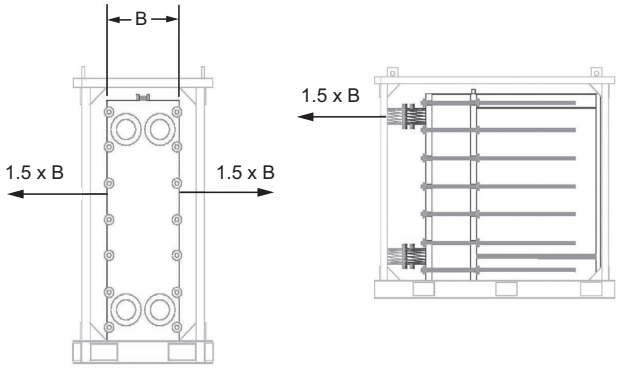
If using a forklift:

- Confirm the forklift can safely support the weight of the unit.
- Use the provided fork pockets.
- During the lift and the movement of the unit, all personnel should wear appropriate Personal Protective Equipment (PPE) - hard hats, steel toed shoes, and safety gloves.
- Do not stand close to, or under, a unit that is being lifted or moved.

Placement

Place the heat exchanger on a flat, level, clean surface capable of supporting the unit weight. Consider the following when choosing a location for the unit:

- Minimizes the length of piping required
- Isolated from sources of electricity
- Would not be affected by a water leak
- Accessible in the event of an emergency
- Restricts access from unqualified personnel
- Protected from exposure to freezing weather
- Provide adequate clearances for piping connections and service procedures



Connections

Pre-Installation Checks

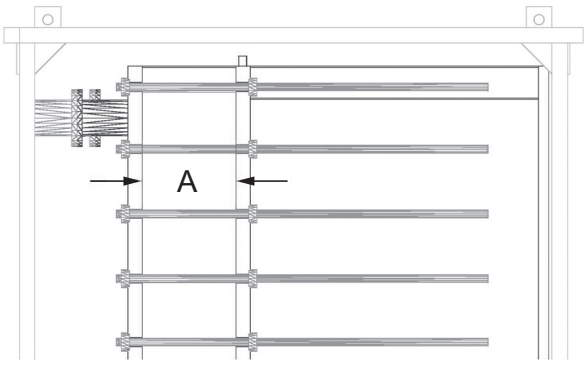
⚠WARNING

Contents Under Pressure!

Failure to follow this safety precaution could release dangerous pressures which could result in death, serious injury, or property damage.
Always operate within allowable temperature and pressure limits and only circulate approved fluid media through the heat exchanger.

Confirm the following before proceeding with installation:

- System fluid pressures are below the maximum allowable operating pressure of the unit.
- Fluid temperatures of the system are above the minimum allowable temperature and below the maximum allowable temperature of the unit.
- Fluids/chemicals flowing through the unit should be compatible with the plate and gasket materials.
- Inspect the unit for visible signs of damage before filling and/or operating to avoid unnecessary leaks.
- Verify compression dimension A of the heat exchanger is within the limits described on the unit nameplate.



- After locating and placing the unit and performing pre-installation checks, make the water connections.

⚠WARNING

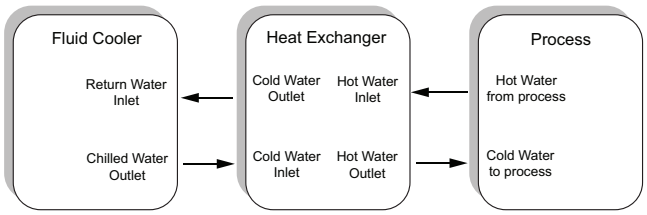
Hazardous Pressures!

Failure to follow this safety precaution could release dangerous pressures which could result in death, serious injury, or property damage.
Trane rental hose has a maximum allowable operating pressure of 150psi. For applications with higher pressures, hard piping must be used.

If using rental flexible hose, refer to *Trane Rental Services Temporary Cooling - Flexible Water Hose - Installation, Operation, and Maintenance* (CHS-SVX01*-EN) for additional instruction on proper handling and use of the hoses and fittings. Rental hose has a maximum allowable operating pressure of 150 psi. If the heat exchanger is to be operated at pressures above 150 psi (but still below the maximum allowable operating pressure of the heat exchanger) hard piping must be used.

Make piping connections as follows:

- The hot water inlet connects to the water line that carries hot water away from the process that needs to be cooled.
- The hot water outlet connects to the water line that carries cooled water to the process that needs to be cooled.
- The cold water inlet connects to the outlet of the fluid cooler (chiller/cooling tower/etc).
- The cold water outlet connects to the inlet of the fluid cooler.



The rental heat exchanger is built with permanent pipe connections that are ANSI 300 Flange style. For convenient use with rental hose, the unit is converted to grooved connections and ships with a short section of pipe on each inlet and outlet of the heat exchanger. The short sections of pipe are each fitted with pressure and temperature gauges.

⚠WARNING

Hazardous Chemicals!

Failure to follow this safety precaution could result in death or serious injury. Coil cleaning agents can be either acidic or highly alkaline and can burn severely if contact with skin or eyes occurs.
Handle chemical carefully and avoid contact with skin. ALWAYS wear Personal Protective Equipment (PPE) including goggles or face shield, chemical resistant gloves, boots, apron or suit as required. For personal safety refer to the cleaning agent manufacturer's Materials Safety Data Sheet and follow all recommended safe handling practices.

When filling the system, confirm there are protections in place to prevent chemical spills that may cause personal, property, or environmental damage.

NOTICE

Clogging

Failure to do so could cause premature clogging of the heat exchanger.
It is recommended that a bypass or strainer is used when first flushing the system loop.

If the system needs to be flushed before operation, it is recommended this is done with the heat exchanger bypassed to avoid clogging due to debris in the flow media.

Avoid rapid flow/pressure changes during start-up. Any valves used should be opened slowly to avoid a water hammer effect.

Filtration

The media flowing through the heat exchanger should not contain particles larger than 0.5 mm diameter/length. If necessary, Mesh 40 inline filters should be fitted.

Freeze Protection

⚠WARNING

Freeze Hazard!

Failure to do so could result in vessel rupture and sudden release of contents under high pressure and could result in death or serious injury or possible equipment or property damage.
The heat exchanger must be protected from freezes due to fluid temperatures and/or ambient conditions.

If operating the heat exchanger with below-freezing fluid temperatures, select an approved anti-freeze solution and apply it in proper concentration to prevent damage to the heat exchanger.

If the heat exchanger will be exposed to freezing ambient temperatures, the user is responsible for freeze protection of the unit. Heating blankets or heat tracing and insulation may be

used, but in the event of a power outage, the heat exchanger will be unprotected.

Important: *Select an approved anti-freeze solution and apply it in proper concentration to protect against the lowest expected ambient temperatures.*

Decommission

⚠WARNING

Hazardous Pressures!

Failure to follow this safety precaution could release dangerous pressures which could result in death, serious injury, or property damage.
Ensure the system has been depressurized before loosening any piping connections.

⚠WARNING

Hazardous Chemicals!

Failure to follow this safety precaution could result in death or serious injury. Coil cleaning agents can be either acidic or highly alkaline and can burn severely if contact with skin or eyes occurs.
Handle chemical carefully and avoid contact with skin. ALWAYS wear Personal Protective Equipment (PPE) including goggles or face shield, chemical resistant gloves, boots, apron or suit as required. For personal safety refer to the cleaning agent manufacturer's Materials Safety Data Sheet and follow all recommended safe handling practices.

1. Release system pressure before loosening piping connections.
2. Confirm there are property, environmental, and personal protections in place to prevent damage due to chemical spills before draining the system.
3. Confirm chemical solutions are disposed and/or properly contained. Adhere to guidelines of environmental laws in the area.
4. If the flange-to-groove adapters and short sections of grooved pipe have been uninstalled to accommodate flanged connections, re-install them onto the heat exchanger before returning the equipment.
5. If any chemical solutions, hazardous or not, were used during operation of the heat exchanger, the user must flush these materials out before returning.
6. Contact Trane Rental Services for assistance in identifying an appropriate cleaning solution based on the chemical solution that has been circulated through the unit.

Notes

Trane - by Trane Technologies (NYSE: TT), a global climate innovator - creates comfortable, energy efficient indoor environments for commercial and residential applications. For more information, please visit trane.com or tranetechnologies.com.

SRV-SVX03J-EN 12 Dec 2023
Supersedes SRV-SVX03H-EN (Sep 2023)