Installation, Operation, and Maintenance

Trane Rental Services

Cold Storage Container

Models:
Thermoking
Magnum+/Superfreezer — CFF

⚠ 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.

June 2025

TEMP-SVX007C-EN

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 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

Cancer and Reproductive Harm!

This product can expose you to chemicals including lead and bisphenol A (BPA), which are known to the State of California to cause cancer and birth defects or other reproductive harm. For more information go to www.P65Warnings.ca.gov.

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Table of Contents

Overview

This catalog should be only be used as a reference for Trane Rental Services cold storage containers to determine size limitations, available power, or lifting requirements. Verify the following with Trane Rental Services:

- Dimensions/weights and control options for the specific rental unit before equipment is shipped to a job site.
- Confirm adequate power is available for each cold storage container.
- If additional information is required, reference the Thermoking installation manual.

Contact Trane Rental Services 24/7 for availability of all equipment (including: flex duct, electrical cable, transformers, etc.) prior to obtaining a purchase order from the customer. Equipment is available on a first come, first-served basis, and can be reserved for three days with a signed Rental Agreement.

Model Number Description

Digit 1, 2, — Unit Model

RS = Rental Services

Digit 3, 4 — Unit Type

RC = Refrigerated Container

Digit 5, 6 — Door Configuration

00 = Dock Door
10 = Butcher Door

Digit 7, 8 — Container Length

20 = 20 foot container

Digit 9, 10— Design Sequence

F0 = Magnum Plus
F1 = SuperFreezer
F2 = Container Fresh and Frozen

Digit 11, 12— Incremental Designator

AA

Reference Documents

For further information, refer to the documents below.

Table 1. Thermo King reference documents

MAGNUM PLUS® with MP4000	TK 60275
Superfreezer CRR DF MP3000	**TK 50134**
CFF Maintenance Manual	**TK 61888**
Marine Reefer Units with mP-4000	TK 61959
MP4000 (Drivers Guide)	TK 61693
SG-5000 Clip On Generator Maintenance Manual	**TK 56740**
SGCO 5000 Parts Manual	TK 56803
YanmarTNV Series Engine Service Manual	TK 55584
YanmarTNV Series Engine Troubleshooting Manual	TK 55740
Tool Catalog	TK 5955
EPA and ARB Supplemental Emissions Warranty Statement	TK 56690

General Data

RSRC1020F0

Table 2. General data - RSRC1020F0

Net Cooling Capacity[a]	12,636 BTU/hr
Net Defrost Heating Capacity[b]	17,914 BTU/hr
Refrigerant Type	R-404A
Number of Compressors	1
Compressor Type	Scroll
Refrigerant Charge	8 pounds
Number of Refrigerant Circuits	1
Ambient Operating Conditions	(-22)°F — 122°F

[a] Design Conditions: 100°F Ambient, -40°F Evap. Return Air Temperature
[b] Design Conditions: Includes fan heat

RSRC1020F1

Table 3. General data - RSRC1020F1

Net Cooling Capacity[a]	28,150 BTU/hr
Net Defrost Heating Capacity[b]	27,814 BTU/hr
Refrigerant Type	R-134a/R-23
Number of Compressors	2
Compressor Type	Semi-hermetic reciprocating (R-134a) / Hermetic scroll (R-23)
Refrigerant Charge	7.7 pounds (R-134a) / 7.05 pounds (R-23)
Number of Refrigerant Circuits	2
Ambient Operating Conditions	(-22)°F — 122°F

[a] Design Conditions: 100°F Ambient, -94°F Evap. Return Air Temperature
[b] Design Conditions: Includes fan heat

RSRC1020F2

Table 4. General data - RSRC1020F2

Net Cooling Capacity[a]	12,636 BTU/hr
Net Defrost Heating Capacity[b]	17,914 BTU/hr
Refrigerant Type	R-134a
Number of Compressors	1
Compressor Type	Scroll
Refrigerant Charge	11.4 pounds
Number of Refrigerant Circuits	1
Ambient Operating Conditions	(-22)°F — 122°F

[a] Design Conditions: 100°F Ambient, -40°F Evap. Return Air Temperature
[b] Design Conditions: Includes fan heat

Gross Cooling Capacities

RSRC1020F0

Table 5. Net cooling capacities — RSRC1020F0

Evaporator Return Air Temperature	Cooling Capacity (Watts)	Cooling Capacity (BTU/hr)
70°F	11,500	56,700
35°F	11,000	40,945
0°F	7,500	24,785
(-20°F)	6,600	17,251
(–31°F)	6,000	14,000

Note: Net Cooling Capacity at 100°F Ambient Temperature at 60 Hz Power

RSRC1020F1

Table 6. Net cooling capacities — RSRC1020F1

Evaporator Return Air Temperature	Cooling Capacity (Watts)	Power Factor	Cooling Capacity (BTU/hr)	Power Consumption (Watts)
(-22°F)	8,250	0.84	28,150	9,585
(–76°F)	5,850	0.81	19,961	10,660
(-85°F)	4,876	0.73	16,637	13,200
(-94°F)	3,744	0.70	12,775	16,300

Note: Net Cooling Capacity at 100°F Ambient Temperature at 60 Hz Power

RSRC1020F2

Table 7. Net cooling capacities — RSRC1020F2

Evaporator Return Air Temperature	Cooling Capacity (Watts)	Cooling Capacity (BTU/hr)
70°F	10,650	53,618
35°F	8,800	38,847
0°F	5,690	21,345
(-20°F)	4,570	13,780

Note: Net Cooling Capacity at 100°F Ambient Temperature at 60 Hz Power

Electrical Data

RSRC1020F0

Table 8. Electrical data — RSRC1020F0

Number of Electrical Circuits	1
Voltage	460 V 3–phase
Frequency	60 Hz
MCA	18.1 A
MOP	25 A
FLA	15.3 A

RSRC1020F1

Table 9. Electrical data — RSRC1020F1

Number of Electrical Circuits	1
Voltage	460 V 3–phase
Frequency	60 Hz
MCA	33.8 A
MOP	45 A
FLA	30.1 A

RSRC1020F2

Table 10. Electrical data — RSRC1020F2

Number of Electrical Circuits	1
Voltage	460 V 3–phase
Frequency	60 Hz
MCA	17.9 A
MOP	25 A
FLA	15.2 A

Optional: Clip-On Generator

Table 11. Optional clip-on generator specifications

Engine	Thermo King diesel engine compliant with EPA Tier 4 and CARB regulations
Fuel Type	No. 2 diesel (under normal conditions)/ No. 1 diesel (cold weather fuel)
Rotational Speed	1500 ±25rpm / 1800 ±25rpm
Generator	460/230Vac, 3Phase, 60Hz
Output Power	15 kW
Apparent Power	18.75 kVA
Rotational Speed	1,800 RPM
Electrical System	SG+ microprocessor controller
Battery	12V, 925CCA

Table 11. Optional clip-on generator specifications (continued)

Fuel Tank	Included in all models
SGCO	4,731 kg (125 gallons)
Weight-less fuel	
SGCO	871 kg (1,920 gallons)

Dimensions and Weights

All Container Types

Table 12. External dimensions

Length	19 feet 11 inches
Width	8 feet
Height	8 feet 6 inches

Table 13. Internal dimensions

Length	17 feet 3 inches
Width	6 feet 8 inches
Height	6 feet 11.5 inches

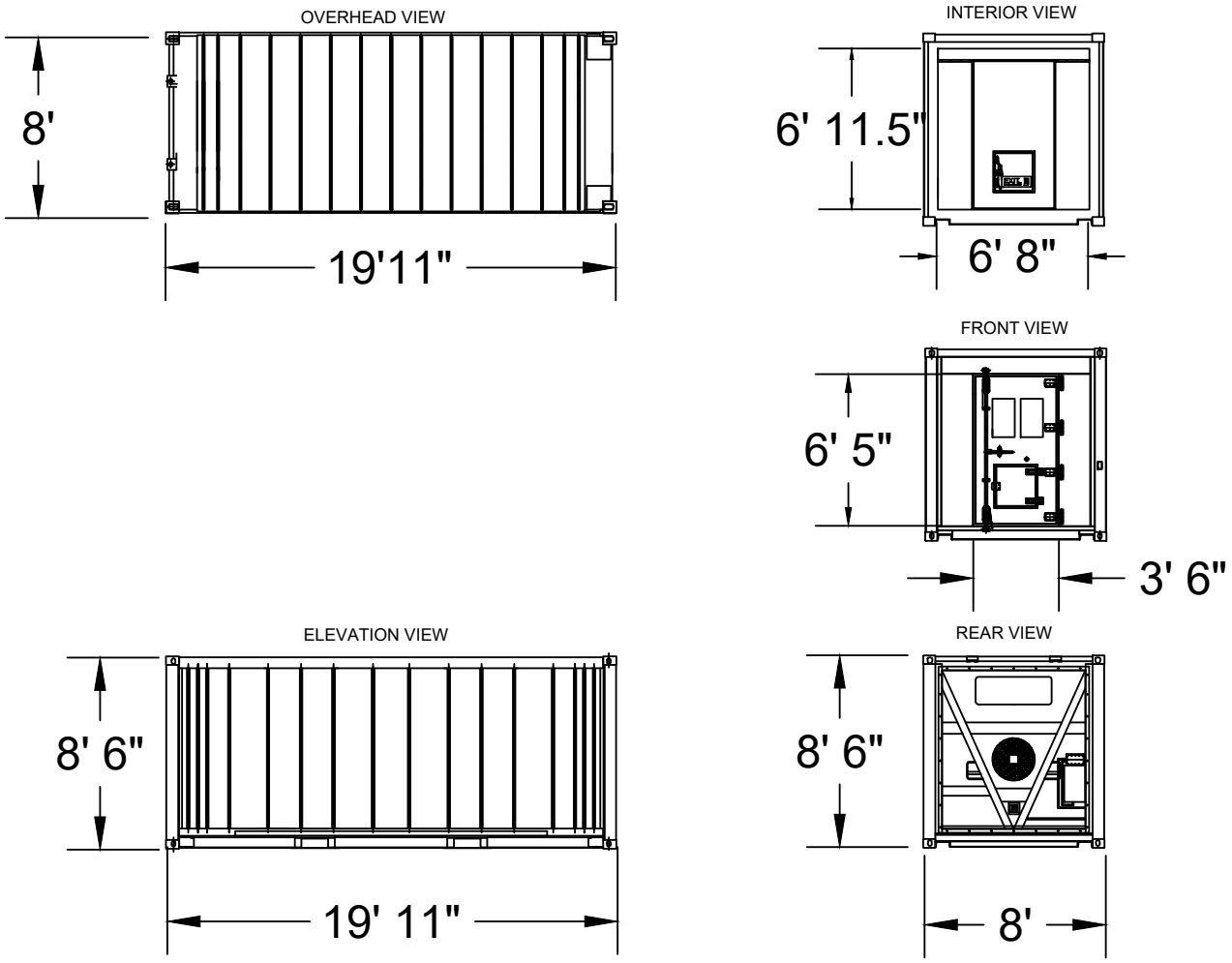
Table 14. Opening dimensions

Width	3 feet 6 inches
Height	6 feet 5 inches

Table 15. Weight

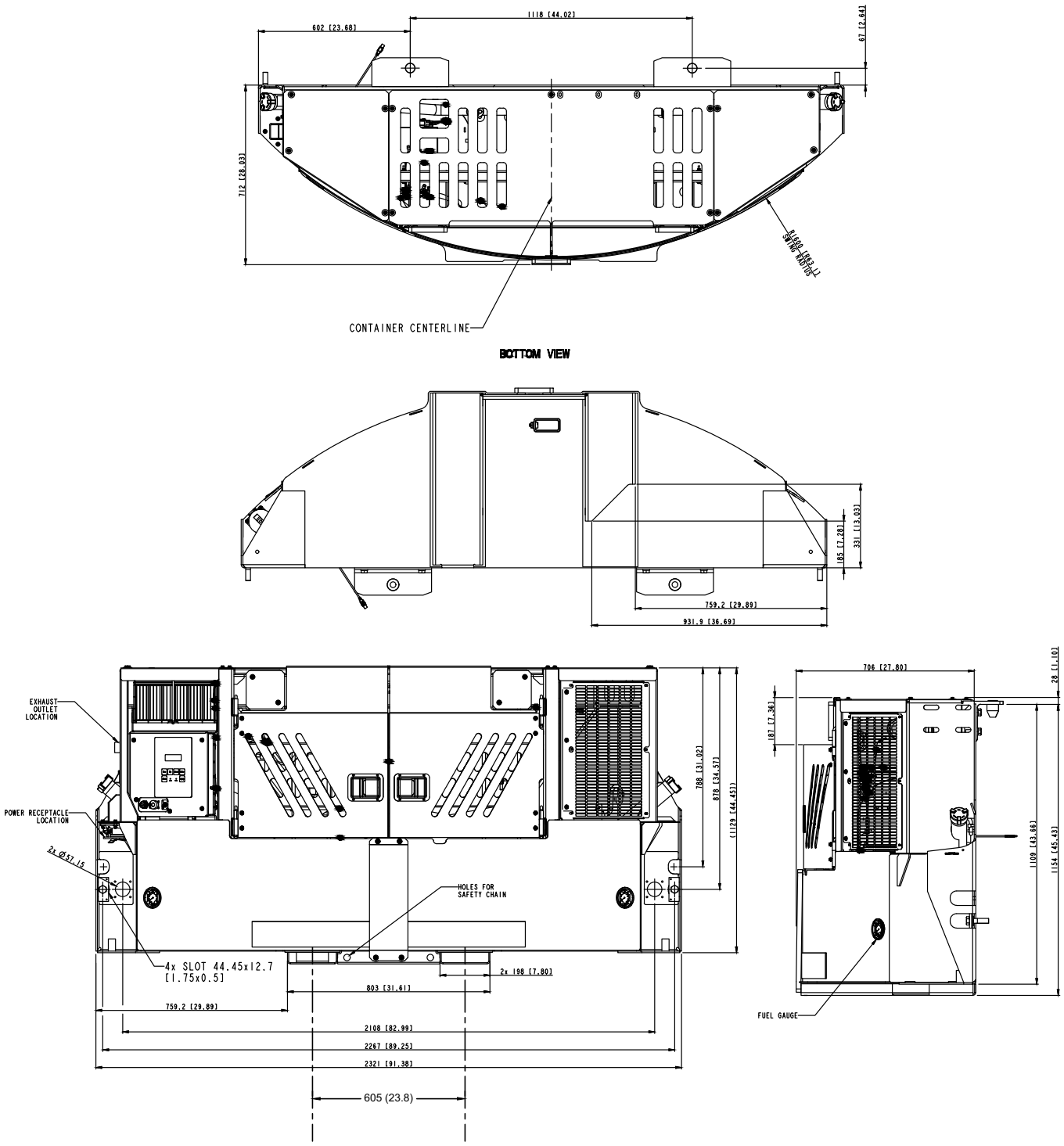
Empty Weight	9,260 pounds
Cargo Capacity	43,650 pounds

Figure 1. Container dimensions



Dimensions (Clip-On Generator)

Figure 2. Installation outline



Installation Considerations

Temperature Setpoint Range

- RSRC1020F0 (Magnum Plus) cold storage containers can maintain a temperature range of -40°F to 86°F with a maximum air temperature fluctuation of +/- 0.45°F (chilled mode) or +/- 1.8°F (frozen mode).
- RSRC1020F1 (Super Freezer) cold storage containers can maintain a temperature range of -94°F to 14°F with a maximum air temperature fluctuation of +/-1.8°F.
- RSRC1020F2 (Container Fresh and Frozen) cold storage containers can maintain a temperature range of -22°F to 86°F with a maximum air temperature fluctuation of +/- 0.45°F (chilled mode) or +/- 1.8°F (frozen mode).

Product Types

- RSRC1020F0 (Magnum Plus) and RSRC1020F2 (Container Fresh and Frozen) cold storage containers are ideal for above freezing storage applications and deep freeze storage applications requiring tight temperature control. Products used in these applications include temporary storage of food and beverages, industrial products, pharmaceuticals, and extra capacity for hospital environments.
- RSRC1020F1 (Super Freezer) cold storage containers allow for ultra-low temperature storage applications. Extreme low temperatures cause microbial decomposition to cease completely, ensuring that products remain in perfect condition over extended periods. Products used in these applications include vaccines, active pharmaceutical ingredients, biological material, blood plasma, food ingredients such as yogurt cultures, chemical enzymes, 3D printing components, high-tech semiconductor components, R&D material, processed and freshly caught seafood, and pre-treated composite materials.

Required Clearance

Units should be installed on a level surface with at least four feet of clearance in front of the refrigeration unit to ensure adequate airflow and service clearance.

Electrical Connections

All refrigerated containers are equipped with 50 foot power cables terminated with four-pin Leviton IEC pin and sleeve connectors. The units are provided with a 7 foot Leviton IEC adapter cable with 8 AWG Type W bare wire connections for termination at appropriately sized disconnect or overcurrent device. Refer to unit-specific information in the following pages for electrical sizing and requirements. Clip-on generators come with a provided 3–foot adapter cable to transition between the 4-pin Mennekes generator output connector and the 4-pin Leviton input connector on the container power cable.

Containers include a phase fault indicator light located next to the operator interface which illuminates to indicate phase reversal.

⚠ WARNING

Conform to All Applicable National, State, and Local Electrical Codes!

Failure to follow all applicable codes could result in an arc flash event, electrocution, explosion, or fire, which could result in death or serious injury.

Users MUST conform to all applicable national, state, and local electrical codes during the electrical installation and servicing of this product.

Container Features

All containers include a user-operable controls with the following functionality:

- Alarm switch with flashing alarm beacon to alert of safety issues
- Light switch to illuminate the interior of the container
- Pause switch to disable refrigeration unit for a predefined period of 8 minutes

Additionally all RSRC1020F1/RSRC1020F2 units include a door open indicator light and door heater switch to assist in opening the container door while operating at low temperatures. On units so equipped, the alarm switch provides the additional function of disabling the refrigeration unit when engaged.

⚠ WARNING

Check of Safety Devices Required!

Failure to follow instructions below could cause unsafe conditions and result in death, serious injury, or property damage.

All safety controls MUST be checked before starting the unit and during regular maintenance! Check and test the operational functions of all safety devices supplied with this unit.

In order to prevent accidental containment of personnel within the container, each container door includes a door hatch which can be opened from within the container in order to access the main door latch for egress from the container.

Container Ramps

To assist with loading/unloading material to and from the container, ramps are provided with all containers.

Figure 3. Ramps included with all containers

Container Loading

Container interiors are labeled with a maximum cargo height in order to maintain adequate clearance for cooling airflow throughout the container; do not stack cargo above this height.

Optional Clip-On Generator Startup

Genset Power Up

Move the power switch to the On position.

Genset start sequence will automatically begin, including engine preheat if needed.

Once the engine has successfully started, power output will turn on automatically after two minutes.

Pretrip Inspection

The pretrip inspection is an important part of the preventive maintenance program. It is designed to head off operating problems and breakdowns before they happen. The Pretrip Inspection is not a substitute for a regularly scheduled maintenance.

Visual Inspection

The following inspections should be made before loading the container or trailer:

- **FUEL:** The diesel fuel supply must be sufficient to guarantee engine operation to the next check point.
- **Engine Oil:** Engine oil level should be at the FULL mark. Never overfill. The dipstick is attached to the filler cap.

- **Coolant:** Engine coolant must be above the ADD mark with antifreeze protection of-34°C (-30°F). Check and add coolant in the expansion tank.
- **Battery:** Terminals must be clean. Electrolyte should be at the full mark.
- **Electrical:** Electrical connections should be securely fastened. Check wires and terminals for corrosion, cracks or moisture. Repair or replace if necessary.
- **Structural:** Visually inspect the unit for leaks, loose or broken parts and other damage. The radiator coil should be clean and free of debris. Clean if necessary. Use an air or water spray jet directed against the coil from the air discharge side.
- **Mounting Bolts:** Check the mounting bolts on the unit and engine. Tighten if necessary.

Starting the Unit

Generator sets are designed to provide power for a refrigeration unit. Before starting the generator set, make sure the refrigeration unit power cord is connected to the generator set electric power receptacle. To operate the refrigeration unit on shore power, disconnect the power cord from the generator set and plug it into the proper power supply.

1. Turn unit ON/OFF switch to On. The switch is located below the SG+ 1.5 controller.
2. A series of displays called the Start Sequence appears on the display as follows:

- DISPLAY UNIT
- REV 1.0.0

- SG+
- X.X.X.XYYMMDD

- MAIN MENU
- DATA
- DELAY 20 (or 19, 18, 17, etc. to 01)
- The delay screen counts down from 20 to 01 while the controller performs some self checks

- MAIN MENU
- INIT
- The controller energizes the glow plugs for preheat (if necessary). The preheat buzzer is energized during the preheat period. Preheat time ranges from 5 to 120 seconds, depending on the engine temperature. Preheat may continue until after the engine starts.

- MAIN MENU
- DATA
- FUEL RELAY ON
- The controller energizes the fuel relay.

- MAIN MENU
- DATA
- STARTER
- The engine begins cranking. The glow plug and pre-heat buzzer may remain energized during the cranking period.

- MAIN MENU
- DATA
- DELAYED OUTPUT
- This display appears while the controller delays energizing the alternator output for approximately 2 minutes.

After Start Inspection

After the engine has started:

1. Listen for abnormal noises.
2. Check for any alarms or messages using the Alarm List Menu and the Message List Menu.

Note: *The engine must operate for approximately 2 minutes before the exciter circuit and battery charging circuits are energized.*

Functional Inspection

To properly perform a PTI (Pretrip Inspection Test) on units equipped with a SG+ controller, do not apply a load to the alternator.

1. Start the unit.
2. Initiate an automatic PTI:

Correct all existing alarm conditions and clear the alarm codes before performing a PTI.

- Press the ENTER key or the ESCAPE key to enter the Main Menu, if necessary.
- Press the UP or DOWN key to scroll up or down through the Main Menu to the Commands Menu.
- Press the ENTER key to enter the Commands Menu.
- The PTI submenu will be displayed.
- Press the ENTER key to start the PTI.

3. The controller then performs the PTI. Observe the unit for proper operation and functions during the PTI. The display shows which component is being tested, and the test result (PASSED of FAILED):

- "Please Wait"
- The engine stops.
- A display test is performed. Watch the display to verify it is operating properly.
- The controller beeps to test the buzzer.
- The ECU ignition is tested.
- The ECU run relay is tested.
- The ECU fuel relay is tested.
- The ECU CAN connect is tested.
- Engine Start is tested. The engine starts, The display says: "START ENGINE TEST” (beep on, then off, then start appears briefly) (the result of the test - i.e. RUNNING 1491). RESULT: "PASS" if the result is acceptable.
- Low/High speed is tested. (Engine still running - similar results screen and test sequence to point above.)
- The output voltage is tested, (Engine still running - similar results screen and test sequence to point above).

If a component fails its test, the PTI will stop at that point and display “FAILED — REBOOT.” Correct the problem and repeat the PTI by pressing the ENTER key.

4. When the PTI is complete, the test ends automatically and the controller display shows "PTI PASSED (or FAILED) -REBOOT". Turn the On/Off Switch Off and back On to reboot and return the unit to normal operation
5. If an operating problem occurs during the PTI, view and correct any alarms or messages. Then acknowledge the alarms or messages and repeat the PTI.

Note: *Acknowledge the alarms or messages ONLY after the alarm codes are documented and problems repaired.*

Main Menu

The Main Menu contains the following menus:

- Data Menu
- Alarm List Menu
- Message List Menu
- Commands Menu
- Misc. Functions Menu
- Configuration Menu
- Event Log Menu

To enter the Main Menu complete the following steps:

1. Place the On/Off switch in the "ON" position.
2. Press the ENTER key or the ESCAPE key to enter the Main Menu, if it is not displayed.
3. The Data Menu is typically the first menu displayed in the Main Menu.

- Press the ENTER key to enter the Data Menu.
- Press the UP or DOWN key to scroll up or down through the Main Menu.

Additional Considerations

For additional information and specific unit considerations, contact Trane Rental Services.

Lifting and Rigging Instructions

See table below for typical unit lifting weights.

Table 16. Unit weights

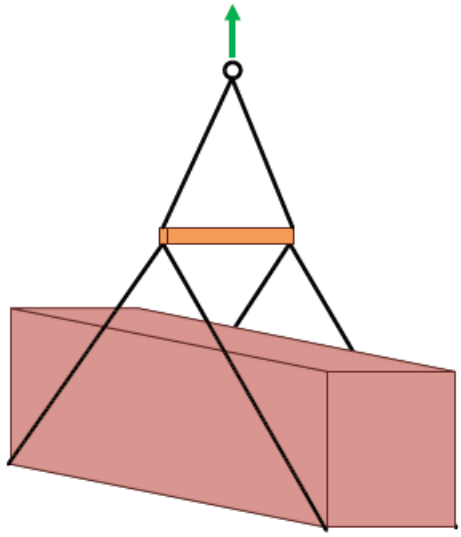
Empty Weight	Cargo Capacity
9260 pounds	43650 pounds

Lifting with a side loading forklift or standard forklift is acceptable. Lift and position the container using the fork pockets integrated into the sides of the container. There are not fork pockets on the ends of the container, therefore it is not allowed to lift the container from the ends. Ensure that the forklift is capable of lifting the combined weight of the container and cargo held within.

Figure 4. Forklift lifting method

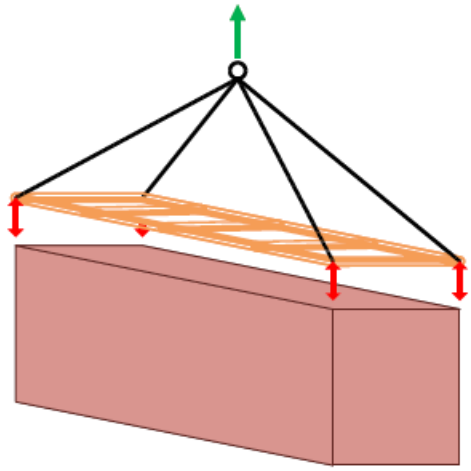
Lifting with a crossbar and lifting cables is acceptable. The cables **MUST** attach to the bottom lifting points on the container. Lifting beam crossbars **MUST** be positioned so lifting cables do not contact the sides of the unit. See figure below for an example of this lifting method.

Figure 5. Crossbar and cable lifting method



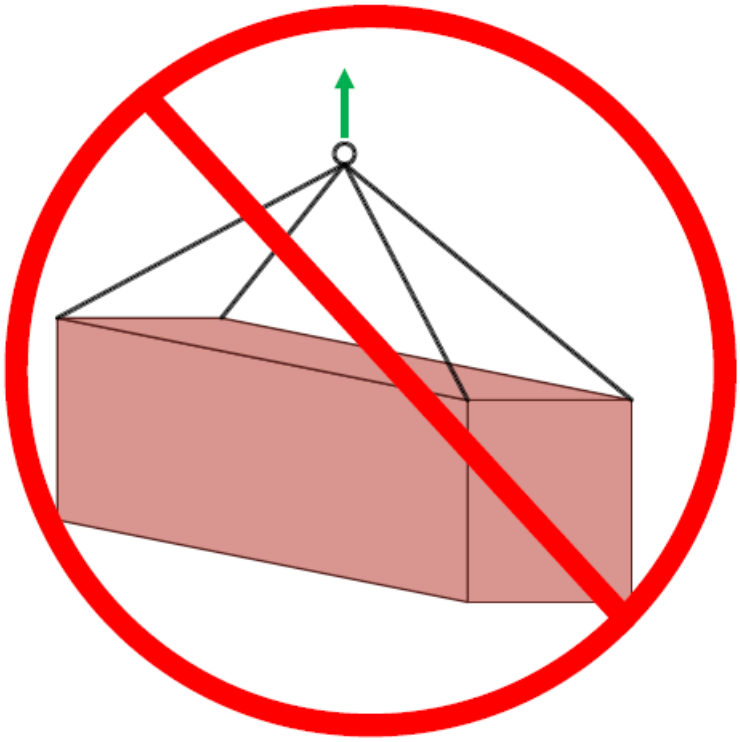
If lifting with a crane, using a container spreader is preferred. Attach chains or cables to lifting points on the top of the container as shown in the figure below.

Figure 6. Container spreader lifting method (preferred)



It is **NOT** permitted to lift a container using just a 4-leg sling attached to the four top lifting points. Doing so induces compression loads in the roof plane of the container, especially lengthwise, which could result in the instant breaking of the container. See the figure below for an example of this unacceptable lifting method.

Figure 7. Unacceptable 4–legged sling lifting method

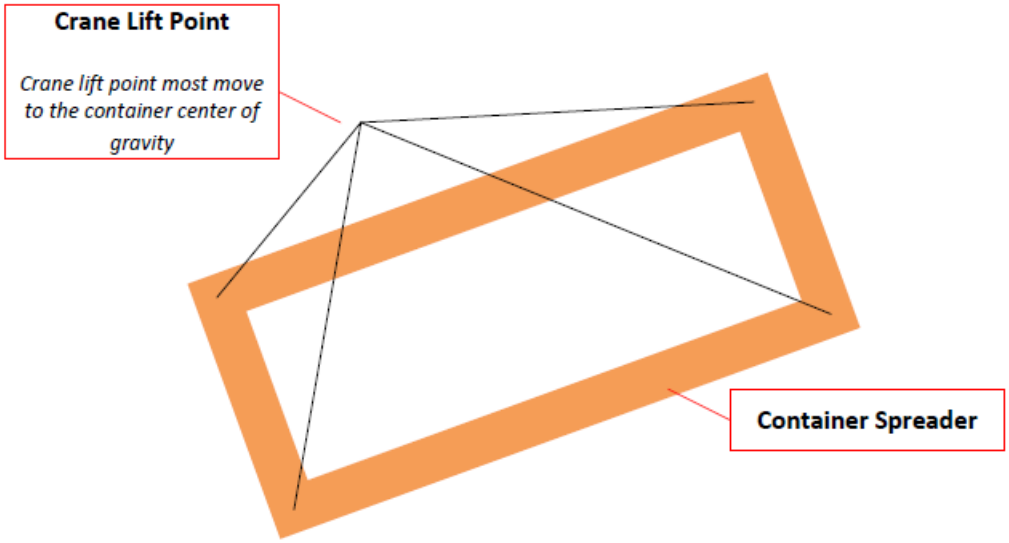


Important: *The center of gravity (CG) is never at the midpoint of the container base lifting points. A level unit lift is required for a safe lift and to prevent unit and cargo damage.*

Lifting a unit with equal length cables will **NOT** produce a level unit during the lift because the CG will not be at the midpoint between the base lifting holes. The following adjustments must be made to produce a level lift:

- Container Spreader Lifting Method
  - If the cables from the spreader bar to the container roof are the same length, the crane lifting point on the center web of the container spreader must be adjusted to produce a level lift. See Figure 5 for illustration.
- Crossbar and Cable Lifting Method
  - Several adjustments of the cable length may be required to produce a level unit during lift.

Figure 8. Container spreader bar adjustment for level unit lift



Controls

Operator Interface

RSRC1020F0 and RSRC1020F2

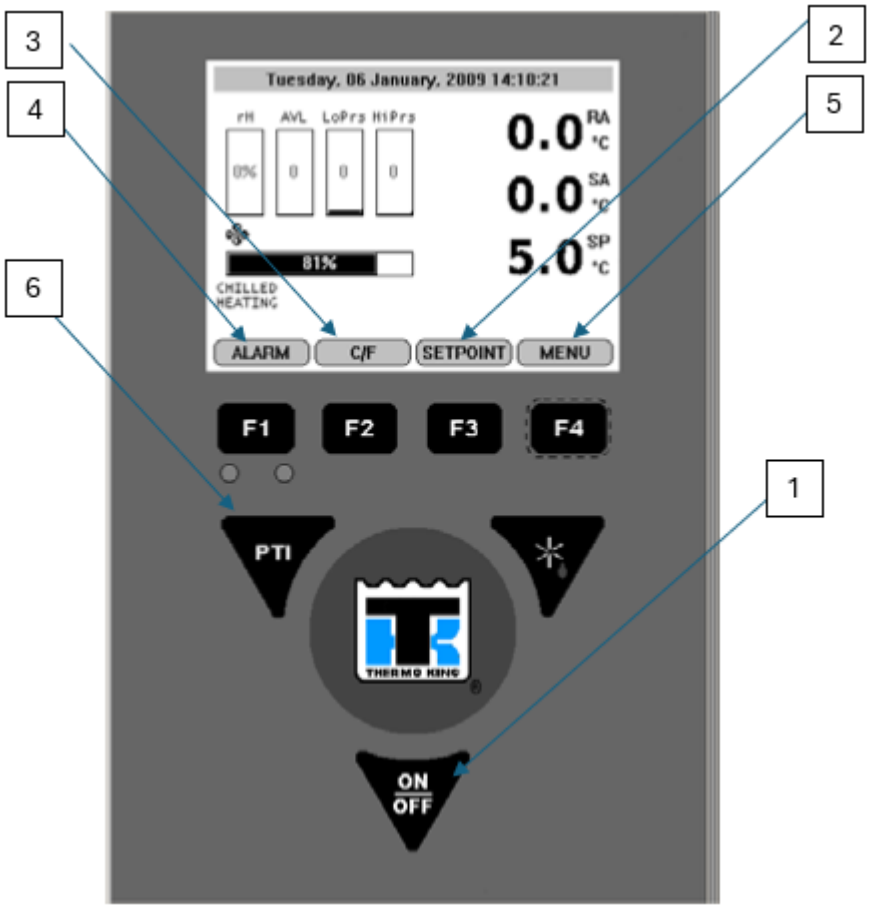
The MP4000 controller display is used to turn the refrigeration unit on/off and to adjust setpoints and enable optional controls features. The following includes a brief description of the primary control functions; for additional controls functions and information please reference Thermo King literature #TK 61959–4–OP-EN.

1. To turn unit on or off, use the **On/Off** button at the bottom of the display.
2. To adjust the container air temperature setpoint, press the **F3** key with unit running and use the **F2** and **F3** keys to adjust the setpoint up or down to the required temperature. Finally, press and hold the **F4** key to save the setpoint and return to the main screen, where the updated setpoint will be visible.
3. To temporarily adjust display units from °C to °F and vice versa, press the **F2** key from the main menu. To permanently adjust display units, hold the **F2** key from the main menu until prompted to confirm change.
4. To view alarms, press the **F1** key from the main display screen.
5. Press **F4** from the main screen to enter the menu from which the following functions can be enabled/disabled (all optional functions disable by default): Dehumidification mode, Cold Treatment mode, Multiple Temperature Setpoint Mode, and Silent Mode. Refer to Thermo King literature #TK-61110-4-OP for additional information on these optional operating modes.
6. Press the **PTI** button to enter the pre-trip inspection/functional self-test menu.

In addition to the features/modes described above, the MP4000 controller also includes status indicator lights located just under the **F1** function key, providing status as follows:

- Flashing Green LED – Temperature approaching in-range
- Solid Green LED – Temperature in-range
- Flashing Red LED – Alarm present and unacknowledged
- Solid Red LED – Alarm present and acknowledged

Figure 9. MP4000 controller



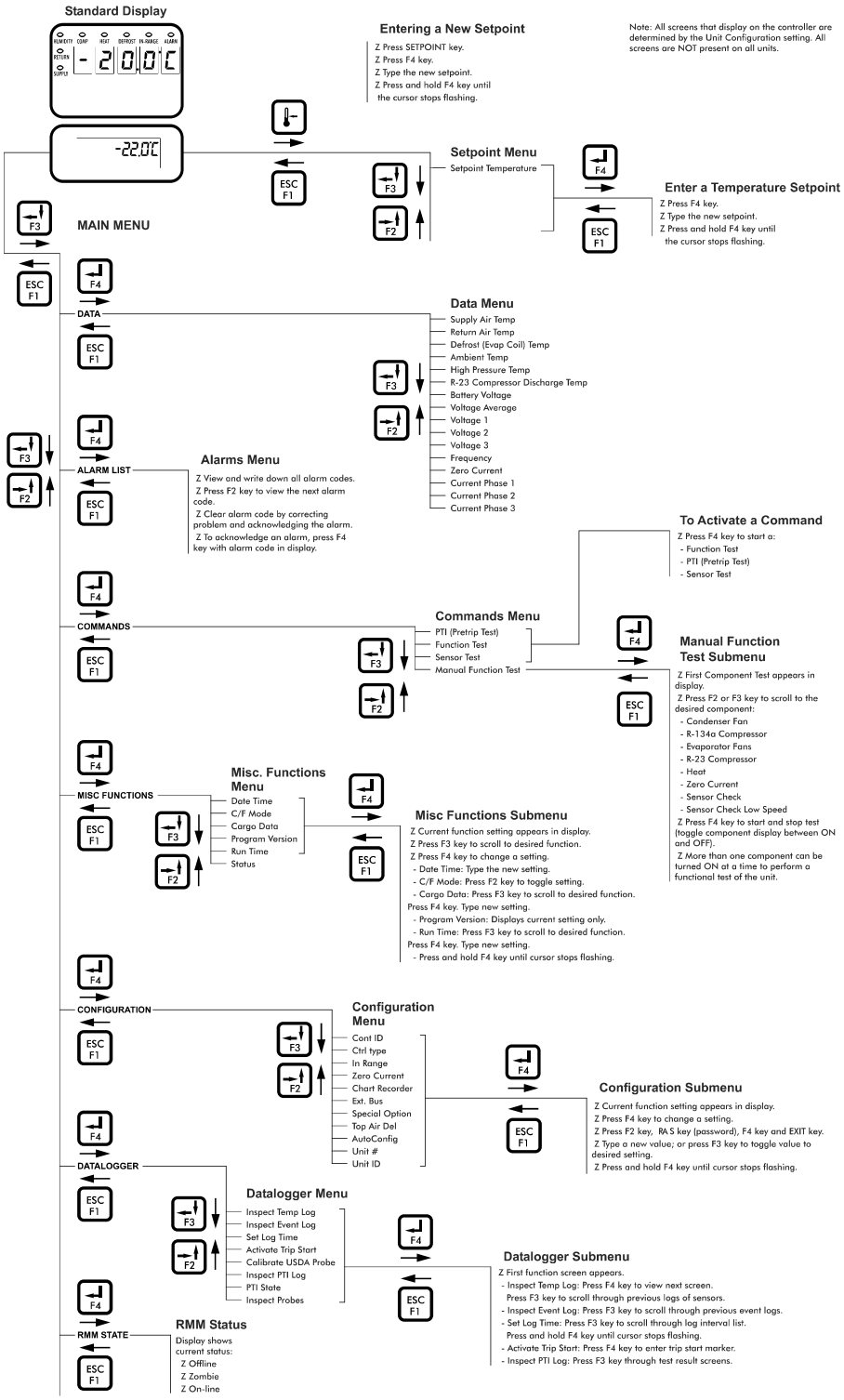
RSRC1020F1

RSRC1020F1 units are equipped with MP3000 operator interfaces which provide the following functionality:

- Setpoint adjustment
- Cargo and refrigeration system temperature data
- Operating mode selection
- Pre-trip Inspection diagnostic tools

Review Figure 3 on the following page for MP3000 operating instructions.

Figure 10. MP3000 navigation



Clip-On Generator

Figure 11. Controller overview

Display

The vacuum lucent display on the front panel shows operating information including output voltage, current test state during a Pretrip test and the controller menu. Normally it shows the Output Voltage (this is called the Standard Display). It will be blank when the unit On/Off switch is OFF.

Escape Key

Press this key to escape a new setting or jump to the parent menu.

Up Key

Press this key to scroll UP through the menu display, or increase the value of a setting.

Down Key

Press this key to scroll DOWN through the menu display, or decrease the value of a setting.

Enter Key

Press this key to enter or execute controller menu tasks or commands.

Alarm Key

Press this key to go directly to the Alarm List Menu and view the alarm information in the display.

Alarm LED

Flashes when the controller has detected an alarm condition. It is off when there are no alarms.

Power LED

Lights up while the Unit On/Off Switch is in the ON position. It is off when the Unit On/Off switch is in the OFF position.

Language Key

Press this key to change the language used on the display. English and Spanish are the languages that are currently available.

Language Key

Press this key to change the language used on the display. English and Spanish are the languages that are currently available.

On-Off Switch

In the ON position, the electrical control system energizes for unit operation. In the OFF position, the electrical control system including the fuel solenoid de-energizes to stop the engine. The unit will not operate.

Alarm List Menu

The Alarm List Menu displays alarms. Alarms are recorded in the controller memory to simplify unit diagnostic procedures. The alarms are listed in the reverse order of their occurrence. The Alarm LED flashes if a shutdown alarm is present. Enter the Alarm List Menu to view the and acknowledge the alarms.

Displaying and Acknowledging Alarms

Enter the Alarm List Menu to view and acknowledge the alarms as follows:

1. Place the On/Off switch in the "ON" position.
2. Press the ALARM key to enter the Alarm List Menu directly. Or Enter the Alarm List Menu through the Main Menu as follows: Press the ENTER key or the ESCAPE key to enter the Main Menu, if necessary. Press the UP or DOWN key to scroll up or down through the Main Menu to the Alarm List Menu. Press the ENTER key to enter the Alarm List Menu.
3. The Alarm List Menu will appear on the display. It shows the most recent alarm and the following information: The alarm code (100 through 604). The position of the alarm in the list of recorded alarms. For example, 1/2 means alarm one of two. The alarm text. The alarm status (Active or Acknowledged). Write down the alarm code and the alarm text.
4. Write down the alarm code and the alarm text.
5. Press the ENTER key to acknowledge the alarm. The Alarm LED will continue flashing until the active alarms (and messages) have been acknowledged.
6. Press the DOWN key to scroll down to the next alarm, if necessary.
7. Write down the alarm code and the alarm text.
8. Press the ENTER key to acknowledge the alarm.
9. Repeat steps 6 through 8 until all active alarms have been written down and acknowledged.
10. Press the ESCAPE key to return to the Main Menu.

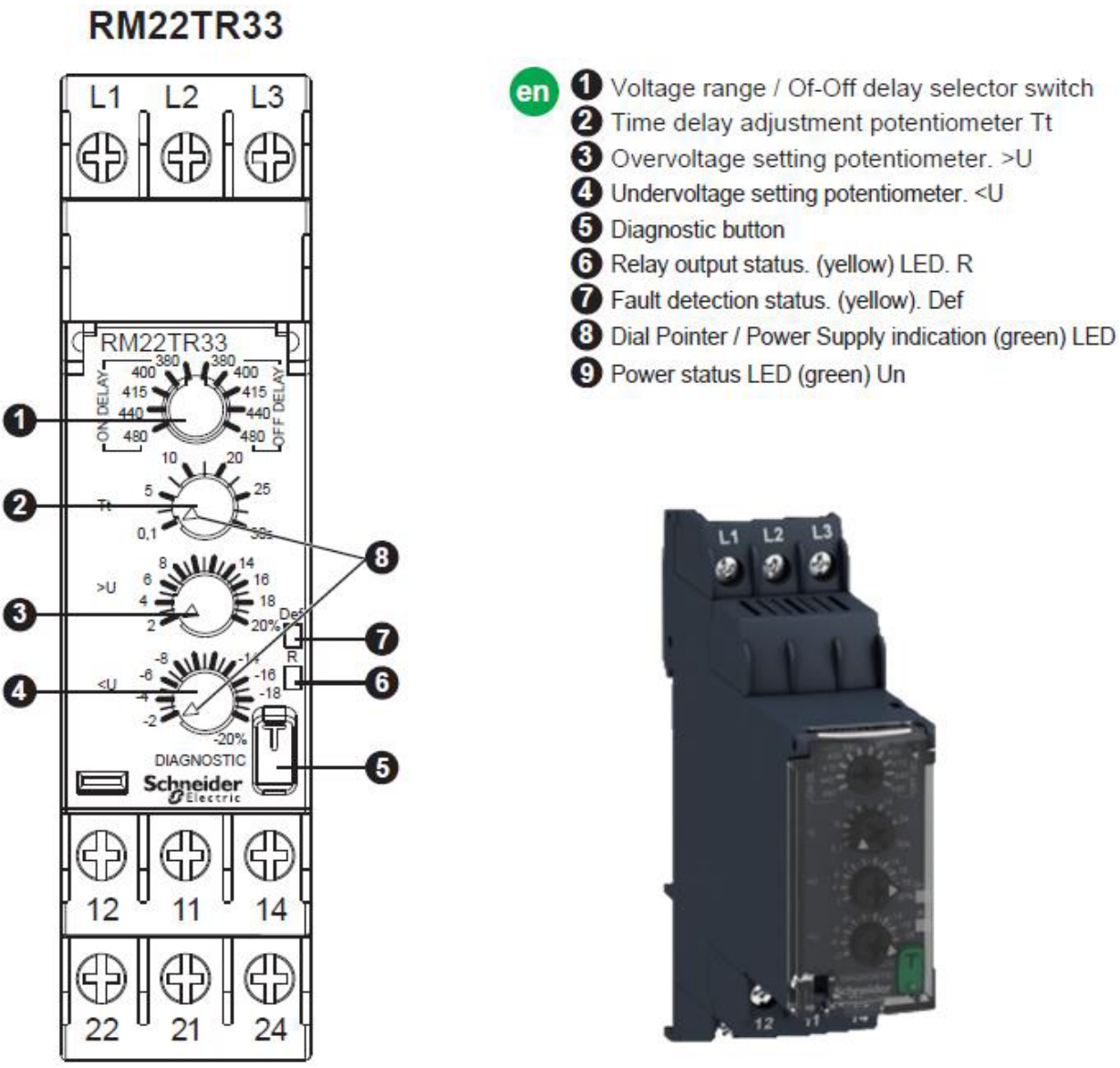
Note: *Acknowledge the alarms or messages ONLY after the alarm codes are documented and problems repaired.*

Phase Monitor Setup

Units powered by the SGCO-5000 need to have the phase monitor settings adjusted to account for inrush at startup. If the phase monitor is not adjusted, nuisance trips will occur. See the steps below to ensure proper parameters are set.

- Decrease voltage setting to 440v (Off Delay)
- Set delay to 10 seconds
- Set Undervoltage to 15%
- Set Overvoltage to 15%
- See figure below for details:

Figure 12. Phase monitor and settings



Maintenance

For detailed maintenance procedures refer to the following documents:

- RSRC1020F0: Magnum Plus Maintenance Manual: TK 60275-4-MM-EN
- RSRC1020F1: Super Freezer Maintenance Manual: TK 50134-4-MM-EN
- RSRC1020F2: CFF Maintenance Manual: TK 61888-4-MM-EN

The table below describes regular preventative maintenance for TRS refrigerated containers.

Service Guide (Cold Storage Containers)

A closely followed maintenance program will help to keep your Thermo King unit in top operating condition.

The following service guide table should be used as a guide when inspecting or servicing components on this unit.

Table 17. Service schedule

Pretrip	Every 1,000 Hours	Annual/Yearly	Inspect/Service These Items
			Electrical
x			Perform a controller pretrip inspection (PTI) check.
x	x	x	Visually check condenser fan and evaporator fan.
x	x	x	Visually inspect electrical contacts for damage or loose connections.
x	x	x	Visually inspect wire harnesses for damage or loose connections.
	x	x	Download the data logger and check data for correct logging.
		x	Check operation of protection shutdown circuits.
			Refrigeration
x	x	x	Check refrigerant charge.
	x	x	Check for proper discharge and suction pressures.
		x	Check filter drier/in-line filter for a restriction pressures.
			Structural
x	x	x	Visually inspect unit for damaged, loose or broken parts.
x	x	x	Tighten unit, compressor and fan motor mounting bolts.
	x	x	Clean entire unit including condenser and evaporator coils, and defrost drains.

Note: *If a unit has been carrying cargo which contains a high level of sulphor or phosphorous (e.g. garlic, salted fish etc.), it is recommended that clean evaporator coil after each trip.*

Service Guide (Clip-On Generator)

Table 18. Maintenance schedule

Pretrip	Every 1,500 Hours	Every 3,000 Hours	Inspect/Service These Items
			Microprocessor:
x			Run Pretrip test (see Performing a pretrip test section).
			Engine:
x			Check fuel supply.
x			Check engine oil level.

Table 18. Maintenance schedule (continued)

Pretrip	Every 1,500 Hours	Every 3,000 Hours	Inspect/Service These Items
x	x	x	Listen for unusual noises, vibrations, etc.
x	x	x	Inspect belts for condition and proper tension.
x	x	x	Check engine oil pressure hot, on high speed (should display "OK").
x	x	x	Check engine coolant level and antifreeze protection (-30 F [-40 C]).
x	x	x	Drain water from the Primary fuel filter bowl.
	x	x	Drain water from fuel tank and check vent.
	x	x	Inspect/clean electric fuel pump filter.
		x	Check engine mounts for wear.
		x	Replace EMI 3000 air cleaner element (see "EMI 3000 Air Cleaner") at 3,000 hours or two years (whichever occurs first).
		x	Replace EMI 3000 fuel filter/water separator.*
		x	Replace Secondary EMI 3000 fuel filter.*
		x	Change engine oil and oil filter (hot). Requires oil with API Classification CJ-4 or CK-4.* NOTE: For high biodiesel use (B20) the engine oil and filter should be changed every 1500 hours.
		x	Inspect/clean EGR system. Cleaning the valve and piping is recommended . Cleaning the cooler is required for emissions compliance.
		x	Adjust engine valve clearance.
		x	Change ELC (red) engine coolant every 5 years or 12,000 hours. Units equipped with ELC
			Electrical:
	x	x	Inspect battery terminals and electrolyte level.
	x	x	Inspect wire harness for damaged wires or connections.
	x	x	Inspect AC generator wire connections for tightness.
			Structural:
x	x	x	Visually inspect unit for fluid leaks.
x	x	x	Visually inspect unit for damaged, loose, or broken parts.
	x	x	Clean entire unit including radiator coil.
	x	x	Check all unit and fuel tank mounting bolts, brackets, lines, hoses, etc.

*3,000 hours or one year, whichever comes first.

Notes

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

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