



Installation, Operation, and Maintenance

Trane Rental Services

ACSA/ACXA Chillers



Models: ACSA/ACXA

⚠ 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.

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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.

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.

⚠ WARNING

Hazardous Service Procedures!

Failure to follow all precautions in this manual and on the tags, stickers, and labels 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 following instructions: Unless specified otherwise, disconnect all electrical power including remote disconnect and discharge all energy storing devices such as capacitors before servicing. Follow proper lockout/tagout procedures to ensure the power can not be inadvertently energized. When necessary to work with live electrical components, have a qualified licensed electrician or other individual who has been trained in handling live electrical components perform these tasks.

⚠ WARNING

R-454B Flammable A2L Refrigerant!

Failure to use proper equipment or components as described below could result in equipment failure, and possibly fire, which could result in death, serious injury, or equipment damage.

The equipment described in this manual uses R-454B refrigerant which is flammable (A2L). Use **ONLY** R-454B rated service equipment and components. For specific handling concerns with R-454B, contact your local representative.

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Revision History

- Updated Model Number Description chapter.
- Updated General Data - ACSA-ACXA (IP) table in the General data chapter.
- Updated Unit weights table in the Dimensions and Weights chapter.
- Updated Water Piping, Chilled Water Pump Starter, Controls, and Communications Interface Options sections in the Installation chapter.



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Model Number Description

Digit 1, 2 — Unit Model

RS = Rental Service

Digit 3, 4 — Unit Type

CA = Air-Cooled Chiller

XA = Air-Cooled Heat Pump

Digit 5, 6, 7, 8 — Unit Capacity

0200 = 200 Nominal Tons

Digit 9 — Operating Voltage

F = 460 Vac

J = 575 Vac

Digit 10 — Design Sequence

Note: See the model number series table below.

Digit 11, 12 — Incremental Designator

AA

	Electrical Connection Type	Power Connection	Refrigerant Type	Pump Piping Bypass	VFD Included on Integral Pump
F0	Series 16 Cam Connections	Single Point	R-410A	Yes	Yes
F1	Series 16 Cam Connections	Single Point	R-454B	Yes	Yes
J1	Series 16 Cam Connections	Single Point	R-454B	Yes	Yes



General Information

Unit Description

Ascend™ Model ACS and ACX units are scroll type, air-cooled, liquid chillers, designed for installation outdoors. The 200 ton units have two independent refrigerant circuits, with three compressors per circuit. The chillers are packaged with an brazed plate evaporator and air-cooled microchannel condenser.

Note: Each unit is a completely assembled, hermetic -compressors packaged unit that is factory-piped, wired, leak-tested, dehydrated, charged and tested for proper control operations prior to shipment. The chilled water inlet and outlet openings are covered for shipment.

The chiller features Tracer® Symbio 800 controls to monitor the control variables that govern the operation of the chiller unit. Adaptive Control logic can correct these variables, when necessary, to optimize operational efficiencies, avoid chiller shutdown, and keep producing chilled water.

Each refrigerant circuit is provided with filter, sight glass, electronic expansion valve, and charging valves. The evaporator is a brazed plate heat exchanger equipped with water drain and vent connections in the water piping. The condenser is an air-cooled slit or serpentine fin coil, arranged in a transverse V layout.

Accessories

For flexible hose data, see *Trane Rental Services Temporary Cooling - Flexible Water Hose - Installation, Operation, and Maintenance* (CHS-SVX01*-EN).

Electrical Cable

For electrical cable data, refer to **Electrical Cable** in *Trane Rental Services Electrical Cable - Engineering Bulletin* (CHS-PRB005*-EN).

Pig-Tail Connectors

Each cable box has pigtails for non cam-type connections. There is a cam-type on one end and a barrel lug on the other. The barrel lug end allows for connection into a power

distribution panel or non cam-type equipment. The pig-tail can be connected to the standard cam-type cable (see [Figure 1, p. 7](#)).

Figure 1. Electrical connector overview

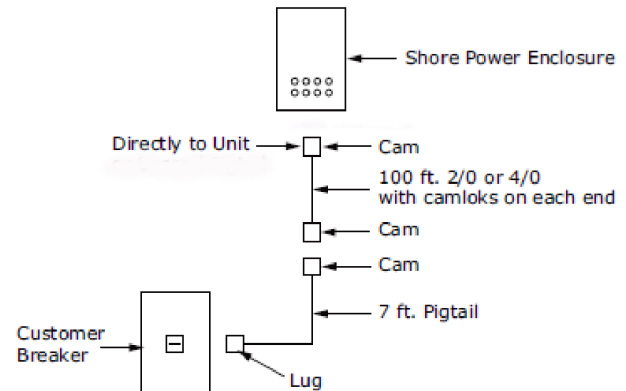


Figure 2. Pig-tail connectors





General Information

General Data

Table 1. General data - ACSA-ACXA (IP)

Unit Model	RSCA0200F0	RSCA0200F1	RSCA0200J1	RSCX0200F1
Unit Description	Air-Cooled Chiller			Air-Cooled Heat Pump Chiller
Nominal Cooling Capacity (tons)	200			
Electrical				
Operating Voltage	460 Vac		575 Vac	460 Vac
Short Circuit Interrupt Rating	35 kA at 460 V		10 kA at 575 V	35 kA at 460 Vac
Minimum Circuit Ampacity (incl. Pump)	493 A		370 A	462 A
Maximum Overcurrent Protection (incl. Pump)	500 A		400 A	500 A
Electrical Connection Type	Series 16 Cam			
Optional Shore Power Connection Rating	115 Vac - 60Hz - 1 PH - 15A			
Compressor				
Quantity	6	6	6	6
Tonnage/ckt ^(a)	40 + 40 + 30	40 + 40 + 30	30 + 30 + 40	30 + 30 + 40
Evaporator				
Water storage - Standard Cooling	17.4 Gal			
Min. flow ^(b)	240 GPM			
Max. flow ^(b)	720 GPM			
External Water Connection	6 in. Grooved Victaulic			
Max. Entering Water Temp - Cooling Mode	105°F			
Min. Chilled Water Setpoint	0°F ^(c)			40°F
Max. Chilled Water Setpoint	68°F			
Min. Hot Water Setpoint	—			68°F ^(d)
Max. Hot Water Setpoint	—			140°F
Max. Water Pressure	150 psig			
Condenser				
Condenser Type	Microchannel			Round Tube-Fin
Quantity of coils	10			
Coil length	75 in.			83.6 in.
Coil height	49 in.			49.2 in.
Tube width	1 in.			0.75 in.
Fins per foot	276 FPF			180 FPF
Condenser Fans				
Condenser Fan Quantity	10			
Diameter	37.5			
Airflow Per Fan - Cooling Mode	11,338 CFM			12,288 CFM
Airflow Per Fan - Heating Mode	—			10,510 CFM
EC Motor Power per motor	2.4 HP			
EC Motor RPM - Cooling Mode	820 RPM			
EC Motor RPM - Heating Mode	—			740 RPM

Table 1. General data - ACSA-ACXA (IP) (continued)

Unit Model	RSCA0200F0	RSCA0200F1	RSCA0200J1	RSCX0200F1
EC Motor Tip Speed (Cooling Mode)	7,728 ft/min			
General Unit				
Refrigerant circuits	2			
Capacity steps	14-32-50-64-82-100		15-30-50-65-80-100	
Min. Ambient Temperature - Cooling Mode	-20°F			-4°F
Max. Ambient Temperature - Cooling Mode	125°F			
Min. Ambient Temperature - Heating Mode	—			0°F
Max. Ambient Temperature - Heating Mode	—			95°F
Refrigerant Type	R-410A	R-454B		
Refrig charge/ckt ^(a)	96 lb.	63 lb.		163 lb.
Oil charge/ckt ^(a)	6 gal.			7 gal.

^(a) Data shown for one circuit only. The second circuit always matches.

^(b) Minimum and maximum flow rates apply to constant-flow chilled water system running at AHRI conditions, without freeze inhibitors added to the water loop.

^(c) Freeze inhibitors required when operating units at setpoints below 40°F.

^(d) Freeze inhibitor required when operating unit in heat pump mode at heating setpoints below 80°F.



Pre-Installation

Inspection Checklist

- When the unit is delivered, verify it is the correct unit and properly equipped.
- Inspect all the exterior components for visible damage. Report any apparent damage or material shortage to the carrier and make a **unit damage** notation on the carrier delivery receipt.
- Specify the extent and type of damage found and notify Trane.
- Do not proceed with installation of a damaged unit without Trane approval.

To protect against loss due to damage incurred in transit, complete the following checklist upon receipt of the unit.

- Inspect the individual pieces of the shipment before accepting the unit. Check for obvious damage to the unit or packing material.
- Inspect the unit for concealed damage as soon as possible after delivery and before it is stored.
- Notify the carrier terminal of the damage immediately, by phone and mail. Request an immediate, joint inspection of the damage with the carrier and the consignee.
- Notify the Trane sales representative and arrange for repair. Do not repair the unit, until damage is inspected by the carrier representative.

Unit Storage

If the chiller will be stored in ambients of 32°F or less, evaporator and pump should be completely drained to prevent freeze damage.

Prior to installation, if storing the chiller for more than one month, see the following recommendations:

- Do not remove the protective coverings from the electrical panel.
- Store the chiller in a secure area.
- Units charged with refrigerant should not be stored where temperatures exceed 155°F.
- At least every three months, attach a gauge and manually check the pressure in the refrigerant circuit. If the refrigerant pressure is below 200 psig at 70° F (or 145 psig at 50° F), call a qualified service organization and the appropriate Trane sales office.

Installation Requirements

A list of the contractor responsibilities typically associated with the unit installation process is provided.

Table 2. Installation requirements

Type	Trane Supplied		Field Supplied Field Installed
	Trane Installed	Field Installed	
Foundation			Meet foundation requirements
Rigging			<ul style="list-style-type: none"> • Safety chains • Clevis connectors • Lifting beam
Electrical	<ul style="list-style-type: none"> • Circuit breakers (optional) • Unit mounted starter 		<ul style="list-style-type: none"> • Circuit breakers (optional) • Electrical connections to unit mounted starter • Wiring sizes per submittal and NEC • Terminal lugs • Ground connection(s) • BAS wiring (optional) • Control voltage wiring • Option relays and wiring

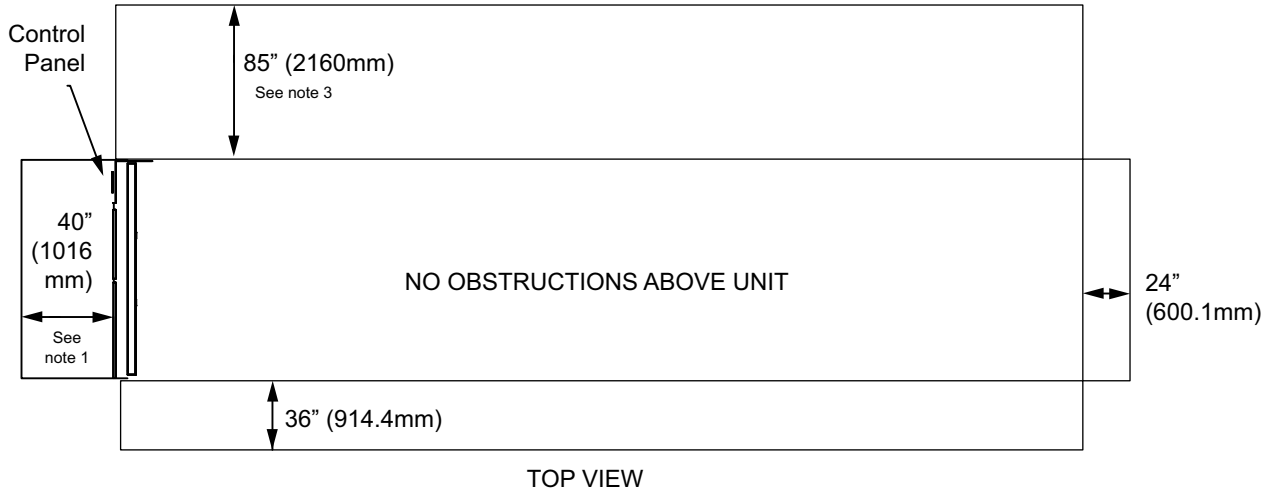
Table 2. Installation requirements (continued)

Type	Trane Supplied		Field Supplied Field Installed
	Trane Installed	Field Installed	
Water Piping	<ul style="list-style-type: none"> • Flow switch • Water strainer • Taps for thermometers and gauges • Thermometers • Water flow pressure gauges • Isolation and balancing valves in water piping • Vents and drain • Pressure relief valves 		Bypass piping and valves
Insulation	Insulation		Insulation
Water Piping Connection Components	Grooved pipe		

Dimensions and Weights

Service Clearances

Figure 3. Unit service clearance requirements

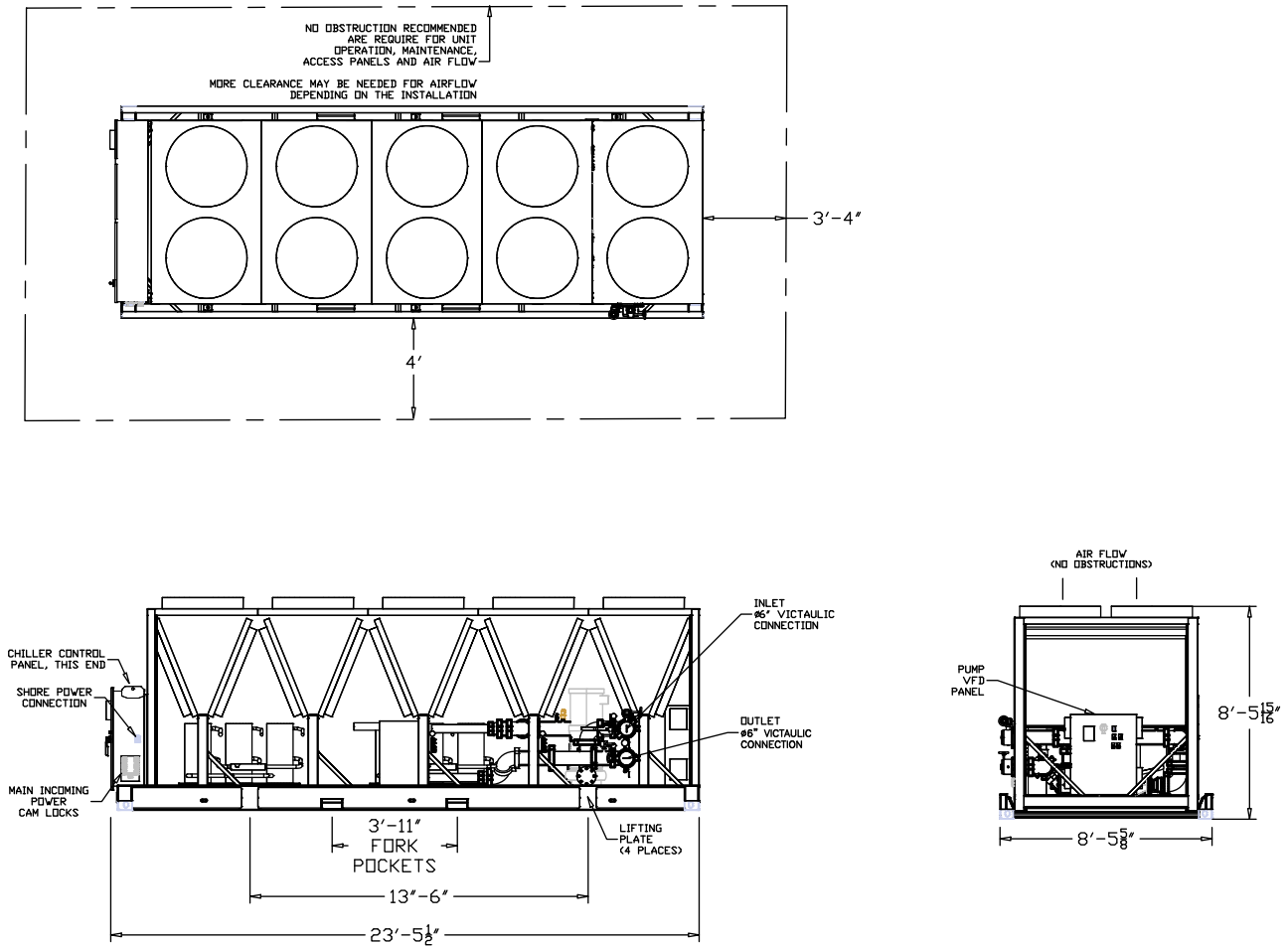


Notes:

- A full 40-inch clearance is required in front of the control panel. Must be measured from front of panel, not end of unit base. Installer must also follow NEC and local/state codes for electrical clearance requirements.
- Area above unit is required for operation, maintenance, access panel and air flow. No obstructions above unit.
- Clearance of 85-inch on the side of the unit is required for coil replacement. Preferred side for coil replacement is shown (left side of the unit, as facing control panel), however either side is acceptable.
- For obstructions or multiple units, see Close-Spacing and Restricted Airflow Situations Engineering Bulletin (AC-PRB001*-EN).

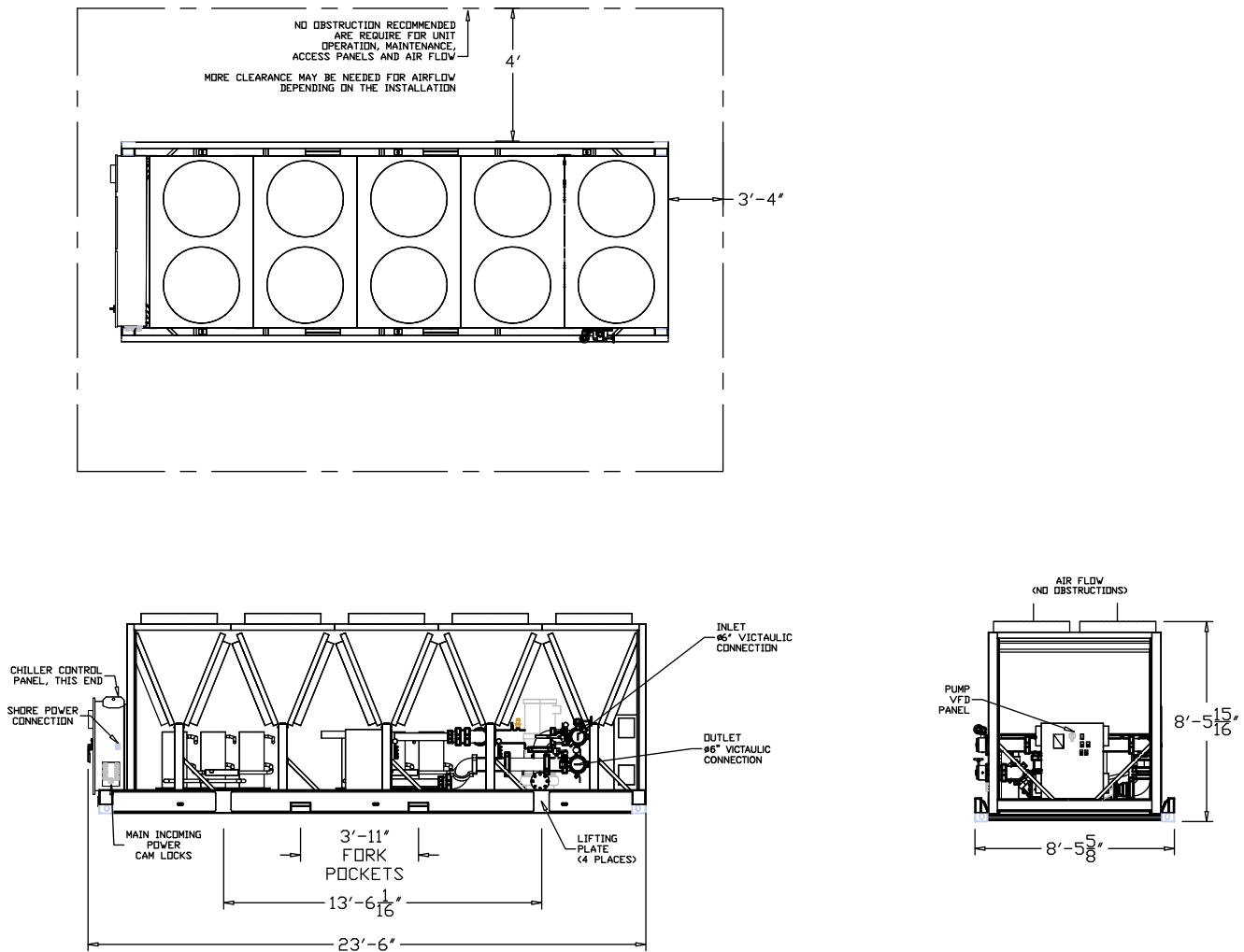
Unit Drawings

Figure 4. 200T ACSA (RSCA0200*0-*1)



Dimensions and Weights

Figure 5. 200T ACXA (RSXA0200F1)



Unit Weights

Table 3. Unit weights

Unit	Weight (lb)	
	Shipping	Operational
RSCA0200*0-*1	15,020	15,520
RSXA0200F1	18,769	19,328



A2L Work Procedures

⚠ WARNING

Risk of Fire — Flammable Refrigerant!

Failure to follow instructions below could result in death or serious injury, and equipment damage.

- To be repaired only by trained service personnel.
- Do not puncture refrigerant tubing.
- Dispose of properly in accordance with federal or local regulations.
- The equipment shall be stored in a room without continuously operating ignition sources.

⚠ WARNING

Refrigerant under High 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 under high pressure. Recover refrigerant to relieve pressure before opening the system. See unit nameplate for refrigerant type. Do not use non-approved refrigerants, refrigerant substitutes, or refrigerant additives.

⚠ WARNING

Hazardous Voltage!

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

Disconnect all electric power, including remote disconnects before servicing. Follow proper lockout/tagout procedures to ensure the power can not be inadvertently energized. Verify that no power is present with a voltmeter.

The units described in this manual use R-454B refrigerant. Use ONLY R-454B rated service equipment or components with these units. For specific handling concerns with R-454B, contact your local Trane representative.

Installation, repair, removal, or disposal should be performed by trained service personnel.

At all times, Trane's maintenance and service guidelines shall be followed. If in doubt, contact Trane technical support for assistance.

Servicing

Prior to initiating work on equipment, check the area with an appropriate refrigerant detector. Ensure the service personnel are properly trained regarding work in potentially toxic or flammable atmospheres. Ensure that the leak detection equipment being used is suitable for use with all

applicable refrigerants, i.e. non-sparking, adequately sealed, or intrinsically safe. Be aware that the refrigerant does not contain an odor.

If any hot work is to be conducted on the refrigerating equipment or any associated parts, appropriate fire extinguishing equipment shall be available on hand. A dry powder or CO₂ fire extinguisher should be located adjacent to the charging area.

At all times, Trane's maintenance and service guidelines shall be followed. If in doubt, contact Trane technical support for assistance.

All maintenance staff and others working in the local area shall be instructed on the nature of the work being carried out. Work in confined spaces shall be avoided.

Ignition Source Mitigation

Do not use any sources of ignition when working on the refrigeration system.

Keep all ignition sources, including cigarette smoking, away from the site of installation, repair, removal or disposal, during which refrigerant can potentially be released to the surrounding space.

Survey the area around the equipment before initiating work to ensure no flammable hazards or ignition risks are present.

"No Smoking" signs shall be displayed.

Do not use devices that can be a source of ignition to accelerate defrosting of components. Use only defrost and cleaning procedures recommended by Trane. Do not pierce or burn.

Ventilation

Ensure that the area is in the open or that it is adequately ventilated before breaking into the system or conducting any hot work. A degree of ventilation shall continue during the period that the work is carried out. The ventilation should safely disperse any released refrigerant and preferably expel it externally into the atmosphere. If present, check that the ventilation system, including outlets, are operating adequately and are not obstructed.

Refrigerating Equipment

Refrigerant piping or components should not be installed in locations where substances which may corrode them are present.

Check that equipment hazard markings are visible and legible. Replace them if they are not.

For equipment using secondary fluids, like water or glycol, check that refrigerant is not present in the secondary fluid loop before conducting any hot work.



Electrical Devices

Do not apply power to the circuit if a fault exists which compromises safety. If the fault cannot be corrected immediately, but it is necessary to continue operation, an adequate temporary solution shall be used. This shall be reported to the owner of the equipment, so all parties are advised.

Initial safety checks shall include:

- Cabling is not subject to wear, corrosion, excessive pressure, vibration, sharp edges, or any other adverse environmental effects. Account for the effects of aging or continual vibration from sources such as compressors or fans.
- Capacitors are discharged. This shall be done in a safe manner to avoid possibility of sparking.
- No live electrical components and wiring are exposed while charging, recovering, or purging the system.
- Verify continuity of earth bonding.
- Replace electrical components with Trane replacement parts, or those meeting the same ratings and qualified for flame arrest protection, UL LZGH2 category.

Leak Detection

Never use an open flame to detect leaks. A halide torch should not be used. Use only approved leak detection methods per this instruction manual.

The following leak detection methods are deemed acceptable for all refrigerant systems.

Electronic leak detectors may be used to detect refrigerant leaks but, in the case of flammable refrigerants, the sensitivity may not be adequate, or may need re-calibration. (Detection equipment shall be calibrated in a refrigerant-free area.) Verify the detector is not a potential source of ignition and is suitable for the refrigerant used. Leak detection equipment shall be set at a percentage of the LFL gas (25% maximum) is confirmed.

Leak detection fluids are also suitable for use with most refrigerants but the use of detergents containing chlorine shall be avoided as the chlorine may react with the refrigerant and corrode the copper pipe-work.

Examples of leak detection fluids are:

- Bubble method
- Fluorescent method agents

If a leak is suspected, all naked flames shall be removed/ extinguished.

If a refrigerant leak is found which requires brazing, all refrigerant shall be recovered from the system, or isolated (by means of shut-off valves) in a part of the system remote from the leak.

Refrigerant Removal and Evacuation

Ensure that the correct number of cylinders for holding the total system charge is available. All cylinders to be used are designated for the recovered refrigerant and labeled for that refrigerant (special cylinders for the recovery of refrigerant, for example). Cylinders shall be complete with pressure-relief valve and associated shut-off valves in good working order. Empty recovery cylinders are evacuated and, if possible, cooled before recovery occurs.

When breaking into the refrigerant circuit to make repairs – or for any other purpose – conventional procedures shall be used. However, for flammable refrigerants it is important that best practice be followed, since flammability is a consideration.

The following procedure shall be adhered to:

1. Safely remove refrigerant following local and national regulations.
2. Evacuate.
3. Purge the circuit with inert gas.
4. Evacuate (optional for A2L).
5. Continuously flush or purge with inert gas when using flame to open circuit.
6. Open the circuit.

Prior to refrigerant removal, open all appropriate valves, including solenoid and electronic expansion valves (EXVs). Use control settings, where available. When not available, manually open all electronically controlled valves using acceptable service procedures.

The recovery equipment shall be in good working order with instructions available. Equipment shall be suitable for the recovery of the flammable refrigerant. For specific handling concerns, contact the manufacturer. Ensure all hose connections are checked for tightness to avoid refrigerant leaks.

In addition, a set of calibrated weighing scales shall be available and in good working order.

The refrigerant shall be recovered into the correct recovery cylinders if venting is not allowed by local and national codes. Do not mix refrigerants in recovery unit and especially not in cylinders.

Refrigerant recovery unit should be purged with an inert gas after each use or before using with a different refrigerant Class – for example, A2L to A1.

If compressors or compressor oils are to be removed, ensure that they have been evacuated to an acceptable level to make certain that flammable refrigerant does not remain within the lubricant. The compressor body shall not be heated by an open flame or other ignition sources to accelerate this process. When oil is drained from a system, it shall be carried out safely.

The system shall be purged with oxygen-free nitrogen to render the appliance safe for flammable refrigerants. This process might need to be repeated several times.

Compressed air or oxygen shall not be used for purging refrigerant systems.

The system shall be vented down to atmospheric pressure to enable work to take place.

The outlet for the vacuum pump shall not be close to any potential ignition sources, and ventilation shall be available.

Refrigerant Charging

In addition to conventional charging procedures, the following requirements shall be followed.

- Ensure that contamination of different refrigerants does not occur when using charging equipment.
- Hoses or lines shall be as short as possible to minimize the amount of refrigerant contained in them.
- Cylinders shall be kept in an appropriate position according to the instructions.
- Ensure that the refrigerating system is earthed prior to charging the system with refrigerant.
- Label the system when charging is complete (if not already).
- Extreme care shall be taken not to overfill the refrigerating system.

Prior to recharging the system, it shall be pressure-tested with the appropriate purging gas. The system shall be leak-tested on completion of charging but prior to commissioning. A follow up leak test shall be carried out prior to leaving the site.

Prior to refrigerant charging, open all appropriate valves, including solenoid and electronic expansion valves (EXVs). Use control settings, where available. When not available, manually open all electronically controlled valves using acceptable service procedures.

Verify the equipment refrigerant charge is in accordance with the room area limitation as described in Minimum Room Area Limits section.

Decommissioning

Before carrying out the decommissioning procedure, it is essential that the trained service personnel is completely familiar with the equipment and all its details. It is recommended good practice that all refrigerants are

recovered safely. Prior to the task being carried out, an oil and refrigerant sample shall be taken in case analysis is required prior to re-use of recovered refrigerant. It is essential that electrical power is available before the task is commenced.

1. Become familiar with the equipment and its operation.
2. Isolate system electrically.
3. Before attempting the procedure, ensure that:
 - a. Mechanical handling equipment is available, if required, for handling refrigerant cylinders.
 - b. All personal protective equipment is available and being used correctly.
 - c. The recovery process is supervised at all times by a competent person.
 - d. Recovery equipment and cylinders conform to the appropriate standards.
4. Pump down refrigerant system, if possible.
5. If a vacuum is not possible, make a manifold so that refrigerant can be removed from various parts of the system.
6. Make sure that cylinder is situated on the scales before recovery takes place.
7. Start the recovery machine and operate in accordance with instructions.
8. Do not overfill cylinders (no more than 80% volume liquid charge).
9. Do not exceed the maximum working pressure of the cylinder, even temporarily.
10. When the cylinders have been filled correctly and the process completed, make sure that the cylinders and the equipment are removed from site promptly and all isolation valves on the equipment are closed off.
11. Recovered refrigerant shall not be charged into another refrigerating system unless it has been cleaned and checked.
12. When equipment has been decommissioned, attach a signed and dated label stating it has been decommissioned and emptied of refrigerant.
13. Ensure that there are labels on the equipment stating it contains flammable refrigerant.



Installation

Location Requirements

Sound Considerations

- Locate the unit away from sound-sensitive areas.
- Chilled water piping should not be supported by chiller frame.

- Install rubber vibration isolators in all water piping.
- Seal all wall penetrations.

Note: Sound data does not include on-board pump.
Consult an acoustical engineer for critical applications.

Table 4. ACSA standard noise sound power levels (Lw, in dB, ref 1 pW)

Unit size	Octave Band Center Frequency (Hz)								Overall A-Wtd
	63	125	250	500	1000	2000	4000	8000	
Full Load									
200	96	101	96	97	96	89	82	77	99
Nominal 83% Load (1 Compressor Off)									
200	96	101	96	97	95	89	82	76	99
Nominal 67% Load (2 Compressors Off)									
200	95	101	96	96	94	88	82	75	98
Nominal 50% Load (Half of The Compressors Off)									
200	93	98	94	93	94	89	83	75	97
Nominal 33% Load (4 Compressors Off)									
200	90	90	90	90	92	86	81	75	94
Nominal 17% Load (5 Compressors Off)									
200	87	87	86	86	88	83	78	73	91

Table 5. ACSA standard sound pressure levels (Lp, in dB, ref 1 µPa) - 10m from center of broad sides of chiller

Unit size	Octave Band Center Frequency (Hz)								Overall A-Wtd
	63	125	250	500	1000	2000	4000	8000	
Full Load									
200	69	74	69	70	69	62	55	50	72
Nominal 83% Load (1 Compressor Off)									
200	69	74	69	70	68	62	55	49	72
Nominal 67% Load (2 Compressors Off)									
200	68	74	69	69	67	61	55	48	72
Nominal 50% Load (Half of The Compressors Off)									
200	66	71	67	66	67	62	56	48	70
Nominal 33% Load (4 Compressors Off)									
200	66	63	63	63	65	59	54	48	67
Nominal 17% Load (5 Compressors Off)									
200	60	60	59	59	61	56	51	46	64

Table 6. ACSA standard sound pressure levels (Lp, in dB, ref 1 µPa) - 10m from end of chiller

Unit size	Octave Band Center Frequency (Hz)								Overall A-Wtd
	63	125	250	500	1000	2000	4000	8000	
Full Load									
200	65	70	65	66	65	58	51	46	68
Nominal 83% Load (1 Compressor Off)									
200	65	70	65	66	64	58	51	45	68
Nominal 67% Load (2 Compressors Off)									
200	64	70	65	65	63	57	51	44	67
Nominal 50% Load (Half of The Compressors Off)									
200	62	67	63	62	63	58	52	44	66
Nominal 33% Load (4 Compressors Off)									
200	59	59	59	59	61	55	50	44	63
Nominal 17% Load (5 Compressors Off)									
200	56	56	55	55	57	52	47	42	60

Note: ACSA full and part load sound data by octave band. The ACXA has no separate sound information available at this time - ACXA and ACSA have the same main components that contribute to sound.

Unit Location and Mounting

- Inspect the location for installation and verify service access clearances.
- Provide adequate blocking to level unit or trailer.

Foundation

Provide rigid, non-warping mounting pads or a concrete foundation of sufficient strength and mass to support the applicable operating weight (including completed piping, and full operating charges of refrigerant, oil and water). See the chapter Dimensions and Weights for unit operating weights in "Dimensions and Weights," p. 12. Once in place, the unit must be level within 1/4 -in. (6.4 mm) over its length and width. The Trane Company is not responsible for equipment problems resulting from an improperly designed or constructed foundation.

Clearances

Provide enough space around the unit to allow the installation and maintenance personnel unrestricted access to all service points. Refer to submittal drawings for the unit dimensions, to provide sufficient clearance for the opening of control panel doors and unit service. See "Service Clearances," p. 12 for minimum clearances. In all cases, local codes which require additional clearances will take precedence over these recommendations.

For close spacing information, see *Close-Spacing and Restricted Airflow Situations Ascend™ Chiller Models ACR and ACS Sintesis™ Chiller Model RTAF - Engineering Bulletin* (AC-PRB001*-EN).

Rigging

See Table 3, p. 14 for typical unit lifting weights. Refer to the rigging label attached to the unit for further details.

⚠ WARNING

Heavy Object!

Failure to follow instructions below could result in unit dropping which could result in death or serious injury, and equipment or property-only damage. Ensure that all the lifting equipment used is properly rated for the weight of the unit being lifted. Each of the cables (chains or slings), hooks, and shackles used to lift the unit must be capable of supporting the entire weight of the unit. Lifting cables (chains or slings) may not be of the same length. Adjust as necessary for even unit lift.

⚠ 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.

NOTICE

Equipment Damage!

To prevent damage to unit, do not fork lift or allow lifting cables to contact unit during lift.

Lifting using either a single spreader bar or an H-type spreader is acceptable. Attach chains or cables to lifting beam. Lifting beam crossbars **MUST** be positioned so lifting cables do not contact the sides of the unit.

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

Lifting a unit with equal length straps 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:

- Single spreader bar lifting method.
 - Several adjustments of the strap length may be required to produce a level unit during lift.
- H-type spreader bar lifting method.
 - If the straps from the H bar to the unit base are the same length, the crane lifting point on the center web of the H bar must be adjusted to produce a level unit lift. See [Figure 6, p. 20](#).

Figure 6. H-type spreader bar adjustment for level unit lift

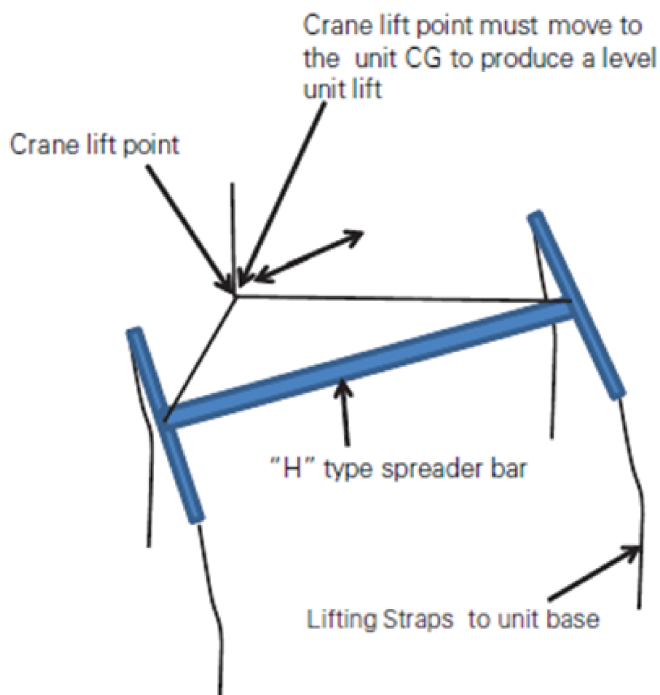
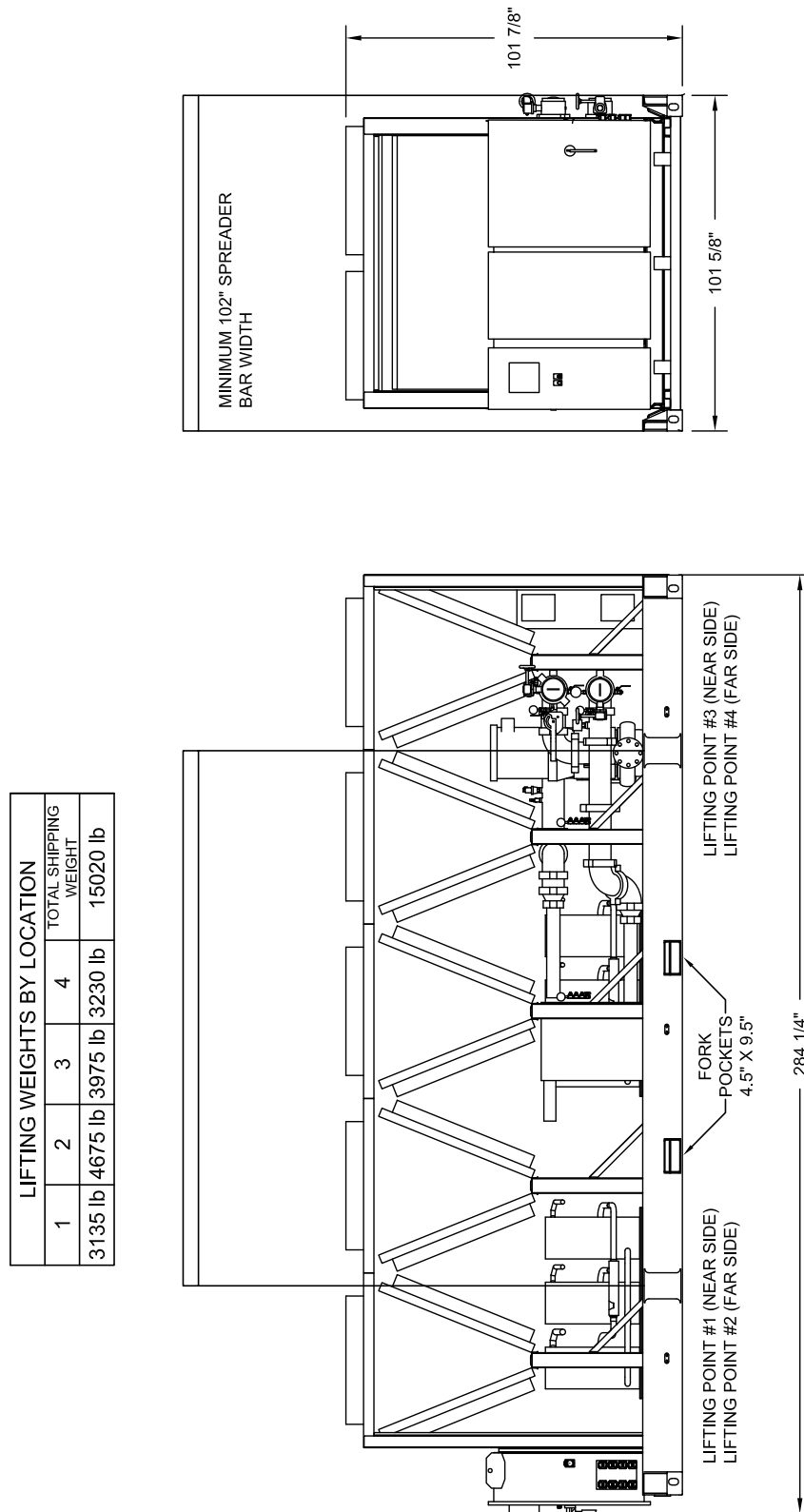


Figure 7. 200T ACSA/ACXA rigging diagram



Handling

⚠ WARNING

Heavy Object!

Failure to follow instructions below could result in unit dropping which could result in death or serious injury, and equipment or property-only damage.

Ensure that all the lifting equipment used is properly rated for the weight of the unit being lifted. Each of the cables (chains or slings), hooks, and shackles used to lift the unit must be capable of supporting the entire weight of the unit. Lifting cables (chains or slings) may not be of the same length. Adjust as necessary for even unit lift.

Units can be left on the trailer or removed from the trailer for rental. Remove units by the forklift pockets that are easily accessible for wide forklift trucks. See [Table 3, p. 14](#) to determine if a forklift truck has the capacity to lift the unit. Units can also be lifted by using the lifting plates and spreader bars.

Leveling

Level the unit using the base rail as a reference. The unit must be level within 1/4-inch over the entire length (end-to-end as well as side-to-side). Use shims as necessary to level the unit.

Water Piping

NOTICE

Equipment Damage!

Failure to follow these instructions could result in equipment damage.

All heaters have separate power from the unit. All heaters must be energized or the unit controller must control the pumps when the unit is off (unless the water circuit is drained or sufficient glycol is used). In the event of prolonged power loss, neither heaters nor unit control of the pumps will protect the evaporator from catastrophic damage. In order to provide freeze protection in the event of a power loss you **MUST** drain the evaporator, use sufficient freeze inhibitor in the evaporator or provide back-up power for pump and/or heaters.

- Chiller main water connections are grooved.
- Thoroughly flush all water piping to the unit before making the final piping connections to the unit.
- Components and layout will vary slightly, depending on the design sequence of the unit.

Drainage

Evaporator and integral pump drain connections are routed to the perimeter of the chiller frame to allow for easy access when filling or draining the unit. Drain connections include 3/4-inch garden hose threads to assist in filling the unit

during start-up. All local and national codes apply. In order to prevent the lines from freezing, it is recommended the drain and vent lines are disconnected and plugged, or heat traced, if the ambient temperature is expected to drop below freezing and the system contains no glycol.

⚠ WARNING

Hazardous Voltage!

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

Disconnect all electric power, including remote disconnects before servicing. Follow proper lockout/tagout procedures to ensure the power can not be inadvertently energized. Verify that no power is present with a voltmeter.

How to drain the water circuit (for protection with ambients below -20°F):

1. Shut-off the power supply to the unit and to all heaters.
2. Purge the water circuit.
3. Blow out the evaporator to confirm no liquid is left in the evaporator.

Air Vents

A vent port is located at the highest points in the water piping and extend to the sides of the chiller. Additional vents must be installed at high points in the piping system to facilitate air purging during the filling process.

Piping Components

NOTICE

Evaporator Damage!

Do not exceed 150 psig evaporator pressure as it could result in damage to the evaporator.

NOTICE

Proper Water Treatment Required!

The use of untreated or improperly treated water could result in scaling, erosion, corrosion, algae or slime.

Use the services of a qualified water treatment specialist to determine what water treatment, if any, is required. Trane assumes no responsibility for equipment failures which result from untreated or improperly treated water, or saline or brackish water.

Piping components include all devices and controls used to provide proper water system operation and unit operating safety.

Water Pressure Gauge Manifold

Two manifolds with water pressure gauges and isolation valves are provided to check and compare pressures at different points within the chiller and determine whether pressure differentials fall within allowable limits. Using this

manifold, users can check pressure at the: chiller/suction guide inlet, pump inlet/suction guide outlet, pump outlet/strainer inlet, strainer outlet/evaporator inlet, and evaporator/chiller outlet. Review tables on the following pages for typically pressure drops across these components.

Water Shut-off Valves

Shut-off valves are provided in the **supply** and **return** pipe near the chiller so the gauge(s), thermostats, sensors, strainer, etc., can be isolated during service.

Pump and Suction Guide

In integral, vertical in-line pump is installed prior to the evaporator. The pump is fully integrated with the chiller piping and can be operated at a user-adjustable speed setting to allow for flow rate optimization.

The pump is equipped with a suction guide and strainer to provide maximum flow efficiency at the inlet of the pump.

Integral Pump Bypass

The integral pump is equipped with a piping bypass and isolation valves to allow operation using either the integral pump or an external pump. When utilizing the integral pump, the pump bypass valve should be closed and the pump inlet/outlet valves left open. Conversely, when utilizing an external pump the bypass valve should be open and the integral pump inlet/outlet valves can be closed.

Note: *When operating in this bypass configuration during freezing weather it is important to ensure that either the integral pump is completely isolated and drained, or the integral pump isolation valves are left open to allow enough flow through the pump to prevent freeze damage.*

Pipe Unions and Connectors

Pipe unions and Victaulic® connectors are used to simplify disassembly for system service.

Thermometers

Analog temperature gauges are used in the lines to monitor the evaporator entering and leaving water temperatures.

Flow Sensor

A flow sensor is installed on this unit near the outlet piping. The purpose of the flow sensor is to determine if there is

adequate flow to prevent the evaporator from freezing. This flow sensor is wired into the controls of this unit. The unit has a pump interlock control that requires flow to operate. If there is no flow through the evaporator of the unit, the chiller will not start or will shutdown if the evaporator loses flow. For more information about chilled water flow, refer to the **Chilled Water Flow (Pump) Interlock** section in *Ascend™ Air-Cooled Chiller Models ACS and ACX With Symbio™ Controls 140 to 230 Nominal Tons Installation, Operation, and Maintenance (AC-SVX004*-EN)*.

Flow Meter

An analog, propeller-driven flow meter is installed on the evaporator outlet piping to allow users to quickly verify current flow rate. The flow meter gauge face is located underneath a blue protective cover and expresses total flow through the unit in gallons per minute.

Balancing Valves

A balancing valve is installed in the leaving water line. It will be used to establish a balanced flow.

Note: *Both the entering and leaving water lines have shut-off valves installed to isolate the evaporator for service.*

Water Strainer

The evaporator water strainer is factory installed and equipped with pressure lines leading to a manifold gauge assembly which allows users to quickly check the strainer pressure drop and determine whether it is necessary to clean the strainer. The strainer is equipped with a manually operated blowdown valve which in some cases may be used to clear debris from the strainer without draining and removing the strainer itself.

Chiller Drain

The chiller drain is piped with a ball shut-off valve to facilitate evaporator draining during service or shutdown procedures.

Pressure Drop Curves

Evaporator, water strainer, and suction guide head loss are illustrated below. These pressure drop curves indicate water applications.

Figure 8. Evaporator pressure drop curve

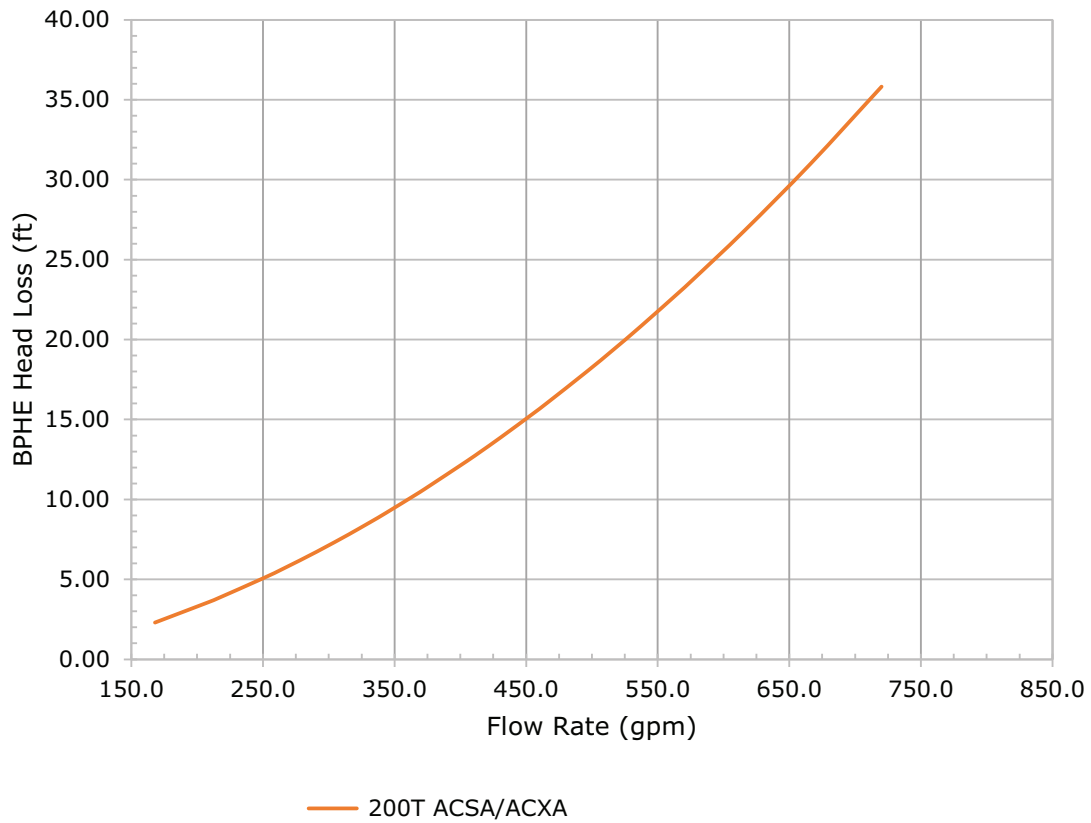


Figure 9. Differential pressure - suction guide

Pressure Drop (PSI) vs Flow (GPM)

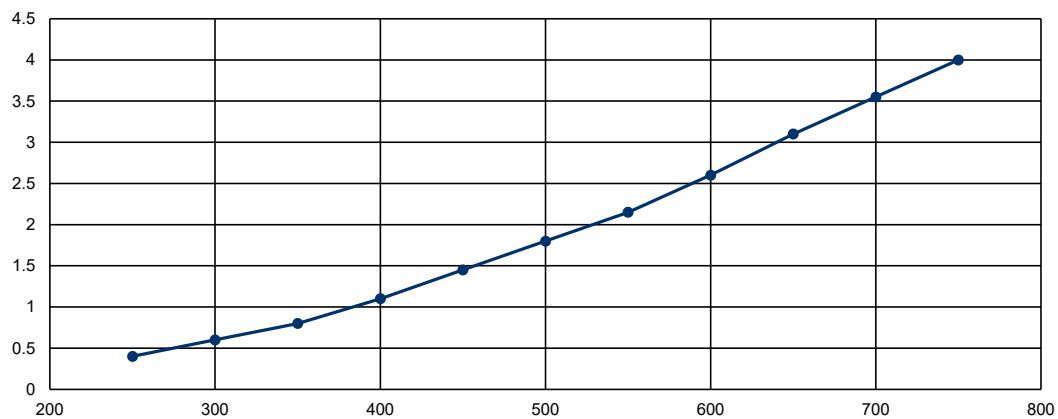
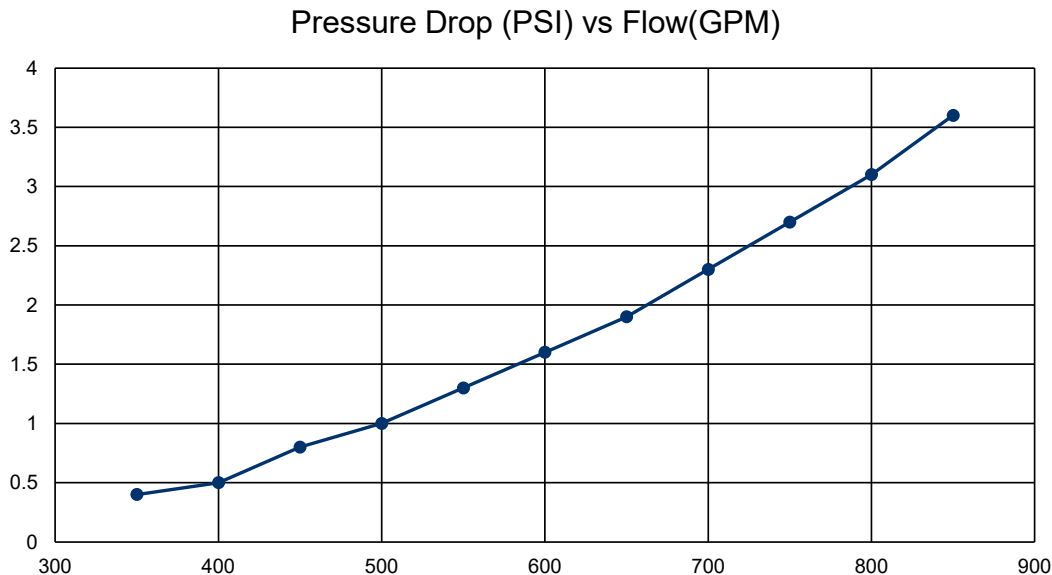


Figure 10. Differential pressure - T-strainer



Water Piping Connections

1. All water piping to the system should be flushed thoroughly before making the final connections.

NOTICE

Pump Damage!

Failure to follow instruction could result in pump damage.

If using any commercial flushing/cleaning solution, construct a temporary bypass around the unit to prevent damage to internal components of the evaporator/condenser. Trane assumes no responsibility for equipment damage caused by flushing/cleaning solutions or water-borne debris.

2. Connect the water pipe to the chilled water piping connections.
3. Confirm the drain shut-off valve is closed.
4. While filling the chiller system with solution, vent the air from the system at the highest points.

NOTICE

Proper Water Treatment Required!

The use of untreated or improperly treated water could result in scaling, erosion, corrosion, algae or slime.

Use the services of a qualified water treatment specialist to determine what water treatment, if any, is required. Trane assumes no responsibility for equipment failures which result from untreated or improperly treated water, or saline or brackish water.

Table 7. Unit water connection sizes

ACSA/ACXA Unit Model	Piping Connection Size
RSCA0200F0-F1	6 in. Victaulic
RSXA0200F1	6 in. Victaulic
RSCA0200J1	6 in. Victaulic

NOTICE

Evaporator Damage!

Do not exceed 150 psig evaporator pressure as it could result in damage to the evaporator.

NOTICE

Pump Damage!

Failure to follow instructions below could result in pump or unit damage.

Do not reverse system water piping connections to the unit or pump.

To prevent unit or pump damage, do NOT reverse system water piping connections to the unit or pump; water entering the evaporator is pre-piped to the discharge of the pump.

Flexible Hose and Hard Pipe Installation

To minimize premature or catastrophic failure of flexible hose provided as part of a Trane Rental Services rental or hard pipe, refer to *Trane Rental Services Temporary Cooling - Flexible Water Hose Installation, Operation, and Maintenance* (CHS-SVX01*-EN) for installation data.

Hard Pipe Guidelines

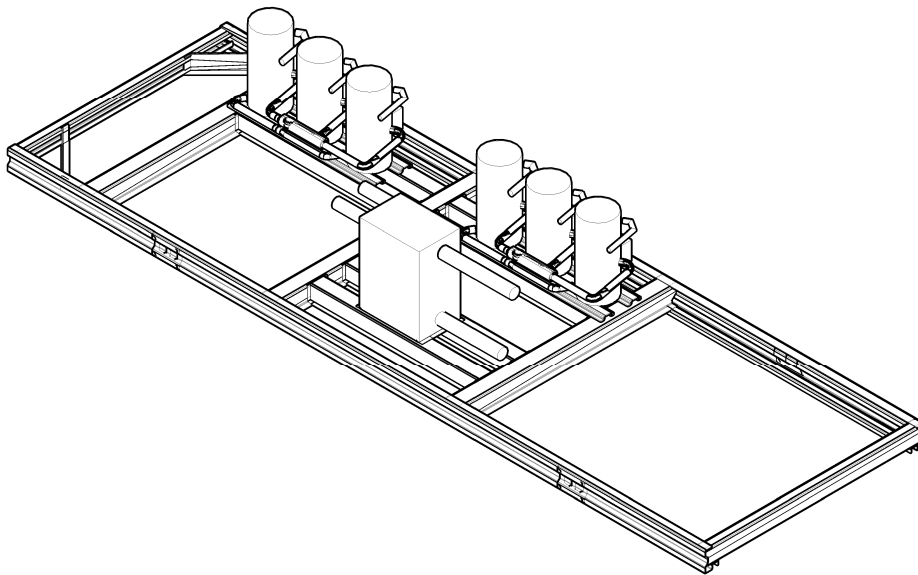
Certain installations may require the use of hard pipe (steel or PVC). Hard pipe is typically recommended for semi-permanent installations (three months or more), installations with space limitations, and/or between connection and pump inlet.

When installing hard pipe:

- Construct and install the piping according to local and national codes.
- Isolate and support the piping as required to prevent stress on the unit and vibration to building piping.

If there are any questions regarding how to install water piping, contact Trane Rental Services Technical Service Support.

Figure 11. Water inlet/outlet connections



Note: When installing water pipes, route them away from the compressor access panels to allow for compressor servicing or replacement.

Ambient Freeze Avoidance

A glycol type anti-freeze may be required for freeze protection. For more information, refer to the Freeze Protection section in *Ascend™ Air-Cooled Chiller Models ACS and ACX With Symbio™ Controls 140 to 230 Nominal Tons - Installation, Operation, and Maintenance* (AC-SVX004*-EN).

Exceptions

Trane Rental Services Support must authorize any exceptions to the guidelines established in this bulletin in writing.

Material disposition

In the event the hose fails or leaks:

1. Call Trane Rental Services Support.
2. Tag the hose **BAD**.
3. Place it back in the shipping box.

Note: ACSA/ACXA chillers use brazed plate heat exchanges, which are NOT at risk for refrigerant migration freeze. Chiller must only be protected from freeze due to low ambient conditions.

One or more of the ambient freeze avoidance methods in [Table 8, p. 27](#) must be used to protect the ACSA/ACXA chiller from ambient freeze damage.

Table 8. ACSA/ACXA ambient freeze avoidance methods

Method	Protects to Ambient Temperature	Notes
Water Pump Control	Down to 0°F	<ul style="list-style-type: none"> Symbio™ 800 controller can start the pump when the ambient temperatures drops to prevent freezing. For this option the pump must to be controlled by the chiller and this function must be validated. Heaters are factory-installed on the evaporator and water piping and will protect them from freezing.
Heaters	Down to -20°F	<ul style="list-style-type: none"> Heaters are factory-installed on the evaporator and will protect it from freezing in ambient temperatures down to -20°F (-29°C). If protection below freezing is using heaters is required, field-installed heat tracing must be supplied. Install heat tape on all water piping, pumps, and other components that may be damaged if exposed to freezing temperatures. Heat tape must be designed for low ambient temperature applications. Heat tape selection should be based on the lowest expected ambient temperature. See NOTICE below for important information.
Freeze Inhibitor	Varies. See "Low Evaporator Refrigerant Cutout/Percent Glycol Recommendations," p. 27.	Freeze protection can be accomplished by adding sufficient glycol to protect against freezing below the lowest ambient expected.
Drain Water Circuit	Below -20°F	<ul style="list-style-type: none"> Shut off the power supply to the unit and to all heaters. Purge the water circuit. Blow out the evaporator to confirm no liquid is left in the evaporator.

NOTICE

Equipment Damage!

Failure to follow these instructions could result in equipment damage.

All heaters have separate power from the unit. All heaters must be energized or the unit controller must control the pumps when the unit is off (unless the water circuit is drained or sufficient glycol is used). In the event of prolonged power loss, neither heaters nor unit control of the pumps will protect the evaporator from catastrophic damage. In order to provide freeze protection in the event of a power loss you **MUST** drain the evaporator, use sufficient freeze inhibitor in the evaporator or provide back-up power for pump and/or heaters.

Low Evaporator Refrigerant Cutout/Percent Glycol Recommendations

The tables below shows the low evaporator temperature cutout for different glycol levels.

Additional glycol beyond the recommendations will adversely effect unit performance. The unit efficiency will be reduced and the saturated evaporator temperature will be reduced. For some operating conditions this effect can be significant.

If additional glycol is used, then use the actual percent glycol to establish the low refrigerant cutout setpoint.

Note: Table below is not a substitute for full unit simulation for proper prediction of unit performance for specific operating conditions. For information on specific conditions, contact Trane product support.

Table 9. Low evaporator refrigerant temperature cutout (LERTC) and low water temperature cutout (LWTC) — ethylene glycol

Glycol Percentage (%)	Solution Freeze Point (°F)	Minimum Recommended LERTC (°F)	Minimum Recommended LWTC (°F)	Minimum Chilled Water Setpoint (°F)
0	32.0	26.0	36.0	41.7
1	31.6	25.6	35.6	41.3
2	31.0	25.0	35.0	40.7
3	30.3	24.3	34.3	40.0
4	29.7	23.7	33.7	39.4
5	29.0	23.0	33.0	38.7
6	28.3	22.3	32.3	38.0
7	27.6	21.6	31.6	37.3
8	26.9	20.9	30.9	36.6
9	26.2	20.2	30.2	35.9

Table 9. Low evaporator refrigerant temperature cutout (LERTC) and low water temperature cutout (LWTC) — ethylene glycol (continued)

Glycol Percentage (%)	Solution Freeze Point (°F)	Minimum Recommended LERTC (°F)	Minimum Recommended LWTC (°F)	Minimum Chilled Water Setpoint (°F)
10	25.5	19.5	29.5	35.2
11	24.7	18.7	28.7	34.4
12	23.9	17.9	27.9	33.6
13	23.1	17.1	27.1	32.8
14	22.3	16.3	26.3	32.0
15	21.5	15.5	25.5	31.2
16	20.6	14.6	24.6	30.3
17	19.7	13.7	23.7	29.4
18	18.7	12.7	22.7	28.4
19	17.8	11.8	21.8	27.5
20	16.8	10.8	20.8	26.5
21	15.8	9.8	19.8	25.5
22	14.7	8.7	18.7	24.4
23	13.7	7.7	17.7	23.4
24	12.5	6.5	16.5	22.2
25	11.4	5.4	15.4	21.1
26	10.2	4.2	14.2	19.9
27	9.0	3.0	13.0	18.7
28	7.7	1.7	11.7	17.4
29	6.4	0.4	10.4	16.1
30	5.1	-0.9	9.1	14.8
31	3.7	-2.3	7.7	13.4
32	2.3	-3.7	6.3	12.0
33	0.8	-5.2	4.8	10.5
34	-0.7	-6.7	3.3	9.0
35	-2.3	-8.3	1.7	7.4
36	-3.9	-9.9	0.1	5.8
37	-5.6	-11.6	-1.6	4.1
38	-7.3	-13.3	-3.3	2.4
39	-9.0	-15.0	-5.0	0.7
40	-10.8	-16.8	-6.8	0.0
41	-12.7	-18.7	-7.0	0.0
42	-14.6	-20.6	-7.0	0.0
43	-16.6	-21.0	-7.0	0.0
44	-18.6	-21.0	-7.0	0.0
45	-20.7	-21.0	-7.0	0.0
46	-22.9	-21.0	-7.0	0.0
47	-25.1	-21.0	-7.0	0.0
48	-27.3	-21.0	-7.0	0.0
49	-29.7	-21.0	-7.0	0.0
50	-32.1	-21.0	-7.0	0.0
51	-34.5	-21.0	-7.0	0.0
52	-37.1	-21.0	-7.0	0.0
53	-39.7	-21.0	-7.0	0.0

Table 9. Low evaporator refrigerant temperature cutout (LERTC) and low water temperature cutout (LWTC) — ethylene glycol (continued)

Glycol Percentage (%)	Solution Freeze Point (°F)	Minimum Recommended LERTC (°F)	Minimum Recommended LWTC (°F)	Minimum Chilled Water Setpoint (°F)
54	-42.3	-21.0	-7.0	0.0
55	-45.0	-21.0	-7.0	0.0

Table 10. Low evaporator refrigerant temperature cutout (LERTC) and low water temperature cutout (LWTC) — propylene glycol

Glycol Percentage (%)	Solution Freeze Point (°F)	Minimum Recommended LERTC (°F)	Minimum Recommended LWTC (°F)	Minimum Chilled Water Setpoint (°F)
0	32.0	26.0	36.0	41.7
1	31.6	25.6	35.6	41.3
2	31.0	25.0	35.0	40.7
3	30.4	24.4	34.4	40.1
4	29.9	23.9	33.9	39.6
5	29.3	23.3	33.3	39.0
6	28.7	22.7	32.7	38.4
7	28.1	22.1	32.1	37.8
8	27.6	21.6	31.6	37.3
9	27.0	21.0	31.0	36.7
10	26.4	20.4	30.4	36.1
11	25.7	19.7	29.7	35.4
12	25.1	19.1	29.1	34.8
13	24.4	18.4	28.4	34.1
14	23.8	17.8	27.8	33.5
15	23.1	17.1	27.1	32.8
16	22.4	16.4	26.4	32.1
17	21.6	15.6	25.6	31.3
18	20.9	14.9	24.9	30.6
19	20.1	14.1	24.1	29.8
20	19.3	13.3	23.3	29.0
21	18.4	12.4	22.4	28.1
22	17.6	11.6	21.6	27.3
23	16.7	10.7	20.7	26.4
24	15.7	9.7	19.7	25.4
25	14.8	8.8	18.8	24.5
26	13.8	7.8	17.8	23.5
27	12.7	6.7	16.7	22.4
28	11.6	5.6	15.6	21.3
29	10.5	4.5	14.5	20.2
30	9.3	3.3	13.3	19.0
31	8.1	2.1	12.1	17.8
32	6.8	0.8	10.8	16.5
33	5.5	-0.5	9.5	15.2
34	4.1	-1.9	8.1	13.8
35	2.7	-3.3	6.7	12.4
36	1.3	-4.7	5.3	11.0
37	-0.3	-6.3	3.7	9.4



Installation

Table 10. Low evaporator refrigerant temperature cutout (LERTC) and low water temperature cutout (LWTC) — propylene glycol (continued)

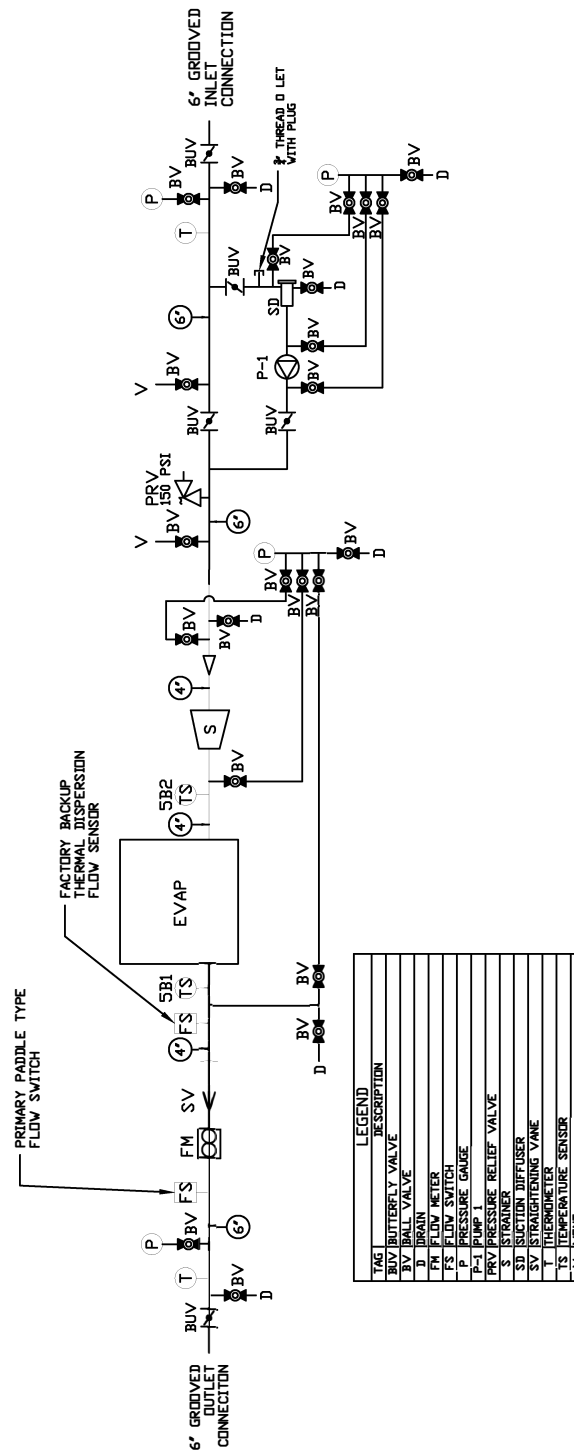
Glycol Percentage (%)	Solution Freeze Point (°F)	Minimum Recommended LERTC (°F)	Minimum Recommended LWTC (°F)	Minimum Chilled Water Setpoint (°F)
38	-1.8	-7.8	2.2	7.9
39	-3.5	-9.5	0.5	6.2
40	-5.2	-11.2	-1.2	4.5
41	-6.9	-12.9	-2.9	2.8
42	-8.8	-14.8	-4.8	0.9
43	-10.7	-16.7	-6.7	0.0
44	-12.6	-18.6	-7.0	0.0
45	-14.6	-20.6	-7.0	0.0
46	-16.7	-21.0	-7.0	0.0
47	-18.9	-21.0	-7.0	0.0
48	-21.1	-21.0	-7.0	0.0
49	-23.4	-21.0	-7.0	0.0
50	-25.8	-21.0	-7.0	0.0
51	-28.3	-21.0	-7.0	0.0
52	-30.8	-21.0	-7.0	0.0
53	-33.4	-21.0	-7.0	0.0
54	-36.1	-21.0	-7.0	0.0
55	-38.9	-21.0	-7.0	0.0

Integral Pump Package

Integral pump package includes: integral pump, drainage valves, shut-off valves at entering and leaving connections. See [Figure 12, p. 31](#) for specific model schematics.

The pump package is single point power integrated into the chiller unit power with a separate factory wired control panel. The control of the pump is integrated into the chiller controller.

Figure 12. Pump package unit schematic - RSCA0200*0, RSCA0200*1, RSXA0200F1 chillers



Pump Curves

Figure 13. 200T ACSA/ACXA single-speed pressure curve

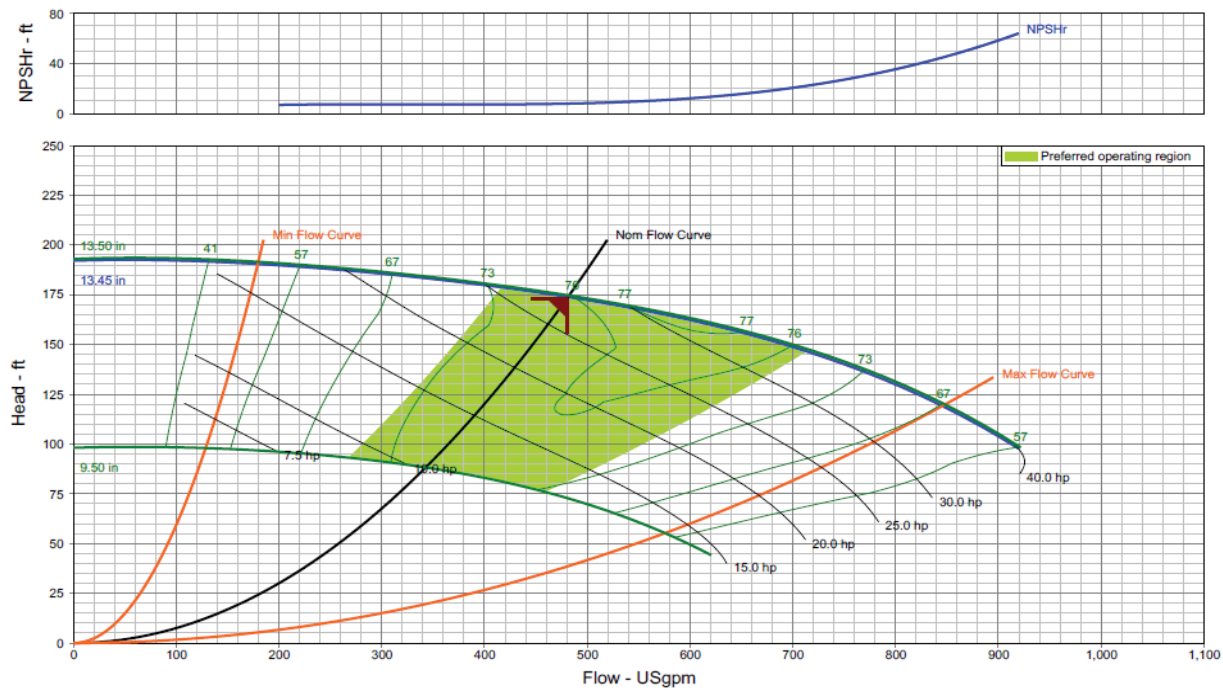
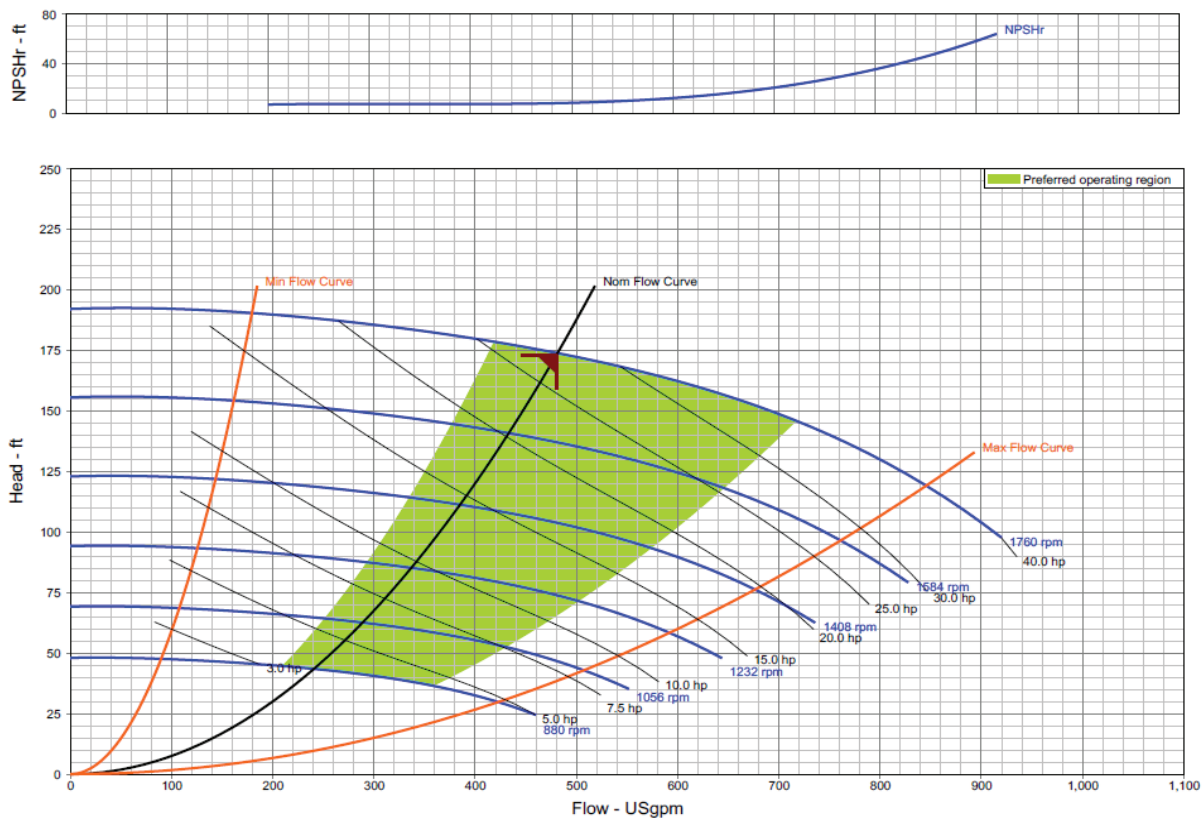


Figure 14. 200T ACSA/ACXA multi-speed pressure curve



Pump Package Requirements

The following requirements must be met for proper operation of pump package:

- Maximum working pressure 150 psig
- Fluid type shown in [Table 11, p. 33](#)

Table 11. Working fluid

Fluid Type	Fluid Percent (of weight)
Water	100%
Ethylene Glycol	0–50%
Propylene Glycol	0–50%

Electrical Connections

The breaker for the ACSA/ACXA unit is located in the main electric panel. Main power is supplied to the unit by cam-type electrical connections, or hard-wiring with copper conductors if required.

⚠ 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.

All wiring must comply with National Electric Code (NEC) and state and local requirements. Outside the United States, the national and/or local electrical requirements of other countries shall apply. The installer must provide properly sized system interconnecting and power supply wiring with appropriate fused disconnect switches. Type and locations of disconnects must comply with all applicable codes.

NOTICE

Use Copper Conductors Only!

Failure to use copper conductors could result in equipment damage as the equipment was not designed or qualified to accept other types of conductors.

[Figure 4, p. 13](#) and [Figure 5, p. 14](#) show the locations of the unit electrical access openings.

Shore Power Supply (115 Vac)

Each Trane Rental Services ACSA/ACXA unit comes with a shore power connection. The shore power connection supplies power to the Symbio 800 controls and interface.

The shore power circuit is powered by a 115 Volt, 15 A max, 60 Hz circuit where power is supplied to a NEMA 5-15 plug on the electrical panel enclosure, from the building, with an extension cord.

The shore power circuit powers the following components:

- Compressor crankcase heaters
- Compressor heater transformer
- Symbio™ 800 interface
- Symbio 800 controls

Important: *If the door on the right side of the electrical panel is opened, the shore power plug circuit will disengage and the listed devices (above) will not be powered. The door must remain closed for these devices to operate. If the electric panel doors are opened for service, they should be closed as soon as service is completed.*

⚠ WARNING

Hazardous Voltage!

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

Disconnect all electric power, including remote disconnects before servicing. Follow proper lockout/tagout procedures to ensure the power can not be inadvertently energized. Verify that no power is present with a voltmeter.

Refer to unit schematics to check the number of disconnects required to de-energize the unit.

When electrically troubleshooting the compressor make sure electrical power is NOT applied.

- Inspect all wiring connections; electrical connections should be clean and tight.
- Stop the chilled water pump.
- Open all circuit breakers.

Unit Voltage and Amperage Checks

⚠ WARNING

Live Electrical Components!

Failure to follow all electrical safety precautions when exposed to live electrical components could result in death or serious injury.

When it is necessary to work with live electrical components, have a qualified licensed electrician or other individual who has been properly trained in handling live electrical components perform these tasks.

Electrical power to the unit must meet stringent requirements for the unit to operate properly. Total voltage supply and voltage imbalance between phases should be within the following tolerances.



Installation

Voltage Supply

Measure each leg of supply voltage at all line voltage on circuit breaker. Readings must fall within the voltage utilization range shown on the unit nameplate. If voltage on any leg does not fall within tolerance, notify the power company to correct this situation before operating the unit. Inadequate voltage to the unit will cause control components to malfunction and shorten the life of electrical components and compressor motors.

Voltage Imbalance

Excessive voltage imbalance between phases in a three-phase system will cause motors to overheat and eventually fail. Maximum allowable imbalance is 2 percent.

If the voltage imbalance is over 2 percent, notify the proper agencies to correct the voltage problem before operating this equipment.

Field-Installed Power Wiring

⚠ 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.

An overall layout for the field installed wiring entrance into the unit is illustrated in [Figure 4, p. 13](#) and [Figure 5, p. 14](#). Follow the guidelines outlined below to confirm the unit supply power wiring is properly sized and installed.

Note: All field installed wiring must conform to NEC guidelines as well as State and Local codes.

Verify that the power supply available is compatible with the unit nameplate ratings. The available supply power must be within 10 percent of the rated voltage stamped on the nameplate. Use only copper conductors to connect the 3-phase power supply to the unit.

The short circuit current ratings are listed in the table below.

Table 12. Short circuit current ratings

	RSCA0200-F0/F1	RSCX0200F1	RSCA0200J1
Using Cam Connections	35kA @ 460 Vac Max Symmetrical	35kA @ 460 Vac Max Symmetrical	10kA @ 575 Vac Max Symmetrical
No Cams, Hardwired into Breaker	65kA @ 460 Vac Max Symmetrical	65kA @ 460 Vac Max Symmetrical	10kA @ 575 Vac Max Symmetrical

Contact Trane Rental Services for further information.

NOTICE

Use Copper Conductors Only!

Failure to use copper conductors could result in equipment damage as the equipment was not designed or qualified to accept other types of conductors.

Circuit Breaker External Handle

Units are provided with an externally mounted circuit breaker handle. This allows the operator to disconnect power from the unit without having to open the control panel door. The handle locations and its three positions are described below:

- **ON** – The circuit breaker is closed, allowing the main power supply to be applied at the unit.
- **OFF** – The circuit breaker is open, interrupting the main power supply to the unit controls.
- **OPEN COVER/RESET** – Turn the handle to this position to release the handle from the circuit breaker, allowing the control panel door to be opened.

Once the door has been opened, it can be closed with the handle in any one of the three positions outlined above, provided it matches the circuit breaker position.

Refer to the wiring diagram that shipped with the unit for specific electrical schematic and connection information.

Before Supplying Power

⚠ WARNING

Hazardous Service Procedures!

Failure to follow all precautions in this manual and on the tags, stickers, and labels 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 following instructions: Unless specified otherwise, disconnect all electrical power including remote disconnect and discharge all energy storing devices such as capacitors before servicing. Follow proper lockout/tagout procedures to ensure the power can not be inadvertently energized. When necessary to work with live electrical components, have a qualified licensed electrician or other individual who has been trained in handling live electrical components perform these tasks.

NOTICE

Compressor Damage!

Failure to follow instructions below could result in compressor failure due to lack of refrigerant and/or oil flow.

Fully open all compressor service valves (suction, discharge, liquid line, and oil line) prior to start-up.

NOTICE

Heater Damage!

Failure to follow instructions below could result in equipment damage.

Verify there is water in the evaporator before powering on. Heaters will overheat and burn out without water.

NOTICE

Proper Water Treatment Required!

The use of untreated or improperly treated water could result in scaling, erosion, corrosion, algae or slime.

Use the services of a qualified water treatment specialist to determine what water treatment, if any, is required. Trane assumes no responsibility for equipment failures which result from untreated or improperly treated water, or saline or brackish water.

- Inspect the interior of the unit for tools and debris.
- Fill the chilled water system.
- Vent the chilled water system at the highest points in the system. Vent the air out of the chiller using the chiller vent lines. Close the vent when the chiller is full of water.
- Once the system has been filled, inspect the entire chilled water piping system for leaks. Make any necessary repairs before proceeding.

Electrical Wiring

⚠ WARNING

Hazardous Voltage!

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

Disconnect all electric power, including remote disconnects before servicing. Follow proper lockout/tagout procedures to ensure the power can not be inadvertently energized. Verify that no power is present with a voltmeter.

⚠ 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.

- Check for tight connections for the unit power supply wiring with the circuit breaker to the terminal block.
- Check interlock wiring, chilled water pump control, chilled water flow interlock and external auto stop (required). For further details, see *Ascend™ Air-Cooled Chiller Models ACS and ACX With Symbio™ Controls 140 to 230 Nominal Tons Installation, Operation, and Maintenance* (AC-SVX004*-EN) or refer to unit wiring schematics.

NOTICE

Equipment Damage!

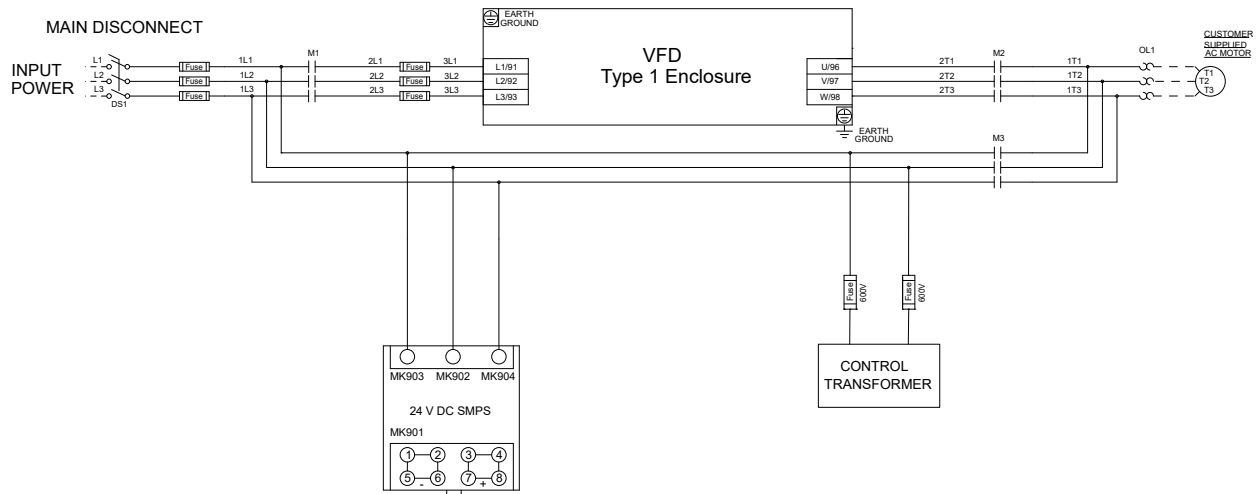
Failure to follow all instructions could result in equipment damage.

Follow instructions for the chilled water pump interlock and external auto/stop.

- Control power wiring isolated in control panel/starter enclosure.
- Required - chilled water pump controlled by Symbio™ 800.
- Inspect all wiring connections. Connections should be clean and tight.
- Energize oil sump heaters 24 hours prior to start up.
Note: Connecting shore power to the unit without main power energizes the crankcase and oil separator heaters. TD-7 is powered at the same time.
- Confirm all service and isolation valves are open.

Chilled Water Pump Starter

Each chiller is equipped with a fully integrated, vertical in-line pump. The integral pump package is controlled by a Variable Frequency Drive (VFD) with electrical bypass, located in a dedicated electrical enclosure opposite the main control panel. The figure below provides a basic schematic representation of the pump VFD bypass circuit.

Figure 15. Basic bypass circuit


This pump VFD panel is separately fused and powered through the main single point power connections and breaker. The VFD panel also includes a dedicated electrical disconnect and control points to be detailed further in the “Controls,” p. 36 section.

See table [Table 13, p. 36](#) below for pump performance at maximum speed in a water-only application.

Table 13. Unit performance, reference only

Unit Size	Motor Size (hp)	Evaporator Flow (gpm)			Pump Flow (gpm)			Discharge Head Pressure (ft)		
		Min.	Nominal	Max.	Min.	Nominal	Max.	at Min. Flow	Nominal	at Max. Flow
200T	40	240	420	720	181	480	845	190	173	99

Controls

Chilled Water Pump Control

The integral chilled water pump has control points at both the main operator interface and at the pump starter panel:

- The pump Hand/Off/Auto switch located near the chiller TD-7 display controls pump request signals to the pump VFD control panel as follows:
 - HAND mode - Continuous pump request is conveyed to the pump VFD control panel regardless of chiller operating state.
 - OFF mode - No pump request is conveyed to the pump
- VFD control panel regardless of chiller operating state.
 - AUTO mode - Pump request is conveyed from the Symbio™ 800 controls to the pump VFD panel when the chiller is either:
 - placed into running mode,
 - or
 - requesting flow for freeze protection purposes.

Note: When operating the pump controls in Auto mode, in the event of a machine-level diagnostic chiller shutdown the Symbio 800 pump relay contacts will open and stop the pump mode to prevent the buildup of pump heat in the chilled water loop.

The pump VFD panel includes additional pump control options and setpoints:

- Drive/Off/Bypass Switch - Allows users to choose whether to operate the pump using the VFD to control speed, or operate at fixed speed bypass.

Notes:

- The VFD operator display will only energize when the **Drive** option is selected.
- On units equipped with an additional **TEST** switch position, the **TEST** position should only be utilized by a qualified technician when troubleshooting or programming the VFD.
- VFD speed control - When operating in **Drive** mode, the pump VFD speed setpoint can be adjusted by one of two means, depending on the design sequence of the chiller.

- For units equipped with a speed control dial, simply turn the dial clockwise to increase pump speed.
- For units not equipped with a speed control dial, adjust preset reference on the TR-Series VFD faceplate using the instruction labeling provided on the unit.

Contact Trane Rental Services for additional information.

In no scenario should any TR-series VFD parameters be updated beyond the preset reference described above, unless changes are authorized by Trane Rental Services Technical Support team.

Unit Controls

Trane Rental Services ACSA and ACXA chillers utilize the following chiller control components:

- Symbio™ 800 Controller
- Tracer® AdaptiView™ TD-7 Operator Interface

Symbio™ 800

The Symbio 800 controller is a factory-installed, application specific and programmable controller designed to control chillers and large packaged HVAC equipment. A 7-inch user interface features a touch-sensitive color screen that provides facility managers at-a-glance operating status, performance monitoring, scheduling changes, and operating adjustments. Other advanced features include automated controller back-up, and optional features such as secure remote connectivity, wireless building communications, mobile device connectivity, and custom programming with an expandable I/O.

For more information, see *Symbio™ 800 Controller Installation, Operation, and Maintenance* (BAS-SVX080*-EN).

AdaptiView™ Display

Information is tailored to operators, service technicians, and owners. When operating a chiller, specific information is needed on a day-to-day basis—setpoints, limits, diagnostic information, and reports. This information is provided through the AdaptiView display. Logically organized groups of information — chiller modes of operation, active diagnostics, settings and reports put information conveniently at your fingertips.

For more information, see *Ascend Air-Cooled Chiller Model ACS AdaptiView™ Display with Symbio™ Controls User Guide* (AC-SVU002*-EN).

Chilled Water Flow (Pump) Interlock

All model chillers have a factory-installed flow switch.

Low Voltage Wiring

⚠ 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.

The remote devices described below require low voltage wiring. All wiring to and from these remote input devices to the Control Panel must be made with shielded, twisted pair conductors. Be sure to ground the shielding only at the panel.

Note: To prevent control malfunctions, do not run low voltage wiring (<30 V) in conduit with conductors carrying more than 30 Volts.

Emergency Stop

Symbio™ 800 provides auxiliary control for a customer specified/installed latching trip out. When this customer furnished remote contact 5S1 is provided, the chiller will run normally when the contact is closed. When the contact opens, the unit will trip on a latching diagnostic. This latched condition requires either a manual reset at the front of the control panel or a power cycle of the Symbio 800 to clear.

Silver or gold-plated contacts are recommended. These customer-furnished contacts must be compatible with 24 Vdc, 12 mA resistive load.

External Auto/Stop

If the unit requires the external Auto/Stop function, the installer must provide leads from the remote contacts 5K1.

The chiller will run normally when the contacts are closed. When either contact opens, the compressor(s), if operating, will go to the RUN:UNLOAD operating mode and cycle off. Unit operation will be inhibited. Closure of the contacts will permit the unit to return to normal operation.

Field-supplied contacts for all low voltage connections must be compatible with dry circuit 24 Vdc for a 12 mA resistive load. Refer to the field diagrams that are shipped with the unit.

NOTICE

Equipment Damage!

Failure to follow instructions below could cause equipment damage.

Do NOT enable/disable the chiller by removing water flow.



Communications Interface Options

BACnet Interface

The BACnet® control network for Symbio™ 800 expands communications from the unit UCM network to the Tracer Ensemble or Tracer SC+ building automation system or third party building automation system. Utilizing BACnet, the BAS allows external setpoint and configuration adjustment and monitoring of status and diagnostics.

The Symbio 800 utilizes the BACnet defined MS/TP protocol as defined in ASHRAE standard 135-2004. This controller works in standalone mode, with Tracer

Ensemble, Tracer SC+ or when connected to a third party building automation system that supports BACnet.

Note: For more information, see *Symbio™ 800 Integration Points List BACnet® for Ascend™ Air-Cooled Chiller Models ACS and ACX with Symbio™ Controls (BAS-PTS011*-EN)*.

Additional Communication Protocols

In addition to BACnet support, the Symbio 800 controller includes support for MODBUS and (with additional hardware) Lontalk protocols. Contact your local Trane office for additional information on integrating with building automation systems using these protocols.



Start-Up and Shutdown

NOTICE

Equipment Damage!

Failure to follow instructions could result in equipment damage.

Improper phasing can result in equipment damage due to reverse rotation.

1. Confirm phase sequencing A-B-C.

Note: Unit is equipped with auxiliary phase monitors. If the Phase Indicator pilot light is on, the phasing is incorrect. Phase Indicator (red) pilot lights are located in the door of the shore power enclosure.

2. Confirm evaporator heaters are operational and have been operating for 24 hours prior to starting the unit.

NOTICE

Equipment Damage!

Failure to follow instructions could result in equipment damage.

Ensure that the compressor and oil sump heaters have been operating properly for a minimum of 24 hours before starting.

3. Verify/close all drain valves in the system. Fill the system with water or glycol solution from a low point in the system while venting all air from a high point in the system.
4. After filling system and venting air, close all drain/vent valves and open all isolation valves in the path of flow. If utilizing integral chiller pump, turn pump switch to HAND and pump VFD switch to DRIVE and allow the pump to operate for 1 minute before turning pump switch to OFF.
5. With pump off, vent any additional air from the system, check for any additional leaks and repair as needed. Repeat as necessary to purge all air out of the system.

NOTICE

Freeze Damage to Unit!

Failure to follow instructions below could result in equipment damage.

Improper adjustment of the flow switch could cause equipment damage due to freezing.

NOTICE

Equipment Damage!

Snow, ice, or debris build up on fans could cause excessive imbalance and equipment damage.

Clear fans of build up prior to machine start-up.

6. With pump running, check analog flow meter to confirm flow is within prescribed minimum/maximum flow rates.

Using balancing valves and/or VFD speed control to adjust water flow per application requirements.

If no water flow is detected with pump operating, turn pump switch to OFF and confirm all air is bled from system and no valves are preventing water flow.

7. Check and adjust glycol concentration, if required. Run pump to thoroughly mix solution.
8. Return pump **Hand/Off/Auto** switch to the **Auto** position.
9. On the AdaptiView™ TD-7 Interface, adjust the Front Panel Chilled Water Setpoint from the Settings menu. Contact Trane Rental Services or your local Trane office for applications with fluid temperature setpoints below 40°F.

Note: To Operate ACXA Heat Pump chillers in Heating Mode, Navigate to the Service Settings menu. Set the Front Panel Hot Water Command field to On and adjust the Front Panel Hot Water Setpoint to the desired setpoint value.

10. Press the **Auto** icon on the AdaptiView TD-7 display to place the unit into running mode.

Checking Operating Conditions

If required, once the system has been operating for approximately 30 minutes and has become stabilized, complete the remaining start-up procedures, as follows:

1. Check the evaporator refrigerant pressure and the condenser refrigerant pressure under Subcomponent Report on the AdaptiView™ TD-7 or Tracer® TU.
2. Check the EXV sight glasses after sufficient time has elapsed to stabilize the chiller. The refrigerant flow past the sight glasses should be clear. Bubbles in the refrigerant indicate either low refrigerant charge or excessive pressure drop in the liquid line or a stuck open expansion valve. A restriction in the line can sometimes be identified by a noticeable temperature differential between the two sides of the restriction. Frost will often form on the line at this point. Proper refrigerant charges are shown in "General Data," p. 8 tables.

Important: A clear sight glass alone does not mean that the system is properly charged. Also check system sub-cooling, liquid level control and unit operating pressures.

If chiller is limited by any limiting conditions, contact local Trane Rental Services for more information.

Start-Up Procedure

1. Verify/close all drain valves.

Start-Up and Shutdown

2. Service the auxiliary equipment according to the start-up/ maintenance instructions provided by the respective equipment manufacturers.
3. Remove all air from the system (including each pass). Close the vents in the evaporator chilled water circuits.
4. Open all valves in evaporator chilled water circuits.

Shutdown

1. Perform normal unit stop sequence using **Stop** key.
Note: *Starter disconnect switch must remain closed to provide power to compressor oil sump heaters.*
2. Verify that compressor oil sump heaters are installed tightly around compressor. Energize and verify heaters are operational using a temperature probe.
3. Once the unit is secured, perform maintenance identified in “Maintenance and Diagnostics,” p. 44.

Sequence of Operation

This section provides basic information on chiller operation for common events. Adaptive control algorithms are used

on these chillers. This section illustrates common control sequences.

Software Operation Overview

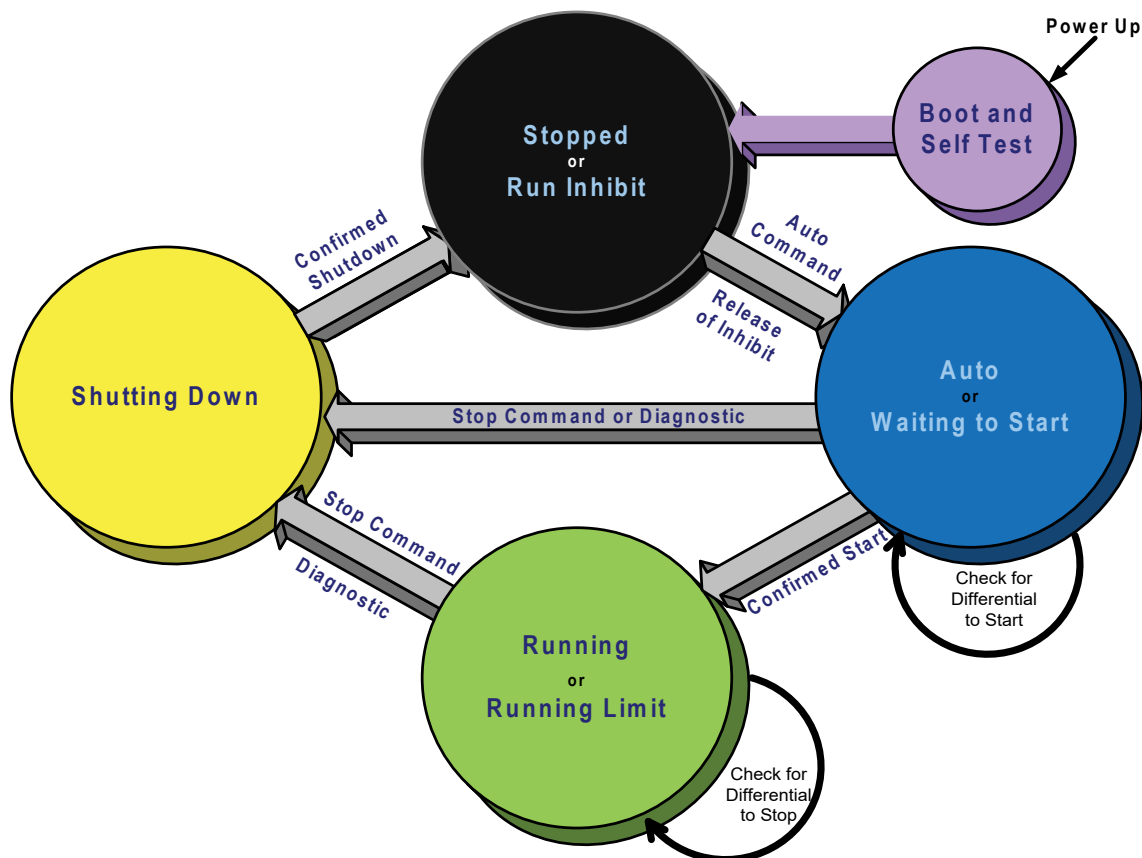
The Software Operation Overview shown in Figure 16, p. 40 is a diagram of the five possible software states. This diagram can be thought of as a state chart, with the arrows and arrow text depicting the transitions between states.

- The text in the circles is the internal software designations for each state.
- The shading of each software state circle corresponds to the shading on the time lines that show the chillers state.

There are five generic states that the software can be in:

- Power Up
- Stopped
- Starting
- Running
- Stopping

Figure 16. Chiller state chart



In the following diagrams:

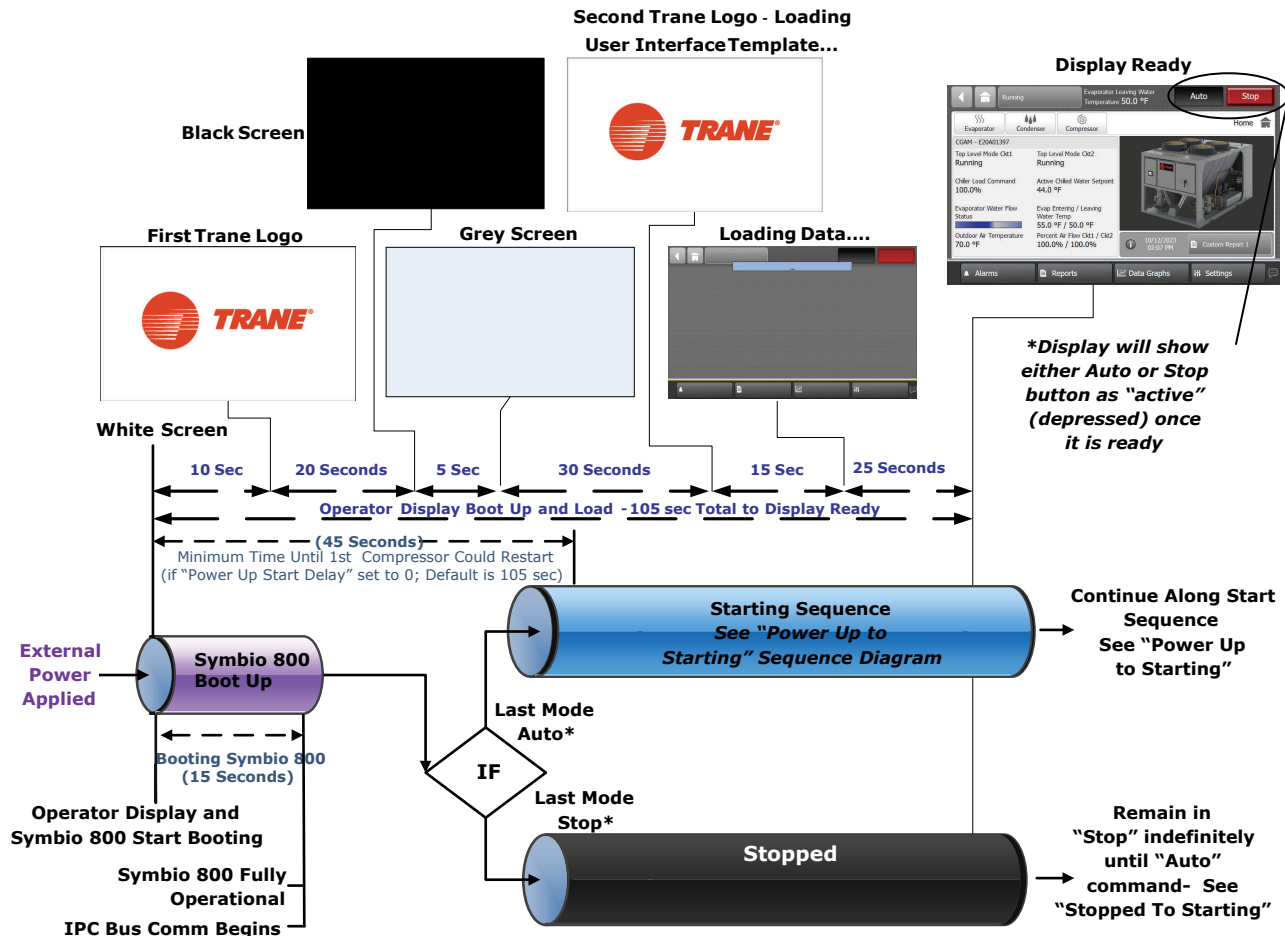
- The time line indicates the upper level operating mode, as it would be viewed in the Tracer® AdaptiView™.
- The shading color of the cylinder indicates the software state.
- Text in parentheses indicates sub-mode text as viewed in the Tracer AdaptiView.
- Text above the time line cylinder is used to illustrate inputs to the Symbio 800. This may include user input to the Tracer AdaptiView touch screen, control inputs from sensors, or control inputs from a generic BAS.
- Boxes indicate control actions such as turning on relays, or pulsing compressor load or unload solenoids.
- Smaller cylinders under the main cylinder indicate diagnostic checks.

- Text outside a box or cylinder indicates time-based functions.
- Solid double arrows indicate fixed timers.
- Dashed double arrows indicate variable timers.

Power Up Diagram

The following diagram shows the respective TD-7 AdaptiView™ screens during a power up of the Symbio™ 800 and display. This process takes 15 seconds for the Symbio 800 and 105 seconds for the display. On all power ups, the software model always will transition through the **Stopped** Software state independent of the last mode. If the last mode before power down was **Auto**, the transition from **Stopped** to **Starting** occurs, but it is not apparent to the user.

Figure 17. Sequence of operation: power up diagram



Start-Up and Shutdown

Power Up to Starting

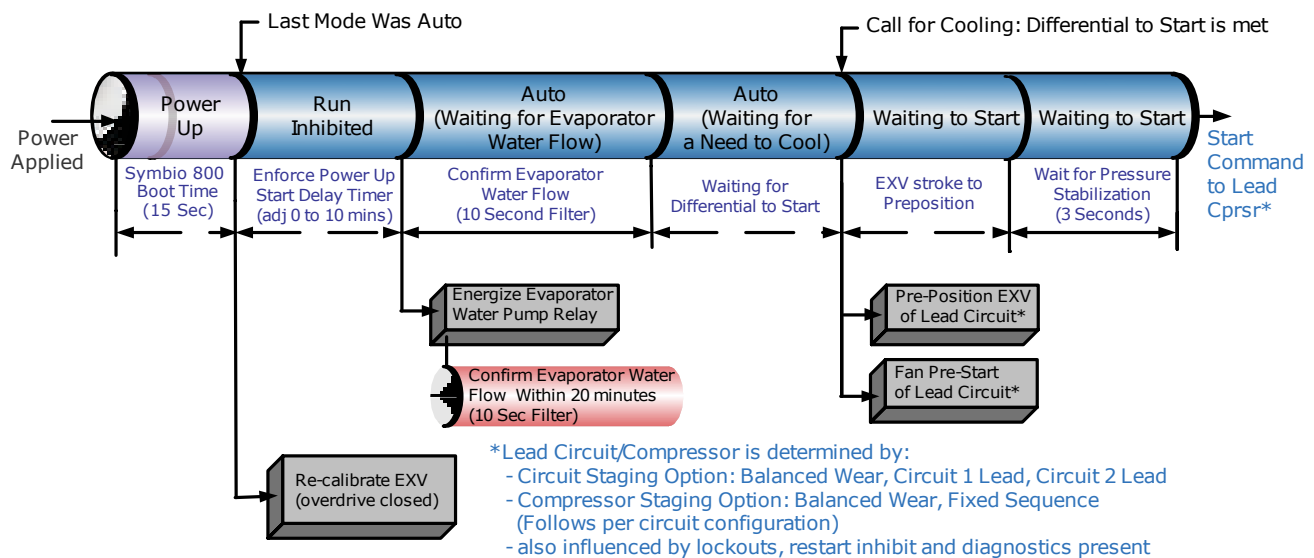
The following diagram shows the timing from a power up event to energizing the first compressor. The shortest allowable time would be under the following conditions:

- No motor restart inhibit time left from subsequent starts
- Evaporator Water flow occurs quickly with pump on command
- Power up Start Delay set to 0 minutes

- Need to cool (differential to start) already exists
- Oil level is detected immediately

The above conditions would allow for a minimum power up to starting the first compressor time of about 45 seconds (variations may exist due to options installed). Note that it is not advisable to start a chiller cold, the oil heaters should be in operation for a sufficient length of time prior to first start.

Figure 18. Power up to starting



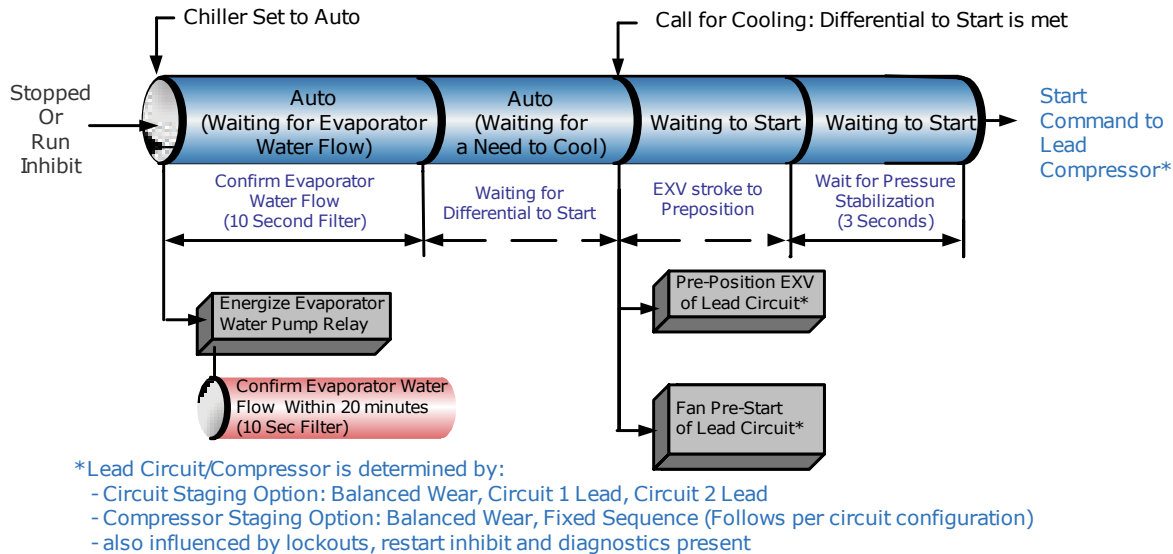
Stopped to Starting

The following diagram shows the timing from a stopped mode to energizing the first compressor. The shortest allowable time would be under the following conditions:

- No motor restart inhibit time left from subsequent starts

- Evaporator Water flow occurs quickly with pump on command
- Need to cool (differential to start) already exists
- The above conditions would allow a compressor to start in about 20 seconds.

Figure 19. Stopped to starting

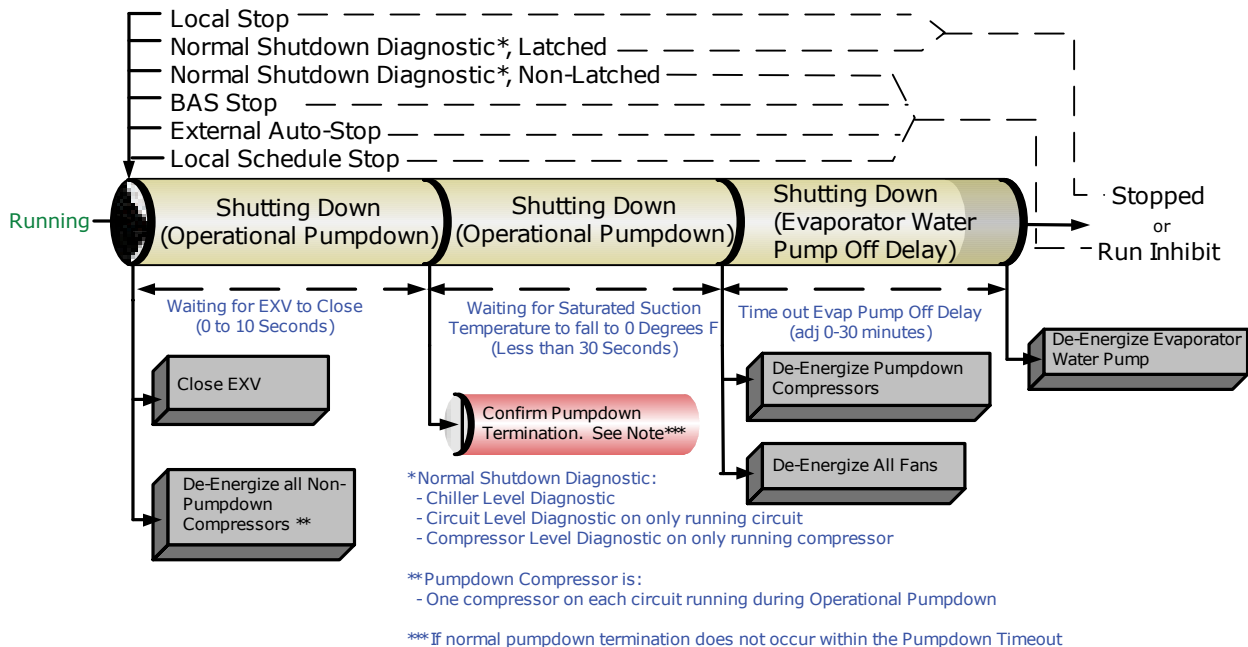


Normal Shutdown to Stopped

The following diagram shows the Transition from Running through a Normal (friendly) Shutdown. The dashed lines on

the top attempt to show the final mode if stop is selected via various inputs.

Figure 20. Sequence of operation: normal shutdown to stopped or run inhibit



Controls Interface

For controls interface information, see *Ascend™ Air-Cooled Chiller Models ACS and ACX Withymbio™*

Controls 140 to 230 Nominal Tons Installation, Operation, and Maintenance (AC-SVX004-EN).*



Maintenance and Diagnostics

For maintenance procedures, refer to the **Weekly Maintenance** and **Monthly Maintenance** sections in *Ascend™ Air-Cooled Chiller Models ACS and ACX With Symbio™ Controls 140 to 230 Nominal Tons Installation, Operation, and Maintenance* (AC-SVX004*-EN).

Refrigerant Charge Information

For refrigerant charge information, see *Ascend™ Air-Cooled Chiller Models ACS and ACX With Symbio™ Controls 140 to 230 Nominal Tons Installation, Operation, and Maintenance* (AC-SVX004*-EN).

Decommissioning Procedure

1. Press **STOP** key on the AdaptiView™ TD-7. Allow enough time for compressors to go through the unload sequence and shutdown.
2. Turn the chilled water pump to **OFF**.

Note: Local codes and regulations apply for disposal of glycol or anti-freeze solutions.

WARNING

Hazardous Voltage!

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

Disconnect all electric power, including remote disconnects before servicing. Follow proper lockout/tagout procedures to ensure the power can not be inadvertently energized. Verify that no power is present with a voltmeter.

3. Put unit disconnect in the **OFF** or **OPEN** position and locate and disconnect utility power source. Verify system is not energized before proceeding with next steps.
4. Drain solution from system. If the system has glycol or other anti-freeze solution, flush hoses and evaporator with water. Leave vent and drain valve(s) open.
5. Secure any loose panels. Replace any sheet metal screws or bolts to prevent panel from blowing off during transportation.
6. Return hose, fittings or cables (if furnished by Trane Rental Services) to appropriate containers for return shipment.
7. Notify Trane Rental Services if unit needs repairs or has damage.

Diagnostics

For diagnostic information, see *Ascend™ Air-Cooled Chiller Models ACS and ACX With Symbio™ Controls 140 to 230 Nominal Tons Installation, Operation, and Maintenance* (AC-SVX004*-EN).



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.

Trane has a policy of continuous product and product data improvements and reserves the right to change design and specifications without notice. We are committed to using environmentally conscious print practices.

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