Installation Manual

InRow® Air Cooled Condensers and Fluid Coolers

ACCD75201, ACCD75202, ACCD75203, ACCD75204, ACCD75205, ACCD75206, ACCD75207, ACCD75208, ACCD75209, ACCD75214, ACCD75215, ACCD75216, ACCD75217, ACCD75218, ACCD75219, ACAC75004, ACAC75005, ACAC75007, ACAC75009

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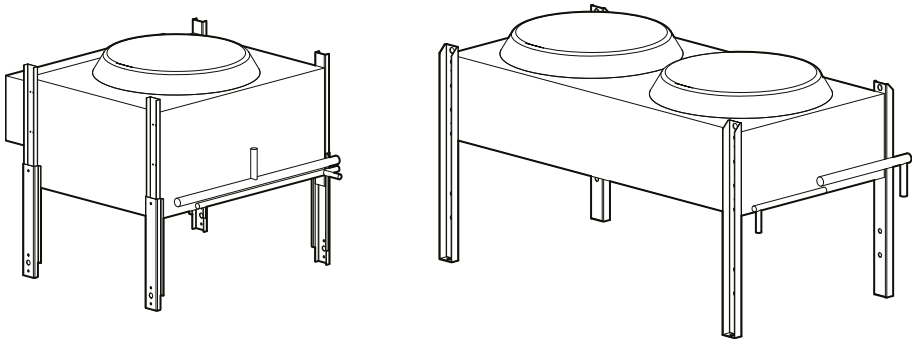

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Safety

Important Safety Information

Read the instructions carefully to become familiar with the equipment before trying to install, operate, service, or maintain it. The following special messages may appear throughout this manual or on the equipment to warn of potential hazards or to call attention to information that clarifies or simplifies a procedure.

The addition of this symbol to a Danger or Warning safety label indicates that an electrical hazard exists which will result in personal injury if the instructions are not followed.

This is the safety alert symbol. It is used to alert you to potential personal injury hazards. Obey all safety messages that follow this symbol to avoid possible injury or death.

⚠ DANGER

DANGER indicates an imminently hazardous situation which, if not avoided, **will result in** death or serious injury.

⚠ WARNING

WARNING indicates a potentially hazardous situation which, if not avoided, **can result in** death or serious injury.

⚠ CAUTION

CAUTION indicates a potentially hazardous situation which, if not avoided, **can result in** minor or moderate injury.

NOTICE

NOTICE addresses practices not related to physical injury including certain environmental hazards, potential damage or loss of data.

Safety Notices for All Installation Procedures

Read and adhere to the following important safety considerations when working with this equipment. Follow all local and national regulations when handling refrigerants. Service to the components in the refrigeration loop should be performed only by a certified HVAC technician.

⚠ ⚠ DANGER

HAZARD OF ELECTRIC SHOCK, EXPLOSION, OR ARC FLASH

- Apply appropriate personal protective equipment (PPE) and follow safe electrical work practices. See NFPA 70E or CSA Z462.
- This equipment must be installed and serviced by qualified personnel only.
- Turn off all power supplying this equipment before working on or inside the equipment.
- Always use a properly rated voltage sensing device to confirm power is off.
- Replace all devices, doors, and covers before turning on power to this equipment.

Failure to follow these instructions will result in death or serious injury.

⚠ ⚠ DANGER

HAZARD OF ELECTRIC SHOCK

To avoid possible personal injury or death, the access door locking mechanism must be re-engaged after access to a compartment for inspection or service requirements.

Failure to follow these instructions will result in death or serious injury.

⚠ WARNING

HAZARD FROM MOVING PARTS

Keep hands, clothing, and jewelry away from moving parts. Check the equipment for foreign objects before closing the doors and starting the equipment.

Failure to follow these instructions can result in death, serious injury, or equipment damage.

⚠ CAUTION

DAMAGE TO EQUIPMENT OR PERSONNEL

The equipment is heavy and can easily be tipped. For safety purposes, adequate personnel must be present when moving this equipment.

Failure to follow these instructions can result in injury or equipment damage.

⚠CAUTION

UNPROTECTED OUTPUTS

Apply circuit protection to all outputs.

Failure to follow these instructions can result in injury or equipment damage.

⚠CAUTION

HAZARD TO EQUIPMENT OR PERSONNEL

Ensure that all spare parts and tools are removed from the equipment before operating it

Failure to follow these instructions can result in injury or equipment damage.

NOTICE

FREEZE HAZARD

External water piping must have adequate freeze protection and must be correctly applied based on local climatic conditions and best practices. Install insulation and electric heat tracing (not supplied) on all exposed piping.

Failure to follow these instructions can result in equipment damage.

NOTICE

HAZARD TO EQUIPMENT

Circuit boards contained within this unit are sensitive to static electricity. Use one or more electrostatic-discharge device while handling the boards.

Failure to follow these instructions can result in equipment damage.

NOTICE

UV HAZARD

Avoid exposing cross-linked polyethylene (PEX) piping to direct sunlight. PEX piping can be damaged by direct sunlight. Store PEX piping in its carton to avoid dirt accumulation and extended exposure to direct sunlight.

Failure to follow these instructions can result in equipment damage.

General Information

Overview

Manual updates

Check for updates to this manual on the Schneider Electric Web site, **www.schneider-electric.com/support**. Select the **Download Documents and Software** link under the **Support** tab and enter the manual part number or SKU for your equipment in the search field. See the back cover of this manual for the part number.

Save these instructions

This manual contains important information for installing InRow® Fluid Coolers and Condensers.

Codes

Follow all local and national codes while performing the steps set forth in this manual. If your local and national codes conflict with any information in this manual, the codes shall take priority.

Inspecting the Equipment

Carefully inspect both the exterior and interior of the equipment immediately upon receipt to ensure that the equipment has not been damaged during transit. Verify that all parts ordered were received as specified and that the equipment is the correct type, size, and voltage.

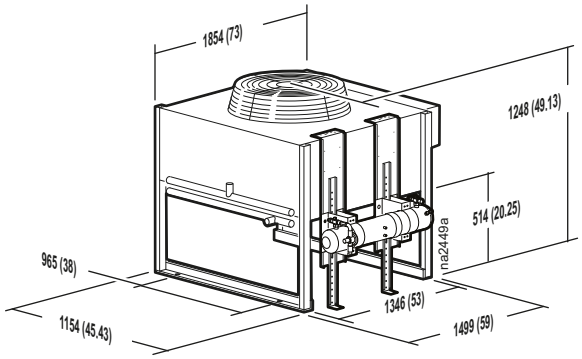
Filing a claim: If damage is identified on receipt of the equipment, note the damage on the bill of lading and file a damage claim with the shipping company. Contact Schneider Electric Worldwide Customer Support for information about filing a claim with the shipping company. The shipping claim must be filed at the receiving end of the delivery.

NOTE: In case of shipping damage, do not operate the equipment. Keep all packaging for inspection by the shipping company.

Model Identification

Air Cooled Condensers for InRow Products

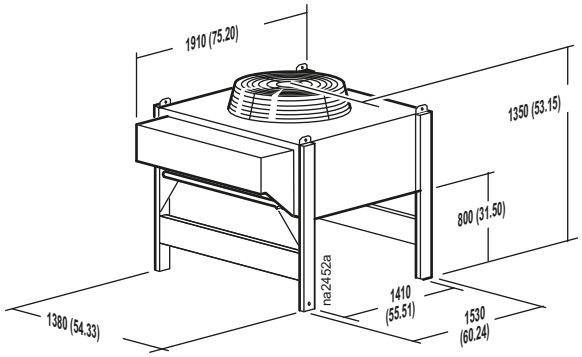
ACCD75201 and ACCD75204



Dimensions are shown in mm (in.)

SKU	Description	Weight kg (lb)	V/Ph/Hz	Application Ambient Temp.	Connection Size	
					Hot Gas	Liquid
ACCD75201	Condenser 1 EC Fan 8.8 MBH/1F TD 200-240V/3/6	163 (360)	208-230/3/60	35°C (95°F)	35 mm (1 3/8 in.)	35 mm (1 3/8 in.)
ACCD75204	Condenser 1 EC Fan 8.8 MBH/1F TD 460-480V/3/60	163 (360)	460/3/60	35°C (95°F)	35 mm (1 3/8 in.)	35 mm (1 3/8 in.)

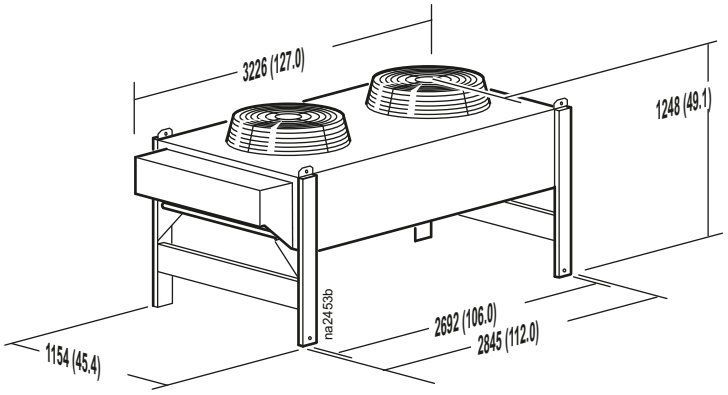
ACCD75207



Dimensions are shown in mm (in.)

SKU	Description	Weight kg (lb)	V/Ph/Hz	Application Ambient Temp.	Connection Size	
					Hot Gas	Liquid
ACCD75207	Condenser 1 EC Fan 4.8 kW/1C TD 380-415V/3/50	173 (381)	400/3/50	35°C (95°F)	42 mm (1.65 in.)	22 mm (0.87 in.)

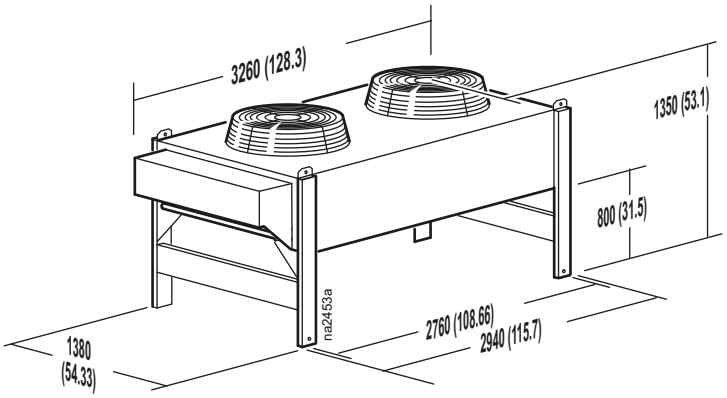
ACCD75202 and ACCD75205



Dimensions are shown in mm (in.)

SKU	Description	Weight kg (lb)	V/Ph/Hz	Application Ambient Temperature	Connection Size	
					Hot Gas	Liquid
ACCD75202	Condenser 2 EC Fan 14.6 MBH/1F TD 200-240V/3/60	290 (640)	208-230/3/60	40°C (105°F)	41 mm (1 5/8 in.)	41 mm (1 5/8 in.)
ACCD75205	Condenser 2 EC Fan 14.6 MBH/1F TD 460-480V/3/60	290 (640)	460/3/60	40°C (105°F)	41 mm (1 5/8 in.)	41 mm (1 5/8 in.)

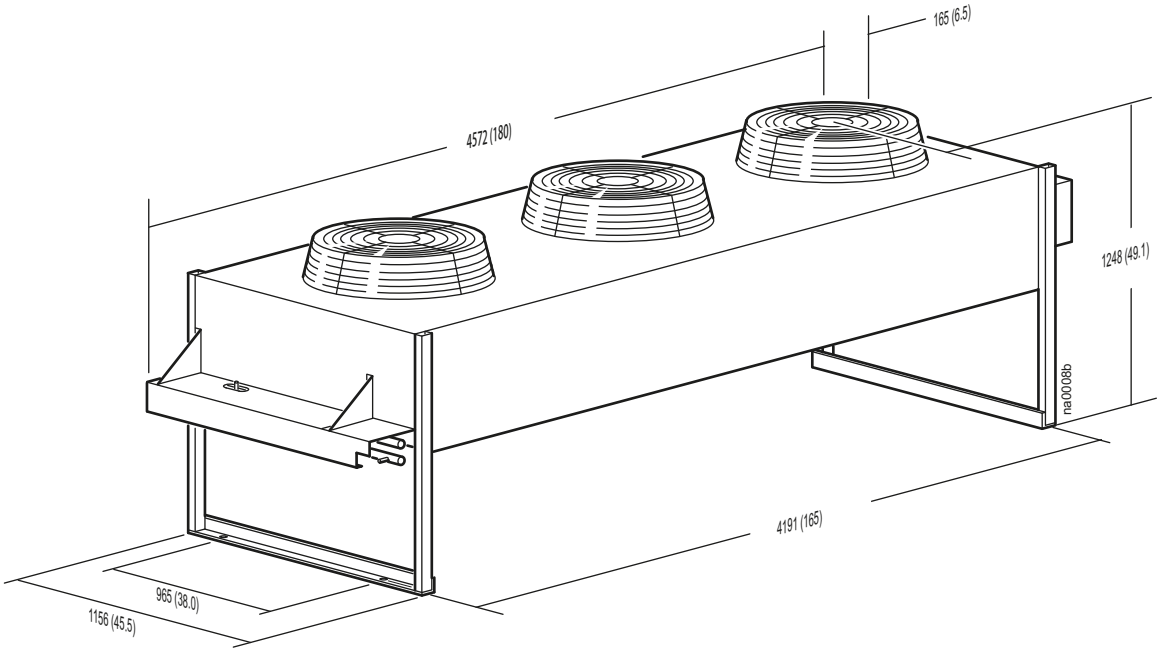
ACCD75208 and ACCD75209



Dimensions are shown in mm (in.)

SKU	Description	Weight kg (lb)	V/Ph/Hz	Application Ambient Temperature	Connection Size	
					Hot Gas	Liquid
ACCD75208	Condenser 2 EC Fan 8.1 kW/1C TD 380-415V/3/50	308 (679)	400/3/50	40°C (105°F)	42 mm (1.65 in.)	28 mm (1.10 in.)
ACCD75209	Condenser 2 EC Fan 11.1 kW/1C TD 380-415V/3/50	360 (794)	400/3/50	46°C (115°F)	54 mm (2.13 in.)	35 mm (1.38 in.)

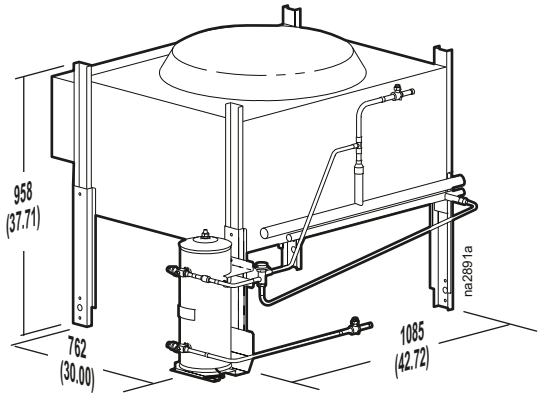
ACCD75203 and ACCD75206



Dimensions are shown in mm (in.)

SKU	Description	Weight kg (lb)	V/Ph/Hz	Application Ambient Temperature	Connection Size	
					Hot Gas	Liquid
ACCD75203	Condenser 3 EC Fan 25.8 MBH/1F TD 200-240V/3/60	458 (1010)	208-230/3/60	46°C (115°F)	28 mm (2 1/8 in.)	28 mm (2 1/8 in.)
ACCD75206	Condenser 3 EC Fan 25.8 MBH/1F TD 460-480V/3/60	458 (1010)	460/3/60	46°C (115°F)	28 mm (2 1/8 in.)	28 mm (2 1/8 in.)

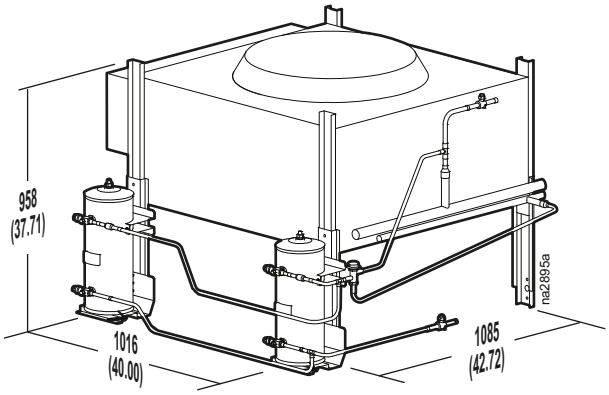
ACCD75214



A flooded receiver is shown installed but is not included with the condenser. Dimensions are shown in mm (in.)

Description	Weight kg (lb)	V/Ph/Hz	Application Ambient Temp.	Connection Size	
				Hot Gas	Liquid
Condenser 1 Fan, Single Circuit, 2.4 MBH/1F TD, 208-240V/1/60	82 (180)	230/1/60	35°C (95°F) and 41°C (105°F)	28 mm (1 1/8 in.)	22 mm (7/8 in.)

ACCD75215

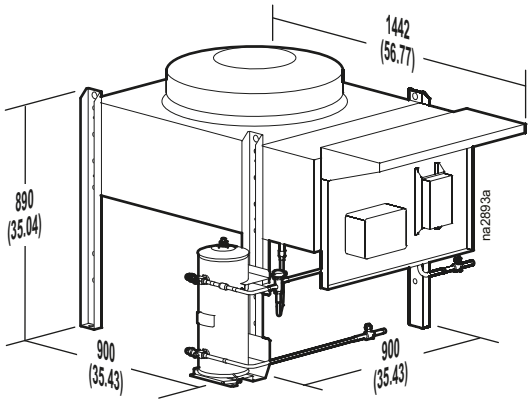


Flooded receivers are shown installed but are not included with the condenser.

Dimensions are shown in mm (in.)

Description	Weight kg (lb)	V/Ph/Hz	Application Ambient Temperature	Connection Size	
				Hot Gas	Liquid
Condenser 1 Fan, Single Circuit, 4MBH/1F TD, 208-240V/1/60	118 (260)	230/1/60	46°C (115°F)	28 mm (1 1/8 in.)	22 mm (7/8 in.)

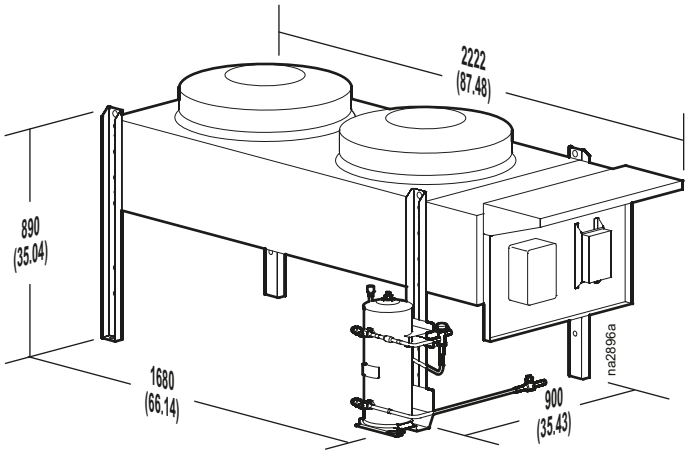
ACCD75216 and ACCD75218



A flooded receiver is shown installed but is not included with the condenser. Dimensions are shown in mm (in.)

SKU	Description	Weight kg (lb)	V/Ph/Hz	Application Ambient Temperature	Connection Size	
					Hot Gas	Liquid
ACCD75216	Condenser 1 Fan, Single Circuit, 1.2MBH /1C TD, 400/3/50 FSC	48 (106)	400/3/50	35°/40° C (95°/105° F)	22 mm (7/8 in.)	18 mm (5/8 in.)
ACCD75218	Condenser, 1 Fan, Single Circuit, 1.2MBH /1C TD, 220/1/50 FSC	48 (106)	220/1/50	35°/40° C (95°/105‘° F)	22 mm (7/8 in.)	18 mm (5/8 in.)

ACCD75217 and ACCD75219

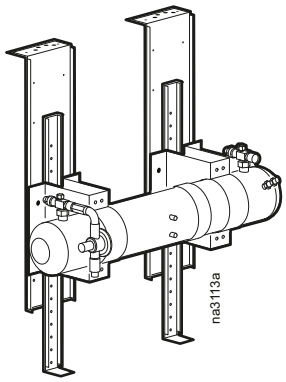


A flooded receiver is shown installed but is not included with the condenser. Dimensions are shown in mm (in.)

SKU	Description	Weight kg (lb)	V/Ph/Hz	Application Ambient Temperature	Connection Size	
					Hot Gas	Liquid
ACCD75217	Condenser, 2 Fan, Single Circuit, 2.3MBH /1C TD, 400/3/50 FSC	89 (196)	400/3/50	46°C (115°F)	28 mm (1 1/8 in.)	22 mm (7/8 in.)
ACCD75219	Condenser, 2 Fan, Single Circuit, 2.3MBH /1C TD, 220/1/50 FSC	89 (196)	220/1/50	46°C (115°F)	28 mm (1 1/8 in.)	22 mm (7/8 in.)

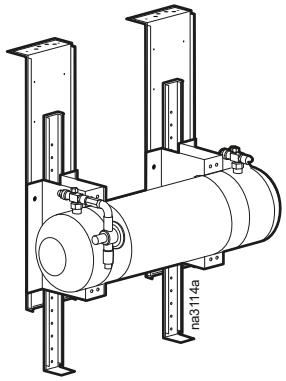
Flooded Receivers

ACAC75004



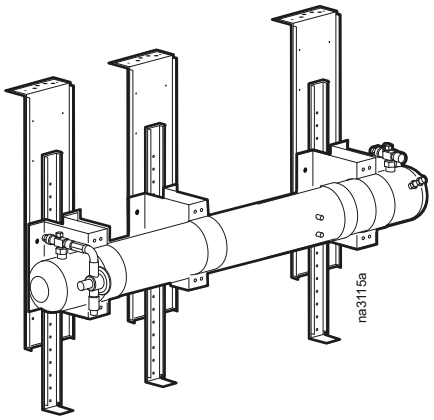
Description	Qty	Application
Flooded receiver: 17.7 kg (39 lbs), 167.6 mm (6.6 in.) diameter, 965.2 mm (38 in.) length	1	600 mm InRow units

ACAC75005



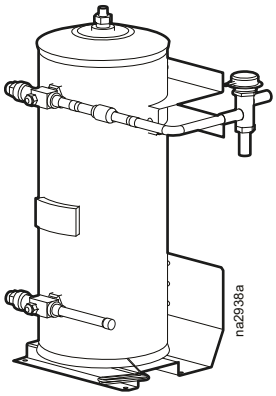
Description	Qty	Application
Flooded receiver: 28.1 kg (62 lbs), 167.6 mm (6.6 in.) diameter	1	600 mm InRow units

ACAC75007



Description	Qty
Flooded receiver: 48 kg (106 lbs), 218.4 mm (8.6 in.) diameter, 1524.0 mm (60.0 in.) length	1

ACAC75009



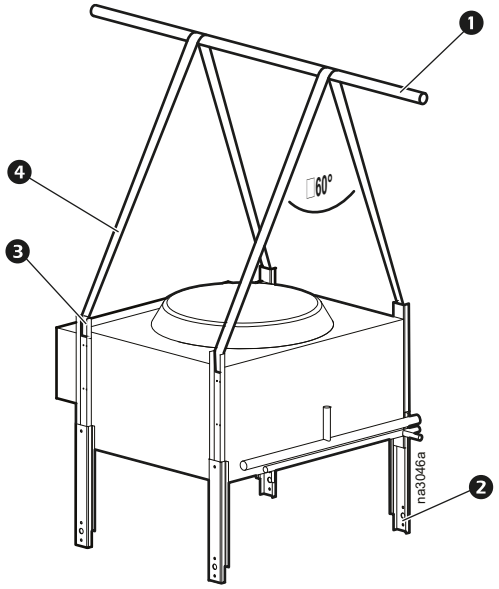
Description	Qty	Application
Flooded receiver, R410a: 7.7 kg (17 lbs), 152.4 mm (6 in.) diameter, 457.2 mm (18.0 in.) length	1	35°C (95°F), 41°C (105°F), ambient condensers
	2	46°C (115°F) ambient condensers (ACCD75215 only)

Moving the Equipment

Rigging

⚠CAUTION
HAZARD TO EQUIPMENT AND PERSONNEL • Do not use coil headers, return bends, or electrical boxes to lift or move the units. • The equipment is heavy. For safety purposes, adequate personnel must be present when moving this equipment. **Failure to follow these instructions can result in injury or equipment damage.**

The figure at right shows a typical unit. Use the appropriate equipment to move the unit based on its weight, size, and final location.



Use a spreader bar ❶ to lift the unit. Attach lifting straps ❹ to the lifting brackets ❸.

NOTE: Do not allow the lifting straps to exceed an angle of 60 degrees as shown.

Remove two 5/16 x 4-in. bolts from each leg and extend the legs ❷ to the operating position. Re-install the two 5/16 x 4-in. bolts to secure the legs in the operating position.

Conform to all local and national codes when moving the unit to its final location.

Location

Condensers and fluid coolers are designed for outdoor use and may be mounted on a roof or on a concrete slab for ground level installations.

Installation

General Considerations

Ensure all packing materials have been removed from the outside and inside of the unit. Install roof-mounted units on steel channels, I-beams, or other supports, and ensure they are level. It is recommended that you consult a structural specialist to ensure the roof is capable of supporting the weight of the unit, mounting arrangement, piping, and all associated refrigerant or fluid. Follow all local and national codes.

Calculate the total system weight by adding the weights of all units, piping, brackets, and refrigerant or water/glycol mixture.

See the InRow RD Air Cooled *Operation and Maintenance* manual for detailed instructions on calculating total refrigerant.
See “Fluid Weight Per Gallon” on page 23. and fluid cooler internal volume specifications beginning on page 20 for calculating coolant weight of water/glycol systems.

For a ground-level installation, create a level and properly-supported concrete slab. To prevent settling, install footings that extend below the frost line. Follow all local and national codes.

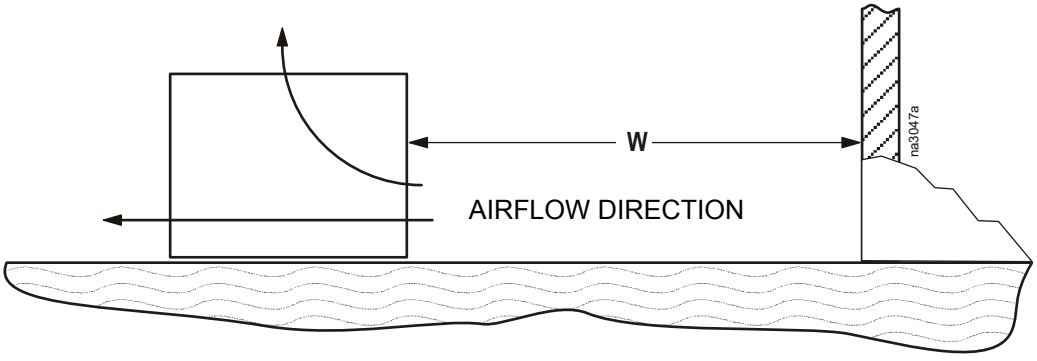
NOTE: Level mounting is required for proper fluid distribution through the coil and for flooded suction for the pump.

Do not install condensers or fluid coolers too near occupied spaces. Install them above or outside of utility areas, corridors, and auxiliary spaces where noise will not be a factor, and where the transmission of sound and vibration to occupied spaces will be reduced.

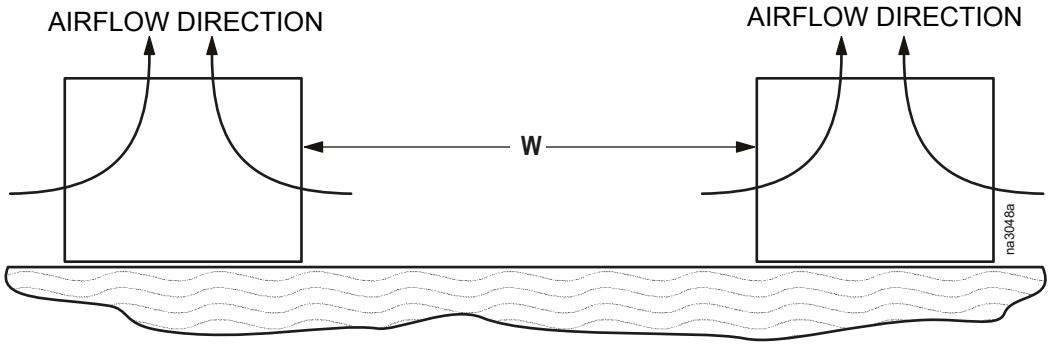
The unit must be secured in its final location.

Location requirements

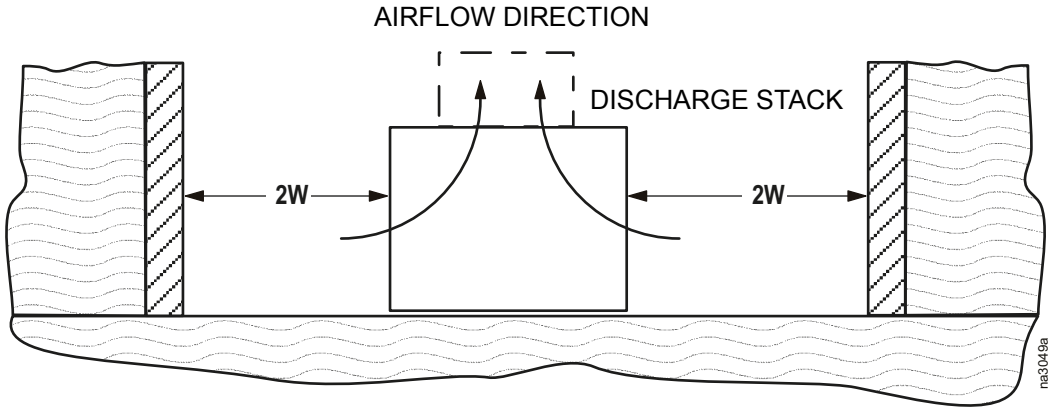
Locate the air cooled condenser or fluid cooler far enough away from any wall or obstruction so that air can circulate freely and will not be recirculated. Do not locate a unit in the vicinity of steam, hot air, or exhaust fumes. If possible, locate the unit where terrain features such as trees or building can provide a shaded area. This will minimize the solar load on the unit. Avoid locating ground-level units in sites that are accessible to the public. The **minimum** distance between the unit and any wall or obstruction is the width of the unit (W). Increase this difference if possible. Make sure there is room for maintenance work and that access doors and panels are not blocked. Do not attach ductwork to the coil inlet or fan outlet. If the unit is to be installed in an area with three walls, install it as if it were in a pit.



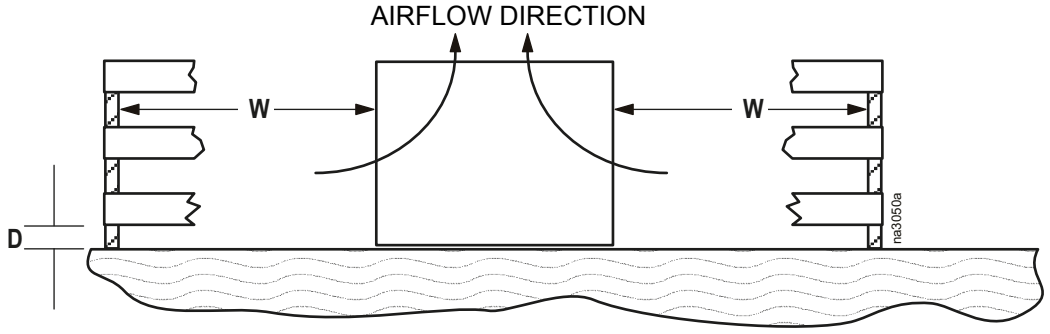
If multiple units are installed, the **minimum** distance between units is the width of the largest unit (W). If units are placed end to end, the minimum distance between units is 1.2 meters (4 feet). Make sure there is room for maintenance work and that access doors and panels are not blocked. Overhead obstructions are not permitted. Do not attach ductwork to the coil inlet or fan outlet.



If the unit is installed in a pit, the top of the unit should be level with the top of the pit. If the top of the unit can not be level with the top of pit, install discharge cones or stacks to raise discharge air to the top of the pit. This is a minimum requirement. The **minimum** distance between the unit and the wall increases to twice the width of the unit (2W)



A decorative fence near a unit must have 50% free area, with a 305-mm (12-in.) undercut (D), and a clearance equal to or greater than the width of the unit (W). In addition, the fence must not be higher than the top of the unit. If these conditions cannot be met, install it as if it were in a pit (above).



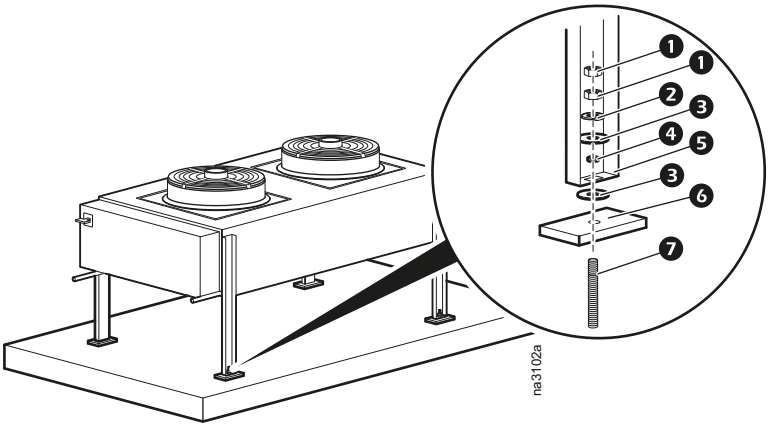
Install a Condenser

Secure the unit

To prevent the unit from moving during operation, secure the unit to a base or concrete pad as shown.

NOTE: All hardware is field-supplied.

Be sure to use vibration pads as shown to reduce vibration transmitted to the mounting surface.



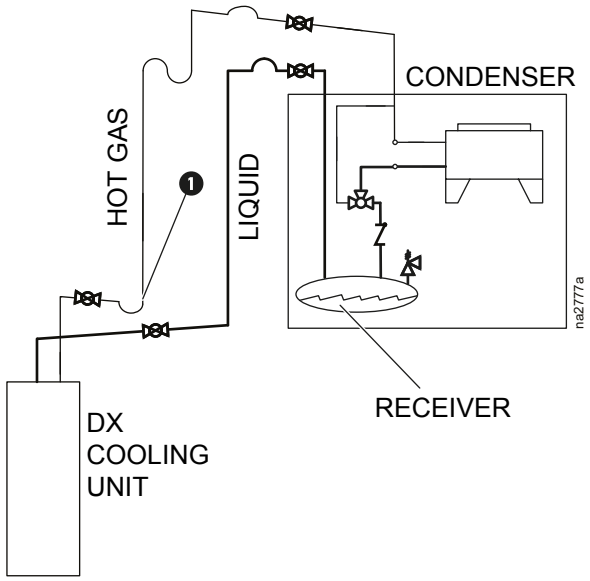
Item	Description	Item	Description
❶	Nut	❺	Support leg
❷	Lock washer	❻	Vibration pad
❸	Flat washer	❼	Stud
❹	Bushing		

Refrigerant piping

Refrigerant piping should be flexible enough to prevent noise and vibration transmission from the unit into the building. If refrigerant lines are to be suspended from the building structure, use isolation hangers to prevent vibration and noise transmission. Where piping passes through a wall, pack fiberglass and sealing compound around the lines to minimize vibration and retain flexibility in the lines.

Install piping according to standard accepted refrigeration practice. Adhere to the following recommendations:

1. For remote condensers, use the correct line sizes for discharge and liquid lines. See the unit installation manual for more information.
2. Use only refrigeration-grade ACR copper tubing.
3. Do not soft-solder joints.
4. Flow dry nitrogen through lines at ambient pressure while brazing (do not pressurize).
   NOTE: Wrap valves with wet rags for protection of internal parts during the brazing process.
5. Do not leave dehydrated piping or components open to the atmosphere any longer than necessary.
   NOTE: Make the radius of all oil traps as short as possible. Common practice is to fabricate the trap using three 90° ells.
6. Where piping goes through a wall, install a sleeve per applicable local codes to protect the piping.



1	Reduction of piping diameter for vertical piping run (if necessary)		Pressure relief valve
	Shutoff valves		P-trap
	Head pressure control valve		S-trap
	Check valve		Inverted P-trap

All lines are Type L copper tubing.

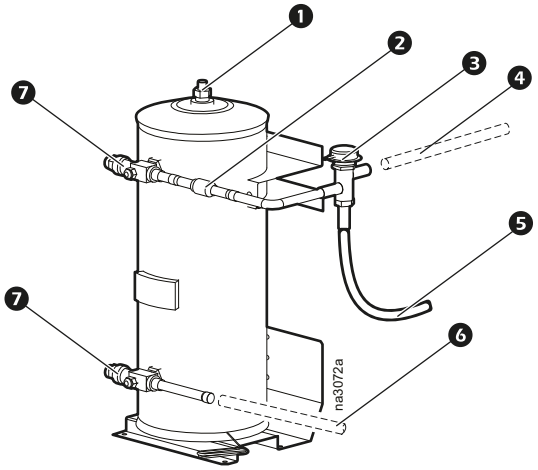
The figure illustrates a typical piping arrangement involving a remote condenser and receiver located at a higher elevation.

NOTICE
HAZARD TO EQUIPMENT The condenser must be mounted higher than the air conditioner. **Failure to follow these instructions can result in equipment damage.**

The design of the discharge line is critical. If the equipment is properly sized for full load condition, the gas velocity may be too low at reduced loads to carry oil up through the discharge line and condenser coil. Reducing the size of the discharge line would increase the gas velocity sufficiently at reduced load conditions. However, when the system is operating at full load, the line would be greatly undersized and would create an excessive refrigerant pressure drop.

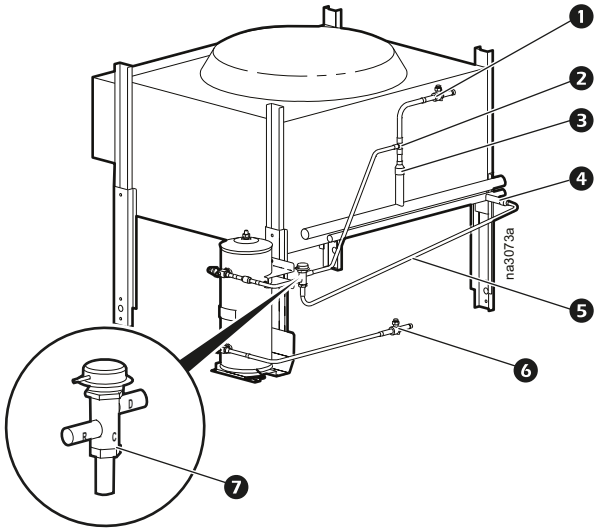
NOTE: For proper pipe sizing, see the unit *Installation* manual. For charge calculations, see the unit *Operation and Maintenance* manual.

Install a single receiver



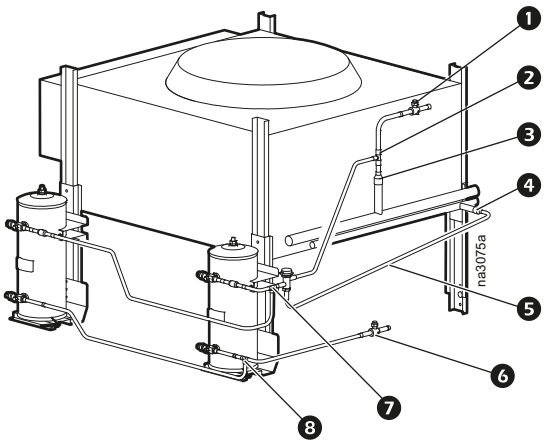
Item	Description
❶	Fusible plug (must be on top of unit)
❷	Check valve
❸	Low Ambient Control Valve
❹	From discharge line tee on condenser inlet piping
❺	Condenser outlet piping to unit
❻	Liquid line to indoor unit
❼	Service valve

Note: All components provided by Schneider Electric unless labeled otherwise.



1. Mount the receiver (ACAC75009) to the condenser vertically (fusible plug on top) per the instruction sheet included with the receiver.
2. Install a 1 1/8 x 5/8 in. reducing coupling ❸ and a 5/8 x 5/8 x 1/2 in. tee fitting ❷ as shown (piping and fittings not provided).
3. Install a 5/8 in. ODF ball valve ❶ (not provided) as shown.
4. Install a 1/2 in. line (not provided) between the tee fitting ❷ and the “D” port of the LAC ❼ as shown.
5. Install a 7/8 x 1/2 in. coupling ❹ and a 1/2 in. line ❺ between the LAC “C” port and the condenser as shown.
6. Install a 1/2 in. ODF ball valve ❻ (not provided) in. the liquid line as shown.
7. Connect the condenser to the external piping per the piping diagram.

Install dual receivers



1. Cut the line and remove the LAC from one receiver.
2. Mount the receivers (ACAC75009) to the condenser vertically (fusible plugs on top) per the instruction sheet included with each receiver. Mount the receiver without the LAC on the left, as shown.
3. Install a 1 1/8 x 5/8 in. reducing coupling ❸ and a 5/8 x 5/8 x 1/2 in. tee fitting ❷ as shown (piping and fittings not provided).
4. Install a 5/8 in. ODF ball valve ❶ (not provided) as shown.
5. Install a 1/2 in. line (not provided) between the tee fitting ❷ and the “D” port of the LAC as shown.
6. Install a 7/8 x 1/2 in. coupling ❹ (not provided) and a 1/2 in. line ❺ (not provided) between the LAC “C” port and the condenser as shown.
7. Break the line between the LAC “R” port and the receiver. Install a 1/2 in. tee fitting ❼ (not provided) as shown.
8. Install another 1/2 in. tee fitting ❽ (not provided) as shown.
9. Connect the receivers together as shown.
10. Install a 1/2 in. ODF ball valve ❻ (not provided) in the liquid line as shown.
11. Connect the condenser to the external piping per the piping diagram.

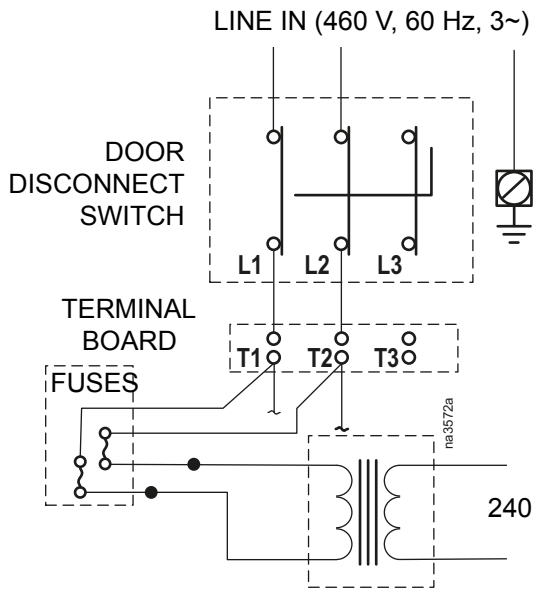
Electrical wiring

The electrical installation must be in accordance with all national and local electrical codes and regulations. Provide proper overcurrent protection.

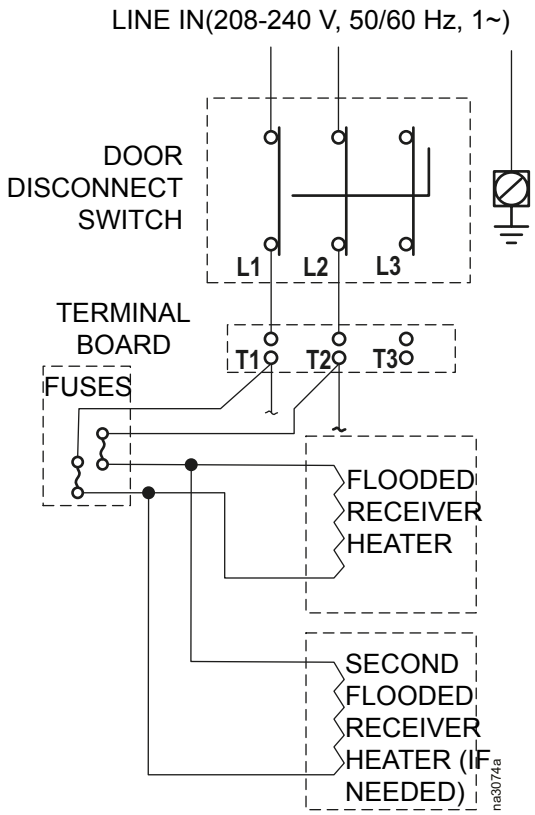
Connect the unit to supply power as indicated by the electrical requirements identified on the unit dataplate and in accordance with the wiring diagram included with the unit.

The diagrams below show how supply voltage is connected to typical units, as well as interconnections to flooded receiver heaters (if required).

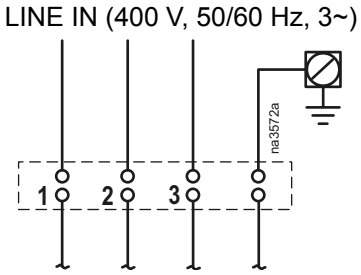
ACCD75204



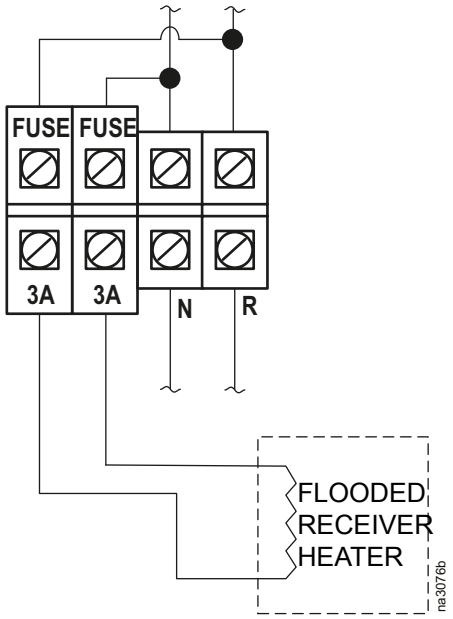
ACCD75214 and ACCD75215



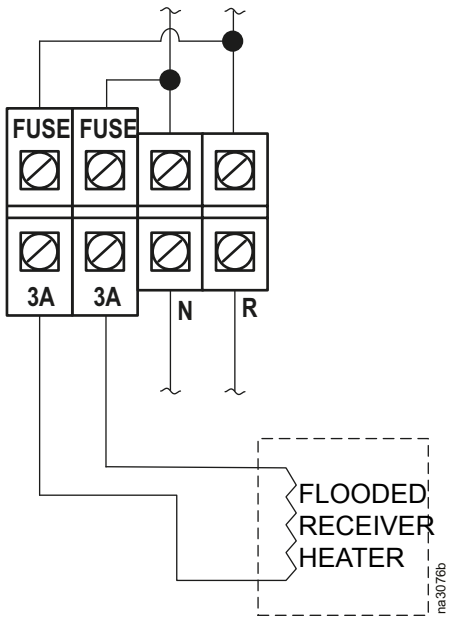
ACCD75207, ACCD75208, and ACCD75209



ACCD75216 and ACCD75217

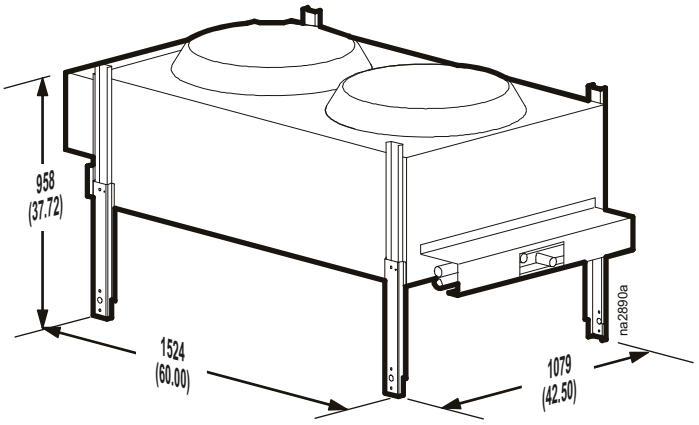


ACCD75218 and ACCD75219



Fluid Coolers

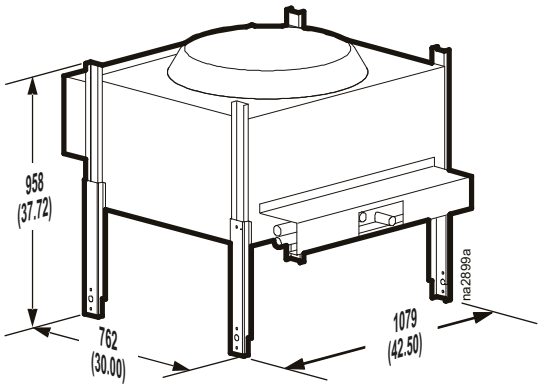
ACFC75210



Dimensions are shown in mm (in.)

Description	Weight kg (lb)	Internal volume l (U.S. gal)	V/Ph/Hz	Application	Connection Size mm (in.)
Fluid Cooler: 135 MBH@25TD, 30 GPM, 16 Feeds	204 (450)	15 (4)	460/3/60	41°C (105°F)	35 mm (1-3/8 in.)

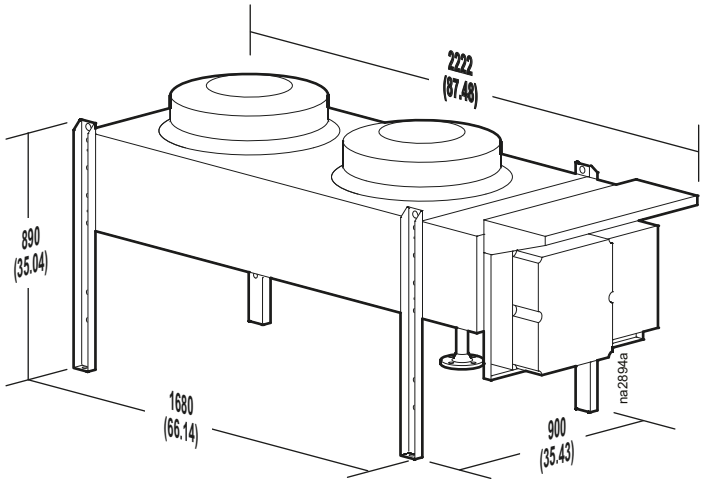
ACFC75255



Dimensions are shown in mm (in.).

Description	Weight kg (lb)	Internal volume l (U.S. gal)	V/Ph/Hz	Application	Connection Size mm (in.)
Fluid Cooler: 59 MBH@25TD, 10 GPM, 8 Feeds	150 (330)	11.4 (3)	480/3/60	35°C (95°F)	28 mm (1 1/8 in.)

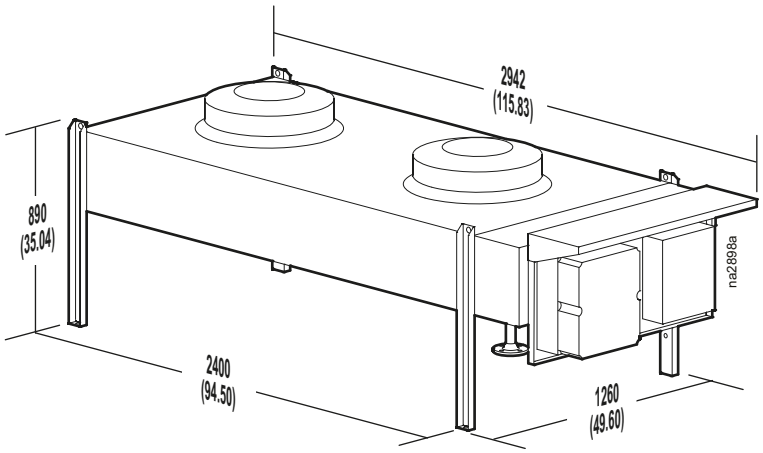
ACFC75256



Dimensions are shown in mm (in.).

Description	Weight kg (lb)	Internal volume l (U.S. gal)	V/Ph/Hz	Application	Connection Size mm (in.)
Fluid Cooler: 57 MBH@25 TD, 10GPM, 5 Feeds	90 (198)	13 (3.4)	400/3/50	35°C (95°F)	Flange 1-1/2 in. Dn40 Pn10

ACFC75257



Dimensions are shown in mm (in.).

Description	Weight kg (lb)	Internal volume l (U.S. gal)	V/Ph/Hz	Application	Connection Size mm (in.)
Fluid Cooler: 57 MBH@20TD, 10GPM, 8 Feeds	151 (333)	27 (7.1)	400/3/50	46°C (115°F)	Flange 2 in. Dn50 Pn10

Install a Fluid Cooler

Read and follow all installation guidelines presented in “General Considerations” on page 13.

Fluid piping

The piping system must provide maximum leak prevention. Use brazed or sweat joints where possible. Tightly drawn Teflon tape-threaded pipe joints can be made if needed.

NOTE: Glycol solutions or other heat transfer fluids will leak where water will not.

- Follow all national and local codes. Correct pipe sizing will reduce pumping power requirements and operating costs.
- Provide sufficient valves and unions to permit easy access to parts subject to wear and possible repair or replacement.
- Do not use a pressure reduction valve with the glycol system, because a slight leak would lead to a dilution of the mixture. Any refill must be controlled in order to maintain the proper glycol-to-water ratio.
- If city makeup water is required, follow local and national codes.
- Test all joints for leaks after piping is completed.

This table shows pressure drops for various pipe sizes at flow rates commonly used with a typical fluid cooler.

Proper pipe size depends on the available pump head, determined by subtracting the condenser pressure drop and the fluid cooler pressure drop from the total available pump head at design flow.

- Glycol piping requires no insulation except when fluid temperature is below ambient dew point temperatures. Fluid coolers normally produce 21°C (70°F) or higher fluid temperatures.
- Vents are required at all high points in the piping and are used to bleed air when filling the system. If fluid coolers are at high points, install vent valves at each fluid cooler.
- Gate valve installation is recommended on both sides of the pump to prevent loss of fluid if the pump requires repair or replacement. Install shut-off valves at fluid coolers in case the unit is to be moved or requires maintenance.

Pressure Loss in Feet of Water			
Flow LPM (GPM)	**Pipe Size I.D. (in.)**	**Schedule 40 Steel Head ft/100 ft Equivalent Length**	**Copper Tube Head ft/100 ft Equivalent Length**
57 (15) 76 (20)	1 1	17.6 30.2	15.0 23.1
95 (25) 114 (30) 132 (35)	1 1/4 1 1/4 1 1/4	11.5 16.3 21.8	12.6 17.4 23.0
151 (40) 170 (45)	1 1/2 1 1/2	13.0 16.5	12.9 15.7
227 (60) 303 (80)	2 2	7.9 13.7	7.0 12.0
379 (100) 568 (150)	2 1/2 2 1/2	8.5 18.6	6.1 12.9
757 (200) 946 (250)	3 3	10.7 16.5	9.1 13.7
1136 (300)	3 1/2	11.1	9.2
1136 (300) 1325 (350) 1514 (400)	4 4 4	5.9 7.9 10.2	4.9 6.5 8.2

Fluid Weight Per Gallon	
Percent Glycol	**Kg per liter (Pounds Per Gallon)**
0 (all water)	0.99 (8.345)
10	1.00 (8.395)
20	1.02 (8.495)
30	1.03 (8.604)
40	1.04 (8.712)
50	1.05 (8.804)

Filling and purging water/glycol systems

Pressure-test the system with air pressure only before adding glycol. Test pressure should not exceed 60 PSIG.

Roof-mounted fluid cooler: Fill the system by pouring the premixed water and glycol into the expansion tank until the tank is half-full, then purge the air from all vents. Operate the system for one minute, then purge all vents again and add glycol as required. Repeat the purging of all vents after the first hour of operation and again after several hours of operation.

Ground-mounted fluid cooler: Typically, all systems are filled from the lowest point and bled at the high point.

Be sure all valves are open in all cooling units, pumps, fluid coolers, etc. to avoid trapped air that may be released after the system has been started.

The fluid cooler may be at the lowest point in the system, so the pre-mixed water and glycol will have to be pumped into the system. Close the shut off valve and open the two hose bibs installed in the piping run on the leaving side of the pump.

Connect a pump and hose to the hose bib farthest away from the pump and a hose to the hose bib closest to the pump. Begin pumping the glycol mixture into the system at full pressure. Close the hose bib for the return hose so there is only a small flow of fluid or air; this will build a head of fluid that will force the air from the system. Once the air is out and a steady flow of fluid has been achieved, close off the two hose bibs and open the shutoff valve.

NOTE: Typically, all systems are filled from the lowest point and bleeding at the high point.

Be sure all valves are open in all cooling units, pumps, fluid coolers, etc to avoid trapped air that may be released after the system has been started.

Flow adjustment procedure

After the system is completely full of fluid, start the fluid circulating pump. Adjust the balancing valve to ensure proper fluid flow.

Glycol charge

The amount of glycol the system requires is dependent upon the holding volume of the system, including the holding capacity of the unit, the holding capacity of the piping, and the holding capacity of the fluid cooler. See “Pressure Loss in Feet of Water” on page 22.

NOTE: Take proper precautions to prevent freeze damage during low ambient temperatures. Consult the glycol vendor recommendations for specific freeze protection for your location.

Mixing glycol and water

Mix glycol and water before adding it to the system. The resulting chemical reaction will release oxygen, which is extremely undesirable in a closed-loop system.

NOTICE
FREEZE HAZARD Adequate freeze protection is necessary during ambient temperatures below 0°C (32°F) for dry coolers operating without a glycol mixture. **Failure to follow these instructions can result in equipment damage.**

Glycol sludge prevention

Glycol systems may be subject to sludge formation in coils, due to one or more of the following causes:

- Reaction of the corrosion inhibitor with galvanized piping (zinc).
- Reaction of the glycol with chromate-type water additives.
- Reaction of the glycol with pipe dope, cutting oils, solder flux, and other system dirt.

Glycol manufacturers offer a specially inhibited glycol (formulated for snow melting systems) that does not react with zinc. This glycol is also suitable for heat transfer systems. Glycol manufacturers also provide inhibitor check services on a regular basis. Good glycol system design requires the following precautions:

- Do not use galvanized piping.
- Clean system piping and flush the system with a heated trisodium phosphate solution before filling the system with the water/glycol mixture.
- Do not use chromate inhibitor treatment.
- The glycol manufacturer shall provide inhibitor check service and supply additional inhibitor as required.

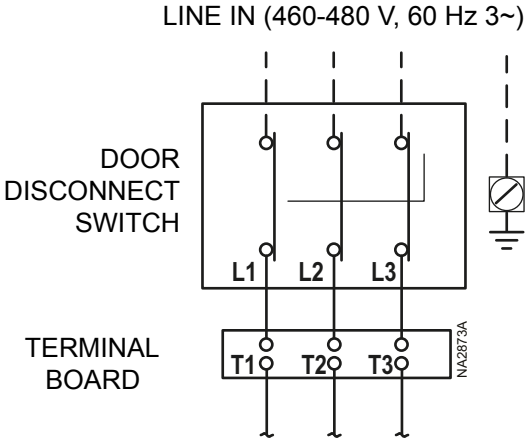
Electrical wiring

The electrical installation must be in accordance with all national and local electrical codes and regulations. Provide proper overcurrent protection.

Connect the unit to supply power as indicated by the electrical requirements identified on the unit name plate and in accordance with the wiring diagram included with the unit.

The diagram on the right shows how supply voltage is connected to typical units. All units use an inline door disconnect switch that prevents operation while the door is open.

ACFC75210 and ACFC75255



Start-Up

Perform all items as listed in the start-up checklist.

Environment:

- The environment must be suitable for operation according to the Installation manual:
  - Space construction is complete
  - Conditioned space has adequate vapor barrier
  - Room load is present for proper unit operation
  - The unit and accessories have been received in full, and free of damage
- Minimum space requirements have been met according to the Installation manual for the indoor unit:
  - Minimum space in front of unit: _____ cm/inches
  - Minimum space on right side of unit: _____ cm/inches
  - Minimum space on left side of unit: _____ cm/inches
  - Minimum space in back of unit: _____ cm/inches
- Minimum space requirements have been met according to the Installation manual for the air-cooled condenser or fluid cooler
  - Minimum space in front of unit _____ cm/inches
  - Minimum space on right side of unit: _____ cm/inches
  - Minimum space on left side of unit: _____ cm/inches
  - Minimum space in back of unit: _____ cm/inches
- Minimum space requirements have been met according to the Installation manual for the pump package.
  - Minimum space in front of unit _____ cm/inches
  - Minimum space on right side of unit: _____ cm/inches
  - Minimum space on left side of unit: _____ cm/inches
  - Minimum space in back of unit: _____ cm/inches

Mechanical Inspection:

- All piping complies with ASHRAE, local and national codes and the refrigerant piping size is in accordance with the pipe size selection:
  - Liquid line size in. O.D. _____
  - Discharge line size in. O.D. _____
  - Suction line size in. O.D. _____
  - Chilled water supply and return line sizes in. O.D. _____
  - Condenser loop supply and return line sizes in. O.D. _____
  - Condensate removal line size in. O.D. _____
  - Humidifier supply line size in. O.D. _____
- The piping is complete, adequately supported, and free of debris
  - The refrigerant piping is _____ equivalent feet (including all piping elbows and fittings)
  - Length of vertical run _____ m/ft
  - Number of traps _____
  - Length of horizontal run _____ m/ft
  - Inverted trap at air-cooled condenser _____
  - Piping connections are tight and free of leaks
  - The piping was leaked checked at _____ bar/kpa _____psig
- The refrigerant line is dehydrated according to the installation manual
  - The evacuation process took the unit down to _____ microns
  - Vacuum was held for _____ hours
  - The refrigeration piping has a holding charge of _____ kg/lb of refrigerant
  - The fluid cooler was filled with water/glycol. freeze protection is down to _____ degrees C/F (Optional - for glycol units using Schneider-Electric-supplied fluid coolers)
- Condensing water is available (optional - for water cooled units). Condenser loop pressure is:
  - Supply _____ bar/kpa _____psig
  - Return _____ bar/kpa _____psig
  - _____ Degrees C/F Supply
- The condensate pump is installed (Optional)
- The drain line is connected
  - Drain trap is _____ cm/in. (optional for units not using condensate pumps)
- The humidifier water supply line is connected
  - Water supply pressure is _____bar/kpa/psig
- The ducting is complete/or optional plenum has been installed
- Chilled water is available and connected to equipment (optional: CW units)
  - Chilled water supply temperature is _____ degrees C/F
- Water detection devices are connected to the unit (optional)

Electrical Inspection:

- The electrical service is compliant with local, state, and national codes
- Incoming electrical feeds match the name plate phase and voltage listings
  - Incoming Voltage is: AB_____ AC_____ BC_____VAC for indoor unit
    _____ Phase
    _____ Hz
- Incoming Voltage is: AB_____ AC_____ BC_____VAC for air cooled condenser/fluid cooler (Optional)
  _____ Phase
  _____ Hz
- Incoming Voltage is: AB_____ AC_____ BC_____VAC for pump package (optional)
  _____ Phase
  _____ Hz
- Circuit breakers and fuses are rated properly according to the unit data plate
  - Main circuit breaker size is _____ Amps for indoor unit
  - Main circuit breaker size is _____ Amps for air cooled condenser/fluid cooler (optional)
  - Main circuit breaker size is _____ Amps for pump package (optional)
- The unit is properly grounded
- All power wiring connections and control wiring connections between evaporator, condenser, dry cooler, and pumps, as well as external options, are complete according to the Installation manual
- All electrical components/connections are tight and free of damage

Please provide the following information:

Electrical Contractor name: _____

Telephone Number: _____

Will the Electrical Contractor be present during the Start-Up? _____

Mechanical Contractor name: _____

Telephone Number: _____

Will the Mechanical contractor be present during the Start-Up? _____

If any of these statements are false (disregard absent optional equipment), please go to **www.schneider-electric.com/support**. Do not sign the form below until these conditions are met.

Please confirm that the conditions above have been met by signing the form below and returning it to Schneider Electric 3-5 business days prior to the scheduled start-up date. Incorrect information or missing information that leads to additional time at site would lead to additional cost for completing the start-up. Ensure that the information is accurate and complete prior to sending this form back to us for scheduling the startup.

Customer or Customer Representative (signature): _____.

Date:_____.

Address and phone number: _____.

Worldwide Customer Support

Customer support for this or any other product is available at no charge in any of the following ways:

- Visit the Schneider Electric Web site to access documents in the Schneider Electric Knowledge Base and to submit customer support requests.
  - **www.schneider-electric.com** (Corporate Headquarters)
    Connect to localized Schneider Electric Web sites for specific countries, each of which provides customer support information.
  - **www.schneider-electric.com/support/**
    Global support searching Schneider Electric Knowledge Base and using e-support.
- Contact the Schneider Electric Customer Support Center by telephone or e-mail.
  - Local, country-specific centers: go to **www.schneider-electric.com > Support > Operations around the world** for contact information.

For information on how to obtain local customer support, contact the representative or other distributors from whom you purchased your product.