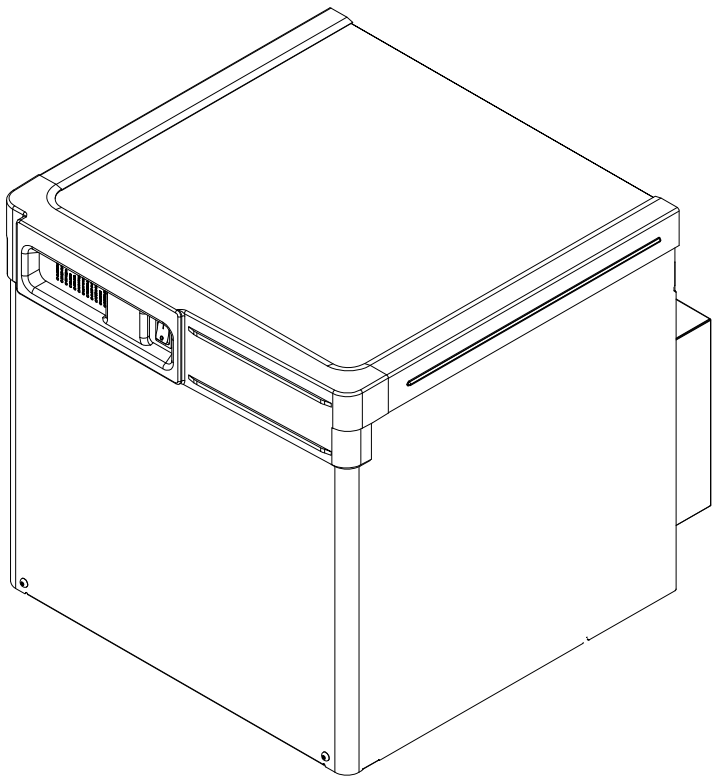
Horizon Elite™ 1412 Ice Machines (Remote Condensing)

User Guide
Serial Numbers Below R03747

Please visit *www.follettice.com/technicaldocuments* for the Operation and Service manual for your unit.

HCD1412R, HMD1412R, HCF1412R, HMF1412R



Welcome to Follett

Follett equipment enjoys a well-deserved reputation for excellent performance, long-term reliability and outstanding after-the-sale support. To ensure that this equipment delivers that same degree of service, review this guide carefully before you begin your installation.

Should you need technical help, please call our Technical Service group at (877) 612-5086 or (610) 252-7301.

Please have your model number, serial number and complete and detailed explanation of the problem when contacting Technical Service.

Getting Started

After uncrating and removing all packing material, inspect the equipment for concealed shipping damage. All freight is to be inspected upon delivery. If visible signs of damage exist, please refuse delivery or sign your delivery receipt "damaged." Follett Customer Service must be notified within 48 hours. Wherever possible, please include detailed photos of the damage with the original packaging so that we may start the freight claim process.

801 Church Lane • Easton, PA 18040, USA
Toll free (877) 612-5086 • +1 (610) 252-7301
www.follettice.com

Installation and Service Videos:
www.follettice.com/servicevideolibrary
01519115R01

⚠ CAUTION

- Installation and service must be performed in accordance with all federal, state and local laws. It is the responsibility of the technician to ensure that these requirements are met.
- Warranty does not cover exterior or outside installations.
- Moving parts. Do not operate with front cover removed.
- Hot parts. Do not operate with cover removed.
- To reduce risk of shock, disconnect power before servicing.
- Drain line must not be vented.
- Water supply must have particle filtration.
- Most ice machine cleaners contain citric or phosphoric acid, which can cause skin irritation. Read caution label on product and follow instructions carefully.
- Ice is slippery. Maintain counters and floors around dispenser in a clean and ice-free condition.
- Ice is food. Follow recommended cleaning instructions to maintain cleanliness of delivered ice.

Specifications

Electrical

Separate circuit and equipment ground required.

Evaporator unit

Standard electrical: 115/60/1
Maximum fuse: 15A
Amperage: 5A

Condensing unit – F1412CU

	Electrical	Min Circuit Ampacity	Max Circuit HVACR breaker size
1412 3-Phase (Emerson/Copeland)	208-230 V, 60 Hz	12A	20A

Plumbing

⚠ WARNING

This equipment to be installed with adequate backflow protection to comply with applicable federal, state, and local codes.

Notes:

- Water supply must have particle filtration. Follett recommends the filter system that has integral scale inhibitors. (Follett item# 00130286).
- Follett does not recommend the use of water softeners or bowl scale inhibitors.
- The potable water total dissolved solids (TDS) content must be greater than 10 ppm for the water control system to function properly. If using reverse osmosis water filtration system, ensure TDS level is greater than 10 ppm.

Evaporator plumbing

- 3/8" OD push-in water inlet - 3/8" OD tubing required.
- Water shut-off recommended within 10 feet (3 m).
- Follett recommends installation of Follett water filter system (part# 00130286) in ice machine inlet water line.

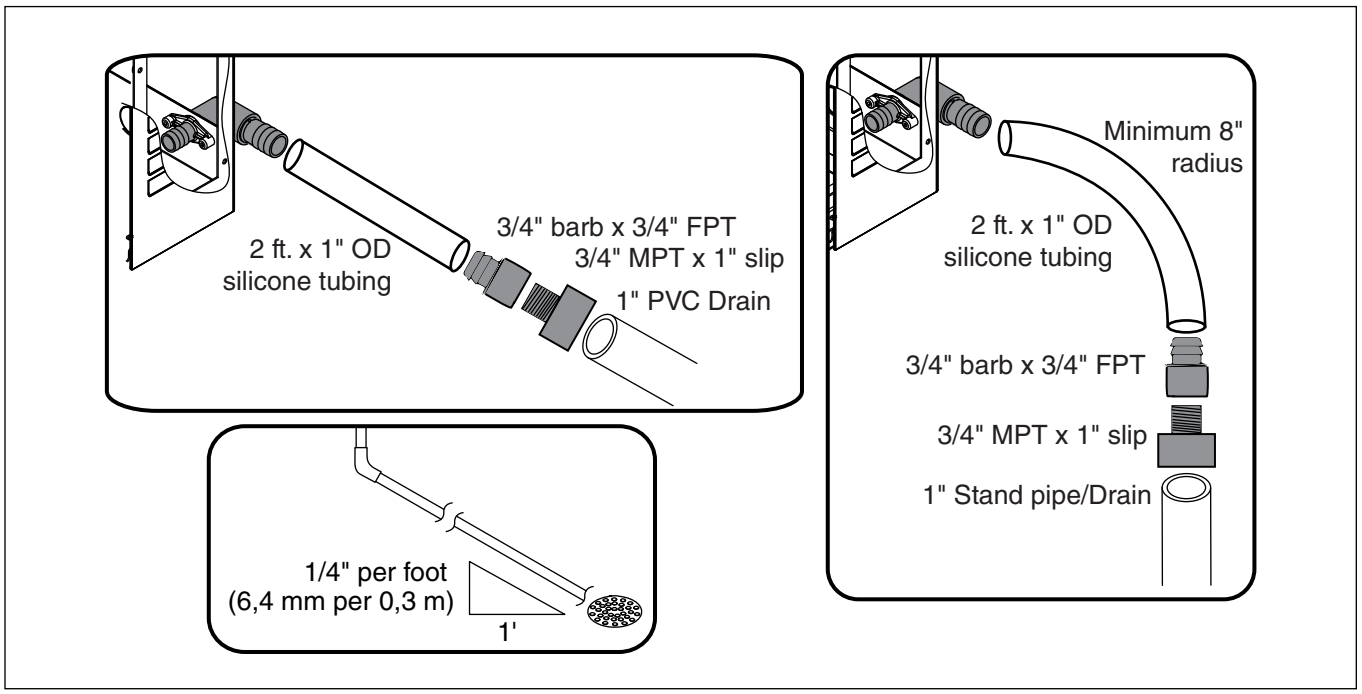
Flush drain plumbing

- Apply Teflon tape to 3/4" male outlet ice machine fitting. Thread on either the provided straight 3/4" barb adapter or a 90 degree adaptor. Connect the supplied 2' (0.61 m) silicone hose to the 3/4" drain barb.
- It is recommended that the silicone hose be routed down into a 1.5" or 2" standpipe/drain. The minimum drain size for the ice machine is 1".

  Note: 3/4" to 1" PVC adapter fittings are provided if a larger drain size is not possible.

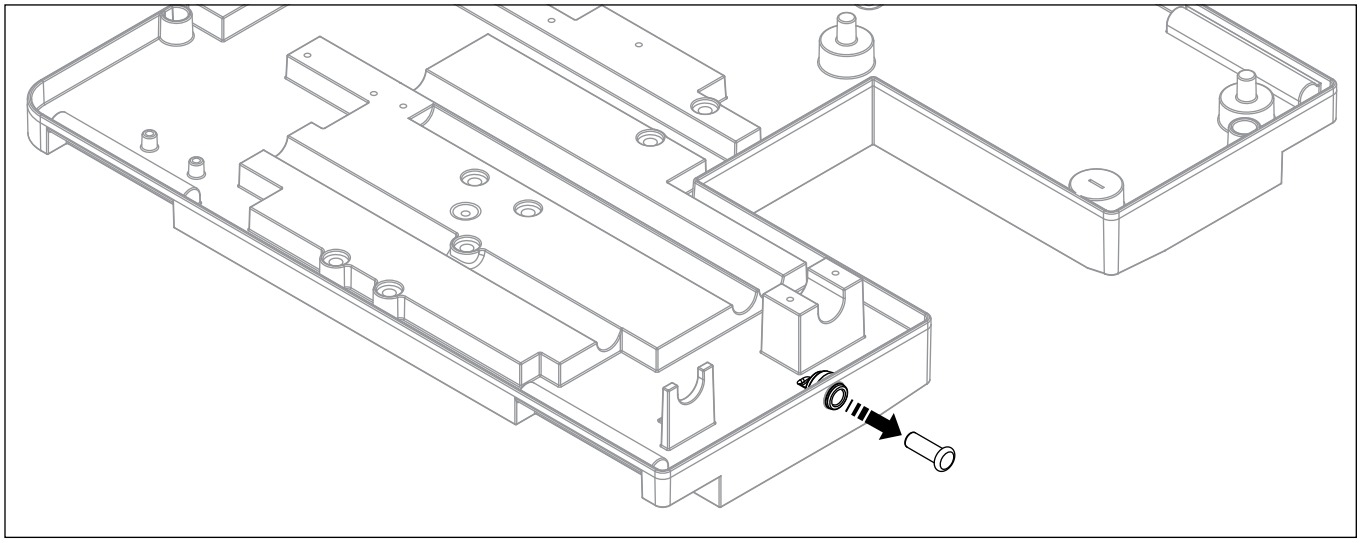
  Note: Minimum 8" radius on silicone drain line. Drain line from the ice machine must have at least 1/4" per foot pitch (6.4 mm/0.3 m).

  Note: Standpipe/drain provided by others. All other components provided with ice machine.



Chassis drain plumbing

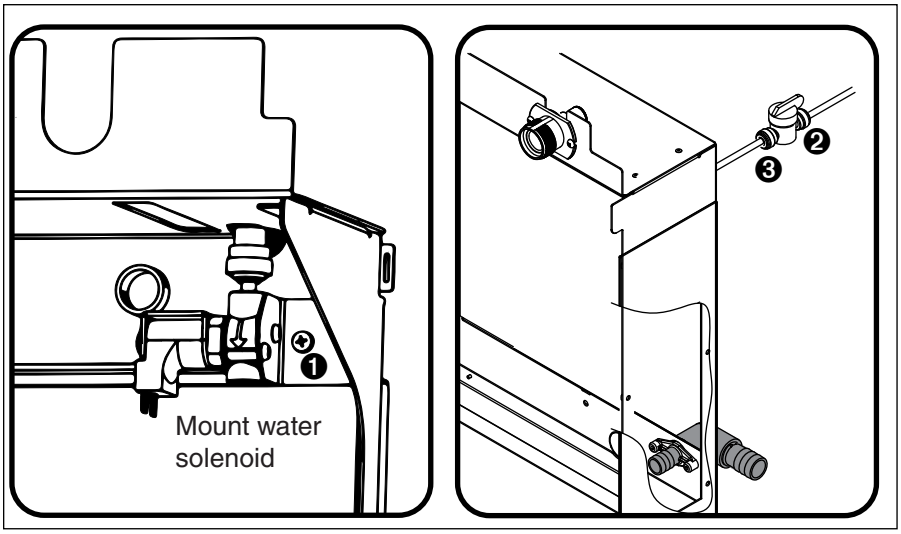
- 3/8" plug must be removed from John Guest fitting.
- Route 3/8" OD drain tubing (preferably copper) through rear of docking station and fully insert into chassis base push-in fitting. Route into drain standpipe.
- Gravity drain. Drain must slope 1/4" inch per foot (6 mm per 30,4 cm). Ensure 3/8" OD tubing slopes down into drain standpipe without forming a trap.



Water Solenoid and Shut-off Valve

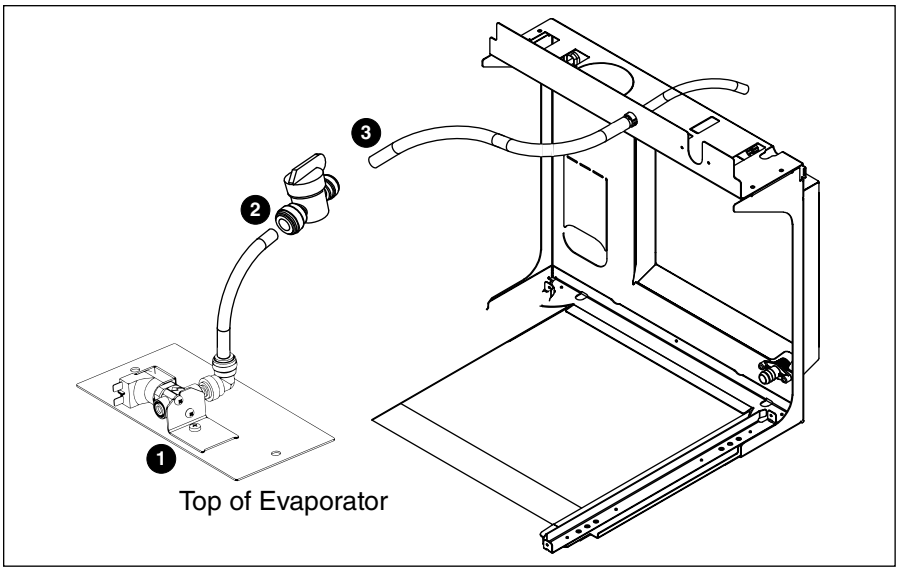
Standard Installations

Mount water solenoid to inside rear of docking assembly using one screw ❶, insert potable water line into valve ❷,insert tubing into push-in connection of water solenoid ❸.



⚠ ATTENTION INSTALLER!

For undercounter installations only, the water inlet solenoid must be mounted on top of the evaporator ❶, its tubing connected to the water shut-off valve ❷, and the potable water line connected to the shut-off valve ❸. This method of installation provides access to the water shut-off valve for service or in case of an emergency.



Ambient

Evaporator unit

Air temperature	100 F/38 C max.	50 F/10 C min.
Water temperature	90 F/32 C max.	45 F/7 C min.
Water pressure	70 psi max. (483 kPa)	10 psi min. (69 kPa)

Condenser unit

Air temperature 120 F/49 C max. –20F/–29C min.

Refrigeration

- R449A
- 3/8" liquid line
- 7/8" suction line

Note: 1412N not compatible with rack system. Consult Technical Service.

Weight

Evaporator unit: 125 lbs (57 kg)

Condensing unit:

	Horizon Elite 1412 series – F1412CU
Approximate ship weight	three phase – 265 lbs (120.2 kg)
Approximate net weight	three phase – 230 lbs (104.3 kg)

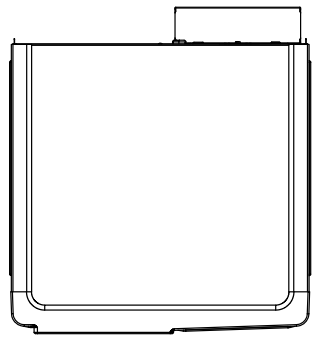
Ice production

1412 ice machine capacity/24 hrs.

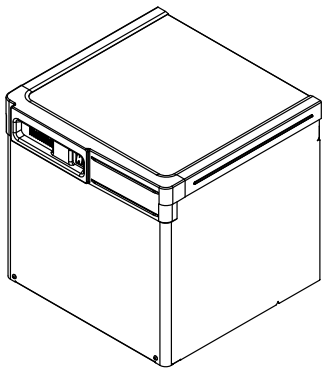
Ambient Air Temperature F/C								
Evap Potable Water Temperature F/C	**F**	**60**	**70**	**80**	**90**	**100**	**110**	
	C	**16**	**21**	**27**	**32**	**38**	**43**	
	50	1391	1371	1339	1306	1235	1165	**lbs**
	10	755	744	726	701	668	629	**kg**
	60	1301	1280	1251	1222	1156	1090	**lbs**
	16	705	693	677	661	624	588	**kg**
	70	1224	1215	1176	1138	1077	1016	**lbs**
	21	662	657	636	614	581	547	**kg**
	80	1156	1149	1113	1077	1020	962	**lbs**
	27	624	621	601	581	549	517	**kg**
	90	1075	1055	1036	1016	962	908	**lbs**
	32	580	568	558	547	517	487	**kg**

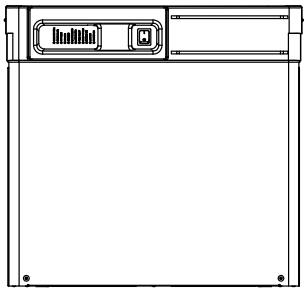
Dimensions and clearances

- Entire front of ice machine must be clear of obstructions/connections to allow removal.
- 1" (26 mm) clearance above ice machine for service.
- 1" (26 mm) minimum clearance on sides.
- The intake and exhaust air grilles must provide at least 250 sq in (1615 sq cm) of open area.
- Air-cooled ice machines – 18" (458 mm) minimum clearance between discharge and air intake-grilles.

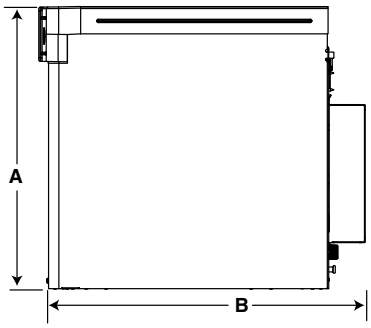


ICE–MAKER TOP VIEW

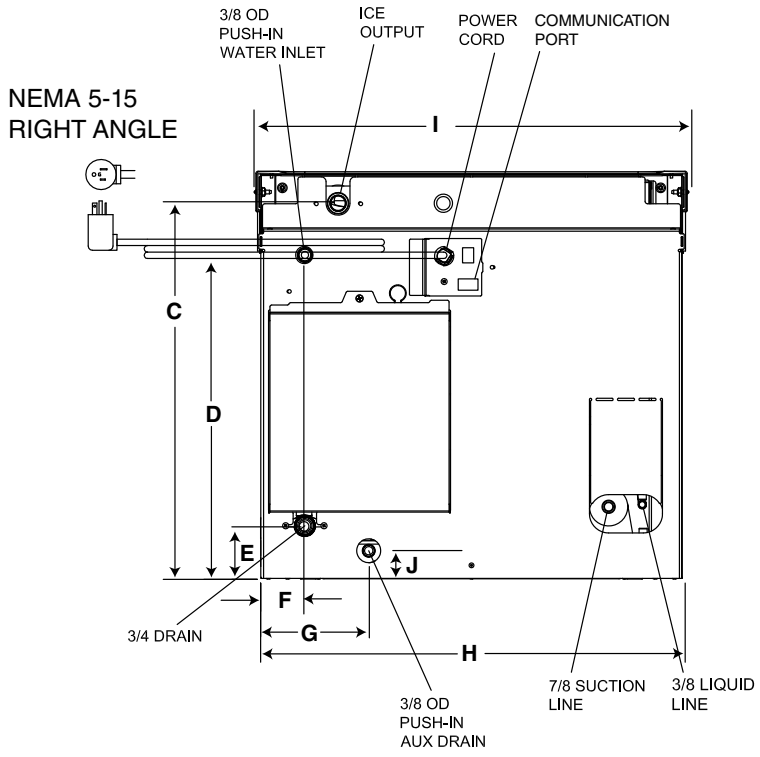




ICE–MAKER FRONT VIEW

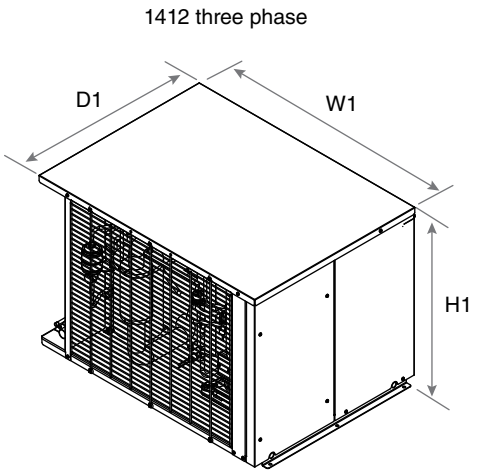


ICE–MAKER SIDE VIEW



A	21.26" (54.0 cm)
B	24.59" (62.5 cm)
C	19.59" (49.8 cm)
D	16.92" (43.0 cm)
E	2.78" (6.9 cm)
F	2.28" (5.8 cm)
G	5.64" (14.3 cm)
H	22.00" (55.9 cm)
I	22.69" (57.6 cm)
J	1.48" (3.8 cm)

Condensing unit – F1412CU



Horizon Elite 1412 series – F1412CU	
W1 Width	39.6” (100.6 cm)
D1 Depth	28.2” (71.6 cm)
H1 Height	26.0” (66.0 cm)
Electrical	three phase – 208-230/60/3 (Emerson/Copeland)
Minimum circuit ampacity	three phase – 12A
Maximum overcurrent protection	three phase – 20A
Outdoor condensing unit operating limits (air temperature)	min –20 F (–29 C) max 120 F (49 C)
Maximum refrigerant line run length	100' (30,5 m)
Maximum line rise above evaporator	35' (10,7 m)
Maximum refrigeration line drop without oil trap	15' (4,6 m)
Refrigerant charge	8 lb
Approximate ship weight	three phase – 265 lbs (120.2 kg)
Approximate net weight	three phase – 230 lbs (104.3 kg)

Operation

Cleaning/sanitizing and preventive maintenance (all models)

Note: Do not use bleach to sanitize or clean the icemaker.

Preventive maintenance

Periodic cleaning of Follett's icemaker system is required to ensure peak performance and delivery of clean, sanitary ice. The recommended cleaning procedures that follow should be performed at least as frequently as recommended, and more often if environmental conditions dictate.

Cleaning of the condenser can usually be performed by facility personnel. Cleaning of the icemaker system, in most cases, should be performed by your facility's maintenance staff or a Follett authorized service agent. Regardless of who performs the cleaning, it is the operator's responsibility to see that this cleaning is performed according to the schedule below. Service problems resulting from lack of preventive maintenance will not be covered under the Follett warranty.

Weekly exterior care

The exterior may be cleaned with a stainless cleaner such as 3M Stainless Steel Cleaner & Polish or equivalent.

Monthly condenser cleaning (air-cooled icemaker only)

1. Use a vacuum cleaner or stiff brush to carefully clean condenser coils of air-cooled icemakers to ensure optimal performance.
2. When reinstalling counter panels in front of remote icemakers, be sure that ventilation louvers line up with condenser air duct.

Semi-annual evaporator cleaning (every 6 months)

⚠ WARNING

- Wear rubber gloves and safety goggles (and/or face shield) when handling ice machine cleaner or sanitizer.

⚠ CAUTION

- Use only Follett approved SafeCLEAN Plus™ cleaning solution and NU-CALGON IMS-III sanitizing solution.
- DO NOT USE BLEACH.
- It is a violation of federal law to use these solutions in a manner inconsistent with their labeling.
- Read and understand all labels printed on packaging before use.

Note: Complete procedure for cleaning and sanitizing MUST be followed. Ice must be collected for 10 minutes before putting ice machine back into service.

1. Press the CLEAN button. The machine will drain. The auger will run for a short time and then stop. Wait for the LOW WATER light to come on.

Fig. 1

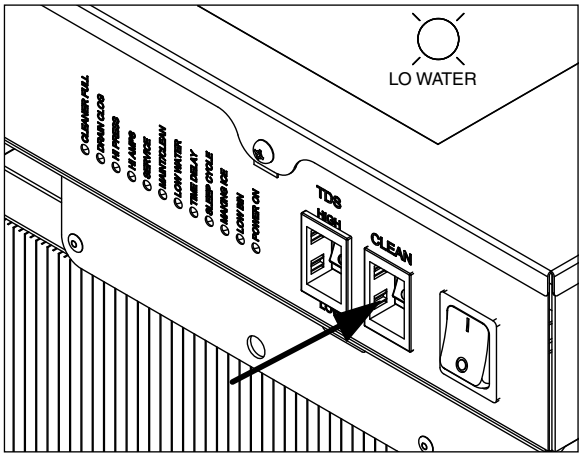
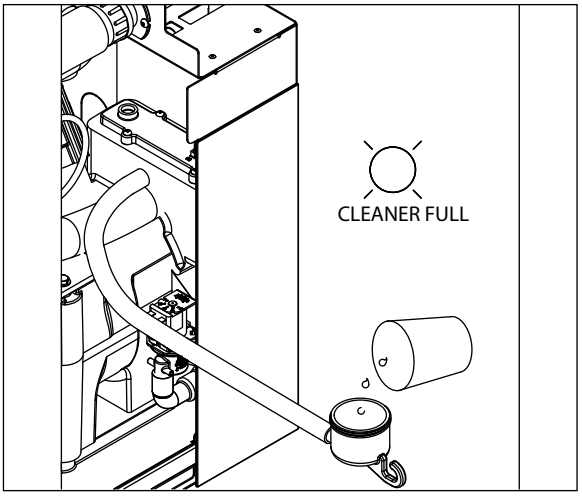


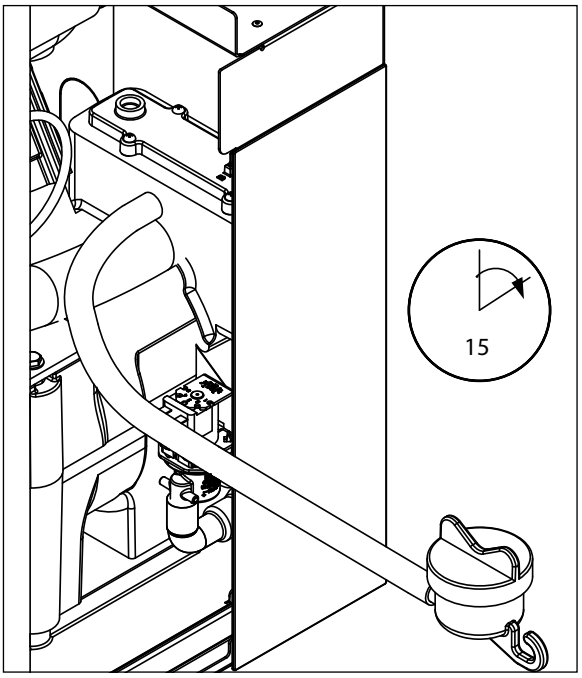
Fig. 2



2. Follow the directions on the SafeCLEAN Plus packaging to mix 1 gal. (3.8 L) of Follett SafeCLEAN Plus solution. Use 100 F (38 C) water.
3. Using a 1 quart (1 L) container, slowly fill cleaning cup until CLEANER FULL light comes on and cleaner just begins to flow from the vent tube.
4. Place two SaniSponge™ cleaning sponges in remaining sanitizing and cleaning solution and retain for Step 9.

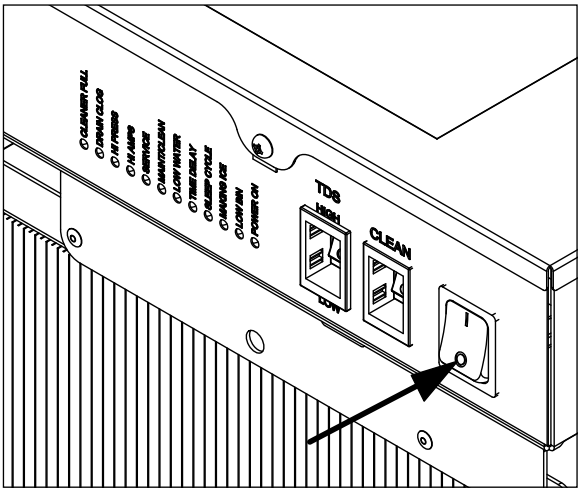
Note: Do not use bleach to sanitize or clean the icemaker.

Fig. 3



5. Replace cover on cleaner cup. Machine will clean, then flush 3 times in approximately 15 minutes. Wait until machine restarts.

Fig. 4



6. To clean/sanitize ice transport tube – Press power switch OFF

7. Disconnect coupling as shown.

Fig. 5

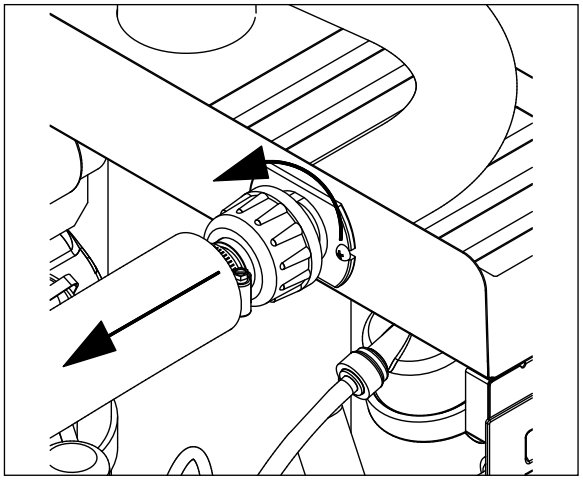


Fig. 6

8. Using disposable foodservice grade gloves, insert SaniSponge cleaning sponges saturated in SafeClean Plus (from Step 4).

9. Push both SaniSponge cleaning sponges down ice transport tube with supplied pusher tube.

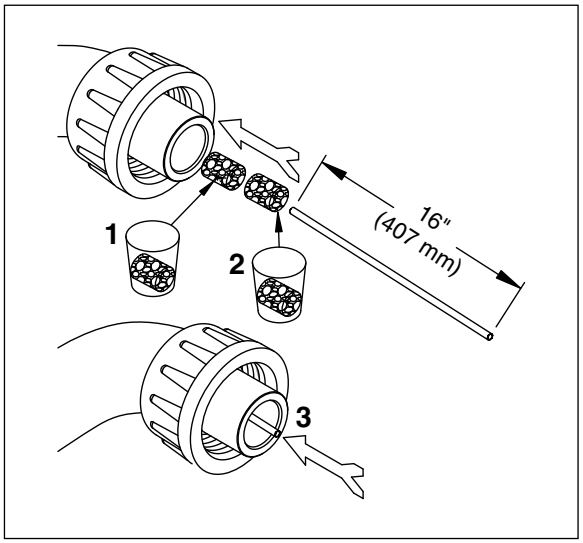
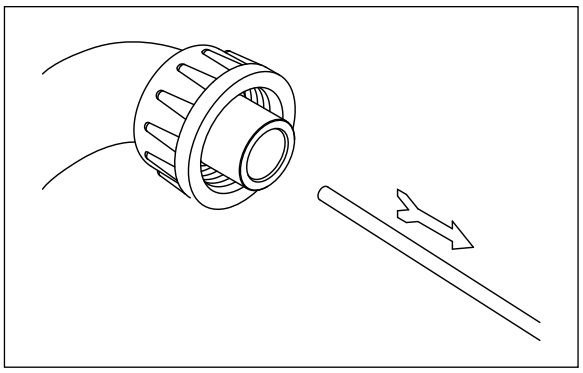


Fig. 7

10. Remove and discard 16" (407 mm) pusher tube.



11. Reconnect coupling. Press power switch ON. Ice pushes SaniSponge cleaning sponges through ice transport tube.

Fig. 8

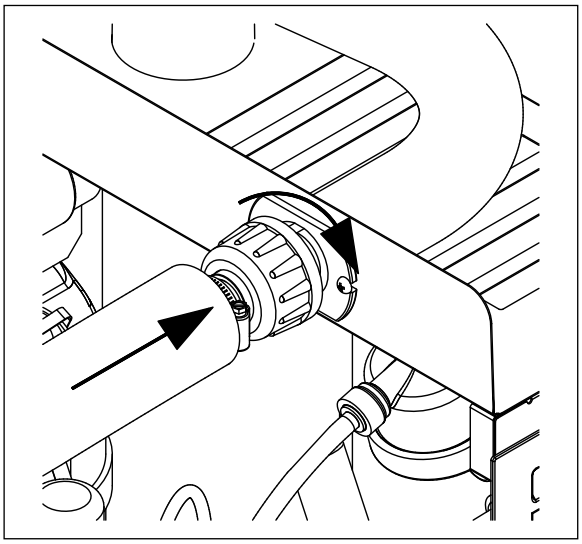
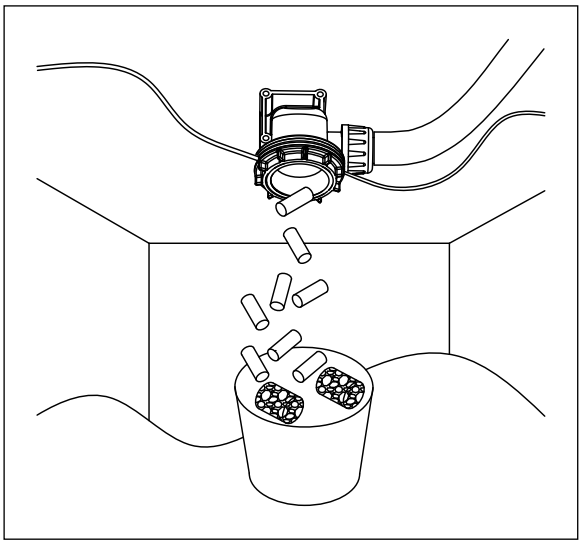


Fig. 9



12. Place a sanitary (2 gal. or larger) container in bin or dispenser to collect SaniSponge cleaning sponges and ice for 10 minutes.

13. Collect 5.5 lbs (3 kg) of ice from unit. Discard ice and SaniSponge cleaning sponges.

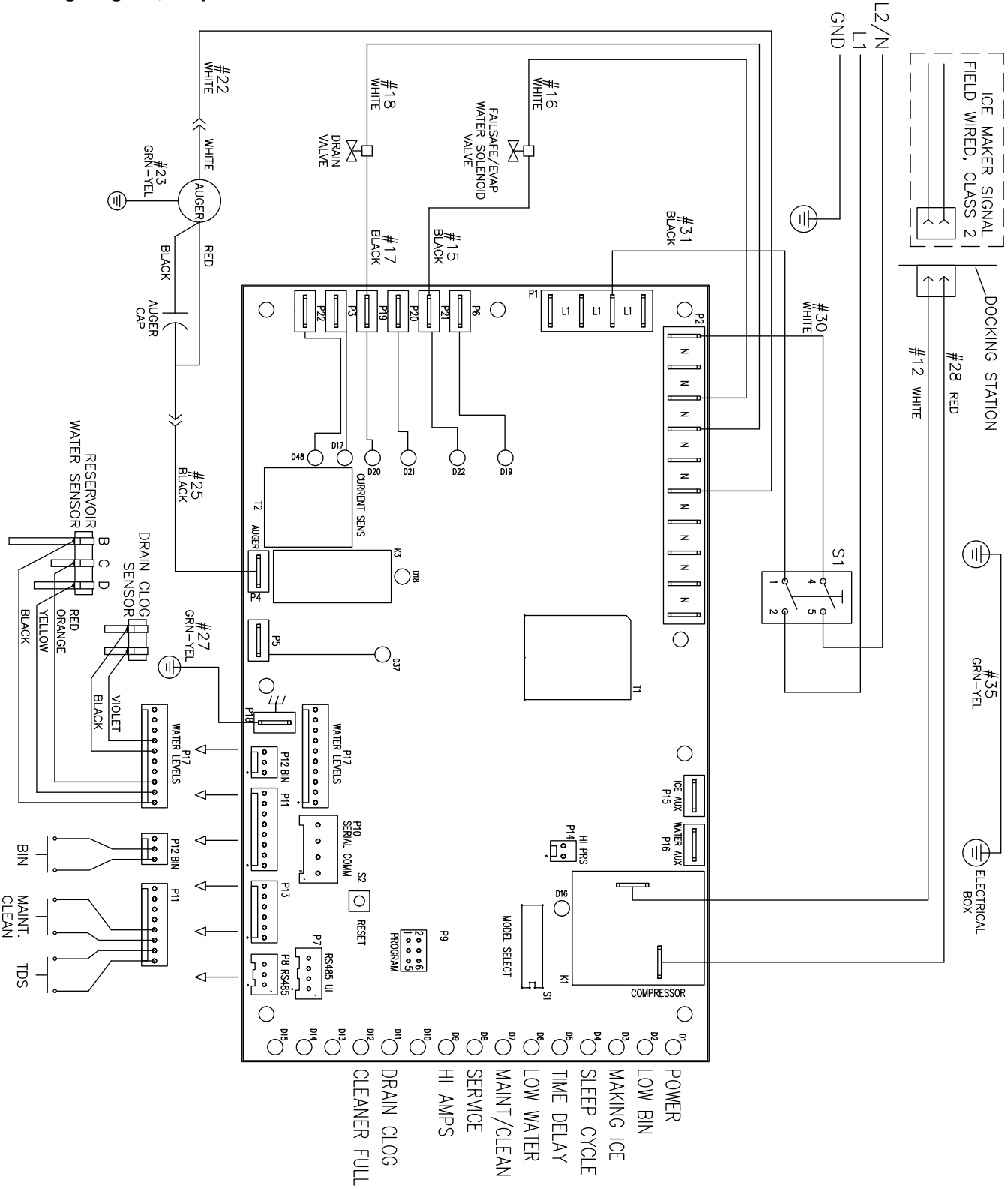
14. Repeat Steps 1 through 5, using the remaining SafeCLEAN Plus solution.

SANITIZING SOLUTION

15. Mix 1 gallon (3.8 L) 120 F (49 C) water and 1.6 oz (48 ml) NU-CALGON IMS-III SANITIZER.

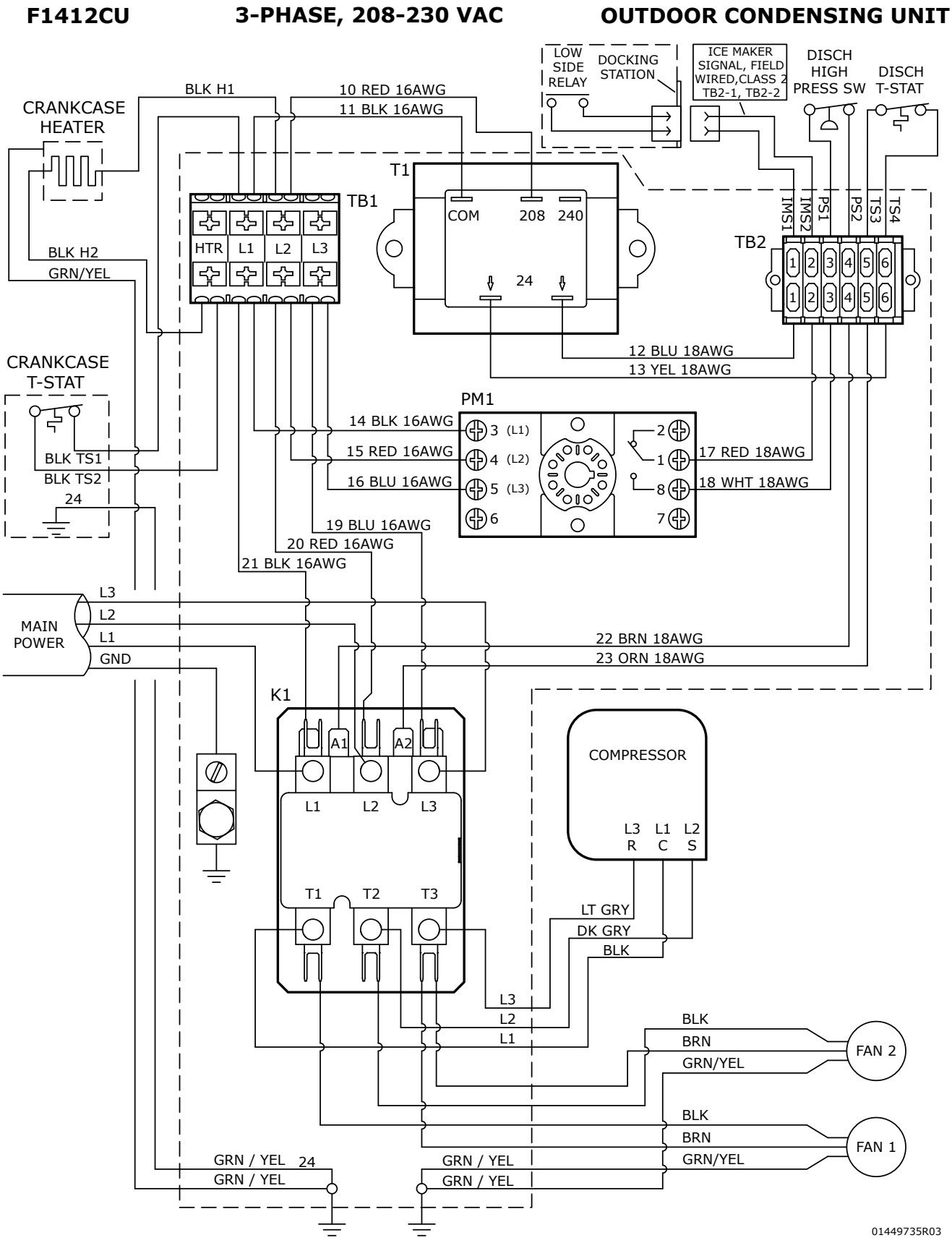
16. Repeat Steps 1 through 13 using the sanitizing solution.

Wiring diagram, evaporator unit



Gearmotor data	**Resistance of windings**
Gearmotor current 2.8A @ 115 V Gearmotor torque-out (high amp) trip point: 5.6A	**115 vac gearmotor (Brother):** White to Black: 3Ω White to Red: 3Ω Red to Black: 6Ω

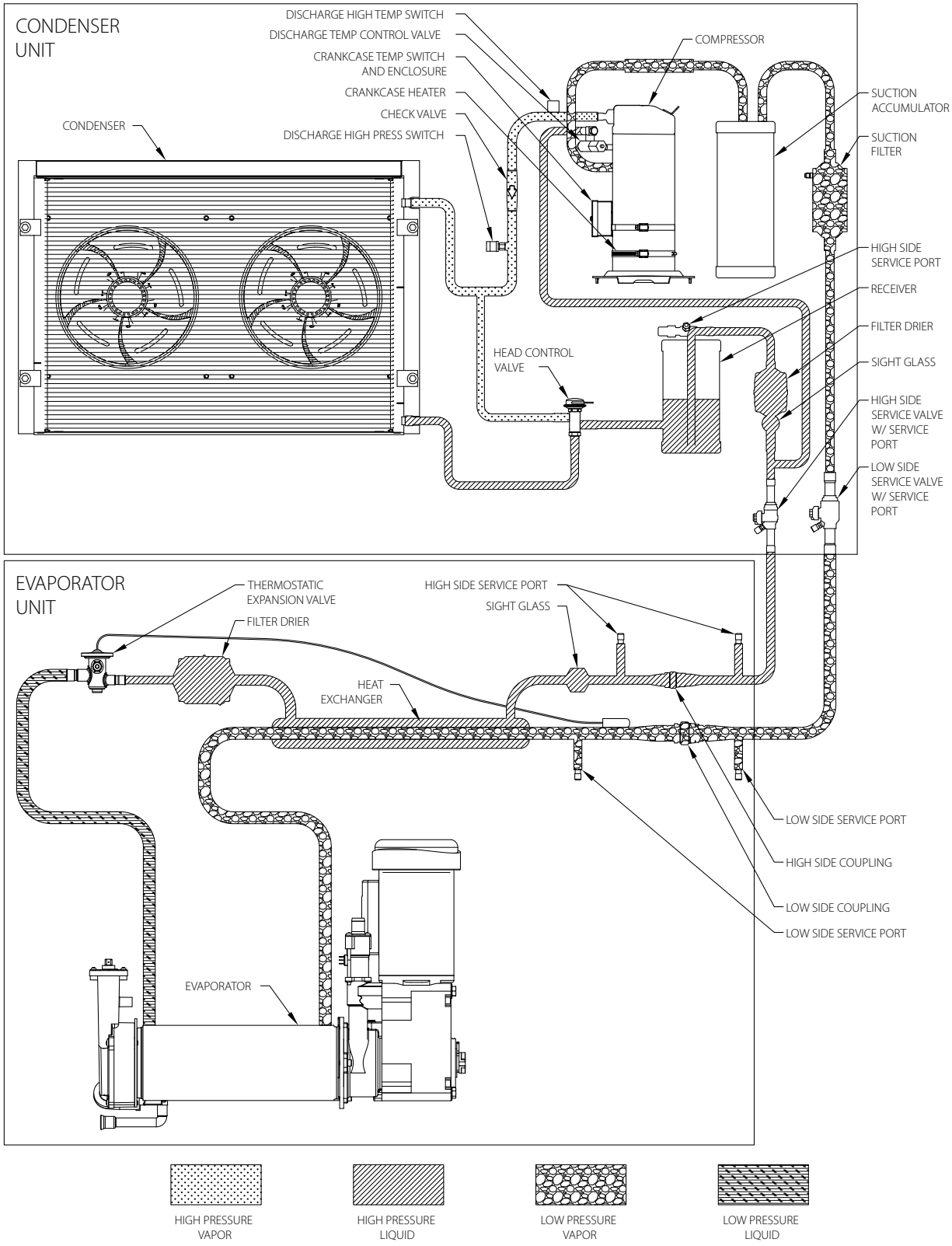
1412 Three-phase condensing unit wiring diagram



Refrigeration system

Air-cooled condensers (air)	50 F/ 10 C	60 F/ 16 C	70 F/ 21 C	80 F/ 27 C	90 F/ 32 C	100 F/ 38 C	110 F/ 43 C	120 F/ 49 C
Pressure (psig) discharge/ suction	182/18	186/19	190/20	206/21	222/22	260/24	298/26	336/28

Refrigeration system diagram



Refrigeration charge

All service on refrigeration systems must be performed in accordance with all federal, state and local laws. It is the responsibility of the technician to ensure that these requirements are met. Recharging ice machine to other than factory specifications will void the warranty.

R449A ice machine charge specifications

Model	Line Run	Total Charge
1412 three-phase (F1412CU)	0–100 ft (0–30,5 m)	8 lb (3.63 kg)

Note: Condensing unit shipped with full charge.

Refrigerant replacement requirements

1. Non-contaminated refrigerant removed from any Follett refrigeration system can be recycled and returned to the same system after completing repairs. Recycled refrigerant must be stored in a clean, approved storage container. If additional refrigerant is required, virgin or reclaimed refrigerant that meets ARI standard 700-88 must be used.
2. In the event of system contamination (for example, a compressor burn out, refrigerant leak, presence of non-condensibles or moisture), the system must be repaired, evacuated and recharged using virgin or reclaimed refrigerant that meets ARI standard 700-88.
3. Follett Products, LLC does not approve of recovered refrigerants. Improper refrigeration servicing procedures will void the factory warranty.

Evacuation

Evacuate the system to a level of 500 microns. When the 500 micron level is reached, close all valves. Allow the system to sit for approximately 20 minutes. During this period the system pressure should not rise. If the system pressure rises and stabilizes there is moisture in the system and further evacuation is needed. If the pressure continues to rise check the system for leaks.

Evaporator Unit Low-side or ice making head

Ambients	Minimum	Maximum
Air temperature	50 F/10 C	100 F/37,8 C
Water temperature[1]	45 F/7 C	90 F/32,2 C

[1]Ambient water temperature is measured in the ice machine water reservoir.

Ice capacity test

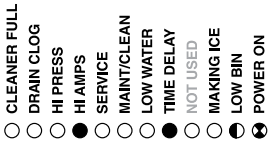
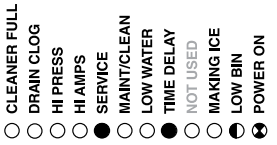
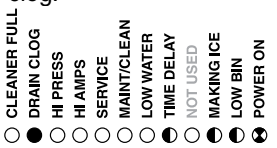
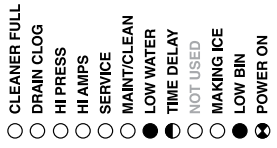
Ice machine production capacity can only be determined by weighing ice produced in a specific time period.

1. Replace all panels on ice machine.
2. Disconnect the drain solenoid.
3. Run ice machine for at least 15 minutes.
4. Weigh and record weight of container used to catch ice.
5. Catch ice for 15 or 20 minutes.
6. Reconnect the drain solenoid.
7. Weigh harvested ice and record total weight.
8. Subtract weight of container from total weight.
9. Convert fractions of pounds to decimal equivalents (ex. 6 lbs 8 oz = 6.5 lbs).
10. Calculate production using following formula:

$$\frac{\text{1440 min. x wt. of ice produced}}{\text{Total test time in minutes}} = \text{Production capacity/24 hr.}$$

11. Calculated amount per 24 hours should be checked against rated capacity for same ambient and water temperatures in Ice Production Tables.

Troubleshooting

Ice machine disposition	Possible causes	Corrective action
Legend: ● ON ○ OFF ◐ ON or OFF ⊠ FLASHING		
1. Machine in TIME DELAY without full bin. 	1. Ice jamming due to improperly installed transport tube causing a false shuttle. 2. Shuttle stuck in up position. 3. Damaged or improperly installed thermostat (open). 4. Transport tube backed-out of coupling. 5. Damaged shuttle mechanism.	1. Correct transport tube routing. 2. Repair or replace shuttle mechanism. 3. Replace or reposition thermostat. 4. Correct coupling installation. 5. Replace or repair shuttle mechanism.
2. Ice machine is not making ice. HI AMPS. 	1. Excessive scaling on internal components. 2. Damaged shuttle mechanism. 3. Intermittent drive output from PC board. Evaporator will freeze causing a HI AMPS error. 4. Gearmotor is unplugged.	1. Clean ice machine. Increase flushing frequency. Position TDS switch to High TDS setting. 2. Replace or repair shuttle mechanism. 3. Replace PC board. 4. Plug in gearmotor.
3. Ice machine is not making ice. SERVICE. 	1. Internal water leak touching chassis sensor.	1. Identify and repair leak. Clean/dry chassis and sensors and restart machine.
4. Drain clog. 	1. Improper flow in drain system. 2. Inoperable purge solenoid.	1. Correct/clean drain system. 2. Test and verify purge solenoid operation.
5. Ice machine is making ice. Excessive water in bin or coming into bin from transport tube. 	1. Failed water sensors. Processor assumes there is no water when there is water. 2. Blocked reservoir vent. 3. Defective water feed solenoid valve. Stuck in open position.	1. Clean or replace water probe assembly. Check wiring connections. 2. Clean or replace vent tubes. 3. Replace water feed solenoid valve.
6. Ice machine is not making ice. Low water. 	1. Water supply is insufficient. 2. Low water pressure. 3. Defective water feed solenoid valve. Stuck in closed position. 4. No water feed output from PC board. 5. Plugged screen on inlet side of fill solenoid. 6. Plugged check valve.	1. Restore water supply and check water filters. If evaporator was completely empty the reset button may have to be pressed to restart the ice machine. 2. Ice machine will eventually start when water reaches normal lo level. 3. Replace water feed solenoid valve. 4. Replace PC board. 5. Remove and clean screen. 6. Replace check valve.

Ice machine disposition	Possible causes	Corrective action
Legend: ● ON ○ OFF ◐ ON or OFF ⊠ FLASHING		
7. Blinking Low water, power, time delay. 	Machine has not yet energized fill solenoid in specified amount of time during normal operation. 1. Lack of refrigeration/low refrigerant charge/leak. 2. Debris shorting reservoir probes.	1. Verify refrigerant pressures, compressor running, sight glass clear. 2. Clean probes and reservoir of debris.

ATTENTION!

To prevent circuit breaker overload, wait 5 minutes before restarting this unit.

Warranty Registration and Equipment Evaluation

Thank you for purchasing Follett Products, LLC equipment. Our goal is to earn your complete satisfaction by delivering high-value products and services backed by outstanding customer and technical support.

Please review the installation instructions thoroughly. It is important that the installation be performed to factory specifications so your equipment operates at its maximum efficiency.

Follett Products, LLC will not be liable for any consequential damages, expenses, connecting or disconnecting charges, or any losses resulting from a defect of the machine. For full warranty details, visit our website www.follettice.com/productwarranties.

Registering your equipment helps Follett Products, LLC track your equipment's service history should you need to contact us for technical support, and your feedback helps us improve our products and services. Please visit www.follettice.com/support to complete the Warranty Registration form.

Should you have any questions, please contact Follett's technical support group at (877) 612-5086 or (610) 252-7301 and we will be happy to assist you.

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