

INSTRUCTIONS FOR INSTALLING AN ICEMAKER REPAIR KIT IN A NATIONAL VENDORS[®], CROWN SEVENTY TWO[®], COLD DRINK MERCHANDISER THAT IS EQUIPPED WITH A REYNOLDS PRODUCTS INC. ICEMAKER

I. INTRODUCTION

These Instructions cover the procedure for installing an Icemaker Repair Kit in any National Vendors, Cold Drink Merchandiser that is equipped with a Reynolds Icemaker. The installation when completed, will, unless the Merchandiser was originally so equipped or unless it has been previously so up-dated, convert the Icemaker System to a reverse flow Refrigeration System, plus replace the Automatic Expansion Valve with a Thermostatic Expansion Valve.

The Icemaker Repair Kit, Part Number 312-4115, includes the following parts:

| Part Number | Description | Quantity |
|-------------|--|----------|
| 311-4067 | Installation Instructions | 1 |
| 311-4086 | Evaporator, Housing and Hopper Assembly | 1 |
| 311-4030 | Ice Chute Mounting Angle | 1 |
| 310-4100 | Liquid Line Tube Assembly | 1 |
| 310-4155 | Ice Chute Assembly | 1 |
| 310-4157 | Ice Chute Cover | 1 |
| 311-4116 | Icemaker Insulation | 1 |
| 310-8338 | Suction Line Tube Assembly | 1 |
| 311-4121 | Suction Line Tube Assembly | 1 |
| 312-4064 | Icemaker Thermostatic Valve | 1 |
| 312-4083 | Bulb Valve Insulation | 1 |
| 312-4129 | Icemaker Miscellaneous Parts consists of: | 1 |
| 310-4068 | Icemaker Record Cleaning Label | 1 |
| 311-4039 | Water Level Label | 1 |
| 310-4153 | Water Level Label | 1 |
| 312-4090 | Water Level Label | 1 |
| 9900-039 | No.10-32 Self Locking Wing Nut | 2 |
| 310-4010 | No.10-32 x 3/8 Thumb Screw | 1 |
| 310-4123 | No.1/4-20 x 3/8 FHS Screw W/LW | 1 |
| 311-4126 | Heat Shrinkable Tube | 1 |
| 310-6145 | Wire Tie | 1 |
| 311-4114 | Wire Tie | 5 |
| 312-4072 | Expansion Valve Bulb Clamp | 2 |
| 613-8181 | Plate Washer | 2 |
| 301-4091 | Coupling | 1 |
| 310-6215 | No.8-32 (Stainless) Nut | 1 |
| 310-6221 | No.8 External Tooth (Stainless) Lockwasher | 1 |
| 310-8221 | No.8-32 x 3/8 PHS (Stainless) Screw | 1 |
| 312-4097 | Ice Chute Upper Bracket Assembly | 1 |
| 312-4029 | Shutoff Plug | 1 |
| 312-4060 | 3/8 Flare Gasket | 1 |
| 314-4004 | T.E.V. Icemaker Insulation | 1 |

* * *

Special Tools Required: Flare Nut Wrench

Figure I-1 illustrates and gives the part number of the parts included in the Kit. Check the contents of the Kit with Figure I-1 to be sure all the parts are included in the Kit before starting to replace the defective Icemaker.

This Instruction is divided into five Sections: Section I - Introduction; Section II - Removal of the Defective Icemaker from the Merchandiser and Removal of the Evaporator, Housing, and Hopper Assembly from the Defective Icemaker; Section III - Preparation of the Replacement Evaporator, Housing and Hopper Assembly for Installation in the Merchandiser; Section IV Installation of the repaired Icemaker Assembly in the Merchandiser; Section V - Checking the Installation of the Icemaker Assembly in the Merchandiser.

Before starting the work of installing the parts of the Kit, read these Instructions carefully and thoroughly. Because of the complexity of these Instructions, follow ONLY those steps which are applicable to the Merchandiser being worked on. The Non-applicable steps of these Instructions should be marked-out. Retain the Instructions for future part number identification and installation information.

NOTE

1. For personal physical protection and safety, heed all of the SAFETY WARNINGS given in these Instructions and the WARNING given on the Label on the Hopper Assembly.
2. For Merchandiser protection heed the CAUTIONS given in these Instructions.
3. The installation of the Evaporator, Housing and Hopper Assembly and some of its associated parts, will require the discharging and recharging of the Refrigeration System. These operations should be performed ONLY by a qualified refrigeration serviceman.
4. Use the proper size flare nut wrenches when tightening fittings. Any Tubing which vibrates will harden near the flare ends of the Tube and will become brittle and break.
5. None of the original parts replaced when the replacement parts in this Kit are installed, nor any of the unused parts in this Kit are returnable for credit. National Vendors suggests that all unused serviceable parts be placed in inventory for replacement use in other National Vendors, Cold Drink Merchandisers.

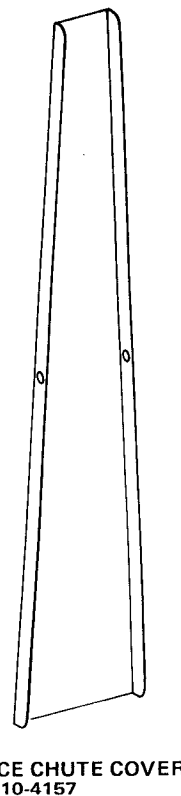
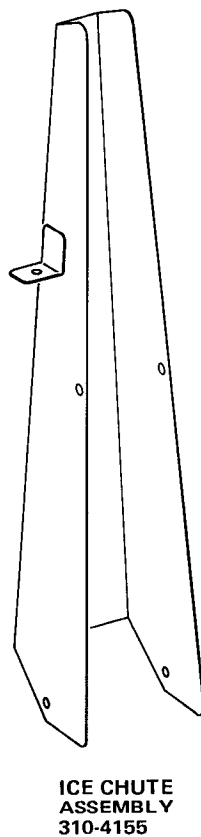
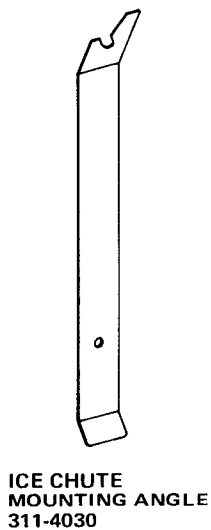
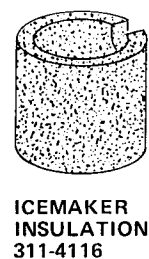
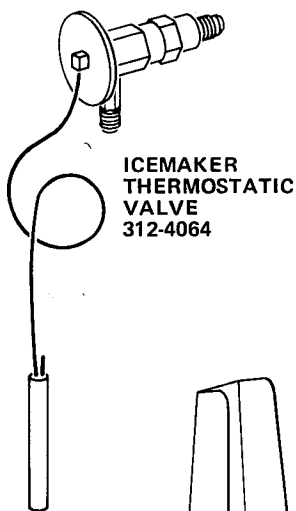
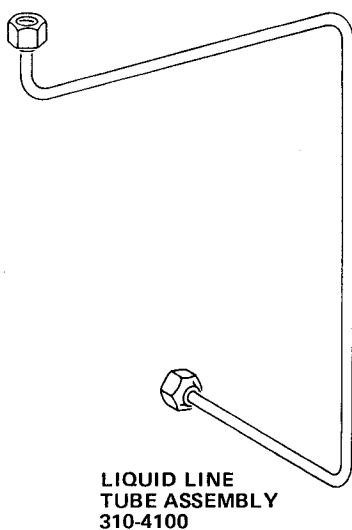
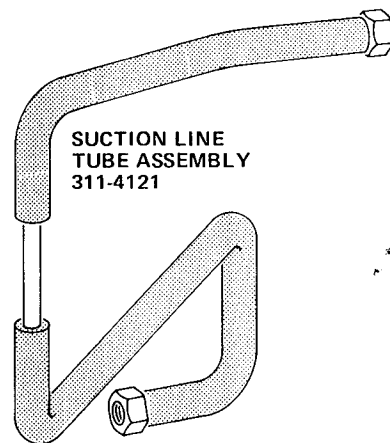
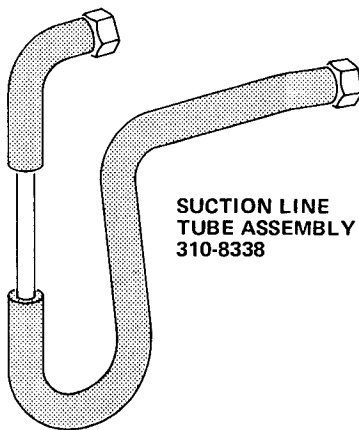
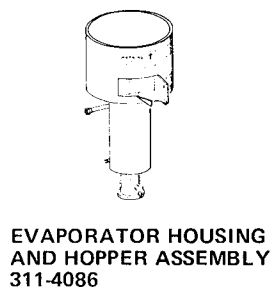
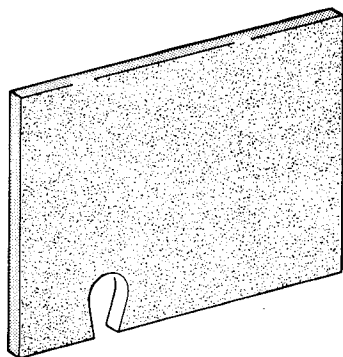


FIGURE I-1 (1 of 2)

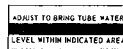
The parts shown on this page make up Icemaker Miscellaneous Parts,
Part Number 312-4129, included in the Kit.



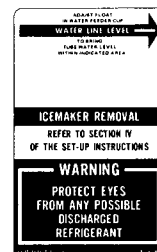
**T.E.V. ICEMAKER
INSULATION**
314-4004



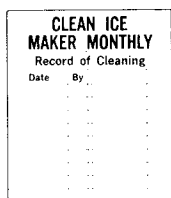
WATER LEVEL LABEL
311-4039



WATER LEVEL LABEL
310-4153



WATER LEVEL LABEL
312-4090



**ICEMAKER RECORD
CLEANING LABEL**
310-4068



WIRE TIE
310-6145



COUPLING
301-4091



WIRE TIE
311-4114(5)



SHUTOFF PLUG
312-4029



3/8 FLARE GASKET
312-4060



**CLAMP-STAINLESS
STEEL** 3154059



**NO. 10-32 SELF
LOCKING WING NUT**
9900-039 (2)



**HEAT
SHRINKABLE
TUBE**
311-4126



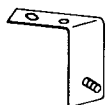
**NO. 8-32 x 3/8 PHS
(STAINLESS) SCREW**
310-8221



**NO. 1/4-20 x 3/8
FHS SCREW W/L**
310-4123



**NO. 10-32 x 3/8
THUMB SCREW**
310-4010



**ICE CHUTE UPPER
BRACKET ASSEMBLY**
312-4097



PLATE WASHER
613-8181 (2)



**NO. 8-32
(STAINLESS) NUT**
310-6215



**NO. 8 EXTERNAL TOOTH
(STAINLESS) LOCKWASHER**
310-6221

FIGURE I-1 (2 of 2)

6. *Be sure the appropriate steps of the procedures of this Instruction are followed in the order given and that the replacement Evaporator, Housing and Hopper Assembly is properly prepared according to the appropriate procedures given in this Instruction.*
7. *If a step of this Instruction indicates the use of an attaching part that is included in the Kit, DO NOT substitute the original equipment attaching part - use ONLY the attaching part included in the Kit, as specified.*
8. *Only certain parts of this Kit can be used on a CDM-312 Merchandiser including the Evaporator, Housing and Hopper Assembly. Therefore the Kit should be used on a CDM-312 only in emergencies. To keep the Kit complete, those parts used should be replaced and added to the Kit.*

There are three different Water Level Labels included in the Kit. The Label to be installed will depend upon whether the Merchandiser is equipped with a stainless-steel or plastic Water Feeder Cup.

The Lower Water Tube on the repaired Icemaker Assembly must be cut to a shorter length, if the reconditioned Icemaker Assembly is to be used in a Merchandiser equipped with a National Vendors, Cool-San, Manually Actuated Automatic Icemaker Cleaning System.

The Kit includes a Thermostatic Expansion Valve. The defective Icemaker Assembly which is in the Merchandiser and which is being repaired, may be equipped with an Automatic Expansion Valve. Be sure to use **ONLY** the Tubing specified in the applicable procedures of the Instructions.

The Thermostatic Expansion Valve is factory preset for the application.

II. REMOVAL OF THE DEFECTIVE ICEMAKER FROM THE MERCHANDISER AND REMOVAL OF THE EVAPORATOR, HOUSING AND HOPPER ASSEMBLY FROM THE DEFECTIVE ICEMAKER ASSEMBLY

CAUTION

1. **DO NOT allow moisture and air to enter the Refrigeration System. Moisture can freeze and block the openings in the Liquid Line Valve and corrode the metal parts in the system.**
2. **Always use two proper size wrenches when tightening the fittings. Any tubing allowed to vibrate will harden near the flare section and become brittle and break.**

WARNING

1. **Installation of this Kit will involve discharging and recharging the Refrigeration System of the Merchandiser which should be performed only by a qualified refrigeration serviceman.**
2. **Wear safety glasses. R-12 refrigerant boils at minus twenty one degrees fahrenheit (-21°F.) and may freeze any skin area that comes in contact with the refrigerant. If R-12 refrigerant accidentally comes in contact with exposed skin, immediately flush the affected areas of skin with cold water and treat for frostbite.**
3. **DO NOT inhale the vapor from R-12. The refrigerant vapor acts as an anesthetic.**
4. **DO NOT discharge the Refrigeration System when an open flame exists in the area. R-12 and an open flame produce a toxic gas.**

NOTE

1. *Seal all lines and components and replace all Valve Caps to prevent moisture and air from entering the Refrigeration System.*
2. *Keep all refrigerant lines dry, clean, and free from kinks.*
1. **Disconnect the Merchandisers electrical Service Cord from the wall receptacle.**
2. **Unlock and open the Cabinet Door.**
3. **Move the Power Switch in the Merchandiser to the OFF position.**
4. **Observe the above Warning, Caution and Notes and remove the defective Icemaker Assembly from the Merchandiser. For CDM-312 Merchandisers, see Set-Up Instructions for easy removal procedure. Retain the attaching hardware for installation of the replacement Icemaker Assembly.**
5. **Disconnect the Icemaker Harness from the Disposal Mechanism Assembly and the Icemaker Motor Cable Assembly. It may be necessary to mark the connections for proper hookup when reinstalling.**
6. **Remove and retain two No.8-32 x 1 1/2" Thumb Screws and the Ice Level Control Cover Assembly from the Icemaker Assembly. See Figure III-1.**
7. **Unscrew (counterclockwise) the Agitator Assembly and remove it from inside the Hopper.**
8. **Rotate the Drip Ring clockwise then lift the Drip Ring from inside the Hopper.**

NOTE

Removing the Drip Ring may require the use of an aid, such as a bent piece of wire or a paper clip inserted through one of the small holes and then lifting the Ring up until it can be lifted out by hand.

9. Remove and retain three No.8-32 Lock Nuts, the Disposal Mechanism Assembly, and the Door Insulation Pad from the Icemaker Assembly.
10. Remove the Ice Hopper Baffle from the inside of the Hopper.
11. Loosen the Screws and remove the two plastic Tubes and Clamps from the Icemaker Assembly.
12. Remove the Screw which attaches the Ice Chute Mounting Angle to the Transmission.
13. Remove and retain the four Hex. Head Bolts and Clips which attach the Housing at the base of the Evaporator to the Transmission.
14. Remove the upper portion of the Icemaker from the Motor and Transmission Assembly.
15. Remove the Coupling from the Transmission output Shaft.

III. PREPARATION OF THE REPLACEMENT EVAPORATOR, HOUSING AND HOPPER ASSEMBLY FOR INSTALLATION IN THE MERCHANDISER

1. Install the Coupling, Part Number 301-4091, included in the Kit, on the Transmission output Shaft. See Figure III-1.
2. Install the replacement Evaporator, Housing and Hopper Assembly, Part Number 311-4086 included in the Kit, on the Motor and Transmission Assembly. Position the Evaporator, Housing, and Hopper Assembly so the tube for the Expansion Valve on the Evaporator is directly over the Motor on the Transmission. This positioning places the four cut-outs in the Housing Assembly at the base of the Evaporator in line with the Mounting holes in the Transmission.
3. Install the four clips removed in Step II-13 at the slots in the Housing and securely attach the Housing to the Transmission with the four Hex. Head Bolts also removed in Step II-13.
4. Attach the Drain Tube and Tee removed in Step II-11 to the bottom of the Hopper and tighten the hose clamp.
5. Attach the Inlet Tube removed in Step II-11 to the bottom of the Evaporator and tighten the hose clamp.

6. Install the Ice Hopper Baffle, removed in Step II-10 inside the Hopper Assembly, by fitting the slotted end of the Baffle over the flanged stud on the front inside wall of the Hopper, and the threaded stud end of the Baffle through the adjacent hole in the wall.
7. Install the Door Insulation Pad removed in Step II-9 on the two Screws.
8. Install the Disposal Mechanism Assembly removed in Step II-9, on the Hopper Assembly by carefully fitting the upper front hole on the Disposal Mechanism Assembly over the protruding Baffle in place with the other hand. Seat the two remaining holes, and then install the first No.8-32 Locknut, over the Baffle stud.

NOTE

Due to the limited work area in this step, install but do not tighten, the two front Locknuts first, then the Disposal Mechanism Assembly will be loose enough to allow the remaining Locknut to be installed in the rear. Tighten all three Locknuts.

9. Install the Drip Ring, removed in Step II-8 by inserting one side of the Ring under the Baffle and seating the Ring in the bottom of the Hopper.
10. Install the Agitator Assembly, removed in Step II-7, by screwing the threaded end over the end of the Auger inside of the Hopper.
11. Install the Ice Level Control Cover Assembly removed in Step II-6 by placing it on the top of the Hopper Assembly and aligning the holes and attaching with the two No.8-32 1 x 1-1/2" Thumb Screws.
12. Connect the Icemaker Harness to the Disposal Mechanism Assembly and the Icemaker Motor Cable Assembly.

IV. THE INSTALLATION OF THE REPAIRED ICEMAKER ASSEMBLY IN THE MERCHANDISER

- A. Attach the appropriate Water Level Label to the replacement Icemaker Assembly Evaporator. See Figure IV-1.
 1. If the Merchandiser is equipped with a stainless-steel Water Feeder Cup, use Water Level Label (part number 310-4153).
 2. If the Merchandiser is equipped with a plastic Water Feeder Cup, use Water Level Label (part number 311-4039).
 3. Use Water Level Label (part number 312-4090) on CDM-312 Merchandisers.

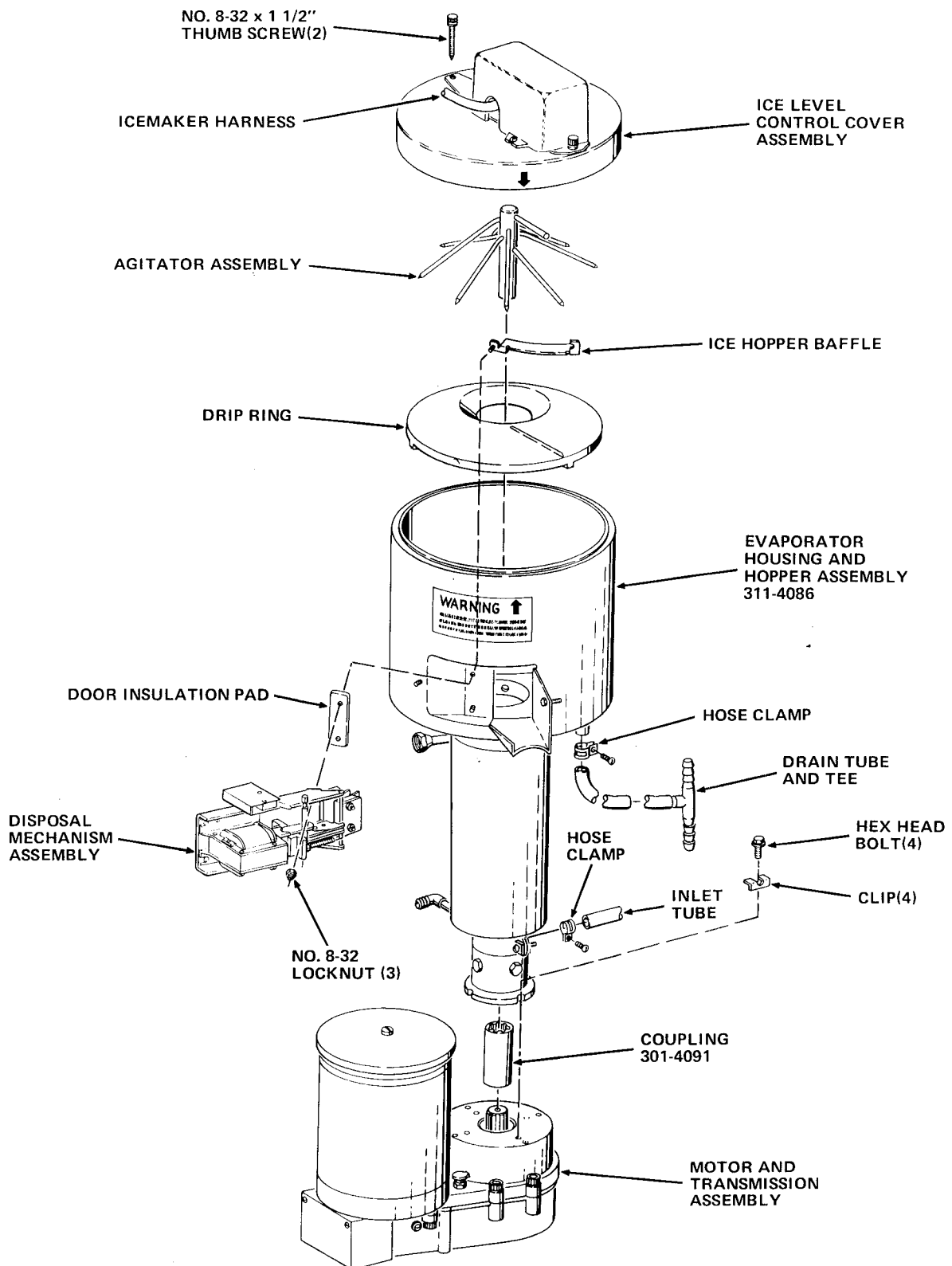


FIGURE III-1

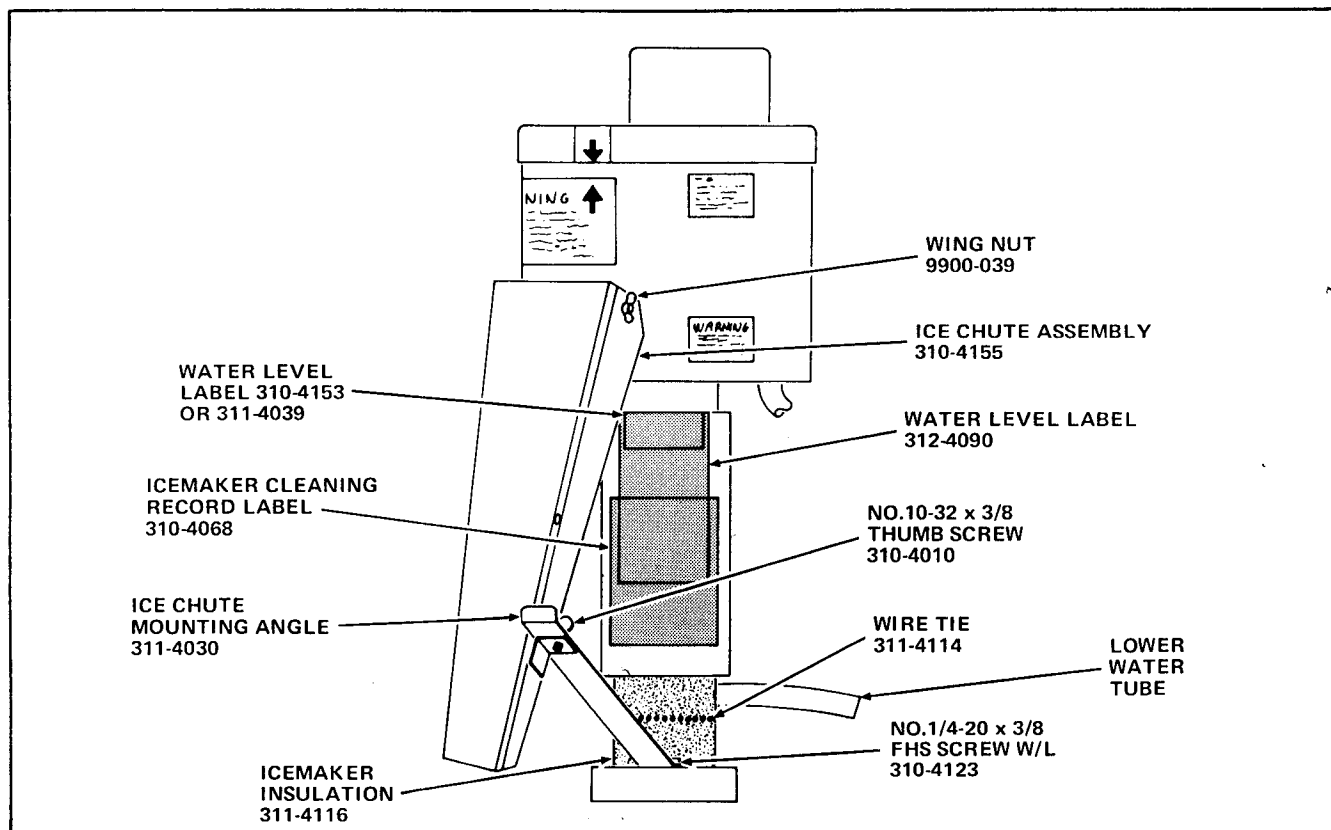


FIGURE IV-1

- B. Attach the Icemaker Cleaning Record Label (part number 310-4068) to the replacement Icemaker Assembly Evaporator. See Figure IV-1.

NOTE

The Cleaning Record Label may be placed on the Merchandiser wall behind the Icemaker Assembly.

- C. Install the Icemaker Insulation (part number 311-4116) around the Lower Bearing Housing of the Icemaker Assembly. Attach the Insulation with one of the Wire Ties (part number 311-4114). See Figure IV-1.
- D. If the Icemaker Assembly is to be installed in a Merchandiser that is equipped with a National Vendors, Cool-San Manually Actuated Automatic Icemaker Cleaning System, cut the lower plastic tube (Lower Water Tube) on the Icemaker Assembly to a length of 4 3/4". Use a sharp knife and make a clean square cut. See Figure IV-1.

NOTE

1. If the Merchandiser is a CDM-72 or CDM-72A perform step E and skip steps F and G.
2. If the Merchandiser is a CDM-312 skip step E and perform steps F and G.

- E. Install the replacement Ice Chute Mounting Angle, Part Number 311-4030, included in the Kit, on the repaired Icemaker. See Figure IV-1. Attach the Angle with the 1/4-20 x 3/8 FHS Screw/Lockwasher, Part Number 310-4123, included in the Kit. Install the replacement Ice Chute Assembly, Part Number 310-4155, included in the Kit, on the Icemaker. Attach the Chute Assembly to the Icemaker Hopper with the Wing Nut, Part Number 9900-039, included in the Kit, and to the Mounting Angle with the Thumb Screw, Part Number 310-4010, included in the Kit. Place the Ice Chute Cover, Part Number 310-4157, included in the Kit, on the Ice Chute Assembly by fitting the bosses on the Ice Chute Assembly in the holes in the Ice Chute Cover. See Figure IV-1.

- F. Remove the Green (grounding) Wire Terminal from the Switch Bracket on the repaired Icemaker Assembly. Attach the Green Wire and the Ice Chute Upper Bracket Assembly, Part Number 312-4097, included in the Kit, to the Switch Bracket using the No.8-32 x 3/8 Pan Head (Stainless) Screw, Part Number 310-8221, No.8 External Tooth (Stainless) Lockwasher, Part Number 310-6221, and No.8-32 (Stainless) Nut, Part Number 310-6215, all included in the Kit.

- G. Remove the Ice Chute Assembly from the defective Icemaker and attach the Ice Chute Assembly to the repaired Icemaker Assembly using the two Wing Nuts, Part Number 9900-039, and two Plate Washers, Part Number 613-8181, both parts included in the Kit.

NOTE

1. *If the Merchandiser is a CDM-72 and had the Expansion Valve toward the bottom of the Evaporator or had the Reverse Flow Kit, Part Number 310-4091, installed, perform steps H and I.*
 2. *If Merchandiser is a CDM-72 or CDM-72A and had the Expansion Valve toward the top of the Evaporator but not equipped with the Reverse Flow Kit, Part Number 310-4091, perform Step H and omit Step I.*
- H. Remove the Tube Assembly that was connected between the Icemaker and the Solenoid Valve.
- I. Remove the Tube Assembly that was connected between the Icemaker and Sight Glass Tee.
- J. Install the repaired Icemaker Assembly, in the Merchandiser using the Screws removed in Step II-4.

CAUTION

1. **DO NOT allow moisture and air to enter the Refrigeration System. Moisture can freeze and block the openings in the Liquid Line Valve and corrode the metal parts in the system.**
 2. **Always use the proper size wrenches when tightening the fittings. Any tubing allowed to vibrate will harden near the flare section and become brittle and break.**
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NOTE

If installing the Icemaker Assembly in a CDM-312 Merchandiser, install the 3/8 Flare Gasket, Part Number 312-4060 and the Shut off Plug, Part Number 312-4029, both included in the Kit, on the Icemaker Assembly before attaching the Suction Line Tube Assembly. See Figure IV-2.

- K. Install the replacement Icemaker Suction Line Tube Assembly, Part Number 310-8338 (CDM-72 Merchandisers) or Part Number 311-4121 (CDM-72A Merchandisers) included in the Kit, in the Merchandiser by connecting one end of the Icemaker Suction Line Tube Assembly to the Solenoid Valve and the other end to the Icemaker Assembly. See Figure IV-3 for CDM-72A

Merchandisers and Figure IV-4 for CDM-72 Merchandisers.

- L. Install the Icemaker Thermostatic Valve, Part Number 312-4064, included in the Kit, in the Merchandiser by connecting the Icemaker Thermostatic Valve to the Icemaker Assembly.

NOTE

Step M applies only if Step I was performed.

- M. Install the replacement Icemaker Liquid Line Tube Assembly, Part Number 310-4100, included in the Kit, between the Sight Glass Tee and the Thermostatic Icemaker Valve.
- N. Connect the Icemaker Liquid Line Tube Assembly to the 1/4 Male Flare on the Icemaker Thermostatic Valve.
- O. Attach the sensor (or bulb) on the Icemaker Thermostatic Valve at the break in the Insulation on the Icemaker Suction Line Tube Assembly with two Clamps, Part Number 315-4059, included in the Kit.
- P. Wrap the Insulation, Part Number 312-4083, included in the Kit, around the sensor on the Icemaker Thermostatic Valve and the Icemaker Suction Line Tube Assembly and secure with two Wire Ties, Part Number 311-4114, included in the Kit.

NOTE

It is very important that the sensor (bulb) makes good contact with the Icemaker Suction Line Tube Assembly and that the Insulation is properly installed to assure that the sensor is sensing the temperature of the R-12 refrigerant in the Tube and not the atmospheric temperature.

- Q. Place the Icemaker Insulation, Part Number 314-4004, around the Icemaker Thermostatic Valve.
- R. Secure the Insulation installed in Step Q with two Wire Ties, Part Number 311-4114, included in the Kit.
- S. If the Icemaker Harness has a black or clear cover connect the Harness Plug to its mating Merchandiser Receptacle.

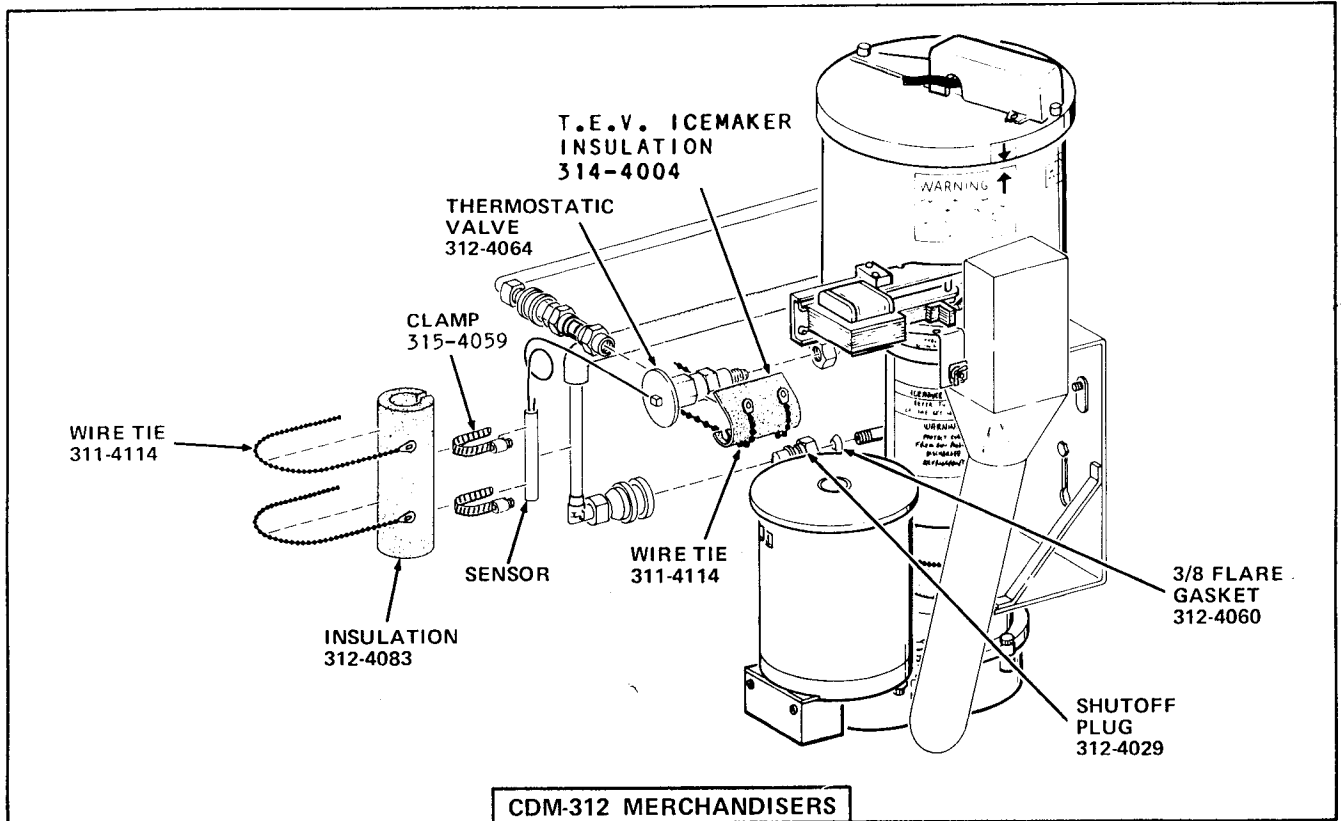


FIGURE IV-2

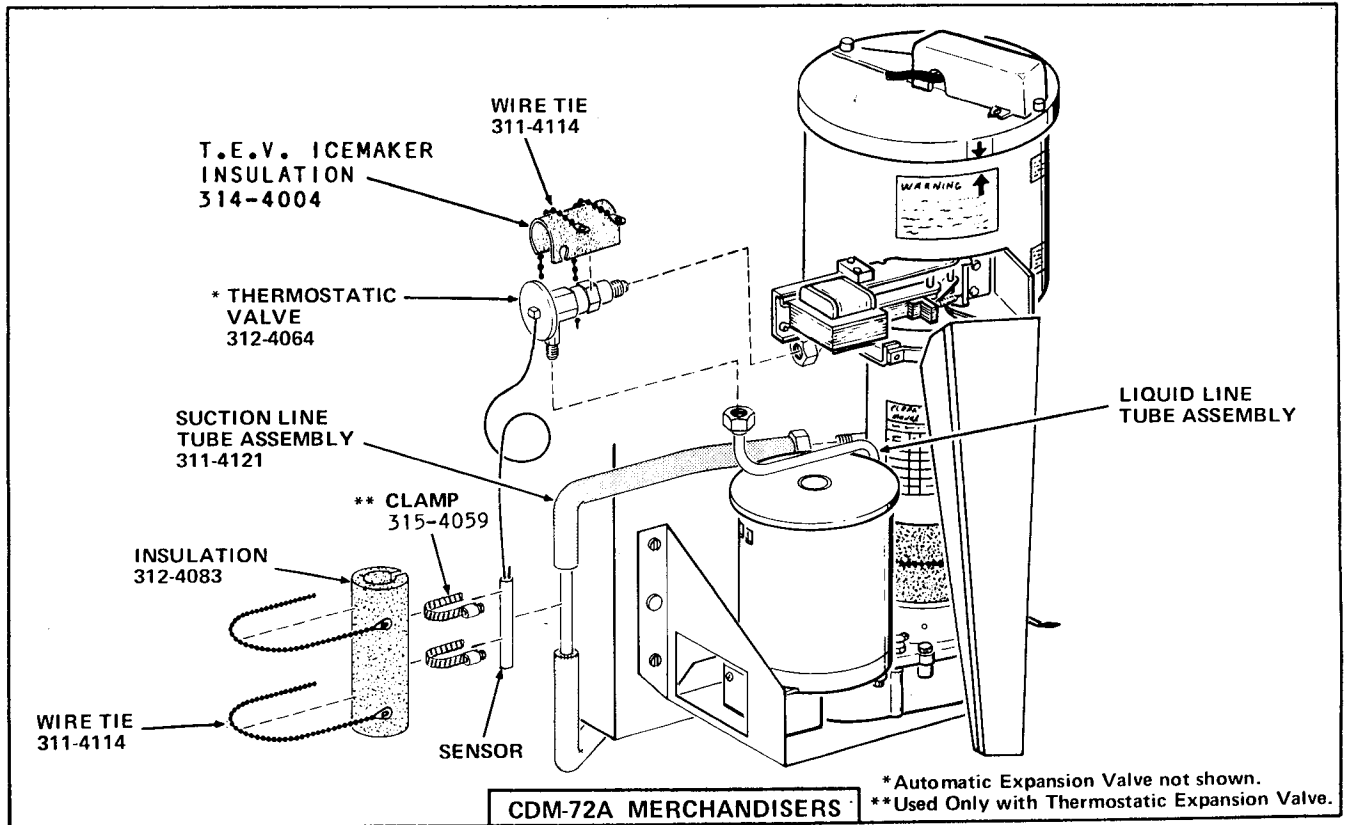


FIGURE IV-3

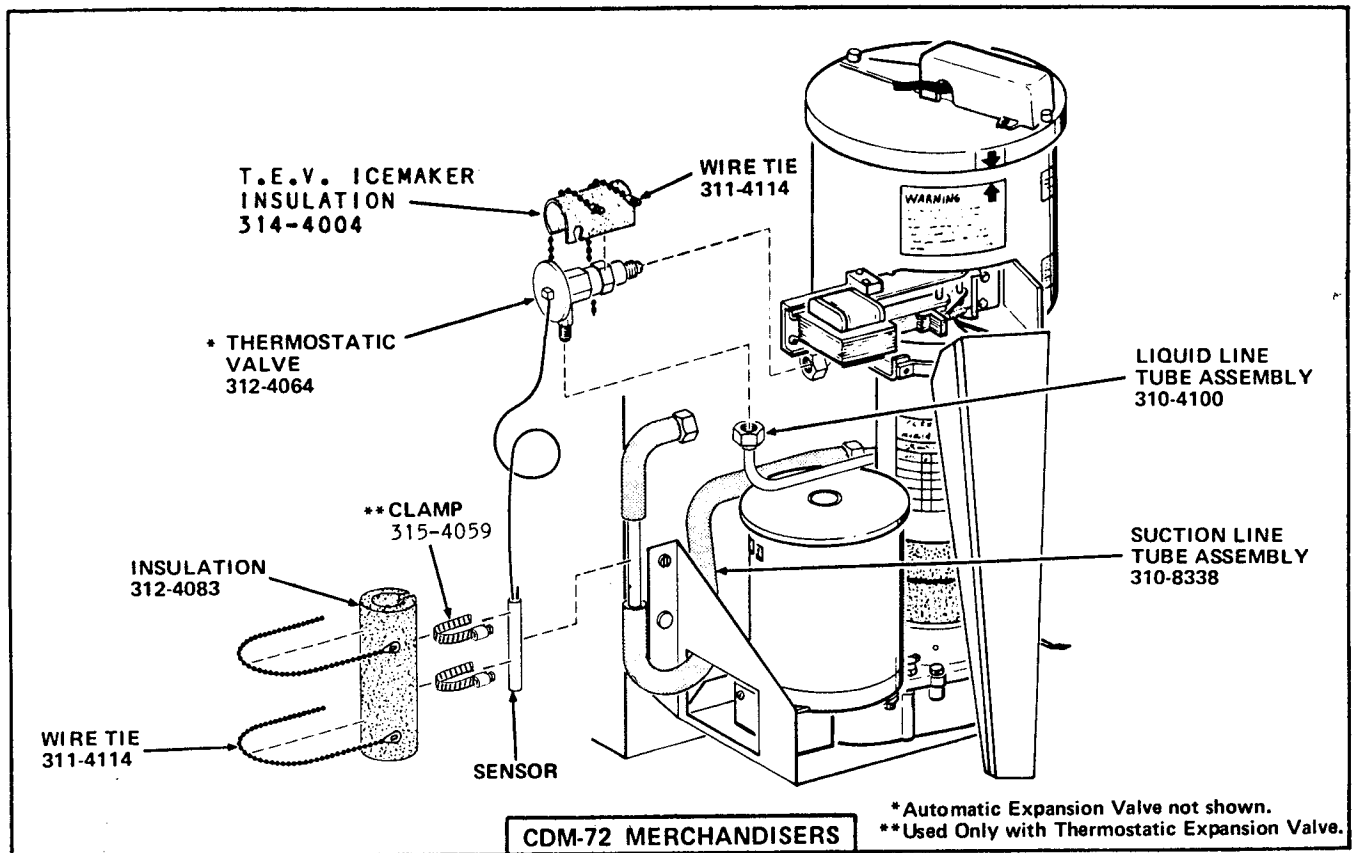


FIGURE IV-4

NOTE

If the Icemaker Harness has a clear cover perform Steps T and U.

- T. Attach the soft-plastic-insulator-covered Terminal on the White Wire to the Black Wire Terminal connected to the Icemaker Refrigeration Solenoid.
- U. Attach the soft-plastic insulator-covered Terminal on the Orange Wire to the Orange (No.12) Wire Terminal.

NOTE

If the Icemaker Harness has a Grey molded cover perform Steps V, W, and X.

- V. Attach the 2 quick-disconnect Terminals on the ends of the Icemaker Harness (Grey molded cover) to the quick-disconnects on the Control Box To Icemaker And Water Feeder Cup Cable Assembly. The polarity of the connection is not imperative. See Figure IV-5.

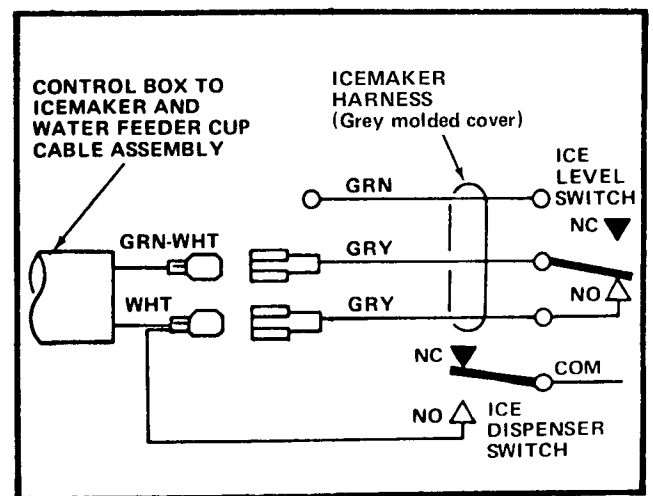


FIGURE IV-5

W. Attach the terminal of the wire with the single quick-disconnect terminal on the Icemaker Motor Cable Assembly to the Common Contact of the Ice Dispenser Switch, the white wire to the Normally Open contact of the Ice Dispenser Switch, and install the Ice Dispenser Switch and its insulator on the Disposal Mechanism Assembly using the two Screws removed in Step III-B8.

X. Attach the remaining soft-plastic-insulator-covered Terminal on the Icemaker Motor Cable Assembly to its mating Merchandiser Connection.

V. CHECKING THE INSTALLATION OF THE ICEMAKER ASSEMBLY IN THE MERCHANDISER

1. Be sure all tubing is properly connected.
2. Connect the Merchandisers electrical Service Cord to a properly polarized wall receptacle.
3. Charge the Refrigeration System with R-12 refrigerant as specified on Merchandiser. Observe the Warning and Caution given at the beginning of this Instruction.
4. Check the Refrigeration System.

NOTE

Icemaker Pressure Readings:

- Low Side - approximately 10 psi on the low side pressure gauge*
High Side - 125 psi @75° Ambient temperature
135 psi @85° Ambient temperature
150 psi @95° Ambient temperature

Water Bath Pressure Readings:

- Low Side - approximately 10 psi at the Compressor just before cut-out*
High Side - 130 psi @75° Ambient temperature
140 psi @85° Ambient temperature
155 psi @95° Ambient temperature

The head pressure readings may vary as much as \pm , 10 psi, and the system still be operating properly. When the refrigeration system is operating properly there should be a minimum of one inch of frost on the outlet side Tube on the Icemaker Evaporator.

5. Test vend the Merchandiser.
6. Close and lock the Cabinet Door.