RESIDENTIAL SPLITS

Mingledorff’s Technical Services / SE

03/19/2025

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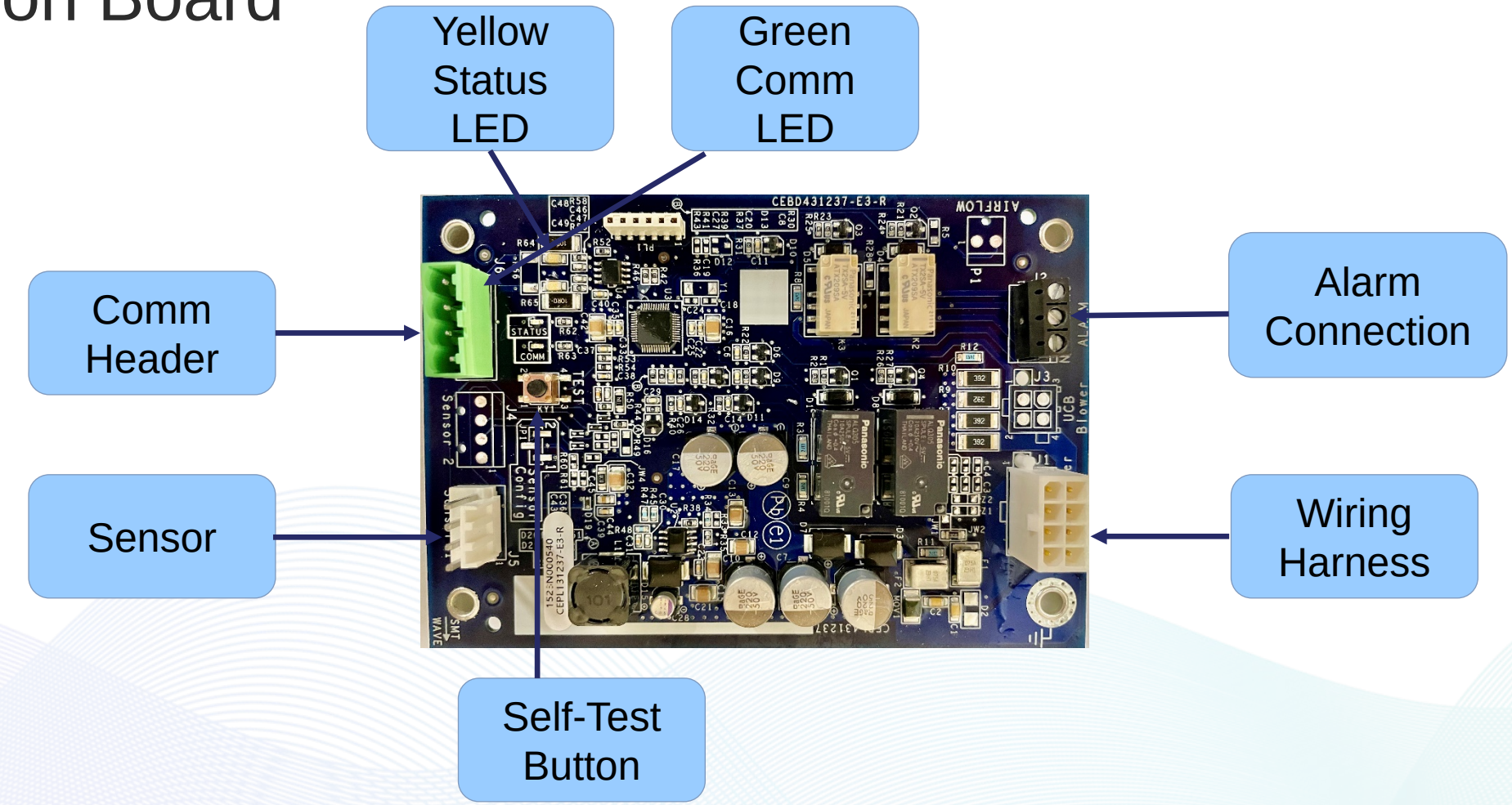
Dissipation Equipment

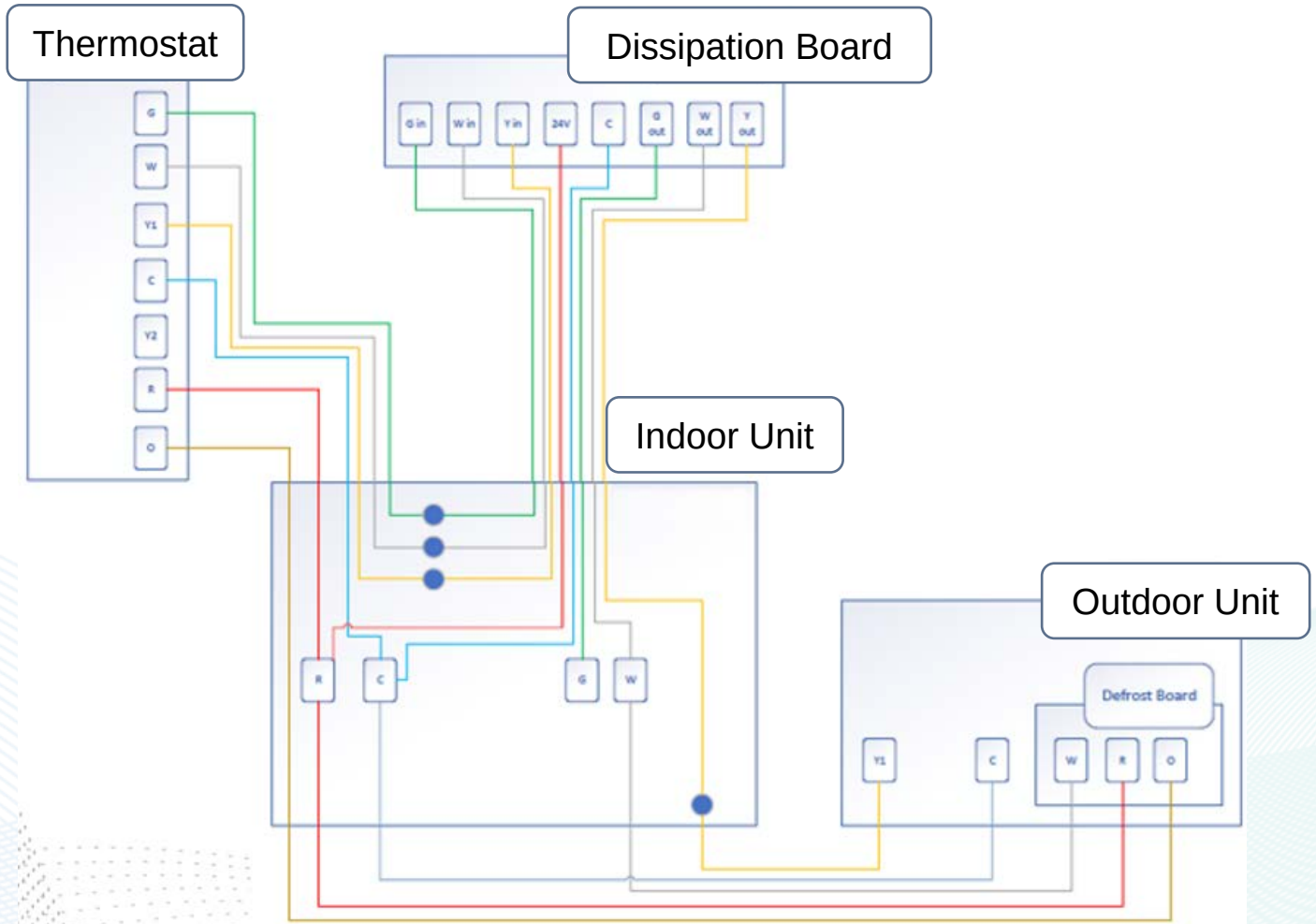
Dissipation Board



Dissipation Board Wiring

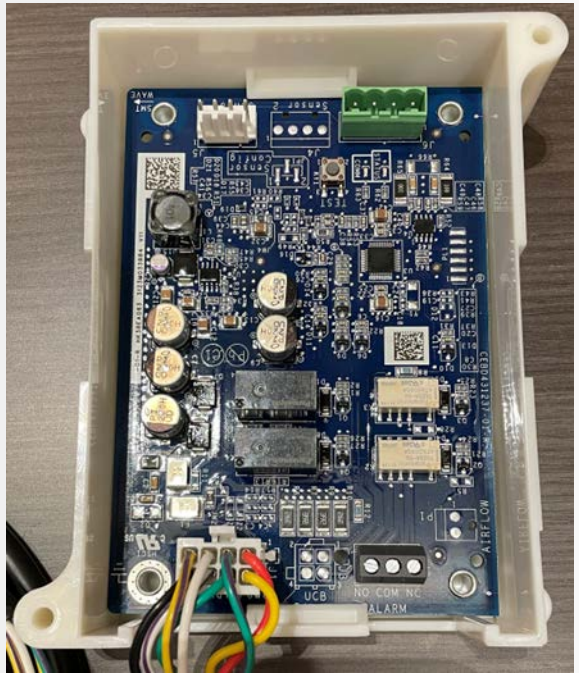
- Wiring diagram will be provided in installation instructions
  - Fan coils will be factory wired

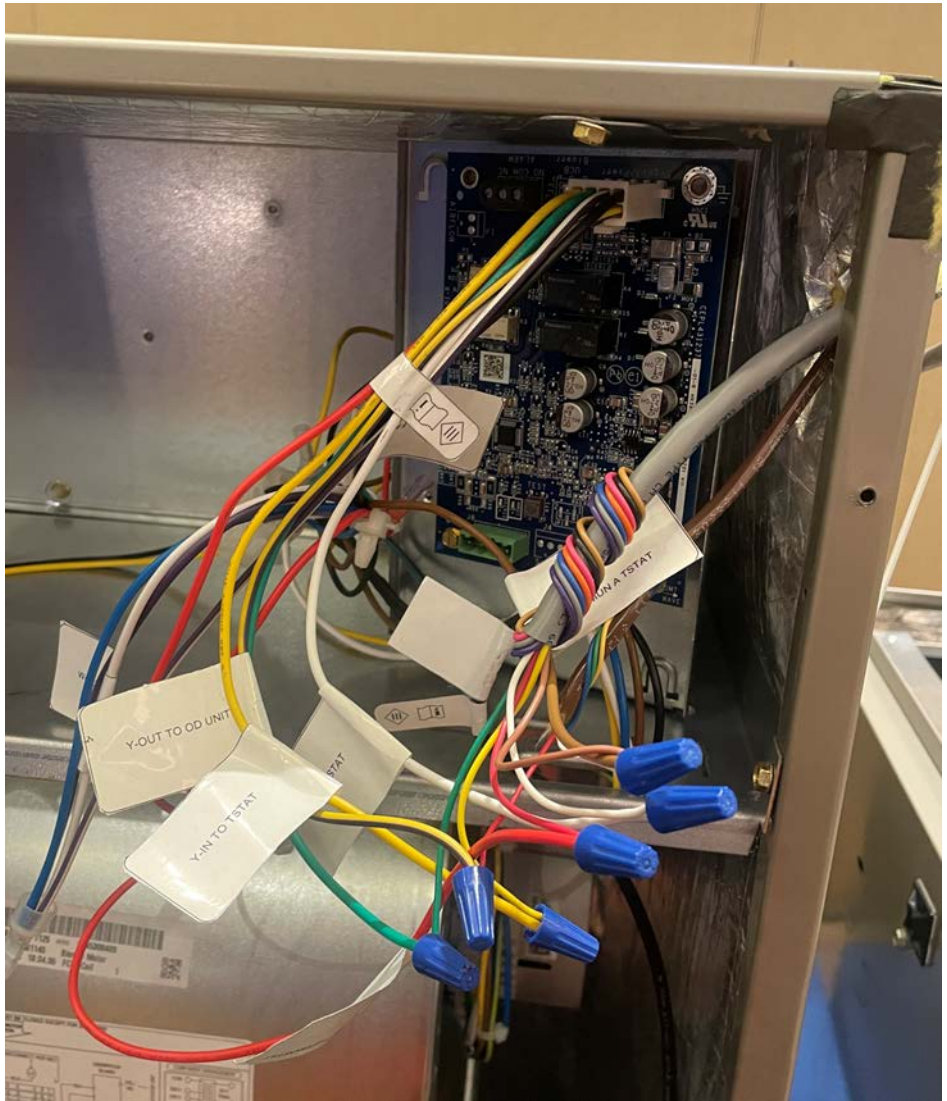
G, W and Y1 will be routed through the dissipation board
R and C provide power to the board



DISSIPATION SYSTEM

Fan coils are prewired





DISSIPATION SYSTEM OPERATIONAL TESTS

- Sensor Testing
  - Power up with sensor connected – wait for 10sec sensor warm up delay
  - Ensure yellow status LED is on steady with no flashing (indicates sensor is communicating)
  - Disconnect sensor from the dissipation board
  - Verify that within 5sec the relays clicks, and the yellow status LED begins flashing fault code 2, this indicates the sensor is no longer communicating with the dissipation board

DISSIPATION SYSTEM

How it works

- In the event of a leak, the leak sensor sends a signal to the dissipation board, which energizes a blower to dissipate the refrigerant into the air stream.
  - Once activated, the blower is always on in dissipation mode and stays on for five minutes after the sensor readings are below the dissipation threshold.
- Dissipation board shuts down active heating or cooling call
- The system allows a heating or cooling call after 15 minutes of dissipation if the sensor is reading below the threshold.

Dissipation Sequence of Operation

- Each type of equipment will have a slightly different sequence of operation
  - Non-communicating residential splits
  - Communicating residential splits
  - Multi-family residential splits

Dissipation Sequence of Operation

- Non communicating residential splits
  - Once leak reaches 20% of the LFL the system will go into dissipation mode
    - Dissipation board LED will flash code 1 (dissipation in progress)
    - The Y1 and W relays will open
    - The G relay will close
    - After 15 min dissipation mode and the refrigerant detected is below 20% of the LFL compressor operation will resume as long as there is enough refrigerant to run the unit (low pressure switch)
    - If in heating mode, after 10 min in dissipation mode and the refrigerant detected is below 20% of the LFL, electric heat or gas heat will resume to satisfy the call
    - If the sensor still detects a refrigerant level that is 20% of the LFL 15 min, the board will determine that the sensor is faulty, heating and cooling will cycle but fan will remain on

Dissipation Sequence of Operation

- Communicating residential splits
  - Once leak reaches 20% of the LFL the system will go into dissipation mode
    - Dissipation board LED will flash code 1 (dissipation in progress)
    - Heating or cooling will stop
    - After 15 min dissipation mode and the refrigerant detected is below 20% of the LFL compressor operation will resume as long as there is enough refrigerant to run the unit (low pressure switch)
    - If in heating mode, after 5 min in dissipation mode and the refrigerant detected is below 20% of the LFL, electric heat or gas heat will resume to satisfy the call
    - If the sensor still detects a refrigerant level that is 20% of the LFL after 10 min, the board will determine that the sensor is faulty, heating and cooling will cycle but fan will remain on

Dissipation Sequence of Operation

- Multi-Family Splits (Midea)
  - Once leak reaches 10% of the LFL the system will go into dissipation mode
    - Heating or cooling will stop
    - After 5 min dissipation mode and the refrigerant detected is below 10% of the LFL compressor operation will resume as long as there is enough refrigerant to run the unit (low pressure switch)
    - If in heating mode, after 5 min in dissipation mode and the refrigerant detected is below 10% of the LFL, electric heat will resume to satisfy the call
    - If the sensor still detects a refrigerant level that is 10% of the LFL after 10 min, the board will determine that the sensor is faulty, the unit will remain in dissipation mode with no heating or cooling allowed

Dissipation Sequence of Operation

- SPP
  - SPP products will use the same sequence of operation as the non-communicating equipment
  - Once leak reaches 20% of the LFL the system will go into dissipation mode
    - Dissipation board LED will flash code 1 (dissipation in progress)
    - The Y1 and W relays will open
    - The G relay will close
    - After 15 min dissipation mode and the refrigerant detected is below 20% of the LFL compressor operation will resume as long as there is enough refrigerant to run the unit (low pressure switch)
    - If in heating mode, after 10 min in dissipation mode and the refrigerant detected is below 20% of the LFL, electric heat or gas heat will resume to satisfy the call
    - If the sensor still detects a refrigerant level that is 20% of the LFL 15 min, the board will determine that the sensor is faulty, heating and cooling will cycle but fan will remain on

PURON ADVANCE™ FURNACE COILS

- 410A and Puron Advance™ (454B) coils are not interchangeable.
- If an outdoor Puron Advance™ unit is used to replace an existing 410A unit, the indoor coil must be replaced with a Puron Advance™ coil
- All Puron Advance™ models ship with a dissipation sensor factory installed with the cable and harness attached.
  - A separate box with a dissipation board, enclosure and wiring harness will be shipped inside the coil packaging to connect to the furnace
- Puron Advance™ furnace coils will be compatible with Puron Advance™ AC/HP units
  - Always check MyCarrierRatings to determine system combinations

A COIL MULTIPOISE SENSOR LOCATION

Grommet modification and straight stub-outs

Sensor location

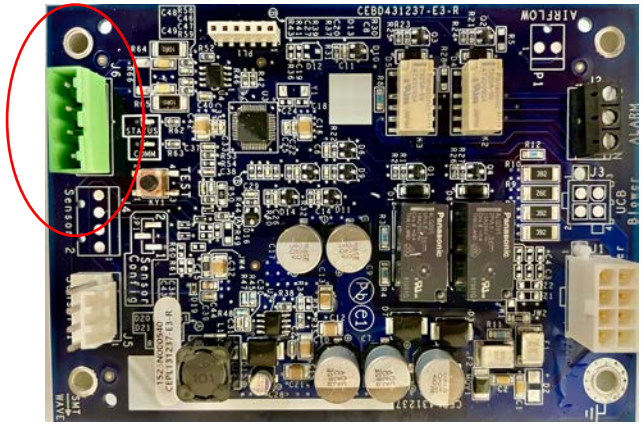
SLAB COIL SENSOR LOCATION

Grommet modification and straight stub-outs

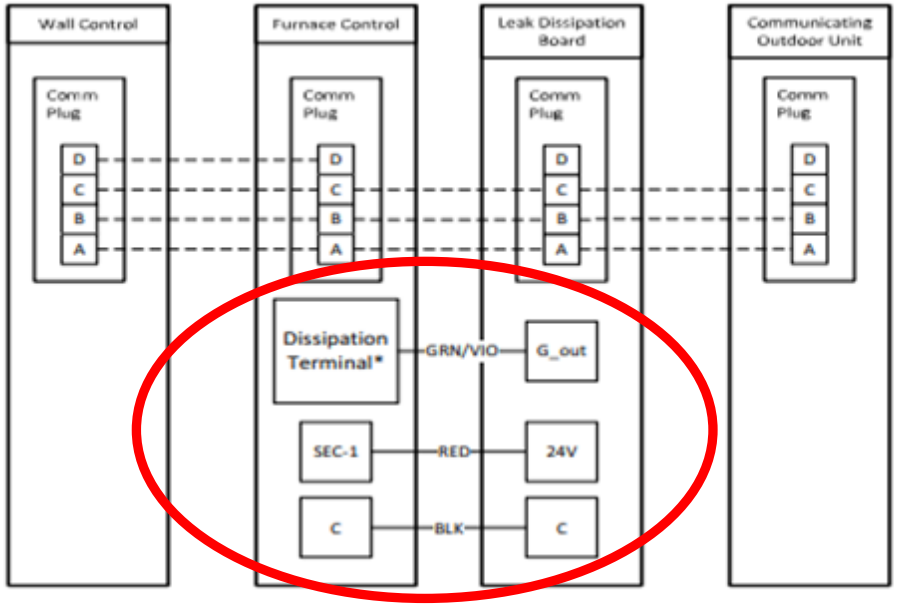
Sensor location

THERE'S A NEW SENSOR IN TOWN

DISSIPATION BOARD WIRING – INFINITY/EVOLUTION



- Dissipation Board is Communicating for Deluxe Models
  - ABCD connection header will be used
    - (A, B and C wires)
  - 8-pin connector also partially used
    - (R,C, (& G on furnaces)
  - Function remains the same



NOTE: Dissipation terminal is only used on Carrier communicating furnaces manufactured Q4 2023 and later. Use a 3/16" spade connector on the GRN/VIO wire to connect to the dissipation terminal on communicating furnaces. Attach wire nut to all unused wires from the power harness.

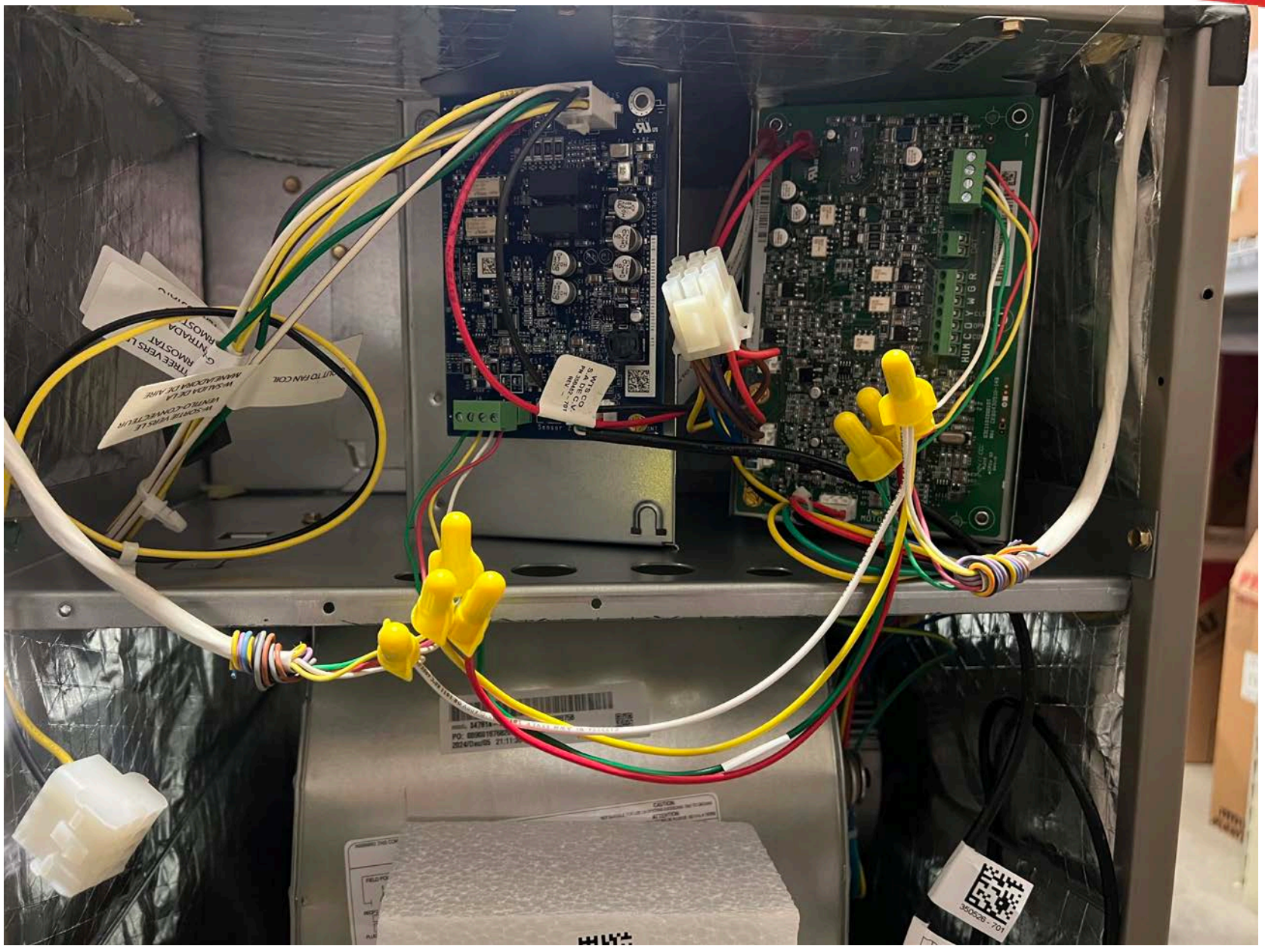
A230462

Fig. 21 – Wiring Layout, Communication Unit

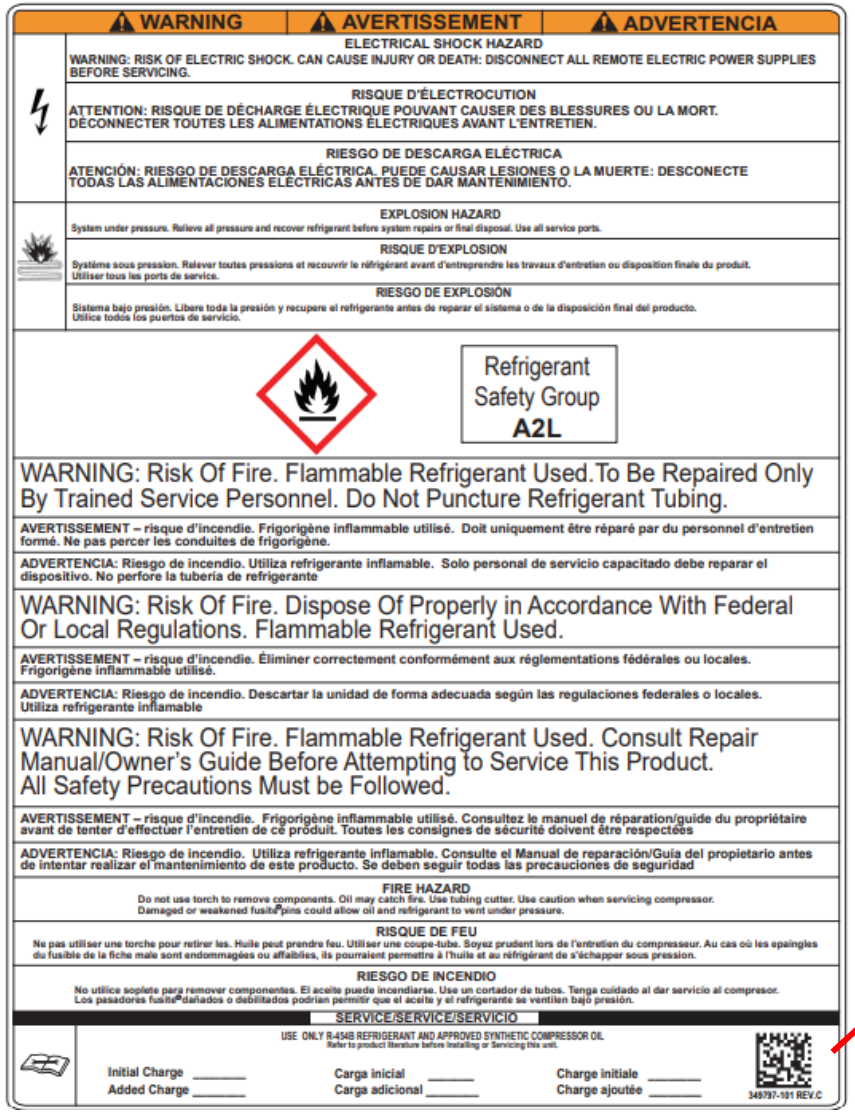
Table 3 – Communication Plug Designations

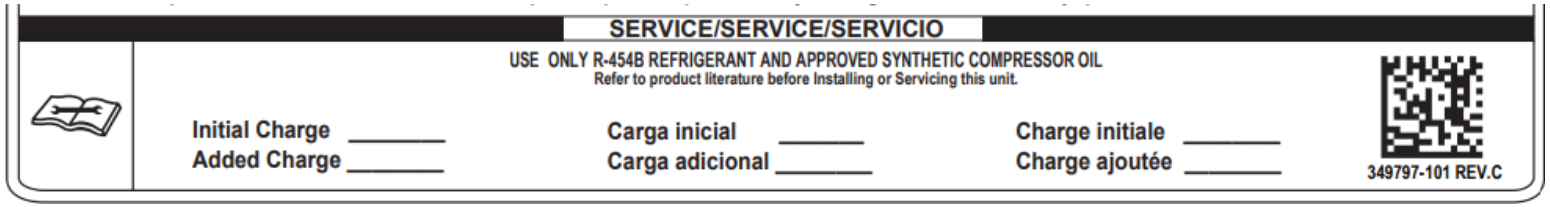
CCN Plug Connections				
Color	GRN	YEL	WHT	RED
Signal	A	B	C	D

DISSIPATION BOARD WIRING – INFINITY/EVOLUTION

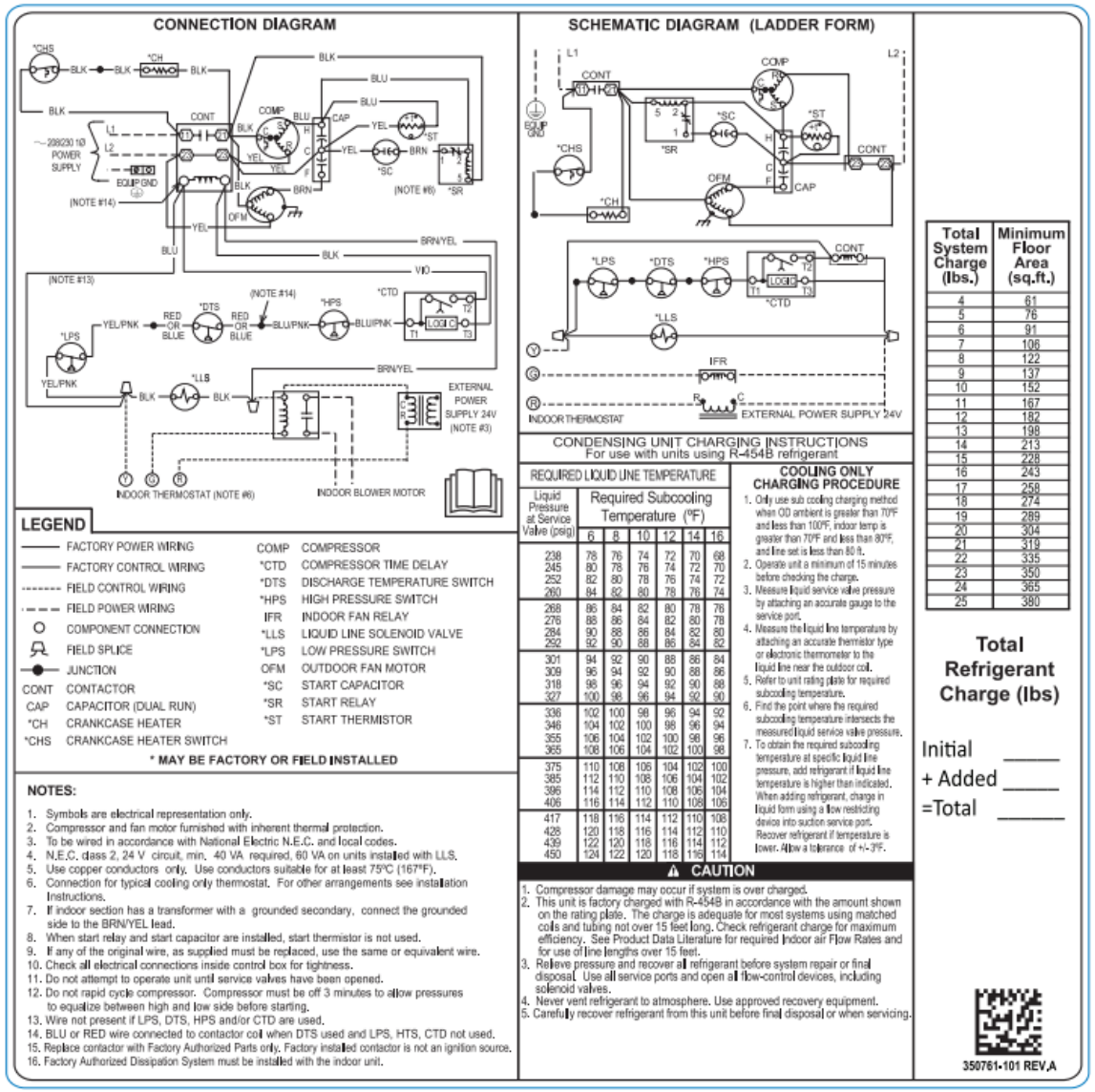


NEW OUTDOOR LABELS-OUTSIDE CONTROL PANEL COVER





NEW OUTDOOR LABELS-INSIDE CONTROL PANEL COVER



CONNECTION DIAGRAM

SCHEMATIC DIAGRAM (LADDER FORM)

Total System Charge (lbs.)	Minimum Floor Area (sq.ft.)
4	61
5	76
6	91
7	106
8	122
9	137
10	152
11	167
12	182
13	198
14	213
15	228
16	243
17	258
18	274
19	289
20	304
21	319
22	335
23	350
24	365
25	380

Total Refrigerant Charge (lbs)

Initial _____
+ Added _____
=Total _____

LEGEND

———	FACTORY POWER WIRING	COMP	COMPRESSOR
———	FACTORY CONTROL WIRING	*CTD	COMPRESSOR TIME DELAY
-------	FIELD CONTROL WIRING	*DTS	DISCHARGE TEMPERATURE SWITCH
- - - -	FIELD POWER WIRING	*HPS	HIGH PRESSURE SWITCH
O	COMPONENT CONNECTION	IFR	INDOOR FAN RELAY
	FIELD SPLICE	*LLS	LIQUID LINE SOLENOID VALVE
	JUNCTION	*LPS	LOW PRESSURE SWITCH
CONT	CONTACTOR	OFM	OUTDOOR FAN MOTOR
CAP	CAPACITOR (DUAL RUN)	*SC	START CAPACITOR
*CH	CRANKCASE HEATER	*SR	START RELAY
*CHS	CRANKCASE HEATER SWITCH	*ST	START THERMISTOR

* MAY BE FACTORY OR FIELD INSTALLED

NOTES:

1. Symbols are electrical representation only.
2. Compressor and fan motor furnished with inherent thermal protection.
3. To be wired in accordance with National Electric N.E.C. and local codes.
4. N.E.C. class 2, 24 V circuit, min. 40 VA required, 60 VA on units installed with LLS.
5. Use copper conductors only. Use conductors suitable for at least 75°C (167°F).
6. Connection for typical cooling only thermostat. For other arrangements see installation Instructions.
7. If indoor section has a transformer with a grounded secondary, connect the grounded side to the BRN/YEL lead.
8. When start relay and start capacitor are installed, start thermistor is not used.
9. If any of the original wire, as supplied must be replaced, use the same or equivalent wire.
10. Check all electrical connections inside control box for tightness.
11. Do not attempt to operate unit until service valves have been opened.
12. Do not rapid cycle compressor. Compressor must be off 3 minutes to allow pressures to equalize between high and low side before starting.
13. Wire not present if LPS, DTS, HPS and/or CTD are used.
14. BLU or RED wire connected to contactor coil when DTS used and LPS, HTS, CTD not used.
15. Replace contactor with Factory Authorized Parts only. Factory installed contactor is not an ignition source.
16. Factory Authorized Dissipation System must be installed with the indoor unit.

CONDENSING UNIT CHARGING INSTRUCTIONS
For use with units using R-454B refrigerant

REQUIRED LIQUID LINE TEMPERATURE

Liquid Pressure at Service Valve (psig)	Required Subcooling Temperature (°F) 6	8	10	12	14	16
238	78	76	74	72	70	68
245	80	78	76	74	72	70
252	82	80	78	76	74	72
260	84	82	80	78	76	74
268	86	84	82	80	78	76
276	88	86	84	82	80	78
284	90	88	86	84	82	80
292	92	90	88	86	84	82
301	94	92	90	88	86	84
309	96	94	92	90	88	86
318	98	96	94	92	90	88
327	100	98	96	94	92	90
336	102	100	98	96	94	92
346	104	102	100	98	96	94
355	106	104	102	100	98	96
365	108	106	104	102	100	98
375	110	108	106	104	102	100
385	112	110	108	106	104	102
396	114	112	110	108	106	104
406	116	114	112	110	108	106
417	118	116	114	112	110	108
428	120	118	116	114	112	110
439	122	120	118	116	114	112
450	124	122	120	118	116	114

COOLING ONLY CHARGING PROCEDURE

1. Only use sub cooling charging method when OD ambient is greater than 70°F and less than 100°F, indoor temp is greater than 70°F and less than 80°F, and line set is less than 80 ft.
2. Operate unit a minimum of 15 minutes before checking the charge.
3. Measure liquid service valve pressure by attaching an accurate gauge to the service port.
4. Measure the liquid line temperature by attaching an accurate thermistor type or electronic thermometer to the liquid line near the outdoor coil.
5. Refer to unit rating plate for required subcooling temperature.
6. Find the point where the required subcooling temperature intersects the measured liquid service valve pressure.
7. To obtain the required subcooling temperature at specific liquid line pressure, add refrigerant if liquid line temperature is higher than indicated. When adding refrigerant, charge in liquid form using a flow restricting device into suction service port. Recover refrigerant if temperature is lower. Allow a tolerance of +/- 3°F.

⚠ CAUTION

1. Compressor damage may occur if system is over charged.
2. This unit is factory charged with R-454B in accordance with the amount shown on the rating plate. The charge is adequate for most systems using matched coils and tubing not over 15 feet long. Check refrigerant charge for maximum efficiency. See Product Data Literature for required Indoor air Flow Rates and for use of line lengths over 15 feet.
3. Relieve pressure and recover all refrigerant before system repair or final disposal. Use all service ports and open all flow-control devices, including solenoid valves.
4. Never vent refrigerant to atmosphere. Use approved recovery equipment.
5. Carefully recover refrigerant from this unit before final disposal or when servicing.

Total Refrigerant Charge (lbs)

Initial _____
+ Added _____
=Total _____

350761-101 REV.A

Total System Charge (lbs.)	Minimum Floor Area (sq.ft.)
4	61
5	76
6	91
7	106
8	122
9	137
10	152
11	167
12	182
13	198
14	213
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Total Refrigerant Charge (lbs)

Initial _____
+ Added _____
=Total _____

LIQUID/SUCTION TUBE DOOR GROMMETS

Reported Situation	Status	Implementation Date (Week/Year)
Liquid/Suction tube door grommets - loose	Complete	0224J

Condition reported:
Liquid and suction stub grommets were not staying in panel opening around tube. Created air leaks and a poor-quality perception.

Solution:
Grommets were resized to fit into panel opening while creating a tight seal on copper stubs.

LIQUID/SUCTION TUBE PLUG LEAKS

Reported Situation	Status	Implementation Date (Week/Year)
Liquid/Suction tube plugs - leak	Complete	0624J

Condition reported:
Nitrogen is leaking out of coils around rubber plugs. Customer perspective –if they don't hear gas escaping from coil when removing plugs, the coil has a leak.

Solution:
Nitrogen pressure was adjusted, and rubber plug material was changed to maintain a higher pressure in coils, so customers could hear gas escape during plug removal.

OUTDOOR SPLIT SERVICE VALVES

Situation: We continue to receive reports that the service tech are unable to open the service valves. The hex socket inside of the valve has become “stripped” and can’t be opened.

Findings: Upon investigation of the reports, we are finding the hex socket isn’t completely “stripped” the entire length of the socket. When a valve is tight the multi-step tool being used by the service tech isn’t engaging enough of the socket & stripping the valve.

- Liquid Service Valve – Full Insertion Depth is 1-3/8”
- Suction Service Valve – Full Insertion Depth is 1”

Recommendation: **Don’t use the hex multi-size tool because is doesn’t all full engagement to the bottom of the valve socket. Especially when breaking the valve free for the first time. Use the standard hex “Allen” wrenches that fit the entire socket depth or purchase the correct depth hex multi-size tool.**

COPELAND K7 COMPRESSOR INVESTIGATION

- Reverse rotation may produce a short duration sound at shutdown; lasting until discharge and suction gas pressure equalizes.
- While reverse rotation noise does not damage the compressor and has no impact on compressor reliability, the noise may be objectionable to some customers.
- A design change internal to the compressor has been implemented on Copeland 3.5, 4, and 5-ton K7 compressors manufactured after December 1, 2024, that eliminates most reverse rotation noise at shutdown.

PRESSURE SWITCH UPDATE – GAS FURNACE

- We have received increased reports of stuck closed pressure switches in our furnaces.
- Switch Part # HK06MB012, HK06MB020, and HK06MB021
- On Max deflection of the switch diaphragm (> 2.0” negative pressure), friction between the diaphragm and housing may cause the diaphragm to lightly bind to the housing edge when the vacuum drops after firing of the unit.
- This could be a temporary condition and may release spontaneously or by a light tap on the switch.
- All inventory at Replacement Components has been purged of any suspect switch.

80% KINKED PRESSURE SWITCH CROSSOVER HOSE

1 ISSUE STATEMENT

Reports of pinched crossover tube on non-condensing furnace two-stage pressure switch assemblies

2 CONTRIBUTING FACTORS

Original Honeywell equipped switch set had different pressure port angle and spacing. When switch was transitioned to MTI, the hose material was not changed.

3 CORRECTIVE ACTION

Tube to be changed to square style tubing like the pressure hose used on current condensing furnaces connecting the inducer housing to the Housing Pressure Switch

Implementation:
Week 23, 2024

OUTDOOR SPLITS MISSING SERVICE CAPS

Report: Multiple reports about missing service valve caps both liquid line and suction line of condenser units, most of the units were built at CMX-C during 2024.

Problem Description

What? *Missing caps on service valves.*

Why? *Valves have no protection.*

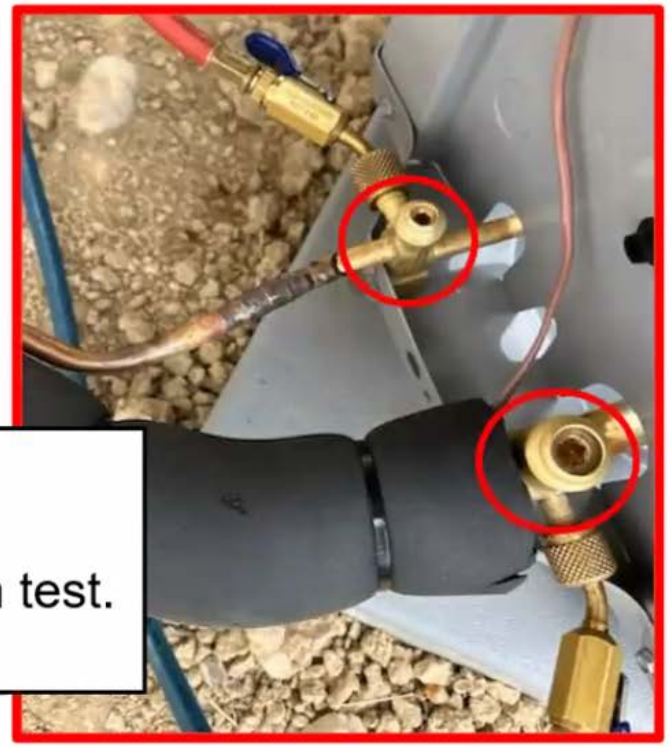
Who? *Field Reports*

When? *June 17, 2024.*

Where? *Northeast / Midwest*

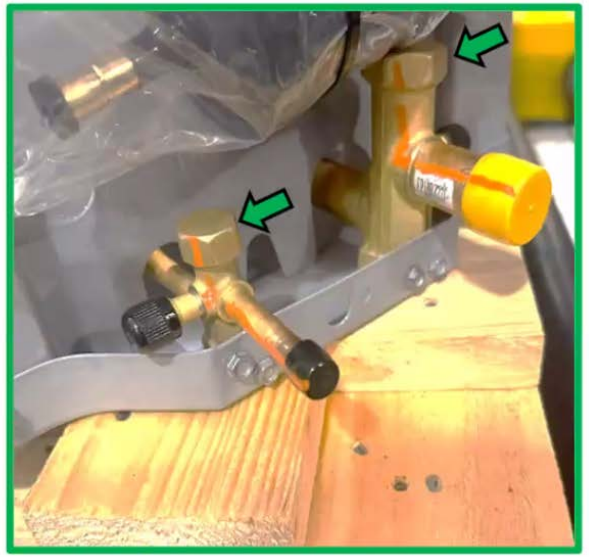
How much? *multiple serial number reports*

Reports



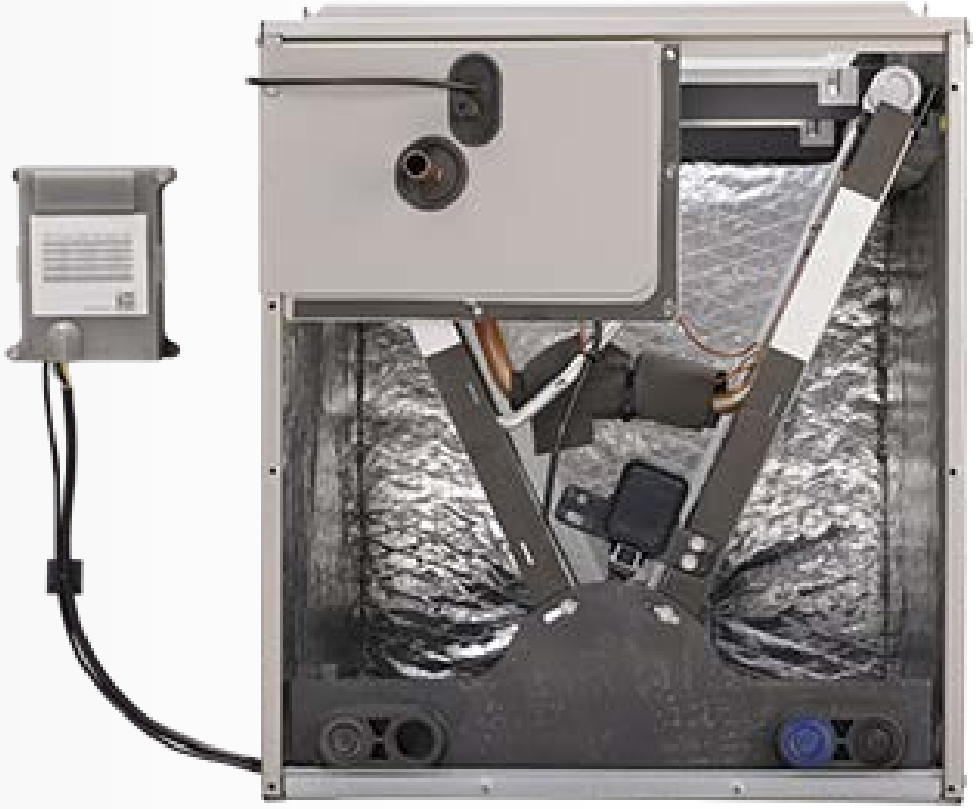
Solution:
Added witness marks on each service valve.
Placed more service valve caps at end of run test.
Issued a Factory Quality Alert to all lines.

Witness mark applicable since Wk 26, 2024



V COIL SENSOR LOCATION

Grommet modification and straight stub-outs



Sensor location