

# AIR HANDLER KITS AND ACCESSORIES

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## REFRIGERANT SENSOR REPLACEMENT PART

### INSTALLATION INSTRUCTIONS FOR REFRIGERANT SENSOR REPLACEMENT PART (628718-01, 29U50) USED WITH ELITE AIR HANDLER (ELKA) UNITS

#### RETAIN THESE INSTRUCTIONS FOR FUTURE REFERENCE

#### Shipping and Packing List

- 1- Refrigerant Detection Sensor (RDS)
- 2- Sensor mounting brackets
- 2- Wire ties (screw-in)
- 3- Wire ties (push-in)
- 6- #10 sheet metal screws

#### General

This document outlines the replacement procedures for R454B Refrigerant Detection Sensor.

A refrigerant detection sensor is required in R-454B applications. These instructions are meant to be a general guide when installing this replacement sensor and are not meant to replace the original equipment instructions.

#### ⚠ WARNING

Improper installation, adjustment, alteration, service or maintenance can cause property damage, personal injury or loss of life. Installation and service must be performed by a licensed professional HVAC installer or equivalent, service agency, or the gas supplier.

#### ⚠ CAUTION

As with any mechanical equipment, contact with sharp sheet metal edges can result in personal injury. Take care while handling this equipment and wear gloves and protective clothing.

#### ⚠ WARNING



Electric Shock Hazard. Can cause injury or death. Unit must be properly grounded in accordance with national and local codes.

Line voltage is present at all components when unit is not in operation on units with single-pole contactors. Disconnect all remote electric power supplies before opening access panel. Unit may have multiple power supplies.

#### ⚠ CAUTION

Refrigerant Detection System installed. Unit must be powered except for service.

#### ⚠ WARNING

**RISK OF ELECTRIC SHOCK. CAN CAUSE INJURY OR DEATH:** System contains two independent protective earthing (grounding) terminals which both shall be properly connected and secured.

#### ⚠ WARNING

If this appliance is conditioning a space with an area smaller than T<sub>Amin</sub>, then that space must be without continuously operating open flames (e.g. an operating gas appliance) or other potential ignition sources (e.g. an operating electric heater or similar hot surface). A flame-producing device may be installed in the same space if the device is provided with an effective flame arrest system.

#### ⚠ CAUTION

Equipment shall be labeled stating that it has been decommissioned and emptied of refrigerant. The label shall be dated and signed. For appliances containing flammable refrigerants, ensure that there are labels on the equipment stating the equipment contains flammable refrigerant.

#### ⚠ WARNING

Auxiliary devices which may be a potential ignition source shall not be installed in the duct work. Examples of such potential ignition sources are hot surfaces with a temperature exceeding 700°C and electric switching devices.

#### ⚠ WARNING

For appliances using A2L refrigerants connected via an air duct system to one or more rooms, only auxiliary devices approved by the appliance manufacturer or declared suitable with the refrigerant shall be installed in connecting ductwork.

#### ⚠ WARNING

For duct connected appliances, false ceilings or drop ceilings may be used as a return air plenum if a REFRIGERANT DETECTION SYSTEM is provided in the appliance and any external connections are also provided with a sensor immediately below the return air plenum duct joint.



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## CAUTION

Any service personnel installing, decommissioning, or performing maintenance on the unit must be properly trained with A2L refrigerants

## IMPORTANT

RDS system requires 3 VA additional loading on low voltage transformer.

## WARNING

- Do not use means to accelerate the defrosting process or to clean, other than those recommended by the manufacturer.
- The appliance shall be stored in a room without continuously operating ignition sources (for example: open flames, an operating gas appliance, or an operating electric heater).
- Do not pierce or burn.
- Be aware that refrigerants may not contain an odor.

## WARNING

Ducts connected to an appliance shall not contain a potential ignition source

**NOTE** - Partial units shall only be connected to an appliance suitable for the same refrigerant.

## IMPORTANT

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

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

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

**NOTE** – The ELKA is a PARTIAL UNIT AIR HANDLER, complying with PARTIAL UNIT requirements in this standard, and must only be connected to other units that have been confirmed as complying to corresponding PARTIAL UNIT requirements of this Standard, UL 60335-2-40/CSA C22.2 No. 60335-2-40, or UL 1995/CSA C22.2 No 236.

## APPLICATION CONSIDERATIONS

R-454B is a A2L refrigerant. The system installation must meet the following parameters based upon total refrigerant charge (line set included).

When a system has a single compressor, the total refrigerant charge (lb/kg) is the sum of the factory charge plus the field added charge. For multiple compressor systems, use the compressor circuit with the largest total refrigerant charge (lb/kg) calculated the same as single compressor.

**T<sub>Amin</sub>** (Total minimum conditioned area) is the minimum allowable conditioned area based upon the total system charge at sea level. Values must be multiplied by altitude adjustment factor at installed altitude.

**Q<sub>min</sub>** refers to minimum airflow requirements during refrigerant leak mitigation by the refrigerant detection system, based upon total system charge.

For applications where the final charge is greater than listed in the **T<sub>Amin</sub> Table**, specific requirements in ANSI/ASHRAE Standard 15, Safety Standard for Refrigeration Systems, may be more stringent than those in UL 60335-2-40 standard. Refer to the ANSI/ASHRAE Standard 15, Safety Standard for Refrigeration Systems, to determine any additional requirements based on total system charge.

**T<sub>Amin</sub> Table**

Charge (lb)	10.0	15.0	20.0	25.0	30.0
Charge (kg)	4.5	6.8	9.1	11.3	13.6
Minimum Conditioned Area (ft <sup>2</sup> )	149.9	224.9	299.9	374.8	449.8
Minimum Conditioned Area (m <sup>2</sup> )	13.9	20.9	27.9	34.8	41.8

**NOTE** – Multiply values in T<sub>Amin</sub> table by the Altitude Adjustment Factors to correct T<sub>Amin</sub> based on installed altitude.

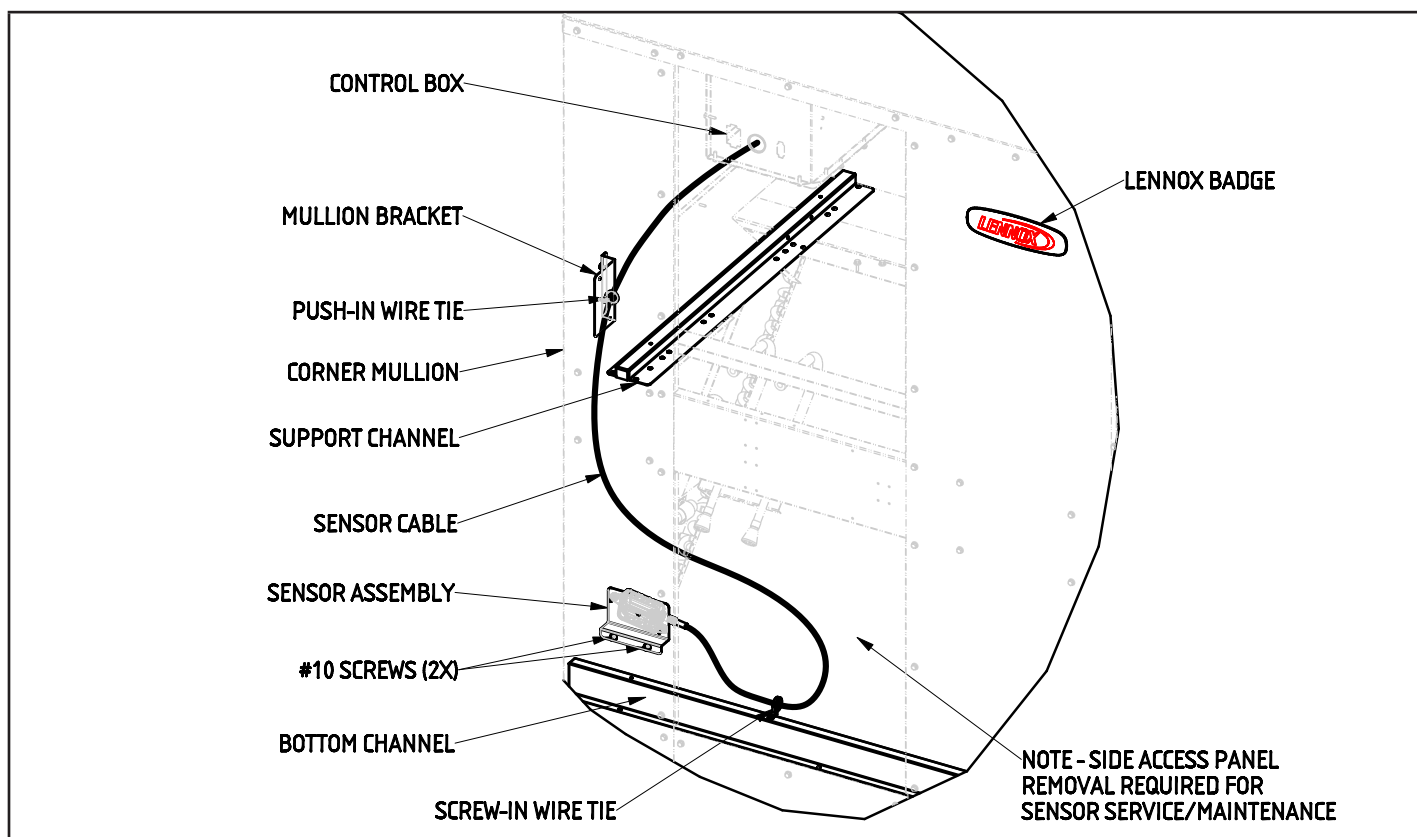
**Altitude Adjustment Factor**

Altitude (m)	0	200	400	600	800	1000	1200	1400	1600	1800	2000
Altitude (ft)	0	660	1310	1970	2620	3280	3940	4590	5250	5910	6560
Adj. Factor	1	1	1	1	1.02	1.05	1.04	1.1	1.12	1.15	1.18

**Q<sub>min</sub> Table**

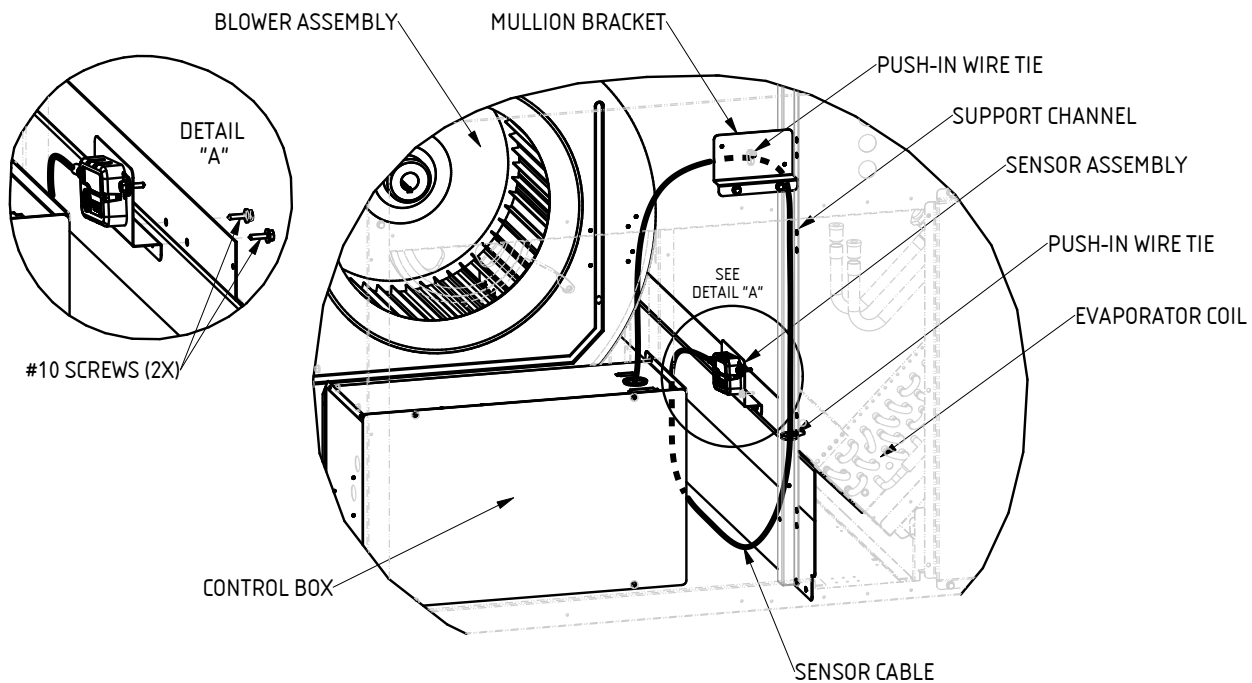
Refrigerant Charge lb (kg)	CFM Required	Refrigerant Charge lb (kg)	CFM Required
5 (2.3)	135	18 (8.1)	487
6 (2.7)	162	19 (8.6)	514
7 (3.2)	189	20 (9.1)	541
8 (3.6)	216	21 (9.5)	568
9 (4.1)	244	22 (10)	595
10 (4.5)	271	23 (10.4)	622
11 (5)	298	24 (10.9)	649
12 (5.4)	325	25 (11.3)	676
13 (5.9)	352	26 (11.7)	704
14 (6.4)	379	27 (12.2)	731
15 (6.8)	406	28 (12.7)	758
16 (7.3)	433	29 (13.2)	785
17 (7.7)	460	30 (13.6)	812

**NOTE** – Q<sub>min</sub> minimum airflow requirement for refrigerant leak mitigation.



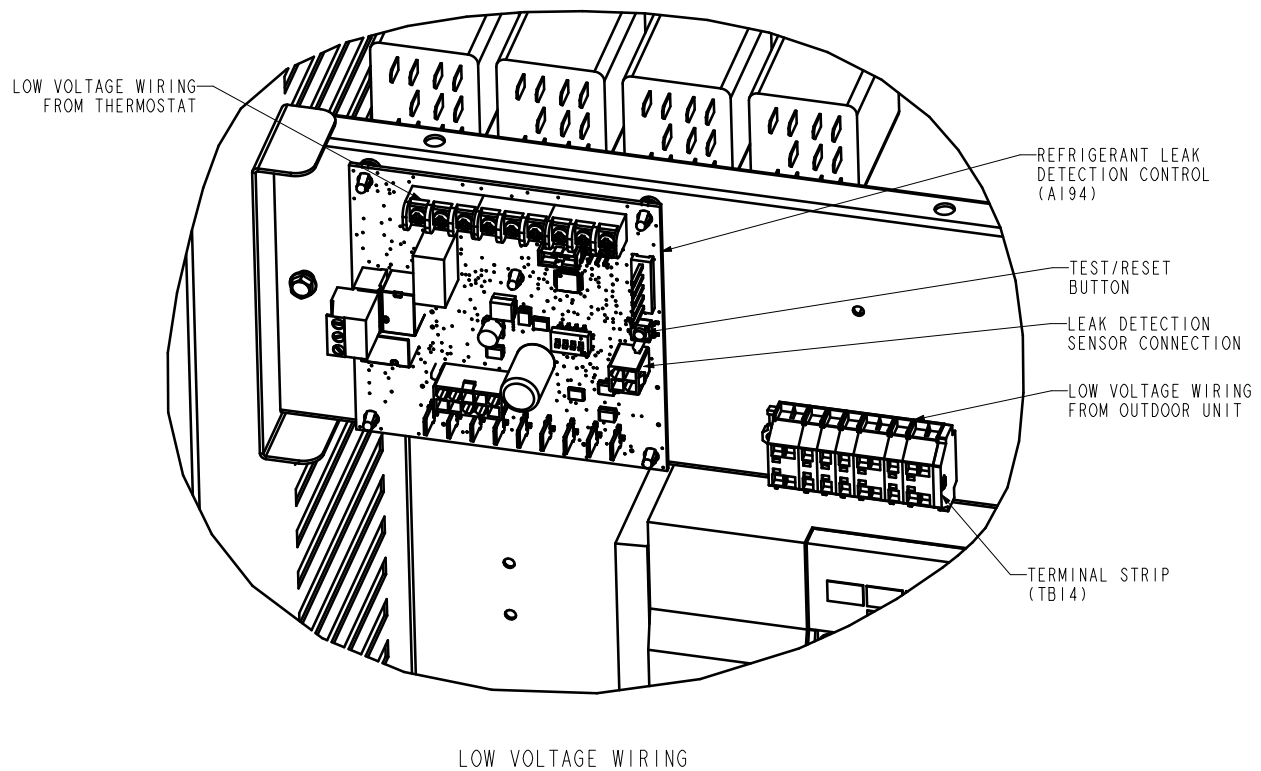
**FIGURE 1. LDS Detail (Upflow)**

# LEAK DETECTION SENSOR DETAIL - HORIZONTAL ORIENTATION



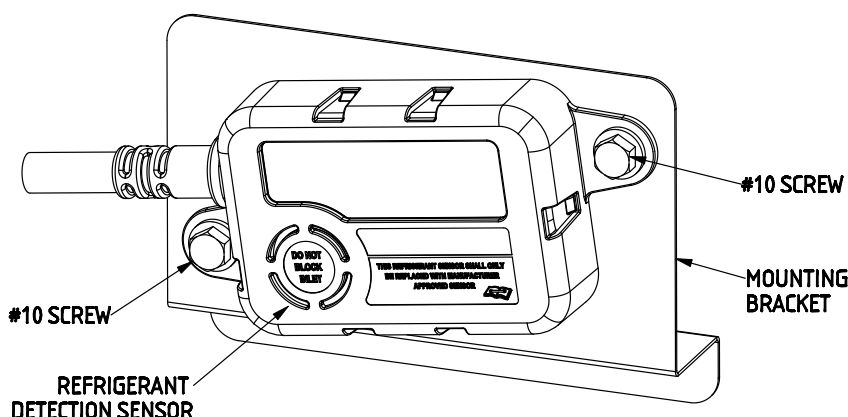
NOTE - PANELS REMOVED FOR ILLUSTRATION PURPOSES ONLY

**FIGURE 2. LDS Detail (Horizontal)**



**FIGURE 3. Low Voltage Wiring**

## SENSOR ASSEMBLY DETAIL



**FIGURE 4. Sensor Assembly**

### Replacement Procedure

**NOTE** – For the purposes of this document, the Refrigerant Detection Sensor (RDS) shall be considered equivalent to the Leak Detection Sensor (LDS).

For an ELKA Air Handler installed in up-flow orientation, refer to figure 1 Leak detection sensor (LDS) details. For an ELKA Air Handler installed in horizontal orientation, refer to figure 2 Leak detection sensor (LDS) details.

#### Air Handler – Upflow Orientation

### **CAUTION**

Before attempting to perform any service or maintenance, turn the electrical power to unit OFF at disconnect switch.

- 1 - Remove blower access panel, control box cover and right-side access panel (see figure 1).
- 2 - Disconnect the 4-pin sensor cable plug from the A194 control board (see figure 3), then carefully remove the cable from the control box.
- 3 - Cut push-in wire tie securing cable to the mullion bracket.
- 4 - Cut screw-in wire tie securing sensor cable to the bottom channel.
- 5 - Remove and discard current sensor assembly (bracket, cabled sensor, screws securing bracket to mullion).
- 6 - Locate the new sensor and mounting bracket provided.
- 7 - Secure sensor to the mounting bracket with screws provided. See figure 4 for proper sensor assembly alignment details.

**NOTE** – Take care not to over-tighten screws and break sensor mounting ears.

- 8 - Install sensor assembly to the corner mullion with screws provided so that the bracket lays between corner mullion and sensor (see figure 1).

- 9 - Install a screw-in wire tie on the bottom channel to replace previously removed wire tie.

- 10 - Install a push-in wire tie on the mullion bracket to replace previously removed wire tie.

- 11 - Route sensor cable through the screw-in wire tie. Then, route sensor cable through the push-in wire tie (see figure 1).

- 12 - Route the plug end of the cable into the control box and reconnect to A194 control board (see figures 1 and 3).

**NOTE** – Pull any excess sensor cable into the control box before tightening the wire ties.

- 13 - Restore power to the unit.

- 14 - Confirm that the Refrigerant Leak Detection System is functioning properly. Refer to the “Refrigerant Leak Detection System” section in the Air Handler unit installation instructions for details.

#### Air Handler – Horizontal Orientation

- 1 - Remove blower access panel and control box cover and coil access panel (see figure 2).
- 2 - Cut and discard push-in wire ties securing cable to the mullion bracket and support channel.
- 3 - Disconnect the 4-pin sensor cable plug from the A194 control board (see figure 3), then carefully remove the cable from the control box.
- 4 - Remove and discard current sensor assembly (bracket, cabled sensor, screws securing bracket to mullion).
- 5 - Locate the new sensor and mounting bracket provided.
- 6 - Secure sensor to the mounting bracket with screws provided. See figure 4 for proper sensor assembly alignment details.
- 8 - Install sensor assembly to the baffle channel with screws provided so that the mounting bracket lays between sensor and the coil. (see figure 2).

- 9 - Install new push-in wire ties on the mullion bracket and support channel.
- 10 - Route sensor cable through the push-in ties as shown in figure 2.
- 11 - Route the plug end of the cable into the control box and reconnect to A194 control board (see figures 2 and 3). NOTE – Pull any excess sensor cable into the control box before tightening the wire ties.

**CAUTION – Any excess sensor cable left near the blower belt/pulleys could be damaged by moving parts.**

- 12 - Restore power to the unit.
- 13 - Confirm that the Refrigerant Leak Detection System is functioning properly. Refer to the “Refrigerant Leak Detection System” section in the Air Handler unit installation instructions for details.