



Installation Instructions

IntelliPak™ 2 Refresh Service Program



Model Number:

SFHJ

SXHJ

This document applies to service offering applications only.

Distribution/use of this document is limited to the Trane sales and service organization in support of the Refresh service program and is not intended for independent third party use.

⚠ SAFETY WARNING

Only qualified personnel should install and service the equipment. The installation, starting up, and servicing of heating, ventilating, and air-conditioning equipment can be hazardous and requires specific knowledge and training. Improperly installed, adjusted or altered equipment by an unqualified person could result in death or serious injury. When working on the equipment, observe all precautions in the literature and on the tags, stickers, and labels that are attached to the equipment.



Introduction

Read this manual thoroughly before operating or servicing this unit.

Warnings, Cautions, and Notices

Safety advisories appear throughout this manual as required. Your personal safety and the proper operation of this machine depend upon the strict observance of these precautions.

The three types of advisories are defined as follows:



WARNING

Indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury.



CAUTION

Indicates a potentially hazardous situation which, if not avoided, could result in minor or moderate injury. It could also be used to alert against unsafe practices.

NOTICE

Indicates a situation that could result in equipment or property-damage only accidents.

Important Environmental Concerns

Scientific research has shown that certain man-made chemicals can affect the earth's naturally occurring stratospheric ozone layer when released to the atmosphere. In particular, several of the identified chemicals that may affect the ozone layer are refrigerants that contain Chlorine, Fluorine and Carbon (CFCs) and those containing Hydrogen, Chlorine, Fluorine and Carbon (HCFCs). Not all refrigerants containing these compounds have the same potential impact to the environment. Trane advocates the responsible handling of all refrigerants.

Important Responsible Refrigerant Practices

Trane believes that responsible refrigerant practices are important to the environment, our customers, and the air conditioning industry. All technicians who handle refrigerants must be certified according to local rules. For the USA, the Federal Clean Air Act (Section 608) sets forth the requirements for handling, reclaiming, recovering and recycling of certain refrigerants and the equipment that is used in these service procedures. In addition, some states or municipalities may have additional requirements that must also be adhered to for responsible management of refrigerants. Know the applicable laws and follow them.

⚠ WARNING

Proper Field Wiring and Grounding Required!

Failure to follow code could result in death or serious injury.

All field wiring **MUST** be performed by qualified personnel. Improperly installed and grounded field wiring poses **FIRE** and **ELECTROCUTION** hazards. To avoid these hazards, you **MUST** follow requirements for field wiring installation and grounding as described in NEC and your local/state/national electrical codes.

⚠ WARNING

Personal Protective Equipment (PPE) Required!

Failure to wear proper PPE for the job being undertaken could result in death or serious injury.

Technicians, in order to protect themselves from potential electrical, mechanical, and chemical hazards, **MUST** follow precautions in this manual and on the tags, stickers, and labels, as well as the instructions below:

- Before installing/servicing this unit, technicians **MUST** put on all PPE required for the work being undertaken (Examples; cut resistant gloves/sleeves, butyl gloves, safety glasses, hard hat/bump cap, fall protection, electrical PPE and arc flash clothing). **ALWAYS** refer to appropriate Safety Data Sheets (SDS) and OSHA guidelines for proper PPE.
- When working with or around hazardous chemicals, **ALWAYS** refer to the appropriate SDS and OSHA/GHS (Global Harmonized System of Classification and Labelling of Chemicals) guidelines for information on allowable personal exposure levels, proper respiratory protection and handling instructions.
- If there is a risk of energized electrical contact, arc, or flash, technicians **MUST** put on all PPE in accordance with OSHA, NFPA 70E, or other country-specific requirements for arc flash protection, **PRIOR** to servicing the unit. **NEVER** PERFORM ANY SWITCHING, DISCONNECTING, OR VOLTAGE TESTING WITHOUT PROPER ELECTRICAL PPE AND ARC FLASH CLOTHING. ENSURE ELECTRICAL METERS AND EQUIPMENT ARE PROPERLY RATED FOR INTENDED VOLTAGE.

⚠ WARNING**Follow EHS Policies!**

Failure to follow instructions below could result in death or serious injury.

- All Trane personnel must follow the company's Environmental, Health and Safety (EHS) policies when performing work such as hot work, electrical, fall protection, lockout/tagout, refrigerant handling, etc. Where local regulations are more stringent than these policies, those regulations supersede these policies.
- Non-Trane personnel should always follow local regulations.

⚠ WARNING**Cancer and Reproductive Harm!**

This product can expose you to chemicals including lead and bisphenol A (BPA), which are known to the State of California to cause cancer and birth defects or other reproductive harm. For more information go to www.P65Warnings.ca.gov.

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Refresh Options Overview

The IntelliPak™ Refresh offering includes the following options.

- **Basic Refresh** is designed for users with well-running equipment. It addresses electrical, control, and cabinet-integrity wear points that typically occur during the middle of the units life. This service focuses on known wear items while reducing air leaks and improving energy efficiency.
- **Common Options** are generally done as part of an overall plan to extend the life of a unit 10 or more years. These options can be added to the Refresh operation with minimal disruption. A building with units that are 15 to 20 years old might see a pattern of barometric style damper failures. A common Refresh option is to replace all the remaining original barometric style

dampers in order to avoid the inconvenience of repairing them on a random basis in the future.

- **Sales Order Special** includes repairing components that address specific unit problems. These options generally require substantial planning and effort for their completion. These are not standard options. These are field-provided or are ordered as design specials. An example of a major option is repair or replace evaporator drain pan assembly. Drain pan leaks cause corrosion and provide opportunities for biological growth both in the unit and the surrounding area. This is a substantial project, but may be worthwhile when the alternative would be replacing the entire unit.

Table 1. IntelliPak refresh offerings

Scope	Basic Refresh (Standard)	Common Options	Sales Order Special
Initial evaluation for evidence of rust and corrosion damage.	X	—	—
Initial evaluation for evidence of heat exchanger damage and conditions to be addressed.	X	—	—
Initial evaluation for evidence of damaged, soiled, or soaked insulation should be cleaned, repaired or replaced.	X	—	—
Initial evaluation of drain pan condition and visually checked for evidence of biological accumulation.	X	—	—
Initial evaluation of heating and cooling system performance.	X	—	—
Initial evaluation of damage or wear to refrigeration lines and connections.	X	—	—
Replacement of internal airflow and air pressure switches electrical control components.	X	—	—
Replacement of cabinet door/panel gaskets, damper seals, missing fasteners, and failed panel latches to improve cabinet integrity.	X	—	—
Replacement of large power contactors for fans, compressors, and electric heat.	X	—	—
Installation of power protection monitor to prevent damage due to single phase and/or reversed phase operation.	X	—	—
Installation of outside air static pressure sensor, if available on the unit.	X	—	—
Replace the condenser coil temperature sensor, if available on the unit.	X	—	—
OEM warranty and nameplate component replacement.	X	—	—
Replace worn exhaust damper tip seals.	X	—	—
Replace unit condenser fan blades, brackets, and fan motors.	—	X	—
Replace broken condenser fan guard(s). Order one replacement for each broken guard.	—	X	—
Replace unit compressors. Choice of 2 or 5-year extended compressor parts warranty.	—	X	—
Replace compressor crankcase heaters, isolators, gasket, solenoid coils, thermostat sensors, and high/low pressure cutouts.	—	X	—
Replace supply fan bearings to minimize failure risk.	—	X	—
Replace worn damper actuators and rod bearings to reduce the possibility of air leakage and/or insufficient ventilation.	—	X	—
Replace worn dampers to reduce the possibility of air leakage and/or insufficient ventilation.	—	X	—
Replace worn gas heat exchanger, gas heat valves, and regulator with new gas valve train components to reduce the possibility of loss in heating operation.	—	X	—
Replace broken door latch(es) with latch kit(s). Order one latch kit for each broken latch.	—	X	—

Refresh Options Overview

Table 1. IntelliPak refresh offerings (continued)

Scope	Basic Refresh (Standard)	Common Options	Sales Order Special
Replace supply/exhaust/return fan motor for high-hour motors.	—	X	—
Replace Variable Frequency Drive(s) (VFD), including supply fan drive, exhaust/return fan drive, and compressor drive.	—	X	—
Replace condenser coil. (see Figure 1 , p. 6). Heat exchangers may experience mechanical damage, corrosion due to salt-air corrosion or chemicals, and other factors. Replacing damaged coils restores efficiency and prevents refrigerant leakage.	—	X	—
Replace worn expansion valves to prevent refrigerant loss.	—	X	—
Replace broken hail guard protect coil fins.	—	X	—
Replace fan pulleys and belts. Worn fan pulleys can accelerate belt wear and promote slippage, reducing system efficiency. Replacement of worn pulleys and belts is strongly recommended. Pulleys and belts may be field-provided or ordered as a design special as part of the kit.	—	—	X
Replace supply fan inlet guide vane assembly with supply fan VFD control. Guide vane failure results in loss of airflow control. Replacing worn assemblies with current Trane VFD controls is a cost-effective alternative to rebuilding and improves unit efficiency. VFD conversion is field-provided and -engineered. It is not offered as a design special part of the kit.	—	—	X
Replace IntelliPak™ modules to current specification, allowing upgraded controls and communications options. Upgrade control modules may be field-provided or ordered as a design special part of the kit.	—	—	X
Replace evaporator coils (see Figure 1 , p. 6). Heat exchangers can may experience mechanical or other damage. Replacing damaged coils restores efficiency and prevents refrigerant loss. Replacement evaporator coil may be field-provided or ordered as a design special.	—	—	X
Repair or replace evaporator drain pan assembly. Drain pan leaks cause corrosion and provide opportunities for biological growth both in the unit and the surrounding building and need to be addressed when discovered. Replacement drain pan may be field-provided or ordered as a design special part of the kit.	—	—	X
Repair or replace damaged unit insulation to improve unit efficiency and reduce risk of biological growth. Insulation is field-provided and not part of the kit.	—	—	X
Clean or replace the fan wheel and shaft. Replacement of the complete fan shaft, wheel, and bearing assembly is often more practical than replacing the bearings alone.	—	—	X

Figure 1. Major refresh option - replacing damaged coils





Initial Inspection

If a unit inspection was not performed before the Refresh parts were ordered, assess the equipment condition and its suitability for the application. Report any observed deficiencies to the owner/building manager before remediation.

Inspect for the following:

Rust and corrosion – Visually assess the unit for significant corrosion damage to the unit structure.

Condenser and evaporator coil condition – Visually assess unit coils for damage and check their leak history.

Thermal insulation – Visually check unit insulation for water damage, physical damage or being otherwise soiled.

Drain pan problems and biological growth – Visually check the unit drain pan for biological growth, leaks and/or wear and corrosion that has the potential to cause leaks.

Refrigeration system pressures and temperatures – Check refrigeration system temperatures and pressures for indication of improper charge levels or operation.

Refrigerant piping and joints – Visually inspect the condition of refrigerant lines and connections.



Model Number Descriptions

S*HJ 90 to 162 Ton

Digit 1 — Product Refresh

R = Product Refresh - Yes

Digit 2, 3, 4, 5 — Unit Function – Base Unit Digit 1 to 4

SFHJ = DX Cooling/Natural Gas Heat
SXHJ = DX Cooling/No Heat

Digit 6, 7, 8 — Nominal Capacity – Base Unit Digit 5, 6, 7

090 = 90 Tons
100 = 100 Tons
105 = 105 Tons
118 = 118 Tons
120 = 120 Tons
128 = 128 Tons
130 = 130 Tons
140 = 140 Tons
150 = 150 Tons
162 = 162 Tons

Digit 9 — Power Supply – Base Unit Digit 8

4 = 460/60/3
5 = 575/60/3

Digit 10 — Heat Selection – Base Unit Digit 9

0 = (0) No Gas Heat
A = (A) Low - Gas Heat 2-Stage
B = (B) Medium - Gas Heat 2-Stage
C = (C) High - Gas Heat 2-Stage
D = (D) Low - Gas Heat Modulating
E = (E) Medium - Gas Heat Modulating
F = (F) High - Gas Heat Modulating

Digit 11, 12 — Old Unit Design Sequence – Base Unit Digit 10, 11

A = A0 - Design Sequence
B = B0 - Design Sequence
C = C0 - Design Sequence
D = D0 - Design Sequence
E = E0 - Design Sequence
F = F0 - Design Sequence
G = G0 - Design Sequence
H = H0 - Design Sequence
J = J0 - Design Sequence
K = K0 - Design Sequence
L = L0 - Design Sequence
M = M0 - Design Sequence
N = N0 - Design Sequence
P = P0 - Design Sequence
R = R0 - Design Sequence
S = S0 - Design Sequence
T = T0 - Design Sequence
U = U0 - Design Sequence
V = V0 - Design Sequence
W = W0 - Design Sequence
X = X0 - Design Sequence
Y = Y0 - Design Sequence
Z = AA - Design Sequence

Digit 13 — Unit Configuration – Base Unit Digit 12

1 = (1) RT - 1 Piece Unit - W/O Blank Section
2 = (2) RT - 1 Piece Unit - 4 FT Blank Section
3 = (3) RT - 1 Piece Unit - 8 FT Blank Section
4 = (4) 2 Piece Unit - W/O Blank Section
5 = (5) 2 Piece Unit - 4 FT Blank Section
6 = (6) 2 Piece Unit - 8 FT Blank Section
7 = (7) RT - 3 Piece Unit - W/O Blank Section
8 = (8) RT - 3 Piece Unit - 4 FT Blank Section
9 = (9) RT - 3 Piece Unit - 8 FT Blank Section

Digit 14 — Airflow Direction – Base Unit Digit 13

1 = (1) Downflow Supply / Upflow Return
2 = (2) Downflow Supply / Horiz End Return
3 = (3) Downflow Supply / Horiz Right Return
4 = (4) Right Side Horiz Sply / Upflow Return
5 = (5) Right Side Horiz Sply / Horiz End Return
6 = (6) Right Side Horiz Sply / Horiz Right Return

Digit 15 — Supply Fan Selection – Base Unit Digit 14

1 = (1) High CFM Fan Motor(s)
2 = (2) High CFM Fan / High Eff. Motor(s)
3 = (3) High CFM Fan / TEFC Motor(s)
4 = (4) RT - Low CFM Fan Motor(s)
5 = (5) Low CFM Fan / High Eff. Motor(s)
6 = (6) RT - Low CFM Fan / TEFC Motor(s)
7 = (7) High CFM Fan / ODP with SGR Motor(s)
8 = (8) High CFM Fan / High Eff. with SGR Motor(s)
9 = (9) High CFM Fan / TEFC with SGR Motor(s)
A = (A) RT - Low CFM Fan / ODP with SGR Motor(s)
B = (B) Low CFM Fan / High Eff. with SGR Motor(s)
C = (C) RT - Low CFM Fan / TEFC with SGR Motor(s)

Digit 16 — Supply Fan Motor – Base Unit Digit 15

F = (F) 15HP
G = (G) 20HP
H = (H) 25HP
J = (J) 30HP
K = (K) 40HP
L = (L) 50HP
M = (M) 60HP
N = (N) 75HP
P = (P) RT - 100HP

Digit 17 — 100% Exhaust/Return Fan Option – Base Unit Digit 17

0 = (0) None
1 = (1) High CFM Exhaust w/o Statitrac - CV Only
2 = (2) Low CFM Exhaust w/o Statitrac - CV Only
3 = (3) High CFM Exhaust w/o VFD w/ Statitrac
4 = (4) Low CFM Exhaust w/o VFD w/ Statitrac
5 = (5) High CFM Exhaust w/ VFD w/Bypass
6 = (6) Low CFM Exhaust w/ VFD w/Bypass
7 = (7) High CFM Exhaust w/ VFD w/o Bypass
8 = (8) Low CFM Exhaust w/ VFD w/o Bypass

Digit 17 — 100% Exhaust/Return Fan Option – Base Unit Digit 17 (Continued.)

A = (A) High CFM Return w/o Statitrac - CV Only
B = (B) RT - Low CFM Return w/o Statitrac - CV Only
C = (C) High CFM Return w/ VFD w/ Bypass
D = (D) RT - Low CFM Return w/ VFD w/ Bypass
E = (E) High CFM Return w/ VFD w/o Bypass
F = (F) RT - Low CFM Return w/ VFD w/o Bypass

Digit 18 — Exhaust/Return Fan Motor – Base Unit Digit 18

0 = (0) None
D = (D) 7.5HP
E = (E) 10HP
F = (F) 15HP
G = (G) 20HP
H = (H) 25HP
J = (J) 30HP
K = (K) 40HP
L = (L) 50HP
M = (M) 60HP

Digit 19 — System Control Selection – Base Unit Digit 20

1 = (1) Constant Volume (Zone Temp Cntl)
2 = (2) VAV w/o Inlet Guide Vanes (Disch Air Cntl)
3 = (3) VAV w/ Inlet Guide Vanes (Disch Air Cntl)
4 = (4) VFD Supply W/o Bypass (Disch Air Cntl)
5 = (5) VFD Supply W/ Bypass (Disch Air Cntl)
6 = (6) Single Zone VAV W/VFD Sup W/O Bypass (Disch Air Cntl)
7 = (7) Single Zone VAV W/VFD Sup W/ Bypass (Disch Air Cntl)

Digit 20 — Fresh Air and Econ Options/Controls – Base Unit Digit 21

A = (A) 0 to 25% Motorized Damper
B = (B) Econ w/ Dry Bulb
C = (C) Econ w/ Reference Enthalpy
D = (D) Econ w/ Comparative Enthalpy
E = (E) Econo w/ Fresh Air Measure w/ Dry Bulb
F = (F) Econo w/ Fresh Air Measure w/ Ref Enth
G = (G) Econo w/ Fresh Air Measure w/ Comp Enth
H = (H) Econo w/ DCV/Dry Bulb
J = (J) Econo w/ DCV/Ref Enth
K = (K) Econo w/ DCV/Comp Enth

Digit 21 — Damper Option – Base Unit Digit 22

0 = (0) Standard
1 = (1) Low Leak
2 = (2) Ultra Low Leak

Digit 22 — Energy Recovery Wheel Option – Base Unit Digit 25

0 = (0) None
1 = (1) Low CFM ERW w/Bypass Defrost
2 = (2) High CFM ERW w/Bypass Defrost

Digit 23 — RT-Condenser Selection - Base Unit Digit 27

0 = (0) RT - Standard Aluminum Condenser Coils
 1 = (1) RT - Air-Cooled w/ Copper Fins
 A = (A) RT- Evaporative Condenser
 B = (B) RT - Evap Cond w/ Sump Heater
 C = (C) RT - Evap Cond w/ H₂O Treatment
 D = (D) RT - Evap Cond w/ H₂O Trtmt and Sump Htr
 E = (E) RT - Evap Cond w/ Conduivity Controller
 F = (F) RT - Evap Cond w/ Conduivity Controller and Sump Heater
 J = (J) RT - Corrosion Protected Condenser Coils

Digit 24 — Evap Coil and Drain Pan - Base Unit Digit 28

0 = (0) RT - Std-Cap Evap - Galvanized Pan
 A = (A) RT - Std-Cap Evap - Stainless Stl Pan
 B = (B) RT - Hi-Cap Evap - Galvanized Pan
 C = (C) RT - Hi-Cap Evap - Stainless Stl Pan
 D = (D) AH - No Drain Pan
 E = (E) AH - Galvanized Steel Drain Pan
 V = (V) RT - Variable Speed - Std Cap Evap - Galvanized Pan
 W = (W) RT - Variable Speed - Std Cap Evap - Stainless Steel Pan
 Y = (Y) RT - Variable Speed - Hi Cap Evap - Galvanized Pan
 Z = (Z) RT - Variable Speed - Hi Cap Evap - Stainless Steel Pan

Digit 25 — RT-Refrigerant System Option - Base Unit Digit 29

0 = (0) RT - Standard
 A = (A) RT - Suction Service Valves
 B = (B) RT - Replaceable Core Liquid Filter Driers
 C = (C) RT - Suct Svc Vlvs / Repl Core Liq Fltr Driers

Digit 26 — RT-Ambient Control Option - Base Unit Digit 31

0 = (0) RT - Standard Ambient
 1 = (1) RT - Low Ambient

Digit 27 — Remote Human Interface Option - Base Unit Digit 33

0 = (0) None
 1 = (1) Remote Human Interface and IPCB Bridge
 2 = (2) IPCB Only
 3 = (3) Rapid Restart

Digit 28 — Replacement Compressors

0 = (0) No Compressors
 1 = (1) Replace All Compressors

Digit 29 — Replacement Condenser Fan (Not for Evap Condenser)

0 = (0) No Condenser Fan
 1 = (1) Replace Condenser Fan Blade and Motor

Digit 30 — Replacement Condenser Fan Guard (Not for Evap Condenser)

0 = No Fan Guard
 1 = (1) Fan Guard QTY - 1
 2 = (2) Fan Guard QTY - 2
 3 = (3) Fan Guard QTY - 3
 4 = (4) Fan Guard QTY - 4
 5 = (5) Fan Guard QTY - 5
 6 = (6) Fan Guard QTY - 6
 7 = (7) Fan Guard QTY - 7
 8 = (8) Fan Guard QTY - 8

Digit 31 — Replacement Condenser Coil (Not for Evap Condenser)

0 = (0) No Condenser Coil
 1 = (1) Replace Cond Coil Circuit #1
 2 = (2) Replace Cond Coil Circuit #2
 3 = (3) Replace Cond Coil Both Circuit #1 and #2

Digit 32 — Replacement TXV

0 = (0) No TXV
 1 = (1) Replace TXV

Digit 33 — Replacement Gas Heat Exchanger

0 = (0) No Gas Heat Exchanger
 1 = (1) Replace Gas Heat Exchanger

Digit 34 — Replacement Gas Heat Motor

0 = (0) No Gas Heat Motor
 1 = (1) Replace Gas Heat Motor

Digit 35 — Replacement Gas Heat Switch

0 = (0) No Gas Heat Temperature Limit Switch
 1 = (1) Replace GH Temperature Limit Switch

Digit 36 — Replacement Return Air Damper

0 = (0) No Return Air Damper
 1 = (1) Replace Return Air Damper
 2 = (2) Replace Return Air Actuator
 3 = (3) Replace Return Air Linkage
 4 = (4) Replace Return Air Damper with Actuator
 5 = (5) Replace Return Air Damper with Linkage
 6 = (6) Replace Return Air Damper with Actuator and Linkage

Digit 37 — Replacement Fresh Air Damper

0 = (0) No Fresh Air Damper
 1 = (1) Replace Fresh Air Damper
 2 = (2) Replace Fresh Air Actuator (ERW)
 3 = (3) Replace Fresh Air Linkage
 4 = (4) Replace Fresh Air Damper with Actuator (ERW)
 5 = (5) Replace Fresh Air Damper with Linkage
 6 = (6) Replace Fresh Air Damper with Actuator and Linkage (ERW)

Digit 38 — Replacement Exhaust Damper

0 = (0) No Exhaust Damper
 1 = (1) Replace Return Air Damper (linkage included)
 2 = (2) Replace Exhaust Actuator
 3 = (3) Replace Return Air Linkage
 4 = (4) Replace Exhaust Air Damper (linkage included) with Actuator

Digit 39 — Replacement Exhaust Bypass Damper (ERW only)

0 = (0) No Exhaust Bypass Damper
 1 = (1) Replace Exhaust Bypass Damper
 2 = (2) Replace Exhaust Bypass Actuator
 3 = (3) Replace Exhaust Bypass Linkage
 4 = (4) Replace Exhaust Bypass Damper with Actuator
 5 = (5) Replace Exhaust Bypass Damper with Linkage
 6 = (6) Replace Exhaust Bypass Damper with Actuator and Linkage

Digit 40 — Replacement Fresh Air Bypass Damper (ERW only)

0 = (0) No Fresh Air Bypass Damper
 1 = (1) Replace Fresh Air Bypass Damper
 2 = (2) Replace Fresh Air Bypass Actuator
 3 = (3) Replace Fresh Air Bypass Linkage
 4 = (4) Replace Fresh Air Bypass Damper with Actuator
 5 = (5) Replace Fresh Air Bypass Damper with Linkage
 6 = (6) Replace Fresh Air Bypass Damper with Actuator and Linkage

Digit 41 — Replacement Economizer Sensors

0 = (0) No Economizer Sensors
 1 = (1) Replace Economizer Sensors

Digit 42 — Replacement Supply Fan Motor

0 = (0) No Supply Fan Motor
 1 = (1) Replace Supply Fan Motor

Digit 43 — Replacement Exhaust/Return Fan Motor

0 = (0) No Exhaust/return Fan Motor
 1 = (1) Replace Exhaust/return Fan Motor

Digit 44 — Replacement All Fan Bearings

0 = (0) No Fan Bearing
 1 = (1) Replace All Fan Bearing

Digit 45 — Replacement Air Pressure Sensor

0 = (0) No Air Pressure Sensor
 1 = (1) Replace Air Pressure Sensor



Model Number Descriptions

Digit 46 — Replacement Hail Guard

- 0 = (0) No Hail Guard
- 1 = (1) Replace Hail Guard

Digit 47 — Replacement VFD

- 0 = (0) No VFD
- 1 = (1) Replace Supply Fan Drive
- 2 = (2) Replace Exhaust Fan Drive
- 3 = (3) Replace Compressor Drive (VS Compressor Only)
- 4 = (4) Replace Condenser Fan Drives (Low Ambient Only)
- 5 = (5) Replace Sup and Exh Fan Drives
- 6 = (6) Replace Sup and Exh and Cond Fan Drives
- 7 = (7) Replace Sup and Exh and Comp Drive
- 8 = (8) Replace Sup and Exh and Cond Fan Drives and Comp Drive

Digit 48 — CMSA Connective Tool

- 0 = (0) No CMSA Connective Tool
- 1 = (1) CMSA Connective Tool
- 2 = (2) BCI-I Kit
- 3 = (3) CMSA with BCI-I



Pre-Installation

Nameplate

Two Refresh nameplate stickers ship in a separate envelope under part number 018503790100.

Remove each sticker from the backing and place on the unit in the following locations:

1. Beneath the existing unit nameplate.
2. Inside the control panel door.

Parts

See the tables and figures in this section to verify all required parts have been received.

- Required parts will vary based on the selected options and the specific unit being refreshed.
- See Refresh model number on the nameplate sticker to verify selected options.

Standard Parts

Confirm the following standard parts have been provided:

- Compressor contactors and auxiliary switches
- Supply fan contactors
- Condenser fan contactors
- Supply fan proving switch, and phase monitor
- Gasket material, decorative brass refresh nameplate, and screws for access doors and panels
- Outside air static pressure sensor
 - Outdoor air pressure static sensor
 - Air pressure static sensor bracket
 - Tube

The following parts are standard, but are dependent on the existing unit options:

- Exhaust fan or return fan contactors
- Exhaust fan proving switch kit
- Gas ignitor and combustion fan proving switch
- Damper tip seal
- Thermistor sensors on condenser coils
- Control panel handle and latch

Optional Parts

Options parts listed below may be provided:

- Supply fan motor and bearing
 - Supply fan motor
 - Bearing
- Exhaust fan motor and bearing
 - Exhaust fan motor

- Bearing
- Return fan motor
- Condenser fan
 - Condenser fan blades
 - Condenser fan motors
 - Bracket and screws
 - Wire harness
 - Fan guards
- Compressor and the related parts
 - Scroll compressors
 - Scroll compressor band heaters
 - Isolators and sleeves
 - Gasket for oil equalizing tube
 - Solenoid coil (E-flex compressor)
 - Thermostat
 - High/low pressure cutouts
- Expansion valves and filter driers
- Exhaust damper, actuator, and linkage
 - Exhaust damper
 - Exhaust actuator
 - Linkages
- Return and fresh air damper, actuator, linkages, and sensors
 - Return and fresh air damper
 - Return and fresh air actuator
 - Linkages
 - Sensors
- Exhaust bypass damper, actuator, and linkage (unit with energy recovery wheel)
- Fresh air bypass damper, actuator, and linkage (unit with energy recovery wheel)
- Condenser assembly
 - Condenser coils
- Door latch kit installation
 - Replacement knob
 - Replacement bracket
 - Replacement latch
 - Self-drilling screws
- Gas heat exchanger and the related parts
 - Gas heat exchangers
 - Gas heat motor
 - Limit control
- Air pressure sensor



Pre-Installation

- Transducer
- Hail guard
- Drive and keypad
- CMSA connectivity tool
 - Tracer SC+ gateway kit
 - BCI-I kit

Design Special Parts

Some design special options are available. The specific part numbers are unique for each order.

Note: *Design special options will extend the lead time for the entire order.*

Examples of common design specials include:

- Gas heat valves and pressure regulators.
- Supply fan VFD to replace inlet guide vanes.
- Inverter duty supply fan motor.
- Evaporator coil.
- Fan pulleys and belts as they are unit specific.

Note: *Belt and fan pulley replacement is highly recommended and can be implemented by Sales Office.*

Additional Service Procedures

Some Refresh projects may include additional procedures, such as:

- Supply fan and housing cleaning.
- Drain pan repair and cleaning.
- Unit insulation repairing and/or replacement.

Installation

Refresh Standard Parts

Standard refresh parts include:

- Contactors (compressor, supply fan, condenser fan, and exhaust/return fan)
- Proving switches (supply fan, exhaust fan)
- Phase monitor
- Gasket material
- Decorative brass refresh nameplate
- Outside air static pressure sensor
- Gas igniter with fan proving switch
- Damper tip seal
- Condenser-coil thermistor sensor

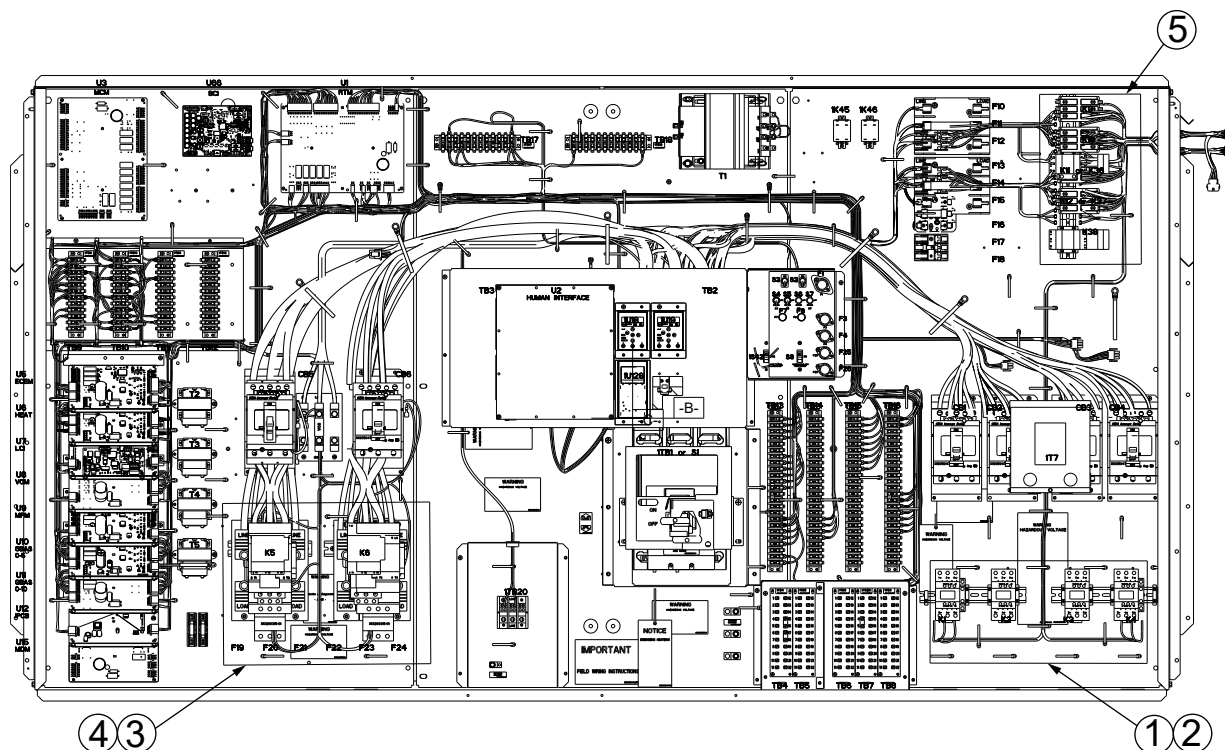
- Control-panel handle and latch

Contactors and Auxiliary Switches

Table 2. Contactor kit

Item	Description
1	Compressor Contactors
2	Compressor Auxiliary Switches
3	Supply Fan Contactor
4	Exhaust/return Fan Contactor
5	Condenser Fan Contactors

Figure 2. Contactors in control box



Supply Fan Proving Switch and Phase Monitor

Table 3. Supply fan proving switch and phase monitor kit

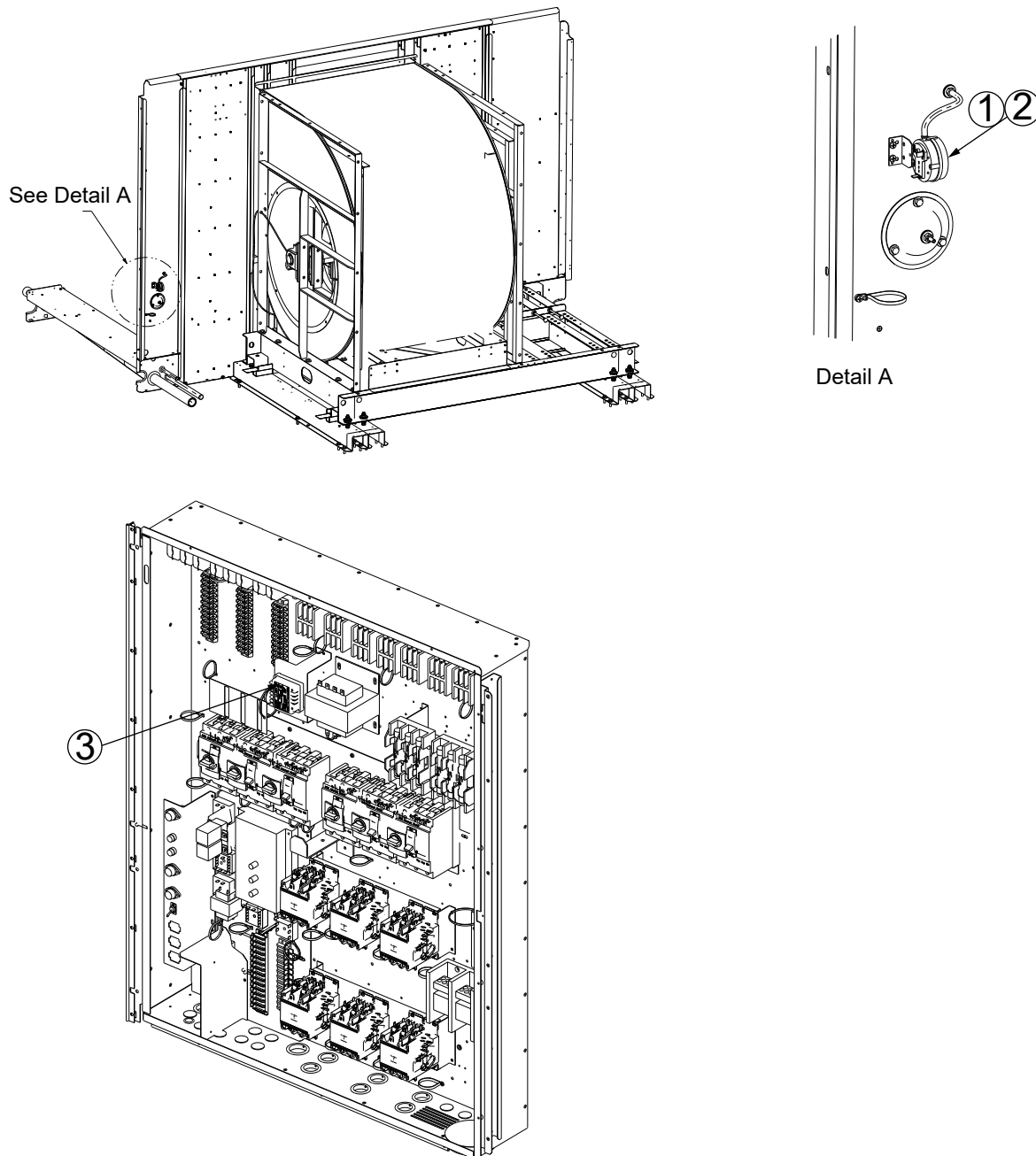
Item	Description
1	Air Pressure Controller
2	Tube

Table 3. Supply fan proving switch and phase monitor kit (continued)

Item	Description
3	Phase Monitor

Note: Phase monitor is in control box.

Figure 3. Supply fan proving switch and phase monitor kit



Gasket Material and Screws for Access Doors and Panels

Table 4. Gasket and screws for access doors and panels

Item	Description
1	Gasket (roll)
2	Screws

Notes:

1. Gaskets and screws in this kit are intended for use on all unit access doors. Stationary panels, gaskets, and screws are not typically replaced.
2. Two screw sizes are provided:
 - SCR01557 - 1/4-14 X 0.625
 - SCR02523 - 5/16 X 3/4
3. Decorative Brass Refresh Nameplate

Figure 4. Gasket and screws for access doors and panels

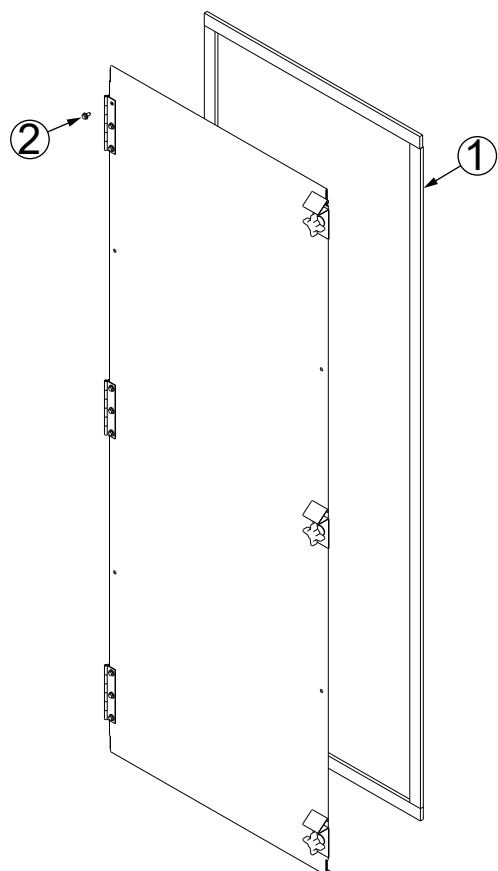


Figure 5. Decorative brass refresh nameplate

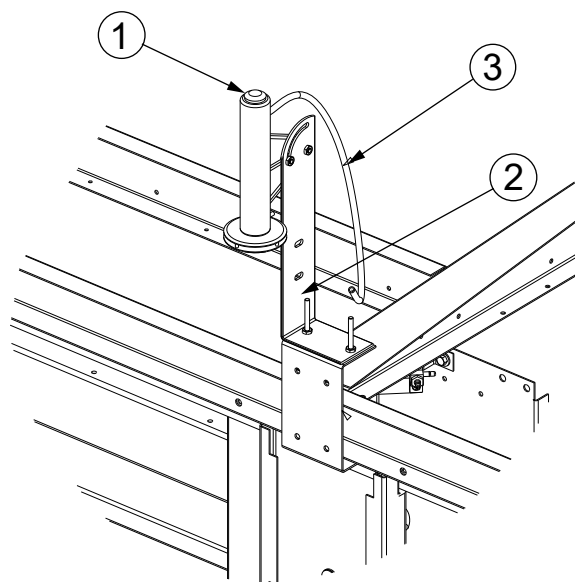


Outside Air Static Pressure Sensor

Table 5. Outside air static pressure sensor kit

Item	Description
1	Outdoor Air Static Pressure Sensor
2	Sensor Bracket
3	Tube

Figure 6. Outside air static pressure sensor kit

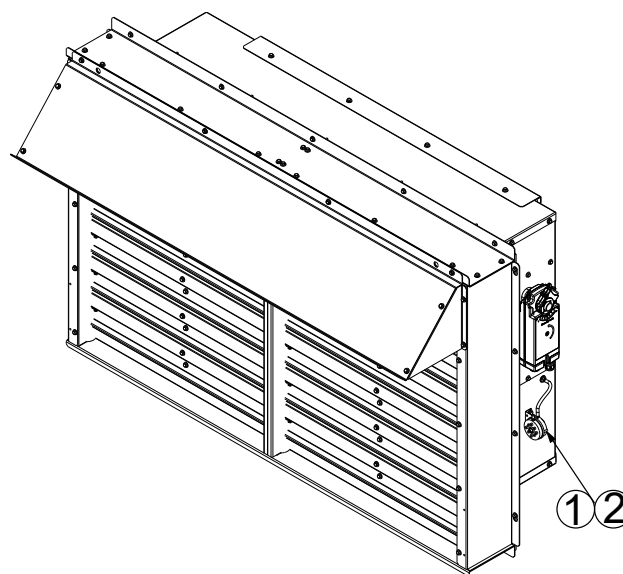


Exhaust Fan Proving Switch

Table 6. Exhaust fan-proving switch kit

Item	Description
1	Exhaust Fan Proving Switch
2	Tube

Figure 7. Exhaust fan-proving switch kit

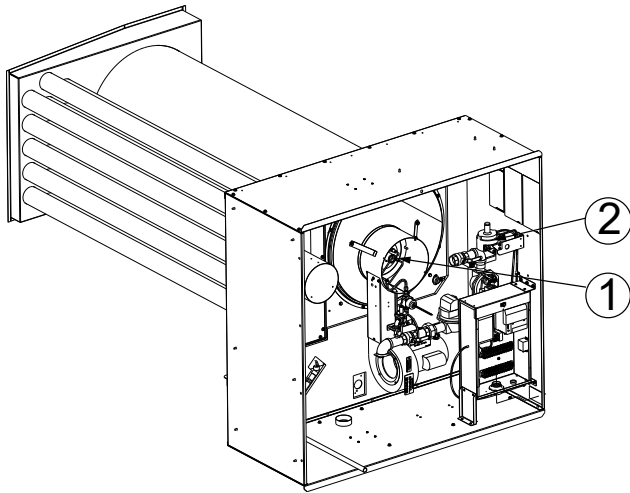


Gas Ignitor and Combustion Fan Proving Switch

Table 7. Gas igniter and combustion fan proving switch

Item	Description
1	Ignitor
2	Combustion Fan Proving Switch

Figure 8. Gas igniter and combustion fan proving switch locations

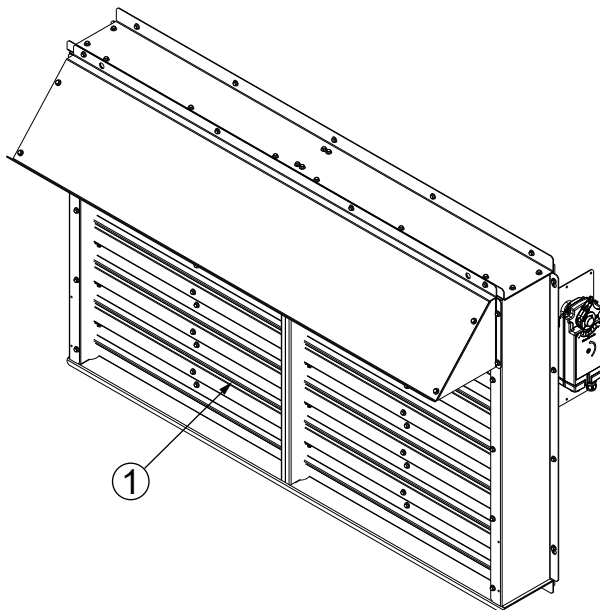


Exhaust Damper Tip Seal

Table 8. Exhaust damper tip seal

Item	Description
1	Exhaust Damper Tip Seal

Figure 9. Exhaust damper tip seal



Thermistor Sensors on Condenser Coils

Item	Offering	Description
1	Sensor	Thermistor Sensor

Figure 10. Thermistor sensor on condenser coils (fin-tube coil)

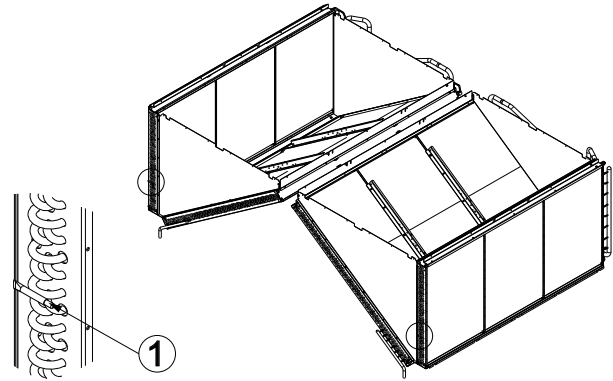
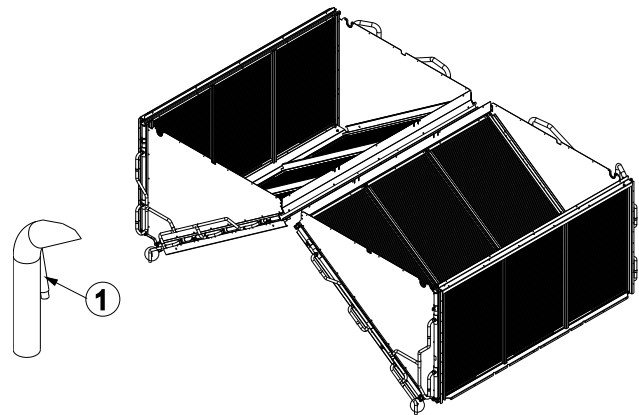


Figure 11. Thermistor sensor on condenser coils (MCHE coil)

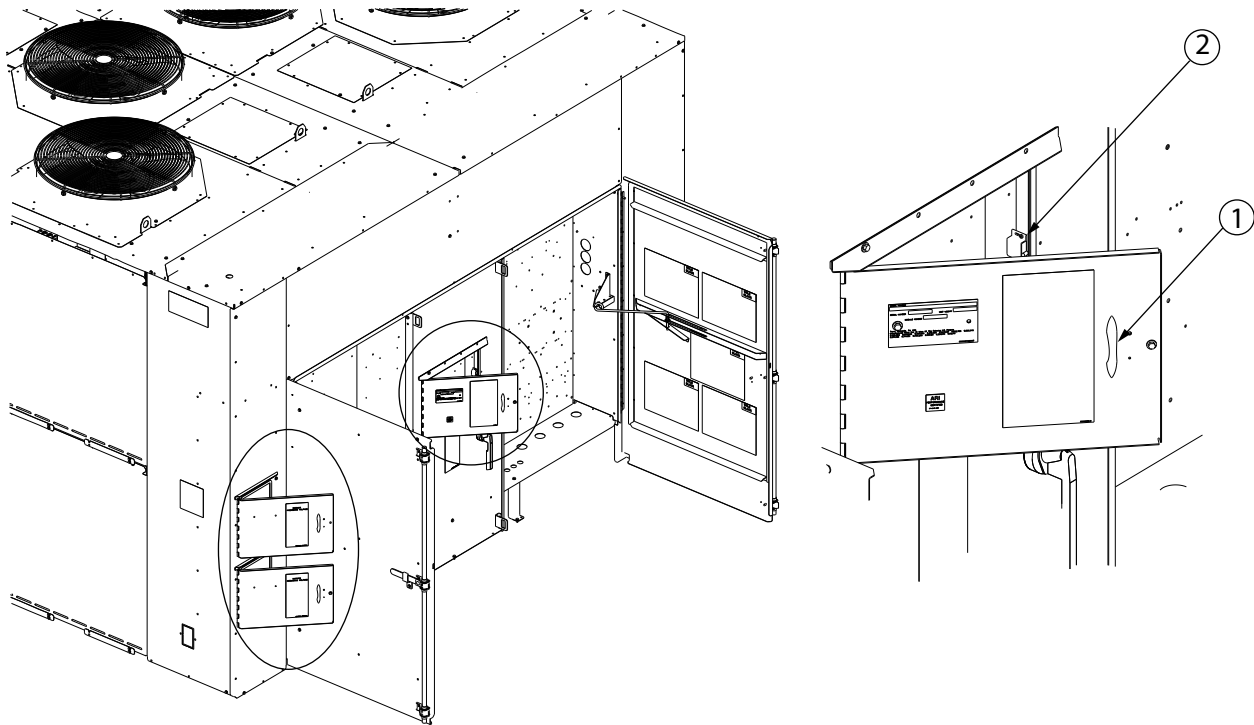


Control Panel Handle and Latch

Table 9. Handle and latch

Item	Description
1	Plastic Handle
2	Latch

Figure 12. Control panel handle and latch



Refresh Optional Parts

Option refresh parts include:

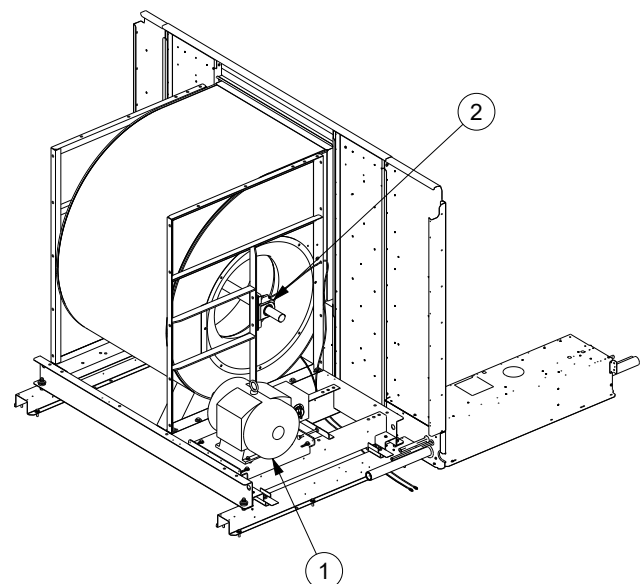
- Supply fan motor and bearing
- Exhaust fan motor and bearing
- Return fan motor
- Condenser fan
- Compressors
- Expansion valve and filter drier
- Exhaust damper
- Economizer damper
- Actuator and linkage
- Fresh air damper
- Condenser coil
- Low ambient damper
- Low ambient damper actuator
- Fan guard
- Door latch
- Gas heat exchanger
- Air pressure sensor
- Hail guard
- Drive and keypad
- CMSA connectivity tool

Supply Fan Motor and Bearing

Table 10. Supply fan motor and bearing

Item	Description
1	Supply Fan Motor
2	Bearing

Figure 13. Supply fan motor and bearing



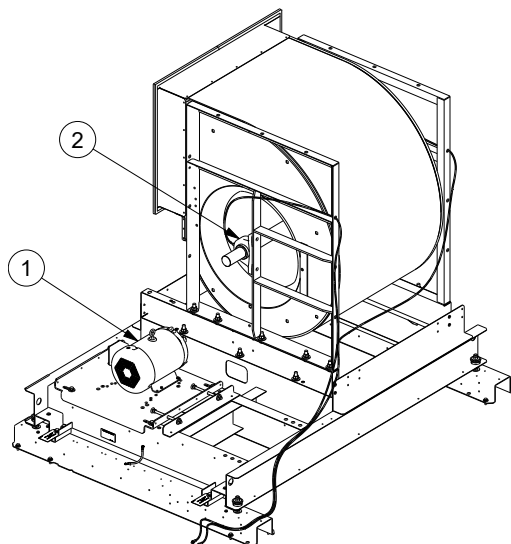
Exhaust Fan Motor and Bearing

Table 11. Exhaust fan motor and bearing

Item	Description
1	Exhaust Fan Motor
2	Bearing

Note: The unit has either an exhaust fan or a return fan.

Figure 14. Exhaust fan motor and bearing

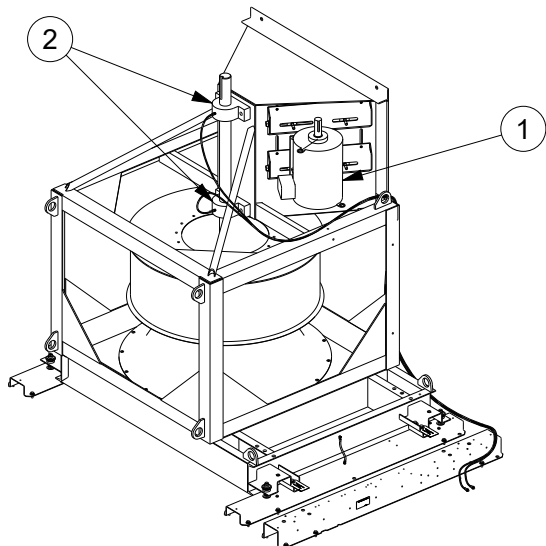


Return Fan Motor and Bearing

Table 12. Return fan motor and bearing

Item	Description
1	Return Fan Motor
2	Bearing

Figure 15. Return fan motor and bearing

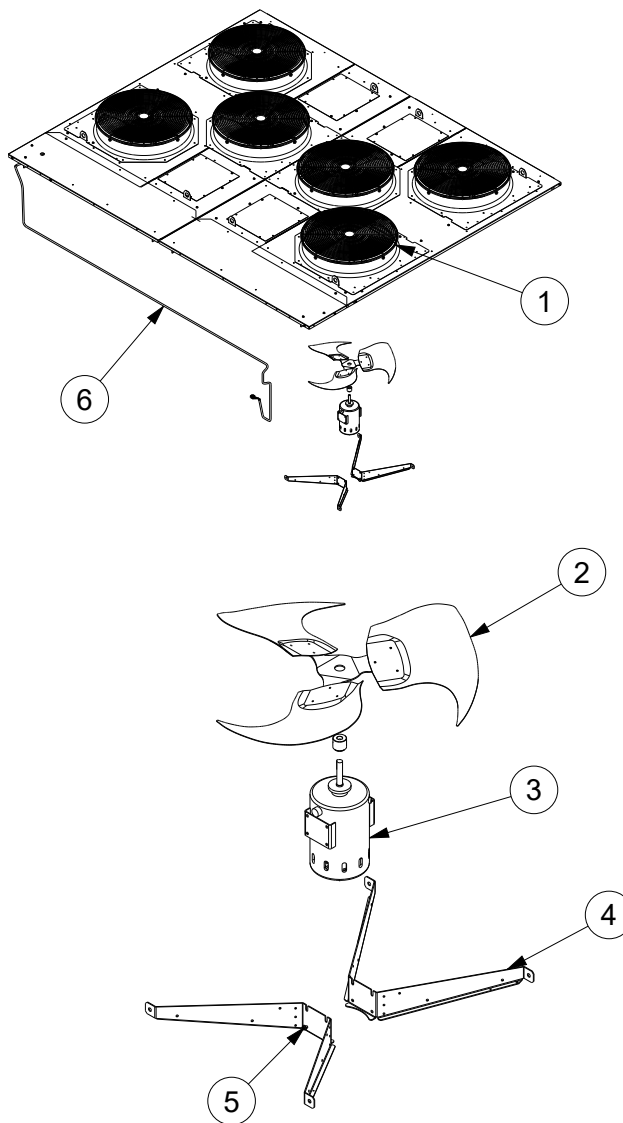


Condenser Fan

Table 13. Condenser fan kit and fan guard

Item	Offering	Description
1	Fan guard	OD Fan Guard
2	Condenser fan kit	OD Fan Blade
3		OD Fan Motor
4		Bracket
5		Screw
6		Wire

Figure 16. Condenser fan kit and fan guard



Compressor and Related Parts

Table 14. Compressor and related parts

Item	Offering	Description
1	Compressor and CCH	Compressor
2		Crankcase Heater
3	Compressor accessory kit	Spacer
4(a)		Gasket
5(b)		Solenoid Coil (E-flex compressor only)
6		Low Pressure Cutout
7		High Pressure Cutout

Table 14. Compressor and related parts (continued)

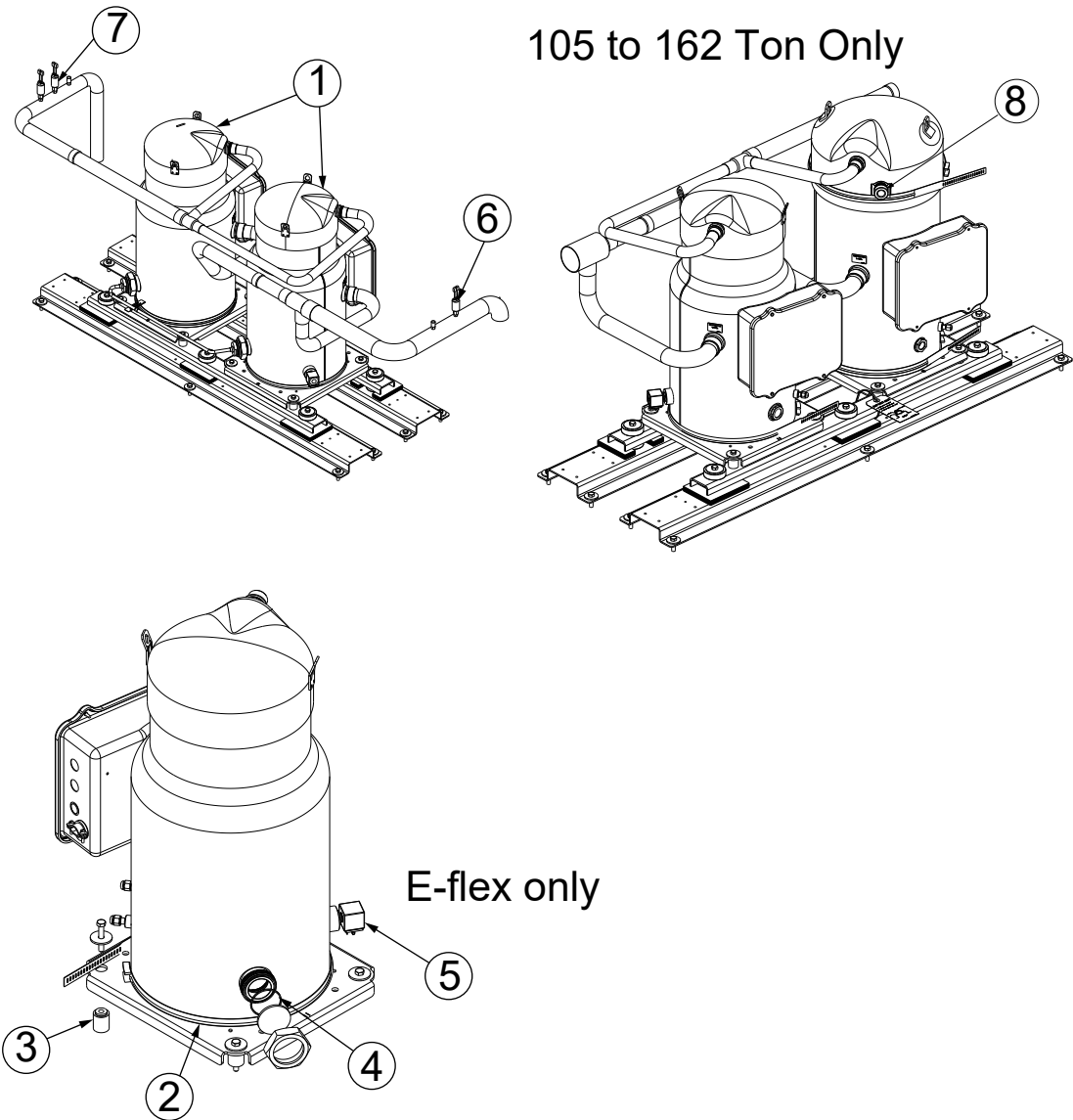
Item	Offering	Description
8(c)	Sensor	Thermostat Sensor

(a) Gasket is included in the compressor kit. For the unit with E-flex compressor, the gasket for the manifolded E-flex compressor is included in the compressor accessory kit.

(b) E-flex compressors only.

(c) Only required for 105 to 162 ton models. Mounted on the upper crankcase heater.

Figure 17. Compressor and related parts



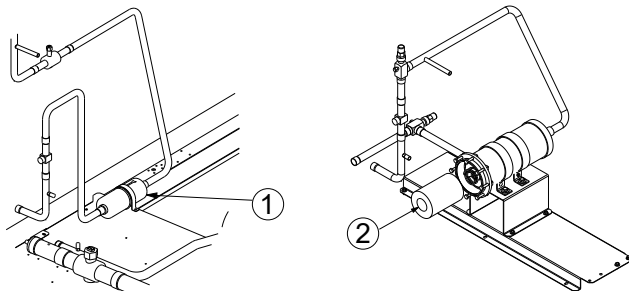
Filter Drier

Table 15. Filter drier

Item	Description
1	Filter Drier (Standard Filter Drier)
2	Filter Drier Core (Replaceable Core Filter Drier)

Note: The unit has either standard filter drier or replaceable core filter drier.

Figure 18. Filter drier

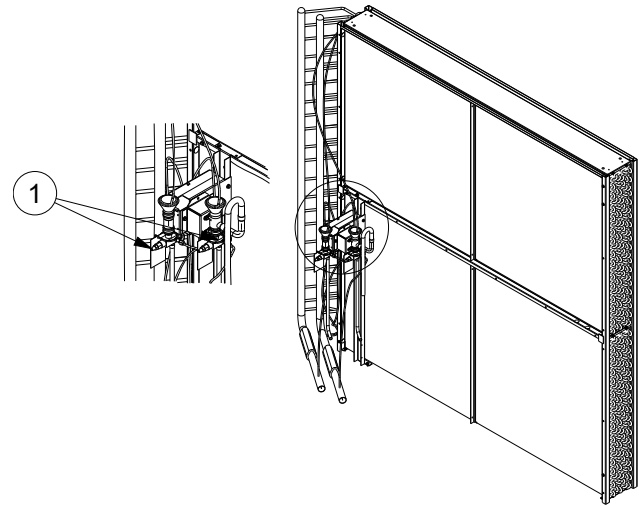


Expansion Valves

Table 16. Expansion valves

Item	Description
1	Expansion Valves

Figure 19. Expansion valves



Damper, Actuator, and Linkage

Figure 20. All dampers with ERW

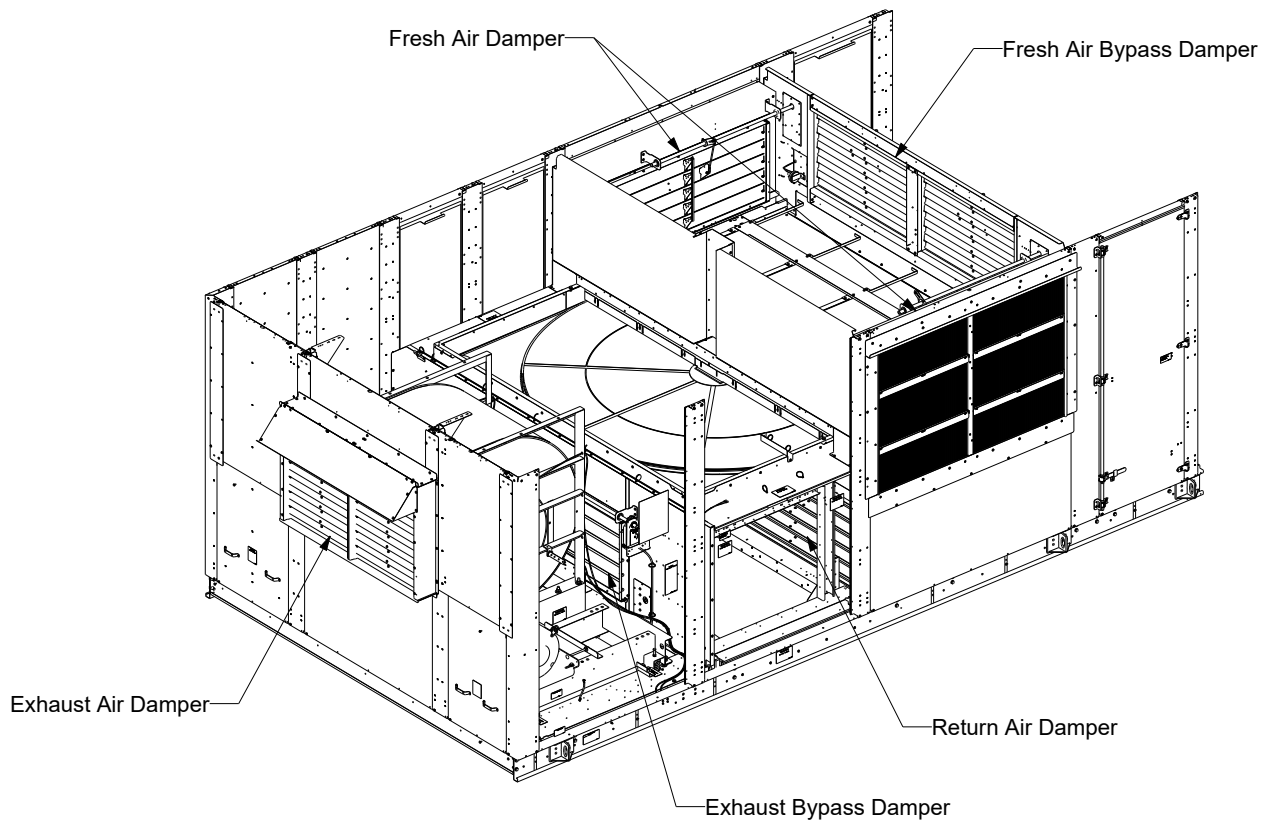
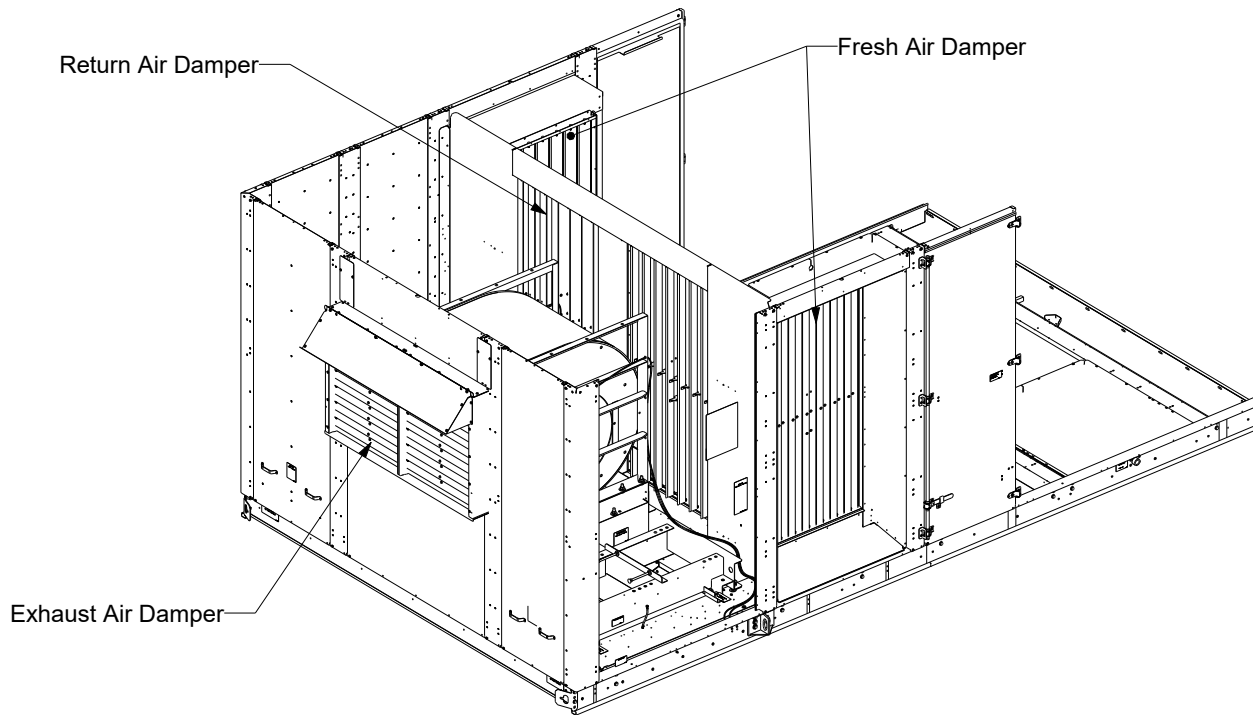


Figure 21. All dampers without ERW

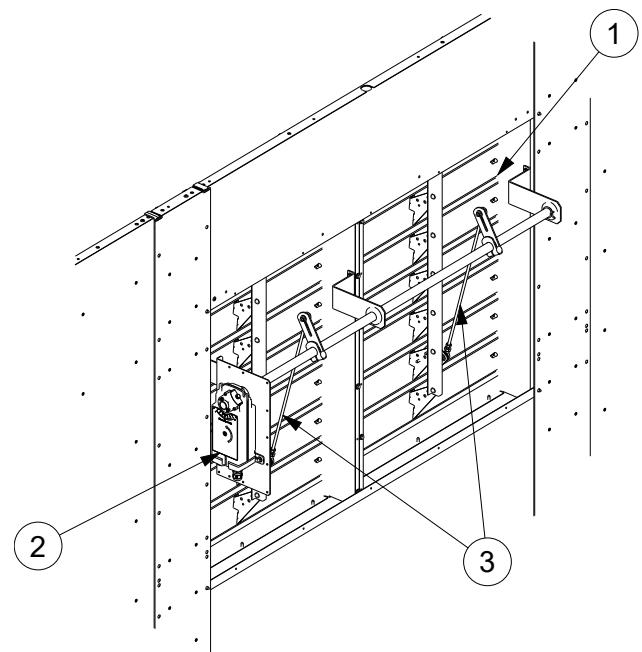


Exhaust Air Damper, Actuator, and Linkage

Table 17. Exhaust damper, actuator, and linkages

Item	Description
1	Exhaust damper
2	Actuator
3	Linkage

Figure 22. Exhaust damper, actuator, and linkages

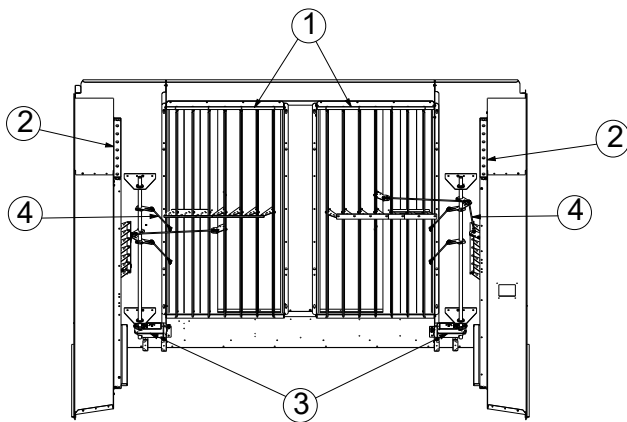


Return and Fresh Air Damper, Actuator, and Linkage

Table 18. Return and fresh air damper, actuator, and linkages

Item	Description
1	Return air damper
2	Fresh air damper
3	Actuator
4	Linkage

Figure 23. Return and fresh air damper, actuator, and linkages

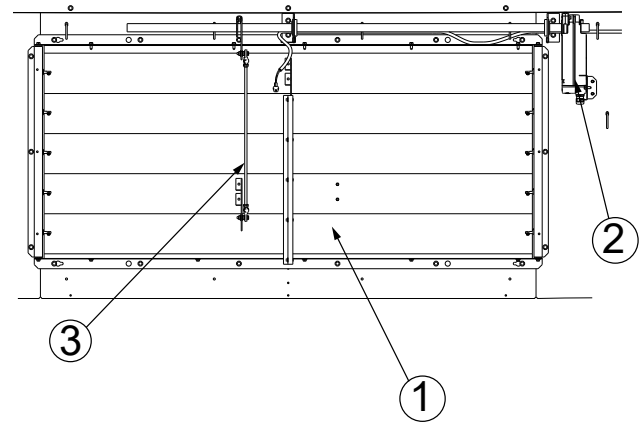


Exhaust Bypass Damper, Actuator, and Linkage

Table 19. Exhaust bypass damper, actuator, and linkages

Item	Description
1	Exhaust Bypass Damper
2	Actuator
3	Linkage

Figure 24. Exhaust bypass damper, actuator, and linkages

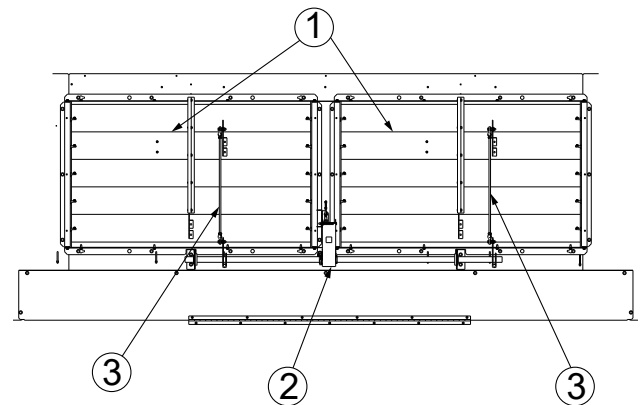


Fresh Air Bypass Damper, Actuator, and Linkage

Table 20. Fresh air bypass damper, actuator, and linkages

Item	Description
1	Fresh Air Bypass Damper
2	Actuator
3	Linkage

Figure 25. Fresh air bypass damper, actuator, and linkages

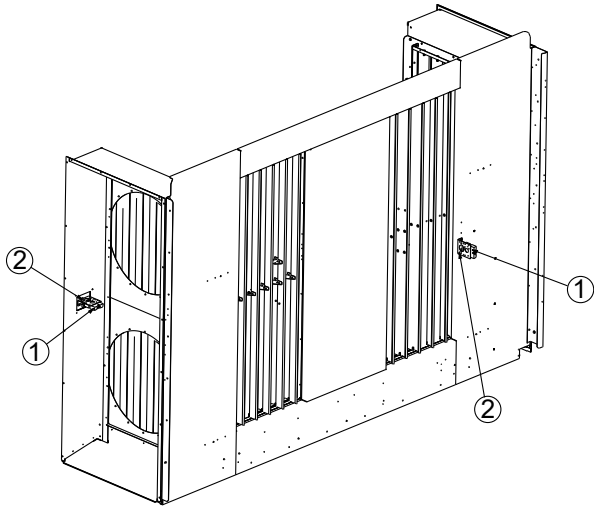


Sensors on Return and Fresh Air Dampers

Table 21. Sensors on Return and Fresh Air Dampers

Item	Description
1	Humidity Sensor
2	Thermister Sensor

Figure 26. Sensors on return and fresh air dampers

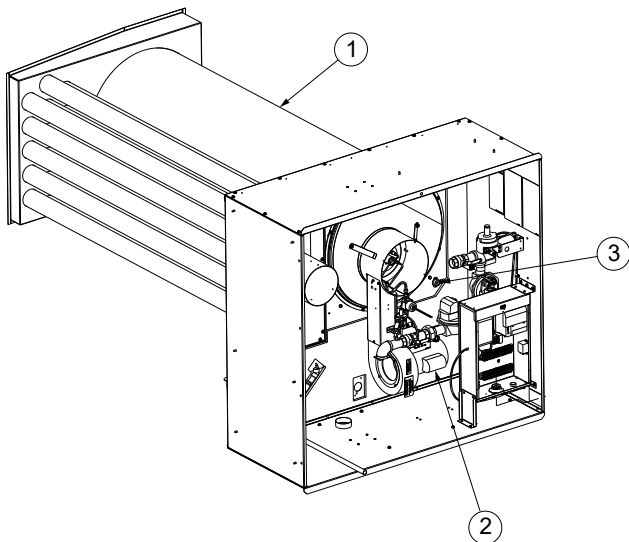


Gas Heat Exchanger, Motor and Limit Control

Table 22. Gas heat exchanger, motor and limit control

Item	Description
1	Gas Heat Exchanger
2	Motor
3	Limit Control

Figure 27. Gas heat exchanger, motor and limit control

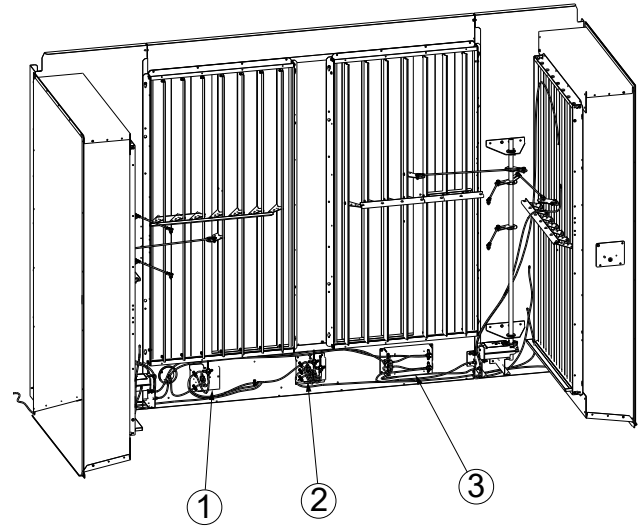


Air Pressure Sensor

Table 23. Air pressure sensor kit

Item	Description
1	Return Air Transducer
2	Duct/space Pressure Transducer
3	Air Measurement Transducer

Figure 28. Air pressure sensor kit

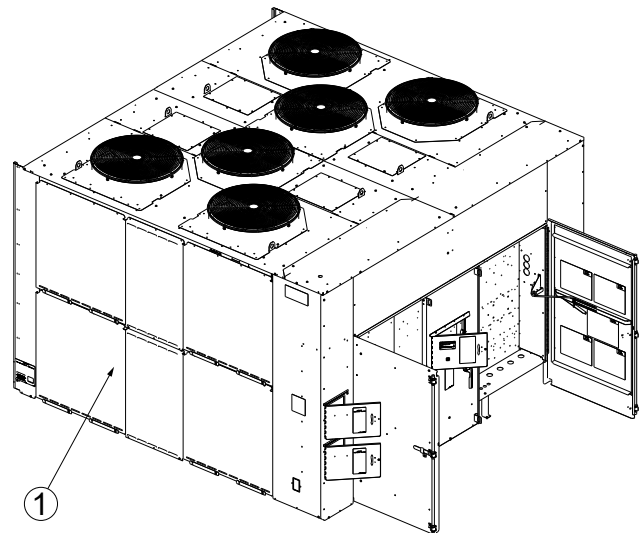


Hail Guard

Table 24. Hail guard

Item	Description
1	Hail Guard Panel

Figure 29. Hail guard

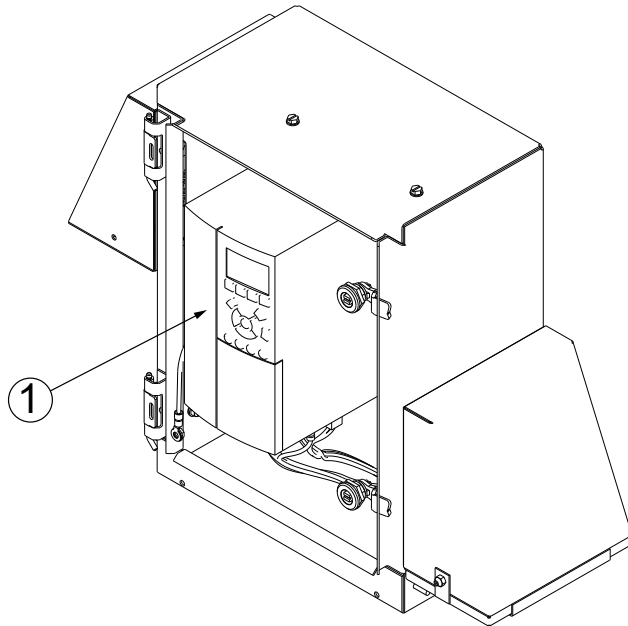


Variable Frequency Drive

Table 25. VFD

Item	Description
1	VFD

Figure 30. VFD



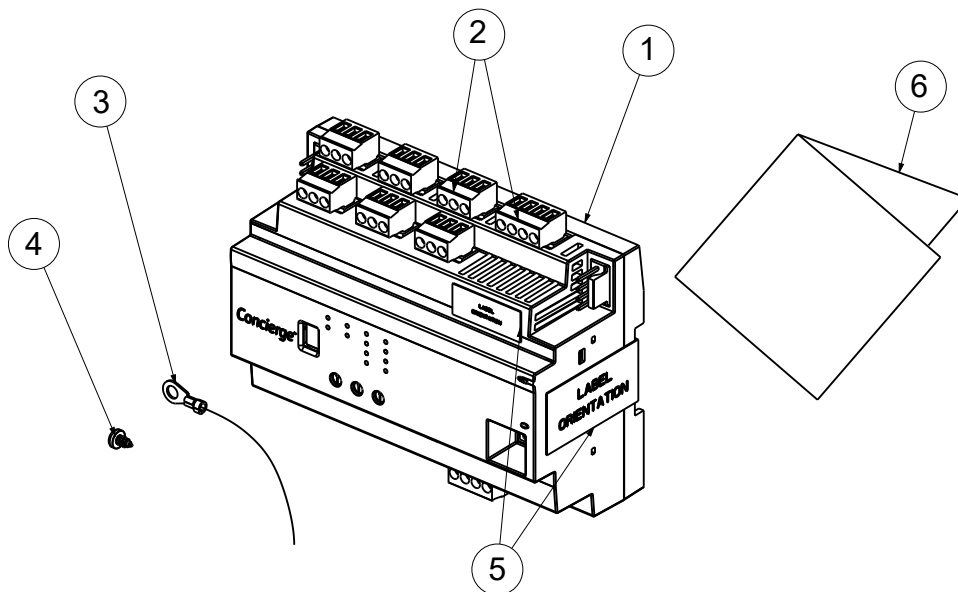
CMSA Connectivity Tool

Tracer SC+ gateway kit and/or BCI-I kit

Table 26. Tracer SC+ gateway (KIT18461) kit

Item	Description
1	Module Tracer SC+
2	Contactor
3	Wire
4	Self Tapping Screw
5	Label
6	Literature

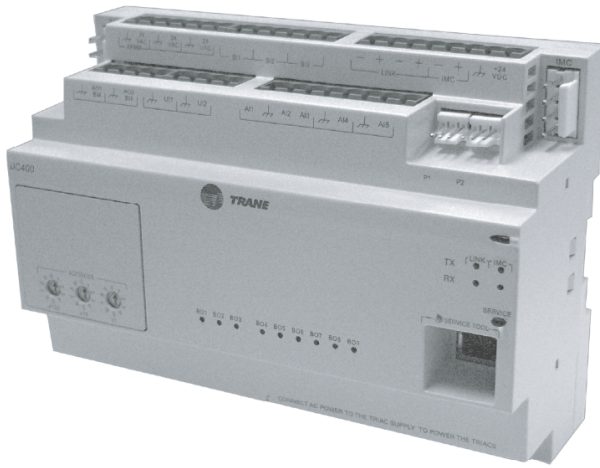
Figure 31. Tracer SC+ gateway (KIT18461) kit



BCI-I Kit

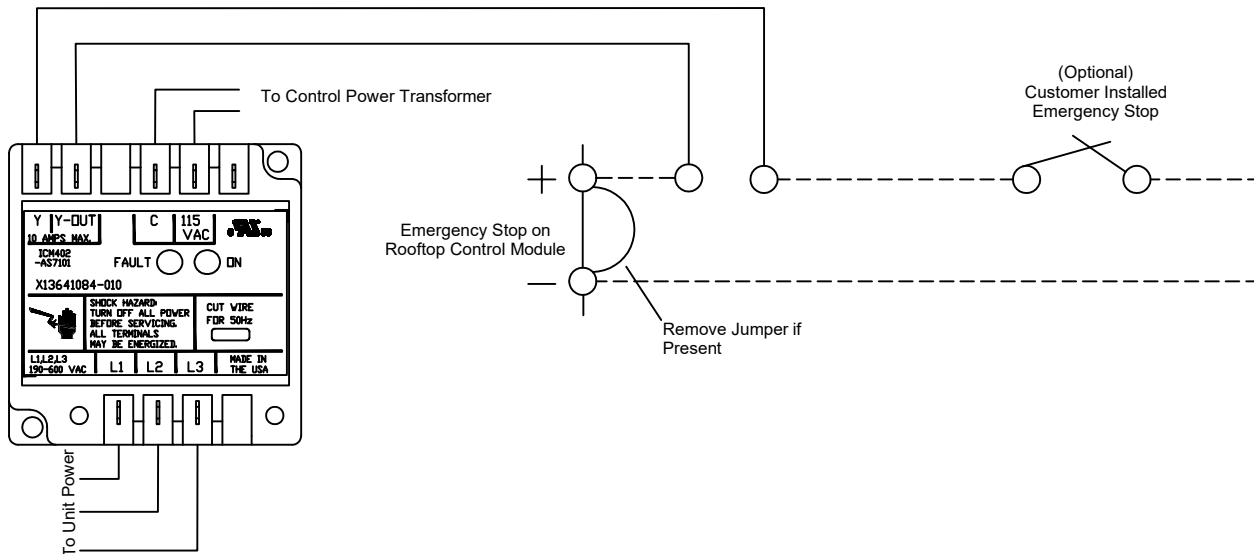
Note: See literature in BCI-I (KIT15634) kit for installation.

Figure 32. BCI-I (KIT15634) kit



Phase Monitor Diagram

Figure 33. Phase monitor diagram



- The phase monitor module interfaces with the existing unit in three places. Terminals labeled L1, L2, and L3 should be connected to the three-phase power entering the unit (after the unit disconnect if present).
 - The terminal labeled 115 Vac should be wired to the hot leg of the control power transformer (CPT), while the terminal labeled C should be wired to the neutral leg of the CPT. Terminals Y and Y-OUT are the terminals of a normally open switch that is actuated by the phase monitoring circuit. The switch is closed when three-phases are present and open when a phase or control power is lost. The switch is rated for a maximum of 10 at 28 Vdc and a minimum of 10 mA at 5 Vdc. This switch needs to be wired to the unit controls in order to shutdown the unit.
 - Trane recommends wiring terminals Y and Y-OUT to the emergency stop on the Rooftop Control Module.
 - If the jumper that shipped with the unit is present, it should be removed. If the control has been wired to an external switch, the phase-loss module should be wired in series with this switch.
 - For units that do not have IntelliPak controls the wire terminals Y and Y-OUT could be connected to either the Remote Signal Input, Compressor Status, or other location depending on how the unit was wired after it was installed.
- Connect the phase monitor module to the unit as follows:



Installation

- a. Connect L1, L2, and L3 to the incoming three-phase power, downstream of the unit disconnect if present.
 - b. Connect 115 Vac to the hot leg of the control power transformer (CPT).
 - c. Connect C to the neutral leg of the CPT.
2. Y and Y-OUT form a normally open switch operated by the phase monitor circuit:
- The switch closes when three-phase power is present.
 - The switch opens if a phase or control power is lost.
 - Switch rating: 10 A maximum at 28 Vdc; 10 mA minimum at 5 Vdc.

Connect Y and Y-OUT to the unit control circuit emergency stop input on the rooftop control module to shut down the unit on phase or control power loss:

- a. Remove the factory-installed jumper, if present.
- b. If the control is already wired to an external switch, wire the phase-loss module in series with that switch.
- c. On units without IntelliPak controls, connect Y and Y-OUT to the Remote Signal Input, Compressor Status, or another suitable shutdown point, based on the installed unit wiring.

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