



# Installation Instructions

Part No. 30GT911054

## GENERAL

These installation instructions cover field installation of the accessory hot gas bypass valve, pilot valve, and hot gas solenoid. For 30GT units, these instructions are intended for units with a starting serial number of 2294F--- or higher. The hot gas bypass package is not required on 30GT015, 50 Hz units or on 30GT020, 60 Hz units, since these 2 units have hot gas bypass installed as standard from the factory. See table below for a listing of package contents.

NOTE: Since the 30GT015-035 and 38AKS014-024 units are single-circuit units, only one accessory package is required per unit.

## ACCESSORY PACKAGE CONTENTS

ITEM	QUANTITY	PART NO.
Pilot Valve	1	EF11BS038
Hot Gas Solenoid With Clip	1	EF19XS024
Hot Gas Bypass Valve	1	EA52DC421

In addition, the following parts will need to be field-supplied:

- 1/4-in. refrigerant grade copper tubing (amount will vary with application)
- 3/8-in. refrigerant grade copper tubing (amount will vary with application)
- 5/8-in. refrigerant grade copper tubing (amount will vary with application)
- For 30GT units, one manual shut-off valve for 5/8-in. line
- One 3-way-tee with an internal branch OR one standard 3-way tee (depending on application - see Pilot Valve and Hot Gas Solenoid section for more information)
- For 38AKS/indoor coil split system, an auxiliary side connector may be required.

**Examine Package Contents** — Examine each item in the package. If any part is damaged or missing, file a claim immediately with the shipper. See table above for accessory package contents.

## SAFETY CONSIDERATIONS

Installing, starting up, and servicing air-conditioning equipment can be hazardous due to system pressures, electrical components, and equipment location.

Only trained, qualified installers and service technicians should install, start up, and service this equipment.

When working on air-conditioning equipment, observe precautions in the literature and on tags, stickers, and labels attached to the equipment.

Follow all safety codes. Wear safety glasses and work gloves. Use care in handling equipment.

### **⚠ WARNING**

Be sure power to equipment is shut off before performing maintenance or service functions. Electrical shock may cause personal injury.

## INSTALLATION IN 30GT AIR-COOLED CHILLERS

### Step 1 — Install Piping

### **⚠ WARNING**

Shut off all power to the unit and remove refrigerant charge before continuing with this accessory installation. Failure to do so may result in personal injury.

See Fig. 1 for a schematic of the unit piping.

**BYPASS LINE** — Install the 5/8 in., field-supplied line between the factory-supplied stubs in the discharge line (from the compressor) and in the liquid line between the expansion valve and cooler. See Fig. 2.

NOTE: The stubs are sealed as shipped from the factory.

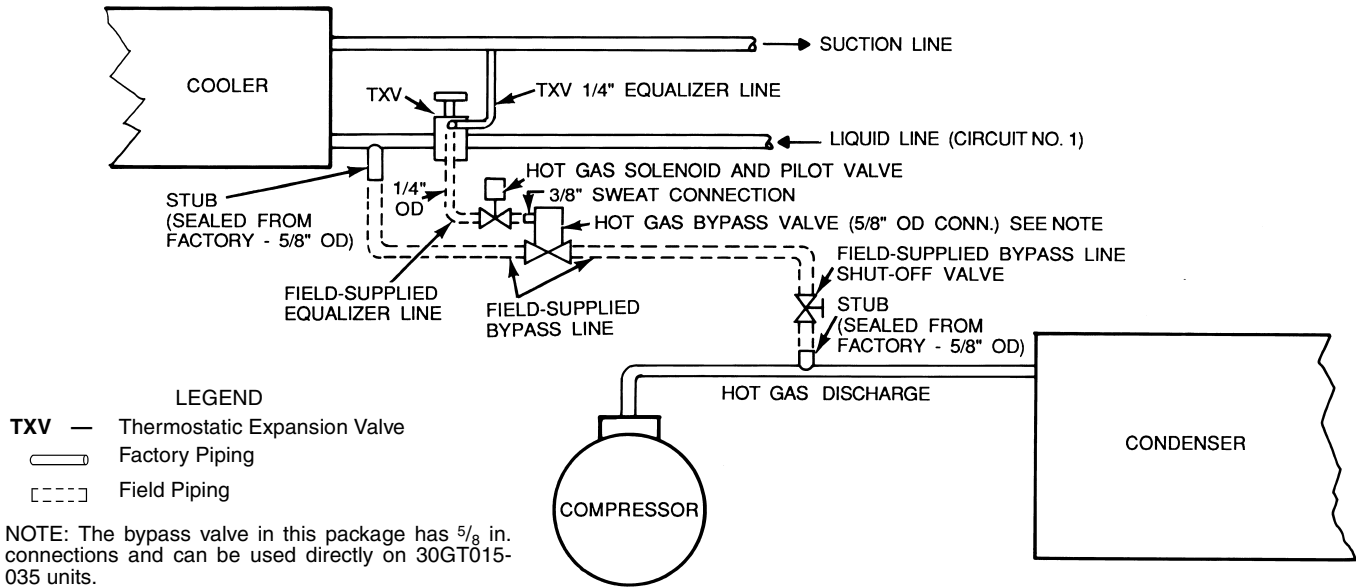
Install the field-supplied shut-off valve in the bypass line as close to the discharge line as possible. The shut-off valve will aid in the pumpdown of the low side when closed.

**HOT GAS BYPASS VALVE** — Install the valve in the bypass line near the shut-off valve installed in the Bypass Line section above. The bypass valve has 5/8 in. ODF inlet and outlet (one each), and a 3/8 in. ODM equalizer port (sweat connection). To ensure proper operation, the valve should be installed in a horizontal section of the bypass line and the pilot valve should be installed above bypass valve body.

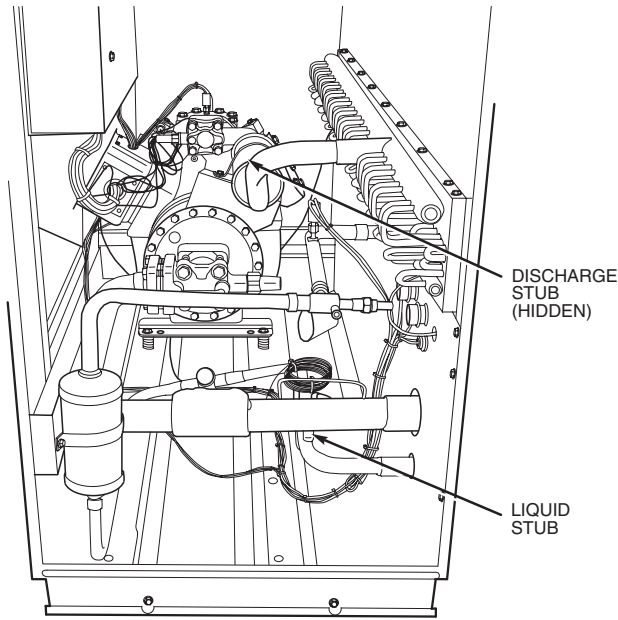
**PILOT VALVE AND HOT GAS SOLENOID** — Install the hot gas solenoid onto the pilot valve. The solenoid fits over the stem of the valve and attaches with the supplied clip on the top (over the coil).

Install the pilot valve/solenoid assembly in the external equalizer line of the bypass valve (3/8 in. ODF equalizer port). The pilot valve has a 3/8 in. ODF inlet and a 1/4 in. SAE (Society of Automotive Engineers, U.S.A.) connection to the TXV (thermostatic expansion valve) equalizer line.

**IMPORTANT:** Be sure the sweat connection on the hot gas bypass valve is facing the pilot valve/solenoid assembly in the equalizer line (See Fig. 1).



**Fig. 1 — 30GT Piping Schematic**



**Fig. 2 — 30GT Stub Locations**

Install the field-supplied 1/4 in. OD tubing from the SAE connection to the TXV equalizer line. If the connection is made directly to the TXV, use the field-supplied, 3-way tee with an internal branch (install horizontally in the line with the internal branch attaching directly to the TXV). If the connection is made into the equalizer line, use the field-supplied, standard 3-way tee.

**Step 2 — Dehydrate and Recharge the Circuit** — When piping is completed, leak test the assembly and replace the filter drier cores. Then evacuate, dehydrate, and recharge the circuit, using approved refrigeration practices.

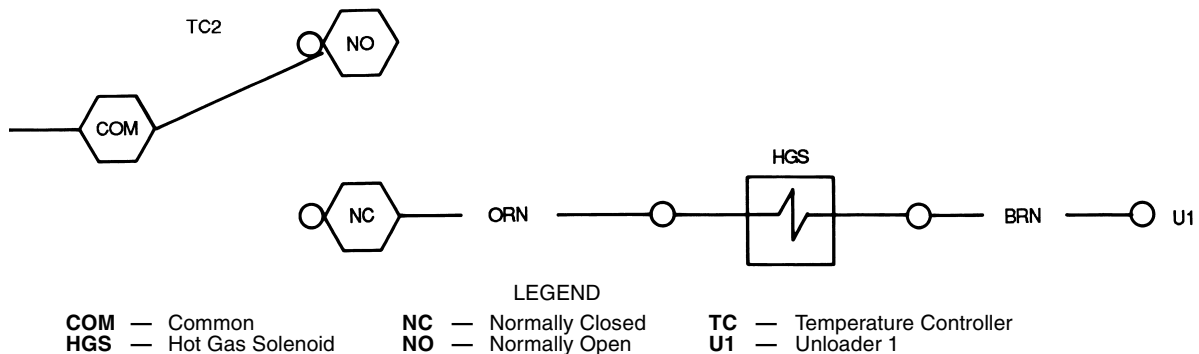
**Step 3 — Install Control Wiring**

**⚠ WARNING**

Be sure all power to the unit is off before proceeding, and that all disconnects are open and tagged.

Follow all local codes and NEC (National Electrical Code, U.S.A.) when installing control wiring. All wire must be a minimum of 16 AWG (American Wire Gage, U.S.A.).

Connect control wires as shown in Fig. 3. At hot gas solenoid (HGS), connect to brown and orange wires as shown.



**Fig. 3 — 30GT Hot Gas Solenoid Wiring**

# INSTALLATION IN 38AKS014-024/INDOOR FAN COIL (CONSTANT VOLUME) SPLIT SYSTEM COMBINATION

## Step 1 — Install Piping (See Fig. 4)

### ⚠ WARNING

Shut off all power to the unit and remove refrigerant charge using an approved refrigerant recovery device before proceeding with installation. Failure to do so may result for personal injury.

**IMPORTANT:** Do not bury refrigerant piping underground.

1. In applications where the air handler refrigerant distributor is not equipped with a side outlet connection, it is recommended that a Sporlan in-line auxiliary side connector with standard distributor be used. Refer to the installation instructions for the indoor fan coil to obtain nozzle size and distributor connection size. Select the auxiliary side connector based on this information. The side connector must be installed on refrigerant circuit no. 1 (first stage of cooling) of the fan coil being used.

2. Install a field-supplied 1/4 in. NPT to 1/4 in. flare fitting on the gage connection port of the compressor suction service valve.
3. Sweat the pilot solenoid valve supplied in the hot gas accessory package **directly** to the hot gas bypass valve on the 3/8 in. ODF external equalizer port.
4. Install field-supplied 1/4 in. copper tube (flared with a nut on each end) between the compressor suction valve and the hot gas pilot solenoid valve.
5. Connect a field-supplied 5/8 in. OD copper tube between the discharge line process tube (hot gas stub) and a field-supplied manual shutoff service valve, avoiding any traps in piping.
6. Connect another field-supplied 5/8 in. OD copper tube between the manual shutoff valve outlet and the hot gas bypass valve inlet.
7. Connect a field-supplied 5/8 in. OD copper tube between the leaving side of the hot gas bypass valve and the Sporlan auxiliary side connector (distributor-side connector).

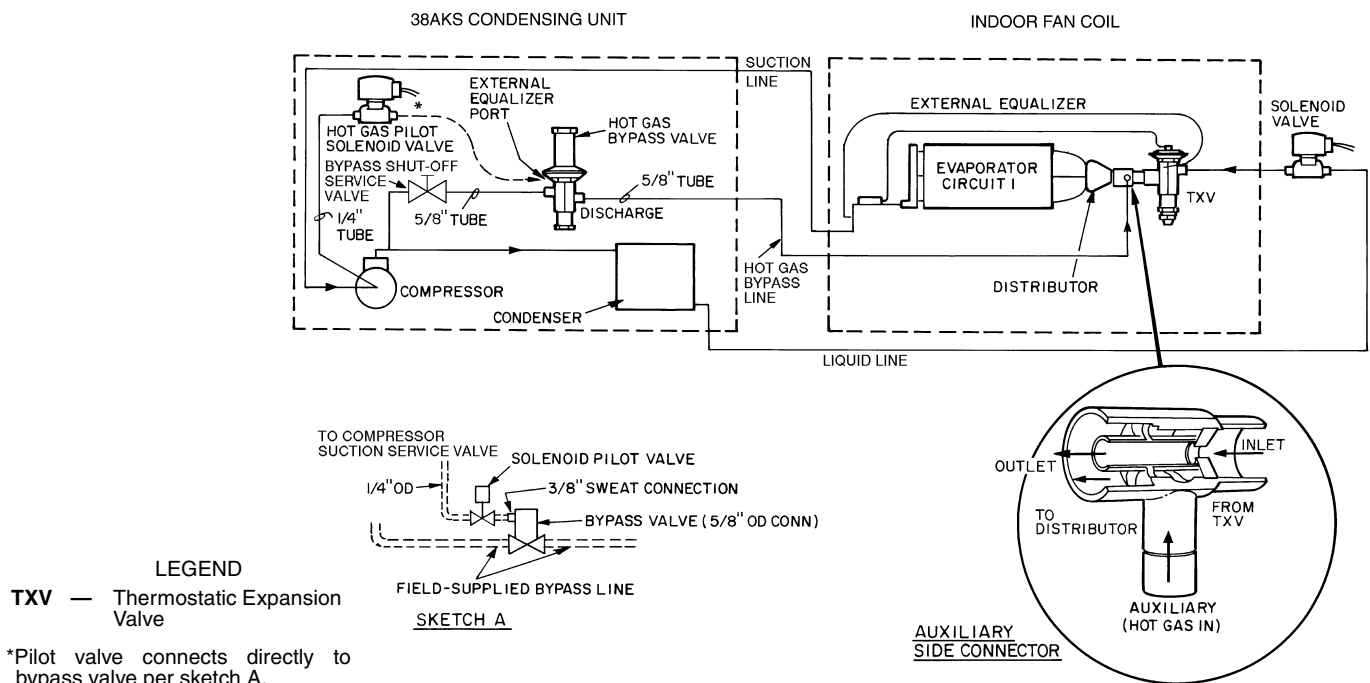


Fig. 4 — 38AKS Hot Gas Bypass Piping

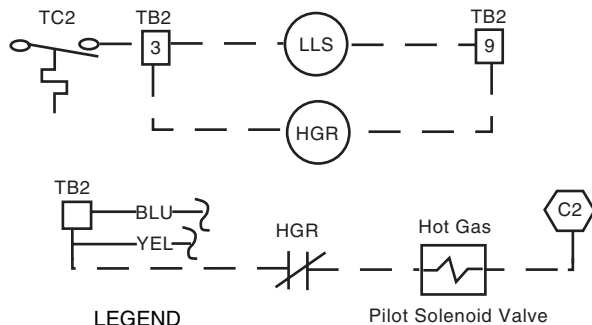
## Step 2 — Install Control Wiring (See Fig. 5)

1. Install a field-supplied relay with a 24-v coil and normally closed contacts rated for 20 va at 125 vac inductive load. Mount this relay in the 38AKS control box.

NOTE: This relay is identified in Fig. 5 as HGR (hot gas relay).

2. For 38AKS014-024:
  - a. Connect a field-supplied wire between TB2-3 and the L1 side of the HGR coil.
  - b. Connect a field-supplied wire between TB2-9 and the L2 side of the HGR coil.
  - c. Connect a field-supplied wire between TB2-2 and HGR-4, one of the normally closed (NC) contacts.
  - d. Connect one leg of the hot gas pilot solenoid valve to HGR-6, the other NC contact.
  - e. Connect the other leg of the hot gas pilot solenoid valve to C2.

## Step 3 — Restore Refrigerant Charge — Charge unit in accordance with 38AKS Charging Chart found on unit.



NOTE: Hot Gas Relay (HGR) use Part No. HN61KK324.

Fig. 5 — 38AKS014-024 Hot Gas Bypass Wiring

## ACCESSORY OPERATION AND ADJUSTMENT

**Adjustment** — The hot gas bypass valve is set to begin opening when the suction pressure falls to approximately 62 psig (427 kPa). The pressure corresponds to a chilled water set point of approximately 44 F (6 C). If the chilled water set point is lower than 44 F (6 C), the bypass setting must be decreased. The opposite is true if the chilled water setting is above 44 F (6 C).

Condensing temperature also affects the setting of the bypass valve, and a change may be required. To adjust the setting of the bypass valve, a  $\frac{3}{16}$  in. hex wrench is required. Remove the cap on the valve, and turn the adjustment nut with the hex wrench. Turning in a clockwise direction increases the setting, and turning in a counterclockwise direction decreases the setting.

**Operation** — The hot gas bypass accessory operates as follows: When a call for cooling is received, the compressor start circuit is energized, along with the hot gas solenoid (HGS) and all unloaders. Once the HGS circuit is completed, the solenoid valve opens allowing the hot gas bypass valve (HGBV) to sense suction pressure and respond accordingly.

If the suction pressure is below the HGBP (hot gas bypass) valve setting, the valve begins to open. The valve continues to open until it either reaches an equilibrium or the maximum open position. Discharge gas is bypassed into the mixed-phase line between the expansion valve and the cooler. This condition continues until the suction pressure rises above the HGBP valve setting, a second stage of temperature control is called for, or the unit cycles off.

## TROUBLESHOOTING

PROBLEM	PROBABLE CAUSE	SOLUTION
Hot Gas Bypass Valve Fails to Open.	<ol style="list-style-type: none"> <li>1. Dirt or foreign material in valve.</li> <li>2. Equalizer passageway clogged.</li> <li>3. External equalizer not connected or equalizer line is pinched shut.</li> </ol>	<ol style="list-style-type: none"> <li>1. Disassemble and clean valve.</li> <li>2. Disassemble and clean valve.</li> <li>3. Connect or replace equalizer line. Check solenoid valve.</li> </ol>
Hot Gas Bypass Valve Fails to Close.	<ol style="list-style-type: none"> <li>1. Dirt or foreign material in valve.</li> <li>2. Diaphragm failure.</li> </ol>	<ol style="list-style-type: none"> <li>1. Disassemble and clean valve.</li> <li>2. Replace element only.</li> </ol>