

REPLACED BY 30G,H/38AK-1SI
DATE 11/90

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.

INTRODUCTION

These instructions cover field installation of the Accessory Hot Gas Bypass Valve and solenoid pilot valve on the following chillers:

- 30HK,HL015 through 060 (50 and 60 Hz)
- 30GB040,045,055,070 (60 Hz), Flotronic™
- 30GB040,046,050,055,070 (50 Hz), Flotronic™
- 30GB075 through 200 (50 and 60 Hz), Flotronic™
- 30GT015,025,030,035 (60 Hz)
- 30GT020,025,030 (50 Hz)

On Flotronic chillers with no unloaders or 2 unloaders, the accessory hot gas bypass must be added to **both** circuits because of an automatic lead-lag feature.

INSTALLATION

Step 1 — Examine Package Contents — Package includes hot gas bypass valve, solenoid pilot valve and instructions. Examine each item. If any part is damaged or missing, file a claim immediately with the shipping agent.

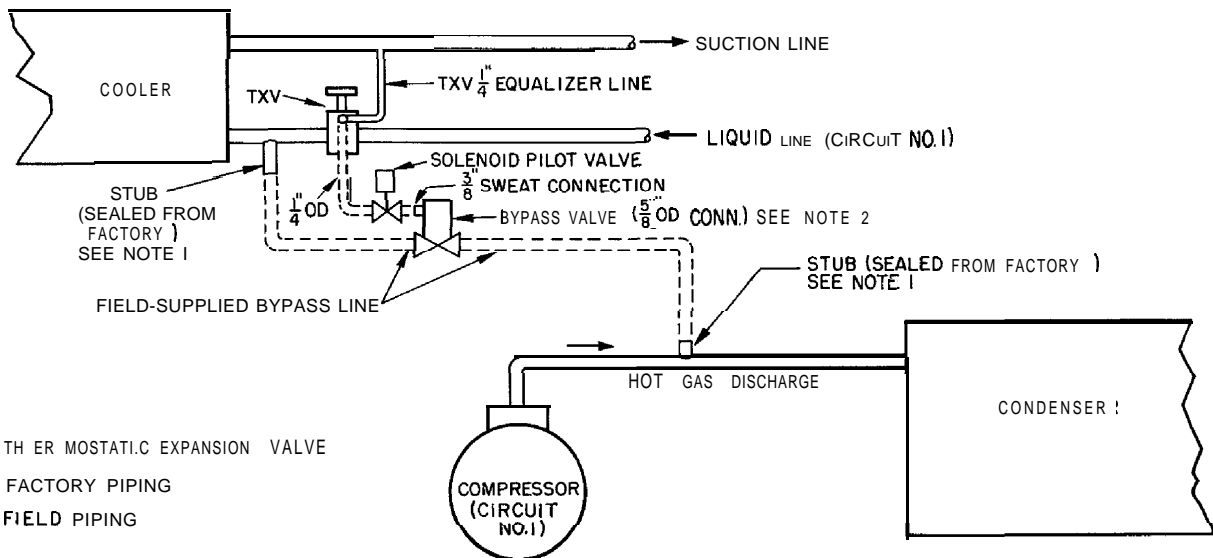
Step 2 — Install Piping

⚠ WARNING

Be sure power to equipment is shut off before performing maintenance or service.

⚠ WARNING

Shut off all power to the unit and remove refrigerant charge from circuit no. 1 (also from circuit no. 2 on Flotronic chillers).



TXV = THERMOSTATIC EXPANSION VALVE
 FACTORY PIPING
 FIELD PIPING

NOTES:

1. 3/8-in. OD for 30HK,HL and 30GT; 1/4-in. OD for 30GB.
2. The bypass valve in this package has 3/8-in. connections and can be used directly on 30HK,HL and 30GT units.
3. On 30GB units, a change from 3/8 in. to 1/4 in. must be made either at the valve or at the stubs.

Fig. 1 — Schematic Piping; 30HK,HL015-060; 30GT015-035

UNITS 30HK, HL015-060 and 30GT015-035 (See Fig. 1.)

Bypass Line — Connect the field-supplied line to the factory-provided stubs in the discharge line from the circuit no. 1 compressor and in the circuit no. 1 liquid line, between expansion valve and cooler (stubs are sealed from factory).

Bypass Valve — Install the valve in the bypass line as close to the cooler as possible. This minimizes liquid storage between valve and cooler when valve is closed and prevents flood of liquid refrigerant when the valve opens. *To ensure proper closing, install the bypass valve in a horizontal section of the bypass line, with the pilot valve installed vertically (coil on top).*

Solenoid Pilot Valve — Install on the bypass valve at the external equalizer (3/8-in. OD sweat connection). The outlet side of the pilot valve is a 1/4-in. SAE thread. Run a 1/4-in. OD tube from this connection to the thermostatic expansion valve (TXV) equalizer line. If the connection is made directly to the TXV, use a 1/4-in. FL x 1/4-in. female flare tee. If the connection is made into the equalizer line, use a standard 1/4-in. FL tee.

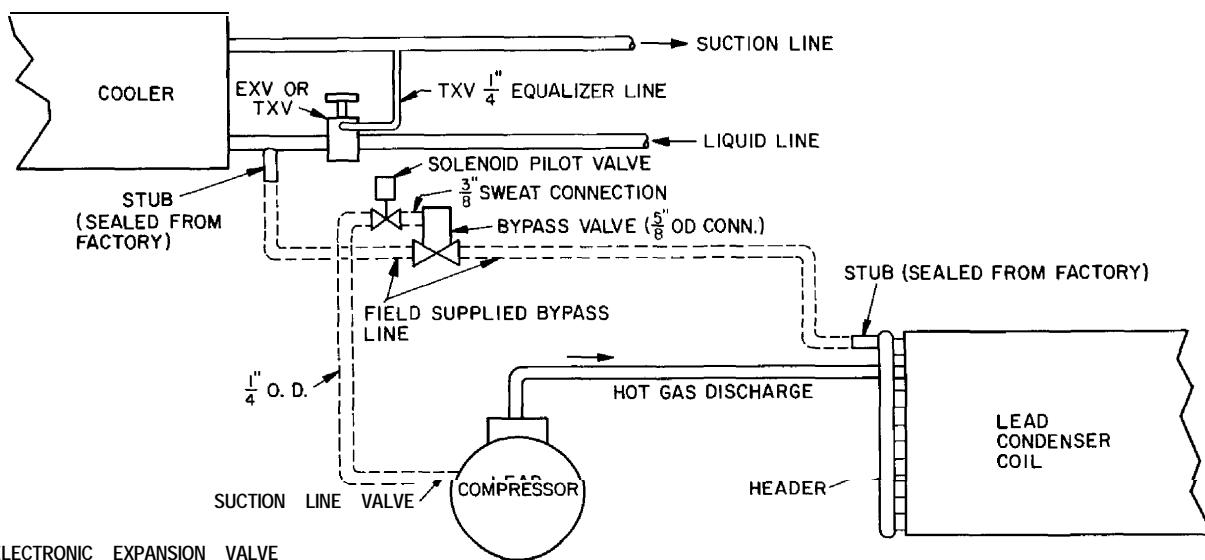
FLOTTRONIC™ UNITS, 30GB040-200 (See Fig. 2.)

Bypass Line — Install field-supplied line between the header on inlet side of lead coil and the entrance to the cooler. Two factory-sealed stubs are provided in each circuit, one on the lead coil header and one on the liquid line between the Flotronic expansion valve (EXV) and the cooler.

NOTE: The 30GB 1 10-200 units have 2 stubs in the high side of each circuit, one on each lead coil header; it is necessary to connect piping to only one of these stubs.

Bypass Valve — Install the valve in the bypass line as close to the cooler as possible. This minimizes liquid storage between the valve and cooler when valve is closed and prevents flood of liquid refrigerant when the valve opens. *To ensure proper closing, install the bypass valve in a horizontal section of the bypass line, with the pilot valve installed vertically (coil on top).*

Solenoid Pilot Valve — Install on the bypass valve at the external equalizer. The outlet side of the pilot valve is a 1/4-in. SAE thread. Run a 1/4-in. OD tube from this connection to the suction valve of the lead compressor in the circuit.



EXV- ELECTRONIC EXPANSION VALVE
 TXV- THERMOSTATIC EXPANSION VALVE
 FACTORY PIPING FIELD PIPING

NOTE: Circuit 2 should be piped same as circuit 1. The 1/4-in. tube should be connected to the lead compressor in both circuits.

UNIT	LEAD COMPR NO.	
	Ckt 1	Ckt 2
30GB040-060	1	2
30GB070-100	1	3
30GB110-150	1	4
30GB175,200	1	5

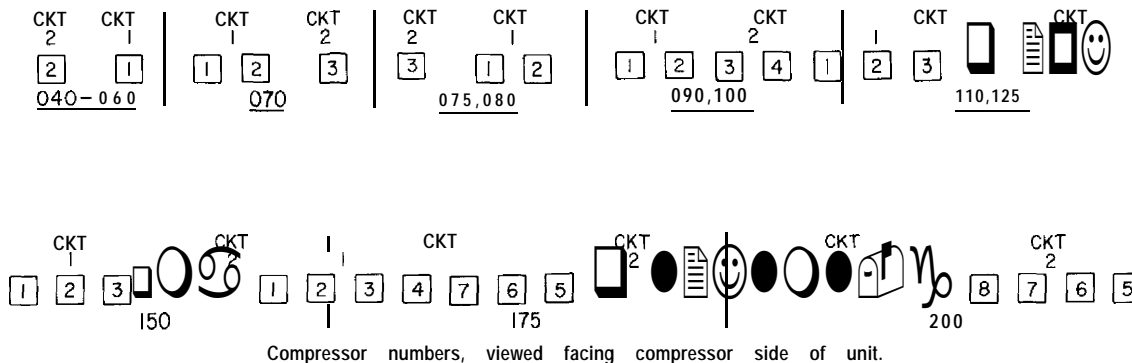


Fig. 2 — Schematic Piping; 30GB040-200, with Electronic Controls (Flotronic)

Step 3 — Dehydrate and Recharge Circuit —

When piping has been completed, leak test the assembly and replace the filter drier, or core(s) for circuit no. 1. On single-compressor chillers (30HK, HLO 15,025 and 030 for 60 Hz, 020,025 for 50 Hz; 30GT) the filter drier itself must be replaced.

After core (or drier) replacement, evacuate, dehydrate and recharge the circuit. Procedures for evacuation, dehydration and charging are detailed in Carrier Standard Service Techniques Manual, Chapter 1, Refrigerants, Sections 6 and 7.

Step 4 — Install Control Wiring

⚠ WARNING

Be sure all power to the unit is off before proceeding. 1

Wires between field-installed components and unit control box must be enclosed in conduit. Wire size is no. 16 AWG minimum. Wire-end terminals required on field wires are indicated in the Combined Legend for Fig. 3 ■ 8.

UNITS 30GB040 THROUGH 070 FLOTTRONIC (See Fig. 3.) Control logic allows the hot gas bypass to be energized only on the first stage of capacity.

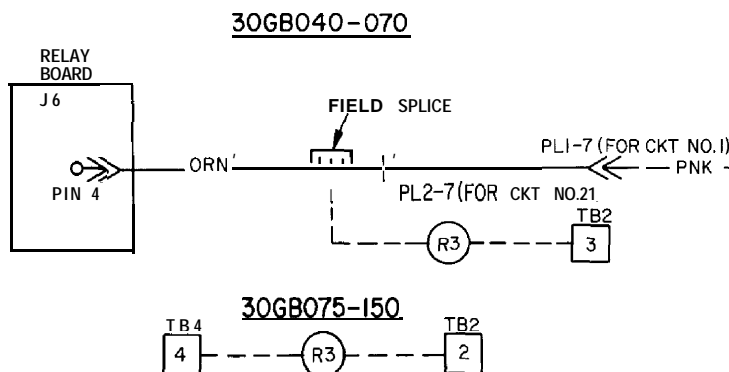
A unit with 2 unloaders has the automatic lead/lag feature which allows starting of either circuit, and thus must have 2 hot gas bypass packages, one per circuit (see Fig. 4).

On the 040-060 units, R3 should energize with compressor no. 2. On the 070 unit, R3 energizes with compressor no. 3. In both instances, it is the lead compressor on circuit no. 2 (see Fig. 5).

The time delay module must be set for a one-minute delay by connecting a 600k-ohm resistor between the center terminals of the module (see Fig. 6). (One second of time delay results from each 10k-ohms of resistance.)

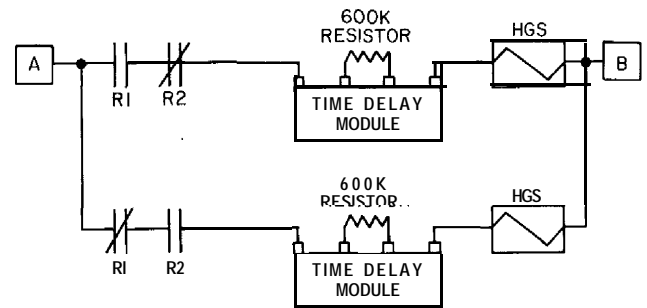
NOTES:

1. Relays R 1 and R2 apply to all units.
2. R3 applies only to units with a single unloader. Units with no unloaders or 2 unloaders do not require R3.
3. 30GB 175 and 200 units do not use unloaders.



NOTE: 3063175,200 — R3 DOES NOT APPLY.

Fig. 3 — R3 Coil Wiring (R3 used only with units having a single unloader)



30GB040-070

A = TB 2 c 4 1
B = TB2 10

30GB075-200

A = TB3 c 1 1
B = TB 2 c 2 1

Fig. 4 — Hot Gas Solenoid Wiring, Units with No Unloaders or Two Unloaders

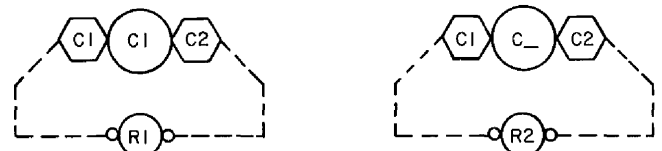


Fig. 5 — R1 and R2 Coil Wiring, All Units

Connect R2 in parallel with lead compressor in circuit 2:

30GB040-060	Comp 2
30GB070-100	Comp 3
30GB110-150	Comp 4
30GB175,200	Comp 5

(Refer to Fig. 2 for compressor locations.)

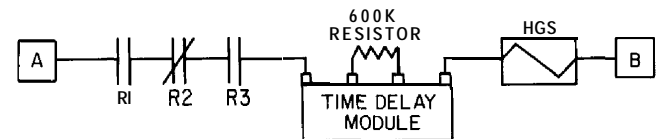


Fig. 6 — Hot Gas Solenoid Wiring, Single Unloader Units

FLOTTRONIC™ UNITS, 30GB040 THROUGH 070 — Drill a hole to accommodate a standard conduit fitting in bottom of control box at right end, adjacent to existing entrance hole for control wiring. Locate HGR (Hot Gas Bypass Relay) in right side of control box adjacent to existing relays. Using the HGR base as a template, mark mounting hole locations and drill appropriate hole. Run conduit from the bypass valve to the control box and wire relays into control circuit as shown in Fig. 4. Relays and Time Delay Module should be installed in the upper left corner of the control box, above the transformer.

FLOTTRONIC UNITS, 30GB075 THROUGH 200 — Drill 2 holes in the bottom right of the control box, next to the compressor conduit holes, to accommodate standard conduit fittings. Run conduit from the bypass valve to the control box and wire relays into control circuit as shown in Fig. 4.

ALL FLOTRONIC UNITS Units require control relays (R) and Time Delay Module. They may be obtained from your Carrier distributor under the following Carrier Part Numbers:

R1 and R2	115-v 230-v	HN61KK041 HN61KK913	DPDT DPDT
R3	24-v	HN61KK040	DPDT
Time Delay Module	30HK501602		

UNITS 30HK,HL015 THROUGH 060 (Except 020, 60 Hz, and 015, 50 Hz.)

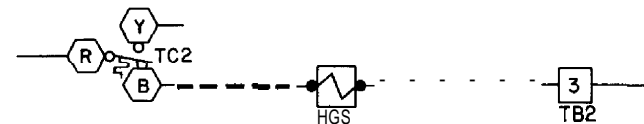
IMPORTANT: On 30HK,HL 2-compressor units, the SEQUENCE switch on the control panel must be in the 1-2 position to obtain hot gas bypass operation.

Run the conduit from the bypass valve to one of the knockouts provided on the right side of the unit control box. Connect the control wires as shown in Fig. 7.

UNITS 30GT015 THROUGH 035 (except 020, 60 Hz, and 015, 50 Hz) — Connect control wires as shown in Fig. 8. At LLSV, connect to existing splice containing white wire.



A. CONNECTIONS FOR SINGLE-COMPRESSOR UNITS (60HZ: 015, 025, 030; 50HZ: 020, 025)



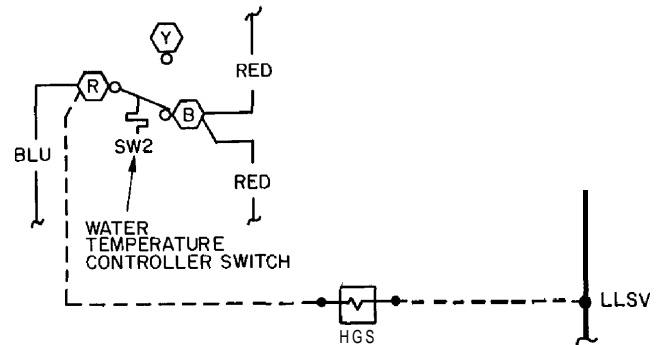
B. CONNECTIONS FOR TWO-COMPRESSOR UNITS (50 AND 60HZ: 040, 050, 060; 50HZ: 030)

See Combined Legend.

Fig. 7 — Hot Gas Bypass Field Wiring; 30HK,HL Units

OPERATION AND ADJUSTMENT

The bypass valve is factory set to begin opening when suction pressure drops to about 62 psig. This pressure corresponds to a chilled water controller set point of approximately 44 F. If the chilled water set point is lower than 44 F, it will be necessary to decrease the bypass valve setting for proper operation. Conversely, for chilled water set points above 44 F, the bypass valve setting must be increased. A change in condensing temperature will also require a change in bypass valve set point. As condensing temperature decreases, decrease the bypass valve set point until it opens at the desired conditions.



See Combined Legend.

Refer to unit wiring label inside front access door for complete wiring schematic.

Fig. 8 — Hot Gas Bypass Field Wiring; 30GT Units

COMBINED LEGEND (Fig. 3 - 8)

- C** — Compressor Contactor (1/4-in. Female Quick-Conn)
- HGS** — Hot Gas Bypass Solenoid (Splice Conn)
- LLSV** — Liquid Line Solenoid Valve
- TB** — Terminal Block (#6 Ring Conn)
- TC 2** — Temperature Controller (1/4-in. Female Quick-Conn)

- c 1** Terminal on TB
- 0** Terminal on Control Component

- Factory Wiring
- - - - - Field Wiring

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