

Date: June 7, 2002

Subject: Hot Gas Bypass

Dept: Commercial Split Systems

Number: 2002-01

Author: M.J. Taylor

Hot Gas Bypass for 38ARZ007 – 012 Condensing Units

In the application of 38ARZ condensing units it may be necessary to limit the minimum evaporator temperature in low load conditions to prevent coil icing. Hot gas bypass (HGBP) may be applied for this purpose if the equipment is to be installed in a location which is **not** subject to the requirements of ASHRAE 90.1 1999 and if HGBP is not prohibited by any other codes, regulations, or jurisdictions.

There are several methods of HGBP, however only one; the Hot Gas to the Evaporator method is approved for 38 Series commercial condensing units. Figure 1 is a simplified piping diagram of the approved method. In this method the hot gas line is connected from the compressor discharge line to the evaporator at a point between the TXV and the distributor. Please note: The Hot Gas Bypass to the Suction line method is not approved for use on 38 Series commercial condensing units.

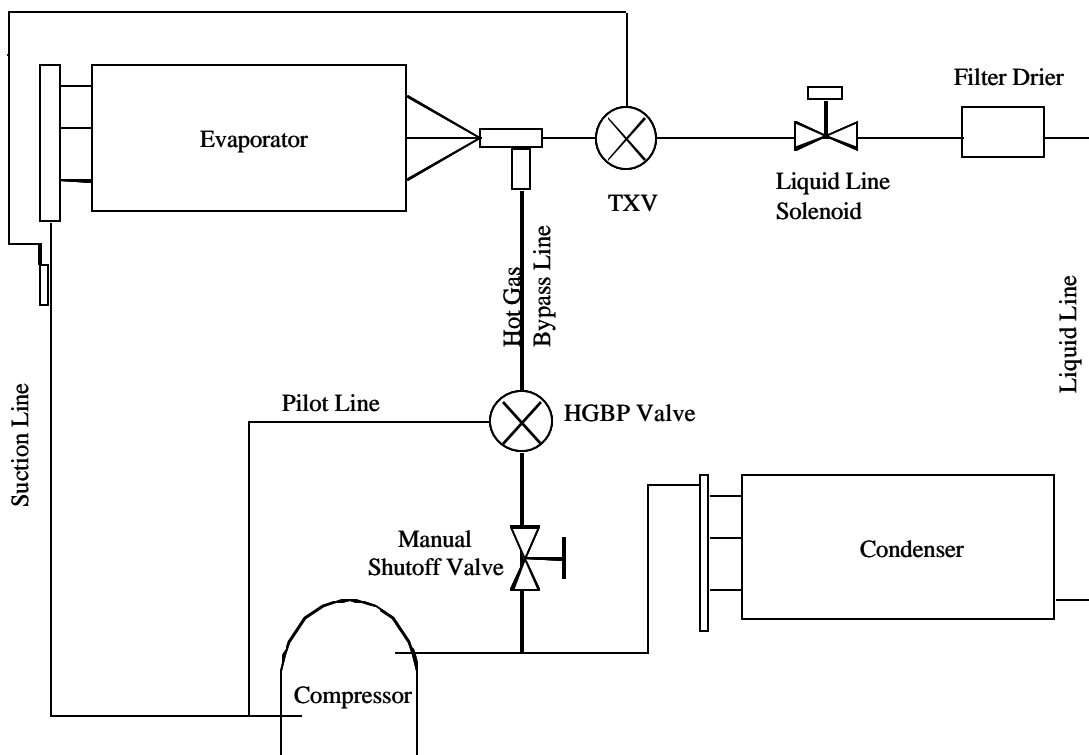


Figure 1
Hot Gas Bypass to Evaporator

The required components to field fabricate a HGBP system are available from RCD and are detailed in Table 1 & 2 below.

Table 1

Model	Hot Gas Bypass Valve	Hot Gas Line	Shut off Valve
38ARZ007-012	P525-H02T04FD	½", length as required	586WA-8ST

The basics of HGBP installation on the 38ARZ007-012 is as follows:

1. Turn off electrical power to the units.
2. Recover all refrigerant from the system.
3. If the indoor unit is not equipped with a side outlet distributor, e.g., the 40RM series of packaged air handlers, an auxiliary side connector must be installed. The auxiliary side connector required for the 40RM is detailed in Table 2 below.

Table 2

Model	Carrier Part Number	Sporlan Part Number
40RM007	EA19BA705	ASC-9-5
40RM008	EA19BA905	ASC-11-7
40RM012*	EA19BA705 (2 required)	ASC-9-5 (2 required)
40RM014*	EA19BA705 (2 required)	ASC-9-5 (2 required)

*HGBP should be applied to all evaporator circuits that are active during first stage cooling. The 40RM012 and 014 have a split evaporator coil that has two circuits. An auxiliary side connector must be installed on both coil circuits.

To install the auxiliary side connector:

- a) Unsolder and remove the stub tube between the TXV and the distributor.
 - b) Remove the nozzle from the distributor and re-install in the auxiliary side connector (ASC).
 - c) Install the ASC between the TXV and the distributor
 - d) If necessary, repeat steps a – c for the other coil split (size 012 or 014 only)
4. Install a tee in the discharge line between the compressor and the condenser.
 5. Mount the hot gas bypass valve rigidly to the outdoor unit base pan or compressor rails.
 6. Install a ½" line with the shut off valve between the compressor discharge line and the hot gas bypass valve. Note: You may wish to use a solenoid valve in lieu of the manual shut off valve. If you choose to use the solenoid valve, it should be a normally closed type, wired to open when Y1 is energized, and be closed when Y2 is energized. This will insure that HGBP is active only when the space temperature is close to the setpoint.
 7. Install a ¼" pilot line between the suction line and the sensing port on the hot gas bypass valve.
 8. Install and insulate a ½" hot gas line between the hot gas bypass valve in the outdoor unit and the side connector at the indoor unit. Please Note: If the indoor unit has two circuits, the hot gas line must tee at the indoor unit and feed both circuits. In addition, if the indoor unit has two circuits, a check valve (P/N 116004, 2 required) must be installed in each branch of the hot gas line between the tee and the ASC side connections. The check valve must allow hot gas to flow toward the evaporator only.
 9. Evacuate and re charge the system.
 10. Test for proper operation.

If you have any questions, please contact Application Engineering for assistance.

Best regards,

A handwritten signature in black ink that reads "MJ Taylor". The signature is written in a cursive, flowing style.

Michael J. Taylor
Product Manager
Carrier Commercial Split Systems