SERVICE BULLETIN

Carrier Corporation

Number: SMB06-0004A **Date**: 02/06/2006 **Supersedes**: SMB06-0004

Title: High Flow Schrader Valve Usage

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Category: General Information

Dealer Bulletin Number: DSB06-0004A

PRODUCT CATEGORY:

Chillers (30 Series)
Small Rooftop Units
Large Rooftop Units

MODELS AFFECTED:

Carrier: **30RAN010 – 055**
30GXR/GXN080 – 528 (serial nos. beginning with 0904F)
30HXA/HXC076 – 271 (serial nos. beginning with 5003Q)
48/50A series
48/50HG and **48/50HJ** units (serial nos. with "G")
48/50TF and **48/50TM** units (serial nos. with "G")
48/50PG units (serial nos. with "G")
50HJQ and **50TFQ** units (serial nos. with "G")
38ARD, **38ARS**, **38ARZ**, **38ARQ** units (serial nos. with "G")

SITUATION:

The purpose of this bulletin is to summarize the usage and features of two high flow service and charging fittings used on the above chillers and roof top units. Compared to standard Schrader type refrigerant valve/access fittings, these "high flow" fittings permit 4 to 6 times more flow. In addition, the flow rate can be increased to up to 12 times the baseline when certain optional adapters are attached and the valve core is removed from the flow stream.

Figures 1 through 4 below are intended to help service personnel distinguish between these two assemblies and two other fittings which are commonly found in similar locations.

Type A: Eaton Single Seal High Flow Valve

Parts. This valve is comprised of the body (Carrier part EC39EZ061, Eaton 3036C), and the removable valve core (Carrier part EC39EZ062, Eaton 2955C). Note from Figures 1 – 4 that, of the four fittings shown, only this one (Figure 1) has no threaded flare connection. (This fitting was also the subject of SMB03-0009.)

Figure 1. Eaton Type High Flow Access Valve

Figure 2. Coremax Type High Flow Access Valve

Figure 3. Standard Schrader Access Valve and Fitting

Figure 4. Fuse/Fusible Plug Relief Device and Fitting (should never be capped)

Usage. As of this writing, the Eaton valves are no longer being used on production units. Prior usage includes:

- **30GXR** or **30GXN** Series 6 chillers (example: model number 30GXR150 - - - 6**6**1BQ), serial numbers 0904F*xxxxx* until end of production. Locations per circuit: (1) on the inlet line to the cooler at the base of the cooler (See Figure 5), one per compressor, (2) on the discharge line between the oil separator and condenser, downstream of the discharge service valve.
- **30HXC** Series 6 chillers (example: model number 30HXC261 - - - 6**6**1KA), with serial numbers 0802Q*xxxxx* through 1305Q*xxxxx*. Locations per circuit: (1) on the inlet line to the cooler at the base of the cooler, one per compressor, (2) on the discharge line before entering the oil separator/condenser shell, one per compressor, (3) on the liquid line leaving the condenser.
- **30HXA** Series 6 chillers (example: model number 30HXA261 - - - 6**6**1KA), with serial numbers 0802Q*xxxxx* through 1305Q*xxxxx*. Locations per circuit: (1) on the inlet line to the cooler at the base of the cooler, one per compressor, (2) on the discharge line before entering the oil separator shell, one per compressor, (3) on the oil suction line at the base of the oil separator.
- **30RAN** chillers with serial numbers 1801Fxxxxx through 2705Q*xxxxx*. Locations per circuit: (1) on compressor suction manifold, (2) on the liquid line leaving the condenser.

- All Tyler plant products (including rooftop units and rooftop heat pumps **48/50HJ**, **48/50TF**, **48/50TM**, **48/50HG**, **48/50PG**, **50HJQ**, **50TFQ**, and condensing units and heat pumps **38ARx**), i.e. with the letter "G" in the serial number, made prior to the beginning of 2004 (approximately). These fittings were intended for factory usage only, are identifiable by a black cap, and were always accompanied by standard Schrader fitting(s) for field service. The phase-out among the listed products was spread out over a couple of years, at different times for different size ranges. Locations per circuit: (1) on compressor suction line, (2) on compressor discharge line.

Special Tools: A quick disconnect adapter is required to connect the Eaton type high flow Schrader valve to a standard refrigeration hose. There are two such adapters available, one with a ¼" flare nipple and one with a 3/8" flare nipple. See Figure 6. These parts (available from RCD) are:

- Production Control Units Inc (Sterling PCU) #A-62PF221 (provides 1/4" male external flare)
- Sterling PCU #A-62FP321 (provides 3/8" male external flare)

This type of valve and the adapters were previously discussed in SMB03-0009.

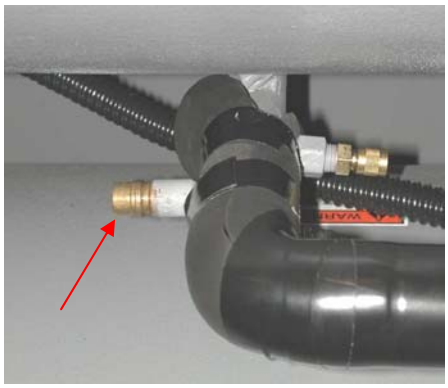

Figure 5. Eaton Style High Flow Valve on 30GX Chiller, Base of Cooler.

Figure 6. PCU Quick-Connect Adapters for Eaton High Flow Fitting

In order to replace or temporarily remove the valve core without losing refrigerant, a special tool is required. Unfortunately, no fully satisfactory tool has been identified. For simple core removal, a modified 3/16" nut driver will work in most cases. (Start with a Craftsman #41977 nut driver or 3/16 XceLite nut driver No. 6. Then machine a slot into the end barrel as shown in Figure 7. The end barrel OD must be <= 0.32", and the shaft must be hollow. The central slot should be 0.135" (3.4mm) wide, minimum, and 0.160" deep.) However, in at least one case this tool (made as described) was not strong enough to withstand the forces of core removal.

Figure 7. Slotted Nut Driver Core Removal Tool (Hand-made)

Type B – CoreMax High Flow Valve System (by FasTest)

A Parts. This valve is comprised of the body (Carrier part EC39EZ065, FasTest SCH0730B02), and the removable valve core (Carrier part EC39EZ067, FasTest SCCA07H). The valve is shown installed in Figure 2, and the individual parts are shown before and after assembly in Figure 8. The valve connects to a ¼" flare standard refrigeration hose.

Figure 8. Coremax (FasTest) High Flow Valve Parts

Compared to a standard Schrader valve, flow through the Coremax is typically 5x greater (using the Snap-Mate tool described below, through the opened valve) to 12x greater (using the side port removal tool, which moves the core entirely out of the flow stream). Flow capacity with the valve in place is comparable to an open ¼" tube.

Usage. As of this writing, this Coremax valve is the *only* high flow Schrader type valve used in Carrier chiller and rooftop production. Current usage includes:

- **30HXC** Series 6 chillers (example: model number 30HXC261 - - - 6**6**1KA), beginning with serial numbers 1405Q*xxxxx*. Locations per circuit: (1) on the inlet line to the cooler at the base of the cooler, one per compressor, (2) on the discharge line before entering the oil separator/condenser shell, one per compressor, (3) on the liquid line leaving the condenser.
- **30HXA** Series 6 chillers (example: model number 30HXA261 - - - 6**6**1KA), beginning with serial numbers 1405Q*xxxxx*. Locations per circuit: (1) on the inlet line to the cooler at the base of the cooler, one per compressor, (2) on the discharge line before entering the oil separator shell, one per compressor, (3) on the oil suction line at the base of the oil separator.
- **30RAN** chillers beginning with serial numbers 2805Q*xxxxx*. Locations per circuit: (1) on compressor suction manifold, (2) on the liquid line leaving the condenser.
- **30RB** chillers. Locations per circuit: (1) on the filter drier cover in the liquid line, (2) on the suction pipe on top of the cooler.
- **30XA** chillers. Locations per circuit: (1) on top of the oil separator, (2) downstream of the main EXV at the inlet to the cooler, (3) on the liquid line branch to the economizer EXV.

- **48/50A** (but not **Z**) series large rooftop units. Locations per circuit: (1) on the suction tube assembly, (2) on the discharge tube assembly.
- All Tyler plant products (including rooftop units and rooftop heat pumps **48/50HJ**, **48/50TF**, **48/50TM**, **48/50HG**, **48/50PG**, **50HJQ**, **50TFQ**, and condensing units and heat pumps **38ARx**), i.e. with the letter "G" in the serial number, made after the beginning of 2004 (approximately). When Coremax valves were introduced in these products (replacing the Eatons) the accompanying standard Schrader valves were eliminated as well, since the Coremax valves serve as both a field and factory access port. The phase-in occurred over the span of several months among these products, at different times for different size ranges. Locations per circuit: (1) on compressor suction line, (2) on compressor discharge line.

Special Tools: While the valve connects to a ¼" flare standard refrigeration hose (passing 3.6x the flow of standard Schrader valve), flow rate can be increased by the use of special tools.

One is the Snap-Mate quick connect adapter (Figure 9 below), FasTest part SCTA07H (RCD#SCTA07H). This tool, which passes almost 5x the flow of a standard Schrader valve, presents a 7/16" 45° SAE flare nipple on the side for external connection.

The in-line valved core removal tool (Figure 10 below) is FasTest part SCFT20A, RCD#P920-0010. This can remove the valve core either to increase flow rate or for core seal replacement. The intervening ball valve permits core removal with negligible loss of refrigerant. This is most useful when the system is charged at the start of the operation.

Figure 9. Snap-Mate Connector

Figure 10. In-Line Core Removal Tool

The greatest flow (more than 12x standard Schrader flow) can be achieved with the side port Core Insertion Tool, FasTest SCFT10 (Figure 11). This is primarily useful when the system is uncharged and unevacuated at the start of the operation. After evacuation and charging through the side port, the core is then inserted in place. This tool also quick-connects to the Coremax body. The torque used for valve core insertion should be limited to 8 ft-lb (excessive torque can damage the seat and result in leakage).

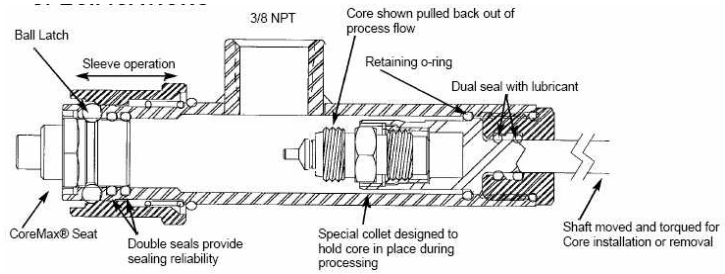

Figure 11. Core Insertion Tool