



40RM/524A/PF1A/ABC/HBC Fan Coil Units **Service Manual**

40RM Series 0 - DX Cooling Fan Coil Units

40RMQ Series 0 – DX Cooling/Heat Pump Fan Coil Units

40RMS Series 0 – Chilled Water Fan Coil Units

524A – Bryant DX Cooling/Heat Pump Fan Coil Units

PFA1 – Payne DX Cooling/Heat Pump Fan Coil Units

ABC – ICP DX Cooling Fan Coil Units

HBC – ICP DX Cooling/Heat Pump Fan Coil Units

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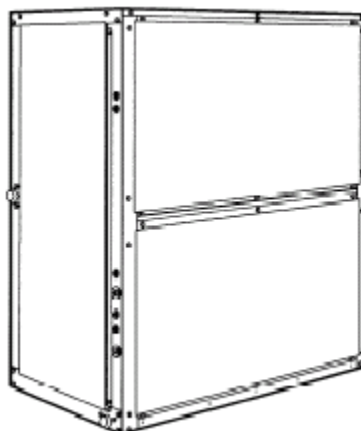


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Not for Distribution

SAFETY CONSIDERATIONS

Installing, starting up, and servicing this equipment can be hazardous due to system pressures, electrical components, and equipment location (roof, elevated structures, etc.). Only trained, qualified installers and service mechanics should install, start-up, and service this equipment.

When working on this equipment, observe precautions in the literature, and on tags, stickers, and labels attached to the equipment and any other safety precautions that apply. Follow all safety codes. Wear safety glasses and work gloves. Use care in handling, rigging, and setting this equipment, and in handling all electrical components.

WARNING

Electrical shock can cause personal injury and death. Shut off all power to this equipment during installation and service. There may be more than one disconnect switch. Tag all disconnect locations to alert others not to restore power until work is complete.

WARNING

DO NOT VENT refrigerant valves within a building. Outlet from relief valves must be vented outdoors in accordance with the latest edition of ANSI/ASHRAE (American National Standards Institute/American Society of Heating, Refrigeration and Air Conditioning Engineers) 15 (Safety Code for Mechanical Refrigeration). The accumulation of refrigerant in an enclosed space can displace oxygen and cause asphyxiation. Provide adequate ventilation in enclosed or low overhead areas. Inhalation of high concentrations of vapor is harmful and may cause heart irregularities, unconsciousness or death. Misuse can be fatal. Vapor is heavier than air and reduces the amount of oxygen available for breathing. Product causes eye and skin irritation. Decomposition products are hazardous.

WARNING

DO NOT attempt to unbrazed factory joints when servicing this equipment. Compressor oil is flammable and there is no way to detect how much oil may be in any of the refrigerant lines. Cut lines with a tubing cutter as required when performing service. Use a pan to catch any oil that may come out of the lines and as a gauge for how much oil to add to the system. DO NOT re-use compressor oil. DO NOT leave refrigerant system open to air any longer than necessary. Seal circuits being serviced and charge with dry nitrogen to prevent oil contamination when timely repairs cannot be completed.

INTRODUCTION

This information should be used with the Installation Instructions, for these machines. Follow all safety precautions and procedures.

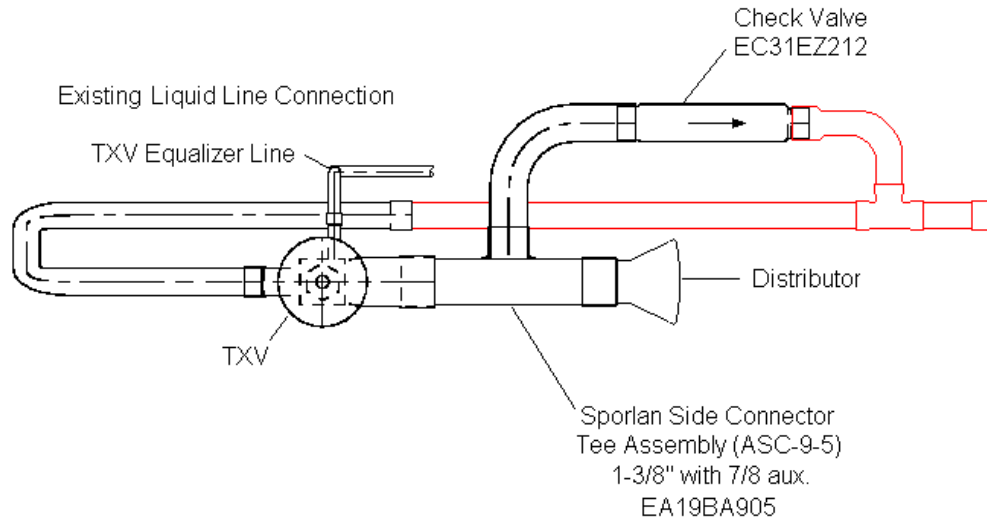
The 40RM Air Handler was introduced into production beginning XX9XF.

Production of these units was transferred to Monterrey, Mexico starting in August 2004, serial numbers beginning with 3204X. Full production at Monterrey began YY04X.

APPLICATION

Heat Pump Conversion

The 40RM-008 and 524A**072 machines are the only machines that can be converted in the field without major coil modifications. The header must be modified as per the diagram below.



Remove Nozzle from Distributor and relocate into the Sporlan Side Connector Tee

11/11/02

In the diagram above, the red piping is the field liquid line connections.

Indoor Fan Motors

Fan motors rated for 5 Hp or larger are VFD compatible.

Tons per Circuit

Bulletins pertaining to this topic:

- 2002-02 – 38ARS/30AKS Unloading – The Minimum Tons per Circuit Limitation on Unloading

CONTROLS

LITERATURE

Below is a list of literature for the 40RM machines. Shaded literature is obsolete literature.

| Form Number | Catalog Number | Title | Print Date | Reprint Date | Superseded By |
|---|----------------|---|------------|--------------|---------------|
| Product Data | | | | | |
| 38A-12PD | | | | | 38A-15PD |
| 38A-13PD | | | | | 38A-16PD |
| 38A-14PD | | | | | 38A-17PD |
| 38A-15PD | 523-80135 | Gemini 38AQ007, 38ARQ008,012, 38AQS016 with 40RMQ008-028, Heat Pump Systems, 50/60 Hz, 6 to 25 Nominal Tons | 7/04 | 10/04A | |
| 38A-16PD | 523-0136 | 38ARZ007-012, 38ARS012, 38ARD012-024, 38AKS014-024 with 40RM007-028 and 28CB,LA008,012 Commercial Air-cooled Split Systems, 6 to 20 Nominal Tons | 7/04 | | |
| 38A-17PD | 523-80137 | Gemini 38AKS024-044, 38AH024-034 with 40RM016-034 Commercial Air-Cooled Split Systems, 20 to 40 Nominal Tons | 7/04 | | |
| 38A-C9PD | | | | | 30A-C11PD |
| 38A-C11PD | 003-80020 | Gemini 38AKS024-044, 38AH024-034 with 40RM016-034 Commercial Air-Cooled Split Systems, 20 to 40 Nominal Tons, 50 Hz | 7/04 | | |
| 40RM-7PD | | | | | 40RM-8PD |
| 40RM-8PD | 524-084 | 40RM, 40RMQ, 40RMS Packaged Air-Handling Units, 50/60 Hz, 6 to 30 Tons (21 to 105 kW) Cooling | 7/04 | | |
| Application Information | | | | | |
| | | | | | |
| | 811-10121 | Meeting ASHRAE 90.1-1999 (2001) Energy Standard for Buildings - A Reference Guide to Meeting the New Minimum Efficiency Requirements for HVAC Equipment with Carrier Products | 12/02 | | |
| | | | | | |
| Promotional Information | | | | | |
| | | | | | |
| | | | | | |
| Submittal Bulletin | | | | | |
| 40RM-3SB | | 40RM007-034, 40RMQ008-028 Direct Expansion Air Handling Unit | | | 40RM-4SB |
| 40RM-4SB | 514-025 | 40RM007-034, 40RMQ008-028 Direct Expansion Air Handling Unit | 6/01 | | |
| 40RMS-1SB | | 40RM008-034 Chilled Water Air Handling Unit, | | | 40RMS-2SB |
| 40RMS-2SB | 514-026 | 40RM008-034 Chilled Water Air Handling Unit | 6/01 | | |
| Installation, Start-Up, and Service Instructions | | | | | |

| Form Number | Catalog Number | Title | Print Date | Reprint Date | Superseded By |
|--|----------------|--|------------|--------------|-----------------------------|
| 40RM-1SI | | 40RM,40RMQ,40RMS Packaged Air-Handling Units, 50/60 Hz | | | 40RM-9SI |
| 40RM-9SI | 534-054 | 40RM,40RMQ,40RMS Packaged Air-Handling Units, 50/60 Hz | 11/95 | 5/96 | 40RM-12SI |
| 40RM-12SI | 534-029 | 40RM,40RMQ,40RMS Packaged Air-Handling Units, 50/60 Hz | 10/97 | | 40RM-14SI |
| 40RM-14SI | 534-002 | 40RM,40RMQ,40RMS Packaged Air-Handling Units, 50/60 Hz | 12/98 | | 40RM-17SI |
| 40RM-17SI | 534-010 | 40RM,40RMQ,40RMS Packaged Air-Handling Units, 50/60 Hz | 3/00 | | 40RM-18SI |
| 40RM-18SI | 534-013 | 40RM,40RMQ,40RMS Packaged Air-Handling Units, 50/60 Hz | 11/00 | 07/01 | |
| Accessory Installation Instructions | | | | | |
| 40RM-2SI IIK524A-72-1 | 534-030 | Packaged Air Handling Units, Sub-base Accessory, 6 to 3 tons | 3/95 | | |
| 40RM-4SI IIK524A-72-3 | 534-034 | Plenum and Return Grille Accessories for Packaged Air Handling Units, 6 to 30 tons | 3/95 | | |
| 40RM-5SI IIK524A-72-4 | 534-061 | Packaged Air Handling Units, 3 to 6 tons Economizer Assembly, 50/60 Hz | 10/95 | 5/96 | 40RM-16SI IIK524A-72-11 |
| 40RM-6SI IIK524A-72-5 | 534-089 | Packaged Air Handling Units, 6 to 30 tons Hot Water and Steam Coil Accessories, 50/60 Hz | 1/96 | | 40RM-10SI IIK524A-72-8 |
| 40RM-7SI IIK524A-72-6 | 534-064 | Packaged Air Handling Units, 6 to 30 tons (21 to 105 kW), Electric Heat Accessory, 50/60 Hz | 3/95 | | 40RM-11SI IIK 524A-72-9 |
| 40RM-8SI IIK524A-72-7 | 534-048 | Packaged Air Handling Units, 6 to 30 tons Condensate Trap Drain Accessory, 50/60 Hz | 10/95 | | |
| 40RM-10SI IIK524A-72-8 | 534-089 | Packaged Air Handling Units, 6 to 30 tons Hot Water and Steam Coil Accessories, 50/60 Hz | 10/95 | | |
| 40RM-11SI IIK524A-72-9 | 534-004 | Packaged Air Handling Units, 6 to 30 tons (21 to 105 kW), Electric Heat Accessory, 50/60 Hz | 12/96 | | 40RM-13SI IIK 524A-72-10 |
| 40RM-13SI IIK524A-72-10 | 534-001 | Packaged Air Handling Units, 6 to 30 tons (21 to 105 kW), Electric Heat Accessory, 50/60 Hz | 12/98 | | 40RM-20SI IIK 524A-72-13 |
| 40RM-15SI | 534-005 | Accessory Ultra-Violet Germicidal Lamps, 40RM007-034, 40RMQ008-016, 40RMS008-024 Air Handler Units | 4/99 | | |
| 40RM-16SI IIK524A-72-11 | 534-093 | Packaged Air Handling Units, 3 to 6 tons Economizer Assembly, 50/60 Hz | 7/99 | | 40RM-19SI IIK524A-72-12 |
| 40RM-19SI IIK524A-72-12 | 534-097 | Packaged Air Handling Units, 3 to 6 tons Economizer Assembly, 50/60 Hz | 12/00 | | |
| 40RM-20SI IIK524A-72-13 | 534-098 | Packaged Air Handling Units, 6 to 30 tons (21 to 105 kW), Electric Heat Accessory, 50/60 Hz | 1/01 | | 40RM-21SI IIK 524A-72-14 |
| 40RM-21SI IIK524A-72-14 | 534-044 | Packaged Air Handling Units, 6 to 30 tons (21 to 105 kW), Electric Heat Accessory, 50/60 Hz | 9/02 | | |
| Wiring Diagrams | | | | | |
| | | | | | |
| Warranty Certificate | | | | | |
| UED-1855 | 590-033 | Standard Product Warranty | | 8/92 | |
| Technical Training | | | | | |
| | | | | | |

SERVICE

Expansion Valves

The following part numbers are provided as reference only. Before ordering any replacement parts, confirm part numbers in EPIC.

| Brand/Model Number | | | | Expansion Valve | | | |
|--------------------|-----------------|-----|---------------|-----------------|------------------|------------|------------------|
| | | | | Circuit 1 | | Circuit 2 | |
| Bryant 524A | Carrier 40RM | ICP | Payne PAF1 | Adjustable | High Capacity | Adjustable | High Capacity |
| | | | | | | | |
| | -012 | | | EA02DZ488 | | EA02DZ488 | |
| | Q012 | | | EA02DZ489 | | EA02DZ489 | |

Electric Heaters

Temperature Rise

Temperature rise for a given heater can be calculated as follows:

$$\Delta T = \frac{3.412(\text{Heater Watts})}{1.08(\text{CFM})}$$

Indoor Fan Motors

Below is a chart for the fan motors used on various units.

MAINTENANCE

RECOMMENDED SPARE PARTS