QUALIFIED INSTALLER

Improper installation, adjustment, alteration, service or maintenance can cause property damage, personal injury or loss of life. Startup and service must be performed by a Factory Trained Service Technician. A copy of this IOM should be kept with the unit.

If the information in this manual is not followed exactly, a fire or explosion may result causing property damage, personal injury or loss of life.

FOR YOUR SAFETY

Do not store or use gasoline or other flammable vapors and liquids in the vicinity of this or any other appliance.
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AAON® M3 Series Features and Options Introduction

Energy Efficiency
- Direct Drive Backward Curved Plenum Fans
- Double Wall Rigid Polyurethane Foam Injected Panel R-13 Construction
- Factory Installed AAONAIRE® Energy Recovery Wheels

Indoor Air Quality
- 100% Outside Air Configurations
- Multiple High Efficiency Filter Options
- Double Sloped Stainless Steel Drain Pans

Humidity Control
- Modulating Hot Gas Reheat

Safety
- Burglar Bars

Installation and Maintenance
- Convenience Outlet
- Standard Hinged Access Doors
- Labeled Electrical Components
- Color-Coded Wiring and Wiring Diagrams
- Factory Run Test Report
- Clogged Filter Switch
- Magnehelic Gauge
- Double Pane Viewing Windows
- Service Accessible Drain Pan
- Slide Out Coil Assembly

System Integration
- Shipping Available as Factory Assembled or Individual Modules
- AAON or Customer Provided Controls
- Draw-Through or Blow-Through Configurations
- DX and Chilled Water Cooling Options
- Hot Water, Steam, and Direct Fired Gas Heating Options
- Factory Installed Power Exhaust and Power Return Fans
- Hot Water Preheat

Environmentally Friendly
- R-410A Refrigerant

Extended Life
- 2,500 Hour Salt Spray Tested Interior and Exterior Protection
- 6,000 Hour Salt Spray Tested Polymer E-Coated Coils
- Optional 5 Year Parts Warranty
- Optional 10 Year Parts Warranty
- Stainless Steel Drain Pan
Safety

Attention should be paid to the following statements:

NOTE - Notes are intended to clarify the unit installation, operation and maintenance.

⚠️ CAUTION - Caution statements are given to prevent actions that may result in equipment damage, property damage, or personal injury.

⚠️ WARNING - Warning statements are given to prevent actions that could result in equipment damage, property damage, personal injury or death.

⚠️ DANGER - Danger statements are given to prevent actions that will result in equipment damage, property damage, severe personal injury or death.

⚠️ WARNING
ELECTRIC SHOCK, FIRE OR EXPLOSION HAZARD

Failure to follow safety warnings exactly could result in dangerous operation, serious injury, death or property damage.

Improper servicing could result in dangerous operation, serious injury, death or property damage.

➢ Before servicing, disconnect all electrical power to the unit. More than one disconnect may be provided.
➢ When servicing controls, label all wires prior to disconnecting. Reconnect wires correctly.
➢ Verify proper operation after servicing. Secure all doors with key-lock or nut and bolt.

⚠️ WARNING
Electric shock hazard. Before servicing, disconnect all electrical power to the unit, including remote disconnects, to avoid shock hazard or injury from rotating parts. Follow proper Lockout-Tagout procedures.

⚠️ WARNING
FIRE, EXPLOSION OR CARBON MONOXIDE POISONING HAZARD

Failure to replace proper controls could result in fire, explosion or carbon monoxide poisoning. Failure to follow safety warnings exactly could result in serious injury, death or property damage. Do not store or use gasoline or other flammable vapors and liquids in the vicinity of this appliance.
<table>
<thead>
<tr>
<th><strong>WARNING</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>GROUNDING REQUIRED</strong></td>
</tr>
<tr>
<td>All field installed wiring must be completed by qualified personnel. Field installed wiring must comply with NEC/CEC, local and state electrical code requirements. Failure to follow code requirements could result in serious injury or death. Provide proper unit ground in accordance with these code requirements.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>WARNING</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>VARIABLE FREQUENCY DRIVES</strong></td>
</tr>
<tr>
<td>Do not leave VFDs unattended in hand mode or manual bypass. Damage to personnel or equipment can occur if left unattended. When in hand mode or manual bypass mode VFDs will not respond to controls or alarms.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>WARNING</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>UNIT HANDLING</strong></td>
</tr>
<tr>
<td>To prevent injury or death lifting equipment capacity shall exceed unit weight by an adequate safety factor. Always test-lift unit not more than 24 inches high to verify proper center of gravity lift point to avoid unit damage, injury or death.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>WARNING</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>ROTATING COMPONENTS</strong></td>
</tr>
<tr>
<td>Unit contains fans with moving parts that can cause serious injury. Do not open door containing fans until the power to the unit has been disconnected and fan wheel has stopped rotating.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>CAUTION</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>VARIABLE FREQUENCY DRIVES</strong></td>
</tr>
<tr>
<td>Electric motor over-current protection and overload protection may be a function of the Variable Frequency Drive to which the motors are wired. Never defeat the VFD motor overload feature. The overload ampere setting must not exceed 115% of the electric motors FLA rating as shown on the motor nameplate.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>CAUTION</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>FAILURE TO PROPERLY DRAIN AND VENT COILS</strong></td>
</tr>
<tr>
<td>Failure to properly drain and vent coils when not in use during freezing temperature may result in coil and equipment damage.</td>
</tr>
</tbody>
</table>
**CAUTION**
Rotation must be checked on all MOTORS AND COMPRESSORS of 3 phase units at startup by a qualified service technician. Scroll compressors are directional and can be damaged if rotated in the wrong direction. Compressor rotation must be checked using suction and discharge gauges. Fan motor rotation should be checked for proper operation. Alterations should only be made at the unit power connection.

**WARNING**

**WATER PRESSURE**
Prior to connection of condensing water supply, verify water pressure is less than maximum pressure shown on unit nameplate. To prevent injury or death due to instantaneous release of high pressure water, relief valves should be field supplied on system water piping.

**WARNING**
Do not weld or cut foam panel with plasma cutters or a cutting torch – When burnt the foam produces dangerous fumes.

**WARNING**
Do not clean DX refrigerant coils with hot water or steam. The use of hot water or steam on refrigerant coils will cause high pressure inside the coil tubing and damage to the coil.

**WARNING**
Do not work in a closed area where refrigerant or nitrogen gases may be leaking. A sufficient quantity of vapors may be present and cause injury or death.

**CAUTION**
Always use a pressure regulator, valves and gauges to control incoming pressures when pressure testing a system. Excessive pressure may cause line ruptures, equipment damage or an explosion which may result in injury or death.

**CAUTION**
To prevent damage to the unit, do not use acidic chemical coil cleaners. Do not use alkaline chemical coil cleaners with a pH value greater than 8.5, after mixing, without first using an aluminum corrosion inhibitor in the cleaning solution.
Some chemical coil cleaning compounds are caustic or toxic. Use these substances only in accordance with the manufacturer’s usage instructions. Failure to follow instructions may result in equipment damage, injury or death.

Do not enter or reach into a fan cabinet while the fan is still turning.

Check the shipping section weights on the Bill of Lading to be sure they can be lifted safely. Rigging should be adjusted so that all sections are lifted level.

Never attempt to open an access door or remove a panel while the unit is running. Pressure in the unit can cause excessive force against the panel.

Door compartments containing hazardous voltage or rotating parts are equipped with door latches to allow locks. Door latch are shipped with nut and bolts requiring tooled access. If you do not replace the shipping hardware with a pad lock always re-install the nut & bolt after closing the door.

Never pressurize equipment over 8” w.c – Equipment and property damage, personal injury or loss of life could result.

Ensure that sufficient dampers will be open to provide air path before fan is allowed to run.

PVC (Polyvinyl Chloride) and CPVC (Chlorinated Polyvinyl Chloride) are vulnerable to attack by certain chemicals. Polyolester (POE) oils used with R-410A and other refrigerants, even in trace amounts, in a PVC or CPVC piping system will result in stress cracking of the piping and fittings and complete piping system failure.
1. Startup and service must be performed by a Factory Trained Service Technician.

2. The unit is for indoor use. See General Information section and unit specifications for more unit information.

3. Every unit has a unique equipment nameplate with electrical, operational, and unit clearance specifications. Always refer to the unit nameplate for specific ratings unique to the model you have purchased.

4. READ THE ENTIRE INSTALLATION, OPERATION AND MAINTENANCE MANUAL. OTHER IMPORTANT SAFETY PRECAUTIONS ARE PROVIDED THROUGHOUT THIS MANUAL.

5. Keep this manual and all literature safeguarded near or on the unit.

**WARNING**

**HOT PARTS**

Disconnect all power, close all isolation valves and allow equipment to cool before servicing equipment to prevent serious injury. Equipment may have multiple power supplies. Electric resistance heating elements and hot water or steam heating coils may have automatic starts. Hot water will circulate even after power is off.
Unit Orientation

Determine left hand or right hand orientation (connections):

Consider the air flow to be hitting the back of your head.

Figure 1 - Unit Orientation
# Model Number Nomenclature

<table>
<thead>
<tr>
<th>Base Model Number</th>
<th>Individual Module Model Numbers</th>
</tr>
</thead>
<tbody>
<tr>
<td>MBA-101-A-00-CF0A0-000A0-0-0</td>
<td>MBA-104-A-00-00000-00000-0-0</td>
</tr>
<tr>
<td>FMB-102-0-00-B00C0-00000-0-0</td>
<td>SFA-105-0-00-CPTB0-00000-A-0</td>
</tr>
<tr>
<td>CLA-103-A-00-CNCA0-00000-J-0</td>
<td>DPA-106-A-00-D0000-0000C-M-0</td>
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</table>

<table>
<thead>
<tr>
<th>Complete Model Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>M3-0-094-134x119-3-A-A-0-A-0 :</td>
</tr>
</tbody>
</table>
# M3 Series Base Feature String Nomenclature

<table>
<thead>
<tr>
<th>GEN</th>
<th>UNIT TYPE</th>
<th>UNIT SIZE</th>
<th>CROSS SECTION</th>
<th>VOLTAGE</th>
<th>ASSEMBLY</th>
<th>WIRING</th>
<th>ACCESSORIES</th>
<th>CORROSION PROTECTION</th>
<th>BASE RAIL</th>
<th>TYPE</th>
</tr>
</thead>
<tbody>
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</tbody>
</table>

M3 - 0 - 060 - 108 x 099 - 3 - B - A - B - C - B - 0

**BASE MODEL**

**Series and Generation**

M3

**Type**

0 = Indoor Unit  
A = Outdoor Unit

**Unit Size**

- 032 = 32 ft² Coil  
- 039 = 39 ft² Coil  
- 045 = 45 ft² Coil  
- 054 = 54 ft² Coil  
- 060 = 60 ft² Coil  
- 067 = 67 ft² Coil  
- 074 = 74 ft² Coil  
- 083 = 83 ft² Coil  
- 094 = 94 ft² Coil

**Cross Section**

- 092 x 066 = 92” x 66”  
- 092 x 079 = 92” x 79”  
- 092 x 089 = 92” x 89”  
- 108 x 089 = 108” x 89”  
- 108 x 099 = 108” x 99”  
- 122 x 096 = 122” x 96”  
- 134 x 096 = 134” x 96”  
- 134 x 107 = 134” x 107”  
- 134 x 119 = 134” x 119”

**Voltage**

- 2 = 230V/3Φ/60Hz  
- 3 = 460V/3Φ/60Hz  
- 4 = 575V/3Φ/60Hz  
- 6 = 380-415V/3Φ/50Hz  
- 8 = 208V/3Φ/60Hz

**Assembly**

- A = Factory Assembled  
- B = Shipping Splits

**Wiring**

- 0 = No Wiring  
- A = Wiring, Motor Starters & Branch Fusing

**Accessories**

- 0 = None  
- A = 115V Outlet, Factory Wired (13Amp)  
- B = 115V Outlet, Field Wired (20 Amp)

**Corrosion Protection**

- 0 = No Paint  
- A = Interior Corrosion Protection  
- B = Exterior Corrosion Protection  
- C = Shipping Shrink Wrap  
- D = Options A + B  
- E = Options A + C  
- F = Options B + C  
- G = Options A + B + C

**Base Rail**

- 0 = 6” High  
- A = 8” High  
- B = 10” High

**Type**

- 0 = None  
- U= Special Exterior Paint and Special Pricing Authorization  
- X = Special Pricing Authorization and Standard Paint
**Supply Fan Module Feature String Nomenclature**

<table>
<thead>
<tr>
<th>MODULE ID</th>
<th>POSITION</th>
<th>CONNECTION</th>
<th>CTRL TYPE</th>
<th>BLWR QUANTITY</th>
<th>BLWR TYPE</th>
<th>BLWR HP</th>
<th>BLOWER</th>
<th>BLWR ISOLATION</th>
<th>FILT TYPE</th>
<th>FILT ACCESSORY</th>
<th>POWER SWITCH</th>
<th>CTRL PANEL</th>
<th>MODULE ACCESSORY</th>
<th>ACCESS</th>
<th>TYPE</th>
</tr>
</thead>
<tbody>
<tr>
<td>SFA - 106 - 0 - 0 0 - C P H D A - A C B 0 R - B - 0</td>
<td></td>
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</table>

**SUPPLY FAN MODULE**

**Module ID**
- SFA = Supply Fan
- SFB = Supply Fan with Flat Filter Bank
- SFC = Supply Fan with External Control Panel
- SFD = Supply Fan with Flat Filter Bank and External Control Panel

**Position**
- ### = Level and Position of Module in Air Handling Unit

**Connections**
- 0 = No End Wall
- B = Air Leaving Side End Wall

**CONTROLS**

**Type**
- 0 = No Wiring
- A = Terminal Strip, Branch Fusing
- B = VAV Controller, Motor Starters, Branch Fusing
- C = CAV Controller, Motor Starters, Branch Fusing
- D = MUA Controller, Motor Starters, Branch Fusing

**Manufacturer**
- 0 = No Wiring
- A = Terminal Strip
- B = WattMaster
- D = WattMaster with Specials

**BLOWERS AND MOTORS**

**Quantity**
- 0 = 1 Blower with ODP Motor
- A = 2 Blowers with ODP Motors
- B = 3 Blowers with ODP Motors
- C = 4 Blowers with ODP Motors
- D = 1 Blower with TEFC Motor
- E = 2 Blowers with TEFC Motors
- F = 3 Blowers with TEFC Motors
- G = 4 Blowers with TEFC Motors

**Blower Type**
- 0 = Standard Efficiency
- A = Premium Efficiency
- B = Premium Eff with 1 VFD
- C = Premium Eff with 1 VFD and Bypass
- D = Premium Eff with Field Installed VFD
- E = Premium Eff with 1 VFD Shipped Loose
- F = Premium Eff with 2 VFDs
- G = Premium Eff with 2 VFDs and Bypass
- H = Premium Eff with 2 Field Installed VFDs
- J = Premium Eff with 2 VFDs Shipped Loose
- K = Premium Eff with 3 VFDs
- L = Premium Eff with 3 VFDs and Bypass
- M = Premium Eff with 3 Field Installed VFDs
- N = Premium Eff with 3 VFDs Shipped Loose
- P = Premium Eff with 4 VFDs
- Q = Premium Eff with 4 VFDs and Bypass
- R = Premium Eff with 4 Field Installed VFDs
- S = Premium Eff with 4 VFDs Shipped Loose

**Blower HP**
- 0 = 1 hp, 1170 rpm
- A = 2 hp, 1170 rpm
- B = 3 hp, 1170 rpm
- C = 5 hp, 1170 rpm
- D = 7.5 hp, 1170 rpm
- E = 10 hp, 1170 rpm
- F = 15 hp, 1170 rpm
- G = 20 hp, 1170 rpm
- H = 25 hp, 1170 rpm
- J = 30 hp, 1170 rpm
- K = 40 hp, 1170 rpm
- L = 50 hp, 1170 rpm
- M = 1 hp, 1760 rpm
- N = 2 hp, 1760 rpm
- P = 3 hp, 1760 rpm
- Q = 5 hp, 1760 rpm
- R = 7.5 hp, 1760 rpm
- S = 10 hp, 1760 rpm
- T = 15 hp, 1760 rpm
- U = 20 hp, 1760 rpm
- V = 25 hp, 1760 rpm
- W = 30 hp, 1760 rpm
- Y = 40 hp, 1760 rpm
- Z = 50 hp, 1760 rpm
- 1 = 60 hp, 1760 rpm
## Supply Fan Module Feature String Nomenclature

<table>
<thead>
<tr>
<th>Module ID</th>
<th>Position</th>
<th>Connection</th>
<th>Ctrl Type</th>
<th>Ctrl Man</th>
<th>Blwr</th>
<th>Quantity</th>
<th>Blwr Hp</th>
<th>Blwr Type</th>
<th>Blwr Isolation</th>
<th>Filter Type</th>
<th>Filter Accessory</th>
<th>Power Switch</th>
<th>Ctrl Panel</th>
<th>Module Accessory</th>
<th>Access</th>
<th>Type</th>
</tr>
</thead>
<tbody>
<tr>
<td>SFA</td>
<td>106</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>C</td>
<td>P</td>
<td>H</td>
<td>D</td>
<td>A</td>
<td>A</td>
<td>A</td>
<td>B</td>
<td>0</td>
<td>R</td>
<td>B</td>
<td>0</td>
</tr>
</tbody>
</table>

### Blower
- **0** = 24” Diameter
- **A** = 27” Diameter
- **B** = 30” Diameter
- **C** = 33” Diameter
- **D** = 36.5” Diameter
- **E** = 42.5” Diameter

### Blower Isolation
- **0** = Springs (Unhoused 1” Deflection)
- **A** = Springs (Unhoused 2” Deflection)
- **B** = Springs (Seismic 1” Deflection)
- **C** = Springs (Seismic 2” Deflection)
- **D** = Option 0 + Backdraft Dampers
- **E** = Option A + Backdraft Dampers
- **F** = Option B + Backdraft Dampers
- **G** = Option C + Backdraft Dampers

### Filter Type
- **0** = None
- **A** = 2” Pleated, 30% Eff, MERV 8
- **B** = 4” Pleated, 30” Eff, MERV 8

### Filter Accessories
- **0** = None
- **A** = Clogged Filter Switch
- **B** = Magnehelic Gauge
- **C** = Options A + B
- **D** = Air Flow Measurement
- **E** = Options A + D
- **F** = Options B + D
- **G** = Options A + B + D

### Power Switch
- **0** = No Wiring
- **A** = Power Block (No Power Switch)
- **B** = 60 Amp Non-fused Disconnect Switch
- **C** = 100 Amp Non-fused Disconnect Switch
- **D** = 150 Amp Non-fused Disconnect Switch
- **E** = 250 Amp Non-fused Disconnect Switch
- **F** = 400 Amp Non-fused Disconnect Switch
- **G** = 600 Amp Non-fused Disconnect Switch
- **H** = 60 Amp Fused Disconnect Switch
- **J** = 100 Amp Fused Disconnect Switch
- **K** = 150 Amp Fused Disconnect Switch
- **L** = 250 Amp Fused Disconnect Switch
- **M** = 400 Amp Fused Disconnect Switch
- **N** = 600 Amp Fused Disconnect Switch

### Control Panel / Opening
- **0** = None
- **A** = Left Control Panel
- **B** = Right Control Panel
- **C** = Left Discharge Opening
- **D** = Options B + C
- **E** = Right Discharge Opening
- **F** = Options A + E
- **G** = Top Discharge Opening
- **H** = Options A + G
- **I** = Options B + G
Supply Fan Module Feature String Nomenclature

<table>
<thead>
<tr>
<th>MODULE ID</th>
<th>POSITION</th>
<th>CONNECTION</th>
<th>CTRL TYPE</th>
<th>CTRL MANU</th>
<th>BLWR</th>
<th>QUANTITY</th>
<th>BLWR TYPE</th>
<th>BLWR HP</th>
<th>BLOWER</th>
<th>ISO</th>
<th>FILT TYPE</th>
<th>FILT</th>
<th>ACCESSORY</th>
<th>POWER</th>
<th>SWITCH</th>
<th>CTRL PANEL</th>
<th>MODULE ACCESSORY</th>
<th>ACCESS</th>
<th>TYPE</th>
</tr>
</thead>
<tbody>
<tr>
<td>SFA - 106 - 0 - 0 0 - C P H D A - A C B 0 R - B - 0</td>
<td></td>
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</table>

**Module Accessories**

0 = None  
A = Treadplate Floor  
B = Base Drain  
C = Marine Light  
D = Door Window  
F = Options A + B  
G = Options A + C  
H = Options A + D  
J = Options B + C  
K = Options B + D  
L = Options C + D  
P = Options A + B + C  
Q = Options A + B + D  
R = Options A + C + D  
S = Options B + C + D  
U = Options A + B + C + D

**Type**

0 = Standard  
A = Stainless Steel Interior  
B = Stainless Steel Exterior  
C = Options A + B  
X = Special Pricing Authorization  
Y = Options A + X  
Z = Options B + X  
1 = Options A + B + X

**Access**

0 = Left Door, No Drain  
A = Right Door, No Drain  
B = Both Doors, No Drain  
C = Left Door, Left Drain  
D = Left Door, Right Drain  
E = Left Door, Both Drains  
F = Right Door, Left Drain  
G = Right Door, Right Drain  
H = Right Door, Both Drains  
J = Both Doors, Left Drain  
K = Both Doors, Right Drain  
L = Both Doors, Both Drains
### Cooling/Preheat Module Feature Description

#### COOLING/PREHEAT MODULE

**Module ID**
- CLA = Chilled Water Coils, External Connection, Standard Drain Pan (30.5”)
- CLC = Chilled Water Coils, Hydronic Preheat, External Connection, Standard Drain Pan (30.5”)
- CLD = DX Coils
- CLE = DX Coils, Hot Gas Reheat
- CLF = DX Coils, Hydronic Preheat
- CLG = DX Coils, Hot Gas Reheat, Hydronic Preheat
- CLH = Chilled Water Coils, External Connection, Short Drain Pan (9”)
- CLJ = Chilled Water Coils, Hydronic Preheat, External Connection, Short Drain Pan (9”)

#### Position
- ### = Level and Position of Module in Air Handling Unit

#### Compartment Pressurization
- 0 = Blow-Through, No End Wall
- A = Draw-Through, No End Wall
- B = Blow-Through, Air Leaving Side End Wall

#### Blank
- 00 = Standard

#### COOLING COIL

**Rows**
- 0 = 4 Rows, 1/2” Tubes, 50/50 Split
- A = 6 Rows, 1/2” Tubes, 50/50 Split
- B = 8 Rows, 1/2” Tubes, 50/50 Split
- C = 4 Rows, 5/8” Tubes, 50/50 Split
- D = 6 Rows, 5/8” Tubes, 50/50 Split
- E = 8 Rows, 5/8” Tubes, 50/50 Split

#### FPI
- 0 = 8 FPI, 0.0060” Fin Thick, 0.017” Tube Wall
- A = 10 FPI, 0.0060” Fin Thick, 0.017” Tube Wall
- B = 12 FPI, 0.0060” Fin Thick, 0.017” Tube Wall
- C = 8 FPI, 0.0075” Fin Thick, 0.017” Tube Wall
- D = 10 FPI, 0.0075” Fin Thick, 0.017” Tube Wall
- E = 12 FPI, 0.0075” Fin Thick, 0.017” Tube Wall
- F = 8 FPI, 0.0100” Fin Thick, 0.017” Tube Wall
- G = 10 FPI, 0.0100” Fin Thick, 0.017” Tube Wall
- H = 12 FPI, 0.0100” Fin Thick, 0.017” Tube Wall
- J = 8 FPI, 0.0060” Fin Thick, 0.025” Tube Wall
- K = 10 FPI, 0.0060” Fin Thick, 0.025” Tube Wall
- L = 12 FPI, 0.0060” Fin Thick, 0.025” Tube Wall
- M = 8 FPI, 0.0075” Fin Thick, 0.025” Tube Wall
- N = 10 FPI, 0.0075” Fin Thick, 0.025” Tube Wall
- P = 12 FPI, 0.0075” Fin Thick, 0.025” Tube Wall
- Q = 8 FPI, 0.0100” Fin Thick, 0.025” Tube Wall
- R = 10 FPI, 0.0100” Fin Thick, 0.025” Tube Wall
- S = 12 FPI, 0.0100” Fin Thick, 0.025” Tube Wall
- T = 8 FPI, 0.0060” Fin Thick, 0.035” Tube Wall
- U = 10 FPI, 0.0060” Fin Thick, 0.035” Tube Wall
- V = 12 FPI, 0.0060” Fin Thick, 0.035” Tube Wall
- W = 8 FPI, 0.0075” Fin Thick, 0.035” Tube Wall
- Y = 10 FPI, 0.0075” Fin Thick, 0.035” Tube Wall
- Z = 12 FPI, 0.0075” Fin Thick, 0.035” Tube Wall
- 1 = 8 FPI, 0.0100” Fin Thick, 0.035” Tube Wall
- 2 = 10 FPI, 0.0100” Fin Thick, 0.035” Tube Wall
- 3 = 12 FPI, 0.0100” Fin Thick, 0.035” Tube Wall
Cooling/Preheat Coil Module Feature String Nomenclature

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**Circuiting**
- 0 = Full Serpentine
- A = Half Serpentine
- B = 1 1/2 Serpentine
- C = Double Serpentine
- D = DX Single Systems
- E = DX Two Interlaced Systems

**Coating**
- 0 = Galvanized Coil Casings
- A = Polymer E-Coated Coils
- B = Stainless Steel Coil Casings
- C = Stainless Steel Coil Casings, Copper Fins

**Accessories**
- 0 = None
- A = UV Lights
- B = 2” Pleated Filters, 30% Eff, MERV 8, Coil Inlet
- C = 4” Pleated Filters, 30% Eff, MERV 8, Coil Inlet
- D = Options A + B
- E = Options A + C

**PREHEAT COIL**

**Rows**
- 0 = No Preheat Coil
- A = 1 Rows, 1/2” Tubes
- B = 2 Rows, 1/2” Tubes
- C = 1 Rows, 5/8” Tubes
- D = 2 Rows, 5/8” Tubes

**FPI**
- 0 = No Preheat Coil
- A = 8 FPI, 0.0060” Fin Thick, 0.017” Tube Wall
- B = 10 FPI, 0.0060” Fin Thick, 0.017” Tube Wall
- C = 12 FPI, 0.0060” Fin Thick, 0.017” Tube Wall
- D = 8 FPI, 0.0075” Fin Thick, 0.017” Tube Wall
- E = 10 FPI, 0.0075” Fin Thick, 0.017” Tube Wall
- F = 12 FPI, 0.0075” Fin Thick, 0.017” Tube Wall
- G = 8 FPI, 0.0100” Fin Thick, 0.017” Tube Wall
- H = 10 FPI, 0.0100” Fin Thick, 0.017” Tube Wall
- I = 12 FPI, 0.0100” Fin Thick, 0.017” Tube Wall
- J = 8 FPI, 0.0060” Fin Thick, 0.025” Tube Wall
- K = 10 FPI, 0.0060” Fin Thick, 0.025” Tube Wall
- L = 12 FPI, 0.0060” Fin Thick, 0.025” Tube Wall
- M = 8 FPI, 0.0075” Fin Thick, 0.025” Tube Wall
- N = 10 FPI, 0.0075” Fin Thick, 0.025” Tube Wall
- O = 12 FPI, 0.0075” Fin Thick, 0.025” Tube Wall
- P = 8 FPI, 0.0100” Fin Thick, 0.025” Tube Wall
- Q = 10 FPI, 0.0100” Fin Thick, 0.025” Tube Wall
- R = 12 FPI, 0.0100” Fin Thick, 0.025” Tube Wall
- S = 8 FPI, 0.0100” Fin Thick, 0.025” Tube Wall
- T = 10 FPI, 0.0100” Fin Thick, 0.025” Tube Wall
- U = 12 FPI, 0.0100” Fin Thick, 0.025” Tube Wall
- V = 8 FPI, 0.0060” Fin Thick, 0.035” Tube Wall
- W = 10 FPI, 0.0060” Fin Thick, 0.035” Tube Wall
- X = 12 FPI, 0.0060” Fin Thick, 0.035” Tube Wall
- Y = 8 FPI, 0.0075” Fin Thick, 0.035” Tube Wall
- Z = 10 FPI, 0.0075” Fin Thick, 0.035” Tube Wall
- 1 = 12 FPI, 0.0075” Fin Thick, 0.035” Tube Wall
- 2 = 8 FPI, 0.0100” Fin Thick, 0.035” Tube Wall
- 3 = 10 FPI, 0.0100” Fin Thick, 0.035” Tube Wall
- 4 = 12 FPI, 0.0100” Fin Thick, 0.035” Tube Wall
## Cooling/Preheat Coil Module Feature String Nomenclature

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</table>

### Preheat Coil Type
- **0** = No Preheat Coil
- **A** = Hot Water, Full Serpentine (2 Rows Only)
- **B** = Hot Water, Half Serpentine
- **C** = Hot Water, Quarter Serpentine
- **D** = Steam Distributing

### Coating
- **0** = No Preheat Coil
- **A** = Galvanized Coil Casing
- **B** = Polymer E-Coated Coil
- **C** = Stainless Steel Coil Casing
- **D** = Stainless Steel Coil Casing, Copper Fins

### Module Accessories
- **0** = None
- **A** = Marine Light
- **B** = Door Window
- **C** = Options A + B

### Access
- **0** = Left Door, Left Drain, Left Coil Connections
- **A** = Left Door, Left Drain, Right Coil Connections
- **B** = Left Door, Right Drain, Left Coil Connections
- **C** = Left Door, Right Drain, Right Coil Connections
- **D** = Left Door, Both Drains, Left Coil Connections
- **E** = Left Door, Both Drains, Right Coil Connections
- **F** = Right Door, Left Drain, Left Coil Connections
- **G** = Right Door, Left Drain, Right Coil Connections
- **H** = Right Door, Right Drain, Left Coil Connections
- **J** = Right Door, Right Drain, Right Coil Connections
- **K** = Right Door, Both Drains, Left Coil Connections
- **L** = Right Door, Both Drains, Right Coil Connections
- **M** = Both Doors, Left Drain, Left Coil Connections
- **N** = Both Doors, Left Drain, Right Coil Connections
- **P** = Both Doors, Right Drain, Left Coil Connections
- **Q** = Both Doors, Right Drain, Right Coil Connections
- **R** = Both Doors, Both Drains, Left Coil Connections
- **S** = Both Doors, Both Drains, Right Coil Connections

### Type
- **0** = Standard
- **A** = Stainless Steel Interior
- **B** = Stainless Steel Exterior
- **C** = Options A + B
- **X** = Special Pricing Authorization
- **Y** = Options A + X
- **Z** = Options B + X
- **1** = Options A + B + X
Heating Coil Module Feature String Nomenclature

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HEATING COIL MODULE

**Module ID**
- **HCA** = Hot Water Coil, External Connections
- **HCB** = Steam Coil, External Connections
- **HCD** = Hot Water Coil with Internal Face and Bypass Dampers
- **HCE** = Hot Water Coil with External Face and Bypass Dampers
- **HCF** = Integral Face and Bypass Hot Water Coil
- **HCG** = Steam Coil with Internal Face and Bypass Dampers
- **HCH** = Steam Coil with External Face and Bypass Dampers
- **HCJ** = Integral Face and Bypass Steam Coil

**Position**
- ### = Level and Position of Module in Air Handling Unit

**Compartment Pressurization**
- 0 = Blow-Through
- A = Draw-Through

**Blank**
- 00 = Blank

**HEATING COIL**

**Size**
- 0 = No Heating Coil
- A = Size A
- B = Size B
- C = Size C
- D = Size D

**Rows**
- 0 = No Heating Coil
- A = 1 Row, 1/2” Tubes
- B = 2 Rows, 1/2” Tubes
- C = 1 Row, 5/8” Tubes
- D = 2 Rows, 5/8” Tubes

**FPI**
- 0 = No Heating Coil
- A = 8 FPI, 0.0060” Fin Thick, 0.017” Tube Wall
- B = 10 FPI, 0.0060” Fin Thick, 0.017” Tube Wall
- C = 12 FPI, 0.0060” Fin Thick, 0.017” Tube Wall
- D = 8 FPI, 0.0075” Fin Thick, 0.017” Tube Wall
- E = 10 FPI, 0.0075” Fin Thick, 0.017” Tube Wall
- F = 12 FPI, 0.0075” Fin Thick, 0.017” Tube Wall
- G = 8 FPI, 0.0100” Fin Thick, 0.017” Tube Wall
- H = 10 FPI, 0.0100” Fin Thick, 0.017” Tube Wall

**Type**
- 0 = No Heating Coil
- A = Hot Water, Full Serpentine (2 Rows Only)
- B = Hot Water, Half Serpentine
- C = Hot Water, Quarter Serpentine
- D = Steam Distributing

**Coating**
- 0 = No Heating Coil
- A = Galvanized Coil Casing
- B = Polymer E-Coated Coil
- C = Stainless Steel Coil Casing
- D = Stainless Steel Coil Casing, Copper Fins
Heating Coil Module Feature String Nomenclature

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**Blank**

0000 = Standard

**Module Accessories**

0 = None
A = Heating Coil Drain Pan

**Access**

0 = No Drain, Left Coil Connections
A = No Drain, Right Coil Connections
B = Left Drain, Left Coil Connections
C = Left Drain, Right Coil Connections
D = Right Drain, Left Coil Connections
E = Right Drain, Right Coil Connections
F = Both Drain, Left Coil Connections
G = Both Drain, Right Coil Connections
H = No Drain, No Coil Connections

**Type**

0 = Standard
A = Stainless Steel Interior
B = Stainless Steel Exterior
C = Options A + B
X = Special Pricing Authorization
Y = Options A + X
Z = Options B + X
1 = Options A + B + X
Blank Module Feature String Nomenclature

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**Blank Module Feature Description**

**BLANK MODULE**

**Module ID**

- BMA = 2’ Access Section
- BMB = 2.5’ Access Section
- BMC = 3’ Access Section
- BMD = 4’ Access Section

**Position**

### = Level and Position of Module in Air Handling Unit

**Compartment Pressurization**

- 0 = Blow-Through, No End Wall
- A = Draw-Through, No End Wall
- B = Blow-Through, Air Leaving Side End Wall

**Blank**

- 00 = Standard

**Drain Pan**

- 0 = None
- A = Stainless Steel Drain Pan

**Blank**

- 0 = None

**Blank**

- 0 = None

**Blank**

- 0 = None

**Blank**

- 0 = Standard

**Blank**

- 0000 = Standard

**Module Accessories**

- 0 = None
- A = Treadplate Floor
- B = Base Drain
- C = Marine Light
- D = Door Window
- F = Options A + B
- G = Options A + C
- H = Options A + D
- J = Options B + C
- K = Options B + D
- L = Options C + D
- P = Options A + B + C
- Q = Options A + B + D
- R = Options A + C + D
- S = Options B + C + D
- U = Options A + B + C + D

**Access**

- 0 = Left Door, No Drain
- A = Right Door, No Drain
- B = Both Doors, No Drain
- C = Left Door, Left Drain
- D = Left Door, Right Drain
- E = Left Door, Both Drains
- F = Right Door, Left Drain
- G = Right Door, Right Drain
- H = Right Door, Both Drains
- J = Both Doors, Left Drain
- K = Both Doors, Right Drain
- L = Both Doors, Both Drains
- M = No Door, No Drain
- N = No Door, Left Drain
- P = No Door, Right Drain
- Q = No Door, Both Drains

**Type**

- 0 = Standard
- A = Stainless Steel Interior
- B = Stainless Steel Exterior
- C = Options A + B
- X = Special Pricing Authorization
- Y = Options A + X
- Z = Options B + X
- 1 = Options A + B + X
## Filter Module Feature String Nomenclature

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</table>

### FILTER MODULE

- **Module ID**
  - FMA = Flat Filter Bank
  - FMB = Angle Filter Bank
  - FMC = Flat Cartridge Filter Bank
  - FMD = Staggered Cartridge Filter Bank
  - FME = Bag Filter Bank
  - FMF = HEPA Filter Bank

### Position

#### Blank
- 0 = Standard

### Pre-filter

#### Blank
- 0 = None
- A = 2” Pleated, 30% Eff, MERV 8
- B = 4” Pleated, 30% Eff, MERV 8

### Final Filter

#### Blank
- 0 = None
- A = 4” Cartridge Filter
- B = 12” Cartridge Filter
- C = 30” Bag Filter

### Final Filter Efficiency

#### Blank
- 0 = None
- A = MERV 11 (65% Eff)
- B = MERV 13 (85% Eff)
- C = MERV 14 (95% Eff)

### Accessories

#### Blank
- 0 = None
- A = Clogged Filter Switch
- B = Magnehelic Gauge
- C = Options A + B

- **Type**
  - 0 = Standard
  - A = Stainless Steel Interior
  - B = Stainless Steel Exterior
  - C = Options A + B
  - X = Special Pricing Authorization
  - Y = Options A + X
  - Z = Options B + X
  - 1 = Options A + B + X
### Mixing Box/Economizer Module Feature String Nomenclature

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</table>

#### MBA - 101 - 0 - 00 - B B C A 0 - A B 00 Q - B - 0

### Mixing Box/Economizer Module Feature Description

**Module ID**
- MBA = Mixing Box (RA & OA Openings)
- MBB = Mixing Box, Flat Filter Bank
- MBC = Economizer Box (RA, EA, & OA Openings)
- MBD = Economizer Box, Flat Filter Bank

**Position**

### Connections
- **0** = No End Wall
- **A** = Air Entering End Wall

**Blank**
- **00** = Standard

**Outside Air Location**
- **0** = None
- **A** = End
- **B** = Bottom
- **C** = Left
- **D** = Right
- **E** = Top
- **F** = End, Dampers
- **G** = Bottom, Dampers
- **H** = Left, Dampers
- **J** = Right, Dampers
- **K** = Top, Dampers

**Return Air Location**
- **0** = None
- **A** = End
- **B** = Bottom
- **C** = Left
- **D** = Right
- **E** = Top
- **F** = End, Dampers
- **G** = Bottom, Dampers
- **H** = Left, Dampers
- **J** = Right, Dampers
- **K** = Top, Dampers

**Exhaust Air Location**
- **0** = None
- **A** = End
- **B** = Bottom
- **C** = Left
- **D** = Right
- **E** = Top
- **F** = End, Dampers
- **G** = Bottom, Dampers
- **H** = Left, Dampers
- **J** = Right, Dampers
- **K** = Top, Dampers
- **L** = End, Barometric Relief Damper
- **M** = Left, Barometric Relief Damper
- **N** = Right, Barometric Relief Damper

**Damper Type**
- **0** = None
- **A** = Standard Damper, No Actuator
- **B** = Standard Damper, On/Off Actuator
- **C** = Standard Damper, 0-10 VDC Actuator

**Opening Accessories**
- **0** = None
- **A** = Burglar Bars
- **B** = Outdoor Air Hood
- **C** = Outdoor Air Louvers
- **D** = Options A + B
- **E** = Options A + C

**Filter**
- **0** = None
- **A** = 2” Pleated, 30% Eff, MERV 8
- **B** = 4” Pleated, 30% Eff, MERV 8

**Filter Accessories**
- **0** = None
- **A** = Clogged Filter Switch
- **B** = Magnehelic Gauge
- **C** = Options A + B

**Blank**
- **00** = Standard
### Mixing Box/Economizer Module Feature String Nomenclature

<table>
<thead>
<tr>
<th>Module ID</th>
<th>Position</th>
<th>Connection</th>
<th>Blank</th>
<th>OA LOC</th>
<th>RA LOC</th>
<th>EA LOC</th>
<th>Actuator</th>
<th>Opening Accessory</th>
<th>Filter</th>
<th>Accessory</th>
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<th>Access</th>
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</tr>
</tbody>
</table>

#### Module Accessories
- 0 = None
- A = Treadplate Floor
- B = Base Drain
- C = Marine Light
- D = Door Window
- F = Options A + B
- G = Options A + C
- H = Options A + D
- J = Options B + C
- K = Options B + D
- L = Options C + D
- P = Options A + B + C
- Q = Options A + B + D
- R = Options A + C + D
- S = Options B + C + D
- U = Options A + B + C + D

#### Access
- 0 = Left Door, No Drain
- A = Right Door, No Drain
- B = Left and Right Doors, No Drain
- C = Left Door, Left Drain
- D = Left Door, Right Drain
- E = Left Door, Both Drains
- F = Right Door, Left Drain
- G = Right Door, Right Drain
- H = Right Door, Both Drains
- J = Left and Right Doors, Left Drain
- K = Left and Right Doors, Right Drain
- L = Left and Right Doors, Both Drains
- M = Left and End Doors, No Drain
- N = Left and End Doors, Left Drain
- P = Left and End Doors, Right Drain
- Q = Left and End Doors, Both Drains
- R = Right and End Doors, No Drain
- S = Right and End Doors, Left Drain
- T = Right and End Doors, Right Drain
- U = Right and End Doors, Both Drains
- V = End Door, No Drain
- W = End Door, Left Drain
- Y = End Door, Right Drain
- Z = End Door Both Drains

#### Type
- 0 = Standard
- A = Stainless Steel Interior
- B = Stainless Steel Exterior
- C = Options A + B
- X = Special Pricing Authorization
- Y = Options A + X
- Z = Options B + X
- 1 = Options A + B + X
**Discharge Module Feature String Nomenclature**

<table>
<thead>
<tr>
<th>MODULE ID</th>
<th>POSITION</th>
<th>CONNECTION</th>
<th>CTRL TYPE</th>
<th>CTRL MANU</th>
<th>DISCH OPEN LOC</th>
<th>ACTUATOR TYPE</th>
<th>OPENING ACCESSORIES</th>
<th>BLANK</th>
<th>PWR SWITCH</th>
<th>BLANK</th>
<th>BLANK</th>
<th>CTRL PANEL</th>
<th>MODULE ACCESSORY</th>
<th>ACCESS</th>
<th>TYPE</th>
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</tbody>
</table>

**Discharge Module**

- **Module ID**
  - DPA = Discharge Plenum
  - DPB = Discharge Plenum with Control Panel

- **Position**
  - ### = Level and Position of Module in Air Handling Unit

- **Connections**
  - 0 = No End Wall
  - A = Air Leaving Side End Wall

- **Controls**
  - **Controls Type**
    - 0 = No Wiring
    - A = Terminal Strip, Branch Fusing
    - B = VAV Controller, Motor Starters, Branch Fusing
    - C = CAV Controller, Motor Starters, Branch Fusing
    - D = MUA Controller, Motor Starters, Branch Fusing

- **Controls Manufacturer**
  - 0 = No Wiring
  - A = Terminal Strip
  - B = WattMaster
  - D = WattMaster with Specials

- **Discharge Opening Location**
  - 0 = End
  - A = Bottom
  - B = Left
  - C = Right
  - D = Top
  - E = End, Dampers
  - F = Bottom, Dampers
  - G = Left, Dampers
  - H = Right, Dampers
  - J = Top, Dampers

- **Damper Actuator Type**
  - 0 = None
  - A = Standard Damper
  - B = Standard Damper, On/Off Actuator
  - C = Standard Damper, 0-10 VDC Actuator

- **Opening Accessories**
  - 0 = None
  - A = Burglar Bars

- **Blank**
  - 0 = Standard

- **Power Switch**
  - 0 = No Wiring
  - A = Power Block (No Power Switch)
  - B = 60 Amp Non-fused Disconnect Switch
  - C = 100 Amp Non-fused Disconnect Switch
  - D = 150 Amp Non-fused Disconnect Switch
  - E = 250 Amp Non-fused Disconnect Switch
  - F = 400 Amp Non-fused Disconnect Switch
  - G = 600 Amp Non-fused Disconnect Switch
  - H = 60 Amp Fused Disconnect Switch
  - J = 100 Amp Fused Disconnect Switch
  - K = 150 Amp Fused Disconnect Switch
  - L = 250 Amp Fused Disconnect Switch
  - M = 400 Amp Fused Disconnect Switch
  - N = 600 Amp Fused Disconnect Switch

- **Blank**
  - 000 = Standard

- **Control Panel**
  - 0 = No Control Panel
  - A = Left Control Panel
  - B = Right Control Panel
  - C = Center Control Panel

- **Module Accessories**
  - 0 = None
  - A = Treadplate Floor
  - B = Base Drain
  - C = Marine Light
  - D = Door Window
  - F = Options A + B
  - G = Options A + C
  - H = Options A + D
  - J = Options B + C
  - K = Options B + D
  - L = Options C + D
  - P = Options A + B + C
  - Q = Options A + B + D
  - R = Options A + C + D
  - S = Options B + C + D
  - U = Options A + B + C + D
Discharge Module Feature String Nomenclature

<table>
<thead>
<tr>
<th>MODULE ID</th>
<th>POSITION</th>
<th>CONNECTION</th>
<th>CTRL TYPE</th>
<th>CTRL MANU</th>
<th>DISCH</th>
<th>OPEN LOC</th>
<th>ACTUATOR</th>
<th>OPENING</th>
<th>ACCESSORIES</th>
<th>PWR SWITCH</th>
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<th>CTRL PANEL</th>
<th>MODULE ACCESSORY</th>
<th>ACCESS</th>
<th>TYPE</th>
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</thead>
<tbody>
<tr>
<td>DPA</td>
<td>107</td>
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<td>A A</td>
<td>B</td>
<td>A</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>Q</td>
<td>B</td>
<td>Q</td>
<td>B</td>
</tr>
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</table>

**Access**
- 0 = Left Door, No Drain
- A = Right Door, No Drain
- B = Both Doors, No Drain
- C = Left Door, Left Drain
- D = Left Door, Right Drain
- E = Left Door, Both Drains
- F = Right Door, Left Drain
- G = Right Door, Right Drain
- H = Right Door, Both Drains
- J = Both Doors, Left Drain
- K = Both Doors, Right Drain
- L = Both Doors, Both Drains
- M = No Door, No Drain

**Type**
- 0 = Standard
- A = Stainless Steel Interior
- B = Stainless Steel Exterior
- C = Options A + B
- X = Special Pricing Authorization
- Y = Options A + X
- Z = Options B + X
- 1 = Options A + B + X
## Control Panel Module Feature String Nomenclature

<table>
<thead>
<tr>
<th>MODULE ID</th>
<th>POSITION</th>
<th>AIRFLOW</th>
<th>CTRL TYPE</th>
<th>CTRL MANU</th>
<th>BLANK</th>
<th>BLANK</th>
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<th>BLANK</th>
<th>PWR SWITCH</th>
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<th>BLANK</th>
<th>CTRL PANEL</th>
<th>MODULE ACCESSORY</th>
<th>ACCESS</th>
<th>TYPE</th>
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<tr>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### CONTROL PANEL MODULE

**Module ID**
- CMA = 36” Access Selection
- CMB = 48” Access Selection
- CMC = 60” Access Selection

**Position**

### = Level and Position of Module in Air Handling Unit

### Compartment Pressurization

- 0 = Blow-Through
- A = Draw-Through

**CONTROLS**

**Controls Type**

- 0 = No Wiring
- A = Terminal Strip, Branch Fusing
- B = VAV Controller, Motor Starters, Branch Fusing
- C = CAV Controller, Motor Starters, Branch Fusing
- D = MUA Controller, Motor Starters, Branch Fusing

**Controls Manufacturer**

- 0 = No Wiring
- A = WattMaster
- B = WattMaster with Specials

### Blank

- 000 = Standard

### Control Panel Location

- 0 = No Control Panel
- A = Left Control Panel
- B = Right Control Panel

**Module Accessories**

- 0 = None
- A = Treadplate Floor
- B = Base Drain
- C = Marine Light
- D = Door Window
- F = Options A + B
- G = Options A + C
- H = Options A + D
- J = Options B + C
- K = Options B + D
- L = Options C + D
- P = Options A + B + C
- Q = Options A + B + D
- R = Options A + C + D
- S = Options B + C + D
- U = Options A + B + C + D
- V = Options A + B + C + D
- W = Options A + B + C + D
- X = Special Pricing Authorization
- Y = Options A + X
- Z = Options B + X
- 1 = Options A + B + X

### Access

- 0 = No Door, No Drain
- C = Left Door, No Drain
- D = Right Door, No Drain
- E = Left Door, Left Drain
- F = Right Door, Left Drain
- G = Left Door, Right Drain
- H = Right Door, Right Drain

**Type**

- 0 = Standard
- A = Stainless Steel Interior
- B = Stainless Steel Exterior
- C = Options A + B
- X = Special Pricing Authorization
- Y = Options A + X
- Z = Options B + X
- 1 = Options A + B + X
**Exhaust Fan Module Feature String Nomenclature**

<table>
<thead>
<tr>
<th>MODULE ID</th>
<th>POSITION</th>
<th>CONNECTION</th>
<th>PREHEAT TYPE</th>
<th>PREHEAT SIZE</th>
<th>BLWR QUANTITY</th>
<th>BLWR TYPE</th>
<th>BLWR HP</th>
<th>BLOWER ISOLATION</th>
<th>OA FILTER</th>
<th>OA LOC</th>
<th>FA LOC</th>
<th>ACTUATOR TYPE</th>
<th>MODULE ACCESSORY</th>
<th>ACCESS</th>
<th>TYPE</th>
</tr>
</thead>
</table>

**EXHAUST FAN MODULE**

**Module ID**
- EFA = Exhaust Fan
- EFB = Exhaust Fan for Energy Recovery Wheel

**Position**
- ### = Level and Position of Module in Air Handling Unit

**Connections**
- 0 = No Air Entering End Wall
- A = Air Entering Side End Wall

**PREHEAT COIL**

**Type**
- 0 = No Preheat
- A = Hot Water Preheat
- B = Steam Preheat

**Size**
- 0 = None
- A = Preheat Size A
- B = Preheat Size B
- C = Preheat Size C
- D = Preheat Size D

**BLOWERS AND MOTORS**

**Quantity**
- 0 = 1 Blower with ODP Motor
- A = 2 Blowers with ODP Motors
- B = 3 Blowers with ODP Motors
- C = 4 Blowers with ODP Motors
- D = 1 Blower with TEFC Motor
- E = 2 Blowers with TEFC Motors
- F = 3 Blowers with TEFC Motors
- G = 4 Blowers with TEFC Motors

**Blower Type**
- 0 = Standard Efficiency
- A = Premium Efficiency
- B = Premium Eff with 1 VFD
- C = Premium Eff with 1 VFD and Bypass
- D = Premium Eff with Field Installed VFD
- E = Premium Eff with 1 VFD Shipped Loose
- F = Premium Eff with 2 VFDs
- G = Premium Eff with 2 VFDs and Bypass
- H = Premium Eff with 2 Field Installed VFDs
- J = Premium Eff with 2 VFDs Shipped Loose
- K = Premium Eff with 3 VFDs
- L = Premium Eff with 3 VFDs and Bypass
- M = Premium Eff with 3 Field Installed VFDs
- N = Premium Eff with 3 VFDs Shipped Loose
- P = Premium Eff with 4 VFDs
- Q = Premium Eff with 4 VFDs and Bypass
- R = Premium Eff with 4 Field Installed VFDs
- S = Premium Eff with 4 VFDs Shipped Loose

**Blower HP**
- 0 = 1 hp, 1170 rpm
- A = 2 hp, 1170 rpm
- B = 3 hp, 1170 rpm
- C = 5 hp, 1170 rpm
- D = 7.5 hp, 1170 rpm
- E = 10 hp, 1170 rpm
- F = 15 hp, 1170 rpm
- G = 20 hp, 1170 rpm
- H = 25 hp, 1170 rpm
- J = 30 hp, 1170 rpm
- K = 40 hp, 1170 rpm
- L = 50 hp, 1170 rpm
- M = 1 hp, 1760 rpm
- N = 2 hp, 1760 rpm
- P = 3 hp, 1760 rpm
- Q = 5 hp, 1760 rpm
- R = 7.5 hp, 1760 rpm
- S = 10 hp, 1760 rpm
- T = 15 hp, 1760 rpm
- U = 20 hp, 1760 rpm
- V = 25 hp, 1760 rpm
- W = 30 hp, 1760 rpm
- Y = 40 hp, 1760 rpm
- Z = 50 hp, 1760 rpm
- T = 60 hp, 1760 rpm
## Exhaust Fan Module Feature String Nomenclature

<table>
<thead>
<tr>
<th>MODULE ID</th>
<th>POSITION</th>
<th>CONNECTION</th>
<th>PREHEAT TYPE</th>
<th>PREHEAT SIZE</th>
<th>BLWR QUANTITY</th>
<th>BLWR TYPE</th>
<th>BLWR HP</th>
<th>BLOWER</th>
<th>BLOWER ISOLATION</th>
<th>OA FILTER</th>
<th>OA LOC</th>
<th>EA LOC</th>
<th>ACTUATOR TYPE</th>
<th>MODULE ACCESSORI</th>
<th>ACCESS</th>
<th>TYPE</th>
</tr>
</thead>
</table>

### Blower
- **0 = 24” Diameter**
- **A = 27” Diameter**
- **B = 30” Diameter**
- **C = 33” Diameter**
- **D = 36.5” Diameter**
- **E = 42.5” Diameter**
- **F = 36” Diameter, 3 Blade, 6W Prop**
- **G = 42” Diameter, 4 Blade, 6W Prop**
- **H = 42” Diameter, 6 Blade, 6W Prop**
- **I = 48” Diameter, 6 Blade, 6W Prop**

### Blower Isolation
- **0 = None**
- **A = Springs (Unhoused 1” Deflection)**
- **B = Springs (Unhoused 2” Deflection)**
- **C = Springs (Seismic 1” Deflection)**
- **D = Springs (Seismic 2” Deflection)**
- **E = Option 0 + Backdraft Dampers**
- **F = Option A + Backdraft Dampers**
- **G = Option B + Backdraft Dampers**
- **H = Option C + Backdraft Dampers**

### Outside Air Filters
- **0 = None**
- **A = 2” Pleated, 30% Eff, MERV 8**
- **B = 4” Pleated, 30” Eff, MERV 8**
- **C = Option A + Clogged Filter Switch**
- **D = Option B + Clogged Filter Switch**
- **E = Option A + Magnehelic Gauge**
- **F = Option B + Magnehelic Gauge**
- **G = Option A + Clogged Filter Switch + Magnehelic Gauge**
- **H = Option B + Clogged Filter Switch + Magnehelic Gauge**

### Outside Air Location
- **0 = None**
- **A = End**
- **B = Left**
- **C = Right**
- **D = Left and Right**
- **E = Top**
- **F = End, Dampers**
- **G = Left, Dampers**
- **H = Right, Dampers**
- **I = Left and Right, Dampers**
- **J = Top, Dampers**
- **L = End, Hood**
- **M = Left, Hood**
- **N = Right, Hood**
- **P = Left and Right, Hood**
- **Q = End, Dampers, Hood**
- **R = Left, Dampers, Hood**
- **S = Right, Dampers, Hood**
- **T = Left and Right, Dampers, Hood**
- **U = End, Louvers**
- **V = Left, Louvers**
- **W = Right, Louvers**
- **Y = Left and Right, Louvers**
- **Z = End, Dampers, Louvers**
- **1 = Left, Dampers, Louvers**
- **2 = Right, Dampers, Louvers**
- **3 = Left and Right, Dampers, Louvers**

### Exhaust Air Location
- **A = End**
- **B = Left**
- **C = Right**
- **D = Left and Right**
- **E = End, Dampers**
- **F = Left, Dampers**
- **G = Right, Dampers**
- **H = Left and Right, Dampers**
- **J = End, Barometric Relief Damper**
- **K = Left, Barometric Relief Damper**
- **L = Right, Barometric Relief Damper**
- **M = Left and Right, Barometric Relief Damper**
Exhaust Fan Module Feature String Nomenclature

<table>
<thead>
<tr>
<th>Module ID</th>
<th>Position</th>
<th>Connection</th>
<th>Preheat Type</th>
<th>Preheat Size</th>
<th>Blwr Quantity</th>
<th>Blwr Type</th>
<th>Blwr Hp</th>
<th>Blwr Isolation</th>
<th>Oa Filter</th>
<th>Oa Loc</th>
<th>Ea Loc</th>
<th>Actuator Type</th>
<th>Module Accessory</th>
<th>Access</th>
<th>Access Type</th>
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<td>R</td>
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<td></td>
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</tbody>
</table>

**Damper Actuator Type**

0 = None
A = Standard Damper
B = Standard Damper, On/Off Actuator
C = Standard Damper, 0-10 VDC Actuator

**Module Accessories**

0 = None
A = Treadplate Floor
B = Base Drain
C = Marine Light
D = Door Window
F = Options A + B
G = Options A + C
H = Options A + D
J = Options B + C
K = Options B + D
L = Options C + D
P = Options A + B + C
Q = Options A + B + D
R = Options A + C + D
S = Options B + C + D
U = Options A + B + C + D

**Access**

0 = Left Door, No Drain
A = Right Door, No Drain
B = Both Doors, No Drain
C = Left Door, Left Drain
D = Left Door, Right Drain
E = Left Door, Both Drains
F = Right Door, Left Drain
G = Right Door, Right Drain
H = Right Door, Both Drains
J = Both Doors, Left Drain
K = Both Doors, Right Drain
L = Both Doors, Both Drains
M = No Doors, No Drain
N = No Doors, Left Drain
P = No Doors, Right Drain
Q = No Doors, Both Drain

**Type**

0 = Standard
A = Stainless Steel Interior
B = Stainless Steel Exterior
C = Options A + B
X = Special Pricing Authorization
Y = Options A + X
Z = Options B + X
1 = Options A + B + X
**Energy Recovery Module Feature String Nomenclature**

<table>
<thead>
<tr>
<th>MODULE ID</th>
<th>POSITION</th>
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<th>ERW TYPE &amp; QTY</th>
<th>ERW SIZE</th>
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<th>BLANK</th>
<th>RA FILT</th>
<th>RA LOC</th>
<th>ERW ACCESSORY</th>
<th>ACTUATOR TYPE</th>
<th>MODULE ACCESSORY</th>
<th>ACCESS</th>
<th>TYPE</th>
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<tbody>
<tr>
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</tr>
</tbody>
</table>

**ENERGY RECOVERY MODULE**

**Module ID**

HRA = AAONAIRE Energy Recovery Wheel

**Position**

### = Level and Position of Module in Air Handling Unit

**Blank**

0 = Standard

**Energy Recovery Wheel Type and Quantity**

0 = 1 Total Energy Recovery Wheel  
A = 2 Total Energy Recovery Wheels  
B = 1 Sensible Energy Recovery Wheel  
C = 2 Sensible Energy Recovery Wheels

**Energy Recovery Wheel Size**

0 = 25” Wheel  
A = 36” Wheel  
B = 52” Wheel  
C = 64” Wheel  
D = 74” Wheel  
E = 81” Wheel  
F = 86” Wheel  
G = 92” Wheel  
H = 99” Wheel  
J = 104” Wheel  
K = 110” Wheel

**Return Air Opening Location**

0 = None  
A = Bottom  
B = Left  
C = Right  
D = Bottom, Dampers  
E = Left, Dampers  
F = Right, Dampers  
G = Bottom, Burglar Bars  
H = Left, Burglar Bars  
J = Bottom, Dampers  
K = Bottom, Dampers, Burglar Bars  
L = Left, Dampers, Burglar Bars  
M = Right, Dampers, Burglar Bars

**Energy Recovery Wheel Accessories**

0 = None  
A = Energy Recovery Wheel Purge  
C = Defrost Timer  
D = Rotation Detector  
G = Options A + C  
H = Options A + D  
N = Options C + D  
U = Options A + C + D

**Damper Actuator Type**

0 = None  
A = Standard Damper  
B = Standard Damper, On/Off Actuator  
C = Standard Damper, 0-10 VDC Actuator

**Module Accessories**

0 = None  
A = Treadplate Floor  
B = Base Drain  
C = Marine Light  
D = Door Window  
F = Options A + B  
G = Options A + C  
H = Options A + D  
J = Options B + C  
K = Options B + D  
L = Options C + D  
P = Options A + B + C  
Q = Options A + B + D  
R = Options A + C + D  
S = Options B + C + D  
U = Options A + B + C + D
## Energy Recovery Module Feature String Nomenclature

<table>
<thead>
<tr>
<th>Module ID</th>
<th>Position</th>
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<th>ERW Type &amp; Qty</th>
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<th>Blank</th>
<th>Blank</th>
<th>Blank</th>
<th>Blank</th>
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<th>RA LOC</th>
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<th>Access</th>
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<td>A</td>
<td>C</td>
<td>D</td>
<td>0</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Access**

- 0 = Left Door, Left Drain
- 1 = Left Door, No Drain
- 2 = Right Door, No Drain
- 3 = Both Doors, No Drain
- B = Left Door, Right Drain
- D = Left Door, Both Drains
- F = Right Door, Left Drain
- H = Right Door, Right Drain
- K = Right Door, Both Drain
- M = Both Doors, Left Drain
- P = Both Doors, Right Drain
- R = Both Doors, Both Drains

**Type**

- 0 = Standard
- A = Stainless Steel Interior
- B = Stainless Steel Exterior
- C = Options A + B
- X = Special Pricing Authorization
- Y = Options A + X
- Z = Options B + X
- 1 = Options A + B + X
Return Fan Module Feature String Nomenclature

<table>
<thead>
<tr>
<th>MODULE ID</th>
<th>POSITION</th>
<th>CONNECTION</th>
<th>BLANK</th>
<th>BLWR QUANTITY</th>
<th>TYPE</th>
<th>BLWR HP</th>
<th>BLWR BLOWER</th>
<th>BLWR ISOLATION</th>
<th>BLANK</th>
<th>BLANK</th>
<th>BLANK</th>
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<th>MODULE ACCESSORI</th>
<th>ACCESS</th>
<th>TYPE</th>
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<tbody>
<tr>
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<td>0</td>
<td>0</td>
<td>0</td>
<td>C</td>
<td>P</td>
<td>H</td>
<td>D</td>
<td>A</td>
<td>0</td>
<td>0</td>
<td>A</td>
<td>R</td>
<td>M</td>
<td>0</td>
</tr>
</tbody>
</table>

**RETURN FAN MODULE**

**Module ID**
RFA = Return Fan Module

**Position**
### = Level and Position of Module in Air Handling Unit

**Connections**
0 = No End Wall
A = Air Entering End Wall

**Blank**
0 = Standard

**BLOWERS AND MOTORS**

**Quantity**
0 = 1 Blower with ODP Motor
A = 2 Blowers with ODP Motors
B = 3 Blowers with ODP Motors
C = 4 Blowers with ODP Motors
D = 1 Blower with TEFC Motor
E = 2 Blowers with TEFC Motors
F = 3 Blowers with TEFC Motors
G = 4 Blowers with TEFC Motors

**Blower Type**
0 = Standard Efficiency
A = Premium Efficiency
B = Premium Eff with 1 VFD
C = Premium Eff with 1 VFD and Bypass
D = Premium Eff with Field Installed VFD
E = Premium Eff with 1 VFD Shipped Loose
F = Premium Eff with 2 VFDs
G = Premium Eff with 2 VFDs and Bypass
H = Premium Eff with 2 Field Installed VFDs
J = Premium Eff with 2 VFDs Shipped Loose
K = Premium Eff with 3 VFDs
L = Premium Eff with 3 VFDs and Bypass
M = Premium Eff with 3 Field Installed VFDs
N = Premium Eff with 3 VFDs Shipped Loose
P = Premium Eff with 4 VFDs
Q = Premium Eff with 4 VFDs and Bypass
R = Premium Eff with 4 Field Installed VFDs
S = Premium Eff with 4 VFDs Shipped Loose

**Blower HP**
0 = 1 hp, 1170 rpm
A = 2 hp, 1170 rpm
B = 3 hp, 1170 rpm
C = 5 hp, 1170 rpm
D = 7.5 hp, 1170 rpm
E = 10 hp, 1170 rpm
F = 15 hp, 1170 rpm
G = 20 hp, 1170 rpm
H = 25 hp, 1170 rpm
J = 30 hp, 1170 rpm
K = 40 hp, 1170 rpm
L = 50 hp, 1170 rpm
M = 1 hp, 1760 rpm
N = 2 hp, 1760 rpm
P = 3 hp, 1760 rpm
Q = 5 hp, 1760 rpm
R = 7.5 hp, 1760 rpm
S = 10 hp, 1760 rpm
T = 15 hp, 1760 rpm
U = 20 hp, 1760 rpm
V = 25 hp, 1760 rpm
W = 30 hp, 1760 rpm
Y = 40 hp, 1760 rpm
Z = 50 hp, 1760 rpm
1 = 60 hp, 1760 rpm

**Blower**
0 = 24” Diameter
A = 27” Diameter
B = 30” Diameter
C = 33” Diameter
D = 36.5” Diameter
E = 42.5” Diameter
F = 36” Diameter, 3 Blade, 6W Prop
G = 42” Diameter, 4 Blade, 6W Prop
H = 42” Diameter, 6 Blade, 6W Prop
I = 48” Diameter, 6 Blade, 6W Prop

**Blower Isolation**
A = Springs (Unhoused 1” Deflection)
B = Springs (Unhoused 2” Deflection)
C = Springs (Seismic 1” Deflection)
D = Springs (Seismic 2” Deflection)
E = Option 0 + Backdraft Dampers
F = Option A + Backdraft Dampers
G = Option B + Backdraft Dampers
H = Option C + Backdraft Dampers
## Return Fan Module Feature String Nomenclature

<table>
<thead>
<tr>
<th>MODULE ID</th>
<th>POSITION</th>
<th>CONNECTION</th>
<th>BLANK</th>
<th>BLANK</th>
<th>BLWR</th>
<th>QUANTITY</th>
<th>BLWR</th>
<th>TYPE</th>
<th>BLWR HP</th>
<th>BLOWER</th>
<th>BLWR</th>
<th>BLWR ISOLATION</th>
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<th>BLANK</th>
<th>BLANK</th>
<th>CONNECTION</th>
<th>MODULE ACCESSORY</th>
<th>ACCESS</th>
<th>TYPE</th>
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</thead>
<tbody>
<tr>
<td>RFA - 101</td>
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<td>P</td>
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<td>D</td>
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<td>A</td>
<td>R</td>
<td>M</td>
<td>0</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Blank**
000 = Standard

**Connection**
0 = No End Wall
A = Air Entering End Wall

**Module Accessories**
0 = None
A = Treadplate Floor
B = Base Drain
C = Marine Light
D = Door Window
F = Options A + B
G = Options A + C
H = Options A + D
J = Options B + C
K = Options B + D
L = Options C + D
P = Options A + B + C
Q = Options A + B + D
R = Options A + C + D
S = Options B + C + D
U = Options A + B + C + D

**Access**
M = No Door, No Drain
N = No Door, Left Drain
P = No Door, Right Drain
Q = No Door, Both Drains

**Type**
0 = Standard
A = Stainless Steel Interior
B = Stainless Steel Exterior
C = Options A + B
X = Special Pricing Authorization
Y = Options A + X
Z = Options B + X
1 = Options A + B + X
General Description

M3 Series modular air handling units have been designed to maximize the versatility and range of applications. This manual is intended to be a guide to facilitate the installation, startup, operation, and maintenance of this product.

Any conflicting codes or regulations take precedence over the information in this manual. It is important that all installation and service work be performed by qualified professionals.

**CAUTION**

These units must not be used as a “construction heater” at anytime during any phase of construction. Very low return air temperatures, harmful vapors, and misplacement of the filters will damage the unit and its efficiency.

M3 Series modular air handling units are designed for safe operation when installed, operated, and maintained within design specifications and the instructions set forth in this manual. It is necessary to follow these instructions to avoid personal injury or damage to equipment or property during equipment installation, operation, startup, and maintenance.

Receiving

All shipments are FOB from the factory. It is the responsibility of the receiving party to inspect the equipment upon arrival. Units should be inspected for damage that may have occurred in transit. Please do not refuse shipments!

Do the following upon receipt:
1. Assure that freight carrier is in compliance with Bill of Lading instructions.
2. Inspect delivery before signing Bill of Lading.
3. Note on Bill of Lading immediately.
4. Call carrier immediately to file a freight claim and to schedule an inspection.
5. Photograph damage if possible.
6. Do not move or discard damaged freight packaging materials.
7. After losses have been acknowledged by the freight carrier, contact factory for a repair or replacement part quote.

**WARNING**

Improper installation, adjustment, alteration, service or maintenance can cause property damage, personal injury or loss of life. Installation and service must be performed by a trained, qualified installer. A copy of this IOM should be kept with the unit.

**WARNING**

This equipment is protected by a standard limited warranty under the condition that initial start up and maintenance is performed according to the instructions set forth in this manual. This manual should be read in its entirety prior to installation and before performing any service or maintenance work.
6. With permission of freight carrier, order parts and/or make repairs.
7. Stay in contact with freight carrier to ensure payment of your claim.

Nameplate should be checked to ensure the correct model sizes and voltages have been received to match the job requirements.

If repairs must be made to damaged goods, then the factory should be notified before any repair action is taken in order to protect the warranty. Certain equipment alteration, repair, and manipulation of equipment without the manufacturer’s consent may void the product warranty. Contact the AAON Technical Support for assistance with handling damaged goods, repairs, and freight claims: (918) 382-6450.

**Note:** Upon receipt check shipment for items that ship loose such as filters, thermostats and remote sensors. Consult order and shipment documentation to identify potential loose-shipped items. Loose-shipped items may have been placed inside unit cabinet for security. Installers and owners should secure all doors with locks or nuts and bolts to prevent unauthorized access.

The warranty card must be completed in full and returned to AAON not more than 3 months after unit is delivered.

**Storage**
Units are not designed for outdoor use or storage. Equipment should be protected from environmental conditions such as rain, snow, humidity, extreme temperatures and corrosive chemicals.

If installation will not occur immediately following delivery, then store the equipment in a dry protected area away from construction traffic, and in the proper orientation with all internal packaging in place. Secure all loose-shipped items.

![Figure 2 - Lockable Handle](image)

**CAUTION**

If the optional shrink wrap is selected it should be left on units until placed inside the building. Unprotected units could develop corrosion if left exposed to the environment.

**Installation**
AAON equipment has been designed for quick and easy installation.

**Location/Clearances**
Unit should be installed on a flat, level and rigid surface which is capable of supporting the weight of the unit, including water in the coils. It is important that the unit be installed level for drain pan and coil drainage.

The unit should be located so that there is sufficient clearance for accessing doors and panels. A minimum clearance of one unit width is recommended on one side for coil removal.
The unit should be lifted using all marked lifting points. Spreader bars should be used to prevent damage to the unit. They should be at least 12 inches wider than the unit to prevent damage. Be sure that the protruding coil connections are not interfering with the straps.

Only two lifting points on each side of the unit should be connected to one spreader bar, and the straps, chains or cables connected to a single spreader bar should be the same length. The angle of each strap should be a minimum of 60° from horizontal to prevent excess lateral force on the lifting points.

All shipping covers should be left in place until ductwork is ready to be connected or shipping sections are ready to be joined.
Module Location
Module location is identified by a three digit number which is labeled on the access side of the base rail. The last two digits in the location number are an incremental number for the position.

The numbering begins at the return air side of the unit. Module 101 will always be the bottom module at the return air end of the unit.

The unit tag number will also be displayed on each module, so that each module can be reattached to the correct unit.

Module Assembly
The following tools are suggested for equipment assembly:

- Power drill with 5/16” socket
- Come-along (2)
- ½” wrench and socket
- Crowbar
- Phillips-head screwdriver

1. Move the section chosen to be installed first, to the correct position. It is recommended to start with the heaviest section. If that is not possible then the first section may need to be secured to prevent it from moving when additional sections of the unit are installed.
The modules can be moved by rolling them on pipes. The pipes should be spaced a maximum of one foot apart. See the following figure.

2. Remove module shipping covers. Check to make sure neoprene gasket is installed on downstream edge of each section. If any neoprene gasket is damaged or missing it should be repaired with 3/8” thick low-durometer neoprene.

3. Correctly orient the second section and move it close to the first, while aligning the two sections. The split unit lifting lugs should be removed once there is no longer a need to lift the section.

4. Pull the two sections together using a come-along attached to the lifting points on the base rail.

As the sections come together make sure the integrated splice on the unit walls and roof correctly overlap the walls and roof of the adjoining module.
The following figure displays a top view of the correctly overlapping module sections with integrated splice.

Figure 10 - Top View of Module Connection

A crow-bar or similar tool can be used through the lifting holes to line up the two sections.

Figure 11 - Aligning Two Modules

The top of the two sections can be aligned by using a come-along diagonally across the top of the unit.

Figure 12 - Aligning the Top of a Unit

5. Secure the two sections together with bolts in the holes surrounding the lifting hole in the base rail.

Be sure to replace the lifting lugs on either side of the two base rails before bolting together.

Figure 13 - Lifting Lugs and Bolts

6. Pull the top of the two sections together using a come-along attached to the lug points in the top-corner rail.

Figure 14 - Come-Along Putting Together Modules
7. Pull sections together until exterior skins meet.

8. After ensuring that the dimensions are correct, fasten sections together with self-tapping screws (#10 HEX HEAD) on top angle.

9. Attach integrated splice on walls and roof to adjoining section with self-tapping screws (#10 HEX HEAD)

10. Attach corner rail cover with provided .5” #10 flat head screws.
11. Attach the base splice on inside of unit using self-tapping screws (#10 HEX HEAD)

![Figure 19 - Attaching Base Splice](image)

Splice should have 1/8” thick neoprene preinstalled on one side.

Module Disassembly

1. Remove base splice from inside of the unit and remove the top corner rail cover (see Assembly Steps 10 and 11).

2. Remove screws from the integrated splice on walls and roof (see Assembly Step 9).

3. Remove 3 end screws from top angle on both sides of the unit (see Assembly Step 8).

4. Remove bolts connecting the two sections at the base rail. If the sections are to be lifted the lifting lugs must be re-attached to each section (see Assembly Steps 3 and 5).

5. Pull one section straight back from the other until all parts have cleared the other section.

**Note:** When re-assembling sections be sure that all gaskets are in place. It is the contractor’s responsibility to seal all field-split sections.

Spring Isolator Adjustment

AAON M3 Series air handling units are equipped with spring isolators in all blower sections for vibration attenuation.

**CAUTION**

Vibration spring isolators MUST BE adjusted from the shipping position prior to unit start up.

Prior to unit shipment the isolators are set in the lock down position and the blower section deck is resting on a wood base to protect the unit during transit.

Once the unit is set into place it is important that all of the isolators are adjusted out of the shipping position and the shipping material is discarded before the unit is put into operation.
The isolators can be adjusted by first loosening the locking bolt located on top of the frame. The adjustment bolt located just below the frame is used to set the spring into the operating position. After the isolator is set for operation the locking bolt must be tightened against the frame.

Adjust the isolators so that the blower frame is in contact with the gasket on all four sides of the bulkhead. The blower frame should be parallel with the base of the unit.

Blower Wheels
AAON units are equipped with a backward curved blower wheels that is set to deliver the air volume specified according to unit size and/or job requirements.

Air Adjustment
In the event that reduced air volume is required, an air volume band can be installed within the blower wheel to reduce the amount of air delivery. If the unit is factory equipped with the air band but additional air delivery is needed, the band can be removed from the wheel.

The air band is sized according to the air delivery specifications and can be ordered from the factory for field installation.

The related photos of the wheel are provided for practical guidelines only in order to identify the air band location in the wheel. Actual field installation of the air band into the wheel will require access into and through the blower wheel venturi.

The band is made of aluminum, sized and equipped with easy bend tabs that are to be inserted into pre-punched slots provided on the wheel. Once the band has been inserted into the slots, it MUST BE secured by bending the tabs over from the back side of the wheel and also MUST BE secured from the inside by connecting the ends together with a pop-rivet in the holes provided on the ends of the band. If the band is to be field installed, a hand held pop-rivet tool is recommended for connecting the band ends together. Caution must be taken to assure that the band is tightly installed and no damage, denting, or alteration to the wheel or blades occurs during the installation.

Figure 21 - Spring Isolator Adjustment

⚠️ WARNING
Electric shock hazard. Before attempting to perform any installation, service, or maintenance, shut off all electrical power to the unit at the disconnect switches. Unit may have multiple power supplies. Failure to disconnect power could result in dangerous operation, serious injury, death, or property damage.
The primary condensate drains must be trapped for proper operation. Draw-through cooling coils will have a negative static pressure in the drain pan area. This will cause an un-trapped drain to back up due to air being pulled up through the condensate drain piping. Blow-through coils will have a positive static pressure in the drain pan. The condensate piping on these drain pans must be trapped to prevent pressure loss through the drain.

Condensate drain trapping and piping should conform to all applicable governing codes.

**Note:** The drain pan connection is a 1.5” MPT fitting.
Draw-Through Coils

The X dimension on the draw-through trap should be at least equal to the absolute value of the negative static pressure in the drain pan plus one inch. To calculate the static pressure at the drain pan add the pressure drops of all components upstream of the drain pan, including the cooling coil, and add the return duct static pressure. Include the dirt allowance pressure drop for the filters to account for the worst-case scenario.

The height from top of the bottom bend of the trap to the bottom of the leaving pipe must be at least equal to one half of the X dimension. This ensures that enough water is stored in the trap to prevent losing the drain seal during unit startup.

Note: The absolute value of the fan inlet pressure will always be greater than or equal to the absolute value of the static pressure in the drain pan on draw-through units, so the fan inlet pressure is a safe value to use for the drain pan static pressure.

Table 1 - Draw-Through Drain Trap Dimensions

<table>
<thead>
<tr>
<th>Drain Pan Pressure (inches of water)</th>
<th>Trap Dimensions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Negative Static</td>
<td>X</td>
</tr>
<tr>
<td>-0.50</td>
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<td>2.50</td>
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<td>-2.00</td>
<td>3.00</td>
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<td>3.50</td>
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</tr>
<tr>
<td>-4.00</td>
<td>5.00</td>
</tr>
</tbody>
</table>
Draw-Through P-Trap Example

The unit shown above is a draw-through unit with a mixing box, 12” cartridge filters with 2” pleated pre-filters, hot water preheat coils, chilled water cooling coils, and hot water reheat coils. The static pressure in the drain pan area is found by finding the largest negative static pressure entering the unit, and then subtracting any pressure drops between that point and the drain pan.

In the case below the outside air static pressure is -0.75” due to duct loss between the unit and the outside air intake. The return air static pressure is -1.5” due to the building pressure and duct loss between the space and the unit. In this case the -1.5” would be used.

The static pressures of all the components between the return air opening and the drain pan need to be subtracted from the external static pressure at the return air opening.
These values are listed on the Unit Rating Sheet which can be obtained from the AAON sales representative.

**Unit Rating**

2401 South tuna ave. - Tulsa, oklahoma 74107-2720 - ph: (918) 493-2950 fax: (918) 633-0494
AAONEcat32 Ver. 3.109-200 9/29/99

<table>
<thead>
<tr>
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</tr>
</thead>
<tbody>
<tr>
<td>Tag: AHU# 5</td>
</tr>
</tbody>
</table>

**Job Information**

- **Job Name**: Draw-Thru Unit
- **Job Number**: Job 92
- **Site Altitude**: 1500 ft
- **Unit Foot Print (W x L)**: 144" x 313"

**Unit Static Pressure**

- Excess: 3.00 in. ugc
- Dirt Allowance: 0.53 in. ugc

**Components Static Pressure**

- 101-RA Opening: 0.28
- 102-12" Cartridge Filter: 0.35
- 102-45" Pleated Filter: 0.3
- 103-Cooling Coil: 0.45
- 103-Preheat coil: 0.09
- 104-Heating Coil: 0.08
- 107-Discharge Opening: 0.15

**Cooling Section**

- **Design**: Gross
- **Net**:
- **Total Capacity**: 1333.15 MBH
- **Sensible Capacity**: 1927.6 MBH
- **Latent Capacity**: 395.47 MBH
- **Mixed Air Temp**: 89.90°F DB / 67.0°F WB
- **Entering Air Temp**: 89.90°F DB / 67.0°F WB
- **Lx Air Temp (Cool)**: 55.21°F DB / 57.53°F WB
- **Lx Air Temp (Unit)**: 62.31°F DB / 59.03°F WB
- **Supply Air Fan**: 4 x 300 @ 19.83 BHP En.
- **SA Fan RPM / Width**: 1460 / 5.925" 

**Heating Section**

- **Total Capacity**: 2550.5 MBH
- **RA Temp**: 75.0°F DB / 62.0°F WB
- **Entering Air Temp**: 68.0°F DB / 45.0°F WB
- **Leaving Air Temp**: 112.5°F DB / 75.0°F WB

**EER - ARI Listing Information**

No ARI Rating Program Exists for Non-Compressorized Units. All AAON Units Are Tested in Accordance With ARI Standards.

**Electrical Data**

<table>
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<th>Rating</th>
<th>Unit FLA</th>
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<tbody>
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<td>0.0</td>
<td>240</td>
<td>3</td>
<td>1760</td>
<td>34.0</td>
</tr>
</tbody>
</table>

**Cabinet Sound Power Levels**

- **Octave Bands**: 63, 125, 250, 500, 1000, 2000, 4000, 8000
- **Discharge Lw(dB)**: 40
- **Return Lw(dB)**: 40

*Sound power levels are given for informative purposes only. The actual levels are not guaranteed.

Figure 25 - Example Draw-Through AAONEcat32 Rating Sheet
The following components should be added:

- RA Opening 0.28”
- 12” Cartridge Filter 0.35”
- Pleated Cartridge Filter 0.30”
- Cooling Coil 0.45”
- Preheat Coil 0.09”
- Dirt Allowance 0.35”

These values should be added to the absolute value of 1.5” to get a total of 3.32” static pressure. Note that the heating coil which is downstream of the drain pan and the discharge opening static pressures are not used in the calculation.

In this case the ‘X’ dimension of the draw-through p-trap should be at least 4.32”, which is the absolute value of the calculated static pressure in the drain pan plus one inch. The lower part of the p-trap should be half that value, or 2.16”.

The total height of the p-trap would be 6.48” measured from the bottom of the drain pan connection to the top of the bottom bend, so one diameter of the pipe needs to be added to find the required clearance for the drain. If the outside diameter of the pipe is 1.5” the total clearance required would be 7.98”. If the unit has a 6” base rail, accommodations must be made for an additional 2” of drain pipe to extend below the base rail.
**Blow-Through Coils**

Figure 26 - Blow-Through Drain Trap

The Y dimension of blow-through traps should be at least equal to the value of the positive pressure in the drain pan plus one inch. This ensures that there will be enough water stored in the trap to counter the static pressure in the drain pan. To find the pressure subtract any pressure drops between the drain pan and the supply blower from the blower discharge pressure. The worst-case scenario for blow-thru coils is the minimum pressure drop, so do not include dirt allowance pressure drops for filters.

The bottom of the leaving pipe should be at least one half inch lower than the bottom of the drain pan connection. This ensures proper drainage when the unit is not running.

**Note:** It may be necessary to fill the trap manually, or the trap can be filled automatically by operating the unit until enough condensate collects to fill the trap.

The trap will then be filled when the unit is turned off.

<table>
<thead>
<tr>
<th>Drain Pan Pressure (inches of water)</th>
<th>Trap Dimension Y (inch)</th>
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<tbody>
<tr>
<td>0.5</td>
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</table>
Blow-Through P-Trap Example

In this case the supply external static pressure is 3”. The only components between the drain pan and the supply-air ductwork are the discharge opening and the heating coil. To find the static pressure in the drain pan, subtract .08” and .15” from the 3” supply air external static pressure. This gives a positive pressure in the drain pan of 2.77”. These values are listed on the Unit Rating Sheet which can be obtained from the AAON sales representative.
Figure 28 - Example Blow-Through AAONEcat32 Rating Sheet
The ‘Y’ dimension on the blow-through p-trap should be at least 3.77”, or one inch plus the calculated static pressure in the drain pan. The total p-trap height will need to be 3.77” plus at least .5” and then one pipe diameter. If the outside diameter of the p-trap pipe is 1.5” then the total height of the trap would be 5.77”. A unit with the 6” base rail would have sufficient height to properly trap this example unit without additional accommodations.

1. Remove the external control panel from the shipping position in the supply fan module.

2. Install the external control panel by placing it on the preinstalled mounting bracket on the exterior of the supply fan module.

3. While one or two people hold the external control panel in place on top of the mounting bracket, another person should secure it to the wall of the unit with self-tapping #10 screws through the side angles and top angles.

4. Push conduit and wiring from inside the blower cabinet into the external control panel and connect wiring according to the provided wiring diagram.

5. Seal the hole in the foam wall by caulking around the entire perimeter of the conduit on both the inside and the outside of the unit. Use an industrial grade silicone sealant or a duct seal compound.

Base Drains
Base drains must be either capped or trapped using the same methods as condensate drains. If a base drain is to be trapped and then piped, the trap must be manually filled before unit operation and periodically afterwards as the water evaporates.

External Control Panel
Note: The external control panel is heavy. Installation is a multi-person job.

The optional external control panel may be shipped loose from the factory. If it is shipped loose, it is secured for shipping in the supply fan module.

To install the external control panel use the following procedure:
**Electrical**

All external wiring must comply with the National Electric Code (NEC) and any additional local codes. It is the responsibility of the installer to conform to all necessary codes. All internal wiring complies with UL 1995.

*Note:* All voltages should be within 10% of unit and component nameplate voltages.

Check the unit data plate to make sure it agrees with the power supply. For units that contain factory wiring, connect power supply to the unit according to the provided wiring diagram.

All wiring should be done in conduit on the exterior of the unit. Control wiring should not be run in the same conduit as power wiring. Protect the branch circuit in accordance with code requirements.

The unit must be electrically grounded in accordance with the National Electric Code, ANSI/NFPA No. 70. In Canada use current C.S.A. Standard C22.1, Canadian Electric Code Part 1.

For field wired units, refer to the motor connection diagram on the inside of the motor terminal box for wiring instructions. Check the electrical characteristics of the motor to make sure they correspond to the supply voltage and the conductor size used.

**Foam Insulated Panel Cutting**

*Note:* The location for field cut electrical entry is marked on the unit. Field cut openings must be a minimum of 6 inches away from all components and wiring to prevent damage due to drilling or cutting.

To pass wires through the wall or roof of the unit, a hole should be cut and conduit passed through it. Use the following procedure to cut a round hole in a foam panel:

1. Locate the placement of the hole. Be sure that the conduit will not interfere with the operation of any component or prevent access of any door or removable panel.

2. Drill a pilot hole all the way through the foam wall or roof.

3. Using a hole saw cut the hole through the metal on both sides of the foam part.

4. With a knife cut the foam out of the hole.

5. After the conduit or pipe is installed in the hole caulk the entire perimeter of the hole on
both sides with an industrial grade silicone sealant or a duct seal compound.

If a larger cut-out is needed for additional duct connections not provided by the factory, or for any other reason, it is very important that the foam be completely sealed. Insulation covers should be fabricated from sheet metal to cover the foam at the cut. The edges and corners that are not covered should then be sealed using silicone caulking or a duct seal compound.

If a reciprocating saw is used to make the cut-out take care that the metal skins of the foam part do not separate from the foam, this would result in reduced structural integrity of the part.

**Dampers and Actuators**

![WARNING]

Care should be taken to ensure that the dampers do not fail to a position where all are closed while the fan is still running. This can result in damage to the unit.

AAON damper blades are connected with interlocking gears. A coupling is attached to one of the gears for connection to the actuator.

Factory provided actuators have a spring return. The recommended configuration is that the return air actuator should return to an open position and the exhaust and outside air should return to a closed position.

It is recommended that field provided actuators also be spring return with the same configuration listed above.

The factory provided actuators use a 24V power supply and are either on/off or modulating using a 2-10 VDC signal.
**Note:** If one damper bank is to be independently controlled by two actuators, the two gears that join the separate portions will need to be cut so that they do not engage each other.

![Figure 32 - Independently Controlled Dampers](image)

**Duct System**
Remove duct shipping covers immediately prior to duct connection. A 1 inch tall duct flange is provided around each duct opening.

**Piping**

---

**CAUTION**

PVC (Polyvinyl Chloride) and CPVC (Chlorinated Polyvinyl Chloride) are vulnerable to attack by certain chemicals. Polylester (POE) oils used with R-410A and other refrigerants, even in trace amounts, in a PVC or CPVC piping system will result in stress cracking of the piping and fittings and complete piping system failure.

The coil connections are copper MPT. Use dielectric unions as necessary to prevent galvanic-corrosion.

Always use a backup pipe wrench to prevent excess stress and damage to coil connections. The connecting piping should never be supported by the coil, it should be independently supported. Swing joints or flexible fittings should be used to absorb expansion and contraction due to temperature changes.

An access cover is provided for the chilled water, hot water, and steam coil vent and drains. Remove the two bolts by each coil connection. When replacing the cover, take care not to over-tighten the bolts as this could cause the rivet-nut to come loose. Vents and drains are sealed with half inch plugs.

All coils should be piped in a counter-flow arrangement. The water entering connection should be on the air leaving side of the coil.

---

**CAUTION**

All piping design and installation should be performed by qualified professionals. All applicable codes and industry standards should be adhered to.
Before starting up the equipment, building construction should be complete. Startup personnel should:

- Have a working knowledge of general HVAC and mechanical commissioning procedures and practices.
- Be familiar with unit functions, features, optional unit accessories, and all control sequences.
- Have appropriate literature on hand for consultation.

### Startup Checklist

- Check all electrical connections for tightness.
- Inspect all sections. Remove any shipping restraints and check for loose debris.
- Check fan set screws for tightness, turn fan to assure free rotation.
- Ensure electrical supply matches unit nameplate.
- Ensure condensate lines are connected, glued, and sloped towards building drain.
- Manually fill any trapped drains. (Condensate drains will fill automatically)
- Check for compliance of all codes and special provisions.
- Attach all access panels, close all doors.
- Ensure that ductwork dampers are open.

### Operation

- Improper installation, adjustment, alteration, service or maintenance can cause property damage, personal injury or loss of life. Startup and service must be done by a Factory Trained Service Technician. A copy of this IOM should be kept with the unit.

- Improper startup procedures could damage unit and possibly void manufacturer’s warranties.

### Procedures

Install any gauges, voltmeter, and ammeter before startup. If any excess sound or vibration occurs during startup, note and determine the cause, and shut off unit immediately to correct.
1. Turn the unit power on.

2. One at a time turn on all blowers, check for correct rotation. Units with factory wiring have been tested. If motor rotation is not correct, switch position of two legs of power at the power entry. Rotation may need to be corrected for each motor for field wired units. Plenum fans should rotate clockwise as viewed from the air leaving side of the motor.

3. When rotation directions are correct, take blower amp readings and check to make sure they are within the safety factor of the motor.

4. With the blowers off, check the operation of all dampers. Ensure that the dampers are operating such that airflow through the unit will not be shut off while the fan is operating. This could cause severe damage to the unit.

5. Check the operation of all water valves. Simulate calls for cooling and heating, check for the proper response of the valves.

Check the operation of any other optional equipment per the manufacturer’s specifications.

**Commissioning**

The commissioning of an air conditioning system is the process of achieving, verifying, and documenting the performance of that system to meet the operational needs of the building. Adjustments made during the commissioning phase may include air or water balancing, or configuration of controls and operational sequences.

**Air Balancing**

High performance systems commonly have complex air distribution and fan systems. Unqualified personnel should not attempt to adjust fan operation or air circulation, as all systems have unique operating characteristics. Professional air balance specialists should be employed to establish actual operating conditions and to configure the air delivery system for optimal performance.

**Water Balancing**

A hydronic specialist with a complete working knowledge of water systems, controls, and operation must be employed to properly balance the entire system. Unqualified personnel should not attempt to manipulate temperatures, pressures, or flow rates, as all systems have unique operating characteristics and improper balancing can result in undesirable noises and operation.

**Controls**

M3 Series air handlers can be shipped from the factory with no controls and no wiring, wired to terminal blocks, or with a factory installed WattMaster VCC-X controller. If the unit includes a VCC-X controller, the technical guide will be included with the literature package.
Operate unit according to control manufacturer’s instructions. Contact sales representative or controls contractor for information on non-factory controls.

**Maintenance**

**Routine Maintenance**
Routine maintenance is required to keep the unit running efficiently and minimize down time. The following maintenance schedule should be used.

One week after start-up:
- Check filters for cleanliness. Replace if necessary.
- Check cycling of fans and valves. Correct unusual cycling.
- Check for correct damper operation.
- Check blower set screws. Tighten if necessary.

Monthly:
- Check filters for cleanliness. Replace if necessary.
- Check drain pans to ensure proper drainage and clean as necessary.
- Inspect all coils. Clean if dirty or obstructed in any way.

Seasonal:
- Check operation of heating and cooling sequences.
- Check for correct damper operation.
- Check fans for wear. Clean if necessary.
- Refer to motor manufacturer IOM for re-lubrication schedule.
- Winterize coils if necessary.
- Inspect and if necessary clean unit interior.

Yearly:
- Clean coils, drain pan and drain line.
- Check electrical connections for tightness.
- Check piping and valves for correct operation.

**Blower Assembly**
The M3 Series air handling unit uses only direct drive fans. The only bearings that will need to be lubricated are the ones contained in the motor. Refer to the motor manufacturer maintenance manual for the correct re-lubrication schedule and lubricant information.

It is important that fans be kept clean to maintain efficiency and reduce stress on the unit. To clean the fans first make sure the power to the unit is turned off. Secure the fan so it cannot free-wheel. Clean dust and debris on the fan. Check set screws for tightness. Rotate the fan by hand and check for noise and roughness. The fan should rotate smoothly.

**Coils/Drain Pans**
Coils must be kept clean to maintain peak unit efficiency and capacity. Clean filters will help prevent dirty coils; however, coils should still be cleaned at least annually by an HVAC professional.

The coils should be cleaned using low-pressure water, low-pressure air, or a non-corrosive coil cleaner.

Take care not to damage fins while cleaning. High pressure water can damage fins.

Condensate drain pans should be inspected often and cleaned at least annually to maintain proper drainage and prevent the spread of disease. Cooling coils are raised off the drain pan to facilitate cleaning. The drain and p-traps should also be checked to prevent clogging. A clogged drain will result in water backing up in the drain pan and potentially damaging the unit and the building.
E-Coated Coil Cleaning
Documented quarterly cleaning of e-coated coils is required to maintain coating warranty coverage.

Surface loaded fibers or dirt should be removed prior to water rinse to prevent restriction of airflow. If unable to back wash the side of the coil opposite of the coils entering air side, then surface loaded fibers or dirt should be removed with a vacuum cleaner. If a vacuum cleaner is not available, a soft non-metallic bristle brush may be used. In either case, the tool should be applied in the direction of the fins. Coil surfaces can be easily damaged (fin edges bent over) if the tool is applied across the fins.

Use of a water stream, such as a garden hose, against a surface loaded coil will drive the fibers, dirt and salts into the coil. This will make cleaning efforts more difficult. Surface loaded fibers must be completely removed prior to using low velocity clean water rinse.

Quarterly cleaning is required to maintain warranty coverage and is essential to maintain the life of an E-coated coil. Coil cleaning shall be part of the unit's regularly scheduled maintenance procedures.

Failure to clean an E-coated coil on the prescribed quarterly cycle will void the warranty and may result in reduced efficiency and durability in the environment.

A routine two-step quarterly coil cleaning is required to maintain warranty.

Step one is to clean the coil with the below approved coil cleaner (see approved products list under the "Recommended Coil Cleaners" section.

Step two is to use the approved salt/chloride remover under the "Recommended Chloride Remover" section to dissolve soluble salts and revitalize the unit. It is very important when cleaning and/or rinsing not to exceed 130°F and potable water pressure is less than 100 psig to avoid damaging the unit and coil fin edges.

**WARNING**
Electric shock hazard. Shut off all electrical power to the unit to avoid shock hazard or injury from rotating parts.

**CAUTION**
High velocity water from a pressure washer or compressed air should only be used at a very low pressure to prevent fin and/or coil damages. The force of the water or air jet may bend the fin edges and increase airside pressure drop. Reduced unit performance or nuisance unit shutdowns may occur.

**CAUTION**
Harsh chemicals, household bleach, or acid cleaners should not be used to clean e-coated coils. These cleaners can be very difficult to rinse out of the coil and can accelerate corrosion and attack the e-coating. If there is dirt below the surface of the coil, use the recommended coil cleaners.
For routine quarterly cleaning, first clean the coil with the below approved coil cleaner. After cleaning the coils with the approved cleaning agent, use the approved chloride remover to remove soluble salts and revitalize the unit.

**Recommended Coil Cleaner – Step 1**
**GulfCoat™ Coil Cleaner**, assuming it is used in accordance with the manufacturer's directions on the container for proper mixing and cleaning, has been approved for use on E-coated coils to remove mold, mildew, dust, soot, greasy residue, lint and other particulate. Never use any cleaners that are not approved.

**Recommended Chloride Remover – Step 2**
**CHLOR*RID® Concentrate**, assuming it is used in accordance with the manufacturer's directions on the container for proper mixing, has been approved for use on E-coated coils to remove chlorides/salts & sulfates. Never use any chloride removers that are not approved.

**Warranty Protection – Step 1**
Complete the coil cleaning following these steps:

1. Ensure that the power to the unit is off and locked out.
2. Clean the area around the unit if needed to ensure leaves, grass or loose debris will not be blown into the coil.
3. Remove panels or tops as required gaining access to the coil(s) to be cleaned.
4. Using a pump up sprayer, fill to the appropriate level with potable water and add the correct amount of approved cleaner as per manufacture instructions leaving room for the pump plunger to be reinserted.
5. If the coils have heavy dirt, fibers, grass, leaves etc. on the interior or exterior face areas, a vacuum and brush should be used to remove those surface contaminants prior to applying cleaner. The interior floor, drain tray or pan areas should also be vacuumed.
6. Apply the mixed cleaner to coil surfaces using a pressurized pump up sprayer maintaining a good rate of pressure and at a medium size nozzle spray, (not a solid stream and not a wide fan but somewhere in the middle). Work in sections/panels ensuring that all areas are covered and kept wetted.
7. Apply the cleaner to unit interior air exiting side coil surfaces first. Work in sections/panels moving side to side and from top to bottom.
8. Generously soak coils by spraying cleaner directly on and into the fin pack section to be cleaned and allow the cleaning solution to soak for 5 to 10 minutes.
9. Using pressurized potable water, (< 100 psi), rinse the coils and continue to always work in sections/panels. Start at the top of the coil and slowly move vertically downward to the bottom. Then, staying in the same vertical area, slowly move back up to the top where you started. Now move over slightly overlapping the area just completed and repeat above. Continue until all coil areas on the inside of the unit have been rinsed.
10. Complete steps 5-9 for the exterior air entering side of the coils.
11. Final rinse – Now complete a quick rinse of both sides of the coil.

**NOTE:** Coils should always be cleaned / back flushed, opposite of airflow to prevent impacting the dirt into the coil.
including the headers, piping, u-bends and hairpins.
12. If the coil has a drain pan or unit floor that is holding rinse water or cleaner, extra time and attention will need to be taken in those areas to ensure a proper rinse has been completed.

Warranty Protection – Step 2
Complete the coil chloride (salt) removal following these steps:
1. CHLOR*RID® is a concentrate to be used for both normal inland applications at a 100:1 mix ratio OR for severe coastal applications 50:1 mix ratio with potable water, (2.56 ounces of Chlor*rid to 1 gal of water). Using a pump up sprayer, fill to the appropriate level with potable water and add the correct amount of CHLOR*RID® salt remover leaving room for the pump plunger to be reinserted.
2. Apply CHLOR*RID® to all external coil surfaces using a pressurized pump up sprayer maintaining a good rate of pressure and at a medium size nozzle spray, (not a solid stream and not a wide fan but somewhere in the middle). Work in sections/panels ensuring that all areas are covered and kept wetted.
3. Generously soak coils by spraying CHLOR*RID® directly on and into the fin pack section. Let stand for 5 to 10 minutes keeping the area wetted. Do not allow to dry before rinsing.
4. Using pressurized potable water, (< 100 psi), rinse the CHLOR*RID® and dissolved chlorides/salts off of the coils continuing to always work in sections/panels.
5. Starting at the top of the coil, begin rinsing the coil from side to side until you reach the bottom. Repeat as many times as is necessary to ensure all coil sections/panels have been completed and are thoroughly rinsed.
6. Reinstall all panels and tops that were removed.

Winterizing Coils
In some cases it may be necessary to winterize water coils to prevent them from freezing.

First completely drain the coils. There is a drain located below the ‘water in’ connection and a vent connection located above the ‘water out’ connection. Auxiliary drain piping can also be added to exterior water piping if yearly winterizing is necessary. After the coil is drained, fill with an antifreeze solution using a circulating pump. Then thoroughly drain.

Removing Coils
Coils on the M3 units can be removed from either side of the unit. The coils are independently supported so they can be removed independently from either side of the unit.

To remove a coil, first disconnect the water piping from the coil. Remove the coil access panel on the side from which the coil is to be removed. Remove the screws connecting coil end panel to the coil. Slide the coil straight out onto a support that is at the same level as the coil.

<table>
<thead>
<tr>
<th>CAUTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>Take care that the coil is not dropped or knocked over. This could damage the coil fins, or cause a leak in the coil.</td>
</tr>
</tbody>
</table>

To replace the coil, the above procedure should be reversed. The coil should first be
placed on a support that is at the same level as the coil position in the unit. The coil should then be slid straight into the unit.

The upper coil location has angles on both the front and back side of the coil; the lower coil has an angle on the downstream side of the coil and guides on the upstream side. Be sure that the coil is all the way up against the front (downstream) side of the coil, this should center the coil in the opening.

Push the coil all the way in so that the return-bend side of the coil is between 1/8” and 1/4” from the inside wall of the unit. For cooling coils, be sure that the vertical headers are entirely over the drain pan. Screw the coil end panel to the coil using self-tapping sheet metal screws.

Figure 35 - Coil Removal

Doors/Panels
Removable access panels are provided directly across from most access doors. If regular access is required from the panel side of the unit, the doors and panels can be swapped or additional doors can be ordered from the factory. Contact sales representative to order additional parts.

Note: For safety, inside-opening doors are used in positive pressure sections and outside-opening doors are used in negative pressure sections. The opening direction of doors cannot be changed.

WARNING
Shut off power to unit and wait for fans to stop turning before removing an access panel. To make sure the unit is not pressurized, open door opposite the access panel. Serious injury can result from removing a panel under positive pressure.
To remove an access panel, remove bolts from the perimeter. When replacing a panel, make sure that the neoprene gasket on the panel is not damaged. Do not over-tighten the bolts as this could cause the rivet-nuts to come loose.

Figure 36 - Access Door/Panel Removal

**Outside Opening Door and Panel**

To switch the door and access panel locations remove panel and remove door by removing the screws connecting the hinge to the unit. For inside opening doors, the gap covers around the door opening should also be removed.

Install the door on the opposite side of the unit by attaching the hinge to the unit. Be sure that the door is centered in the opening. Rubber gasket needs to be applied on the door jamb of the new door side. The door latch parts will need to be removed and replaced on the new door side.

**Filters**

Pleated filters install from upstream side of filter rack. Filters are installed in columns. For each column open snap-fasteners and remove first filter. Slide the rest of the filters to the opening and then remove.

Bag and cartridge filters are installed with a type 8 holding frame. Use the provided clips to attach new filters. Be sure to remove pre-filter clips from cartridge filters before discarding. Pre-filter clips will need to be attached to replacement cartridge filters.
Replacement Parts
Parts for AAON equipment may be obtained from your local AAON representative. Reference the unit serial number and part number when ordering parts.

AAON Technical Support
2424 S. Yukon Ave.
Tulsa, OK 74107
Ph: (918) 382-6450
techsupport@AAON.com
www.AAON.com

Note: Before calling, technician should have model and serial number of the unit available for the service department to help answer questions regarding the unit.
Table 3 - Flat Pleated Filters

<table>
<thead>
<tr>
<th>Unit Size</th>
<th>Filter Size</th>
<th>Qty Wide</th>
<th>Qty High</th>
<th>Total Qty</th>
<th>Face Area</th>
</tr>
</thead>
<tbody>
<tr>
<td>032</td>
<td>20” x 16”</td>
<td>4</td>
<td>4</td>
<td>16</td>
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<td>20” x 16”</td>
<td>4</td>
<td>5</td>
<td>25</td>
<td>55.56 ft²</td>
</tr>
<tr>
<td>054</td>
<td>20” x 16”</td>
<td>5</td>
<td>5</td>
<td>30</td>
<td>66.67 ft²</td>
</tr>
<tr>
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<td>20” x 16”</td>
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<td>6</td>
<td>42</td>
<td>80.00 ft²</td>
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<tr>
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<tr>
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<td>7</td>
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<td>93.34 ft²</td>
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<tr>
<td>094</td>
<td>25” x 16”</td>
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<td>101.33 ft²</td>
</tr>
</tbody>
</table>

Table 4 - Angled Pleated Filters

<table>
<thead>
<tr>
<th>Unit Size</th>
<th>Filter Size</th>
<th>Qty Wide</th>
<th>Qty High</th>
<th>Total Qty</th>
<th>Face Area</th>
</tr>
</thead>
<tbody>
<tr>
<td>032</td>
<td>20” x 16”</td>
<td>5</td>
<td>4</td>
<td>20</td>
<td>44.44 ft²</td>
</tr>
<tr>
<td>039</td>
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<td>5</td>
<td>25</td>
<td>55.56 ft²</td>
</tr>
<tr>
<td>045</td>
<td>24” x 20”</td>
<td>5</td>
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<td>20” x 16”</td>
<td>6</td>
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<td>72.00 ft²</td>
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<td>6</td>
<td>36</td>
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<td>7</td>
<td>42</td>
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</tbody>
</table>

Table 5 - Cartridge/Bag Filters

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<th>Primary Filter Size</th>
<th>Quantity</th>
<th>Secondary Filter Size</th>
<th>Quantity</th>
<th>Face Area</th>
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<td>57.78 ft²</td>
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<td>NA</td>
<td>NA</td>
<td>66.67 ft²</td>
</tr>
<tr>
<td>067</td>
<td>20” x 24”</td>
<td>20</td>
<td>12” x 24”</td>
<td>5</td>
<td>76.67 ft²</td>
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<td>074</td>
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<td>12” x 24”</td>
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<td>25</td>
<td>12” x 24”</td>
<td>4</td>
<td>91.33 ft²</td>
</tr>
<tr>
<td>094</td>
<td>20” x 24”</td>
<td>25</td>
<td>12” x 24”</td>
<td>9</td>
<td>101.33 ft²</td>
</tr>
</tbody>
</table>
Figure 38 - Cartridge/Bag Filter Layout Viewed from Upstream Side. Filters Face Load Into Type 8 Holding Frame.
# M3 Series Startup Form

Job Name:_____________________________________________  Date:__________

Address:______________________________________________________________________________

Model Number:_______________________________________________________________

Serial Number:___________________________________________  Tag:___________

Startup Contractor:____________________________________________________________

Address:______________________________________________________________________________  Phone:____________

## Pre Startup Checklist

<table>
<thead>
<tr>
<th>Item</th>
<th>Yes</th>
<th>No</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Is there any visible shipping damage?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. Is the unit level?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. Are the unit clearances adequate for service and operation?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. Do all access doors open freely and are the handles operational?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. Have all shipping braces been removed?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6. Have all electrical connections been tested for tightness?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>7. Does the electrical service correspond to the unit nameplate?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>8. On 208/230V units, has transformer tap been checked?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>9. Has overcurrent protection been installed to match the unit nameplate requirement?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>10. Have all set screws on the fans been tightened?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>11. Do all fans rotate freely?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>12. Does the field water piping to the unit appear to be correct per design parameters?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>13. Is all copper tubing isolated so that it does not rub?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>14. Have the damper assemblies been inspected?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>15. Are air filters installed with proper orientation?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>16. Have condensate drain and p-trap been connected?</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

## Ambient Temperature

Ambient Dry Bulb Temperature ________ °F  Ambient Wet Bulb Temperature ________ °F
### Supply Fan Assembly

<table>
<thead>
<tr>
<th>Alignment □</th>
<th>Check Rotation □</th>
<th>Nameplate Amps________</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number</td>
<td>hp</td>
<td>L1</td>
</tr>
<tr>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Band Size_____________________
VAV Controls_________________
VFD Frequency_________________
Springs Operating Correctly □

### Energy Recovery Wheel Assembly

<table>
<thead>
<tr>
<th>Wheels Spin Freely □</th>
<th>Check Rotation □</th>
<th>FLA _______</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number</td>
<td>hp</td>
<td>L1</td>
</tr>
<tr>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Power Exhaust Fan Assembly

<table>
<thead>
<tr>
<th>Alignment □</th>
<th>Check Rotation □</th>
<th>Nameplate Amps________</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number</td>
<td>hp</td>
<td>L1</td>
</tr>
<tr>
<td>1</td>
<td></td>
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<tr>
<td>2</td>
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</tbody>
</table>

Band Size_____________________
VFD Frequency_________________
Springs Operating Correctly □

### Power Return Fan Assembly

<table>
<thead>
<tr>
<th>Alignment □</th>
<th>Check Rotation □</th>
<th>Nameplate Amps________</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number</td>
<td>hp</td>
<td>L1</td>
</tr>
<tr>
<td>1</td>
<td></td>
<td></td>
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<tr>
<td>2</td>
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</tbody>
</table>

Band Size_____________________
VFD Frequency_________________
Springs Operating Correctly □
### Outside Air/Economizer Dampers

<table>
<thead>
<tr>
<th>OA Operation Check</th>
<th>Damper Wiring Check</th>
<th>Gears Check</th>
</tr>
</thead>
<tbody>
<tr>
<td>RA Operation Check</td>
<td>Damper Wiring Check</td>
<td>Gears Check</td>
</tr>
<tr>
<td>EA Operation Check</td>
<td>Damper Wiring Check</td>
<td>Gears Check</td>
</tr>
</tbody>
</table>

**Damper Actuator Type:**

**Economizer Changeover Type and Operation:**
**Maintenance Log**
This log must be kept with the unit. It is the responsibility of the owner and/or maintenance/service contractor to document any service, repair, or adjustments. AAON Service and Warranty Departments are available to advise and provide phone help for proper operation and replacement parts. The responsibility for proper startup, maintenance, and servicing of the equipment falls to the owner and qualified licensed technician.

<table>
<thead>
<tr>
<th>Entry Date</th>
<th>Action Taken</th>
<th>Name/Tel.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
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</tbody>
</table>
Literature Change History

**June 2010**
Update of the IOM adding PVC and CPVC piping Caution and revising the Module Assembly section.

**April 2012**
Update of the IOM changing the 2” pleated 30% efficient filter from MERV 7 to MERV 8, correcting the Unit Lifting Drawing to show a 60 degree minimum strap angle, adding the electronic startup form, adding the index of tables and figures, and updating the table of contents.

**March 2014**
Updated factory trained service technician text and feature string nomenclature.

**July 2015**
Added Features and Options Introduction.

**August 2016**
Added E-coated cleaning section.

**January 2018**
Remove references to electric heat.

**May 2018**
Updated technical support contact information. Remove references to outdoor unit. Update e-coated coil cleaning instructions.