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# Double Wall Construction

## HORIZONTAL

Chilled Water

Hot Water

500 thru 10,000 CFM

Belt Drive



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## Double Wall Construction - Horizontal

***Unit is a completely factory assembled, single-piece air handler.***

Unit includes a fan and coil section with factory installed chilled water, preheat or reheat hot water coil position, and a 2" filter section. Field mounted components include a mixing box, 2" or 4" flat filter section and a 2" or 4" (4" only available for unit sized 16-80) angled filter section.

### STANDARD FEATURES

**Unit Cabinet**, 1" double wall construction fabricated from a minimum of 18 gauge LFQ (lock forming quality) galvanized steel outer panels and a minimum 24 gauge inner liner fabricated from galvanized steel. Post and panel construction allows for large access panels to permit full access to internal components. The structural integrity of the cabinets remain unaffected by the removal of any or all access panels.

**Unit panels** shall consist of 1" thick 1.5lb fiberglass insulation sandwiched between galvanized steel exterior and interior panels. Panels are fastened with captured thumb-screws that hold panels in place with a closed cell neoprene gasket in between the panel and the post to prevent thermal bridging from the interior to the exterior of the unit.

**Coils** are 1/2 inch staggered tube type construction with seamless copper tubes and headers, and deep corrugated aluminum fins with straight edges. Fins are manufactured with full depth collars, drawn in the fin stock to provide accurate control of fin spacing and completely cover the copper tubes to lengthen coil life. The tubes are mechanically expanded into the fins for a permanent primary to secondary surface bond, assuring maximum heat transfer efficiency. The coils are to be tested at 450 pounds air pressure for operation at 300 PSI gauge working pressure.

**Drain pans** are made from an UL94-5V rated, rigid PVC material with a three-way slope for positive drainage.

**Fan Wheels** are double width, double inlet (DWDI), forward curved, centrifugal type. They are statically and dynamically balanced for smooth, quiet operation. The Class I housing is constructed of heavy gauge steel with die-formed inlet cones.

## STANDARD FEATURES (CONT)

**Motors and Drives:** Belt drive motors are standard duty, 1725 RPM, open, drip-proof construction. Single phase and most three phase motors are resilient mount with automatic reset thermal protection. Motor sheaves are variable pitch, cast iron with a split-tapered hub.

**Blower and Motor** mounting platform is constructed from 12 gauge LFQ (lock forming quality) galvanized steel. Platform is mounted to cabinet support rails with rubber in compression isolators for quiet vibration free operation. Blower exits cabinet through rubber-isolated frame.

**Filter Section** includes 2" pleated Merv 7 disposable type fiberglass filters. The 2" filter section is an integral part of the cabinet with easy tool free access. Merv 8,11 and 13 available on request.

## OPTIONS

**Coils** are available with 2 circuit options for high or low flow applications. Coil rows options include 1, 2, 4, or 6 rows with a maximum total of 10 rows.

**Drain pan** options include stainless steel with an insulating coating.

**Electric Heat:** Discharge mounted electric heat available in a wide range of KW's and voltages. Available voltages are 120/1/60, 208/230/1/60, 277/1/60, 208/230/460/3/60, 575/3/60, 110/220/1/50, and 220/380/440-3-50.

**Spring Isolators:** Kits are available by unit size and coil rows with and without mixing boxes.

**Motor** options include 2-speed, TEFC, or (HE) High Efficient. Voltage options include 120/1/60, 208/1/60, 240/1/60, 277/1/60, 208/3/60, 240/3/60, 480/3/60, 575/3/60. Contact Factory for availability of 50HZ motors.

**Motor Control Box:** For use with standard motors with internal overload protection. The 986FF control box is factory installed and wired. Features include a Disconnect switch, HOA switch, power fusing, motor contactor, 24V control transformer and low voltage terminal block.

**Motor Control Starters:** For use with non-standard motors without internal overload protection. The 986FR starter box is factory installed and wired. Features include a non-fused disconnect switch with thru-the-door pad lockable handle, HOA switch, built-in overload and magnetic trip, 24V control transformer and low voltage terminal block.

**Filter Section** options include Double Wall flat filter sections available for filters up to 4". Double Wall angled filter sections accept 2" and 4" (4" only available for unit sized 16-80) deep filters. Filters are arranged in a "V" formation. Double wall access doors are standard on flat and angled filter sections.

**Mixing Boxes** are double wall construction with parallel blade, interconnecting outside-air and return-air dampers. Damper blades include stiffening breaks and are attached with 1/2" diameter steel rods rotating in nylon bushings and mounted in rigid galvanized steel frames. Dampers are rated as low-leakage, having a leakage rate not to exceed 2% of airflow. Damper blades are gasketed and include edge seal strips.

# GUIDE SPECIFICATIONS

## Part 1 — General

- 1.01 SECTION INCLUDES
  - A. Air Handling Units
- 1.02 REFERENCES
  - AFBMA 9 – Load Ratings and Fatigue Life for Ball Bearings
  - AMCA 99 – Standards Handbook
  - AMCA 210 – Laboratory Methods for Testing Fans for Rating Purposes
  - AMCA 300 – Test Code for Sound Rating Air Moving Devices
  - AMCA 500 – Test Methods for Louver, Dampers, and Shutters
  - AG.ARI 430 – Central-Station Air-Handling Units
  - ARI 435 – Application of Central-Station Air-Handling Units
  - NEMA MGI – Motors and Generators
  - NFPA 70 – National Electric Code
  - SMACNA – HVAC Duct Construction Standards – Metal and Flexible
  - UL 900 – Test Performance of Air Filter Units
  - UL 1995 – Standard for Heating and Cooling Equipment
- 1.03 SUBMITTALS
  - A. Shop Drawings: Indicate assembly, unit dimensions, weight loading, required clearances, construction details, field connection details, and electrical characteristics and connection requirements. Computer generated fan curves for each air handling unit shall be submitted with specific design operating point noted. A computer generated psychometric chart shall be submitted for each cooling coil with design points and final operating point clearly noted.
  - B. Product Data:
    1. Provide literature that indicates dimensions, weights, capacities, ratings, fan performance, finishes of materials, and electrical characteristics and connection requirements.
    2. Provide data of filter media, filter performance data, filter assembly, and filter frames.
    3. Manufacturer's Installation Instructions.
- 1.04 OPERATION AND MAINTENANCE DATA
  - A. Maintenance Data: Include instructions for lubrication, filter replacement and motor and drive replacement.
- 1.05 QUALIFICATIONS
  - A. Manufacturer: Company specializing in manufacturing the Products Specified in this section with a minimum 10 years documented experience, which issues complete catalog data on total product.
- 1.06 DELIVERY, STORAGE, AND HANDLING
  - A. Deliver, store, and handle product to site
  - B. Accept products on site on factory-installed shipping skids. Inspect for damage.
  - C. Store in clean dry place and protect from weather and construction traffic. Handle carefully to avoid damage to components, enclosures, and finish.
- 1.07 ENVIRONMENTAL REQUIREMENTS
  - A. Do not operate units for any purpose, temporary or permanent, until ductwork is clean, filters are in place, bearings lubricated, and fan has been test run under observation.

# GUIDE SPECIFICATIONS (CONT.)

## Part 2 — Products

### 2.01 MANUFACTURERS

- A. The following manufacturers are approved for use. No substitutions will be permitted.
  - 1. First Co.

### 2.02 CASING

- A. Unit panels shall consist of 1" thick 1.5lb fiberglass insulation sandwiched between galvanized steel exterior and interior panels. Panels are fastened to post with captured thumb-screws that hold panels in place with a closed cell neoprene gasket in between the panel and the post to prevent thermal bridging from the interior to the exterior of the unit.
- B. Removable panels on both sides of unit shall provide full access to unit components. Blower and filter access panels shall have tool free fasteners.
- C. Drain pans shall be an UL94-5 rated, rigid PVC material with a three way slope for positive drainage of condensate. Optional drain pan shall be heavy gauge stainless steel with an insulating coating. Secondary drain connections shall extend to cabinet exterior to comply with International Building Code and International Mechanical Code. Drain pans shall be removable for cleaning or replacement without removing coils or disturbing coil connections. Coil vents and drains shall be accessible from separate access panel.

### 2.03 SUPPLY FAN

- A. Provide DWDI forward-curved supply fans. Fan assemblies shall be statically and dynamically balanced by manufacturer. The housings are constructed from heavy gauge galvanized steel with die-formed inlet cones.
- B. Bearings shall be self-aligning , ball or roller bearings.
- C. Fan and motor mounting platform shall be a minimum of 12 gauge LFQ galvanized steel.

### 2.04 DRIVES

- A. Shafts shall be solid, hot rolled steel, ground and polished, keyed to shaft, and protectively coated with lubricating oil. Hollow shafts are not acceptable.
- B. V-belt drives shall be cast iron or steel sheaves, dynamically balanced, bored to fit shafts and keyed. Variable and adjustable pitch sheaves selected so required RPM is obtained with sheaves set at mid-position and rated based on motor horsepower.

### 2.05 ELECTRICAL

- A. Motors: provide (ODP) (TEFC) type with (EPACT)(premium) efficiency. Electrical characteristics shall be as shown in schedule.

### 2.07 COOLING AND HEATING COIL SECTIONS

- A. Provide access to coils from connection side of unit for service and cleaning. Enclose coil headers and return bends fully within unit cabinet. Drain and vent connections shall be accessible by separate access panel. Coil connections must exit manifold panel through grommets on the exterior of unit casing to minimize air leakage and condensation inside panel assembly.
- B. Water Coils: fins shall have full drawn collars to provide a continuous surface cover over the entire tube for maximum heat transfer. Tubes shall be mechanically expanded into the fins to provide a continuous primary-to-secondary compression bond over the entire finned length for maximum heat transfer rates. Bare copper tube shall not be visible between fins. Coil tubes shall be seamless copper, expanded into fins, brazed at joints. Coil connections shall be copper with connection size to be determined by manufacturer based upon the most efficient coil circuiting. Vent connections shall be provided at the highest point of the header to assure proper venting. Coils shall be tested with 350 pounds air pressure and suitable for 300 psig working pressure. Coil casings shall be a formed channel frame of galvanized steel.

## GUIDE SPECIFICATIONS (CONT.)

### 2.08 FILTERS

- A. Filter sections shall be Double wall construction.
- B. (Angled) (Flat) arrangement with (2") (4") deep pleated panel filters (4" only available for unit sized 16-80)
- C. Filter shall be MERV 8 , 11 or 13
- D. Filter media shall be UL 900listed, Class I or Class II.

### 2.09 MIXING BOXES

- A. Optional mixing box consist of the same construction as described in "2.02 Casings." Section shall include factory mounted outside and return air dampers. Boxes shall be double wall construction with parallel blade, interconnecting outside-air and return-air dampers. Damper blades shall include stiffing breaks and attached with 1/2" diameter steel rods rotating in nylon bushings and mounted in rigid galvanized steel frames. Dampers shall be rated as low-leakage, having a leakage rate not to exceed 2% of airflow. Damper blades shall be gasketed and include edge seal strips.

## Part 3 — Execution

### 3.01 INSTALLATION

- A. Install in accordance with manufacturer's instructions.

## NOMENCLATURE - Selection Procedure

|   |           |          |          |          |          |          |          |          |           |             |          |          |            |   |             |
|---|-----------|----------|----------|----------|----------|----------|----------|----------|-----------|-------------|----------|----------|------------|---|-------------|
| <b>Nominal CFM</b><br>08 - 800<br>12 - 1200<br>16 - 1600<br>20 - 2000<br>30 - 3000<br>40 - 4000<br>60 - 6000<br>80 - 8000 | <b>12</b> | <b>A</b> | <b>W</b> | <b>H</b> | <b>D</b> | <b>*</b> | <b>*</b> | <b>-</b> | <b>4Q</b> | <b>- 2H</b> | <b>-</b> | <b>*</b> | <b>- R</b> | <b>- 0.75</b>   | <b>- 31</b> |
| <b>OEM ID</b><br>A - AE - Air   |           |          |          |          |          |          |          |          |           |             |          |          |            | <b>Coil Connection</b><br>R Right Hand<br>L Left Hand   |             |
| <b>Unit Type</b><br>W - Water   |           |          |          |          |          |          |          |          |           |             |          |          |            | <b>3rd Coil Position</b>  |             |
| <b>Configuration</b><br>H - Horizontal  |           |          |          |          |          |          |          |          |           |             |          |          |            | <b>2nd Coil Position</b>  |             |
| <b>Construction Type</b><br>D - Double Wall   |           |          |          |          |          |          |          |          |           |             |          |          |            | <b>1st Coil Position</b><br>1Q 1 row - quarter circuit<br>2F 2 row - full circuit<br>2H 2 row - half circuit<br><br>4H 4 row - half circuit<br>4Q 4 row - quarter circuit<br><br>6H 6 row - half circuit<br>6Q 6 row - quarter circuit  |             |
| <b>Open</b>   |           |          |          |          |          |          |          |          |           |             |          |          |            | <b>Voltage</b><br>151 115V-1Ph-60Hz<br>201 208V-1Ph-60Hz<br>231 230V-1Ph-60Hz<br>271 277V-1Ph-60Hz<br><br>111 110V-1Ph-50Hz<br>221 220V-1Ph-50Hz<br><br>203 208V-3Ph-60Hz<br>233 230V-3Ph-60Hz<br>463 460V-3Ph-60Hz<br>573 575V-3Ph-60Hz<br><br>223 220V-3Ph-50Hz<br>383 380V-3Ph-50Hz<br>443 440V-3Ph-50Hz |             |
| <b>Model Revision</b>   |           |          |          |          |          |          |          |          |           |             |          |          |            | <b>Horsepower</b><br>0.25<br>0.33<br>0.50<br>0.75<br>1.0<br>1.5<br>2.0<br>3.0<br>5.0<br>7.5<br>10.0   |             |

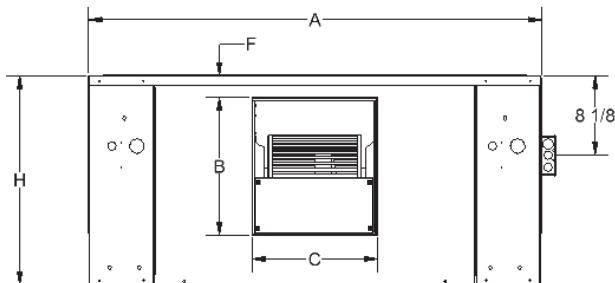
### Required Order Information

1. Model number with rows and circuit
2. CFM and external static pressure
3. Motor HP
4. Actual voltage motor is to be wired to.
5. Hot water coil installed in preheat or reheat position
6. Hand connections with air hitting you in back of head

# PHYSICAL DATA

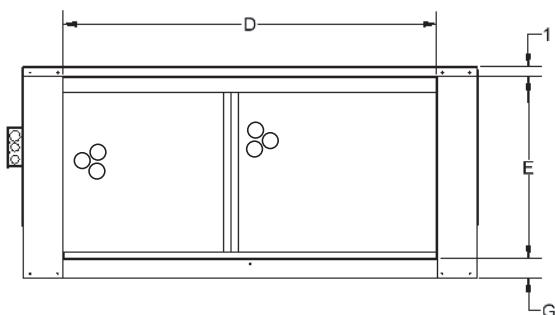
## FRONT VIEW

Supply

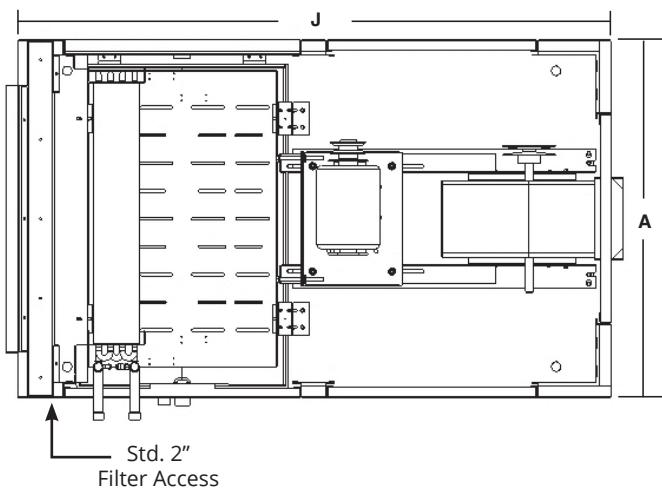


## REAR VIEW

Return

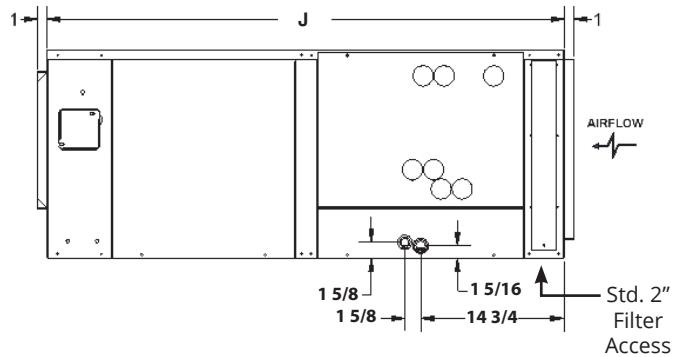


## PLAN VIEW



## SIDE VIEW

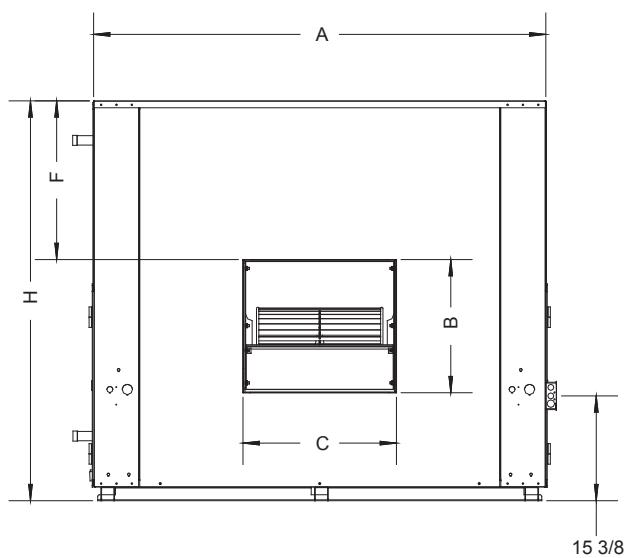
Left Hand Connection



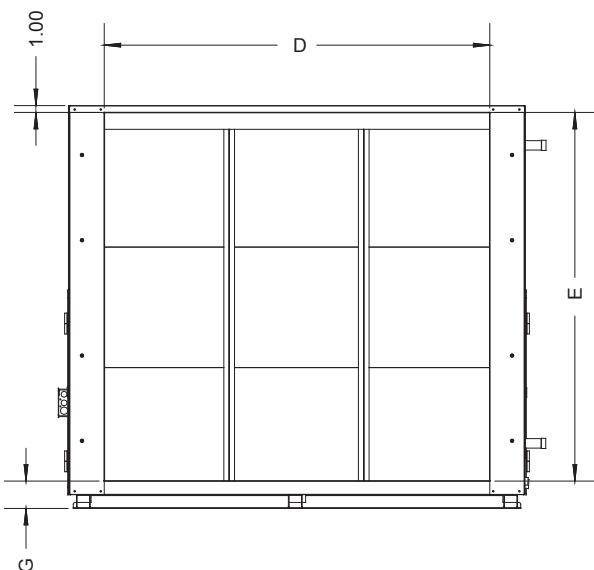
| UNIT CABINET DIMENSIONS |        |        |        |    |        |       |   |        |        |                            |
|-------------------------|--------|--------|--------|----|--------|-------|---|--------|--------|----------------------------|
| UNIT MODEL              | A      | B      | C      | D  | E      | F     | G | H      | J      | FILTERS (MERV)             |
| <b>8AWH</b>             | 32-1/4 | 10-7/8 | 7-1/2  | 24 | 16     | 1-3/4 | 2 | 19     | 53-1/4 | (2) 16X25X2                |
| <b>12AWH</b>            | 36-1/4 | 10-7/8 | 8-7/8  | 24 | 16     | 1-3/4 | 2 | 19     | 53-1/4 | (2) 16X25X2                |
| <b>16AWH</b>            | 40-1/4 | 12     | 10-1/4 | 32 | 18-1/2 | 2-1/4 | 2 | 21-1/2 | 53-1/4 | (2) 18X20X2                |
| <b>20AWH</b>            | 46-1/4 | 14-1/8 | 12-7/8 | 38 | 18-1/2 | 2-1/4 | 2 | 21-1/2 | 53-1/4 | (1) 18X20X2<br>(1) 18X24X2 |
| <b>30AWH</b>            | 46-1/4 | 16-1/2 | 15-1/4 | 36 | 31     | 8     | 2 | 34     | 66-1/8 | (4) 16X20X2                |
| <b>40AWH</b>            | 57-1/4 | 16-1/2 | 19-1/4 | 47 | 31     | 7-7/8 | 2 | 34     | 66-1/8 | (4) 16X25X2                |

## PHYSICAL DATA (CONT.)

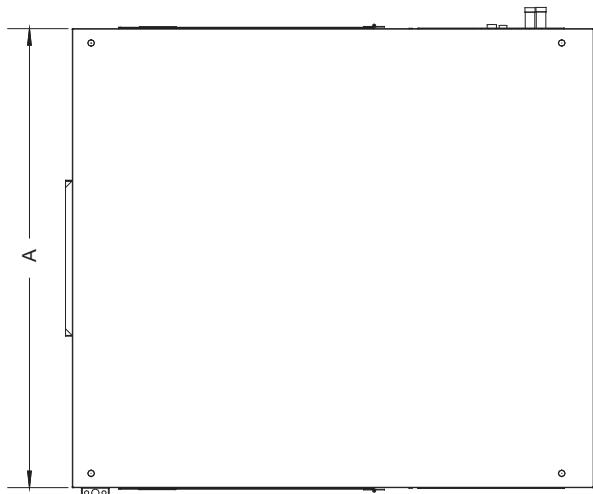
SUPPLY END



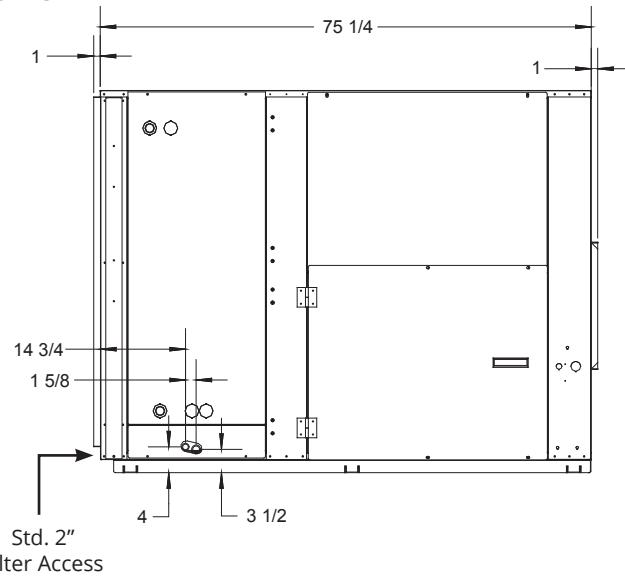
RETURN END



TOP VIEW

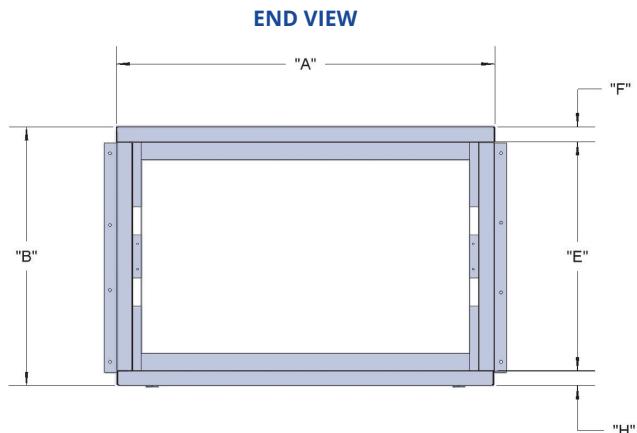
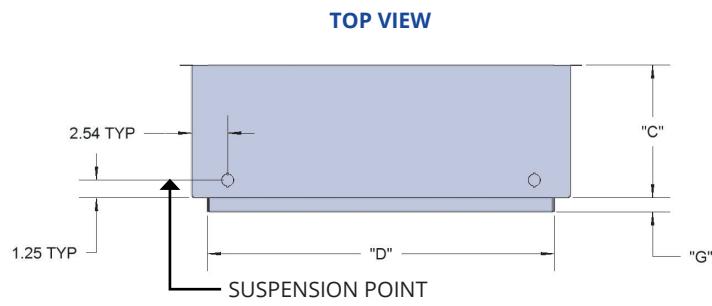
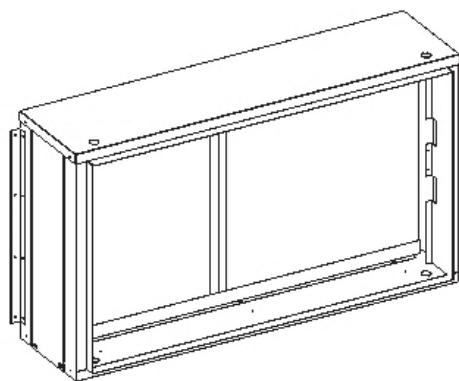


RIGHT SIDE



| UNIT CABINET DIMENSIONS |        |        |        |    |        |        |   |        |                 |
|-------------------------|--------|--------|--------|----|--------|--------|---|--------|-----------------|
| UNIT MODEL              | A      | B      | C      | D  | E      | F      | G | H      | FILTERS (MERV7) |
| 60AWH                   | 66-1/4 | 19-1/2 | 22-1/2 | 56 | 41     | 10-3/4 | 4 | 44     | (9) 15x20x2     |
| 80AWH                   | 66-1/4 | 19-1/2 | 22-1/2 | 56 | 53-1/2 | 23-1/4 | 4 | 58-1/2 | (9) 18x20x2     |

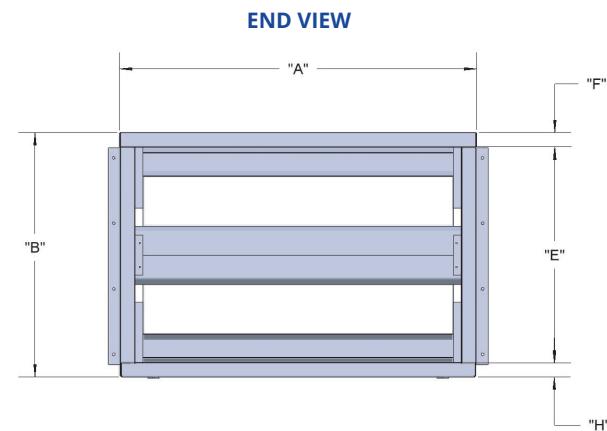
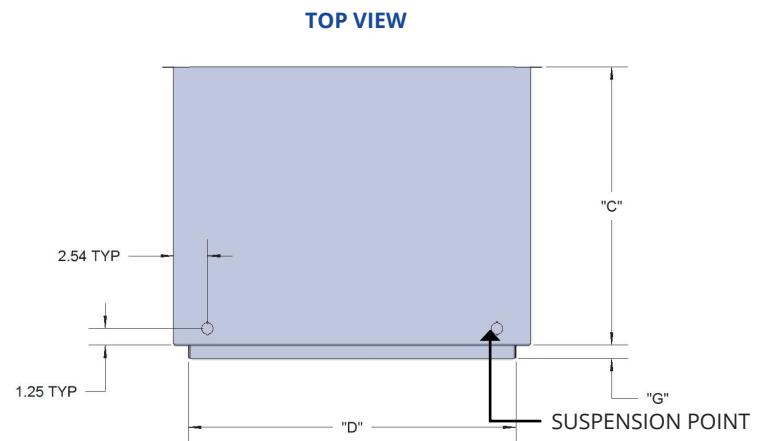
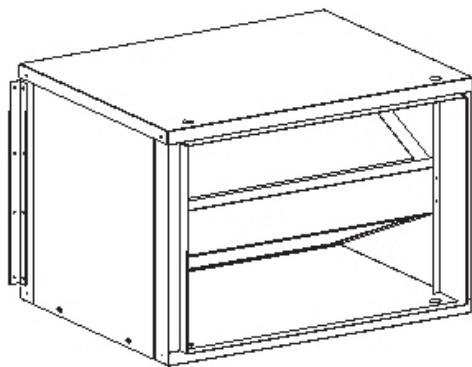
## FILTERS - Optional Flat Filter Section



| FLAT FILTER BOX |                                |             |          |        |        |        |        |   |   |   |                            |
|-----------------|--------------------------------|-------------|----------|--------|--------|--------|--------|---|---|---|----------------------------|
| UNIT SIZE       | PART NUMBER                    | FILTER SIZE | A        | B      | C      | D      | E      | F | G | H | FILTER SIZE (Qty)          |
| 8               | <b>9BDAF12F2<br/>9BDAF12F4</b> | 2"<br>4"    | 26-13/16 | 18-3/8 | 9-7/16 | 24-1/2 | 16-1/4 | 1 | 1 | 1 | (1) 25 X 16                |
| 12              | <b>9BDAF12F2<br/>9BDAF12F4</b> | 2"<br>4"    | 26-13/16 | 18-3/8 | 9-7/16 | 24-1/2 | 16-1/4 | 1 | 1 | 1 | (1) 25 X 16                |
| 16              | <b>9BDAF16F2<br/>9BDAF16F4</b> | 2"<br>4"    | 37-1/4   | 21-1/2 | 9-7/16 | 35     | 19-3/4 | 1 | 1 | 1 | (1) 16 X 20<br>(1) 20 X 20 |
| 20              | <b>9BDAF20F2<br/>9BDAF20F4</b> | 2"<br>4"    | 41-1/4   | 21-1/2 | 9-7/16 | 39     | 19-3/4 | 1 | 1 | 1 | (2) 20 X 20                |
| 30              | <b>9BDAF30F2<br/>9BDAF30F4</b> | 2"<br>4"    | 41-13/16 | 34     | 9-3/8  | 39-5/8 | 32     | 1 | 1 | 1 | (4) 16 X 20                |
| 40              | <b>9BDAF40F2<br/>9BDAF40F4</b> | 2"<br>4"    | 51       | 34     | 9-3/8  | 48-7/8 | 32     | 1 | 1 | 1 | (4) 16 X 25                |
| 60              | <b>9BDAF60F2<br/>9BDAF60F4</b> | 2"<br>4"    | 61       | 44     | 9-3/8  | 58-7/8 | 42     | 1 | 1 | 1 | (6) 20 X 20                |
| 80              | <b>9BDAF80F2<br/>9BDAF80F4</b> | 2"<br>4"    | 61       | 56-1/2 | 9-3/8  | 58-7/8 | 54-1/4 | 1 | 1 | 1 | (9) 20 X 18                |

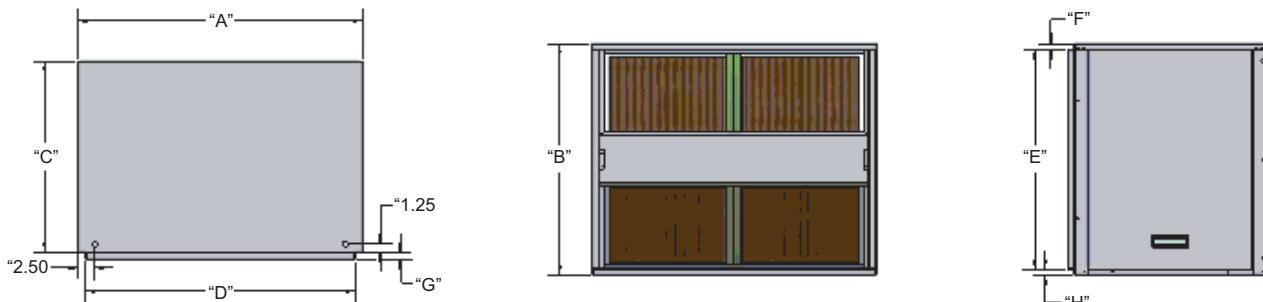
NOTE: Unit comes standard with 2" filter mounted in cabinet

## FILTERS - Optional Angled Filter Section (Unit Size 8-20)



| ANGLED FILTER BOX |                                |             |       |       |       |       |       |   |   |   |                   |
|-------------------|--------------------------------|-------------|-------|-------|-------|-------|-------|---|---|---|-------------------|
| UNIT SIZE         | PART NUMBER                    | FILTER SIZE | A     | B     | C     | D     | E     | F | G | H | FILTER SIZE (Qty) |
| 8                 | <b>9BDAF12A2<br/>9BDAF12A4</b> | 2"<br>4"    | 26.78 | 18.32 | 20.88 | 24.57 | 16.21 | 1 | 1 | 1 | (2) 25 X 16       |
| 12                | <b>9BDAF12A2<br/>9BDAF12A4</b> | 2"<br>4"    | 26.78 | 18.32 | 20.88 | 24.57 | 16.21 | 1 | 1 | 1 | (2) 25 X 16       |
| 16                | <b>9BDAF16A2<br/>9BDAF16A4</b> | 2"<br>4"    | 37.28 | 21.57 | 28.68 | 35.07 | 19.71 | 1 | 1 | 1 | (2) 18 X 24       |
| 20                | <b>9BDAF20A2<br/>9BDAF20A4</b> | 2"<br>4"    | 41.28 | 21.57 | 28.68 | 39.07 | 19.71 | 1 | 1 | 1 | (2) 20 X 24       |

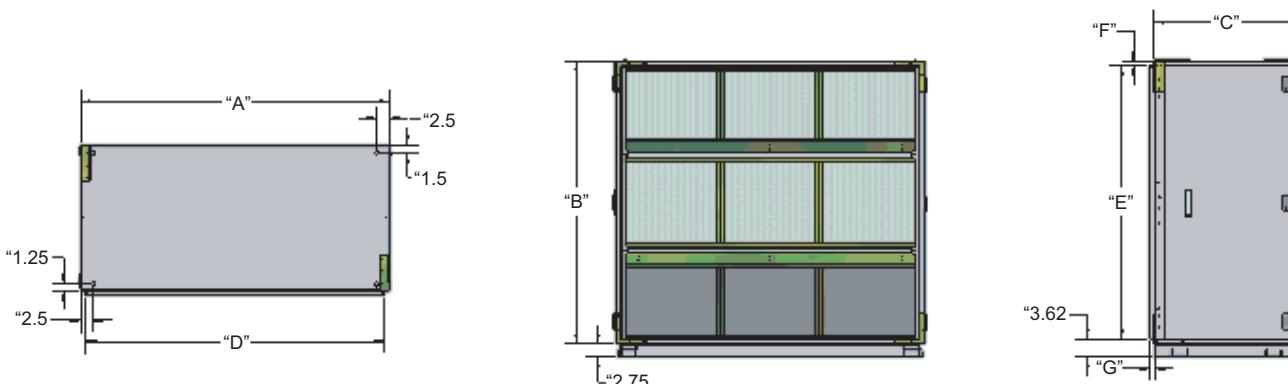
## FILTERS - Optional Angled Filter Section (Unit Size 30-40)



| ANGLED FILTER BOX |                        |             |          |    |    |        |    |   |   |   |                            |
|-------------------|------------------------|-------------|----------|----|----|--------|----|---|---|---|----------------------------|
| UNIT SIZE         | PART NUMBER            | FILTER SIZE | A        | B  | C  | D      | E  | F | G | H | FILTER SIZE (Qty)          |
| 30                | 9BDAF30A2<br>9BDAF30A4 | 2"<br>4"    | 41-13/16 | 34 | 28 | 39-5/8 | 32 | 1 | 1 | 1 | (4) 20 X 25                |
| 40                | 9BDAF40A2<br>9BDAF40A4 | 2"<br>4"    | 51       | 34 | 27 | 48-7/8 | 32 | 1 | 1 | 1 | (4) 16 X 24<br>(2) 18 x 24 |

NOTE: Unit comes standard with 2" filter mounted in cabinet

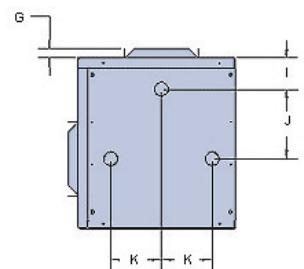
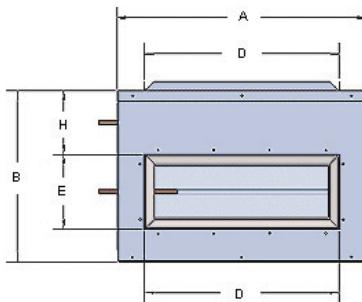
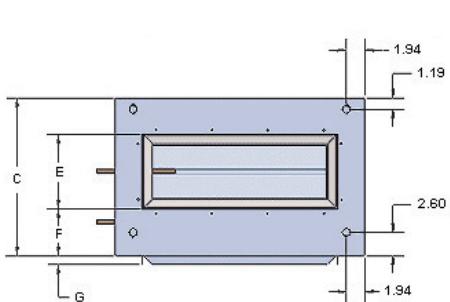
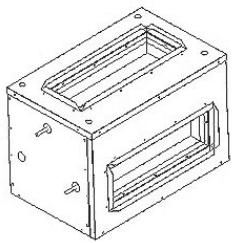
## FILTERS - Optional Angled Filter Section (Unit Size 60-80)



| ANGLED FILTER BOX |                        |             |    |        |        |        |        |   |   |   |                            |
|-------------------|------------------------|-------------|----|--------|--------|--------|--------|---|---|---|----------------------------|
| UNIT SIZE         | PART NUMBER            | FILTER SIZE | A  | B      | C      | D      | E      | F | G | H | FILTER SIZE (Qty)          |
| 60                | 9BDAF60A2<br>9BDAF60A4 | 2"<br>4"    | 61 | 44     | 21-3/8 | 58-7/8 | 42     | 1 | 1 | 1 | (9) 16 X 20                |
| 80                | 9BDAF80A2<br>9BDAF80A4 | 2"<br>4"    | 61 | 56-1/2 | 28-1/2 | 58-7/8 | 54-1/4 | 1 | 1 | 1 | (3) 20 X 18<br>(6) 20 x 25 |

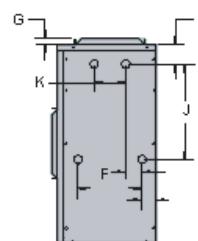
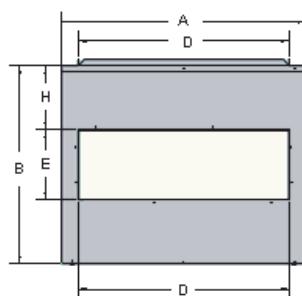
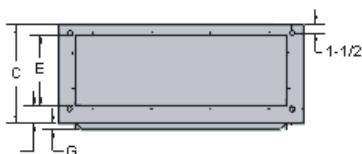
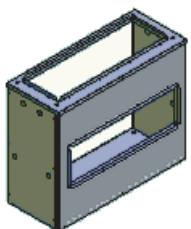
NOTE: Unit comes standard with 2" filter mounted in cabinet

## MIXING BOX - Optional Angled Filter Section (Unit Size 8-20)



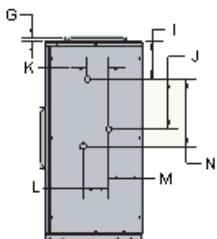
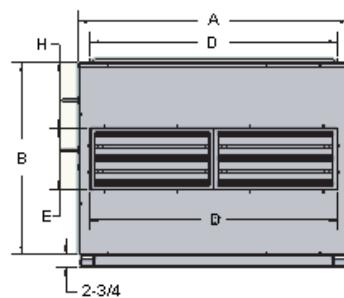
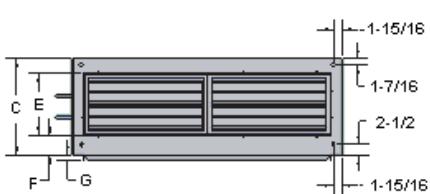
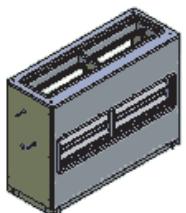
| 8-20 MIXING BOX DIMENSIONS |       |       |       |       |       |      |      |      |      |      |      |
|----------------------------|-------|-------|-------|-------|-------|------|------|------|------|------|------|
| UNIT MODEL                 | A     | B     | C     | D     | E     | F    | G    | H    | I    | J    | K    |
| 9BDAM08                    | 26.78 | 18.31 | 16.91 | 21.00 | 8.00  | 5.00 | 1.00 | 6.81 | 3.35 | 7.48 | 5.44 |
| 9BDAM12                    | 26.78 | 18.31 | 16.91 | 21.00 | 8.00  | 5.00 | 1.00 | 6.81 | 3.35 | 7.48 | 5.44 |
| 9BDAM16                    | 37.28 | 21.57 | 16.91 | 32.00 | 10.00 | 4.00 | 1.00 | 8.05 | 3.35 | 9.71 | 5.44 |
| 9BDAM20                    | 41.28 | 21.57 | 16.91 | 36.00 | 10.00 | 4.00 | 1.00 | 8.05 | 3.35 | 9.71 | 5.44 |

## MIXING BOX - Optional Angled Filter Section (Unit Size 30-40)



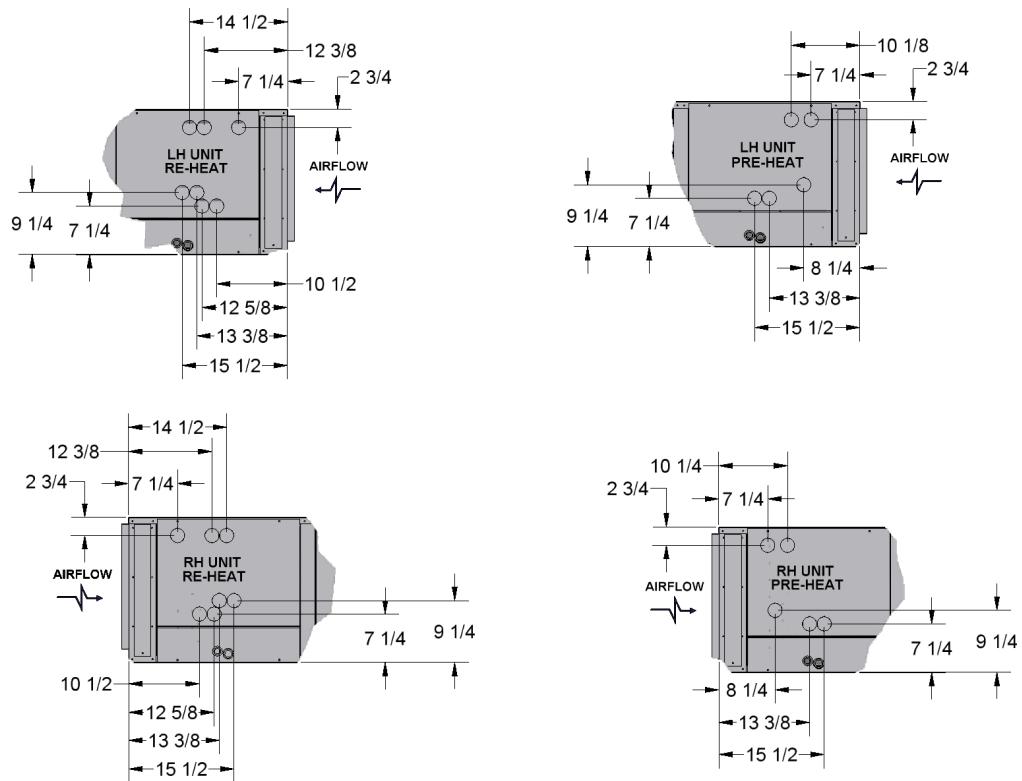
| 30-40 MIXING BOX DIMENSIONS |          |    |          |    |    |   |   |    |       |        |       |
|-----------------------------|----------|----|----------|----|----|---|---|----|-------|--------|-------|
| UNIT MODEL                  | A        | B  | C        | D  | E  | F | G | H  | I     | J      | K     |
| 9BDAM30                     | 37-13/16 | 34 | 16-15/16 | 36 | 12 | 3 | 1 | 11 | 3-3/8 | 16-3/8 | 5-3/8 |
| 9BDAM40                     | 52-13/16 | 34 | 17       | 46 | 12 | 3 | 1 | 11 | 3-3/8 | 16-3/8 | 5-3/8 |

## MIXING BOX - Optional Angled Filter Section (Unit Size 60-80)



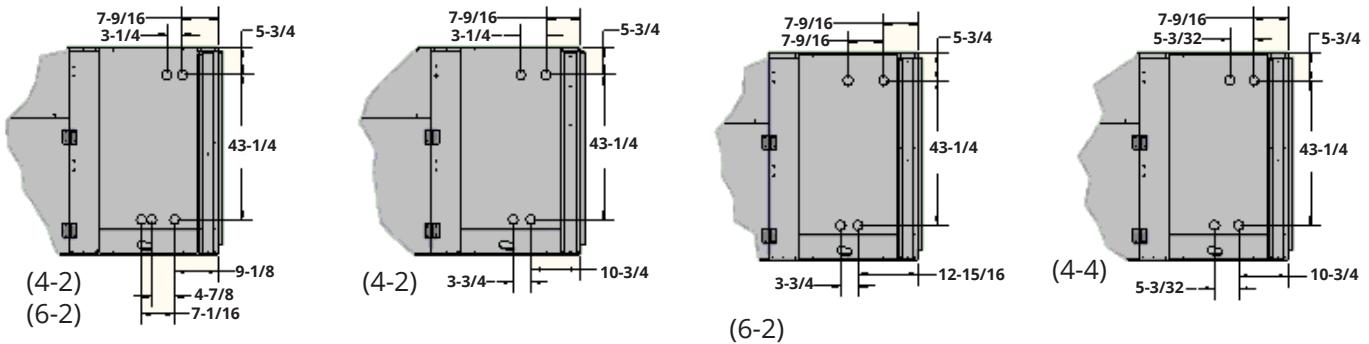
| 60-80 MIXING BOX DIMENSIONS |    |         |    |    |    |        |   |          |       |        |       |         |        |         |
|-----------------------------|----|---------|----|----|----|--------|---|----------|-------|--------|-------|---------|--------|---------|
| UNIT MODEL                  | A  | B       | C  | D  | E  | F      | G | H        | I     | J      | K     | L       | M      | N       |
| 9BDAM60                     | 61 | 43-5/16 | 22 | 56 | 14 | 4-9/16 | 1 | 14-11/16 | 8-1/2 | 11-1/4 | 4-7/8 | 5-7/8   | 7-1/2  | 15-3/16 |
| 9BDAM80                     | 61 | 55-7/8  | 22 | 56 | 14 | 4-9/16 | 1 | 20-15/16 | 8-1/2 | 17-1/2 | 4-7/8 | 5-13/16 | 7-9/16 | 21-7/16 |

## HYDRONIC MANIFOLD - 8-40AWH



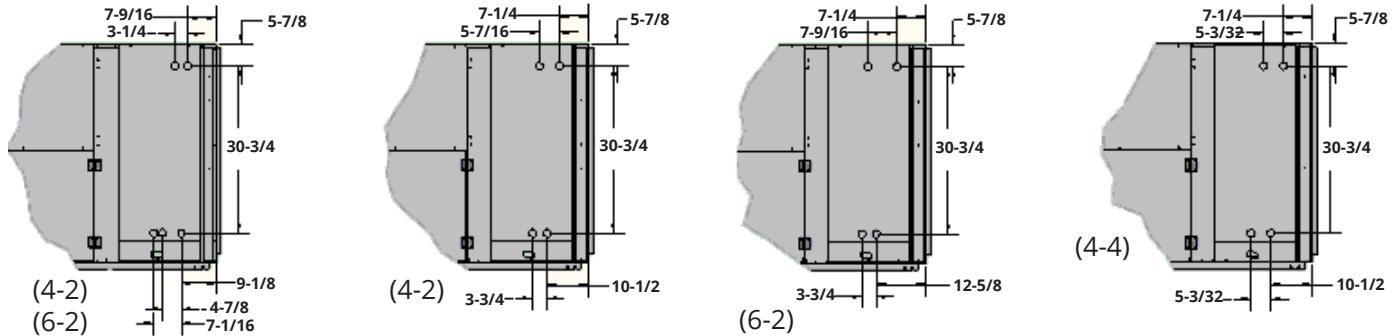
| COIL MANIFOLD CONNECTIONS                  |             |             |             |             | PLASTIC CONDENSATE PAN CONNECTIONS |                    | SS CONDENSATE PAN CONNECTIONS |           |
|--|-------------|-------------|-------------|-------------|------------------------------------|--------------------|-------------------------------|-----------|
| UNIT MODEL                                 | 1 ROW       | 2 ROW       | 4 ROW       | 6 ROW       | PRIMARY                            | SECONDARY          | PRIMARY                       | SECONDARY |
| 8AWH                                       | 7/8" O.D.   | 7/8" O.D.   | 7/8" O.D.   | 7/8" O.D.   | 3/4" PVC I.D.                      | 1/2" PVC SLIP I.D. | 3/4" MPT                      | 3/4" MPT  |
| 12AWH                                      | 7/8" O.D.   | 7/8" O.D.   | 7/8" O.D.   | 7/8" O.D.   | 3/4" PVC I.D.                      | 1/2" PVC SLIP I.D. | 3/4" MPT                      | 3/4" MPT  |
| 16AWH                                      | 7/8" O.D.   | 7/8" O.D.   | 1-1/8" O.D. | 1-1/8" O.D. | 3/4" PVC I.D.                      | 1/2" PVC SLIP I.D. | 3/4" MPT                      | 3/4" MPT  |
| 20AWH                                      | 7/8" O.D.   | 7/8" O.D.   | 1-1/8" O.D. | 1-1/8" O.D. | 3/4" PVC I.D.                      | 1/2" PVC SLIP I.D. | 3/4" MPT                      | 3/4" MPT  |
| 30AWH                                      | 1-3/8" O.D. | 1-3/8" O.D. | 1-3/8" O.D. | 1-3/8" O.D. | 3/4" PVC I.D.                      | 1/2" PVC SLIP I.D. | 3/4" MPT                      | 3/4" MPT  |
| 40AWH                                      | 1-3/8" O.D. | 1-3/8" O.D. | 1-3/8" O.D. | 1-3/8" O.D. | 3/4" PVC I.D.                      | 1/2" PVC SLIP I.D. | 3/4" MPT                      | 3/4" MPT  |
| COIL CONNECTIONS ARE COPPER SWEAT FITTINGS |             |             |             |             | PVC CONNECTIONS                    |                    | MPT CONNECTIONS               |           |

## HYDRONIC MANIFOLD - 60AWH



| COIL MANIFOLD CONNECTIONS                  |             |             |             |             | PLASTIC CONDENSATE PAN CONNECTIONS |                    | SS CONDENSATE PAN CONNECTIONS |           |
|--|-------------|-------------|-------------|-------------|------------------------------------|--------------------|-------------------------------|-----------|
| UNIT MODEL                                 | 1 ROW       | 2 ROW       | 4 ROW       | 6 ROW       | PRIMARY                            | SECONDARY          | PRIMARY                       | SECONDARY |
| 60AWH                                      | 1-3/8" O.D. | 1-3/8" O.D. | 1-3/8" O.D. | 1-3/8" O.D. | 3/4" PVC I.D.                      | 1/2" PVC SLIP I.D. | 3/4" MPT                      | 3/4" MPT  |
| COIL CONNECTIONS ARE COPPER SWEAT FITTINGS |             |             |             |             | PVC CONNECTIONS                    |                    | MPT CONNECTIONS               |           |

## HYDRONIC MANIFOLD - 80AWH



| COIL MANIFOLD CONNECTIONS                  |             |             |             |             | PLASTIC CONDENSATE PAN CONNECTIONS |                    | SS CONDENSATE PAN CONNECTIONS |           |
|--|-------------|-------------|-------------|-------------|------------------------------------|--------------------|-------------------------------|-----------|
| UNIT MODEL                                 | 1 ROW       | 2 ROW       | 4 ROW       | 6 ROW       | PRIMARY                            | SECONDARY          | PRIMARY                       | SECONDARY |
| 80AWH                                      | 1-3/8" O.D. | 1-3/8" O.D. | 1-3/8" O.D. | 1-3/8" O.D. | 3/4" PVC I.D.                      | 1/2" PVC SLIP I.D. | 3/4" MPT                      | 3/4" MPT  |
| COIL CONNECTIONS ARE COPPER SWEAT FITTINGS |             |             |             |             | PVC CONNECTIONS                    |                    | MPT CONNECTIONS               |           |





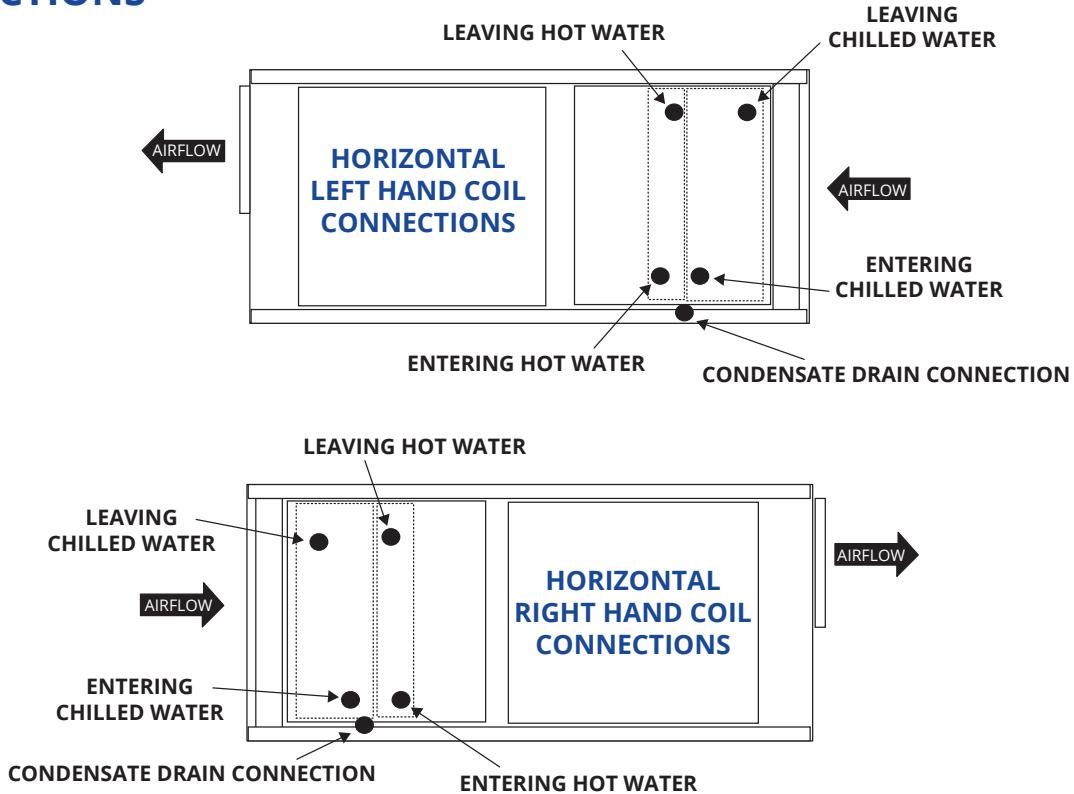




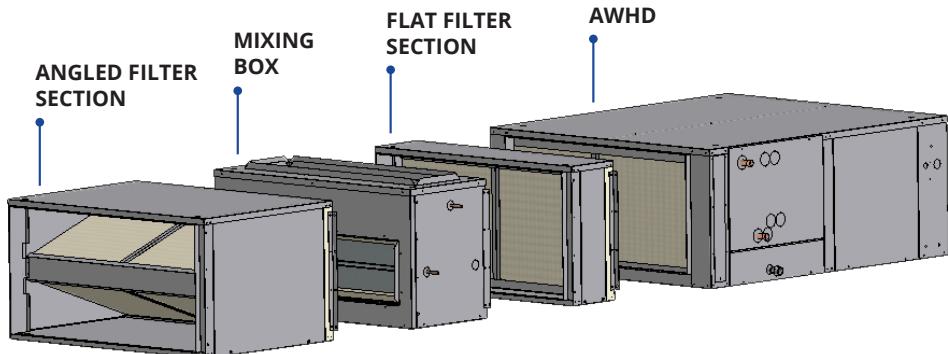




# CONNECTIONS



# SERVICE CLEARANCE



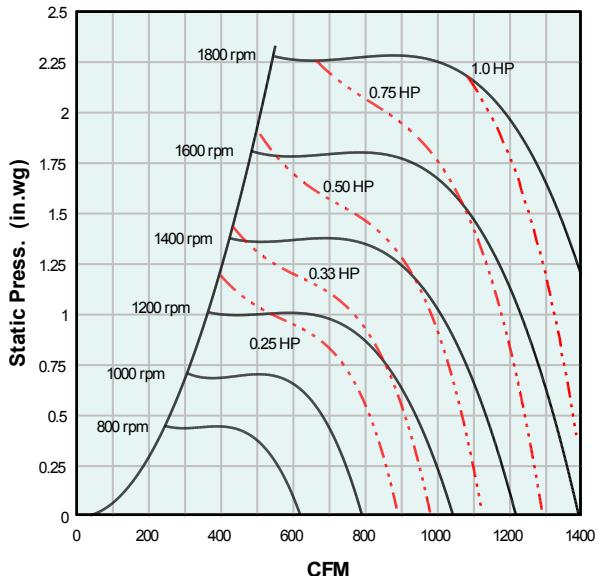
| *MINIMUM SIDE SERVICE CLEARANCES (Same for LH or RH units) |       |        |                |          |                   |            |   |
|--|-------|--------|----------------|----------|-------------------|------------|---|
| UNIT MODEL   | MOTOR | BLOWER | FILTER SECTION | COIL     | MOTOR CONTROL BOX | MIXING BOX | CABINET   |
|  |       |        | FLAT OR ANGLED | ALL ROWS |                   |            | TOP      BOTTOM   |
| 8AWHD  | 36.0" | 36.0"  | 36.0"          | 36.0"    | 36.0"             | 36.0"      | Allow extra space for spring isolators if applicable<br><br>If mounting unit on a platform, leave space for condensate trap |
| 12AWHD   | 42.0" | 42.0"  | 42.0"          | 42.0"    | 42.0"             | 42.0"      |   |
| 16AWHD   | 48.0" | 48.0"  | 48.0"          | 48.0"    | 48.0"             | 48.0"      |   |
| 20AWHD   | 52.0" | 52.0"  | 52.0"          | 52.0"    | 52.0"             | 52.0"      |   |
| 30AWHD   | 52.0" | 52.0"  | 52.0"          | 52.0"    | 52.0"             | 52.0"      |   |
| 40AWHD   | 54.0" | 54.0"  | 54.0"          | 54.0"    | 54.0"             | 54.0"      |   |
| 60AWHD   | 64.0" | 64.0"  | 64.0"          | 64.0"    | 64.0"             | 64.0"      |   |
| 80AWHD   | 64.0" | 64.0"  | 64.0"          | 64.0"    | 64.0"             | 64.0"      |   |

## NOTES:

\*Minimum service clearances only allow for removal of largest unit component, it does not allow extra space for service access or local code requirements.  
Blower and motor access panels are on both sides of cabinet.  
Filter access is from either side of cabinet.

# BLOWER CURVE - 2 ton/8AWH

**Size 08 Blower Curve**



| CFM  | CABINET | 8AWH Component Static Pressure (Inches of Water) |       |          |       |                |        |                 |        |        |        |            |  |
|------|---------|--|-------|----------|-------|----------------|--------|-----------------|--------|--------|--------|------------|--|
|      |         | Chilled Water Coil                               |       |          |       | Hot Water Coil |        | Filter Sections |        |        |        | Mixing Box |  |
|      |         | Dry Coil   |       | Wet Coil |       | Dry Coil       |        | 2"              | 4"     | 2"     | 4"     |            |  |
|      |         | 4 Row  | 6 Row | 4 Row    | 6 Row | *1-2 Row       | Merv 7 | Merv 7          | Merv 7 | Merv 7 | Merv 7 |            |  |
| 600  | 0.06    | 0.14   | 0.18  | 0.20     | 0.26  | 0.05           | 0.09   | 0.06            | 0.05   |        |        | .10        |  |
| 700  | 0.08    | 0.16   | 0.22  | 0.23     | 0.31  | 0.07           | 0.12   | 0.08            | 0.06   |        |        | .13        |  |
| 800  | 0.10    | 0.19   | 0.26  | 0.27     | 0.37  | 0.09           | 0.15   | 0.10            | 0.08   | NA     |        | .16        |  |
| 900  | 0.12    | 0.22   | 0.30  | 0.31     | 0.43  | 0.11           | 0.18   | 0.12            | 0.10   |        |        | .20        |  |
| 1000 | 0.15    | 0.25   | 0.34  | 0.36     | 0.49  | 0.13           | 0.21   | 0.15            | 0.12   |        |        | .24        |  |

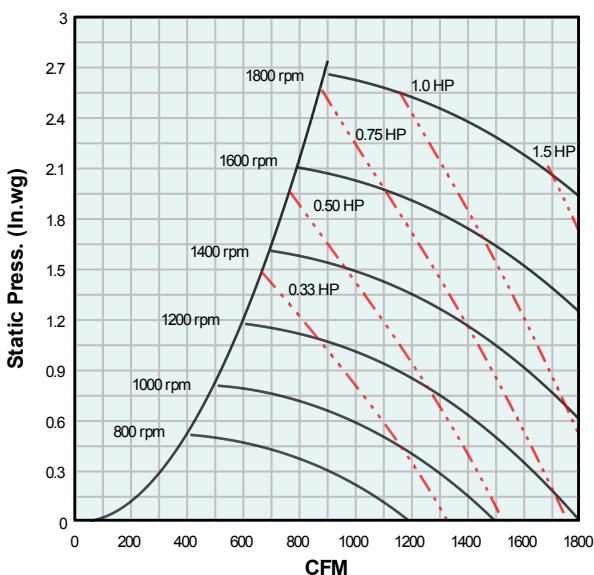
| 2 Ton (08) Horizontal Belt Drive Information |                      |             |                          |
|--|----------------------|-------------|--------------------------|
| HP   | Voltage              | Blower RPM  | Motor / Drive Kit Number |
| 1/4  | 115-1-60             | 825 - 1065  | 9MD08-A1                 |
| 1/4  | 115 / 208 - 2301-60  | 825 - 1065  | 9MD08-A2                 |
| 1/4  | 277-1-60             | 825 - 1065  | 9MD08-A3                 |
| 1/4  | 115-1-60             | 955 - 1240  | 9MD08-A6                 |
| 1/4  | 115 / 208 - 230-1-60 | 955 - 1240  | 9MD08-A7                 |
| 1/4  | 277-1-60             | 955 - 1240  | 9MD08-A8                 |
| 1/3  | 115-1-60             | 825 - 1065  | 9MD08-B1                 |
| 1/3  | 115 / 208- 230-1-60  | 825 - 1065  | 9MD08-B2                 |
| 1/3  | 277-1-60             | 825 - 1065  | 9MD08-B3                 |
| 1/3  | 208 - 230 / 460-3-60 | 825 - 1065  | 9MD08-B4                 |
| 1/3  | 575-3-60             | 825 - 1065  | 9MD08-B5                 |
| 1/3  | 115-1-60             | 955 - 1240  | 9MD08-B6                 |
| 1/3  | 115 / 208- 230-1-60  | 955 - 1240  | 9MD08-B7                 |
| 1/3  | 277-1-60             | 955 - 1240  | 9MD08-B8                 |
| 1/3  | 208 - 230 / 460-3-60 | 955 - 1240  | 9MD08-B9                 |
| 1/3  | 575-3-60             | 955 - 1240  | 9MD08-B10                |
| 1/3  | 115-1-60             | 1020 - 1330 | 9MD08-B11                |
| 1/3  | 115 / 208- 230-1-60  | 1020 - 1330 | 9MD08-B12                |
| 1/3  | 277-1-60             | 1020 - 1330 | 9MD08-B13                |
| 1/3  | 208 - 230 / 460-3-60 | 1020 - 1330 | 9MD08-B14                |
| 1/3  | 575-3-60             | 1020 - 1330 | 9MD08-B15                |

| 2 Ton (08) Horizontal Belt Drive Information |                      |             |                          |  |
|--|----------------------|-------------|--------------------------|--|
| HP   | Voltage              | Blower RPM  | Motor / Drive Kit Number |  |
| 1/2  | 115-1-60             | 1020 - 1330 | 9MD08-C1                 |  |
| 1/2  | 115 / 208- 230-1-60  | 1020 - 1330 | 9MD08-C2                 |  |
| 1/2  | 277-1-60             | 1020 - 1330 | 9MD08-C3                 |  |
| 1/2  | 208 - 230 / 460-3-60 | 1020 - 1330 | 9MD08-C4                 |  |
| 1/2  | 575-3-60             | 1020 - 1330 | 9MD08-C5                 |  |
| 1/2  | 115-1-60             | 1165 - 1520 | 9MD08-C6                 |  |
| 1/2  | 115 / 208- 230-1-60  | 1165 - 1520 | 9MD08-C7                 |  |
| 1/2  | 277-1-60             | 1165 - 1520 | 9MD08-C8                 |  |
| 1/2  | 208 - 230 / 460-3-60 | 1165 - 1520 | 9MD08-C9                 |  |
| 1/2  | 575-3-60             | 1165 - 1520 | 9MD08-C10                |  |
| 3/4  | 115 / 208- 230-1-60  | 1165 - 1520 | 9MD08-D2                 |  |
| 3/4  | 277-1-60             | 1165 - 1520 | 9MD08-D3                 |  |
| 3/4  | 208 - 230 / 460-3-60 | 1165 - 1520 | 9MD08-D4                 |  |
| 3/4  | 575-3-60             | 1165 - 1520 | 9MD08-D5                 |  |
| 3/4  | 115 / 208- 230-1-60  | 1310 - 1710 | 9MD08-D7                 |  |
| 3/4  | 277-1-60             | 1310 - 1710 | 9MD08-D8                 |  |
| 3/4  | 208 - 230 / 460-3-60 | 1310 - 1710 | 9MD08-D9                 |  |
| 3/4  | 575-3-60             | 1310 - 1710 | 9MD08-D10                |  |
| 1  | 115 / 208- 230-1-60  | 1310 - 1710 | 9MD08-E2                 |  |
| 1  | 277-1-60             | 1310 - 1710 | 9MD08-E3                 |  |
| 1  | 208 - 230 / 460-3-60 | 1310 - 1710 | 9MD08-E4                 |  |
| 1  | 575-3-60             | 1310 - 1710 | 9MD08-E5                 |  |

| Model | CFM  | 2 TON FAN PERFORMANCE                   |      |     |      |     |      |     |      |     |      |     |      |     |      |     |      |     |     |     |
|-------|------|---|------|-----|------|-----|------|-----|------|-----|------|-----|------|-----|------|-----|------|-----|-----|-----|
|       |      | TOTAL STATIC PRESSURE - INCHES OF WATER |      |     |      |     |      |     |      |     |      |     |      |     |      |     |      |     |     |     |
|       |      | 0.6                                     |      | 0.7 |      | 0.8 |      | 0.9 |      | 1.0 |      | 1.2 |      | 1.4 |      | 1.6 |      | 1.8 |     | 2.0 |
| RPM   | BHP  | RPM                                     | BHP  | RPM | BHP  | RPM | BHP  | RPM | BHP  | RPM | BHP  | RPM | BHP  | RPM | BHP  | RPM | BHP  | RPM | BHP |     |
| 600   | 986  | 0.3                                     | 1044 | 0.3 | 1103 | 0.3 | 1161 | 0.4 | 1220 | 0.4 | 1333 | 0.5 | 1439 | 0.5 | 1538 | 0.6 | 1629 | 0.7 | --- | --- |
| 700   | 1042 | 0.3                                     | 1087 | 0.3 | 1134 | 0.4 | 1183 | 0.4 | 1232 | 0.4 | 1333 | 0.5 | 1434 | 0.6 | 1531 | 0.6 | 1624 | 0.7 | --- | --- |
| 800   | 1117 | 0.4                                     | 1153 | 0.4 | 1191 | 0.4 | 1230 | 0.4 | 1271 | 0.5 | 1356 | 0.5 | 1443 | 0.6 | 1531 | 0.7 | 1619 | 0.8 | --- | --- |
| 900   | 1204 | 0.5                                     | 1234 | 0.5 | 1265 | 0.5 | 1298 | 0.5 | 1331 | 0.5 | 1401 | 0.6 | 1475 | 0.7 | 1551 | 0.7 | 1629 | 0.8 | --- | --- |
| 1000  | 1298 | 0.6                                     | 1324 | 0.6 | 1351 | 0.6 | 1378 | 0.6 | 1406 | 0.6 | 1465 | 0.7 | 1527 | 0.7 | 1592 | 0.8 | 1659 | 0.9 | --- | --- |

# BLOWER CURVE - 3 ton/12AWH

## Size 12 Blower Curve



| 12AWH |         |   |          |          |         |                |           |                 |        |            |      |      |  |
|-------|---------|---|----------|----------|---------|----------------|-----------|-----------------|--------|------------|------|------|--|
| CFM   | CABINET | Component Static Pressure (Inches of Water) |          |          |         |                |           |                 |        | Mixing Box |      |      |  |
|       |         | Chilled Water Coil                          |          |          |         | Hot Water Coil |           | Filter Sections |        |            |      |      |  |
|       |         | Dry Coil                                    | Wet Coil | Dry Coil | 2" Flat | 4" Flat        | 2" Angled | 4" Angled       | Merv 7 |            |      |      |  |
| 4 Row | 6 Row   | 4 Row                                       | 6 Row    | *1-2 Row | Merv 7  | Merv 7         | Merv 7    | Merv 7          | Merv 7 | NA         | 0.24 | 0.28 |  |
| 1000  | 0.15    | 0.15  | 0.24     | 0.21     | 0.34    | 0.11           | 0.009     | 0.06            | 0.05   |            | 0.24 | 0.28 |  |
| 1100  | 0.18    | 0.17  | 0.26     | 0.24     | 0.37    | 0.13           | 0.12      | 0.08            | 0.06   |            | 0.33 | 0.38 |  |
| 1200  | 0.22    | 0.20  | 0.29     | 0.29     | 0.41    | 0.15           | 0.15      | 0.10            | 0.08   |            | 0.33 | 0.38 |  |
| 1300  | 0.25    | 0.23  | 0.31     | 0.33     | 0.44    | 0.17           | 0.18      | 0.12            | 0.10   |            | 0.38 | 0.43 |  |
| 1400  | 0.29    | 0.26  | 0.35     | 0.37     | 0.50    | 0.19           | 0.21      | 0.15            | 0.12   |            | 0.43 |      |  |

| 3 Ton (12) Horizontal Belt Drive Information |                      |            |                          |  |
|--|----------------------|------------|--------------------------|--|
| HP   | Voltage              | Blower RPM | Motor / Drive Kit Number |  |
| 1/2  | 115-1-60             | 695 - 890  | 9MD12-B1                 |  |
| 1/3  | 115 / 208- 230-1-60  | 695 - 890  | 9MD12-B2                 |  |
| 1/3  | 277-1-60             | 695 - 890  | 9MD12-B3                 |  |
| 1/3  | 208 - 230 / 460-3-60 | 695 - 890  | 9MD12-B4                 |  |
| 1/3  | 575-3-60             | 695 - 890  | 9MD12-B5                 |  |
| 1/3  | 115-1-60             | 825 - 1065 | 9MD12-B6                 |  |
| 1/3  | 115 / 208- 230-1-60  | 825 - 1065 | 9MD12-B7                 |  |
| 1/3  | 277-1-60             | 825 - 1065 | 9MD12-B8                 |  |
| 1/3  | 208 - 230 / 460-3-60 | 825 - 1065 | 9MD12-B9                 |  |
| 1/3  | 575-3-60             | 825 - 1065 | 9MD12-B10                |  |
| 1/3  | 115-1-60             | 955 - 1240 | 9MD12-B11                |  |
| 1/3  | 115 / 208- 230-1-60  | 955 - 1240 | 9MD12-B12                |  |
| 1/3  | 277-1-60             | 955 - 1240 | 9MD12-B13                |  |
| 1/3  | 208 - 230 / 460-3-60 | 955 - 1240 | 9MD12-B14                |  |
| 1/3  | 575-3-60             | 955 - 1240 | 9MD12-B15                |  |
| 1/2  | 115-1-60             | 695 - 890  | 9MD12-C1                 |  |
| 1/2  | 115 / 208- 230-1-60  | 695 - 890  | 9MD12-C2                 |  |
| 1/2  | 277-1-60             | 695 - 890  | 9MD12-C3                 |  |
| 1/2  | 208 - 230 / 460-3-60 | 695 - 890  | 9MD12-C4                 |  |
| 1/2  | 575-3-60             | 695 - 890  | 9MD12-C5                 |  |
| 1/2  | 115-1-60             | 825 - 1065 | 9MD12-C6                 |  |
| 1/2  | 115 / 208- 230-1-60  | 825 - 1065 | 9MD12-C7                 |  |
| 1/2  | 277-1-60             | 825 - 1065 | 9MD12-C8                 |  |
| 1/2  | 208 - 230 / 460-3-60 | 825 - 1065 | 9MD12-C9                 |  |
| 1/2  | 575-3-60             | 825 - 1065 | 9MD12-C10                |  |
| 1/2  | 115-1-60             | 955 - 1240 | 9MD12-C11                |  |
| 1/2  | 115 / 208- 230-1-60  | 955 - 1240 | 9MD12-C12                |  |
| 1/2  | 277-1-60             | 955 - 1240 | 9MD12-C13                |  |

| Model | CFM  | 3 TON FAN PERFORMANCE                   |     |      |     |      |     |      |     |      |      |      |     |      |     |      |     |      |     |     |     |
|-------|------|---|-----|------|-----|------|-----|------|-----|------|------|------|-----|------|-----|------|-----|------|-----|-----|-----|
|       |      | TOTAL STATIC PRESSURE - INCHES OF WATER |     |      |     |      |     |      |     |      |      |      |     |      |     |      |     |      |     |     |     |
|       |      | 0.6                                     |     | 0.7  |     | 0.8  |     | 0.9  |     | 1.0  |      | 1.2  |     | 1.4  |     | 1.6  |     | 1.8  |     | 2.0 |     |
| 12    | RPM  | BHP                                     | RPM | BHP  | RPM | BHP  | RPM | BHP  | RPM | BHP  | RPM  | BHP  | RPM | BHP  | RPM | BHP  | RPM | BHP  | RPM | BHP |     |
|       | 1000 | 1028                                    | 0.4 | 1077 | 0.4 | 1125 | 0.4 | 1171 | 0.5 | 1215 | 0.50 | 1301 | 0.6 | 1383 | 0.6 | 1461 | 0.7 | 1536 | 0.7 | --- | --- |
|       | 1100 | 1068                                    | 0.5 | 1114 | 0.5 | 1159 | 0.5 | 1203 | 0.5 | 1246 | 0.6  | 1329 | 0.6 | 1408 | 0.7 | 1483 | 0.7 | 1556 | 0.8 | --- | --- |
|       | 1200 | 1111                                    | 0.5 | 1155 | 0.5 | 1198 | 0.6 | 1239 | 0.6 | 1280 | 0.6  | 1360 | 0.7 | 1436 | 0.8 | 1509 | 0.8 | 1579 | 0.9 | --- | --- |
|       | 1300 | 1157                                    | 0.6 | 1198 | 0.6 | 1239 | 0.7 | 1279 | 0.7 | 1318 | 0.7  | 1394 | 0.8 | 1467 | 0.9 | 1537 | 0.9 | 1606 | 1   | --- | --- |
|       | 1400 | 1205                                    | 0.7 | 1244 | 0.7 | 1283 | 0.8 | 1321 | 0.8 | 1358 | 0.8  | 1431 | 0.9 | 1501 | 1.0 | 1569 | 1.0 | 1635 | 1.1 | --- | --- |

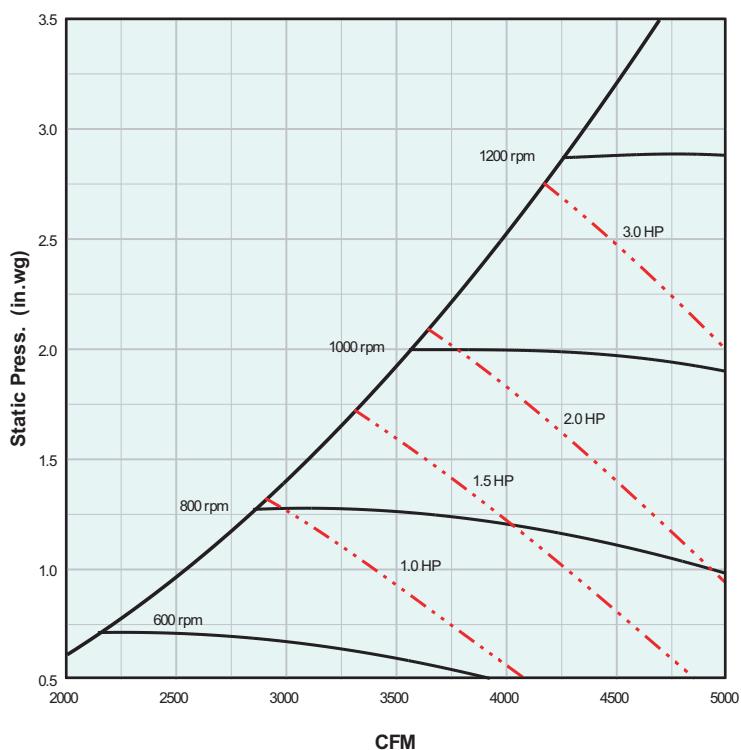






# BLOWER CURVE - 10 ton/40AWH

Size 40 Blower Curve

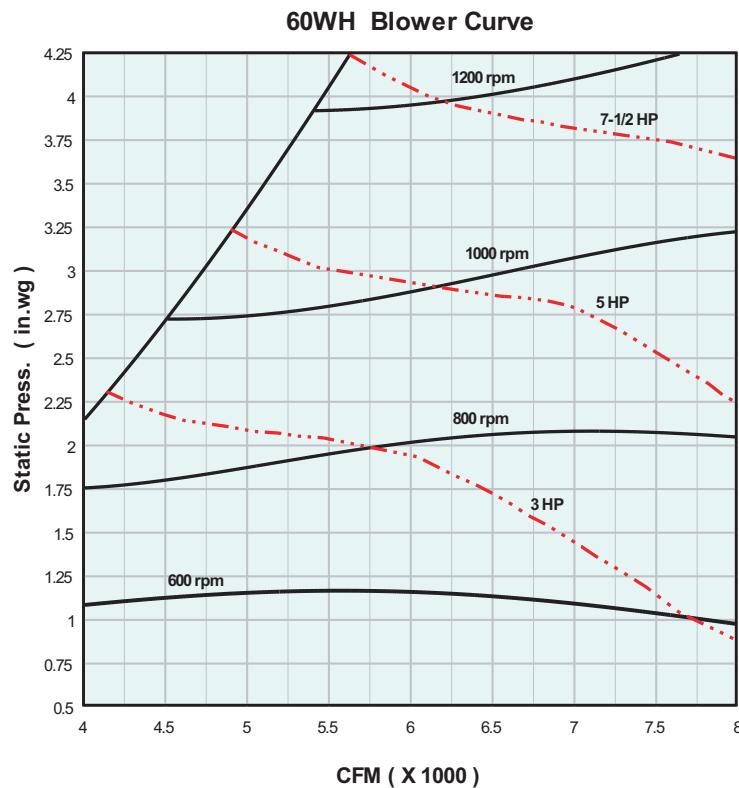


| 40AWH Component Static Pressure (Inches of Water) |         |                    |       |          |       |                |         |                 |           |           |      |            |  |
|---|---------|--------------------|-------|----------|-------|----------------|---------|-----------------|-----------|-----------|------|------------|--|
| CFM   | CABINET | Chilled Water Coil |       |          |       | Hot Water Coil |         | Filter Sections |           |           |      | Mixing Box |  |
|   |         | Dry Coil           |       | Wet Coil |       | Dry Coil       | 2" Flat | 4" Flat         | 2" Angled | 4" Angled |      |            |  |
|   |         | 4 Row              | 6 Row | 4 Row    | 6 Row | *1-2 Row       | Merv 7  | Merv 7          | Merv 7    | Merv 7    |      |            |  |
| 3600  | 0.14    | 0.12               | 0.18  | 0.13     | 0.19  | 0.05           | 0.20    | 0.13            | 0.13      | 0.13      | 0.20 |            |  |
| 3800  | 0.16    | 0.14               | 0.21  | 0.15     | 0.22  | 0.06           | 0.21    | 0.14            | 0.14      | 0.14      | 0.22 |            |  |
| 4000  | 0.18    | 0.16               | 0.24  | 0.17     | 0.26  | 0.08           | 0.22    | 0.15            | 0.14      | 0.14      | 0.24 |            |  |
| 4200  | 0.20    | 0.18               | 0.27  | 0.19     | 0.29  | 0.10           | 0.23    | 0.15            | 0.15      | 0.15      | 0.27 |            |  |
| 4400  | 0.22    | 0.20               | 0.31  | 0.21     | 0.33  | 0.12           | 0.24    | 0.16            | 0.16      | 0.15      | 0.30 |            |  |

| 10 Ton (40) Horizontal Belt Drive Information |                 |       |             |                          |
|---|-----------------|-------|-------------|--------------------------|
| HP  | Voltage         | Phase | Blower RPM  | Motor / Drive Kit Number |
| 1-1/2   | 115 / 208 - 230 | 1     | 695 - 825   | 9MD40-F2                 |
| 1-1/2   | 277             | 1     | 695 - 825   | 9MD40-F3                 |
| 1-1/2   | 208- 230 / 460  | 3     | 695 - 825   | 9MD40-F4                 |
| 1-1/2   | 575             | 3     | 695 - 825   | 9MD40-F5                 |
| 1-1/2   | 115 / 208 - 230 | 1     | 765 - 910   | 9MD40-F7                 |
| 1-1/2   | 277             | 1     | 765 - 910   | 9MD40-F8                 |
| 1-1/2   | 208- 230 / 460  | 3     | 765 - 910   | 9MD40-F9                 |
| 1-1/2   | 575             | 3     | 765 - 910   | 9MD40-F10                |
| 2   | 115 / 208 - 230 | 1     | 695 - 825   | 9MD40-G2                 |
| 2   | 277             | 1     | 695 - 825   |                          |
| 2   | 208- 230 / 460  | 3     | 695 - 825   | 9MD40-G4                 |
| 2   | 575             | 3     | 695 - 825   | 9MD40-G5                 |
| 3   | 115 / 208 - 230 | 1     | 765 - 910   | 9MD40-H2                 |
| 3   | 277             | 1     | 765 - 910   |                          |
| 3   | 208- 230 / 460  | 3     | 765 - 910   | 9MD40-H4                 |
| 3   | 575             | 3     | 765 - 910   | 9MD40-H5                 |
| 3   | 115 / 208 - 230 | 1     | 850 - 1010  | 9MD40-H7                 |
| 3   | 277             | 1     | 850 - 1010  |                          |
| 3   | 208- 230 / 460  | 3     | 850 - 1010  | 9MD40-H9                 |
| 3   | 575             | 3     | 850 - 1010  | 9MD40-H10                |
| 3   | 115 / 208 - 230 | 1     | 955 - 1140  | 9MD40-H12                |
| 3   | 277             | 1     | 955 - 1140  |                          |
| 3   | 208- 230 / 460  | 3     | 955 - 1140  | 9MD40-H14                |
| 3   | 575             | 3     | 955 - 1140  | 9MD40-H15                |
| 5   | 208- 230 / 460  | 3     | 900 - 1075  | 9MD40-J4                 |
| 5   | 575             | 3     | 900 - 1075  | 9MD40-J5                 |
| 5   | 208- 230 / 460  | 3     | 1015 - 1220 | 9MD40-J9                 |
| 5   | 575             | 3     | 1015 - 1220 | 9MD40-J10                |

| 10 TON FAN PERFORMANCE |      |   |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |      |     |      |     |      |     |      |     |      |     |
|------------------------|------|---|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|------|-----|------|-----|------|-----|------|-----|------|-----|
| Model                  | CFM  | TOTAL STATIC PRESSURE - INCHES OF WATER |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |      |     |      |     |      |     |      |     |      |     |
|                        |      | 0.7                                     |     | 0.8 |     | 0.9 |     | 1.0 |     | 1.2 |     | 1.4 |     | 1.6 |     | 1.8 |     | 2.0  |     | 2.25 |     | 2.5  |     | 2.75 |     | 3.0  |     |
| 40                     | 3400 | 639                                     | 0.9 | 671 | 1.0 | 701 | 1.1 | 731 | 1.1 | 791 | 1.3 | 848 | 1.5 | 905 | 1.6 | 961 | 1.7 | ---  | --- | ---  | --- | ---  | --- | ---  | --- | ---  |     |
|                        | 3700 | 655                                     | 1.1 | 685 | 1.2 | 714 | 1.2 | 742 | 1.3 | 798 | 1.4 | 852 | 1.6 | 906 | 1.8 | 958 | 1.9 | 1010 | 2.1 | ---  | --- | ---  | --- | ---  | --- | ---  |     |
|                        | 4000 | 673                                     | 1.2 | 701 | 1.3 | 728 | 1.4 | 755 | 1.5 | 808 | 1.6 | 860 | 1.8 | 910 | 2.2 | 960 | 2.1 | 1009 | 2.3 | 1072 | 2.5 | 1132 | 2.7 | ---  | --- | ---  |     |
|                        | 4300 | 693                                     | 1.4 | 719 | 1.5 | 745 | 1.6 | 771 | 1.7 | 821 | 1.8 | 870 | 2.0 | 918 | 2.2 | 965 | 2.4 | 1011 | 2.5 | 1073 | 2.7 | 1132 | 3.0 | 1184 | 3.2 | ---  | --- |
|                        | 4600 | 713                                     | 1.6 | 739 | 1.7 | 764 | 1.8 | 788 | 1.9 | 836 | 2.1 | 883 | 2.2 | 929 | 2.4 | 973 | 2.6 | 1018 | 2.8 | 1076 | 3.0 | 1132 | 3.2 | 1184 | 3.2 | 1236 | 3.8 |

## BLOWER CURVE - 15 ton/60AWH



| 60AWH Component Static Pressure (Inches of Water) |         |                    |       |          |       |                |                 |         |         |           |           |            |
|---|---------|--------------------|-------|----------|-------|----------------|-----------------|---------|---------|-----------|-----------|------------|
| CFM   | CABINET | Chilled Water Coil |       |          |       | Hot Water Coil | Filter Sections |         |         |           |           | Mixing Box |
|   |         | Dry Coil           |       | Wet Coil |       |                | Dry Coil        | 2" Flat | 4" Flat | 2" Angled | 4" Angled |            |
|   |         | 4 Row              | 6 Row | 4 Row    | 6 Row | *1-2 Row       | Merv 7          | Merv 7  | Merv 7  | Merv 7    | Merv 7    |            |
| 5600  | 0.01    | 0.14               | 0.20  | 0.15     | 0.21  | 0.06           | 0.16            | 0.16    | 0.16    | 0.15      | 0.15      | 0.23       |
| 5800  | 0.05    | 0.17               | 0.23  | 0.18     | 0.25  | 0.09           | 0.18            | 0.18    | 0.17    | 0.16      | 0.16      | 0.25       |
| 6000  | 0.12    | 0.19               | 0.26  | 0.21     | 0.28  | 0.11           | 0.21            | 0.19    | 0.18    | 0.17      | 0.17      | 0.27       |
| 6200  | 0.19    | 0.22               | 0.29  | 0.23     | 0.31  | 0.13           | 0.23            | 0.20    | 0.19    | 0.18      | 0.18      | 0.28       |
| 6400  | 0.25    | 0.24               | 0.32  | 0.26     | 0.35  | 0.15           | 0.26            | 0.23    | 0.20    | 0.19      | 0.19      | 0.30       |

| 15 Ton (60) Horizontal Belt Drive Information |                 |       |    |             |                          |  |
|---|-----------------|-------|----|-------------|--------------------------|--|
| HP  | Voltage         | Phase | Hz | Blower RPM  | Motor / Drive Kit Number |  |
| 3   | 115 / 208 - 230 | 1     | 60 | 615 - 720   | 9MD60-H2                 |  |
| 3   | 277             | 1     | 60 |             |                          |  |
| 3   | 208-230 / 460   | 3     | 60 | 615 - 720   | 9MD60-H4                 |  |
| 3   | 575             | 3     | 60 | 615 - 720   | 9MD60-H5                 |  |
| 3   | 115 / 208 - 230 | 1     | 60 | 665 - 785   | 9MD60-H7                 |  |
| 3   | 277             | 1     | 60 |             |                          |  |
| 3   | 208-230 / 460   | 3     | 60 | 665 - 785   | 9MD60-H9                 |  |
| 3   | 575             | 3     | 60 | 665 - 785   | 9MD60-H10                |  |
| 3   | 115 / 208 - 230 | 1     | 60 | 730 - 865   | 9MD60-H12                |  |
| 3   | 277             | 1     | 60 |             |                          |  |
| 3   | 208-230 / 460   | 3     | 60 | 730 - 865   | 9MD60-H14                |  |
| 3   | 575             | 3     | 60 | 730 - 865   | 9MD60-H15                |  |
| 5   | 208-230 / 460   | 3     | 60 | 730 - 865   | 9MD60-J4                 |  |
| 5   | 575             | 3     | 60 | 730 - 865   | 9MD60-J5                 |  |
| 5   | 208-230 / 460   | 3     | 60 | 805 - 955   | 9MD60-J9                 |  |
| 5   | 575             | 3     | 60 | 805 - 955   | 9MD60-J10                |  |
| 5   | 208-230 / 460   | 3     | 60 | 900 - 1075  | 9MD60-J14                |  |
| 5   | 575             | 3     | 60 | 900 - 1075  | 9MD60-J15                |  |
| 7-1/2   | 208-230 / 460   | 3     | 60 | 915 - 1065  | 9MD60-K4                 |  |
| 7-1/2   | 575             | 3     | 60 | 915 - 1065  | 9MD60-K5                 |  |
| 7-1/2   | 208-230 / 460   | 3     | 60 | 1020 - 1195 | 9MD60-K9                 |  |
| 7-1/2   | 575             | 3     | 60 | 1020 - 1195 | 9MD60-K10                |  |

| 15 TON FAN PERFORMANCE |      |   |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |      |     |      |     |      |     |      |     |
|------------------------|------|---|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|------|-----|------|-----|------|-----|------|-----|
| Model                  | CFM  | TOTAL STATIC PRESSURE - INCHES OF WATER |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |      |     |      |     |      |     |      |     |
|                        |      | 0.7                                     |     | 0.8 |     | 0.9 |     | 1.0 |     | 1.2 |     | 1.4 |     | 1.6 |     | 1.8 |     | 2.0 |     | 2.25 |     | 2.5  |     | 2.75 |     | 3.0  |     |
|                        |      | RPM                                     | BHP | RPM | BHP | RPM | BHP | RPM | BHP | RPM | BHP | RPM | BHP | RPM | BHP | RPM | BHP | RPM | BHP | RPM  | BHP | RPM  | BHP | RPM  | BHP |      |     |
| 60                     | 5200 | 488                                     | 1.3 | 515 | 1.4 | 542 | 1.5 | 568 | 1.6 | 621 | 1.8 | 672 | 2.0 | 727 | 2.3 | 784 | 2.7 | 837 | 3.1 | 901  | 3.5 | 1009 | 4.0 | 1012 | 4.5 | 1060 | 4.9 |
|                        | 5600 | 494                                     | 1.5 | 520 | 1.6 | 545 | 1.7 | 571 | 1.8 | 620 | 2.0 | 669 | 2.2 | 716 | 2.5 | 766 | 2.8 | 819 | 3.2 | 885  | 3.6 | 945  | 4.1 | 1000 | 4.6 | 1052 | 5.1 |
|                        | 6000 | 502                                     | 1.7 | 527 | 1.8 | 551 | 1.9 | 575 | 2.0 | 622 | 2.2 | 668 | 2.4 | 713 | 2.7 | 758 | 3.0 | 802 | 3.3 | 867  | 3.7 | 928  | 4.2 | 985  | 4.7 | 1039 | 5.3 |
|                        | 6400 | 511                                     | 1.9 | 535 | 2.0 | 558 | 2.1 | 581 | 2.2 | 626 | 2.4 | 670 | 2.7 | 712 | 2.9 | 755 | 3.2 | 797 | 3.5 | 853  | 3.8 | 910  | 4.3 | 968  | 4.8 | 1023 | 5.4 |
|                        | 6800 | 521                                     | 2.1 | 543 | 2.2 | 566 | 2.4 | 588 | 2.5 | 631 | 2.7 | 673 | 3.0 | 714 | 3.2 | 755 | 3.5 | 794 | 3.8 | 849  | 4.1 | 898  | 4.5 | 950  | 4.9 | 1005 | 5.5 |



# ELECTRICAL DATA

| SINGLE PHASE   |       |            |      |                  |          |             | THREE PHASE |            |    |     |      |                  |             |   |             |  |  |  |  |  |
|--|-------|------------|------|------------------|----------|-------------|-------------|------------|----|-----|------|------------------|-------------|---|-------------|--|--|--|--|--|
| Motor Data   |       |            |      | Control Box Data |          |             | Part Number | Motor Data |    |     |      | Control Box Data |             |   | Part Number |  |  |  |  |  |
| Volt   | Phase | HP         | FLA  | MCA              | Fuse/Qty | Part Number | Volt        | Phase      | HP | FLA | MCA  | Fuse/Qty         | Part Number |   |             |  |  |  |  |  |
| 115  | 1     | 1/4        | 5.8  | 10               | 10       | 1           | 986FF11M3M  | 208/230    | 3  | 1/3 | 1.6  | 3                | 3           | 3 | 986FF33M1M  |  |  |  |  |  |
|  |       | 1/3        | 7.2  | 15               | 15       | 1           |             |            |    | 1/2 | 2.4  | 6                | 6           | 3 | 986FF33M2M  |  |  |  |  |  |
|  |       | 1/2        | 9.8  | 15               | 15       | 1           |             |            |    | 3/4 | 3.5  | 6                | 6           | 3 |             |  |  |  |  |  |
|  |       | 3/4        | 13.8 | 20               | 20       | 1           |             |            |    | 1   | 5.6  | 10               | 10          | 3 | 986FF33M3M  |  |  |  |  |  |
|  |       | 1          | 16.4 | 25               | 25       | 1           | 986FF11M6M  |            |    | 1.5 | 6.6  | 10               | 10          | 3 |             |  |  |  |  |  |
|  |       | 1.5        | 20.0 | 25               | 25       | 1           |             |            |    | 2   | 7.5  | 15               | 15          | 3 | 986FF33M4M  |  |  |  |  |  |
|  |       | 2          | 24.0 | 30               | 30       | 1           |             |            |    | 3   | 10.6 | 15               | 15          | 3 |             |  |  |  |  |  |
|  |       | 986FF11M7M |      |                  |          |             |             |            |    | 5   | 16.7 | 25               | 25          | 3 | 986FF33M6M  |  |  |  |  |  |
| 277  | 1     | 1/3        | 3.0  | 6                | 6        | 1           | 986FF71M2M  | 460        | 3  | 1/3 | 0.8  | 3                | 3           | 3 | 986FF63M1M  |  |  |  |  |  |
|  |       | 1/2        | 4.1  | 6                | 6        | 1           |             |            |    | 1/2 | 1.1  | 3                | 3           | 3 |             |  |  |  |  |  |
|  |       | 3/4        | 5.7  | 10               | 10       | 1           |             |            |    | 3/4 | 1.6  | 3                | 3           | 3 |             |  |  |  |  |  |
|  |       | 1          | 6.8  | 10               | 10       | 1           |             |            |    | 1   | 3.7  | 6                | 6           | 3 | 986FF63M2M  |  |  |  |  |  |
|  |       | 1.5        | 8.5  | 15               | 15       | 1           | 986FF71M4M  |            |    | 1.5 | 3.0  | 6                | 6           | 3 |             |  |  |  |  |  |
|  |       | 2          | 10.0 | 15               | 15       | 1           |             |            |    | 2   | 3.7  | 6                | 6           | 3 |             |  |  |  |  |  |
|  |       | 986FF71M4M |      |                  |          |             |             |            |    | 3   | 4.8  | 10               | 10          | 3 | 986FF63M3M  |  |  |  |  |  |
|  |       | 986FF71M3M |      |                  |          |             |             |            |    | 5   | 7.6  | 10               | 10          | 3 |             |  |  |  |  |  |
| 208/230  | 1     | 1/4        | 2.9  | 6                | 6        | 2           | 986FF31M2M  | 575        | 3  | 1/2 | 0.9  | 3                | 3           | 3 | 986FF53M1M  |  |  |  |  |  |
|  |       | 1/3        | 3.6  | 6                | 6        | 2           |             |            |    | 3/4 | 1.3  | 3                | 3           | 3 |             |  |  |  |  |  |
|  |       | 1/2        | 4.9  | 10               | 10       | 2           |             |            |    | 1   | 1.7  | 3                | 3           | 3 | 986FF53M2M  |  |  |  |  |  |
|  |       | 3/4        | 6.9  | 10               | 10       | 2           |             |            |    | 1.5 | 2.4  | 3                | 3           | 3 |             |  |  |  |  |  |
|  |       | 1          | 8.2  | 15               | 15       | 2           | 986FF31M4M  |            |    | 2   | 2.7  | 6                | 6           | 3 |             |  |  |  |  |  |
|  |       | 1.5        | 10.0 | 15               | 15       | 2           |             |            |    | 3   | 3.9  | 6                | 6           | 3 |             |  |  |  |  |  |
|  |       | 2          | 12.0 | 20               | 20       | 2           |             |            |    | 5   | 6.1  | 10               | 10          | 3 | 986FF53M3M  |  |  |  |  |  |
| CONTACT FACTORY FOR<br>MOTOR CONTROLS FOR 7-1/2 & 10 HP MOTORS |       |            |      |                  |          |             |             |            |    |     |      |                  |             |   |             |  |  |  |  |  |

## SHIPPING WEIGHTS

| AWHD SERIES WEIGHTS |                     |                 |                   |                             |              |                         |                                |                                   |                  |                 |                 |      |      |
|---------------------|---------------------|-----------------|-------------------|-----------------------------|--------------|-------------------------|--------------------------------|-----------------------------------|------------------|-----------------|-----------------|------|------|
| MODEL               | **BASE UNIT WEIGHTS |                 | COIL WEIGHTS      |                             |              |                         | ACCESSORY WEIGHTS              |                                   |                  | MOTOR WEIGHTS   |                 |      |      |
|                     | OPERATING WEIGHT    | SHIPPING WEIGHT | COIL (LESS FLUID) | COIL FLUID VOLUME (GALLONS) | FLUID (LBS.) | COIL (OPERATING) WEIGHT | 9BDAF_F2/4 FLAT FILTER SECTION | 9BDAF_A2/4 ANGULAR FILTER SECTION | 9BDAM_MIXING BOX | 120/208/240/1PH | 277/1/60        |      |      |
| 8AHWD               | 243.0               | 295.0           | 1 ROW             | 5.3                         | 0.24         | 2.0                     | 7.3                            | SHIPPING WT                       | SHIPPING WT      | SHIPPING WT     | 1/4             | 20.0 | N/A  |
|                     |                     |                 | 2 ROW             | 10.5                        | 0.48         | 4.0                     | 14.5                           | 52.0                              | 89.0             | 98.0            | 1/3             | 23.0 | 23.0 |
|                     |                     |                 | 4 ROW             | 21.0                        | 0.96         | 8.0                     | 29.0                           | OPERATING WT                      | OPERATING WT     | OPERATING WT    | 1/2             | 26.0 | 26.0 |
|                     |                     |                 | 6 ROW             | 31.5                        | 1.44         | 12.0                    | 43.5                           | 32.0                              | 62.0             | 78.0            | 3/4             | 31.0 | 34.0 |
| 12AHWD              | 257.0               | 320.0           | 1 ROW             | 6.0                         | 0.28         | 2.3                     | 8.3                            | SHIPPING WT                       | SHIPPING WT      | SHIPPING WT     | 1               | 33.0 | 42.0 |
|                     |                     |                 | 2 ROW             | 12.0                        | 0.56         | 4.7                     | 16.7                           | 56.0                              | 97.0             | 103.0           | 1 1/2           | 42.0 | 49.0 |
|                     |                     |                 | 4 ROW             | 24.0                        | 1.13         | 9.4                     | 33.4                           | OPERATING WT                      | OPERATING WT     | OPERATING WT    | 2               | 44.0 | N/A  |
|                     |                     |                 | 6 ROW             | 36.0                        | 1.72         | 14.4                    | 50.4                           | 36.0                              | 70.0             | 83.0            | 208/240/480/3PH |      |      |
| 16AHWD              | 295.0               | 361.0           | 1 ROW             | 8.3                         | 0.37         | 3.1                     | 11.4                           | SHIPPING WT                       | SHIPPING WT      | SHIPPING WT     | 1/4             | 22.0 | N/A  |
|                     |                     |                 | 2 ROW             | 16.5                        | 0.75         | 6.3                     | 22.8                           | 60.0                              | 123.0            | 127.0           | 1/3             | 22.0 |      |
|                     |                     |                 | 4 ROW             | 33.0                        | 1.50         | 12.5                    | 45.5                           | OPERATING WT                      | OPERATING WT     | OPERATING WT    | 1/2             | 23.0 |      |
|                     |                     |                 | 6 ROW             | 49.5                        | 2.25         | 18.8                    | 68.3                           | 49.0                              | 98.0             | 105.0           | 3/4             | 27.0 |      |
| 20AHWD              | 332.0               | 402.0           | 1 ROW             | 9.5                         | 0.44         | 3.7                     | 13.2                           | SHIPPING WT                       | SHIPPING WT      | SHIPPING WT     | 1               | 33.0 | N/A  |
|                     |                     |                 | 2 ROW             | 19.0                        | 0.89         | 7.4                     | 26.4                           | 67.0                              | 137.0            | 146.0           | 1 1/2           | 33.0 |      |
|                     |                     |                 | 4 ROW             | 38.0                        | 1.78         | 14.9                    | 52.9                           | OPERATING WT                      | OPERATING WT     | OPERATING WT    | 2               | 41.0 |      |
|                     |                     |                 | 6 ROW             | 57.0                        | 2.67         | 22.3                    | 79.3                           | 52.0                              | 111.0            | 121.0           | 3               | 58.0 |      |
|                     |                     |                 |                   |                             |              |                         |                                |                                   |                  |                 |                 |      |      |
| 30AHWD              | Contact Factory     |                 |                   |                             |              |                         |                                |                                   |                  |                 |                 |      |      |
| 40AHWD              | Contact Factory     |                 |                   |                             |              |                         |                                |                                   |                  |                 |                 |      |      |
| 60AHWD              | Contact Factory     |                 |                   |                             |              |                         |                                |                                   |                  |                 |                 |      |      |
| 80AHWD              | Contact Factory     |                 |                   |                             |              |                         |                                |                                   |                  |                 |                 |      |      |

\*\*BASE UNIT WEIGHT INCLUDES BLOWER ASSEMBLY, MOTOR SHEAVE, BLOWER PULLEY, BELT AND 2" FILTER