FIRST CO.
P.O. BOX 270969 - DALLAS, TEXAS 75227
PH. (214) 388-5751 | FAX (214) 388-2255
WWW.FIRSTCO.COM

WH - ECM
Double Wall Construction
HORIZONTAL

Chilled Water

Hot Water

500 thru 4,000 CFM

Direct Drive ECM

AHRI CERTIFIED www.ahridirectory.org
Central Station Air-Handlers
AHRI Standard 430

INTERTEK ETL LISTED C US

Table of Contents

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 16-40) 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)

Motor High Efficency ECM motor with 0-10V DC input

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.

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

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 stiffing 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.

2.05 ELECTRICAL

A. High Efficency ECM motor with 0-10V DC input

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

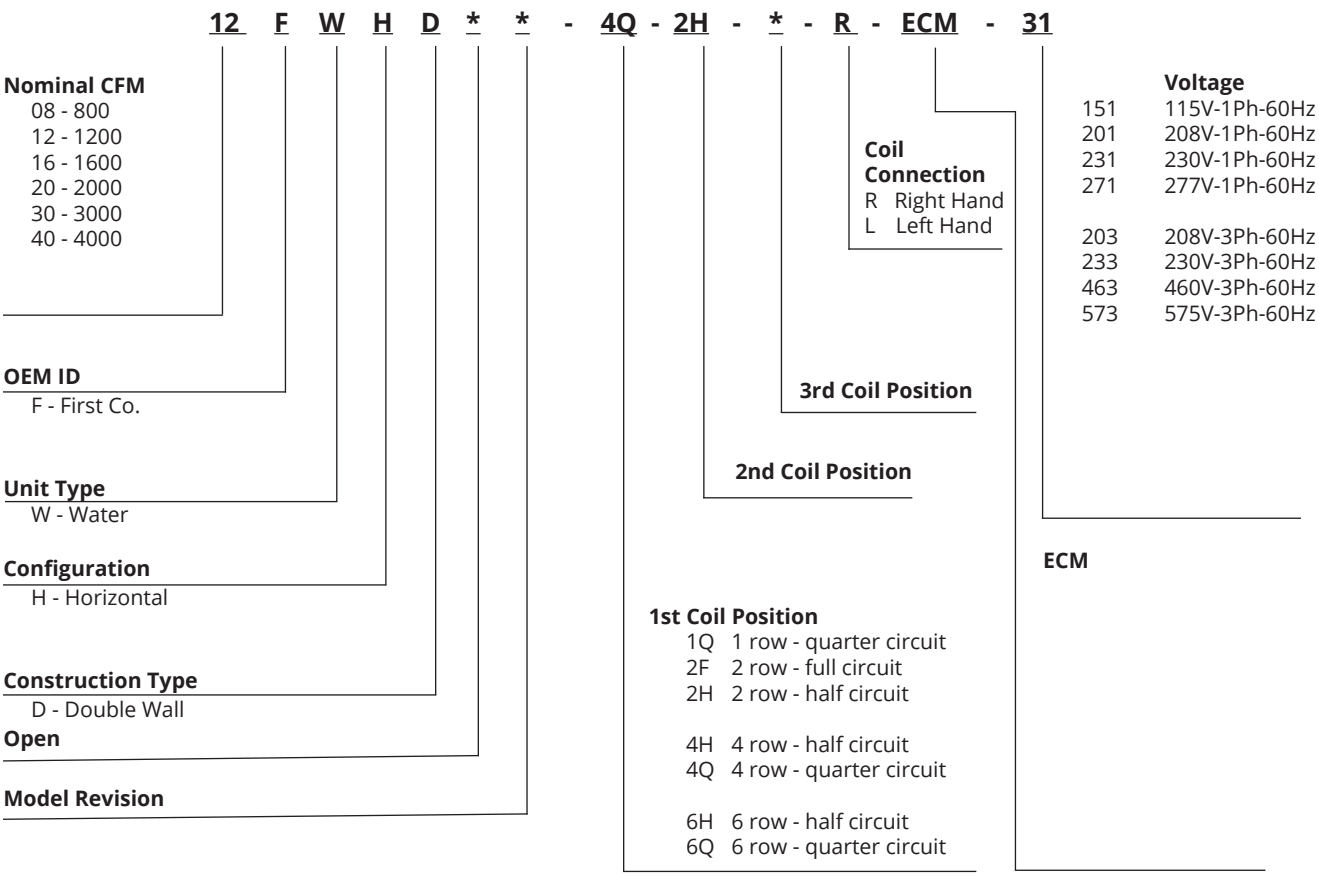
A. Optional mixing box consist of the same construction as described in "2.02 Casings." Section shall include factory mounted outside and return air dampers. Boxes shall be double wall construction with parallel blade, interconnecting outside-air and return-air dampers. Damper blades shall include stiffing 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*

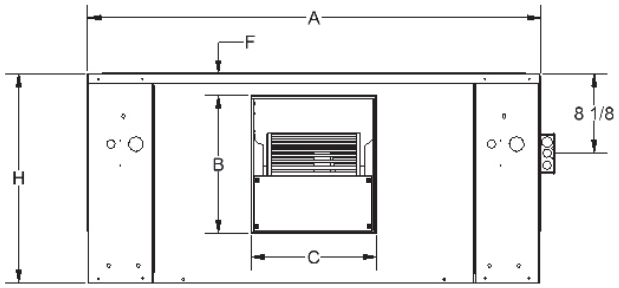


Required Order Information

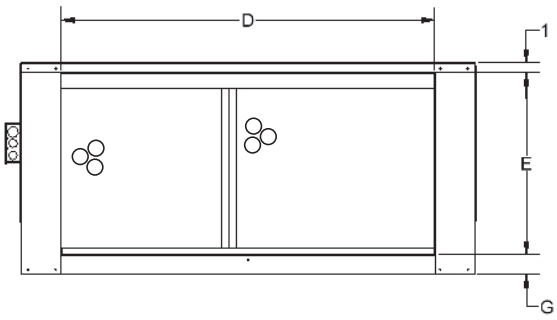
1. Model number with rows and circuit
2. Actual voltage motor is to be wired to.
3. Hot water coil installed in preheat or reheat position
4. Hand connections with air hitting you in back of head

PHYSICAL DATA

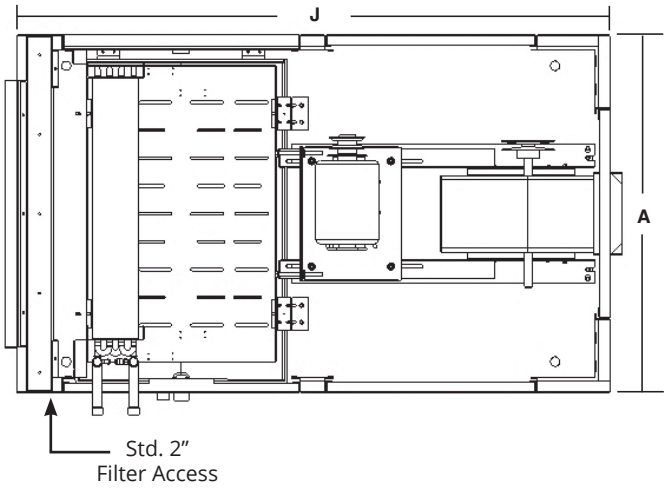
FRONT VIEW
Supply



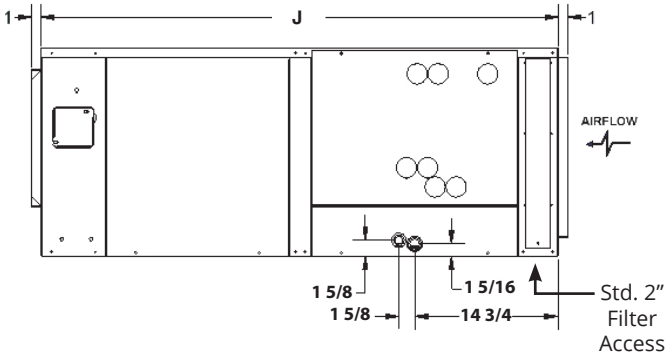
REAR VIEW
Return



PLAN VIEW

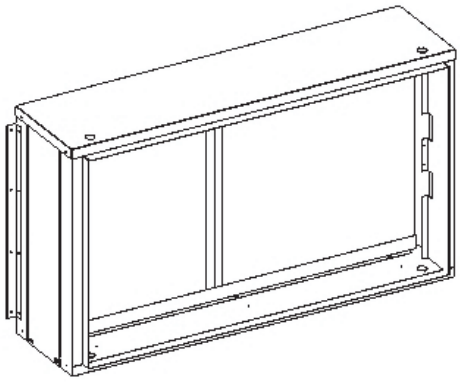


SIDE VIEW
Left Hand Connection

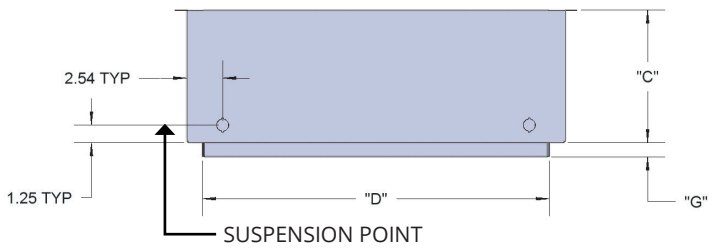


UNIT CABINET DIMENSIONS										
UNIT MODEL	**A**	**B**	**C**	**D**	**E**	**F**	**G**	**H**	**J**	**FILTERS (MERV7)**
8WH	32-1/4	10-7/8	8-7/8	24	16	1-3/4	2	19	53-1/4	(2) 16X25X2
12WH	36-1/4	10-7/8	12-1/2	24	16	1-3/4	2	19	53-1/4	(2) 16X25X2
16WH	40-1/4	14-1/8	12-7/8	32	18-1/2	2-1/4	2	21-1/2	53-1/4	(2) 18X20X2
20WH	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 (1) 18X24X2
30WH	46-1/4	16-1/2	16-3/8	36	31	8	2	34	66-1/8	(4) 16X20X2
40WH	57-1/4	16-1/2	19-1/4	47	31	7-7/8	2	34	66-1/8	(4) 16X25X2

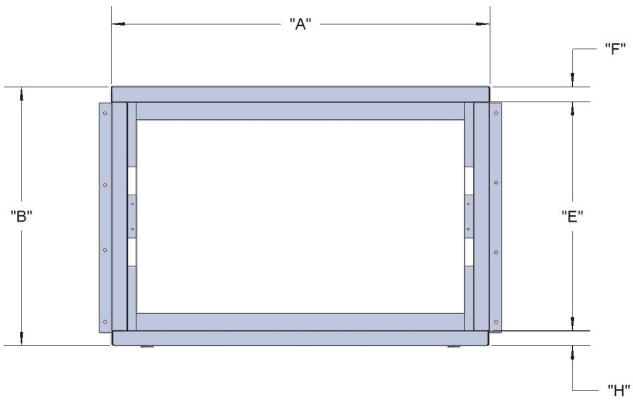
FILTERS - *Optional Flat Filter Section*



TOP VIEW



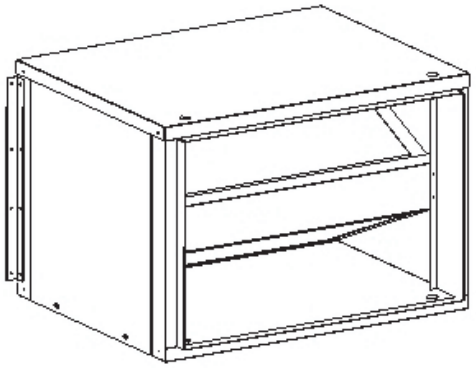
END VIEW



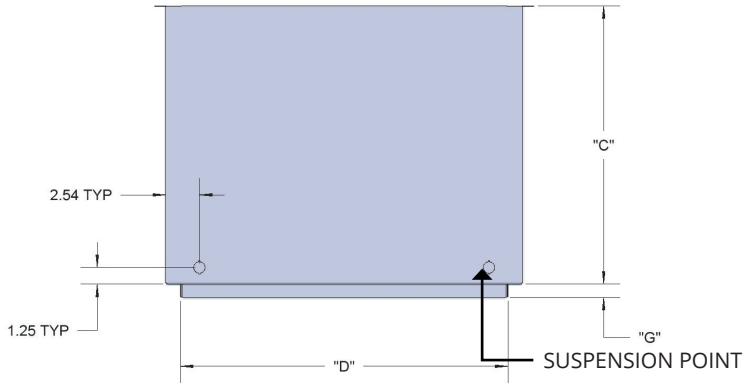
FLAT FILTER BOX											
UNIT SIZE	**PART NUMBER**	**FILTER SIZE**	**A**	**B**	**C**	**D**	**E**	**F**	**G**	**H**	**FILTER SIZE (Qty)**
8	**9BDAF12F2** **9BDAF12F4**	2″ 4″	26-13/16	18-3/8	9-7/16	24-1/2	16-1/4	1	1	1	(1) 25 X 16
12	**9BDAF12F2** **9BDAF12F4**	2″ 4″	26-13/16	18-3/8	9-7/16	24-1/2	16-1/4	1	1	1	(1) 25 X 16
16	**9BDAF16F2** **9BDAF16F4**	2″ 4″	37-1/4	21-1/2	9-7/16	35	19-3/4	1	1	1	(1) 16 X 20 (1) 20 X 20
20	**9BDAF20F2** **9BDAF20F4**	2″ 4″	41-1/4	21-1/2	9-7/16	39	19-3/4	1	1	1	(2) 20 X 20
30	**9BDAF30F2** **9BDAF30F4**	2″ 4″	41-13/16	34	9-3/8	39-5/8	32	1	1	1	(4) 16 X 20
40	**9BDAF40F2** **9BDAF40F4**	2″ 4″	51	34	9-3/8	48-7/8	32	1	1	1	(4) 16 X 25

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

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



TOP VIEW



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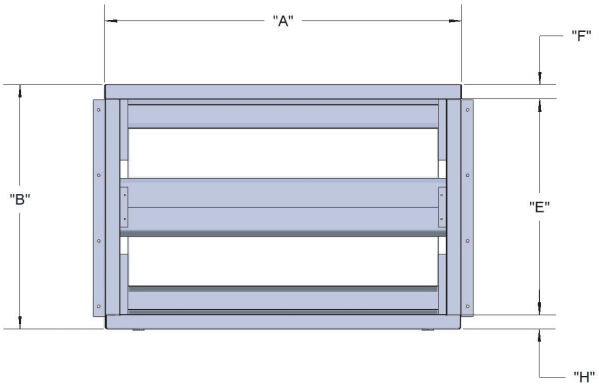
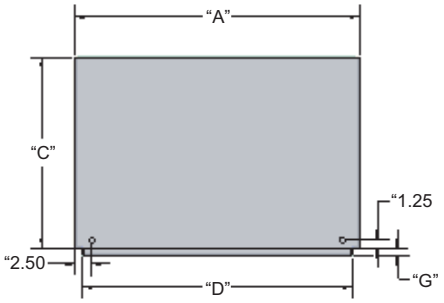
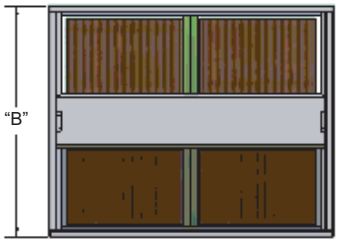
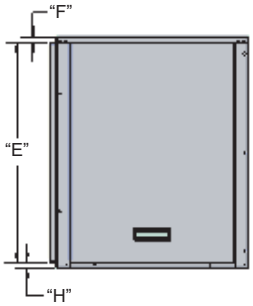


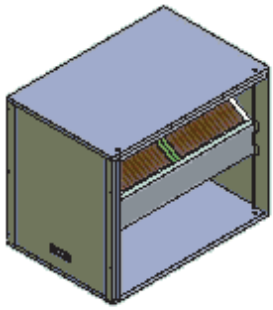
ANGLED FILTER BOX											
UNIT SIZE	**PART NUMBER**	**FILTER SIZE**	**A**	**B**	**C**	**D**	**E**	**F**	**G**	**H**	**FILTER SIZE (Qty)**
8	**9BDAF12A2** **9BDAF12A4**	2″ 4″	26.78	18.32	20.88	24.57	16.21	1	1	1	(2) 25 X16
12	**9BDAF12A2** **9BDAF12A4**	2″ 4″	26.78	18.32	20.88	24.57	16.21	1	1	1	(2) 25 X 16
16	**9BDAF16A2** **9BDAF16A4**	2″ 4″	37.28	21.57	28.68	35.07	19.71	1	1	1	(2) 18 X 24
20	**9BDAF20A2** **9BDAF20A4**	2″ 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)*





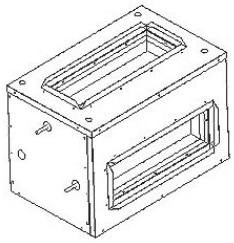


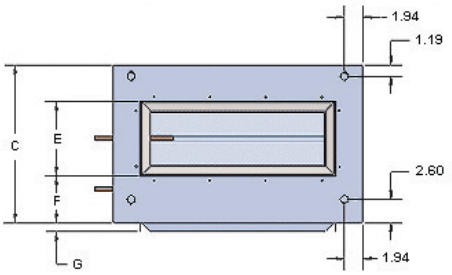


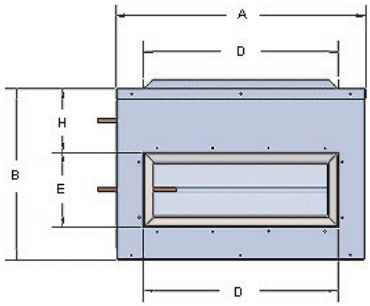
ANGLED FILTER BOX											
UNIT SIZE	**PART NUMBER**	**FILTER SIZE**	**A**	**B**	**C**	**D**	**E**	**F**	**G**	**H**	**FILTER SIZE (Qty)**
30	9BDAF30A2 9BDAF30A4	2" 4"	41-13/16	34	28	39-5/8	32	1	1	1	(4) 20 X 25
40	9BDAF40A2 9BDAF40A4	2" 4"	51	34	27	48-7/8	32	1	1	1	(4) 16 X 24 (2) 18 x 24

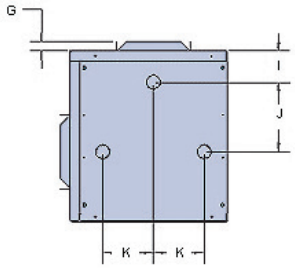
NOTE: Unit comes standard with 2" filter mounted in cabinet

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



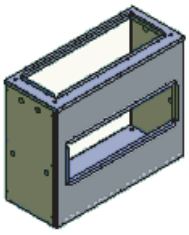


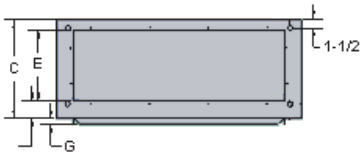


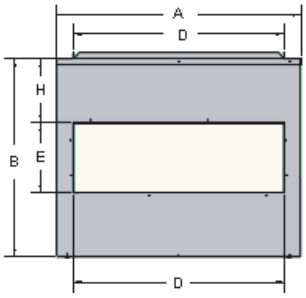


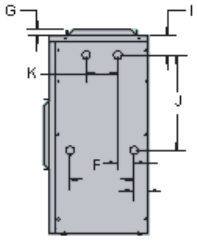
8-20 MIXING BOX DIMENSIONS											
UNIT MODEL	**A**	**B**	**C**	**D**	**E**	**F**	**G**	**H**	**I**	**J**	**K**
9BDAM08	26.78	18.31	16.91	21.00	8.00	5.00	1.00	6.81	3.35	7.48	5.44
9BDAM12	26.78	18.31	16.91	21.00	8.00	5.00	1.00	6.81	3.35	7.48	5.44
9BDAM16	37.28	21.57	16.91	32.00	10.00	4.00	1.00	8.05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



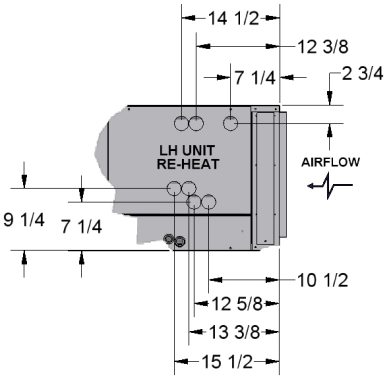


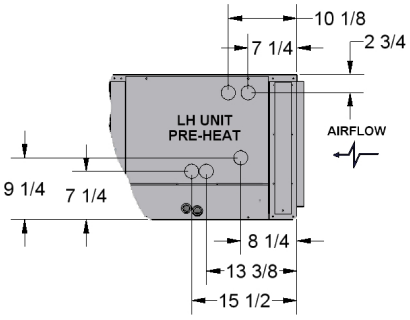


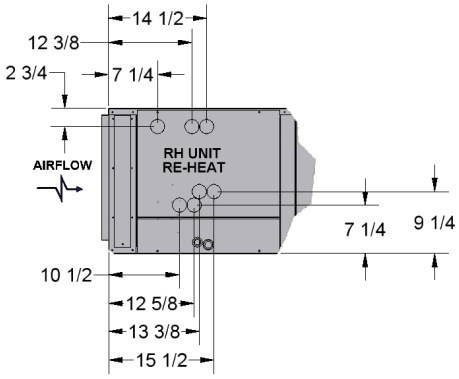


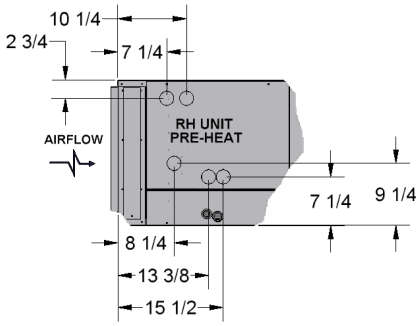
30-40 MIXING BOX DIMENSIONS											
UNIT MODEL	**A**	**B**	**C**	**D**	**E**	**F**	**G**	**H**	**I**	**J**	**K**
9BDAM30	37-13/16	34	16-15/16	36	12	3	1	11	3-3/8	16-3/8	5-3/8
9BDAM40	52-13/16	34	17	46	12	3	1	11	3-3/8	16-3/8	5-3/8

HYDRONIC MANIFOLD - *8-40WH*









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
8WH	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
12WH	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
16WH	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
20WH	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
30WH	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
40WH	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	

CHILLED WATER · COOLING PERFORMANCE - *8WH*

8WH (4 ROW - QUARTER CIRCUIT) (45° EWT)																
CFM	GPM	P.D. FT.	75 F DB / 63 F WB					80 F DB / 67 F WB					85 F DB / 71 F WB				
			TOTAL MBH	SENSIBLE MBH	TEMP. RISE	LADB	LAWB	TOTAL MBH	SENSIBLE MBH	TEMP. RISE	LADB	LAWB	TOTAL MBH	SENSIBLE MBH	TEMP. RISE	LADB	LAWB
600	4.1	2.7	16.2	13.3	8.1	54.1	53.5	20.4	14.9	10.2	56.5	55.8	25.2	16.7	12.4	59.1	58.3
800			18.3	16.0	9.3	56.0	54.9	22.9	17.9	11.5	58.8	57.7	33.4	21.9	16.3	59.6	58.8
1000			19.9	18.3	10.3	57.3	55.9	24.5	20.5	12.4	60.4	59.0	37.0	25.5	18.1	61.3	60.4
600	6.1	5.8	18.5	14.3	6.2	52.6	52.1	23.4	16.3	7.8	54.6	54.0	33.1	19.6	10.9	54.7	54.1
800			21.2	17.3	7.2	54.4	53.6	26.8	19.6	9.0	56.8	56.0	38.3	23.8	12.6	57.5	56.7
1000			23.1	19.9	7.9	55.8	54.8	29.0	22.4	9.8	58.6	57.5	43.2	27.8	14.2	59.3	58.3
600	8.1	9.8	19.8	14.9	5.0	51.6	51.2	25.4	17.2	6.4	53.3	52.8	25.2	16.7	12.4	59.1	58.3
800			23.1	18.2	5.9	53.4	52.7	29.4	20.8	7.4	55.5	54.9	27.8	19.8	13.9	61.7	60.6
1000			25.4	21.0	6.5	54.8	53.9	32.1	23.7	8.2	57.3	56.4	29.4	22.3	14.9	63.7	62.2

8WH (6 ROW - QUARTER CIRCUIT) (45° EWT)																
CFM	GPM	P.D. FT.	75 F DB / 63 F WB					80 F DB / 67 F WB					85 F DB / 71 F WB				
			TOTAL MBH	SENSIBLE MBH	TEMP. RISE	LADB	LAWB	TOTAL MBH	SENSIBLE MBH	TEMP. RISE	LADB	LAWB	TOTAL MBH	SENSIBLE MBH	TEMP. RISE	LADB	LAWB
600	3.4	2.6	18.3	14.4	11.0	52.4	52.2	23.3	16.4	13.9	54.4	54.1	28.6	18.4	17.0	56.6	56.3
800			20.7	17.4	12.6	54.3	53.8	20.9	17.1	17.1	59.7	58.5	31.4	21.6	18.9	59.6	59.1
1000			22.6	20.0	14.0	55.6	55.0	22.4	19.4	13.8	61.4	59.7	33.1	24.4	20.1	61.8	61.0
600	5.4	4.6	17.8	14.0	6.7	53.1	52.5	22.7	16.0	8.5	55.1	54.5	34.2	20.7	12.8	53.1	53.0
800			20.3	16.9	7.8	54.9	54.0	25.6	19.1	9.7	57.4	56.5	39.1	24.7	14.7	56.1	55.8
1000			22.1	19.3	8.6	56.3	55.2	27.6	21.8	10.6	59.1	58.0	42.3	28.0	16.1	58.5	58.0
600	7.4	11.2	23.2	16.6	6.4	49.0	48.9	24.8	16.9	6.8	53.7	53.2	37.0	21.9	10.1	51.3	51.2
800			27.4	20.4	7.6	50.8	50.6	28.6	20.5	7.9	55.9	55.2	43.6	26.6	12.0	54.0	53.8
1000			30.5	23.7	8.5	52.3	52.0	31.2	23.4	8.7	57.7	56.8	48.2	30.4	13.3	56.3	56.0

Note: Capacitys and pressure drops based on quarter Circuited coils. For lower pressure drops contact the factory for half to full circuit coils.

CHILLED WATER · COOLING PERFORMANCE - *12WH*

12WH (4 ROW - QUARTER CIRCUIT) (45° EWT)																
CFM	GPM	P.D. FT.	75 F DB / 63 F WB					80 F DB / 67 F WB					85 F DB / 71 F WB				
			TOTAL MBH	SENSIBLE MBH	TEMP. RISE	LADB	LAWB	TOTAL MBH	SENSIBLE MBH	TEMP. RISE	LADB	LAWB	TOTAL MBH	SENSIBLE MBH	TEMP. RISE	LADB	LAWB
1000	4.7	3.7	22.8	20.0	9.9	56.3	55.1	28.0	22.1	12.2	59.2	58.0	34.3	24.7	14.8	62.2	60.9
1200			24.4	22.3	10.8	57.4	55.9	29.5	24.5	13.1	60.5	59.0	36.0	27.2	15.7	63.8	62.2
1400			25.9	24.4	11.5	58.3	56.5	30.9	26.7	13.8	61.6	59.8	37.2	29.5	16.4	65.0	63.1
1000	6.7	7.3	26.0	21.6	7.9	54.8	53.9	32.5	24.2	9.9	57.4	56.4	40.1	27.1	12.1	60.0	59.0
1200			27.9	24.1	8.6	56.0	54.9	34.7	26.9	10.6	58.8	57.6	42.5	29.9	12.9	61.7	60.4
1400			29.4	26.2	9.2	57.0	55.6	36.2	29.3	11.3	60.0	58.6	44.2	32.3	13.6	63.2	61.6
1000	8.7	11.8	28.1	22.6	6.6	53.9	53.1	35.5	25.5	8.3	56.1	55.4	43.9	28.7	10.2	58.6	57.7
1200			30.3	25.3	7.2	55.1	54.1	38.1	28.4	9.0	57.7	56.6	47.0	31.8	11.0	60.3	59.2
1400			32.1	27.6	7.7	56.1	54.9	40.0	30.9	9.5	58.9	57.7	49.2	34.5	11.6	61.8	60.5

12WH (6 ROW - QUARTER CIRCUIT) (45° EWT)																
1000	4.0	3.8	25.8	21.8	13.2	54.5	54.0	32.0	24.4	16.3	57.2	56.7	38.9	27.0	19.7	60.0	59.4
1200			27.9	24.6	14.4	55.6	54.9	33.8	27.1	17.4	58.7	57.9	40.6	29.8	20.8	61.8	60.9
1400			29.5	26.9	15.5	56.5	55.5	35.4	29.5	18.4	59.8	58.8	42.0	32.3	21.7	63.2	62.1
1000	6.0	8.0	30.4	23.9	10.3	52.6	52.3	38.6	27.3	13.0	54.6	54.3	47.4	30.5	16.0	56.8	56.5
1200			32.8	26.9	11.2	53.9	53.4	41.3	30.4	14.1	56.2	55.7	50.5	33.8	17.1	58.7	58.2
1400			34.6	29.4	12.0	54.9	54.2	43.2	33.0	14.8	57.6	56.9	52.6	36.6	18.0	60.3	59.6
1000	8.0	13.7	33.4	25.4	8.5	51.3	51.1	42.7	29.1	10.8	53.0	52.7	52.8	32.8	13.3	54.8	54.5
1200			36.4	28.5	9.3	52.6	52.2	46.2	32.6	11.8	54.6	54.2	57.0	36.4	14.4	56.8	56.4
1400			38.6	31.3	10.0	53.7	53.1	48.9	35.6	12.6	55.9	55.5	60.1	39.6	15.4	58.4	57.9
1000	6.0	8.0	30.4	23.9	10.3	52.6	52.3	38.6	27.3	13.0	54.6	54.3	47.4	30.5	16.0	56.8	56.5
1200			32.8	26.9	11.2	53.9	53.4	41.3	30.4	14.1	56.2	55.7	50.5	33.8	17.1	58.7	58.2
1400			34.6	29.4	12.0	54.9	54.2	43.2	33.0	14.8	57.6	56.9	52.6	36.6	18.0	60.3	59.6
1000	8.0	13.7	33.4	25.4	8.5	51.3	51.1	42.7	29.1	10.8	53.0	52.7	52.8	32.8	13.3	54.8	54.5
1200			36.4	28.5	9.3	52.6	52.2	46.2	32.6	11.8	54.6	54.2	57.0	36.4	14.4	56.8	56.4
1400			38.6	31.3	10.0	53.7	53.1	48.9	35.6	12.6	55.9	55.5	60.1	39.6	15.4	58.4	57.9

Note: Capacitys and pressure drops based on quarter Circuited coils. For lower pressure drops contact the factory for half to full circuit coils.

CHILLED WATER · COOLING PERFORMANCE - *16WH*

16WH (4 ROW - QUARTER CIRCUIT) (45° EWT)																	
CFM	GPM	P.D. FT.	75 F DB / 63 F WB					80 F DB / 67 F WB					85 F DB / 71 F WB				
			TOTAL MBH	SENSIBLE MBH	TEMP. RISE	LADB	LAWB	TOTAL MBH	SENSIBLE MBH	TEMP. RISE	LADB	LAWB	TOTAL MBH	SENSIBLE MBH	TEMP. RISE	LADB	LAWB
1400	5.5	5.4	31.0	27.4	11.5	56.7	55.4	37.9	30.5	14.1	59.7	58.3	45.8	33.4	16.9	62.9	61.4
1600			32.6	29.7	12.2	57.4	55.9	39.6	33.0	14.8	60.6	59.1	47.4	36.0	17.6	64.0	62.3
1800			34.0	31.7	12.9	58.2	56.4	41.0	35.1	15.4	61.5	59.7	48.8	38.1	18.3	65.0	63.0
1400	8.5	12.1	36.1	30.0	8.7	54.9	54.0	45.6	33.8	10.9	57.5	56.5	55.7	37.6	13.2	60.2	59.1
1600			38.2	32.6	9.2	55.8	54.7	47.7	36.5	11.4	58.6	57.4	58.3	40.5	13.9	61.5	60.2
1800			39.9	34.9	9.7	56.6	55.3	49.5	38.9	12.0	59.6	58.1	60.1	43.0	14.5	62.6	61.1
1400	11.5	21.2	39.5	31.5	7.0	54.0	53.1	50.1	35.9	8.8	56.2	55.3	61.5	40.0	10.8	58.6	57.7
1600			41.8	34.4	7.4	54.8	53.8	52.9	38.9	9.4	57.3	56.3	64.8	43.3	11.4	59.9	58.8
1800			43.8	36.9	7.9	55.6	54.4	55.0	41.5	9.8	58.2	57.1	67.5	46.1	12.0	61.0	59.7

16WH (6 ROW - QUARTER CIRCUIT) (45° EWT)																	
CFM	GPM	P.D. FT.	75 F DB / 63 F WB					80 F DB / 67 F WB					85 F DB / 71 F WB				
			TOTAL MBH	SENSIBLE MBH	TEMP. RISE	LADB	LAWB	TOTAL MBH	SENSIBLE MBH	TEMP. RISE	LADB	LAWB	TOTAL MBH	SENSIBLE MBH	TEMP. RISE	LADB	LAWB
1400	4.0	4.3	32.7	28.9	16.7	55.7	54.9	39.3	31.8	19.9	58.9	58.1	53.9	37.4	27.0	60.3	56.9
1600			34.5	31.3	17.8	56.5	55.5	41.0	34.4	21.0	59.8	58.8	56.2	40.8	28.1	61.4	61.0
1800			36.1	33.6	18.8	57.2	56.0	42.6	36.7	22.0	60.7	59.4	59.3	44.4	29.7	62.2	61.7
1400	6.5	10.5	39.8	32.3	12.4	53.5	53.0	50.0	36.5	15.5	55.9	54.4	68.9	42.9	21.2	56.6	56.2
1600			42.0	35.0	13.2	54.4	53.8	52.2	39.3	16.3	57.1	56.4	73.4	47.0	22.6	57.8	57.4
1800			44.0	37.6	13.9	55.2	54.4	54.0	42.0	17.0	58.0	57.3	78.3	51.2	24.1	58.7	58.2
1400	9.0	19.0	44.8	34.6	10.1	52.0	51.7	57.1	39.6	12.8	53.9	53.5	77.2	46.1	17.2	54.5	54.1
1600			47.4	37.6	10.7	53.0	52.5	60.1	42.8	13.6	55.1	54.6	83.0	50.6	18.5	55.7	55.3
1800			49.7	40.4	11.3	53.8	53.2	62.5	45.7	14.2	56.1	55.6	89.3	55.3	19.8	56.6	56.1

Note: Capacitys and pressure drops based on quarter Circuited coils. For lower pressure drops contact the factory for half to full circuit coils.

CHILLED WATER · COOLING PERFORMANCE - *20WH*

20WH (4 ROW - QUARTER CIRCUIT) (45° EWT)																	
CFM	GPM	P.D. FT.	75 F DB / 63 F WB					80 F DB / 67 F WB					85 F DB / 71 F WB				
			TOTAL MBH	SENSIBLE MBH	TEMP. RISE	LADB	LAWB	TOTAL MBH	SENSIBLE MBH	TEMP. RISE	LADB	LAWB	TOTAL MBH	SENSIBLE MBH	TEMP. RISE	LADB	LAWB
1800	6.0	6.9	37.8	34.1	12.9	57.3	55.8	45.9	37.8	15.6	60.5	58.9	55.1	41.2	18.6	63.8	52.1
2000			39.4	36.3	13.5	57.9	56.2	47.5	40.1	16.2	61.2	59.5	56.6	43.7	19.2	64.7	62.7
2200			40.9	38.3	14.1	58.5	56.6	48.9	42.3	16.8	61.9	59.9	58.1	45.8	19.8	65.5	63.3
1800	8.5	13.2	43.0	36.9	10.3	55.9	54.7	53.5	41.1	12.8	58.8	57.5	65.0	45.5	15.5	61.7	60.3
2000			45.1	39.5	10.8	56.6	55.3	55.4	43.7	13.3	59.6	58.1	67.0	48.1	16.0	62.7	61.1
2200			46.8	41.8	11.3	57.2	55.7	56.9	46.1	13.7	60.3	58.7	68.6	50.5	16.5	63.6	61.8
1800	11.0	21.3	46.7	38.6	8.6	55.0	54.0	58.8	43.6	10.8	57.6	43.6	71.9	48.5	13.2	60.2	59.1
2000			48.8	41.4	9.0	55.7	54.5	61.1	46.3	11.6	58.5	57.2	74.3	51.3	13.7	61.2	59.9
2200			50.7	43.9	9.4	56.3	55.0	63.0	48.8	11.7	59.2	57.8	76.7	54.0	14.2	62.1	60.7

20WH (6 ROW - QUARTER CIRCUIT) (45° EWT)																	
CFM	GPM	P.D. FT.	75 F DB / 63 F WB					80 F DB / 67 F WB					85 F DB / 71 F WB				
			TOTAL MBH	SENSIBLE MBH	TEMP. RISE	LADB	LAWB	TOTAL MBH	SENSIBLE MBH	TEMP. RISE	LADB	LAWB	TOTAL MBH	SENSIBLE MBH	TEMP. RISE	LADB	LAWB
1800	4.5	5.9	40.1	36.0	18.2	56.3	55.3	47.7	39.4	21.6	59.6	58.6	56.1	42.7	25.3	63.0	61.9
2000			42.2	38.7	19.1	56.9	55.8	49.6	42.1	22.5	60.4	59.1	57.7	45.3	26.2	63.9	62.5
2200			43.6	40.7	20.0	57.5	56.2	51.3	44.6	23.4	61.0	59.6	59.4	47.7	27.1	64.7	63.1
1800	7.0	13.1	48.0	39.9	13.9	54.3	53.7	59.6	44.6	17.3	57.0	56.3	72.5	49.4	21.0	59.6	58.9
2000			50.3	42.8	14.7	55.0	54.2	61.9	47.7	17.9	57.9	57.1	74.4	52.1	21.6	60.8	59.9
2200			52.5	45.6	15.3	55.5	54.7	63.6	50.1	18.5	58.7	57.7	75.7	54.4	22.0	61.6	60.6
1800	9.5	23.0	53.8	42.6	11.5	52.9	52.5	68.1	48.5	14.5	55.0	54.6	83.4	54.0	17.7	57.3	56.9
2000			56.3	45.7	12.1	53.7	53.1	70.6	51.5	15.1	56.0	55.5	86.7	57.3	18.5	58.5	57.9
2200			58.4	48.4	12.6	54.3	53.7	72.9	54.3	15.6	56.9	56.2	88.6	59.7	18.9	59.3	58.6

Note: Capacitys and pressure drops based on quarter Circuited coils. For lower pressure drops contact the factory for half to full circuit coils.

CHILLED WATER · COOLING PERFORMANCE - *30WH*

30WH (4 ROW - QUARTER CIRCUIT) (45° EWT)																	
CFM	GPM	P.D. FT.	75 F DB / 63 F WB					80 F DB / 67 F WB					85 F DB / 71 F WB				
			TO-TAL MBH	SENSIBLE MBH	TEMP. RISE	LADB	LAWB	TOTAL MBH	SENSIBLE MBH	TEMP. RISE	LADB	LAWB	TO-TAL MBH	SENSIBLE MBH	TEMP. RISE	LADB	LAWB
2500	9.0	7.7	56.6	59.5	12.9	56.4	55.2	69.6	55.1	15.7	59.5	58.1	83.9	60.3	18.9	62.6	61.1
3000			61.1	55.5	14.0	57.5	55.9	73.8	61.0	16.8	60.9	59.1	88.0	66.5	20.0	64.3	62.4
3500			64.6	60.5	15.0	58.4	56.5	77.5	67.1	17.8	61.8	59.9	91.4	72.1	21.0	65.5	63.3
2500	12.0	13.1	63.3	52.9	10.7	55.2	54.2	79.3	59.4	13.4	57.9	56.8	96.4	65.7	16.3	60.7	59.5
3000			68.0	59.1	11.6	56.4	55.1	84.1	66.0	14.3	59.4	58.0	101.8	72.4	17.3	62.5	60.9
3500			72.0	64.5	12.5	57.4	55.8	88.1	72.0	15.1	60.5	58.9	105.6	78.4	18.1	63.9	62.1
2500	15.0	19.8	68.3	55.2	9.2	54.4	53.4	86.2	62.7	11.6	56.7	55.8	105.2	69.5	14.2	59.3	58.3
3000			73.5	62.1	10.0	55.5	54.4	92.0	69.5	12.5	58.3	57.1	112.3	77.0	15.2	61.1	59.8
3500			77.7	67.7	10.7	56.6	55.2	96.5	75.8	13.2	59.6	58.1	117.4	83.5	16.0	62.6	61.0

30WH (6 ROW - QUARTER CIRCUIT) (45° EWT)																	
CFM	GPM	P.D. FT.	75 F DB / 63 F WB					80 F DB / 67 F WB					85 F DB / 71 F WB				
			TO-TAL MBH	SENSIBLE MBH	TEMP. RISE	LADB	LAWB	TOTAL MBH	SENSIBLE MBH	TEMP. RISE	LADB	LAWB	TOTAL MBH	SENSIBLE MBH	TEMP. RISE	LADB	LAWB
2500	8.0	8.9	64.1	54.2	16.4	54.7	54.0	78.2	60.0	19.9	57.7	56.9	94.1	66.0	23.8	60.6	59.8
3000			69.4	60.9	17.9	55.8	54.9	83.1	66.8	21.3	59.1	58.1	98.3	72.7	25.1	62.4	61.3
3500			73.8	66.8	19.2	56.8	55.6	87.4	73.2	22.6	60.2	58.9	102.3	78.8	26.3	63.8	62.3
2500	10.0	13.4	70.3	57.2	14.3	53.6	53.1	87.9	64.3	17.8	56.1	55.6	107.3	71.4	21.7	58.6	58.0
3000			75.9	64.1	15.6	54.8	54.1	93.1	71.3	19.0	57.8	57.0	112.2	78.5	22.8	60.7	59.8
3500			80.9	70.7	16.8	55.8	54.9	97.5	77.7	20.1	59.0	58.0	116.4	84.7	23.9	62.2	61.1
2500	12.0	18.7	75.7	59.6	12.8	52.8	52.3	95.7	67.8	16.1	54.8	54.4	117.4	75.6	19.8	57.1	56.6
3000			81.5	66.9	13.9	54.0	53.4	101.5	75.2	17.2	56.6	56.0	123.9	83.3	21.0	59.2	58.5
3500			86.6	73.4	14.9	55.0	54.3	106.3	81.9	18.2	57.9	57.1	128.3	90.0	21.9	60.9	60.0

Note: Capacitys and pressure drops based on quarter Circuited coils. For lower pressure drops contact the factory for half to full circuit coils.

CHILLED WATER · COOLING PERFORMANCE - *40WH*

40WH (4 ROW - QUARTER CIRCUIT) (45° EWT)																	
CFM	GPM	P.D. FT.	75 F DB / 63 F WB					80 F DB / 67 F WB					85 F DB / 71 F WB				
			TO-TAL MBH	SENSIBLE MBH	TEMP. RISE	LADB	LAWB	TOTAL MBH	SENSIBLE MBH	TEMP. RISE	LADB	LAWB	TOTAL MBH	SENSIBLE MBH	TEMP. RISE	LADB	LAWB
3400	11.0	13	74.6	65.6	14.1	56.6	55.3	91.2	72.3	17.1	59.9	58.4	109.9	79.5	20.4	63.1	61.4
4000			79.7	72.2	15.2	57.7	56.0	95.9	79.4	18.1	61.1	59.3	114.7	86.7	21.4	64.6	62.5
4600			83.8	78.1	16.1	58.5	56.5	100.1	85.4	19.1	62.1	59.9	118.4	93.0	22.3	65.7	63.4
3400	13.0	17.6	79.3	67.6	12.6	56.1	54.8	98.4	75.6	15.5	59.0	57.6	119.6	83.7	18.7	62.0	60.5
4000			84.7	75.0	13.6	57.0	55.6	103.5	82.8	16.5	60.3	58.6	124.8	91.0	19.7	63.6	61.7
4600			89.3	81.2	14.5	57.9	56.1	107.7	89.5	17.3	61.3	59.4	128.8	97.7	20.5	64.8	62.7
3400	15	22.8	84.0	70.4	11.5	55.5	54.3	105.0	78.8	14.3	58.3	57.0	127.9	87.4	17.3	61.0	59.7
4000			89.5	77.7	12.4	56.5	55.2	110.6	86.3	15.2	59.6	58.1	133.8	95.1	18.3	62.7	61.0
4600			94.3	84.1	13.2	57.4	55.8	115.2	93.2	15.9	60.7	58.9	138.6	101.8	19.1	64	62.0

40WH (6 ROW - QUARTER CIRCUIT) (45° EWT)																	
CFM	GPM	P.D. FT.	75 F DB / 63 F WB					80 F DB / 67 F WB					85 F DB / 71 F WB				
			TO-TAL MBH	SENSIBLE MBH	TEMP. RISE	LADB	LAWB	TOTAL MBH	SENSIBLE MBH	TEMP. RISE	LADB	LAWB	TOTAL MBH	SENSIBLE MBH	TEMP. RISE	LADB	LAWB
3400	8	10.4	77.4	68.1	20.1	55.9	55.0	91.8	74.1	23.7	59.4	58.3	108.3	80.9	27.7	62.8	61.6
4000			82.5	75.0	21.6	57.0	55.7	97.0	81.3	25.2	60.6	59.1	113.5	88.2	29.2	64.2	62.6
4600			86.3	80.6	22.9	57.9	56.3	101.5	88.3	26.7	61.5	59.8	117.8	95.2	30.7	65.2	63.4
3400	10.0	10.6	85.1	72.0	17.6	54.9	54.2	103.0	79.1	21.2	58.0	57.2	123.5	87.2	25.2	61.1	60.1
4000			91.0	79.6	19.0	55.9	55.0	108.7	87.2	22.5	59.2	58.2	128.6	94.8	26.4	62.7	61.4
4600			95.9	86.3	20.2	56.8	55.6	113.4	94.0	23.8	60.3	58.9	133.2	102.4	27.6	63.8	62.4
3400	11.5	20.2	90.1	74.5	16.1	54.3	53.7	110.8	83.0	19.7	57.1	56.4	134.0	91.5	23.7	59.9	59.1
4000			96.6	82.7	17.4	55.3	54.5	116.6	90.8	20.9	58.5	57.5	139.2	99.5	24.8	61.6	60.6
4600			102.0	89.8	18.6	56.2	55.2	121.8	98.4	22.0	59.5	58.4	173.7	106.9	25.8	62.9	61.7

Note: Capacitys and pressure drops based on quarter Circuited coils. For lower pressure drops contact the factory for half to full circuit coils.

HEATING PERFORMANCE - *8-20WH*

8WH

8WH (1 ROW COIL) (180° EWT)					
CFM	GPM	P.D. FT.	ENTERING AIR - 70°F DB		
			TOTAL MBH	TEMP. RISE	LADB
600 800 1000	3.0	1.0	30.7 35.2 38.9	20.6 23.6 25.8	115.0 108.7 103.9
600 800 1000	5.0	2.7	33.6 39.1 43.8	13.5 15.7 17.5	119.4 113.1 108.3
600 800 1000	8.0	6.6	35.5 41.9 47.2	9.0 10.5 11.8	122.3 116.1 111.3

8WH (2 ROW COIL - HALF CIRCUIT) (180° EWT)					
CFM	GPM	P.D. FT.	ENTERING AIR - 70°F DB		
			TOTAL MBH	TEMP. RISE	LADB
600 800 1000	3.0	0.4	43.1 49.8 54.9	29.1 33.5 36.7	133.6 124.9 118.2
600 800 1000	5.0	1.2	48.3 57.1 64.2	19.6 23.1 25.9	141.4 133.2 126.6
600 800 1000	8.0	1.9	48.8 57.9 65.2	12.4 14.6 16.4	142.1 134.0 127.4

12WH

12WH (1 ROW COIL) (180° EWT)					
CFM	GPM	P.D. FT.	ENTERING AIR - 70°F DB		
			TOTAL MBH	TEMP. RISE	LADB
1000 1200 1400	4.0	1.8	44.6 48.5 51.6	22.4 24.2 25.8	109.2 105.3 102.2
1000 1200 1400	7.0	5.3	49.1 53.8 58.1	14.2 15.5 16.6	113.5 109.6 106.4
1000 1200 1400	10.0	10.4	51.3 56.6 61.3	10.4 11.4 12.3	115.5 111.6 108.4

12WH (2 ROW COIL - HALF CIRCUIT) (180° EWT)					
CFM	GPM	P.D. FT.	ENTERING AIR - 70°F DB		
			TOTAL MBH	TEMP. RISE	LADB
1000 1200 1400	4.0	0.8	63.8 69.5 73.9	32.3 35.0 37.2	126.4 121.0 116.5
1000 1200 1400	7.0	2.3	72.7 80.3 87.0	21.1 23.3 25.1	134.7 129.4 124.9
1000 1200 1400	10.0	406	77.1 85.8 93.7	15.7 17.4 18.9	138.6 133.5 129.2

16WH

16WH (1 ROW COIL) (180° EWT)					
CFM	GPM	P.D. FT.	ENTERING AIR - 70°F DB		
			TOTAL MBH	TEMP. RISE	LADB
1400 1600 1800	4.0	1.2	56.1 59.4 62.4	28.4 29.9 31.2	105.4 102.7 100.3
1400 1600 1800	7.5	4.1	64.7 69.0 73.1	17.5 18.6 19.6	110.9 108.1 105.7
1400 1600 1800	11.0	8.5	68.6 73.5 78.1	12.6 13.5 14.3	113.5 110.6 108.2

16WH (2 ROW COIL - HALF CIRCUIT) (180° EWT)					
CFM	GPM	P.D. FT.	ENTERING AIR - 70°F DB		
			TOTAL MBH	TEMP. RISE	LADB
1400 1600 1800	4.0	0.7	80.3 84.8 88.9	40.7 42.9 44.8	120.9 116.9 113.5
1400 1600 1800	7.5	2.4	96.4 103.3 109.6	26.1 27.9 29.5	131.2 127.3 123.9
1400 1600 1800	11.0	5.1	103.8 112.0 119.5	19.2 20.7 22.0	136.0 132.2 128.8

20WH

20WH (1 ROW COIL) (180° EWT)					
CFM	GPM	P.D. FT.	ENTERING AIR - 70°F DB		
			TOTAL MBH	TEMP. RISE	LADB
1800 2000 2200	5.0	2.0	72.1 74.6 77.6	28.9 30.1 31.2	105.1 102.9 101.0
1800 2000 2200	8.0	4.8	80.2 83.5 87.2	20.1 21.1 22.0	109.1 106.9 105.0
1800 2000 2200	11.0	8.8	84.5 88.3 92.5	15.4 16.2 17.0	111.3 109.1 107.1

20WH (2 ROW COIL - HALF CIRCUIT) (180° EWT)					
CFM	GPM	P.D. FT.	ENTERING AIR - 70°F DB		
			TOTAL MBH	TEMP. RISE	LADB
1800 2000 2200	5.0	1.1	103.1 107.3 111.4	41.7 43.5 45.1	120.7 117.6 114.8
1800 2000 2200	8.0	2.8	118.7 124.6 130.4	30.1 31.6 33.0	128.5 125.3 122.5
1800 2000 2200	11.0	5.2	127.2 134.2 141.0	23.4 24.8 26.0	132.7 129.7 126.9

HEATING PERFORMANCE - *30-40WH*

30WH

30WH (1 ROW COIL) (180° EWT)					
CFM	GPM	P.D. FT.	ENTERING AIR - 70°F DB		
			TOTAL MBH	TEMP. RISE	LADB
2500	9.0	2.3	114.2	25.6	110.3
3000			124.2	27.7	106.4
3500			133.0	29.5	103.2
2500	12.0	3.9	121.0	20.4	112.8
3000			132.4	22.2	108.8
3500			142.4	23.7	105.6
2500	15.0	6.0	125.6	16.9	114.4
3000			137.9	18.5	110.5
3500			148.7	19.9	107.3

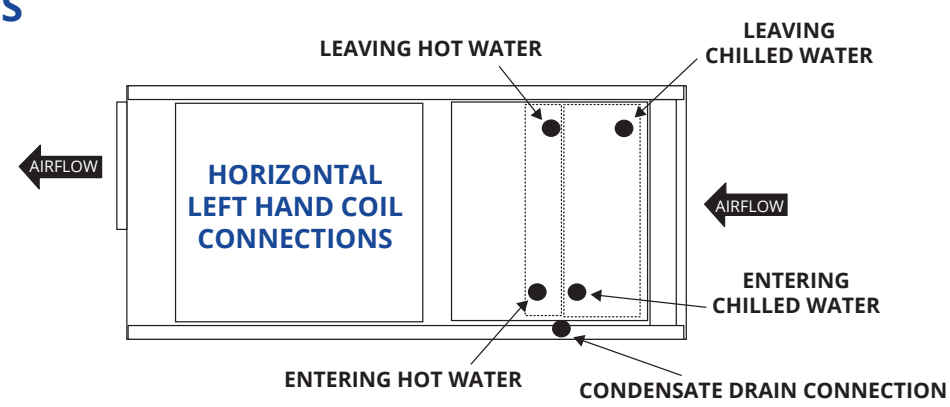
30WH (2 ROW COIL - HALF CIRCUIT) (180° EWT)					
CFM	GPM	P.D. FT.	ENTERING AIR - 70°F DB		
			TOTAL MBH	TEMP. RISE	LADB
2500	9.0	0.9	162.4	36.6	127.6
3000			176.7	39.7	122.1
3500			188.4	42.3	117.5
2500	12.0	1.5	175.6	29.7	132.4
3000			192.8	32.5	126.9
3500			207.1	34.9	122.3
2500	15.0	2.3	184.4	25.0	135.5
3000			203.7	27.5	130.2
3500			220.1	29.7	125.7

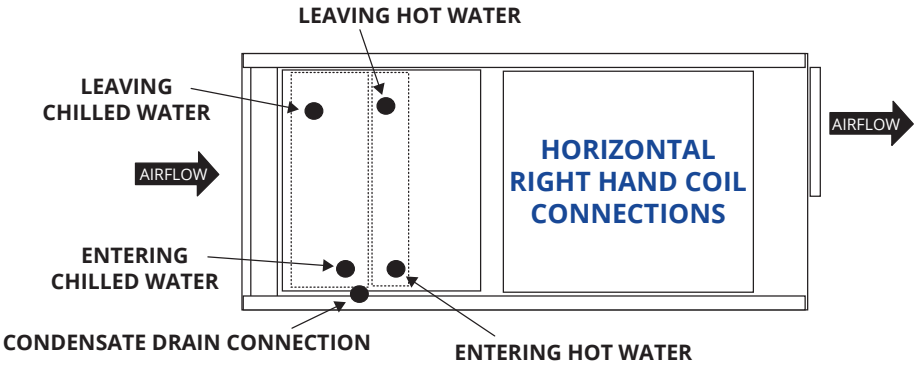
40WH

40WH (1 ROW COIL) (180° EWT)					
CFM	GPM	P.D. FT.	ENTERING AIR - 70°F DB		
			TOTAL MBH	TEMP. RISE	LADB
3400	8.0	2.0	141.1	35.5	106.5
4000			151.1	37.9	103.1
4600			160.0	39.8	100.3
3400	11.0	3.7	153.1	28.1	109.7
4000			165.0	30.1	106.2
4600			175.7	31.9	103.4
3400	14.0	5.8	160.9	23.2	111.8
4000			174.2	25.0	108.3
4600			186.1	26.6	105.4

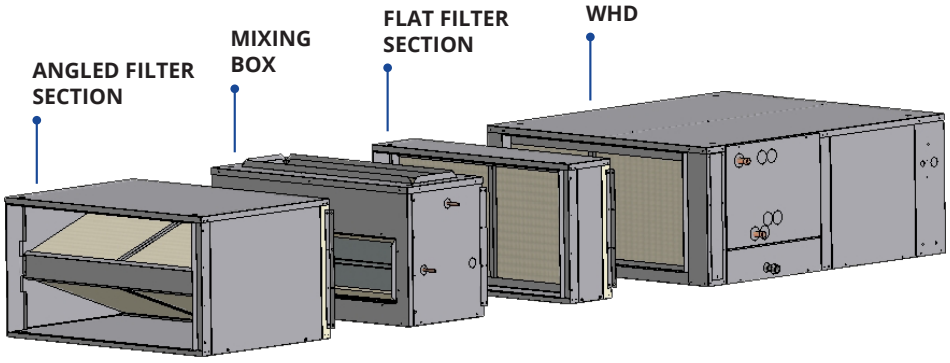
40WH (2 ROW COIL - HALF CIRCUIT) (180° EWT)					
CFM	GPM	P.D. FT.	ENTERING AIR - 70°F DB		
			TOTAL MBH	TEMP. RISE	LADB
3400	8.0	0.7	194.6	49.3	120.7
4000			207.8	52.4	115.8
4600			219.1	55.0	111.8
3400	11.0	1.4	217.7	40.1	126.8
4000			234.6	43.1	121.8
4600			249.2	45.6	117.7
3400	14.0	2.1	233.1	33.8	130.8
4000			252.9	36.5	125.9
4600			270.2	38.9	121.8

CONNECTIONS





SERVICE CLEARANCE

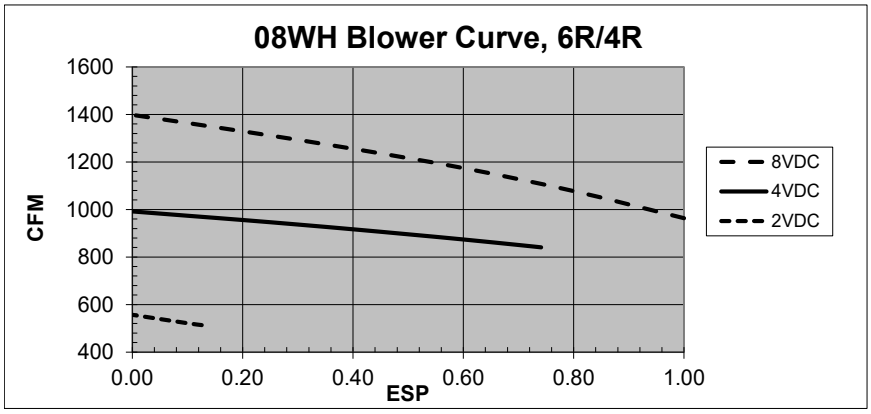


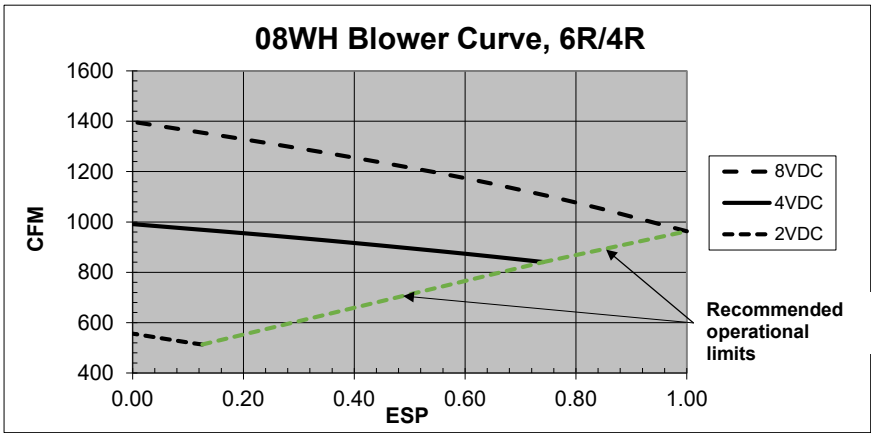
*MINIMUM SIDE SERVICE CLEARANCES (Same for LH or RH units)								
UNIT MODEL	MOTOR	BLOWER	FILTER SECTION	COIL	MOTOR CONTROL BOX	MIXING BOX	CABINET	
			FLAT OR ANGLED	ALL ROWS			TOP	BOTTOM
8WHD	36.0”	36.0”	36.0”	36.0”	36.0”	36.0”	Allow extra space for spring isolators if applicable	If mounting unit on a platform, leave space for condensate trap
12WHD	42.0”	42.0”	42.0”	42..0”	42.0”	42.0”		
16WHD	48.0”	48.0”	48.0”	48.0”	48.0”	48.0”		
20WHD	52.0”	52.0”	52.0”	52.0”	52.0”	52.0”		
30WHD	52.0”	52.0”	52.0”	52.0”	52.0”	52.0”		
40WHD	54.0”	54.0”	54.0”	54.0”	54.0”	54.0”		

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/8WH-ECM*

Torque (%)	Static Pressure	Velocity Pressure	CFM
100%	1.00	1.512	1100
10.00	0.80	1.82	1207
VDC	0.60	0.82	1302
	0.40	0.91	1374
	0.20	1.01	1447
	0.00	1.11	1519
80%	1.00	1.262	1003
8.00	0.80	1.58	1124
VDC	0.60	1.87	1224
	0.40	2.14	1310
	0.20	2.40	1388
	0.00	1.03	1463
60%	1.00	0.95	870
6.00	0.80	1.33	1029
VDC	0.60	1.63	1143
	0.40	1.90	1236
	0.20	2.16	1318
	0.00	2.34	1370
40%	0.74	0.967	878
4.00	0.70	0.99	888
VDC	0.60	1.04	912
	0.50	1.10	935
	0.40	1.15	957
	0.30	1.20	978
	0.20	1.25	998
	0.10	1.29	1017
	0.00	1.34	1036
20%	0.13	0.364	537
2.00	0.10	0.37	544
VDC	0.00	0.43	582



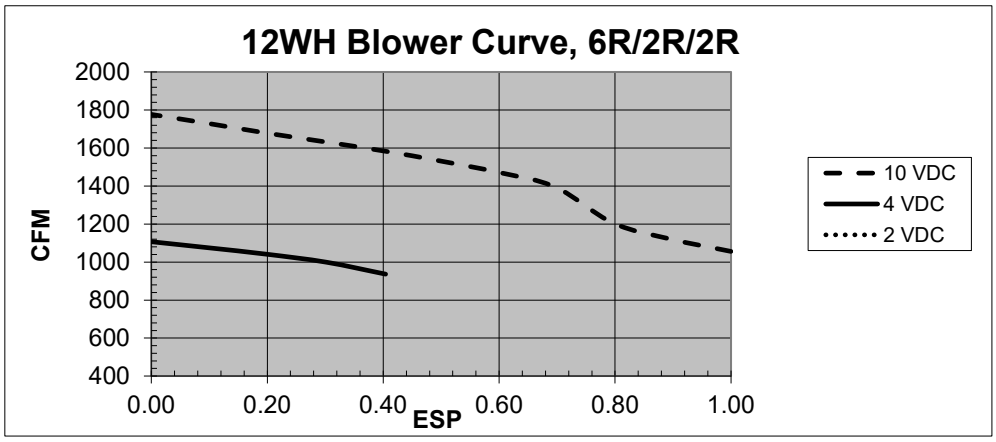


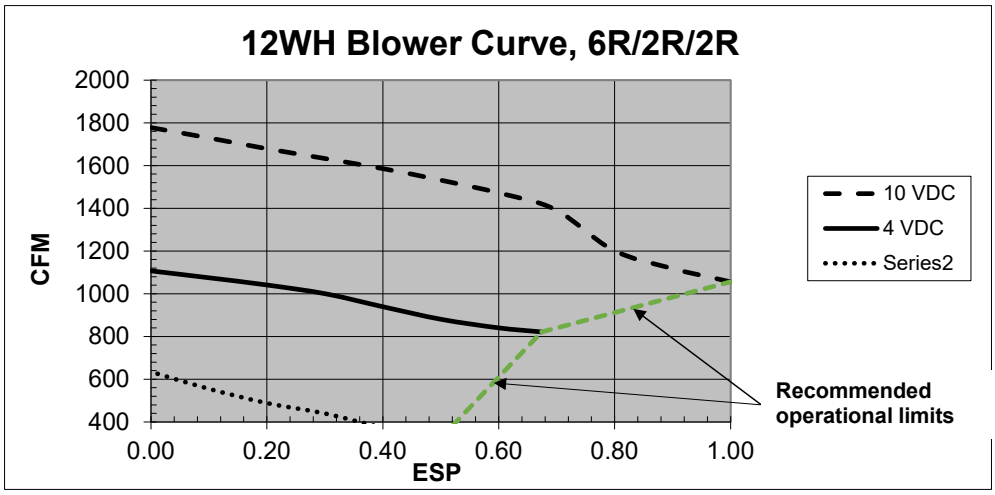
Note: Recommended range between 600-1000 CFM. Could do lower if measures to prevent coil freezing are taken

8WH											
CFM	Componet Static Pressure (Inches of Water)										
	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	
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

BLOWER CURVE - *3 ton/12WH-ECM*

Torque (%)	Static Pressure	Velocity Pressure	CFM
100%	1.00	1.51	1096
10.00	0.90	1.70	1163
VDC	0.80	1.96	1251
	0.70	1.02	1448
	0.60	1.13	1527
	0.50	1.23	1594
	0.40	1.312	1647
	0.30	1.40	1698
	0.20	1.47	1746
	0.10	1.56	1797
	0.00	1.65	1850
80%	0.99	1.27	1003
8.00	0.90	1.43	1068
VDC	0.80	1.62	1135
	0.69	0.88	1346
	0.60	0.99	1429
	0.50	1.09	1501
	0.40	1.182	1563
	0.30	1.27	1618
	0.20	1.34	1668
	0.10	1.43	1719
	0.00	1.51	1772
60%	0.90	1.178	968
6.00	0.80	1.33	1031
VDC	0.70	1.55	1112
	0.60	0.82	1298
	0.50	0.87	1340
	0.40	0.91	1373
	0.30	0.952	1401
	0.20	0.99	1428
	0.10	1.03	1455
	0.00	1.07	1483
40%	0.67	0.919	856
4.00	0.60	0.96	875
VDC	0.50	1.06	916
	0.40	1.19	975
	0.30	1.36	1040
	0.20	1.47	1084
	0.10	1.569	1119
	0.00	1.66	1152
20%	0.50	0.908	331
2.00	0.40	1.25	389
VDC	0.30	1.72	458
	0.20	2.13	509
	0.10	2.76	580
	0.00	3.59	663



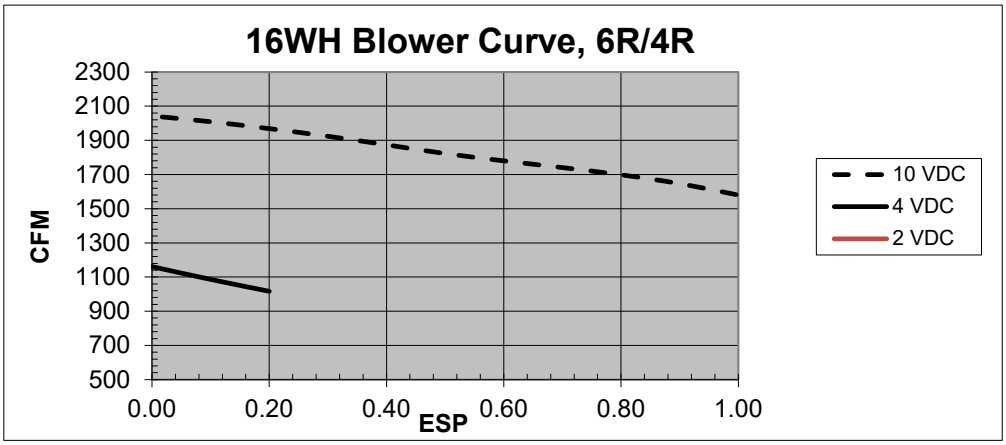


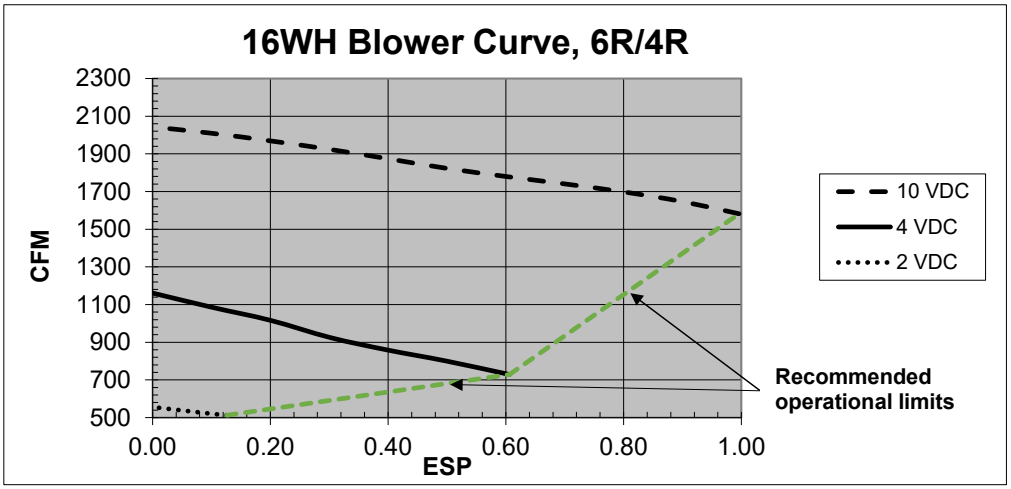
Note: Recommended range between 1000-1400 CFM. Could do lower if measures to prevent coil freezing are taken

12WH											
CFM	Componet Static Pressure (Inches of Water)										
	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	
1000	0.15	0.15	0.24	0.21	0.34	0.11	0.009	0.06	0.05		0.24
1100	0.18	0.17	0.26	0.24	0.37	0.13	0.12	0.08	0.06		0.28
1200	0.22	0.20	0.29	0.29	0.41	0.15	0.15	0.10	0.08	NA	0.33
1300	0.25	0.23	0.31	0.33	0.44	0.17	0.18	0.12	0.10		0.38
1400	0.29	0.26	0.35	0.37	0.50	0.19	0.21	0.15	0.12		0.43

BLOWER CURVE - *4 ton/16WH-ECM*

Torque (%)	Static Pressure	Velocity Pressure	CFM
100%	1.00	1.313	1647
10.00	0.90	1.42	1715
VDC	0.80	1.51	1769
	0.70	1.59	1814
	0.60	1.66	1855
	0.50	1.75	1903
	0.40	1.843	1956
	0.30	1.94	2007
	0.20	2.03	2055
	0.10	2.11	2097
	0.00	2.19	2133
80%	1.00	2.266	1346
8.00	0.90	2.42	1392
VDC	0.79	1.02	1447
	0.70	1.12	1519
	0.60	1.20	1573
	0.50	1.29	1631
	0.40	1.343	1666
	0.30	1.44	1725
	0.20	1.54	1785
	0.10	1.62	1832
	0.00	1.69	1873
60%	0.99	1.268	1006
6.00	0.90	1.37	1046
VDC	0.80	1.50	1096
	0.70	1.64	1145
	0.60	1.80	1199
	0.50	0.78	1264
	0.40	0.874	1341
	0.30	0.95	1396
	0.20	1.04	1463
	0.10	1.15	1538
40%	0.00	3.13	1586
4.00	0.61	4.691	756
VDC	0.50	0.87	832
	0.40	1.00	893
	0.30	1.16	962
	0.20	1.40	1057
	0.10	1.60	1132
	0.00	1.831	1211
20%	0.13	0.364	537
2.00	0.10	0.37	544
VDC	0.00	0.43	582
	0.20	2.13	509
	0.10	2.76	580
	0.00	3.59	663



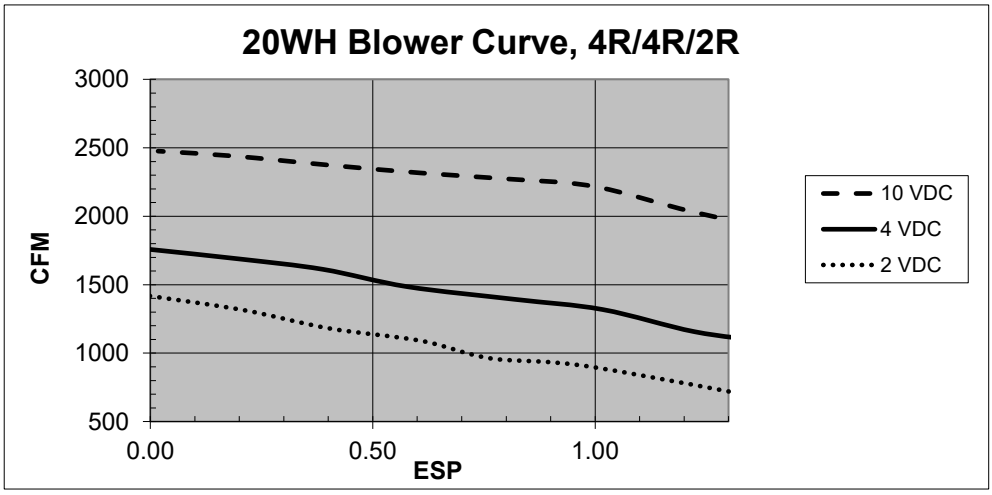


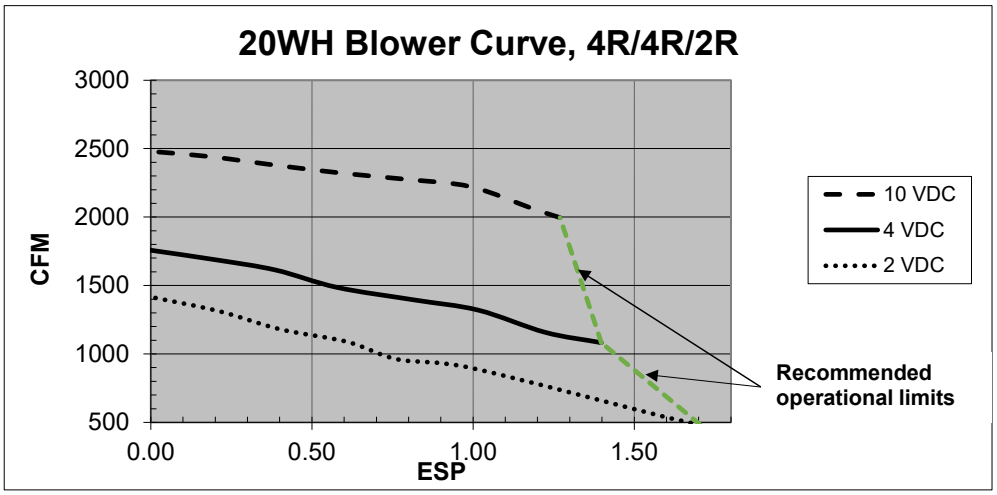
Note: Recommended range between 1400-1800 CFM. Could do lower if measures to prevent coil freezing are taken

16WH											
CFM	Componet Static Pressure (Inches of Water)										
	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	
1200	0.12	0.17	0.22	0.24	0.31	0.10	0.10	0.08	0.04	0.08	.12
1400	0.16	0.21	0.26	0.30	0.37	0.13	0.14	0.10	0.06	0.10	.16
1600	0.20	0.25	0.31	0.36	0.44	0.16	0.18	0.13	0.08	0.12	.21
1800	0.24	0.29	0.36	0.41	0.51	0.19	0.22	0.17	0.10	0.15	.27
2000	0.28	0.33	0.41	0.47	0.59	0.22	0.27	0.21	0.12	0.19	.33

BLOWER CURVE - *5 ton/20WH-ECM*

Torque (%)	Static Pressure	Velocity Pressure	CFM
100%	1.27	0.94	2076
10.00	1.19	0.99	2139
VDC	0.99	1.16	2310
	0.79	1.22	2367
	0.61	1.26	2410
	0.40	1.32	2469
	0.19	1.40	2539
	0.02	1.44	2576
80%	1.18	0.79	1905
8.00	1.00	0.89	2028
VDC	0.81	0.97	2117
	0.59	1.05	2200
	0.40	1.11	2265
	0.19	1.19	2342
	0.01	1.20	2356
60%	1.31	1.23	1524
6.00	1.22	1.34	1590
VDC	1.00	1.54	1704
	0.77	1.72	1801
	0.59	1.92	1903
	0.38	2.04	1964
	0.20	2.16	2020
	0.01	2.32	2094
40%	1.40	2.08	1114
4.00	1.22	2.38	1192
VDC	1.02	3.10	1359
	0.82	1.66	1436
	0.58	1.89	1531
	0.39	2.22	1661
	0.20	2.44	1739
	-0.01	1.74	1815
20%	1.71	2.14	500
2.00	1.60	2.63	554
VDC	0.99	1.46	932
	0.77	1.66	995
	0.61	2.14	1129
	0.40	2.51	1224
	0.21	3.11	1361
	-0.01	1.75	1473



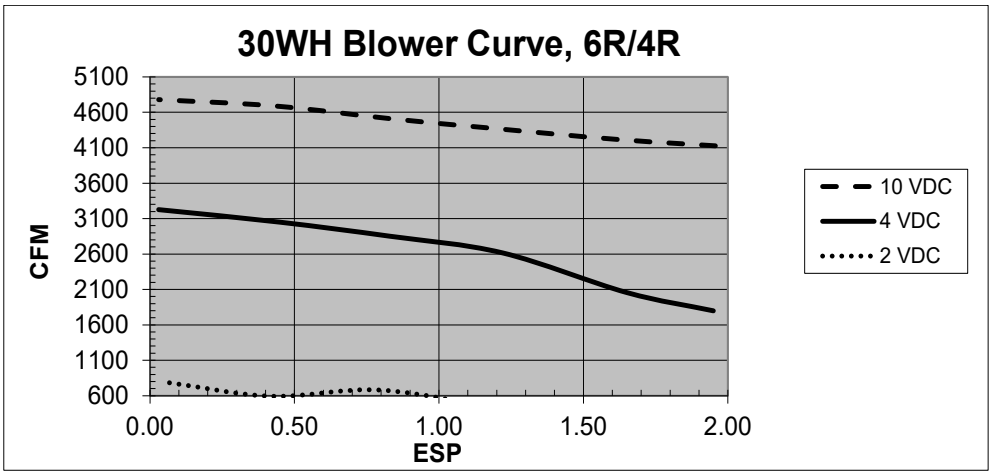


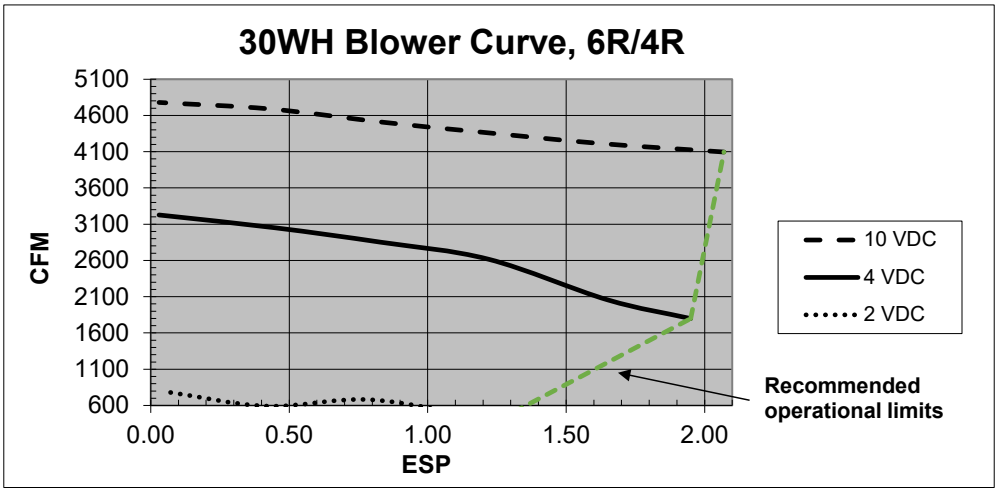
Note: Recommended range between 1800-2200 CFM. Could do lower if measures to prevent coil freezing are taken

20WH											
CFM	Componet Static Pressure (Inches of Water)										
	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	
1600	0.13	0.15	0.22	0.21	0.31	0.11	0.15	0.11	0.08	0.10	0.14
1800	0.17	0.18	0.27	0.26	0.39	0.14	0.18	0.13	0.10	0.12	0.21
2000	0.21	0.20	0.32	0.29	0.46	0.17	0.22	0.15	0.12	0.15	0.26
2200	0.25	0.23	0.37	0.33	0.53	0.21	0.26	0.19	0.14	0.18	0.31
2400	0.29	0.27	0.42	0.39	0.60	0.25	0.30	0.23	0.16	0.22	0.36

BLOWER CURVE - *7 1/2 ton/30WH-ECM*

Torque (%)	Static Pressure	Velocity Pressure	CFM
100%	2.07	1.19	4216
10.00	1.62	1.26	4338
VDC	1.17	1.36	4507
	0.84	1.44	4638
	0.43	1.56	4827
	0.03	1.62	4919
80%	2.02	1.18	4198
8.00	1.54	1.28	4373
VDC	1.24	1.38	4540
	0.85	1.48	4702
	0.46	1.54	4796
	-0.11	1.57	4843
60%	2.03	0.87	3605
6.00	1.63	0.98	3826
VDC	1.19	1.03	3923
	0.82	1.14	4127
	0.37	1.25	4321
	0.04	1.31	4424
40%	1.95	2.76	1851
4.00	1.65	3.61	2117
VDC	1.22	1.17	2693
	0.83	1.39	2936
	0.45	1.59	3140
	0.03	1.78	3322
20%	1.25	1.36	399
2.00	0.80	0.82	699
VDC	0.42	0.30	610
	0.06	0.53	811



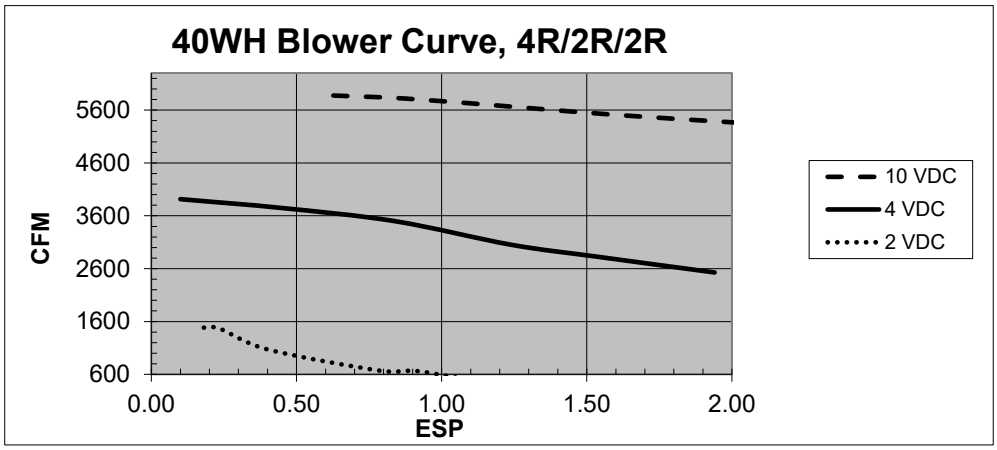


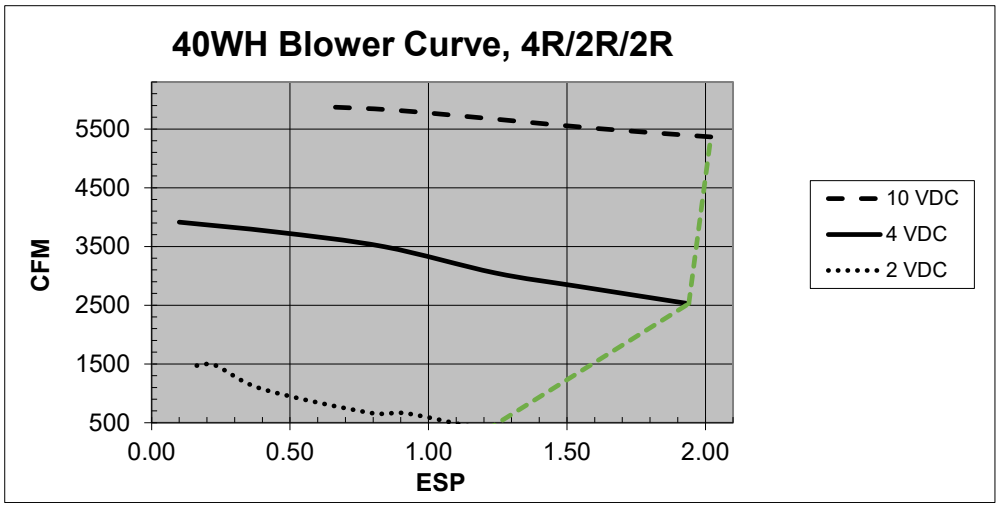
Note: Recommended range between 2500-3500 CFM. Could do lower if measures to prevent coil freezing are taken

30WH											
CFM	Componet Static Pressure (Inches of Water)										
	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	
2600	0.17	0.11	0.15	0.12	0.16	0.05	0.19	0.14	0.11	0.10	0.22
2800	0.18	0.12	0.17	0.13	0.18	0.06	0.20	0.15	0.12	0.11	0.25
3000	0.19	0.13	0.19	0.14	0.20	0.07	0.21	0.16	0.13	0.12	0.28
3200	0.20	0.14	0.22	0.15	0.24	0.08	0.23	0.17	0.14	0.13	0.32
3400	0.21	0.15	0.24	0.16	0.26	0.09	0.24	0.18	0.14	0.14	0.36

BLOWER CURVE - *10 ton/40WH-ECM*

Torque (%)	Static Pressure	Velocity Pressure	CFM
100%	3.03	1.48	4702
10.00	2.62	2.03	5507
VDC	2.21	2.24	5785
	2.00	2.38	5963
	1.62	2.57	6196
	1.25	2.62	6256
	1.08	2.71	6363
80%	2.02	2.04	5520
8.00	1.61	2.15	5667
VDC	1.26	2.27	5823
	0.88	2.40	5988
	0.62	2.45	6050
60%	1.87	1.16	4163
6.00	1.63	1.44	4638
VDC	1.25	1.57	4843
	0.86	1.75	5113
	0.44	1.85	5257
	0.07	1.93	5369
40%	1.94	1.09	2600
4.00	1.54	1.36	2904
VDC	1.24	1.59	3140
	0.84	2.09	3600
	0.45	2.40	3857
	0.10	2.62	4030
20%	1.21	1.27	385
2.00	0.92	3.93	678
VDC	0.79	0.79	686
	0.40	2.04	1103
	0.23	3.86	1517
	0.16	3.83	1511





Note: Recommended range between 3400-3600 CFM. Could do lower if measures to prevent coil freezing are taken

40WH											
CFM	Componet Static Pressure (Inches of Water)										
	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

SHIPPING WEIGHTS

WHD SERIES WEIGHTS													
MODEL	**BASE UNIT WEIGHTS		COIL WEIGHTS					ACCESSORY WEIGHTS			MOTOR WEIGHTS		
											120/208/240/1PH		277/1/60
	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	HP	LBS	LBS
8HWD	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
12HWD	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**		
16HWD	295.0	361.0	1 ROW	8.3	0.37	3.1	11.4	SHIPPING WT	SHIPPING WT	SHIPPING WT	1/4	22.0	
			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	
20HWD	332.0	402.0	1 ROW	9.5	0.44	3.7	13.2	SHIPPING WT	SHIPPING WT	SHIPPING WT	1	33.0	
			2 ROW	19.0	0.89	7.4	26.4	67.0	137.0	146.0	1 1/2	33.0	N/A
			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	
											5	81.0	
											7 1/2	117.0	
											10	143	
30HWD	**Contact Factory**												
40HWD	**Contact Factory**												
****BASE UNIT WEIGHT INCLUDES BLOWER ASSEMBLY, MOTOR SHEAVE, BLOWER PULLEY, BELT AND 2" FILTER**													