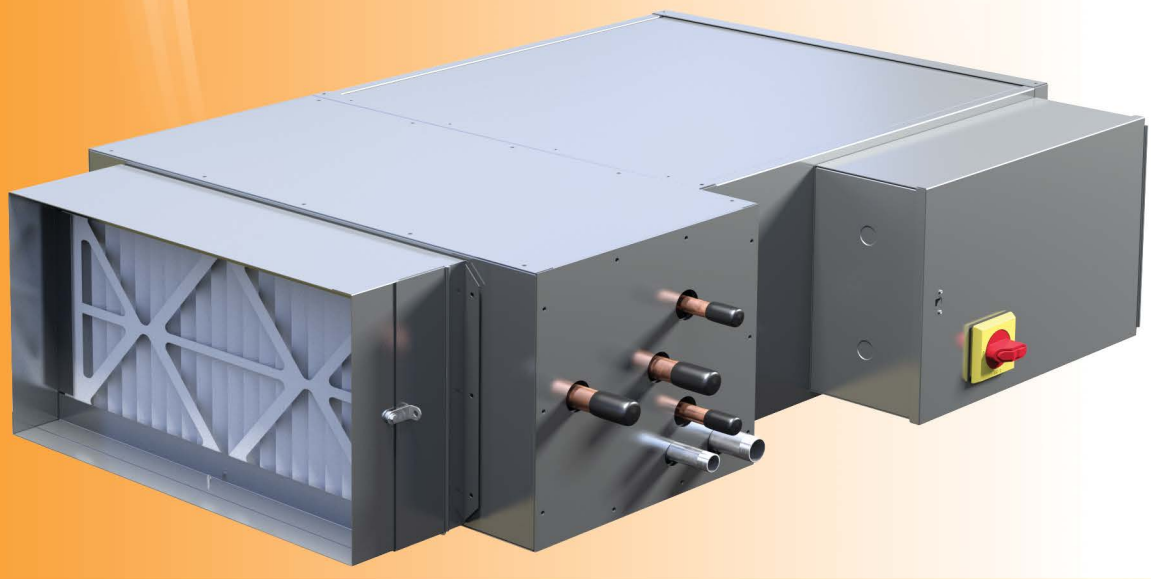
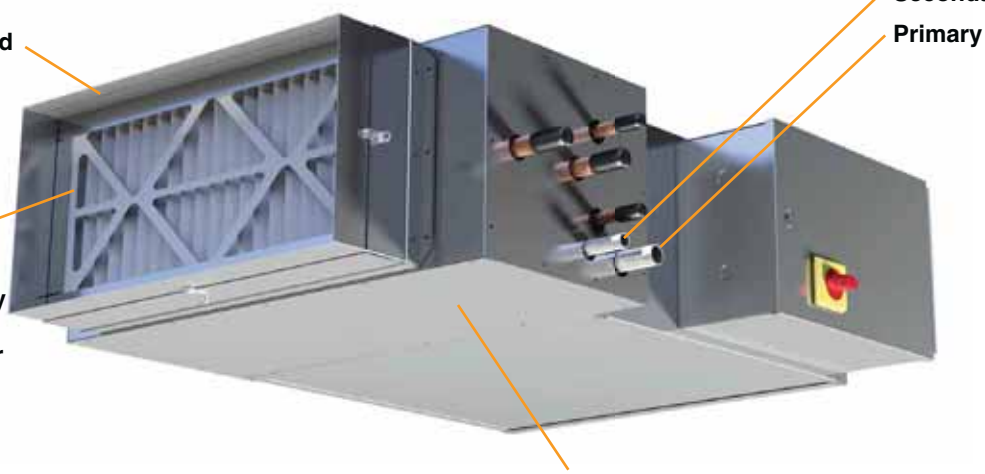
Engineered Comfort

LOW PROFILE HORIZONTAL FAN COIL UNITS – DUCTED



Model Series 37FH
11" High • Fully Modulating
Direct Drive Draw-through Design

Model Series 37FH • Low Profile • Direct Drive Draw-through Design



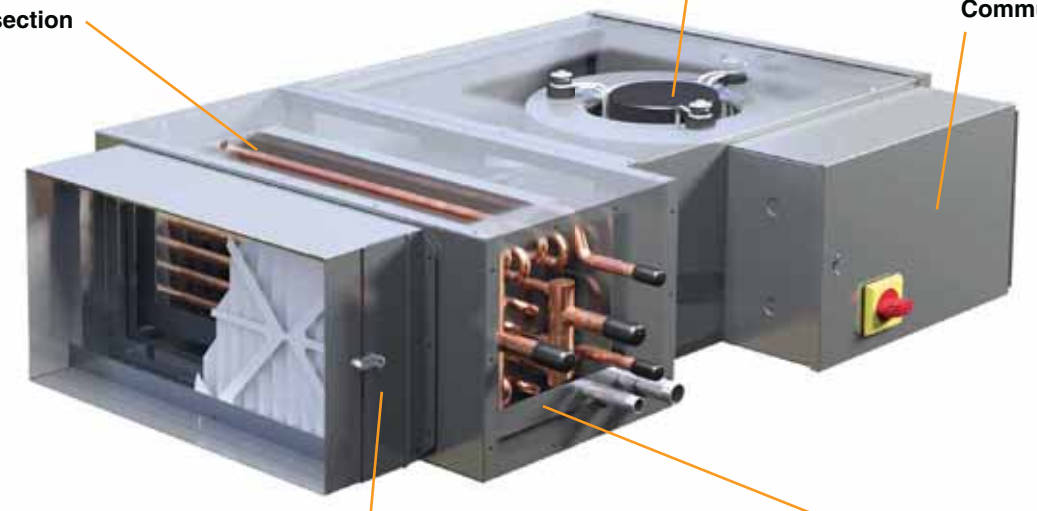
20 gauge galvanized formed steel frame

Filter
- 1" (25) throwaway (standard)
- 2" (51) MERV 8 or MERV 13 pleated (optional)

Secondary drain outlet

Primary drain outlet

Multiple coil options:
- 3, 4, 5 or 6 row cooling or 1, 2 or 3 heating coils
- 1 or 2 row preheat or reheat coil



Coil section

Blower/Motor assembly
- EPIC ECM

Hinged door control enclosure will accept a toggle disconnect or a door interlocking type and can accommodate controls for BAS Communications.

Optional FFR Ducted Filter Rack to facilitate the installation of inlet duct. FFR Filter Rack shall have hinged door flap with latch on the side and bottom to facilitate filter replacement.

Insulated drain pan
- Galvanized or Stainless Steel
- Optional secondary overflow drain connection

37FHZW

Model Series 37FH • Low Profile • Direct Drive Draw-through

The Engineered Comfort Low Profile Direct Drive draw-through 37FH Series, a fully commercial unit designed for concealed ceiling applications where a lower profile is required [11" (279) high unit].

BENEFITS:

- Airflow capacities from 100 – 1400 CFM (47 – 661 l/s).
- Insulated inlet casing reduces radiated sound.
- Only 11" (279) in height for tight ceiling applications.
- Various IAQ linings available.
- Optional Outside Air Inlet provides a greater indoor quality.

Sound power levels tested and published in accordance with ASHRAE 130/AHRI 880.

AHRI certified units available as:

2-pipe System:

- Type W: 1, 2 or 3 row coil for heating only.
- Type Z: 3, 4, 5 or 6 row coil for cooling or heating.

4-pipe system:

- Type ZW: 3, 4 or 5 row cooling coil and 1 or 2 row heating coil.
- Either as reheat or preheat.

Contact Nailor's representative for steam heating or direct expansion application.

Standard and Features

CONSTRUCTION

- 20 ga. (1.00) galvanized steel casing components.
- 1" (25) throwaway filter.
- 1/2" (13) dual density fiberglass liner, exposed edges coated to prevent air erosion. Meets the requirements of NFPA 90A and UL 181.
- Top and bottom full size access panels for ease of maintenance and service.
- Ultra-energy efficient ECM fan motor with overload protection. Solid state EPIC fan volume controller.
- Motor blower assembly mounted on special 16 ga. (1.61) angles and isolated from casing with rubber isolators.
- Single point electrical connection.
- Discharge opening designed for flanged duct connection.
- Controls mounted as standard on RH side as shown. Fan Coil ordered with LH controls (optional) are inverted and discharge duct hanging location will change.

FAN/MOTOR ASSEMBLIES

- Forward Curved, DWDI, direct driven blowers.
- Blower/motor assembly isolated from fan housing with vibration isolators.
- Motor power leads with quick disconnect brought into an external hinged door starter-control enclosure.
- 120, 208, 240 and 277 volt single phase motor.

WATER COILS

- Installed on inlet as a draw-through design.
- Coil (and header on multi-circuit units) is installed in insulated (fiber-free/foam) casing for increased thermal efficiency.
- 1/2" (13) copper tubes with aluminum ripple fins.
- Cooling coils include an insulated, galvanize steel drain pan with 3/4" (19) male NPT primary drain connection.
- Top and bottom access panels for inspection and coil cleaning.
- Right hand coil connection shown (looking in direction of airflow) is standard. Left hand is optional.

ELECTRICAL COILS

- Hinged door with heater element module for easy access, removal and replacement of heater element without disturbing ductwork.
- Coil installed on unit discharge.
- Insulated coil element wrapper.
- Automatic reset high limit cut-outs (one per element).
- Flanged outlet duct connection.

Model Series 37FH • Low Profile • Direct Drive Draw-through



37FHZW with EPIC ECM Motor, Optional Outside Air Inlet, Optional Controls Enclosure and Optional Ducted Filter Rack Connection

Options and Accessories

CONSTRUCTION

Insulation

- 1/2" (13) Steri-Liner (Foil Face).
- Fiber-free Liner (closed cell foam).
- 1" (25) or 2" (51) Filter Rack
- 1" (25) Throwaway filter with spare.
- 2" (51) MERV 8 / MERV 13.
- 2" (51) MERV 8 / MERV 13 with spare

COILS

- Manual or Automatic air vent(s) with valve package.
- Coil Casing 20 ga. (1.00) stainless steel drain pan externally insulated with fiber-free foam.
- Stainless steel coil casing.
- Increased tube wall thickness 0.025" (0.635).

DRAIN PANS

- Stainless Steel drain pan externally insulated with fiber-free foam.
- 5/8" (15.9) Secondary (overflow) drain connection with or without overflow safety switch.

CONTROL PACKAGES

- Toggle Disconnect Switch.
- Door Interlocking disconnect switch.
- Main Unit Fusing.
- Drain Pan Float Switch (24V).
- 24V transformer and fan relay packages.
- Factory installed controls – provided by others.

VALVE-PIPING PACKAGES

- Factory assembled and Installed in enclosure or field installed.
- 1/2" or 3/4" (13 or 19) 2 or 3 way valves.
- On/Off, 24V, modulating 0–10 vdc.
- Ball valves, Unions, P/T ports and Shut-off valves.
- Circuit setters (manual or auto-fixed flow control).
- Strainers and Strainer with hose bib valve.
- P/T ports and Bypass balancing valve.

OTHER OPTIONS

- Ultraviolet light w/safety switch.
- Ducted return filter rack connection (FFR).
- Outside Air Inlet (OAI).
- Duct tight controls enclosure.
- Condensate pump.

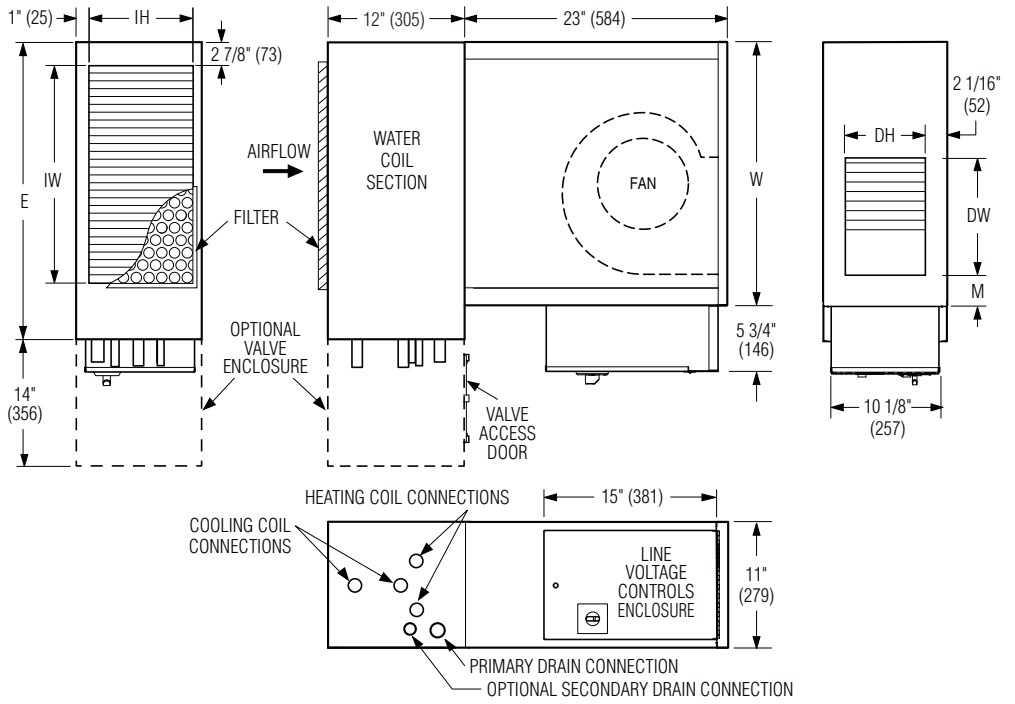
Engineered Comfort

Model Series 37FH • Direct Drive Draw-through • EPIC ECM
2 Pipe or 4 Pipe • Unit Sizes 5 & 8

MODELS:

37FHZ Chilled/Hot water (2-pipe).

37FHZW Chilled & hot water (4-pipe).



Dimensional Data

Unit Size	Nominal CFM (l/s)	W	E	Inlet IW x IH	Outlet Discharge DW x DH	M	Filter Size W x H
5	500 (236)	23 (584)	26 (660)	19 x 8 3/ 4 (483 x 222)	10 1/ 4 x 6 3/ 4 (260 x 171)	2 3/ 4 (70)	20 x 10 (508 x 254)
8	800 (378)	37 (940)	40 (1016)	33 x 8 3/ 4 (838 x 222)	11 1/ 4 x 6 3/ 4 (286 x 171)	10 5/ 8 (270)	35 x 10 (889 x 254)

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Room Fan-Coils
AHRI Standard 440

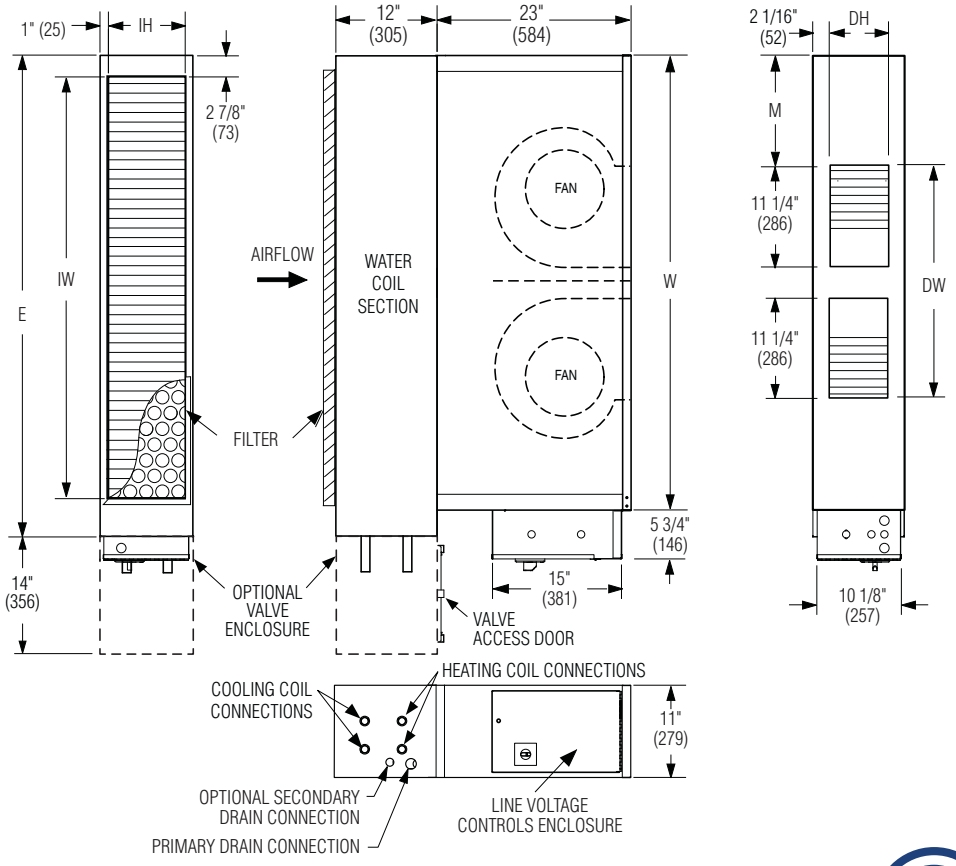
Engineered Comfort

Model Series 37FH • Direct Drive Draw-through • EPIC ECM
2 Pipe or 4 Pipe • Unit Size 12

MODELS:

37FHZ Chilled/Hot water (2-pipe).

37FHZW Chilled & hot water (4-pipe).



Dimensional Data

Unit Size	Nominal CFM (l/s)	W	E	IW x IH	Outlet Discharge DW x DH	M	Filter Size W x H
12	1200 (566)	54 (1372)	57 (1448)	50 x 8 3/4 (1270 x 222)	26 3/4 x 6 3/ 4 (679 x 171)	13 5/8 (346)	52 x 10 (1321 x 254)

Intertek

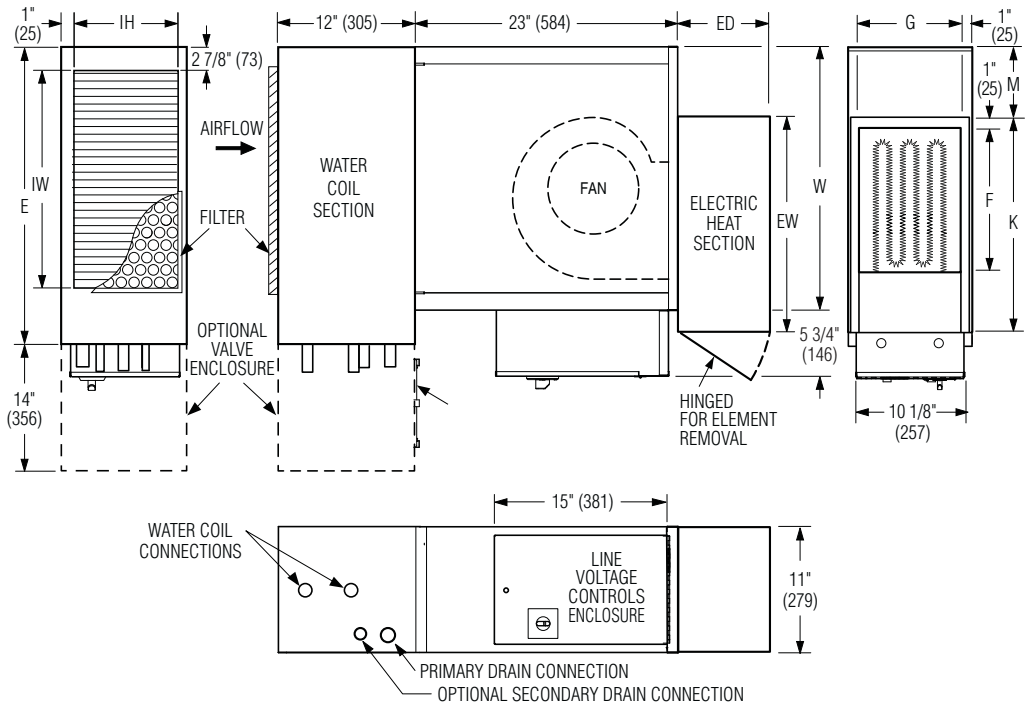
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Room Fan-Coils
AHRI Standard 440

Engineered Comfort

Model Series 37FH • Direct Drive Draw-through • EPIC ECM
2 Pipe with Electric Heat • Unit Sizes 5 & 8

MODEL:

37FHZE Chilled/Hot water and Electric Heat



Dimensional Data

Unit Size	Nominal CFM (l/s)	W	E	Inlet IW x IH	Outlet Duct Size F x G	ED	EW	K	M	Filter Size W x H
5	500 (236)	23 (584)	26 (660)	19 x 8 3/4 (483 x 222)	12 1/2 x 9 (318 x 229)	8 (203)	18 3/4 (476)	18 3/4 (476)	6 1/8 (156)	20 x 10 (508 x 254)
8	800 (378)	37 (940)	40 (1016)	33 x 8 3/4 (838 x 222)	12 1/2 x 9 (318 x 229)	8 – 14 (203 – 356)	18 3/4 (476)	18 3/4 (476)	12 1/4 (311)	10 x 35 (254 x 889)

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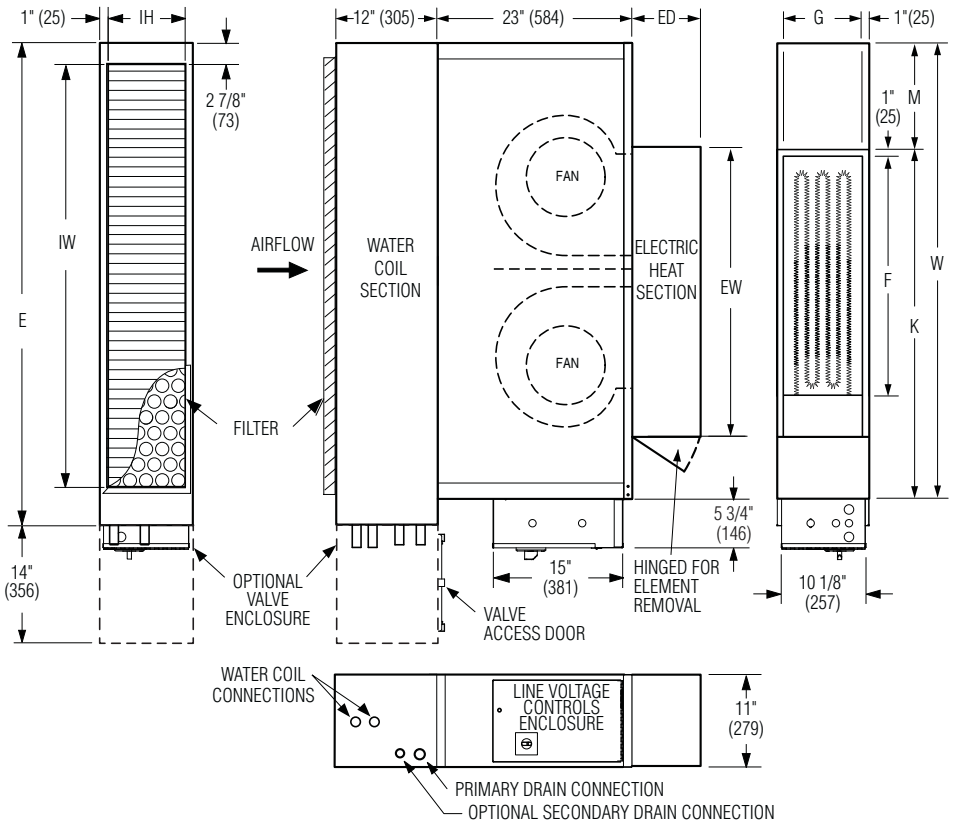
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Engineered Comfort

Model Series 37FH • Direct Drive Draw-through • EPIC ECM
2 Pipe with Electric Heat • Unit Size 12

MODEL:

37FHZE Chilled/Hot water and Electric Heat



Dimensional Data

Unit Size	Nominal CFM (l/s)	W	E	IW x IH	Outlet Duct Size F x G	ED	EW	K	M	Filter Size W x H
12	1200 (566)	54 (1372)	57 (1448)	50 x 8 3/4 (1270 x 222)	20 x 9 (508 x 229)	8 – 14 (203 – 356)	34 3/8 (873)	41 3/8 (1051)	12 5/8 (321)	52 x 10 (1321 x 254)

Intertek

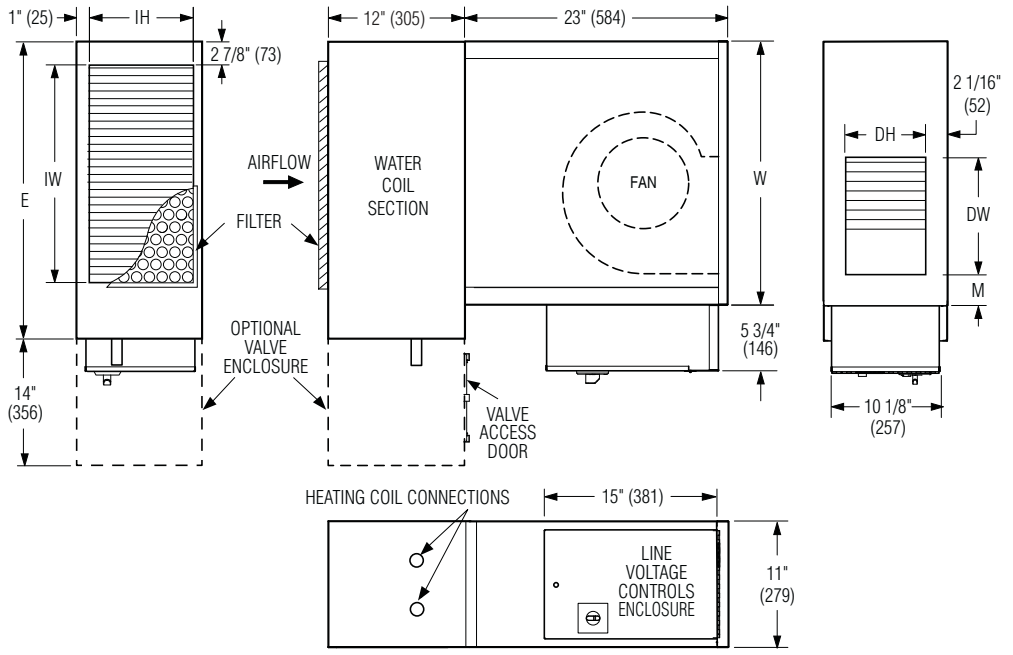
AHRI CERTIFIED™ www.ahridirectory.org Room Fan-Coils AHRI Standard 440

Engineered Comfort

Model Series 37FH • Direct Drive Draw-through • EPIC ECM • 2 Pipe
Unit Sizes 5 & 8

MODEL:

37FHW Hot Water.



Dimensional Data

Unit Size	Nominal CFM (l/s)	W	E	Inlet IW x IH	Outlet Discharge DW x DH	M	Filter Size W x H
5	500 (236)	23 (584)	26 (660)	19 x 8 3/ 4 (483 x 222)	10 1/ 4 x 6 3/ 4 (260 x 171)	2 3/ 4 (70)	20 x 10 (508 x 254)
8	800 (378)	37 (940)	40 (1016)	33 x 8 3/ 4 (838 x 222)	11 1/ 4 x 6 3/ 4 (286 x 171)	10 5/ 8 (270)	35 x 10 (889 x 254)

Intertek

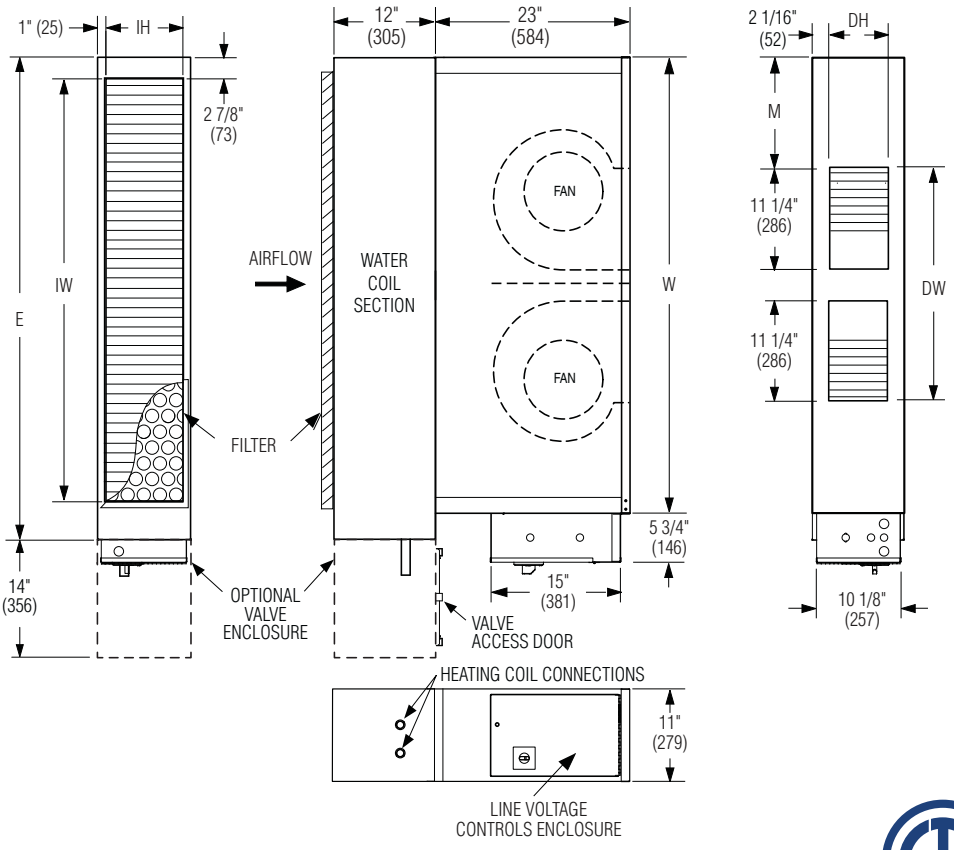
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Room Fan-Coils
AHRI Standard 440

Engineered Comfort

Model Series 37FH • Direct Drive Draw-through • EPIC ECM • 2 Pipe
Unit Size 12

MODEL:

37FHW Hot Water.



Dimensional Data

Unit Size	Nominal CFM (l/s)	W	E	IW x IH	Outlet Discharge DW x DH	M	Filter Size W x H
12	1200 (566)	54 (1372)	57 (1448)	50 x 8 3/4 (1270 x 222)	26 3/4 x 6 3/ 4 (679 x 171)	13 5/8 (321)	52 x 10 (1321 x 254)

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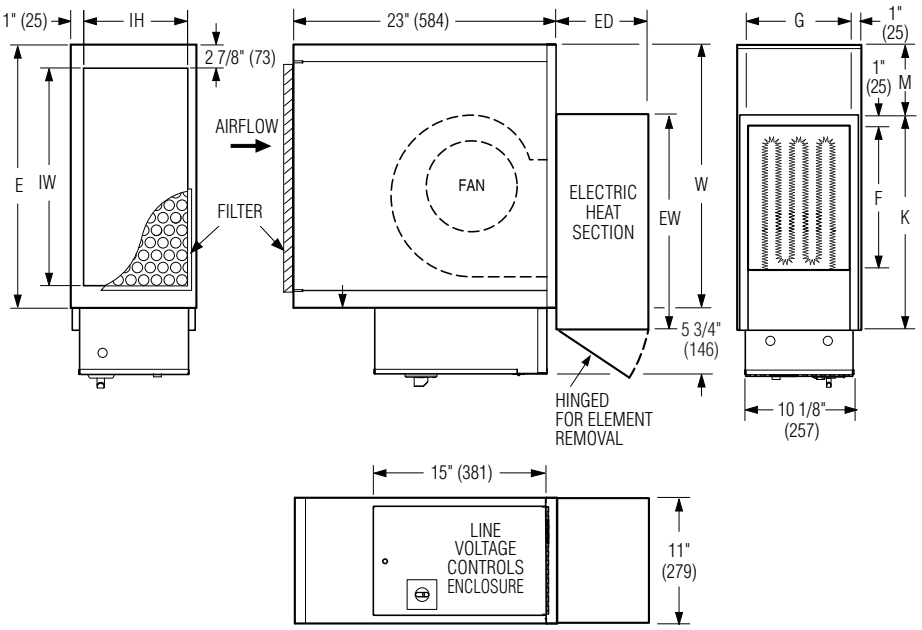
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Room Fan-Coils
AHRI Standard 440

Engineered Comfort

Model Series 37FH • Direct Drive Draw Through • EPIC ECM
Electric Heat Only • Unit Sizes 5, 8 & 12

MODEL:

37FHE Electric Heat.



Dimensional Data

Unit Size	Nominal CFM (l/s)	W	E	Inlet IW x IH	Outlet Duct Size F x G	ED	EW	K	M	Filter Size W x H
5	500 (236)	23 (584)	23 (584)	17 1/4 x 8 3/4 (438 x 222)	12 1/2 x 9 (318 x 229)	8 (203)	18 3/4 (476)	18 3/4 (476)	6 1/8 (156)	20 x 10 (508 x 254)
8	800 (378)	37 (950)	37 (940)	31 1/4 x 8 3/4 (794 x 222)	12 1/2 x 9 (318 x 229)	8 – 14 (203 – 356)	18 3/4 (476)	18 3/4 (476)	12 1/4 (311)	35 x 10 (889 x 254)

Intertek

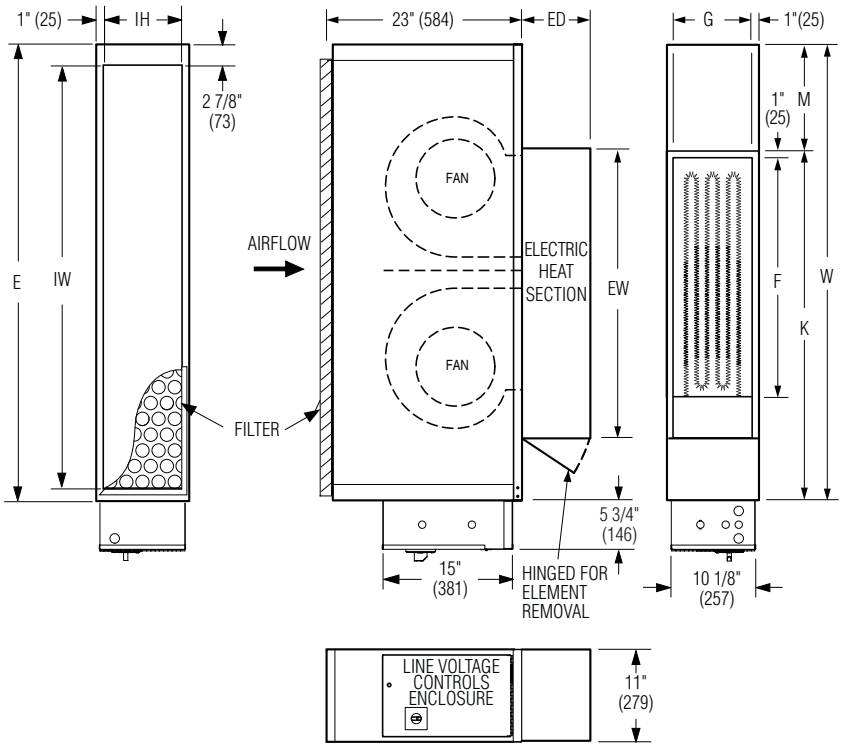
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AHRI Standard 440

Engineered Comfort

Model Series 37FH • Direct Drive Draw-through • EPIC ECM
Electric Heat Only • Unit Sizes 5, 8 & 12

MODEL:

37FHE Electric Heat.



Dimensional Data

Unit Size	Nominal CFM (l/s)	W	E	IW x IH	Outlet Duct Size F x G	ED	EW	K	M	Filter Size W x H
12	1200 (566)	54 (1372)	54 (1370)	48 1/4 x 8 3/4 (1226 x 222)	20 x 9 (508 x 229)	8 – 14 (203 – 356)	34 3/8 (873)	41 3/8 (1051)	12 5/8 (321)	52 x 10 (1321 x 254)

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AHRI CERTIFIED™
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Room Fan-Coils
AHRI Standard 440

Model Series 37FH • Direct Drive Draw-through • Supplement Outside Air Inlet (OAI) Option • Unit Sizes 5, 8 & 12

MODELS:

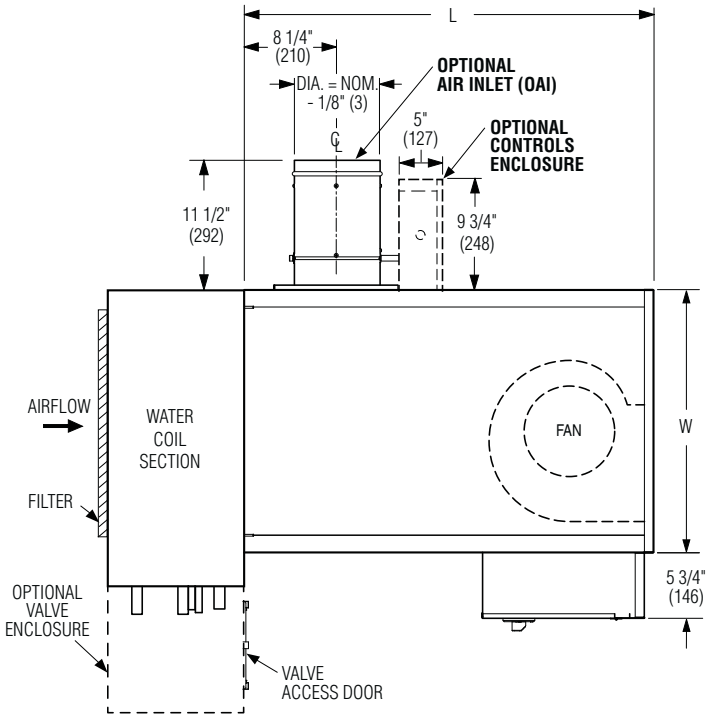
37FHZ Chilled/Hot Water (2-pipe).
37FHZW Chilled & Hot Water (4-pipe).
37FHW Hot Water Only (2-pipe).
37FHZE Chilled/Hot Water (2-pipe) with Electric Heat.

STANDARD CONSTRUCTION (OAI INLET):

1. Casing: 20 ga. (1.00), corrosion-resistant steel with stiffening beads.
2. Blade: Two layers of 20 ga. (1.00), corrosion-resistant steel laminated together with a cross-linked polyethylene peripheral gasket for tight shut-off. 90° rotation, CW to close. Damper leakage is less the 1% of the terminal rated airflow at 3" w.g. (750 pa.) and less than 2% at 6" w.g. (1500 pa.) as tested in accordance with ANSI / ASHRAE Standard 130.
3. Bearings: Self-lubricating oilite bronze.
4. Drive Shaft/Axles: 1/2" (13) diameter plated steel, double-bolted to blades. Indicator mark on the end of the shaft to show damper position.
5. Multi-point averaging Diamond Flow Sensor: Aluminum construction. Supplied with brass balancing tees. See EC-IOM-FCK for associated K-factor(s).

OPTION:

1. Full NEMA 1 type controls enclosure for field mounted controllers/actuators.



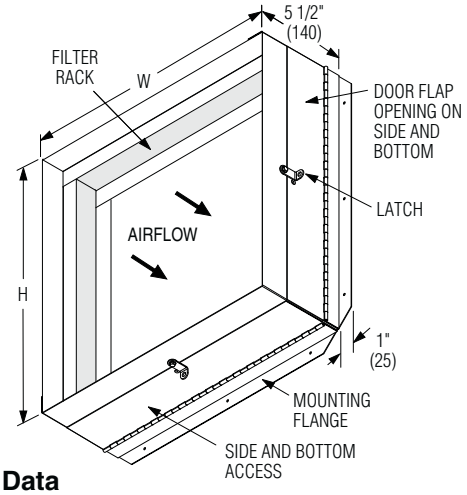
Dimensional Data

Unit Size	Nominal CFM (l/s)	Available Outside Air Inlet (OAI) DIA.	W	L
5	500 (236)	4, 5, 6, 8 (102, 127, 152, 203)	23 (584)	36 (914)
8	800 (378)		37 (940)	36 (914)
12	1200 (566)		54 (1372)	36 (914)

Model Series 37FH • Filter Rack Option • Options and Accessories

DESCRIPTION

- The FFR Ducted Return Filter Rack Connection is an optional accessory for the Horizontal Fan Coil Units Model Series 35FH and 37FH.
- The accessory is required for ducted inlet applications where a filter is also required and ease of accessibility is required.
- The Ducted Filter Connection features a filter rack, which accommodates a 1" (25) standard or 2" (51) optional filter.
- Factory mounted on the induced air inlet of the draw-through water coil section.
- A piano-hinged door flap with latch on the side and bottom of the unit accessory allows for easy removal and replacement of the filter.
- The accessory is provided with a nominally sized duct connection collar.
- Side access to filter is same as coil hand.



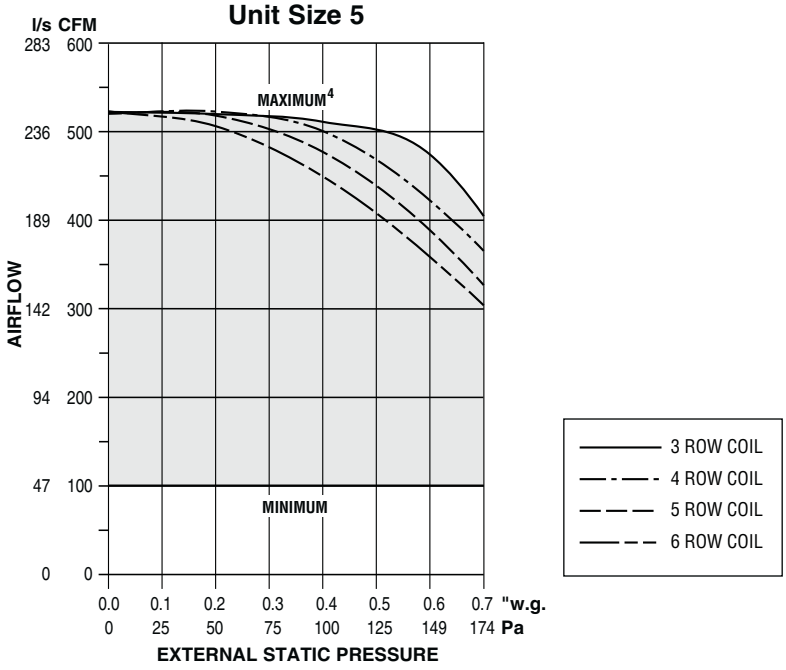
Dimensional Data

Unit Size	Inlet Size H x W	Filter Size W x H (Nominal)
5	20 1/4 x 10 1/2 (514 x 267)	20 x 10 (508 x 254)
8	35 1/4 x 10 1/2 (895 x 267)	35 x 10 (889 x 254)
12	52 1/4 x 10 1/2 (1327 x 267)	52 x 10 (1321 x 254)

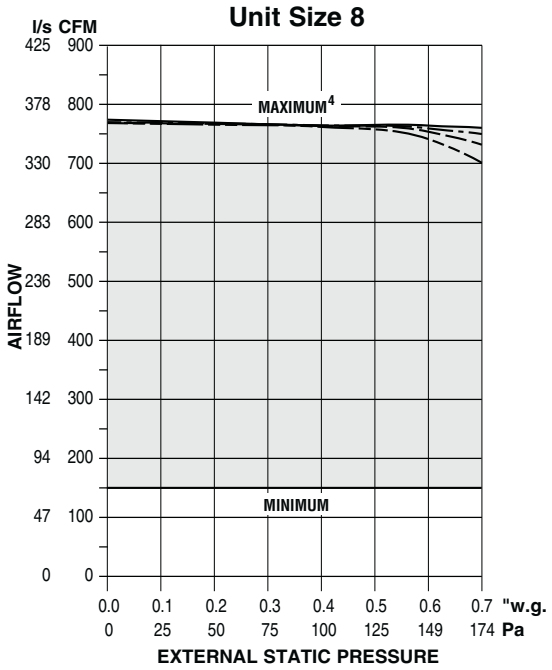
Model Series 37FH • EPIC ECM Motor • Fan Performance Curves

Airflow vs. External Static Pressure

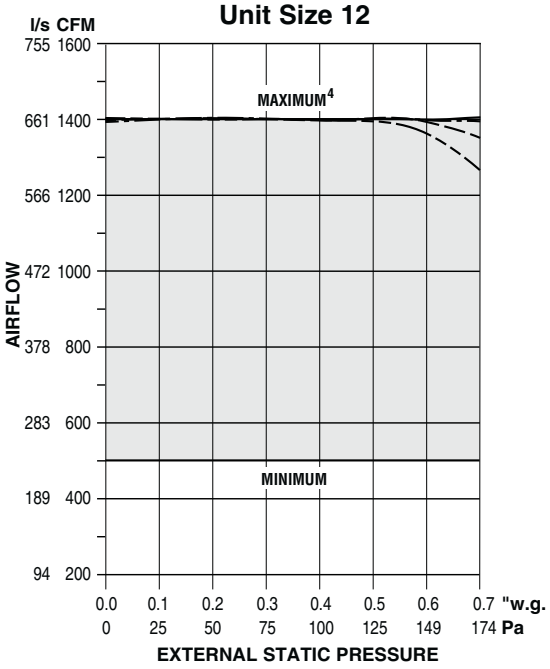
Unit Size 5



Unit Size 8



Unit Size 12



EPIC ECM Notes:

1. The EPIC ECM is a pressure independent constant volume device at set point and airflow does not vary with changing static pressure condition. The motor compensates for any changes in static pressure such as filter loading. Variations in airflow are generated by the controls which reset the fan airflow based on room demand. (See control sequence).
2. Airflow can be set to operate at any point within shaded area under the selected water coil curve using the EPIC volume controller provided.
3. Fan curves shown are applicable to 120/208/240 and 277 volt, single phase EPIC ECM (motors).
4. The maximum curve represents unit performance with a 3-row coil. For one (1) or two (2) row hot water coils (37FHW heating unit) performance will be slightly better. Model 37FHE (electric heat only) performance data will be comparable to a one (1) row unit. See SelectWorks for performance data Characteristics.
5. Filter pressure drops table shown on page B52.

Model Series 37FH • Performance Data

Electrical Motor Characteristics

Unit Size	Voltage	No. of Fans/ Motors	EPIC ECM	
			FLA	Full Load Watts
5	120	1/1	1.9	146
	208	1/1	1.3	
	230	1/1	1.2	
	277	1/1	1.2	
8	120	1/1	3.8	320
	208	1/1	2.6	
	230	1/1	2.5	
	277	1/1	2.6	
12	120	2/2	6.2	520
	208	2/2	4.1	
	230	2/2	3.9	
	277	2/2	3.8	

The FLA and watts are shown at the maximum setting for selected motor type and unit size. The EPIC ECM will provide a much lower amp and watt consumption under application conditions. Refer to SelectWorks selection software for application specific data.

Filter Pressure Drop Adjustments (in w.g.)

Unit Size	Airflow		Velocity		Filter Type			Filter Size W x H
	CFM	l/s	fpm	m/s	1" (25) Throwaway	2" (51) MERV 8	2" (51) MERV 13	
5	500	236	360	1.829	0.095	0.192	0.296	20 x 10 (508 x 254)
	400	189	288	1.463	0.066	0.134	0.224	
	300	142	216	1.097	0.037	0.077	0.153	
8	750	354	309	1.570	0.074	0.151	0.245	35 x 10 (889 x 254)
	600	283	247	1.255	0.049	0.102	0.184	
	450	212	185	0.940	0.025	0.052	0.122	
12	1400	661	388	1.971	0.106	0.214	0.325	52 x 10 (1321 x 254)
	1120	529	310	1.575	0.075	0.152	0.247	
	840	396	233	1.184	0.044	0.090	0.169	

NOTES:

1. Pressure drop based on clean filters. Using any type of filter will lower unit airflow.
2. To determine fan airflow with the addition of a filter, add the filter pressure drop to the external static pressure on the fan curve or use Selectworks.



Front: 1" (25) Throwaway
Middle: 2" (51) MERV 13
Back: 2" (51) MERV 8

Model Series 37FH • Performance Data
Sound Power Levels and NC Level Application Guide • EPIC ECM Motor

Unit Size	Airflow CFM	Airflow l/s	Discharge Sound Power Levels Octave Bands 2	3	4	5	6	7	NC	Radiated Sound Power Levels Octave Bands 2	3	4	5	6	7	NC
	500	236	72	67	64	63	60	56	**26**	68	60	56	53	44	35	**33**
	400	189	69	63	61	59	56	51	**23**	65	57	53	50	40	30	**29**
5	300	142	65	59	58	55	52	45	**21**	59	54	50	45	35	24	**24**
	200	94	60	53	52	48	43	34	**15**	58	52	48	42	32	19	**22**
	100	47	56	43	27	23	10	10	**15**	10	45	40	30	10	10	**15**
	783	369	75	71	67	66	64	61	**30**	71	63	61	59	49	39	**36**
	625	295	70	66	63	62	59	56	**25**	66	59	58	55	44	34	**33**
8	450	212	64	61	58	56	53	48	**19**	62	55	54	49	39	27	**29**
	275	130	60	56	54	51	48	39	**15**	57	52	51	45	35	21	**25**
	100	47	56	48	39	34	23	10	**15**	50	47	44	37	24	10	**18**
	1483	700	77	74	71	71	68	66	**34**	75	66	65	64	55	48	**41**
	1300	613	75	72	68	68	65	63	**31**	73	63	63	62	53	45	**39**
	1100	519	72	68	66	65	61	58	**26**	70	61	61	59	50	42	**36**
12	900	425	68	64	63	61	58	54	**21**	66	58	58	56	47	38	**33**
	700	330	65	60	60	58	54	49	**16**	64	56	56	53	43	34	**31**
	500	236	61	58	57	55	51	44	**15**	60	54	54	50	39	29	**29**
	300	142	55	52	51	48	42	32	**15**	58	53	53	47	36	25	**28**

Performance Notes:

1. Fan discharge (external) static pressure is 0.25" w.g. (63 Pa) in all cases. It is the difference (ΔPs) in static pressure from fan coil unit discharge to the room.
2. Discharge sound power is the noise emitted from the unit discharge into the downstream duct.
3. Radiated sound power is the breakout noise transmitted through the unit casing walls.
4. Sound power levels in decibels, dB re 10^{-12} watts.
5. All sound data listed by octave bands is raw data without any corrections for room absorption or duct attenuation.
6. Data derived from independent tests in accordance with AHRI Standard 880.
7. NC levels are calculated from the published raw data and based on procedures outlined in Appendix E, AHRI Standard 885.
8. Fan discharge sound attenuation deductions are based on environmental effect, duct lining, branch power division, insulated flexible duct, end reflection and space effect and are as follows:

Discharge attenuation	Octave Band 2	3	4	5	6	7
< 300 cfm	24	28	39	53	58	40
300 – 700 cfm	27	29	40	51	53	39
> 700 cfm	29	30	41	51	52	39

9. Radiated sound attenuation deductions are based on a mineral tile ceiling and environmental effect and are as follows:

Radiated attenuation	Octave Band 2	3	4	5	6	7
Total dB reduction	18	19	20	26	31	36

10. Dash (–) in space denotes an NC level of less than 20.

Engineered Comfort

Model Series 37FH • AHRI Standard Ratings

Unit Size	Airflow CFM (l/s) (Dry Flow)	Coil Row	Cooling Capacity QT (BTUH)	Cooling Capacity QS (BTUH)	Water Flow Rate (GPM)	Water WPD ft.-w.g.	EPIC ECM, Power Input (Watts)
5	600 (236)	3	11900	9300	2.5	2.4	120
		4	15300	11000	3.1	5.2	125
		5	16500	11700	3.4	2.5	130
		6	18700	12600	3.8	3.7	135
8	750 (354)	3	19700	14800	4.1	3.1	200
		4	23400	16700	4.8	2.6	210
		5	27600	18600	5.7	4.3	230
		6	29700	19600	6.1	3.2	240
12	1400 (661)	3	34700	26300	7.2	5.7	380
		4	44200	31200	9.1	11.7	390
		5	51700	34800	10.6	19.5	400
		6	55900	36800	11.4	14.7	410

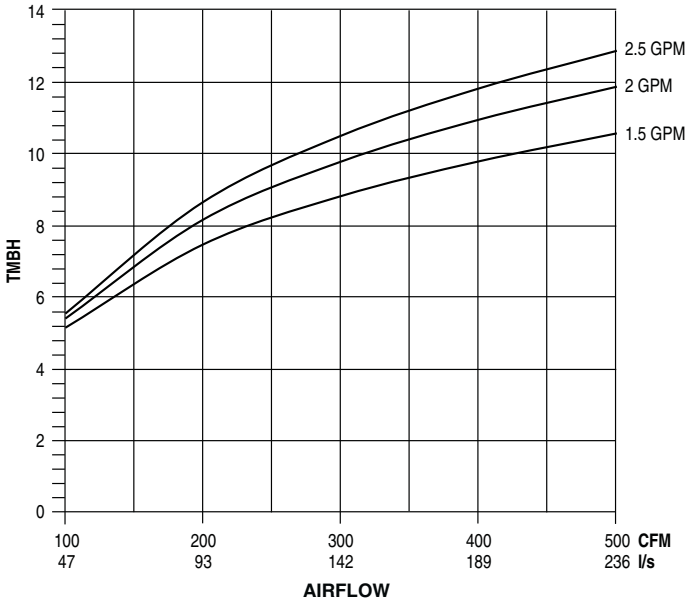
Note: Based on 80°F DB and 67°F WB EAT, 45°F EWT 10° temperature rise, maximum fan speed. Motor type is EPIC ECM and motor voltage is 115/1/60. Airflow under dry coil conditions. All models tested at 0.05" external static pressure.

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Room Fan-Coils
AHRI Standard 440

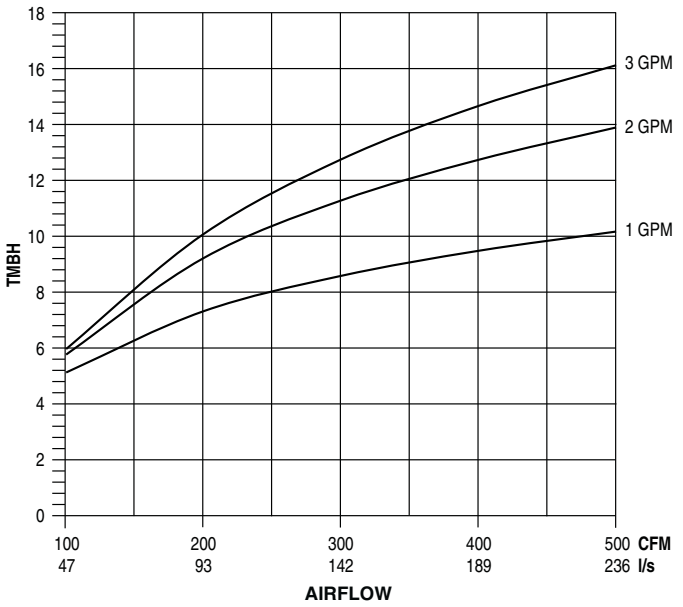
Model Series 37FH • Chilled Water Coil Performance Data • Unit Size 5

Data Based on 80°F DB 67°F WB Entering Air & 45°F Entering Water

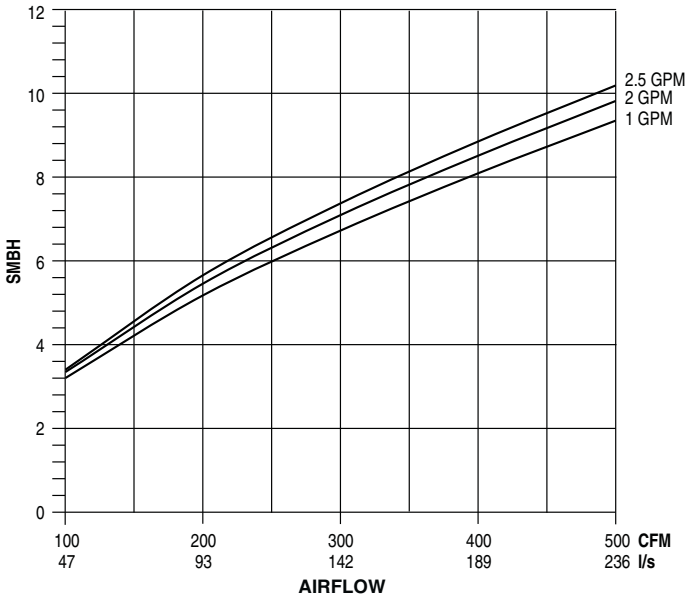
3 Row (Total MBH)



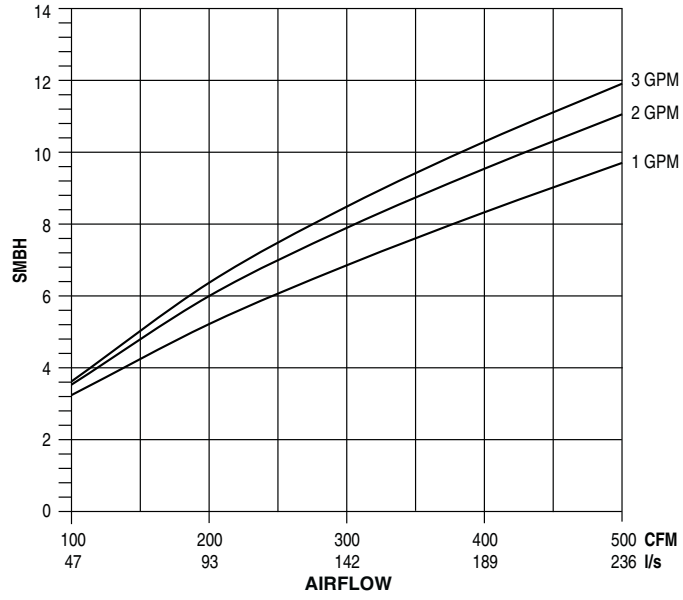
4 Row (Total MBH)



3 Row (Sensible MBH)



4 Row (Sensible MBH)



Altitude Correction Factors

Altitude (ft.)	0	1000	2000	3000	4000	5000	6000	7000
Air Density (lb./cu.ft)	0.075	0.072	0.070	0.067	0.065	0.063	0.060	0.058
Total Capacity	1000	0.988	0.986	0.983	0.981	0.979	0.977	0.975
Sensible Capacity	1000	0.960	0.930	0.900	0.860	0.830	0.800	0.770
Static Pressure	1000	0.960	0.930	0.900	0.860	0.830	0.800	0.770

NOTES:

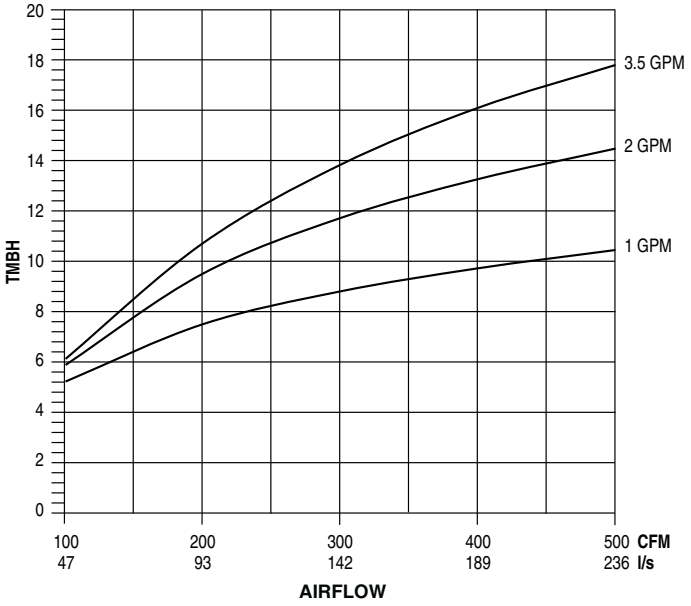
Capacity and static pressure will be affected for applications above sea level. To apply correction factors, multiply the coil capacity or fan curve data by the tabulated correction factor.

Connections: 3 and 4 Row 7/8" (22.2) O.D. male solder.

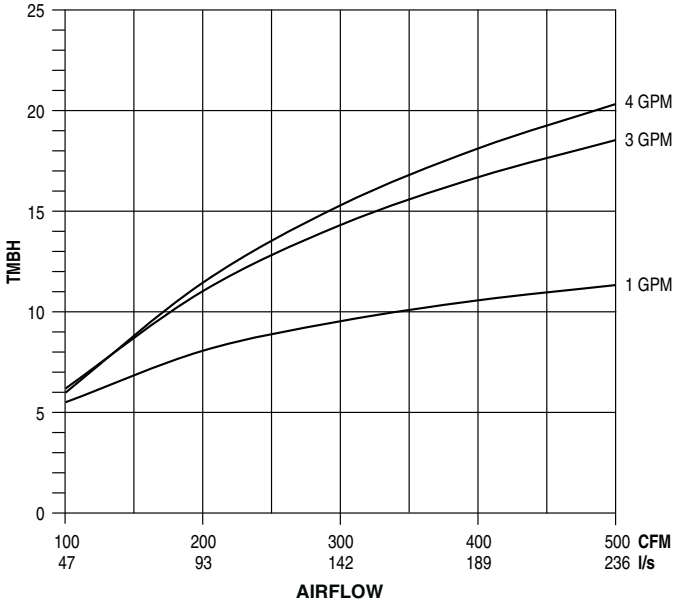
Model Series 37FH • Chilled Water Coil Performance Data • Unit Size 5

Data Based on 80°F DB 67°F WB Entering Air & 45°F Entering Water

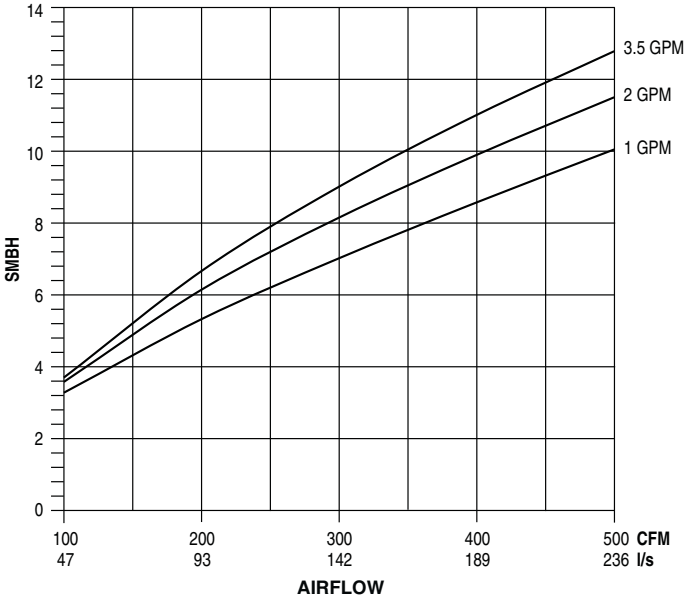
5 Row (Total MBH)



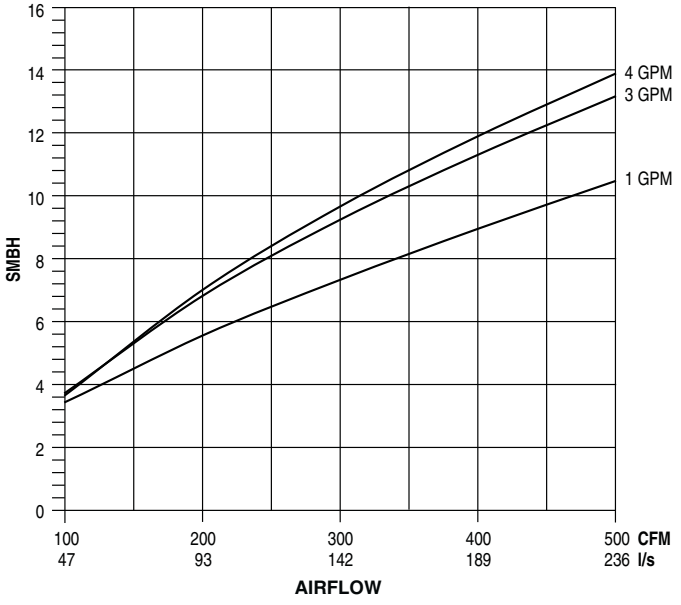
6 Row (Total MBH)



5 Row (Sensible MBH)



6 Row (Sensible MBH)



Altitude Correction Factors

Altitude (ft.)	0	1000	2000	3000	4000	5000	6000	7000
Air Density (lb./cu. ft)	0.075	0.072	0.070	0.067	0.065	0.063	0.060	0.058
Total Capacity	1000	0.988	0.986	0.983	0.981	0.979	0.977	0.975
Sensible Capacity	1000	0.960	0.930	0.900	0.860	0.830	0.800	0.770
Static Pressure	1000	0.960	0.930	0.900	0.860	0.830	0.800	0.770

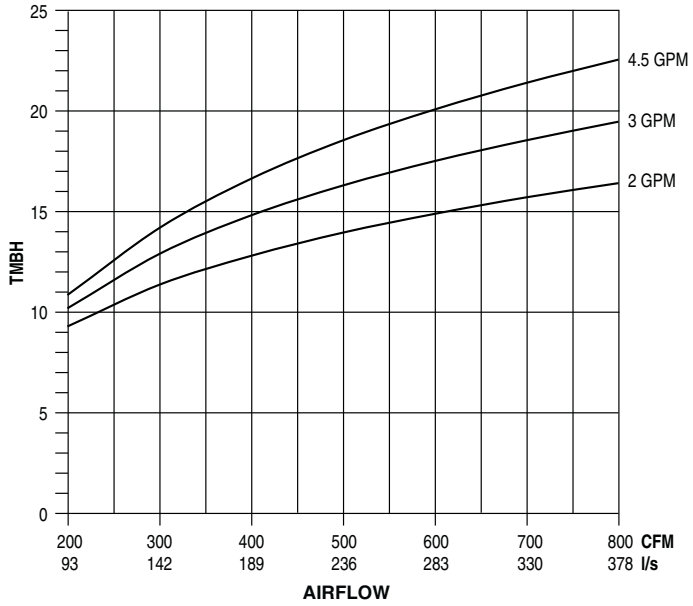
NOTES:

1. Capacity and static pressure will be affected for applications above sea level. To apply correction factors, multiply the coil capacity or fan curve data by the tabulated correction factor.
2. Connections: 3 and 4 Row 7/8" (22.2) O.D. male solder.

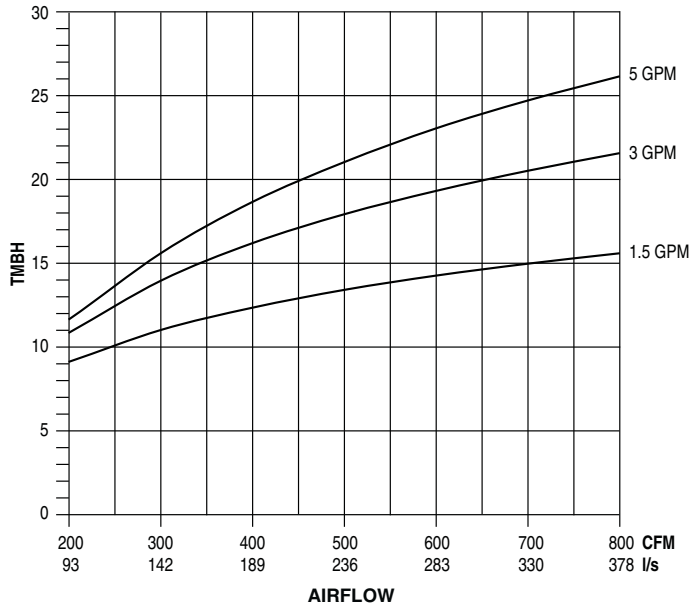
Model Series 37FH • Chilled Water Coil Performance Data • Unit Size 8

Data Based on 80°F DB 67°F WB Entering Air & 45°F Entering Water

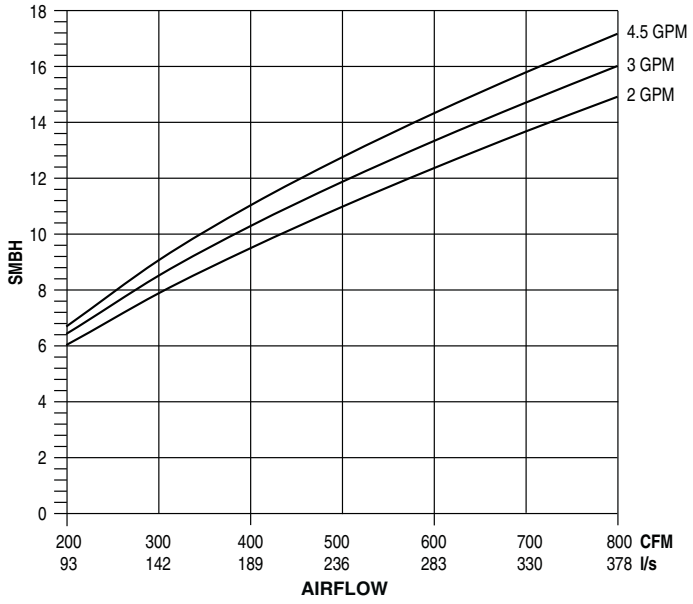
3 Row (Total MBH)



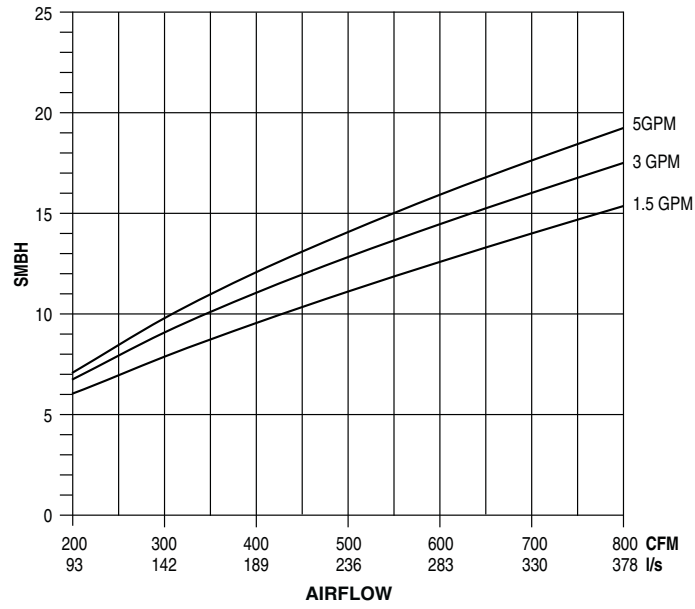
4 Row (Total MBH)



3 Row (Sensible MBH)



4 Row (Sensible MBH)



Altitude Correction Factors

Altitude (ft.)	0	1000	2000	3000	4000	5000	6000	7000
Air Density (lb./cu. ft)	0.075	0.072	0.070	0.067	0.065	0.063	0.060	0.058
Total Capacity	1000	0.988	0.986	0.983	0.981	0.979	0.977	0.975
Sensible Capacity	1000	0.960	0.930	0.900	0.860	0.830	0.800	0.770
Static Pressure	1000	0.960	0.930	0.900	0.860	0.830	0.800	0.770

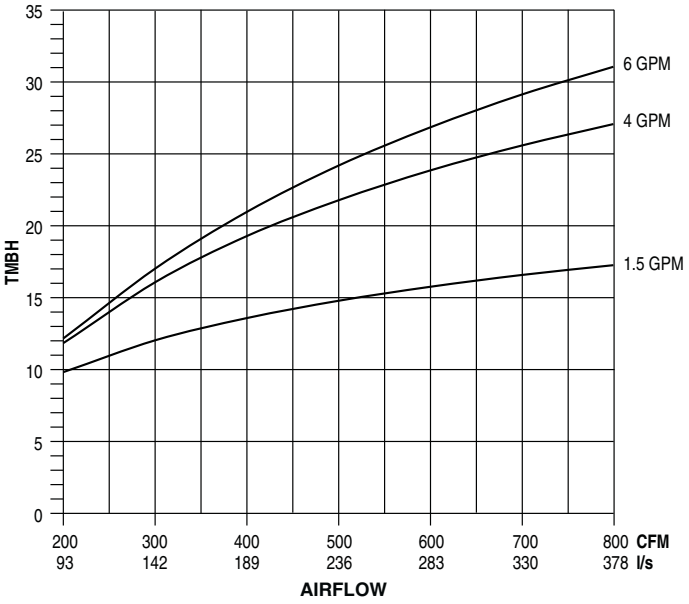
NOTES:

1. Capacity and static pressure will be affected for applications above sea level. To apply correction factors, multiply the coil capacity or fan curve data by the tabulated correction factor.
2. Connections: 3 and 4 Row 7/8" (22.2) O.D. male solder.

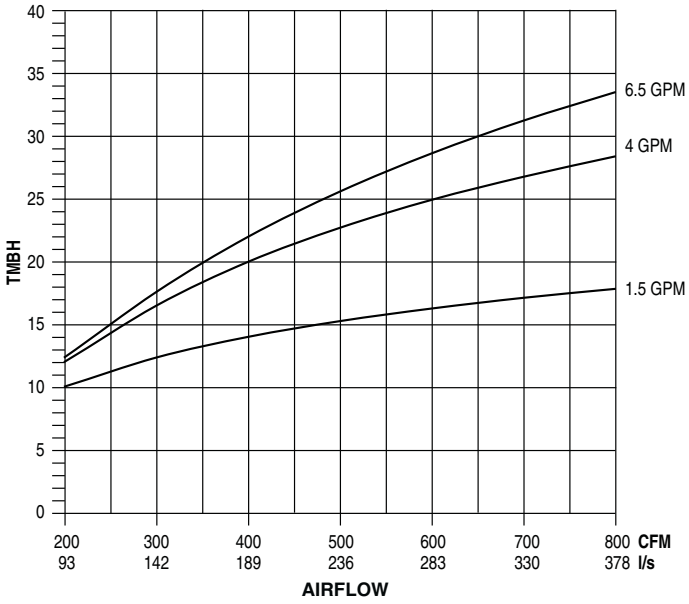
Model Series 37FH • Chilled Water Coil Performance Data • Unit Size 8

Data Based on 80°F DB 67°F WB Entering Air & 45°F Entering Water

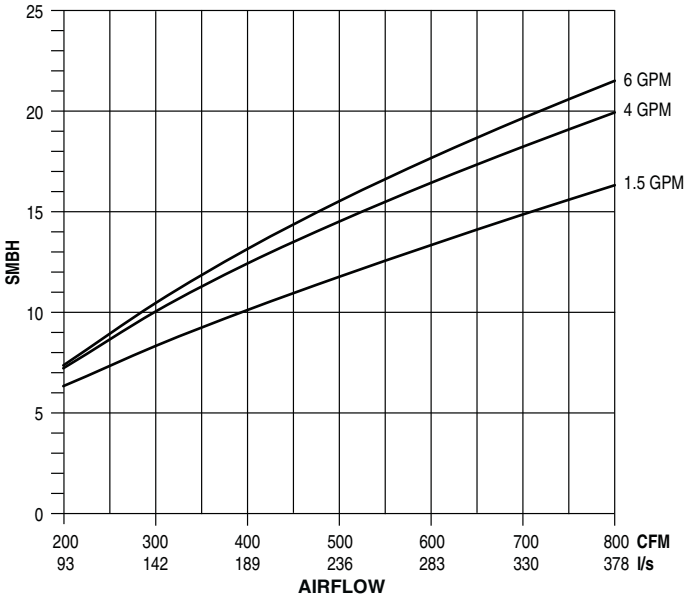
5 Row (Total MBH)



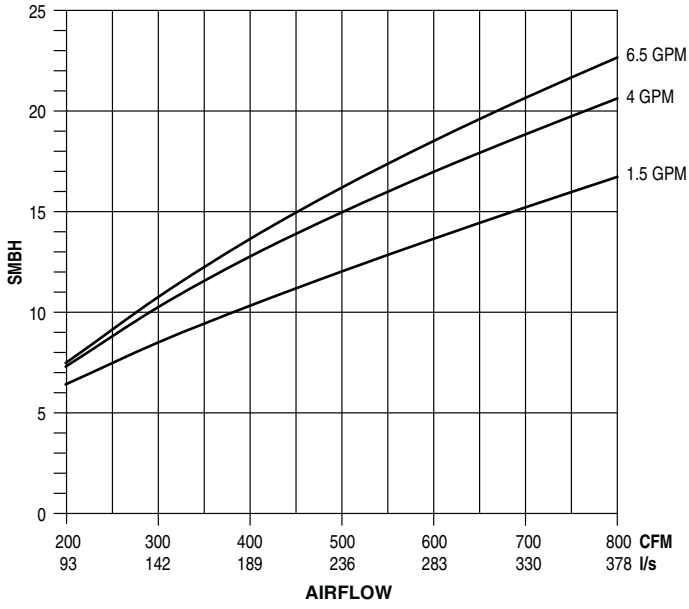
6 Row (Total MBH)



5 Row (Sensible MBH)



6 Row (Sensible MBH)



Altitude Correction Factors

Altitude (ft.)	0	1000	2000	3000	4000	5000	6000	7000
Air Density (lb./cu. ft)	0.075	0.072	0.070	0.067	0.065	0.063	0.060	0.058
Total Capacity	1000	0.988	0.986	0.983	0.981	0.979	0.977	0.975
Sensible Capacity	1000	0.960	0.930	0.900	0.860	0.830	0.800	0.770
Static Pressure	1000	0.960	0.930	0.900	0.860	0.830	0.800	0.770

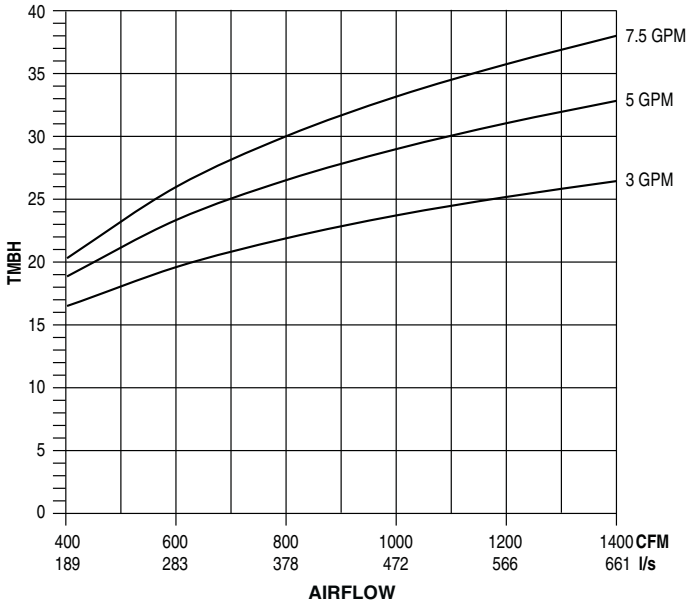
NOTES:

1. Capacity and static pressure will be affected for applications above sea level. To apply correction factors, multiply the coil capacity or fan curve data by the tabulated correction factor.
2. Connections: 5 and 6 Row 7/8" (22.2) O.D. male solder.

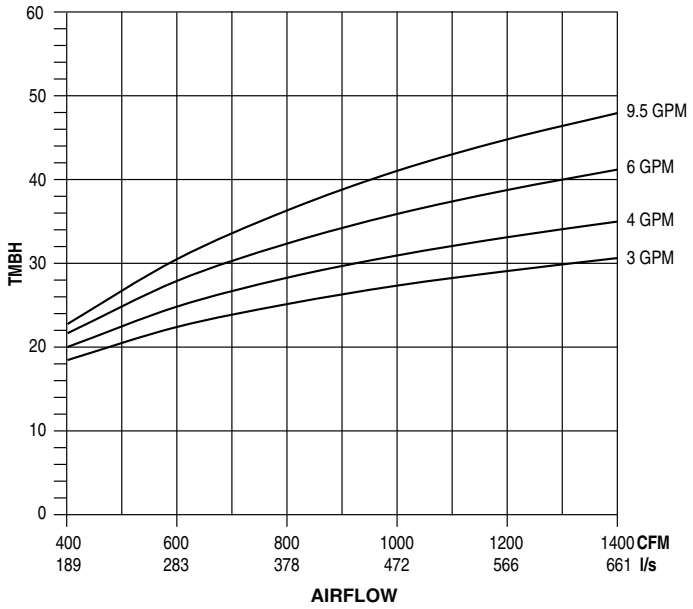
Model Series 37FH • Chilled Water Coil Performance Data • Unit Size 12

Data Based on 80°F DB 67°F WB Entering Air & 45°F Entering Water

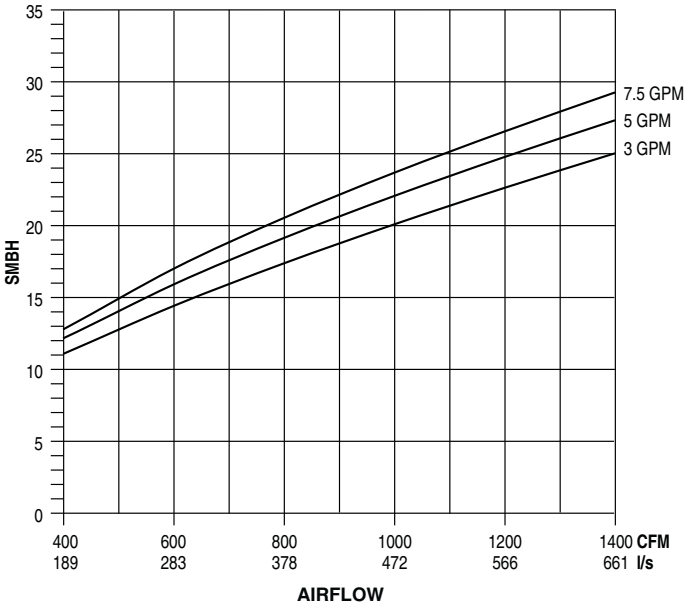
3 Row (Total MBH)



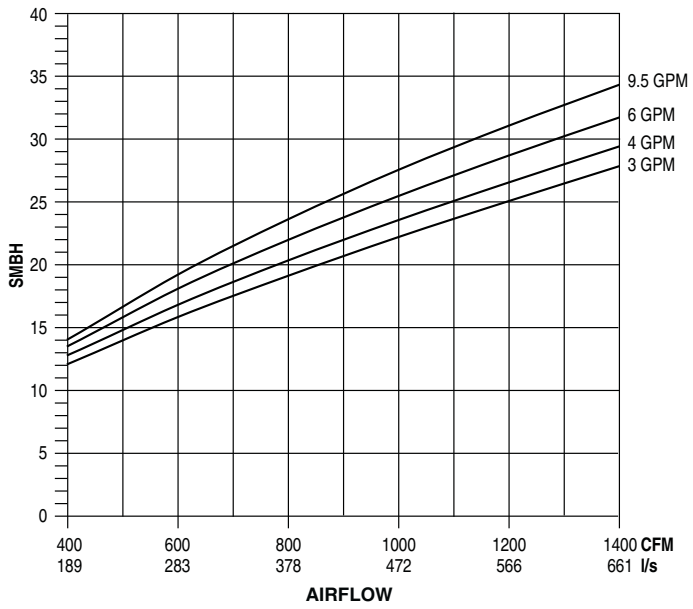
4 Row (Total MBH)



3 Row (Sensible MBH)



4 Row (Sensible MBH)



Altitude Correction Factors

Altitude (ft.)	0	1000	2000	3000	4000	5000	6000	7000
Air Density (lb./cu. ft)	0.075	0.072	0.070	0.067	0.065	0.063	0.060	0.058
Total Capacity	1000	0.988	0.986	0.983	0.981	0.979	0.977	0.975
Sensible Capacity	1000	0.960	0.930	0.900	0.860	0.830	0.800	0.770
Static Pressure	1000	0.960	0.930	0.900	0.860	0.830	0.800	0.770

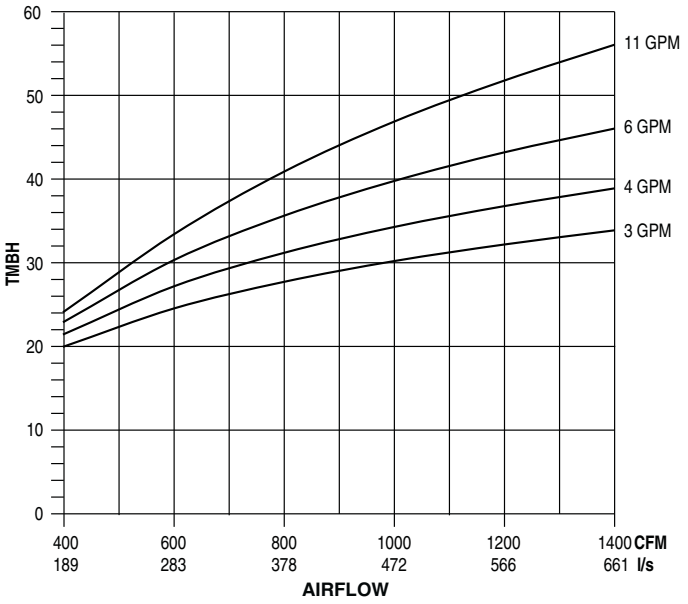
NOTES:

1. Capacity and static pressure will be affected for applications above sea level. To apply correction factors, multiply the coil capacity or fan curve data by the tabulated correction factor.
2. Connections: 3 and 4 Row 7/8" (22.2) O.D. male solder.

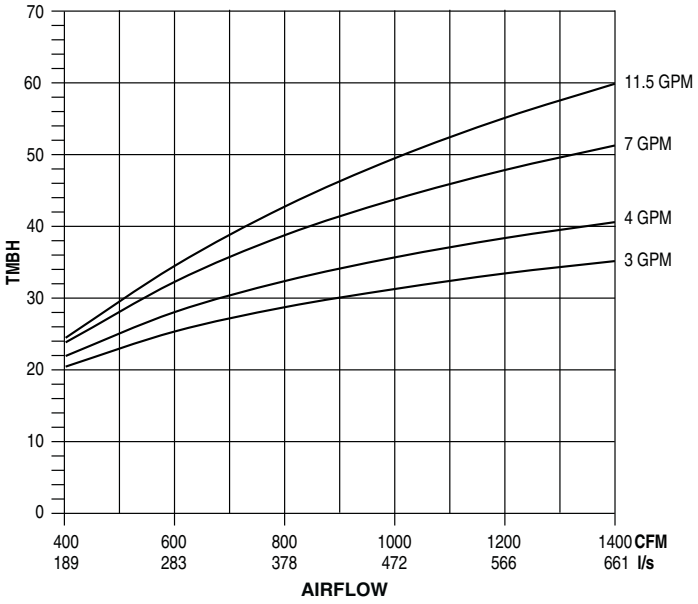
Model Series 37FH • Chilled Water Coil Performance Data • Unit Size 12

Data Based on 80°F DB 67°F WB Entering Air & 45°F Entering Water

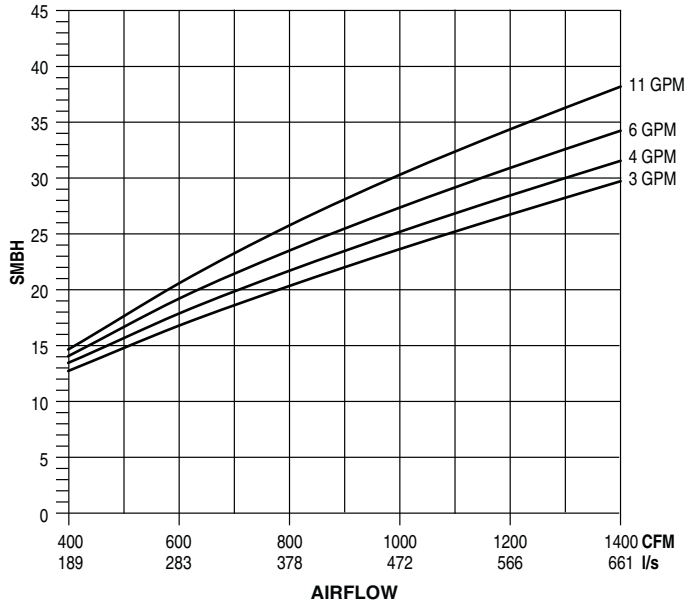
5 Row (Total MBH)



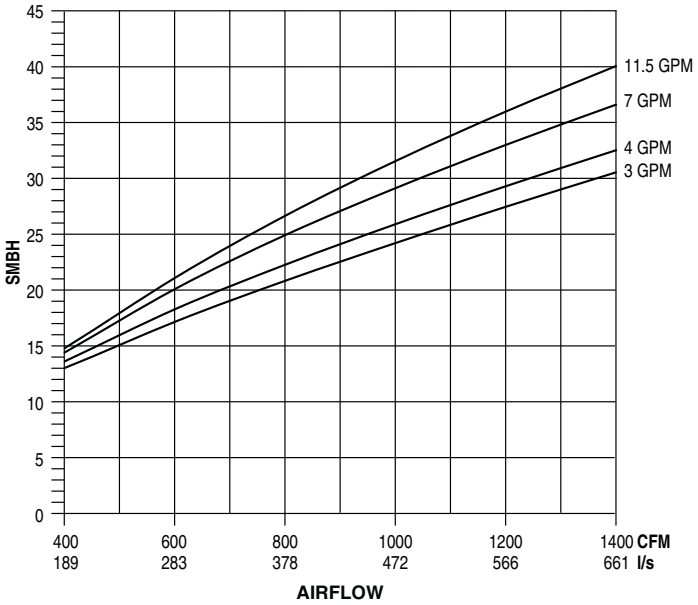
6 Row (Total MBH)



5 Row (Sensible MBH)



6 Row (Sensible MBH)



Altitude Correction Factors

Altitude (ft.)	0	1000	2000	3000	4000	5000	6000	7000
Air Density (lb./cu. ft)	0.075	0.072	0.070	0.067	0.065	0.063	0.060	0.058
Total Capacity	1000	0.988	0.986	0.983	0.981	0.979	0.977	0.975
Sensible Capacity	1000	0.960	0.930	0.900	0.860	0.830	0.800	0.770
Static Pressure	1000	0.960	0.930	0.900	0.860	0.830	0.800	0.770

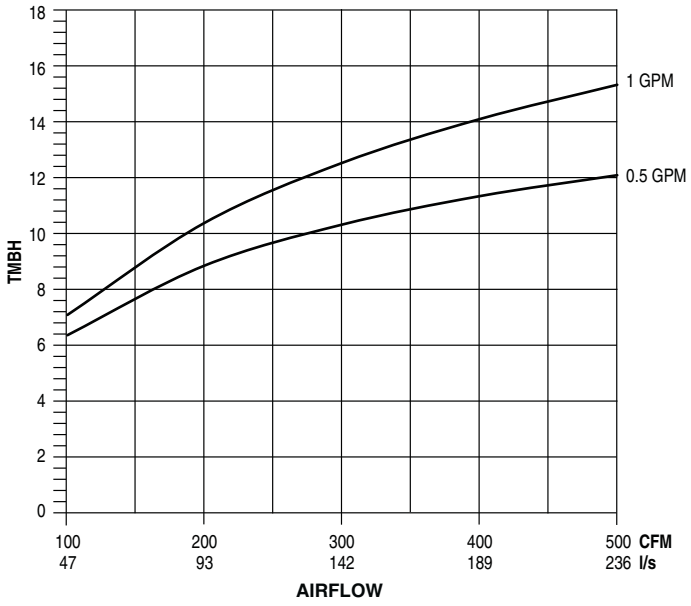
NOTES:

1. Capacity and static pressure will be affected for applications above sea level. To apply correction factors, multiply the coil capacity or fan curve data by the tabulated correction factor.
2. Connections: 5 and 6 Row 7/8" (22.2) O.D. male solder.

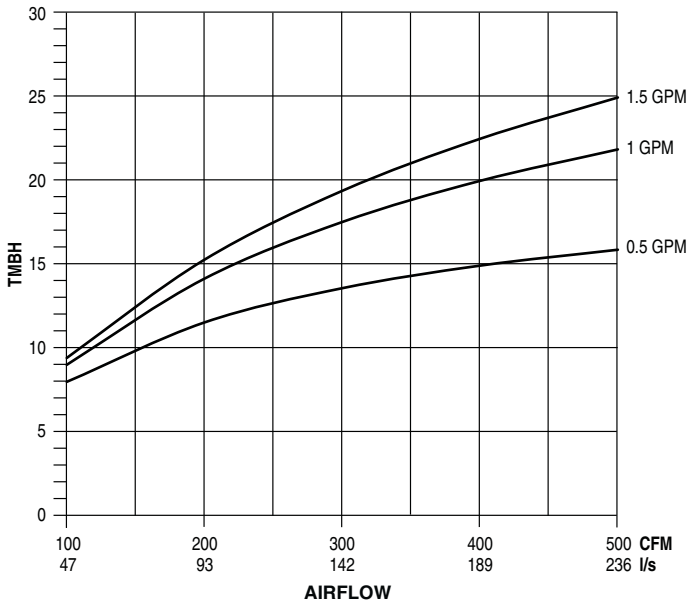
Model Series 37FH • Hot Water Coil Performance Data • Unit Size 5

Data Based on 70°F DB Entering Air & 180°F Entering Water

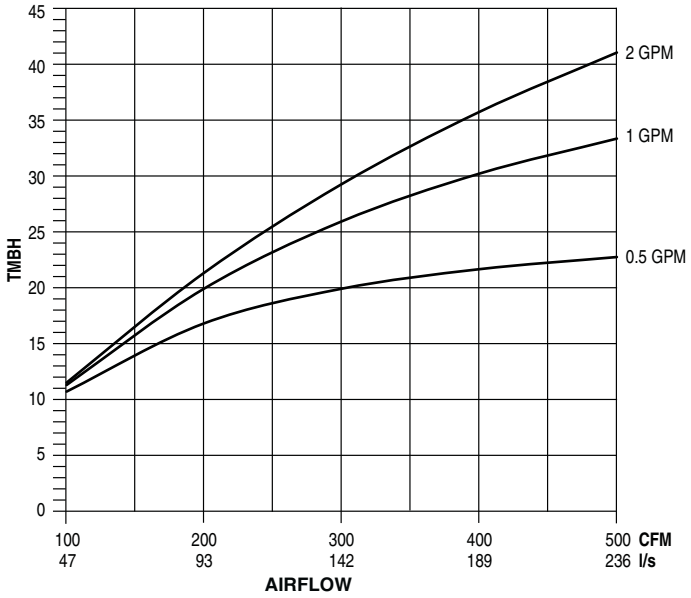
1 Row (Total MBH)



2 Row (Total MBH)



3 Row (Total MBH)



NOTES:

1. Capacities are in MBH (kW), ***thousands of Btu per hour (kiloWatts)***.
2. MBH (kW) values are based on a Δt (temperature difference) of 110°F (61°C) between entering air and entering water. For other Δt's; multiply the MBH (kW) values by the factors below.
3. Air Temperature Rise.
   ATR (°F) = 927 x $\frac{MBH}{CFM}$, ATR (°C) = 829 x $\frac{kW}{l/s}$
4. Water Temp. Drop.
   WTD (°F) = 2.04 x $\frac{MBH}{GPM}$, WTD (°C) = .224 x $\frac{kW}{l/s}$
5. Connections: Size 1, one and two row and size 3 one row 1/2" (12.7); Size 3 two row 7/8" (22.2) O.D. male solder.

Altitude Correction Factors:

Altitude ft. (m)	Sensible Heat Factor
0 (0)	1.00
2000 (610)	0.94
3000 (914)	0.90
4000 (1219)	0.87
5000 (1524)	0.84
6000 (1829)	0.81
7000 (2134)	0.78

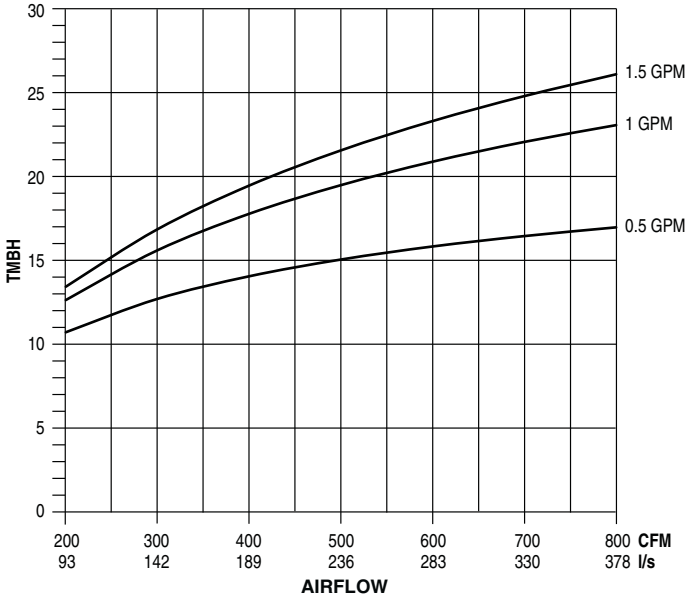
Correction factors at other entering conditions:

Δt °F (°C)	50 (28)	60 (33)	70 (39)	80 (44)	90 (50)	100 (56)	110 (61)	120 (67)	130 (72)	140 (78)	150 (83)
Factor	.455 (.459)	.545 (.541)	.636 (.639)	.727 (.721)	.818 (.820)	.909 (.918)	1.00 (1.00)	1.09 (1.10)	1.18 (1.18)	1.27 (1.28)	1.36 (1.36)

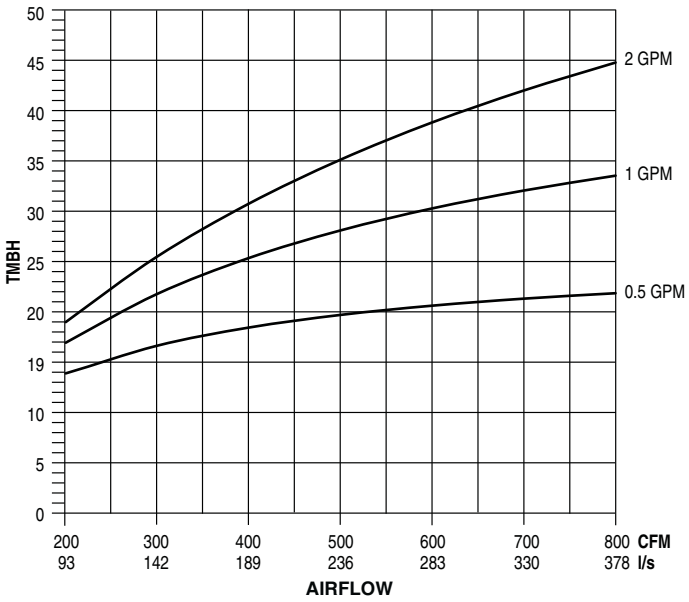
Model Series 37FH • Hot Water Coil Performance Data • Unit Size 8

Data Based on 70°F DB Entering Air & 180°F Entering Water

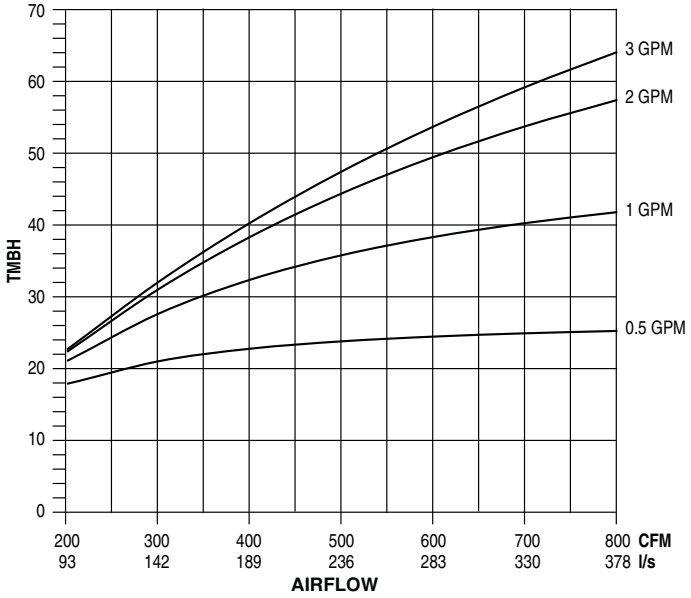
1 Row (Total MBH)



2 Row (Total MBH)



3 Row (Total MBH)



NOTES:

1. Capacities are in MBH (kW), ***thousands of Btu per hour (kiloWatts)***.
2. MBH (kW) values are based on a Δt (temperature difference) of 110°F (61°C) between entering air and entering water. For other Δt's; multiply the MBH (kW) values by the factors below.
3. Air Temperature Rise.
   ATR (°F) = 927 x $\frac{\text{MBH}}{\text{CFM}}$, ATR (°C) = 829 x $\frac{\text{kW}}{\text{l/s}}$
4. Water Temp. Drop.
   WTD (°F) = 2.04 x $\frac{\text{MBH}}{\text{GPM}}$, WTD (°C) = .224 x $\frac{\text{kW}}{\text{l/s}}$
5. Connections: Size 1, one and two row and size 3 one row 1/2" (12.7); Size 3 two row 7/8" (22.2) O.D. male solder.

Altitude Correction Factors:

Altitude ft. (m)	Sensible Heat Factor
0 (0)	1.00
2000 (610)	0.94
3000 (914)	0.90
4000 (1219)	0.87
5000 (1524)	0.84
6000 (1829)	0.81
7000 (2134)	0.78

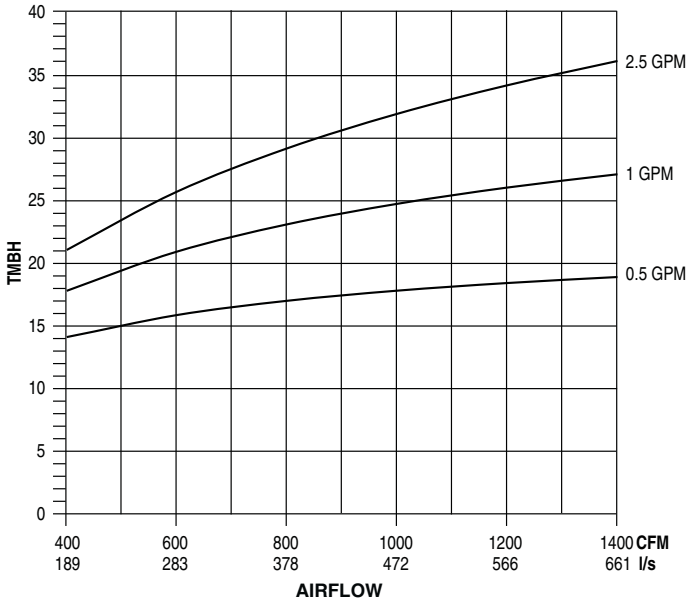
Correction factors at other entering conditions:

Δt °F (°C)	50 (28)	60 (33)	70 (39)	80 (44)	90 (50)	100 (56)	110 (61)	120 (67)	130 (72)	140 (78)	150 (83)
Factor	.455 (.459)	.545 (.541)	.636 (.639)	.727 (.721)	.818 (.820)	.909 (.918)	1.00 (1.00)	1.09 (1.10)	1.18 (1.18)	1.27 (1.28)	1.36 (1.36)

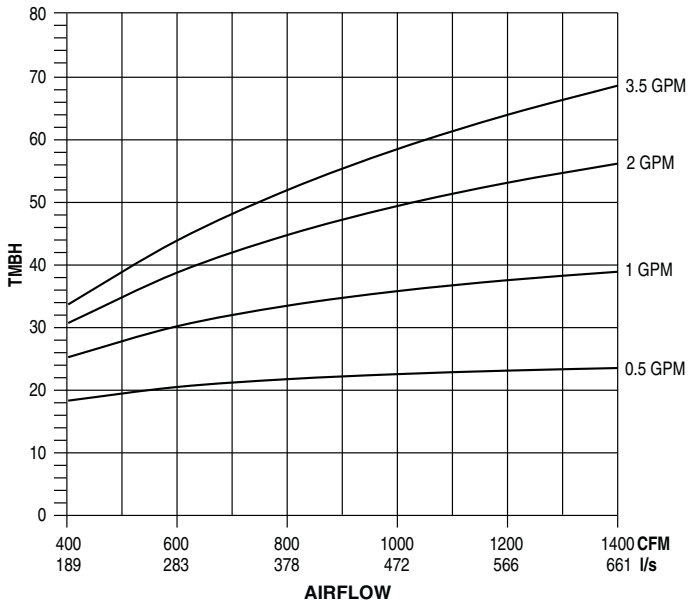
Model Series 37FH • Hot Water Coil Performance Data • Unit Size 12

Data Based on 70°F DB Entering Air & 180°F Entering Water

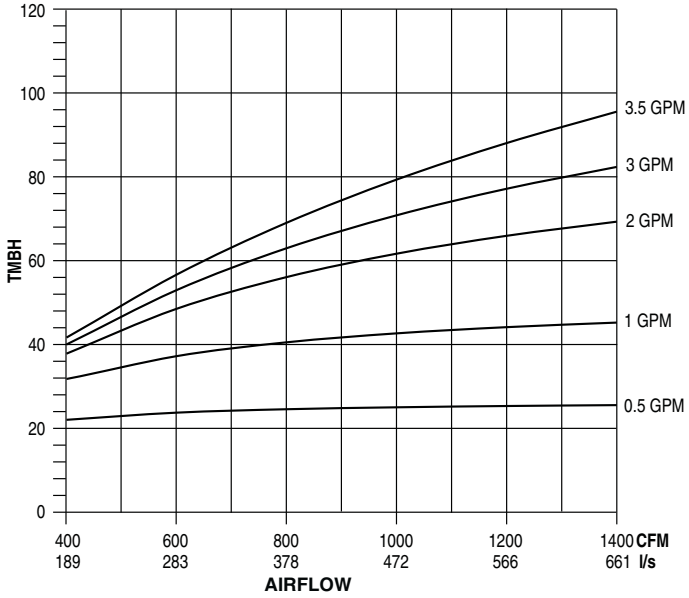
1 Row (Total MBH)



2 Row (Total MBH)



3 Row (Total MBH)



NOTES:

1. Capacities are in MBH (kW), ***thousands of Btu per hour (kiloWatts)***.
2. MBH (kW) values are based on a Δt (temperature difference) of 110°F (61°C) between entering air and entering water. For other Δt's; multiply the MBH (kW) values by the factors below.
3. Air Temperature Rise.
   ATR (°F) = 927 x $\frac{MBH}{CFM}$, ATR (°C) = 829 x $\frac{kW}{l/s}$
4. Water Temp. Drop.
   WTD (°F) = 2.04 x $\frac{MBH}{GPM}$, WTD (°C) = .224 x $\frac{kW}{l/s}$
5. Connections: Size 1, one and two row and size 3 one row 1/2" (12.7); Size 3 two row 7/8" (22.2) O.D. male solder.

Altitude Correction Factors:

Altitude ft. (m)	Sensible Heat Factor
0 (0)	1.00
2000 (610)	0.94
3000 (914)	0.90
4000 (1219)	0.87
5000 (1524)	0.84
6000 (1829)	0.81
7000 (2134)	0.78

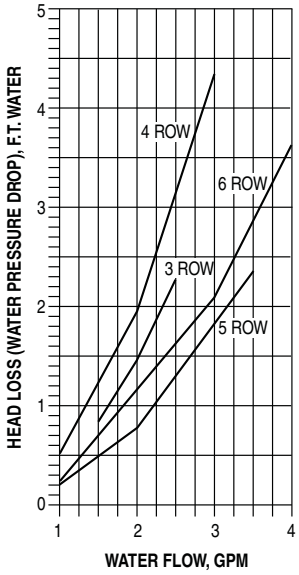
Correction factors at other entering conditions:

Δt °F (°C)	50 (28)	60 (33)	70 (39)	80 (44)	90 (50)	100 (56)	110 (61)	120 (67)	130 (72)	140 (78)	150 (83)
Factor	.455 (.459)	.545 (.541)	.636 (.639)	.727 (.721)	.818 (.820)	.909 (.918)	1.00 (1.00)	1.09 (1.10)	1.18 (1.18)	1.27 (1.28)	1.36 (1.36)

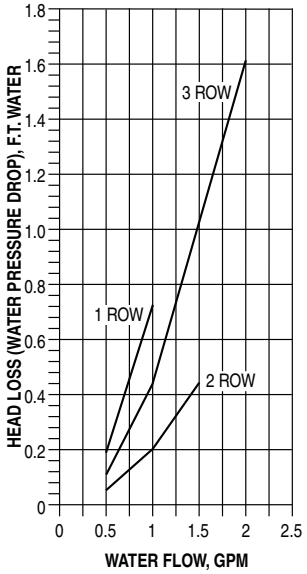
Model Series 37FH • Coil Performance Data • Pressure Drop

Unit Size 5

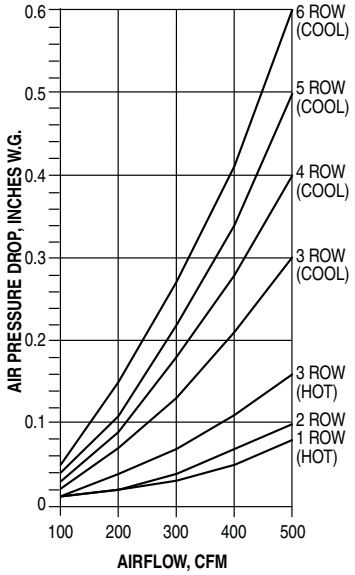
Chilled Water Pressure Drop



Hot Water Pressure Drop

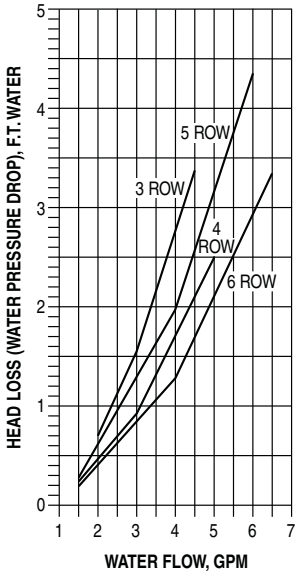


Chilled and Hot Water Air Pressure Drop

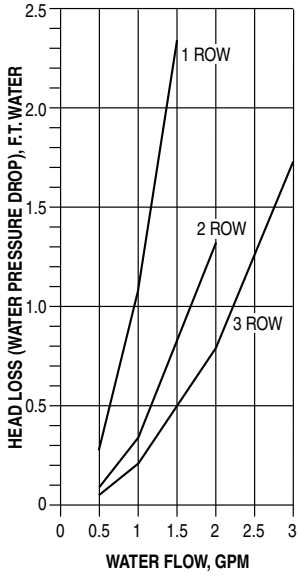


Unit Size 8

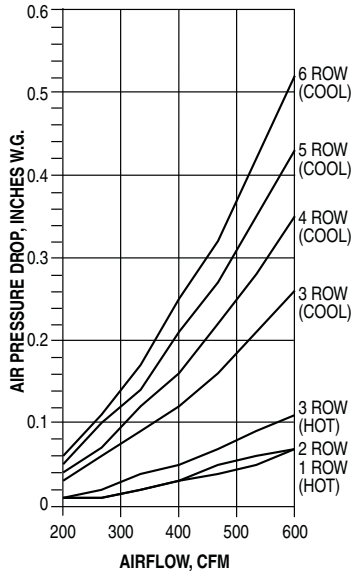
Chilled Water Pressure Drop



Hot Water Pressure Drop



Chilled and Hot Water Air Pressure Drop



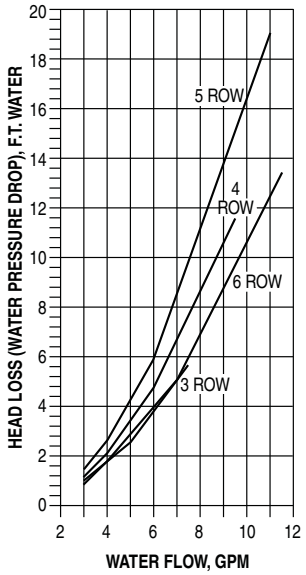
Metric Conversion Factors:

1. Water Flow (liters per second)
   l/s = gpm x 0.6309
2. Water Head Loss (kilopascals):
   kPa = ft. w.g. x 2.9837
3. Airflow Volume (liters per second)
   l/s = CFM x 0.472
4. Air Pressure Drop (Pascals):
   Pa = in. w.g. x 248.6
5. Heat (kilowatts):
   kW = Mbh x 0.293
6. Air Temperature Rise.
   $ATR = 927 \times \frac{Mbh}{CFM}$
7. Water Temp. Drop.
   $WTD = 2.04 \times \frac{Mbh}{GPM}$

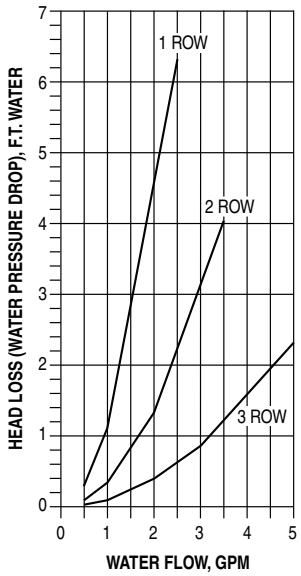
Model Series 37FH • Coil Performance Data • Pressure Drop

Unit Size 12

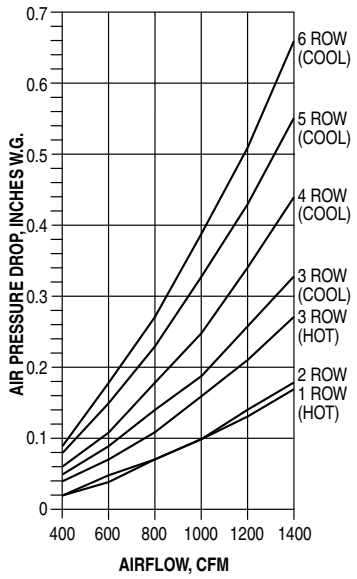
Chilled Water Pressure Drop



Hot Water Pressure Drop



Chilled and Hot Water Air Pressure Drop



Metric Conversion Factors:

1. Water Flow (liters per second)
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6. Air Temperature Rise.
   $ATR = 927 \times \frac{Mbh}{CFM}$
7. Water Temp. Drop.
   $WTD = 2.04 \times \frac{Mbh}{GPM}$

Model Series 37FH • Suggested Specifications

1. General

   Furnish and install Engineered Comfort Model 37FH Series High Performance Horizontal Fan Coil Units where indicated on the plans and in the specifications.

2. Construction
   a. All units shall be Direct Drive – Draw Through configuration and completely factory assembled, tested and shipped as one piece. All units shall be capable of meeting or exceeding the scheduled capacities for cooling, heating and air delivery. All unit dimensions, for each model and size, shall be considered maximums. Units shall be UL or ETL, listed in compliance with UL 1995, and be certified as complying with the latest edition of AHRI Standard 440. Must meet the requirements of NFPA 90A and UL 181.
   b. All unit chassis shall be fabricated of heavy gauge galvanized steel panels able to meet 125-hour salt spray test per ASTM B-117. All panels surrounding the coil shall be insulated with 3/4" (19) thick closed cell fiber-free liner and rated for air velocity of 6000 f.p.m. Insulation must meet all requirements of ASTM C1071 (including C665), UL 181 for erosion, and carry a 25/50 rating for flame spread/smoke developed per ASTM E-84, UL 723 and NFPA 90A. All other panels, surrounding the units, must also be acoustically and thermally insulated with a minimum of 3/4" (19) insulation with dual density insulation fiber glass insulation where all exposed edges are coated to prevent air erosion.
   c. Unit cabinet shall have side and bottom full size access panels for ease of maintenance and service and motor blower removal. Access panels shall be attached to casing with screws.

   Optional

   - Aluminum foil-faced insulation (steri-liner), meets ASTM Standards C-665 and C-1136 for biological growth in insulation. All exposed edges shall be sealed to prevent any fibers from reaching the air stream.
   - Close cell fiber-free liner. Insulation shall conform to UL 181 for erosion and NFPA 90A for fire, smoke and melting, and comply with a 25/50 Flame Spread and Smoke Developed Index per ASTM E-84 or UL 723. Additionally, insulation shall comply with Antimicrobial Performance Rating of 0, no observed growth, per ASTM G-21.
   - Perforated metal with steri-liner.

4. Casing leakage shall not exceed 2% of rated airflow @ .5" w.g. (125 Pa).
5. Unit shall be draw through type with fan dynamically balanced, forwardly curved; DWDI centrifugal type constructed of 18-gauge zinc coated galvanized steel for corrosion resistance. The fan assembly shall be easily removable for servicing the motor and blower at, or away from the unit. The entire fan assembly shall be able to come out of the unit by removing four nuts per fan and disconnecting the motor(s) wires.
6. Motor shall be direct drive, isolated from blower and fan housing in at least four (4) locations with rubber isolators to eliminate any motor vibration being transmitted to the fan housing and duct. Motor shall be capable to be serviced through the bottom or side panel. Provide isolation between fan motor assembly and unit casing in at least four (4) locations to eliminate any vibration from the fan to the terminal unit casing. Motors shall be high efficiency, permanently lubricated sleeve bearing. Single speed motors are not acceptable. Motor wires shall be brought into external hinged door control enclosure to facilitate wiring and service. Motors shall be EPIC ECM™, Electronic Commutated Motors with UL and CSA listed automatic reset thermal overload protection and factory-programmed and run-tested in assembled units with fully variable speed capability.

   The motor designed for use with single phase power shall have a controller mounted in a control box with a built-in integrated user interface. If adjustments are needed, motor parameters can be adjusted without factory service personnel at the motor control board. Motors shall soft-ramp to programmed specific to minimize the acoustics due to sudden speed changes. Motors can be operated at the established range of airflows with a factory or field-supplied variable speed controller. All motors have integral thermal overload protection with a maximum ambient operating temperature of 104°F (40°C). Motors are capable of starting at 50 percent of rated voltage and operating at 90 percent of rated voltage on all speed settings. Motors can operate up to 10 percent over voltage.
7. Sound

   Units shall have discharge and radiated sound power levels published and tested in accordance with AHRI Standard 880.
8. Coils
   a. All water coils shall be AHRI 410 certified and tagged with an AHRI 410 label. All coils shall be pressure tested under water at 1.5 times the working pressure classification indicated in the Contract Documents, but the test pressure in no case shall be less than 300 psig. Coils shall have 1/2" O.D. seamless copper tubes, and collared and corrugated aluminum fins. Tube wall thickness of 0.016 to be standard. Coil frames shall be constructed of minimum G-90 galvanized steel. Water velocity in the tubes shall not exceed eight (8) feet per second and the coil face velocity shall not exceed 500 fpm (2.5 m/s).
   b. For 4-pipe system a separate heating coils shall be furnished in the reheat position as standard.
   c. Coils, header and drain pan shall be provided in a fully insulated integral casing with 3/4"(19) fiber-free/foam insulation to increase thermal efficiency and reduce casing leakage.

   Optional

   - For 4-pipe system a separate heating coils shall be furnished in the preheat position as standard.
   - Coil tube wall thickness of 0.025" (0.635).
   - All coils with piping packages shall be provided with a manual air vent fitting to reduce potential air locks within coil.
   - All coils shall be provided with an auto air vent fitting to allow for coil venting.

9. Drain Pans
   a. Primary condensate drain pans shall be heavy gauge galvanized steel, and extend under the entire cooling coil. Drain pans shall be of one-piece construction, have at least 1" (25) height side and be positively sloped for condensate removal.
   b. The drain pan shall be externally insulated with minimum 3/8" (10) thick fire retardant, closed cell foam insulation. The insulation shall carry no more than a 25/50 Flame Spread and Smoke Developed Rating per ASTM E-84 and UL 723 and an Antimicrobial Performance Rating of "0", no observed growth, per ASTM G-21.

   Optional

   - Provide a primary drain pan constructed entirely of heavy gauge stainless steel for superior corrosion resistance. Stainless steel drain pans shall be externally insulated and meet or exceed the requirements stated above.
   - Provide a secondary drain connection on the primary drain pan for condensate overflow.
   - Provide a condensate overflow switch in the primary drain pan for condensate overflow.

10. Standard units can be ordered without filters.

    Optional Filter

    - Unit to be furnished with a minimum 1" (25) nominal glass fiber throwaway filter. Filters shall be tight fitting to prevent air bypass.
    - Provide unit with 2" (52) pleated filters rated at 25-30% efficiency and MERV 8 or 13 based on ASHRAE 52.2
    - Unit shall be furnished with the FFR Ducted Filter Rack to facilitate the installation of inlet duct. FFR Filter Rack shall have hinged door flap with latch on the side and bottom to facilitate filter replacement.
    -

Model Series 37FH • Suggested Specifications (continued)

11. Electrical

Units shall be furnished with a hinged door control enclosure and wired single point power connection. All power and control wiring shall conform to National Electric Code Standards. Within the control enclosure it shall include all required devices, including but not limited to, service switch, relay, control power transformers and control packages, low voltage remote shutdown relays, etc.

12. Electric heat

a. Furnish an electric resistance heating assembly as an integral part of the fan coil unit, with the heating capacity, voltage and kilowatts scheduled. The heater assembly shall be designed and rated for installation on the fan coil unit and be located in the unit as to not expose the fan assembly to excessive leaving air temperatures that could affect motor performance.

b. The heater and unit assembly shall be listed for zero clearance and meet all NEC requirements, and be ETL listed with the unit as an assembly in compliance with UL 1995. A NEMA 1 enclosure with hinges shall be placed at the side of the fan coil to provide easy access. All motor wiring and heater terminates in the enclosure for single point electrical connection.

c. All heating elements shall be open coil high grade Class A 80/20 nickel/chrome element wire mounted in ceramic insulators and located in an insulated heavy gauge galvanized steel housing. All elements shall terminate in a machine staked stainless steel terminal secured with stainless steel hardware for corrosion resistance. The element support brackets shall be spaced no greater than 3-1/2" (89) on center. All internal wiring shall be rated for 221°F (105°C) minimum. All heaters shall include over temperature protection consisting of an automatic reset primary thermal limit. All heaters shall be single stage unless noted otherwise on the plans. All units with electric heat shall be provided with an incoming line power distribution block, designated to accept single point power wiring capable of carrying 125% of the calculated load current.

d. A Class 2 transformer shall be provided for low voltage control. All devices shall be serviceable through the hinged enclosure and without removing heating element from the unit.

Optional

- Heating coils shall be controlled with the SCR option and proportional control to provide infinite heater control.
- 2 Stage Electric Heat shall be provided.
- Toggle Disconnect.
- Door Interlocking disconnect switch.
- Quieter operation option available.
- Power circuit fusing.

Dust tight control enclosure.

- Manual reset secondary high limit.
- Positive pressure air flow switch.
- Electronic air proofing with EPIC ECM.

13. Piping – Valve Packages

As optional

- Provide a factory assembled and installed valve piping package in a fully insulated integral casing with 3/4" (19) fiber-free/foam insulation to increase thermal efficiency and reduce casing leakage. Valve package shall consist of a 2 or 3 way, on/off, motorized electric control valve and two ball isolation valves. Maximum entering water temperature on the control valve shall be 200°F (93.3°C) with a maximum operating pressure of 300 PSIG. Refer to Specification Section titled, "Pipes, Valves, Fittings and Accessories" for optional and accessories specifications.
- Provide modulating control valve (fail-in-place) in lieu of standard 2-position control valve with factory assembled valve piping package.
- Provide a fixed-auto flow control device for each piping package with the specific gpm specified for the unit on the schedule.
- Provide an adjustable flow control device for each piping package.
- Provide unions and/or pressure/temperature ports for each piping package.

14. Ultraviolet Light

As optional each unit shall be supplied with Ultraviolet Lights for disinfection for HVAC mold, bacteria & odor control. Fixture assembly to be installed at the coil discharge (downstream of the coil), between the coil and fan housing. Fixtureless lamps are to be installed in sufficient quantity and in such a manner so as to provide an equal distribution of UVC energy. The minimal UVC energy striking a surface shall be sufficient to continuously destroy a monolayer of mold and bacteria in less than six hours when at 55-135°F (12.7-57°C). Fixture shall be electrically terminated to within factory supplied ballast housings to meet NEC and local codes. Lamps shall be mounted to irradiate the intended surface(s) as well as all of the available line of sight airstream by proper placement and incident angle reflection.

To protect maintenance personnel, all access panels and doors to the UVC assembly and/or within view of the UVC assembly must include mechanical interlock switch(es) to insure that the UVC assembly will be de-energized when any of these accesses are opened. For complete safety, the UVGI equipment shall have been tested, Listed and labeled as an integral part of the fan coil unit by the fan coil manufacturer, no exceptions.

15. Controls

Controller and sensors provided by others but mounted and wired during unit assembly at the fan coil manufacturing facility.

NOTES: