



ThinLine™ 3G Vertical Unit Heaters

Catalog 723

Type FHVC, FHVH, FHVS, FHWC Vertical Design



Engineered for flexibility and performance™

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Features and Benefits

The ThinLine™ 3G Advantage

New ThinLine 3G vertical unit heaters combine the features most desired in a unit heater by building owners, specifying engineers and contractors alike. The result is a new, third generation unit heater design that meets the needs of all three.

For building owners

For building owners, ThinLine 3G unit heaters offer quiet operation. They fully comply with ASHRAE 62.1-2004 standards for high indoor air quality. And they offer a range of control options that can enhance occupant comfort and reduce operating costs. These units are also easy to maintain, with easy access to filters, fan motors and control systems.

For specifying engineers

For specifying engineers, ThinLine 3G unit heaters provide great versatility. Five different vertical models are available with multiple arrangements and configurations.

- Coil options include two, three, and four-row hot water coils. An electric heat option is also available for use when hot water is shut down for the season.
- Multiple control options range from a simple fan speed switch to a DDC interface board that can tie into most building automation systems. Non-communicating or communicating control options for LonTalk and BacNet will be available soon. Contact your McQuay representative for details.
- Grille options include multi-directional outlet grilles which can be rotated for discharge in four different directions. Stamped inlet and outlet grilles are available. Slope-top and inverted vertical cabinet units are also available.
- Appearance options including four cabinet colors, three grille colors, painted recess flanges, aluminum wall boxes and painted Decorative Wall Plate panels. Rear cabinet extensions are available in 4 and 8-inch depths. An 8-inch (20 cm) extended end pocket is available on the piping end of cabinet style units. Key-operated, locking access doors are available to prevent nuisance tampering with units and/or controls. Leveling feet are also available.

Figure 2: Unit Features

Multiple Control Options

- From 3-speed switch to DDC interface board
- Remote or unit-mounted
- 3-speed or staged fan

Multiple Coil Options

- 2, 3 or 4-row main coil
- Electric heat option

Multiple Configurations

- Flat top
- Slope top
- Hideaway
- Wall mounted
- Inverted

Multiple Grille Options

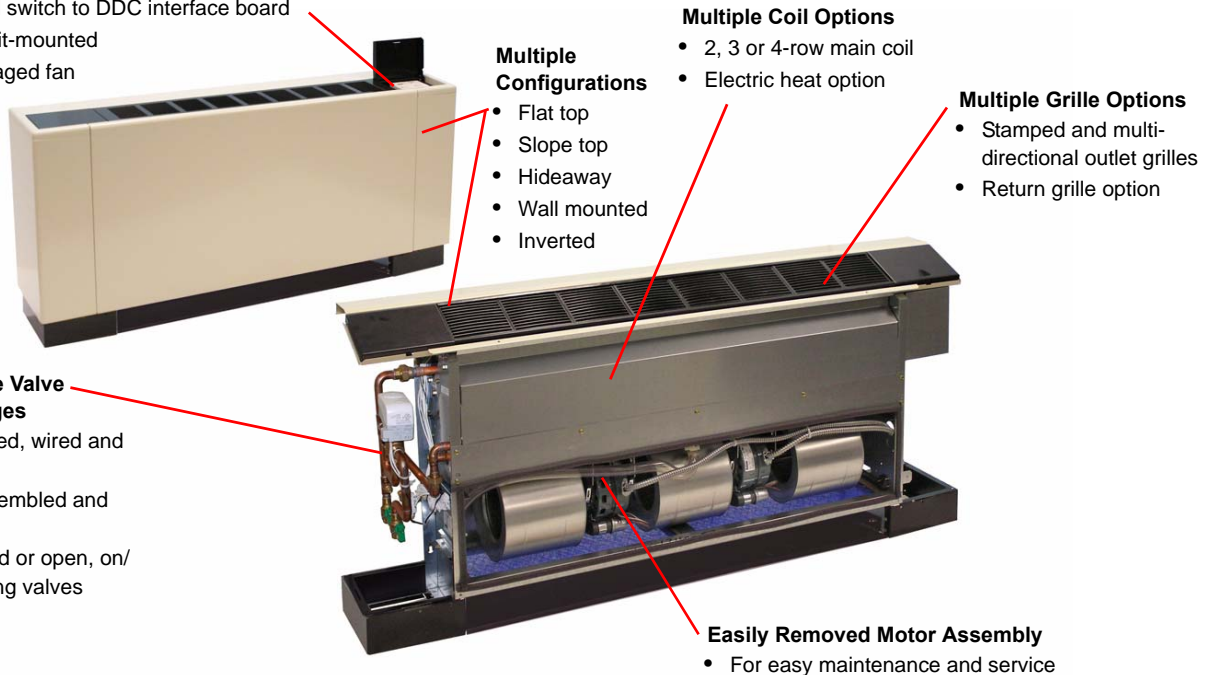
- Stamped and multi-directional outlet grilles
- Return grille option

Diverse, Flexible Valve & Piping Packages

- Factory-mounted, wired and tested
- Or, factory-assembled and shipped loose
- Normally closed or open, on/off or modulating valves

Easily Removed Motor Assembly

- For easy maintenance and service



For contractors

For contractors, ThinLine 3G unit heaters feature Quick Ship options for fast delivery and a number of features that make installation fast and simple.

- Factory-mounted, wired and tested valve and piping packages for quick hookup to the building piping to reduce installation time. Packages can also be shipped loose with the unit.
- Factory-mounted and tested controls minimize field setup. Depending on the option requested, controls can be wired with a 24 VAC transformer to provide a single-source power connection to the unit. Several options are available for unit

or wall mounted thermostats and sensors. All wall-mounted thermostat and zone sensors require only low-voltage control wiring from the device to the unit control box.

- Easy, end-panel removal for hookup of electrical and piping connections minimizes field-labor time and cost.
- End compartment panels can be removed for installation and service without removing the front panel covering the fan blower section. This means that airflow through the filter and coil is not jeopardized for taking temperature and performance readings.
- The fan deck and motor assembly is easily removed, when required, for service.

Options and Accessories

Control Options

Manual 4-Position Fan Switch



This four-position fan switch (Off, High, Med, Low) option is available remote-mounted. It operates on low-voltage or line-voltage power and can be provided with a factory-mounted, low-voltage DDC interface board, which contains 3-24 volt relays with line voltage contactors and terminal connections. The transformer is factory-installed and wired.

Sequence of operation

- *Off:* Fan is turned off. The two-position, motorized fresh-air damper, when supplied, is closed.
- *High, Medium, Low:* Fan runs continuously at the selected speed. The two-position, motorized fresh-air damper, when supplied, is opened.

Unit-Mounted, Mechanical Thermostat With 4-Position Fan Switch

This unit-mounted option combines the four-position fan switch described above with a mechanical thermostat. Sequence of operation



- Fan Switch
 - *Off:* Fan is turned off. The two-position, motorized fresh-air damper, when supplied, is closed.
 - *High, Medium, Low:* Fan runs continuously at the selected speed. The two-position, motorized fresh-air damper, when supplied, is opened.
- Thermostat
 - Cycles the valve(s) open or closed on demand based on occupant-desired level.

Digital Thermostats

McQuay offers a broad range of unit-mounted and remote, wall-mounted digital thermostats with the capability to control on-off, 3-wire and proportional modulating valves, and normally closed or normally open actuator valves. See



[Table 1](#). For more information, refer to the McQuay publication ED 18513.

MT155 Thermostat

The MT155 series thermostat provides on-off control for low-voltage or line-voltage valves and fan motors. It is remote-wall mounted. Options include three-speed fan control for continuous or cycling fan operation.

Figure 3: MT155 Thermostats



Three standard control options are available:

- *On-off fan cycle operation only:* The thermostat cycles the fan from the manually selected fan speed (high, medium or low) to off.
- *Continuous fan and on-off valve cycle operation:* The thermostat cycles the valves on and off. The fan runs continuously at the manually selected fan speed.
- *On-off fan and on-off valve cycle operation:* The thermostat cycles the fan from the manually selected fan speed to off and it cycles the valves on and off.

When the system switch is in the off position, the unit heater system including the fan is shut off.

MT158 and MT168 Thermostat-Controllers with Digital Display

Series MT158 and MT168 microprocessor-based thermostat-controllers combine a proportional integral control algorithm with adaptive logic. They can be unit-mounted or remote-wall mounted.

Figure 4: MT158 and MT168 Thermostats



Heating outputs for the MT158 are individually configurable for three-wire floating control valves or on/off valves in the normally open or normally closed modes.

Heating outputs for the MT168 provide 0-10 Vdc or 4-20 mA. The integrated, three-speed fan control switch is line voltage to

allow direct connection to the fan motors. Remote setback capability is available from a time clock or facility management system. Features include a Fahrenheit or Celsius digital display.

Two standard control options are available:

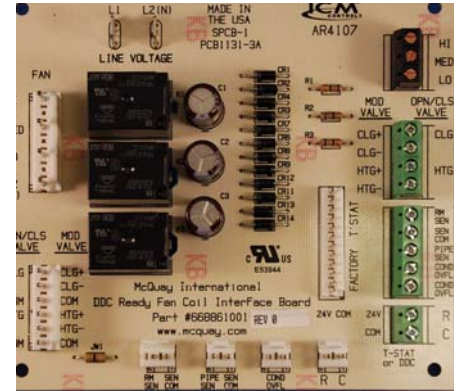
- *Continuous fan and modulating (or on-off) valve operation.* The fan runs continuously at the manually selected fan speed (high, medium or low). The controller modulates the valves or, on the MT158, dip-switches can be set to cycle the valves on and off.
- *On-off fan cycle operation and modulating (or on-off) valve operation.* The controller cycles the fan from the manually selected fan speed to off. The controller modulates the valves or, on the MT158, dip-switches can be set to cycle the valves on and off.

Table 1: ThinLine 3G Thermostat Offerings

Thermostat Type	Mounting
Manual three speed fan switch	Remote
Single-pull, double-throw heating/cooling thermostat with manual heat-off-cool system switch and manual three-speed fan switch	Unit
Single-pull, double-throw thermostat only	Unit
Two-pole dead-band auto-changeover thermostat with manual on-off system switch and manual three-speed fan switch	Unit
Two-pole dead-band auto-changeover thermostat	Unit
Digital thermostat 24 vac/120-277 vac with 3-speed fan control (continuous or fan cycle)	Remote
Digital thermostat 24 vac/120-277 vac with staged fan (continuous or fan cycle)	Remote
Digital thermostat with on/off or three-wire floating valve control.	Unit or Remote
Digital thermostat with on/off or three-wire floating valve control, and manual three-speed fan switch	Unit or Remote
Digital thermostat with modulating valve control	Unit or Remote
Digital thermostat with modulating-valve control, and three speed fan switch	Unit or Remote

DDC Interface Board

The low-voltage, DDC interface board is used with any remote (wall mounted) McQuay thermostat or control. It can also be used with a BAS (Building Automation System) control where low voltage is needed to operate the unit heater.



The DDC interface board includes:

- Three 24-volt relays with line-voltage contactors to operate the fan motor speeds.
- Terminal connections for interfacing to:
 - An optional wall-mounted thermostat.
 - Low-voltage actuators for cooling valves.
 - A return air sensor.
- A factory-wired and installed transformer.

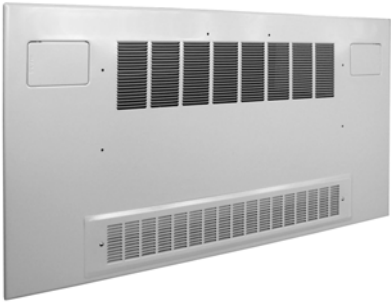
Customer-Supplied Controls

Your McQuay representative can work with engineers and/or contractors to factory install and wire other manufacturers' DDC controllers in one of the end pockets of the unit heater. Contact your local McQuay representative for assistance with your specific project.

Options and Accessories

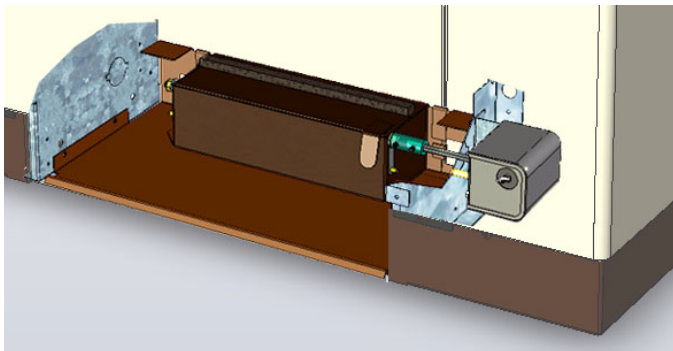
Decorative Wall Plate Option

Decorative wall plates have rounded corners and an antique ivory finish for an attractive appearance. Other colors are available upon request. **See Figure 10, page 21 for dimensional data.**



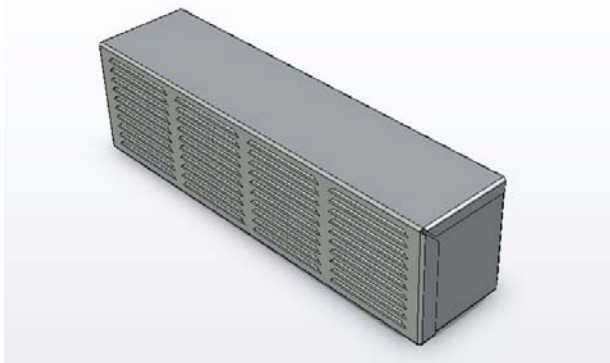
Fresh Air Damper Options (Manual and Motorized)

A fresh air intake that will provide up to 25% fresh air with insect air screen and damper blade, can be ordered either factory installed or as a field installed kit. The kit consists of an intake with damper blade and insect screen. The damper may be manually controlled through the return air opening or with an optional field-installed damper motor. If freezing air temperatures are expected, the damper must be closed or outside air must be tempered before entering the unit.



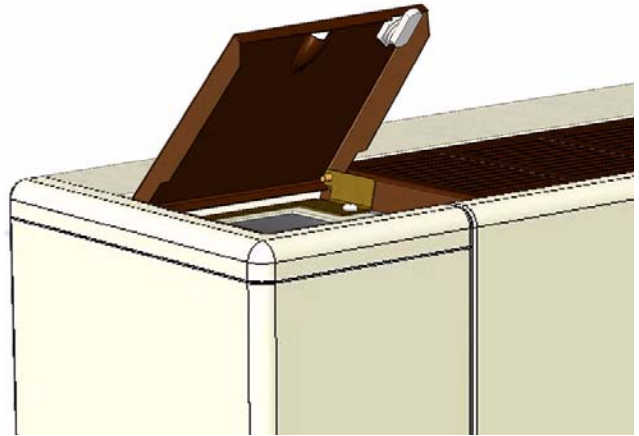
Fresh Air Intake Box Option

Fabricated of aluminum with weep holes and a double set of louvers in series to prevent moisture draw-through. This is used with a fresh air damper and is mounted in an exterior wall. **See Figure 11, page 21 for dimensional data**



Tamperproof Cabinet Option

This option can be factory- or field-installed on cabinet units to prevent access to unit controls and easy removal of cabinet panels. It includes a key lock access door to unit controls and torx head screws for cabinet panels.

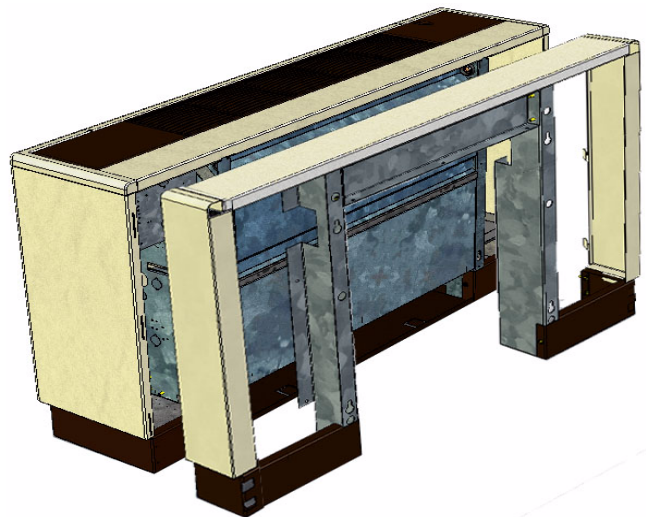


Rear Cabinet Extension Option

This kit is available for applications where additional depth is necessary. Four-inch extension kits are available. Other extension depths are available as a special. Contact your McQuay Representative for details. This kit is not designed to be an air duct or outside air plenum.

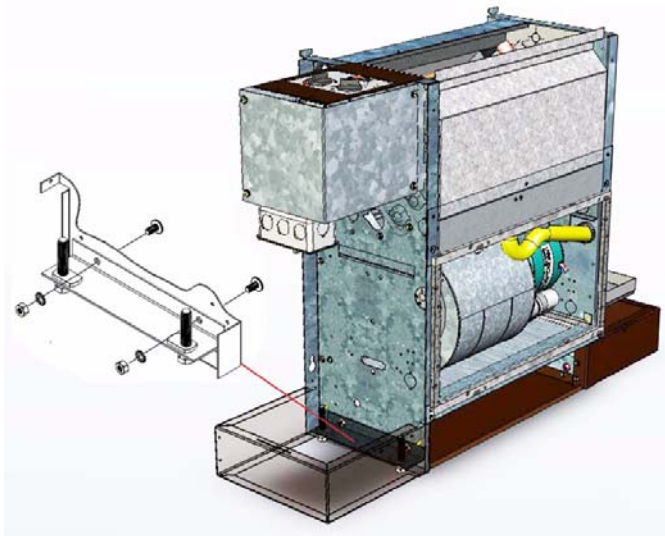
Some common applications for the rear cabinet extension include:

- Allow additional depth for appearance of unit.
- Allow additional clearance for cross-over piping and connections.
- Extend the discharge grille past drapery or wall hangings.
- Cover floor covering terminations in remodeling projects.
- Allow for piping entry through the side panels of the unit.



Leveling Legs Option

Field or factory-installed kits are available with 0" to 1" adjustment for positive leveling of floor-mounted units.



Raised Sub-Bases and Extended-Width End Pockets

Extended-height subbases and extended end pockets are available as a special. Contact your McQuay Representative for more information.

Note: Standard end pockets on McQuay units can accommodate most requirements. Therefore, extended pockets are seldom needed.

Return Air Grille

A stamped-steel, return air grille is available as an option, factory or field-installed.

Factory Valve & Piping Packages

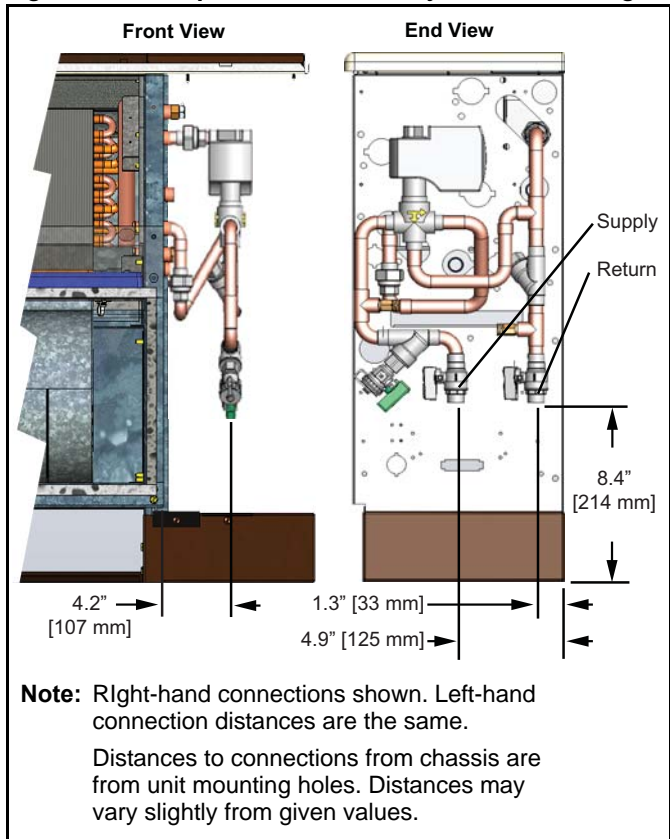
Factory valve and piping packages are available with either right or left hand connections. Packages can be either factory-installed or factory-assembled and shipped loose with the unit. Units are also available without a valve and piping package in either a right-hand or left-hand configuration. All packages are fully leak tested.

Factory-installed packages are sweated to the coil and wired to the unit control box or DDC. Hot water pipes are the only field connections required. Piping is 1/2" nominal copper (5/8" OD).

Pre-determined field connection points are located for easy access. See [Figure 5](#) for connection locations. The installing contractor can pre-pipe the building water connections before the units arrive on the jobsite. A label clearly identifies water connection points on every unit.

Numerous piping packages are available to match your configuration. Additional components can be added to meet your exact requirements, including P/T ports, unions, and flexible, stainless steel hoses.

Figure 5: Hook Up Locations - Factory-Installed Packages



Shut-off Only Packages

Shut-off only piping packages provide interconnecting copper piping and shut-off ball valves for easily connecting supply and return lines to the unit. Coils on all units have an integral venting valve.

Basic Packages

Basic valve and piping packages add control valves to the Shut-off Only package. All McQuay control valves are factory-mounted in the supply water pipe. See [Control Valve Options, page 10](#) for more information on the variety of control valves available.

Enhanced Packages

Enhanced valve and piping packages replace the ball valve on the Basic package's supply water pipe with a manual circuit setter, also known as a manual flow control valve. The circuit setter acts as both a flow-setting device and a shut-off valve. It allows water flow through the unit heater to be set quickly and accurately.

P/T ports are included, which are used to measure the temperature or pressure drop across the valve. This pressure

Options and Accessories

drop can be compared to factory-supplied tables that relate the pressure drop to a specific flow rate. The valve also has a memory stop so that the correct setting can be found quickly.

Premium Packages

Premium valve and piping packages replace the Enhanced package's manual circuit setter with an automatic circuit setter. The circuit setter includes a cartridge within the valve body that is sized to allow a specific flow rate through the coil. This valve sets flow through the coil without any action required by a system piping balancer.

Deluxe Packages

Deluxe valve and piping packages add a strainer to the Premium package. The strainer is attached to the supply water pipe at the coil connections. The strainer body is cast brass construction with a stainless steel mesh that is easily removed for cleaning. The strainer is available with or without an optional draining (blow-off) valve.

Control Valve Options

Except for Shut-off Only packages, all valve and piping packages include control valves for controlling water flow. All McQuay control valves are factory-assembled and mounted in the supply water pipe downstream of the coil. Several options are available as follows.

Two-Way/Two-Position Valves

These valves will be either fully open or fully closed in response to a line voltage (115 or 265-277 VAC) or a 24 VAC signal from the McQuay thermostat or controller. Some means of relieving pump head pressure should be accounted for when two-way valves are selected. Normally open or normally closed valves are available. Both are spring-return.

Three-Way, Two-Position Valves

These valves either allow full water flow through the coil or divert the flow through a bypass line. The valves respond to a line voltage (115 or 265-277 VAC) or to a 24 VAC signal from the McQuay thermostat or controller. All standard three-way valves come with a fixed-balance orifice in the bypass line to compensate for flow balancing in the bypass position, eliminating the need for an additional balancing valve. Normally open or normally closed valves are available.

Two-Way Modulating Valves

These valves modulate the water flow through the coil in response to a signal from the McQuay thermostat or controller. All standard McQuay modulating valves are three-wire floating point equal percentage valves. Zero to 10 VDC proportional valves are also available as a special option upon request. The modulating valves are factory mounted in the supply water pipe upstream of the coil.

Three-Way Modulating Valves

These valves modulate the water flow through the coil in response to a signal from the McQuay thermostat or controller. Three-way valves allow water that is directed through the coil to mix with water that is directed through the bypass line. This mixture exits through the leaving water pipe. All modulating valves are three-wire, floating-point equal percentage valves. The modulating valves are factory mounted in the supply water pipe upstream of the coil.

Selecting the Correct Size Modulating Valve

McQuay SelectTools™ software automatically selects the best modulating valve size for the unit and coil being considered. By combining the ARI performance data, the coil flow rate and the DP across the water coil, the water coil Cv is calculated and the best matching modulating port size is selected.

Unit Selection

The achievement of an efficient unit heater system is dependent upon accurate system design and proper equipment selection. Variations, limitations and control of unit heater systems, design conditions and design load calculations are not described in detail in this catalog. More detailed information may be found in the ASHRAE Guide. This catalog contains ARI certified ratings and application ratings for ThinLine 3G unit heaters from which the design engineer can make initial unit selections to meet the requirements of the system.

The mechanical system designer must select the unit types best suited to the overall system before the actual unit sizes can be determined. The factors that generally influence this decision are intended building usage, building layout, architectural and aesthetic values, economics, geographical location, and type of maintenance service available. The general results may be a mixture of various unit types within a given system. McQuay International manufactures a unit heater to meet your every need including ThinLine, HiLine and Large Capacity models. For McQuay product information, please go to www.mcquay.com.

Basic design data

Prior to selecting the individual unit sizes, the design engineer must fix or determine the following factors:

- Total and sensible heat gains and losses of the area to be served.

- Ventilation air.
- Properties of the heating medium.
- Available electric power service.
- Any special design requirements of the building or system.

Unit size

The capacity ratings presented in this catalog are provided for initial unit selection only. Water heating capacities, unit air flow, static pressure and glycol solutions are all incorporated into the program to provide the best possible selection. Consult your McQuay representative for a selection tailored to your application.

Unit sizes for the ideal system should be selected by calculating the peak load requirements due to unusually high occupancy or severe climatic conditions and with fan operating at high speed. Ordinary day to day cooling and heating requirements are then achieved at low and medium speeds.

The initial unit selection should be checked for air volume in the design system and the cooling capacities checked at the actual operating conditions. While units selected on the basis of sensible load will generally meet the total load, total load should be checked in all cases.

The unit size is generally selected on the basis of matching the heating capacity of the unit with the calculated requirements when operating at high speed.

Performance Data

Heating Performance - Hot Water Coil

All performance measured on high speed tap, 115 V, zero ESP, with a throwaway filter. Heating performance is based on 70°F (21°C) entering air temperature, 180°F (82°C) entering hot water temperature with a 30°F (17°C) ΔT.

Table 2: Heating performance

Unit Size	Coil Rows	SCFM	Heating Performance			
			TMBh (TkW)	Q/ITD	Gpm (L/s)	WPD FtofH ₂ O (kPa)
02	2 Row	218	14.1 (4.1)	0.128 (0.067)	0.9 (0.06)	0.3 (0.9)
	3 Row	209	17.2 (5.0)	0.156 (0.082)	1.2 (0.08)	0.5 (1.5)
	4 Row	200	19.2 (5.6)	0.175 (0.092)	1.2 (0.08)	0.6 (1.8)
03	2 Row	299	19.8 (5.8)	0.180 (0.095)	1.1 (0.07)	0.4 (1.2)
	3 Row	291	24.4 (7.2)	0.222 (0.118)	1.5 (0.09)	0.5 (1.5)
	4 Row	265	27.2 (8.0)	0.247 (0.131)	1.9 (0.12)	1.5 (4.5)
04	2 Row	398	28.3 (8.3)	0.257 (0.136)	1.7 (0.11)	1.0 (3.0)
	3 Row	385	34.0 (10.0)	0.309 (0.164)	2.2 (0.14)	1.3 (3.9)
	4 Row	374	38.9 (11.4)	0.354 (0.187)	2.9 (0.18)	3.4 (10.2)
06	2 Row	602	41.0 (12.0)	0.373 (0.196)	2.9 (0.18)	4.4 (13.1)
	3 Row	565	47.1 (13.8)	0.428 (0.226)	3.7 (0.23)	5.2 (15.5)
	4 Row	554	52.6 (15.4)	0.478 (0.252)	4.6 (0.29)	9.0 (26.9)
08	2 Row	675	50.3 (14.7)	0.457 (0.241)	3.6 (0.23)	7.7 (23.0)
	3 Row	656	58.7 (17.2)	0.534 (0.281)	4.5 (0.28)	8.0 (23.9)
	4 Row	634	64.3 (18.8)	0.585 (0.308)	5.5 (0.35)	14.8 (44.2)
10	2 Row	831	62.4 (18.3)	0.567 (0.299)	4.4 (0.28)	6.8 (20.3)
	3 Row	808	73.2 (21.5)	0.665 (0.352)	5.7 (0.36)	8.7 (26.0)
	4 Row	795	80.8 (23.7)	0.735 (0.388)	6.7 (0.42)	11.1 (33.2)
12	2 Row	1118	78.3 (22.9)	0.712 (0.375)	5.6 (0.35)	12.5 (37.4)
	3 Row	1059	95.4 (28.0)	0.867 (0.458)	7.1 (0.45)	15.5 (46.3)
	4 Row	1022	103.8 (30.4)	0.944 (0.497)	8.3 (0.52)	18.3 (54.7)

Electric Heat Data

Table 3: Electric Heat kW*

Unit Size	Unit Voltage	kW									
		0.5	1.0	1.5							
02	115	0.5	1.0	1.5							
	230	0.5	1.0								
	277	0.5	1.0	1.5							
	208	0.5	0.9								
03	115		1.0	1.5	2.0						
	230		1.0								
	277		1.0	1.5							
	208		0.9								
04	115		1.0	1.5	2.0						
	230		1.0	1.5	2.0						
	277		1.0	1.5	2.0						
	208		0.9	1.4	1.8						
06	115			1.5	2.0						
	230			1.5	2.0	2.5	3.0				
	277			1.5	2.0	2.5	3.0	4.0			
	208			1.4	1.8	2.3	2.7				
08	115				2.0						
	230				2.0	2.5	3.0	4.0			
	277				2.0	2.5	3.0	4.0			
	208				1.8	2.3	2.7	3.6			
10	115										
	230					2.5	3.0	4.0			
	277					2.5	3.0	4.0			
	208					2.3	2.7	3.6			
12	115										
	230						3.0	4.0	5.0	6.0	
	277						3.0	4.0	5.0	6.0	
	208						2.7	3.6	4.5	5.4	

Note: *Electric heat MBh = (Heater kW) (3.413)

MCA (Minimum Circuit Ampacity) Calculations and MFS (Maximum Fuze Size) Calculations

HACR (Heating, Air-Conditioning and Refrigeration) type circuit breakers are required in the branch circuit wiring for all fan coils with electric heat.

Note: MCA ratings are based on the unit and electric heat power supply having the same voltage. If the electric heat power supply is different, a separate circuit breaker may be required. Follow local codes.

Select a standard fuse size or HACR type circuit breaker equal to the MCA. Standard Fuse Sizes are: 15, 20, 25, 30, 35, 40, 45, 50, 60 amps. Use the next larger standard size if the MCA does not equal a standard size.

$$\text{Heater Amps} = (\text{Heater kW} \times 1000) / \text{Heater Voltage}$$

Note: Use 120V heater voltage for 115V units. Use 240V heater voltage for 230V units.

$$\text{MCA} = 1.25 \times (\text{heater amps} + \text{all motor FLAs})$$

$$\text{MFS or HACR Type Circuit Breaker} = (2.25 \times \text{Largest Motor FLA}) + \text{Second Motor FLA} + \text{Heater Amps (If Applicable)}$$

See Table 5 through Table 7 for motor FLAs.

Performance Data

Air Volume Capacity Data

Air volumes shown in the table are measured at the motor speeds indicated with 115v/60/1 electrical power, with a 1” throwaway filter installed, and with a stamped discharge grill

on a vertical cabinet unit or a discharge duct collar on a hideaway unit at approximately 0.10 inch of pressure drop.

Table 4: SCFM, 115/60/1 Motor (Factor 88%)

Unit Size	Main Coil Rows	Heating Coil Rows	SCFM		
			Motor on High Speed	Motor on Medium Speed	Motor on Low Speed
02	2 Row	None	214	197	167
	3 Row	None	204	190	161
	4 Row	None	197	183	159
03	2 Row	None	296	264	211
	3 Row	None	292	256	205
	4 Row	None	283	253	206
04	2 Row	None	380	330	261
	3 Row	None	365	325	250
	4 Row	None	368	319	249
06	2 Row	None	600	524	421
	3 Row	None	559	483	373
	4 Row	None	554	486	409

Unit Size	Main Coil Rows	Heating Coil Rows	SCFM		
			Motor on High Speed	Motor on Medium Speed	Motor on Low Speed
08	2 Row	None	668	585	465
	3 Row	None	654	576	456
	4 Row	None	632	562	450
10	2 Row	None	831	712	548
	3 Row	None	807	696	536
	4 Row	None	789	680	523
12	2 Row	None	1110	995	840
	3 Row	None	1059	960	822
	4 Row	None	1025	930	803

Motor Electrical Data

Table 5: Electrical Data - Standard (Free Discharge) Motor - 2 Row Coil

Motor Speed	Size 2			Size 3			Size 4			Size 6			Size 8			Size 10			Size 12			
	Amps	Watts	RPM	Amps	Watts	RPM	Amps	Watts	RPM	Amps	Watts	RPM	Amps	Watts	RPM	Amps	Watts	RPM	Amps	Watts	RPM	
115 V	High	0.49	53	1059	0.56	63	993	0.68	72	991	1.32	123	1122	1.20	129	1015	1.37	148	987	2.52	237	1123
	Med	0.42	44	984	0.48	53	886	0.57	59	876	0.99	95	987	1.01	108	910	1.16	124	866	1.81	175	1013
	Low	0.35	36	856	0.39	42	726	0.45	45	705	0.90	81	815	0.83	84	741	0.92	95	681	1.64	153	864
208 V	High	0.27	53	955	0.30	62	837	0.38	75	928	0.61	122	1102	0.77	154	1070	0.72	147	860	1.15	236	1113
	Med	0.23	48	766	0.24	52	639	0.30	59	764	0.44	87	910	0.58	48	709	0.58	120	681	0.83	166	960
	Low	0.19	39	561	0.19	42	485	0.25	49	611	0.36	65	691	0.50	39	504	0.45	93	533	0.70	127	708
230	High	0.27	57	1026	0.30	67	949	0.37	75	998	0.63	133	1124	0.80	180	1093	0.73	163	954	1.19	261	1131
	Med	0.23	52	914	0.25	60	791	0.31	64	880	0.41	89	1011	0.57	131	1006	0.61	139	797	0.81	178	1021
	Low	0.20	45	742	0.21	50	607	0.26	6	737	0.36	78	844	0.50	111	870	0.50	113	616	0.71	149	831
265 V	High	0.28	55	1026	0.29	61	931	0.34	77	917	0.47	117	1118	0.79	172	1097	0.65	149	906	0.95	246	1104
	Med	0.20	49	915	0.21	44	778	0.27	64	771	0.34	85	986	0.56	133	1007	0.50	126	737	0.74	188	933
	Low	0.16	41	758	0.16	43	597	0.20	46	609	0.30	69	836	0.47	114	882	0.38	99	594	0.63	152	737
277 V	High	0.29	57	1049	0.29	66	948	0.35	75	955	0.49	132	1125	0.81	183	1110	0.71	159	948	0.97	265	1115
	Med	0.22	51	953	0.22	58	788	0.27	65	820	0.34	86	1018	0.57	139	1030	0.51	135	791	0.72	196	968
	Low	0.16	44	827	0.17	47	625	0.21	56	682	0.30	72	890	0.47	120	924	0.39	108	638	0.64	159	793

Table 6: Electrical Data - Standard (Free Discharge) Motor - 3 Row Coil

Motor Speed	Size 2			Size 3			Size 4			Size 6			Size 8			Size 10			Size 12			
	Amps	Watts	RPM	Amps	Watts	RPM	Amps	Watts	RPM	Amps	Watts	RPM	Amps	Watts	RPM	Amps	Watts	RPM	Amps	Watts	RPM	
115 V	High	0.48	52	1067	0.55	62	1005	0.68	72	994	1.29	121	1120	1.20	129	1018	1.37	149	992	2.48	231	1127
	Med	0.41	43	1007	0.48	53	899	0.57	59	876	1.01	96	976	1.01	108	915	1.15	124	871	1.76	169	1029
	Low	0.34	35	889	0.39	42	722	0.45	45	700	0.89	80	783	0.83	84	749	0.91	95	689	1.60	149	895
208 V	High	0.26	52	962	0.29	62	847	0.38	75	931	0.60	120	1100	0.77	154	1073	0.72	148	865	1.13	230	1117
	Med	0.22	46	784	0.24	52	648	0.30	59	764	0.45	88	900	0.58	48	713	0.57	119	685	0.81	160	975
	Low	0.18	38	583	0.19	42	482	0.25	49	607	0.36	64	664	0.50	39	509	0.45	93	539	0.68	124	733
230	High	0.26	55	1034	0.29	66	960	0.37	75	1001	0.62	131	1122	0.80	179	1096	0.72	163	959	1.17	254	1135
	Med	0.22	50	935	0.25	59	803	0.31	64	880	0.42	90	1000	0.57	130	1011	0.60	138	802	0.79	172	1037
	Low	0.19	44	771	0.21	50	604	0.26	6	732	0.36	77	811	0.50	111	879	0.49	113	624	0.69	145	861
265 V	High	0.27	54	1034	0.28	61	942	0.34	77	920	0.46	115	1116	0.79	172	1100	0.65	150	911	0.93	240	1108
	Med	0.20	47	936	0.21	44	789	0.27	64	771	0.35	86	975	0.56	133	1012	0.49	126	742	0.72	182	948
	Low	0.16	41	787	0.17	44	594	0.20	46	605	0.30	68	803	0.47	114	891	0.38	99	601	0.61	148	763
277 V	High	0.28	56	1057	0.29	65	959	0.35	75	958	0.48	130	1123	0.81	183	1113	0.70	159	953	0.95	258	1119
	Med	0.21	49	975	0.22	58	800	0.27	65	820	0.35	87	1007	0.57	139	1035	0.51	134	796	0.70	189	983
	Low	0.16	43	859	0.17	48	622	0.21	56	677	0.30	71	855	0.47	120	933	0.39	108	646	0.62	155	821

Table 7: Electrical Data - Standard (Free Discharge) Motor - 4 Row Coil

Motor Speed	Size 2			Size 3			Size 4			Size 6			Size 8			Size 10			Size 12			
	Amps	Watts	RPM	Amps	Watts	RPM	Amps	Watts	RPM	Amps	Watts	RPM	Amps	Watts	RPM	Amps	Watts	RPM	Amps	Watts	RPM	
115 V	High	0.48	52	1069	0.54	61	1019	0.68	71	1002	1.28	118	1127	1.17	126	1027	1.36	152	993	2.46	228	1131
	Med	0.41	43	1007	0.47	52	923	0.57	59	890	0.93	88	1017	0.98	105	935	1.15	123	863	1.73	166	1036
	Low	0.34	35	888	0.38	41	779	0.45	45	712	0.86	77	873	0.81	83	769	0.91	94	684	1.57	147	909
208 V	High	0.26	52	964	0.29	60	859	0.38	74	938	0.60	117	1107	0.75	150	1083	0.71	151	865	1.12	227	1121
	Med	0.22	46	784	0.23	50	665	0.30	59	776	0.41	81	938	0.56	47	729	0.57	118	678	0.80	157	982
	Low	0.18	38	582	0.19	41	520	0.25	49	617	0.35	62	740	0.48	39	523	0.45	92	535	0.67	122	744
230	High	0.26	55	1036	0.29	64	973	0.37	74	1009	0.62	128	1129	0.78	175	1106	0.72	166	959	1.16	251	1139
	Med	0.22	50	935	0.24	58	824	0.31	64	894	0.39	83	1042	0.55	127	1034	0.60	137	795	0.78	169	1044
	Low	0.19	44	770	0.20	49	652	0.26	6	745	0.35	74	904	0.49	110	903	0.49	112	619	0.68	143	874
265 V	High	0.27	54	1036	0.28	59	955	0.34	76	927	0.46	112	1123	0.77	167	1110	0.65	153	911	0.92	237	1112
	Med	0.20	47	936	0.21	42	810	0.27	64	783	0.32	79	1016	0.55	130	1034	0.49	125	735	0.71	179	954
	Low	0.16	40	786	0.16	43	641	0.20	46	615	0.29	65	895	0.45	113	915	0.37	98	597	0.60	146	775
277 V	High	0.28	56	1059	0.28	63	972	0.35	74	966	0.48	127	1130	0.79	178	1123	0.70	162	953	0.94	255	1123
	Med	0.21	49	975	0.21	56	821	0.27	65	833	0.32	80	1049	0.55	136	1058	0.51	133	789	0.69	186	990
	Low	0.16	42	858	0.17	46	671	0.21	56	689	0.29	68	953	0.46	119	959	0.39	106	641	0.61	153	834

Physical Data

Unit Data

Table 8: Unit Data

	02	03	04	06	08	10	12
Coil Data							
Face Area, ft ² (cm ²)	0.74 (685)	1.08 (1004)	1.43 (1323)	2.11 (1962)	2.46 (2281)	3.14 (2917)	3.83 (3559)
Fins/inch (cm)	12 [4.7]	12 [4.7]	12 [4.7]	12 [4.7]	12 [4.7]	12 [4.7]	12 [4.7]
Coil Dimensions							
2-Row L x D x H, in (cm)	11.8 x 1.7 x 9 (30.0x4.4x22.9)	17.3 x 1.7 x 9 (43.9x4.4x22.9)	22.8 x 1.7 x 9 (57.9x4.4x22.9)	33.8 x 1.7 x 9 (85.9x4.4x22.9)	39.3x 1.7 x 9 (99.8x4.4x22.9)	50.2 x 1.7 x 9 (127.6x4.4x22.9)	61.3 x 1.7 x 9 (155.7x4.4x22.9)
3-Row L x D x H, in (cm)	11.8 x 2.6 x 9 (30x6.6x22.9)	17.3 x 2.6 x 9 (43.9x6.6x22.9)	22.8 x 2.6 x 9 (57.9x6.6x22.9)	33.8 x 2.6 x 9 (85.9x6.6x22.9)	39.3 x 2.6 x 9 (99.8x6.6x22.9)	50.2 x 2.6 x 9 (127.6x6.6x22.9)	61.3 x 2.6 x 9 (155.7x6.6x22.9)
4-Row L x D x H, in (cm)	11.8 x 3.5 x 9 (30.0x8.8x22.9)	17.3 x 3.5 x 9 (43.9x8.8x22.9)	22.8 x 3.5 x 9 (57.9x8.8x22.9)	33.8 x 3.5 x 9 (85.9x8.8x22.9)	39.3 x 3.5 x 9 (99.8x8.8x22.9)	50.2 x 3.5 x 9 (127.6x8.8x22.9)	61.3 x 3.5 x 9 (155.7x8.8x22.9)
Volume, Gal (Liters)							
2-Row	0.15 (0.6)	0.19 (0.7)	0.24 (0.9)	0.32 (1.2)	0.37 (1.4)	0.46 (1.7)	0.55 (2.1)
3-Row	0.20 (0.7)	0.26 (1.0)	0.32 (1.2)	0.45 (1.7)	0.52 (2.0)	0.64 (2.4)	0.77 (2.9)
4-Row	0.26 (1.0)	0.34 (1.3)	0.43 (1.6)	0.61 (2.3)	0.70 (2.6)	0.87 (3.3)	1.05 (4.0)
Fan/Motor Data							
Fan Quantity	1	1	2	2	3	4	4
Size, Dia" x W" (cm)	6.26 x 6.3 (15.9 x 16)	7.95 x 6.3 (20 x 16)	6.26 x 6.3 (15.9 x 16)	7.95 x 6.3 (20 x 16)	6.26 x 6.3 (15.9 x 16)	6.26 x 6.3 (15.9 x 16)	7.95 x 6.3 (20 x 16)
Motor Quantity	1	1	1	1	2	2	2
Filter Data							
Part Number	668332901	668332902	668332903	668332907	668332905	668332906	668332904
1" (25.4 cm) Media	Throw-away	Throw-away	Throw-away	Throw-away	Throw-away	Throw-away	Throw-away
Quantity	1	1	1	1	2	2	2
L x D x H, in. (cm)	16 x 8.75 x 1 (40.6 x 22 x 2.5)	21.5 x 8.75 x 1 (54.6 x 22 x 2.5)	27 x 8.75 x 1 (68.5 x 22 x 2.5)	38 x 8.75 x 1 (96.5 x 22 x 2.5)	21.7 x 8.75 x 1 (56.1 x 22 x 2.5)	27.2 x 8.75 x 1 (69.0 x 22 x 2.5)	32.7 x 8.75 x 1 (83.1 x 22 x 2.5)

Table 9: Approximate Shipping Weights - lbs (kg)*

Unit Type	Unit Size						
	S02	S03	S04	S06	S08	S10	S12
FHVC, FHVS	84 (38)	95 (43)	108 (49)	131 (60)	152 (69)	177 (80)	202 (92)
FHVH, FHVI	55 (25)	63 (29)	74 (34)	91 (41)	110 (50)	129 (59)	149 (68)

Note: *Approximate shipping weights do not include valve packages or other options.

