Q-TEC™ QC-Series
Chilled Water Air Conditioner

Cooling Capacities: 13,300 to 49,300 BTUH (Based on EWT, GPM & CFM)

The Q-TEC™ Series self-contained packaged chilled water air conditioner is designed to be installed inside a building structure against an exterior exposed wall when ventilation option is selected. When no ventilation option is used, the QC-Series units can be installed in any interior space accessible to water supply system and condensate drain.

Q-TEC's™ design provides "whisper" quiet operation with total comfort for the occupants. This design eliminates the need for roof-mounted equipment and outside condensing units and can meet your specific architectural requirements.

Q-TEC's™ "quiet technology" provides extremely low indoor sound levels by using special components and materials in the construction of the unit. By using special motors and sound insulation we have built a chilled water cooling system that is significantly quieter than competitive product available today.

Q-TEC™ is suitable for both new construction and renovation projects for schools, modular buildings and light commercial buildings. A variety of ventilation options are designed to address your project's indoor air quality.

The Q-TEC™ Series unique design allows all maintenance and service to be performed inside the building to facilitate multi-story installations. Access to air filters and controls is accomplished through a hinged front panel for easy accessibility. All Q-TEC™ Series models are built on heavy duty permanent rollers for easy installation and removal.

Q-TEC's™ durable, easy to clean cabinet is aesthetically pleasing and comes standard with side and bottom trim pieces. Two types of cabinet finish are available: a durable two tone (slate and platinum) vinyl covered steel, or gray pre-painted steel.

Product Features

Indoor Blower Motor
All models feature a variable speed (ECM) motor providing super high efficiency, low sound levels and soft start capabilities. The motor is self-adjusting to provide the proper airflow rate at high static pressure for ducted installations without user adjustment or wiring changes.

Copper Tube/Aluminum Fin Chilled Water Coil
Grooved copper tubing and enhanced aluminum fins provide maximum heat transfer and high energy efficiency. Evaporator coil constructed with hydrophilic fin stock that seals fin surface against aluminum oxide formation, is resistant to mold and mildew growth (tested to ASTM D3273, no growth) and reduces beading of condensate on the fin surface.

Stainless Steel Drain Pan
Provides extended life of the evaporator drain pan for maximum corrosion resistance.

Two Water Valve Choices
Either a 2 or 3-way valve may be selected to meet the piping system requirements of the building. Two valves are supplied for 2-stage control.

Cabinet
Constructed of 20 gauge pre-painted or vinyl laminated galvanized steel. Choice of either two tone vinyl finish with "slate" front panels and "platinum" cabinet for designer appearance, or gray painted steel. Vinyl finish is very resistant to scratching and marring and is very easy to clean. Tamper resistant fasteners are provided for access panels. Unit includes built-in rollers for easy installation into wall sleeve and removal for service if necessary. Hinged, lockable front panel for filter service and access to primary functional electrical controls.

Insulation
Cabinet is fully insulated with foil covered, high density fiberglass insulation with sealed edge treatment. All insulation is designed to resist mold and mildew growth and facilitate ease of cleaning.

Electrical Components
Are easily accessible for routine inspection and maintenance through front service panels. Circuit breaker standard on all models. Circuit breaker access is through lockable access panel. Lock and key provided as standard equipment.

Optional Hot Water Coil
A plenum mounted hot water coil is available for both duct free and ducted applications.

Air Filters
One-inch disposable panel type air filters are standard. Optional two-inch pleated and two-inch fiberglass disposable air filters are available. Optional Energy Recovery Ventilator has a separate filter for exhaust air to keep ERV clean.

Side Trim Piece Extension
Provides cabinet extension between interior wall and unit when wall thickness is 14 inches. Standard feature shipped with all models. Optional trim kits for thinner walls available.

Optional Ventilation Packages
Optional energy recovery ventilator can provide up to 450 cfm of outside air and exhaust through the unit while maintaining indoor comfort and humidity levels. Other available options include commercial room ventilator with exhaust and barometric damper without exhaust. Outside wall and ventilation sleeve are required for installations with ventilation option.

Optional Ventilation Wall Sleeve
Required for ventilation options only. Constructed of 16 gauge galvanized steel, coated with epoxy primer and a baked on polyester enamel paint, which allows it to withstand 1000 hours of salt spray tests per ASTM B117-03. Ordered separately.

- Intertek ETL Listed to Standard for Safety Heating and Cooling Equipment ANSI/UL 1995/CSA 22.2 No. 236-05, Fourth Edition.

* The AHRI Certified® mark indicates Bard Manufacturing Company participation in the AHRI Certification program. For verification of individual certified products, go to www.ahridirectory.org.

Indoor Blower Performance

Model	Voltage	HP/SPD	Motor AMPS	Rated ESP ①	Max. ESP ①	Rated CFM ②	Optional CFM ③	Continuous CFM ④	CFM @ Max ESP
QC501-A	230/208-1	1/2 Variable	3.7	0.15	0.8	1200	1000	1000	1175
QC501-K	115-1	1/2 Variable	7.4	0.15	0.8	1200	1000	1000	1175
QC501-L	277-1	1/2 Variable	3.7	0.15	0.8	1200	1000	1000	1175

NOTE: These units are equipped with a variable speed (ECM) indoor motor that automatically adjusts itself to maintain approximately the same rate of indoor airflow in both heating and cooling, dry and wet coil conditions.

① Max ESP (inches WC) shown is with 1" thick disposable filter (reduced by .2 for 2" filter)

② Rated CFM (based on ducted application) for heating and cooling operation.

③ Reduced indoor air flow option to provide lowest possible indoor air sound level. Reduces system capacity performance by approx. 2%.

④ Continuous fan CFM is the total air being circulated during continous fan mode.

Electrical Specifications

MODEL	Single Circuit						Dual Circuit							
	Rated Volts & Phase 60 Hz	No. Field Power Circuits	③ Minimum Circuit Ampacity	① Maximum External Fuse or Ckt. Brkr.	② Field Power Wire Size	② Ground Wire	③ Minimum Circuit Ampacity		① Maximum External Fuse or Ckt. Breaker		② Field Power Wire Size		② Ground Wire Size	
							Ckt. A	Ckt. B	Ckt. A	Ckt. B	Ckt. A	Ckt. B	Ckt. A	Ckt. B
QC501-A0Z	230/208-1	1	7	15	14	14								
-A05		1	33	35	8	10								
-A10		1	58	60	6	10								
-A15		1 or 2	83	90	4	8	50	33	50	40	8	8	10	10
QC501-K0Z	115-1	1	10	15	14	14								
QC501-L0Z	277-1	1	6.5	10	14	14								

① Maximum size of the time delay fuse or HACR type circuit breaker for protection of field wiring conductors.

② Based on 75ºC copper wire. All wiring must conform to the National Electrical Code and all local codes.

③ These "Minimum Circuit Ampacity" values are to be used for sizing the field power conductors. Refer to the National Electrical Code (latest revision), Article 310 for power conductor sizing.

CAUTION: When more than one field power conductor circuit is run through one conduit, the conductors must be derated. Pay special attention to Note 8 of Table 310 regarding Ampacity Adjustment Factors when more than three conductors are in a raceway.

Electric Heat Table
Refer to Electrical Specifications for Availability by Unit Model

Nominal KW	At 240V ①				At 208V ①			
	KW	1-Ph Amps	3-Ph. Amps	BTUH	KW	1-Ph Amps	3-Ph. Amps	BTUH
5.0	5.0	20.8		17,065	3.75	18.0		12,799
10.0	10.0	41.7		34,130	7.50	36.1		25,598
15.0	15.0	62.5	36.1	51,195	11.25	54.1	31.2	38,396

① These electric heaters are available in 230/208V units only.

Shipping Weight

400 lbs.

Filter Sizes - Inches

(1) 16 x 25 and (1) 16 x 16

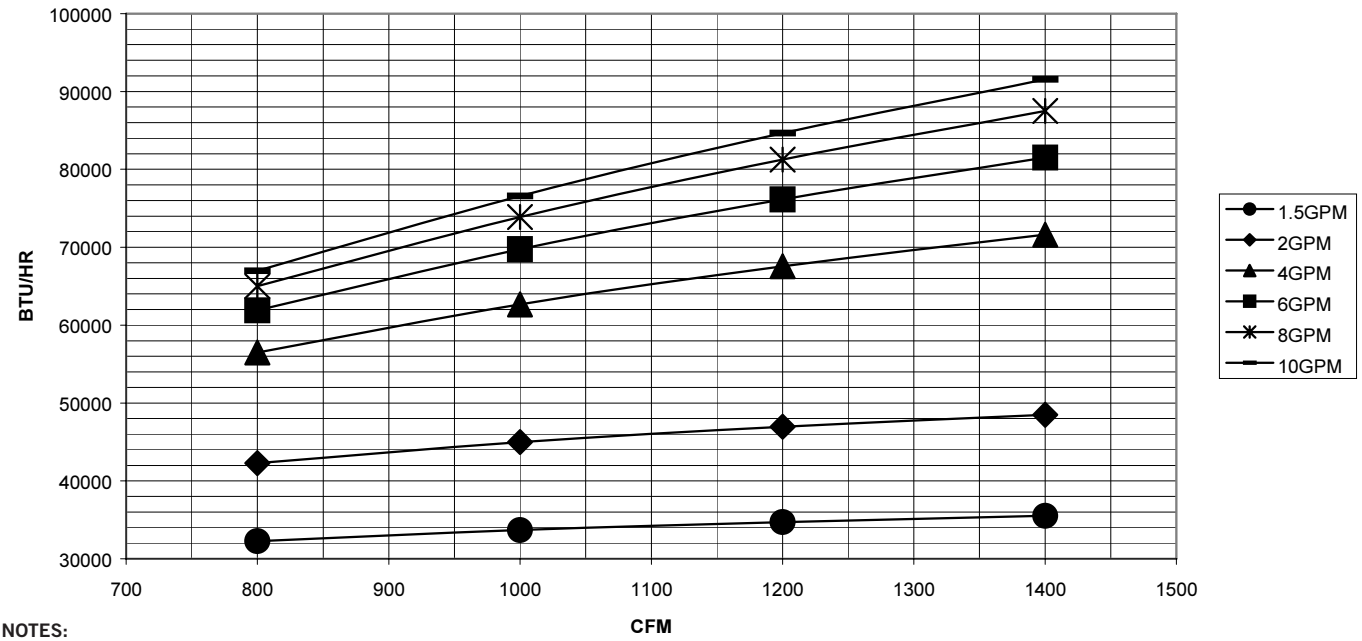
- Standard - 1" Fiberglass
- Optional - 2" Fiberglass
- Optional - 2" Pleated

Chilled Water Coil Performance - Cooling Capacity

MODEL QC501										
GPM	EWT	CFM	BTUH Capacity (1000) ④			BTUH Capacity (1000) ④			Water Coil	
			Stage 1			Stage 1 & 2			Pressure Drop	
			Total	Sensible	Latent	Total	Sensible	Latent	PSIG	Ft. Hd.
6	42	1000	15.1	10.5	4.6	38.5	25.3	13.2	1.9	4.4
8			16.4	11.1	5.3	41.5	26.8	14.7	3.3	7.5
10			17.4	11.7	5.7	43.2	27.4	15.8	4.9	11.3
6	44	1000	13.9	10.0	3.9	35.8	24.2	11.6	1.9	4.4
8			15.1	10.6	4.5	38.4	25.4	13.0	3.3	7.5
10			16.0	11.1	4.9	40.0	26.0	14.0	4.9	11.3
6	46	1000	12.8	9.6	3.2	33.0	23.0	10.0	1.9	4.4
8			13.9	10.1	3.8	35.3	24.0	11.3	3.3	7.5
10			14.7	10.6	4.1	36.9	24.6	12.3	4.9	11.3
6	48	1000	11.6	9.1	2.5	30.3	21.9	8.4	1.9	4.4
8			12.6	9.6	3.0	32.2	22.6	9.6	3.3	7.5
10			13.3	10.0	3.3	33.7	23.2	10.5	4.9	11.3
6	42	1200	15.9	11.5	4.4	42.1	29.0	13.1	1.9	4.4
8			17.4	12.2	5.2	46.0	30.6	15.4	3.3	7.5
10			18.8	12.8	6.0	49.3	31.9	17.4	4.9	11.3
6	44	1200	14.8	11.1	3.7	39.3	27.7	11.6	1.9	4.4
8			16.2	11.7	4.5	42.7	29.2	13.5	3.3	7.5
10			17.4	12.3	5.1	45.6	30.4	15.2	4.9	11.3
6	46	1200	13.6	10.7	2.9	36.4	26.5	9.9	1.9	4.4
8			14.9	11.3	3.6	39.5	27.9	11.6	3.3	7.5
10			16.1	11.7	4.4	42.0	29.0	13.0	4.9	11.3
6	48	1200	12.5	10.3	2.2	33.6	25.2	8.4	1.9	4.4
8			13.7	10.8	2.9	36.2	26.5	9.7	3.3	7.5
10			14.7	11.2	3.5	38.3	27.5	10.8	4.9	11.3

① Stages 1 and 2 water valves (2 are supplied) afford 2-stage control when connected to 2-stage cooling thermostat.
② If factory mounted thermostat is selected, it is 2-stage design.
③ If field supplied thermostat is used and it is only a 1-stage design, then the TOTAL CAPACITY STAGE 1 and 2 would cycle as one.
④ Based on 80F DB / 67F WB (50% RH).

Optional Hot Water Coil Performance-Heating Capacity @ 180°F Water & 70° Return Air



NOTES:
① Water connections are 7/8" O.D. copper.
② 3-way flow valve is factory installed.
③ Control wiring included, and can be operated as either 1st or 2nd stage.

Ventilation System Packages

Q-TEC models are designed to provide optional ventilation packages to meet all of your ventilation and indoor air quality requirements. All ventilation packages are factory installed.

NOTE: A ventilation wall sleeve QWVS42 with outdoor louver grille is required for all installations that intend to utilize one of the built-in ventilation options of the QC-Series models. If a ventilation option is not to be utilized, do not order ventilation wall sleeve.

BAROMETRIC FRESH AIR DAMPER **OPTIONAL**

The barometric fresh air damper allows outside ventilation air, up to 25% of the total airflow rating of the unit, to be introduced through the ventilation louver grille and to be mixed with the conditioned air. The damper opens during blower operation and closes when the blower is off. Adjustable blade stops allow different amounts of outside air to be introduced into the building and can be easily locked closed if required.

NOTE: The above vent systems are intake only without built-in exhaust capability. Building will likely require separate field installed barometric relief or mechanical exhaust elsewhere within the conditioned space. Balancing dampers in the return air grille may be required to achieve specified amount of outdoor air intake.

COMMERCIAL ROOM VENTILATOR **OPTIONAL**

The built-in commercial room ventilator is internally mounted and allows outside ventilation air, up to 50% of the total airflow rating of the unit, to be introduced through the ventilation louver grille. It includes a built-in exhaust air damper. Spring return on power loss or deactivation. The commercial room ventilator (CRV) is a simple and innovative approach to improving the indoor air quality by providing fresh air intake and exhaust capability through the CRV. The damper can be easily adjusted to control the amount of fresh air supplied into the building. The CRV can be controlled by indoor blower operation or field controlled based on room occupancy. Complies with ASHRAE Standard 62.1 "Ventilation for Acceptable Indoor Air Quality."

Two Models Available:
- Spring return on power loss or deactivation
- Power return (will not close on power loss)

ENERGY RECOVERY VENTILATOR (Used only on QC501-A models) **OPTIONAL**

The energy recovery ventilator (ERV) is a highly innovative approach to meeting indoor air quality ventilation requirements as established by ASHRAE Standard 62.1. The ERV is internally mounted and allows up to 450 CFM (depending upon speed setting) of fresh air and exhaust through the unit while maintaining superior indoor comfort and humidity levels. In most cases, this can be accomplished without increasing equipment sizing or operating costs. Heat transfer efficiency is up to 64% during summer and 79% during winter conditions.

The ERV consists of a unique "rotary energy recovery cassette" that provides effective sensible and latent heat transfer capabilities during summer and winter conditions. Various control schemes are addressed – including limiting ventilation during building occupancy only. The ERV has a filter for the exhaust air to keep the rotary wheels clean and free of any debris introduced through the room return air grille. The intake and exhaust rates can be independently selected. Factory set on medium intake and low exhaust.

NOTE: This vent option does not include positive shut-off dampers. If positive shut-off is required, a kit is available (Part #8620-215) that may be installed during unit installation. This kit is for the QWVS42 wall sleeve, and will not function properly with the QWVSR42 version.

Commercial Room Ventilator Performance Tables

QC501 Ventilation Mode				
Damper Position	Duct-Free	Static Pressure		
		0.1	0.3	0.5
A	140	135	125	120
B	180	170	160	160
C	220	210	205	195
D	315	315	315	290
E	410	400	385	380

SUMMER COOLING PERFORMANCE
(INDOOR DESIGN CONDITIONS 75°DB/62°WB)

Ambient O.D.		VENTILATION RATE -- 450CFM 65% EFFICIENCY						VENTILATION RATE -- 375 CFM 66% EFFICIENCY						VENTILATION RATE -- 300 CFM 67% EFFICIENCY					
DB/WB	F	VLT	VLS	VLL	HRT	HRS	HRL	VLT	VLS	VLL	HRT	HRS	HRL	VLT	VLS	VLL	HRT	HRS	HRL
105	75	21465	14580	6884	13952	9477	4475	17887	12150	5737	11805	8018	3786	14310	9720	4590	9587	6512	3075
	70	14580	14580	0	9477	9477	0	12150	12150	0	8018	8018	0	9720	9720	0	6512	6512	0
	65	14580	14580	0	9477	9477	0	12150	12150	0	8018	8018	0	9720	9720	0	6512	6512	0
100	80	31590	12150	19440	20533	7897	12635	26325	10125	16200	17374	6682	10692	21060	8100	12960	14110	5427	8683
	75	21465	12150	9314	13952	7897	6054	17887	10125	7762	11805	6682	5123	14310	8100	6210	9587	5427	4160
	70	12352	12150	202	8029	7897	131	10293	10125	168	6793	6682	111	8235	8100	135	5517	5427	90
	65	12150	12150	0	7897	7897	0	10125	10125	0	6682	6682	0	8100	8100	0	5427	5427	0
	60	12150	12150	0	7897	7897	0	10125	10125	0	6682	6682	0	8100	8100	0	5427	5427	0
95	80	31590	9720	21870	20533	6318	14215	26325	8100	18225	17374	5345	12028	21060	6480	14580	14110	4341	9768
	75	21465	9720	11744	13952	6318	7634	17887	8100	9787	11805	5345	6459	14310	6480	7830	9587	4341	5246
	70	12352	9720	2632	8029	6318	1711	10293	8100	2193	6793	5345	1447	8235	6480	1755	5517	4341	1175
	65	9720	9720	0	6318	6318	0	8100	8100	0	5345	5345	0	6480	6480	0	4341	4341	0
	60	9720	9720	0	6318	6318	0	8100	8100	0	5345	5345	0	6480	6480	0	4341	4341	0
90	80	31590	7290	24300	20533	4738	15794	26325	6075	20250	17374	4009	13365	21060	4860	16200	14110	3256	10854
	75	21465	7290	14175	13952	4738	9213	17887	6075	11812	11805	4009	7796	14310	4860	9450	9587	3256	6331
	70	12352	7290	5062	8029	4738	3290	10293	6075	4218	6793	4009	2784	8235	4860	3375	5517	3256	2261
	65	7290	7290	0	4738	4738	0	6075	6075	0	4009	4009	0	4860	4860	0	3256	3256	0
	60	7290	7290	0	4738	4738	0	6075	6075	0	4009	4009	0	4860	4860	0	3256	3256	0
85	80	31590	4860	26730	20533	3159	17374	26325	4050	22275	17374	2672	14701	21060	3240	17820	14110	2170	11939
	75	21465	4860	16605	13952	3159	10793	17887	4050	13837	11805	2672	9132	14310	3240	11070	9587	2170	7416
	70	12352	4860	7492	8029	3159	4870	10293	4050	6243	6793	2672	4120	8235	3240	4995	5517	2170	3346
	65	4860	4860	0	3159	3159	0	4050	4050	0	2672	2672	0	3240	3240	0	2170	2170	0
	60	4860	4860	0	3159	3159	0	4050	4050	0	2672	2672	0	3240	3240	0	2170	2170	0
80	75	21465	2430	19035	13952	1580	12372	17887	2025	15862	11805	1336	10469	14310	1620	12690	9587	1085	8502
	70	12352	2430	9922	8029	1580	6449	10293	2025	8268	6793	1336	5457	8235	1620	6615	5517	1085	4432
	65	4252	2430	1822	2764	1580	1184	3543	2025	1518	2338	1336	1002	2835	1620	1215	1899	1085	814
	60	2430	2430	0	1579	1580	0	2025	2025	0	1336	1336	0	1620	1620	0	1085	1085	0
75	70	12352	0	12352	8029	0	8029	10293	0	10293	6793	0	6793	8235	0	8235	5517	0	5517
	65	4252	0	4252	2764	0	2764	3543	0	3543	2338	0	2338	2835	0	2835	1899	0	1899
	60	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

WINTER HEATING PERFORMANCE
(INDOOR DESIGN CONDITIONS 70°F DB)

Ambient O.D.	VENTILATION RATE					
	450 CFM 80% EFFICIENCY		375 CFM 81% EFFICIENCY		300 CFM 82% EFFICIENCY	
DB/°F	WVL	WHR	WVL	WHR	WVL	WHR
65	2430	1944	2025	1640	1620	1328
60	4860	3888	4050	3280	3240	2656
55	7290	5832	6075	4920	4860	3985
50	9720	7776	8100	6561	6480	5313
45	12150	9720	10125	8201	8100	6642
40	14580	11664	12150	9841	9720	7970
35	17010	13608	14175	11481	11340	9298
30	19440	15552	16200	13122	12960	10627
25	21870	17496	18225	14762	14580	11955
20	24300	19440	20250	16402	16200	13284
15	26730	21384	22275	18042	17820	14612

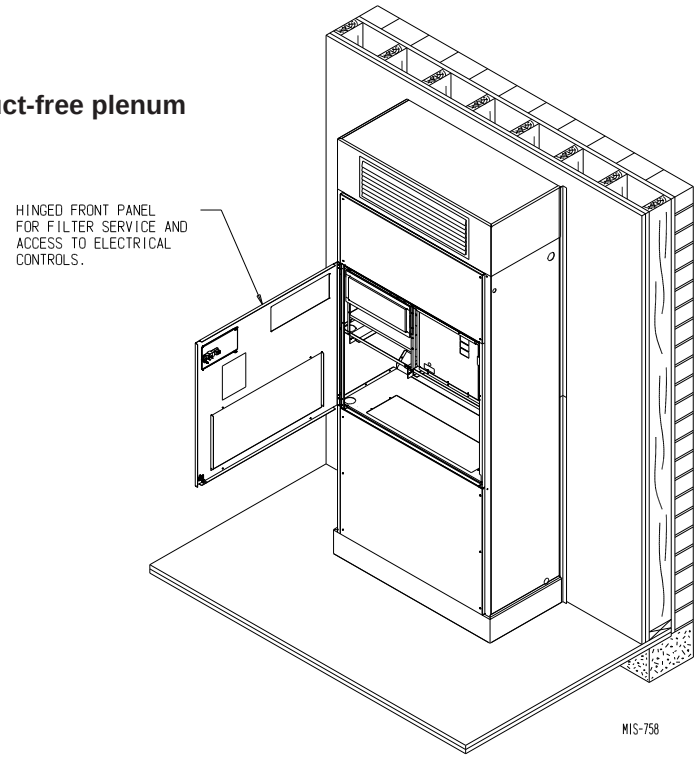
NOTE: Sensible performance only is shown for winter application.

LEGEND:

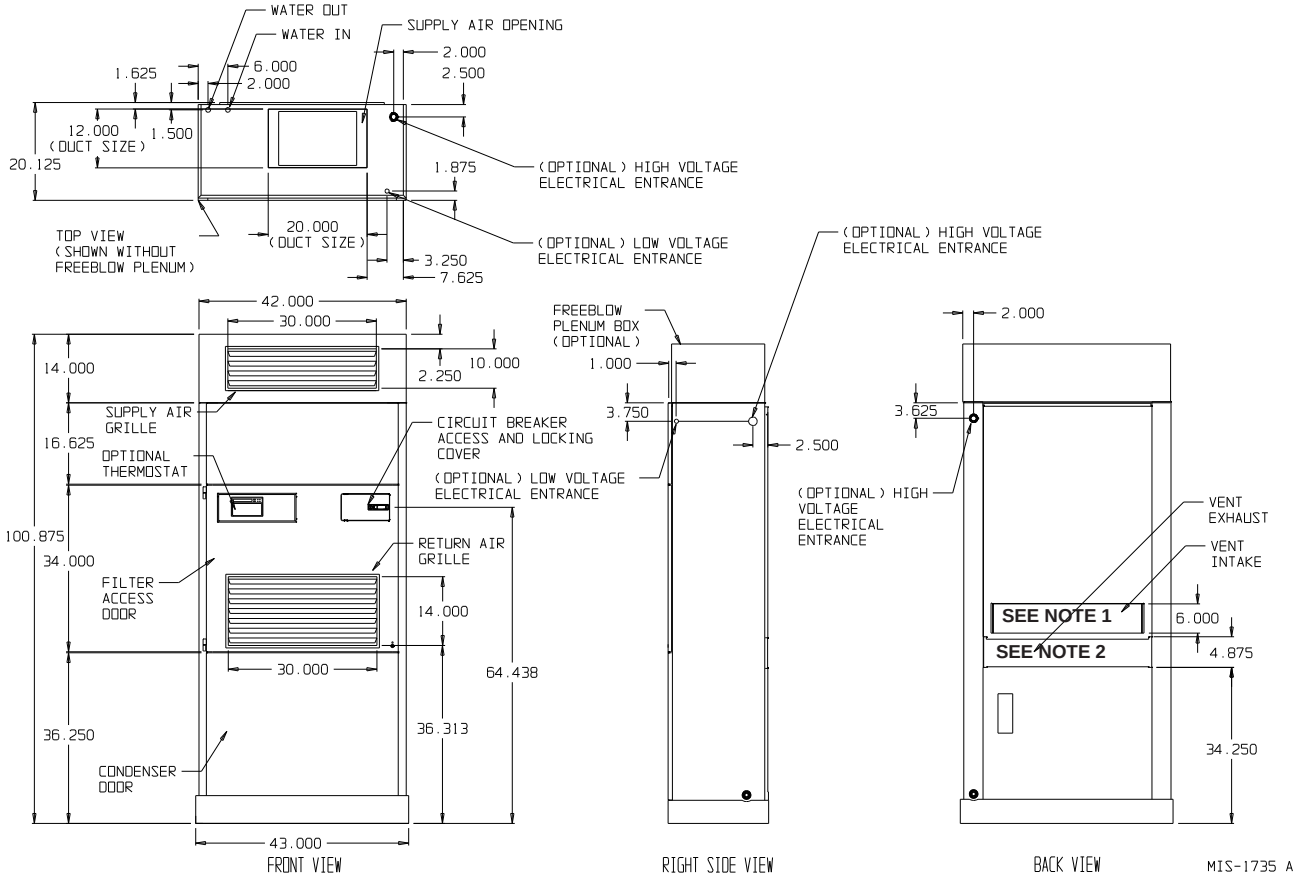
VLT = Ventilation Load - Total
VLS = Ventilation Load - Sensible
VLL = Ventilation Load - Latent
HRT = Heat Recovery - Total
HRS = Heat Recovery - Sensible
HRL = Heat Recovery - Latent
WVL = Winter Ventilation Load
WHR = Winter Heat Recovery

Installation Overview

Unit installed with duct-free plenum



Dimensions of Basic Unit for Architectural and Installation Requirements (Nominal)

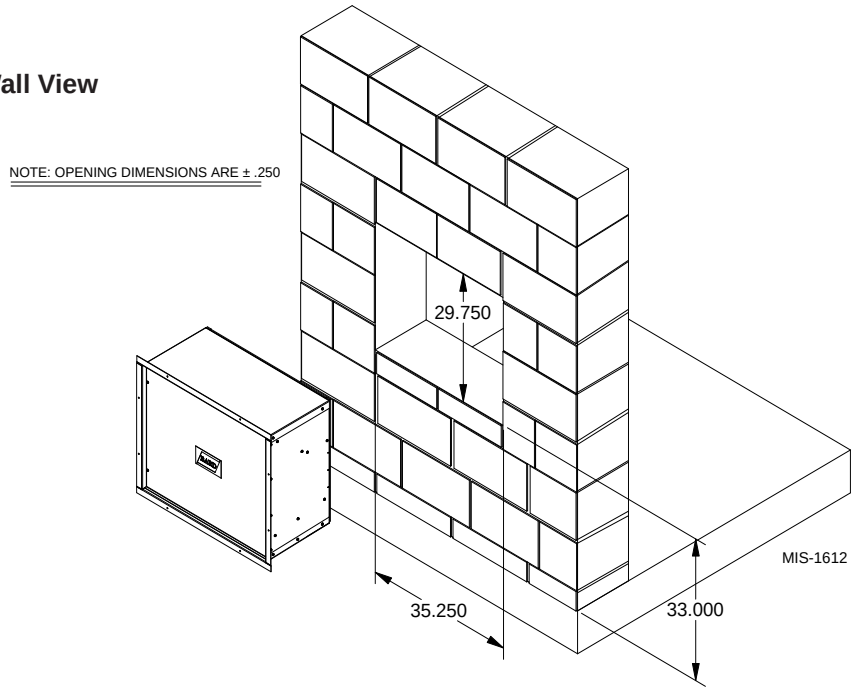


NOTE 1: Ventilation intake opening for barometric fresh air damper, commercial room ventilator (CRV) or energy recovery ventilator (ERV). Opening is sealed if no vent option.

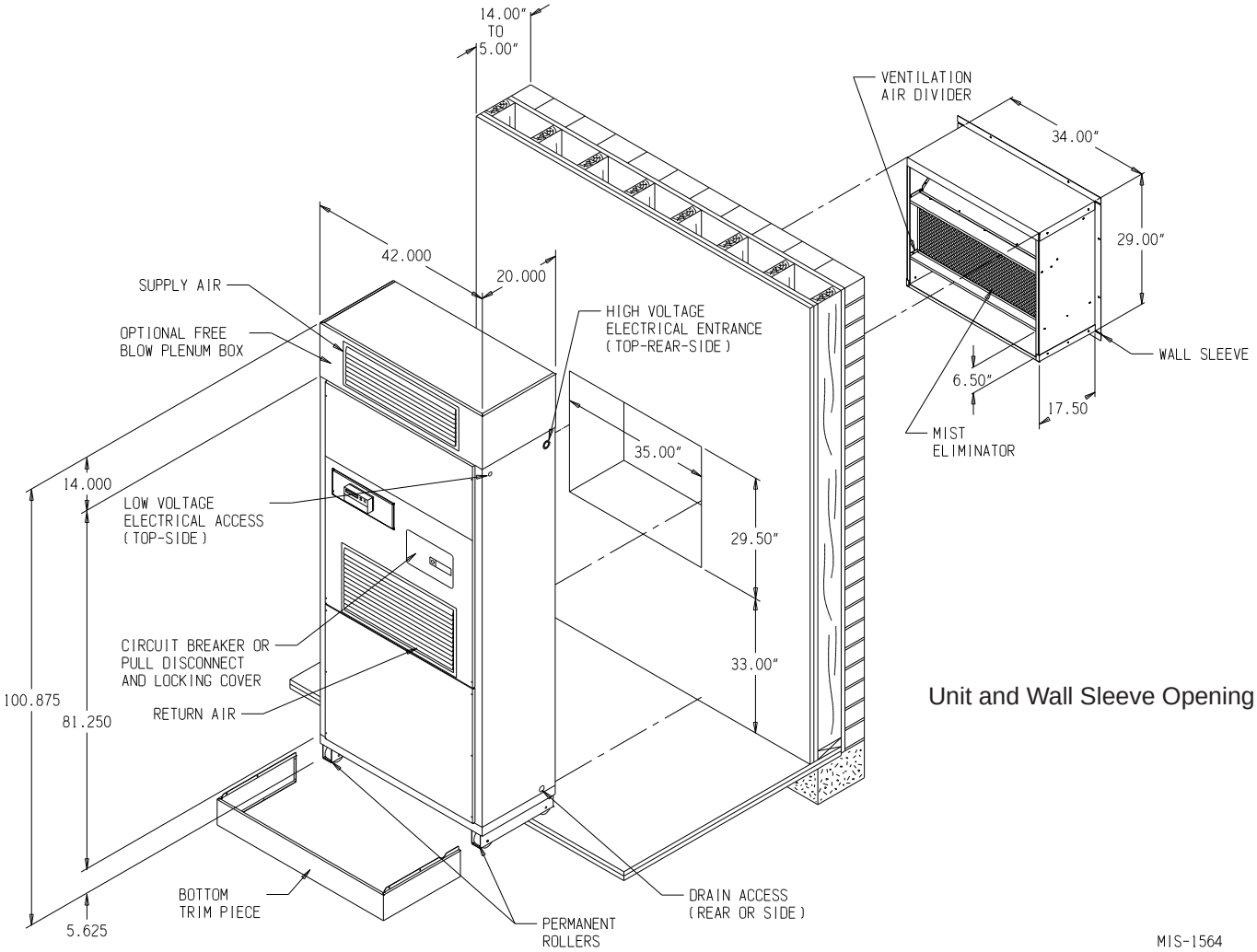
NOTE 2: Ventilation exhaust opening for CRV and ERV vent options. Opening is sealed for no vent option and for barometric fresh air damper.

Installation Overview When Ventilation Package With Ventilation Sleeve Is Used

Exterior Wall View



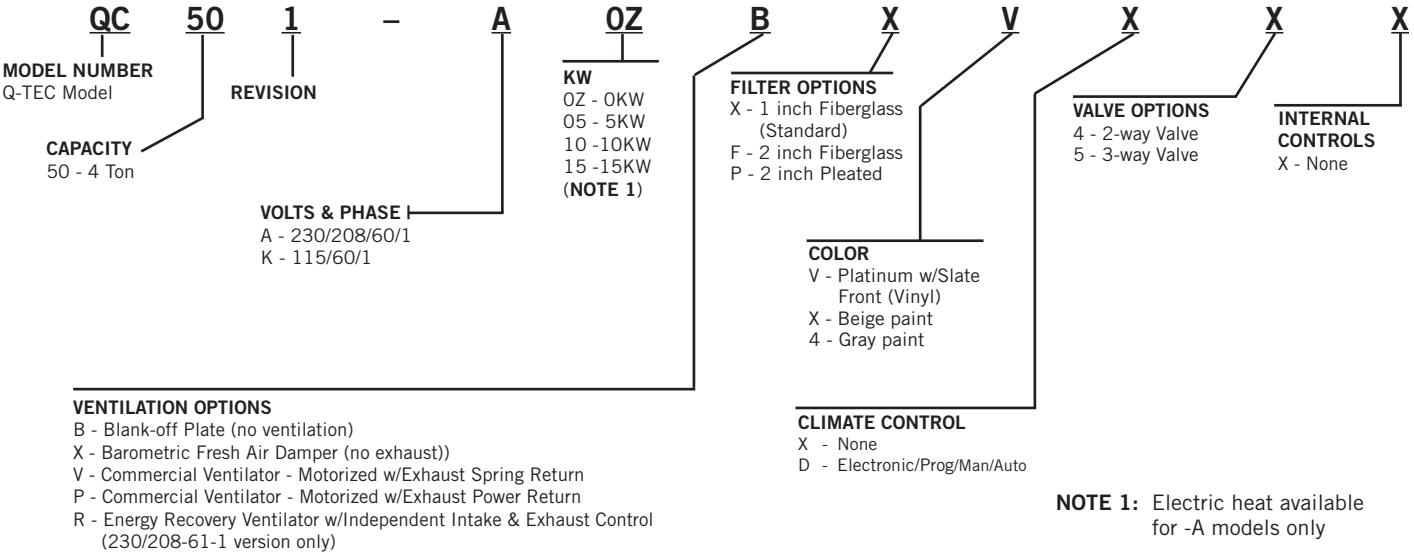
NOTE: Wall opening and wall sleeve required only when one of the ventilation options is utilized. Installations not utilizing any ventilation option can be made in any interior space accessible to electrical supply, water supply system and condensate drain.



Unit and Wall Sleeve Opening

MIS-1564

Q-TEC Model Nomenclature



NOTE 1: Electric heat available for -A models only

Optional Field Installed Accessories – Must Be Used For Each Installation w/Ventilation Options

Ventilation Wall Sleeves:

QWVS42	Ventilation wall sleeve for walls up to 14 inches thick	**NOTE:** Actual depth of QWVS42 sleeve is 17" with 3" allocation for water piping. Standard side trim kit packaged with QC unit will cover the space behind the unit if wall is 14 inches. For walls less than 14 inches, also order side trim extension kit QSTX42A-V or -4. See below.

Ventilation Outdoor Louver Grilles:

QLW-10	Clear Painted Enamel Finish for vent option, 1" Depth
QLW-20	Medium Bronze Painted Enamel Finish for vent option, 1" Depth
QLW-30	Dark Bronze Painted Enamel Finish for vent option, 1" Depth
QLW-**	Optional Louver Finishes available **(See Form F1974)**

Contact your Bard Sales Representative for Custom Finish Louver information

Optional Field Installed Accessories - Additional Items As Determined By Job Specifications

***NOTE*: The following accessory items must be selected so that the finish (color) is matched to the QC model that they will be used with.**

Side Trim Extension Kits: Required when wall thickness is less than 10½ inches and works for walls down to 6 inches thick. Used in place of standard trim kit supplied with unit to cover the space between unit and wall.

							Unit Compatibility
QSTX42A-V	Platinum vinyl	QSTX42A-4	Gray paint	QSTX42A-X	Beige paint		All Models

Duct-Free Plenum Boxes:							*Unit Compatibility*
QPB42-V	Platinum vinyl	QPB42-4	Gray paint	QPB42-X	Beige paint	Front supply, 4-way deflection grille	All Models
QPBS42-V	Platinum vinyl	QPBS42-4	Gray paint	QPBS42-X	Beige paint	Same as QPB42, plus 2-way deflection grille on each side	All Models
QPBS42-V-8	Platinum vinyl	QPBS42-4-8	Gray paint	QPBS42-X-8	Beige paint	Same as QPB42, 8" height ①	All Models

Top Fill Systems for Finishing Plenum Boxes to Ceilings:							*Unit Compatibility*
QPBX42-9-V	Platinum vinyl	QPBX42-9-4	Gray paint	QPBX42-9-X	Beige paint	Use with QPB42 or QPBS42 (adjusts to ceilings up to 9' 6")	All Models
QPBX42-10-V	Platinum vinyl	QPBX42-10-4	Gray paint	QPBX42-10-X	Beige paint	Use with QPB42 or QPBS42 (adjusts to ceilings up to 10' 2")	All Models

Cabinet Extensions for Ducted Applications:							*Unit Compatibility*
QCX10A-V	Platinum vinyl	QCX10A-4	Gray paint	QCX10A-X	Beige paint	20" height (adjusts for ceilings up to 9' 4"; add QPBX42-9 (-V or -4) for 9'4" to 10' finished ceiling heights)	All Models

Hot Water Coils with Plenum Boxes:							*Unit Compatibility*
QPBHW42-F-V	Platinum vinyl	QPBHW42-F-4	Gray paint	QPBHW42-F-X	Beige paint	Duct-Free plenum box	All Models
QPBHW42-D-V	Platinum vinyl	QPBHW42-D-4	Gray paint	QPBHW42-D-X	Beige paint	Ducted plenum box	All Models

See page 3 for heating capacity performance

NOTE: The same top fill system and cabinet extensions can be used with hot water coil plenum boxes as with standard plenum boxes.

① 8" Plenum box height may affect sound level of supply air and unit.

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Due to our continuous product improvement policy, all specifications subject to change without notice.

Form No. S3360 August 2020

Supersedes: S3360-1015