



DESIGN GUIDE PTAC/PTHP

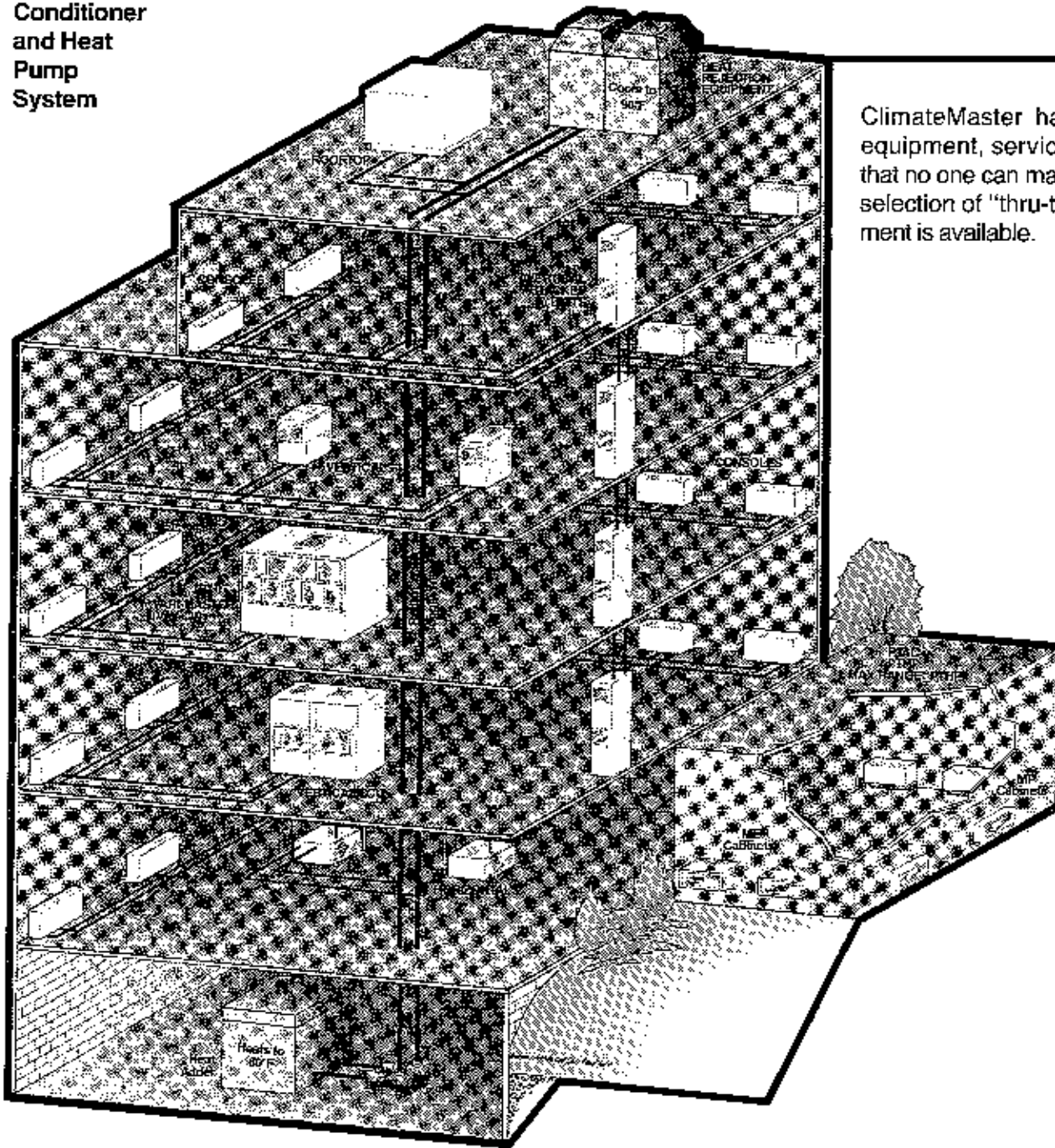
Air-to-Air Heat Pumps
702/703/704 SERIES

ClimateMaster

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FRIEDRICH™ CLIMATE MASTER, INC.

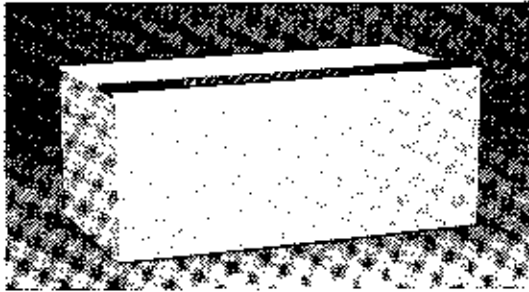
THE NATURAL SOLUTION...USING

ClimateMaster Packaged Terminal Air Conditioner and Heat Pump System

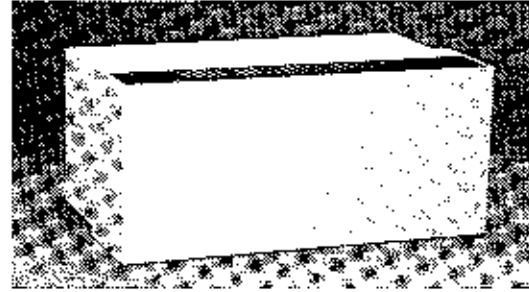


ClimateMaster has experience, equipment, service, and support that no one can match. A complete selection of "thru-the-wall" equipment is available.

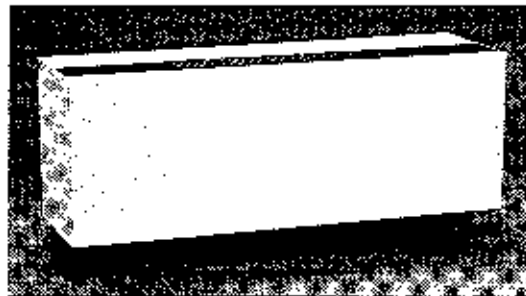
702/703/704 PTAC/PTHP UNITS



SP CABINET



ME CABINET



MP CABINET

PACKAGED TERMINAL AIR CONDITIONERS AND HEAT PUMPS

702/703/704 Packaged Terminal Air Conditioners and Heat Pumps are attractive, versatile, self-contained conditioners designed to please the most demanding occupant. These thru-the-wall units meet room comfort requirements in both new and retrofit applications. Low cost is associated with both installation and operation. Packaged terminal units save vital room area

due to the fact that the unit installation is mostly in the exterior wall cavity.

Individual zone control offers the advantage levels for different areas.

Service required on any one unit will not interrupt operation of others within the same building. Noise

problems are minimized. The fan and compressor are enclosed in insulated compartments with removable, insulated steel panels. The exterior cabinet is insulated both thermally and acoustically for MP and SP style cabinets!

Multiple options are available. See pages 11A and 11B.

PERFORMANCE CHARTS

702 PERFORMANCE AND ELECTRICAL DATA

Model	702-07	702-09	702-12	702-15
Total Cooling BTUH	7300	8400	11800	14900
EER	9.1	8.4	8.7	7.7
Air Flow CFM High Vent	350 45	350 45	470 50	470 50
Electrical 115-1-60 FLA Watts	8.2 800	9.6 990	X	
208/230-1-60 FLA Watts	4.0 800	4.7 990	5.9 1360	9.5 1940
265-1-60 FLA Watts	3.7 800	4.2 990	5.35 1360	7.4 1940

703 PERFORMANCE AND ELECTRICAL DATA

Model	703-07	703-09	703-12	703-15
Total Cooling BTUH	7300	8400	11800	14600
EER	9.1	8.4	8.7	7.6
Total Heating BTUH	6300	7700	10400	13200
COP	2.7	2.6	2.8	2.5
Air Flow CFM				
High Vent	350 45	350 45	470 50	470 50
Electrical			X	
115-1-60 FLA Cooling Watts	8.2 800	9.6 990	X	
208/230-1-60 FLA Cooling Watts	4.0 800	4.7 990	5.9 1360	9.5 1920
265-1-60 FLA Cooling Watts	3.7 800	4.2 990	5.35 1360	7.4 1920

PERFORMANCE CHARTS

704 PERFORMANCE AND ELECTRICAL DATA

Model	704-08	704-12	704-14
Total Cooling BTUH	8000	11000	13000
EER	8.9	8.5	7.9
High Temp Total Heating BTUH	7500	10700	12900
COP	2.8	2.8	2.7
Low Temp Total Heating BTUH	4300	6100	7700
COP	1.8	1.8	1.8
Air Flow CFM High Vent	350 45	470 50	470 50
208/230-1-60 FLA Cooling Watts	4.8 900	5.9 1300	7.8 1650
265-1-60 FLA Cooling Watts	3.8 900	5.35 1300	6.15 1650

702/703 HEATER OPTIONS

Voltage Heater Code	208-60-1				230-60-1			265-60-1	
	1	2	4	5	1	2	4	3	5
BTUH	7100	10600	13000	14000	8700	12900	15700	11400	13900
KW	2.00	3.00	3.70	4.00	2.45	3.70	4.50	3.25	3.98

702/703 HYDRONIC HEAT

Models	BTUH	
	Steam	Hot Water
702/703-07, 09, 12, 15	18400	15400

704 ELECTRIC HEAT OPTIONS

Voltage Heater Code	208-60-1				230-60-1			265-60-1	
	6	7	8	9	6	7	8	6	7
Stage 1 BTUH KW	2795 .82	4180 1.225	4860 1.425	6310 1.85	3410 1.00	5155 1.50	5880 1.725	4545 1.335	6785 1.99
Stage 1 & 2 BTUH KW	5590 1.64	8360 2.45	9720 2.85	12620 3.70	6820 2.00	10230 3.00	11760 3.45	9090 2.67	13570 3.98

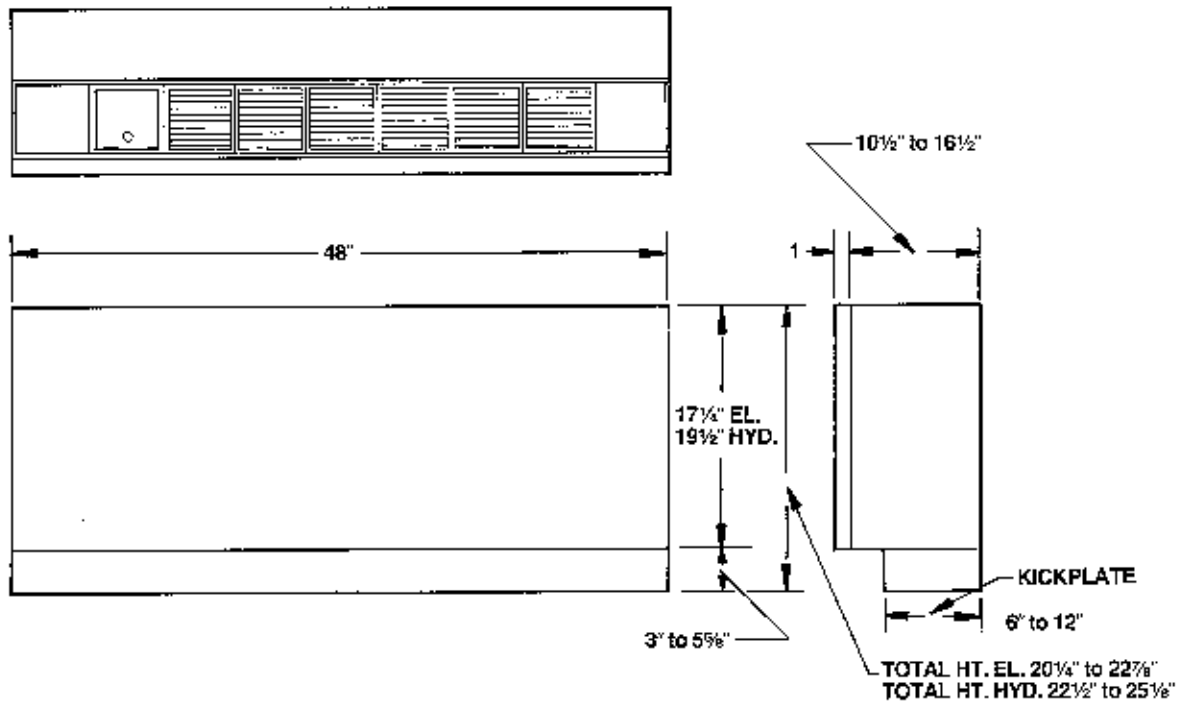
GENERAL DATA

GENERAL DATA CHART

Model Number	Voltages	Phase	Min. CRC Ampacity	Max. Fuse	Comp LRA	Comp RLA	Blower FLA	Fan FLA	Blower HP	Fan HP	Total FLA	Min. Voltage	Ship Wt. Lbs.
702-07	115, 208/230 265	1	11.0	15	29.8	5.6	1.00	1.60	1/20	1/12	8.2	197	138
			5.2		15.9	2.8	0.45	0.75	1/20	4.0			
			5.0		12.3	2.6	0.45	0.65	1/20	3.7			
702-09	115 208/230 265	1	13.2	15	40.0	7.0	1.00	1.60	1/20	1/12	9.6	197	140
			7.0		20.0	3.5	0.45	0.75	1/20	4.7			
			5.7		16.0	3.1	0.45	0.65	1/20	4.2			
702-12	208/230 265	1	7.3	15	26.3	4.6	0.55	0.75	1/12	1/12	5.9	197	145
			6.6		22.0	4.2	0.50	0.65	1/12	1/12	5.35		
702-15	208/230 265	1	14.5	15	44.0	7.3	0.55	0.75	1/12	1/12	9.5	197	152
			14.5		40.0	7.1	0.50	0.65	1/12	1/12	7.4		
703-07	115 208/230 265	1	11.0	15	29.8	5.6	1.00	1.60	1/20	1/12	8.2	197	140
			5.2		15.9	2.8	0.45	0.75	1/20	4.0			
			5.0		12.3	2.6	0.45	0.65	1/20	3.7			
703-09	115 208/230 265	1	13.2	15	40.0	7.0	1.00	1.60	1/20	1/12	9.6	197	145
			7.0		20.0	3.5	0.45	0.75	1/20	4.7			
			5.7		16.0	3.1	0.45	0.65	1/20	4.2			
703-12	208/230 265	1	7.3	15	26.3	4.6	0.55	0.75	1/12	1/12	5.9	197	150
			6.6		22.0	4.2	0.50	0.65	1/12	1/12	5.35		
703-15	208/230 265	1	14.5	15	44.0	7.3	0.55	0.75	1/12	1/12	9.5	197	167
			14.5		40.0	7.1	0.50	0.65	1/12	1/12	7.4		
704-08	208/230 265	1	12.0	15	20.0	3.6	0.45	0.75	1/20	1/12	4.8	197	146
			12.0		17.5	2.7	0.45	0.65	1/20	1/12	3.8		
704-12	208/230 265	1	7.3	15	26.3	4.6	0.55	0.75	1/12	1/12	5.9	197	152
			6.6		22.0	4.2	0.50	0.65	1/12	1/12	5.35		
704-14	208/230 265	1	12.0	15	42.0	6.5	0.55	0.75	1/12	1/12	7.8	197	154
			12.0		25.3	5.0	0.50	0.65	1/12	1/12	6.15		

*Minimum Circuit Ampacity and Maximum Fuse Size do not include the use of electric heaters. Please consult factory for units with electric heaters.

DIMENSIONS



MP Cabinet

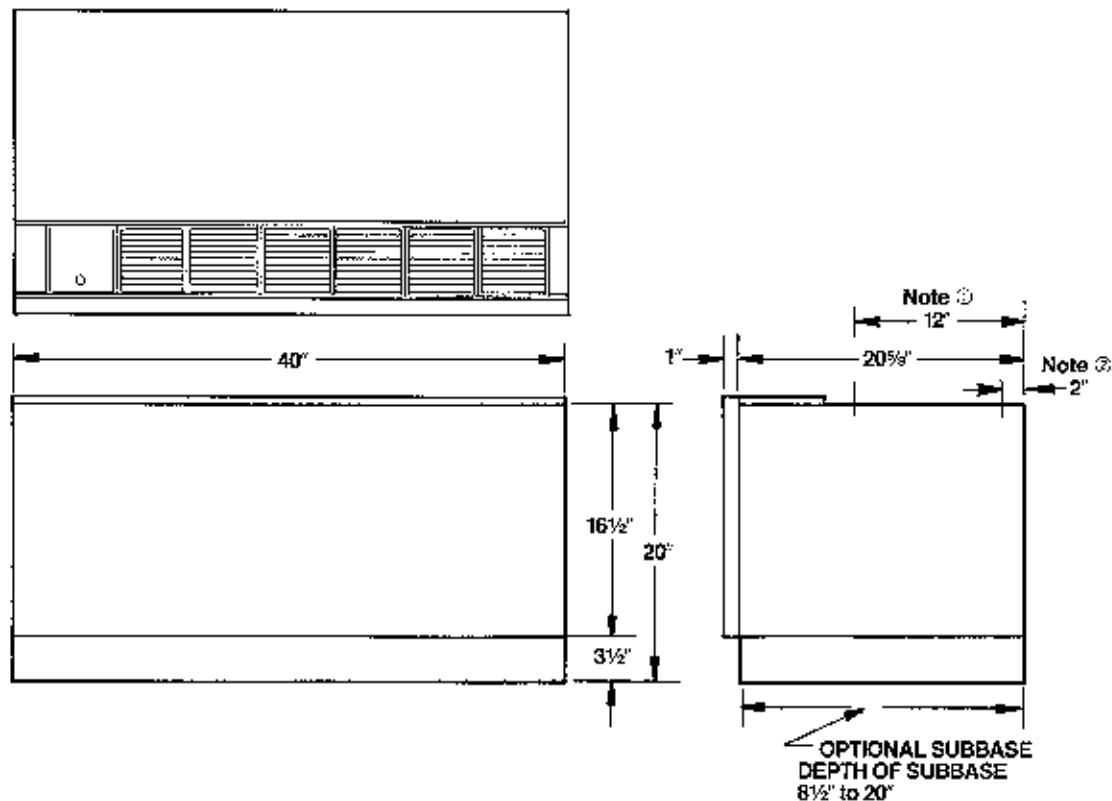
The room cabinet shall consist of two sections, a back frame and a removable front panel to allow full access to the chassis. Construction shall be of heavy gauge furniture steel finished in a neutral-colored baked enamel to blend with the interior. Provisions shall be made to match wall thicknesses of 2" to 24" depths in 1" increments. An adjustable kick plate shall be provided.

The discharge grill assembly shall be of stamped steel with a 4-way adjustment capability. The grill bars shall be set at a 20 degree deflection angle.

Return air shall enter the bottom of the chassis between the kick plate and the cabinet front.

Closed-cell material shall provide a positive compression, weather-tight seal between the chassis and wall box.

DIMENSIONS



SP Cabinet/Sleeve

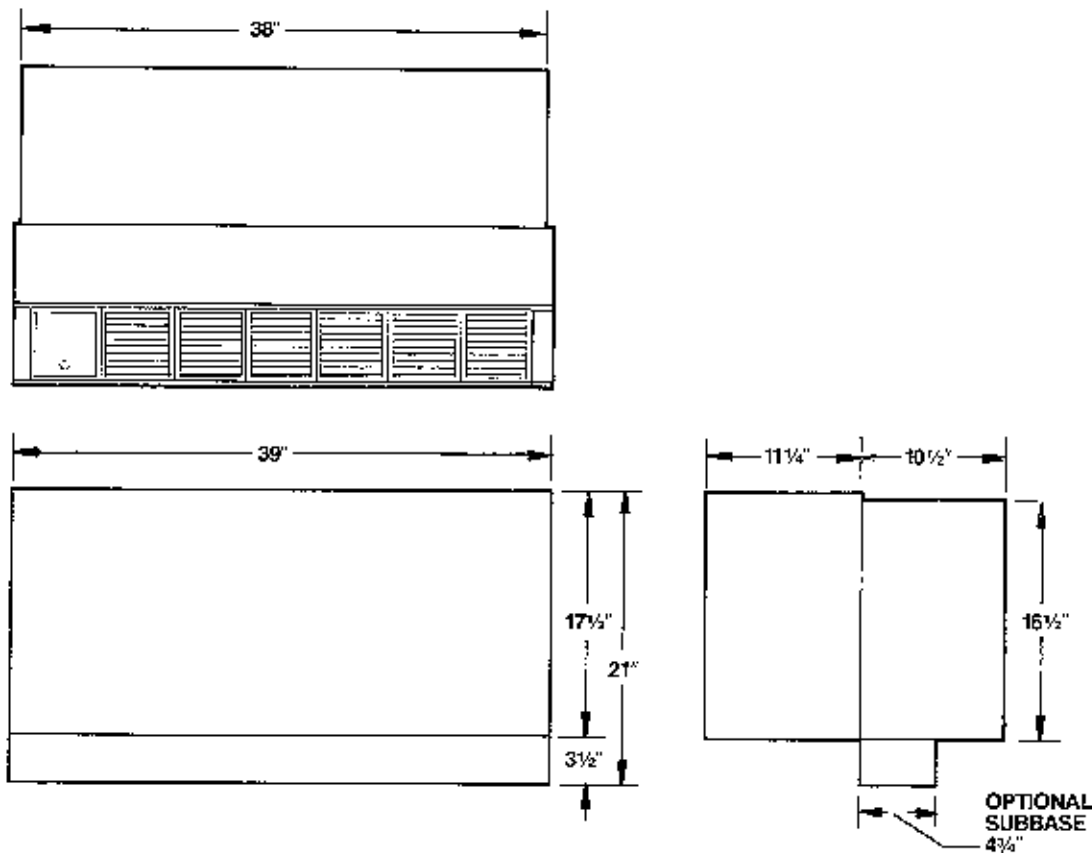
The Cabinet/Sleeve shall consist of two sections, a back frame and a removable front panel to allow full access to the chassis. Construction shall be of heavy gauge galvanized steel finished in a neutral-colored baked enamel to blend with the interior and provide corrosion protection. Glides shall be die formed in the base rails to permit easy removal of the chassis. The Base shall include a built-in pitch of not less than 1/4" for drainage to the outside. The Cabinet/Sleeve dimensions shall be 16 1/2" high and 40" wide. Provisions shall be made for recess capability up to 12" wall depth.

The discharge grill assembly shall be of stamped steel with a 4-way adjustment capability. The grill bars shall be set at a 20 degree deflection angle.

Note ① — Minimum wall insertion is 2".

Note ② — Maximum wall insertion is 12".

DIMENSIONS



ME Cabinet

The room cabinet shall consist of one section for access to the chassis. Construction shall be of heavy gauge furniture steel finished in a neutral-colored baked enamel to blend with the interior. Provisions shall be made to match wall thickness of 2" to 24" depths in 1" increments.

The discharge grill assembly shall be of stamped steel with a four-way adjustment capability. The grill bars shall be set at a 20 degree deflection angle.

Return air shall enter the bottom of the chassis under the cabinet.

Closed-cell material shall provide a positive compression, weathertight seal between the chassis and the cabinet.

The ME subbase attaches to the wall sleeve. The position of the subbase is dependent on the wall thickness.

The ME wall sleeve has no built-in drainage pitch and must be field installed with a minimum 1/4" pitch for condensate drainage to the outside.

OPTIONS

Cabinet Options

BAR GRILL DISCHARGE—Replaces the standard stamped-steel four-way adjustable discharge grill for a more sophisticated appearance.

ADJOINING ROOM OUTLET—Allows up to 40% of air flow to be directed to an adjoining room, to permit conditioning two rooms with one unit. MP and SP cabinet style only.

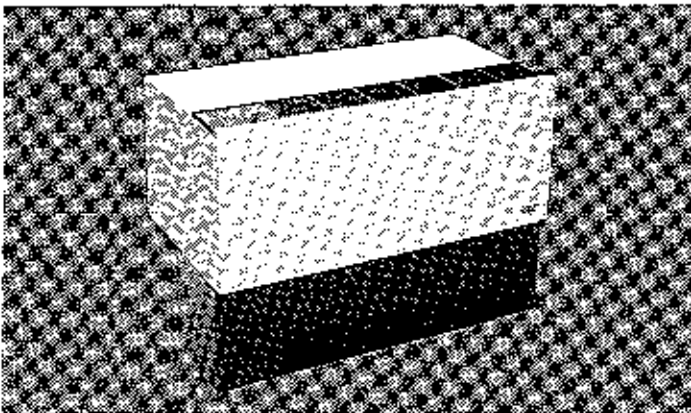
CONDENSATE DRAIN KIT (for heat pump)—This kit allows any unit to be connected to an internal drain system.

HYDRONIC HEAT SUB-BASE—This sub-base includes a hydronic (steam or hot water) heating coil, allowing units installed in the SP cabinet the option of hydronic heat with full service access to the chassis. Not available with MP and ME style cabinets. Hydronic Heat available with 702 series. Consult factory for other applications.

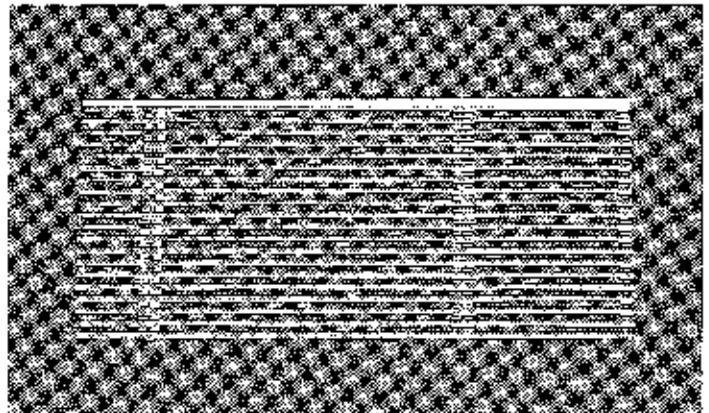
HIGH VOLUME FRESH AIR—Additional fresh air is brought into the unit for hospital or nursing home applications.

SEA COAST CONSTRUCTION—Various levels of salt-air protection for the outdoor condenser components and wall sleeve are available.

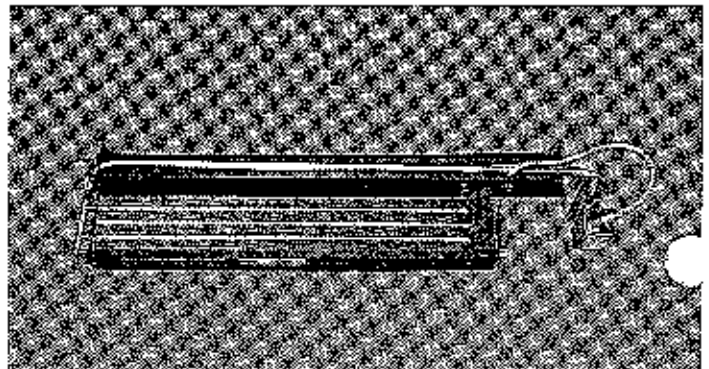
HYDRONIC HEAT MP CABINET—This cabinet is designed to house a hydronic (steam or hot water) heating coil, allowing units installed in the MP cabinet the option of hydronic heat with full service access to the chassis. Not available with SP and ME style cabinets. Hydronic heat available with 702 series. Consult factory for other applications.



SP Cabinet Sleeve with Hydronic Heater Sub-Base



Optional Outdoor Louver



MP Hydronic Heat Coil

Control Options

CYCLING AIR CONTROL (CAC) SWITCH—Allows the building owner to select continuous or cycling fan control.

PROGRAM RELAY—Factory-installed control relay (24 or 115 VAC) allows unit control by a time clock or energy management system.

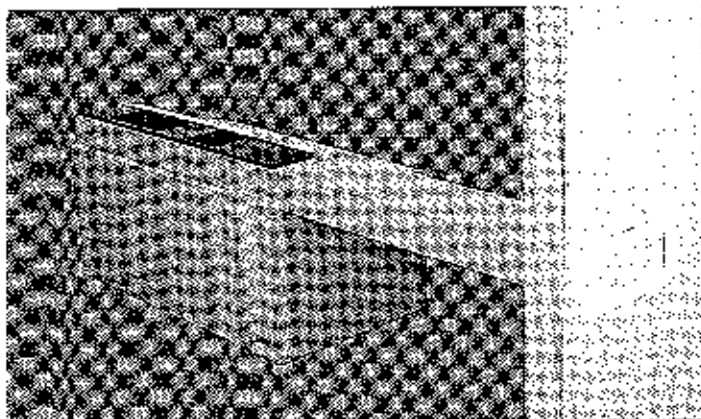
PROGRAM RELAY WITH NIGHT SET-BACK THERMOSTAT—Program relay with setback thermostat to maintain the space at 55°F during unoccupied hours.

PROGRAM RELAY WITH NIGHT SETBACK THERMOSTAT AND OVERRIDE TIMER—Program relay and setback thermostat with a timer which allows the occupant to override the central controller for 0 to 120 minutes (MP cabinet only).

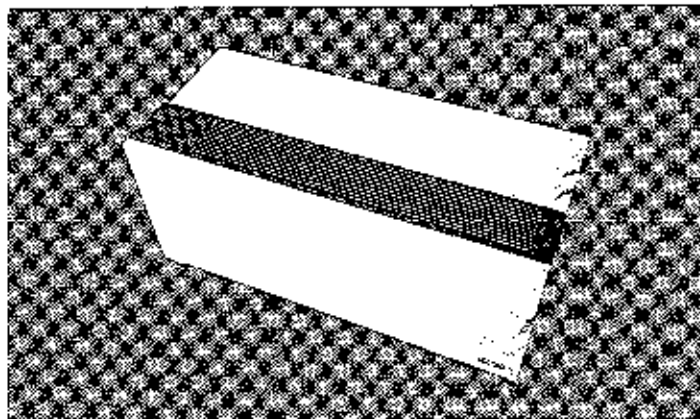
REMOTE THERMOSTAT—Controls unit from a wall-mounted 24 VAC thermostat; manual or automatic changeover.

MASTER/SLAVE—Allows a single wall thermostat to control up to 11 units in parallel.

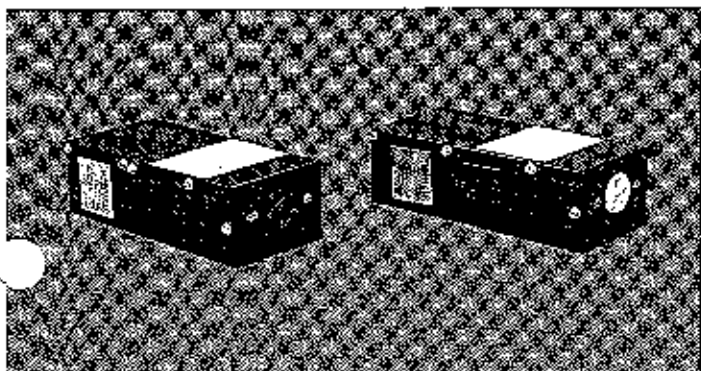
POWER CONNECTION OPTIONS—All Packaged Terminal units offer line cords with unit mounted receptacles, with or without unit mounted circuit breakers. Cabinet style determines location of optional power connections.



Adjoining Room Outlet

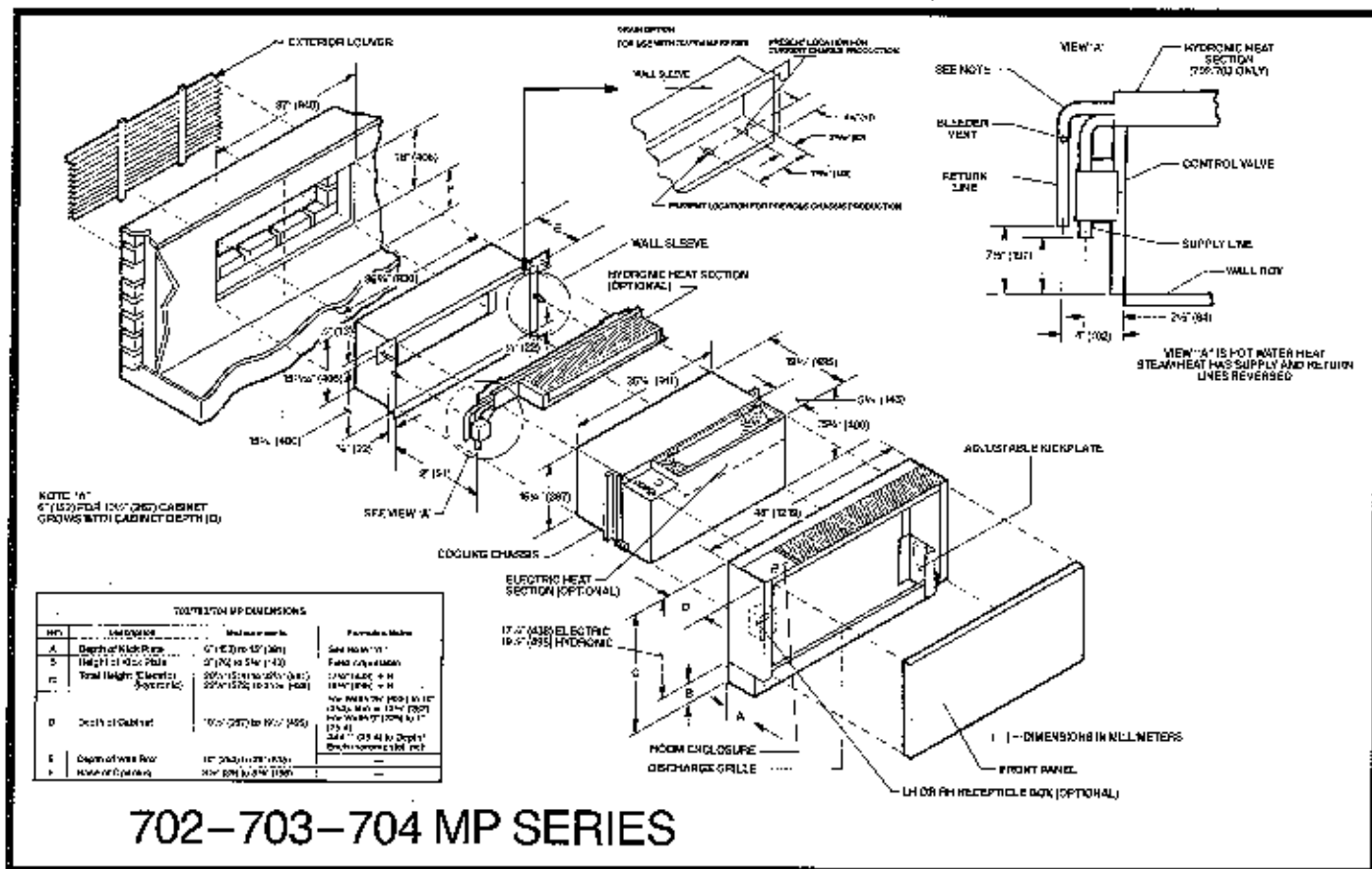


Bar Grill on SP Cabinet

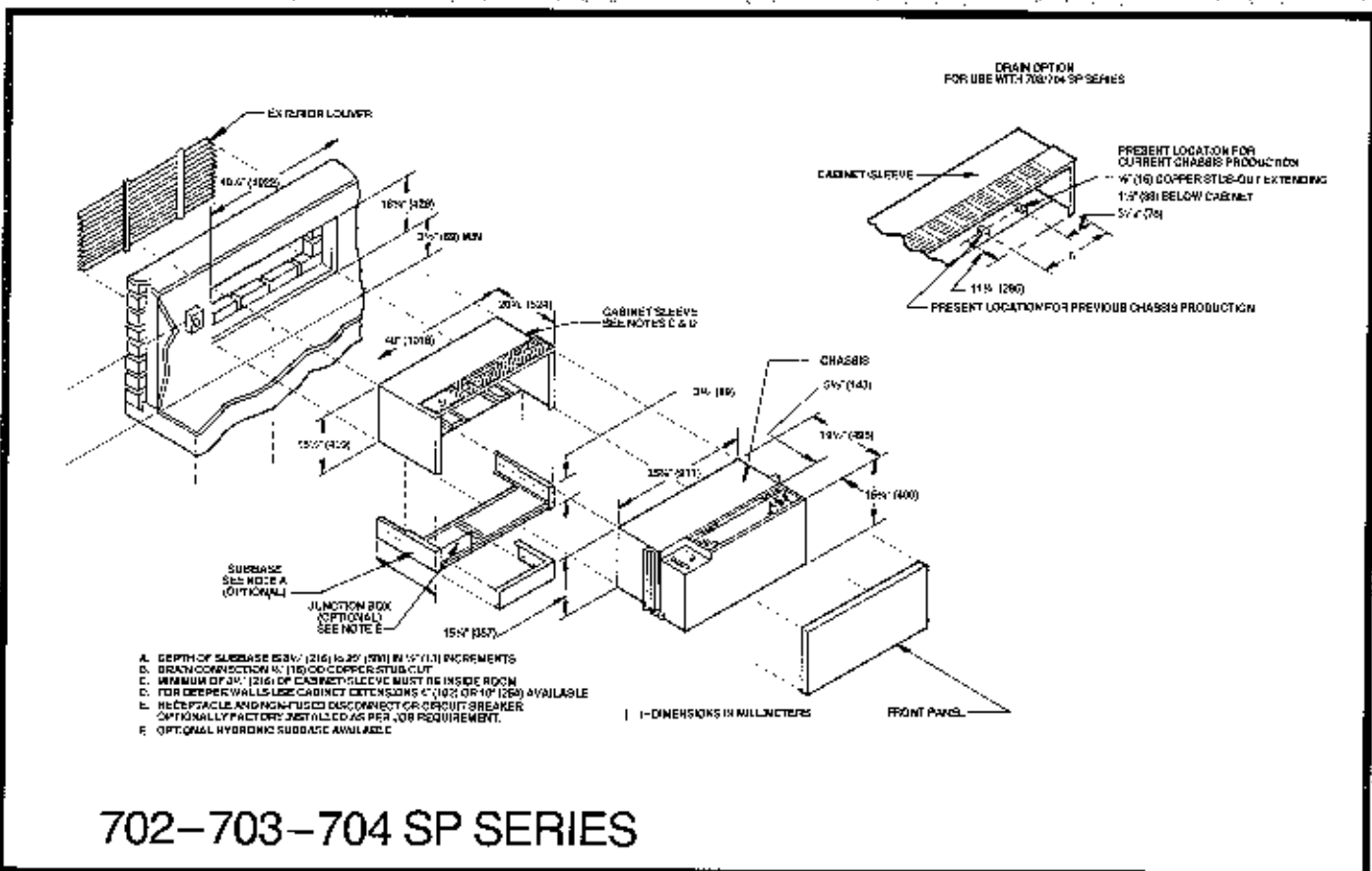


Power Connection Option—MP

SPECIFICATIONS

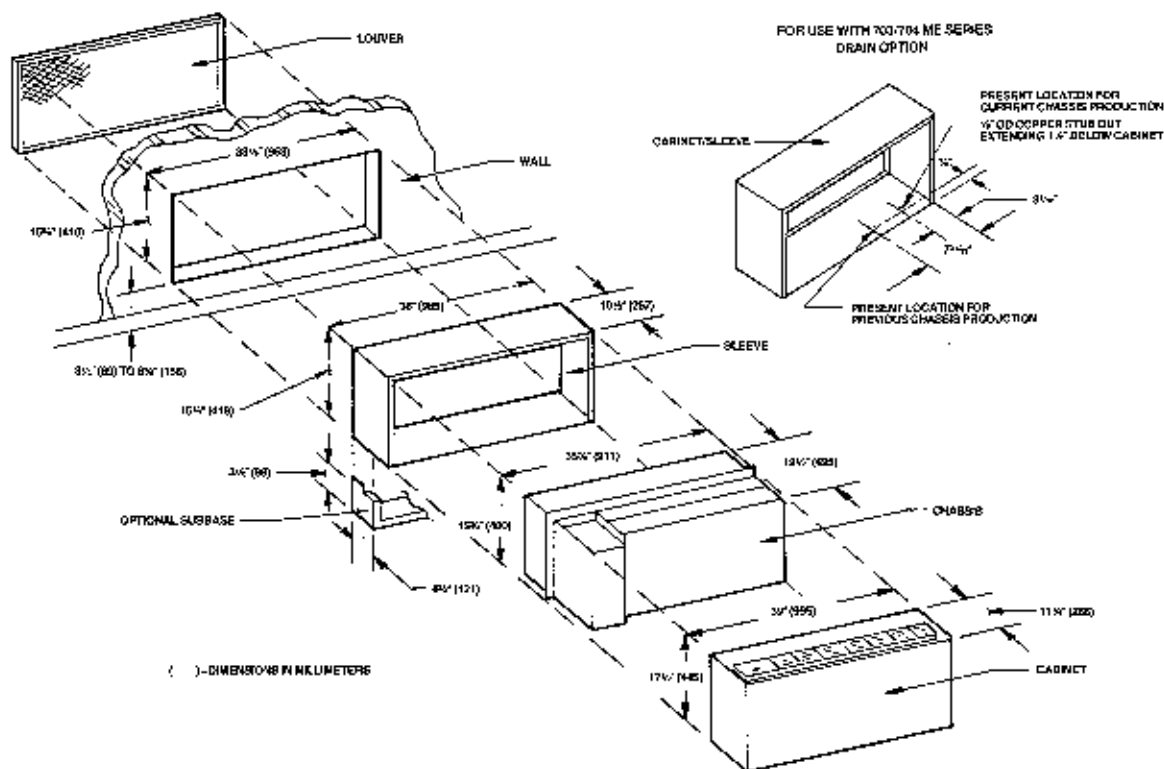


702-703-704 MP SERIES



702-703-704 SP SERIES

SPECIFICATIONS



702-703-704 ME SERIES

SPECIFICATION GUIDE

GENERAL

All units must carry ARI Certification (Standard 310, or 380), CSA and U.L. Listing via appropriate labeling. All electrical and refrigeration components shall be U.L. recognized devices. The manufacturer's standard warranty and unit serviceability shall be given consideration in bids. Tabulated efficiency and capacity shall be considered minimum.

CHASSIS

The chassis shall include a self-contained, hermetically sealed, refrigeration system with unit controls.

A cooling only chassis (PTAC) shall include the option of factory installed electric heating elements in a range of 2.0kw to 4.5kw, dependent on voltage.

A cooling/heating chassis (PTHP) shall combine a high efficiency cooling circuit with the economy of reverse cycle heating and shall include the option of factory installed electric heating elements in a range of 2.0kw to 4.5kw, dependent on voltage. The heat pump shall operate in heating down to 35°F based on proper

installation, humidity, and outside coil temperature.

An extended range cooling/heating (PTHP) chassis shall combine a high efficiency cooling circuit with the economy of reverse cycle heating and shall include a factory installed sheathed heating element in a range of 1.64kw to 3.98kw, dependent on voltage. The extended range of heat pump operation shall be to 10°F outside air temperature before heat pump operation is suspended and both stages of the factory installed two stage electric back-up heater are engaged. A factory installed defrost control shall cycle, as needed, to prevent damage to the extended range cooling/heating (PTHP) chassis.

Double inlet centrifugal roomside blowers shall be provided for effective air delivery. The outside fan provides a positive condensate removal system virtually eliminating any splash or drip on the exterior wall during the cooling season. Individual PSC motors are separated by an acoustically insulated bulkhead for maximum sound reduction.

CABINETS

The Single Piece cabinet/sleeve assembly shall have a removable front panel to allow service access to the chassis. The cabinet/sleeve shall be constructed from reinforced 18 gauge furniture steel. The entire cabinet/sleeve, interior and exterior, shall be painted for corrosion protection. Painting shall consist of a primer coat and an electrostatically applied finish coat of enamel paint. The finish coat shall be baked on to provide a thermoset coating. The front panel and the tops and sides of the cabinet shall be insulated with matt-face fiberglass thermal and acoustic insulation.

Die-formed glides shall be factory installed in the cabinet/sleeve to allow easy insertion and removal of the chassis. The cabinet/sleeve shall have a built-in pitch of at least 1/4" to the outside, allowing for proper drainage. The cabinet/sleeve shall be constructed so that the gasketing material supplied with the chassis shall form a weather-tight seal between the cabinet and chassis.

SPECIFICATION GUIDE

The Single Piece cabinet/sleeve dimensions shall be 16½" high and 40" wide. Provisions shall be made for recess capability up to 12" wall depth.

The Multiple Piece cabinet and wall sleeve assembly shall have a removable cabinet front panel to allow service access to the chassis. The cabinet and wall sleeve shall be constructed from reinforced 18 gauge furniture steel. The entire cabinet and wall sleeve shall be painted for corrosion protection. Painting shall consist of a primer coat and an electrostatically applied finish coat of enamel paint. The finish coat shall be baked on to provide a thermoset coating. The front panel and the tops and sides of the cabinet shall be insulated with matt-face fiberglass thermal and acoustic insulation. Cabinet shall have adjustable height and depth kick plates.

The Multiple Piece wall sleeve shall allow easy insertion and removal of the chassis. The wall sleeve shall have a built-in pitch of at least ¼" to the outside allowing for proper drainage. Provisions shall be made to match wall thickness of 2" to 24" depths in 1" increments. For thin wall applications, the wall sleeve shall accept adjustable legs for stability. The wall sleeve shall be constructed so that the gasketing material supplied with the chassis shall form a weathertight seal between the cabinet and chassis.

The Maximum Economy cabinet and wall sleeve shall have a removable cabinet to allow service access to the chassis. The cabinet and wall sleeve shall be constructed from reinforced 18 gauge furniture steel. The entire cabinet and wall sleeve shall be painted for corrosion protection. Painting shall consist of a primer coat and an electrostatically applied finish coat of enamel paint. The finish coat shall be baked on to provide a thermoset coating.

The Maximum Economy wall sleeve shall allow easy insertion and removal of the chassis. The wall sleeve shall have a field applied pitch of at least ¼" to the outside allowing for proper drainage. Provisions shall be made to match wall thicknesses of 2" to 24" depths in 1" increments. The wall sleeve shall be constructed so that the gasketing material supplied with the chassis shall form a weathertight seal between the cabinet and chassis.

REFRIGERANT CIRCUIT

The chassis shall contain all refrigerant components in a properly charged, sealed, leak and performance tested system. Sealed refrigerant circuit shall be certified for 400 PSIG working pressure. All refrigerant components shall be interconnected with copper tubing. The refrigerant system protection shall include compressor thermal overload.

Fully Hermetic Compressor shall be internally mounted and externally isolated to minimize mechanical vibration and sound transmission.

The indoor air-to-refrigerant coil construction shall be rippled aluminum fins mechanically bonded to staggered copper tubes, mounted above drain pan.

The outdoor air-to-refrigerant coil construction shall be the same as the indoor air-to-refrigerant coil.

UNIT OPERATING CONTROLS

Standard Manual Changeover Unit Mounted controls shall include High and Low Cool, Heat, and Standby selections. An adjustable room return air thermostat shall be provided. Standard operation shall be continuous fan with compressor cycling to satisfy thermostat demand in the selected cooling or heating mode.

(Optional) Automatic Changeover Unit Mounted controls shall include On and Standby selections. An adjustable room return air thermostat shall be provided. Standard operation shall be continuous fan with compressor automatically cycling to heat or cool as demanded by the thermostat.

(Optional) 24 Volt Remote/Master-Slave controls shall include a 24 volt transformer and required relays. A Single unit or Master-slave combination (up to 11 slave units) shall be controlled by the following:

- Manual Changeover wall thermostat shall include Heat, Off, Cool operating mode selection switch, Auto, On fan switch and adjustable temperature control.
- Automatic Changeover wall thermostat shall include On, Off system switch, Auto, On fan switch and adjustable temperature control.

(Optional) Program Relay shall be provided for interface to an Energy Management Control System or Time Clock by others.

(Optional) Security Guard 24 Volt control package shall be provided for unit random start, night set back at 55°F and a two hour user override timer.

(Optional) Emergency Power controls and components shall be provided to allow unit operation from an emergency power source (by others) in case the primary power source fails. The emergency power source shall double as the primary power source during normal operation to allow continuous operation of the blower motor, controls, and hydronic heating valve.

(Optional) Cycling Air shall be provided to allow the blower motor to cycle with compressor operation in lieu of continuous fan during unit operation.

(Optional) Manual Mechanical or Motorized Damper shall be provided, with or without filter, for outside air requirements.

OPTIONS

Sub-bases for the Single Piece or Maximum Economy cabinet designs shall be provided. These sub-bases shall include optional power connections, if required. The Single Piece Sub-base shall include optional hydronic heat coil and valve, if required. Sub-bases for the Single Piece or Maximum Economy cabinet designs shall also provide support for thin wall applications where applicable.

Power Connections for the Multiple Piece cabinet design shall be provided for field installation, in left hand or right hand configurations, where required.

Adjoining Room Outlet shall be provided for Single Piece and Multiple Piece cabinet designs where space conditioning is required for two spaces.

Support Legs shall be provided for Multiple Piece Cabinet design where required for "thin wall" applications.

An Architectural Anodized Extended Aluminum Outdoor Louver shall be provided for the Single Piece, Multiple Piece, and Maximum Economy cabinet designs.

Louvers, by others, shall be factory tested for unit compatibility.

Room Cabinet/Sleeve Extensions shall be provided in 4" and 10" extensions for Single Piece cabinet design.

Condensate Drain kits shall be provided for all cabinet designs.

(Optional) Spare chassis shall be supplied to minimize tenant inconvenience during service repair. Size and quantity shall be as per equipment schedule.



Continuing engineering research results in steady improvements. Therefore, these ratings and specifications are subject to change without notice.

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