UNIT SPECIFICATIONS

Package Terminal Air Conditioners

Friedrich 701 Series Package Terminal Air Conditioners are thru-the-wall cooling/heating systems providing decentralized air conditioning. Each system consists of four (4) sections; wallbox, outdoor louver, cooling/heating chassis, and room cabinet. Extensive laboratory tests are performed to assure satisfactory heating and cooling operation over a wide range of conditions. All models are UL listed and rated in accordance with A.R.I. Standard 310-76. Each section is designed for ease of installation and factory assembled as follows:

WALLBOX:

Wallbox construction shall be heavy guage, galvannealed steel, painted electrostatically and baked to form a thermo-setting coating for corrosion protection. A temporary weather seal shall be provided to protect interiors until installation is complete. Glides shall be dieformed in the base to permit easy installation and/or removal of the chasis section. Base shall include a built-in pitch of not less than 1/4" for drainage to the outside. Dimensions shall be 16" high by 40-5/8" wide with provisions to match wall thickness in 1" increments. Wall box shall not form part of finished room side enclosure.

OUTDOOR LOUVER:

Architectural outdoor louver shall be constructed from extruded aluminum with a clear anodized finish. Construction shall be angled horizontal blades secured to vertical struts forming an attractive design which blends harmoniously with exterior walls. Louver shall be secured into place in the wallbox from inside the building.

COOLING/HEATING CHASSIS:

Chassis shall include a self-contained, hermetically sealed, air-cooled regrigeration system with factory installed electric heating element and unit controls.

All sheet metal parts shall be constructed from galvannealed steel, painted electrostatically and baked to form a thermo-setting coating for corrosion protection. Compressor shall be welded hermetic design with internal spring mounting and externally double isolated behind an insulated bulkhead for minimum vibration and maximum sound reduction. Compressor shall be furnished with built-in overload protection and capacitor.

Room side fan shall consist of two slow turning double inlet centrifugal blower wheels connected directly to a two speed PSC motor with built in overload protection. Motor/blower assembly shall be provided with a quick disconnect for ease of service. Outdoor fan shall consist of a centrifugal blower wheel painted for corrosion protection, connected directly to its own PSC motor provided with built-in overload protection. All blower wheels shall be statically and dynamically balanced to obtain minimum vibration. Both motors shall be provided with oilers for life extending relubrication. Positive removal of condensate shall be provided by re-evaporation on the condenser coil and discharged as vapor without drip or splash. A clear plastic condensate line that may be inspected visually shall be provided from condensate pan to point of dispersal. A motorized fresh air damper shall be located between the indoor and outdoor sections to provide up to 25% outside air for ventilation. Evaporator and condenser coils shall utilize staggered copper tubes with aluminum fins for efficient heat transfer. All refrigerant lines shall be copper with circuiting designed for optimum performance. Refrigerant shall be controlled by a precisely designed and optimized capillary tube to provide efficient performance over a wide range of operating conditions. Complete refrigerant circuit shall be checked for leaks and factory charged with refrigerant 22. Each unit shall incorporate an automatic, COOL-ECON-CYCLE, that locks out the compressor when outdoor temperature is below 50°F. On call for cooling, the fresh air damper shall open and outdoor blower energize to force cool outdoor air into the room. Complete factory installed and wired controls shall be provided. Standard control shall contain OFF - HIGH COOL - LOW COOL - HEAT - VENT selector switch and a self-contained adjustable thermostat. Control components shall be isolated from the air stream. Various optional control sequences shall be available. Models designed for electric heating shall be provided with a factory installed and wired heating element with built-in dual protection against over-heating. Electric heat element shall be located under the evaporator coil to eliminate user contact. A washable air filter for both fresh air and return air shall be provided. Provision shall be made for easy removal and insertion of chassis as a unit. Closed-cell material shall be used to provide a positive compression seal between chassis and wall box.

ROOM CABINET:

A. ELECTRIC: Room cabinet shall consist of two sections, a front and back. Construction shall be from heavy gauge furniture steel finished in neutral baked enamel color to blend with interior. An adjustable kickplate shall be provided. cabinet front shall be removable, providing full access to the chassis. Discharge grille and hinged control door shall be extruded aluminum with polished top and shadded interior. Grille bars shall be set on at 15° deflection angle to direct discharge air into the room away from windows and drapes. Return air shall enter thru the bottom of the chassis between the cabinet kick-plate and cabinet front to minimize air recirculation. A factory assembled electrical wiring compartment and receptacle to match chassis cord and plug shall be provided for field wiring connection to pigtail wire leads.

B. HOT WATER & STEAM: Same description as A above plus a hydronic heating coil shall be mounted to the cabinet back. A motorized zone valve shall be factory mounted to the coil with plug-in electrical connection to the chassis section. Supply and return piping shall terminate in 5/8" o.d. copper.

C. Electric and hydronic heat room cabinet selection shall be available to fit various wall depths.

PERFORMANCE DATA (Cooling and Electric/Hydronic Heating)

COOLING CAPACITIES

MODEL 701	VOLTAGE	CAPACITY BTU/HR	TOTAL WATTS	E.E.R.	TOTAL F.L.A.	COMPR. L.R.A.	POWER FACTOR
–07	208V	6800	1025	6.6	5.3	16.6	.93
	230V	7100	1025	6.9	4.9	16.6	.91
	265V	7100	1100	6.5	4.6	17.1	.90
–09	208V	8400	1225	6.9	6.3	23.8	.93
	230V	8500	1250	6.9	5.9	23.8	.92
	265V	8600	1300	6.6	5.6	22.2	.88
–12	208V	11200	1625	6.9	8.4	34.0	.93
	230V	11200	1650	6.8	8.1	34.0	.89
	265V	11200	1675	6.7	6.8	33.0	.93
–14	208V	13700	1850	7.4	9.6	37.5	.93
	230V	14000	1900	7.4	9.1	37.5	.91
	265V	14000	1950	7.2	7.9	36.0	.93
–17	208V	16700	2475	6.7	12.6	55.0	.94
	230V	17000	2500	6.8	11.7	55.0	.93
	265V	17000	2500	6.8	10.3	52.0	.92

Cooling capacity rating in accordance with ARI Standard 310–76.

STEAM HEATING CAPACITIES

MODEL 701	STANDARD BTU/HR
-07 -09 -12	17000
–14 –17	18500

Based on 70 °F entering air, steam at 2 PSIG.

HOT WATER HEATING CAPACITIES

MODEL 701	STANDARD BTU/HR
-07 -09 -12	14000
–14 –17	15500

Based on 70 °F entering air, 200°F entering water and 180°F leaving.

ELECTRIC HEATING CAPACITIES*

MODEL 701	208V			230V			265V		
	BTUH	WATTS	AMPS	BTUH	WATTS	AMPS	BTUH	WATTS	AMPS
–07 –09 –12 –14 –17	7800	2290	11.0	9600	2800	12.2	9600	2800	10.6
	10000	2995	14.2	12300	3600	15.7	12600	3700	14.0
	13400	3925	18.9	16400	4800	20.9	16400	4800	18.1

*Note: Fan amps & watts not included.

AIR DELIVERY

MODEL 701	CFM HIGH	CFM LOW	VENTILATION CFM (UP TO)
–07	280	260	75
–09	280	260	75
–12	325	275	85
–14	470	400	95
–17	460	380	95

APPLICATIONS DATA

701-07

INDOOR ENTERING WB °F	Outdoor Temperature (°F) DB											
	85				95				105			
	TOTAL CAPACITY	SENSIBLE HEAT RATIO ENTERING AIR (°F) DRY BULB			TOTAL CAPACITY	SENSIBLE HEAT RATIO ENTERING AIR (°F) DRY BULB			TOTAL CAPACITY	SENSIBLE HEAT RATIO ENTERING AIR (°F) DRY BULB		
		75	80	85		75	80	85		75	80	85
64	7200	.72	.88	–	8600	.78	.94	–	5500	.83	–	–
67	7350	.62	.76	.90	7100	.64	.78	.94	6300	.66	.82	.98
70	7500	.53	.66	.80	7600	.51	.65	.78	7100	.53	.68	.82

701-09

INDOOR ENTERING WB °F	Outdoor Temperature (°F) DB											
	85				95				105			
	TOTAL CAPACITY	SENSIBLE HEAT RATIO ENTERING AIR (°F) DRY BULB			TOTAL CAPACITY	SENSIBLE HEAT RATIO ENTERING AIR (°F) DRY BULB			TOTAL CAPACITY	SENSIBLE HEAT RATIO ENTERING AIR (°F) DRY BULB		
		75	80	85		75	80	85		75	80	85
64	8400	.73	.87	–	7950	.79	.91	–	6400	.81	.99	–
67	8750	.60	.74	.88	8600	.62	.76	.90	7350	.65	.81	.97
70	9150	.49	.63	.76	9150	.52	.65	.78	8300	.52	.66	.81

701-12

INDOOR ENTERING WB °F	Outdoor Temperature (°F) DB											
	85				95				105			
	TOTAL CAPACITY	SENSIBLE HEAT RATIO ENTERING AIR (°F) DRY BULB			TOTAL CAPACITY	SENSIBLE HEAT RATIO ENTERING AIR (°F) DRY BULB			TOTAL CAPACITY	SENSIBLE HEAT RATIO ENTERING AIR (°F) DRY BULB		
		75	80	85		75	80	85		75	80	85
64	11200	.77	.85	.93	10550	.77	.86	.99	9300	.81	.92	–
67	11450	.65	.74	.82	11200	.65	.73	.85	10400	.65	.75	.83
70	11700	.55	.63	.71	11600	.55	.63	.74	11100	.54	.63	.71

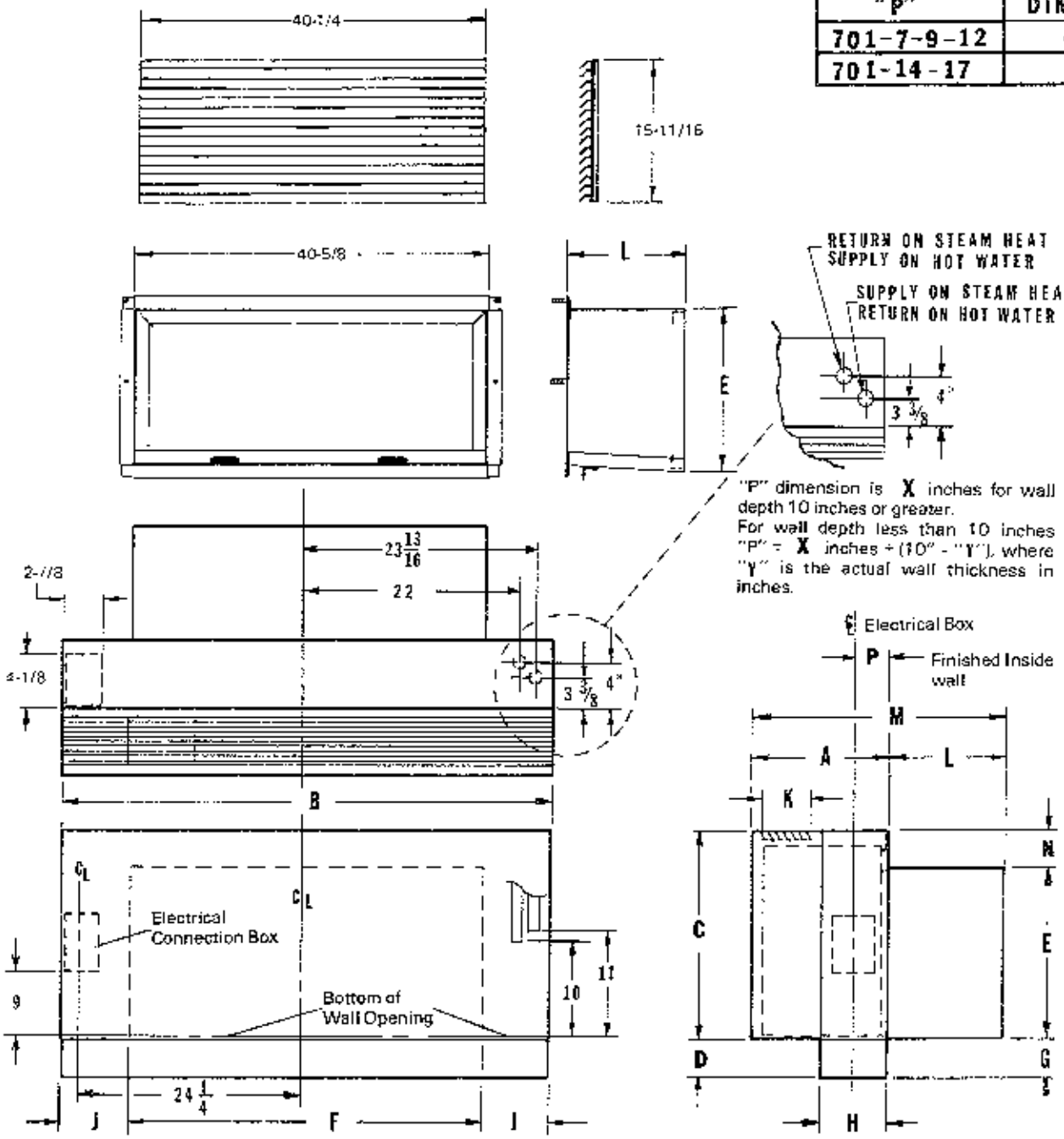
701-14

INDOOR ENTERING WB °F	Outdoor Temperature (°F) DB											
	85				95				105			
	TOTAL CAPACITY	SENSIBLE HEAT RATIO ENTERING AIR (°F) DRY BULB			TOTAL CAPACITY	SENSIBLE HEAT RATIO ENTERING AIR (°F) DRY BULB			TOTAL CAPACITY	SENSIBLE HEAT RATIO ENTERING AIR (°F) DRY BULB		
		75	80	85		75	80	85		75	80	85
64	13100	.75	.90	–	12800	.76	.92	–	11300	.83	.99	–
67	14200	.63	.75	.87	14000	.61	.76	.89	12400	.66	.81	.98
70	15000	.51	.63	.75	15000	.50	.63	.75	13200	.53	.68	.84

701-17

INDOOR ENTERING WB °F	Outdoor Temperature (°F) DB											
	85				95				105			
	TOTAL CAPACITY	SENSIBLE HEAT RATIO ENTERING AIR (°F) DRY BULB			TOTAL CAPACITY	SENSIBLE HEAT RATIO ENTERING AIR (°F) DRY BULB			TOTAL CAPACITY	SENSIBLE HEAT RATIO ENTERING AIR (°F) DRY BULB		
		75	80	85		75	80	85		75	80	85
64	16000	.68	.83	.96	15600	.74	.85	–	12800	.80	.96	–
67	17000	.54	.67	.80	17000	.64	.74	.87	14800	.64	.78	.93
70	18000	.42	.53	.66	18000	.56	.65	.78	15900	.55	.67	.81

"P"	DIM. 'X'
701-7-9-12	4
701-14-17	8



DESCRIPTION			SERIES 701	
			7–9–12	14–17
A	Cabinet Depth		11-1/2	16-1/2
B	Cabinet Width	Electric	48	48
		Hydronic	52	52
C	Cabinet Height	Electric	20-1/4	20-1/4
		Hydronic	22-1/2	22-1/2
D	Base Height (adjustable) Minimum		3-3/16	3-3/16
E	Wall Box Height		16	16
F	Wall Box Width		40-5/8	40-5/8
G	Wall Box Height Above Floor (adjustable) Minimum		2-15/16	2-15/16

DESCRIPTION			SERIES 701	
			7–9–12	14–17
H	Base Width		5-1/4	10-1/4
J	Right & Left Side Compartment	Electric	4	4
		Hydronic	6	6
K	Discharge Grille Depth		4-3/4	4-3/4
L	Wall Box Depth Adjustable to 1/2" Increments For Varying Wall Thickness Less Than 10" and 1" Increments For Wall Thickness Above 10"		10 STD.	10 STD.
M	Total Minimum Unit Depth		21-1/2	26-1/2
N	Cabinet Top Height Above Wall Box	Electric	4-1/2	4-1/2
		Hydronic	6-3/4	6-3/4

Friedrich Climate Master Series

PTAC 701 SERIES

INSTALLATION APPLICATIONS

CERTIFICATIONS

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

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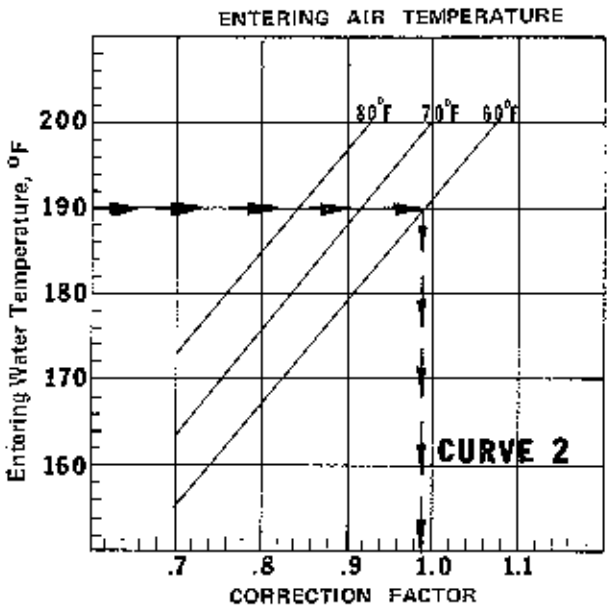
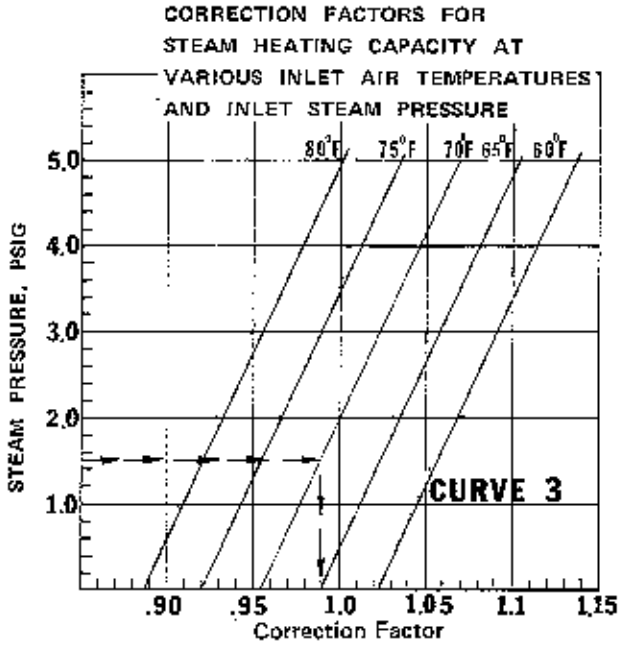
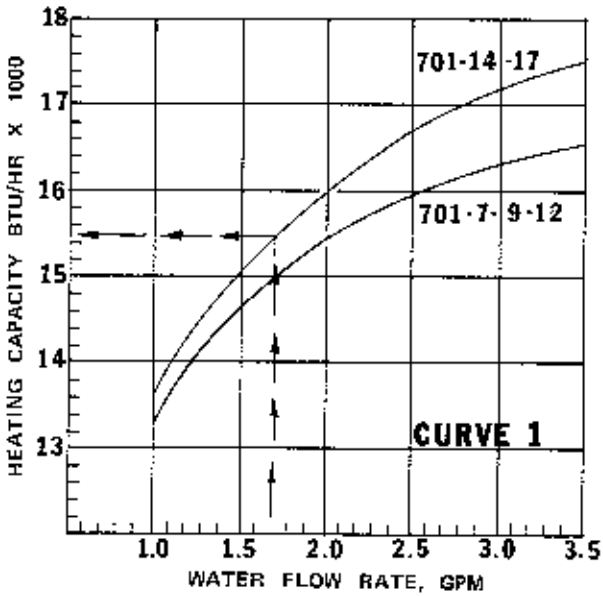
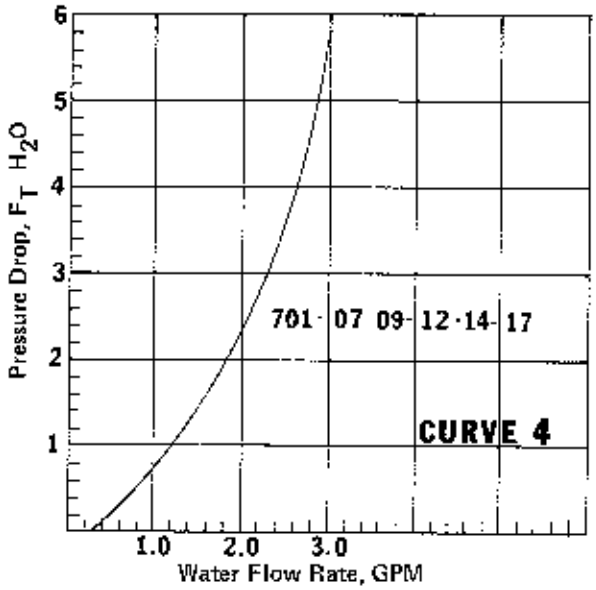








Hot Water Heating Correction Factors For Variation Of:

1. Flow Rate (GPM)
2. Entering Air Temperature
3. Entering Water Temperature

Selection Sample

Basis: Model 701—14 or —17, 1.7 GPM, 190°F Entering Water, 60°F Entering Air Temperature

1. Enter Curve No. 1 At 1.7 GPM.
2. Move Vertically To Line Market 701—14—17.
3. Move Horizontally To Left And Read 15,500 BTU/HR Heating Capacity.
4. Enter Curve No. 2 At 190°F Entering Water Temperature.
5. Move Horizontally To Right Line Marked 60°F Entering Air Temperature.
6. Move Downward And Read Correction Factor .99.
7. Corrected Capacity = 15500 x .99 = 15345 BTU/HR.

Steam Heating Correction Factor For Variation Of:

1. Steam Pressure, PSIG
2. Entering Air Temperature

Selection Sample

Basis: Model 701—07, —09, —12 1.5 PSIG Steam Pressure 70°F Entering Air Temperature

1. From Performance Data, Determine Standard Rating Capacity Of 17000 BTU/HR.
2. Enter Curve No. 3 At 1.5 PSIG Steam Pressure.
3. Move Horizontally To Right And Meet Reference Line Marked 70°F Entering Air Temperature.
4. Move Downward, Read Correction Factor of .99.
5. Corrected Capacity = 17000 x .99 = 16830 BTU/HR.

ECONO-CYCLE OPERATION

Each unit incorporates an automatic, COOL-ECONO-CYCLE, that locks out the compressor when outdoor temperature is below 50°F. On call for cooling by the unit thermostat, the fresh air damper will open and the outdoor blower will energize to force cool filtered outdoor air into the conditioned space.

System operating cost is reduced by not operating the compressor during cold weather although, cooling may be required due to solar or other internal loads. Compressor operating life is extended and evaporator coil frosting is eliminated.

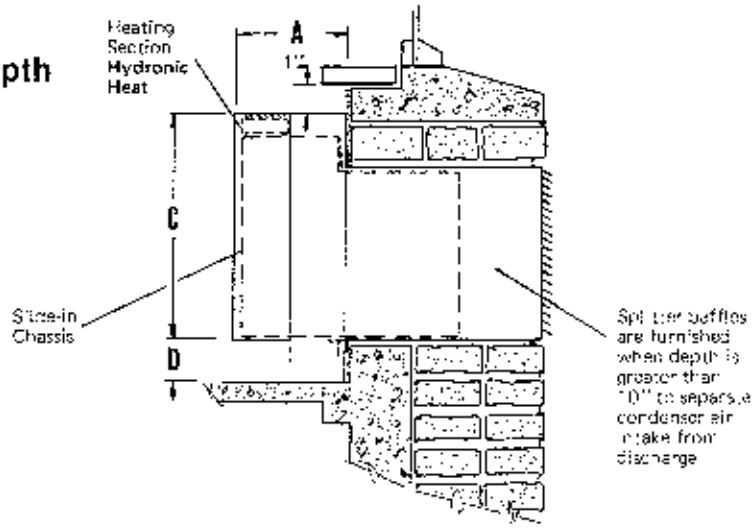
Data shown below is typical of expected unit performance during econo-cycle operation.

Based on 80° DB, 67° WB Indoor High Cool.

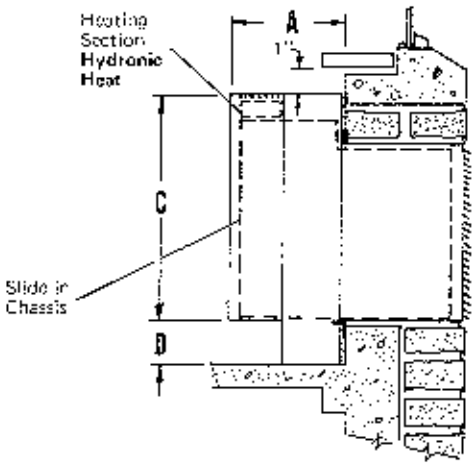
MODEL	OUTDOOR TEMP. (°F)	TOTAL WATTS	CAPACITY BTU/HR	BTU/WATT	OUTDOOR AIR CFM
701-07 -09	55°	350	3800	10.9	75
701-12	55°	380	4000	10.5	85
701-14 -17	55°	430	4300	10.0	95
701-07 -09	50°	350	4900	14.0	75
701-12	50°	380	5400	14.2	85
701-14 -17	50°	430	5800	13.5	95
701-07 -09	45°	350	5600	16.0	75
701-12	45°	380	6300	16.6	85
701-14 -17	45°	430	6800	15.8	95
701-07 -09	40°	350	6200	17.7	75
701-12	40°	380	7000	18.4	85
701-14 -17	40°	430	7700	17.9	95
701-07 -09	35°	350	6800	19.4	75
701 12	35°	380	7700	20.3	85
701-14 -17	35°	430	8500	19.8	95
701-07 -09	30°	350	7200	20.6	75
701-12	30°	380	8300	21.8	85
701-14 17	30°	430	9200	21.4	95

Installation Applications

Wall Construction Greater than 10″ Depth

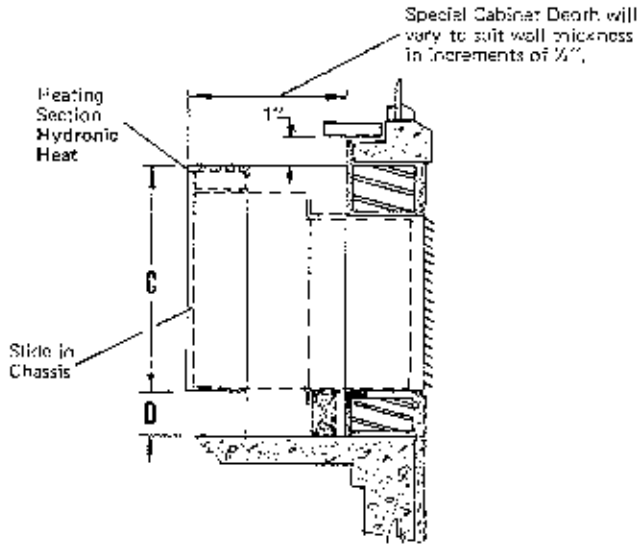


Wall Construction standard 10″ Depth

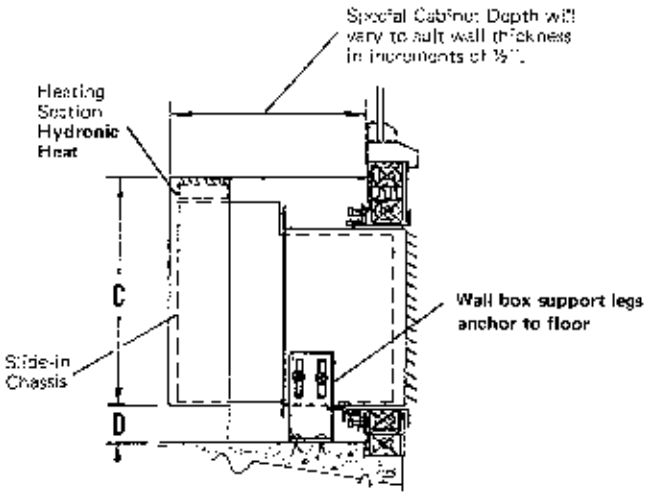


Wall boxes are available in 1″ increments 11″ through 15″. Splitters shipped with wall sleeve.

Wall Construction 9″ to 5″ Depth



Wall Construction with panel walls



Wall boxes should be parged to masonry and lapped to prevent movement. If the wall construction is 5″ to 9″ in depth a blocking beneath the box should be considered.

APPLICATIONS DATA

701-07

INDOOR ENTERING WB °F	Outdoor Temperature (°F) DB											
	85				95				105			
	TOTAL CAPACITY	SENSIBLE HEAT RATIO ENTERING AIR (°F) DRY BULB			TOTAL CAPACITY	SENSIBLE HEAT RATIO ENTERING AIR (°F) DRY BULB			TOTAL CAPACITY	SENSIBLE HEAT RATIO ENTERING AIR (°F) DRY BULB		
		75	80	85		75	80	85		75	80	85
64	7200	.72	.86	–	6600	.78	.94	–	5500	.83	..	–
67	7350	.62	.76	.90	7100	.64	.78	.94	6300	.66	.82	.98
70	7500	.53	.66	.80	7600	.51	.65	.78	7100	.53	.68	.82

701-09

INDOOR ENTERING WB °F	Outdoor Temperature (°F) DB											
	85				95				105			
	TOTAL CAPACITY	SENSIBLE HEAT RATIO ENTERING AIR (°F) DRY BULB			TOTAL CAPACITY	SENSIBLE HEAT RATIO ENTERING AIR (°F) DRY BULB			TOTAL CAPACITY	SENSIBLE HEAT RATIO ENTERING AIR (°F) DRY BULB		
		75	80	85		75	80	85		75	80	85
64	8400	.73	.87	–	7850	.76	.91	–	6400	.81	.99	–
67	8750	.60	.74	.88	8600	.62	.76	.90	7350	.66	.81	.97
70	9150	.49	.63	.76	9150	.52	.65	.78	8300	.52	.66	.81

701-12

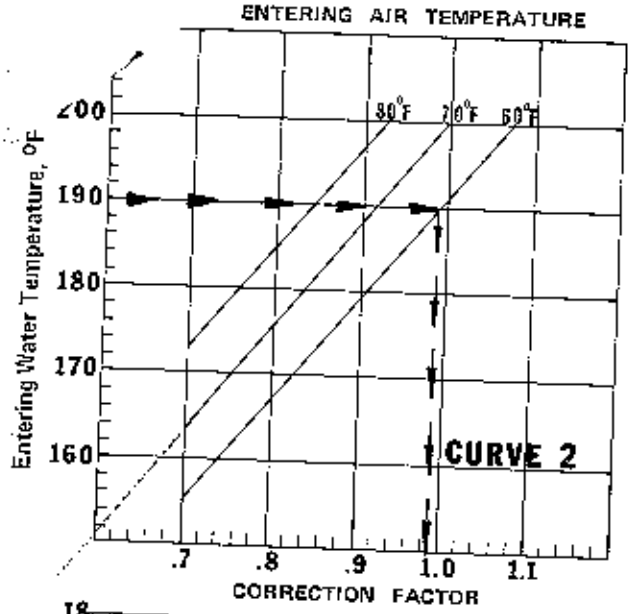
INDOOR ENTERING WB °F	Outdoor Temperature (°F) DB											
	85				95				105			
	TOTAL CAPACITY	SENSIBLE HEAT RATIO ENTERING AIR (°F) DRY BULB			TOTAL CAPACITY	SENSIBLE HEAT RATIO ENTERING AIR (°F) DRY BULB			TOTAL CAPACITY	SENSIBLE HEAT RATIO ENTERING AIR (°F) DRY BULB		
		75	80	85		75	80	85		75	80	85
64	11200	.77	.85	.93	10550	.77	.86	.98	9300	.81	.92	–
67	11450	.65	.74	.82	11200	.65	.73	.85	10400	.65	.76	.83
70	11700	.55	.63	.71	11600	.55	.63	.74	11100	.54	.63	.71

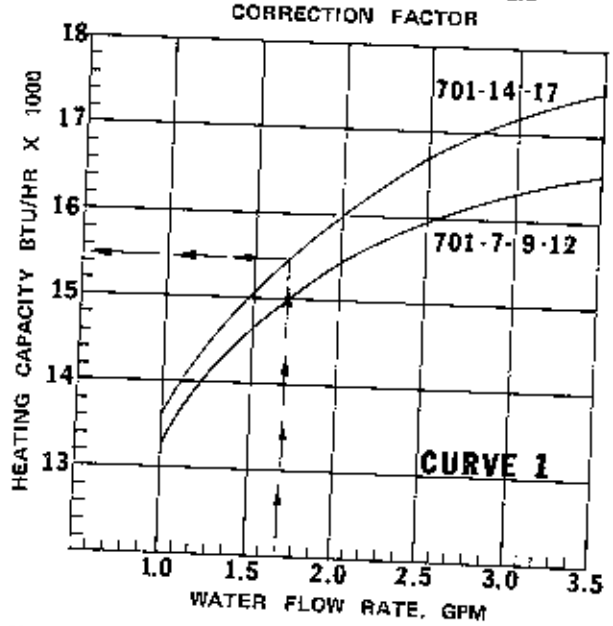
701-14

INDOOR ENTERING WB °F	Outdoor Temperature (°F) DB											
	85				95				105			
	TOTAL CAPACITY	SENSIBLE HEAT RATIO ENTERING AIR (°F) DRY BULB			TOTAL CAPACITY	SENSIBLE HEAT RATIO ENTERING AIR (°F) DRY BULB			TOTAL CAPACITY	SENSIBLE HEAT RATIO ENTERING AIR (°F) DRY BULB		
		75	80	85		75	80	85		75	80	85
64	13100	.75	.90	–	12800	.76	.92	–	11300	.83	.99	–
67	14200	.63	.75	.87	14000	.61	.76	.89	12400	.66	.81	.98
70	15000	.51	.63	.75	15000	.50	.63	.75	13200	.53	.68	.84

701-17

INDOOR ENTERING WB °F	Outdoor Temperature (°F) DB											
	85				95				105			
	TOTAL CAPACITY	SENSIBLE HEAT RATIO ENTERING AIR (°F) DRY BULB			TOTAL CAPACITY	SENSIBLE HEAT RATIO ENTERING AIR (°F) DRY BULB			TOTAL CAPACITY	SENSIBLE HEAT RATIO ENTERING AIR (°F) DRY BULB		
		75	80	85		75	80	85		75	80	85
64	16000	.68	.83	.96	15600	.74	.89	–	12800	.80	.95	–
67	17000	.54	.67	.80	17000	.54	.74	.87	14800	.64	.78	.93
70	18000	.42	.53	.66	18000	.56	.65	.78	15900	.55	.67	.81





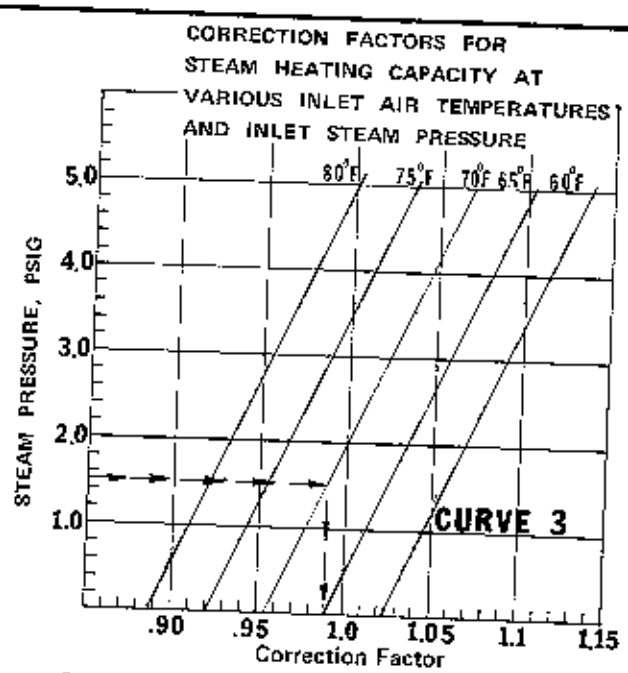
Hot Water Heating Correction Factors For Variation Of:

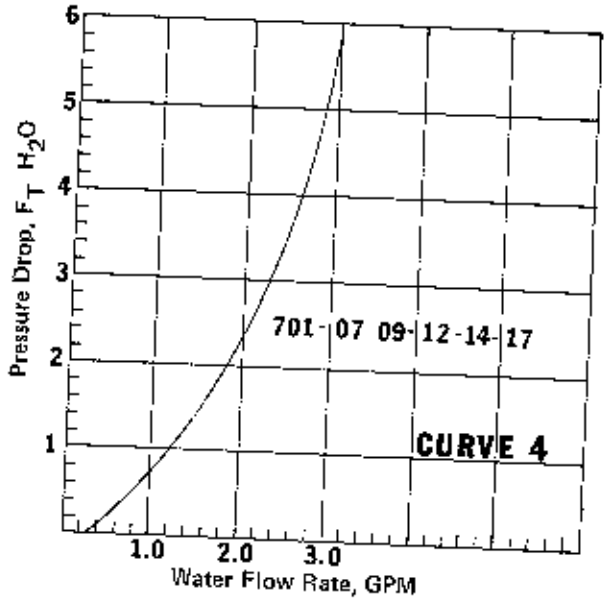
1. Flow Rate (GPM)
2. Entering Air Temperature
3. Entering Water Temperature

Selection Sample

Basis: Model 701–14 or –17, 1.7 GPM, 190°F Entering Water, 60°F Entering Air Temperature

1. Enter Curve No. 1 At 1.7 GPM.
2. Move Vertically To Line Market 701–14–17.
3. Move Horizontally To Left And Read 15,500 BTU/HR Heating Capacity.
4. Enter Curve No. 2 At 190°F Entering Water Temperature.
5. Move Horizontally To Right Line Marked 60°F Entering Air Temperature.
6. Move Downward And Read Correction Factor .99.
7. Corrected Capacity = 15500 x .99 = 15345 BTU/HR.





Steam Heating Correction Factor For Variation Of:

1. Steam Pressure, PSIG
2. Entering Air Temperature

Selection Sample

Basis: Model 701–07, –09, –12 1.5 PSIG Steam Pressure 70°F Entering Air Temperature

1. From Performance Data, Determine Standard Rating Capacity Of 17000 BTU/HR.
2. Enter Curve No. 3 At 1.5 PSIG Steam Pressure.
3. Move Horizontally To Right And Meet Reference Line Marked 70°F Entering Air Temperature.
4. Move Downward, Read Correction Factor of .99.
5. Corrected Capacity = 17000 x .99 = 16830 BTU/HR.

ECONO-CYCLE OPERATION

Each unit incorporates an automatic, COOL-ECONO-CYCLE, that locks out the compressor when outdoor temperature is below 50°F. On call for cooling by the unit thermostat, the fresh air damper will open and the outdoor blower will energize to force cool filtered outdoor air into the conditioned space.

System operating cost is reduced by not operating the compressor during cold weather although, cooling may be required due to solar or other internal loads. Compressor operating life is extended and evaporator coil frosting is eliminated.

Data shown below is typical of expected unit performance during econo-cycle operation.

Based on 80° DB, 67° WB Indoor High Cool.

MODEL	OUTDOOR TEMP. (°F)	TOTAL WATTS	CAPACITY BTU/HR	BTU/WATT	OUTDOOR AIR CFM
701-07 -09	55°	350	3800	10.9	75
701-12	55°	380	4000	10.5	85
701-14 -17	55°	430	4300	10.0	95
701-07 -09	50°	350	4900	14.0	75
701-12	50°	380	5400	14.2	85
701-14 -17	50°	430	5800	13.5	95
701-07 -09	45°	350	5600	16.0	75
701-12	45°	380	6300	16.6	85
701-14 -17	45°	430	6800	15.8	95
701-07 -09	40°	350	6200	17.7	75
701-12	40°	380	7000	18.4	85
701-14 -17	40°	430	7700	17.9	95
701-07 -09	35°	350	6800	19.4	75
701 12	35°	380	7700	20.3	85
701-14 -17	35°	430	8500	19.8	95
701-07 -09	30°	350	7200	20.6	75
701-12	30°	380	8300	21.8	85
701-14 17	30°	430	9200	21.4	95