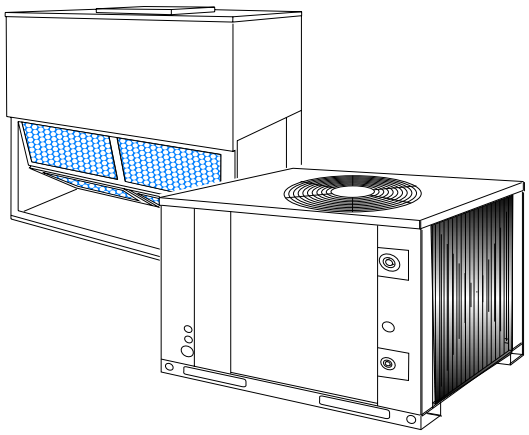
YORK®

Heating and Air Conditioning

TECHNICAL GUIDE



SPLIT-SYSTEM
HEAT PUMPS
60 HZ

EA120 / FA120

c UL us LISTED

UL

THE HARTFORD STEAM BOILER INSPECTION AND INSURANCE CO. 1866 ISO 9000 REGISTRATION™

This product was manufactured in a plant whose quality system is certified/registered as being in conformity with ISO 9001.

DESCRIPTION

YORK has combined the latest concepts in modern technology with time-proven quality standards to design a split-system heat pump to meet the demands of the energy and quality-conscious commercial market.

Both the outdoor and indoor units are completely piped and wired at the factory. Only the interconnecting liquid and vapor lines are required to complete the refrigerant circuit. Every unit is dehydrated, evacuated, leak tested and pressure tested before being pressurized with a holding charge of Refrigerant-22 for shipment and/or storage. The compressor, fan motors and controls are functionally tested after the units are fabricated to assure a reliable start-up and years of dependable operation.

These units have been tested by Underwriters' Laboratories and will be shipped with UL and CUL labels.

OUTDOOR UNIT

Every outdoor unit includes a heavy-duty compressor with a crankcase heater, line break overload protection, a suction line accumulator with a fusible plug, a 4-way reversing valve with a 24-volt solenoid, outdoor fan motor(s) with inherent protection, and a copper tube/aluminum fin coil that is positioned vertically for better drainage of the water that will condense on it during the heating cycle.

They also include a filter-drier, an expansion valve and a distributor that are only used during the heating cycle plus a check valve to provide the proper flow of refrigerant through the unit during both the cooling and heating cycles.

To eliminate the costly cabinet deterioration problems usually associated with outdoor equipment, all sheet metal parts are constructed of commercial grade (G90) galvanized steel. After fabrication, each part is thoroughly cleaned to remove any grease or dirt from its surfaces. The parts that will be exposed to the weather are then coated with a powder paint to assure a quality finish for many years. This coating system has passed the 750 hour, salt spray test per ASTM Standard B117. To assist in servicing, the high and low pressure service connections are exterior to the cabinet, allowing simple access.

The fan guards are vinyl-coated to provide additional rust protection. An optional decorative coil guard is available to protect the coil on the outdoor unit.

INDOOR UNIT

Every indoor unit includes a well-insulated cabinet, a copper tube/aluminum fin coil, 1" throwaway filters, a centrifugal blower, a blower motor, adjustable drive components, a blower motor contactor and a small holding charge of Refrigerant-22.

They also include a filter-drier, an expansion valve and a distributor that are only used during the cooling cycle; also, a check valve to provide the proper flow of refrigerant through the coil during both the cooling and heating cycles.

The units are shipped in the vertical position ready for field installation. For horizontal installation, interchange the solid bottom panel and the return air duct flange on the front of the unit.

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OUTDOOR UNITS

These outdoor units are lightweight and can be installed on almost any roof.

Units can be lifted using nylon straps with hooks at the holes provided in the base rails, or they may be lifted with a forklift through the slotted openings in the base rails.

A quality appearance and low sound levels make these units suitable for most ground level locations.

Remember that during heat and defrost cycles, condensate will drip from the underside of the unit coils. This condensate will freeze when the temperature of the outdoor air is below 32°F. A gravel bed or some other means of handling this condensate may have to be provided.

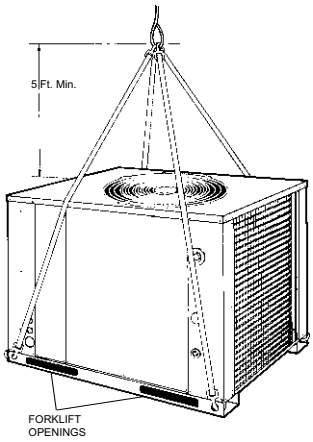


FIGURE 1 - TYPICAL RIGGING

VERTICAL / HORIZONTAL

The FA120 unit is shipped for vertical installation with a vertical air discharge as shown in FIG. 2; but may be converted to other arrangements per the following instructions:

1. Remove the panels from the blower section.
2. Remove the four Phillips machine bolts that hold the coil and blower sections together. A bolt is located near each corner.
3. Move the blower section to the proper location.
4. Attach the blower section to the coil section with the machine bolts removed in Step 2.
5. Before replacing the panel, see Duct Connection and Drain Connection.
6. Replace the panels.

NOTE: See Figure -2 on next page for horizontal and vertical application.

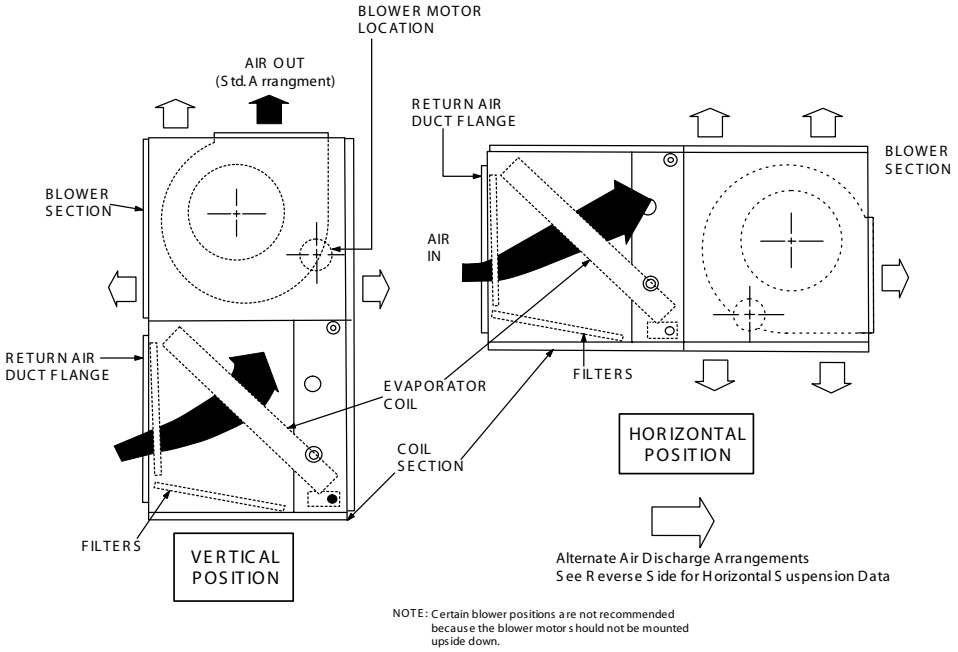


FIGURE 2 - VERTICAL AND HORIZONTAL APPLICATION

TABLE 1: ARI RATINGS* - COOLING, HEATING AND SOUND

Model		Cooling Capacity		Heating Capacity			
				High Outdoor Temperature (47°F)		Low Outdoor Temperature (17°F)	
Outdoo Unit	Indoor Unit	MBH3	EER	MBH3	COP	MBH3	COP
EA-120	FA120	122	10.7	125	3.25	84	2.5

Outdoor Unit	Sound Rating† (bels)
EA-120	8.8

*. Ratings are in accordance with ARI Standard 340/360

†. Sound Ratings are in accordance with ARI Standard 270.

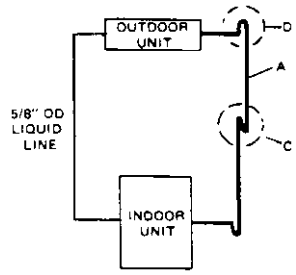
TABLE 2: SYSTEM APPLICATION DATA

Air Temperature on OUTDOOR Coil, °F				Air Temperature on INDOOR Coil, °F			
Minimum		Maximum		Minimum		Maximum	
Cool	Heat	Cool	Heat	Cool	Heat	Cool	Heat
40 db	0 db*	115 db	75 db	57 wb	50 db†	72 wb	80 db
				Air Flow across INDOOR Coil, CFM (Min./Max.)			
				FA-120	3200/4800		

*. Below 0°F,the control circuit will ock out the compressor and allow the electric heat accessory to cycle at its standby capacity.

†. Operation below this temperature is permissible for a short period of time when a unit is required to heat the conditioned space up to 50°F.

SYSTEM FLEXIBILITY



The coils for both the indoor and outdoor units are not only circuited and headered for optimum heating and cooling performance, but also for ample subcooling during all modes of operation. The sub-cooling permits the outdoor unit to be mounted 60 feet over or under the indoor unit without any danger of flashing liquid refrigerant during the heating or the cooling cycle.

Refer to the REFRIGERANT PIPING table above for more detailed information on refrigerant pipe limitations.

A = 1-3/8" OD Vapor Line

B = 1-1/8" OD Vapor Line

C = Intermediate Trap - only required when a riser exceeds 50 feet.

D = Inverted Trap - only required when the horizontal run to the unit exceeds 25 feet.

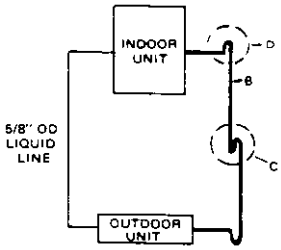


TABLE 3: COOLING CAPACITIES

Air On Evaporator Coil		Temperature of Air Condenser Coil																	
		85°F									95°F								
		Total Capacity (MBh)	Total Input (kW)	Sensible Capacity (MBh)							Total Capacity (MBh)	Total Input (kW)	Sensible Capacity (MBh)						
				Return Dry Bulb (°F)									Return Dry Bulb (°F)						
CFM	WB (°F)			86	83	80	77	74	71	68			86	83	80	77	74	71	68
3000	72	134	11.4	79	70	61	53	44	-	-	121	12.2	75	66	58	49	40	-	-
	67	121	11.2	96	88	79	70	62	53	45	113	12.0	93	85	76	67	59	50	42
	62	110	11.1	110	105	97	88	79	71	62	102	11.9	102	99	91	82	74	65	57
	57	111	11.1	111	105	97	88	80	71	63	102	11.9	102	99	91	82	74	65	57
3750	72	139	11.6	90	79	68	58	47	-	-	129	12.4	87	76	65	54	44	-	-
	67	125	11.4	110	99	88	77	66	55	45	120	12.2	108	97	86	75	64	54	43
	62	114	11.2	114	112	108	97	86	75	64	108	12.1	108	107	103	92	81	70	59
	57	115	11.3	115	112	108	97	86	75	64	109	12.1	109	107	103	92	81	70	59
4500	72	144	11.8	102	88	75	62	49	-	-	136	12.6	99	86	73	60	47	-	-
	67	129	11.6	123	110	97	84	71	58	44	127	12.5	122	109	96	83	70	57	44
	62	118	11.4	118	118	118	105	92	79	66	114	12.4	114	114	115	102	89	75	62
	57	119	11.5	119	119	119	106	92	79	66	115	12.4	115	115	115	102	89	75	62
4750	72	148	11.9	106	92	78	64	50	-	-	139	12.7	103	89	75	61	47	-	-
	67	134	11.7	129	115	101	87	73	59	45	130	12.5	127	113	99	85	71	57	43
	62	122	11.5	122	122	122	108	94	80	66	116	12.5	116	116	117	103	89	75	61
	57	123	11.6	123	123	123	109	95	81	67	117	12.4	117	117	117	103	89	75	61
5000	72	153	11.9	111	96	81	66	51	-	-	141	12.8	107	92	77	62	48	-	-
	67	138	11.8	134	119	104	89	74	59	45	132	12.6	132	117	102	87	72	57	42
	62	126	11.6	126	126	126	111	96	81	66	119	12.5	119	119	119	104	89	74	59
	57	127	11.6	127	127	127	112	97	82	67	119	12.5	119	119	119	105	90	75	60

Air On Evaporator Coil		Temperature of Air Condenser Coil																	
		105°F									115°F								
		Total Capacity (MBh)	Total Input (kW)	Sensible Capacity (MBh)							Total Capacity (MBh)	Total Input (kW)	Sensible Capacity (MBh)						
				Return Dry Bulb (°F)									Return Dry Bulb (°F)						
CFM	WB (°F)			86	83	80	77	74	71	68			86	83	80	77	74	71	68
3000	72	116	13.2	73	64	56	47	38	-	-	111	14.2	71	62	53	45	36	-	-
	67	108	13.0	91	82	74	65	57	48	40	103	14.0	89	80	72	63	55	46	38
	62	100	12.9	100	95	87	78	70	61	53	99	13.9	99	91	83	74	66	57	49
	57	99	12.9	99	95	87	78	69	61	52	96	13.9	96	91	82	74	65	57	48
3750	72	123	13.4	85	74	63	52	41	-	-	117	14.5	83	72	61	50	39	-	-
	67	115	13.2	105	95	84	73	62	51	41	109	14.2	102	93	82	71	60	49	39
	62	106	13.1	106	104	99	88	77	66	55	105	14.1	105	101	94	83	73	62	51
	57	105	13.1	105	103	98	88	77	66	55	102	14.1	102	99	94	83	72	61	51
4500	72	130	13.7	97	84	71	57	44	-	-	124	14.7	95	82	68	55	42	-	-
	67	121	13.4	119	107	94	81	68	55	42	115	14.4	115	105	92	79	66	53	40
	62	112	13.4	112	112	110	97	84	71	58	111	14.4	111	111	106	93	80	67	53
	57	111	13.3	111	111	110	97	84	71	58	107	14.3	107	107	106	92	79	66	53
4750	72	133	13.2	101	87	73	59	45	-	-	127	13.6	98	84	70	56	42	-	-
	67	124	13.0	122	111	97	83	69	55	41	118	13.4	118	108	94	80	66	52	38
	62	115	12.9	115	115	113	99	85	71	57	114	13.3	114	114	109	95	81	67	53
	57	114	12.9	114	114	113	99	85	71	57	110	13.3	110	110	108	94	80	66	52
5000	72	136	12.7	104	90	75	60	45	-	-	130	12.5	102	87	72	57	42	-	-
	67	126	12.5	126	114	99	84	70	55	40	121	12.3	121	112	97	82	67	52	37
	62	117	12.4	117	117	115	100	85	70	55	116	12.3	116	116	111	96	82	67	52
	57	116	12.4	116	116	115	100	85	70	56	113	12.2	113	113	111	96	81	66	51

Air On Evaporator Coil		Temperature of Air Condenser Coil 125°F								
		Total Capacity (MBh)	Total Input (kW)	Sensible Capacity (MBh) Return Dry Bulb (°F)						
CFM	WB (°F)			86	83	80	77	74	71	68
3000	72	105	15.3	68	60	51	43	34	-	-
	67	98	15.0	87	78	70	61	53	44	36
	62	98	14.9	98	87	79	70	62	53	44
	57	93	14.9	93	87	78	70	61	53	44
3750	72	111	15.5	80	70	59	48	37	-	-
	67	103	15.2	99	91	80	69	58	47	37
	62	103	15.1	103	98	90	79	68	58	47
	57	98	15.1	98	95	90	79	68	57	46
4500	72	117	15.7	92	79	66	53	40	-	-
	67	109	15.4	109	103	90	77	64	51	38
	62	109	15.4	109	109	101	88	75	62	49
	57	103	15.3	103	103	101	88	75	62	48
4750	72	121	14.0	96	82	68	54	40	-	-
	67	112	13.8	112	106	92	78	64	50	36
	62	112	13.7	112	112	105	91	77	63	49
	57	106	13.7	106	106	104	90	76	62	48
5000	72	124	12.4	99	84	69	54	39	-	-
	67	115	12.2	115	109	94	79	64	49	34
	62	115	12.1	115	115	108	93	78	63	48
	57	109	12.1	109	109	107	92	77	62	47

Nominal Rating

1 - These capacities are gross ratings. For net capacity, deduct air blower motor, MBh = 3.415 x kW. Refer to the appropriate Blower Performance Table for the kW of the supply air blower motor.

2 - These ratings include the condensate fan motors (total 1 kW) and the compressor motors but not the supply air blower motor.

[1] Capacities shown are gross ratings. For net capacities, determine the KW requirement of the supply air blower motor per the SUPPLY AIR BLOWER PERFORMANCE table on page 7. Convert KW to MBH by the following equation and deduct this equivalent heat from the gross cooling ratings.

Blower Motor Heat (MBH) = Blower Motor KW x 3.415

[2] Apply the following correction factors to determine the unit performance at different CFM.

[3] These ratings include the compressor KW and the following KW for the outdoor fan motor(s).

% Nominal Supply Air CFM	80	90	100	110	120
Total Capacity Correction Factor	0.963	0.981	1.000	1.015	1.030
Sensible Capacity Correction Factor	0.935	0.965	1.000	1.049	1.098
Kilowatt Correction Factor	0.981	0.992	1.000	1.008	1.019

NOTE: Sensible capacity can never exceed total capacity. A higher corrected sensible capacity indicates a dry coil, and it should be reduced to the corrected total capacity.

Outdoor Unit Size	10 Ton
Outdoor Fan Motor KW - 60 HZ	1.06

Blower motor KW is not included. Refer to the SUPPLY AIR BLOWER PERFORMANCE table for the KW rating of the supply air blower motor at the design conditions and add this power requirement to the KW rating.

TABLE 4: HEATING CAPACITIES

HEATING APPLICATION DATA		UNIT MODEL EF-10 60 HZ								
CFM	ID DB		OUTDOOR TEMPERATURE (F) (72% RH)							
			0	10	20	30	40	50	60	70
3000	60	MBH	13.058	35.855	58.653	81.451	104.249	127.047	149.844	172.642
3000		KW	2.805	4.421	6.038	7.654	9.270	10.887	12.503	14.120
3000	70	MBH	12.959	35.757	58.555	81.353	104.151	126.949	149.746	172.544
3000		KW	3.682	5.299	6.915	8.532	10.148	11.764	13.381	14.997
3000	80	MBH	12.312	35.110	57.908	80.706	103.503	126.301	149.099	171.897
3000		KW	4.697	6.313	7.930	9.546	11.162	12.779	14.395	16.012
4000	60	MBH	17.636	40.434	63.232	86.030	108.827	131.625	154.423	177.221
4000		KW	1.741	3.357	4.974	6.590	8.207	9.823	11.440	13.056
4000	70	MBH	17.554	40.352	63.150	85.948	108.745	131.543	154.341	177.139
4000		KW	2.623	4.240	5.856	7.473	9.089	10.705	12.322	13.938
4000	80	MBH	16.930	39.728	62.526	85.324	108.122	130.919	153.717	176.515
4000		KW	3.645	5.261	6.877	8.494	10.110	11.727	13.343	14.960
5000	60	MBH	18.690	41.488	64.285	87.083	109.881	132.679	155.477	178.274
5000		KW	1.586	3.202	4.819	6.435	8.052	9.668	11.284	12.901
5000	70	MBH	18.592	41.389	64.187	86.985	109.783	132.581	155.378	178.176
5000		KW	2.463	4.080	5.696	7.313	8.929	10.546	12.162	13.778
5000	80	MBH	17.944	40.742	63.540	86.338	109.136	131.933	154.731	177.529
5000		KW	3.478	5.094	6.711	8.327	9.944	11.560	13.176	14.793

THE MBH AND KW VALUES DO NOT INCLUDE THE SUPPLY AIR BLOWER MOTOR.
FOR NET CAPACITY, ADD THE SUPPLY AIR BLOWER MOTOR HEAT (MBH = 3.415 X KW)

1These ratings are based on an outdoor relative humidity of 72%. They include an allowance for defrost but not for the supply air blower motor heat. Refer to the BLOWER PERFORMANCE table for the KW rating of the supply air blower motor at the design conditions. Convert this KW rating to MBH using the following equation and add this equivalent heat to the heating capacity.

Blower Motor Heat (MBH) = Blower Motor KW x (3.415 MBH/KW)

Use the following equation to determine the C.O.P. at any operating condition:

C.O.P. = Total MBH (Including Blower Motor Heat)/[Total KW (Including Blower Motor KW) x 3.415]

2Correct the MBH and KW ratings with the following factors for different supply air CFM's.

3These ratings include the compressor KW and the following KW for the outdoor fan motor(s).

CorrectionFactor	% Nominal Supply Air CFM				
	80	90	100	110	120
MBH	0.96	0.98	1.00	1.02	1.04
KW	1.030	1.015	1.000	0.985	0.970

NOTE: Apply these factors to the above ratings before correcting for the supply air blower heat and power requirements.

Outdoor Unit Size	7-1/2 Ton	10 Ton
Outdoor Fan Motor KW - 60 HZ	0.96	1.03
Outdoor Fan Motor KW - 50 HZ	0.80	0.85

Blower motor KW is not included. Refer to the SUPPLY AIR BLOWER PERFORMANCE table for the KW rating of the supply air blower motor at the design conditions and add this power requirement to the KW rating.

TABLE 5: ELECTRIC HEAT ACCESSORY

Heater Model		Nominal Voltage	Heating Capacity							
			Nominal		Defrost		Supplemental		Standby and Emergency	
			KW	MBH	KW	MBH	KW	MBH	KW	MBH
2HS045010	25A	240[1]	10	34.2	10	34.2	10	34.2	10	34.2
	46A	480[2]								
	50A	480[2]								
2HS045016	25A	240[1]	16	54.7	10	34.2	16	54.7	16	54.7
	46A	480[2]								
	50A	480[2]								
2HS045026	25A	240[1]	26	88.8	16	54.7	26	88.8	26	88.8
	46A	480[2]								
	50A	480[2]								
2HS045036	25A	240[1]	36	123.0	16	54.7	26	88.8	36	123.0
	46A	480[2]								
	50A	480[2]								

1For 208 volts, multiply the MBH and KW values by (208/240)^2 or 0.751.
For 230 volts, multiply the MBH and KW values by (230/240)^2 or 0.918.

2For 460 volts, multiply the MBH and KW values by (460/480)^2 or 0.918.

TABLE 6: BLOWER MOTOR AND DRIVE DATA

Indoor Unit Model	Motor HP*	Blower HP	Adjustable Motor Pulley		Fixed Blower Pulley		Belt	
			Pitch Diameter (in.)	Bore (in.)	Pitch Diameter (in.)	Bore (in.)	Designation	Pitch Length (in.)
FF-10	2	550-730	2.8-3.8	7/8	9.5	1	A55	56.3

*. These motors will always be wired for a 460 volt power supply. Refer to the wiring diagram inside the motor terminal box when the motor leads have to be reconnected for a 208 or 230 volt power supply.

***Motor Specifications:**	• 1750 RPM • 208/230/460-3-60** • solid base • 56 frame	• inherently protected • 1.15 service factor • permanently lubricated

TABLE 7: SUPPLY AIR BLOWER PERFORMANCE* †

ESP	CFM	RPM	Watts	CFM	RPM	Watts	CFM	RPM	Watts	CFM	RPM	Watts	CFM	RPM	Watts	CFM	RPM	Watts
0.2	-	-	-	5775	680	2168	5402	650	1851	4990	616	1516	4571	582	1281	4250	548	1097
0.4	5521	713	2283	5409	684	1954	4810	653	1633	4326	618	1307	3785	582	1069	3484	550	903
0.6	4864	718	2006	4736	688	1695	4098	657	1353	3411	622	1052	2635	586	826	-	-	-
0.8	4221	722	1695	3780	693	1393	2860	661	1019	-	-	-	-	-	-	-	-	-
1	3223	728	1376	2625	697	1097	-	-	-	-	-	-	-	-	-	-	-	-
	0 turns			1 turn			2 turns			3 turns			4 turns			5 turns		

Exceeds Amperage rating of motor.

*. Available static pressure in IWG to overcome the resistance of the duct system and any accessories added to the unit. Refer to the table above for additional motor and drive data and to Table 9 on page11 for the resistance to these accessories.

†. Refer to Form 515.41-AD1 for blower performance curves.

TABLE 8: SUPPLY PLENUM PERFORMANCE

Indoor Unit Model FF-10	CFM	Face Velocity (FPM	Angle of Deflection																	
			Vertical Louvers[1] (Plan View) 0° SPREAD				Horizontal Lovers (Elevation View)		22-1/2° SPREAD Vertical Louvers (Plan View)				Horizontal Lovers (Elevation View)		45° SPREAD Vertical Louvers (Plan View)				Horizontal Lovers (Elevation View)	
			Throw (Feet)[3]		Spread (Feet)[3]		18° 0° SPREAD		Throw (Feet)[3]		Spread (Feet)[3]		18° 0° SPREAD		Throw (Feet)[3]		Spread (Feet)[3]		18° 0° SPREAD	
			Min.	Max	Min.	Max	Drop (Feet)[4]		Min.	Max.	Min.	Max.	Drop (Feet)[4]		Min.	Max.	Min.	Max.	Drop (Feet)[4]	
120	3200	820	63	98	25	37	21	10	45	70	29	43	19	9	34	53	54	82	10	5
	3600	920	71	110	28	41	22	11	50	69	32	47	20	10	38	60	60	91	11	6
	4000	1025	78	123	30	45	22	11	56	88	35	52	20	10	42	66	67	102	11	6
	4400	1130	86	135	33	49	23	12	62	97	38	57	21	11	47	73	76	115	12	6
	4800	1230	94	147	35	53	23	12	68	106	41	62	21	11	51	80	85	127	12	6

1 Adjusting the vertical louvers will vary the throw, the spread and the drop.
2 Adjusting the horizontal louvers will only vary the drop.
3 The velocity of the air will be 125 ft./min. at the minimum distance and 80 ft./min. at the maximum distance.
4 The velocity of the conditioned air at the bottom of the drop will be 50 ft./min. occur if the drop extends into the occupied level of the conditioned space.

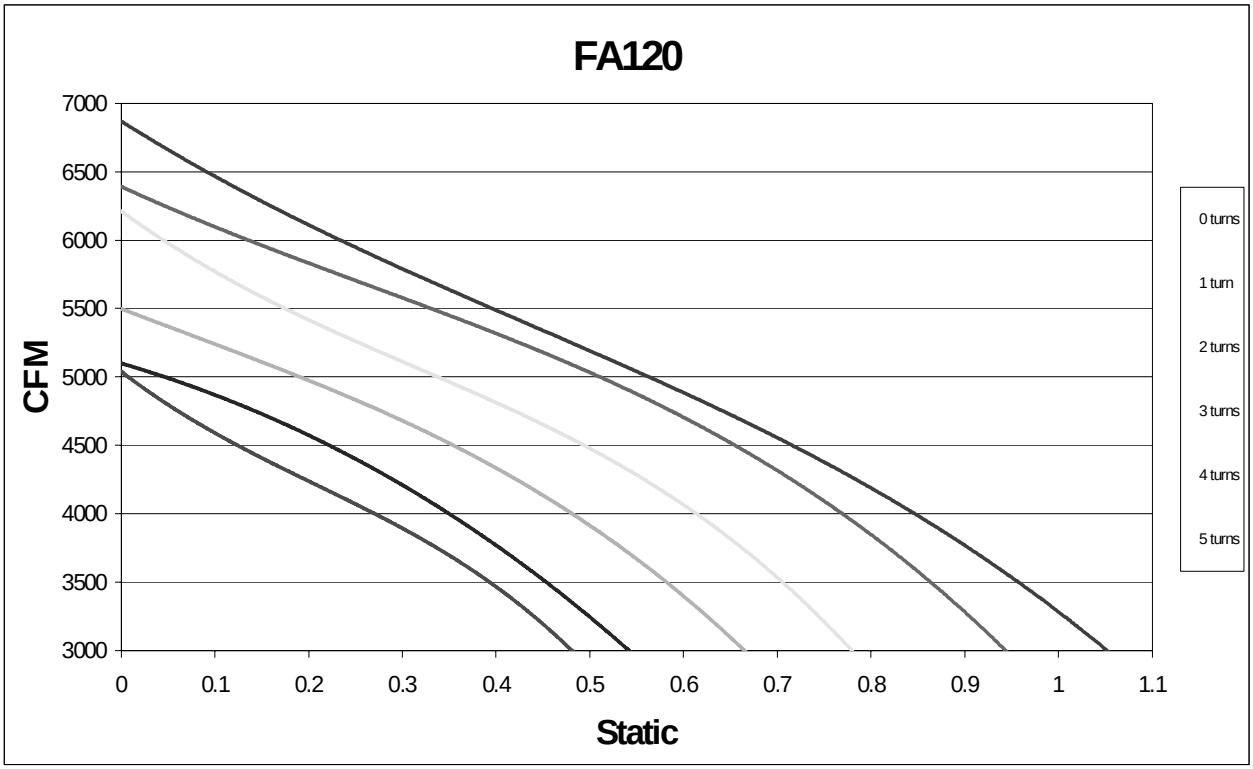


FIGURE 3 - INDOOR AIRFLOW

TABLE 9: STATIC RESISTANCES FOR UNIT ACCESSORIES (IWG)

UNIT MODEL	ACCESSORY		CFM				
			3200	3600	4000	4400	4800
FF-10	ELECTRIC HEAT	10 KW	0.02	0.02	0.03	0.03	0.04
		16 KW	0.03	0.04	0.05	0.06	0.07
		26 KW	0.06	0.07	0.09	0.11	0.13
		36 KW	0.09	0.11	0.14	0.17	0.20
	SUPPLY AIR PLENUM		0.05	0.06	0.07	0.08	0.10
	RETURN AIR GRILLE		0.05	0.06	0.07	0.08	0.10

ACCESSORIES (FIELD-INSTALLED)

Three-Phase Electric Heaters are available in several capacities to provide maximum flexibility. The heater can be selected to precisely meet the supplemental heating requirement of the conditioned space.

These heaters are designed for easy field-installation over the supply air opening of the indoor unit. They have been tested by Underwriters' Laboratories and will be shipped with a UL label. Every heater will be fully protected against excessive current and temperature by fuses and two high limit thermostats.

Units with Electric Heat will require only one power supply for both the heating elements and the supply air blower motor, and the power wiring can be protected by either dual element/time delay fuses or an inverse time circuit breaker.

Supply Air Plenums and Return Air Grilles (expanded metal) are available for free-standing indoor units located in the conditioned space. Both accessories are finished to match the exterior of the basic unit, and both can be applied with either vertical or horizontal units. The supply air plenums are fully insulated and have double-deflection, adjustable grilles.

Base Sections are available to raise vertical indoor units above the floor. Outdoor air may be introduced through these bases by cutting an access opening for the outdoor air duct connection. These bases are finished to match the exterior of the basic unit. They may have to be insulated in the field for certain applications.

Decorative Coil Guards can be field installed to enhance protection of the unit.

Thermostats with either manual or automatic changeover are available for precise control of the temperature within the conditioned space. The manual thermostat has a four-position selector switch - COOL, OFF, HEAT, and EMERGENCY HEAT, and three stages of control - one stage of cooling and two stages of heating. The automatic thermostat has a three-position selector switch - OFF, AUTOMATIC and EMERGENCY HEAT, and four stages of control - two stages of cooling and two stages of heating.

Both thermostats have a two-position fan switch, AUTO and ON to provide intermittent or continuous blower operation.

NOTE: The automatic changeover thermostat must be used on units equipped with a field-supplied economizer.

The first cooling stage of the automatic thermostat will only control the position of the reversing valve; the system will still operate with only one stage of cooling.

The EMERGENCY HEAT position on the selector switch and the second stage of heating will only function on systems with an electric heat accessory.

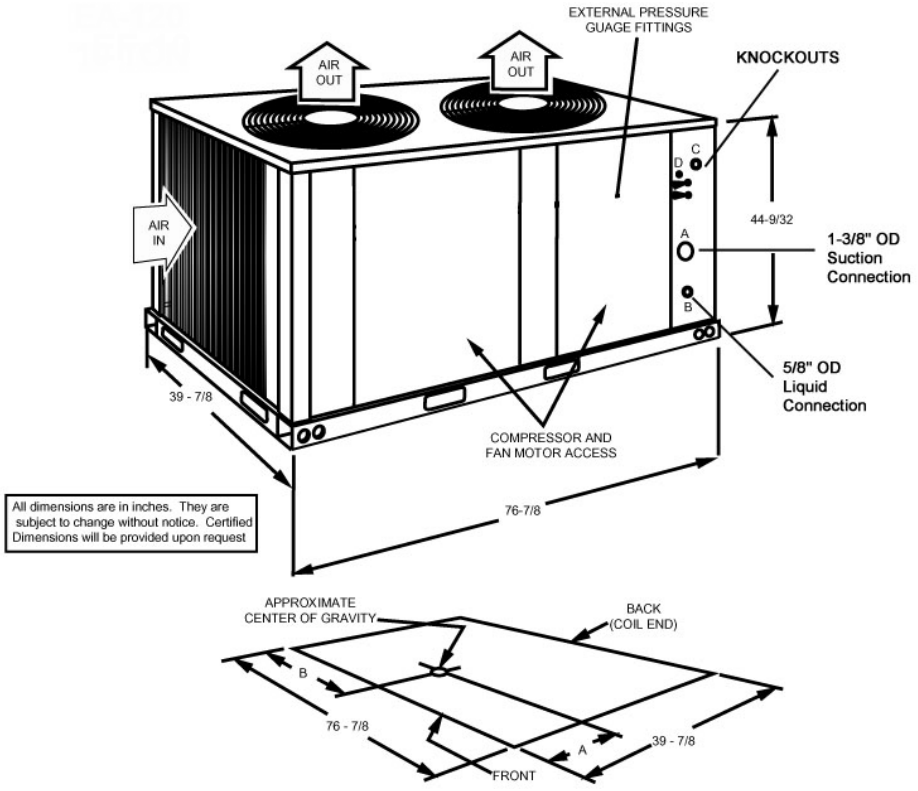


FIGURE 4 - UNIT DIMENSIONS

NOTE: All dimensions are in inches. They are subject to change without notice. Certified dimensions will be provided upon request.

TABLE 10: UNIT/DIMENSIONS

Unit	Dim. (in.)	
	A	B
EA120	16	38

TABLE 11: CLEARANCES

Overhead (Top)*	120”
(Piping and Access Panels)	30”
Left Side	24”
Right Side	24”
Rear	24”
Bottom†	0”

*. Units must be installed outdoors. Overhanging structures or shrubs should not obstruct condenser air discharge.

†. Adequate snow clearance must be provided if winter operation is expected.

MINIMUM CLEARANCES	
Side with RETURN AIR opening	24"
Side with SUPPLY AIR opening	24"*
Side with PIPING CONNECTIONS	61†
Side opposite PIPING CONNECTIONS	26
Side with access for both POWER & CONTROL WIRING	26‡
Bottom	**

*. Overall dimension of the unit will vary if an electric heater, a supply air plenum or a base is used.

†. This dimension is required for removal of the coil. Only 26" is required for normal servicing.

‡. Although no clearance is required for service and operation, some clearance may be required for routing the power wiring and the control wiring.

**. Allow enough clearance to trap the condensate drain line.

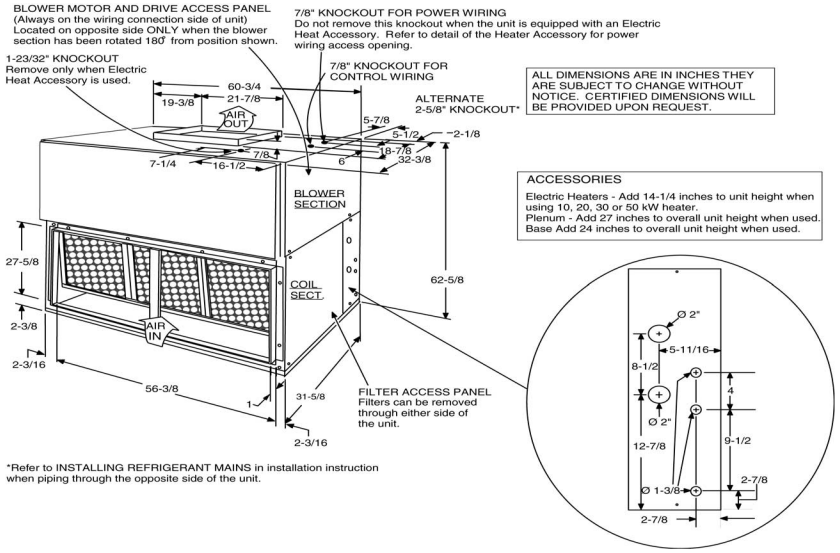


FIGURE 5 - UNIT DIMENSIONS & CLEARANCES - INDOOR UNITS

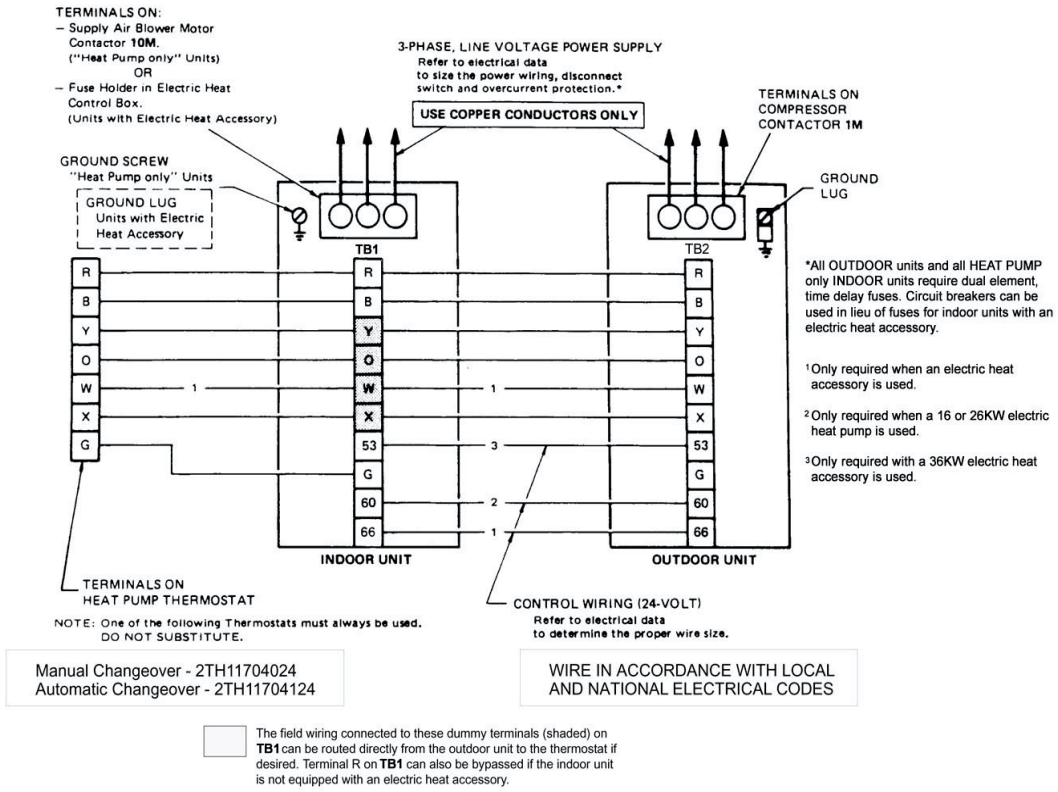
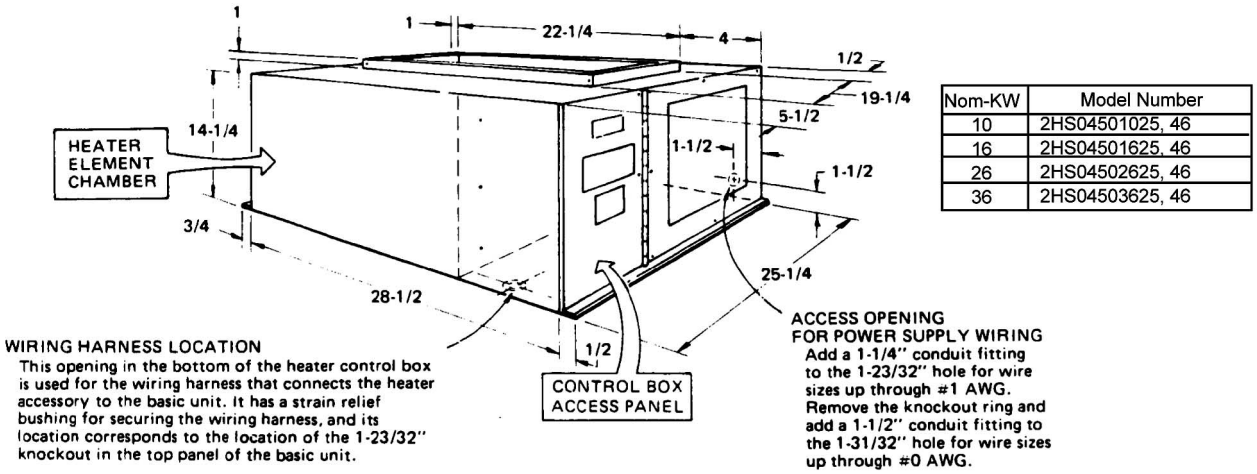


FIGURE 6 - FIELD WIRING

ACCESSORY DIMENSIONS



Nom-KW	Model Number
10	2HS04501025, 46
16	2HS04501625, 46
26	2HS04502625, 46
36	2HS04503625, 46

FIGURE 7 - ELECTRIC HEATER

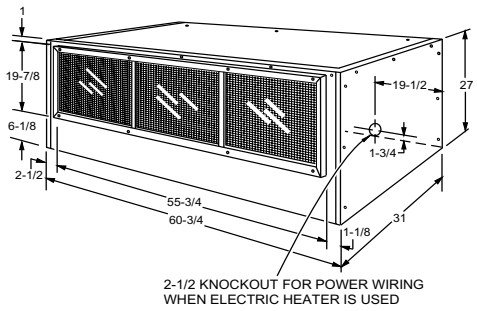


FIGURE 8 - SUPPLY AIR PLENUM

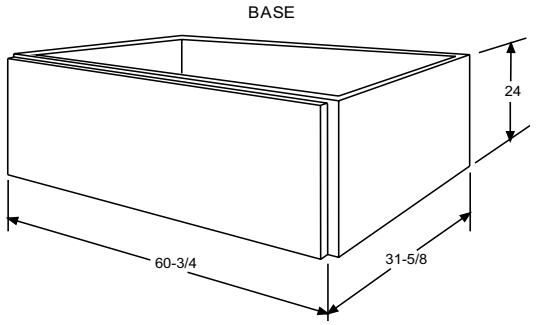


FIGURE 10 - BASE ACCESSORY

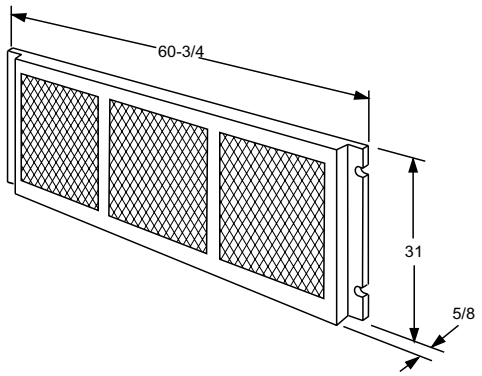


FIGURE 9 - RETURN AIR GRILLE

TABLE 12: PHYSICAL DATA - INDOOR UNIT

DESCRIPTION			UNIT MODEL
			FA120
Coil	Rows Deep X Rows High		3 X 32
	Finned Length - inches		54.5
	Face Area - square feet		12.11
	Tube (Copper) OD - inches		3/8
	Fins (Aluminum) per inch		13
Centrifugal Blower (Forward Curve) - Qty	Diameter X Width - inches		18 X 18 - 1
Blower Motor *	HP		2
	RPM		1750
Filters (Throwaway)	Quantity per unit		6
	Size (in)		20 X 20 X 1
	Total Face Area - square feet		16.7
Unit Weight (lbs)	Shipping		425
	Operating		435
Accessory Operating Weight (lbs.)	Electric Heat	10 kW	63
		16 kW	66
		26 kW	71
		36 kW	74
	Supply Air Plenum		114
	Return Air Grille		20
	Base		100

*. Refer to Blower Motor and Drive Data table for more information

TABLE 13: PHYSICAL DATA -ELECTRIC HEAT ACCESSORIES

Description		Nominal Heater Capacity			
		10 KW	16 KW	26 KW	36 KW
Heater Elements	% Nickel	59.2			
	% Chromium	16.0			
	Coil ID - inches	9/32			
	Watt Density - watts/sq. in.	59.0			
	Rows Deep	1	2	3	4
Face Area - square feet		3.0			

TABLE 14: PHYSICAL DATA - OUTDOOR UNIT

DESCRIPTION		UNIT MODEL
		EA120
Compressor*	Rating - (Qty) Tons	10
Fans	Quantity	2
	Blades/Pitch (°)	3/30
	Nominal CFM	8100
Fan Motors†	HP	3/4
	RPM	1100
Coil	Rows Deep X Rows High	2 X 40
	Finned Length - inches	130
	Face Area - square feet	36.11
	Tube(Copper) OD - inches	3/8
	Fins(Aluminum) per inch	18
Refrigerant - 22 (lbs - ozs)	Holding Charge (sys1/sys2)‡	1 - 0 / 1 - 0
	Operating Charge	31-8
Unit Weight (lbs)	Shipping	847
	Operating	857

*. These compressors are fully hermetic.

†. The ball bearing, 48 frame, single phase condenser fan motors have internal protection and are directly connected to the condenser fans. Motor rotation is counter-clockwise when viewing the lead end, which is opposite the shaft end.

‡. The amount of charge in the unit as shipped from the factory.

TABLE 15: ELECTRICAL DATA - OUTDOOR UNIT

Model		Compressor					Outdoor Fan Motor			Min. Circuit Amps	Max. Fuse Size	Min. Wire Size AWG
		Power Supply	RLA	LRA		Power Factor	Power Supply	Qty.	FLA (Each)			
EF-10	2	208/230-3-60	42.0	239.0	42.0	0.95 @ 208V 0.86 @ 230V	208/230-1-60	2	3.0	58.6	100	6
	4	460-3-60	19.2	146.0	19.2	0.86	460-1-60	2	1.8	27.2	45	8

TABLE 16: INDOOR HEAT UNIT - HEAT PUMP ONLY

INDOOR UNIT

HEAT PUMP ONLY

Blower Motor HP	Power Supply	FLA	Max. Fuse Size,[1] AMPS
FA120			
2	208-3-60	7.5	10
	230-3-60	6.8	10
	460-3-60	3.4	5

1Dual element, time delay fuses.

2Based on three 60°C, 14 AWG, insulated copper conductors

TABLE 17: HEAT PUMP WITH ELECTRIC HEAT*

NOMINAL HEATER KW†	POWER SUPPLY	HEATER FLA	TOTAL UNIT AMPACITY AMPS	MAX. FUSE SIZE AMPS‡	MIN WIRE SIZE AWG**
10	208-3-60	20.8	35.4	40	8
	230-3-60	23.1	37.3	40	8
	460-3-60	11.5	18.7	20	12
16	208-3-60	33.4	51.1	60	8
	230-3-60	36.9	54.6	60	6
	460-3-60	18.4	27.3	30	10
26	208-3-60	54.2	77.1	80	4
	230-3-60	59.9	83.4	90	4
	460-3-60	30.0	41.7	45	8
36	208-3-60	75.1	103.2	110	2
	230-3-60	83.3	112.2	125	1
	460-3-60	41.5	56.1	60	6

*. Unit with an electric heat accessory will always be wired for a single power supply.

†. Refer to the HEATING CAPACITY table on page 5 for the actual KW and MBH ratings of each heater at the different voltages.

‡. Inverse time circuit breakers may be used in lieu of dual element, time delay fuses.

**. Based on three insulated copper conductors in steel conduit:
60ºC wire when the total unit ampacity is below 100 amps.
75ºC wire when the total unit ampacity is 100 amps or above.

Subject to change without notice. Printed in U.S.A. CD: 6-21363 036-21363-002-B-0303

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Unitary Products Group **5005 York Drive** **Norman OK 73069**