



## Heating and Air Conditioning

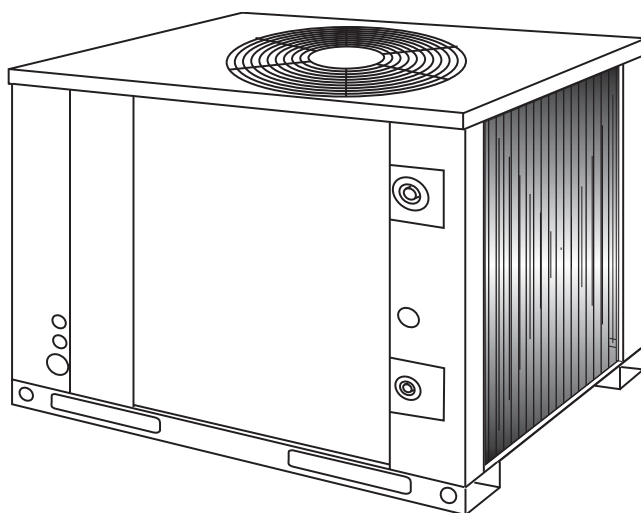
### TECHNICAL GUIDE

SPLIT-SYSTEM AIR-COOLED

CONDENSING UNITS

SUNLINE 2000™

**MODELS: H5CE090, H3CE120 & H1CE150**  
**7-1/2, 10, & 12-1/2 NOMINAL TONS**  
**9.0-9.5 EER**



### DESCRIPTION

These Sunline 2000™ units are completely assembled, piped and wired at the factory to provide one-piece shipment and rigging. Each unit is pressurized with a holding charge of refrigerant-22 for storage and/or shipping.

The compact design, clean styling, low silhouette, and quiet operation make these condensing units suitable for almost any outdoor location. On rooftops...because they weigh much less than a single package unit of similar capacity and are much easier to rig and support. At ground level...because their ample sub-cooling capacity allows them to be located 60 feet below the evaporator coil.

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 external parts are coated with a powder paint to assure a quality finish for many years. This coating system has surpassed the 500 hour, 5% salt spray test per ASTM Standard B117.

All models include a 1-year limited warranty on the complete unit. The compressor carries an additional 4-year warranty.

A complete line of Evaporator Blower units is also offered to meet your precise capacity and air handling requirements. Refer to Form 036-21300-001 for more information on this air side equipment.

### FEATURES

- Condenser coil constructed of copper tubes and aluminum fins for durability and long lasting efficient operation.
- Permanently attached base rails with fork-lift slots and lifting holes. This design allows for 3-way fork-lift access and overhead rigging.
- Both high and low pressure controls. Since these controls are self-contained, there are no capillary lines to be damaged.
- Compressor line-break motor protection and crankcase heaters. (No crankcase heater on H\*CE150 compressors.)
- Anti-short cycle timer to protect the compressor.
- A lockout circuit to prevent the unit from cycling on safety control.
- A 24-volt temperature control circuit.
- Low ambient operation to 45°F accessories for 0°F low ambient operation are available.
- A filter-drier (shipped in the unit's compressor compartment for field installation near the evaporator coil).
- Service valves with a back-seating access port for pressure testing the system. Copper stub-outs are factory mounted on the suction and liquid service valves to simplify the field piping connections.
- Separate panel for easy access to the control box without affecting air flow across the condenser coil.
- Gauge lines extend out from cabinet to facilitate servicing.
- Packaging suitable for outdoor storage
- Optional coil guard accessory protect coils with a decorative grille.

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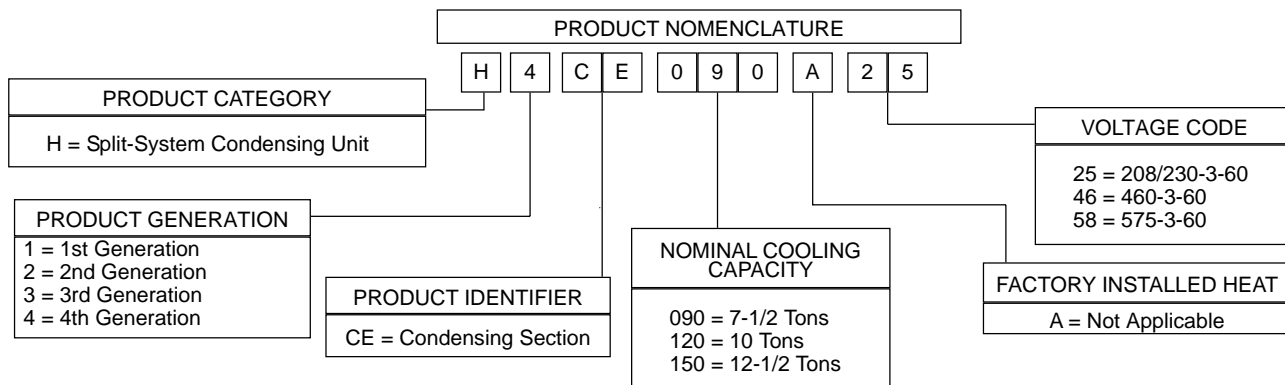
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**TABLE 1: ARI RATINGS\***

CONDENSING UNIT MODEL	INDOOR BLOWER UNIT MODEL	SYSTEM MBH	SYSTEM EER	CONDENSING UNIT SOUND LEVEL†(bels)
<b>H5CE090A25, 46</b>	K4EU090A33	85‡	9.2	8.4
	K3EU120A33	91‡	9.4	
<b>H2CE120A25, 46</b>	K3EU120A33	117**	9.0	9.0
	K3EU180A33	124**	9.5	
<b>H1CE150A25, 46</b>	K3EU180A33	140**	9.0	-

\*. Certified in accordance with Unitary Large Equipment certification program, which is based on ARI Standard 340/360

†. Rated in accordance with ARI Standard 270.

‡. Deduct 0.5 MBH for units operating at 208 volts.

\*\*. Deduct 1.0 MBH for units operating at 208 volts.

**TABLE 2: APPLICATION DATA**

LIMITATION		MIN.	MAX.
Voltage Variation *	208/230-3-60	187V	252V
	460-3-60	432V	504V
	575-3-60	540V	630V
	380/415-3-50	342V	456V
Ambient Air on Condenser Coil		45°F†	115°F‡

\*. Rated in accordance with ARI Standard 110, utilization range "A".

†. Low Ambient accessories are available to permit stable system operation at ambient temperatures down to 0°F.

‡. These units can operate at a maximum ambient temperature of 120°F providing the wet bulb temperature of the air entering the evaporator coil does not exceed 67°F.

Note: Refer to Form 035-15407-002 for refrigerant piping limitations.

**TABLE 3: PHYSICAL DATA**

Model HCE	Compressor (Tandem on 150 only)		Condenser												Unit Weight (Lbs.)		Charge, Lbs.-Oz. (Refrigerant-22)	
			Fan (Propeller)					Fan Motor*				Coils†						
	Rating (Tons)	Cap. (Stages)	Qty.	Dia. (in.)	Norm- CFM	Blades		Qty.	RPM	HP	Rota- tion‡	Face Area‡	Finned Length (in.)	Rows High	Ship.	Oper.	Holding	Oper.**
					Qty	Pitch (Deg.)												
090	7-1/2	1	1	24	4677	3	29	1	1120	3/4	CW	18.7	90	30	365	360	1-12	12-0††
120	10	1	2	24	8034	3	27	2	1110	1/2	CCW	23.8	96	36	435	430	2-4	18-6
150	12-1/2	1	2	24	7950	3	27	2	1110	1/2	CCW	23.8	96	36	510	505	2-4	19-5

\*. These PSC motors are directly connected to the condenser fans and have inherent protection, ball bearings and a 48" frame.

†. These condenser coils have 2 rows of 3/8" OD copper tubes and 16 aluminum fins per inch.

‡. When viewing the shaft end of the motor.

\*\*. Includes matched indoor blower unit but no piping.

††. Add an additional 1 lb. charge when used with KEU120 (10 ton) indoor units.

**TABLE 4: ELECTRICAL DATA**

MODEL (HCE)	VOLTAGE CODE	COMPRESSOR			CONDENSER FAN MOTOR				UNIT AMPACITY (AMPS)	MAX. FUSE SIZE* (AMPS)
		POWER SUPPLY	RLA	LRA	POWER SUPPLY	HP	QTY	FLA		
090	25	208/230-3-60	25.6	190	208/230-1-60	3/4	1	3.03	35.1	60
	46	460-3-60	12.8	95	460-1-60	3/4	1	1.60	17.6	30
	58	575-3-60	10.2	75	575-1-60	3/4	1	1.8	14.6	20
120	25	208/230-3-60	42.0	239	208/230-1-60	1/2	2	2.7	51.8	70
	46	460-3-60	19.2	125	460-1-60	1/2	2	1.6	24.7	35
	58	575-3-60	13.8	80	460-1-60†	1/2	2	1.3	18.0	25
150	25	208/230-3-60	41.4	312	208/230-1-60	1/2	2	3.0	52.6	70
	46	460-3-60	20.0	150	460-1-60	1/2	2	1.8	26.1	35
	58	575-3-60	16.4	108	460-1-60†	1/2	2	1.8	21.3	30

\*. Dual element.

†. Unit includes a 575 to 460-volt transformer.

**TABLE 5: UNIT COOLING CAPACITIES AND POWER REQUIREMENTS**

Model HCE	Suction Press. & Corresponding Temp. @ Saturation		Temperature of Air on Condenser Coil, °F											
			65		75		85		95		105		115	
	PSIG	°F	MBH	KW*	MBH	KW*	MBH	KW*	MBH	KW*	MBH	KW*	MBH	KW*
090	61.6	35	90	6.1	88	6.7	81	7.2	77	7.9	74	8.6	68	9.5
	68.5	40	101	6.3	96	6.8	91	7.4	87	8.1	82	8.9	77	9.7
	76.0	45	110	6.5	109	7.0	101	7.6	95	8.4	90	9.1	85	10.0
	84.0	50	120	6.6	115	7.2	109	7.8	104	8.6	99	9.4	93	10.3
120	61.6	35	123	7.7	117	8.4	112	9.1	106	9.9	100	10.8	95	11.8
	68.5	40	134	8.0	128	8.6	122	9.3	116	10.1	110	11.0	104	12.1
	76.0	45	145	8.2	139	8.8	132	9.5	126	10.4	120	11.3	113	12.3
	84.0	50	156	8.4	150	9.1	143	9.8	136	10.6	129	11.5	123	12.5
150	61.6	35	140	9.4	133	10.4	127	11.3	119	12.6	112	13.8	105	15.1
	68.5	40	151	9.6	144	10.6	137	11.5	129	12.8	122	14.1	114	15.4
	76.0	45	165	9.9	156	10.9	148	11.8	140	13.1	132	14.4	124	15.8
	84.0	50	178	10.2	169	11.2	159	12.1	151	13.4	142	14.8	134	16.1

\*. Includes compressor and condenser fan motor(s).

**TABLE 6: SYSTEM COOLING CAPACITIES AND POWER REQUIREMENTS**

Air On Cool- ing Coil		Temperature of Air on Condenser																	
		95°F						105°F								115°F			
		Total Cap., MBH	Power Input, KW	Sensible Capacity, MBH				Total Cap. MBH	Power Input, KW	Sensible Capacity, MBH				Total Cap., MBH	Power Input, KW	Sensible Capacity, MBH			
				Entering Dry Bulb, °F						Entering Dry Bulb, °F						Entering Dry Bulb, °F			
CFM	WB °F			86	80	74	68			86	80	74	68			86	80	74	68
H5CE090/K4EU090																			
3600	72	100	8.5	75	53	32	-	96	9.5	73	52	31	-	93	10.4	72	50	29	-
	67	93	8.3	92	70	49	27	89	9.3	88	68	47	26	85	10.2	85	67	45	24
	62	82	8.0	82	82	61	39	81	9.0	81	81	60	38	80	10.0	80	80	58	37
	57	91	8.1	91	88	67	45	89	9.0	89	84	63	41	87	9.9	87	80	58	37
3000	72	97	8.5	66	49	31	-	93	9.5	65	48	30	-	88	10.5	64	47	29	-
	67	91	8.2	82	64	47	29	86	9.2	80	63	45	28	81	10.2	79	62	44	27
	62	80	8.0	80	78	61	43	78	9.0	78	76	59	41	76	10.1	76	74	57	39
	57	89	8.0	89	81	63	46	86	9.0	86	77	60	42	83	9.9	83	74	56	39
2400	72	91	8.4	57	43	30	-	88	9.3	56	42	28	-	85	10.3	54	41	27	-
	67	86	8.1	71	57	43	30	82	9.1	69	55	42	28	78	10.0	67	54	40	26
	62	75	7.9	75	69	56	42	74	8.9	74	67	53	40	73	9.9	73	65	51	38
	57	84	7.9	84	72	58	44	82	8.8	81	68	54	41	80	9.7	78	64	51	37
H5CE090/K3EU120																			
4200	72	104	8.5	84	59	34	-	97	9.5	82	57	32	-	90	10.4	80	55	30	-
	67	97	8.3	97	80	55	30	92	9.2	92	77	52	27	86	10.2	86	75	50	25
	62	91	8.2	91	91	65	40	84	9.1	84	84	59	34	78	10.0	78	78	53	28
	57	91	8.2	91	91	66	41	86	9.1	86	86	61	36	81	10.0	81	81	56	31
3500	72	102	8.4	75	54	34	-	96	9.4	73	53	32	-	91	10.3	71	51	31	-
	67	95	8.2	94	74	53	33	91	9.1	91	72	51	31	87	10.1	87	70	49	29
	62	89	8.1	89	88	68	48	84	9.0	84	85	64	44	79	9.9	79	81	60	40
	57	89	8.1	89	89	69	48	85	9.0	85	85	65	44	81	9.9	81	81	61	41
2800	72	97	8.4	63	47	31	-	91	9.3	62	46	30	-	85	10.2	60	44	28	-
	67	91	8.2	80	64	48	32	86	9.1	78	62	47	31	81	10.0	77	61	45	29
	62	85	8.0	85	77	61	45	79	8.9	79	74	58	42	74	9.9	74	70	54	38
	57	86	8.1	86	78	62	46	81	8.9	81	74	58	52	76	9.8	76	71	55	39
H3CE120/K3EU120																			
4400	72	137	11.1	95	69	43	-	133	12.4	94	68	42	-	129	13.6	93	67	41	-
	67	126	11.1	112	93	67	40	120	12.3	109	91	64	38	114	13.4	105	88	62	36
	62	113	10.7	113	111	84	58	109	12.0	109	108	82	55	106	13.2	106	106	79	53
	57	113	10.7	113	113	87	60	109	12.0	109	109	83	57	106	13.2	106	106	80	53
4000	72	134	11.3	90	66	43	20	130	12.5	89	66	42	19	125	13.6	88	65	42	18
	67	123	11.3	110	89	66	42	117	12.3	106	87	64	41	111	13.4	102	86	62	39
	62	110	10.9	110	106	83	59	106	12.0	106	104	81	57	103	13.2	103	102	78	55
	57	110	10.9	110	110	87	64	106	12.0	106	106	83	60	103	13.2	103	102	79	56
3000	72	114	11.1	70	53	35	18	112	12.3	69	52	35	18	110	13.6	69	52	35	18
	67	104	11.0	88	70	53	36	101	12.2	87	70	52	35	98	13.4	86	69	52	34
	62	94	10.7	94	84	67	50	92	11.9	92	83	66	49	90	13.2	90	82	64	47
	57	94	10.7	94	87	70	53	92	11.9	92	85	68	50	90	13.2	90	82	65	48
H3CE120/K3EU180																			
4700	72	140	11.7	101	74	46	19	135	12.8	100	72	45	17	129	13.9	98	71	43	16
	67	129	11.4	119	95	67	40	124	12.5	115	94	67	39	119	13.6	110	93	66	38
	62	120	11.2	120	115	87	60	115	12.3	115	113	85	58	112	13.4	112	112	83	56
	57	120	11.2	120	119	91	64	115	12.3	115	115	88	61	112	13.4	112	112	85	57
HCE150/K3EU180																			
6250	72	163	13.7	135	99	63	-	156	15.1	132	96	60	-	149	16.8	129	94	58	-
	67	157	13.5	157	130	94	57	151	15.0	151	127	91	55	145	16.7	145	124	89	52
	62	157	13.5	157	147	125	89	151	15.0	151	141	122	87	144	16.7	144	135	119	84
	57	156	13.5	156	147	137	119	150	15.0	150	141	132	116	144	16.7	144	135	126	113
5000	72	160	13.6	121	90	60	-	153	15.0	118	88	57	-	145	16.7	115	85	55	-
	67	150	13.3	144	117	87	56	144	14.8	141	114	84	53	138	16.5	138	111	81	51
	62	149	13.3	149	139	113	83	143	14.8	143	134	110	80	137	16.5	137	129	107	77
	57	148	13.3	148	139	131	108	143	14.8	143	134	125	105	137	16.5	137	129	120	102

	All Sensible Capacity		Nominal Rating
Blower Motor KW x	3.415 MBH		= Blower Motor (MBH)
	KW		

The KW input ratings listed above include the compressor and condenser fan motor(s).

Note: These capacities are gross ratings. For net capacities, determine the KW requirement of the supply air blower motor per the published BLOWER PERFORMANCE data. Convert KW to MBH per the following equation and deduct this equivalent heat from the gross cooling ratings.

## Sequence of Operation

### UNIT OPERATION - 7-1/2, 10 & 12-1/2 TON

When the external control calls for cooling at terminal Y1:

The system controller (SC) is energized. The system controller starts the compressors and enables the condenser fans by energizing contactor 1M (2M on the 10 and 12-1/2 ton, 208/230 volt models).

The single condenser fan is energized with the compressor on the 7-1/2 ton models.

Condenser fan motor #1 is energized with the compressors on the 10 and 12-1/2 ton models while fan #2 is enabled with compressor operation. Fan motor #2 operation is controlled through the Ambient Temperature Switch (ATS) which will de-energize the motor when the ambient temperature falls below 70°F

Safety Lockout: The system controller (SC) has a lockout circuit to prevent compressor short-cycling on a safety control

with automatic reset. If the high or low refrigerant pressure switches (HP or LP) open, the SC will enter lockout mode.

SC provides a 90 second bypass of the low pressure switch LP to prevent nuisance lockouts during unit start-up.

A malfunction light (24V, 2 A max. resistive load) can be energized through SC, by connecting the light between terminals X and B on TB1.

**NOTE:** To reset the unit after a lockout:

- a. Turn the system switch on the thermostat to the "OFF" position and back to the "COOL" position.
- OR
- b. Increase the set point of the room thermostat above the temperature in the conditioned space and return it to its original setting. If the unit continues to be shut down by one of its safety controls, a service man should be called to determine the cause of the problem. Repeated resetting of the lockout circuit may damage the unit.

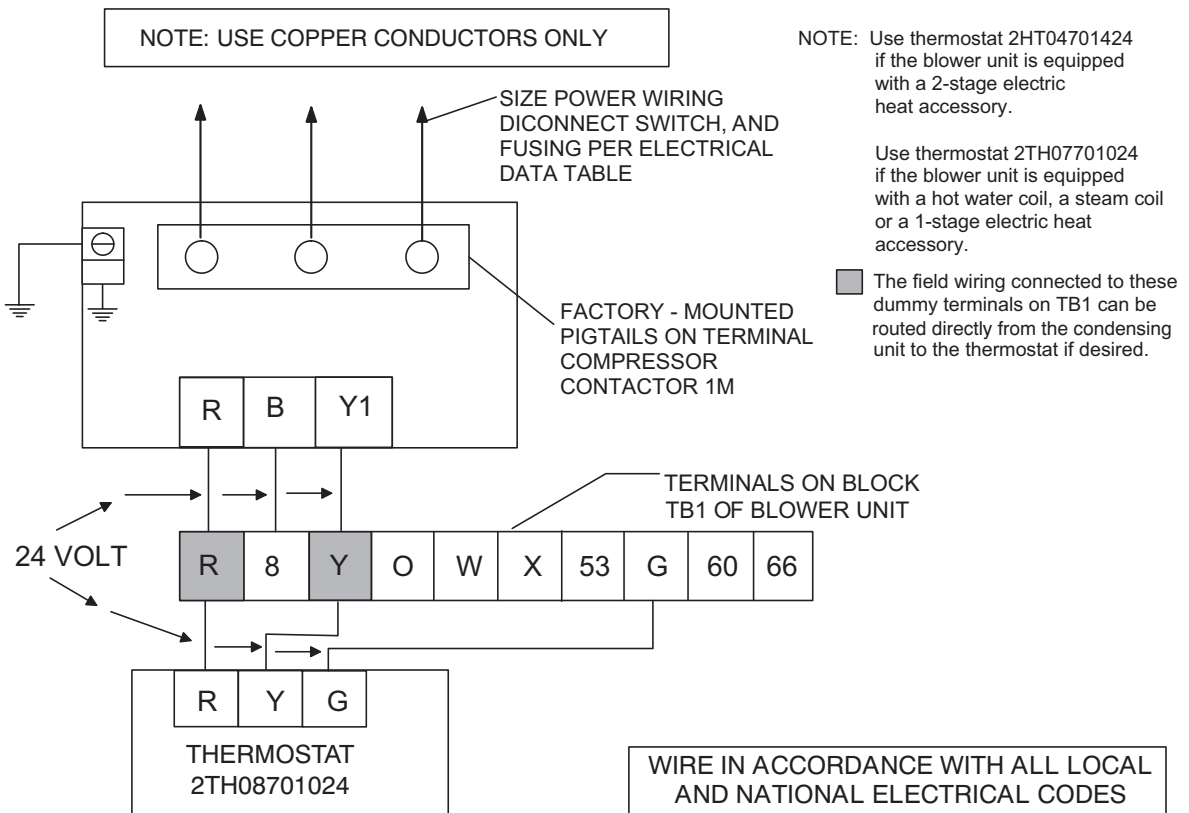


FIGURE 1 - TYPICAL FIELD WIRING WITH AIR HANDLER

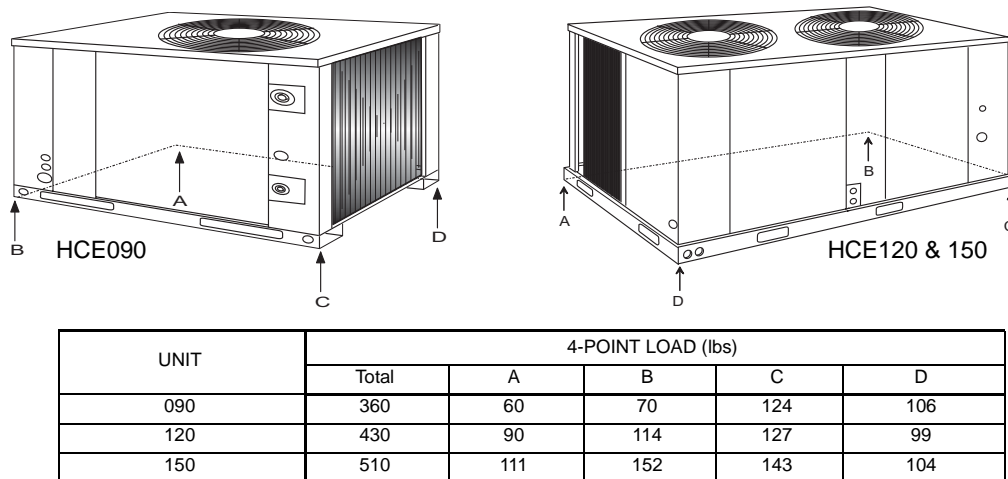
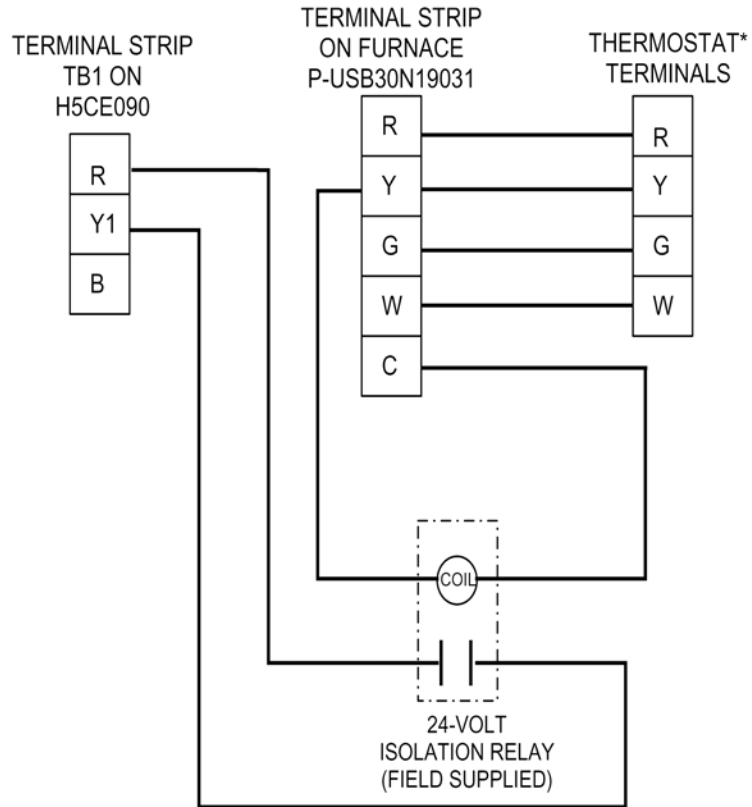


FIGURE 2 - 4 POINT LOADS



\*24-volt thermostat  
2TH13700424 with Subbase 2TB17700424.

**FIELD-INSTALLED ACCESSORIES - 0° FLOW AMBIENT KITS** - An auto-transformer and temperature control maintain stable system operation by reducing the speed of the condenser fan motor.

**FIGURE 3 - TYPICAL FIELD WIRING WITH 7-1/2 TON FURNACE**

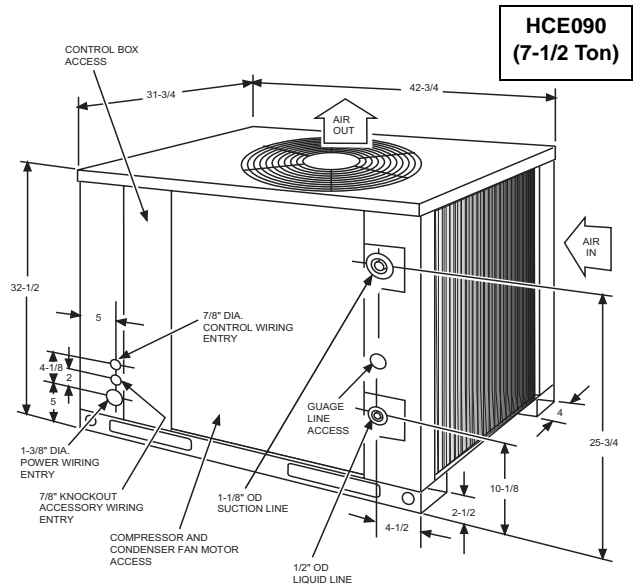


## CLEARANCES

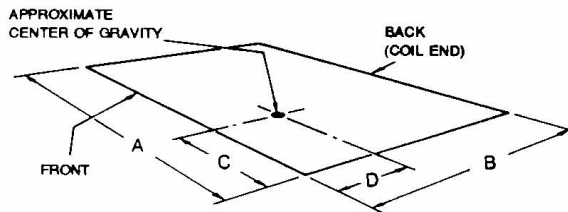
Overhead (Top)*	120"
Front (Piping and Access Panels)	30"
Left Side	24"
Right Side	24"
Rear	24"
Bottom†	0"

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

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



## CENTER OF GRAVITY



UNIT	DIM (IN.)			
	A	B	C	D
7-1/2 TON	42-3/4	31-3/4	19-3/4	11-1/2
10 TON	70-1/8	32	30-3/4	15-1/8
12-1/2 TON	70-1/8	32	29-5/8	16 -1/2

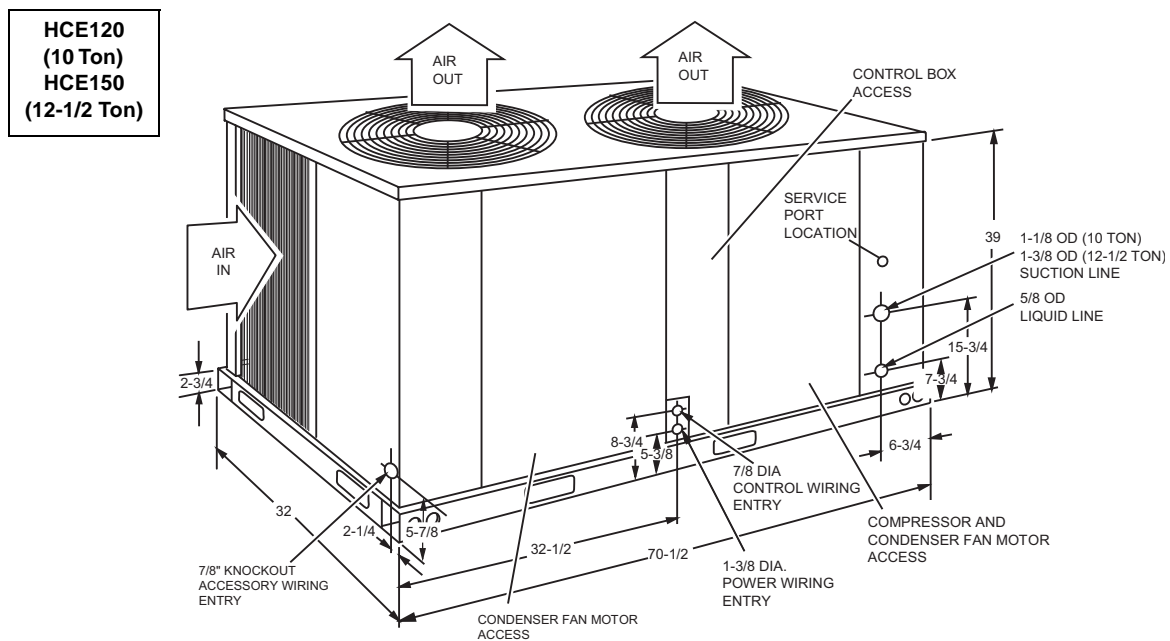


FIGURE 4 - UNIT DIMENSIONS & CLEARANCES - HCE090, 120 & 150

TABLE 7: NOMINAL EVAPORATOR DATA FOR G2FD090S35 W/HCE090

DB/WB@		CAPACITY* (Btu/hr)			DB/WB@		CAPACITY* (Btu/hr)			DB/WB@		CAPACITY* (Btu/hr)		
OUTDOOR AMBIENT	CFM	TOTAL	SENS.	LATENT	OUTDOOR AMBIENT	CFM	TOTAL	SENS.	LATENT	OUTDOOR AMBIENT	CFM	TOTAL	SENS.	LATENT
86°/72° @ 95°	2400	105,688	67,640	38,048	86°/72° @ 105°	2400	104,631	66,964	37,667	86°/72° @ 115°	2400	102,538	65,624	36,914
86°/67° @ 95°	2400	87,087	75,765	11,321	86°/67° @ 105°	2400	86,216	75,008	11,208	86°/67° @ 115°	2400	84,491	73,507	10,984
86°/62° @ 95°	2400	82,014	82,014	0	86°/62° @ 105°	2400	81,193	81,193	0	86°/62° @ 115°	2400	81,210	81,210	0
86°/57° @ 95°	2400	82,014	82,014	0	86°/57° @ 105°	2400	81,193	81,193	0	86°/57° @ 115°	2400	81,210	81,210	0
80°/72° @ 95°	2400	103,997	53,038	50,958	80°/72° @ 105°	2400	102,957	52,508	50,449	80°/72° @ 115°	2400	100,897	51,458	49,440
80°/67° @ 95°	2400	84,550	60,876	23,674	80°/67° @ 105°	2400	83,705	60,267	23,437	80°/67° @ 115°	2400	82,030	59,062	22,969
80°/62° @ 95°	2400	70,177	68,773	1,404	80°/62° @ 105°	2400	69,475	68,085	1,389	80°/62° @ 115°	2400	68,085	66,724	1,362
80°/57° @ 95°	2400	70,177	70,177	0	80°/57° @ 105°	2400	69,475	69,475	0	80°/57° @ 115°	2400	69,726	69,726	0
74°/67° @ 95°	2400	81,168	45,454	35,714	74°/67° @ 105°	2400	82,030	45,937	36,093	74°/67° @ 115°	2400	80,390	45,018	35,372
74°/62° @ 95°	2400	63,413	51,998	11,414	74°/62° @ 105°	2400	62,778	51,478	11,300	74°/62° @ 115°	2400	62,343	51,121	11,222
74°/57° @ 95°	2400	58,340	58,340	0	74°/57° @ 105°	2400	57,756	57,756	0	74°/57° @ 115°	2400	57,421	57,421	0
68°/62° @ 95°	2400	61,722	37,650	24,071	68°/62° @ 105°	2400	61,104	37,274	23,831	68°/62° @ 115°	2400	59,882	36,528	23,354
68°/57° @ 95°	2400	46,503	44,642	1,860	68°/57° @ 105°	2400	46,037	44,196	1,841	68°/57° @ 115°	2400	45,117	43,312	1,805

DB/WB@		CAPACITY* (Btu/hr)			DB/WB@		CAPACITY* (Btu/hr)			DB/WB@		CAPACITY* (Btu/hr)		
OUTDOOR AMBIENT	CFM	TOTAL	SENS.	LATENT	OUTDOOR AMBIENT	CFM	TOTAL	SENS.	LATENT	OUTDOOR AMBIENT	CFM	TOTAL	SENS.	LATENT
86°/72° @ 95°	3000	118,750	76,000	42,750	86°/72° @ 105°	3000	116,375	74,480	41,895	86°/72° @ 115°	3000	114,048	72,990	41,057
86°/67° @ 95°	3000	97,850	85,130	12,721	86°/67° @ 105°	3000	95,893	83,427	12,466	86°/67° @ 115°	3000	93,975	81,758	12,217
86°/62° @ 95°	3000	92,150	92,150	0	86°/62° @ 105°	3000	90,307	90,307	0	86°/62° @ 115°	3000	90,326	90,326	0
86°/57° @ 95°	3000	92,150	92,150	0	86°/57° @ 105°	3000	90,307	90,307	0	86°/57° @ 115°	3000	90,326	90,326	0
80°/72° @ 95°	3000	116,850	59,594	57,257	80°/72° @ 105°	3000	114,513	58,402	56,111	80°/72° @ 115°	3000	112,223	57,234	54,989
80°/67° @ 95°	3000	95,000	68,400	26,600	80°/67° @ 105°	3000	93,100	67,032	26,068	80°/67° @ 115°	3000	91,238	65,691	25,547
80°/62° @ 95°	3000	78,850	77,273	1,577	80°/62° @ 105°	3000	77,273	75,728	1,545	80°/62° @ 115°	3000	75,728	74,213	1,515
80°/57° @ 95°	3000	78,850	78,850	0	80°/57° @ 105°	3000	77,273	77,273	0	80°/57° @ 115°	3000	77,552	77,552	0
74°/67° @ 95°	3000	91,200	51,072	40,128	74°/67° @ 105°	3000	91,238	51,093	40,145	74°/67° @ 115°	3000	89,413	50,071	39,342
74°/62° @ 95°	3000	71,250	58,425	12,825	74°/62° @ 105°	3000	69,825	57,257	12,569	74°/62° @ 115°	3000	69,341	56,860	12,481
74°/57° @ 95°	3000	65,550	65,550	0	74°/57° @ 105°	3000	64,239	64,239	0	74°/57° @ 115°	3000	63,867	63,867	0
68°/62° @ 95°	3000	69,350	42,304	27,047	68°/62° @ 105°	3000	67,963	41,457	26,506	68°/62° @ 115°	3000	66,604	40,628	25,975
68°/57° @ 95°	3000	52,250	50,160	2,090	68°/57° @ 105°	3000	51,205	49,157	2,048	68°/57° @ 115°	3000	50,181	48,174	2,007

DB/WB@		CAPACITY* (Btu/hr)			DB/WB@		CAPACITY* (Btu/hr)			DB/WB@		CAPACITY* (Btu/hr)		
OUTDOOR AMBIENT	CFM	TOTAL	SENS.	LATENT	OUTDOOR AMBIENT	CFM	TOTAL	SENS.	LATENT	OUTDOOR AMBIENT	CFM	TOTAL	SENS.	LATENT
86°/72° @ 95°	3600	123,690	81,635	42,055	86°/72° @ 105°	3600	122,453	80,819	41,634	86°/72° @ 115°	3600	118,780	78,394	40,385
86°/67° @ 95°	3600	102,743	86,304	16,439	86°/67° @ 105°	3600	101,715	85,441	16,274	86°/67° @ 115°	3600	98,664	82,877	15,786
86°/62° @ 95°	3600	96,758	96,758	0	86°/62° @ 105°	3600	95,790	95,790	0	86°/62° @ 115°	3600	92,916	92,916	0
86°/57° @ 95°	3600	96,259	96,259	0	86°/57° @ 105°	3600	95,296	95,296	0	86°/57° @ 115°	3600	92,437	92,437	0
80°/72° @ 95°	3600	122,693	62,573	60,119	80°/72° @ 105°	3600	121,466	61,947	59,518	80°/72° @ 115°	3600	117,822	60,089	57,733
80°/67° @ 95°	3600	99,750	73,815	25,935	80°/67° @ 105°	3600	98,753	73,077	25,676	80°/67° @ 115°	3600	95,790	70,885	24,905
80°/62° @ 95°	3600	82,793	81,137	1,656	80°/62° @ 105°	3600	81,965	80,325	1,639	80°/62° @ 115°	3600	79,506	77,916	1,590
80°/57° @ 95°	3600	82,294	82,294	0	80°/57° @ 105°	3600	81,471	81,471	0	80°/57° @ 115°	3600	79,027	79,027	0
74°/67° @ 95°	3600	95,760	53,626	42,134	74°/67° @ 105°	3600	94,802	53,089	41,713	74°/67° @ 115°	3600	91,958	51,497	40,462
74°/62° @ 95°	3600	74,813	61,346	13,466	74°/62° @ 105°	3600	74,064	60,733	13,332	74°/62° @ 115°	3600	71,842	58,911	12,932
74°/57° @ 95°	3600	68,828	68,828	0	74°/57° @ 105°	3600	68,139	68,139	0	74°/57° @ 115°	3600	66,095	66,095	0
68°/62° @ 95°	3600	72,818	44,419	28,399	68°/62° @ 105°	3600	72,089	43,974	28,115	68°/62° @ 115°	3600	69,927	42,655	27,271
68°/57° @ 95°	3600	54,863	52,668	2,195	68°/57° @ 105°	3600	54,314	52,141	2,173	68°/57° @ 115°	3600	52,684	50,577	2,107

\* All capacities based on a 45°F saturated suction temperature

## GUIDE SPECIFICATION

Furnish and install YORK Sunline air-cooled condensing units or equivalent, suitable for ground or roof mounting. Units shall have capacities and efficiencies as outlined in the schedules shown on the plans and shall be installed in accordance with all applicable national and local codes.

### I. General

- Units shall be manufactured in a facility registered under the ISO 9002 manufacturing quality standard.
- Units shall be CSA approved.
- Unit shall be packaged to allow outdoor storage.
- Hermetic compressors shall be covered by a five year limited warranty.
- All other unit parts shall be covered by a full year limited warranty.

### II. Unit Cabinet

- Cabinet shall be constructed of 18 gauge, zinc-coated steel, finished with a powder paint process capable of withstanding a minimum of 500 salt spray hours according to ASTM B117.
- Cabinet screws shall comply with the ASTM B117 salt spray test for a minimum of 750 hours.
- Panels shall be removable for easy access to all internal components during maintenance and service.
- Cabinet shall feature a separate access panel for the controls so that unit airflow need not be disturbed during servicing.
- Permanently attached base rails shall have 3-way fork lift access and lifting holes for ease of installation.

### III. Compressor

- Compressor shall be scroll compressors with integral motor overload protection.
- Compressors for HCE090, 120 have crankcase heaters to keep refrigerant from diluting the compressor oil in the sump. Crankcase heater shall be field replaceable without removal of the charge.
- Compressor shall be mounted on isolators to limit the transmission of sound and vibration.

### IV. Condenser and Fans

- Fan motors shall be single phase, direct-drive with propeller-type condenser fans which discharge air vertically upward.
- Units with more than one condenser fan motor shall be wired to distribute the single phase motor loads across the 3 phase power supply, thus minimizing phase imbalance on multiple unit installations.

- Fan motors shall be totally enclosed with permanently lubricated ball-bearings for longer wear during start and stop cycles.
- Fan motors shall have inherent overload protection.
- Coil shall be constructed of rifled copper tubing mechanically expanded and bonded to louvered aluminum fins. Coil shall include an integral subcooler.

### V. Refrigeration Components

- Refrigeration system contains both high and low pressure cut-outs.
- Service valves to ease installation and recovery of refrigerant.
- External ports to accommodate gauge lines, allowing for easy servicing of the unit.
- Each unit ships with a filter drier for field installation.
- Holding charge of R-22.

### VI. Controls

- Each unit is equipped with 24 volt control circuit with terminal blocks.
- Color-coded wiring for easy service and trouble shooting.
- Independent line break thermal protection for the condenser fans.
- 5 minute anti-short cycle timer to protect the compressor from frequent cycling.
- Unit safety lockouts which automatically reset from the thermostat once the anti-short cycle timer is satisfied. Safety lockouts will also generate a 24 volt signal to the "X" terminal, allowing notification to the user via the thermostat fault light (if present). These safety lockouts shall include:
  - High refrigerant pressure.
  - Low refrigerant pressure (low refrigerant pressure shall be bypassed for the first 90 seconds of operation to eliminate nuisance trips).
  - Compressor motor protection to automatically shutdown the unit in the event of motor overcurrent or excessive temperature conditions. Unit shall automatically restart after the line break protector cools.
  - Low ambient operation down to 45°F (7°C) without a low ambient kit. (Operation down to 0°F with the optional low ambient kit.)

### VII. Electrical

- Units shall be \_\_\_\_\_ volts, 3 phase, with a single power point connection.
- Unit control circuit shall have a 24 volt transformer, sized sufficiently to operate the indoor fan.
- All condenser fan motors and the secondary of each transformer shall be grounded.

## VIII. Accessories and Options

- a. Head Pressure Control - Shall include an auto transformer to slow the speed of the condenser fan at low ambient temperatures, allowing operation of the condensing unit down to 0°F.
- b. Coil Guard - Field installed decorative grille shall be placed on the units to provide further coil protection.
- c. Phenolic Coating on Condenser Coil - Condenser coils shall be dipped in a four-coat phenolic coating process to provide longer life in corrosive conditions.