

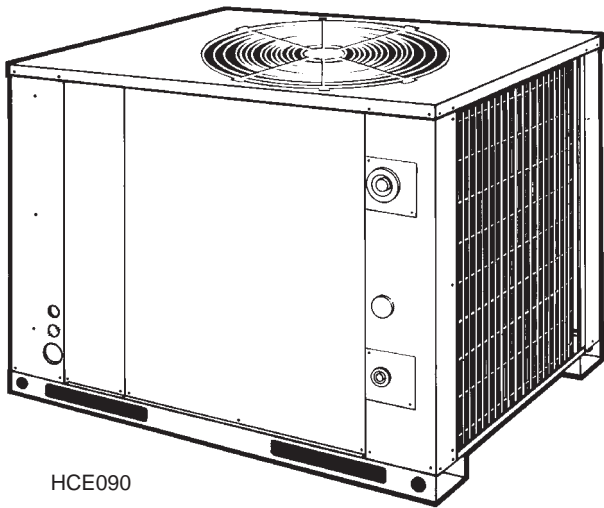


TECHNICAL GUIDE

SPLIT-SYSTEM AIR-COOLED CONDENSING UNITS

H6CE090 & H4CE120
7.5 AND 10 NOMINAL TONS
(World 50 HZ)

SUNLINE 2000™



HCE090

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 18 meters (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 then coated with zinc phosphate and finished 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.

A complete line of Evaporator Blower units is also offered to meet your precise capacity and air handling requirements. Refer to Form 550.23-TG4Y1 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. The coil fins are protected with a decorative grille.
- 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.
- 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 7°C (45°F).
- 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.
- Hole in piping panel to accommodate gauge lines to refrigerant fittings in the unit.
- Packaging suitable for outdoor storage.

APPLICATION DATA

LIMITATION		MIN.	MAX.
Voltage Variation	380/415-3-50	342V	456V
Ambient Air on Condenser Coil.		7.2°C (45°F)	46°C (115°F) ¹
Suction Pressure at Compressor		400kPa (57.5 psig)	626kPa (90.0 psig)
Corresponding Temp. at Saturation		0.5°C (32.0°F)	12°C (53.5°F)

¹These units can operate at a maximum ambient temperature of 52°C (125°F) providing the wet bulb temperature of the air entering the evaporator coil does not exceed 23°C (73°F).

NOTE: Refer to Form 550.39-N1Y1 for refrigerant piping limitations.

PHYSICAL DATA

Model HCE	Compressor		Condenser											Unit Weight kg (Lbs.)		Charge, kg (Lbs.-Oz.) (Refrigerant-22)	
			Fan (Propeller)				Fan Motor ¹			Coil ³							
	Rating kW (Tons)	Cap. (Stages)	Qty.	Dia. mm (in.)	Nom. CFM	Blades		Qty.	kW HP	RPM	Rotation ²	Face Area m ² (Ft. ²)	Rows High	Ship.	Oper.	Holding	Oper.
090	25.6 (7.5)	1	1	610 (24)	4036	3	29	1	0.56 (0.75)	950	CW	1.7 (18.7)	30	136 (300)	134 (295)	0.79 (1 - 12)	4.7 (10 - 6)
120	34.2 (10)	1	2	610 (24)	6584	3	27	2	0.37 (0.5)	950	CCW	2.21 (23.8)	36	198 (435)	195 (430)	1.25 (2 - 12)	8.1 (17 - 11)

¹These PSC motors are directly connected to the condenser fans and have inherent protection, ball bearings and a 48 frame.

²When viewing the shaft end of the motor.

³These condenser coils have 2 rows of 9.5mm (3/8") OD copper tubes and 16 aluminum fins per 25mm (1").

ELECTRICAL DATA

MODEL (HCE)	VOLTAGE CODE	COMPRESSOR			CONDENSER FAN MOTOR				UNIT AMPACITY (AMPS)	MAX. FUSE SIZE ¹ (AMPS)
		POWER SUPPLY	FLA	LRA	POWER SUPPLY	kW (HP)	QTY	FLA		
090	50	380/415-3-50	17.3	111	220/240-1-50	0.56 (0.75)	1	2.9	22.3	30
120	50	380/415-3-50	19.6	118	220/240-1-50	0.37 (0.5)	2	2.1	26.2	35

¹Dual element.

²Based on three, 60°C insulated copper conductors in steel conduit.

UNIT COOLING CAPACITIES AND POWER REQUIREMENTS

Model HCE	Suction Pressure & 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	54.9	30	85	6.0	80	6.5	76	7.1	72	7.7	68	8.4	64	9.2
	61.6	35	92	6.2	88	6.7	84	7.2	80	7.8	75	8.5	71	9.3
	68.5	40	100	6.3	96	6.8	92	7.4	87	8.0	83	8.7	78	9.5
	76.0	45	109	6.5	104	7.0	100	7.5	95	8.1	90	8.8	86	9.6
	84.0	50	118	6.7	113	7.2	108	7.7	103	8.3	98	9.0	93	9.8
120	54.9	30	106	7.0	102	7.6	97	8.3	93	9.0	88	10.0	84	11.0
	61.6	35	116	7.2	111	7.8	106	8.4	102	9.2	97	10.1	92	11.2
	68.5	40	127	7.4	122	8.0	116	8.6	110	9.4	105	10.3	99	11.4
	76.0	45	139	7.6	133	8.2	126	8.8	119	9.6	113	10.5	106	11.5
	84.0	50	151	7.8	144	8.4	136	9.0	128	9.8	120	10.6	112	11.6

* Includes compressor and condenser fan motor(s).

UNIT COOLING CAPACITIES AND POWER REQUIREMENTS - SI Units

Model HCE	Suction Pressure & Corresponding Temp. @ Saturation		Temperature of Air on Condenser Coil, °C											
			20		25		30		35		40		45	
	kPa	°C	kW	kW*	kW	kW*	kW	kW*	kW	kW*	kW	kW*	kW	kW*
090	365	-2	25	6.0	23	6.5	22	7.1	21	7.7	20	8.4	19	9.2
	413	1	27	6.2	26	6.7	25	7.2	23	7.8	22	8.5	21	9.3
	465	4	29	6.3	28	6.8	27	7.4	25	8.0	24	8.7	23	9.5
	520	7	32	6.5	30	7.0	29	7.5	28	8.1	26	8.8	25	9.6
	580	10	35	6.7	33	7.2	32	7.7	30	8.3	29	9.0	27	9.8
120	365	-2	31	7.0	30	7.6	28	8.3	27	9.0	26	10.0	25	11.0
	413	1	34	7.2	33	7.8	31	8.4	30	9.2	28	10.1	27	11.2
	465	4	37	7.4	36	8.0	34	8.6	32	9.4	31	10.3	29	11.4
	520	7	41	7.6	39	8.2	37	8.8	35	9.6	33	10.5	31	11.5
	580	10	44	7.8	42	8.4	40	9.0	37	9.8	35	10.6	33	11.6

* Includes compressor and condenser fan motor(s).

SYSTEM COOLING CAPACITIES

Air On Cooling 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
H6CE090A50/K5EU090A50																			
3600	72	103	8.7	82	60	38	-	98	9.3	80	58	37	-	93	9.8	78	56	35	-
	67	98	8.5	98	79	57	35	94	9.0	94	77	55	33	89	9.6	89	75	63	31
	62	98	8.5	98	92	76	54	94	9.0	94	86	73	52	89	9.6	89	83	72	50
	57	98	8.5	98	92	85	73	94	9.0	94	87	81	70	89	9.6	89	83	77	68
3000	72	102	8.6	75	56	37	-	96	9.2	73	55	36	-	91	9.7	71	53	34	-
	67	95	8.4	91	73	64	34	91	8.8	89	71	52	33	86	9.4	86	69	50	31
	62	94	8.3	94	88	70	51	90	8.8	90	84	68	50	86	9.4	86	80	66	48
	57	94	8.3	94	88	82	67	90	8.8	90	84	78	65	86	9.4	86	80	74	63
2400	72	99	8.5	66	52	36	-	94	9.1	66	50	34	-	89	9.6	64	49	32	-
	67	91	8.2	81	66	50	34	87	8.7	79	64	49	32	83	9.2	77	62	46	30
	62	89	8.1	89	79	64	48	85	8.6	85	77	62	46	81	9.1	81	74	59	44
	57	88	8.1	88	83	76	61	85	8.6	85	79	74	59	81	9.1	81	75	70	57
H4CE120A50/K4EU120A50																			
4800	72	136	10.9	107	79	51	-	130	11.7	105	76	49	-	123	12.4	103	75	46	-
	67	129	10.7	128	104	75	46	125	11.4	125	101	73	44	119	12.2	119	99	70	42
	62	130	10.7	130	121	99	71	125	11.4	125	118	96	68	119	12.2	119	110	94	66
	57	130	10.7	130	121	112	94	125	11.4	125	116	107	92	119	12.2	119	110	102	89
4000	72	133	10.8	96	60	49	-	127	11.5	96	71	47	-	123	12.2	94	69	45	-
	67	125	10.5	119	75	71	45	120	11.2	116	93	68	43	114	12.0	112	91	66	41
	62	124	10.5	124	89	91	67	119	11.2	119	111	89	65	114	11.9	114	106	86	62
	57	124	10.5	124	88	107	87	119	11.2	119	111	103	85	114	11.9	114	106	98	82
3200	72	129	10.7	88	53	47	-	123	11.4	86	66	46	-	117	12.1	84	64	43	-
	67	120	10.4	105	66	65	44	115	11.0	103	84	63	42	109	11.7	100	81	61	40
	62	116	10.2	116	78	82	62	112	10.9	112	100	80	60	107	11.6	107	97	77	57
	57	116	10.2	116	85	99	79	112	10.9	112	104	95	77	107	11.6	107	99	92	74

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.

$$\text{Blower Motor KW} \times \frac{3.415 \text{ MBH}}{\text{KW}} = \text{Blower Motor Heat (MBH)}$$

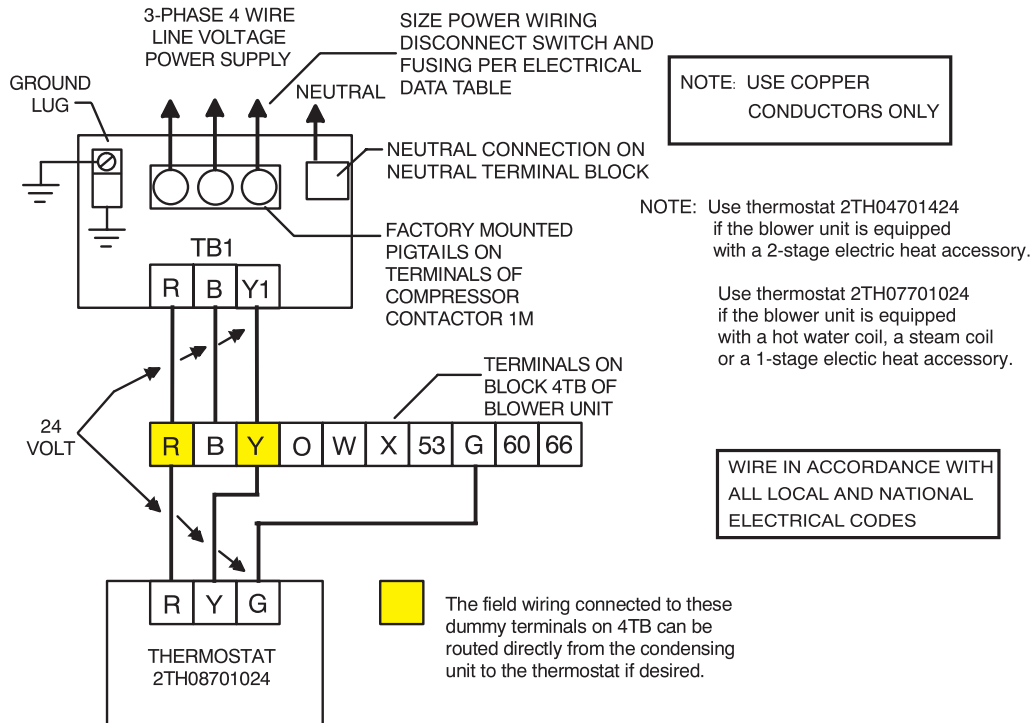
The KW input ratings listed above include the compressor and condenser fan motor(s).

SYSTEM COOLING CAPACITIES - SI Units

Air On Cooling Coil		Temperature of Air on Condensor																	
		27°C						35°C						46°C					
		Total Cap., kW	Power Input kW	Sensible Capacity, kW				Total Cap., kW	Power Input kW	Sensible Capacity, kW				Total Cap., kW	Power Input kW	Sensible Capacity, kW			
Entering Dry Bulb, °C				Entering Dry Bulb, °C						Entering Dry Bulb, °C									
M ³ /S	WB °C			31	28	25	22			31	28	25	22			31	28	25	22
H6CE090A50/K5EU090A50																			
1.70	23	33.2	8.0	25	19	14	-	31.0	8.8	24	19	13	-	27.8	10.0	23	17	12	-
	20	31.2	7.8	31	25	20	14	29.4	8.6	29	25	19	13	26.8	9.7	27	23	18	12
	17	31.2	7.8	31	29	26	20	29.4	8.6	29	28	25	19	26.8	9.7	27	25	23	18
	14	31.2	7.8	31	29	28	25	29.4	8.6	29	28	26	24	26.7	9.7	27	25	24	22
1.40	23	32.5	8.0	23	18	13	-	30.4	8.7	22	17	12	-	27.3	9.8	21	16	11	-
	20	30.2	7.7	28	23	18	13	28.3	8.4	27	22	17	13	25.7	9.5	26	21	16	12
	17	29.7	7.6	30	28	23	19	28.0	8.4	28	26	23	18	25.6	9.5	26	24	21	17
	14	29.6	7.6	30	28	26	24	28.0	8.4	28	26	25	23	25.6	9.4	26	24	23	21
1.10	23	31.5	7.8	21	17	12	-	29.4	8.6	20	18	12	-	26.5	9.7	19	16	11	-
	20	29.0	7.5	25	21	17	13	27.1	8.2	24	20	16	12	24.6	9.2	23	19	15	11
	17	27.7	7.4	28	25	21	17	26.2	8.1	26	24	20	16	24.0	9.2	24	23	19	15
	14	27.7	7.4	28	26	25	21	26.2	8.1	26	25	23	20	24.0	9.2	24	23	21	19
H4CE120A50/K4EU120A50																			
2.30	23	43.5	10.0	33	25	18	-	40.8	11.0	32	25	17	-	37.1	12.5	31	23	16	-
	20	41.1	9.8	40	33	26	18	39.1	10.8	39	32	25	17	35.8	12.3	36	31	23	16
	17	41.2	9.8	41	39	33	26	39.1	10.8	39	37	32	25	35.8	12.3	36	34	30	24
	14	41.2	9.8	41	38	36	33	39.0	10.8	39	37	34	32	35.8	12.3	36	33	31	29
1.90	23	42.6	9.9	30	24	17	-	40.0	10.9	29	23	16	-	36.2	12.4	28	22	15	-
	20	38.6	9.7	37	30	24	18	37.4	10.6	36	29	23	17	34.1	12.1	34	28	22	15
	17	39.2	9.6	39	36	31	24	37.2	10.6	37	35	29	23	34.2	12.0	34	32	28	22
	14	39.2	9.6	39	37	35	31	37.2	10.6	37	35	33	30	34.1	12.0	34	32	30	26
1.50	23	41.3	9.8	27	22	16	-	38.8	10.8	26	21	15	-	35.2	12.2	25	20	14	-
	20	38.1	9.5	32	27	22	17	35.8	10.4	31	26	21	16	32.5	11.8	30	25	20	14
	17	36.5	9.4	37	33	27	22	34.7	10.3	35	32	25	21	31.9	11.7	32	30	25	20
	14	36.5	9.4	36	34	32	27	34.7	10.3	35	33	31	26	31.9	11.7	32	30	26	25

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

FIELD WIRING



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

UNIT DIMENSIONS & CLEARANCES - HCE090 & 120

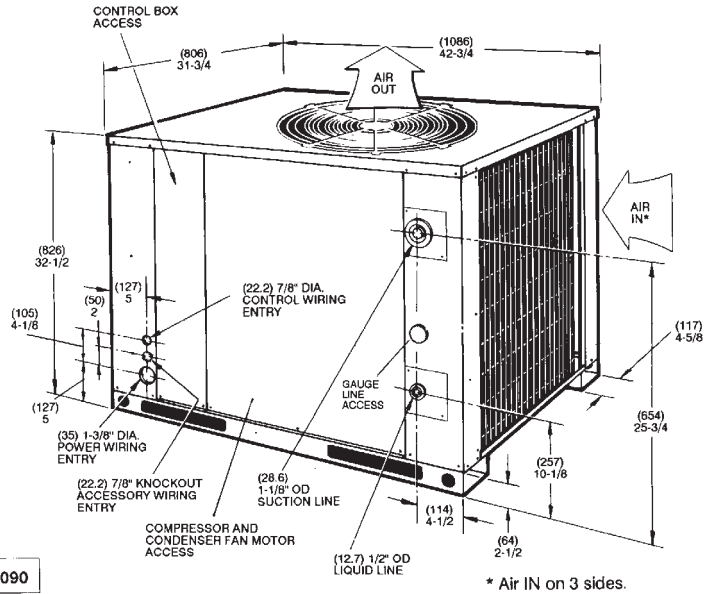
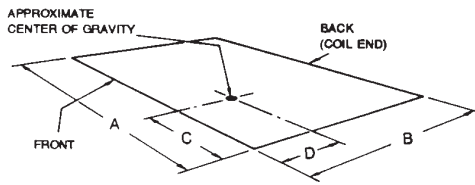
CLEARANCES, mm (inches)

Overhead (Top) ¹	3048 (120)
Front (Piping and Access Panels)	762 (30)
Left Side	610 (24)
Right Side	610 (24)
Rear	610 (24)
Bottom ²	0 (0)

¹Units must be installed outdoors. Overhanging structures or shrubs should not obstruct condenser air discharge.

²Adequate snow clearance must be provided if winter operation is expected.

CENTER OF GRAVITY

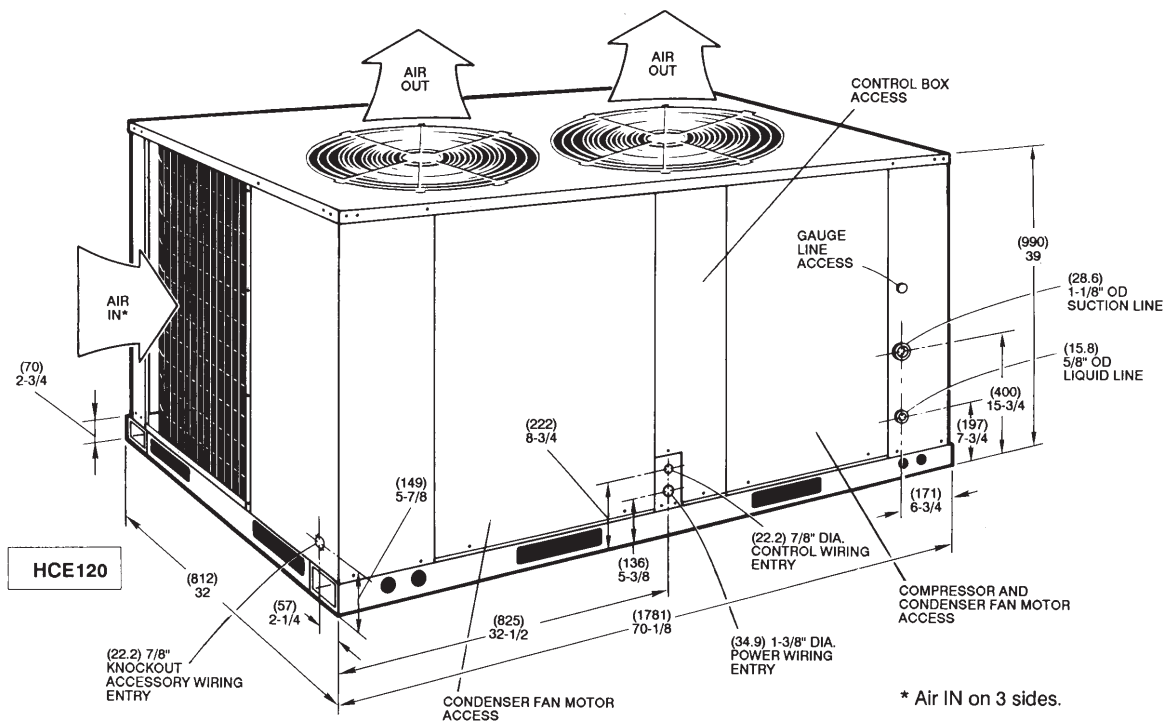


HCE090

* Air IN on 3 sides.

Unit	Dimensions (in. / mm)			
	A	B	C	D
7.5 Ton	1086/ 42.75	806/ 31.75	516/ 20 5/16	325/ 12 13/16
10 Ton	1781/ 70.125	813/ 32	782/ 30.8	386/ 15.2

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



HCE120

* Air IN on 3 sides.



Heating and Air Conditioning
