KRAMER

Catalog KM-KSX-0617B
Replaces document KM-KSX-0617A and all previous versions

KRAMERSAVER

15 TO 70 HP
MODELS C & KS
AIR COOLED CONDENSING UNITS

c UL US

20 to 70 HP Air Cooled Condensing Units

Kramer C and KS model condensing units are available in 15 to 70 HP for use with environmentally friendly R404A, R507 or R407C refrigerants. All compressors are supplied with POE synthetic lubricant as standard.

While the basic C model is available in a stand alone configuration, **KramerSaver (KS)** systems offer the additional advantage of the rugged design of Kramer manufactured equipment coupled with the inherent energy efficiency provided by floating head pressure technology. With KramerSaver's factory matched and balanced equipment, energy savings are achieved each time air temperatures decrease below design ambient temperatures, saving money and increasing compressor life as operating pressures are reduced. The elimination of the extra refrigerant required for conventional flooded head pressure control adds to the savings achieved when installing and operating KramerSaver high efficiency refrigeration equipment. Kramer's legendary design excellence shines through in every Kramer condensing unit.

Model C is a basic outdoor condensing unit that can be customized for specific applications with optional components. It can be used for air defrost/off cycle systems or may be ordered with electric defrost components. The standard unit without head pressure control can usually be used in mild, tropical climates. When used in colder climates, it may be ordered with optional fan cycling and/or flooded condenser head pressure control.

KramerSaver models are suitable for all climates and begin saving energy when the outdoor temperature drops below approximately 70°F. As the outdoor temperature drops, system performance increases and less energy is consumed. That's more BTU's for less watts. More BTU for less money, reduced operating costs and increased profits. Less refrigerant is required in the KramerSaver system, and the compressor runs fewer hours due to increased performance. Less run time also means longer equipment life. The KramerSaver can provide yearly cost saving up to 30% when compared to conventional refrigeration systems. That can be SUBSTANTIAL COST SAVINGS.

KS models include factory selected thermostatic expansion valve, liquid line solenoid valve and electronic room thermostat shipped loose for field mounting or they can be supplied factory mounted on the evaporator as an option. Low temperature electric defrost units will have all defrost controls factory mounted and wired (including fuse blocks).

Models C and KS can be further customized with a long list of options including anti-short cycle timer, evaporator fan contactors, oil separator, suction accumulator, non fused disconnect, gauge kit, oversized receiver, phase loss monitor, compressor unloading, single point alarm, hot gas bypass, circuit breakers, coil coatings, etc.

KramerSaver - Models C & KS

Features and Options

Construction Features
- Robust all weather housing
- Rigid assembly for roof, pad or rail mounting

Semi-Hermetic or Discus Compressor
- Durable - Long life
- Accessible with service valves
- Service replacements readily available
- Available with Bitzer or Copeland compressors
- Energy efficient design
- Extended compressor protection plan available

High Performance Air Cooled Condenser
- High efficiency Copper tube and Aluminum fins
- Generous coil surface lowers operating cost
- Wide fin spacing for easier cleaning
- Low noise / energy efficient 850 rpm direct drive fan motors
- Epoxy coated fan guards
- Integral liquid subcooling circuit

Piping and Electrical Components
- Replaceable core liquid line filter-drier
- Suction line vibration eliminator
- Discharge line vibration eliminator
- Receiver with service valves and pressure relief valve

Quality Assurance and Warranty
- UL and cUL listed
- Warranted 12 months from installation or 15 months from shipment (whichever comes first)

Large Weatherproof Control Cabinet
- Hinged door for safety and convenience
- Compressor contactors
- Condenser motor contactors
- Control circuit fusing
- Main power terminal block
- Compressor fusing
- Condenser motor fusing
- Evaporator fan motor fuse block
- Space for optional controls

Optional Features and Accessories
- Pumpdown switch
- Oversized receiver
- Phase loss monitor
- Oil separator
- Anti short cycle timer
- Coated fin condenser
- Electric defrost controls
- Suction accumulator
- Hot gas bypass (some models)
- Copper fin condenser
- Oversize condenser
- Gauge kit - High, Low and Oil pressure
- Single point alarm
- Cylinder unloading (some models)
- Non fused disconnect
- Room thermostat
- Liquid line solenoid

Model C - Choice of Head Pressure Controls

- Without Controls - standard
- With Condenser Fan Cycling (Temperature, Pressure or combination of both) - optional
- With Flooded Condenser Control (Adjustable or Fixed - optional
- With Flooded Condenser and Fan Cycling - optional

Model KS - KramerSaver

- Suitable for all climates
- Reduces refrigerant charge requirements
- Reduces operating costs — Increases profits
- Balanced system with factory selected components

Standard Features

- Weatherproof Outdoor Housing
- Copper Tube-Aluminum Fin Coils
- Hi-Lo Pressure Switch
- Electronic Oil Pressure Safety Control
- Receiver with Service Valves
- Suction & Discharge Vibration Eliminator
- Control Circuit Transformer - 460V & 575V
- Liquid Sub-Cooling Circuit
- Crankcase Heater(s)
- Replaceable Core Liquid Line Filter-Drier
- Replaceable Core Suction Line Filter
- Moisture Indicating Sightglass
- Low Noise/Energy Efficient 850 RPM Motors (on rail mount units)
- Expansion Valve(s) (Loose)

KS Models Also Include:

- Floating Head Pressure
- Liquid Line Solenoid Valve (Loose)
- Manual Pumpdown Switch

Options

All Models

- Complete Defrost Controls
- Electronic Room Thermostat (Loose)
- Oil Separator
- Suction Accumulator
- Non Fused Disconnect
- Gauge Kit
- Oversized Receiver
- Phase Loss Monitor
- Single Point Alarm
- Circuit Breakers
- Coil Coatings
- Copper Fin Coil

C Models Only

- Liquid Line Solenoid Valve (Loose)
- Manual Pumpdown Switch
- Flooded Head Pressure Controls
- Ambient Fan Cycling

Nomenclature

KS	4	200	L	44	—	E
I	II	III	IV	V		VI

I **Series Designator**
C = Basic Outdoor
KS = KramerSaver

II **Compressor Code**
2 = Copeland Discus
4 = Bitzer

III **Nominal HP**
Example - 2000 = 20 HP

IV **Temperature Range**
L = Low
M = Medium

V **Refrigerant Type**
44 = R404A or R507
47 = R407C

VI **Voltage Code**
E = 208-230/3/60
G = 460/3/60
J = 575/3/60

Medium Temperature R404A and R507- 60 Hz‡

Capacity Data (BTUH) @ 95˚F Ambient
SUCTION TEMPERATURE

MODEL NUMBER C / KS	+45°F	+40°F	+35°F	+30°F	+25°F	+20°F	+15°F	+10°F	+5°F
1500M44	201,600	185,000	170,900	157,300	144,300	130,700	119,100	108,000	98,000
2000M44	253,000	232,200	218,900	197,700	183,700	167,100	151,400	135,700	122,150
2500M44	274,000	255,900	237,500	219,200	201,000	183,200	167,700	151,200	136,500
3000M44	318,200	294,400	271,400	249,300	228,100	207,700	188,400	170,100	153,400
3500M44	425,700	392,500	357,300	327,300	298,900	272,000	246,700	222,900	201,400
4000M44	468,800	434,900	402,000	370,100	339,400	310,000	282,000	255,400	231,200
5000M44	526,900	491,500	455,700	420,000	384,800	350,400	317,300	285,900	257,900
6000M44	635,100	587,700	541,900	497,800	455,400	414,900	376,300	339,800	306,400
7000M44	808,400	749,600	692,100	636,900	584,100	533,700	485,700	440,300	398,700

‡ Multiply capacity by .83 when used with 50 Hz power.

Medium Temperature R407C- 60 Hz‡

Capacity Data (BTUH) @ 95˚F Ambient
SUCTION TEMPERATURE

MODEL NUMBER C / KS	+45°F	+40°F	+35°F	+30°F	+25°F	+20°F	+15°F	+10°F
1500M47	188,900	171,400	156,600	142,400	129,100	115,500	103,900	93,000
2000M47	229,000	206,700	191,500	170,000	155,200	138,700	123,650	108,600
2500M47	256,800	237,000	217,600	198,400	179,700	161,800	146,300	130,200
3000M47	298,200	272,700	248,700	225,700	204,000	183,400	164,300	146,500
3500M47	398,900	363,500	327,300	296,300	267,300	240,200	215,200	192,000
4000M47	439,300	402,800	368,300	335,000	303,500	273,800	246,000	219,900
5000M47	493,800	455,200	417,500	380,100	344,100	309,500	276,700	246,200
6000M47	595,100	544,300	496,400	450,600	407,200	366,400	328,200	292,600
7000M47	757,500	694,200	634,000	576,400	522,200	471,300	423,600	379,100

‡ Multiply capacity by .83 when used with 50 Hz power.

Capacity Correction Factors

REFRIGERANT	AMBIENT TEMPERATURE					
	80°F	85°F	90°F	95°F	100°F	105°F
R404A or R507	1.15	1.10	1.05	1.00	0.95	0.90
R407C	1.10	1.07	1.03	1.00	0.96	0.92

Department of Energy Annual Walk-In Energy Factor (AWEF) Ratings		
Base Model Number	AWEF	
	Outdoor Rated	Indoor Rated
Medium Temperature Models		
KS*1500M4**	8.73	–
C*1500M4**	8.73	–
KS*2000M4**	9.33	–
C*2000M4**	9.33	–
KS*2500M4**	9.53	–
C*2500M4**	9.53	–

* Each asterisk represents a variable character based upon model, refrigerant and voltage ordered. See page 3 for nomenclature.

Larger HP KS & C models are not intended for use in walk-in coolers less than 3,000 sq. feet thus are outside the scope of this DOE regulation.

Dept. of Energy AWEF ratings for low temperature condensing models will be implemented in 2020.

Medium Temperature Electrical Data

MODEL NUMBER C /KS	230/3/60 Hz					460/3/60 Hz					575/3/60 Hz				
	COMP.		TOTAL COND. FLA	TOTAL UNIT AMPS	MCA (2)	COMP.		TOTAL COND. FLA	TOTAL UNIT AMPS	MCA (2)	COMP.		TOTAL COND. FLA	TOTAL UNIT AMPS	MCA (2)
	RLA	LRA				RLA	LRA				RLA	LRA			
MEDIUM TEMPERATURE R404A and R507															
1500M44	53.5	275.0	8.0	62.5	76	26.0	138.0	4.0	31.0	38	23.6	110.0	4.2	28.8	34
2000M44	64.7	374.0	8.0	73.7	90	32.4	187.0	4.0	37.4	46	28.2	135.0	4.3	33.5	40
2500M44	73.7	428.0	8.0	82.7	102	36.9	214.0	4.0	41.9	52	34.4	172.0	4.2	39.6	48
3000M44	94.6	470.0	12.0	107.6	132	47.3	235.0	6.0	54.3	67	39.3	200.0	6.3	46.6	56
3500M44	112.3	565.0	12.0	125.3	154	56.2	283.0	6.0	63.2	78	42.5	230.0	6.3	49.8	60
4000M44	128.2	594.0	12.0	141.2	174	64.1	315.0	6.0	71.1	88	53.5	245.0	6.3	60.8	74
5000M44	147.4	856.0	16.0	164.4	183	73.8	428.0	8.0	82.8	93	68.8	344.0	8.4	78.2	95
6000M44	189.2	940.0	16.0	206.2	230	94.6	470.0	8.0	103.6	116	78.6	400.0	8.4	88.0	107
7000M44	224.6	1130.0	24.0	249.6	278	112.4	566.0	12.0	125.4	140	85.0	460.0	12.6	98.6	119
MEDIUM TEMPERATURE R407C															
1500M47	53.5	275.0	8.0	62.5	76	26.0	138.0	4.0	31.0	38	23.6	110.0	4.2	28.8	34
2000M47	64.7	374.0	8.0	73.7	90	32.4	187.0	4.0	37.4	46	28.2	135.0	4.3	33.5	40
2500M47	73.7	428.0	8.0	82.7	102	36.9	214.0	4.0	41.9	52	34.4	172.0	4.2	39.6	48
3000M47	94.6	470.0	12.0	107.6	132	47.3	235.0	6.0	54.3	67	39.3	200.0	6.3	46.6	56
3500M47	112.3	565.0	12.0	125.3	154	56.2	283.0	6.0	63.2	78	42.5	230.0	6.3	49.8	60
4000M47	128.2	594.0	12.0	141.2	174	64.1	315.0	6.0	71.1	88	53.5	245.0	6.3	60.8	74
5000M47	147.4	856.0	16.0	164.4	183	73.8	428.0	8.0	82.8	93	68.8	344.0	8.4	78.2	95
6000M47	189.2	940.0	16.0	206.2	230	94.6	470.0	8.0	103.6	116	78.6	400.0	8.4	88.0	107
7000M47	224.6	1130.0	24.0	249.6	278	112.4	566.0	12.0	125.4	140	85.0	460.0	12.6	98.6	119

Medium Temperature Physical Data

MODEL NUMBER C/KS	COMPRESSOR			CONDENSER FANS			CONNECTION SIZE (IN.)		REFR. CHARGE R404A (LBS.)		UNIT CONFIG. (2)	APPROX. NET WT. LBS.
	MODEL NUMBER	CFH	QTY.	QTY.	FAN DIAM. (IN.)	HP	SUCTION O.D.	LIQUID O.D.	COND. UNIT (1)	REC'R @ 90% CAP.		
MEDIUM TEMPERATURE R404A and R507												
1500M44	3DS-R17ME	2,120	1	2	30	1	1-3/8	7/8	23	94	A	1,500
2000M44	4DB-R20ME	2,380	1	2	30	1	2-1/8	7/8	23	94	A	1,925
2500M44	4DH-R22ME	3,020	1	2	30	1	2-1/8	7/8	29	128	A	2,000
3000M44	4DJ-R28ME	3,603	1	3	30	1	2-1/8	7/8	33	162	A+	2,140
3500M44	6DH-R35ME	4,955	1	3	30	1	2-1/8	1-1/8	42	162	A+	2,385
4000M44	6DJ-R40ME	5,404	1	3	30	1	2-1/8	1-3/8	53	195	A+	2,525
5000M44	(2) 4DH-R22ME	(2) 3,020	2	4	30	1	2-5/8	1-3/8	57	195	D	3,500
6000M44	(2) 4DJ-R28ME	(2) 3,603	2	4	30	1	2-5/8	1-5/8	65	195	D	3,710
7000M44	(2) 6DH-R35ME	(2) 4,955	2	6	30	1	2-5/8	1-5/8	78	262	E	4,340
MEDIUM HIGH TEMPERATURE R407C												
1500M47	3DS-R17ME	2,120	1	2	30	1	1-5/8	7/8	25	94	A	1,500
2000M47	4DB-R20ME	2,380	1	2	30	1	2-1/8	7/8	25	94	A	1,925
2500M47	4DH-R22ME	3,020	1	2	30	1	2-1/8	7/8	32	128	A	2,000
3000M47	4DJ-R28ME	3,603	1	3	30	1	2-1/8	7/8	46	162	A+	2,140
3500M47	6DH-R35ME	4,955	1	3	30	1	2-1/8	1-1/8	49	162	A+	2,385
4000M47	6DJ-R40ME	5,404	1	3	30	1	2-1/8	1-3/8	60	195	A+	2,525
5000M47	(2) 4DH-R22ME	(2) 3,020	2	4	30	1	2-5/8	1-3/8	65	195	D	3,500
6000M47	(2) 4DJ-R28ME	(2) 3,603	2	4	30	1	2-5/8	1-5/8	74	195	D	3,710
7000M47	(2) 6DH-R35ME	(2) 4,955	2	6	30	1	2-5/8	1-5/8	89	262	E	4,340

(1) Estimated refrigerant charge is for a floating head pressure condensing unit only. It does not include interconnecting piping, evaporators, flooded condenser or other accessories.

(2) See drawings on page 8.

Low Temperature R404A and R507- 60 Hz‡

Capacity Data (BTUH) @ 95˚F Ambient

SUCTION TEMPERATURE

MODEL NUMBER C / KS	0°F	-5°F	-10°F	-15°F	-20°F	-25°F	-30°F	-40°F
1500L44	113,700	102,400	92,200	82,700	73,900	65,700	57,800	42,400
2200L44	132,000	119,800	109,200	98,100	87,500	77,300	67,600	49,100
2700L44	169,800	153,700	138,100	123,100	108,700	95,200	82,600	60,400
3100L44	187,300	169,900	153,900	136,600	121,700	106,400	92,700	69,350
4400L44	267,000	242,100	218,600	196,300	175,100	154,800	135,300	98,300
5400L44	340,500	307,900	279,100	248,500	219,400	192,000	166,400	121,700
6200L44	373,300	338,000	306,700	271,650	242,600	212,100	184,750	138,200

‡ Multiply capacity by .83 when used with 50 Hz power.

Capacity Correction Factors

REFRIGERANT	AMBIENT TEMPERATURE					
	80°F	85°F	90°F	95°F	100°F	105°F
R404A or R507	1.15	1.10	1.05	1.00	0.95	0.90

Low Temperature Electrical Data

MODEL NUMBER C / KS	230/3/60 Hz					460/3/60 Hz					575/3/60 Hz				
	COMP.		TOTAL COND. FLA	TOTAL UNIT AMPS	MCA (2)	COMP.		TOTAL COND. FLA	TOTAL UNIT AMPS	MCA (2)	COMP.		TOTAL COND. FLA	TOTAL UNIT AMPS	MCA (2)
	RLA	LRA				RLA	LRA				RLA	LRA			
1500L44	52.6	278.0	8.0	61.6	76	26.3	139.0	4.0	31.3	39	20.9	113.0	4.2	25.6	31
2200L44	57.7	374.0	8.0	66.7	83	28.8	187.0	4.0	33.8	42	24.2	135.0	4.2	28.9	35
2700L44	72.4	450.0	8.0	81.4	101	36.2	225.0	4.0	41.2	51	32.5	172.0	4.2	37.2	45
3100L44	85.9	470.0	12.0	98.9	122	42.9	235.0	6.0	49.9	62	39.6	200.0	6.3	46.4	56
4400L44	115.4	748.0	16.0	132.4	149	57.6	374.0	8.0	66.6	75	48.4	270.0	8.4	57.3	69
5400L44	144.8	900.0	16.0	161.8	182	72.4	450.0	8.0	81.4	92	65.0	344.0	8.4	73.9	90
6200L44	171.8	940.0	24.0	196.8	221	85.8	470.0	12.0	98.8	111	79.2	400.0	12.6	92.3	112

(2) Minimum Circuit Ampacity (MCA) does not include evaporator(s) electrical requirements (Fan Motors or Defrost Heaters).

Low Temperature Physical Data

MODEL NUMBER C / KS	COMPRESSOR			CONDENSER FANS			CONNECTION SIZE (IN.)		REFR. CHARGE R404A (LBS.)		UNIT CONFIG. (2)	APPROX. NET WT. LBS.
	MODEL NUMBER	CFH	QTY.	QTY.	FAN DIAM. (IN.)	HP	SUCTION O.D.	LIQUID O.D.	COND. UNIT (1)	REC'R @ 90% CAP.		
1500L44	4DH-F63KE	3,020	1	2	30	1	1-5/8	7/8	29	94	A	1,650
2200L44	4DJ-F76KE	3,603	1	2	30	1	2-1/8	7/8	39	128	A	1,900
2700L44	6DHF93KE	4,530	1	2	30	1	2-1/8	7/8	49	162	A	2,450
3100L44	6DJ-F11ME	5,404	1	3	30	1	2-1/8	7/8	58	195	A+	3,150
4400L44	4DJ-F76KE	(2) 3,603	2	4	30	1	3-1/8	1-1/8	58	195	D	4,000
5400L44	6DH-F93KE	(2) 4,530	2	4	30	1	3-1/8	1-1/8	101	370	D	4,600
6200L44	6DJ-F11ME	(2) 5,404	2	6	30	1	3-1/8	1-1/8	101	370	E	6,000

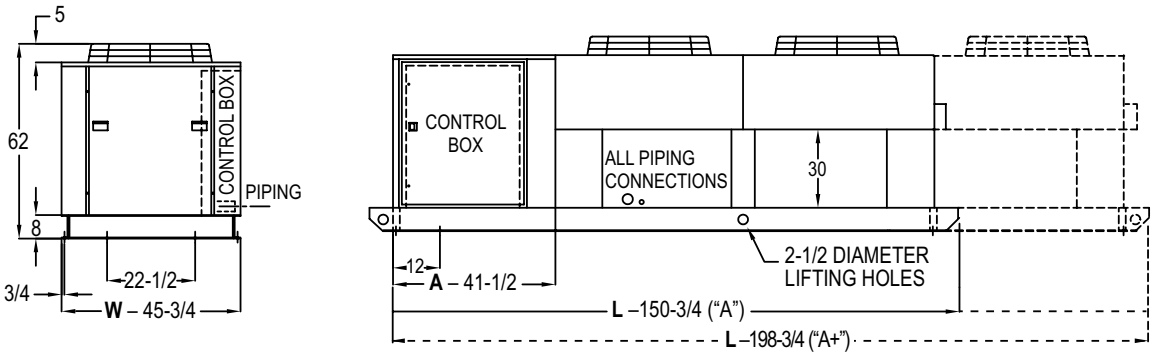
(1) Estimated refrigerant charge is for floating head pressure condensing unit only. It does not include interconnecting piping, evaporators, flooded condenser or other accessories.

(2) See drawings on page 8.

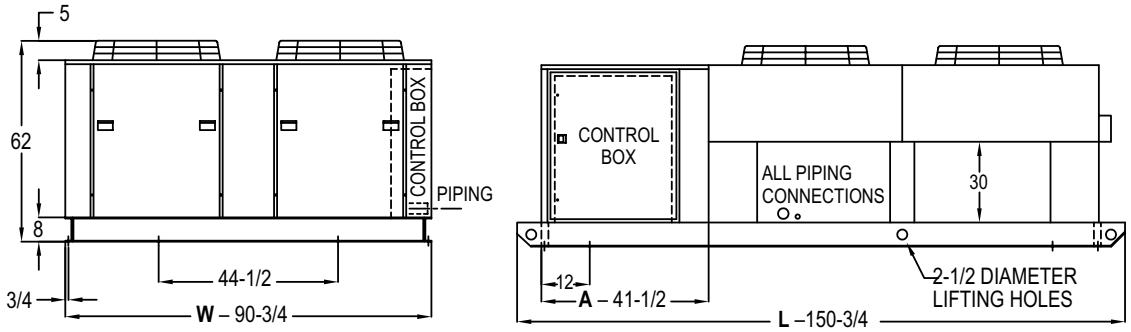
Physical Dimensions

** Dimensions are in inches.*

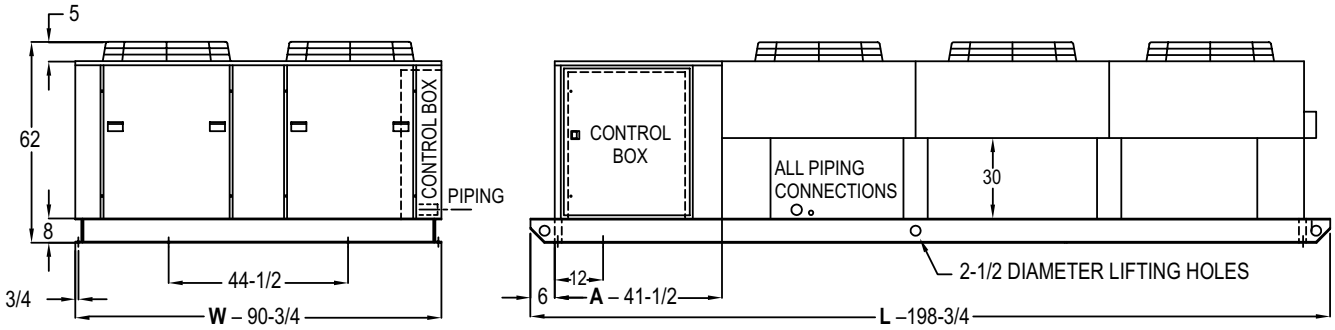
FAN CONFIGURATION "A" & "A+"



FAN CONFIGURATION "D"



FAN CONFIGURATION "E"



Due to continuing product development, specifications are subject to change without notice.