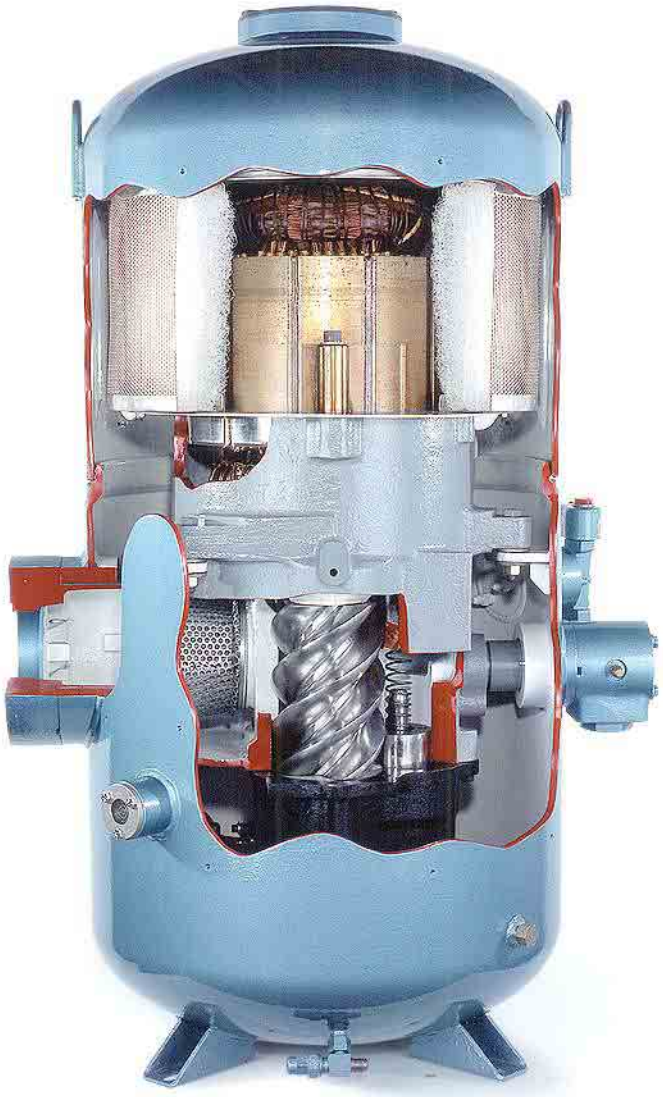
MSC-127 Series

Medium Screw Compressors



Four Sizes

8-225 TR (28-791 kW)
186-335 CFM
80-200 HP

- Small Footprint
- Built-in, High Efficiency Oil Separator
- Refrigerants: R22, R134a, R404A, R407C, R507 and other HFCs
- UL Recognized
- Designed for A/C & Refrigeration
- Fully hermetic design
- Models from -50°F (-46°C) to 50°F (10°C) SST
- Models from +65°F (18°C) to 145°F (63°C) SDT
- Helium, Neon, and Other Alternate Gas Applications
- Low oil carry-over rate of less than 0.2%
- Optional vapor injection to enhance capacity and EER/COP
- Smooth, Quiet Rotary Motion

HARTFORD® COMPRESSORS

Pioneers in Screw Compressor Technology

Company Information

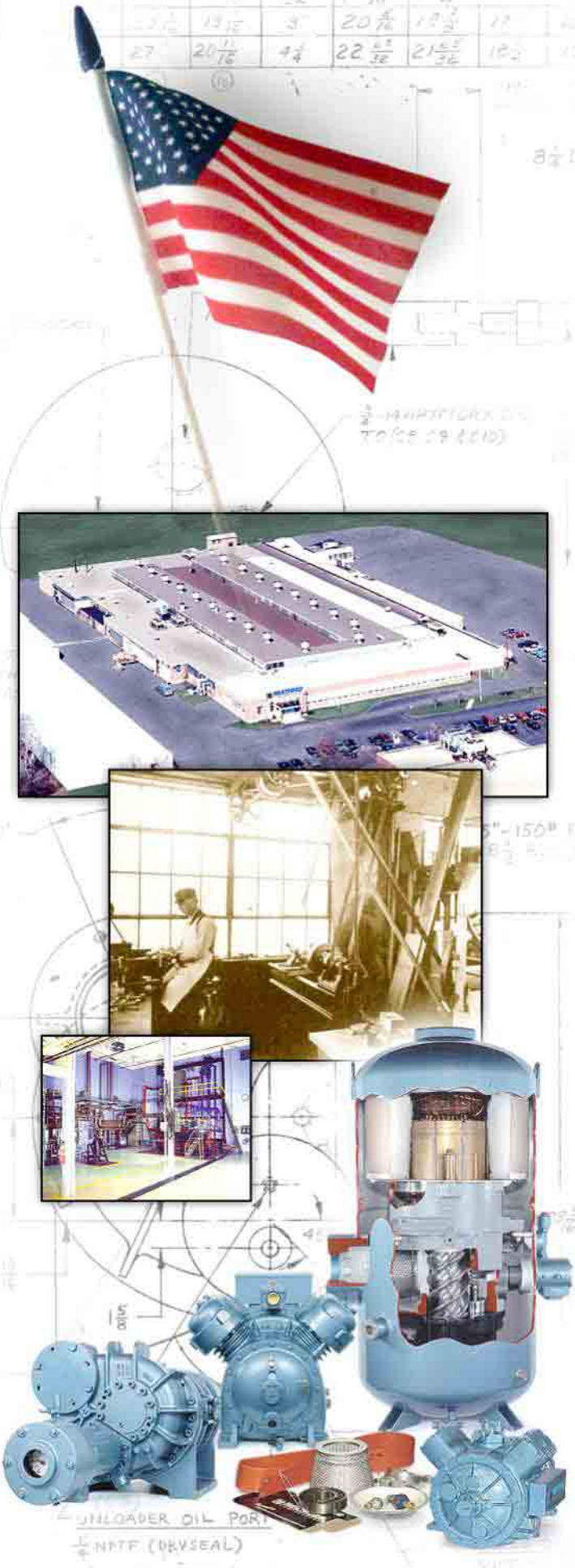
Hartford Compressors Inc. designs, manufactures, and supports an extensive range of rotary screw compressors and reciprocating compressors for use in air conditioning and refrigeration systems. With decades of experience in developing innovative products for commercial, industrial, and marine applications, Hartford Compressors sets the standard for precision engineering, optimum performance, and customer satisfaction.

Our latest generation of medium and large screw compressors have been designed for long life, low noise and vibration levels, improved reliability, and lower operating costs. They are compatible with environmentally friendly refrigerants and gases with zero ozone depletion potential (ODP) and zero global warming potential (GWP).

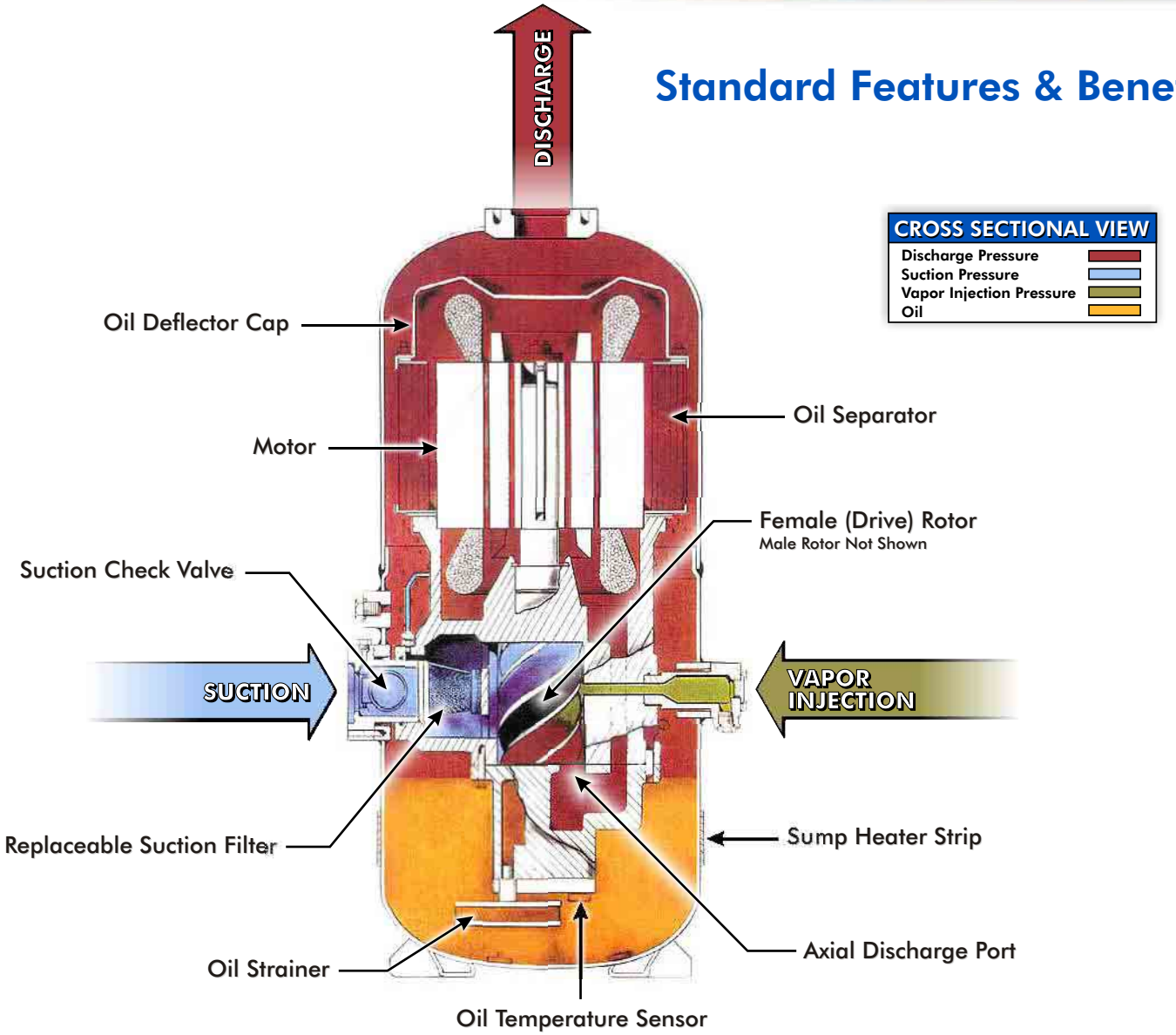
A continuing program of in-house laboratory testing has resulted in screw compressors with the best combination of economy and efficiency available today.

With fewer moving parts and smooth rotary motion, screw compressors provide reliable, non-pulsating positive displacement compression. Paired male and female helically profiled rotors are machined with extreme accuracy of pitch and thread form, to obtain tight uniform clearances. This ensures proper sealing and dynamic balance necessary for quiet and efficient performance. Positive displacement compression results in stable operation at partial or full load. A built-in separator (MSC only) creates a full self-contained unit.

All of our products are engineering with the highest attention to detail. Whether choosing a standard model or one specially engineered, we provide needed features and benefits. With this philosophy, Hartford Compressors Inc. proudly presents the MSC-127 which illustrates all aspects of engineering excellence.



Standard Features & Benefits



FEATURE	BENEFIT
Slide-Valve Capacity Control	Capacity control from 100% to 20% of full load
Solid State Motor Protector	Thermal motor protection
Unloading Solenoid Valves	Energizes load/unload mechanism
Optical Oil Level Sensor	Electronic low oil level safety, mounted externally
Oil Sump Heater	Prevents refrigerant migration
XL or 2 Step Motor Start	Choice of motor starting method
Built-in Suction Check Valve	Prevents rotors from spinning backwards
Suction Filter	Serviceable filter for compressor protection
Standard Voltages	200/3/50Hz; 230/3/60Hz; 400/3/50Hz; 460/3/60Hz
Oil Strainer	Located in the oil sump to filter oil continuously
Liquid Injection	Standard on air-cooled applications for oil cooling

U. S. Standard Units

General Compressor Information

Model	Refrigerant	Motor Nominal HP	Displacement at 60 Hz (CFM)	Rotor L/D	SST Range		SDT Range		Estimated Weight (Lb.)
					Min (°F)	Max (°F)	Min (°F)	Max (°F)	
1210NHF6X6K	R22,R407C	120	186 @ 3500 RPM	1.00	0	50	65	145	1010
1210NHF6W4K	R22,R407C	80			20*	50	65	115	968
1210NHF6W3K	R22,R407C	60			20*	50	65	110	948
1210NHL6V5K	R134a	60			0	50	65	145	867
1210NLF6V5K	R22,R507, R404A	100			0	20	65	125	990
1210NUF6V5K	R22,R404A, R507	100			-50	0	65	125	990
1212NHF6X6K	R22,R407C	150	233 @ 3500 RPM	1.25	0	50	65	145	1020
1212NHF6W4K	R22,R407C	100			20*	50	65	115	983
1212NHF6W3K	R22,R407C	80			20*	50	65	110	963
1212NHL6V5K	R134a	80			0	50	65	145	884
1212NLF6V5K	R22,R507, R404A	120			0	20	65	125	1002
1212NUF6V5K	R22,R404A, R507	120			-50	0	65	125	1002
1215NHF6X6K	R22,R407C	175	279 @ 3500 RPM	1.50	0	50	65	145	1265
1215NHF6W4K	R22,R407C	120			20*	50	65	115	1225
1215NHF6W3K	R22,R407C	100			20*	50	65	110	1205
1215NHL6V5K	R134a	100			0	50	65	145	1109
1215NLF6V5K	R22,R507, R404A	150			0	20	65	125	1250
1215NUF6V5K	R22,R404A, R507	150			-50	0	65	125	1250
1218NHF6X6K	R22,R407C	200	335 @ 3500 RPM	1.80	0	50	65	145	1260
1218NHF6W4K	R22,R407C	150			20*	50	65	115	1230
1218NHF6W3K	R22,R407C	120			20*	50	65	110	1214
1218NHL6V5K	R134a	120			0	50	65	145	1120

* "NHF6W4" and "NHF6W3" models can operate down to 10°F SST, however, the maximum allowable SDT is 105°F.

Capacity (TR), Power (KW) and Energy Efficiency Ratio (EER), 60 Hz, R22

Saturated Suction Temp. °F	Saturated Discharge Temp. °F	1210			1212			1215			1218		
		CAP (TR)	POW (KW)	EER	CAP (TR)	POW (KW)	EER	CAP (TR)	POW (KW)	EER	CAP (TR)	POW (KW)	EER
0	105	35.7	66.3	6.5	42.7	79.3	6.5	53.0	92.8	6.9	-	-	-
	125	27.9	82.9	4.0	33.9	99.0	4.1	42.1	115.8	4.4	-	-	-
	145	-	-	-	-	-	-	-	-	-	-	-	-
10	105	46.9	69.1	8.2	55.4	82.5	8.1	68.8	96.6	8.5	-	-	-
	125	39.0	85.5	5.5	45.7	102.2	5.4	56.7	119.6	5.7	-	-	-
	145	-	-	-	-	-	-	-	-	-	-	-	-
20	105	57.6	75.1	9.2	72.5	92.8	9.8	89.6	107.4	10.0	107.1	130.1	9.9
	125	54.2	90.2	7.2	66.6	109.2	7.3	82.8	129.4	7.7	97.6	155.3	7.5
	145	46.1	113.8	4.9	56.0	137.3	4.9	71.8	161.2	5.3	81.5	193.2	5.1
30	105	71.6	73.9	11.6	90.9	91.2	12.0	112.0	106.7	12.6	133.5	128.4	12.5
	125	66.6	90.9	8.8	81.9	110.7	8.9	103.6	130.2	9.5	120.7	156.5	9.3
	145	56.7	114.2	6.0	69.9	138.5	6.1	87.7	162.3	6.5	103.1	194.4	6.4
40	105	88.3	72.5	14.6	110.9	89.5	14.9	139.2	106.0	15.8	162.8	126.4	15.5
	125	82.2	92.2	10.7	101.3	112.2	10.8	124.0	132.7	11.2	147.1	158.5	11.1
	145	70.6	115.3	7.4	87.0	139.9	7.5	103.9	164.2	7.6	126.3	195.8	7.7
50	105	107.1	71.0	18.1	131.1	87.6	17.9	172.9	105.1	19.7	194.3	124.4	18.7
	125	99.3	94.0	12.7	122.9	114.0	12.9	156.4	133.8	14.0	180.7	161.0	13.5
	145	86.2	116.9	8.9	105.6	141.5	9.0	132.9	163.8	9.7	155.1	197.4	9.4

Data based on 10°F subcooling/10°F superheat.

NOTE: Performance data on this page is adequate for preliminary selections. For detailed information on specific applications contact Hartford Compressors Inc.

Metric Units

General Compressor Information

Model	Refrigerant	Motor Nominal KW	Displacement at 50Hz (m3/hr.)	Rotor L/D	SST Range		SDT Range		Estimated Weight (kG)
					Min (°C)	Max (°C)	Min (°C)	Max (°C)	
1210NHF6X6K	R22,R407C	89	262 @ 2900 RPM	1.00	-18	10	18	63	459
1210NHF6W4K	R22,R407C	60			-7*	10	18	46	440
1210NHF6W3K	R22,R407C	45			-7*	10	18	43	431
1210NHL6V5K	R134a	45			-18	10	18	63	394
1210NLF6V5K	R22,R507, R404A	75			-18	-7	18	52	450
1210NUF6V5K	R22,R404A, R507	75			-46	-18	18	52	450
1212NHF6X6K	R22,R407C	112	329 @ 2900 RPM	1.25	-18	10	18	63	464
1212NHF6W4K	R22,R407C	75			-7*	10	18	46	447
1212NHF6W3K	R22,R407C	60			-7*	10	18	43	438
1212NHL6V5K	R134a	60			-18	10	18	63	402
1212NLF6V5K	R22,R507, R404A	89			-18	-7	18	52	455
1212NUF6V5K	R22,R404A, R507	89			-46	-18	18	52	455
1215NHF6X6K	R22,R407C	130	394 @ 2900 RPM	1.50	-18	10	18	63	575
1215NHF6W4K	R22,R407C	89			-7*	10	18	46	557
1215NHF6W3K	R22,R407C	75			-7*	10	18	43	548
1215NHL6V5K	R134a	75			-18	10	18	63	504
1215NLF6V5K	R22,R507, R404A	112			-18	-7	18	52	568
1215NUF6V5K	R22,R404A, R507	112			-46	-18	18	52	568
1218NHF6X6K	R22,R407C	149	473 @ 2900 RPM	1.80	-18	10	18	63	573
1218NHF6W4K	R22,R407C	112			-7*	10	18	46	559
1218NHF6W3K	R22,R407C	89			-7*	10	18	43	552
1218NHL6V5K	R134a	89			-18	10	18	63	509

* "NHF6W4" and "NHF6W3" models can operate down to -12°C SST, however, the maximum allowable SDT is 40°C.

Capacity (KW), Power (KW) and Coefficient of Performance (COP), 60 Hz, R22

Saturated Suction Temp. °C	Saturated Discharge Temp. °C	1210			1212			1215			1218		
		CAP (KW)	POW (KW)	COP	CAP (KW)	POW (KW)	COP	CAP (KW)	POW (KW)	COP	CAP (KW)	POW (KW)	COP
-15	40	119.2	56.2	2.1	141.3	67.2	2.1	175.2	78.6	2.2	-	-	-
	50	98.8	68.4	1.4	117.5	81.7	1.4	145.6	95.6	1.5	-	-	-
	60	-	-	-	-	-	-	-	-	-	-	-	-
-10	40	149.9	58.5	2.6	177.3	69.8	2.5	219.9	81.6	2.7	-	-	-
	50	129.1	70.6	1.8	150.7	84.3	1.8	186.9	98.6	1.9	-	-	-
	60	-	-	-	-	-	-	-	-	-	-	-	-
-5	40	178.1	61.9	2.9	225.4	76.4	2.9	277.7	88.9	3.1	331.8	107.4	3.1
	50	168.5	73.3	2.3	207.3	88.9	2.3	263.7	104.7	2.5	307.0	126.0	2.4
	60	146.3	90.3	1.6	179.2	109.4	1.6	230.5	128.6	1.8	264.2	154.5	1.7
0	40	216.4	60.9	3.6	274.7	75.2	3.7	338.7	88.4	3.8	402.6	106.0	3.8
	50	203.9	73.9	2.8	250.8	90.1	2.8	316.3	105.8	3.0	369.4	127.1	2.9
	60	177.4	90.8	2.0	218.7	110.4	2.0	272.2	129.8	2.1	321.4	155.4	2.1
5	40	260.4	59.9	4.4	326.8	73.9	4.4	411.8	87.8	4.7	479.6	104.5	4.6
	50	245.8	75.0	3.3	302.9	91.3	3.3	372.0	107.8	3.5	440.6	128.7	3.4
	60	215.3	91.8	2.3	265.2	111.5	2.4	318.3	131.3	2.4	384.2	156.7	2.5
10	40	309.5	58.7	5.3	378.9	72.5	5.2	500.3	87.1	5.2	561.5	102.8	5.5
	50	290.9	76.4	3.8	360.2	92.6	3.9	459.5	108.7	4.2	530.5	130.8	4.1
	60	256.7	93.0	2.8	315.4	112.7	2.8	397.7	131.2	3.0	462.4	158.1	2.9

Data based on 5°C subcooling/5°C superheat.

NOTE: Performance data on this page is adequate for preliminary selections. For detailed information on specific applications contact Hartford Compressors Inc.

MSC-127 Series

Applications

- Ice Skating Rinks and Process Ice Production
- Air-Conditioning Chillers for Commercial buildings
- Refrigeration chillers for refrigerated warehouses
- Air-Conditioning and Process Chillers for military and passenger ships

. . . and so much more.

Compressor Nomenclature

* 12 15 N H F 6 W 4 K 0EM BJ O C

ROTOR DIAMETER
12 = 127 mm

ROTOR L/D RATIO
10 = 1.00
12 = 1.25
15 = 1.50
18 = 1.80

COMPRESSOR TYPE
B = Flanged semi-hermetic female drive
N = Fully hermetic female drive

TEMPERATURE APPLICATION
H = High temperature
L = Commercial temperature
U = Low temperature

REFRIGERANT
F = R22, R404A, R407C, R507
L = R134a

UNLOADING CONFIGURATION
6 = Automatic unloaded start (spring)

INJECTION MODE
V = Vapor & liquid injection
W = Vapor injection only
X = Vapor & liquid injection

CONTROL VOLTAGE
C = 115/1/50-60
J = 230/1/50-60

START METHOD
0 = Two step-double-delta

MOTOR VOLTAGE
AK = 200/3/60
AM = 220/3/50
BJ = 400-460/3/50-60
BK = 200-230/3/50-60
CA = 500-575/3/50-60
CS = 346-400/3/50-60

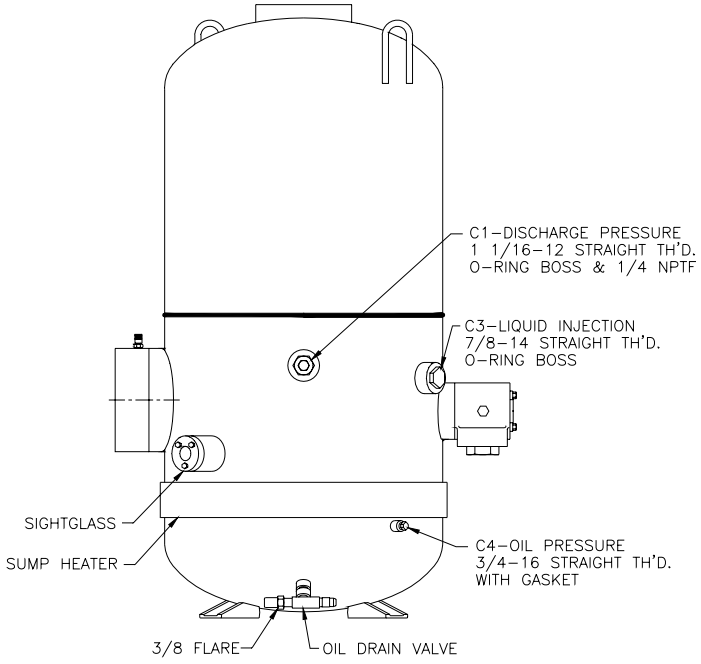
ASSEMBLY LEVEL
0EM = Original Equipment Mfg.
RMF = Remanufactured

COMPRESSOR VERSION
K = w/cast iron main housing and inlet needle bearings

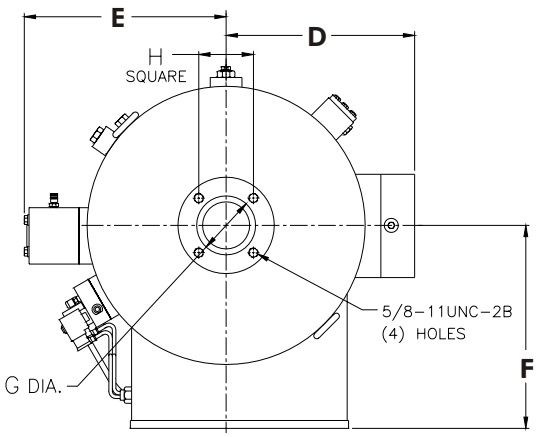
MOTOR SIZING
3 = Undersize by 2 steps
4 = Undersize by 1 step
5 = Nominal
6 = Oversized by 1 step

* For special engineered compressors, these six characters would be replaced by "SE". Example: 1215SE1271KOEMBJO

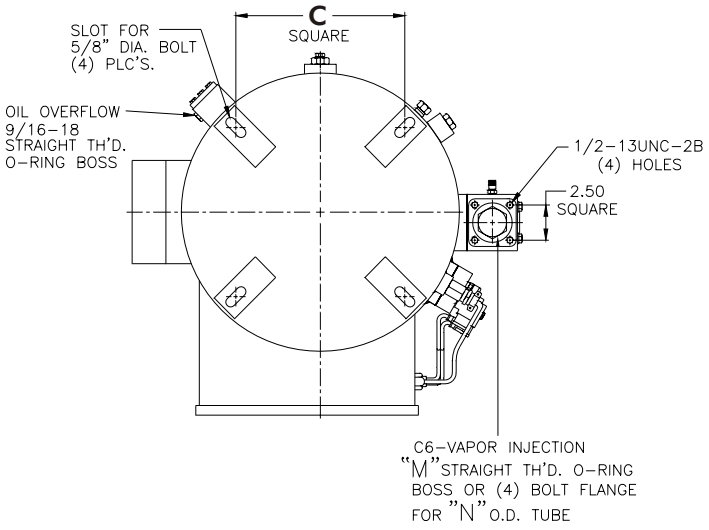
Outline Drawings

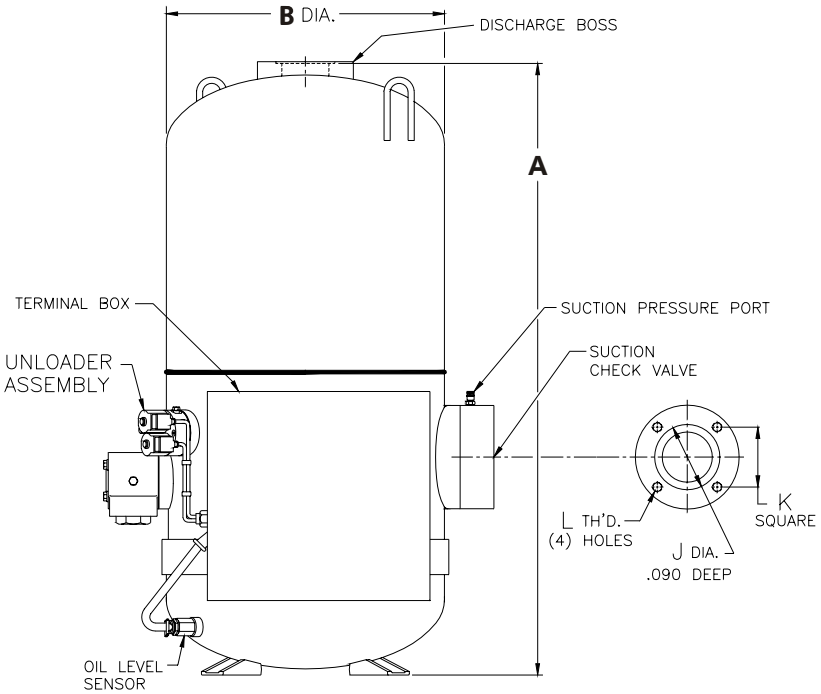


BACK VIEW



FRONT VIEW





Compressor Dimensions in inches (mm)

Models	A	B	C	D	E	F
1210K/1212K	43.4 (1102)	19.8 (502)	12.0 (305)	13.1 (332)	14.3 (364)	14.4 (366)
1215K/1218K	47.3 (1200)	21.8 (555)	14.0 (356)	14.2 (361)	15.3 (389)	16.5 (419)

Rotary Motion Operation

For clarity reasons, the compressor operation description will be limited to one lobe on the male rotor (right) and one interlobe space of the female rotor (left). In actual operation, as the rotors turn all of the male lobes and female interlobe spaces interact with a uniform gas flow.

Suction Phase — As a lobe of the male rotor begins to unmesh from an interlobe space in the female rotor, a void is created and suction gas is drawn in through the inlet port. As the rotors continue to turn the interlobe space increases in size, and gas flows continuously into the compressor. Suction is sealed off when the interlobe space reaches its maximum volume.

Compression Phase — As rotation continues, the gas in the interlobe space is carried around the circumference of the compressor housing. Further rotation meshes male and female lobes thus reducing interlobe volume. Positive displacement compression continues in the direction of the discharge port.

Discharge Phase — At a point determined by the designed "built-in" compressor volume ratio (V), the discharge port is uncovered and the compressed gas is discharged by further meshing of the male and female interlobe space. While the meshing point of a pair of lobes is moving axially, the next charge is being drawn into the unmeshed portion and the working phase of the compressor cycle are repeated.

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Pioneers in Screw Compressor Technology

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