



SARMAAFARIN Scroll Air-Cooled Condensing Units

AEROACOUSTIC



Certificate No.: 9190.C308 FORM SSI - 38RAN (1401)

38RAN 380V/50Hz

INTRODUCTION



SarmaAfarin 38RAN outdoor products provide split systems compatible with 39HX or 39FD series to satisfy in diverse choices of residential, industrial, and commercial cooling solution. The unique design leads to high reliability, efficient condensation, easy maintenance, and comprehensive system control and monitoring.

38RAN Features:

- Highly efficient hermetic scroll compressor(s)
- Plate fin and tube with precise expanding to minimize contact resistance.
- Optimized condenser in terms of circuitry and tube layout
- Chlorine free 134a and 407C HFC Refrigerants
- Air cooled condenser with integrated sub-cooler to achieve higher COP and Capacity
- Capability to adjust with two or one air handler
- Proper regulation of suction and discharge pressure to retain the desired range.
- Protection against high discharge and low suction refrigerant pressure
- Weatherized structure constructed of heavy-duty and corrosion resistant surface
- Convenient control and monitoring via building management system
- Eco-friendly and low noise design

Description

SSI provides three types of condensing units including 38AK(S), 38RAN, and 38XD series. 38RAN type covers medium nominal capacity range from 60 to 180 ton.

The air-cooled condenser is a V-type plate-fin heat exchanger. In order to increase heat transfer, fins are constructed in sinusoidal shape, which increases the heat transfer coefficient. It is also optimized in terms of circuitry and tube layout. A proven sub-cooler has been designed and validated to increase capacity and coefficient of performance.

In 38RAN series, the best brands of scroll compressors are used to gain greater compressor lifecycle, wider range of applications, lower acoustic levels and higher energy efficiency.

One of the essential requirements in HVAC systems is a high Energy Efficiency Ratio (EER). This criterion has been met by an efficient V-type condenser which leads to a lower condensation temperature and makes compressors work at high EER up to 14.5.

The 38RAN Series condensing units feature up to 6 compressors and 2 refrigerant circuits and can be matched with a wide variety of air-handling units. Dual circuit condensing units can operate with a single air handler or two separate air handlers. Standard units have multiple scroll compressors.

Moreover, 38RAN unit is capable of unloading in control sequence of scroll compressors.

Programmable logic controller (PLC) is used to adapt capacity with different weather conditions. Moreover, the controller constantly monitors all machine parameters and precisely manages the operation of compressors to improve efficiency.

Thus, it is evident that the 38RAN units are designed to meet current and future requirements in terms of energy efficiency and operating sound levels. They use the best technologies available today.

Compressors

Refrigerant compression continuously occurs by two scroll elements that include three stages of suction, compression, and discharge.



The scroll hermitic compressors are equipped with a high efficiency motor and heater to prevent mixing oil and refrigerant in the sump.

The anti-vibration made of rubber in the bottom of the compressor legs causes the nearly silent working of compressor. In sensitive cases, it is possible to use a sound box.

The compressors are constructed in trio or tandem configuration with oil and pressure equalization line to manage oil level.

Condenser

Efficient air cooled condenser with extended surface and the best axial fan in the market provides a guaranteed heat rejection. Seamless copper tubes are arranged in a staggered tube layout and mechanically expanded into wavy aluminum condenser fins. Copper or Anti-corrosion coated fins are applicable upon request.

At both refrigerant and air side, the ratio of heat transfer to pressure drop has been maximized by optimizing tube layout, circuit number and condenser width. In order to achieve higher performance, an integrated sub-cooler has been devised to provide subcooled refrigerant by using an elevated liquid outlet. This promotes effective flashing phenomenon in expansion valve and increases cooling capacity without increasing the power input. Two low-noise axial fans have been positioned on the top of a V-shaped coil to



draw air from bottom and throw it to the atmosphere with sufficient dynamic pressure. For high sensitive cases, a sound diffuser could be applied on the fan discharge.

Piping system

There are some precautions like oil management and liquid flood back that should be considered in split systems. So SarmaAfarin offers an oil separator to return oil to the compressor. It is also possible to install an accumulator in the suction line to prevent from liquid migration to the compressor.

Control and Monitor

For safety and protection, discharge and suction pressure are monitored by PLC. Additionally, a set of

pressure switches has been installed which works mechanically.

Compressors are constantly monitored to adapt with the required load. To reserve the required superheat of the compressor, the expansion valve is controlled by an EVD to prevent liquid flood back to the compressor.

User can access to the operating parameters with a screen. It is also possible to monitor the condensing unit through building management system (BMS) with a Modbus protocol connection.



PHYSICAL DATA AND AHRI RATING-R134A



060	080	100	120	150	180				
1505	2501	2525	2540	2946	3612				
1637	2765	2789	2804	3210	4008				
R134a									
Scroll									
2	4	4	4	6	6				
50	50	50	50	50	50				
50	50	50	50	50	50				
50	25	25	25	17	17				
2	2	2	2	2	2				
Tube and Plate Fin, V-Type									
	Axial 8	00 mm Diamet	ter, Vertical Dis	charge					
2	4	4	4	4	6				
21800	43600	43600	43600	43600	65400				
1.94	1.94	1.94	1.94	1.94	1.94				
910	910	910	910	910	910				
2	4	4	4	4	6				
4/14	4/14	4/14	4/14	4/14	4/14				
47.5	95.0	95.0	95.0	95.0	142.6				
1199 2400 2400 2400 2400 3599									
2314									
		26	24						
	060 1505 1637 2 50 50 2 2 21800 1.94 910 2 4/14 47.5 1199	060 080 1505 2501 1637 2765 2 4 50 50 50 50 50 25 2 2 2 2 2 2 2 2 2 2 2 2 2 4 1.94 1.94 910 910 2 4 4/14 4/14 47.5 95.0 1199 2400	060 080 100 1505 2501 2525 1637 2765 2789 1637 2765 2789 1637 2765 2789 2 4 4 50 50 50 50 50 50 50 50 50 50 22 2 2 2 2 2 2 2 2 2 2 2 2 2 2 4 4 2 4 4 2 4 4 2 4 4 2 4 4 194 194 194 910 910 910 2 4 4 4/14 4/14 4/14 4/14 4/14 4/14 4/15 95.0 95.0 1199 2400	060 080 100 120 1505 2501 2525 2540 1637 2765 2789 2804 1637 2765 2789 2804 1637 2765 2789 2804 1637 2765 2789 2804 1637 2765 2789 2804 1637 2765 2789 2804 1637 2765 578 2804 1 50 50 50 50 50 50 50 50 50 50 25 25 25 25 2 2 2 2 2 2 2 2 2 2 2 4 4 4 4 21800 43600 43600 43600 4 1.94 1.94 1.94 1.94 1.94 910 910 910 910 910 2 4 4 4 4 4/14 4/14 4/14<	060 080 100 120 150 1505 2501 2525 2540 2946 1637 2765 2789 2804 3210 1637 2765 2789 2804 3210 I 50 57 58 50 50 50 50 50 50 50 50 50 25 25 17 2 2 2 2 2 2 2 2 2 2 50 25 25 17 2 2 2 2 2 4 4 4 4 4 4 21800 43600 43600 43600 43600 43600 4 194 910 910				

*The weight and dimensions of units are approximate and may subject to change.

AHRI Rating Condition-R134a										
Unit Model	060	080	100	120	150	180				
CAP(Ton)	36.9	50.3	60.9	73.7	84.7	110.4				
CAP(kBtu/h)	443	604	731	884	1016	1325				
THR(kBtu/h)	567	754	927	1132	1348	1698				
CMP(kW)	36.3	43.9	57.4	72.7	97.4	109.2				
Fan Power(kW)	3.9	7.8	7.8	7.8	7.8	11.6				
EER	12.2	13.8	12.7	12.2	10.4	12.1				

CAP - Gross Capacity

THR - Total Heat Rejection CMP - Compressor Gross Power Input

EER - Energy Efficiency Ratio Rated in accordance with AHRI Standard 365 at standard rating conditions.

Standard rating conditions are as follows: Saturated Suction Temperature: 45 °F (7.2 °C)

Condenser Air Entering Dry Bulb Temperature: 95 °F (35 °C)

PHYSICAL HYSICAL DATA AND AHRI RATING-R407C



UNIT 38RAN	060	080	100	120	150	180				
Operating weight (kg)*										
Al-Cu coils	1505	2501	2525	3183	3590	4298				
Cu-Cu coils	1637	2765	2789	3579	3986	4826				
Refrigerant	R407C									
Compressors	Scroll									
Quantity	2	4	4	4	6	6				
% Cap. Circuit 1	50	50	50	50	50	50				
% Cap. Circuit 2	50	50	50	50	50	50				
Minimum capacity	50	25	25	25	17	17				
Refrigerant circuits	2	2	2	2	2	2				
Condenser	Tube and Plate Fin, V-Type									
Condenser Fan		Axial 8	00 mm Diamet	ter, Vertical Dis	charge					
Quantity	4	4	4	6	6	8				
Total Airflow (CFM)	43600	43600	43600	65400	65400	87200				
Fan power (kW)	1.94	1.94	1.94	1.94	1.94	1.94				
Fan RPM	910	910	910	910	910	910				
Condenser Coils	4	4	4	6	6	8				
Row/FPI	4/14	4/14	4/14	4/14	4/14	4/14				
Total face area (Sq.Ft)	95.0	95.0	95.0	142.6	142.6	190.1				
CHASSIS DIM. (mm)										
Length	2400 2400 2400 3599 3599 4801									
Width	2314									
Height			26	24						

*The weight and dimensions of units are approximate and may subject to change.

AHRI Capacity Rating R407C										
Unit Model	060	080	100	120	150	180				
CAP(Ton)	56.3	71.1	83.4	107.4	125.1	157.1				
CAP(kBtu/h)	676	853	1001	1288	1501	1885				
THR(kBtu/h)	835	1085	1308	1635	1962	2427				
CMP(kW)	46.7	68.0	89.9	101.6	134.9	158.7				
Fan Power(kW)	7.8	7.8	7.8	11.6	11.6	15.5				
EER	14.5	12.5	11.1	12.7	11.1	11.9				

CAP - Gross Capacity

THR - Total Heat Rejection

CMP - Compressor Gross Power Input

EER - Energy Efficiency Ratio Rated in accordance with AHRI Standard 365 at standard rating conditions.

Standard rating conditions are as follows: Saturated Suction Temperature: 45 °F (7.2 °C)

Condenser Air Entering Dry Bulb Temperature: 95 °F (35 °C)



MODEL	SST[°F]			El	NTERING A	AIR TEMPI	RETURE (°	F)		
(R134a)	35	85	90	95	100	105	110	115	120	125
060	ТС	388	377	365	353	341	329	317	305	292
060	СМР	30.8	32.4	34.1	35.9	37.8	39.9	42.1	44.4	46.8
000	ТС	520	505	490	475	460	445	429	413	397
080	СМР	37.8	39.8	41.9	44.2	46.6	49.1	51.7	54.5	57.5
100	ТС	634	616	597	578	559	539	520	499	479
100	СМР	48.7	51.4	54.2	57.2	60.3	63.6	67.2	70.9	74.9
120	ТС	775	752	729	706	682	657	633	608	582
120	СМР	61.7	64.9	68.4	72.0	75.9	80.0	84.4	89.0	93.8
150	ТС	896	868	839	810	780	750	720	689	-
150	СМР	81.3	85.7	90.4	95.3	100.6	106.2	112.1	118.5	-
190	ТС	1162	1128	1093	1058	1022	985	948	911	873
180	СМР	92.6	97.5	102.6	108.1	113.9	120.1	126.6	133.6	140.9

MODEL	SST[°F]			EN	NTERING A	AIR TEMPI	RETURE (°	'F)		
(R134a)	40	85	90	95	100	105	110	115	120	125
060	ТС	428	416	403	390	377	363	350	336	322
060	СМР	31.7	33.4	35.1	37.0	39.0	41.1	43.3	45.7	48.2
000	ТС	578	562	545	528	511	494	477	460	442
UOU	СМР	38.6	40.7	42.9	45.2	47.6	50.1	52.9	55.7	58.8
100	ТС	703	682	662	641	620	598	576	554	532
100	СМР	50.1	52.9	55.8	58.8	62.0	65.4	69.1	72.9	77.0
120	ТС	855	830	804	778	752	725	698	671	643
120	СМР	63.6	67.0	70.5	74.2	78.2	82.4	86.9	91.6	96.6
150	ТС	988	957	925	893	860	827	794	760	-
150	СМР	84.3	88.9	93.7	98.8	104.3	110.1	116.3	122.9	-
100	ТС	1282	1244	1206	1167	1127	1087	1047	1006	964
180	СМР	95.5	100.5	105.8	111.4	117.4	123.7	130.4	137.5	145.0



MODEL	SST[°F]			E	NTERING A	IR TEMPI	RETURE (°	'F)		
(R134a)	45	85	90	95	100	105	110	115	120	125
060	ТС	470	457	443	429	414	400	385	370	355
060	СМР	32.8	34.5	36.3	38.2	40.2	42.4	44.6	47.0	49.6
000	ТС	641	623	604	586	567	548	529	510	490
080	СМР	39.5	41.6	43.9	46.2	48.7	51.3	54.1	57.0	60.1
100	ТС	775	753	731	708	684	661	637	613	589
100	СМР	51.6	54.4	57.4	60.6	63.9	67.4	71.1	75.1	79.3
120	ТС	939	912	884	856	827	798	768	738	708
120	СМР	65.7	69.1	72.7	76.6	80.6	85.0	89.5	94.4	99.5
150	ТС	1085	1051	1016	981	945	909	873	836	-
150	СМР	87.6	92.4	97.4	102.7	108.4	114.4	120.8	127.7	-
100	ТС	1409	1367	1325	1283	1240	1196	1151	1107	1061
180	СМР	98.6	103.8	109.2	115.0	121.1	127.5	134.4	141.7	149.4

MODEL	SST[°F]			EN	TERING A	AIR TEMPH	RETURE (°	F)		
(R134a)	50	85	90	95	100	105	110	115	120	125
060	ТС	515	500	485	469	454	438	422	406	-
060	СМР	33.9	35.6	37.5	39.4	41.5	43.7	46.0	48.5	-
000	ТС	709	688	668	647	627	606	585	564	542
080	СМР	40.5	42.7	44.9	47.3	49.9	52.6	55.4	58.4	61.5
100	ТС	853	829	804	779	754	728	702	676	649
100	СМР	53.3	56.2	59.3	62.5	66.0	69.6	73.4	77.5	81.8
120	ТС	1029	999	968	937	906	874	842	809	-
120	СМР	67.9	71.4	75.1	79.1	83.2	87.6	92.3	97.3	-
150	ТС	1187	1150	1112	1074	1035	995	955	-	-
150	СМР	91.3	96.3	101.5	107.0	112.9	119.2	125.8	-	-
100	ТС	1543	1498	1452	1405	1358	1310	1262	1213	-
180 -	СМР	102.0	107.2	112.8	118.7	125.0	131.6	138.6	146.1	-

MODEL	SST[°F]		E	NTERING A	AIR TEMPI	RETURE (°	F)	
(R407C)	35	85	90	95	100	105	110	115
0.00	ТС	588	573	561	545	528	512	494
060	СМР	40.2	42.3	44.2	46.5	49.0	51.7	54.5
000	ТС	747	726	707	685	663	639	615
080	СМР	57.8	60.8	63.5	66.9	70.4	74.5	78.6
100	ТС	886	862	840	814	787	757	728
100	СМР	75.1	79.2	82.9	87.3	91.9	97.0	102.2
120	ТС	1133	1103	1076	1044	1011	975	940
120	СМР	86.6	91.0	95.1	100.1	105.3	111.2	117.2
150	ТС	1329	1293	1260	1220	1180	1136	1092
150	СМР	112.7	118.8	124.3	131.0	137.8	145.5	153.3
180	ТС	1667	1621	1580	1531	1481	1427	1374
	СМР	134.7	141.5	147.8	155.6	163.7	172.8	182.1

MODEL	SST[°F]		EN	NTERING A	AIR TEMPI	RETURE (°	F)	
(R407C)	40	85	90	95	100	105	110	115
060	ТС	647	631	616	599	581	563	544
060	СМР	41.4	43.5	45.4	47.8	50.3	53.1	55.9
000	ТС	822	799	778	754	730	703	677
080	СМР	59.8	62.9	65.7	69.1	72.8	76.9	81.2
100	ТС	970	943	919	890	860	828	795
100	СМР	78.3	82.5	86.3	90.8	95.5	100.7	106.0
120	ТС	1242	1209	1180	1144	1108	1069	1031
120	СМР	89.6	94.1	98.2	103.3	108.7	114.7	120.8
150	ТС	1454	1414	1378	1334	1290	1242	1193
120	СМР	117.5	123.7	129.4	136.2	143.2	151.0	159.0
100	ТС	1825	1774	1729	1675	1621	1562	1503
180	СМР	139.6	146.6	153.1	161.0	169.2	178.5	188.1

MODEL	SST[°F]		E	NTERING A	AIR TEMPI	RETURE (°	F)	
(R407C)	45	85	90	95	100	105	110	115
060	ТС	709	691	676	657	637	617	596
060	СМР	42.7	44.8	46.7	49.1	51.7	54.5	57.4
000	ТС	900	875	853	826	800	771	743
080	СМР	62.0	65.1	68.0	71.6	75.3	79.6	84.0
100	ТС	1057	1028	1001	969	937	902	866
100	СМР	81.8	86.0	89.9	94.6	99.3	104.6	110.1
120	ТС	1357	1321	1288	1250	1211	1168	1126
120	СМР	92.7	97.3	101.6	106.8	112.2	118.3	124.5
150	ТС	1586	1542	1501	1454	1406	1353	1299
150	СМР	122.7	129.0	134.9	141.8	148.9	156.9	165.1
180 -	ТС	1990	1935	1885	1827	1768	1704	1639
	СМР	144.9	152.0	158.7	166.8	175.1	184.6	194.4

MODEL	SST[°F]		EN	NTERING A	AIR TEMPI	RETURE (°	F)	
(R407C)	50	85	90	95	100	105	110	115
060	ТС	775	755	738	718	697	674	652
060	СМР	44.0	46.1	48.1	50.6	53.1	56.0	58.9
000	ТС	983	956	931	902	874	842	811
080	СМР	64.4	67.6	70.6	74.3	78.1	82.5	87.0
100	ТС	1148	1117	1087	1052	1018	979	-
100	СМР	85.5	89.8	93.8	98.6	103.3	108.8	-
120	ТС	1478	1438	1402	1360	1318	1272	1226
120	СМР	96.1	100.8	105.1	110.4	115.9	122.2	128.6
150	ТС	1723	1675	1630	1578	1527	1469	-
150	СМР	128.3	134.7	140.7	147.9	155.0	163.1	-
100	ТС	2162	2103	2048	1985	1922	1852	1782
180	СМР	150.6	157.8	164.7	172.9	181.4	191.1	201.1



T/EXV valve

The expansion valve sensing bulb must be installed after at least two 90 degree bends at the evaporator outlet.

Ideally the expansion valve should be installed in a vertical pipe run. If that is not possible, the valve may be rotated through a full 90, with the horizontal pipe remaining at the base.

Solenoid Valve

Liquid line solenoid valves are necessary, either with single circuit or with dual-circuit. The solenoid valve should be controlled in case of evaporators be deactivated in the upper section of the evaporator coil and reduce the load on the compressor (capacity unloaders operated by suction pressure).

Installation of Piping

Caution:

In order to prevent vibration and possible pipe breaks install proper pipe supports for all pipes at the point where they leave the unit.

The design and operation of refrigerant piping systems should:

- Ensure proper refrigerant feed to evaporators
- Provide practical refrigerant line sizes without excessive pressure drop.
- Prevent excessive amounts of lubricating oil from being trapped in any part of the system
- Protect the compressor at all times from loss of lubricating oil
- Prevent liquid refrigerant or oil slugs from entering the compressor during operating and idle time
- Maintain a clean and dry system

Liquid accessories

The filter-drier should have maximum unit capacity and minimum pressure drop and should be installed before the expansion valve and the moisture indicator just after the shut-off valve in the same line. These are available as factory-ordered. It is somehow obligatory to install a moisture indicator in liquid line just after condenser to be sure about the refrigerant charge.

Oil Return

Condensing units with multiple-step unloading may require double suction risers to ensure proper oil return at minimum load. The refrigerant suction line should be insulated in accordance with the guidelines set forth in the "Carrier System Design Manual".

The more important point is that, the oil charge must be adjusted to allow for extra line length. This is done by adding 1% of the nominal oil charge for the compressor every 3 m of piping in excess of 16 m.

When Sizing the refrigerant lines, consider the length of piping required between condensing unit and evaporator, the amount of liquid lift, and the compressor oil return. Refer to the dimensional drawings for the size, type and location of the suction and liquid line pipe connections. Refer to the "Carrier System Design Manual". Include a liquid receiver in the installation if it seems to be necessary.

NOTE: If it is obligatory to implement double riser suction line some points should be considered as follow.



In 38RAN units which contain two circuits, the circuits are controlled by independent circuitry, making it possible to maintain partial cooling capability even if one compressor is inoperable.

IMPORTANT: Condensing units applied in any systems must have field-supplied and installed accumulators.

IMPORTANT: Some areas should be insulated to guarantee the performance of the outdoor unit and indoor unit as well.

Insulation

Liquid lines should not be insulated if the surrounding temperature is lower than or equal to the temperature of the liquid. Insulation is recommended only when the liquid line can pick up a considerable amount of heat. Moreover, it is not needed to insulate the hot gas line but at the other hand in suction line the thickness of insulation required to prevent condensation on the outer surface.

APPLICATION DATA



Piping Size

The following table represents the suction and liquid line for different equivalent pipeline lengths based on various units. In some cases, double suction risers are required which are shaded. Double suction risers are based on the partial load of the unit to help proper oil return. In case of ambient temperature higher than 115 °F suction line should be one size smaller than the specified diameter. Oil separator in discharge line and accumulator in suction line are recommended for long-distance pipeline.

D124a		Total Equivalent Length(ft)												
K134a	0-33		34-82		83-131		132-181		182-230		231-263		264-295	
38RAN	S	L	S	L	S	L	S	L	S	L	S	L	S	L
060	15/8	7/8	2 1/8	7/8	2 1/8	11/8	2 5/8	1 1/8	2 5/8	11/8	2 5/8	11/8	2 5/8	11/8
080	2 1/8	11/8	2 1/8	11/8	2 5/8	11/8	2 5/8	1 1/8	2 5/8	13/8	2 5/8	13/8	3 1/8	13/8
100	2 1/8	11/8	2 5/8	11/8	2 5/8	11/8	2 5/8	13/8	3 1/8	13/8	3 1/8	13/8	3 1/8	13/8
120	2 1/8	11/8	2 5/8	11/8	3 1/8	13/8	3 1/8	13/8	3 1/8	13/8	3 1/8	13/8	3 1/8	15/8
150	2 1/8	13/8	2 5/8	13/8	3 1/8	13/8	3 1/8	13/8	3 5/8	15/8	3 5/8	15/8	3 5/8	15/8
180	2 5/8	13/8	3 1/8	13/8	3 1/8	13/8	3 5/8	15/8	3 5/8	15/8	3 5/8	15/8	3 5/8	15/8

Shading indicates double suction riser required on units if condensing unit is located higher than evaporator. S: suction(in), L: Liquid(in)

D407C		Total Equivalent Length(ft)												
K4U/C	0-33		34-82		83-131		132-181		182-230		231-263		264-295	
38RAN	S	L	S	L	S	L	S	L	S	L	S	L	S	L
060	15/8	1 1/8	2 1/8	1 1/8	21/8	1 1/8	2 1/8	11/8	2 1/8	11/8	2 1/8	11/8	2 5/8	11/8
080	15/8	1 1/8	2 1/8	11/8	21/8	11/8	2 5/8	1 1/8	2 5/8	13/8	2 5/8	13/8	2 5/8	13/8
100	2 1/8	13/8	2 1/8	13/8	2 5/8	13/8	2 5/8	13/8	2 5/8	13/8	2 5/8	13/8	2 5/8	13/8
120	2 1/8	13/8	2 5/8	13/8	2 5/8	13/8	2 5/8	13/8	2 5/8	13/8	3 1/8	15/8	3 1/8	15/8
150	2 1/8	13/8	2 5/8	13/8	2 5/8	13/8	3 1/8	13/8	3 1/8	15/8	3 1/8	15/8	3 1/8	15/8
180	2 1/8	15/8	2 5/8	15/8	3 1/8	15/8	3 1/8	15/8	3 1/8	15/8	3 1/8	15/8	3 5/8	2 1/8

Shading indicates double suction riser required on units if condensing unit is located higher than evaporator. S: suction(in), L: Liquid(in)

D124a	Total Equivalent Length(ft)													
K134a	0-33		34-82		83-131		132-181		182-230		231-263		264-295	
38RAN	A	В	Α	В	A	В	Α	В	Α	В	A	В	А	B
060	-	-	-	-	-	-	-	-	-	-	-	-	-	-
080	-	-	-	-	15/8	2 1/8	2 1/8	2 1/8	2 1/8	2 1/8	2 1/8	2 1/8	2 1/8	2 1/8
100	-	-	-	-	-	-	-	-	2 1/8	2 1/8	2 1/8	2 5/8	2 1/8	2 5/8
120	-	-	-	-	2 1/8	2 1/8	2 1/8	2 5/8	2 1/8	2 5/8	2 1/8	2 5/8	2 5/8	2 5/8
150	-	-	15/8	2 5/8	21/8	2 5/8	2 1/8	2 5/8	2 1/8	3 1/8	2 1/8	3 1/8	2 1/8	3 1/8
180	-	-	2 1/8	2 5/8	2 1/8	2 5/8	2 1/8	3 1/8	2 1/8	3 1/8	2 1/8	3 1/8	2 5/8	3 1/8

A(in) and B(in) are suction riser

D4070		Total Equivalent Length(ft)												
K4U/L	0-33		34-82		83-131		132-181		182-230		231-263		264-295	
38RAN	A	B	Α	B	Α	В	A	В	Α	B	Α	В	Α	В
060	-	-	-	-	-	-	-	-	-	-	-	-	-	-
080	-	-	-	-	-	-	15/8	2 1/8	15/8	2 1/8	15/8	2 1/8	2 1/8	2 1/8
100	-	-	-	-	15/8	2 1/8	15/8	2 1/8	2 1/8	2 1/2	2 1/8	2 1/8	2 1/8	21/8
120	-	-	15/8	2 1/8	21/8	2 1/8	2 1/8	2 1/8	2 1/8	2 1/8	2 1/8	2 1/8	2 1/8	2 5/8
150	-	-	15/8	2 1/8	15/8	2 5/8	15/8	2 5/8	2 1/8	2 5/8	2 1/8	2 5/8	2 1/8	2 5/8
180	-	-	15/8	2 1/8	2 1/8	2 5/8	2 1/8	2 5/8	2 1/8	2 5/8	2 1/8	3 1/8	2 1/8	3 1/8
A(in) and B(in) are suct	ion riser												

10

APPLICATION DATA

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NOTES:

- 1. All piping must follow standard refrigerant piping techniques such as AHAREA, CARRIER.
- All wiring must comply with the applicable local and national codes.
 Wiring and piping shown are general points-of-connection guides only
- So, they are not intended for, or to include all details for, a specific installation



Do not locate near sound sensitive areas without proper acoustic consideration. For applications requiring mounting a split system on a building rooftop, consideration should be given to using rubber-in-shear or spring isolators to minimize structure-borne transmission. Unit must be level when installed to ensure proper oil return to the compressors.

Clearances must be provided around split systems for airflow, service and local code requirements. See dimensional drawings for specific unit clearance

1800

requirements. Ensure adequate clearance between adjacent split systems is maintained.

Split system fan discharge must be at least as high as adjacent solid walls. Installation in pits is not recommended.

Minimum clearances

The recommended minimum clearance to ensure proper airflow through the condenser coils and to allow fan maintenance is as shown below.



Clearances of 38RAN (Dimensions are in mm)

Acceptable clearance between the split system and a single wall may be reduced to 3 ft (914.4 mm) on one side or end opposite the control panel without sacrificing performance.

Clearances between split systems in dual split system applications may be as shown above.

Over sizing split systems

Over sizing split systems by more than 15% at design conditions must be avoided as the system operating efficiency is adversely affected (resulting in greater or excessive electrical demand).

When future expansion of equipment is anticipated, install a single split system to meet present load requirements and add a second split system to meet the additional load demand. It is also recommended that 2 smaller split systems be installed where operation at minimum load is critical. The operation of a smaller split system loaded to a greater percentage over minimum is preferred to operating a single split system at or near its minimum recommended value.

High ambient temperature operation

High outdoor ambient split system start-up and operation is possible for standard 38XD split systems

at standard ambient and high temperatures up to 125 F (52 C) at nominal voltage as well.

Low ambient temperature operation

Units will start and operate down to 32 °F (0°C) as standard. Operation to -20 °F (-29 °C) requires optional low ambient head pressure control as well as wind baffles (field fabricated and installed to all units for operation below 32 °F (0°C) if wind velocity is anticipated to be greater than 5 mph (8 km/h).

Altitude correction factors-Correction factors must be applied to standard ratings at altitudes above 2000 ft (609.6 m) using the following multipliers:

Altitude[ft]	Capacity Ratio	Compressor Power Ratio
0	1.0	1.0
2000	0.99	1.01
4000	0.98	1.02
6000	0.97	1.03
8000	0.96	1.04
10000	0.95	1.05



Condenser airflow

Airflow restrictions on units with standard fans will affect the unit capacity, condenser head pressure, and compressor power input. Correction factors to be applied for external static restrictions up to 0.2 in.wg (50 Pa) are as follows:

External Static Pressure (inWg)	Capacity Ratio	Compressor Power Ratio
0.0	1.000	1.00
0.1	0.986	1.01
0.2	0.968	1.03

R134a	Electrical Data					
38RAN	FLA(A)	PC(kW)				
60	86	51				
80	125	71				
100	156	87				
120	171	101				
150	225	127				
180	257	152				

R407C	Electrical Data					
38RAN	FLA(A)	PC(kW)				
60	121	74				
80	163	98				
100	195	118				
120	235	145				
150	293	177				
180	348	215				

-Above data should be used for cable and fuse selection -Full Load Amperes (FLA)

-Power Consumption



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No. 194, W. Khorramshahr (Apadana) Ave., TEHRAN-15337, P. O. BOX: 13145-1799 Tel: 88762038 Fax: 88762033 www.sarmaafarin.com سهروردی شمالی، خیابان خرمشهر، شماره ۱۹۴، تهران – ۱۵۳۷۷، صندوق پستی: ۱۳۱۴۵–۱۳۱۵ تلفن: ۸۸۷۶۲۰۳۸ فاکس: ۲۹۳ Manufacturer reserves the right to discontinue or change at time, specifications of designs without notice and without incurring obliqations