SARMAAFARIN

Air-Cooled scroll/Reciprocating Condensing Units

50Hz

AEROACOUSTIC

ISO 9001

Certificate No.: 9190.C308

FORM SSI - 38AK(S) (1400)

38AK(S)

008-044

6.4 to 36.8 Tons
(22.3 to 129.5 kW)

Features/Benefits

SarmaAfarin Aeroacoustic 38AK(S) series are dependable split systems that match SSI indoor air handlers and direct expansion coils with outdoor condensing units for a wide selection of commercial cooling solutions.

SarmaAfarin condensing units are efficiently sized and can be constructed according to the technical specifications and temperature range requirements. These condensers are built using superior electrical components and proven designs. Each unit undergoes comprehensive performance and quality check before commissioning. This is why our clients trust us to offer a vast range of turnkey solutions across cooling and condenser requirements.

Constructed for long life

38AK (Scroll Compressor units) and 38AKS (semi hermetic compressor units) are designed and built to last. The copper tube/aluminum fin outdoor coil construction provides years of trouble-free operation. Where conditions require them, copper fin coils are also available. Cabinets are constructed of painted galvanized steel, delivering unparalleled protection from the environment. Inside and outside surfaces are protected to ensure long life, good looks, and reliable operation. Safety controls are used for enhanced system protection and reliability.

Efficient operation

Building owners will appreciate the high unit EERs (Energy Efficiency Ratios) offered by the 38AK(S) units. These units provide greater efficiency than similar units in the market place, which translates into year-round operating savings.

The 38AK(S) condensing units offer the building owner operating controls and components designed for performance dependability. The highly efficient hermetic and semi hermetic compressors are reengineered for long life and durability. The compressors include overload protection and vibration isolation for enhancement of quiet operation. The high pressure switch protects the entire refrigeration system from abnormally high operating pressures. A low-pressure switch protects the system from low pressure conditions, including loss of charge.

38AK(S)008 to 38AK(S)044 units include a crankcase heater to eliminate liquid slugging at startup. In all units, compressors including scroll and reciprocating are equipped with oil level sight glass.

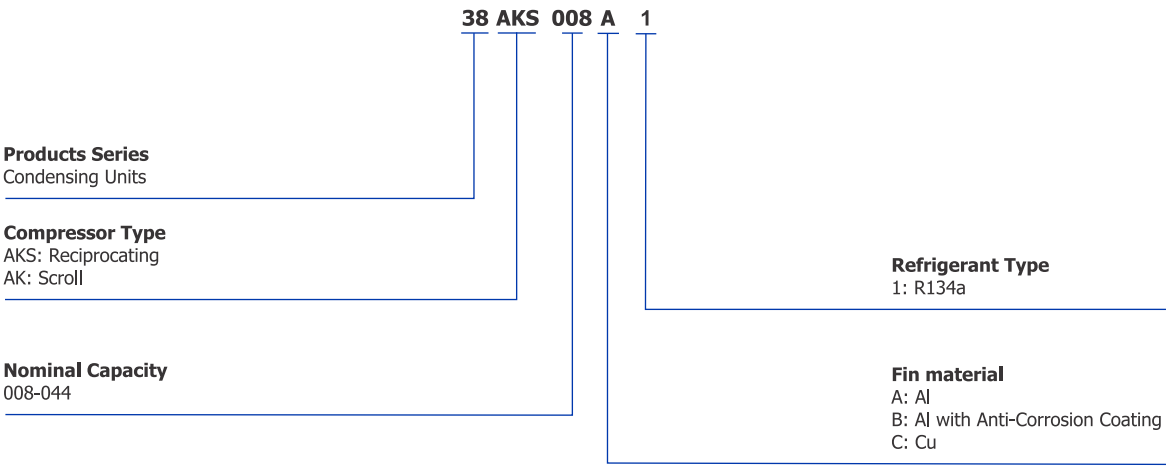
Latest safety standard for 38AK(S) units are in accordance with UL (Underwriters Laboratories) and CSA (Canadian standards Association) approvals.

Custom matched 38AK(S) Condensing units to SSI packaged air handlers

The SSI Air Handling Units including Double Skin air Handling Unit (2 inch insulation) "39HX", double skin air Handling Unit (1 inch insulation) "39FD" and single skin air handling unit "40RM(S)" could be customized and matched with 38AK(S) condensing units.

The SSI AHU Series have excellent fan performance, efficient direct expansion (DX) coils, a unique combination of indoor – air quality features, and easy installation. Their versatility and state-of-the-art features help to ensure that your split system provides economic performance now and in the future.

Model Number Nomenclature



PHYSICAL DATA

Unit 38AK(S)		008	009	012	013	016	024	028	034	044
Refrigerant		R134a								
Operating weight (lb.)*	38AK									
	Al Fin	389	390	392	766	770	778	1764	2001	2682
	Cu Fin	457	459	460	859	886	893	1918	2207	2990
	38AKS									
	Al Fin	564	565	571	843	945	951	2012	2265	2882
	Cu Fin	632	634	639	936	1085	1091	2166	2471	3190
Compressor	38AK									
	Type	Scroll								
	No. Control Steps	1	1	1	1	2	2	2	2	2
	Type	Reciprocating								
	No. Control Steps	1	1	1	1	2	2	2	2	2
Condenser	Coil	Copper Tubes, Aluminum Fins								
	Rows...Fins/in.	2…14	2…14	2…14	2…14	3…14	3…14	2…14	3…14	3…14
	Total Face Area (Sq.Ft)	18	18	18	29.2	29.2	29.2	39.2	39.2	58.4
	Fans Type	Propeller - Direct Drive								
	Qty...Rpm	2…900	2…900	2…900	2…900	2…900	2…900	2…900	2…900	3…900
	Diameter (in.)	26	26	26	26	26	26	28	28	28
	Total Power (kW)	1.1	1.1	1.1	1.1	1.1	1.1	1.84	1.84	2.76
	Total Air Flow(CFM)	5900	5900	5900	12300	12000	12000	16800	16600	25800

* Typical approximate operating weight with 25 ft. of interconnecting piping and may be subject to change.

AHRI Capacity Rating

UNIT 38AK	008	009	012	013	016	024	028	034	044
CAP (Ton)	6.4	7.7	8.9	14.7	15.8	18.3	23.4	28.8	36.8
THR (Ton)	7.9	9.7	11.5	18.6	19.6	23.3	29.9	36.9	46.2
CMP (kW)	5.1	7.0	9.1	13.8	13.5	17.5	22.8	28.8	33.0
Fan power (kW)	1.1	1.1	1.1	1.1	1.1	1.1	1.84	1.84	2.76
COP	4.38	3.90	3.44	3.75	4.11	3.68	3.61	3.51	3.93
EER	14.94	13.29	11.75	12.79	14.02	12.56	12.32	11.98	13.39

UNIT 38AKS	008	009	012	013	016	024	028	034	044
CAP (Ton)	6.4	7.1	9.1	11.8	15.7	17.4	22.4	29.1	35.8
THR (Ton)	7.9	8.9	11.7	14.8	19.9	22.2	28.6	37.7	45.2
CMP (kW)	5.5	6.4	9.1	10.7	14.6	16.9	22	30.5	33
Fan power (kW)	1.1	1.1	1.1	1.1	1.1	1.1	1.84	1.84	2.76
COP	4.06	3.92	3.53	3.86	3.79	3.62	3.57	3.35	3.81
EER	13.85	13.36	12.03	13.18	12.94	12.36	12.20	11.43	13.02

CAP - Gross Capacity (TON)
THR - Total Heat Rejection (TON)
CMP - Compressor Power Input(kW)
COP - Coefficient of Performance
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)

PERFORMANCE DATA (38AK SERIES)

38AK008

SST(°F)		Air Temperature Entering Condenser (°F)								
		70	80	85	95	100	105	115	120	125
20	TC	51.2	48.8	47.5	44.6	43.1	41.5	37.9	35.9	33.9
	CMP	3.6	4.0	4.2	4.7	5.0	5.2	5.8	6.2	6.5
25	TC	57.4	54.8	53.3	50.3	48.6	46.9	43.2	41.2	39
	CMP	3.6	4.0	4.3	4.8	5.0	5.3	6.0	6.3	6.7
30	TC	64.2	61.2	59.4	56	54.2	52.4	48.4	46.2	44
	CMP	3.7	4.1	4.4	4.9	5.2	5.5	6.1	6.5	6.9
35	TC	71.3	67.9	66.2	62.5	60.6	58.6	54.3	52.1	49.7
	CMP	3.8	4.2	4.4	5.0	5.2	5.5	6.2	6.6	7.0
40	TC	79	75.2	73.2	69.2	67	64.9	60.2	57.8	55.3
	CMP	3.9	4.3	4.5	5.1	5.4	5.7	6.4	6.8	7.2
45	TC	87.2	83	81.3	76.8	74	72.1	67.1	63.9	61.8
	CMP	4.0	4.4	4.6	5.1	5.5	5.8	6.5	6.9	7.3
50	TC	96.2	91.4	89.5	84.5	81.9	79.3	73.9	71.1	68.2
	CMP	4.1	4.5	4.7	5.3	5.6	5.9	6.6	7.0	7.4

38AK009

SST(°F)		Air Temperature Entering Condenser (°F)								
		70	80	85	95	100	105	115	120	125
20	TC	64	60.4	58.4	54.1	51.8	49.3	44.1	41.4	38.5
	CMP	4.7	5.2	5.5	6.1	6.5	6.9	7.8	8.3	8.9
25	TC	71.3	67.5	65.4	60.8	58.3	55.7	50.2	47.3	44.3
	CMP	4.8	5.3	5.6	6.3	6.7	7.1	8.1	8.6	9.1
30	TC	79.2	75.1	72.8	68.4	65.2	63	57.3	53.6	51.1
	CMP	4.9	5.5	5.8	6.4	6.9	7.2	8.2	8.8	9.3
35	TC	87.7	83.2	81.2	76	72.6	70.3	64.1	60.9	57.5
	CMP	5.1	5.6	5.9	6.6	7.1	7.4	8.4	8.9	9.5
40	TC	96.5	92	89.8	84.2	81.1	78	71.4	68	64.4
	CMP	5.2	5.8	6.1	6.8	7.2	7.6	8.6	9.2	9.8
45	TC	107	101.5	99	92.9	89.6	86.2	79.2	75.5	71.7
	CMP	5.4	6.0	6.3	7.0	7.4	7.9	8.9	9.4	10.0
50	TC	117.5	111.5	108	101.5	98	96.5	87.4	83.5	79.4
	CMP	5.6	6.2	6.5	7.3	7.7	7.9	9.1	9.7	10.3

38AK012

SST(°F)		Air Temperature Entering Condenser (°F)								
		70	80	85	95	100	105	115	120	125
20	TC	74.6	70.4	67.7	63.2	60.5	57.7	51.8	48.7	-
	CMP	6.1	6.8	7.2	8.0	8.5	9.0	10.2	10.8	-
25	TC	83.2	78.6	76.7	71.4	67.9	65.6	59.4	55.5	52.8
	CMP	6.3	7.0	7.3	8.2	8.7	9.2	10.4	11.1	11.7
30	TC	92.4	87.4	85.3	79.6	75.9	73.4	66.7	62.6	59.7
	CMP	6.4	7.1	7.5	8.4	9.0	9.4	10.6	11.4	12.0
35	TC	102.5	96.9	94	88.4	84.4	81	74.5	70.1	67
	CMP	6.6	7.3	7.7	8.6	9.2	9.8	10.9	11.7	12.2
40	TC	113	107	104	97.1	93.5	89.8	82.1	78	73.9
	CMP	6.8	7.5	7.9	8.9	9.4	10.0	11.3	12.0	12.7
45	TC	124	118	114	107	103	99.2	90.9	86.5	82.1
	CMP	7.0	7.7	8.2	9.1	9.7	10.3	11.5	12.2	13.0
50	TC	135	129	125	117	113.5	108.5	100	95.6	90.8
	CMP	7.3	8.0	8.5	9.5	9.9	10.6	11.8	12.5	13.3

• TC: Total Capacity (1000Btuh) • CMP: Compressor Power Input (kW) • SST: Saturated Suction Temperature (°F)

PERFORMANCE DATA (38AK SERIES)

38AK013

SST(°F)		Air Temperature Entering Condenser (°F)								
		70	80	85	95	100	105	115	120	125
20	TC	120.5	114.5	111	104.5	101	97.6	90.1	85.3	82
	CMP	9.0	10.2	10.8	12.1	12.8	13.6	15.3	16.5	17.3
25	TC	135	128	124	117	114	109	101	96.7	92.3
	CMP	9.2	10.4	11.1	12.4	13.0	14.0	15.8	16.8	17.8
30	TC	150	142.5	138	130.5	126.5	121.5	112.5	109	103
	CMP	9.5	10.7	11.4	12.7	13.4	14.4	16.2	17.0	18.4
35	TC	166.5	158	153.5	145	140.5	136	126	121	116
	CMP	9.9	11.0	11.7	13.0	13.8	14.6	16.5	17.5	18.6
40	TC	184	174	170	160.5	155.5	150	139.5	134	128
	CMP	10.2	11.4	12.0	13.4	14.2	15.0	16.9	18.0	19.5
45	TC	202	192.5	186.5	176.5	171	165	154	148	141.5
	CMP	10.7	11.7	12.5	13.8	14.6	15.5	17.4	18.5	19.7
50	TC	222	211	205	193	188	182	169	162.5	155.5
	CMP	11.1	12.2	12.9	14.4	15.0	15.9	17.9	19.0	20.2

38AK016

SST(°F)		Air Temperature Entering Condenser (°F)								
		70	80	85	95	100	105	115	120	125
20	TC	129.2	122.2	118.4	110.4	106	101.2	91	86	79.8
	CMP	9.1	10.1	10.7	11.9	12.7	13.4	15.2	16.1	17.2
25	TC	144.4	137	132.8	124.4	119.6	114.6	103.8	98.2	92.8
	CMP	9.3	10.4	11.0	12.2	12.9	13.7	15.5	16.5	17.5
30	TC	160.8	152.8	148.4	139.2	133.2	128.92	117.4	112	106
	CMP	9.6	10.6	11.2	12.5	13.4	14.0	15.8	17.4	17.8
35	TC	178	169.2	165	154.92	148	144	132	125.6	119.2
	CMP	9.8	10.9	11.5	12.8	13.6	14.3	16.2	17.2	18.3
40	TC	196	187.4	182.4	171.2	166	159.8	146.8	140.8	133.8
	CMP	10.1	11.2	11.8	13.2	13.9	14.7	16.6	17.6	18.7
45	TC	217	207	201	189.6	183.2	176.6	163.42	156.8	149.4
	CMP	10.5	11.5	12.2	13.5	14.3	15.2	17.0	17.9	19.1
50	TC	238	227	221	208	202	194.4	180.4	172.6	165.4
	CMP	10.8	11.9	12.6	13.9	14.7	15.6	17.4	18.5	19.6

38AK024

SST(°F)		Air Temperature Entering Condenser (°F)								
		70	80	85	95	100	105	115	120	125
20	TC	151.6	143.6	139	130	124.2	119.4	107.8	101.8	-
	CMP	11.8	13.1	13.8	15.4	16.5	17.3	19.5	20.8	-
25	TC	169.2	160.6	155.8	145.4	140	134.2	122	115.6	109.6
	CMP	12.1	13.4	14.1	15.8	16.8	17.8	20.0	21.3	22.5
30	TC	188	178.4	173.4	162.2	156.2	150.6	137.6	130.8	123.6
	CMP	12.3	13.7	14.5	16.2	17.2	18.1	20.4	21.7	23.0
35	TC	208	197.8	192.2	180	174.2	167.4	153.4	146.8	139.4
	CMP	12.7	14.1	14.9	16.7	17.5	18.6	20.9	22.1	23.4
40	TC	230	219	212	199	192.8	185.6	170.4	163.4	155.2
	CMP	13.1	14.5	15.3	17.1	18.0	19.1	21.4	22.6	24.0
45	TC	253	240	234	220	212	205	188.4	180.8	172.2
	CMP	13.5	14.9	15.7	17.5	18.5	19.5	22.0	23.2	24.6
50	TC	277	263	257	241	233	225	208	198.6	190.2
	CMP	14.0	15.4	16.2	18.0	19.0	20.1	22.5	23.9	25.2

• TC: Total Capacity (1000Btuh) • CMP: Compressor Power Input (kW) • SST: Saturated Suction Temperature (°F)

PERFORMANCE DATA (38AK SERIES)

38AK028

SST(°F)		Air Temperature Entering Condenser (°F)								
		70	80	85	95	100	105	115	120	125
20	TC	192.2	182.2	177.2	166.6	161.2	156	144.4	139.2	-
	CMP	14.8	16.6	17.6	19.8	20.9	22.1	24.8	26.1	-
25	TC	214	203	197.8	186.4	180.6	174.8	162.6	155.6	149
	CMP	15.3	17.1	18.1	20.3	21.4	22.7	25.3	27.0	28.5
30	TC	239	226	220	208	201	194.4	180.8	173.8	166.6
	CMP	15.7	17.6	18.7	20.9	22.1	23.4	26.2	27.7	29.3
35	TC	265	250	245	230	224	216	201	192.8	184.8
	CMP	16.2	18.2	19.1	21.5	22.6	23.9	26.8	28.6	30.3
40	TC	293	278	270	256	248	239	223	214	205
	CMP	16.7	18.7	19.8	22.0	23.3	24.6	27.6	29.3	31.0
45	TC	324	307	298	281	272	264	245	236	226
	CMP	17.3	19.3	20.4	22.8	24.1	25.4	28.5	30.2	32.0
50	TC	354	337	327	309	299	289	269	259	248
	CMP	18.0	20.0	21.1	23.4	24.8	26.2	29.4	31.0	32.9

38AK034

SST(°F)		Air Temperature Entering Condenser (°F)								
		70	80	85	95	100	105	115	120	125
20	TC	238	226	219	206	198.6	191.4	175.4	167.4	-
	CMP	18.6	20.9	22.1	24.8	26.3	27.9	31.7	33.7	-
25	TC	265	252	244	230	222	214	197.8	189	180
	CMP	19.2	21.5	22.8	25.6	27.1	28.8	32.5	34.5	36.7
30	TC	295	280	272	256	247	239	221	211	201
	CMP	19.9	22.2	23.5	26.3	27.9	29.6	33.4	35.5	37.8
35	TC	326	310	301	284	274	265	245	235	224
	CMP	20.6	22.9	24.2	27.1	28.7	30.4	34.4	36.5	38.9
40	TC	360	342	333	314	302	293	271	260	251
	CMP	21.3	23.7	24.9	27.9	29.7	31.3	35.3	37.6	39.5
45	TC	397	376	365	345	333	322	299	287	274
	CMP	22.1	24.6	25.9	28.8	30.5	32.4	36.3	38.6	41.0
50	TC	434	412	400	378	365	354	328	314	300
	CMP	23.1	25.5	26.9	29.8	31.6	33.3	37.5	39.9	42.4

38AK044

SST(°F)		Air Temperature Entering Condenser (°F)								
		70	80	85	95	100	105	115	120	125
20	TC	304	289	281	264	256	248	231	223	214
	CMP	21.3	23.9	25.3	28.6	30.3	32	35.8	37.8	39.9
25	TC	339	322	313	296	286	277	259	249	240
	CMP	22.0	24.7	26.0	29.2	31.1	32.9	36.8	38.9	41.0
30	TC	376	357	347	328	318	308	288	278	267
	CMP	22.7	25.4	26.9	30.2	32	33.8	37.8	40	42.2
35	TC	416	395	385	364	353	342	320	308	297
	CMP	23.5	26.3	27.7	31	32.8	34.7	38.8	41	43.4
40	TC	460	436	426	402	388	377	354	340	327
	CMP	24.4	27.1	28.6	32	33.8	35.8	39.8	42.4	44.8
45	TC	506	480	468	442	430	416	389	375	361
	CMP	25.4	28	29.6	33	34.7	36.7	41	43.4	45.8
50	TC	556	526	512	486	470	458	426	412	396
	CMP	26.4	29.2	30.8	34.1	36.0	37.8	42.2	44.6	47.2

• TC: Total Capacity (1000Btuh) • CMP: Compressor Power Input (kW) • SST: Saturated Suction Temperature (°F)

PERFORMANCE DATA (38AKS SERIES)

38AKS008

SST(°F)		Air Temperature Entering Condenser (°F)								
		70	80	85	95	100	105	115	120	125
20	TC	52.4	47.9	46.2	41.8	40.1	38	33.8	31.8	30.2
	CMP	3.4	3.7	3.8	4	4	4.1	4.3	4.3	4.4
25	TC	59	54.6	52.2	47.9	45.6	43.3	39.1	36.9	34.7
	CMP	3.7	3.9	4	4.2	4.3	4.5	4.6	4.7	4.8
30	TC	66.8	61.5	58.8	54.1	51.6	49.5	44.5	42	39.6
	CMP	3.8	4.2	4.3	4.5	4.7	4.8	5	5.1	5.2
35	TC	74.8	69.5	66.6	60.9	58.1	55.8	50.3	48.1	45.4
	CMP	4.1	4.4	4.5	4.9	5	5.1	5.4	5.4	5.6
40	TC	83.3	77.6	74.5	68.8	65.8	62.7	56.7	54.3	51.3
	CMP	4.3	4.6	4.8	5.1	5.3	5.5	5.7	5.9	6
45	TC	92.6	86.4	83	76.2	73.5	70.2	64.2	61	57.7
	CMP	4.6	4.9	5.1	5.5	5.6	5.8	6.1	6.3	6.4
50	TC	101.8	95.1	91.4	84.8	81.1	78.2	71.1	68.3	64.7
	CMP	4.8	5.2	5.5	5.8	6	6.7	6.5	6.7	6.9

38AKS009

SST(°F)		Air Temperature Entering Condenser (°F)								
		70	80	85	95	100	105	115	120	125
20	TC	58.9	55	53.4	49.4	47.4	45.4	41.4	39.8	37.7
	CMP	4.1	4.5	4.6	4.9	5.1	5.2	5.4	5.5	5.6
25	TC	65.8	62	59.8	55.4	53.7	51	47.1	44.9	42.7
	CMP	4.3	4.7	4.9	5.2	5.4	5.6	5.8	5.9	6.1
30	TC	73.8	69.1	66.8	62	60.1	57.7	52.8	50.5	48.5
	CMP	4.5	4.9	5.1	5.5	5.7	5.9	6.2	6.4	6.5
35	TC	81.9	76.8	74.3	69.6	67	64.3	59.1	56.5	54.6
	CMP	4.7	5.2	5.4	5.8	6	6.2	6.6	6.8	6.9
40	TC	90.7	85.2	82.3	77.3	74.4	71.6	66.4	63	60.7
	CMP	4.9	5.4	5.7	6.1	6.4	6.6	7	7.2	7.4
45	TC	100.1	94.1	91.1	85.5	82.4	79.3	73.2	70.1	67.4
	CMP	5.1	5.7	5.9	6.4	6.7	6.9	7.4	7.7	7.8
50	TC	109.6	103.7	100.4	93.8	91.1	87.7	81.1	77.7	-
	CMP	5.4	5.9	6.2	6.8	7	7.3	7.8	8.1	-

38AKS012

SST(°F)		Air Temperature Entering Condenser (°F)								
		70	80	85	95	100	105	115	120	125
20	TC	76.8	72.5	69.6	65.2	62.7	60.1	55.5	52.8	50.2
	CMP	5.8	6.2	6.4	6.8	7	7.2	7.6	7.7	7.8
25	TC	85.5	80.3	77.7	72.7	70.1	67.4	62.4	59.5	
	CMP	6.1	6.6	6.8	7.3	7.5	7.7	8.1	8.3	-
30	TC	95	89.3	86.5	80.6	78.2	75.2	69.7	66	
	CMP	6.4	6.9	7.2	7.7	7.9	8.2	8.6	8.9	-
35	TC	104.6	99	95.9	89.5	87	83.7	77.7	-	-
	CMP	6.8	7.3	7.6	8.2	8.4	8.7	9.1	-	-
40	TC	115.5	108.8	106.1	99.2	96.4	92.5	86.4	-	-
	CMP	7.1	7.8	8	8.6	8.9	9.2	9.7	-	-
45	TC	126.5	119.9	117	109.5	106.5	102.6	95.7	-	-
	CMP	7.5	8.1	8.4	9.1	9.3	9.7	10.2	-	-
50	TC	138.2	131.1	127.1	119	115.7	111.6	-	-	-
	CMP	7.9	8.6	8.9	9.7	10	10.3	-	-	-

• TC: Total Capacity (1000Btuh) • CMP: Compressor Power Input (kW) • SST: Saturated Suction Temperature (°F)

PERFORMANCE DATA (38AKS SERIES)

38AKS013

SST(°F)		Air Temperature Entering Condenser (°F)								
		70	80	85	95	100	105	115	120	125
20	TC	99.4	87.7	83.9	77.3	73.6	70.6	62.2	58.3	50.7
	CMP	7.1	7.5	7.6	7.8	7.9	8	8.1	8.1	8
25	TC	108.3	100.3	96.1	88	83.8	80.2	71.6	66.1	61.3
	CMP	7.4	7.9	8.1	8.4	8.5	8.6	8.7	8.8	8.8
30	TC	121.7	113.1	108.6	100.4	95.7	90.7	81.9	75.7	69
	CMP	7.9	8.3	8.6	8.9	9.1	9.2	9.4	9.5	9.6
35	TC	137.4	127.1	122.1	113	108.7	103.1	91.8	86.3	78.7
	CMP	8.2	8.8	9.1	9.4	9.7	9.9	10.2	10.3	10.4
40	TC	153.5	142.3	137.9	126.8	121.6	115.3	102.5	96.2	87.6
	CMP	8.5	9.2	9.5	10.1	10.3	10.5	10.9	11.1	11.2
45	TC	169.6	158.6	153.7	141	135.6	129.8	113.9	106.8	99.1
	CMP	8.9	9.7	10	10.7	10.9	11.2	11.7	11.9	12.1
50	TC	188.1	176.2	170.8	156.5	150.4	144	128.1	118.1	109.5
	CMP	9.3	10.1	10.5	11.3	11.5	11.9	12.5	12.8	13

38AKS016

SST(°F)		Air Temperature Entering Condenser (°F)								
		70	80	85	95	100	105	115	120	125
20	TC	128.6	117.7	111.9	101.9	96.2	91.4	79.4	73.3	66.8
	CMP	9.4	9.8	10	10.3	10.3	10.4	10.2	10.1	9.9
25	TC	145.5	134	127.9	116.8	111.7	104.9	91.3	84.4	76.9
	CMP	10	10.5	10.8	11.1	11.2	11.3	11.3	11.2	11
30	TC	164.1	151.8	145.2	132.9	127.2	121.1	105.9	96.2	87.7
	CMP	10.5	11.1	11.5	12	12.1	12.3	12.4	12.3	12.2
35	TC	184.4	171.2	163.9	150.3	143.8	137	119.7	111.1	99.2
	CMP	11.1	11.9	12.3	12.9	13.1	13.3	13.5	13.5	13.5
40	TC	206.4	192.1	184.1	168.9	161.7	154	134.5	124.8	111.5
	CMP	11.6	12.5	13	13.8	14	14.3	14.7	14.8	14.8
45	TC	228.4	212.9	204	188.9	180.8	172.1	150.3	136.6	124.5
	CMP	12.2	13.3	13.9	14.6	15	15.3	15.8	16	16.1
50	TC	253.8	236.8	227	210.2	201.1	189	167.2	151.8	140.9
	CMP	12.7	14	14.6	15.6	16	16.5	17.1	17.4	17.6

38AKS024

SST(°F)		Air Temperature Entering Condenser (°F)								
		70	80	85	95	100	105	115	120	125
20	TC	144.1	134.1	128.7	119.1	113.3	108.4	96	87.9	80.7
	CMP	10.8	11.4	11.7	12.2	12.4	12.5	12.6	12.6	12.5
25	TC	162.1	151.5	145.7	134.9	128.5	122.9	108.8	101.5	91.5
	CMP	11.5	12.2	12.5	13.1	13.3	13.5	13.7	13.79	13.80
30	TC	181.7	170.3	164	152	144.8	138.5	122.4	114.2	102.9
	CMP	12.0	12.9	13.3	14.0	14.3	14.5	14.9	15.05	15.13
35	TC	203	189.3	182.3	170.3	162.2	155.1	136.9	127.7	117.6
	CMP	12.6	13.7	14.2	14.9	15.3	15.6	16.2	16.4	16.5
40	TC	224.5	211.1	203.3	189.9	180.7	172.8	152.4	142	130.4
	CMP	13.3	14.4	14.9	15.8	16.3	16.7	17.4	17.7	18.1
45	TC	249	232.7	225.8	208.9	200.5	189.2	168.7	157.2	144
	CMP	13.8	15.2	15.7	16.9	17.4	17.9	18.7	19.1	19.6
50	TC	275.3	257.4	249.7	230.9	219.2	209	186.2	172.2	159.6
	CMP	14.6	15.9	16.5	17.9	18.5	19.1	20.1	20.5	21.2

• TC: Total Capacity (1000Btuh) • CMP: Compressor Power Input (kW) • SST: Saturated Suction Temperature (°F)

PERFORMANCE DATA (38AKS SERIES)

38AKS028

SST(°F)		Air Temperature Entering Condenser (°F)								
		70	80	85	95	100	105	115	120	125
20	TC	185.2	170.9	163.4	148.8	142.7	136.4	120.6	103.4	101.7
	CMP	14.5	15.1	15.4	15.8	15.9	16	16.1	16.1	16.1
25	TC	209.4	193.9	185.7	170.9	162.3	155	136.7	127.5	115
	CMP	15.3	16.1	16.4	16.9	17.2	17.3	17.5	17.6	17.6
30	TC	235.6	219	210	193.3	183.4	175	159	143.5	129.1
	CMP	16.1	17	17.5	18.1	18.4	18.6	19	19.1	19.2
35	TC	262.4	244.3	236.2	217.4	206.1	196.5	172.6	160.5	147.6
	CMP	17.1	18.1	18.5	19.3	19.7	20	20.5	20.7	20.9
40	TC	293.4	273.5	262.3	243.3	230.5	219.7	192.4	178.8	164.1
	CMP	17.9	19.1	19.7	20.6	21.1	21.4	22.1	22.4	22.6
45	TC	327	302.5	292.4	268.3	246.7	244.4	213.6	198.3	185.7
	CMP	18.7	20.2	20.8	22	22.5	22.9	23.8	24.1	24.4
50	TC	360.3	336	324	297.7	281.3	267.3	236.3	219.1	206.6
	CMP	19.7	21.2	22	23.3	24	24.5	25.5	26	26.4

38AKS034

SST(°F)		Air Temperature Entering Condenser (°F)								
		70	80	85	95	100	105	115	120	125
20	TC	244.6	223.9	212.8	194.2	182.7	172.5	149.8	136.9	119.1
	CMP	19.3	20	20.4	20.7	20.7	20.7	20.2	19.9	19.2
25	TC	278	253.3	218.1	220.8	209.9	198.3	172.4	157.7	137.5
	CMP	20.5	21.6	22.5	22.5	22.6	22.6	22.4	22.2	21.6
30	TC	311.7	287.7	274.2	251.4	239.9	225.9	192.4	175.5	156.9
	CMP	21.9	23.1	23.7	24.4	24.6	24.7	24.7	24.5	24.2
35	TC	348.2	322	309.9	284.2	266.7	251.6	217.8	198.5	177.6
	CMP	23.4	24.8	25.3	26.2	26.7	26.9	27.1	27	26.8
40	TC	385.5	358.4	344.9	315.7	299.8	282.7	239.3	217.3	199
	CMP	24.9	26.5	27.1	28.3	28.7	29.1	29.5	29.6	29.6
45	TC	429.3	400.7	381.7	348.7	330.5	311	267.3	246.4	223.2
	CMP	26.4	28.1	29.1	30.5	31	31.5	32.1	32.3	32.4
50	TC	473.7	441.8	420.5	383	362.3	340.2	290.5	264.2	-
	CMP	27.9	29.9	31.1	33.2	33.4	34	34.9	35.2	-

38AKS044

SST(°F)		Air Temperature Entering Condenser (°F)								
		70	80	85	95	100	105	115	120	125
20	TC	292.9	270.3	259.6	240.3	229	219.4	194.9	182.5	165.1
	CMP	21.4	22.8	23.4	24.3	24.7	24.9	25.2	25.2	25.1
25	TC	329	305.2	293	272.4	262.3	248.7	221	206.8	187
	CMP	22.6	24.2	24.9	26	26.4	26.9	27.4	27.6	27.6
30	TC	368.5	345.6	333.1	309.6	295.5	280.2	252.5	232.6	215.1
	CMP	23.7	25.4	26.2	27.6	28.3	28.9	29.7	30	30.2
35	TC	411.4	386.8	373.1	346.9	331.0	317.3	282.5	260.1	255.9
	CMP	24.8	26.7	27.7	29.4	30.3	30.9	32.1	32.6	32.9
40	TC	457.8	431.2	416	386.8	369	353.6	314.4	289.3	267.2
	CMP	25.8	28	29.2	31.2	32.2	33	34.5	35.3	35.8
45	TC	507.6	475.4	460.8	429.5	409.4	392.4	348.4	326.2	299.4
	CMP	26.8	29.6	30.7	33	34.2	35.2	37.1	37.8	38.9
50	TC	557.6	525.8	507.2	474.9	452.6	433.4	384.4	353.2	-
	CMP	28.1	30.9	32.2	34.8	36.3	37.4	39.7	40.8	-

• TC: Total Capacity (1000Btuh) • CMP: Compressor Power Input (kW) • SST: Saturated Suction Temperature (°F)

Example

I. Determine cooling load, evaporator entering air temperature and quantity.

Given:

Total Cooling Cap. Required (TC)…..... 210,000 Btuh
Sensible Heat Cap. Required (SHC)….....175,000 Btuh
Condenser Entering Air Temp. (Edb.) ……..... 95 °F
Evaporator Entering Air Temp. (db./wb.)……...80/67°F
Evaporator Air Quantity ….....……..... 8000 CFM
External Static Pressure……..……..0.8 In. Wg
Length of Interconnecting Ref. Piping.....40ft. (linear)

II. Select Condensing unit-air handler combination.

For this example, from performance data tables select a 38AKS024 matched with a 39FD370. Also it is possible to match the selected Condensing unit with 39HX or 40RM(S) units. This 38AKS024/39FD370 condensing unit-air handler combination provides 226,286 Btuh of total cooling capacity and 175,292 Btuh of sensible capacity at the given conditions. If other temperature or airflow values are required, the values should be interpolated.

III. Determine sizes of liquid and suction lines.

Enter the refrigerant piping size table for 38AKS024. The sizes shown are based on an equivalent length of pipe. This equivalent length is equal to the linear length of piping indicated at top of each sizing column, plus a 50% allowance for fitting losses (for a more accurate determination of actual equivalent length in place of using the estimated 50% value). For this example, note in the linear length column that the proper pipe size is 7/8 in. for the liquid line and 1 5/8 in. for the suction line.

IV. Determine fan rpm and bhp (brake horsepower).

In SSI air handling units 39FD series catalogue, at fan performance table enter 39FD370 section at 8000 cfm and move to 0.8 in. wg external static pressure (ESP) column. Note that the condition require 1297 rpm at 5.98 bhp.

V. Determine motor and drive.

For the AHU units, find the type of drive that satisfies the 1297 rpm requirement in the 39FD Drive Data table. Next, enter the 39FD fan motor data tables, and find that for the 39FD370 unit, an alternate motor has a motor hp of 7.5 which satisfies the bhp requirement for the described example, select the alternate motor and medium static drive combination.

DIMENSIONS

Provide clearances as approximately as indicated in Figure1. These clearance recommendations are vital for service access, ventilation of the system and post-installation maintenance activities. Also for proper airflow through the condenser coils and availability of fans, compressors and filter drier services the following statements should be met.

- Ensure adequate clearance between adjacent units is maintained. The distance between any two units should be at least 1800 mm.

- There must be a minimum of 2500 mm clear air space above the unit.

- Fan discharge must be at least as high as adjacent solid walls.

- Acceptable clearance on the side with control and power box shall not be less than 1200 mm due to National Electric Code, U.S.A.

- Installation in spaces like cavity or pit is not recommended.

- Provide plenty of space to connect the suction and liquid line.

Note: The height of the Powerbox is approximately 650 mm.

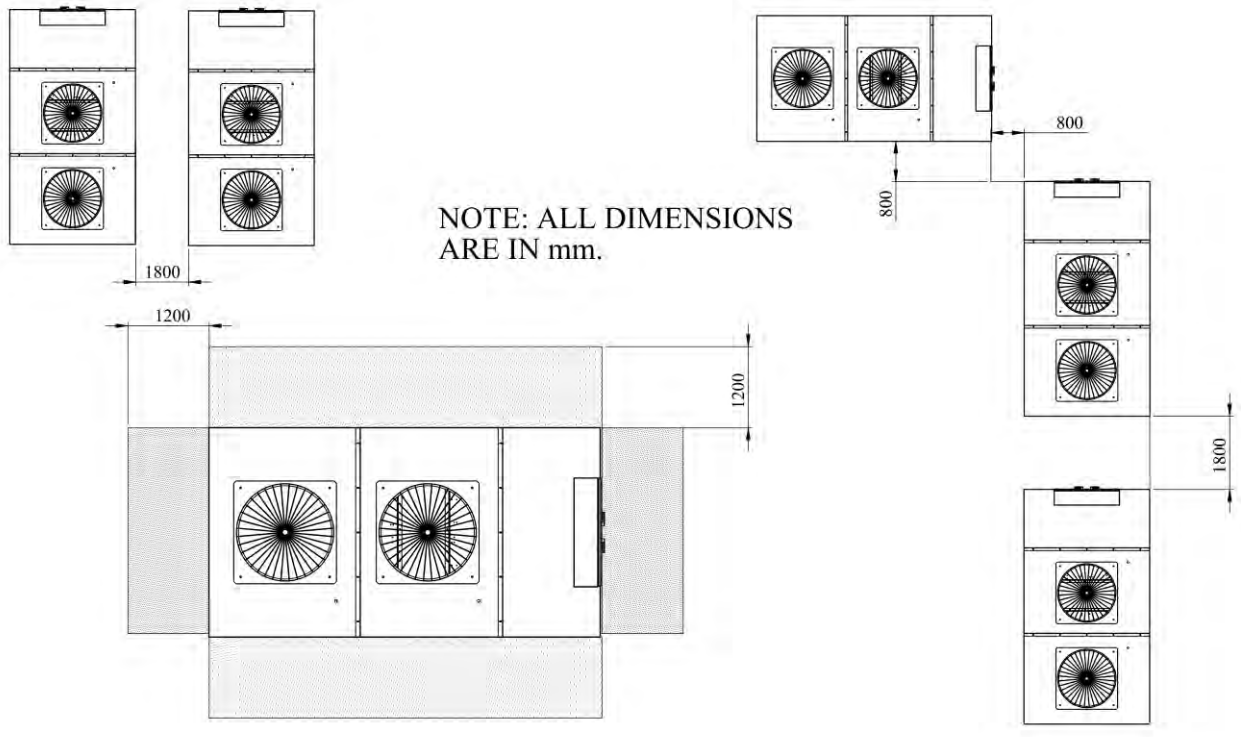
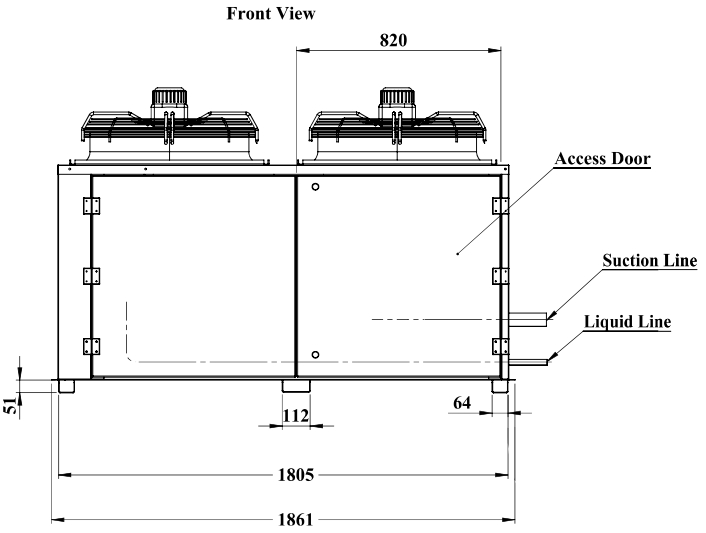
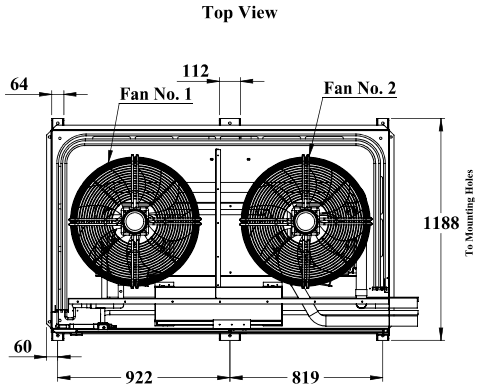


Figure 1- Service Area and multiple condensing unit arrangements

38AK(S) 013-024





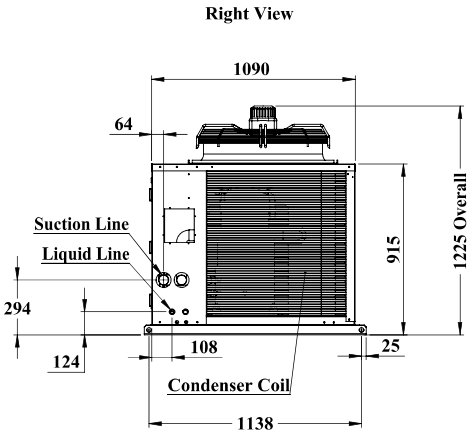
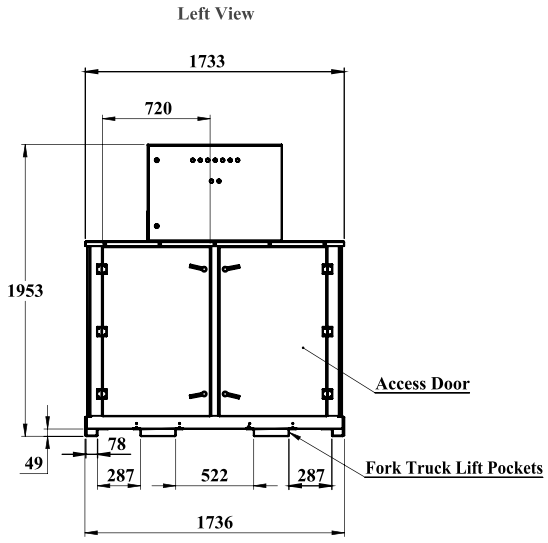
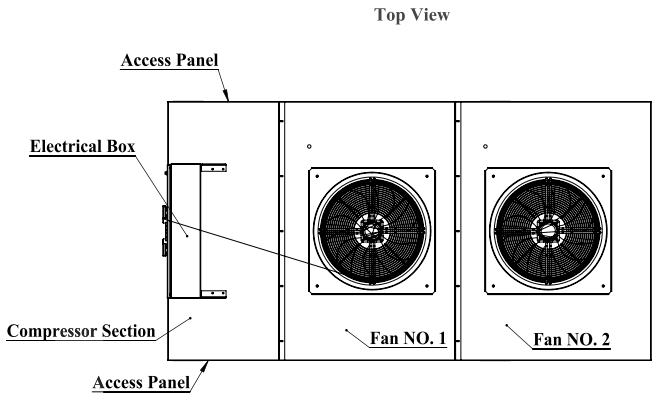


Figure 2 - 38AK(S)013 to 024 Dimensions
(All dimensions are in mm)

38AK(S) 028-034





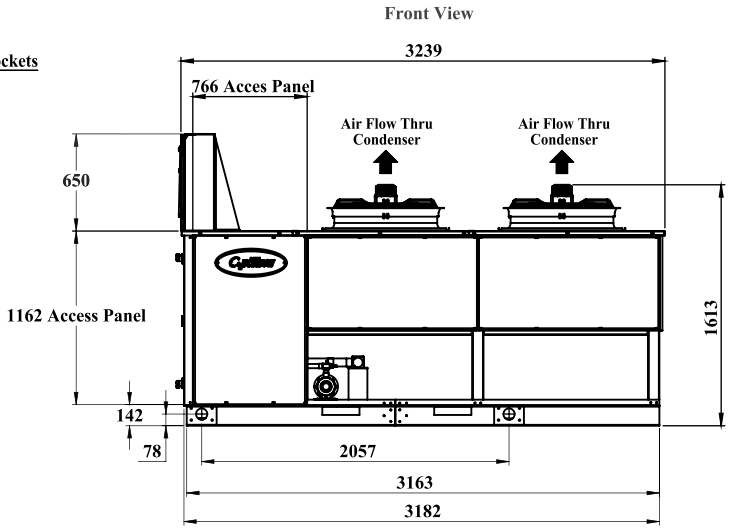


Figure 3 - 38AK(S)028 and 034
Dimensions (All dimensions are in mm)

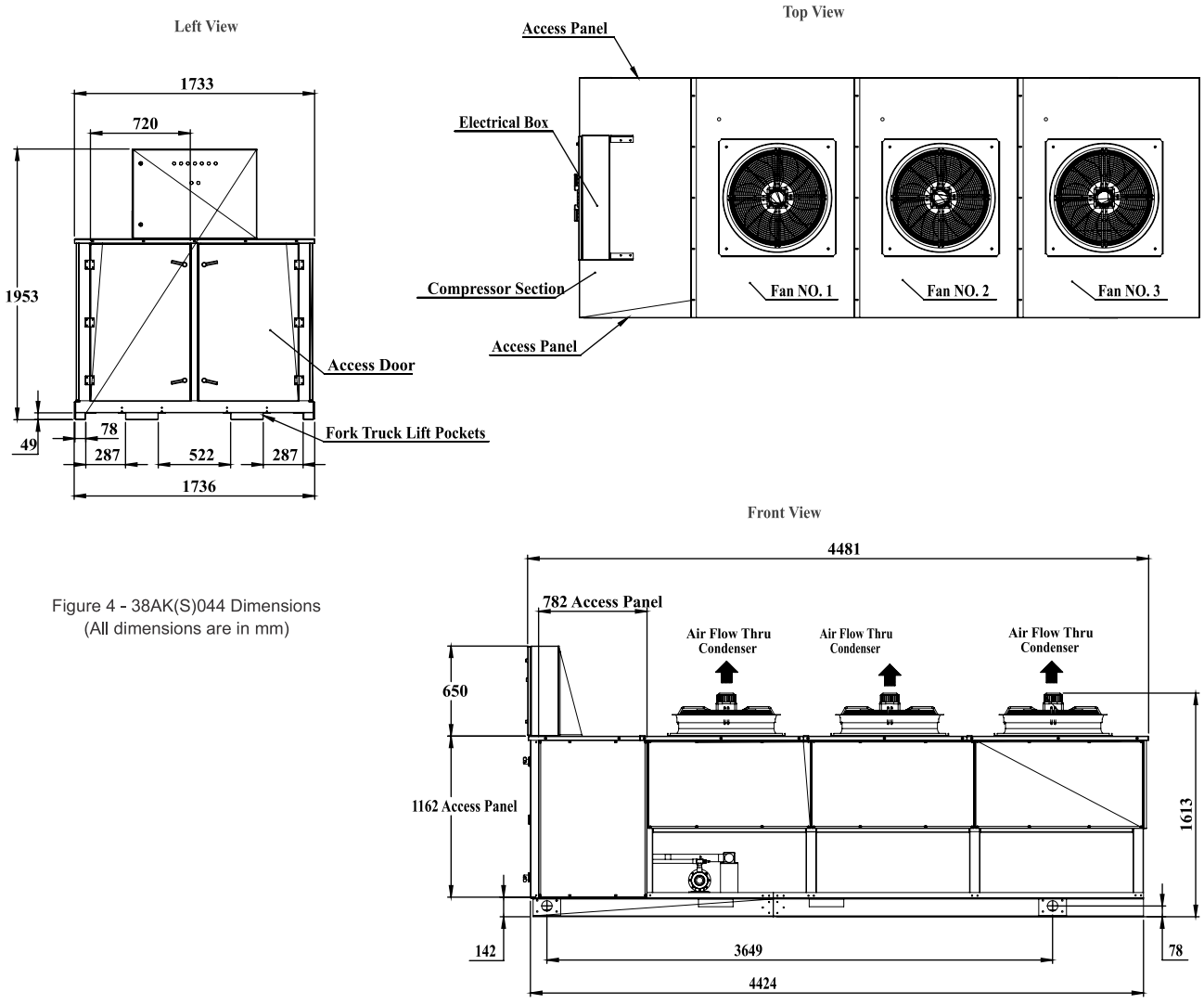


Figure 4 - 38AK(S)044 Dimensions
(All dimensions are in mm)

NOTES:

1. All piping must follow standard refrigerant piping techniques. Refer to SSI installation operation manual.
2. All wiring must comply with the applicable local and national codes.
3. 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.
4. Liquid line solenoid valve (solenoid drop control) is recommended to prevent refrigerant migration to the compressor.

Note: For the suction line, a double riser may be required.

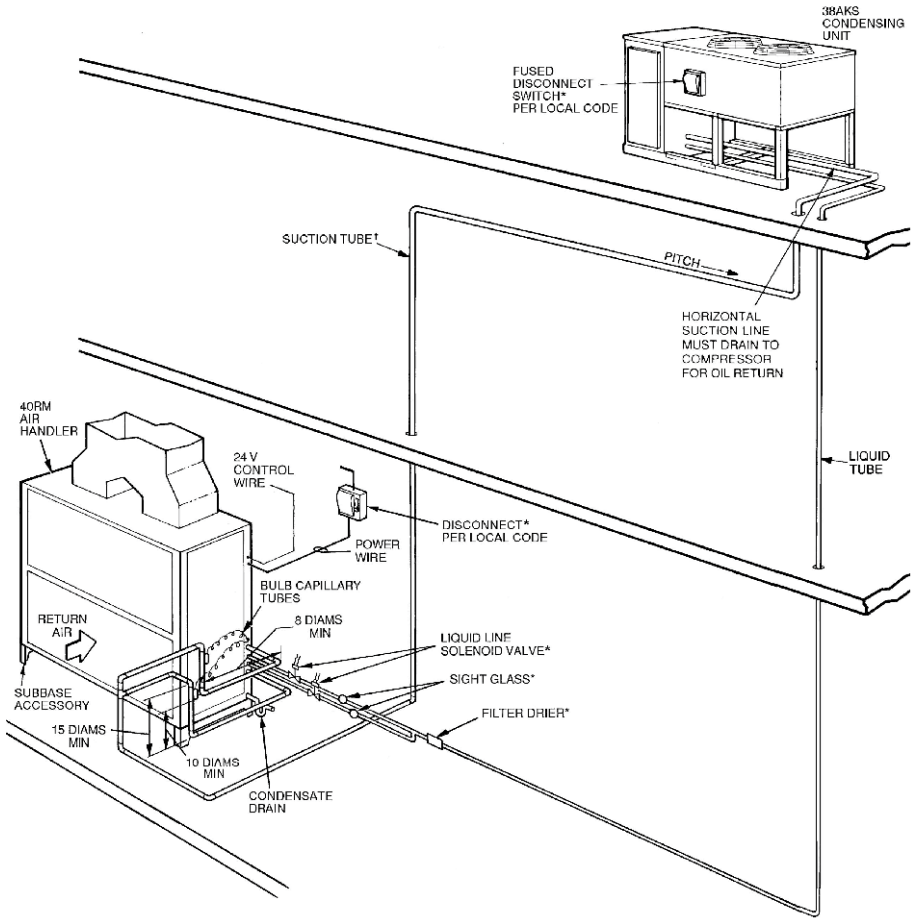


Figure 5 - Rooftop Installation-38AKS028-044

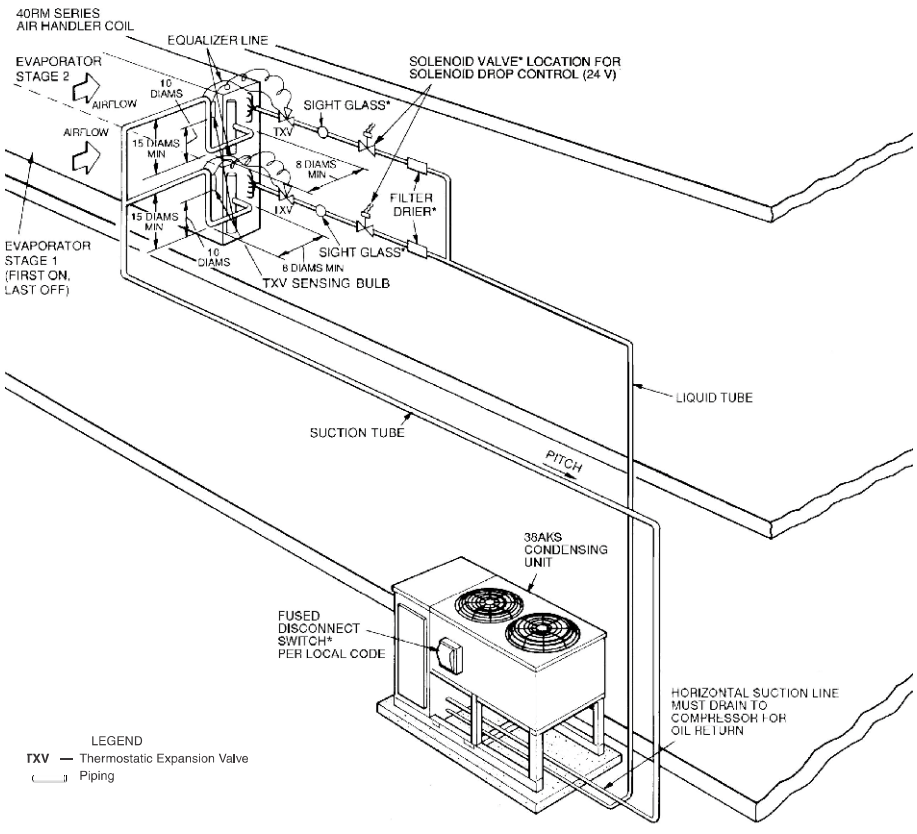


Figure 6 - Ground Level Installation-38AKS028-044

Operating Limits: 38AK(S) 008-012	
Maximum Outdoor Ambient	125 °F
Minimum Outdoor Ambient	50 °F*
Minimum Return-Air Temperature	55 °F
Normal acceptable SST Range	25 to 55 °F
Maximum Discharge Temperature	275 °F

*For lower ambient temperatures contact SSI engineers.

It is recommended to select air handler at no less than 300 CFM/ton (nominal condensing unit capacity).

Refrigerant Piping Size: 38AK(S) 008-012

UNIT 38AK(S)	Linear length of piping (ft.)							
	0-25		25-50		50-75		75-100	
	Line Size (in. OD)							
	L	S	L	S	L	S	L	S
008	1/2	7/8	5/8	1 1/8	5/8	1 3/8	5/8	1 3/8
009	5/8	1 1/8	5/8	1 1/8	5/8	1 3/8	7/8	1 3/8
012	5/8	1 1/8	5/8	1 3/8	7/8	1 3/8	7/8	1 3/8

Legend
L-Liquid Line S-Suction Line
Notes:
1. Pipe sizes are based on the maximum linear and suction lines.
2. Pipe sizes are based on the maximum linear length.

38AK(S) 013-024

Installation

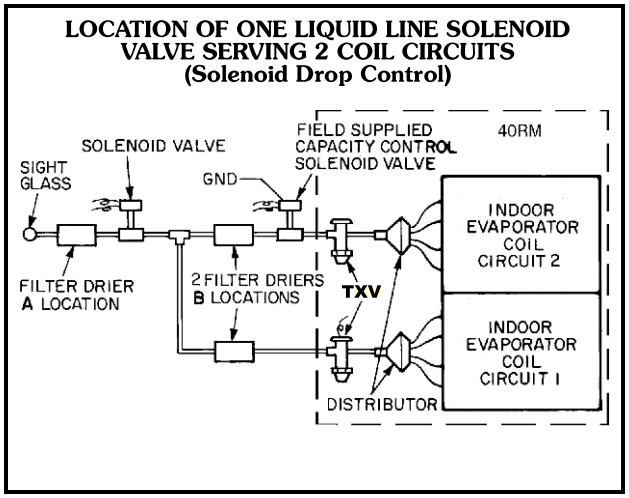
Select equipment to match or to be slightly less than peak load. This provides better humidity control, less unit cycling, and less part load operation.
When selecting vapor line sizes, oil return must be evaluated, particularly at part-load conditions.
The indoor fan must always be operating when the outdoor unit is operating.
Ductwork should be sized according to unit size, not building load.
To minimize the possibility of air recirculation, avoid the use of concentric supply/return grilles.
Indoor equipment should be selected at no less than 300 CFM/Ton.

Operating Limits: 38AK(S) 013-024	
Maximum Outdoor Ambient	125 °F
Minimum Outdoor Ambient	50 °F*
Minimum Return-Air Temperature	55 °F
Normal acceptable SST Range	25 to 55 °F
Maximum Discharge Temperature	275 °F

*For lower ambient temperatures contact SSI engineers.

Use of liquid line solenoid valves

A liquid line solenoid valve is recommended.
For dual coil application, a single liquid line solenoid valve is required to deactivate upper second-stage coil.



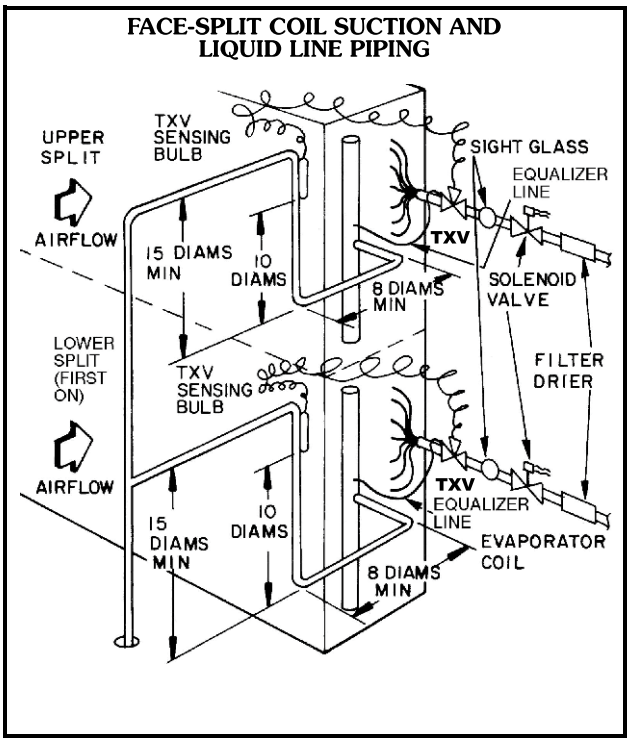


Figure 7 - Use of liquid line solenoid valves

Insulation

Refrigerant suction piping should be insulated in accordance with guidelines set forth in the Carrier System Design Manual.

Oil Return

Condensing units with multiple-step unloading may require double suction risers to assure proper oil return at minimum load operating conditions.

Refrigerant Piping Size: 38AK(S) 013-024								
Length of interconnecting Piping (ft.)								
UNIT 38AK(S)	0-25		26-50		51-75		76-100	
	Line Size (in. OD)							
	L	S	L	S	L	S	L	S
013	7/8	1 5/8	7/8	1 5/8	7/8	1 5/8	7/8	1 5/8
016	7/8	1 5/8	7/8	1 5/8	7/8	1 5/8	7/8	2 1/8
024	7/8	1 5/8	7/8	1 5/8	7/8	2 1/8	1 1/8	2 1/8

Notes:

1. Pipe sizes are based on an equivalent length equal to the maximum length. A more accurate estimate may result in smaller sizes.
2. Units must be charged in accordance with unit installation.
3. No double suction risers are needed for unit size 024.

Note: May double suction riser be required, if evaporator is below condensing unit and unloaders be used.

Refrigerant Piping Size: 38AK(S) 028-044								
Single Suction Risers								
Length of interconnecting Piping (ft.)								
UNIT 38AK(S)	0-25		26-50		51-75		76-100	
	Line Size (in. OD)							
	L	S	L	S	L	S	L	S
028	7/8	1 5/8	7/8	1 5/8	1 1/8	1 5/8	1 1/8	2 1/8
034	7/8	1 5/8	7/8	1 5/8	7/8	1 5/8	1 1/8	2 1/8
044	7/8	2 1/8	1 1/8	2 1/8	1 1/8	2 5/8	1 1/8	2 5/8

Legend
L-Liquid Line S-Suction Line
Note: liquid and suction line sizes are OD (in.)

38AK(S) 028-044

Installation

Select equipment to match or to be slightly less than peak load. This provides better humidity control, less unit cycling, and less part-load operation. When selecting vapor lines sizes, oil return should be evaluated, particularly at part load conditions. The indoor fan must always be operating when outdoor fan is operating. Unit cycles should be limited to 3 or less per hour. Multiple outdoor units may be used with a single indoor unit; those involve multiple refrigeration circuits.

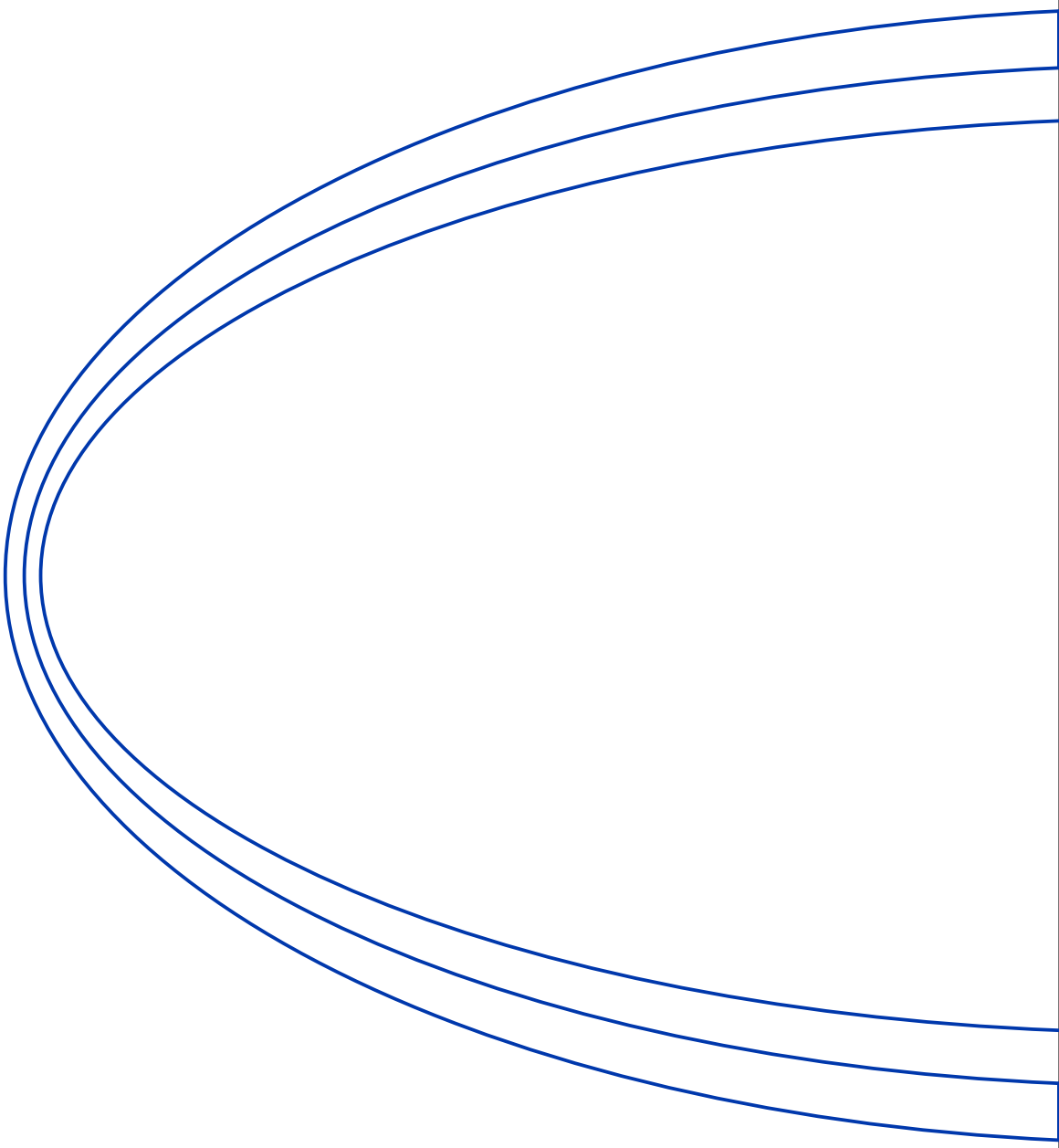
Important: When application is in a variable air volume (VAV) system, total building load is not the sum of the individual peak load. If individual peak loads are summed, the equipment tends to be oversized for the load. To minimize return-air temperature extremes, use the equipment room as a return-air plenum when applying VAV Control Systems. Indoor equipment should be selected at no less than 300 CFM/Ton.

Operating Limits: 38AK(S) 0028-044	
Maximum Outdoor Ambient	125 °F
Minimum Outdoor Ambient	50 °F*
Minimum Return-Air Temperature	55 °F
Maximum Return-Air Temperature	95 °F
Normal acceptable SST Range	30 to 55 °F
Maximum Discharge Temperature	295 °F

*For lower ambient temperatures contact SSI engineers.

ELECTRICAL DATA		
UNIT 38AK	380V/3ph/50Hz	
	Power (kW)	FLA (Amps)
008	9.35	17.45
009	11.9	22.22
012	14.2	28.09
013	22.3	39.53
016	22.7	41.84
024	27.3	53.58
028	35.94	73.6
034	44.24	78.46
044	53.16	91.02
UNIT 38AKS	380V/3ph/50Hz	
	Power (kW)	FLA (Amps)
008	7.84	13.9
009	9.1	19.2
012	11.74	19.8
013	14.08	30.7
016	18.54	42.7
024	21.62	49.1
028	27.8	60.8
034	36.72	84.8
044	43.8	99.9

FLA - Full Load Amps
- Above data should be used for cable and fuse selection



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