

Davis & Straznicky Construction Company

1234 Mockingbird Ln.
Houston, TX 77497
Tel 979-864-9543

Fax 979-874-9674

Letter of Transmittal

To: Bryant Consulting

Date: 4/21/2003

Job No. 202

Attn: Dr. John Bryant

Re:

WE ARE SENDING YOU

Attached Under separate cover via overnight mail/regular mail the following items:

SUB. AGREE.	PLANS	SHOP DRAWINGS	COPY OF LETTER	CHANGE ORDER	SAMPLES	SPECIFICATIONS	SUBMITTAL
							✓

COPIES	DATE	NO.	DESCRIPTION
1	4/21/2003	1	Carrier Model No. 40RM008, 40RM024, 40RM028, 40RM034 A.H.U.
1	4/21/2003	1	Carrier Model No. AKS008, AKS024, AKS028, AKS034 Condensing Units
1	4/21/2003	1	Corresponding Refrigerant Piping as specified by Carrier MATERIAL?

THESE ARE TRANSMITTED as checked below:

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REMARKS

Signature

Copies to:

AIR HANDLING UNIT SCHEDULE

MARK	AHU-1	AHU-2	AHU-3	AHU-4	AHU-5
AREA SERVED	MEETING ROOM	CHILDREN'S	R.R..VEST, WK.R.	STACK	STACK
CFM	3,000	3,000	7,600	10,000	12,000
EXT. ST. PR. IN W. C.	0.9	0.95	1.0	1.1	1.2
O.A. AIR CFM	600	300	780	1,000	1,000
BLOWER MOTOR					
HP	2.4	2.4	5.0	7.5	10.0
VOLTS / PHASE	460/3	460/3	460/3	460/3	460/3
COOLING COIL					
AIR TEMP.					
ENT DB/WB	79/67	77/64.5	77/64.5	77/64.5	77/64.5
LVG DB/WB	57.5/56.5	56/55	56/55	56/55	56/55
CAPACITY BTUH					
TOTAL	89,500	85,440	216,450	284,800	341,760
SENSIBLE	67,000	68,350	173,150	227,800	273,360
COIL FACE VEL. FPM	360	360	380	400	400
COIL AREA SQ. FT.	8.33	8.33	19.88	24.86	29.83
COIL ROWS/FINS/IN	3/15	3/15	3/17	3/15	3/15
COIL MODEL	R-22	R-22	R-22	R-22	R-22
HEATING COIL (REHEAT)					
AIR TEMP ENTERING	63.0	67.7	67.7	67.7	67.7
BTUH TOTAL	97,650	97,650	247,400	325,500	390,600
COIL AREA SQ. FT.	6.67	6.67	13.33	15.0	15.0
COIL FACE VEL. FPM	450	450	570	666	666
ROWS/FINS/IN	2/8.5	2/8.5	2/8.5	2/12.5	2/12.5
WATER (HEATING)					
ENT. TEMP.	180	180	180	180	180
LVG. TEMP.	160	160	160	160	160
GPM	9.8	9.8	24.7	32.5	39.0
P. D. (FT OF WATER)	5.2	5.2	7.5	8.5	7.8
MANUFACTURER	CARRIER	CARRIER	CARRIER	CARRIER	CARRIER
MODEL NO.	40RMO08	40RMO08	40RMO24	40RMO28	40RMO34
REMARKS	1,2,3,4.	1,2,3,4.	1,2,3,4.	1,2,3,4.	1,2,3,4.

1. SMOKE DETECTOR BY HVAC, INSTALLED BY ELECTRICAL CONTRACTOR
2. MOTOR STARTER BY HVAC, INSTALLED BY ELECTRICAL CONTRACTOR
3. INTERLOCK WITH OUTSIDE AIR SUPPLY FAN.
4. REFER TO SPECIFICATIONS FOR TEMPERATURE AND HUMIDITY CONTROL SYSTEM.

CONDENSING UNIT SCHEDULE

MARK	CU-1	CU-2	CU-3	CU-4	CU-5
AREA SERVED	MEETING ROOM	CHILDREN ROOM	R.R., VEST, Wk. R.	STACK AREA	STACK AREA
NOMINAL TONNAGE	7.5	7.5	20	25	30
EER	11.5	11.5	9.9	9.9	9.9
REFRIGERANT	R-22	R-22	R-22	R-22	R-22
CAPACITY					
TOTAL	89,500	85,440	216,440	285,800	341,760
SENSIBLE	67,000	68,350	173,100	222,800	273,360
STEPS,%	100, 0	100, 0	100, 50, 0	100, 66, 33	100, 66, 33
CONDENSER					
COIL					
FACE AREA	16.56	16.56	29.2	39.2	39.2
ROWS	-	-	3	2	3
FINS	-	-	15	19	17
FAN					
CFM	6,500	6,500	1,075	15,700	15,700
AMBIENT, deg	95	95	95	95	95
MOTOR, FLA	1.4	1.4	(2) 2.1 EACH	(2) 3.1 EACH	(2) 3.1 EACH
COMPRESSOR					
VOLTS/PHASE	460/3	460/3	460/3	460/3	460/3
RLA	15.7	15.7	34.7	43.6	50
LRA	80	80	173	223	253
ELECTRICAL					
MIN.CIRC.AMP	21	21	48.1	60.7	68.7
MAX.FUSE SIZE	25	25	80	100	110
PHYSICAL DIMENSIONS (IN.)	45x38x42(h)	45x39x42(h)	76x43x40(h)	128x69x52(h)	128x69x52(h)
WEIGHT	510	510	900	1,650	1,803
MANUFACTURER	CARRIER	CARRIER	CARRIER	CARRIER	CARRIER
MODEL NO.	AKS008	AKS008	AKS024	AKS028	AKS034
REMARKS	1,2,3,4,5	2,3,4,5,6	2,3,4,5,6	2,3,4,5,6	2,3,4,5,6

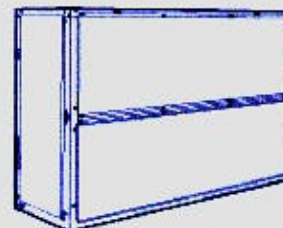
1. LOW AMBIENT OPERATION KIT.
2. LOW AND HIGH PRESSURE CONTROLS.
3. TIMED OFF CONTROL.
4. CRANKCASE HEATER.
5. FILTER-DRYER AND MOISTURE INDICATING SIGHT GLASS, SERVICE VALVES.
6. PROVIDE THERMAL EXPANSION VALVE (ONE PER CIRCUIT), LIQUID LINE SOLENOID VALVES.


[Back to Article](#)

40RM

Packaged DX and Heat Pump
Air Handlers
1,800 to 15,000 CFM

40RM - DX
40RMQ - Heat pump



Performance & Sizing Information

MODEL	NOMINAL CAPACITY TONS	NOMINAL AIRFLOW CFM	MACHINE WEIGHT (Lbs)	DIMENSIONS (in.)		
				WIDTH	HEIGHT	DEPTH
Heat Pump						
40RMQ008	7.5	3000	385	49	57	28
40RMQ012	10	4000	427	49	57	28
40RMQ016	15	6000	713	89	57	28
40RMQ024	20	8000	720	89	57	28
40RMQ028	25	10000	1050	99	67	33
Cooling Only						
40RM007	6	2400	381	49	57	28
40RM008	7.5	3000	385	49	57	28
40RM012	10	4000	405	49	57	28
40RM014	12.5	5000	670	89	57	28
40RM016	15	5000	677	89	57	28
40RM024	20	8000	690	89	57	28
40RM028	25	10000	1020	99	67	33
40RM034	30	12000	1030	99	67	33

[Return to Top](#)

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Performance data (cont)



FAN PERFORMANCE DATA — 0.0-1.2 in. wg ESP — 60 Hz, ENGLISH

UNIT	AIRFLOW (Cfm)	EXTERNAL STATIC PRESSURE (in. wg)													
		0.0		0.2		0.4		0.6		0.8		1.0		1.2	
		Rpm	Bhp	Rpm	Bhp	Rpm	Bhp	Rpm	Bhp	Rpm	Bhp	Rpm	Bhp	Rpm	Bhp
40RM 007*	1,800	399	0.19	454	0.24	548	0.35	634	0.47	713	0.60	785	0.74	850	0.89
	2,100	446	0.26	497	0.34	583	0.46	660	0.59	733	0.73	802	0.88	867	1.05
	2,400	498	0.40	541	0.47	622	0.60	683	0.74	760	0.89	824	1.05	885	1.22
	2,700	544	0.55	588	0.63	663	0.78	730	0.93	792	1.09	851	1.26	908	1.44
	3,000	594	0.73	635	0.82	707	0.99	770	1.15	828	1.32	883	1.50	937	1.69
40RM* 40RMS 008	2,250	273	0.08	493	0.37	580	0.49	656	0.62	727	0.78	784	0.92	858	1.08
	2,600	322	0.15	540	0.52	622	0.66	693	0.81	757	0.96	819	1.12	878	1.29
	3,000	552	0.65	595	0.73	673	0.91	740	1.07	800	1.24	856	1.41	910	1.60
	3,400	615	0.91	653	1.01	726	1.21	789	1.40	846	1.59	899	1.78	950	1.97
	3,750	671	1.20	706	1.31	773	1.53	834	1.74	889	1.95	940	2.16	988	2.37
40RMS 010	2,550	386	0.42	502	0.54	586	0.65	658	0.76	722	0.87	780	0.97	833	1.08
	2,975	462	0.60	556	0.72	634	0.84	701	0.95	762	1.06	818	1.18	870	1.29
	3,400	527	0.80	612	0.93	684	1.06	748	1.18	806	1.30	860	1.41	910	1.53
	3,825	593	1.05	670	1.18	737	1.31	797	1.44	852	1.56	904	1.68	952	1.80
	4,250	659	1.33	729	1.47	791	1.60	848	1.73	901	1.86	950	1.98	997	2.11
40RM* 40RMS 012	3,000	399	0.29	573	0.69	654	0.86	722	1.03	784	1.19	841	1.37	896	1.55
	3,500	604	0.92	641	1.02	714	1.22	780	1.42	838	1.61	892	1.81	942	2.01
	4,000	680	1.33	713	1.45	778	1.68	839	1.91	896	2.14	947	2.36	995	2.58
	4,500	756	1.86	787	1.99	845	2.26	901	2.52	955	2.78	1005	3.03	1051	3.28
	5,000	834	2.51	861	2.67	914	2.96	966	3.25	1018	3.54	1064	3.82	1109	4.11
40RMS 012	3,000	421	0.35	592	0.73	670	0.90	737	1.06	787	1.23	854	1.41	908	1.59
	3,500	626	0.98	684	1.08	735	1.28	798	1.48	855	1.67	908	1.87	958	2.07
	4,000	706	1.42	738	1.54	803	1.77	862	2.00	917	2.23	967	2.45	1014	2.67
	4,500	786	1.99	815	2.12	873	2.39	929	2.65	980	2.90	1028	3.16	1073	3.41
	5,000	867	2.70	893	2.84	946	3.14	997	3.43	1046	3.72	1092	4.00	1135	4.28
40RM* 40RMS 014	3,750	394	0.40	453	0.52	558	0.80	643	1.10	717	1.39	785	1.71	848	2.04
	4,300	436	0.57	487	0.70	586	1.00	670	1.34	742	1.67	808	2.01	867	2.36
	5,000	492	0.86	535	0.99	623	1.31	704	1.69	775	2.08	836	2.47	896	2.86
	5,700	550	1.23	587	1.37	664	1.71	740	2.11	809	2.55	872	2.99	929	3.43
	6,250	596	1.59	630	1.74	700	2.09	770	2.51	837	2.97	899	3.45	955	3.94
40RM* 40RMS 016	4,500	428	0.59	475	0.70	570	0.99	656	1.33	730	1.68	796	2.02	856	2.38
	5,300	488	0.92	528	1.04	609	1.34	699	1.71	762	2.11	827	2.51	886	2.92
	6,000	542	1.29	578	1.43	649	1.74	721	2.11	791	2.55	856	3.00	914	3.46
	6,800	604	1.83	637	1.99	700	2.32	763	2.70	826	3.15	888	3.64	946	4.15
	7,500	660	2.42	690	2.59	747	2.95	804	3.34	861	3.79	919	4.29	975	4.83
40RMS 016	4,500	437	0.61	483	0.72	576	1.01	660	1.35	732	1.69	797	2.03	856	2.38
	5,300	499	0.95	538	1.07	617	1.37	696	1.74	767	2.13	830	2.53	888	2.94
	6,000	555	1.34	580	1.48	659	1.79	730	2.17	798	2.58	860	3.04	918	3.49
	6,800	620	1.91	651	2.06	712	2.39	774	2.78	836	3.22	896	3.71	952	4.21
	7,500	677	2.52	706	2.69	761	3.04	817	3.44	873	3.89	929	4.39	984	4.93
40RM* 40RMS 024	6,000	532	1.25	589	1.39	639	1.69	711	2.06	781	2.48	846	2.93	905	3.39
	7,000	606	1.93	641	2.09	702	2.42	763	2.80	824	3.23	885	3.71	943	4.23
	8,000	686	2.83	716	3.01	770	3.38	823	3.77	876	4.21	930	4.70	983	5.24
	9,000	764	3.97	791	4.18	841	4.59	888	5.02	935	5.47	982	5.96	1030	6.51
	10,000	843	5.38	868	5.62	914	6.09	957	6.55	1000	7.02	1042	7.53	1084	8.08
40RMS 024	6,000	542	1.29	577	1.42	646	1.72	716	2.09	785	2.51	849	2.95	907	3.40
	7,000	620	1.99	652	2.15	711	2.48	771	2.85	831	3.28	890	3.76	947	4.27
	8,000	700	2.92	728	3.10	781	3.46	833	3.85	885	4.29	938	4.78	990	5.32
	9,000	781	4.10	806	4.30	854	4.71	900	5.13	946	5.58	993	6.08	1039	6.62
	10,000	862	5.58	885	5.79	929	6.24	971	6.70	1012	7.18	1054	7.69	1096	8.24
40RM* 40RMS 028	7,500	456	1.29	490	1.47	558	1.85	621	2.25	678	2.64	728	3.06	778	3.60
	8,750	521	1.98	551	2.18	608	2.61	664	3.07	720	3.53	770	3.99	816	4.45
	10,000	587	2.88	614	3.11	664	3.59	714	4.09	763	4.62	812	5.15	857	5.68
	11,250	653	4.03	678	4.29	724	4.82	768	5.37	812	5.95	856	6.54	899	7.14
	12,500	720	5.46	743	5.75	785	6.33	825	6.93	865	7.55	904	8.20	944	8.86
40RMS 028	7,500	478	1.39	510	1.58	579	1.99	644	2.40	701	2.81	752	3.29	804	3.96
	8,750	545	2.14	574	2.35	633	2.81	691	3.29	747	3.77	797	4.25	842	4.76
	10,000	615	3.12	641	3.36	692	3.87	743	4.41	794	4.96	843	5.51	888	6.05
	11,250	685	4.37	709	4.64	754	5.20	800	5.79	845	6.40	891	7.02	935	7.64
	12,500	756	5.92	778	6.22	819	6.83	860	7.47	901	8.14	942	8.83	983	9.52
40RM* 40RMS 034	9,000	521	1.99	550	2.25	616	2.77	676	3.23	731	3.72	782	4.20	829	4.70
	10,500	596	3.16	623	3.40	672	3.89	720	4.40	767	4.94	814	5.50	859	6.05
	12,000	673	4.63	698	4.90	743	5.45	785	6.02	826	6.62	867	7.23	908	7.87
	13,500	751	6.51	773	6.82	815	7.44	853	8.06	890	8.71	927	9.38	963	10.07
	15,000	829	8.84	850	9.19	888	9.88	924	10.57	958	11.27	991	11.99	1024	12.73

*With standard 3-row coil.
See Legend and Notes on page 52.

Electrical data



STANDARD MOTORS

UNIT	V ³ -PH-Hz	VOLTAGE LIMITS	FAN MOTOR		POWER SUPPLY	
			Hp (kW)	FLA	Minimum Circuit Amps	MOCP
40RM 007	208/230-1-60	187-253	1.3 (0.97)	7.6	9.5	15
	208/230-3-60	187-253	2.4 (1.79)	5.2	6.5	15
	460-3-80	414-506	2.4 (1.79)	2.6	3.3	15
	575-3-80	518-632	1.0 (0.75)	1.4	1.8	15
	230-3-50	207-253	2.4 (1.79)	5.2	6.5	15
40RM 40RMQ 40RMS 008	400-3-50	360-440	2.4 (1.79)	2.6	3.3	15
	208/230-1-60	187-253	2.4 (1.79)	11.0	13.8	20
	208/230-3-60	187-253	2.4 (1.79)	5.2	6.5	15
	460-3-80	414-506	2.4 (1.79)	2.6	3.3	15
	575-3-80	518-632	2.0 (1.49)	2.3	2.9	15
40RMS 010	230-3-50	207-253	2.4 (1.79)	5.2	6.5	15
	400-3-50	360-440	2.4 (1.79)	2.6	3.3	15
	208/230-1-60	187-253	2.4 (1.79)	11.0	13.8	20
	208/230-3-60	187-253	2.4 (1.79)	5.2	6.5	15
	460-3-80	414-506	2.4 (1.79)	2.6	3.3	15
40RM 40RMQ 40RMS 012	575-3-80	518-632	2.0 (1.49)	2.3	2.9	15
	230-3-50	207-253	2.9 (2.16)	7.5	9.4	15
	400-3-50	360-440	2.9 (2.16)	3.4	4.3	15
	208/230-3-60	187-253	2.9 (2.16)	7.5	9.4	15
	460-3-80	414-506	2.4 (1.79)	2.6	3.3	15
40RM 40RMS 014	575-3-60	518-632	3.0 (2.24)	3.6	4.8	15
	230-3-50	207-253	2.9 (2.16)	7.5	9.4	15
	400-3-50	360-440	2.9 (2.16)	3.4	4.3	15
	208/230-3-60	187-253	2.9 (2.16)	7.5	9.4	15
	460-3-60	414-506	2.9 (2.16)	3.4	4.3	15
40RM 40RMQ 40RMS 016	575-3-60	518-632	3.0 (2.24)	3.8	4.8	15
	230-3-50	207-253	2.9 (2.16)	7.5	9.4	15
	400-3-50	360-440	2.9 (2.16)	3.4	4.3	15
	208/230-3-60	187-253	3.7 (2.76)	10.2	12.8	20
	460-3-60	414-506	3.7 (2.76)	4.8	6.0	15
40RM 40RMQ 40RMS 024	575-3-60	518-632	3.0 (2.24)	3.8	4.8	15
	230-3-50	207-253	2.9 (2.16)	7.5	9.4	15
	400-3-50	360-440	2.9 (2.16)	3.4	4.3	15
	208/230-3-60	187-253	5.0 (3.73)	14.6/12.8	18.3/16.0	30/25
	460-3-60	414-506	5.0 (3.73)	6.4	8.0	15
40RM 40RMQ 40RMS 028	575-3-60	518-632	5.0 (3.73)	5.1	6.4	15
	230-3-50	207-253	5.0 (3.73)	13.2	16.5	25
	400-3-50	360-440	5.0 (3.73)	7.6	9.5	15
	208/230-3-60	187-253	7.5 (5.59)	21.5/19.4	26.9/24.3	45/40
	460-3-60	414-506	7.5 (5.59)	9.7	12.1	20
40RM 40RMS 034	575-3-60	518-632	7.5 (5.59)	7.8	9.8	15
	230-3-50	207-253	7.5 (5.59)	19.8	24.8	40
	400-3-50	360-440	7.5 (5.59)	11.4	14.3	25
	208/230-3-60	187-253	10.0 (7.46)	28.2/26.8	35.3/33.5	60/60
	460-3-60	414-506	10.0 (7.46)	13.4	16.8	30
40RM 40RMS 034	575-3-60	518-632	10.0 (7.46)	10.3	12.9	20
	230-3-50	207-253	10.0 (7.46)	28.0	35.0	60
	400-3-50	360-440	10.0 (7.46)	16.1	20.1	30

See Legend and Notes on page 56.

Performance data



40RM WITH STANDARD COIL COOLING CAPACITIES — ENGLISH

UNIT 40RM (Standard 3 Row Coil)	EVAPORATOR AIR		COIL REFRIGERANT TEMP (F)									
	Airflow (Cfm) BF	Ewb (F)	30		35		40		45		50	
			TC	SHC	TC	SHC	TC	SHC	TC	SHC	TC	SHC
007	1,800 0.06	72	116	55	104	50	93	46	79	40	84	35
		67	96	61	85	56	74	50	61	45	47	40
		62	80	66	69	61	57	55	46	46	39	39
	2,400 0.10	72	135	65	121	60	108	54	92	48	75	42
		67	112	73	99	68	86	62	71	56	55	49
		62	94	81	81	75	67	67	56	56	47	47
	3,000 0.12	72	150	73	135	68	120	62	102	56	83	49
		67	125	85	112	78	96	71	80	65	61	57
		62	105	95	90	86	75	75	64	64	54	54
008	2,250 0.06	72	144	69	130	63	116	57	99	50	80	43
		67	120	76	106	70	92	63	76	56	59	50
		62	100	83	87	76	71	69	57	57	49	49
	3,000 0.10	72	169	81	151	75	135	68	114	61	94	53
		67	140	92	124	85	108	77	89	69	69	62
		62	118	101	102	94	84	84	70	70	59	59
	3,750 0.12	72	187	92	168	85	150	78	127	70	104	61
		67	157	106	140	97	120	89	100	81	77	72
		62	132	118	112	108	94	94	80	80	68	68
012	3,000 0.05	72	193	92	174	81	154	76	132	67	108	58
		67	161	102	143	93	123	85	102	76	79	67
		62	134	111	116	102	96	93	78	78	66	66
	4,000 0.07	72	223	108	201	99	179	91	153	81	125	71
		67	186	122	166	113	143	104	119	93	92	82
		62	157	136	136	126	113	113	95	95	80	80
	5,000 0.12	72	246	122	222	112	198	103	169	93	138	81
		67	207	140	185	131	159	120	132	109	102	97
		62	175	159	149	145	126	126	109	109	92	92
014	3,750 0.06	72	223	107	204	99	183	91	157	81	127	70
		67	188	121	169	112	144	102	118	90	94	81
		62	154	133	136	123	114	111	94	94	80	80
	5,000 0.08	72	259	126	234	117	210	108	180	97	145	85
		67	220	146	194	136	166	124	138	112	110	100
		62	178	163	156	150	134	134	114	114	97	97
	6,250 0.10	72	284	142	257	132	230	122	198	111	160	98
		67	242	166	209	154	183	145	153	131	119	117
		62	197	188	172	172	150	150	130	130	111	111
018	4,500 0.03	72	282	134	254	123	228	112	194	100	162	89
		67	233	149	209	138	178	125	149	112	117	99
		62	192	163	169	151	141	138	116	116	98	98
	5,000 0.05	72	320	156	293	145	263	134	223	119	179	104
		67	276	181	243	167	207	153	174	137	137	123
		62	225	200	198	185	167	167	140	140	119	119
	7,500 0.08	72	358	177	319	163	290	152	248	137	197	120
		67	305	208	263	192	229	178	193	160	153	144
		62	251	222	212	182	188	188	161	161	136	136
024	6,000 0.03	72	365	174	330	161	296	147	254	131	208	114
		67	309	198	274	182	234	166	195	150	153	132
		62	250	216	221	200	186	182	155	155	132	132
	8,000 0.06	72	416	203	378	189	338	174	291	157	235	138
		67	354	237	305	217	269	202	224	183	179	163
		62	290	264	253	245	218	218	187	187	159	159
	10,000 0.07	72	454	228	413	213	373	198	319	179	259	160
		67	376	266	338	251	296	235	250	214	194	189
		62	316	303	279	278	244	244	213	213	182	182

See Legend and Notes on page 26.



HYDRONIC HEATING CAPACITIES — ENGLISH

UNIT	AIRFLOW (Cfm)	1-ROW STEAM*		2-ROW HOT WATER COIL†			
		Cap.	Ldb	Cap.	Ldb	Water Flow (Gpm)	PD
40RM 007	1,800	146	134	156.0	140	15.8	3.4
	2,400	173	126	183.0	131	18.3	4.3
	3,000	209	123	206.0	124	20.6	5.2
40RM 40RMQ 40RMS 008	2,250	188	129	174.0	133	17.4	4.0
	3,000	209	123	206.0	124	20.6	5.2
	3,750	240	117	238.0	118	23.8	6.5
40RMS 010	2,550	183	125	199.0	132	19.9	4.5
	3,400	229	121	233.0	123	23.3	5.7
	4,250	254	114	271.0	119	27.1	7.2
40RM 40RMS 40RMQ 012	3,000	209	123	299.0	152	29.9	5.0
	4,000	243	115	275.0	124	27.5	6.6
	5,000	279	111	316.0	119	31.6	8.2
40RM 40RMS 014	3,750	370	150	382.0	149	38.2	4.2
	5,000	425	137	408.0	138	40.8	5.1
	6,250	465	128	458.0	128	46.8	6.0
40RM 40RMQ 40RMS 016	4,500	402	141	412.0	145	41.2	4.5
	6,000	458	129	471.0	133	47.1	5.5
	7,500	479	118	529.0	125	52.9	6.6
40RM 40RMQ 40RMS 024	6,000	458	129	506.0	138	50.6	5.1
	8,000	487	115	584.0	128	58.4	6.3
	10,000	499	105	652.0	120	65.2	7.5
40RM 40RMQ 40RMS 028	7,500	511	122	649.0	140	64.9	5.7
	10,000	575	112	752.0	130	75.2	7.1
	12,500	626	106	842.0	122	84.2	8.5
40RM 40RMS 034	9,000	560	117	735.0	136	73.5	6.2
	12,000	621	107	850.0	126	85.0	7.8
	15,000	670	101	950.0	118	95.0	8.3

LEGEND

Cap. — Capacity (Btuh in thousands)
Ldb — Leaving-Air Dry-Bulb Temp (F)
PD — Pressure Drop (ft water)

*Based on 5 psig steam, 60 F entering-air temperature. All steam coils are non-freeze type.

†Based on 200 F entering water, 20 F water temperature drop, 60 F entering-air temperature.

NOTES:

- Maximum operating limits for heating coils: 20 psig at 260 F.
- Leaving db = ent db (F) + $\frac{\text{Capacity (Btuh)}}{1.1 \times \text{cfm}}$
- See Heating Correction Factors table.

HEATING CORRECTION FACTORS — ENGLISH

HOT WATER COIL						
Water Temp Drop (F)	Ent Water Temp (F)	Entering-Air Temp (F)				
		40	50	60	70	80
10	140	0.72	0.64	0.57	0.49	0.41
	160	0.89	0.81	0.74	0.66	0.58
	180	1.06	0.98	0.90	0.83	0.75
	200	1.22	1.15	1.07	1.00	0.92
	220	1.39	1.32	1.24	1.17	1.09
20	140	0.64	0.57	0.49	0.41	0.33
	160	0.81	0.74	0.66	0.58	0.51
	180	0.98	0.91	0.83	0.75	0.68
	200	1.15	1.08	1.00	0.93	0.85
	220	1.32	1.25	1.17	1.10	1.02
30	140	0.56	0.49	0.41	0.33	0.24
	160	0.74	0.66	0.58	0.51	0.43
	180	0.91	0.83	0.75	0.68	0.60
	200	1.08	1.00	0.93	0.85	0.78
	220	1.25	1.18	1.10	1.03	0.95

STEAM COIL					
Steam Pressure (psig)	Entering-Air Temp (F)				
	40	50	60	70	80
0	1.06	0.98	0.91	0.85	0.78
2	1.09	1.02	0.95	0.89	0.82
5	1.13	1.06	1.00	0.93	0.87

NOTE: Multiply capacity given in the Hydronic Heating Capacities table by the correction factor for conditions at which unit is actually operating. Correct leaving-air temperature using formula in Note 2 of Hydronic Heating Capacities table.

HYDRONIC HEATING CAPACITIES — SI

UNIT	AIRFLOW (L/s)	1-ROW STEAM*		2-ROW HOT WATER COIL†			
		Cap.	Ldb	Cap.	Ldb	Water Flow (L/s)	PD
40RM 007	850	43	57	46	59	1.0	10.2
	1150	53	53	53	53	1.2	12.8
	1450	62	51	61	50	1.3	16.0
40RM 40RMQ 40RMS 008	1000	48	55	50	56	1.1	11.5
	1400	59	50	60	50	1.3	15.3
	1800	71	47	70	47	1.5	19.5
40RMS 010	1200	54	52	58	55	1.3	13.4
	1600	64	48	69	50	1.5	17.3
	2000	74	46	79	48	1.7	21.4
40RM 40RMS 40RMQ 012	1450	62	50	68	65	1.9	15.0
	1900	72	46	90	54	2.0	24.7
	2350	82	44	93	48	2.0	24.5
40RM 40RMS 014	1750	108	66	106	65	2.3	12.4
	2350	122	58	120	57	2.6	15.2
	2950	136	53	134	52	2.9	17.9
40RM 40RMQ 40RMS 016	2100	117	61	120	62	2.6	13.3
	2800	129	53	137	55	3.0	16.2
	3500	140	48	154	51	3.3	19.5
40RM 40RMQ 40RMS 024	2900	135	53	150	58	3.3	15.6
	3800	140	46	170	52	3.7	18.6
	4700	146	41	191	48	4.1	22.3
40RM 40RMQ 40RMS 028	3500	149	50	189	60	4.1	16.9
	4700	166	44	218	53	4.7	20.8
	5900	183	41	247	50	5.4	25.4
40RM 40RMS 034	4250	164	47	215	57	4.7	18.5
	5650	180	41	247	51	5.4	22.8
	7050	196	38	278	48	6.0	27.7

LEGEND

Cap. — Capacity (kW)
Ldb — Leaving-Air Dry-Bulb Temp (C)
PD — Pressure Drop (kPa)

*Based on 34.5 kPag steam, 15.6 C entering-air temperature. All steam coils are non-freeze type.

†Based on 93.3 C entering water temperature, 11.1 C water temperature drop, 15.6 C entering-air temperature.

NOTES:

- Maximum operating limits for heating coils: 138 kPag at 126.7 C.
- Leaving db = ent db (C) + $\frac{\text{Capacity (kW)}}{1.23 \times 10^{-3} \times \text{L/s}}$
- See Heating Correction Factors table.

HEATING CORRECTION FACTORS — SI

HOT WATER COIL						
Water Temp Drop (C)	Ent Water Temp (C)	Entering-Air Temp (C)				
		4	10	16	20	25
5	60	0.72	0.64	0.55	0.50	0.43
	70	0.87	0.79	0.71	0.65	0.58
	80	1.02	0.94	0.86	0.80	0.73
	90	1.17	1.09	1.01	0.95	0.89
	100	1.32	1.24	1.16	1.10	1.04
11	60	0.65	0.56	0.48	0.42	0.35
	70	0.80	0.72	0.63	0.58	0.51
	80	0.95	0.87	0.79	0.73	0.66
	90	1.10	1.02	0.94	0.89	0.82
	100	1.26	1.18	1.09	1.04	0.97
16	60	0.56	0.48	0.39	0.33	0.28
	70	0.72	0.63	0.55	0.49	0.42
	80	0.87	0.79	0.70	0.65	0.58
	90	1.02	0.94	0.86	0.81	0.74
	100	1.18	1.10	1.02	0.97	0.90

STEAM COIL					
Steam Pressure (kPag)	Entering-Air Temp (C)				
	4	10	16	20	25
0	1.07	0.99	0.91	0.86	0.80
14	1.10	1.02	0.95	0.90	0.84
35	1.14	1.07	0.99	0.95	0.89

NOTE: Multiply capacity given in the Hydronic Heating Capacities table by the correction factor for conditions at which unit is actually operating. Correct leaving-air temperature using formula in Note 2 of Hydronic Heating Capacities table.

Performance data (cont)



COMBINATION RATINGS (cont)

UNIT 38AKS024 (cont)

38AKS024/40RM024 WITH STANDARD 3-ROW COIL										
Temp (F) Air Entering Condenser (Edb)	Evaporator Air — Cfm									
	6000			8000			10,000			
	Evaporator Air — Ewb (F)									
	72	67	62	72	67	62	72	67	62	
85 TC	256.4	236.5	216.9	267.0	247.5	229.7	272.9	255.3	240.0	
85 SHC	131.9	167.0	208.9	148.3	192.9	229.7	162.8	216.4	240.0	
85 kW	20.80	19.56	18.54	21.15	20.13	19.21	21.48	20.54	19.75	
95 TC	224.8	225.2	206.5	255.0	235.6	219.4	260.3	243.3	229.7	
95 SHC	127.5	182.4	199.9	144.0	187.9	219.4	158.3	211.0	229.7	
95 kW	22.12	21.01	19.96	22.69	21.60	20.88	22.89	22.04	21.27	
100 TC	234.0	220.1	202.3	248.6	229.9	214.8	253.5	237.4	224.9	
100 SHC	125.3	160.3	196.2	141.7	185.5	214.8	156.0	208.2	224.9	
100 kW	22.80	21.88	20.63	23.37	22.26	21.37	23.66	22.70	21.97	
105 TC	233.1	214.3	197.1	242.5	223.9	209.6	247.1	231.3	219.6	
105 SHC	123.0	157.9	191.6	139.5	182.9	209.6	153.7	205.5	219.6	
105 kW	23.50	22.30	21.20	24.09	22.91	22.00	24.39	23.38	22.84	
115 TC	221.0	203.1	187.2	229.7	211.9	199.4	233.6	218.9	209.2	
115 SHC	118.4	153.3	183.1	134.8	177.8	199.4	149.0	199.8	209.2	
115 kW	24.84	23.56	22.43	25.46	24.18	23.30	25.74	24.69	24.00	

38AKS024/40RM028 WITH STANDARD 3-ROW COIL										
Temp (F) Air Entering Condenser (Edb)	Evaporator Air — Cfm									
	7500			10,000			12,500			
	Evaporator Air — Ewb (F)									
	72	67	62	72	67	62	72	67	62	
85 TC	275.0	253.1	235.5	284.8	262.9	249.6	289.9	271.8	261.5	
85 SHC	148.4	191.3	231.9	168.6	222.7	249.6	188.3	250.8	261.5	
85 kW	21.57	20.43	19.51	22.08	20.94	20.25	22.35	21.39	20.87	
95 TC	262.7	240.6	224.5	272.2	250.1	238.8	276.9	258.9	250.7	
95 SHC	143.9	186.3	221.9	164.2	217.4	238.8	184.0	245.3	250.6	
95 kW	23.13	21.88	20.97	23.67	22.42	21.78	23.93	22.91	22.46	
100 TC	256.1	234.5	219.6	285.0	243.6	233.5	269.4	252.1	245.1	
100 SHC	141.5	183.8	217.3	161.7	214.7	233.5	181.5	242.4	245.1	
100 kW	23.81	22.53	21.65	24.34	23.07	22.47	24.80	23.57	23.16	
105 TC	249.9	228.2	214.0	258.6	237.1	228.0	262.8	245.7	239.5	
105 SHC	139.2	181.2	212.2	159.4	212.1	228.0	179.3	239.5	239.5	
105 kW	24.56	23.18	22.28	25.12	23.75	23.17	25.39	24.30	23.91	
115 TC	236.6	215.4	203.1	244.7	223.8	216.8	248.4	232.1	228.0	
115 SHC	134.3	176.1	202.2	154.6	206.6	216.8	174.5	233.6	228.0	
115 kW	25.96	24.44	23.58	26.54	25.04	24.54	26.80	25.64	25.34	

UNIT 38AKS028

38AKS028/40RM024 WITH STANDARD 3-ROW COIL										
Temp (F) Air Entering Condenser (Edb)	Evaporator Air — Cfm									
	6000			8000			10,000			
	Evaporator Air — Ewb (F)									
	72	67	62	72	67	62	72	67	62	
85 TC	305.1	279.8	—	320.3	295.8	—	330.3	305.7	279.5	
85 SHC	150.5	184.8	—	167.6	213.3	—	183.0	239.4	279.5	
85 kW	25.59	24.45	—	26.28	25.17	—	26.73	25.62	24.44	
95 TC	292.8	268.8	—	306.8	283.5	257.9	315.7	292.9	269.8	
95 SHC	145.8	180.3	—	162.7	208.1	257.9	177.8	233.6	269.8	
95 kW	27.58	26.34	—	28.30	27.09	25.77	28.76	27.58	26.38	
100 TC	286.3	262.5	237.6	300.0	276.8	252.2	308.8	286.1	263.9	
100 SHC	143.3	177.7	227.0	180.3	205.3	252.2	175.3	230.5	263.9	
100 kW	28.50	27.18	25.81	29.25	27.97	26.81	29.72	28.48	27.26	
105 TC	279.8	258.7	232.8	292.9	270.3	247.1	300.9	279.4	258.6	
105 SHC	140.8	175.3	222.8	157.7	202.5	247.1	172.6	227.4	258.6	
105 kW	28.35	27.86	26.33	30.19	28.74	27.25	30.71	29.32	27.99	
115 TC	266.8	245.0	223.2	278.7	257.4	238.9	285.7	265.9	248.0	
115 SHC	135.9	170.5	214.4	152.6	187.1	238.9	167.3	221.3	248.0	
115 kW	31.21	29.70	28.19	32.03	30.56	29.14	32.52	31.15	29.91	

38AKS028/40RM034 WITH STANDARD 3-ROW COIL										
Temp (F) Air Entering Condenser (Edb)	Evaporator Air — Cfm									
	9000			12,000			15,000			
	Evaporator Air — Ewb (F)									
	72	67	62	72	67	62	72	67	62	
85 TC	353.9	325.8	300.2	367.2	339.2	318.4	374.7	350.2	328.8	
85 SHC	186.0	238.4	293.9	212.4	276.3	318.4	234.9	311.5	272.3	
85 kW	27.80	26.53	25.37	28.40	27.13	26.19	28.74	27.63	26.92	
95 TC	337.9	310.8	288.0	350.0	323.1	305.6	356.7	333.7	327.6	
95 SHC	179.9	232.4	282.8	206.6	269.8	305.6	228.9	304.2	309.3	
95 kW	29.91	28.50	27.33	30.53	29.14	28.24	30.88	29.89	29.37	
100 TC	330.6	303.1	281.4	342.4	315.4	299.1	348.8	326.0	305.8	
100 SHC	177.2	229.4	276.8	204.0	268.7	299.1	226.3	300.9	325.3	
100 kW	30.94	29.42	28.23	31.59	30.10	29.20	31.94	30.69	29.56	
105 TC	322.2	295.2	274.9	333.4	307.1	292.3	339.4	317.4	283.3	
105 SHC	174.0	226.2	270.9	210.0	263.4	292.3	223.1	297.1	341.4	
105 kW	32.08	30.34	29.04	32.80	31.10	30.15	33.19	31.77	29.57	
115 TC	305.6	279.5	262.0	315.7	290.5	278.7	—	300.4	244.7	
115 SHC	167.7	220.0	259.2	195.0	256.7	278.7	—	289.6	369.4	
115 kW	33.90	32.09	30.88	34.59	32.85	32.04	—	33.54	29.68	

NOTES:

1. Direct interpolation is permissible. Do not extrapolate.
2. Evaporator fan heat not deducted from ratings.
3. Ratings based on approximately 12 F superheat leaving coil.
4. Formulas:

$$\text{Leaving db} = \text{entering db} - \frac{\text{sensible heat capacity (Btuh)}}{1.1 \times \text{cfm}}$$

$$\text{Leaving wb} = \text{wet-bulb temperature corresponding to enthalpy of air leaving coil (h}_{wb}\text{)}$$

$$h_{wb} = h_{wb} - \frac{\text{total capacity (Btuh)}}{4.5 \times \text{cfm}}$$

$$\text{Where } h_{wb} = \text{enthalpy of air entering coil}$$

5. SHC is based on 80 F db temperature of air-entering evaporator coil.

LEGEND

- — Out of Range
- Edb — Entering Dry Bulb
- Ewb — Entering Wet Bulb
- kW — Compressor Motor Power Input
- SHC — Sensible Heat Capacity (1000 Btuh) Gross
- TC — Total Capacity (1000 Btuh) Gross

Guide specifications — 38AK007-012 38AKS008-012

*DON'T NEED THIS
SPECS WERE ALREADY PROVIDED!*

Carrier

Commercial Air-Cooled Condensing Units

HVAC Guide Specifications

Size Range: **6 to 10 Tons, Nominal**

Carrier Model Numbers: **38AK, Sizes 007-012**
38AKS, Sizes 008-012

Part 1 — General

1.01 SYSTEM DESCRIPTION

Outdoor-mounted, air-cooled condensing unit suitable for on-the-ground or rooftop installation. Unit shall consist of a reciprocating or scroll air-conditioning compressor assembly, an air-cooled coil, propeller-type condenser fan, and a control box. Unit shall discharge supply air upward as shown on contract drawings. Unit shall be used in a refrigeration circuit matched with a packaged air-handling unit.

1.02 QUALITY ASSURANCE

- A. Unit shall be rated in accordance with ARI Standard 210/240-89 and 270-84.
- B. Unit construction shall comply with ANSI/ASHRAE 15 safety code latest revision and comply with NEC.
- C. Unit shall be constructed in accordance with UL 1995 standard and shall carry the UL label. Unit shall have CSA approval.
- D. Unit cabinet shall be capable of withstanding 500-hour salt spray exposure per ASTM B117 (scribed specimen).
- E. Air-cooled condenser coils for semi-hermetic compressor units (38AKS) shall be leak tested at 150 psig and pressure tested at 480 psig. Air-cooled condenser coils for hermetic compressor units (38AK) shall be leak tested at 200 psig, and pressure tested at 428 psig.
- F. Unit shall be manufactured in a facility registered to ISO 9001 manufacturing quality standard.

1.03 DELIVERY, STORAGE, AND HANDLING

Unit shall be shipped as single package only, and shall be stored and handled according to unit manufacturer's recommendations.

1.04 WARRANTY (FOR INCLUSION BY SPECIFYING ENGINEER.)

Part 2 — Products

2.01 EQUIPMENT

A. General:

Factory-assembled, single piece, air-cooled condensing unit. Contained within the unit enclosure shall be all factory wiring, piping, controls, compressor, holding charge (R-22), and special features required prior to field start-up.

B. Unit Cabinet:

- 1. Unit cabinet shall be constructed of galvanized steel, bonderized and coated with a prepainted baked enamel finish.

- 2. A heavy-gage roll-formed perimeter base rail with forklift slots and lifting holes shall be provided to facilitate rigging.

C. Fans:

- 1. Condenser fans shall be direct driven, propeller-type, discharging air vertically upward.
- 2. Fan blades shall be balanced.
- 3. Condenser fan discharge openings shall be equipped with PVC coated steel wire safety guards.
- 4. Condenser fan and motor shaft shall be corrosion resistant.

D. Compressor:

- 1. Compressor shall be of the hermetic type (AK) or semi-hermetic reciprocating type (AKS).
- 2. Compressor shall be mounted on vibration isolators.
- 3. Compressors shall include overload protection.

E. Condenser Coil:

- 1. Condenser coil shall be air-cooled and circuited for integral subcooler.
- 2. Coil shall be constructed of aluminum fins (copper fins optional) mechanically bonded to internally grooved seamless copper tubes which are then cleaned, dehydrated, and sealed.

F. Refrigeration Components:

Refrigeration circuit components shall include liquid line service valve, suction line service valve, liquid filter drier, a full charge of compressor oil, and a holding charge of refrigerant. Unit 38AK012 shall include an accumulator. Units with semi-hermetic compressors (38AKS) shall have oil-level sight glass and crankcase heater.

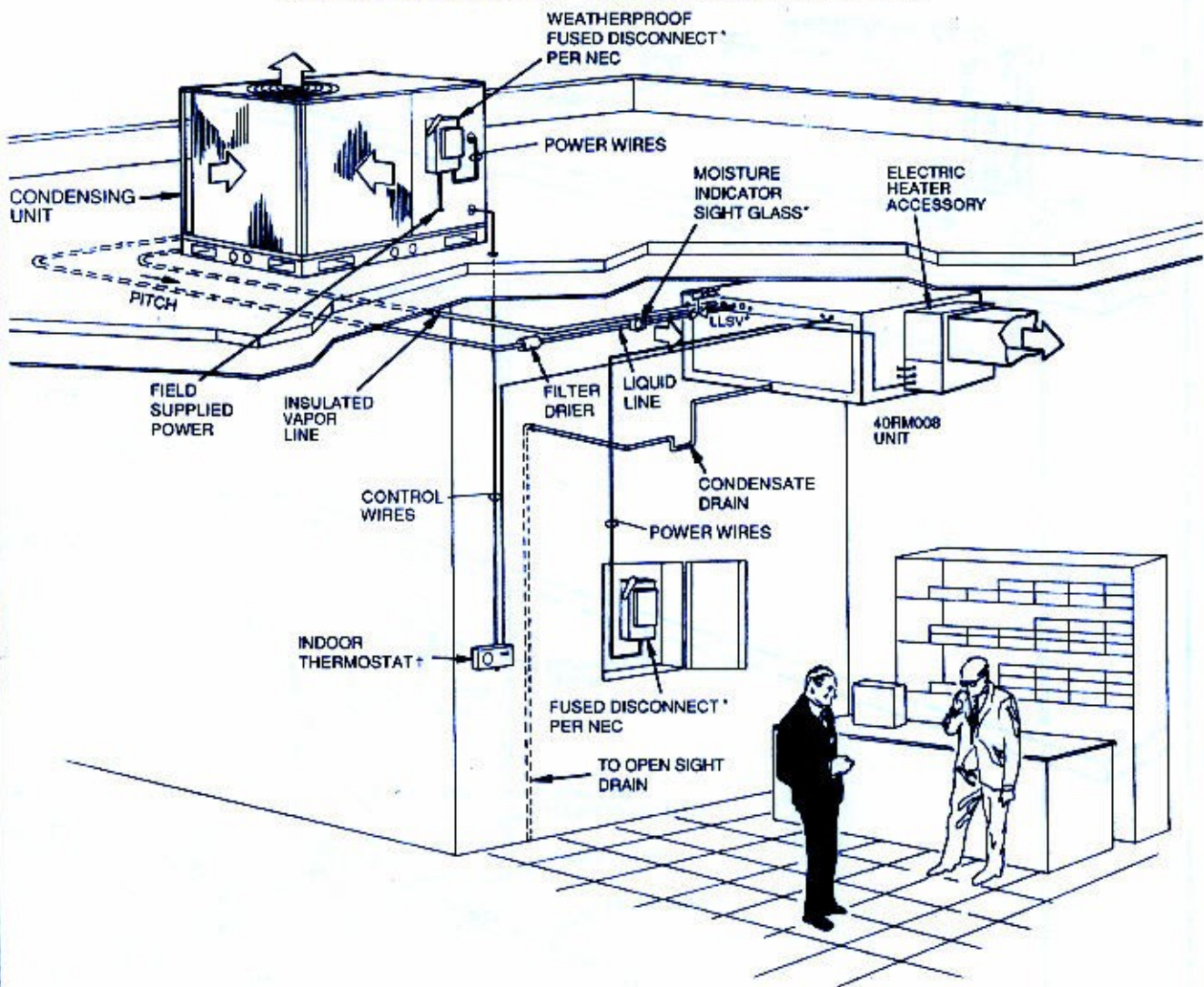
G. Controls and Safeties:

- 1. Minimum control functions shall include:
 - a. Control wire terminal blocks.
 - b. Compressor lockout on auto-reset safety until reset from thermostat.
- 2. Minimum safety devices which are equipped with automatic reset (after resetting first at thermostat), shall include:
 - a. High discharge pressure cutout.
 - b. Loss-of-charge cutout.

Typical piping and wiring



ROOFTOP INSTALLATION — 38AK007-012, 38AKS008-012



LEGEND

- LLSV — Liquid Line Solenoid Valve
- NEC — National Electrical Code
- TXV — Thermostatic Expansion Valve

*Field supplied.
†Accessory item.

NOTES:

1. All piping must follow standard refrigerant piping techniques. Refer to Carrier System Design Manual for details.
2. All wiring must comply with the applicable local and national codes.
3. Wiring and piping shown are general points-of-connection guides only and 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.
5. Internal factory-supplied TXVs not shown.