

Installation, Operation and Maintenance Manual

IOMM ALS-1

Group: Chiller

Part Number: 070774401

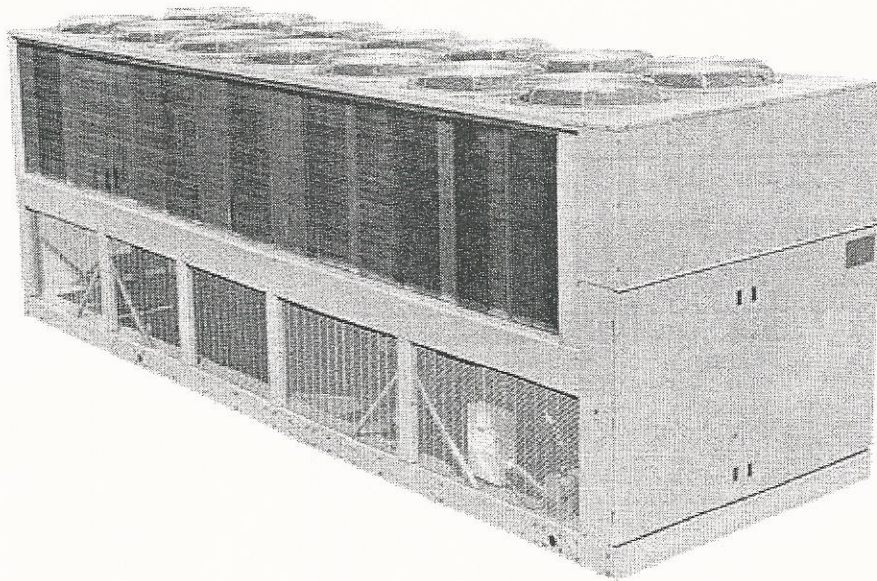
Date: June 1999

Supersedes: IOMM ALS

Air-Cooled Screw Compressor Chiller

ALS 070A through 425A

60 Hertz



MODEL #: ALS140A
S/N: 56H8131901

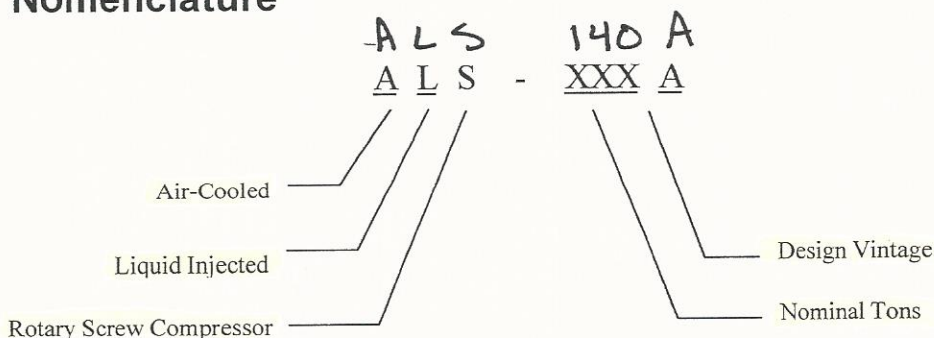
YR: 1996
140 TON
460-3-60
R-22

Introduction

General Description

McQuay air-cooled water chillers are complete, self-contained automatic refrigerating units that include the latest in engineering components arranged to provide a compact and efficient unit. Each unit is completely assembled, factory wired, evacuated, charged, tested and comes complete and ready for installation. Each unit consists of multiple air-cooled condensers with integral subcooler sections, multiple accessible semi-hermetic single-screw compressors, replaceable tube multiple circuit shell-and-tube evaporator, and complete refrigerant piping. Liquid line components included are manual liquid line shutoff valves, charging valves, filter-driers, liquid line solenoid valves, sightglass/moisture indicators, and electronic expansion valves. Other features include compressor heaters, an evaporator heater for low ambient water freeze protection, automatic one time pumpdown of refrigerant circuit upon circuit shutdown, and an advanced fully integrated microprocessor control system.

Nomenclature



Inspection

When the equipment is received, all items should be carefully checked against the bill of lading to insure a complete shipment. All units should be carefully inspected for damage upon arrival. All shipping damage must be reported to the carrier and a claim must be filed with the carrier. The unit's serial plate should be checked before unloading the unit to be sure that it agrees with the power supply available. Physical damage to unit after acceptance is not the responsibility of McQuay International.

Note: Unit shipping and operating weights are available in the Physical Data Tables.

Installation and Start-up

Note: Installation and maintenance are to be performed only by qualified personnel who are familiar with local codes and regulations, and experienced with this type of equipment.

CAUTION

Sharp edges and coil surfaces are a potential injury hazard. Avoid contact with them.

Start-up by McQuayService is included on all units sold for installation within the USA and Canada. Two week prior notification of start-up is required. The contractor should obtain a copy of the Start-up Scheduled Request Form from the sales representative or from the nearest office of McQuayService.

Physical Data

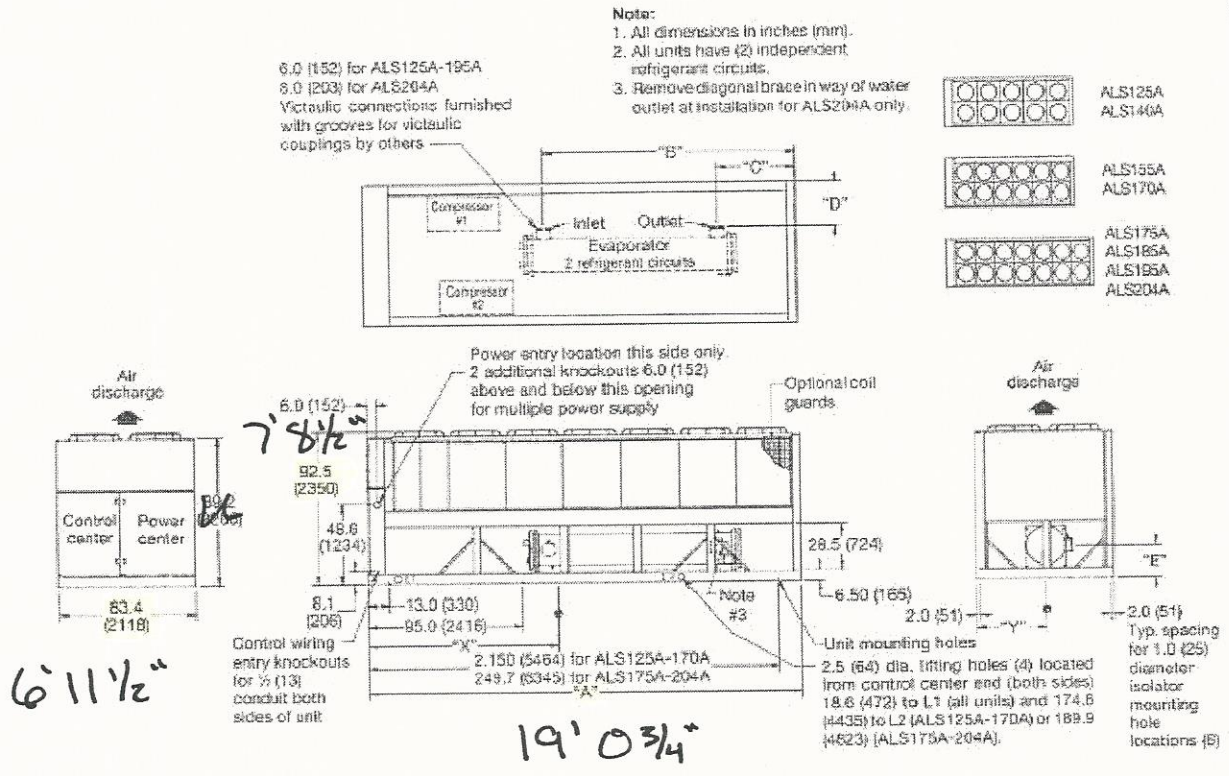
Table 21, ALS 070-100

DATA	ALS MODEL NUMBER			
	070A	080A	090A	100A
BASIC DATA				
Unit capacity @ ARI conditions, tons (kW)	68.1 (239)	77.9 (274)	90.6 (319)	96.4 (339)
Unit operating charge R-22, lbs (kg)	150 (68)	160 (73)	180 (82)	190 (87)
Cabinet dimensions L x W x H, in. (mm)	124.7 X 83.4 X 92.5 (3167 X 2118 X 2350)	124.7 X 83.4 X 92.5 (3167 X 2118 X 2350)	159.4 X 83.4 X 92.5 (4049 X 2118 X 2350)	159.4 X 83.4 X 92.5 (4049 X 2118 X 2350)
Unit operating weight, lbs. (kg)	5725 (2597)	6175 (2801)	6825 (3096)	7300 (3311)
Unit shipping weight, lbs. (kg)	5500 (2495)	5900 (2676)	6500 (2948)	6900 (3130)
COMPRESSORS, SCREW, SEMI-HERMETIC				
Nominal tons, (kW)	65 (230)	80(280)	95 (335)	95 (335)
CONDENSERS, HIGH EFFICIENCY FIN & TUBE TYPE WITH INTEGRAL SUBCOOLER				
Coil face area, sq. ft. (m ²)	115.6 (10.7)	115.6 (10.7)	154.1 (14.3)	154.1 (14.3)
Finned height x finned length, in. (mm)	160 x 104 (4064 x 2642)	161 x 104 (4064 x 2642)	160 x 138.7 (4064 x 3523)	160 x 138.7 (4064 x 3523)
Fins per inch x rows deep	16 x 3	16 x 3	16 x 3	16 x 3
CONDENSER FANS, DIRECT DRIVE PROPELLER TYPE				
No. of fans - fan diameter, in. (mm)	6-28 (711)	6-28 (711)	8-28 (711)	8-28 (711)
No. of motors - hp (kW)	6-1.5 (1.1)	6-1.5 (1.1)	6-1.5 (1.1)	6-1.5 (1.1)
Fan & motor rpm, 60/50Hz	1140	1140	1140	1140
60 Hz fan tip speed, fpm	8357	8357	8357	8357
50 Hz fan tip speed, (m/sec)				
60 Hz total unit airflow, cfm	54120	54120	72160	72160
50 Hz total unit airflow, (m2/sec)				
EVAPORATOR, DIRECT EXPANSION, BAFFLED SHELL & THRU TUBE				
Shell diameter - tube length in (mm) - ft. (mm)	12-08 (305-2439)	14008 (356-2439)	14-10 (356-3048)	16-10 (407-3048)
Water volume, gallons (L)	24.3 (92.0)	32.6 (123.4)	41.3 (156.3)	43.6 (165)
Max. water pressure, psi (kPa)	175 (1207)	175 (1207)	175 (1207)	175 (1207)
Max. refrigerant pressure, psi (kPa)	225 (1552)	225 (1552)	225 (1552)	225 (1552)

Table 22, ALS 125-170

DATA	ALS MODEL NUMBER							
	125A		140A		155A		170A	
	CKT.1	CKT.2	CKT.1	CKT.2	CKT.1	CKT.2	CKT.1	CKT.2
BASIC DATA								
Unit capacity @ ARI conditions, tons (kW)	62.2 (218)	62.2 (218)	64.4 (226)	75 (263)	77.1 (271)	77.1 (271)	79 (278)	89.7 (315)
Unit operating charge R-22, lbs (kg)	140 (63.5)	140 (63.5)	140 (63.5)	150 (68.1)	150 (68.1)	150 (68.1)	150 (68.1)	160 (72.6)
Cabinet dimensions L x W x H, in. (mm)	228.7 x 83.4 x 92.5 (5809 x 2118 x 2350)		228.7 x 83.4 x 92.5 (5809 x 2118 x 2350)		228.7 x 83.4 x 92.5 (5809 x 2118 x 2350)		228.7 x 83.4 x 92.5 (5809 x 2118 x 2350)	
Unit operating weight, lbs. (kg)	9920 (4500)		10350 (4700)		10670 (4840)		10750 (4880)	
Unit shipping weight, lbs. (kg)	9600 (4355)		9900 (4450)		10250 (4650)		10350 (4700)	
COMPRESSORS, SCREW, SEMI-HERMETIC								
Nominal tons, (kW)	65 (230)	65 (230)	65 (230)	80 (280)	80 (280)	80 (280)	80 (280)	95 (335)
CONDENSERS, HIGH EFFICIENCY FIN & TUBE TYPE WITH INTEGRAL SUBCOOLER								
Coil face area, sq. ft. (m ²)	115.6 (10.7)	115.6 (10.7)	115.6 (10.7)	115.6 (10.7)	115.6 (10.7)	115.6 (10.7)	115.6 (10.7)	115.6 (10.7)
Finned height x finned length, in. (mm)	80 x 208 (2032 x 5283)	80 x 208 (2032 x 5283)	80 x 208 (2032 x 5283)	80 x 208 (2032 x 5283)	80 x 208 (2032 x 5283)	80 x 208 (2032 x 5283)	80 x 208 (2032 x 5283)	80 x 208 (2032 x 5283)
Fins per inch x rows deep	16 x 3	16 x 3	16 x 3	16 x 3	16 x 3	16 x 3	16 x 3	16 x 3
CONDENSER FANS, DIRECT DRIVE PROPELLER TYPE								
No. of fans - fan diameter, in. (mm)	10 - 28 (711)		10 - 28 (711)		12 - 28 (711)		12 - 28 (711)	
No. of motors - hp (kW)	10 - 1.5 (1.1)		10 - 1.5 (1.1)		12 - 1.5 (1.1)		12 - 1.5 (1.1)	
Fan & motor rpm, 60/50Hz	1140/950		1140/950		1140/950		1140/950	
60 Hz fan tip speed, fpm	8357		8357		8357		8357	
50 Hz fan tip speed, (m/sec)	(35.4)		(35.4)		(35.4)		(35.4)	
60 Hz total unit airflow, cfm	90200		90200		108240		108240	
50 Hz total unit airflow, (m2/sec)	(35.5)		(35.5)		(42.6)		(42.6)	
EVAPORATOR, DIRECT EXPANSION, BAFFLED SHELL & THRU TUBE								
Shell diameter - tube length in (mm) - ft. (mm)	14 - 10 (356 - 3048)		16 - 10 (406 - 3048)		16 - 10 (406 - 3048)		16 - 10 (406 - 3048)	

Figure 24, ALS 125A-204A



ALS UNIT SIZE	LENGTH A	EVAPORATOR					CENTER OF GRAVITY		UNIT WEIGHTS lb (kg)		
		B	C	D	E	X	Y	STANDARD UNIT		ADD'L WT. FOR COPPER FINIS	
								OPERATING	SHIPPING		
125A	228.7 (5809)	117.6 (2987)	13.8 (351)	28.7 (729)	19.4 (493)	104.3 (2649)	41.7 (1059)	9920 (4500)	9600 (4355)	1652 (750)	
140A	228.7 (5809)	118.5 (3010)	12.9 (328)	28.7 (729)	19.4 (493)	104.3 (2649)	41.7 (1059)	10350 (4700)	9900 (4355)	1652 (750)	
155A	228.7 (5809)	118.5 (3010)	12.9 (328)	28.7 (729)	19.4 (493)	105.2 (2672)	41.7 (1059)	10670 (4840)	10250 (4650)	1652 (750)	
170A	228.7 (5809)	118.5 (3010)	12.9 (328)	28.7 (729)	19.4 (493)	105.2 (2672)	41.7 (1059)	10750 (4880)	10350 (4700)	1652 (750)	
175A	263.4 (6690)	153.2 (3891)	47.6 (1209)	28.7 (729)	19.4 (493)	113.1 (2873)	41.7 (1059)	11250 (5100)	10850 (4920)	1930 (876)	
185A	263.4 (6690)	153.2 (3891)	47.6 (1209)	28.7 (729)	19.4 (493)	113.1 (2873)	41.7 (1059)	11250 (5100)	10850 (4920)	1930 (876)	
195A	263.4 (6690)	153.2 (3891)	47.6 (1209)	27.3 (693)	20.4 (518)	115.2 (2926)	41.7 (1059)	11500 (5218)	11100 (5036)	1930 (876)	
204A	263.4 (6690)	152.2 (3866)	48.5 (1232)	25.7 (653)	20.2 (513)	116.5 (2959)	41.7 (1059)	12570 (5701)	11980 (5433)	2025 (918)	

ALS UNIT SIZE	COMPRESSOR		FANS		OPERATING REFRIGERANT CHARGE (R-22) lb (kg)	
	QTY.	NOM. TONS	QTY.	H.P.	SYSTEM #1	SYSTEM #2
125A	2	65/65	10	1.5	140 (63.5)	140 (63.5)
140A	2	65/80	10	1.5	140 (63.5)	150 (68.1)
155A	2	80/80	12	1.5	150 (68.1)	150 (68.1)
170A	2	80/95	12	1.5	150 (68.1)	160 (72.6)
175A	2	80/95	14	1.5	160 (72.6)	160 (72.6)
185A	2	95/95	14	1.5	160 (72.6)	160 (72.6)
195A	2	95/95	14	1.5	170 (77.1)	170 (77.1)
204A	2	95/95	14	2.0	195 (88.5)	195 (88.5)