Bulletin 182B

evapco® for LIFE

LSC-E & LRC

Low Sound and Low Profile Forced Draft Condensers

Technology for the future available today!

EVAPCO Global Headquarters, Taneytown, Maryland USA

Get to Know EVAPCO

Since its founding in 1976, EVAPCO, Incorporated has become an industry leader in the engineering and manufacturing of quality heat transfer products around the world. EVAPCO's mission is to provide first class service and quality products for the following markets:

- **Industrial Refrigeration**
- Commercial HVAC
- Industrial Process
- Power

These quality products for the industrial refrigeration market include: refrigerant condensers, cooling towers, closed circuit coolers, evaporators, hygienic air handlers, packaged low charge ammonia systems, packaged transcritical CO_2 rack systems, pressure vessels and packages, waters systems and controls and automation.

The EVAPCO Wilson E. Bradley Research & Development Center

Featuring a state-of-the-art, low-temperature, insulated environmental test chamber and a fully functional ammonia refrigeration system designed to operate at suction temperatures as low as -60°F, the EVAPCO Research & Development Center enables us to find groundbreaking solutions for the industry's biggest challenges. The newest addition to EVAPCO's R&D center is a CO_2 testing lab.

LSC-E and LRC Principle of Operation

Low Sound and Low Rise Forced Draft Closed Circuit Coolers

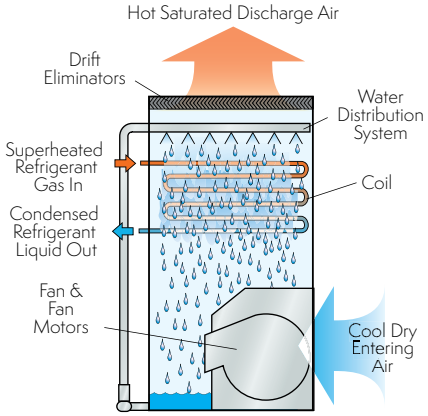
EVAPCO's LSCE/LRC Closed Circuit Coolers utilize EVAPCO's Thermal-Pak® coil design now featuring the revolutionary CROSSCOOL™ Internal Tube Enhancement. The CROSSCOOL™ Internal Tube Enhancement increases the internal heat transfer coefficient of the the coil and thus increases the cooling capacity of the unit. This new and improved series of coolers is the ideal solution for indoor application, confined layouts, low sound requirements and direct replacements to name a few. Both models are designed for easy maintenance and long, trouble free operation.

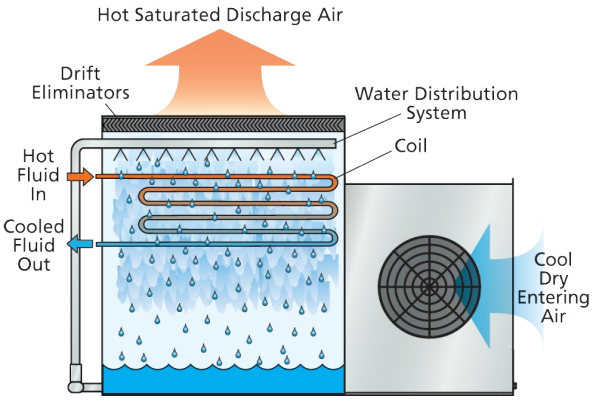
LSCE

The standard for forced draft centrifugal fan designs, Now more efficient than ever.

LRC

With the fan section located beside the heat transfer casing, this unit satisfies even the strictest of height requirements in a unitary, compact design.

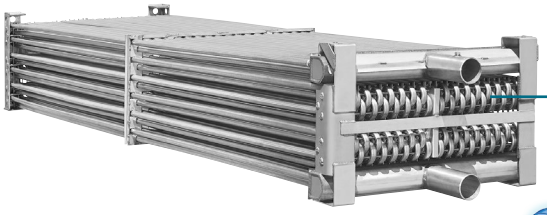


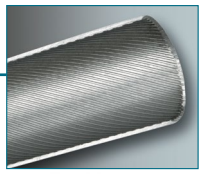


Principle of Operation

The refrigerant gas is discharged from the compressor into the inlet connection of the evaporative condenser. Water from the condenser's sump is continuously distributed over the condenser coil, while ambient air is simultaneously forced into the unit. As the ambient air moves up through the coil section, a portion of the spray water is evaporated into the air stream.The evaporative process cools the spray water, which in turn cools the tubes containing the refrigerant gas. The cool tube walls cause the refrigerant gas to give up heat and condense into a liquid.
The condensed liquid flows out of the coil's sloping tubes to the high pressure liquid receiver for return to the system. The hot saturated air is driven through the drift eliminators, where any entrained water droplets are removed. The condenser's fan then discharges this air stream out of the top of the unit at a high velocity, where it can dissipate harmlessly into the atmosphere. The water which was not evaporated falls into the sump and is recirculated by the spray pump to the water distribution system above the condensing coil section.

LSWE Design & Construction Features





CROSSCOOL™
INTERNAL TUBE ENHANCEMENT

Galvanized Steel Coil Elliptical Thermal-Pak® COIL Construction Featuring CROSSCOOL™ Internal Tube Enhancement Technology

- Internal tube enhancement improves heat transfer efficiency providing **additional evaporative capacity**
- Elliptical return bends allows for more circuits per coil bundle increasing maximum capacity per footprint
- Coil located in the airstream increasing dry bulb switchover temperature

Pulse~Pure®

evapco® SMARTSHIELD

Optional Factory Mounted Water Treatment Systems

The LSCE is available with multiple water treatment options, including a ***Pulse*~Pure®** (not shown) non-chemical or a **Smart Shield®** (not shown) solid chemical water treatment system. EVAPCO offers a number of environmentally sensitive alternatives for treating water in evaporative cooled equipment. Each system includes all components required for an effective water treatment system; factory mounted and wired. Refer to pages 11-12 for more information.

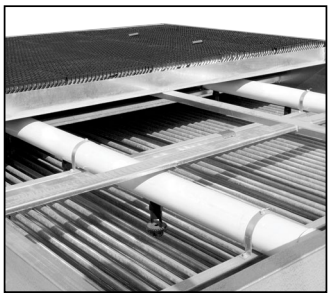
IBC COMPLIANT DESIGNS

IBC Compliant Design

- All standard models meet IBC requirements
- Upgraded designs available for high seismic and wind load areas
- Shake table verified for 1.5 Importance Factor installations

Zero Maintenance PVC Spray Distribution Header with ZM®II Nozzles

- Fixed position nozzles require zero maintenance
- Large orifice nozzles prevent clogging



Easy Field Assembly

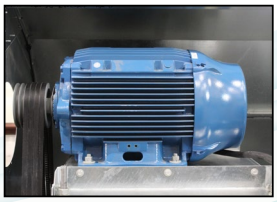
- Ensures easy assembly and fewer fasteners
- Incorporates self-guiding channels to guide the coil casing section into position improving the quality of the field seam

Clean Pan Design

- Sloped design allows water to drain completely from cold water basin
- Easier removal of dirt and debris

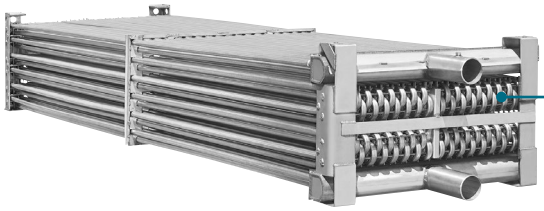
Totally Enclosed Fan Motors

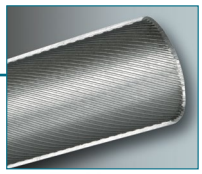
- Assures long life
- All normal maintenance can be performed quickly from outside the unit
- If required, motor may be easily removed
- Motors are now located outboard on multi-motor units for even easier drive system access
- Premium efficient inverter-ready motors are standard



Exclusive 5 Year Motor and Drive Warranty

LRWB Design and Construction Features

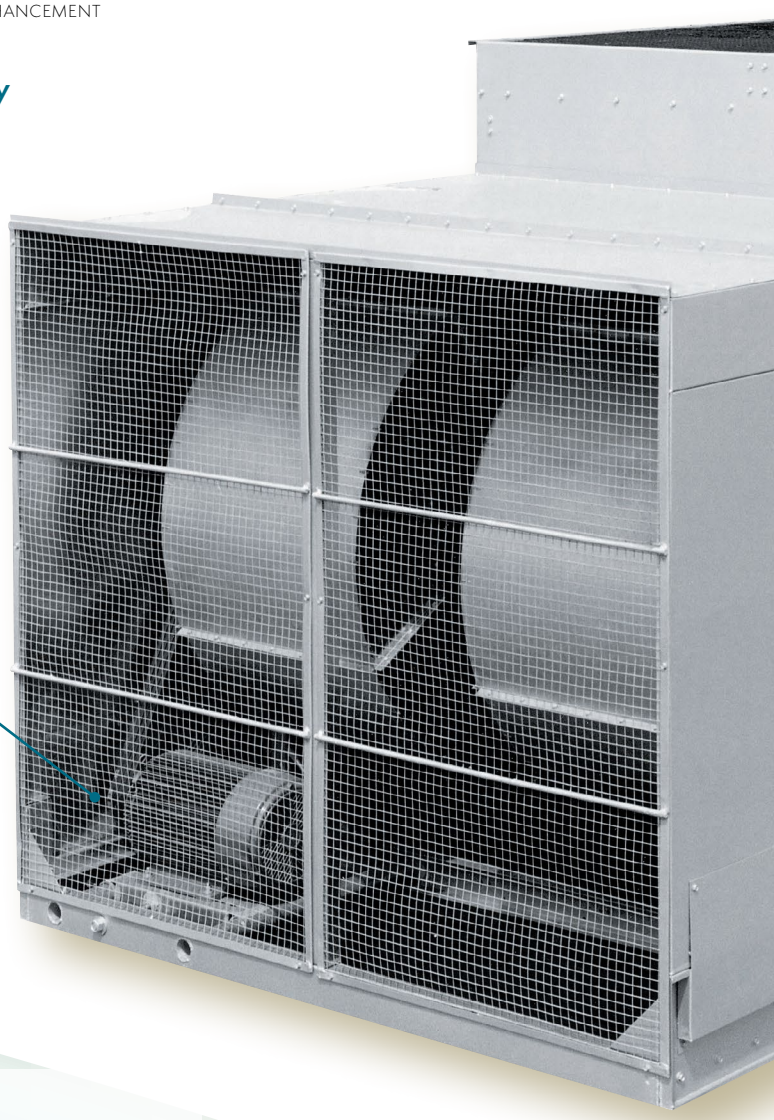


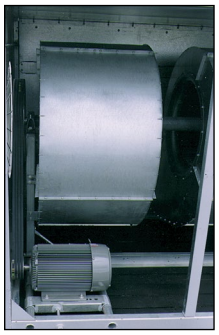


CROSScool™ INTERNAL TUBE ENHANCEMENT

Galvanized Steel Coil Elliptical Thermal-Pak® COIL Construction Featuring CROSScool™ Internal Tube Enhancement Technology

- Internal tube enhancement improves heat transfer efficiency providing **additional evaporative capacity**
- Elliptical return bends allows for more circuits per coil bundle increasing maximum capacity per footprint
- Coil located in the airstream increasing dry bulb switchover temperature





Easy to Service Motor & Drive System

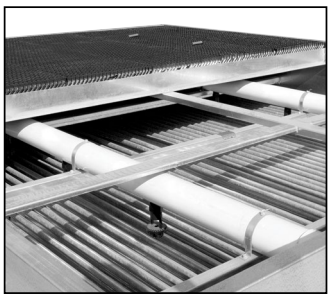
- Belt tensioning and bearing lubrication can be performed from outside the unit
- Locking mechanism can also be used as a wrench to adjust the belts
- Motor is fully accessible by removing one inlet screen
- Split fan housings allow removal of all mechanical equipment through the end of the unit

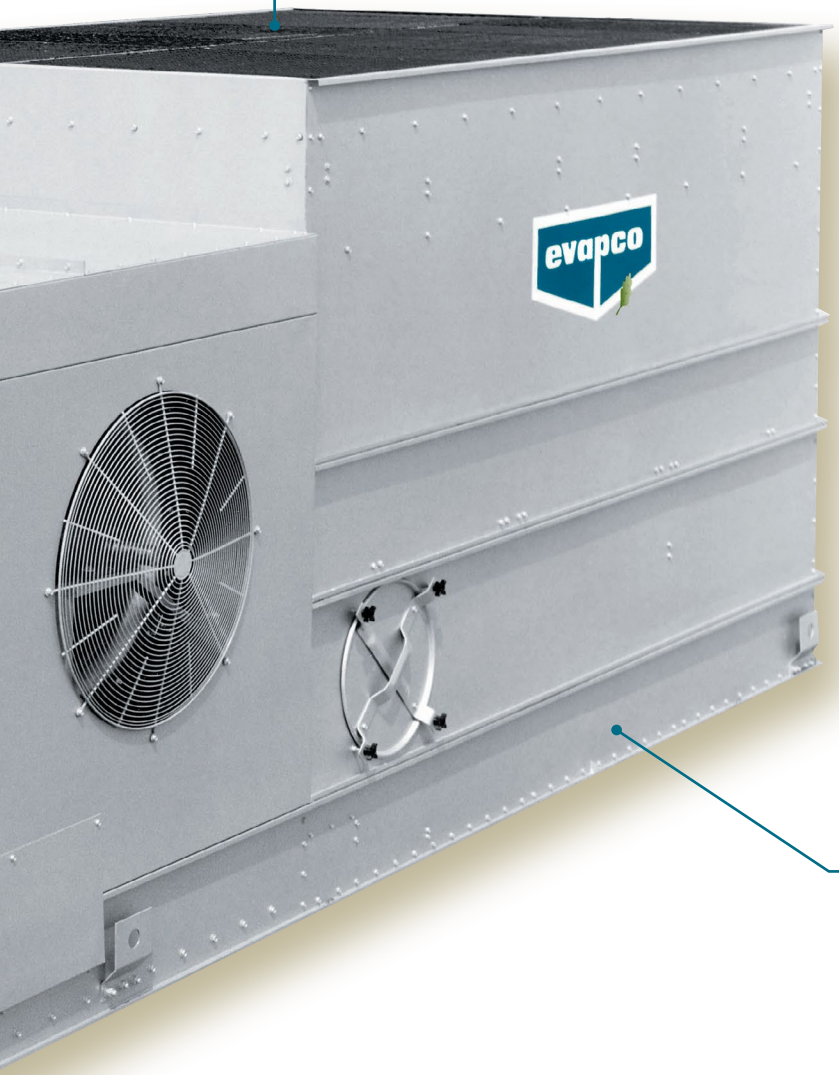
MOTOR AND DRIVE 5 Year WARRANTY

Exclusive 5 Year Motor and Drive Warranty

Zero Maintenance PVC Spray Distribution Header with ZM®II Nozzles

- Fixed position nozzles require zero maintenance
- Large orifice nozzles prevent clogging





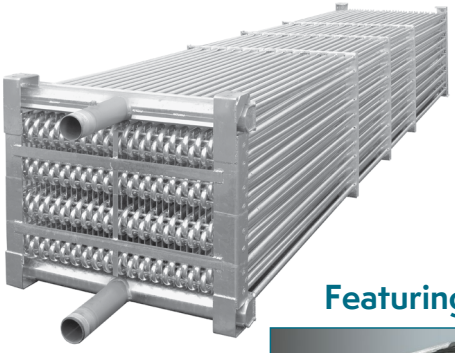
Optional Factory Mounted Water Treatment Systems

The LRC is available with multiple water treatment options, including a ***Pulse*~Pure®** (not shown) non-chemical or a **Smart Shield®** (not shown) solid chemical water treatment system. EVAPCO offers a number of environmentally sensitive alternatives for treating water in evaporative cooled equipment. Each system includes all components required for an effective water treatment system; factory mounted and wired. Refer to pages 11-12 for more information.

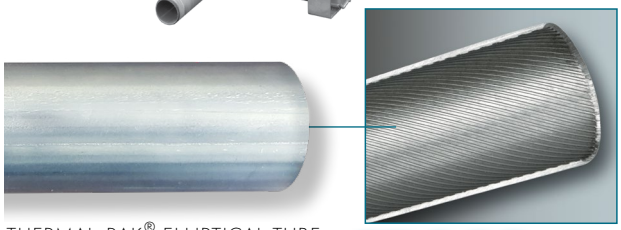
SS Cold Water Basin Design

Innovative Design Features

Elliptical Thermal-Pak® Heat Transfer Coil



Featuring



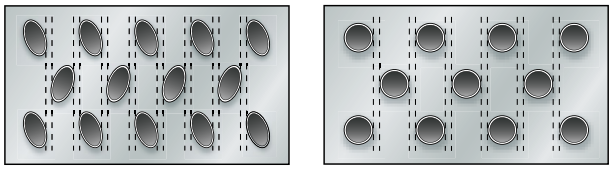
THERMAL-PAK® ELLIPTICAL TUBE

CROSSCOOL™

INTERNAL TUBE ENHANCEMENT

Galvanized steel elliptical Thermal-Pak® coil featuring CROSSCOOL™ Internal Tube Enhancement Technology

- Internal Tube Enhancement provides additional evaporative capacity
- Elliptical tube design allows for more circuits per coil bundle increasing maximum capacity per footprint
- Elliptical tube design results in lower airflow resistance than typical round tube designs



EVAPCO's Thermal-Pak II® Elliptical Tube ***Competitors Round Tube Coil***

The LSCE and LRC closed circuit coolers utilize EVAPCO's Thermal-Pak® coil design. The elliptical tube design allows for closer tube spacing, resulting in greater surface area per plan area than round-tube coil designs.

In addition, the Thermal-Pak® design has lower resistance to airflow and also permits greater water loading making the Thermal-Pak® coil the most efficient design available.

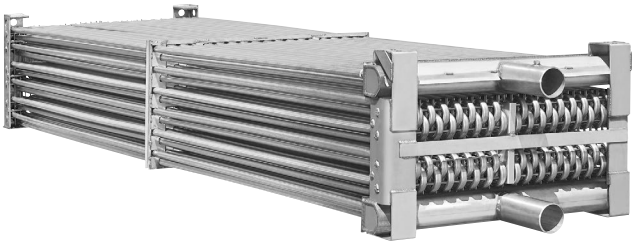
The Thermal-Pak® coil design also features EVAPCO's Internal Tube Enhancement Technology. This increases turbulence through the coil, further increasing the evaporative capacity.

The coils are manufactured from high quality steel tubing in accordance with the most stringent quality control procedures. Each circuit is inspected to ensure the material quality and then tested before being assembled into a coil. The coil shall have design pressure of 300 psi and shall be in compliance with ANSI/ASME B31.5, Refrigeration Piping and Heat Transfer Components. The coil assembly shall be strength tested in accordance with ANSI/ASME B31.5 and subsequently leak tested underwater.

To protect the coil against corrosion, it is placed in a heavy steel frame and then the entire assembly is dipped into molten zinc (hot-dipped galvanized) at a temperature of approximately 800°F.

Stainless Steel Coil Option

EVAPCO offers the optional TITAN COIL. Constructed with type 304L Stainless Steel, the TITAN COIL is manufactured using EVAPCO's elliptical tube Thermal-Pak® design upgraded to Xtra Tough construction featuring: Xtra Durability, Xtra Corrosion Resistance, and an Xtra long **5 Year Coil Warranty** as standard.

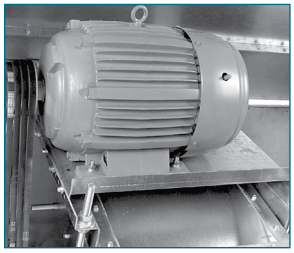


Thermal-Pak® Coil

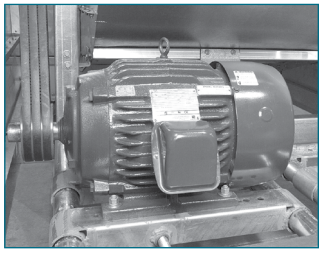
Innovative Design Features

Fan Motor Mount

TEFC fan motors are mounted in a convenient open area for ease of belt tensioning, motor lubrication and electrical connection. The motor base is designed for easy adjustment and is locked into position to maintain proper belt tension.



Example LSWE Fan Motor Mount



LRWB Fan Motor Mount

Fan Access-Split Housing

Another unique feature of the LRWB closed circuit cooler is the split fan housing. The split fan housing on the LRWB allows quick removal of the fans from the front end of the unit. This feature allows fan removal when units are placed side by side where space is minimal.

Mechanical Drive System Access

The LSWE and LRWB mechanical drive systems are easy to maintain. Bearing lubrication and belt adjustment can be performed from outside the unit. There is no need to remove fan screens to maintain important drive components. In addition, the locking mechanism used to maintain belt tension can also work as a wrench to adjust the belt.

Centrifugal Fan Assembly

Fans on LSWE and LRWB closed circuit coolers are of the forward curved centrifugal design with hot-dip galvanized steel construction. All fans are statically and dynamically balanced and are mounted in a hot-dip galvanized steel housing.

Maintenance Free ZM®II Spray Nozzle Water Distribution System

ZM®II Nozzle

EVAPCO'S Zero Maintenance ZM®II spray nozzle remains clog-free while providing even and constant water distribution for reliable, scale-free evaporative cooling under all operating conditions.

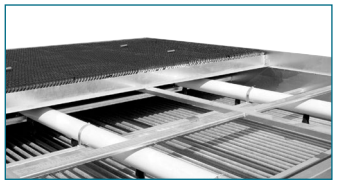
The heavy duty nylon ZM®II spray nozzles have a 1-5/16" diameter opening and a 1-1/2" splash plate clearance. Furthermore, the fixed position ZM®II nozzles are mounted in corrosion-free PVC water distribution pipes that have threaded end caps. Together, these elements combine to provide unequaled coil coverage and scale prevention, and make the industry's best performing non-corrosive, maintenance-free water distribution system.

Efficient Drift Eliminators

The LSWE and LRWB are provided with an efficient drift eliminator system that effectively reduces entrained water droplets from the air discharge to less than 0.001% of the spray water flow rate.

The eliminators are constructed of non-corrosive PVC with a multi-pass design for maximum drift reduction. They are assembled in modular sections for easy removal and access to the water distribution system.

In addition to reducing drift, the eliminators also function as effective debris screens which protect the spray system from sunlight and debris.



LSWE and LRWB Drift Eliminator

Drift Eliminators Removed for Coil Inspection

Stainless Steel Material Options

All LSC-E and LRC Series units are constructed with galvanized steel panels as standard. The following pages illustrate the available stainless steel construction material options for this series. Stainless steel options are available in both 304 and 316L stainless steel. Selection of these options only changes the sheet steel; optional accessories such as attenuation, discharge hoods, platforms, etc. are available in stainless steel only by special order. Stainless steel discharge hoods/ attenuation have galvanized dampers with a stainless steel linkage. Accessories, coils, and fan shafts **do not** change to stainless steel with these options and are upgraded separately. The strainer in the basin is always 304 stainless steel independent of basin construction.

LSC-E

Stainless Steel Basin up to Overflow Level Option

Includes Type 304 stainless steel basin panels up to the overflow level. All panels above the overflow, including the fan discharge cowls are G-235 galvanized steel. Centrifugal fan wheels are **not available** in stainless steel.

This is the first stage of stainless steel on the LS Series units 5' wide and larger. The "stainless steel basin up to overflow" option is not available on 4' wide models.

Stainless Steel Water Touch Basin

All panels in the pan section in contact with the cooling water including the fan discharge cowls are constructed of Type 304 stainless steel. Remainder of unit constructed of G-235 galvanized steel. All models with this option are furnished with epoxy coated fan wheels and shafts coated with a rust inhibitor. Centrifugal fan wheels are **not available** in stainless steel.

Stainless Steel Water Touch Unit

All panels in contact with the cooling water including the upper casing panels are constructed of Type 304 stainless steel. All models with this option are furnished with epoxy coated fan wheels and shafts coated with a rust inhibitor. Centrifugal fan wheels are **not available** in stainless steel.

This option designates the entire water section as stainless. Note that the fan housings and supports are still galvanized in this option.

All Stainless Steel Except Fans Option

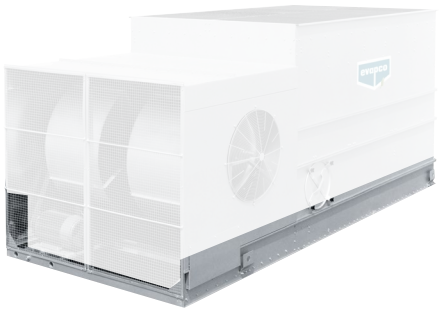
All panels including the fan housings and supports are constructed of Type 304 stainless steel. All models with this option are furnished with epoxy coated fan wheels and shafts coated with a rust inhibitor. Centrifugal fan wheels are **not available** in stainless steel. With this option, all sheet metal is stainless including the fan housings and supports.

Stainless Steel Material Options

LRC

Stainless Steel Cold Water Basin

With this option, the lowest section of the unit, as highlighted in the photograph to the right, is constructed of Type 304 stainless steel. On all LRC units, the fan side inlet screens are PVC coated. Fan screens are galvanized.

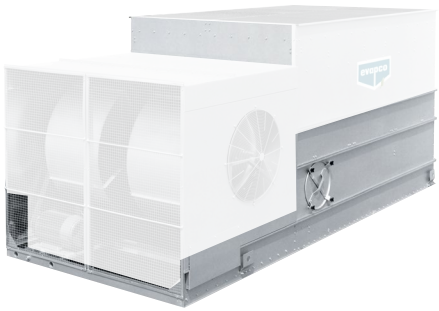


Stainless Steel Water Touch Basin

All panels in the pan section in contact with the cooling water including the fan discharge cowls are constructed of Type 304 stainless steel. The remainder of unit is constructed of G-235 galvanized steel.

All models with this option are furnished with epoxy coated fan wheels and shafts coated with a rust inhibitor. Centrifugal fan wheels are **not available** in stainless steel. Fan screens are galvanized.

NOTE: LRC models have carbon steel coils, which are hot dip galvanized after fabrication as standard.



Stainless Steel Water Touch Unit

All panels in contact with the cooling water including the upper casing panels are constructed of Type 304 stainless steel. All models with this option are furnished with epoxy coated fan wheels and shafts coated with a rust inhibitor. Centrifugal fan wheels are **not available** in stainless steel. Fan screens are galvanized. This option designates the entire water section as stainless.

All Stainless Steel Option (Excluding Fans/Coils)

All panels including the fan housings and supports are constructed of Type 304 stainless steel. All models with this option are furnished with epoxy coated fan wheels and shafts coated with a rust inhibitor. Centrifugal fan wheels are **not available** in stainless steel. With this option, all sheet metal is stainless including the Fan Housings and Supports. Fan screens are stainless steel.

LSC-E / LRC Selection Procedure

Two methods of selection are presented, the first is based on the total heat of rejection as described immediately below. The second and more simple method is based on evaporator tons. The evaporator ton method is only applicable to systems with open type reciprocating compressors.

The heat of rejection method is applicable to all but centrifugal compressor applications and is normally used for selecting evaporative condensers for use with hermetic compressors and screw compressors. It can also be used for standard open type reciprocating compressors as an alternate to the evaporator ton method.

The evaporator ton method is based on the estimated heat of compression. **The heat of rejection method of selection is more accurate and should be used whenever possible.**

Refer to the factory for selections on systems with centrifugal compressors.

Heat of Rejection Method

In the heat of rejection method, a factor for the specified operating conditions (condensing temperature and wet bulb) is obtained from Table 1 or 2 and multiplied times the heat of rejection.

The resultant figure is used to select a unit from Table 3. Unit capacities are given in Table 3 in thousands of BTU/Hr or MBH.

If the heat of rejection is not known, it can be determined by one of the following formulaes:

Open Compressors:

Heat of Rejection = Evaporator Load (BTU/Hr) + Compressor BHP x 2545

Hermetic Compressors:

Heat of Rejection = Evaporator Load (BTU/Hr) + K.W. Compressor Input x 3415

EXAMPLE

Given: 250 ton load, ammonia refrigerant 96.3° condensing temperature, 78° W.B. temperature and 300 compressor BHP.

Selection: Heat of Rejection

250 tons x 12000 = 3,000,000 BTU/Hr

300 BHP x 2545 = 763,500 BTU/Hr

Total 3,763,500 BTU/Hr

From Table 2 the capacity factor for 96.3° condensing and 78° W.B. = 1.37 3,763,500 x 1.37 = 5,155,995 BTU/Hr or 5156 MBH. Therefore, select model LSC-355E-1g or LRC-361-1g.

Note: For screw compressor selections employing water cooled oil cooling, select a condenser for the total MBH as in the example. The condenser can then function in one of two ways:

(1) Recirculating water from the water sump can be used directly in the oil cooler. A separate pump should be employed and the return water should be directed into the water sump at the opposite end from the pump suction.

(2) The condenser coil can be circuited so that water or a glycol-water mixture for the oil cooler can be cooled in a separate section of the coil. Specify load and water flow required.

For refrigerant injection cooled screw compressors, select the condenser in the same manner as shown in the example.

If the oil cooler is supplied by water from a separate source, then the oil cooling load should be deducted from the heat of rejection before making the selection.

LSC-E / LRC Selection Procedure

Table 1 - HCFC-22 and HFC-134a Heat Rejection Factors

Condensing Pres. psig		Cond. Temp. °F	Wet Bulb Temperature, (°F)																
HCFC-22	HFC-134a		50	55	60	62	64	66	68	70	72	74	75	76	77	78	80	82	84	86
156	95	85	1.10	1.22	1.39	1.50	1.61	1.75	1.93	2.13	2.42	2.78	3.02	3.29	3.64	4.00	-	-	-	-
168	104	90	.93	1.02	1.14	1.21	1.28	1.36	1.45	1.57	1.71	1.89	2.00	2.12	2.25	2.38	2.85	3.50	-	-
182	114	95	.80	.87	.95	1.00	1.05	1.10	1.15	1.22	1.31	1.40	1.45	1.50	1.56	1.64	1.82	2.07	2.37	2.77
196	124	100	.71	.76	.82	.85	.88	.91	.94	.98	1.03	1.09	1.12	1.15	1.20	1.24	1.34	1.46	1.63	1.82
211	135	105	.63	.66	.70	.72	.75	.77	.80	.83	.87	.91	.93	.95	.97	1.00	1.06	1.13	1.23	1.35
226	146	110	.56	.59	.62	.64	.65	.67	.69	.71	.74	.77	.78	.80	.82	.84	.88	.93	.98	1.04

Table 2 - Ammonia (R-717) Heat Rejection Factors

Condensing Pres. psig	Cond. Temp. °F	Wet Bulb Temperature, (°F)																	
		50	55	60	62	64	66	68	70	72	74	75	76	77	78	80	82	84	86
152	85	.98	1.09	1.24	1.34	1.44	1.56	1.72	1.90	2.16	2.48	2.70	2.94	3.25	3.57	-	-	-	-
166	90	.83	.91	1.02	1.08	1.14	1.21	1.29	1.40	1.53	1.69	1.79	1.89	2.01	2.12	2.54	3.12	-	-
181	95	.71	.78	.85	.89	.94	.98	1.03	1.09	1.17	1.25	1.29	1.34	1.39	1.47	1.63	1.85	2.12	2.47
185	96.3	.69	.75	.82	.86	.90	.94	.98	1.03	1.10	1.18	1.22	1.26	1.31	1.37	1.51	1.71	1.94	2.25
197	100	.63	.68	.73	.76	.79	.81	.84	.87	.92	.97	1.00	1.03	1.07	1.11	1.20	1.30	1.46	1.63
214	105	.56	.59	.62	.64	.67	.69	.71	.74	.78	.81	.83	.85	.87	.89	.95	1.01	1.10	1.21
232	110	.50	.53	.55	.57	.58	.60	.62	.63	.66	.69	.70	.71	.73	.75	.79	.83	.87	.93

Table 3 - Unit Heat Rejection

LSC-E Models

Model	MBH Base	Model	MBH Base	Model	MBH Base	Model	MBH Base
LSC-36E-1g	529	LSC-280E-1g	4,116	LSC-490E-1	7,203	LSC-820E-1g	12,054
LSC-41E-1g	603	LSC-281E-1g	4,131	LSC-500E-1g	7,350	LSC-860E-1g	12,642
LSC-48E-1g	706	LSC-295E-1g	4,337	LSC-510E-1g	7,497	LSC-861E-1g	12,657
LSC-54E-1g	794	LSC-300E-1g	4,410	LSC-515E-1g	7,571	LSC-900E-1g	13,230
LSC-65E-1g	956	LSC-310E-1g	4,557	LSC-530E-1g	7,791	LSC-920E-1g	13,524
LSC-70E-1g	1,029	LSC-315E-1g	4,631	LSC-540E-1g	7,938	LSC-950E-1g	13,965
LSC-75E-1g	1,103	LSC-330E-1g	4,851	LSC-550E-1g	8,085	LSC-960E-1g	14,112
LSC-80E-1g	1,176	LSC-335E-1g	4,925	LSC-560E-1g	8,232	LSC-980E-1g	14,406
LSC-90E-1g	1,323	LSC-345E-1g	5,072	LSC-500E-1g	8,673	LSC-1000E-1g	14,700
LSC-100E-1g	1,470	LSC-355E-1g	5,219	LSC-591E-1g	8,688	LSC-1020E-1g	14,994
LSC-110E-1g	1,617	LSC-360E-1g	5,292	LSC-620E-1g	9,114	LSC-1030E-1g	15,141
LSC-120E-1g	1,764	LSC-370E-1g	5,439	LSC-625E-1g	9,188	LSC-1060E-1g	15,582
LSC-135E-1g	1,985	LSC-385E-1g	5,660	LSC-650E-1g	9,555	LSC-1080E-1g	15,876
LSC-150E-1g	2,205	LSC-386E-1g	5,674	LSC-660E-1g	9,702	LSC-1100E-1g	16,170
LSC-155E-1g	2,279	LSC-400E-1g	5,880	LSC-690E-1g	10,143	LSC-1120E-1g	16,464
LSC-170E-1g	2,499	LSC-410E-1g	6,027	LSC-691E-1g	10,158	LSC-1180E-1g	17,346
LSC-185E-1g	2,720	LSC-430E-1g	6,321	LSC-720E-1g	10,584	LSC-1250E-1g	18,375
LSC-200E-1g	2,940	LSC-431E-1g	6,336	LSC-721E-1g	10,599	LSC-1310E-1g	19,257
LSC-210E-1g	3,087	LSC-450E-1g	6,615	LSC-755E-1g	11,099	LSC-1380E-1g	20,286
LSC-225E-1g	3,308	LSC-460E-1g	6,762	LSC-770E-1g	11,319	LSC-1440E-1g	21,168
LSC-240E-1g	3,528	LSC-475E-1g	6,982	LSC-800E-1g	11,760	LSC-1510E-1g	22,197
LSC-250E-1g	3,675	LSC-480E-1g	7,056	LSC-805E-1g	11,834	LSC-1610E-1g	23,667

LRC Models

Model	MBH Base	Model	MBH Base
LRC-25-1g	368	LRC-174-1g	2,558
LRC-27-1g	397	LRC-183-1g	2,690
LRC-29-1g	426	LRC-188-1g	2,764
LRC-35-1g	515	LRC-190-1g	2,793
LRC-38-1g	559	LRC-210-1g	2,955
LRC-42-1g	617	LRC-211-1g	3,102
LRC-48-1g	706	LRC-213-1g	3,131
LRC-51-1g	750	LRC-225-1g	3,308
LRC-58-1g	853	LRC-227-1g	3,337
LRC-65-1g	956	LRC-233-1g	3,425
LRC-72-1g	1,058	LRC-240-1g	3,528
LRC-76-1g	1,117	LRC-246-1g	3,616
LRC-84-1g	1,235	LRC-249-1g	3,660
LRC-91-1g	1,338	LRC-255-1g	3,749
LRC-101-1g	1,485	LRC-269-1g	3,954
LRC-108-1g	1,588	LRC-287-1g	4,219
LRC-114-1g	1,676	LRC-300-1g	4,410
LRC-116-1g	1,705	LRC-321-1g	4,719
LRC-128-1g	1,882	LRC-336-1g	4,939
LRC-131-1g	1,926	LRC-361-1g	5,307
LRC-140-1g	2,058	LRC-379-1g	5,571
LRC-155-1g	2,279		

Note: Table 3 presents only the standard model selections. Other models exist for special horsepower or layout applications. Please consult the factory or EVAPCO Representative for the special situations.

LSC-E / LRC Selection Procedure

Evaporator Ton Method

In the evaporator ton method, factors for the specified operating conditions (suction temperature, condensing temperature and wet bulb) are obtained from either Table 5 or 6 and multiplied times the heat load in tons. The resultant figure is used to select a unit from Table 4. The condenser model in Table 4 is equal to the unit capacity in evaporator tons for HCFC-22 or HFC-134a conditions of 105°F condensing, 40°F suction and 78° wet bulb.

EXAMPLE

Given: 200 ton evaporator load, R-717, condensing at 95° F, with +10° F suction and 76° F wet bulb temperatures.

Selection: The capacity factor from Table 6 for the given condensing and wet bulb conditions is 1.38, and the capacity factor for the suction temperature of +10° F is 1.03, so the corrected capacity required may be determined as:

200 X 1.38 X 1.03 = 284 corrected tons. Therefore, select a model LSC-300E-1g or LRC-287-1g depending on unit type desired, and any layout or horsepower considerations.

Table 4 - Unit Sizes

LSC-E Models			
LSC-36E-1g	LSC-300E-1g	LSC-620E-1g	LSC-450E-1g
LSC-41E-1g	LSC-315E-1g	LSC-660E-1g	LSC-480E-1g
LSC-48-1g	LSC-335E-1g	LSC-691E-1g	LSC-500E-1g
LSC-54E-1g	LSC-355E-1g	LSC-721E-1g	LSC-515E-1g
LSC-65E-1g	LSC-370E-1g	LSC-770E-1g	LSC-550E-1g
LSC-70E-1g	LSC-385E-1g	LSC-820E-1g	LSC-590E-1g
LSC-75E-1g	LSC-281E-1g	LSC-861E-1g	LSC-625E-1g
LSC-80E-1g	LSC-295E-1g	LSC-920E-1g	LSC-650E-1g
LSC-90E-1g	LSC-310E-1g	LSC-950E-1g	LSC-690E-1g
LSC-100E-1g	LSC-330E-1g	LSC-980E-1g	LSC-720E-1g
LSC-110-1g	LSC-345E-1g	LSC-1020E-1g	LSC-755E-1g
LSC-120E-1g	LSC-360E-1g	LSC-1060E-1g	LSC-805E-1g
LSC-135E-1g	LSC-386E-1g	LSC-1080E-1g	LSC-1100E-1g
LSC-150E-1g	LSC-410E-1g	LSC-1120E-1g	LSC-1180E-1g
LSC-155E-1g	LSC-431E-1g	LSC-800E-1g	LSC-1250E-1g
LSC-170E-1g	LSC-460E-1g	LSC-805E-1g	LSC-1310E-1g
LSC-185E-1g	LSC-475E-1g	LSC-860E-1g	LSC-1380E-1g
LSC-200E-1g	LSC-490E-1g	LSC-900E-1g	LSC-1440E-1g
LSC-210E-1g	LSC-510E-1g	LSC-960E-1g	LSC-1510E-1g
LSC-225E-1g	LSC-530E-1g	LSC-1000E-1g	LSC-1610E-1g
LSC-240E-1g	LSC-540E-1g	LSC-1030E-1g	
LSC-250E-1g	LSC-560E-1g	LSC-400E-1g	
LSC-280E-1g	LSC-591E-1g	LSC-430E-1g	

LRC Models			
LRC-25-1g	LRC-72-1g	LRC-155-1g	LRC-240-1g
LRC-27-1g	LRC-76-1g	LRC-174-1g	LRC-246-1g
LRC-29-1g	LRC-84-1g	LRC-183-1g	LRC-249-1g
LRC-35-1g	LRC-91-1g	LRC-188-1g	LRC-255-1g
LRC-38-1g	LRC-101-1g	LRC-190-1g	LRC-269-1g
LRC-42-1g	LRC-108-1g	LRC-201-1g	LRC-287-1g
LRC-48-1g	LRC-114-1g	LRC-211-1g	LRC-300-1g
LRC-51-1g	LRC-116-1g	LRC-213-1g	LRC-321-1g
LRC-58-1g	LRC-128-1g	LRC-225-1g	LRC-336-1g
LRC-65-1g	LRC-131-1g	LRC-227-1g	LRC-361-1g
	LRC-140-1g	LRC-233-1g	LRC-379-1g

Table 5 - HCFC-22 and HFC-134a Capacity Factors

Condensing Pres. psig		Cond. Temp. °F	Wet Bulb Temperature, (°F)																	
HCFC-22	HFC 134a		50	55	60	62	64	66	68	70	72	74	75	76	77	78	80	82	84	86
156	95	85	1.05	1.16	1.32	1.43	1.53	1.66	1.83	2.02	2.30	2.64	2.87	3.13	3.46	3.80	-	-	-	-
168	104	90	.90	.98	1.10	1.17	1.24	1.31	1.40	1.52	1.65	1.82	1.93	2.05	2.17	2.30	2.75	3.38	-	-
182	114	95	.78	.85	.93	.98	1.02	1.07	1.12	1.19	1.28	1.37	1.42	1.46	1.52	1.60	1.78	2.02	2.31	2.70
196	124	100	.70	.75	.81	.84	.87	.90	.93	.97	1.02	1.08	1.11	1.14	1.19	1.23	1.33	1.44	1.61	1.80
211	135	105	.63	.66	.70	.72	.75	.77	.80	.83	.87	.91	.93	.95	.97	1.00	1.06	1.13	1.23	1.35
226	146	110	.57	.60	.63	.65	.66	.68	.70	.72	.75	.78	.79	.81	.83	.85	.89	.94	.99	1.05

Suction Temp. °F		-20°	-10°	-0°	+10°	+20°	+30°	+40°	+50°
Suction Press. (psig)	HCFC-22	10.1	16.5	24.0	32.8	43.0	54.9	68.5	84.0
	HFC-134a	-1.8	1.9	6.5	11.9	18.4	26.1	35.0	45.4
Capacity Factor		1.22	1.17	1.13	1.09	1.06	1.03	1.00	0.97

Table 6 - Ammonia (R-717) Capacity Factors

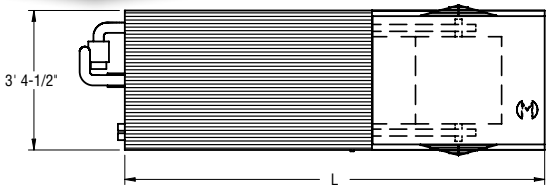
Condensing Pres. psig		Cond. Temp. °F	Wet Bulb Temperature, (°F)																	
			50	55	60	62	64	66	68	70	72	74	75	76	77	78	80	82	84	86
152	85	.99	1.09	1.25	1.34	1.44	1.57	1.73	1.91	2.17	2.49	2.71	2.95	3.26	3.59	-	-	-	-	-
166	90	.84	.93	1.03	1.10	1.16	1.23	1.32	1.42	1.55	1.71	1.81	1.92	2.04	2.16	2.59	3.17	-	-	-
181	95	.74	.80	.87	.92	.97	1.01	1.06	1.12	1.21	1.29	1.33	1.38	1.44	1.51	1.68	1.91	2.18	2.55	2.70
185	96.3	.72	.78	.85	.89	.93	.97	1.01	1.07	1.14	1.22	1.26	1.30	1.35	1.41	1.56	1.76	2.01	2.33	1.80
197	100	.66	.71	.76	.79	.82	.85	.87	.91	.96	1.01	1.04	1.07	1.12	1.15	1.25	1.36	1.52	1.69	1.35
214	105	.59	.62	.66	.68	.71	.73	.75	.78	.82	.86	.88	.90	.91	.94	1.00	1.07	1.16	1.27	1.05
232	110	.53	.56	.59	.61	.62	.64	.66	.68	.71	.73	.74	.76	.78	.80	.84	.89	.93	.99	

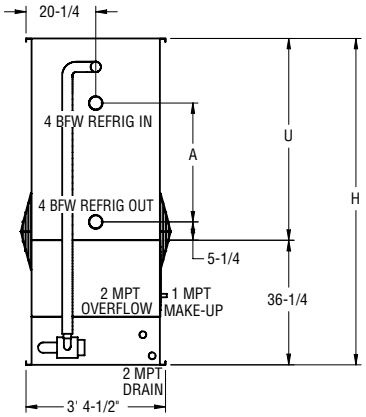
Suction Temp. °F	-30°	-20°	-10°	0°	+10°	+20°	+30°	+40°
Suction Press. (psig)	-1.6	3.6	9.0	15.7	23.8	33.5	45.0	58.6
Capacity Factor	1.18	1.14	1.10	1.07	1.03	1.00	0.97	0.95

Note: Table 4 presents only the standard model selections. Other models exist for special horsepower or layout applications. Please consult the factory or EVAPCO Representative for the special situations.

Engineering Data & Dimensions

Models LRC-25 to 72





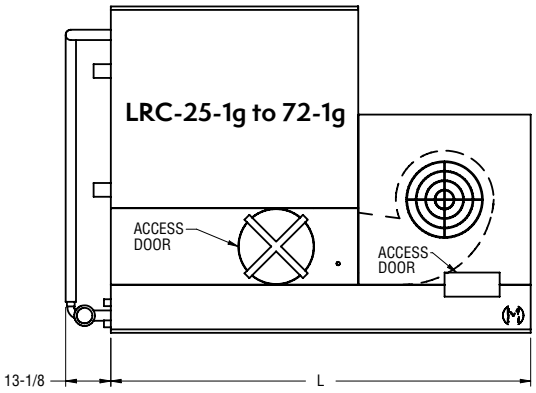


Table 7 Engineering Data

Model No.*	R-717 Tons*	Fans		Weights		Refrigerant Charge lbs.†	Coil Volume ft3	Spray Pump		Remote Pump			Dimensions			
		HP**	CFM	Shipping	Operating			HP	GPM	Gallons Req'd***	Conn. Size	Operating Weight	Height H	Upper U	Coil A	Length L
LRC-25-1g	18	1	6,630	2,270	3,280	30	4	1/2	100	80	4"	2,430	6' 7-3/4"	43-1/2"	12"	10' 1-7/8"
LRC-27-1g	19	1-1/2	7,580	2,270	3,290	30	4	1/2	100	80	4"	2,430	6' 7-3/4"	43-1/2"	12"	10' 1-7/8"
LRC-29-1g	21	2	8,340	2,270	3,290	30	4	1/2	100	80	4"	2,430	6' 7-3/4"	43-1/2"	12"	10' 1-7/8"
LRC-35-1g	25	1-1/2	7,420	2,580	3,610	40	6	1/2	100	80	4"	2,760	6' 7-3/4"	43-1/2"	19-1/2"	10' 1-7/8"
LRC-38-1g	27	2	8,180	2,580	3,610	40	6	1/2	100	80	4"	2,760	6' 7-3/4"	43-1/2"	19-1/2"	10' 1-7/8"
LRC-42-1g	30	3	9,370	2,590	3,630	40	6	1/2	100	80	4"	2,770	6' 7-3/4"	43-1/2"	19-1/2"	10' 1-7/8"
LRC-48-1g	34	5	11,110	2,600	3,640	40	6	1/2	100	80	4"	2,780	6' 7-3/4"	43-1/2"	19-1/2"	10' 1-7/8"
LRC-51-1g	36	3	9,180	2,920	3,980	55	7	1/2	100	80	4"	3,120	7' 3-1/4"	51"	27"	10' 1-7/8"
LRC-58-1g	41	5	10,890	2,930	3,990	55	7	1/2	100	80	4"	3,130	7' 3-1/4"	51"	27"	10' 1-7/8"
LRC-65-1g	46	5	10,680	3,290	4,360	65	9	1/2	100	80	4"	3,500	7' 10-3/4"	58-1/2"	34-1/2"	10' 1-7/8"
LRC-72-1g	51	7-1/2	12,220	3,330	4,400	65	9	1/2	100	80	4"	3,540	7' 10-3/4"	58-1/2"	34-1/2"	10' 1-7/8"

* Tons at standard conditions: HCFC-22 and HFC-134a. 105°F condensing, 40°F suction and 78°F W.B.; ammonia 96.3°F condensing, 20°F suction and 78°F W.B.

** For dry operation or for external static pressure up to 1/2" use next larger size fan motor.

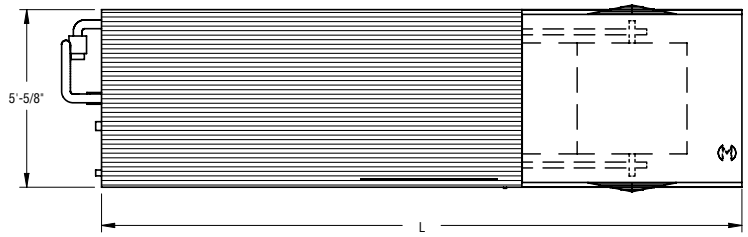
*** Gallons shown is water in suspension in unit and piping. Allow for additional water in bottom of remote sump to cover pump suction and strainer during operation. (12" would normally be sufficient.)

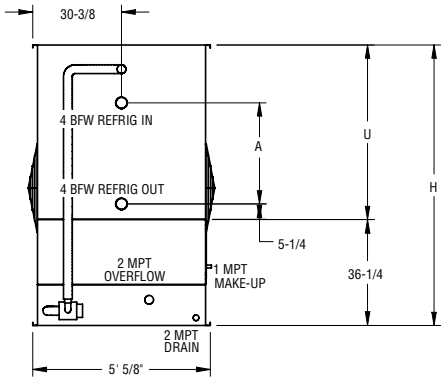
† Refrigerant charge is shown for R-717. Multiply by 1.93 for R-22 and 1.98 for R-134a.

Dimensions are subject to change. Do not use for pre-fabrication.

Engineering Data & Dimensions

Models LRC-76 to 246





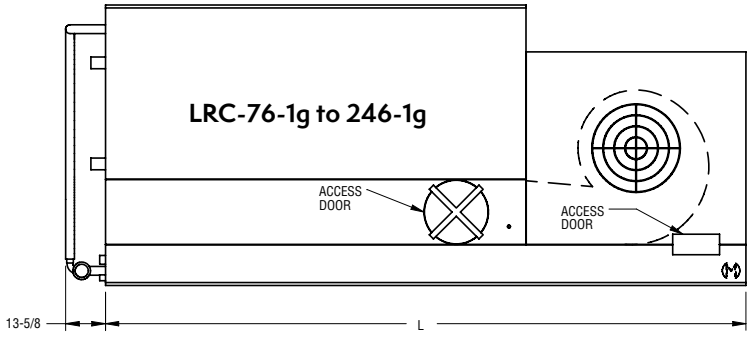


Table 8 Engineering Data

Model No.*	R-717 Tons*	Fans		Weights		Refrigerant Charge lbs.†	Coil Volume ft3	Spray Pump		Remote Pump			Dimensions			
		HP**	CFM	Shipping	Operating			HP	GPM	Gallons Req'd***	Conn. Size	Operating Weight	Height H	Upper U	Coil A	Length L
LRC-76-1g	54	5	16,030	3,900	5,730	65	9	1	160	120	6"	4,250	6' 7-3/4"	43-1/2"	19-1/2"	12' 2-7/8"
LRC-84-1g	60	7-1/2	18,370	3,940	5,770	65	9	1	160	120	6"	4,290	6' 7-3/4"	43-1/2"	19-1/2"	12' 2-7/8"
LRC-91-1g	65	5	15,730	4,390	6,250	85	11	1	160	120	6"	4,770	7' 3-1/4"	51"	27"	12' 2-7/8"
LRC-101-1g	72	7-1/2	18,010	4,480	6,330	85	11	1	160	120	6"	4,850	7' 3-1/4"	51"	27"	12' 2-7/8"
LRC-114-1g	81	7-1/2	17,650	4,980	6,860	105	14	1	160	120	6"	5,380	7' 10-3/4"	58-1/2"	34-1/2"	12' 2-7/8"
LRC-108-1g	77	7-1/2	22,450	5,040	7,790	95	13	1-1/2	255	170	6"	5,630	6' 7-3/4"	43-1/2"	19-1/2"	15' 2-1/4"
LRC-116-1g	82	10	24,690	5,080	7,820	95	13	1-1/2	255	170	6"	5,660	6' 7-3/4"	43-1/2"	19-1/2'	15' 2-1/4"
LRC-128-1g	91	15	28,280	5,190	7,930	95	13	1-1/2	255	170	6"	5,770	6' 7-3/4"	43-1/2"	19-1/2"	15' 2-1/4"
LRC-131-1g	93	7-1/2	22,000	5,790	8,580	125	17	1-1/2	255	170	6"	6,420	7' 3-1/4"	51"	27"	15' 2-1/4"
LRC-140-1g	99	10	24,240	5,830	8,620	125	17	1-1/2	255	170	6"	6,460	7' 3-1/4"	51"	27"	15' 2-1/4"
LRC-155-1g	110	15	27,740	5,940	8,730	125	17	1-1/2	255	170	6"	6,570	7' 3-1/4"	51"	27"	15' 2-1/4"
LRC-174-1g	123	15	27,160	6,740	9,570	150	21	1-1/2	255	170	6"	7,410	7' 10-3/4"	58-1/2"	34-1/2"	15' 2-1/4"
LRC-183-1g	130	15	26,620	7,410	10,290	180	25	1-1/2	255	170	6"	8,130	8' 6-1/4"	66"	42"	15' 2-1/4"
LRC-190-1g	135	20	34,220	7,260	11,070	165	22	2	345	240	8"	8,210	7' 4-1/4"	52"	27"	18' 2-5/8"
LRC-201-1g	143	25	36,860	7,270	11,080	165	22	2	345	240	8"	8,220	7' 4-1/4"	52"	27"	18' 2-5/8"
LRC-213-1g	151	20	33,500	8,250	12,120	200	28	2	345	240	8"	9,260	7' 11-3/4"	59-1/2"	34-1/2"	18' 2-5/8"
LRC-225-1g	160	25	36,080	8,260	12,130	200	28	2	345	240	8"	9,270	7' 11-3/4"	59-1/2"	34-1/2"	18' 2-5/8"
LRC-233-1g	165	30	38,360	8,280	12,150	200	28	2	345	240	8"	9,290	7' 11-3/4"	59-1/2"	34-1/2"	18' 2-5/8"
LRC-246-1g	174	30	37,580	9,210	13,120	240	33	2	345	240	8"	10,270	8' 7-1/4"	67"	42"	18' 2-5/8"

* Tons at standard conditions: HCFC-22 and HFC-134a. 105°F condensing, 40°F suction and 78°F W.B.; ammonia 96.3°F condensing, 20°F suction and 78°F W.B.

** For dry operation or for external static pressure up to 1/2" use next larger size fan motor.

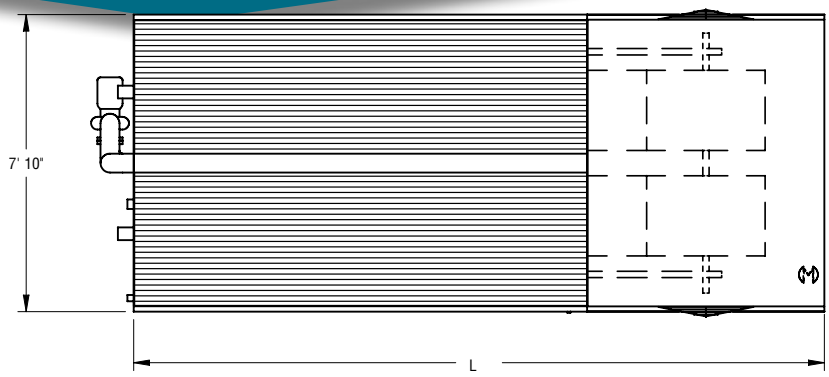
*** Gallons shown is water in suspension in unit and piping. Allow for additional water in bottom of remote sump to cover pump suction and strainer during operation. (12" would normally be sufficient.)

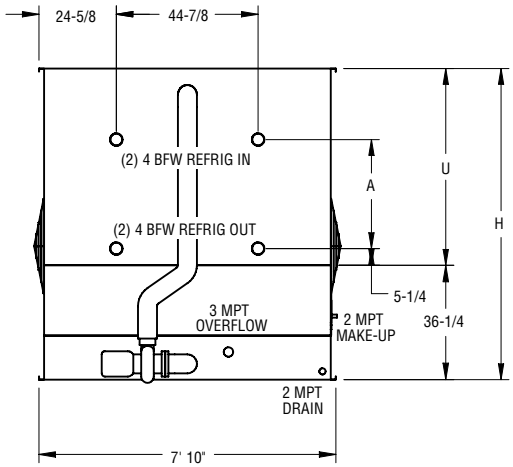
† Refrigerant charge is shown for R-717. Multiply by 1.93 for R-22 and 1.98 for R-134a.

Dimensions are subject to change. Do not use for pre-fabrication.

Engineering Data & Dimensions

Models LRC-188 to 379





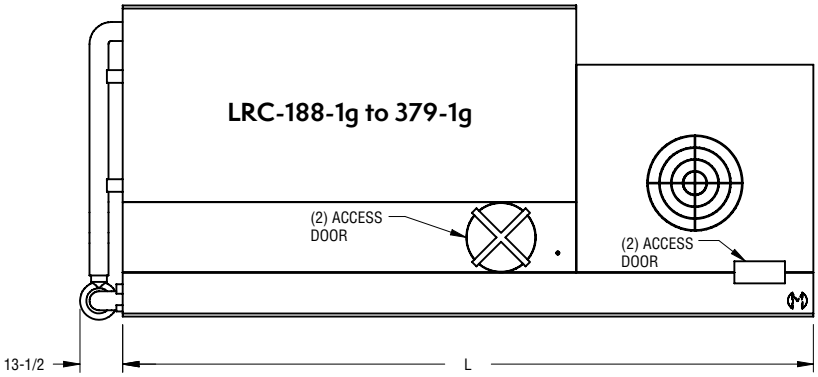


Table 9 Engineering Data

Model No.*	R-717 Tons*	Fans		Weights		Refrigerant Charge lbs.†	Coil Volume ft³	Spray Pump		Remote Pump			Dimensions			
		HP**	CFM	Shipping	Operating			HP	GPM	Gallons Req'd***	Conn. Size	Operating Weight	Height H	Upper U	Coil A	Length L
LRC-188-1g	133	20	41,820	7,820	12,360	150	18	2	405	250	8"	8,900	6' 11-1/2"	47-1/4"	19-1/2"	15' 2-1/4"
LRC-211-1g	150	15	37,210	8,940	13,540	195	24	2	405	250	8"	10,090	7' 7"	54-3/4"	27"	15' 2-1/4"
LRC-227-1g	161	20	40,970	8,950	13,560	195	24	2	405	250	8"	10,110	7' 7"	54-3/4"	27"	15' 2-1/4"
LRC-240-1g	170	25	44,160	8,970	13,570	195	24	2	405	250	8"	10,120	7' 7"	54-3/4"	27"	15' 2-1/4"
LRC-255-1g	181	20	40,190	10,380	15,050	240	29	2	405	250	8"	11,590	8' 2-1/2"	62-1/4"	34-1/2"	15' 2-1/4"
LRC-269-1g	191	25	43,240	10,390	15,060	240	29	2	405	250	8"	11,600	8' 2-1/2"	62-1/4"	34-1/2"	15' 2-1/4"
LRC-249-1g	177	30	55,830	9,340	15,490	195	24	3	545	360	10"	10,930	6' 11-1/2"	47-1/4"	19-1/2"	18' 2-5/8"
LRC-287-1g	204	25	51,560	10,770	17,020	255	31	3	545	360	10"	12,460	7' 7"	54-3/4"	27"	18' 2-5/8"
LRC-300-1g	213	30	54,790	10,790	17,040	255	31	3	545	360	10"	12,480	7' 7"	54-3/4"	27"	18' 2-5/8"
LRC-321-1g	228	25	50,510	12,300	18,640	320	39	3	545	360	10"	14,080	8' 2-1/2"	62-1/4"	34-1/2"	18' 2-5/8"
LRC-336-1g	238	30	53,650	12,320	18,660	320	39	3	545	360	10"	14,100	8' 2-1/2"	62-1/4"	34-1/2"	18' 2-5/8"
LRC-361-1g	256	40	59,060	12,620	18,950	320	39	3	545	360	10"	14,390	8' 2-1/2"	62-1/4"	34-1/2"	18' 2-5/8"
LRC-379-1g	269	40	57,920	14,050	20,470	380	46	3	545	360	10"	15,910	8' 10"	69-3/4"	42"	18' 2-5/8"

* Tons at standard conditions: HCFC-22 and HFC-134a. 105°F condensing, 40°F suction and 78°F W.B.; ammonia 96.3°F condensing, 20°F suction and 78°F W.B.

** For dry operation or for external static pressure up to 1/2" use next larger size fan motor.

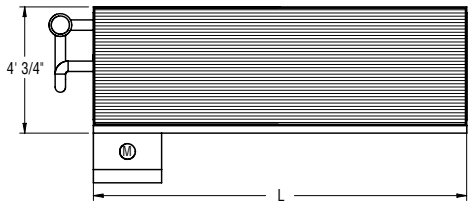
*** Gallons shown is water in suspension in unit and piping. Allow for additional water in bottom of remote sump to cover pump suction and strainer during operation. (12" would normally be sufficient.)

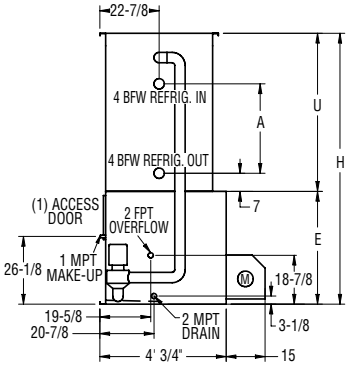
† Refrigerant charge is shown for R-717. Multiply by 1.93 for R-22 and 1.98 for R-134a.

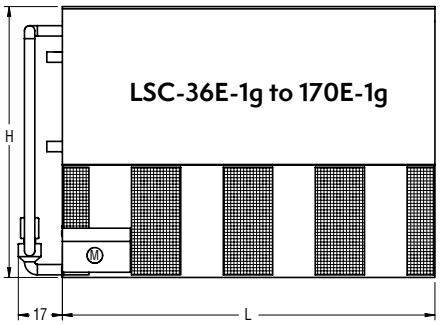
Dimensions are subject to change. Do not use for pre-fabrication.

Engineering Data & Dimensions

Models LSC-36E to LSC-170E







[u] The side view motor dimension for LSC-135E-1g to 170E-1g equals 19"

Table 10 Engineering Data

Model No.*	R-717 Tons*	Fans		Weights		Heaviest Section†	Refrigerant Operating Charge lbs.††	Coil Volume ft³	Spray Pump		Remote Pump			Dimensions				
		HP**	CFM	Shipping	Operating				HP	GPM	Gallons Req'd***	Conn. Size	Operating Weight	Height H	Upper U	Lower E	Coil A	Length L
LSC-36E-1g	26	3	10,200	2,360	3,080	1,230	33	5	3/4	120	80	4"	2,660	6' 10"	38-1/2"	43-1/2"	12"	5' 11-7/8"
LSC-41E-1g	29	5	12,200	2,370	3,090	1,230	33	5	3/4	120	80	4"	2,670	6' 10"	38-1/2"	43-1/2"	12"	5' 11-7/8"
LSC-48E-1g	34	3	10,100	2,720	3,460	1,590	46	6	3/4	120	80	4"	3,030	7' 5-1/2"	46"	43-1/2"	19-/12"	5' 11-7/8"
LSC-54E-1g	38	5	11,900	2,730	3,470	1,590	46	6	3/4	120	80	4"	3,040	7' 5-1/2"	46"	43-1/2"	19-/12"	5' 11-7/8"
LSC-65E-1g	46	5	11,700	3,080	3,850	1,940	59	8	3/4	120	80	4"	3,420	8' 1"	53-1/2"	43-1/2"	27"	5' 11-7/8"
LSC-70E-1g	50	7-1/2	13,300	3,130	3,900	1,940	59	8	3/4	120	80	4"	3,470	8' 1"	53-1/2"	43-1/2"	27"	5' 11-7/8"
LSC-75E-1g	53	5	11,400	3,440	4,230	2,300	73	10	3/4	120	80	4"	3,810	8' 8-1/2"	61"	43-1/2"	34-1/2"	5' 11-7/8"
LSC-80E-1g	57	7-1/2	13,100	3,490	4,280	2,300	73	10	3/4	120	80	4"	3,860	8' 8-1/2"	61"	43-1/2"	34-1/2"	5' 11-7/8"
LSC-90E-1g	64	5	15,200	4,260	5,440	2,770	87	12	1	180	120	6"	4,890	8' 1"	53-1/2"	43-1/2"	27"	8' 11-1/4"
LSC-100E-1g	71	7-1/2	17,400	4,310	5,490	2,770	87	12	1	180	120	6"	4,940	8' 1"	53-1/2"	43-1/2"	27"	8' 11-1/4"
LSC-110E-1g	78	10	19,200	4,330	5,510	2,770	87	12	1	180	120	6"	4,960	8' 1"	53-1/2"	43-1/2"	27"	8' 11-1/4"
LSC-120E-1g	85	10	18,900	4,860	6,080	3,300	107	15	1	180	120	6"	5,520	8' 8-1/2"	61"	43-1/2"	34-1/2"	8' 11-1/4"
LSC-135E-1g	96	10	23,300	5,680	7,180	3,690	115	16	1-1/2	245	170	6"	6,570	8' 1"	53-1/2"	43-1/2"	27"	11' 11-3/4"
LSC-150E-1g	106	15	26,700	5,800	7,300	3,690	115	16	1-1/2	245	170	6"	6,690	8' 1"	53-1/2"	43-1/2"	27"	11' 11-3/4"
LSC-155E-1g	110	10	22,900	6,330	7,880	4,340	142	19	1-1/2	245	170	6"	7,300	8' 8-1/2"	61"	43-1/2"	34-1/2"	11' 11-3/4"
LSC-170E-1g	121	15	26,100	6,450	8,000	4,340	142	19	1-1/2	245	170	6"	7,420	8' 8-1/2"	61"	43-1/2"	34-1/2"	11' 11-3/4"

* Tons at standard conditions: HCFC-22 and HFC-134a. 105°F condensing, 40°F suction and 78°F W.B.; ammonia 96.3°F condensing, 20°F suction and 78°F W.B.

** For dry operation or for external static pressure up to 1/2" use next larger size fan motor.

*** Gallons shown is water in suspension in unit and piping. Allow for additional water in bottom of remote sump to cover pump suction and strainer during operation. (12" would normally be sufficient.)

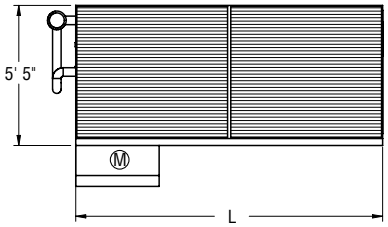
† Heaviest section is the coil section.

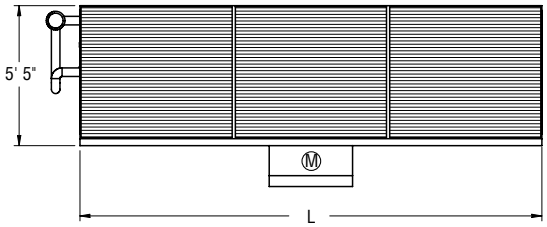
†† Refrigerant charge is shown for R-717. Multiply by 1.93 for R-22 and 1.98 for R-134a.

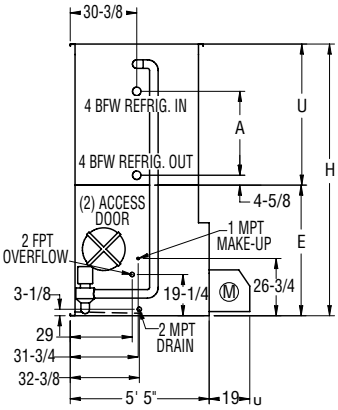
Dimensions are subject to change. Do not use for pre-fabrication.

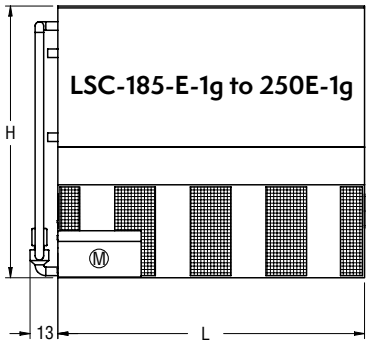
Engineering Data & Dimensions

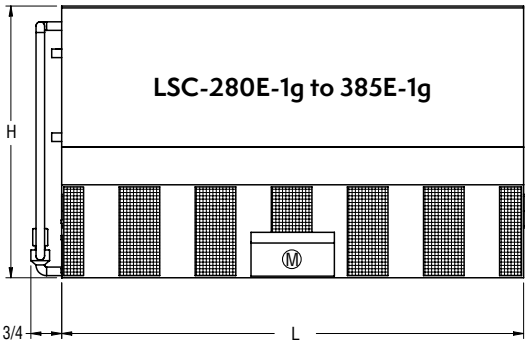
Models LSC-185E to 385E











u The side view motor dimension for LSC-280E-1g to 385E-1g equals 22"

Table 11 Engineering Data

Model No.*	R-717 Tons*	Fans		Weights			Refrigerant Operating Charge lbs.††	Coil Volume ft³	Spray Pump		Remote Pump			Dimensions				
		HP	CFM	Shipping	Operating	Heaviest Section†			HP	GPM	Gallons Req'd***	Conn. Size	Operating Weight	Height H	Upper U	Lower E	Coil A	Length L
LSC-185E-1g	131	10	29,300	7,500	10,240	4,930	163	22	2	345	230	6"	8,550	9' 10-5/8"	57-1/2"	61-1/8"	30-3/4"	11' 11-1/2"
LSC-200E-1g	142	15	33,600	7,620	10,360	4,930	163	22	2	345	230	6"	8,670	9' 10-5/8"	57-1/2"	61-1/8"	30-3/4"	11' 11-1/2"
LSC-210E-1g	149	20	37,000	7,680	10,420	4,930	163	22	2	345	230	6"	8,730	9' 10-5/8"	57-1/2"	61-1/8"	30-3/4"	11' 11-1/2"
LSC-225E-1g	160	15	32,900	8,620	11,430	5,930	202	28	2	345	230	6"	9,750	10' 7-1/8"	66"	61-1/8"	39-1/4"	11' 11-1/2"
LSC-240E-1g	170	20	36,200	8,680	11,490	5,930	202	28	2	345	230	6"	9,810	10' 7-1/8"	66"	61-1/8"	39-1/4"	11' 11-1/2"
LSC-250E-1g	177	20	35,500	9,660	12,550	6,910	240	33	2	345	230	6"	10,880	11' 3-5/8"	74-1/2"	61-1/8"	47-3/4"	11' 11-1/2"
LSC-280E-1g	199	15	44,100	11,270	15,160	7,390	242	33	3	515	340	8"	12,180	9' 10-5/8"	57-1/2"	61-1/8"	30-3/4"	17' 11-7/8"
LSC-300E-1g	213	20	48,500	11,330	15,220	7,390	242	33	3	515	340	8"	12,240	9' 10-5/8"	57-1/2"	61-1/8"	30-3/4"	17' 11-7/8"
LSC-315E-1g	223	25	52,300	11,360	15,250	7,390	242	33	3	515	340	8"	12,270	9' 10-5/8"	57-1/2"	61-1/8"	30-3/4"	17' 11-7/8"
LSC-335E-1g	238	20	47,600	12,840	16,840	8,900	301	41	3	515	340	8"	13,880	10' 7-1/8"	66"	61-1/8"	39-1/4"	17' 11-7/8"
LSC-355E-1g	252	25	51,200	12,870	16,870	8,900	301	41	3	515	340	8"	13,910	10' 7-1/8"	66"	61-1/8"	39-1/4"	17' 11-7/8"
LSC-370E-1g	262	30	54,400	12,920	16,920	8,900	301	41	3	515	340	8"	13,960	10' 7-1/8"	66"	61-1/8"	39-1/4"	17' 11-7/8"
LSC-385E-1g	273	30	53,300	14,390	18,500	10,370	359	49	3	515	340	8"	15,570	11' 3-5/8"	74-1/2"	61-1/8"	47-3/4"	17' 11-7/8"

* Tons at standard conditions: HCFC-22 and HFC-134a. 105°F condensing, 40°F suction and 78°F W.B.; ammonia 96.3°F condensing, 20°F suction and 78°F W.B.

** For dry operation or for external static pressure up to 1/2" use next larger size fan motor.

*** Gallons shown is water in suspension in unit and piping. Allow for additional water in bottom of remote sump to cover pump suction and strainer during operation. (12" would normally be sufficient.)

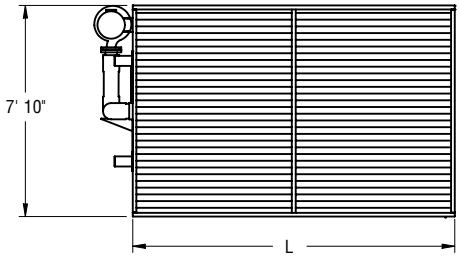
† Heaviest section is the coil section.

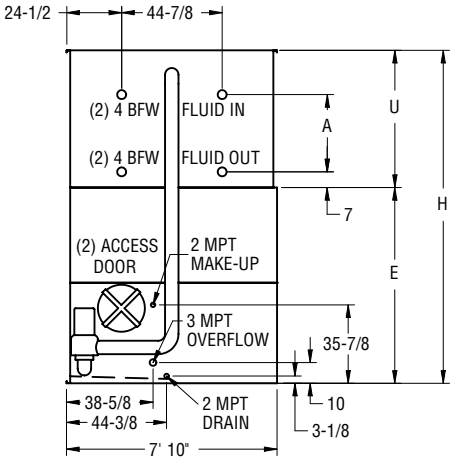
†† Refrigerant charge is shown for R-717. Multiply by 1.93 for R-22 and 1.98 for R-134a.

Dimensions are subject to change. Do not use for pre-fabrication.

Engineering Data & Dimensions

Models LSC-281E to 386E





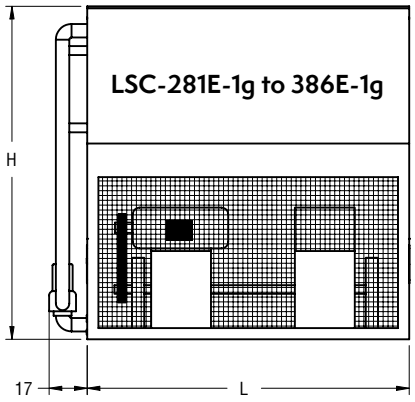


Table 12 Engineering Data

Model No.*	R-717 Tons*	Fans		Weights			Refrigerant Operating Charge lbs.††	Coil Volume ft³	Spray Pump		Remote Pump			Dimensions				
		HP	CFM	Shipping	Operating	Heaviest Section†			HP	GPM	Gallons Req'd***	Conn. Size	Operating Weight	Height H	Upper U	Lower E	Coil A	Length L
LSC-281E-1g	199	20	47,700	11,120	14,990	7,330	257	35	5	570	360	10"	13,130	11' 9-1/8"	4' 5-3/4"	7' 3-3/8"	27"	11' 11-3/4"
LSC-295E-1g	209	25	51,300	11,150	15,020	7,330	257	35	5	570	360	10"	13,160	11' 9-1/8"	4' 5-3/4"	7' 3-3/8"	27"	11' 11-3/4"
LSC-310E-1g	220	30	54,600	11,200	15,070	7,330	257	35	5	570	360	10"	13,210	11' 9-1/8"	4' 5-3/4"	7' 3-3/8"	27"	11' 11-3/4"
LSC-330E-1g	234	25	50,300	12,560	16,550	8,740	318	43	5	570	360	10"	14,800	12' 4-5/8"	5' 1-1/4"	7' 3-3/8"	34-1/2"	11' 11-3/4"
LSC-345E-1g	245	30	53,400	12,610	16,600	8,740	318	43	5	570	360	10"	14,850	12' 4-5/8"	5' 1-1/4"	7' 3-3/8"	34-1/2"	11' 11-3/4"
LSC-360E-1g	255	30	52,400	14,070	18,170	10,200	379	52	5	570	360	10"	16,540	13' 1/8"	5' 8-3/4"	7' 3-3/8"	42"	11' 11-3/4"
LSC-386E-1g	274	40	57,600	14,230	18,330	10,200	379	52	5	570	360	10"	16,700	13' 1/8"	5' 8-3/4"	7' 3-3/8"	42"	11' 11-3/4"

* Tons at standard conditions: HCFC-22 and HFC-134a. 105°F condensing, 40°F suction and 78°F W.B.; ammonia 96.3°F condensing, 20°F suction and 78°F W.B.

** For dry operation or for external static pressure up to 1/2" use next larger size fan motor.

*** Gallons shown is water in suspension in unit and piping. Allow for additional water in bottom of remote sump to cover pump suction and strainer during operation. (12" would normally be sufficient.)

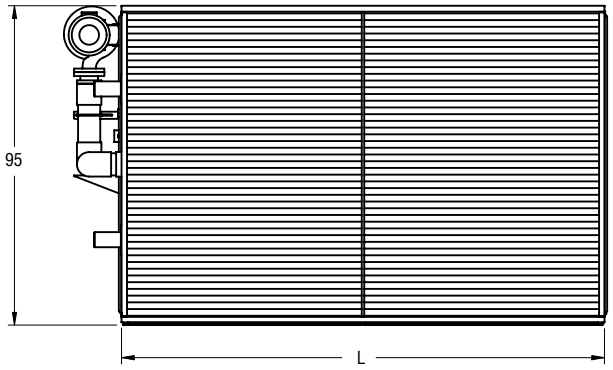
† Heaviest section is the coil section.

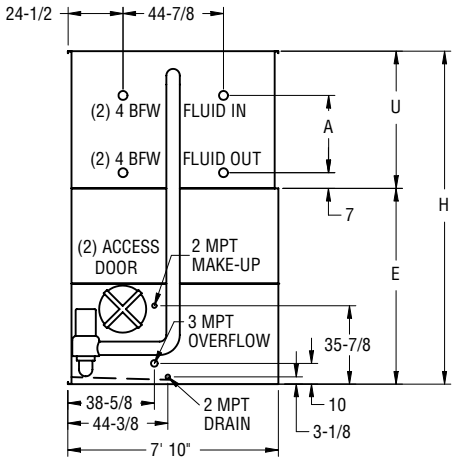
†† Refrigerant charge is shown for R-717. Multiply by 1.93 for R-22 and 1.98 for R-134a.

Dimensions are subject to change. Do not use for pre-fabrication.

Engineering Data & Dimensions

Models LSC-410E to LSC-560E





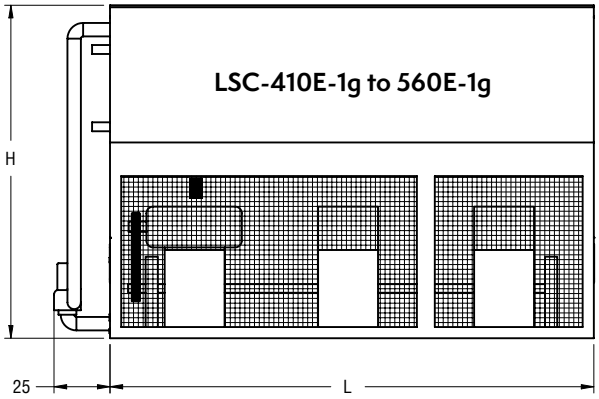


Table 13 Engineering Data

Model No.*	R-717 Tons*	Fans		Weights			Refrigerant Operating Charge lbs.††	Coil Volume ft³	Spray Pump		Remote Pump			Dimensions				
		HP	CFM	Shipping	Operating	Heaviest Section†			HP	GPM	Gallons Req'd***	Conn. Size	Operating Weight	Height H	Upper U	Lower E	Coil A	Length L
LSC-410E-1g	291	25	67,200	16,080	21,950	10,890	382	52	7-1/2	840	530	12"	19,230	11' 9-1/8"	4' 5-3/4"	7' 3-3/8"	27"	18'
LSC-431E-1g	306	30	71,400	16,130	22,000	10,890	382	52	7-1/2	840	530	12"	19,280	11' 9-1/8"	4' 5-3/4"	7' 3-3/8"	27"	18'
LSC-460E-1g	326	40	78,500	16,290	22,160	10,890	382	52	7-1/2	840	530	12"	19,440	11' 9-1/8"	4' 5-3/4"	7' 3-3/8"	27"	18'
LSC-475E-1g	337	30	69,900	18,220	24,270	12,980	474	65	7-1/2	840	530	12"	21,720	12' 4-5/8"	5' 1-1/4"	7' 3-3/8"	34-1/2"	18'
LSC-490E-1g	348	50	84,600	16,300	22,170	10,890	382	52	7-1/2	840	530	12"	19,450	11' 9-1/8"	4' 5-3/4"	7' 3-3/8"	27"	18'
LSC-510E-1g	362	40	77,000	18,380	24,430	12,980	474	65	7-1/2	840	530	12"	21,880	12' 4-5/8"	5' 1-1/4"	7' 3-3/8"	34-1/2"	18'
LSC-530E-1g	376	40	75,400	20,600	26,820	15,200	566	77	7-1/2	840	530	12"	24,430	13' 1/8"	5' 8-3/4"	7' 3-3/8"	42"	18'
LSC-540E-1g	383	50	83,000	18,390	24,440	12,980	474	65	7-1/2	840	530	12"	21,890	12' 4-5/8"	5' 1-1/4"	7' 3-3/8"	34-1/2"	18'
LSC-560E-1g	397	50	81,200	20,610	26,830	15,200	566	77	7-1/2	840	530	12"	24,440	13' 1/8"	5' 8-3/4"	7' 3-3/8"	42"	18'

* Tons at standard conditions: HCFC-22 and HFC-134a. 105°F condensing, 40°F suction and 78°F W.B.; ammonia 96.3°F condensing, 20°F suction and 78°F W.B.

** For dry operation or for external static pressure up to 1/2" use next larger size fan motor.

*** Gallons shown is water in suspension in unit and piping. Allow for additional water in bottom of remote sump to cover pump suction and strainer during operation. (12" would normally be sufficient.)

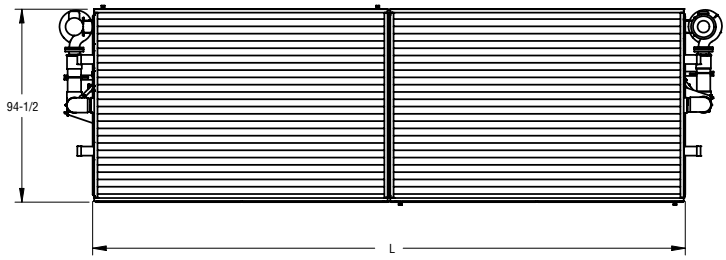
† Heaviest section is the coil section.

†† Refrigerant charge is shown for R-717. Multiply by 1.93 for R-22 and 1.98 for R-134a.

Dimensions are subject to change. Do not use for pre-fabrication.

Engineering Data & Dimensions

Models LSC-591E to 770E



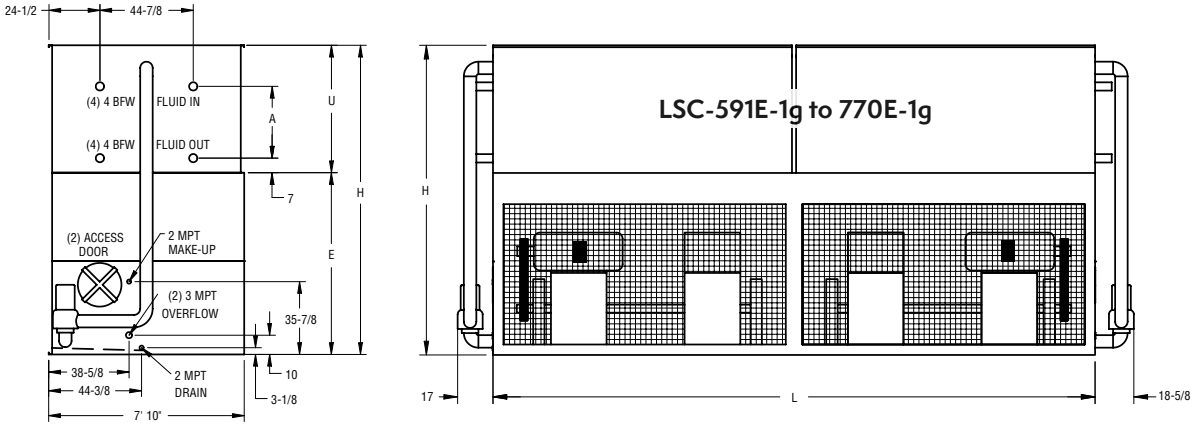


Table 14 Engineering Data

Model No.*	R-717 Tons*	Fans		Weights		Heaviest Section†	Refrigerant Operating Charge lbs.††	Coil Volume ft³	Spray Pump		Remote Pump			Dimensions				
		HP	CFM	Shipping	Operating				HP	GPM	Gallons Req'd***	Conn. Size	Operating Weight	Height H	Upper U	Lower E	Coil A	Length L
LSC-591E-1g	419	(2) 25	102,700	21,600	29,410	7,320	514	70	(2) 5	1140	720	(2) 10"	26,590	11' 9-1/8"	4' 5-3/4"	7' 3-3/8"	27"	24' 1"
LSC-620E-1g	440	(2) 30	109,100	21,700	29,510	7,320	514	70	(2) 5	1140	720	(2) 10"	26,790	11' 9-1/8"	4' 5-3/4"	7' 3-3/8"	27"	24' 1"
LSC-660E-1g	468	(2) 25	100,600	24,440	32,490	8,740	636	87	(2) 5	1140	720	(2) 10"	29,880	12' 4-5/8"	5' 1-1/4"	7' 3-3/8"	34-1/2"	24' 1"
LSC-691E-1g	490	(2) 30	106,900	24,540	32,590	8,740	636	87	(2) 5	1140	720	(2) 10"	30,080	12' 4-5/8"	5' 1-1/4"	7' 3-3/8"	34-1/2"	24' 1"
LSC-721E-1g	511	(2) 30	104,800	27,460	35,730	10,200	758	103	(2) 5	1140	720	(2) 10"	33,470	13' 1/8"	5' 8-3/4"	7' 3-3/8"	42"	24' 1"
LSC-770E-1g	546	(2) 40	115,300	27,780	36,050	10,200	758	103	(2) 5	1140	720	(2) 10"	34,110	13' 1/8"	5' 8-3/4"	7' 3-3/8"	42"	24' 1"

* Tons at standard conditions: HCFC-22 and HFC-134a. 105°F condensing, 40°F suction and 78°F W.B.; ammonia 96.3°F condensing, 20°F suction and 78°F W.B.

** For dry operation or for external static pressure up to 1/2" use next larger size fan motor.

*** Gallons shown is water in suspension in unit and piping. Allow for additional water in bottom of remote sump to cover pump suction and strainer during operation. (12" would normally be sufficient.)

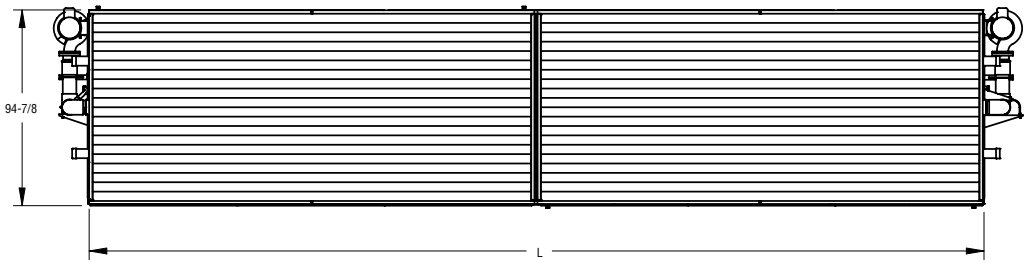
† Heaviest section is the coil section.

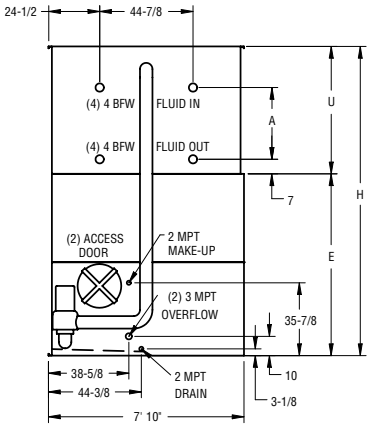
†† Refrigerant charge is shown for R-717. Multiply by 1.93 for R-22 and 1.98 for R-134a.

Dimensions are subject to change. Do not use for pre-fabrication.

Engineering Data & Dimensions

Models LSC-820E to LSC-1120E





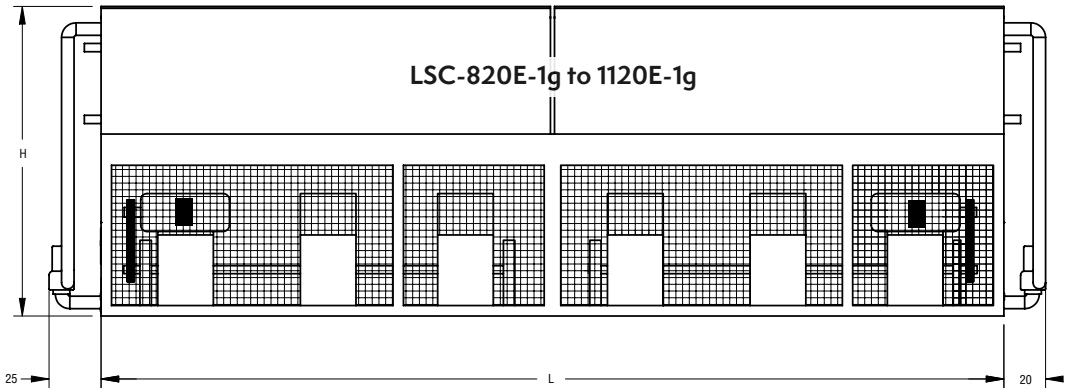


Table 15 Engineering Data

Model No.*	R-717 Tons*	Fans		Weights			Refrigerant Operating Charge lbs.††	Coil Volume ft³	Spray Pump		Remote Pump			Dimensions				
		HP	CFM	Shipping	Operating	Heaviest Section†			HP	GPM	Gallons Req'd***	Conn. Size	Operating Weight	Height H	Upper U	Lower E	Coil A	Length L
LSC-820E-1g	582	(2) 25	134,300	31,430	43,270	10,900	763	104	(2) 7-1/2	1680	1060	(2) 12"	38,720	11' 9-1/8"	4' 5-3/4"	7' 3-3/8"	27"	36' 2"
LSC-861E-1g	611	(2) 30	142,700	31,530	43,370	10,900	763	104	(2) 7-1/2	1680	1060	(2) 12"	38,920	11' 9-1/8"	4' 5-3/4"	7' 3-3/8"	27"	36' 2"
LSC-920E-1g	652	(2) 40	157,100	31,850	43,690	10,900	763	104	(2) 7-1/2	1680	1060	(2) 12"	39,560	11' 9-1/8"	4' 5-3/4"	7' 3-3/8"	27"	36' 2"
LSC-950E-1g	674	(2) 30	139,900	35,730	47,930	13,000	947	129	(2) 7-1/2	1680	1060	(2) 12"	43,850	12' 4-5/8"	5' 1-1/4"	7' 3-3/8"	34-1/2"	36' 2"
LSC-980E-1g	695	(2) 50	169,200	31,870	43,710	10,900	763	104	(2) 7-1/2	1680	1060	(2) 12"	39,600	11' 9-1/8"	4' 5-3/4"	7' 3-3/8"	27"	36' 2"
LSC-1020E-1g	723	(2) 40	153,900	36,050	48,250	13,000	947	129	(2) 7-1/2	1680	1060	(2) 12"	44,490	12' 4-5/8"	5' 1-1/4"	7' 3-3/8"	34-1/2"	36' 2"
LSC-1060E-1g	752	(2) 40	150,800	40,450	52,990	15,200	1132	154	(2) 7-1/2	1680	1060	(2) 12"	49,550	13' 1/8"	5' 8-3/4"	7' 3-3/8"	42"	36' 2"
LSC-1080E-1g	766	(2) 50	165,800	36,070	48,270	13,000	947	129	(2) 7-1/2	1680	1060	(2) 12"	44,530	12' 4-5/8"	5' 1-1/4"	7' 3-3/8"	34-1/2"	36' 2"
LSC-1120E-1g	794	(2) 50	162,400	40,470	53,010	15,200	1132	154	(2) 7-1/2	1680	1060	(2) 12"	49,590	13' 1/8"	5' 8-3/4"	7' 3-3/8"	42"	36' 2"

* Tons at standard conditions: HCFC-22 and HFC-134a. 105°F condensing, 40°F suction and 78°F W.B.; ammonia 96.3°F condensing, 20°F suction and 78°F W.B.

** For dry operation or for external static pressure up to 1/2" use next larger size fan motor.

*** Gallons shown is water in suspension in unit and piping. Allow for additional water in bottom of remote sump to cover pump suction and strainer during operation. (12" would normally be sufficient.)

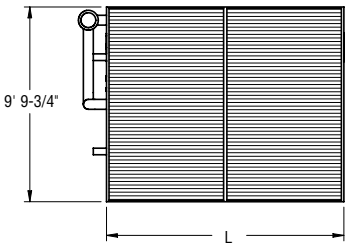
† Heaviest section is the coil section.

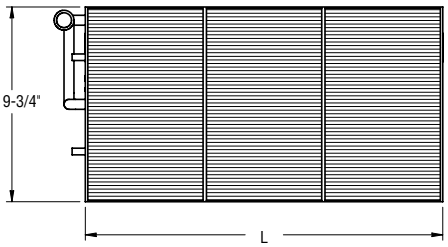
†† Refrigerant charge is shown for R-717. Multiply by 1.93 for R-22 and 1.98 for R-134a.

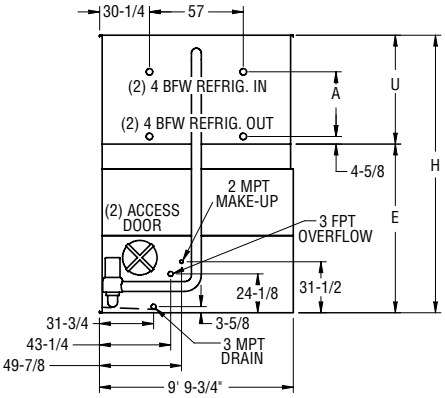
Dimensions are subject to change. Do not use for pre-fabrication.

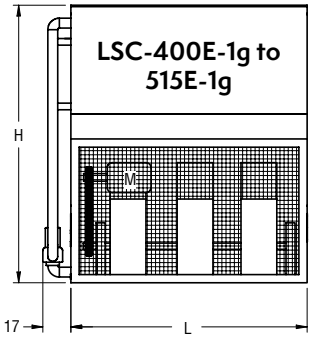
Engineering Data & Dimensions

Models LSC-400E to LSC-805E









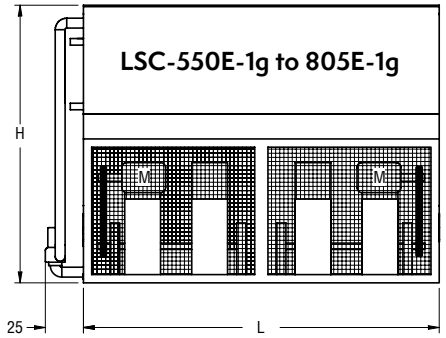


Table 17 Engineering Data

Model No.*	R-717 Tons*	Fans		Weights			Refrigerant Operating Charge lbs.††	Coil Volume ft³	Spray Pump		Remote Pump			Dimensions				
		HP	CFM	Shipping	Operating	Heaviest Section†			HP	GPM	Gallons Req'd***	Conn. Size	Operating Weight	Height H	Upper U	Lower E	Coil A	Length L
LSC-400E-1g	284	30	67,000	14,690	19,670	9,800	326	44	5	685	410	10"	17,600	13' 4-1/8"	57-5/8"	102-1/2"	30-3/4"	11' 11-3/4"
LSC-430E-1g	305	25	61,800	16,450	21,580	11,610	404	55	5	685	410	10"	19,680	14' 5/8"	66-1/8"	102-1/2"	39-1/4"	11' 11-3/4"
LSC-450E-1g	319	30	65,700	16,500	21,630	11,610	404	55	5	685	410	10"	19,730	14' 5/8"	66-1/8"	102-1/2"	39-1/4"	11' 11-3/4"
LSC-480E-1g	340	40	72,300	16,660	21,790	11,610	404	55	5	685	410	10"	19,890	14' 5/8"	66-1/8"	102-1/2"	39-1/4"	11' 11-3/4"
LSC-500E-1g	355	40	70,800	18,560	23,840	13,510	481	66	5	685	410	10"	22,120	14' 9-1/8"	74-5/8"	102-1/2"	47-3/4"	11' 11-3/4"
LSC-515E-1g	365	50	76,300	18,570	23,850	13,510	481	66	5	685	410	10"	22,130	14' 9-1/8"	74-5/8"	102-1/2"	47-3/4"	11' 11-3/4"
LSC-550E-1g	390	(2)15	88,100	21,350	28,910	14,340	484	66	7-1/2	1,030	600	12"	25,620	13' 4-1/8"	57-5/8"	102-1/2"	30-3/4"	18' 1/4"
LSC-590E-1g	418	(2)20	96,900	21,470	29,030	14,340	484	66	7-1/2	1,030	600	12"	25,740	13' 4-1/8"	57-5/8"	102-1/2"	30-3/4"	18' 1/4"
LSC-625E-1g	443	(2)25	104,400	21,530	29,090	14,340	484	66	7-1/2	1,030	600	12"	25,800	13' 4-1/8"	57-5/8"	102-1/2"	30-3/4"	18' 1/4"
LSC-650E-1g	461	(2)20	94,900	24,180	31,960	17,050	601	82	7-1/2	1,030	600	12"	28,930	14' 5/8"	66-1/8"	102-1/2"	39-1/4"	18' 1/4"
LSC-690E-1g	489	(2)25	102,300	24,240	32,020	17,050	601	82	7-1/2	1,030	600	12"	28,990	14' 5/8"	66-1/8"	102-1/2"	39-1/4"	18' 1/4"
LSC-720E-1g	511	(2)30	108,700	24,340	32,120	17,050	601	82	7-1/2	1,030	600	12"	29,090	14' 5/8"	66-1/8"	102-1/2"	39-1/4"	18' 1/4"
LSC-755E-1g	535	(2)30	106,500	27,160	35,160	19,870	718	98	7-1/2	1,030	600	12"	32,380	14' 9-1/8"	74-5/8"	102-1/2"	47-3/4"	18' 1/4"
LSC-805E-1g	571	(2)40	117,200	27,480	35,480	19,870	718	98	7-1/2	1,030	600	12"	32,700	14' 9-1/8"	74-5/8"	102-1/2"	47-3/4"	18' 1/4"

* Tons at standard conditions: HCFC-22 and HFC-134a. 105°F condensing, 40°F suction and 78°F W.B.; ammonia 96.3°F condensing, 20°F suction and 78°F W.B.

** For dry operation or for external static pressure up to 1/2" use next larger size fan motor.

*** Gallons shown is water in suspension in unit and piping. Allow for additional water in bottom of remote sump to cover pump suction and strainer during operation. (12" would normally be sufficient.)

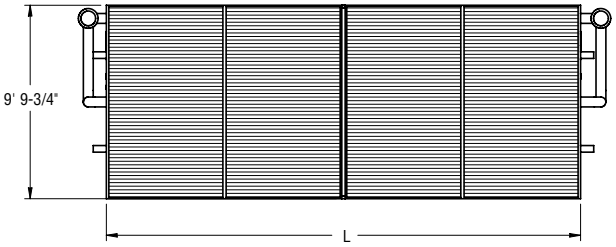
† Heaviest section is the coil section.

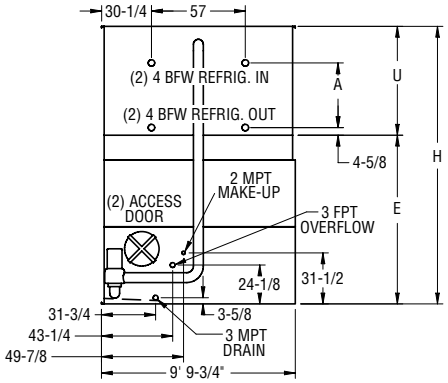
†† Refrigerant charge is shown for R-717. Multiply by 1.93 for R-22 and 1.98 for R-134a.

Dimensions are subject to change. Do not use for pre-fabrication.

Engineering Data & Dimensions

Models LSC-800E to 1030E





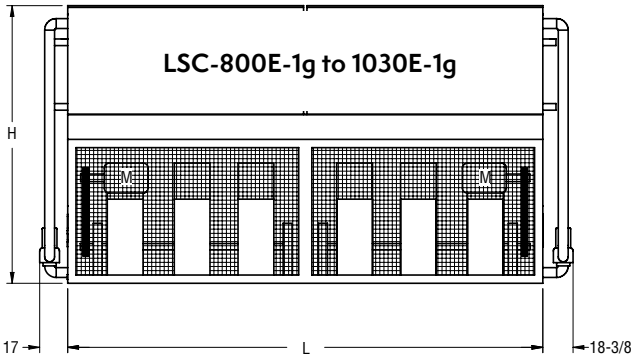


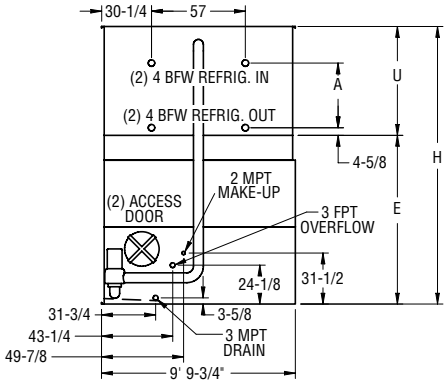
Table 16 Engineering Data

Model No.*	R-717 Tons*	Fans		Weights			Refrigerant Operating Charge lbs.††	Coil Volume ft³	Spray Pump		Remote Pump			Dimensions				
		HP	CFM	Shipping	Operating	Heaviest Section†			HP	GPM	Gallons Req'd***	Conn. Size	Operating Weight	Height H	Upper U	Lower E	Coil A	Length L
LSC-800E-1g	567	(2)30	134,100	28,780	38,900	9,760	652	89	(2)5	1,370	820	(2)10"	35,300	13' 4-1/8"	57-5/8"	102-1/2"	30-3/4"	24' 1-1/4"
LSC-860E-1g	610	(2)25	123,600	32,320	42,740	11,610	807	110	(2)5	1,370	820	(2)10"	39,360	14' 5/8"	66-1/8"	102-1/2"	39-1/4"	24' 1-1/4"
LSC-900E-1g	638	(2)30	131,400	32,420	42,840	11,610	807	110	(2)5	1,370	820	(2)10"	39,560	14' 5/8"	66-1/8"	102-1/2"	39-1/4"	24' 1-1/4"
LSC-960E-1g	681	(2)40	144,600	32,740	43,160	11,610	807	110	(2)5	1,370	820	(2)10"	40,200	14' 5/8"	66-1/8"	102-1/2"	39-1/4"	24' 1-1/4"
LSC-1000E-1g	709	(2)40	141,600	36,540	47,260	13,510	962	131	(2)5	1,370	820	(2)10"	44,630	14' 9-1/8"	74-5/8"	102-1/2"	47-3/4"	24' 1-1/4"
LSC-1030E-1g	730	(2)50	152,600	36,560	47,280	13,510	962	131	(2)5	1,370	820	(2)10"	44,670	14' 9-1/8"	74-5/8"	102-1/2"	47-3/4"	24' 1-1/4"

* Tons at standard conditions: HCFC-22 and HFC-134a. 105°F condensing, 40°F suction and 78°F W.B.; ammonia 96.3°F condensing, 20°F suction and 78°F W.B.
** For dry operation or for external static pressure up to 1/2" use next larger size fan motor.
*** Gallons shown is water in suspension in unit and piping. Allow for additional water in bottom of remote sump to cover pump suction and strainer during operation. (12" would normally be sufficient.)
† Heaviest section is the coil section.
†† Refrigerant charge is shown for R-717. Multiply by 1.93 for R-22 and 1.98 for R-134a.
Dimensions are subject to change. Do not use for pre-fabrication.

Engineering Data & Dimensions

Models LSC-1100E to 1610E



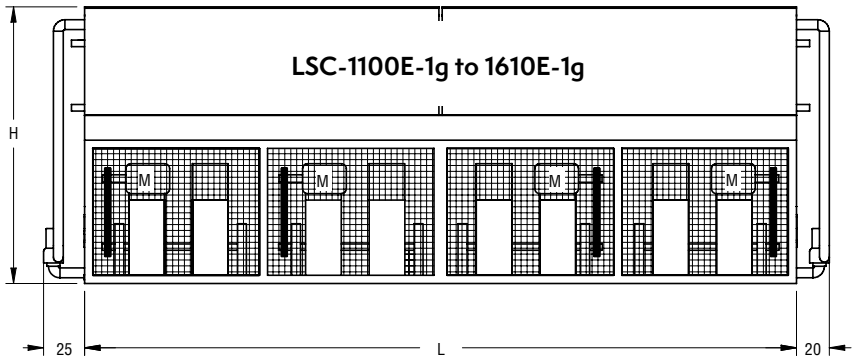


Table 18 Engineering Data

Model No.*	R-717 Tons*	Fans		Weights		Heaviest Section†	Refrigerant Operating Charge lbs.††	Coil Volume ft³	Spray Pump		Remote Pump			Dimensions				
		HP	CFM	Shipping	Operating				HP	GPM	Gallons Req'd***	Conn. Size	Operating Weight	Height H	Upper U	Lower E	Coil A	Length L
LSC-1100E-1g	780	(4)15	176,000	42,640	57,770	14,340	969	132	(2) 7-1/2	2,060	1,500	(2)12"	52,500	13' 4-1/8"	57-5/8"	102-1/2"	30-3/4"	36' 2-1/2"
LSC-1180E-1g	837	(4)20	193,700	42,880	58,010	14,340	969	132	(2) 7-1/2	2,060	1,500	(2)12"	52,980	13' 4-1/8"	57-5/8"	102-1/2"	30-3/4"	36' 2-1/2"
LSC-1250E-1g	887	(4)25	208,700	43,000	58,130	14,340	969	132	(2) 7-1/2	2,060	1,500	(2)12"	53,220	13' 4-1/8"	57-5/8"	102-1/2"	30-3/4"	36' 2-1/2"
LSC-1310E-1g	929	(4)30	221,800	43,200	58,330	14,250	969	132	(2) 7-1/2	2,060	1,500	(2)12"	53,620	13' 4-1/8"	57-5/8"	102-1/2"	30-3/4"	36' 2-1/2"
LSC-1380E-1g	979	(4)25	204,500	48,420	63,990	17,050	1,203	164	(2) 7-1/2	2,060	1,500	(2)12"	59,600	14' 5/8"	66-1/8"	102-1/2"	39-1/4"	36' 2-1/2"
LSC-1440E-1g	1021	(4)30	217,400	48,620	64,190	17,050	1,203	164	(2) 7-1/2	2,060	1,500	(2)12"	60,000	14' 5/8"	66-1/8"	102-1/2"	39-1/4"	36' 2-1/2"
LSC-1510E-1g	1071	(4)30	212,900	54,240	70,250	19,860	1,437	196	(2) 7-1/2	2,060	1,500	(2)12"	66,580	14' 9-1/8"	74-5/8"	102-1/2"	47-3/4"	36' 2-1/2"
LSC-1610E-1g	1142	(4)40	234,400	54,880	70,890	19,860	1,437	196	(2) 7-1/2	2,060	1,500	(2)12"	67,860	14' 9-1/8"	74-5/8"	102-1/2"	47-3/4"	36' 2-1/2"

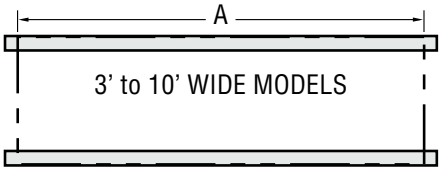
* Tons at standard conditions: HCFC-22 and HFC-134a. 105°F condensing, 40°F suction and 78°F W.B.; ammonia 96.3°F condensing, 20°F suction and 78°F W.B.
** For dry operation or for external static pressure up to 1/2" use next larger size fan motor.
*** Gallons shown is water in suspension in unit and piping. Allow for additional water in bottom of remote sump to cover pump suction and strainer during operation. (12" would normally be sufficient.)
† Heaviest section is the coil section.
†† Refrigerant charge is shown for R-717. Multiply by 1.93 for R-22 and 1.98 for R-134a.
Dimensions are subject to change. Do not use for pre-fabrication.

LSC-E / LRC Steel Support

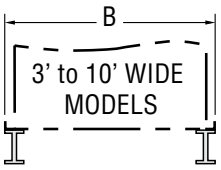
The recommended support for EVAPCO condensers is structural "I" beams located under the outer flanges and running the entire length of the unit. Mounting holes, 3/4" in diameter are located in the bottom channels of the pan section to provide for bolting to the structural steel. (Refer to certified drawings from the factory for bolt hole locations.)

Beams should be level to within 1/8" in 6' before setting the unit in place. Do not level the unit by shimming between it and the "I" beams as this will not provide proper longitudinal support.

Plan View



End Elevation

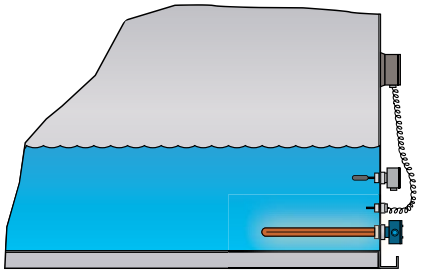


LSC-E DIMENSIONS		
4' Wide Models	**A**	**B**
LSC-36E-1g to 80E-1g	5' 11-7/8"	4' 5/8"
LSC-90E-1g to 120E-1g	8' 11-1/4"	4' 3/4"
LSC-135E-1g to 170E-1g	11' 11-3/4"	4' 5/8"
5' Wide Models	**A**	**B**
LSC-185E-1g to 250E-1g	11' 11-1/2"	5' 5"
LSC-280E-1g to 385E-1g	17' 11-7/8"	5' 5"
8' Wide Models	**A**	**B**
LSC-281E-1g to 386E-1g	7' 10"	11' 11-3/4"
LSC-410E-1g to 560E-1g	7' 10"	18'
LSC-591E-1g to 770E-1g	7' 10"	24' 1"
LSC-820E-1g to 1120E-1g	7' 10"	36' 2"
10' Wide Models	**A**	**B**
LSC-400E-1g to 515E-1g	11' 11-3/4"	9' 9-3/4"
LSC-550E-1g to 805E-1g	18' 1/4"	9' 9-3/4"
LSC-800E-1g to 1030E-1g	24' 1-1/4"	9' 9-3/4"
LSC-1100E-1g to 1610E-1g	36' 2-1/2"	9' 9-3/4"

LRC DIMENSIONS		
3' Wide Models	**A**	**B**
LRC-25-1g to 72-1g	10' 1-7/8"	3' 4-1/2"
5' Wide Models	**A**	**B**
LRC-76-1g to 114-1g	12' 2-7/8"	5' 5/8"
LRC-108-1g to 183-1g	15' 2-1/4"	5' 5/8"
LRC-190-1g to 246-1g	18' 2-5/8"	5' 5/8"
8' Wide Models	**A**	**B**
LRC-188-1g to 269-1g	15' 2-1/4"	7' 10"
LRC-249-1g to 379-1g	18' 2-5/8"	7' 10"

Electric Heaters

Electric immersion heaters are available factory installed in the basin of the condenser. They are sized to maintain a +40° F pan water temperature with the fans off and an ambient air temperature of 0°F, -20°F or -40°F. They are furnished with a thermostat and low water protection device to cycle the heater on when required and to prevent the heater elements from energizing unless they are completely submerged. All components are in weather proof enclosures for outdoor use. The heater power contactors and electric wiring are not included as standard.



LSC-E Basin Heater Sizing			
Unit Footprint	**kW (0°F)**	**kW (-20°F)**	**kW (-40°F)**
4' x 6'	(1) 2	(1) 3	(1) 4
4' x 9'	(1) 3	(1) 4	(1) 5
4' x 12'	(1) 3	(1) 5	(1) 7
4' x 18'	(1) 5	(1) 7	(1) 9
5' x 12'	(1) 4	(1) 6	(1) 8
5' x 18'	(2) 3	(2) 4	(1) 12
8' x 12'	(1) 5	(1) 8	(1) 10
8' x 18'	(2) 4	(2) 6	(2) 7
8' x 24'	(2) 5	(2) 7	(2) 10
8' x 36'	(2) 7	(2) 12	(2) 15
10' x 12'	(1) 7	(1) 10	(1) 15
10' x 18'	(2) 5	(2) 7	(2) 10
10' x 24'	(2) 7	(2) 10	(2) 15
10' x 36'	(2) 10	(4) 7	(4) 9

LRC Basin Heater Sizing			
Unit Footprint	**kW (0°F)**	**kW (-20°F)**	**kW (-40°F)**
3' x 6'	(1) 2	(1) 3	(1) 4
5' x 6'	(1) 3	(1) 5	(1) 6
5' x 9'	(1) 4	(1) 6	(1) 8
5' x 12'	(1) 6	(1) 8	(1) 12
8' x 9'	(1) 7	(1) 9	(1) 12
8' x 12'	(1) 9	(1) 12	(1) 16

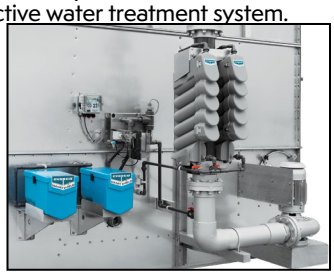
LSC-E / LRC Optional Equipment

Pulse~Pure® Non-Chemical Water Treatment

Pulse~Pure® is an environmentally sensitive non-chemical water treatment system for evaporative condensers. Developed by EVAPCO, Pulse~Pure offers an alternative to chemical water treatment programs. Utilizing pulse-power technology Pulse~Pure provides chemical-free treatment that is environmentally safe.

Smart Shield® Solid Chemistry Water Treatment System

EVAPCO's SmartShield® solid chemistry water treatment system is an innovative solution to conventional liquid chemical programs. SmartSheild® was developed specifically for evaporative condensers and closed circuit coolers. The system comes factory mounted and includes all the components required for an effective water treatment system. Solid products eliminate the potential for liquid spills making it easier and safer to use. Controlled release chemistry provides uniform treatment over a 30 day period.



Self Supporting Service Platforms

Some LSC-E condensers are available with self-supporting service platforms that include access ladders which are designed for easy field installation. This option offers significant savings in comparison to field constructed, externally supported catwalks. The EVAPCO service platform option may be installed on either side or the end opposite the connections.

Multiple Circuit Coils

Condensers may be supplied with multiple circuit coils to match various system requirements such as split systems, or if a glycol or water circuit is desired for compressor head cooling.

ASME Coils

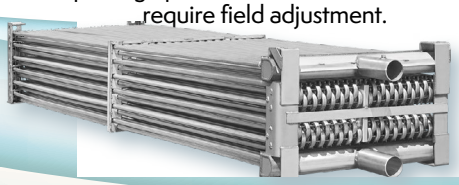
Evaporative condensers can be furnished with condensing coils manufactured in accordance with the ASME Pressure Vessel Code Section VIII, Division I. Coils built with this option will bear a U-stamp indicating their compliance with the ASME code.

TITAN Coils – Stainless Steel Construction

EVAPCO offers the option of Type 304L stainless steel construction using the Thermal Pak® II coil design. Highly efficient heat transfer coils with the ultimate corrosion protection.

Electric Water Level Control

Evaporative condensers may be ordered with an electric water level control in lieu of the standard mechanical float and make-up assembly. This package provides accurate control of water levels and does not require field adjustment.



Two Speed Motors

Two speed fan motors can provide an excellent means of capacity control. In periods of lightened loads or reduced wet bulb temperatures, the fans can operate at low speed, which will provide about 60% of full speed capacity, yet consume only about 15% of the power compared with high speed. In addition to the energy savings, the sound levels of the units will be greatly reduced at low speed.

Pony Motors

In addition to two speed fan motors, variable frequency drives (VFD's) and fan cycling on multiple motor units, pony motors are available as another capacity control method. Pony motors are smaller fan motors for use in times of reduced loading. The pony motor is typically 1/4 the hp of the primary motor and can significantly reduce energy requirements.

Remote Sump Configuration

For units operating in areas where temperatures may be very low, or where low temperatures may occur during periods when the unit is not operating, a sump located inside the building is the preferred means of ensuring that the basin water will not freeze. For these applications, the condenser will be supplied without the spray pump, suction strainers and all associated piping, but with an oversize bottom outlet.

Screened Bottom Panels

Protective inlet screens are provided on the sides and/or end of the unit's air intake. Screens are not provided below the fan section since most units are mounted on the roof or at ground level. It is recommended that bottom screens be added to the unit when it will be elevated. These screens can be provided by the factory at an additional cost or added by the installing contractor.

Solid Bottom Panels for Ducted Installations

When centrifugal fan units are installed indoors and intake air is ducted to the unit, a solid bottom panel is required to completely enclose the fan section and prevent the unit from drawing air from the room into the fan intakes. When this option is ordered, air inlet screens are omitted.

Sound Attenuation Package

For extremely noise-sensitive applications, centrifugal fan models may be supplied with intake and/or discharge attenuation packages which greatly reduce sound levels. Oversize fan motors are required for this option in order to overcome the additional static pressure.

Oversized Access Door

For enhanced basin access, the Oversized Access Door option is available on LSC-E models LSC-400E through LSC-1610E. This option enables maintenance personnel to easily enter the basin for routine maintenance or for float valve adjustment.

LSC-E / LRC Product Applications

Design

EVAPCO Evaporative Condensers are of heavy-duty construction and designed for long trouble-free operation. Proper equipment selection, installation and maintenance is, however, necessary to ensure full unit performance. Some of the major considerations in the application of a cooler are presented below. For additional information, contact the factory.

Air Circulation

In reviewing the system design and unit location, it is important that proper air circulation be provided. The best location is on an unobstructed roof top or on ground level away from walls and other barriers. Care must be taken when locating condensers in wells or enclosures or next to high walls. The potential for recirculation of hot, moist discharge air back into the fan intake exists. Recirculation raises the wet bulb temperature of the entering air causing the tower pressure to rise above the design. For these cases, a discharge hood or ductwork should be provided to raise the overall unit height even with the adjacent wall, thereby reducing the chance of recirculation. Good engineering practice dictates that the cooling tower's discharge air not be directed or located close to or in the vicinity of building air intakes. Engineering assistance is available from the factory to identify potential recirculation problems and recommend solutions.

For additional information regarding layout of cooling towers, see EVAPCO Bulletin entitled "Equipment Layout".

Piping

Condenser piping should be designed and installed in accordance with generally accepted engineering practice. All piping should be anchored by properly designed hangers and supports with allowance made for possible expansion and contraction. No external loads should be placed upon condenser connections, nor should any of the pipe supports be anchored to the unit framework. For additional information concerning refrigerant pipe sizing and layout, see EVAPCO Bulletin entitled "Piping Evaporative Condensers".

Recirculating Water Quality

Proper water treatment is an essential part of the maintenance required for evaporative cooling equipment. A well designed and consistently implemented water treatment program will help to ensure efficient system operation while maximizing the equipment's service life. A qualified water treatment company should design a site specific water treatment protocol based on equipment (including all metallurgies in the cooling system), location, makeup water quality, and usage.

Bleed off

Evaporative cooling equipment requires a bleed or blowdown line, located on the discharge side of the recirculating pump, to remove concentrated (cycled up) water from the system. Evapco recommends an automated conductivity controller to maximize the water efficiency of your system. Based on recommendations from your water treatment company, the conductivity controller should open and close a motorized ball or solenoid valve to maintain the conductivity of the recirculating water. If a manual valve is used to control the rate of bleed it should be set to maintain the conductivity of the recirculating water during periods of peak load at the maximum level recommended by your water treatment company.

Water Treatment

In some cases the make-up will be so high in mineral content that a normal bleed-off will not prevent scaling. In this case water treatment will be required and a reputable water treatment company familiar with the local water conditions should be consulted.

Any chemical water treatment used must be compatible with the construction of the unit. If acid is used for treatment, it should be accurately metered and the concentration properly controlled. The pH of the water should be maintained between 6.5 and 8.0. **Units constructed of galvanized steel operating with circulating water having a pH of 8.3 or higher will require periodic passivation of the galvanized steel to prevent the formation of "white rust".** Batch chemical feeding is not recommended because it does not afford the proper degree of control. If acid cleaning is required extreme caution must be exercised and only inhibited acids recommended for use with galvanized construction should be used. For more information see EVAPCO Bulletin entitled "Maintenance Instructions".

Control of Biological Contaminants

Evaporative cooling equipment should be inspected regularly to ensure good microbiological control. Inspections should include both monitoring of microbial populations via culturing techniques and visual inspections for evidence of biofouling.

Poor microbiological control can result in loss of heat transfer efficiency, increase corrosion potential, and increase the risk of pathogens such as those that cause Legionnaires' disease. Your site specific water treatment protocol should include procedures for routine operation, startup after a shutdown period, and system lay-up, if applicable. If excessive microbiological contamination is detected, a more aggressive mechanical cleaning and/or water treatment program should be undertaken.

LSC-E/LRC Specifications

Furnish and install, as shown on the plans, an EVAPCO model _____ evaporative condenser. Each unit shall have condensing capacity of _____ BTUH heat rejection, operating with _____ refrigerant at _____ °F condensing temperature and _____ °F design wet bulb temperature.

Cold Water Basin – LRC

The complete cold water basin shall be constructed of Type 304 stainless steel for long life and durability.*

Standard cold water basin accessories shall include Type 304 stainless steel overflow, drain, anti-vortexing hood, strainers, brass make-up valve with unsinkable, foam filled plastic float and wastewater bleed line with adjustable valve.

Casing and Fan Section – LRC

The casing and fan section shall be constructed of G-235 galvanized steel for long life and durability. Fan section shall include fans, motors and drives. The entire drive system (including fans, motors, sheaves and belts) shall be located in the dry entering airstream.

Pan and Casing – LSC-E

The pan and casing shall be constructed of G-235 hot-dip galvanized steel for long life and durability. The heat transfer section shall be removable from the pan to provide easy handling and rigging.

The pan/fan section shall include fans, motors and drives mounted and aligned at the factory. These items shall be located in the dry entering air stream to provide maximum service life and easy maintenaince. Standard pan accessories shall include circular access doors, stainless steel strainers, wastewater bleed line with adjustable valve and brass makeup valve, with an unsinkable foam filled plastic float.

Centrifugal Fan Drives

Fans shall be forwardly curved centrifugal type of hot-dip galvanized construction. The fans shall be factory installed into the pan-fan section, and statically and dynamically balanced for vibration free operation. Fans shall be mounted on a hollow steel shaft with forged bearing journals. The fan shaft shall be supported by heavy-duty, self aligning bearings with cast-iron housings and lubrication fittings for maintenance.

The fan drive shall be V-belt type with taper lock bushings designed for 150% of motor nameplate horsepower. Drives are to be mounted and aligned at the factory.

Fan Motor

_____ horsepower premium efficient totally enclosed fan cooled motor(s) with 1.15 service factor shall be furnished suitable for outdoor service on _____ volts, _____ hertz, and _____ phase. Motor(s) shall be mounted on an adjustable base.

Heat Transfer Coil

The coil(s) shall be all prime surface steel, encased in steel framework with the entire assembly hot-dip galvanized after fabrication. Coil(s) shall be designed for free drainage of liquid refrigerant and tested to 390 psig air pressure under water.

Water Distribution System

The system shall provide a water flow rate of 6 GPM over each square foot of the unit face area to ensure proper flooding of the coil. The spray header shall be constructed of Schedule-40, PVC pipe for corrosion resistance. All spray branches shall be removable and include a threaded end plug for cleaning. The water shall be distributed over the entire coil surface by heavy-duty ABS spray nozzles with large 1-1/4" diameter opening and internal sludge ring to eliminate clogging. ZM nozzles are threaded into Schedule-40 Polyvinyl Chloride headers equipped with removable end plugs for ease of cleaning. Nozzles shall be threaded into a spray header to provide easy removal for maintenance.

Water Recirculation Pump

The pump(s) shall be a close-coupled, centrifugal type with mechanical seal. _____ horsepower totally enclosed, motor shall be furnished suitable for outdoor service on _____ volts, _____ hertz, and _____ phase.

Eliminators

The eliminators shall be constructed entirely of PVC that has been specially treated to resist ultra-violet light. Assembled in easily handled sections, the eliminator blades shall incorporate three changes in air direction to assure removal of entrained moisture from the discharge air stream. The maximum drift rate shall not exceed 0.001% of the recirculated water rate.

Finish-LSC-E

All pan and casing materials shall be constructed of G-235 heavy gauge mill hot-dip galvanized steel for maximum protection against corrosion. During fabrication, all panel edges shall be coated with 95% pure zinc-rich compound.

Finish-LRC

The complete cold water basin shall be constructed of Type 304 stainless steel for maximum corrosion protection.* The casing and fan section shall be constructed of G-235 heavy gauge mill hot-dip galvanized steel. During fabrication, all galvanized panel edges shall be coated with a 95% pure zinc compound.

* Available in G-235 hot-dip galvanized steel construction as an option.

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