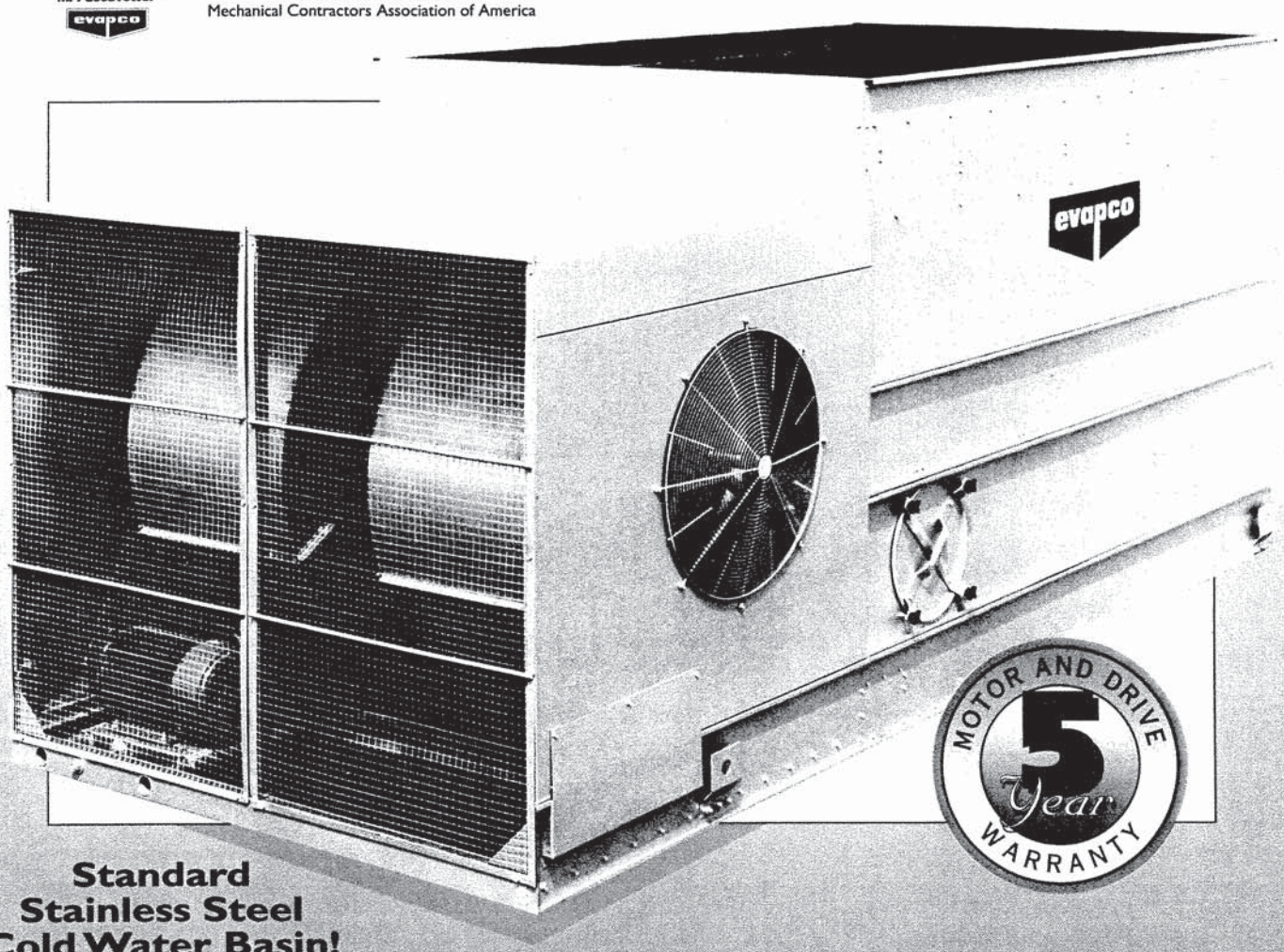
evapco

LRT

COOLING TOWER

Mr. GoodTower®

Member MCAA
Mechanical Contractors Association of America



Standard Stainless Steel Cold Water Basin!

THERMAL PERFORMANCE
27 TO 331 NOMINAL TONS

LRT Cooling Tower – Another Product Innovation from EVAPCO

The LRT Cooling Tower is a combination of EVAPCO's extensive forced draft cooling tower experience and engineered solutions design philosophy. The result is the easiest forced-draft cooling tower to maintain and operate. The LRT Cooling Tower's superior engineering design offers:

Contractor Features
- Low Rigging Cost
- Low Installation Cost
- Quick Connect Piping

Owner Features
- Low Maintenance
- Low Silhouette
- 5 Year Motor and Drive Warranty

All these features and more ...

THE LRT IS STANDARD WITH A STAINLESS STEEL COLD WATER BASIN AND STRAINERS!

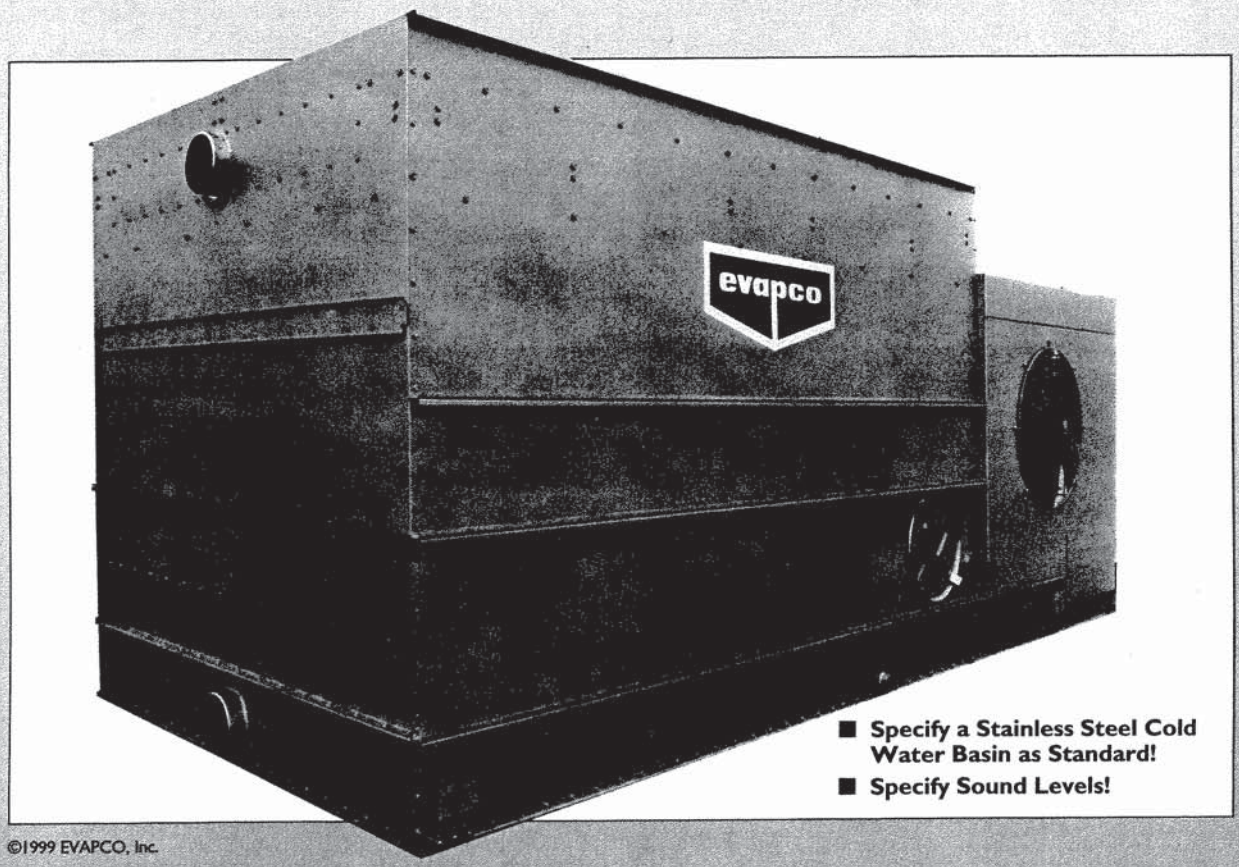
THE LRT IS THE QUIETEST LOW SILHOUETTE COOLING TOWER IN THE INDUSTRY!

Solves Cooling Tower Sound Concerns!

Following EVAPCO's philosophy of "Taking Quality and Service to a Higher Level", EVAPCO's standard stainless steel cold water basin and low sound design takes industry standards in product quality to a higher level.

The stainless steel cold water basin and strainers will:
- Provide Protection from the Effects of Corrosion
- Extend the Life of the Cooling Tower Without the Need for Future Basin Repairs.

The low sound design provides:
- Standard Cooling Tower Sound Levels Lower than Most Sound Ordinances Found in the U.S.
- Sound Pressure Levels Lower than the Competitions Comparable Product



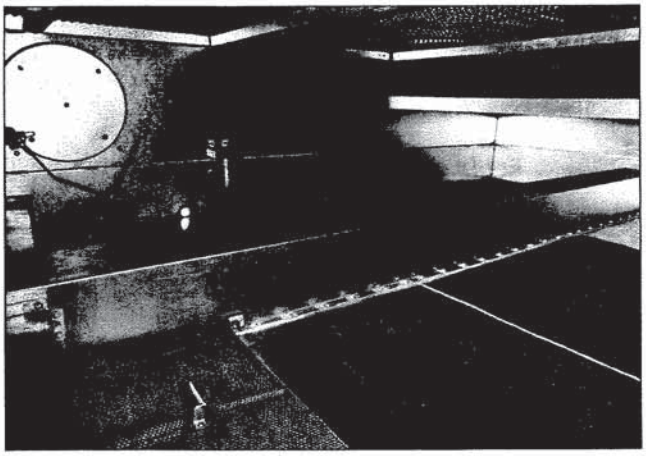
- **Specify a Stainless Steel Cold Water Basin as Standard!**
- **Specify Sound Levels!**

LRT Cooling Tower Maintenance Accessibility

Stainless Steel Cold Water Basin Access

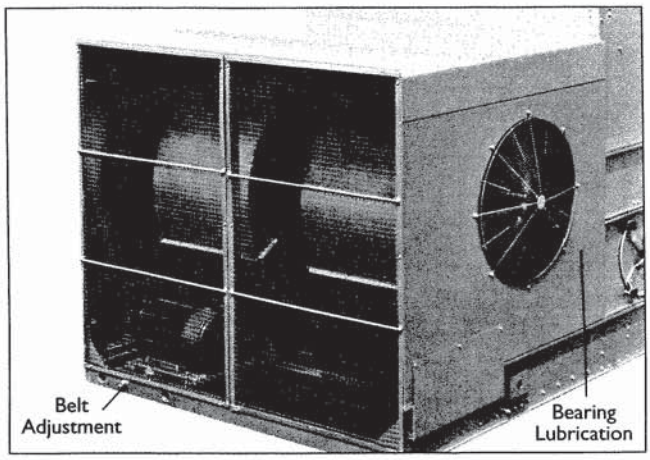
The LRT stainless steel cold water basin can be easily maintained from the side of the cooling tower through large, circular access doors. The unique stepped configuration of the LRT heat transfer section allows unimpeded access to the basin to allow adjustment of the float assembly, removal of the stainless steel strainers and basin cleaning.

This feature is not found on any other manufacturer's products.



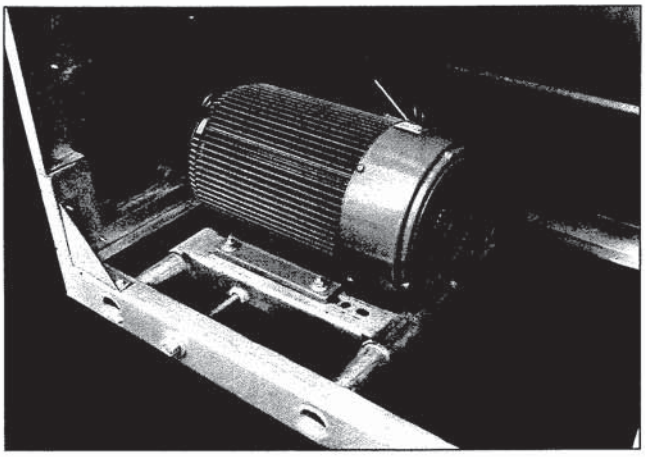
Mechanical Drive System Access

The LRT mechanical drive system is 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.



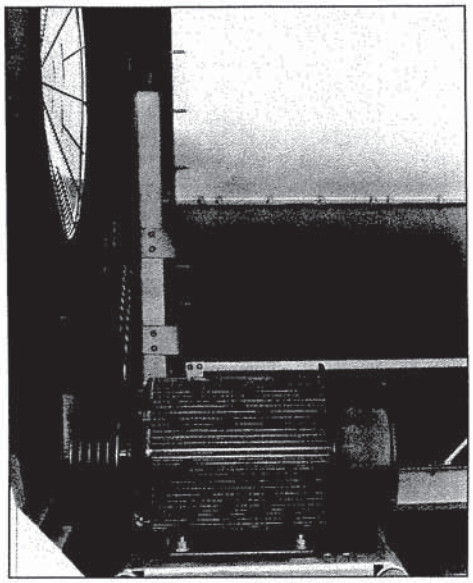
Motor Location

All LRT models have TEFC motors mounted on adjustable motor bases, similar in design to the large EVAPCO AT Cooling Tower Drive System. This same technology has been utilized in the LRT design to allow belt adjustment to be performed externally. In addition, the motor is located under the protective fan system enclosure and can be easily accessed by removing one air inlet screen.



Fan Access-Split Housing

Another unique feature of the LRT Cooling Towers are split fan housings. The split fan housing on the LRT 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.



LRT Thermal Performance

To Make a Selection:
Locate the column with the desired operating temperature conditions. Read down the column until you find the GPM equal to or greater than the flow required. Read horizontally to the left to find the model number of the unit that will perform the duty.

Low Silhouette Cooling Towers

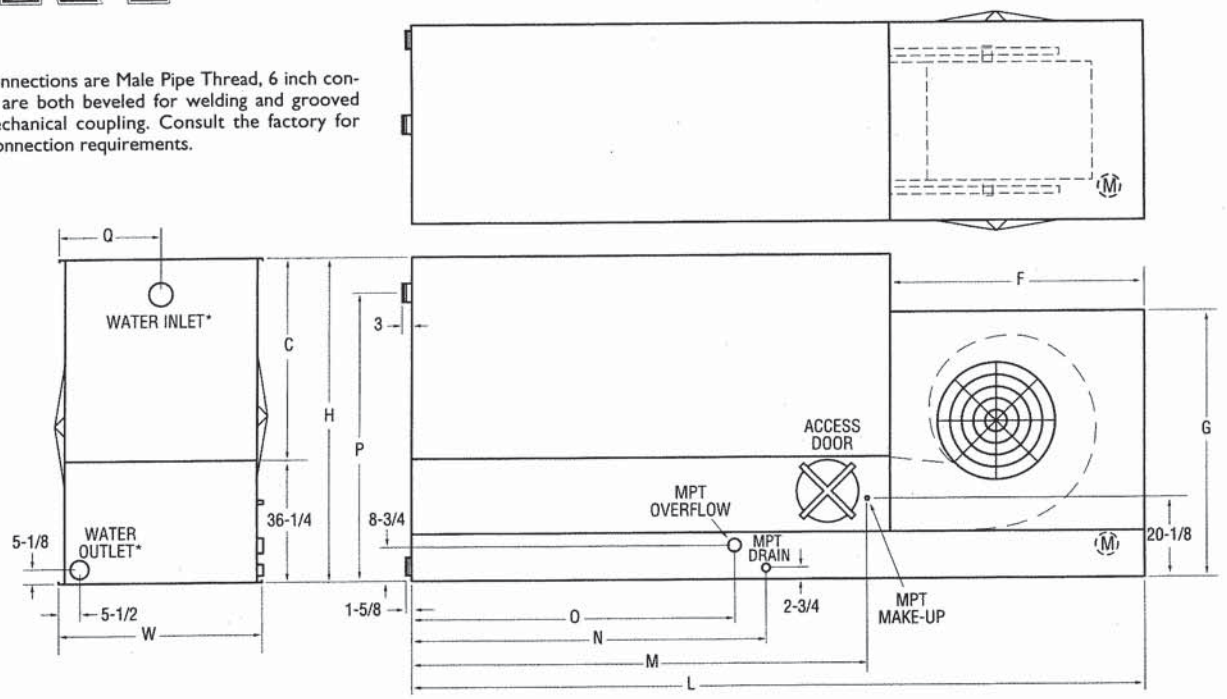
Models LRT 3-61 to 8-128

			COOLING CAPACITY IN GPM																			
		TEMP F°																				
		EWT	90°	95°	90°	95°	90°	95°	90°	95°	95°	100°	95°	100°	95°	97°	100°	102°	95°	97°	100°	102°
MODEL	MOTOR	LWT	80°	80°	80°	80°	80°	80°	80°	80°	85°	85°	85°	85°	85°	87°	85°	87°	85°	87°	85°	87°
NO.	HP	WB	66°	66°	68°	68°	70°	70°	72°	72°	75°	75°	76°	76°	78°	78°	78°	78°	80°	80°	80°	80°
LRT 3-61	1		110	83	101	76	88	67	75	58	102	78	95	73	81	102	63	78	64	85	53	67
LRT 3-62	2		137	105	126	95	110	84	94	74	127	98	119	92	102	127	80	98	81	107	65	84
LRT 3-63	3		156	119	142	109	125	96	107	85	144	111	135	105	116	144	91	112	93	122	75	96
LRT 3-64	3		171	132	157	121	138	108	120	96	159	124	150	117	129	159	103	125	104	135	86	108
LRT 3-65	5		199	154	183	142	162	127	140	112	185	145	174	137	150	185	120	146	122	158	101	126
LRT 3-66	7.5		223	174	206	160	182	143	158	127	208	164	196	155	170	208	136	165	138	178	114	143
LRT 5-61	3		239	182	219	167	192	148	165	130	221	171	207	161	177	221	140	172	142	187	115	148
LRT 5-62	5		279	214	256	196	225	175	194	154	259	201	243	190	208	258	165	202	168	220	137	174
LRT 5-63	3		289	227	267	210	237	189	207	169	270	214	255	203	221	269	180	215	183	232	153	189
LRT 5-64	5		306	237	281	217	248	194	215	172	285	222	268	210	230	284	184	224	187	243	154	194
LRT 5-65	7.5		315	242	290	222	254	198	220	175	293	228	275	215	236	292	188	229	191	249	156	198
LRT 5-66	7.5		334	260	308	239	273	214	236	190	312	245	294	231	254	311	203	246	206	267	170	214
LRT 5-67	10		363	285	336	262	298	234	259	208	340	268	320	254	277	339	222	269	226	291	186	234
LRT 5-68	7.5		368	293	342	271	305	245	268	219	346	277	327	263	286	345	233	278	237	299	198	244
LRT 5-69	10		390	311	363	289	325	261	285	233	367	294	347	280	304	366	248	296	252	318	211	260
LRT 5-91	10		412	316	378	290	332	258	286	227	383	297	359	280	308	382	243	298	248	324	201	257
LRT 5-92	15		466	358	428	329	376	293	324	258	433	336	406	317	349	432	277	338	283	367	230	293
LRT 5-93	15		495	385	456	354	403	316	349	280	462	362	434	342	375	461	300	364	305	394	251	315
LRT 5-94	20		524	409	484	377	429	337	372	299	490	385	461	364	399	489	319	387	325	419	268	336
LRT 5-95	15		546	433	507	401	452	362	397	324	512	410	484	339	423	511	345	412	350	443	293	361
LRT 5-96	20		587	468	545	434	488	392	429	351	551	443	522	421	457	550	373	445	379	478	317	391
LRT 5-121	15		555	427	509	392	448	350	388	311	516	401	484	379	416	514	332	403	338	438	279	350
LRT 5-122	20		603	466	555	428	489	383	423	339	562	438	528	414	454	561	363	441	369	478	304	382
LRT 5-123	25		643	499	593	459	523	410	453	363	600	469	564	444	486	598	388	471	396	511	326	409
LRT 5-124	30		677	527	624	485	552	433	479	384	632	496	595	469	513	630	411	498	418	540	344	432
LRT 5-125	25		701	555	650	514	580	463	508	414	658	524	621	498	542	656	441	527	448	568	375	463
LRT 5-126	30		735	584	683	541	610	488	534	436	690	552	653	524	570	688	464	554	472	597	394	487
LRT 5-127	30		759	608	706	565	633	513	559	462	714	576	676	549	595	712	489	579	497	621	419	512
LRT 8-91	20		691	530	633	486	556	433	480	381	641	497	601	470	516	640	409	500	417	543	339	432
LRT 8-92	15		697	539	641	494	565	442	488	392	649	506	610	478	525	647	419	508	426	552	351	441
LRT 8-93	20		736	570	678	524	598	468	517	415	686	536	645	506	555	684	444	539	452	585	372	467
LRT 8-94	15		756	596	700	551	623	497	545	444	708	563	668	534	582	706	473	566	481	610	402	496
LRT 8-95	25		806	628	744	578	658	516	571	458	753	591	709	559	612	751	489	594	498	644	410	516
LRT 8-96	30		830	648	766	596	678	533	589	473	776	609	730	576	631	773	505	612	514	664	423	532
LRT 8-97	25		865	687	803	636	717	574	629	513	812	649	768	617	671	810	546	652	555	703	464	573
LRT 8-121	25		912	704	838	646	738	577	638	512	849	661	797	625	685	847	547	664	557	721	459	576
LRT 8-124	30		990	767	911	704	804	629	696	557	922	720	867	681	746	920	596	724	607	786	500	628
LRT 8-123	40		1044	811	963	746	850	666	736	591	975	763	916	721	791	972	632	767	643	831	529	665
LRT 8-124	30		1070	845	991	782	883	705	773	630	1002	798	947	758	825	1000	670	802	682	865	570	704
LRT 8-125	50		1118	873	1033	804	914	718	794	637	1046	821	985	777	851	1043	681	826	694	895	571	717
LRT 8-126	40		1153	915	1070	847	955	764	837	683	1082	865	1023	821	893	1079	727	869	739	936	618	763
LRT 8-127	50		1230	980	1143	908	1022	820	898	734	1156	927	1094	881	957	1153	780	931	794	1002	663	818
LRT 8-128	50		1265	1014	1177	943	1056	856	933	771	1189	962	1127	916	992	1186	817	966	830	1036	701	855

Note: For alternate selections and conditions other than those stated, consult your EVAPSPEC II selection program or local EVAPCO representative.

LRT Engineering Data and Dimensions

* 4 inch connections are Male Pipe Thread, 6 inch connections are both beveled for welding and grooved for a mechanical coupling. Consult the factory for special connection requirements.



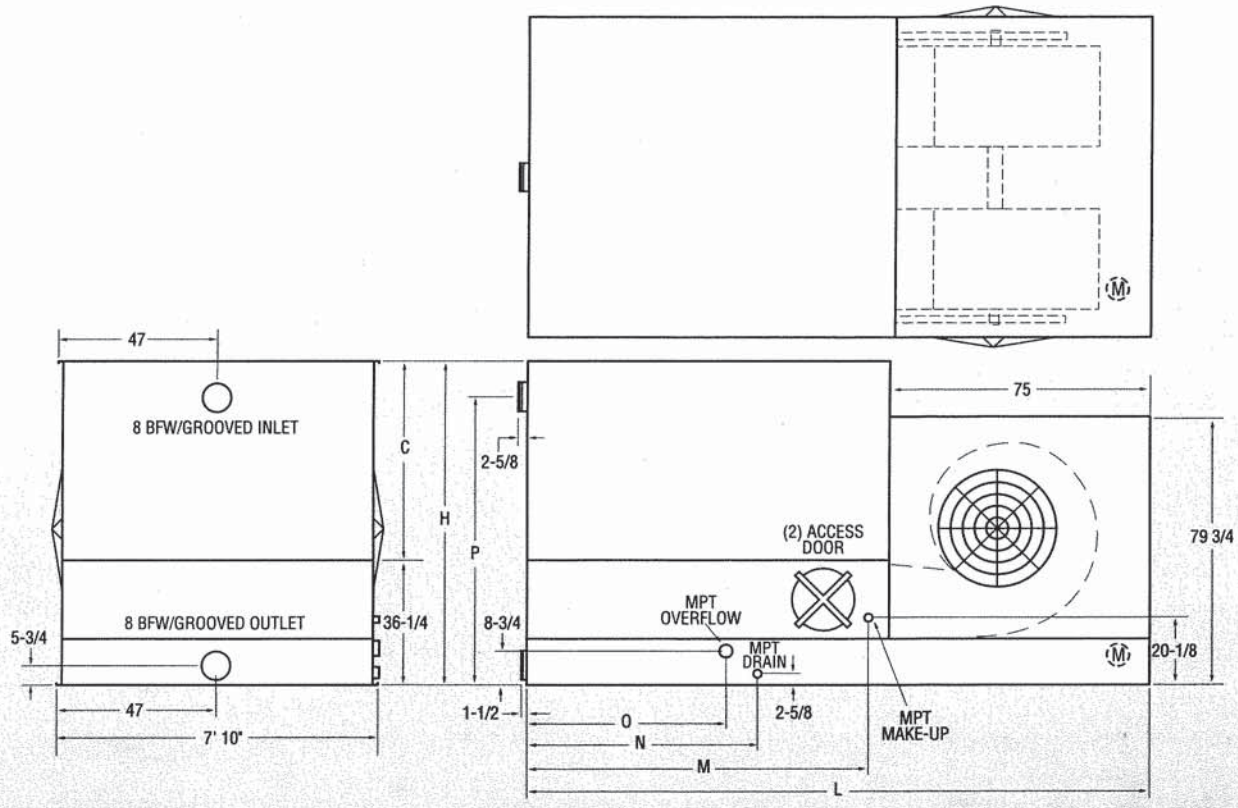
Low Silhouette Cooling Towers

Models LRT 3-61 to 5-127

MODEL NO.	WEIGHT		FANS			DIMENSIONS											CONNECTIONS (IN)				
	SHIPPING	OPERATING	NO.	MOTOR HP	CFM	H	W	L	P	Q	C	O	N	M	F	G	WATER IN	WATER OUT	MAKE UP	DRAIN	OVER FLOW
LRT 3-61	1510	2490	1	1	7020	6' 10-1/2"	3' 4-1/2"	10' 1-7/8"	6' 1-7/8"	1' 8-1/4"	3' 10-1/4"	2' 1/4"	2' 8-1/2"	5' 6"	4' 2"	5' 3-3/8"	4	4	1	2	2
LRT 3-62	1520	2490	1	2	8850	6' 10-1/2"	3' 4-1/2"	10' 1-7/8"	6' 1-7/8"	1' 8-1/4"	3' 10-1/4"	2' 1/4"	2' 8-1/2"	5' 6"	4' 2"	5' 3-3/8"	4	4	1	2	2
LRT 3-63	1530	2510	1	3	10130	6' 10-1/2"	3' 4-1/2"	10' 1-7/8"	6' 1-7/8"	1' 8-1/4"	3' 10-1/4"	2' 1/4"	2' 8-1/2"	5' 6"	4' 2"	5' 3-3/8"	4	4	1	2	2
LRT 3-64	1620	2590	1	3	9940	6' 10-1/2"	3' 4-1/2"	10' 1-7/8"	6' 1-7/8"	1' 8-1/4"	3' 10-1/4"	2' 1/4"	2' 8-1/2"	5' 6"	4' 2"	5' 3-3/8"	4	4	1	2	2
LRT 3-65	1630	2600	1	5	11780	6' 10-1/2"	3' 4-1/2"	10' 1-7/8"	6' 1-7/8"	1' 8-1/4"	3' 10-1/4"	2' 1/4"	2' 8-1/2"	5' 6"	4' 2"	5' 3-3/8"	4	4	1	2	2
LRT 3-66	1670	2640	1	7.5	13490	6' 10-1/2"	3' 4-1/2"	10' 1-7/8"	6' 1-7/8"	1' 8-1/4"	3' 10-1/4"	2' 1/4"	2' 8-1/2"	5' 6"	4' 2"	5' 3-3/8"	4	4	1	2	2
LRT 5-61	2320	4040	1	3	14880	6' 10-5/8"	5' 5/8"	12' 2-3/4"	6' 1-7/8"	2' 6-3/8"	3' 10-3/8"	2' 1/4"	2' 7-5/8"	5' 6"	6' 3"	6' 6-3/4"	4	4	1	2	3
LRT 5-62	2330	4050	1	5	17640	6' 10-5/8"	5' 5/8"	12' 2-3/4"	6' 1-7/8"	2' 6-3/8"	3' 10-3/8"	2' 1/4"	2' 7-5/8"	5' 6"	6' 3"	6' 6-3/4"	4	4	1	2	3
LRT 5-63	2470	4190	1	3	14560	7' 10-5/8"	5' 5/8"	12' 2-3/4"	7' 1-7/8"	2' 6-3/8"	4' 10-3/8"	2' 1/4"	2' 7-5/8"	5' 6"	6' 3"	6' 6-3/4"	4	4	1	2	3
LRT 5-64	2410	4130	1	5	17320	7' 10-5/8"	5' 5/8"	12' 2-3/4"	7' 1-7/8"	2' 6-3/8"	4' 10-3/8"	2' 1/4"	2' 7-5/8"	5' 6"	6' 3"	6' 6-3/4"	4	4	1	2	3
LRT 5-65	2370	4100	1	7.5	20210	6' 10-5/8"	5' 5/8"	12' 2-3/4"	6' 1-7/8"	2' 6-3/8"	3' 10-3/8"	2' 1/4"	2' 7-5/8"	5' 6"	6' 3"	6' 6-3/4"	4	4	1	2	3
LRT 5-66	2400	4120	1	7.5	19960	6' 10-5/8"	5' 5/8"	12' 2-3/4"	6' 1-7/8"	2' 6-3/8"	3' 10-3/8"	2' 1/4"	2' 7-5/8"	5' 6"	6' 3"	6' 6-3/4"	4	4	1	2	3
LRT 5-67	2480	4210	1	10	21300	6' 10-5/8"	5' 5/8"	12' 2-3/4"	6' 1-7/8"	2' 6-3/8"	3' 10-3/8"	2' 1/4"	2' 7-5/8"	5' 6"	6' 3"	6' 6-3/4"	4	4	1	2	3
LRT 5-68	2520	4240	1	7.5	19750	7' 10-5/8"	5' 5/8"	12' 2-3/4"	7' 1-7/8"	2' 6-3/8"	4' 10-3/8"	2' 1/4"	2' 7-5/8"	5' 6"	6' 3"	6' 6-3/4"	4	4	1	2	3
LRT 5-69	2560	4280	1	10	21300	7' 10-5/8"	5' 5/8"	12' 2-3/4"	7' 1-7/8"	2' 6-3/8"	4' 10-3/8"	2' 1/4"	2' 7-5/8"	5' 6"	6' 3"	6' 6-3/4"	4	4	1	2	3
LRT 5-91	2820	5430	1	10	26470	7' 5/8"	5' 5/8"	15' 2-1/4"	6' 2-7/8"	2' 6-3/8"	4' 3/8"	4' 11-5/8"	5' 7-1/8"	8' 5-1/4"	6' 3"	6' 6-3/4"	6	6	1	2	3
LRT 5-92	2930	5530	1	15	30290	7' 5/8"	5' 5/8"	15' 2-1/4"	6' 2-7/8"	2' 6-3/8"	4' 3/8"	4' 11-5/8"	5' 7-1/8"	8' 5-1/4"	6' 3"	6' 6-3/4"	6	6	1	2	3
LRT 5-93	2990	5590	1	15	29960	7' 5/8"	5' 5/8"	15' 2-1/4"	6' 2-7/8"	2' 6-3/8"	4' 3/8"	4' 11-5/8"	5' 7-1/8"	8' 5-1/4"	6' 3"	6' 6-3/4"	6	6	1	2	3
LRT 5-94	3000	5600	1	20	32110	7' 5/8"	5' 5/8"	15' 2-1/4"	6' 2-7/8"	2' 6-3/8"	4' 3/8"	4' 11-5/8"	5' 7-1/8"	8' 5-1/4"	6' 3"	6' 6-3/4"	6	6	1	2	3
LRT 5-95	3170	5770	1	15	29590	8' 5/8"	5' 5/8"	15' 2-1/4"	7' 2-7/8"	2' 6-3/8"	5' 3/8"	4' 11-5/8"	5' 7-1/8"	8' 5-1/4"	6' 3"	6' 6-3/4"	6	6	1	2	3
LRT 5-96	3240	5830	1	20	32110	8' 5/8"	5' 5/8"	15' 2-1/4"	7' 2-7/8"	2' 6-3/8"	5' 3/8"	4' 11-5/8"	5' 7-1/8"	8' 5-1/4"	6' 3"	6' 6-3/4"	6	6	1	2	3
LRT 5-121	3440	6990	1	15	32190	7' 5/8"	5' 5/8"	18' 2-5/8"	6' 2-7/8"	2' 6-3/8"	4' 3/8"	8'	8' 7-1/2"	11' 5-5/8"	6' 3"	6' 6-3/4"	6	6	1	2	3
LRT 5-122	3450	7010	1	20	35460	7' 5/8"	5' 5/8"	18' 2-5/8"	6' 2-7/8"	2' 6-3/8"	4' 3/8"	8'	8' 7-1/2"	11' 5-5/8"	6' 3"	6' 6-3/4"	6	6	1	2	3
LRT 5-123	3460	7020	1	25	38170	7' 5/8"	5' 5/8"	18' 2-5/8"	6' 2-7/8"	2' 6-3/8"	4' 3/8"	8'	8' 7-1/2"	11' 5-5/8"	6' 3"	6' 6-3/4"	6	6	1	2	3
LRT 5-124	3490	7040	1	30	40550	7' 5/8"	5' 5/8"	18' 2-5/8"	6' 2-7/8"	2' 6-3/8"	4' 3/8"	8'	8' 7-1/2"	11' 5-5/8"	6' 3"	6' 6-3/4"	6	6	1	2	3
LRT 5-125	3700	7250	1	25	37890	8' 5/8"	5' 5/8"	18' 2-5/8"	7' 2-7/8"	2' 6-3/8"	5' 3/8"	8'	8' 7-1/2"	11' 5-5/8"	6' 3"	6' 6-3/4"	6	6	1	2	3
LRT 5-126	3720	7270	1	30	40280	8' 5/8"	5' 5/8"	18' 2-5/8"	8' 2-7/8"	2' 6-3/8"	5' 3/8"	8'	8' 7-1/2"	11' 5-5/8"	6' 3"	6' 6-3/4"	6	6	1	2	3
LRT 5-127	3980	7520	1	30	40110	9' 5/8"	5' 5/8"	18' 2-5/8"	7' 2-7/8"	2' 6-3/8"	6' 3/8"	8'	8' 7-1/2"	11' 5-5/8"	6' 3"	6' 6-3/4"	6	6	1	2	3

Notes:
1) An adequately sized bleed line must be installed in the cooling tower system to prevent buildup of impurities in the recirculated water.
2) Do not use catalog drawings for certified prints. Dimensions subject to change.
3) For external static pressure up to 1/2", use next size fan motor.

LRT Engineering Data and Dimensions



Low Silhouette Cooling Towers

Models LRT 8-91 to 8-128

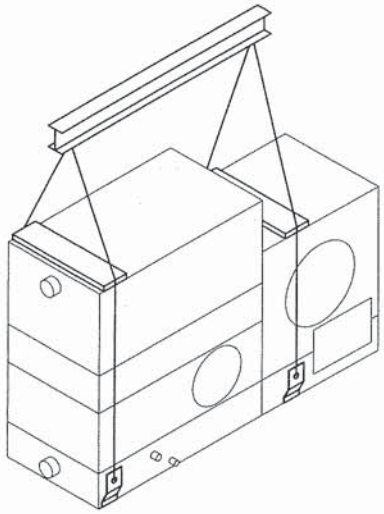
MODEL NO.	WEIGHT		FANS			DIMENSIONS							CONNECTIONS (IN)				
	SHIPPING	OPERATING	NO.	MOTOR HP	CFM	H	L	P	C	O	N	M	WATER IN	WATER OUT	MAKE UP	DRAIN	OVER FLOW
LRT 8-91	4220	8530	2	20	49270	6' 11-1/2"	15' 2-1/4"	6' 5/8"	3' 11-1/4"	4' 11-1/2"	5' 7-1/2"	8' 5-1/4"	8	8	1	2	3
LRT 8-92	4290	8600	2	15	41610	6' 11-1/2"	15' 2-1/4"	6' 5/8"	3' 11-1/4"	4' 11-1/2"	5' 7-1/2"	8' 5-1/4"	8	8	1	2	3
LRT 8-93	4220	8530	2	20	46850	6' 11-1/2"	15' 2-1/4"	6' 5/8"	3' 11-1/4"	4' 11-1/2"	5' 7-1/2"	8' 5-1/4"	8	8	1	2	3
LRT 8-94	4460	8770	2	15	41020	7' 11-1/2"	15' 2-1/4"	7' 5/8"	4' 11-1/4"	4' 11-1/2"	5' 7-1/2"	8' 5-1/4"	8	8	1	2	3
LRT 8-95	4320	8630	2	25	49340	6' 11-1/2"	15' 2-1/4"	6' 5/8"	3' 11-1/4"	4' 11-1/2"	5' 7-1/2"	8' 5-1/4"	8	8	1	2	3
LRT 8-96	4340	8650	2	30	51110	6' 11-1/2"	15' 2-1/4"	6' 5/8"	3' 11-1/4"	4' 11-1/2"	5' 7-1/2"	8' 5-1/4"	8	8	1	2	3
LRT 8-97	4490	8790	2	25	48680	7' 11-1/2"	15' 2-1/4"	7' 5/8"	4' 11-1/4"	4' 11-1/2"	5' 7-1/2"	8' 5-1/4"	8	8	1	2	3
LRT 8-121	4760	10610	2	25	57240	6' 11-1/2"	18' 2-5/8"	6' 5/8"	3' 11-1/4"	7' 11-7/8"	8' 6-7/8"	11' 5-3/4"	8	8	2	2	3
LRT 8-122	4830	10670	2	30	59530	6' 11-1/2"	18' 2-5/8"	6' 5/8"	3' 11-1/4"	7' 11-7/8"	8' 6-7/8"	11' 5-3/4"	8	8	2	2	3
LRT 8-123	5080	10920	2	40	66940	6' 11-1/2"	18' 2-5/8"	6' 5/8"	3' 11-1/4"	7' 11-7/8"	8' 6-7/8"	11' 5-3/4"	8	8	2	2	3
LRT 8-124	5110	10960	2	30	58650	7' 11-1/2"	18' 2-5/8"	7' 5/8"	4' 11-1/4"	7' 11-7/8"	8' 6-7/8"	11' 5-3/4"	8	8	2	2	3
LRT 8-125	5190	11030	2	50	68790	6' 11-1/2"	18' 2-5/8"	6' 5/8"	3' 11-1/4"	7' 11-7/8"	8' 6-7/8"	11' 5-3/4"	8	8	2	2	3
LRT 8-126	5410	11250	2	40	64560	7' 11-1/2"	18' 2-5/8"	7' 5/8"	4' 11-1/4"	7' 11-7/8"	8' 6-7/8"	11' 5-3/4"	8	8	2	2	3
LRT 8-127	5520	11360	2	50	68790	7' 11-1/2"	18' 2-5/8"	7' 5/8"	4' 11-1/4"	7' 11-7/8"	8' 6-7/8"	11' 5-3/4"	8	8	2	2	3
LRT 8-128	5840	11670	2	50	68700	8' 11-1/2"	18' 2-5/8"	8' 5/8"	5' 11-1/4"	7' 11-7/8"	8' 6-7/8"	11' 5-3/4"	8	8	2	2	3

Notes:
1) An adequately sized bleed line must be installed in the cooling tower system to prevent buildup of impurities in the recirculated water.
2) Do not use catalog drawings for certified prints. Dimensions subject to change.
3) For external static pressure up to 1/2", use next size fan motor.

LRT Applications

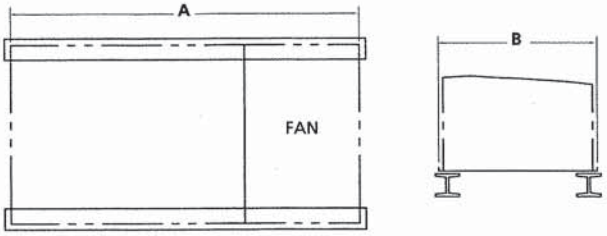
LRT Ships Factory Assembled

The compact, unitary design of the LRT Cooling Tower allows them to be shipped completely assembled. This results in lower transportation costs and no assembly requirements at the job site. Only one lift is required to rig the LRT. *Note: Options such as attenuation and discharge hoods will require additional lifts.*



Structural Steel Support

The recommended method of support for the LRT cooling tower is two structural "I" beams located under the outer flanges and running the entire length of the unit. Mounting holes 3/4" in diameter, are located at 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. See the drawing and chart below for unit dimensions.



DIMENSIONS		
Model No.	A	B
LRT 3-61 to 3-66	10' 1-7/8"	3' 4-1/2"
LRT 5-61 to 5-69	12' 2-3/4"	5' 5/8"
LRT 5-91 to 5-96	15' 2-1/4"	5' 5/8"
LRT 5-121 to 5-127	18' 2-5/8"	5' 5/8"
LRT 8-91 to 8-97	15' 2-1/4"	7' 10"
LRT 8-121 to 8-128	18' 2-5/8"	7' 10"

Note:

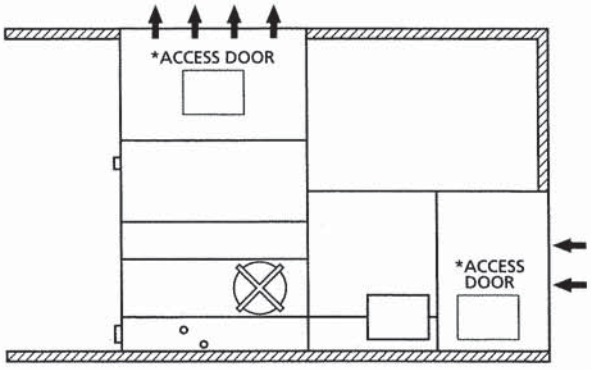
1) Beams should be level before setting the unit in place.
2) Do not level the unit by shimming between it and the "I" beams as this will not provide proper longitudinal support.
3) Beams should be sized in accordance with accepted structural practices. Support beams and anchor bolts are to be furnished by others.

Indoor Installation

All LRT Cooling Towers can be installed indoors where they normally require ductwork to and from the unit. The design of the ductwork should be symmetrical to provide even air distribution across both intake and discharge openings. Guidelines for Ducted Applications:

1) The static pressure loss imposed by the ductwork must not exceed 1/2". The fan motor size must be increased for ESP up to 1/2".
2) For ducted installations, the solid bottom panel option should be ordered. A blank off plate will also be provided in lieu of the side air inlet screens with this option.
3) * Access doors must be located in the ductwork for service to the fan drive components and water distribution system.

Drawings are available showing recommended ductwork connections. See EVAPCO's Layout Guidelines for additional information.



LRT Applications

Design
EVAPCO LRT Cooling Towers have heavy-duty construction and are designed for long, trouble-free operation. However, proper equipment selection, installation and maintenance are necessary to insure good unit performance. Some of the major considerations in the application of a cooling tower are presented below. For additional information, contact the factory.

Air Circulation
In reviewing the system design and unit location, it is important that enough fresh air is provided to enable proper unit performance. 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 towers in wells or enclosures or next to high walls. The potential for recirculation of the hot, moist discharge air back into the fan intake exists. Recirculation raises the wet bulb temperature of the entering air causing the leaving water temperature to rise above 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. For additional information see the EVAPCO Equipment Layout Manual. Engineering assistance is also available from the factory to identify potential recirculation problems and recommend solutions.

Capacity Control
The design wet bulb for which the cooling tower is sized occurs only a small percentage of the time. Unless colder water temperatures are beneficial to the process being cooled, some form of capacity control will be needed. A common control practice is to cycle the fans off when leaving water is below the minimum allowable temperature. However this does not provide close control of the leaving water temperature.

Another method is to use two-speed fan motors which add a second step of control. Two speed fan motors are an excellent method of capacity control for the LRT. This arrangement gives capacity steps of 10% (fans off), 60% (fans half-speed) and 100%. A temperature controller can be supplied to set control at 5° increments, so fairly close temperature control can be maintained without excessive cycling of the fan motor.

Two-speed motors also save operating costs. At half-speed the motor draws approximately 15% of full load power. Since maximum wet bulb and maximum load very seldom coincide on air conditioning systems, the cooling tower will actually operate at half speed 80% of the time. Thus, power costs will be reduced by approximately 85% during the major portion of the operating season.

Caution: The water circulation pump must be interlocked with the fan motor starter(s) to insure water flow over the tower fill during fan operation.

Piping
Cooling tower piping should be designed and installed in accordance with generally accepted engineering practices. 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 cooling tower connections, nor should any of the pipe supports be anchored to the unit framework.

Maintaining the Recirculated Water System
The cooling in a tower is accomplished by the evaporation of a portion of the recirculated spray water. As this water evaporates, it leaves behind all of its mineral content and impurities. Therefore, it is important to bleed-off an amount of water equal to that which is evaporated to prevent the buildup of impurities. If this is not done, the mineral content and/or the corrosive nature of the water will continue to increase. This will ultimately result in heavy scaling or a corrosive condition.

Bleed-off
A bleed line should be installed in the piping, external to the unit. The bleed line must be properly sized for the application and provided with a metering connection and globe valve. The recommended bleed off for a cooling tower is equivalent to the evaporation rate of 3 gpm per 100 tons of cooling. If the make-up water supplying the unit is relatively free of impurities, it may be possible to cut back the bleed, but the unit must be checked frequently to make sure scale is not forming. Make-up water pressure must be maintained between 20 and 50 psig for proper operation of the float valve.

Water Treatment
In some cases the make-up water will be so high in mineral content that a normal bleed-off will not prevent scaling. In this cases 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 stainless and galvanized construction of the unit. The pH of the water should be maintained between 6.5 and 8.0. In order to prevent "white rust", the galvanized steel in the unit may require routine passivation of the steel when the system is operating in higher pH levels. 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 compatible with galvanized steel construction should be used.

Control of Biological Contamination
Water quality should be checked regularly for biological contamination. If biological contamination is detected, a more aggressive water treatment and mechanical cleaning program should be undertaken. The water treatment program should be performed by a qualified water treatment company. It is important that all internal surfaces be kept clean of accumulated dirt and sludge. In addition, the drift eliminators should be maintained in good operating condition.

Note: The location of the cooling tower must be considered during the equipment layout stages of a project. It is important to prevent the discharge air (potential of biological contamination) from being introduced into the fresh air intakes of the building.

LRT Optional Equipment for Low Sound Applications

Sound Attenuation Packages

The standard LRT is the quietest, low silhouette centrifugal fan cooling tower in the industry. This is achieved by providing the first stage of inlet sound attenuation as part of the LRT's standard design. The LRT drive system, including the fan housing(s), electric motors, belts, bearings and drives, is completely enclosed by a protective housing which covers the drive system and also provides a significant level of sound reduction.

If the standard LRT sound pressure level is not quiet enough for certain applications, the sound levels can be further reduced by adding various stages of sound attenuation. The sound attenuation options of the LRT can be provided in stages and will provide varying degrees of attenuation based on the stage of attenuation selected. Consult the factory for Factory Certified Sound Data for each option.

Fan Side Inlet Attenuation

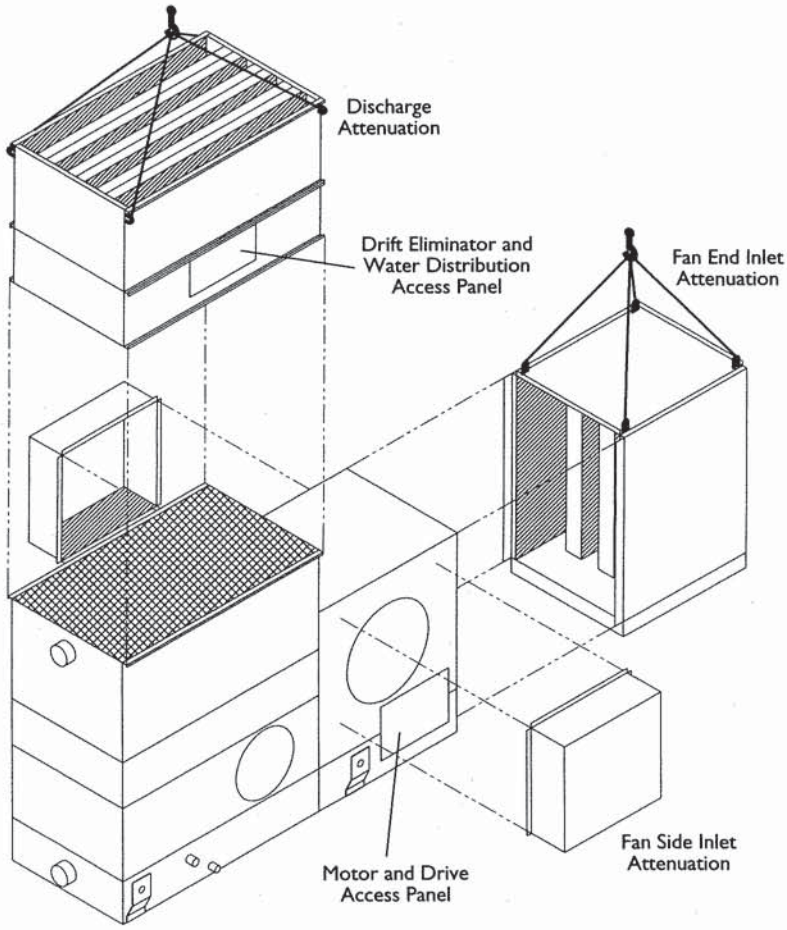
Reduces sound radiated from the fan side air intakes and has an open bottom to allow for air entry. This attenuation package ships loose to be mounted in the field on each side of the cooling tower over the fan intakes.

Fan End Inlet Attenuation

Reduces sound radiated through the end air intakes. It consists of baffled panels to change the path of the air entry and to capture the radiated noise thus reducing the overall sound levels generated. In addition, the external belt adjustment mechanism is extended through the inlet attenuator to allow easy belt adjustment without having to enter the unit.

Discharge Attenuation

The discharge attenuation hood features a straight sided design with insulated baffles to reduce the overall sound levels of the discharge air. The discharge attenuation incorporates a large access panel to allow entry to the drift eliminators and water distribution system. If a higher discharge velocity is required with minimal sound attenuation, a tapered discharge hood is available.



LRT Optional Equipment

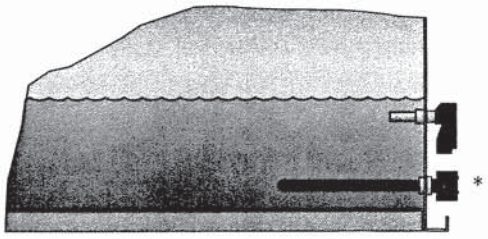
Pan Freeze Protection

Remote Sump

Whenever a cooling tower is idle during sub-freezing weather, the water in the sump must be protected from freezing and damaging the pan. The simplest and most reliable method of accomplishing this is with a remote sump tank located in a heated space in the building under the tower. With this system, the water in the tower drains to the indoor tank whenever the pump is shut-off. When a tower is ordered for remote sump operation, the standard float valve and strainer are omitted, and the unit is provided with an oversized water out connection. When a remote sump is not possible, a supplementary means of heating the pan water must be provided.

Electric Heaters

Electric immersion heaters are available factory installed in the basin of the tower. They are sized to maintain a +40°F pan water temperature at 0°F ambient with the fans off. They are furnished with a combination thermostat/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 enclosed in rugged, weather proof enclosures for outdoor use. Heater control packages are available as an option. Contact your local EVAPCO representative for further details.



BASIN HEATER
*See factory certified prints for detailed drawings.

Electric Pan Heaters

Model No.	KW
LRT 3-61 to 3-66	(1) 2
LRT 5-61 to 5-69	(1) 3
LRT 5-91 to 5-96	(1) 3
LRT 5-121 to 5-127	(1) (6)
LRT 8-91 to 8-97	(1) (7)
LRT 8-121 to 8-128	(1) (9)

* Electric heater selection based on 0°F ambient temperature. For alternate low ambient heater selections, consult the factory.

Steam or Hot Water Coils

Pan coils are available as an alternate to the electric heaters described above. Constructed of galvanized pipe installed in the cooling tower basin, they are supplied less controls and are ready for piping to an external steam or hot water source. Pan water heater controls should be interlocked with the water circulating pump to prevent their operation when the pump is energized.

Electric Water Level Control

EVAPCO LRT Cooling Towers are available with an optional electric water level control system in place of the standard mechanical makeup valve and float assembly. This package provides accurate control of the pan water level and does not require field adjustment, even under widely variable operating conditions.

The control was designed by EVAPCO and consists of multiple heavy duty stainless steel electrodes. These electrodes are mounted external to the unit in a vertical stand pipe. For winter operation, the stand pipe must be wrapped with electric heating cable and insulated to protect it from freezing. The weather protected slow closing solenoid valve for the makeup water connection is factory supplied and is ready for piping to a water supply with a pressure between 20 psig (minimum) and 50 psig.(maximum).

Vibration Isolators

The fans on EVAPCO cooling towers are balanced and run virtually vibration free. In addition, the rotating mass is very small in relation to the total mass of the cooling tower, further reducing the possibility of objectionable vibration being transmitted to the building structure. As a result, vibration isolation is generally not required.

In those cases where it is determined that vibration isolation is necessary, spring type vibration isolator rails can be furnished. The rails are constructed of heavy gauge G-235 hot-dip galvanized steel for superior corrosion resistance. Rails are designed to be mounted between the cooling tower and the supporting steel framework. They are 90% efficient and have approximately 1" static deflection. Rails are designed for wind loading up to 50 mph.

It is important to note that vibration isolation must be installed continuously along the full length of the cooling tower on both sides of the unit. Point isolators may be used between the supporting steel and the building framework, but not between the unit and the supporting steel.

Screened Bottom Panels

Protective inlet screens are provided on the front of the fan section on the LRT. Screens are not provided on the bottom of the fan section since most units are mounted on the roof or at ground level.

If units are installed in an elevated position, bottom screens are recommended for safety protection.

Other Options Available:

Capacity Dampers and Controls
Pony Motors
Ladders
Inverter Duty and 2 Speed Motors
Steam Injectors
Additional Stainless Steel Material Options
Stainless Steel Fan Shafts
Tapered Discharge Hoods

LRT Specifications

Furnish and install EVAPCO Model(s) LRT _____ Counterflow, Blow-Through Cooling Tower with single side air entry to cool _____ GPM of water from ____°F to ____°F with a ____°F entering wet bulb temperature. Unit height shall not exceed _____feet. The tower(s) shall operate against _____ w.g. external static pressure. Cooling tower(s) shall be fully assembled with all moving parts factory mounted and aligned.

Cold Water Basin

The complete cold water 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 and brass make-up valve with unsinkable, foam filled plastic float. A circular access door shall be located above the basin to allow easy access to the pan interior.

The outlet shall be Type 304 stainless steel grooved for a mechanical coupling and beveled for welding or a threaded connection.

Casing and Fan Section

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 air stream.

Centrifugal Fans and Drives

The complete drive system, including the fan housing, electric motor, belts, bearings and drives shall be completely enclosed by a protective housing which covers the drive system and provides sound reduction.

Fans shall be forwardly curved centrifugal type of hot-dip galvanized construction. The fans shall be factory installed, statically and dynamically balanced for vibration free operation. The fans shall be mounted on either a solid steel shaft or a hollow steel foamed filled shaft with forged bearing journals. The fan shaft shall be supported by heavy-duty, self aligning ball bearings with cast iron housings and lubrication fittings for maintenance. The fan drive shall be V-Belt type adjustable from outside the unit, with taper lock sheaves designed for 150% of the motor nameplate horsepower. Drives are to be mounted and aligned at the factory.

A belt adjustment device shall be provided as standard.

Fan Motor

Fan motor(s) shall be _____Horsepower T.E.F.C. design with 1.15 service factor and suitable for outdoor installation on _____volts, _____hertz, and _____ phase electrical service. Motor(s) shall be mounted on an adjustable base.

Fill Section*

The cooling tower fill shall be PVC (Polyvinyl Chloride) of cross-fluted design for optimum heat transfer and efficiency. The cross-fluted sheets shall be bonded together for strength and durability. The fill shall have special drainage tips to allow high water loading and low pressure drop. The fill section shall be easily removed from the cooling tower casing section. The PVC fill shall be self-extinguishing for fire resistance with a flame spread rating of 5 per ASTM E84-81a. It shall also be resistant to rot, decay or biological attack.

Water Distribution System

The spray header and branches shall be constructed of Schedule 40 PVC (Polyvinyl Chloride) pipe for corrosion resistance and shall have a steel connection which is either beveled for weld/grooved for a mechanical coupling or threaded to attach the external piping. The water shall be distributed over the fill by precision molded threaded ABS spray nozzles with large 3/8 by 1 inch orifice openings and integral sludge ring to prevent clogging. The internal tower water distribution system piping shall be removable for cleaning and have threaded end caps to allow debris to be removed.

Eliminators

The eliminators shall be constructed of inert polyvinyl chloride (PVC) that has been specially treated to resist UV degradation. Assembled in easily handled sections, the eliminators shall incorporate three changes in air direction to assure removal of entrained moisture from the discharge air stream.

The drift rate shall not exceed .001% of the recirculated water rate.

Finish

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 panel edges shall be coated with a 95% pure zinc compound.

Coated finishes shall not be acceptable.

Mechanical Equipment Warranty

The motor and drive system shall carry a 5 year warranty from the date of shipment, against defects in materials and workmanship including the fan(s), bearings, sheaves, shafts, fan motor(s) and mechanical equipment supports

* The LRT uses the patented EVAPAK® fill (U.S. Patent No. 5,124,087) which is designed to induce highly turbulent mixing of the air and water for superior heat transfer.

EVAPCO PRODUCTS ARE MANUFACTURED WORLDWIDE

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