



AXT

COOLING TOWER

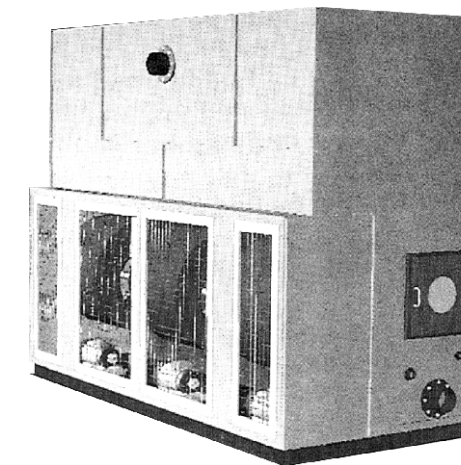


YEKTA TAHVIEH
ARVAND
www.arvandcorp.com

CT-02-16/01

COOLING TOWERS

...For Cooling Water in AirConditioning Refrigeration,
and
Industrial Process Systems



54 Standard Sizes
54 Kw to 27500 Kw
1.59 to 1317 L/s

INTRODUCTION

AXT - Cooling towers extend the proven advantages, with a broader choice of size to closely match the capacity. Space, and application requirements of virtually project.

All units are designed to ensure quiet operation, dependable performance, long life and ease of maintenance.

- The compactness of the pan and the static pressure capability of the centrifugal fans make **AXT** cooling towers the logical choice for indoor installation or restricted outdoor enclosures. Single - fan side design and variety of width and length combination provide alternative configuration to fit the required capacity in the available space.
- Because the recessed Centrifugal fans are inherently quiet.

AXT cooling towers are preferred whenever low sound levels are desired. Sound accessories manufactured by ARVAND are available for project requiring very quiet operation.

Certified sound rating data are available.

- A choice of materials of construction (including three wet deck surface options) and ARVAND engineered accessories mean the **AXT** cooling tower can meet virtually every application and installation need including complete fireproof construction and reliable year - round operation

- Product life is extended and maintenance costs are minimized by the blow -through design which places all moving parts in the dry entering airstream.

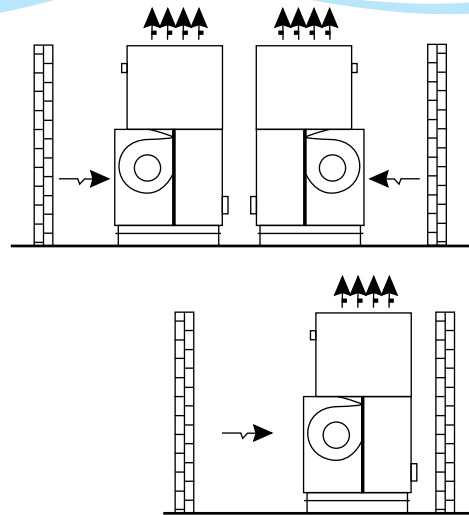
AXT cooling towers are constructed of heavy gauge, Hot - dip galvanized steel"conform to. Bs729 or Din En 10143 with a proven corrosion protection finish significantly better than galvanized alone. In addition all critical air handling components are provided as related standard same as CTI , NFPA,...

- Ease of maintenance is provided by the self-cleaning pan and large orifice spray nozzles. ALL rotating parts are located at the base of the unit for easy access and maintenance. ALL units are factory-assembled for uniform quality of construction and performance with major components having been designed, tested, and manufactured by"ARVAND."

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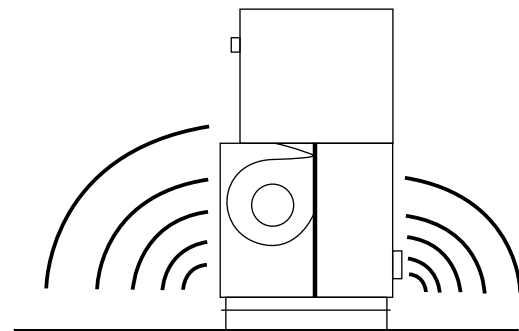
AXT ADVANTAGES

Location Versatility



Single side air entry saves space.

Quiet Operation



YEAR - ROUND OPERATION

-Designed for cold weather

AXT cooling towers are ideally suited for year - round operation. Since the blow - through designed Places the fans, motors and drivers in the dry entering airstream. These moving parts are protected from moisture Condensation and fan icing. The counter flow design provides more even cooling and has fewer potential icing problems than crossflow designs.

-Accessories for winter operation

Standard accessories are available to provide protection against icing conditions. They include sump water heaters, and electric water level control packages. Since not all these accessories are required for every cold weather application.

-Compact outdoor installation

The ability to locate the compact AXT cooling towers in tight location allows designers of cooling systems to better utilize available space. Smaller, less costly enclosures can be used units can be placed in narrow set-backs or close to solid walls. Optional discharge hoods can be used to reduce Space requirements.

-Compact indoor installation

AXT cooling towers, with centrifugal fans are Ideally suited for indoor installation which are often Desirable for freeze protection, noise abatement space limitations, or aesthetic Consideration. Single side air entry on all units allows inlet ducting and uses a minimum amount of valuable indoor space.

-Quiet Design

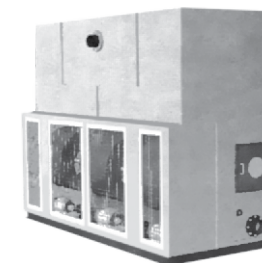
AXT cooling towers are particularly suited for Noise sensitive installations .the use of centrifugal fans And special design for pan, creating a recessed fan Position enables the AXT cooling towers to achieve Superior acoustical performance.

-Sound Attenuation Available

When even quieter operation is desired, the AXT cooling towers can be supplied with packaged Sound attenuators to reduce sound levels further. this Attenuators are designed and built by "ARVAND" specifically for use on this equipment. they are sound Tested and rated for the units on which they are used, And octave band sound rating data are available.

EASY MAINTENANCE

Large Orifice nozzles



-Few moving parts

less maintenance is an inherent benefit of "ARVAND" single fan side design because there are minimum number of fans, bearing, motors and drivers.

-Easy Access

All moving parts are located near the base of the unit within easy reach for cleaning, lubrication, or adjustment. Belt adjustment on AXT units is accomplished by a single threaded bolt and nut assembly accessible from out side the fan assembly the interior of the unit is easily accessible through leak proof, man-size access doors for adjusting the float valve, cleaning the strainer or flashing the sump.

-Trouble - free water distribution

The water distribution system employs large orifice plastic nozzles which greatly reduce the potential for clogging so thermal performance is more consistent between maintenance periods. When nozzles must be cleaned, the large orifices can be cleaned in place, but are grom meted for easy removal if necessary.

-Easy to Clean

Moving Part Located at base of unit large pan space simplifies cleaning the unite interior another inherent benefit of single fan side design.

-Factory Assembled

AXT cooling towers are fabricated and assembled at the factory to ensure consistent. High quality construction at minimum cost an extensive research and development facility assures design before it goes into production component parts. Including wet deck surface (Conform to BS 4458 part 3) are designed and manufactured by "ARVAND" providing single source responsibility for every unite.

-Directed Air Discharge

Eliminators on AXT cooling towers are engineered to effectively perform two functions - eliminate entrained water droplets from the leaving air stream and direct the saturated airstream into a smooth high velocity jet. (Conform to BS 4458: part 3). The eliminators change the air direction three times for effective removal of all water droplets. A hooked leaving edge directs the discharge of air away from the fan at a 45 degree angle. The resultant smooth, converging air stream boost the leaving air velocity to 6 m/s, minimizing the possibility of recirculation.

RELIABLE OPERATION

6 m/s Converging
Smooth Airstream

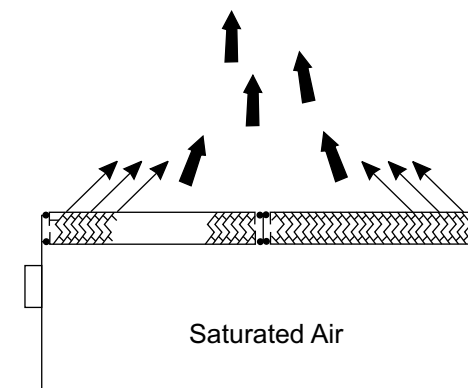


CHART 2 - Recommended Selection in L/S Selection Factor 0.4 to 0.85

Enter chart reading across the selection factor columns to find a factor EQUAL TO OR GREATER THAN the design selection factor. Read downward until reaching the flow in L/S EQUAL TO OR GREATER THAN design. Read the recommended unit selection from the unit column on the left. -interpolation is permitted between selection factors only.

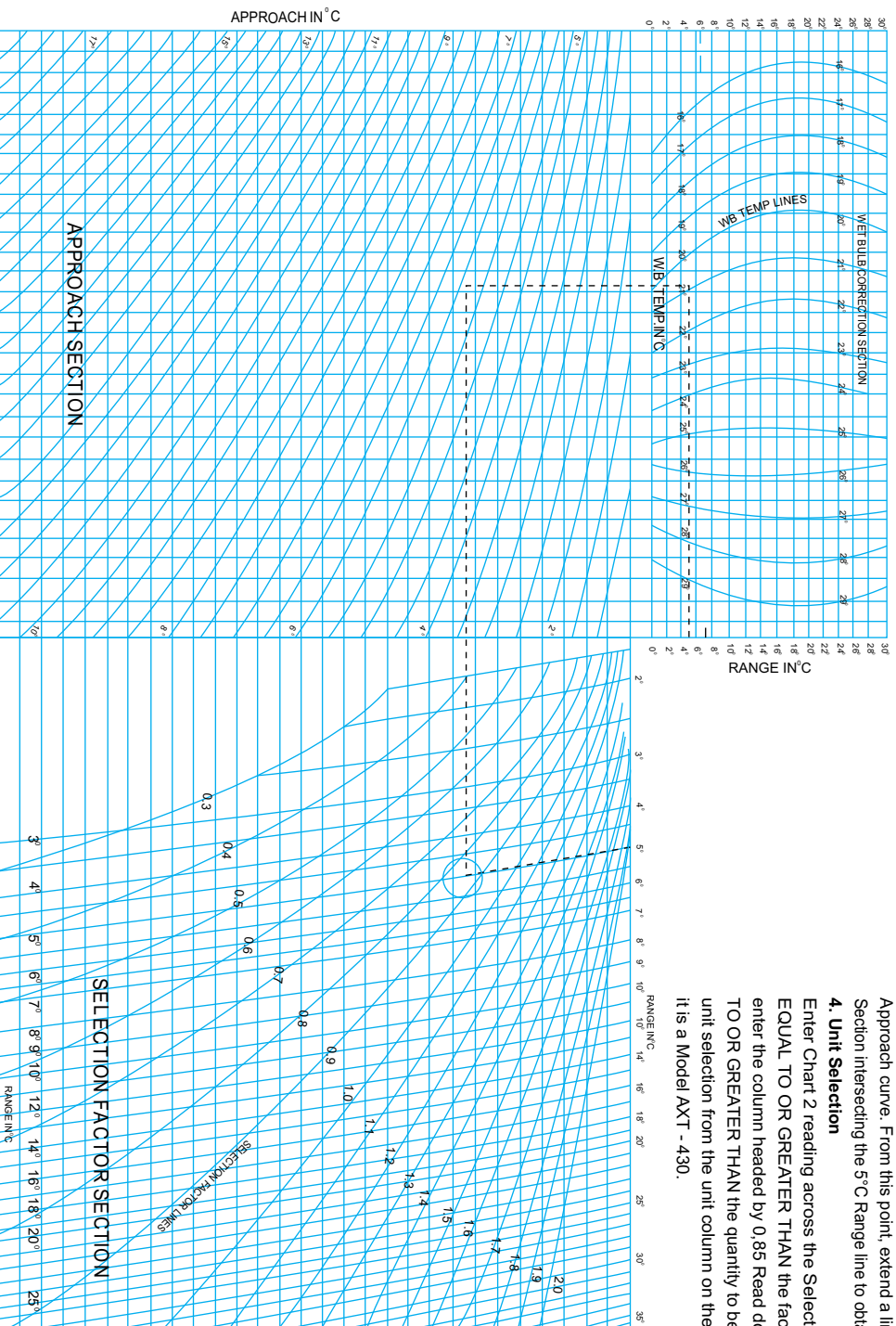
UNIT	SELECTION FACTOR									
	0.4	0.45	0.5	0.55	0.6	0.65	0.7	0.75	0.8	0.85
AXT - 10	6.62	5.87	5.3	4.73	4.23	3.85	3.47	3.22	2.84	2.59
AXT - 15	8.2	7.26	6.62	5.93	5.43	4.92	4.54	4.23	3.85	3.6
AXT - 20	8.52	8.52	8.08	7.32	6.69	6.12	5.68	5.3	4.92	4.61
AXT - 25	8.52	8.52	8.52	8.52	8.01	7.32	6.81	6.37	5.93	5.62
AXT - 30	16.4	14.83	13.31	12.11	10.98	9.97	9.27	8.58	7.82	7.32
AXT - 40	17.67	17.67	16.09	14.7	13.5	12.37	11.55	10.73	9.91	9.34
AXT - 45	17.67	17.67	17.67	16.02	14.7	13.56	12.74	11.8	10.98	10.35
AXT - 55	17.67	17.67	17.67	17.67	17.54	16.09	15.02	14.07	13.12	12.43
AXT - 65	27.13	27.13	25.87	23.53	21.64	19.87	18.42	17.16	15.84	14.89
AXT - 70	27.13	27.13	27.13	24.98	23.15	21.26	19.81	18.36	16.97	15.9
AXT - 75	27.13	27.13	27.13	26.5	22.46	22.46	20.95	19.56	18.11	17.03
AXT - 85	27.13	27.13	27.13	27.13	24.98	23.34	21.77	20.31	19.18	19.18
AXT - 95	36.28	36.28	36.28	34.07	31.23	28.71	26.81	24.92	23.34	21.83
AXT - 105	36.28	36.28	36.28	36.28	34.07	31.23	29.34	27.16	25.49	23.97
AXT - 120	36.28	36.28	36.28	36.28	36.28	35.33	32.81	30.6	28.87	27.07
AXT - 135	36.28	36.28	36.28	36.28	36.28	36.28	36.28	34.07	31.96	30.22
AXT - 150	51.1	51.1	51.1	51.1	48.26	44.79	41.64	38.8	36.28	34.07
AXT - 165	51.1	51.1	51.1	51.1	48.58	45.42	41.95	39.43	37.22	35.11
AXT - 185	51.1	51.1	51.1	51.1	51.1	50.16	46.69	43.85	41.32	39.21
AXT - 215	71.92	71.92	71.92	71.92	68.45	63.41	58.67	54.89	51.52	48.26
AXT - 240	71.92	71.92	71.92	71.92	71.92	70.35	64.98	60.88	57.0	53.63
AXT - 265	71.92	71.92	71.92	71.92	71.92	71.61	66.88	62.46	58.99	55.99
AXT - 310	109.8	109.8	109.8	109.8	100.3	92.11	85.17	79.49	74.76	70.03
AXT - 345	109.8	109.8	109.8	109.8	109.8	101.6	94	87.7	82.33	77.29
AXT - 370	109.8	109.8	109.8	109.8	109.8	108.5	100.3	94	88.01	82.65
AXT - 395	109.8	109.8	109.8	109.8	109.8	109.8	106.6	99.68	93.37	88.51
AXT - 430	143.8	143.8	143.8	143.8	136.9	126.8	117.3	109.8	102.8	96.53
AXT - 480	143.8	143.8	143.8	143.8	143.8	140.7	130	121.8	114.2	107.3
AXT - 510	143.8	143.8	143.8	143.8	143.8	143.8	137.5	128.1	120.5	113.6
AXT - 535	143.8	143.8	143.8	143.8	143.8	143.8	143.8	135	126.2	118.6

UNIT	SELECTION FACTOR									
	0.4	0.45	0.5	0.55	0.6	0.65	0.7	0.75	0.8	0.85
AXT - 620	219.6	219.6	219.6	218.2	200.6	184.22	170.34	158.98	149.52	140.06
AXT - 690	219.6	219.6	219.6	219.6	219.6	203.2	188	175.4	164.66	154.58
AXT - 740	219.6	219.6	219.6	219.6	219.6	217	200.6	188	176.02	165.3
AXT - 790	219.6	219.6	219.6	219.6	219.6	213.2	199.36	186.74	176.02	165.3
AXT - 930	329.4	329.4	329.4	327.3	300.9	276.33	255.45	238.5	224.28	210.1
AXT - 1035	329.4	329.4	329.4	329.4	329.4	304.8	282	263.1	247	231.87
AXT - 1110	329.4	329.4	329.4	329.4	329.4	325.5	300.9	282	264.03	247.95
AXT - 1185	329.4	329.4	329.4	329.4	329.4	329.4	319.8	299.04	280.11	264.03
AXT - 1240	439.2	439.2	439.2	436.4	401.2	368.44	340.65	317.9	299.04	280.12
AXT - 1380	439.2	439.2	439.2	439.2	439.2	406.4	376	350.8	329.32	309.16
AXT - 1480	439.2	439.2	439.2	439.2	439.2	434	401.2	376	352.04	330.6
AXT - 1580	439.2	439.2	439.2	439.2	439.2	426.4	398.7	343.48	350.04	330.6
AXT - 1860	658.8	658.8	658.8	654.6	601.6	552.6	511.02	476.9	448.56	420.8
AXT - 2070	658.8	658.8	658.8	658.8	609.6	564.0	536.2	400.94	463.74	446
AXT - 2220	658.8	658.8	658.8	658.8	651	601.8	564	528.1	528.1	528.1
AXT - 2370	658.8	658.8	658.8	658.8	658.8	639.6	598.1	598.1	560.3	560.3
AXT - 2480	879	879	879	802.4	737	681.2	636	598.1	560.3	560.3
AXT - 2760	879	879	879	879	813	752	701.6	658.6	613.3	613.3
AXT - 2960	879	879	879	879	868	802.5	752	704.1	661.2	661.2
AXT - 3160	879	879	879	879	879	853	797.5	748	704.1	704.1
AXT - 3720	1317.6	1317.6	1317.6	1309.2	1203.6	1105.6	1022.1	954	897.12	840.38
AXT - 4140	1317.6	1317.6	1317.6	1317.6	1317.6	1219.2	1128	1052.4	987	937.5
AXT - 4440	1317.6	1317.6	1317.6	1317.6	1317.6	1302	1203.6	1128	1056.1	991.8
AXT - 4740	1317.6	1317.6	1317.6	1317.6	1317.6	1279.2	1196.02	1120.4	1056.1	1056.1

CHART 1 - COUNTERFLOW COOLING TOWERS SELECTION AND PERFORMANCE CHART

Entering Water Temp °C Leaving Water Temp °C
 Leaving Water Temp °C Air Wet Bulb Temp °C
 Range °C Approach °C

NOTE: Do Not exceed 55°C with PVC wet deck surface.



Selection Example:
 GIVEN : 95 Ltr/s of water from 32°C to 27°C at 21°C wet bulb.
 1. **Determine Range**
 Range = Water on 32°C - Water off 27°C = 5°C
 2. **Determine Approach**
 Approach = Water off 27°C - Water Bulb 21°C = 6°C
 3. **Determine Selection Factor**
 Enter the Wet Bulb Correction Section of Chart on the 5°C Range line as shown dotted line. From the intersection of the 5°C Range line and the 21°C Wet Bulb, curve projects straight line into the Approach Section to intersect the 6°C Approach curve. From this point, extend a line horizontally into the Selection Factor Section intersecting the 5°C Range line to obtain the selection factor. The factor is 0.83.
 4. **Unit Selection**
 Enter Chart 2 reading across the Selection Factor Columns to find a factor EQUAL TO OR GREATER THAN the factor determined in step 3. In this case enter the column headed by 0.85. Read downward unit reaching a Ltr/s EQUAL TO OR GREATER THAN the quantity to be cooled (95 Ltr/s). Read recommended unit selection from the unit column on the left. For the given design conditions, it is a Model AXT - 430.

CHART 2 - Recommended Selection in L/S Selection Factor 1.40 to 2.0

Enter chart reading across the selection factor columns to find a factor EQUAL TO OR GREATER THAN the design selection factor. Read downward until reaching the flow in L/S EQUAL TO OR GREATER THAN design. Read the recommended unit selection from the unit column on the left. -interpolation is permitted between selection factors only.

UNIT	SELECTION FACTOR									
	1.4	1.45	1.5	1.55	1.6	1.65	1.7	1.8	1.9	2
AXT -10	N.A	N.A	N.A	N.A	N.A	N.A	N.A	N.A	N.A	N.A
AXT -15	N.A	N.A	N.A	N.A	N.A	N.A	N.A	N.A	N.A	N.A
AXT -20	2.21	2.02	1.89	1.77	1.64	N.A	N.A	N.A	N.A	N.A
AXT -25	3.03	2.84	2.71	2.52	2.4	2.27	2.15	1.89	1.64	N.A
AXT -30	N.A	N.A	N.A	N.A	N.A	N.A	N.A	N.A	N.A	N.A
AXT -40	4.42	4.04	3.85	3.6	N.A	N.A	N.A	N.A	N.A	N.A
AXT -45	5.24	4.86	4.61	4.29	4.04	3.72	3.47	N.A	N.A	N.A
AXT -55	6.81	6.44	6.18	5.8	5.49	5.17	4.92	4.35	3.85	3.41
AXT -65	7.31	6.81	6.44	5.99	5.62	5.24	N.A	N.A	N.A	N.A
AXT -70	8.08	7.63	7.19	6.75	6.39	5.93	5.62	N.A	N.A	N.A
AXT -75	8.96	8.39	7.95	7.44	3.94	6.5	6.12	5.36	N.A	N.A
AXT -85	10.79	10.28	9.46	8.96	8.45	8.01	7.57	6.75	6.06	5.36
AXT -95	11.17	10.79	9.91	9.27	8.64	8.14	7.63	N.A	N.A	N.A
AXT -105	12.74	11.99	11.36	10.6	10.28	9.46	8.83	7.76	6.88	N.A
AXT -120	15.02	14.38	13.69	13.06	12.43	11.73	11.17	10.09	9.08	8.08
AXT -135	17.35	16.53	15.65	14.95	14.32	13.56	12.93	11.55	10.35	9.27
AXT -150	18.36	17.41	16.34	15.46	14.64	13.88	13.19	11.73	10.41	N.A
AXT -165	20.69	19.68	18.61	17.67	16.53	15.77	14.95	13.44	11.99	10.6
AXT -185	23.6	22.59	21.45	20.25	19.24	18.11	17.03	15.14	13.63	12.18
AXT -215	26.31	24.92	23.66	22.4	21.14	20	18.93	16.91	15.14	N.A
AXT -240	29.97	28.39	27.13	25.87	24.29	22.71	21.77	19.24	17.03	15.27
AXT -265	33.75	32.18	30.66	29.15	27.76	26.69	24.92	22.4	19.94	17.79
AXT -310	37.29	35.2	33.63	31.36	29.65	28.01	26.37	23.34	20.82	N.A
AXT -345	42.21	39.87	37.85	35.52	33.44	31.55	29.78	26.31	23.34	20.69
AXT -370	46.06	43.53	41.01	38.8	35.59	34.38	32.49	28.83	25.55	22.59
AXT -395	50.16	47.63	45.42	43.22	41.01	38.8	36.72	32.81	29.27	25.87
AXT -430	62.68	49.84	47.32	44.79	42.27	40.06	37.85	33.82	30.28	N.A
AXT -480	59.94	56.78	54.26	51.73	48.58	45.74	43.53	38.48	34.07	30.54
AXT -510	64.35	61.2	58.04	55.2	52.05	49.21	46.69	41.64	36.91	32.81
AXT -535	68.77	65.3	62.46	59.3	56.47	53.63	50.79	45.42	40.5	35.96

UNIT	SELECTION FACTOR									
	1.4	1.45	1.5	1.55	1.6	1.65	1.7	1.8	1.9	2
AXT -620	74.6	70.4	67.3	62.72	59.36	56.1	52.7	46.7	41.7	N.A
AXT -690	84.4	79.7	75.7	71.1	66.9	63.1	59.6	52.6	46.7	41.4
AXT -740	92.1	87.1	82	77.6	73.2	68.8	65	57.7	51.1	45.2
AXT -790	100.3	95.3	90.8	86.5	82	77.6	73.5	65.6	58.6	51.7
AXT -930	112	105.6	10.9	94.1	88.95	84.2	79.1	70.1	62.6	N.A
AXT -1035	126.6	119.5	13.5	106.7	100.3	94.7	89.4	78.9	70.1	62.6
AXT -1110	138.2	130.6	123	116.4	110	103.2	97.5	86.5	76.7	67.8
AXT -1185	150.4	142.9	136.2	129.7	123	116.4	102	98.4	88	77.6
AXT -1240	N.A	N.A	N.A	N.A	N.A	N.A	N.A	N.A	N.A	N.A
AXT -1380	168.9	159.4	151.4	142.2	133.8	126.2	119.2	105.2	93.4	82.8
AXT -1480	184.3	174.2	164	155.2	146.4	137.6	130	115.4	102.2	90.4
AXT -1580	200.6	190.6	181.62	173	164	155.2	147	131.2	117.2	103.4
AXT -1860	223.8	211.2	202	188.1	178	168.3	158.1	140.1	125.1	N.A
AXT -2070	253.2	239	227	213.3	200.7	189.3	178.8	157.8	140.1	124.2
AXT -2220	276.3	261.3	246	232.8	219.6	206.4	195	173.1	153.3	135.6
AXT -2370	300.9	286	272.4	259.5	246	232.8	220.3	196.8	175.8	155.1
AXT -2480	N.A	N.A	N.A	N.A	N.A	N.A	N.A	N.A	N.A	N.A
AXT -2760	337.6	318.8	302.8	284.4	267.6	252.4	238.4	210.4	186.8	165.6
AXT -2960	368.5	348.4	328	310.4	292.8	275.2	260	230.8	204.4	180.8
AXT -3160	401.2	381.2	363.2	346	328	310.43	294	262.4	234.5	206.8
AXT -3720	447.6	422.4	403.8	376.3	355.8	336.3	316.2	280.2	250.2	N.A
AXT -4140	506.4	478.2	454.2	426.6	401.4	378.6	357.6	315.6	280.2	248.4
AXT -4440	552.7	522.6	492	465.6	439.2	412.8	390	346.2	306.6	271.2
AXT -4740	601.8	571.8	544.8	519	492	465.6	441	393.6	351.6	310.2

CHART 2 - Recommended Selection in L/S Selection Factor 0.90 to 1.35

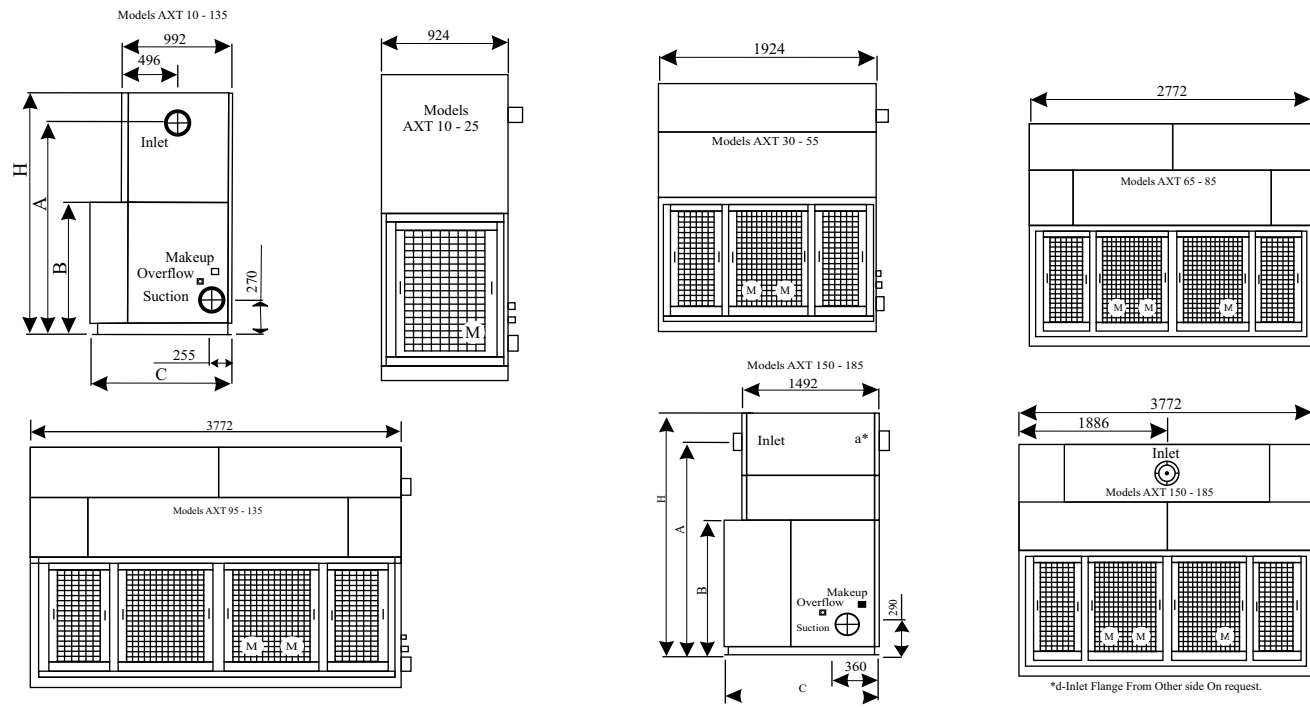
Enter chart reading across the selection factor columns to find a factor EQUAL TO OR GREATER THAN the design selection factor. Read downward until reaching the flow in L/S EQUAL TO OR GREATER THAN design. Read the recommended unit selection from the unit column on the left. -interpolation is permitted between selection factors only.

UNIT	SELECTION FACTOR									
	0.9	0.95	1	1.05	1.1	1.15	1.2	1.25	1.3	1.35
AXT -10	2.27	2.08	1.89	1.64	N.A	N.A	N.A	N.A	N.A	N.A
AXT -15	3.28	3.09	2.84	2.59	2.33	2.15	2.02	1.83	1.7	N.A
AXT -20	4.23	4.04	3.79	3.53	3.28	3.09	2.9	2.71	2.52	2.33
AXT -25	5.24	5.05	4.73	4.48	4.23	4.04	3.79	3.6	3.41	3.22
AXT -30	6.62	6.18	5.68	5.24	4.73	4.35	3.97	3.66	N.A	N.A
AXT -40	8.58	8.08	7.57	7.07	6.62	6.25	5.8	5.43	5.05	4.73
AXT -45	9.65	9.08	8.52	8.01	7.57	7.07	6.69	6.31	5.93	5.62
AXT -55	11.67	11.1	10.41	9.91	9.4	8.9	8.39	8.01	7.57	7.19
AXT -65	13.94	13.12	12.3	11.55	10.85	10.16	9.53	8.96	8.01	7.82
AXT -70	14.89	14.07	13.25	12.49	11.8	11.04	10.41	9.78	9.15	8.64
AXT -75	15.9	15.08	14.2	13.44	12.74	11.99	11.36	10.66	10.03	9.59
AXT -85	17.92	16.91	16.09	15.08	14.38	13.69	13.06	12.37	11.67	11.04
AXT -95	20.44	19.31	17.98	16.91	15.9	15.02	14.26	13.44	12.68	11.92
AXT -105	22.59	21.32	19.87	18.93	17.92	16.85	15.9	15.02	14.26	13.05
AXT -120	25.55	24.23	22.71	21.64	20.57	19.56	18.55	17.54	16.59	15.77
AXT -135	28.64	27.25	25.55	24.48	23.34	22.333	21.26	20.25	19.24	18.36
AXT -150	32.11	30.41	28.39	27.13	25.68	24.35	23.15	21.83	20.57	19.59
AXT -165	35.2	33.25	31.23	29.72	28.26	26.88	25.55	24.29	22.96	21.82
AXT -185	39.18	37.29	35.01	33.44	31.99	30.41	29.02	27.51	26.18	24.92
AXT -215	45.74	43.22	40.69	38.48	36.59	34.38	32.81	30.91	29.34	27.76
AXT -240	50.47	47.95	45.42	43.22	41.01	38.8	36.91	35.01	33.44	31.86
AXT -265	55.52	52.68	50.16	47.63	44.79	43.22	41.32	39.12	37.22	35.65
AXT -310	65.61	62.14	58.67	55.2	52.36	49.53	46.69	44.48	41.95	39.75
AXT -345	72.87	68.77	65.3	61.52	58.36	55.52	52.36	49.84	47.32	44.79
AXT -370	77.92	73.82	70.03	66.24	63.09	59.94	56.78	53.94	51.1	48.58
AXT -395	82.96	78.55	74.76	70.66	67.51	64.35	61.2	58.36	55.52	52.68
AXT -430	91.54	86.43	81.39	76.97	73.18	68.77	65.61	61.83	58.67	55.52
AXT -480	100.9	95.9	90.85	86.43	82.02	77.6	73.82	70.03	66.88	63.72
AXT -510	107.3	101.9	96.53	91.8	87.7	83.28	79.18	75.71	71.61	68.14
AXT -535	112.3	106.6	101.3	96.53	91.8	87.7	83.28	79.49	76.02	72.24

UNIT	SELECTION FACTOR									
	0.9	0.95	1	1.05	1.1	1.15	1.2	1.25	1.3	1.35
AXT -620	131.22	124.28	117.34	110.4	104.72	99.06	93.4	88.96	84	79.5
AXT -690	145.74	137.5	130.6	123.01	116.7	111.04	104.7	99.68	94.64	89.6
AXT -740	155.84	147.6	140.1	132.01	126.1	119.91	113.5	107.88	102.2	97.16
AXT -790	165.92	151.1	149.5	141.32	135.05	128.7	122.4	116.7	111.04	105.36
AXT -930	198.8	186.4	176	165.6	157.1	148.6	140.1	133.4	126	119.2
AXT -1035	218.6	206.2	196	184.5	175.1	166.6	157.1	149.5	142	134.4
AXT -1110	233.7	221.4	210.2	198.7	189.2	179.8	170.3	161.8	153.3	145.7
AXT -1185	249	235.6	224.3	212	202.5	193.1	183.6	175.1	166.6	158.5
AXT -1240	262.5	248.6	235	220.8	209.5	198.1	186.8	177.9	168	159
AXT -1380	291.4	275	261.2	246	233.4	222.1	209.4	199.4	189.3	179.2
AXT -1480	311.7	295.2	280.2	265	252.2	240	227	215.7	204.5	179.2
AXT -1580	331.8	314.2	299	282.6	270.1	257.4	244.8	233.4	222.1	210.7
AXT -1860	393.7	373	325.1	331.2	314.2	297.2	280.2	266.9	252	238.5
AXT -2070	434.2	412.5	391.8	369.1	350.1	333.1	314.1	299.1	283.9	268.8
AXT -2220	467.5	442.8	420.3	397.5	378.3	359.7	340.5	323.1	306.6	291.5
AXT -2370	497.8	471.3	448.5	423.9	405.1	386.1	367.2	350.1	333.1	316.1
AXT -2480	524.9	497.2	469.4	441.6	418.9	396.3	373.6	355.9	336	318
AXT -2760	583	550	522.4	492.1	466.7	444.2	418.8	398.7	378.6	358.4
AXT -2960	623.4	590.4	560.4	530	504.4	479.6	454	431.5	408.9	388.

ENGINEERING DATA MODELS AXT 10 TO AXT 185

This catalogue includes data current at the time of publication which should be reconfirmed at the time of purchase.

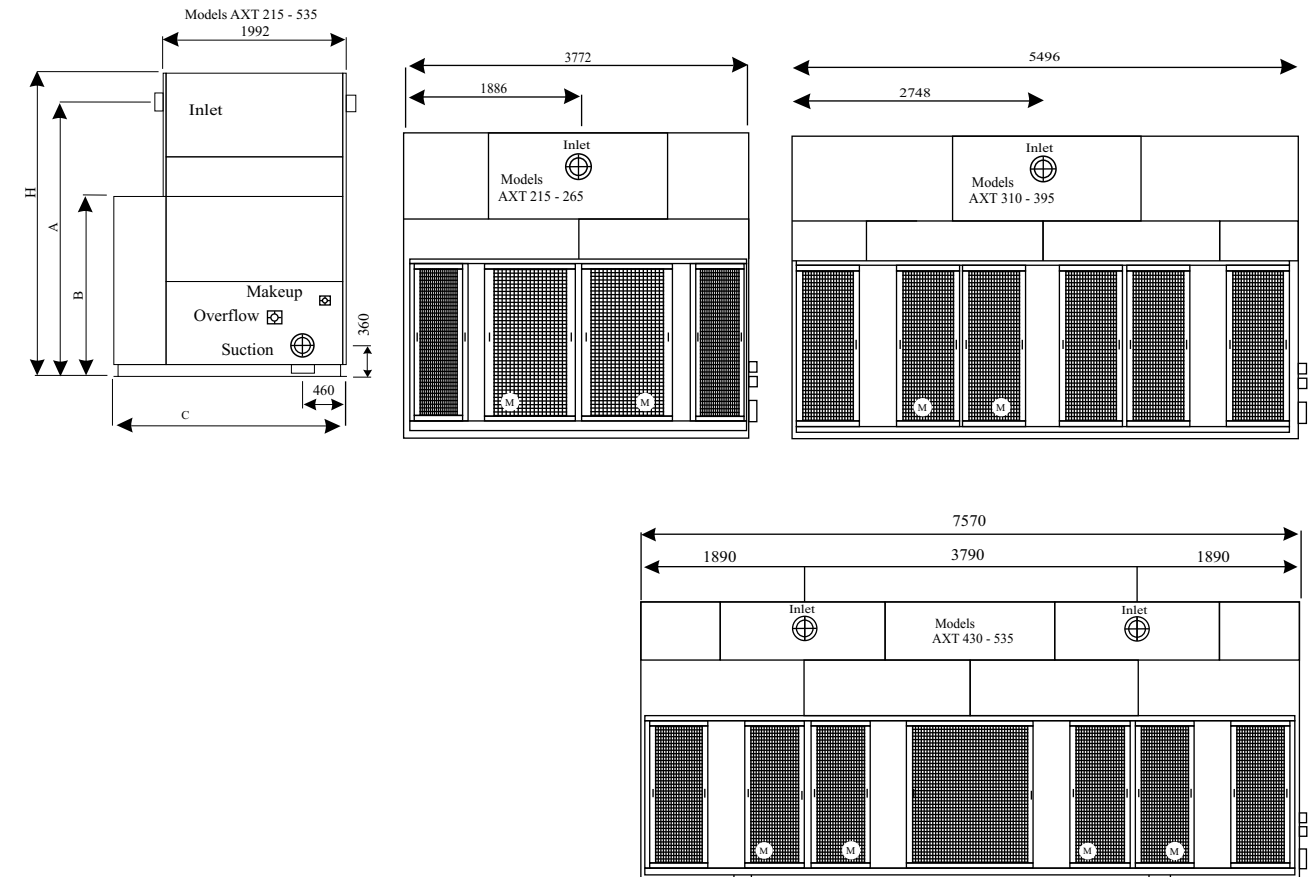


MODEL NO.	MASS (kg)		Air flow (m ³ /s)	Motor (No./kw)	DIMENSION				Water Inlet Conn.	Water Outlet Conn.	Makeup Conn.	Overflow Conn.
	Approx Oper	Approx Shpg			A (mm)	B (mm)	C (mm)	H (mm)				
AXT - 10	515	435	1.7	(1) 0.75	1964	1220	1400	2254	3"	3"	3/4"	1"
AXT - 15	515	435	1.94	(1) 1.1	1964	1220	1400	2254	3"	3"	3/4"	1"
AXT - 20	520	435	2.19	(1) 1.1	1964	1220	1400	2254	3"	3"	3/4"	1"
AXT - 25	520	435	2.50	(1) 1.5	1964	1220	1400	2254	3"	3"	3/4"	1"
AXT - 30	980	790	3.74	(1) 1.1	1874	1220	1400	2154	3"	3"	3/4"	1"
AXT - 40	980	760	4.48	(1) 1.1	1874	1220	1400	2154	3"	3"	3/4"	1"
AXT - 45	990	760	4.97	(1) 1.1	1874	1220	1400	2154	3"	3"	3/4"	1"
AXT - 55	1020	820	5.16	(1) 1.5	2298	1220	1400	2588	3"	3"	3/4"	1"
AXT - 65	1390	1115	7.22	(3) 1.1	2070	1336	1400	2374	4"	4"	3/4"	1"
AXT - 70	1485	1180	8.12	(3) 1.5	2400	1336	1400	2704	4"	4"	3/4"	1"
AXT - 75	1510	1240	8.47	(3) 1.5	2700	1336	1400	3004	4"	4"	3/4"	1"
AXT - 85	1560	1280	8.83	(3) 2.2	2700	1336	1400	3004	4"	4"	3/4"	1"
AXT - 95	1800	1395	11.04	(2) 3	2074	1336	1440	2374	4"	4"	1"	1-1/2"
AXT - 105	2010	1610	11.81	(2) 3	2704	1336	1490	3004	4"	4"	1"	1-1/2"
AXT - 120	2025	1620	12.58	(2) 4	2704	1336	1490	3004	4"	4"	1"	1-1/2"
AXT - 135	2095	1710	14.12	(2) 5.5	2909	1336	1540	3204	4"	4"	1"	1-1/2"
AXT - 150	2820	2170	15.76	(3) 4	2688	1656	1690	3024	6"	6"	1"	1-1/2"
AXT - 165	2920	2260	16.36	(3) 4	2988	1656	1690	3324	6"	6"	1"	1-1/2"
AXT - 185	3060	2410	16.94	(3) 5.5	3322	1656	1690	3658	6"	6"	1"	1-1/2"

All connection 6" smaller are MPT. Connections 8" and larger are beveled - for - welding.
Fan KW is at Op a (ESP). To operate against external static pressure up to 125 Pa, increase each fan motor one size.
1. Units AXT-10 to AXT-95 ship in one piece.
2. Casing is heaving section.
Make-up, overflow, suction, and drain connections can be provided on end opposite to that shown.

ENGINEERING DATA MODELS AXT 215 TO AXT 535

This catalogue includes data current at the time of publication which should be reconfirmed at the time of purchase.



MODEL NO.	MASS (kg)		Air flow (m ³ /s)	Motor (No./kw)	DIMENSION				Water Inlet Conn.	Water Outlet Conn.	Makeup Conn.	Overflow Conn.
	Approx Oper	Approx Shpg			A (mm)	B (mm)	C (mm)	H (mm)				
AXT - 215	4120	2555	23.49	(2) 11	3052	1990	2400	3378	6"	6"	1-1/2"	2"
AXT - 240	4220	2660	23.87	(2) 11	3344	1990	2400	3678	6"	6"	1-1/2"	2"
AXT - 265	4390	2830	24.26	(2) 15	3628	1990	2400	3962	6"	6"	1-1/2"	2"
AXT - 310	5570	3445	34.12	(3) 11	3032	1990	2400	3408	8"	8"	1-1/2"	2"
AXT - 345	6010	3885	35.13	(3) 11	3362	1990	2400	3738	8"	8"	1-1/2"	2"
AXT - 370	6250	4120	35.64	(3) 11	3636	1990	2400	4012	8"	8"	1-1/2"	2"
AXT - 395	6250	4120	36.15	(3) 15	3636	1990	2400	4012	8"	8"	1-1/2"	2"
AXT - 430	8000	4860	46.98	(4) 11	3002	1990	2400	3338	2 x (6")	10"	2"	3"
AXT - 480	8000	4860	47.96	(4) 11	3322	1990	2400	3658	2 x (6")	10"	2"	3"
AXT - 510	8340	5205	48.45	(4) 15	3676	1990	2400	4012	2 x (6")	10"	2"	3"
AXT - 535	8340	5205	48.94	(4) 15	3676	1990	2400	4012	2 x (6")	10"	2"	3"

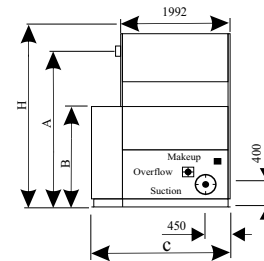
All connection 6" smaller are MPT. Connections 8" and larger are beveled - for - welding.
Fan KW is at Op a (ESP). To operate against external static pressure up to 125 Pa, increase each fan motor one size.
Make-up, overflow, suction, and drain connections can be provided on end opposite to that shown.

ENGINEERING DATA MODELS AXT 620 TO AXT 4740

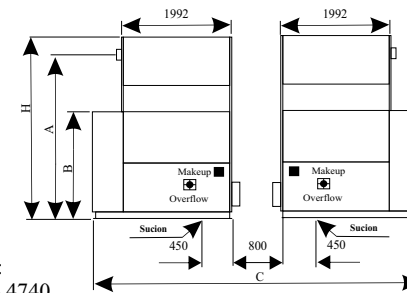
This catalogue includes data current at the time of publication which should be reconfirmed at the time of purchase.

Unit size AXT-1 240 through AXT-4740 have water inlet connection on both sides. All water inlet connection must be used. Unit sized AXT-1240 through AXT-4740 require equalizers. The necessary equalizer connection are furnished by ARVAND consult technical office for size and location. If equalizer piping is valved or inlet header piping is located in the Access Lane, increase width as required.

For Models:
AXT 620 - 1185



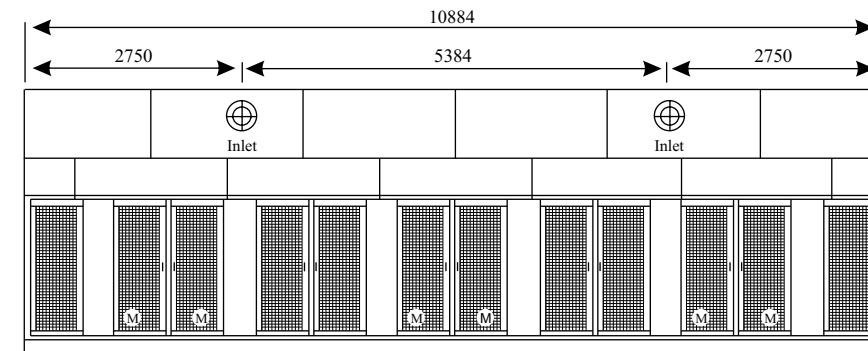
For Models:
AXT 1240 - 4740



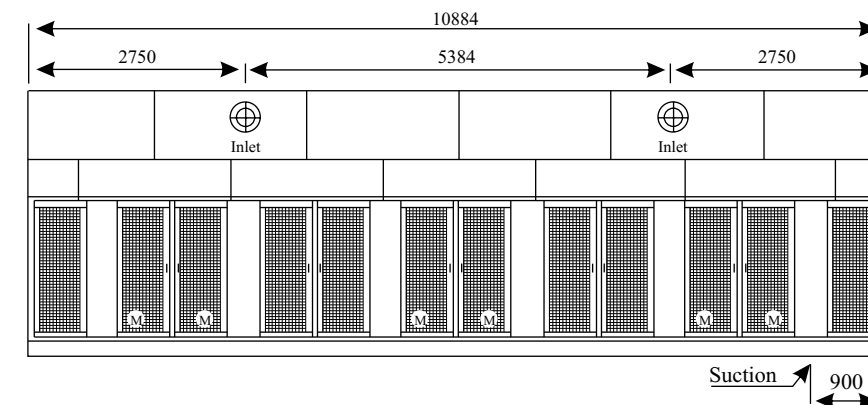
MODEL NO.	MASS (kg)		Air flow (m ³ /s)	Motor (No./kw)	DIMENSION				Water Inlet Conn.	Water Outlet Conn.	Makeup Conn.	Overflow Conn.
	Approx Oper	Approx Shpg			A (mm)	B (mm)	C (mm)	H (mm)				
AXT - 620	10740	6500	68.24	(6) 11	3032	1980	2400	3408	(2) x 8"	12"	1-1/2"	2"
AXT - 690	11550	7350	70.26	(6) 11	3362	1980	2400	3738	(2) x 8"	12"	1-1/2"	2"
AXT - 740	12050	7800	71.28	(6) 15	3636	1980	2400	4012	(2) x 8"	12"	1-1/2"	2"
AXT - 790	12050	7800	72.3	(6) 15	3636	1980	2400	4012	(2) x 8"	12"	1-1/2"	2"
AXT - 930	15980	9630	102.36	(9) 11	3032	1980	2400	3408	(3) x 8"	(2) x 10"	2-1/2"	3-1/2"
AXT - 1035	17300	10950	105.39	(9) 11	3362	1980	2400	3738	(3) x 8"	(2) x 10"	2-1/2"	3-1/2"
AXT - 1110	18030	11650	106.92	(9) 15	3636	1980	2400	4012	(3) x 8"	(2) x 10"	2-1/2"	3-1/2"
AXT - 1185	18030	11650	108.45	(9) 15	3636	1980	2400	4012	(3) x 8"	(2) x 10"	2-1/2"	3-1/2"
AXT - 1240	21400	12900	136.48	(12) 11	3032	1980	5600	3408	(4) x 8"	(2) x 12"	2-1/2"	3-1/2"
AXT - 1380	23200	14700	140.52	(12) 11	3362	1980	5600	3738	(4) x 8"	(2) x 12"	2-1/2"	3-1/2"
AXT - 1480	24100	15600	142.56	(12) 15	3636	1980	5600	4012	(4) x 8"	(2) x 12"	2-1/2"	3-1/2"
AXT - 1580	24100	15600	144.6	(12) 15	3636	1980	5600	4012	(4) x 8"	(2) x 12"	2-1/2"	3-1/2"
AXT - 1860	32010	19250	204.72	(18) 11	3032	1980	5600	3408	(6) x 8"	(2) x 14"	2-1/2"	3-1/2"
AXT - 2070	34650	21900	210.72	(18) 11	3362	1980	5600	3738	(6) x 8"	(2) x 14"	2-1/2"	3-1/2"
AXT - 2220	36050	23450	213.84	(18) 15	3636	1980	5600	4012	(6) x 8"	(2) x 14"	2-1/2"	3-1/2"
AXT - 2370	36050	23450	216.9	(18) 15	3636	1980	5600	4012	(6) x 8"	(2) x 14"	2-1/2"	3-1/2"
AXT - 2480	42750	55650	272.96	(24) 11	3032	1980	5600	3408	(8) x 8"	(2) x 12"	(2) x 2-1/2"	(2) x 3-1/2"
AXT - 2760	46100	29150	281.04	(24) 11	3362	1980	5600	3738	(8) x 8"	(2) x 12"	(2) x 2-1/2"	(2) x 3-1/2"
AXT - 2960	48100	31100	285.12	(24) 15	3636	1980	5600	4012	(8) x 8"	(2) x 12"	(2) x 2-1/2"	(2) x 3-1/2"
AXT - 3160	48100	31100	289.2	(24) 15	3636	1980	5600	4012	(8) x 8"	(2) x 12"	(2) x 2-1/2"	(2) x 3-1/2"
AXT - 3720	64020	33400	409.44	(36) 11	3032	1980	5600	3408	(12) x 8"	(2) x 14"	(2) x 2-1/2"	(2) x 3-1/2"
AXT - 4140	69300	43770	421.56	(36) 11	3362	1980	5600	3738	(12) x 8"	(2) x 14"	(2) x 2-1/2"	(2) x 3-1/2"
AXT - 4440	72100	46600	427.68	(36) 15	3636	1980	5600	4012	(12) x 8"	(2) x 14"	(2) x 2-1/2"	(2) x 3-1/2"
AXT - 4740	72100	46600	433.8	(36) 15	3636	1980	5600	4012	(12) x 8"	(2) x 14"	(2) x 2-1/2"	(2) x 3-1/2"

All connection 6" smaller are MPT. Connections 8" and larger are beveled - for - welding.
Fan KW is at Op a (ESP). To operate against external static pressure up to 125 Pa, increase each fan motor one size.
Make-up, overflow, suction, and drain connections can be provided on end opposite to that shown.

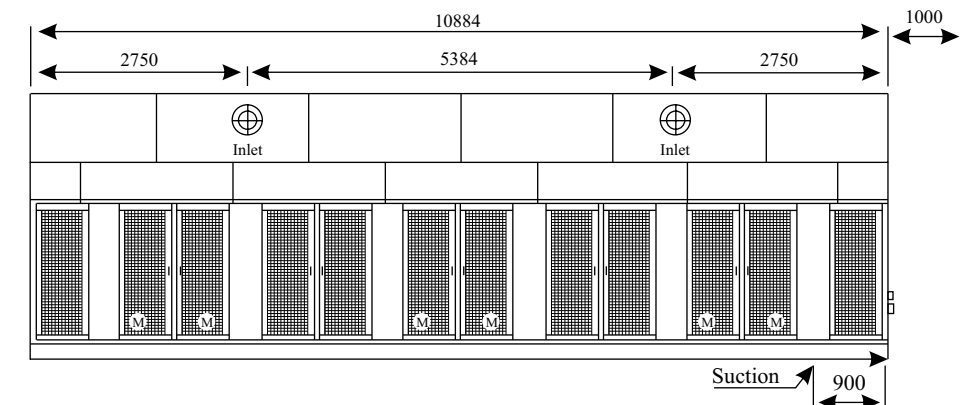
Models
AXT 620 - 790



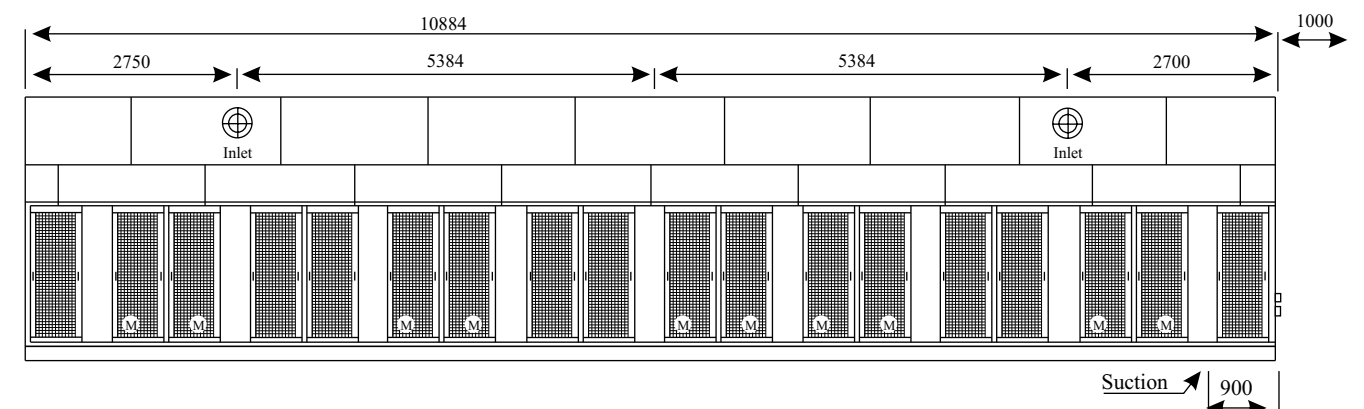
Models
AXT 1240 - 1580

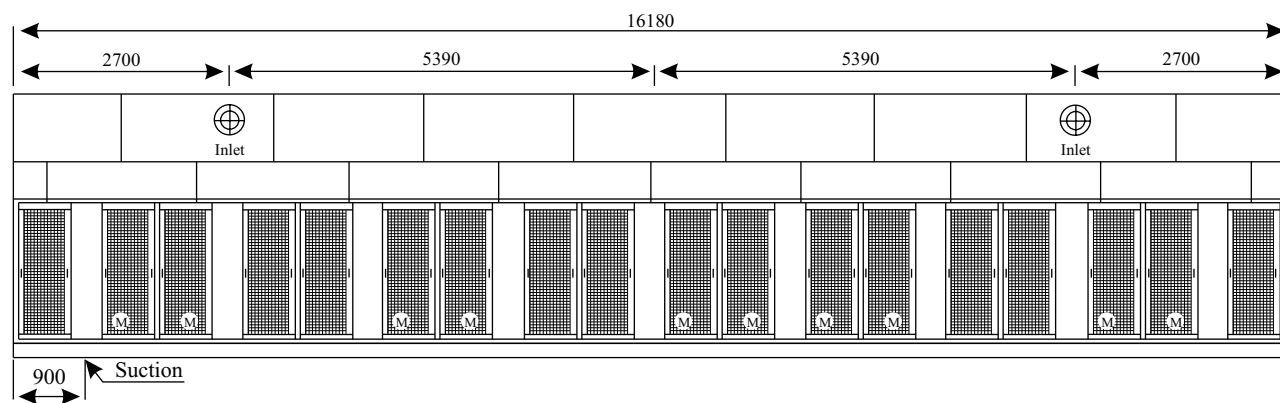
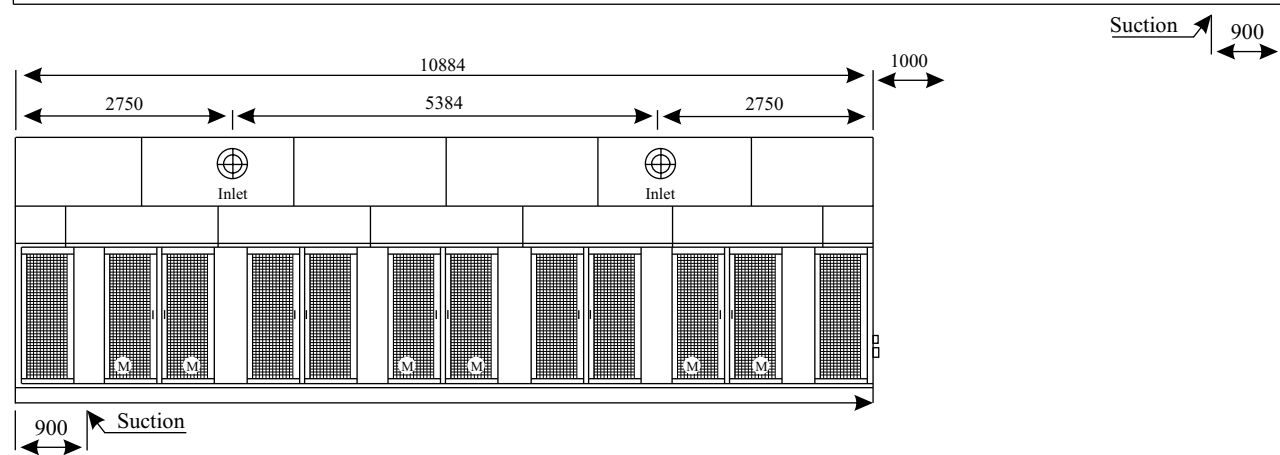
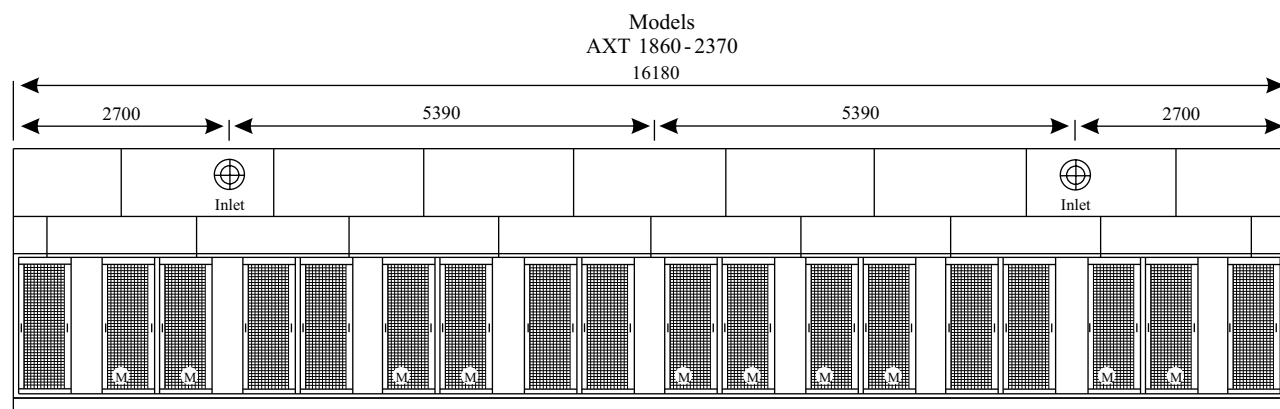
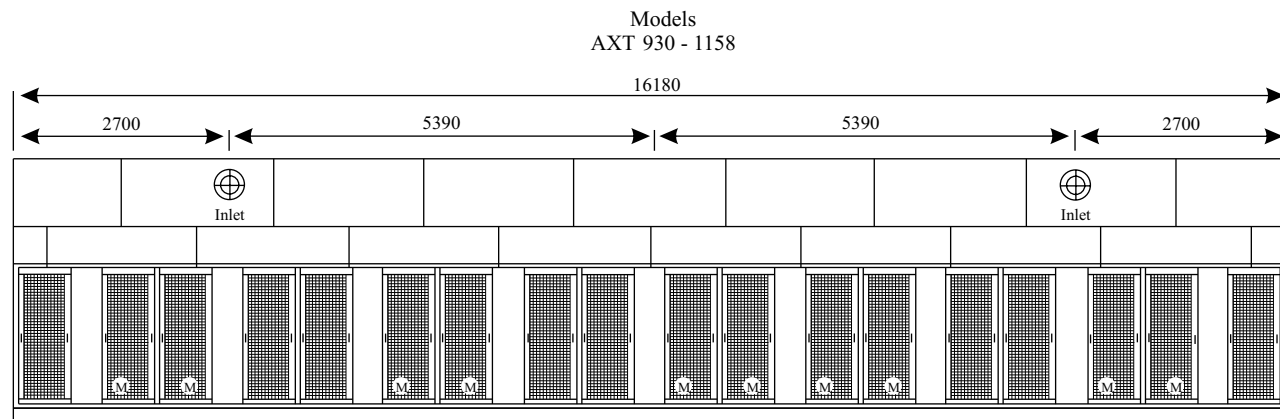


Models
AXT 2480 - 3160

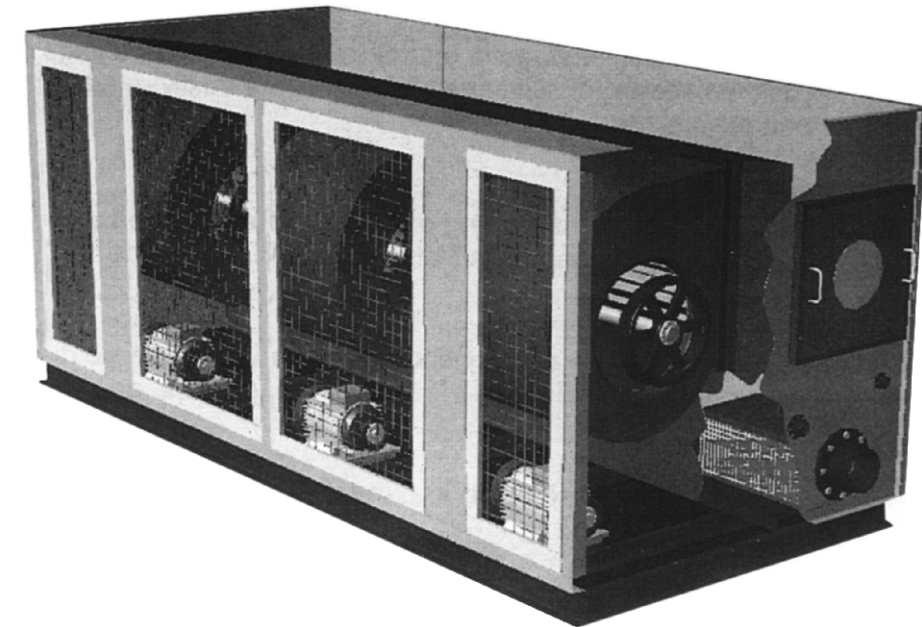


Models
AXT3720 - 4740





Construction Details / Pan Section



Pan Section

The pan section of **AXT** cooling towers is actually a combination of a pan and fan arrangement, with blow-through centrifugal fans mounted on one side underneath the sloping pan. The entire assembly is constructed to heavy gauge, hot galvanized steel.

ACCESS

leakproof, circular or rectangular access doors are furnished to provide convenient access to the interior of the pan/fan section, for inspection and adjustment of the float valve, cleaning the liftOut strainers, and flushing the sump.

-MOTORS & DRIVERS

Drip-proof fan motors are furnished as standard. In addition to bring suitable for outdoor service, The motors are sheltered from the weather by their location under the sloping pan side. The belts are provided from best type and easily adjusted by means of a threaded bolt and nut arrangement.

-FAN SHAFT & BEARING

All models have a solid steel fan shaft supported on each and by a ball bearing where intermediate Bearing are required, self-aligning, oil lubricated, sleeve type bearings with split, cast iron, pillowblock housings are furnished.

-FAN

The forwardly curved centrifugal fans are statically and dynamically balanced. they are mounted in fan housing with specially designed inlet rings to smooth air entry.

HEAVY DUTY CONSTRUCTION

The pan/fan section consist of heavy gauge, hot-dip galvanized panels. This heavy duty construction provides the strength and rigidity required for lasting, trouble-free operation.

All pan/fan section panels are formed for maximum strength and die-punched to assure accurate mating with the casing section.

-PROTECTION FOR MOVING PARTS

All moving parts are protected by inlet screens on the front of the fan housings and by solid panels on the ends of the unit fan section(s). Screens and panels are easily removable for access to fans, bearing, motor and drivers.

-FAN DISCHARGE COWLS

Fan discharge cowls, mounted inside the sloping pan sides, are designed to recover normal velocity pressure losses, providing increased fan efficiency and lower energy consumption.

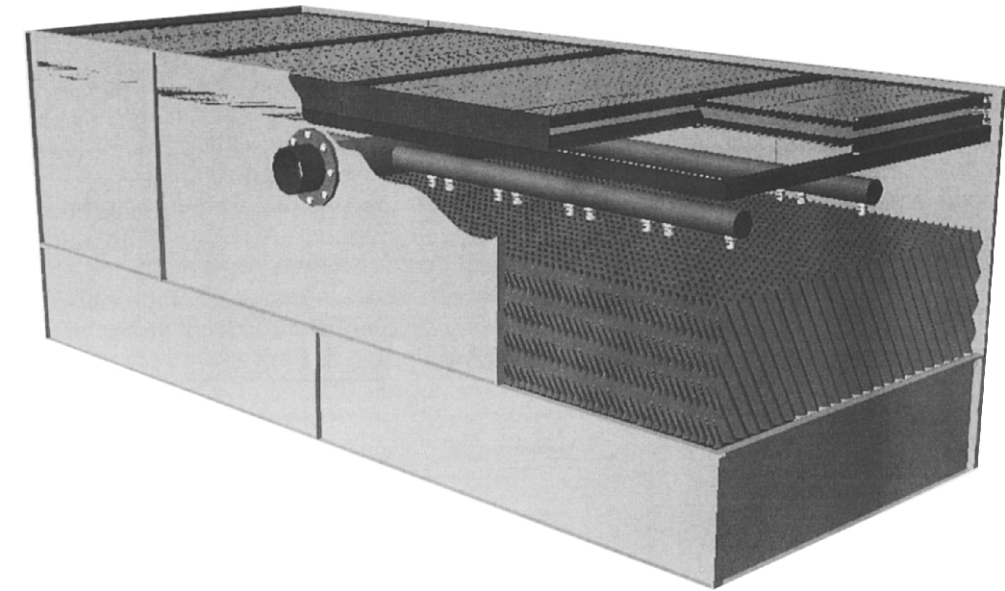
-WATER MAKE-UP VALVE

The brass float valve on the water make up connection is actuated by a large diameter plastic floater. Water level is easily adjusted by means of wing nuts on the float rod.

-STRAINER

A strainer of hot-dip galvanized be assembled in pan section to prevent entering particles-existing in pan water-in to the outlet line.

Construction Details / Casing Section



CASING SECTION

-WATER DISTRIBUTION SYSTEM

Water is distributed over the wet deck surface by a header and spray branches. The branches are connected to the main header by means of a grommet assembly so they can be individually moved for flushing and cleaning. Large diameter non-clog, plastic spray nozzles are oriented for optimum water distribution over the wet deck surface. The nozzles are held in place with shape-in rubber grommets which permit quick removal for cleaning.

-“ARVAND” WET DECK SURFACE

An efficient poly vinyl chloride (PVC) and self extinguishing wet deck surface manufactured by “ARVAND” is furnished as standard in AXT cooling towers. The special configuration provides maximum contact between air and water with low air pressure drop to ensure efficient heat transfer while minimizing power requirements. Optional wet deck surface materials are discussed on page 26.

-CASING

The casing of the heat transfer section is constructed of heavy gauge, galvanized steel. All casing panels are formed for maximum strength and die-punched to assure accurate mating of the casing section to the pan section.

-ELIMINATORS

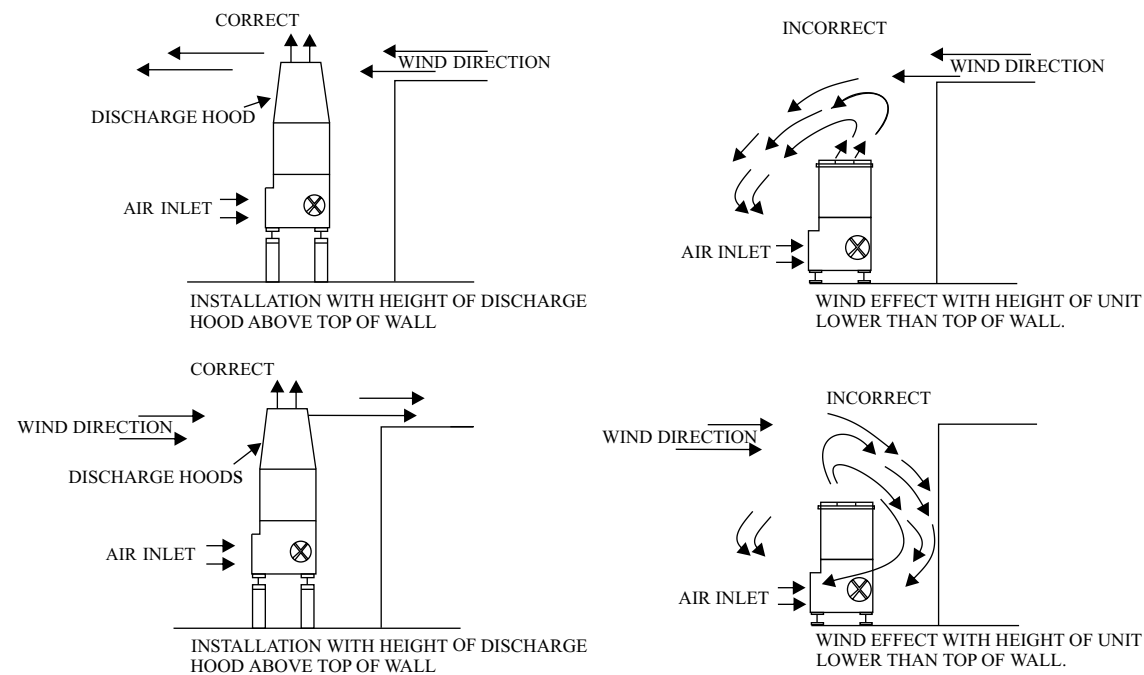
The eliminators are constructed of hot-dip galvanized steel. assembled in easy to handle sections the eliminators lift aside for access to the spray tree and nozzles.

APPLICATION

Satisfactory **AXT** cooling towers performance is dependent on correct selection and proper attention over all system design and installation. Some of the major design considerations are discussed below.

-Location

AXT cooling towers must be located so there is an unimpeded supply of air to all fans. When units are located in enclosures or closed to building walls, the top of unit must be level with the top of adjacent walls. This will reduce the possibility of capacity reduction due to recirculation of the warm saturated discharge air back into the fan intakes. On installations where the unit cannot be elevated to permit discharge above adjacent hood, or duct should be provided to raise the discharge opening even with the top of the enclosure of adjacent wall. Additionally each cooling tower should be located and positioned to prevent the introduction of its discharge air into the ventilation systems of the building on tower is located and of adjacent buildings.



-Wet Deck Surface Compatibility

The maximum allowable entering water temperature for a **AXT** tower with PVC wet deck surface is 55 °C. The PVC wet deck surface is compatible with the water found in most cooling tower applications. However, for applications which may require an alternative type of wet deck surface material and for the proper choice of wet deck surface ARVAND Technical office.

-Piping

Piping should be sized and installed in accordance with good piping practice. In order to prevent overflowing of the tower basin and ensure satisfactory pump operation at start up all heat exchangers and as much tower-piping as possible should be installed below the operating level of the tower. In addition, all piping should be supported separately from the unit through the use of pipe hangers or supports.

If more than one inlet connection is required, balancing valves should be installed to properly balance flow to each cooling tower cell. Shut-off valves optional and their use is dictated by the necessity to isolate units for servicing. Maximum spray pressure required the inlet header is 35Kpa.

When multiple towers (such as models AXT-1 240 through AXT-4740) are used on a common system, equalizing lines units to ensure a balanced water level in all units.

Water Treatment

Evaporation cooling is accomplished by the evaporation of the water being recirculated. As this water evaporates, the dissolved solids originally present in the water remain in the system. Thus, the concentration of dissolved solids in the circulating water increases rapidly and continues long as the unit is in operation. If this buildup is not controlled, concentrations can rapidly reach levels of 750 to 1000 times the concentration in the original supply water. Additionally, the recirculating water is often contaminated by airborne impurities that may be present in the vicinity of the unit such as chemical fumes in an industrial area or salt near the coastline. If the concentration of these dissolved solids and impurities is not controlled, scaling, Sludge, or corrosion can occur which will reduce the operating efficiency and shorten the life of the equipment. To prevent an excessive buildup of impurities in the circulating water, it is recommended that a small amount of water be "bled" from the unit at a rate at least equal to the amount of water being evaporated. In many localities, this constant bleed and replacement with fresh water will keep the concentration of impurities in the system at an acceptable level. The evaporation rate can be determined by one of the following:

1. The evaporation rate is approximately 1.8 lit per 1000 kcal of heat rejection.
2. The evaporation is approximately 1.8 lit per 4140 kjoule.
3. Evaporation rate (lit/sec) = Water flow rate (lit/sec) x Range(°C) x 0.0018.

Example : At a flow rate of 130 lit/sec and a cooling range of 6°C, calculate make up water.

Solution:

Evaporation rate = $130 \times 6 \times 0.0018 = 1.404$ lit/sec

Bleed off rate = Evaporation rate = 1.404 lit/sec

Drift loss rate $0.4\% \times$ water flow rate = $0.4\% \times 130 = 0.52$ lit/sec

Thus:

make up water rate = $1.404 + 1.404 + 0.52 = 3.328$ lit/sec

The table on page 19, demonstrate the rate of evaporation, bleed off, drift loss and make up water for all **AXT** ARVAND cooling towers.

CHEMICAL TREATMENT

If the condition of water is such that constant bleed-off will not control scale or corrosion, chemical treatment may be necessary. If a water treatment program is used it must meet the following requirements:

1. The chemical must be compatible with galvanized (zinc coated) steel. Water treatment chemicals which are compatible with galvanized steel are also satisfactory for the Zinc Chromatized Aluminium finish.
2. The PH of the circulating water must be maintained between 6.5 and 8.5
3. Chemicals should be feed into the recirculated water, but not into the cold water sump, on a continuous metered basis to avoid localized high concentrations which may cause corrosion. These chemicals are normally feed into the pump discharge line. Batch feeding of chemicals does not afford adequate control of water quality and is not recommended.
4. Acid water treatment is not recommended.

For specific recommendations on water treatment, contact a competent water treatment supplier.

EVAPORATION, BLEED OFF, DRIFT LOSS & MAKE UP WATER FOR ARVAND AXT COOLING TOWERS

AXT MODEL	EVAPORATION (LIT/MIN)	BLEED OFF (LIT/MIN)	DRIFT LOSS (LIT/MIN)	MAKE UP (LIT/MIN)
10	2.3	2.3	0.8	5.4
15	3	3	1.1	7.1
20	2.7	2.7	1.4	6.8
25	4.4	4.4	1.7	10.5
30	6	6	2.3	14.3
40	7.5	7.5	2.8	17.8
45	8.3	8.3	3	19.6
55	9.8	9.8	3.6	23.2
65	12	12	4.4	26.4
70	12.9	12.9	4.8	30.6
75	13.6	13.6	5	32.2
85	15.2	15.2	6	36.4
95	17.4	17.4	6.5	41.3
105	19	19	7	45
120	21.3	21.3	7.9	50.5
135	23.5	23.5	8.7	55.7
150	27	27	10	64
165	29.5	29.5	10.9	69.9
185	32.5	32.5	12	77
215	38	38	13.8	89.8
240	42.1	42.1	15.6	99.8
265	46.4	46.4	17.2	110
310	55.2	55.2	20.4	130.8
345	61	61	22.2	144.2
370	65	65	24	154
395	69	69	25.8	163.8
430	76	76	28.2	180.2

AXT MODEL	EVAPORATION (LIT/MIN)	BLEED OFF (LIT/MIN)	DRIFT LOSS (LIT/MIN)	MAKE UP (LIT/MIN)
480	84.2	84.2	31.2	200
510	89.1	89.1	33	211.5
535	93.2	93.2	34.2	221
620	110.4	110.4	40.8	261.6
690	121.9	121.9	45	288.8
740	130	130	48	308
790	138.2	138.2	51	327.4
930	165.6	165.6	61.2	392.4
1035	183	183	67.7	433.7
1110	195	195	72	462
1185	207.2	207.2	76.8	491.2
1240	221	221	81.6	523.6
1380	244	244	90	578
1480	260	260	96	616
1580	276.3	276	102	645.6
1860	331.1	331.1	122.4	784.6
2070	356.5	356.5	135	866
2220	390	390	144.6	924.6
2370	414.5	414.5	153.6	982.6
2480	441.5	441.5	163.2	1046.2
2760	487.3	487.3	180	1154.6
2960	520	520	192.6	1232.6
3160	552.8	552.8	204.6	1310.2
3720	662.4	662.4	245.4	1570.2
4140	731	731	270.6	1732.6
4440	779.6	779.6	288.6	1847.8
4740	828.8	828.8	306.6	1964.2

- Rating are based on inlet water temperature = 35°C, outlet water temperature = 29°C & entering air WB = 19.5 (selection factor = 0.68 # 0.7)

- Bleed off rating is equal to evaporation rate. According to total hardness of make up water this amount increases up 4 times of evaporation rate.

APPLICATION CHECKLIST

Shown below are items that should be checked before the design of a **AXT** cooling tower installation is completed.

1. Correct selection.

2. Location:

a: outdoor

b: indoor

3. Wet deck compatibility.

4. Piping:

a: inlet

b: outlet C: drain

d: make - up e: overflow f: support

g: equalizer

5. Capacity control.

6. Pan water freeze protection.

7. Water treatment.

8. Sound.

9. Foundation.

OPTIONAL ACCESSORY EQUIPMENT

- ELECTRICAL WATER LEVEL CONTROL

A factory - set electric water level control system can be substituted for the standard mechanical makeup valve to provide exceptionally accurate water level control. No field adjustment is necessary regardless of variation in thermal loads on the cooling tower or variations in makeup water supply pressure. This system consist of a weather protected electric float switch with stilling chamber mounted on the pan / fan section and a solenoid valve factory installed at the makeup water connection on the unit. All wiring must be provided by others.

Because this accessory assures a constant water level without adjustment, it is recommended for use on units that will require year round operation in a freezing climate.

- PAN WATER HEATERS

Cooling towers that will be exposed to below - freezing ambient temperature require protection to prevent freezing of the pan water when the cooling towers is idle.

Heaters selected to maintain +4°C pan water temperature offered a simple and inexpensive way or providing such protection. Factory - installed pan heaters are available.

- ELECTRIC HEATERS

Electric immersion heaters are normally factory - installed in the cooling in the cooling tower basin. The heaters are controlled by a thermostat with the sensing bulb located in the pan water.

A low water level control, also factory - installed, prevents heater operation unless the heater elements are fully submerged. Immersion heaters should be interlocked with water circulating pump to de - energize heater whenever the circulating pump is running.

MODEL	Anti Freeze Heater			
	Heater	Electric Element		
	kw (tot)	No.	L(cm)	kw
AXT (10-55)	1	1	30	1
AXT (65-85)	1	2	30	0.5
AXT (95-135)	1.5	2	30	0.75
AXT (150-185)	2	2	30	1
AXT (215-265)	3	2	40	1.5
AXT (310-395)	4	4	50	1
AXT (430-535)	6	3	50	2
AXT (620-790)	6	4	50	1.5
AXT (930-1185)	9	6	50	1.5
AXT (1240-1580)	12	4x(4)	50	1.5
AXT (1860-2370)	18	4x(6)	50	1.5
AXT (2480-3160)	24	4x(4)	50	1.5
AXT (3720-4740)	36	4x(6)	50	1.5

Flange size for all of models are 1-1/2 inch

Heater selection for maintaining pan water at + 4°C at - 7°C ambient air temperature.

OPTIONAL ACCESSORY EQUIPMENT

- ENGINEERED SOUND ATTENUATION SYSTEM

AXT cooling tower installation will meet most sound level criteria without attenuation. for extremely noise sensitive installations, factory-built sound attenuations systems are available for field mounting the full line of sound attenuations system of two types of barrier attenuations to meet both horizontal noise criteria and three types of air intake and air discharge sound attenuators to meet both horizontal and vertical noise criteria. All engineered sound attenuation systems are designed to allow easy access to all moving parts of the unit.

- VIBRATION ISOLATORS

AXT's cooling towers operate with virtually no vibration and generally do no vibration and generally do not require vibration isolation. When desired "neoprene rubber isolators" can be furnished by "ARVAND" for installation between the supporting steel and the bottom frame work of the unit.

- SOLID BOTTOM PANELS

Factory - installed bottom panels are available. their use is required when the intake air is ducted to the unit.

When a tower is specified for use with inlet ductwork the solid bottom panel packages lubrication protection desirable or necessary for safety or other reasons.

- BOTTOM SCREENS

Air inlet screens can be factory installed on the bottom of cooling tower when location makes this additional protection desirable or necessary for safety or other reason.

- DISCHARGE HOODS

YEKTA TAHVIEH ARVAND offers a full line of standard discharge hoods for all AXT cooling towers. These hoods are designed to increase the discharge air velocity to avoid recirculation in extremely tight enclosures.

They can be used to elevate the tower discharge above adjacent walls.

The size larger for motors and drivers must be used when hoods are provided.

- LADDER, SAFETY CAGE AND PERIMETER HANDRAIL

These item are available for field installation on AXT models when required. Componets are constructed to OSHA standards.

- CONNECTIONS

The design of the AXT cooling tower allows for additional connections be installed in the pan for equalizing, by pass, or optional suction location.

When the tower is specified for remote sump operation, the float valve and strainer are omitted and an oversized outlet is provided.

Connection can be provided as flanged, or threaded depending on size and location.

- EXPORT SHIPMENTS

AXT cooling towers can be prepared for export shipment in either of two ways; minimum export crating acceptable to the carrier, or completely closed export boxing.

SILENCER

For reduce sound power level in high capacity cooling towers as same as shown in figure be used packaged sound attenuators in the entering and discharge air side.

- Table (2) and figure illustrate sound power level, length and physical data of packaged sound attenuators from each side.

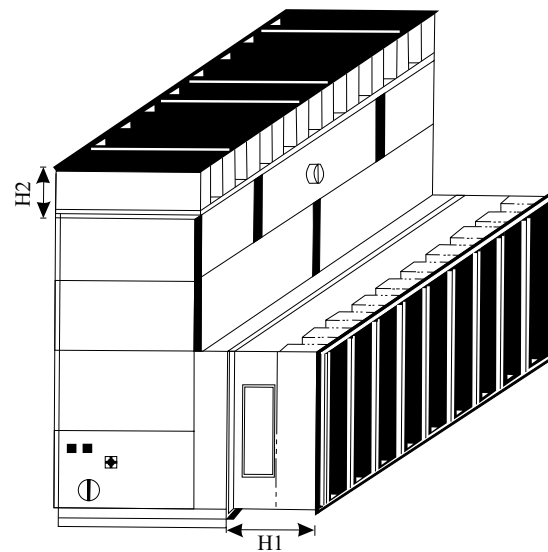
These values are based on 65 (db) desired sound level and at the 5 meters distance from the unit.

- SR-(100, 150, 200): Air passage between two packaged in (mm).

- (Db*): sound power level before installing the attenuator and at 5 meters from the unit. For determining sound power level in any distance use table(1).

Table(1)

Distance (m)	1	2	3	4	5	7	10	15	20	30	50
db	+15	+10	+7	+5	+0	-3	-6	-9	-12	-16	-20



Table(2)

MODEL	OCTAVE BAND db*	SR - 100		SR - 150		SR - 200	
		H1(mm)	H2(mm)	H1(mm)	H2(mm)	H1(mm)	H2(mm)
AXT - 10	49 - 53	-	-	-	-	-	-
AXT - 15	49 - 53	-	-	-	-	-	-
AXT - 20	49 - 53	-	-	-	-	-	-
AXT - 25	50 - 54	-	-	-	-	-	-
AXT - 30	52 - 55	-	-	-	-	-	-
AXT - 40	53 - 56	-	-	-	-	-	-
AXT - 45	53 - 56	-	-	-	-	-	-
AXT - 55	53 - 56	-	-	-	-	-	-
AXT - 65	55 - 58	-	-	-	-	-	-
AXT - 70	56 - 59	-	-	-	-	-	-
AXT - 75	56 - 59	-	-	-	-	-	-
AXT - 85	55 - 58	-	-	-	-	-	-

*.Sound power level at the inlet and outlet of the unit before installing attenuator.

SILENCER

Table(2) (Cont.)

UNIT	OCTAVE BAND db*	SR - 100		SR - 150		SR - 200	
		H1(mm)	H2(mm)	H1(mm)	H2(mm)	H1(mm)	H2(mm)
AXT - 95	58-61	-	-	-	-	-	-
AXT - 105	58-61	-	-	-	-	-	-
AXT - 120	58-61	-	-	-	-	-	-
AXT - 135	59-62	-	-	-	-	-	-
AXT - 150	63-66	-	-	-	-	-	-
AXT - 165	61-64	-	-	-	-	-	-
AXT - 185	61-64	-	-	-	-	-	-
AXT - 215	67-71	1000	500	1000	500	1000	500
AXT - 240	68-73	1000	500	1000	500	1000	500
AXT - 265	67-72	1000	500	1000	500	1000	500
AXT - 310	69-74	1000	500	1000	500	1250	1000
AXT - 345	74-79	1250	500	1500	500	1500	500
AXT - 395	75-79	1250	500	1500	500	1500	500
AXT - 430	71-75	1000	500	1000	500	1250	500
AXT - 480	75-80	1000	500	1250	500	1500	750
AXT - 510	75-80	1000	500	1250	500	1500	750
AXT - 535	76-81	1000	500	1250	500	1500	750
AXT - 620	77-82	1250	500	1500	750	1750	1000
AXT - 690	77-82	1250	500	1500	750	1750	1000
AXT - 740	77-82	1250	500	1500	750	1750	1000
AXT - 790	78-83	1250	500	1500	750	1750	1000
AXT - 930	78-83	1250	500	1500	750	1750	1250
AXT - 1035	78-83	1250	750	1500	750	1750	1000
AXT - 1110	78-83	1250	500	1500	750	1750	1000
AXT - 1185	78-83	1500	500	1500	750	1750	1000
AXT - 1240	80-85	1250	500	1750	1000	2000	1250
AXT - 1380	80-84	1250	750	1500	750	1750	1000
AXT - 1480	80-84	1250	500	1500	750	1750	1000
AXT - 1580	79-84	1250	500	1500	750	1750	1000
AXT - 1860	80-85	1500	500	1750	1000	2000	1250
AXT - 2070	80-85	1250	500	1500	750	1750	1000
AXT - 2220	80-84	1250	500	1500	750	1750	1000
AXT - 2370	79-84	1250	500	1500	750	1750	1000
AXT - 2480	82-86	1750	1000	1750	1000	2000	1250
AXT - 2760	81-85	1500	750	1750	1000	2000	1250
AXT - 2960	81-85	1500	750	1750	1000	2000	1250
AXT - 3160	80-85	1500	750	1750	1000	2250	1500
AXT - 3720	82-86	1750	1000	2000	1250	2250	1500
AXT - 4140	81-85	1500	750	2000	1250	2250	1500
AXT - 4440	81-85	1500	750	2000	1250	2250	1500
AXT - 4740	80-85	1500	750	2000	1250	2250	1500

*.Sound power level at the inlet and outlet of the unit before installing attenuator.

OPTIONAL MATERIALS WET DECK SURFACE

WET DECK SURFACE

High temperature ARVAND wet deck surface

In applications where temperature may exceed 55 g C, high temperature ARVAND wet deck surface can be provided.

Galvanized steel

In applications where it is desirable to have fireproof construction along with particularly rigid. Wet deck surface wave formed galvanized steel wet deck can be provided. It is strength offers particular advantages in dirty water applications where foreign matter in the circulating water stream collects on the wet deck material. Steel wet deck can be hosed or steam cleaned periodically.

Stainless Steel

In applications where severe corrosive conditions exist and rigid wet deck surface is desired, stainless steel wet deck surface can be provided. Type 304 stainless steel is used to produce the wave from wet deck surface for use in casing sections also made of 304 stainless steel.

STAINLESS STEEL COOLING TOWERS

ARVAND Standard corrosion protection system will give many years of satisfactory service for most cooling tower application. For these installations where severe corrosion, conditions exist and exceptionally long life is desired. ARVAND offers the **AXT** cooling tower in stainless steel construction. **AXT** stainless steel cooling towers can be built of stainless in water - touched areas only, or of complete stainless steel construction.

- WATER CONTACT

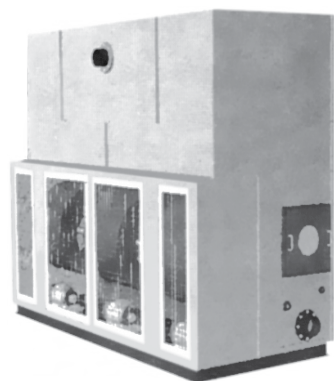
Water contact stainless **AXT** towers utilize 304 stainless steel in all areas of the tower which come in contact with water while the remainder of the unit is built of hot - dip galvanized steel. This construction provides the corrosion resistance of stainless steel where it is needed most at a lower cost than all stainless construction.

The components made of stainless steel are Casing panels, discharge eliminators, pan section panels, strainer assembly, fan discharge snout, and internal baffles. Pan section components which are located in the dry entering air are made of standard hot - dip galvanized steel protected with the **ARVAND** corrosion protection system.

- All Stainless

In situations where the air moving equipment along with the water contact components must be stainless, all 304 stainless **AXT** construction can be supplied.

All components except the heat transfer section, fan motors, belts and sheaves are made of stainless steel when this type of construction is chosen.



SUPPORT

The recommended support arrangement for ARVAND "**AXT**" cooling towers is two I beams running the full length of the unit. Besides providing support, the steel also serves to raise the unit above any solid foundation which might restrict air movement or prevent access to the bottom of the unit.

The steel support beam must be located directly beneath the unit and extend the full length of the pan section. Support beams and anchor bolt are to be furnished and installed others.

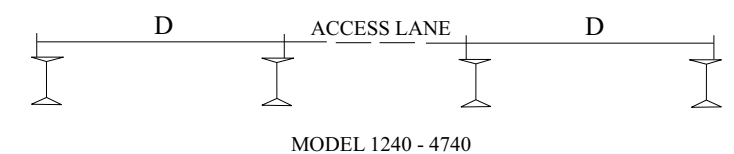
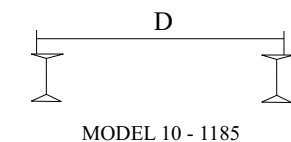
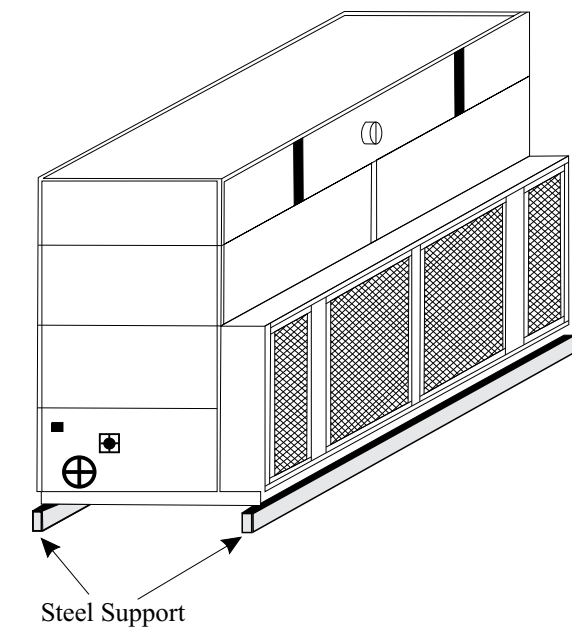
BEAM SIZE AND LENGTH

Beams size should be calculated in accordance with accepted structure practice. Use 65 percent of the operating weight as a uniform load on must be at least equal of the pan.

Refer to Engineering data section pages 10 to 14 for pan dimensions.

Maximum permissible beam deflection and center line distance between bolt holes are tabulated below.

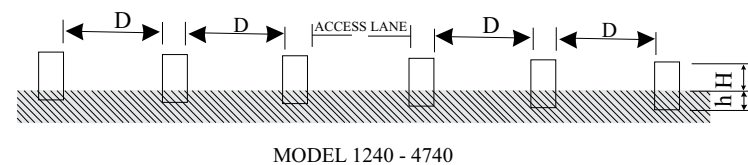
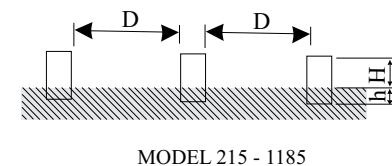
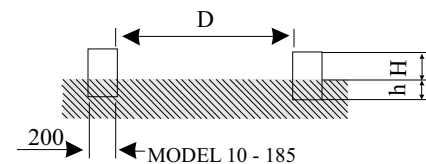
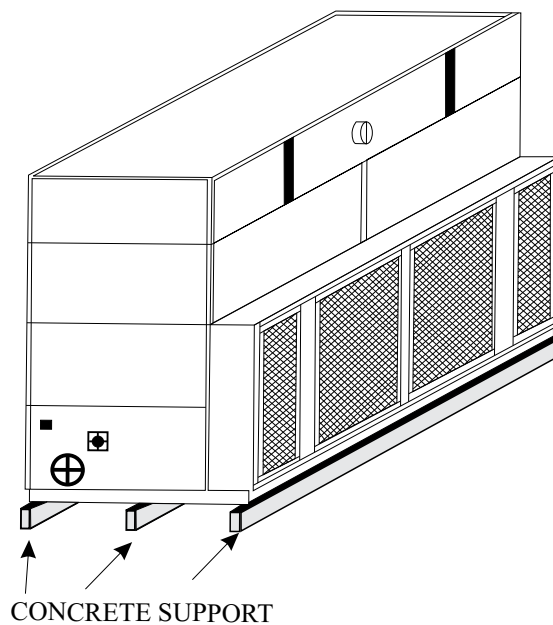
MODEL	D(mm)	Maximum Deflection (mm)
AXT 10 - 25	1253	0.3
AXT 30 - 55	1253	0.5
AXT 65 - 85	1253	0.7
AXT 95	1253	0.8
AXT 105 - 120	1303	1.2
AXT 135	1353	1.2
AXT 150 - 185	1638	1.8
AXT 215	2492	4.8
AXT 240 - 265	2342	4.8
AXT 310	2392	6.2
AXT 345 - 395	2342	6.2
AXT 430	2492	9.8
AXT 480 - 510	2342	9.8
AXT 535	2442	9.8
AXT 620 - 790	2342	11.5
AXT 930 - 1185	2342	17
AXT 1240 - 1580	2342	11.5
AXT 1860 - 2370	2342	17
AXT 2480 - 3160	2342	11.5
AXT 3720 - 4740	2342	17



CONCRETE FOUNDATION

All "ARVAND" AXT cooling towers can be supported by rectangular reinforced concrete beam. This table illustrate the dimension of concrete beam and distance of each supports. The construction should consideration be done according to total weight of cooling towers by others.

MODEL	D(mm)	D(mm)	D(mm)
AXT 10-65	1000	250	150
AXT 70	1100	250	150
AXT 75-85	1000	250	150
AXT 95	1140	250	150
AXT 105-120	1190	250	150
AXT 135	1240	250	150
AXT 150-185	1380	300	200
AXT 215	1015	300	200
AXT 240-265	940	300	200
AXT 310	965	300	200
AXT 345-510	940	300	200
AXT 535	990	300	200
AXT 620,930, 1240,1860, 2480,3720	965	350	200
Other Models	940	350	250



ENGINEERING SPECIFICATIONS FOR AXT COOLING TOWERS

COOLING TOWER - furnish and install, as shown on plans,.... Factory assembled cooling tower(s) of Sectional. counter flow, blow-through design. The tower(s) shall have centrifugal fan assemblies built completely into the pan with all moving parts factory-mounted and aligned, tower(s) shall be internally baffled to permit independent operation of the individual fan section assemblies. Air entry shall be from one side only. All steel components shall be made from hot-dip galvanized steel. With all edges given a protective coat of zinc - rich compound.

CAPACITY - The cooling tower(s) shall have the capacity to cool Lit/Sec of water From °C to °C with °C entering air wet bulb temperature. The tower(s) shall operate against Pa. external static pressure.

PAN/FAN SECTION - the combination pan/fan section shall consist of heavy gauge hot - dip galvanized steel pan with centrifugal fans mounted beneath the sloping undersides of the pan. the fans and motors ball be located in the dry entering airstream to provide greater reliability and ease of maintenance. Standard pan accessories shall include rectangular access doors, large area lift - out hot - dip galvanized steel pan with perforated openings side smaller than spray nozzle orifices, and brass make up valve with large diameter plastic float arranged for easy adjustment.

AXT - MODELS - The forwardly curved centrifugal fans shall be statically and dynamically balanced. Fan housing shall have curved inlet rings for efficient air entry, and rectangular discharge cowls shall extend into the pan to increase fan efficiency and prevent water from entering the fans. fans shall be mounted on a steel fan shaft supported by heavy - duty, Self - aligning, relubricatable bearings with cast iron housing.

FAN MOTOR AND DRIVE - Kw, TEFC ball bearing fan motor (s) shall be suitable for outdoor service and operation on 380 Volt, 50 Hz, 3 phase electrical service. Each motor shall be mounted on an easily adjusted heavy - duty motor base located so the driver and motor in a protective enclosure beneath the pan side. V-belt fan drive(s), shall be designed for not less than 150% of motor name plate power rating. Drive(s) and all moving parts shall be protected by removable hot - dip galvanized screens and panels.

SURFACE SECTION - The heat transfer casing section(s) shall be removable from the pan - fan section facilitate rigging - each section shall include the PVC wet deck surface below a spray - type water distribution system, all enclosed by hot - dip galvanized steel panels with removable sectional eliminators at top. The wet deck surface shall consist of self - extinguishing polyvinyl chloride (PVC), a minimum 0.7 mm thick.

WATER DISTRIBUTION - water shall be distributed evenly over the tower fill area by a water distribution system consisting of header and spray branches of Pn10 and Pn 16 PVC pipe with plastic distribution nozzles having a minimum orifice of 7 mm, The branches and plastic spray nozzles shall be held in place by snap - in rubber grommets providing quick removal of individual nozzle or complete branches for cleaning or flushing. The header shall include provisions for measuring spray pressure externally.

ELIMINATORS - Eliminators shall be constructed of hot - dip galvanized steel and be removable in easily handled sections. They shall have a minimum of three changes in air direction with a hooked leaving edge, and shall direct discharge air away from the fans.

UNIT SIZE - overall dimensions shall not exceed approximatelymm xmm with an overall height not exceeding approximatelymm.

The operating weight shall not exceedkg.

The cooling tower shall be AXT model



شرکت صنایع یکتا تهویه ارون

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