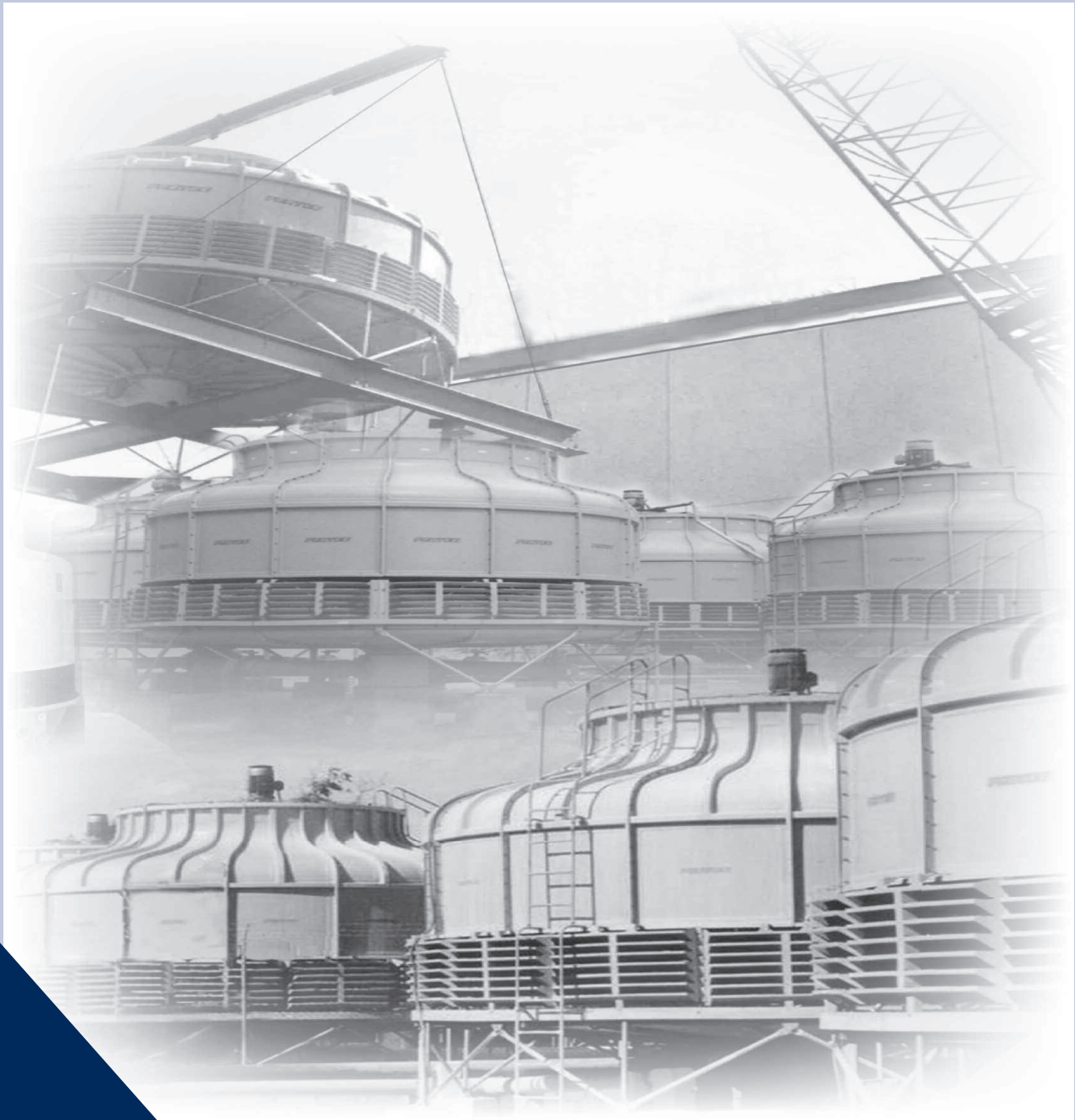


# **PROTEC<sup>®</sup>**

## Counter Flow Cooling Towers



**Counter  
Flow  
Cooling  
Towers**



## DESIGN FEATURES

Protec round, fiberglass cooling towers are available for commercial, institutional and industrial applications.

### **DURABILITY**

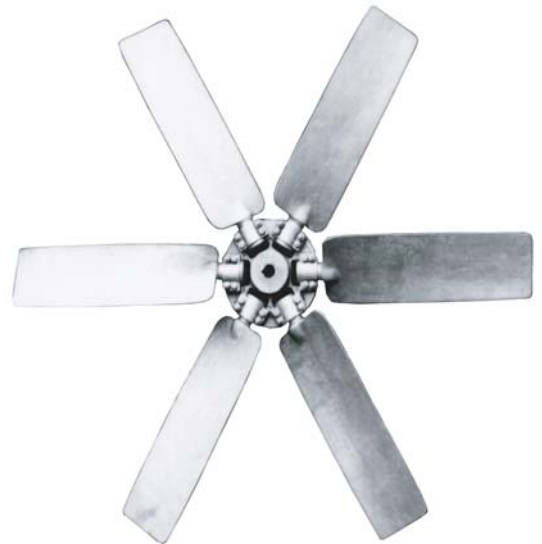
Our cooling towers are manufactured with non-corrosive materials, which result in a longer life with minimum maintenance. Protec Cooling Towers do not rot or rust like conventional towers because all main parts are fiberglass reinforced polyester (FRP) and rigid poly-vinyl chloride (PVC). This eliminates the need for painting and repairs, reducing maintenance cost and guaranteeing long dependable service.

### **ENERGY EFFICIENCY**

The efficiency of the round, bottle-style Protec Cooling Tower is not only thermal, but operational, a fact that one should seriously take into consideration when choosing a cooling tower. Our 360 degree air intake and lower face velocity through the fill offers less air resistance, therefore requiring less motor horsepower than other cooling towers, and guaranteeing considerable electric energy savings.

## MOTORS AND FANS

All fan motors are water-proof and totally enclosed. (TEFC & TEAO). All fan blades are reinforced nylon, aluminum alloy or fiberglass (FRP) with adjustable pitch. Blade pitch is pre-set and balanced at factory.



## PVC FILL

The efficiency of a cooling tower depends upon its fill. The Protec Fill is made of rigid PVC film of flame retardant quality with high heat exchange efficiency. This fill is suitable for operation with inlet water temperature up to 130 degrees Fahrenheit (54°C).

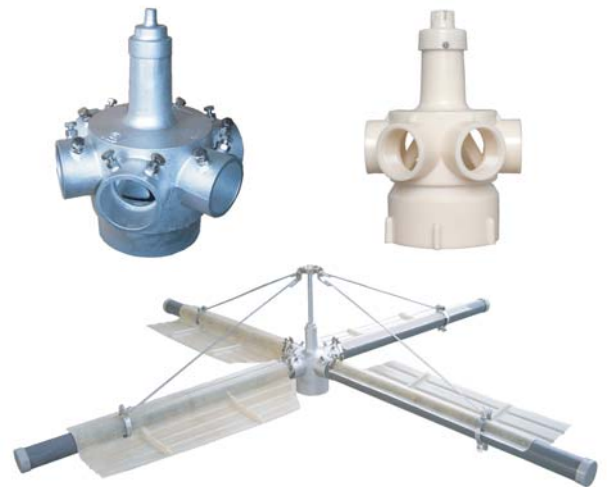
The High efficiency fill reduces the motor input HP and assures uniform distribution of water, with minimum resistance to air flow.



## WATER DISTRIBUTION SYSTEM

The inlet water pressure will rotate the sprinkler pipes to distribute the water evenly over the entire surface of the fill, ensuring maximum performance capability. Protec's sprinkler pipes have non-clog openings and are corrosion resistant. Distribution headers for models up to PCT-80 are constructed of polyacetal, and for larger models, bronze.

A water eliminator blade is located above each water distribution pipe to avoid carry-over of water.



## TOWER SUPPORT STAND

For smaller towers, the support stand is made of fiberglass (FRP). For the larger models, all steel members are hot dip galvanized. Stainless steel parts are also available as an option.

Note: All fasteners are standard. Stainless Steel on all models.



## GUARANTEE

The FRP casing and basin are guaranteed against defective materials and workmanship for a period of five years. The rest of the components are guaranteed for a period of one year. Five years are available at an additional cost. When returned to PROTEC with transportation prepaid, all parts found by factory inspection to be defective will be repaired or replaced without charge, FOB our plant.

No liability will be assumed for loss or damage resulting from the misuse of our products. Also, operating conditions should be in accordance with the name plate on the tower.

## NOTES

1. Pump head is obtained by adding resistance of piping, pressure drop of equipment and cooling tower.
2. Spring Vibration Isolators cannot be installed directly underneath the support legs. Please contact the factory for installation details of your specific application.
3. Our model numbers are equivalent to tons when the selection is based on 3GPM/TON at 95°F inlet water temperature, 85°F outlet water temperature and 75°F ambient wet bulb temperature.
4. For motors 7.5 HP and above, installation of stardelta or soft start starter is recommended.
5. CONTINUING ENGINEERING RESEARCH RESULTS IN STEADY IMPROVEMENTS. THEREFORE, THESE SPECIFICATIONS AND DATA ARE SUBJECT TO CHANGE WITHOUT NOTICE. PLEASE CONTACT PROTEC TO CONFIRM DIMENSIONS.
6. The cooling tower must be located at such distance and direction to avoid the possibility of contaminated tower discharge air being drawn into building fresh air intake ducts. It is recommended to consult with a Licensed Professional Engineer to certify the location of the cooling tower.
7. Water Treatment must be supplied and/or applied by a professional in the field in order to avoid fill damage. It is the user's/owner's responsibility to treat the water in order to stop biological contaminations and avoid, among other bacterium, the Legionnaire's Disease.

For inquiries about PROTEC Cooling Towers, please contact our local representative or our engineering department and specify the following conditions:

- a) circulating water flow
- b) circulating water inlet temperature
- c) circulating water outlet temperature
- d) ambient wet bulb temperature
- e) power source-voltage / phase / frequency

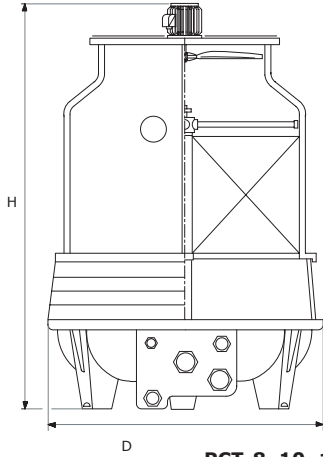


## QUICK SELECTION CHART

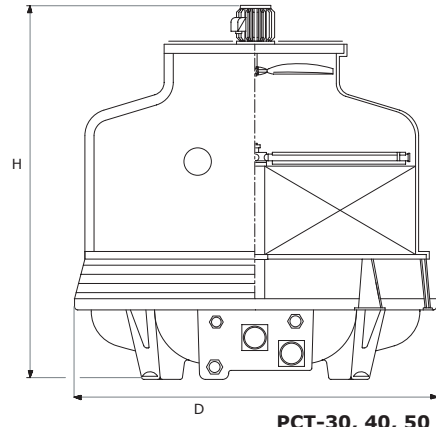
The capacities shown in this chart are for guidance purpose only and are the maximum each model can handle when 3 GPM of water per ton enter 95°F and leave 85°F. Please refer to the wet bulb of the area where the cooling tower will operate. For other values, please consult our local representative or our engineering department.

MODEL	WET BULB °F																
		65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80
PCT-8	TONS	12	12	12	11	11	10	10	9	9	8	8	7	6	6	5	5
	GPM	37	36	35	34	32	31	30	28	26	25	23	21	19	18	16	14
PCT-10	TONS	15	15	15	14	13	13	12	11	11	10	10	9	8	8	7	6
	GPM	46	45	44	42	40	39	37	34	32	31	29	27	24	24	21	19
PCT-15	TONS	24	23	22	21	20	20	19	17	16	15	15	13	12	11	10	9
	GPM	71	68	66	64	61	59	56	52	49	46	44	40	36	33	31	28
PCT-20	TONS	31	30	29	28	27	26	25	23	22	21	20	18	17	16	14	13
	GPM	93	90	88	84	82	79	74	69	66	63	60	54	50	48	43	39
PCT-30	TONS	47	47	44	43	42	39	38	35	33	32	30	27	25	23	21	19
	GPM	140	140	133	128	125	118	113	105	100	96	90	82	74	69	64	58
PCT-40	TONS	60	60	58	56	54	52	50	46	43	42	40	37	33	31	29	26
	GPM	180	180	175	168	163	155	150	138	130	125	120	110	100	93	86	78
PCT-50	TONS	77	73	70	67	65	66	62	58	55	52	50	45	42	39	35	33
	GPM	230	220	210	201	195	197	186	175	165	157	150	135	125	117	105	98
PCT-60	TONS	93	90	90	87	83	81	77	71	67	63	60	55	50	47	42	38
	GPM	280	270	270	260	250	242	230	212	200	190	180	165	150	141	125	115
PCT-80	TONS	113	113	110	107	103	100	97	92	87	83	80	73	68	64	58	53
	GPM	340	340	330	320	310	300	290	275	260	250	240	220	205	192	175	160
PCT-100	TONS	157	153	150	143	137	133	127	115	108	103	98	90	82	77	68	62
	GPM	470	460	450	430	412	400	380	345	325	310	295	270	245	231	205	185
PCT-125	TONS	200	190	187	180	174	167	157	147	138	132	123	113	103	97	88	80
	GPM	600	570	560	540	522	500	470	440	415	395	370	340	310	291	265	240
PCT-150	TONS	243	233	230	220	211	200	193	177	167	160	150	135	123	115	103	93
	GPM	730	700	690	660	632	600	580	530	500	480	450	405	370	345	310	280
PCT-175	TONS	280	270	267	250	241	233	223	207	193	183	175	157	143	135	122	110
	GPM	840	810	800	750	722	700	670	620	580	550	525	470	430	405	365	330
PCT-200	TONS	323	310	303	290	283	273	257	237	225	213	200	182	167	156	140	127
	GPM	970	930	910	870	850	820	770	710	675	640	600	545	500	468	420	380
PCT-250	TONS	400	383	383	367	355	340	323	300	282	272	252	230	210	193	177	158
	GPM	1200	1150	1150	1100	1065	1020	970	900	845	815	755	690	630	579	530	475
PCT-300	TONS	483	467	450	433	422	407	383	358	338	325	305	275	247	234	210	187
	GPM	1450	1400	1350	1300	1265	1220	1150	1075	1015	975	915	825	740	702	630	560
PCT-350	TONS	550	533	517	500	483	467	447	417	393	382	350	327	300	280	250	230
	GPM	1650	1600	1550	1500	1450	1400	1340	1250	1180	1145	1050	980	900	840	750	690
PCT-400	TONS	633	617	600	573	550	533	507	467	448	427	400	367	338	320	290	263
	GPM	1900	1850	1800	1720	1650	1600	1520	1400	1345	1280	1200	1100	1015	960	870	790
PCT-500	TONS	767	733	733	703	692	667	633	600	567	550	517	483	440	417	383	350
	GPM	2300	2200	2200	2110	2075	2000	1900	1800	1700	1650	1550	1450	1320	1251	1150	1050
PCT-600	TONS	933	900	900	867	840	817	767	717	683	650	617	567	517	484	442	400
	GPM	2800	2700	2700	2600	2520	2450	2300	2150	2050	1950	1850	1700	1550	1452	1325	1200
PCT-700	TONS	1067	1033	1000	967	958	925	892	833	800	763	733	667	617	584	533	483
	GPM	3200	3100	3000	2900	2875	2775	2675	2500	2400	2290	2200	2000	1850	1752	1600	1450
PCT-800	TONS	1267	1233	1200	1150	1125	1073	1033	967	917	883	833	767	700	654	600	533
	GPM	3800	3700	3600	3450	3375	3220	3100	2900	2750	2650	2500	2300	2100	1962	1800	1600
PCT-1000	TONS	1533	1467	1433	1400	1367	1300	1250	1167	1100	1067	1025	942	883	834	767	700
	GPM	4600	4400	4300	4200	4100	3900	3750	3500	3300	3200	3075	2825	2650	2502	2300	2100

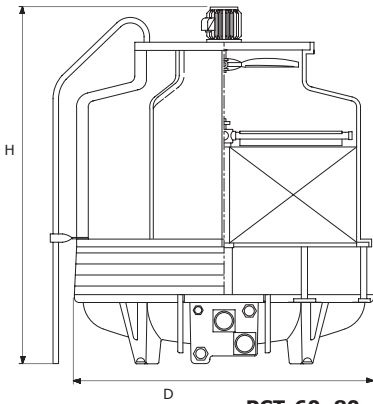
**DIMENSIONS**



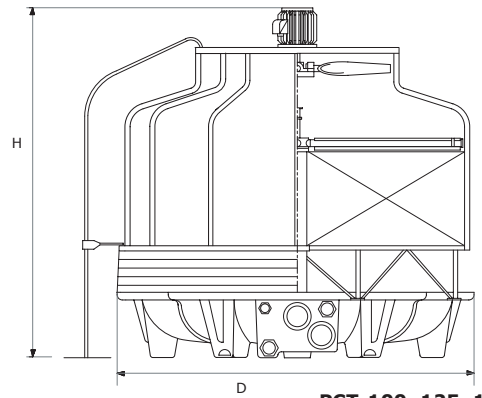
**PCT-8, 10, 15, 20**



**PCT-30, 40, 50**



**PCT-60, 80**

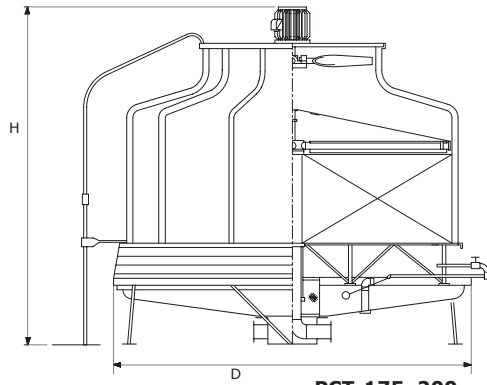


**PCT-100, 125, 150**

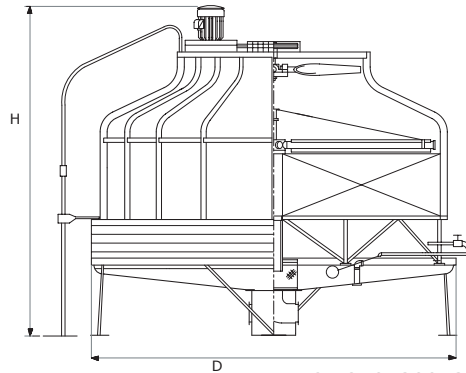
PCT	8	10	15	20	30	40	50	60	80	100	125	150
H	5'-2"	5'-7"	5'-3"	6'-1"	6'-3"	6'-8"	6'-11"	7'-7"	8'-2"	9'-7"	10'-3"	10'-3"
D	3'-1"	3'-1"	3'-10"	3'-10"	5'-6"	5'-6"	6'-3"	6'-11"	6'-11"	9'-6"	10'-3"	10'-3"
WATER INLET & OUTLET	1½"	1½"	2"	2"	3"	3"	3"	4"	4"	5"	5"	6"
OVERFLOW & DRAIN	1"	1"	1"	1"	1"	1"	1"	1"	1"	2"	2"	2"
MAKE-UP	½"	½"	½"	½"	½"	½"	½"	¾"	¾"	¾"	¾"	¾"
AUX MAKE-UP	-	-	-	-	-	-	-	-	-	-	-	-
MOTOR HP	½"	½"	½"	½"	1"	2"	2"	2"	2"	3"	3"	3"
DRIVE	D	D	D	D	D	D	D	D	D	D	D	D
PRESSURE DROP FT	6	7	6	6	7	7	7	8	8	9	10	10
OPERATING WEIGHT LBS.	311	342	502	541	944	1008	1381	1857	1926	2895	3029	3198
DRY WEIGHT LBS.	124	143	165	187	286	330	396	550	594	1100	1188	1276



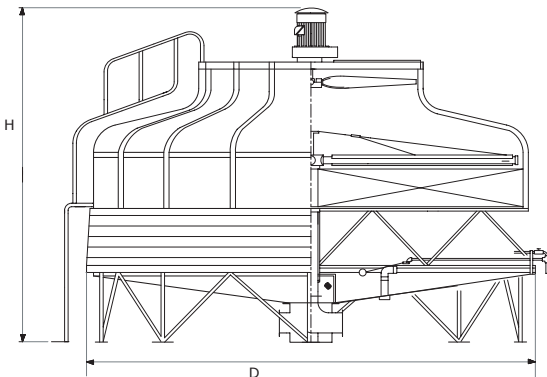
**DIMENSIONS**



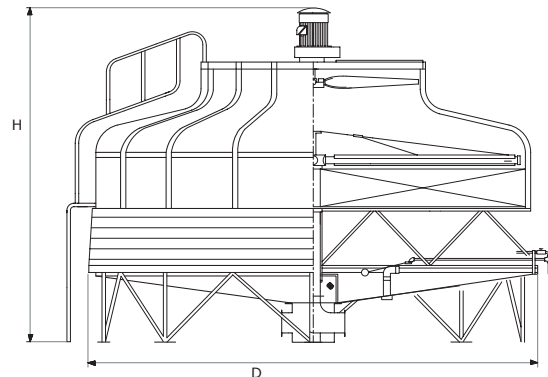
**PCT-175, 200**



**PCT-250, 300, 350, 400**



**PCT-500, 600, 700**



**PCT-800, 1000**

PCT	175	200	250	300	350	400	500	600	700	800	1000
H	10'-10"	11'-4"	12'-11"	13'-1"	13'-9"	14'-0"	15'-1"	17'-5"	18'-1"	18'-7"	19'-3"
D	10'-11"	10'-11"	13'-0"	14'-4"	15'-8"	15'-8"	18'-5"	21'-8"	21'-8"	25'-0"	25'-0"
WATER INLET & OUTLET	6"	6"	8"	8"	8"	8"	10"	10"	10"	12"	12"
OVERFLOW & DRAIN	2"	2"	3"	3"	3"	3"	4"	4"	4"	4"	4"
MAKE-UP	1"	1"	1 ¼"	1 ¼"	1 ¼"	1 ¼"	2"	2"	2"	3"	3"
AUX MAKE-UP	1"	1"	1 ¼"	1 ¼"	1 ¼"	1 ¼"	2"	2"	2"	3"	3"
MOTOR HP	5	5	7.5	10	10	15	15	20	20	30	30
DRIVE	D	D	B	B	B	B	B	G	G	G	G
PRESSURE DROP FT	11	12	13	13	14	14	15	18	18	19	20
OPERATING WEIGHT LBS.	4312	4439	6267	7367	8549	9425	15466	21193	21650	27197	27951
DRY WEIGHT LBS.	1914	1980	2970	3410	3784	4510	5390	8690	8910	10340	10780

NOTES: 1) ALL MOTORS ARE THREE PHASE. CONSULT FACTORY FOR SINGLE PHASE.  
 2) FOR FOUNDATION DIMENSIONS AND WEIGHT DISTRIBUTION, CONSULT FACTORY.  
 3) DRIVE: D=DIRECT, B=BELT(GEAR OPTIONAL), G=GEAR

## COOLING TOWER SPECIFICATIONS

- A. Cooling towers shall be induced-draft, bottle type design with 360 degree air inlet, axial fan and vertical discharge as manufactured by PROTEC COOLING TOWERS, INC. model PCT- \_\_\_\_\_ flow rates, capacities, and design temperatures shall be as indicated on the drawings.
- B. Tower manufacturer must be a member of Cooling Tower Institute (CTI) and towers shall be rated based on results from performance tests to guarantee capacity.
- C. Structural framework and casing panels shall be designed for operating loads. Casing shall be molded of corrosion-resistant fiberglass reinforced polyester (FRP) material. The casing panels shall be one-piece type, or multi-segment type and arranged to allow easy access to the fill media.
- D. Water basin shall be molded of corrosion-resistant fiberglass reinforced polyester (FRP) material. Basin shall be one piece type, or if multi-segment type. Basin shall be provided with connections for: water inlet, water outlet, water make-up quick-fill, overflow and drain.
- E. The following accessories shall be included: strainer, water make-up valve with float, and adjustable water level device.
- F. Fill shall be polyvinyl chloride (PVC) arranged in a circular configuration. Fill material shall be of flame retardant quality as per ASTM standard E-84 with flame spread rating of 25 or less and shall be resistant to rot, decay or biological attack.
- G. Fan shall be multi-blade adjustable pitch axial type, (1) \_\_\_\_\_ /construction. Fan and shaft shall be supported by heavy duty, relubricatable ball bearings with special moisture proof seals, grease packed, self-aligning with integral slinger rings. All bearings shall be designed for a minimum life of 40,000 hours. Fan assembly shall be (2) \_\_\_\_\_ driven. Fan motor shall be TEFC/TEAO, rated as indicated on the drawings and not more than \_\_\_\_\_ H.P. The motor and fan assembly shall be supported on a structural steel support. A suitable fan guard shall be provided.
- H. Water distribution shall be provided through a rotating sprinkler head system. The rotating sprinkler head shall be (3) \_\_\_\_\_, sprinkler pipe shall be rigid PVC.
- I. Provide air inlet (4) \_\_\_\_\_ 360° around the casing, constructed of (5) \_\_\_\_\_ with UV (ultraviolet) inhibitors.
- J. A ladder to allow inspection and accessibility to the fan motor and upper portion of the tower cell shall be provided for models PCT-60 and larger.
- K. All fiberglass reinforced polyester (FRP) materials shall contain UV (ultraviolet) inhibitors and an exterior gel coat.
- L. All fasteners shall be stainless steel and the rest of the metal components shall be (6) \_\_\_\_\_.

### NOTES:

- (1) Models PCT-8 through PCT-50 Plastic  
Models PCT-60 through PCT- 700 Aluminum Alloy  
Models PCT-800 through PCT-1000 Fiberglass
- (2) Models PCT-8 through PCT-200 Direct  
Models PCT-250 through PCT-500 Belts (Gear Optional)  
Models PCT-600 through PCT-1000 Gear
- (3) Models PCT-8 through PCT-80 Plastic  
Models PCT-100 through PCT-1000 Bronze
- (4) Louvers or Screens
- (5) Louvers are constructive of fiberglass (FRP)  
Screens are constructed of PVC
- (6) Galvanized or Stainless Steel

**PROTEG<sup>®</sup>**  
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