

CT/CW SERIES



Cooling Tower Pump Tank Systems

ADVANCED TECHNOLOGY FOR ENHANCED PERFORMANCE

The CT/CW Series, single and double compartment, pump tank assemblies are the most complete, best constructed available. Our pump tanks' standard sizes range from 140 to 6,285 gallons, with pump sizes from 1.5 to 75 hp. Flow rates can be adjusted on each pump tank, depending on the customer's needs. These tanks can be custom made with multiple reservoirs, pump decks and ports for expansion, to name a few.

Chilled water tanks feature insulation and a cover to prevent sweating. Tower water tanks feature a stainless steel strainer basket. Both share these features: centrifugal pumps; full sized suction; discharge check; and throttling valves; thermometer for temperature monitoring; and overflow and valved drain fittings.



Features

- Centrifugal close-coupled pump, featuring cast iron impellers with 230/ or 460/3/60 ODP motor; other voltages and motor designs are available
- Tank, sides, bottom, and baffles are stainless steel
- Lug-mount butterfly valves
- Butterfly valve handles
- Stainless steel basket on process return
- #304 stainless steel tank side walls, 3/16" from C480 to C2040; 1/4" from C2700 to C5130D
- Standard hardware includes thermometer(s), pump pressure gauges(s), drain valve
- Full-size pump trim for maximum efficiency; includes isolation, throttling, and check valves
- Automatic level control makeup valve
- Solid diamond-plate pump ledge
- 1 year warranty on parts and labor

Options

- Armaflex insulation; CT models
- Composite cover; CT models
- Second Pump Ledge
- OSHA handrail and ladder
- Sight glass
- 1" Clayton float valve (claval makeup valve)
- Well reinforcement
- TEFC motor; in lieu of ODP motor
- Bronze impeller
- Discharge manifold: process/ recirculation standby
- Additional stainless steel openings: Plugged or valved
- Digital temperature display: amp meter, hour meter, digital flow meter
- UL panel
- NEMA 12 enclosure; includes enclosure and fused control transformer
- Through the door disconnect
- Mounted panel on tank and wired
- 8-foot support legs

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Cooling Tower Pump Tank Systems

SELECTION

Model	Max. tower, tons ¹ (Kcal/hr)		Capacity, gallons (l)		Max. pumps/ledge	Return water conn., in. (mm) NPT
	1 well	2 wells	Overflow	Operating		
CT140 (D)	27 (102,200)	16 (63,900)	135 (511)	100 (378)	3	3 (76)
PCT390 (D)	78 (295,200)	48 (184,500)	390 (1476)	350 (1325)	3	5 (127)
CT480 (D)	96 (363,400)	60 (227,100)	480 (1817)	360 (1362)	3	4 (102)
CT720 (D)	144 (545,000)	90 (340,600)	720 (2725)	540 (2044)	4	4 (102)
CT1080 (D)	215 (813,800)	134 (508,600)	1075 (4069)	825 (3122)	4	6 (152)
CT1620 (D)	323 (1,222,600)	200 (764,100)	1615 (6113)	1240 (4693)	4	6 (152)
CT2040 (D)	408 (1,544,200)	255 (965,100)	2040 (7721)	1565 (5923)	5	6 (152)
CT2700 (D)	540 (2,043,800)	337 (1,277,400)	2700 (10,219)	2065 (7816)	6	6 (152)
CT3670 (D)	733 (2,774,400)	458 (1,734,000)	3665 (13,872)	2830 (10711)	6	6 (152)
CT5130 (D)	1026 (3,883,400)	641 (2,427,100)	5130 (19,417)	3960 (14988)	7	8 (203)

¹ Calculated for cooling tower water, based on 3 gpm per ton and towers beign within 25 feet of the tank

PUMP TANK CAPACITIES

Capacity		Trim size, in. NPT (mm)	Process pump, hp (kW)	Recirculating pump, hp (kW)
Nominal refrigeration, tower water, tons (Kcal/hr)	Nominal flow, gal. (l)			
20 (75,600)	60 (227)	2.5 (64)	5 (3.73)	3 (2.24)
30 (113,400)	90 (341)	2.5 (64)	7.5 (5.59)	3 (2.24)
40 (151,200)	120 (454)	3 (76)	7.5 (5.59)	5 (3.73)
50 (189,000)	150 (568)	3 (76)	10 (7.5)	5 (3.73)
60 (226,800)	180 (682)	4 (102)	10 (7.5)	5 (3.73)
75 (283,500)	225 (852)	4 (102)	15 (11.19)	7.5 (5.59)
80 (302,400)	240 (909)	4 (102)	15 (11.19)	7.5 (5.59)
100 (378,000)	300 (1135)	4 (102)	20 (14.91)	7.5 (5.59)
125 (472,500)	375 (1416)	6 (152)	20 (14.91)	10 (7.5)
150 (567,000)	450 (1703)	6 (152)	25 (18.64)	10 (7.5)
175 (661,500)	525 (1987)	6 (152)	30 (22.37)	15 (11.19)
200 (756,000)	600 (2271)	6 (152)	30 (22.37)	15 (11.19)
250 (945,000)	750 (2839)	6 (152)	40 (29.93)	20 (14.91)
300 (1,134,000)	900 (3406)	6 (152)	50 (37.29)	20 (14.91)

DIMENSIONS

Model	Length, in. (cm)	Width, in. (cm)	Height, in. (cm)	Ship. weight ² , lbs.	Operating weight ² , lbs.
CT140 (D)	72 (183)	36 (91)	40 (102)	600 (273)	1800 (817)
PCT390 (D)	95 (241)	56 (142)	64 (162)	500 (227)	3500 (1588)
CT480 (D)	102 (259)	48 (122)	52 (132)	2000 (908)	6000 (2722)
CT720 (D)	114 (289)	72 (183)	52 (132)	2600 (1180)	8600 (3901)
CT1080 (D)	114 (289)	72 (183)	77 (195)	3400 (1543)	12400 (5625)
CT1620 (D)	138 (350)	72 (183)	77 (195)	4000 (1815)	17500 (7938)
CT2040 (D)	150 (381)	92 (234)	78 (198)	5000 (2268)	22100 (10025)
CT2700 (D)	150 (381)	120 (305)	78 (198)	6000 (2722)	28500 (12928)
CT3670 (D)	162 (411)	120 (305)	90 (229)	7000 (3176)	37600 (17056)
CT5130 (D)	162 (411)	168 (427)	92 (234)	7800 (3539)	50700 (22998)

² Weights are for tank only; pump weight is not included

CT/CW SERIES



Cooling Tower Pump Tank Systems

SIZING CONSIDERATIONS

In sizing a cooling tower pump tank, allow enough volume to avoid unacceptable levels of turbulence and enough volume for drawdown. Drawdown is the amount of water that is pumped out of the tank on startup before water begins to return from the towers. Standard tank sizes in this specification allow 2 gallons per ton (2 liters per 1,000 Kcal/hr) for drawdown and towers located within 25 feet (8 m) of the tank.

System size		Additional tank volume	
tons	Kcal/hr	gallons per foot over 25 feet	liters per meter over 8 meters
1 — 100	3,780 — 378,000	8.8	109.3
101 — 300	378,001 — 1,134,000	16.4	203.7
301 — 600	1,134,001 — 2,268,000	26.8	332.8

If towers are more than 25 feet (8 m) from the tank, add more tank volume based on the table below. To reduce turbulence when the system is in operation, allow 1 gallon of tank volume for each gpm (1 liter of tank volume for each lpm) entering the tank.

Sizing Example

A 100-ton cooling tower is being located 50 feet from the pump tank. What minimum volume should the tank have for a single-well tank and for a dual-well tank?

Single well: Volume = Drawdown volume + Operating volume + Distance correction
 = 2 gals./ton x 100 tons + 1 gal./gpm x 300 gpm + (50 - 25) feet x 8.8 gal./foot
 = 200 + 300 + 220
 = 720 gallons required

Result: Select a CT720 model pump tank

Dual well: Volume = Drawdown volume + Operating volume + Distance correction
 = 2 gals./ton x 100 tons + 1 gal./gpm x 600 gpm + (50 - 25) feet x 8.8 gal./foot
 = 200 + 600 + 220
 = 1,020 gallons required

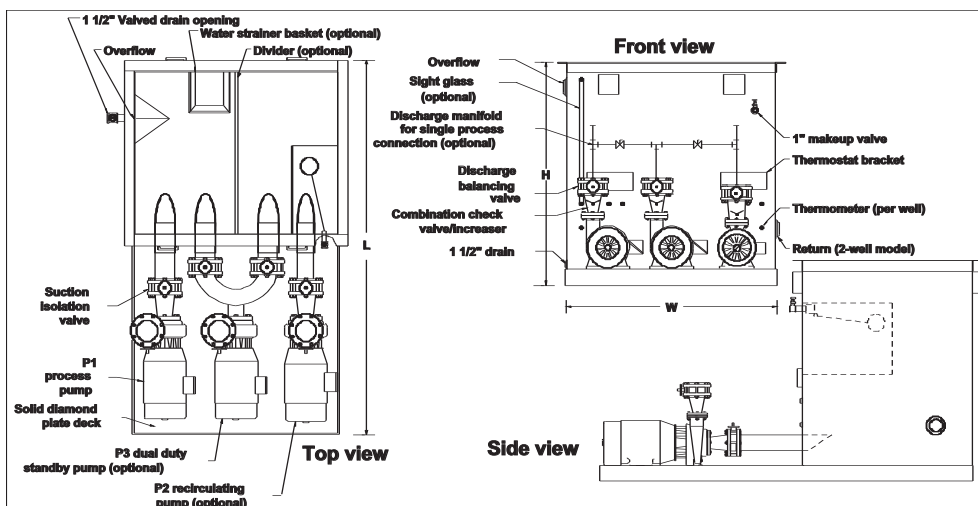
Result: Select a CT1080D model pump tank

Simplifying formulas where standard flow, 3 gpm per ton, is used are:

Single well volume = 5 x Tons + Distance correction

Dual well volume = 8 x Tons + Distance correction

Standard tank selections are based on the formulas listed above, where the distance correction is zero (0), meaning that towers are within 25 feet of the tank.

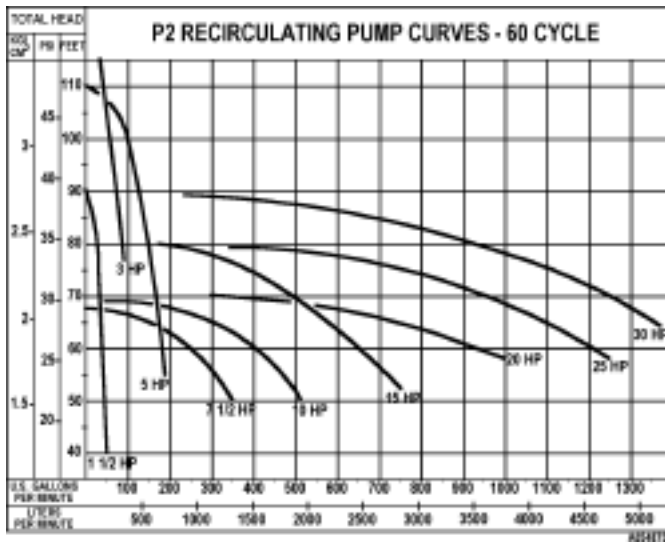
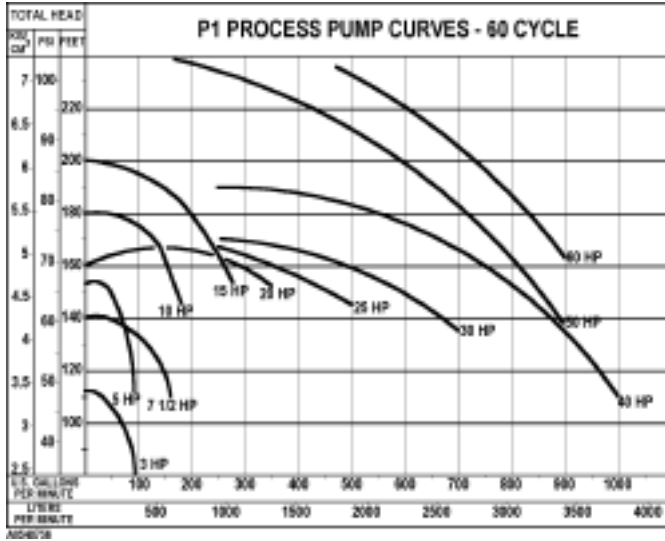


All pumps are close-coupled centrifugal types and include a compound pressure gauge and ODP-type motors. TEFC motors are available as an option. Trim is full size, including butterfly valve (and reducer if necessary) on the suction side, combination increaser/check valve, and butterfly valve on the discharge side.

CT/CW SERIES

Cooling Tower Pump Tank Systems

PUMP CURVES



NEMA 1 STARTERS

2-60 hp pumps are available with 460/3/60 or 230/3/60 individual NEMA 1 starters. (230/3/60 voltage not available on 50 and 60 hp pumps).

Thermostat, well, on/off switch for cycling tower fans, and P2 recirculating pumps are available at extra cost. Mounting the starter on the pump tank and wiring to the motor is also available at extra cost.

Starters are shipped loose.

CT/CW SERIES



Chilled Water Pump Tank Systems

ENHANCED TECHNOLOGY FOR ENHANCED PERFORMANCE

The CT/CW Series, single and double compartment, pump tank assemblies are the most complete, best constructed available. Our pump tanks' standard sizes range from 140 to 6,285 gallons, with pump sizes from 1.5 to 75 hp. Flow rates can be adjusted on each pump tank, depending on the customer's needs. These tanks can be custom made with multiple reservoirs, pump decks and ports for expansion, to name a few.

Chilled water tanks feature insulation and a cover to prevent sweating. Tower water tanks feature a stainless steel strainer basket. Both share these features: centrifugal pumps; full sized suction; discharge check; and throttling valves; thermometer for temperature monitoring; and overflow and valved drain fittings.



Features

- Centrifugal close-coupled pump, featuring cast iron impellers with 230/ or 460/3/60 ODP motor; other voltages and motor designs are available
- Tank, sides, bottom, and baffles are stainless steel
- Insulation and composite covers
- Lug-mount butterfly valves
- #304 stainless steel tank side walls 3/16" from 480 to 2040; 1/4" from 2700 to 5130D
- Standard hardware includes thermometer(s), pump pressure gauge(s), drain valve
- Full-size pump trim for maximum efficiency; includes isolation, throttling, and check valves
- Automatic level control makeup valve
- Butterfly valve handles
- Solid diamond-plate pump ledge
- 1 year warranty on parts and labor

Options

- Second pump ledge
- OSHA handrail and ladder
- Sight glass
- 1" Clayton float valve (claval makeup valve)
- Well reinforcement
- P1 process pump, P2 recirculating pump
- TEFC motor, in lieu of ODP motor
- Bronze impeller
- Single suction or double suction trim
- Discharge manifold: process/recirculation standby
- Plugged or valved opening, mild or stainless steel
- Digital temperature display
- Amp meter, hour meter, digital flow meter
- UL Panel
- NEMA 12 enclosure with fused transformer
- Through-the-door disconnect
- Panel mounted on tank and wired
- 8-foot support legs

CT/CW SERIES

Chilled Water Pump Tank Systems

SELECTION

Model	Max. chiller, tons (Kcal/hr)		Capacity, gallons (l)		Max. pumps/ledge	Return water conn., in. (mm) NPT
	1 well	2 wells	Overflow	Operating		
CW140 (D)	56 (170,300)	28 (85,100)	135 (511)	100 (378)	3	3 (76)
PCW390 (D)	162 (492,000)	81 (246,000)	390 (1476)	350 (1325)	3	5 (127)
CW480 (D)	200 (605,700)	100 (302,800)	480 (1817)	360 (1362)	3	4 (102)
CW720 (D)	300 (908,300)	150 (454,200)	720 (2725)	540 (2044)	4	4 (102)
CW1080 (D)	448 (1,356,300)	224 (678,200)	1075 (4069)	825 (3122)	4	6 (152)
CW1620 (D)	672 (2,037,700)	336 (1,018,800)	1615 (6113)	1240 (4693)	4	6 (152)
CW2040 (D)	850 (2,572,700)	425 (1,286,800)	2040 (7721)	1565 (5923)	5	6 (152)
CW2700 (D)	1125 (3,406,700)	562 (1,703,300)	2700 (10,219)	2065 (7816)	6	6 (152)
CW3670 (D)	1527 (4,624,000)	763 (2,312,000)	3665 (13,872)	2830 (10711)	6	6 (152)
CW5130 (D)	2138 (6,472,300)	1069 (3,236,200)	5130 (19,417)	3960 (14988)	7	8 (203)

Calculated for chiller volume capacity based upon 2.4 gpm per ton with the chiller within 25 ft. of the tank

PUMP TANK CAPACITIES

Capacity		Trim size, in. NPT (mm)	Process pump, hp (kW)	Recirculating pump, hp (kW)
Nominal refrigeration, tower water, tons (Kcal/hr)	Nominal flow, gal. (l)			
25 (75,600)	60 (227)	2.5 (64)	5 (3.73)	3 (2.24)
35 (105,840)	84 (318)	2.5 (64)	7.5 (5.59)	3 (2.24)
50 (151,200)	120 (454)	3 (76)	7.5 (5.59)	5 (3.73)
60 (181,440)	144 (545)	3 (76)	10 (7.5)	5 (3.73)
75 (226,800)	180 (682)	4 (102)	10 (7.5)	5 (3.73)
90 (272,160)	216 (818)	4 (102)	15 (11.19)	7.5 (5.59)
100 (302,400)	240 (909)	4 (102)	15 (11.19)	7.5 (5.59)
125 (378,000)	300 (1135)	4 (102)	20 (14.91)	7.5 (5.59)
155 (468,720)	372 (1408)	6 (152)	20 (14.91)	10 (7.5)
185 (559,440)	444 (1680)	6 (152)	25 (18.64)	10 (7.5)
220 (665,280)	528 (1998)	6 (152)	30 (22.37)	15 (11.19)
250 (756,000)	600 (2271)	6 (152)	30 (22.37)	15 (11.19)
310 (937,440)	744 (2816)	6 (152)	40 (29.93)	20 (14.91)
375 (1,134,000)	900 (3406)	6 (152)	50 (37.29)	20 (14.91)

DIMENSIONS

Model	Length, in. (cm)	Width, in. (cm)	Height, in. (cm)	Ship. weight, lbs.	Operating weight, lbs.
CW140 (D)	72 (183)	36 (91)	40 (102)	600 (273)	1800 (817)
PCW390 (D)	95 (241)	56 (142)	64 (162)	500 (227)	3500 (1588)
CW480 (D)	102 (259)	48 (122)	52 (132)	2000 (908)	6000 (2722)
CW720 (D)	114 (289)	72 (183)	52 (132)	2600 (1180)	8600 (3901)
CW1080 (D)	114 (289)	72 (183)	77 (195)	3400 (1543)	12400 (5625)
CW1620 (D)	138 (350)	72 (183)	77 (195)	4000 (1815)	17500 (7938)
CW2040 (D)	150 (381)	92 (234)	78 (198)	5000 (2268)	22100 (10025)
CW2700 (D)	150 (381)	120 (305)	78 (198)	6000 (2722)	28500 (12928)
CW3670 (D)	162 (411)	120 (305)	90 (229)	7000 (3176)	37600 (17056)
CW5130 (D)	162 (411)	168 (427)	92 (234)	7800 (3539)	50700 (22998)

CT/CW SERIES

Chilled Water Pump Tank Systems

SIZING CONSIDERATIONS

In sizing a chilled water pump tank system, make sure you have enough volume to avoid unacceptable levels of turbulence in the tank. Typically, you can accomplish this by allowing one gallon of capacity for each gallon per minute (gpm [liters per minute; lpm]) of flow entering the tank. Standard tank selections are based on a flow rate entering the tank at 2.4 gallons per minute per ton (3 lpm per 1,000 Kcal/hr) of refrigeration.

For flow rates other than the standard tank selection specification, perform the procedure listed below.

Sizing Example

What tank size is required for a 100-ton system with standard flow through the chiller and double flow to process?

Flow entering the tank = Flow through the chiller (100 ton x 2.4 gpm/ton) + Flow through process (100 tons x 4.8 gpm/ton) = 720 gpm

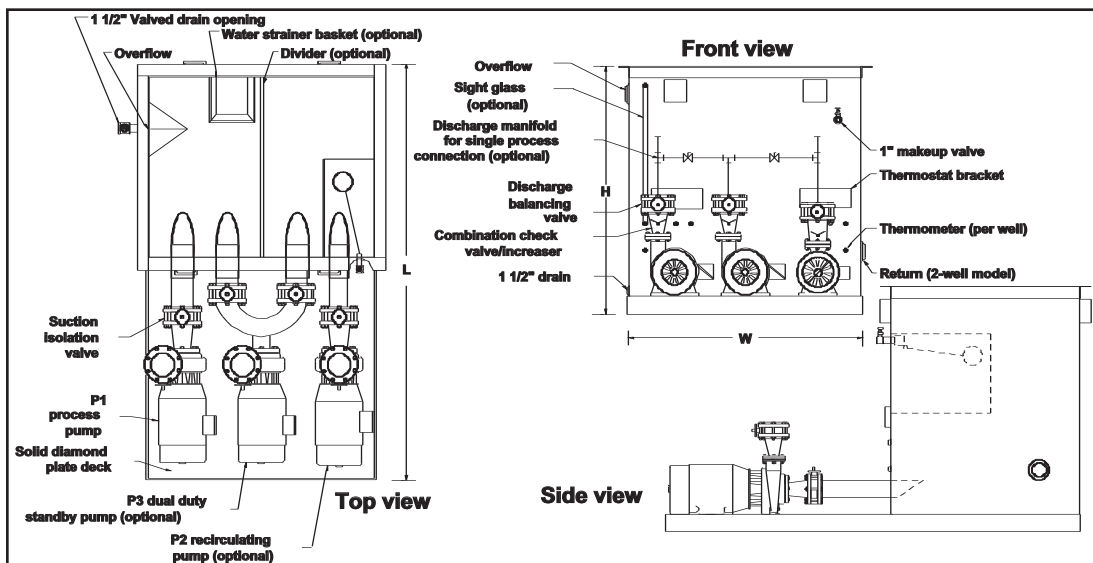
Minimum tank volume to overflow = 720 gallons

Result: Select a CW720D model pump tank.

Standard tank selections are based on flow rates being equal to 2.4 gpm per ton of cooling. Therefore, standard volumes are as follows:

Single well volume = 2.4 x tons

Dual well volume = 4.8 x tons

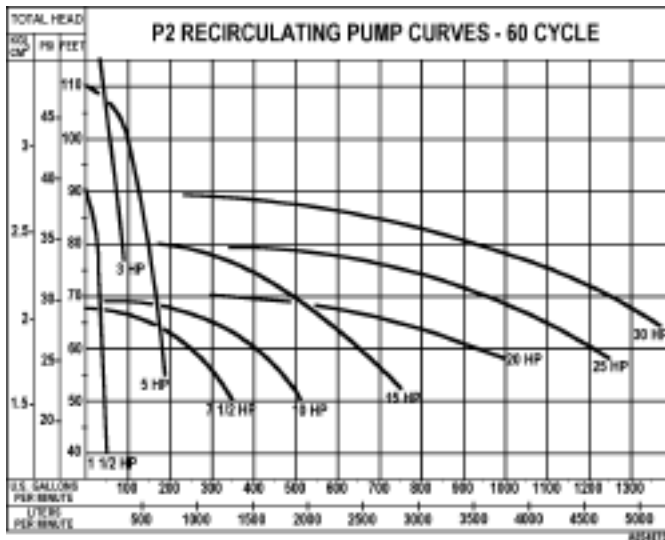
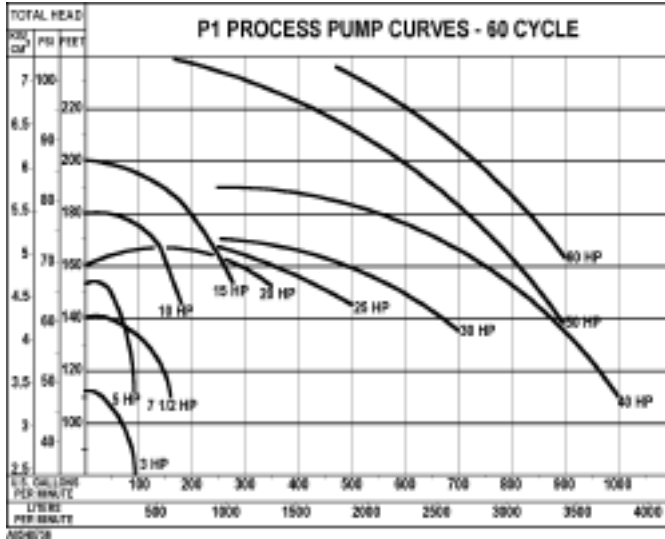


All pumps are close-coupled centrifugal types and include a compound pressure gauge and ODP-type motors. TEFC motors are available as an option. Trim is full size, including butterfly valve (and reducer if necessary) on the suction side, combination increaser/check valve, and butterfly valve on the discharge side.

CT/CW SERIES

Chilled Water Pump Tank Systems

PUMP CURVES



Note: For 50 Hz operation, derate by multiplying pressures by 0.69

NEMA 1 STARTERS

2-60 hp pumps are available with 460/3/60 or 230/3/60 individual NEMA 1 starters. (230/3/60 voltage not available on 50 and 60 hp pumps).

Mounting the starter on the pump tank and wiring to the motor is also available at extra cost.

Starters are shipped loose.