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TECHNICAL DATA DOCUMENT

ADVANTAGE®

PUMP TANK STATIONS for CHILLED OR TOWER WATER SYSTEMS POLYETHYLENE or STEEL TANKS

Information for all Advantage Water System Products is available on our web site: www.AdvantageEngineering.com

APPLICATIONS... **ADVANTAGE** Pump Tank Stations are used in central water distribution systems for tower or chiller systems. **ADVANTAGE** pump tanks provide process water for a wide variety of applications, including plastic injection molding, thermoforming, extrusion, hydraulic cooling, die cooling, roll cooling, heat exchangers, rubber processing, printing, calendering, laminating, chemical processing and many other industrial process cooling applications.

ENGINEERING SERVICE & WATER SYSTEM DESIGN... **ADVANTAGE** staffs a complete CAD based engineering department with experienced water system designers. For each application, working from customer supplied facility and process information, **ADVANTAGE** analyzes flow, pressure and temperature requirements. For pump tank applications, standard pump sizes are adequate for the majority of applications. However, if a standard pump is not suitable, **ADVANTAGE** will select the proper impeller, motor and piping size combinations to provide the most efficient output. The purchase of a central water system includes water distribution piping drawings suitable for contractor bidding and installation work.

CAPACITIES... **ADVANTAGE** Pump Tank stations are suitable for tower systems (**PTS**) up to 1000 tons and central chilled water systems (**CPTS**) up to 1200 tons. Mild and stainless steel, tank sizes are offered in 275, 400, 600, 750, 1000, 1250, 1500, 2000, 2500, and 3000 gallons (***Figure A***). In rotational molded polyethylene, tank sizes are offered in 450, 850, 1600 and 3200 gallons (***Figure B***). Standard tank sizes can be combined to facilitate larger capacities.

CHOICE OF TANK CONSTRUCTION MATERIALS...
Pump tank stations from **ADVANTAGE** are offered in three materials: polyethylene, mild steel and stainless steel. Polyethylene tanks are rotational molded from linear low density polyethylene. Steel tanks are offered in mild and stainless steel. Generally, polyethylene tanks offer the lowest capital expenditure.

TTK-1600 shown in Conventional configuration with the following optional features:
- Standby pump and manifold
- Central control console
- Pressure and temperature alarm system
- Electric water make-up system
- CheckMate™ control panel

FIGURE B

PTS-2000 shown with the following optional features:
- Standby pump and manifold
- Central control console
- Pressure and temperature alarm system
- Electric water make-up system
- CheckMate™ control panel

FIGURE A

RESERVOIR CONSTRUCTION...

TOUGH TANK® POLYETHYLENE TANKS... The **ADVANTAGE TOUGH TANK®** pump tank is a seamless one-piece tank, rotational molded from linear low density polyethylene (***Figure C***). The ***patent pending*** design includes a rectangular base to allow for straight-line pump attachments, unlike the tangential attachments of competitive models. The rectangular base also offers greater stability and the ability to expand tank capacity by in-line plumbing of additional tanks and pumps. The cylindrical shape of the reservoir area offers structural strength, without the need for perimeter belting. A polyethylene baffle plate is provided for true 'hot-cold' operation. All process ports are molded into the tank to offer structural support, including an overflow port and ports for temperature and pressure gauges and sensors. A drain port with installed ball valve is provided. On chilled water systems, 3/8" dense foam insulation is applied to the outside of the polyethylene tank to prevent sweating and heat gain. The standard service cover has cut-outs for distribution piping and an inspection opening. Polyethylene tanks cost less than steel tanks and offer excellent prevention of corrosion and tank-contributed contamination.

STEEL TANKS... 10 gauge stainless or 7 gauge mild steel sheets are welded to form the tank assembly (***Figure D***). The interior of mild steel tanks are sandblasted to prepare the surface for a 2 part epoxy coating that is applied to prevent corrosion. Angle iron perimeter belting is added to the circumference of the tank to increase tank rigidity. A partition is set inside the tank to serve as a hot and cold section divider. The tank assembly is set onto a structural steel base. The base area not immediately underneath the tank is decked with sheet metal and becomes the pump platform. On chilled water systems, 3/8" dense foam insulation is applied to the outside of the tank to prevent sweating and heat gain. A drain port with installed ball valve and overflow port is provided. Other tank features include an overflow port and spare pump ports. Options include tank service covers and spare pump ports.

STANDARD SYSTEM CONFIGURATION... the standard system configuration is shown at right and is available for polyethylene and steel tanks (***Figure E***). The standard system includes all components necessary for a complete and workable system at an economical cost. Prewired individual motor starters are included as well as temperature and pressure gauges and mechanical water make-up valve. Tower systems include tower fan and tower pump thermostats for matching system capacity to the load.

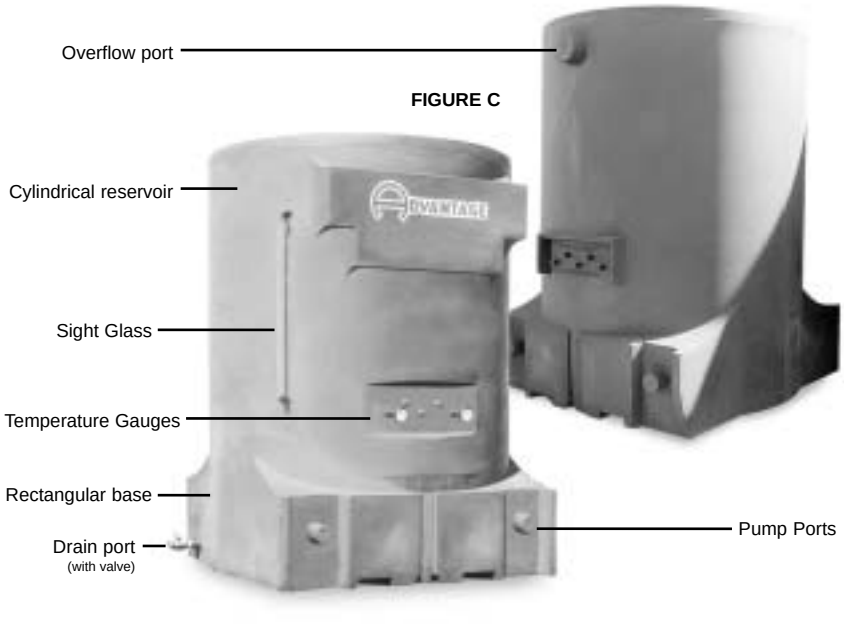

FIGURE C

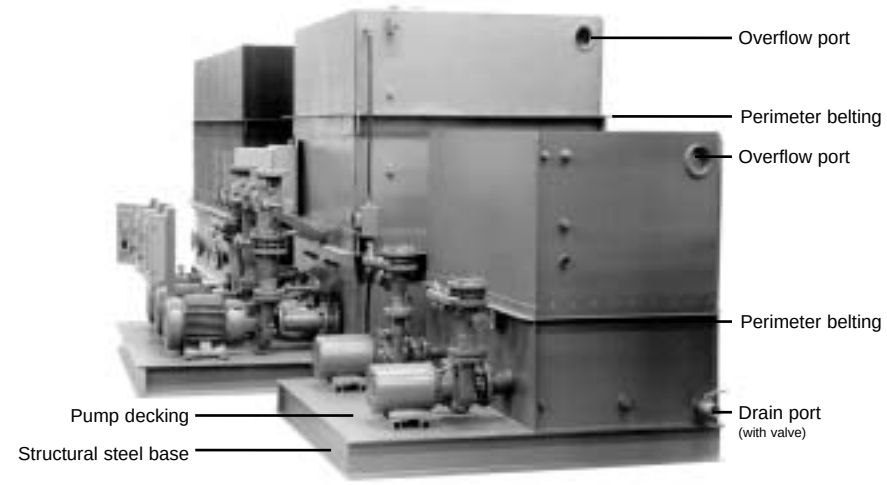

FIGURE D

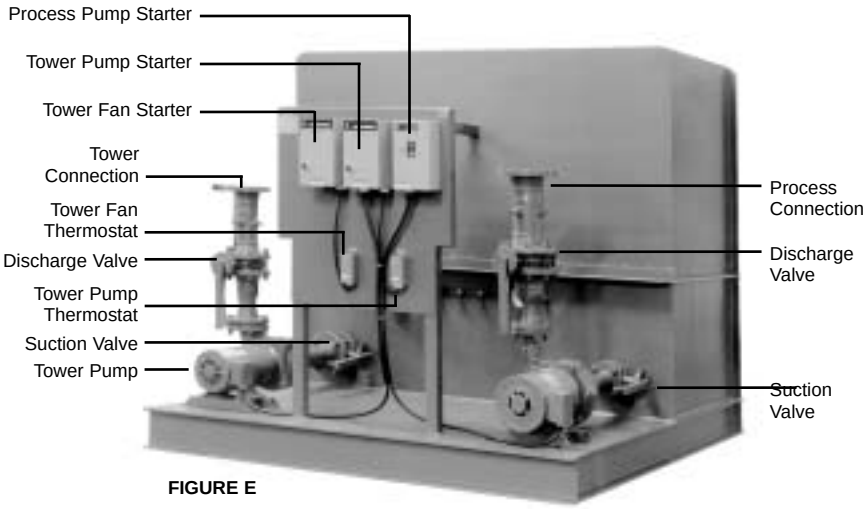

FIGURE E

PUMPS... careful consideration to service, ef ficiency and motor protection are central to the design and selection of the best pump for your application. Each pump is equipped with suction and discharge service valves (***Figure J***). Each pump is toggled on and off by individual operators and wired from a dedicated motor starter with overload protection. Single pump systems are available. Dual pump systems are preferred for most applications (***Figure K***). In a dual pump system, the ***PROCESS PUMP*** distributes water at full capacity through the plant. For tower systems, the ***TOWER PUMP*** circulates water to the tower cell at the correct flow of normally 3 gpm per ton. For chilled water systems, the ***EVAPORATOR PUMP*** circulates water at the correct flow of normally 2.4 gpm per ton through the chiller evaporators. In a dual pump system, the pumps operate independently of each other and allow for greater control of water temperature, flow and pressure.

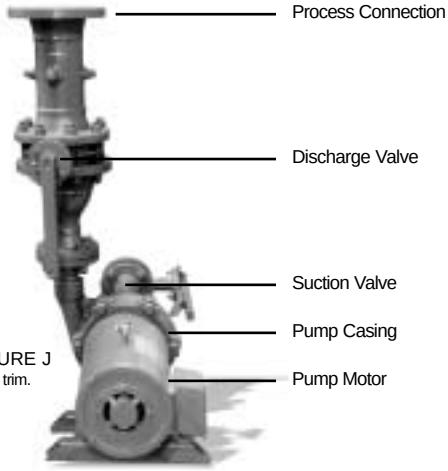

FIGURE J
Pump shown with with full trim.

OPTIONAL STANDBY PUMP CONFIGURATION... prewired standby pumps and preplumbed manifolds are offered for the process and tower or evaporator pumps. A standby pump is useful when service is required on the primary pump but continued operation is necessary (***Figure L***). Installation costs are higher for systems that must have field supplied manifolds, compared to systems with factory supplied manifolds.

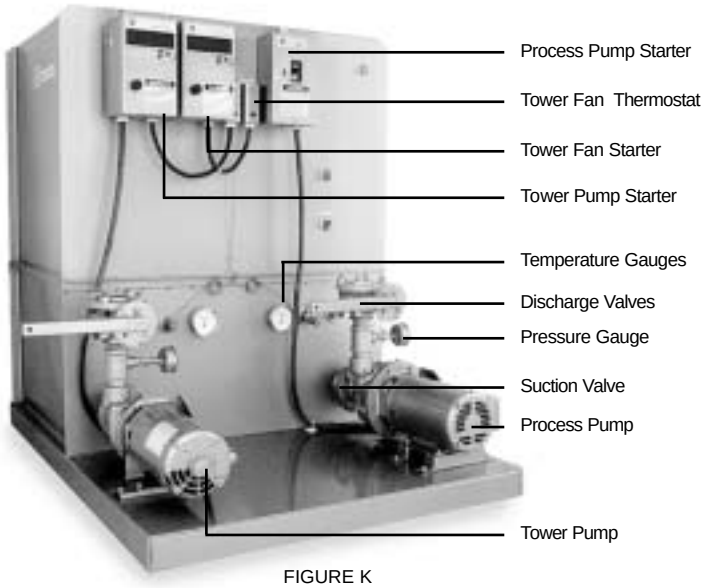

FIGURE K
Dual pump system shown with manual pump and tower fan starters.

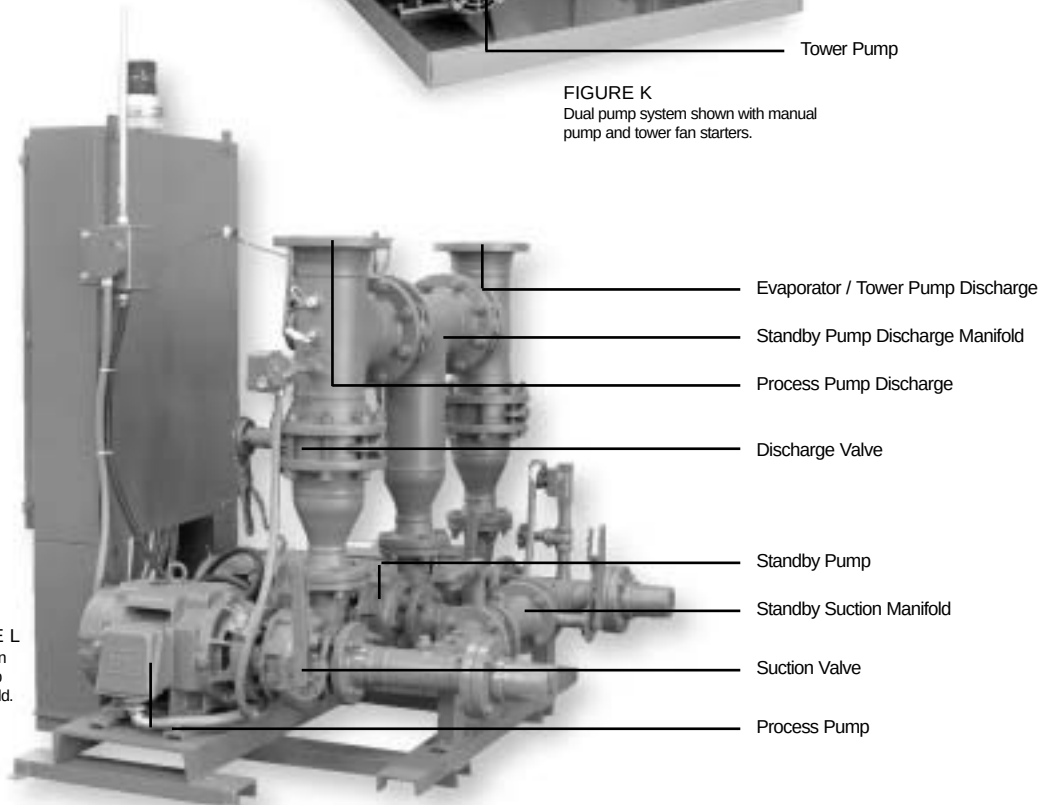

FIGURE L
Dual pump system shown with optional standby pump and manifold.

OPTIONAL CENTRAL CONTROL CONSOLE...

provide easier and less costly installation and operator convenience (Figure M). The control console includes a Nema 12 cabinet. A single power (208, 230, 460, 575 volt) connection is required. A control transformer is mounted and wired to provide 115 volt control power to required use points. Pump motor starters are protected with branch circuit fusing. Wiring from the cabinet to the motors is protected in seal tight conduit. A •power on• light and off/on selector switches are mounted on the cabinet for operator convenience. See Figures N and O for pictures of the Central Control Console with optional CheckMate ™ cooling tower system control and monitoring Instrument.

OPTIONAL TEMPERATURE AND PRESSURE ALARM SYSTEM...

with the optional alarm system, pump pressure and fluid temperatures are constantly monitored. A pressure switch is mounted in the process pump discharge stream (Figure P) and a thermostat monitors water temperature in the tank. An out-of-spec condition will activate the beacon alarm.

FIGURE M - Optional Control Console cabinet shown with indication lights and pump controls (left) and branch circuit fusing with alarm system (right).

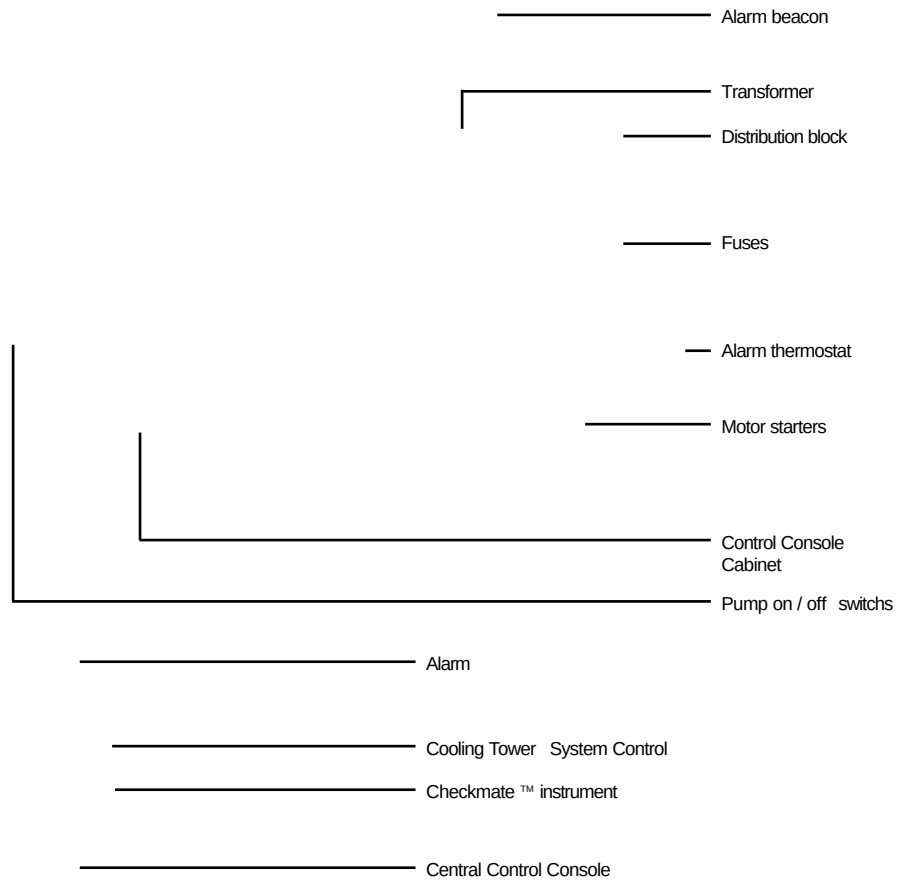

FIGURE N - PTS-2500 showing the optional Central Control Console with Alarm and optional Checkmate ™ Cooling T ower System Control and Monitoring Instrument.

FIGURE O - TTK-1600 showing the optional Central Control Console with Alarm and optional Checkmate ™ Cooling T ower System Control and Monitoring Instrument.

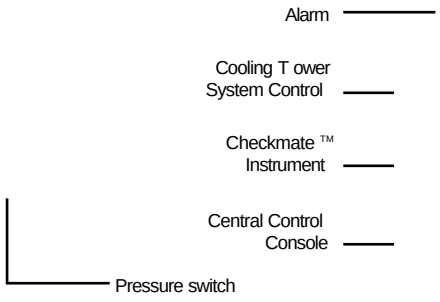

FIGURE P - Typical alarm pressure switch location on the process pump discharge.