



## **STANDARD AND LONG TERM STORAGE**

### **Standard Packaging**

- 1) This is suitable for protection during shipment and during covered storage at jobsite for a short period between installation and start-up. The preservatives applied at the factory have an effective life of three (3) months (plus/minus) from date of domestic shipment depending on the severity of the environment in which the equipment. For international destination this will vary depending on the sea worthiness of export boxing.

### **Recommended Storage Atmosphere**

- 1) Controlled storage facilities should be maintained at and even temperature 10 degrees F or more above the dew point with relative humidity less than 50% and little or no dust. If these requirements cannot be met the pump is to be considered in uncontrolled storage.
- 2) For uncontrolled storage periods of six (6) months or less, the equipment is to be inspected weekly to insure that all preservatives are intact and internals are protected.
- 3) Inspect and recoat periodically the equipment with water displacement rust inhibitors (VPCI-368-021 (Rust-Ban 392 or equal) crusting grease (Rust-Ban 326 or equal), vapor phase inhibitor (Shell VPI-260 or equal), rust preventative coating (Rust-Ban 373 or equal).

### **Uncontrolled Storage Moisture Protection**

- 1) All pipe threads and flanged pipe covers are to be sealed with tape. Furthermore you should place 10 pounds of moisture absorbing desiccant or 5 pounds of vapor phase inhibitor crystals near the center of pump.
- 2) If the pump is assembled, place an additional one pound in the discharge of the pump securely fastened.
- 3) Also install a moisture indicator near the perimeter of the pump.
- 4) A cover the equipment with 6 mil minimum thickness black polythene or equal and seal it with tape. Provide a small ventilation hole approximately half-inch in diameter.
- 5) Provide a roof or shed shelter to protect from direct exposure to the elements.

### **Engine, Gearbox, Motor**

- 1) The engine, gearbox, or motor cannot be left idle for extended periods without concern of corrosion attack. For the above equipment the shaft must be rotated to coat the bearings with lubricant and to retard oxidation and corrosion.
- 2) Provisions must be made to "store" the equipment in a reasonably protected environment as outlined above (dry and indoors if possible) and that the engine, gearbox be started at least once per month for five to ten minutes till the engines is hot so as to lubricate the internals properly.
- 3) Please remove the engine exhaust covering used to protect the engine against damage in shipment before running engine. This cover as well as any other originally covered, or plugged openings, must be replaced and sealed each time you shut the engine down.
- 4) If the pneumatic control is integrated into the start-up sequence then you should use clean and dry shop air. More preferably, you should use nitrogen regulated to 100 psig, by use of nitrogen, you eliminate "water" getting into the control valves and piping system of the panel.
- 5) Oil and filter change interval should not exceed six months.



**Engine, Gearbox, Motor- Continued**

- 6) The motor windings should be protected from excessive moisture absorption by some safe reliable method of heating. Space heaters, if supplied, may be used for this purpose. The temperature of the windings should always be maintained at 10° F. above the temperature of the surrounding air, otherwise you must install desiccant plugs and bags in all motors.
- 7) On all oil lubricated motors the bearing reservoir should be filled to the operating level with a high grade oxidation corrosion inhibiting turbine oil.
- 8) Coat motor shaft and flange surfaces with rust preventative (Ashland Tectyl no.502-c or equal)
- 9) Remove motor condensation drain plugs (if present) and insert silica gel (desiccant) plugs in openings.
- 10) Cover motor to completely exclude dirt, dust, moisture and other foreign materials. If possible, insert motor in a strong transparent plastic bag. Attach moisture indicator to side of motor and place several bags of silica-gel inside then seal the plastic bag.
- 11) Rotate the motor shaft several revolutions every month.
- 12) For outdoor humid condition you should spray all internal surfaces with one coat of anti fungus varnish (e.g. George no. 11137 sealer or equal).
- 13) Check motor insulation resistance periodically. A hand cranked ohm meter if not over 500 volts is the most convenient and safest method. The insulation resistance of the stator windings should be in accordance with IEEE Standard No. 43 recommended practice for insulation resistance testing of AC rotating machinery
- 14) If the insulation fails to meet this standard, the motor may be dried out by heat from a warm air oven, electric strip heaters, or heat lamps.
- 15) Prior to approving a unit for start-up, the storage condition, as well as the log of ohm meter readings and other maintenance performed during the storage period must be submitted.
- 16) When the units are finally set in place for start-up ready for commissioning, all oil should be drained out and changed, as well as new anti-freeze water changed.
- 17) All other requirements described in the original manufactures manual.

**Horizontal Centrifugal Pumps**

- 1) Remove and discard stuffing box packing, if pump is packed type. Spray the interior portion of the pump case and the pump stuffing boxes with a water-soluble type of rust preventative.
- 2) After pump has been thoroughly drained, cover the pump suction and discharge flanges with full natural rubber gasket material and blank off these Openings with metal blank flanges and a minimum of four full sized bolts. Cover the pump stuffing box opening with a non-hygroscopic tape. If packed type pump the packing gland may be left on the pump shaft, but must be wired or otherwise securely fastened in position.
- 3) All exposed machined surfaces shall be thoroughly coated with a rust preventative material that is readily removable with a petroleum distillate product.
- 4) All exposed painted surfaces shall be dry, clean and free of grease and other contaminates.
- 5) The pump shall be covered with a weather resistant cover of waterproof paper or plastic to prohibit the build-up of dirt and dust accumulations.



- 6) The pump shall be inspected at regular periods during storage and pump shaft shall be rotated, at intervals of approximately 4 to 6 weeks, by hand.
- 7) To place the pump in operation, all protective coverings and coatings shall be properly removed; if packed type pump repack with the proper number of packing rings in each stuffing box in accordance with normal repair and maintenance instructions furnished with the pump.
- 8) Fill pump bearing frame (Series 8175, 8196, 8796) with a high-grade oxidation corrosion inhibited turbine oil.
- 9) Rotate pump shaft several revolutions at least once per week to coat the bearing with lubricate and to retard oxidation and corrosion, flat spots and staining.
- 10) On Series 8196 make sure rotation is clockwise to prevent impeller from screwing off the shaft.
- 11) "Long Term Storage Procedures" should be followed as detailed by the OEM manufacturer when the start-up of equipment is made over three months from the date of shipment from the factory.

### **Vertical Centrifugal Pumps**

- 1) Rotate the shaft several revolutions every month in a counter clockwise rotation. Also check that the shaft is not in an extreme raised or lowered lateral condition.
- 2) All exposed interior and exterior non-coated metallic surfaces are sprayed with a water displacement rust preventative (Rust-Ban 392 or equal)
- 3) Apply film of compatible lube oil (Rust-Ban 632 or equal) over the water displacement rust preventative.
- 4) Coat exposed machined surfaces with firm rust preventative (Rust-Ban 373 or equal)
- 5) Cover pump with plastic sheet (min 6 mil thickness) and tape in place with a one half-inch hole in pump suction to allow for breathing.
- 6) "Long term storage procedures" should be followed as detailed in Bulletin 44.5 when the start-up of equipment will occur over three months from the date of shipment.

### **Special notes**

- 1) The purchase of "Long Term Storage Protection" is available for purchase of new equipment from the factory prior to pump shipment, so as to extend the life of equipment and to maintain the integrity of the equipment.
- 2) Please note that the purchase of "Long Term Storage Protection" from the factory does not extend the warranty in any manner.
- 3) Warranty policy is twelve months from start-up or eighteen months from shipment, whichever occurs first. This warranty is valid only if equipment has been properly handled and stored as per the above requirements. Should the equipment be stored or handled improperly, then the warranty is invalid and may be reinstated only after a factory representative is allowed to inspect the equipment prior to start-up. Expenses for the representative will be billed in accordance with the latest schedule for field service engineer. Any repairs or repair parts needed shall be billed to the customer at prices in effect at time of shipment of these repairs/parts.

### **Closing comments**

- 1) The customer shall agree that procedures will be adhered to so that the integrity and reliability of the equipment will be maintained.
- 2) The warranty and operational performance of equipment is strictly dependent and valid upon, proper handling, maintenance and storage of equipment.



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**COMMERCIAL &  
TECHNICAL POLICY**

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3) Refer to the factory for further information is required.