

OWNER'S MANUAL

ACT-SD SERIES Side Discharge Centrifugal Pump (For Belt or Coupling Drive)



IMPORTANT: READ THIS MANUAL BEFORE INSTALLING OR OPERATING THE PUMP.

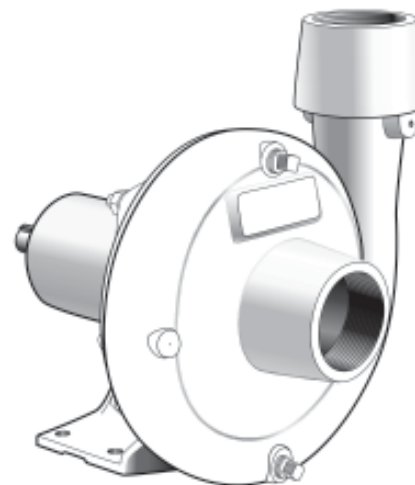
SAFETY CAREFULLY READ THESE SAFETY MESSAGES.

CAUTION

- **DO NOT OPERATE THIS PUMP DRY!**
- Review instructions before operating.

APPLICATION

These pumps may be direct-coupled or belt driven from a suitable power source - electric motor, gas engine, etc. They are intended for installations where the vertical distance from the pump to water surface does not exceed 7.5m (25 ft.). In all installations, friction losses in the piping must be taken into consideration. Pump models ACT-5SD and ACT-6SD should not be used for pumping liquid fertilizer. Pump model ACT-8SD can be used for liquid fertilizer if equipped with the high temperature (Viton) seal.



PERFORMANCE

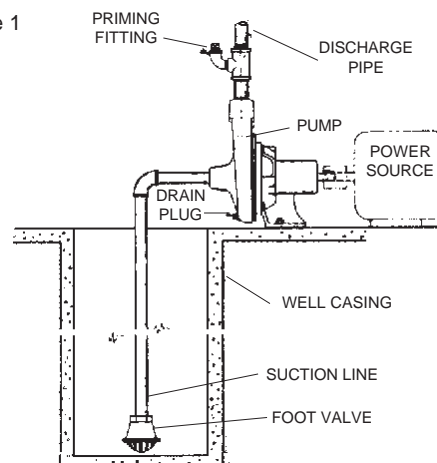
MODEL PUMP	RPM	HP	TOTAL HEAD IN FEET									
			10	20	30	40	50	60	80	100	120	140
			CAPACITY IN GPM									
ACT-5SD	3450	1-1/2		66	65	62	58	53	38	18		
	2250	1/3	42	21								
ACT-6SD	3450	2-1/2		90	88	85	80	66	47	17		
	1750	1/2	50	37	11							
ACT-8SD	3450	5		170	168	164	155	135	122	88	55	
	1750	1	93	78	59							

Complete Pressure and Flow Data is available in the Product Specification Sheets and Performance Curve Section.

INSTALLATION

- (a) **LOCATION:** The pump should be installed in a location that provides adequate drainage, room for servicing, and protection from freezing. A proper foundation is necessary to maintain the alignment between pump and power source. To reduce friction losses and provide maximum capacities, the location of the pump should be such that a minimum of suction piping is required.
- (b) **SUCTION PIPE:** It is recommended that only new, clean pipe or hose be used and the size be the same as the pump suction tapping. If the pump is installed any appreciable distance away from the source of water supply, the suction pipe should be increased by one size. The suction pipe must always slope upwards from the water source to the pump to avoid air pockets in the line. In cases where the pump has to be reprimed often, and it is not necessary that a lot of water be delivered, it is advisable to use a 90° or 45° elbow on the suction line. This enables the pump to prime sooner and also prevents kinking of the hose. In cases where a maximum volume of water is required over a prolonged period of time, the suction line should be led almost horizontally to the pump. Non-toxic thread compound should be used on all pipe joints and connections should be thoroughly tightened. A foot valve should be connected to the bottom end of the suction pipe and must be submerged at all times.
- (c) **FOUNDATION:** A rigid mounting system must be provided for the pumps to ensure that correct alignment of the drive coupling can be maintained. It is recommended that a mounting frame be constructed from heavy steel channel and both the pump transmission and the power source be bolted to this. If possible, the frame itself should be securely anchored to a rigid concrete foundation.

Figure 1



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(d) **ALIGNMENT:** Proper alignment is essential for proper pump performance and satisfactory life of transmission drive components. For direct couplings, ensure that shafts are both parallel and concentric. The units will be concentrically aligned when a straight edge rests evenly on both halves of the coupling in all positions. The shafts will be parallel when the gap between the two halves of the coupling is even at all positions around the coupling.

(e) **ROTATION:** Ensure that shaft rotation will be in the same direction as the arrow on the casing (clockwise, looking from shaft end).

(f) **SPEED:** Pressure and Flow Data is available for transmission speeds ranging from 1750 to 3450 RPM (2250 to 3450 RPM ACT-5SD only). Operation at speeds outside this range is not recommended.

OPERATION - PRIMING THE PUMP

WARNING: DO NOT RUN THE PUMP BEFORE PRIMING IT, SINCE THE SEAL AND IMPELLER COULD BE PERMANENTLY DAMAGED.

a) **PRIMING:** These pumps are not self-priming. For best results, use a foot valve and priming fitting as shown in Fig. 1. Slowly add water through the priming fitting until both the suction line and casing are full.

b) **STARTUP:** NEVER operate the pump dry as this may damage the seal. If the pump does not deliver water after two minutes, repeat the priming operation.

c) **DRAINING:** Should the pump be subject to freezing temperatures, it will be necessary to drain the pump completely. This is done by removing the drain plug on the bottom of the front face of the pump casing. After all the water has been drained, operating the pump for a few seconds will ensure that the impeller is devoid of water. Ensure that the lines are also free of water.

d) **STORAGE OF PUMP:** Drain liquid from pump to prevent frost damage. It is recommended that a good rust inhibitor be put inside the casing to prevent corrosion. When restoring use of the pump, replace all plugs and ensure that all connections are tightly sealed. After a complete check, make the initial prime according to directions under the heading, PRIMING.

MAINTENANCE

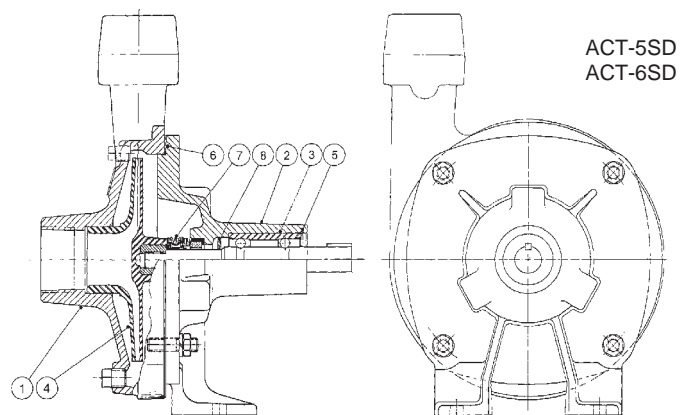
a) **LUBRICATION:** The pump itself does not require lubrication. On ACT-5SD and ACT-6SD series pumps, the transmission uses sealed bearings which have been greased for life at the factory and are not intended to be re-lubricated. On the ACT-8SD pump a grease fitting has been provided on the housing to lubricate the bearings. Use a proper high grade ball bearing grease, and DO NOT over lubricate.

b) **DISASSEMBLY:** (Refer to Fig. 2 & 3)

- Disconnect power source from transmission and remove suction and discharge piping prior to any disassembly.
- Remove four 3/8" nuts securing casing (1) to transmission housing (2) and carefully remove casing & gasket (6).
- Remove impeller (4) from shaft. Impeller is threaded onto shaft in normal fashion. **NOTE:** On ACT-8SD is necessary to first remove bolt (9).
- Remove mechanical seal (7) from shaft.
- On ACT-5SD and ACT-6SD remove snap ring (5) from back of transmission housing and press out shaft/bearing unit (3).
- On ACT-8SD, remove seal plate (10), sleeve (11), and flinger (8). Pry shaft seal (13) out of housing. Remove snap ring (16) and press shaft/bearing assembly out of housing.

NOTE: Premature seal failure may be a result of pumping corrosive chemicals. A seal for chemical handling is available (see Repair Parts List).

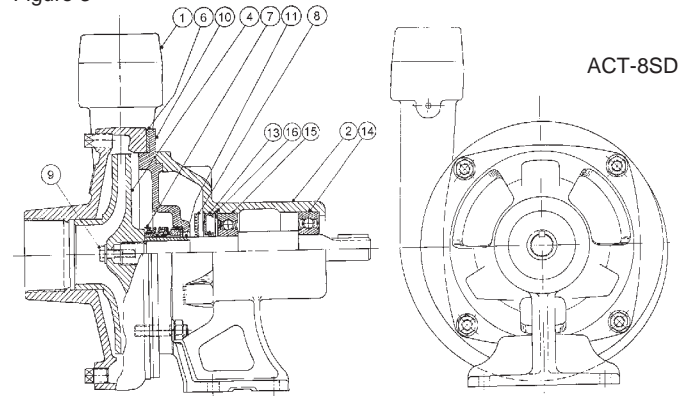
Figure 2



- (c) **REASSEMBLY:** (Refer to Fig. 2 & 3 and Repair Parts List)
- Carefully clean all parts. Replace parts showing signs of excessive wear. Apply film of light oil to bearings, shaft and on the inside of transmission housing.
 - Apply a light soapy lubricant onto the rubber only seal seat and press into housing (ACT-5SD, -6SD or seal plate ACT-8SD). Make sure that the seat is seated properly.
 - On ACT-5SD, -6SD, install flinger (8) on threaded end of shaft/bearing unit (3), press unit into housing and install snap ring (5).
 - On ACT-8SD, press outer bearing (14) into housing (2). Press inner bearing (15) onto threaded end of shaft. Press shaft and bearing assembly into housing. Care must be taken to avoid preloading bearings. Install snap ring (16) and seal (13) into housing. Slide flinger (8) onto shaft. Prior to installing sleeve (11), apply liquid gasket to area of shaft which will be covered by sleeve. Install seal plate (10) to transmission.
 - Install rotating mechanical seal onto shaft with the shiny side of the washer facing towards white ceramic seat. Install impeller securely (4) on ACT-8SD. Fasten with 1/4" NC x 1" bolt (9).

- Install gasket (6) and casing (1) to assembly using (4) 3/8" NC nuts and lockwashers.
- Ensure shaft turns freely and reconnect piping.

Figure 3



ACT-8SD

TROUBLESHOOTING GUIDE

TROUBLE	PROBABLE CAUSE	CORRECTIVE ACTION
Failure to pump	<ol style="list-style-type: none"> 1) Pump not properly primed. 2) Speed too low. 3) Total head more than that for which pump was intended. 4) Excessive suction lift. 	<ol style="list-style-type: none"> 1) Check that pump casing and suction line are full of water. See priming instructions. 2) Check RPM of source. See installation instructions. 3) A pump designed for higher head is needed. 4) Locate pump closer to water. Suction losses can also be reduced by increasing suction pipe size.
Reduced capacity and/or head	<ol style="list-style-type: none"> 1) Air pockets or leaks in suction line. 2) Clogged impeller, suction line or foot valve. 3) Reverse impeller rotation. 4) Insufficient submergence of suction line. 5) Excessive suction lift. 6) Total head more than that for which pump was intended. 7) Excessively worn impeller. 	<ol style="list-style-type: none"> 1) Check suction piping. 2) Remove and clean. 3) Check impeller rotation against arrow on casing, reverse direction of power source if necessary. 4) Add lengths of suction pipe to keep submerged end well below the water surface. 5) Locate pump closer to source of water. Suction losses can also be reduced by increasing suction pipe size. 6) A pump designed for higher head is needed. 7) Order replacement parts, using Repair Parts List.
Pump loses prime	<ol style="list-style-type: none"> 1) Air leaks in suction line. 2) Excessive suction lift and operating too near shut-off point. 3) Water level drops while pumping, uncovering suction piping. 	<ol style="list-style-type: none"> 1) Check suction piping. 2) Move pump nearer water. 3) Check water supply. Add length of pipe to suction line to keep submerged end under water.
Mechanical trouble and noises	<ol style="list-style-type: none"> 1) Bent shaft and/or damaged bearings. 2) Suction and/or discharge piping not properly supported and anchored. 3) Misalignment. 4) Seal leaking due to corrosion of sealing faces. 	<ol style="list-style-type: none"> 1) Inspect shaft and bearings, replace if necessary. 2) Check that all piping is supported to relieve strain on pump assembly. 3) Check alignment of shafts for parallelism and concentricity. 4) The pump seal supplied is for a fresh water use. For salt water and/or chemicals, contact factory and supply information on material being pumped.

MONARCH INDUSTRIES
51 Burmac Road, P.O. Box 429
Winnipeg, Manitoba, Canada
R3C 3E4

www.monarchindustries.com

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