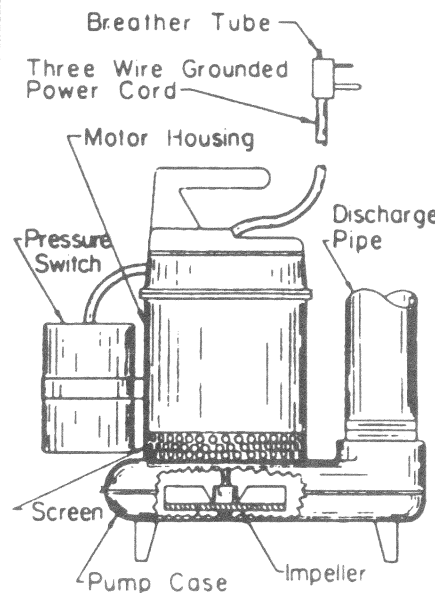
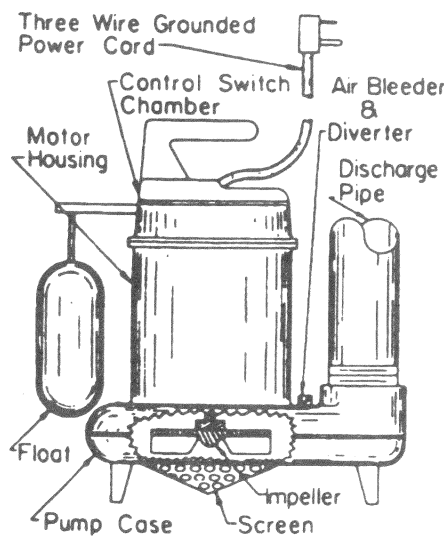
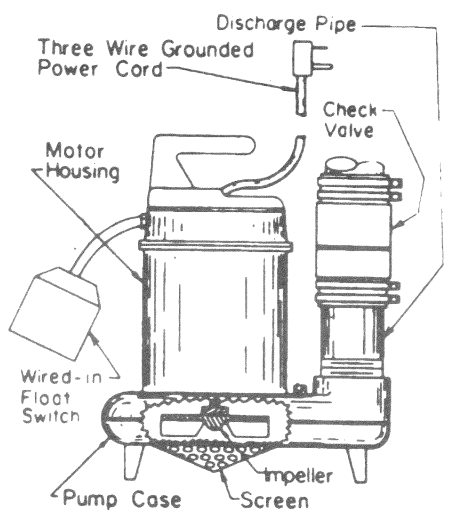
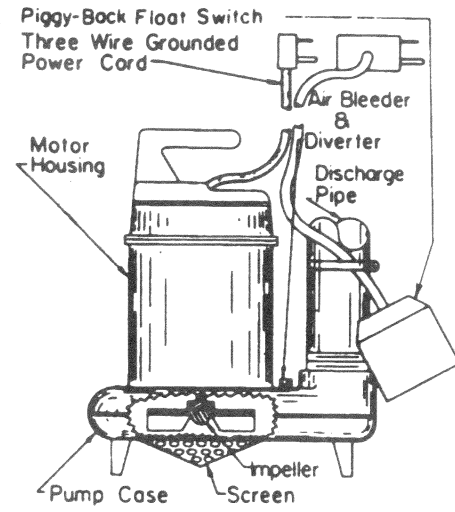
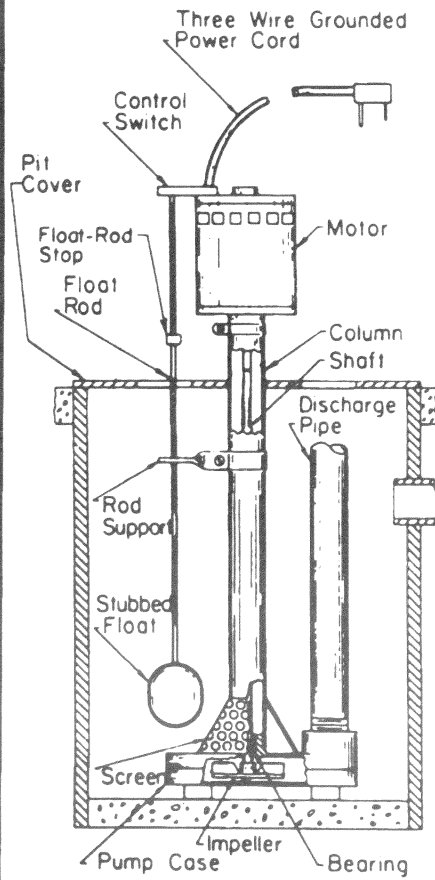
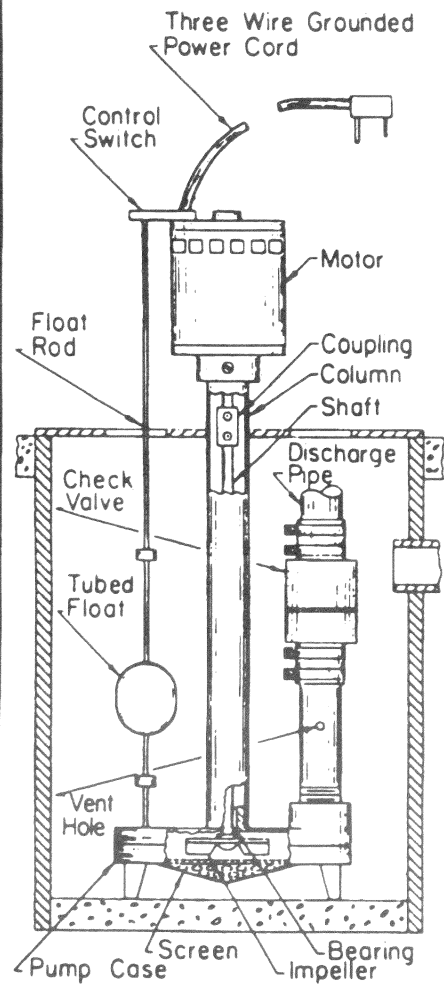
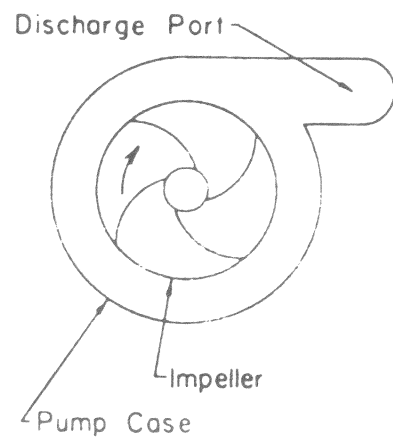


TYPICAL PEDESTAL AND SUBMERSIBLE PUMPS



CORRECT IMPELLER ROTATION



SSPMA

Trouble Shooting Chart

This "TROUBLE SHOOTING" chart has been prepared to guide in the general determination of pump problems and their solutions. Each manufacturer normally provides a description of warranty conditions. Some pump warranties are immediately voided if the unit is disassembled. Be sure to thoroughly read the owner's manual and warranty.

WARNING: Unplug pump from power source before handling. Failure to do so could result in severe personal injury or death when touching the pump or discharge piping.

- SAFETY INSTRUCTION:**
1. For your own safety, read the owner's manual carefully. Learn the pump's application and limitations as well as specific hazards peculiar to this pump.
 2. If pump repair is required, take the pump to the manufacturer's authorized service station.

EXPLANATION OF THE CODE SYSTEM

1. Determine trouble symptom of pump.
Example: PUMP FAILS TO OPERATE
2. Read and perform operations indicated by code listed under CAUSE-TEST-CURE at right of Trouble Symptom.



Read No. 1 under POSSIBLE CAUSE OF PROBLEM. Perform Test A under TESTS. Perform corrective action No. 1 under CORRECTIONS.

3. If No. 1-A-1 does not solve the problem, continue down Code list until problem is solved.



CAUTION:

Always disconnect pump from power when working on or testing any portion of pump or discharge piping

TROUBLE SYMPTOM	CAUSE - TEST - CURE	POSSIBLE CAUSE OF PROBLEM	TESTS	CORRECTIONS
PUMP FAILS TO OPERATE (Motor does not run)	1-A- 1 5-E- 7 26- K-13 1-A- 2 5-E- 8 27- T-13 2-B- 4 6-H-13 28- K-13 2-B- 5 6-H-31 29- P-13 2-B- 7 7-H-31 31- J- 9 2-C- 4 9-E- 6 31- J-31 2-C- 5 9-E- 7 40- Z-32 3-H- 4 9-E- 8 41-AA-33 3-H- 5 10-J- 9 42- P-34 3-H- 7 10-J-31 42- P-35 4-E- 6 14-J-10 42- P-36 4-E- 7 14-J-11 42- P-37 5-D- 3 14-J-31 43- P-38 5-D- 6 16-L-27 44- P-39 5-D-31 16-S-27 45- Z-40 5-E- 6 16-Y-27 45- Z-41	1. Pump power cord not connected to power receptacle or making poor contact. 2. Branch circuit not connected. Defective circuit breaker. Branch circuit open or faulty. 3. Branch circuit fuse blown or circuit breaker tripped. 4. Branch circuit wiring too small to carry pump load. 5. Pump motor overload tripped. 6. Automatic liquid level control switch defective. 7. Internal motor defect (open motor winding, thermal overload defective, power cord open or damaged, centrifugal switch or relay defective or moisture in motor.) 8. Exceptionally high voltage. 9. Exceptionally low voltage. 10. Impeller blocked or bound. 11. Impeller loose on shaft. 12. Clogged or damaged impeller. 13. Impeller rubbing inlet plate or pump housing. 14. Bearings frozen. 15. Worn out or defective pump or motor bearings. 16. Water temperature too high. 17. Water inflow excessive. 18. Clogged screen or pump inlet. 19. Air locked or air bound pump. 20. Air bleed hole blocked. 21. Pipe discharge closed by obstruction or ice. 22. Inadequate discharge pipe diameter. 23. Defective or inoperative check valve. 24. Check valve installed in wrong direction. 25. No check valve in high head installations. 26. Water level not sufficiently high to actuate control switch. 27. Float operation obstructed or restrained. 28. Floats or weights improperly adjusted. 29. Float rod bent or obstructed by debris. 30. Loose shaft coupling. 31. Obstructed rotating parts. 32. Too high a static and friction head. 33. Motor running backwards. 34. Sump size too small. 35. Discharge plumbing connected directly to floor joists. 36. Pump not positioned firmly on bottom of sump. 37. Gravel or stones on bottom of sump. 38. Sump bottom soft and muddy. 39. Improperly sized pump. 40. Diaphragm control skirt lost trapped air. 41. Breather tube in power cord obstructed. 42. Moisture in breather tube. 43. Passage from control skirt to diaphragm obstructed. 44. Compression fittings retaining pressure tube between control skirt and control are loose. 45. Defective control switch.	A. Check pump cord cap prongs for tightness and corrosion. B. Test for power with light bulb. C. Check fuses and breaker. D. Allow pump to cool for 5-10 minutes and reconnect, if overload trips again take corrective action. E. Have line voltage checked and compare with manufacturer's specifications. F. Disconnect power and check pump for stability. G. Check number of other devices on branch circuit. H. Remove pump, disconnect power, connect to rated voltage and actuate control switch. I. Manually operate control. J. Disconnect power, remove pump from sump and observe for freedom of impeller and shaft rotation. K. Add water to sump and observe turn-on. L. Add cold water to sump and test. M. Measure sump width and depth and compare with manufacturer's specifications. N. Measure vertical portion of discharge pipe (over 15 feet is excessive). If discharge pipe length is extremely long, the friction losses may exceed pump capacity. Observe number of pipe fittings and reducing bushings. O. Evacuate sump. P. Examine and observe. Q. Check rotation of impeller. R. Observe backflow of water from discharge. S. Observe source and amount of water in-rush. T. Observe and check float or weight freedom. U. Observe arrow on check valve indicating direction of flow. V. Check gate of check valve. W. Remove screen and observe condition. X. Measure discharge pipe and compare with manufacturer's suggested diameter (should be no smaller than pump discharge). Y. Measure water temperature. Z. Manually override control to check pump operations, if override is provided by manufacturer. AA. Visually inspect power cord for sharp twists or tape over breather tube at cord cap end.	1. Replace plug or clean plug prongs with abrasive paper. 2. Have electrical receptacle replaced. 3. Have electrician or power company check branch circuit voltage. 4. Replace fuse. Note size recommended by pump manufacturer and pump nameplate rating. Use slow-blow type to withstand starting load. 5. Reset breaker. 6. Have pump connected to separate branch circuit. 7. Call electrician to repair circuit. 8. Call power company. 9. Clean volute and impeller and remove any blockage. 10. Free and lubricate lower bearing of column pump. 11. Replace pump bearing. 12. Have larger sump and pump installed. 13. Readjust control floats or weights. 14. Clean screen. 15. Have installed larger diameter discharge piping. 16. Have larger pump installed. 17. Remove any reducing pipe fittings and elbows. 18. Clean or snake discharge line. 19. Install larger sump. 20. Drill 1/8" or 3/16" air bleed hole between pump discharge and check valve. 21. Clean out air bleed hole. 22. Tighten coupling and set screws. 23. Tighten fasteners, replace key. 24. Install check valve. 25. Clean gate of check valve. 26. Install check valve in opposite direction. 27. Install high temperature pump or reduce temperature of incoming water. 28. Readjust discharge piping and pump. 29. Replace portion of discharge with rubber hose. 30. Clean sump. 31. Return pump to Authorized Service Center. 32. Lift pump above fluid level in sump. Then holding pump straight and vertical, place pump back into sump to retrap air in control skirt. 33. Straighten cord or remove tape from breather tube. 34. Return to Authorized Service Center for corrective action. 35. Return pump to service center for new power cord. 36. Plug cord into receptacle upside down to prevent moisture from entering breather tube. 37. Remove source of moisture such as dripping pipes, washing machine discharge splash etc., or protect power cord plug from dripping or splashing water. Clean passage way. 38. Clean passage way. 39. Tighten fittings. Then lift pump above fluid level in sump and holding pump straight and vertical, place pump back into sump to retrap air in control skirt. 40. If overridden control operates pump, but pump fails to function automatically, return pump to a service center. 41. If override does not operate pump, pump motor is defective. Return pump to service center.
PUMP OPERATES BUT FAILS TO DELIVER WATER OR DELIVERS INSUFFICIENT AMOUNT OF WATER	11-J-23 23-V-25 12-W- 9 24-U-26 12-W-31 30-J-22 17-S-12 32-N-15 17-S-16 32-N-16 18-P-14 32-N-17 19-H-20 33-J-31 20-P-21 38-O-30 21-P-18 39-S-16 22-X-15			
PUMP OPERATES FOR SHORT TIME THEN STOPS (Does not stop at normal turn off point)	5-D- 3 13-J-31 5-D- 7 15-J-11 7-H-31 15-J-31 8-E- 8 16-L-27 9-E- 6 16-Y-27 9-E- 8 28-K-13			
PUMP OPERATES CONTINUOUSLY (Does not turn off at normal turn off level, and continues to operate after all water is evacuated.)	6-I-31 23-V-25 11-J-23 24-U-26 12-W- 9 27-T-13 12-W-31 28-K-13 17-S-12 29-T-13 17-S-16 30-J-22 18-P-14 32-N-16 19-H-20 32-N-17 20-P-21 33-J-31 21-P-18 39-S-16 22-X-15			
PUMP CYCLES TOO FREQUENTLY (Cycles on and off more than once a minute)	17-S-12 25-P-24 23-R-25 28-K-13 23-V-25 34-M-19			
PUMP OPERATION VERY NOISY (Squeeling, hammering, grinding or excessive noise transmitted thru piping.)	11-J-23 35-P-28 13-J-31 35-P-29 15-P-11 36-F-28 30-J-22 37-O-30 31-J- 9			
PUMP TURN ON & TURN OFF POINTS HAVE CHANGED	27-K-13 44-P-39 29-T-13 36-F-28 40-Z-32			