

TROUBLE SHOOTING

CAUSES	REMEDY
PUMP WILL NOT START	
Faulty electrical circuit	<ul style="list-style-type: none"> • Make sure both circuit breaker and disconnect switch are in the "ON" position • If the circuit breaker trips when the pump tries to start check horsepower and voltage specified on the schematic and wiring diagram inside the starter door with the pump motor nameplate • Ensure that the pressure switch is working properly and is responding to changes in pressure
Stuffing box too tight or packing improperly installed	<ul style="list-style-type: none"> • Loosen gland swing bolts and remove stuffing box gland halves; replace packing
Impeller locked	<ul style="list-style-type: none"> • Remove obstruction
Excess bearing friction due to wear and dirt	<ul style="list-style-type: none"> • Remove bearings and clean, lubricate, or replace as necessary

PUMP IS NOISY OR VIBRATES	
Stuffing box too tight or packing improperly installed	<ul style="list-style-type: none"> • Loosen gland swing bolts and remove stuffing box gland halves; replace packing
Impeller obstructed	<ul style="list-style-type: none"> • Pressures fall off rapidly when an attempt is made to draw a large amount of water, remove obstruction from impeller
Excess bearing friction due to wear and dirt	<ul style="list-style-type: none"> • Remove bearings and clean, lubricate, or replace as necessary
Foundation not rigid	<ul style="list-style-type: none"> • Tighten foundation bolts or replace foundation if necessary

NO WATER DISCHARGE	
Air pocket or air leakage in suction line	<ul style="list-style-type: none"> • Uncover suction pipe and locate and re-arrange
Suction connection obstructed	<ul style="list-style-type: none"> • Examine suction intake, screen, and suction pipe and remove obstruction
Impeller obstructed	<ul style="list-style-type: none"> • Pressures fall off rapidly when an attempt is made to draw a large amount of water, remove obstruction from impeller
Pump not primed	<ul style="list-style-type: none"> • First warning is a change in pitch of the sound of the driver; shut down the pump

DISCHARGE PRESSURE TOO LOW	
Air leakage in suction line	<ul style="list-style-type: none"> • Uncover suction pipe and locate and re-arrange
Suction connection obstructed	<ul style="list-style-type: none"> • Examine suction intake, screen, and suction pipe and remove obstruction
Stuffing box too tight or packing improperly installed	<ul style="list-style-type: none"> • Loosen gland swing bolts and remove stuffing box gland halves; replace packing
Water seal or pipe to seal obstructed or air leak into pump through stuffing boxes	<ul style="list-style-type: none"> • Loosen gland swing bolt and remove stuffing box gland halves along with the water-seal ring and packing. • Clean the water passage to and in the water seal-ring. Replace water seal-ring, packing gland and packing in accordance with manufacturer's instructions
Impeller obstructed	<ul style="list-style-type: none"> • Pressures fall off rapidly when an attempt is made to draw a large amount of water, remove obstruction from impeller
Speed too low	<ul style="list-style-type: none"> • Check that rated motor speed corresponds to rated speed of pump, voltage is correct, and starting equipment is operating properly
Wrong direction of rotation	<ul style="list-style-type: none"> • With polyphase electric motor drive two wires must be reversed; where two sources of electrical current are available, the direction of rotation produced by each should be checked
Rated motor voltage different from line voltage i.e., 220 or 440 volt motor on 208 or 416 volt line	<ul style="list-style-type: none"> • Obtain motor of correct rated voltage or larger size motor

TROUBLESHOOTING

CAUSES	REMEDY
PUMP WILL NOT STOP	
* Faulty electrical circuit	<ul style="list-style-type: none"> • Is the pressure switch inside the starter properly piped up to the water system? (system side) • Is the stop valve in the piping to the pressure switch open? • Check that pressure switch is working properly by disconnecting one of the pressure switch leads to simulate open contact position • Ensure that pressure switch connection lines have been flushed to clear dirt in piping • Make sure that pressure switch set point is correct according to suction and working pressure • Change manual start handle to automatic
Run period timer defective	<ul style="list-style-type: none"> • Remove jumper if applicable
Pressure too low	<ul style="list-style-type: none"> • Verify pressure switch setting compared to system pressure

* Note: Refer to control panel manufactures installation instructions for other controller related problems.

WARRANTY

Armstrong Darling pumps are guaranteed against defective workmanship and material for a period of twelve months from date of shipment. Should the Armstrong Darling pump fail within the warranty period, our responsibility is limited to the repair or replacement of defective parts provided such are returned to our Plant, transportation prepaid. We do not accept liability

for damage or break-down from causes beyond our control, or the result of reasonable wear nor for repair made, or date attempted to be made without prior sanction, nor for any consequential damage resulting from the failure of a pump. The customer will assume all labor charges incurred in our making the replacement of adjustment of the part.

PRE START-UP / POST START-UP CHECK LIST

CENTRIFUGAL PUMPS

START-UP DATE:		ORDER No.:		SERIAL No.:	
PUMP SIZE	MIN. SUCT.PRESS.	FLOW	HEAD	VOLT _____ PHASE _____ Hz _____	
CHECK THE FOLLOWING AT PRESTART-UP			OK	REMARKS / CORRECTIVE ACTIONS	
1. STORAGE Verify equipment for improper storage or mishandling.			<input type="checkbox"/>		
2. INSTALLATION Compare electrical supply to one indicated on motor nameplate. Compare current rating of overload relays and fuses in controller against full load current value on motor nameplate.			<input type="checkbox"/> <input type="checkbox"/>		
3. ALIGNMENT Verify the alignment of driver to pump. (Horizontal Pumps Only) Verify suction and discharge for pipe strain. Do the flanges meet squarely?			<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	Indicate alignment reading _____	
4. ROTATION Manually turn coupling to assure free rotation of pump and motor.			<input type="checkbox"/>		
5. SYSTEM Insure system is free of foreign matter which could damage the pump. Responsible parties present when equipment is energized.			<input type="checkbox"/> <input type="checkbox"/>		
6. DIESEL DRIVEN FIRE PUMP ONLY Engine coolant filled to the proper level? Engine oil filled to proper level? Fuel line from the tank connected to engine (supply and return)? Fuel tank filled with proper diesel fuel? Silencer properly connected to engine and outside? Engine controller wiring connected to engine junction box? Is engine jacket water heater connected to AC power? Batteries charged (<i>MIN.24 HRS PRIOR TO START-UP</i>) and connected to engine?			<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>		
CHECK THE FOLLOWING AT POST START-UP			OK	REMARKS / CORRECTIVE ACTIONS	
6. VIBRATION Upon the occurrence of excessive vibration or noise, was equipment immediately shut down?			<input type="checkbox"/>		
7. FLOW Has flow been established? Take gauge and amperage readings (if motor driven) ? Packing been adjusted to a slight leakage? If pumps are equipped with mechanical seals, has the establishment of a clear source of water to lubricate the seals been made? Is the lubricating seal water pressure a constant 10 to 15 PSI above the discharge of the pump?			<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>		
8. READINGS Flow, pressure and amperage readings taken immediately after correction of all problems and restart.			<input type="checkbox"/>		

CUSTOMER'S REPRESENTATIVE(S) WITNESSING TESTS:

ARMSTRONG PUMP DIV., REPRESENTATIVE CONDUCTING TESTS:

WITNESS _____

WITNESS _____

DATE: _____

DATE: _____