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SUBMERSIBLE MOTOR STARTING

Our submersible pumping unit utilizes a capacitor run motor when the power supply is single phase. These motors do not have the same starting torque as a capacitor start or a polyphase motor. It is important that these motors start under very light load. Too heavy a load will prevent the motor from starting, and it will draw its locked rotor current until a fuse blows.

The up bypass circuit in the hydraulic valve is designed to allow the motor to start with the pump not subject to system hydraulic pressure. When the motor starts, the pump output goes back to the tank. The up bypass spool then starts to close gradually, sending the pump output through the valve and into the hydraulic system.

If you have a single phase submersible motor that does not start, first rule out electrical problems such as bad wiring or connections, incorrect power, defective contactor, defective capacitor, etc. Service bulletin documents SB-002 and SB-003 contain more information about electrical troubleshooting for motors. If the problem does not appear to be electrical, check to see if the up bypass is functioning properly.

A simple way to see if the up bypass is the problem is to back out the relief valve screw all the way. On our standard Blain valve this is adjustment S. If the motor now starts properly, the problem is in the up bypass. There are several things to try. First, check the adjustment. Sometimes just changing the adjustment will correct the problem. Second, try running the pump with the down solenoid energized. Sometimes this will dislodge debris that is causing the problem. Third, remove the up bypass spool and check for signs of binding, nicks or burrs, defective o-rings, etc. If none of these remedies solve the problem, it is usually best to just change the valve.

If you couldn't get the motor to start with the relief valve adjustment, disconnect the high pressure hose from the valve inlet, and try to start the motor. Be sure to secure the free end of the hose so any oil is discharged into the tank. If the motor starts now, replace the valve. If the motor doesn't start, and you have ruled out an electrical problem, there is mechanical problem with either the bearings or the pump rotor elements. You will have to disassemble the pump and motor to investigate further.

If you have any questions, please contact us.