

What's the difference between Capacitor Start, Capacitor Run (CSCR) and Capacitor Start, Induction Run (CSIR)?

CSCR and CSIR controls both start a motor the same way – with a “start capacitor” that shifts the motor’s electrical phase slightly, creating starting torque. As the motor approaches running speed (in about 1/3 second), a relay in the control opens, removing the start capacitor from the circuit. Here’s where the controls differ.

The CSIR control box deenergizes the motor’s start windings, which then do no more work until the next time the motor starts. The CSCR Submersible Motor Control divides the capacitance in the control between the start capacitor and a “run capacitor”, wired in series with the start capacitor. The relay removes the start capacitor from the circuit, but not the run capacitor, which continues to energize the motor’s start windings.

This works because:

- The run capacitor is designed to run indefinitely, while the start capacitor is designed for a finite number of starts (like a light bulb – it’s considered replaceable) and
- Less capacitance is needed at running speed, so the run capacitor can take over the load.

The run capacitor in the CSCR Control increases the motor’s efficiency, increases pump output, reduces current draw, smooths out operation, and reduces noise and vibration. See Technical Bulletin P8091TB for a performance comparison.

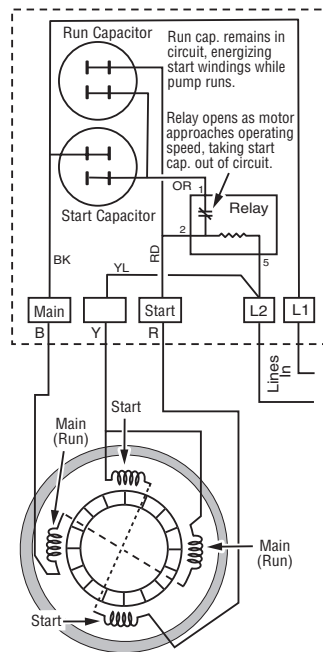


Figure 1: CSCR Submersible Motor Control schematic wiring diagram.

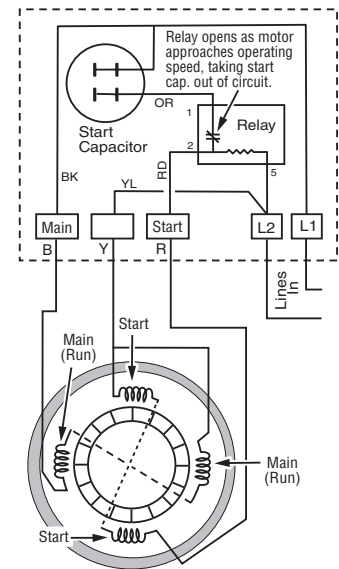


Figure 2: CSIR control box schematic wiring diagram.