

# TECH BULLETIN 131



## 120 Volt Rectified DC Proper Motor Wiring for 1XP Series

There are multiple causes of DC motor failures, such as low voltage from the wall, pump discharge pressure set too high, excessive heat in extractor case, or incorrect wiring. Since motors can run even when wired “in reverse,” many times the wiring is overlooked. A good indication of improper wiring occurs when there is high motor case temperature or premature motor failure and no or minimal wear on brushes, seals and valves.

The motors will run if wiring is reversed (red to negative and black to positive), but will cause premature motor failure. When the wiring is reversed, here are possible outcomes:

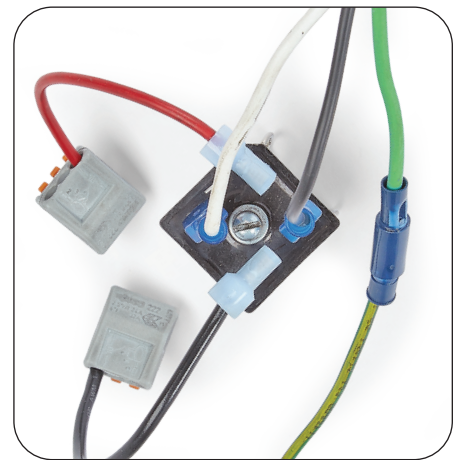
- Reversing the wiring reverses the polarity, changing the direction in which the motor spins. Fan cooled motors are designed to spin in one direction. When motor spins in the opposite direction, the fan is not moving air through the motor.
- Motors will run and full pump performance is achievable, but amp draw can increase up to 15% (around 0.5 amps) when polarity is reversed.
- The combination of the increased amps and lack of air moving through motor causes excessive heat, significantly shortening motor life.

1XP product, 8136 motors (120 volt, rectified DC) have three wires:

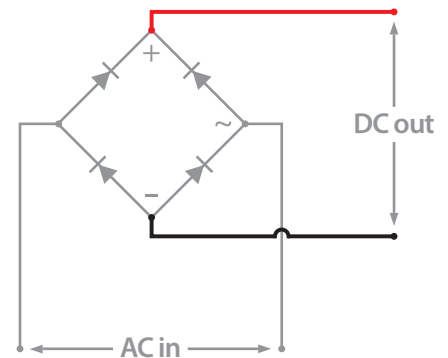
- Red – connects to positive side (+) of rectifier
- Black – connects to negative side (-) of rectifier
- Green – connects to ground

The “**block**” type rectifiers are commonly used in portable extractors. See sample below.

### Block Rectifier



### Rectifier wiring diagram



Red wire from 8136 motor connects to (+) terminal. Black wire from 8136 motor connects to opposite corner.

For AC wiring, black or white can connect to terminal marked for AC (~), and then other wire connects to opposite corner.

### Cat Pumps

Technical Services Department

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