

TESTING SUBMERSIBLE PUMP MOTORS

Presented by:

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The first thing you need to check when you are having problems with your submersible water well pump, is the motor condition.

We will need to use an ohm meter to test resistance in the windings. The first test we will do is whether the motor is grounded.

Set your ohm meter to Rx100k or the highest reading available to you. Place the leads together and zero the meter reading. The wires from your pump control box going to the well, should be disconnected. You will have a Red, Yellow, Black, and a Green ground wire.

Connect one of your meter leads to the green ground wire. Using the other meter lead, connect to each of the other 3 wires, one at a time, looking for any reading. If you get any reading, you have a ground in the windings of the motor. If you do this test and no reading appears, you do not have a ground condition to correct.

Testing the windings of your motor will tell us if the motor has a problem in the main or start windings. Set your meter to Rx1 and zero out the reading on the meter. For this test, we will assume you have a 3/4 hp 230V single phase 3 wire with ground submersible motor in the well.

According to the manual the MAIN winding should have a reading of between 3.0 and 3.6 ohms between the YELLOW and BLACK wires, which are the main winding readings.

The START windings are the reading between the YELLOW and RED wires. The range should be between 10.7 and 13.1 ohms.

Check below for the Single Phase Motor Specs details about other motors.

Single Phase Submersible Pump Motor Specifications

HP	Voltage	2 or 3 Wire Plus Ground	Main Winding Yellow & Black Resistance in Ohms	Start Winding Yellow & Red Resistance in Ohms	F&W Part #
4" 2 Wire + Ground Submersible Pump Motors (No Control Box Needed since controls are in the motor)					
1/2 HP	115V	2 Wire	1.0 - 1.3 Ohms		137412
1/2 HP	230V	2 Wire	4.2 - 5.2 Ohms		137414
3/4 HP	230V	2 Wire	3.0 - 3.6 Ohms		137416
1 HP	230V	2 Wire	2.2 - 2.7 Ohms		137418
4" 3 Wire + Ground Submersible Pump Motors (Must Use Control Box to run these 3 wire motors)					
1/2 HP	115V	3 Wire	1.0 - 1.3 Ohms	4.1 - 5.1 Ohms	137426
1/2 HP	230V	3 Wire	4.2 - 5.2 Ohms	16.7 - 20.5 Ohms	137428
3/4 HP	230V	3 Wire	3.0 - 3.6 Ohms	10.7 - 13.1 Ohms	137430
1 HP	230V	3 Wire	2.2 - 2.7 Ohms	9.9 - 12.1 Ohms	137432
1-1/2 HP	230V	3 Wire	1.7 - 2.2 Ohms	8.0 - 9.7 Ohms	137434
2 HP	230V	3 Wire	1.8 - 2.3 Ohms	5.8 - 7.2 Ohms	137435
3 HP	230V	3 Wire	1.0 - 1.5 Ohms	4.0 - 4.9 Ohms	139422
5 HP	230V	3 Wire	.68 - 1.0 Ohms	1.8 - 2.2 Ohms	137456
6" 3 Wire + Ground Single Phase Submersible Pump Motors					
5 HP	230V	3 Wire	.55 - .68 Ohms	1.3 - 1.6 Ohms	126551
7-1/2 HP	230V	3 Wire	.36 - .50 Ohms	.88 - 1.1 Ohms	126553
10 HP	230V	3 Wire	.27 - .33 Ohms	.80 - .99 Ohms	134134
15 HP	230V	3 Wire	.17 - .22 Ohms	.68 - .93 Ohms	136361