



# CENTRUFUGAL SWITCH REPLACEMENT/ADJUSTMENT (Motor Fan-End Locations) INSTRUCTIONS

For questions or help with this product contact Tech Support at (570) 546-9663 or techsupport@grizzly.com

## Application

These instructions cover typical removal, replacement, and adjustment of centrifugal switch assemblies located on the fan end of most Grizzly single-phase or split-phase induction motors under five horsepower. For switches located at the pulley end of the motor, these instructions do not apply.

The typical centrifugal switch assembly consists of two main parts.

- A contact plate equipped with points that is mounted to the fixed motor housing.
- A fly-weight and spring assembly called the actuator is mounted to the motor shaft.

## Function

When the motor is **OFF** and at rest, the points on the contact plate are closed. When the motor is started, current is sent to the start capacitor, through the closed contact plate points, and then to the motor start windings to get the motor up to full speed as fast as possible.

When the speed of the motor shaft gets close to the rated motor speed, centrifugal force causes the flyweights to override actuator spring tension, swing out, and open the contact points. When the points are open, current is cut to the start windings and the start capacitor, allowing them to cool. At this point, the run windings take over and operate the motor. (**Note:** Often a run capacitor is used in the run circuit to increase motor efficiency.)

When the motor is turned **OFF**, centrifugal force diminishes, and the springs draw the flyweights back in (sometimes with a click sound), returning the contact points to the closed position.

## CAUTION

For your own safety and protection of property, consult a qualified electrician if you are unsure about wiring practices or electrical codes in your area.

## Before You Begin

- Read all safety instructions, take the required precautions, and make sure that you are qualified to do the work. If not, consult a qualified electrician.
- Disconnect the machine from power!
- Make sure the start capacitor is functional and is not the reason why the motor is slow to start, or not starting at all.
- Make sure that the power supply circuit has the correct voltage and the machine plug is correctly wired.
- Make sure that all wires including grounds have continuity, and their connections are tight.
- Make sure the motor windings are not shorted or open. Make sure the motor bearings are in good condition, and the motor shaft end-play is minimal.

## Items Needed

- Phillips Screwdriver #2 ..... 1
- Standard Screwdriver #2..... 1
- Combination Wrench Set ..... 1
- Sandpaper 100-120 Grit ..... As Needed
- Light-Duty Thread Locking Fluid ..... 1-Drop

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## **WARNING**

**SHOCK HAZARD.** It is extremely dangerous to perform any wiring or electrical procedure while equipment is connected to the power supply. Touching electrified parts will result in severe burns, electrocution, or death. Always disconnect all equipment from the power supply before servicing electrical components!

**QUALIFIED ELECTRICIAN.** To reduce the risk of burns, electrocution, fire, or equipment damage, only an electrician or qualified service personnel should perform wiring tasks or electrical service procedures.

**MODIFICATIONS.** Unapproved modifications may lead to unpredictable results, including serious injury, electrocution, or fire. This includes installation of unapproved aftermarket parts.

**CIRCUIT REQUIREMENTS.** Unless otherwise approved by a qualified electrician, circuit requirements at the beginning of your Grizzly machine Owner's Manual **MUST** be followed when connecting the machine or equipment to a power supply.

**WIRE CONNECTIONS.** All connections must be tight enough to prevent wires becoming loose when exposed to vibration. Double-check all wires disconnected or connected during any wiring procedure to ensure tight connections.

**WIRE/COMPONENT DAMAGE.** Damaged wires or components increase the risk of burns, electrocution, fire, or machine damage. Always immediately replace damaged components before resuming operations.

**CAPACITORS/INVERTERS.** Some capacitors and power inverters store an electrical charge for up to 10 minutes after being disconnected from the power source. To reduce the risk of being shocked, wait at least this long before working on capacitors.

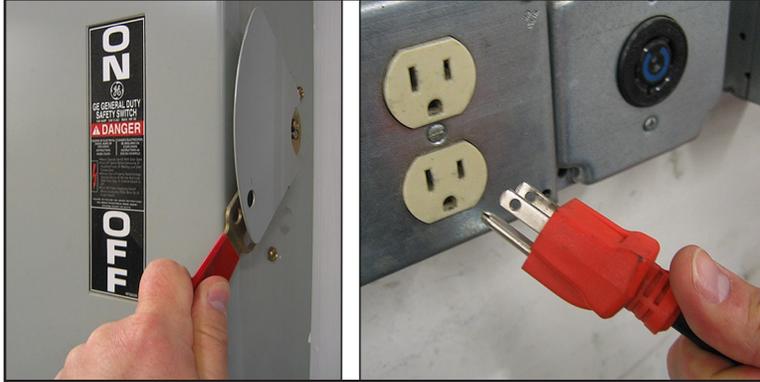
**EXPERIENCING DIFFICULTIES.** If you are experiencing difficulties understanding the information included in this section, contact our Technical Support at (570) 546-9663.



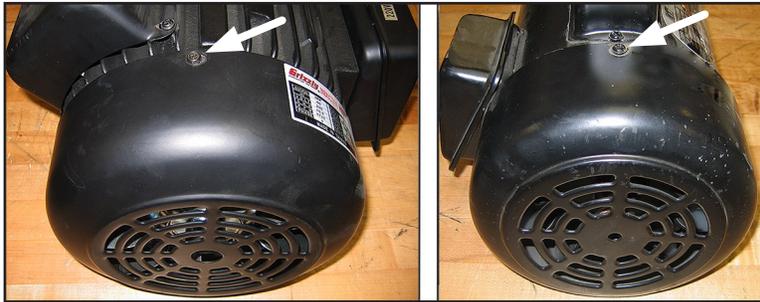
# Centrifugal Switch Replacement and Adjustment



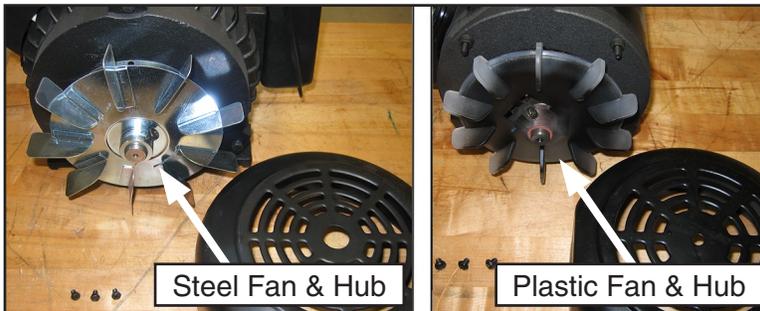
1. DISCONNECT THE MACHINE AND MOTOR FROM POWER!



2. Remove the fan cover screws.

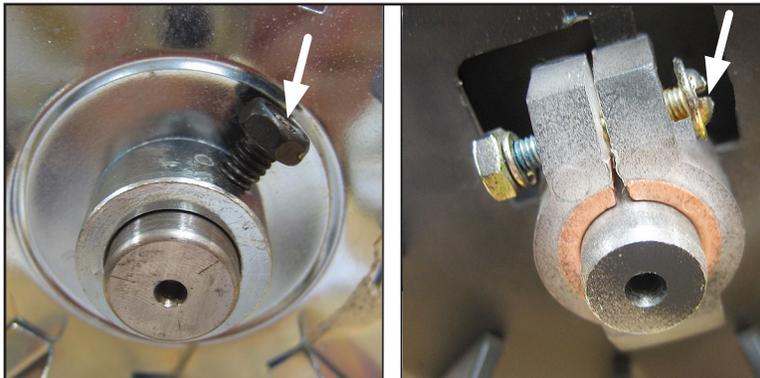


3. Remove the fan cover to gain access to the fan hub.



**Tip:** Never pry or hammer on a fan or motor shaft. Doing so will bend a steel fan, crack plastic ones, or mushroom the end of a motor shaft, requiring motor or fan replacement.

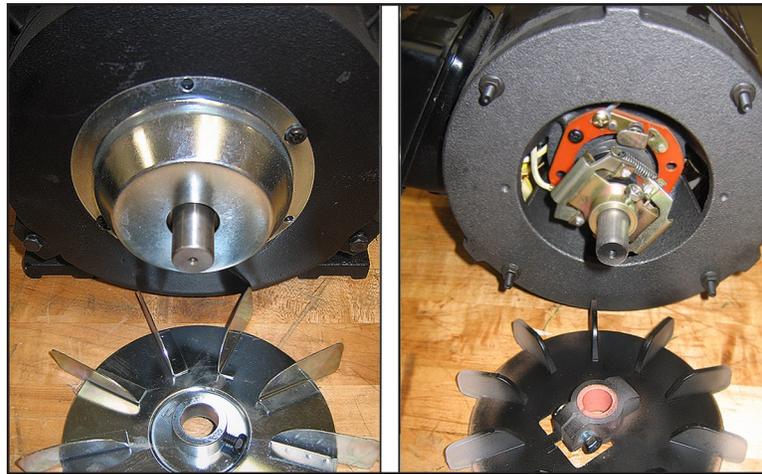
4. Loosen the fan hub fastener and slide the fan off.



**Tip:** For removal of this fan model, use a screwdriver to expand the hub slightly.

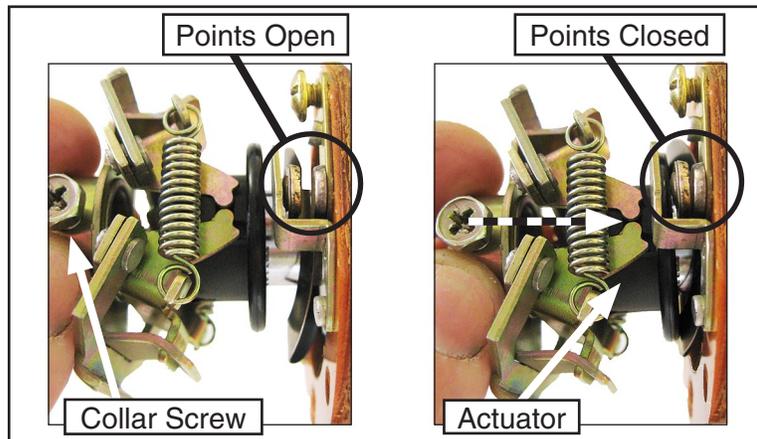


5. If equipped, remove the dust cover screws, and the dust cover.



6. To adjust, loosen the collar screw, slide the actuator against the contact plate until the points just close. Then retighten the screw to hold the adjustment.

To replace, go to **Step 7.**

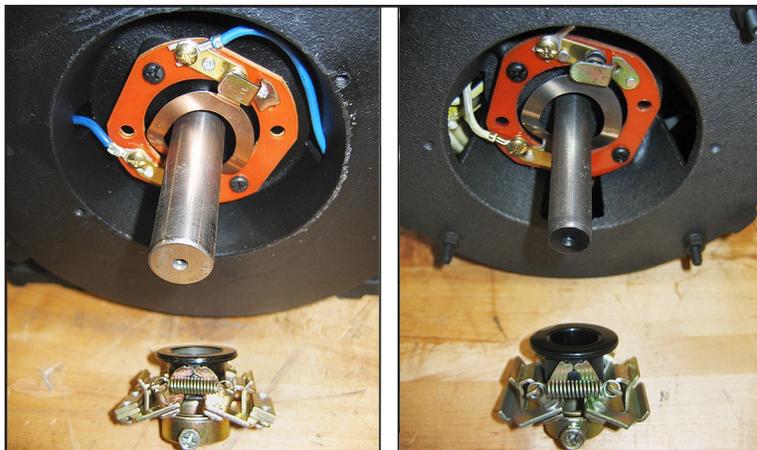


**Tip:** Clean carbon from the points with a piece of folded sandpaper.



7. If only replacing the contact plate, mark the centrifugal switch location on the shaft.

8. Mark all wire positions, and loosen the collar screw and remove the centrifugal switch.

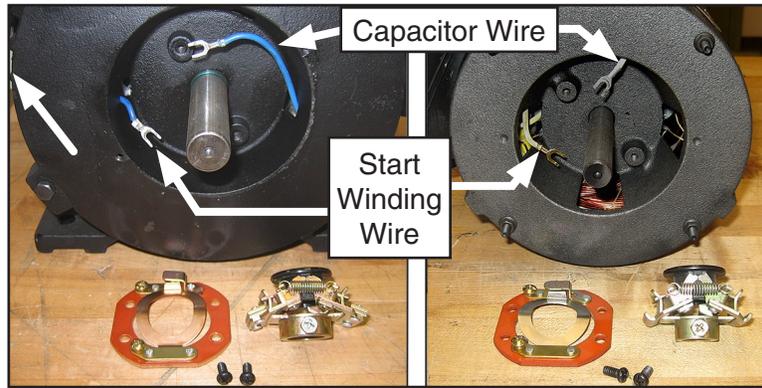


**Note:** The switch contact points are positioned at one o'clock on both styles of motors.

**Note:** Typically only two mounting screws are used to fasten the switch.



**10.** Carefully inspect all wires where they enter the motor for chaffing, overheating, and loose terminals (repair as required).



**Note:** Wires can wear on casting edges. Overloaded wires may have wrinkled or melted insulation. Overloaded motor windings often have a strong smell and show bubbled varnish.

**11.** Vacuum out the motor so all built-up dust and contaminants are removed.

**12.** Install the new switch and wires at the same locations.

**13.** Install the actuator and adjust the switch as described in **Step 6**.

**14.** Reassemble all components in reverse order of removal. Make sure that all wires are routed away from moving parts and sharp edges, and that you use thread locking fluid on the fan retaining screw.

**15.** Test run the motor.



# Adjusting Internal Motor Points

*Machine Clarification, FAQ's, Diagrams, Charts, Notices, and Other Recent Updates*

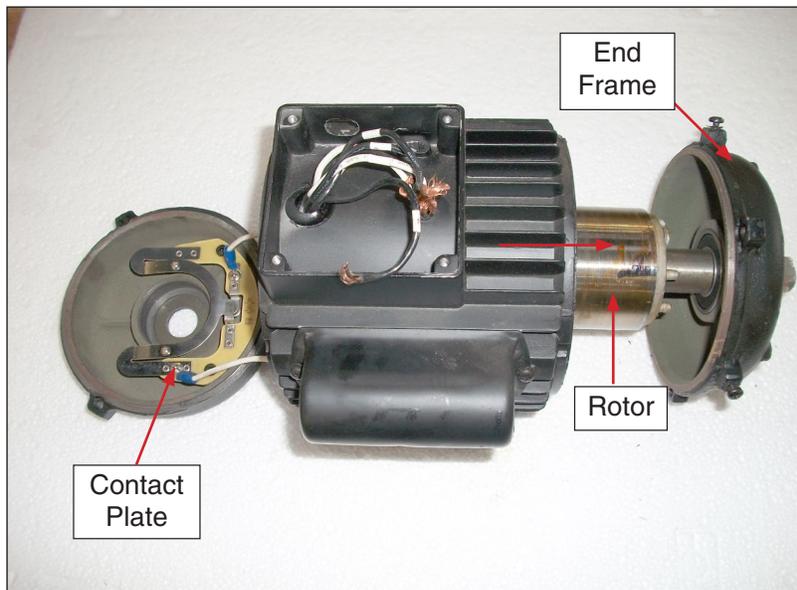
## Step 1

Remove the end-bell bolts on both sides of the motor. Tap the drive shaft (pulley side) with a rubber mallet, and remove the shaft and opposite end-bell. Once those two parts are removed, the remaining end-bell containing the contact points can be pried off.



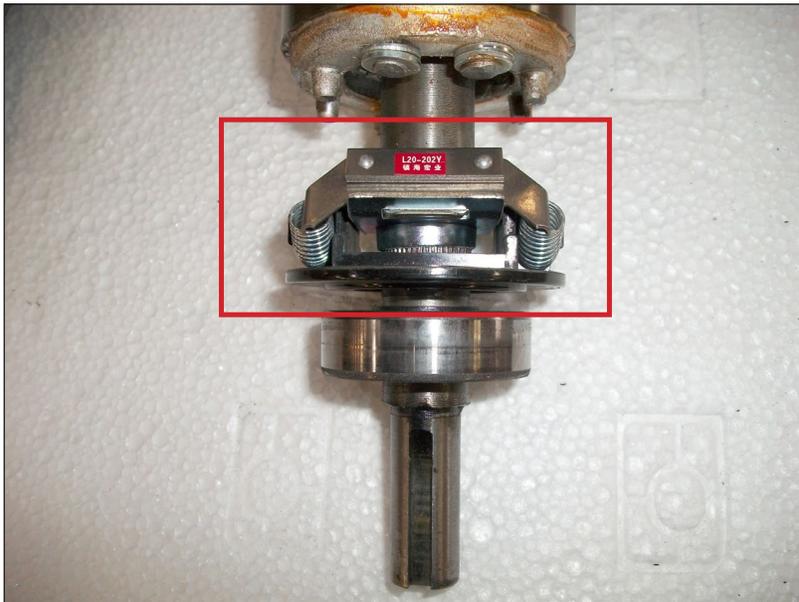
## Step 2

Below is how the motor should look after tapping the shaft out and prying the remaining end-bell off.



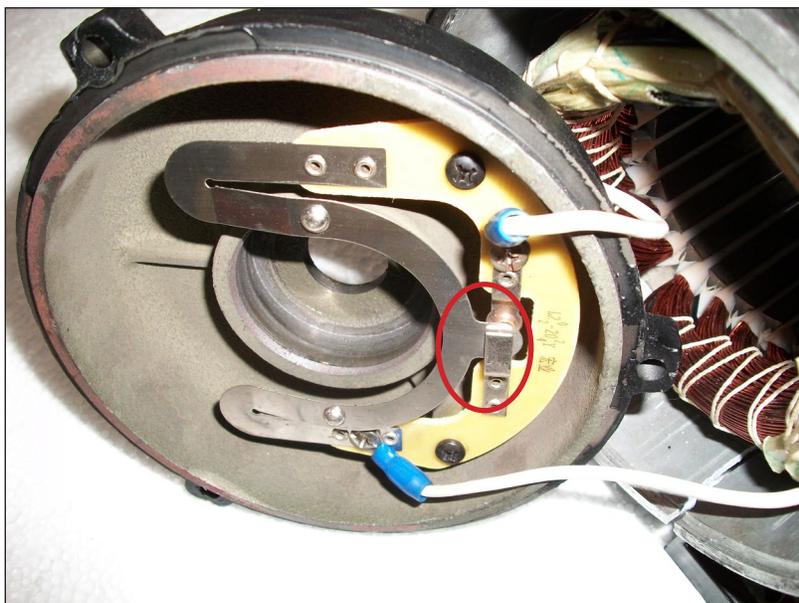
### Step 3

The centrifugal switch shown below is not adjustable on motors with internal contact points. The centrifugal switch is permanently pressed on the shaft and cannot be moved without damaging it. The only way to adjust separation of the contact points is to shim the entire contact plate itself.



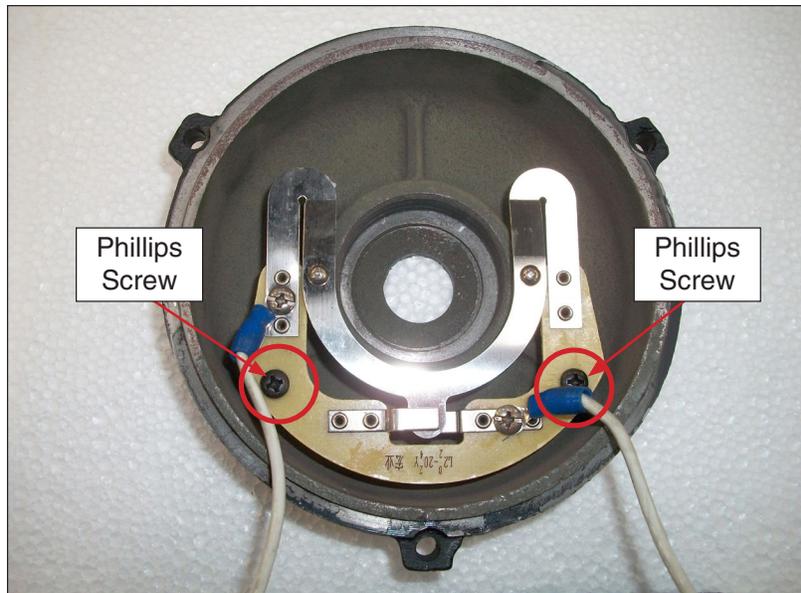
### Step 4

Shown below are the actual contact points. These points are held closed by the centrifugal switch shown in the photo above. When these points are closed, the start winding and start capacitor are in circuit for the initial start of the motor. Once the motor reaches a certain speed, the centrifugal switch will open and allow these points to separate and stop the flow of electricity to the start capacitor and start windings. If these contact points are open when the motor is being started, it will usually just buzz or hum.



## Step 5

Since the centrifugal switch is not adjustable in this type of motor, as shown in the previous photo, the contact plate will need to be moved outward by shimming underneath it with flat washers. To do this, start by removing the two Phillips head screws shown below. Remove the contact plate, and place one flat washer over each hole where the Phillips screws are threaded into.



## Step 6

Re-attach the contact plate to the motor end-bell, making sure that the screw is going through both the contact plate and the washer that is placed underneath it. Then, re-assemble the motor and test it to make sure that it starts properly. The fan and fan cover do not need to be installed for testing.

