# Apex 42 Blower Bearing Replacement

March 17, 2021

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# Fan Specifications


Fig 1. Motor Specifications.

Manufacturer: Fasco
Model: U73B1
Voltage: 115V @ 60Hz
Current: 1.8A
RPM: 1550 RPM
Calculated Max RPM: 7,200 for a Single Phase AC Motor

# Cause of Failure

Fig 2. Outer Bearing.

The outer bearing, shown in figure 2, is most likely to fail first. This bearing is located on the exterior of the blower assembly and fails due to an increased amount of ash debris flowing over it.

# Replacement Bearings

## Original Bearings

The original bearings, as shown in figure 2, were double-sealed steel bearings, meaning they are sealed on both sides. Upon removal of the bearings: the bearings were lacking lubricant, the lubricant that was remaining was black from ash, and the exterior of the bearing was pitted with corrosion. The lifespan of the original bearings was 2 years before an audible sound was heard. Over this time period, the bearings were in constant operation from November through March. The whole unit was replaced with a new motor at the end of the third season of usage.

The model number for the original bearings: **r1-1438s**.

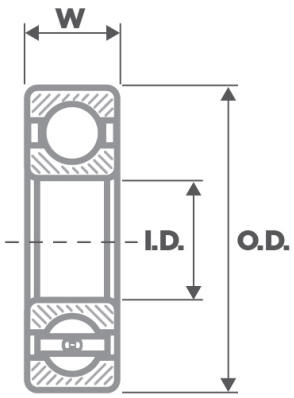


Fig 3. Bearing Dimension Diagram.

The inner dimension, outer dimension, and width for the R1-1438s bearings are shown in table 1.

Table 1 - Bearing Dimensions in Metric and Imperial Units.

| Dimension Abrev. | Metric Units | Imperial Units |
|---|---|---|
| I.D. | 9.5 mm | ⅜” or 0.375” |
| O.D. | 22.22 mm | ⅞” or 0.875” |
| W. | 7.13 mm | 9/32” or 0.2812” |

## New Bearings

Bought From: Grainger.com
Price: $6.25 per bearing
Purchase Date: March 2021
Quantity Purchased: 6 bearings

Product Specs:

- Double Sealed
- 0.375” x 0.875” x 0.2812”
- Max RPM: 38,000
- Temp Range: -40 to 350 degrees Fahrenheit
- Bearing Material: Stainless Steel
- Cage Material: Stainless Steel

Total Purchase Price with Tax & Shipping: $51.52

# Changing The Bearings

The following steps will guide you through changing the bearing on the fireplace blower.

## Tools Required


Fig 4. Tools Required.

## Step 1 - Loosening the Fan

Fig 5. Loosen Screw Holding the Fan to the Blower.

Loosening of the screw will require a hex screwdriver. Do not totally remove the screw. The screw is located:

1. inside the fan,
2. on the flat side of the motor's shaft (shown below).

## Step 2 - Flange Removal


Fig 6. Remove the 4 Screws Holding on the Outside Flange.

## Step 3 -  Blower Fan Removal

Once the flange is removed, slide out the blower fan.

## Step 4 - Removing the Motor


Fig 7. Remove the Motor From the Motor Housing

There are **3 nuts** holding the motor to the blower housing and **1 screw** connecting the motor's green neutral wire to the housing. **Remove all 4** to separate the motor from the housing.

## Step 5 - Removing the Cover's Clips


Fig 8. Remove 4 Metal Clips.

Use a screwdriver to **remove the 4 clips** holding on the motor's top cover. Upon reassembly, the spots for these clips are obvious because there is paint missing where the clips are located. Also, there are notches in the side of the housing where the clips attach the side to the top.

## Step 6 - Removing the Cover

To remove the top of the motor, use two screwdrivers to carefully and evenly slide the metal cover up and off the motor's shaft. Two metal washers may fall out when you remove the cover. These two washers are used as a spring setup to keep the top bearing in place, as shown in Figures 9 and 10.

Fig 9. Motor Cover and Bearing Springs Removed.

Fig 10. Motor Cover Removed.

## Step 7 - Removing the Armature

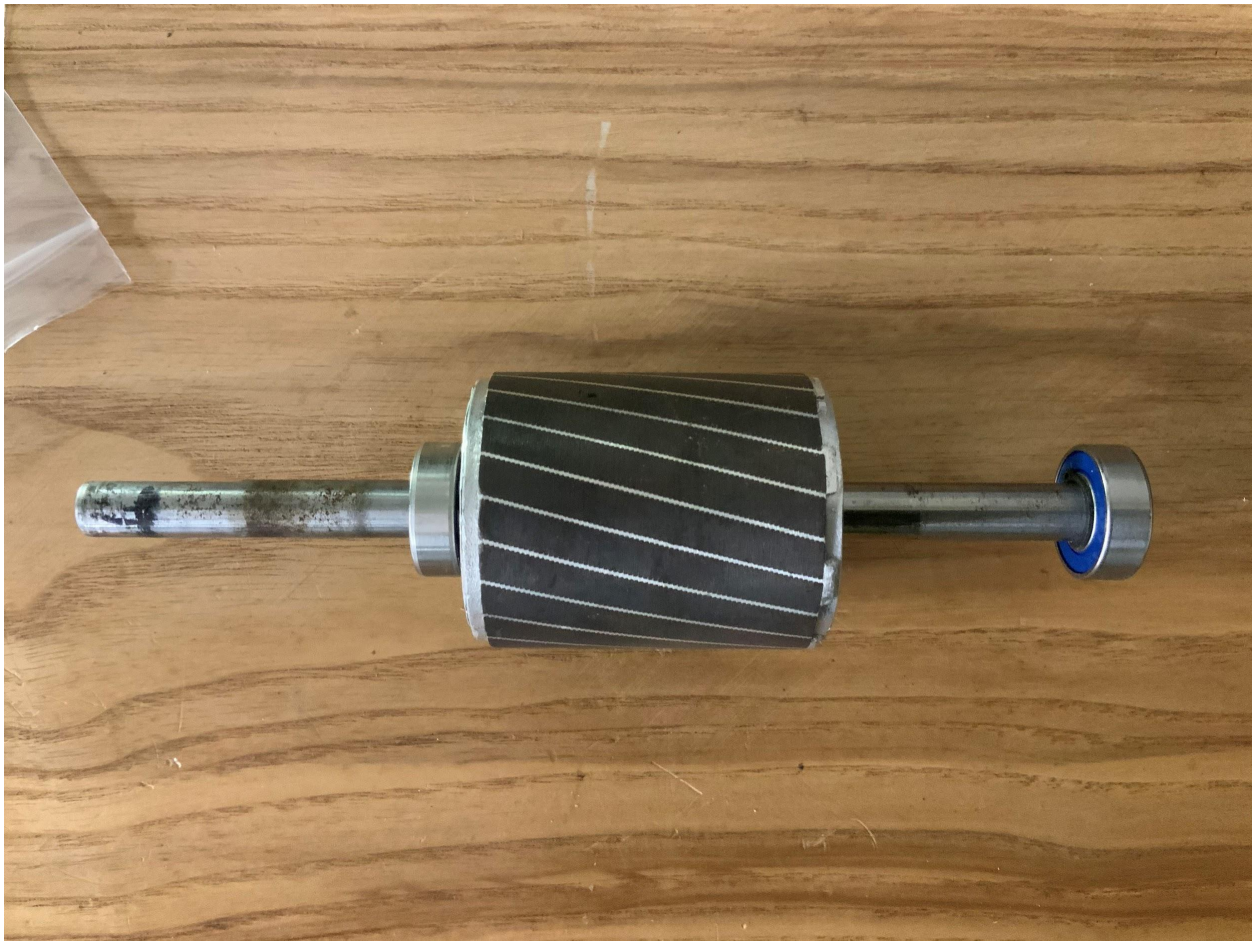

Fig 11. Motor’s Armature.

If the motor’s armature, as shown in figure 11, did not come out when removing the cover in step 6, then either:

1. remove it by pulling on the shaft, or
2. by using a hammer and a punch to tap on the end of the shaft to push it out from the motor’s circular housing.

You may want to mark on the shaft with a Sharpie where the bearings are located on the shaft. This will aid in knowing where the ‘C’ Clips go when you reassemble the motor.

## Step 8 - Remove Armature ‘C’ Clips

Place the shaft in the vice and use the two dental-like cleaning picks to remove the ‘C’ Clips. Put the pointy tips of the picks in each eyelet on the ‘C’ Clips to maneuver them off the shaft.

## Step 9 - Bearing Removal

Fig 12. Bearing Removal.

Removing both bearings will involve using a 3/8 “ wrench in different configurations with the vice depending on which bearing is being removed. The ⅜” wrench is used to evenly place pressure around the face of the bearing to unseat it from the armature’s shaft.

To remove the first bearing shown above, place the armature in the vice and lightly clamp it down. Use a hammer and a flat head punch to tap on the shaft to separate the bearing from the shaft. Once separated, remove the armature from the vice.

To remove the second bearing, place the 3/8 “ wrench vertically in the vice with only ¼” of the wrench’s open side above the vice. Perform a similar operation as before, with the hammer and flathead punch, to separate the bearing from the shaft.

## Step 10 - Reassembly

Perform the previous steps in reverse to put the new bearings on and to reassemble the motor.

# Motor Testing

Fig 13. Motor Testing.

Using two wires pulled from a tree tube tie conduit, you can test the motor. Be careful, this is AC voltage!

# Outer Bearing Protection

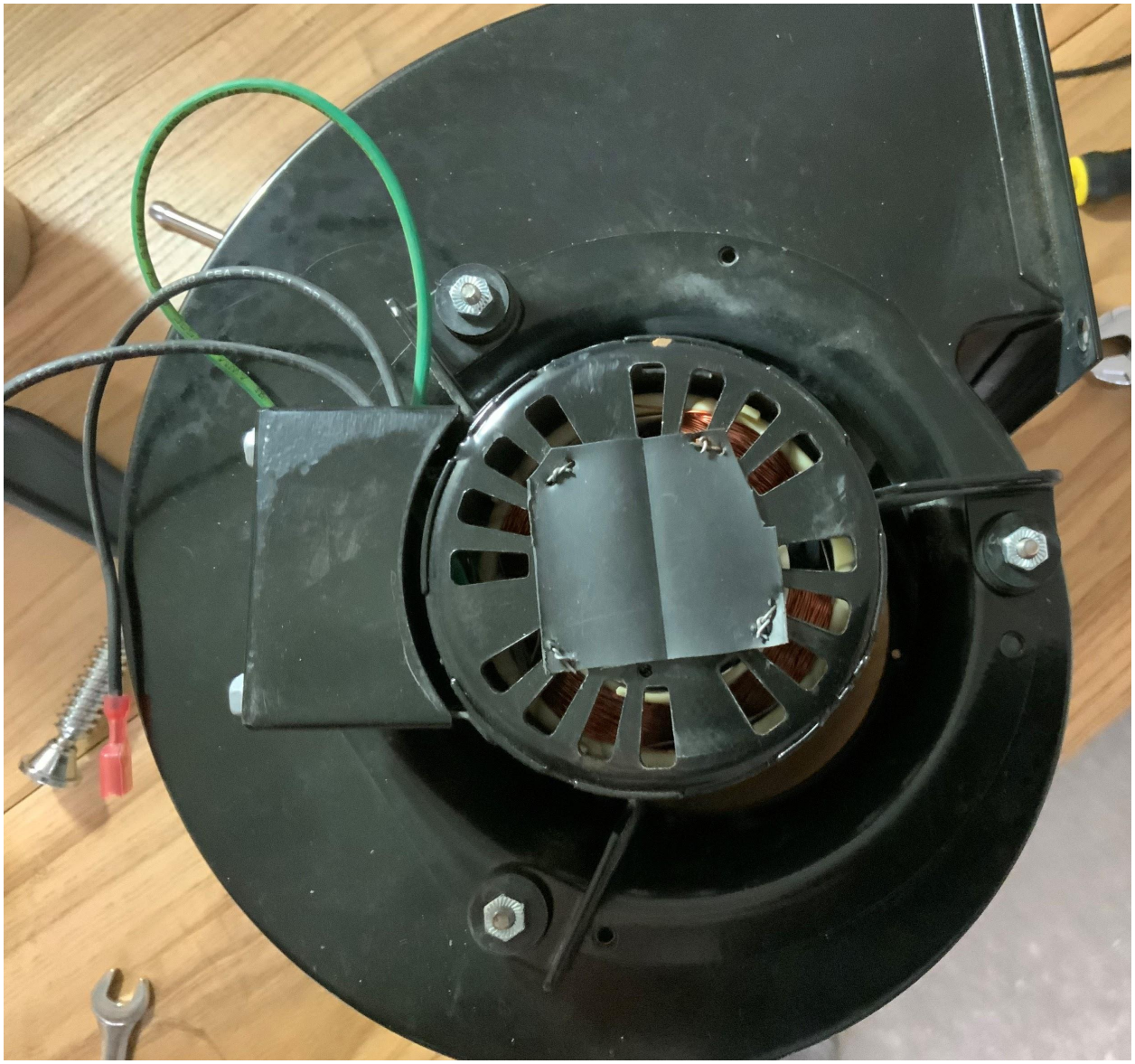

Fig 14. Outer Bearing Protection.

The goal of this modification is to decrease the amount of dust and debris that flows over this bearing. Thus, to protect the outer bearing, I used a piece of electrical wire heat-shrink-rubber-tubing that I cut to make a rubber pad. Then I tied the pad down to the rear motor cover with some fine gauge wire.

I used this because it shouldn't make a rattling noise and it's non-conductive to the armature. For example, if you used a piece of aluminum foil and the foil was to touch the motor's shaft, you would short out the armature with the neutral power line.