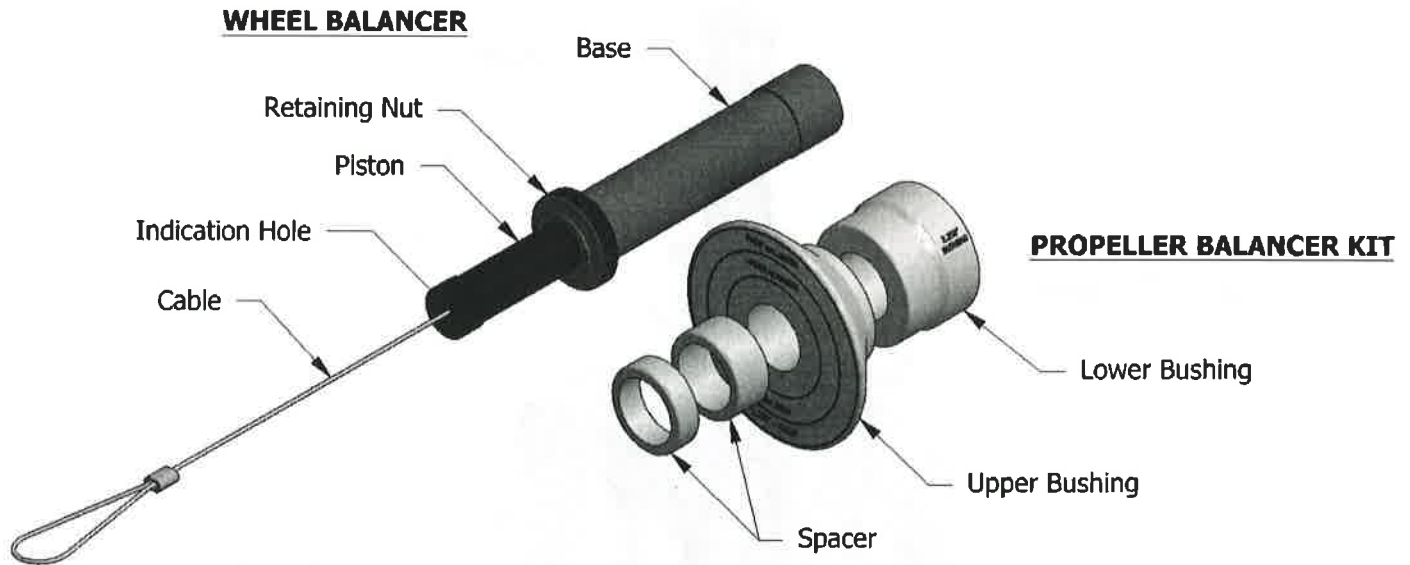


# McFarlane Aviation Propeller Balancer Instructions

## Introduction

The McFarlane Propeller Balancer Kit is an add-on for the McFarlane Wheel Balancer. It is comprised of a series of bushings, spacers, and cones that enable the precision wheel balancer to be used to balance a number of fixed pitch propellers that use standard SAE propeller flange designs. The components of both the Wheel Balancer and the Propeller Balancer Kit are shown below in **Figure 1**. **Figure 2** on the following page shows how the parts are installed during use. Always reference the propeller manufacturer's instructions for balance standards and out of balance correction methods.



**Figure 1 - Tool Components**

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Engineering Manager: <i>[Signature]</i> Date: 12/18/15	Manufacturing Manager: <i>[Signature]</i> Date: 12-21-15

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696 East 1700 Road  
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Drawing: **PROPELLER BALANCER INSTRUCTIONS**

Size: **A**    Scale: **NA**    Drawn: **SD**    Sheet: **1** of **5**

Drawing Number: **6933**                      **REVISION**

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~ 12/15/2015  
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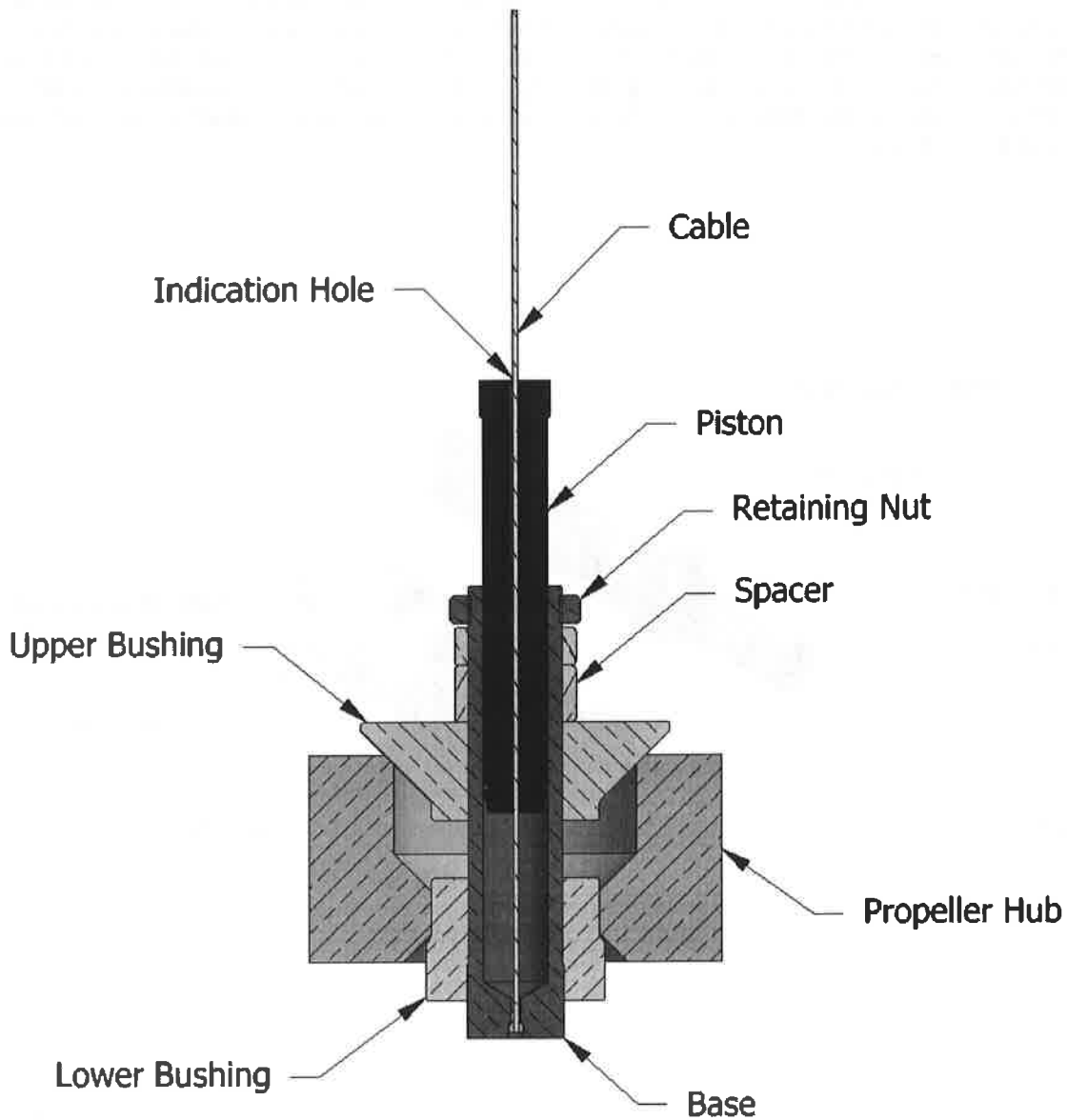



Figure 2 – Propeller Hub and Tool Assembly

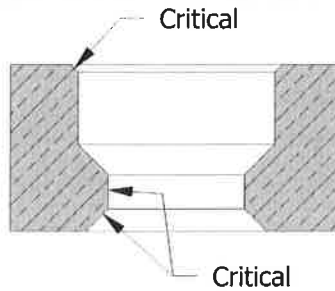
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# MCFARLANE AVIATION SUSPENSION TYPE STATIC PROPELLER BALANCER INSTRUCTIONS

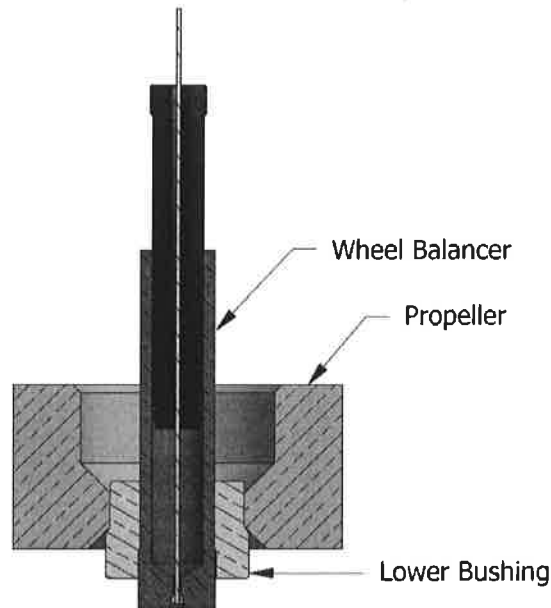
## Mounting Instructions

1. Prior to balancing the propeller, ensure that all of the components are clean and free of debris. Inspect the balancer to ensure there is no debris on any of the bushings, spacers, or the wheel balancer. This also includes any raised material from nicks or damage. All raised material should be removed prior to balancing. This is especially critical for the surfaces detailed in **Figure 3** below. These surfaces will be used to locate the balancer and must be clean to ensure there is no bias in the balancing process.



**Figure 3 - Propeller Mounting Diameter**

2. Remove the **Retaining Nut** and install the **Lower Bushing** onto the wheel balancer **Base**. Feed the assembly through the propeller as shown in **Figure 4** below. The balancer system is designed to only work in this orientation.




**Figure 4 - Propeller Balancer Installation Step #1**

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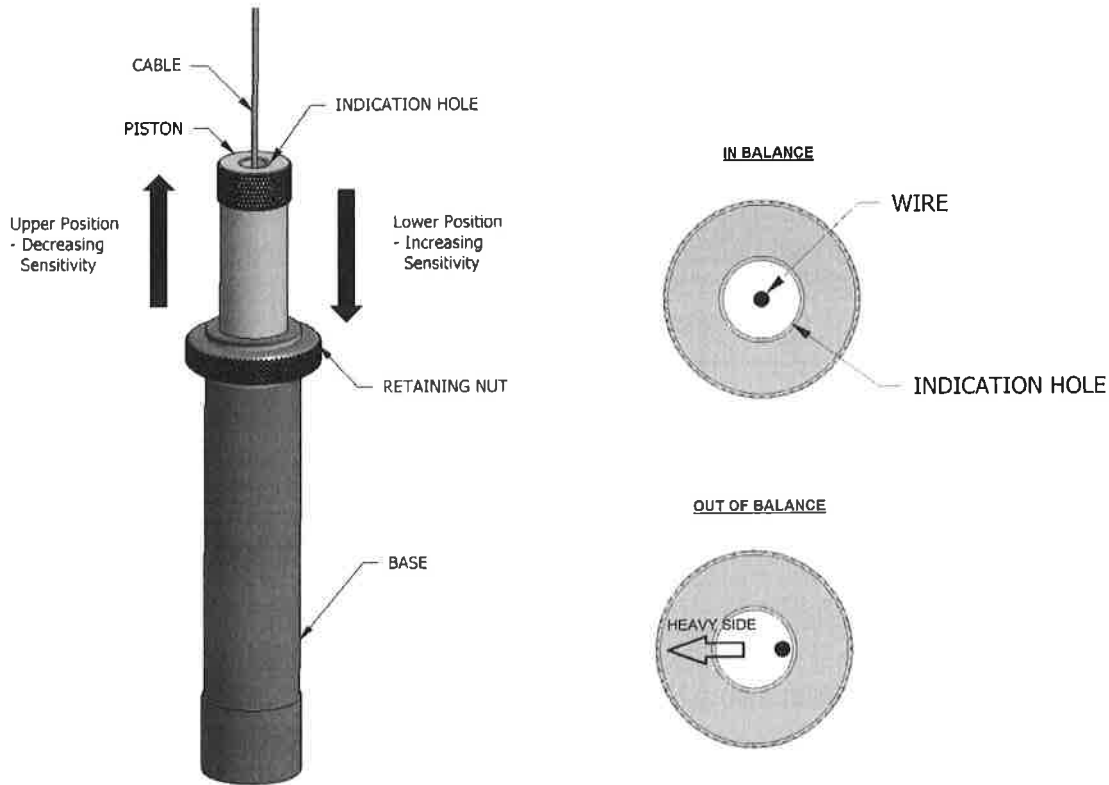
3. Due to the weight of the propeller, place the assembly on a table or clean area of the floor with the bottom of the balancer downward so that you can load the **Upper Bushing, Spacers, and Retaining Nut** without risking damage to the propeller or balancer.
4. Load the **Upper Bushing** as shown in *Figure 2*. There are two different **Upper Bushings** that come with the kit. Select the **Upper Bushing** that best fits your propeller. Select the appropriate **Spacer, or Spacers**, such that the **Retaining Nut** can be tightened to apply light pressure on the **Upper Bushing**.
5. After the assembly is complete, hang the cable from any fixed point so that the propeller assembly is suspended and free of any obstructions.

**NOTE: THE FIXED POINT MUST BE STRONG ENOUGH TO SUPPORT THE WEIGHT OF THE ASSEMBLY. FAILURE TO DO SO COULD RESULT IN PERSONAL INJURY OR DAMAGE TO THE PROPELLER.**

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## Balancing Instructions

- A. Raise the piston to the upper most position. Wait for the propeller to come to rest and loosely add weights as needed to balance the propeller. Balance is achieved when **Cable** is centered in the **Indication Hole**.



**Figure 5 - Balancer Sensitivity Diagram**

- B. Lower the piston for greater sensitivity; it is advised that this be done in  $\frac{1}{2}$ " increments, as marked on the **Piston**. It is important to wait for the propeller to come to rest before adjusting the balancing weights. Adjust weight to achieve balance.
- C. Repeat Step B until desired balance precision is achieved.

**Note:** The lower the **Piston**, the more sensitive the tool will become. There is a point at which the propeller will become unstable and will not be able to be balanced. This is caused because the bottom of the **Piston** has moved below the propeller's center of gravity. If this has occurred, the wire will have a tendency to stay wherever it is, regardless of the actual balance. If this occurs, raise the piston to the last stable location and verify balance.

- D. Mark the location of the weights prior to removal from the fixture to ensure accuracy. Before removing the propeller from the balancer, loosen the **Retaining Nut** and rotate the balancer and bushing assembly relative to the propeller, and verify the balance. This will show any bias in the balancer or its mounting. If any difference in balance is detected, average the results to eliminate any bias.
- E. Remove the propeller from the balancer and follow the propeller and/or aircraft manufacturer's instructions for making alterations to the propeller or its mounting to reflect the results of the balancing process.
- F. If the propeller is physically altered to achieve balance, it is critical to repeat **Steps A** through **E** to verify proper balance before installation on the aircraft.

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