



# Marvel

Manufacturing Company

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# Tail Rotor Hub & Blade Assembly Balance Bell Helicopter Model 407 Typical

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## Balance Equipment

### Balance Indicator and Rotor Mount

1 ea. 7HEL104                      Kit – Tail Rotor Balance

**Note:** The 7HEL104 Kit supplies all balance equipment required for this rotor. Due to multipurpose application, balance equipment for other model helicopters may include one or more of its individual parts. Refer to the installation illustration for identification.

## Preparation

1. Select a draft free area. Provide a flat top bench and hoist equipment or other means of suspension.
2. Provide two standard 2" x 4" wood blocks approximately 6" long. Place on edge approximately 3 1/2" apart on bench top.
3. Remove 3165 Arbor from kit case, remove stored adapters from arbor shaft and stand upright in bore of case block.
4. Clean oil from indicator area, if present, and depress indicator collar, releasing internal oil seal. Position indicator collar from minimum free clearance, approximately .005" from arbor end, and secure lightly with set screw.

**Note:** Once the indicator collar has been set for use, the arbor must remain in an upright position or loss of the internal damping oil will result. Prior to storing arbor in kit case after use, release set screw to allow indicator collar to move upward and activate oil seal. It is not necessary to retighten set screw.

5. Clean bore and chamfers of rotor trunnion. Inspect for and correct raised portion of nicks if present.

## **Balance Procedure**

1. Place **3152 Base**, hub extension upward, central across blocks.
2. Assemble **3063 Spacers** onto bottom end of **2939 Posts**. Set index plug section of each post at **19/32"** from end of rod and secure with set screw. Install posts in outermost threaded bores of base.
3. Place **3832 Adapter**, recessed end downward, over hub extension of base.
4. Position tail rotor assembly outboard side upward (hub data plates upward, pitch horn fork sections upward), and engage trunnion bore with adapter cone section.
5. Position (rotate) tail rotor assembly to align pitch horn ends with **2939 Posts** and insert small diameter of posts into bolt bore of pitch horns to set and maintain blade pitch.
6. Install **2533 Bushing**, knurled end upward, on **3165 Arbor** from lower end, position near top end of arbor shaft and temporarily secure with set screw.
7. Install **2586 Plate** on arbor from lower end and position against bushing.
8. Install **3822 Cone**, large end upward, on arbor from lower end and position to align its top surface at arbor scale sensitivity setting indicated by the installation illustration. Secure by moderately tightening both set screws.
9. Insert arbor downward thru trunnion, adapter and base. Seat cone firmly into trunnion bore, maintain positive downward clamping pressure and secure by moderately tightening both set screws in hub of base.
10. Lower plate and bushing on arbor to seat firmly on rotor yoke and secure by moderately tightening set screws in bushing. Maintain engagement of posts with pitch horns.
11. Suspend assembly to clear work support. Stabilize movements and observe balance condition as indicated by exposure of black disc in top surface of arbor shaft. Check to insure indications are not affected by interferences, air drafts, or movement of nearby personnel.
12. Refer to applicable helicopter maintenance manual for balance tolerance, method of correction or other assembly requirements.

**Balancer Installation - Tail Rotor  
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