



Marvel

Manufacturing Company

40 North 2nd Street
Stroudsburg, PA 18360 USA
570-421-6221

Main Rotor Hub & Blade Assembly Balance Bell Helicopter Models 206 A, B, L Typical

Balance Equipment

Balance Indicator

1	7BAL052		Kit - Balance Indicator
1	3350		Stand & Hoist
		Alternate	
1	7BAL051		Kit - Balance Indicator
		Or	
1	7BAL050		Kit - Balance Indicator

Note: The 2293 Arbor of Kits 7BAL052 and 7BAL051 or the 2259 Arbor of the 7BAL050 are used for this balance operation.

Rotor Mount

1	7HEL089		Kit - Main Rotor Balance Adapter
1	2337		Fixture

Note: The 7HEL069 Main Rotor Balance Adapter Kit may be used as alternate to the 7HEL089 for 206A and B Models. Addition of a 3407 Bushing will provide for the 206L.

Preparation

1. Select a draft free area of adequate size. If required, provide shop equipment for work support and hoist.
2. Assemble 3350 Stand & Hoist and install 7BAL052 Kit under its table section when used.
3. Prepare 2293 or 2259 Balance Indicator Arbor for use. Stand upright and remove rubber seals (2) for damping oil at indicator collar and clean indicator surfaces. Reposition indicator collar to provide minimum free clearance, approximately .005", with end of arbor and secure. Maintain arbor in upright position after removal of seals. Reinstall after use if arbor is to be stored horizontally.

4. Preparation of the rotor assembly prior to installation for balance must provide that the centrifugal tilt stop assembly is removed from the trunnion and grips are completely oil filled to normal reservoir level. Blades are to be installed with tightening of the blade bolts and alignment latches snug but not to final torques. Refer to applicable helicopter maintenance manual.
5. Attach 3035 Pitch Position Locks to the rotor assembly while mounted on the helicopter or prior to installation of blades in the hub. Install between the pitch arms and hub lower flange with flange retained between hook of rod section and clamp bar. Adjust ring nut to loosely retain clamp and adjust blade grips to zero pitch with captive ring nuts at each side of pitch arm link bearing. Snug clamp nut prior to final adjustment.
6. Clean bore and cone seat of rotor trunnion. Check for and remove raised portion of nicks. Insert 2775 Adapter from lower end of 206A and B trunnion to verify clearance and remove.

Balance Procedure

1. Place 2337 Fixture central on table of work stand and install 2775 Adapter, large end downward over top extension.
2. Carefully install rotor, engaging trunnion bore with pilot diameter of adapter and seat cone surfaces.
3. Blade alignment can be accomplished at this time. Refer to applicable helicopter maintenance manual and observe the following procedure to set and maintain blade grips at zero pitch with reference to trunnion axis.
 - Place 2780 Yoke, legs upward, central on top surface of rotor trunnion for reference.
 - Place base of bevel (bubble) protractor on surface of yoke and align at 90° to rotor span axis. Adjust quadrant of protractor to centralize bubble and secure.
 - Transfer protractor, maintaining same transverse position, to flat upper surface of grip fork, adjacent to outboard side of blade bolt and again align at 90° to span axis.
 - Adjust blade pitch to centralize bubble using ring nuts of pitch positioning lock.
 - Transfer protractor, maintaining some transverse position, to opposite grip fork and repeat pitch adjustment procedure.
 - Recheck bubble for central position of yoke reference and again on initial grip.
 - Proceed with blade alignment operation, rechecking to maintain zero blade pitch setting upon final sweep adjustment. Tighten blade bolts and alignment latches snug but not to final torques.
4. Install 2780 Yoke, legs downward, on 2293 or 2259 Arbor and position to align its top surface at the arbor scale Sensitivity Setting indicated by the installation illustration. Secure with both set screws.

5. Using 2777 Busing for 206A & B Models or 3407 Bushing for 206L Model, install on arbor with knurled section upward and position against lower surface of yoke body. Temporarily secure with set screw.
6. Install arbor downward thru rotor trunnion, engaging adapter and fixture. Position legs to align with blade span axis and seat on top surface of rotor hub.
7. Loosen bushing and seat firmly into rotor trunnion bore. Do not retighten set screw at this time.
8. Using 2215 Handwheel without spacer for 206A & B Models or with 2201 Spacer for the 206L assemble to arbor lower end and tighten to seat yoke legs against hub. Maintain alignment of yoke legs with blade span axis and seat of bushing in trunnion bore. Tighten set screw of bushing to secure.
9. Place blades in their radially outward condition by lifting both blades evenly at their tips to eliminate droop and approach the precone angle. Maintain an outward pull on each blade while lowering slowly.
10. Check blade grips for zero pitch and reset if required. Refer to steps 3 except place protractor base on top surface of 2780 Yoke for trunnion axis reference.
11. Attach 2264 Cable with 2266 Quick Disconnect to arbor and engage ball with liftplate of stand hoist or alternate 2994 Quick Disconnect Cable with shop hoist.
12. Hoist assembly approximately 1/4" above stand table, stabilize movements and observe balance condition as indicated by exposure of black disc in top surface of arbor shaft. Check to ensure indications are not affected by interferences, air drafts or movement of nearby personnel.

CAUTION

Forces generated by wrench torques required for blade sweep balance adjustment and final lock of latch nuts can damage the balance indicator and adapting equipment. Prior to and after accomplishing each adjustment observe procedure 14 thru 20.

13. The initial balance indication will determine which blade must be swept for chordwise balance correction. Final blade bolt and alignment latch torque operations for the blade not requiring change can be accomplished at this time. Upon completion, recheck pitch position of both grips and reset, if necessary, in accordance with step 10 before proceeding with final balance. Refer to applicable helicopter maintenance manual for balance tolerance, method of correction or other assembly requirements.
14. Lower hoist, allowing support fixture to rest on stand table.
15. Loosen set screw of bushing engaging trunnion bore but do not unseat.
16. Loosen handwheel at bottom of arbor a minimum of 5 turns.
17. Adjust blade sweep for chordwise balance correction. Restrain blade movement manually to reduce pitch change forces applied to pitch position locks during wrench movement of blade alignment latch nuts. Wrench use with handle aligned vertically will minimize this condition.

- 18. Repeat step 9 to radially reposition blades.**
- 19. Insure bushing is seated firmly in rotor trunnion bore. Do not tighten its set screw.**
- 20. Retighten handwheel to seat yoke. Maintain alignment of yoke legs and seat of bushing into trunnion. Tighten bushing set screw.**
- 21. Recheck blade grips for zero pitch setting. Reset if necessary.**
- 22. Repeat hoist operation, stabilize movement and observe balance indication.**

Balancer Installation - Main Rotor Bell Models 206 A, B, L, Typical

