Marvel

Manufacturing Company

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Main Rotor Hub & Blade Assembly Balance
Bell Helicopter Model 222 Typical

Balance Equipment

Balance Indicator

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

Rotor Motor

1	7HEL088A	Kit-Main Rotor Balance Adapter
1	2337	Fixture

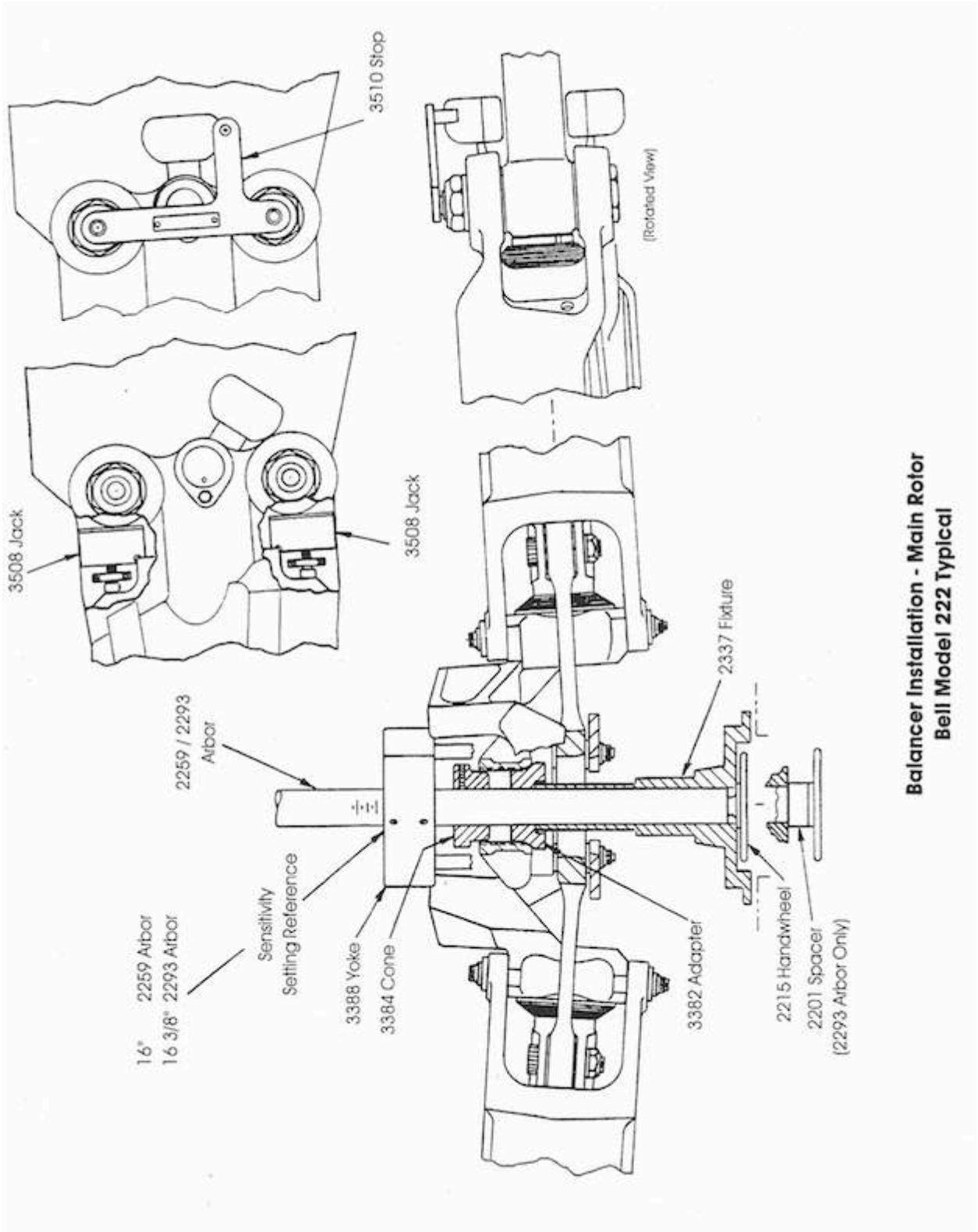
Preparation

1. Select a draft free area of adequate size. If required, provide shop equipment for work support and hoist.
2. Assemble 3350 Stand and Hoist and install 7BAL052 Kit under its table section.
3. Upon installation or rotor blades in hub; do not tighten blade bolts or install plugs and locks at this time.
4. Clean bore and cone seat of rotor trunnion. Check for and remove raised portion of nicks. Insert 3382 Adapter into trunnion from lower end to verify clearance and remove.
5. 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. Reinstall indicator collar to provide minimum free clearance, approximately .005”, with end of arbor and secure. Maintain arbor in upright position after removal of seals and replace after use if arbor is to be stored horizontally.

Balance Procedure

1. Place 2337 Fixture central on table of work stand and install 3382 Adapter, large end downward, over top extension.
2. Carefully install rotor, engaging trunnion bore with pilot diameter of adapter and seat cone surfaces.
3. Install 3388 Yoke, legs downward, on 2293 or alternate 2259 Arbor from lower end. Position to align its top surface with arbor scale Sensitivity Setting indicated by the installation illustration and secure with both set screws.
4. Install 3384 Cone, knurled end upward, on arbor and position against yoke. Temporarily secure with set screw.
5. Insert arbor downward thru rotor trunnion, adapter and fixture bores. Position legs of yoke to pass thru clearance adjacent to teeter stops and seat on flat of hub yoke.
6. Reposition cone downward to seat firmly in rotor trunnion bore. Do not retighten set screw.
7. Select spacer to extend beyond lower end of arbor not to exceed 1 ¼" and install. Insert 2215 Handwheel and tighten to seat yoke on surface of hub, then loosen approximately 5 turns.
8. Attach 2264 Cable with 2266 Quick Disconnect to arbor and engage ball with lift plate of stand hoist or alternate 2294 Quick Disconnect Cable with shop hoist. Hoist to remove loose slack from cable.
9. At one blade, install 3508 Jack within fork of blade grip at each side. Position ledge of jack inward and flat pad against blade root. Seat ledge on surface adjacent to pitch change bearing and tighten jack screw moderately to secure. Insure blade bolt nuts are loose.
10. Raise blades toward precone to allow movement within grip. Hand tighten bolt jack screws evenly to seat blade against bolts. Allow blades to return to droop position evenly.
11. Torque bolts of aligned blade. Maintain alignment by holding hub or opposite blade. Remove both jacks.
12. Repeat steps 9, 10 and 11 on opposite blade.
13. Swing damper weight beyond mid position and install 3510 Stop at each blade, inserting posts of stop into blade bolt bores. Return damper to rest against pin of stop.
14. Insure cone is seated in trunnion bore and tighten handwheel to seat yoke firmly on surface of hub. Secure cone with set screw.
15. Hoist assembly approximately ¼" above stand table, 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.

16. **Refer to applicable helicopter maintenance manual for balance tolerance, method of correction or other assembly requirements.**
17. **Upon completion of balance correction, remove damper-weight stops and install blade bolt plug and lock parts in accordance with the helicopter manual.**



Balancer Installation - Main Rotor
Bell Model 222 Typical