



Marvel

Manufacturing Company

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Tail Rotor Hub & Blade Assembly Balance Bell Helicopter Models 204 – 205 Typical

(Rotor P/N 204-010-7XX Typical)

Balance Equipment

Balance Indicator

| | | |
|---|---------|-------------------------|
| 1 | 7BAL080 | Kit - Balance Indicator |
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Rotor Mount

| | | |
|---|---------|-----------------------------------|
| 1 | 7HEL065 | Kit - Tail Rotor Balance Position |
| 1 | 2529 | Bushing - Pilot |
| 1 | 2533 | Bushing - Pilot |
| 1 | 2586 | Plate - Squaring |
| 1 | 3152 | Base |

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. Clean rotor trunnion bore and cone seat surfaces.
4. Remove 3165 Arbor from kit case and disassemble stored adapters from its shaft. Stand upright in bore of case block.
5. Clean oil from indicator area, if present, and depress indicator collar to release internal oil seal. Position collar for minimum free clearance, approximately .005", with arbor end and secure lightly with set screw.

Note: Prior to storing arbor in kit case after use, release set screw to allow oil seal to move upward and seat. Do not retighten set screw.

Balance Procedure

1. Place 3152 Base, hub extension upward, central across blocks.
2. Prior to installing 2939 Post Assemblies adjust movable index pin to proper dimension shown in auxiliary view, depending on the specific rotor assembly being balanced. Auxiliary views illustrate the rotor configurations and corresponding proper index lengths. Tighten the locking set screw to maintain proper setting.
3. After adjusting post assemblies properly, thread the post assemblies into two diametrically tapped holes of 3152 Base shown as holes "A" in top view of Base.
4. Locate the 2529 Bushing, large end down, centrally on top of base hub.
5. Remove or loosen nuts from tail rotor blade attaching bolts. Drive bolts partially out of yoke assembly to obtain an approximate 9/32 inch gap under the bolt heads.
6. Set tail rotor on base so that blade shanks clear posts, flat surface of hub is upward, and inside diameter of rotor splined trunnion fits over diameter of 2529 Bushing.
7. Install 2533 Bushing, flange end downward, on 3165 Balance Arbor so that top surface of bushing aligns with 7 1/4" or 7 3/8" position on arbor scale, depending on the yoke configuration. Auxiliary views illustrate the differences in yoke designs and it will be noted that the yoke with the half-moon cut out portion at the bottom requires the 7 3/8" setting. Lock bushing in this position by moderate and uniform tightening of bushing set screws.
8. Place 2586 Plate centrally on top surface of rotor hub as shown in top view of assembly and insert lower end of balance arbor downward through plate, bushing and hub of base. Seat assembly firmly together by pressing downward on 2533 Bushing and lock in this position by moderate and uniform tightening of two set screws in hub of 3152 Base.
9. Rotate the rotor hub on base, positioning the index pins of the two post assemblies until the index pins enter the pitch linkage holes in grip arms to their full depth.
10. From the matched sets of positioning bars (P/N 2940 thru 2950, 7HEL065 Kit) select the pair (set) identified as having the lowest part number (2940). Make sure each bar bears the same matched pair serial number and the same part number. Trial install the matched set of bars, blocks upward, between opposite blade attachment bolts, contacting shanks underneath the bolt heads. If bars are too short, continue the trial installation using increasingly longer bar sets (identified by matched pair serial numbers and identical part numbers) as necessary until the longest matched pair that can be installed between the bolt shanks without force has been precisely established. Once this set and length have been determined, select the next higher part number bar pair, but make sure each bar also carries the same matched pair serial number. This is the matched pair bar set that shall be used during the balance operations. Be certain that the pair is

identified correctly with a matched pair serial number and the same part number.

11. Carefully lift upward on both rotor blades at their tips simultaneously to produce increased span distance between the blade bolts; install the properly matched and identified pair of bars, then, release blade tips, allowing the bolt shanks to rest firmly upon the bar ends. Move bars precisely into final position by pressing upward to seat block section against rotor grip bushing face surface and inwardly to seat tang of bars against the bolt shanks.
12. Investigate to make sure that the positioning post index sections are engaged in grip pitch arm holes and that the arbor with 2533 Bushing is tight against the rotor hub.
13. Sight beneath the rotor hub across the positioning bar pair to make sure they are in the same plane. Correct, if required, by readjusting the index section of each positioning post on its mounting rod an equal amount.
14. Suspend entire assembly free of interference. 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.
15. Refer to applicable helicopter maintenance manual for balance tolerance, method of correction or other assembly requirements.

Balancer Installation - Tail Rotor Bell Models 204 – 205 Typical

