

NOTICE

Revision 14 updates the Tail Rotor Pitch Change Installation Procedures in Chapter 64.

Please incorporate these updates into the Maintenance Manual in accordance with the Log of Pages (attached).

Bell Helicopter would also like to thank its Customers for providing us with Customer Feedback information. This information is very much appreciated and allows us to improve the quality of our manuals with each revision.

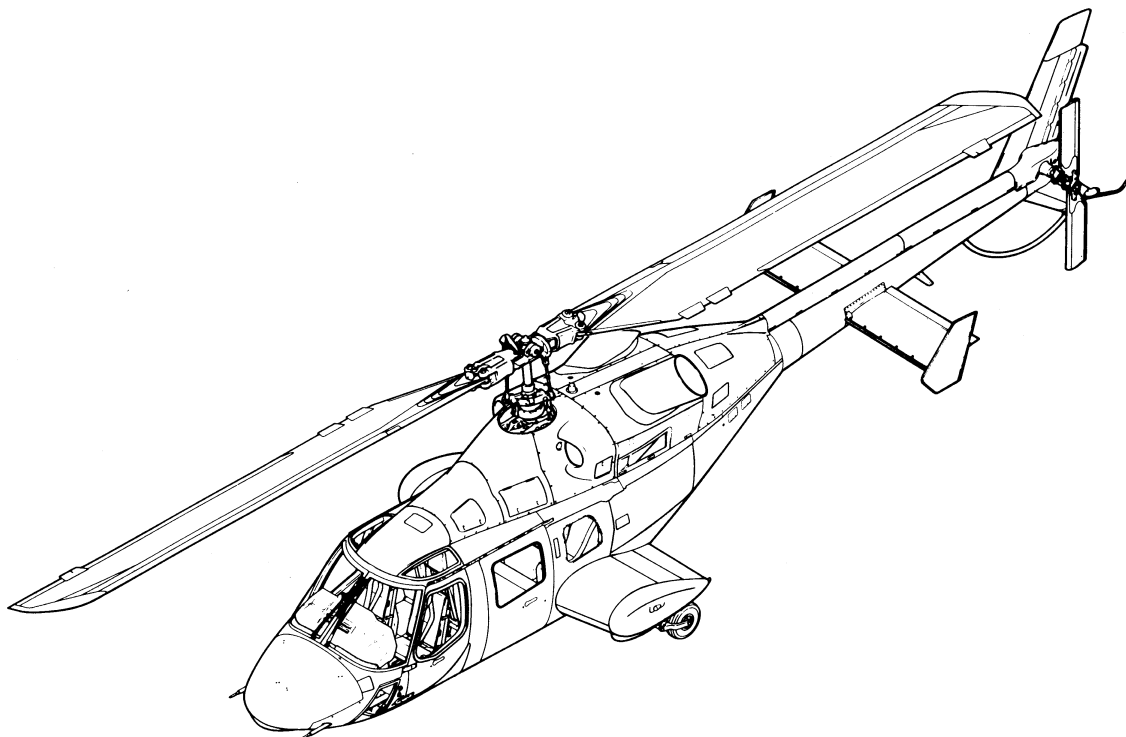
Bell Helicopter

A Textron Company

POST OFFICE BOX 482 • FORT WORTH, TEXAS 76101

12 MARCH 1992
REVISION 14 — 15 DECEMBER 2006

Bell MODEL **230**



MAINTENANCE MANUAL

VOLUME 1

GENERAL INFORMATION

NOTICE

The instructions set forth in this manual, as supplemented or modified by Alert Service Bulletins (ASB) or other directions issued by Bell Helicopter Textron Inc. and Airworthiness Directives (AD) issued by the applicable regulatory agencies, shall be strictly followed.

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LOG OF REVISIONS

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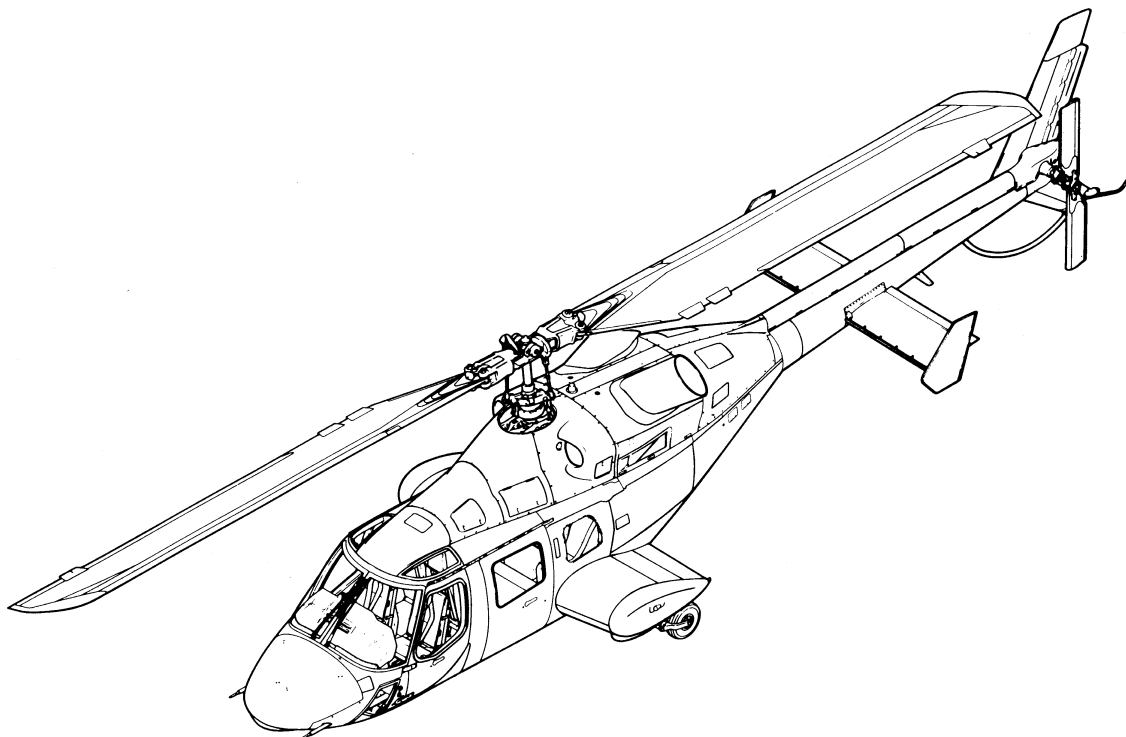
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Bell MODEL **230**



MAINTENANCE MANUAL

VOLUME 7

TAIL ROTOR/ TAIL ROTOR DRIVE SYSTEM

NOTICE

The instructions set forth in this manual, as supplemented or modified by Alert Service Bulletins (ASB) or other directions issued by Bell Helicopter Textron Inc. and Airworthiness Directives (AD) issued by the applicable regulatory agencies, shall be strictly followed.

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12 MARCH 1992
REVISION 14 — 15 DECEMBER 2006

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64-18. TAIL ROTOR PITCH CHANGE MECHANISM.

Tail rotor pitch change mechanism mounts on output shaft of tail rotor gearbox. Movement of directional control system is transmitted to tail rotor by pitch change mechanism. Mechanism is connected to directional control system by a lever and idler mounted to gearbox case.

64-19. REMOVAL — TAIL ROTOR PITCH CHANGE MECHANISM.

1. Remove idler (6, Figure 64-13) and lever (10) as follows:

a. Remove cotter pin (8), nut (7), washers (5), and bolt (4). Separate idler (6) from lever (10). Remove inner race (9).

b. Remove cotter pin (17), nut (16), washers (3), and bolt (2). Remove idler (6) from boss of tail rotor gearbox (1).

c. Remove cotter pin (15), nut (14), washers (12), and bolt (11).

d. Remove cotter pins (19), nuts (18), washers (20), and bolts (21). Remove lever (10).

2. Remove control assembly (22), pitch links (38), and counterweight links (33) as follows:

a. Remove tail rotor hub and blades (Paragraph 64-6).

b. Remove cotter pin (40), nut (39), washers (41), and bolt (42). Remove pitch link (38). Remove other pitch link (38) in same manner.

c. Remove cotter pin (32), nut (31), washers (30), and bolt (29). Remove cotter pin (35), nut (34), washers (36), and bolt (37). Remove counterweight link (33). Remove other counterweight link (33) in same manner.

d. Remove lockwire securing boot (23) to nut (24). Straight edges of lockplates (25 and 27). Hold nut (24) and loosen nut (28). Remove nut (28), lockplate (27), support (26), lockplate (25), and nut (24).

e. Remove lockwire securing boot (23) to control assembly (22) and remove boot.

f. Remove control assembly (22) from gearbox output shaft.

NOTE

Refer to BHT-230-CR&O-3 for disassembly of control assembly (22).

64-20. INSPECTION AND REPAIR — TAIL ROTOR PITCH CHANGE MECHANISM.**NOTE**

Refer to BHT-230-CR&O-3 for more detailed inspection and repair procedures.

1. Inspect components of pitch change mechanism for mechanical and corrosion damage (BHT-230-CR&O-3).

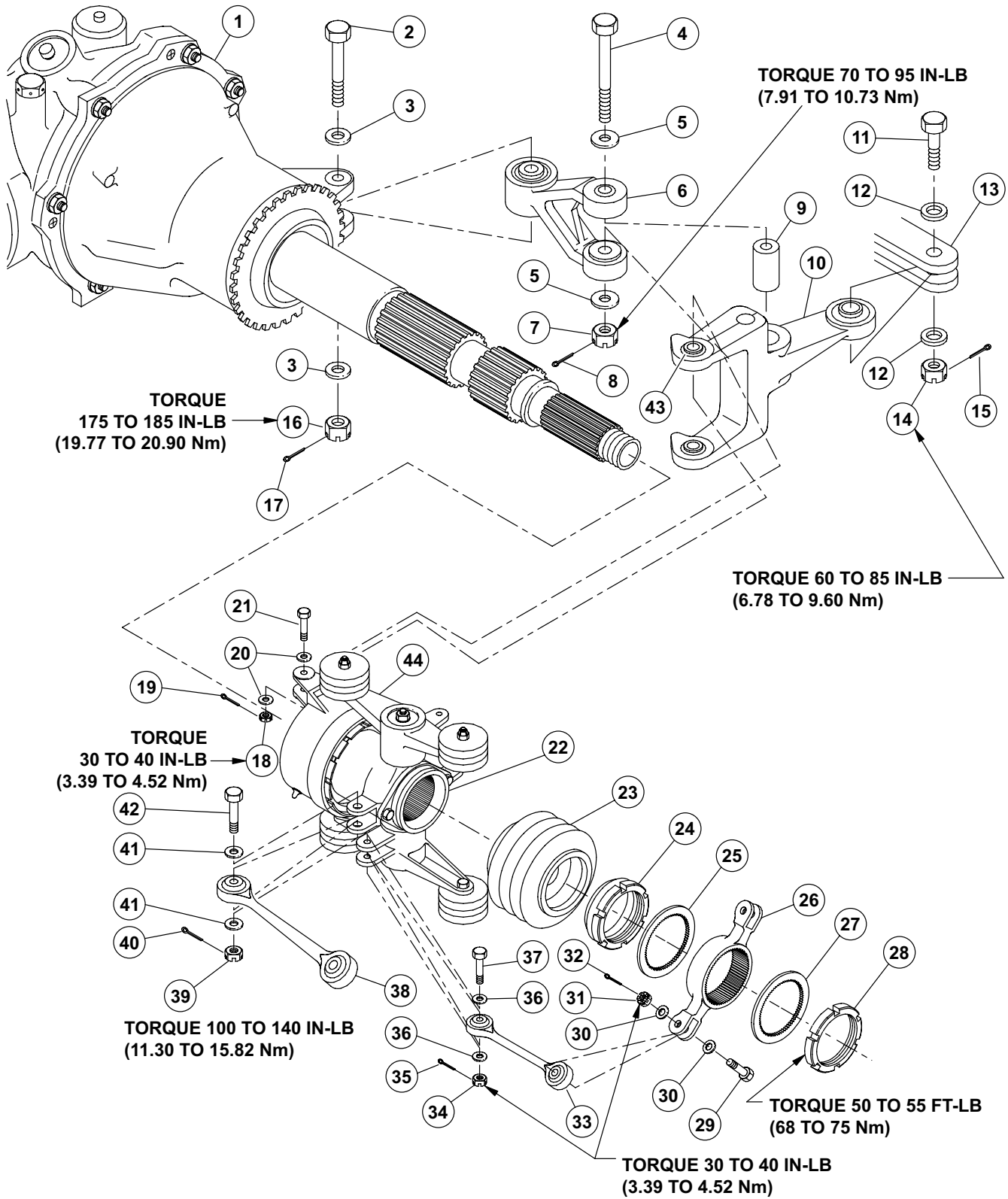
2. Inspect bearings in idler (6, Figure 64-13), lever (10) and counterweight links (33) for roughness and wear. Refer to BHT-ALL-SPM for bearing wear limits (10 and 33). Inspect bearing in pitch links (38) for roughness and wear. Refer to BHT-230-CR&O-3 for bearing wear limits.

3. Inspect nuts (24 and 28) for damaged threads.

4. Inspect boot (23) for deterioration.

5. Check bearings in control assembly (22) for evidence of roughness and wear.

6. Inspect bearing (43) bore diameter in lever (10) for damage or corrosion. Maximum bore diameter after cleanup may not exceed 0.775 inch (19.69 mm).



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Figure 64-13. Tail Rotor Pitch Change Mechanism (Sheet 1 of 2)

- | | |
|-------------------------|-----------------------------|
| 1. Tail rotor gearbox | 23. Boot |
| 2. Bolt | 24. Nut |
| 3. Washer | 25. Lockplate |
| 4. Bolt | 26. Support |
| 5. Washer | 27. Lockplate |
| 6. Idler | 28. Nut |
| 7. Nut | 29. Bolt |
| 8. Cotter pin | 30. Washer |
| 9. Inner race | 31. Nut |
| 10. Lever | 32. Cotter pin |
| 11. Bolt | 33. Counterweight link |
| 12. Washer | 34. Nut |
| 13. Control tube clevis | 35. Cotter pin |
| 14. Nut | 36. Washer |
| 15. Cotter pin | 37. Bolt |
| 16. Nut | 38. Pitch link |
| 17. Cotter pin | 39. Nut |
| 18. Nut | 40. Cotter pin |
| 19. Cotter pin | 41. Washer |
| 20. Washer | 42. Bolt |
| 21. Bolt | 43. Bearing |
| 22. Control assembly | 44. Counterweight bellcrank |

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Figure 64-13. Tail Rotor Pitch Change Mechanism (Sheet 2 of 2)

64-21. INSTALLATION — TAIL ROTOR PITCH CHANGE MECHANISM

MATERIALS REQUIRED

Refer to BHT-ALL-SPM for specifications.

NUMBER	NOMENCLATURE
C-001	Grease
C-104	Corrosion Preventive Compound
C-352	Retaining Compound
C-447	Lockwire

1. Apply grease (C-001) to the splines of the control assembly (22, [Figure 64-13](#)) and to the inboard set of splines on the tail rotor gearbox output shaft.

2. Apply corrosion preventive compound (C-104) to the remaining splines of the tail rotor gearbox output shaft. Put the control assembly (22) on the output shaft of the tail rotor gearbox (1).

3. Connect idler (6) to boss on tail rotor gearbox (1) with bolt (2), washers (3), and nut (16). Torque nut 175 to 185 inch-pounds (19.77 to 20.90 Nm). Install cotter pin (17).

4. Install bearing (43) in lever (10) as follows:

a. Clean corrosion preventive compound (C-104) from exterior of bearing (43) and bore of input lever (10) at bearing location.

NOTE

Cure time of retaining compound (C-352) at room temperature is 30 minutes. Complete [step b](#), [step c](#) and [step 5](#) while retaining compound is still wet.

b. Apply retaining compound (C-352) (Loctite #609 with primer "T") to bore of lever (10).

c. Install bearing (43) in lever (10); remove excessive retaining compound.

5. Connect each lug of lever (10) to control assembly (22) with bolt (21), washers (20), and nut (18) while retaining compound (C-352) is wet. Torque nuts (18). Install cotter pins (19) and bend around nuts (18). Allow retaining compound to cure.

6. Position inner race (9) in lever (10). Connect idler (6) to lever (10) with bolt (4), washers (5), and nut (7). Torque nut 70 to 95 inch-pounds (7.91 to 10.73 Nm). Install cotter pin (8).

7. Connect lever (10) to control tube clevis (13) with bolt (11), washers (12), and nut (14). Torque nut 60 to 85 inch-pounds (6.78 to 9.60 Nm). Install cotter pin (15).

8. Install boot (23) and secure to control assembly (22) with lockwire (C-447).

9. Install and position counterweight links (33) as follows:

a. Connect each counterweight link (33) to bellcrank on control assembly (22) with bolt (37), washers (36), and nut (34). Torque nut 30 to 40 inch-pounds (3.39 to 4.52 Nm). Install cotter pins (35).

b. Install nut (24), lockplate (25), support (26), lockplate (27), and nut (28) on threaded splines of tail rotor gearbox output shaft. Tighten nuts (24 and 28) enough to hold support (26) snug. Final adjustment is accomplished in [step d](#).

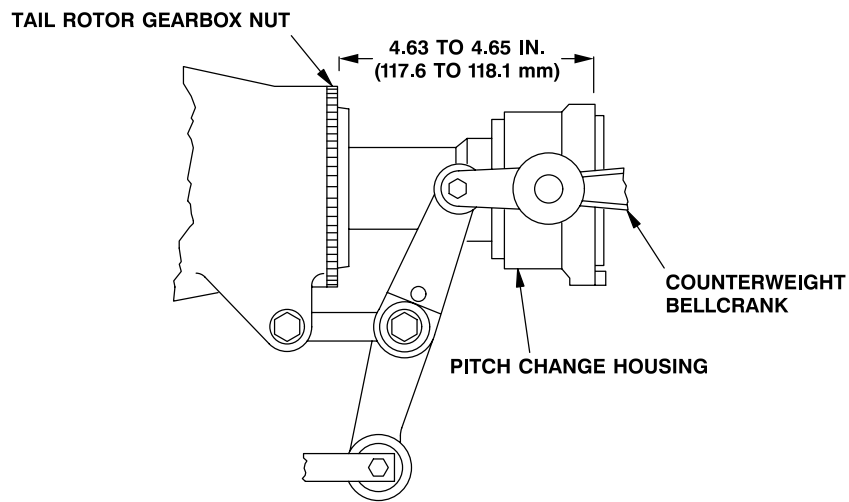
c. Ensure that directional controls are properly rigged (Chapter 67). Position pitch change housing to obtain 4.63 to 4.65 inches (117.6 to 118.11 mm) dimension, as shown in [Figure 64-14](#).

d. Position nuts (24 and 28, [Figure 64-13](#)) as follows:

(1) Place centerline of counterweight bellcranks parallel with centerline of tail rotor gearbox output shaft.

(2) Adjust position of nuts (24 and 28) until bearings in counterweight links (33) align with holes in support (26).

(3) Hold nut (24) in this position and tighten nut (28) firmly against lockplate (27).



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Figure 64-14. Tail rotor pitch change mechanism positioning

(4) Install tail rotor, but do not connect pitch links (paragraph 64-8).

(5) Move the tail rotor through the full flap range. Verify at both full flap positions. Verify if the tail rotor yoke touches the flapping stop (22, Figure 64-1) before it touches the nut (28, Figure 64-13). If the tail rotor yoke contacts nut (28) before contacting the flapping stop (22, Figure 64-1) and a gap exists between the tail rotor yoke and the flapping stop, yoke replacement or yoke rework is required. Contact BHT Product Support Engineering.



WIRE TYPE FEELER GAUGES MUST BE USED FOR THIS APPLICATION.

DUE TO POSSIBLE VARIATIONS IN PARTS TOLERANCES, THE MEASURED GAP REFERENCE IN [STEP \(6\)](#) SHALL BE THE SMALLEST GAP THAT IS MEASURED AT ANY LOCATION BETWEEN THE TAIL ROTOR YOKE AND NUT (28, [FIGURE 64-13](#)) WHEN THE TAIL ROTOR ASSEMBLY IS MOVED THROUGH THE FULL FLAP RANGE AT BOTH FULL FLAP POSITIONS.

NOTE

Adjusting nuts (24 and 28) to obtain a 0.020 to 0.030 inch (0.50 to 0.76 mm) gap between the tail rotor yoke and nut (28) will result in a minor misalignment of the counterweight bellcranks (44) in relation to

the tail rotor gearbox output shaft. This is acceptable.

(6) If the smallest gap between the tail rotor yoke and nut (28) is between 0.020 inch (0.50 mm) and 0.030 inch (0.76 mm), proceed to [step \(7\)](#). If a gap of 0.000 to 0.019 inch (0 to 0.48 mm) exists between the tail rotor yoke and the nut (28), adjust nuts (24 and 28) until a gap of 0.020 to 0.030 inch (0.50 to 0.76 mm) maximum exists between the tail rotor yoke and nut (28).

(7) Hold nut (24) in this position and torque nut (28) 50 to 55 foot-pounds (67.80 to 74.60 Nm).

(8) Shear edges of lockplates (25 and 27) into slots of nuts (24 and 28).

e. Connect each counterweight link (33) to support (26) with bolt (29), washers (30), and nut (31). Torque nut (30) to 30 to 40 inch-pounds (3.39 to 4.52 Nm). Install the cotter pins (32).

f. Position boot (23) over the flange of nut (24) and secure with lockwire (C-447).

10. Connect pitch links (38) to control assembly (22) with bolt (42), washers (41), and nut (39). Torque nut to 100 to 140 inch-pounds (11.30 to 15.82 Nm). Install cotter pins (40).

11. Connect pitch links to tail rotor hub and blades (paragraph 64-8).

12. Lubricate tail rotor and pitch change mechanism (Chapter 12).

13. Perform operational check (paragraph 64-5).