

URGENT

TB 1-1520-238-20-131

CHANGE

NO. 1

HEADQUARTERS
DEPARTMENT OF THE ARMY
WASHINGTON, D.C. 12 December 2003

MAIN ROTOR BLADE FOLD KIT FOR AH-64A APACHE HELICOPTER AND AH-64D LONGBOW APACHE HELICOPTER

Headquarters, Department of the Army, Washington D.C.

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TB 1-1520-238-20-131

DEPARTMENT OF THE ARMY TECHNICAL BULLETIN

MAIN ROTOR BLADE FOLD KIT FOR AH-64A APACHE HELICOPTER AND AH-64D LONGBOW APACHE HELICOPTER

Headquarters, Department of the Army, Washington D.C.
24 March 2003

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NOTE

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1. Priority Classification. URGENT

a. **Purpose.** This publication provides information and instructions for installation, operation, removal, and repair to the Main Rotor Blade Fold Kit. The purpose of this technical bulletin is to support maintainers with near term requirements for both AH-64A and AH-64D model Apache helicopter main rotor blade folding operations. This kit allows aircraft to be stored in confined spaces for shipping or storage, including aboard ships and flight ramps.

2. General Information

a. **Application.** These procedures are to be used by maintainers to manually fold AH-64A or AH-64D model helicopter main rotor blades in winds up to 45 knots. The kit safely holds blades in winds up to 70 knots.

b. **Main Rotor Blade Fold Kit Characteristics.** The kit dimensions are 110 .0 inches x 69.3 inches x 46.4 inches. The kit weight is 831.6 lbs and includes:

- (1) A saddle assembly to anchor blades to tail boom.
- (2) Four flap lock assemblies to secure pitch housing assemblies.
- (3) One blade handling pole to guide blades into their stowed position.
- (4) One blade positioning assembly to hold main rotor blades in their stowed position.
- (5) Four securing poles to anchor blades at proper angle.
- (6) Two auxiliary positioners.
- (7) Two swing link assemblies.

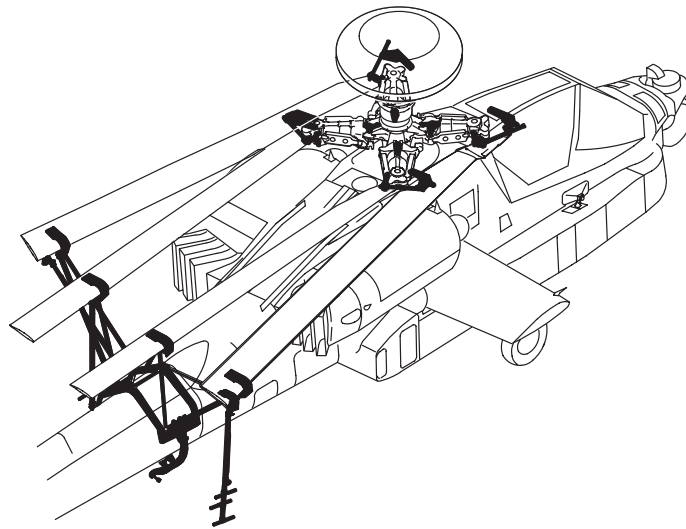


Figure 1. Main Rotor Blade Fold Kit

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3. Main Rotor Blade Fold Kit Set up and Installation.**a. References.**

- (1) TM 1-1520-238-23
- (2) TM 1-1520-Longbow/Apache IETM

b. Required persons.

- (1) Number of persons: 7
- (2) Category: 67R Attack Helicopter Repairer
- (3) Category: 67R30 Attack Helicopter Technical Inspector

c. Support equipment

Nomenclature	NSN	CAGE	Part Number	Qty.
Main rotor blade fold kit - US	TBD	8V613	7-562110044-601	1
Tool Kit, Aircraft mechanic, General	5180-01-375-6925	81996	SC518099B01	1
Tool Set, Aviation Unit Maintenance Set No. 2	4920-00-567-0476	81996	SC492099CLA92	1

d. Consumables, materials and expendables.

Nomenclature	NSN	CAGE	Part Number	Qty.
Aircraft and instrument grease	9150-00-985-7246	81349	MIL-PRF-23827 TYPE I	CN
Anti-seize compound	8030-00-938-1947	81349	MIL-C-81309	CN
Marker, tube type (white)	7520-01-207-4159	0X226	63713	TU
Strap, tiedown	5975-00-899-4606	06383	SST4-0	8

e. Preconditions.

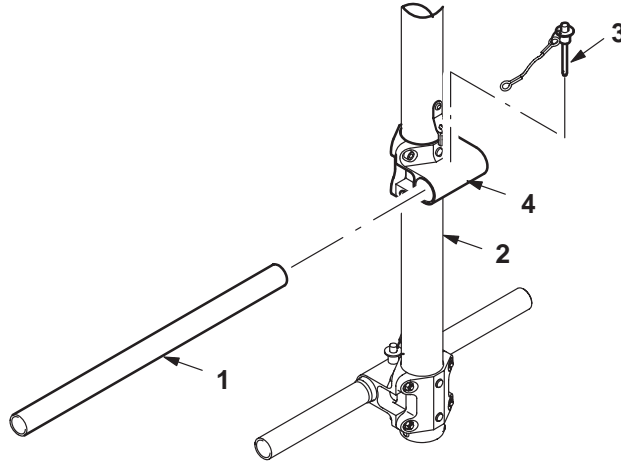
- (1) A-model aircraft must be equipped with **AMWO 1-1520-238-55-18**.
D-model aircraft must be equipped with **AMWO 1-1520-251-55-18**.
- (2) Perform aircraft safety check procedure per the following:
A-model refer to TM 1-1520-238-23-1, (para 1.57).
D-model refer to TM 1-1520-Longbow/Apache IETM.

- (3) Perform MRBFK inventory and inspection (See APPENDIX A).

- f. Use aircraft grease to lubricate the threads of the jackscrew on blade positioner and aux blade positioner.
- g. Identify and label all aircraft blade pins to their corresponding blades and pin holes.

h. **Install Main Rotor Blade Fold Kit on Aircraft.**

- (1) Install T-handles (1) in blade handling and securing pole assemblies (2) (See Figure 2).
- (2) Install four quick release pins (3) in receptacles (4).



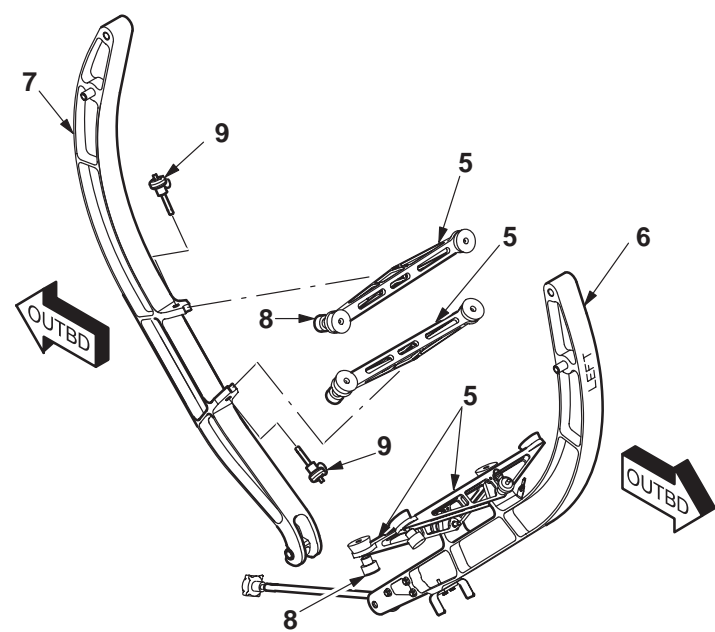
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Figure 2. T-Handle Installation

NOTE

All pivot assemblies are universal and have a **FWD** marking for installation orientation.

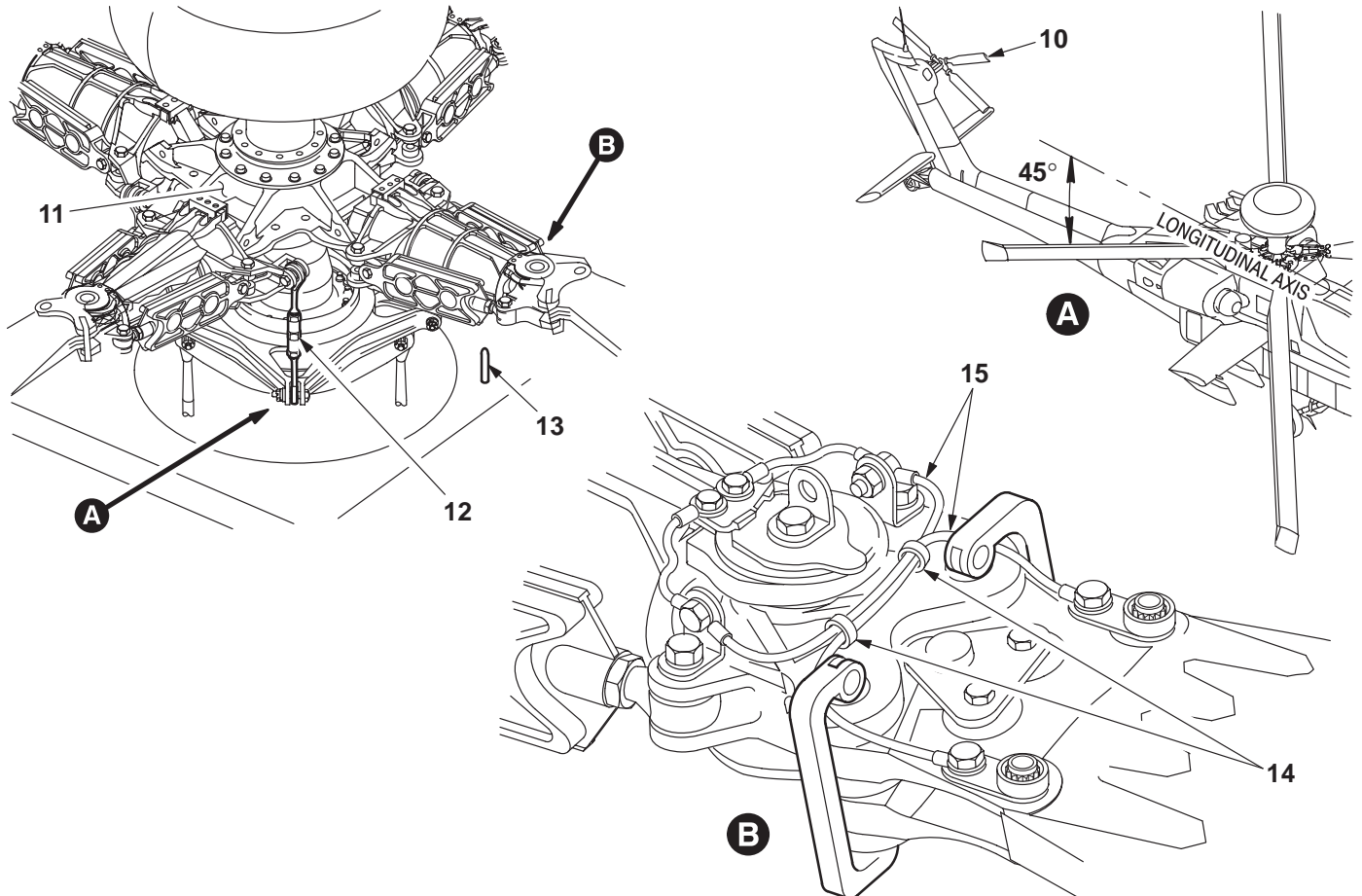
- (3) Install four pivot assemblies (5) on left lower saddle assembly (6) and right lower saddle assembly (7) with torque knobs (8) facing outboard (See Figure 3).
- (4) Install four quick release pins (9) through pivot assemblies (5), lower saddle (7), and lower saddle (6).



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Figure 3. Pivot Assembly Installation

- (5) Ensure correct clocking of tail rotor blades (10) per transportability/load-plan instructions (See Figure 4).
- (6) Turn main rotor head (11) until one pitch link (12) aligns with IFF antenna (13).
- (7) Remove tiedown straps (14) securing bonding jumpers (15).



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Figure 4. Rotate Main Rotor Blades 45° to Helicopter Centerline

(8) Install upper saddle assembly (16) (See Figure 5).

NOTE

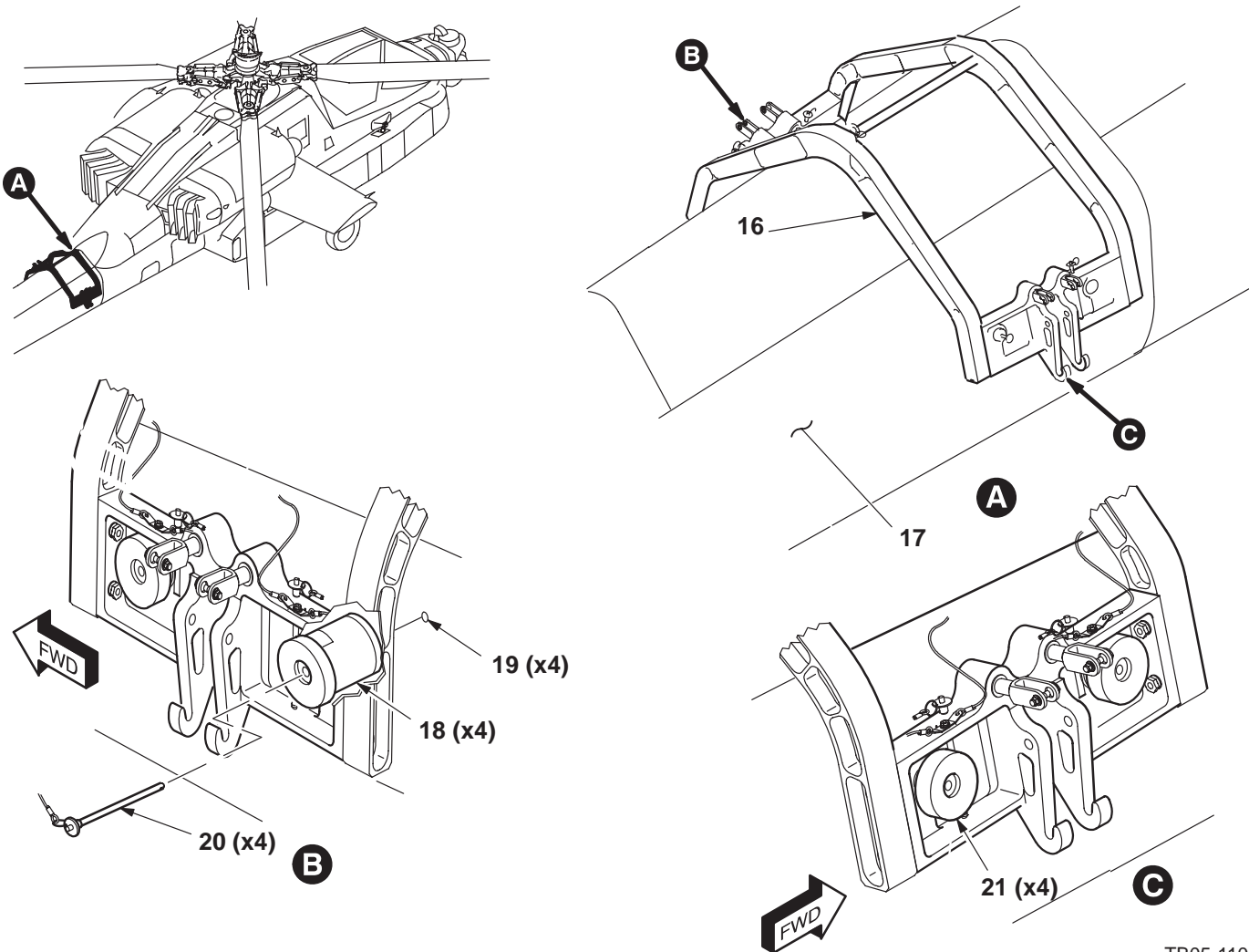
- Four lock fittings (knobs) on the upper saddle must be loose to permit movement of mounts during alignment.
- Ensure quick release pins are in stowage position.

(9) Position upper saddle (16) with **FORWARD** marking in a forward direction with helicopter. Two persons lift and one person position upper saddle (16) onto the tailboom (17).

(10) Align four saddle mounts (18) with four quick release pin receptacles (19).

(11) Install four quick release pins (20) in receptacles (19).

(12) Tighten four knobs (21).



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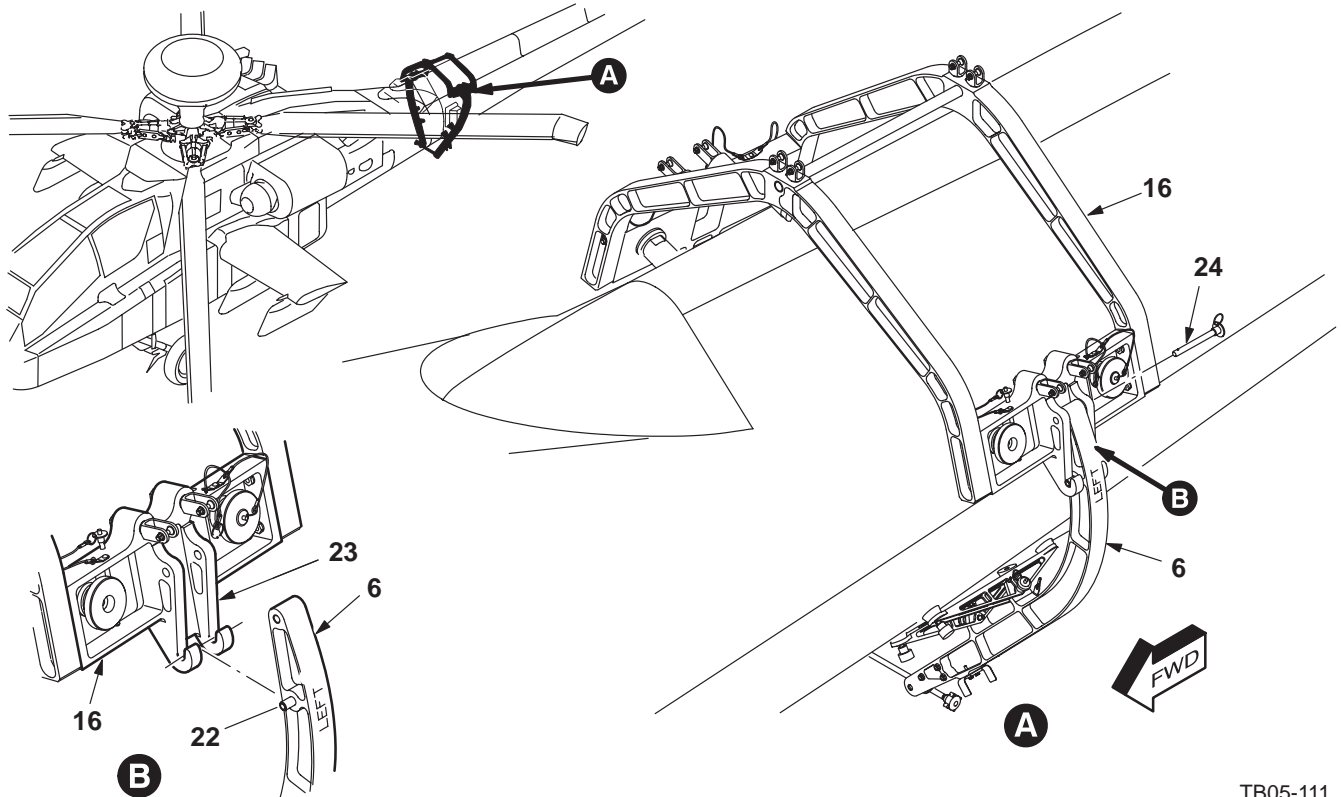
Figure 5. Installation of Upper Saddle Assembly

- (13) Install left lower saddle assembly (6).

NOTE

Ensure support rod is positioned inboard and under tailboom during installation of left lower saddle.

- (a) On left side of tailboom, align two pins (22) on left lower saddle frame (6) marked **LEFT** with two J-hooks (23) on left side rail of upper saddle (16) (See Figure 6).
- (b) Install quick release pin (24) through upper saddle (16) and lower saddle (6) assemblies.

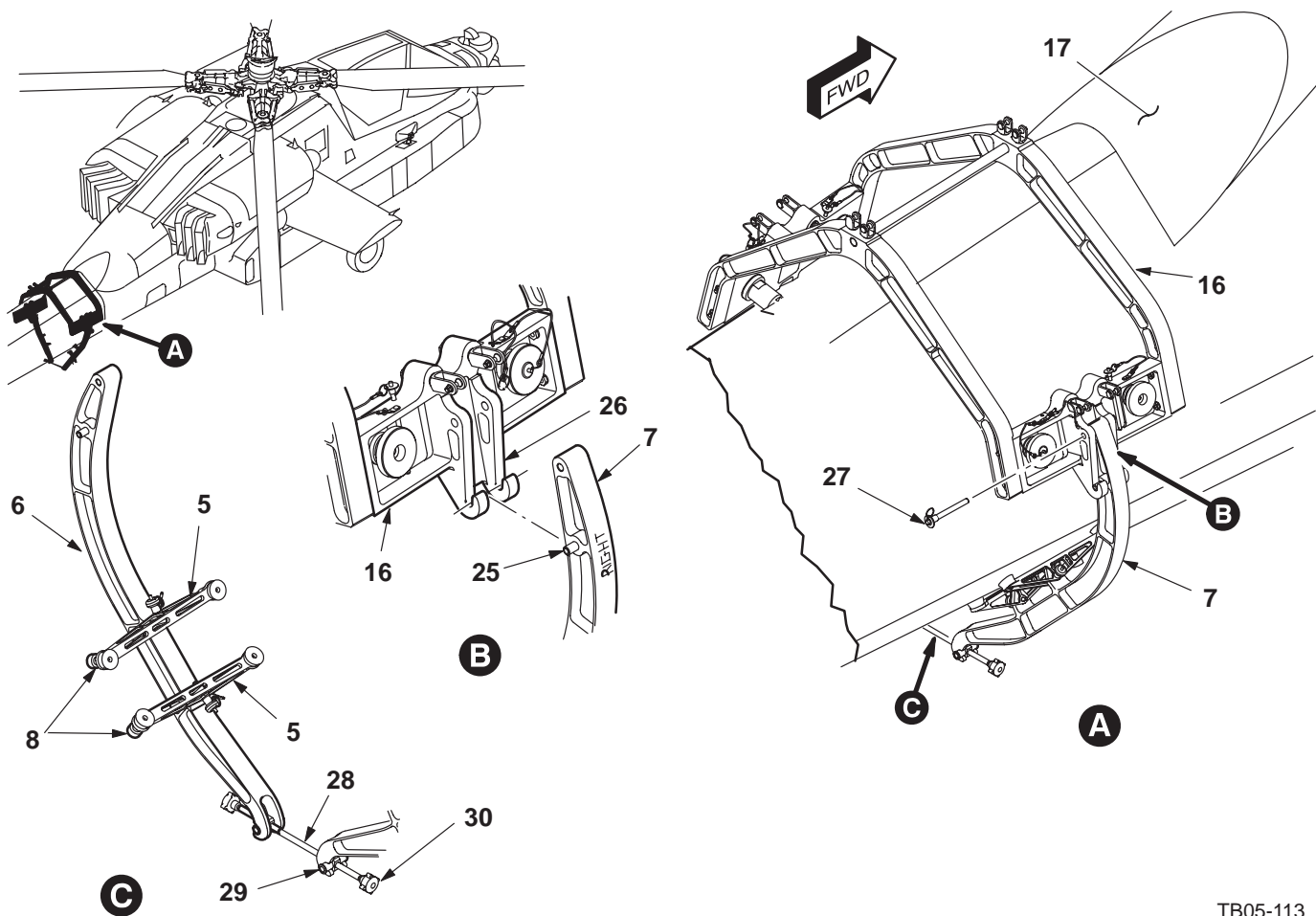


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Figure 6. Left Side Saddle and Side Rail

(14) Install right lower saddle assembly (7).

- (a) On right side of tailboom (17), align two pins (25) on right lower saddle (7) marked **RIGHT** in J-hooks (26) on right side rail of upper saddle (16) (See Figure 7).
- (b) Install quick release pin (27) through upper saddle (16) and lower saddle (7) assemblies.
- (c) Connect support rod (28) from left saddle (6) to clevis (29) on right saddle (7).
- (d) Tighten torque knob (30) on support rod (28) one click.
- (e) Tighten eight torque knobs (8) on four pivot assemblies (5).



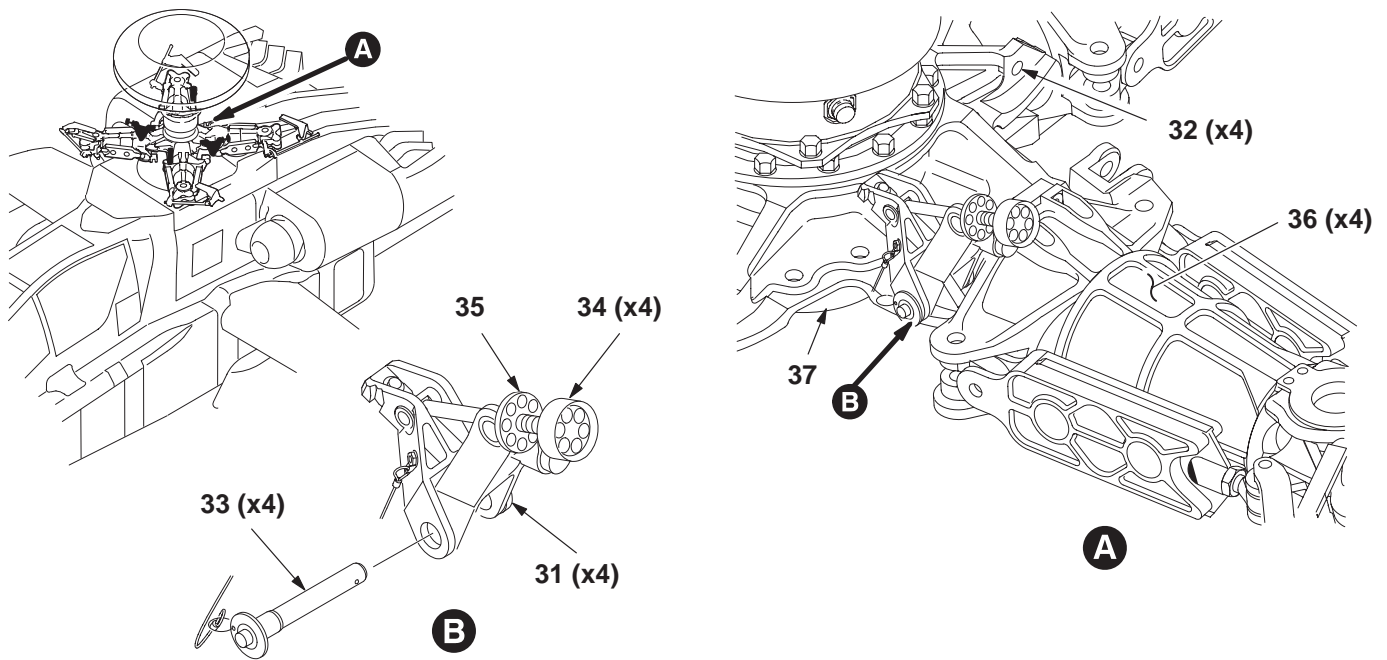
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Figure 7. Installation of Right Lower Saddle Assembly

NOTE

Main rotor blade flap locks will be tightened later in step i.(3).

- (15) Install four flap lock assemblies (31) on main rotor hub lifting lug (32).
- (a) Remove quick release pin (33) (See Figure 8).
 - (b) Turn stud (34) to fully retract each flap lock assembly (31).
 - (c) Fully loosen cinch nut (35).
 - (d) Install four flap locks (31) on main rotor hub lifting lugs (32) between each of four pitch housings (36) and main rotor head hub (37).
 - (e) Install quick release pin (33) through four flap locks (31) and main rotor hub lifting lug (32).



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Figure 8. Installation of Flap Lock Assemblies on Main Rotor Hub

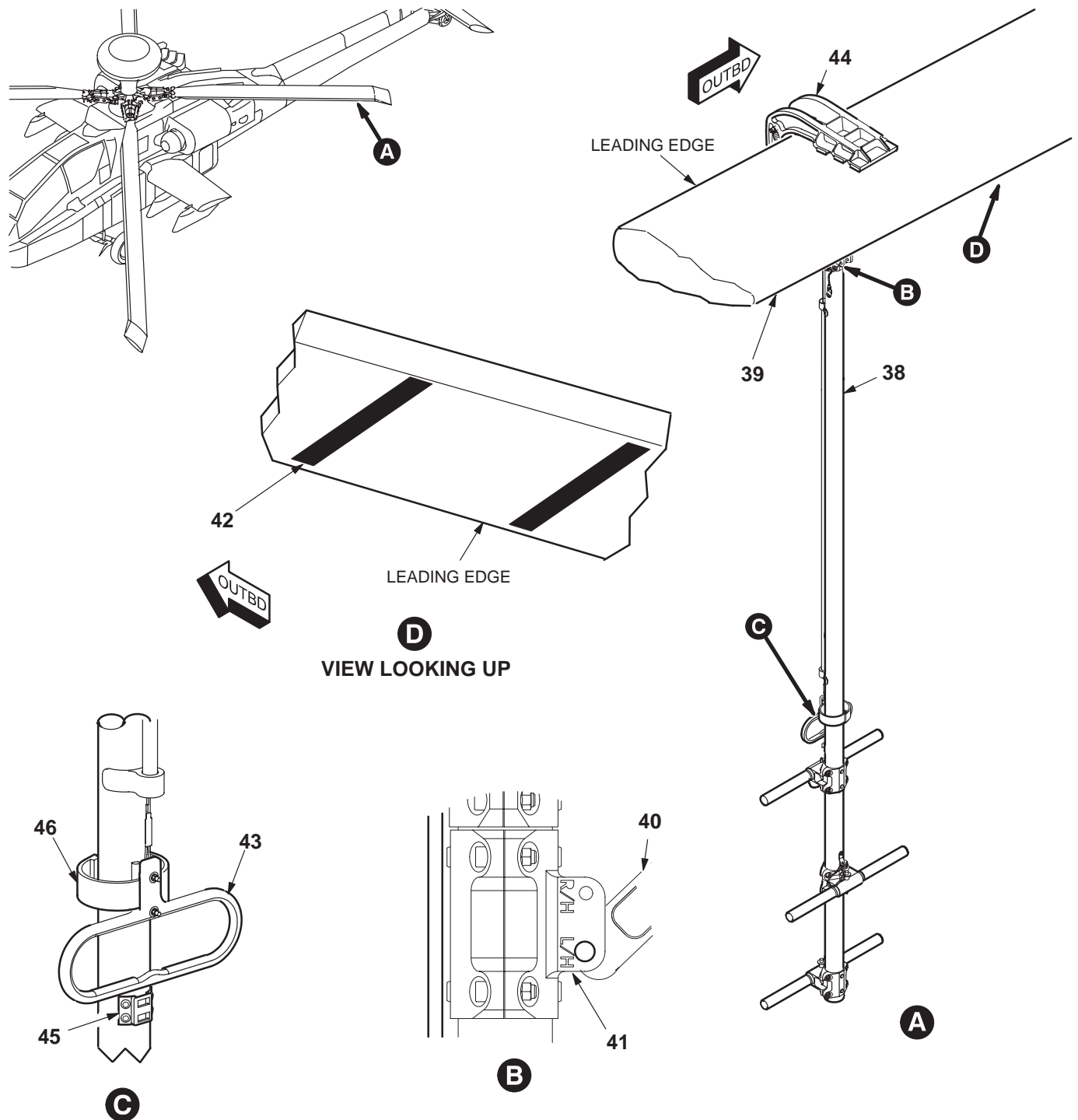
WARNING

Use four persons to lift and control the main rotor blade. In moderate or high winds it can be necessary to use more than four persons. The main rotor blade is a large and heavy component. Failure to follow maintenance instructions may result in serious injury or death and/or serious damage to the helicopter.

NOTE

While installing the handling pole assembly, one person must hold the tail rotor blades to prevent movement of the main rotor blades.

- i. One person temporarily hold tail rotor blades to prevent movement of main rotor blades (See Figure 8).
- j. Install handling pole assembly (38) on L/H AFT blade (39).
 - (1) Adjust handling pole strut (40) to **L/H** position of clevis (41) (See Figure 9).
 - (2) Install handling pole (38) on outboard stripe (42) of blade (39).
 - (a) Pull down release handle (43) to unlock blade clamp (44) on blade handling pole (38).
 - (b) Place the release handle (43) into retaining clip (45) to hold blade clamp (44) open.
 - (c) Align the blade clamp (44) of handling pole (35) on the outboard stripe (42) of the blade (39).
 - (d) Install handling pole assembly (38) onto blade (39) (leading edge first) until leading edge of blade (39) contacts pad on inside of blade clamp (44).
 - (e) Release handle (43) from retainer (45) to lock blade clamp (44) onto blade (39).
 - (f) Secure handle (43) with Velcro strap (46).



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Figure 9. Installation of Blade Handling Pole on Inboard Stripe L/H Aft Main Rotor Blade

NOTE

- During flap lock adjustment, two persons will raise the L/H AFT blade. This allows the R/H FWD flap lock assembly to be tightened in a position which holds pitch housing to an optimum position for blade folding. Lifting of L/H AFT blade required only for tightening of R/H FWD flap lock assembly.
- The R/H FWD flap lock must be tightened first to ensure pitch housings are in an optimum position for blade folding.
- The droop stop follower is bottomed out when spring is fully compressed.

(3) Adjust flap lock assemblies (31) to hold pitch housings (36) to an optimum position for blade folding.

(a) Position two persons on the handling pole assembly (38) at L/H AFT blade (39) (See Figure 10).

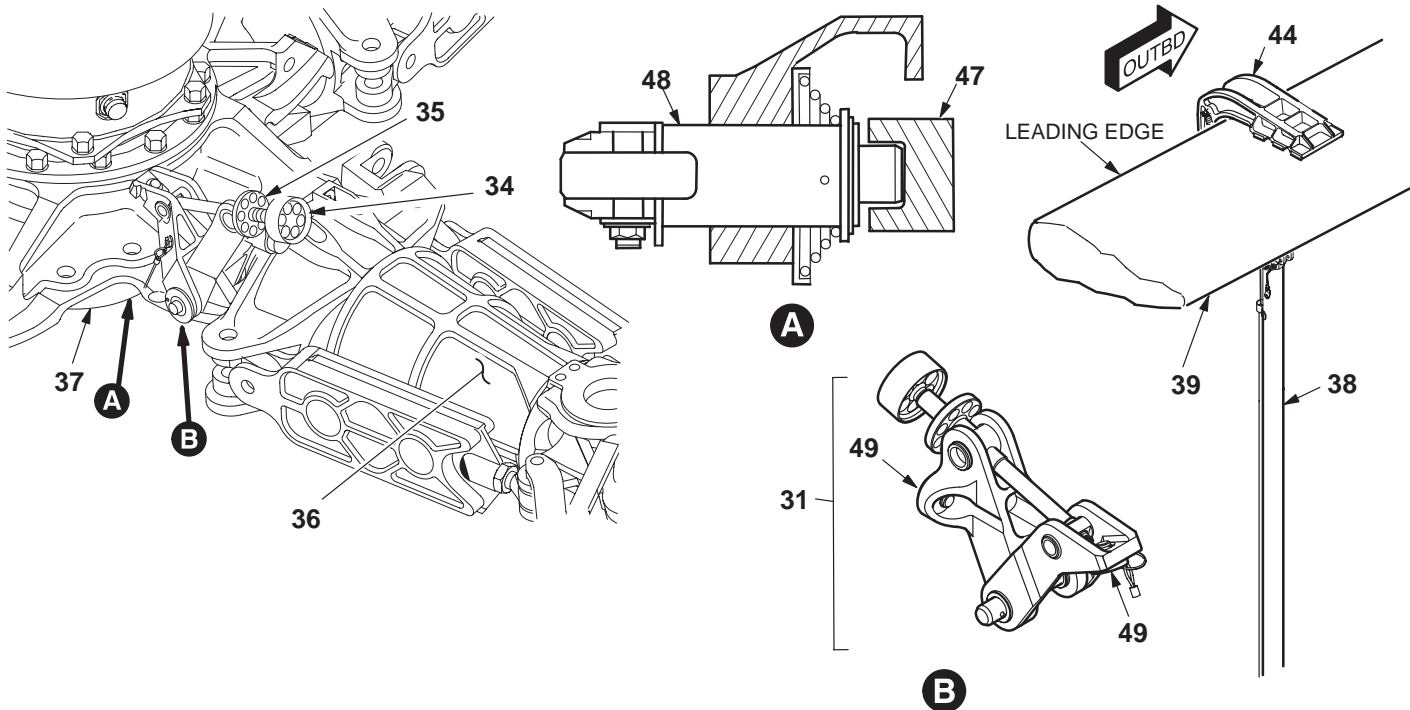
(b) Lift L/H AFT blade (39) until R/H FWD droop stop ring (47) and follower (48) is fully compressed.

(c) Ensure there is no gap between droop stop ring (47) and follower (48) at L/H AFT mast position.

(d) Tighten stud (34) on R/H FWD flap lock (31) until pads (49) on flap lock (31) contacts hub (37) and pitch housing (36).

(e) Tighten remaining flap lock assemblies (34) in same manner.

(f) After all four flap locks (31) are extended, tighten four cinch nuts (35).



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Figure 10. Flap Lock Assemblies Adjustment

k. Install blade securing pole assembly (50) marked **LEFT REAR - ALIGN WITH BLADE'S INNER MARK** and install on inboard stripe (51) of L/H AFT blade (39) (See Figure 11).

NOTE

- The extension pole assemblies (short or long) can be utilized for better ergonomics during lifting of main rotor blade.
- The “U” shaped end of extension will go around handle of securing pole while clevis on extension engages J hook on securing pole.
- Ensure lower end of support pole (the smaller dia. tube) is in clevis marked **HANDLING**.

- (1) Attach appropriate extension (52) on base of securing pole (53).
- (2) Install securing pole (53) on inboard stripe (51) on bottom of blade (39).
 - (a) Pull down release handle (54) to unlock blade clamp (55) on the securing pole (53).
 - (b) Place handle (54) into retaining clip (56) to hold blade clamp (55) open.
 - (c) Align blade clamp (55) on securing pole assembly (50) with inboard stripe (51) on bottom of blade (39).
 - (d) Install blade clamp (55) of securing pole assembly (50) on inboard stripe (51) on bottom of blade (39) (leading edge first) until leading edge of blade (39) contacts pad on inside of blade clamp (55).
 - (e) Release handle (54) from retainer (56) to lock blade clamp (55) onto blade (39).
 - (f) Secure handle (54) with Velcro strap (57).

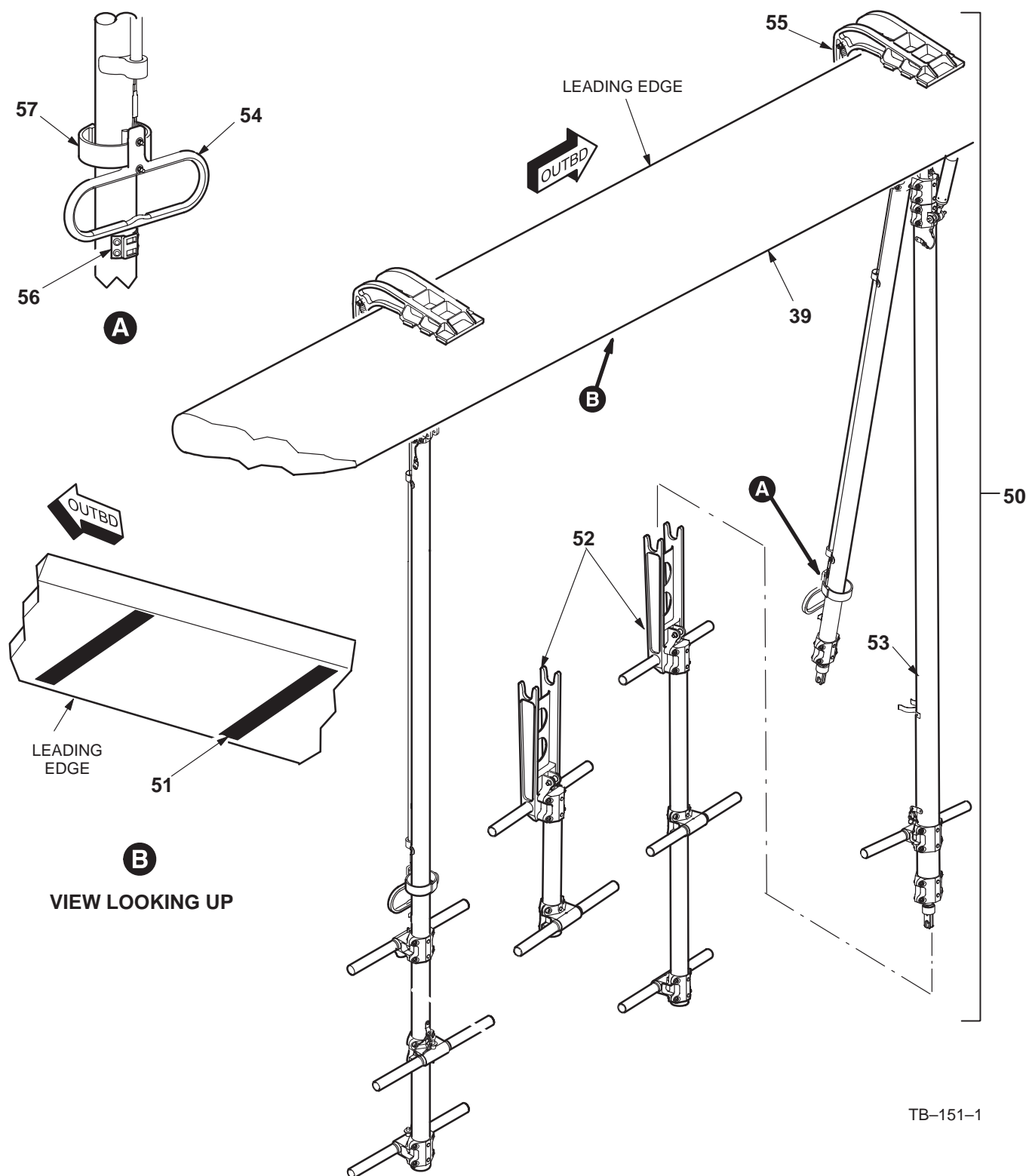


Figure 11. Installation of Blade Securing Pole on L/H AFT Main Rotor Blade

WARNING

- Use four persons to lift and control main rotor blade. In moderate or high winds it can be necessary to use more than four persons. The main rotor blade is a large and heavy component. Failure to follow maintenance instructions may result in serious injury or death and/or serious damage to helicopter.
- Use two persons to lift blade positioning gear during installation. The positioning gear is a large and heavy component. Failure to follow maintenance instructions may result in serious injury or death of and/or serious damage to helicopter.
- Make sure main rotor blade is secured with handling pole before removing aircraft blade pins. Heavy blades can fall if not correctly held. Failure to follow maintenance instructions may result in serious injury or death and/or serious damage to helicopter.

CAUTION

- Do not move main rotor blades after blades are folded. Failure to follow maintenance instructions will result in damage to aircraft.
- Do not use aircraft blade pins to fold or unfold main rotor blades. The MRBFK blade fold pin assemblies must be used for blade folding procedures. Failure to follow maintenance instructions will result in damage to aircraft blade pins.

4. Left Hand Aft Blade Folding Procedure.

a. Fold Left Hand Aft Blade.

- (1) Open both spring clips (58) on aircraft blade pins (59) and (60) to fully-open position. (See Figure 12).
- (2) Install blade positioner assembly (61) on trailing edge side of blade (39).
 - (a) Disassemble jackscrew (62) from blade positioner clamp halves (63) by removing quick release pin (64).
 - (b) Remove quick release pin (65) from the **TOP** and **BOTTOM** blade positioner clamp halves (63).
 - (c) Open and install blade positioner clamp halves (63) from trailing edge side of blade (39).
 - (d) Align holes of **TOP** and **BOTTOM** blade positioner clamp halves (63) with caps (66) on bolts going through blade (39) near root end (67).
 - (e) Install quick release pin (65) through blade positioner clamp halves (63).

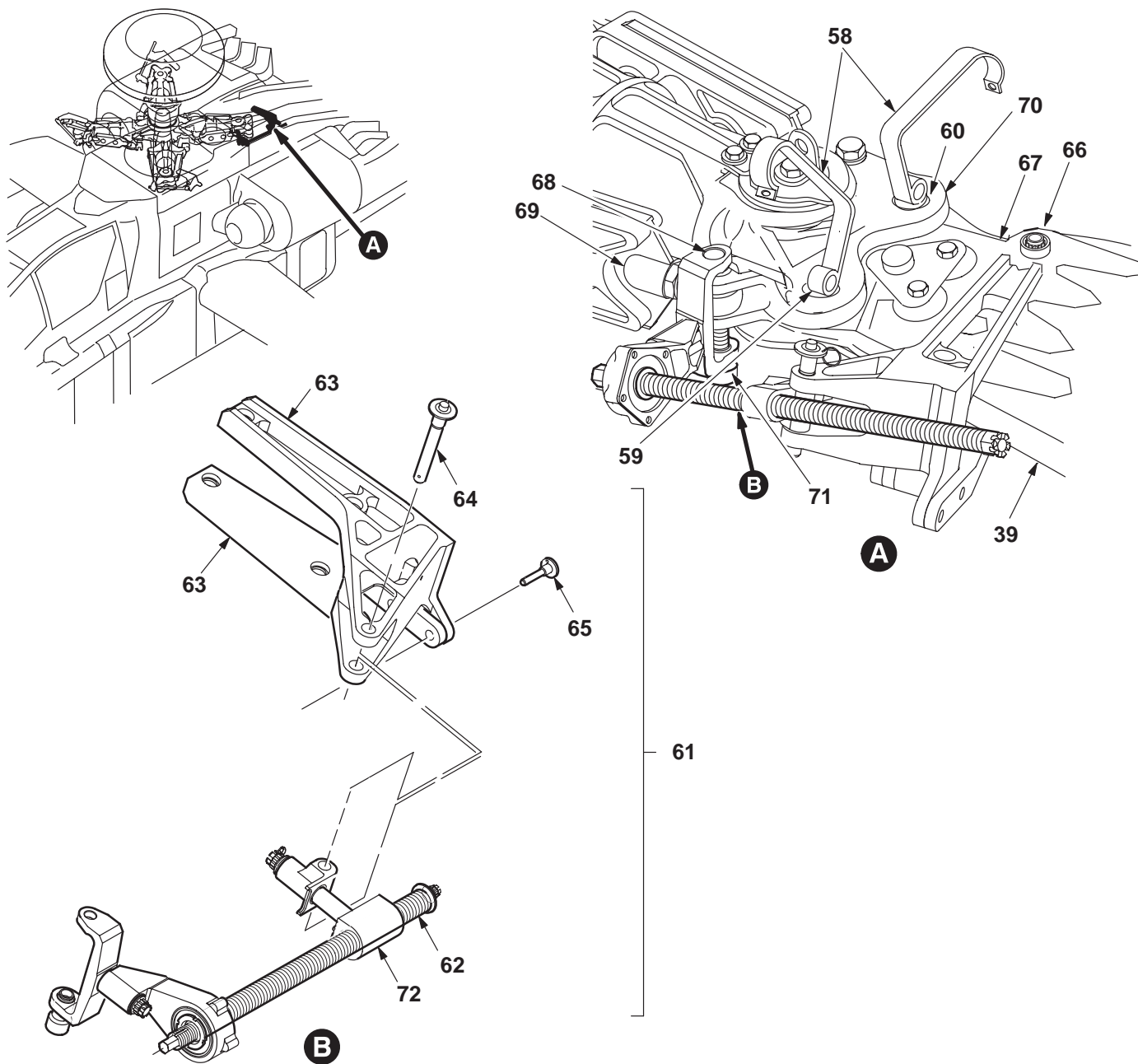
NOTE

Thumbscrew is always tightened upward and is positioned on bottom of jackscrew on all four blades.

- (f) Install jackscrew (62) on damper bolt (68) which connects damper (69) to lead lag link (70). Tighten thumbscrew (71) on yoke end of jackscrew (62).

(g) Align hole of jackscrew knuckle (72) with hole of blade positioner clamp (63).

(h) Install quick release pin (64) that attaches jackscrew knuckle (72) to blade positioner clamp (63).



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Figure 12. Blade Positioning Assembly on L/H AFT Main Rotor Blade

NOTE

- The person turning jackscrew will direct movement of blade up or down as necessary.
- While installing the folding the L/H AFT blade, one person must hold the tail rotor blades to prevent movement of the main rotor blades.

- (3) One person temporarily hold tail rotor blades to prevent movement of main rotor blades.
- (4) Remove leading edge aircraft blade pin (60) (See Figure 13).
 - (a) Position one person at rotor head, one person on wing, two people each on handling pole (38) and securing pole (53).
 - (b) Use four persons to lift or lower L/H AFT blade (39) with handling pole (38) and securing pole assembly (50) until aircraft blade pin (60) on leading edge side moves freely.
 - (c) Remove leading edge aircraft blade pin (60).

NOTE

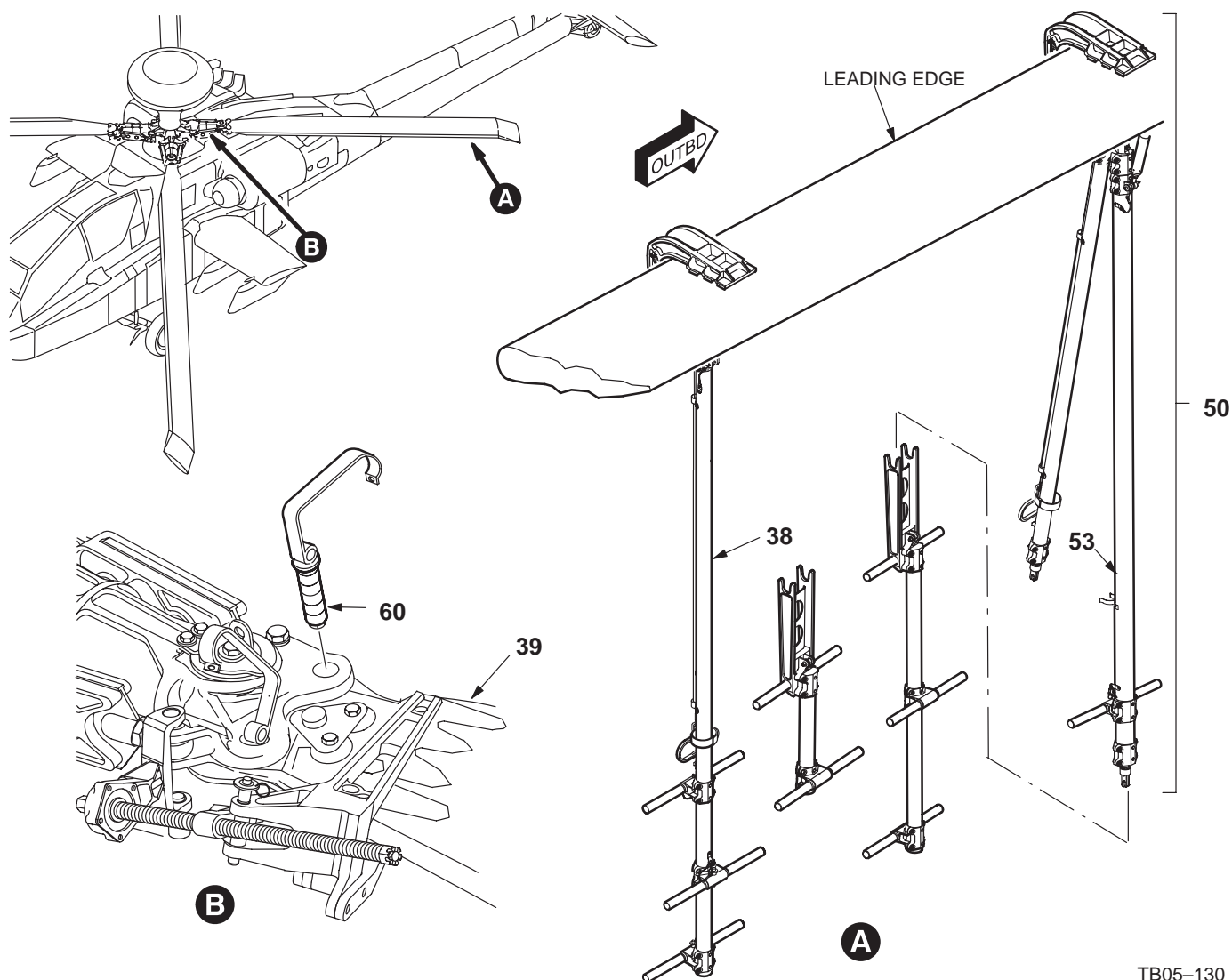
The handle on quick release fold pin assembly slides up and down on shaft to allow slight tapping during fold pin installation.

- (d) Install blade fold pin (73) (non shouldered) in place of aircraft blade pin removed (See Figure 14).
- (5) Remove aircraft blade pin (59) from trailing edge side of blade (39).
 - (a) Lift or lower the L/H AFT blade (39) until aircraft blade pin (59) on trailing edge side moves freely.
 - (b) Remove aircraft blade pin (59) from trailing edge side of blade (39).

NOTE

- The person turning jackscrew shall direct whether blade needs to be lifted or let down by inspecting blade root fitting movement out of lead lag link and by feeling any binding occurring on jackscrew as it turns.
- The blade block assembly is labeled **THIS SIDE UP** for correct orientation.
- The blade block fits between the middle and upper clevis of lead lag link and on top of blade root fitting.

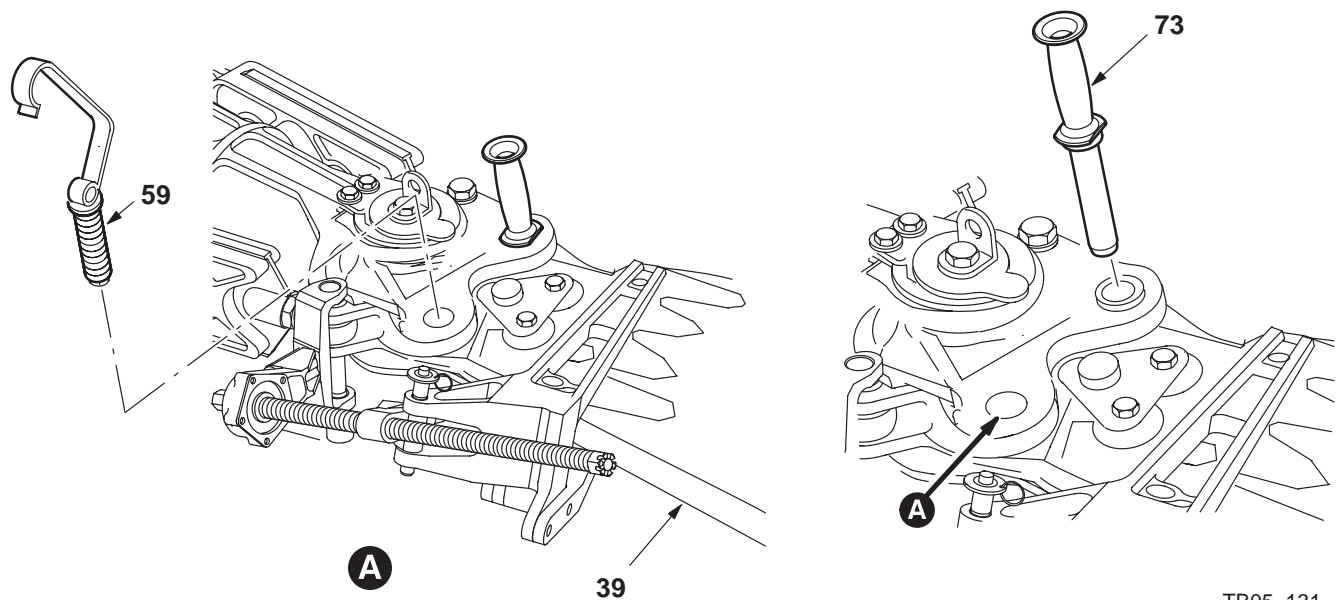
- (6) Install L/H AFT blade block assembly (74).
 - (a) Turn jackscrew (62) on blade positioning assembly (61) counter-clockwise to move L/H AFT blade (39) to folded position. (See Figure 15).
 - (b) Align hole in L/H AFT blade block (74) with blade pin hole in lead/lag link (70) at trailing edge of blade root fitting (67).
 - (c) Install L/H AFT blade block assembly (74).
 - (d) Install (non-shouldered) blade fold pin (75) through L/H AFT blade block (74) and blade root fitting (67).
 - (e) Continue to turn jackscrew (62) as necessary.



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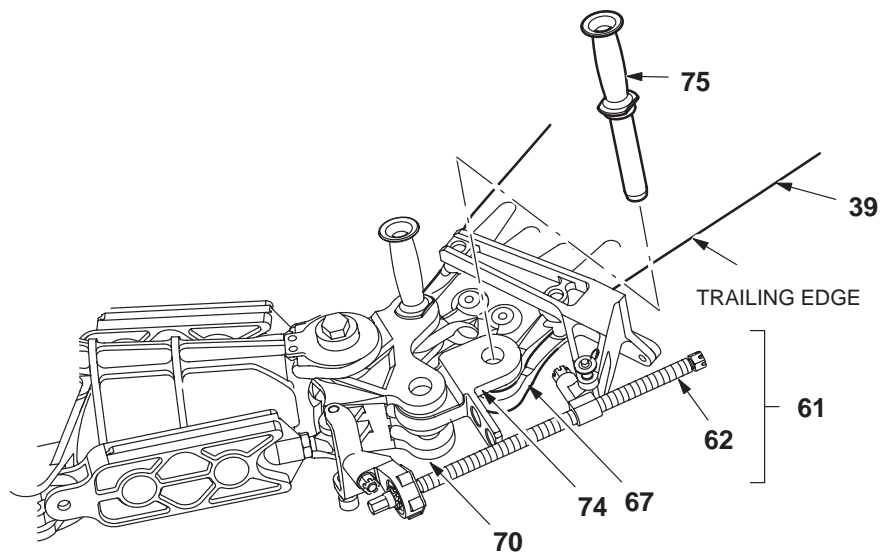
Figure 13. Removal of Aircraft Blade Pin from L/H AFT Blade Edge

- (f) Align remaining hole in L/H AFT blade block (74) with hole in lead-lag link (70) on pitch housing (See Figure 16).
- (g) Install (non-shouldered) blade fold pin (76) in L/H AFT blade block (74) and lead/lag link (70).
- (7) Remove pole extension (52) from securing pole (53) (See Figure 17).
- (8) Detach support pole (77) (small dia. tube) from retainer clip (78) on securing pole (53) (larger dia. tube) marked **LEFT REAR - ALIGN WITH BLADE'S INNER MARK**.
- (9) Attach support pole (77) to top of upper saddle assembly (16) at position labeled **C** by snapping J hook (79) down onto clevis (80) (See Figure 18).
- (10) Remove handle (1) from securing pole (53).
 - (a) Remove quick release pin (3) from receptacle (4) and handel (1).



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Figure 14. Install Blade Fold Pin at Leading Edge, Remove Aircraft Blade Pin from Trailing Edge



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Figure 15. Install of Quick Release Fold Pins in L/H AFT Blade Block, Lead/Lag Link and Blade Root End

- (b) Remove handle (1) from securing pole (53).
- (11) Attach securing pole (53) to side of upper saddle assembly (16) at position labeled **C** by snapping J hook (81) down onto clevis (82).
- (12) Remove blade positioner assembly (61) from trailing edge side of blade (39).
 - (a) Loosen thumbscrew (71) from damper bolt (68) (See Figure 19).
 - (b) Remove quick release pin (64) that attaches jackscrew knuckle (72) to blade positioner clamp (63).

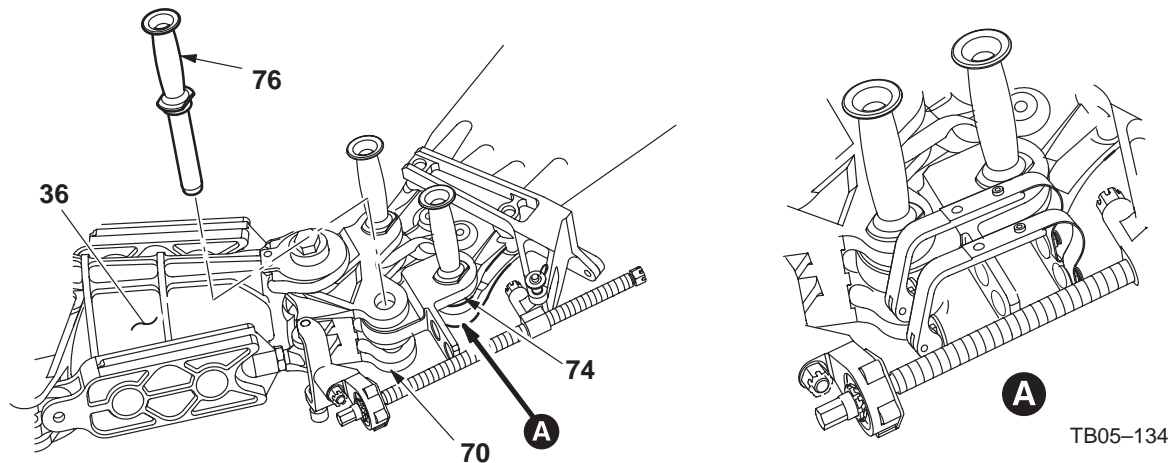


Figure 16. Install Quick Release Fold Pin in L/H AFT Blade Block and Lead/Lag

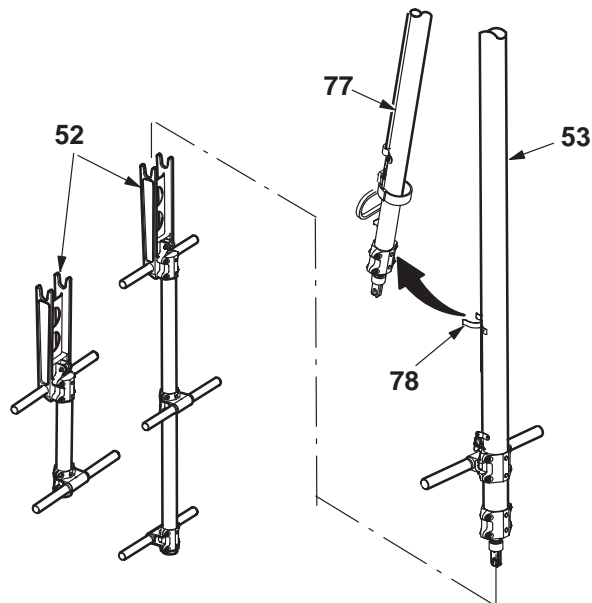


Figure 17. Support Pole from Securing Pole

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- (c) Remove jackscrew (62) from blade positioner clamp halves (63).
- (d) Remove quick release pin (65) from blade positioner clamp halves (63).
- (e) Open **TOP** and **BOTTOM** blade positioner clamp halves (63) and remove from trailing edge side of blade (39).
- (f) Person release tail rotor blades.

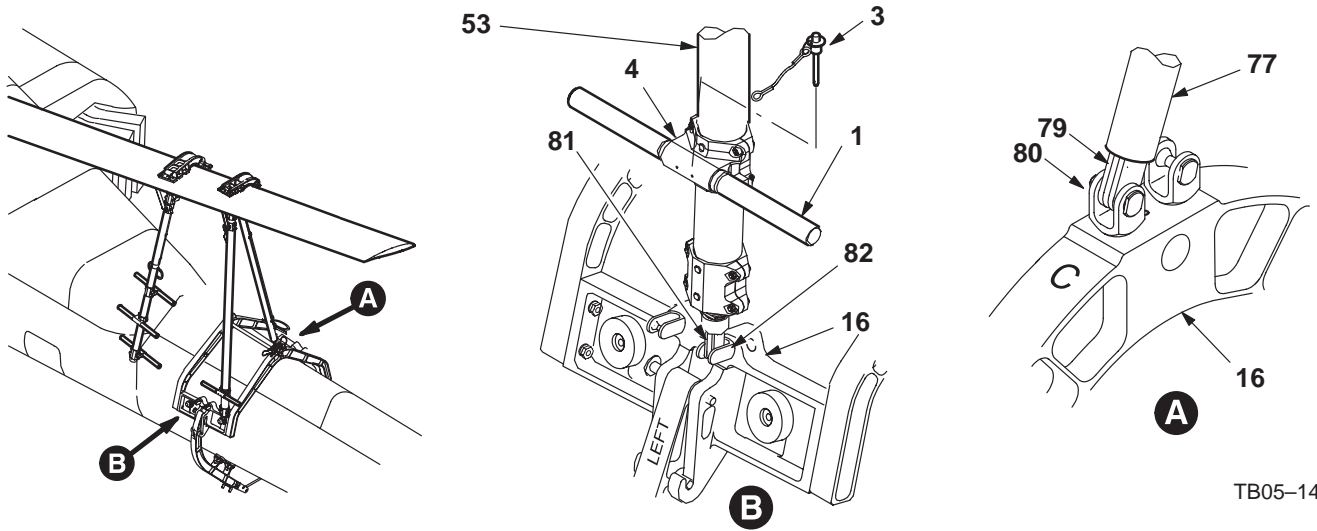
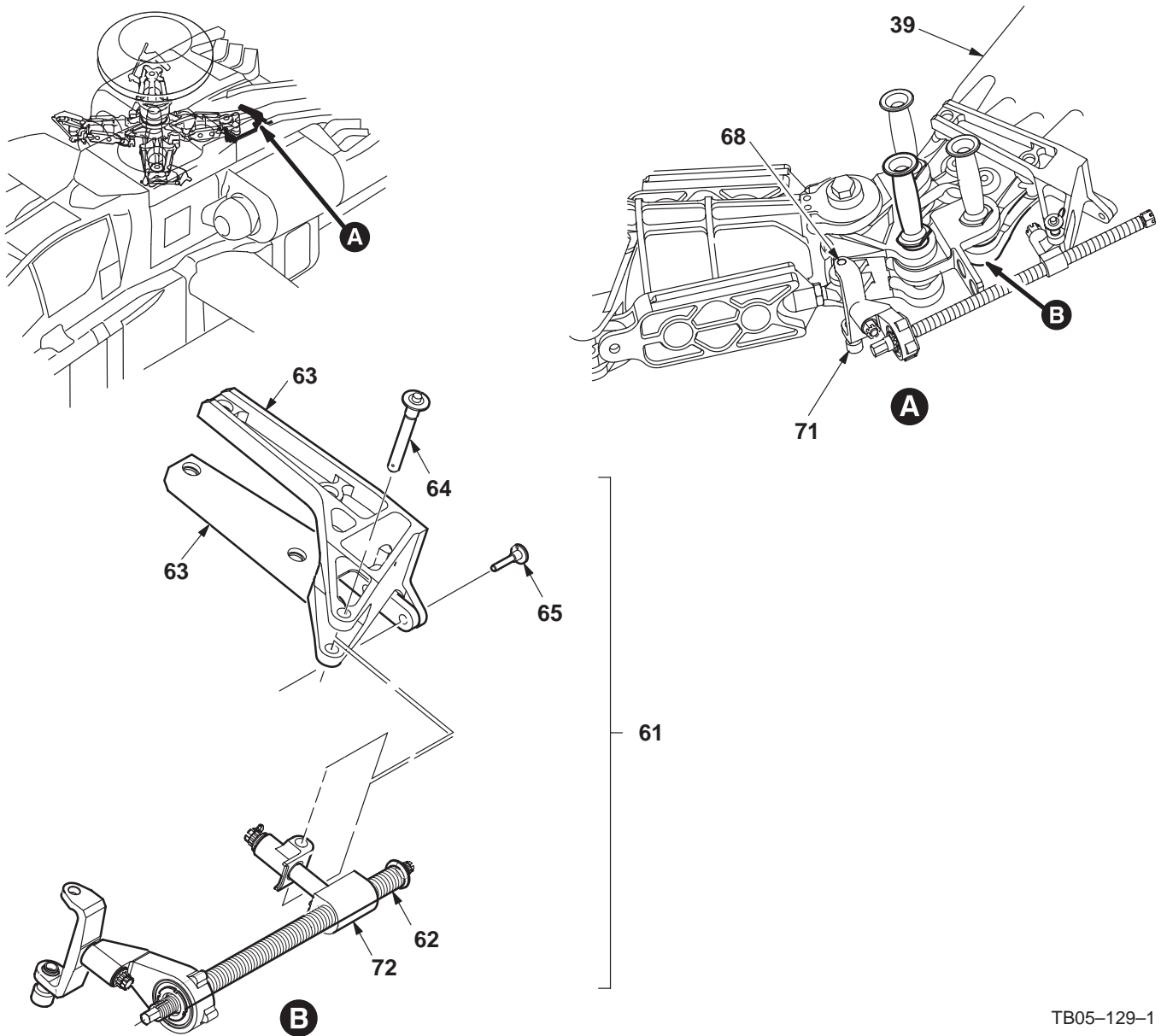


Figure 18. Securing Pole on Saddle

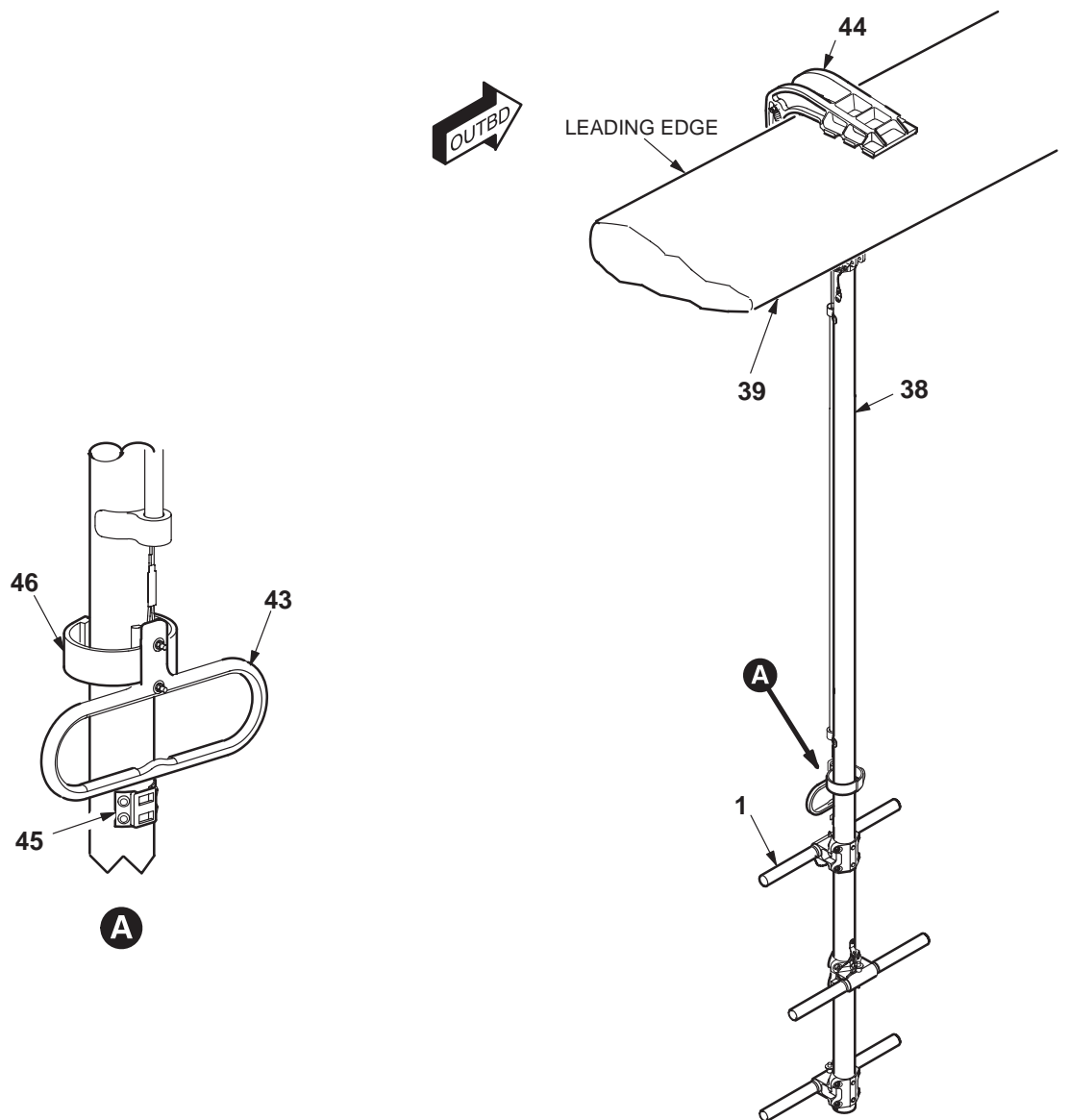
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Figure 19. Blade Positioning Assembly on L/H AFT Main Rotor Blade

- (13) Remove blade handling pole assembly (38).
- (a) Remove Velcro strap (46) from handle (43) (See Figure 21).
 - (b) Pull down release handle (43) to unlock blade clamp (44) on blade handling pole (38).
 - (c) Place release handle (43) into retaining clip (45) to hold blade clamp (44) open.
 - (d) Using two persons, remove handling pole (38) from blade (39).
 - (e) Release handle (43) from retainer (45).
 - (f) Remove handle (1) from pole (38).



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Figure 20. Removal of Blade Handling Pole Assembly

- (14) Remove blade fold handles (83) from blade fold pins (73), (75), and (76) to allow adequate transport clearance.
- (15) Tag and identify aircraft blade pins (59), (60) and loose handles (83).
- (16) Wipe aircraft blade pins (59) and (60) with clean rag.
- (17) Apply corrosion preventive compound on adjustment nut and threads of aircraft blade pins (59) and (60).
- (18) Stow tagged and identified aircraft blade pins (59), (60), and loose handles (83) in in stowage compartment in aft avionics bay.

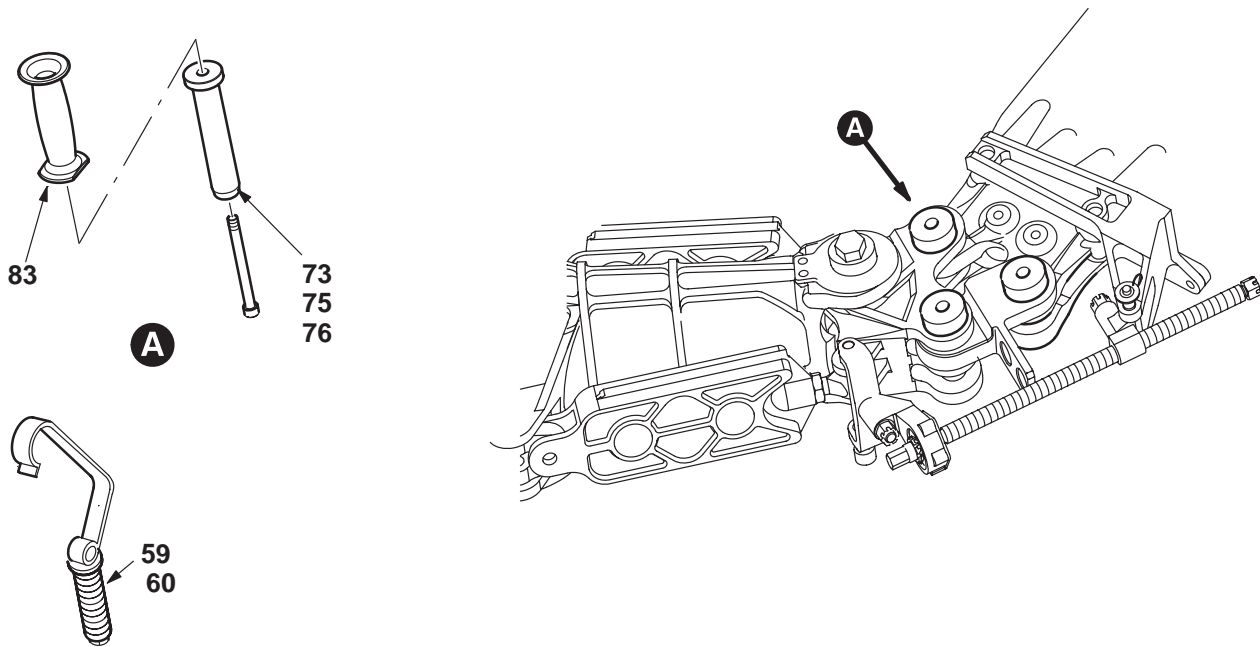


Figure 21. Removal of Blade Fold Handles

5. Right Hand Aft Blade Folding Procedure.

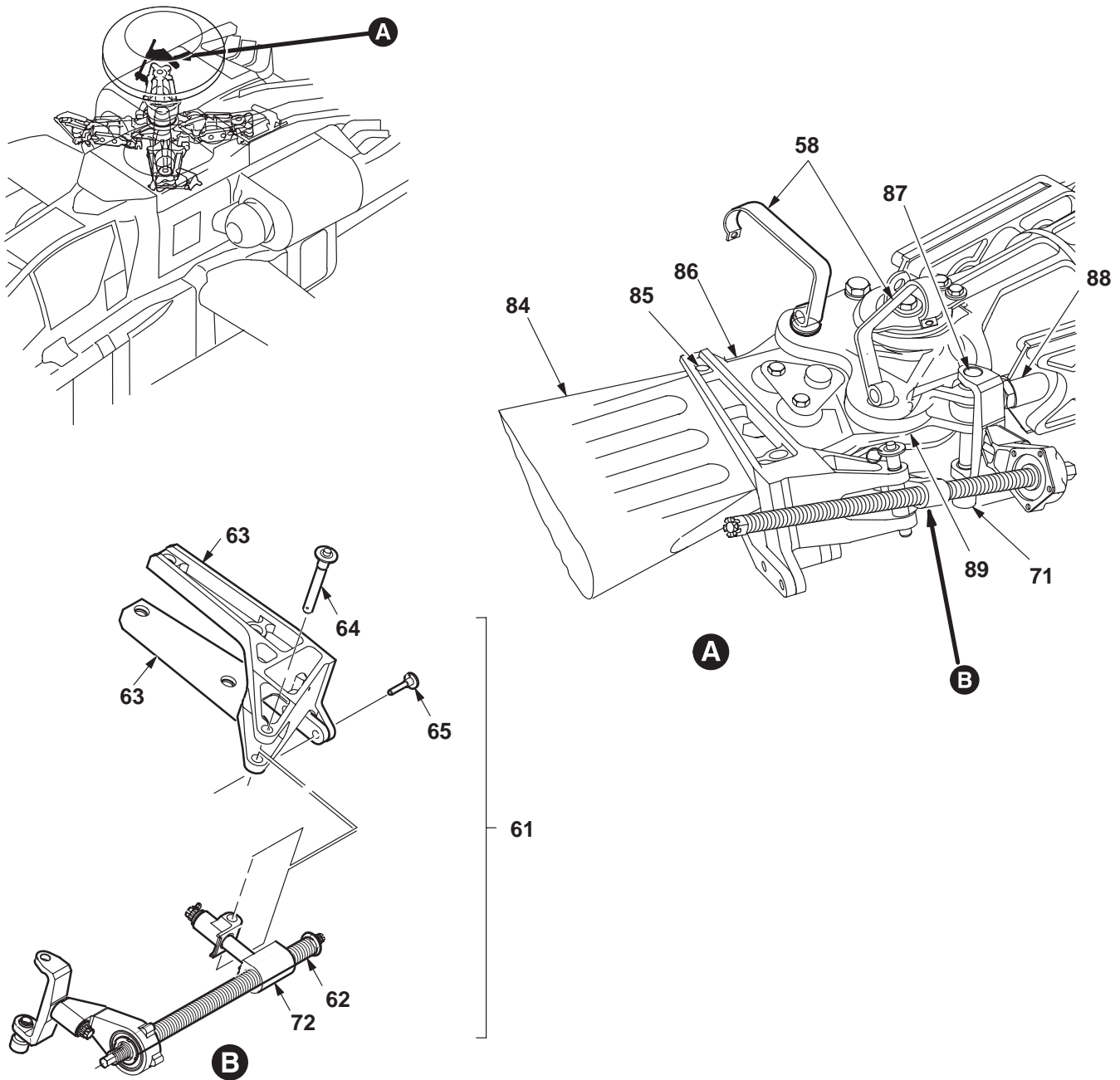
a. Fold Right Hand Aft Blade.

- (1) Pull both spring clips (58) up to fully open position on R/H AFT blade (84) (See Figure 22).
- (2) Install blade positioner assembly (61) on R/H AFT blade (84).
 - (a) Disassemble jackscrew (62) from blade positioner clamp halves (63) by removing quick release pin (64).
 - (b) Remove quick release pin (65) from the **TOP** and **BOTTOM** blade positioner clamp halves (63).
 - (c) Open and install blade positioner clamp halves (63) from leading edge side of blade (84).
 - (d) Align holes of **TOP** and **BOTTOM** blade positioner clamp halves (63) with caps (85) on bolts going through blade (84) near root end (86).
 - (e) Install quick release pin (65) through blade positioner clamp halves (63).

NOTE

Thumbscrew is always tightened upward and is positioned on the bottom of the jackscrew on all four blades.

- (f) Install jackscrew (62) on damper bolt (87) which connects damper (88) to lead lag link (89). Tighten thumbscrew (71) on yoke end of jackscrew (62).
- (g) Align hole of jackscrew knuckle (72) with hole of blade positioner clamp (63).
- (h) Install quick release pin (64) that attaches jackscrew knuckle (72) to blade positioner clamp (63).



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Figure 22. Blade Positioning Assembly on R/H AFT Main Rotor Blade

WARNING

- **Use four persons to lift and control main rotor blade. In moderate or high winds it can be necessary to use more than four persons. The main rotor blade is a large and heavy component. Failure to follow the maintenance instructions may result in serious injury or death and/or serious damage to helicopter.**
- **Use two persons to lift blade positioning gear during installation. The positioning gear is a large and heavy component. Failure to follow maintenance instructions may result in serious injury or death of and/or serious damage to helicopter.**
- **Make sure main rotor blade is secured with handling pole before removing aircraft blade pins. Heavy blades can fall if not correctly held. Failure to follow maintenance instructions may result in serious injury or death and/or serious damage to helicopter.**

CAUTION

- **Do not move main rotor blades after blades are folded. Failure to follow maintenance instructions will result in damage to aircraft.**
- **Do not use aircraft blade pins to fold or unfold main rotor blades. The MRBFK blade fold pin assemblies must be used for blade folding procedures. Failure to follow maintenance instructions will result in damage to aircraft blade pins.**

b. Install handling pole assembly (38) on R/H AFT blade (84).

(1) Adjust handling pole strut (40) to **R/H** position of clevis (41) (See Figure 23).

(2) Install handling pole (38) on outboard stripe (90) of blade (84).

(a) Pull down release handle (43) to unlock blade clamp (44) on blade handling pole (38).

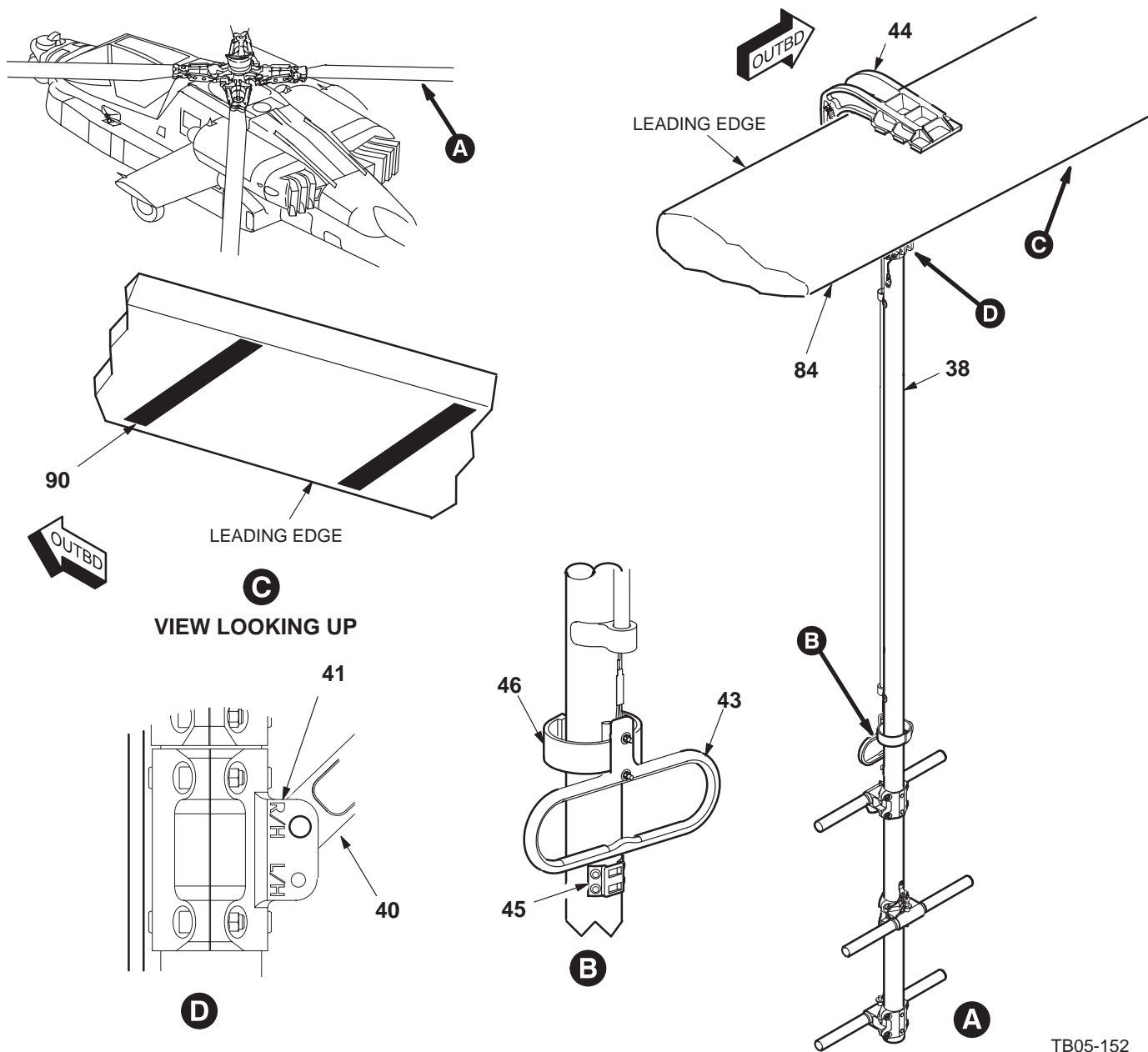
(b) Place release handle (43) into retaining clip (45) to hold blade clamp (44) open.

(c) Align blade clamp (44) of handling pole (38) on outboard stripe (90) of blade (84).

(d) Install handling pole assembly (38) onto blade (84) (leading edge first) until leading edge of blade (84) contacts pad on inside of blade clamp (44).

(e) Release handle (43) from retainer (45) to lock blade clamp (44) onto blade (84).

(f) Secure handle (43) with Velcro strap (46).



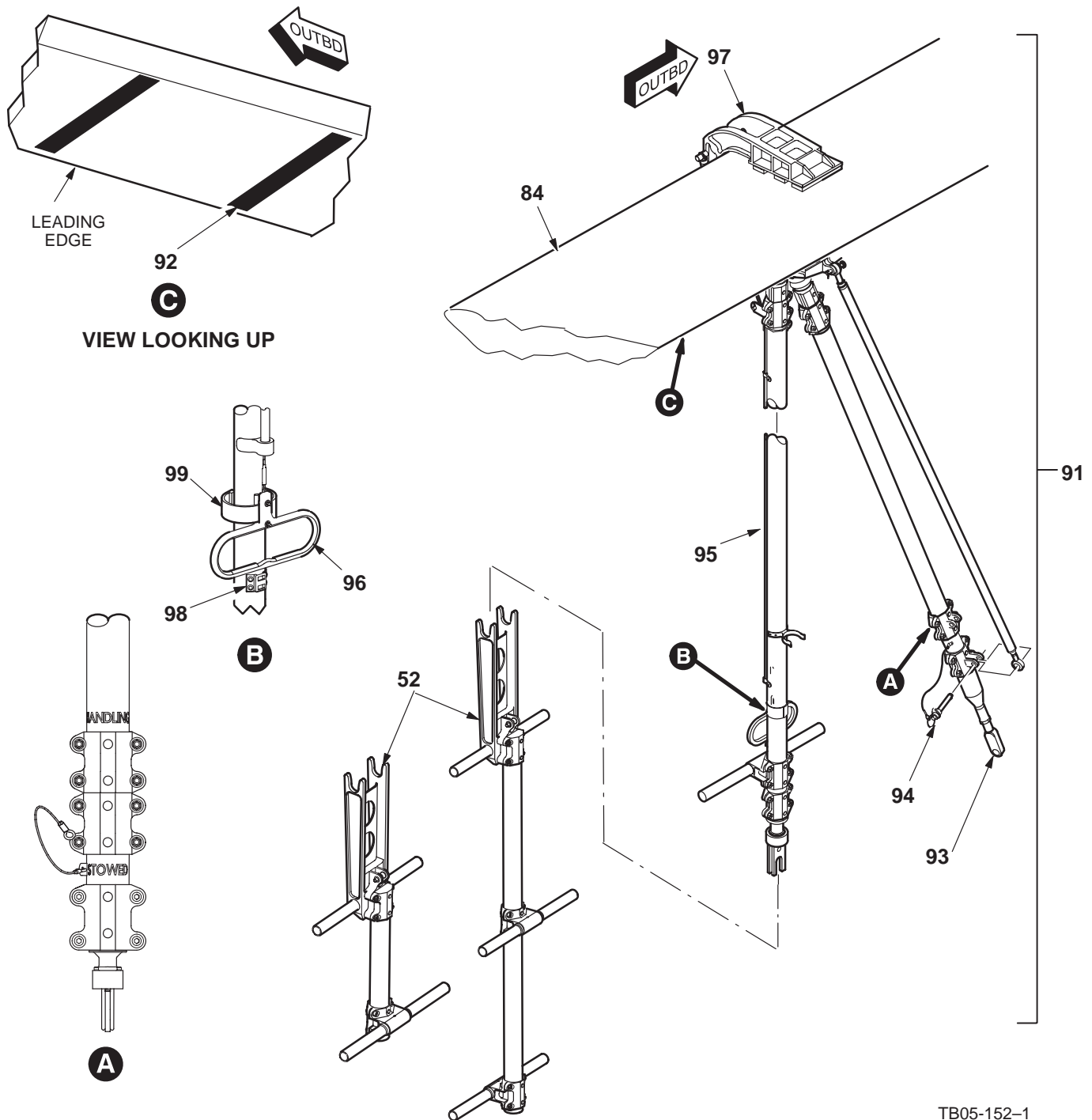
TB05-152

Figure 23. Handling Pole on R/H AFT Main Rotor Blade

c. Install blade securing pole assembly (91) (marked **RIGHT REAR - ALIGN WITH BLADE'S INNER MARK**) and install on inboard stripe (92) of R/H AFT blade (84) (See Figure 24).

NOTE

- The extension pole assemblies (short or long) can be utilized for better ergonomics during lifting of main rotor blade.
 - The “U” shaped end of extension will go around handle of securing pole while clevis on extension engages J hook on securing pole.
 - Ensure lower end of support pole (the smaller dia. tube) is in clevis marked **HANDLING**.
- (1) Position lower end of support pole (93) (small dia. tube) into clevis labeled **HANDLING** and insert quick release pin (94).
 - (2) Attach the appropriate extension (52) by installing extension (52) on the base of securing pole (95).
 - (a) Pull down release handle (96) to unlock blade clamp (97) on securing pole (95).
 - (b) Place handle (96) into retaining clip (98) to hold blade clamp (97) open.
 - (c) Align securing pole (95) with inboard stripe (92) on bottom of blade (84).
 - (d) Install blade clamp (97) of securing pole assembly (95) on inboard stripe (92) on bottom of blade (84) (leading edge first) until leading edge of blade (84) contacts pad on inside of blade clamp (97).
 - (e) Release handle (96) from retainer (98) to lock blade clamp (97) onto blade (84).
 - (f) Secure handle (96) with Velcro strap (99).



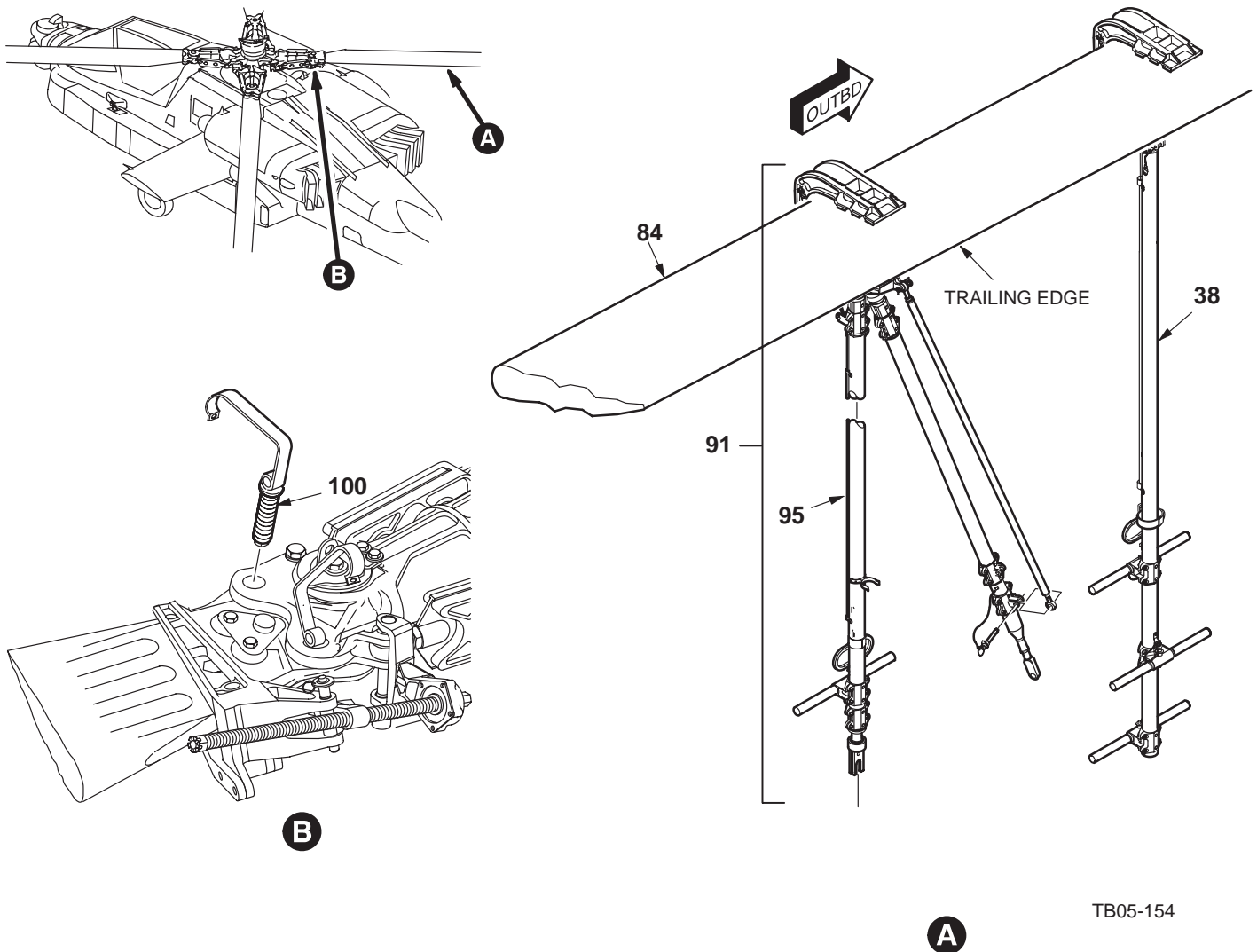
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Figure 24. Securing Pole on R/H AFT Main Rotor Blade

NOTE

The person turning jackscrew will direct movement of R/H AFT blade up or down as necessary.

- (3) Remove aircraft blade pin (100) from trailing edge of blade (84) (See Figure 25).
 - (a) Position one person at rotor head, one person on wing, two people each on handling pole (38) and securing pole (95).
 - (b) Use four persons to lift or lower R/H AFT blade (84) with handling pole (38) and securing pole assembly (91) until aircraft blade pin (100) on trailing edge side moves freely.
 - (c) Remove trailing edge aircraft blade pin (100).



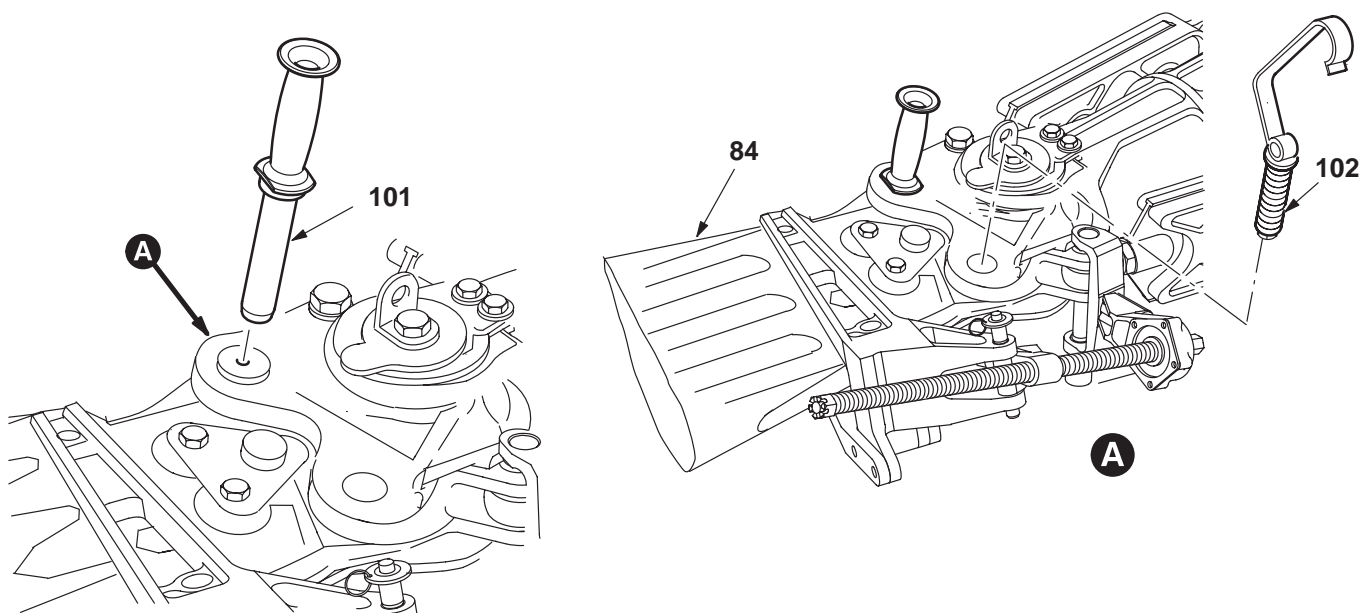
TB05-154

Figure 25. Aircraft Blade Pin from R/H AFT Blade Trailing Edge

NOTE

The handle portion on blade fold pin assembly slides up and down on shaft to allow slight tapping during fold pin installation.

- (d) Install blade fold pin (101) (non shouldered) in place of aircraft blade pin removed (See Figure 26).
- (4) Remove aircraft blade pin (102) from leading edge of blade (84).
 - (a) Lift or lower R/H AFT blade (84) until aircraft blade pin (102) on leading edge side moves freely.
 - (b) Remove aircraft blade pin (102).



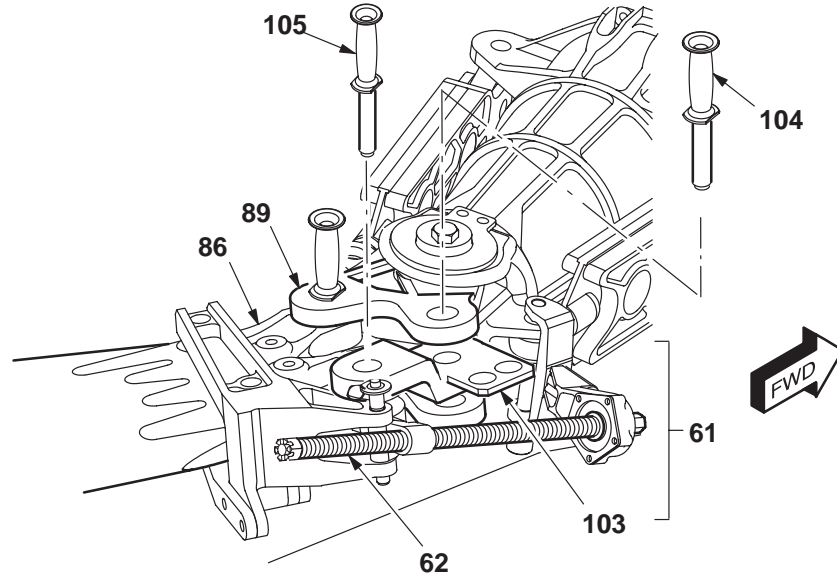
TB05-155

Figure 26. Aircraft Blade Pin from R/H AFT Blade Leading Edge

NOTE

- The person turning jackscrew shall direct whether blade needs to be lifted or let down by inspecting blade root fitting movement out of lead lag link and by feeling any binding occurring on jackscrew as it turns.
 - The blade block assembly is labeled **THIS SIDE UP** for correct orientation.
 - The blade block fits between middle and upper clevis of lead lag link and on top of blade root fitting.
- (5) Install R/H AFT blade block assembly (103).
 - (a) Turn the jackscrew (62) on the blade positioning assembly (61) counter-clockwise to move R/H AFT blade (84) to folded position (See Figure 27).
 - (b) Align hole in R/H AFT blade block (103) with blade pin hole in lead lag link (89) at trailing edge of blade root fitting (86).

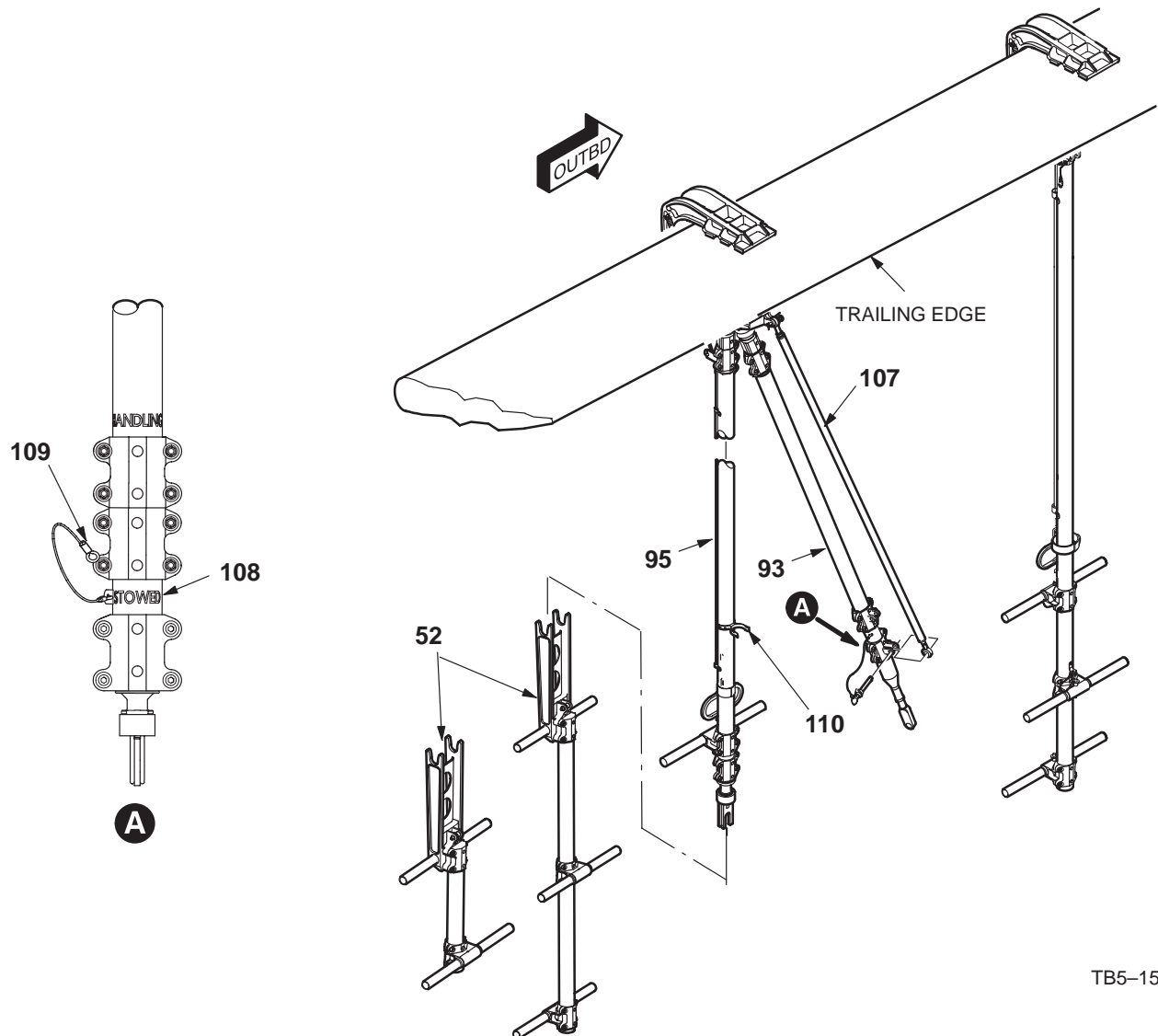
- (c) Install R/H AFT blade block assembly (103).
- (d) Install (non-shouldered) blade fold pin (104) through R/H AFT blade block (103) and blade root fitting (86).
- (e) Continue to turn jackscrew (62) as necessary.
- (f) Align remaining hole in R/H AFT blade block (103) with hole in lead lag link (89).
- (g) Install (non-shouldered) blade fold pin (105) in R/H AFT blade block (103) and lead lag link (89).



TB05-159

Figure 27. Install Quick Release Fold Pins in R/H AFT Blade Block, Lead/Lag Link and Blade Root End

- (6) Remove pole extension (52) from securing pole (95) (See Figure 28).
- (7) Position lower end of support strut (107) (small dia. tube) into clevis (108) labeled **STOWED** and insert quick release pin (109).
- (8) Detach support pole (95) (small dia. tube) from retainer clip (110) on securing pole (95) (larger dia. tube) marked **RIGHT REAR - ALIGN WITH BLADE'S INNER MARK.**



TB5-152-2

Figure 28. Preparing R/H AFT Securing Pole for Mounting to Saddle

- (9) Attach support pole (93) to top of upper saddle assembly (16) at position labeled **A** by snapping J hook (111) down onto clevis (112) (See Figure 29).
- (10) Remove handle (1) from securing pole (95).
 - (a) Remove quick release pin (3) from receptacle (4) and handel (1).
 - (b) Remove handle (1) from securing pole (95).
- (11) Attach securing pole (95) to side of upper saddle assembly (16) at position labeled **A** by snapping J hook (113) down onto clevis (114).

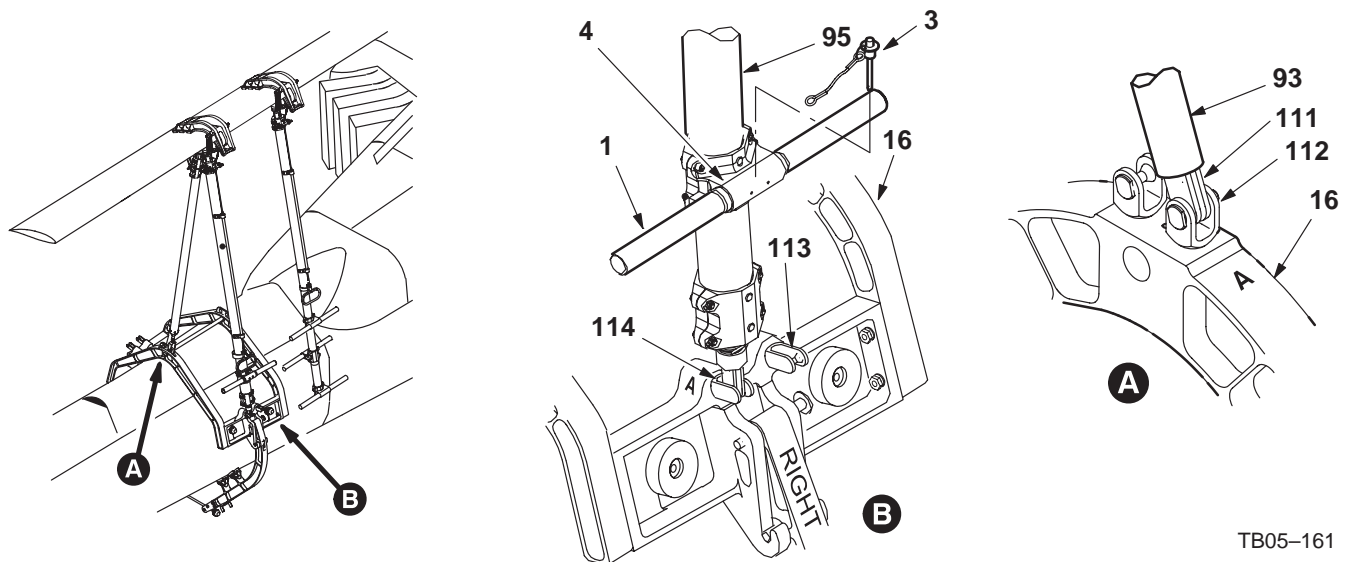
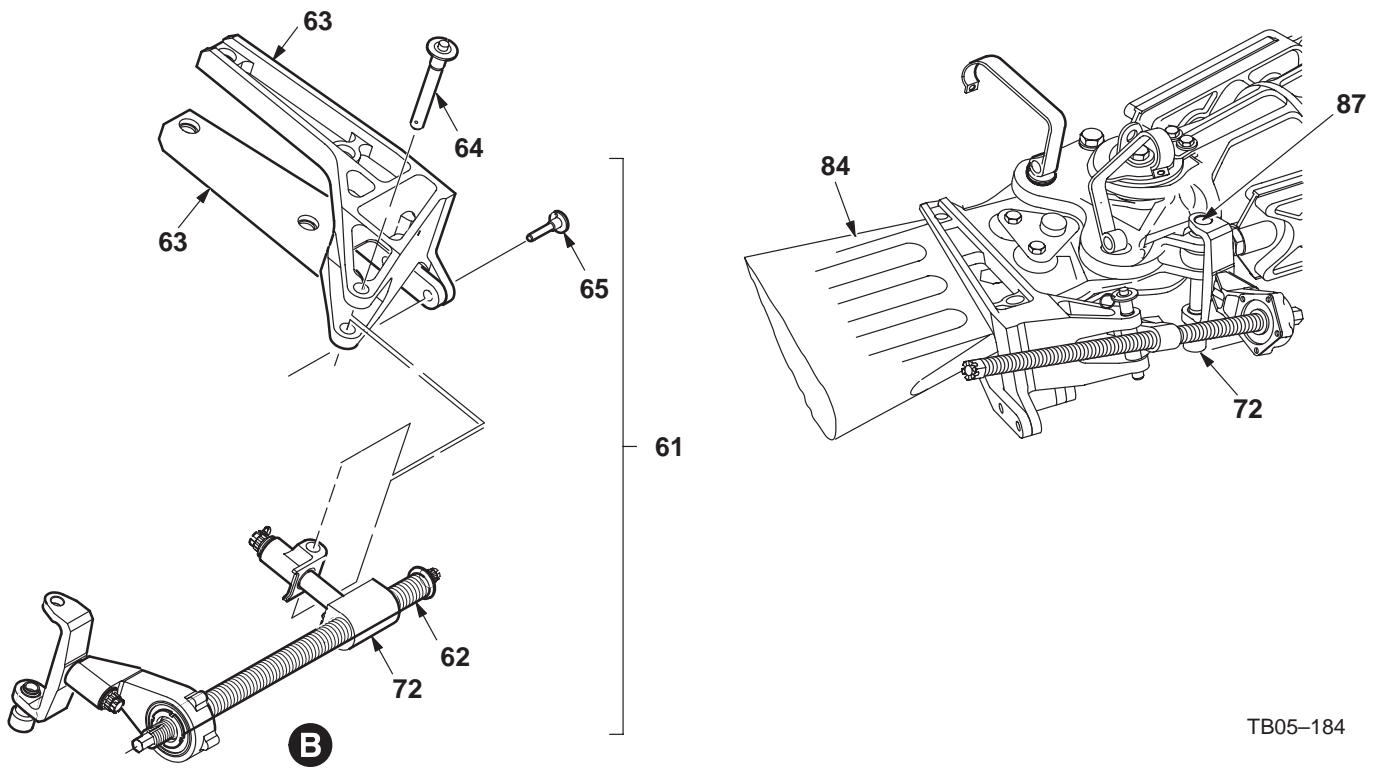


Figure 29. Securing Pole on Saddle

TB05-161

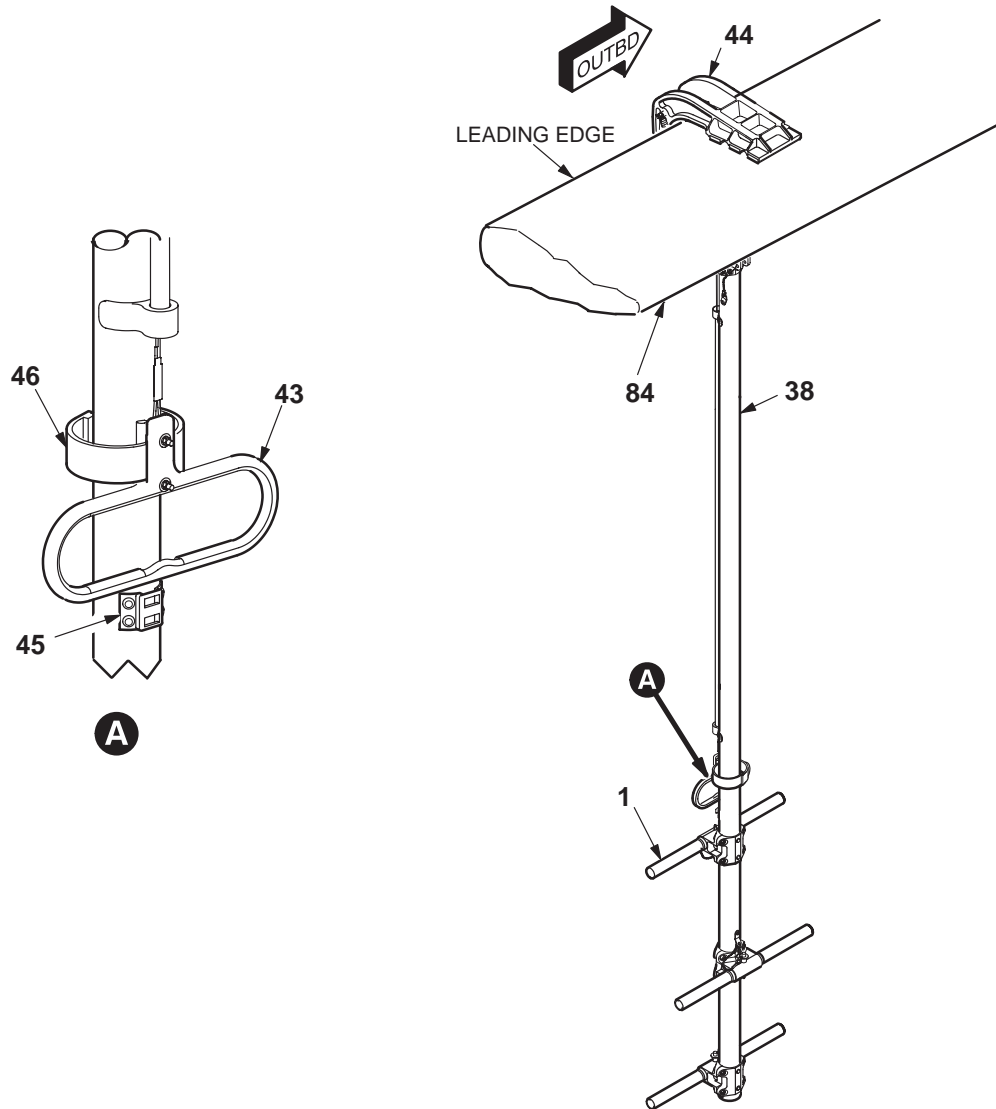
- (12) Remove blade positioner assembly (61) from leading edge side of blade (84).
 - (a) Loosen thumbscrew (71) from damper bolt (87) (See Figure 30).
 - (b) Remove quick release pin (64) that attaches jackscrew knuckle (72) to blade positioner clamps (63).
 - (c) Remove jackscrew (62) from blade positioner clamp halves (63).
 - (d) Remove quick release pin (65) from blade positioner clamp halves (63).
 - (e) Open **TOP** and **BOTTOM** blade positioner clamp halves (63) and remove from leading edge side of blade (84).



TB05-184

Figure 30. Blade Positioning Assembly on R/H AFT Main Rotor Blade

- (13) Remove blade handling pole assembly (38).
- Remove Velcro strap (46) from handle (43).
 - Pull down release handle (43) to unlock blade clamp (44) on blade handling pole (38).
 - Place release handle (43) into retaining clip (45) to hold blade clamp (44) open.
 - Using two persons, remove handling pole (38) from blade (84).
 - Release handle (43) from retainer (45).



TB5-152-3

Figure 31. Removal of Blade Handling Pole

- (14) Remove blade fold handles (83) from blade fold pins (101), (104) and (105) to allow adequate transport clearance.
- (15) Tag and identify aircraft blade pins (100), (102), and lock handles (83).
- (16) Wipe aircraft blade pins (100) and (102) with clean rag.
- (17) Apply corrosion preventive compound on adjustment nut and threads of aircraft blade pins (100) and (102).
- (18) Stow tagged and identified aircraft blade pins (100), (102), and loose handles (83) in stowage compartment in aft avionics bay.

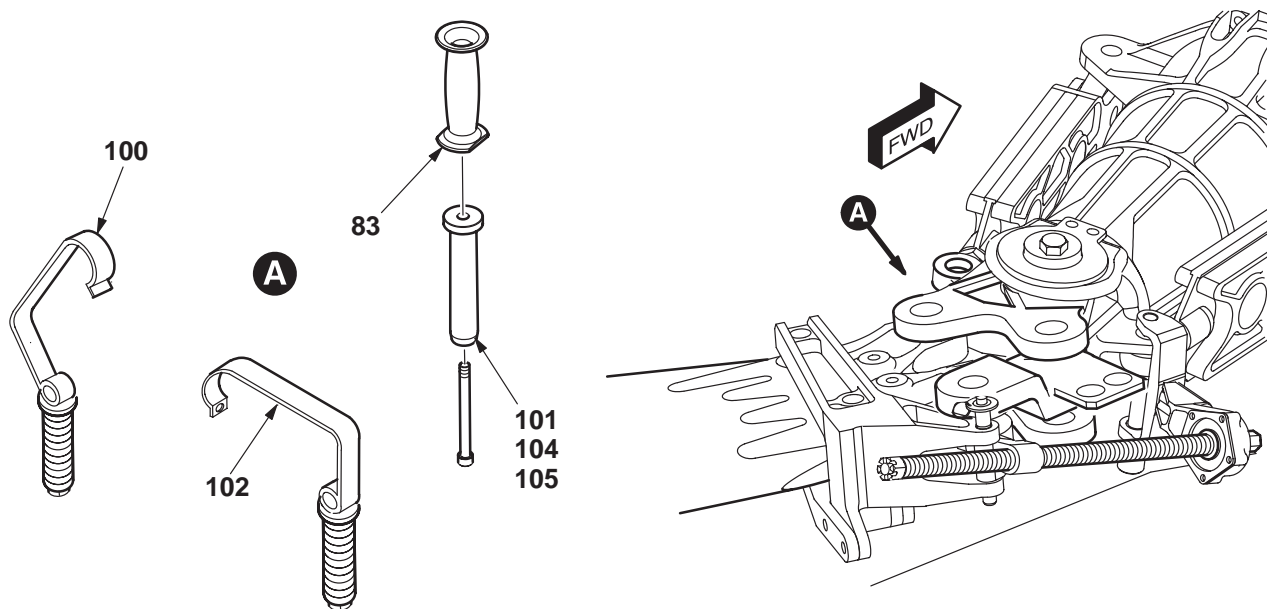


Figure 32. Removal of Blade Fold Handles

TB05-159

<p>CAUTION</p>

Make sure, as the right main blade is folded, it does not touch right aft folded main rotor blade. Failure to follow maintenance instructions will result in damage to main rotor blades.

6. Right Hand Forward Blade Folding Procedure.

a. Fold R/H FWD Blade.

- (1) Pull two spring clips (58) up to the fully open position of blade (115) (See Figure 33).
- (2) Install blade positioner assembly (61) on R/H FWD blade (115).
 - (a) Disassemble jackscrew (62) from blade positioner clamp halves (63) by removing quick release pin (64).
 - (b) Remove the quick release pin (65) from the **TOP** and **BOTTOM** blade positioner clamp halves (63).
 - (c) Open and install blade positioner clamp halves (63) from trailing edge side of blade (115).
 - (d) Align holes of **TOP** and **BOTTOM** blade positioner clamp halves (63) with caps (116) on bolts going through blade (115) near root end (117).
 - (e) Install quick release pin (65) through clamp halves (63).

NOTE

Thumbscrew is always tightened upward and is positioned on the bottom of the jackscrew on all four blades.

- (f) Install jackscrew (62) on damper bolt (118) which connects damper (119) to the lead lag link (120). Tighten thumbscrew (71) on yoke end of jackscrew (62).
- (g) Align hole of jackscrew knuckle (72) with hole of blade positioner clamp (63).
- (h) Install quick release pin (64) that attaches the jackscrew knuckle (72) to blade positioner clamp (63).

WARNING

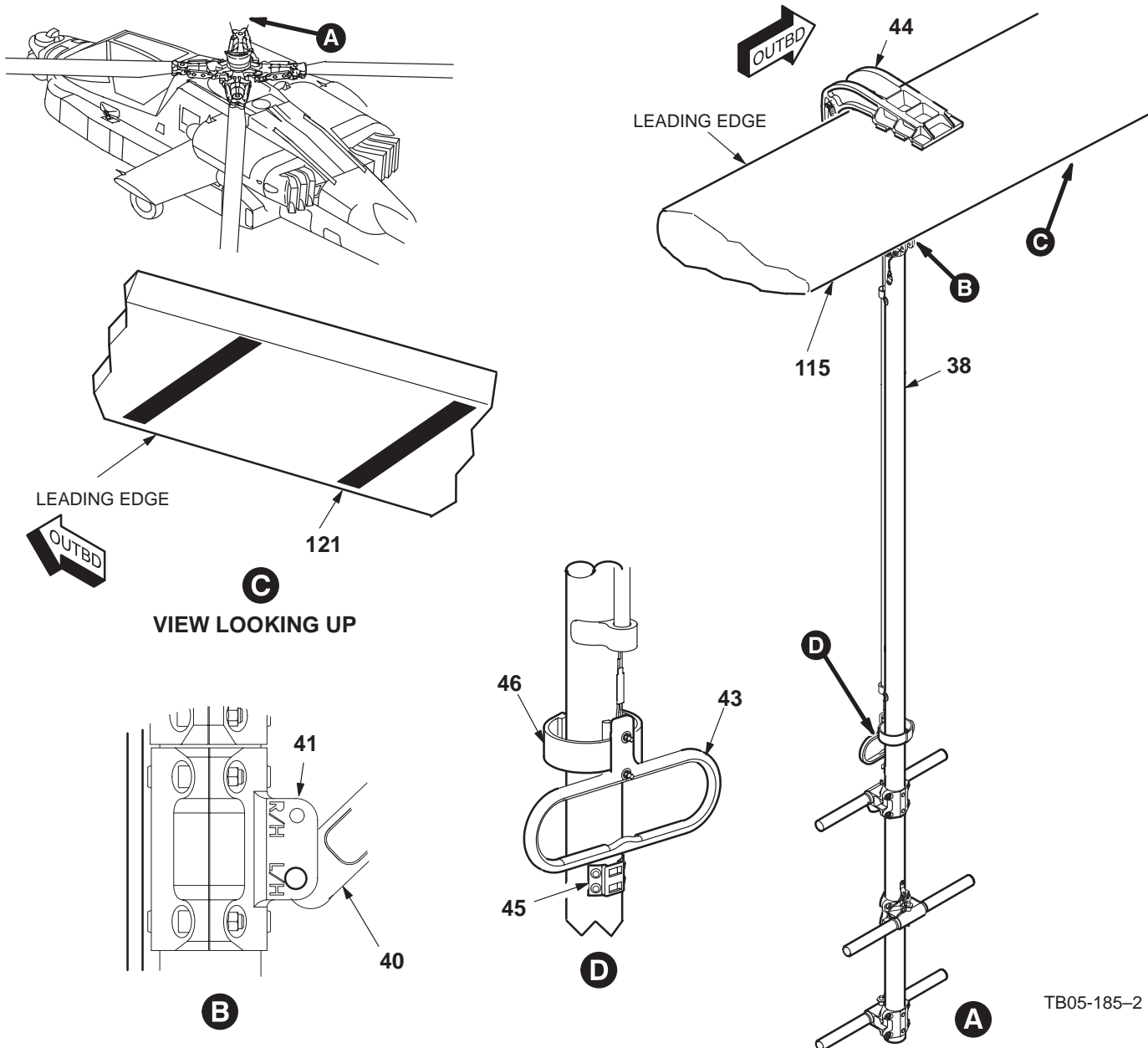
- **Use four persons to lift and control main rotor blade. In moderate or high winds it can be necessary to use more than four persons. The main rotor blade is a large and heavy component. Failure to follow maintenance instructions may result in serious injury or death and/or serious damage to helicopter.**
- **Use two persons to lift blade positioning gear during installation. The positioning gear is a large and heavy component. Failure to follow maintenance instructions may result in serious injury or death of and/or serious damage to helicopter.**
- **Make sure the main rotor blade is secured with handling pole before removing aircraft blade pins. Heavy blades can fall if not correctly held. Failure to follow maintenance instructions may result in serious injury or death and/or serious damage to helicopter.**

CAUTION

- **Do not move main rotor blades after blades are folded. Failure to follow maintenance instructions will result in damage to aircraft.**
- **Do not use aircraft blade pins to fold or unfold main rotor blades. The MRBFK blade fold pin assemblies must be used for blade folding procedures. Failure to follow maintenance instructions will result in damage to aircraft blade pins.**

b. Install blade handling pole assembly (38) on R/H FWD blade (115) (See Figure 34).

- (1) Adjust handling pole strut (40) to **R/H** position of clevis (41).
- (2) Install handling pole (38) on inboard stripe (121) of blade (115).
 - (a) Pull down release handle (43) to unlock blade clamp (44) on blade handling pole (38).
 - (b) Place release handle (43) into retaining clip (45) to hold blade clamp (44) open.
 - (c) Align blade clamp (44) of handling pole (38) on inboard stripe (121) of blade (115).
 - (d) Install handling pole assembly (38) on blade (115) (leading edge first) until leading edge of blade (115) contacts pads on inside of blade clamp (44).
 - (e) Release handle (43) from retainer (45) to lock blade clamp (44) onto blade (115).
 - (f) Secure handle (43) with Velcro strap (46).



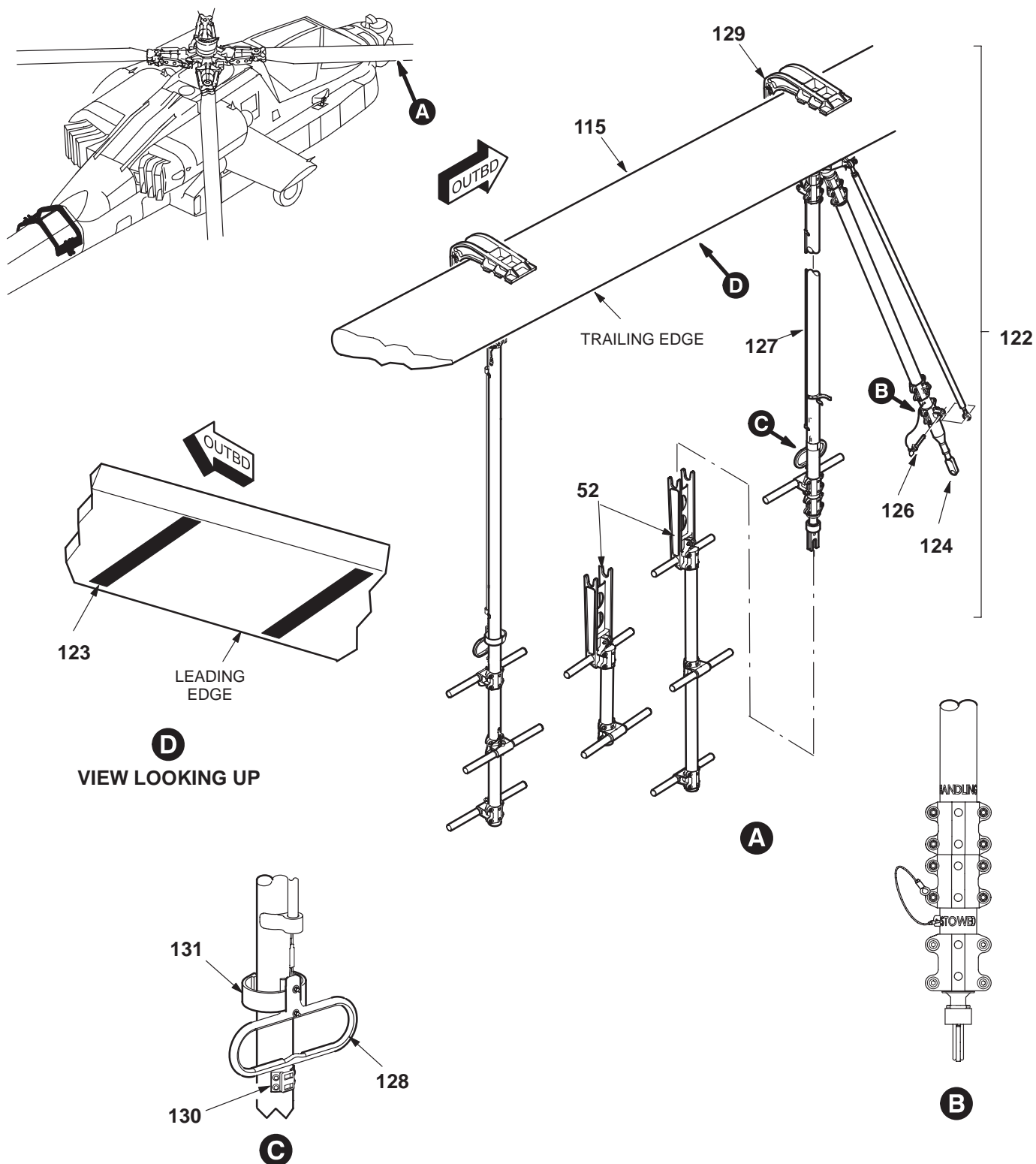
TB05-185-2

Figure 34. Handling Pole on R/H FWD Main Rotor Blade

c. Install blade securing pole assembly (122) (marked **RIGHT FORWARD - ALIGN WITH BLADE'S OUTER MARK**) and install on the outboard stripe (123) on R/H FWD blade (115) (See Figure 35).

NOTE

- The extension pole assemblies (short or long) can be utilized for better ergonomics during lifting of main rotor blade.
 - The “U” shaped end of extension will go around handle of securing pole while clevis on extension engages J hook on securing pole.
 - Ensure lower end of support pole (the smaller dia. tube) is in clevis marked **HANDLING**.
- (1) Position lower end of support pole (124) (small dia. tub) into clevis labeled **HANDLING** (125) and insert quick release pin (126).
 - (2) Attach appropriate extension (52) by installing extension (52) on base of securing pole (127).
 - (a) Pull down release handle (128) to unlock blade clamp (129) on securing pole (127).
 - (b) Place handle (128) into retaining clip (130) to hold blade clamp (129) open.
 - (c) Align securing pole (127) with outboard stripe (123) on bottom of blade (115).
 - (d) Install blade clamp (129) of securing pole (127) on outboard stripe (123) on bottom of blade (115).
 - (e) Release handle (128) from retainer (130) to lock blade clamp (129) onto blade (115).
 - (f) Secure handle (128) with Velcro strap (131).



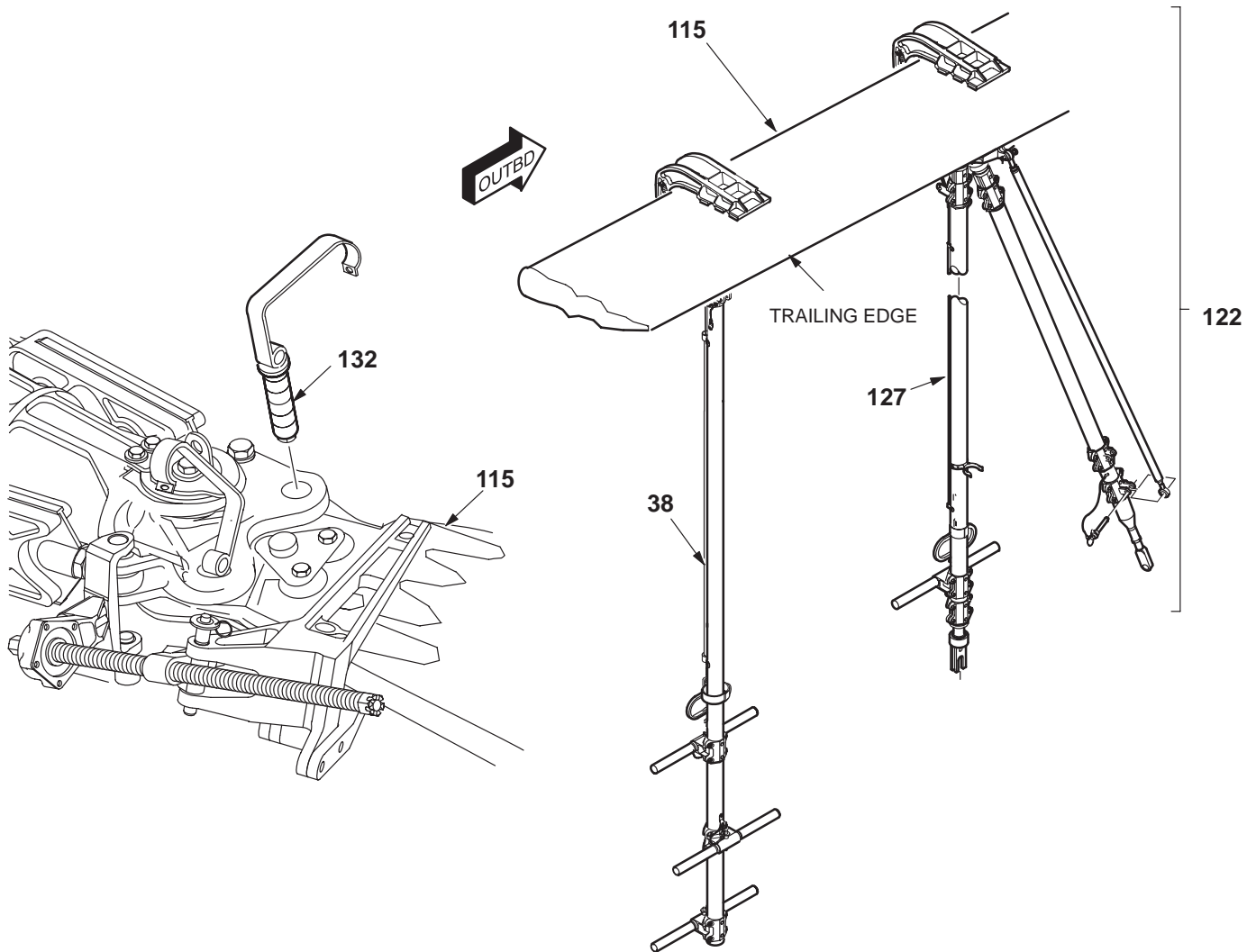
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Figure 35. Securing Pole and Handling Pole on FWD R/H Main Rotor Blade

NOTE

The person turning jackscrew will direct movement of R/H FWD blade up or down as necessary.

- (3) Remove aircraft blade pin (132) from leading edge of blade (115) (See Figure 36).
 - (a) Position one person at rotor head, one person on wing, two people each on handling pole (38) and securing pole (127).
 - (b) Use four persons to lift or lower R/H FWD blade (115) with handling pole (35) and securing pole assembly (122) until aircraft blade pin (132) on leading edge side moves freely.
 - (c) Remove aircraft blade pin (132).



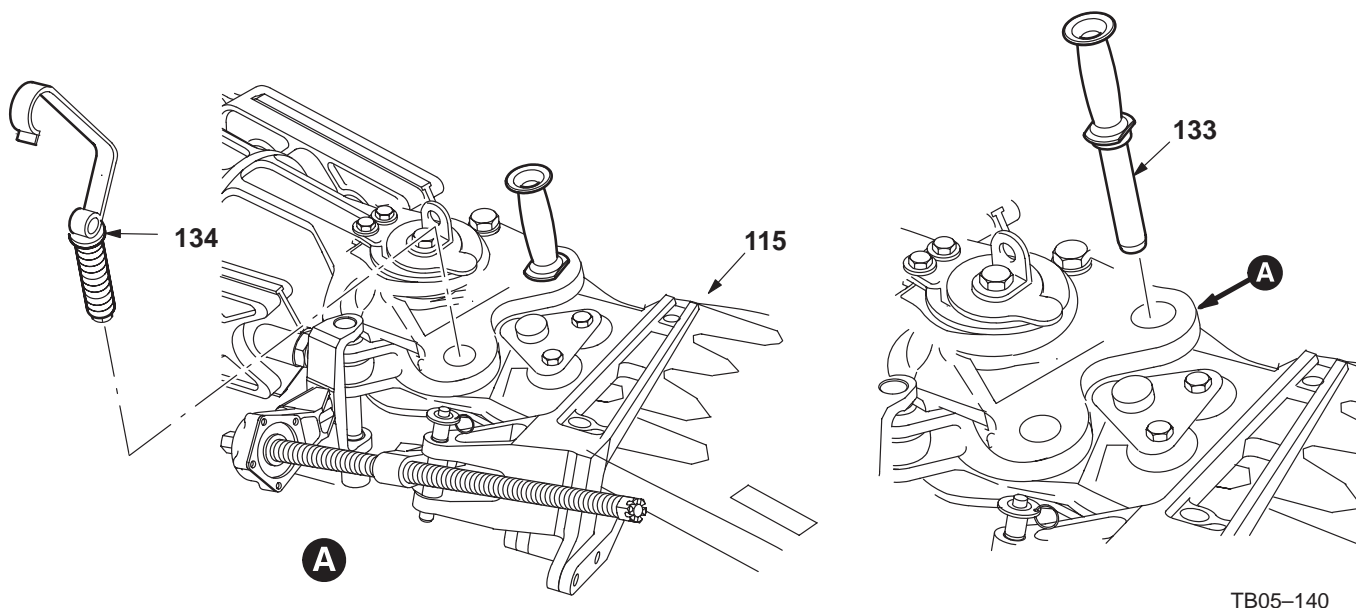
TB05-137

Figure 36. Aircraft Blade Pin from R/H FWD Blade Leading Edge

NOTE

The handle portion on blade fold pin assembly slides up and down freely on shaft to allow slight tapping during fold pin installation.

- (d) Install blade fold pin (133) (non shouldered) in place of aircraft blade pin removed (See Figure 37).
- (4) Remove aircraft blade pin (134) from trailing edge of blade (115).
 - (a) Lift or lower R/H FWD blade (115) until aircraft blade pin (134) on trailing edge side moves freely.
 - (b) Remove aircraft blade pin (134).



TB05-140

Figure 37. Install Quick Release Fold Pin at Leading Edge and Remove Aircraft Blade Pin from Trailing Edge

NOTE

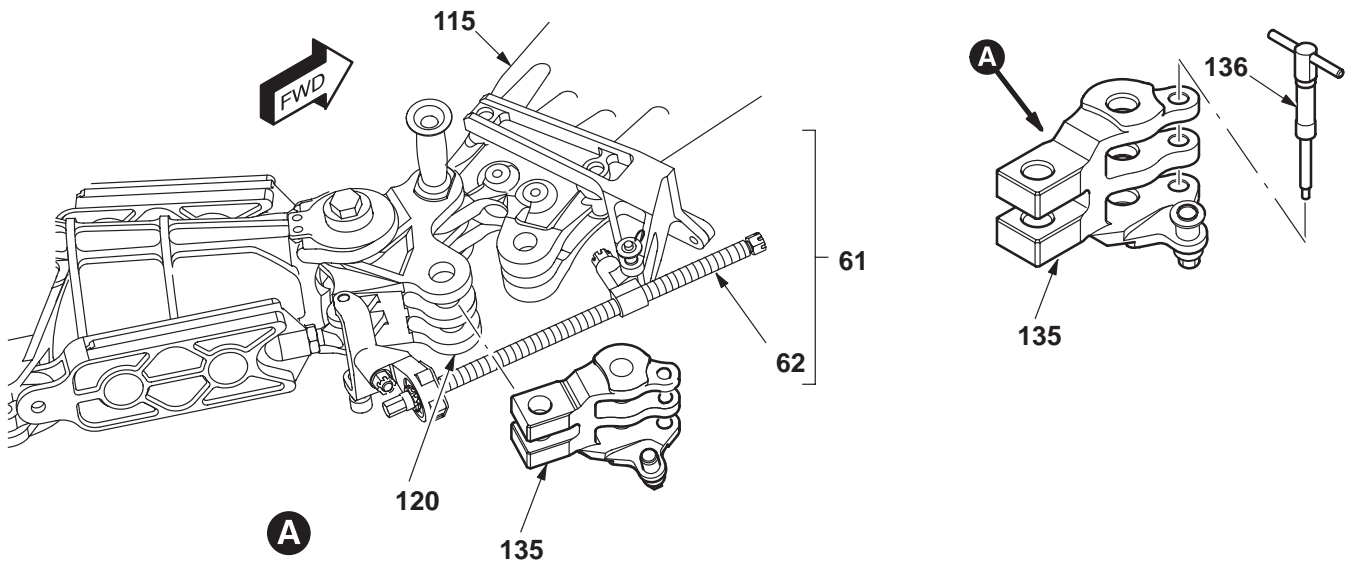
- The person turning jackscrew shall direct whether the blade needs to be lifted or let down by inspecting blade root fitting movement out of lead lag link and by feeling any binding occurring on jackscrew as it turns.
- T-handle is temporarily removed from swing link assembly.
- The swing link assembly is labeled **THIS SIDE UP** for correct orientation.
- The swing link assembly fits between middle and upper clevis of lead lag link and on top of blade root fitting.

(5) Install R/H FWD swing link assembly (135).

(a) Remove T-handle (136) from swing link assembly (135) (See Figure 38).

(b) Turn jackscrew (62) on blade positioning assembly (61) to move R/H FWD blade (115) in a forward direction until approximately parallel with aircraft longitudinal axis.

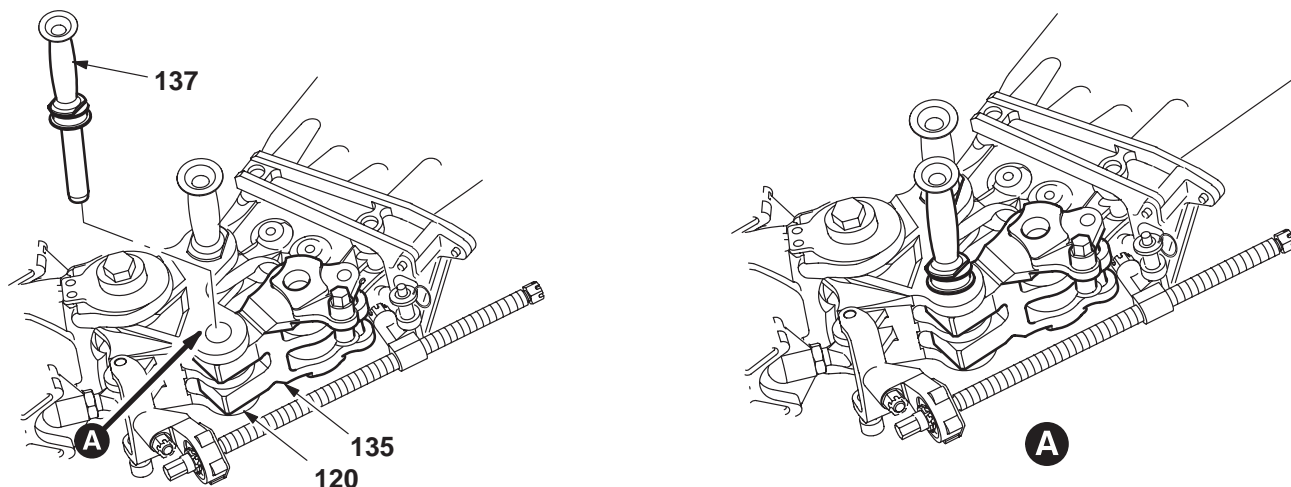
(c) Align hole in R/H FWD swing link assembly (135) with blade pin hole in lead/lag link (120).



TB05-141

Figure 38. R/H Swing Link Align with Lead/Lag between Blade Root End and Pitch Housing

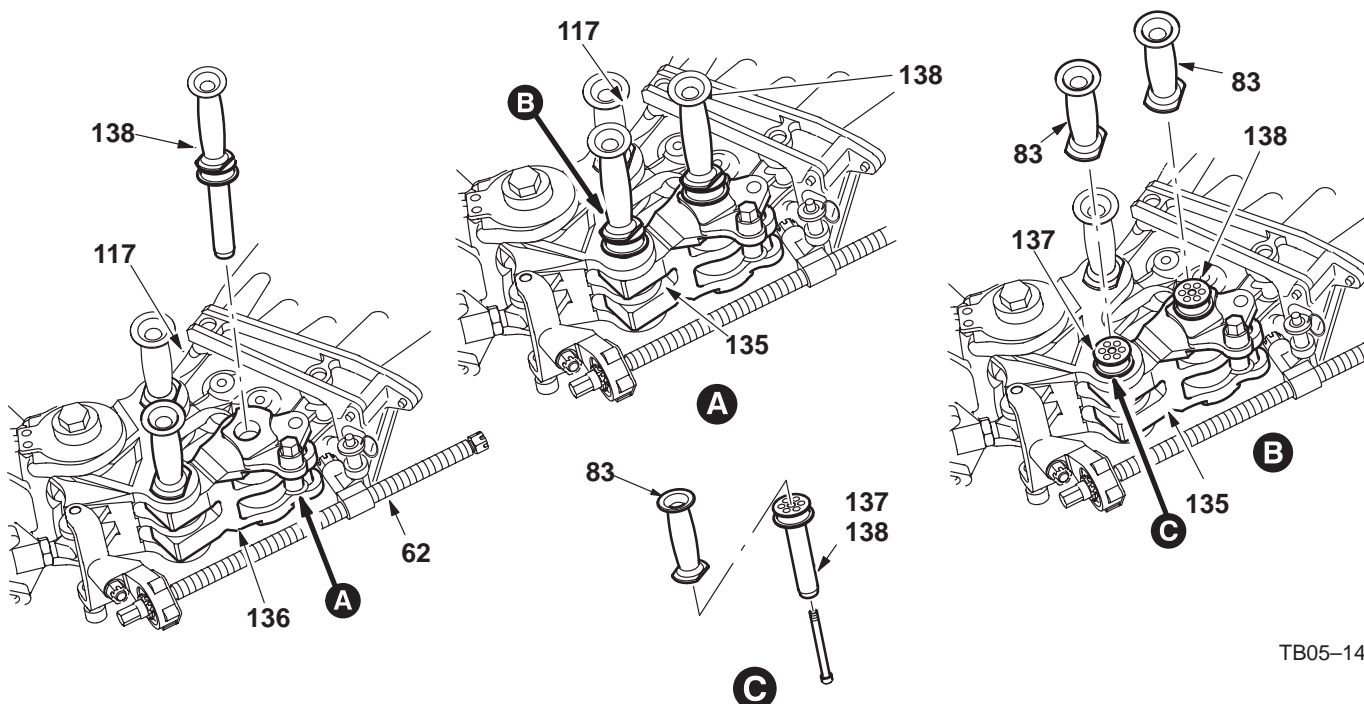
- (d) Install (shouldered) blade fold pin (137) through R/H swing link (135) and lead/lag link (120) (See Figure 39).



TB05-141-1

Figure 39. Install Shouldered Blade Fold Pin Through Swing Link and Lead/Lag Link

- (e) Continue to turn jackscrew (62) as necessary and align remaining hole in R/H swing link (135) with hole in blade root fitting (117) (See Figure 40).
- (f) Install (shouldered) blade fold pin (138) through swing link (135) and blade root fitting (117).
- (g) Remove blade fold pin handles (83) from shouldered pins (137) and (138) in swing link (135).



TB05-142

Figure 40. R/H Swing Link Installed

(6) Install R/H AUX positioner (139) on leading edge of blade (115).

(a) Use four persons to lift or lower R/H FWD blade (115) with handling pole assembly (38) and securing pole assembly (122) until blade fold pin (133) on the leading edge side moves freely (See Figure 41).

(b) Remove leading edge (non shouldered) blade fold pin (133).

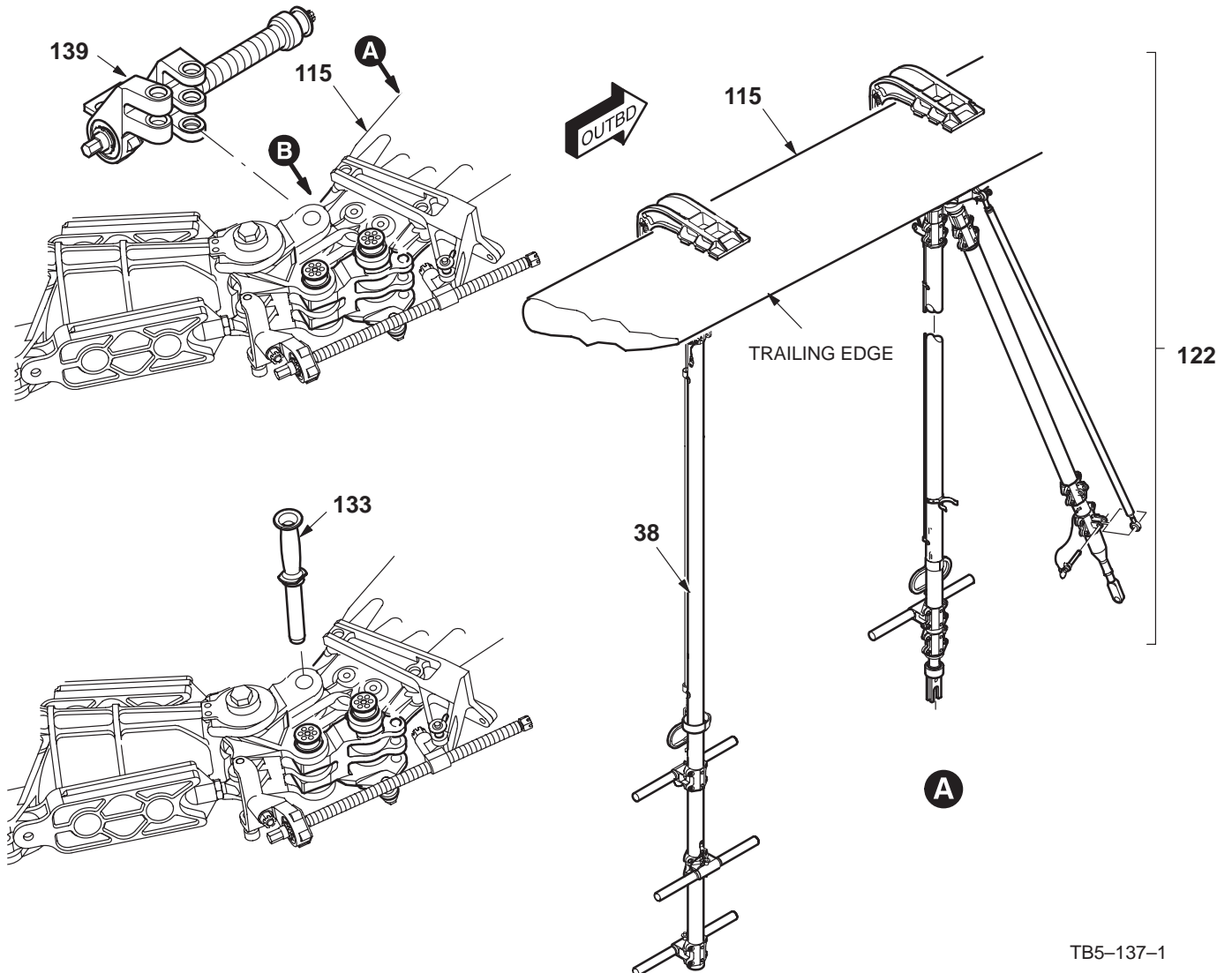
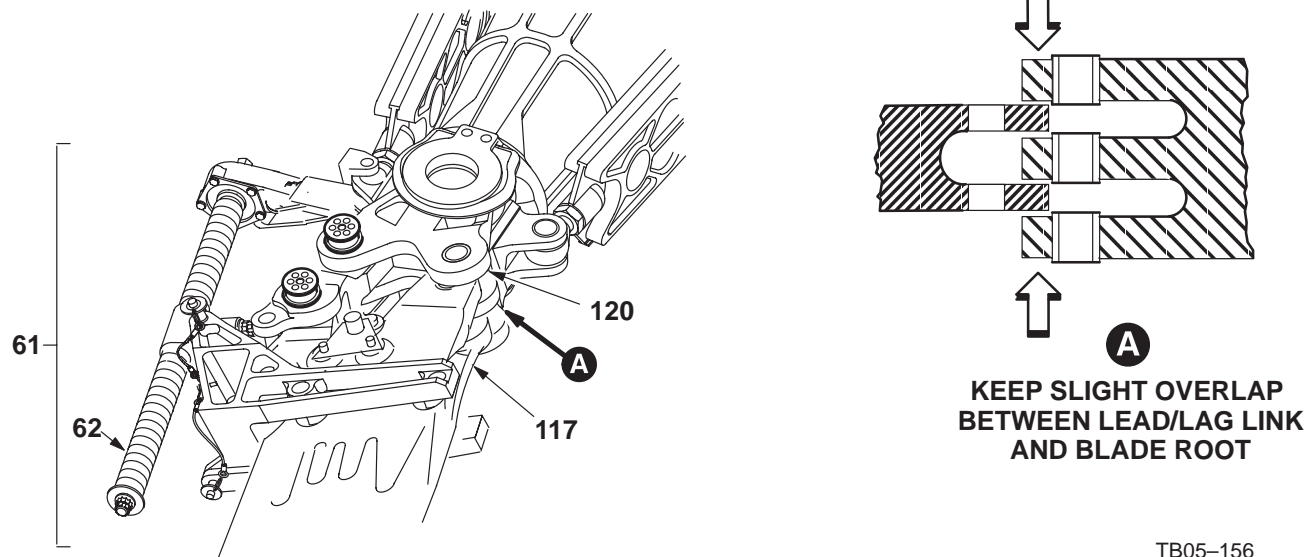


Figure 41. Preparing for R/H Aux Positioner Installation

NOTE

- Keep slight engagement between main rotor blade root and lead/lag link so R/H AUX positioner can be installed.
- Ensure R/H AUX positioner is installed with locking nut towards outboard end of jackscrew.
- Ensure jam nut on L/H AUX positioner jackscrew is loosen to end of threads.

(c) Turn the jackscrew (62) on the blade positioning assembly (61) until slight engagement of blade root (117) and lead/lag link (120) exists (See Figure 42).



TB05-156

Figure 42. Alignment of Lead/Lag Links for Aux Positioner Installation

- (d) Slide R/H aux positioner (139) in gap between blade root (117) and lead/lag link (120)
(See Figure 43).
- (e) Install blade fold pin (140) through lead/lag link (120) and aux positioner (139).
- (f) Turn jackscrew (62) on blade positioning assembly (61) until holes in blade root fitting (117) align with R/H aux positioner (139).
- (g) Install (non shouldered) blade fold pin (141) through blade root (117) and aux positioner (139).
- (h) Install T-handle (136) in R/H swing link assembly (135).
- (7) Remove handles (83) from blade fold pins (137, 138, 140, 141) to allow adequate transport clearance
(See Figure 44).
- (8) Tag and identify aircraft blade pins (132, 134) and loose handles (83).
- (9) Wipe aircraft blade pins (132, 134) with clean rag.
- (10) Apply corrosion preventive compound on adjustment nut and threads of aircraft blade pins (132, 134).
- (11) Stow tagged and identified aircraft blade pins (132, 134) and loose handles (83) in stowage compartment in aft avionics bay.

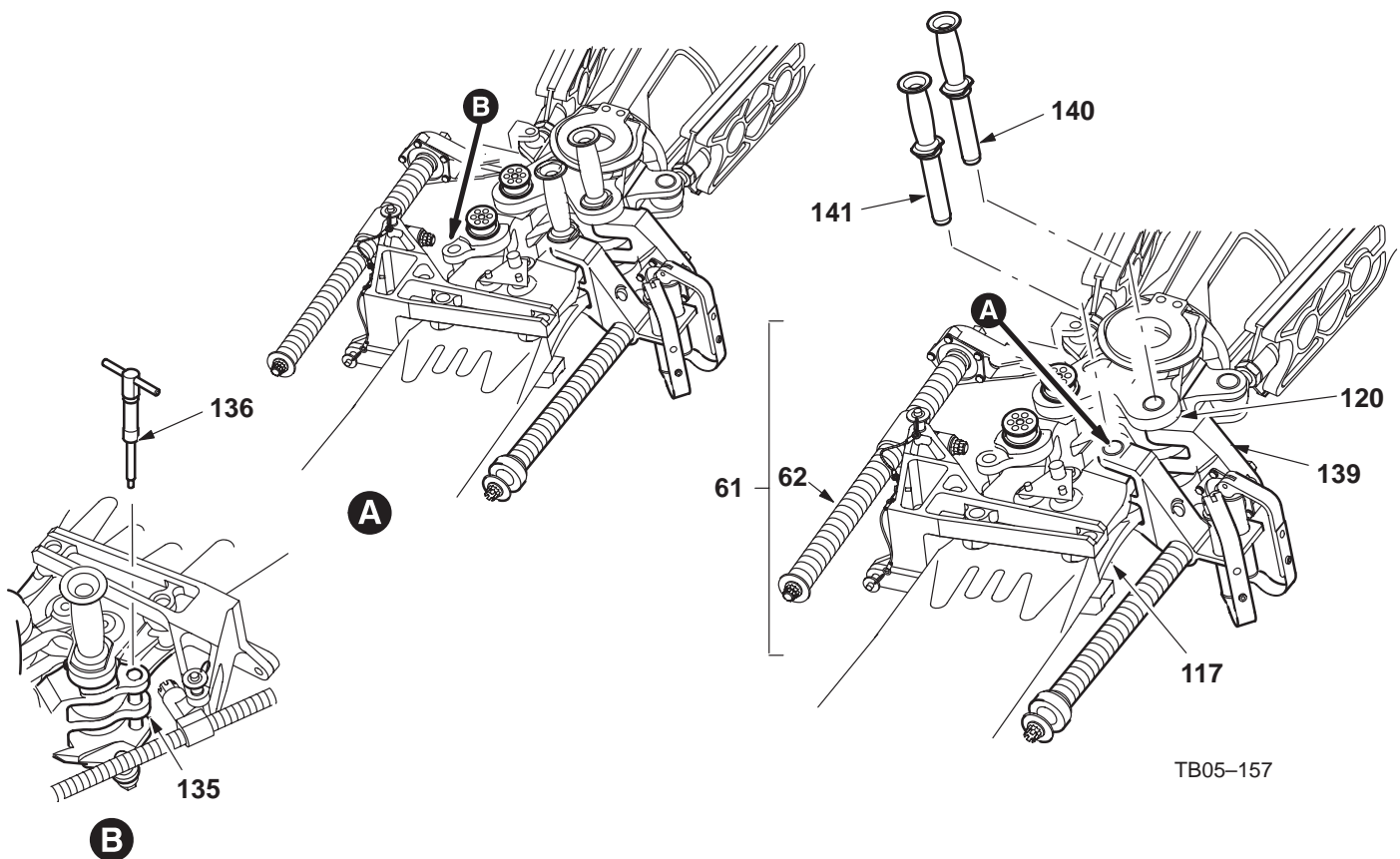
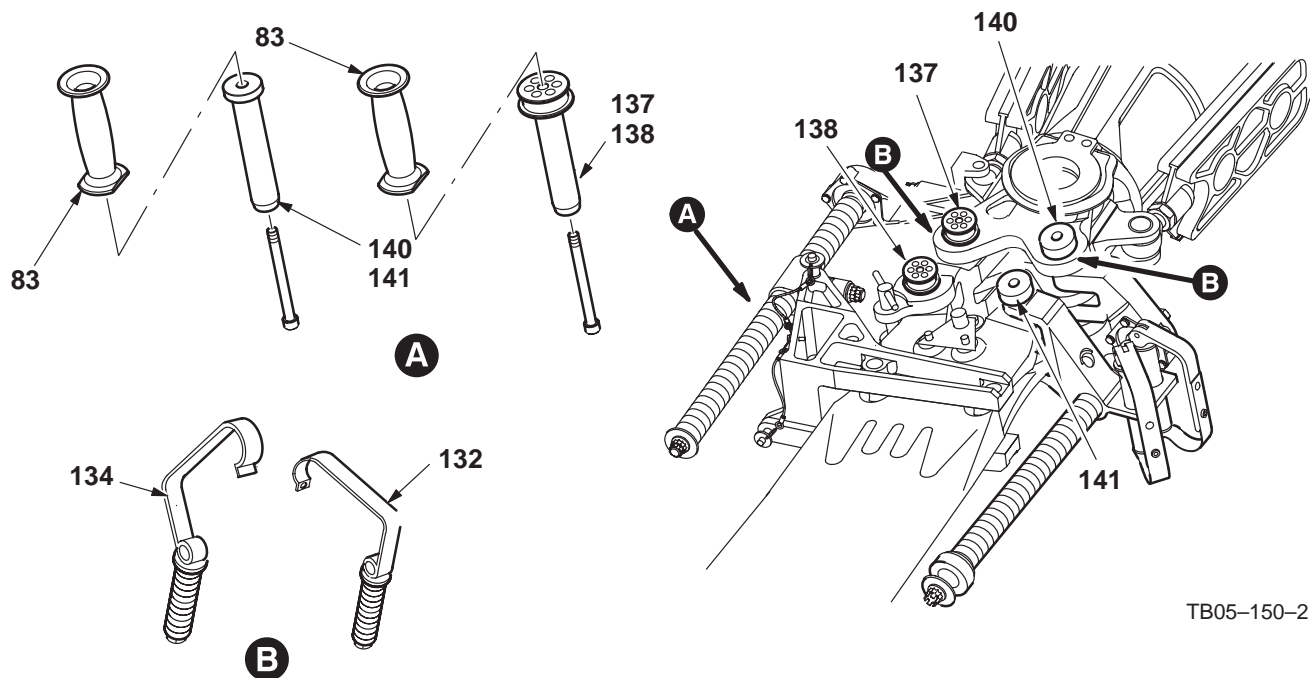


Figure 43. R/H Auxiliary Blade Positioner Installed



TB05-150-2

Figure 44. Removal of Handles from Blade Fold Pins

(12) Remove blade positioner assembly (61) from trailing edge side of blade (115).

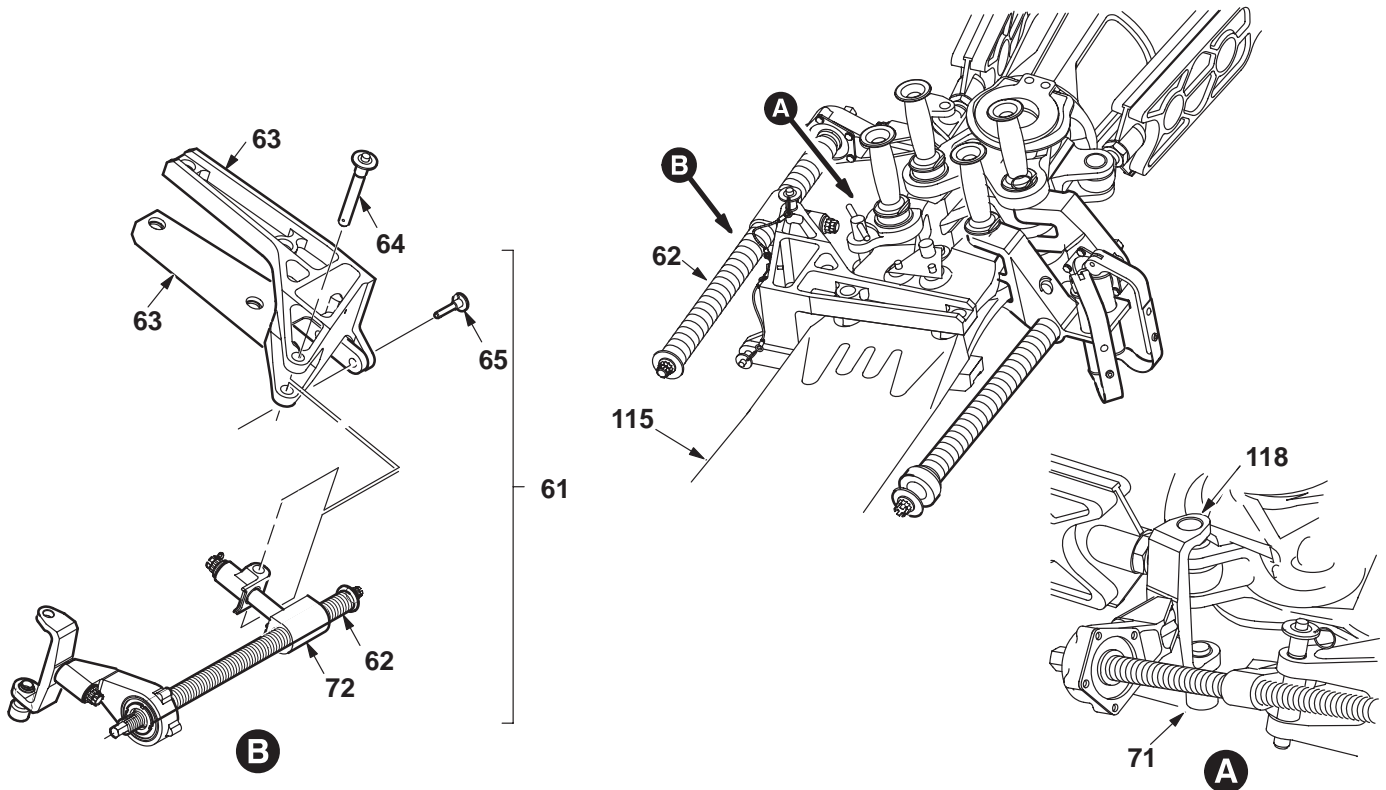
(a) Loosen thumbscrew (71) from damper bolt (118) (See Figure 45).

(b) Remove quick release pin (64) that attaches jackscrew knuckle (72) to blade positioner clamps (63).

(c) Remove jackscrew (62) from blade positioner clamp halves (63).

(d) Remove quick release pin (65) from blade positioner clamp halves (63).

(e) Open **TOP** and **BOTTOM** blade positioner clamp halves (63) and remove from trailing edge side of blade (115).



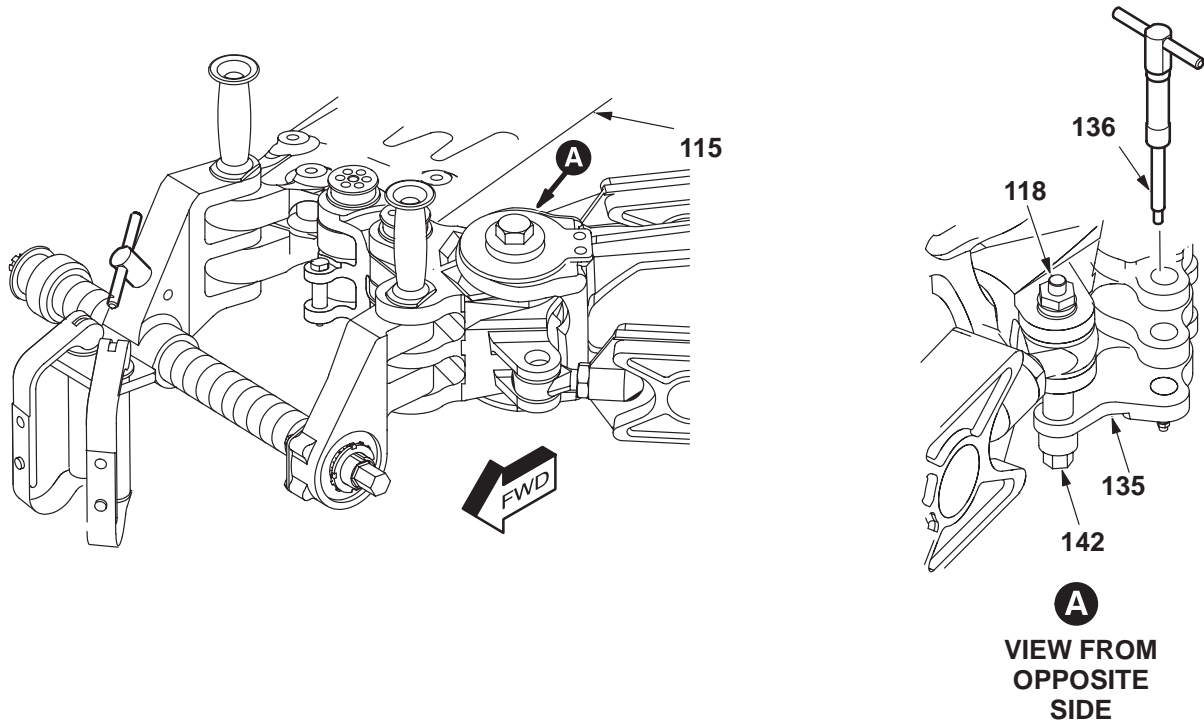
TB05-202

Figure 45. Removal of Blade positioner From R/H FWD blade

NOTE

Observe bonding jumpers on the aft blade folding handles for clearance.

- d. Fold R/H FWD blade (115) aft to the stowed position.
 - (1) Fold blade aft (115) until thumbscrew (142) on swing link (135) aligns with damper bolt (118) (See Figure 46).
 - (a) Turn thumbscrew (142) upward until fully engaged on damper bolt (118) stud.
 - (b) Rotate blade (115) forward to facilitate removal of T-handle (136).
 - (c) Remove T-handle (136) from swing link assembly (135) and place in AUX positioner storage port and secure with Velcro straps.
 - (d) Continue folding blade (115) AFT to stowed position.



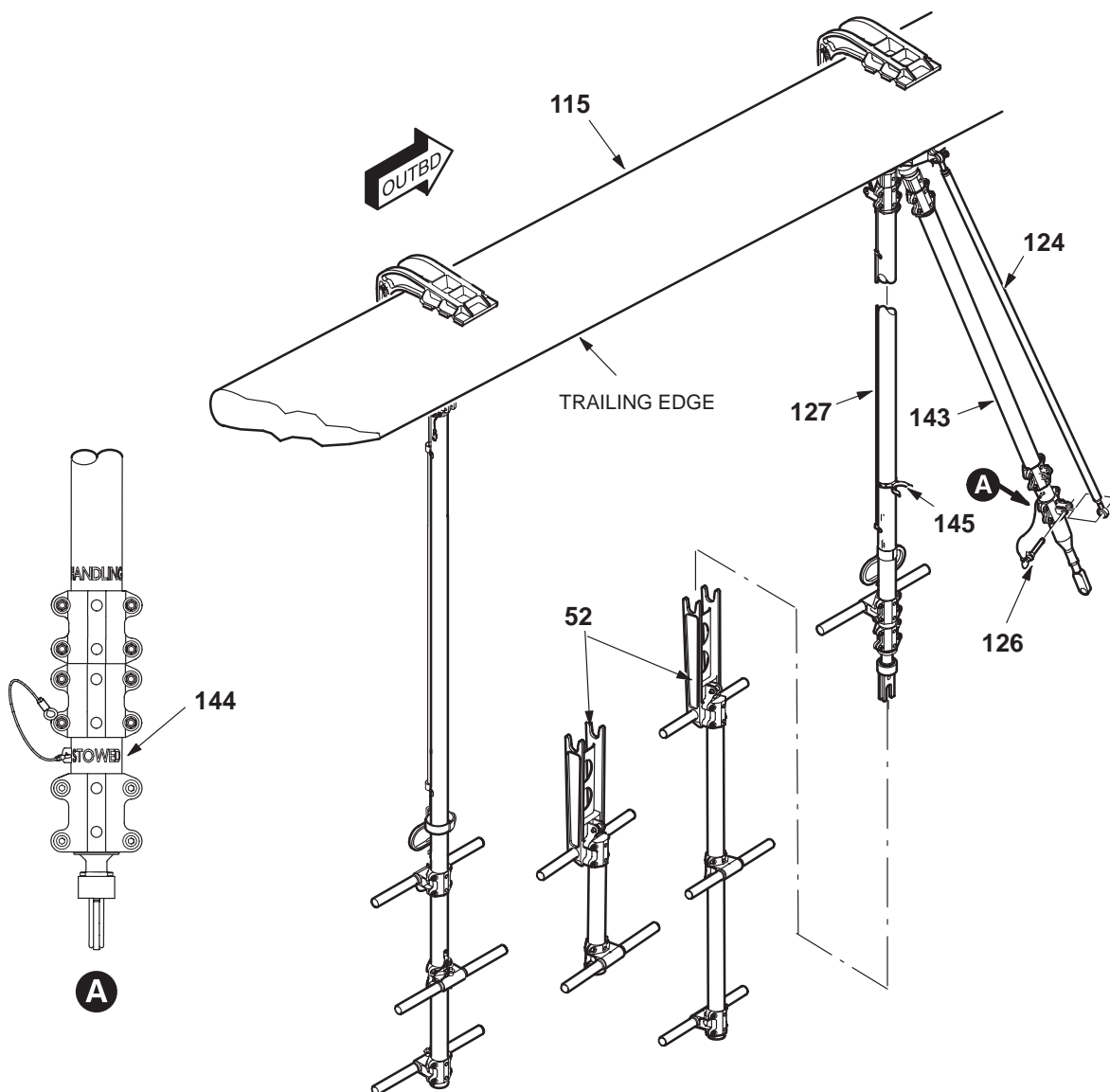
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Figure 46. R/H FWD Swing Link and Blade in Folded Position

CAUTION

Ensure the R/H FWD blade does not touch R/H AFT securing poles during folding and during attachment to upper saddle.

- (2) Remove pole extension (52) from securing pole (127) (See Figure 47).
- (3) Position lower end of support strut (124) (small dia. tube) into clevis (144) marked **STOWED** . Insert quick release pin (126).
- (4) Detach support pole (143) from retaining clip (145) on securing pole (127) marked **RIGHT FORWARD** - **ALIGN WITH BLADE'S OUTER MARK**.



TB05-153-2

Figure 47. Securing Pole and Handling Pole on FWD R/H Main Rotor Blade

WARNING

Fingers can be pinched between support pole and retainer clip. Ensure fingers are clear of retainer area during support pole movement.

- (5) Attach support pole (143) to top of upper saddle assembly (16) at position **B** by snapping J hook (146) onto clevis (147) (See Figure 48).
- (6) Remove handle (1) from securing pole (127).
 - (a) Remove quick release pin (3) from receptacle (4) and handel (1).
 - (b) Remove handle (1) from securing pole (127).
- (7) Attach securing pole (127) to side of upper saddle assembly (16) at position **B** by snapping J hook (148) down onto clevis (149).

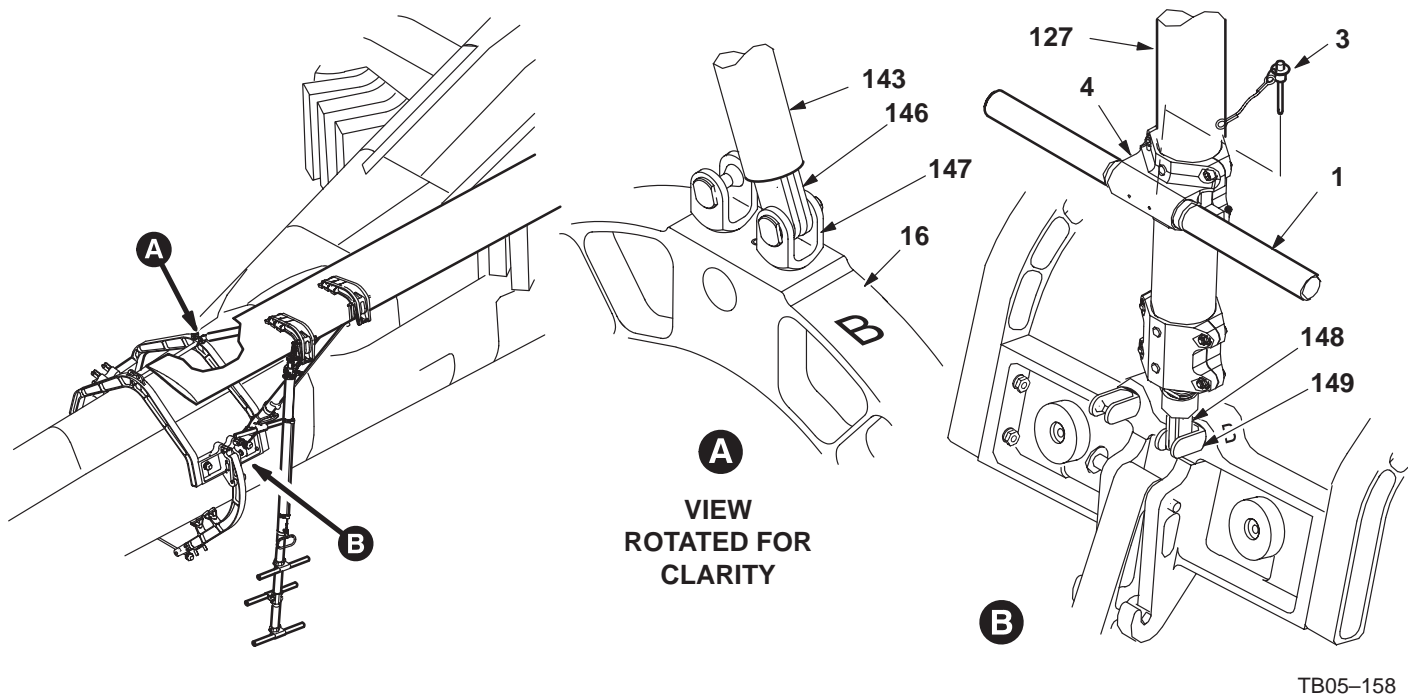
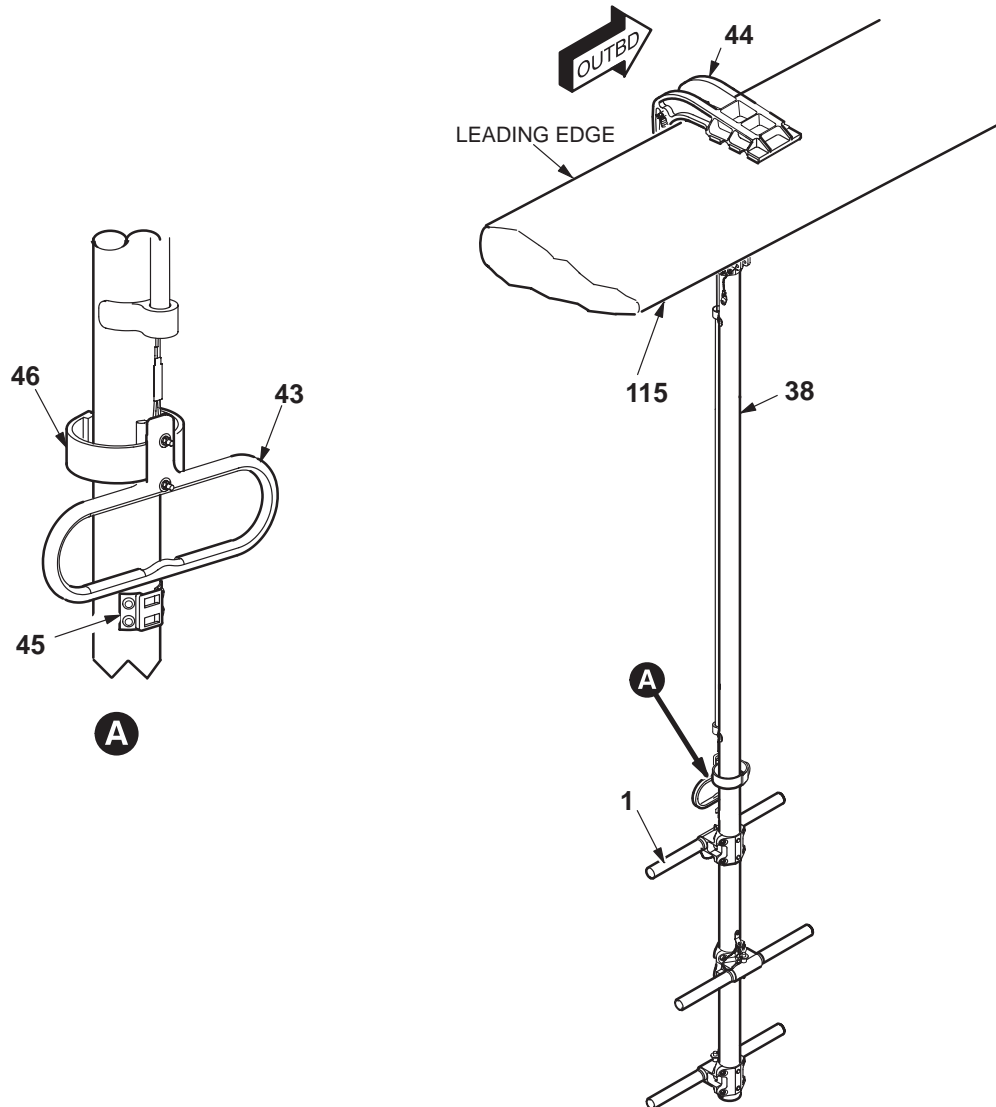


Figure 48. R/H FWD Securing Pole on Saddle

- (8) Remove blade handling pole assembly (38) (See Figure 49).
 - (a) Remove Velcro strap (46) from release handle (43).
 - (b) Pull down release handle (43) to unlock blade clamp (44) on blade handling pole (38).
 - (c) Place release handle (43) into retaining clip (45) to hold blade clamp (44) open.
 - (d) Using two persons, remove blade handling pole (38) from blade (115).
 - (e) Release handle (43) from retaining clip (52).

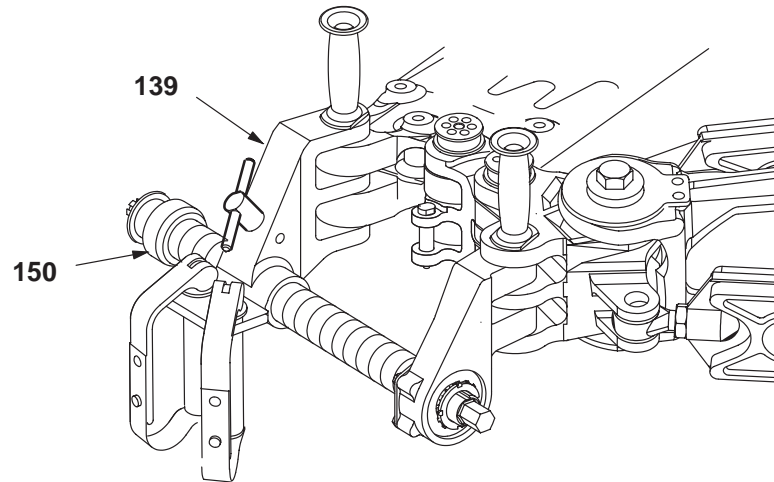


TB05-152-5

Figure 49. Removal of Blade Handling Pole

(9) Secure Aux positioner (139).

(a) Tighten jam nut (150) on Aux positioner (139) (See Figure 50).



TB05-203

Figure 50. Removal of Blade Fold Handles

7. Left Hand Forward Blade Folding Procedure.

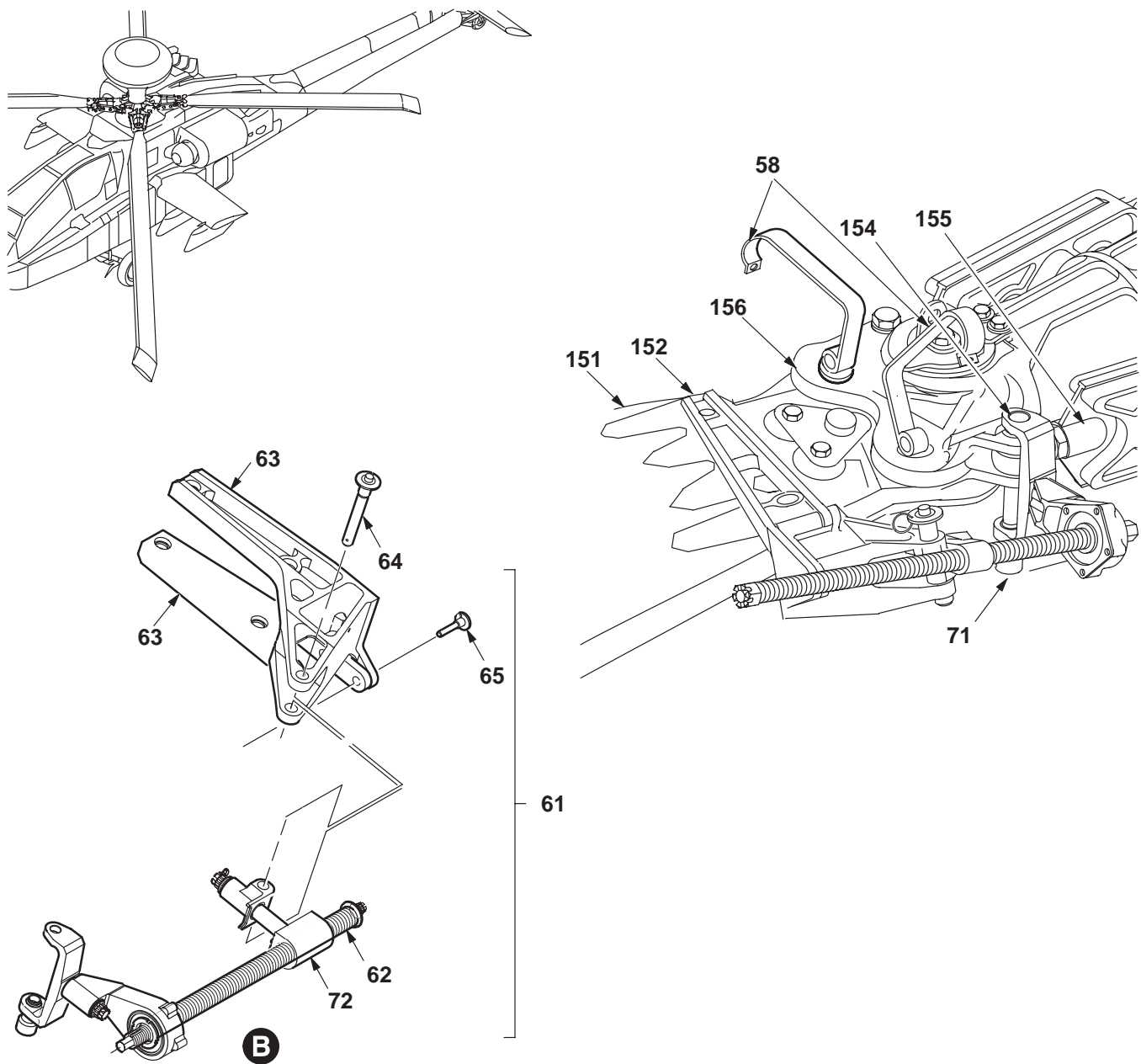
a. Fold L/H FWD Blade.

- (1) Pull two spring clips (58) up to fully open position (See Figure 51).
- (2) Install blade positioner assembly (61) on leading edge side of L/H FWD blade (151).
 - (a) Disassemble jackscrew (62) from blade positioner clamp halves (63) by removing quick release pin (64).
 - (b) Remove the quick release pin (65) from the **TOP** and **BOTTOM** blade positioner clamp halves (63).
 - (c) Open and install blade positioner clamp halves (63) from leading edge side of blade (151).
 - (d) Align holes of **TOP** and **BOTTOM** blade positioner clamp halves (63) with caps (152) on bolts going through blade (151) near root end (153).
 - (e) Install quick release pin (65) through blade positioner clamp halves (63).

NOTE

Thumbscrew is always tightened upward and is positioned on the bottom of jackscrew on all four blades.

- (f) Install jackscrew (62) on damper bolt (154) which connects damper (155) to lead lag link (156). Tighten thumbscrew (71) on yoke end of jackscrew (62).
- (g) Align hole of jackscrew knuckle (72) with hole of blade positioner clamps (63).
- (h) Install quick release pin (64) that attaches jackscrew knuckle (72) to blade positioner clamps (63).



TB05-186

Figure 51. Blade Positioning Assembly on L/H Main Rotor Blade

WARNING

- **Use four persons to lift and control main rotor blade. In moderate or high winds it can be necessary to use more than four persons. The main rotor blade is a large and heavy component. Failure to follow maintenance instructions may result in serious injury or death and/or serious damage to helicopter.**
- **Use two persons to lift blade positioning gear during installation. The positioning gear is a large and heavy component. Failure to follow maintenance instructions may result in serious injury or death of and/or serious damage to helicopter.**
- **Make sure the main rotor blade is secured with handling pole before removing aircraft blade pins. Heavy blades can fall if not correctly held. Failure to follow maintenance instructions may result in serious injury or death and/or serious damage to helicopter.**

CAUTION

- **Do not move main rotor blades after blades are folded. Failure to follow maintenance instructions will result in damage to aircraft.**
- **Do not use aircraft blade pins to fold or unfold main rotor blades. The MRBFK blade fold pin assemblies must be used for blade folding procedures. Failure to follow maintenance instructions will result in damage to aircraft blade pins.**

b. Install blade handling pole assembly (38) on L/H FWD blade (44).

(1) Adjust handling pole strut (42) to **L/H** position of clevis. (See Figure 52).

(2) Install handling pole (38) on inboard stripe (157) of blade (151).

(a) Pull down release handle (43) to unlock blade clamp (44) on blade handling pole (38).

(b) Place release handle (43) into retaining clip (45) to hold blade clamp (44) open. (See Figure 52).

(c) Align blade clamp (44) of handling pole (38) on inboard stripe (157) of blade (151). (See Figure 52)

(d) Install handling pole assembly (38) onto blade (151) (leading edge first) until leading edge of blade (151) contacts pad on inside of blade clamp (44).

(e) Release handle (43) from retainer (45) to lock blade clamp (44) onto blade (151).

(f) Secure handle (43) with Velcro strap (46).

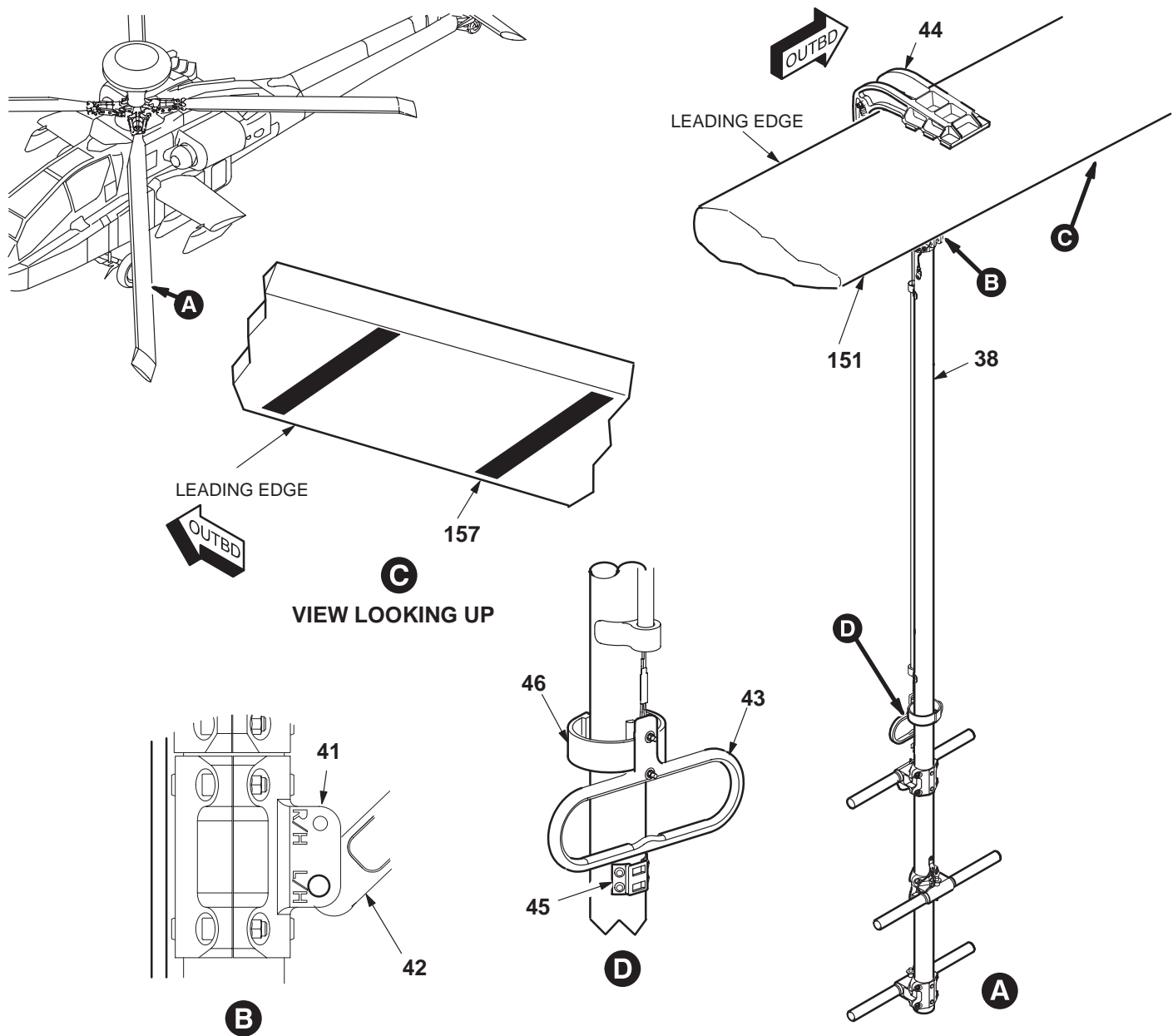


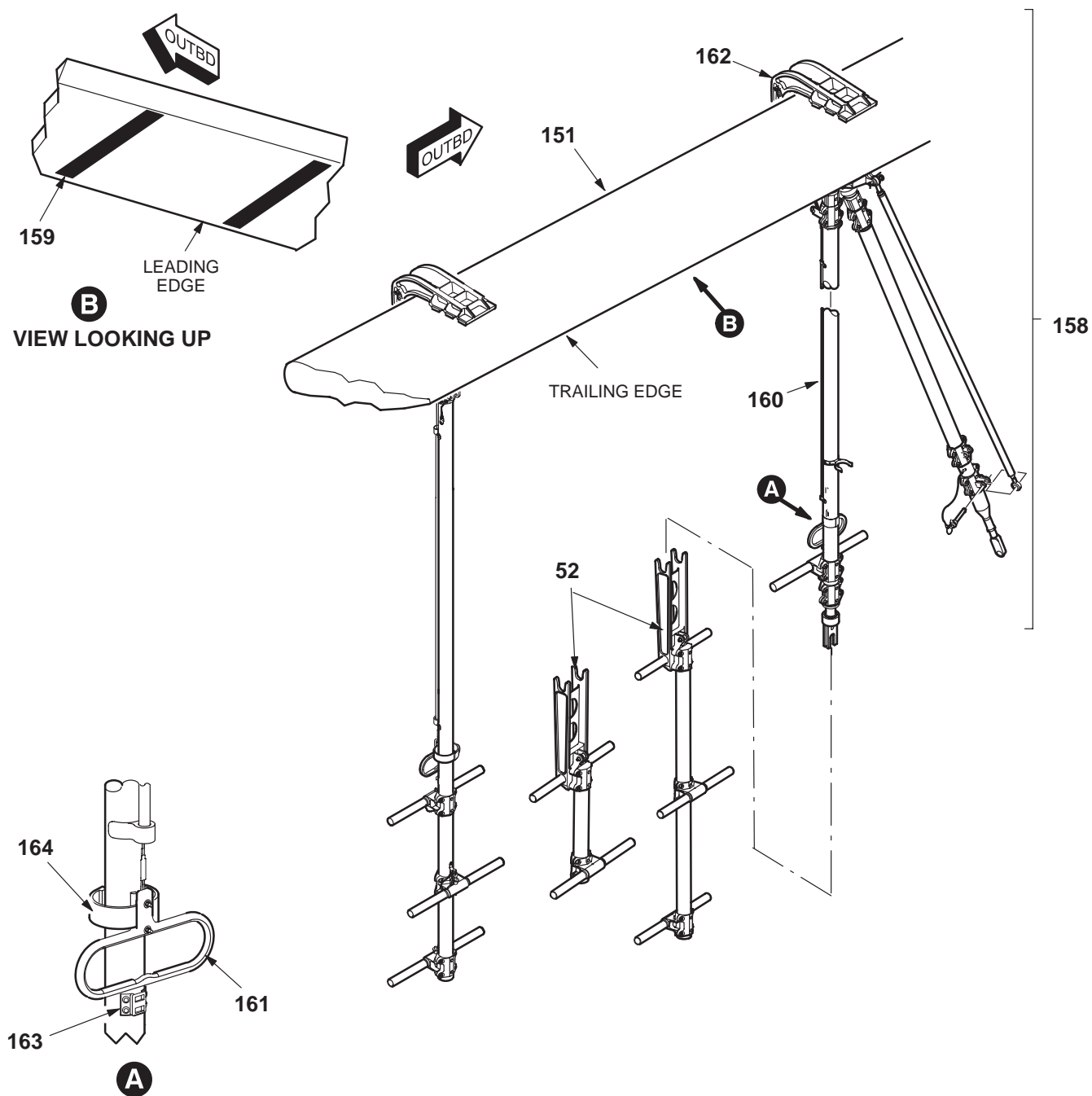
Figure 52. Handling Pole on L/H FWD Main Rotor Blade

TB05-169-1

c. Install blade securing pole assembly (158) (marked **LEFT FORWARD ALIGN WITH BLADE'S INNER MARK**) and install on the inboard stripe (159) on L/H FWD blade (151) (See Figure 53).

NOTE

- The extension pole assemblies (short or long) can be utilized for better ergonomics during lifting of main rotor blade.
 - The “U” shaped end of extension will go around handle of securing pole while clevis on extension engages J hook on securing pole.
- (1) Attach appropriate extension (52) by installing extension (52) on base of securing pole (160). Secure handle (161) with velcro strap (164). (See Figure 53).
- (a) Pull down release handle (161) to unlock blade clamp (162) on securing pole (160).
 - (b) Place handle (161) into retaining clip (163) to hold blade clamp (162) open.
 - (c) Align securing pole (160) with outboard stripe (159) on bottom of blade (151).
 - (d) Install blade clamp (162) of securing pole (160) on inboard stripe (159) on bottom of blade (151).
 - (e) Release handle (161) from retainer (163) to lock clamp (162) onto blade (151).
 - (f) Secure handle (161) with Velcro strap (40).



TB05-169

Figure 53. Securing Pole and Handling Pole on L/H FWD Main Rotor Blade

NOTE

The person turning jackscrew will direct the movement of L/H FWD blade up or down as necessary.

- (2) Remove aircraft blade pin (165) from trailing edge of blade (151) (See Figure 54).
 - (a) One person hold the tail rotor blades to prevent movement of main rotor blades.
 - (b) Position one person at rotor head, one person on wing, two people each on handling pole (38) and securing pole (160).
 - (c) Use four persons to lift or lower L/H FWD blade (151) with handling pole (38) and securing pole assembly (158) until aircraft blade pin (165) on trailing edge side moves freely.
 - (d) Remove aircraft blade pin (165).

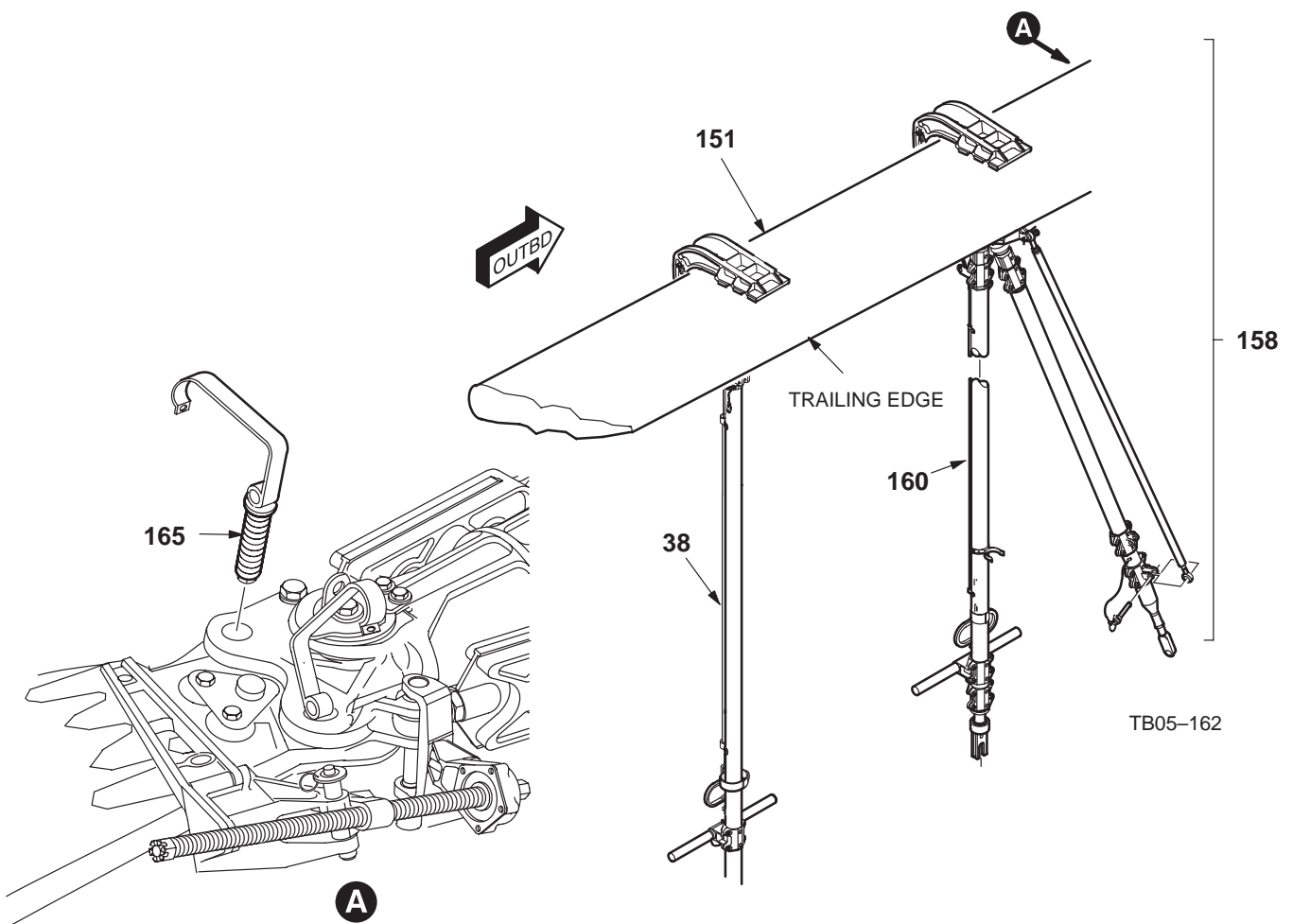
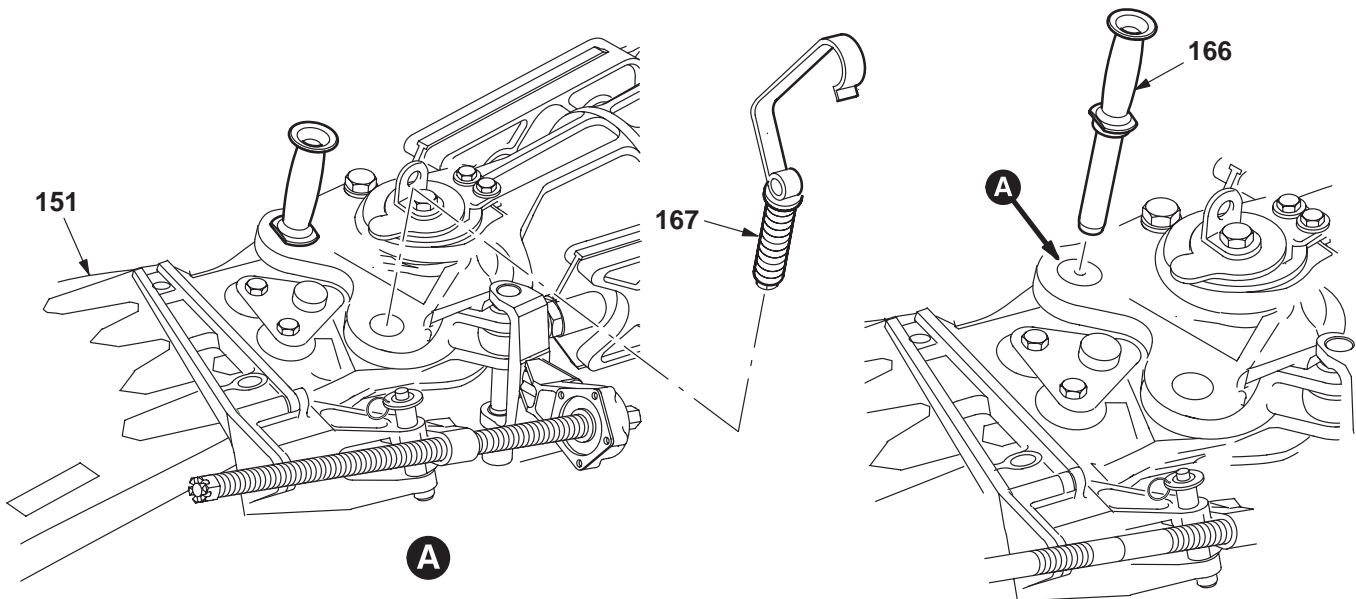


Figure 54. Aircraft Blade Pin from L/H FWD Blade Leading Edge

NOTE

The handle portion on blade fold pin assembly slides up and down freely on shaft to allow slight tapping during fold pin installation.

- (e) Install blade fold pin (166) (non shouldered) in place of aircraft blade pin removed (See Figure 55).
- (3) Remove aircraft blade pin (167) from leading edge of blade (151).
 - (a) Lift or lower L/H FWD blade (151) until aircraft blade pin (167) on leading edge side moves freely.
 - (b) Remove aircraft blade pin (167).



TB05-163

Figure 55. Quick Release Fold Pin at Leading Edge and Remove Aircraft Blade Pin from Trailing Edge

NOTE

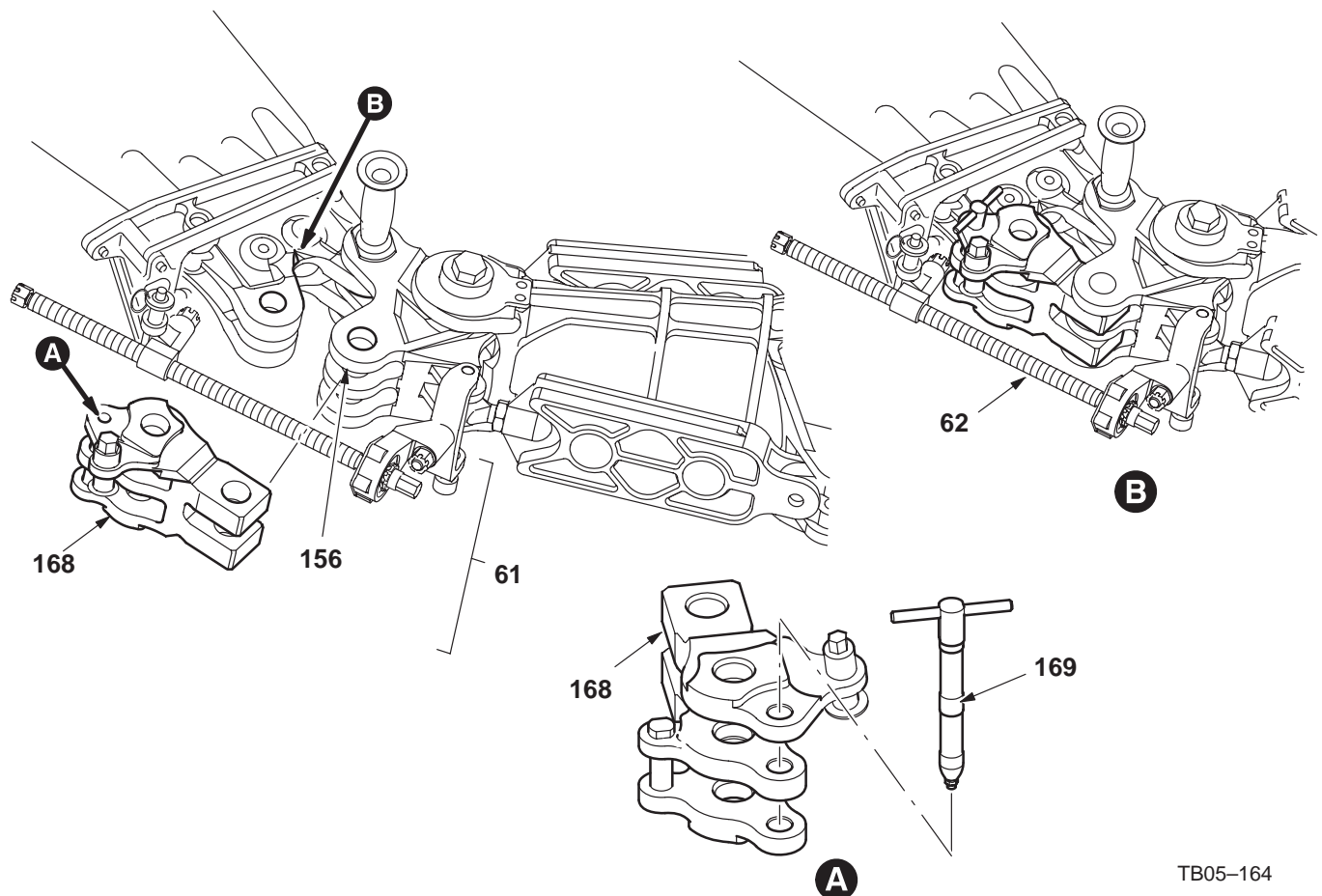
- The person turning jackscrew shall direct whether blade needs to be lifted or let down by inspecting blade root fitting movement out of lead lag link and by feeling any binding occurring on jackscrew as it turns.
- T-handle is temporarily removed from swing link assembly.
- The swing link assembly is labeled **THIS SIDE UP** for correct orientation.
- The swing link assembly fits between the middle and upper clevis of lead lag link and on top of blade root fitting.

(4) Install L/H swing link assembly (168).

(a) Remove T-handle (169) from swing link assembly (168) (See Figure 56).

(b) Turn jackscrew (62) on blade positioning assembly (61) to move L/H FWD blade (151) in a forward direction until approximately parallel with aircraft longitudinal axis.

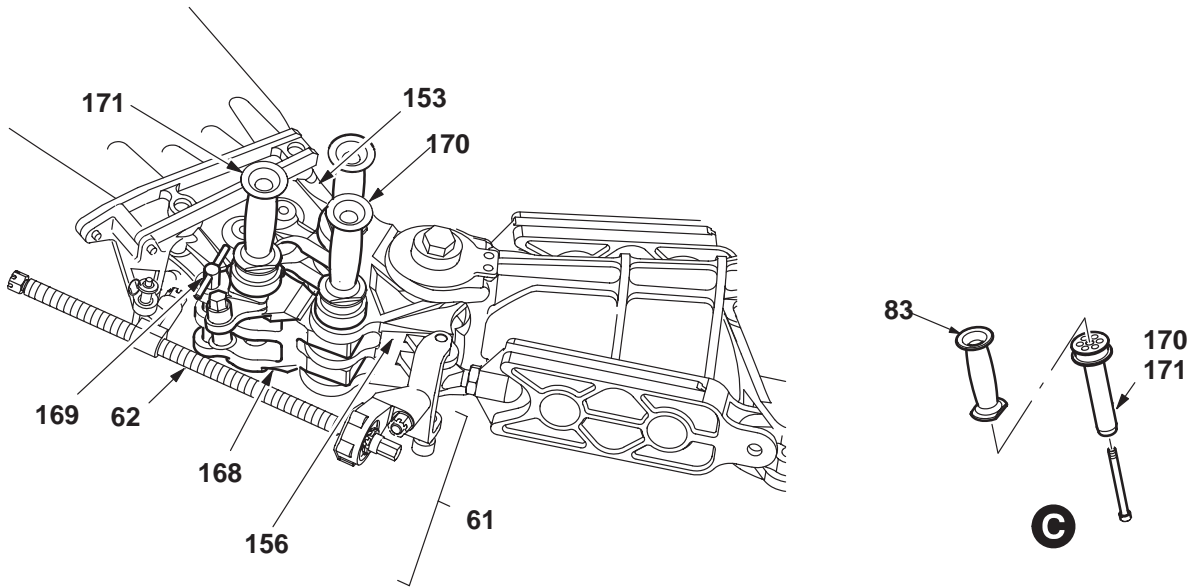
(c) Align hole in L/H swing link assembly (168) with blade pin hole in lead/lag link (156).



TB05-164

Figure 56. L/H Swing Link Align with Lead/Lag between Blade Root End and Pitch Housing

- (d) Install (shouldered) blade fold pin (170) through L/H swing link (168) and lead/lag link (156) (See Figure 57).
- (e) Continue to turn jackscrew (62) as necessary and align remaining hole in L/H swing link (168) with hole in blade root fitting (153).
- (f) Install (shouldered) blade fold pin (171) through L/H swing link (168) and blade root fitting (153).
- (g) Remove blade fold pin handles (83) from shouldered pins (170, 171) in swing link (168).



TB05-165

Figure 57. L/H Swing Link Installed

- (5) Install L/H AUX positioner (172) on trailing edge of blade (151).

NOTE

Observe bonding jumpers so they do not catch on handle.

- (a) Use four persons to lift or lower L/H FWD blade (151) with handling pole assembly (38) and securing pole assembly (158) until blade fold pin (166) on trailing edge side moves freely (See Figure 58).
- (b) Remove trailing edge (non shouldered) blade fold pin (166).

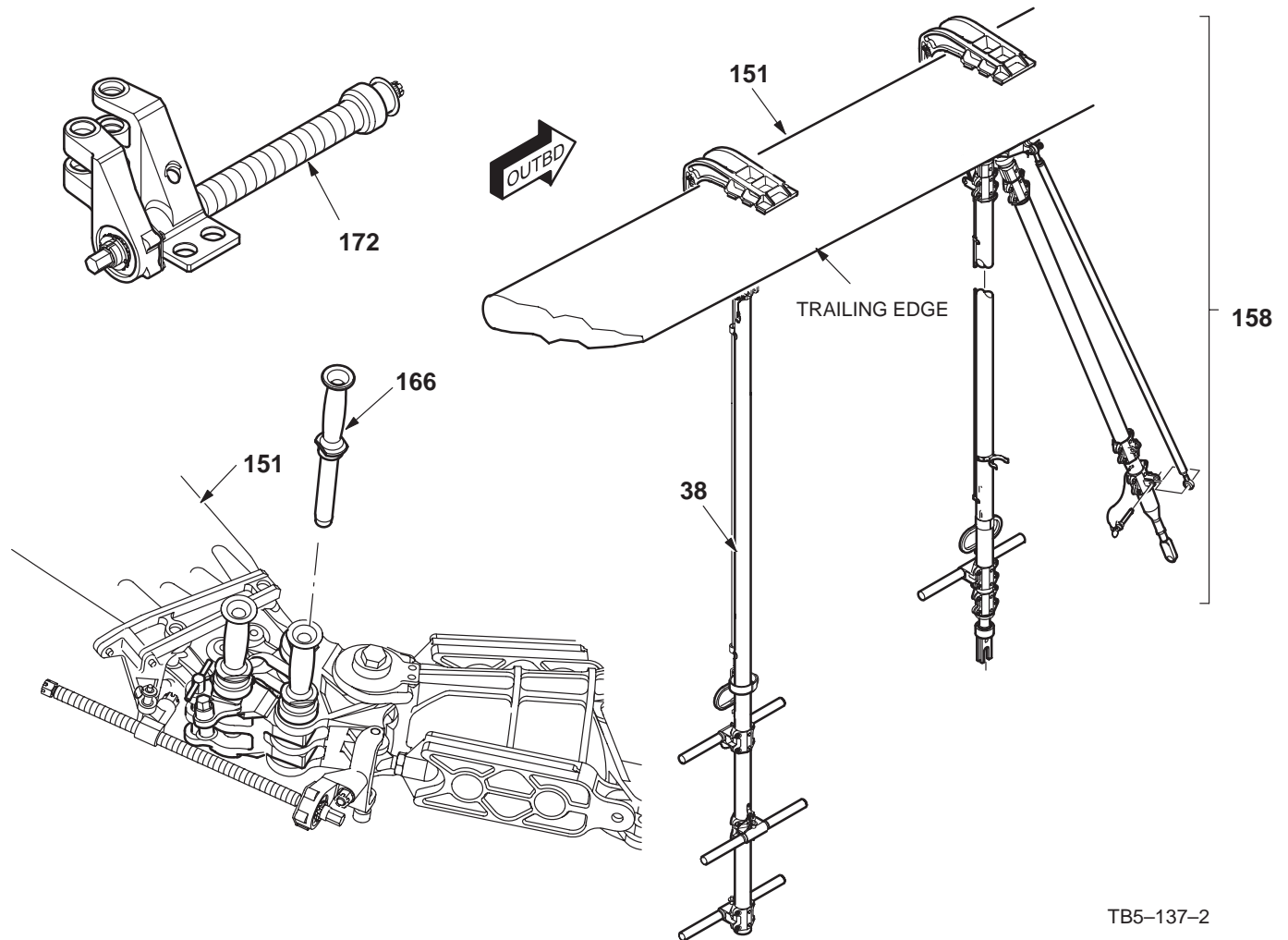


Figure 58. Preparing for L/H AUX Positioner Installation

NOTE

- Keep slight engagement between main rotor blade root and lead/lag line so L/H AUX positioner can be installed.
- Ensure L/H AUX positioner is installed with locking nut towards outboard end of jackscrew.
- Ensure jam nut on L/H AUX positioner jackscrew is loosen to end of threads.

(c) Turn jackscrew (62) on blade positioning assembly (61) until slight engagement of blade root (153) and lead/lag (156) link exists (Figure 59).

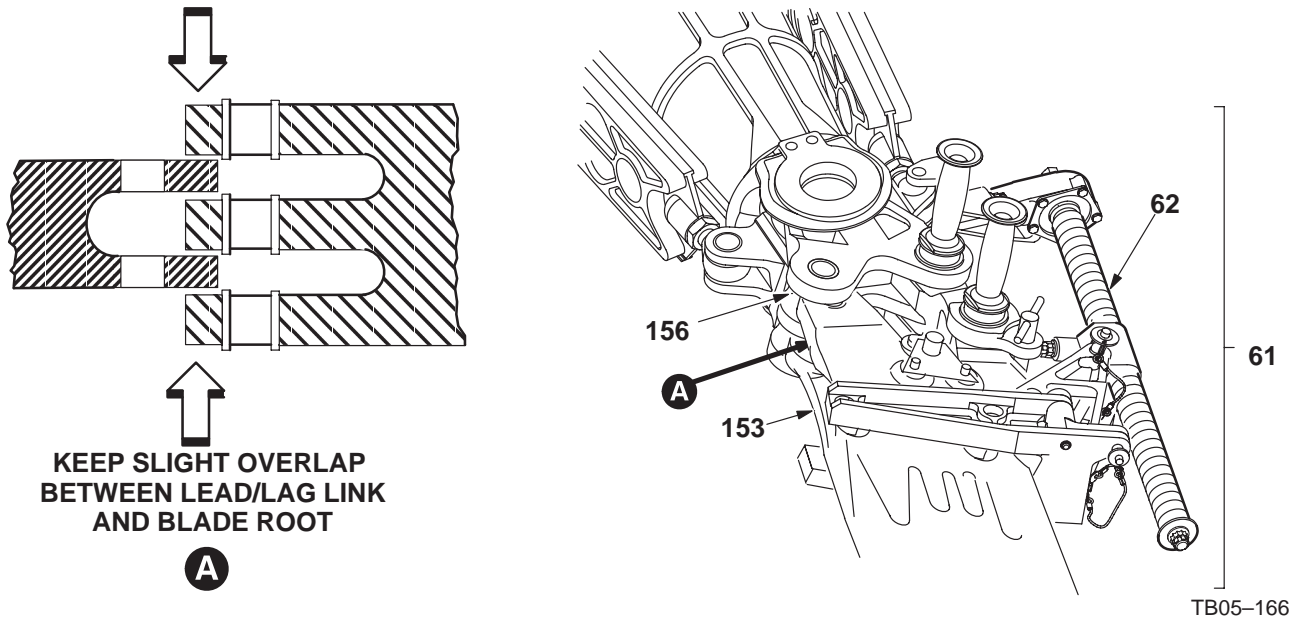
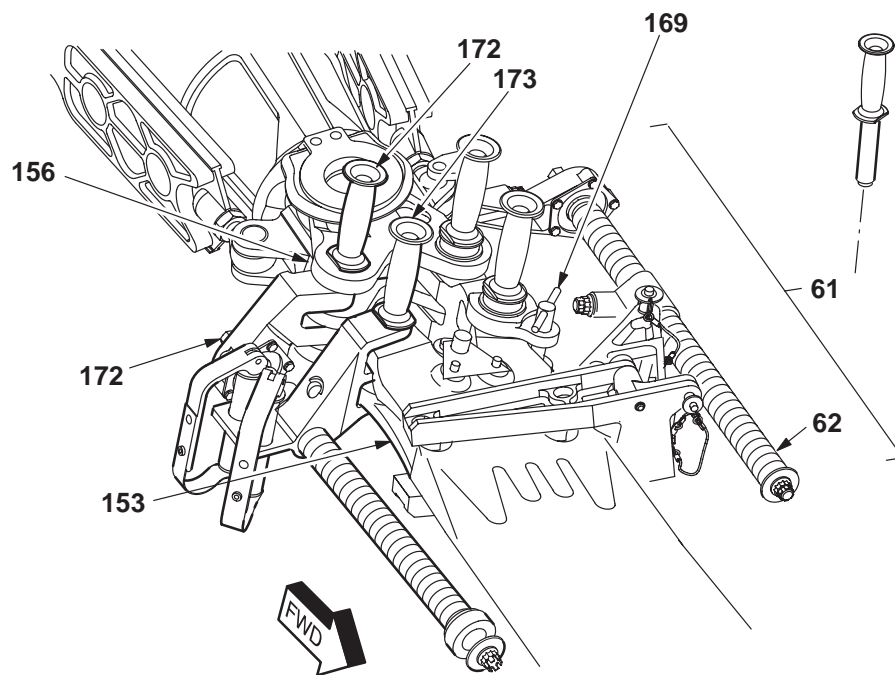


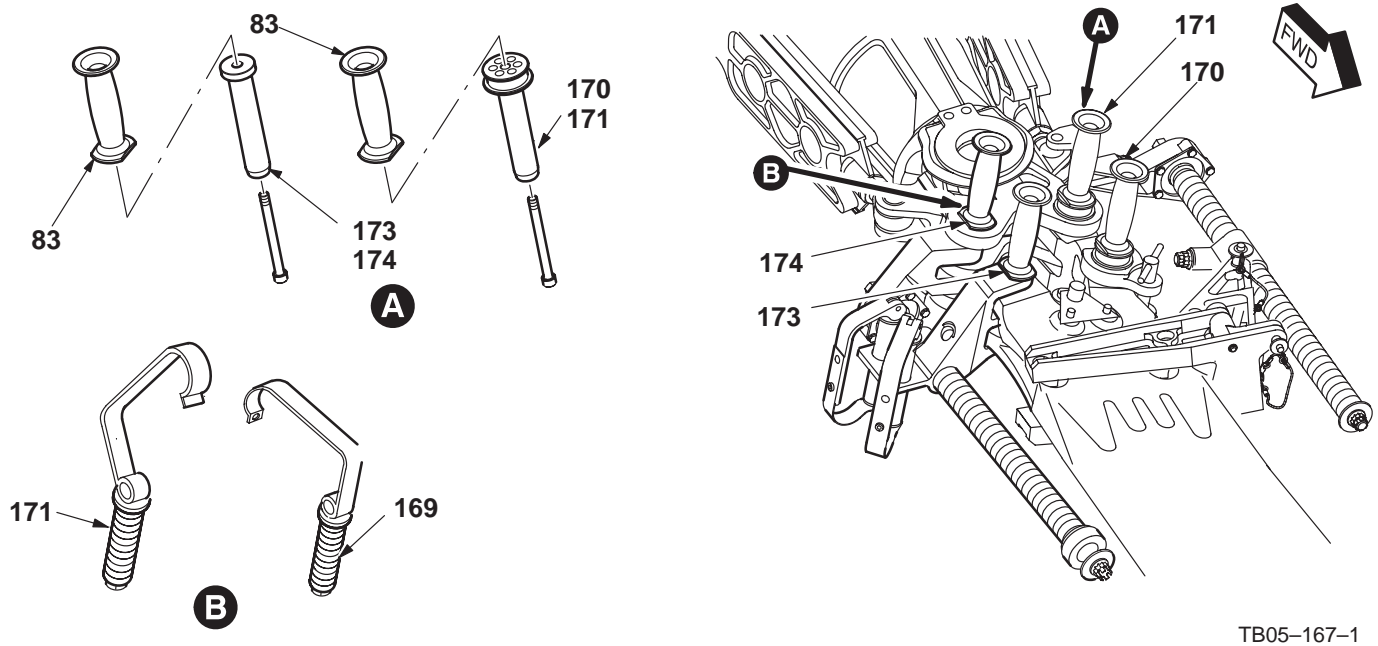
Figure 59. Alignment of Lead/Lag Links for Aux Positioner Installation

- (d) Slide L/H AUX positioner (172) in gap between blade root end (153) and lead/lag link (156) (See Figure 60).
- (e) Install bladefold pin (173) through lead/lag link (156) and aux positioner (172).
- (f) Turn jackscrew (62) on blade positioning assembly (61) until holes in blade root (153) align with L/H aux positioner (172).
- (g) Install (non shouldered) blade fold pin (174) through blade root (153) and aux positioner (172).
- (h) Install T-handle (169) in L/H swing link assembly (168).
- (6) Remove handles (83) from blade fold pins (170,171,173, and 174) to allow adequate transport clearance (See Figure 61).
- (7) Tag and identify aircraft blade pins (165, 167) and loose handles (83).
- (8) Wipe aircraft blade pins (165, 167) with clean rag.
- (9) Apply corrosion preventive compound on adjustment nut and threads of aircraft blade pins (165, 167).
- (a) Stow tagged and identified aircraft blade pins (165, 167), blade fold pins (170, 171, 173, 174), and loose handles (83) in in stowage compartment in aft avionics bay.



TB05-167

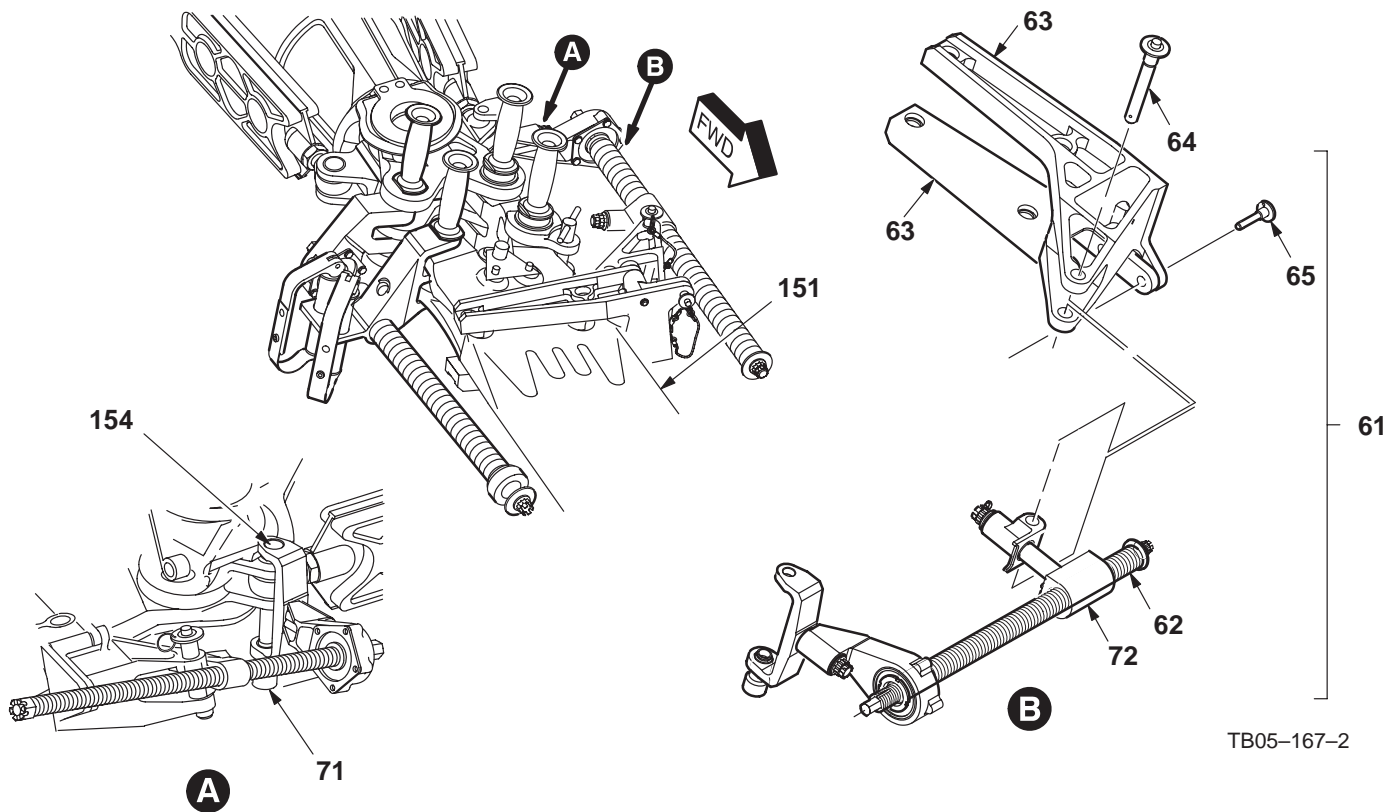
Figure 60. L/H Auxiliary Blade Positioner Installed



TB05-167-1

Figure 61. Removal of Handles from Blade Fold Pins

- (10) Remove blade positioner assembly (61) from leading edge side of blade (151) (See Figure 62).
- (a) Loosen thumbscrew (71) from damper bolt (154).
 - (b) Remove quick release pin (64) that attaches jackscrew knuckle (72) to blade positioner clamps (63).
 - (c) Remove jackscrew (62) from blade positioner clamp halves (63).
 - (d) Remove quick release pin (65) from blade positioner clamp halves (63).
 - (e) Open **TOP** and **BOTTOM** blade positioner clamp halves (63) and remove from leading edge side of blade (151).



TB05-167-2

Figure 62. Removal of Blade Positioner from L/H FWD Blade

NOTE

Observe bonding jumpers on the aft blade folding handles for clearance.

d. Fold L/H FWD blade (151) aft to stowed position.

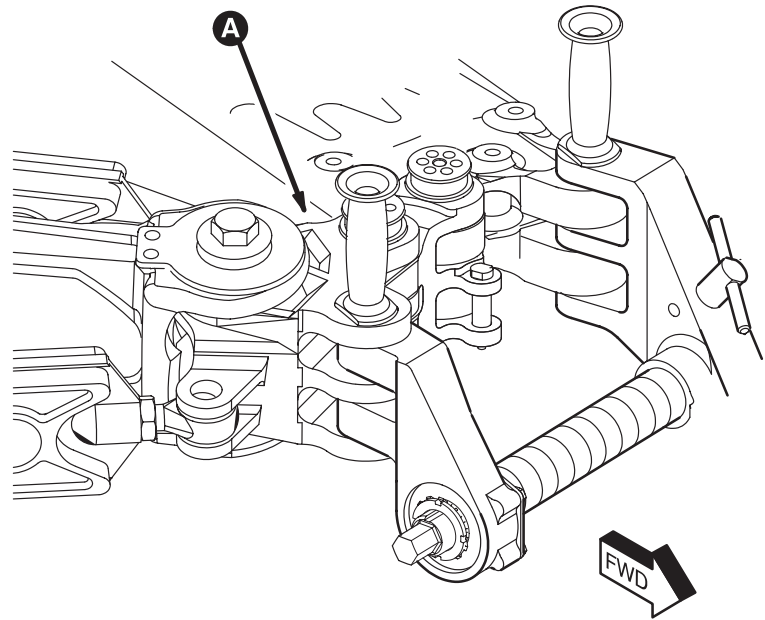
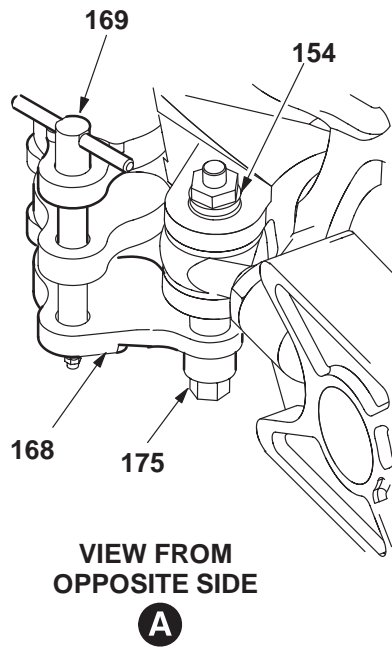
- (1) Fold blade (151) aft until thumbscrew (175) on swing link (168) aligns with damper bolt (154) (See Figure 63).
 - (a) Turn thumbscrew (175) upward until fully engaged on damper bolt (154) stud.
 - (b) Rotate blade (151) forward to facilitate removal of T-handle (169).
 - (c) Remove T-handle (169) from swing link assembly (168) and place in AUX positioner storage port and secure with Velcro straps.

CAUTION

When stowed, ensure there is adequate clearance between leading edge of L/H FWD blade, L/H AFT blade pitch housing lead lag link and L/H AFT blade fold pin at root end.

(d) Continue folding blade (151) AFT to the stowed position.

e. Check minimum **1.00-INCH** clearance between L/H FWD blade leading edge, trailing edge side of L/H AFT blade pitch housing and bottom end of blade fold pin at trailing edge side of L/H AFT blade root.



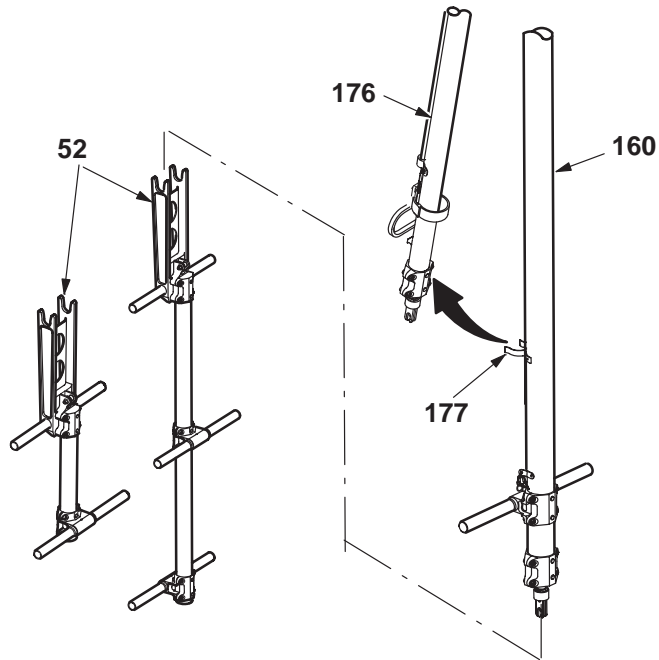
TB05-183

Figure 63. L/H FWD Swing Link and Blade Locked in Folded Position

CAUTION

Ensure L/H FWD blade does not touch L/H AFT securing poles during folding and during attachment to upper saddle.

- (1) Remove pole extension (52) from securing pole (160) (See Figure 64).
- (2) Detach support pole (176) (small dia. tube) from retainer clip (177) on securing pole (160) (larger dia. tube) marked **LEFT REAR - ALIGN WITH BLADE'S INNER MARK.**



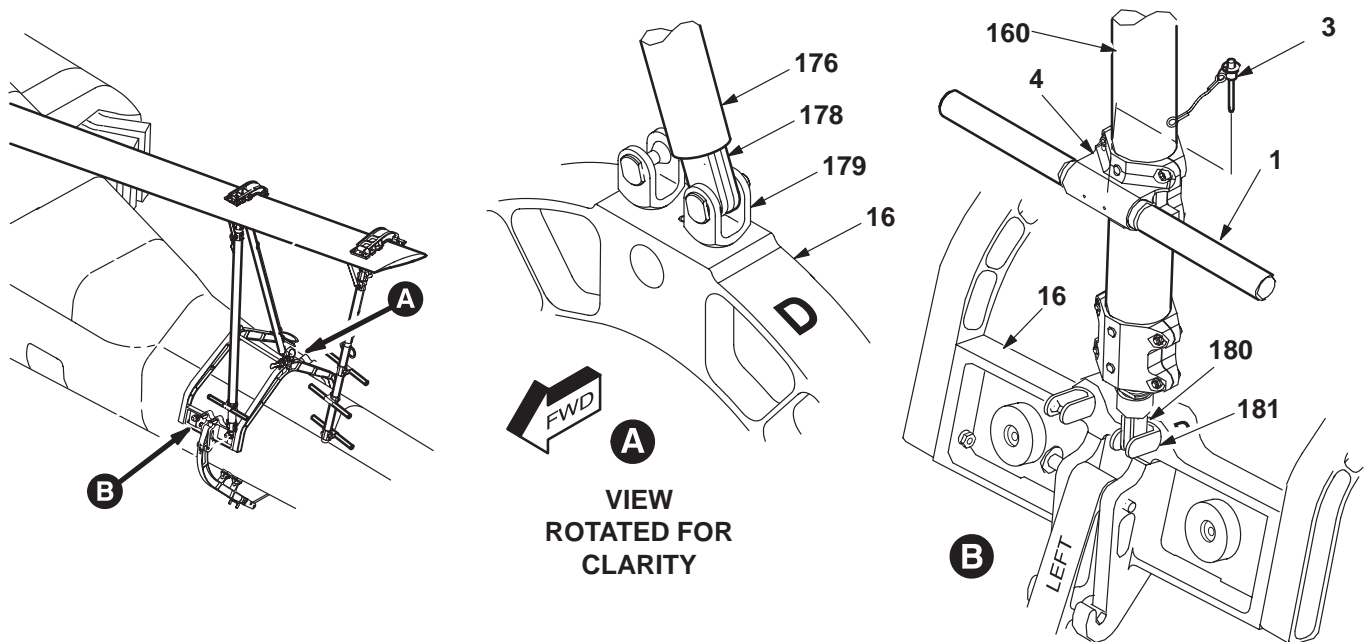
TB05-147-1

Figure 64. Support Pole from Securing Pole

WARNING

Fingers can be pinched between support pole and retainer clip. Ensure fingers are clear of retainer area during support pole movement.

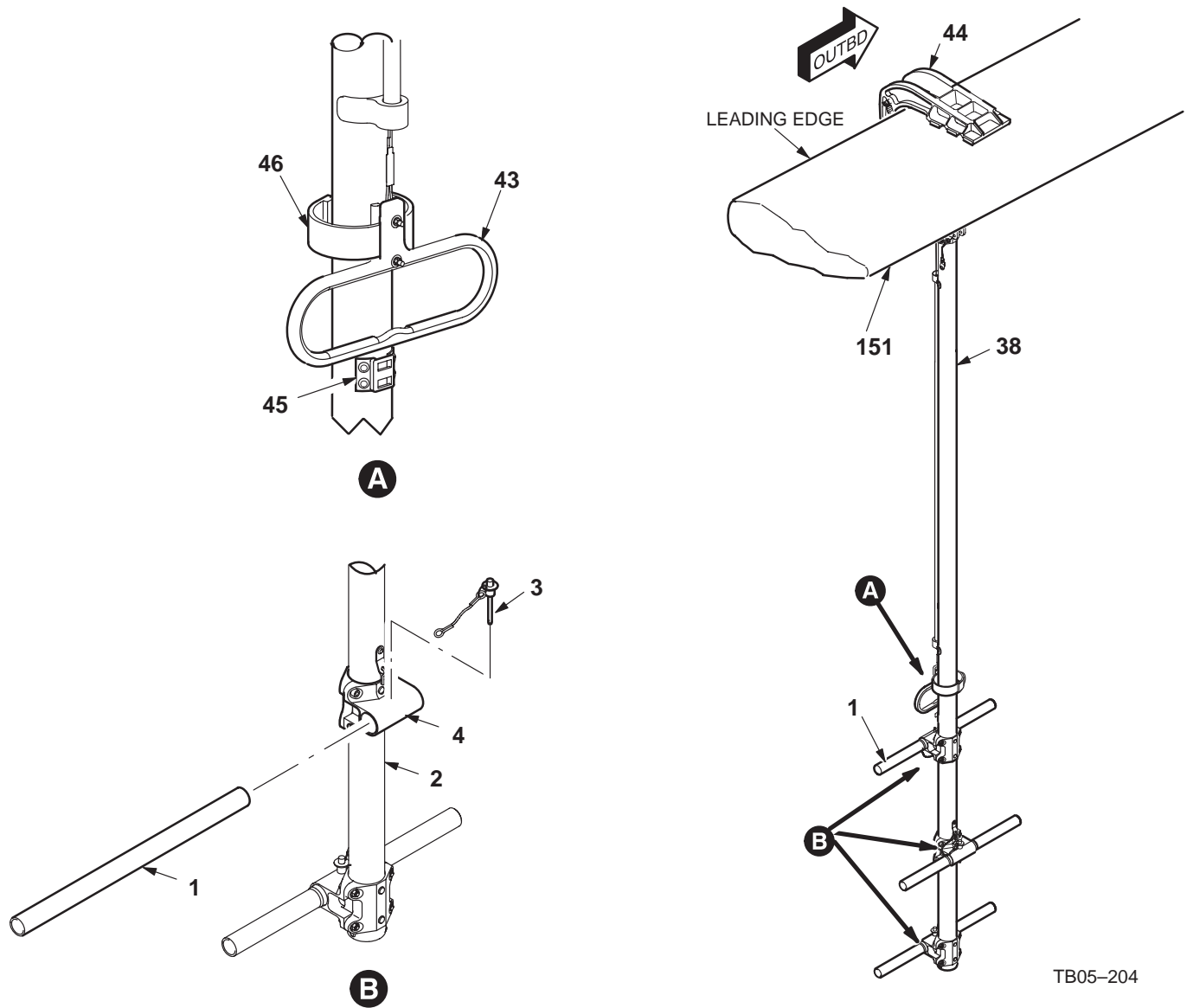
- (3) Attach support pole (176) to top of upper saddle assembly (16) at position **D** by snapping J hook (178) down onto clevis (179) (See Figure 65).
- (4) Remove handle (1) from securing pole (160).
 - (a) Remove quick release pin (3) from receptacle (4) and handle (1).
 - (b) Remove handle (1) from securing pole (160).
- (5) Attach securing pole (160) to side of upper saddle assembly (16) at position **D** by snapping J hook (180) down onto clevis (181).



TB05-182

Figure 65. L/H Securing Pole on Saddle

- (6) Remove blade handling pole assembly (38).
 - (a) Remove Velcro strap (46) from handle (43) (See Figure 66).
 - (b) Pull down release handle (43) to unlock blade clamp (44) on blade handling pole (38).
 - (c) Place release handle (43) into retaining clip (45) to hold blade clamp (44) open.
 - (d) Using two persons, remove handling pole (38) from blade (151).
 - (e) Release handle (43) from retainer (45).
- (7) Remove handle (1) from handling pole (38).
 - (a) Remove quick release pin (3) from receptacle (4) and handle (1).
 - (b) Remove handle (1) from handling pole (38).

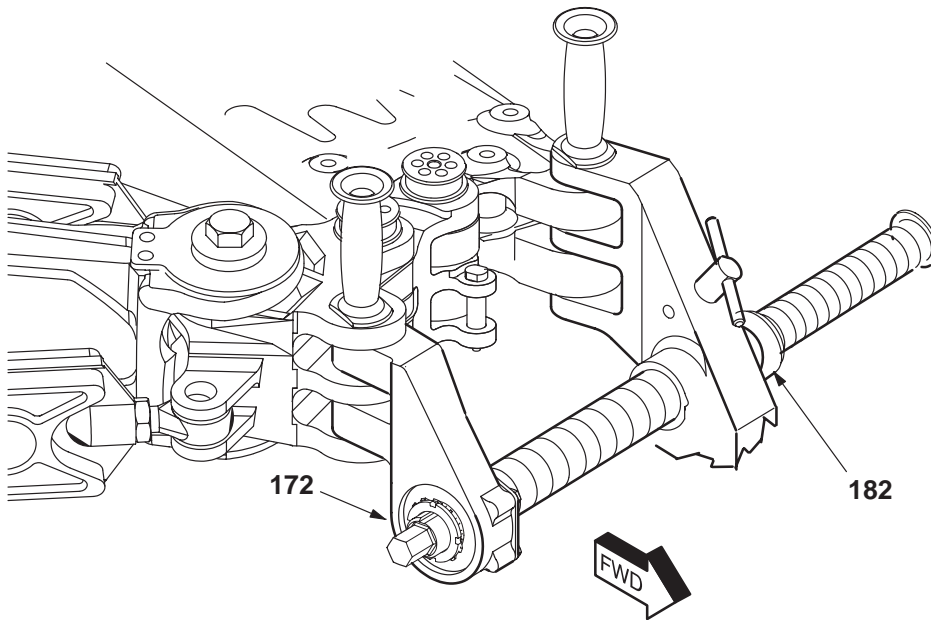


TB05-204

Figure 66. Removal of Blade Handling Pole

(8) Secure Aux positioner (172).

(a) Tighten jam nut lock (182) on Aux positioner (172) (See Figure 67).



TB05-205

Figure 67. Removal of Blade Fold Handles

8. MAIN ROTOR BLADE UN-FOLD PROCEDURES

- a. Remove main rotor blade fold equipment from stowage compartment in aft avionics bay.
- b. Use aircraft grease to lubricate jackscrew threads on blade positioner, L/H AUX blade positioner and R/H AUX blade positioner.

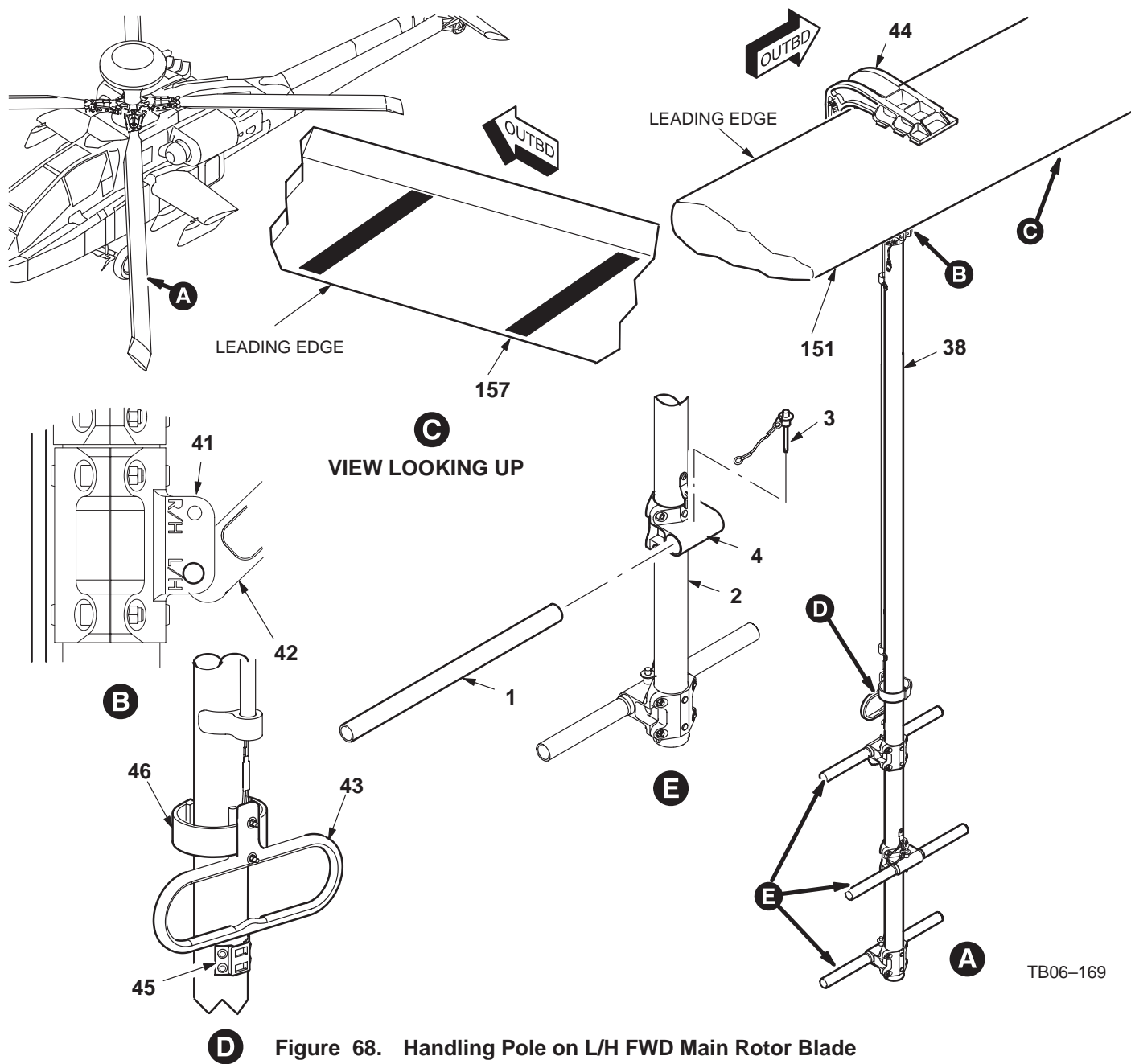
WARNING

- Use four persons to lift and control main rotor blade. In moderate or high winds it can be necessary to use more than four persons. The main rotor blade is a large and heavy component. Failure to follow maintenance instructions may result in serious injury or death and/or serious damage to helicopter.
- Use two persons to lift blade positioning gear during the installation. The positioning gear is a large and heavy component. Failure to follow maintenance instructions may result in serious injury or death of and/or serious damage to helicopter.
- Make sure main rotor blade is secured with the handling pole before removing aircraft blade pins. Heavy blades can fall if not correctly held. Failure to follow maintenance instructions may result in serious injury or death and/or serious damage to helicopter.

CAUTION

Do not use the aircraft blade pins to fold or unfold main rotor blades. The MRBFK blade fold pin assemblies must be used for blade folding procedures. Failure to follow maintenance instructions will result in damage to aircraft blade pins.

- c. **Unfold Left Hand Forward Blade.**
- d. Install blade handling pole assembly (38) on L/H FWD blade (151) (See Figure 68).
 - (1) Adjust handling pole strut (40) to **L/H** position of clevis (41).
 - (2) Install handling pole (38) on inboard stripe (157) of blade (151).
 - (a) Install handles (1) on handling pole assembly (38).
 - (b) Pull down release handle (43) to unlock blade clamp (41) on blade handling pole (38).
 - (c) Place release handle (43) into retaining clip (45) to hold blade clamp (44) open.
 - (d) Align blade clamp (44) of handling pole (38) on inboard stripe (157) of blade (151).
 - (e) Install handling pole assembly (38) onto blade (151) (leading edge first) until leading edge of blade (151) contacts pad on inside of blade clamp (44).
 - (f) Release handle (43) from retainer (45) to lock blade clamp (44) onto blade (151).
 - (g) Secure handle (43) with Velcro strap (46).



TB06-169

D Figure 68. Handling Pole on L/H FWD Main Rotor Blade

- (3) Position one person at rotor head, one person on wing, two people each on handling pole (38) and securing pole (160).

CAUTION

Ensure the L/H FWD blade does not touch L/H AFT securing poles during unfolding and during detachment from upper saddle.

- (4) Install handle (1) on securing pole (160). (See Figure 69).
- (5) Disconnect end of securing pole (160) from side of upper saddle assembly (16) at position **D** by unsnapping J hook (180) up from clevis (181).
- (6) Disconnect support pole (176) from top of upper saddle assembly (16) at position **D** by unsnapping J hook (178) up from clevis (179).

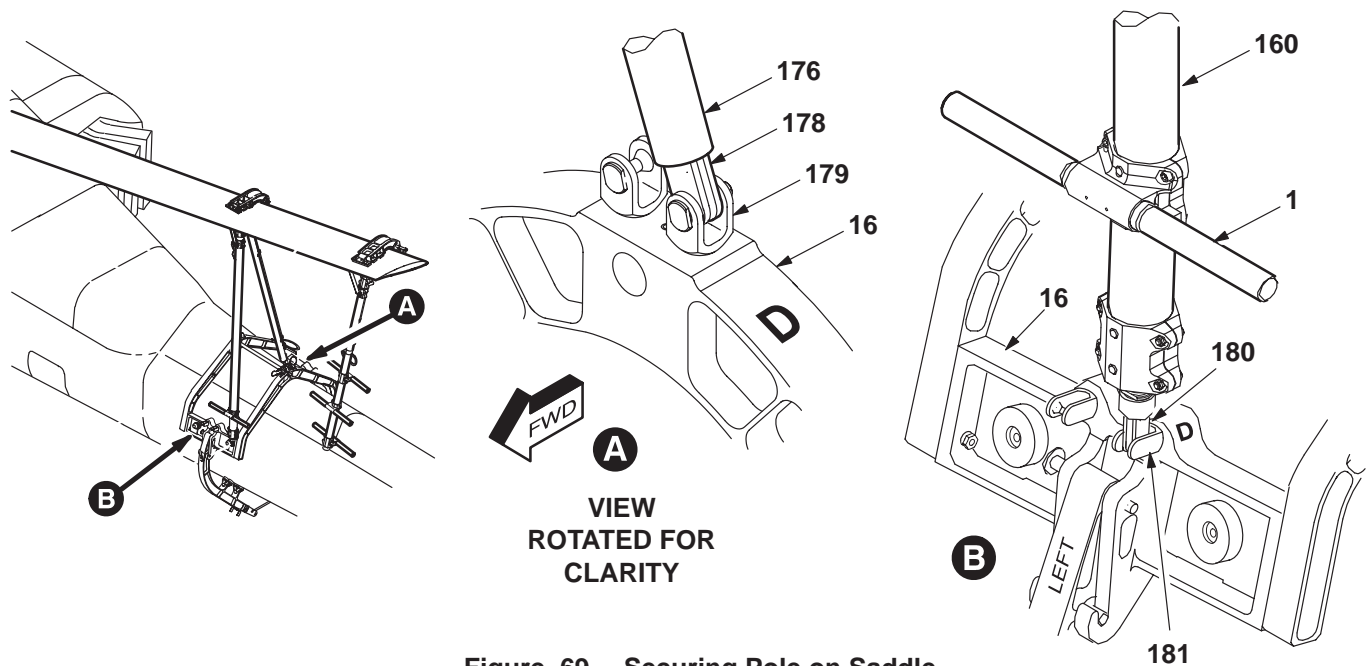


Figure 69. Securing Pole on Saddle

TB06-182

WARNING

Fingers can be pinched between support pole and retainer clip. Ensure fingers are clear of retainer area during support pole movement.

- (7) Attach support pole (176) (small dia. tube) to retainer clip (177) on securing pole (163) (larger dia. tube) marked **LEFT REAR - ALIGN WITH BLADE'S INNER MARK**. (See Figure 70).

NOTE

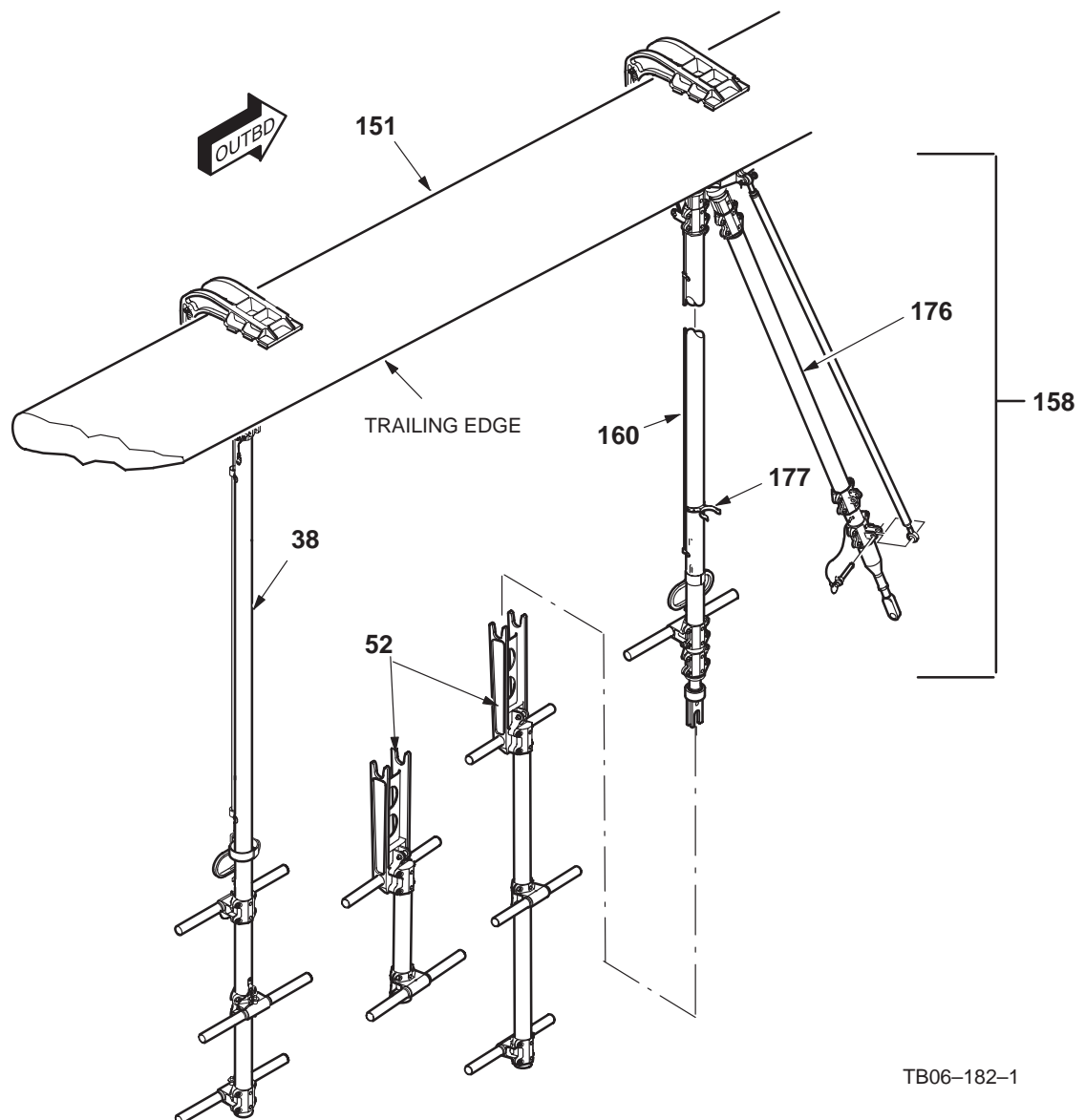
- The extension pole assemblies (short or long) can be utilized for better ergonomics during lifting of main rotor blade.
- The "U" shaped end of extension will go around handle of securing pole while clevis on extension engages J hook on securing pole.

- (8) Attach appropriate extension (52) by installing extension (52) on base of securing pole (160).

NOTE

The person turning jackscrew shall direct whether the blade needs to be lifted or let down by inspecting blade root fitting movement out of lead lag link and by feeling any binding occurring on jackscrew as it turns.

- (9) Use four persons to lift or lower LH FWD blade (151) with handling pole (38) and securing pole assembly (158).



TB06-182-1

Figure 70. Support Pole to Securing Pole

- (10) Remove T-handle (169) from AUX positioner storage port (See Figure 71).
- (11) Rotate blade (151) forward until T-handle (169) can be installed in swing link assembly (168).
- (12) Install T-handle (169) in swing link assembly (168).

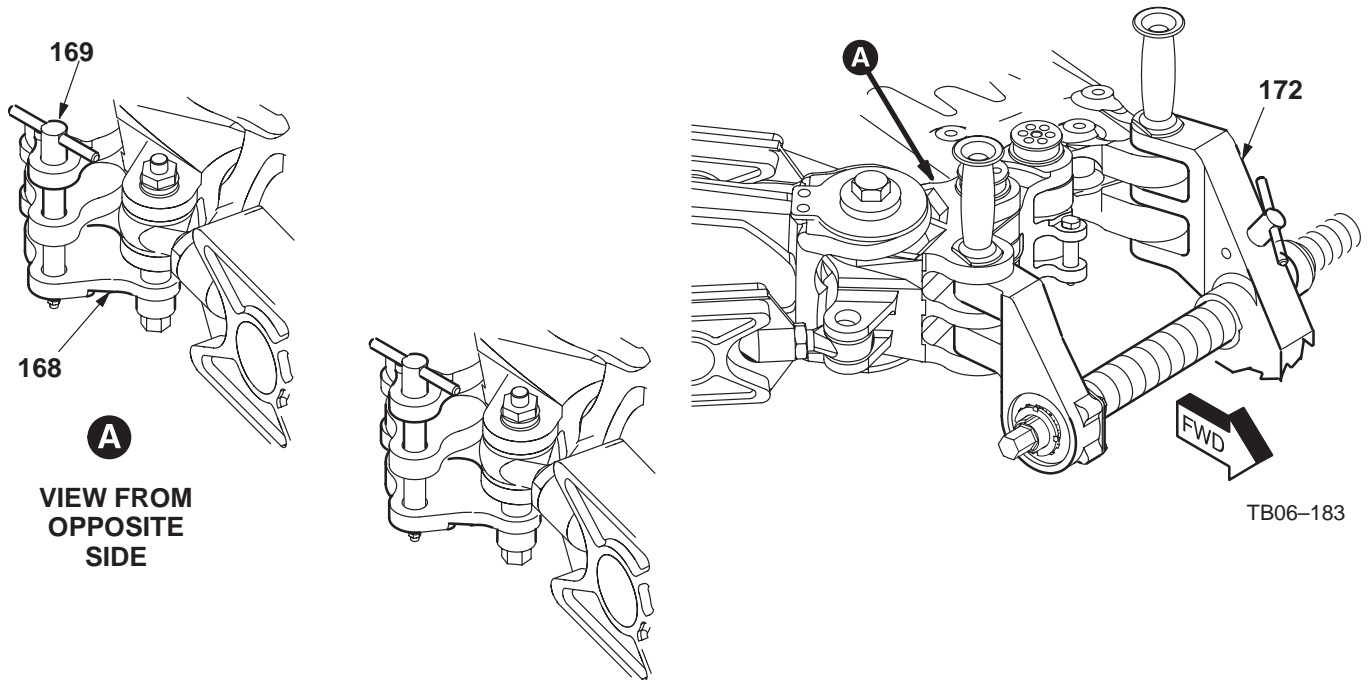


Figure 71. L/H FWD Swing Link and Blade in Folded Position

- (13) Rotate blade (151) AFT to loosen thumbscrew (175) on swing link (168) from damper bolt (154) (See Figure 72).
- (14) Loosen jam nut (182) to end of L/H AUX positioner jackscrew (183) threads.
- (15) Loosen thumbscrew (175) to fully disengage from damper bolt (154) stud.
- (16) After thumbscrew (175) is fully disengaged, turn jackscrew (183) on LH aux positioner (172) until jack-screw (183) threads bottom out.

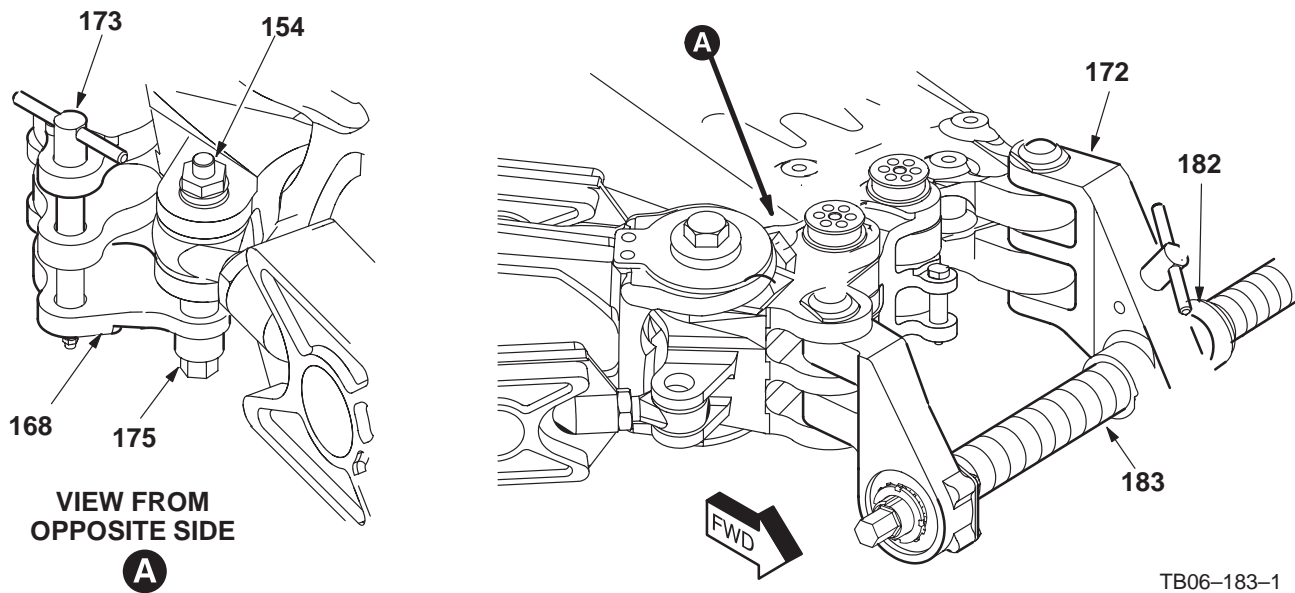
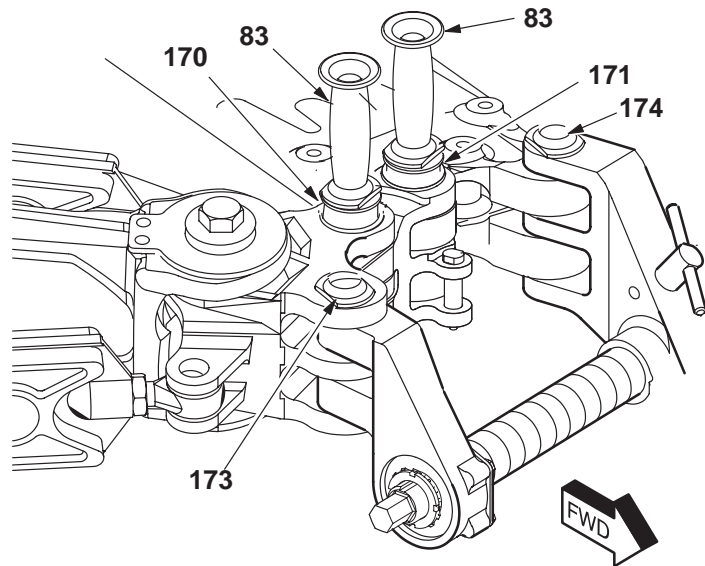


Figure 72. L/H Auxiliary Blade Positioner and Swing Link and Blade in Folded Position

- (17) Install 4 handles (83) on (shouldered) blade fold pins (170, 171) and non-shouldered blade fold pins (173, 174) (See Figure 73).



TB06-206

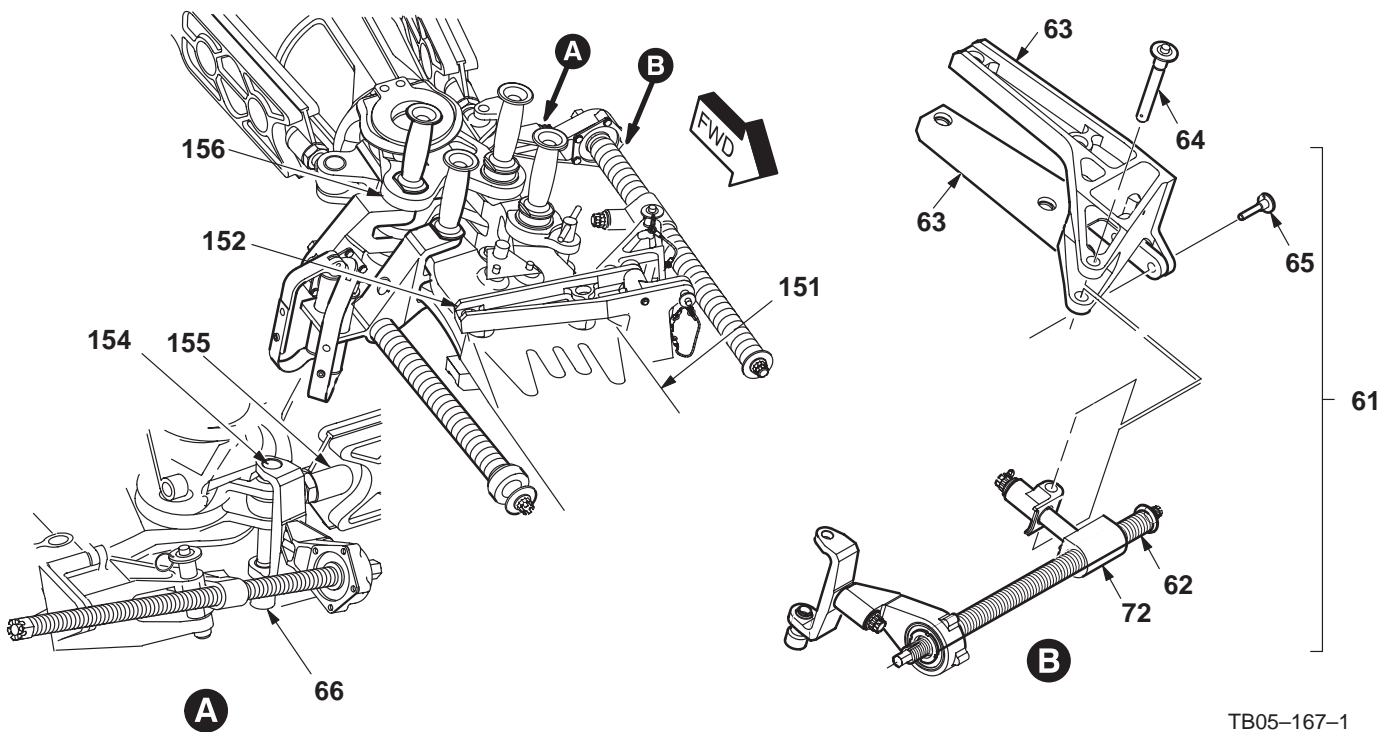
Figure 73. L/H FWD Swing Link and Blade Locked in Folded Position

- (18) Install blade positioner assembly (61) on leading edge side of L/H AFT blade (151) (See Figure 74).
- (a) Disassemble jackscrew (62) from blade positioner clamp halves (63) by removing quick release pin (64).
- (b) Remove the quick release pin (65) from **TOP** and **BOTTOM** blade positioner clamp halves (63).
- (c) Open and install blade positioner clamp halves (63) from leading edge side of blade (151).
- (d) Align holes of **TOP** and **BOTTOM** blade positioner clamp halves (63) with caps (152) on bolts going through blade (151) near root (153) end.
- (e) Install quick release pin (65) through blade positioner clamp halves (63).

NOTE

Thumbscrew is always tightened upward and is positioned on bottom of jackscrew on all four blades.

- (f) Install jackscrew (62) on damper bolt (154) which connects damper (155) to the lead lag link (156). Tighten thumbscrew (71) on yoke end of jackscrew (62).
- (g) Align hole of jackscrew knuckle (72) with hole of blade positioner blade clamp (63).
- (h) Install quick release pin (64) that attaches jackscrew knuckle (72) to blade positioner blade clamp (63).
- (i) Tighten thumbscrew (71) on blade positioner (63) to leading edge lead lag damper bolt (154) head.



TB05-167-1

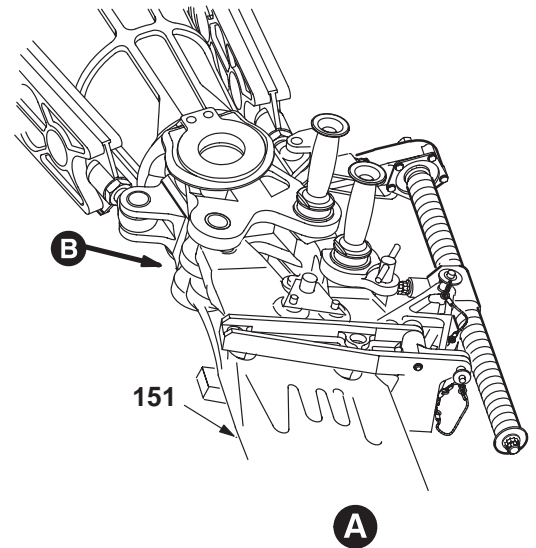
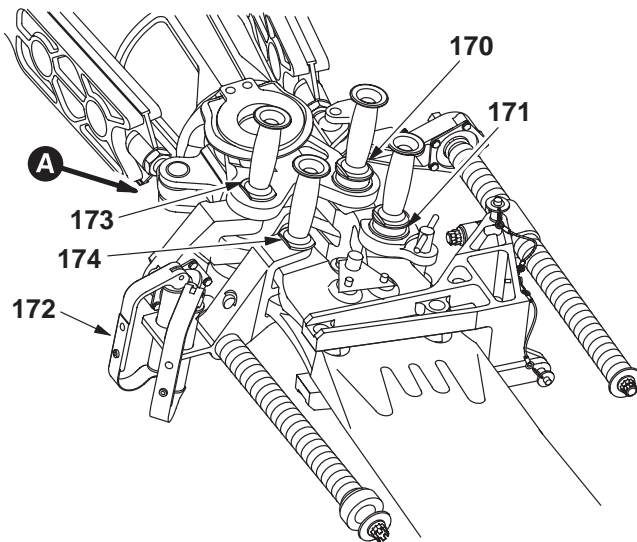
Figure 74. Removal of Blade Positioner from L/H FWD Blade

- (19) Remove L/H AUX positioner (172) from blade (151) trailing edge.

NOTE

The alignment bar is used to facilitate alignment of lead lag holes.

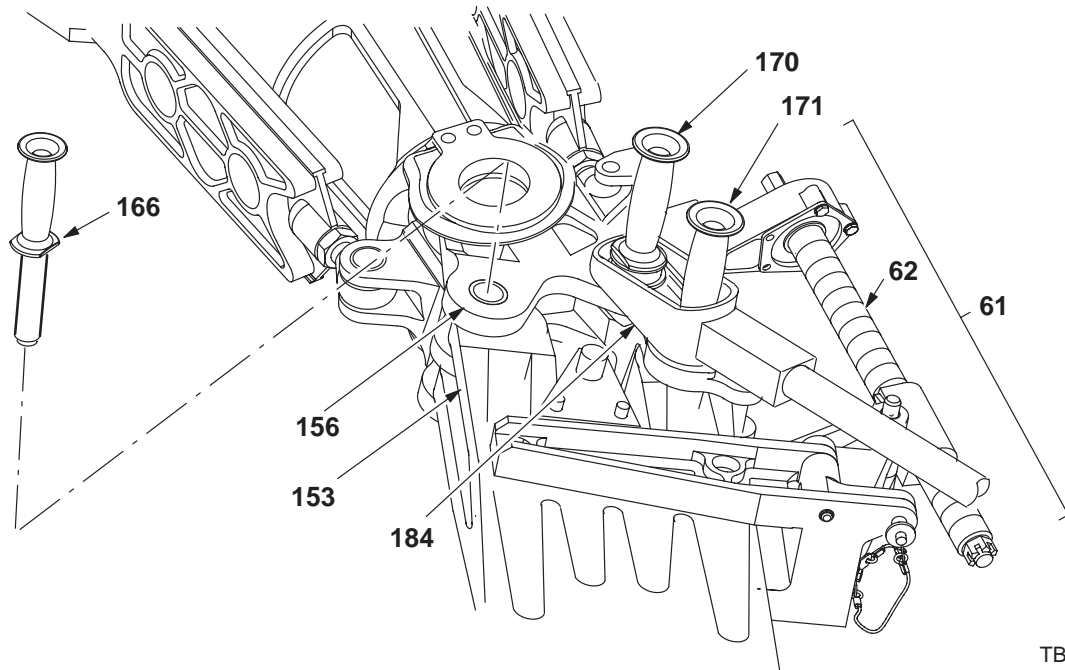
- (a) Install four handles (83) on blade fold pins (shouldered) (170) and (171) and blade fold pins (non-shouldered) (173) and (174) (See Figure 75).
- (b) Remove two (non shouldered) blade fold pins (173) and (174) from L/H aux positioner (172).
- (c) Remove R/H AUX positioner (172).



TB06-167

Figure 75. L/H Auxiliary Blade Positioner Installed

- (d) Turn jackscrew (62) on blade positioning assembly (61) to move L/H FWD blade (151) in a forward direction until holes in lead-lag link (156) align with blade root fitting (153) (See Figure 76).
- (e) Place alignment bar (184) over shouldered blade fold pins (170) and (171).
- (f) Turn jackscrew (62) on blade positioner (61) to align lead/lag link (156) with blade root fitting (153).
- (g) Align hole in the lead/lag link (156) with hole of blade root fitting (153).
- (h) Install blade fold pin (166) (non shouldered).



TB06-149

Figure 76. Alignment Bar on Shouldered Quick Release Pins

(20) Remove L/H swing link assembly (168).

(a) Remove T handle (169) from swing link (168) (See Figure 77).

(b) Use four persons to lift or lower L/H FWD blade (151) with handling pole (38) and securing pole assembly (160) until blade fold pins (170) and (171) move freely.

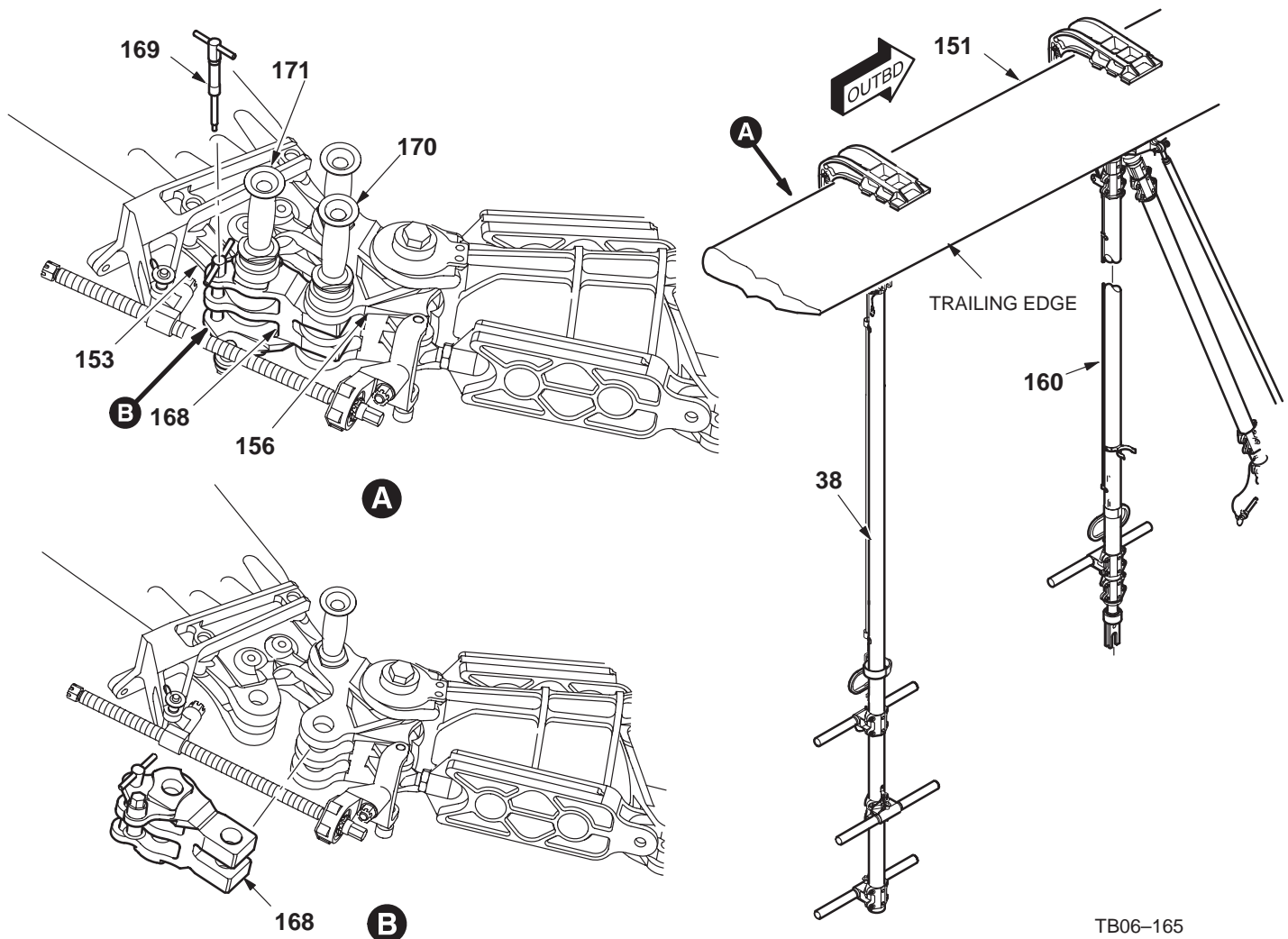
(c) Remove (shouldered) blade fold pins (170) and (171) from swing link (168), lead/lag link (156) and blade root fitting (153).

(d) Remove L/H swing link (168) from lead-lag link (156) and blade root (153).

(21) Check blade fold kit attaching areas on lead lag link (156) and blade root (153) end for damage.

(a) A-Model refer to TM-1-1520-238-23.

(b) D-Model refer to TM-1-1520-Longbow/Apache IETM.



TB06-165

Figure 77. L/H Swing Link

- (22) Install identified aircraft blade pin (167) on leading edge side of blade (151).
 - (a) Move the blade (151) AFT to align hole in lead/lag link (156) with hole in blade root (153) (See Figure 78).
 - (b) Use four persons to lift or lower L/H FWD blade (151) with handling pole (38) and securing pole assembly (163) until blade fold pin (166) on trailing edge side moves freely.
 - (c) Pull spring clip (58) on aircraft blade pin (167) up to the fully open position.
 - (d) Install aircraft blade pin (167) on leading edge side of blade (151).

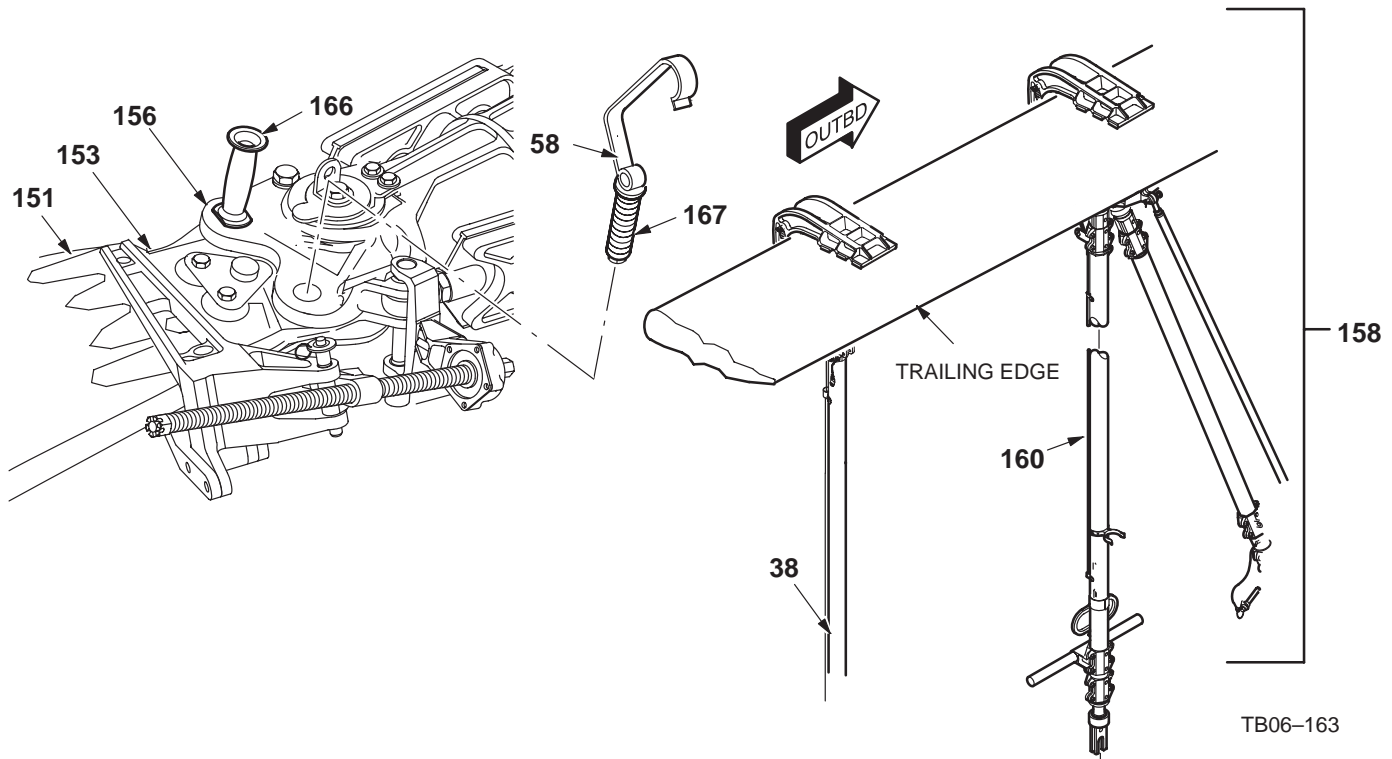
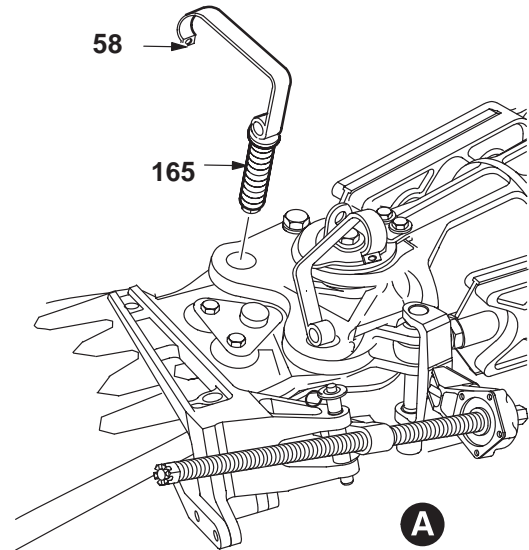
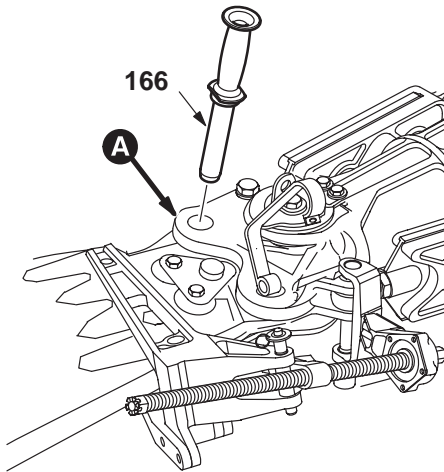


Figure 78. Install Aircraft Blade Pin in Trailing Edge and Remove Quick Release Fold Pin at Leading Edge

- (23) Install identified aircraft blade pin (165) on trailing edge side of blade (151).
- (a) Remove blade fold pin (166) (See Figure 79).
 - (b) Pull spring clip (58) on identified aircraft blade pin (165) up to the fully open position.
 - (c) Install identified aircraft blade pin (165) on trailing edge side of blade (151).



TB06-162

Figure 79. Install Aircraft Blade Pin on Leading Edge Side of Blade

- (24) Remove blade positioner assembly (61) from L/H FWD leading edge side of blade (151).
 - (a) Loosen thumbscrew (71) from damper bolt (154) (See Figure 80).
 - (b) Remove quick release pin (64) that attaches jackscrew knuckle (72) to blade positioner clamps (63).
 - (c) Remove L/H AUX positioner (172).
 - (d) Remove quick release pin (65) from blade positioner clamp halves (63).
 - (e) Open **TOP** and **BOTTOM** blade positioner clamp halves (63) and remove from leading edge side of blade (151).
 - (f) Install blade pin per:
 - 1 A-model refer to TM 1-1520-238-23 (para 5.4).
 - 2 D-model refer to TM 1-1520-Longbow/Apache IETM.

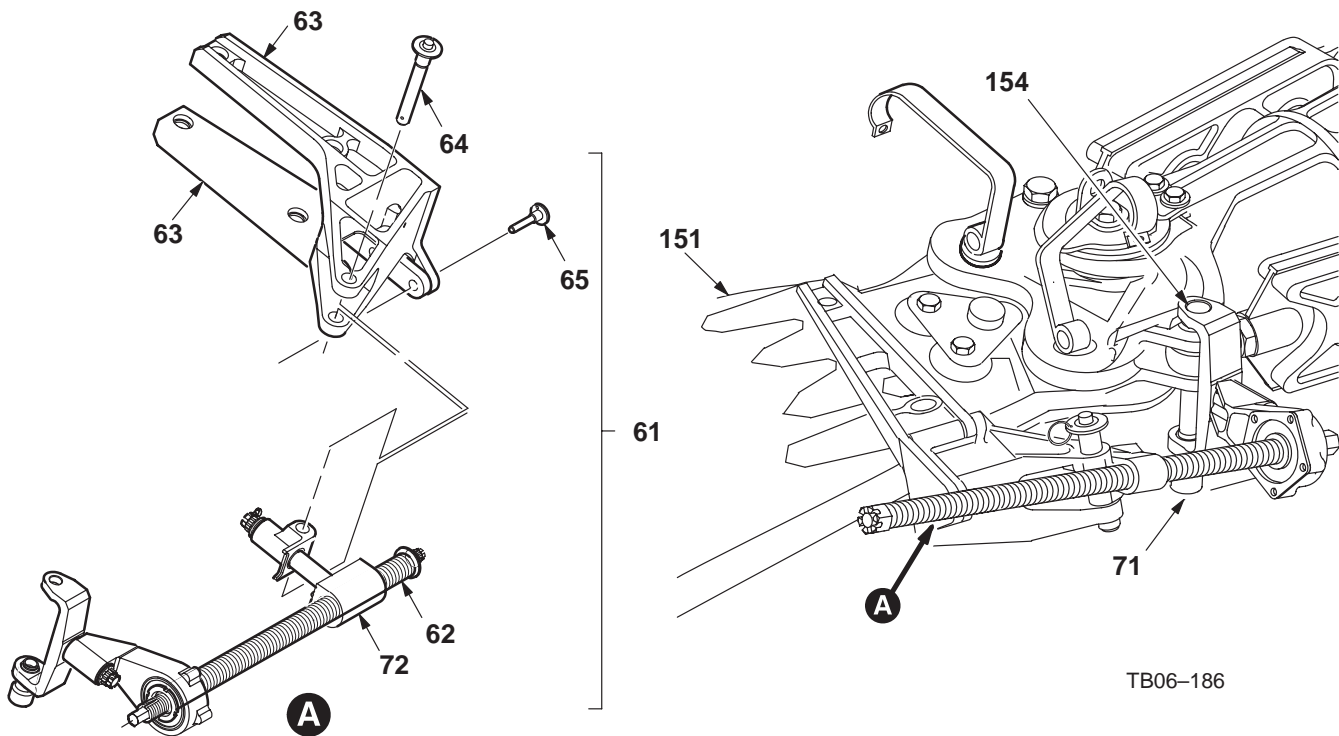
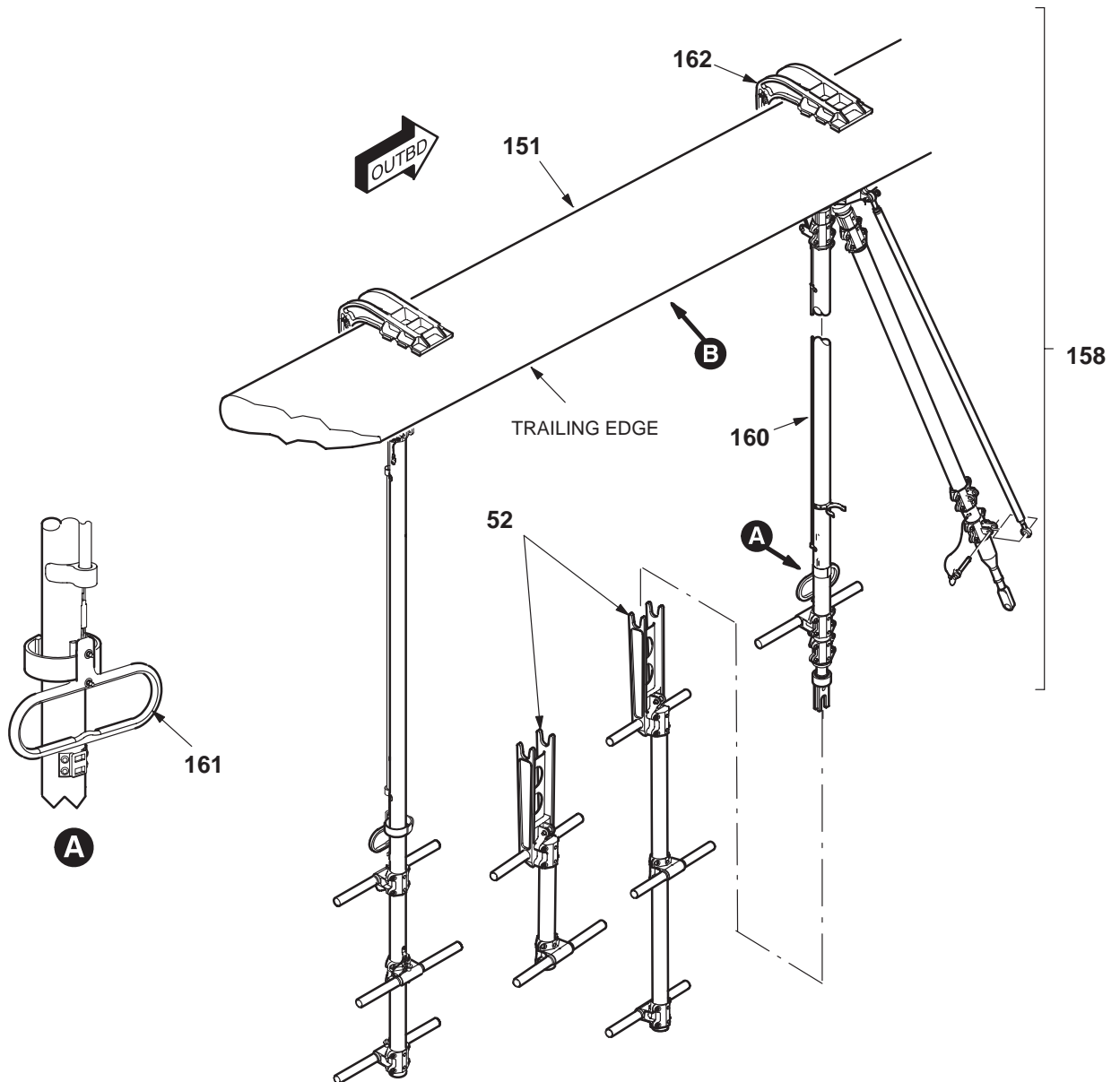


Figure 80. Blade Positioning Assembly on L/H FWD Main Rotor Blade

- (25) Remove securing pole assembly (158) from LH/FWD blade (151).
- (a) Remove extension (52) from base of securing pole (160).
 - (b) Pull down release handle (161) to unlock blade clamp (162) on securing pole (160).
 - (c) Remove securing pole assembly (158) from blade (151).



TB06-207

Figure 81. Removal of Securing Pole Assembly from L/H FWD Blade

(26) Remove blade handling pole assembly (38).

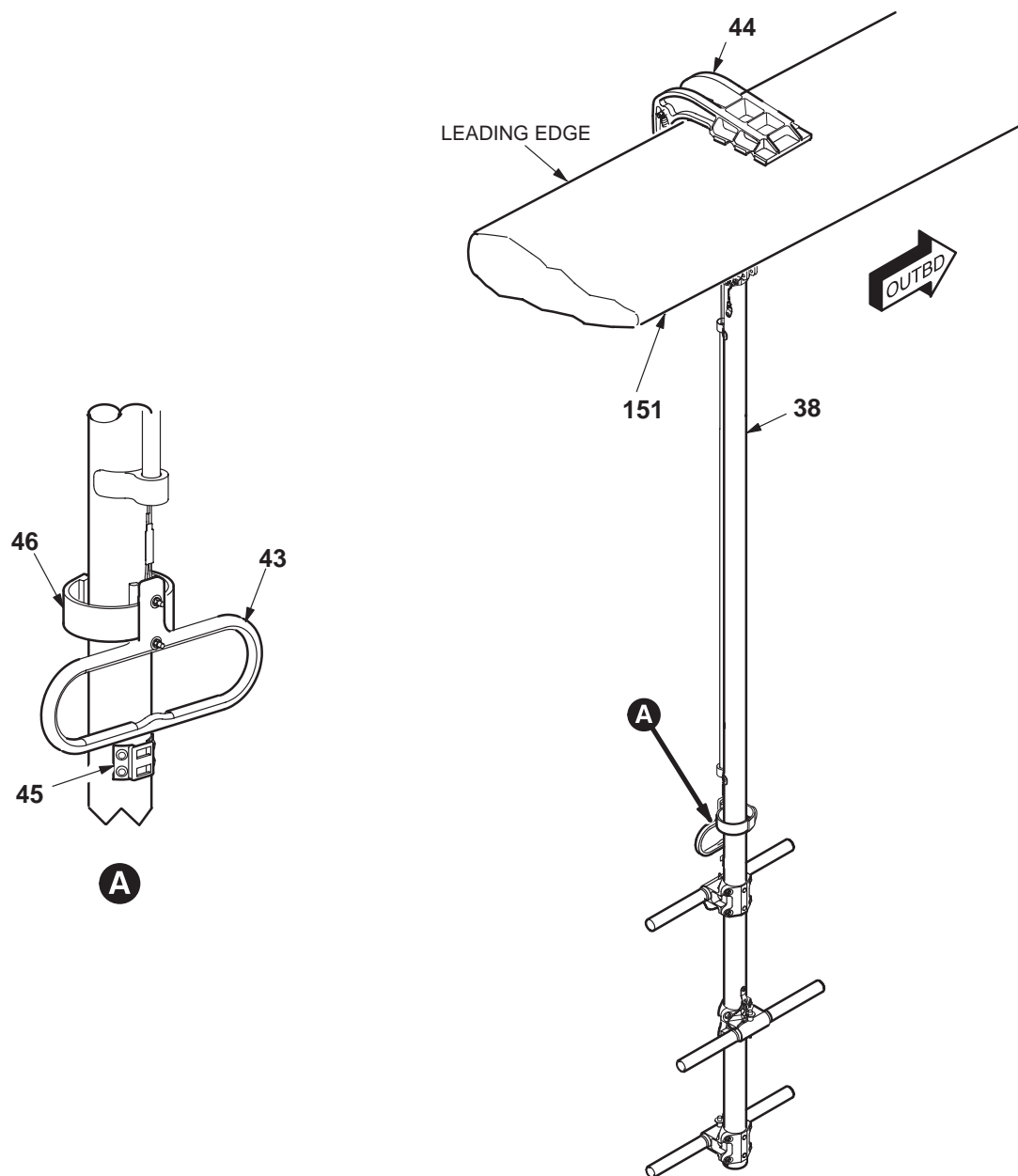
(a) Remove Velcro strap (46) from handle (43) (See Figure 82).

(b) Pull down release handle (43) to unlock blade clamp (44) on blade handling pole (38).

(c) Place release handle (43) into retaining clip (45) to hold blade clamp (44) open.

(d) Using two persons, remove handling pole (38) from blade (151).

(e) Release handle (43) from retainer (45).



TB06-169-1

Figure 82. Handling Pole on L/H FWD Main Rotor Blade

WARNING

- Use four persons to lift and control main rotor blade. In moderate or high winds it can be necessary to use more than four persons. The main rotor blade is a large and heavy component. Failure to follow maintenance instructions may result in serious injury or death and/or serious damage to the helicopter.
- Use two persons to lift blade positioning gear during the installation. The positioning gear is a large and heavy component. Failure to follow maintenance instructions may result in serious injury or death of and/or serious damage to helicopter.
- Make sure main rotor blade is secured with the handling pole before removing aircraft blade pins. Heavy blades can fall if not correctly held. Failure to follow maintenance instructions may result in serious injury or death and/or serious damage to helicopter.

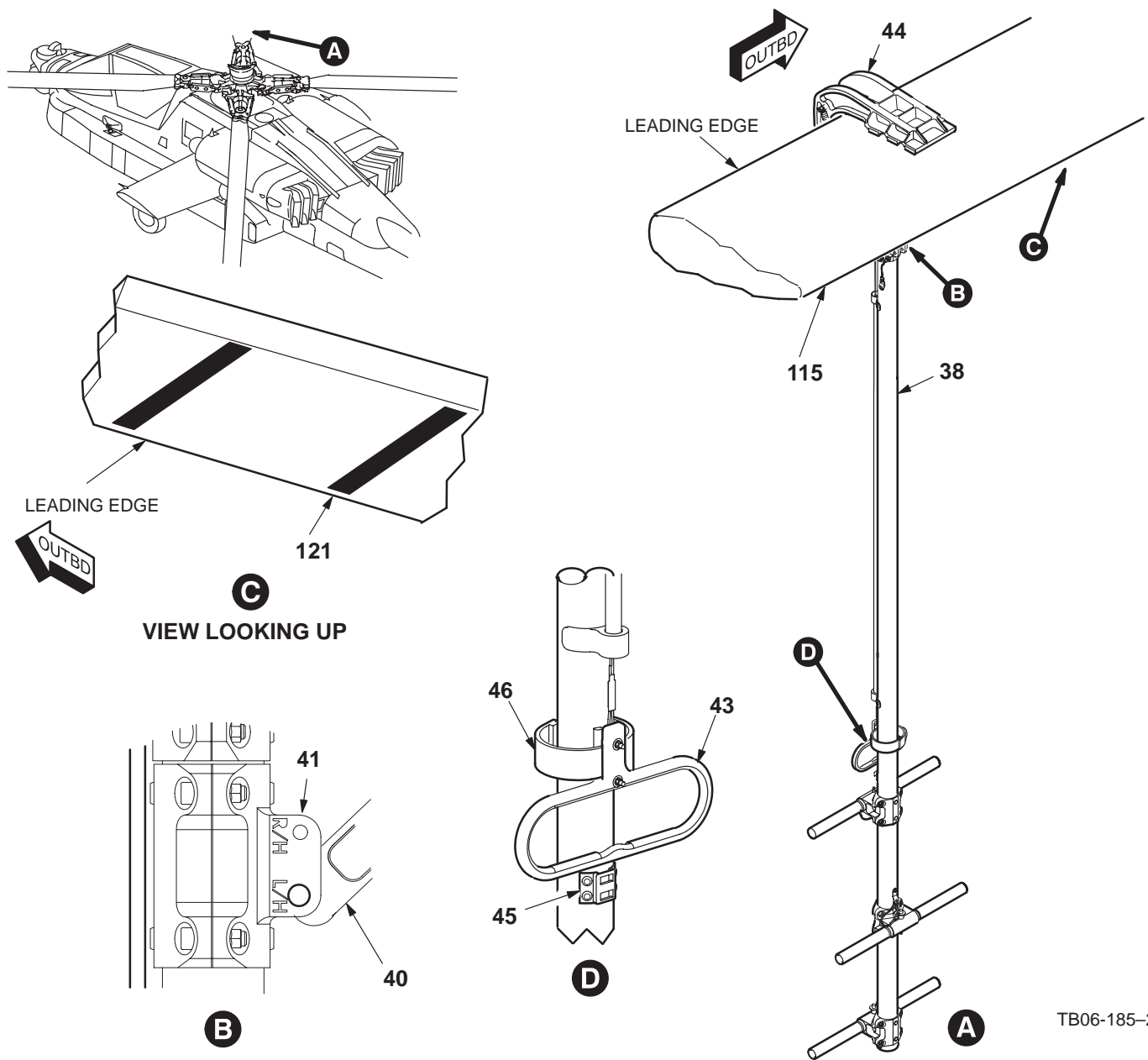
CAUTION

Do not use the aircraft blade pins to fold or unfold main rotor blades. The MRBFK blade fold pin assemblies must be used for blade folding procedures. Failure to follow maintenance instructions will result in damage to aircraft blade pins.

e. Unfold Right Hand Forward Blade.

f. Install blade handling pole assembly (38) on R/H FWD blade (115) (See Figure 83).

- (1) Adjust handling pole strut (40) to **R/H** position of clevis (41).
- (2) Install handling pole (38) on inboard stripe (121) of blade (115).
 - (a) Pull down release handle (43) to unlock blade clamp (44) on blade handling pole (38).
 - (b) Place release handle (43) into retaining clip (45) to hold blade clamp (44) open.
 - (c) Align blade clamp (44) of handling pole (38) on inboard stripe (121) of blade (115).
 - (d) Install handling pole assembly (38) onto blade (115) (leading edge first) until leading edge of blade (115) contacts pad on inside of blade clamp (44).
 - (e) Release handle (43) from retainer (45) to lock blade clamp (44) onto the blade (115).
 - (f) Secure handle (43) with Velcro strap (46).



TB06-185-2

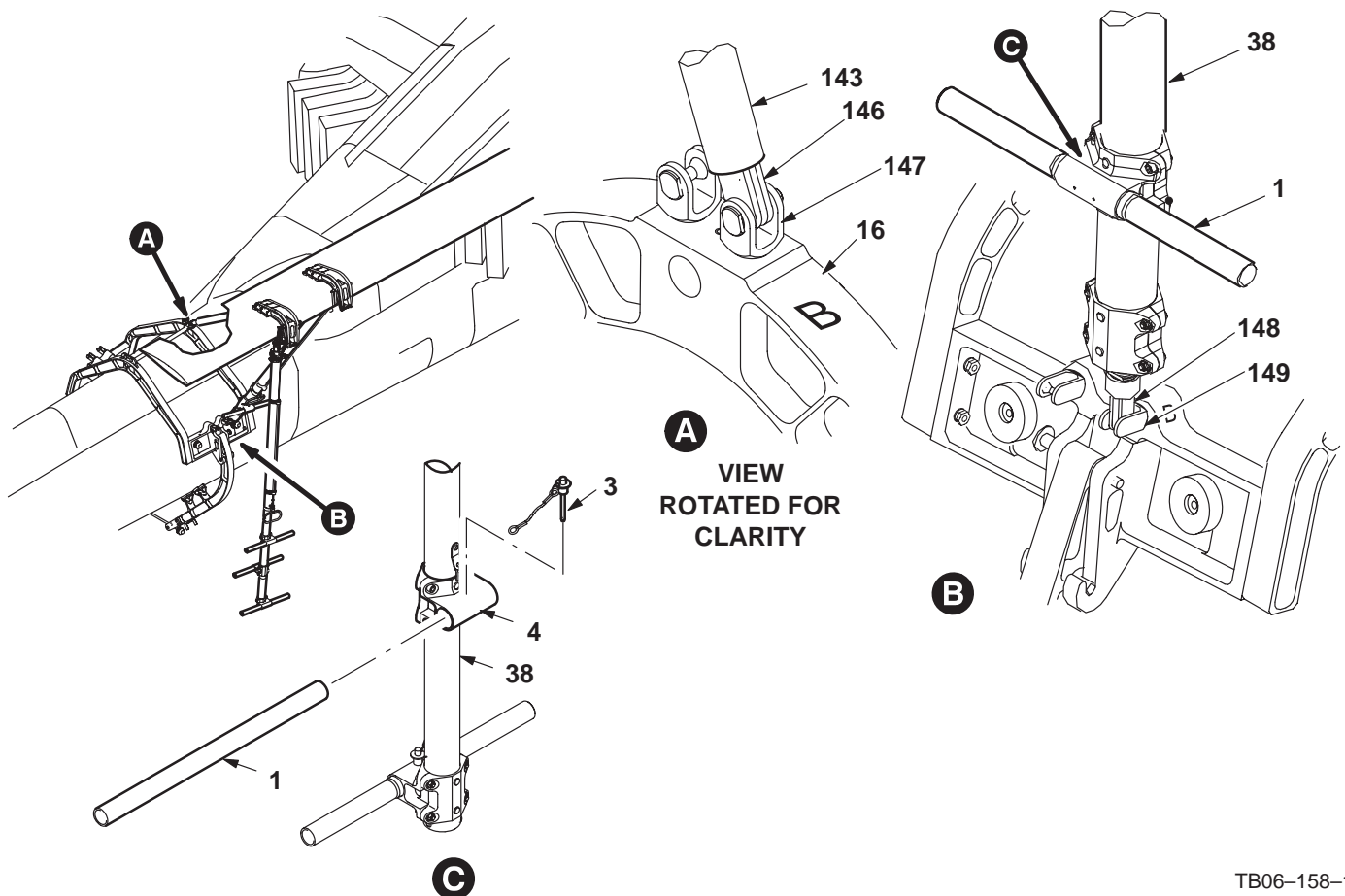
Figure 83. Handling Pole on R/H FWD Main Rotor Blade

- (3) Position one person at rotor head, one person on wing, two people each on handling pole (38) (See Figure 83) and securing pole (127) (See Figure 84).
- (4) Install T-handle (1) in blade securing pole (127).
 - (a) Install T-handle (1) to blade securing pole (127) through receptacle (4).
 - (b) Install quick release pin (3) through receptacle (4)

CAUTION

Ensure the R/H FWD blade does not touch R/H AFT securing poles during unfolding and during detachment from upper saddle.

- (5) Disconnect end of securing pole (127) J lock fitting (148) from clevis (149) at position **B** from side of upper saddle assembly (16).
- (6) Disconnect support pole (143) from J lock fitting (146) from clevis (147) at position **B** from top of upper saddle assembly (16).



TB06-158-1

Figure 84. Securing Pole on Saddle

WARNING

Fingers can be pinched between support pole and retainer clip. Ensure fingers are clear of retainer area during support pole movement.

- (7) Attach the lower end of support pole (143) (large dia. tube) into retainer clip (145) on securing pole (127). (See Figure 85).

NOTE

- The extension pole assemblies (short or long) can be utilized for better ergonomics during lifting of main rotor blade.
- The “U” shaped end of extension will go around handle of securing pole while clevis on extension engages J hook on securing pole.
- Ensure lower end of support pole (the smaller dia. tube) is in clevis marked **HANDLING**.

- (8) Position the lower end of support strut (124) (smaller dia. tub) into clevis labeled **HANDLING** and insert quick release pin (126).

- (9) Attach appropriate extension (52) by installing extension (52) on base of securing pole (127).

NOTE

The person turning jackscrew shall direct whether the blade needs to be lifted or let down by inspecting blade root fitting movement out of lead lag link and by feeling any binding occurring on jackscrew as it turns.

- (10) Use four persons to lift or lower RH FWD blade (115) with handling pole (38) and securing pole assembly (127).

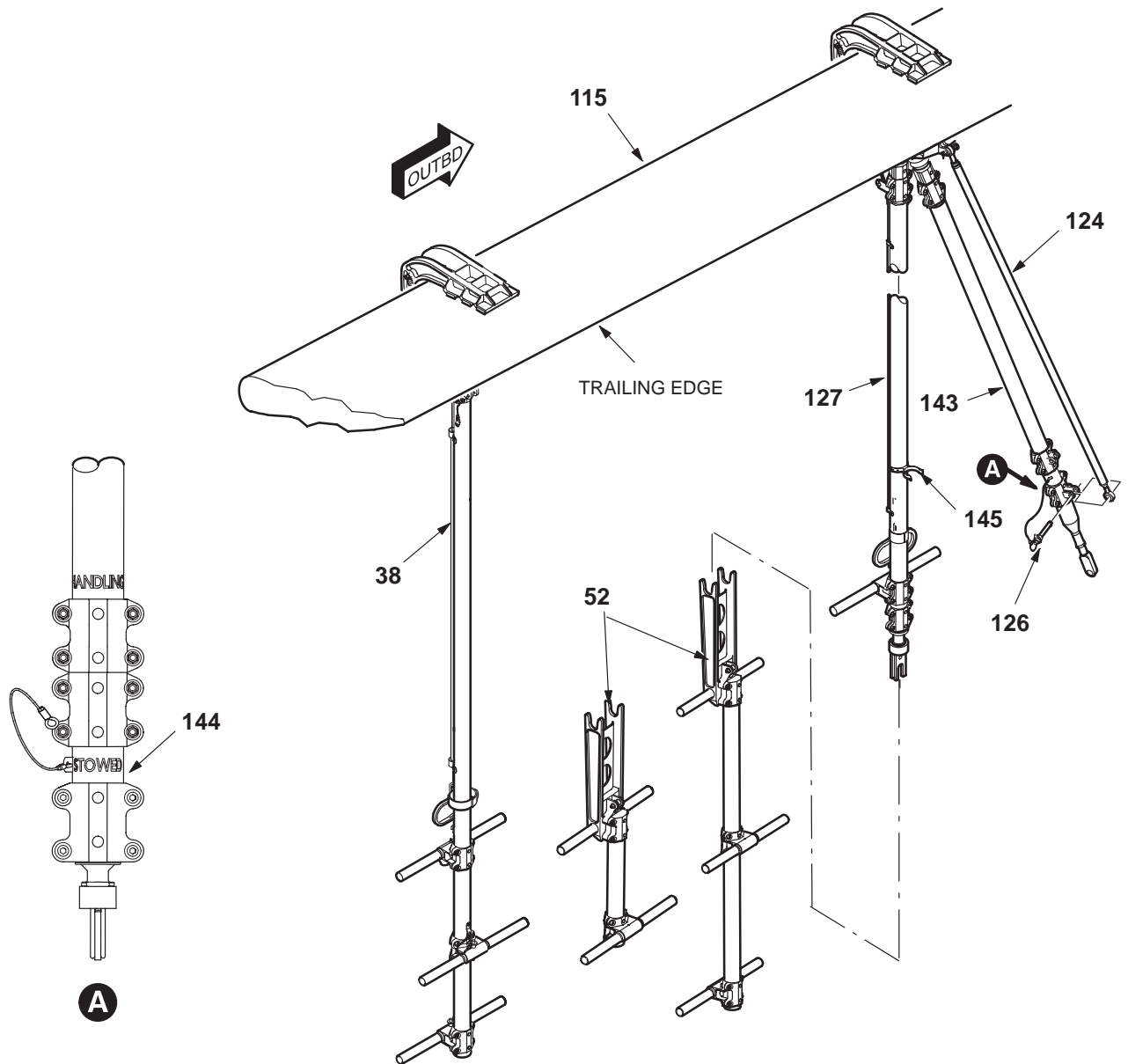
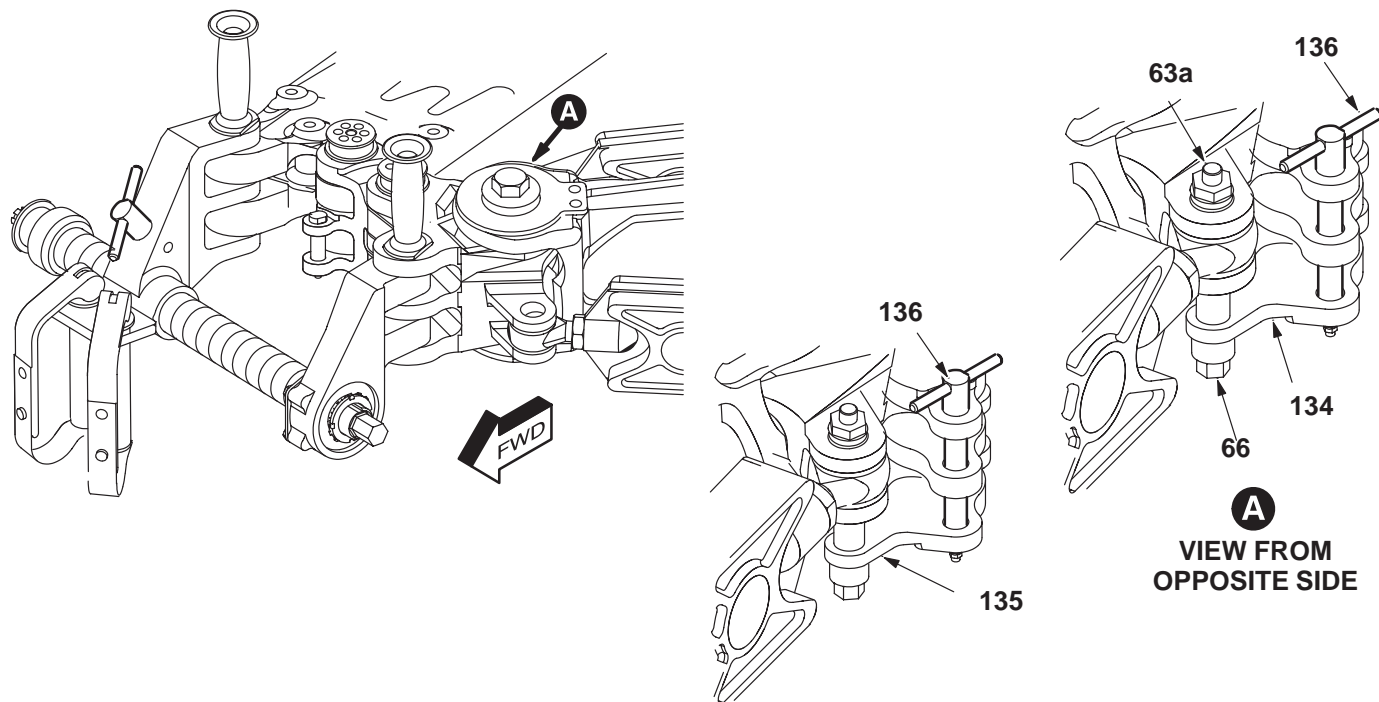


Figure 85. Support Pole to Securing Pole

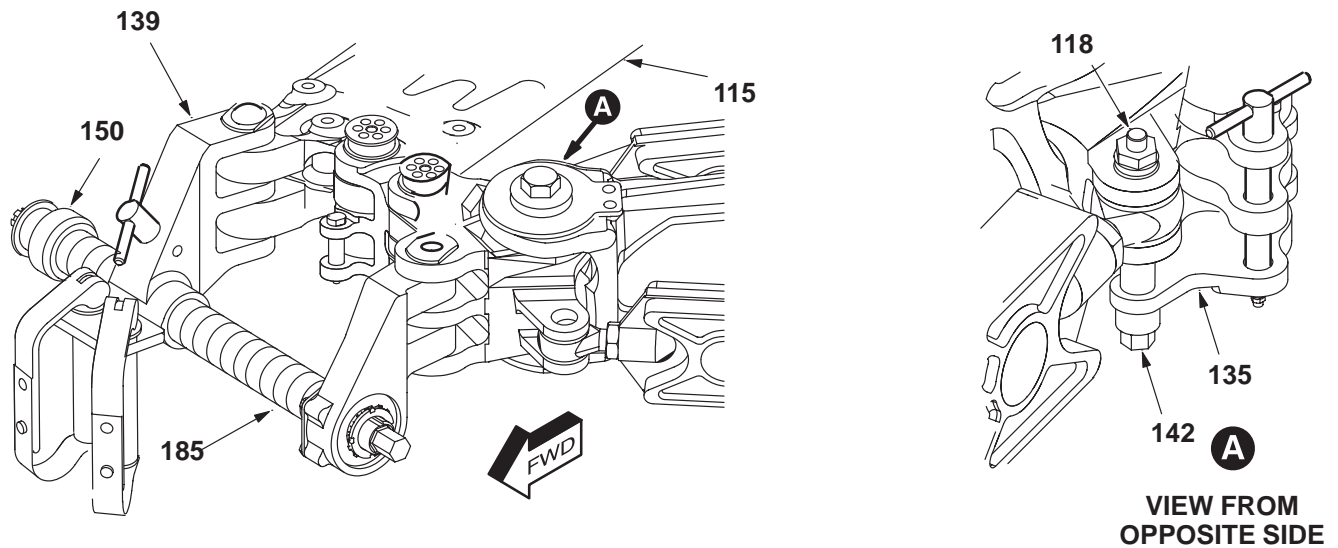
- (11) Remove T-handle (136) from aux positioner storage port (See Figure 86).
- (12) Move blade (115) forward until the T-handle (136) can be installed in the swing link assembly (135).
- (13) Install T-handle (136) in swing link assembly (135).



TB05-150

Figure 86. R/H FWD Swing Link and Blade Locked in Folded Position

- (14) Rotate blade (115) AFT to disconnect the bottom thumbscrew (71) on swing link (135) from damper bolt (118) (See Figure 87).
- (15) Loosen jam nut (150) on R/H aux positioner (139) jackscrew (185).
- (16) Loosen thumbscrew (142) to fully disengage from damper bolt (118) stud.
- (17) After thumbscrew (142) is fully disengaged, turn jackscrew (185) on the R/H AUX positioner (139) until jackscrew (185) threads bottom out.



TB06-157

Figure 87. R/H Auxiliary Blade Positioner and Swing Link in Folded Position

- (18) Install blade positioner assembly (61) on trailing edge of R/H FWD blade (115).
 - (a) Disassemble jackscrew (62) from clamp halves (63) by removing quick release pin (64) (See Figure 88).
 - (b) Remove quick release pin (65) from the **TOP** and **BOTTOM** blade positioner clamp halves (63).
 - (c) Open and install blade positioner clamp halves (63) from trailing edge side of blade (115).
 - (d) Align holes of **TOP** and **BOTTOM** blade positioner clamp halves (63) with caps (116) on bolts going through blade (115) near root end (117).
 - (e) Install quick release pin (65) through blade positioner clamp halves (63).

NOTE

Thumbscrew is always tightened upward and is positioned on the bottom of jackscrew on all four blades.

- (f) Install jackscrew (62) on damper bolt (118) which connects damper (119) to lead lag link (120). Tighten thumbscrew (71) on yoke end of jackscrew (62).
- (g) Align hole of jackscrew knuckle (72) with hole of blade positioner clamps (63).
- (h) Install quick release pin (64) that attaches jackscrew knuckle (72) to blade positioner clamps (63).

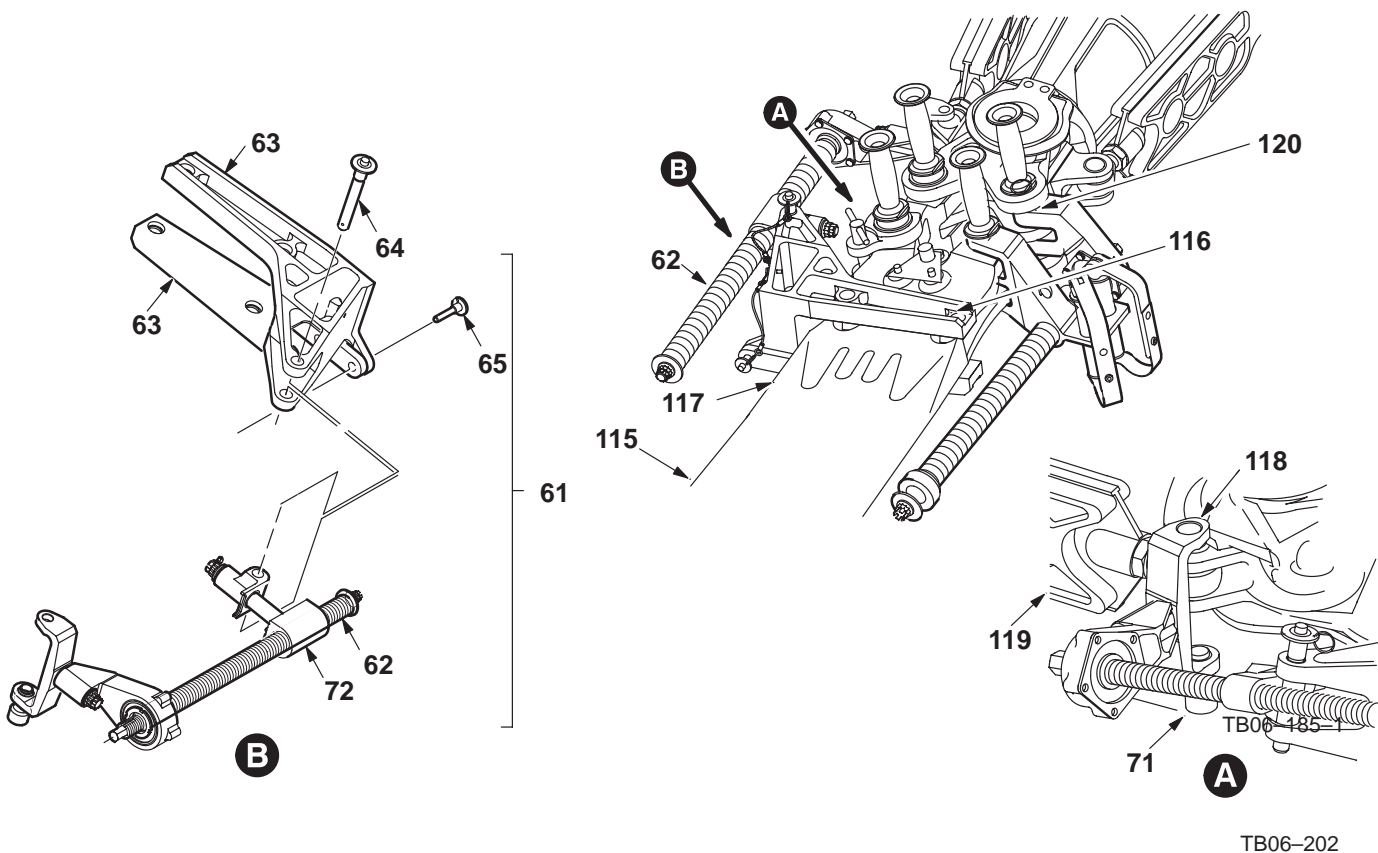
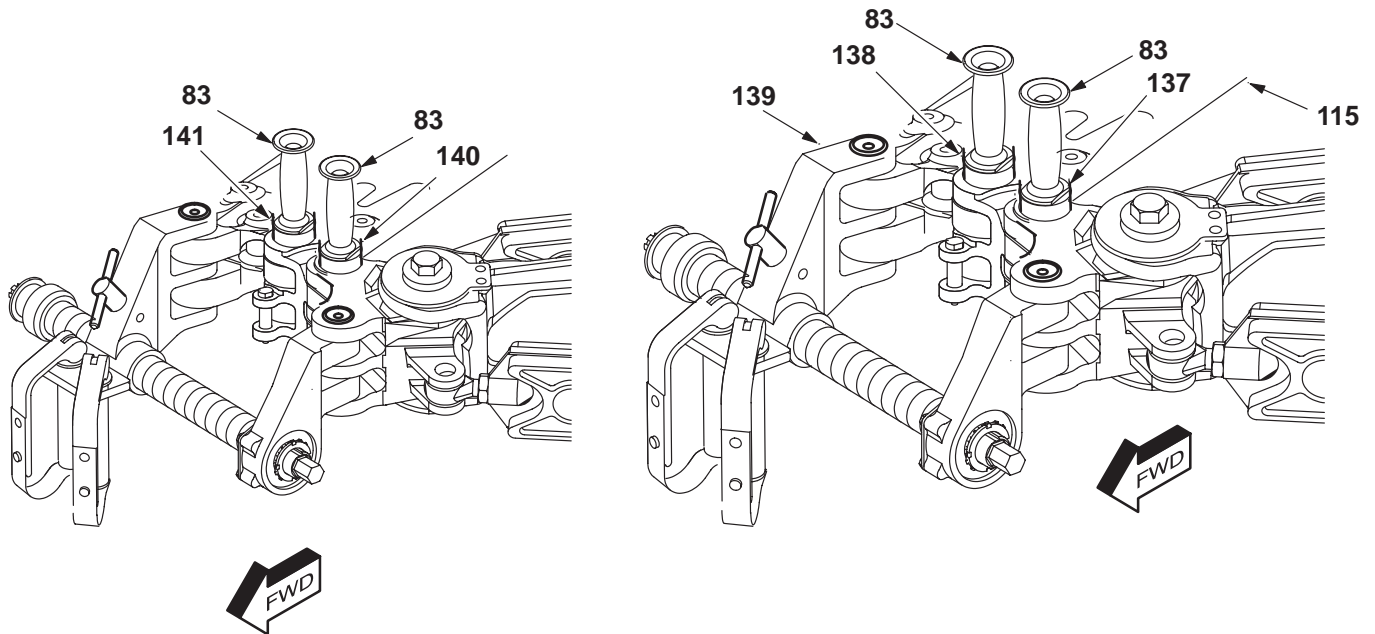


Figure 88. Installation of Blade Positioner on Trailing Edge of R/H FWD Blade

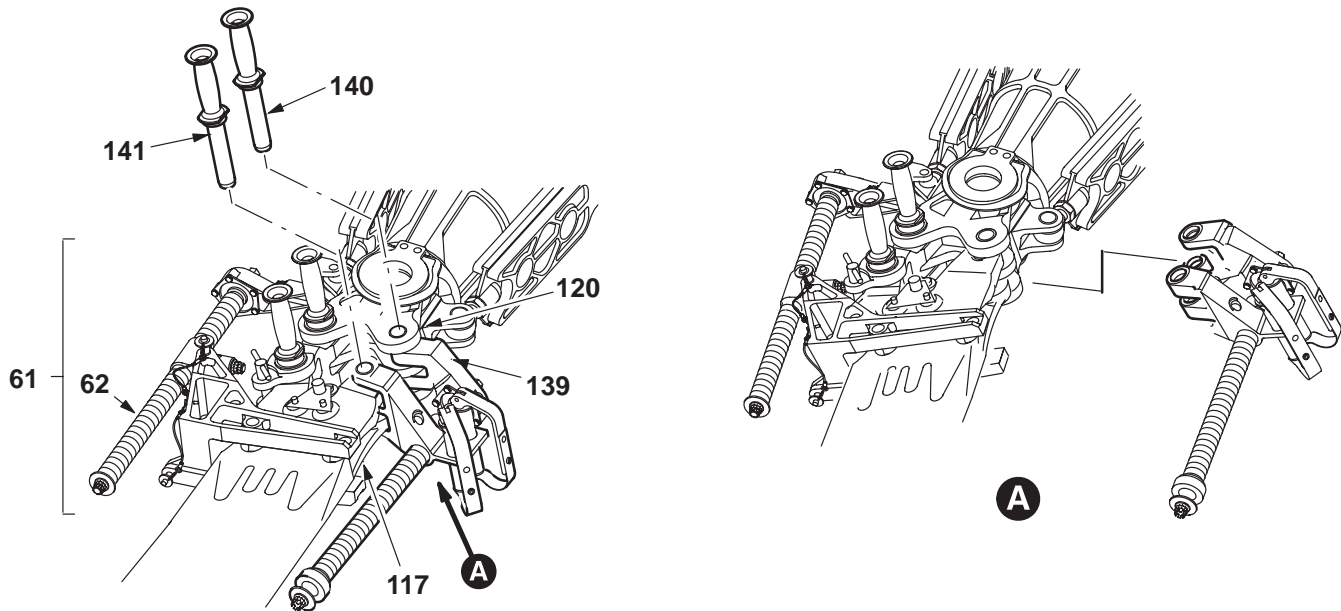
- (19) Remove R/H AUX positioner(139) from blade leading edge.
- (20) Install four handles (83) on (shouldered) blade fold pins (137, 138) and (non-shouldered) blade fold pins (140, 141). (See Figure 89).



TB06-157-1

Figure 89. Installation of Handles on Blade Fold Pins In Swing Link Assembly

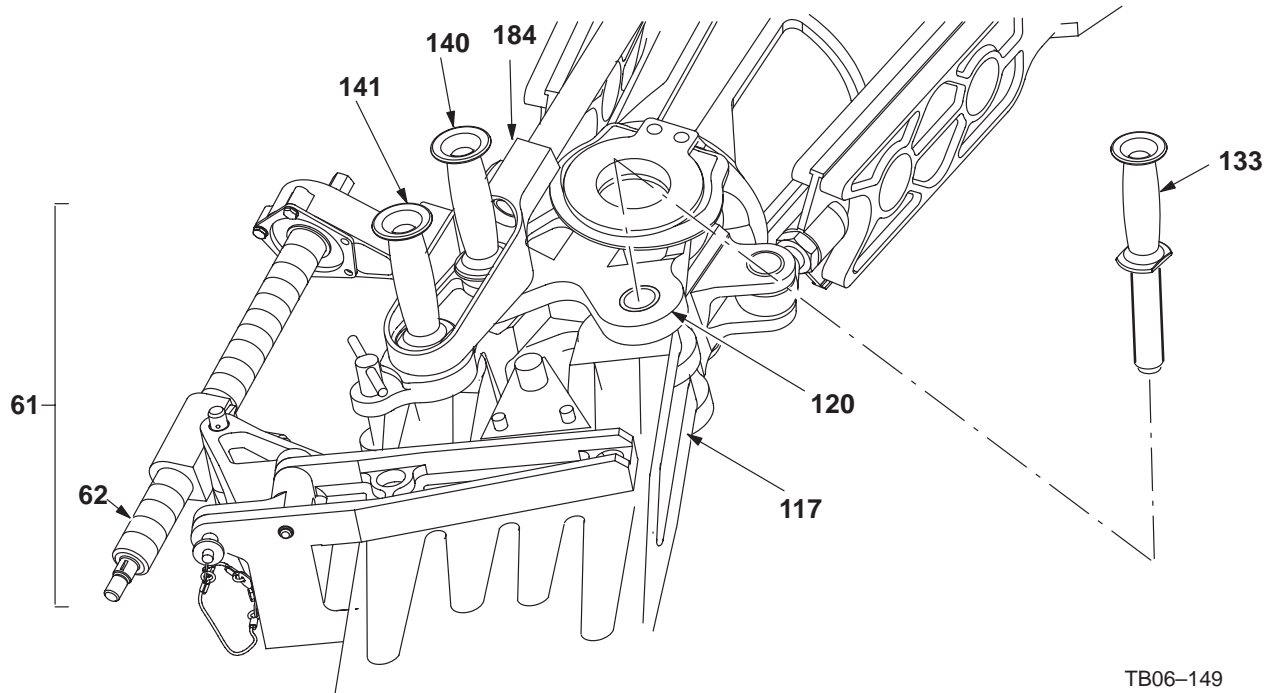
- (a) Remove two (non shouldered) blade fold pins (140, 141) from R/H AUX positioner (139) (See Figure 90).
- (b) Remove R/H AUX positioner (139).
- (c) Turn the jackscrew (62) on the blade positioning assembly (61) until slight engagement of blade root (117) and lead/lag link (120) exists.



TB06-156-1

Figure 90. Alignment of Lead/Lag Links for Aux Positioner Removal

- (d) Place alignment bar (184) over shouldered quick release fold pins (140) and (141) (See Figure 91).
- (e) Turn jackscrew (62) on blade positioner (61) to align lead/lag link (120) with blade root fitting (117).
- (f) Install blade fold pin (133) (non shouldered).



TB06-149

Figure 91. Alignment Bar on Shouldered Quick Release Pins

(21) Remove R/H swing link assembly (135).

(a) Remove T handle (136) from swing link (135) (See Figure 92).

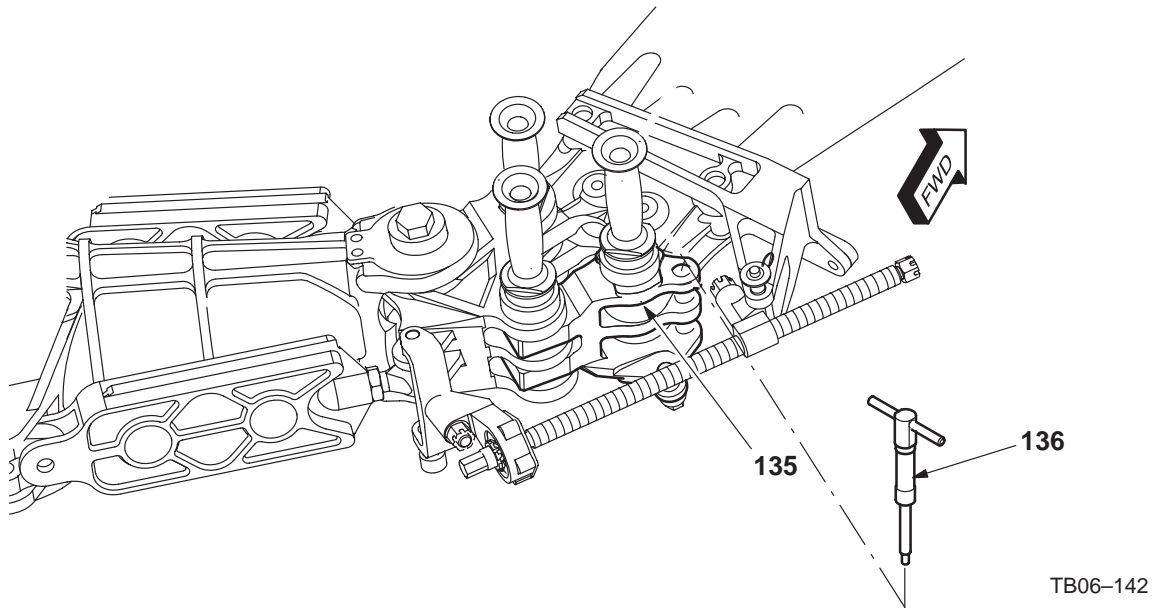
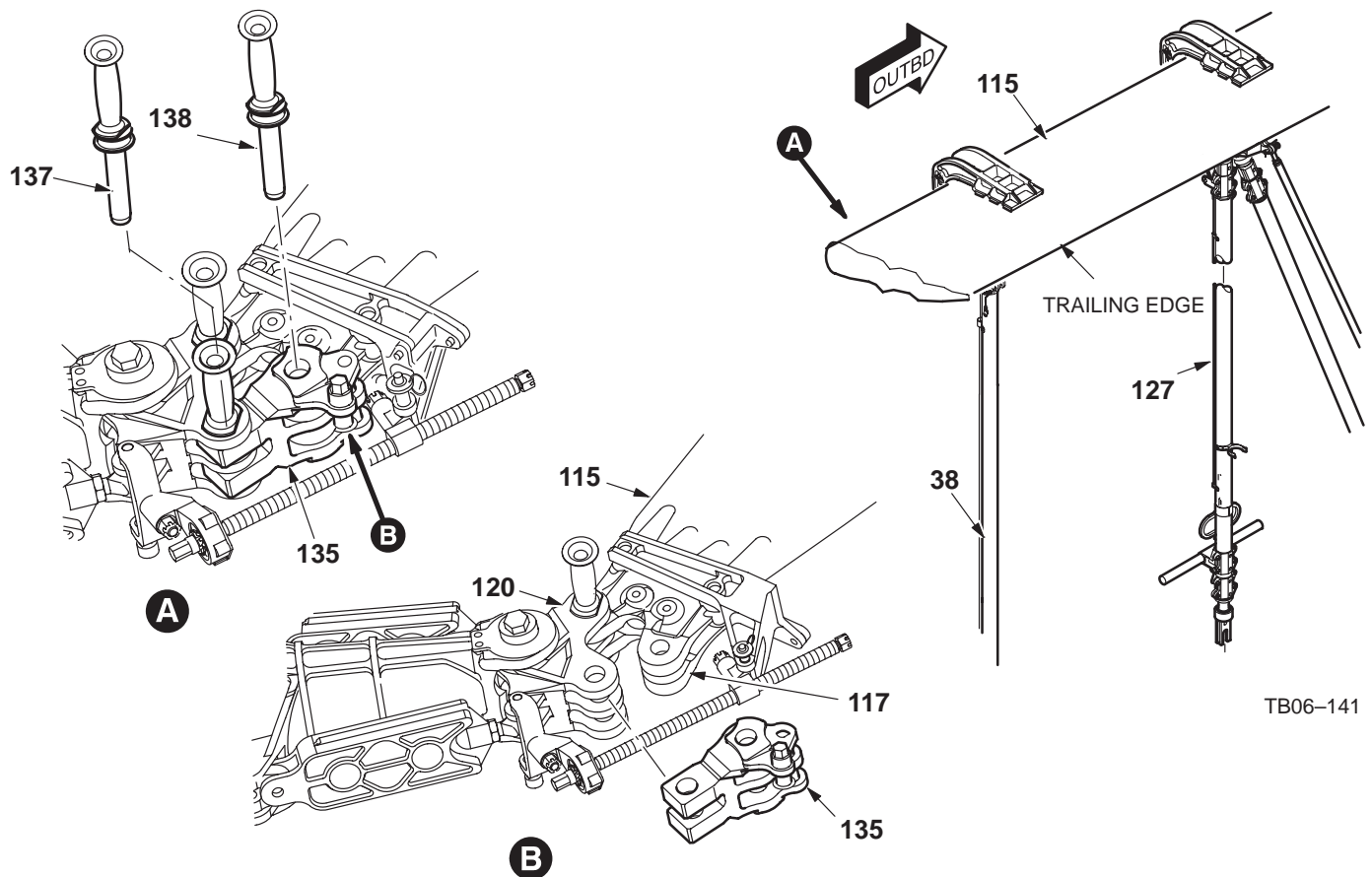


Figure 92. Quick Release Pins Removed from R/H Swing Link

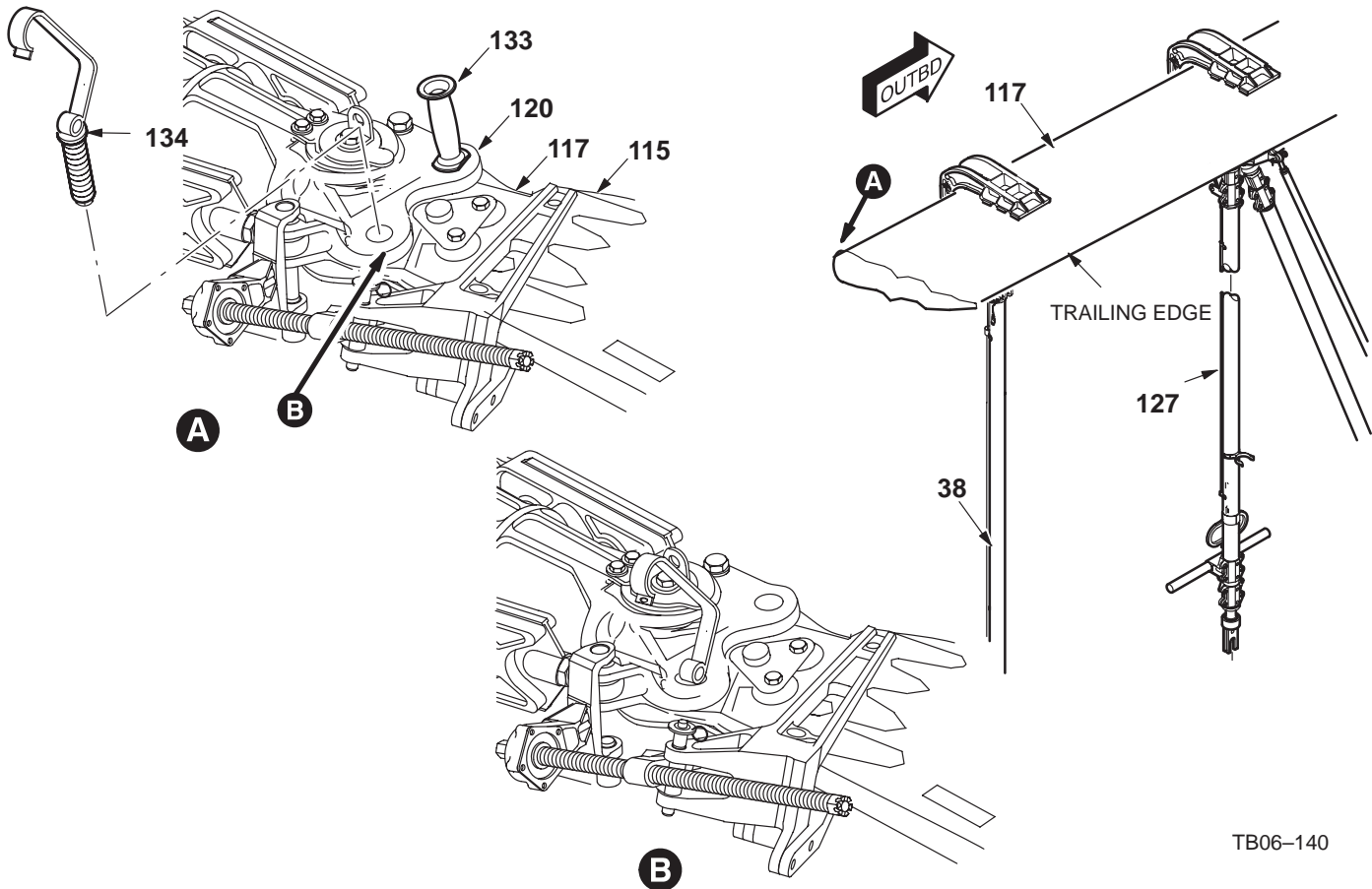
- (b) Use four persons to lift or lower R/H FWD blade (115) with handling pole (38) and securing pole (127) until blade fold pins (137) and (138) move freely (See Figure 93).
 - (c) Remove (shouldered) blade fold pins (137) and (138) from swing link (135) and lead/lag link (120) of blade root fitting (117).
 - (d) Remove R/H swing link (135) from lead-lag link (120) and blade root fitting (117).
- (22) Check blade fold kit attaching areas on lead lag link (120) and blade root end (117) for damage:
- (a) A-model refer to TM 1-1520-238-23 (para 5.3).
 - (b) D-model refer to TM 1-1520-Longbow/Apache IETM.



TB06-141

Figure 93. Lead/Lag Link and R/H Swing Link from Blade Root End

- (23) Install identified aircraft blade pin (134) on trailing edge side of blade (115).
 - (a) Move blade (115) aft to align hole in lead/lag link (120) with hole in blade root fitting (117) (See Figure 94).
 - (b) Use four persons to lift or lower R/H FWD blade (115) with handling pole (38) and securing pole (127) until blade fold pin (133) on trailing edge side moves freely.
 - (c) Pull the spring clip (58) on identified aircraft blade pin (134) up to the fully open position.
 - (d) Install aircraft blade pin (134) on trailing edge side of blade (115).



TB06-140

Figure 94. Install Identified Aircraft Blade Pin on Trailing Edge Side of Blade

- (24) Install identified aircraft blade pin (132) on leading edge side of blade (115).
- (a) Remove blade fold pin (133) (See Figure 95).
 - (b) Pull spring clip (58) on identified aircraft blade pin (132) up to the fully open position.
 - (c) Install aircraft blade pin (132) on leading edge side of blade (115).

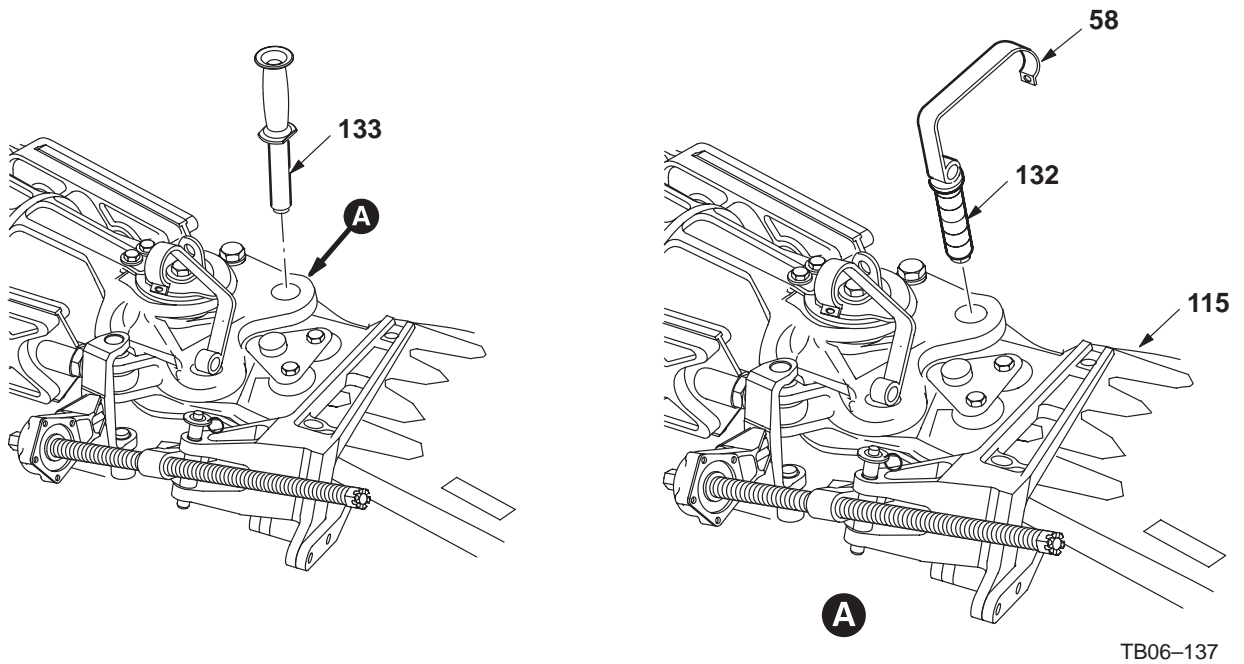


Figure 95. Install Identified Aircraft Blade Pin on Leading Edge Side of Blade

- (25) Remove blade positioner assembly (61) from trailing edge side of blade (115).
 - (a) Loosen thumbscrew (71) from damper bolt (118) (See Figure 96).
 - (b) Remove quick release pin (64) that attaches jackscrew knuckle (72) to blade positioner clamps (63).
 - (c) Remove jackscrew (62) from blade positioner clamp halves (63).
 - (d) Remove quick release pin (65) from blade positioner clamp halves (63).
 - (e) Open **TOP** and **BOTTOM** blade positioner clamp halves (63) and remove from trailing edge side of blade (115).
 - (f) Install blade pins per:
 - 1 A-model refer to TM 1-1520-238-23 (para 5.4).
 - 2 D-model refer to TM 1-1520-Longbow/Apache IETM.

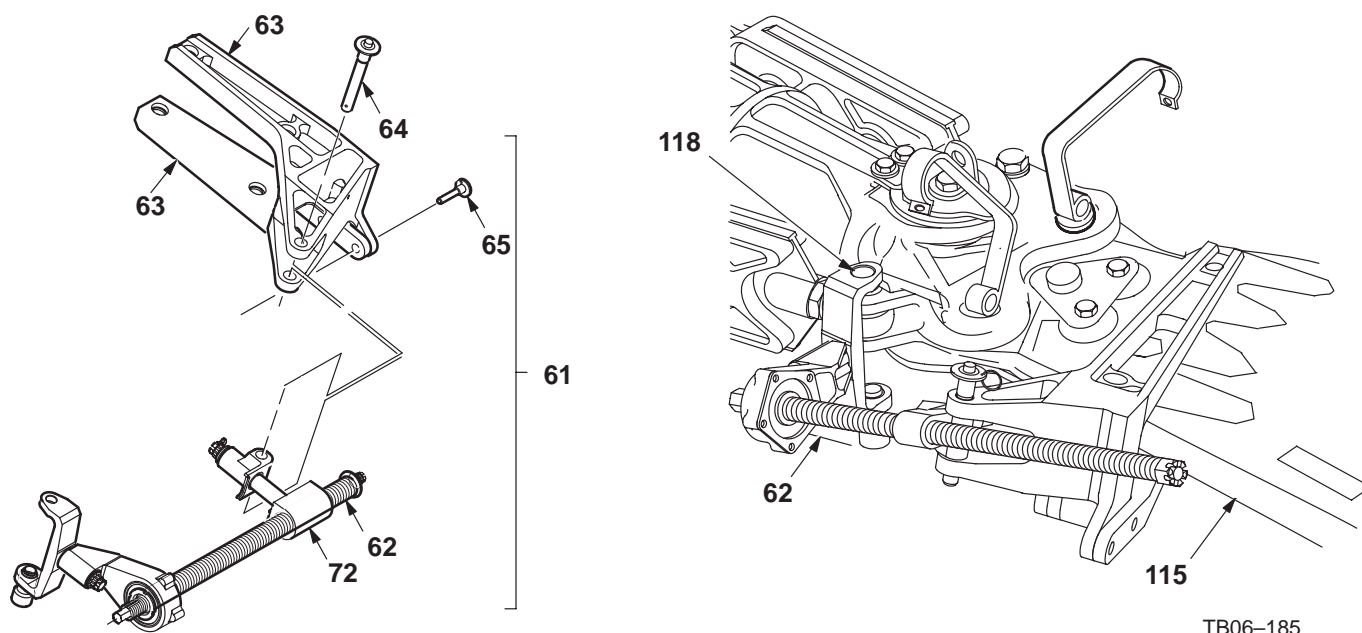
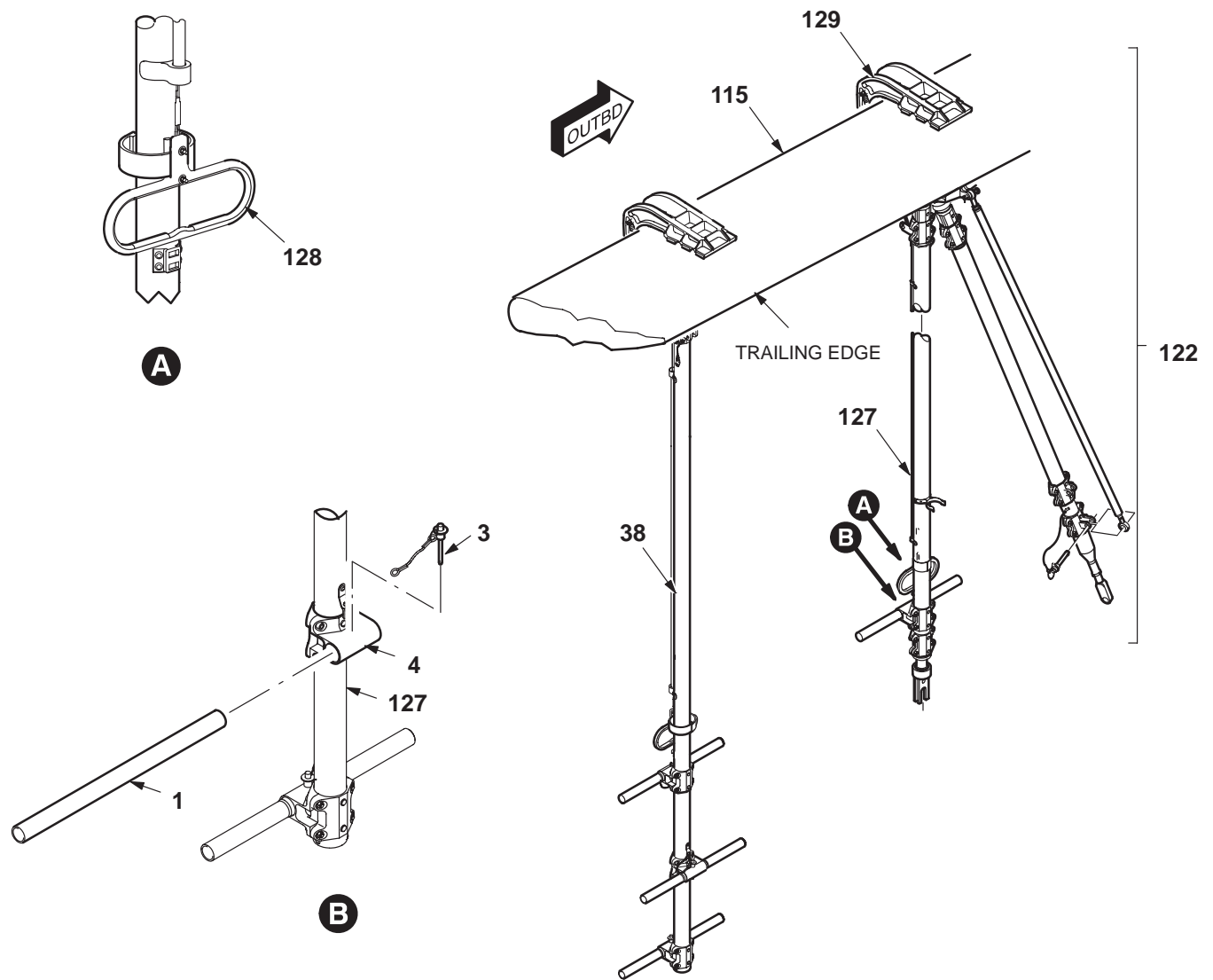


Figure 96. Blade Positioning Assembly on R/H FWD Main Rotor Blade

- (26) Remove securing pole assembly (122) from R/H FWD blade (115).
 - (a) Pull down release handle (128) to unlock blade clamp (129) on securing pole (127) (See Figure 97).
 - (b) Remove securing pole assembly (158) from R/H FWD blade (115).
- (27) Remove T-handle (1) from securing pole (127).
 - (a) Remove quick release pin (3) from receptacle (4)
 - (b) Remove T-handle (1) from securing pole (127).



TB06-152

Figure 97. Securing Pole and Handling Pole on FWD R/H Main Rotor Blade

(28) Remove blade handling pole assembly (38).

(a) Remove Velcro strap (46) from handle (43) (See Figure 98).

(b) Pull down release handle (43) to unlock blade clamp (44) on blade handling pole (38).

(c) Place release handle (43) into retaining clip (45) to hold blade clamp (44) open.

(d) Using two persons, remove blade handling pole (38) from blade (115).

(e) Release handle (43) from retaining clip (45).

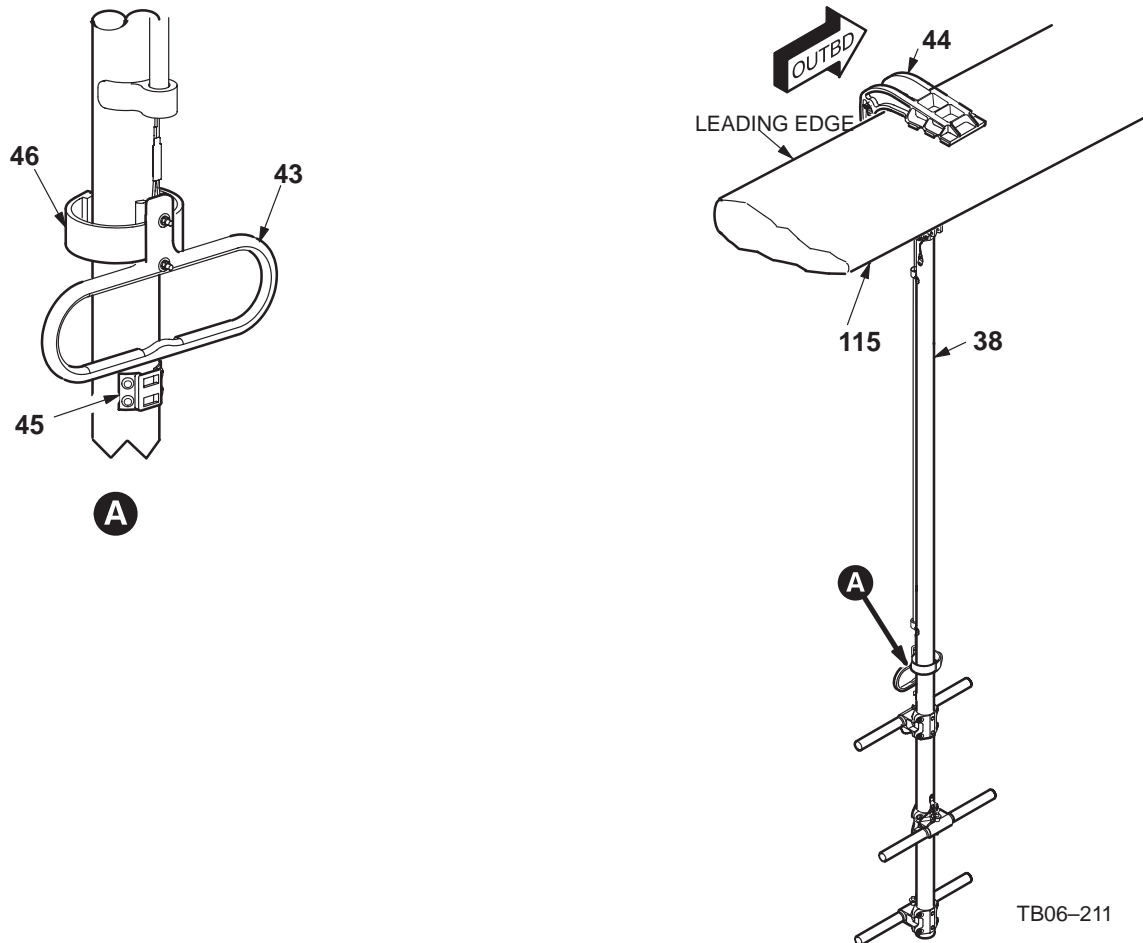


Figure 98. Removal of Handling Pole from R/H FWD Blade

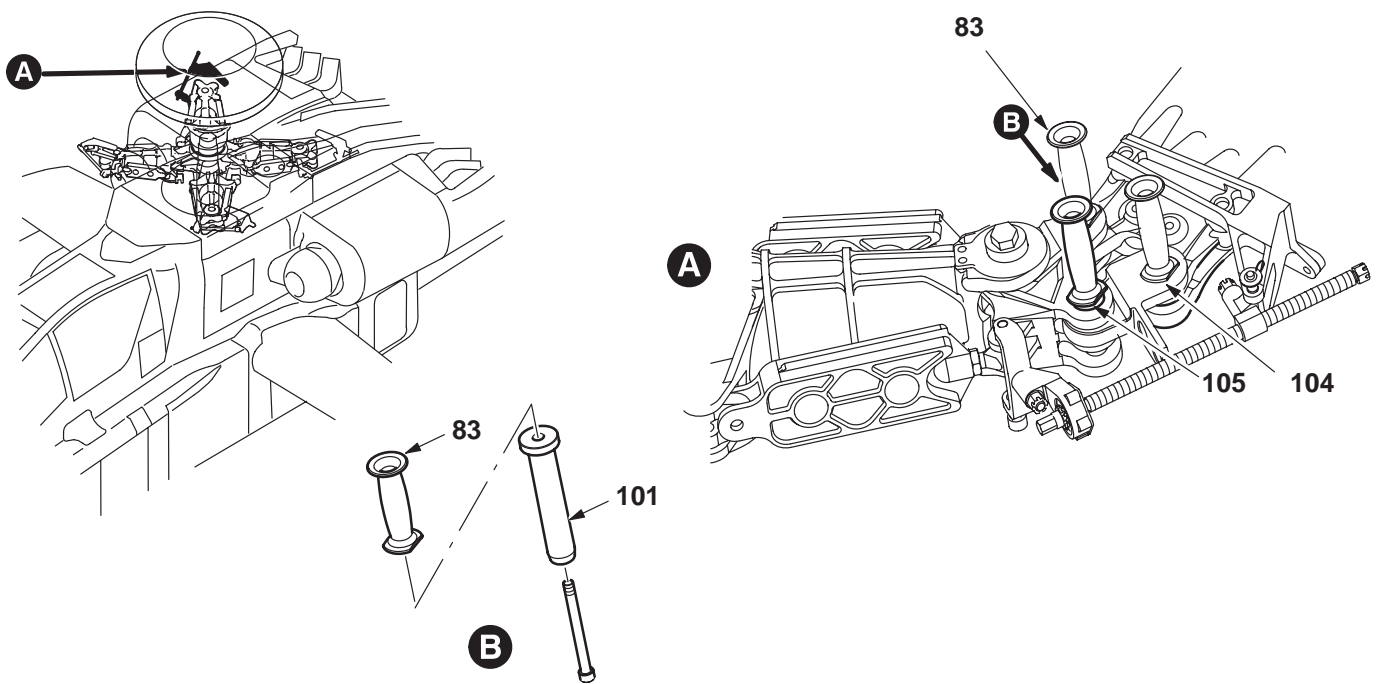
9. Right Hand Aft Blade Unfolding Procedure.

NOTE

Shouldered blade fold pin shall be used only on FWD blades.

a. Unfold Right Hand Aft Blade.

- (1) Remove stowed blade fold equipment from stowage compartment in aft avionics bay.
- (2) Install three blade fold handles (83) on blade fold pins (non-shouldered) (101), (104), and (105) (See Figure 99).



TB06-209

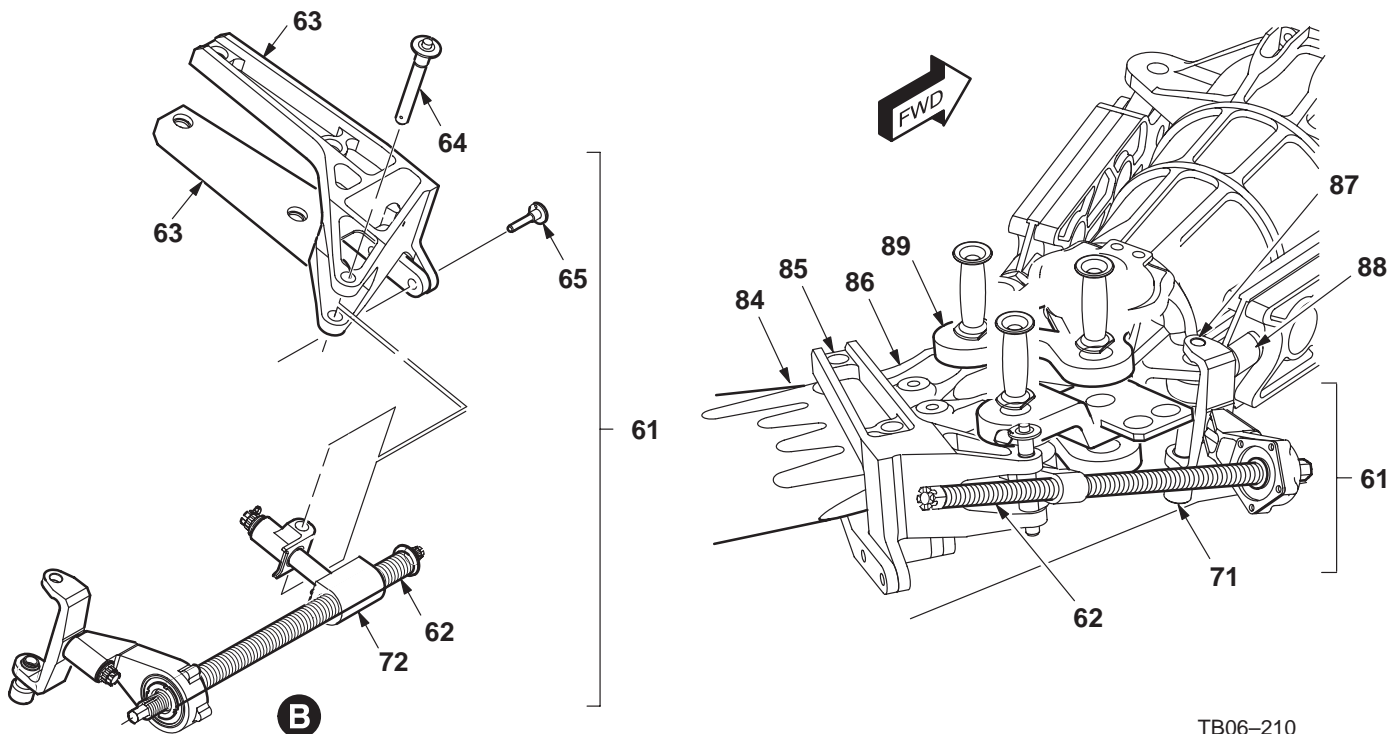
Figure 99. Removal of Blade Fold Handles

- (3) Install blade positioner assembly (61) on the leading edge side of the R/H AFT blade (84).
 - (a) Disassemble jackscrew (62) from blade positioner clamp halves (63) by removing quick release pin (64) (See Figure 100).
 - (b) Remove quick release pin (65) from **TOP** and **BOTTOM** blade positioner blade clamp halves (63).
 - (c) Open and install blade positioner clamp halves (63) from leading edge side of blade (84).
 - (d) Align holes of **TOP** and **BOTTOM** blade positioner clamp halves (63) with caps (85) on bolts going through blade (84) near root end (86).
 - (e) Install quick release pin (65) through blade positioner clamp halves (63).

NOTE

Thumbscrew is always tightened upward and is positioned on bottom of jackscrew on all four blades.

- (f) Install jackscrew (62) on damper bolt (87) which connects damper (88) to lead lag link (89). Tighten thumbscrew (71) on yoke end of jackscrew (62).
- (g) Align hole of jackscrew knuckle (72) with hole of blade positioner clamps (63).
- (h) Install quick release pin (64) that attaches jackscrew knuckle (72) to blade positioner clamps (63).



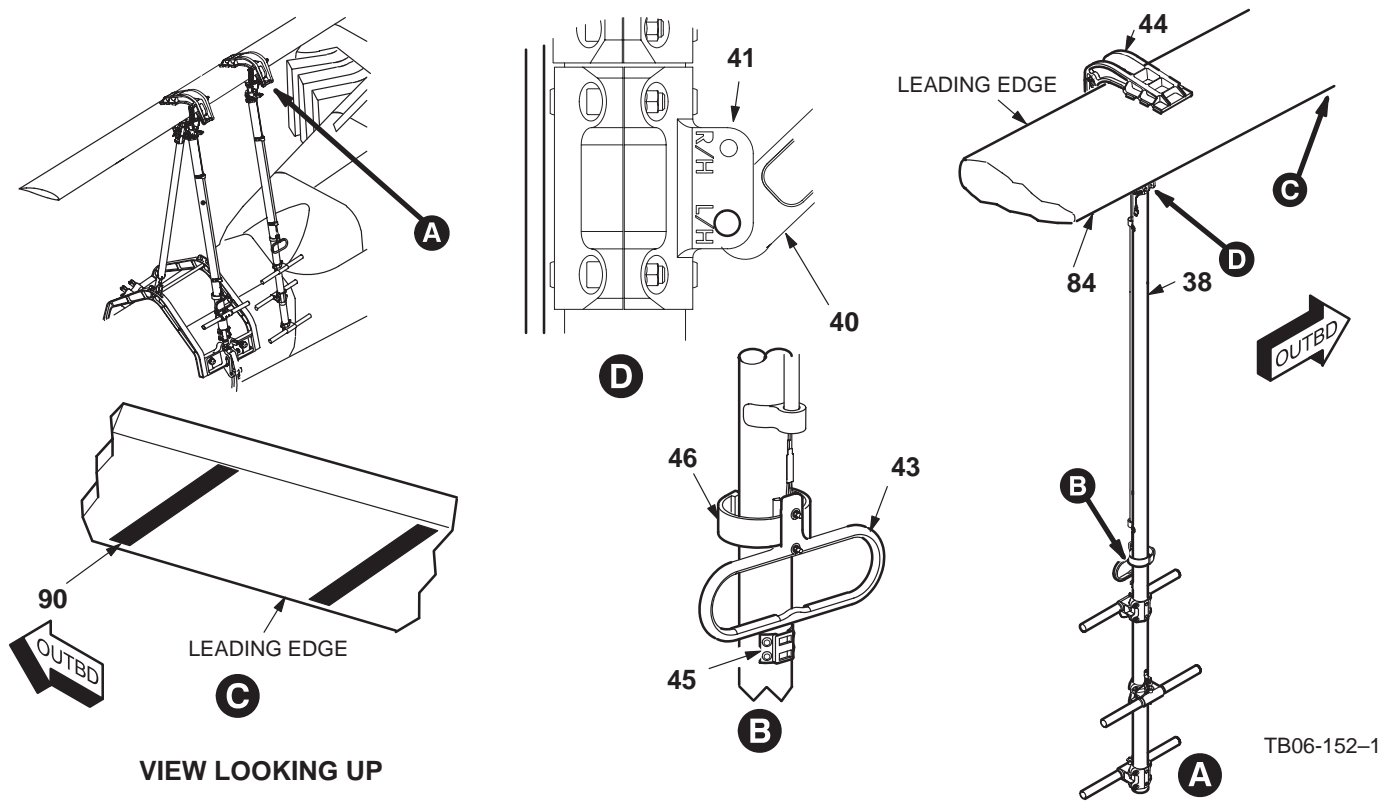
TB06-210

Figure 100. Blade Positioning Assembly on R/H AFT Main Rotor Blade

WARNING

Use four persons to lift and control main rotor blade. In moderate or high winds it can be necessary to use more than four persons. The main rotor blade is a large and heavy component. Failure to follow maintenance instructions may result in serious injury or death and/or serious damage to the helicopter.

- (4) Install blade handling pole assembly (38) on R/H AFT blade (84).
 - (a) Adjust handling pole strut (40) to **R/H** position of clevis (41) (See Figure 101).
 - (b) Install handling pole (38) on outboard stripe (90) of blade (84).
 - (c) Pull down release handle (43) to unlock blade clamp (44) on blade handling pole (38).
 - (d) Place release handle (43) into retaining clip (45) to hold blade clamp (44) open.
 - (e) Align blade clamp (44) of handling pole (38) on outboard stripe (90) of blade (84).
 - (f) Install handling pole assembly (38) onto blade (84) until leading edge of blade (84) contacts pad on inside of blade clamp (44).
 - (g) Release handle (43) from retainer (45) to lock blade clamp (44) onto blade (84).
 - (h) Secure handle (43) with Velcro strap (46).



TB06-152-1

Figure 101. Handling Pole on R/H AFT Main Rotor Blade

- (5) Position one person at rotor head, one person on wing, two people each on handling pole (38) and securing pole (95).
- (6) Install T-handle (1) in securing pole (95).
 - (a) Install T-handle (1) through blade securing pole (95).
 - (b) Install quick release pin (3) through receptacle (4)
- (7) Disconnect securing pole (95) from side of upper saddle assembly (16) at position labeled **A** by unsnapping the J hook (113) from clevis (114) (See Figure 102).
- (8) Disconnect support pole (93) from top of upper saddle assembly (16) at position labeled **A** by unsnapping the J hook (111) down from clevis (112).

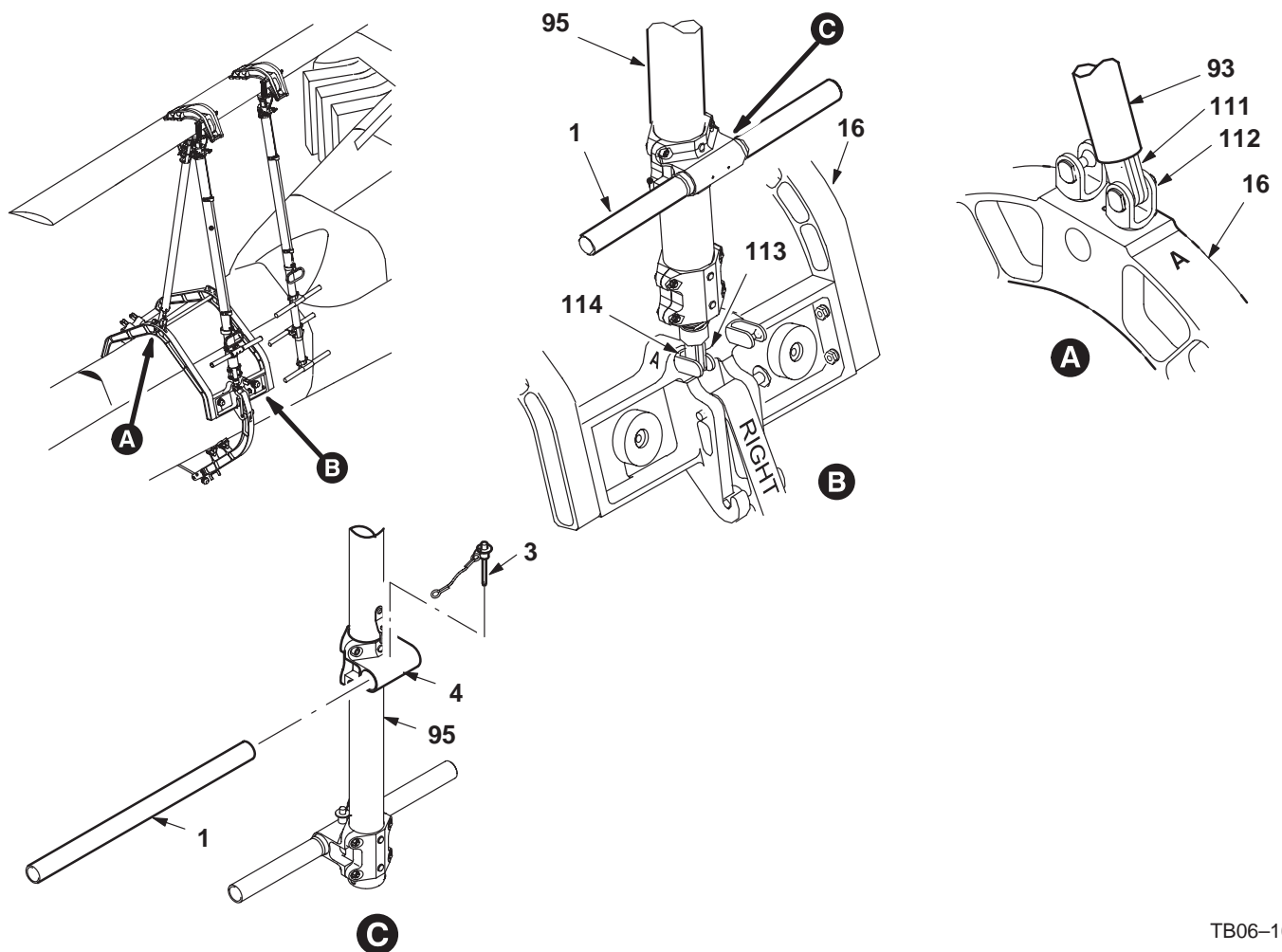


Figure 102. Securing Pole on Saddle

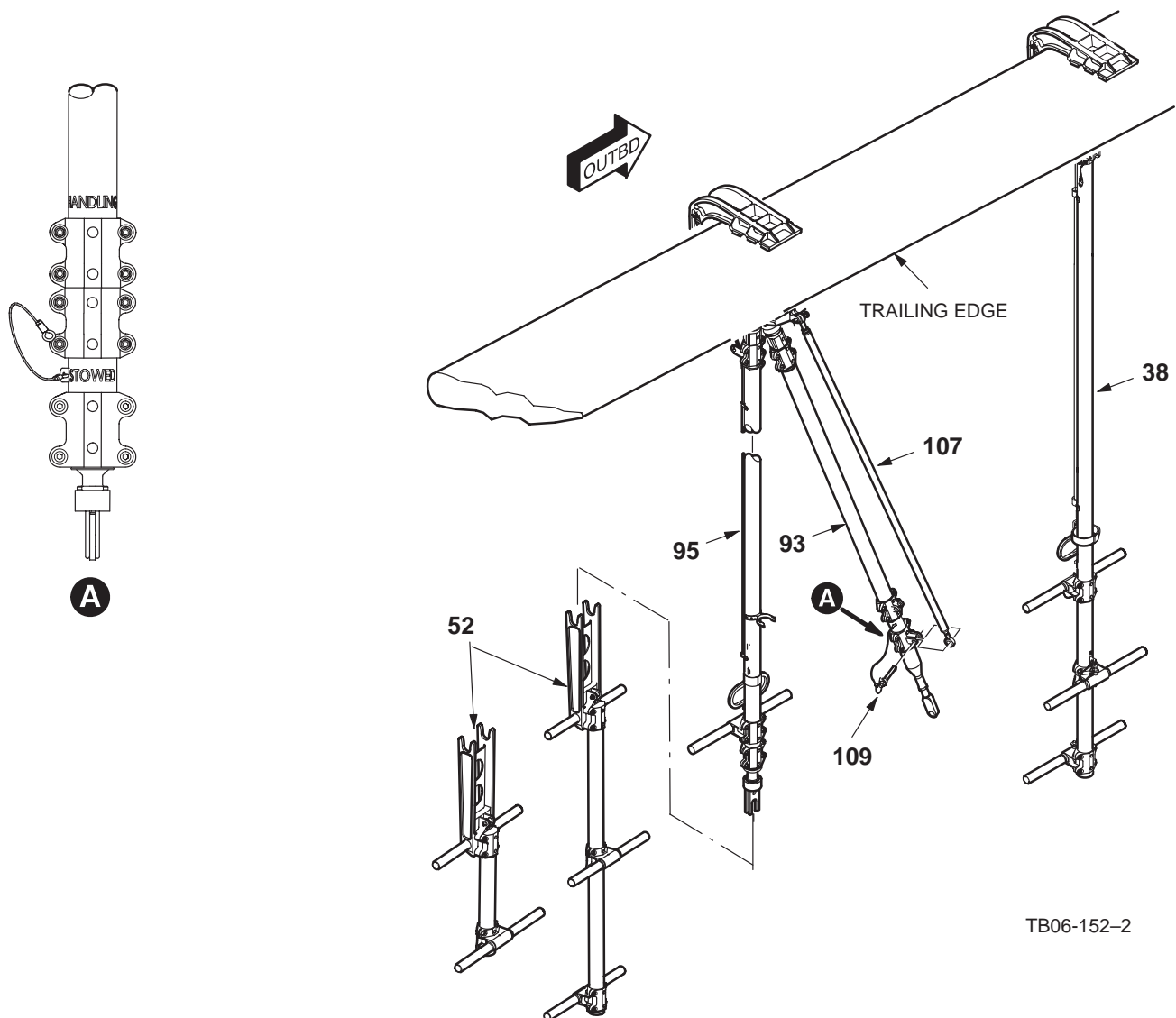
TB06-161

- (a) Position lower end of support strut (107) (smaller dia. tube) into clevis labeled **HANDLING** and insert quick release pin (109).

NOTE

- The extension pole assemblies (short or long) can be utilized for better ergonomics during lifting of main rotor blade.
- The “U” shaped end of extension will go around handle of securing pole while clevis on extension engages J hook on securing pole.

- (9) Attach the appropriate extension (52) by installing extension (52) on base of securing pole (95) (See Figure 103).



TB06-152-2

Figure 103. Installation of Support Pole onto Securing Pole

(10) Remove R/H AFT blade block assembly (103).

- (a) Position one person at rotor head, one person on wing, two people each on handling pole (38) and securing pole (95) (See Figure 104).
- (b) Use four persons to lift or lower R/H AFT blade (84) with handling pole (38) and securing pole assembly (91) until two blade fold pins (104, 105) in blade block (103) move freely.

NOTE

The handle portion on blade fold pin assembly slides up and down freely on shaft to allow slight tapping during fold pin installation and removal.

- (c) Remove two blade fold pins (104, 105) from blade block (103) and lead lag link (89).

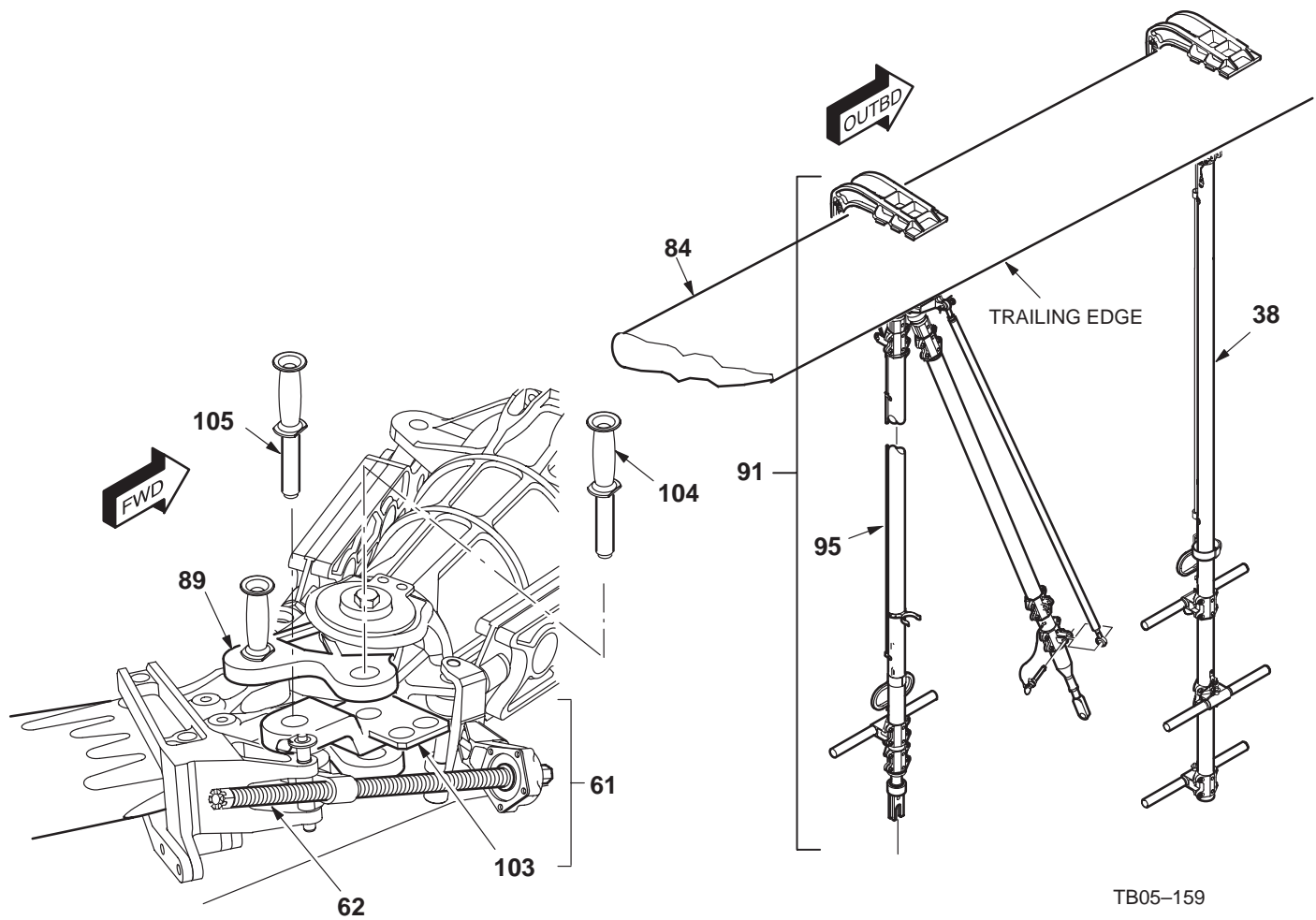
NOTE

The person turning jackscrew shall direct whether the blade needs to be lifted or let down by inspecting blade root fitting movement out of lead lag link and by feeling any binding occurring on jackscrew as it turns.

- (d) Turn jackscrew (62) on blade positioning assembly (61) clockwise to move the R/H AFT blade (84) to the unfolded position (See Figure 104).
- (e) Check blade fold kit attaching areas on lead lag link (89) and blade root (86) end for damage:

1 A-model refer to TM 1-1520-238-23 (para 5.3).

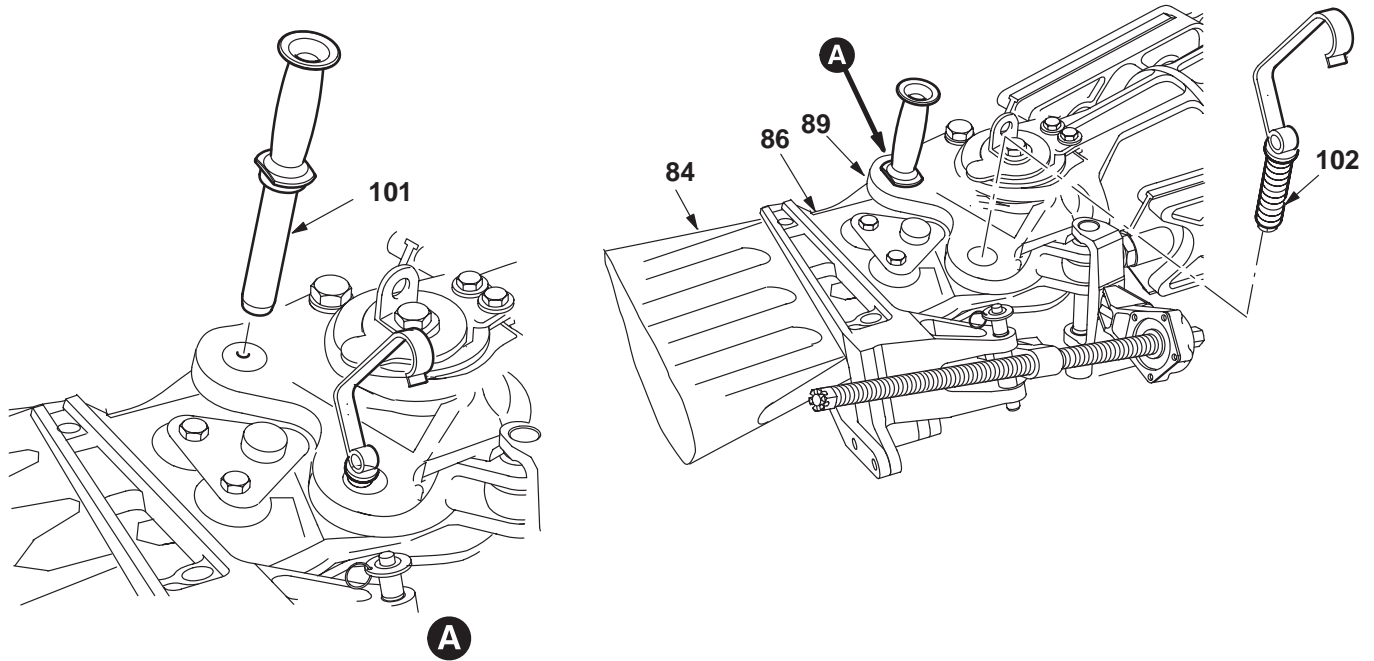
2 D-model refer to TM 1-1520-Longbow/Apache IETM.



TB05-159

Figure 104. Quick Release Fold Pin in R/H AFT Blade Block and Lead Lag Link

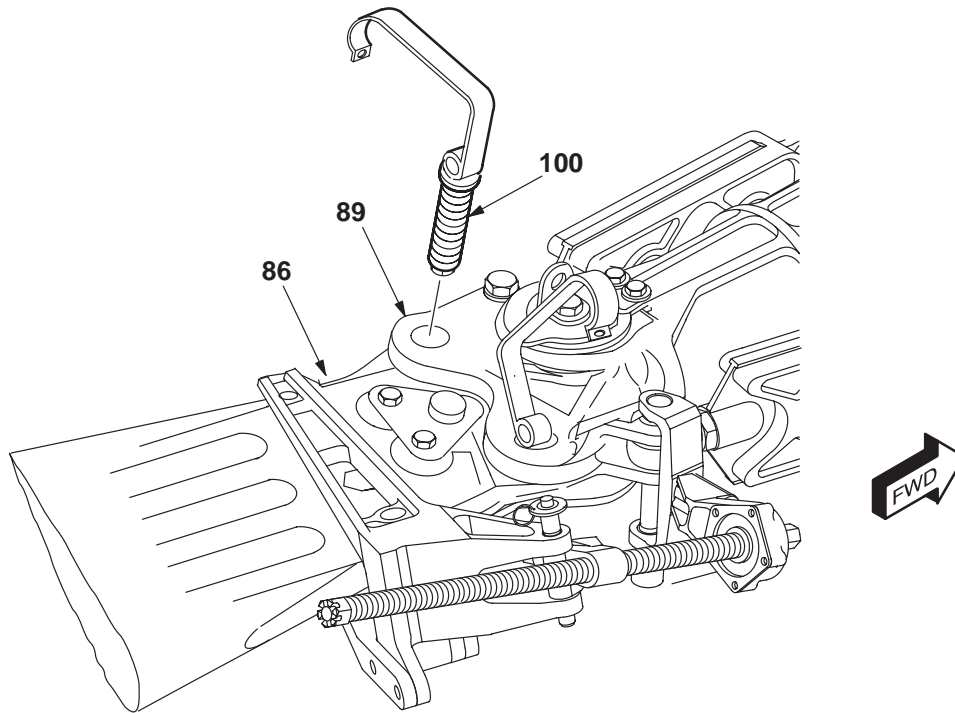
- (f) Align holes in lead lag link (89) with holes in blade root fitting (86) (See Figure 105).
- (g) Install identified aircraft blade pin (102) through the leading edge side of lead lag link (89) and blade root fitting (86).
- (h) Remove blade fold pin (101) from trailing edge side of lead lag link (89) and blade root fitting (86).



TB06-160

Figure 105. Quick Release Fold pin in R/H AFT Blade Block and Lead Lag Link

- (i) Install identified aircraft blade pin (100) through trailing edge lead lag link (89) and blade root fitting (86). (See Figure 106).

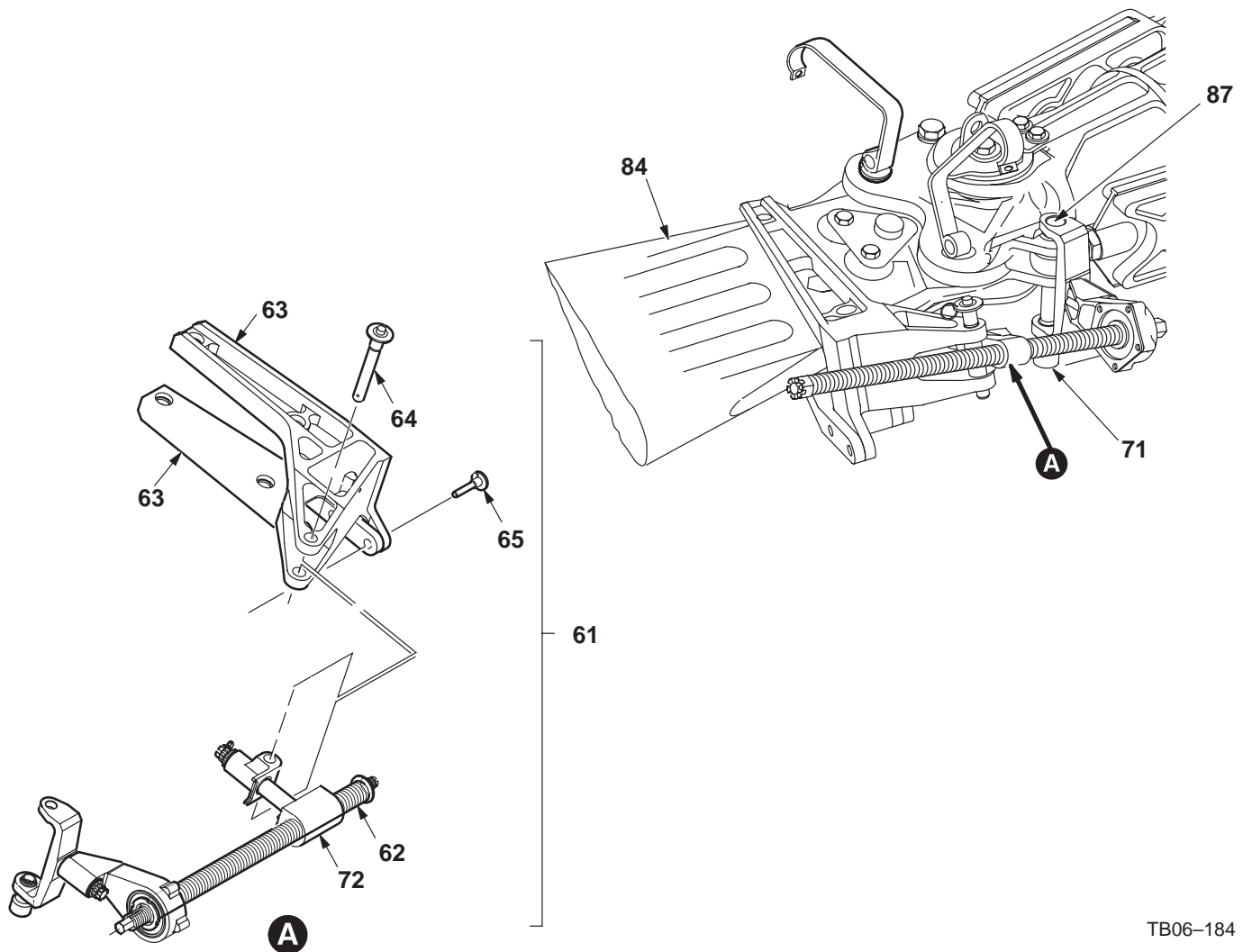


TB06-154

Figure 106. Install Aircraft Blade Pin in Trailing Edge Lead Lag Link and Blade Root Fitting

(11) Remove blade positioning assembly (61) from leading edge side of blade root (86).

- (a) Loosen thumbscrew (71) from damper bolt (87) (See Figure 107).
- (b) Remove quick release pin (64) that attaches jackscrew knuckle (72) to blade positioner clamps (63).
- (c) Remove jackscrew (62) from blade positioner clamp halves (63).
- (d) Remove quick release pin (65) from blade positioner clamp halves (63).
- (e) Open **TOP** and **BOTTOM** clamp halves (63) and remove from leading edge side of blade (84).



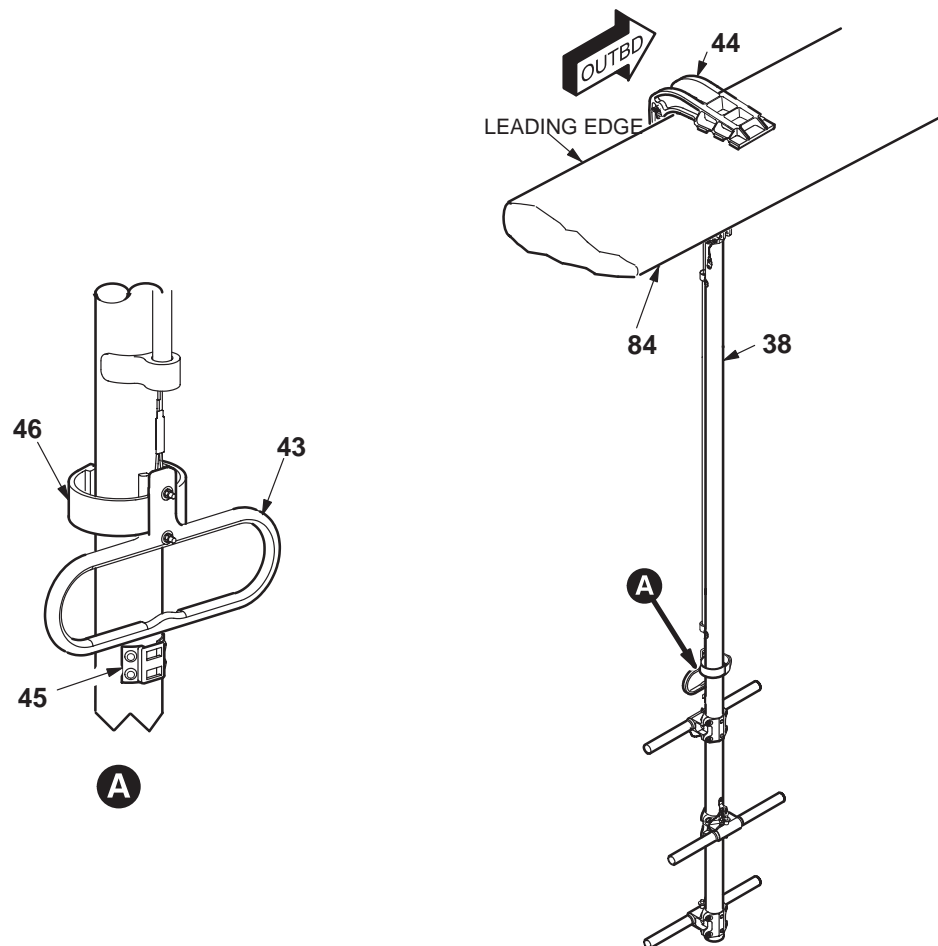
TB06-184

Figure 107. Blade Positioning Assembly on R/H AFT Main Rotor Blade

(f) Install blade pin per:

- 1 A-model refer to TM 1-1520-238-23 (para 5.4).
- 2 D-model refer to TM 1-1520-Longbow/Apache IETM.

- (13) Remove blade handling pole assembly (38).
- (a) Remove Velcro strap (46) from handle (43) (See Figure 109).
 - (b) Pull down release handle (43) to unlock blade clamp (44) on blade handling pole (38).
 - (c) Place release handle (43) into retaining clip (45) to hold blade clamp (44) open.
 - (d) Remove handling pole (38) from blade (84).
 - (e) Release handle (43) from retainer (45).
 - (f) Secure handle (43) with Velcro strap (46).



TB06-152-3

Figure 109. Removal of Blade Handling Pole

10. Left Hand Aft Blade Unfolding Procedure.

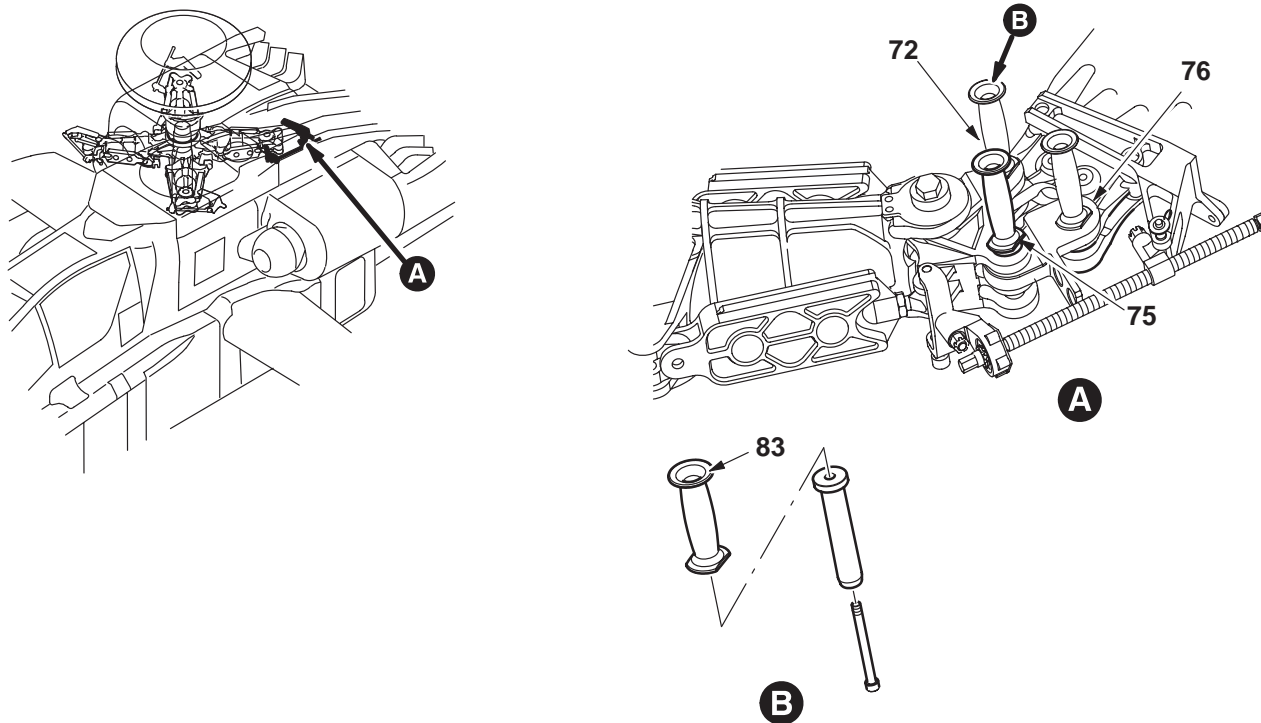
NOTE

Shouldered blade fold pins shall be used only on FWD blades.

a. Unfold Left Hand Aft Blade (39) (See Figure 110).

(1) Remove stowed blade fold equipment from stowage compartment in aft avionics bay.

(2) Install three quick release blade fold handles (83) on non-shouldered blade fold pins (72), (75), and (76).



TB06-212

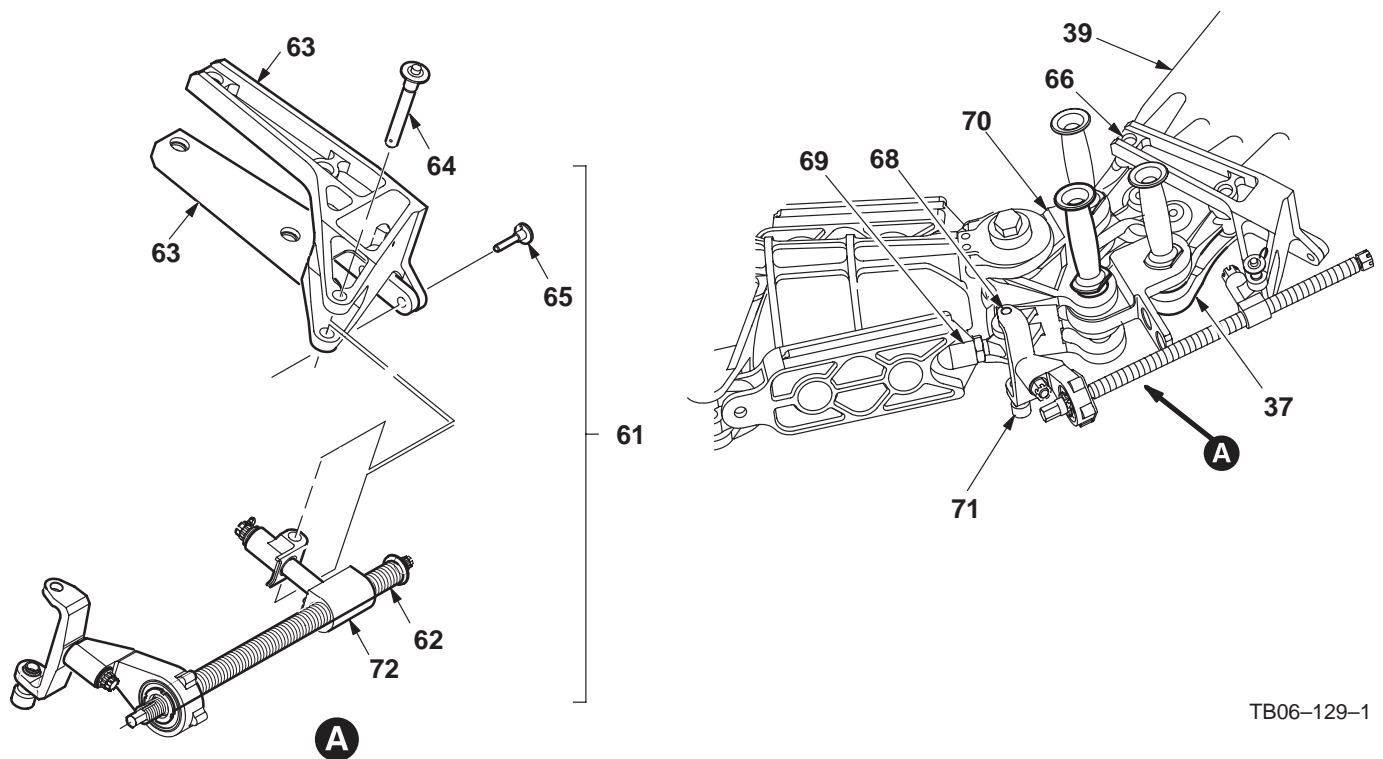
Figure 110. Removal of Blade Fold Handles

- (3) Install blade positioner assembly (61) on trailing edge side of blade (39).
 - (a) Disassemble jackscrew (62) from blade positioner clamp halves (63) by removing quick release pin (64).
 - (b) Remove quick release pin (65) from the **TOP** and **BOTTOM** blade positioner clamp halves (63).
 - (c) Open and install blade positioner clamp halves (63) from trailing edge side of blade (39).
 - (d) Align holes of **TOP** and **BOTTOM** blade positioner clamp halves (63) with caps (66) on bolts going through blade (39) near root end (37).
 - (e) Install quick release pin (65) through blade positioner clamp halves (63).

NOTE

Thumbscrew is always tightened upward and is positioned on the bottom of the jackscrew on all four blades.

- (f) Install jackscrew (62) on damper bolt (68) which connects the damper (69) to lead lag link (70). Tighten thumbscrew (71) on yoke end of jackscrew (62).
- (g) Align hole of jackscrew knuckle (72) with hole of blade positioner clamp (63).
- (h) Install quick release pin (64) that attaches jackscrew knuckle (72) to blade positioner clamps (63).



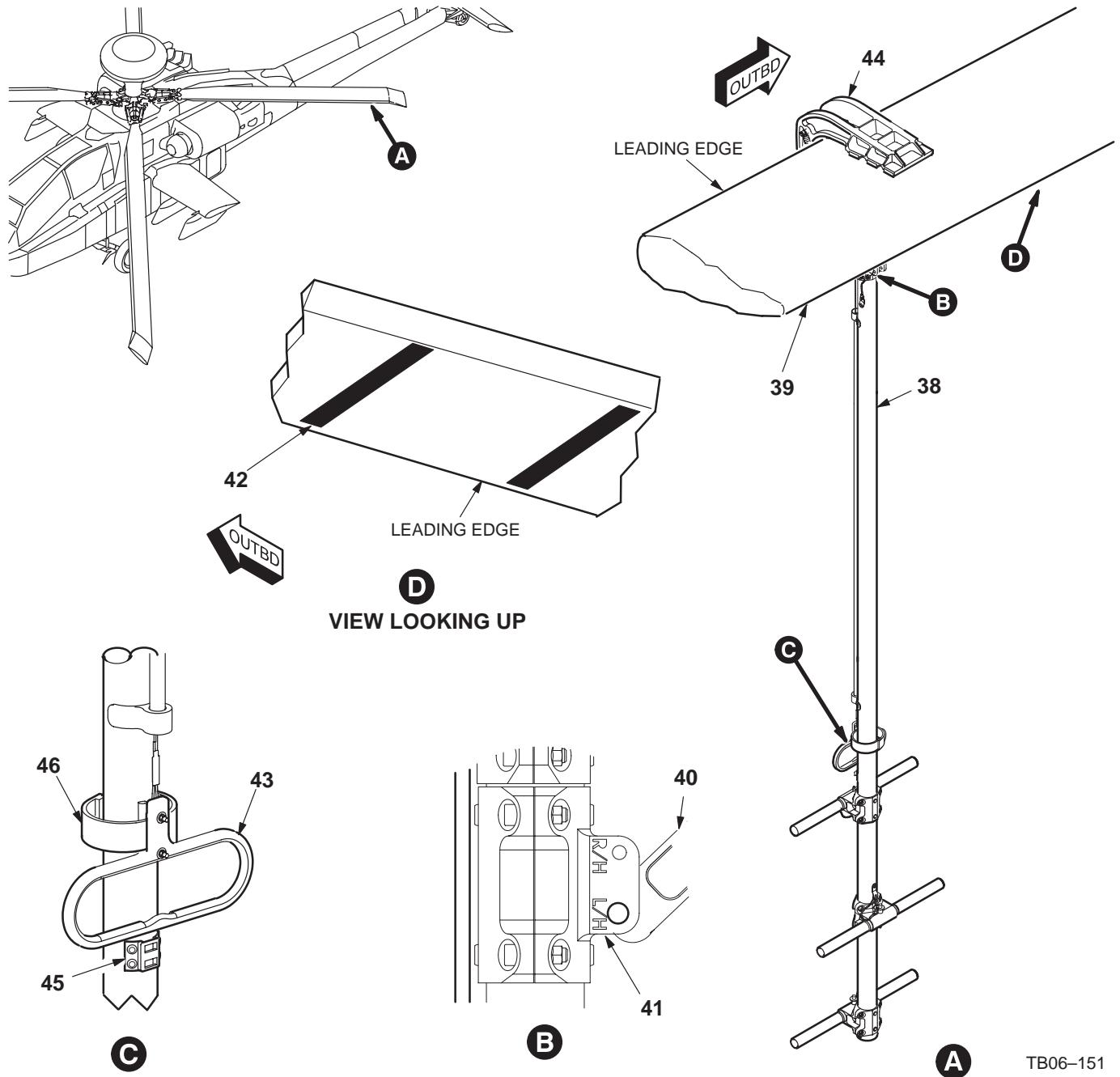
TB06-129-1

Figure 111. Blade Positioning Assembly on L/H AFT Main Rotor Blade

WARNING

Use four persons to lift and control main rotor blade. In moderate or high winds it can be necessary to use more than four persons. The main rotor blade is a large and heavy component. Failure to follow maintenance instructions may result in serious injury or death and/or serious damage to the helicopter.

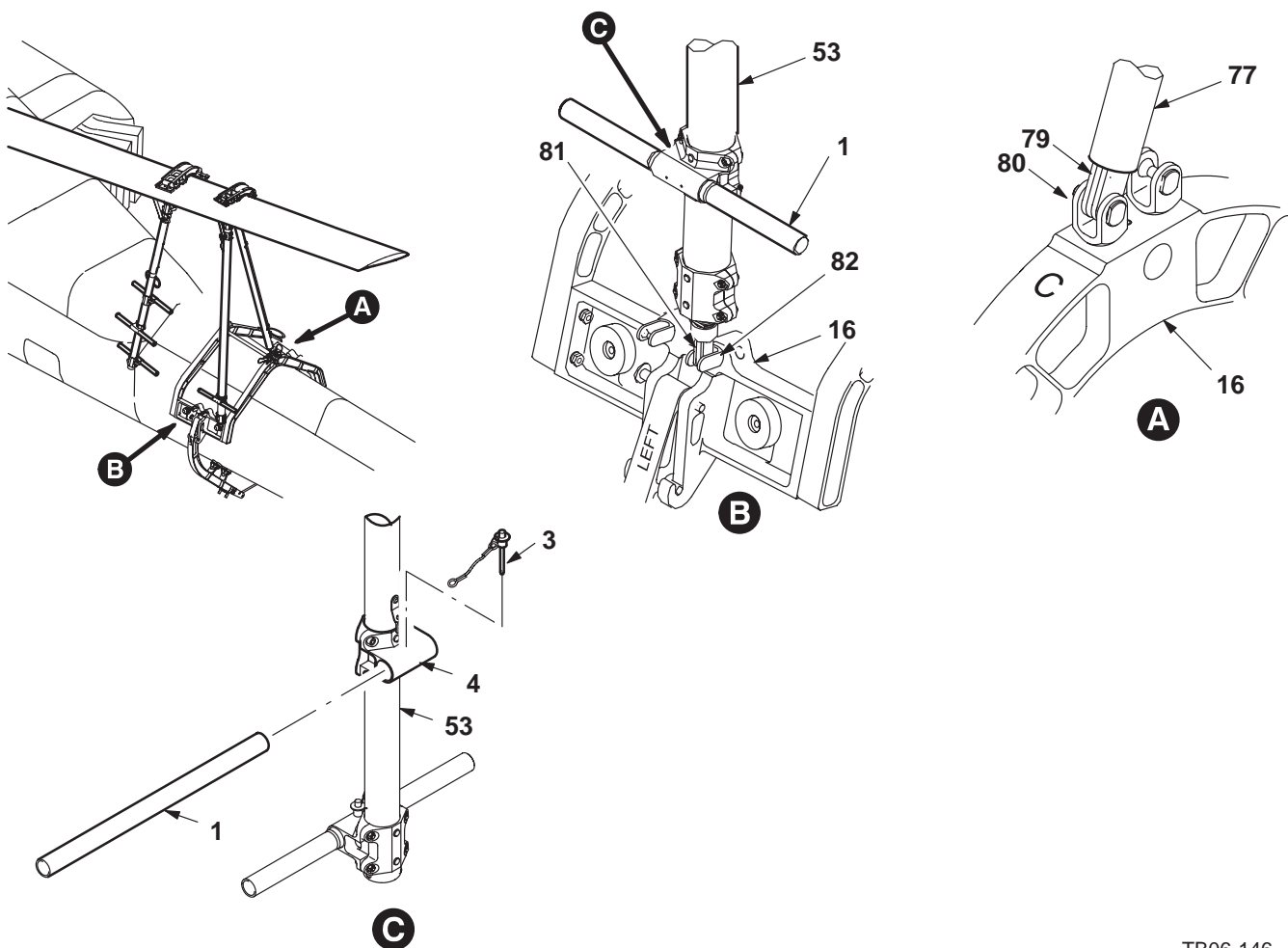
- (4) Install blade handling pole assembly (38) on L/H AFT blade (39).
 - (a) Adjust handling pole strut (40) to **L/H** position of clevis (41) (See Figure 112).
 - (b) Install handling pole (38) on outboard stripe (42) of blade (39).
 - (c) Pull down release handle (43) to unlock blade clamp (44) on blade handling pole (38).
 - (d) Place release handle (43) into retaining clip (45) to hold blade clamp (44) open.
 - (e) Align blade clamp (44) of handling pole (38) on outboard stripe (42) of blade (39).
 - (f) Install handling pole assembly (38) onto blade (39) until leading edge of blade (39) contacts pad on inside of blade clamp (44).
 - (g) Release handle (43) from retainer (45) to lock blade clamp (44) onto blade (39).
 - (h) Secure handle (43) with Velcro strap (46).



TB06-151

Figure 112. Installation of Blade Handling Pole on Inboard Stripe L/H Aft Main Rotor Blade

- (5) Position one person at rotor head, one person on wing, two people each on handling pole (38) and securing pole (53).
- (6) Install T-handle (1) in securing pole (53).
 - (a) Install T-handle (1) through blade securing pole (53).
 - (b) Install quick release pin (3) through receptacle (4)
- (7) Disconnect securing pole (53) from side of upper saddle assembly (16) at position labeled **C** by unsnapping J hook (81) up from clevis (82). (See Figure 113).
- (8) Disconnect support pole (77) from top of upper saddle assembly (16) at position labeled **C** by unsnapping J hook (79) up from clevis (80).



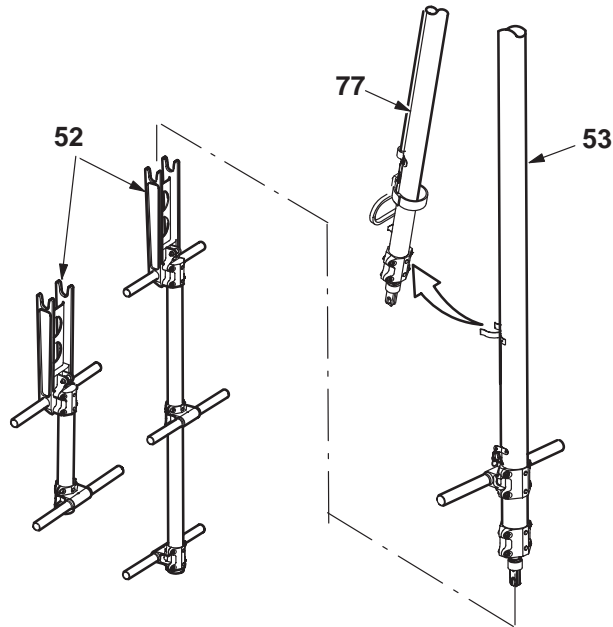
TB06-146

Figure 113. Securing Pole on Saddle

NOTE

- The extension pole assemblies (short or long) can be utilized for better ergonomics during lifting of main rotor blade.
- The “U” shaped end of extension will go around handle of securing pole while clevis on extension engages J hook on securing pole.

(a) Attach appropriate extension (52) on the base of securing pole (53) (See Figure 114).



TB06-147

Figure 114. Installation of Support Pole onto Securing Pole

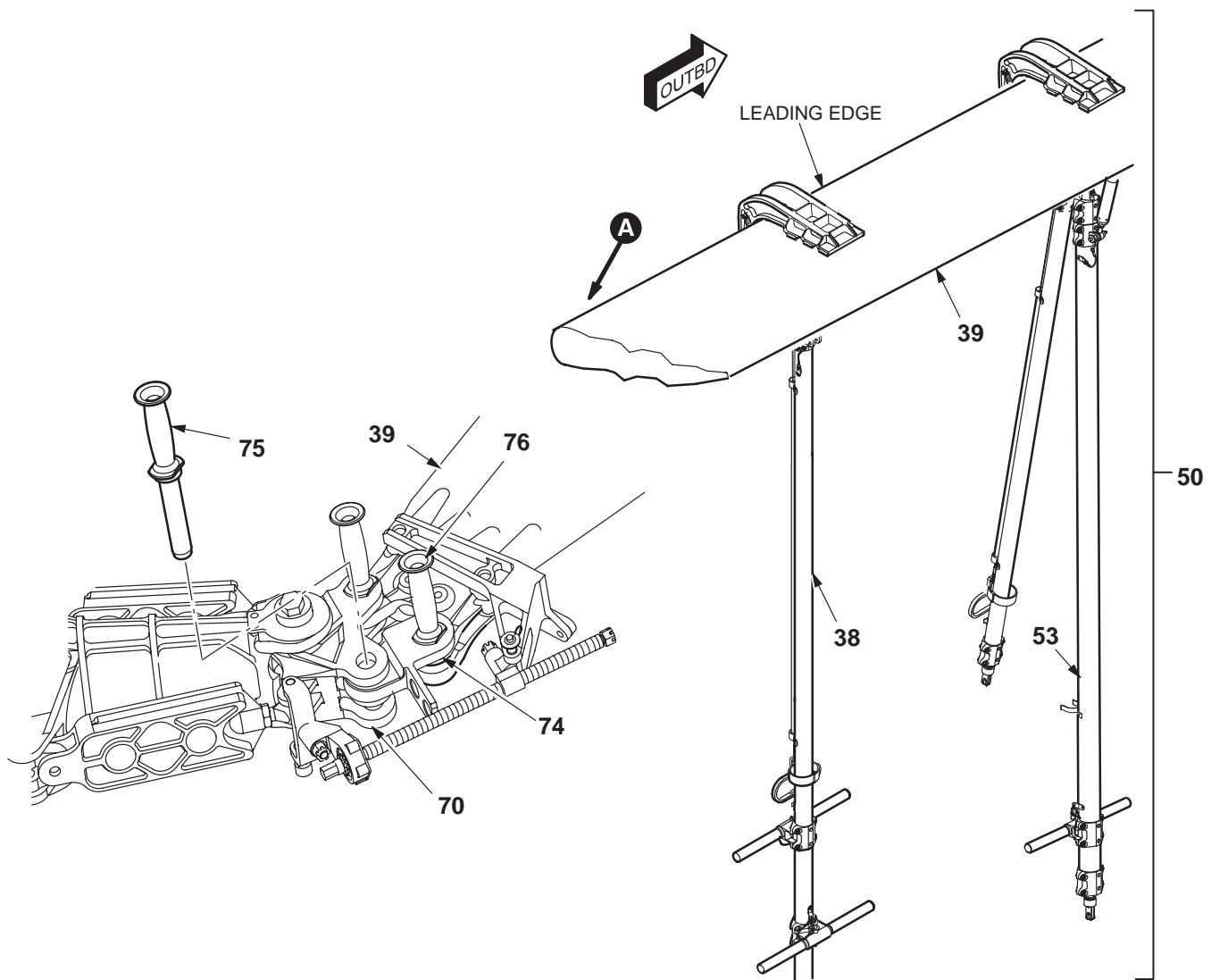
(9) Remove L/H AFT blade block assembly (74).

- (a) Position one person at rotor head, one person on wing, two people each on handling pole (38) and securing pole (53) (See Figure 115).
- (b) Use four persons to lift or lower L/H AFT blade (39) with handling pole (38) and securing pole assembly (50) until two blade fold pins (75) and (76) in blade block (74) move freely.

NOTE

The handle portion on the quick release fold pin assembly slides up and down freely on shaft to allow slight tapping during fold pin installation and removal.

- (c) Remove two quick release blade pins (75) and (76) from blade block (74) and lead/lag link (70).



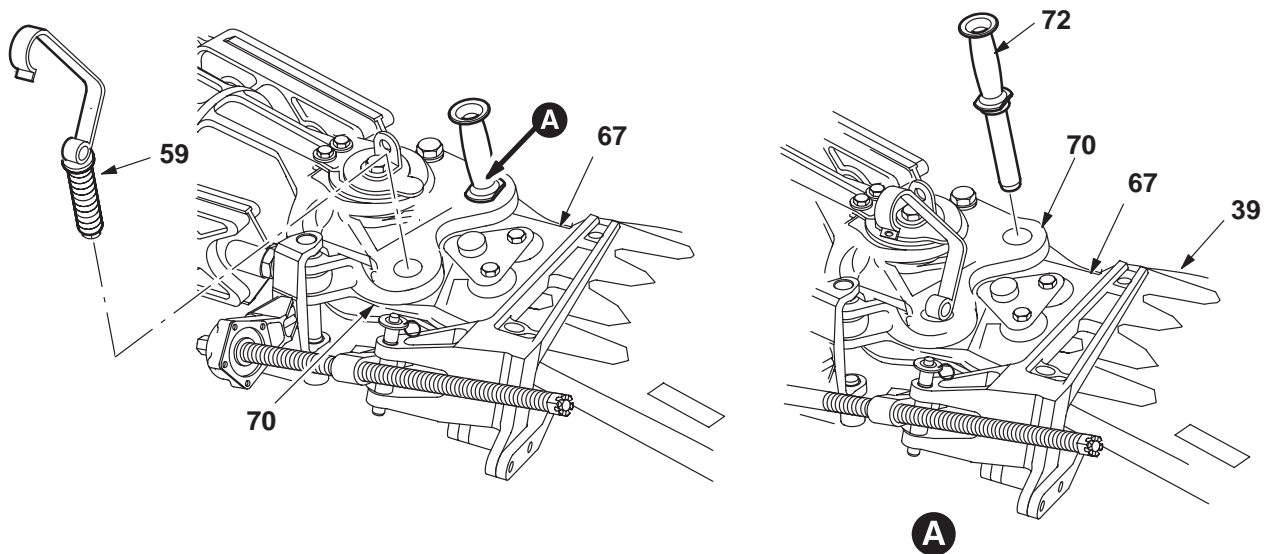
TB06-134

Figure 115. Remove Quick Release Fold Pins from L/H AFT Blade Block

NOTE

The person turning jackscrew shall direct whether the blade needs to be lifted or let down by inspecting blade root fitting movement out of lead lag link and by feeling any binding occurring on jackscrew as it turns.

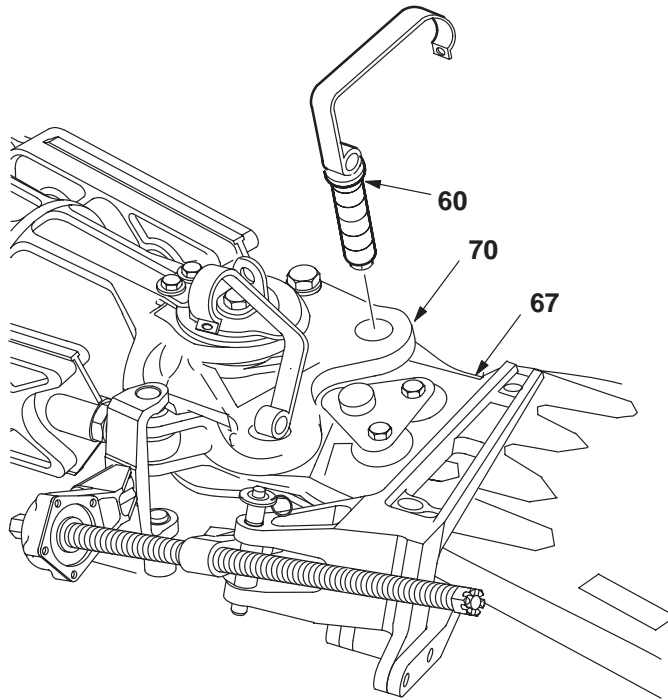
- (d) Turn jackscrew (62) on blade positioning assembly (61) clockwise to move L/H AFT blade (39) to unfolded position.
- (e) Check blade fold kit attaching areas on lead lag link and blade root end for damage:
 - 1 A-model refer to TM 1-1520-238-23 (para 5.3).
 - 2 D-model refer to TM 1-1520 Longbow/Apache IETM.
- (f) Align holes in lead lag link (70) with blade root (67) fitting (See Figure 116).
- (g) Install aircraft blade pin (59) through trailing edge lead lag link (70) and blade root (67) fitting.
- (h) Remove blade fold pin (72) from leading edge lead lag link (70) and blade root fitting (67).



TB06-131

Figure 116. Installation of Aircraft Blade Pin in Trailing Edge

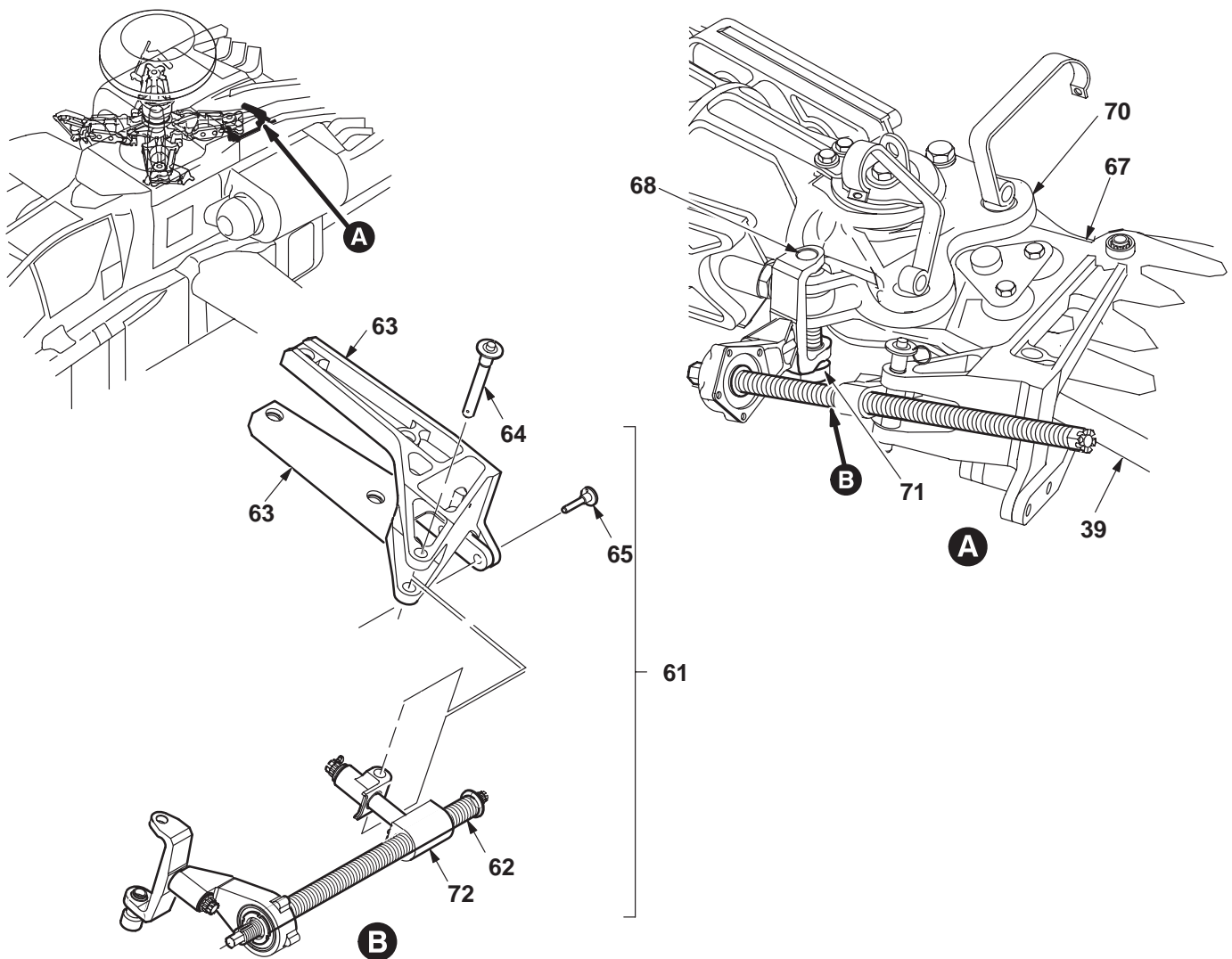
- (i) Install aircraft blade pin (60) through leading edge lead lag link (70) and blade root (67) fitting (See Figure 117).



TB06-130

Figure 117. Installation of Aircraft Blade Pin in Leading Edge

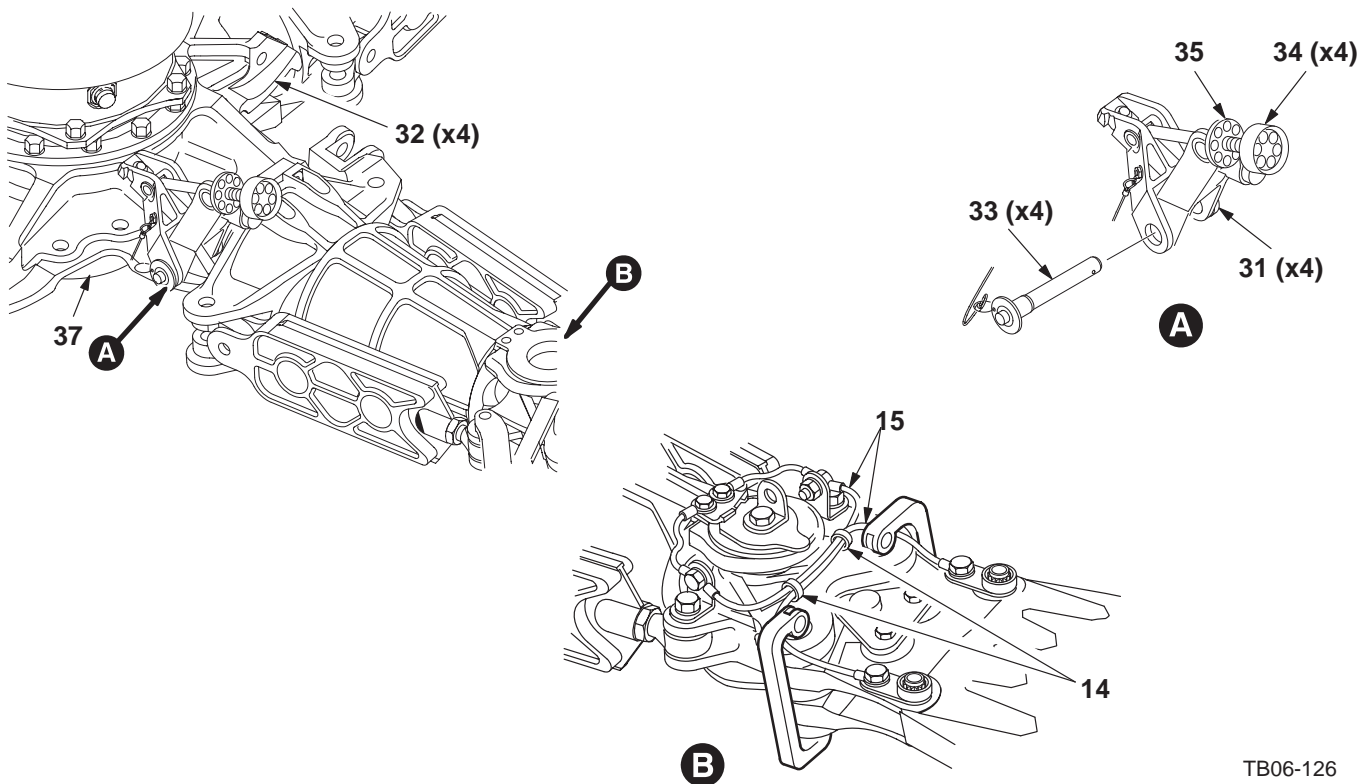
- (10) Remove blade positioner assembly (61) from trailing edge side of blade (39).
 - (a) Loosen thumbscrew (71) from damper bolt (68) (See Figure 118).
 - (b) Remove quick release pin (64) that attaches jackscrew knuckle (72) to blade positioner clamps (63).
 - (c) Remove jackscrew (62) from blade positioner clamp halves (63).
 - (d) Remove quick release pin (65) from blade positioner clamp halves (63).
 - (e) Open **TOP** and **BOTTOM** blade positioner clamp halves (63) and remove from trailing edge side of blade (39).



TB06-129

Figure 118. Blade Positioning Assembly on L/H AFT Main Rotor Blade

- (11) Install blade pin per:
 - (a) A-model refer to TM 1-1520-238-23 (para 5.4).
 - (b) D-model refer to TM 1-1520-Longbow/Apache IETM.
- (12) Remove four flap lock assemblies (31) on main rotor hub lifting lug (32)
 - (a) Lift up on L/H Aft main rotor blade (39) to assist in removal of flap locks (31). Use a handling pole (38) and securing pole assembly (50) (See Figure 119).
 - (b) Loosen cinch nut (35) on each of four flap lock assemblies (31).
 - (c) Loosen stud (34) on each of four flap lock assemblies (31).
 - (d) Remove quick release pins (33) from flap lock assemblies (31) and main rotor head (37).
 - (e) Remove four flap lock assemblies (31) from main rotor head (37).
 - (f) Install tie wraps (14) on bonding jumpers (15).
 - (g) Remove the four flap lock assemblies (31) from the main rotor head (37).

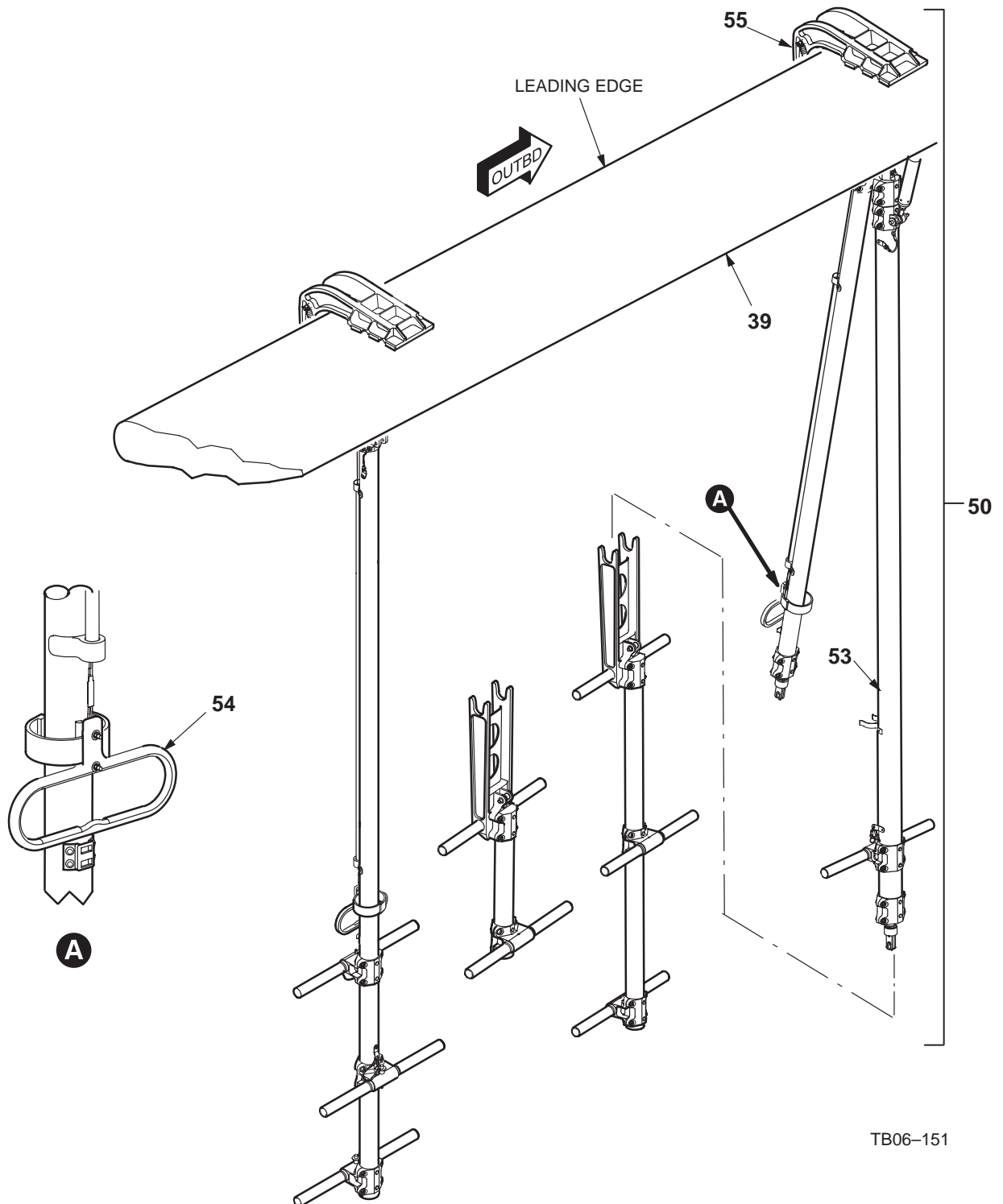


TB06-126

Figure 119. Flap Lock Assembly on Main Rotor Hub Assembly

(13) Remove securing pole assembly (50) from blade (39) (See Figure 108).

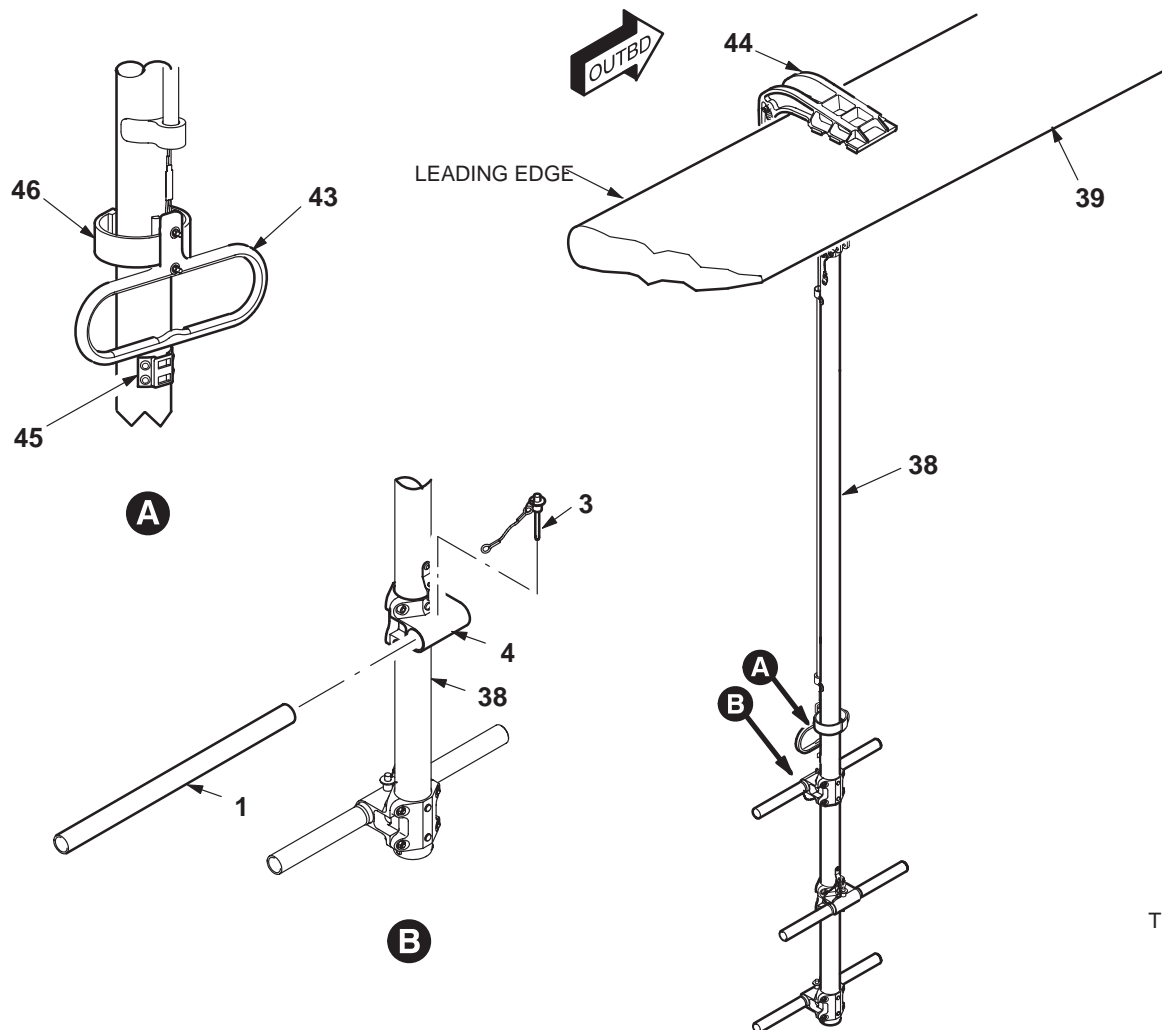
(a) Pull down release handle (54) to unlock blade clamp (55) on securing pole (53).



TB06-151

Figure 120. Installation of Blade Securing Pole on L/H AFT Main Rotor Blade

- (14) Remove blade handling pole (38).
 - (a) Remove Velcro strap (46) from handle (43) (See Figure 121).
 - (b) Pull down release handle (43) to unlock blade clamp (44) on the blade handling pole (38).
 - (c) Place release handle (43) into retaining clip (45) to hold blade clamp (44) open.
 - (d) Remove handling pole (38) from blade (39).
 - (e) Release handle (43) from retainer (45).
 - (f) Secure handle (43) with Velcro strap (46).

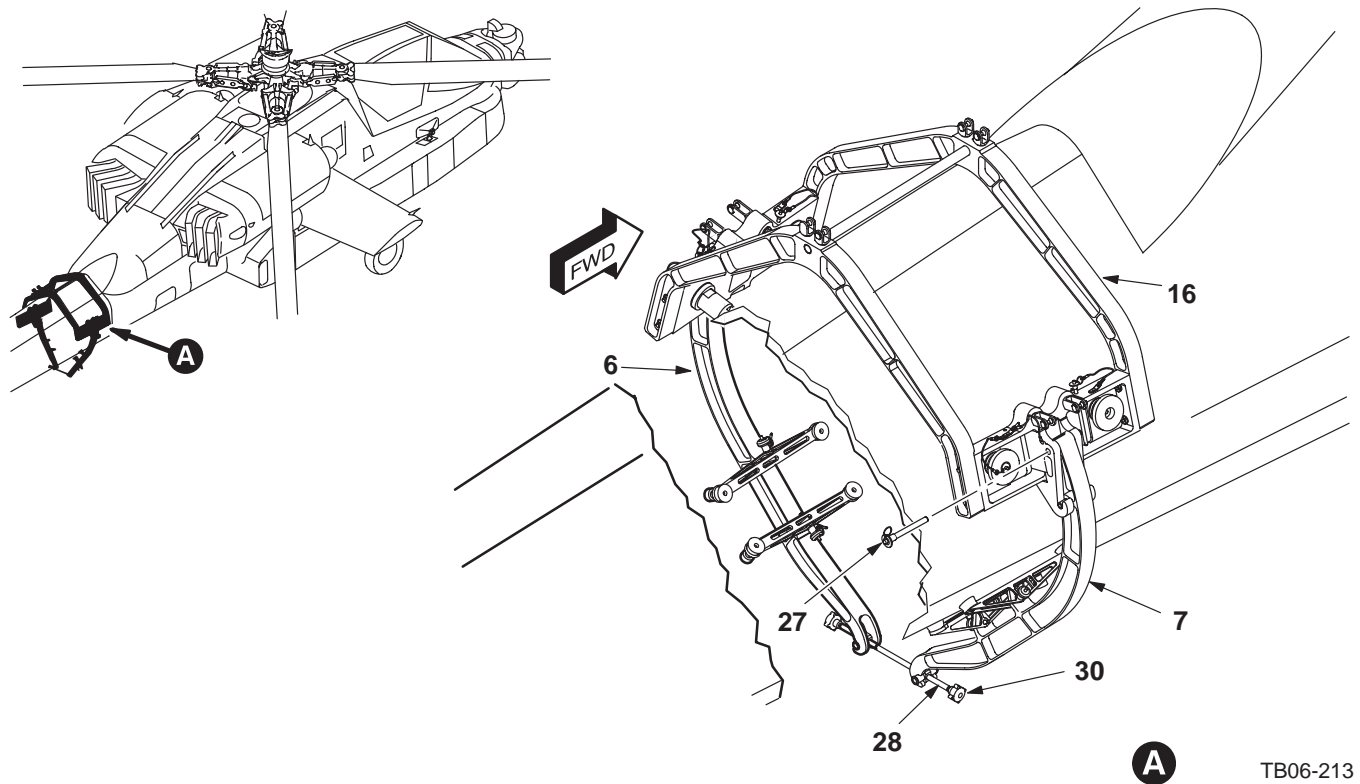


TB-151-2

Figure 121. Removal of Blade Handling Pole Assembly

- (15) Remove T-handle (1) from blade handling pole (38).
 - (a) Remove quick release pin (3) from receptacle (4)
 - (b) Remove T-handle (1) from blade handling pole (38).

- (16) Remove right lower saddle assembly (7).
- (a) Loosen torque knob (30) on support rod (28) (See Figure 122).
 - (b) Remove quick release pin (27) from upper saddle (16) and lower saddle (7) assemblies.
 - (c) Remove right lower saddle assembly (7) from upper saddle assembly (16).



TB06-213

Figure 122. Right Side Saddle and Side Rail

(17) Remove left lower saddle assembly (6).

(a) Remove quick release pin (24) from lower saddle (6) and upper saddle (16) assemblies (See Figure 123).

(b) Remove left lower saddle assembly (6) from upper saddle assembly (16).

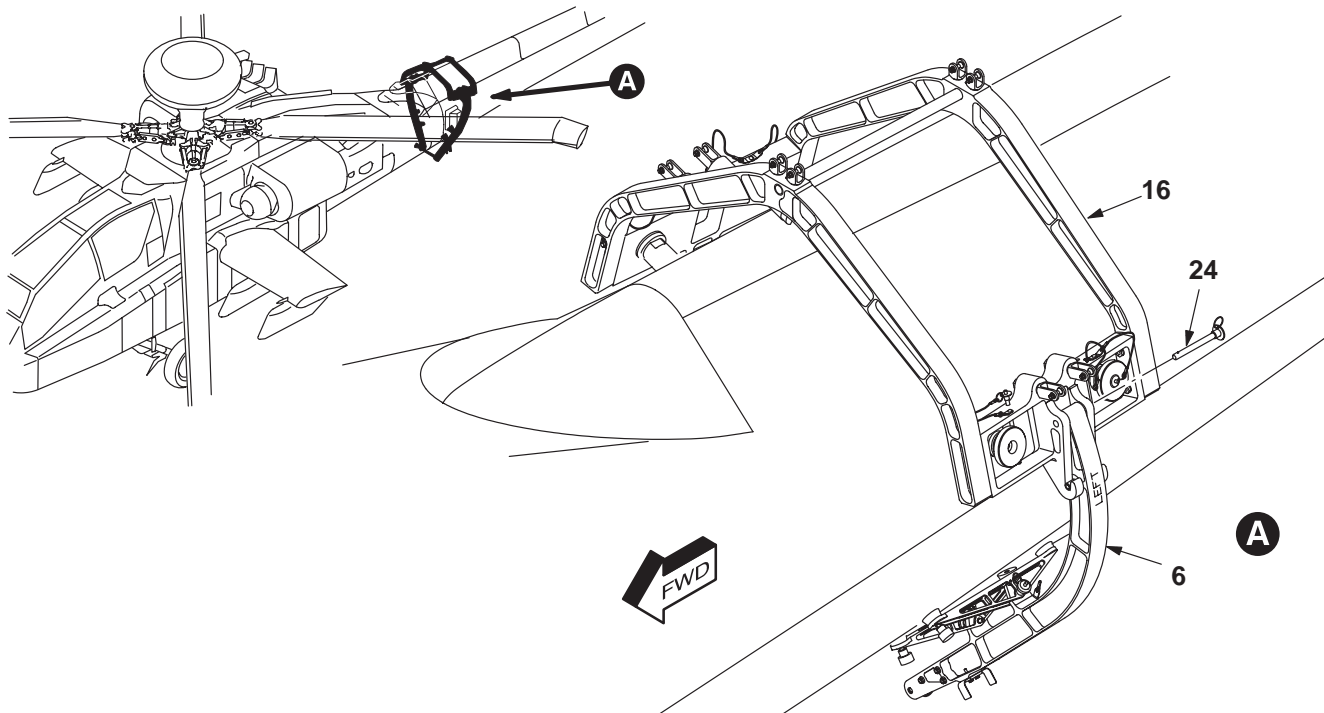


Figure 123. Left Side Saddle and Side Rail

TB06-124

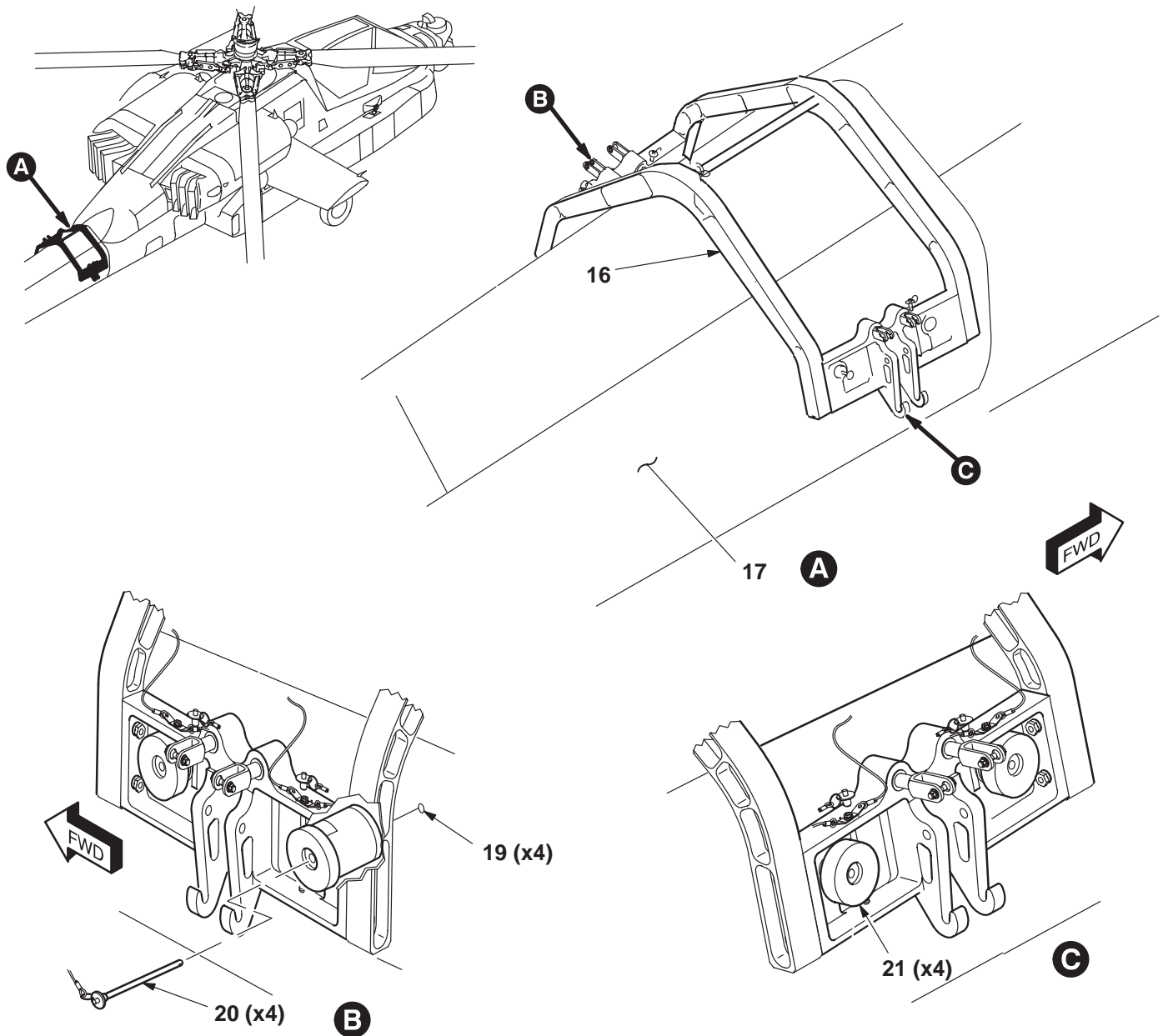
(18) Remove upper saddle assembly (16) from tailboom (17).

(a) Loosen four knobs (21) (See Figure 124).

(b) Remove four quick release pins (20) from receptacles (19).

(c) Remove upper saddle assembly (16) from tailboom (17).

(19) Technical inspector shall verify work is completed to standard.



TB06-215

Figure 124. Upper Saddle Assembly Left and Right Side

b. Post conditions.

- (1) Perform main rotor blade fold kit inventory and inspection (See Appendix A).
- (2) Clean main rotor blade fold kit components and place in kit containers (See Appendix B).

11. RECORDING AND REPORTING REQUIREMENTS.

a. Records and Reports.

- (1) The following forms are applicable and are to be completed in accordance with DA PAM 738-751, TAMMS-A.
 - (a) DA Form 2407/5504, Maintenance Request.
 - (b) DA Form 2408-5, Equipment Modification Record.
 - (c) DA Form 2408-13, Aircraft Status Information Record.
 - (d) DA Form 2408-13-1, Aircraft Inspection and Maintenance Record.
 - (e) Reporting TB Receipt - Commanders and Facility Managers will report receipt of this TB by E-mail or Fax to the Logistical Point of Contact (POC) listed in paragraph 16.

12. Marking Equipment: Not applicable.

13. Identification Data: Not applicable.

14. References

- a. A-model refer to TM 1-1520-238-23.
- b. D-model refer to TM 1-1520-Longbow/Apache IETM.

15. Weight and Balance. Not applicable.

16. Points of contact.

a. Logistical points of contact are:

- (1) Apache Attack Helicopter Project Management Office, Logistics Division SFAE-AV-AAH-LI, DSN (256) 897-4103 or commercial (256) 313-4103. Fax is DSN 897-4374.

17. REPORTING ERRORS AND RECOMMENDING IMPROVEMENTS

You can help improve this TB. If you find any mistakes or if you know of a way to improve these procedures, please let us know. Mail your letter or DA Form 2028 (Recommended Changes to Publications and Blank Forms), directly to: Commander, U.S. Army Aviation and Missile Command, ATTN: AMSAM-MMC-MA-NP, Redstone Arsenal, AL 35898-5000. A reply will be furnished directly to you. You may also provide DA Form 2028 information to AMCOM via e-mail, datafax, or the World Wide Web. Our fax number : DSN 788-6546 or Commercial 256-842-6542-65446. Our e-mail address is: 2028@redstone.army.mil. Instructions for sending an electronic 2028 may be found at the back of the TB immediately preceding the hard copy 2028. For the World Wide Web use: <https://amcom2028.redstone.army.mil>.

APPENDIX A

MAIN ROTOR BLADE FOLD KIT INVENTORY AND POST BLADE FOLD OPERATION INSPECTION

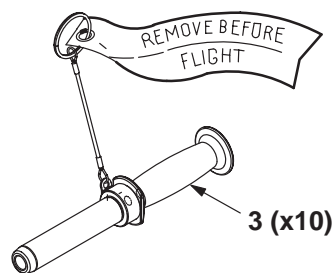
Appendix A lists those items of installed or loose equipment required by and authorized for using organizations to accomplish the Main Rotor Blade Fold/Unfold Operations. Appendix A also contains post operation inspection upon completion of the main rotor blade unfold operation.

1. Inventory and inspect main rotor blade fold kit (See Table 1 and Figure 125).

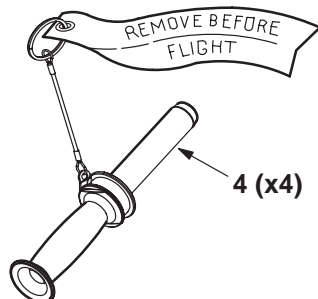
Table 1. 7-562110044-601 Main Rotor Blade Fold Kit-US Contents

ITEM NO.	CAGE	PART NUMBER	DESCRIPTION	QTY
1	8V613	ALQ5430-3006AC	Container Shipping & Storage	1
2	8V613	CW10733-09161	Container Shipping & Storage	1
3	8V613	7-562110045-601	Fold Pin,Quick Release	10
4	8V613	7-562110045-605	Fold Pin,Quick Release	4
5	8V613	7-562110014-601	Flap Lock Assy	4
6	8V613	7-562110047-601	Swing Link-LH	1
7	8V613	7-562110047-603	Swing Link-RH	1
8	8V613	7-562110015-601	Blade Positioner Assy	1
9	8V613	7-562110049-601	Aux Blade Positioner Assy-RH	1
10	8V613	7-562110049-602	Aux Blade Positioner Assy-LH	1
11	8V613	7-562110050-601	Blade Block Assy-LH AFT	1
12	8V613	7-562110050-603	Blade Block Assy-RH AFT	1
13	8V613	7-562110051-601	Upper Saddle Assy	1
14	8V613	7-562110052-601	Lower Saddle Assy	1
15	8V613	7-562110052-001	Pivot Assembly	4
16	8V613	7-562110053-601	Blade Handling Pole Assy	1
17	8V613	7-562110054-601	Blade Securing Pole Assy-RH Fwd	1

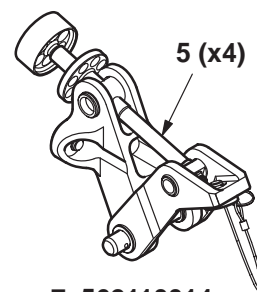
ITEM NO.	CAGE	PART NUMBER	DESCRIPTION	QTY
18	8V613	7-562110055-601	Blade Securing Pole Assy-RH Rear	1
19	8V613	7-562110056-601	Blade Securing Pole Assy-LH Rear	1
20	8V613	7-562110057-601	Blade Securing Pole Assy-LH FWD	1
21	8V613	7-562110068-601	Alignment Bar, Blade Fold	1
22	8V613	7-562110021-1	Extension Pole Assy	1
23	8V613	7-562110021-3	Extension Pole Assy	1
24	8V613	7-562110027-1	T-Handle	7



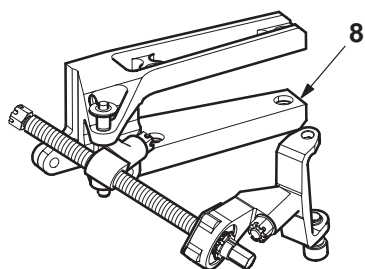
7-562110045-601
FOLD PIN



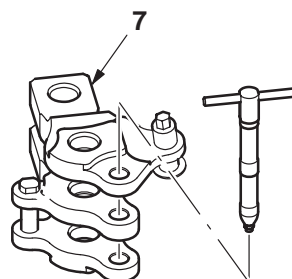
7-562110045-605
FOLD PIN



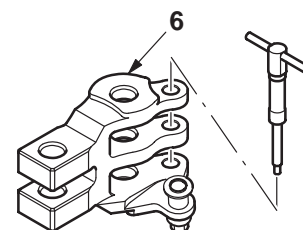
7-562110014
FLAP LOCK ASSY



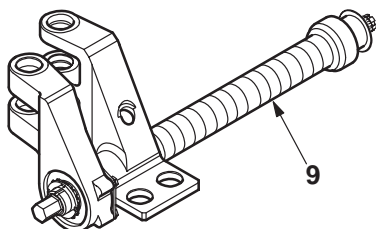
7-562110015-601
BLADE POSITIONING ASSY



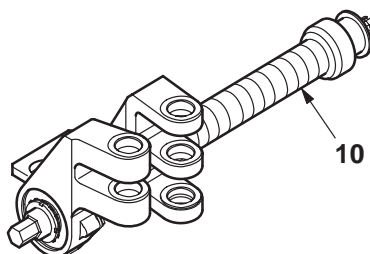
7-562110047-603
LH SWING LINK ASSY



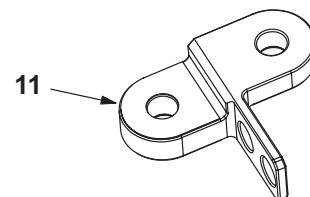
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RH SWING LINK ASSY



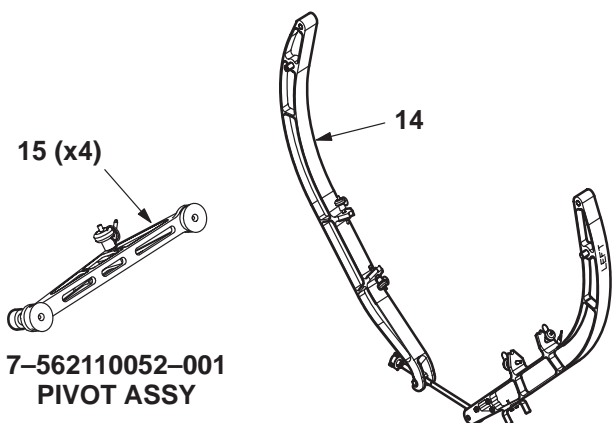
7-562110049-601
LH AUX BLADE POS



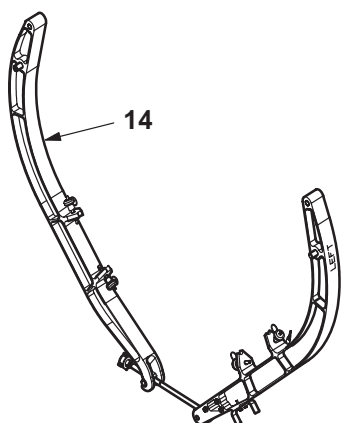
7-562110049-602
RH AUX BLADE POS



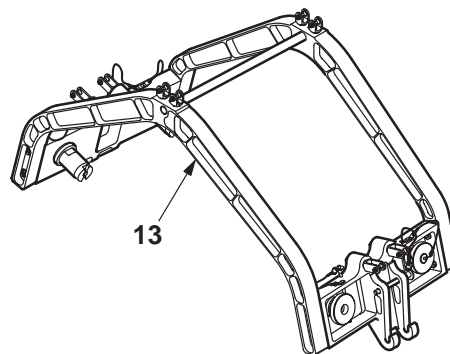
7-562110050-601
LH AFT BLADE
BLOCK ASSY



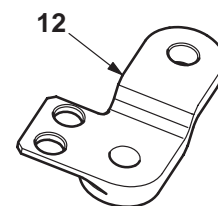
7-562110052-001
PIVOT ASSY



7-562110052-601
LOWER SADDLE ASSY

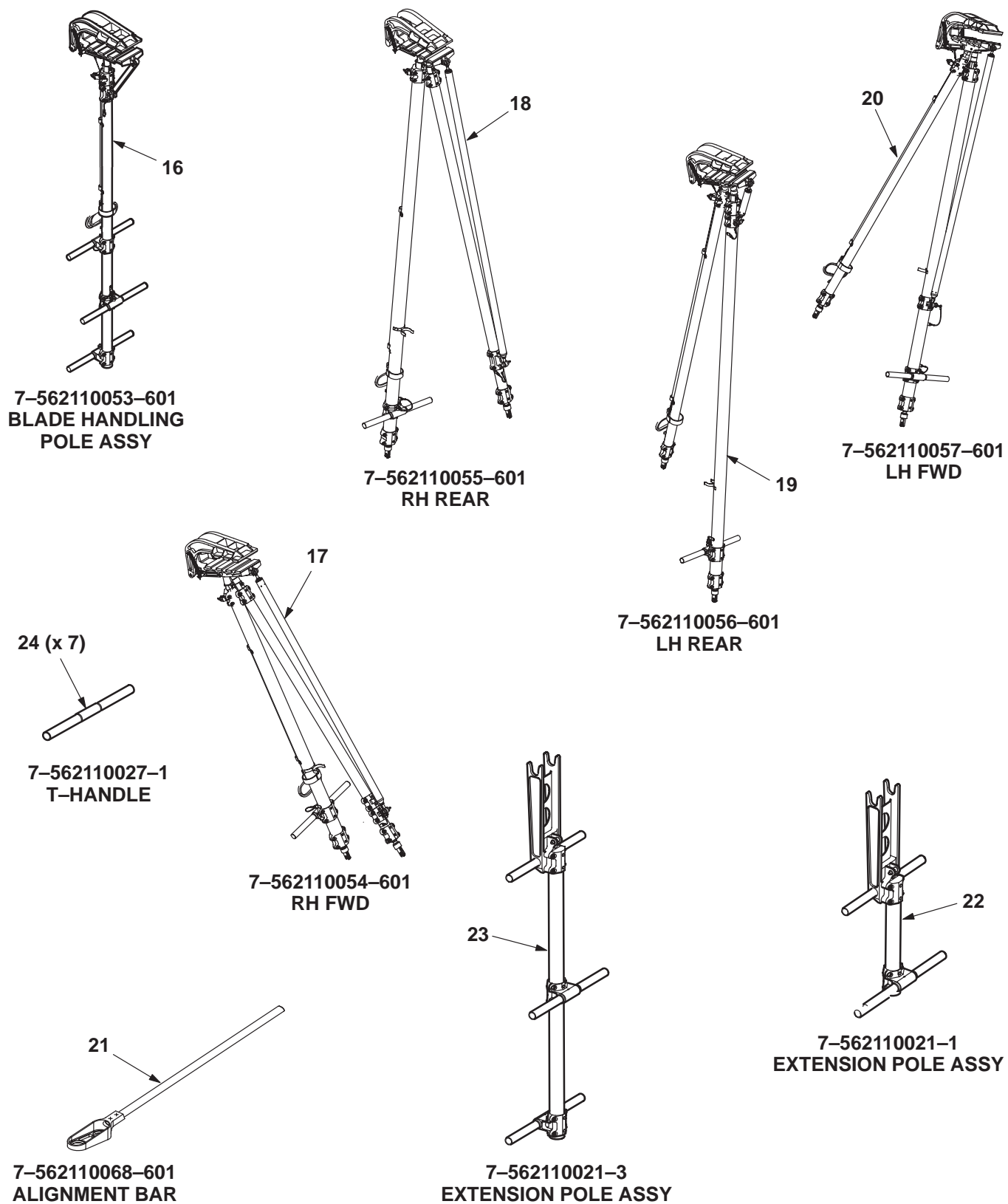


7-562110051-601
UPPER SADDLE ASSY



7-562110050-603
RH AFT BLADE
BLOCK ASSY

Figure 125. Main Rotor Blade Fold Kit-US components



TB105-124

Figure 125 . Main Rotor Blade Fold Kit-US components –continued

a. Visual inspection of Main Rotor Blade Fold Kit (MRBFK).

(1) Visually check blade pole assembly:

- (a) For proper clamp operation (See figure 126).
- (b) Three pads are secured to upper clamp.
- (c) Four pads are secured to lower clamp.
- (d) For bent or damaged poles (See figure 127).
- (e) Loose or missing hardware.
- (f) Loose or missing lanyards and quick release pins.
- (g) Cracks or corrosion.
- (h) If blade pole assembly components are damaged, refer to paragraph 16.a for logistics disposition.

(2) Visually check extension pole assemblies (See Figure 128):

- (a) For loose or missing hardware.
- (b) For loose or missing lanyards and quick release pins.
- (c) Cracks or corrosion.
- (d) T-handle mounts are secure, no loose or missing hardware.
- (e) If extension pole is damaged, refer to paragraph 16.a for logistics disposition.

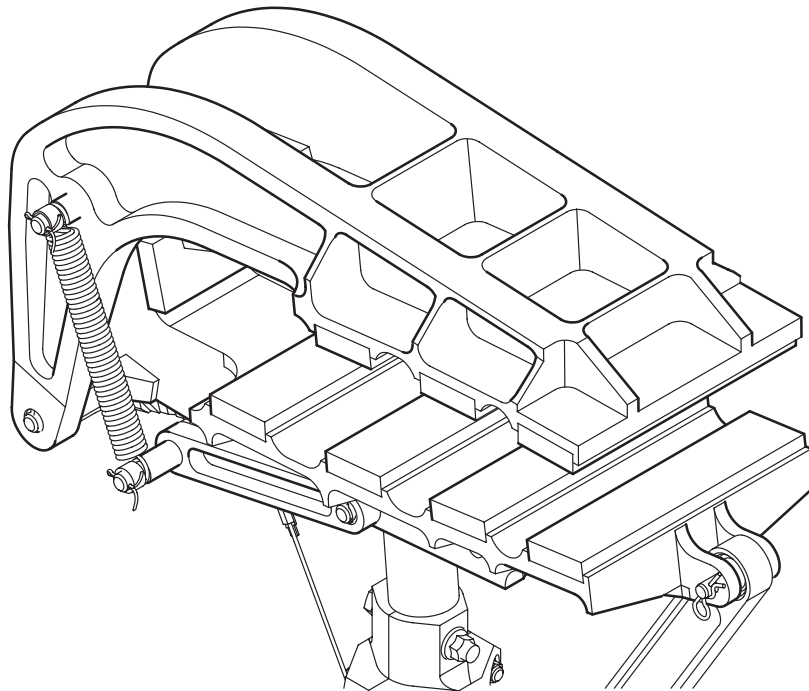
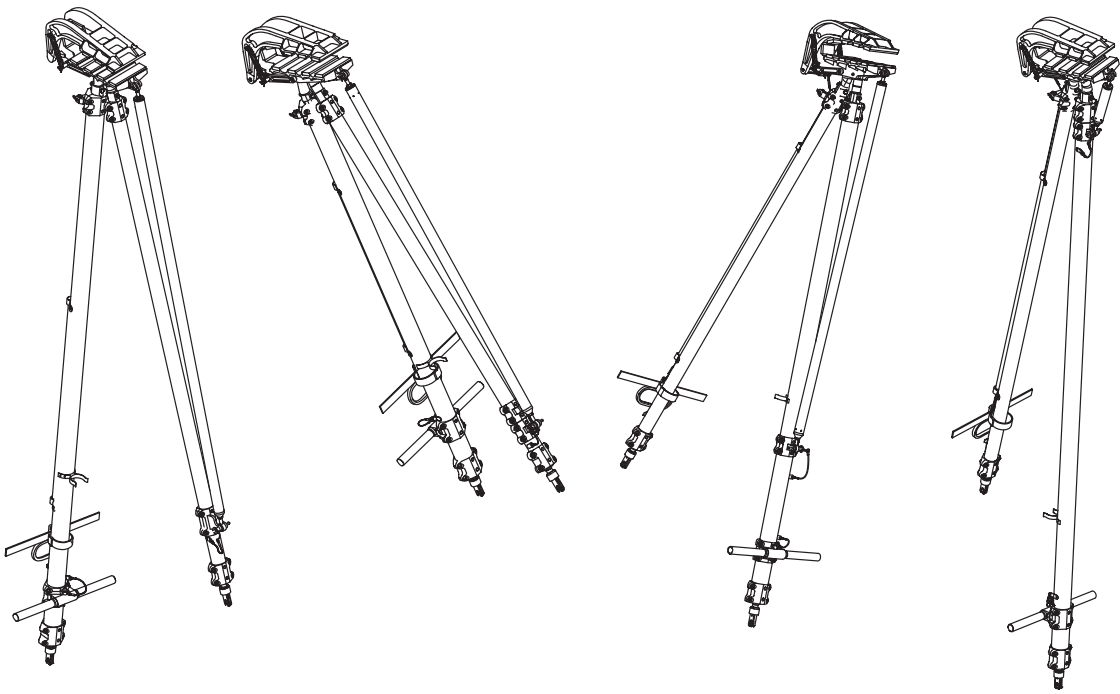


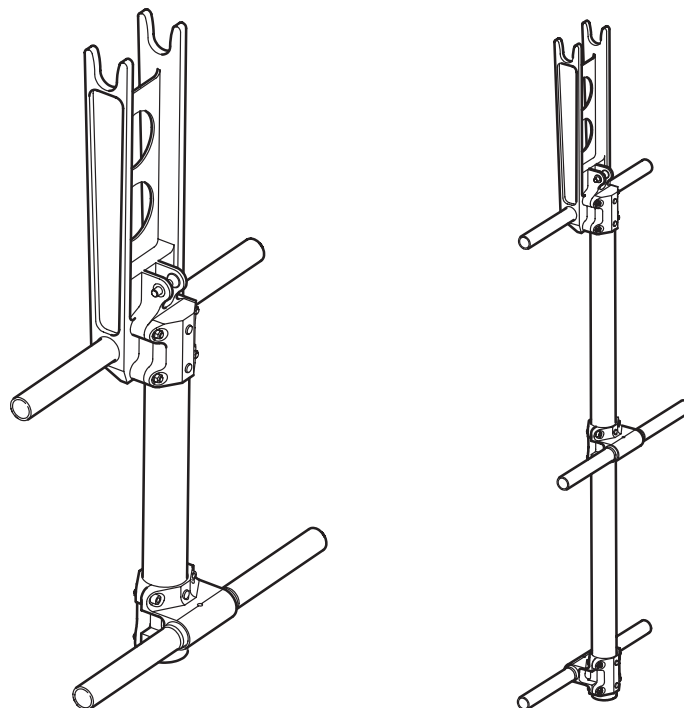
Figure 126. Blade Pole Clamp

TB05-103



TB05-104

Figure 127. Blade Securing Poles



TB05-112

Figure 128. Extension Pole Assemblies

- (3) Visually check upper saddle assembly (1) (See Figure 129):
 - (a) Four mounts are not damaged.
 - (b) Four pads are secured to mounts.
 - (c) For bent or damaged frame.
 - (d) Loose or missing hardware.
 - (e) Loose attaching or missing lanyards and quick release pins.
 - (f) Cracks or corrosion.
 - (g) Mounts are secure, no loose or missing hardware.
 - (h) If the upper saddle assembly (1) is damaged, refer to paragraph 16.a for logistics disposition.
- (4) Visually check the lower saddle assembly:
 - (a) Eight mounts (8) for damage.
 - (b) Four pads (7) secured to mounts.
 - (c) Cracked, corroded, or bent frame (2).
 - (d) No loose or missing hardware.
 - (e) No loose or missing lanyards and quick release pins.
 - (f) If the lower saddle assembly (3) is damaged, refer to paragraph 16.a for logistics disposition.

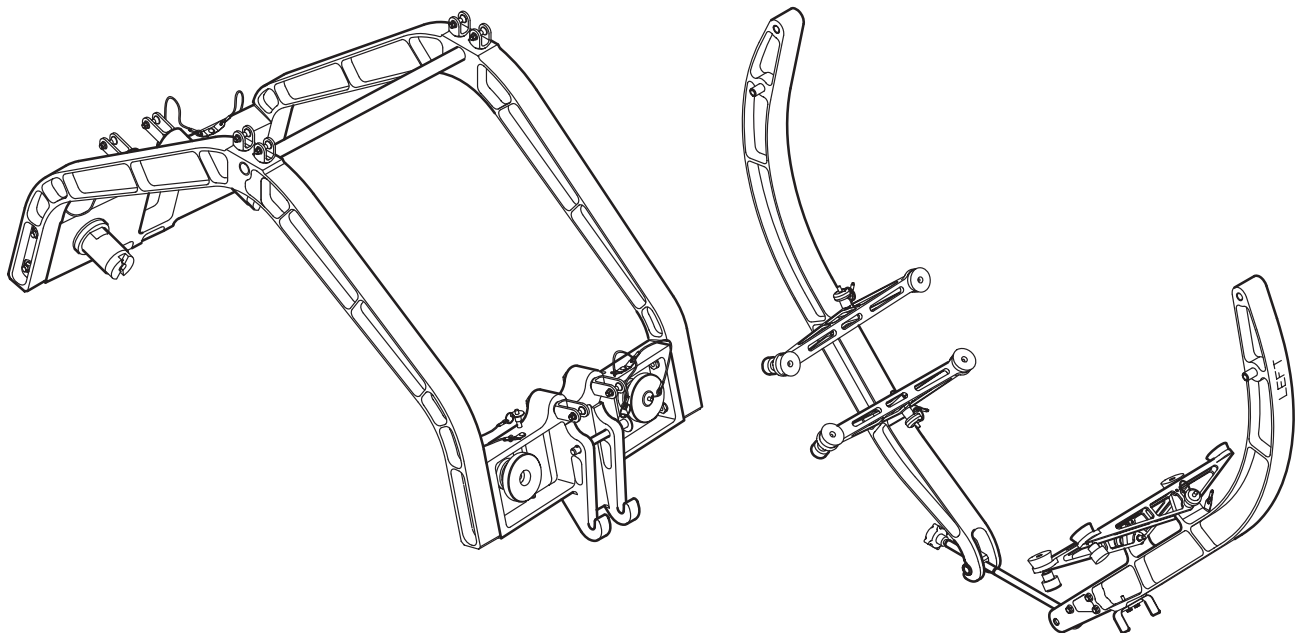
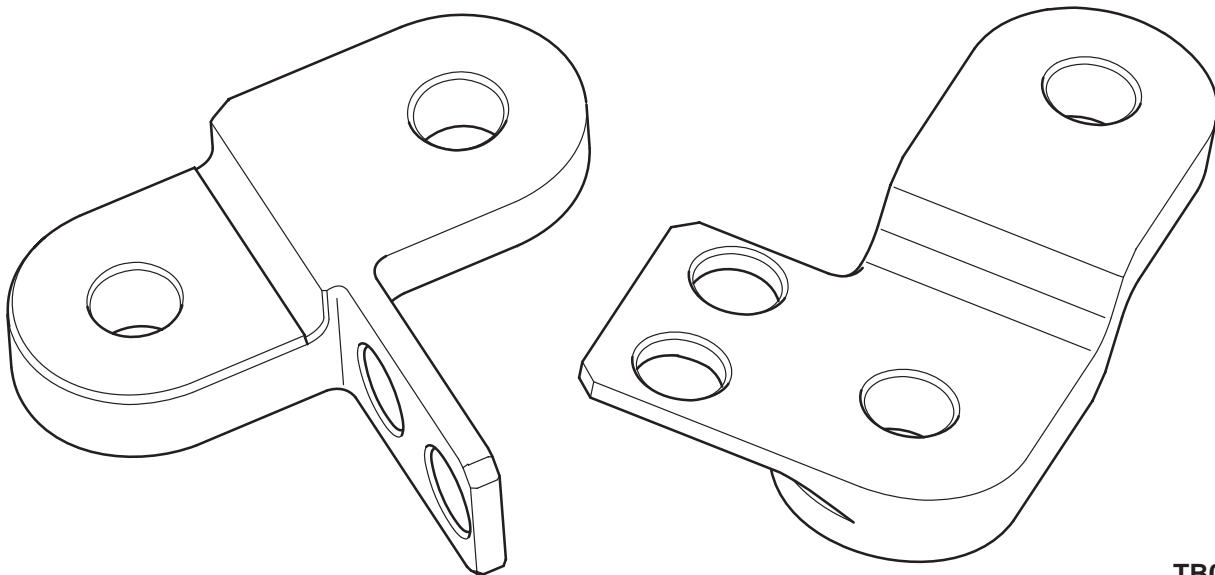


Figure 129. Upper and Lower Saddle

TB05-106

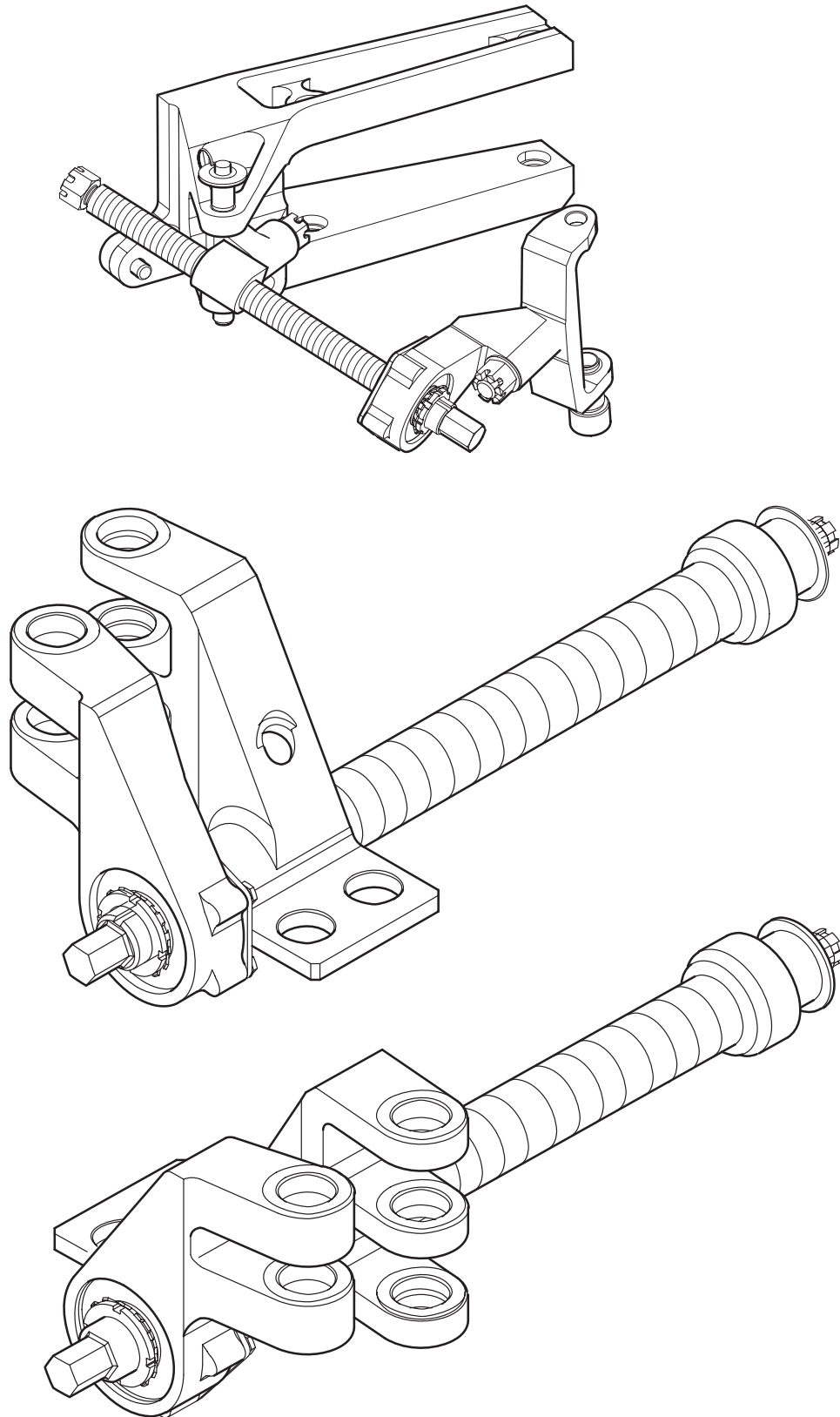
- (5) Visually check blade block assemblies (figure 130):
 - (a) Lead lag hole bores for galling and elongation.
 - (b) Blade pin stow holes for elongation.
 - (c) Cracks, corrosion or deformation.
 - (d) If blade block is damaged, refer to paragraph 16.a for logistics disposition.



TB05-107

Figure 130. Blade Block Assembly

- (6) Visually check blade positioner assembly and auxiliary blade positioners (See Figure 131):
 - (a) Clamp halves and for proper operation.
 - (b) Clamp halves for cracks or corrosion.
 - (c) Jackscrew for proper operation.
 - (d) Jackscrew for rust, damaged threads, burrs, cracks and distortion.
 - (e) For missing damper mount thumbscrew.
 - (f) For loose or missing hardware.
 - (g) For loose or missing lanyards and quick release pins.
 - (h) If blade positioning assembly (1) is damaged, refer to paragraph 16.a for logistics disposition.



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Figure 131. Blade Positioner Assembly and Auxiliary Blade Positioners

- (7) Visually check four flap lock assemblies (See Figure 132):
 - (a) For loose or missing contact pad.
 - (b) Cinch nut for proper operation.
 - (c) For cracks, corrosion and damaged threads.
 - (d) For loose or missing hardware.
 - (e) For loose or missing lanyard and quick release pin.
 - (f) If flap lock assembly (1) is damaged, refer to paragraph 16.a for logistics disposition.

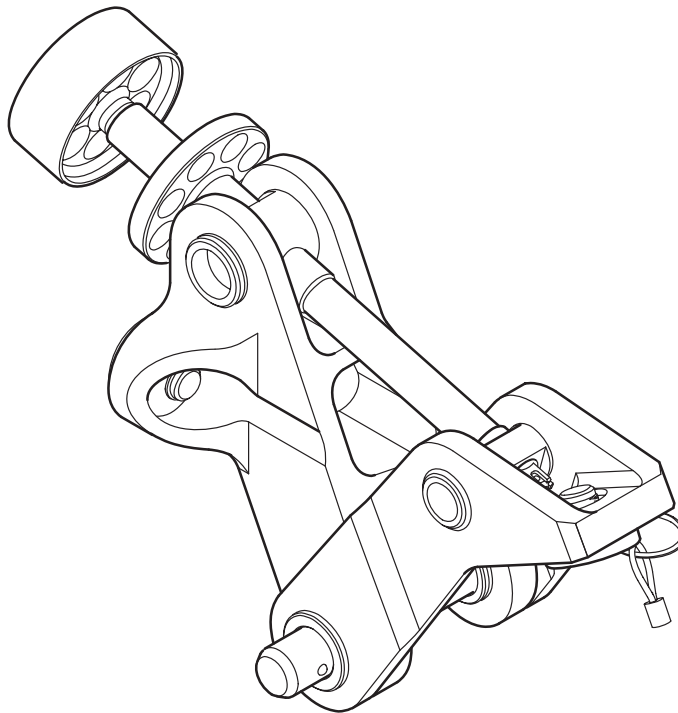


Figure 132. Flap Lock Assembly

TB05-109

- (8) Visually check LH and RH swing link assemblies (See Figure 133):
 - (a) T-handle installed and operational.
 - (b) Cracks, corrosion and deformation.
 - (c) Lead lag hole bores for excessive wear, galling and elongation.
 - (d) If swing link is damaged, refer to paragraph 16.a for logistics disposition.
- (9) Visually check quick release fold pin assembly (See Figure 134):
 - (a) For complete assembly, no missing or damaged hardware.
 - (b) Excessive wear, galling, nicks and gouges.

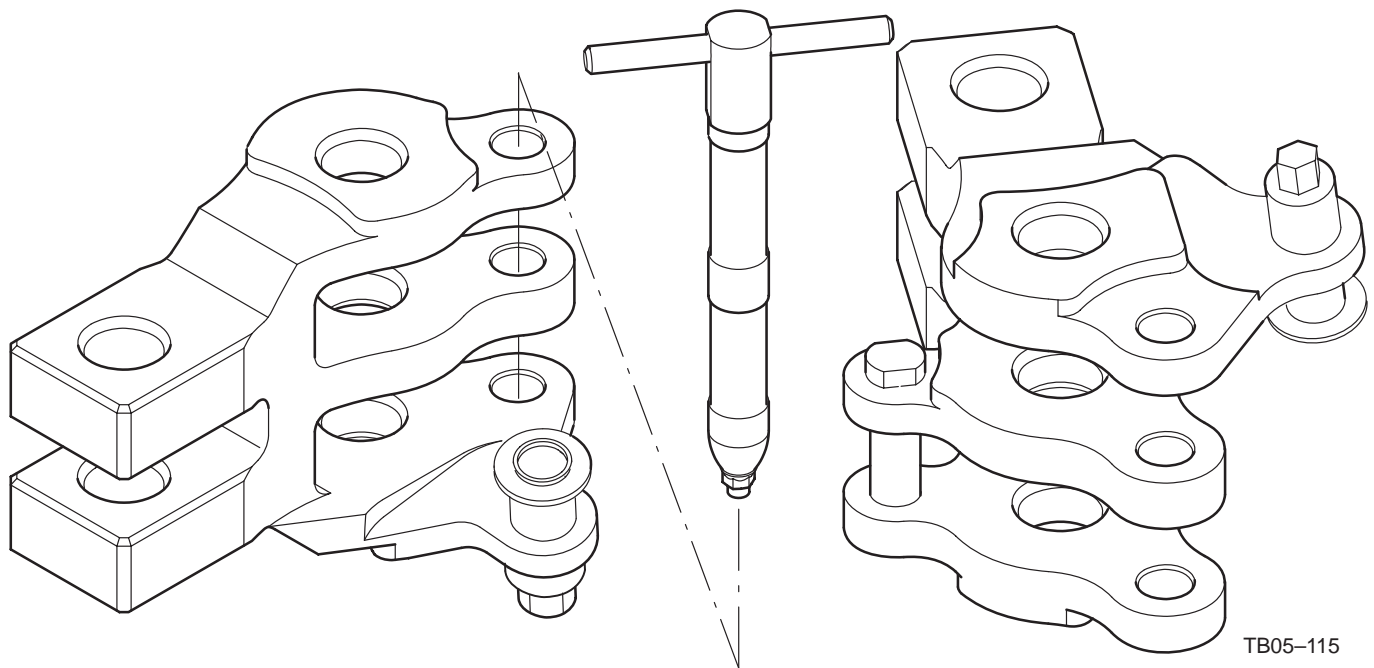


Figure 133. LH and RH Swing Link Assemblies

(c) Cracks, corrosion and deformation.

(d) If quick release fold pin is damaged, refer to paragraph 16.a for logistics disposition.

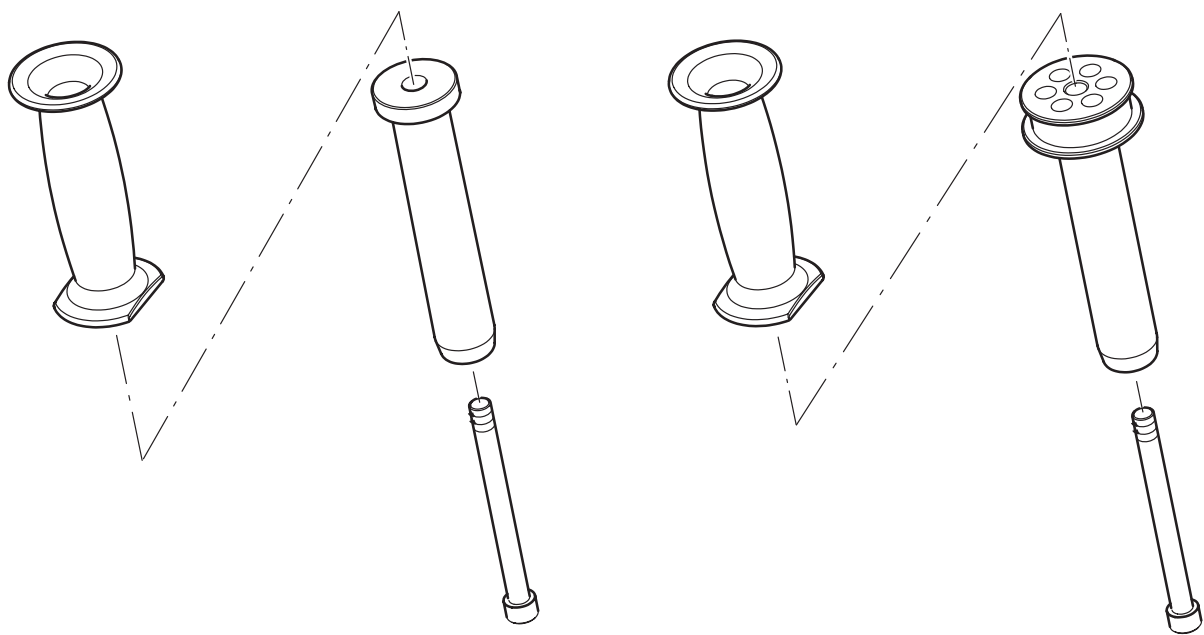
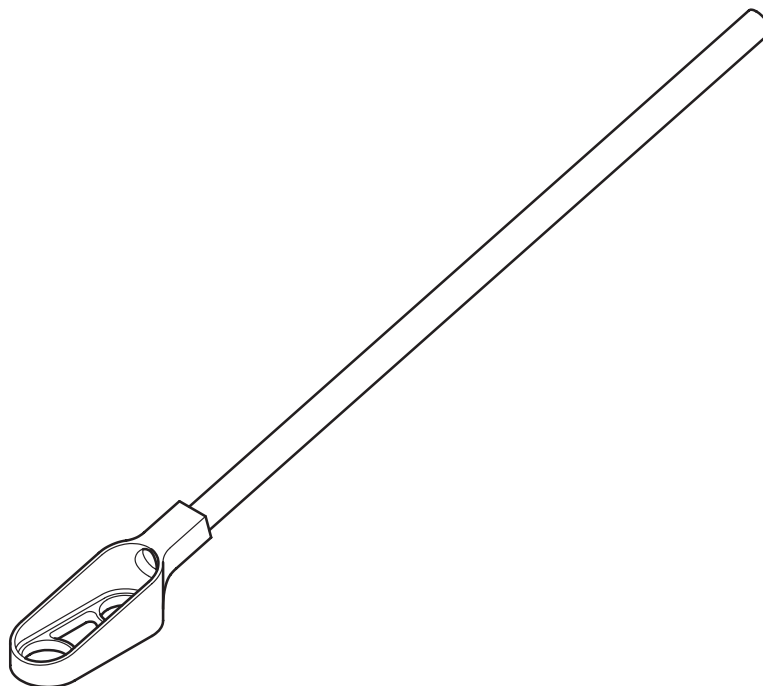


Figure 134. Quick Release Pin Assemblies

TB05-116

- (10) Visually check blade fold alignment bar (See Figure 135):
- (a) Alignment fitting end is secure to handle. No loose or missing rivets.
 - (b) Hole bore for excessive wear, galling, nicks and gouges.
 - (c) Cracks, corrosion and deformation.
 - (d) If blade fold alignment bar is damaged, refer to paragraph 16.a for logistics disposition.



TB05-117

Figure 135. Blade Fold Alignment Bar

b. Main Rotor Blade Fold Kit Aircraft Post Inspections.

- (1) Inspect damper rod end for serviceability.
 - (a) Inspect damper rod end areas where blade fold kit was attached per the following:
 - 1 A-model refer to TM 1-1520-238-23 (para 5.1).
 - 2 D-model refer to TM 1-1520-Longbow/Apache IETM.
- (2) Inspect pitch housing for serviceability.
 - (a) Inspect pitch housing areas where blade fold kit was attached per the following:
 - 1 A-model refer to TM 1-1520-238-23 (para 5.1).
 - 2 D-model refer to TM 1-1520-Longbow/Apache IETM.
- (3) Inspect lead lag link for serviceability.
 - (a) Inspect lead lag link areas where blade fold kit was attached per the following:
 - 1 A-model refer to TM 1-1520-238-23 (para 5.1).
 - 2 D-model refer to TM 1-1520-Longbow/Apache IETM.
- (4) Inspect main rotor blade for serviceability.
 - (a) Inspect main rotor blade areas where blade fold kit was attached per the following:
 - 1 A-model refer to TM 1-1520-238-23 (para 5.1).
 - 2 D-model refer to TM 1-1520-Longbow/Apache IETM.
- (5) Inspect aircraft aft fuselage exterior surface areas for serviceability.
 - (a) Inspect aircraft aft fuselage exterior surface areas where blade fold kit was attached per the following:
 - 1 A-model refer to TM 1-1520-238-23 (para 5.1).
 - 2 D-model refer to TM 1-1520-Longbow/Apache IETM.

APPENDIX B

STORAGE OF MAIN ROTOR BLADE FOLD KIT

Appendix B contains information and procedures for main rotor blade fold kit component storage.

c. Store main rotor blade fold kit components.

(1) Clean main rotor blade fold kit components with clean dry rag.

(a) Wipe components with a cloth damp with fresh water.

(b) Dry with clean dry cloth.

(2) Place main rotor blade fold kit components in containers. See SPECIAL PACKAGING INSTRUCTION for components handling and placement.

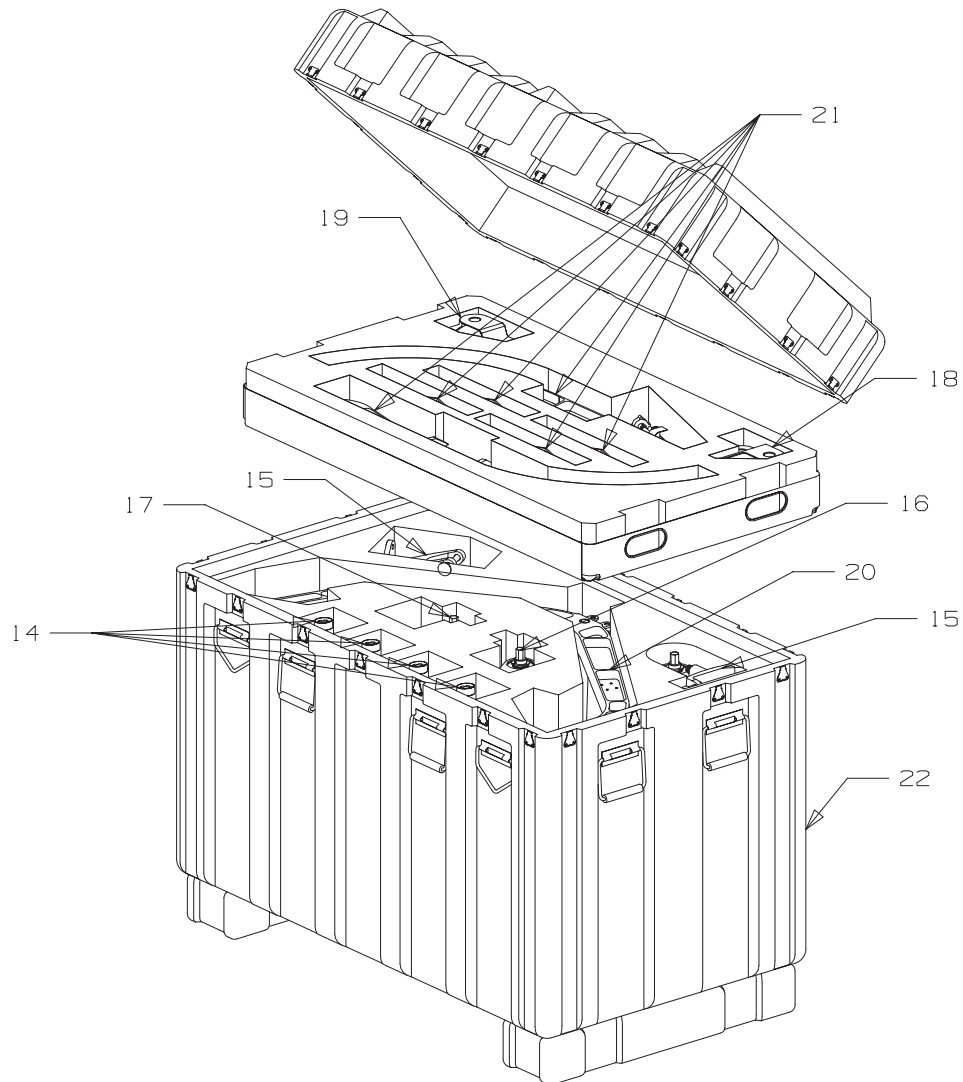
SPECIAL PACKAGING INSTRUCTION					Form Approved OMB No. 0704-0188													
The public reporting burden for this collection of information is estimated to average 30 days per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing the burden, to Department of Defense, Washington Headquarters Services, Directorate for Information Operations and Reports (0704-0188), 1215 Jefferson Davis Highway, Suite 1204, Arlington, VA 22202-4302. Respondents should be aware that notwithstanding any other provision of law, no person shall be subject to any penalty for failing to comply with a collection of information if it does not display a currently valid OMB control number. PLEASE DO NOT RETURN YOUR FORM TO THIS ADDRESS.																		
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4. NATIONAL STOCK NO.			5. DATE 01/06/03		6. REVISION -													
7. QUP 001	8. ICQ 000	9. UNIT PACK WT. SEE TABLE 1	10. UNIT PACK CU SEE TABLE 1		11. UNIT PACK SIZE SEE TABLE 1													
12. MILITARY PRESERVATION MIL-STD-2073-1D, METHOD 44			18. STEPS	19. REQD	20. DESCRIPTION													
13. CLEANING SEE NOTE 1					SEE PACKING KIT CONTENTS LIST													
14. DRYING SEE NOTE 1					(SHEET 2) FOR DETAILED PACKAGING													
15. PACKING					INSTRUCTIONS													
a. LEVEL A SEE NOTE 2																		
b. LEVEL B SEE NOTE 2																		
16. MARKING MIL-STD-129																		
17. NOTES / DRAWING																		
<p>A. ITEMS SHALL BE CLEANED AND DRIED BY ANY SUITABLE PROCESS OR PROCESSES WHICH ARE NOT INJURIOUS TO THE ITEMS.</p> <p>B. BLADEFOLD CONTAINERS MEETS LEVEL A AND B PACKING REQUIREMENTS, NO FURTHER PACKING REQUIRED.</p> <p>C. PLACE A COPY OF THIS SPECIAL PACKING INSTRUCTION FORM INSIDE THE 7-562110058-601 CONTAINER BEFORE FINAL CLOSURE.</p> <p>TABLE 1</p> <table border="1" style="width: 100%; border-collapse: collapse; text-align: center;"> <thead> <tr> <th style="width: 25%;">CONTAINER</th> <th style="width: 25%;">WEIGHT</th> <th style="width: 30%;">SIZE</th> <th style="width: 20%;">(CU.FT.)</th> </tr> </thead> <tbody> <tr> <td>1 OF 2 (SADDLE)</td> <td>381.3 LBS</td> <td>57.3 X 33.3 X 46.4</td> <td>51.236</td> </tr> <tr> <td>2 OF 2 (POLES)</td> <td>450.3 LBS</td> <td>110.0 X 36.0 X 36.0</td> <td>82.5</td> </tr> </tbody> </table> <p><u>ITEM CHARACTERISTICS</u></p> <p>NOMENCLATURE: BLADEFOLD KIT AD-64D</p> <p>DIMENSIONS: 110.0" X 69.3" X 46.4"</p> <p>WEIGHT: 831.6 LBS</p> <p>FRAGILITY: 110 G'S</p>							CONTAINER	WEIGHT	SIZE	(CU.FT.)	1 OF 2 (SADDLE)	381.3 LBS	57.3 X 33.3 X 46.4	51.236	2 OF 2 (POLES)	450.3 LBS	110.0 X 36.0 X 36.0	82.5
CONTAINER	WEIGHT	SIZE	(CU.FT.)															
1 OF 2 (SADDLE)	381.3 LBS	57.3 X 33.3 X 46.4	51.236															
2 OF 2 (POLES)	450.3 LBS	110.0 X 36.0 X 36.0	82.5															

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PACKAGING KIT CONTENTS LIST					
NATIONAL STOCK NO.		APPLICATION BLADEFOLD KIT, AH-64D			
		MCDONNELL DOUGLAS HELICOPTER SYSTEMS			
		DATE 01/06/03			
NO. OF SEGREGATED PACKAGES 22		TOTAL ITEMS IN KIT 37			
		ASSIGNED SPI NUMBER			
		PAGE 1 OF 1			
ITEM NO.	PART NUMBER	NOMENCLATURE	QTY	METHOD OF PRESERVATION FOR EACH SEGREGATED PACKAGE	NOTE
1	7-562110045-601	FOLD PIN, QUICK RELEASE	10	10-010-Q-00-00-00-0-ZZ	A
2	7-562110045-605	FOLD PIN, QUICK RELEASE	4	10-004-Q-00-00-00-0-ZZ	A
3	7-562110047-601	SWING LINK, LH	1	10-001-Q-00-00-00-0-ZZ	A, F
4	7-562110047-603	SWING LINK, RH	1	10-001-Q-00-00-00-0-ZZ	A, F
5	7-562110053-601	BLADE HANDLING POLE ASSEMBLY	1	10-001-Q-00-00-00-0-ZZ	A, B
6	7-562110054-601	BLADE SECURING POLE ASSY, RH FWD	1	10-001-Q-00-00-00-0-ZZ	A, B
7	7-562110055-601	BLADE SECURING POLE ASSY, RH REAR	1	10-001-Q-00-00-00-0-ZZ	A, B
8	7-562110056-601	BLADE SECURING POLE ASSY, LH REAR	1	10-001-Q-00-00-00-0-ZZ	A, B
9	7-562110057-601	BLADE SECURING POLE ASSY, LH FWD	1	10-001-Q-00-00-00-0-ZZ	A, B
10	7-562110068-601	ALIGNMENT BAR, BLADE FOLD	1	10-001-Q-00-00-00-0-ZZ	A
11	7-562110021-1	EXTENSION POLE ASSEMBLY	1	10-001-Q-00-00-00-0-ZZ	A
12	7-562110021-3	EXTENSION POLE ASSEMBLY	1	10-001-Q-00-00-00-0-ZZ	A
13	7-562110059-601	CONTAINER, SHIPPING AND STORAGE	1	10-001-Q-00-00-00-0-ZZ	A
14	7-562110014-601	FLAP LOCK ASSEMBLY	4	10-004-Q-00-00-00-0-ZZ	C
15	7-562110015-601	BLADE POSITIONER ASSY (2 PIECES)	1	10-001-Q-00-00-00-0-ZZ	C, D
16	7-562110049-601	AUX BLADE POSITIONER ASSY, LH	1	10-001-Q-00-00-00-0-ZZ	C
17	7-562110049-602	AUX BLADE POSITIONER ASSY, RH	1	10-001-Q-00-00-00-0-ZZ	C
18	7-562110050-601	BLADE BLOCK ASSEMBLY - LH AFT	1	10-001-Q-00-00-00-0-ZZ	C
19	7-562110050-603	BLADE BLOCK ASSEMBLY - RH AFT	1	10-001-Q-00-00-00-0-ZZ	C
20	7-562110051-601	UPPER SADDLE ASSEMBLY	1	10-001-Q-00-00-00-0-ZZ	C
21	7-562110052-601	LOWER SADDLE ASSEMBLY (6 PIECES)	1	10-001-Q-00-00-00-0-ZZ	C, E
22	7-562110058-601	CONTAINER, SHIPPING AND STORAGE	1	10-001-Q-00-00-00-0-ZZ	C
<p>ZZ = CONTAINERS PER NOTES A AND C</p>					
<p>NOTES:</p> <p>A. PLACE ITEMS IN CONTAINER (P/N 7-562110059-601) AS ILLUSTRATED ON SHEET 4 AND 5. SECURE WITH VELCRO STRAPS WHERE REQUIRED.</p> <p>B. REMOVE HANDLES FROM POLES AND PLACE IN APPROPRIATE HOLES IN END OF CONTAINER.</p> <p>C. PLACE ITEMS IN APPROPRIATE VOIDS IN CONTAINER (P/N 7-562110058-601) AS ILLUSTRATED ON SHEET 3.</p> <p>D. BLADE POSITIONER ASSEMBLY CONSISTS OF TWO PIECES, THE CLAMP ASSEMBLY AND JACKSCREW ASSEMBLY. PLACE IN BOTTOM PORTION OF CONTAINER.</p> <p>E. THE LOWER SADDLE CONSISTS OF SIX PIECES, 4 - PIVOT ASSEMBLIES AND 2- FRAME ASSEMBLIES. PLACE IN THE UPPER TRAY OF THE CONTAINER.</p> <p>F. STOW 7-562110047-005 REMOVABLE RETAINER PINS AS SHOWN.</p>					

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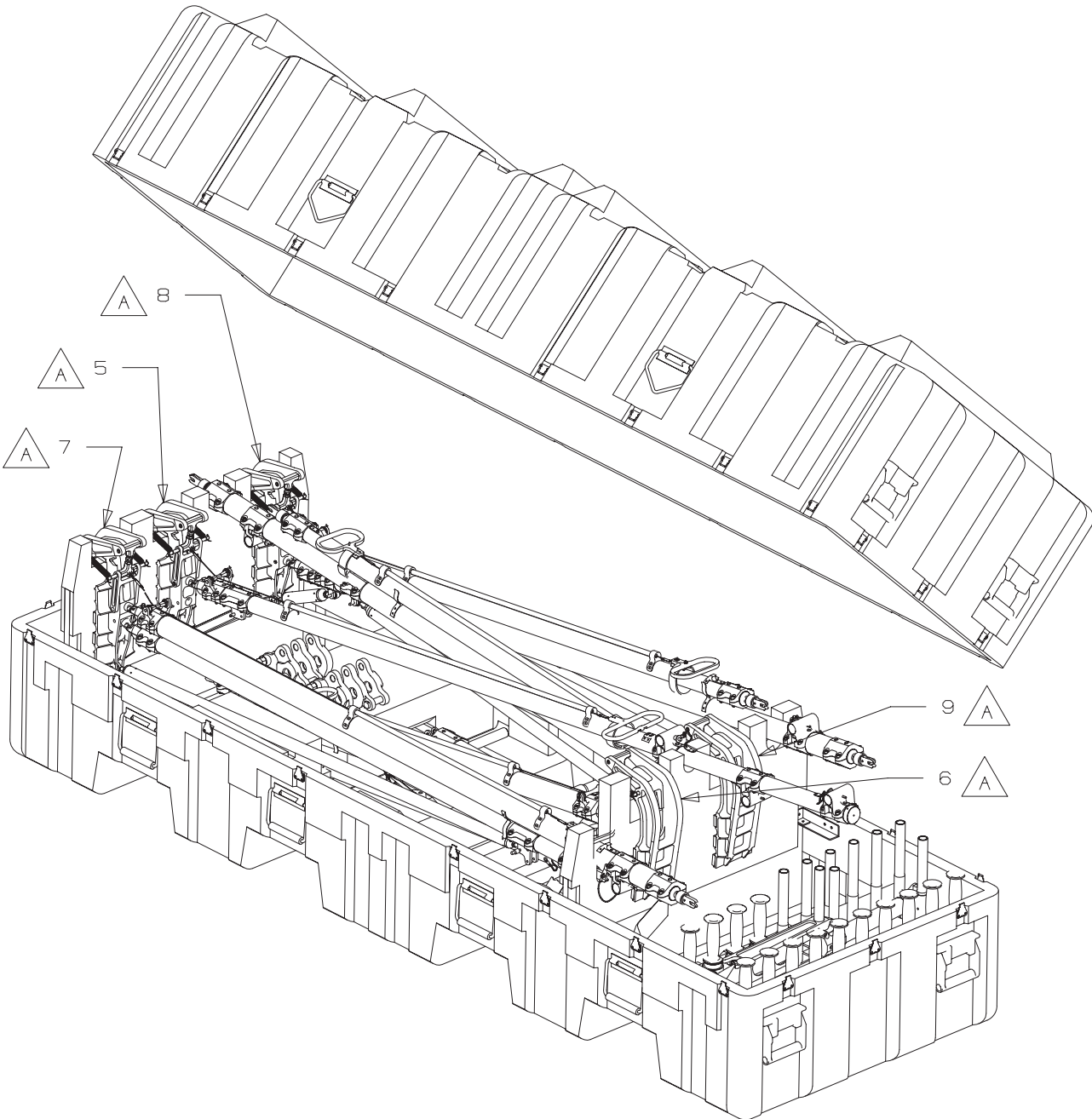
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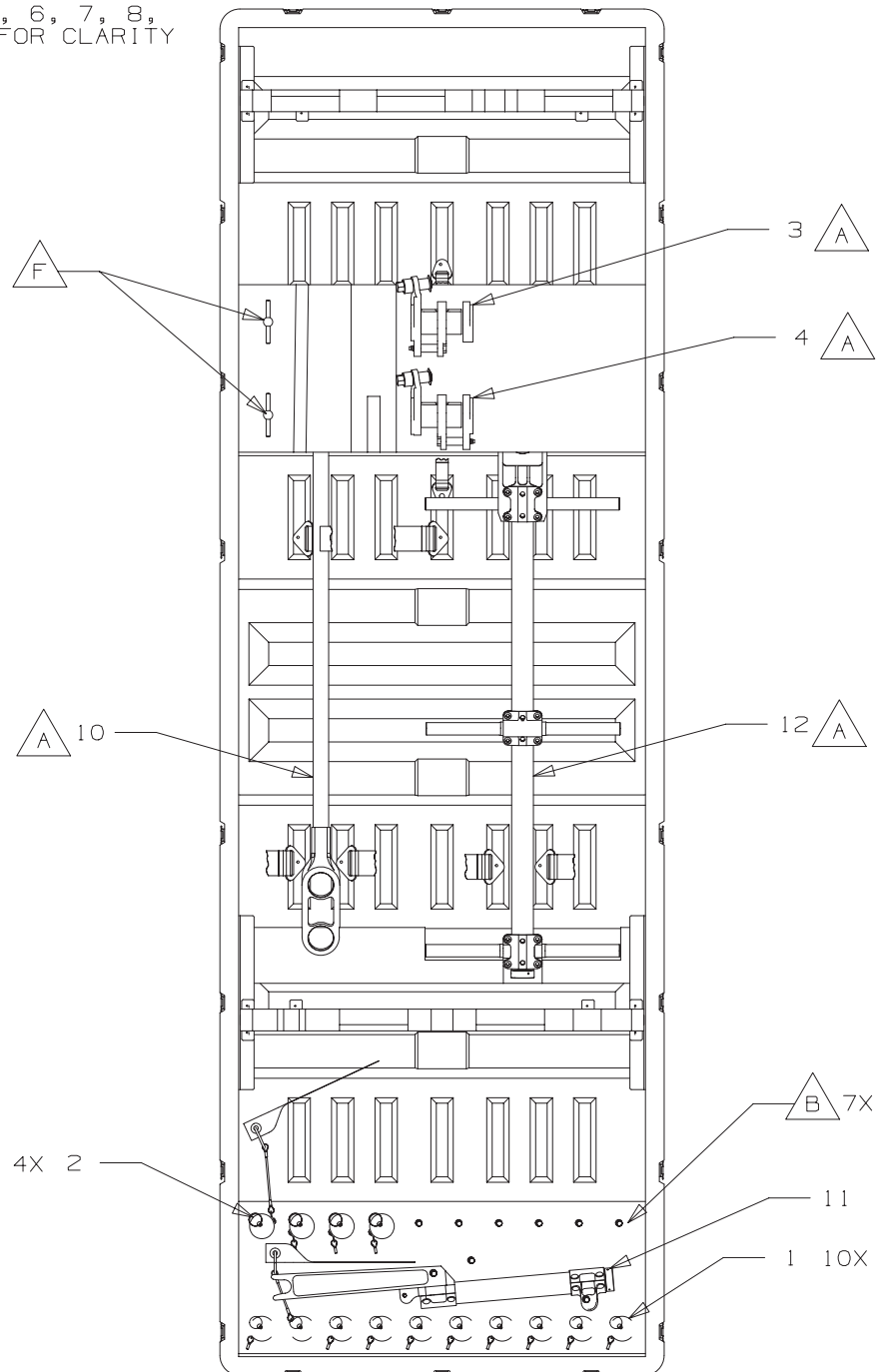


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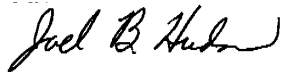
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AND 9 REMOVED FOR CLARITY



By Order of the Secretary of the Army:

Official:

A handwritten signature in black ink, appearing to read "Joel B. Hudson".

JOEL B. HUDSON

Administrative Assistant to the
Secretary of the Army

0307717

ERIC K. SHINSEKI
General, United States Army
Chief of Staff

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The following format must be used if submitting an electronic 2028. The subject line must be exactly the same and all fields must be included; however only the following fields are mandatory: 1, 3, 4, 5, 6, 7, 8, 9, 10, 13, 15, 16, 17, and 27.

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To: ls-lp@redstone.army.mil

Subject: DA Form 2028

1. **From:** Joe Smith
2. Unit: Home
3. **Address:** 4300 Park
4. **City:** Hometown
5. **St:** MO
6. **Zip:** 77777
7. **Date Sent:** 19-Oct-93
8. **Pub no:** 55-2840-229-23
9. **Pub Title:** TM
10. **Publication Date:** 04-Jul-85
11. Change Number: 7
12. Submitter Rank: MSG
13. **Submitter Fname:** Joe
14. Submitter Mname: T
15. **Submitter Lname:** Smith
16. **Submitter Phone:** (123) 123-1234
17. **Problem:** 1
18. Page: 2
19. Paragraph: 3
20. Line: 4
21. NSN: 5
22. Reference: 6
23. Figure: 7
24. Table: 8
25. Item: 9
26. Total: 123
27. **Text:**

This is the text for the problem below line 27.

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TO: (<i>Forward to proponent of the publication or form</i>) (<i>Include ZIP Code</i>) Commander, U.S. Army Aviation and Missile Command Attn: AMSAM-MMC-MA-NP Redstone Arsenal, AL 35898						FROM: (<i>Activity and location</i>) (<i>Include ZIP Code</i>) SP4 John Doe F Troop 5 th Ca. 1 st Taining Bldg. Fort Knox, Kentucky 12345-6789	
PART I - ALL PUBLICATIONS (EXCEPT RPSTL AND SC/SM) AND BLANK FORMS							
PUBLICATION/FORM NUMBER TM 9-1005-43-24						DATE 16 Sep 2002	TITLE Organizational, Direct Support And General Support Maintenance Manual for Machine Gun, .50 Caliber M3P and M3P Machine Gun Electrical Test Set Used on Avenger Air Defense Weapon System
ITEM	PAGE	PARA-GRAPH	LINE	FIGURE NO.	TABLE	RECOMMENDED CHANGES AND REASON	
1	WP0005 PG 3		1			Test or Corrective Action column should identify a different WP number.	
<div style="transform: rotate(-45deg); font-size: 100px; opacity: 0.5;">EXAMPLE</div>							
<i>*Reference to line numbers within the paragraph or subparagraph.</i>							
TYPED NAME, GRADE OR TITLE				TELEPHONE EXCHANGE/AUTOVON, PLUS EXTENTION		SIGNATURE	

TO: <i>(Forward direct to addressee listed in publication)</i> Commander, U.S. Army Aviation and Missile Command ATTN: AMSAM-MMC-MA-NP Redstone Arsenal, 35898				FROM: <i>(Activity and location) (Include ZIP Code)</i> MSG, Jane Q. Doe 1234 Any Street Nowhere Town, AL 34565				DATE 8/30/02											
PART II - REPAIR PARTS AND SPECIAL TOOL LISTS AND SUPPLY CATALOGS/SUPPLY MANUALS																			
PUBLICATION NUMBER				DATE		TITLE													
PAGE NO.	COLM NO.	LINE NO.	NATIONAL STOCK NUMBER	REFERENCE NO.	FIGURE NO.	ITEM NO.	TOTAL NO. OF MAJOR ITEMS SUPPORTED	RECOMMENDED ACTION											
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PART III - REMARKS <i>(Any general remarks or recommendations, or suggestions for improvement of publications and blank forms. Additional blank sheets may be used if more space is needed.)</i>																			
<div style="position: relative; height: 150px;"> <div style="position: absolute; top: 50%; left: 50%; transform: translate(-50%, -50%) rotate(-45deg); font-size: 100px; opacity: 0.5; pointer-events: none;"> EXAMPLE </div> </div>																			
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TO: (<i>Forward to proponent of the publication or form</i>) (<i>Include ZIP Code</i>) Commander, U.S. Army Aviation and Missile Command, ATTN: AMSAM-MMC-MA-NP, Redstone Arsenal, AL 35898-5000.						FROM: (<i>Activity and location</i>) (<i>Include ZIP Code</i>)	
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PUBLICATION/FORM NUMBER TB 1-1520-238-20-131						DATE 21 MAR 03	TITLE Main Rotor Blade Fold Kit for AH-64A Apache Helicopter and AH-64D Longbow Apache Helicopter
ITEM	PAGE	PARA-GRAPH	LINE	FIGURE NO.	TABLE	RECOMMENDED CHANGES AND REASON	
<i>*Reference to line numbers within the paragraph or subparagraph.</i>							
TYPED NAME, GRADE OR TITLE				TELEPHONE EXCHANGE/AUTOVON, PLUS EXTENTION		SIGNATURE	

TO: <i>(Forward direct to addressee listed in publication)</i> Commander, U.S. Army Aviation and Missile Command, ATTN: AMSAM-MMC-MA-NP, Redstone Arsenal, AL 35898-5000.				FROM: <i>(Activity and location) (Include ZIP Code)</i>			DATE	
PART II - REPAIR PARTS AND SPECIAL TOOL LISTS AND SUPPLY CATALOGS/SUPPLY MANUALS								
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PAGE NO.	COLM NO.	LINE NO.	NATIONAL STOCK NUMBER	REFERENCE NO.	FIGURE NO.	ITEM NO.	TOTAL NO. OF MAJOR ITEMS SUPPORTED	RECOMMENDED ACTION
PART III - REMARKS <i>(Any general remarks or recommendations, or suggestions for improvement of publications and blank forms. Additional blank sheets may be used if more space is needed.)</i>								
TYPED NAME, GRADE OR TITLE				TELEPHONE EXCHANGE/AUTOVON, PLUS EXTENTION			SIGNATURE	

The Metric System and Equivalents

Linear Measure

1 centimeter = 10 millimeters = .39 inch
 1 decimeter = 10 centimeters = 3.94 inches
 1 meter = 10 decimeters = 39.37 inches
 1 dekameter = 10 meters = 32.8 feet
 1 hectometer = 10 dekameters = 328.08 feet
 1 kilometer = 10 hectometers = 3,280.8 feet

Weights

1 centigram = 10 milligrams = .15 grain
 1 decigram = 10 centigrams = 1.54 grains
 1 gram = 10 decigrams = .035 ounce
 1 decagram = 10 grams = .35 ounce
 1 hectogram = 10 decagrams = 3.52 ounces
 1 kilogram = 10 hectograms = 2.2 pounds
 1 quintal = 100 kilograms = 220.46 pounds
 1 metric ton = 10 quintals = 1.1 short tons

Liquid Measure

1 centiliter = 10 milliliters = .34 fl. ounce
 1 deciliter = 10 centiliters = 3.38 fl. ounces
 1 liter = 10 deciliters = 33.81 fl. ounces
 1 dekaliter = 10 liters = 2.64 gallons
 1 hectoliter = 10 dekaliters = 26.42 gallons
 1 kiloliter = 10 hectoliters = 264.18 gallons

Square Measure

1 sq. centimeter = 100 sq. millimeters = .155 sq. inch
 1 sq. decimeter = 100 sq. centimeters = 15.5 sq. inches
 1 sq. meter (centare) = 100 sq. decimeters = 10.76 sq. feet
 1 sq. dekameter (are) = 100 sq. meters = 1,076.4 sq. feet
 1 sq. hectometer (hectare) = 100 sq. dekameters = 2.47 acres
 1 sq. kilometer = 100 sq. hectometers = .386 sq. mile

Cubic Measure

1 cu. centimeter = 1000 cu. millimeters = .06 cu. inch
 1 cu. decimeter = 1000 cu. centimeters = 61.02 cu. inches
 1 cu. meter = 1000 cu. decimeters = 35.31 cu. feet

Approximate Conversion Factors

<i>To change</i>	<i>To</i>	<i>Multiply by</i>	<i>To change</i>	<i>To</i>	<i>Multiply by</i>
inches	centimeters	2.540	ounce-inches	Newton-meters	.007062
feet	meters	.305	centimeters	inches	.394
yards	meters	.914	meters	feet	3.280
miles	kilometers	1.609	meters	yards	1.094
square inches	square centimeters	6.451	kilometers	miles	.621
square feet	square meters	.093	square centimeters	square inches	.155
square yards	square meters	.836	square meters	square feet	10.764
square miles	square kilometers	2.590	square meters	square yards	1.196
acres	square hectometers	.405	square kilometers	square miles	.386
cubic feet	cubic meters	.028	square hectometers	acres	2.471
cubic yards	cubic meters	.765	cubic meters	cubic feet	35.315
fluid ounces	milliliters	29.573	cubic meters	cubic yards	1.308
pints	liters	.473	milliliters	fluid ounces	.034
quarts	liters	.946	liters	pints	2.113
gallons	liters	3.785	liters	quarts	1.057
ounces	grams	28.349	liters	gallons	.264
pounds	kilograms	.454	grams	ounces	.035
short tons	metric tons	.907	kilograms	pounds	2.205
pound-feet	Newton-meters	1.356	metric tons	short tons	1.102
pound-inches	Newton-meters	.11296			

Temperature (Exact)

F	Fahrenheit temperature	5/9 (after subtracting 32)	Celsius temperature	C
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