

TECHNICAL MANUAL
AVIATION UNIT AND INTERMEDIATE
MAINTENANCE MANUAL
VOLUME 8 OF 9
ARMY MODEL
AH-64A HELICOPTER
(NSN 1520-01-106-9519)
(EIC: RHA)

- CHAPTER 12 - UTILITY SYSTEMS**
- CHAPTER 13 - ENVIRONMENTAL CONTROL SYSTEM**
- CHAPTER 14 - HOISTS AND WINCHES (not applicable)**
- CHAPTER 15 - AUXILIARY POWER PLANTS**
- CHAPTER 16 - MISSION EQUIPMENT**
- CHAPTER 17 - EMERGENCY EQUIPMENT**
(not applicable)

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* This manual together with TM 1-1520-238-23-1, 16 May 1994, TM 1-1520-238-23-2, 16 May 1994, TM 1-1520-238-23-3, 16 May 1994, TM 1-1520-238-23-4, 16 May 1994, TM 1-1520-238-23-5, 16 May 1994, TM 1-1520-238-23-6, 16 May 1994, TM 1-1520-238-23-7-1, 16 May 1994, TM 1-1520-238-23-7-2, 16 May 1994, TM 1-1520-238-23-9, 16 May 1994, supersedes TM 55-1520-238-23-1, 7 June 1988, TM 55-1520-238-23-2, 7 June 1988, TM 55-1520-238-23-3, 7 June 1988, TM 55-1520-238-23-4, 7 June 1988, TM 55-1520-238-23-5, 7 June 1988, TM 55-1520-238-23-6, 7 June 1988, TM 55-1520-238-23-7, 7 June 1988, TM 55-1520-238-23-8, 7 June 1988, TM 55-1520-238-23-9, 7 June 1988, TM 55-1520-238-23-10, 7 June 1988, including all changes.

WINDSHIELD WIPER SYSTEM MAINTENANCE
FIRE DETECTION SYSTEM MAINTENANCE
FIRE EXTINGUISHING SYSTEM MAINTENANCE
ANTI-ICE/DE-ICE SYSTEM MAINTENANCE
CANOPY JETTISON SYSTEM MAINTENANCE
ENVIRONMENTAL CONTROL SYSTEM MAINTENANCE
DEFOG SYSTEM MAINTENANCE
AUXILIARY POWER SYSTEM MAINTENANCE
AUXILIARY POWER UNIT MOUNTING AND DRAIN SYSTEM
AUXILIARY POWER UNIT EXHAUST SYSTEM
EXTERNAL STORES/PYLONS MAINTENANCE
COUNTERMEASURE SYSTEM MAINTENANCE
WINTERIZATION/BATTERY COLD START SYSTEM MAINTENANCE
DESERT OPERATION PROVISIONS MAINTENANCE

CHAPTER 12 UTILITY SYSTEM

CHAPTER OVERVIEW

Chapter 12 contains the maintenance instructions for the utility systems. Utility systems description, operation, and troubleshooting information is contained in TM 1-1520-238-T.

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SECTION I. WINDSHIELD WIPER SYSTEM MAINTENANCE

12.1. WINDSHIELD WIPER SYSTEM INSPECTION

12.1.1. Description

This task covers: Inspection.

12.1.2. Initial Setup

Tools:

Aircraft mechanic's tool kit (item 376, App H)

Equipment Conditions:

<u>Ref</u>	<u>Condition</u>
1.57	Helicopter safed

Personnel Required:

67R	Attack Helicopter Repairer
67R3F	Attack Helicopter Repairer/Technical Inspector

12.1.3. Inspection

- a. **Check windshield wiper blades for damaged rubber and worn attachment points.** None allowed.
- b. **Check windshield wiper arms for damage, worn attaching points, and loose or missing hardware.** None allowed.
- c. **Check windshield wiper links for damage, worn attaching points, and loose or missing hardware.** None allowed.
- d. **Check windshield wiper converters for damaged splines, nicks, dents, cracks, scratches, and stripped or damaged threads.** None allowed.
- e. **Check windshield wiper flex shafts for cuts, nicks, kinks, and stripped or damaged threads.** None allowed.
- f. **Check windshield wiper motors for nicks, dents, cracks, loose or missing hardware, and damaged connector.** None allowed.
- g. **Check general mounting hardware for cracks, gouges, nicks, scratches, chafing, damage, rounded flats, and stripped or damaged threads.** Replace damaged hardware.
- h. **Check windshield wiper system components for corrosion** (para 1.49).

END OF TASK

12.2. PILOT WINDSHIELD WIPER BLADE REPLACEMENT

12.2.1. Description

This task covers: Removal. Cleaning. Inspection. Installation.

12.2.2. Initial Setup

Tools:

Aircraft mechanic's tool kit (item 376, App H)
0.0 - 50.0-pound weighing scale (item 273, App H)

References:

TM 1-1520-238-T

Personnel Required:

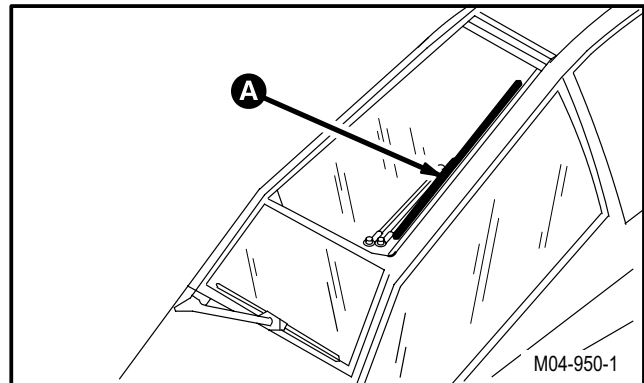
67R Attack Helicopter Repairer
67R3F Attack Helicopter Repairer/Technical Inspector

Equipment Conditions:

Ref	Condition
1.57	Helicopter safed

12.2.3. Removal

- Enter pilot station (para 1.56). Observe all safety precautions.
- On pilot aft circuit breaker panel, open ECS WSHLD WPR circuit breaker.

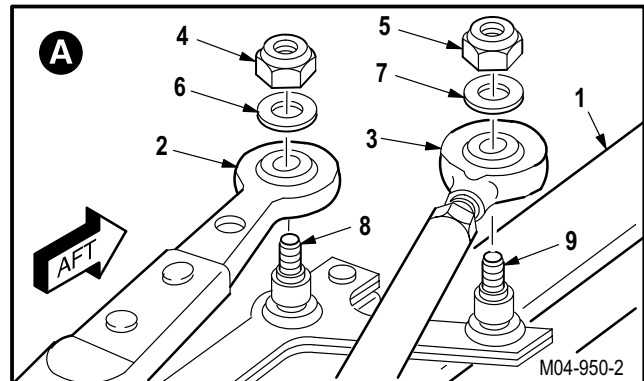


- Remove wiper blade (1) from wiper arm (2) and wiper link (3).

(1) Remove nuts (4) and (5) and washers (6) and (7) from studs (8) and (9).

(2) Lift arm (2) and link (3) from studs (8) and (9).

(3) Remove and discard blade (1).



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12.2. PILOT WINDSHIELD WIPER BLADE REPLACEMENT - continued

12.2.4. Cleaning

- a. **Wipe attaching parts with a clean rag.**

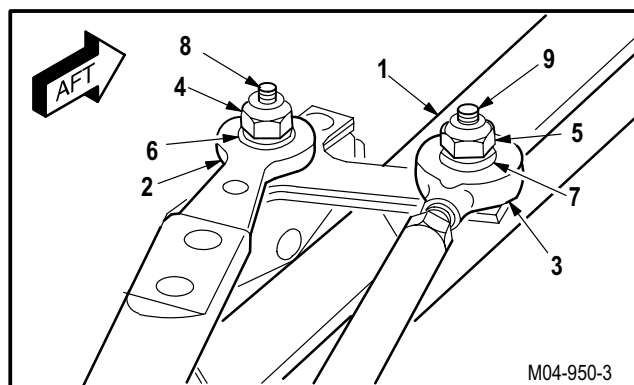
12.2.5. Inspection

- a. **Check nuts for stripped or damaged threads** (para 12.1).
- b. **Check attaching parts for corrosion** (para 1.49).

12.2.6. Installation

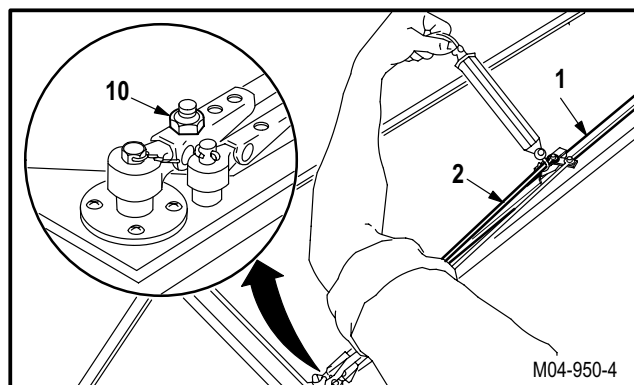
- a. **Install new blade (1) on arm (2) and link (3).**

- (1) Install arm (2) on stud (8).
- (2) Install link (3) on stud (9).
- (3) Install washer (6) and nut (4) on stud (8).
- (4) Install washer (7) and nut (5) on stud (9).



- b. **Adjust blade tension to 10 POUNDS.**

- (1) Check tension of blade (1) at end of arm (2). Use scale.
- (2) Adjust tension to **10 POUNDS**.
- (3) Tighten nut (10) to increase tension. Loosen nut (10) to decrease tension.



- c. **Inspect (QA).**

- d. **Perform windshield wipers maintenance operational check** (TM 1-1520-238-T).

END OF TASK

12.3. PILOT WINDSHIELD WIPER ARM REPLACEMENT

12.3.1. Description

This task covers: Removal. Cleaning. Inspection. Installation.

12.3.2. Initial Setup

Tools:

Aircraft mechanic's tool kit (item 376, App H)
 0.0 - 50.0-pound weighing scale (item 273, App H)

References:

TM 1-1520-238-T

Materials/Parts:

Wire (item 229, App F)

Personnel Required:

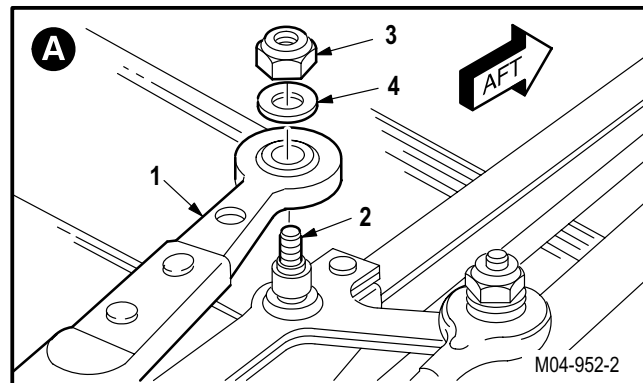
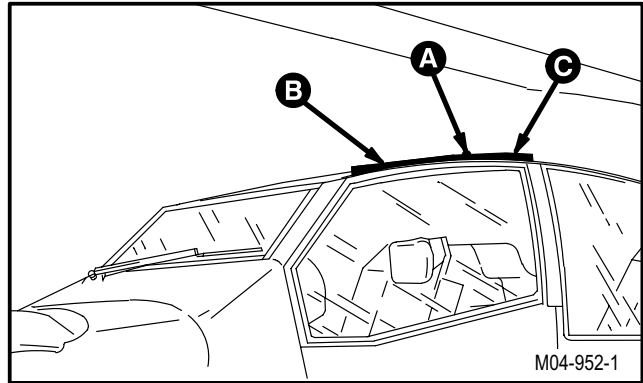
67R Attack Helicopter Repairer
 67R3F Attack Helicopter Repairer/Technical Inspector

Equipment Conditions:

Ref	Condition
1.57	Helicopter safed
1.70	External electrical power applied

12.3.3. Removal

- Enter pilot station (para 1.56). Observe all safety precautions.
- On pilot aft circuit breaker panel, close ECS WSHLD WPR circuit breaker.
- On pilot ANTI-ICE control panel, set WSHLD WIPER switch to PARK, hold, and release.
- Remove external electrical power (para 1.70).
- On pilot aft circuit breaker panel, open ECS WSHLD WPR circuit breaker.
- Remove wiper arm (1) from wiper blade stud (2).
 - (1) Remove nut (3) and washer (4).
 - (2) Remove arm (1) from stud (2).



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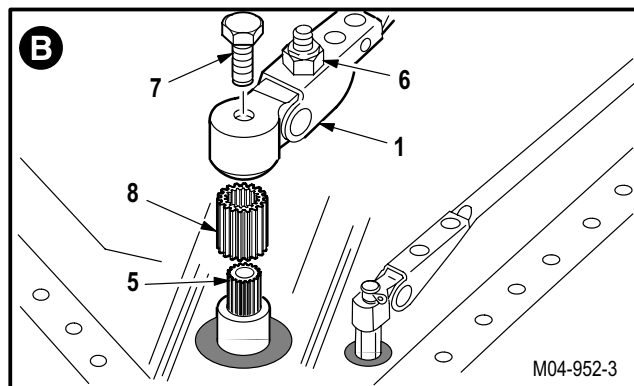
12.3. PILOT WINDSHIELD WIPER ARM REPLACEMENT - continued

NOTE

Spacer can fall out when wiper arm is removed.

g. **Remove arm (1) from wiper converter shaft (5).**

- (1) Loosen nut (6) to release tension on arm (1).
- (2) Remove lockwire from bolt (7).
- (3) Remove bolt (7).
- (4) Remove and discard arm (1) and spacer (8) from shaft (5).



12.3.4. Cleaning

- a. **Wipe removed and attaching parts with a clean rag.**

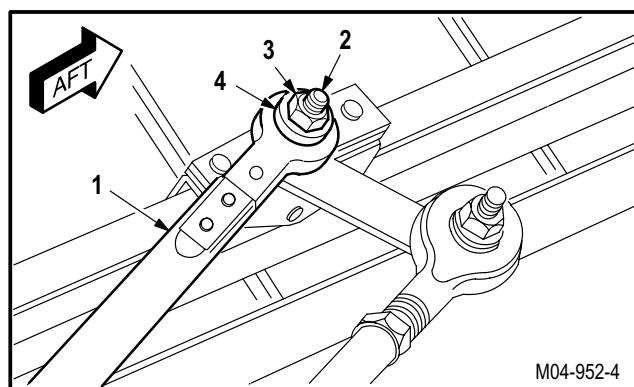
12.3.5. Inspection

- a. **Check stud, nut, shaft, and bolt for stripped or damaged threads (para 12.1).**
- b. **Check removed and attaching parts for corrosion (para 1.49).**

12.3.6. Installation

- a. **Install new arm (1) on stud (2).**

- (1) Position arm (1) on stud (2).
- (2) Install washer (4) and nut (3).



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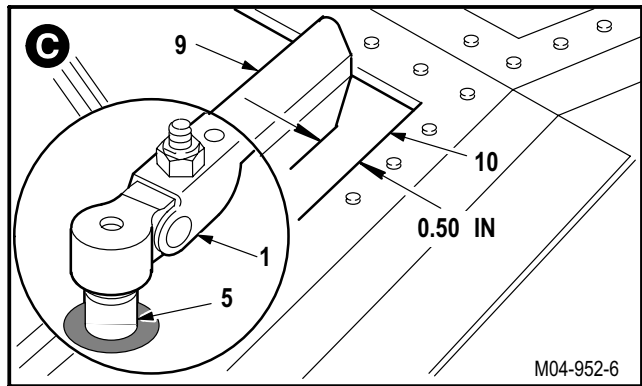
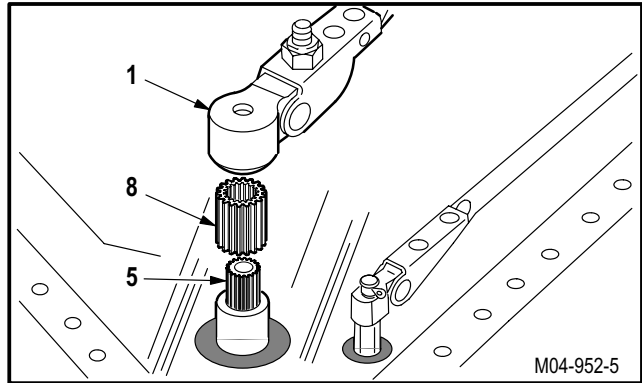
12.3. PILOT WINDSHIELD WIPER ARM REPLACEMENT - continued

NOTE

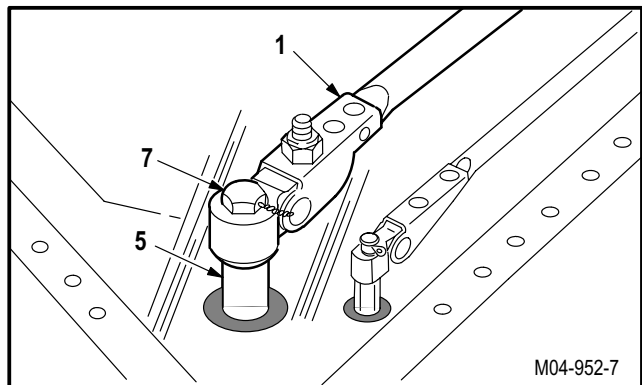
To ensure proper installation of wiper, spacer must be installed between wiper arm and converter. Spacer can fall out when wiper arm is removed.

b. Install arm (1) on shaft (5).

- (1) Install new spacer (8) and arm (1) on shaft (5).
- (2) Adjust arm (1) on shaft (5) until end of blade (9) is **0.50 INCH** from left edge of canopy frame (10).

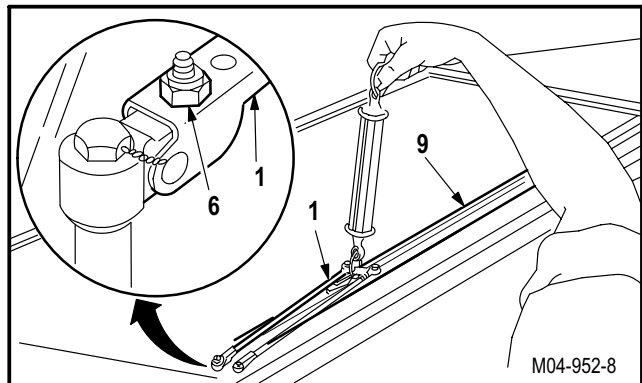


- (3) Install bolt (7) through arm (1) on shaft (5).
- (4) Lockwire bolt (7) to arm (1). Use wire (item 229, App F).



c. Adjust blade tension to 10 POUNDS.

- (1) Check tension of blade (9) at end of arm (1). Use scale.
- (2) Adjust tension to **10 POUNDS**.
- (3) Tighten nut (6) to increase tension. Loosen nut (6) to decrease tension.



d. Inspect (QA).

e. Perform windshield wipers maintenance operational check (TM 1-1520-238-T).

END OF TASK

12.4. PILOT WINDSHIELD WIPER LINK REPLACEMENT

12.4.1. Description

This task covers: Removal. Cleaning. Inspection. Installation.

12.4.2. Initial Setup

Tools:

Aircraft mechanic's tool kit (item 376, App H)

References:

TM 1-1520-238-T

Materials/Parts:

Cotter pin

Personnel Required:

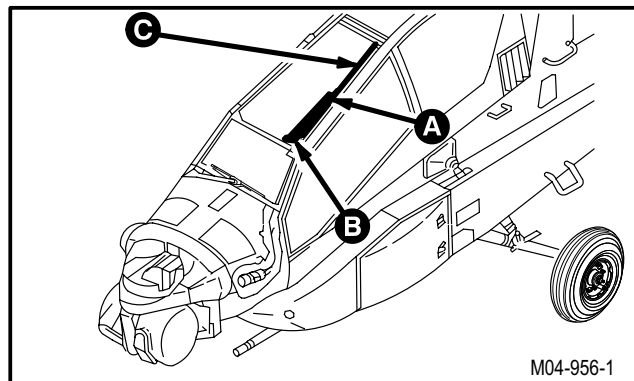
67R Attack Helicopter Repairer
67R3F Attack Helicopter Repairer/Technical Inspector

Equipment Conditions:

Ref	Condition
1.57	Helicopter safed

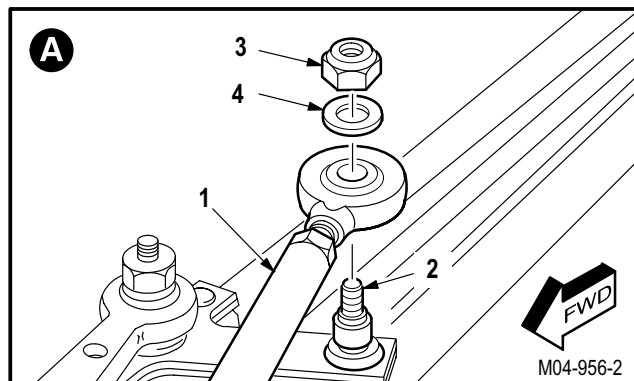
12.4.3. Removal

- a. Enter pilot station (para 1.56). Observe all safety precautions.
- b. On pilot aft circuit breaker panel, open ECS WSHLD WPR circuit breaker.



- c. Remove wiper link (1) from wiper blade stud (2).

- (1) Remove nut (3) and washer (4).
- (2) Remove link (1) from stud (2).



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