

URGENT

TB 1-2835-216-20-1

DEPARTMENT OF THE ARMY TECHNICAL BULLETIN

ALL AH-64A & AH-64D AIRCRAFT, RECURRING OIL SAMPLING AND INSPECTION OF THE AUXILIARY POWER UNIT (APU) POWER TAKE- OFF CLUTCH, P/N 3886200-1

Headquarters, Department of the Army, Washington, D. C.
1 June 1999

DISTRIBUTION STATEMENT A: Approved for public release; distribution is unlimited.

NOTE

THIS PUBLICATION IS EFFECTIVE UNTIL RESCINDED OR SUPERSEDED.

1. Priority Classification. Urgent

a. Aircraft in Use. Upon receipt of this Technical Bulletin (TB) the condition status symbol of the cited aircraft will be changed to a **red horizontal dash //-//**. The **red horizontal dash //-//** may be cleared when the inspection of paragraph 8 below is completed. The affected aircraft shall be inspected as soon as practical but no later than the task/inspection suspense date. Failure to comply with the requirements of this TB within the time frame will cause the status symbol to be upgraded to a **red //X//**.

b. Aircraft in Depot Maintenance. Aircraft will not be issued until compliance with this TB has been completed.

c. Aircraft Undergoing Maintenance. Aircraft will not be issued until compliance with this TB has been completed.

d. Aircraft in Transit.

(1) Surface/Air Shipment. Same as paragraph 1.a.

(2) Ferry Status.

(a) Same as paragraph 1.a.

(b) Those aircraft that have a DD 250 and are at Boeing will be inspected prior to ferry to final destination.

e. Maintenance Trainers (Category A and B). Same as paragraph 1.a.

f. Component/Parts in Stock at All Levels (Depot and Others) Including War Reserves. N/A.

(1) Wholesale Stock. N/A

- (2) Retail Stock. N/A.
- g. Components/Parts in Work (Depot Level and Others). N/A.
- 2. Task/Inspection Suspense Date.** Prior to next flight.
- 3. Reporting Compliance Suspense Date.** No later than 2 June 1999 in accordance with paragraph 14.a. of this TB.
- 4. Summary of the Problem.**
 - a. An investigation of a fire in the APU area has revealed the need for additional installation, inspection and servicing procedures for the PTO clutch, P/N 3886200-1.
 - b. For manpower/downtime and funding impacts, see paragraph 12.
 - c. The purpose of this TB is to require the following inspections and manual changes for the PTO clutch (P/N 3886200-1).
 - (1) Prior to the next flight, take an oil sample, inspect the magnetic plug, and conduct an oil level inspection of the PTO clutch.
 - (2) On or before the next 10 hour/14 day inspection, conduct a one-time inspection of the PTO clutch output bearing.
 - (3) Perform a recurring 25 flight hour PTO clutch oil analysis and establish a requirement for a PTO clutch output bearing 250-hour phase inspection.
 - (4) Provide additional PTO clutch inspection criteria and installation and servicing procedures.
 - (5) Provide Operator Manual (-10), Operator Checklist (-CL) and Maintenance Test Flight (MTF) manual changes requiring the activation of the fire bottles when the APU fire light illuminates in flight.
- 5. End Items to be Inspected.** All AH-64A and AH-64D aircraft with PTO clutch, P/N 3886200-1, installed.
- 6. Assembly Components to be Inspected.** N/A.
- 7. Parts to be Inspected.**

NOMENCLATURE	PART NUMBER	NSN
PTO Clutch	3886200-1	2835-01-431-8327

8. Inspection Procedures. Conduct a records review to determine if PTO clutch, P/N 3886200-1, is installed. If not installed, inspection is complete. If installed, conduct the following inspections:

- a. Prior to the next flight:
 - (1) Take a PTO clutch oil sample and inspect the magnetic plug. This task will be annotated on the DA Form 2408-18 as a recurring 25 flight hour inspection. ULLS-A units will use inspection number A050 for AH-64A and AH-64D aircraft.

NOTE

Always take samples while the PTO clutch is still warm. Samples will be taken within 15 minutes of PTO clutch operation. If it is impossible to operate the system, as in the case of an aircraft that is down for maintenance, the instructions in paragraph 1.c. apply.

- (a) Remove magnetic drain plug by pushing in and turning counterclockwise. Inspect magnetic plug for contamination in accordance with paragraph 8.c.(3) below.
- (b) Obtain a sample bottle and, using a suitable non-metallic clean probe, open the self-sealing magnetic drain plug receptacle and acquire an oil sample (reference TB 43-0106).

(c) Reinstall magnetic plug by turning clockwise to a locked position. Clean up any oil spillage. Use a clean rag.

(d) Submit oil sample to nearest AOAP servicing laboratory.

(2) Check PTO clutch, P/N 3886200-1, oil level. The sight gauge ball will be at approximately the center of the sight glass when the clutch is installed on the aircraft and the aircraft is on level ground.

NOTE

The oil level in the output bearing supply takes approximately one hour to drain back into the sump after APU operation.

(a) If the sight glass ball is lower than the center of the sight glass, service the APU in accordance with paragraph 8.c. (2).

(b) If the sight glass ball is higher than the center of the sight glass, place a suitable container under the PTO clutch over-fill port to catch any oil that may flow out of the over-fill port when it is removed.

b. On or before the next 10-hour/14-day inspection, inspect the PTO clutch output bearing. This inspection will be annotated on the DA Form 2408-18 as a recurring 250-hour phase inspection until it is incorporated into the phase manual. ULLS-A units will use one of their 800 series inspection numbers until this is incorporated into the phase manual. With the drive shaft removed, manually rotate the clutch output drive flange in both directions. The resulting motion should be smooth with no roughness or binding. A light amount of drag, caused by the shaft seal, is to be expected.

(1) PTO clutch 250-hour phase inspection:

(a) Drain and replace PTO clutch oil.

(b) Inspect clutch plate friction material for wear beyond functional limits.

(2) PTO clutch 10-hour/14-day inspection:

(a) Check and service oil supply.

(b) Inspect for contamination and clean magnetic plug.

c. Additional inspection, installation and servicing procedures for the PTO clutch (P/N 3886200-1).

(1) When installing PTO clutch (P/N 3886200-1), ensure the plastic plug on the bottom of the clutch at the 6 o'clock position is removed. This is a drain port intended to drain the oil that leaks through the lip seal/o-rings. If oil leaks through that port, the lip seal/o-rings in the PTO clutch are leaking and the clutch needs to be replaced. If oil is accumulated in the cavity and not allowed to drain away, the clutch friction plate may get wet. The clutch will slip and will not engage properly to transmit torque to the PTO shaft.

(2) When servicing PTO clutch (P/N 3886200-1) with oil, clutch is properly serviced when oil flows from the over-fill port. The sight gauge ball will be at approximately the center of the sight glass when the clutch is installed on the aircraft and the aircraft is on level ground. If the clutch is serviced off aircraft in a level position, the sight gauge ball will be slightly above the center of the sight glass.

(3) Magnetic plug inspection criteria:

(a) Check magnetic plug for metal chips, granular steel, metal flakes or splinters.

(b) If granular steel (looks like sand), metal chips, steel splinters or flakes are present, contact the technical point of contact in paragraph 16.a. for further assistance.

(c) Document findings and AOAP laboratory results on DA Form 2408-20, block 7. Include amount and type of debris found (if any) and actions taken.

NOTE

If any magnetic plug contamination is found, provide the contamination along with an oil sample to servicing AOAP laboratory for trend analysis.

(4) Oil leakage inspection:

- (a) Check PTO clutch for oil dripping. None is allowed.

NOTE

Oil stains or wetness is acceptable.

(b) At temperatures below 20°F up to 20cc's of oil may leak out of the fill port for each APU start; therefore, when operating the PTO clutch (P/N 3886200-1) at temperatures below 20°F, MIL-L-7808 (NSN 9150-00-270-4057) oil should be used to minimize leakage.

(5) Special inspection: During each pre-flight inspection, check the PTO clutch oil level (applies only to P/N 3886200-1 clutch).

9. Correction Procedures.

- a. If the PTO clutch is replaced as a result of the paragraph 8 inspections performed, submit a CAT 1 QDR.
- b. If the oil analysis results (DA Form 3254-R) indicate abnormal metal content, contact the technical point of contact in paragraph 16.a. for further instructions.
- c. Make changes in accordance with paragraph 12.e. of this message to TM 1-1520-238-10 (page 238-10, paragraph 9.10.3), and -CL for the AH-64A for "APU Fire Handle Illumination in Flight."
 - (1) APU Fire Pull Handle - PULL.
 - (2) Fire Bottle Switch - ACTIVATE.
 - (3) Environmental Control System (ECS) - OFF.
 - (4) Land as soon as possible.
- d. Make changes in accordance with paragraph 12.e. of this message to TM 1-1520-251-10 (page 251-10, paragraph 9.17.2), and -CL for the AH-64D for "APU Fire Button illuminates in Flight."
 - (1) Illuminated APU Fire Button - Press APU fire button and the "RDY" light illuminates.
 - (2) "PRI DISCH" button - PRESS.
 - (3) Environmental Control System (ECS) - OFF.

NOTE

If Fire Button remains illuminated:

- (4) "RES DISCH" Button - PRESS.
- (5) Land as soon as possible.

10. Supply/Parts and Disposition.

- a. Parts required. Items cited in paragraph 7 may be required to replace defective items.
- b. Requisitioning instructions. Requisition replacement parts using normal supply procedures. All requisitions shall use project code (CC 57-59) "XFQ" (xray-foxtrot-quebec).

NOTE

Project code "XFQ" is required to track and establish a database of stock fund expenditures incurred by the field as a result of safety of flight actions.

- c. Bulk and consumable materials. N/A.
- d. Disposition. A Cat 1 QDR is required for any PTO clutch not passing paragraph 8 inspections.
- e. Disposition of hazardous material. In accordance with environmental protection agency directives as implemented by your servicing environmental coordinator (AR 200-1).

11. Special Tools, Jigs and Fixtures Required. As required.

12. Application.

- a. Category of Maintenance. AVUM. Aircraft downtime will be charged to AVUM.
- b. Estimated time required:
 - (1) Total of 2 man-hours using 1 person.
 - (2) Total of 2 hours downtime for one end item.
- c. Estimated Cost Impact to the Field:

NOMENCLATURE	PART NO/NSN	QUANTITY	COST EACH
PTO Clutch	3886200-1/2835-01-431-8327	1	\$22,702.10
		Total cost per aircraft =	\$22,702.10

d. TB/Maintenance Work Orders (MWOs) to be Applied Prior to or Concurrently With This Inspection. N/A.

e. Publications Which Require Change as a Result of This Inspection. A copy of this TB shall be inserted in the appropriate publication as authority to implement the change until the printed change is received.

- (1) TM 1-1520-238-10
- (2) TM 1-1520-238-CL
- (3) TM 1-1520-238-MTF
- (4) TM 1-1520-238-PM
- (5) TM 1-1520-238-23-1
- (6) TM 1-1520-251-10
- (7) TM 1-1520-251-CL
- (8) TM 1-1520-251-MTF
- (9) IETM for AH-64D
- (10) TM 1-2835-213-23
- (11) TB 43-0106

13. References.

- a. IETM for AH-64D.
- b. AH-64-MIM-99-001.
- c. TB 43-0106.

14. Recording and Reporting Requirements.

a. Reporting Compliance Suspense Date (Aircraft). Upon entering requirements of this TB on DA Form 2408-13-1 on all subject MDS aircraft, forward a priority message, datafax or E-Mail to Commander, AMCOM, ATTN: AMSAM-SF-A (SOF Compliance Officer), Redstone Arsenal, AL 35898-5000, in accordance with AR 95-1. Datafax number is DSN 897-2111, or commercial (256) 313-2111. E-Mail address is "SAFEADM@redstone.army.mil". The report will cite this TB number, date of entry in DA Form 2408-13-1, the aircraft mission design series and serial numbers of aircraft in numerical order.

- b. Task/Inspection Reporting Suspense Date (Aircraft). N/A.
- c. Reporting TB Receipt (Spares).

- (1) Materiel in wholesale depot storage. N/A.
- (2) Materiel in retail storage. N/A.
- d. Task/Inspection Reporting Suspense Date (Spares).
 - (1) Materiel in wholesale depot storage. N/A.
 - (2) Materiel in retail storage. N/A.
- e. The following forms are applicable and are to be completed in accordance with DA PAM 738-751,15 March 1999:

NOTE

ULLS-A users will use applicable "E" forms.

- (1) DA Form 2408-5-1, Equipment Modification Record (PTO clutch).
- (2) DA Form 2408-13, Aircraft Status Information Record.
- (3) DA Form 2408-13-1, Aircraft Inspection and Maintenance Record.
- (4) DA Form 2408-15, Historical Record for Aircraft.
- (5) DA Form 2408-16, Aircraft Component Historical Record.
- (6) DA Form 2408-18, Equipment Inspection List.
- (7) DA Form 2410, Component Removal and Repair/Overhaul Record
- (8) DD Form 1577-2/DD Form 1577-3, Unserviceable (Reparable) Tag/Label - Materiel (Color Green). Annotate Remarks block with "Unserviceable in accordance with AH-64-99-ASAM-05."

15. Weight and Balance. N/A.

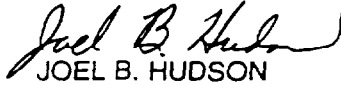
16. Points of Contact.

- a. Technical point of contact for this TB is Mr. Andy Fabery, AMSAM-AR-E-I-P-A, DSN 897-4802 or commercial (256) 313-4802. Datafax is DSN 897-4923 or commercial (256) 313-4923. E-mail is "fabery-aj@redstone.army.mil".
- b. Logistical point of contact for this TB is Mr. John Patton, SFAE-AV-AAH-LF, DSN 897-4244/4189 or commercial (256) 313-4244/4189. Datafax is DSN 897-4343 or commercial (256) 313-4343. E-Mail is "pattonj@redstone.army.mil".
- c. Wholesale material point of contact (spares) is Ms. Deborah Madaris, AMSAM-MMC-VS-AB, DSN 897-1345 or commercial (256) 313-1345. Datafax is DSN 897-1556 or commercial (256) 313-1556. E-mail is "madaris-dl@redstone.army.mil".
- d. Forms and records point of contact for this TB is Ms. Ann Waldeck, AMSAM-MMC-RE-FF, DSN 746-5564 or commercial (256)876-5564. Datafax is DSN 746-4904 or commercial (256)876-4904. E-mail is "waldeck-ab@redstone.army.mil".
- e. Safety point of contact for this TB is Mr. Howard Chilton, AMSAM-SF-A, DSN 897-2068 or commercial (256) 313-2068. Datafax is DSN 897-2111 or commercial (256) 313-2111. E-mail is "howard.chilton@redstone.army.mil".
- f. Foreign Military Sales (FMS) recipients requiring clarification of action advised by this TB should contact CW5 Joseph L. Wittstrom, Security Assistance Management, AMSAM-SA, DSN 897-0681 or commercial (256) 313-0681. E-mail is "wittstrom-jl@redstone.army.mil"; or Mr. Ronnie W. Sammons, AMSAM-SA-CS-NF, DSN 897-0869 or commercial (256) 313-0869. Datafax is DSN 897-0411 or commercial (256) 313-0411. E-mail is "sammons-rw@redstone.army.mil". Huntsville, AL is GMT minus 6 hours.
- g. After hours, contact the AMCOM Command Operations Center (COC) at DSN 897-2066/7 or commercial (256) 313-2066/7.

17. Reporting of Errors and Recommending Improvements. You can 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, US Army Aviation and Missile Command, ATTN: AMSAM-MMC-LS-LP, Redstone Arsenal, AL 35898-5000. You may also submit your recommended changes by e-mail directly to <ls-lp@redstone.army.mil>. A reply will be furnished directly to you. Instructions for sending an electronic 2028 may be found at the back of this manual.

By Order of the Secretary of the Army:

Official:



JOEL B. HUDSON
*Administrative Assistant to the
Secretary of the Army*

9917507

DENNIS J. REIMER
*General, United States Army
Chief of Staff*

DISTRIBUTION:

To be distributed in accordance with Initial Distribution Number (IDN) 313829, requirements for TB 1-2835-216-20-1.

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.

From: "Whoever" <whoever@avma27.army .mil>

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-DEC-98
8. **Pub no:** 1-2835-216-20-1
9. **Pub Title:** TB
10. **Publication Date:** 1-JUN-99
11. **Change Number:** N/A
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.

RECOMMENDED CHANGES TO EQUIPMENT TECHNICAL PUBLICATIONS



THEN...JOT DOWN THE
DOPE ABOUT IT ON THIS FORM.
CAREFULLY TEAR IT OUT, FOLD IT
AND DROP IT IN THE MAIL.

SOMETHING WRONG WITH PUBLICATION

FROM: (PRINT YOUR UNIT'S COMPLETE ADDRESS)

DATE SENT

PUBLICATION NUMBER

PUBLICATION DATE

PUBLICATION TITLE

BE EXACT PIN-POINT WHERE IT IS

PAGE
NO.

PARA-
GRAPH

FIGURE
NO.

TABLE
NO.

IN THIS SPACE, TELL WHAT IS WRONG
AND WHAT SHOULD BE DONE ABOUT IT.

TEAR ALONG PERFORATED LINE

PRINTED NAME, GRADE OR TITLE AND TELEPHONE NUMBER

SIGN HERE

DA FORM 1 JUL 79 2028-2

PREVIOUS EDITIONS
ARE OBSOLETE.

P.S.--IF YOUR OUTFIT WANTS TO KNOW ABOUT YOUR
RECOMMENDATION MAKE A CARBON COPY OF THIS
AND GIVE IT TO YOUR HEADQUARTERS.

THE METRIC SYSTEM AND EQUIVALENTS

LENGTH MEASURE

1 Centimeter = 10 Millimeters = 0.01 Meters = 0.3937 Inches
 1 Meter = 100 Centimeters = 1000 Millimeters = 39.37 Inches
 1 Kilometer = 1000 Meters = 0.621 Miles

WEIGHTS

1 Gram = 0.001 Kilograms = 1000 Milligrams = 0.035 Ounces
 1 Kilogram = 1000 Grams = 2.2 lb.
 1 Metric Ton = 1000 Kilograms = 1 Megagram = 1.1 Short Tons

LIQUID MEASURE

1 Milliliter = 0.001 Liters = 0.0338 Fluid Ounces
 1 Liter = 1000 Milliliters = 33.82 Fluid Ounces

SQUARE MEASURE

1 Sq. Centimeter = 100 Sq. Millimeters = 0.155 Sq. Inches
 1 Sq. Meter = 10,000 Sq. Centimeters = 10.76 Sq. Feet
 1 Sq. Kilometer = 1,000,000 Sq. Meters = 0.386 Sq. Miles

CUBIC MEASURE

1 Cu. Centimeter = 1000 Cu. Millimeters = 0.06 Cu. Inches
 1 Cu. Meter = 1,000,000 Cu. Centimeters = 35.31 Cu. Feet

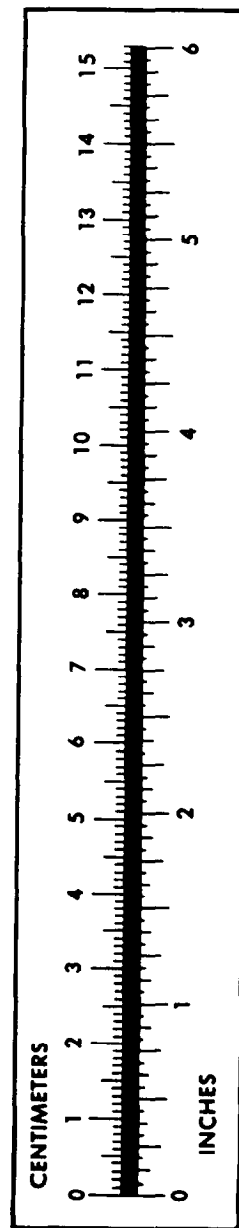
TEMPERATURE

$5/9(^{\circ}\text{F} - 32) = ^{\circ}\text{C}$
 212° Fahrenheit is equivalent to 100° Celsius
 90° Fahrenheit is equivalent to 32.2° Celsius
 32° Fahrenheit is equivalent to 0° Celsius
 $9/5^{\circ}\text{C} + 32 = ^{\circ}\text{F}$

APPROXIMATE CONVERSION FACTORS

TO CHANGE	TO	MULTIPLY BY
Inches	Centimeters	2.540
Feet	Meters	0.305
Yards	Meters	0.914
Miles	Kilometers	1.609
Square Inches	Square Centimeters	6.451
Square Feet	Square Meters	0.093
Square Yards	Square Meters	0.836
Square Miles	Square Kilometers	2.590
Acres	Square Hectometers	0.405
Cubic Feet	Cubic Meters	0.028
Cubic Yards	Cubic Meters	0.765
Fluid Ounces	Milliliters	29.573
its	Liters	0.473
arts	Liters	0.946
allons	Liters	3.785
Ounces	Grams	28.349
Pounds	Kilograms	0.454
Short Tons	Metric Tons	0.907
Pound-Feet	Newton-Meters	1.356
Pounds per Square Inch	Kilopascals	6.895
Miles per Gallon	Kilometers per Liter	0.425
Miles per Hour	Kilometers per Hour	1.609

TO CHANGE	TO	MULTIPLY BY
Centimeters	Inches	0.394
Meters	Feet	3.280
Meters	Yards	1.094
Kilometers	Miles	0.621
Square Centimeters	Square Inches	0.155
Square Meters	Square Feet	10.764
Square Meters	Square Yards	1.196
Square Kilometers	Square Miles	0.386
Square Hectometers	Acres	2.471
Cubic Meters	Cubic Feet	35.315
Cubic Meters	Cubic Yards	1.308
Milliliters	Fluid Ounces	0.034
Liters	Pints	2.113
Liters	Quarts	1.057
ers	Gallons	0.264
ms	Ounces	0.035
ograms	Pounds	2.205
Metric Tons	Short Tons	1.102
Newton-Meters	Pounds-Feet	0.738
Kilopascals	Pounds per Square Inch	0.145
ometers per Liter	Miles per Gallon	2.354
ometers per Hour	Miles per Hour	0.621



PIN: 077379-000