DEPARTMENT OF THE ARMY TECHNICAL BULLETIN

INITIAL AND RECURRING INSPECTION OF TRANSMISSION ROTOR SUPPORT STRUT BARREL NUTS FOR ALL AH–64 AIRCRAFT

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

4 September 2001

NOTE

THIS PUBLICATION IS EFFECTIVE UNTIL RESCINDED OR SUPERSEDED.

1. Priority Classification.

a. Aircraft in Use. Upon receipt of this technical bulletin (TB), make the following entry on the DA Form 2408–13–1. Enter a red horizontal dash //–// status symbol with the following statement: “Inspect the transmission rotor support strut barrel nuts IAW AH–64–01–08 (TB 1–1520–238–20–120) before the next flight, but NLT 1 November 2001.” Clear the red horizontal dash //–// entry when the procedures IAW para 8 and 9 are completed. The affected aircraft shall be inspected as soon as practical but no later than the 1 November 2001. Failure to comply with the requirements of this message within the time frame specified will cause the status symbol of the affected aircraft to be upgraded to a red //X//.

b. Aircraft in Maintenance Facility.

(1) Aircraft in AVUM, AVIM, or Depot – Commanders and facility managers will not issue aircraft until they are in compliance with this message.

(2) Aircraft at Contractor Facility – Boeing will inspect DD 250 aircraft prior to those aircraft departing for ferry to final destination.

c. Aircraft in Transit.

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

(2) Ferry Status. Same as para 1a.

d. Maintenance Trainers (Category A and B). Same as para 1a.

This TB supersedes USAAMCOM Message 022200Z Aug 01 (AH–64–01–ASAM–07)

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

f. Components/Parts in Work (Depot Level and Others). N/A.

2. **Task/Inspection Suspense Date.** Complete the inspection IAW paragraph 8 before the next flight but NLT 1 November 2001 and report IAW para 14a(2) NLT 5 November 2001.

3. **Reporting Compliance Suspense Date**. Report compliance IAW para 14a(1) NLT 8 August 2001.

4. **Summary of the Problem.**

a. AH−64−01−06 and AH−64−01−07 were issued requiring an initial and recurring inspection of the transmission rotor support strut assembly barrel nuts. This message supercedes the procedures required in AH−64−01−06 and AH−64−01−07.

b. For manpower/downtime and funding impacts, see paragraph 12.

c. The purpose of this TB is to:

(1) Require a torque inspection before the next flight of all 4 bolts used to attach the 4 transmission rotor support strut assemblies to the deck for aircraft not inspected by SOF AH−64−01−06/07.

(2) Require a visual inspection of the 4 transmission rotor support strut assembly barrel nuts and bolts, and lower the torque from 3500 inch pounds to 1900 inch pounds, on or before the next 125 hour inspection interval, but NLT 1 November 2001.

(3) Require a recurring transmission rotor support strut assemblies bolt torque check.

(4) Remove and replace all hardware, other than HS5813−12 barrel nuts and HS4243V12H62/34 or HS4243−12H62/34 bolts NLT 2 August 2003.

5. **End Items To Be Inspected**. All AH−64 series aircraft.

6. **Assembly Components To Be Inspected.**

Nomenclature	Part Number	NSN
Support Installation, Rotor	7−3111160005	N/A
Frame Installation (FS 230)	7−311113220	N/A
Frame Installation (FS 230)	7−311113220−601	N/A
Bulkhead Instl/Assy (FS 176)	7−311113180−601	N/A

7. **Parts To Be Inspected**.

NOTE

Some bolts and nuts may be marked with vendor P/N's that are listed in paragraph 7. These are acceptable numbers.

Nomenclature	Part Number	NSN
Bolt, Shear	HS4243V12H34	5306−01−457−3397
(Vendor part numbers, MC4243V12H34, PBF1446V12H34, SL8351V12H34, 76924V12H34, and AIC6924V12H34)		
Bolt, Shear	HS4243−12H34	5306−01−296−6421
(Vendor part numbers, MC424312H34, PBF144612H34, SL835112H34, 7692412H34, and AIC692412H34)		
Bolt, Shear	HS4243V12H62	5306−01−456−1055
(Vendor part numbers, MC4243V12H62, PBF1446V12H62, SL8351V12H62, 76924V12H62, and AIC6924V12H62)		

Bolt, Shear	HS4243−12H62	5306−01−296−8562
(Vendor part numbers, MC424312H62, PBF144612H62, SL835112H62, 7692412H62, and AIC692412H62)		
Bolt, Shear (Steel)	All	All
Nut, Self−Locking, BA	HS5813−12	5310−01−463−1740
(Vendor part numbers, SLN126−12, BFN00609C12, SL4133−12E, and FT5366−12)		
Nut, Self−Locking, BA	HS5483−1216	5310−01−316−7612
(Vendor part numbers F53037−12, 84209−1216, SL4109−12P, 127LH940−126 and BFN00879−12)		
Nut, Self−Locking, BA	7−311113224	5310−01−305−2544
Nut, Self−Locking, BA (Steel)	All	All

8. **Inspection Procedures**.

a. Initial Inspections

(1) If the intital torque check was conducted IAW AH−64−01−06 or AH−64−01−07, proceed to para 8B.

(2) If the initial torque check was not completed IAW AH−64−01−06 or AH−64−01−07, complete the inspection required IAW para 8C of this SOF prior to the next flight.

b. One Time Barrel Nut/Bolt Inspection − On or before the next 125 hour inspection interval, but NLT 1 November 2001, perform a one time hardware identification of all 4 main rotor support strut assembly deck mounting bolts/barrel nuts.

NOTE

This task is typical for all 4 barrel nuts. Perform task for each nut one at a time.

(1) Remove the ammunition storage magazine IAW TM 9−1090−208−23−1−1, para 4−7−72, or the IETM (Armament System Area Weapon System − Ammunition Handling System Installation − Magazine Area Installation − Ammunition Magazine Assembly − Magazine − Ammunition Storage − Remove and Install).

(2) Install the 7−262110009−601 Air Vehicle Sling to remove loads which may result in the truss shifting.

(a) Remove the ADS/Derotation unit IAW TM 1−1520−238−23 or the IETM.

(b) Install sling IAW para 1.79, TM 1−1520−238−23, or the IETM.

(c) Apply load as required to prevent truss movement and allow easy removal/installation of all bolts.

NOTE

As each nut is removed, inspect the bolt threads. Do not remove the bolt from the deck if the bolt threads are undamaged.

(3) Remove the nuts for inspection as follows −

(a) Remove forward barrel nut, and if necessary the bolt, IAW TM 1−1520−238−23 and the IETM and as follows −

NOTE

Do not completely remove the bolt from the deck unless damage is noted to the bolt threads.

1. For left hand side, disconnect aft end of FS 164.33 directional push pull tube. Tie push pull tube up and out of the way.

NOTE

Frequent repositioning of the mast support wrench is required to prevent interference and damage.

2. Use appropriate mast support wrench (7−263110003 = 15/16 or 7−263110003−601 = 13/16) and breaker bar to remove the bolt, and recessed washer from the deck. If bolt binds in hole, loosen struts at mast base to aid in alignment of holes.

3. Remove the self−locking barrel nut and nut retainer from the FS 176 bulkhead.

(b) Remove aft barrel nut, and if necessary the bolt, IAW TM 1−120−238−23 or the IETM and as follows −

1. Use appropriate mast support wrench (7−263110002 = 15/16 or 7−263110002−601 = 13/16) and breaker bar, loosen bolt and unthread from barrel nut. If bolt binds in hole, loosen struts at mast base to aid in alignment of holes.

NOTE

If the threads of the bolt are not damaged, do not remove the bolt from the deck.

2. Raise bolt clear of barrel nut. Remove the self−locking barrel nut and nut retainer from the FS 230 bulkhead.

3. If the bolt is damaged and must be removed, remove hardware attaching struts to mast support base IAW TM 1−1520−238−23 or the IETM so that struts can be removed to allow bolt to clear nacelle frame upon removal.

4. Perform a visual inspection/identification of all 4 barrel nuts/bolts.

NOTE

QA all bolts and nuts for serviceability prior to reinstallation.

a. Inspect the nut with a 10 power magnifier for elongation, thread damage, corrosion, and/or cracks.

NOTE

If the run−on torque is less than 50 inch pounds, the nut may be reused and the recurring torque inspection will be performed IAW para 8C until the nut can be replaced.

b. Visually inspect bolt for damage.

c. If no damage to the nut or bolt is noted, proceed to para 8B(5).

d. If any damage to the nut or bolt is noted −

1. Contact the Tech POC in para 16A immediately for disposition instructions.

2. Check frame support holes for cracks and damamge IAW TM 1−1520−238−23, and for corrosion IAW TM 1−1520−238−23 paragraph 1.49, or the IETM (Aircraft General Maintenance − Aircraft General Repair − Corrosion).

3. Check strut base for damage IAW TM 1−1520−238−23, paragraph 2.89.5, or the IETM.

4. Install a new barrel nut and bolt IAW para 9A.

5. If the barrel nut can be identified as HS5813−12 series and the bolt is HS4243V12H34/62 or HS4243−12H34/62, the inspection is complete for this nut/bolt and can be reinstalled IAW para 9. No recurring torque check is required. Continue the inspection until all four nuts and bolts are completed.

NOTE

For aircraft S/N 82−23355 to 84−24311, all 4 bolts will be HS4243V12H34. For all other aircraft, use only bolt part number HS4243V12H62 for HS4243−12H34/62 for FS 176 and bolt part number HS4243V12H34 for FS 230.

6. If the part number of the barrel nut is not HS5813−12 series and/or the bolt is not HS4243V12H34/62 or HS4243−12H34/62, or if a part number cannot be identified, a recurring torque check is required IAW paragraph 8C until the barrel nut and/or bolt are removed and replaced with a HS5813−12 nut, a redesigned 7−311113224 (when available), nut and/or bolt HS4243V12H34/62 or HS4243−12H34/62.

NOTE

Mixing steel and Incontel hardware should be avoided due to the possibility of corrosion. However, until replacement hardware is available, steel and Incontel hardware can be used if anti−seize compund is applied to the nut threads and the torque is reduced to 1900 in lb.

7. Reinstall IAW para 9A.

c. Recurring Inspection −

(1) Clear the red horizontal dash //−// entry required IAW paragraph 1A of AH−64−01−07.

(2) Perform the following recurring torque checks −

(a) The following recurring torque check will be completed every 10 flight hours/14 days until the visual inspection IAW para 8B has been completed.

(b) Following completion of the visual inspection IAW para 8B, the recurring torque check will be completed every 20 flight hours/28 days.

NOTE

The recurring torque check is not required if HS4243V12H34/62 or HS4243−12H34/62 bolts are installed with HS5813−12 barrel nuts.

(3) Remove lockwire from the bolt.

(4) Using an appropriate mast support wrench per para 11 and torque wrench set at 1900 inch pounds, insure bolt holds torque.

(5) If the bolt turns freely and does not hold torque, replace nut and bolt IAW para 9 and contact Tech POC IAW para 16A.

(6) If the bolt turns slightly, but stops and holds the 1900 inch pounds of torque −

(a) Enter a red horizontal dash //−// status symbol on the DA Form 2408−13−1 with the following statement; “(Enter bolt location here) bolt turned and requires recheck at next recurring torque check IAW AH−64−01−08 (TB1−1520−238−20−120).” Ensure you annotate which bolt turned as either left or right front, or left or right aft.

(b) Mark head of bolt with torque stripe to indicate a recurring torque check is required.

(c) Lockwire the bolt to the strut using the single fastener application, double twist, single hole method IAW TM 1−1500−204−23−6. This portion of the inspection is complete.

(d) If bolt turns at the next recurring torque check, replace bolt and nut IAW para 9A and contact the Tech POC in para 16A.

(e) If bolt does not turn after second check, the red horizontal dash will be cleared. Mark head of bolt with torque stripe to indicate a recurring check is required. Lockwire the bolt to the strut using the single fastener appliccation, double twist, sinlgle hole method IAW TM 1−1500−204−23−6 and continue the recurring check as required.

(7) If bolt holds torque and does not turn –

(a) Mark head of bolt with torque stripe to indicate a recurring torque check is required.

(b) Lockwire the bolt to the strut using the single fastener application, double twist, single hole method IAW TM 1–1500–204–23–6. This portion of the inspection is complete.

(8) Enter this inspection on the DA Form 2408–18. ULLS–A units use an 800 inspection number for the 10 hour/14 day bolt torque inspection.

(9) If lockwire is found broken during the recurring torque check, contact the Tech POC in para 16A immediately.

(10) The recurring torque check is required until the barrel nut and/or bolt are removed and replaced with a HS5813–12 nut, a redesigned 7–311113224 (when available) nut and/or bolt HS4243V12H34/62 or HS4243–12H34/62 prior to 2 August 2003 IAW para 9 of this SOF.

9. **Correction Procedures** – Barrel Nut/Bolt Reinstallation and Replacement –

a. Apply primer MIL–P–23377 to the barrel nut retainer. Allow time for primer to cure prior to installing.

b. Apply anti–seize MIL–T–83483 to nut threads.

c. Install barrel nut and retainer (if required) in support holes. Lightly tap in place.

NOTE

A retainer is required only for FS 230 and FS 176 with the HS5813–12 nut. The 7–311113224 nut does not require a retainer.

d. Install washer onto bolt with countersunk side against bolt head.

e. Install bolt through strut in deck. If bolt does not fit freely, adjust sling to align holes as required. If bolt still does not fit freely, loosen hardware attaching struts to mast base.

f. Torque bolt to 1900 inch–pounds. Use torque wrench and mast support wrench. For nuts and bolts that require a torque check mark head of bolt with stripe to indicate a recurring torque check is required.

g. Lockwire bolt to strut –

(1) If bolt HS4243V12H34/62 or HS4243–12H34/62 is installed with an HS5813–12 nut that exceeds the 50 inch pounds of run–on torque, the double twist–multiple hole method IAW TM 1–1500–204–23–6 will be used.

(a) For any bolts installed with a barrel nut part number other than HS5813–12, or with any nut that does not exceed the 50 inch pounds of run–on torque, the 10 hour/14 day recurring torque check is required and the single fastener application, double twist, single hole method IAW TM 1–1500–204–23–6 will be used.

h. Inspect (QA).

i. Install ammunition storage magazine IAW TM 9–1090–208–231–1, paragraph 4–7–72, and the IETM (Armament System Area Weapon System – Ammunition Handling System Installation – Magazine Area Installation – Ammunition Magazine Assembly – Magazine – Ammunition Storage – Remove and Install).

j. Remove sling and reinstall the ADS/deterioration unit IAW TM 1–1520–238–23 or the IETM.

NOTE

To eliminate the recurring inspection requirement, final replacement hardware must meet all TM and IETM inspection criteria, to include the 50 inch pound drag torque.

k. All hardware other than bolts HS4243V12H34/62 or HS4243–12H34/62 and nut HS5813–12 will be replaced NLT 2 August 2003. If other hardware has been reinstalled, make the following entry on the

DA Form 2408−13−1. Enter a red horizontal dash //−// status symbol with the following statement: “Install bolts HS4243V12H34/62 or HS4243−12H34/62 and nut HS5813−12 at (enter location of bolt) IAW AH−64−01−08 (TB1−1520−238−20−120) NLT 2 August 2003.”

10. **Supply/Parts and Disposition.**

NOTE

HQDA will priortize units and repair parts distribution.

a. Parts Required − Items cited in para 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) “X0U” (X−ray Zero Uniform).

NOTE

Project code “X0U” is required to track and establish a database of stock fund expenditures incurred by the field as a result of SOF actions.

c. Bulk and Consumable Materials −

Nomenclature	Part Number	NSN
Wire, Nonelectrical	N/A	9505−00−684−4841
Primer (MIL−P−23377)	N/A	8010−01−416−6556
Anti−Seize (MIL−T−83483)	N/A	8030−00−087−8630
Torque Stripe	(MIL−C−46168)	8010−01−141−2420

d. Disposition. Demilitarize/mutilate IAW TM 1−1500−328−23 any part/component which does not meet inspection criteria.

e. Disposition of Hazardous Material. IAW Environmental Protection Agency directives as implemented by your servicing environmental coordinator (AR 200−1).

11. **Special Tools and Fixtures Required.**

Nomenclature	Part Number	NSN
Air Vehicle Sling	7−262110009−601	TBD
Mast Support Wrench	7−263110003	TBD
(15/16 inch wrench used for forward bolts)		
Mast Support Wrench	7−263110003−601	TBD
(13/16 inch wrench used for forward bolts)		
Mast Support Wrench	7−263110002	TBD
(15/16 inch wrench used for aft bolts)		
Mast Support Wrench	7−263110002−601	TBD
(13/16 inch wrench used for aft bolts)		

12. **Application.**

a. Category of Maintenance. AVUM. Aircraft downtime will be charged to AVUM.

b. Estimated Time Required.

(1) To inspect the torque −

(a) Total of 2 man−hours using 1 person.

(b) Total of 2 hour downtime per end item.

(2) To remove and install the barrel nuts –

(a) Total of 4 man–hours using 2 persons to remove and reinstall the ammunition magazine.

(b) Total of 16 man–hours using 2 persons to remove and reinstall all four barrel nuts using air vehicle sling.

(c) Estimated 10 hours downtime per end item not including time required for MOC.

c. Estimated Cost Impact to the Field.

Nomenclature	Part No/NSN	QTY	Cost Each	Total
Barrel Nut	HS5813–12	2	$376.04	$752.08
	5310–01–463–1740			
Bolt	HS4243V12H34	2	654.56	1309.12
	5306–01–457–3397			
Barrel Nut	7–311113224	2	158.20	316.40
	5310–01–305–2544			
Bolt	HS4243V12H62	2	318.32	636.64
	5306–01–456–1055			

Total cost per aircraft = $3014.24

d. TB/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) Interactive Electronic Technical Manual (IETM): TM 1–1520–Longbow/Apache IETM, CD No. 1, Version 3.1.2, dated 19 Nov 98, Cd date 1 Dec 98 or subsequent.

(2) TM 1–1520–238–23P, Aviation Unit and Intermediate Maintenance Repair Parts and Special Tools List for AH–64A Apache Attack Helicopter, 27 March 95.

(3) TM 1–1520–238–23, Aviation Unit and Intermediate Maintenance Manual for AH–64A Apache Attack Helicopter, 16 May 94.

13. **References**. –

a. DA Pam 738–751, 15 Mar 1999, Functional Users Manual for the Army Maintenance Management System – Aviation (TAMMS–A).

b. Interactive Electronic Technical Manual (IETM) – TM 1–1520– Longbow/Apache IETM, CD No. 1, version 3.1.2, data 19 Nov 1998, CD date 1 Dec 1998 or subsequent.

c. TM 1–1520–238–23 – Aviation Unit and Intermediate Maintenance Manual for AH–64A Apache Attack Helicopter, 16 May 1994.

d. TM 1–1520–238–23P, Aviation Unit and Intermediate Maintenance Repair Parts and Special Tools List for AH–64A Apache Attack Helicopter, 27 March 1995.

e. TM 9–1090–208–1–1 – Aviation Unit and Intermediate Maintenance Manual for Armament Subsystem, Helicopter: M139; Gun, Automatic, 30 millimeter: M230; Rocket Management Subsystem, Inventory–Deployment: M140.

f. TM 1–1500–328–23 – Aeronautical Equipment Maintenance Management Policies and Procedures, 30 July 1999.

14. **Recording and Reporting Requirements**.

a. Aircraft –

(1) TAMMS Reporting Compliance Suspense – Upon entering requirements of this TB on DA Form 2408–13–1 for all effected aircraft, commanders will forward a priority message, datafax or email to: CDR, AMCOM, ATTN: AMSAM–SF–A (SOF Compliance Officer), Redstone Arsenal, AL 35898–5000, IAW AR 95–1. Datafax number is DSN 897–2111 or (256) 313–2111. E–mail address is "SAFEADM@redstone.army.mil." The report will cite this message and TB number, date of entry in DA Form 2408–13–1, the aircraft mission design series and serial numbers of aircraft in numerical order.

(2) Task/Inspection Reporting Suspense – Upon completion of inspection, commanders will forward a priority message to the logistical point of contact listed in paragraph 16b. The report will cite this message and TB number, date of inspection, aircraft serial number, aircraft and component hours, and results of the inspection. Inspection and reports will be completed NLT date specified in paragraph 2.

b. Wholesale Spare Parts/Assemblies – N/A.

c. Retail Spare Parts/Assemblies – N/A.

d. The following forms are applicable and are to be completed IAW DA PAM 738–751, 15 Mar 1999 –

NOTE

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

(1) DA Form 2408–13, Aircraft Status Information Record.

(2) DA Form 2408–13–1, Aircraft Inspection and Maintenance Record.

(3) DA Form 2408–15, Historical Record for Aircraft.

(4) DA Form 2408–18, Equipment Inspection List.

(5) DD Form 1577/DD Form 1577–1, Unserviceable (Condemned) Tag/Label – Materiel (Color Red). Annotate remarks block wiith "Comdemned IAW AH–64–01–06 (TB 1–1520–238–20–120) and mutilated IAW TM 1–1500–328–23."

15. **Weight and Balance.** N/A.

16. **Points of Contact**.

a. Technical point of contacts for this TB are –

(1) Primary – Mr. Andy Fabery, AMSAM-RD–AE–I–P–A, DSN 897-4802 or (256) 313-4802, datafax is DSN 897-4923 or commercial (256) 313-4923. E-mail is "Andrew.Fabery@redstone.army.mil".

(2) Alternate – Mr. Ken Muzzo, AMSAM–RD–AE–I–P–A, DSN 897–4812 or (256) 313–4812, datafax is DSN 897–4923 or (256) 313–4923. Email is "Kenneth.Muzzo@redstone.army.mil."

b. Logistical point of contacts are –

(1) Primary – Mr. Steve Hayes, SFAE-AV-AAH-LF, DSN 897-4245 or (256) 313-4245, datafax is DSN 897-4343 or commercial (256) 313-4343. E–mail is "Steve.Hayes@peoavn.redstone.army.mil".

(2) Alternate – Mr. Jim Mason, SFAE–AV–AAH–LF, DSN 897–4242 or (256) 313–4242, datafax is DSN 897–4343 or (256) 313–4343. E–mail is "Masonj@peoavn.redstone.army.mil".

(3) Alternate – Mr. Mike Sharp, SFAE–AV–AAH–LF, DSN 897–4236 or (256) 313–4236, datafax is DSN 897–4343 or (256) 313–4343. E–mail is "Mike.Sharp@reoavn.redstone.army.mil".

c. Wholesale materiel point of contact (spares) is Mr. Paul Hughes, DSCR–XBD, DSN 695–6328 or commercial (804) 279–6328. Datafax is DSN 695–5695 or commercial (804) 279–5695. E–mail is "PHughes@dcsr.dla.mil".

d. Forms and records point of contact 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 “Ann.Waldeck@redstone.army.mil” .

e. Safety points of contact are −

(1) Primary − Mr. Harry Trumbull (SAIC), AMSAM−SF−A, DSN 897−2095 or commercial (256) 313−2095. Datafax is DSN 897−2111 or commercial (256) 313−2111. E−mail is “Harry.Trumbull@redstone.army.mil”.

(2) Alternate − 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 one of the following (Huntsville, AL, time is GMT minus 5 hours):

(1) Primary − Mr. Ronnie W. Sammons, AMSAM-SA-CS-NF, DSN 897-0408 or commercial (256) 313-0408. Datafax is DSN 897−6603 or commercial (256) 313−6603. E-mail is “Ronnie.Sammons@redstone.army.mil”.

(2) Alternate − Mr. Paul W, Tarr, AMSAM−SA−CS−NF, DSN 897−6861 or (256) 313−6861. Datafax is DSN 897−6603 or (256) 313−6603. Email is “Tarrpw@redstone.army.mil”.

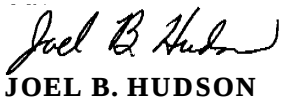
g. After hours, contact the AMCOM Command Operations Center (COC) DSN 897-2066/7 or commercial (256) 313-2066/7.

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 the following address: Commander, US Army Aviation and Missile Command, ATTN: AMSAM-MMC-MA-NP, Redstone Arsenal, AL 35898-5230. You may also submit your recommended changes by e-mail directly to “2028@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:

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

Official:



JOEL B. HUDSON
Administrative Assistant to the
Secretary of the Army
0123402

DISTRIBUTION:
To be distributed in accordance with Initial Distribution Number (IDN) 313996 requirements for TB 1-1520-238-20-120.

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: "Whomever" <whomever@avma27.army.mil>
To: <mpmt%avma28@st−louis−emh7.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).

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.

PRINTED NAME, GRADE OR TITLE AND TELEPHONE NUMBER	SIGN HERE

TEAR ALONG PERFORATED LINE

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

'NEAR MEASURE

. 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

'VEIGHTS

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

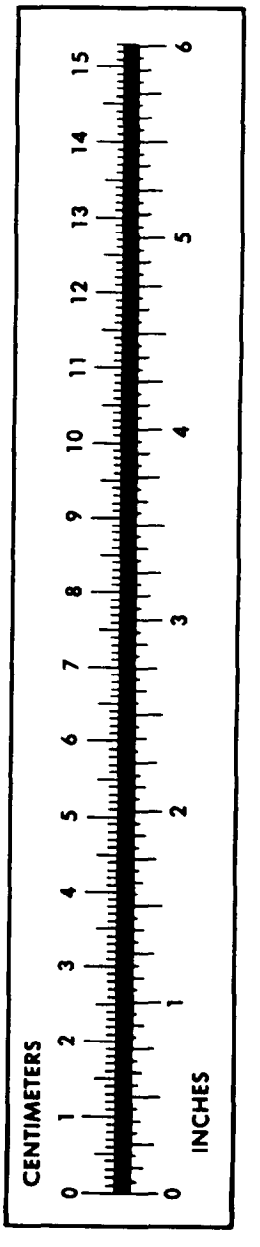
TEMPERATURE

5/9(°F - 32) = °C
212° Fahrenheit is evuivalent to 100° Celsius
90° Fahrenheit is equivalent to 32.2° Celsius
32° Fahrenheit is equivalent to 0° Celsius
9/5C° + 32 =°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
ıts	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
lometers per Liter	Miles per Gallon	2.354
meters per Hour	Miles per Hour	0.621



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