### ROUTINE

### DEPARTMENT OF THE ARMY TECHNICAL BULLETIN

# ANNOUNCEMENT OF APPROVAL AND RELEASE OF NONDESTRUCTIVE TEST EQUIPMENT INSPECTION PROCEDURE MANUAL

## TM 1-1520-256-23, TECHNICAL MANUAL AVIATION UNIT MAINTENANCE

## (AVUM) AND AVIATION INTERMEDIATE MAINTENANCE (AVIM) MANUAL

NONDESTRUCTIVE INSPECTION PROCEDURES FOR

**UH-1 HELICOPTER SERIES** 

## Headquarters, Department of the Army, Washington, D. C. 1 May 1997

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

## NOTE

THIS PUBLICATION IS EFFECTIVE UNTIL REFERENCES TO TM 1-1520-256-23, TECHNICAL MANUAL AVIATION UNIT MAINTENANCE (AVUM) AND AVIATION INTERMEDIATE MAINTENANCE (AVIM) MANUAL NONDESTRUCTIVE INSPECTION PROCEDURES FOR UH-1 HELICOPTER SERIES, HAVE BEEN INCORPORATED INTO THE TM 55-1520-210-23 (SERIES), AVIATION UNIT AND INTERMEDIATE MAINTENANCE INSTRUCTIONS ARMY MODEL UH-1 H/V/EH-1 H/X HELICOPTERS.

### 1. Priority Classification. Routine

**2. Purpose.** The purpose of this technical; bulletin (TB) is to announce the approval and release of the nondestructive test equipment inspection procedure manual, TM 1-1520-256-23, Technical Manual Aviation Unit Maintenance (AVUM) and Aviation Intermediate Maintenance (AVIM) Manual Nondestructive Inspection Procedures for UH-1 Helicopter Series. This manual shall be referred to when performing inspections on the UH-1 aircraft.

**3. Description.** Approved nondestructive test inspection procedures are referenced in Table 1. Refer to TM 1-1520-256-23, Technical Manual Aviation Unit Maintenance (AVUM) and Aviation Intermediate Maintenance (AVIM) Manual Nondestructive Inspection Procedures for UH-1 Helicopter Series, for safety information, part locations, inspection method descriptions, and complete procedures. Do not attempt to perform any nondestructive test inspection without first referring to TM 1-1520-256-23 as this TB does not provide adequate information to properly perform the inspections.

**4.** How to Use. The columns in Table 1. Approved Nondestructive Test Inspection Components/Assemblies are defined as follows:

(1) **Procedure Number:** references the procedure number in TM 1-1520-256-23, Technical Manual Aviation Unit Maintenance (AVUM) and Aviation Intermediate Maintenance (AVIM) Manual Nondestructive Inspection Procedures for UH-1 Helicopter Series.

(2) Component/Assembly: provides the list of parts approved for nondestructive test inspections on the UH-1 aircraft. Parts not listed have not been approved for nondestructive test inspection and shall be inspected as referenced in TM 55-1520-210-23 (Series), Aviation Unit and Intermediate Maintenance Instructions Army Model UH-1 H/V/EH-1 H/X Helicopters.

(3) Inspect For: provides the approved manner of inspection. All other types of inspection shall be performed as referenced in TM 55-1520-210-23 (Series), Aviation Unit and Intermediate Maintenance Instructions Army Model UH-1 H/V/EH-1 H/X Helicopters.

(4) Maintenance Category: details the approved maintenance level for each nondestructive test inspection.

(5) Inspection Equipment Requirements: provides the approved nondestructive inspection method/equipment to perform the inspection. Refer to Notes for the legend.

(6) Remarks: provides the approved backup method/equipment to perform the inspection. Refer to Notes for the legend.

## NOTE

## Legend for the nondestructive inspection methods/equipment referenced in columns (5) and (6):

001	Fluorescent Penetrant Method	004	Ultrasonic Method
002	Magnetic Particle Method	005	Bond Testing Method
003	Eddy Current Method	006	Radiographic Method

(1) PROCEDURE	(2) COMPONENT/ASSEMBLY	(3) INSPECT		(4) MAINTENANCE CATEGORY		(5) INSPECTION	(6)
NUMBER		FOR	AVUM	AVIM	DEPOT	EQUIPMENT REQUIREMENT	REMARKS
2.2	Main Rotor Hub Grip	Cracks		$\checkmark$		003	
2.3	Main Rotor Hub Pillow Block	Cracks		$\checkmark$		003	
2.4	Main Rotor Pitch Horn	Cracks		$\checkmark$		003	
2.5	Main Rotor Drag Brace Assembly	Cracks		$\checkmark$		002	
2.6	Main Rotor Blade Bolt	Cracks		$\checkmark$		002	
2.7	Main Rotor Hub Plate Assembly	Cracks		$\checkmark$		003	
2.8	Grip Retention Nut	Cracks		$\checkmark$		002	
2.9	Main Rotor Hub Shield Assembly	Cracks		$\checkmark$		002	
2.10	Yoke	Cracks		$\checkmark$		002	
2.11	Trunnion	Cracks		$\checkmark$		002	
2.12	Strap Fitting	Cracks		$\checkmark$		002	
2.13	Main Rotor Blade (Metal)	Cracks		$\checkmark$		003	
2.14	Main Rotor Blade (Metal)	Voids		$\checkmark$		005	
2.15	Main Rotor Blade (Metal)	Water		$\checkmark$		006	
2.16	Composite Main Rotor Blade	Voids				005	

(1)	Table 1. Approved Nondes	1		•			(6)
(1)	(2)	(3)	ма	(4) INTENA	NCE	(5)	(6)
PROCEDURE	COMPONENT/ASSEMBLY	INSPECT	1	ATEGO		INSPECTION	
NUMBER		FOR			EQUIPMENT	REMARKS	
_		_	AVUM	ΑνιΜ	DEPOT	REQUIREMENT	_
2.17	Stabilizer Bar Center Frame	Cracks		$\checkmark$		003	Backup 001
2.18	Stabilizer Bar Support	Cracks		$\checkmark$		003	Backup 001
2.19	Stabilizer Bar Lever	Cracks		$\checkmark$		003	Backup 001
2.20	Stabilizer Bar Tube Assembly	Cracks		$\checkmark$		002	
2.21	Damper Lever Arms	Cracks		$\checkmark$		003	
2.22	Rotor Mast Adapter Set	Cracks		$\checkmark$		003	
2.23	Damper Wingshaft Splines	Cracks		$\checkmark$		002	
2.24	Swashplate Inner Ring	Cracks		$\checkmark$		003	
2.25	Swashplate Outer Ring	Cracks		$\checkmark$		003	
2.26	Support Assembly	Cracks		$\checkmark$		003	
2.27	Collective Levers	Cracks		$\checkmark$		003	Backup 001
2.28	Scissors Assembly	Cracks		$\checkmark$		003	Backup 001
2.29	Drive Link	Cracks		$\checkmark$		003	Backup 001
2.30	Collective Sleeve Assembly	Cracks		$\checkmark$		002	
2.31	Nut, Retainer	Cracks		$\checkmark$		002	Backup 001
2.32	Nut, Collective Sleeve Bearing Retention	Cracks		$\checkmark$		002	
2.33	Scissors and Sleeve Hub	Cracks		$\checkmark$		002	
2.34	Tail Rotor Hub Grip Assembly	Cracks		$\checkmark$		003	Backup 001
2.35	Tail Rotor Hub Retainer Nut	Cracks		$\checkmark$		002	
2.36	Tail Rotor Hub Retainer Ring	Cracks		$\checkmark$		001	
2.37	Adapter Nut	Cracks		$\checkmark$		002	
2.38	Tail Rotor Hub Yoke	Cracks		$\checkmark$		002	
2.39	Tail Rotor Hub Trunnion	Cracks		$\checkmark$		002	
2.40	Tail Rotor Crosshead	Cracks		$\checkmark$		003	Backup 001
2.41	Tail Rotor Blade	Cracks		$\checkmark$		003	

(1)	(2)	(3)		(4)		(5)	(6)
				INTENA			
PROCEDURE	COMPONENT/ASSEMBLY	INSPECT	CATEGORY		INSPECTION		
NUMBER		FOR	AVUM	AVIM	DEPOT	EQUIPMENT REQUIREMENT	REMARKS
2.42	Tail Rotor Blade	Voids		$\checkmark$		005	
2.43	Tail Rotor Blade	Water		$\checkmark$		006	
3.2	Main Driveshaft Inner Couplings	Cracks				002	
3.3	Main Driveshaft Outer Couplings	Cracks		$\checkmark$		002	
3.4	Main Driveshaft Splined Nuts	Cracks		$\checkmark$		002	
3.5	Main Driveshaft Clamp Sets	Cracks		$\checkmark$		002	
3.6	Main Driveshaft Grease Retainers	Cracks		$\checkmark$		001	
3.7	Main Driveshaft	Cracks		$\checkmark$		002	
3.8	Adapter Bolt	Cracks		$\checkmark$		002	
3.9	Main Driveshaft Engine	Cracks		$\checkmark$		002	
	Adapter						
3.10	Transmission Case (Top)	Cracks		$\checkmark$		003	
3.11	Ring Gear Case	Cracks		$\checkmark$		002	
3.12	Main Transmission Case	Cracks		$\checkmark$		003	
3.13	Transmission Support Case	Cracks		$\checkmark$		003	
3.14	Lift Link Bushing Hole	Cracks		$\checkmark$		001	
3.15	Threaded Fittings	Cracks				001	
3.16	Input Drive Quill Wear Sleeve	Cracks		$\checkmark$		001	
3.17	Generator Drive Quill Case	Cracks		$\checkmark$		003	
3.18	Hydraulic Pump and Tachometer Quill Case	Cracks		$\checkmark$		003	
3.19	Hydraulic Pump and Tachometer Gear Teeth	Cracks		$\checkmark$		001	
3.20	Tail Rotor Drive Quill Sleeve Assembly	Cracks		$\checkmark$		003	

Table 1. Approved Nondestructive Test Inspection Components/Assemblies.

(1)	I able 1. Approved Nondes (2)	(3)		(4)		(5)	(6)
			1	INTENA			
PROCEDURE	COMPONENT/ASSEMBLY	INSPECT	CATEGORY		INSPECTION		
NUMBER		FOR	AVUM	AVIM	DEPOT	EQUIPMENT REQUIREMENT	REMARKS
3.21	Tail Rotor Drive Quill Bevel Gear Teeth	Cracks		$\checkmark$		002	
3.22	Tail Rotor Drive Quill Sleeve Spacer	Cracks		$\checkmark$		002	
3.23	Pylon Mount Bolts	Cracks		$\checkmark$		002	
3.24	Fifth Mount Support Fitting	Cracks		$\checkmark$		001	
3.25	Friction Damper	Cracks		$\checkmark$		002	
3.26	Main Rotor Mast Nut	Cracks		$\checkmark$		002	
3.27	Oil Pump Driveshaft	Cracks		$\checkmark$		002	
3.28	Oil Jets	Cracks		$\checkmark$		001	
3.29	Tail Rotor Driveshaft	Cracks		$\checkmark$		003	Backup 001
3.30	Tail Rotor Driveshaft Clamps	Cracks		$\checkmark$		002	
3.31	Tail Rotor Driveshaft Hangers	Cracks		$\checkmark$		002	Backup 001
3.32	Tail Rotor Driveshaft Inner (Spherical) Coupling	Cracks		$\checkmark$		002	
3.33	Tail Rotor Driveshaft Forward Coupling	Cracks		$\checkmark$		002	
3.34	Tail Rotor Driveshaft Rear Coupling	Cracks		$\checkmark$		002	
3.35	Tail Rotor Driveshaft Coupling Shaft	Cracks		$\checkmark$		002	
3.36	Tail Rotor Driveshaft Hanger Support Fittings	Cracks		$\checkmark$		003	
3.37	Intermediate Gearbox Case	Cracks		$\checkmark$		003	Backup 001
3.38	Intermediate Gearbox Inner Coupling	Cracks		$\checkmark$		002	
3.39	Intermediate Gearbox Outer Coupling	Cracks		$\checkmark$		002	
3.40	Intermediate Gearbox Sleeve	Cracks		$\checkmark$		002	
3.41	Intermediate Gearbox Pinion Shaft	Cracks		$\checkmark$		002	

(1)	I able 1. Approved Nondes (2)	(3)	•	(4)	•	(5)	(6)
			1	INTENA			
PROCEDURE NUMBER	COMPONENT/ASSEMBLY	INSPECT FOR	CATEGORY			REMARKS	
NUNDER		FUR	AVUM	AVIM	DEPOT	REQUIREMENT	REINARNO
3.42	Tail Rotor Gearbox Case	Cracks		$\checkmark$		003	
3.43	Tail Rotor Gearbox Inner Coupling	Cracks		$\checkmark$		002	
3.44	Tail Rotor Gearbox Outer Coupling	Cracks		$\checkmark$		002	
3.45	Tail Rotor Gearbox Sleeve	Cracks		$\checkmark$		002	
3.46	Transmission Lift Link	Cracks		$\checkmark$		002	
4.2	Honeycombed Structures with Metallic Covering	Voids		$\checkmark$		005	
4.3	Honeycomb Structures with Non-Metallic Covering	Voids		$\checkmark$		005	
4.4	Forward Fuselage Metal Structures	Cracks		$\checkmark$		003	
4.5	Center Service Deck Panel	Voids		$\checkmark$		005	
4.6	Center Service Deck, Hanger Bearing Brace Assembly, and Main Beam Caps	Cracks		V		003	
4.7	Aft Fuselage Structural	Cracks		$\checkmark$		003	
4.8	Reinforced Floor Mount- ing Plates and Base Assembly	Cracks		$\checkmark$		003	
4.9	Transmission and Engine Cowling	Cracks		$\checkmark$		003	
4.10	Anti-Collision Light Mount	Cracks		$\checkmark$		003	
4.11	Lift Beam Cap and Adjacent Structure	Cracks		$\checkmark$		003	
4.12	Friction Damper Support, Clip, Retaining Clip, and Mount Assembly	Cracks		$\checkmark$		003	

(1)	(2)	(3)		(4)		(5)	(6)
(')	(-)		МА		NCE		
PROCEDURE	COMPONENT/ASSEMBLY	INSPECT	1 1		INSPECTION		
NUMBER		FOR				EQUIPMENT	REMARKS
			AVUM	AVIM	DEPOT	REQUIREMENT	
4.13	Friction Damper Mount Assembly	Cracks				003	
4.14	Aft Landing Gear Attachments	Cracks		$\checkmark$		003	Backup 001
4.15	Crew Door Hinges	Cracks		$\checkmark$		003	
4.16	Hinged Panel and Hinges	Cracks		$\checkmark$		003	Backup 001
4.17	Hinged Panel Assembly Hardware	Cracks		V		001	
4.18	Cargo Door	Cracks				003	
4.19	Cargo Door Retainers and Retainer Strap	Cracks		$\checkmark$		003	
4.20	Passenger Step	Cracks				001	
4.21	Paratroop Static Line Fitting and Compression Tube	Cracks		$\checkmark$		003	
4.22	Jack and Mooring Fittings	Cracks		$\checkmark$		002	
4.23	Standard Crew Seat	Cracks		$\checkmark$		003	Backup 001
4.24	Mission Operator Seats	Cracks		$\checkmark$		003	Backup 001
4.25	Engine Mounts	Cracks				002	
4.26	Engine Mount Fittings	Cracks				002	
4.27	Engine Deck Fittings	Cracks				002	
4.28	Pillow Blocks	Cracks				002	
4.29	Exhaust Tailpipe and Duct Assemblies	Cracks		$\checkmark$		001	
4.30	Bolts, Rod Ends, Turnbuckles, Rods, and Pins	Cracks				002	
4.31	Tailboom and Fuselage Attach Fittings	Cracks		$\checkmark$		003	
4.32	Elevator Assembly Support Fittings	Cracks		$\checkmark$		003	Backup 001
4.33	Elevator Horn Assembly	Cracks		$\checkmark$		003	Backup 001

 Table 1. Approved Nondestructive Test Inspection Components/Assemblies.

(1)	Table 1. Approved Nondes			-	mponen		
(1)	(2)	(3)		(4)		(5)	(6)
			MAINTENANCE				
PROCEDURE	COMPONENT/ASSEMBLY	INSPECT	C	CATEGORY		INSPECTION	
NUMBER		FOR				EQUIPMENT	REMARKS
			AVUM	AVIM	DEPOT	REQUIREMENT	
4.34	Intermediate Gearbox	Cracks				003	
_	Support Installation						
4.35	Tailboom Structure	Cracks				003	
4.36	Ninety Degree Gearbox	Cracks				003	
	Support Fitting						
4.37	Vertical Fin	Cracks				001	
4.38	Landing Gear Cross	Cracks				004	Backup
	Tubes						001
4.39	Skid Tube Saddles	Cracks		$\checkmark$		003	
5.2	Non-Self-Purging	Cracks		$\checkmark$		001	
	Particle Separator - Air						
	Induction System						
5.3	Inlet Screen Latch	Cracks				001	
	Assembly Self-Purging -						
	Air Induction System			,			
5.4	Air Particle Separator	Cracks				001	
	Self-Purging - Air						
	Induction System			,			
5.5	Improved Particle	Cracks		$\checkmark$		001	
	Separator (IPS) Air						
5.0	Induction System	Orealize				004	
5.6	Exhaust System Clamp	Cracks		N		001	
5.7	Tailpipe and Heatshield	Cracks		$\sqrt{1}$		001	
5.8	Oil System - Metal	Cracks		Ň		001	
5.9	Lines and Fittings Engine Oil Tank Support	Cracks		2		001	
5.10	Engine Oil Cooler	Cracks		$\sqrt[n]{\sqrt{2}}$		001	
5.10	Engine Oil Cooler Turbo	Cracks		v √		001	
5.11	Blower	CIACKS		N			
5.12	Oil Separator	Cracks				001	
5.12	Engine External Oil	Cracks				001	
0.10	Filter Head and Bowl			v			
5.14	Power Lever Control	Cracks				002	
0.17	Rods						
5.15	Power Lever Torque	Cracks				002	
	Tube						

(1)	(2)	(3)	_	(4)		(5)	(6)
PROCEDURE	COMPONENT/ASSEMBLY	INSPECT				INSPECTION	
NUMBER		FOR				EQUIPMENT	REMARKS
			AVUM	AVIM	DEPOT	REQUIREMENT	
5.16	Power Lever Controls	Cracks		$\checkmark$		003	
5.17	Cambox Assembly	Cracks				003	
5.18	Power Lever Control	Cracks		$\checkmark$		001	
	Mounting Brackets and Plates						
6.2	Hydraulic System	Cracks		$\checkmark$		001	
0.2	Components	Clacks		Ň		001	
6.3	Hydraulic Pump	Cracks		$\checkmark$		003	
	Assembly						
6.4	Ground Test	Cracks		$\checkmark$		001	
6.5	Connections	Cracka				001	
6.0	Relief Valve, Bolt, and Fitting	Cracks		Ň		001	
6.6	Pressure Switch	Cracks		$\checkmark$		001	
6.7	Solenoid Valves	Cracks		$\checkmark$		001	
6.8	Hydraulic Servo	Cracks		$\checkmark$		002	
	Cylinder Assembly						
6.9	(Cyclic Control) Clevis Hydraulic Servo	Cracks				001	
0.3	Cylinder Tube Assembly	Clacks		Ň		001	
	(Cyclic Control)						
6.10	Hydraulic Servo	Cracks		$\checkmark$		001	
	Cylinder Assembly						
6.11	(Cyclic Control) Housing Hydraulic Servo	Cracks				001	
0.11	Cylinder (Cyclic Control)	CIACKS		Ň		001	
	Cylinder Caps						
6.12	Hydraulic Servo	Cracks		$\checkmark$		001	
	Cylinder Assembly						
0.40	(Cyclic Control)	Oracha				000	
6.13	Hydraulic Servo Cylinder Assembly	Cracks				002	
	(Collective Control)						
	Clevis						
6.14	Hydraulic Servo	Cracks		$\checkmark$		001	
	Cylinder (Collective						
	Control) Tube Assembly						

(1)	Table 1. Approved Nondes (2)	(3)	•	(4)		(5)	(6)
(')	(2)	(3)	МА		NCE	(3)	(0)
PROCEDURE	COMPONENT/ASSEMBLY	INSPECT	1	ATEGO		INSPECTION	
NUMBER		FOR	AVUM	AVIM	DEPOT	EQUIPMENT REQUIREMENT	REMARKS
6.15	Hydraulic Servo Cylinder Assembly (Collective Control) Piston Rod	Cracks		$\checkmark$		002	
6.16	Hydraulic Servo Cylinder Assembly (Collective Control) Bearing Housing	Cracks		$\checkmark$		001	
6.17	Collective Control System Bellcrank	Cracks		$\checkmark$		003	
6.18	Collective Control. System Lever Assembly	Cracks		$\checkmark$		003	
6.19	Collective Control System Support	Cracks		$\checkmark$		003	
6.20	Collective Control System Control Tubes	Cracks		$\checkmark$		003	
6.21	Tube and Lever Assembly	Cracks		$\checkmark$		003	
6.22	Support Assembly, Hydraulic Cylinder Assembly (Starboard)	Cracks		$\checkmark$		003	Backup 001
6.23	Support Assembly, Hydraulic Cylinder Assembly (Port)	Cracks		$\checkmark$		003	Backup 001
6.24	Mixing Lever Assembly - Cyclic Controls	Cracks		$\checkmark$		003	
6.25	Cyclic Control System Control Tubes	Cracks		$\checkmark$		003	
6.26	Cyclic Control System Bellcranks and Levers	Cracks		$\checkmark$		003	
6.27	Cyclic Control System Supports	Cracks		$\checkmark$		003	
6.28	Adjuster Assembly	Cracks		$\checkmark$		003	
6.29	Tail Rotor Control Quadrant	Cracks		$\checkmark$		003	
6.30	Tail Rotor Control Tube and Quill - Sprocket Guard	Cracks				001	
6.31	Tail Rotor Control Tube and Quill - Control Tube	Cracks		$\checkmark$		002	

	(2)		(5)	(6)			
(1)	(2)	(3)	ма	(4) INTENA	NCE	(3)	(0)
PROCEDURE	COMPONENT/ASSEMBLY	INSPECT	CATEGORY		INSPECTION		
NUMBER		FOR				EQUIPMENT	REMARKS
			AVUM	AVIM	DEPOT	REQUIREMENT	
6.32	Tail Rotor Control Tube and Quill - Housing	Cracks		$\checkmark$		001	
6.33	Tail Rotor Control Tube and Quill - Retaining Nut	Cracks				002	
6.34	Tail Rotor Control Tube and Quill - Sprocket	Cracks		$\checkmark$		001	
6.35	Tail Rotor Control Tube and Quill - Bearing Retainer	Cracks				001	
6.36	Tail Rotor Control Tube and Quill - Spacer	Cracks		$\checkmark$		002	
6.37	Tail Rotor Control Tube and Quill - Control Nut	Cracks		$\checkmark$		001	
6.38	Tail Rotor Control Tubes	Cracks				003	
6.39	Tail Rotor Hydraulic Power Cylinder - Piston Rod	Cracks		$\checkmark$		002	
6.40	Tail Rotor Hydraulic Power Cylinder Adapter	Cracks		$\checkmark$		002	
6.41	Tail Rotor Support	Cracks		$\checkmark$		003	Backup 001
6.42	Tail Rotor Arm Assemblies	Cracks		$\checkmark$		003	Backup 001
6.43	Tail Rotor Bellcrank Assembly	Cracks				003	Backup 001
6.44	Tail Rotor Cylinder and Support Assembly - Hardware	Cracks		V		002	
6.45	Tail Rotor Control System - Bellcranks	Cracks		$\checkmark$		003	
6.46	Tail Rotor Control System - Levers	Cracks		$\checkmark$		003	
6.47	Elevator Control System - Control Tubes	Cracks		$\checkmark$		003	
6.48	Elevator Control System - Bellcranks	Cracks		$\checkmark$		003	

(1) PROCEDURE	(2) COMPONENT/ASSEMBLY	(3) INSPECT			(5) INSPECTION	(6) REMARKS	
NUMBER		FOR			EQUIPMENT REQUIREMENT		
6.49	Elevator Control System - Levers	Cracks		$\checkmark$		003	
6.50	Elevator Control System - Supports	Cracks		$\checkmark$		003	
6.51	Elevator Control System - Bellcranks, Levers, and Supports - Bearing Replacement	Cracks		N		003	Backup 001

## 5. Points of Contact.

a. Technical point of contact for this TB is Mr. Wayne Suchman, AGSE-PM, AMSAT-D-WAG, DSN 693-1924 or commercial (314)263-1924, e-mail: wsuchman@emh4.wsmd.stl.army.mil.

b. Nondestructive Test Inspection technical point of contact for this TB is Mr. Scott Huddleston, DSN 693-1923 or commercial (314)263-1923, e-mail: shuddles@emh4.wsmd.stl.army.mil.

**6. Reporting of 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, US Army Aviation and Troop Command, ATTN: AMSAT-I-MP, 4300 Goodfellow Blvd., St. Louis, MO 63120-1798. A reply will be furnished to you. You may also submit your recommended changes by E-mail directly to <mpmt%avma28@st-louis-emh7.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.

TB 1-1520-210-23-1

By Order of the Secretary of the Army.

Joel B. Huhn Official

JOEL B HUDSON Administrative Assistant to the Secretary of the Army 03432

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

DISTRIBUTION:

To be distributed in accordance with DA Form 12-31-E, block no. 3674, requirements for TB 1-1520-210-23-1.

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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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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
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- 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		
	SOMETHING WRONG WITH PUBLICATION	
CAREFULLY	DOWN THE T IT ON THIS FORM. TEAR IT OUT, FOLD IT T IN THE MAIL. FROM: (PRINT YOUR UNIT'S COMPLETE ADDRESS) DATE SENT	
PUBLICATION NUMBER	PUBLICATION DATE PUBLICATION TITLE	
BE EXACT PIN-POINT WHERE IT IS          PAGE       PARA- GRAPH       FIGURE       TABLE         NO.       SRAPH       FIGURE       TABLE	IN THIS SPACE, TELL WHAT IS WRONG AND WHAT SHOULD BE DONE ABOUT IT.	
PRINTED NAME, GRADE OR TITLE AND TELE	EPHONE NUMBER SIGN HERE	
	EVIOUS EDITIONS P.SIF YOUR OUTFIT WANTS TO KNOW ABOUT YOUR E OBSOLETE. 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

#### APPROXIMATE CONVERSION FACTORS

APPROXIMATE CONVERSION FACTORS			
TO CHANGE	το	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		
Square Yards	Square Meters		
Square Miles	Square Kilometers		
Acres	Square Hectometers	0.405	
Cubic Feet	Cubic Meters		
Cubic Yards	Cubic Meters		
Fluid Ounces	Milliliters		
1ts	Liters		
arts	Liters		
allons	Liters		
Ounces	Grams		
Pounds	Kilograms		
Short Tons	Metric Tons		
Pound-Feet	Newton-Meters		
Pounds per Square Inch	Kilopascals		
Miles per Gallon	Kilometers per Liter		
Miles per Hour	Kilometers per Hour	1 600	
Mines per mour	Infometers per flour	1.003	
TO CHANGE	то	MULTIPLY BY	
<b>TO CHANGE</b> Centimeters	TO Inches		
		0.394	
Centimeters	Inches	0. <b>394</b> 3.280	
Centimeters Meters Meters Kilometers	Inches Feet	0.394 3.280 1.094	
Centimeters Meters Meters Kilometers	Inches Feet Yards Miles	0.394 3.280 1.094 0.621	
Centimeters Meters Meters Kilometers Square Centimeters	Inches Feet Yards Miles Square Inches	0.394 3.280 1.094 0.621 0.155	
Centimeters Meters Meters Kilometers Square Centimeters Square Meters	Inches Feet Yards Miles Square Inches Square Feet	0.394 3.280 1.094 0.621 0.155 10.764	
Centimeters Meters Meters Kilometers Square Centimeters Square Meters Square Meters	Inches Feet Yards Miles Square Inches Square Feet Square Yards	0.394 3.280 1.094 0.621 0.155 10.764 1.196	
Centimeters . Meters . Meters . Kilometers . Square Centimeters . Square Meters . Square Meters . Square Kilometers .	Inches Feet Yards Miles Square Inches Square Feet	0.394 3.280 1.094 0.621 0.155 10.764 1.196 0.386	
Centimeters Meters Meters Kilometers Square Centimeters Square Meters Square Meters	Inches Feet Yards Miles Square Inches Square Feet Square Yards Square Miles	0.394 3.280 0.621 0.155 10.764 1.196 0.386 2.471	
Centimeters . Meters . Meters . Kilometers . Square Centimeters . Square Meters . Square Meters . Square Kilometers . Square Hectometers . Cubic Meters .	Inches Feet Yards Miles Square Inches Square Feet Square Yards Square Miles Acres Cubic Feet	0.394 3.280 0.621 0.155 10.764 1.196 0.386 2.471 35.315	
Centimeters . Meters . Meters . Kilometers . Square Centimeters . Square Meters . Square Meters . Square Kilometers . Square Hectometers . Cubic Meters . Cubic Meters .	Inches Feet Yards Miles Square Inches Square Feet Square Yards Square Miles Acres	0.394 3.280 1.094 0.621 0.155 10.764 1.196 0.386 2.471 35.315 1.308	
Centimeters . Meters . Meters . Kilometers . Square Centimeters . Square Meters . Square Meters . Square Kilometers . Square Hectometers . Cubic Meters .	Inches Feet	0.394 3.280 1.094 0.621 0.155 10.764 1.196 0.386 2.471 35.315 1.308 0.34	
Centimeters . Meters . Meters . Kilometers . Square Centimeters . Square Meters . Square Meters . Square Kilometers . Square Hectometers . Cubic Meters . Milliliters . Liters .	Inches Feet	$\begin{array}{cccccccccccccccccccccccccccccccccccc$	
Centimeters . Meters . Meters . Kilometers . Square Centimeters . Square Meters . Square Meters . Square Kilometers . Square Hectometers . Cubic Meters . Cubic Meters . Milliliters .	Inches Feet	$\begin{array}{cccccccccccccccccccccccccccccccccccc$	
Centimeters Meters Meters Kilometers Square Centimeters Square Meters Square Meters Square Kilometers Square Hectometers Cubic Meters Cubic Meters Milliliters Liters Liters.	Inches Feet Yards Miles Square Inches Square Feet Square Yards Square Miles Acres Cubic Feet Cubic Yards Fluid Ounces Pints. Quarts Gallons	$\begin{array}{cccccccccccccccccccccccccccccccccccc$	
Centimeters . Meters . Meters . Kilometers . Square Centimeters . Square Meters . Square Meters . Square Kilometers . Square Hectometers . Cubic Meters . Cubic Meters . Milliliters . Liters . 'ers . ms .	Inches Feet	$\begin{array}{cccccccccccccccccccccccccccccccccccc$	
Centimeters . Meters . Meters . Kilometers . Square Centimeters . Square Meters . Square Meters . Square Kilometers . Square Hectometers . Cubic Meters . Cubic Meters . Milliliters . Liters . Liters . .ograms .	Inches Feet	$\begin{array}{cccccccccccccccccccccccccccccccccccc$	
Centimeters . Meters . Meters . Square Centimeters . Square Meters . Square Meters . Square Meters . Square Hectometers . Cubic Meters . Cubic Meters . Cubic Meters . Milliliters . Liters . Liters . ograms . Metric Tons .	Inches Feet	$\begin{array}{cccccccccccccccccccccccccccccccccccc$	
Centimeters . Meters . Meters . Square Centimeters . Square Meters . Square Meters . Square Meters . Square Hectometers . Cubic Meters . Cubic Meters . Cubic Meters . Milliliters . Liters . Liters . ograms . Metric Tons . Newton-Meters .	Inches Feet	$\begin{array}{cccccccccccccccccccccccccccccccccccc$	
Centimeters . Meters . Meters . Square Centimeters . Square Meters . Square Meters . Square Meters . Square Hectometers . Cubic Meters . Cubic Meters . Cubic Meters . Milliliters . Liters . Liters . ograms . Metric Tons . Newton-Meters . Kilopascals .	Inches Feet	$\begin{array}{cccccccccccccccccccccccccccccccccccc$	
Centimeters . Meters . Meters . Kilometers . Square Centimeters . Square Meters . Square Meters . Square Meters . Square Hectometers . Cubic Meters . Cubic Meters . Cubic Meters . Milliliters . Liters . Liters . ograms . Metric Tons . Newton-Meters .	Inches Feet	$\begin{array}{cccccccccccccccccccccccccccccccccccc$	

### 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

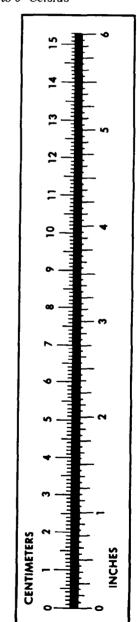
 $5/9(^{\circ}F - 32) = ^{\circ}C$ 

212° Fahrenheit is evuivalent to 100° Celsius

90° Fahrenheit is equivalent to 32.2° Celsius

32° Fahrenheit is equivalent to 0° Celsius

 $9/5C^{\circ} + 32 = {}^{\circ}F$ 



PIN NO: 075397-000