

**TECHNICAL MANUAL**

**OPERATOR AND  
CREWMEMBER CHECKLIST**

**ARMY MODEL**

**AH-1S (MOD)**

**HELICOPTERS**

**This copy is a reprint which included current  
pages from Changes 1 through 4.**

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**\*This manual supersedes TM 55-1520-234-CL dated  
7 May 1984, including all changes.**

**HEADQUARTERS  
DEPARTMENT OF THE ARMY**

**21 OCTOBER 1987**

CHANGE  
NO. 4 }

HEADQUARTERS  
DEPARTMENT OF THE ARMY  
WASHINGTON, D. C., 31 August 1992

OPERATOR AND  
CREWMEMBER CHECKLIST

ARMY MODEL  
AH-1S (MOD)  
HELICOPTERS

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E-1 and E-2  
E-11/E-12  
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**URGENT**

**TM 55-1520-234-CL  
C3**

CHANGE }  
NO. 3

HEADQUARTERS  
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**OPERATOR AND  
CREWMEMBER CHECKLIST**

ARMY MODEL  
AH-1S (MOD)  
HELICOPTERS

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**TM 55-1520-234-CL**  
**C 2**

CHANGE }  
NO. 2 }

HEADQUARTERS  
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**OPERATOR AND  
CREWMEMBER CHECKLIST**

ARMY MODEL  
AH-1S (MOD)  
HELICOPTERS

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**TM 55-1520-234-CL  
C1**

CHANGE

NO. 1

}

HEADQUARTERS  
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**OPERATOR AND  
CREWMEMBER CHECKLIST**

ARMY MODEL  
AH-1S (MOD)  
HELICOPTERS

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N-3 through N-6  
P-1 and P-2  
P-3/P-4

N-3 through N-6  
P-1 and P-2  
P-3/P-4

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## GENERAL INFORMATION AND SCOPE

**SCOPE.** This checklist contains the operators and Crew members checks to be accomplished during normal and emergency operations.

**GENERAL INFORMATION.** The checklist consists of three parts: Normal procedures, emergency procedures, and performance data. Normal procedures consist of the procedures required for normal flight. Emergency procedures are subdivided into 10 classifications as follows: engine, rotor/transmission/drive system, fire, fuel, electrical (Elect), hydraulic (Hyd), landing and ditching (Ldg/Dtch), flight controls (Flt Cont), bailout (Bailout), and mission equipment (MSN/EQPT) (as applicable).

### NOTE

This checklist does not replace the amplified version of the procedures in the operators manual (TM 55-1520-234-10), but is a condensed version of each procedure.

**Normal Procedures Pages.** The contents of the normal procedures of this manual are a condensation of the amplified checklist appearing in the normal procedures or crew duties portion of the applicable operators manual.

**Emergency Procedures Pages.** The requirements for this section of the condensed checklist manual (CL) are identical to those for the normal procedures, except that the information is drawn from the amplified checks in the emergency procedures portion of the operators manual. The emergency requirements are subdivided into the 10 classifications listed above.

**Performance Data Pages.** This section contains expanded armament checks and engine starting procedures.

Symbols Preceding Numbered Steps

- \* - Indicates performance of steps is mandatory for all "Thru Flights".
- ★ - Indicates a detailed procedure for this step is included in the Performance Checks section, located at the back of the checklist.
- (0) - Indicates if installed.

Immediate action emergency items are underlined for your reference and must be committed to memory.

**Reporting of Errors.** Reports of errors, omissions, and recommendations for improving this publication by the individual user are encouraged. Reports should be submitted on DA Form 2028 (Recommended Changes to Publications and Blank Forms) and forwarded direct to Commander, US Army Aviation Systems Command, AMSAV-MPSD, 4300 Goodfellow Blvd., St. Louis, MO 63120-1798.

## HELICOPTER AND SYSTEMS

### BEFORE EXTERIOR CHECK

#### WARNING

Do not preflight until armament systems are safe.

- ★ 1. Armament systems-Safe.
- \* 2. Canopy removal arming/firing mechanism safety pins-IN.
- \* 3. Publications-Check.
- 4. BAT switch-ON.
- 5. NON-ESNTL BUS switch-MANUAL.
- 6. Lights-Check if use is anticipated.
- 7. BAT switch-OFF.
- 8. Pilot's HSS linkage assembly-Check.
- 9. Area behind pilot seat-Check.
- 10. Map light-OFF.
- \* 11. Canopy-Check.

### AREA 1 - FUSELAGE AND MAIN ROTOR

- \* 1. Fuel-Check quantity.
- \* 2. Fuel sample-Check as required.
- ★ 3. Main rotor blade - Check.
- 4. Fuselage-Check.
- \* 5. Ammunition bay-Check.
- \* 6. Hydraulic compartment-Check.
- 7. Landing gear-Check.
- 8. Area beneath transmission-Check.

- 9. Wing-Check.
- (0) 10. Armament-Check.
- 11. Engine and transmission cowling-Secure open.
- \* 12. Transmission area-Check.
- \* 13. Pylon access-Check.
- \* 14. Swashplate and support-Check.
- \* 15. Main rotor system-Check.
- \* 16. Plenum and particle separator-Check.
- 17. Engine compartment-Check and close cowlings.
- 18. Fuselage-Check.

## AREA 2 - TAIL SECTION-RIGHT SIDE

- 1. Tailpipe-Check.
- 2. Electrical compartment-Check.
- 3. Right side tailboom-Check.
- \* 4. 42-degree gearbox-Check.
- \* 5. Main rotor blade-Check.
- \* 6. Tail rotor-Check.

## AREA 3 - TAIL SECTION-LEFT SIDE

- \* 1. 90-degree gearbox-Check.
- 2. Left side tailboom-Check.
- 3. Oil cooler compartment-Check.

## AREA 4 - FUSELAGE-LEFT SIDE

- 1. Engine and transmission cowling-Secure open and check
- \* 2. Plenum and particle separator-Check.
- 3. Tail rotor drive shaft-Check.
- 4. Transmission area-Check.
- 5. Pylon access-Check.
- 6. Swashplate and support-Check.
- 7. Top pylon area-Check.
- 8. Main rotor system-Check.
- 9. Engine and transmission cowlings-Closed.

- 10. Wing-Check.
- (0) 11. Armament-Check.
- 12. Area beneath transmission-Check.
- 13. Landing gear-Check.
- 14. Lower fuselage-Check.
- \* 15. Hydraulic compartment-Check.
- 16. Canopy-Check. (Single Pilot-Perform BEFORE STARTING ENGINE-GUNNER.)
- 17. Fire extinguisher-Check.
- 18. Fuselage-Check.
- 19. Static port-Check.
- \* 20. Ammunition bay-Check.

### **AREA 5-NOSE SECTION**

- 1. Turret-Check.
- 2. Windshield and rain removal nozzles-Check.
- 3. Wire strike protection lower cutter, chin cutter and deflector-Check.

### **\*WALK-AROUND CHECK**

- 1. Cowling, doors, and panels-Secure.
- 2. Covers, tiedowns, and cables-Remove and rotate main rotor.
- (0) 3. Wing store safety pins-Removed.
- (0) 4. TOW launcher missile arming lever-Check down.
- 5. Crew/passenger brief-Complete.

### **BEFORE STARTING ENGINE-GUNNER**

- \* 1. Cockpit-Check.
- 2. HSS-Check and stow.
- \* 3. Miscellaneous control panel switches-Set.
- \* 4. EMER COLL HYD switch-OFF.
- \* 5. WING STORES JETTISON switch-OFF, cover down and lockwired.
- 6. Avionics-As required.
- \* 7. System/flight instruments-Check.

8. Standby compass-Check.
- ★\* 9. Armament switches-Set.
10. Map light-OFF.
- \* 11. Canopy removal arming/firing mechanism safety pin-Remove and stow (if occupied).

## BEFORE STARTING ENGINE-PILOT

- \* 1. IGNITION SW-ON.
- \* 2. Collective friction and lock-OFF.
- \* 3. AC circuit breakers-As required.
- \* 4. PWR panel switches-Set.
- \* 5. ENGINE panel switches-Set.
6. FAT gauge-Check.
7. SCAS POWER switch-OFF.
8. System instruments-Check and set.
9. Collective accumulator switch-OFF.
10. WING STORES JETTISON switch-Cover down and lockwired.
11. Compass switch-MAG.
12. Clock-Set
13. Flight instruments-Check and set.
- \* 14. Altimeter-Set.
15. M73 sight-Check.
- ★ 16. Armament switches-Set.
17. CODE HOLD switch-OFF.
- \* 18. FIRE DET TEST switch-TEST.
19. PITOT HEAT switch-OFF.
20. RAIN REMOVAL/ENVR CONT switch- OFF
21. HEAT or VENT AIR pull knob-Out.
22. LOW G warning light - Press to test.
- \* 23. MASTER CAUTION/RPM lights-Check illuminated.
- \* 24. Caution panel lights-TEST and RESET MASTER CAUTION light.
25. Avionics-OFF and set as desired.

- 26. Light switches Set
- \* 27. DC circuit breakers in except TOW BLOW.
- \* 28. Canopy removal arming/firing mechanism safety pin-Remove and stow.

### \*STARTING ENGINE

- 1. Ground power unit-Connect for GPU start.  
(BAT switch-OFF.)
- 2. Fireguard Posted, if available.
- 3. Rotor blades-Check clear.
- 4. Throttle-Check and set.
- ★ 5. Engine-Start.
- 6. GPU-Disconnect after GPU start.
- 7. BAT switch-ON.
- 8. Systems-Check.

### ENGINE RUNUP

- \* 1. Avionics mission equipment-On as desired.
- \* 2. SCAS POWER switch-POWER.
- 3. Hydraulic system-Check.
- \* 4. Canopy doors-Secure.
- \* 5. Throttle-6600.
- \* 6. Systems-Check as required.
- \* 7. SCAS-Check.
- \* 8. Armament systems-Set.
- \* 9. Avionics mission equipment-Check and set.
- \* 10. Altimeters-Set.
- \* 11. RMI-Set as required.
- \* 12. Attitude indicator-Set.
- ★ 13. Armament systems-Check.
- 14. Health Indicator Test (HIT) check-Perform.
- \* 15. Armament switches-Set.



**\*HOVER CHECK**

1. Flight controls-Check.
2. Engine and transmission instruments-Check.
3. Flight instruments-Check as required.
4. Power-Check.

**\*BEFORE TAKEOFF**

1. RPM-6600.
2. Systems-Check.
3. Avionics-As required.
4. Mission equipment-Set as required.
5. Armament switches-Set.

**BEFORE LANDING**

1. Gunner PLT OVRD switch-OFF.
2. MASTER ARM switch-STBY.
3. TCP-TSU/GUN.
4. Searchlight-As required.

**AFTER LANDING**

1. Searchlight-As required.
2. Transponder-As required.

**ENGINE SHUTDOWN**

1. Throttle-Idle for two minutes.
2. FORCE TRIM switch-FORCE TRIM.
- ★ 3. Armament system-OFF and set.
4. Systems-Check and turn OFF.
5. Throttle-OFF.
6. ENGINE and PWR panel switches-OFF.

7. Collective accumulator-Check.
8. BAT switch-OFF.
9. IGNITION SW-OFF.
10. Both canopy removal arming/firing mechanism safety pins-In.

**BEFORE LEAVING HELICOPTER**

1. Conduct post-flight check.
2. Mission equipment-Secure.
- ★ 3. All armament-Check.
4. Complete all forms and records.
5. Secure helicopter.

## ENGINE

### AUTOROTATE

1. Collective-Adjust.
2. Pedals-Adjust.
3. "Throttle-Adjust.
4. Airspeed-Adjust.
- (0) 5. Wingstores-Jettison.

### EMER SHUTDOWN

1. Throttle-OFF.
2. FUEL switch-OFF.
3. BAT switch-OFF.

### EMER GOV OPNS

1. GOV switch-EMER.
2. Throttle-Adjust.
3. Land as soon as possible.

### ENGINE MALFUNCTION-HOVER

#### AUTOROTATE

### ENGINE MALFUNCTION-LOW ALTITUDE/LOW AIRSPEED OR CRUISE.

1. AUTOROTATE.
2. EMER GOV OPNS.

### ENGINE MALFUNCTION--120 KIAS AND ABOVE

1. CYCLIC-Adjust.
2. AUTOROTATE.
3. EMERGOV OPNS.

## **DROOP COMPENSATOR FAILURE**

EMER GOV OPNS

## **ENGINE COMPRESSOR STALL**

1. Collective-Reduce.
2. RAIN REMOVAL /FNVR CONT switch-OFF.
3. DE-ICF switch-OFF.
4. Land as soon as possible.

## **INLET GUIDE VANE ACTUATOR FAILURE**

Land as soon as practicable.

## **ENGINE OVERSPEED**

1. Collective-Increase.
2. Throttle-Reduce.
3. EMER GOV OPNS.

## **ENGINE OIL TEMPERATURE HIGH**

If the engine oil temperature exceeds the operating limits as specified in Chapter 5, land as soon as possible.

**ROTOR, TRANSMISSION, AND  
DRIVE SYSTEM**

**TAIL ROTOR FAILURE-FLIGHT**

**LOSS OF THRUST/COMPONENTS**

AUTOROTATE

**TAIL ROTOR FAILURE-HOVER**

1. Throttle-Reduce.
2. AUTOROTATE.

**MAIN DRIVESHAFT FAILURE**

1. AUTOROTATE.
2. Throttle-OFF.

**CLUTCH FAILS TO DISENGAGE**

1. Throttle-ON.
2. Land as soon as possible.

**CLUTCH FAILS TO RE-ENGAGE**

1. AUTOROTATE.
2. Throttle-OFF.

## **FIRE**

### **FIRE-ENGINE START**

1. Throttle-OFF.
2. FUEL switch-OFF.
3. Start switch-Press.

### **FIRE-GROUND (Pilot's Station)**

EMER SHUTDOWN

### **FIRE-GROUND (Gunner's Station)**

1. IDLE STOP-RELEASE and hold.
2. Throttle-OFF.
3. ELEC PWR switch-EMER OFF.

### **FIRE-FLIGHT (POWER-ON)**

1. Land as soon as possible.
2. EMER SHUTDOWN.

### **FIRE-FLIGHT (Power-OFF)**

1. AUTOROTATE.
2. EMER SHUTDOWN.

### **ELECTRICAL FIRE-FLIGHT**

1. BAT switch-ON.
2. Electrical switches-OFF.
3. NON-ESS BUS switch-NORMAL.
4. Land as soon as possible.
5. EMER SHUTDOWN.

### **FUMES FROM ECU**

1. ENVR CONT switch-OFF.
2. Land as soon as possible.

**FUEL**

**SINGLE OR DUAL FUEL BOOST PUMP FAILURE**

1. Fuel switch-ON.
2. Pump circuit breaker-OUT.
3. Land as soon as practicable.

## ELECTRICAL

### DC GENERATOR FAILURE

1. GEN BUS RESET/GEN FIELD circuit breaker-IN.
2. GEN switch-RESET then GEN position.

If not restored:

3. GEN switch-OFF.
4. TCP MODE SEL switch-OFF.
5. Switches-OFF for unused equipment.
6. NON ESS BUS switch-As required.

### AC INVERTER FAILURE-CAUTION LIGHT ILLUMINATION

1. INV MAIN/STBY circuit breaker-In.
2. INV switch-STBY.
3. SCAS-Re-engage.

### OVERHEATED BATTERY

1. BAT switch-OFF.
2. Land as soon as possible.
3. EMER SHUTDOWN.



## HYDRAULIC

### HYDRAULIC FAILURE-SINGLE SYSTEM

1. EMER COTI. HYD switch - OFF (Pilot and gunner).
2. HYD CONT circuit breaker - In.
3. SCAS - DISENGAGE appropriate channels.
  - a. No. 1 system - Yaw channel.
  - b. No. 2 system - Pitch and roll channels.
4. MASTER ARM switch - OFF.
5. PLT OVRD switch - OFF.
6. Land as soon as practicable. A run-on landing at a speed of 50 KIAS or above is recommended.
7. EMER COLL HYD PUMP switch - ON (final approach).

### HYDRAULIC FAILURE-DUAL SYSTEM

1. EMER COLL HYD switch - OFF (pilot gunner).
2. HYD CONT circuit breaker - In.
3. SCAS - Disengage all channels.
4. MASTER ARM switch - OFF.
5. PLT OVRD switch - OFF.
6. Land as soon as practicable. A run-on landing at a speed of 50 KIAS or above is recommended.
7. EMER COLL HYD switch - ON (final approach).

## LANDING AND DITCHING

### DITCHING-POWER ON

1. MASTER ARM-OFF.
2. PLT OVRD-OFF.
3. JETTISON CANOPY.
4. Gunner-Exit.
5. Hover-Clear of gunner.
6. Throttle-OFF and autorotate.

### DITCHING-POWER OFF

Perform engine malfunction procedures.

### JETTISON CANOPY

1. Arming/firing mechanism handle-turn 90°.
2. Arming/firing mechanism handle-Pull.

## FLIGHT CONTROLS

### FLIGHT CONTROL/MAIN ROTOR SYSTEM MALFUNCTION

1. Land as soon as possible.
2. EMER SHUTDOWN.

### LOW G WARNING

1. Cyclic stick - Aft to return to positive thrust condition.
2. Reduce severity of maneuver.

### MAST BUMPING

1. Reduce severity of maneuver.
2. Land as soon as possible.

### STABILITY AND CONTROL AUGMENTATION SYSTEM (SCAS) FAILURE

1. SCAS REL button-Press.
2. SCAS POWER switch-OFF.
3. Unaffected SCAS channels-re-engage only if power switch has not been turned off.
4. Land as soon as practicable.

### IN-FLIGHT WIRE STRIKE

Land as soon as possible.

## **BAILOUT**

### **BAILOUT PROCEDURES**

1. FORCE TRIM switches-TRIM.
2. Attitude-Attempt to stabilize helicopter in a shallow descent at approximately 80 KIAS.
3. JETTISON CANOPY.
4. Bailout.

## **MISSION EQUIPMENT**

### **WING STORES EMERGENCY JETTISON (PILOT)**

1. WG ST JETTISON SELECT switch-As required.
2. WINGS STORES JETTISON switch-UP.

### **WING STORES EMERGENCY JETTISON (GUNNER)**

WING STORES JETTISON switch-Up.

### **TOW MISSILE EMERGENCY PROCEDURES HANGFIRE/MISFIRE**

1. After landing-Ensure weapons are pointed at safe area.
2. Armament switches-OFF
3. Engine shutdown.
4. Helicopter-Exit 90 degrees from line of fire.

### **EMERGENCY WIRE CUT**

WIRE CUT switch-Press.

### **TOW MISSILE FLIGHT MOTOR FAILURE**

WIRE CUT switch-Press.

### **TOW MISSILE ERRATIC IN FLIGHT**

1. Attempt to keep missile down range.
2. Emergency wire cut if needed.

## RUNAWAY GUN

1. MASTER ARM switch-OFF.
2. PLT OVRD switch-OFF.

TABLE E. CAUTION PANEL

<u>LIGHT</u>	<u>CORRECTIVE ACTION</u>
MASTER CAUTION	(No segment light.) <u>Land as soon as possible.</u>
ENGINE OIL PRESS	<u>Land as soon as possible.</u>
XMSN OIL PRESS	<u>Land as soon as possible.</u>
ENGINE OIL BYPASS	<u>Land as soon as possible.</u>
XMSN OIL BYPASS	<u>Land as soon as possible.</u>
XMSN OIL HOT	<u>Land as soon as possible.</u>
ENG FUEL PUMP	<u>Land as soon as possible.</u>
CHIP DETECTOR	<u>Land as soon as possible.</u>
FWD FUEL BOOST	Refer to emergency procedure.
FUEL FILTER	<u>Land as soon as possible.</u>
10% FUEL	Land as soon as practicable.
AFT FUEL BOOST	Refer to emergency procedure.
DC GENERATOR	Refer to emergency procedure.
INST INVERTER	Refer to emergency procedure.
EXTERNAL POWER	Close door.
GOV EMER	Information/system status.

LIGHT

CORRECTIVE ACTION

IFF

Information/system status.

HYD PRESS #1

Refer to emergency  
procedure.

HYD PRESS #2

Refer to emergency  
procedure.

SPARE

Land as soon as possible.



## BEFORE EXTERIOR CHECK

1. Armament systems safe as follows:
  - a. Wing ejector racks-Jettison safety pins installed.
  - b. TOW launcher-Missile arming lever up.
  - c. Rocket launcher-Igniter arms in contact with rockets.
  - d. MASTER ARM switch-OFF.
- (0)
  - e. SMOKE switches-OFF.
  - f. PLT OVRD switch-OFF.
  - g. WG ST ARM switch-OFF.
  - h. TURRET weapon-SAFE.

## BEFORE STARTING ENGINE-GUNNER STATION

9. Armament switches-Set as follows:
  - a. Gunner SHC ACO/TRK/STOW switch-STOW.
  - b. Gunner TCP MODE SELECT switch-OFF; system status annunciator displays OFF.
  - c. Gunner TCP CAMERA switch-OFF.
  - d. Gunner TCP TSU RTCL switch-OFF.
  - e. Gunner TCP MISSILE SELECT switch-As desired.
  - f. Gunner AMMO RSV Percent dials-Set.
  - g. TURRET DEPT LIMIT switch-DEPR LIMIT.

## BEFORE STARTING ENGINE-PILOT STATION

16. Armament switches-Set.
  - a. WPNS CONTR-Gunner.
  - b. RKT PR SEL switch-As desired.
  - c. Smoke grenade dispenser-Set.
  - d. PSI-Check.

## STARTING ENGINE

5. Engine-Start as follows:
  - a. Start switch-Press and hold (start time).
  - b. Main rotor-Check turning as N1 reaches 15 percent. If not, abort the start.
  - c. Start switch-Release at 40 percent N1 or after 35 seconds, whichever occurs first.
  - d. IGN SYS circuit breaker-OUT, at 750 degrees C TGT.
  - e. GEN switch-ON, at 60 percent N1.
  - f. INV switch-STBY for first flight of day and MAIN for thru-flight.
  - g. Throttle-Slowly advance past the engine idle stop to engine idle position. Check stop by attempting to roll throttle off.
  - h. N1-Check 68 percent to 72 percent. Hold a slight pressure against the idle stop during this check.
  - i. IGN SYS circuit breaker-IN after TGT has stabilized.

## ENGINE RUNUP

14. Armament systems-Check as follows:
  - a. HSS built-in test-Check.
  - b. HSS to turret-Check.
  - c. HSS to TSU. Check.
  - d. TOW built-in test-Check.
  - e. TSU fast. rate tracking-Check.
  - f. TSU slow rate tracking-Check.
  - g. TSU motion compensation-Check.
  - h. TSU to turret-Check.
  - i. M73 sight-ON and check.

**16. Armament switches-Set as follows:**

- a. Gunner PLT OVRD switch-OFF.
- b. Pilot MASTER ARM switch-STBY.
- c. TCP-TSU/GUN.
- d. TOW launchers-Missile arming lever down.
- e. Wing ejector rack jettison safety pins-Removed.
- f. Other switches-Set for mission requirements.

**ENGINE SHUTDOWN**

**3. Armament systems-OFF and set as follows:**

- a. TOW BLOW circuit breaker-OUT.
- b. TCP switch-OFF.
- c. MASTER ARM-OFF.
- d. HSS linkage-STOW.
- e. TURRET DEPT LIMIT switch-DEPR limit.
- f. M73 sight-OFF.

**BEFORE LEAVING HELICOPTER  
CHECK**

**3. All armament-Check as follows:**

- a. Wing ejector rack jettison safety pins- Installed.
- b. TOW missile arming lever-UP (if missile installed).
- c. Rocket igniter arms-In contact with rockets to reduce possibility of ignition from electromagnetic interference (EMI).

TM 55-1520-234-CL is published for the use of all concerned.

**By Order of the Secretary of the Army:**

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*The Adjutant General*

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To be distributed in accordance with DA Form 12-31, CL requirements for AH-1S (MOD) aircraft.

## **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 dekagram = 10 grams = .35 ounce
- 1 hectogram = 10 dekagrams = 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 = 38.82 fl. ounces
- 1 dekaliter = 10 liters = 2.64 gallons
- 1 hectoliter = 10 dekaliters = 26.42 gallons
- 1 kiloliter = 10 hectoliters = 264.18 gallons

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