*TM 1-1520-236-CL

TECHNICAL MANUAL

OPERATOR AND CREWMEMBER CHECKLIST

ARMY MODEL

AH-1P (PROD)

AH-1E (ECAS)

AH-1F (MODERNIZED COBRA)

HELICOPTERS

Approved for public release; distribution is unlimited.

*This manual supersedes TM 55-1520-236-CL, dated 3 January 1980, including all changes.

HEADQUARTERS, DEPARTMENT OF THE ARMY

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GENERAL INFORMATION AND SCOPE

SCOPE. This checklist contains the operators and crewmembers 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) system, hydraulic (Hyd), landing and ditching (Ldg/Dtch), flight controls (Flt Cont), and mission equipment (MSN/EQPT) (as applicable).

NOTE

This checklist does not replace the amplified version of the procedures in the operators manual (TM 1-1520-236-10), 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 Checks. 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 of this step is included in the Performance Checks section, located at the back of the checklist.

(O) — Indicates if installed.

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

Reporting of Errors and Recommending Improvements. You can help improve this manual. If you find any mistakes or if you know of a way to improve the procedures, please let us know. Mail your letter or DA Form 2028 (Recommended changes to Publications and Blank Forms) directly to: Commander, U.S. Army Aviation and Missile Command, ATTN: AMSAM-MMC-LS-LP, Redstone Arsenal, AL 35898-5230. You may also submit your recommended changes by E-Mail directly to ls-lp@redstone.army.mil or by fax 256-842-6546/DSN 788-6546. A reply will be furnished directly to you. Instructions for sending an electronic 2028 may be found at the back of TM 1-1520-236-10.

NORMAL PROCEDURES

CREW BRIEFING.

The following is a guide that should be used in accomplishing required crew briefing. Items that do not pertain to a specific mission may be omitted.

1. Mission.
   a. Mission brief.
   b. NBC operations.
   c. ASE equipment and use.
   d. Actions on contact.
2. Weather.

   Inadvertent IMC.
3. Flight route.
   a. Doppler.
   b. Time enroute.
   c. Altitude and techniques of movement.
4. Performance data.
5. Emergency actions.
   a. Immediate action steps.
   b. Mayday call.
   c. Egress procedures.
   d. Rendezvous points.
   e. Emergency equipment.
6. Crew duties and responsibilities.
   a. Transfer of controls (normal and emergency).
   b. Area of scan responsibilities.

7. Pilot on the controls.
   a. Positive aircraft control (Primary focus outside).
   b. Avoid traffic and obstacles.
   c. Announce all actions.
8. Pilot not on the controls.
   a. Announce traffic and obstacles.
   b. Navigate.
   c. Copy all required information.
   d. Perform other duties as assigned.
   e. Announce focusing “in and out of the cockpit”.
   f. Acknowledge intentions.
9. Both crewmembers.
   a. Cross check instruments and systems.
   b. Tune radios as required.
   c. Most conservative action.
   d. Two challenge rule.
10. Armament porcedures.
   a. Target priority.
   b. Target handoff.
   c. Ammo load.
11. NVG considerations.
12. Refueling operations.
13. Required equipment.
14. Additional information/questions.

HELICOPTER AND SYSTEMS

BEFORE EXTERIOR CHECK

Warning

Do not preflight until armament systems are safe.

*1. Wing ejector rack — Jettison safety pins installed.

*2. TOW launcher — Missile arming levers up.

*3. Rocket launchers — Igniter arms in contact with rockets.

*4. W2P1 — Disconnected.

*5. JETTISON SELECT switches — OFF.

*6. TURRET STOW, ADS, FCC circuit breakers and TURRET DRIVE MOTOR switch — OUT/OFF.

(O) *7. CHAFF DISP CONT switch — SAFE.

*8. Canopy removal arming/firing mechanism safety pins — IN.

*9. Publications — Check.

10. BATTERY switch — START.

11. NON-ESNTL BUS switch — MANUAL.

12. Lights — Check if use is anticipated.

13. BATTERY switch — OFF.

14. Pilot's HSS linkage assembly — Check.

15. Area behind pilot seat — Check.

16. Both map lights — OFF.
17. Canopy — Check.

EXTERIOR CHECK

AREA 1 — FUSELAGE AND MAIN ROTOR

*1. Fuel — Check.
*2. Fuel sample — Check as required.
*3. Main Rotor Blade — Check.
4. Fuselage — Check.
*5. Ammunition bay (right side) — Check.
*6. Hydraulic compartment — Check.
7. Landing gear — Check.
8. Area beneath transmission — Check.
9. Wing — Check.
(O) ★10. TOW — Check.
(O) ★11. Rocket launcher — Check.
12. Engine and transmission cowlings — Secure open.
*13. Transmission area — Check.
*14. Pylon area — Check.
*15. Swashplate and support — Check.
*16. Main rotor system/root end fitting inboard surface — Check.
*17. Particle separator and scavenge ejector — Check.

18. Engine compartment — Check and close cowlings.
19. Fuselage — Check.

AREA 2 — TAIL SECTION — RIGHT SIDE

1. Tailpipe/IR duct assembly — 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 — LEFTSIDE

1. Engine and transmission cowling — Secure open and check.
*2. Particle separator — Check.
3. Tail rotor drive shaft — Check.
4. Transmission area — Check.
5. Swashplate and support — Check.
6. Drive links — Check.
7. Top of pylon — Check.

8. Main rotor system — Check.
9. Engine and transmission cowling — Close.
10. Wing — Check.

(O) ★11. TOW — Check.

(O) ★12. Rocket launcher — Check.

13. Area beneath transmission — Check.
14. Landing gear — Check.
15. Lower fuselage — Check.

*16. Hydraulic compartment — Check.

17. Canopy – Check (If single pilot — perform checks in paragraph 8-20).
18. Fire extinguisher — Check.
19. Gunner's HSS linkage assembly — Check.
20. Map light — OFF.
21. Fuselage — Check.
22. Static port — Check.

*23. Ammunition bay (left side) — Check.

AREA 5 — NOSE SECTION

★ 1. Turret — Check.

2. Windshield and rain removal nozzles — Check.

*WALK AROUND CHECK

1. Cowling, doors, and panels — Secure.

2. Covers, tiedowns, grounding cables, wing store, chaff dispenser safety pin and AIM-1/EXL warning flag — Remove and rotate main rotor.

(O) 3. TOW launchers missile arming levers — Check down.

(O) 4. W2P1 — Connect.

5. Crew briefing — Completed.

BEFORE STARTING ENGINE — GUNNERS STATION

*1. ENG DE-ICE switch — OFF.

*2. GOV switch — AUTO.

*3. EMER HYDR PUMP switch — OFF.

*4. JTSN SEL — As desired.

*5. WING STORES JETTISON switch — Cover down and locked wired.

6. Avionics — As desired.

*7. Systems/flight instruments — Check.

*8. Attitude indicator — Caged and locked.

9. Standby compass — Check.

*10. PLT ORIDE switch — OFF.

*11. TUR SLEW switch — NORM.

*12. LASER SAFE/TURRET DEPR limit switch — DEPR limit.

*13. SHC ATS switch — STOW.

*14. TCP MODE SELECT switch — OFF.

*15. TCP TSU RTCL switch — OFF.

*16. Canopy removal arming/firing mechanism safety pin — Remove and stow (if occupied).

*17. Seat belt and shoulder harness — Check.

BEFORE STARTING ENGINE — PILOT STATION

*1. IGNITION switch — ON.

2. FAT indicator — Check.

*3. Collective friction and lock — OFF.

*4. AC circuit breaker panel — As desired.

*5. BATTERY switch — START.

*6. RPM switch — OFF.

*7. GEN switch — OFF.

*8. ALTNR switch — OFF.

*9. NON ESNTL bus switch — As desired.

*10. FORCE TRIM switch — FORCE TRIM.

*11. HYD TEST switch — Centered.

*12. FUEL switch — ON (both boost pump caution lights out).

*13. ENG OIL BYP switch — AUTO.

*14. ENG DEICE switch — OFF.

*15. GOV switch — AUTO.

16. SCAS POWER — OFF.

17. CODE HOLD switch — OFF.

18. EMER HYDR PUMP switch — OFF.

*19. Systems/flight instruments — Check.

*20. MASTER CAUTION and RPM WARNING lights — Check illuminated.

*21. Caution panel lights — TEST and RESET.

*22. HUD — OFF; check condition.

*23. FIRE DET TEST switch — TEST.

*24. Altimeter — Set.

25. Radar altimeter — OFF.

26. Clock — Set.

(O) 27. Low G Warning light — Press test.

28. HEAT/VENT AIR PULL knob — Out.

29. Avionics/mission equipment — OFF; set as desired.

30. COMPASS switch — MAG.

*31. LTS panel switches — Set.

32. ECS panel switches — Set.

*33. DC circuit breakers — In.

*34. Canopy removal arming/firing mechanism safety pin — Remove and stow.

*STARTING ENGINE

1. GPU — Connect if GPU starting. A minimum of 22 volts is required for battery start.
2. Fireguard — Posted if available.
3. Rotor blades — Check clear.
4. Throttle — Check and set.

★ 5. Engine — Start.

6. GEN switch — ON.

7. GPU — Disconnected.

8. BATTERY switch — RUN.

9. Engine and transmission oil pressures — Check.

10. Caution lights — Check off (ALTNR and RECT lights are ON).

11. Ammeter — Check less than 200 amps.

12. Turret stowed check — Perform.

★ 13. Gunnery Checklist — Perform if applicable.

ENGINE RUNUP

*1. Avionics/mission equipment — On as desired.

*2. SCAS POWER switch — POWER. Check NO-GO lights extinguish prior to 30 seconds.

*3. Ammo doors — Closed.

*4. Canopy doors — Secure.

*5. Throttle — 100%.

*6. ALTNR switch — ON (ALTER and RECT lights out).

*7. ENG DEICE switch — Check.

*8. Fuel quantity — Check.

*9. Engine and Transmission instruments — Check.

*10. DC voltmeter — Check.

*11. Pitot heater — Check.

*12. SCAS — Check.

*13. TURRET DRIVE MOTOR switch — TURRET.

*14. ADS PWR circuit breaker — IN.

*15. FCC switch — FCC.

*16. RMS control panel — Set.

*17. MASTER ARM switch — STBY.

*18. WPNS CONTR switch — Gunner.

*19. RECOIL COMPEN switch — OFF (ON for live fire).

*20. HUD PWR switch — STBY.

*21. TCP switch — STBY TOW.

*22. **CN** FLIR control panel OFF/ON/BIT switch — ON.

*23. Avionics/mission equipment — Check and set.

*24. Altimeters — Set.

*25. HSI heading — Set.

*26. ADI — Set. Gunner attitude indicator uncage and set.

*27. HUD PWR switch — ON.

★ 28. Armament-Systems — Check.

29. Health Indicator Test (HIT) — Check; perform as required.

*BEFORE TAKE OFF CHECK

1. TOW launchers — Missile arming levers down.
2. Wing ejector rack jettison safety pins — Removed.
3. RPM — 100 percent.
4. Systems — Check.
5. TCP switch — TSU/GUN.
6. TURRET DRIVE MOTOR switch — TURRET
7. Avionics, armament and other mission equipment — Set as desired.

*HOVER CHECK

1. Flight controls — Check.
2. Engine and transmission instruments — Check.
3. Flight instruments — Check.
4. Hover power check — Perform.

BEFORE LANDING

1. MASTER ARM switch — STBY. Verify STBY light is illuminated.
2. TURRET DRIVE MOTOR switch — OFF. Verify GUN ELEV STOWED light is illuminated.
3. Avionics and mission equipment — Set as required.

ENGINE SHUTDOWN

1. FORCE TRIM switch — FORCE TRIM.

2. TCP switch — OFF.
3. HUD night filter — DAY position.
4. HUD PWR switch — OFF.
5. FCC switch — OFF.
6. ADS PWR circuit breaker — Out.
7. TURRET STOW circuit breaker — Out.
8. Throttle — Reduce to idle. Allow TGT to stabilize for two minutes.
9. MASTER ARM switch — OFF.
10. TUR SLEW switch — GND TEST.
11. LASER SAFE/TURRET DEPR LIMIT switch — DEPR LIMIT.
12. HSS LINKAGE — STOW.
13. SCAS POWER switch — OFF.

★ 14. Gunnery Checklist — Perform if applicable.

15. Engine, transmission, and electrical indications — Check.
16. Avionics and other missions equipment — OFF.
17. ECS panel switch — OFF.
18. Lights — Set as required.
19. Gunner's attitude indicator — Cage.
20. Throttle — Off.
21. FUEL switch — OFF.
22. ALTNR switch — OFF RESET.

23. GEN switch — OFF.
24. BATTERY switch — START.
25. IGNITION switch — As required.
26. Canopy removal arming/firing mechanism safety pins — In.
27. Collective friction and lock — ON.
28. BATTERY switch — OFF.

BEFORE LEAVING HELICOPTER

1. Walk around — Perform.
2. Mission equipment — Secure.
3. Wing ejector rack jettison safety pins — Installed.
4. TOW missile arming lever — Up.
5. Rocker igniter arms — In contact with rockets.
6. Chaff dispenser system safety pin — Insert.
7. AIM-1/EXL aiming light protective covering/ warning flag — Installed.
8. Forms and Records — Complete.
9. Helicopter — Secure.

EMERGENCY PROCEDURES

ENGINE

AUTOROTATE

1. Collective — Adjust.
2. Pedals — Adjust.
3. Throttle — Adjust.
4. Airspeed — Adjust.

(O) 5. Wingstores — Jettison.

EMER SHUTDOWN

1. Throttle — Off.
2. FUEL switch — OFF.
3. BATTERY 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. EMER GOV OPNS.

DROOP COMPENSATOR FAILURE

EMER GOV OPNS

ENGINE COMPRESSOR STALL

1. Collective — Reduce.
2. All bleed air — OFF.
3. 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

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. Starter switch — Press.
2. Throttle — Off.
3. FUEL switch — OFF.

FIRE — GROUND (Pilot's Station)

EMER SHUTDOWN

FIRE — GROUND (Gunner's Station)

1. IDLE STOP — RELEASE and hold.
2. Throttle — Off.
3. EMER ELEC PWR switch — EMERG 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. BATTERY switch — START.
2. Electrical switches — OFF.
3. NON–ESNTL BUS switch — NORMAL.
4. LAND AS SOON AS POSSIBLE.
5. EMER SHUTDOWN.

FUMES FROM ECS

1. ECU switch — OFF.
2. LAND AS SOON AS POSSIBLE.

SMOKE AND FUME ELIMINATION

1. Vents — Open.
2. LAND AS SOON AS POSSIBLE.

FUEL

SINGLE OR DUAL FUEL BOOST PUMP FAILURE

1. FUEL switch — ON.
2. FUEL BOOST circuit breaker(s) — OUT.
3. LAND AS SOON AS PRACTICABLE.

ELECTRICAL SYSTEM

DC GENERATOR FAILURE

1. GEN BUS RESET/GEN FIELD circuit breakers — IN.
2. GEN switch — RESET then GEN position.

If not restored:

3. GEN switch — OFF.

ALTERNATOR FAILURE — ALTER AND RECT CAUTION LIGHTS ILLUMINATION

1. ALTNR switch — OFF RESET, then ON.

If alternator is not restored:

2. ALTNR — OFF RESET.
3. LAND AS SOON AS POSSIBLE.

TRANSFORMER RECTIFIER UNIT (TRU) FAILURE – RECT CAUTION LIGHT ILLUMINATION

1. ALTNR switch — OFF RESET.
2. ALTNR switch — ON.

OVERHEATED BATTERY

1. BATTERY switch — OFF.
2. LAND AS SOON AS POSSIBLE.
3. EMER SHUTDOWN.

HYDRAULIC

HYDRAULIC FAILURE — SINGLE SYSTEM

1. EMER HYDR PUMP switch — OFF (pilot and gunner).
2. HYD CONTR circuit breaker — In.
3. EMER HYD PUMP circuit breaker — In.
4. SCAS — Disengage appropriate channels.
   a. No. 1 system — Yaw channel.
   b. No. 2 system — Pitch and roll channels.
5. MASTER ARM switch — OFF.
6. LAND AS SOON AS PRACTICABLE. A run-on landing at a speed of **50 KIAS** or above is recommended.
7. EMER HYDR PUMP switch — EMER HYDR PUMP (final approach).

HYDRAULIC FAILURE — DUAL SYSTEM

1. EMER HYDR PUMP switch — OFF (pilot and gunner).

2. HYD CONTR circuit breaker — In.
3. EMER HYD PUMP circuit breaker — In.
4. SCAS — Disengage all channels.
5. MASTER ARM switch — OFF.
6. LAND AS SOON AS PRACTICABLE. A run-on landing at a speed of **50 KIAS** or above is recommended.
7. EMER HYDR PUMP switch — EMER HYDR PUMP (final approach).

LANDING AND DITCHING

DITCHING — POWER ON

1. MASTER ARM — OFF.
2. PLT ORIDE — OFF.
3. JETTISON CANOPY.
4. Gunner — Exit.
5. Hover — Clear of gunner.
6. AUTOROTATE (Throttle Off).

DITCHING — POWER OFF

Engine malfunction procedures — Perform.

FLIGHT CONTROLS

FLIGHT CONTROL/MAIN ROTOR SYSTEM MALFUNCTION

1. LAND AS SOON AS POSSIBLE.
2. EMER SHUTDOWN.

LOW G WARNING

1. Cyclic — Aft to return rotor 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.

MISSION EQUIPMENT

WING STORES EMERGENCY JETTISON (PILOT)

1. JETTISON SELECT switches — As required.
2. JETTISON switch — Press.

WING STORES EMERGENCY JETTISON (GUNNER)

1. JTSN SEL switch — As required.
2. WING STORES JETTISON switch — Up.

TOW MISSILE EMERGENCY PROCEDURES

HANGFIRE/MISFIRE

1. Pedals — Maintain trim.
2. Wing stores — Check for fire.
3. LAND AS SOON AS POSSIBLE — Ensure weapons are pointed at safe area.
4. Armament switches — OFF.
5. EMER SHUTDOWN.
6. 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 ORIDE switch — OFF.

TABLE E. CAUTION PANEL

LIGHT	CORRECTIVE ACTION
MASTER CAUTION	(No segment light) LAND AS SOON AS POSSIBLE.
ENG/ENGINE OIL PRESS	LAND AS SOON AS POSSIBLE.
XMSN/TRANS OIL PRESS	LAND AS SOON AS POSSIBLE.
ENG OIL BYPASS	LAND AS SOON AS POSSIBLE.
TRANS OIL BYPASS	LAND AS SOON AS POSSIBLE.
TRANS OIL HOT	LAND AS SOON AS POSSIBLE.
ENG FUEL PUMP	LAND AS SOON AS POSSIBLE.
ENG CHIP	LAND AS SOON AS POSSIBLE.
TRANS, 42°, 90° CHIP	LAND AS SOON AS POSSIBLE.
CHIP DETECTOR	LAND AS SOON AS POSSIBLE.
FWD FUEL BOOST	Refer to emergency procedure.
FUEL FILTER	LAND AS SOON AS POSSIBLE.
FUEL LOW	Information/system status.
AFT FUEL BOOST	Refer to emergency procedure.

LIGHT	CORRECTIVE ACTION
DC GEN	Refer to emergency procedure.
RECT	Information/system status.
ALTER	Refer to emergency procedure.
EXT PWR	Close door.
GOV EMERG	Information/system status.
IFF CODE HOLD	Information/system status.
IFF CAUTION	Information/system status.
#1 HYD PRESS	Refer to emergency procedure.
EMERG HYD PUMP ON	Information/system status.
#2 HYD PRESS	Refer to emergency procedure.
SPARE	LAND AS SOON AS POSSIBLE.
GUN ELEV STOWED	Information/system status.
HUD INOP	Information/system status.
FCC INOP	Information/system status.
LASER ARMED	Information/system status.
IRCM INOP	Information/system status.

PERFORMANCE CHECKS

TOW CHECK (Area 1)

1. Launcher mounting – Check upper launcher aft and forward bomb lugs secured to helicopter ejector rack. Swaybrace bolts firmly against launcher. Lower launcher aft and forward attaching points secure to upper launcher.

2. Electrical connectors – Check upper and lower harnesses connected. Jettison quick disconnect lanyard attached and not twisted.

ROCKET LAUNCHER CHECK (Area 1)

1. Launcher mounting – Check launcher aft and forward bomb lugs secured. Swaybrace bolts firmly against launcher but not denting exterior.

2. Electrical connectors – Check harnesses connected to launcher. Jettison quick disconnect lanyard attached.

3. Launcher – Check launcher exterior and tube interiors for damage and corrosion.

TURRET CHECK (Area 5)

1. Left side – Check recoil adapter, gun drive motor, and elevation drive motor.

2. Gun mounting quick release pins – Secure.

3. End and mid barrel clamps – Secure.

4. Right side – Check AIM-1/EXL laser, slider assembly, feeder assembly, timing of feeder assembly to gun assembly, ammunition chute, and azimuth drive motor.

5. Telescopic sight unit – Check.

ENGINE START

1. Start switch – Press and hold (start time).
2. DC voltmeter – Check indications. Battery start can be made provided the voltage is not below 14 volts when cranking through 10 percent N1 speed.
3. Main rotor – Check turning as N1 reaches 15 percent. If not, abort the start.
4. Starter switch – Release at 40 percent (N1) or after 35 seconds, whichever occurs first.
5. IGNITION SW – OFF, at 750 degrees C TGT.
6. Throttle – Slowly advance to 75 percent (N1). Check stop by attempting to roll throttle off.
7. N1 – Check 68 percent to 72 percent. Hold a slight pressure against the idle stop during this check.
8. IGNITION switch – ON after TGT has stabilized.

GUNNERY CHECKLIST – STARTING ENGINE

1. Wing store pins – Remove.
2. Grounding cable – Remove.
3. Ground crews – Clear.
4. ANTI-COLLISION – ON (indicates helicopter is not safe to approach).
5. TURRET STOW circuit breaker – IN.
6. WING STORE PWR circuit breaker – IN.
7. JETTISON SELECT switches – OUTBD/INBD.
8. Continue with ENGINE RUNUP.

ARMAMENT – SYSTEMS CHECK

1. **TOW built-in-test** – Ensure TOW completes BIT (Only performed in STBY TOW). Check as follows:

   a. TCP – TSU/SCA/EPS/MCA indicators display black on black. White on black indicates failed BIT.

   b. TCP BIT switch – Press and hold. Check for Battle flags A\G\R displayed in the TSU. Pilot checks for ascend/descend arrows and prelaunch constraints box displayed in HUD.

   c. TCP BIT switch – Release. BIT completed within approximately 120 seconds. Indicator moves from TEST to PWR ON at completion.

   d. Barber pole indicators – Display black on black.

   e. TCP missile status indicator displays Barber poles.

2. **TSU tracking** – Ensure TSU moves at fast rate in LOW MAG and at slow rate in HI MAG, check as follows:

   a. TSU LHG HI/LOW MAG switch – LOW MAG.

   b. SHC ATS switch – Track and check TSU focus as required.

   c. SHC – Press. Check TSU full travel left, right, up, and down. SHC is released after each check to ensure TSU reticle is stationary and does not rotate. Pilot confirms Gunner LOS on HUD indicates left, right, up, and down.

   d. SHC ATS switch – STOW.

   e. TSU LHG HI/LOW MAG switch – HI MAG.

f. SHC ATS switch – TRK.

g. SHC – Press to the right or left.

h. TSU LHG action switch – Press and hold. TSU continues moving (Motion compensation check).

i. SHC – Release. TSU continues to move.

j. TSU LHG action switch – Release. TSU stops.

k. TSU LHG HI/LOW MAG switch – LOW MAG.

l. SHC ATS switch – STOW.

3. **HSS built-in-test** – Check as follows:

a. HS arm assemblies – Attach to BIT magnets.

b. Test segment lights. All panels illuminate.

c. HSS BIT switch – BIT. Test passed if Go light illuminates, failed if PLT/GNR/EIA lights illuminate. If failed, ensure HSS arm assemblies are secure on BIT magnets, check all cable connections, and press BIT again.

4. **HSS to TURRET** – Check. Ensure turret follows HSS reticle line of sight.

a. HS arm assemblies – Attach to helmet. Extend eyepiece over eye; adjust reticle brightness and test.

b. TCP Mode select switch – TSU GUN.

c. Gunner looks left or right at least 45 degrees. TSU LHG action switch press. Reticle flashes until gun line is coincident with HS line of sight. LHG action switch release.

d. TCP Mode select switch – STBY TOW.

e. PLT ORIDE switch – ORIDE. Press cyclic action switch and repeat steps in c. above.

f. TCP Mode select switch – TSU GUN once the TOW BIT is completed.

g. WPN CONTR switch – Pilot.

h. Pilot looks left or right at least 45 degrees. Cyclic action switch press. Reticle flashes until gun line is coincident with HS line of sight. Cyclic action switch release.

i. WPN CONTR switch – Gunner.

5. **HSS to TSU and TSU to TURRET** – Ensure TSU follows HSS line of sight and turret follows TSU line of sight, check as follows:

a. Gunner's HS reticle on a target at least 45 degrees to the left or right.

b. SHC ATS switch – ACQ and release. Gunner HS reticle retracts. TSU displays target.

c. LHG action switch – Press. GUN flag flashes until gun line is coincident with TSU. LHG action switch release, turret stows.

d. Gunner's HS eyepiece – Extend over eye.

e. Pilot HS reticle – On a target and announces Gunner target.

f. ACQ switch – PHS and release. Gunner's eyepiece retracts, and target is displayed in TSU.

g. SHC ATS switch – STOW.

6. **RMS built-in-test** – Ensure RMS passes a BIT, check as follows:

a. Test switch – Press. Eight 8s and zone arm lights illuminate and then 7s appear for each LRU. Release test switch.

7. **HUD** – Check as follows:

   a. Mode switch – Test. All symbols displayed except Stadiametric reticle.

   b. Mode switch – NORM.

   c. RKT switch – DIR then IND check FCRs.

   d. Night Filter contr – Day position (Green for day/Red for night).

8. **ALT** – Check as follows:

   a. Mode switch – STBY.

   b. Press to test lamps – Test.

   c. Mode switch – Test. Approximately 25 sec. GO and TRACK lights illuminate. GO light off after approximately 30 sec.

   d. Mode switch – As desired.

(O) 9. **FLIR** – Check as follows:

   a. FCP Mode Indicator – Check POWER ON.

   b. FCP BIT Indicator – Check for black on black.

   c. POLARITY switch – As desired (White/Black Hot).

   d. IR LEVEL control knob – Adjust approximately to the 2 o'clock position.

   e. IR GAIN control – Adjust approximately to the 2 o'clock position.

   f. LHG MAG switch – NIGHT.

   g. Gunner – Check for FLIR picture, adjust LHG focus as desired, adjust IR Level and IR Gain as desired.

   h. LHG MAG switch – As desired.

GUNNERY CHECKLIST – ENGINE SHUTDOWN

1. JETTISON SELECT switches – OFF.
2. ANTI-COLLISION – OFF (indicates aircraft is safe to approach).
3. Ground crews – Approach aircraft.
4. Wing stores pins – Installed.
5. Grounding cable – Install.
6. TOW launcher – Missile arming lever up (if TOW missiles are installed).
7. W2P1 – Disconnected.
8. Stray voltage – Check (if loading rockets).
    a. RMS ZONE INVENTORY selector – 6PD.
    b. MASTER ARM switch – ARMED.
    c. FCC circuit breaker – ON.
    d. RMS RATE selector – “A” position.
    e. RMS ZONE ARMING switches – ARMED.
    f. Stray voltage check – Completed.
    g. FCC circuit breaker – OFF.
    h. MASTER ARM switch – OFF.
9. RMS ZONE INVENTORY selector – As required.
10. RMS RATE selector – As desired.
11. WING STORE PWR circuit breaker – OFF.
12. W2P1 – Connect.
13. TOW launcher – Missile arming lever down.
14. Grounding cable – Remove.

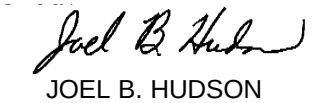
15. Wing stores pins – Remove.
16. Ground crew – Clear.
17. ANTI-COLLISION – ON (indicates aircraft is not safe to approach).
18. HUD PWR – STBY.
19. HSS LINKAGE – As desired.
20. LASER SAFE/TURRET DEPR LIMIT switch – As desired.
21. TUR SLEW switch – NORM.
22. MASTER ARM – STBY.
23. TCP switch – STBY TOW.
24. Throttle – 100%.
25. TURRET STOW circuit breaker – IN.
26. ADS PWR circuit breaker – IN.
27. FCC switch – ON.
28. WING STORE PWR circuit breaker – ON.
29. JETTISON SELECT switches – OUTBD/INBD.
30. HUD PWR switch – ON.
31. FORCE TRIM switch – OFF
32. BEFORE TAKE OFF – CHECK.

TM 1-1520-236-CL

By Order of the Secretary of the Army:

Official:

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



JOEL B. HUDSON
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Secretary of the Army
0029901

DISTRIBUTION:
To be distributed in accordance with Initial Distribution Number (IDN) 311162, requirements for TM 1-1520-236-CL.

The Metric System and Equivalents

Linear Measure

1 centimeter = 10 millimeters = .39 inch
1 decimenter = 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 centrigram = 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 milliters = .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