

**Summary Report for Individual Task
061-271-1456
Maintain an M198 Recoil Mechanism (U6)
Status: Approved**

DISTRIBUTION RESTRICTION: Approved for public release; distribution is unlimited.

DESTRUCTION NOTICE: None

Condition: Given a howitzer scheduled for maintenance, with a recoil mechanism that requires servicing, the tube at a 0-mil elevation, an M3 hydraulic pump kit, a field artillery mechanic's tool kit, cleaning equipment, hydraulic fluid, and lubricants.

Standard: Maintain the recoil mechanism so that all damaged parts are repaired and missing parts replaced IAW the technical guidance listed in TM 9-1025-211-10.

Special Condition: None

Safety Level: Low

MOPP:

Task Statements

Cue: Howitzer is scheduled for maintenance

DANGER
None

WARNING
None

CAUTION
None

Remarks: None

Notes: None

Performance Steps

WARNING

Cannon tube must be at zero elevation to prevent recoil mechanism cannon from sliding out of battery in the event all the reserves are drained from the system.

1. Drain excess oil.
 - a. Remove plug from oil valve assembly.

Remarks:

Ensure liquid release tool assembly is clean before using.

- b. Connect recoil hose assembly to liquid release tool assembly and tighten.
- c. Clean tool assembly and valve assembly.

CAUTION

Do not over tighten liquid release tool assembly (4) as damage to oil valve assembly (2) may result.

- d. Tighten liquid release tool assembly by hand to oil valve assembly.
- e. Place free end of recoil hose assembly in a suitable container.
- f. Tighten liquid release tool assembly until oil begins to flow from hose assembly.

CAUTION

After a day's firing, drained oil reserves must be reestablished because mechanism may have minus reserves, and air would be introduced into system. When recoil is completely cool, set reserves according to the M45 Oil Reserve Level chart. This will allow for expansion during next firing period.

g. Drain approximately four oil reserves from replenisher if oil exceeds 10 reserves. Otherwise drain until four reserves remain in system.

h. Remove liquid release tool.

i. Install plug and tighten.

2. Add oil (hydraulic fluid) to M3 oil pump.

Note: Before adding oil to recoil mechanism, check M3 oil pump reservoir for an adequate oil supply, and fill if necessary.

- a. Remove oil-filling plug and check oil level in oil pump reservoir.
- b. Insert copper funnel with strainer in oil-filling hole.

c. Slowly pour hydraulic fluid into copper funnel with strainer, stopping frequently to remove funnel and to check oil level in reservoir.

Note:

Do not overfill oil reservoir.

d. Remove copper funnel with strainer from hole.

e. Install oil-filling plug in oil-filling hole and tighten.

3. Purge M3 oil pump and add oil to recoil mechanism.

a. Remove plug from oil valve assembly.

b. Connect oil-filling line to 5/8-18 adapter.

Note: Ensure adapter is clean before connecting to oil-filling line.

c. Close valve.

d. Purge air from oil-filling line of M3 oil pump until a solid stream of fluid is discharged from line.

e. Clean oil valve recess using lint-free wiping rag.

f. Insert 5/8-18 adapter into oil valve assembly and hand tighten.

g. Purge air from oil-filling line of M3 oil pump by pumping until no more air bubbles appear at oil valve assembly.

h. Tighten 5/8-18 adapter.

CAUTION

The oil level is adequate when 2 thru 10 reserves are registered on the oil reserve indicator (7) during firing. If during firing the oil reserve indicator exceeds 10 reserves, drain four reserves from the recoil. These four reserves must be returned because the mechanism may have minus reserves; and air would be introduced into the system. Fill recoil mechanism to level according to the M45 Oil Reserve Level chart below.

i. Operate M3 oil pump and fill recoil mechanism with oil until oil reserve indicator indicates four oil reserves.

Note:

M45 Oil Reserve Level Quarter of Year:

6 for the 1st

5 for the 2nd

4 for the 3rd

3 for the 4th

j. Open valve and allow pressure to bleed off oil-filling line.

k. Disconnect oil-filling line from oil valve assembly.

l. Remove 5/8-18 adapter from oil-filling line.

m. Clean out oil valve assembly recess using lint-free wiping rag.

n. Install plug and tighten.

4. Clean respirators with cleaning compound and brush.
5. Repair sleeve bearing assembly.
 - a. Remove lubrication fitting, if damaged.
 - b. Replace lubrication fitting if necessary and install.

WARNING

If nitrogen pressure is below 800 psi (5516 kPa), the recoil mechanism could slide out of battery. Make sure all personnel are clear of cannon recoil path.

6. Check nitrogen pressure in Recoil Mechanism.
 - a. Remove cap from recuperator cylinder assembly.
 - b. Remove valve cap from check valve.
- Remarks:
Apply soap prior to connecting gage assembly (5). If nitrogen pressure happens to be low, this could eliminate the check valve as the cause.
- c. Connect air pressure gauge assembly to check valve.
 - d. Close bleeder valve.
 - e. Open check valve slowly.
 - f. Read nitrogen pressure of recoil mechanism on gauge.
 - g. Lower nitrogen pressure to 1100 psi (7584 kPa) if required.
 - h. Notify direct support maintenance if pressure is less than 1100 psi (7584 kPa).
 - i. Close check valve.
 - j. Open bleeder valve.
 - k. Disconnect air pressure gauge assembly from check valve.
 - l. Apply soap suds to check valve to determine if any nitrogen leaks are present.
 - m. If any leaks occur, notify direct support maintenance.
 - n. Install valve cap.
 - o. Install cap.

WARNING

Nitrogen pressure is dangerous. Eye protection must be worn during this part of the procedure.

7. Raise nitrogen pressure in recoil mechanism.

Note: Removal of ballistic shield may be necessary to check for nitrogen leaks after raising recoil nitrogen pressure to 1100 + 25 psi (7585 + 174 kPa).

a. Remove lock wire, eight capscrews, and eight lockwashers.

b. Remove recoil mechanism ballistic shield.

c. Remove cap from recuperator cylinder assembly.

d. Remove valve cap from check valve.

e. Connect air pressure gauge assembly to check valve and open check valve slowly. Read nitrogen pressure of recoil mechanism on air pressure gauge. If nitrogen pressure in recoil mechanism is lower than 1100 psi (7585 kPa), nitrogen pressure must be raised.

Note: Apply soapy water to the check valve to check for leaks.

f. Connect pressure regulator to nitrogen tank.

g. Close pressure regulator valve by turning counterclockwise until no spring pressure is applied.

h. Connect nitrogen charging device to air pressure gauge assembly, making sure valve is open.

i. Open valve on nitrogen tank slowly until bottle pressure is indicated on 4000-psi gauge of pressure regulator.

Note: Nitrogen tank pressure should indicate at least 1300 psi (8964 kPa) or higher to adequately increase nitrogen pressure in the recoil mechanism.

WARNING

Failure to close check valve (7) on recuperator cylinder assembly (5) could result in injury.

j. Open pressure regulator valve slowly until pressure on 3000-psi gauge registers the same reading registered on air pressure gauge. Turn valve connector handle to open valve core on air pressure gauge. Open regulator valve further, until air pressure gauge reads 1150 psi (7929 kPa). Let nitrogen pressure stabilize.

Note:

Recoil mechanism is to be charged to 1100 + 25 psi (7585 + 174 kPa) at ambient temperature.

k. Close check valve.

l. Close valve on nitrogen tank.

WARNING

Failure to open bleeder valve (20) on air pressure gage assembly (8) could result in injury. Make sure pressure regulator valve (13) is open or injury might result.

m. Open bleeder valve to bleed pressure from nitrogen charging device and air pressure gauge assembly. After nitrogen has been bled, close bleeder valve.

n. Turn valve connector handle counterclockwise and disconnect nitrogen charging device from air pressure gauge assembly.

o. Reopen check valve and check reading on air pressure gauge. Slowly open bleeder valve until gauge pressure reads 1100+25 psi (7585 + 174 kPa). Close bleeder valve and close check valve. Disconnect air pressure gauge assembly from check valve on recuperator cylinder assembly.

p. Close pressure regulator valve by turning counterclockwise.

q. Disconnect pressure regulator from nitrogen tank.

r. Apply liquid soap to check valve to determine if any nitrogen leaks. If any leaks occur, tighten.

s. If check valve is not leaking, check air cylinder, crossover line, recuperator cylinder, and replenisher cylinder for leaks. If leaks are found, notify direct support maintenance.

t. Install valve cap and install cap.

u. Install recoil mechanism ballistic shield.

v. Install eight lockwashers, eight capscrews, and lock wire.

(Asterisks indicates a leader performance step.)

Evaluation Preparation: Setup: Ensure that all information, references, and equipment required to perform the task are available. Use the performance measures and the references to score the Soldier's performance. Brief the Soldier. Tell the Soldier what he is required to IAW the task conditions and standards.

PERFORMANCE MEASURES	GO	NO-GO	N/A
1. Drained excess oil (hydraulic fluid).			
2. Added oil (hydraulic fluid) to M3 oil pump.			
3. Purged the M3 oil pump, and added oil (hydraulic fluid) to the recoil mechanism.			
4. Cleaned respirators.			
5. Repaired sleeve bearing assembly.			
6. Checked nitrogen pressure in Recoil Mechanism.			
7. Raised nitrogen pressure in recoil mechanism.			

Supporting Reference(s):

Step Number	Reference ID	Reference Name	Required	Primary
	TM 9-1025-211-10	Operators Manual (Crew) for Howitzer, Medium, Towed: 155-MM, M198 (NSN 1025-01-026-6648) (EIC: 3EL) {TM 08198A-10/1} (Reprinted W/Basic Incl C1-4)	No	No

Environment: Environmental protection is not just the law but the right thing to do. It is a continual process and starts with deliberate planning. Always be alert to ways to protect our environment during training and missions. In doing so, you will contribute to the sustainment of our training resources while protecting people and the environment from harmful effects. Refer to FM 3-34.5 Environmental Considerations and GTA 05-08-002 ENVIRONMENTAL-RELATED RISK ASSESSMENT. Environmental protection is not just the law but also the right thing to do. It is a continual process and starts with deliberate planning. Always be alert to ways to protect our environment during training and missions. In doing so, you will contribute to the sustainment of our training resources while protecting people and the environment from harmful effects.

Safety: In a training environment, leaders must perform a risk assessment in accordance with FM 5-19, Composite Risk Management. Leaders will complete a DA Form 7566 COMPOSITE RISK MANAGEMENT WORKSHEET during the planning and completion of each task and sub-task by assessing mission, enemy, terrain and weather, troops and support available-time available and civil considerations, (METT-TC). Note: During MOPP training, leaders must ensure personnel are monitored for potential heat injury. Local policies and procedures must be followed during times of increased heat category in order to avoid heat related injury. Consider the MOPP work/rest cycles and water replacement guidelines IAW FM 3-11.4, Multiservice Tactics, Techniques, and Procedures for Nuclear, Biological, and Chemical (NBC) Protection, FM 3-11.5, Multiservice Tactics, Techniques, and Procedures for Chemical, Biological, Radiological, and Nuclear Decontamination. 1. Task may involve personal exposure to hazardous substances.
2. Brief personnel of OSHA's HAZCOM requirements.

Prerequisite Individual Tasks : None

Supporting Individual Tasks : None

Supported Individual Tasks : None

Supported Collective Tasks : None