

Summary Report for Individual Task
551-88L-2054
Maintain an Engine Control System
Status: Approved

Distribution Restriction: Approved for public release; distribution is unlimited.

Destruction Notice: None

Foreign Disclosure: FD5 - This product/publication has been reviewed by the product developers in coordination with the [installation/activity name] foreign disclosure authority. This product is releasable to students from all requesting foreign countries without restrictions.

Condition: Given an operational engine control system aboard a vessel, at sea, at anchor or moored alongside a pier, day or night, under all sea and weather conditions, while wearing appropriate PPE, (i.e. hearing protection, Nitrile gloves, eye protection, etc.), with a lock out tag out kit, marine rail tool box.

Standard: The Soldier correctly maintains an engine control system aboard an Army vessel, IAW the appropriate Technical Manuals and local SOPs, without injury to self or others and without damage to equipment. The engine control system must be fully mission capable at task completion.

Special Condition: None

Safety Risk: Medium

MOPP 4:

Task Statements

Cue: None

DANGER
None

WARNING
None

CAUTION
None

Remarks: None

Notes: None

Performance Steps

1. Perform maintenance on a cable actuated throttle control system.

a. Perform before use maintenance.

(1) Propulsion control head.

(a) Check propulsion controls for:

1 Full range of motion.

a Cycle the control system from full speed ASTERN (REVERSE) to full speed AHEAD (FORWARD).

b Ensure unrestricted operation throughout the entire speed range, and then return to NEUTRAL.

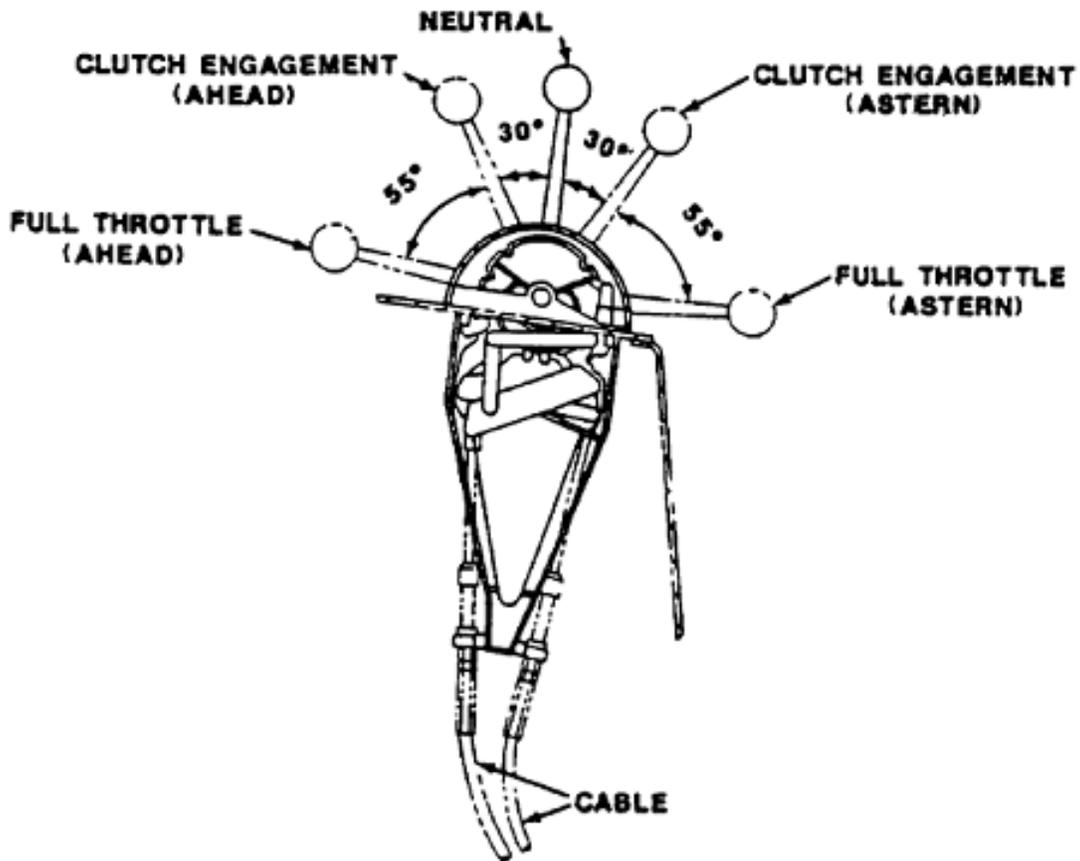


Figure 551-88L-2054_01
Throttle control head

2 Proper control of throttle and clutch linkages.

(b) Replace control head if necessary.

(c) Inspect shifting and throttle linkage ball joints.

(d) Pull the engine shutdown controls out the full length of travel, ensuring linkage is free to move and is not bound at any point.

(2) Engine order telegraph (EOT).

(a) Visually check light lens for illumination.

(b) Manually check all push switches.

(c) Check to ensure all cables and EOT are securely connected.

b. Perform weekly maintenance.

(1) Throttle linkage.

(a) Inspect linkage control head to governor for cable damage.

(b) Ensure linkage is free to move and is not bound at any point.

(c) Adjust and/replace defective components of throttle linkage as necessary.

(2) Clutch linkage.

(a) Inspect linkage from control head to transmission.

(b) Ensure linkage is free to move and is not bound at any point.

(c) Adjust and/replace defective components of clutch linkage as necessary.

c. Perform Bi-weekly maintenance.

(1) Engine clutch and throttle controls.

(a) Remove cover screws (2) from control cover (3).

(b) Place 2 to 4 drops of oil in the cover screw holes (4). Use oil (MIL-L-9000H (SH)).

(c) Oil the throttle joint (5) with 2 to 4 drops of oil (MIL-L-9000H (SH)).

(d) Clutch quadrant cam (6) requires application of grease (MIL-G-24139A (SH)).

(e) Reinstall cover (3) and replace screws (2).

(2) Ensure linkage is free to move and is not bound at any point.

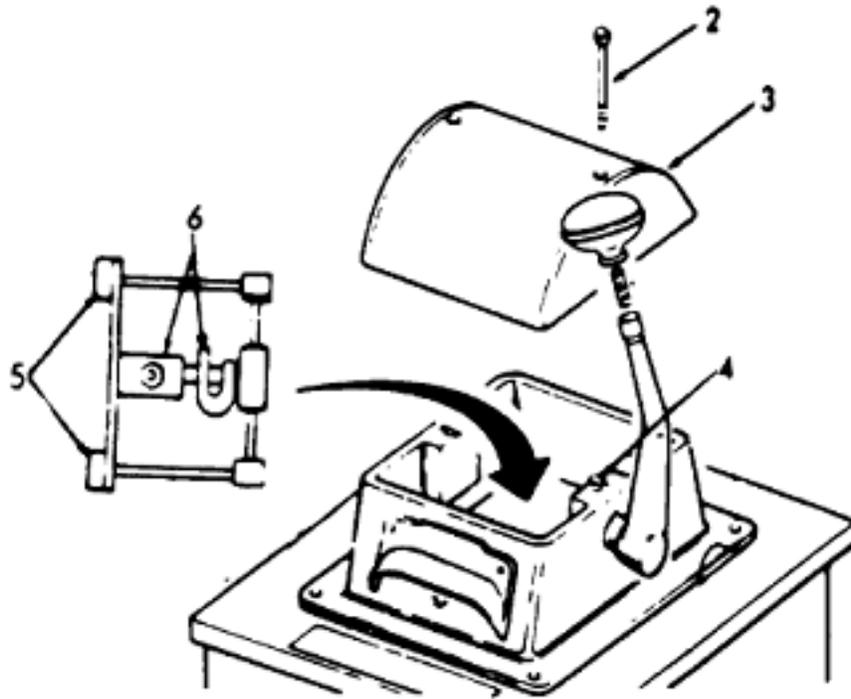


Figure 551-88L-2054_02
Engine clutch and throttle

d. Perform monthly maintenance.

(1) POSITROL station.

(a) Remove cover screws (91) from central station cover (92).

(b) Place a few drops of oil (MIL-L-9000H (SH) in the cover screw holes (93) to lubricate handle bearings.

(c) Lubricate three cable swivel joints (94) with 2 to 4 drops of oil, (MIL-L-9000H (SH)).

(d) Lubricate clutch cam (95) with grease (MIL-G-24139A (SH)).

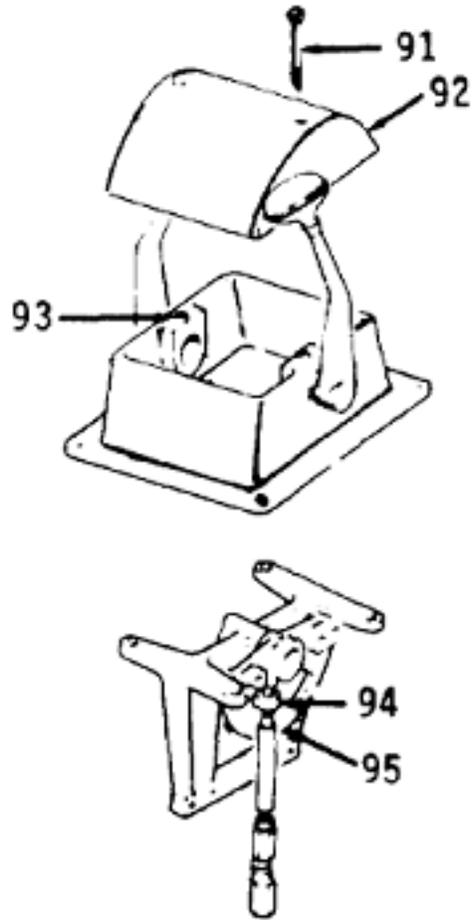


Figure 551-88L-2054_03
POSITROL station

(2) Fuel rod knob.

- (a) Lubricate the fuel rod knob (36) located on the Hydraulic Governor Assembly (28).
- (b) Ensure fuel rod moves freely through its full range of motion and is not binding.

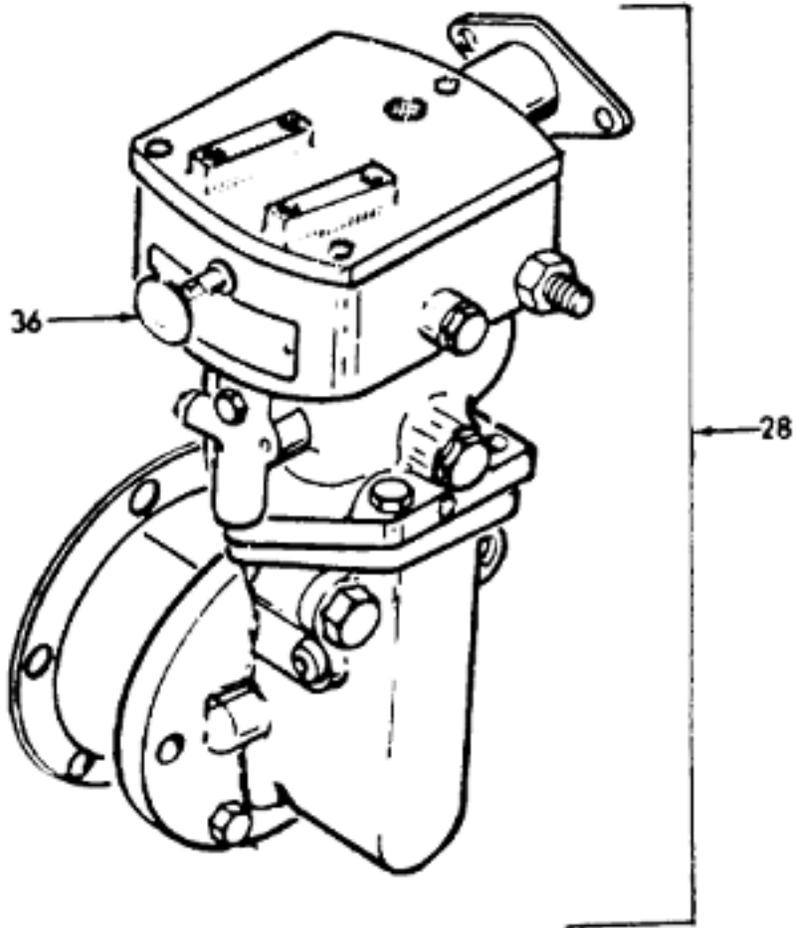


Figure 551-88L-2054_04
Fuel rod knob

(3) Engine throttle control.

(a) Lubricate linkages, clevis, pins and exposed threads (19) with oil (MIL-L-9000H (SH)).

(b) Ensure linkage moves freely through its full range of motion and is not binding.

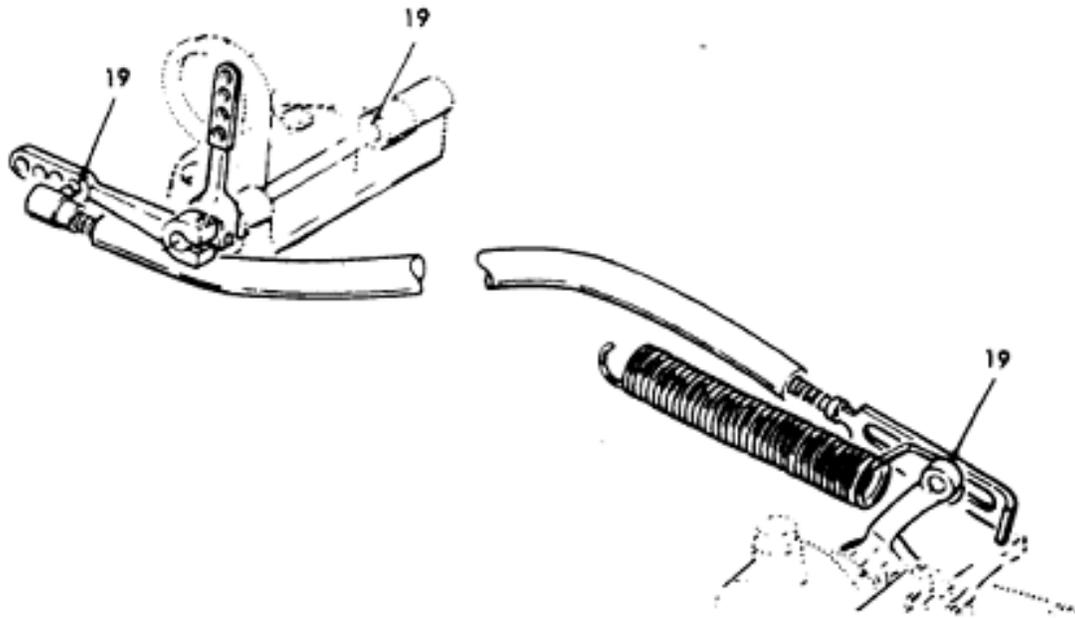


Figure 551-88L-2054_05
Engine throttle control

(4) Engine stop control.

- (a) Lubricate linkage, clevis, pins and exposed threads (20) with oil (MIL-L-9000H (SH)).
- (b) Ensure linkage moves freely through its full range of motion and is not binding.

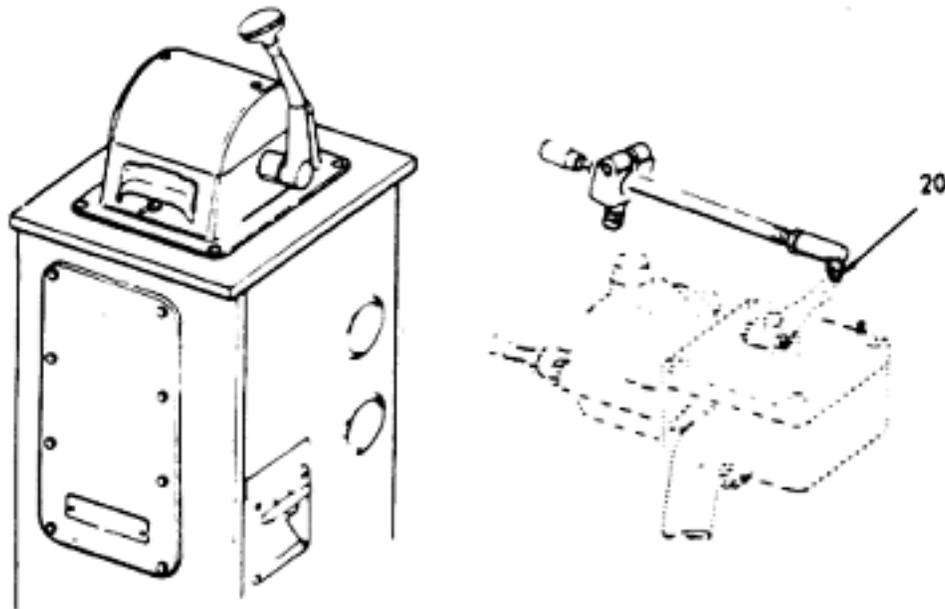


Figure 551-88L-2054_06
Engine stop control

e. Perform quarterly maintenance.

(1) Throttle control.

- (a) Lubricate the throttle control at 2 locations (28) with 2 to 4 drops of oil (MIL-L-9000H (SH)).

(b) Ensure linkage moves freely through its full range of motion and is not binding.

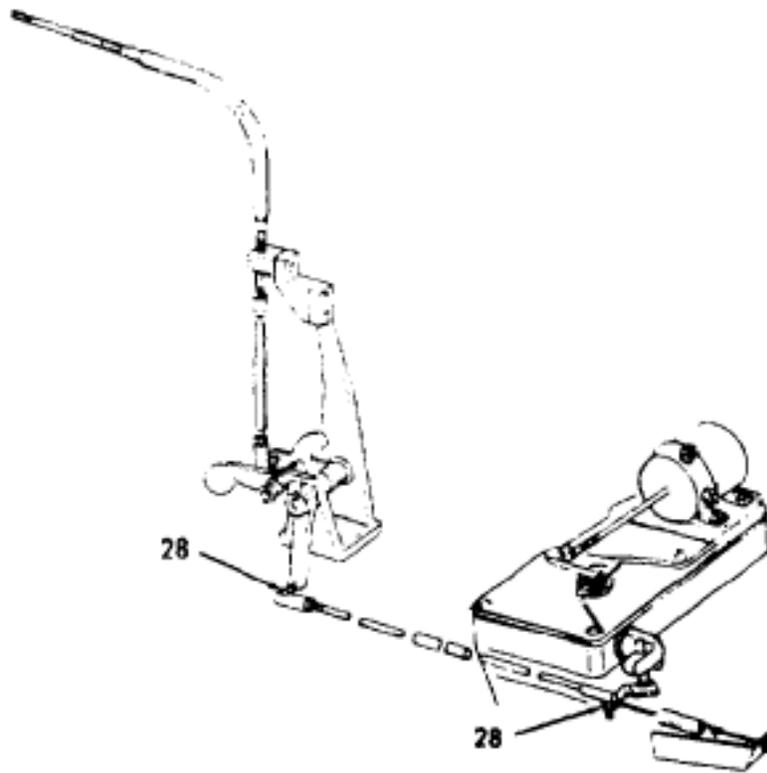


Figure 551-88L-2054_07
Throttle control

(2) Emergency stop control.

(a) With the engine STOPPED, pull the emergency stop levers;

1 Ensure linkage is free to move and is not bound at any point.

2 Ensure the air shut-down valve located between the air inlet housing and the blower trips.

3 After testing emergency stop control:

a Push emergency stop levers down to their normal operating position.

b Reset the air shut down valve.

(b) Lubricate the stop control at 12 locations (29) with 2 to 4 drops of oil, (MIL-L-9000H (SH)).

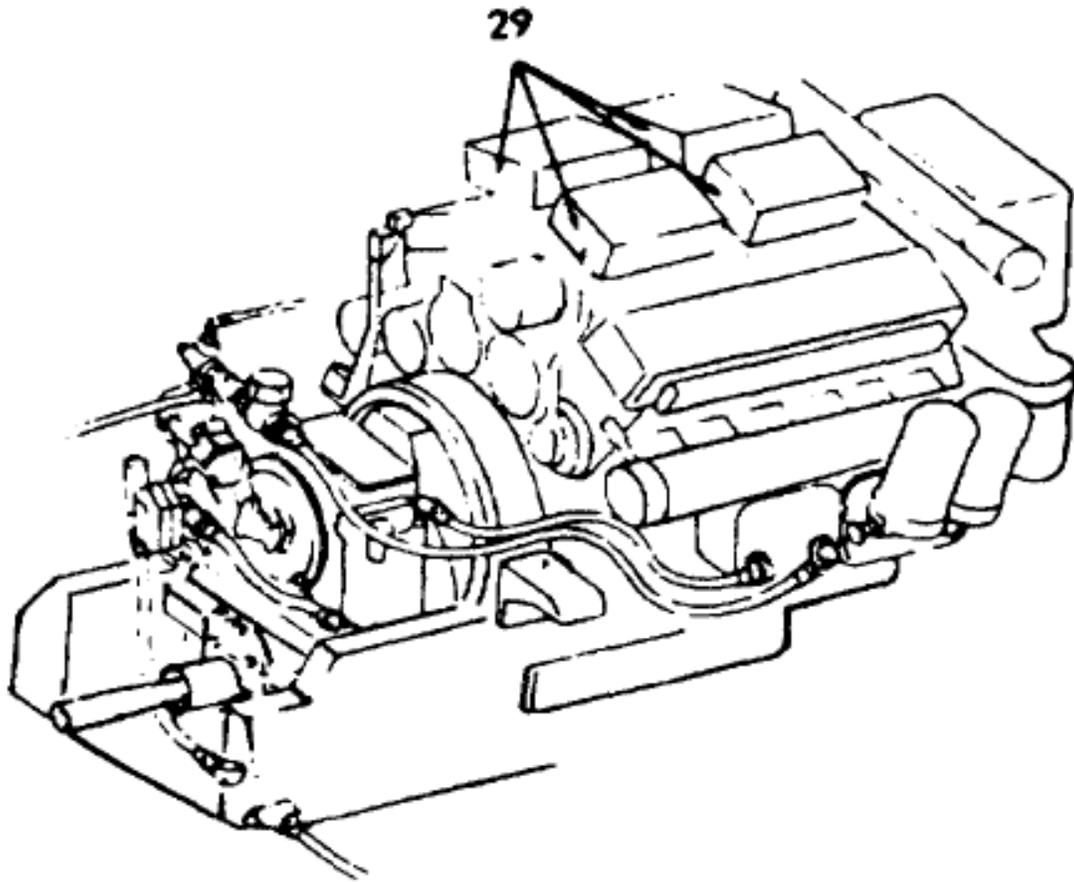


Figure 551-88L-2054_08
Emergency stop control

(3) Marine drive control unit.

(a) Place a few drops of oil (MIL-L-9000H (SH) on either side of levers (13).

(b) Pull manual disconnect pin (14) as far as it will go and place a drop or two of oil on the exposed section.

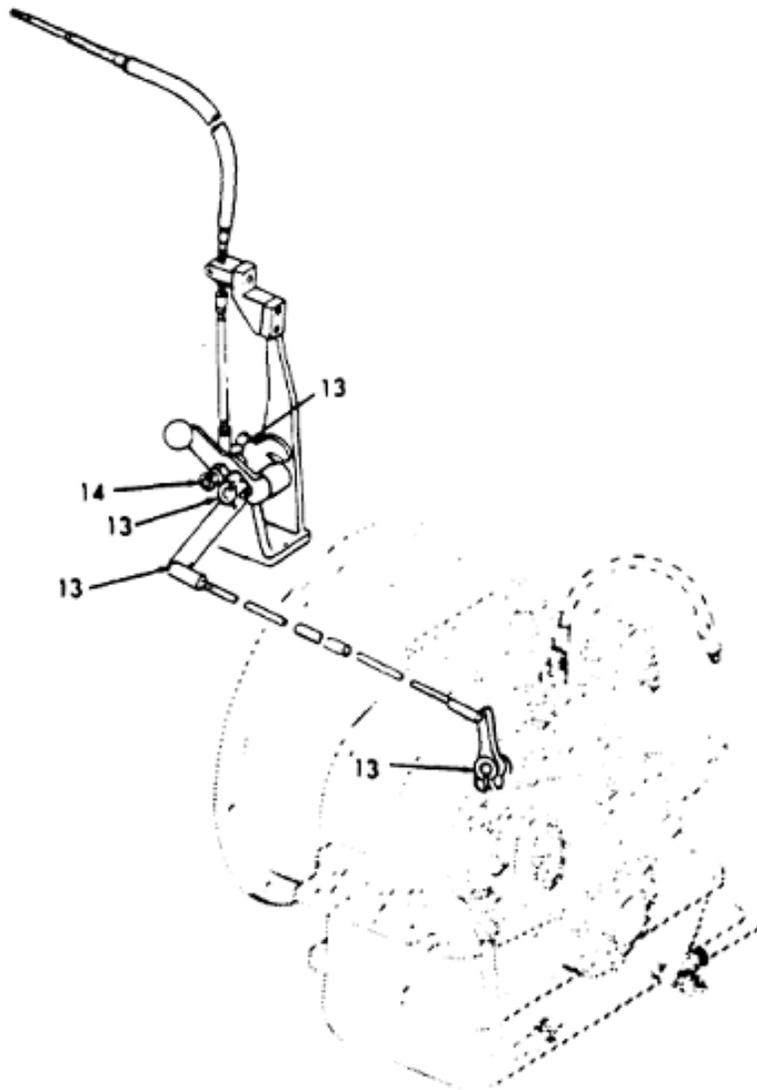


Figure 551-88L-2054_09
Marine drive gear control unit

f. Adjust throttle and clutch linkages.

(1) Adjust throttle linkage.

Note: The throttle cable attached to the throttle-actuating cam must operate within the available stroke of the cable (3 inches).

(a) Loosen locknut (1) and hex nut (2). Rotate rod and socket assembly (3) to lengthen or shorten the cable (4).

(b) Select appropriate connection point (A, B, C, D) for the adapter kit on the throttle cam (5). In order to obtain full handle travel in the speed range.

(c) Adjust adapter kit cable end (6) in such a manner to avoid bottoming of the control cable (4) in either direction.

1 Loosen hex nuts (7 and 8) on rod ends (9 and 10)

2 Rotate connecting rod (11) in such a manner to avoid bottoming of the control cable (4) in either direction.

(2) Adjust clutch linkage.

Note: The aim of this adjustment is to ensure that the output motion generated by the transmission control unit is compatible with the required stroke for the clutch control valve lever. It is also important that the clutch control valve lever goes from neutral to both "gear engage" positions without bottoming. A slight amount of end play is essential.

(a) Remove hex nut (1), lockwasher (2), and rod end (3) from the clutch control valve lever (4).

(b) Move the clutch control valve lever (4) into the FWD and REVERSE positions. Scribe marks to denote the gear positions.

(c) Take measurement between the FWD and REV gear positions. Clutch travel should be 3 inches.

(d) Re-connect rod end (3) to clutch control valve lever (4) using hex nut (1) and lockwasher (2).

(e) Observe position of clutch control valve lever (4) as propulsion control lever in pilot house is cycled into FWD and REV gear positions. The clutch control valve lever (4) should go from NEUTRAL to both "gear engage" positions without bottoming.

(f) Check the clutch control valve lever (4) for slight end play in both "gear engage" positions.

(g) If no play is felt, loosen locknut (5) and adjust rod end (6) for NEUTRAL position Then re-tighten.

CAUTION

It is important that the clutch control valve lever is not trying to push or pull beyond a solid stop. Damage to the control system (and possible failure of the control system) can result if the clutch control valve lever is trying to exert too much pressure against any solid stops.

(h) Cycle propulsion control lever to check for full 60° travel of the propulsion control lever, and 3 inches travel of the clutch control valve lever (4).

(i) Double-check adjustments by pulling out pin (7) and cycling the clutch control valve lever (4) using knobs (8) on transmission control unit.

CAUTION

Do not use thread-locking adhesive or self-locking nuts on cable threads, or damage to the cable may result.

(j) After all adjustments are made, apply a heat resistant crease to all ball joint sockets, and a light film on all rod ends (3 and 6).

(k) Double-check fasteners for tightness, but do not overtighten.

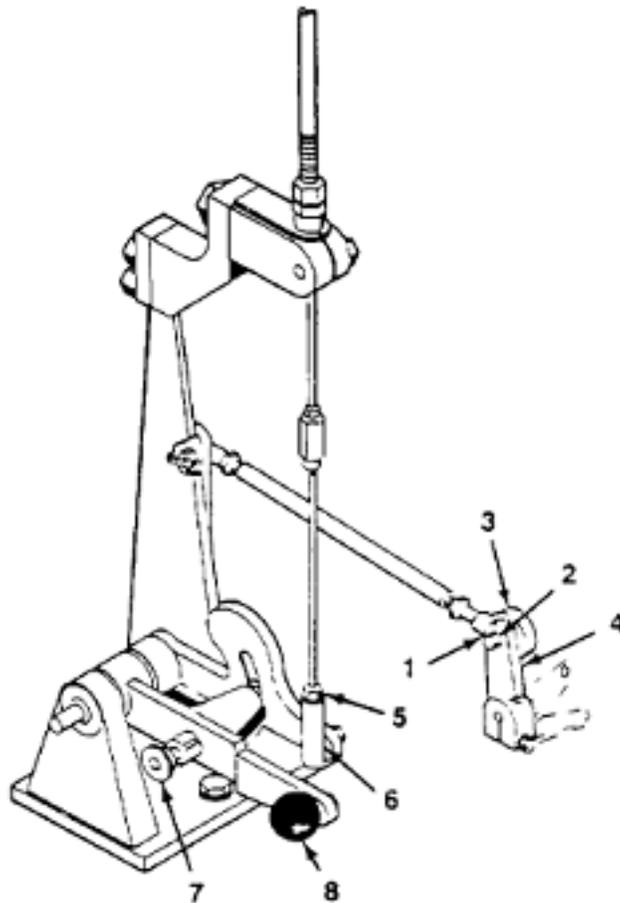


Figure 551-88L-2054_10
Clutch linkage

g. Adjust propulsion unit controls (LCU hull numbers 8540 thru 8560 and 8580 thru 8618).

(1) Each propulsion unit consists of two engines connected by the power transfer unit. The propulsion unit is controlled by a single throttle control from the pilot house or from the engine room. Individual engines are controlled by individual throttle levers located on each propulsion unit. The throttle adjustment is made after setting the valves, timing the injectors, adjusting the governor, and adjusting the injector operating linkage. The propulsion unit throttle control is inter-locked with the reverse-gear control lever to prevent engagement or disengagement of the clutch until the throttle has been placed in the idle speed position.

(2) Adjust throttle linkage by the procedure listed below. Key numbers refer to Figure 551-88L-2054_11 unless otherwise noted.

(a) Disconnect pilot house throttle control by pulling out the manual disconnect pin (16) and twisting 90 degrees.

(b) With engines stopped, set throttle control cross shaft (5) so that the individual engine throttle levers (8) are in a vertical position.

(c) Loosen lever (14) and lever (10) and disconnect rod (9) from lever (10).

1 Adjust so that rod (9) forms an approximate 90 degree angle with both levers.

2 Secure levers (14 and 10) to the shafts and place rod (9) into appropriate hole in lever (10) to maintain 90 degree angle.

3 Secure rod.

(d) Adjust turnbuckles (2 and 11) so that the pins in the governor throttle control levers contact the shoulders of the slot in the control cams (16) in the idle position.

(e) Move propulsion unit control lever (17) to the full-open position.

1 The pins in the governor throttle control levers (15) should just contact the extreme end of the slot in each control cam (16).

2 If the pins do not contact the end of the slots, readjust the turnbuckles (2, 11).

3 The linkage must be adjusted so that the governor throttle control lever pins on both governors reach the run position of each cam at the same time.

(f) Engage pilot house throttle control by pulling out disconnect pin (16) and turning 90 degrees.

(g) Place pilot house throttle control in idle position. Adjust turnbuckles (6) to ensure engine room propulsion unit throttle control (17) is in similar position.

(h) Check that pins in the governor throttle control levers (15) are contacting the shoulder of the cam control slot in the idle position.

Note: Do not force linkage or put any strain on throttle linkage when making this adjustment.

(i) If pins are not contacting the idle shoulder, adjust turnbuckles (6) until proper relationship is obtained.

(j) Move pilot house propulsion unit throttle control to full-open position. Repeat step (6) above.

(k) Start and warm up both engines to operating temperatures.

Note: Engine may be brought up to operating temperature by declutching engines and setting throttle to approximately 1,200 engine rpm. If quick warm up is attempted by turning the propeller, the ship must be securely tied to the dock with no loose lines or floating obstruction to foul the propeller.

(l) Disengage one engine throttle control (8) from cross shaft (5) by pulling upward on the lever. Set idle speed of engine to 550 rpm.

(m) Repeat step (12) for other engine.

(n) Set governor no-load top speed.

(o) With both engines warmed up, stop engines and disconnect throttle control rod (4) for outboard engine by removing bolt (1).

(p) Start inboard engine, declutch and move pilot house throttle control to FULL OPEN position.

(q) Note and record maximum no-load speed as indicated by tachometer.

(r) Stop engine and connect throttle control tube for outboard engine and disconnect inboard engine by removing bolt (13).

(s) Start outboard engine, declutch, and with pilot house throttle control in FULLOPEN position, note and record speed.

(t) If no-load speeds of the two engines are not the same, increase the low engine by loosening the lock nut and turning the high speed spring retainer (10) in until the engine is operating at the desired no-load speed.

(u) Connect throttle control rod (12) for inboard engine.

(3) Synchronize engine speeds at no-load. Speeds of the two engines within one propulsion unit must be synchronized to obtain, as nearly as possible, the same no-load speeds in the range just below the rated load speed by adjusting the linkage to each governor. Synchronize as follows:

(a) With engines warmed up declutch both engines and move the pilot house throttle control to such position that speed of the inboard engine is 1,750 rpm as indicated by the tachometer. lock the throttle in this position.

(b) Note speed of the outboard engine. If the speeds of the two engines are not the same, loosen the locknuts at turnbuckle on the outboard engine, and by adjusting turnbuckle, shorten throttle rod to decrease or lengthen to increase engine speed.

(c) Unlock and move pilot house throttle control to FULL-OPEN position.

1 In the full open position, without strain on the throttle linkage, the pins in the throttle control levers (15) at the governor covers of both engines should be within 1/16- inch of the same distance from the end of the slot in cam.

2 If the levers are not within this limit, the governor gaps or the injector rack adjustments are not identical on the two engines and should be rechecked.

3 If adjustments are necessary, repeat steps (14) and (15) above after making adjustments.

(4) Reverse Gear Control. A single control lever is provided in the pilot house and in the engine room for reverse gear control of each propulsion unit. The reverse gear control is interlocked with the throttle control to prevent engagement or disengagement of the clutch except when propulsion unit is at idle rpm. Control of individual engine reverse gears is provided by a shutoff valve (18) for controlling the flow of oil to each engine. The valves are normally in a vertical (ON) position. The reverse gear control linkage is adjusted as follows (-engine stopped):

(a) Disengage pilot house control lever by pulling out manual disconnect pin (22) and turning 90 degrees.

(b) Place engine room control lever (24) into forward position. Using turnbuckle, adjust rod (23) to insure lever (20) is contacting forward stop.

(c) Place engine room control lever (24) into reverse position. Insure lever (20) is just contacting reverse stop. Adjust turnbuckle and rod (23) if required.

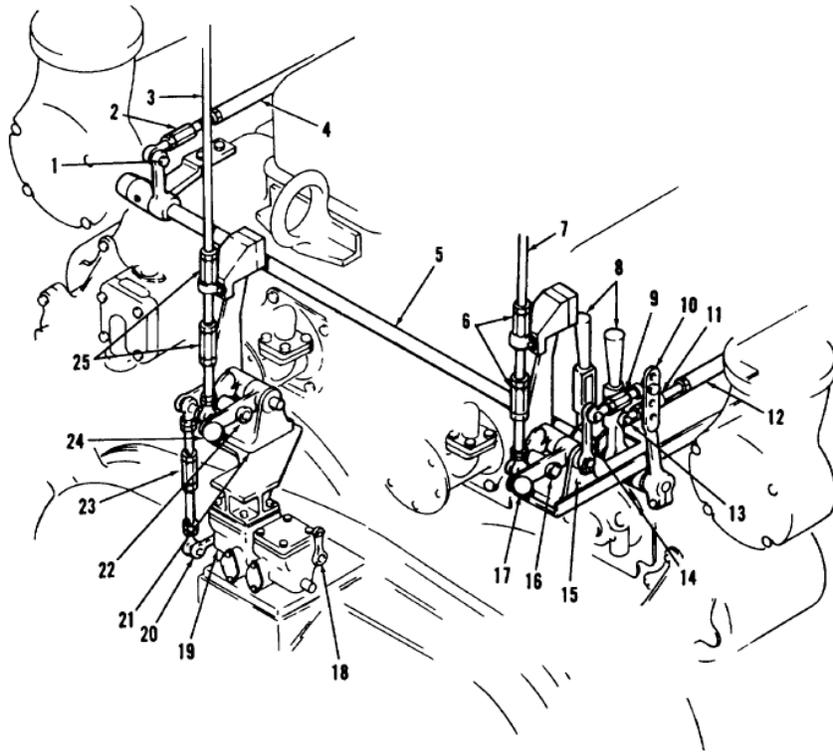
(d) Place engine room control lever (24) into neutral position. Insure lever (20) is in neutral position.

(e) Repeat steps (2), (3), and (4) until lever (20) is in correct position in relation to control lever (24).

(f) Engage pilot house control lever by pulling out manual disconnect -pin (22) and turning 90 degrees.

(g) Place pilot house control in forward position and adjust turnbuckles (25) to obtain proper position of engine room control (21).

(h) Repeat step (7) for reverse and neutral positions.



ME 1905-217-12/2-8 (1)

- | | | |
|---|--|---|
| 1. Bolt | 9. Rod | 18. Engine marine gear oil shutoff valve |
| 2. Turnbuckle | 10. Lever | 19. Marine gear selector control valve |
| 3. Plot house to engine room reverse gear control rod | 11. Turnbuckle | 20. Rod |
| 4. Governor speed control rod | 12. Governor speed control rod | 21. Propulsion unit reverses gear control |
| 5. Throttle control cross shaft | 13. Bolt | 22. Manual disconnect pin |
| 6. Turnbuckle | 14. Lever | 23. Rod and turnbuckle |
| 7. Pilot house to engine room throttle control rod | 15. Engine room propulsion unit throttle control | 24. Reverse gear control knob (red) |
| 8. Engine throttle levers | 16. Manual disconnect pin | 25. Turnbuckle |
| | 17. Throttle control knob (black) | |

Throttle Control
Figure 551-88L-2054_11

2. Perform maintenance on an air actuated throttle control system.

a. Items to be inspected/serviced.

- (1) Control station pilothouse.
- (2) Control station engine room.
- (3) Gear mate control system.
- (4) Governor Actuator.
- (5) Air-Prep System.
- (6) Gauge Shuttle.
- (7) Valve 4-Way Transfer.

(8) Valve 3-Way Transfer.

(9) Valve Shaft.

(10) Brake Panel.

(11) Ball Valve.

(12) Governor Override.

(13) Roller-Operated Valve 4-Way.

(14) Valve Cylinder.

b. Inspect control system.

(1) Operate the systems, observe the function for normal operational, Ahead and Astern. Recommend system supply pressure, 120 psi.

(2) During operation, check for air leaks at tubing fittings, valves, and actuator seals by using liquid leak detector. Assure all tubing is secured and insulated from excessive vibration, check all flexible hoses for cracking, aging, or chafing.

(3) With the system actuated Ahead, inspect for the following, then check again while actuated Astern.

(a) The 3-position gear actuator cylinder should move freely without binding or twisting. The same is true for the governor actuator. Check all linkages and adjustments for correct alignment.

(b) Check all pivot points for freedom of movement, excessive wear and corrosion.

(c) Check valve indicator pins or stem positions and ensure all are in proper sequence.

(d) Check all operating pressures for normal settings.

(4) Check all system components for cleanliness. Exercise care to ensure that excessive dust, dirt, and foreign objects are not allowed to build up around and/or on any system components.

(5) Turn the system air off at the air prep unit shut-off valve. After all system air has bled out, remove the filter unit bowl, drain it, wipe it clean, inspect the filter element, and install the bowl. Be sure the auto drain float (if used) is positioned properly and lock ring is in locked position. Slowly turn on air to prevent system shock.

c. Clean and lubricate.

(1) Turn control system air off at the air prep unit and wait for pressure to bleed off completely before proceeding.

(2) Disconnect the component to be served and remove it from its installation. Plug or cap the air line connection removed from the component to prevent foreign objects from entering air lines.

(3) Disassemble the component to expose all serviceable parts.

(a) Refer to individual component assembly during disassembly and reassembly.

(b) Use a clean, well-lighted work area.

(c) Clean all parts (except rubber parts) with petroleum base solvent, mineral spirits (Stoddard solvent) or kerosene, and air dry.

1 Clean rubber parts with soap and water.

2 Allow to air dry, or blow dry with low pressure air.

(d) Ensure all parts are clean and free of residue.

1 Check all parts for wear, corrosion or damage.

2 Check diaphragms, "O" rings, and seals.

3 Replace if cracked, hardened, or worn.

(e) Replace all suspect parts.

1 During assembly, lubricate each part using Lubriplate No. 107 on metal to metal moving surfaces.

2 During assembly use Pneumatic Grease No. 55 on all rubber parts.

3. Perform maintenance on a chain and cable actuated throttle control system.

a. Inspect throttle control.

(1) Inspect lever (1) for any damage including cracked knob or shaft.

(2) Inspect cover (2) for any dents or other damage. Inspect gasket (3).

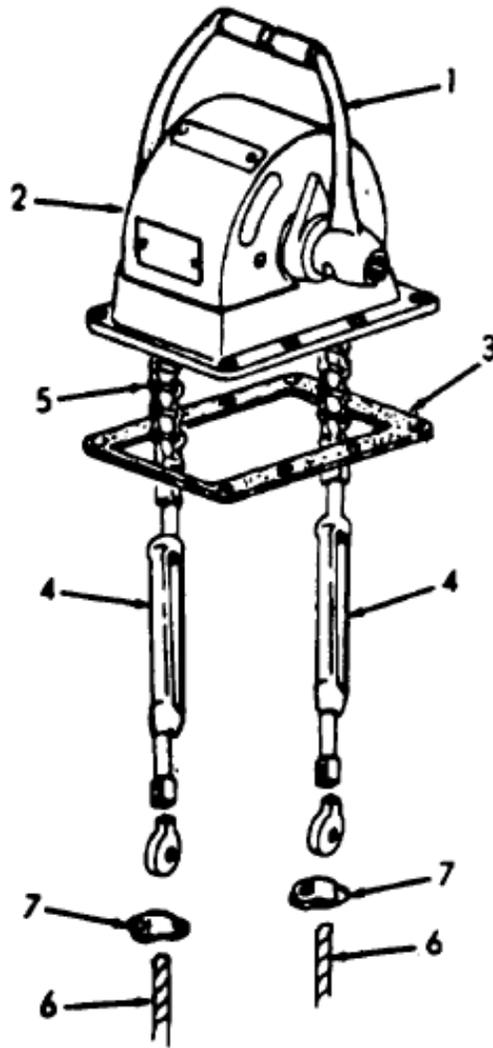


Figure 551-88L-2054_12
Throttle control head

(3) Remove access plate to gain access to turnbuckles (4), chains (5), cables (6) and cable connectors (7). Inspect for any damage.

(4) Inspect rods (8), levers (9) and rod ends (10).

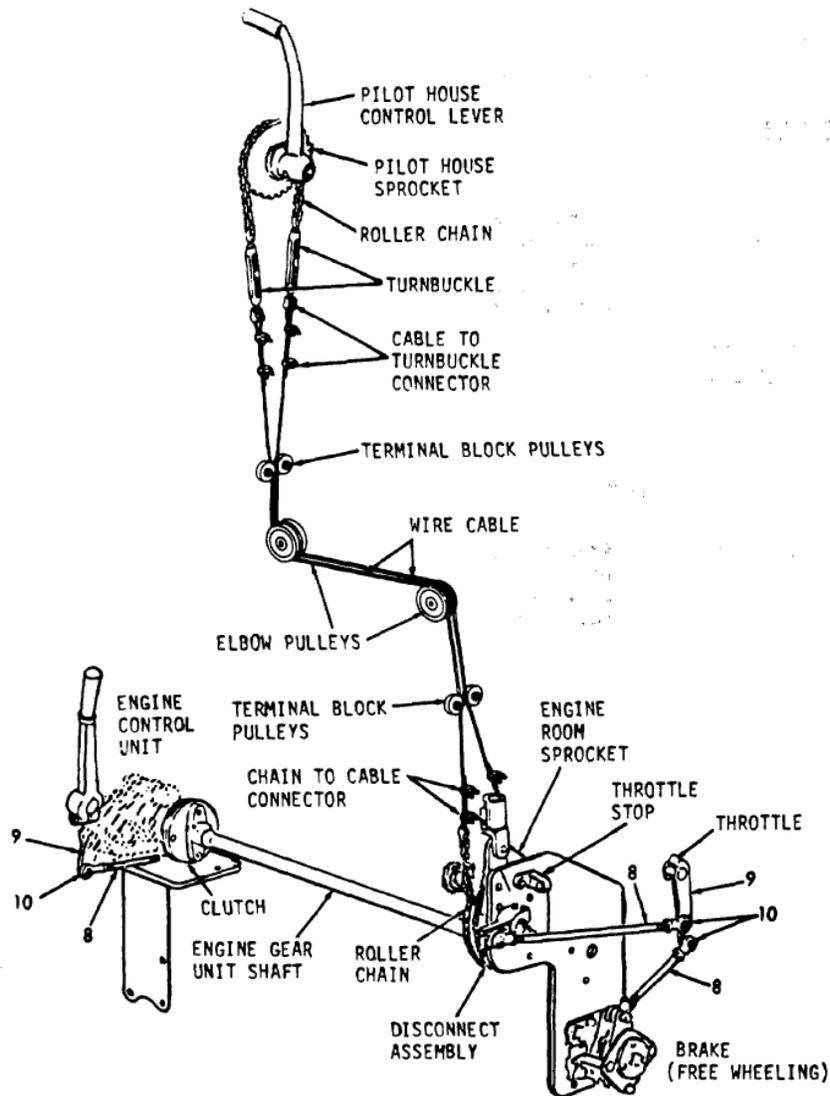


Figure 551-88L-2054_13
Throttle control system

b. Service throttle control.

- (1) Service throttle controls using clean cloth, detergent and clean water.
- (2) Remove all foreign matter from the turnbuckles, cable termination rods and cables.

4. Perform maintenance on various throttle control system consoles.

a. Perform before use maintenance.

- (1) EOS console.
 - (a) Inspect console for cleanliness, clean as required.

1 Look for any loose, missing, or broken switches or controls, gauges, indicator lights, or obvious damage.

2 Ensure that throttle controls operate smoothly and do not bind.

(b) Engine Order Telegraph.

1 Conduct test with pilothouse to ensure communication.

2 Move selector through each position ensuring corresponding indicator lights.

(c) Remote Propulsion Indicator Panel.

1 Press and hold LAMP TEST button.

2 All lights should light.

3 Adjust the intensity of the lights using the dimmer control.

(d) Control air pressure gauge.

125 PSI. _1_ With pilothouse console in command, ensure that the control air pressure gauge reads approximately

2 Equipment not ready if air gauge is reading below 110 or above 140 PSI.

(e) Command transfer.

1 Test command transfer operation.

2 Ensure that control operates smoothly.

3 Verify ability to transfer control.

(2) Aft control station console.

(a) Inspect control station console for cleanliness; clean as required.

damage. _1_ Look for any loose, missing, or broken switches or controls, gauges, indicator lights, or obvious

2 Ensure that throttle, command transfer, and non- follow up controls operate smoothly and do not bind.

3 Observe lights and gauges to ensure proper operation.

(b) Ensure that panel cover is tight.

(3) Pilothouse console.

(a) Inspect control station for cleanliness; clean as required.

damage. _1_ Look for any loose, missing, or broken switches or controls, gauges, indicator lights, or obvious

2 Ensure that panel cover is tight.

3 Ensure that throttle, command transfer, and non- follow up controls operate smoothly and do not bind.

4 Observe lights and gauges to ensure proper operation.

(b) Engine Order Telegraph.

1 Conduct test with EOS to ensure communication.

2 Move selector through each position ensuring corresponding indicator lights.

(c) Remote Propulsion Indicator Panel.

1 Press and hold LAMP TEST button.

2 All lights should light.

3 Adjust the intensity of the lights using the dimmer control.

(d) Control air pressure gauge.

125 PSI. _1_ With pilothouse console in command, ensure that the control air pressure gauge reads approximately

2 Equipment not ready if air gauge is reading below 110 or above 140 PSI.

(e) Command transfer.

1 Test command transfer operation.

2 Ensure that control operates smoothly.

3 Verify ability to transfer control.

b. Perform weekly maintenance.

(1) EOS console.

(a) Inspect console for cleanliness, clean as required.

damage. _1_ Look for any loose, missing, or broken switches or controls, gauges, indicator lights, or obvious

2 Ensure that throttle controls operate smoothly and do not bind.

(b) Engine Order Telegraph.

1 Conduct test with pilothouse to ensure communication.

2 Move selector through each position ensuring corresponding indicator lights.

(c) Remote Propulsion Indicator Panel.

1 Press and hold LAMP TEST button.

2 All lights should light.

3 Adjust the intensity of the lights using the dimmer control.

(d) Control air pressure gauge.

125 PSI. _1_ With pilothouse console in command, ensure that the control air pressure gauge reads approximately

2 Equipment not ready if air gauge is reading below 110 or above 140 PSI.

(e) Command transfer.

1 Test command transfer operation.

2 Ensure that control operates smoothly.

3 Verify ability to transfer control.

(2) Aft control station console.

(a) Inspect control station for cleanliness; clean as required.

damage. _1_ Look for any loose, missing, or broken switches or controls, gauges, indicator lights, or obvious

2 Ensure that throttle, command transfer, and non- follow up controls operate smoothly and do not bind.

3 Observe lights and gauges to ensure proper operation.

(b) Ensure that panel cover is tight.

(3) Pilothouse console.

(a) Inspect control station for cleanliness; clean as required.

damage. _1_ Look for any loose, missing, or broken switches or controls, gauges, indicator lights, or obvious

2 Ensure that panel cover is tight.

3 Ensure that throttle, command transfer, and non- follow up controls operate smoothly and do not bind.

4 Observe lights and gauges to ensure proper operation.

(b) Engine Order Telegraph.

1 Conduct test with EOS to ensure communication.

2 Move selector through each position ensuring corresponding indicator lights.

(c) Remote Propulsion Indicator Panel.

1 Press and hold LAMP TEST button.

2 All lights should light.

3 Adjust the intensity of the lights using the dimmer control.

(d) Control air pressure gauge.

125 PSI. _1_ With pilothouse console in command, ensure that the control air pressure gauge reads approximately

2 Equipment not ready if air gauge is reading below 110 or above 140 PSI.

(e) Command transfer.

1 Test command transfer operation.

2 Ensure that control operates smoothly.

3 Verify ability to transfer control.

(Asterisks indicates a leader performance step.)

Evaluation Guidance: None

Evaluation Preparation: None

PERFORMANCE MEASURES	GO	NO-GO	N/A
1. Performed maintenance on a cable actuated throttle control system.			
a. Perform before use maintenance.			
b. Perform weekly maintenance.			
c. Perform Bi-weekly maintenance.			
d. Perform monthly maintenance.			
e. Perform quarterly maintenance.			
f. Adjust throttle and clutch linkages.			
g. Adjust propulsion unit controls (LCU hull numbers 8540 thru 8560 and 8580 thru 8618).			
2. Performed maintenance on an air actuated throttle control system.			
a. Items to be inspected/serviced.			
b. Inspect control system.			
c. Clean and lubricate.			
3. Performed maintenance on a chain and cable actuated throttle control system.			
a. Inspect throttle control.			
b. Service throttle control.			
4. Performed maintenance on various throttle control system consoles.			
a. Perform before use maintenance.			
b. Perform weekly maintenance.			

Supporting Reference(s):

Step Number	Reference ID	Reference Name	Required	Primary
	TM 55-1905-217-12	Operator's and Organizational Maintenance Manual: Landing Craft, Mechanized, Steel, DED, Overall Length 74 Feet, Mod 1, Mark VIII, Navy Design LCM-8, Hull Nos. 8500-8560 and 8580-8618 (NSN 1905-00-935-6057) (Reprinted W/Basic Incl C1-3)	No	No
	TM 55-1905-219-14-1	OPERATORS, ORGANIZATIONAL, DIRECT SUPPORT, AND GENERAL SUPPORT MAINTENANCE MANUAL FOR LANDING CRAFT UTILITY (LCU) 1667-1670 (NSN 1905-00-168-5764)	No	No
	TM 55-1905-220-14-1	OPERATORS, ORGANIZATIONAL AND DIRECT SUPPORT MAINTENANCE MANUAL FOR LANDING CRAFT, UTILITY, LCU 1671-1679 (NSN 1905-01-009-1056) (NSN 1905-01-009-1056) (REPRINTED W/BASIC INCL C1-5)	No	No
	TM 55-1905-222-14	OPERATOR, UNIT AND INTERMEDIATE (DIRECT AND GENERAL SUPPORT) MAINTENANCE MANUAL FOR LANDING CRAFT, MECHANIZED (LCM-8) (ROHR AND GUNDERSON MODELS) (NSN 1905-01-284-2647) AND (1905-01-284-2648) (REPRINTED W	No	No
	TM 55-1905-223-24-18-1	UNIT, INTERMEDIATE DIRECT SUPPORT AND INTERMEDIATE GENERAL SUPPORT MAINTENANCE INSTRUCTIONS FOR LANDING CRAFT, UTILITY (LCU) BASIC CRAFT (PART 1) (NSN 1905-01-154-1191) (REPRINTED W/BASIC INCL C1-3) (THIS	No	No
	TM 55-1905-223-24-18-2	UNIT, INTERMEDIATE DIRECT SUPPORT AND INTERMEDIATE GENERAL SUPPORT MAINTENANCE INSTRUCTIONS FOR LANDING CRAFT, UTILITY (LCU) (NSN 1905-01-154-1191) BASIC CRAFT (PART II) (REPRINTED W/BASIC INCL C1-2) (THI	No	No
	TM 55-1915-200-10	Operator's Manual for Logistic Support Vessel (LSV) (NSN 1915-01-153-8801) (Reprinted W/Basic Incl C1-6)	No	No
	TM 55-1925-273-10-2	Operator's Manual for Inland and Coastal Large Tug (LT) (NSN 1925-01-509-7013) (EIC XAG) (This item is included on EM 0272)	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.

Safety: In a training environment, leaders must perform a risk assessment in accordance with ATP 5-19, Risk Management. Leaders will complete the current Deliberate Risk Assessment Worksheet in accordance with the TRADOC Safety Officer 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.

Prerequisite Individual Tasks : None

Supporting Individual Tasks :

Task Number	Title	Proponent	Status
551-88L-3060	Troubleshoot an Engine Control System	551 - Transportation (Individual)	Approved

Supported Individual Tasks :

Task Number	Title	Proponent	Status
551-88L-2039	Conduct The Engine Room Watch	551 - Transportation (Individual)	Approved
551-88L-3060	Troubleshoot an Engine Control System	551 - Transportation (Individual)	Approved

Supported Collective Tasks : None

ICTL Data :

ICTL Title	Personnel Type	MOS Data
88L30 Watercraft Engineer	Enlisted	MOS: 88L, Skill Level: SL3, Duty Pos: TFR, LIC: EN
88L20 Watercraft Engineer	Enlisted	MOS: 88L, Skill Level: SL2, Duty Pos: TFS, LIC: EN
88L40 Watercraft Engineer	Enlisted	MOS: 88L, Skill Level: SL4, Duty Pos: TGB, LIC: EN, SQI: O