

TECHNICAL MANUAL

UNIT, INTERMEDIATE DIRECT  
SUPPORT

INTRODUCTION 1-1

AND INTERMEDIATE GENERAL  
SUPPORT  
MAINTENANCE INSTRUCTIONS

UNIT MAINTENANCE  
INSTRUCTIONS 2-1

INTERMEDIATE DIRECT SUPPORT  
MAINTENANCE INSTRUCTIONS 3-1

BOW ANCHOR WINDLASS  
SUBSYSTEM

INTERMEDIATE GENERAL SUPPORT  
MAINTENANCE INSTRUCTIONS 4-1

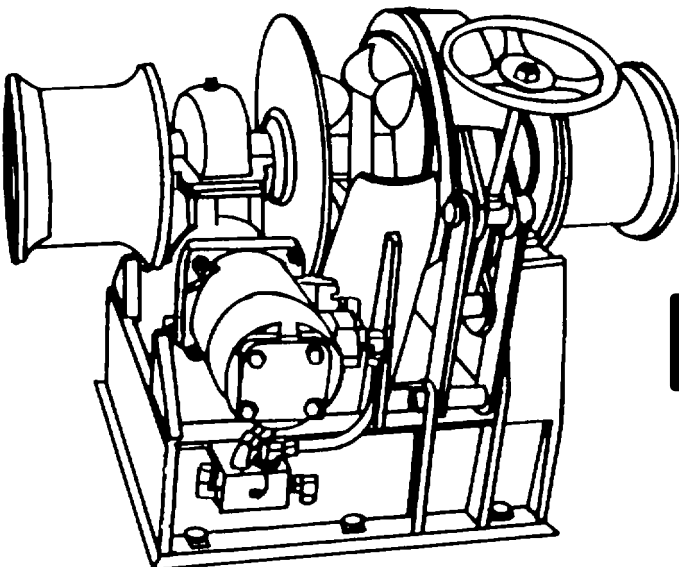
FOR

APPENDIXES A-1

LANDING CRAFT UTILITY (LCU)

ALPHABETICAL INDEX INDEX-1

NSN 1905-01-154-1191



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HEADQUARTERS  
DEPARTMENT OF THE ARMY  
WASHINGTON, D.C., 17 January 1989

**UNIT, INTERMEDIATE DIRECT SUPPORT  
AND INTERMEDIATE GENERAL SUPPORT  
MAINTENANCE INSTRUCTIONS**

**BOW ANCHOR WINDLASS SUBSYSTEM  
FOR**

**LANDING CRAFT UTILITY (LCU)  
NSN 1905-01-154-1191**

**REPORTING ERRORS AND RECOMMENDING IMPROVEMENTS**

You can help improve this manual. If you find any mistakes or if you know of a way to improve these procedures, please let us know. Mail your letter or DA Form 2028 (Recommended Changes to Publications and Blank Forms), or DA Form 2028-2 located in the back of this manual directly to: Commander, US Army Aviation and Troop Command, ATTN: AMSAT-1-MP, 4300 Goodfellow Blvd., St. Louis, MO 63120-1798. A reply will be furnished directly to you.

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## CHAPTER 1

## INTRODUCTION

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## Section I. GENERAL INFORMATION

1-1. **Scope.** The scope of this manual is as follows:

- a. Type of Manual. Unit, intermediate direct support, and intermediate general support maintenance manual.
- b. Model Number and Equipment Name. Model MSW-112-TH, Bow Anchor Windlass.
- c. Purpose of Equipment. Used to raise and lower the bow anchors and stud link chain.

1-2. **Maintenance Forms, Records, and Reports.** Department of the Army forms and procedures used for equipment maintenance are those prescribed by DA Pam 738-750, the Army Maintenance Management System.

1-3. **Destruction of Army Materiel.** Refer to TM 750-244-3 for instructions covering the destruction of Army materiel to prevent enemy use.

1-4. **Reporting Equipment Improvement Recommendations (EIR).** If your equipment needs improvement, let us know. Send us an EIR. You, the user, are the only one who can tell us what you don't like about your equipment. Let us know why you don't like the design. Put it on an SF 368 (Quality Deficiency Report). Mail it to: Commander, U S. Army Troop Support Command; ATTN: AMSTR-QX; 4300 Goodfellow Blvd.; St. Louis, Missouri 63120-1798. We'll send you a reply.

1-5. **Preparation for Storage or Shipment.** Administrative storage of equipment issued to and used by Army activities will have preventive maintenance performed in accordance with the Preventive Maintenance Checks and Services (PMCS) charts before storing. When removing the equipment from administrative storage, the PMCS should be performed to assure operational readiness. Repacking of equipment for shipment or short term storage is covered in paragraph 2-21.

## Section II. EQUIPMENT DESCRIPTION AND DATA

1-6. **Characteristics, Capabilities, and Features.** A very broad view of the bow anchor windlass is as follows:

a. Characteristics.

- (1) Controlled by two electro hydraulically driven anchor windlasses.
- (2) Each fitted with gypsy heads/cathead warping drums.
- (3) Each windlass has its own power unit.

b. Capabilities and Features.

- (1) Retrieval of anchor chain to chain locker.
- (2) Distribution of anchor chain from chain locker.
- (3) Allows free movement of wildcat, allowing rapid, uncontrolled release of the anchor.

1-7. **Location and Description of Major Components.** The model MSW-112-TH bow anchor windlass (FIGURE 1-1) is a hydraulically driven chain windlass for handling the vessel's bow anchors and stud link chain. Each windlass has a single wildcat and two catheads and its own power unit.

- a. Anchor Windlass Assembly. Two electrohydraulically driven anchor windlasses are provided for the bow anchors, one port and one starboard. The windlasses are controlled at each unit. The windlasses are fitted with gypsy heads/cathead warping drums (1) on each end and one wildcat (3) on the main horizontal shaft.
- b. Anchor Windlass Hydraulic Power System. The anchor windlass hydraulic power system (FIGURE 1-2) consists of the hydradyne-hydraulic power pack assembly.
- c. Failsafe Brake System. The failsafe brake system (5, FIGURE 1-1) is spring loaded to apply the brake. Hydraulic pressure is required to release or "hold off" the brake. Normal operation is to have the brake pressurized in the released position with the hydraulic system running. Any malfunction which reduces the hydraulic system pressure below the release pressure of the brake will cause a brake application.
- d. Gear Box Assembly. Provides the necessary gear reduction between the wildcat/cathead and the hydraulic motor (4, FIGURE 1-1).
- e. Hand Brake. Provides manually operated braking device for the windlass assembly (2, FIGURE 1-1).
- f. Hydraulic Motor. Provides drive to the gear box assembly (6, FIGURE 1-1).
- g. Cathead. Provides hauling capability independent of the anchor operation (1, FIGURE 1-1).

1-8. **Equipment Data.** Characteristics and reference data are provided in Table 1-1. Also see the equipment data given in the operator's manual, TM 55-1905-223-10.

Table 1-1. Equipment Data

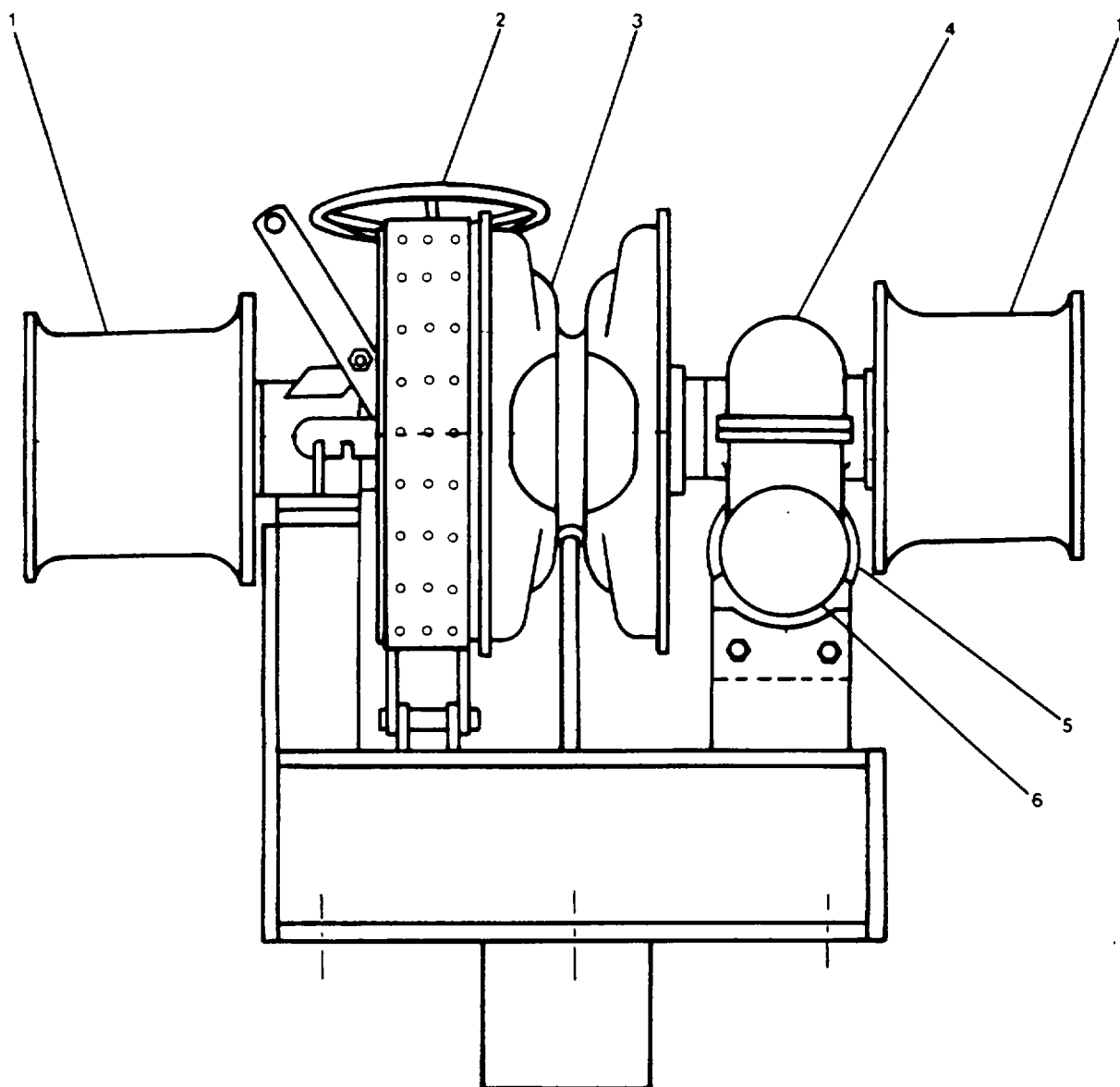
| Characteristics                      | Reference Data          |
|--------------------------------------|-------------------------|
| <u>Bow Anchor Windlass</u>           | <u>Model MSW-112-TH</u> |
| Rated load                           | 14,000 lb               |
| Brake static hold capacity           | 140,000 lb              |
| Rate of haul in cathead (gypsy head) | 30 ft. per min          |
| Wildcat                              | 26 ft. per min          |

1-9. **Safety, Care, and Handling.** Safety precautions must be observed at all times while performing maintenance. General WARNINGS and first-aid data appear in the front of this manual. Review all safety information before starting any task. Carefully read through an entire maintenance procedure before performing any maintenance function. Make sure the task can be done safely. All WARNINGS, CAUTIONS, and NOTES are of great importance to your safety and the safety of the equipment.

Section III. PRINCIPLES OF OPERATION

1-10. **General.** The MSW-112-TH bow anchor windlass is a hydraulically driven chain windlass for handling the vessel's bow anchors and stud link chain. The windlass assembly retrieves anchor chain to the chain locker when the anchor is taken in (raised), and distributes anchor chain from the chain locker when the anchor is let down (lowered). It allows free movement of the wildcat when it is necessary to have uncontrolled release of the anchor. Besides the anchor operation, the bow anchor windlass provides hauling capability to provide lifting for other tasks.

PORT ASSEMBLY



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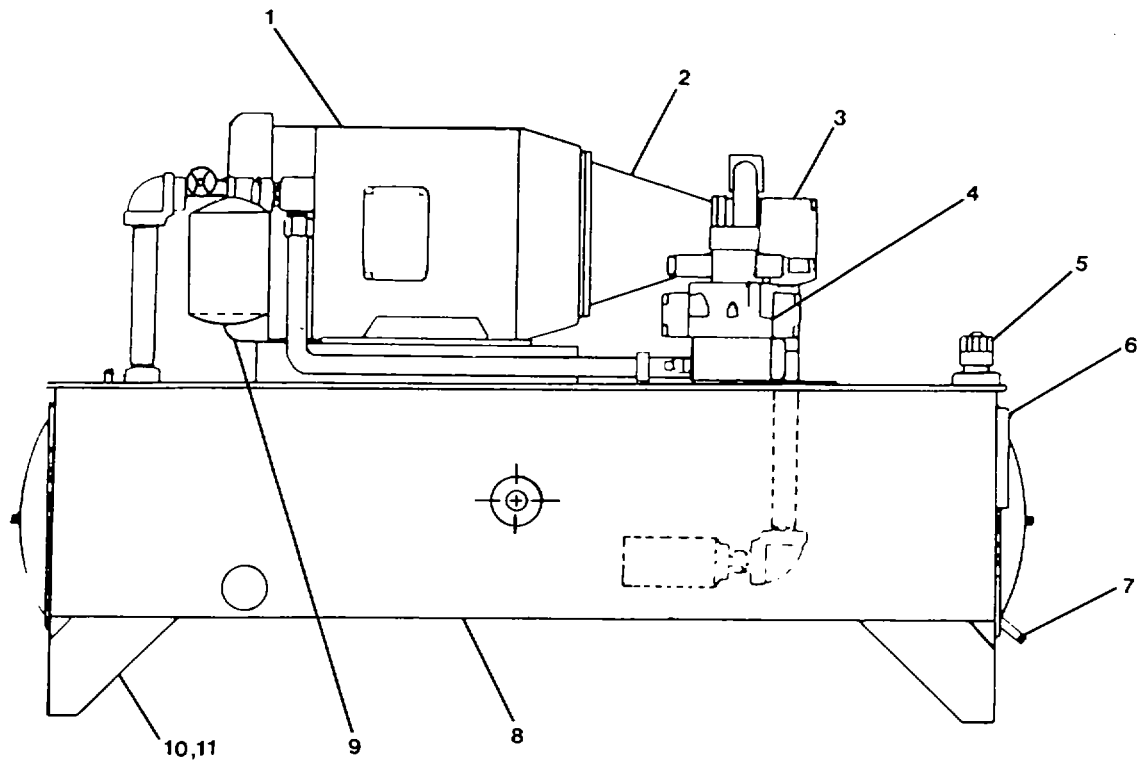
- 1. CATHEAD (GYPSY HEAD)
- 2. HAND BRAKE
- 3. WILDCAT

- 4. GEAR BOX/OIL FILL
- 5. FAILSAFE BRAKE
- 6. HYDRAUUC MOTOR

FIGURE 1-1. Bow Anchor Windlass Assembly.

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- |                              |                   |
|------------------------------|-------------------|
| 1. ELECTRIC MOTOR            | 7. DRAIN PLUG     |
| 2. COUPLER                   | 8. RESERVOIR      |
| 3. HYDRAULIC PUMP            | 9. FILTER ELEMENT |
| 4. DIRECTIONAL CONTROL VALVE | 10. BOLT          |
| 5. BREATHER/FILLER           | 11. NUT           |
| 6. SIGHT LIQUID INDICATOR    |                   |

**FIGURE 1-2. Bow Anchor Windlass Hydraulic Power Pack Assembly.**

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## CHAPTER 2

## UNIT MAINTENANCE INSTRUCTIONS

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### Section I. REPAIR PARTS, SPECIAL TOOLS; TEST, MEASUREMENT, AND DIAGNOSTIC EQUIPMENT (TMDE); AND SUPPORT EQUIPMENT

2-1. **Common Tools and Equipment.** For authorized common tools and equipment, refer to the Modified Table of Organization and Equipment (MTOE) applicable to your organization.

2-2. **Special Tools, TMDE, and Support Equipment.** Special tools; test, measurement, and diagnostic equipment; and support equipment requirements are listed and illustrated in the Repair Parts and Special Tools List (RPSTL), TM 55-1905-223-24P. These items are also listed in the Maintenance Allocation Chart (MAC), Appendix B of this manual.

2-3. **Repair Parts.** Repair parts are listed and illustrated in the Repair Parts and Special Tools List (RPSTL), TM 55-1905-223-24P.

### Section II. SERVICE UPON RECEIPT

#### 2-4. Checking Unpacked Equipment.

- a. Inspect the equipment for damage incurred during shipment. If the equipment has been damaged, report the damage in accordance with the instructions of DA Pam 738-750.
- b. Check the equipment against the packing slip to see if the shipment is complete. Report all discrepancies in accordance the instructions of DA Pam 738-750.
- c. Check to see whether the equipment has been modified.
- d. Remove protective caps, plugs, inserts, wrappings, and tape when inspection/inventory is completed. Inspect piping openings for damage. Wipe off dirt, grease, or protective films at time of installation.

- e. Remove chocks from resilient mounted components.

2-5. **Deprocessing Equipment.** To move windlass assembly, lifting points are indicated in FIGURE 2-1.

### **WARNING**

**Lift windlass by lifting points only, using a sling with four legs to prevent tilting or leaning. Keep the sling legs clear of all windlass components when lifting or lowering to prevent damage to equipment or injury to personnel.**

2-6. **Preliminary Servicing and Adjustment.** The following procedures should be completed before anchor windlass startup:

- a. Examine windlass and power unit for any obvious problems that might have come up since the last operation.
- b. Check all lubrication points and fluid levels for proper operating levels.
- c. Brake should be screwed down tight.
- d. Clutch should be disengaged and locked.

2-7. **Initial Setup Procedure.** Includes operational checks and inspections that are not performed for a routine startup. Direct support maintenance personnel will perform initial setup in accordance with the operator's manual, TM 55-1905-223-10.

2-8. **Normal Startup.** Refer to the operator's manual, TM 55-1905-223-10.

2-9. **Shutdown Procedure (Usual or Unusual).** Refer to the operator's manual, TM 55-1905-223-10.

### **Section III. UNIT PREVENTIVE MAINTENANCE CHECKS AND SERVICES (PMCS)**

2-10. **Explanation of PMCS Table.** PMCS is designed to keep the equipment in good working condition. This is accomplished by performing certain tests, inspections, and services. Table 2-1 lists items to be serviced and the procedures needed to accomplish the PMCS. The "Interval" column tells you when to perform a check or service. If needed, PMCS may be performed more frequently than the indicated interval. The "Procedures" column tells you how to perform the required checks and services. If your equipment does not perform as required, see Table 2-2, Troubleshooting. Report any malfunctions or failures on DA Form 2404. In the "TM" Number column on DA Form 2404, record the appropriate Item Number from the PMCS table.