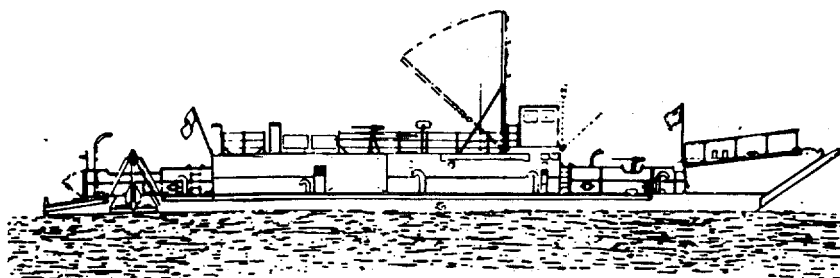


**TECHNICAL MANUAL
OPERATOR, ORGANIZATIONAL,
DIRECT SUPPORT AND
GENERAL SUPPORT
MAINTENANCE MANUAL**

**OPERATOR/CREW
BOW RAMP AND
ANCHOR HANDLING SYSTEM
MAINTENANCE INSTRUCTIONS**

**LANDING CRAFT UTILITY
LCU 1667-1670
NSN 1905-00-168-5764**



**HEADQUARTERS, DEPARTMENT OF THE ARMY
14 MARCH 1984**

CHAPTER III (CONTINUED).

SECTION V. MAINTENANCE PROCEDURES

(CONTINUED).

3-115. BOW RAMP AND WINCH.

<u>DESCRIPTION</u>	<u>PARAGRAPH</u>
Bow Ramp, Sheaves, and Fairleads	3-116
Winch Assembly	3-117
Torque Coupling	3-118
Speed Reducer	3-119
Winch Brake and Motor	3-120
Controller	3-121
Master Switches (Disconnect)	3-122
Limit Switches	3-123

3-116. BOW RAMP, FAIRLEADS AND SHEAVES - MAINTENANCE INSTRUCTIONS.

This task covers:

a. Inspection

b. Repair

INITIAL SETUPTest Equipment

None

References
Paragraph

2-53 Operation Procedures

Special Tools

None

Equipment
Condition Condition Description

None

Material/Parts

None

Special Environmental Conditions

None

Personnel Required

1

General Safety Instructions

Observe WARNING in procedure.

3-116. BOW RAMP, FAIRLEADS AND SHEAVES - MAINTENANCE INSTRUCTIONS.

LOCATION	ITEM	ACTION	REMARKS
INSPECTION			
1. Bow ramp	a. Tee-bolt assembly	1. Check to see if tee-bolt is bent.	
		2. Check for cracks or breaks.	
		3. Check for wear.	
		4. Make sure fittings are tight.	
2. Port or starboard bulkhead	b. Lubrication fitting	1. Make sure fitting has enough lubricant.	
		2. Clean fitting.	
		3. Make sure fittings are tight.	
	a. Turn-buckle	1. Check connection to wire cable.	
		2. Check connection to bow chain.	
		3. Check for cracks or breaks.	
		4. Check for wear.	
		5. Check threads for wear or stripping.	
	b. Chain stop	1. Check for wear.	
		2. Check for cracks and dents.	

3-116. BOW RAMP, FAIRLEADS AND SHEAVES - MAINTENANCE INSTRUCTIONS: (Continued).

LOCATION	ITEM	ACTION	REMARKS
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REPAIR

WARNING

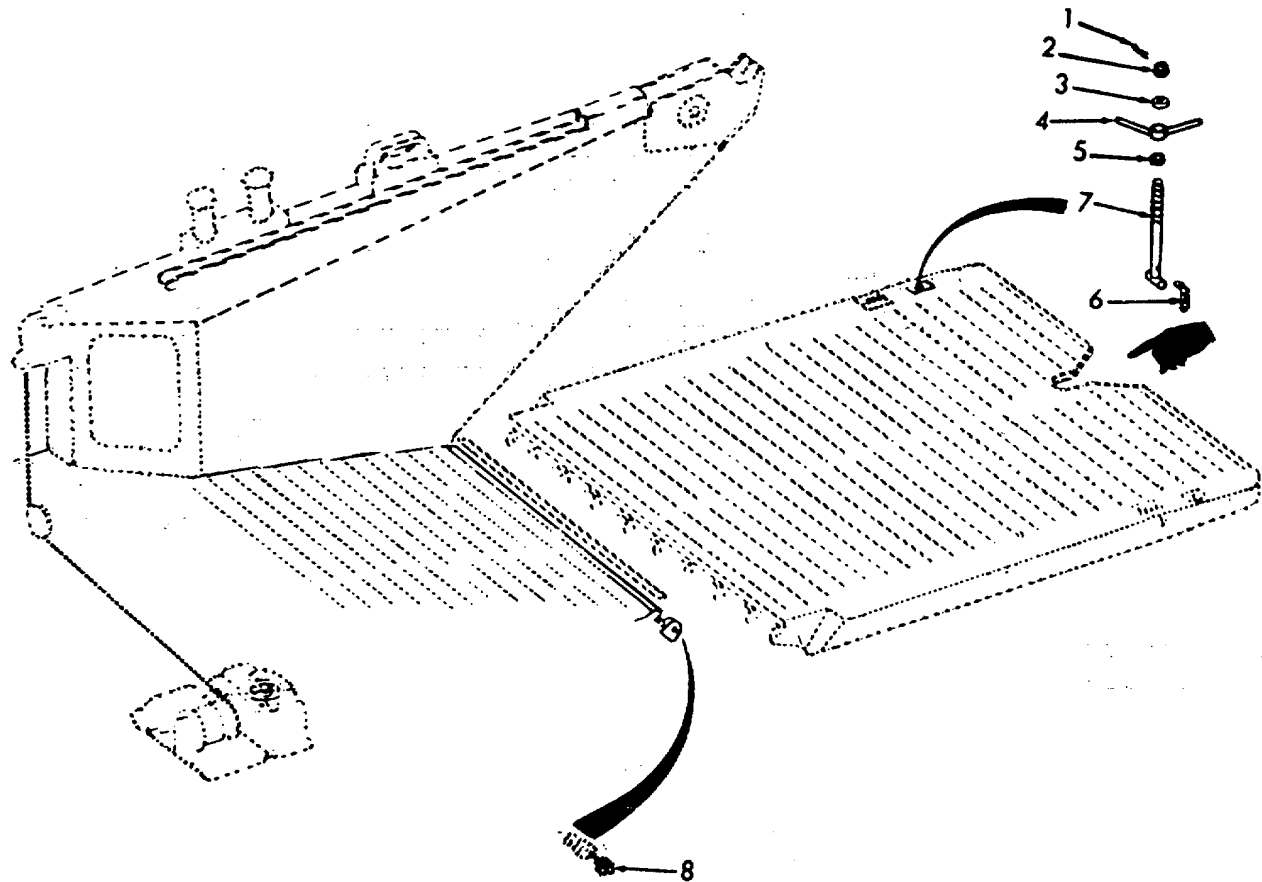
Disconnect power to the winch whenever working on the ramp gate, the wire rope or in the vicinity of the winch in the winch room.

3.	Bow ramp	a. Tee-bolt	1. Lower bow ramp to repair tee-bolt. 2. Remove cotter pin (1), ferrule (2) and washer (3). 3. Remove wingnut (4) and washer (5). 4. Remove toggle pin (6) from tee-bolt (7). 5. Turn tee-bolt (7) counter-clockwise to remove from bow ramp.	Refer to paragraph 2-53 for operating procedures to lower the bow ramp.
		b. Lubrication fitting (8)	Remove lubrication fitting (8) from ramp hinge pin (9).	
		c. Tee-bolt (7)	1. Turn tee-bolt (7) clockwise to install in bow ramp. 2. Replace toggle pin (6) into tee-bolt (7).	

3-116. BOW RAMP, FAIRLEADS AND SHEAVES - MAINTENANCE INSTRUCTIONS (Continued).

LOCATION	ITEM	ACTION	REMARKS
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REPAIR (Cont)



Change 2 3-1995

3-116. BOW RAMP, FAIRLEADS AND SHEAVES - MAINTENANCE INSTRUCTIONS. (Continued).

LOCATION	ITEM	ACTION	REMARKS
REPAIR (Cont)			
		2. Replace toggle pin (6) into tee-bolt (7).	
		3. Install washer (5), and wingnut (4).	
		4. Install washer (3), ferrule, (2) and cotter pin (1).	
	d. Lubri- cation fitting (8)	1. Lubricate fittings. 2. Insert lubrication fitting (8) into bow ramp hinge pin (9).	Tighten.
	e. Bow ramp	Raise bow ramp.	Refer to paragraph 2-53 for operating procedures to raise the bow ramp.
4.	Port or starboard bulkhead		

NOTE

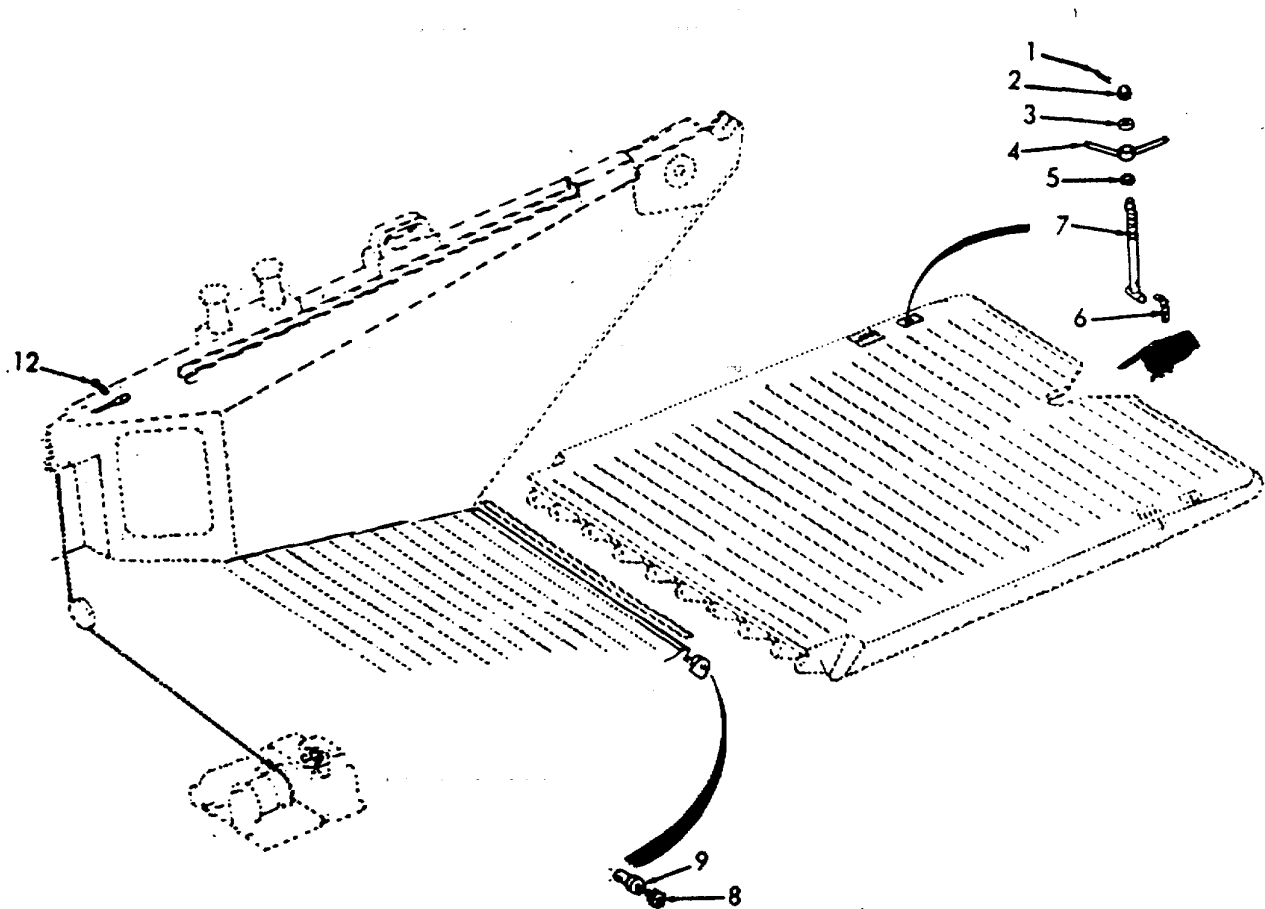
Secure wire cable from winch to prevent slippage while repairing turnbuckle.

- | | |
|----------------------------|---|
| a. Turn-
buckle
(10) | 1. Loosen turnbuckle (10). |
| | 2. Remove pins (11). |
| | 3. Remove turnbuckle (10). |
| | 4. Remove swivel (12) from winch cable. |

3-116. BOW RAMP, FAIRLEADS AND SHEAVES - MAINTENANCE INSTRUCTIONS. (Continued).

LOCATION	ITEM	ACTION	REMARKS
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REPAIR (Cont)



Change 2 3-1997

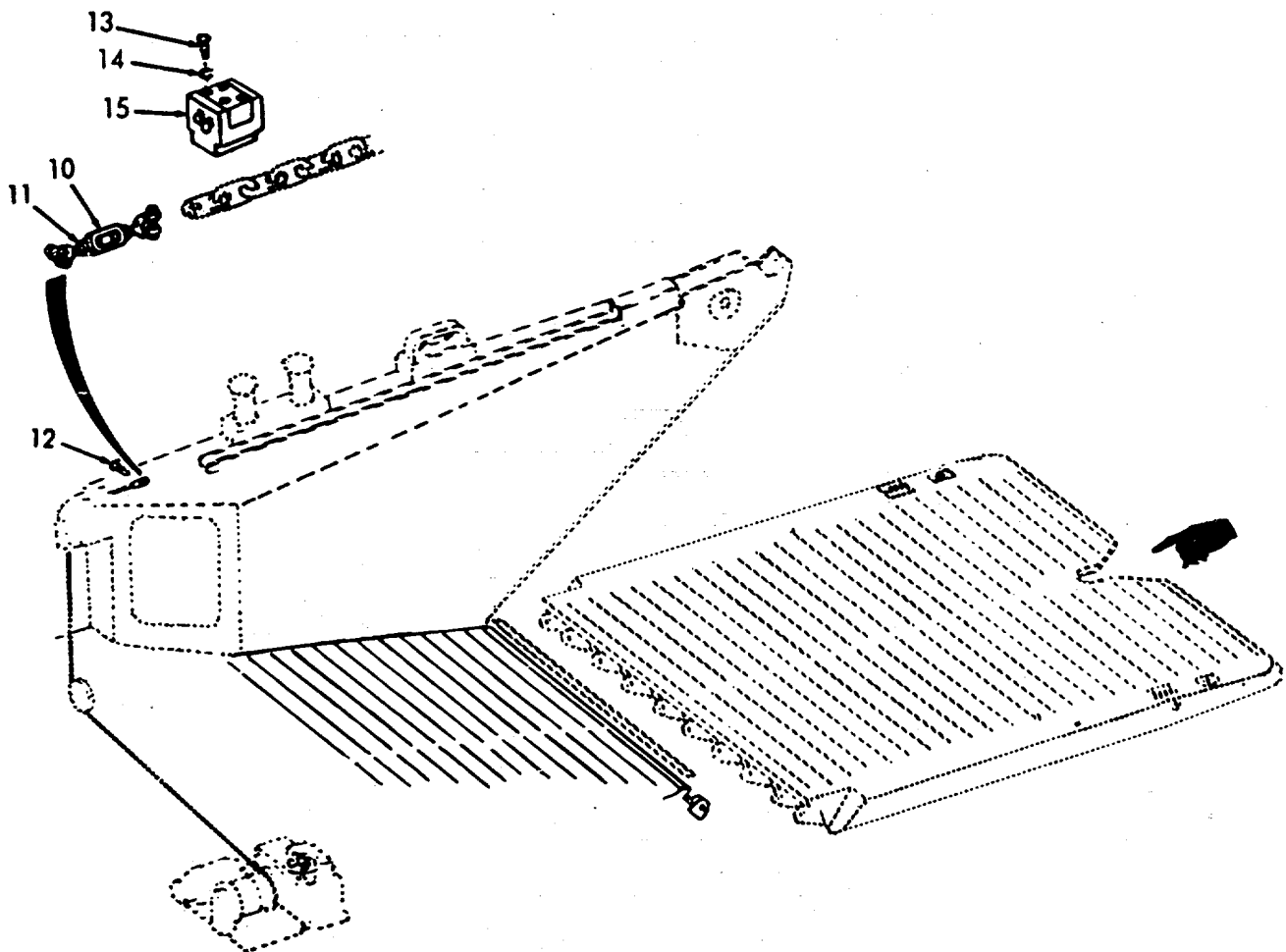
3-116. BOW RAMP, FAIRLEADS AND SHEAVES - MAINTENANCE INSTRUCTIONS (Continued).

LOCATION	ITEM	ACTION	REMARKS
REPAIR (Cont)			
		5. Install swivel (12) onto winch cable.	
		6. Install turnbuckle (10).	
		7. Replace pins (11).	
		8. Tighten turnbuckle (10).	
	b. Chain stop (15)	1. Remove capscrews (13), and lockwashers (14).	Loosen capscrews to adjust bow chain run-out while lowering ramp. Retighten capscrews after adjustment.
		2. Remove chain stop (15).	If damaged.
		3. Replace chain stop (15).	
		4. Install lockwashers (14), and capscrews (13).	

3-116. BOW RAMP, FAIRLEADS AND SHEAVES - MAINTENANCE INSTRUCTIONS. (Continued).

LOCATION	ITEM	ACTION	REMARKS
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REPAIR (Cont)



Change 2 3-1999

3-116. BOW RAMP, FAIRLEADS AND SHEAVES - MAINTENANCE INSTRUCTIONS (Continued).

LOCATION	ITEM	ACTION	REMARKS
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REPAIR (Cont)

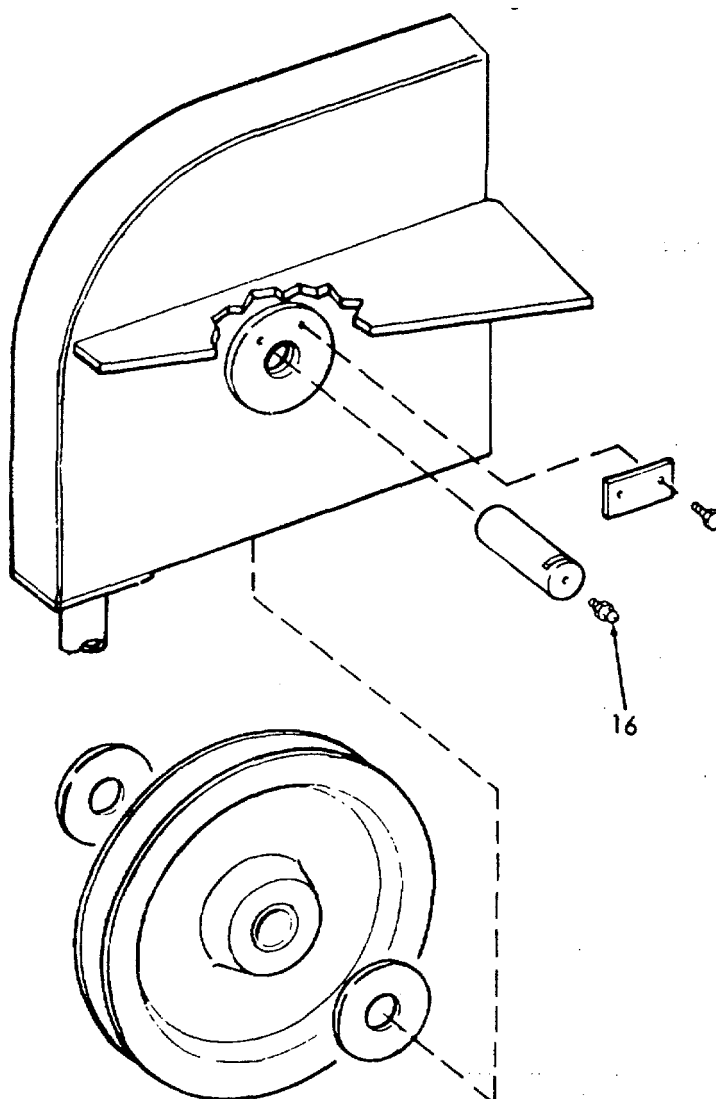
c. Upper fair-lead sheave assembly			
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	1. Remove lubrication fitting (16).		
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	2. Install lubrication fitting (16).		
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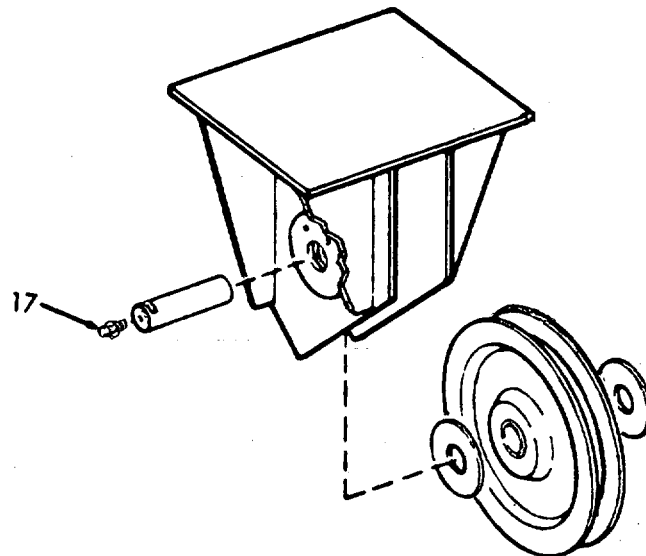
	3. Grease fitting.		
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		Replace if necessary.	
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3-116. BOW RAMP, FAIRLEADS AND SHEAVES - MAINTENANCE INSTRUCTIONS (Continued).

LOCATION	ITEM	ACTION	REMARKS
REPAIR (Cont)			
5. Winch compartment	a. Lower fair-lead sheave assembly	1. Remove lubrication fitting (17). 2. Install lubrication fitting (17). 3. Grease fitting.	Replace if necessary.



3-117. WINCH ASSEMBLY - MAINTENANCE INSTRUCTIONS.

This task covers:

a. Inspection

b. Disassembly

c. Reassembly

INITIAL SETUPTest Equipment

None

References

None

Special Tools

None

Equipment
Condition Condition Description

None

Material/Parts

None

Special Environmental Conditions

None

Personnel Required

1

General Safety Instructions

Observe WARNINGS in procedure.

LOCATION	ITEM	ACTION	REMARKS
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INSPECTION

1.	Bearing housing	a. Bearing housing Cover b. Bearing housing	1. Check lubrication fittings for leaks. 2. Check for cracks or dents. 1. Check for dents, or cracks. 2. Check for leaks.	a. Clean. b. Tighten.
2.	Hand brake	a. Hand brake wheel and shaft	1. Check for cracks, dents or breaks. 2. Make sure shaft is not bent.	

3-117. WINCH ASSEMBLY - MAINTENANCE INSTRUCTIONS (Continued).

LOCATION	ITEM	ACTION	REMARKS
INSPECTION (Cont)			
	b. Brake band	1. Check for cracks, dents or breaks. 2. Check for wear.	
	c. Brake links	1. Check for dents, breaks, and cracks. 2. Check for wear.	
	d. Brake pin	1. Make sure cotter pin is secure. 2. Check for cracks, bends, dents, or breaks. 3. Check for wear.	
	e. Brake nut	1. Check for cracks and breaks. 2. Check for wear.	
3. Pawl	a. Pawl lever	1. Check for cracks, bends, dents, or breaks. 2. Check for wear.	
	b. Pawl	1. Check for wear. 2. Check for cracks, bends, dents, or breaks.	

3-117. WINCH ASSEMBLY - MAINTENANCE INSTRUCTIONS (Continued).

LOCATION	ITEM	ACTION	REMARKS
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DISASSEMBLY

WARNING

- ☐ Disconnect power to the winch whenever working on the ramp gate, the wire rope, or in the vicinity of the winch in the winch room.
- ☐ Ensure ramp is dogged closed.

NOTE

Disengage hand brake, and slacken cable around the drum.

- | | | | |
|--------------------|--------------------------|---|--|
| 4. Bearing housing | a. Bearing housing cover | 1. Remove lubricating fitting (1). | |
| | | 2. Remove screws (2), and lockwashers (3). | |
| | | 3. Remove bearing housing cover (4). | |
| | | 4. Remove ring cover (5). | |
| | b. Bearing roller | 1. Loosen bearing adapter (7). | |
| | | 2. Remove bearing roller (6), and bearing adapter (7) from bearing housing (8) and speed reducer shaft (9). | |
| | | 3. Remove bearing adapter (7) from bearing roller (6). if necessary. | Check bearing roller for wear. Replace if necessary. |
| | c. Bearing housing | 1. Remove capscrews (10) and lockwashers (11). | |

3-117. WINCH ASSEMBLY - MAINTENANCE INSTRUCTIONS (Continued).

LOCATION	ITEM	ACTION	REMARKS
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DISASSEMBLY (Cont)

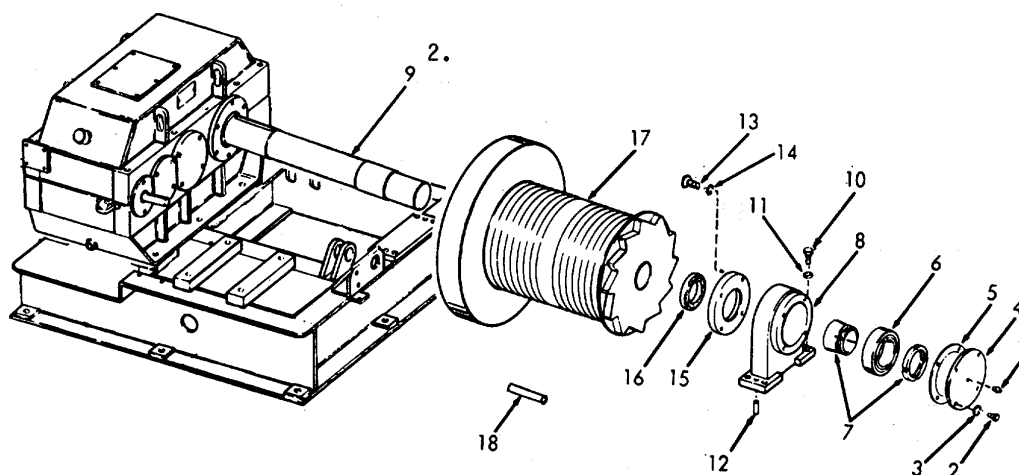
2. Remove dowel pins (12).
3. Remove bearing housing (8) from speed reducer shaft (9).
4. Remove capscrews (13), and lockwashers (14) from seal plate holder (15).
5. Remove seal plate holder (15) from bearing housing (8).
6. Remove oil seal bearing (16).

d. Cable drum key

1. Slide cable drum (17) down speed reducer shaft (9) far enough to remove cable drum key (18).
2. Slide cable drum (17) back into place.

Place a wood support block under cable drum.

Remove wood support blocks.



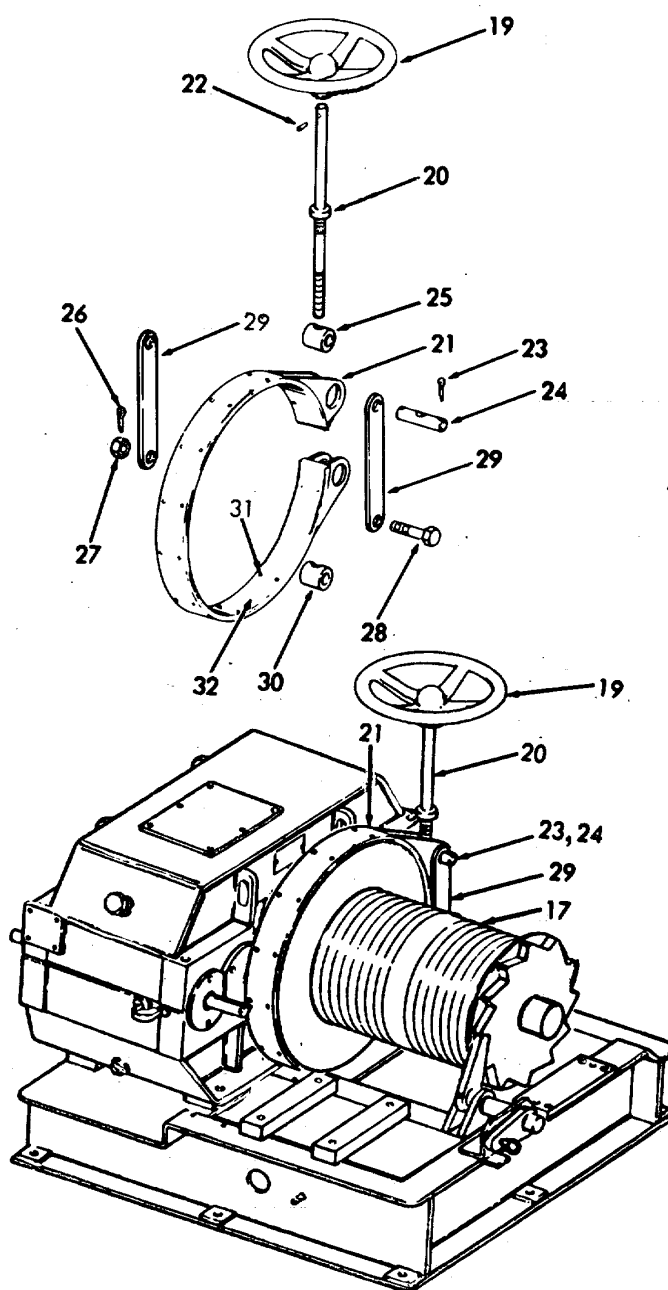
3-117. WINCH ASSEMBLY - MAINTENANCE INSTRUCTIONS (Continued).

LOCATION	ITEM	ACTION	REMARKS
DISASSEMBLY (Cont)			
5. Hand brake	a. Hand brake wheel (19) and shaft (20)	1. Completely unscrew hand brake wheel (19) and shaft (20) from brake band (21).	
		2. Remove hand brake wheel (19) and shaft (20).	
		3. Remove taper pin (22) from hand brake wheel (19), and shaft (20).	
	b. Brake band (21)	1. Remove cotter pins (23) from brake pin (24).	
		2. Remove brake pin (24).	
		3. Remove brake screw (25) from brake band (21).	
	c. Brake links (29)	1. Remove cotter pin (26) from hex nut (27).	
		2. Remove hex nut (27) and screw (28).	
		3. Remove brake links (29).	
	d. Brake band (21)	1. Remove brake nut (30) from brake band (21).	
		2. Remove brake band (21) from cable drum (17).	
		3. Drill out brake band rivets (31) from brake band (21).	
		4. Remove brake lining (32).	Check brake lining for wear. Replace if worn.

3-117. WINCH ASSEMBLY - MAINTENANCE INSTRUCTIONS (Continued).

LOCATION	ITEM	ACTION	REMARKS
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DISASSEMBLY (Cont)



3-117. WINCH ASSEMBLY - MAINTENANCE INSTRUCTIONS (Continued).

LOCATION	ITEM	ACTION	REMARKS
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REASSEMBLY

- | | | | |
|----|-----------|---|---|
| 7. | Pawl (39) | <ol style="list-style-type: none"> Install pawl (39), pawl pin (38) and screw (37). Install pawl lever (36) and screw (35). Install hand crank (40) onto speed reducer. Install eyebolt pawl locking lever (33), with retaining chain (34). Secure pawl lever (36) to winch bed frame. | Carefully turn hand crank to check pawl's engagement with cable drum ratchet. |
|----|-----------|---|---|

