**BELL SYSTEM PRACTICES**
**Motor Vehicles and**
**Construction Apparatus**

**SECTION J6.771**
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# CH WINCH ROPE WINDER

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## 1. GENERAL

1.01 This practice covers the inspection, lubrication and operation of the CH (chain type) winch rope winder.

1.02 The purpose of this device is to keep the coils of winch rope comparatively level as they are wound on to the winch drum.

1.03 An even distribution of coils over the drum results in smoother operation and prevents the line from cutting down through other coils on the drum with the resultant damage to the line and difficulty in pulling the line off.

## 2. PRECAUTIONS

2.01 The workmen should be cautioned against placing their hands on moving winch lines while these lines are under load. This precaution should be carefully observed, even if there is only a possibility of the line being put in motion, while an employee's hand will be at or near the location of any sheaves or rollers. In no case should any one be near the loaded winch line or directly in the path which the line would take should it break.

2.02 The direction of pull from the winch should be as nearly in line with the winch drum as practicable. While the winder is designed to distribute the line under all conditions, the loads on the winder and the bending of the winch line will be less severe the more nearly the pull approaches a direct line.

2.03 In order to secure proper operation from the winder it is desirable that the line be held under some tension at all times when being used so that slack will not work back into the coils of rope already on the drum.

2.04 It is necessary occasionally to rearrange the last few slack coils on the winch drum in order that subsequent layers of line applied under tension will wind properly.

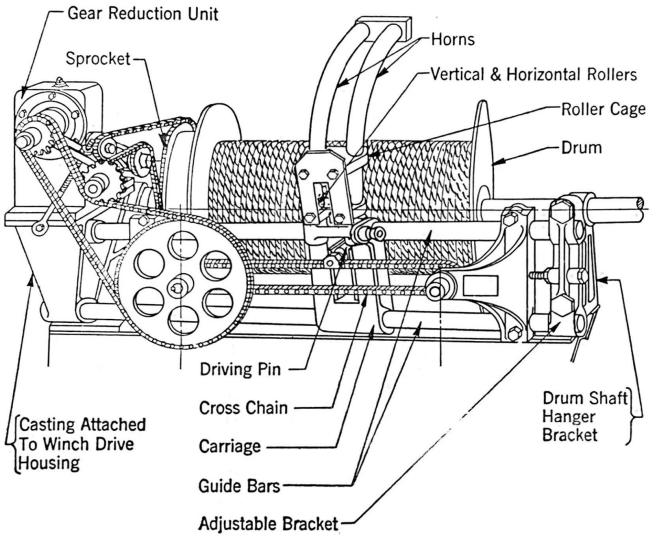
2.05 No material or tools should be stored on the truck in such a way as to prevent the free movement and operation of the winder.

2.06 The horns on the carriage should be checked to see that they are in a raised or operating position before the winch is started since they will be bent by the drum flanges at the end of the travel if in the down or carrying position.

2.07 Never pull the winch line eye closer than two feet from the roller cage since the eye will not pass through the cage and damage to the winder will result if the eye is pulled into the cage.

## 3. DESCRIPTION

Note
Chain Covers Not Shown




3.01 The CH winch rope winder consists of a carriage moved back and forth across the length of the drum by a cross chain which is driven through the necessary gear reduction by a sprocket on the end of the winch drum. This carriage slides on the two guide bars across the front of the drum.

3.02 At the left end of the winch, the winder is mounted on a casting which attaches to the winch drive housing. At the right end the winder is attached to the drum shaft hanger bracket of the winch by means of a special adjustable bracket.

3.03 The carriage consists of the unit sliding on the two guide bars with two horns at the top for supporting the roller cage assembly. This carriage is moved across the guide bars by means of a driving pin attached to the cross chain.

3.04 The horns are curved tubing members which carry the roller cage assembly and permit it to rise or drop to align itself with the direction of the pull.

3.05 The roller cage assembly consists of two vertical rollers for guiding the line in from a sidewise or horizontal direction and two horizontal rollers to move the cage up or down in line with the pull.

3.06 The chains on the winder are single roller chains except for the cross chain which is a triple chain.

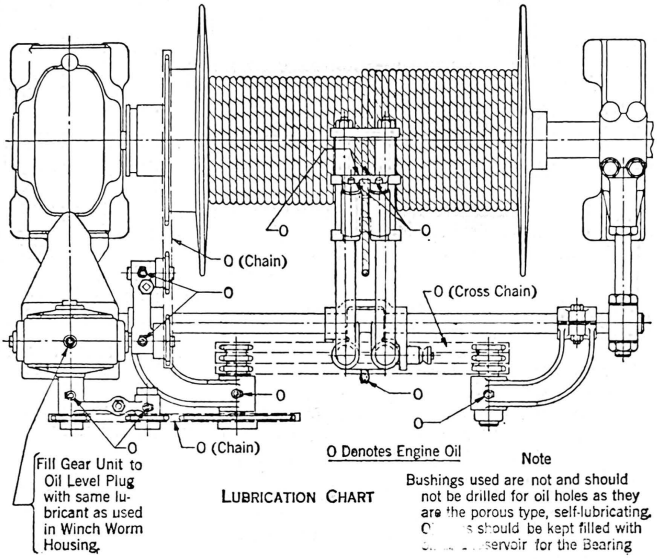
## 4. INSPECTION AND LUBRICATION

4.01 At the beginning of each day of operation the winder, winch and adjacent truck body storage space should be inspected to see that all parts of the winder are in good condition, are in proper adjustment and that nothing has been placed in the space required for free movement of the winder. This inspection should also indicate whether the winder is properly lubricated.

4.02 Minor adjustments should be made of any parts which appear to require them.

4.03 With the exception of the cross chain, the roller chains should be operated with considerable slack in them.

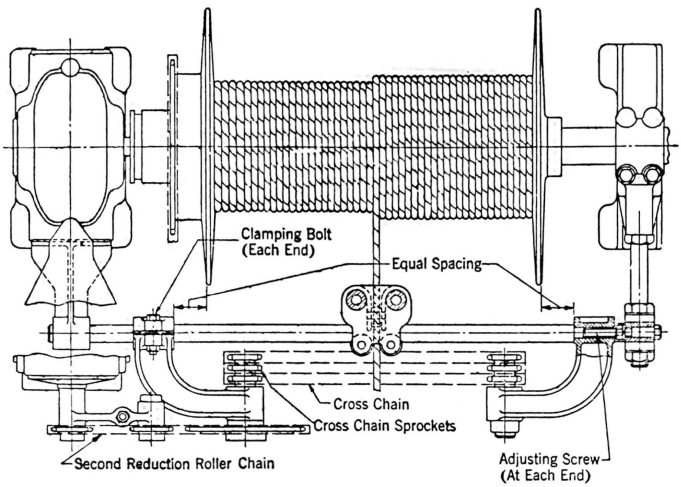
4.04 The following figure shows the various points on the winder which should be lubricated and indicates the type of lubricant required.




## 5. ADJUSTMENT

5.01 The adjustment procedures given here are only those minor adjustments which may be required in field operation. The installation and the initial adjustments are covered by the manufacturing specifications.

5.02 The cross chain and sprockets should be centered on the winch drum. If they are not centered it will be indicated by a pile-up of line at the end where the carriage travels too far and by space at the other end where the travel is short. The cross chain may be centered on the drum by loosening the clamping bolts and centering by means of the adjusting screws until equal spacing is obtained as indicated in the following figure. It may be necessary to loosen the second reduction roller chain before adjusting the cross chain and to tighten it after the cross chain is centered.




CARRIAGE TRAVEL ADJUSTMENT

5.03 The cross chain should be run quite tight so that there is not excessive tipping over of the link to which the driving pin is attached. To tighten the cross chain, loosen the clamping bolts and take up an equal amount on the adjusting screws at each end. This adjustment must be made evenly to keep the cross chain centered.

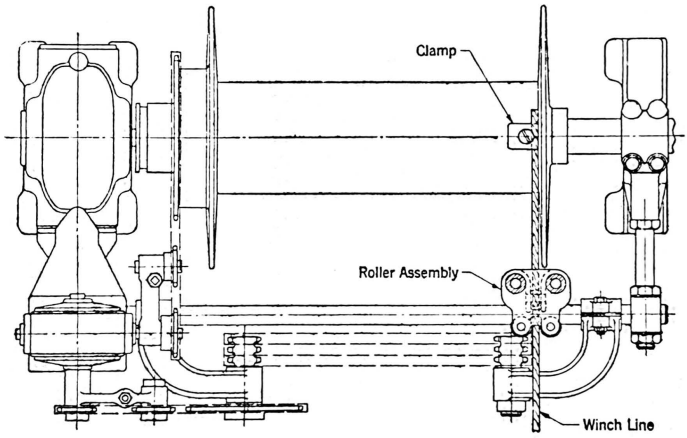
5.04 The drive chains from the sprocket on the winch drum to the gear reduction unit and from this unit to the cross chain driving sprocket are adjustable by chain idlers. These chains and particularly the one from the winch drum should be run rather loose but not with enough slack to permit the chain to jump teeth on the sprockets.

## 6. OPERATION

6.01 The basic operation of the winder is as follows. (See figure under Paragraph 3.) As the drum rotates, the driving sprocket welded to the winch drum drives a gear reduction unit by means of a roller chain. A chain from the low speed side of the gear unit connects to a sprocket on the shaft of the cross chain driving sprocket. The driving pin which projects from the cross chain pushes the carriage along the

guide bars and across the drum at a speed such that one revolution of the drum advances the carriage a distance approximately equal to the diameter of the rope. As the driving pin reaches the end sprocket it is carried around the sprocket and moves up or down in a vertical slot in the carriage. This advances the carriage to the end of its travel and starts it back in the opposite direction.

6.02 To place a line on the winch drum with the winder, run the winch drum until the roller assembly is at the extreme end of its travel and in line with the winch line clamp on the drum. The driving pin on the cross chain will be at the midpoint of the vertical slot in the carriage. Stop the drum with the clamp in the top position. Place the end of the winch line through the roller assembly and attach it to the drum with the clamp.

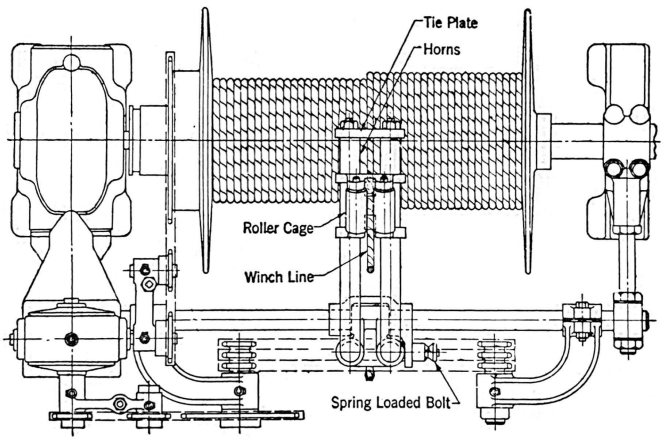



ATTACHING WINCH LINE TO DRUM

The winch line can then be wound on to the drum by using a forward speed for the winch. The line should be placed on the drum under considerable tension so that a smooth firm coiling of the line on the drum will result. The need for centering the cross chain and sprockets, as covered in Paragraph 5.02, will be apparent after one or more layers of line have been

wound on the drum. The results obtained with the winder depend largely on maintaining the tension and uniformity of the coils left on the drum. The line or any portion of it may be taken off the drum by driving the winch in reverse or by disengaging the winch clutch and permitting the winch to operate with a free drum. In either case the carriage should stay directly back of the line since it is driven by the drum.

6.03 If it is necessary to remove the line from the carriage while a part of the line is wound on the drum this can be done by removing the tie plate at the upper end of the horns and sliding the roller cage off of the horns. This should not be done when there is tension in the winch line. The cage is open at the lower portion except for the horizontal roller which can be removed by pushing the pin out of the roller after the cage has been removed from the horns.

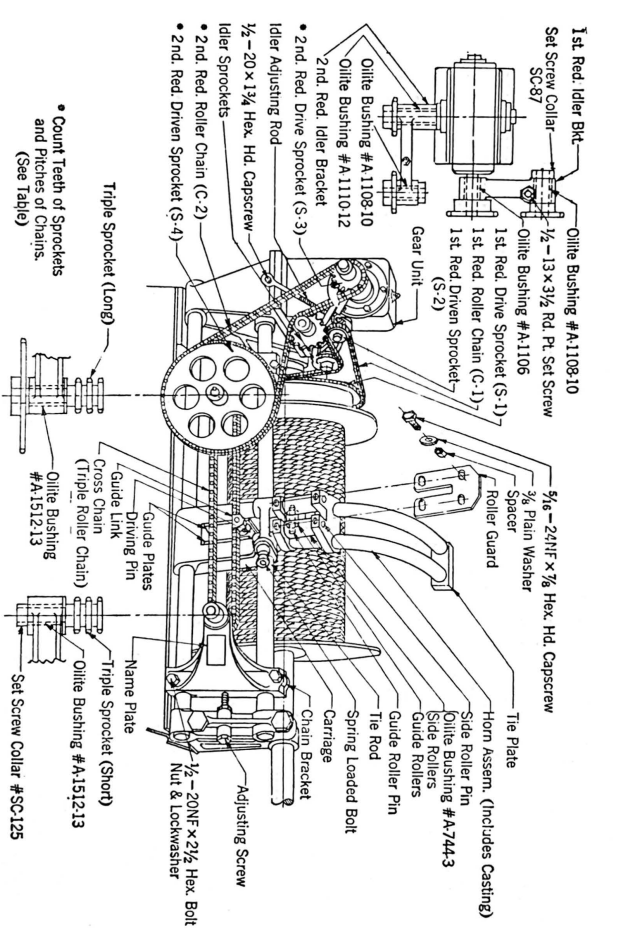



REMOVING WINCH LINE FROM CARRIAGE

6.04 The horn assembly has two positions, one up in the operating position and the other down against the drum to permit lowering the winch seat. The horns are locked in the operating position by means of a spring loaded bolt on the side of the carriage. To change from one position to another the spring loaded bolt should be pulled out and the horn assembly placed at the desired location.

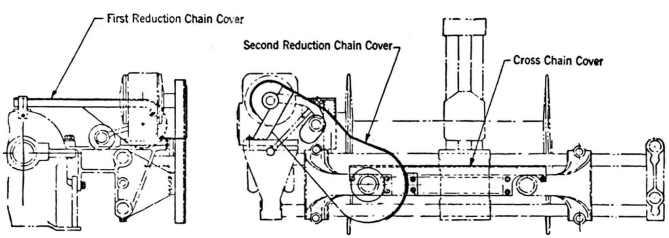
## 7. NAME OF PARTS

7.01 The following figures show the names of the parts of this winder which may be required as replacement or repair parts.




NAME AND LOCATION OF REPLACEMENT PARTS

| SPROCKET AND CHAIN SIZES FOR DIFFERENT ROPE SIZES | | | | | | | |
|---|---|---|---|---|---|---|---|
| | SIZE OF SPROCKET | | | | CHAIN LENGTH | | |
| Winch Rope | Sprocket S-1 | Sprocket S-2 | Sprocket S-3 | Sprocket S-4 | Chain C-1 | Chain C-2 | |
| | Number of Teeth | Number of Teeth | Number of Teeth | Number of Teeth | | CH 12, CH 12D CH 16, CH 22 | CH 16-6 |
| | | | | | Pitches | Pitches | Pitches |
| 5/16 | 58 | 23 | 11 | 36 | 94 | 74 | 90 |
| 3/8 | 58 | 19 | 11 | 36 | 92 | 74 | 90 |
| 7/16 | 58 | 16 | 12 | 40 | 90 | 76 | 93 |
| 1/2 | 58 | 14 | 12 | 40 | 88 | 76 | 93 |
| CH 16-6 Winder for D Single Drum Winch | | | | | | | |
| CH 22 Winder for UG Single Drum Winch | | | | | | | |
| CH 16 Winder for 16 Double Drum Winch | | | | | | | |
| CH 12D Winder for 12 Double Drum Winch | | | | | | | |
| CH 12 Winder for L-12 Single Drum Winch | | | | | | | |




CHAIN COVERS

## 8. CHANGE OF WINCH LINE SIZE

8.01 To change the winder so that it may be used with another size of winch line requires changing certain sprockets and chains.

8.02 The proper sizes of sprockets and chains for various sizes of winch lines are shown in the table in Part 7.

8.03 When the sprockets with the proper number of teeth and the chains with the correct number of pitches have been obtained they can readily be placed on the winder. To change a sprocket and chain, loosen the idler and open the chain at the connecting link. Loosen the set screw holding the sprocket and remove the sprocket. Replace with the desired sprocket and chain. Removing the 5/16 inch set screw which holds the sprocket requires a hexagon socket set screw wrench.