

U **SER MANUAL**
INSTALLATION, SERVICE and PARTS

9-N-1
Cable-Hose Reel

Manual Number 211996

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INTRODUCTION

This booklet contains the complete PARTS, INSTALLATION, and SERVICE information for the 9-N-1 Cable-Hose Reels. The manual also includes TROUBLESHOOTING GUIDES located on page 11 and 12. If you have additional questions, call the nearest Cascade Service Department listed on the back cover.

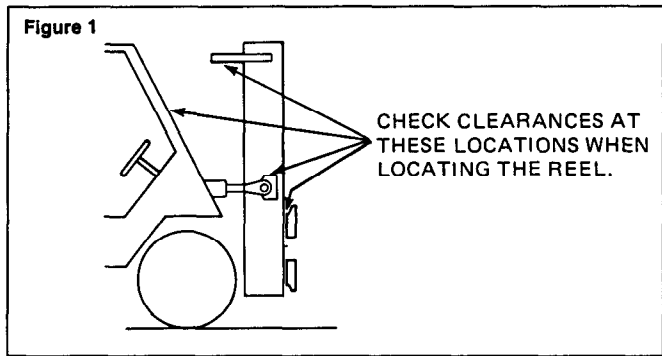
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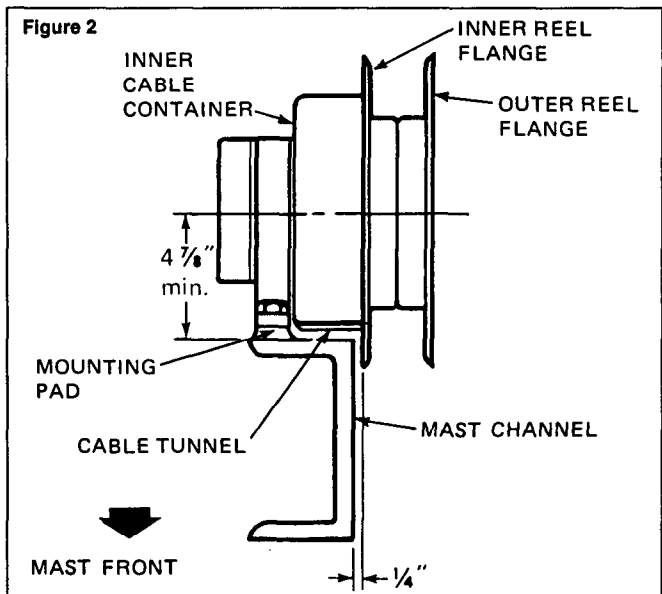
INSTALLATION

IMPORTANT: Do not allow the reel to rotate on its shaft at this time. Doing so will prewind the spring. The wire attaching the caution tag to the reel must stay in place until the reel is to be prewound and cable-hose connected to the junction block.

1. Determine a location for the mounting pad keeping in mind the following points:
 - a. **Locate the mounting pad** on the mast channel or truck cowling. See Figure 1. **The reel flanges must not interfere with:**
 - The truck overhead guard when the mast is tilted all the way back (if the reel is mounted on the mast).
 - The truck carriage as it moves past the reel (if the reel is mounted on the mast).
 - The mast channel members when the mast is tilted all the way back (if the reel is mounted on the truck cowling).

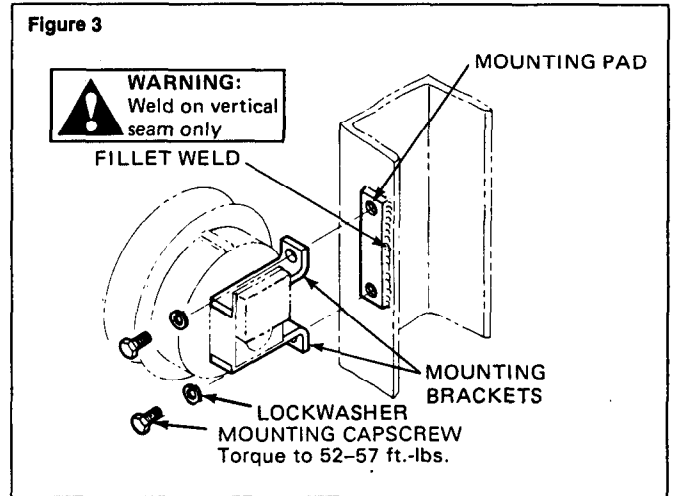


- b. The inner reel flange should be no more than 1/4 inch from the side of the mast and should be placed behind the mast channel rather than along side it. See Figure 2.
 - c. The reel should not extend beyond the widest part of the truck to prevent possible damage to the reel during truck operation.

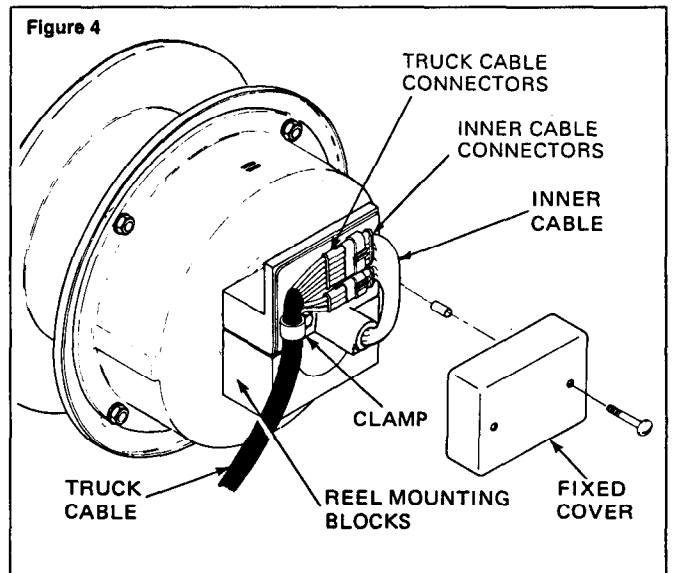


- d. If you are not using the Cascade Mounting Pad, make sure that your pad has a thickness of at least 5/8 inch.

2. Weld the mounting pad in place using a 3/16 inch fillet weld (use E60XX rod with no preheat or postheat) along the vertical sides of the mounting pad only. See Figure 3. Cover the mast hoist chains to shield from weld splatter.
3. Attach the reel mounting brackets to the mounting pad using the mounting capscrews and lockwashers supplied with the reel. See Figure 3.



4. Remove the fixed cover from the mounting block on the backside of the reel. See Figure 4.
5. Join the cable connectors of the inner cable to the cable connectors of the truck cable.
6. Remove the clamp from the mounting block and fit it around the truck cable. Reinstall the clamp on the reel mounting block. See Figure 4.

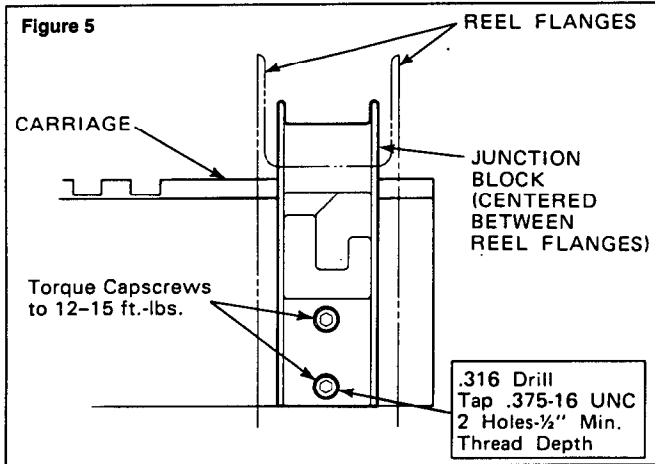


7. Install the fixed cover on the mounting block. Tighten the screws.
- CAUTION:** Overtightening the screws will damage the fixed cover.
8. Connect the truck valve hoses to the reel shaft.

9. Raise the carriage to a position approximately even with the top of the reel. The junction block should be positioned so that it is centered between the reel flanges. See Figure 5. Using the junction block as a guide, mark the location of the junction block mounting holes on the back side of the carriage. Make sure the junction block is positioned vertically.

10. Lower the truck carriage to the floor.

11. Drill and tap both holes at the location marked on the carriage. Figure 5 shows the diameter and drilling information for the two holes. The thread depth should be drilled a minimum of 1/2 inch.

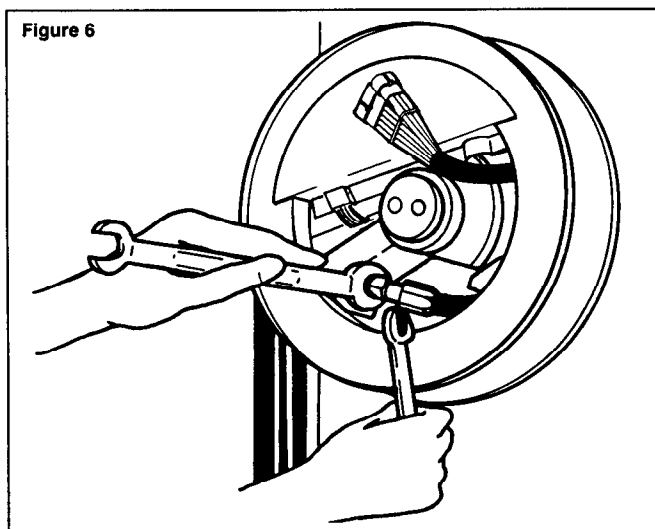


12. Install the junction block on the carriage using the capscrews and lockwashers supplied with the junction block.

13. Determine the length of the cable-hoses required as shown in the Cable-Hose Length Calculations, see page 13.

NOTE: This step may be by-passed if you have been supplied with a pre-assembled cable-hose of the correct length.

14. Connect the hoses to the reel hub fittings. See Figure 6. Put the end of the cable inside of the outer flange area.



15. To install the outer cable-hose on the reel, remove the two hub nuts securing the rotating cover to the outer flange. Remove the rotating cover. See Figure 7.

16. Join the outer cable connectors to the inner cable connectors using the established connection pattern. See Figure 7.

17. Fit the cable clamps to the outer cable and secure them as shown in Figure 7.

18. Install the rotating cover and hub nuts. The inner cable must be laying flat in the flange depression and not pinched. Tighten the hub nuts.

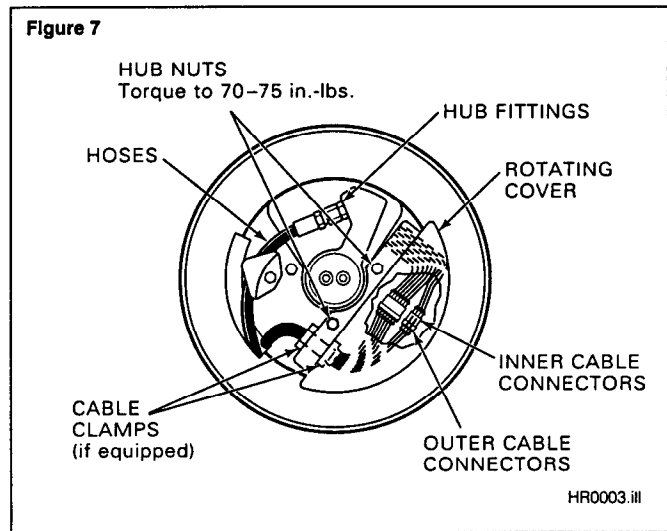
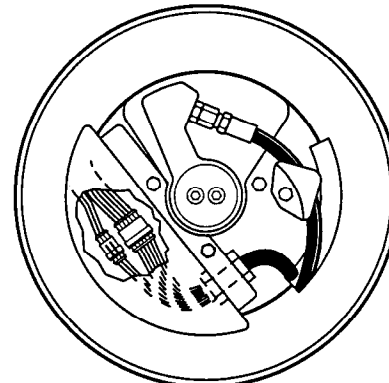
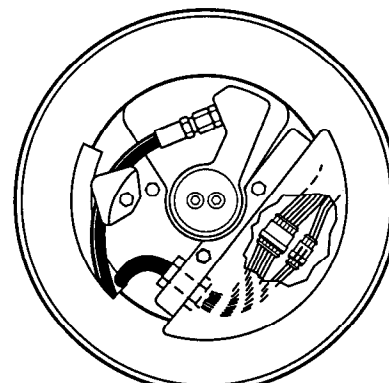


Figure 8

CABLE-HOSE REEL IDENTIFICATION
Viewed from the flange side of the reel.



RIGHT HAND REEL



LEFT HAND REEL

HR0004.iii

19. Wind the outer cable-hose completely onto the reel in the direction indicated (viewed from the flange side):

Right Hand Reel: Wind cable-hose clockwise.

Left Hand Reel: Wind cable-hose counterclockwise.

A Right or Left hand reel is determined as viewed from the flange side of the reel. See Figure 8.

20. Remove the caution tag and wire.
21. Prewind the reel spring by grasping the end of the outer cable-hose and turning the reel a minimum of 3 turns in the direction indicated (viewed from the flange side):

Right Hand Reel: Wind reel clockwise.

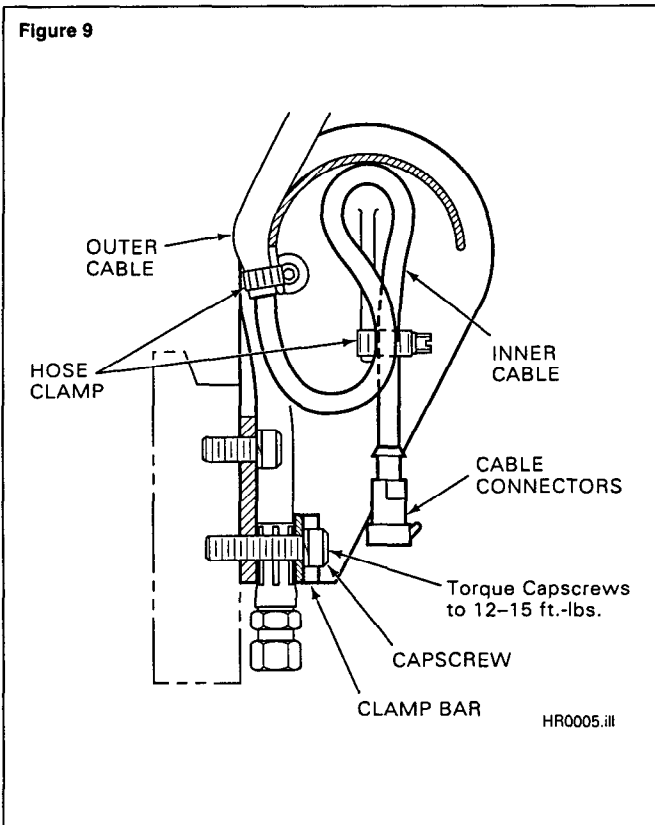
Left Hand Reel: Wind reel counterclockwise.

CAUTION: Rotation in a wrong direction will damage the inner cable and reel spring.

If more tension is required, the reel can be prewound additional turns. The maximum turn capacities are 16 total turns.

Total turns = Prewind turns + Working turns.

CAUTION: Exceeding turn capacity of the reel will damage the inner cable and reel spring.

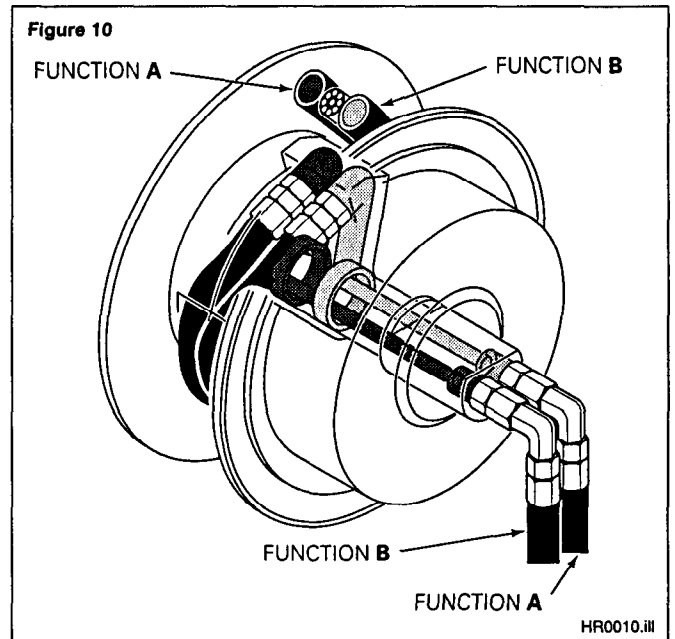


22. With the reel prewound, pull the hose ends down to the junction block. Fasten the hoses with the clamp bar and capscrew. See Figure 9.



WARNING: Do not let the reel unwind when connecting the cable-hose to the junction block.

23. Connect the cable from the cable-hose to the junction block. Clamp the outer cable to the projection between the hoses with a hose clamp. See Figure 9. Position the hose clamp so it can be tightened through the hole in the side of the junction block. Route the inner cable through the junction block as shown. Fasten the male cable connector to the large projection with a hose clamp. Form the hose clamp around the connectors. Do not overtighten the clamp. The female cable connectors must fit in the male connectors. Join the connectors.
24. Connect the attachment hoses to the junction block. Be sure the hoses and their functions do not become interchanged. See Figure 10.
25. Operate the carriage up and down a few times to make sure the cable-hose tracks smoothly and no interference exists.



SEAL AND SPRING ASSEMBLY REPLACEMENT

DISCONNECTING THE REEL

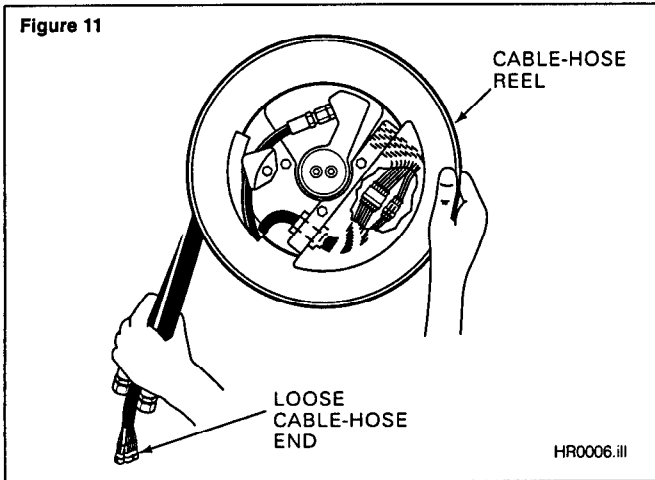
1. Disconnect the cable connectors at the junction block.



WARNING: Hold hoses firmly while disconnecting cable-hose from the junction block. Allow the reel spring to unwind slowly while maintaining tension on the loose cable end. See Figure 11.

2. Remove the cable-hose from the junction block.

Figure 11

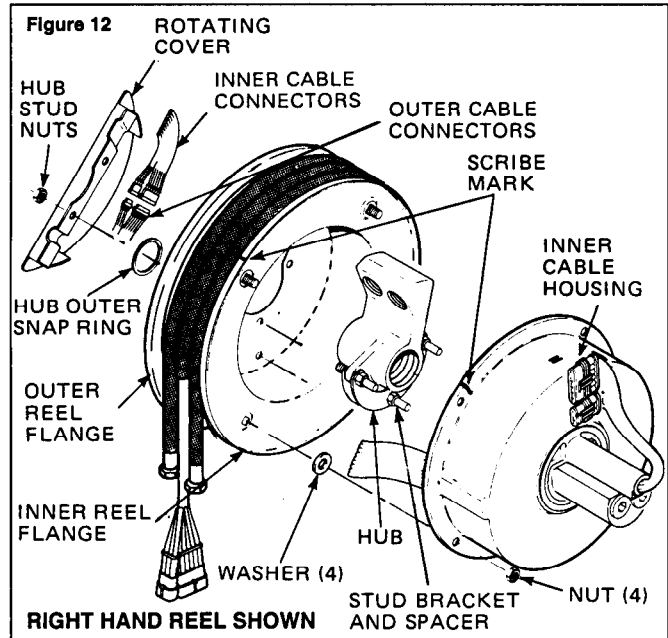


3. Remove the fixed cover from the mounting block. Disconnect the inner cable connectors from the truck cable connectors. See Figure 4.
4. Disconnect the truck valve hoses from the shaft.
5. Remove the capscrews and lockwashers fastening the reel to the mounting pad. Remove the reel from the mast.

REEL DISASSEMBLY

1. Remove the nuts from the hub studs and lift off the rotating cover. See Figure 12.
2. Disconnect the reel outer cable connectors from the inner cable connectors. See Figure 12.
3. Disconnect the hoses from the reel hub fittings.
4. Remove the four nuts and washers attaching the inner cable housing to the inner reel flange. See Figure 12.
5. Scribe a mark on the inner cable housing and the inner reel flange to aid in alignment during reassembly. See Figure 12.
6. **RIGHT HAND REEL** (See Figure 8.)
 - a. Pull both flanges (with outer cable) off the hub studs. Rotate the flanges slightly to free the inner cable connectors. See Figure 12.
 - b. Remove the hub outer snap ring.
 - c. Pull the hub off the shaft.
 - d. Leave the stud bracket and spacer on the hub.

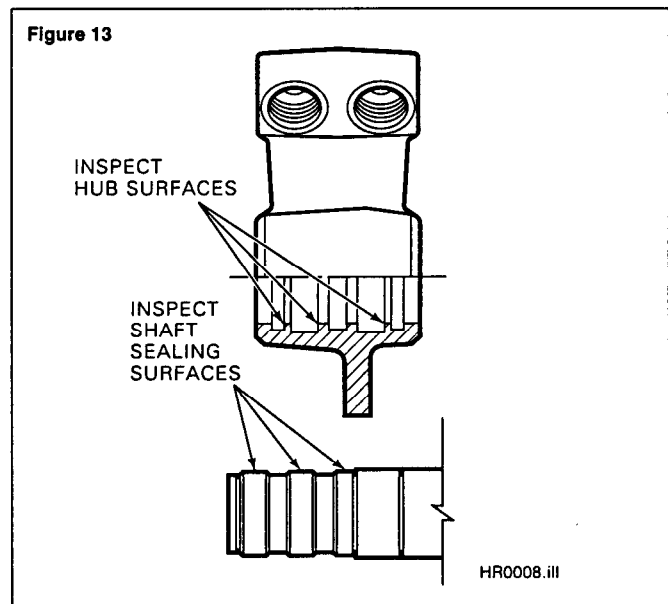
NOTE: Since the O-rings in the hub produce friction, it may be necessary to tap gently on the end of the shaft with a rubber mallet or hammer handle while pulling on the hub.



LEFT HAND REEL (See Figure 8.)

- a. Remove the hub outer snap ring. See Figure 12.
 - b. Pull the hub off the shaft.
 - c. Remove both flanges (with outer cable) and the stud bracket.
7. Remove the seals from the hub. Avoid scratching grooves. Clean the hub and shaft with solvent.
 - The sealing surface on the shaft is nickel plated. If minor surface imperfections are noted, use emery cloth (320 Grit) to lightly smooth up. If sharp edges or grooves are found, shaft replacement is necessary. See Figure 13.
 - Hub grooves must be free of sharp nicks or projections to prevent cutting of the outside diameter of the O-ring during installation. See Figure 13.

Figure 13



SPRING ASSEMBLY REPLACEMENT

NOTE: If the spring assembly does not require replacement, delete this step and proceed to **Reel Assembly**.

1. Disengage the spring from the spring retainer on the shaft. See Figure 14.

CAUTION: Do not allow the inner cable housing to rotate independently of its hub. Damage to the inner cable will occur if they are rotated. Use tape or wire to hold both from rotating. See Figure 14. **If either has been rotated, refer to the Inner Cable Housing Timing instructions on page 8.**

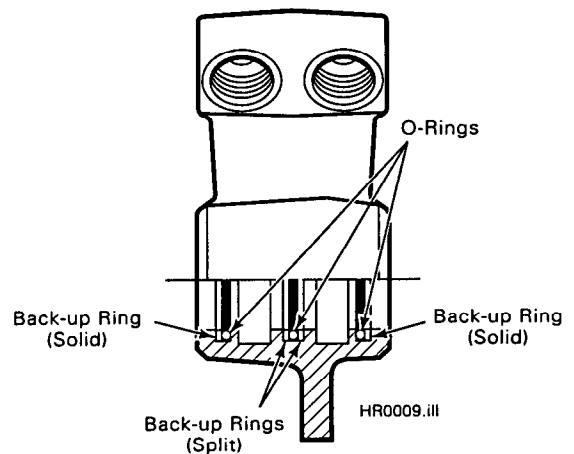
2. Hold the reel assembly, by the outside of the inner cable housing, over a work bench with the shaft downward. Tap the shaft end on the bench. Slide the spring assembly out of the inner cable housing and off the shaft.
3. If the spring retainer has been damaged, remove the spring retainer snap ring and install a new spring retainer. See figure 14.
4. Slide the new spring assembly onto the shaft. Secure the spring end on the spring retainer by turning the spring on the shaft. Make sure the notch in the spring assembly is aligned with the inner cable. See Figure 14.

REEL REASSEMBLY

1. Lubricate the shaft, seals and bore of the hub with hydraulic oil.
2. Install the back-up rings into the hub grooves. Install the split rings on each side of the center O-ring. Place a portion of ring in the groove, then bend as required to install. See Figure 15. Install the O-ring seals.

NOTE: When servicing the inner cable housing or installing a new shaft seal kit, the cable harness (inside the inner cable housing) should be lubricated with TRI-FLON spray lube, Cascade Part No. 669779. See **Inner Cable Replacement** for assembly instructions on page 7.

Figure 15

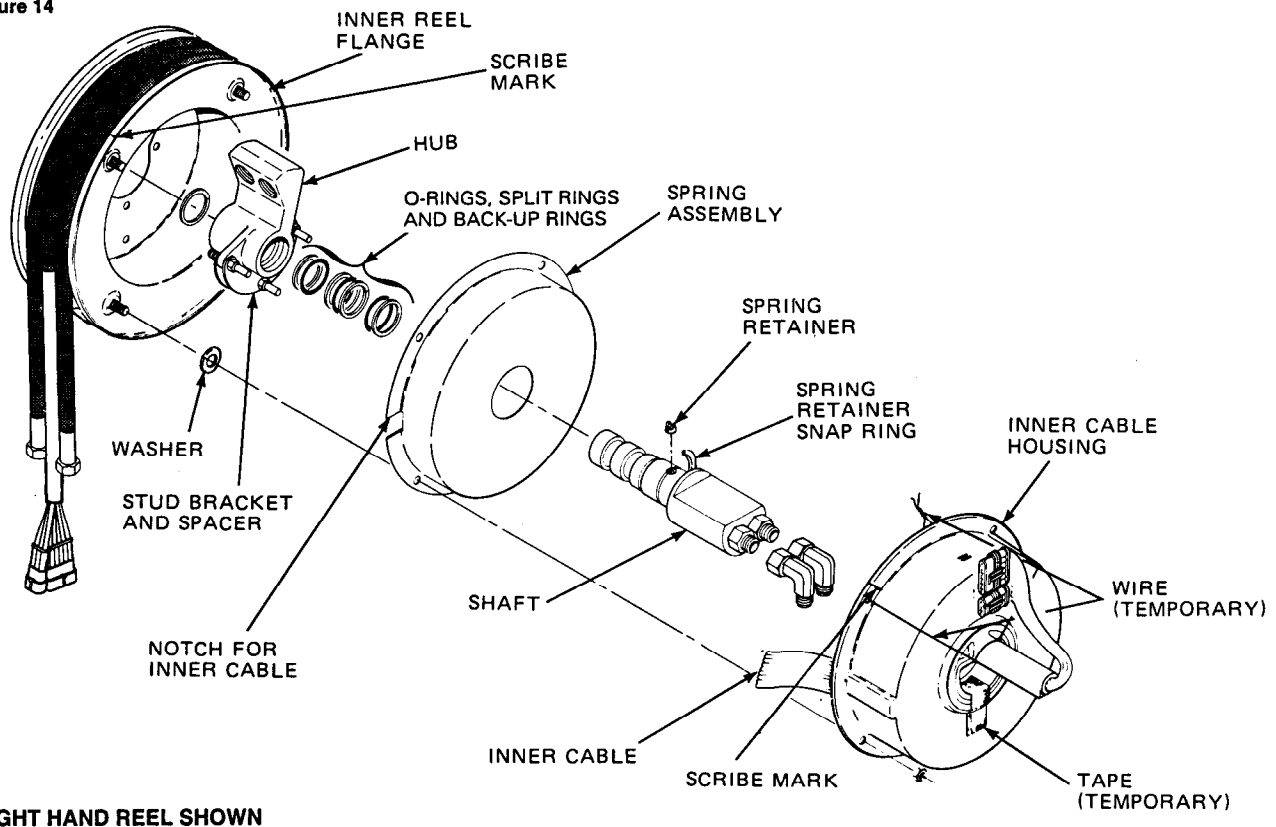


3. **RIGHT HAND REEL** (See Figure 8, page 2.)
 - a. Rotate the hub slowly as you slide it onto the shaft.
 - b. Install the hub outer snap ring. See Figure 12, page 4.
 - c. Place the reel flanges onto the hub, aligning the scribe mark on the inner cable container to the scribe mark on the inner reel flange.

LEFT HAND REEL (See Figure 8, page 2.)

- a. With the stud bracket and spacer on the inside of the reel flanges, slide the hub and reel flanges as one unit onto the shaft.
- b. Align the scribe mark on the inner cable housing to the scribe mark on the reel flanges.
- c. Install the hub outer snap ring. See Figure 12, page 4.

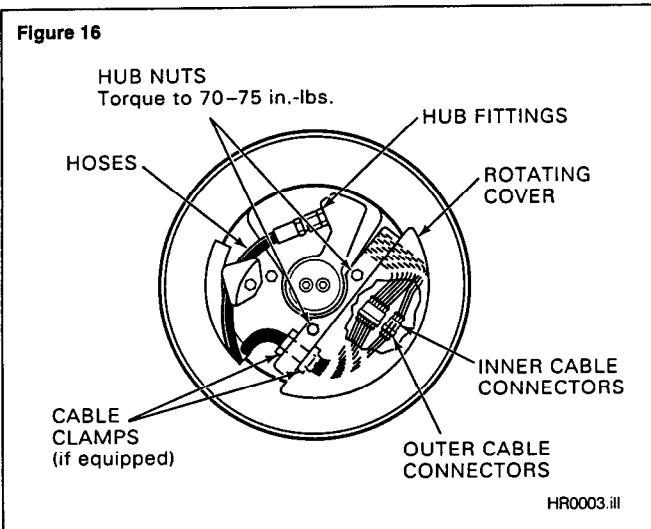
Figure 14



4. Install the capscrews, lockwashers and nuts to fasten the inner reel flange to the inner cable housing. See Figure 14, page 5.
5. Reconnect inner and outer cable connectors. See Figure 16.
6. Connect the hoses to the reel hub fittings.
7. Install the rotating cover and hub nuts. The inner cable must be laying flat in the flange depression and not pinched. Tighten the nuts to a torque of 70–75 in.-lbs.
8. Remount the reel onto the truck.
 - a. Reconnect the inner cable connectors to the truck cable at the mounting block. See Figure 4, page 1.
 - b. Attach the clamp to the truck cable and secure the clamp to the mounting block. See Figure 4, page 1.
 - c. Install the fixed cover.

CAUTION: Overtightening the capscrews will damage the fixed cover.

9. Connect the truck valve hoses to the shaft.



10. Make sure cable-hose is tightly wound on the reel in the direction indicated (viewed from the flange side):

Right Hand Reel: Cable-hose wound clockwise.

Left Hand Reel: Cable-hose wound counterclockwise.

11. Prewind the reel spring by grasping the end of the outer cable-hose and turning the reel a minimum of 3 turns in the direction indicated (viewed from the flange side).

Right Hand Reel: Wind reel clockwise.

Left Hand Reel: Wind reel counterclockwise.

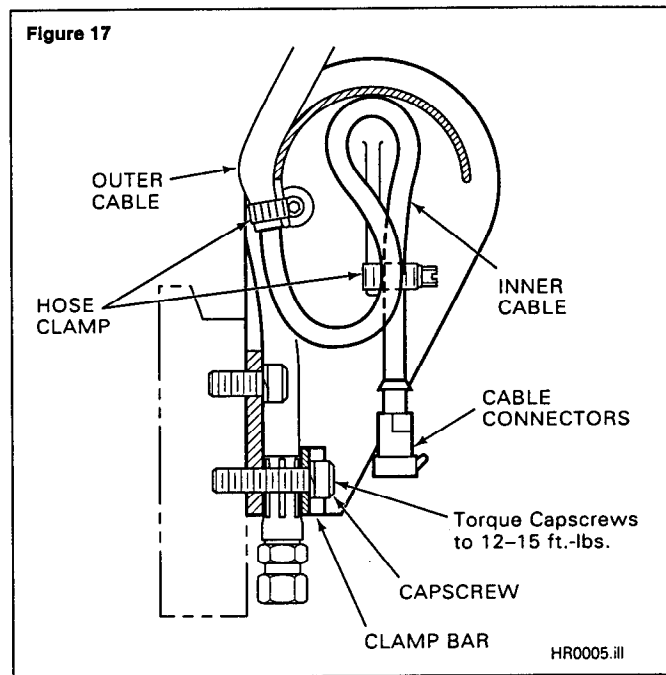
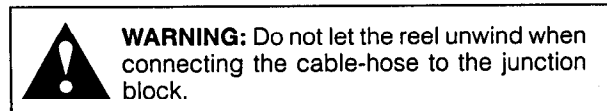
CAUTION: Rotation in a direction opposite than described will damage the inner cable and reel spring.

If more tension is required, the reel can be prewound additional turns. The maximum turn capacities are 16 total turns.

Total turns = Prewind turns + Working turns.

CAUTION: Exceeding turn capacity of the reel will damage the inner cable and reel spring.

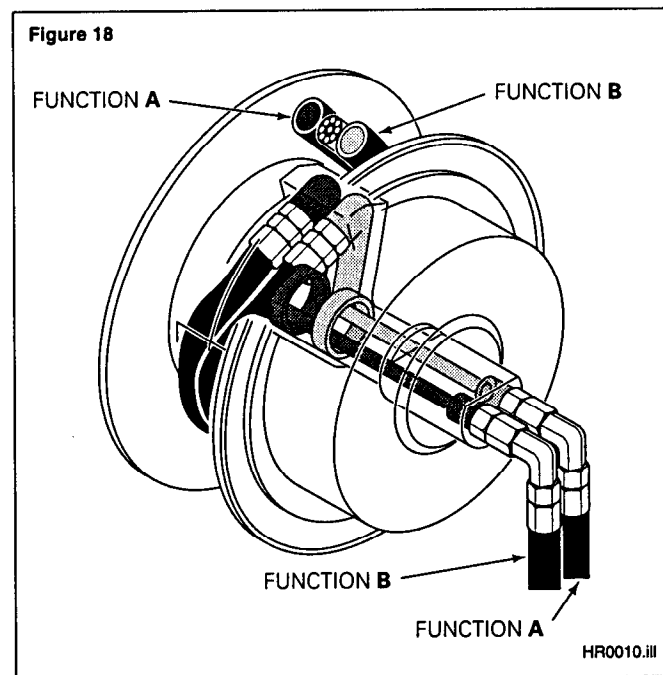
12. With the reel prewound, pull the hose ends down to the junction block. Fasten the hoses with the clamp bar and capscrew. See Figure 16.



13. Connect the cable from the cable-hose to the junction block. Clamp the outer cable to the projection between the hoses with a hose clamp. See Figure 17. Position the hose clamp so it can be tightened through the hole in the side of the junction block. Route the inner cable through the junction block as shown. Fasten the male cable connectors to the large projection with a hose clamp. Form the hose clamp around the connectors. Do not overtighten the clamp. The female cable connectors must fit in the male connectors. Join the connectors.

14. Connect the attachment hoses to the junction block. Be sure the hoses and their functions do not become interchanged. See Figure 18.

15. Operate the carriage up and down a few times to make sure the cable-hose tracks smoothly and no interference exists.



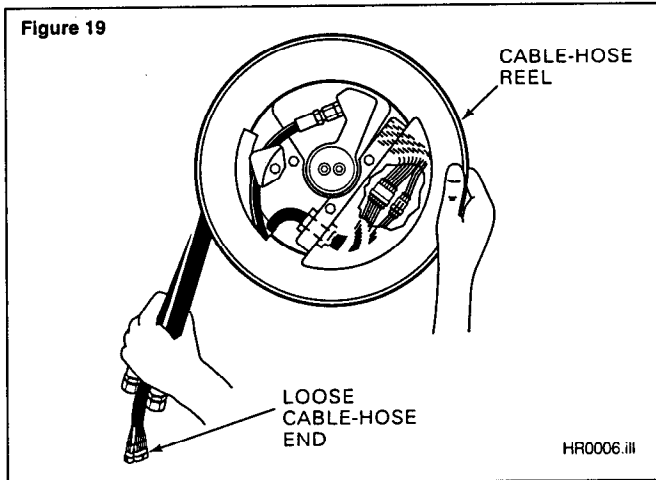
INNER CABLE REPLACEMENT

DISCONNECTING THE REEL

1. Disconnect the connectors at the junction block.
2. Remove the cable-hose from the junction block.



WARNING: Hold hoses firmly while disconnecting cable-hose from the junction block. Allow the reel spring to unwind slowly while maintaining tension on the loose cable-hose end. See Figure 19.

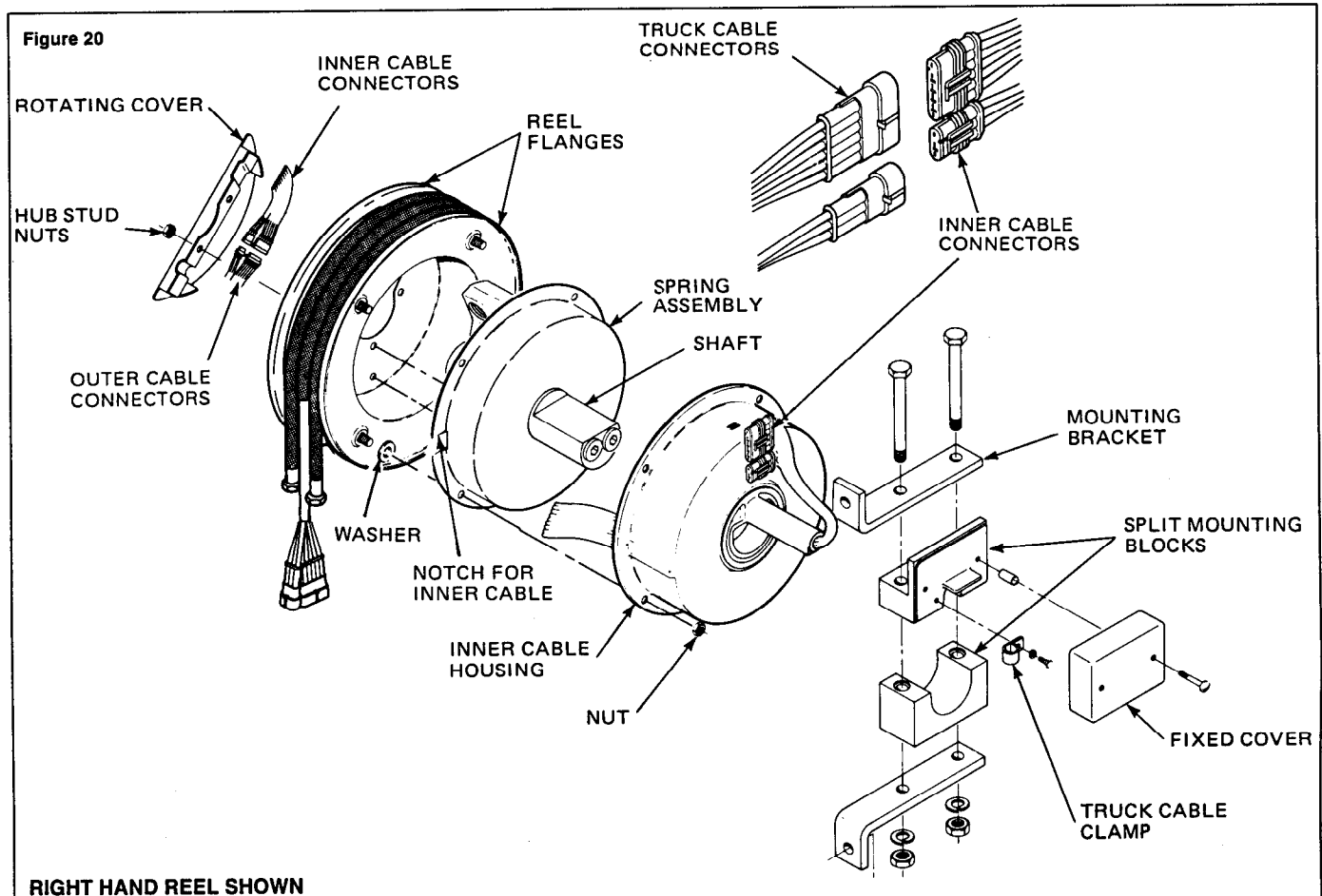


3. Remove the fixed cover from the mounting block and disconnect the cable connectors. See Figure 4, page 1.
4. Disconnect the truck valve hoses from the shaft.
5. Remove the capscrews and lockwashers fastening the reel to the mounting pad. Remove the reel from the mast.

REEL DISASSEMBLY

1. Remove the nuts from the hub studs and lift off the rotating cover. See Figure 20.
2. Disconnect the reel outer cable connectors from the inner cable connectors. See Figure 20.
3. Disconnect the hoses from the reel hub fittings.
4. Remove the four nuts and washers attaching the inner cable housing to the inner reel flange. See Figure 20.
5. Pull the reel flanges off the hub studs. Rotate the flanges slightly to free the inner cable connectors.
6. Remove the mounting brackets and split the mounting blocks from the shaft. See Figure 20.
7. Separate the spring assembly from the inner cable housing. Slide the inner cable housing off the shaft. See Figure 20.

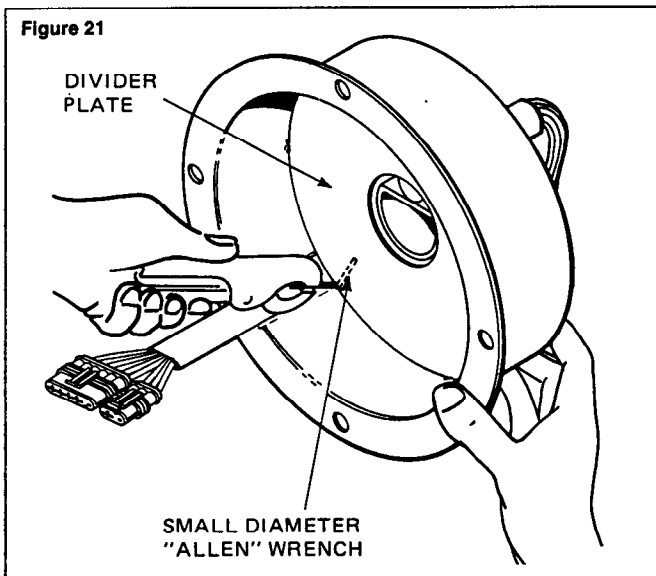
CAUTION: Do not allow the inner cable housing to rotate independently of its hub. Damage to the inner cable will occur if they are rotated. Use tape or wire to hold both from rotating. If either has been rotated, refer to the **Inner Cable Housing Timing** instruction on page 8.



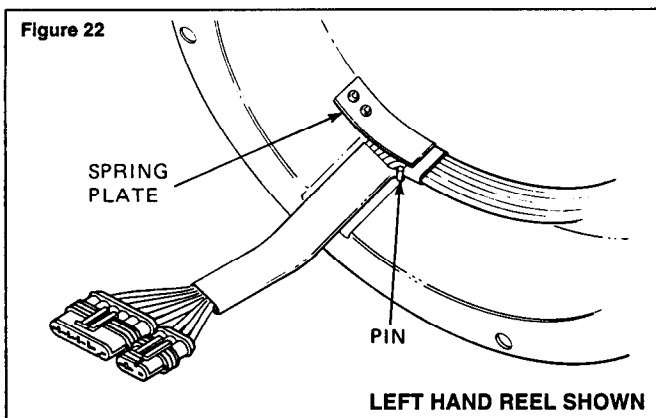
INNER CABLE REPLACEMENT

NOTE: If a new Inner Cable Housing is being installed, delete this step and proceed to **Reel Reassembly**.

1. Insert a small diameter Allen wrench under the lip of the divider plate. Grip the Allen wrench with a pair of vise grips. Pull outward to remove the divider plate. See Figure 21.

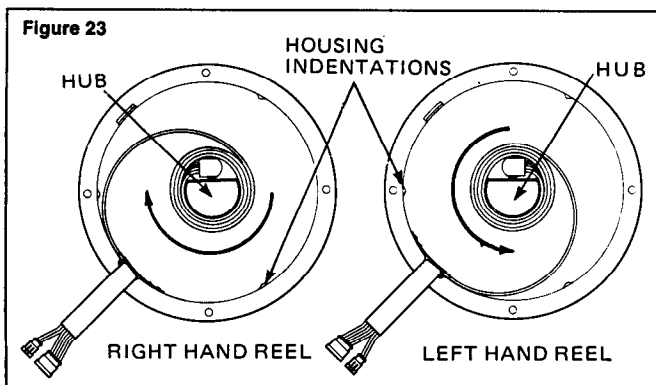


2. Remove the cable harness.
3. Place the new cable harness in the housing. Fit the cable (at its 90° bend) under the spring plate and around the pin. See Figure 22.



4. Wind the cable around the hub in the direction shown in Figure 23.

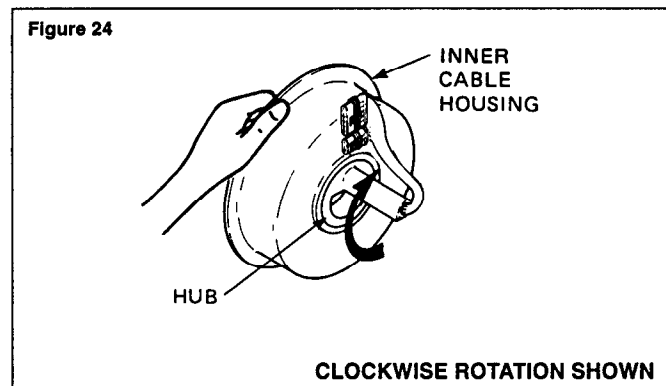
A Right or Left hand reel is determined as viewed from the flange side of the reel. See Figure 8, page 2.



5. Place the divider plate inside the housing. Push the plate edge past the three housing indentations.

INNER CABLE HOUSING TIMING

1. Determine if the reel is a right hand or left hand model as viewed from the flange side of the reel. See Figure 8, page 2.
2. Position the cable container with the hub cable harness toward you. See Figure 24.
3. Hold the housing from rotating. Wind the hub until tight:
 - Right Hand Reel:** Wind hub counterclockwise.
 - Left Hand Reel:** Wind hub clockwise.
4. Rotate the hub back 1 revolution. This provides one safety turn in the wiring to prevent internal damage.
5. Use tape or wire to secure the hub to the housing. This will prevent either from rotating. The Inner Cable Housing is ready for further reel assembly.



REEL REASSEMBLY

1. Fit the new inner cable housing over the shaft (do not rotate) and over the spring assembly. Be sure to fit the inner cable into the notch in the spring assembly. See Figure 20, page 7.

CAUTION: Do not allow the inner cable housing to rotate independently of its hub. Damage to the inner cable will occur if they are rotated. Use tape or wire to hold both from rotating. **If either has been rotated**, refer to the **Inner Cable Housing Timing** instructions in the preceding section.

IMPORTANT: The spring assembly must be in its neutral position when fitted into the inner cable housing.

2. Install the split mounting blocks and mounting brackets. See Figure 20, page 7.
3. Fit the reel flanges onto the hub studs. Install the capscrews, washers, and nuts to fasten the reel flanges to the inner cable housing.
4. Connect inner and outer cable connectors.
5. Install the rotating cover and hub nuts. The inner cable must be laying flat in the flange depression and not pinched. Tighten the nuts.
6. Remount the reel on the truck.
7. Reconnect the inner cable connectors to the truck cable at the mounting block. See Figure 20, page 7.
8. Attach the clamp to the truck cable and secure the clamp to the mounting block.
9. Install the fixed cover.

CAUTION: Overtightening the capscrews will damage the fixed cover.

10. Connect the truck valve hoses to the shaft.
11. Make sure the cable-hose is tightly wound on the reel in the direction indicated (viewed from the flange side):

Right Hand Reel: Cable-hose wound clockwise.

Left Hand Reel: Cable-hose wound counterclockwise.

A right or left hand reel is determined as viewed from the flange side of the reel. See Figure 8, page 2.

12. Prewind the reel spring by grasping the end of the outer cable and turning the reel a minimum of 3 turns in the direction indicated (viewed from the flange side):

Right Hand Reel: Wind reel clockwise.

Left Hand Reel: Wind reel counterclockwise.

CAUTION: Rotation in a direction opposite than described will damage the inner cable and reel spring.

If more tension is required, the reel can be prewound additional turns. The maximum turn capacities are 16 total turns.

Total turns = Prewind turns + Working turns.

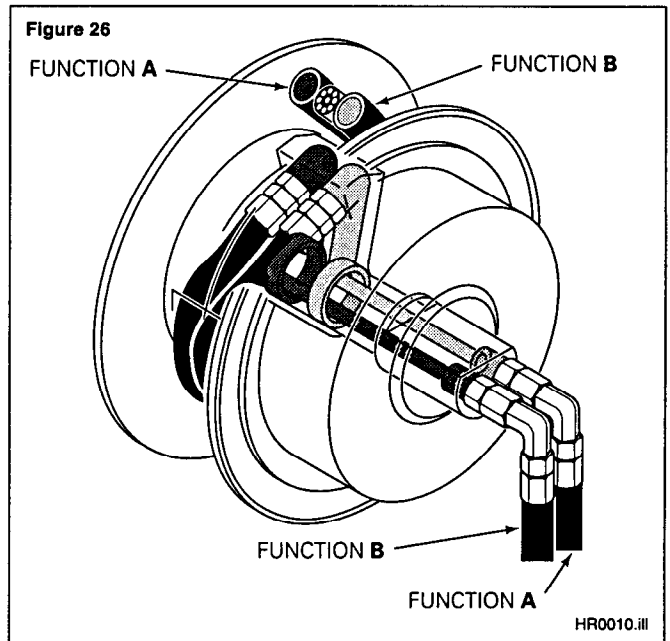
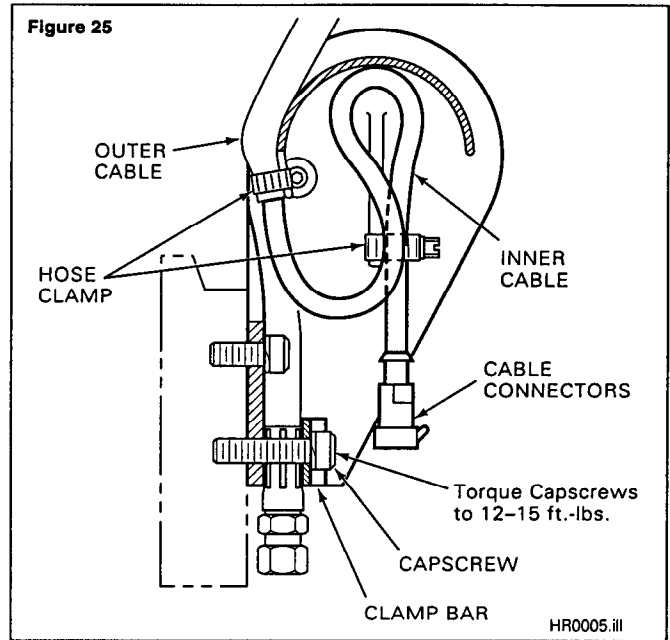
CAUTION: Exceeding turn capacity of the reel will damage the inner cable and reel spring.

13. With the reel prewound, pull the hose ends down to the junction block. Fasten the hoses with the clamp bar and capscrew. See Figure 25.



WARNING: Do not let the reel unwind when connecting the cable-hose to the junction block.

14. Connect the cable from the cable-hose to the junction block. Clamp the outer cable to the projection between the hoses with a hose clamp. See Figure 24, page 8. Position the hose clamp so it can be tightened through the hole in the side of the junction block. Route the inner cable through the junction block as shown. Fasten the male cable connectors to the large projection with a hose clamp. Form the hose clamp around the connectors. Do not overtighten the clamp. The female cable connectors must fit in the male connectors. Join the connectors.
15. Connect the attachment hoses to the junction block. Be sure the hoses and their functions do not become interchanged. See Figure 26.
16. Operate the carriage up and down a few times to make sure the cable-hose tracks smoothly and no interference exists.



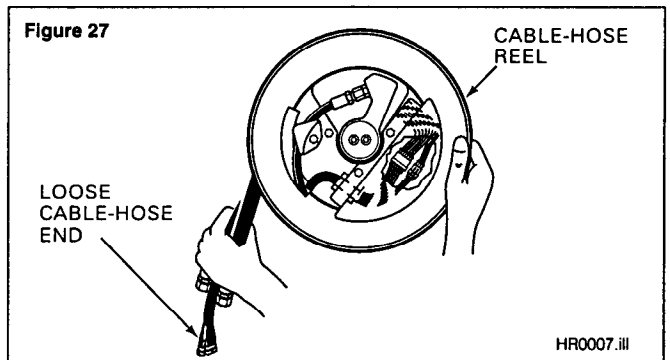
OUTER CABLE-HOSE REPLACEMENT

1. Disconnect the old outer cable-hose from the attachment cable at the junction block.

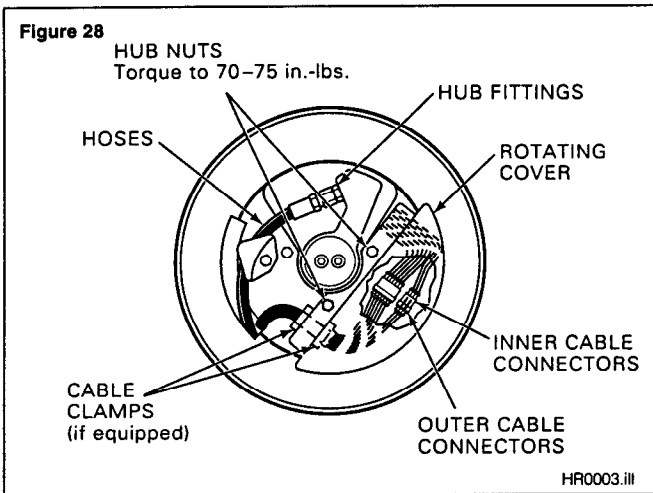


WARNING: Hold hoses firmly while disconnecting cable-hose from the junction block. **Allow the reel spring to unwind slowly while maintaining tension on the loose cable-hose end.** See Figure 27.

2. Disconnect the old cable-hose from the junction block.
3. Disconnect the hoses from the reel hub fittings. See Figure 27.



4. Remove the two hub nuts securing the rotating cover to outer flange. Remove the rotating cover. See Figure 28.
5. Remove the cable clamps (if equipped). Discard the old outer reel cable-hose. See Figure 28.
6. Connect the new hoses to the reel hub fittings.



7. Join the new outer cable connectors to the inner cable connectors.
8. Fit the cable clamps (if equipped) to the outer cable and secure them on each side of the rotating cover. See Figure 28.
9. Install rotating cover and hub nuts. The inner cable must be laying flat in the flange depression and not pinched. Tighten nuts to a torque of 70-75 in.-lbs. See Figure 28.
10. Wind the new cable-hose completely onto the reel in the direction indicated (viewed from the flange side).

Right Hand Reel: Wind cable-hose clockwise.
Left Hand Reel: Wind cable-hose counterclockwise.

A Right or Left hand reel is determined as viewed from the flange side of the reel. See Figure 8, page 2.


11. Prewind reel spring by grasping the end of the outer cable-hose and turning the reel a minimum of 3 turns in the direction indicated (viewed from the flange side).

Right Hand Reel: Wind reel clockwise.
Left Hand Reel: Wind reel counterclockwise.
CAUTION: Rotation in a direction opposite than described will damage the inner cable and reel spring.

If more tension is required, the reel can be prewound additional turns. The maximum turn capacities are 16 total turns.

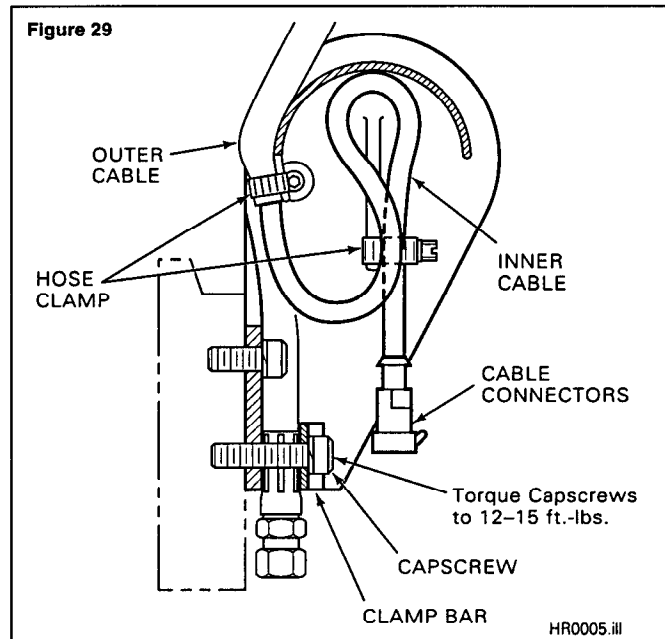
Total Turns = Prewind turns + Working turns

CAUTION: Exceeding turn capacity of the reel will damage the inner cable and reel spring.

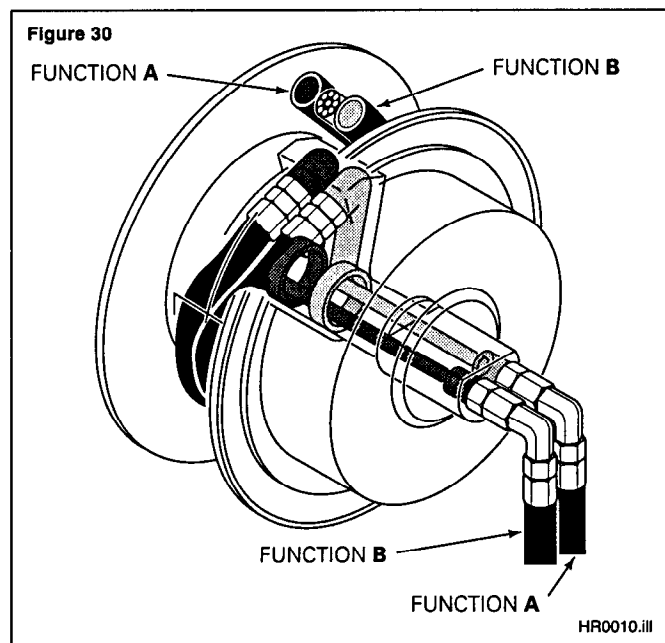


WARNING: Do not let the reel unwind when connecting the cable-hose to the junction block.

12. With the reel prewound, pull the hose ends down to the junction block. Fasten the hoses with the clamp bar and capscrew. See Figure 29.



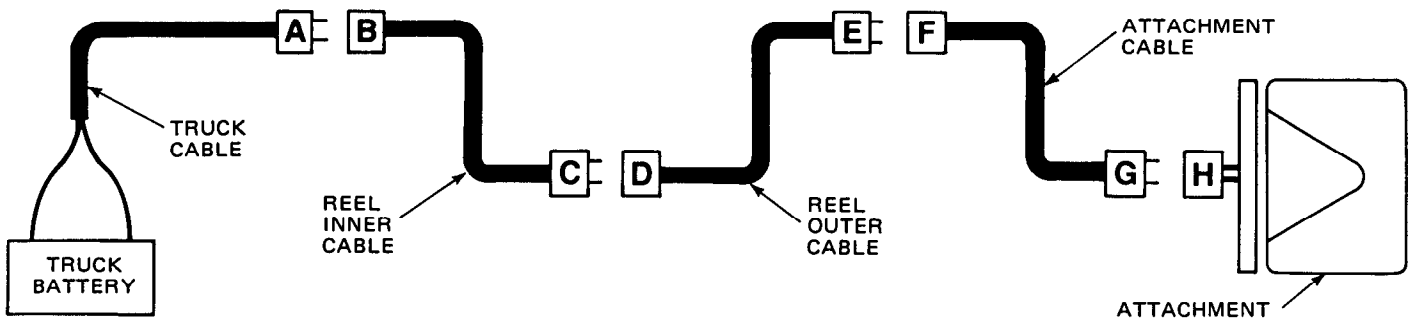
13. Connect the cable from the cable-hose to the junction block. Clamp the outer cable to the projection between the hoses with a hose clamp. See Figure 29. Position the hose clamp so it can be tightened through the hole in the side of the junction block. Route the inner cable through the junction block as shown. Fasten the male cable connectors to the large projection with a hose clamp. Form the hose clamp around the connectors. Do not overtighten the clamp. The female cable connectors must fit in the male connectors. Join the connectors.
14. Connect the attachment hoses to the junction block. Be sure the hoses and their functions do not become interchanged. See Figure 30.
15. Operate the carriage up and down a few times to make sure the cable-hose tracks smoothly and no interference exists.



TROUBLESHOOTING GUIDE

PROBLEM	PROBLEM CAUSE	SOLUTION
Excessive wear on cable-hose.	Cable-Hose reel and junction block are not in proper alignment.	Align the junction block and cable-hose reel properly. They must be on the same center line and mounted squarely to each other. See Figure 5, page 2.
	Cable-Hose reel flanges damaged.	Repair or replace damaged parts.
Cable-Hose jumps off reel during operation.	Incorrect prewind of spring.	Prewind spring, see page 3, steps 21 through 24.
	Cable-Hose not aligned with junction block.	Align junction block with cable-hose reel. See Figure 5, page 2.
Cable-Hose binds during operation.	Cable-Hose reel spring is broken.	Replace the spring.
	Back-up ring in hub working between shaft and hub.	Replace the back-up rings.
	Scored seal areas.	Replace the damaged hub and/or use an emery cloth to remove the nicks from the shaft.
Electrical malfunction.	The same pattern for cable connections has not been used at all locations.	Make sure pin and cable connectors use the same pattern at all locations.
	Electrical short in the reel cable, truck or attachment cable.	See Electrical Troubleshooting Guide, page 12.
Cable-Hose Reel leaks at hub.	Damaged O-ring seals in the rotating hub.	Replace all seals. When a cable-hose reel requires replacement of any one of the O-rings or back-up rings, it is important that all the seals be replaced. If all the O-rings and back-up rings are not replaced at the same time, the reel will only have to be disassembled again in a short period of time to replace the older seals. The seal kit offered by Cascade includes all of the O-rings and back-up rings necessary to rebuild one hose reel. Order appropriate Seal Kit.
	Loose or damaged fittings.	Tighten or replace damaged fittings.
	Scored seal areas.	Replace the damaged shaft and/or use emery cloth to remove the nicks from the shaft.
Inner Cable Housing wire breaks inside housing.	Excessive mast height.	Cable-Hose reel cannot be used in this application. The maximum turn capacity is being exceeded.
	Cable-Hose reel wound backwards.	Replace Inner Cable Housing. Wind reel in direction indicated in Inner Cable Housing Replacement Instructions.
	Service life of wire has been exceeded.	Replace Inner Cable Housing.

ELECTRICAL TROUBLESHOOTING GUIDE



Use the accompanying electrical diagram and the following instructions to locate an electrical short. When using an ohmmeter to check for continuity, follow the instructions with your meter. Make sure the electrical power is disconnected when checking continuity.

1. Connect cable connectors A to cable connectors F (to isolate the entire cable reel). Operate the attachment.

NOTE: Do not operate the mast.

- a. If none of the attachment functions operate:
 - Disconnect cable connectors A from cable connectors F.
 - Use an ohmmeter to check the continuity of the attachment cable (between connectors F and G). If the cable checks OK, the truck cable is faulty and should be replaced. Refer to your truck Service Manual.
- b. If some attachment functions respond and others do not, the pins and/or sockets in the connectors are at fault and should be replaced. Recheck attachment operation after repair.
- c. If all attachment functions operate correctly, reconnect the cables as shown in the diagram and proceed to Step 2.

2. Connect cable connectors A to cable connectors D (to isolate the reel inner cable). Operate the attachment.

NOTE: Do not operate the mast.

- a. If none of the attachment functions operate, the reel outer cable is faulty and should be replaced. For replacement instructions, refer to page 9.
- b. If some attachment functions respond and others do not, the pins and/or sockets in the connectors are at fault and should be replaced. Recheck attachment operation after repair.
- c. If all attachment functions operate correctly, reconnect the cables as shown in the diagram and proceed to Step 3.

3. Connect cable connectors C to cable connectors F (to isolate the reel outer cable). Operate the attachment.

NOTE: Do not operate the mast.

- a. If none of the attachment functions operate, the reel inner cable is faulty and should be replaced. For replacement instructions, refer to page 7.
- b. If some attachment functions respond and others do not, the pins and/or sockets in the connectors are at fault and should be replaced. Recheck attachment operation after repair.

CABLE-HOSE LENGTH CALCULATIONS

H = Total lift height

D = Distance from centerline of reel to junction block.

1. When **H** is equal to, or greater than $2 \times \mathbf{D}$, the correct cable-hose length is: $\mathbf{H} - \mathbf{D} + 38$ inches
2. When **H** is less than $2 \times \mathbf{D}$, the correct cable length is: $\mathbf{D} + 38$ inches

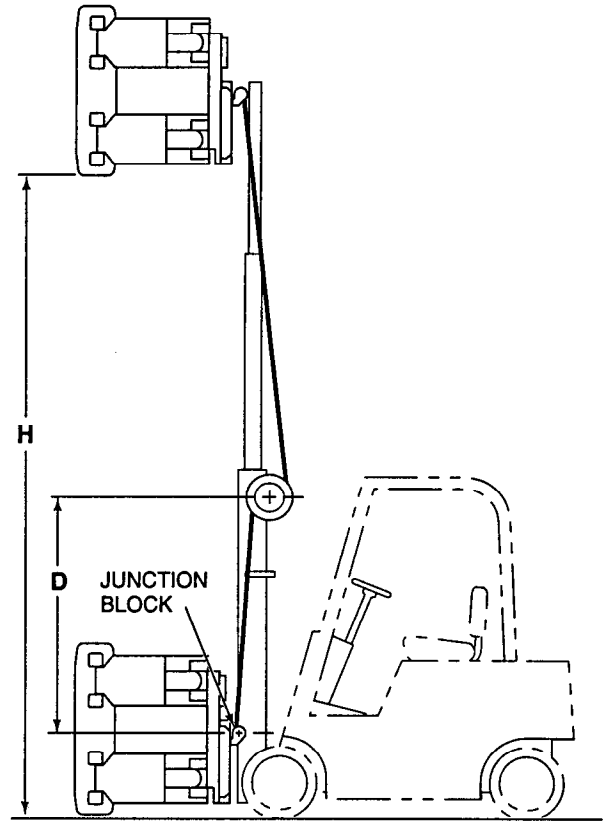
Example

H = 286"

D = 96"

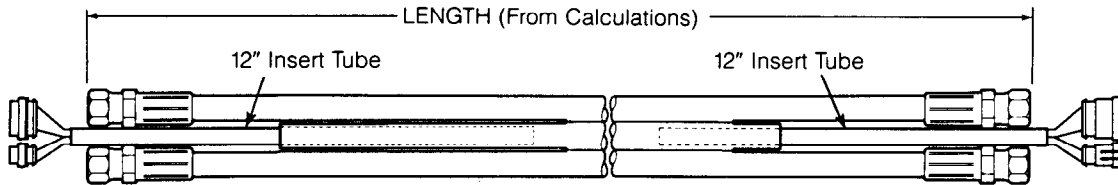
$286" - 96" = 190" + 38" = 228"$

Correct cable-hose length



HR0011.III

CABLE-HOSE PREPARATION DETAIL



REEL END

JUNCTION BLOCK END

WORKSHEET

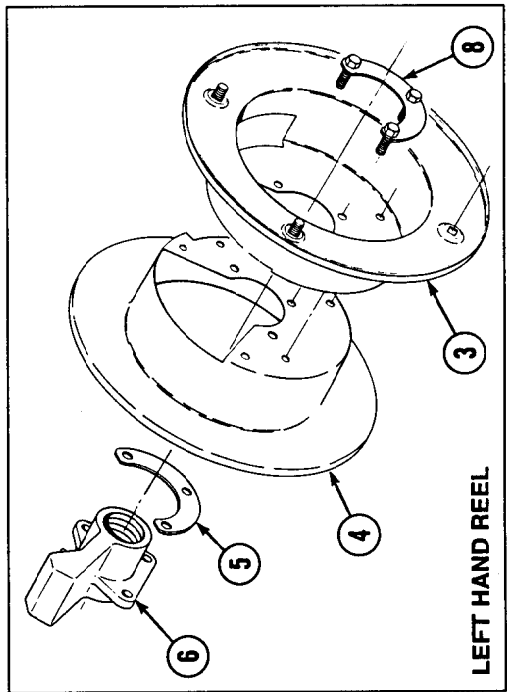
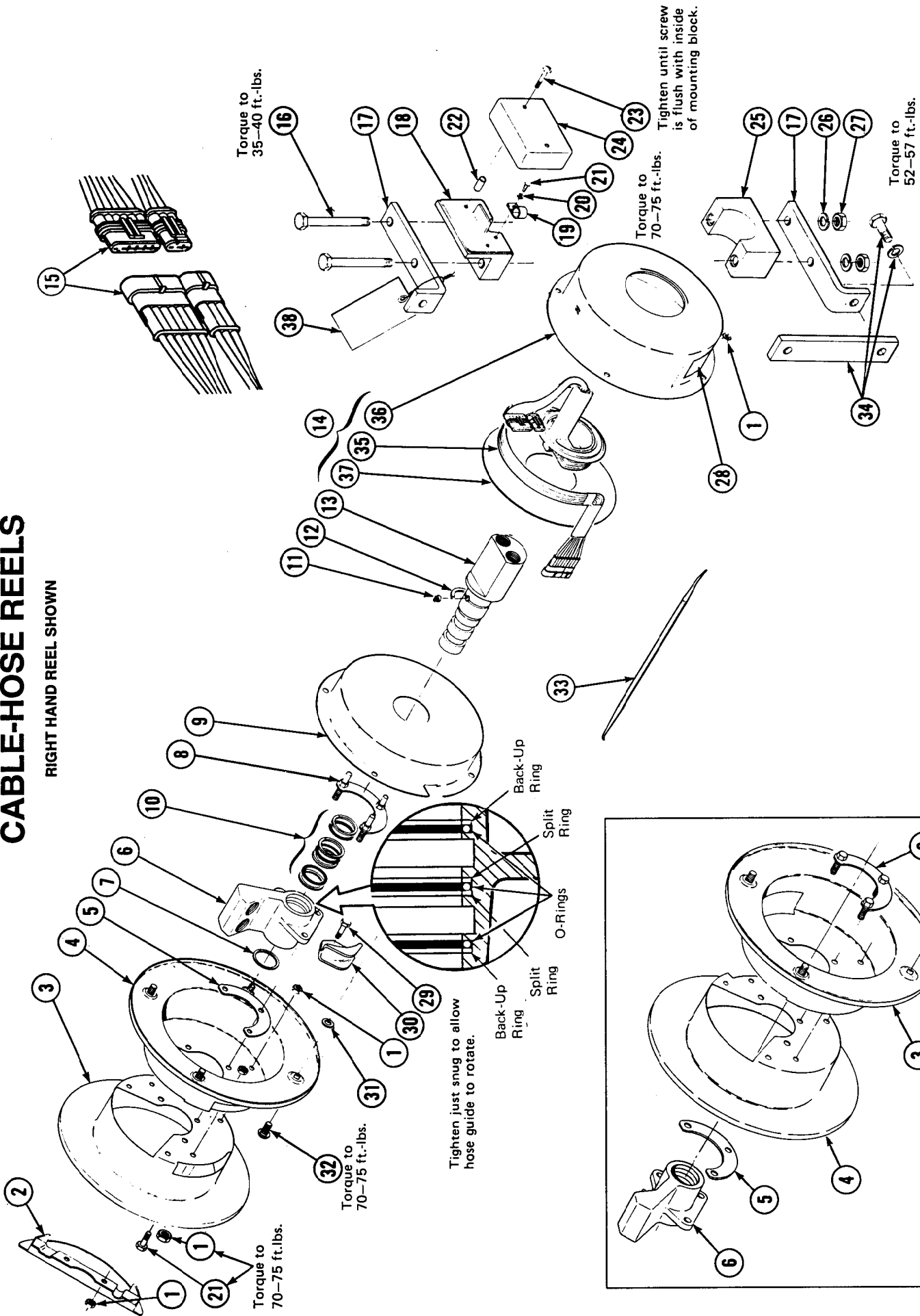
1. **H** = (enter mast's lift height here) _____
2. **D** = (enter distance between junction block and center of reel with carriage completely lowered) _____
3. Multiply **D** by 2 _____
4. If line 1. is less than line 3., the cable-hose length should be: _____
 \mathbf{D} (line 2.) _____
 + 38 inches 38"
 Cable-Hose Length = _____

If line 1. is equal to or larger than line 3., the cable-hose length should be:

\mathbf{H} (line 1.) _____
 - \mathbf{D} (line 2.) _____
 + 38 inches 38"
 Cable-Hose Length = _____

CABLE-HOSE REELS

RIGHT HAND REEL SHOWN



LEFT HAND REEL

CABLE-HOSE REELS

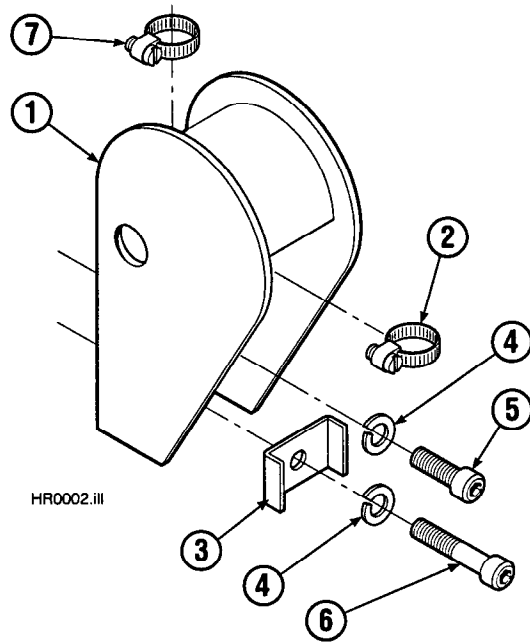
Items that vary according to model

REF	QTY	11.5" Diameter		14.5" Diameter		16.5" Diameter		DESCRIPTION
		Right Hand	Left Hand	Right Hand	Left Hand	Right Hand	Left Hand	
		211485	211468	211486	211469	211487	211470	Cable-Hose Reel Assembly
3	1	645979	645990	645988	646067	646070	646071	Flange
4	1	645990	645979	646067	645988	646071	646070	Flange
28	1	211488	211474	211489	211475	211490	211476	Nameplate

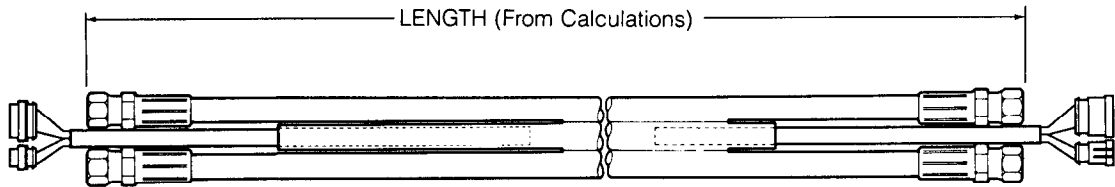
Items common to all models

REF	QTY	PART NO.	DESCRIPTION	REF	QTY	PART NO.	DESCRIPTION
1	11	645986	Locking Nut, 1/4 NC	20	1	6286	Lockwasher, 1/4 ID
2	1	659898	Rotating Cover - Left Hand	21	4	3551	Capscrew, 1/4 NC x .50
2	1	659876	Rotating Cover - Right Hand	22	2	663886	Tube
5	1	659880	Spacer	23	2	659887	Machine Screw, 1/4 NC x 1.50
6	1	677860	Hub	24	1	659886	Fixed Cover
7	1	3135	Snap Ring	25	1	659884	Lower Mounting Block
8	1	659881	Bracket	26	2	6290	Lockwasher, 1/2 ID
9	1	664886	Spring Assembly - Right Hand	27	2	5904	Nut, 1/2 NC
9	1	664885	Spring Assembly - Left Hand	29	1	3556	Capscrew, 1/4 NC x 1.25
10	1	677833	Shaft Seal Kit	30	2	646075	Hose guide
11	1	659917	Spring Retainer	31	4	6228	Washer, 1/4 ID
12	1	675610	Snap Ring	32	4	659889	Capscrew
13	1	677858	Shaft	33	1	674424	O-Ring Extractor Tool
14	1	211570	Cable Service Kit - Right Hand	34	1	661031	Mounting Kit
14	1	211569	Cable Service Kit - Left Hand	◆ 35	1	210294	Cable Harness
● 15	1	211477	Connector Kit	■ 36	1	669647	Cable Housing Assembly - Right Hand
16	2	3667	Capscrew, 1/2 NC x 5.00	◆ 36	1	669648	Cable Housing Assembly - Left Hand
17	2	659888	Mounting Bracket	◆ 37	1	659882	Divider Plate
18	1	659885	Upper Mounting Bracket	38	1	667898	Caution Tag
19	1	659890	Clip	★		211498	Service Tool Kit

- Connector Kit 211477 (Ref. No. 15) includes 3 and 6 Pos. Connectors, Receptacles, Sockets, and Wire Seals.
- Included in Cable Service Kit 211570 (Ref. No. 14).
- ◆ Included in Cable Service Kit 211569 (Ref. No. 14).
- ★ Includes (1) crimping tool and (1) die set.



Junction Block Group				
REF	QTY	NO. 6 HOSE PART NO.	NO. 8 HOSE PART NO.	DESCRIPTION
		211560	211540	Junction Block Assembly
1	1	659828	211539	Junction Block
2	1	662139	662139	Clamp
3	1	211538	211538	Bar
4	1	6372	6372	Lockwasher, .375 ID
5	1	4472	4472	Capscrew, .375UNCx1.50 Lg GR8
6	1	4468	4468	Capscrew, .375x.750 Lg
7	1	662138	662138	Clamp



REEL END

JUNCTION BLOCK END

Hose-Cable Assembly		
CATALOG ORDER NO.	HOSE LENGTH (TOTAL)	
	NO. 6 FITTING	No. 8 FITTING
211564		144"
211565		240"
211471	118"	
211472	212"	
211473	284"	

Fitting Group	
HC2R, HC2L, HC6R, HC6L, HC8R, HC8L Models	
CATALOG ORDER NO.	FITTING SIZE
646062	No. 6
646061	No. 8

This group includes four straight O-Ring fittings and two swivel 90° fittings. These provide hose connections into and out of the reel. All necessary electrical connectors are included with the reel.

Do you have questions you need answered right now? Call your nearest Cascade Parts Department.

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