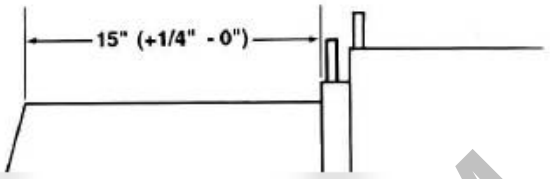
Boom Cable Adjustment

Checking and adjusting boom cables:

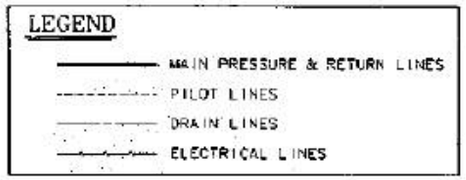


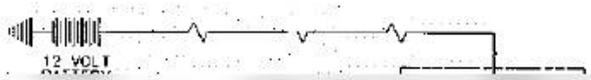
1. Position Gradall material handler in a safe, level, open area away from persons and equipment. Apply parking brake, shift forward/reverse lever to neutral position, and turn rear wheels to straight forward

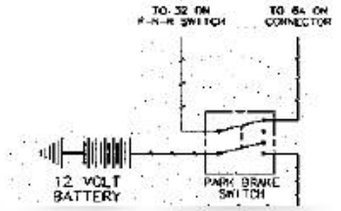
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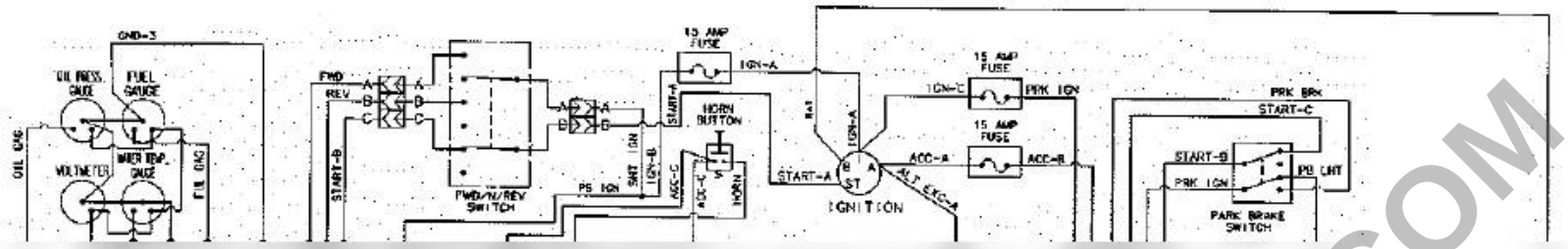




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Recommended Lubricants & Capacities

APPLICATION	SYMBOL	WHEN USED	GRADE	SPECIFICATION	CAPACITY*	
					ENGLISH	LITERS
Boom Cable Adj. Threads	MY (moly lube)	All Year	-	P/N 1440-3323	-	-
Boom Slide Bearing Paths	MG (extreme pres. moly lube)	All Year	NLGI #2	**	-	-

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CAUTION

Service intervals are based on machine usage of 1500 hours annually. Use of your unit may vary significantly and you must adjust service frequency for your usage to obtain maximum service life. Frequency headings in the following schedule indicate a calendar limit and an operating hour limit. Perform service at whichever interval occurs first.

Item	Lube Symbol	No. of Points
Daily or Shift (10 Hour Maximum) Lubrication & Maintenance (Service at whichever interval occurs first)		
13 Engine Crankcase Dipstick (level Handler & check level - refill as req'd - item 14 is filler cap)	EO	1
30. Fuel Filler Cap (fill at end of work shift to minimize condensation)	DF	1
31. Hydraulic Return Filter Condition Indicator (check indicator with oil at normal operating temperature and engine running at full throttle - replace filter element before by-pass indication is reached or at least annually)	-	1
34. Hydraulic Level Sight Gages (level handler, retract all other cylinders & check sight gages - refill as req'd)	HF	1
35. Hydraulic Suction Filter (replace filter element when return filter element is replaced)	-	1
41. Air Cleaner Element Condition Indicator (check for clogged condition (red band showing) & clean or replace element as req'd)	-	1
Weekly (or 50 Hour) Lubrication & Maintenance (Service at whichever interval occurs first). (include all previous periodic services)		
1. Extend/Retract Cable Sheaves	CG	3
6. Boom Bottom, Front Slide Bearings (extend boom fully & lube all wear paths - retract & extend boom fully three times & wipe excess lube from bearings)		
2 stage boom:	MG	2
3 stage boom:	MG	4
7. Carriage Tilt Cylinder Pivots	CG	2
8. Boom Hoist Cylinder Pivots	CG	2
9. Compensating Cylinder Pivots	CG	2
10. Boom Head/Carriage Pivot	CG	2
11. Tires (check for damage & proper inflation) Std. for 522 & 524:1300 x 24, 8 ply - 45 psi Std. for 532C & 534C: 1300 x 24, 12 ply - 65 psi Optional: - 13.00 x 24 Radial - 70 psi	-	4
12. Radiator Fill Cap (check level & refill as req'd)	-	1
17. Fuel/Water Separator (drain water)	-	1
19. Quick Switch Latch	CG	1
26. Leveling Cylinder Pivots	CG	2
29. Battery (check terminals)	-	1
36. Tie Rod Ends	CG	2
37. Steering Cylinder rod Pivots	CG	2
38. Steering Cylinder Barrel Pivots	CG	2
39. Boom Pivots	CG	2
40. Front Axle Pivots	CG	2
42. Rear Axle Pivot	CG	2
43. King Pins	CG	4
At End of First 50 Hours Only		
23. Planetary Drain Plugs (drain while draining differential)	SL	2
25. Differential Drain Plug (drain & refill)	SL	1
At End of First 30 Days Only (250 Hours Maximum) Lubrication & Maintenance		
• Check torque of **all items** listed in Torque Table (pg 34)	-	-

Item	Lube Symbol	No. of Points
5 Week (or 250 Hour) Lubrication & Maintenance (Service at whichever interval occurs first) (include all previous periodic services)		
2. Boom Front, Top & Side Slide Bearings (extend boom fully & lube all wear paths - retract & extend boom fully three times & wipe excess lube from bearings)		
2 stage boom:	MG	4
3 stage boom	MG	12
3. Boom Rear Slide Bearings (lube paths)	MG	12
4. Boom Extend Cables (check adjustment & adjust as req'd - refer to page 19 for procedure)	-	2
6. Boom Front Bottom Slide Bearings (to be performed by experienced maintenance person - check for damage & excessive wear - no wear permitted past bevel - maximum clearance at top bearing is 1/8 inch, shim or replace as req'd; when these bearings require service, check all other slide bearings - shims are 1/16 inch thick)		
2 stage boom:	-	2
3 stage boom	-	4
15. Engine Oil Filter (replace filter element)	-	1
18. Vacuator Valve (rubber cone on bottom - check to be sure cone is clear and undamaged)	-	1
20. Drive Belts (check condition - replace as req'd)	-	1
21. Engine Crankcase Drain Plug (drain & refill top level)	EO	1
22. Rear Hub level Plug (check level & refill as req'd)	SL	2
24. Drive Axle Level Plug (check level & refill as req'd)	SL	1
• Check torque of items indicated in torque table - page 34)	-	-
Quarterly (or 500 Hour) Lubrication & Maintenance (Service at whichever interval occurs first) (include all previous periodic services)		
16. Fuel Filter (replace element)	-	1
17. Fuel/Water Separator (replace element)	-	1
32. Hydraulic System (we recommend that hydraulic fluid be analyzed to determine condition - drain & refill reservoir if req'd - ref. page 35)	HF	1
33. Hydraulic Reservoir Screen (remove, clean & install when hydraulic oil is drained)	-	1
Semi-Annual (or 1000 Hour) Lubrication & Maintenance (Service at whichever interval occurs first) (include all previous periodic services)		
23. Rear Hub Drain Plug (drain & refill - item 22 is fill plug)	SL	2
25/27. Differential & Planetary Drain Plugs (drain, fill to level, wait 5 minutes and fill to level again - item 24 is fill/level plug)	SL	3
28. Front Axle Breather (clean or replace)	-	1
32. Hydraulic Reservoir Breather Cap (clean or replace)	-	1
Annual (or 1500 Hour) Lubrication & Maintenance (Service at whichever interval occurs first) (include all previous periodic services)		
12. Engine Cooling System (drain, flush & refill on basis of period suggested by anti-freeze manufacturer)	-	1
31. Hydraulic Return Filter (replace filter element)	-	1
32. Hydraulic System (unless fluid is analyzed quarterly to determine degree of contamination, reservoir must be drained and refilled on an annual basis)	HF	1
33. Hydraulic Reservoir Screen (remove, clean & install when hydraulic oil is drained)	-	1
35. Hydraulic Suction Filter (replace filter element)	-	1

Lubrication Notes

- Lubricate points indicated by dotted leaders on both sides of unit.
- Intervals shown are for normal (8 hour day) usage and conditions. Adjust intervals for abnormal usage and conditions.
- See recommended lubricants (page 34).
- Apply a light coating of engine oil to all linkage pivot points.
- Clean lubrication fittings before lubricating.
- Clean filter housings using diesel fuel. Dry components thoroughly using a lint free cloth.
- Check lubricant levels when lubricant is cool. Also check appearance for contamination.
- Drain engine and gear cases only after operation when lubricant is hot.
- Refer to page 35 for procedure to obtain oil sample for analysis.

Failure to use Gradall Hydraulic Filter Elements could void Warranty.

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PREPARATION FOR DISASSEMBLY

Overhaul pump only in a clean, dust-free location, using clean tools and equipment. Dirt or grit will damage the highly machined surfaces and will result in leakage or premature failure of the pump.

Before beginning disassembly, scribe match marks on the inlet side of the body and cover to insure that the pump will be reassembled in the same manner as it was shipped from the factory. If the body or rear cover is replaced during overhaul, scribe a match mark on the new part in the same location as on the part it replaced.

DISASSEMBLY OF PUMP

NOTE

All reference numbers refer to items illustrated in the exploded view provided with the parts list section of this publication.

1. Clean outside of pump with a good grade solvent and dry thoroughly.
2. On models with splined drive shaft, proceed to step 3. On models with keyed drive shaft, remove woodruff key (9) from drive shaft. Using a file or stone, remove any burns from shaft end, or key way, lightly grease key way before removal of gear.
3. Secure unit in soft jawed vise (use light clamping pressure) with shaft end down; remove cap screws (1) and washers (2).

NOTE

During disassembly, take special note of the wear patterns on the wear plate (6) and thrust plate (4). Relate these patterns to the inlet side of the pump. The large port in the rear cover (10) always corresponds to the inlet side of the pump. The inlet side can be further identified by the gear contact pattern in the gear bore. The wear plate (6) will have a somewhat heavier wear pattern on the inlet side. The thrust plate (4) will also have a pattern that can be established for reassembly. Also note that the long journal of the driven gear (11) is toward the front of the pump.

4. Separate rear cover (10) from body (13) by supporting pump, shaft end up, on mounting flanges and pressing on drive shaft end in arbor press.

CAUTION

Use one hand to support rear cover from underneath, since cover and internal parts will drop suddenly when dowels are disengaged.

An alternate method of removing the rear cover is to pry simultaneously with two large screwdrivers in the relieved areas between body and cover, or lightly tapping drive shaft with a plastic mallet.

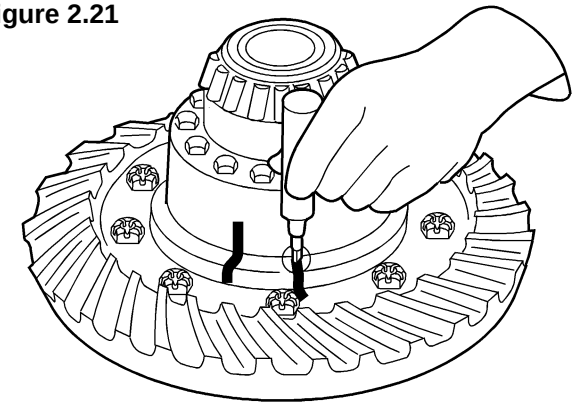
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Disassemble Differential Case

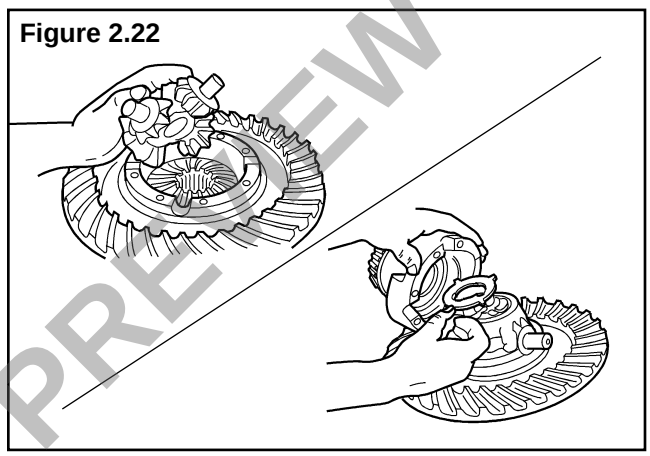
1. Before disassembling differential case, mark position of both halves and spider cross for easier reassembly. **Figure 2.21.**

Figure 2.21



2. Remove differential case capscrews.
3. Separate differential case halves. If necessary use a brass or rubber hammer to separate halves.
4. Remove spider cross, differential pinions, side gears and washers. If differential case is "Limited Slip," remove friction disc pack. **Figure 2.22.**

Figure 2.22



5. If differential case is "integral," remove differential pinion axle lock capscrew and differential pinion axle. Then turn side gears and remove differential pinions, side gears and washers. **Figures 2.23, 2.24 and 2.25.**

Figure 2.23

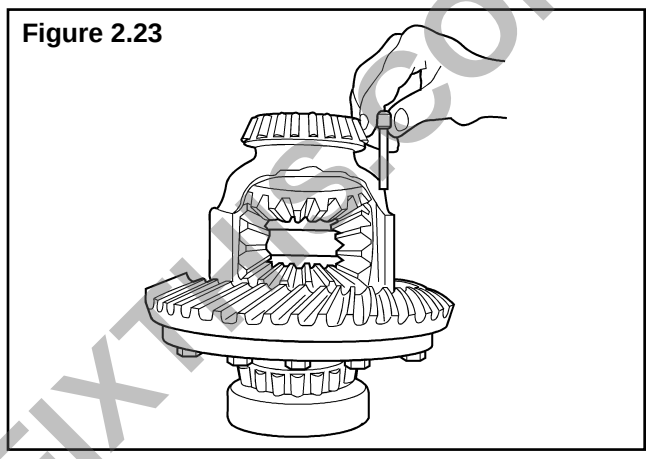


Figure 2.24

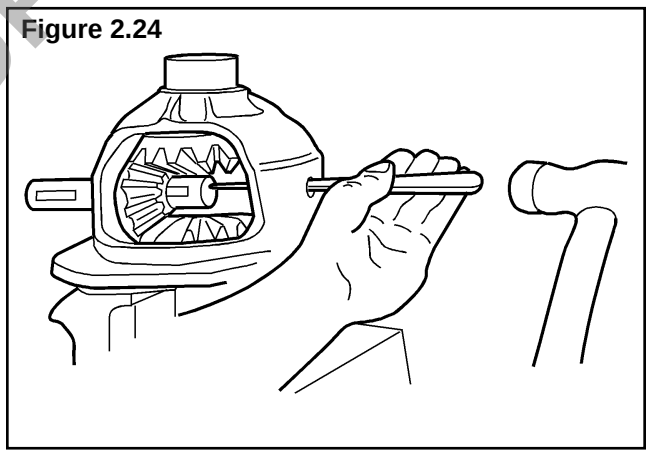
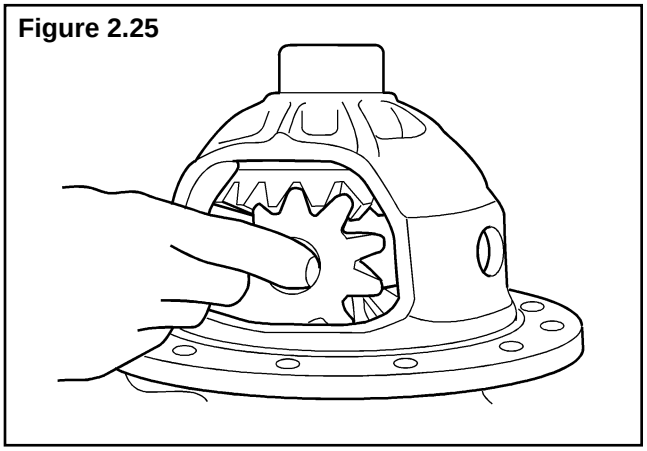


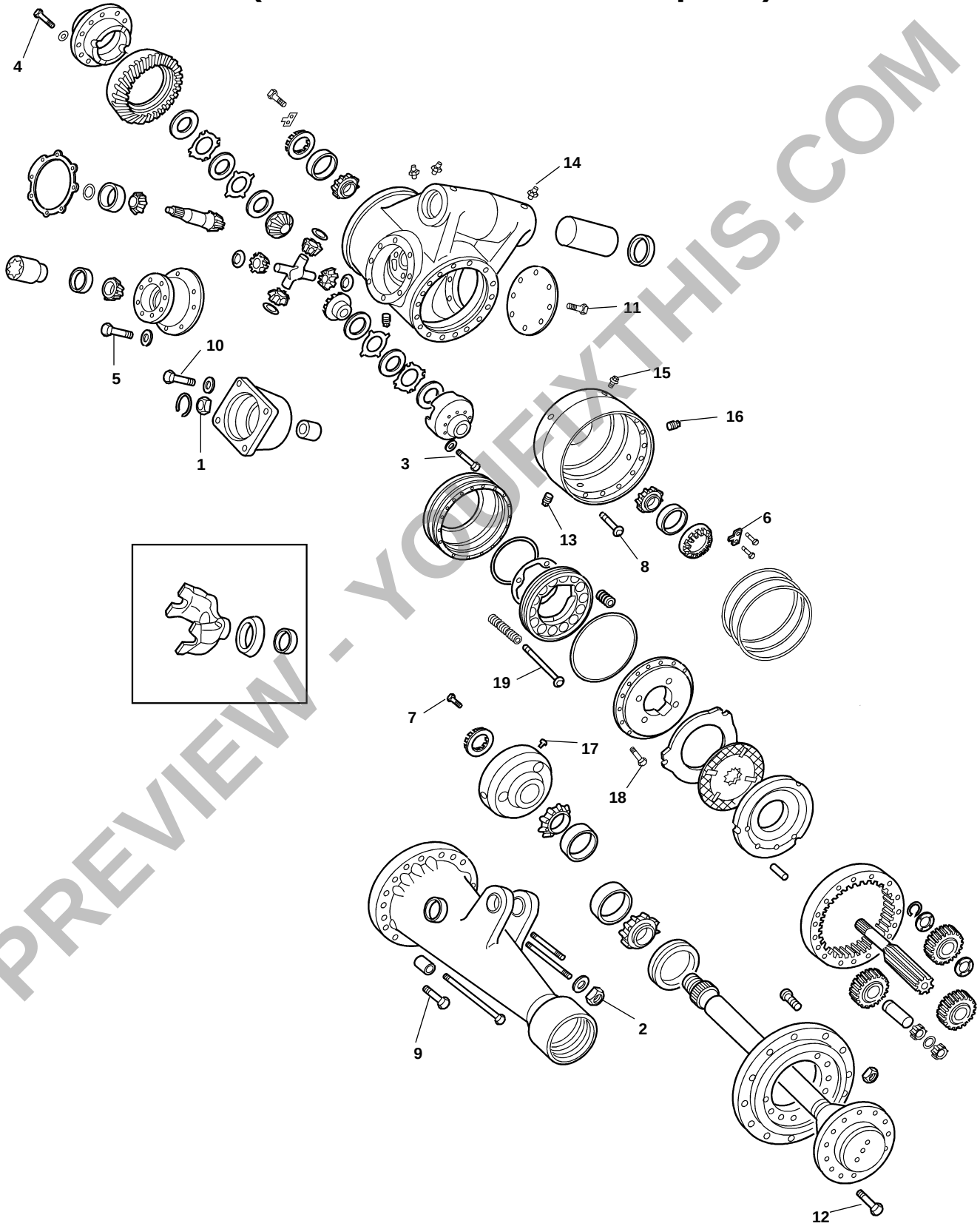
Figure 2.25



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PROA 352/382 (With Mechanical Drive Option)



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Boom Wear Pad Adjustments

To maximize boom service life, wear pads must be carefully adjusted at all times. The following Service Notes are a general guide for properly adjusting boom wear pads:

General Service Notes

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(7E) Extension Cable Reinstallation

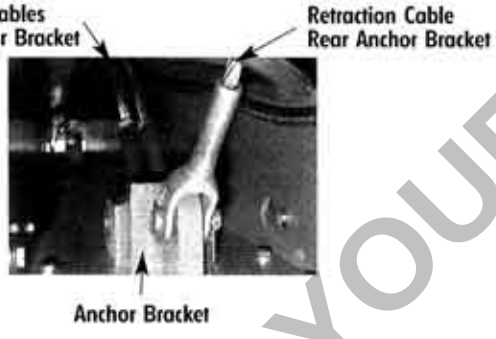
To reinstall the extension cable, you must be able to reach into the rear of the boom assembly to the cable anchor bracket weldment. The anchor bracket is welded to the bottom rear boom plate of Boom-Section 3. If you can't reach the bracket, the booms must be separated. Make sure the keys have been removed from the ignition and fasten a "do not operate" tag to the steering wheel before you reach into the boom.

→ Preparation

- Place the machine in a level, open area with sufficient space to work safely.
- Procure the tools and platforms required for this operation.
- If working with a helper, review each of your duties.
- Be certain the boom assembly is still retracted fully. If not, mechanically push the boom into the correct position. **DO NOT reach into the boom assembly while sections are being mechanically retracted/extended.**

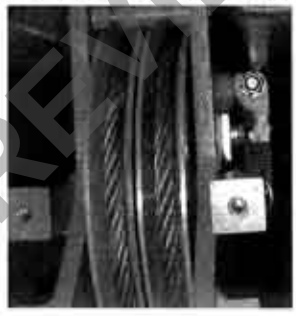
→ Stage 1

1. Tie a rope to the extension cable threaded end and pull the cable to the anchor bracket weldment area.
2. Install the extension cable socket end and the mounting hardware to the cable anchor bracket weldment.



3. **532C-6, 534C-6 & 536D-6:**
   If it has been removed, install the crowd cylinder into the boom assembly from the rear.
4. If it has been removed, install the extension cable sheave bracket to the front of the crowd cylinder.

532C-6, 534C-6 & 534D-6
Extension Cable Sheave Bracket



5. Install the extension cable threaded end through the sheave bracket and feed to the rear of the boom.
6. **534C-9/C10 & 534D-9/D-10:**
   Assemble all extension cable sheave bracket components to the front of the push beam. Be certain that the cable threaded end is inserted through the sheave bracket before the sheave components are installed.

534C-9/C-10 & 534D-9/D-10
Push Beam Front,
Extension Cable Sheave Bracket



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