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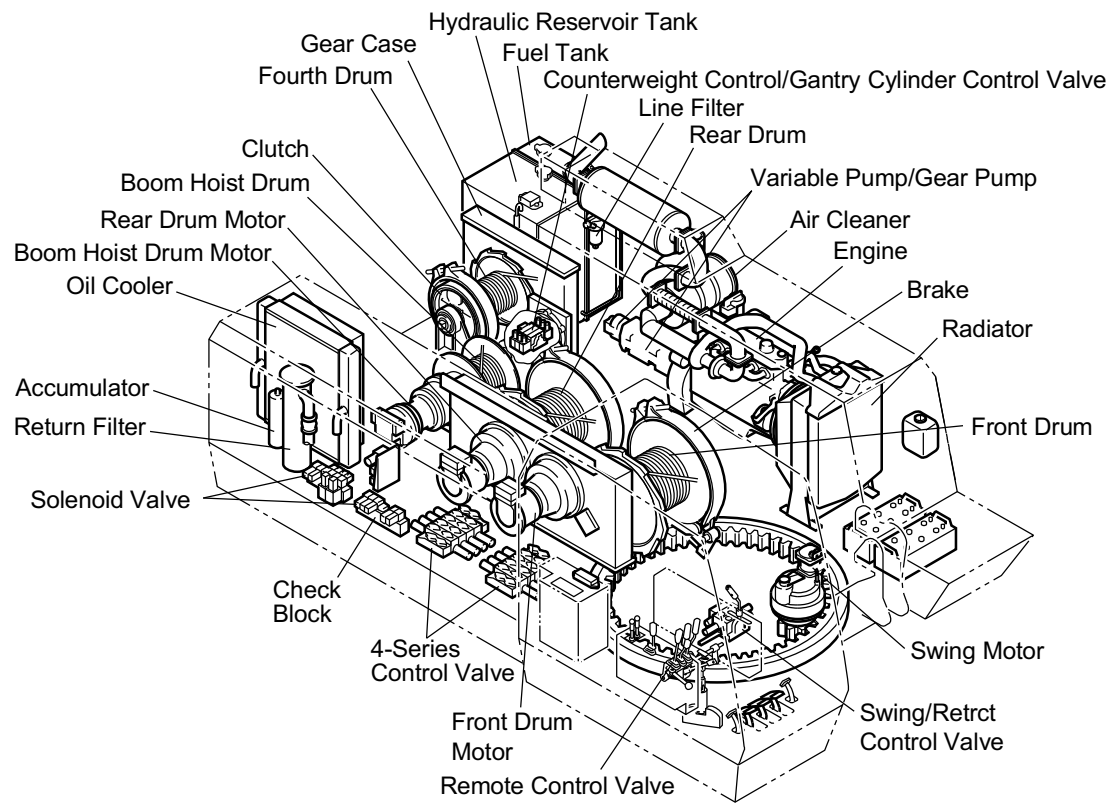
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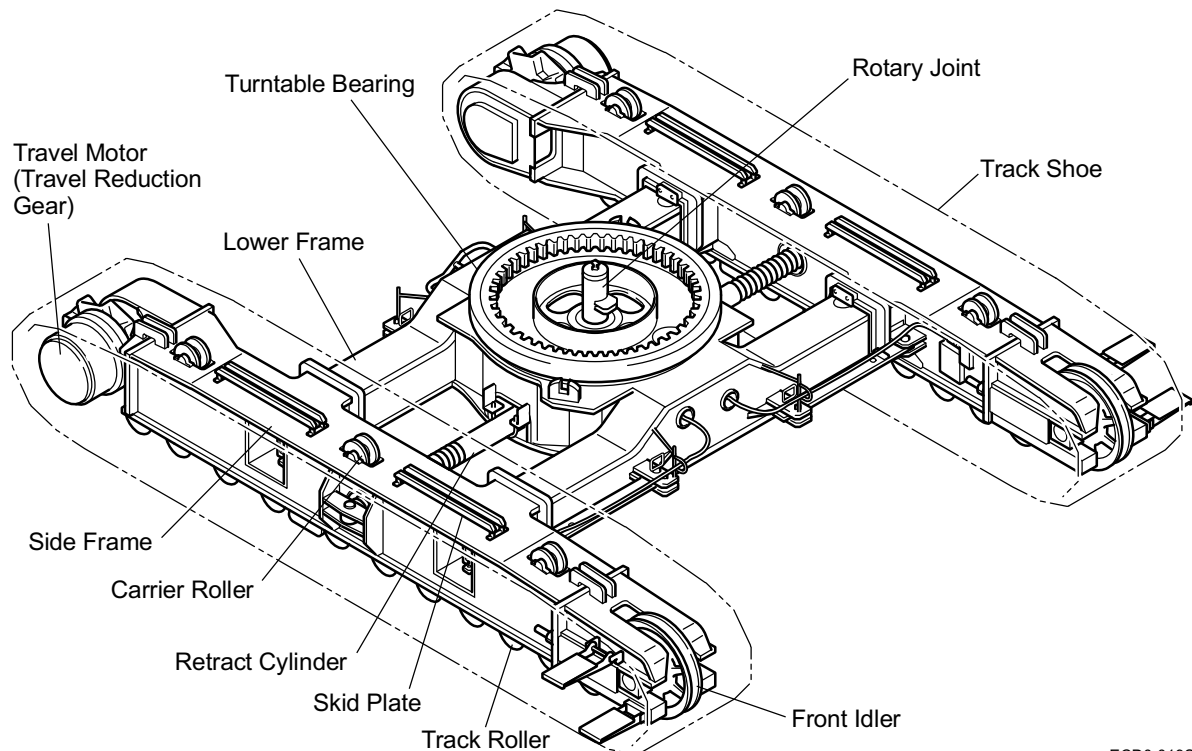
Bolt Tightening Torques	ES14-02-0004.0R1S
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1 Upper Machinery



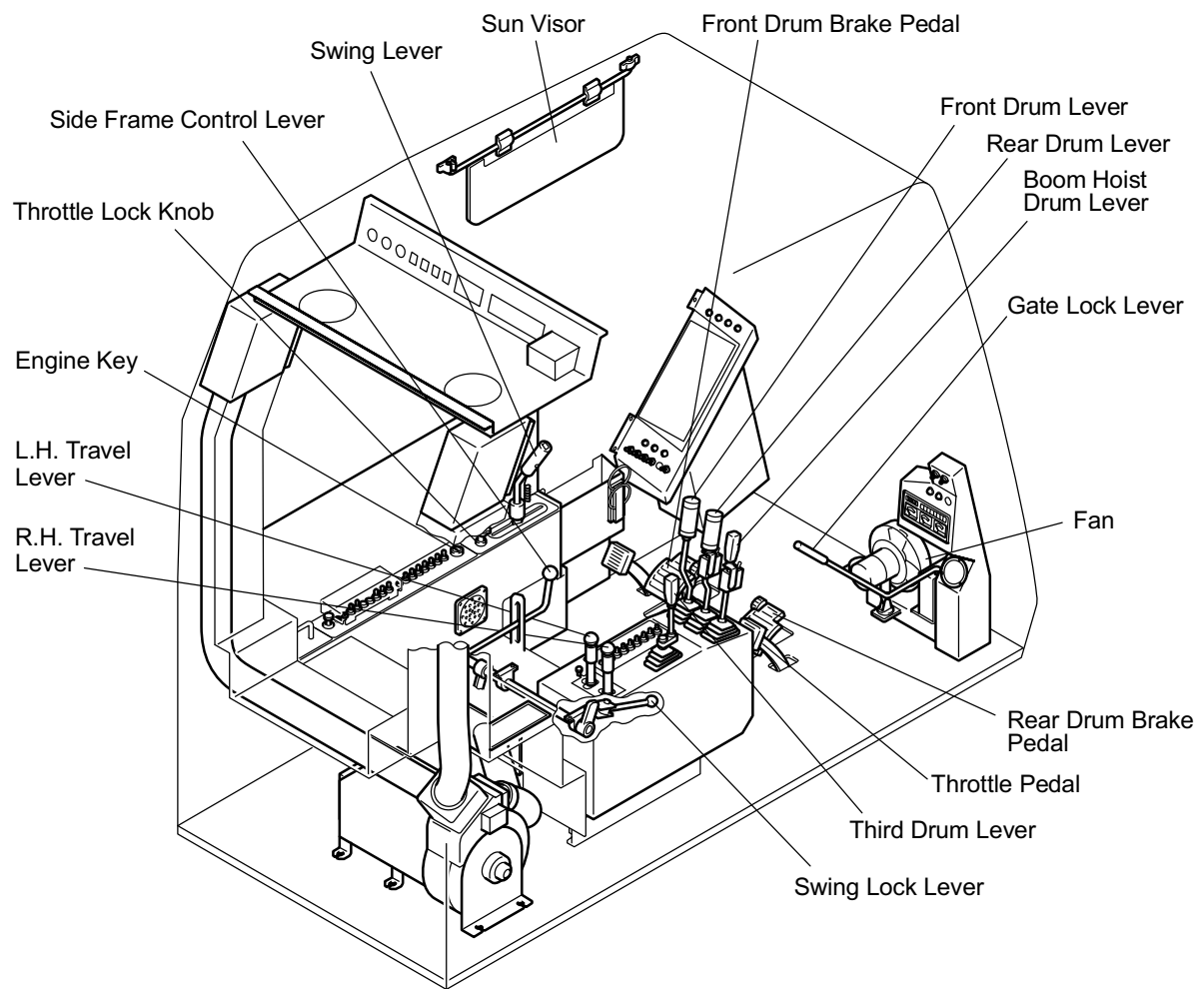
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2 Lower Machinery



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3 Components In Operator's Cab



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Note : For more details of operating levers, pedals and switches on the panel, refer to the operator's manual.

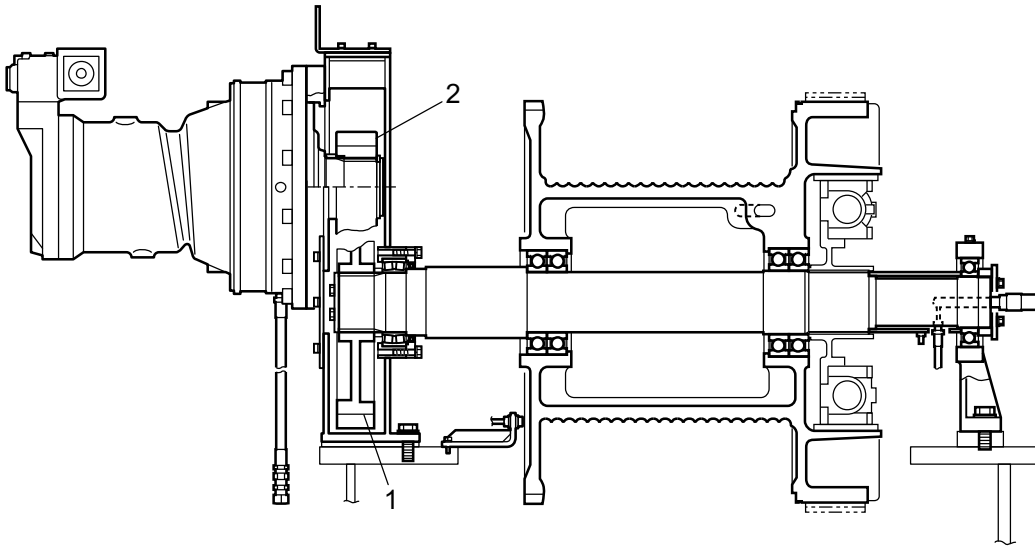
VP	Variable-Capacity Pump
FP	Fixed-Capacity Pump
VM	Variable-Capacity Motor
FM	Fixed-Capacity Motor
BV	Brake Valve
CV	Counterbalance Valve
CL	Clutch
BR	Brake
CYL	Cylinder
SV	Solenoid Valve

4-Series Control Valve { E : Fourth Drum
F : L.H. Travel
G : Rear Drum 2-Speed
H : Front Drum 1-Speed

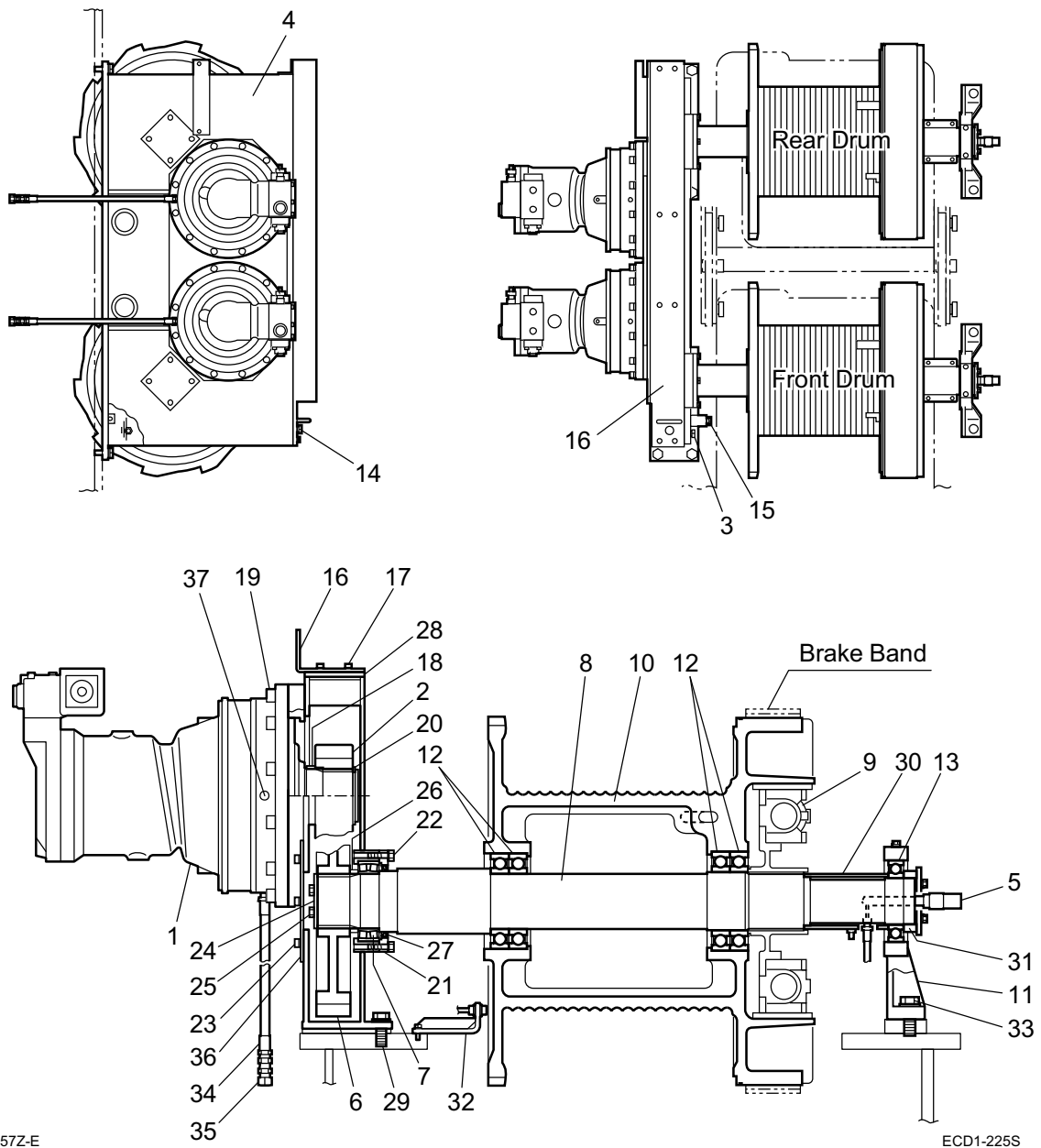
Unit: mm (inches)

Item	Part name	Number Of Teeth	*1	Allowable Backlash	Treatment
1	Spur gear	6	202.7 (7.98")	2.2 (.09")	Replacement
2	Spur gear	3	93.7 (3.689")		

*1 Allowable Displacement Over A Given Number Of Teeth.



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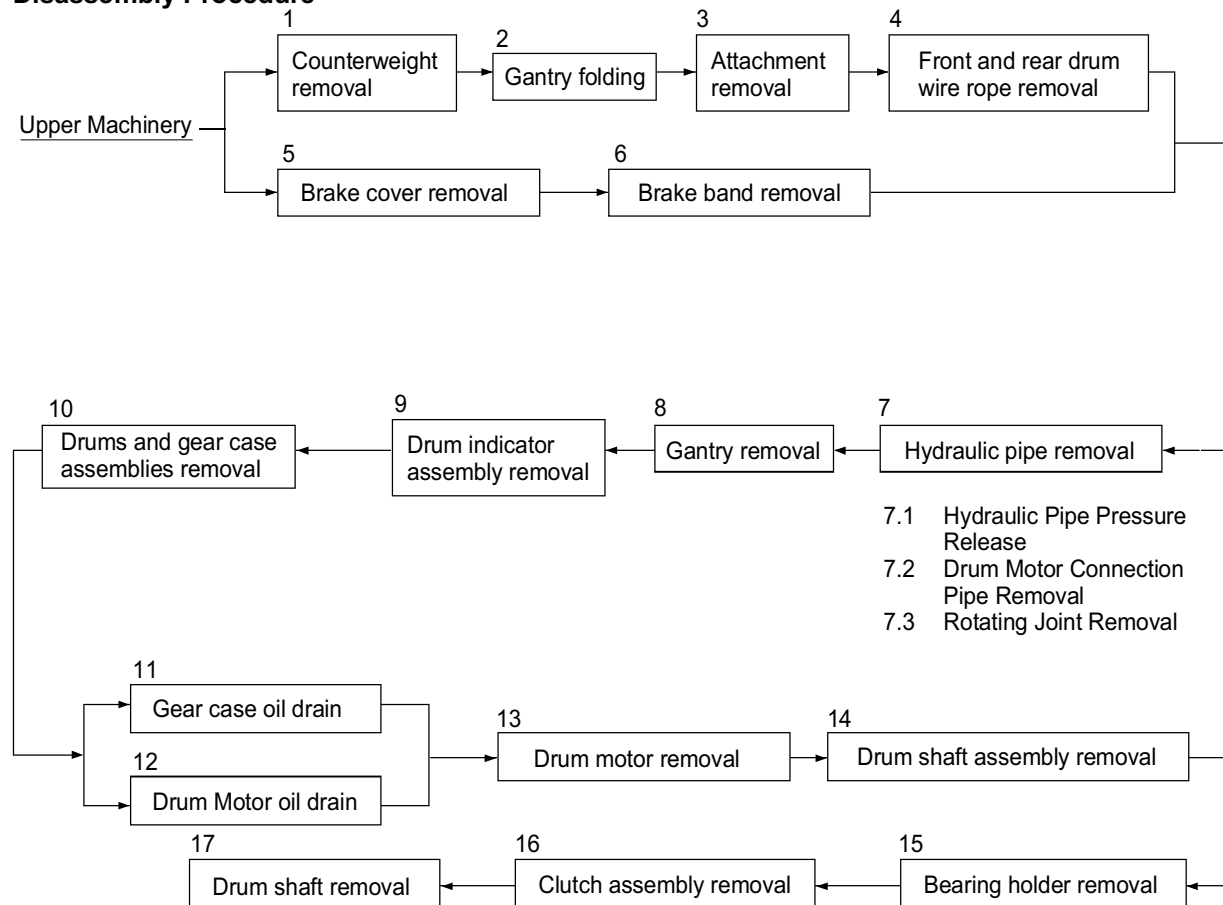
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1 Motor	11 Bearing Holder	22 Bolt	33 Bolt
2 Pinion	12 Ball Bearing	23 Bolt	34 Hose
3 Plug (With Dipstick)	13 Ball Bearing	24 End Plate	35 Drain Cap
4 Gear Case	14 Oil Filler Cap	25 Bolt	36 Cover
5 Rotating Joint	15 Drain Plug	26 Spacer	37 Plug
6 Gear	16 Check Cover	27 Oil Seal	
7 Roller Bearing	17 Bolt	28 Sponge Packing	
8 Drum Shaft	18 Spacer	29 Bolt	
9 Clutch Assembly	19 Bolt	30 Spacer	
10 Hoist Drum	20 Snap Ring	31 Bearing Nut, Washer	
	21 Seal Retainer	32 Drum Indicator Assembly	

Disassembly

Disassembly Procedure



Work Preparation

Main body support

- 1) Park the machine on level and stable ground.
- 2) Extend the side frames.
 For side frame extension, refer to the operator's manual.

⚠ WARNING

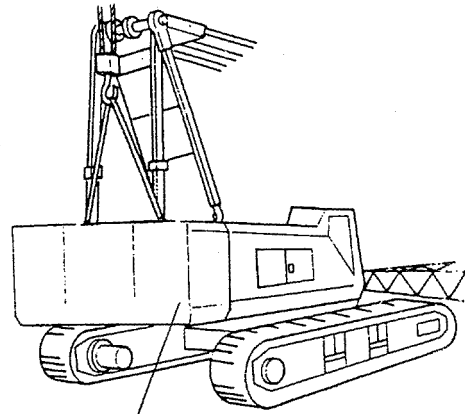
Since The Component Parts Related To This Procedure Are Heavy, Handle Them Carefully Or Accidents May Result. Use A Hoist To Handle Them Efficiently. Check That The Hoist Capacity Is Sufficient.

CAUTION

Take The Surrounding Into Consideration, Select A Place Where Safe Operation Is Possible And Take Precautions Against Dangers. Particularly Avoid Slopes.

1 Counterweight Removal

- 1) To remove the counterweight with the gantry in the high position, refer to the operator's manual.

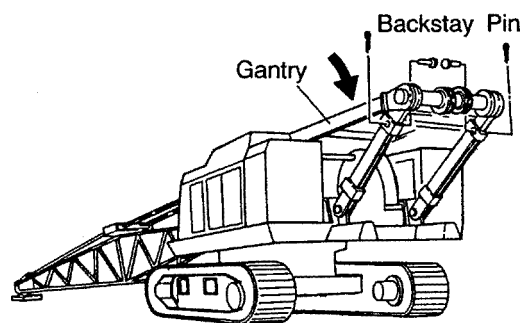


Counterweight

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2 Gantry Folding

- 1) To position the gantry from high to low, refer to the operator's manual.



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3 Attachment Removal

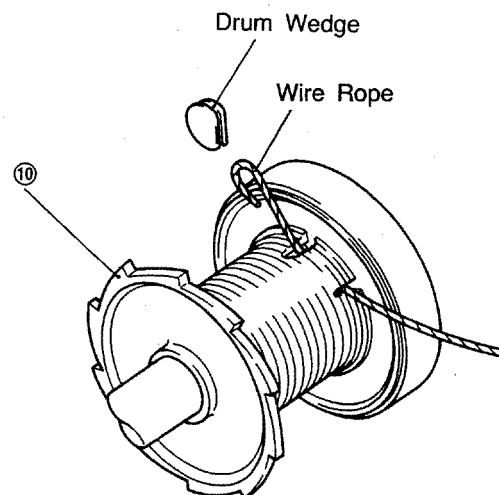
- 1) To remove the attachment from the upper section, refer to the operator's manual.

4 Front and Rear Drum Wire Rope Removal

CAUTION

Avoid Injury To Yourself. Replace Or Rearrange Rope Carefully To Avoid An Accident. Rope Wrapped Around Sheaves May Become Twisted. When Released, The Rope Can Spin As The Dead End Pins Or Sockets Are Removed.

- 1) Pull out wire ropes from the front and rear drums, and wind them with the winder.

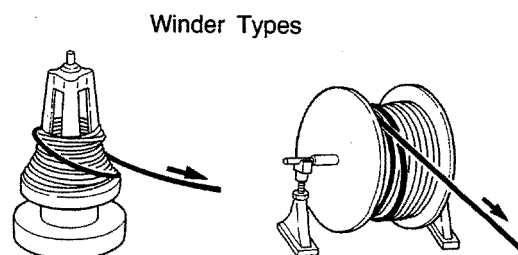


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CAUTION

Properly Release The Hoist Drum Brake During Removal Of Wire Rope Or Rope May Become Kinked Or Twisted, Resulting In Excessive Deformation, Shortening Wire Rope Life.

- 2) Remove the drum wedge, and remove the wire rope from the hoist drum.



Proper Wire Rope Releasing

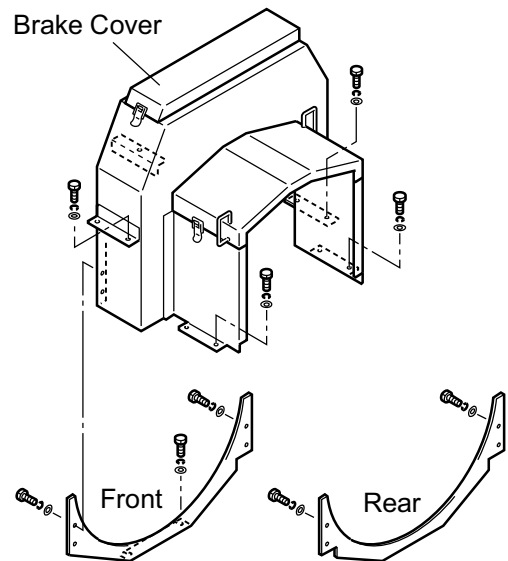
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5 Brake Cover Removal

- 1) Open the upper cover of the brake cover.
- 2) Loosen the locknut and remove the adjusting nut. The hanging bolt and spring cannot be separated from the band.
- 3) Remove the bolt and brake cover.

6 Brake Band Removal

- 1) For brake band removal, refer to "front and rear drum brake control disassembly and re-assembly" ES03-05-6000 in this manual.



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7 Hydraulic Pipe Removal

7.1 Hydraulic pipe pressure release

⚠ WARNING

All Trapped Hydraulic Pressure Must Be Exhausted From The System Before Removing Any Line Or Component. A Sudden Release Of Hot Oil Could Cause Burns Or Other Serious Injury.

- 1) Operate the control lever back and forth several times to release any hydraulic pressure trapped in the lines.

Note: Even if pressure is completely released, oil remains. Before disconnecting a pipe or valve, position a container to collect the oil.

7.2 Drum motor connection pipe removal

- 1) Remove all pipes connected to the motor. (Except hoses 34)
- 2) Attach blank plugs, blank flanges, caps, etc. to the pipe ports of the motor and the ports of the removed pipes to prevent oil from flowing out and foreign materials from entering.

Note: Place the removed pipes where disassembly and reassembly are not hindered. Label pipes, hoses, fittings, and other parts to prevent errors during reassembly.

7.3 Rotating joint removal

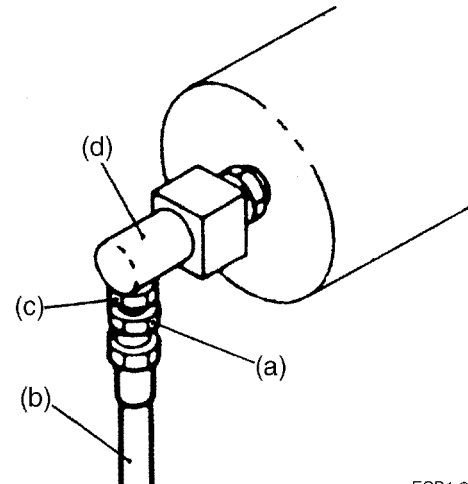
- 1) Loosen hose ferrule (a) and disconnect hose (b) from adapter (c).

Note: To prevent oil from contacting the linings, cover with a cloth before disconnecting hose (b).

Note: To prevent entry of foreign materials, cap or plug the opening of the disconnected hose (b).

Note: Contamination in the hydraulic equipment causes excessive parts wear.

- 2) Loosen rotating joint (d) and remove it as an assembly with adapter (c).
- 3) Remove the hose (b) and piping connected to the hose (b), if necessary.
- 4) Disassemble the rotating joint.
(Refer to ES05-14-6000 in this manual.)



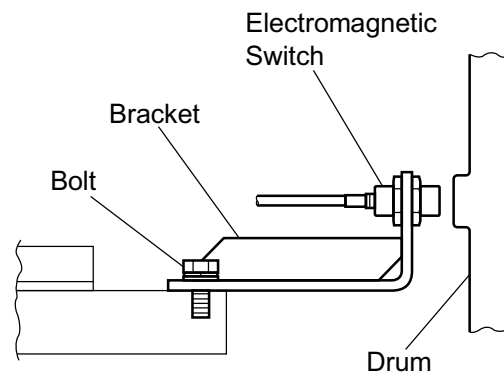
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8 Gantry Removal

- 1) For gantry removal, refer to "gantry disassembly and reassembly" ES06-01-6000 in this manual.

9 Drum Indicator Assembly Removal

- 1) Remove bolt, and remove bracket as an assembly with electromagnetic switch, and put it where reassembly is not hindered.



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10 Drums And Gear Case Assemblies Removal

⚠ WARNING

Do Not Place Your Body Under The Suspended Assemblies. When Separating The Assemblies From The Equipment, Do Not Put Your Body Between The Assemblies And The Equipment.

- 1) Remove bolts 22 and separate seal retainer 21 from gear case 4 to prevent scoring the oil seal.
- 2) Attach wire rope on the assemblies as illustrated.

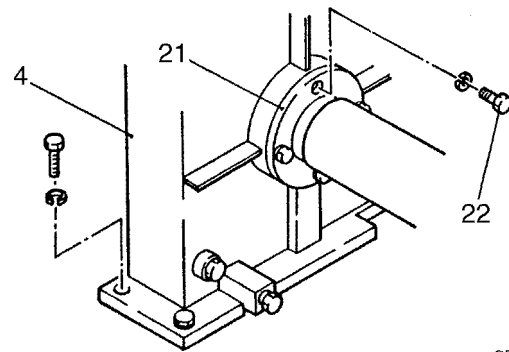
Note: Use rubber pad or wooden block not to give a damage to the assemblies.

- 3) Remove gear case mounting bolts 29 and bearing holder mounting bolts 33.
- 4) Slowly suspend the assemblies horizontally with an auxiliary crane or similar lifting device. Moreover, keep the front and rear drum shafts at a right angle to the gear case.

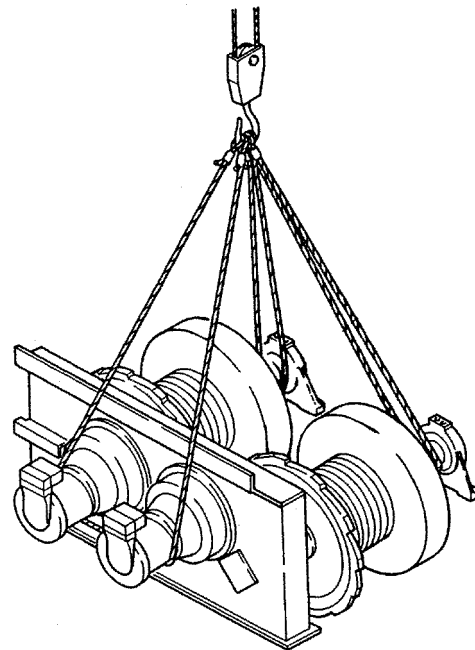
Assemblies mass: 2213 kg (4879 lb)

- 5) Carefully transport the drum and gear case assemblies to a safe place.

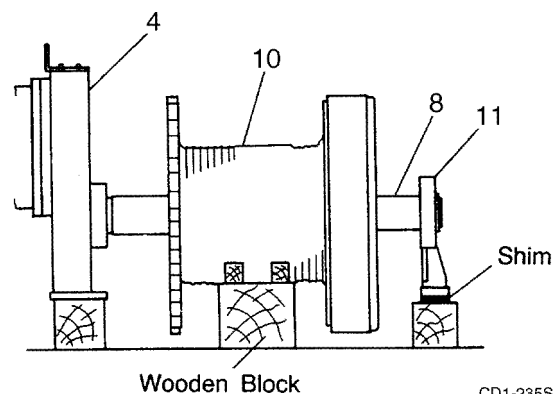
Note: When placing the drum and gear case assemblies to rest, use blocks, shims and suitable supports to ensure the unit is positioned horizontally, as when mounted upon the machine. If the unit is not resting horizontally and if the gear case 4 or bearing holder 11 are not perpendicular to the drums 10 shafts 8, excessive side loading to the bearings can occur which can cause damage and shorten bearing life.



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CD1-9S

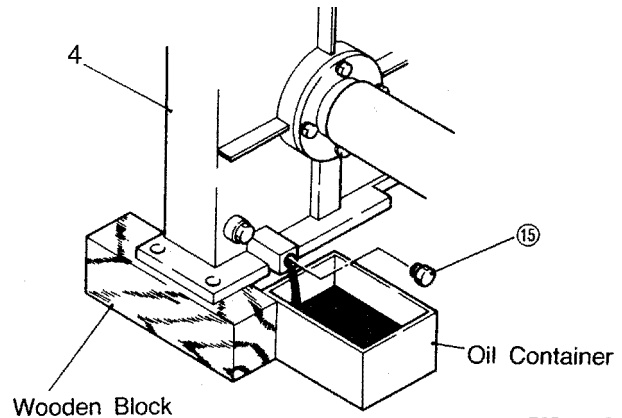


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11 Gear Case Oil Drain

- 1) Position a clean oil container, remove drain plug 15 and drain the oil from the gear box.
Oil capacity: 11.8 lit. (3.1 gal.)
- 2) After the oil is completely drained, insert drain plug 15.

Note: Check the drained oil. If reusable, store it for later use. Replace bad oil.



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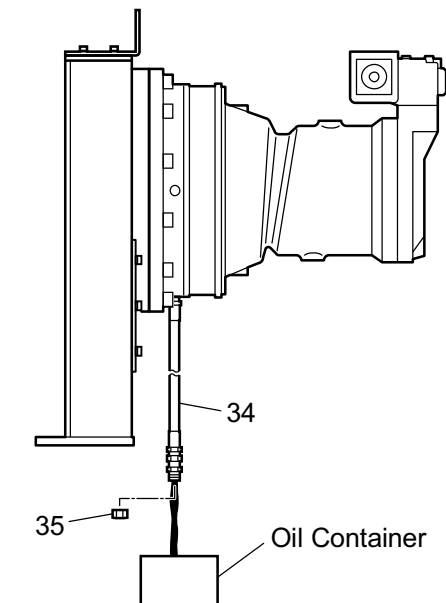
12 Drum Motor Oil Drain

Note: Drain gear oil from the front and rear drum hoist motor 1 using the following procedure.

- 1) Position a clean oil container, remove drain cap 35 from hose 34, and drain gear oil.
Oil capacity: 11.8 lit. (3.1 gal.)
- 2) After gear oil is completely drained, disconnect hose 34 assemblies. Insert blank plug into the ports.

Note: Check the drained oil. If reusable, store it for later use. Replace bad oil.

Note: Before disconnecting hose 34 assemblies, label them to prevent errors during reassembly.



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13 Drum Motor Removal

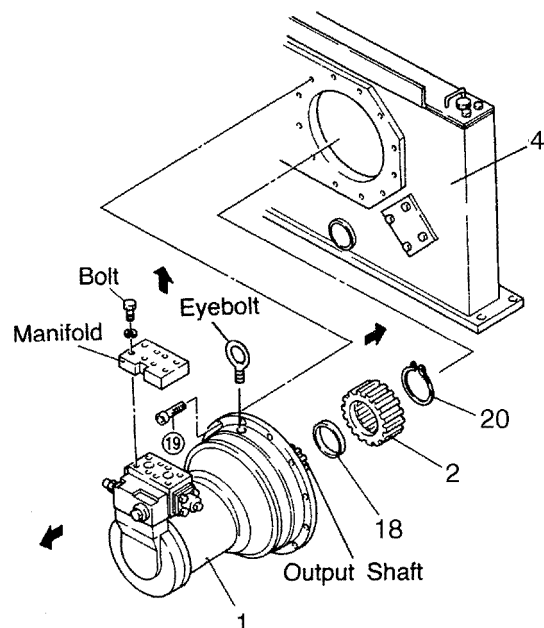
- 1) Attach a sling to the motor 1, and support the motor with the sling and a hoist.
- 2) Remove bolts 19 and the motor assembly.

Motor assembly mass: 304 kg (670.2 lb)

- 3) Place a wooden block in a desired place, and lower the motor onto the block.
- 4) Remove snap ring 20, pinion 2, and spacer 18 from the motor output shaft.
- 5) Remove the bolts and remove the manifold from motor 1.

CAUTION

Do Not Damage The Motor 1 Output Shaft Or Pinion 2 Spline.



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