Section-0 General

Section-1 Upper Mechanism

Section-2 Lower Mechanism

Section-3 Control System

Section-4 Hydraulic System

Section-5 Hydraulic Unit

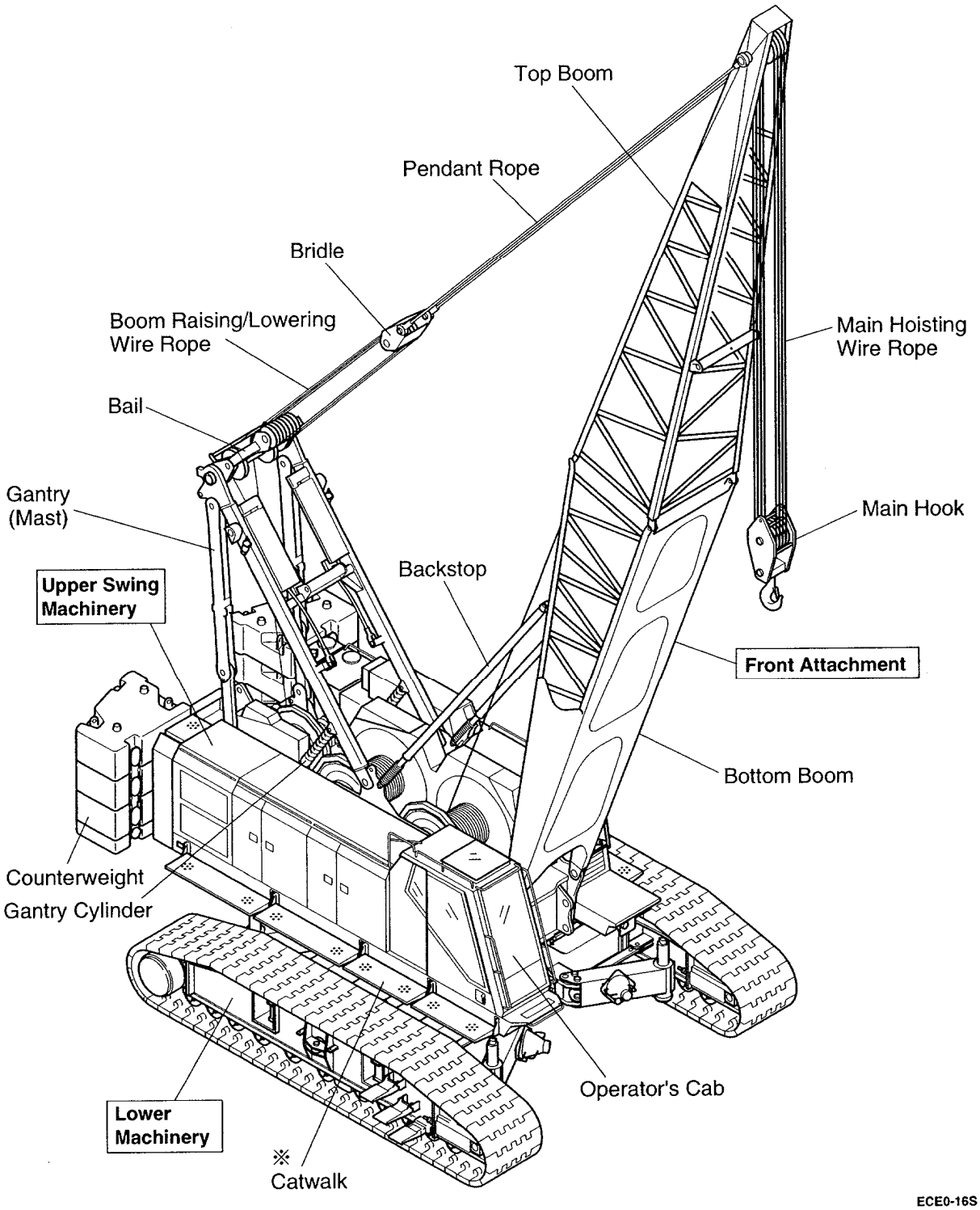
Section-6 Gantry

Section-7 Crane attachment

Section-13 Electrical System

Section-14 Tightening Torque Table

1 Crane Main Body External View And Names

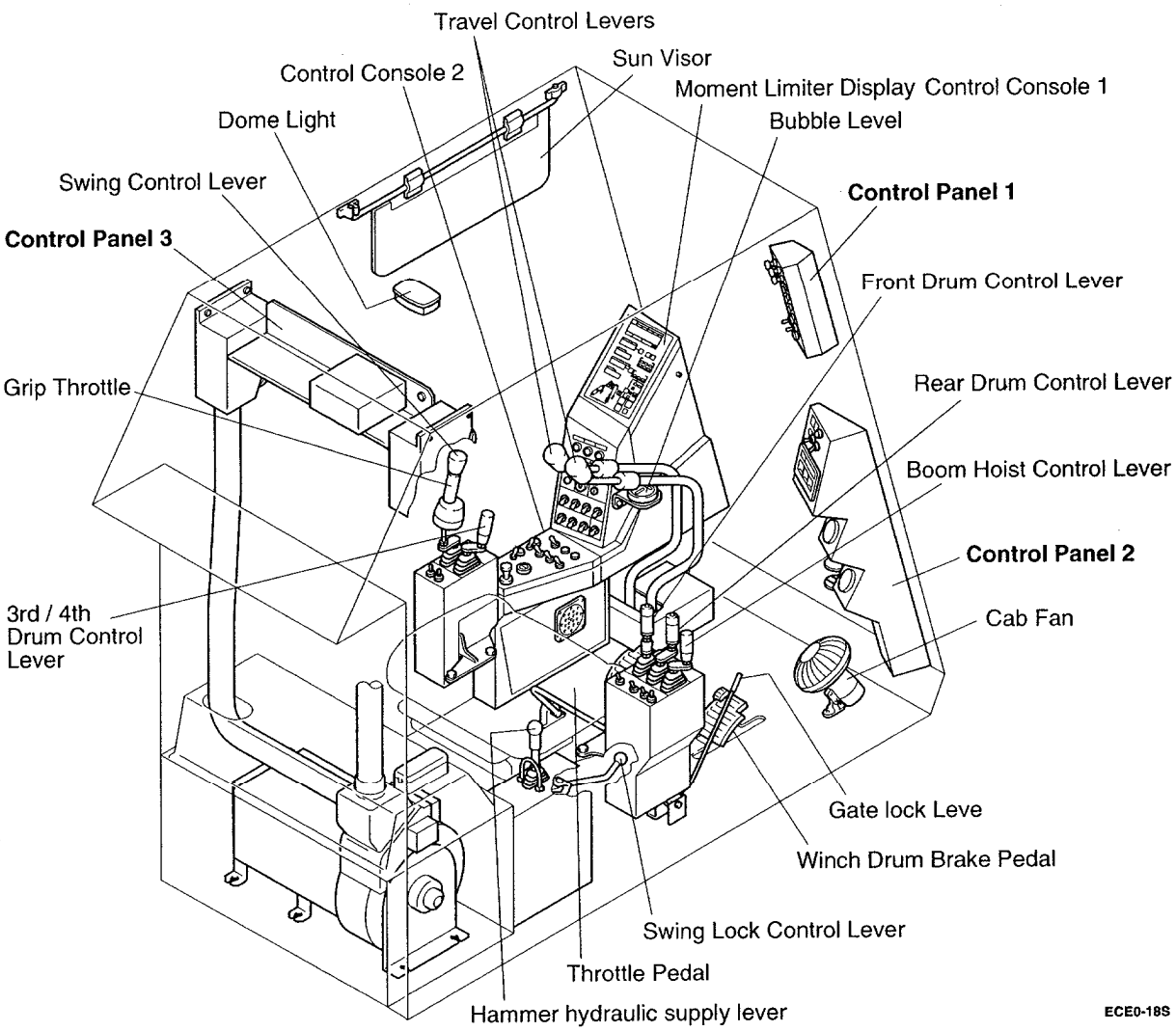


※ : Indicates options.

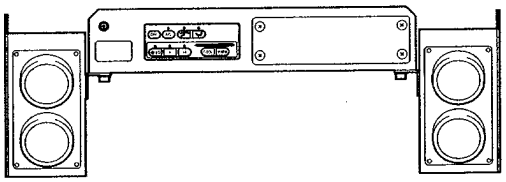
- For hydraulic equipment layout, refer to ES05-01-00--in this manual.
- For electric equipment layout, refer to ES13-10-00--in this manual.

2 Upper Machinery

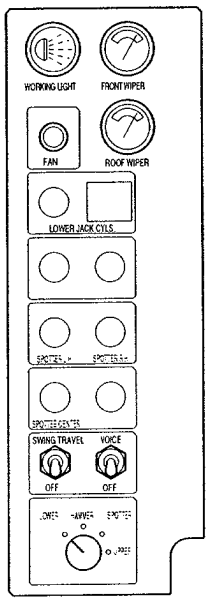
2.1 Operating Equipment Inside Operator's Cab



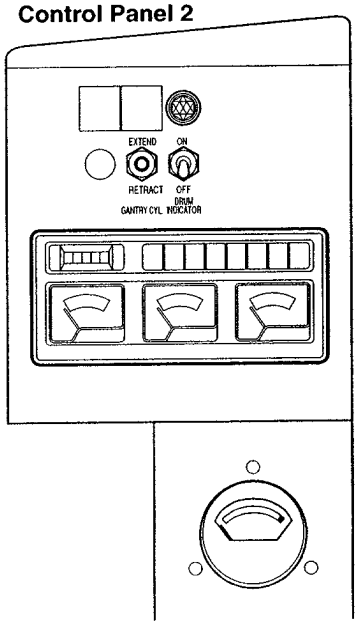
Control Panel 3



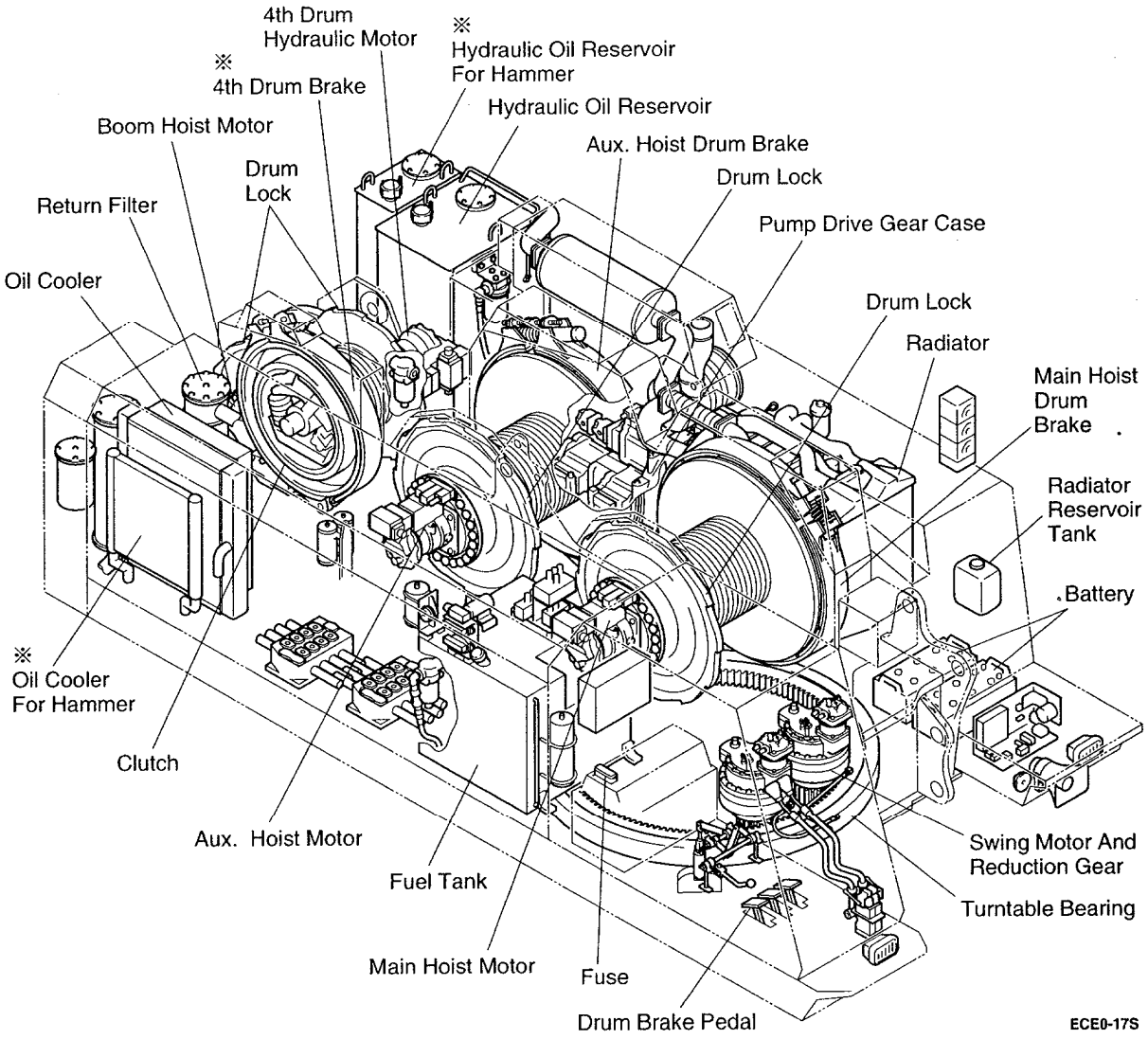
Control Panel 1



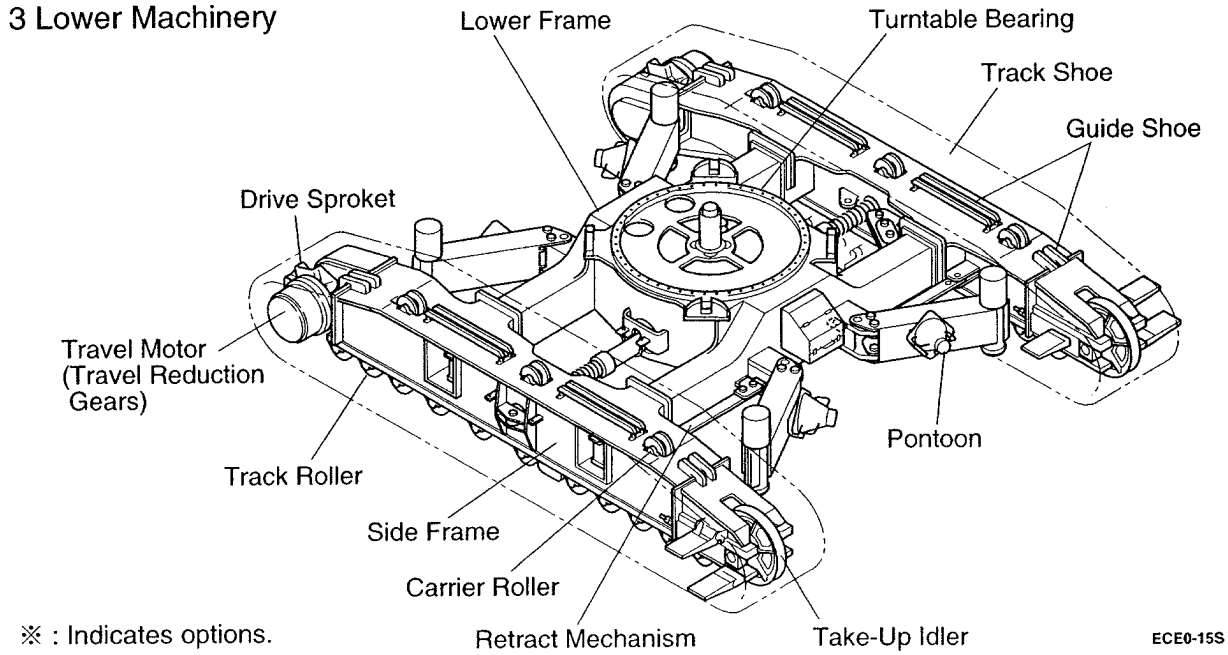
Control Panel 2



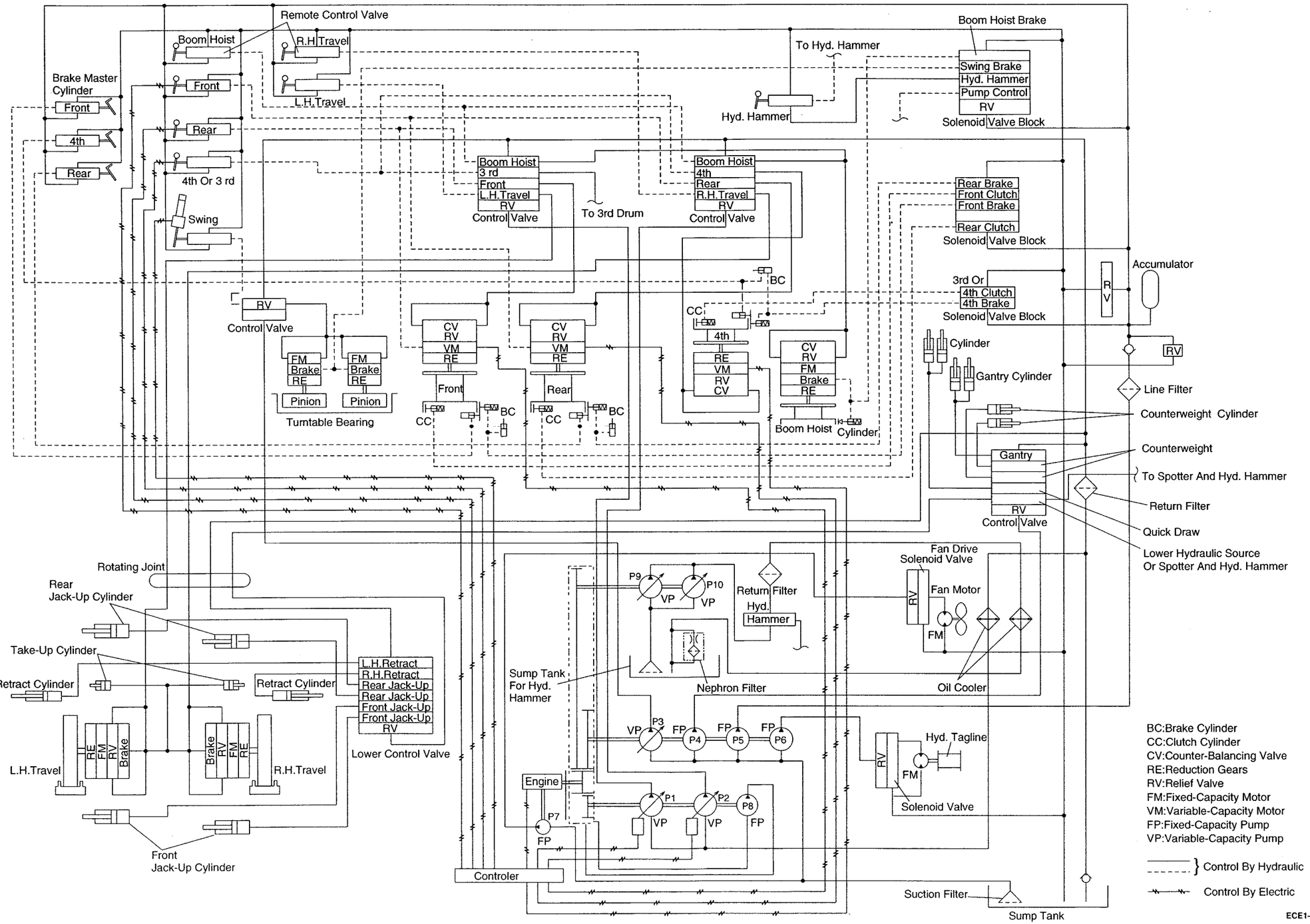
2.2 General Equipment Of Upper Machinery



3 Lower Machinery



Power from the engine is separated by the power divider (pump splitter) to drive hydraulic pumps. The rotating energy of engine power is also converted into fluid energy (the flow of high pressure hydraulic oil) which is directed by the control valves, through hydraulic lines, to various actuators.

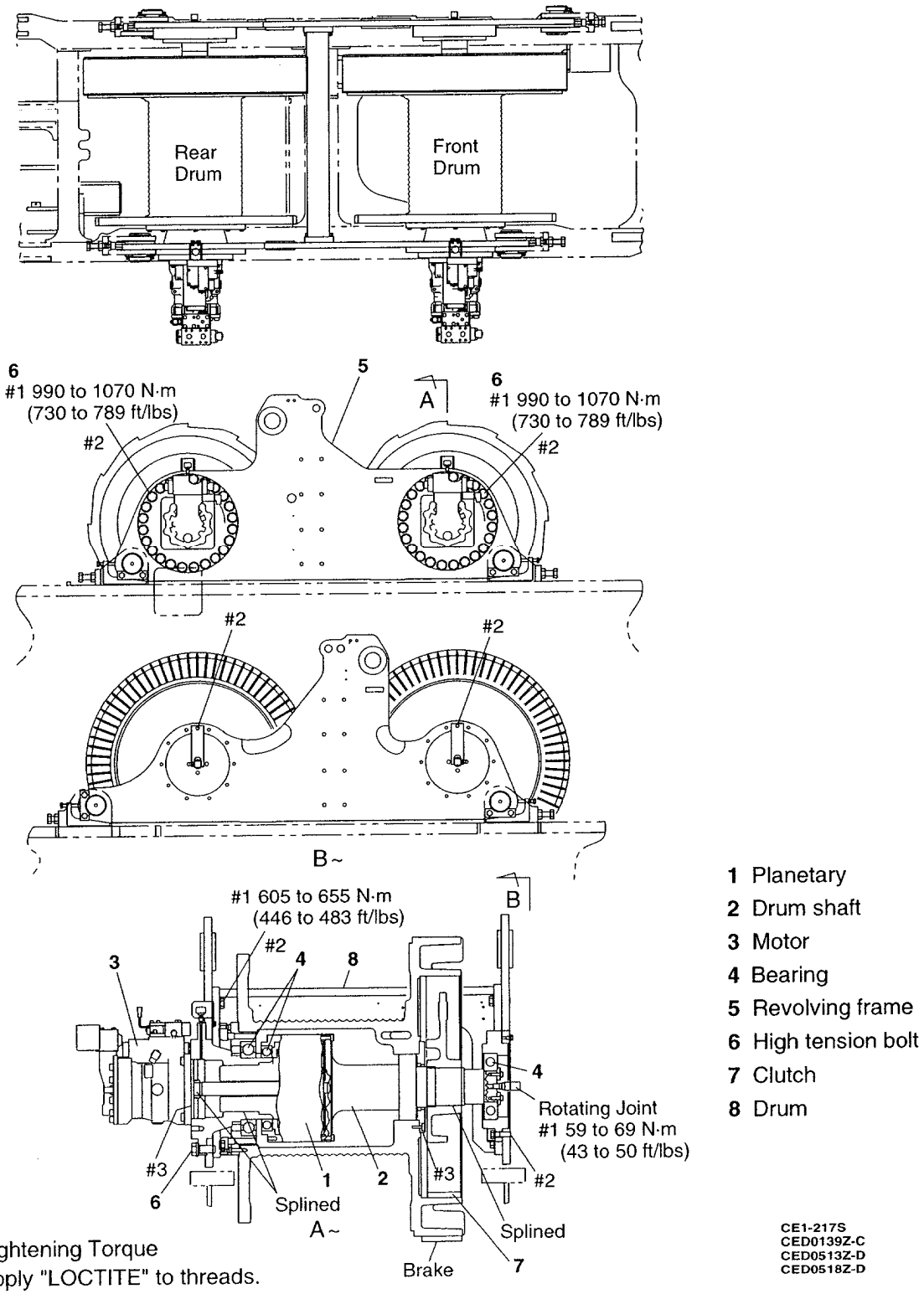


1 Structure And Outline

Power of the hydraulic motor is reduced at the planetary **(1)** and transmitted to the drum shaft **(2)**. The motor **(3)** and drum shaft are supported by the revolving frame **(5)** and through the bearings **(4)**. These are clamped on the revolving frame with high tension bolts **(6)**.

The drum shaft mainly consists of a planetary, drum shaft, clutch **(7)** and drum **(8)**. The clutch assembly is splined to the drum shaft. The drum is designed to rotate freely on the drum shaft with bearings.

Lubrication is stored in the planetary, providing an oil bath type lubrication system.



1 Planetary
2 Drum shaft
3 Motor
4 Bearing
5 Revolving frame
6 High tension bolt
7 Clutch
8 Drum

#1 : Tightening Torque
#2 : Apply "LOCTITE" to threads.
#3 : Surface Of Coating Liquid Packing.

CE1-217S
CED0139Z-C
CED0513Z-D
CED0518Z-D

2 Winch With Brake

The front and rear drums are driven by the newly developed variable-displacement hydraulic motor, and controlled through the use of planetary and clutch.

These two winches work independently of each other: each has a dedicated set consisting of a pump, motor and drum. They provide any type of combined control.

The winch has a clutch on the side of the drum to control its winding power effectively.

It also has a brake on the side of the drum, for improved radiation efficiency and durability.

The band type clutch is hydraulically released.

The clutch and brake can either be automatically or manually controlled: see the table below for available operation modes.

The band brake can be selected from two types : automatic brake and foot brake.

The foot brake is equipped with hydraulic assistance that enables slight foot pressure to generate great breaking force.

Automatic brake and free-fall functions

This unit possesses two operating styles. One is safety brake function and the other is free fall function.

Automatic brake :

The automatic brake function constantly activates the clutch and the drum shaft and drum are connected.

When the control lever is moved either to hoist or lower, the brake is disengaged to rotate the drum.

Foot brake :

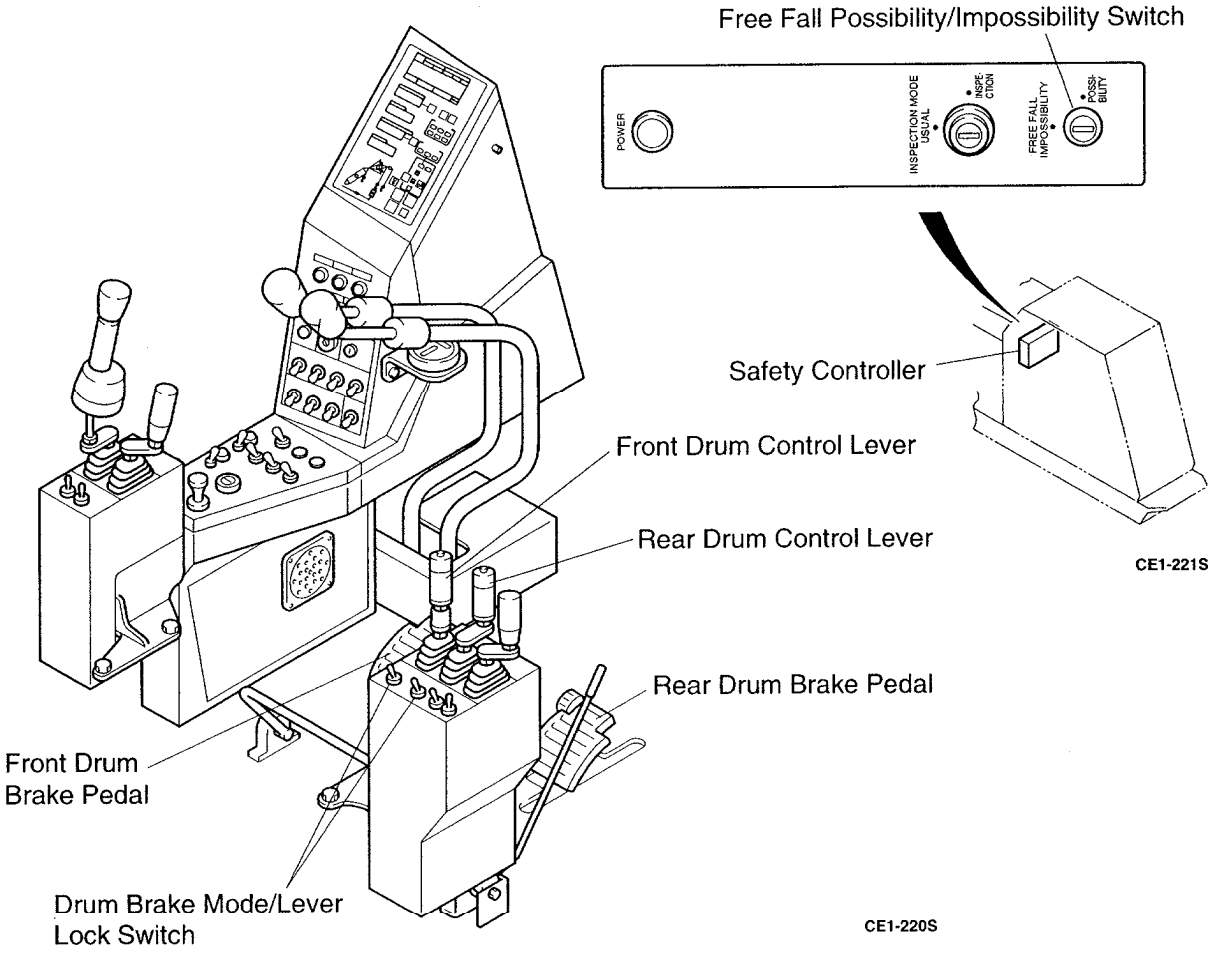
In the case of operation under free fall function, the automatic brake is disengaged at all time, and the control lever is moved either to hoist or lower will activate the clutch to connect the drum shaft and drum. Thus the drum is rotated.

Once the control lever is returned to the neutral position, the clutch is disengaged to free the drum. Then the braking operation by the brake pedal is required.

- Refer to the operator's manual for operation procedures.

Clutch and brake action

Action \ Mode Selection		Automatic brake	Free-fall
Brake	Front Drum	Released during lever operations	Pedal actuation
	Rear Drum	Ditto	Ditto
Clutch	Front Drum	Constant engagement	Released during lever neutral position
	Rear Drum	Ditto	Ditto



3 Inspection And Adjustment

Hydraulic motor, Planetary	} Check for oil leakage.
All moving portions	Listen for any unusual noises and smell with load.
Planetary, Gear, Drum	Check for excessive wear, cracks and damage of teeth.
Planetary	Check lubricant oil level. With the check plug removed, the oil should be to the level of the check plug hole. If below that level, add oil.
Mounting portions	Check for looseness and missing parts. If loosened or missing, replace and/or retighten with specified torque as required.

- After inspecting the above, disassemble or repair, as necessary.

4 Front And Rear Winch Drum Lubrication

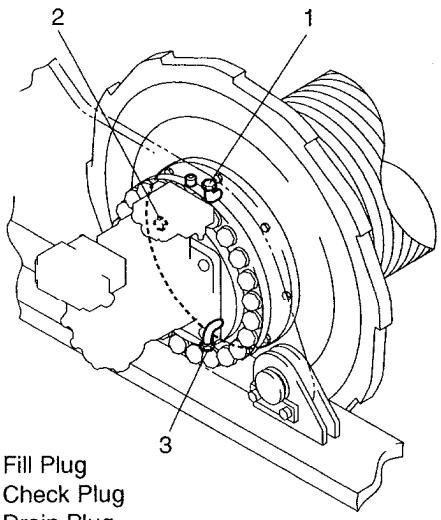
Check the oil level in the planetary after every 250 hours of operation. The oil, in a new or rebuilt planetary, should be changed after the initial 200 hours of operation. Thereafter, change the oil with each 1000 hours of operation or seasonally, whichever occurs first.

4.1 Winch Drum Planetary Oil Level Check

1. Park the crane on a firm level surface.
2. Position the oil fill plug at the top and upper directly over the front or rear of the crawler, engage the travel swing lock, and shutdown the engine.
3. Thoroughly clean the exterior surface of the planetary around the check and fill plugs to prevent contamination from entering the unit.
4. Remove the check and fill plugs.
5. Add oil until it begins to flow from the check plug hole.

Note: For proper oils, refer to the operator's manual.

6. Clean and install the check and fill plugs.



1. Fill Plug
2. Check Plug
3. Drain Plug

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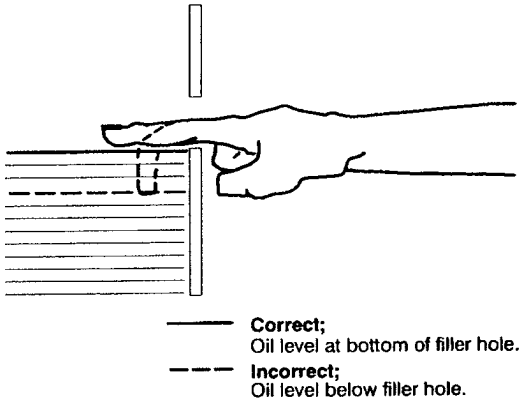
Front And Rear Winch Drum Planetary

4.2 Winch Drum Planetary Oil Change

1. Park the crane on a firm level surface.
2. Cycle the winch for several minutes, without a load to agitate and warm the oil within the planetary.
3. Position the oil fill plug at the top and upper directly over the front or rear of the crawler, engage the travel swing lock and shutdown the engine.
4. Thoroughly clean the exterior surface of the planetary around the check, fill, and drain plugs to prevent contamination from entering the unit.
5. Remove the check, fill, and drain plugs and allow the oil to drain into a suitable container.
6. After the oil has thoroughly drained, clean and install the drain plug.
7. Fill the unit with oil through the fill hole, until it begins to flow from the check plug hole.

Note: For proper oils, refer to the operator's manual.

8. Clean and install the check and fill plugs. Properly dispose of the used oil.



Correct;
Oil level at bottom of filler hole.

Incorrect;
Oil level below filler hole.

Note: Oil level close enough to the hole to be seen or touched is not sufficient. It must be level with the bottom of the hole.

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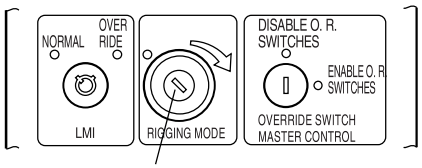
Checking The Oil Level

1 Disassembly

1.1 Removing the winch plate assembly

1) Put the boom tip on the blocking.
   •Turn the key switch to "Rigging Mode".



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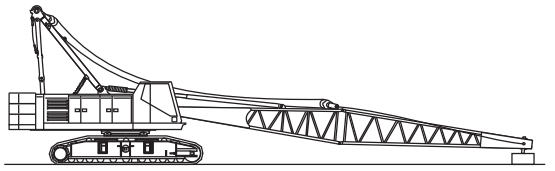
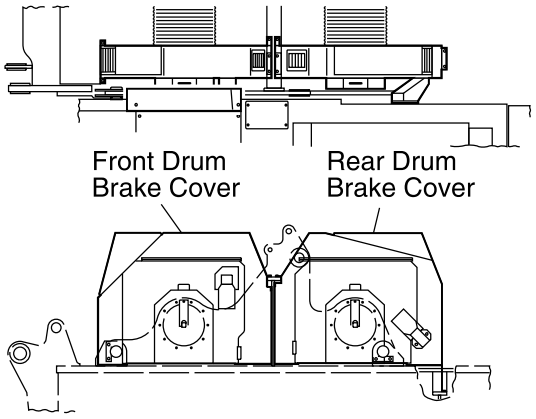
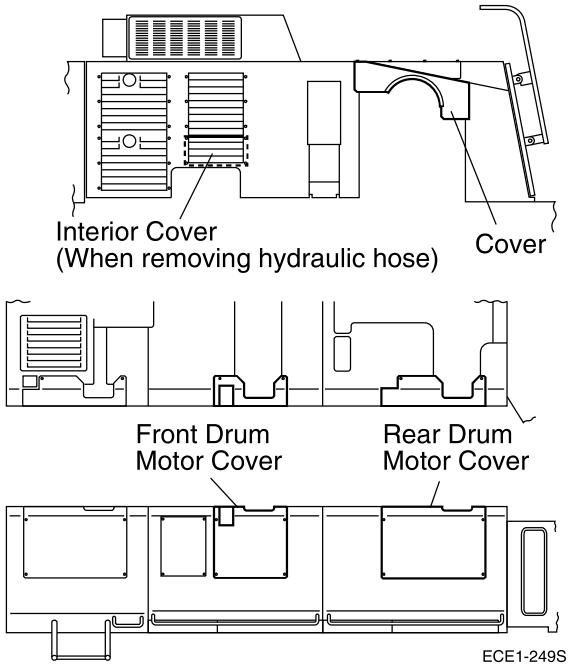

ECE1-248S

2) Remove the wire rope of front and rear drum.

3) Remove the covers.
   (1) Remove the brake cover of front and rear drum.
   (2) Remove the motor cover of the right-hand house.
   (3) Remove the interior cover of the left-hand house.





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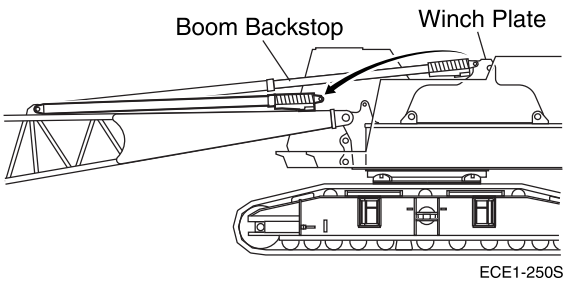
4) Remove the boom backstop from the winch plate.
   •Disconnect the connector of the boom back-stop limit.



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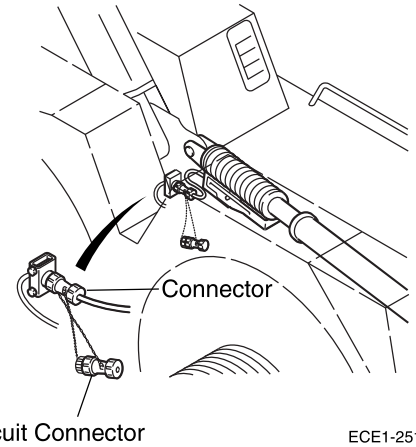

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