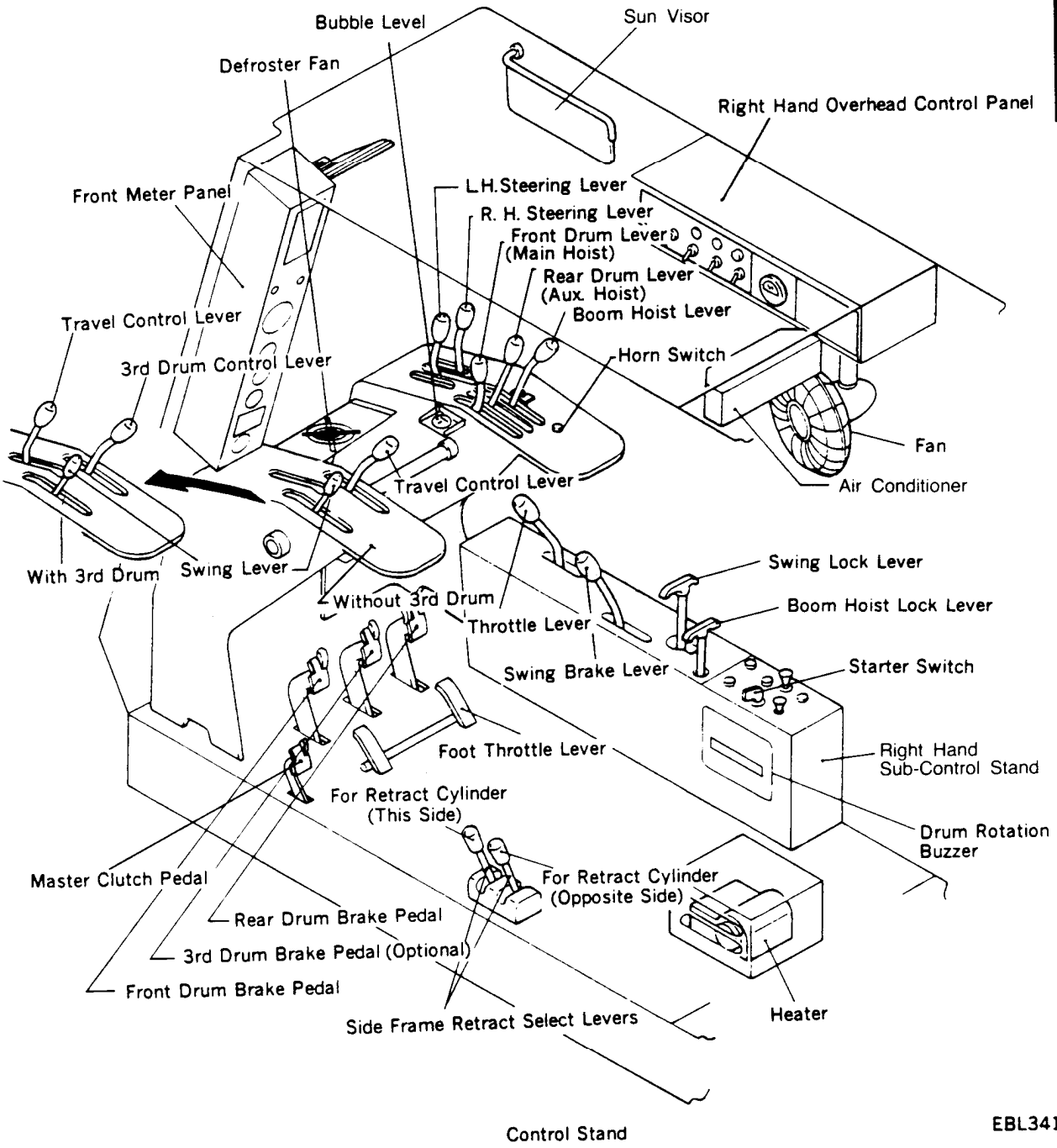
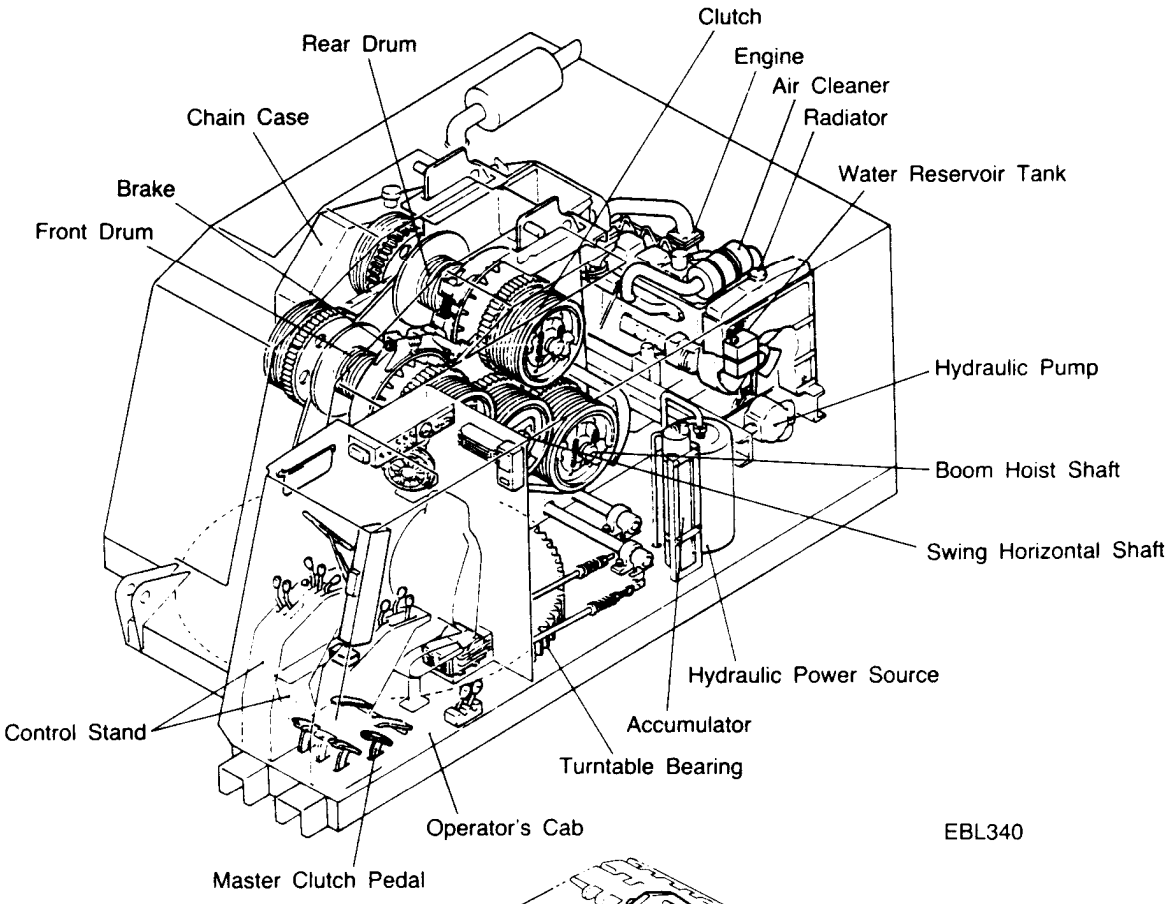
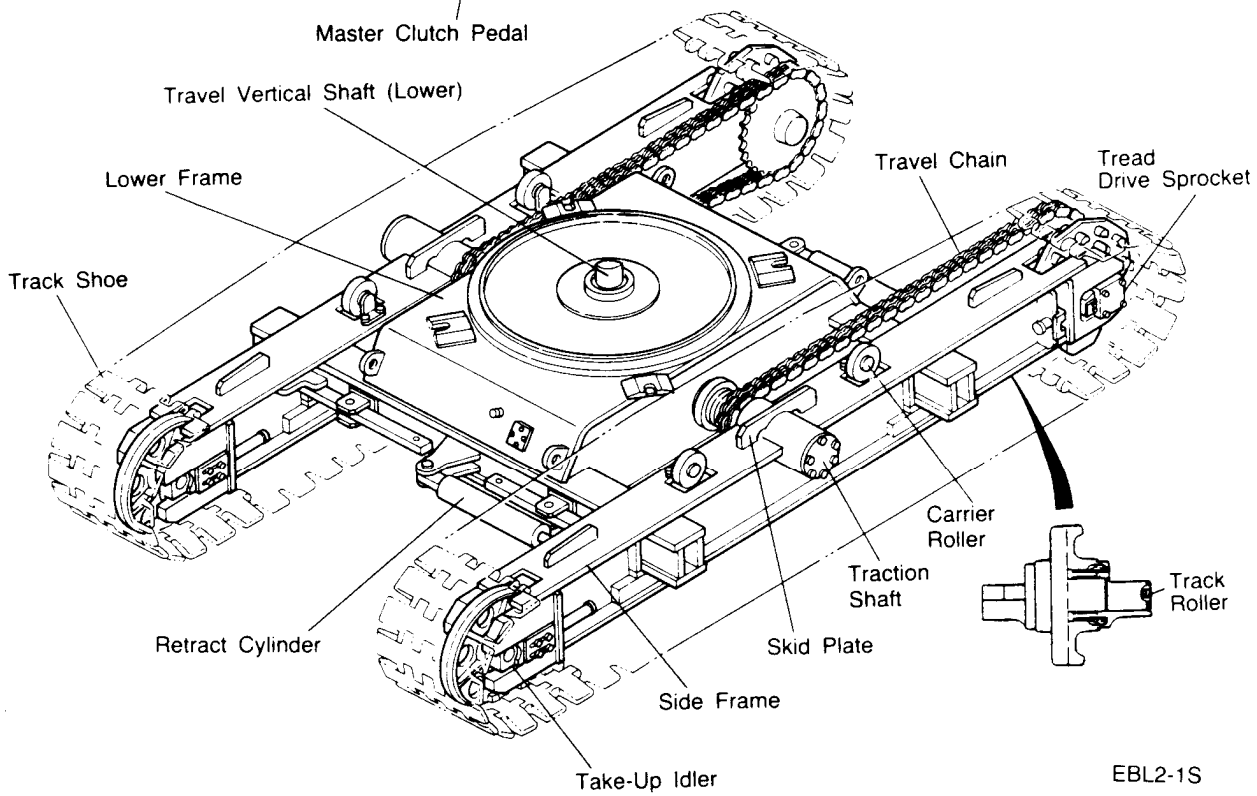
1 Components In Operator's Cab



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

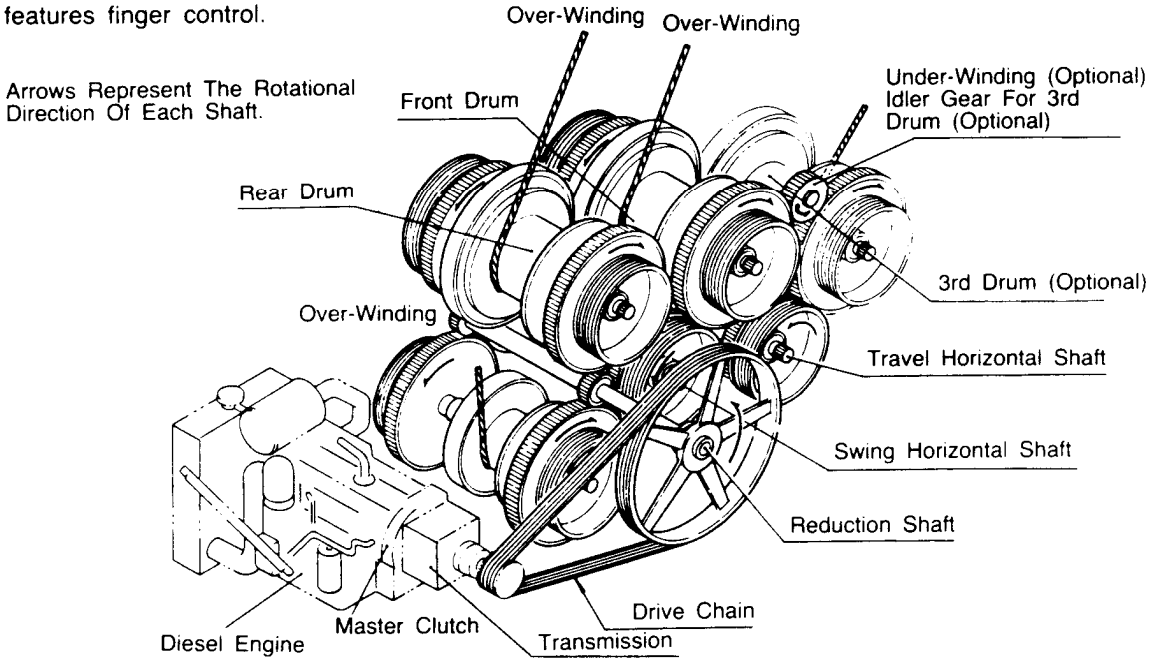
2 Upper Machinery And Lower Machinery



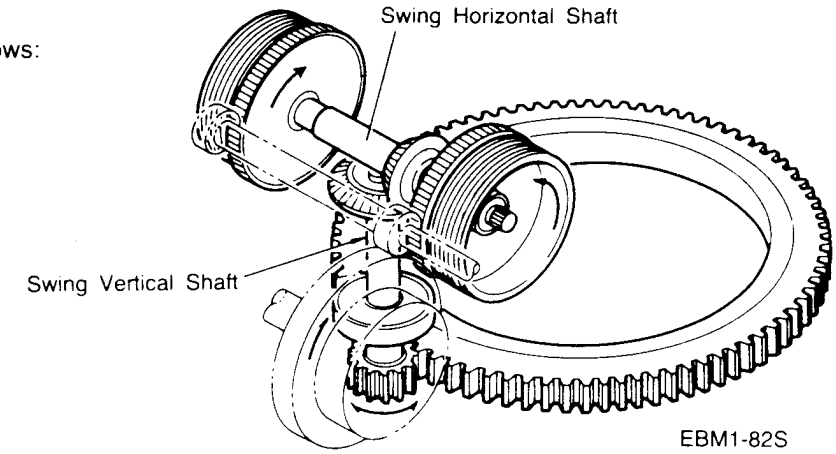


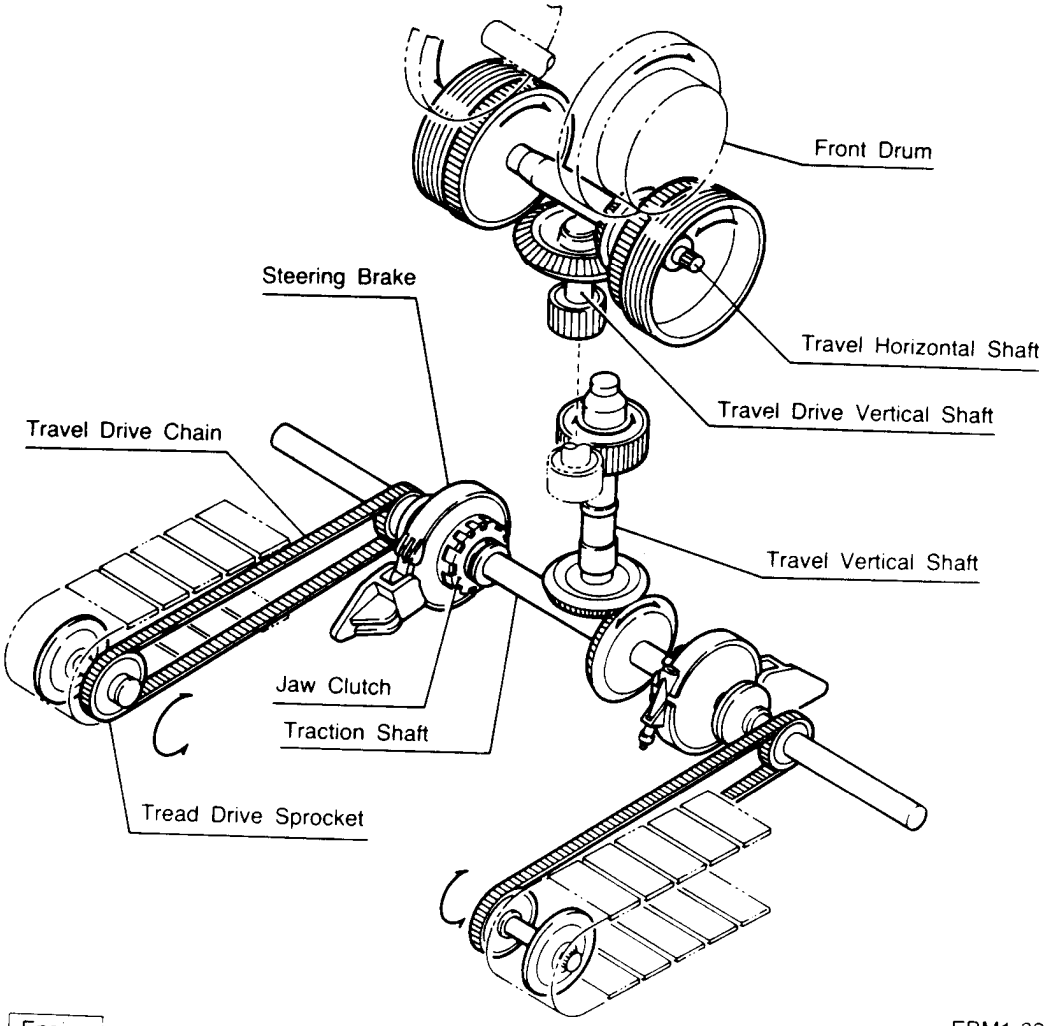
The power torque generated at the diesel engine is transmitted to various mechanisms for hoist, boom hoist, swing, travel, etc. The power torque is transmitted to the various mechanisms through the master clutch in the system as illustrated.

The power to the working devices is turned on and off by a hydraulic "Speed-O-Matic" system which features finger control.

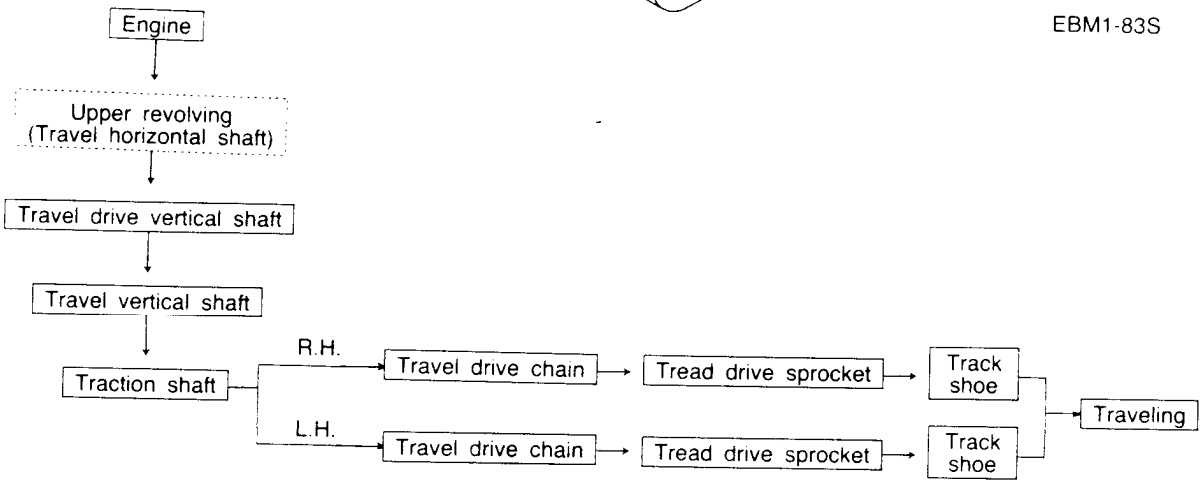


The power is transmitted as follows:




Front Drum
Steering Brake
Travel Horizontal Shaft
Travel Drive Vertical Shaft
Travel Drive Chain
Travel Vertical Shaft
Jaw Clutch
Traction Shaft
Tread Drive Sprocket

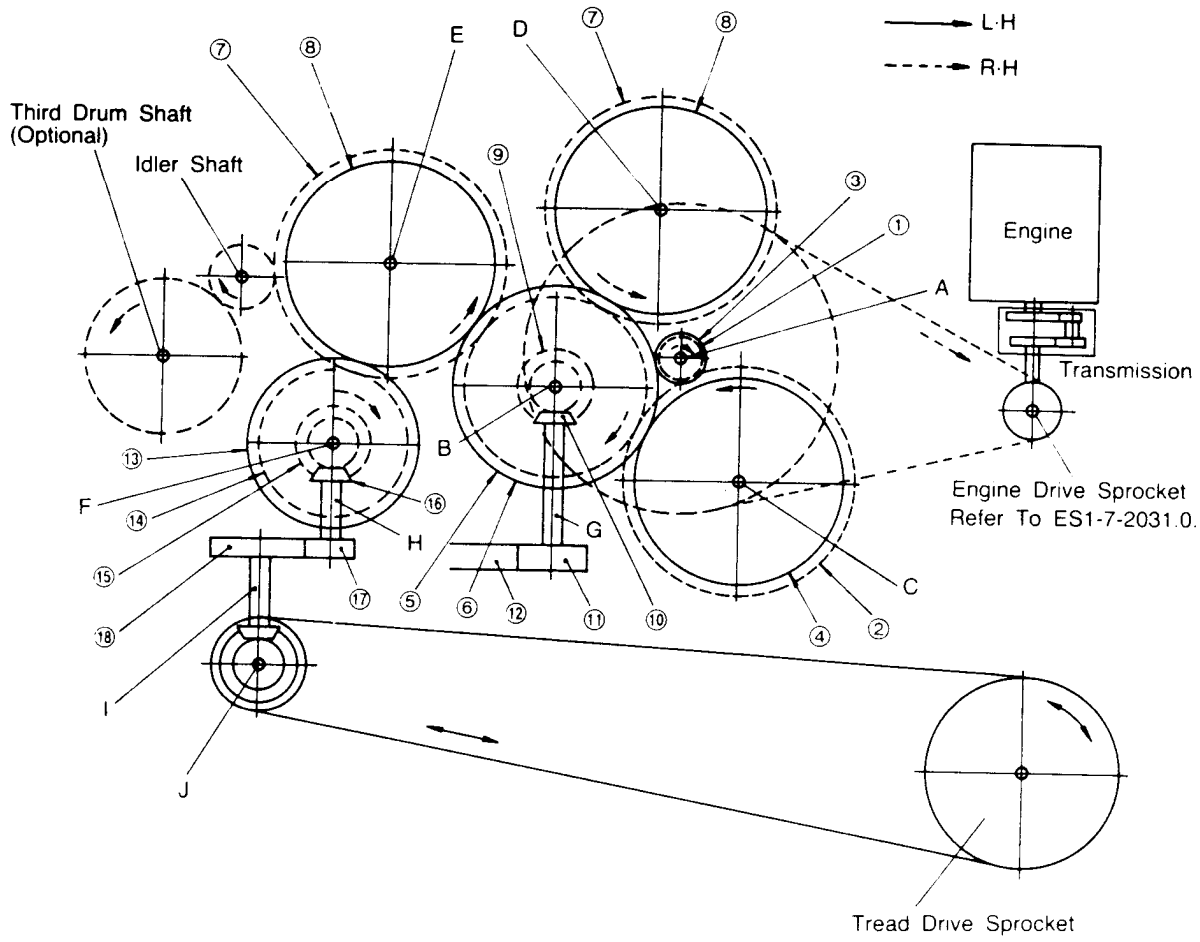
EBM1-83S

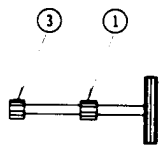

Engine
Upper revolving (Travel horizontal shaft)
Travel drive vertical shaft
Travel vertical shaft
Traction shaft
R.H.
L.H.
Travel drive chain
Travel drive chain
Tread drive sprocket
Tread drive sprocket
Track shoe
Track shoe
Traveling

Unit:inch (mm)

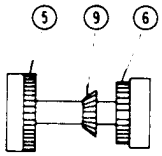
Item	Part Name	Number Of Teeth	*1	Allowable Back-Lash	Treatment
1	Pinion	3	2.468" (62.683)	.063" (1.60)	Replacement
2	Spur gear	11	10.085" (256.163)		
3	Pinion	3	2.473" (62.807)	.065" (1.66)	Replacement
5	Spur gear	10	9.112" (231.438)		
5	Spur gear	10	9.112" (231.438)	.085" (2.17)	Replacement
4	Spur gear	10	9.112" (231.438)		
2	Spur gear	11	10.085" (256.163)	.085" (2.17)	Replacement
6	Spur gear	9	8.142" (206.812)		
6	Spur gear	9	8.142" (206.812)	.085" (2.17)	Replacement
7	Spur gear	10	8.819" (224.006)		
5	Spur gear	10	9.112" (231.438)	.085" (2.17)	Replacement
8	Spur gear	9	7.971" (202.460)		
9	Bevel gear	3	4.992" (126.802)	.121" (3.07)	Replacement
10	Bevel gear	4	7.004" (177.912)		
11	Spur gear	3	3.704" (94.093)	.096" (2.45)	Replacement
12	Ball race	16	22.384" (568.552)		
8	Spur gear	10	9.112" (231.438)	.085" (2.17)	Replacement
13	Spur gear	8	7.199" (182.859)		
7	Spur gear	11	10.081" (256.063)	.085" (2.17)	Replacement
14	Spur gear	7	6.230" (158.234)		
15	Bevel gear	3	4.374" (111.087)	.088" (2.23)	Replacement
16	Bevel gear	3	4.280" (108.723)		
17	Spur gear	2	1.784" (45.323)	.075" (1.91)	Replacement
18	Spur gear	4	4.152" (105.456)		

*1 Allowable Displacement Over A Given Number Of Teeth.

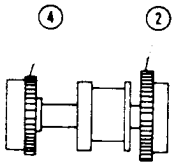




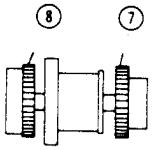
A Reduction Shaft



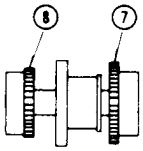
B Swing Horizontal Shaft



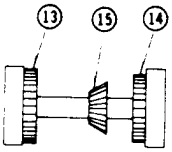
C Boom Hoist Shaft



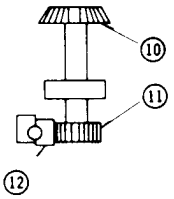
D Rear Drum Shaft



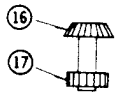
E Front Drum Shaft



F Travel Horizontal Shaft

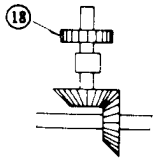


G Swing Vertical Shaft

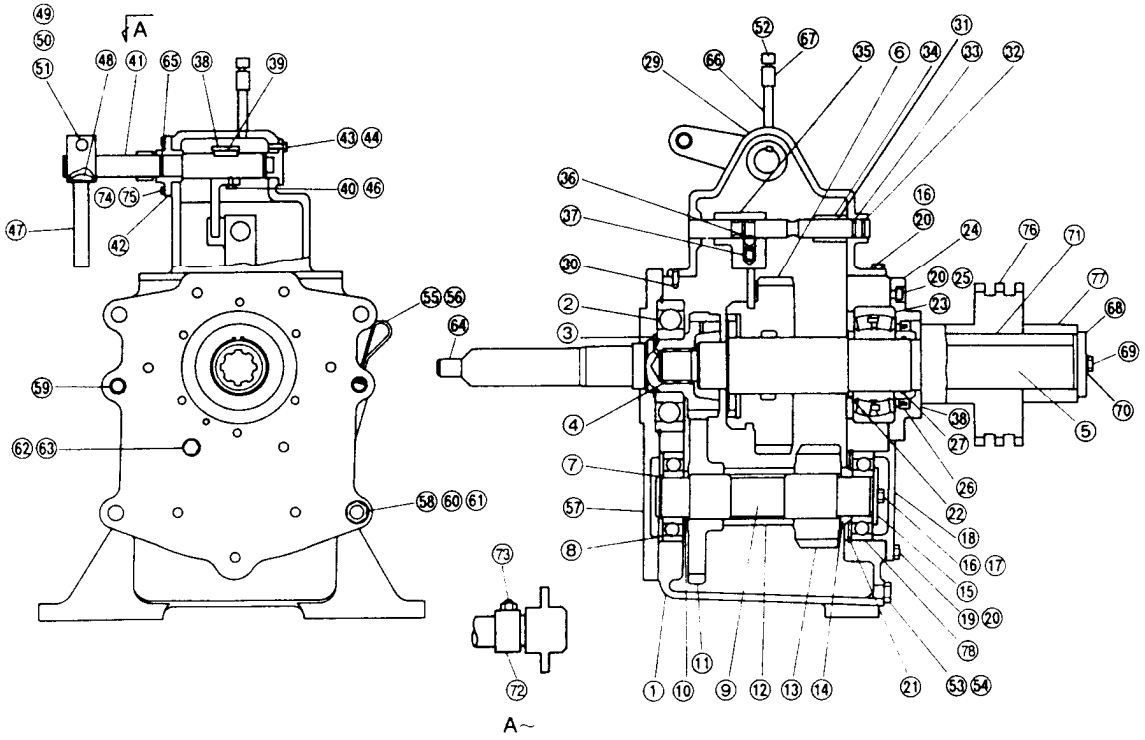


H Travel Drive Shaft

I Travel Shaft



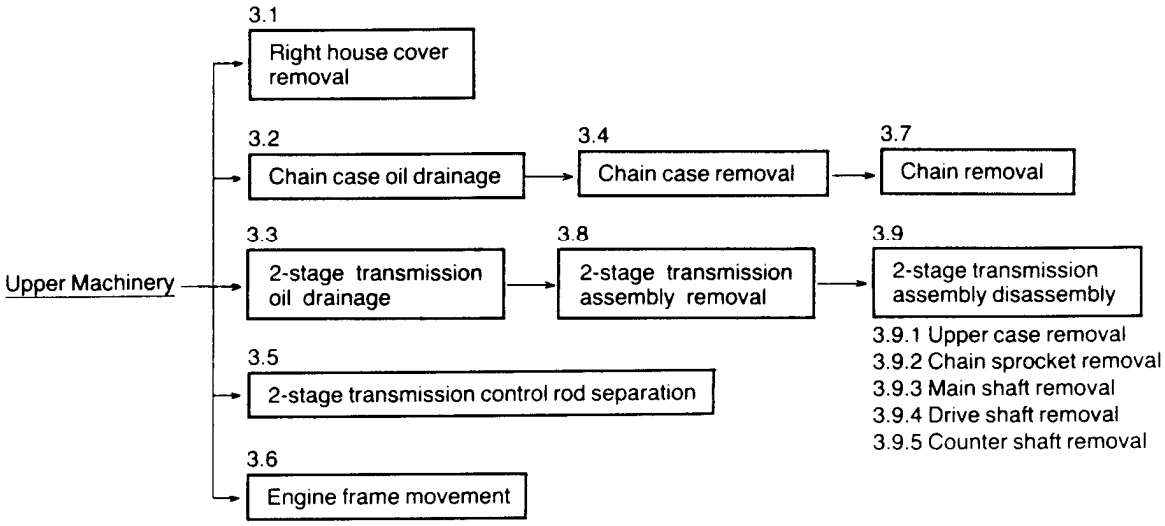
J Traction Shaft
Refer To
ES2-1-2003.0



BLH2529Z-D BLI-345S

① Mission Case	㉑ Snap Ring	㊶ Shaft	㊶ Spring Washer
② Spacer	㉒ Spacer	㊷ Retainer	㊷ Bolt
③ Snap Ring	㉓ Bearing	㊸ Bolt	㊸ Spring Washer
④ Bearing	㉔ Retainer	㊹ Spring Washer	㊹ Drive Shaft
⑤ Main Shaft	㉕ Bolt	㊺ Bearing Holder	㊺ O-Ring
⑥ Spur Gear	㉖ Oil Seal	㊻ Wire	㊻ Pipe
⑦ Snap Ring	㉗ Spacer	㊼ Lever	㊼ Socket
⑧ Bearing	㉘ O-Ring	㊽ Key	㊽ Plate
⑨ Counter Shaft	㉙ Mission Case	㊾ Bolt	㊾ Bolt
⑩ Spacer	㉚ Pin	㊿ Nut	㊿ Washer
⑪ Spur Gear	㉛ Shift Rod	(51) Spring Washer	(71) Key
⑫ Spacer	㉜ Pin	(52) Air Breather	(72) Color
⑬ Spur Gear	㉝ O-Ring	(53) Plug	(73) Nut
⑭ Spacer	㉞ Spacer	(54) Gasket	(74) Bolt
⑮ End Plate	㉟ Shift Arm	(55) Oil Gauge	(75) Spring Washer
⑯ Bolt	㊱ Ball	(56) O-Ring	(76) Sprocket
⑰ Plate	㊲ Spring	(57) Flange	(77) Spacer
⑱ Retainer	㊳ Lever	(58) Bolt	(78) Bearing
⑲ Bolt	㊴ Key	(59) Bolt	
⑳ Spring Washer	㊵ Bolt	(60) Nut	

1 Disassembly Procedure



2 Preparation
1) Run the machine to stir the oil.
2) Move the machine to level and stable ground, and lower the attachment to the ground.
3) Engage the swing lock, and park the machine. Stop the engine.

3 Disassembly

3.1 Right house cover removal
Remove the right house cover.

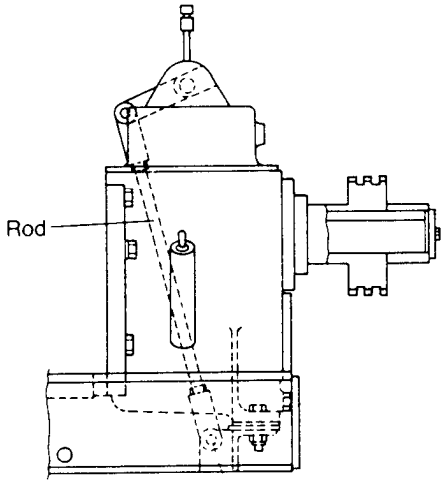
3.2 Chain case oil drainage
(Refer to ES1-8-50○○ in this manual.)

3.3 2-stage transmission oil drainage
1) Remove the plug ㊸, and drain the oil.
2) After drainage, attach the plug ㊸.

Oil capacity: 1.7gal. (6.4lit.)

3.4 Chain case removal
(Refer to ES1-8-60○○ in this manual.)

3.5 2-stage transmission control rod separation
1) Remove the cotter pin.
2) Pull out the pin, and separate the rod.



Cotter Pin, Pin

EBL1-346S

3.6 Engine frame movement
(Refer to ES1-8-60○○ in this manual.)

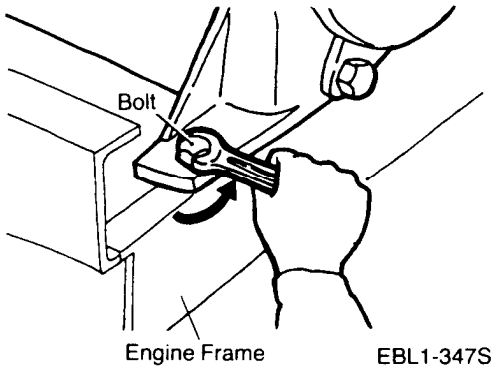
3.7 Chain removal
(Refer to ES1-8-60○○ in this manual.)

3.8 2-stage transmission assembly removal
1) Remove the engine frame fastening bolts.
2) Suspending the 2-stage transmission assembly with a hoist, remove it rightward.

⚠ CAUTION

Take Care To Prevent Damaging The Shaft.

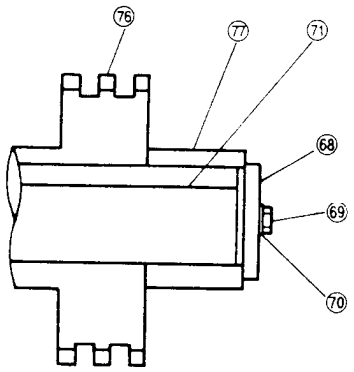
Assembly weight: 254.2lbs. (115.3kg)



EBL1-347S

3.9 2-stage transmission assembly disassembly
3.9.1 Upper case removal
1) Remove the bolts ⑯ and pins ㉚, and remove the mission case ㉙.
2) Remove the pipe ㊻.
3) Remove the bolt ㊾, nut ㊿ and spring washer (51), and remove the lever ㊼ from the shaft ㊶.
4) Bring the round rod into contact, and knock out the shift rod ㉛.
5) Remove the O-ring ㉝ from the shift rod ㉛.
6) Remove the bolts ㊸ and spring washer ㊹, and remove the bearing holder ㊺.
7) Remove the bolt ㊵ and wire ㊻.
8) Remove the bolts ㉔, spring washers ㉕ and retainer ㊷. Slide the shaft ㊶ and remove it from the mission case ㉙.
9) Remove the shaft lever ㊳ as an assembly with the shift arm ㉟.
10) Remove the ball ㊱ and spring ㊲ from the shift arm ㉟.

3.9.2 Chain sprocket removal
1) Remove the bolt ㊾, washer ㊿, and plate ㊽.
2) Remove the spacer ㊼, sprocket ㊻ and key ㊶.



BL1-348S

3.9.3 Main shaft removal
1) Remove the bolts ㉕, spring washers ⑳, and retainer ㉔.
2) Remove the oil seal ㉖, spacer ㉗ and O-ring ㉘.
3) Pull out the main shaft ⑤.
4) Remove the bearing ㉓ and spacer ㉒.
5) Remove the spur gear ⑥.

3.9.4 Drive shaft removal
1) Remove the bolts ⑲, ⑫, ⑮, nut ⑰ and flange ⑰.
2) Pull out the drive shaft ⑭.
3) Remove the snap ring ③ and bearing ②.
4) Remove the bearing ④ from the drive shaft ⑭.

3.9.5 Counter shaft removel
1) Remove the bolts ⑲, and retainer ⑱.
2) Loosen the bolt ⑯ and remove the plate ⑰ and end plate ⑮.
3) Slide the counter shaft ⑨ toward the drive shaft side.
4) Remove the snap ring ⑦, bearing ⑧ and spacer ⑩.
5) Remove the bearing ⑱, snap ring ㉑ and spacer ⑭.
6) Remove the counter shaft ⑨.
7) Remove the spur gears ⑪, ⑬ and spacer ②.

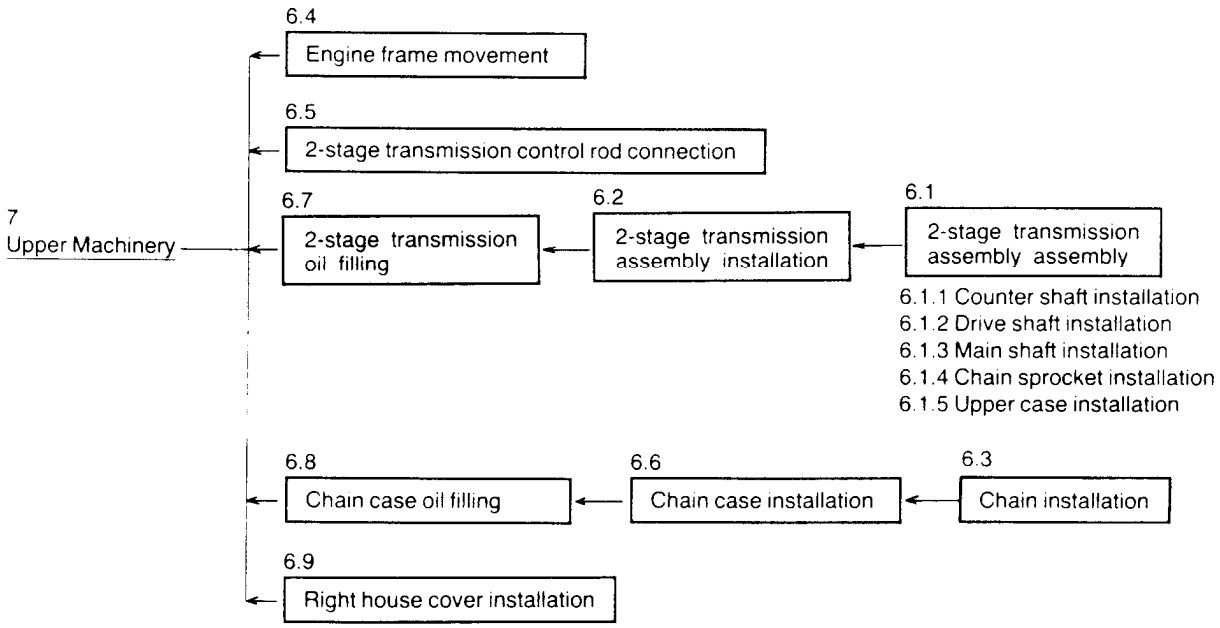
4 Inspection And Parts Replacement

⚠ WARNING

Use Solvent Only In A Well Ventilated Area Away From Open Flame.
Wear Safety Glasses And Protective Clothing. Debris Blown By Compressed Air Can Cause Injury.

1) Wash all disassembled parts and completely dry with compressed air.
2) Check all parts for excessive wear. In case of slight scoring, recondition parts with a fine file or oil stone.
   Replace parts which cannot be repaired.
3) Visually inspect the shaft and spur gear for cracks, deformations, and other abnormalities.
4) Replace the bearing if excessively damaged.
5) Replace all seals with new ones.

5 Reassembly Procedure



6 Reassembly

6.1 2-stage transmission assembly assembly

6.1.1 Counter shaft installation

1) Install the snap ring ㉑ and bearing ㉘.
2) Insert the counter shaft ⑨ from the drive shaft side, and install the spur gear ⑪, spacer ②, spur gear ⑬ and spacer ⑭.
3) Install the specer ⑩, bearing ⑧ and snap ring ⑦.
4) Install the plate ⑰ and end plate ⑮ with bolt ⑯.
5) Install the retainer ⑱ with bolt ⑲.

6.1.2 Drive shaft installation

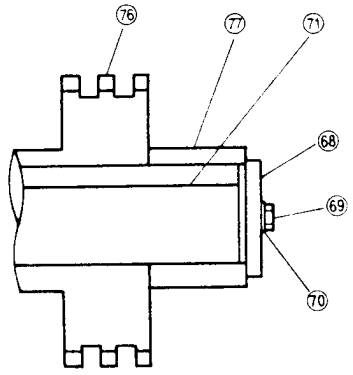
1) Install the bearings ④ and ② to the drive shaft ⑭.
2) Install the snap ring ③.
3) Insert the drive shaft ⑭ into the mission case ①.

6.1.3 Main shaft installation

1) Install the spacer ㉒ and bearing ㉓ to the main shaft ⑤.
2) Position the spur gear ⑥, and insert the main shaft ⑤.
3) Install the O-ring ㉘, spacer ㉗ and oil seal ㉖.
4) Install the retainer ㉔ with the bolts ㉕ and spring washers ⑳.

6.1.4 Chain sprocket installation

1) Install the key ⑦①, sprocket ⑦⑥ and spacer ⑦⑦.
2) Install the plate ⑥⑧ with bolt ⑥⑨ and washer ⑦⓪.



BLI-348S

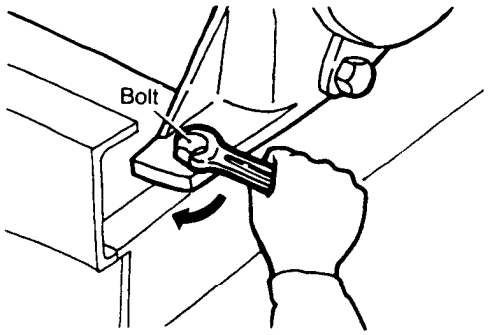
6.1.5 Upper case installation

1) Set up the ball ㊱ and spring ㊲ on the shift arm ㉟.
2) Install the bearing holder ㊺ with bolts ㊸ and spring washers ㊹.
3) Position the shaft lever ㊳ as an assembly with the shift arm ㉟, and pass the retainer ㊷ on the shaft ㊶ for insertion. Fasten them with bolt ㊵ and wire ㊻.
4) Install the O-ring ㉝ to the shift rod ㉛, and insert the assembly into the mission case ㉙.
5) Install the retainer ㊷ with the bolts ⑦④ and spring washers ⑦⑤.
6) Attach the lever ㊼ to the shaft ㊶ with bolt ㊾, nut ㊿ and spring washer ⑤①.
7) Connect the pipe ⑥⑥.
8) Install the mission case ㉙ with bolts ⑯ and pins ㉚.

6.2 2-stage transmission assembly installation
1) Coat adhesive on the mating surfaces between the 2-stage transmission and the engine frame.

   Adhesive: Three bond No. 1102

2) Install the 2-stage transmission on the engine frame.

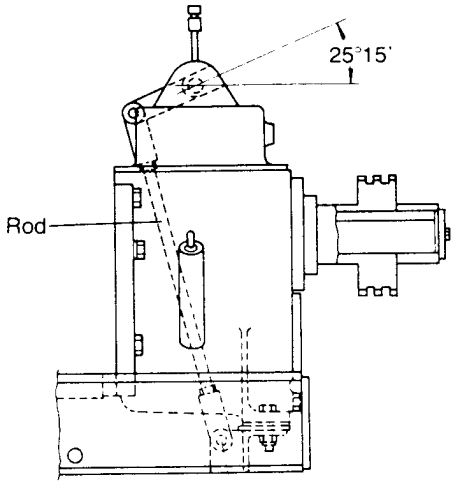


EBLI-349S

6.3 Chain installation
(Refer to ES1-8-60○○ in this manual.)

6.4 Engine frame movement
(Refer to ES1-8-60○○ in this manual.)

6.5 2-stage transmission control rod connection
1) Connect the rod with pin and cotter pin.
2) Adjust the control rod.



Cotter Pin, Pin

EBLI-350S

6.6 Chain case installation
(Refer to ES1-8-50○○ in this manual.)

6.7 2-stage transmission oil filling
Fill oil through the air breather ⑫.

6.8 Chain case oil filling
(Refer to ES1-8-50○○ in this manual.)

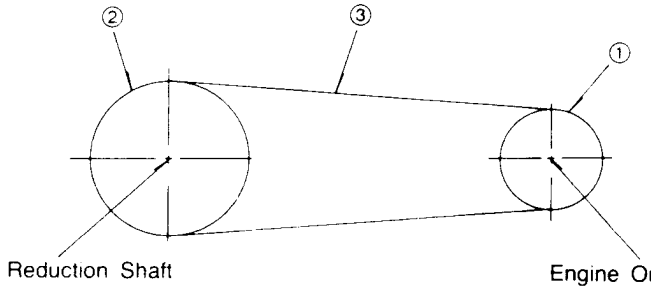
6.9 Right house cover installation
Install the right house cover.

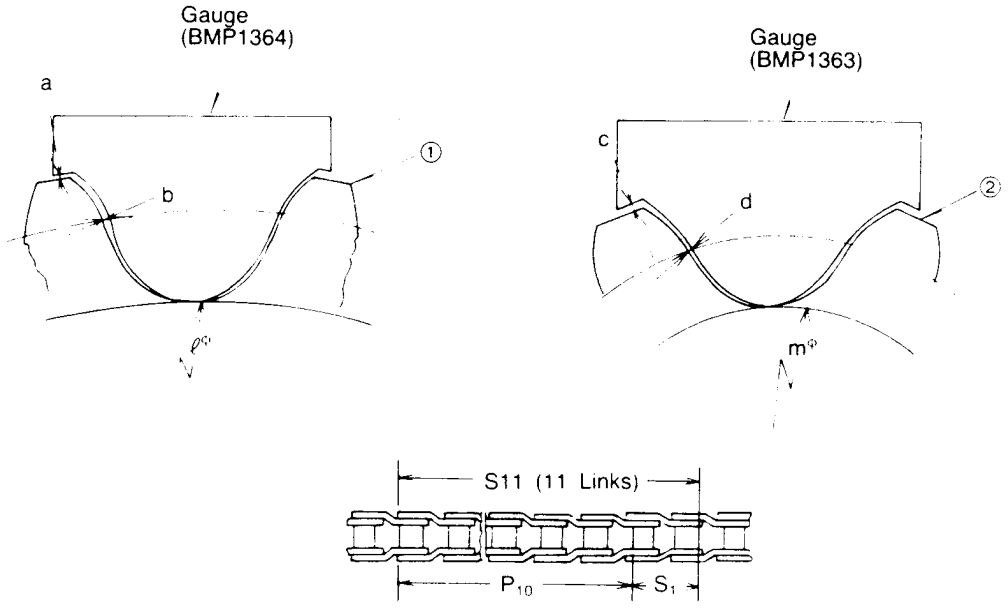
Test operation
1) Start the engine to check each connection for oil leakage and the 2-stage transmission for abnormal operation.
   Repair if any abnormalities are found.

Unit:mm

Item	Part Name	Mark	Nominal Dimension	Allowable Dimension	Treatment · Note
1	Chain sprocket	a	0	.79" (2)	Replacement or welding repair Gauge No. BMP1364
		b	0	.79" (2)	
		ℓ	6.468" (164.29)	6.390" (162.3)	
2	Chain sprocket	c	0	.79" (2)	Replacement or welding repair Gauge No. BMP1363
		d	0	.79" (2)	
		m	37.657" (956.5)	37.520" (953)	
3	Chain	P_{10}*	–	7.614" (193.4)	Replacement

[Att.] $P_{10}^* = S_{11} - S_1$





[Att] Stretch The Chain.