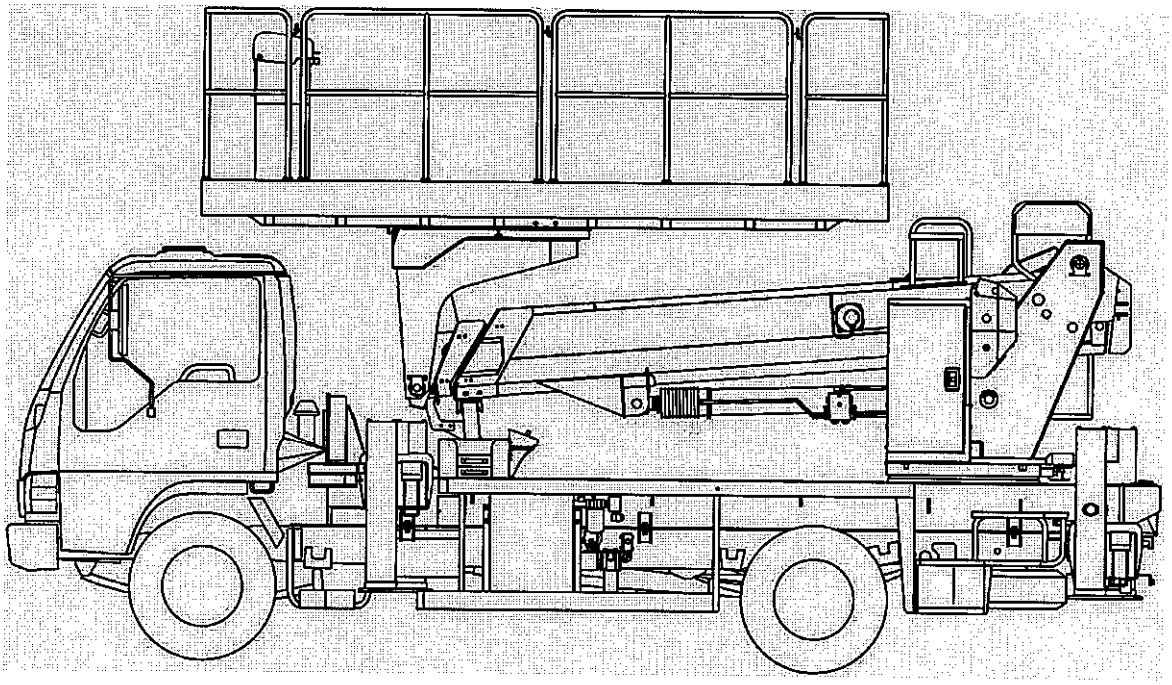
SME-323

SERVICE MANUAL

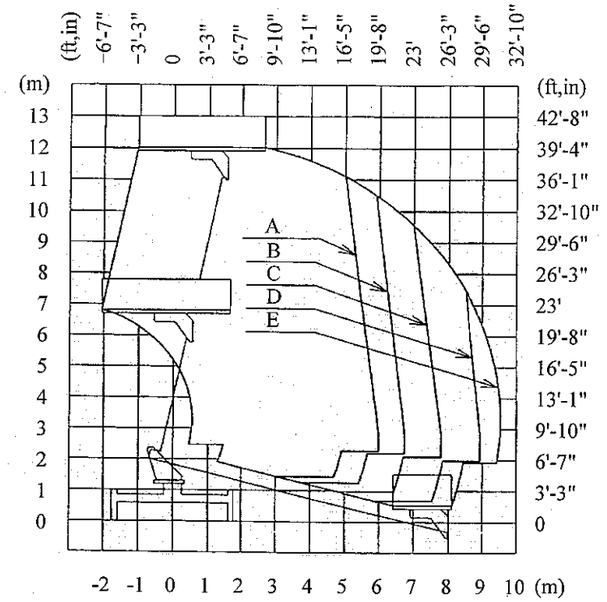
TZ12A / ITZ40A



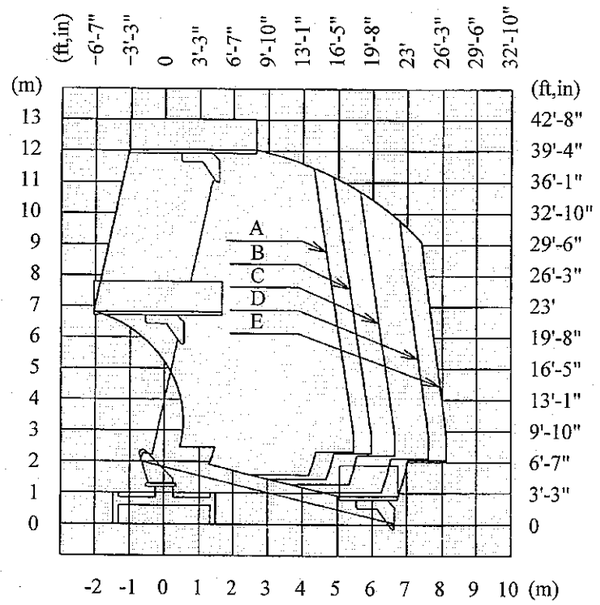
MICHI
CORPORATION
1152, RYOKE, AGEO, SAITAMA, JAPAN.

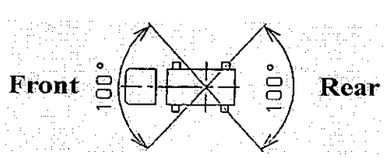
Working range chart

1. When the outrigger extension is MAX (4,100 mm / 13 ft 5 in)

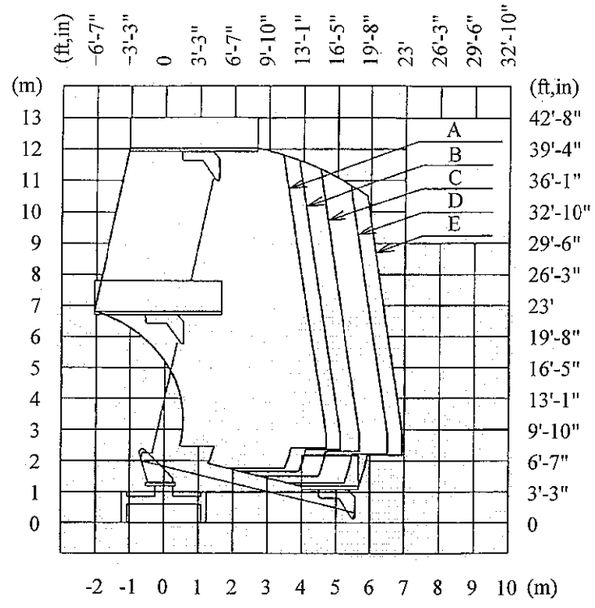


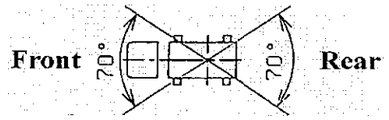
2. When the outrigger extension is MID2 (3,330 mm / 10 ft 11 in)



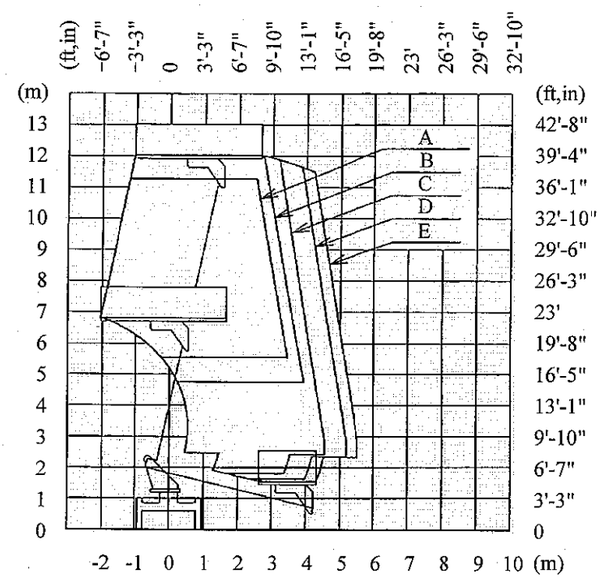


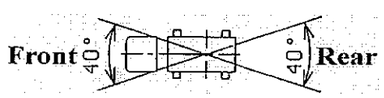
3. When the outrigger extension is MID1 (2,600 mm / 8 ft 6 in)





4. When the outrigger extension is MIN (1,870 mm / 6 ft 2 in)





Working load

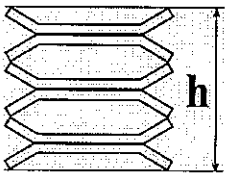
A	--- 1,000 kg	(2,200 lbs)
B	----- 750 kg	(1,650 lbs)
C	----- 500 kg	(1,100 lbs)
D	----- 250 kg	(550 lbs)
E	----- 150 kg	(330 lbs)

NOTE :

1. The deflection of boom is not considered in the working range chart.
2. The working range is calculated, assuming that the machine is set up on firm and level ground.
3. The working range which is obtained with the outrigger extended to MAX is always obtained regardless of the outrigger extension, if the boom is rotated to the front or rear side of the vehicle shown in each figure below the charts.

* Do not twist the wires when tightening the lock nuts.
* When replacing the plate springs, make sure to use the correct collar by following the next instructions.

1. Pile up the 6 plate springs on the level surface, and then measure the overall height (h) of the plate springs.



2. See the table below and measure the heights of the collars to select the correct collar corresponding to the overall height (h) of the 8 plate springs.

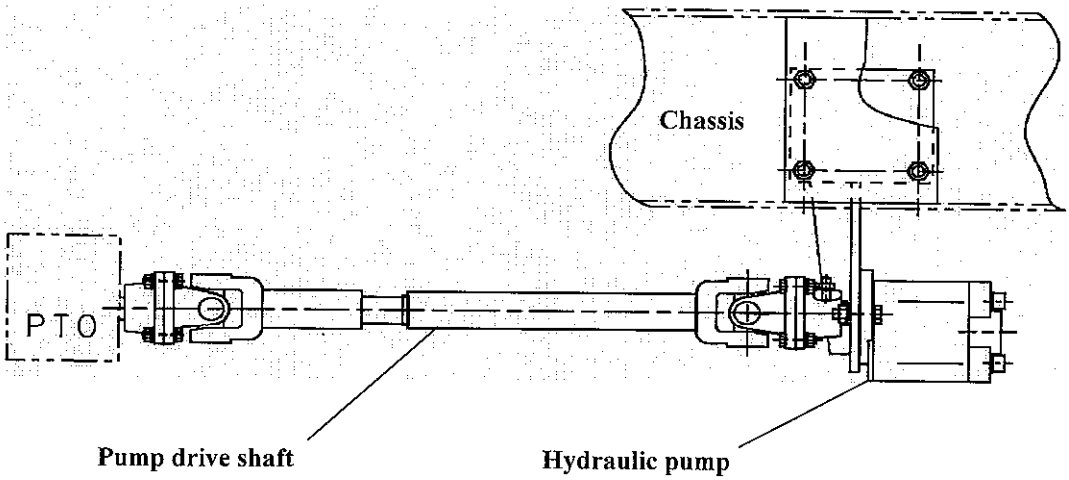
Total height of 6 springs (h)	(mm)	18.8 ~ 19.2	18.3 ~ 18.8	17.9 ~ 18.3	17.4 ~ 17.9	17.0 ~ 17.4	16.5 ~ 17.0
	(in)	0.74 ~ 0.76	0.72 ~ 0.74	0.70 ~ 0.72	0.69 ~ 0.70	0.67 ~ 0.69	0.65 ~ 0.67
Height of collar	(mm)	15.2	14.7	14.1	13.6	13.1	12.6
	(in)	0.60	0.58	0.56	0.54	0.52	0.50
Parts number of collar		S44340-01	S44340-02	S44340-03	S44340-04	S44340-05	S44340-06

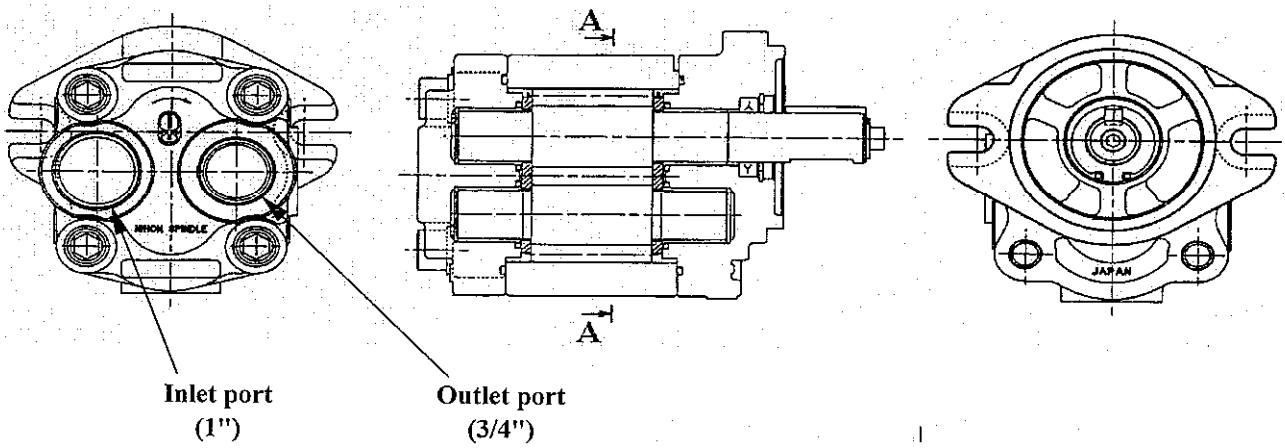
Hydraulic pump

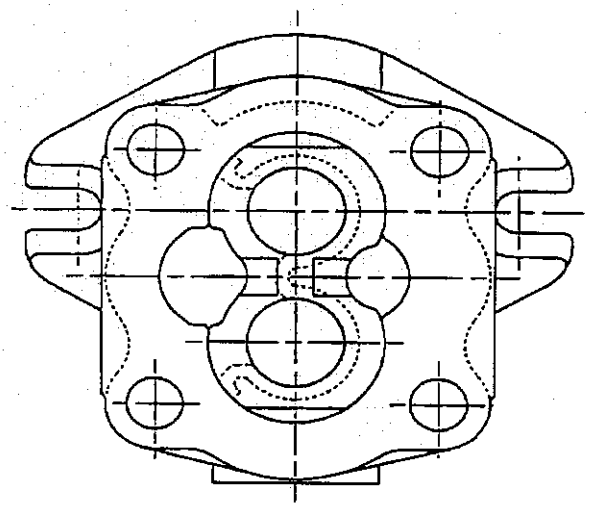
3000000029A

The hydraulic pump is driven by the PTO through the pump drive shaft as shown in the figure below.

Type ----------	Gear type
Rated pressure ----------	175 kg / cm^2 (2,500 PSI)
Displacement ----------	40 cc / rev (2.4 in^3 / rev)
Rotation speed ----------	350 ~ 1,000 rpm

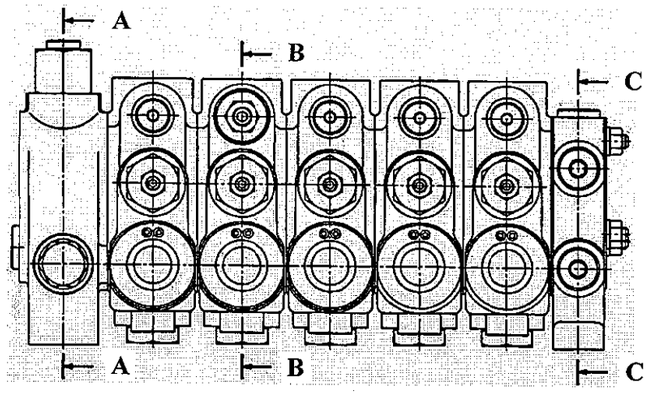


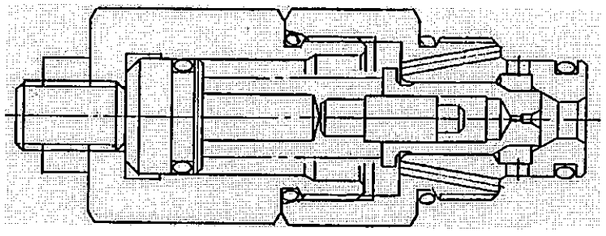




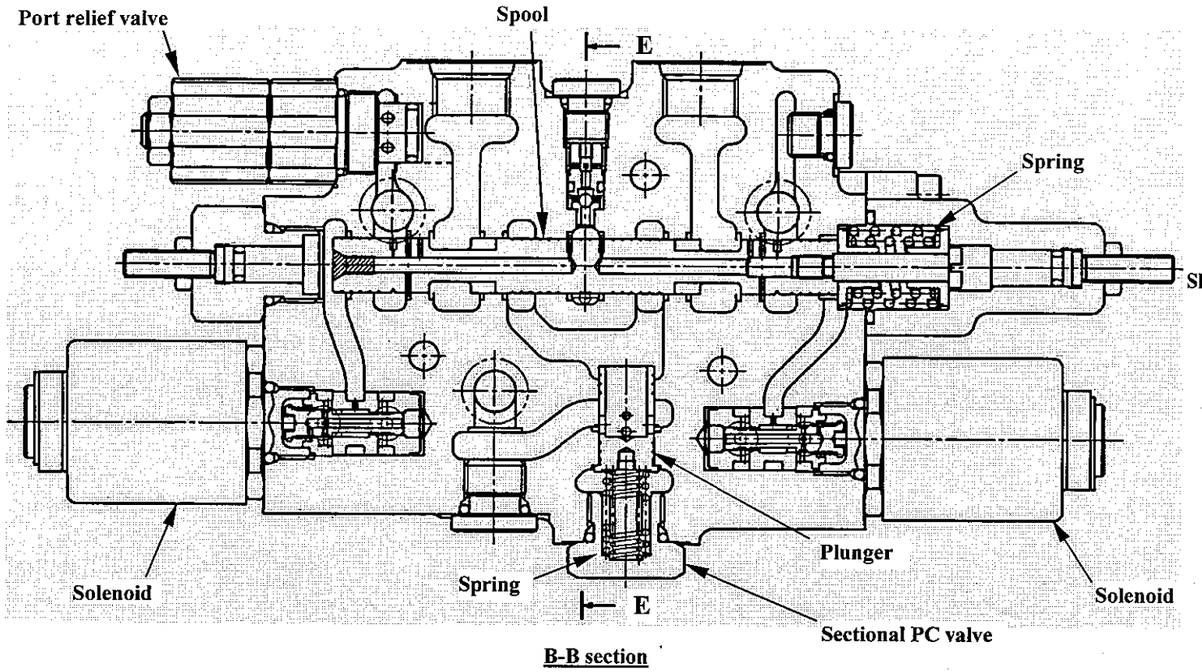
A-A section

2. Section drawings

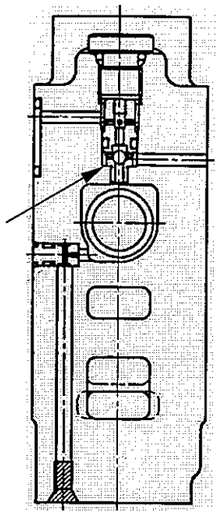




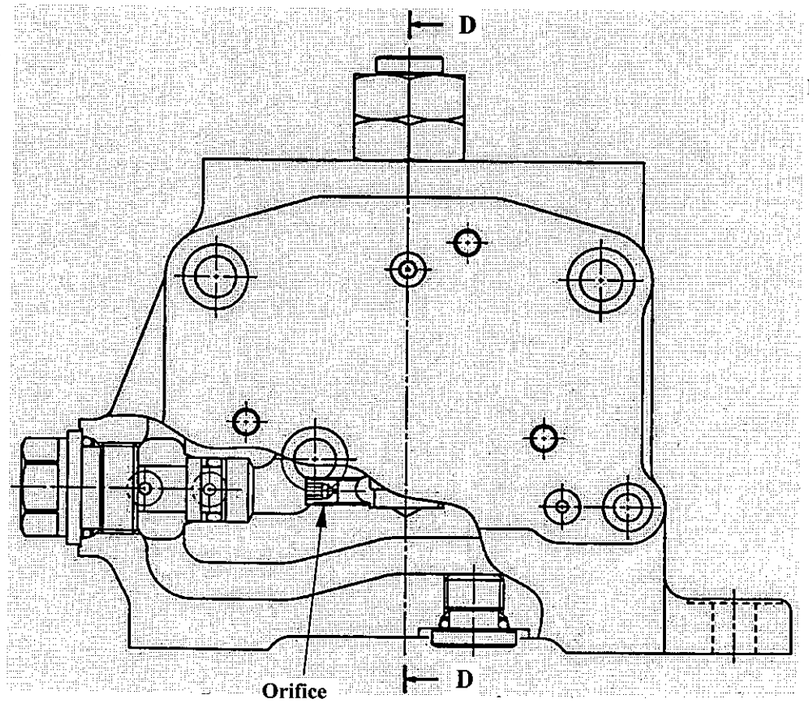
Detail of port relief valve



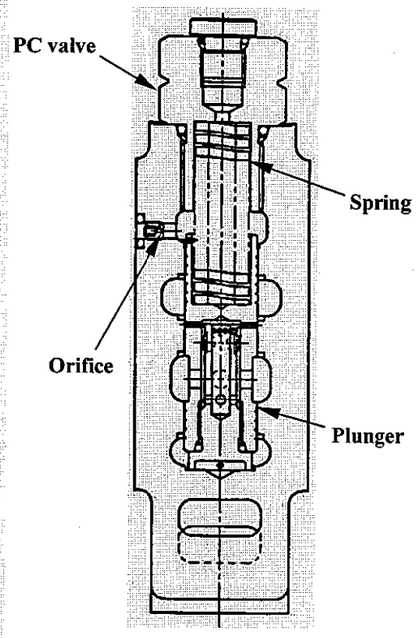
B-B section



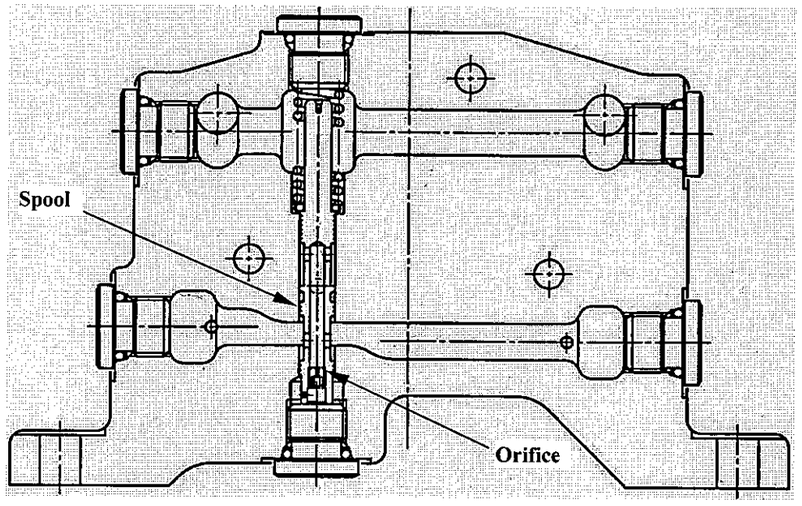
E-E section



A-A section



D-D section



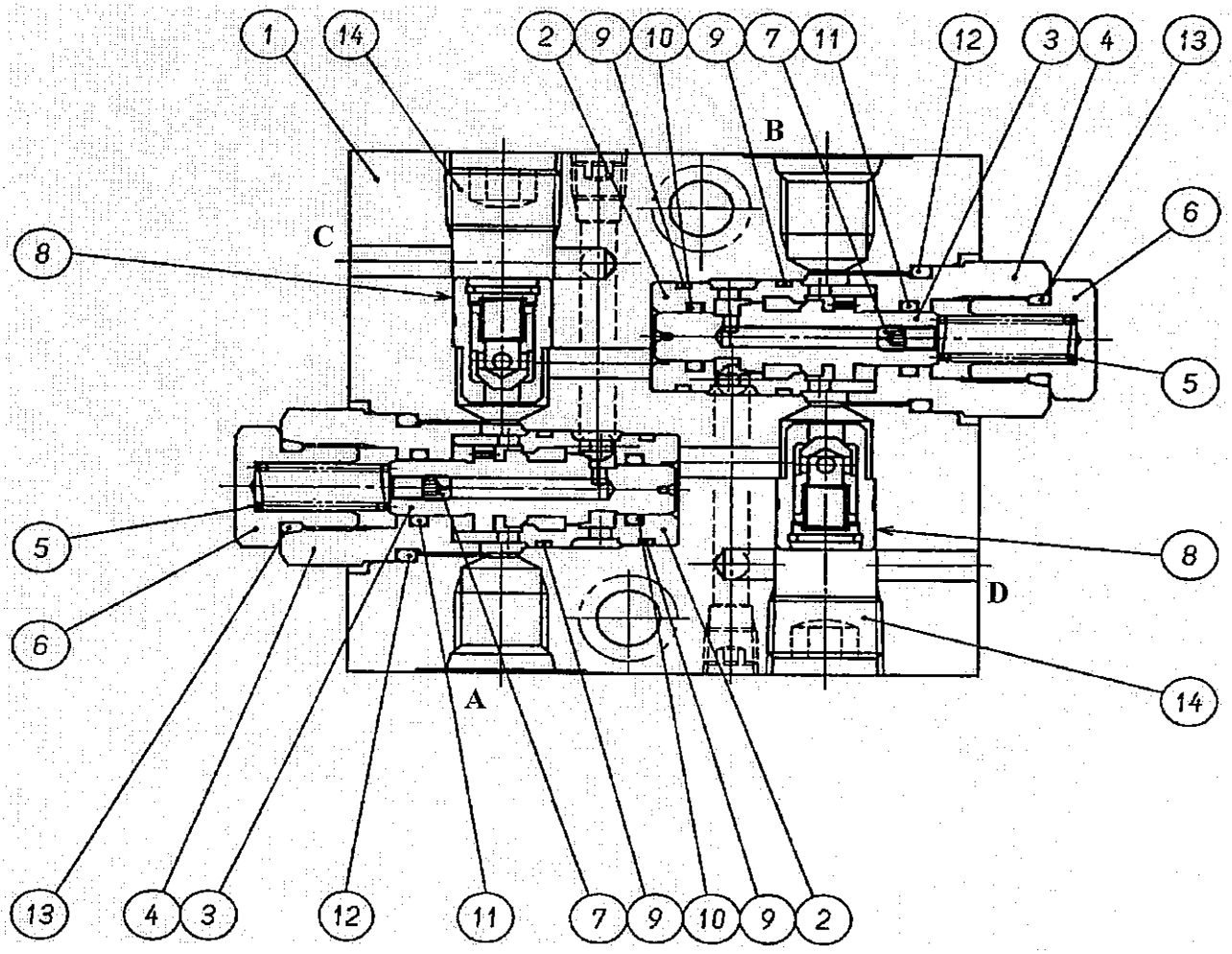
C-C section

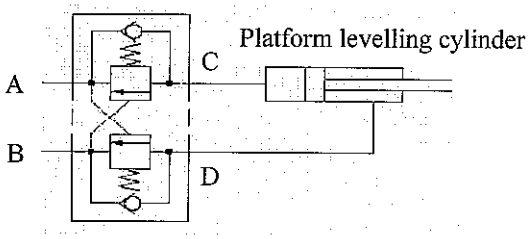
Double holding valve (for Platform levelling cylinder)

302-05847

The double holding valve is mounted on the platform levelling cylinder to confine the hydraulic oil into the cylinder and maintain the platform level in the event of hydraulic hose breakage.

Rated pressure ---------- 230 kg/cm^2 (3,270 PSI)
Rated flow ---------- 10 liters / min (2.64 gal / min)

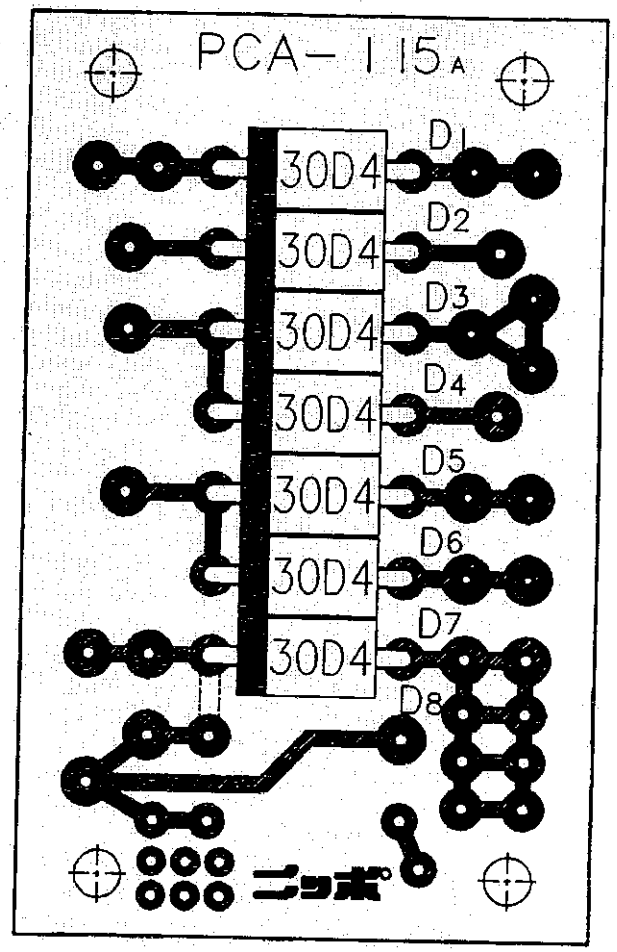




1	Body
2	Valve seat
3	Spool
4	Cap
5	Spring
6	Cap
7	Orifice
8	Check valve
9	O ring
10	O ring
11	O ring
12	O ring
13	O ring
14	Plug

4. Diode board

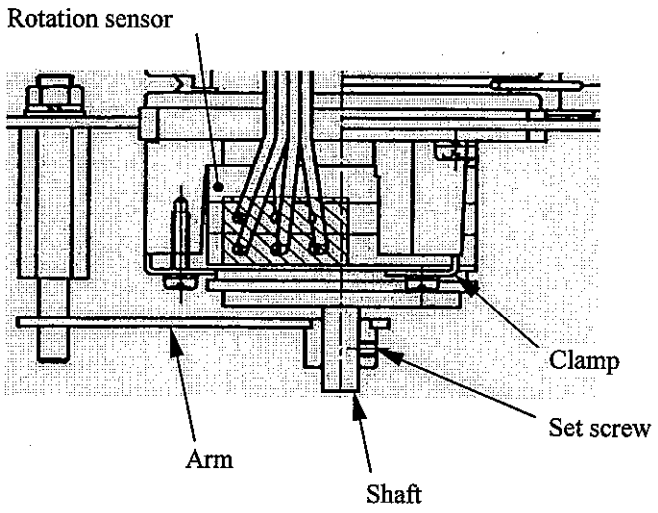
All of the diodes (D1 ~ D8) located in the main power box are installed on this diode board.

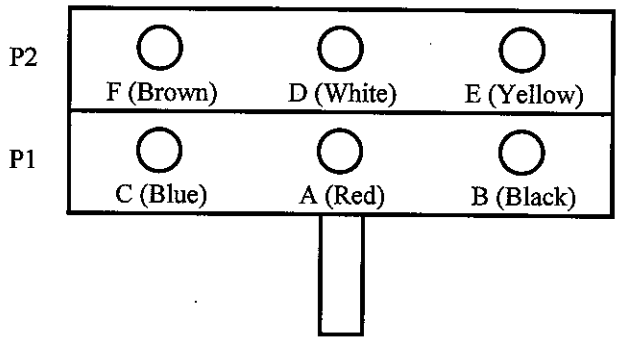


2. Replacement precedures

Replace the platform rotation sensor as follows.

1. Set up the machine on firm level ground and extend all of the outriggers and the jack fully.
2. Rotate both the boom and the platform to the front center of the vehicle exactly.
3. Disengage the PTO and turn off the engine key switch.
4. Remove the slip ring complete from the platform.
5. Remove the cover from the slip ring, then remove the arm and the clamps from the platform rotation sensor.
6. Remove the platform rotation sensor by cutting the six wires connected to the sensor.
7. Connect the six wires to the new rotation sensor by soldering.
   See the previous page when connecting each wire.
8. Install the rotation sensor under the slip ring.
9. Rotate the coupling and align the index lines marked on the coupling and the body.
   See the previous page to align the index lines.
10. Set a ohmmeter between D (White) and E (Yellow) wires, turn the shaft of the rotation sensor slowly and adjust the resistance at 2.5 kΩ.
11. Install the arm onto the shaft of the rotation sensor, then reinstall the cover.
    Caution : Do not turn the shaft of the rotation sensor when installing the arm.
12. Reinstall the reassembled slip ring complete onto the platform, then conduct the AD turning of the platform rotation sensor by connecting the lap top computer.



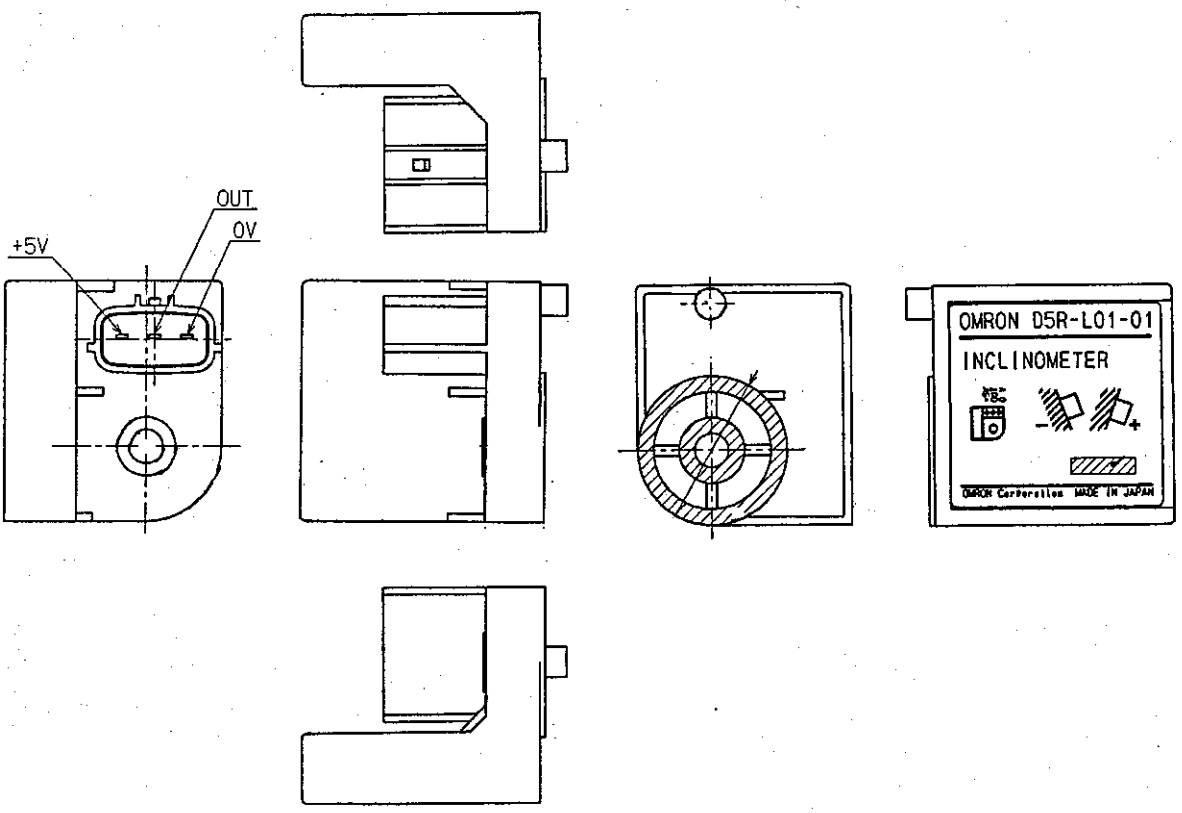


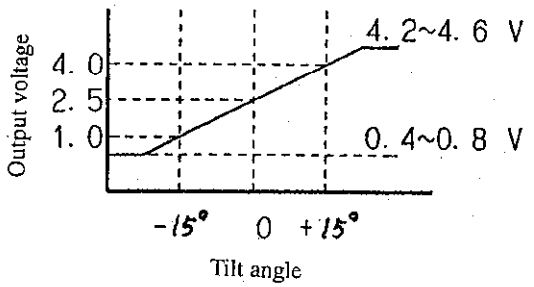
Platform tilt sensor

The platform tilt sensor is installed on the platform rotation post to detect the tilt angle of the platform.

Power voltage ---------- DC5±0.5 V

Output voltage ----------100 mV / 1 degree (2.5±0.05 volts when horizontal)



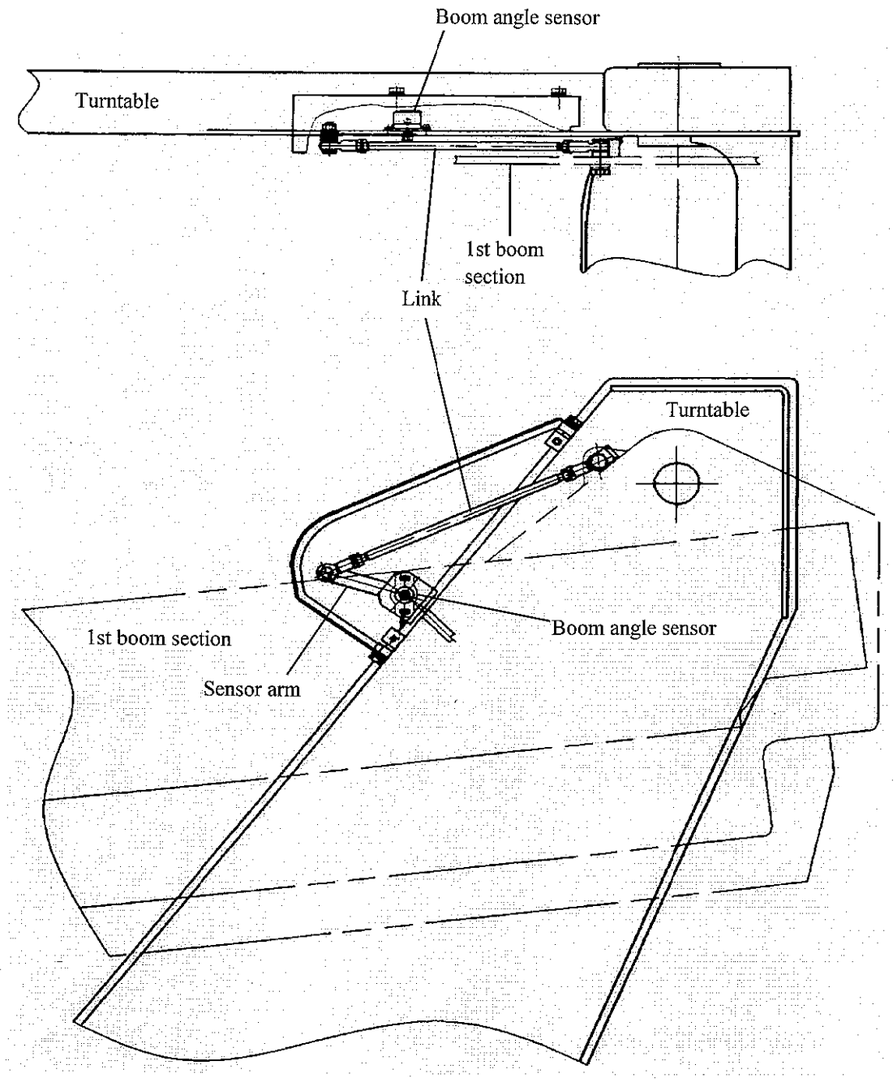


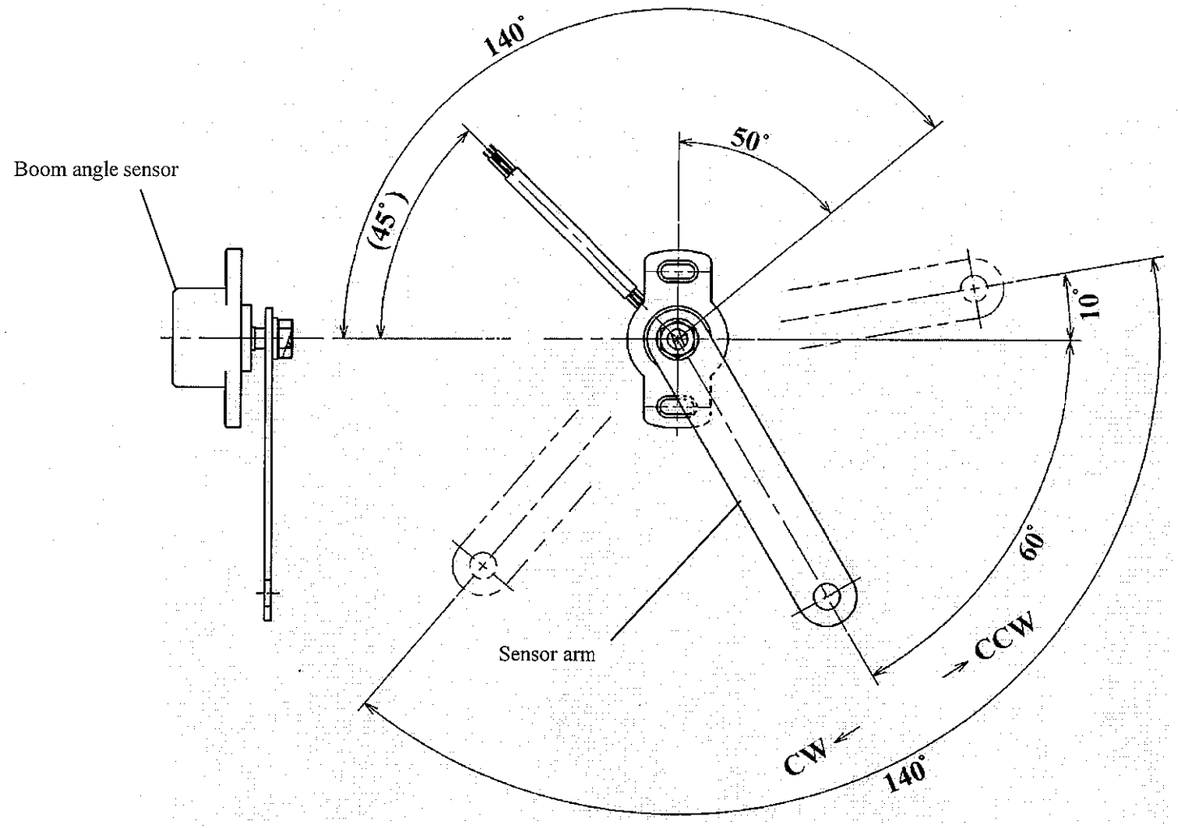
Output characteristics

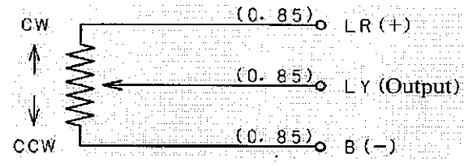
Boom angle sensor

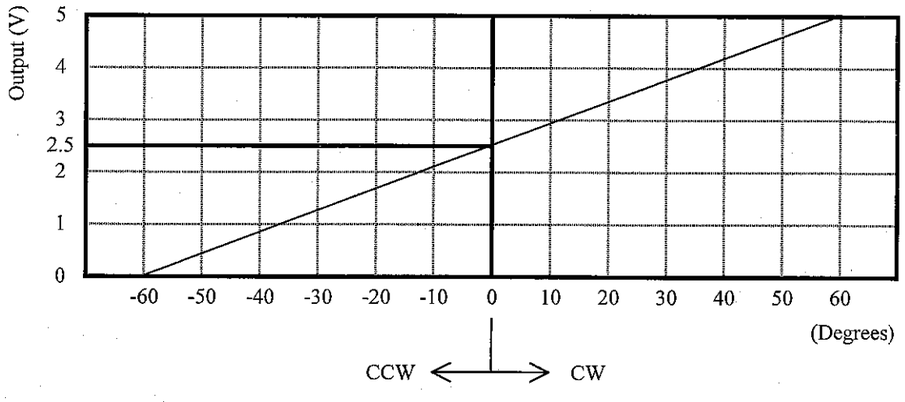
The boom angle sensor is installed on the turntable and actuated by the link connected between the sensor arm and the 1st boom section.

Rated voltage ---------- DC 5 V
Resistance ---------- 5 kΩ





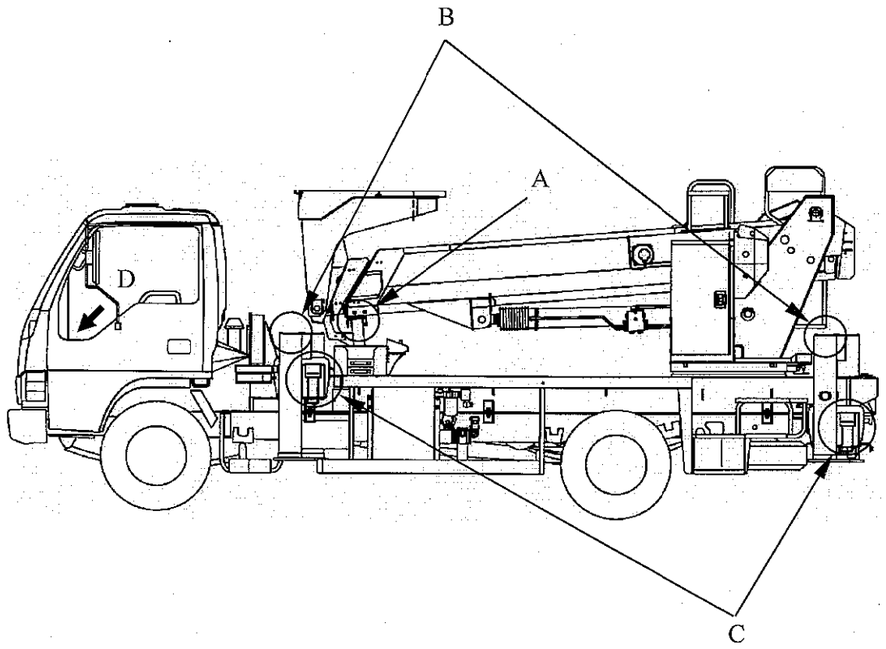


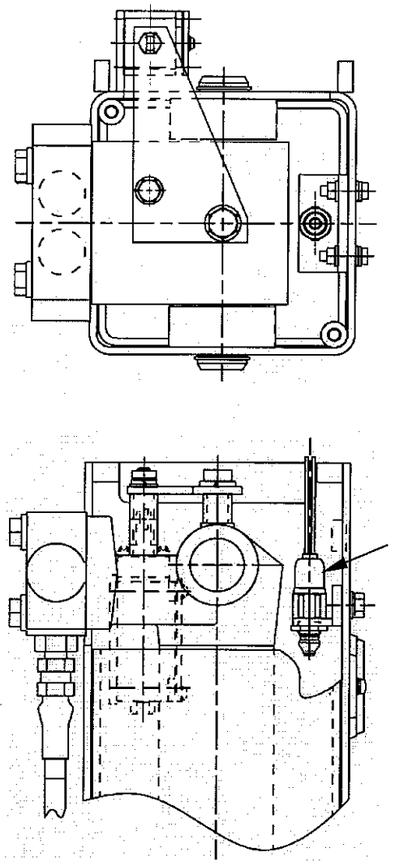


Output characteristics

Storage confirmation system

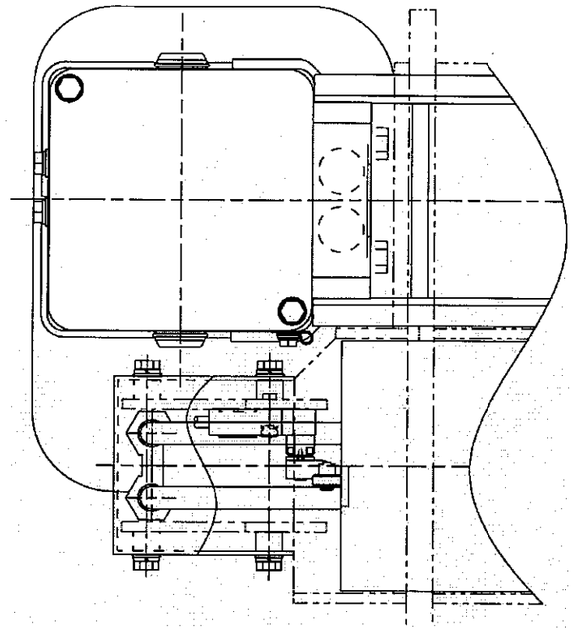
The storage confirmation system consists of the components shown in the figure below to confirm that all of the outriggers, jacks and the boom are stowed.



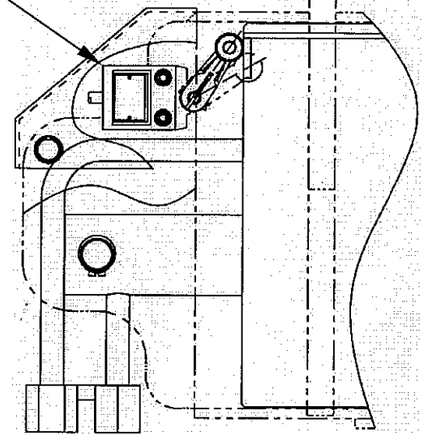


Jack storage confirmation limit switch (320-00013-00)

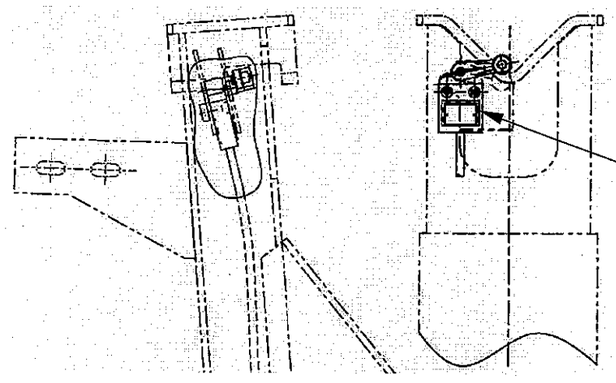
B detail



Outrigger storage confirmation limit switch (171-26000)

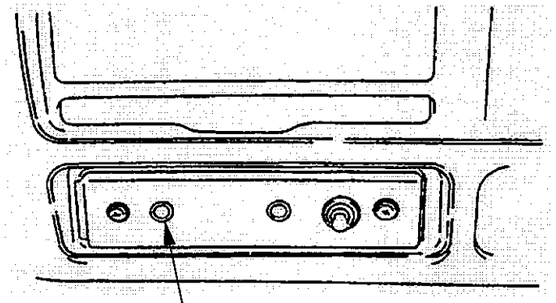


C detail



Boom storage confirmation limit switch (171-26013)

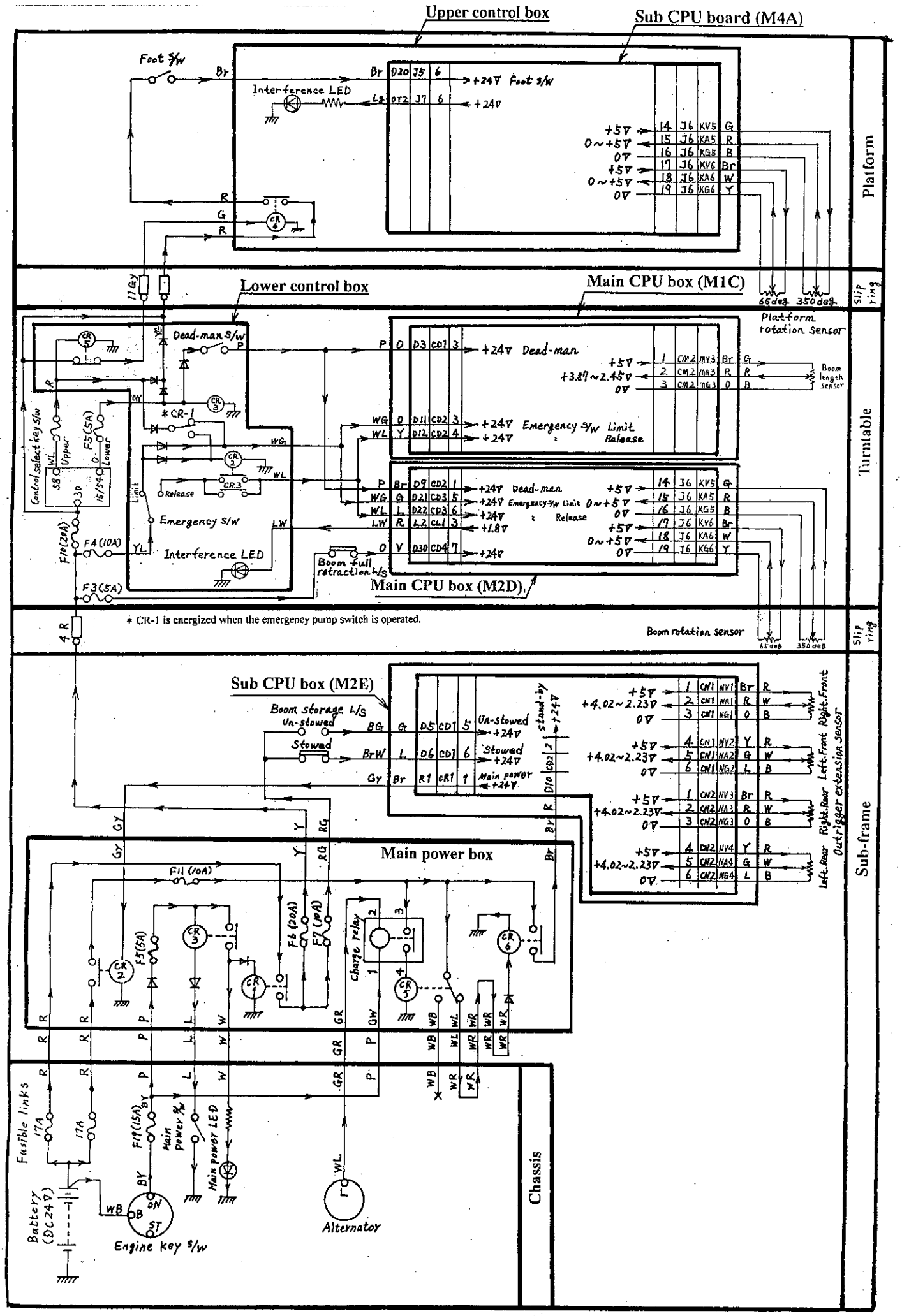
A detail



Storage LED

D view

Interference limit system

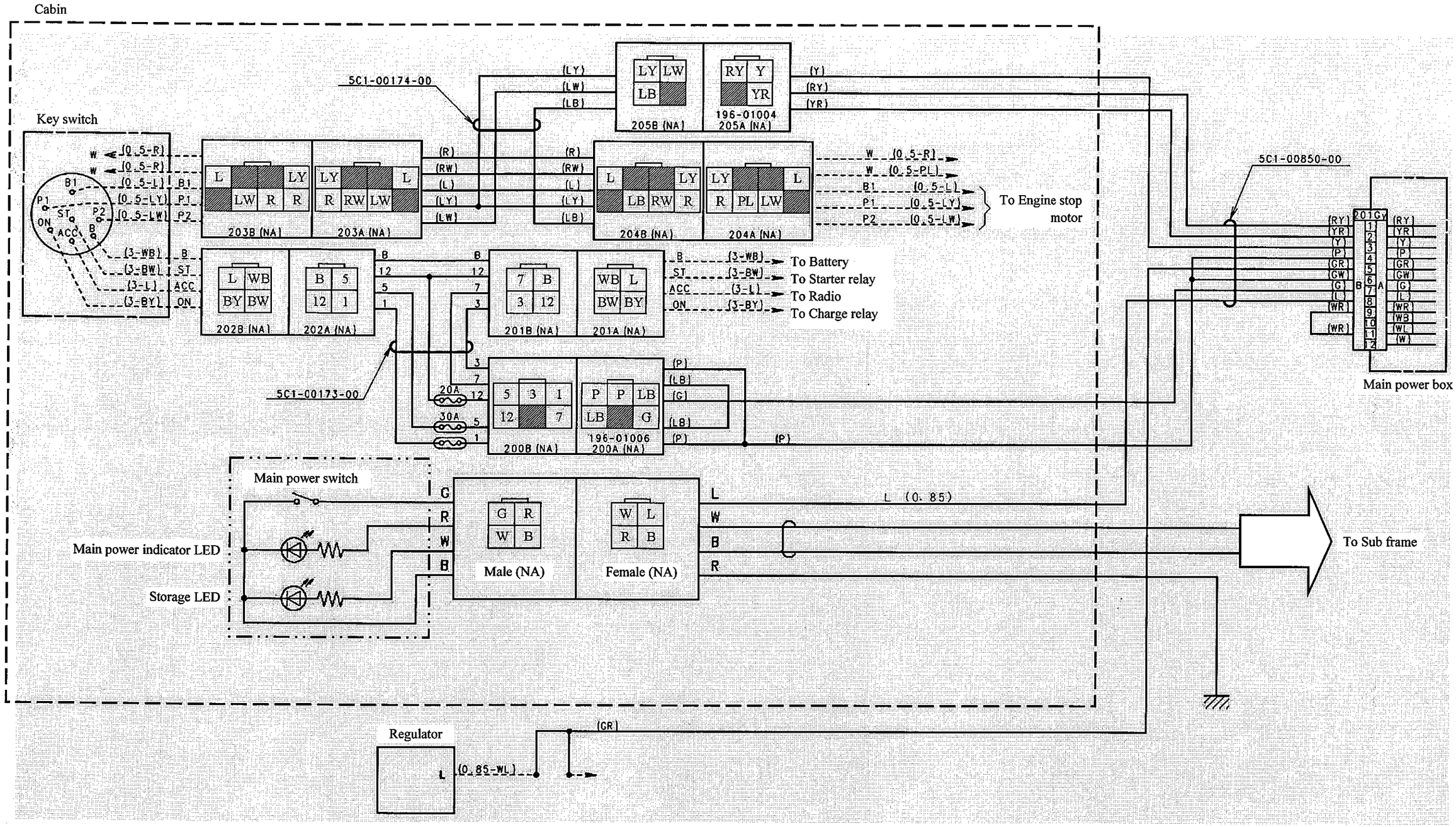


	Outrigger extension	Platform load	Item	Specific work radius	Result	Remarks
Work radius	MID-2	0 kg (0 LBS)	L-MIN	8.68 ~ 9.08 m (28' 6" ~ 29' 9")		
			L-MAX	8.29 ~ 8.69 m (27' 2" ~ 28' 6")		
		150 kg (330 LBS)	L-MIN	7.71 ~ 8.11 m (25' 4" ~ 26' 7")		
			L-MAX	6.99 ~ 7.39 m (22' 11" ~ 24' 3")		
		500 kg (1,100 LBS)	L-MIN	6.24 ~ 6.64 m (20' 6" ~ 21' 9")		
			L-MAX	5.22 ~ 5.62 m (17' 2" ~ 18' 5")		
		1,000 kg (2,200 LBS)	L-MIN	5.06 ~ 5.46 m (16' 7" ~ 17' 11")		
			L-MAX	3.90 ~ 4.30 m (12' 10" ~ 14' 1")		
	MID-1	0 kg (0 LBS)	L-MIN	7.35 ~ 7.75 m (24' 1" ~ 25' 5")		
			L-MAX	6.47 ~ 6.87 m (21' 3" ~ 22' 6")		
		150 kg (330 LBS)	L-MIN	6.53 ~ 6.93 m (21' 5" ~ 22' 9")		
			L-MAX	5.49 ~ 5.89 m (18' 0" ~ 19' 4")		
		500 kg (1,100 LBS)	L-MIN	5.29 ~ 5.69 m (17' 4" ~ 18' 8")		
			L-MAX	4.09 ~ 4.49 m (13' 5" ~ 14' 9")		
		1,000 kg (2,200 LBS)	L-MIN	4.29 ~ 4.69 m (14' 1" ~ 15' 5")		
			L-MAX	3.01 ~ 3.41 m (9' 11" ~ 11' 2")		
	MIN	0 kg (0 LBS)	L-MIN	5.77 ~ 6.17 m (18' 11" ~ 20' 3")		
			L-MAX	4.52 ~ 4.92 m (14' 10" ~ 16' 2")		
		150 kg (330 LBS)	L-MIN	5.13 ~ 5.53 m (16' 10" ~ 18' 2")		
			L-MAX	3.81 ~ 4.21 m (12' 6" ~ 13' 10")		
		500 kg (1,100 LBS)	L-MIN	4.15 ~ 4.55 m (13' 7" ~ 14' 11")		
			L-MAX	2.79 ~ 3.19 m (9' 2" ~ 10' 6")		
		1,000 kg (2,200 LBS)	L-MIN	3.05 ~ 3.45 m (10' 0" ~ 11' 4")		
			L-MAX	2.11 ~ 2.51 m (6' 11" ~ 8' 3")		

	Outrigger extension	Rotating direction	Specific limit angle	Results	Remarks
Rotation limit angle	MIN	C. W.	20 ~ 25 degrees		Platform load: 500 kg (1,100 LBS)
		C.C.W	20 ~ 25 degrees		

	Item	Inspection procedures	Results
Other systems	Interlock system	Stow the jacks and make sure that the boom does not rise from the boom rest.	
		Raise the boom and make sure that the jack and outrigger functions are disabled.	
	Boom automatic storage system	Set the boom and the platform at the automatic storage-able positions, operate the "Auto storage switch" and make sure the boom is stowed onto the boom rest properly.	
	Pre-start check system	Conduct the pre-start check by operating the pre-start check switch and make sure the boom movements stop at the specified positions.	
	Interference limit system	Operate the boom and the platform near the cabin and the jacks and make sure that the boom and the platform movements stop before interfering with the cabin and the jacks.	
		Lower the boom fully with the platform rotated 90 degrees from the central position, rotate the platform and make sure that the platform rotation stops before the platform interferes with the boom.	
		Lower the boom with the platform rotated to the central position and makes sure that the boom lowering movement stops before the boom interferes with the platform.	
	Emergency stop system	Press the emergency stop switch and make sure that engine stops and all of the functions are disabled.	
	Emergency pump system	Operate the boom and the platform using the emergency pump and make sure they move.	

Electric wiring chart (Chassis)



Procedures of Daily inspection

The daily inspection should be conducted with the machine being set on firm level ground.
Use the chassis manufacturer's manual for checking the chassis.

Unit	*Item*	*Description*
PTO	Abnormal noise	Start the engine, engage the PTO, and then check for any abnormal noise.
	Oil leakage	Check for oil leakage.
	Indicator lamp	Engage and disengage the PTO and check if the PTO indicator lamp turns on and off properly.
Hydraulic oil reservoir	Oil level, Oil leakage	Stow the outriggers and the boom, then check for hydraulic oil level and oil leakage.
Outriggers	Crack, deformation	Extend all of the outriggers and check for any cracks and deformations.
	Abnormal noise, movements	Operate the outriggers and the jacks and check for any abnormal noise and movements.
	Oil leakage	Check the outrigger control valve, outrigger cylinders, and jack cylinders for oil leakage.
	Natural descent	Extend all of the jacks, support the machine by the jacks, then check if the jack cylinders retract naturally.
Turntable	Crack, deformation	Check the turntable thoroughly for any cracks and deformations.
	Abnormal noise, movements	Rotate the turntable, and check for any abnormal noise and movements.
Boom	Crack, deformation	Extend the boom fully and check for any cracks and deformations.
	Boom pivot pin	Check the boom pivot pin for any damage.
	Abnormal noise, movements	Raise, lower, telescope the boom and check for any abnormal noise and movements.
	Oil leakage	Check the hydraulic cylinders for oil leakage.
	Natural descent	Elevate the platform and check if the elevation and the telescoping cylinders retract naturally.
Platform	Crack, deformation	Check the platform and the platform rotation device for any cracks and deformations.
	Abnormal noise, movements	Rotate the platform and check for any abnormal noise and movements.
	Oil leakage	Check the platform levelling cylinders and the platform rotation motor for oil leakage.
	Platform levelling system	Raise and lower the boom several times and check if the platform stays level.
Crane (Option)	Winch rope and hook	Check the winch rope and hook for any damage.
	Sub-boom	Check the sub-boom for any damage.
	Abnormal noise, movements	Operate the winch and check for any abnormal noise and movements.
	Oil leakage	Check the winch motor and hydraulic hoses for oil leakage.
Engine power unit (Option)	Cooling system	Check the cooling water level.
		Check the cooling system for water leakage.
		Check the fan belt for tension and any damage.
	Lubrication system	Check the engine oil level.
		Check the engine for oil leakage.
Battery power unit. (Option)	Battery	Check the electrolyte level.
		Check if the batteries are fully charged.
		Check the battery terminals for any damages.
		Check the batteries for electrolyte leakage.