

**UNIC HYDRAULIC CRANE**

**INSTALLATION MANUAL**

**UR1500 SERIES**

**FURUKAWA UNIC CORPORATION**

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# 1. SHIPPING PARTS LIST

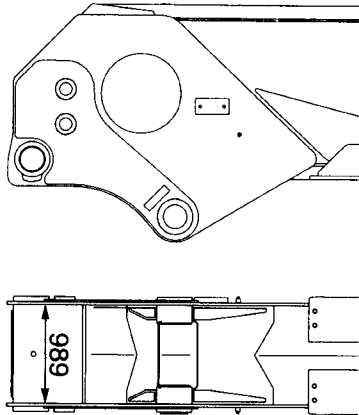
No.	Sub-assembly	Part Name	Part No.	Q'ty
1	Base and column ass'y			1
2	Boom ass'y			1
3	Outrigger inner box ass'y			2
4	Platform ass'y			1
5	Rear outrigger ass'y (optional)			1
6	Single line hook ass'y			1
7	4-part line hook ass'y (optional)			1
8	Oil tank			1
9	Ext. jib (optional)			1
10	For Boom ass'y	Wedge	098321480	1
11	For Safety device ass'y	Stopper	760280001	1
		Weight ass'y	098396810	1
12	For Hydraulic driving device ass'y	Return filter ass'y	740580029	1
13	For Equipment	Placard (Hydraulic Oil)	08US81020	1
		Placard (Filter)	089181070	1
		Placard (Up)	098381190	1
		Placard (PTO caution)	098381060	1
		Placard (Electrocaution Hazard)	088F81110	3
		Placard (Name Plate)	602104431	2
		Placard (Danger, Ride Load line)	08A481120	3
		Placard (Danger, Hoisting Personnel)	08A481130	1
		Clip-wire	760160066	1
		Tool ass'y	760990346	1
14	For Base ass'y	Sliding plate	08VB21160	4
15	For Swing Device ass'y	Breather	013841120	1
16	For Platform ass'y	Bracket (3)	098349050	2
		Accelerator cable ass'y	760260164	1

No.	Sub-assembly	Part Name	Part No.	Q'ty
17	For Oil Tank ass'y	Bolt-refining	711112050	8
		Nut	721111120	8
		Washer-spring	722211120	8
		Hose-rubber	77H150000	4m
		Band-hose	760190013	4
		Joint-hose	266164010	3
		Hose-rubber	77H112000	3m
		Band-hose	760000867	2
		Joint-hose	080062030	1
		Elbow	728631400	1
		Adapter-male & female	770A08J24	2
		Bonded seal	728510800	2
18	For Rear Outrigger ass'y	Bracket	091577011	2
		Plate	091577020	2
		Bolt-refining	711716040	8
		Nut	721111160	8
		Washer-spring	722211160	8
19	Piping for rear outrigger	Hanger for hose	602109220	2
		Spring	023163100	2
		Bolt	711108020	2
		Nut	721111080	2
		Washer-spring	722211080	2
		Band-wire	750516005	4
		Hose-high pressure	772502180	4
		Clamp	602211051	24
		Plate	089T65030	11
		Bolt-SW	714206012	18
		Hose-high pressure	792502503	3
		Hose-high pressure	792502547	1
		Hose-high pressure	792503547	1
		Clamp	602211071	6
Seat	090365170	5		

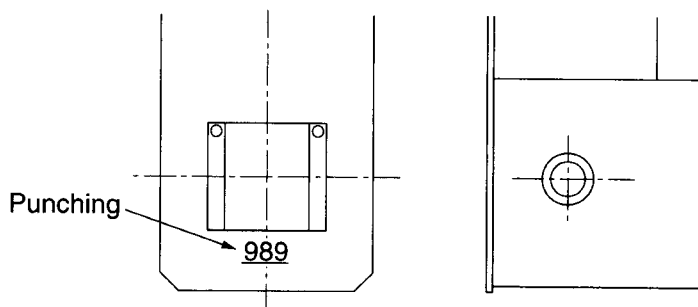
## 2. PUNCHING POSITION OF DATE OF MANUFACTURE AND HOW TO READ IT

To assemble sub-assemblies of the same date of manufacture as crane model name plate on side of column.

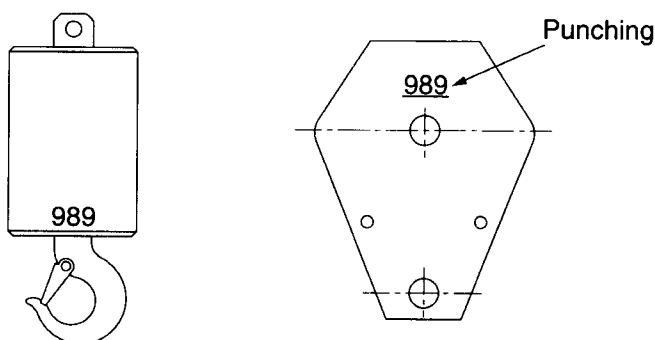
### ① Boom (1), rear part



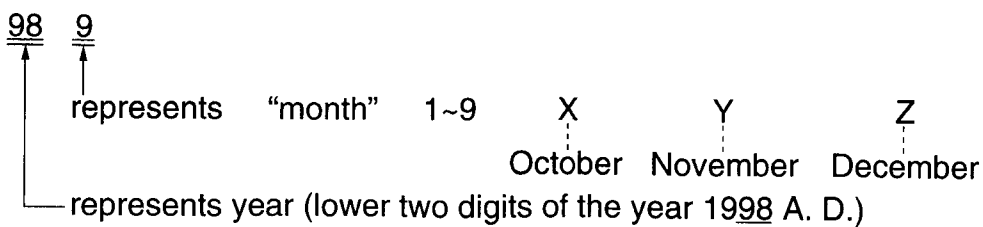
### ② Inner box, upper part (both left and right)



### ③ Hook

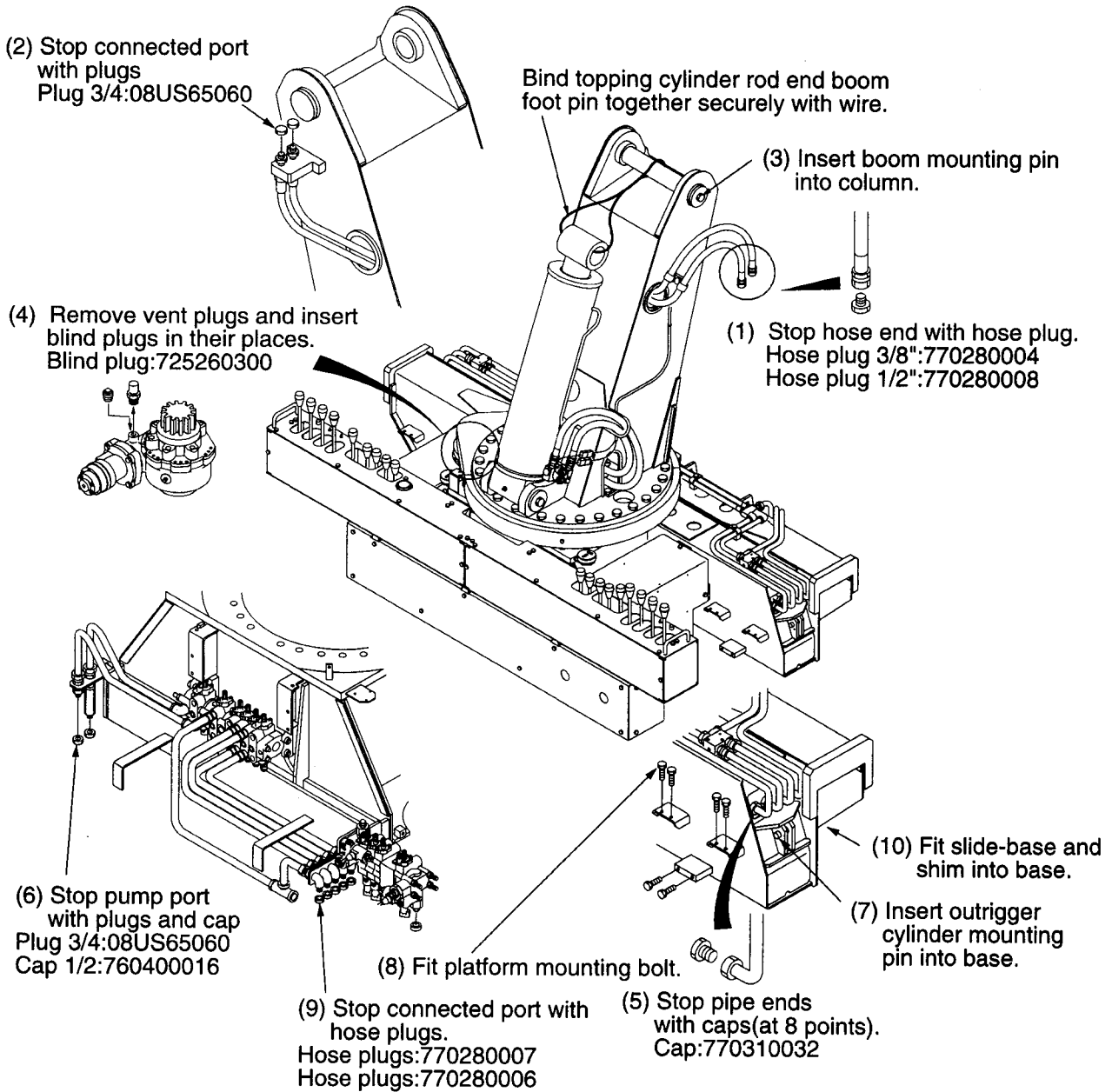


### Reading example



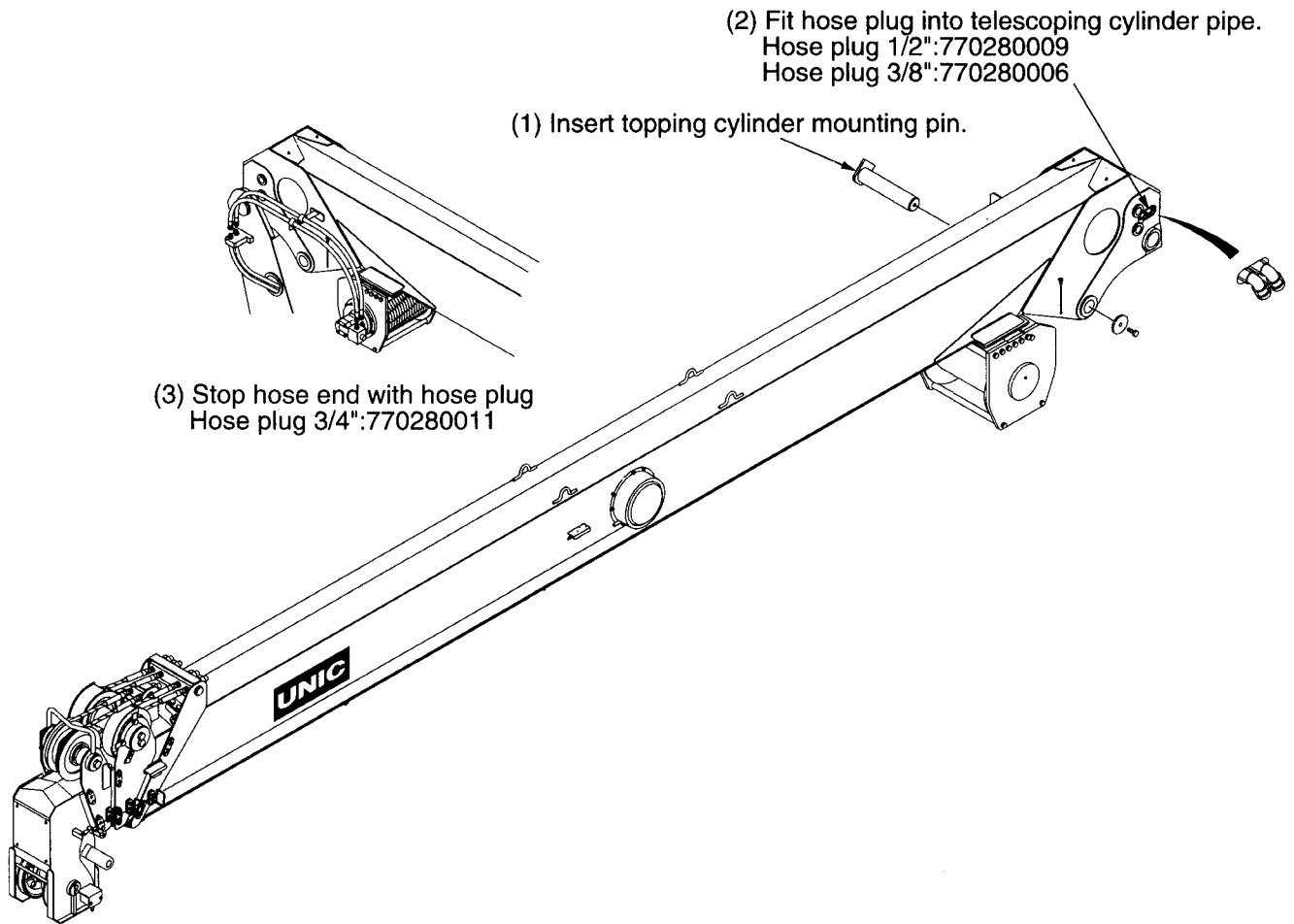
# 3. SHIPPING FORMS

## 3-1. BASE AND COLUMN ASS'Y



- (1) Insert hose plug into telescoping pipe hose.
- (2) Stop connected port for hoist winch with plugs.
- (3) Insert boom mounting pin into column.
- (4) Insert blind plugs in place of vent plugs for swing gear box.
- (5) Insert plugs to outrigger pipes (8 plugs).
- (6) Stop control valve pump port with plug and cap.
- (7) Insert outrigger cylinder mounting pin into base.
- (8) Fit platform mounting bolt on base side.
- (9) Stop connected port for rear outrigger with plugs.
- (10) Fit slide-base and shim into base.

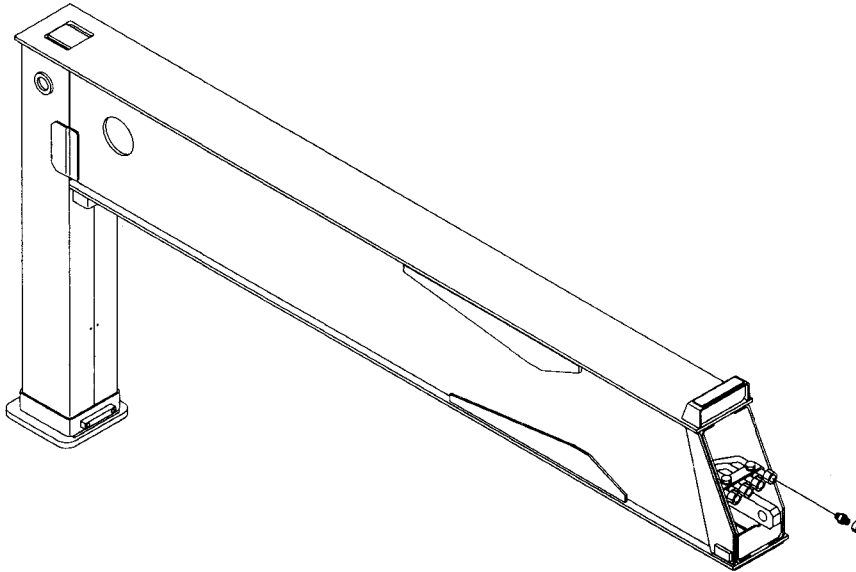
## 3-2. BOOM ASS'Y



- (1) Insert topping cylinder mounting pin into boom.
- (2) Insert hose plug into hose joint for telescoping cylinder pipe.
- (3) Insert hose plug into hose for winch.

### 3-3. OUTRIGGER INNER BOX ASS'Y

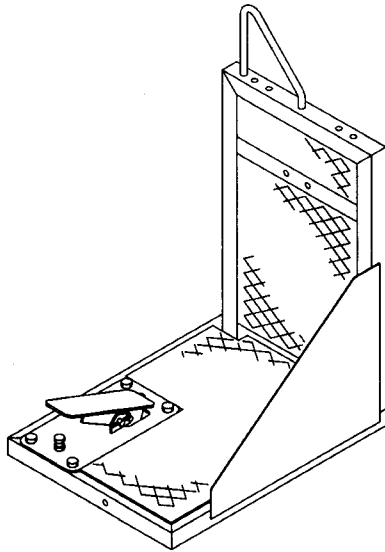
(Applies to both right and left ones.)



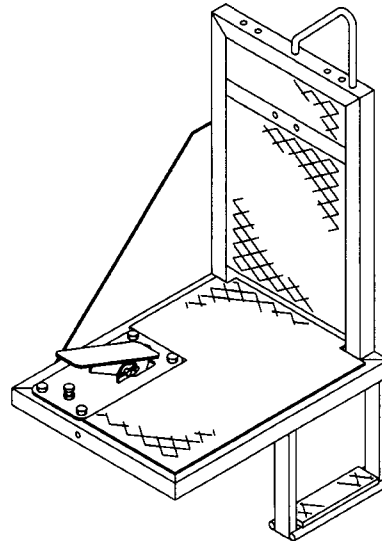
(1) Stop pipe ends with plugs.  
plug:728521200

(1) Stop pipe ends for outrigger cylinder with plugs.

### 3-4. PLATFORM ASS'Y



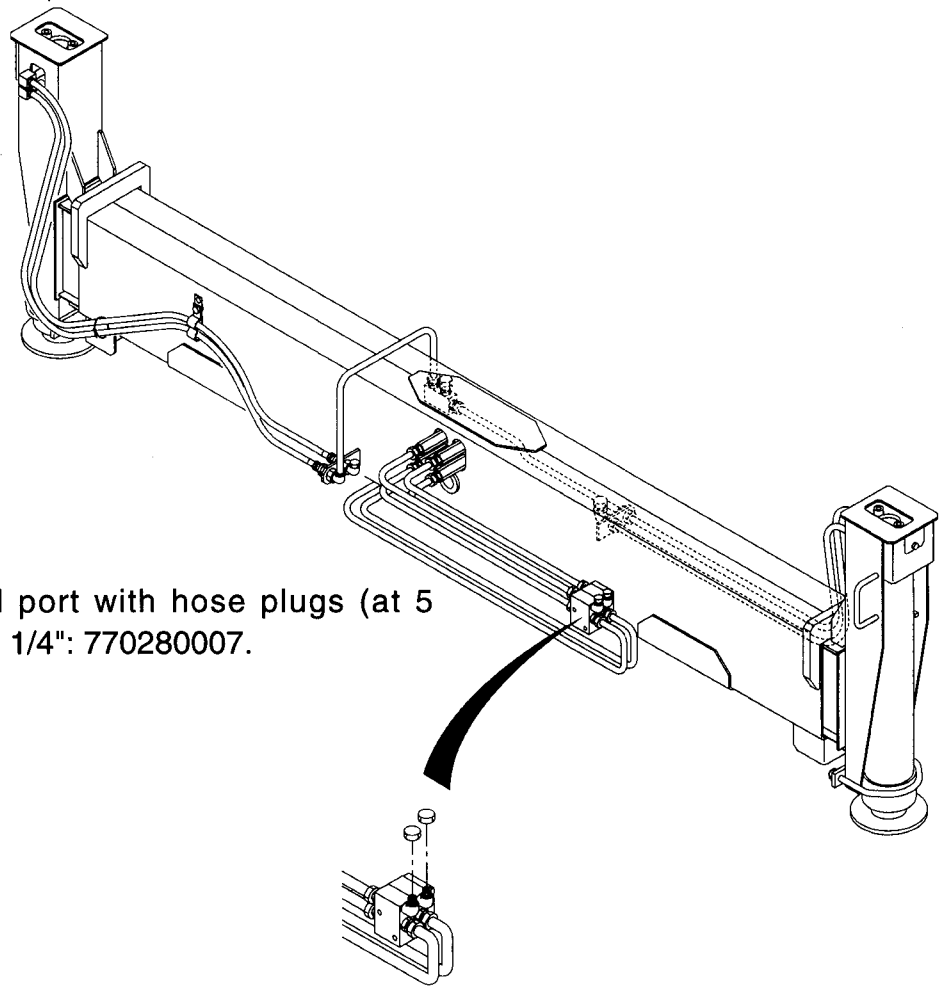
STREET side



CURB side

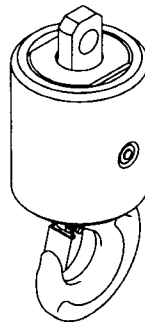


### 3-5. REAR OUTRIGGER ASS'Y (optional)



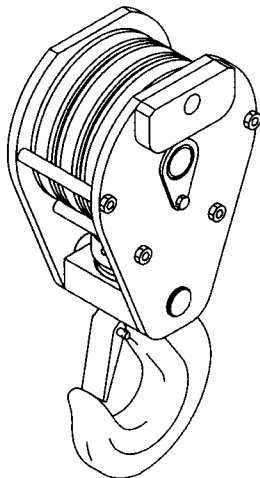
(1) Stop connected port with hose plugs (at 5 points) hose plug 1/4": 770280007.

### 3-6. SINGLE LINE HOOK



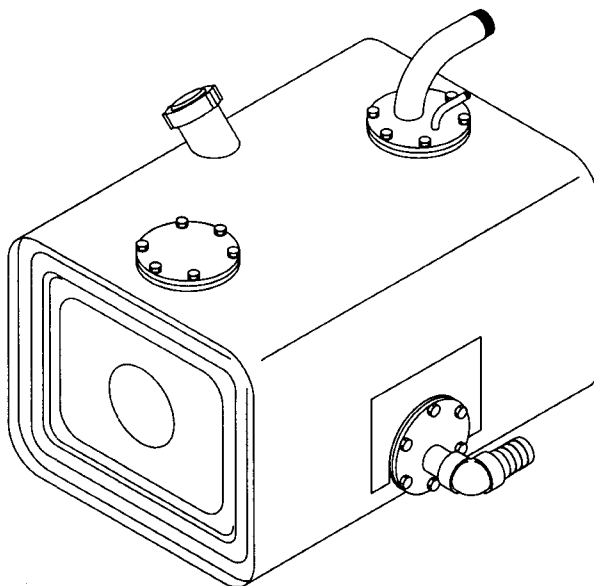
Hook for slinging single line

### 3-7. 4-PART LINE HOOK (optional)



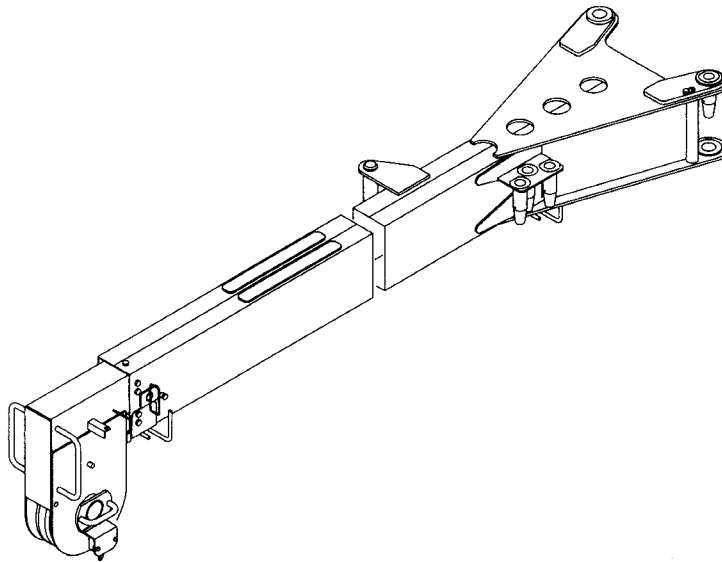
Hook for slinging two or more lines

### 3-8. OIL TANK



(1) No hydraulic oil is in the tank.

### 3-9. EXT. JIB (optional)



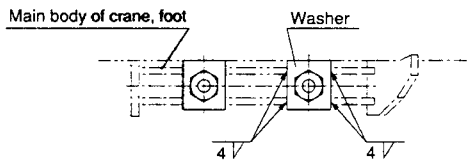
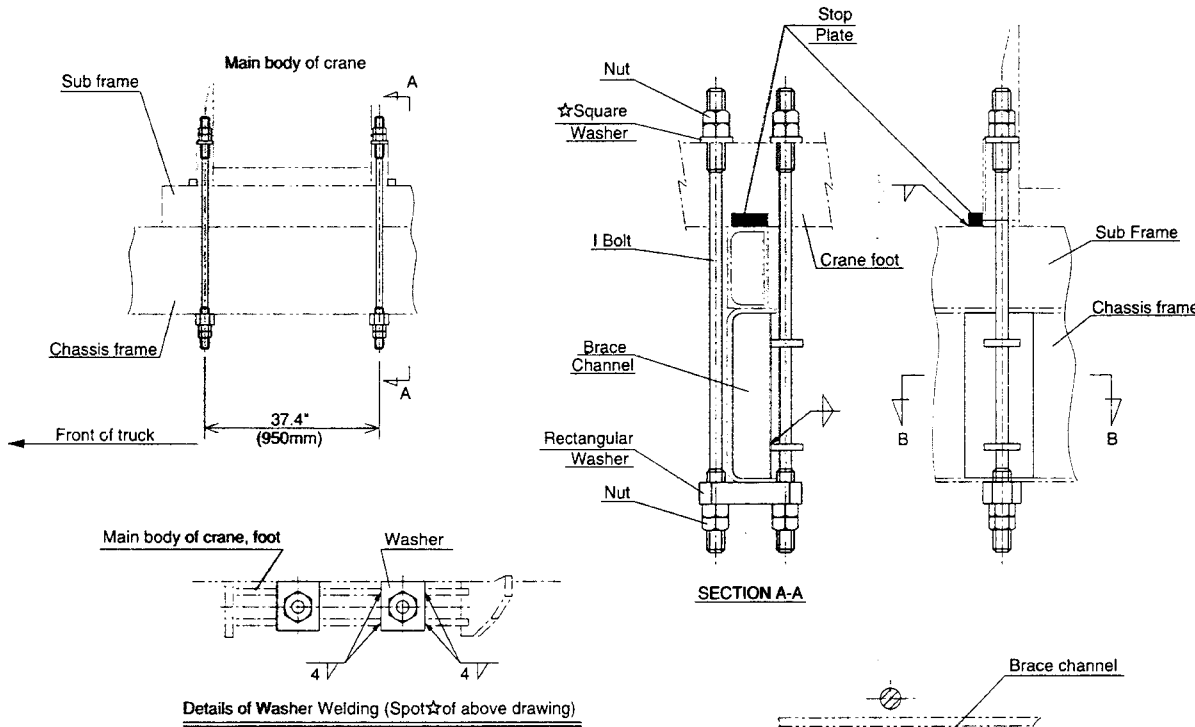
- (1) It has been retracted fully.
- (2) Insert pin in pin stow bracket and jib end.

# 4. MOUNTING PROCEDURES

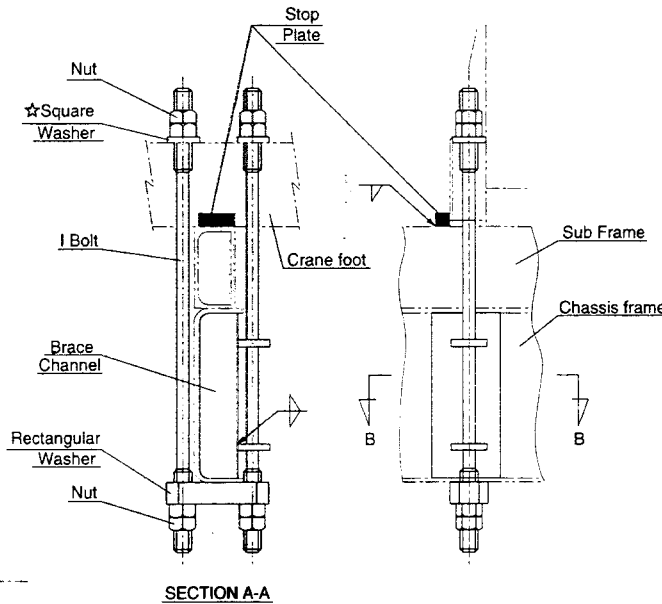
Before mounting

Carefully refer to the contents of these drawings and general cautions for mounting.

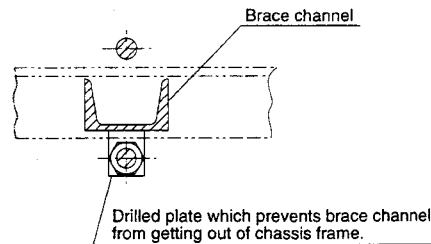
## 4-1. MOUNTING THE CRANE BODY



Details of Washer Welding (Spots of above drawing)



SECTION A-A

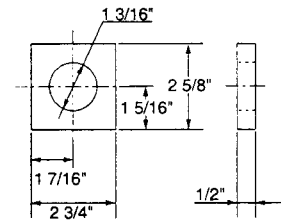


SECTION B-B

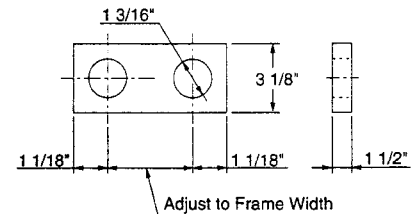
- Recommended Install Bolts  
Grade : 8  
Diameter : 1 1/8 -NF X 12  
Proof load : 120000PSI

- Recommended Install Nuts  
1 1/8 NF X 12

- Square Washer



- Square Washer

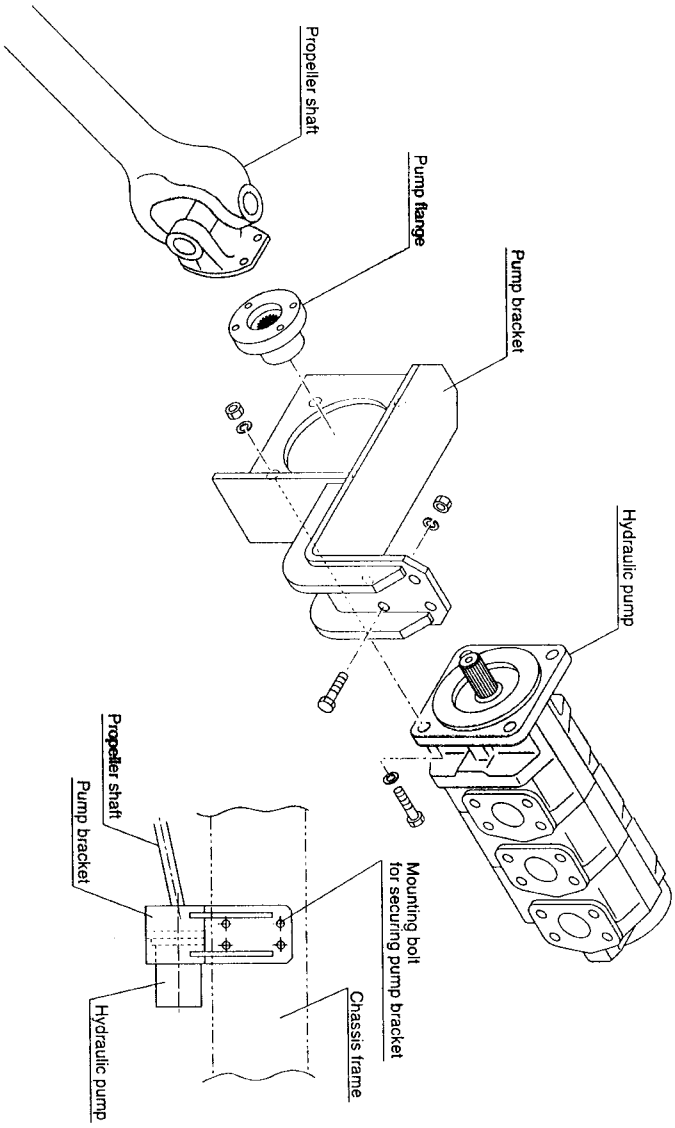


### NOTES

1. In tightening system using install bolts as illustrated above, attach a suitable article to prevent the chassis frame from being deformed.  
Do not attach the anti-deformation article to the chassis frame by welding.
2. Weld the square washer on the crane foot to the crane foot after the install bolts have been tightened.
3. Secure each install bolt by using double-nut tightening system at its both ends.
4. After the crane has been tightened with the install bolts, put the stopper plates (4 pieces) on the sides of crane foot and weld the plates to the sub-frame to prevent the crane-mounted vehicle from moving forward and backward.

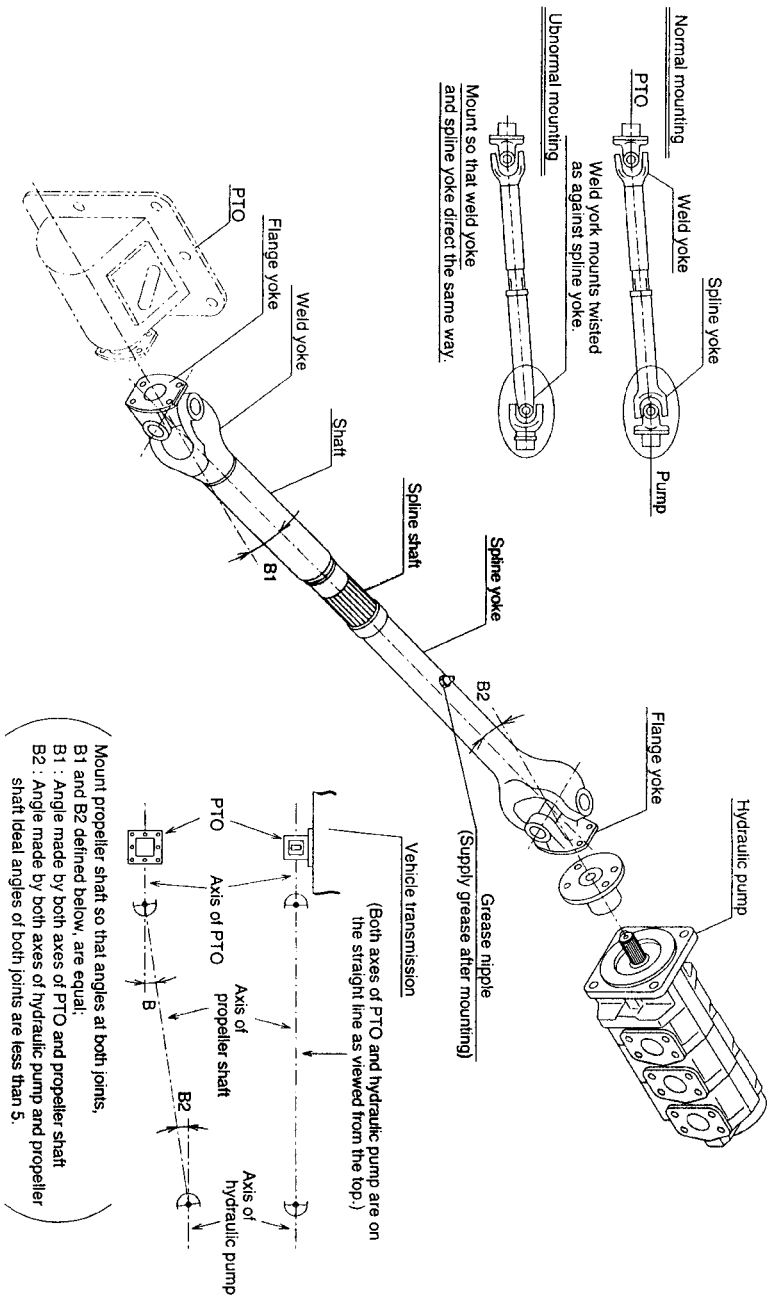
## 4-2. MOUNTING THE HYDRAULIC PUMP

**REFERENCE**  
 Hydraulic Pump : 2850 psi (200 kg/cm<sup>2</sup>)  
 #1 26.4 GPM (100L/min)  
 #2 26.4 GPM (100L/min)  
 #3 12.7 GPM (48L/min)



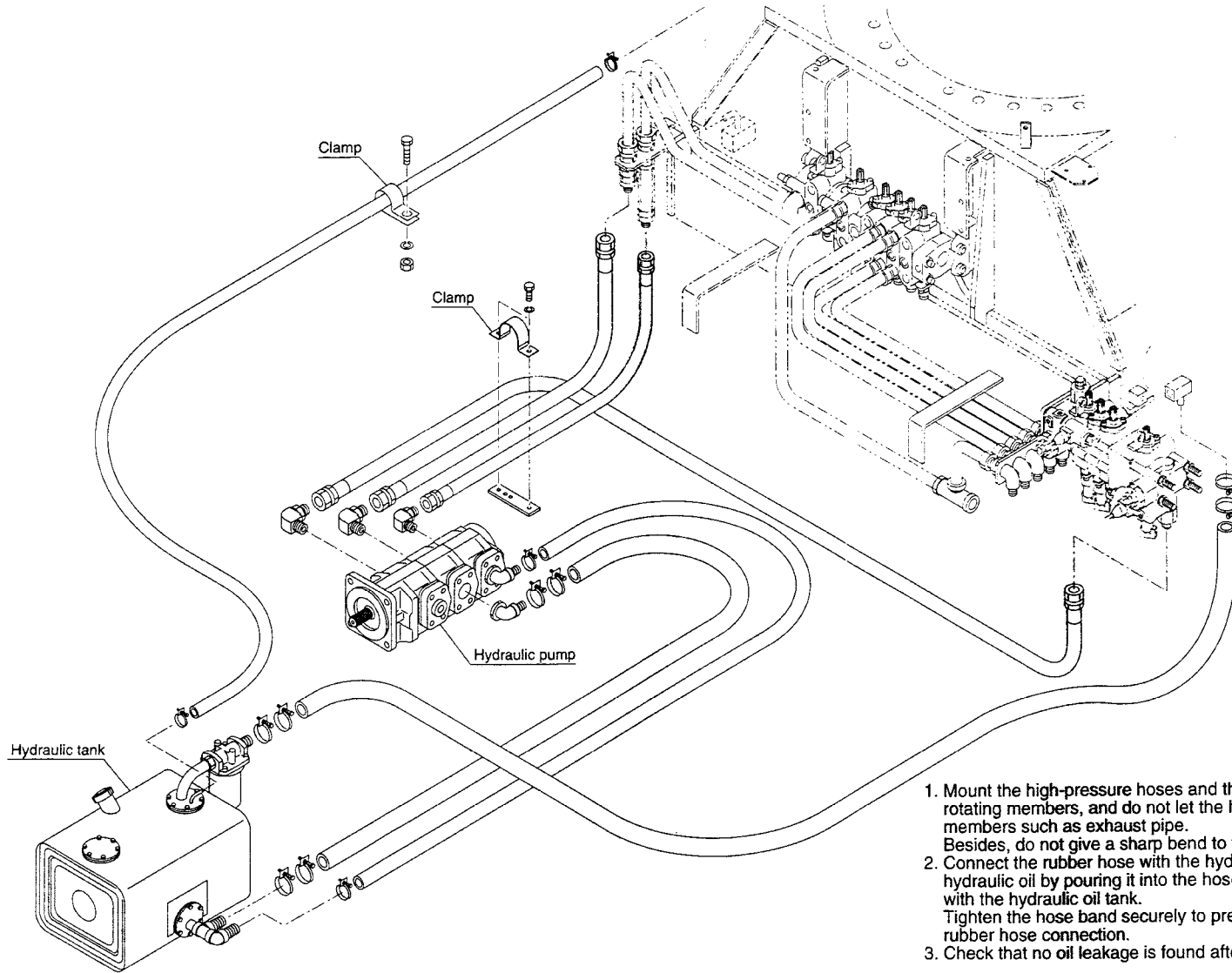
**NOTES**  
 Attach pump bracket to chassis frame with bolts.

### 4-3. MOUNTING THE PROPELLER SHAFT



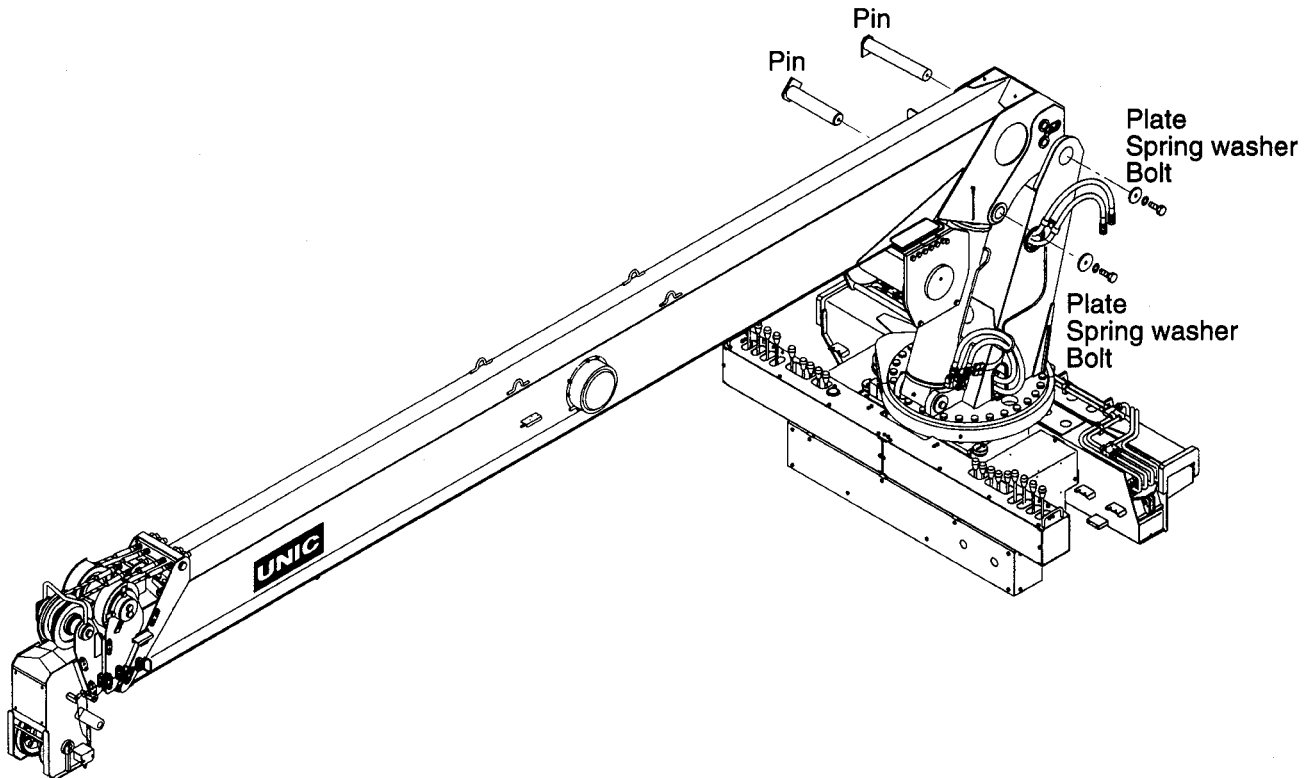
1. In order to prevent moisture from entering in the spline yoke, attach spline shaft directed upward.
2. After shaft has been welded, check that shaft rotates without run-out.

## 4-4. MOUNTING THE PIPING AT LOWER PART



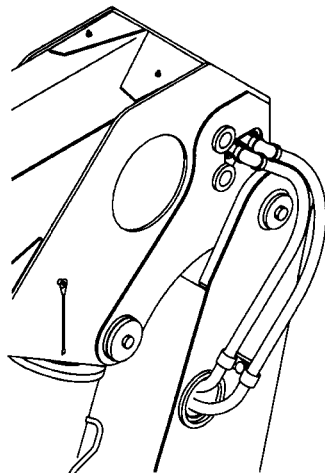
1. Mount the high-pressure hoses and the rubber hoses to avoid interference with rotating members, and do not let the hoses come close to the high temperature members such as exhaust pipe. Besides, do not give a sharp bend to the hoses.
2. Connect the rubber hose with the hydraulic pump first, then fill the hose with hydraulic oil by pouring it into the hose from other end to connect the hose end with the hydraulic oil tank. Tighten the hose band securely to prevent air from entering rubber hose connection.
3. Check that no oil leakage is found after mounting of the piping has been completed.

## 4-5. MOUNTING THE BOOM



- (1) Remove pins from the column and boom.
- (2) Fit the boom ass'y and the column together by inserting pins.
- (3) Raise or lower the boom to align holes and insert derrick cylinder upper pin.

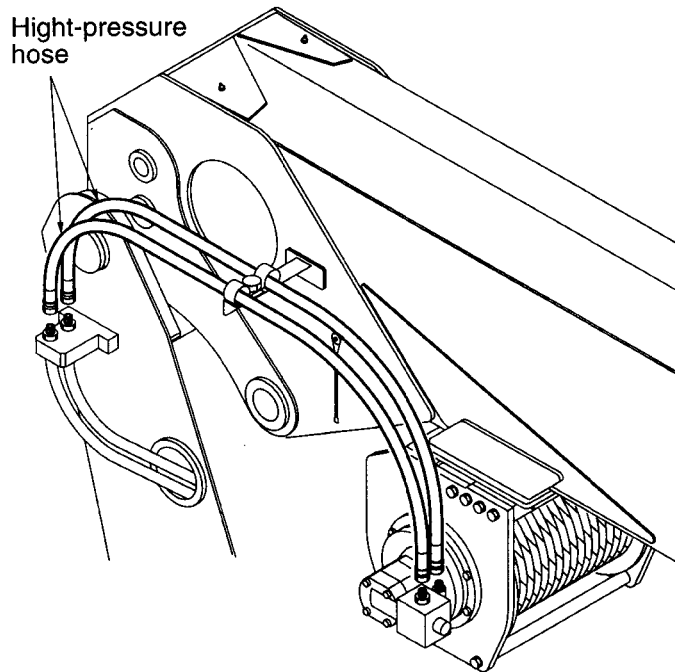
## 4-6. CONNECTING THE HIGH-PRESSURE HOSE FOR TELESCOPING CYLINDER



- (1) Remove plugs from boom pipes and hoses. (4 in total)
- (2) Connect high-pressure hoses to boom piping. (hose dimensions : 1/2", 3/8")



## 4-7. CONNECTING THE HIGH-PRESSURE HOSE FOR WINCH

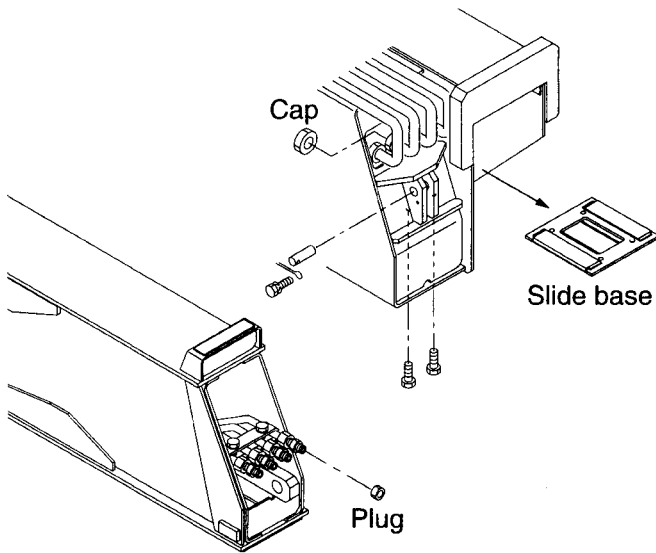


- (1) Remove both plugs fitted in the column and in the winch.
- (2) Connect high-pressure hoses to the connector on column side.

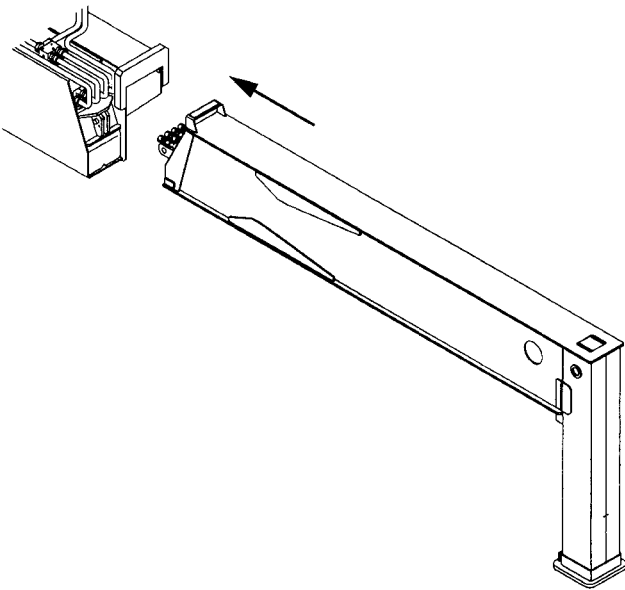
**Note: Pay attention to the ports to be connected.**

## 4-8. ASSEMBLING THE OUTRIGGER INNER BOX

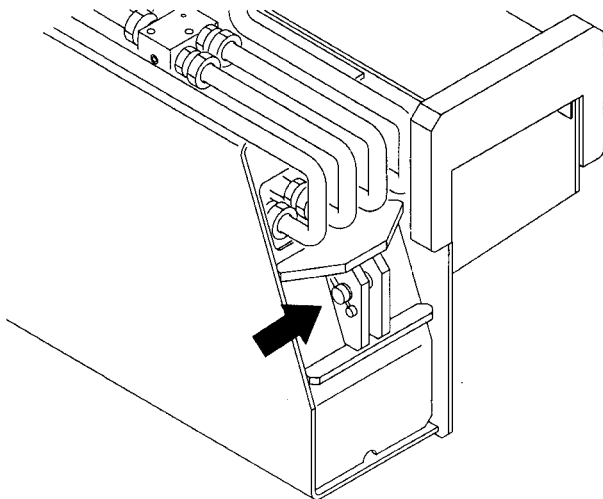
- (1) Remove slide base, shim, and cap pin attached to the pipe end.

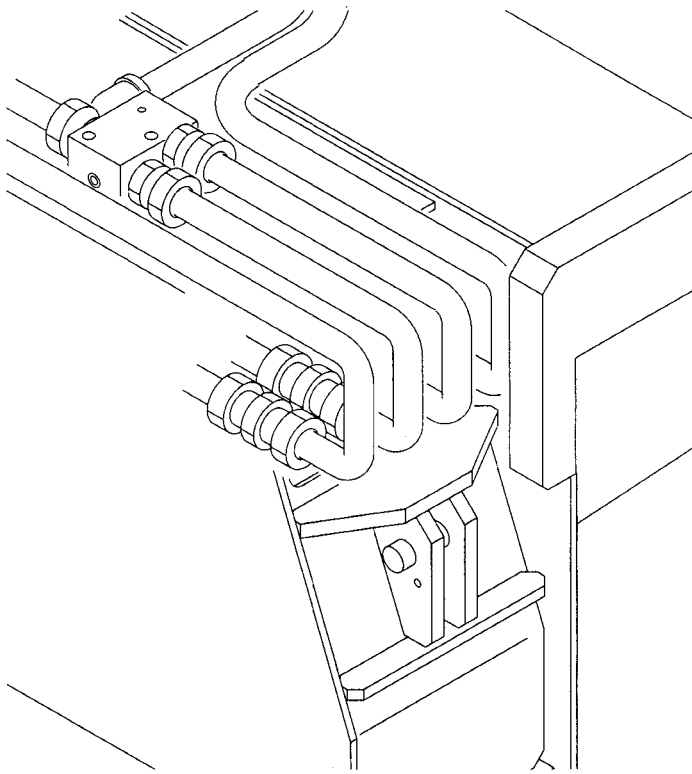


- (2) Insert the outrigger inner box into the base.

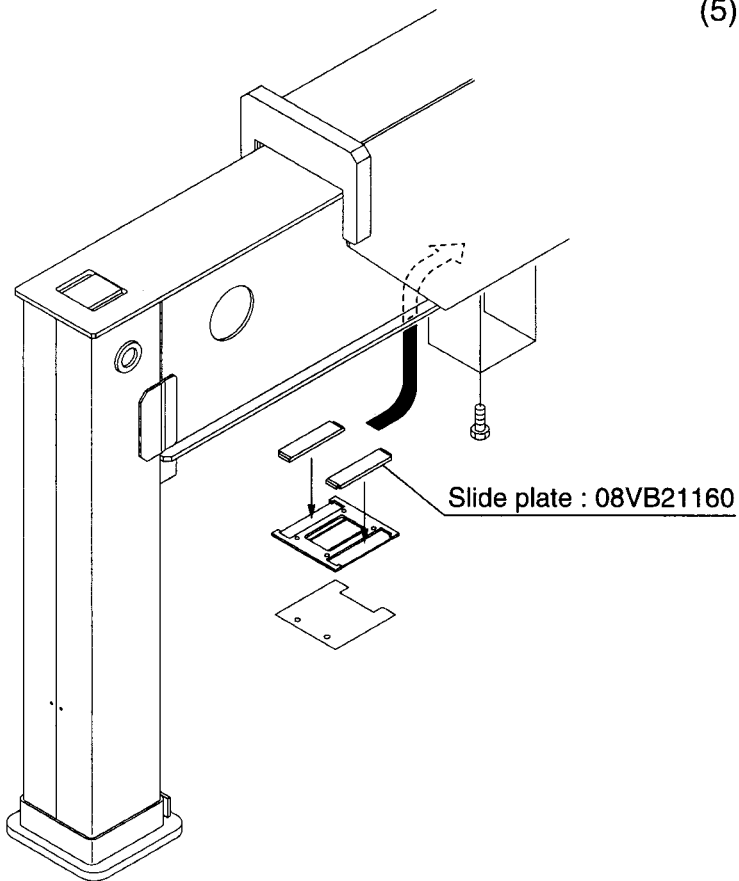


- (3) Fix the horizontal cylinder of outrigger inner box on the base with pins.





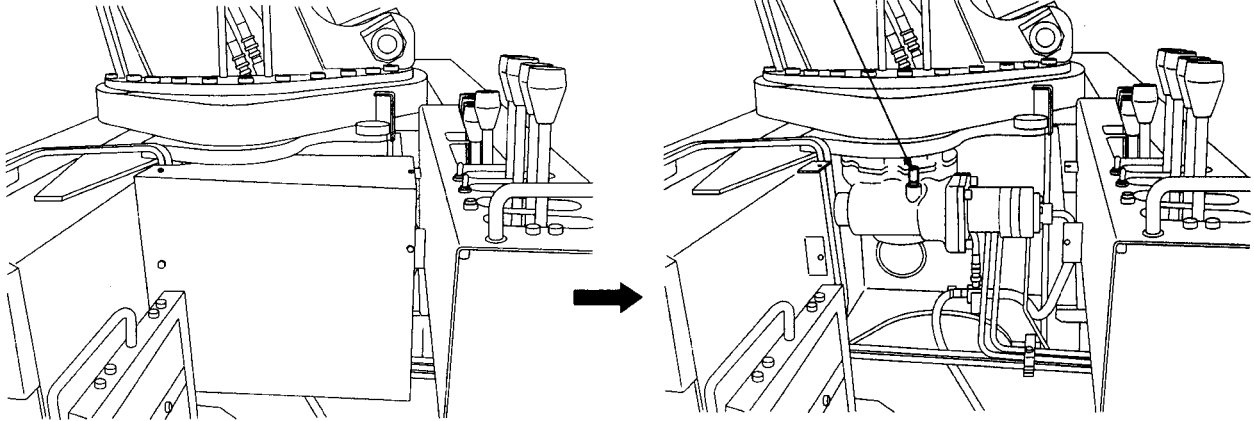
- (4) Remove the plug attached to pipe end of outrigger inner box to connect the pipe.



- (5) Fit the slide plate in the slide base to mount it on the base (by putting it between the base and the inner box).

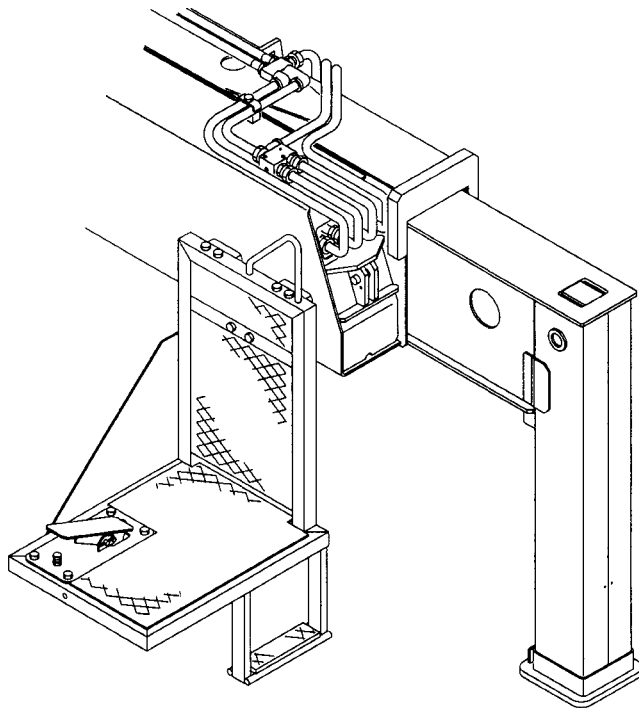
## 4-9. MOUNTING THE VENT PLUG

Vent plug : 013841120



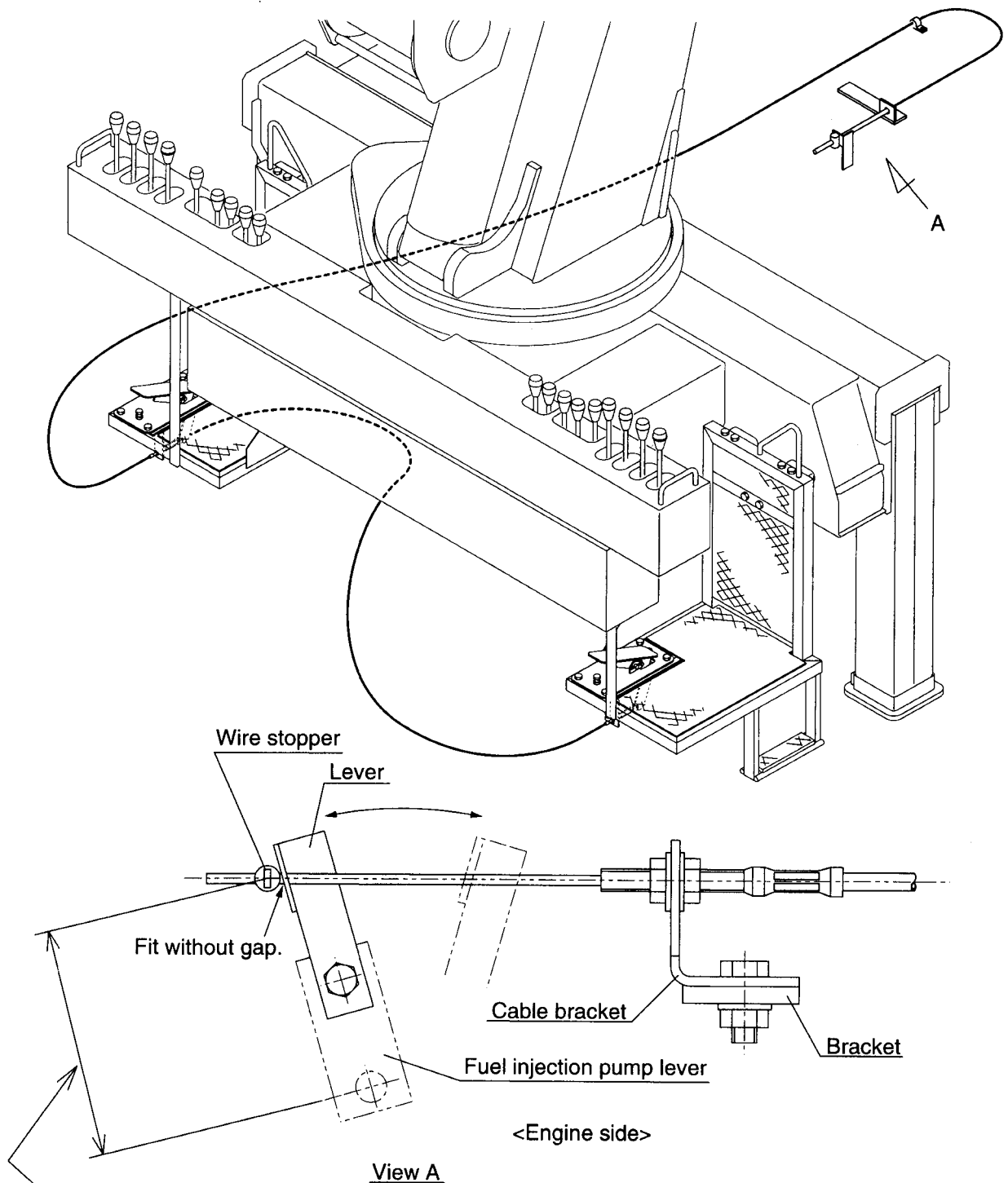
The swing gear box have a plug in their casings to prevent oil leakage during transit. Remove these plugs and fasten vent wound sealing tape in their place. Remove the cover and then attach the cover again.

## 4-10. MOUNTING THE PLATFORM ASS'Y



Mount the platform with bolts being attached to the mounting bracket of platform.

## 4-11. CONNECTING THE ACCELERATOR CABLE



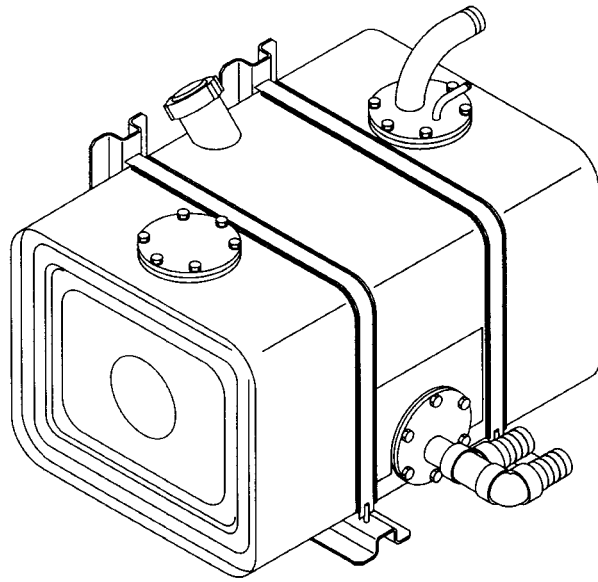
Determine the distance between the center of injection pump lever and the accelerator cable so that desired engine speed can be obtained by operating the control lever on the crane and the control lever can make a smooth movement.

### NOTE

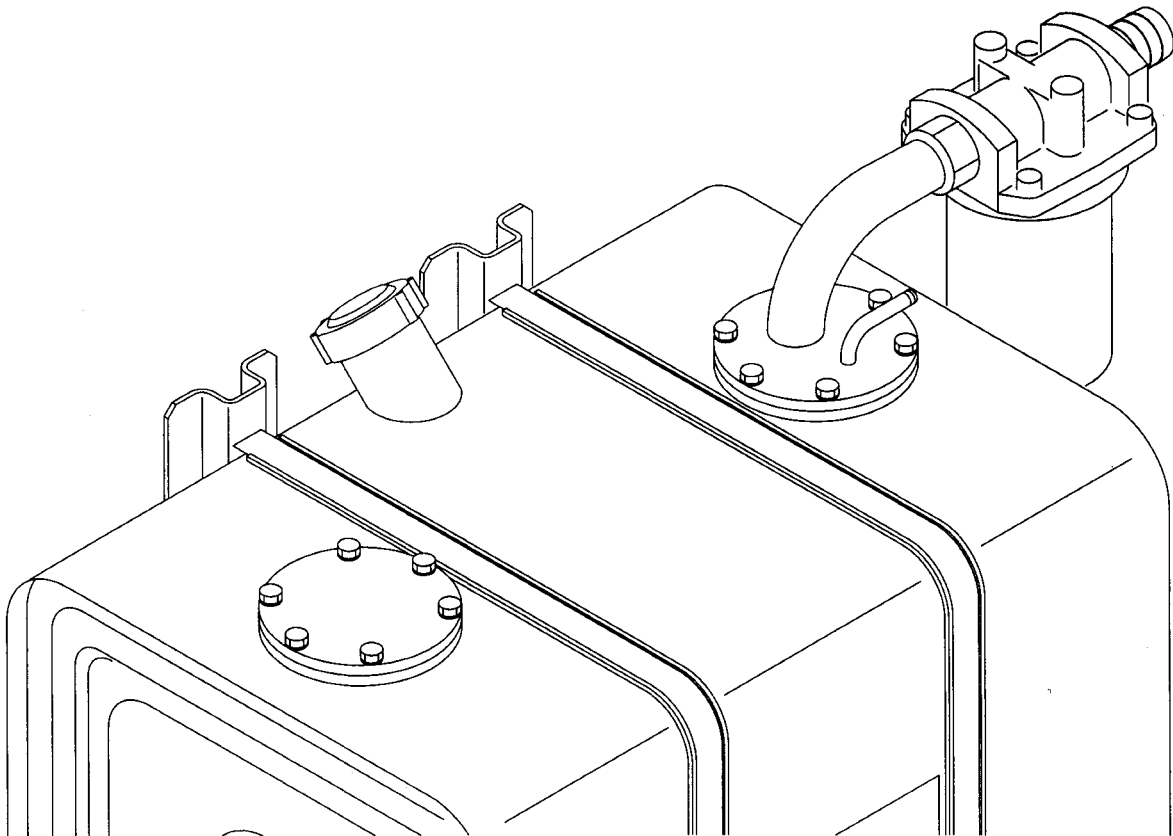
Attach the accelerator cable not to obstruct the accelerator pedal for travelling vehicle.

Connect both accelerator pedals attached to each platform on the right and on the left with the accelerator cable.

## 4-12. MOUNTING THE OIL TANK

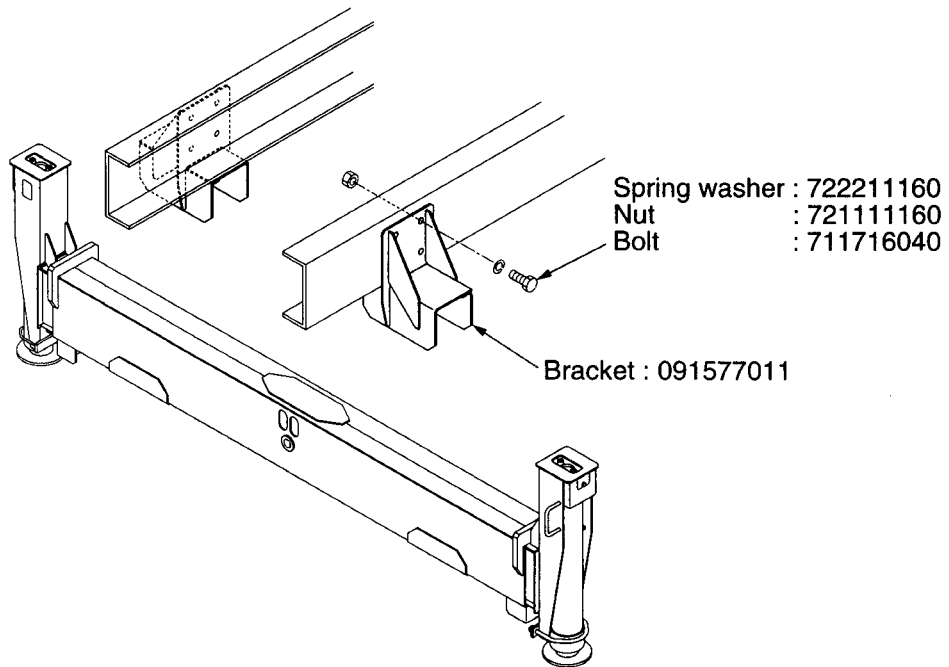


## 4-13. CONNECTING THE RETURN FILTER ASS'Y

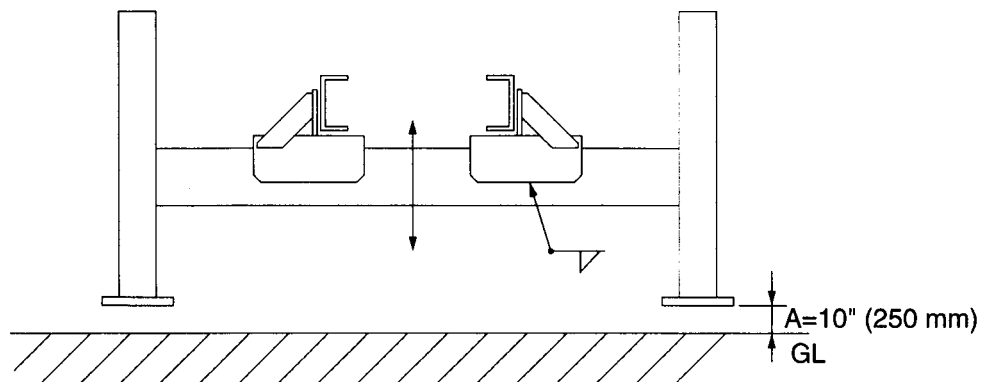


## 4-14. MOUNTING THE REAR OUTRIGGER

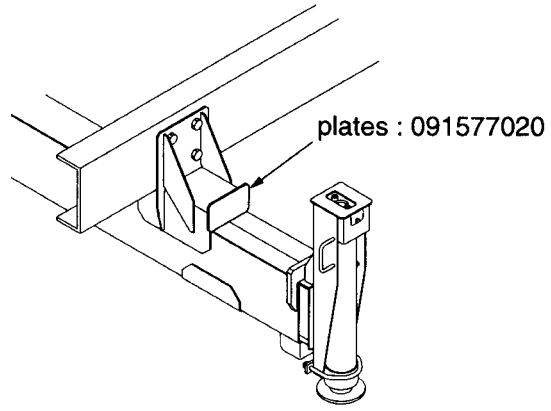
(1) Fix the bracket on the chassis frame with bolts.



(2) Adjust height of rear outriggers to be 10" (250mm) in dimension "A" and weld rear outriggers to the brackets.

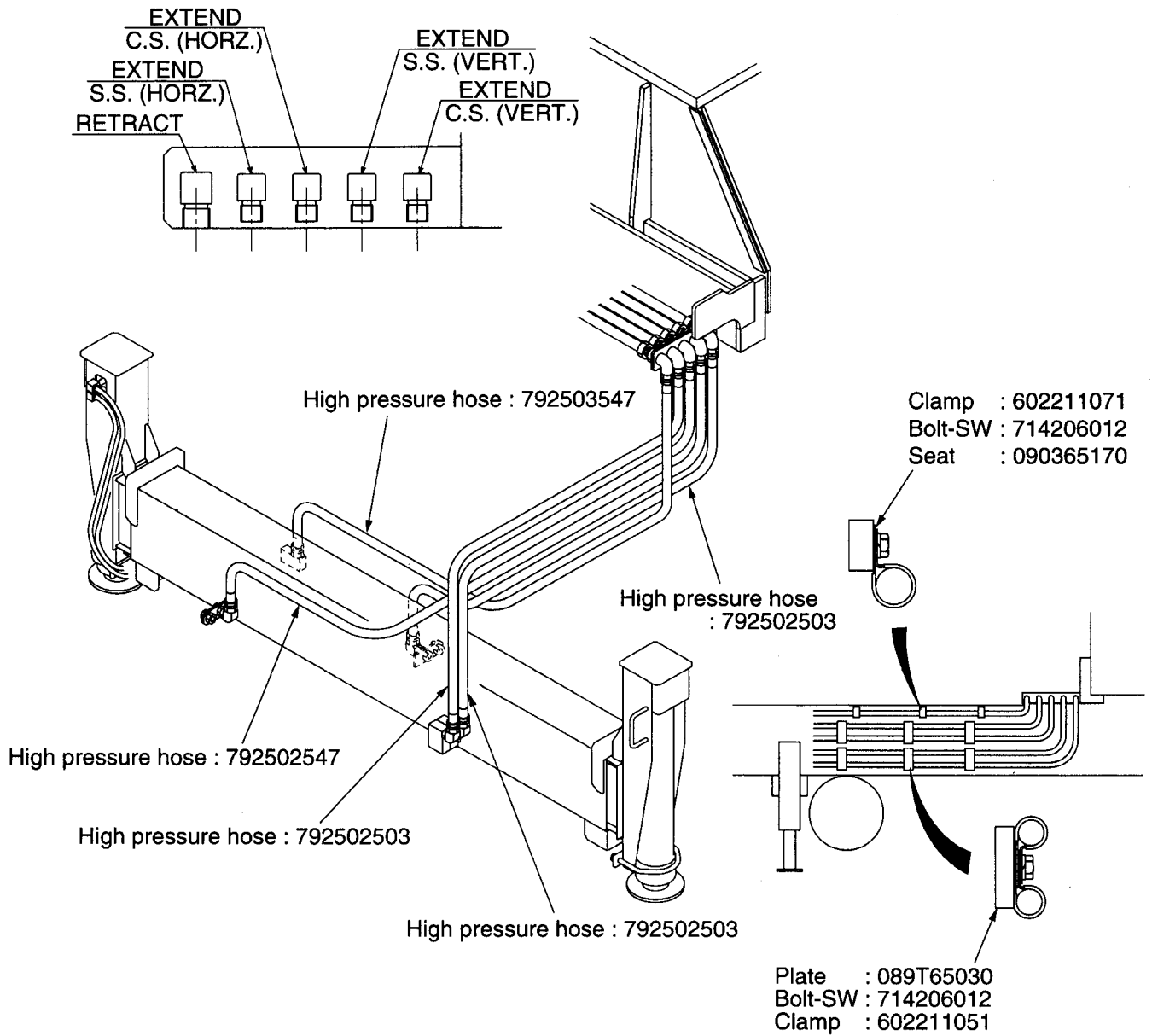


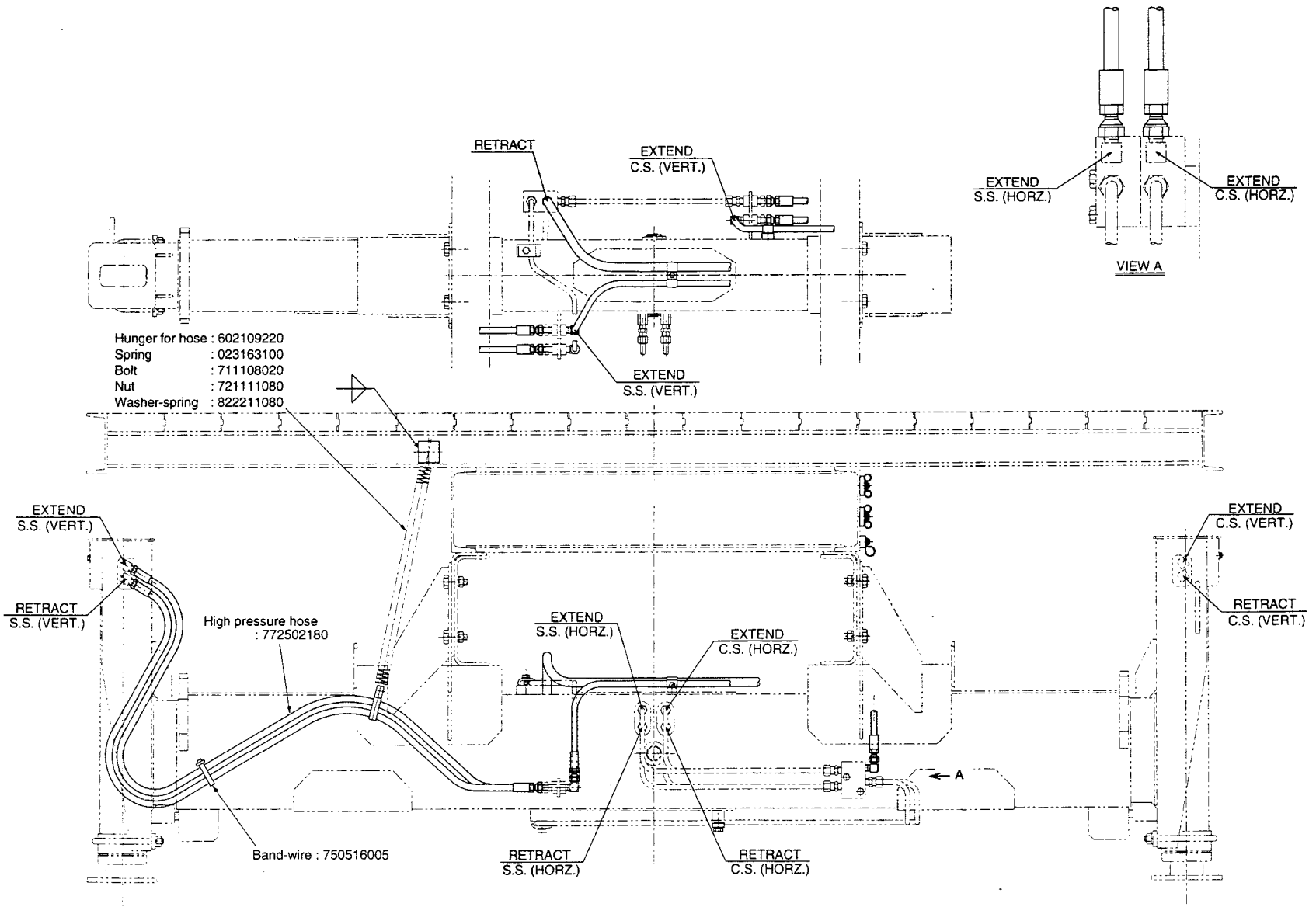
(3) Weld plates to each bracket and rear outrigger.





# 4-15. CONNECTING THE HIGH-PRESSURE HOSE FOR REAR OUTRIGGER

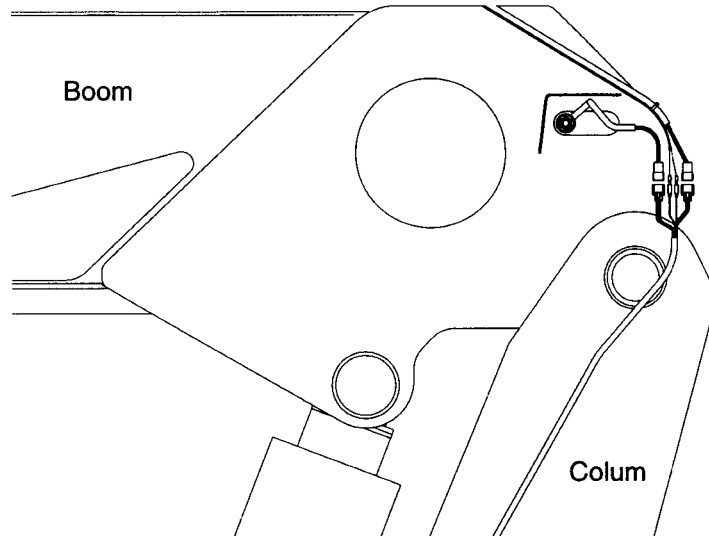




## 4-16. ELECTRIC WIRING

### (1) Wiring boom and column (Part A)

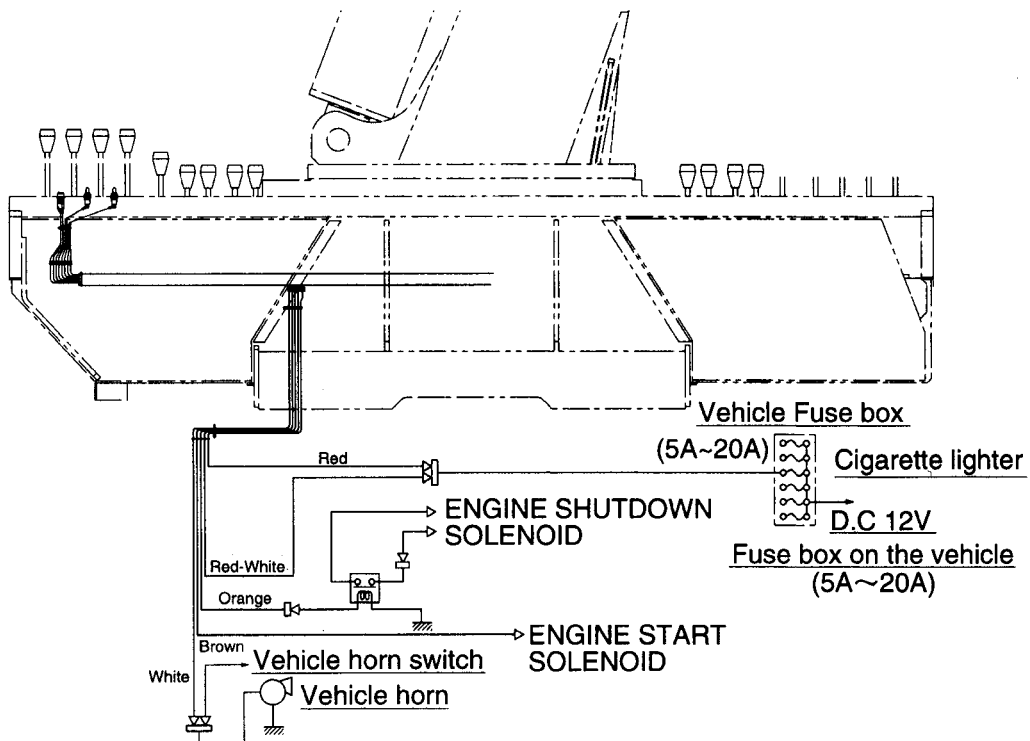
4(four) wiring connectors are provided for the boom and the column respectively. Connect each connector as illustrated in the figure shown below.



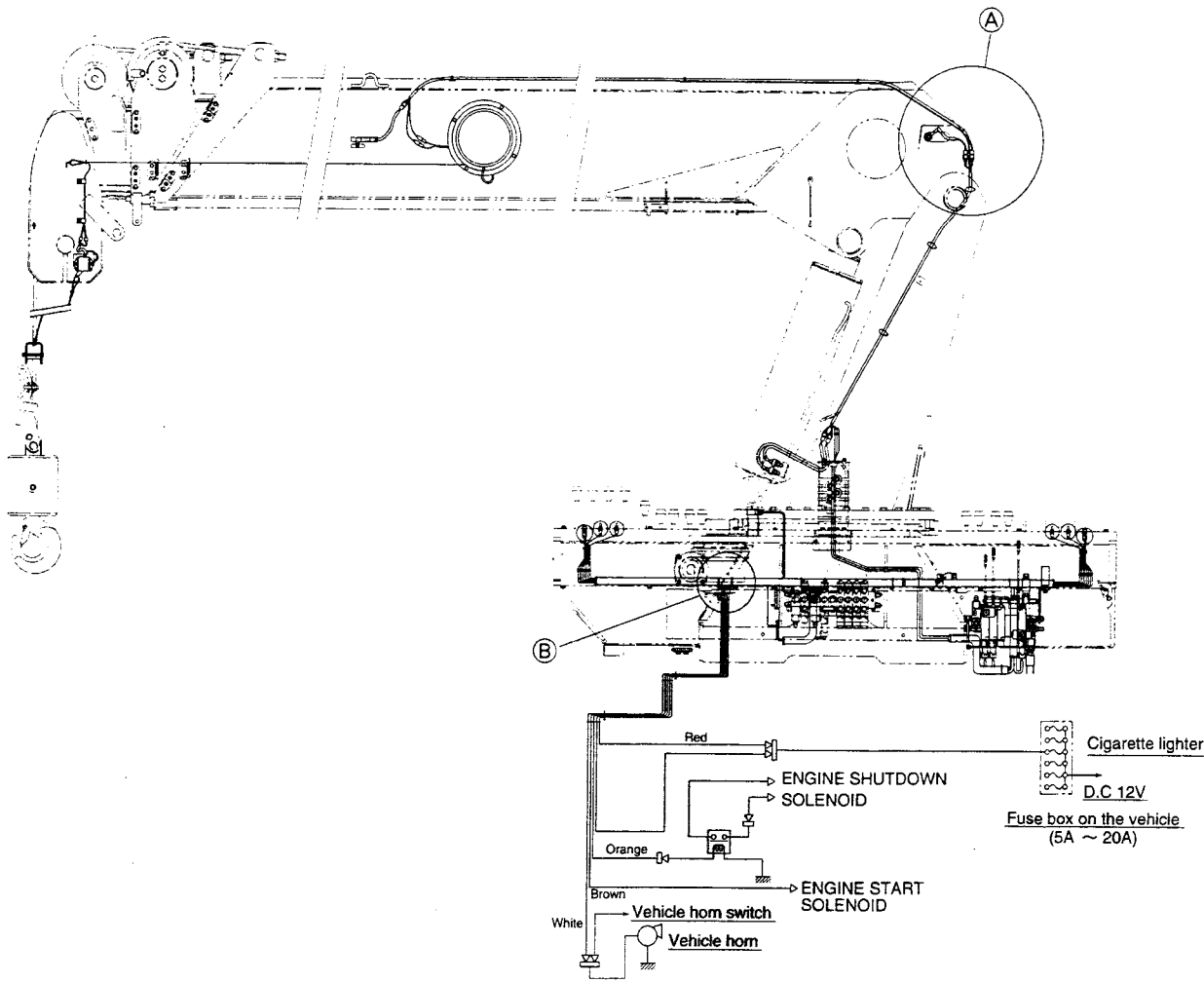
### (2) Wiring base and chassis (Part B)

Connect 5(five) lead wires coming from the crane body to the chassis side by referring to the following illustration.

- 1) Connect the white conductor to horn switch on chassis.
- 2) Connect the brown conductor to engine start solenoid on chassis.
- 3) Connect the orange and red-white conductors to relay for engine shut down solenoid.
- 4) Connect the red conductor to power cable of chassis via a 10-A fuse.



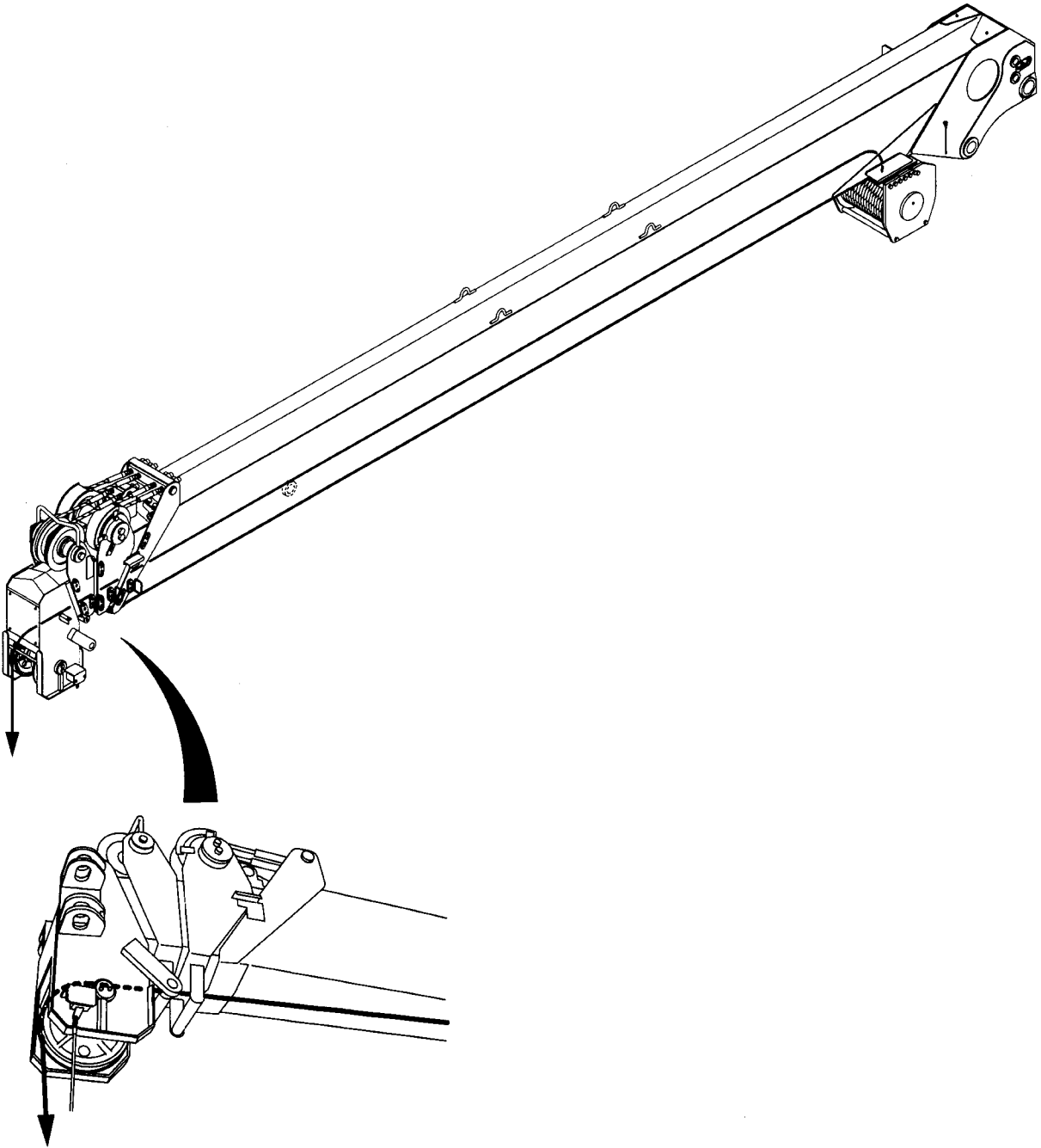
ELECTRIC WIRING DIAGRAM



## 4-17. MOUNTING THE HOOK

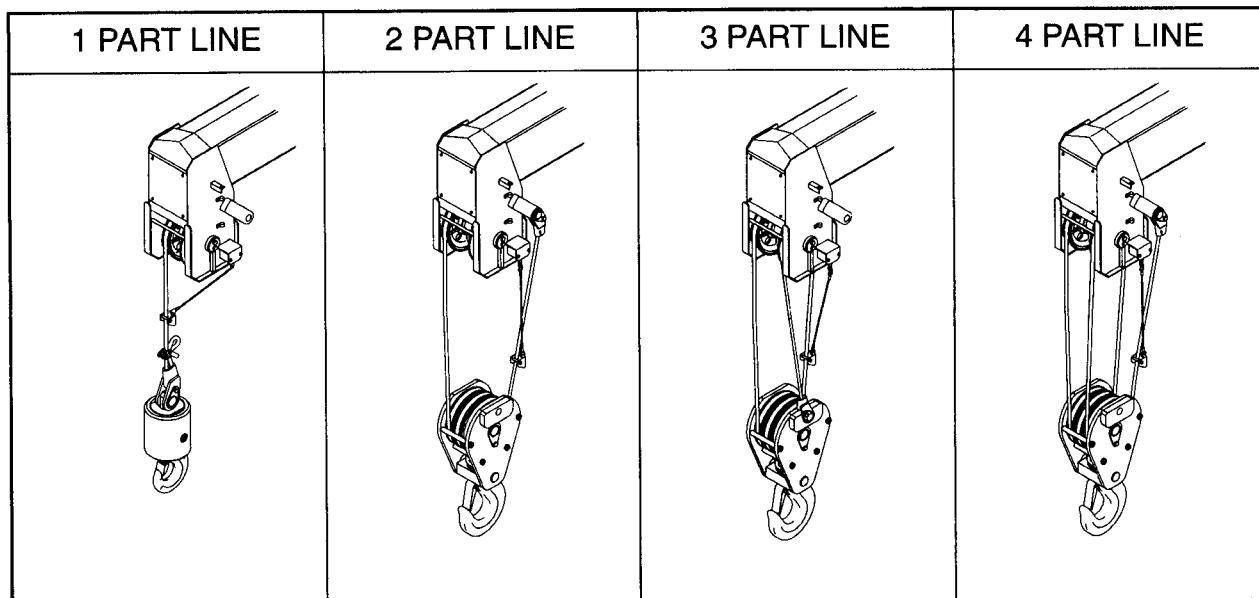
(1) Pull out wire slowly from drum.

Pass wire rope under the boom, and turn it around the right sheave of boom tip as view from the base.

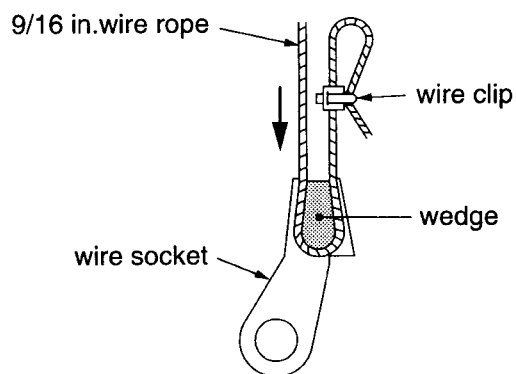


(2) Pass wire through wire socket in the direction shown in the figure.

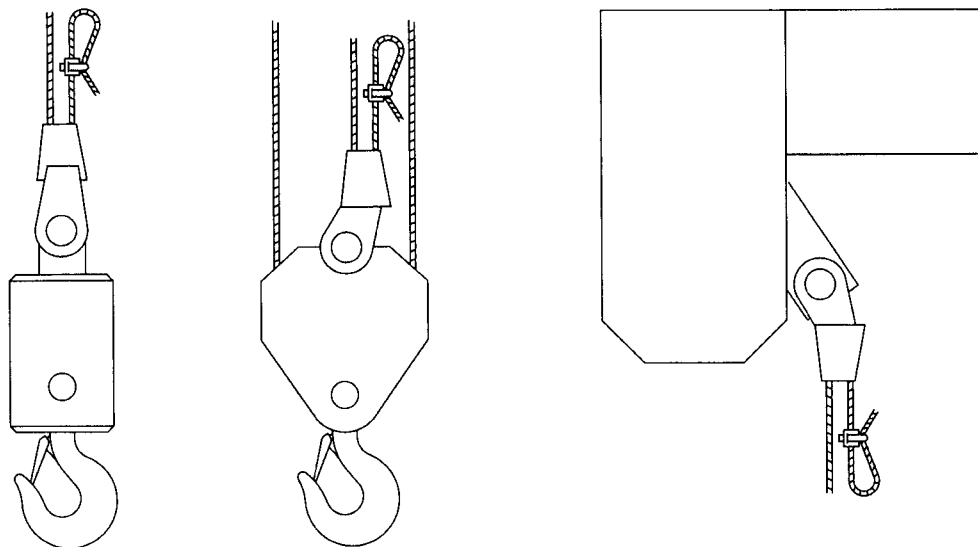
**Note: Pay also attention to the position of weight ass'y.**



(3) Pass wire through wire socket in the direction shown in the figure.

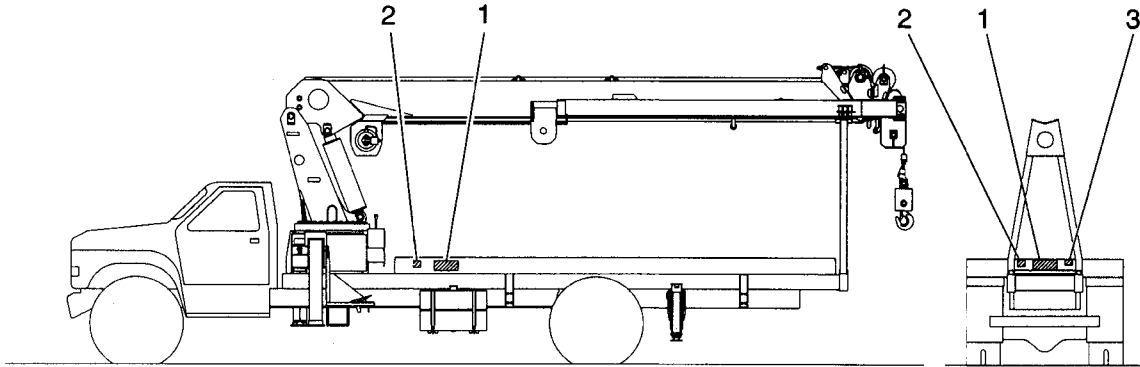


(4) Fit the wire socket either to the hook or to the boom tip.

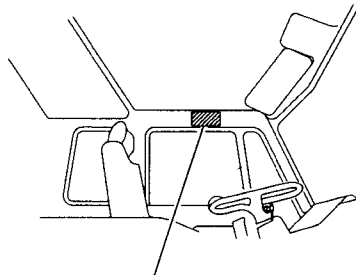


# 4-18. PLACARD LOCATION CHART

To be stuck on the right and on the left sides



Sticker to be stuck on the truck body (Caution:Electric shock)



4,5

Sticker to be stuck inside the cabin (Caution:PTO)

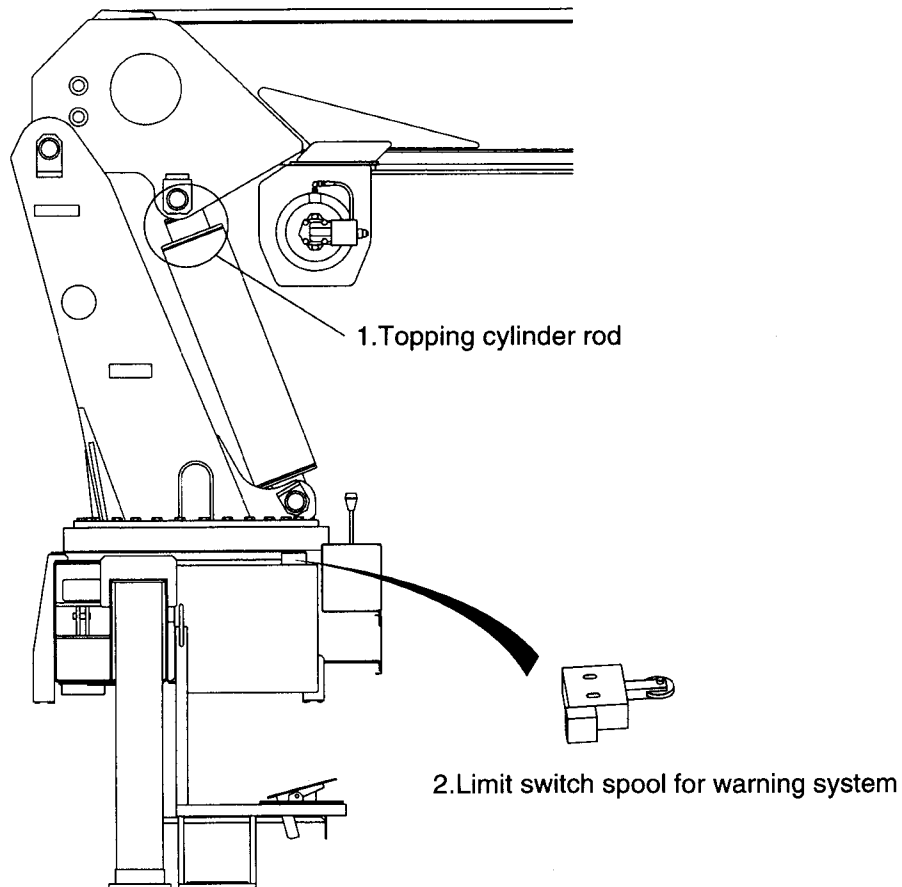
No.	Part Name	Part No.	Q'ty
1	Placard (Hazard)	088F81110	3
2	Placard (Danger, Ride, Load Line))	08A481120	3
3	Placard (Danger, Hoisting Personnel)	08A481130	1
4	Placard (Caution, RPM, Roding)	088F81080	1
5	Placard (Name Plate)	602104431	2

# 5. TEARING OFF MASKING USED WHEN PAINTING

Masking used when painting are stuck to the crane as they were.

After assembling be sure to tear off the maskings. If you fail to tear off the maskings from the following parts, they can cause operational troubles or hydraulic leakage:

1. Topping cylinder rod.
2. Sliding part of the limit switch for the swing warning system





# 6. START-UP CHECK

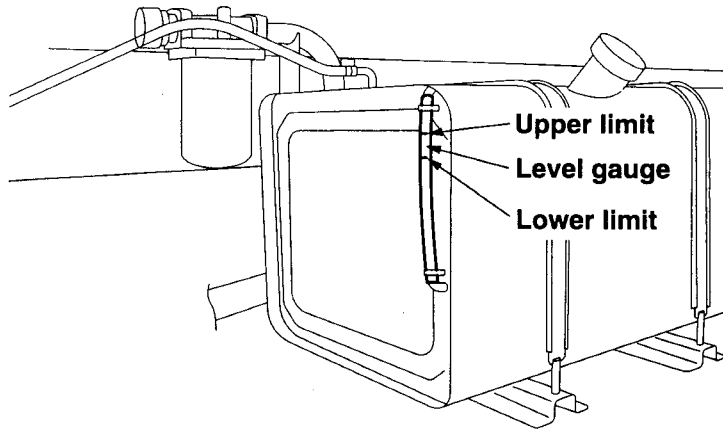
## (1) Hydraulic oil tank level check

Check that hydraulic oil level is between the marks indicating upper and lower limits on the oil level gauge which is attached on the side of the oil tank.

Conditions of checking:

- Return the crane to its original position to set the vehicle in a state ready for running.
- Insert level gauge until cap contacts oil filler, pull out level gauge, and check oil level.

Check oil level on the oil level gauge attached on the side of oil tank.



## RECOMMENDED HYDRAULIC OIL

Use industrial-type hydraulic oil;

ISO VG 46 for temperatures above 32°F (0°C).

ISO VG 22 for temperatures below 32°F (0°C).

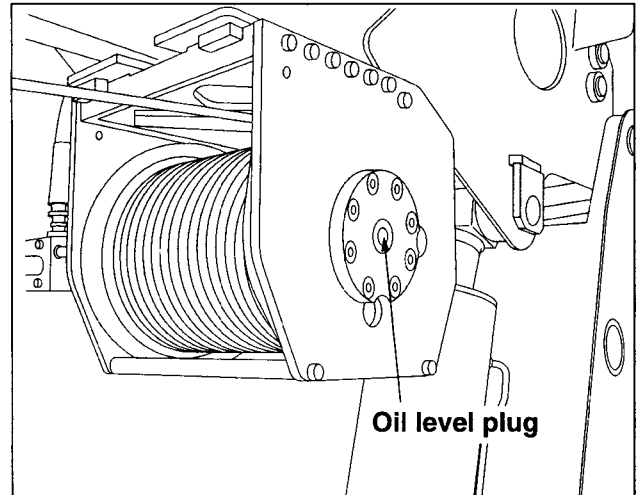
Petroleum Maker	Brand	
	ISO VG 22	ISO VG 46
ESSO	Spinesso 22	Teresso 46
MOBIL	Mobil DTE 22	Mobil DTE Oil Medium
CALTEX	Spindura oil 22	Rando Oil 46
SHELL	Shell Tellus Oil 22	Shell Tellus Oil 46

Quantity of hydraulic oil : 50.2 gallons (190 Liters)

(2) Winch gear box and swing gear box oil level check.

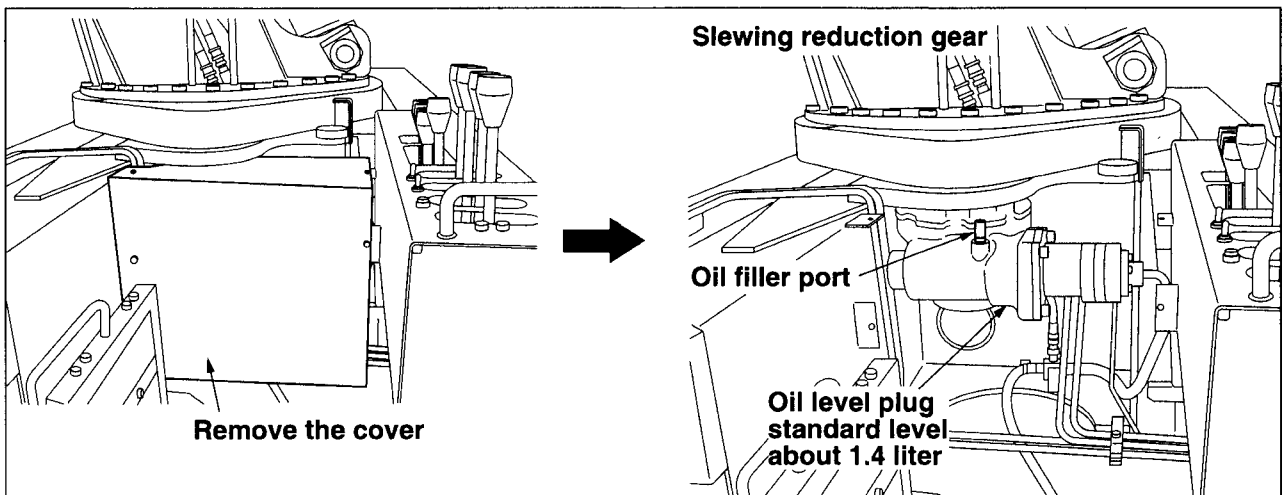
**WINCH SYSTEM**

1. Remove the oil level plug.
2. Fill oil up to the standard level.
3. Install the oil level plug.



**SWING SYSTEM**

1. Remove the vent plug for filler port.
1. Remove the oil level plug.
2. Fill oil up to the standard level.
3. Install the oil level plug and the vent plug.



## RECOMMENDED GEAR OIL

### (a) SWING SYSTEM

Use API Service GL-4 gear oils.

Petroleum Maker	Brand
ESSO	Standard gear oil 90
MOBIL	Mobilube SAE 90
CALTEX	Universal Thuban SAE 90
SHELL	Shell Spirax EP 90

### (b) WINCH SYSTEM

Use API GL-2/3 gear oils or equivalent

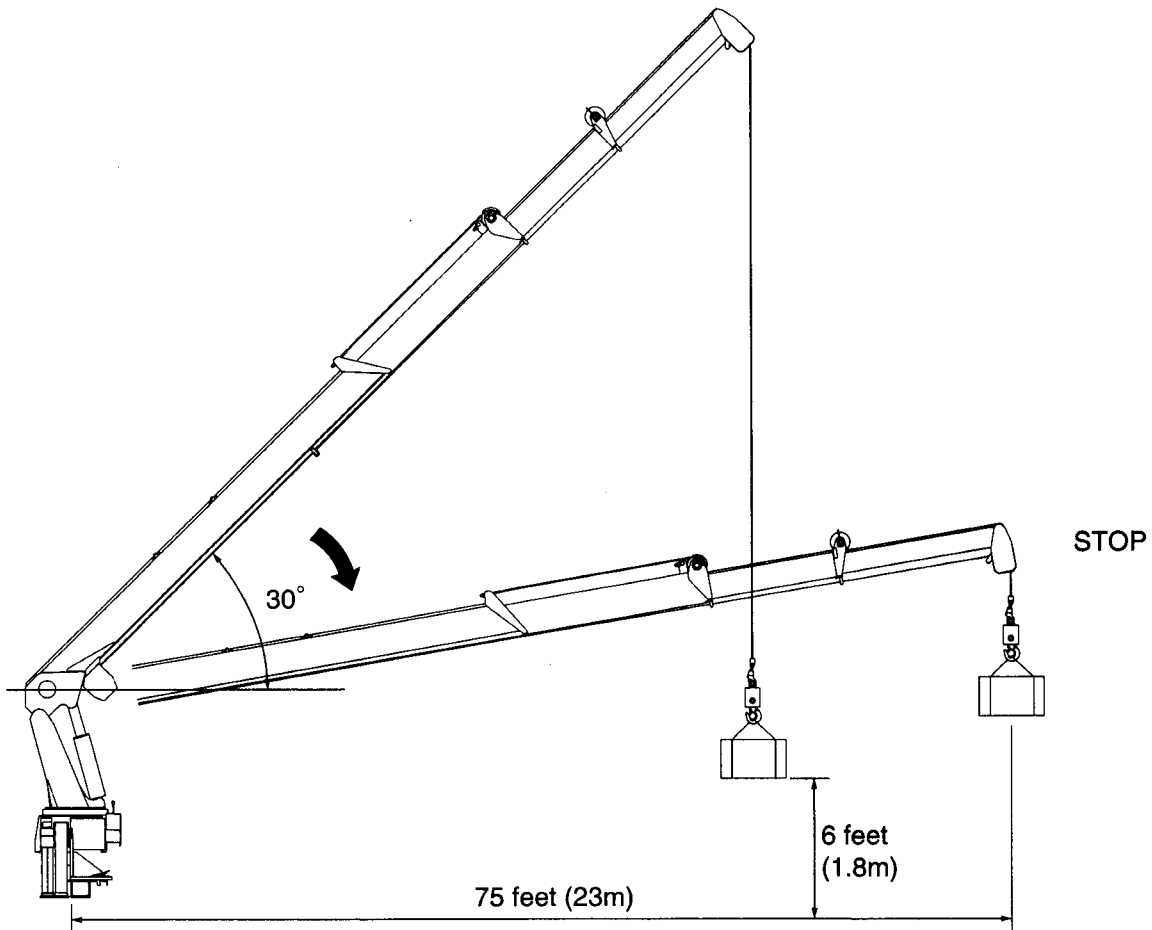
Petroleum Maker	Brand
TEXACO	MEROPA 150

# 7. TESTING

- (1) Engage PTO and check that abnormal noise is not produced from around it.
- (2) Check control levers that they move as indicated on stickers glued to knobs.
- (3) Operate each control lever, and check the operation of topping cylinder, telescoping cylinder, and outrigger cylinder.  
Cylinder operation test
  - Operate full stroke twice or more → Apply rated pressure for 5 seconds or more at each stroke end → Check pipes and glands for oil leaks.Winch operation test
  - Raise boom to 45° or more → Extend boom → Operate winch lower and raise for twice or more → check gear box and pipes for oil leaks.Swing operation test
  - Swing to right and left twice or more → Check pipes for oil leaks.
- (4) Check Anti-tow block device.  
Check that winch winding/boom extension stops when Anti-tow block device is closed.
- (5) Check that horn sounds while outrigger are being extended or retracted.
- (6) Check that horn sounds when push button switch is depressed.
- (7) Wire rope twist check.  
Fully extend boom → Raise boom to 45° or more → Weight 900 lbs (410 kg) → Hoist about 1 feet (0.3 m) high → Hook twist angle 1/4 or less → Check that drum winds in order.

(8) Check capacity alert system.

Fully extend boom → Raise boom to 30° or more → Lift up a cargo with 390 lbs (180 kg) in weight to 6 feet (1.8 m) above the ground → Lower the boom slowly → Confirm the working radius when it has been made an automatic stop that it is at approx. 75 feet (23 m).



**FURUKAWA UNIC Corporation**