



# Mahindra

## TRACTORS

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### Auxiliary-Valve attachment Set-Up Instructions

# '16' Series

**3016**  
**3616**





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## ABOUT THIS MANUAL

This Manual has been prepared to assist you in following the correct procedure for break-in, operation and maintenance of your new Mahindra tractor.

Your tractor has been designed and built to give maximum performance, with good fuel economy and ease of operation under a wide variety of operating conditions. Prior to delivery, the tractor was carefully inspected, both at the factory and by your Mahindra dealer, to ensure that it reaches you in optimum condition. To maintain this condition and ensure trouble free performance, it is important that the routine services, as specified in this manual, are carried out at the recommended intervals.

We have enclosed a page on new tractor inspection sheets. The first sheet is the dealer's copy and should be removed by the dealer after the inspection has been carried out. The second sheet is your copy of the service performed. Ensure that you & the dealer sign both copies.

Read this manual carefully and keep it in a convenient place for future reference. If at any time you require advice concerning your tractor, do not hesitate to contact your authorised Mahindra dealer. He has trained personnel, genuine Mahindra parts and necessary equipments to undertake all your service requirements.

Mahindra USA Inc's. policy is one of continuous improvement, and the right to change prices, specifications or equipments at any time without notice is reserved.

All data given in this book is subject to production variations. Dimensions & weight are approximate only and the illustrations do not necessarily show tractors in standard condition. For exact information about any particular tractor, please consult your Mahindra dealer.



# SAFETY



THIS SAFETY ALERT SYMBOL INDICATES IMPORTANT SAFETY MESSAGES IN THIS MANUAL. WHEN YOU SEE THIS SYMBOL, CAREFULLY READ THE MESSAGE THAT FOLLOWS AND BE ALERT TO THE POSSIBILITY OF PERSONAL INJURY OR DEATH.

**IMPORTANT:** *To prevent personal injury, follow the safety messages in this manual. Follow the instructions carefully*

The procedures recommended and shown in this manual are good, effective service methods. However, all possible procedures and service hazards may not be covered. Therefore, if you use a tool or procedure not recommended, you must make sure that the method you select is a safe method.



**WARNING:** Read operators manual to familiarize yourself with control lever functions.



**WARNING:** Operate tractor and equipment controls from the seat position only. Any other method could result in serious injury



**WARNING:** Unauthorized modifications to this machine can cause injury or death. Do not make unauthorized modifications to this machine.



**WARNING:** Missing shields, guards or access panels can cause injury or death. Before you start the tractor engine and move this machine, always install all shields, guards or access panels correctly.



**CAUTION:** To prevent personal injuries when working with machinery, use safety shoes, a hard hat, safety glasses or goggles and tight fitting clothing. Use a brass or bronze hammer or driver when positioning hardened steel parts.



**CAUTION:** Use a clip on air Chuck, extension hose with gauge and stand away from the tire while inflating to prevent the possibility of personal injury due to a tire and rim separation, etc.



**WARNING:** Hydraulic oil or diesel fuel leaking under pressure can penetrate the skin and cause infection or other injury. To prevent personal injury: Relieve all pressure, before disconnecting lines. Be for applying pressure, make sure all connections are tight and components are in good condition. Never use your hand to tighten for suspected leaks under pressure. Use a piece of cardboard or wood for this purpose. If injured by leaking fluid, see your doctor immediately.



**WARNING:** Never operate the engine in a closed building. Proper ventilation is required under all circumstances.



# INTRODUCTION

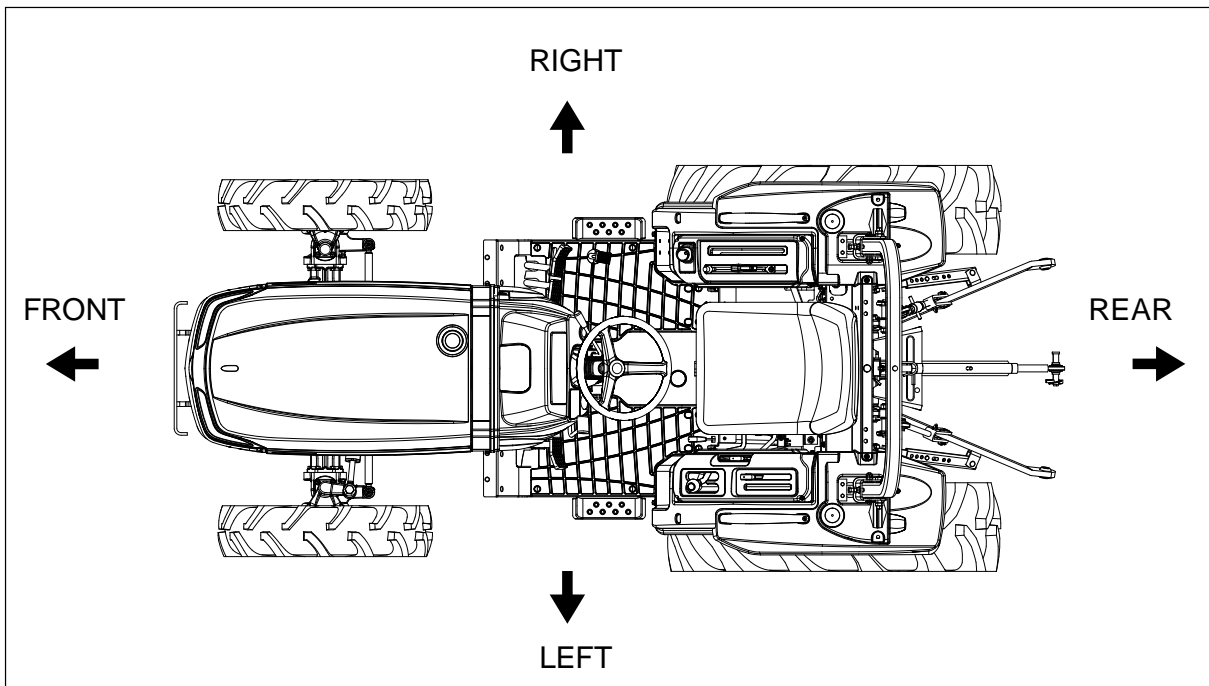
This manual covers the instructions for the assembly of the Auxiliary valve attachment.

Read the entire manual before you start.

Read and understand the safety messages beginning on page 3.

## RIGHT HAND AND LEFT HAND SIDES OF THE TRACTOR

**NOTE:** When you are in the tractor seat looking forward, the right hand and left hand of the tractor are the same as your right hand and left hand.



# TORQUE SPECIFICATION

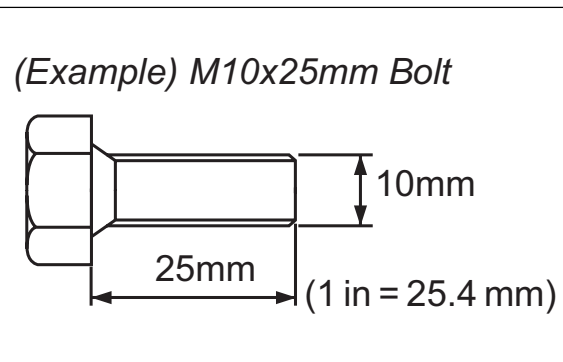
Use the following torques unless otherwise specified.

Nominal size	Pound Feet	Newton Meters
6mm	7-9	10-12
8mm	18-22	25-29
10mm	29-33	39-44
12mm	61-69	83-93
14mm	87-98	118-132
16mm	112-127	152-172

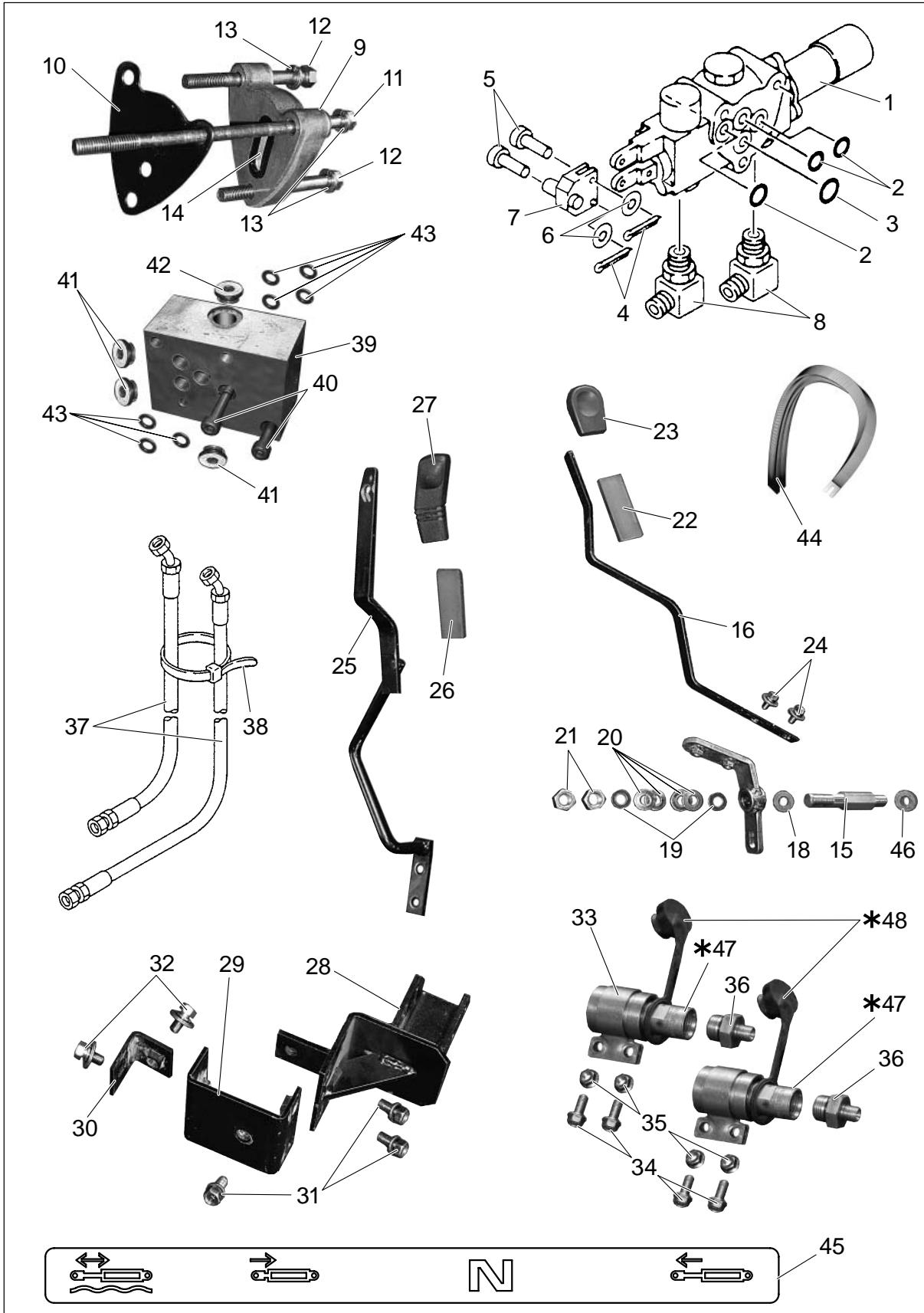
**NOTE:** The bolts and nuts used are "Metric" sizes, be sure to use metric tools.

Be careful to use bolts and nuts of correct sizes and thread pitches when assembling this tractor.

**NOTE:** Nominal size is shown in the "size" column.



# CONTENTS OF AUXILIARY VALVE KIT





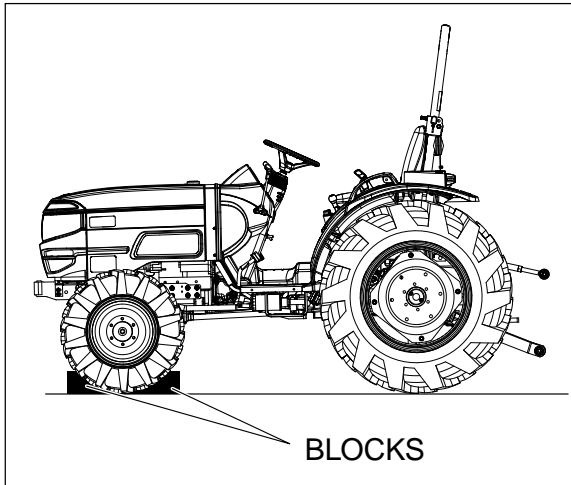
## PARTS LIST OF AUXILIARY VALVE KIT

REF.	DESCRIPTION	REQ'D.
1 - 46	KIT - AUXILIARY VALVE	1
1 - 8	SUB VALVE ASSY	1
1 - 6	SUB VALVE	1
1	BODY	1
2	O - RING ( $\phi$ 12 m m)	3
3	O - RING ( $\phi$ 16 m m)	1
4	PIN SPLIT	2
5	PIN CLEVIS	2
6	WASHER FLAT	2
7	ARM	1
8	ELBOW	2
9	CAP	1
10	PLATE	1
11	BOLT (M 8 x 140 m m)	1
12	BOLT (M 8 x 85 m m)	2
13	WASHER (M 8)	3
14	O - RING ( $\phi$ 25 m m)	1
15	SHAFT	1
16	LEVER AUX	1
17	ARM AUX	1
18	COLLAR	1
19	LINER	2
20	SPRING CONICAL	4
21	NUT (M 16)	2
22	TUBE	1
23	GRIP	1
24	BOLT (M 8 x 25 m m)	2
25	LEVER P / C	1
26	TUBE	1
27	GRIP	1
28	BRACKET (A)	1
29	BRACKET (B)	1
30	BRACKET (C)	1
31	BOLT (M 8 x 20 m m)	3
32	BOLT (M 8 x 16 m m)	2
33	CLAMP COUPLER	2
34	BOLT (M 8 x 20 m m)	4
35	NUT (M 8)	4
36	ADAPTER	2
37	HOSE A	2
38	BAND WIRE	1
39	BLOCK	1
40	BOLT (M 8 x 60 m m)	2
41	PLUG (G 1 / 4)	3
42	PLUG (G 3 / 8)	1
43	O - RING ( $\phi$ 10 m m)	7
44	SEAL A	1
45	LABEL	1
46	WASHER (M 16 x 6 m m)	1
* 47	COUPLING ASSEMBLY	2
* 48	COUPLER CAP	2

\*: **47** **48** parts is not included in kit.

## BEFORE IT WORKS

1. Place the tractor on level and hard ground, put the range shift lever in LOW position, apply the park brakes and stop the engine. Put blocks in front of and behind of the front wheels.

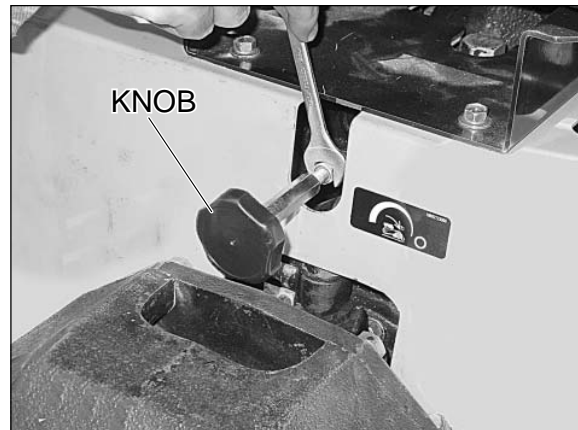


2. Disconnect the ground cable from the battery.



## DISASSEMBLING SEAT BRACKET AND COVER

1. Remove the knob.



2. Remove the R.H. lever guide by removing the four bolts (M6x16mm, M6x20mm) and a nut (M6).

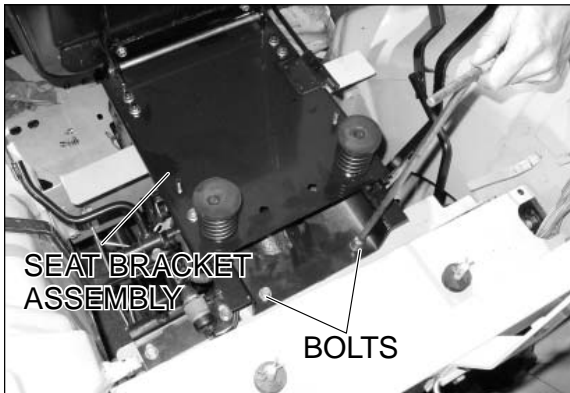
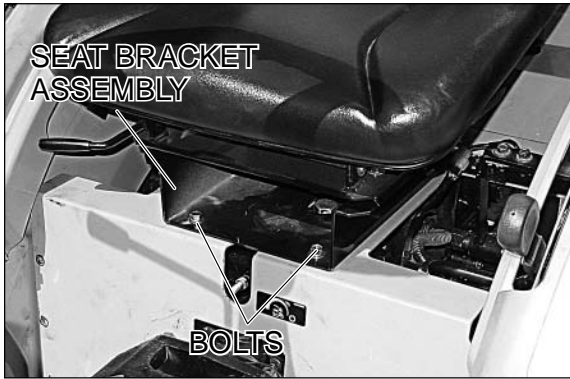
In the case of gear specifications, disconnect the harness of the IND PTO switch.



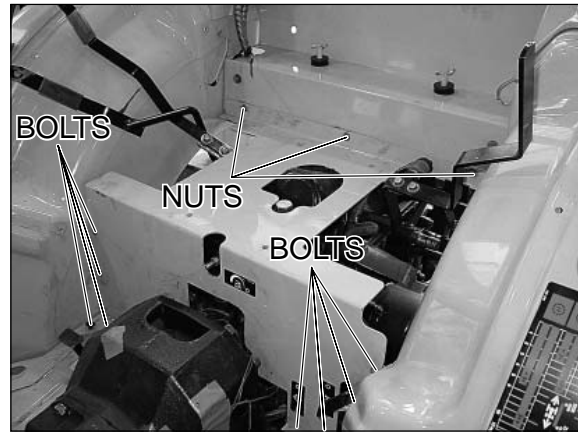
3. Remove the L.H. lever guide by removing the four bolts (M6x16mm) and a nut (M6).



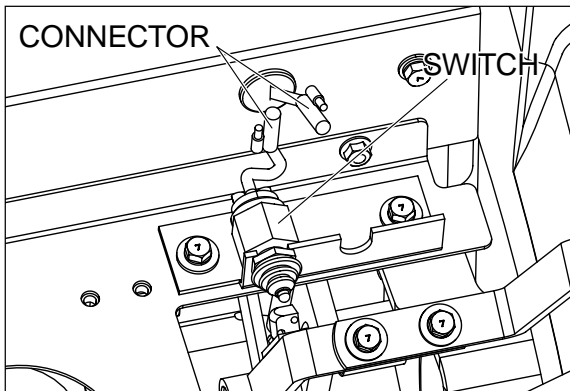
4.Remove the seat bracket assembly by removing the four bolts (M8x16mm).



6.Remove the cover under the seat bracket assembly by removing the eight bolts (M8x16mm) and three nuts (M8).

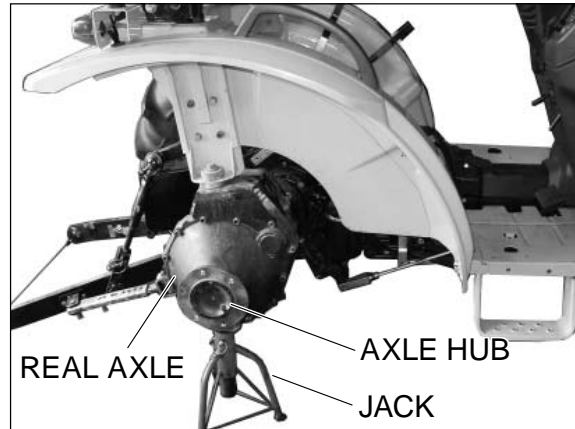
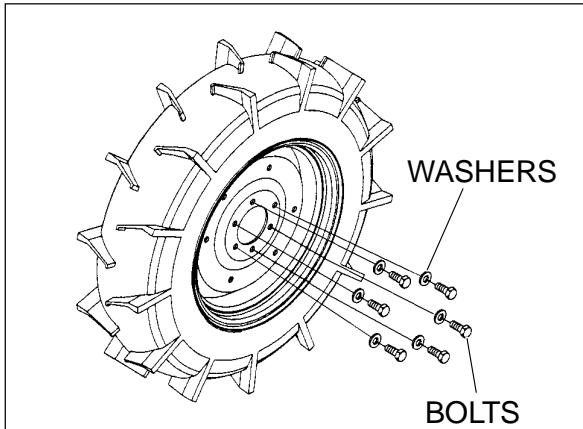


5.Disconnect the connector from the switch.



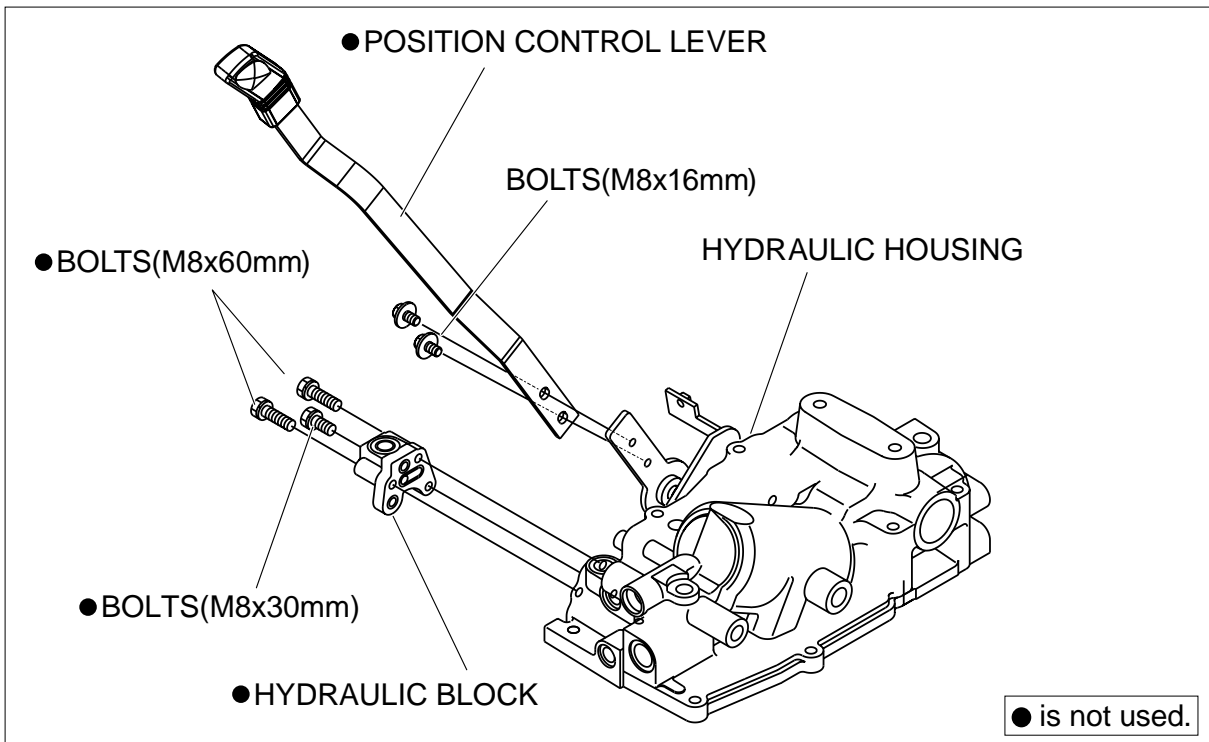
## DISASSEMBLING REAR WHEEL R.H.

1. Jack up the R.H. rear axle and remove the R.H. rear wheels by removing the six bolts (M14x30mm), six washers from the axle hub.



## DISCONNECTING LEVER AND HYDRAULIC BLOCK

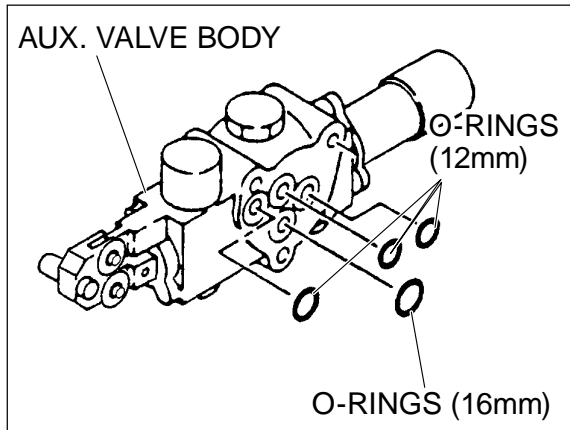
1. Remove the position control lever by removing the two bolts (M8x16mm) from the hydraulic housing.
2. Remove the hydraulic block by removing the three bolts (M8x60mm:2pcs, M8x30mm:1pcs) from the hydraulic housing.



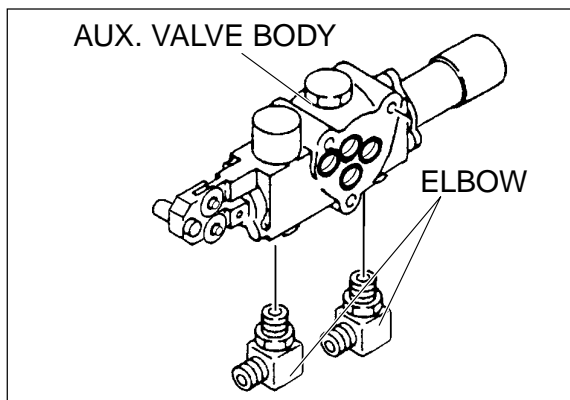


# ASSEMBLING AUX. VALVE KIT

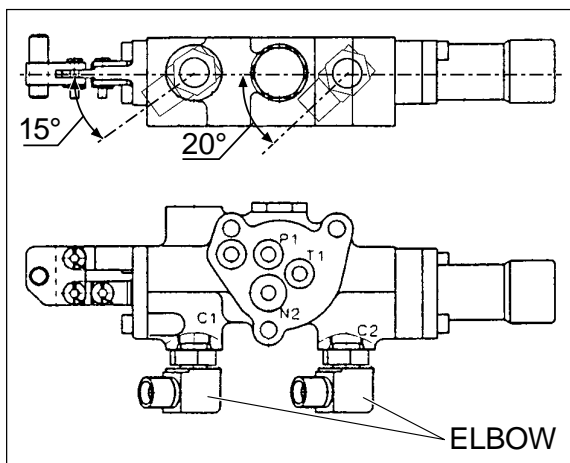
1. Install O-rings to the Aux. valve body.  
(Apply the oil to the O-rings.)



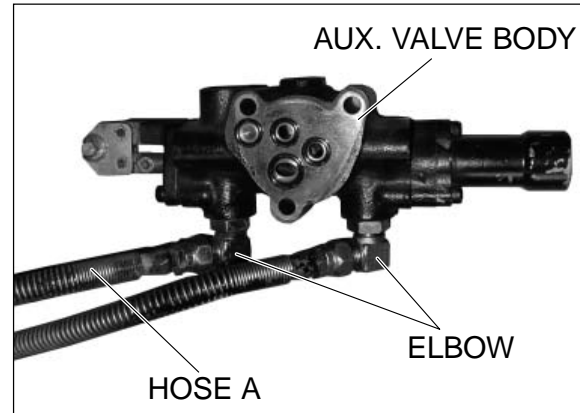
2. Install elbow to the Aux. valve body. Tighten the elbows to the following torque. 43.4-50.6Lbf·ft (59-69N·m)



3. Check the position and direction of two elbows.



4. Install hose A to the elbow. Tighten the hose A to the following torque. 18.5-21.4Lbf·ft (25-29N·m)



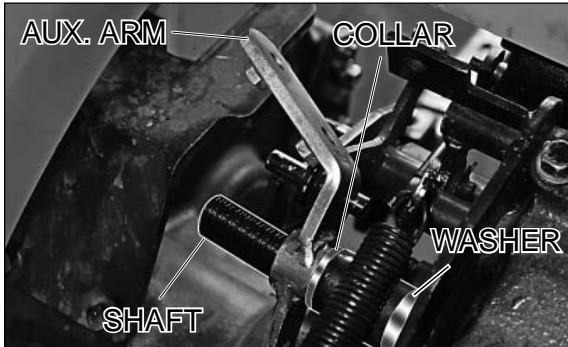
5. Set the cap, plate, O-ring with three bolts (M8x85mm:2pcs, M8x140mm:1pcs) and washers to the Aux. valve body.



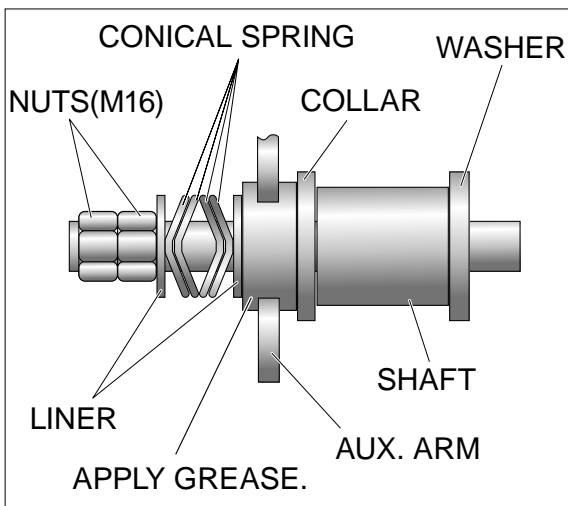
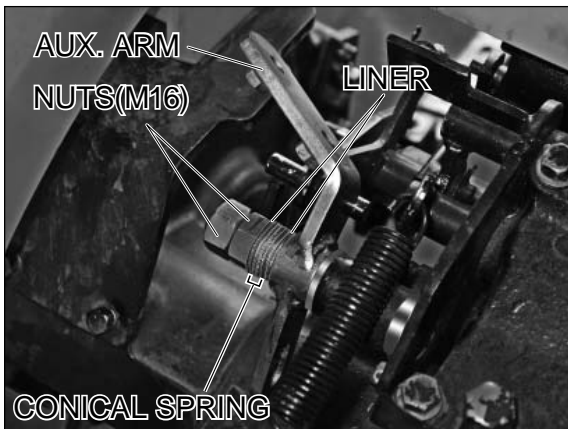
## INSTALLING AUX. ARM

1. Install washer (M16x6mm) and shaft (M16x25mm) to the hydraulic housing. Tighten the shaft to the following torque.  
112-127Lbf-ft (152-172N·m)

2. Install collar and Aux. arm to the shaft.

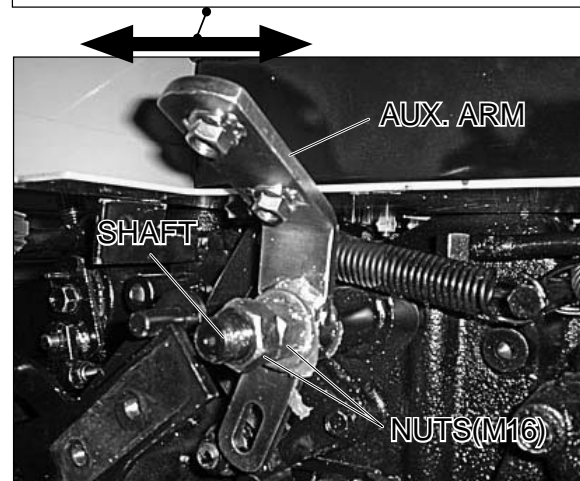


3. Install liner, conical spring and nuts (M16) to the shaft.



4. Tighten the two nuts on the shaft to adjust to the following multiplying the frictional force at the Aux. arm.

FRictional FORCE: 1.44-2.16Lbf-ft  
(1.96-2.94N·m)



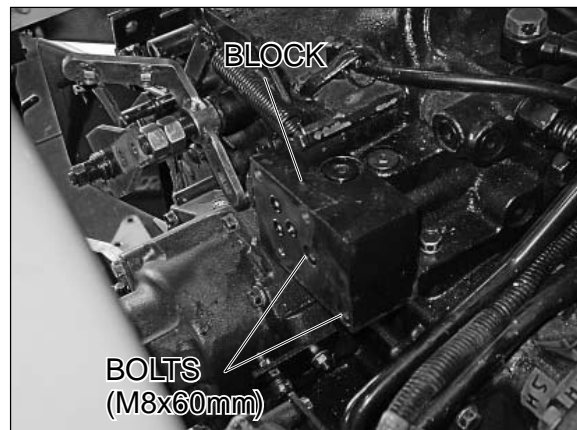
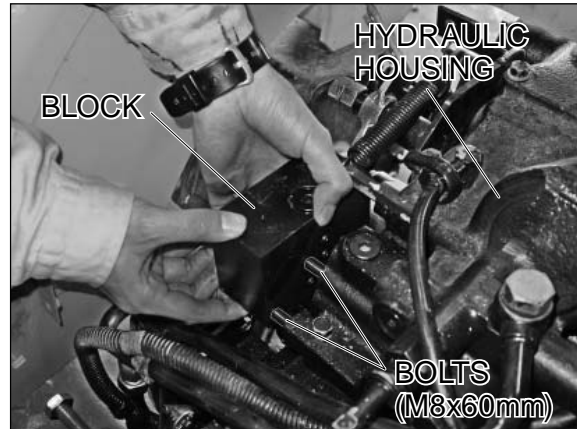
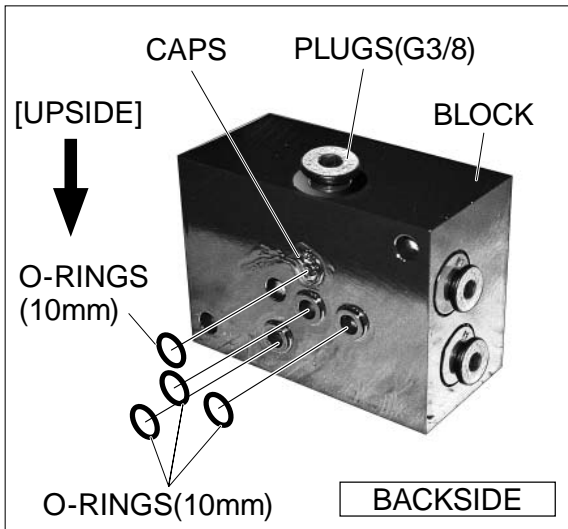
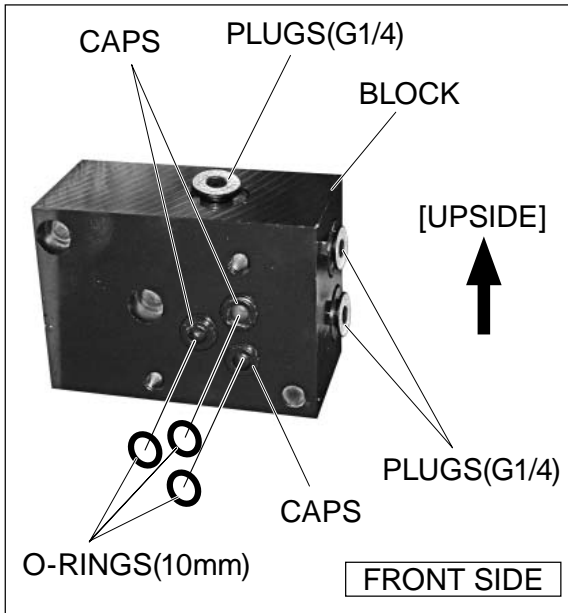
# INSTALLING BLOCK

1. Remove the Seven caps from the block.
2. Install seven O-rings (10mm) to the block.
3. Install four plugs (G1/4:3pcs, G3/8:1pcs) to the block.

Tighten the plugs to the following torque.  
G1/4 : 25-29Lbf-ft (34-39N·m)  
G3/8 : 36-43Lbf-ft (49-59N·m)

4. Install block to the hydraulic housing with two bolts(M8x60mm).

Tighten the bolts to the following torque.18-22Lbf-ft (25-29N·m)

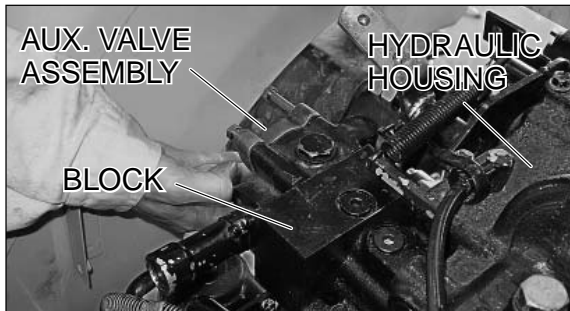




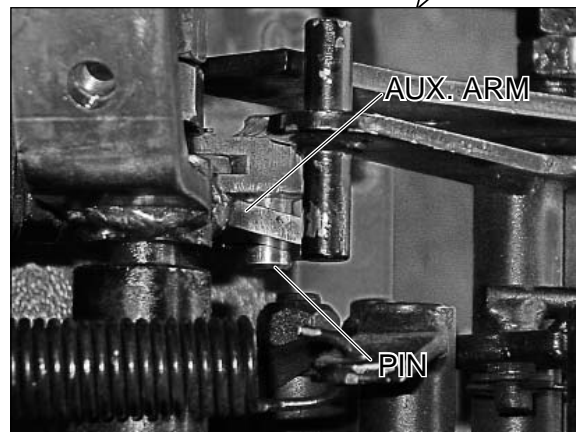
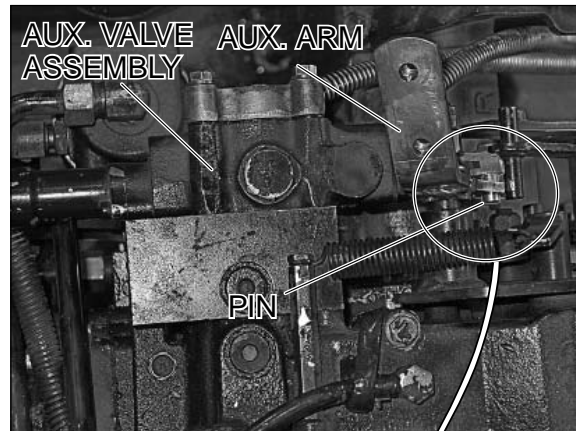
## INSTALLING AUX. VALVE ASSEMBLY

1. Install Aux. valve assembly to the block with three bolts (M8x85mm : 2pcs, M8x140mm : 1pc) and three washers.

Tighten the bolts to the following torque.  
18-22Lbf·ft (25-29N·m)



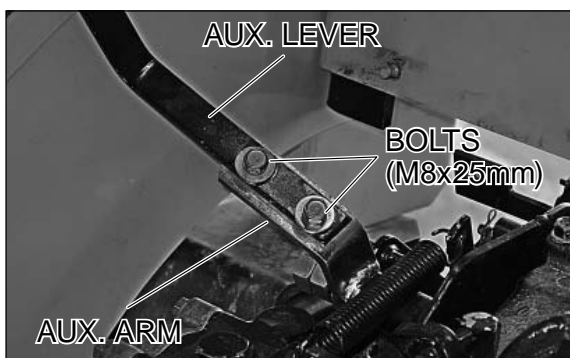
2. Put the pin of Aux. valve assembly into the hole of Aux. arm.



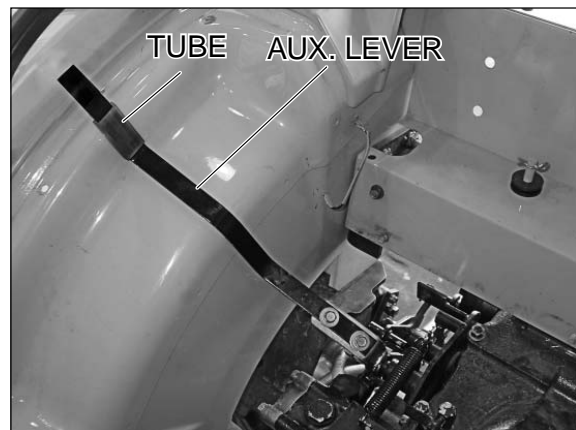
## INSTALLING AUX. LEVER

1. Install Aux. lever to the Aux. arm with two bolts (M8x25mm).

Tighten the bolts to the following torque.  
18-22Lbf·ft (25-29N·m)



2. Install tube to the Aux. lever.

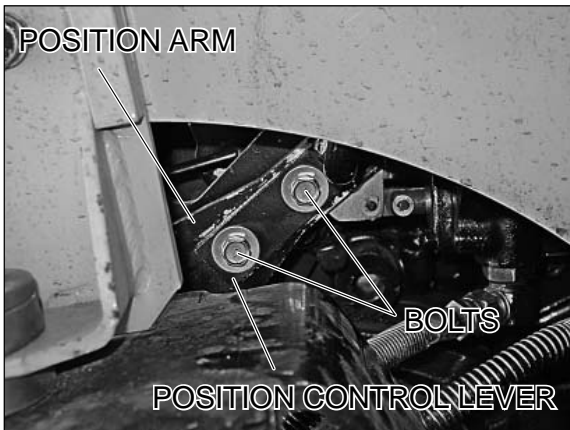




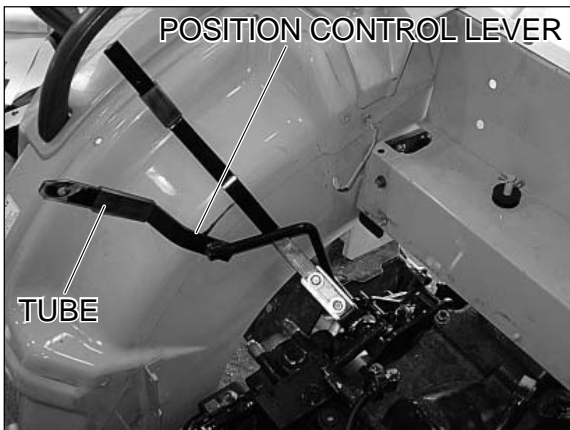
## INSTALLING POSITION CONTROL LEVER

1. Install position control lever to the position arm with two bolts (M8x25mm).

Tighten the bolts to the following torque.  
18-22Lbfft (25-29N·m)

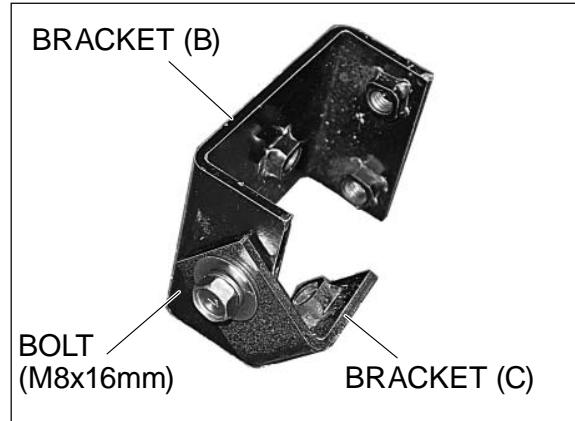


2. Install tube to the position control lever.



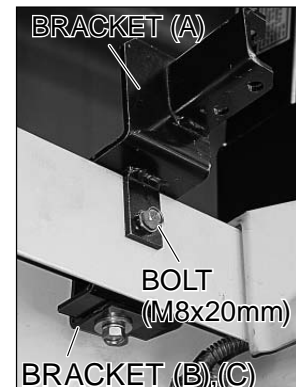
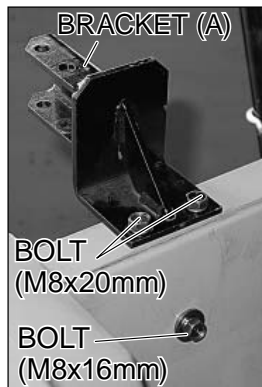
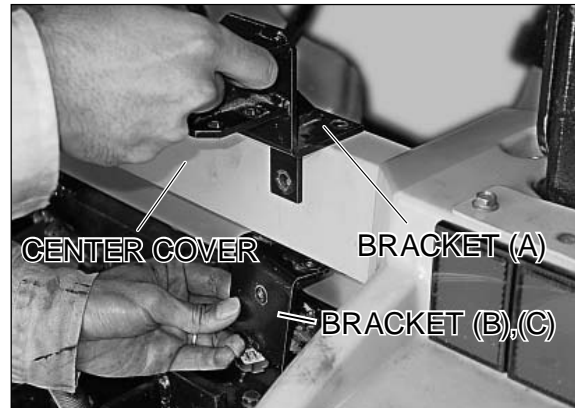
## INSTALLING BRACKET

1. Install bracket (C) to the bracket (B) with bolt (M8x16mm).



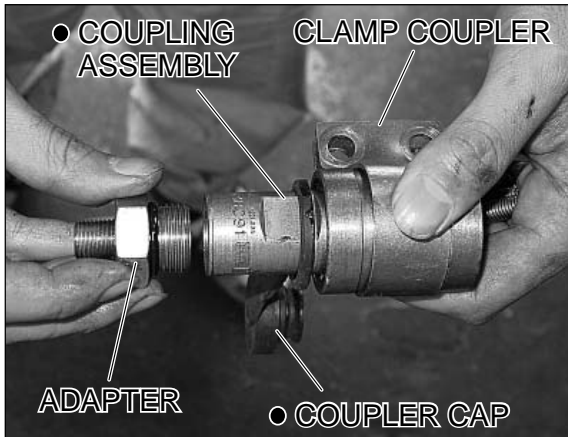
2. Install bracket (A) and bracket (B),(C) to the center cover with four bolts (M8x20mm : 3pcs, M8x16mm:1pcs).

Tighten the bolts to the following torque.  
18-22Lbfft (25-29N·m)



## INSTALLING COUPLING ASSEMBLY

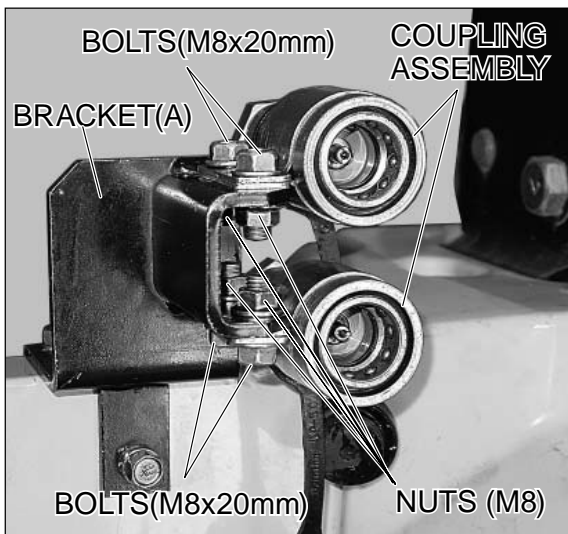
1. Install adapter to the coupling assembly.
2. Install clamp coupler to the coupling assembly.



- Coupling assembly and coupler cap are not included in a kit

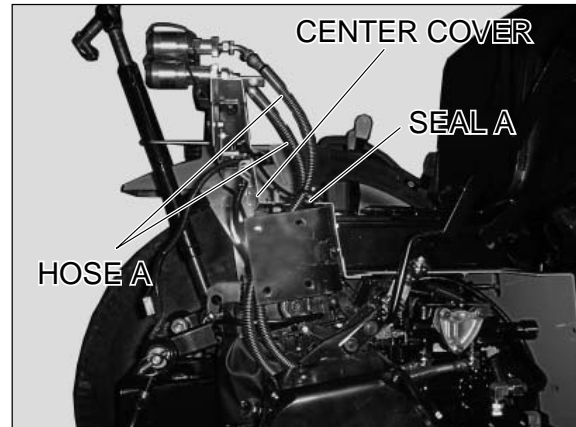
3. Install coupling assembly to the bracket (A) with four bolts (M8 x 20mm) and four nuts (M8).

Tighten the bolts to the following torque.  
18-22Lbfft (25-29N·m)

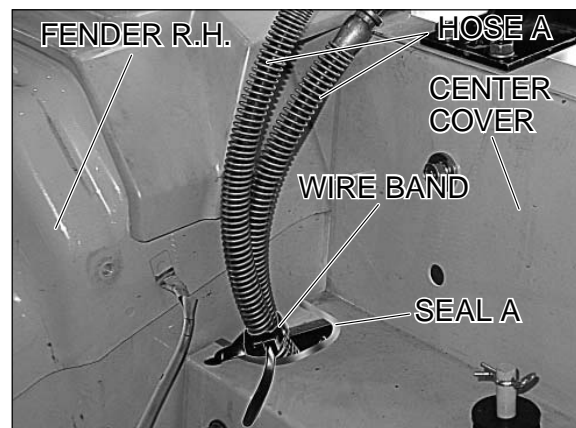


## CONNECTING HOSE A

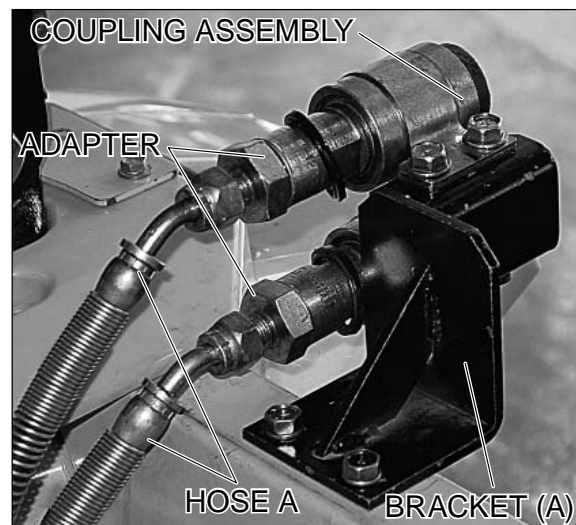
1. Install seal A to the center cover.
2. Pass hose A through the hole of a center cover.



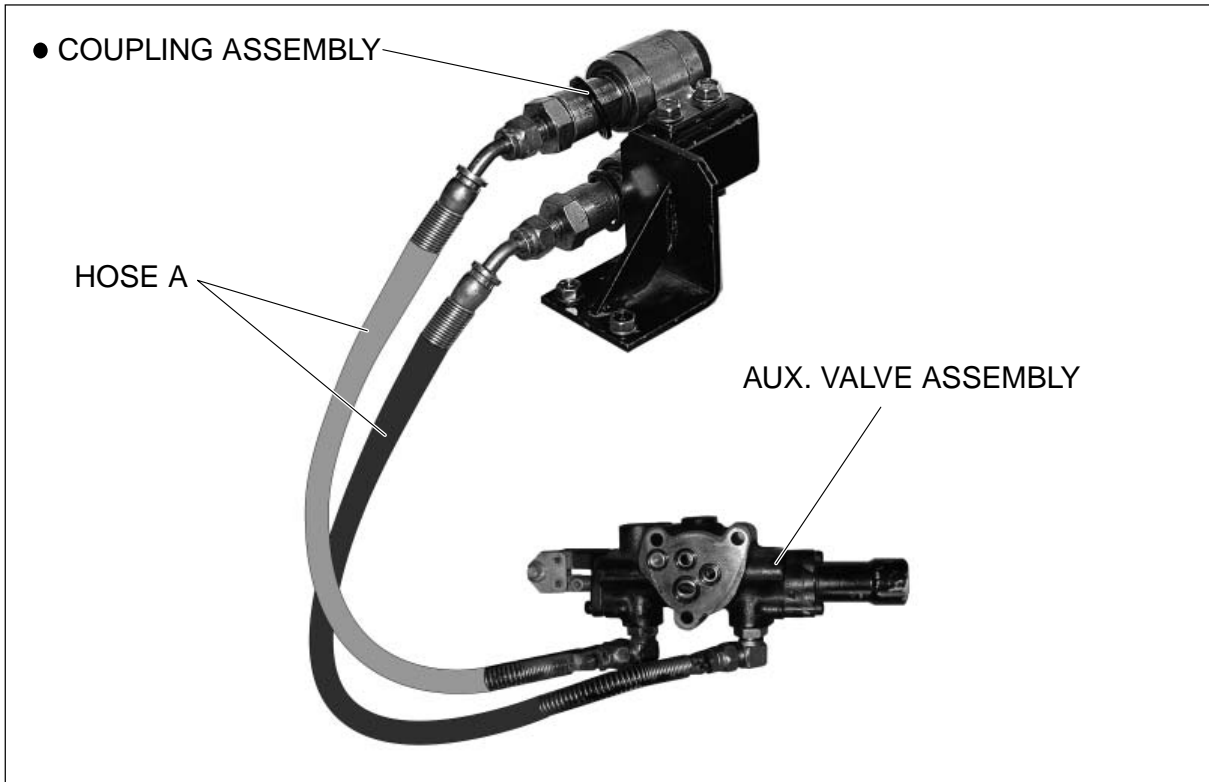
3. Fix hose A with wire band.



4. Connecting the hose A and adapter



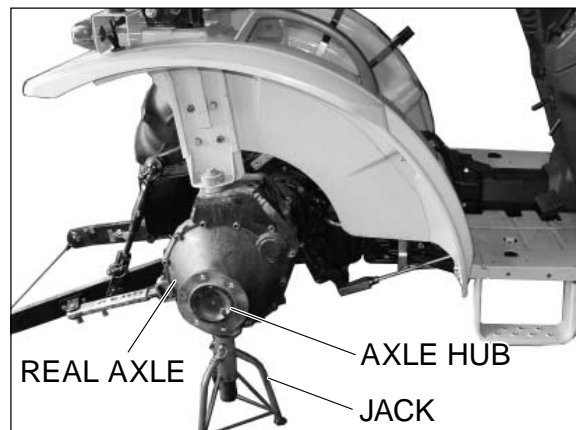
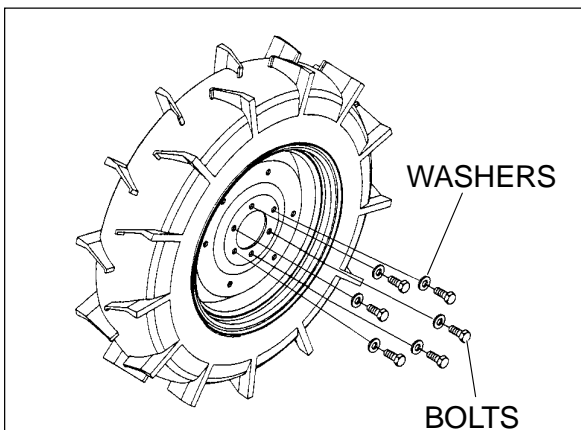
5.The hose A is connected as shown in the figure below.



## INSTALLING REAR WHEEL R.H.

1.Jack up the R.H. rear axle and install the R.H. rear wheels with six bolts (M14x30mm),and six washers to the axle hub.

Tighten the bolts to the following torque. 109-123Lbfft (147-167N·m)

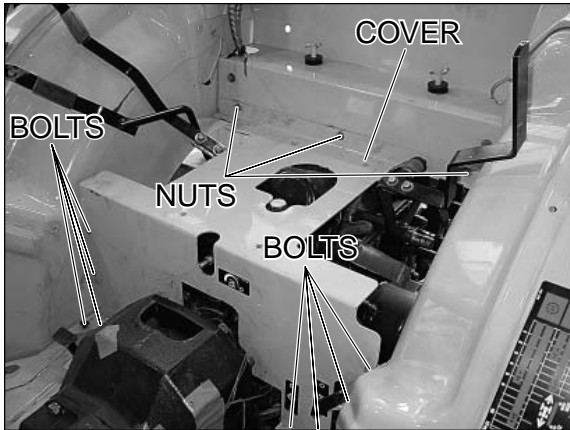




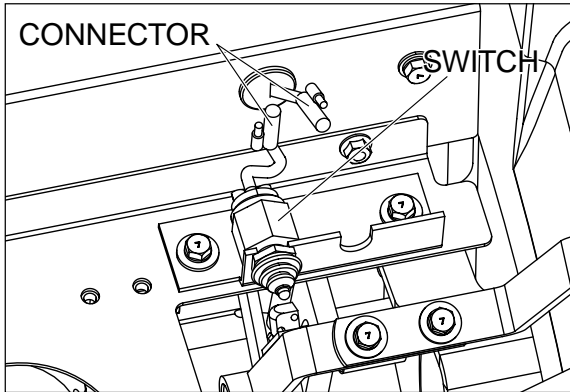
# INSTALLING SEAT BRACKET AND COVER

1. Install the cover under the seat bracket assembly with eight bolts (M8x16mm) and three nuts (M8).

Tighten the bolts to the following torque.  
18-22Lbfft (25-29N·m)

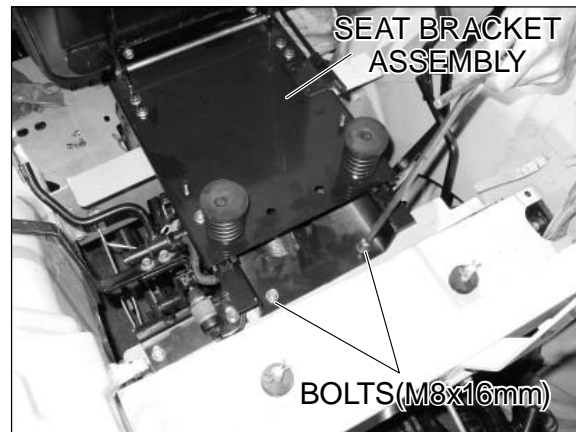
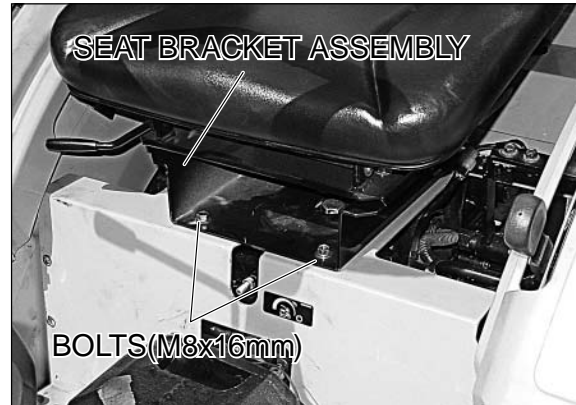


2. Connect the connector to the switch.



3. Install the seat bracket assembly with four bolts (M8x16mm).

Tighten the bolts to the following torque.  
18-22Lbfft (25-29N·m)



4. Install the L.H. lever guide with four bolts (M6x16mm, M6x20mm) and a nut (M6).

Tighten the bolts and nut to the following torque.  
7-9Lbfft (10-12N·m)



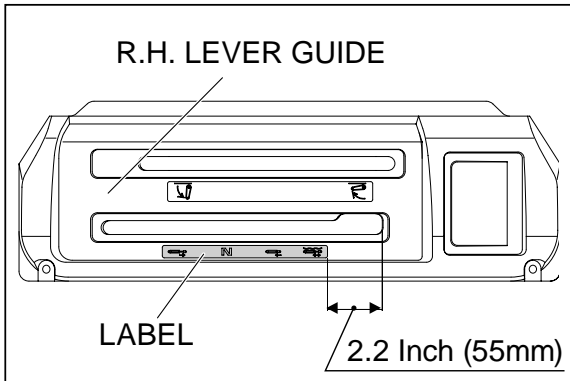
5. Install the R.H. lever guide with four bolts (M6x16mm, M6x20mm) and a nut (M6). Tighten the bolts and nut to the following torque. 4-5Lbf-ft (4.9-6.9N-m). In the case of gear specifications, connect the harness of the IND PTO switch.



6. Install the knob.



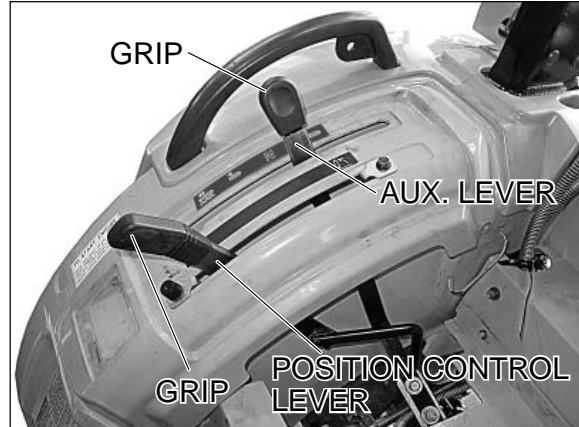
7. Put the label on the R.H. lever guide as shown in the figure below.



## INSTALLING GRIP

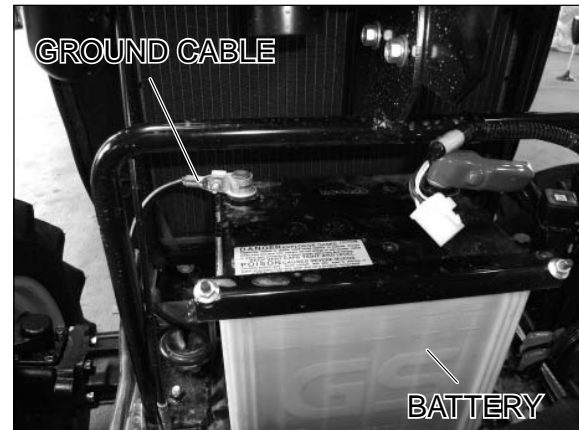
1. Install the grip to the Aux. lever and position lever.

Apply a quick-drying glue to grips.



## CONNECTING GROUND CABLE

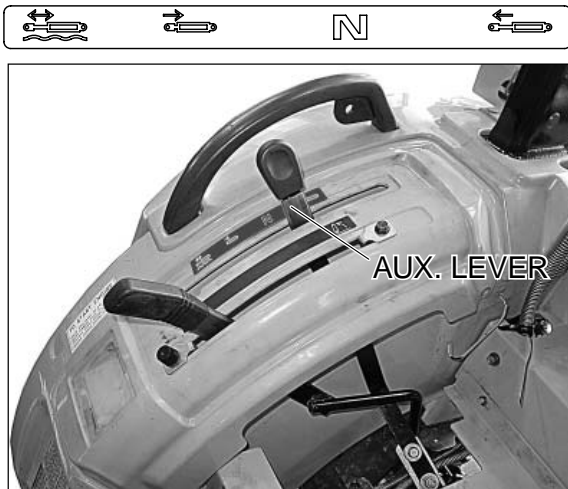
1. Connect the ground cable to the battery.



# OPERATION

## REMOTE HYDRAULIC CONTROL LEVER, WITH FLOAT POSITION

1.A double acting remote control valve is available for your tractor. The remote hydraulic control lever which operates the remote control valve is located on the R.H. side Fender.



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