

Ingersoll

**HM48L MOWER
FOR
6000 SERIES LOADER**

**FIELD INSTALLATION
INSTRUCTIONS 8-60610**



QUALITY IN THE AMERICAN TRADITION

Ingersoll Equipment Co., Inc.

Winneconne, Wisconsin 54986-9576

SAFETY MESSAGES



The safety messages contained in this manual are to be used together with the safety messages appearing in the tractor operator's manual. Be sure to review both carefully before operating the tractor-mower combination.



Regard your rotary mower as a piece of power equipment and be sure this manual is read and understood by all who operate it.



CAUTION: Never allow children or young teenagers to operate the tractor and rotary mower.



Maintain your tractor and rotary mower in top operating condition.



WARNING: Be sure that the attachment drive clutch is off, the engine is shut off, the key removed and the blades have stopped spinning before attempting to clean a plugged discharge chute.



CAUTION: Clear the lawn or area to be mowed of sticks, stones or any hard objects which could come in contact with the blades and be hurled out the discharge opening.



CAUTION: Unbalanced blades are a hazard and will cause premature wear and failure of bearings and spindles. If the blades cannot be balanced by resharpening, replace them with new ones.



CAUTION: Do not permit children or pets in the area while mowing and never direct the mower discharge at buildings, people, pets, windows or cars.



CAUTION: Never get on or off the tractor while the mower is running.



WARNING: Keep feet and hands away from discharge opening and make no repairs unless both the tractor engine and attachment drive are shut off and the key is removed from the tractor.



CAUTION: Give complete and undivided attention to the job at hand.



CAUTION: Fill gas tank out of doors and avoid spilling gasoline. Do not fill tank with gasoline while smoking or while engine is running. Allow engine to cool several minutes before adding gasoline. Wipe up spilled gasoline.



CAUTION: Stop engine, disengage attachment drive, set parking brake and remove the key when tractor is unattended.



CAUTION: Do not allow anyone other than the operator to ride on the tractor.



CAUTION: Stop and inspect the mower for damage immediately after striking a foreign object and repair damage before restarting and operating the machine



DANGER: Spinning Blade. Keep clear. Contact can injure.



WARNING: Improper operation of your tractor on hillsides and slopes can be dangerous. Avoid improper operation! Read and follow the instructions given in the section titled "Hillside Operation" in this manual before operating your tractor.



CAUTION: Disengage attachment drive clutch, stop engine and remove key and spark plug wire(s) before making adjustments.



CAUTION: Shut off engine, allow engine to cool and remove key and spark plug wire(s) before replacing mower drive belt.



CAUTION: Disengage attachment drive clutch when someone approaches or whenever the mower is being transported.



CAUTION: Be sure you know how to stop the tractor and mower at a moment's notice.



CAUTION: Sharp mower blades. Wear gloves or wrap the mower blade with a rag when handling blades. Improper handling can cause cuts to the skin.



WARNING: Flying debris. Operate mower only with discharge chute guard/cover or complete grass catcher in place. Debris may cause injury.



CAUTION: Hydraulic Systems are highly pressurized. Escaping hydraulic oil, even an invisible pinhole leak, can penetrate body tissues causing serious injury. Use a piece of wood or cardboard when looking for leaks, never use the hands or other parts of the body.

Relieve hydraulic pressure before disconnecting circuits. When reassembling, make absolutely certain that all connections are tight.

If injured by hydraulic oil escaping under pressure, see a doctor immediately. Serious complications may arise if medical attention is not given at once.

IMPORTANT: Always install new decals whenever the old decals are destroyed, lost, painted over or illegible. When individual parts are replaced that have decals attached, be sure to install a new decal with the new part. Replacement decals are available from your dealer.

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TOOL LIST

TOOLS

Safety Glasses
Hydraulic Floor Jack
Jack Stands (2 required)
Center Punch
Hammer
Power Drill (3/8" or 1/2")
Combination Square (6" Minimum)
Deburrer or 1/4 " Round File
Side Cutter Pliers
Snap Ring Pliers (1/16" Tips)
Power Grinder (4" or 5" Disc)
"C" Clamp (6" Minimum)
Knife (4" Minimum)
Long Nose Vice Grip (2 Required)
Miniature Screw Driver
(Blade Width – 1/16")
(Blade Thickness – 1/32")

WRENCHES AND SOCKETS SIZE

3/16", 1/4", 5/16", 3/8", 7/16", 1/2", 9/16", 3/4"

DRILL BIT SIZE

1/8", 9/32", 5/16", 11/32", 13/32", 33/64"

HOLE SAW SIZE

7/8", 1-1/4"

INSTALL MOUNTING PIN TO SIDE OF CHASSIS FRAME

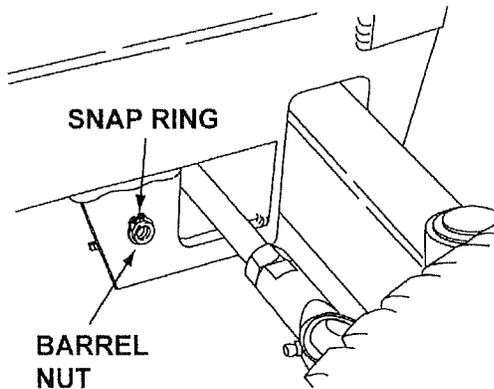


FIGURE 1

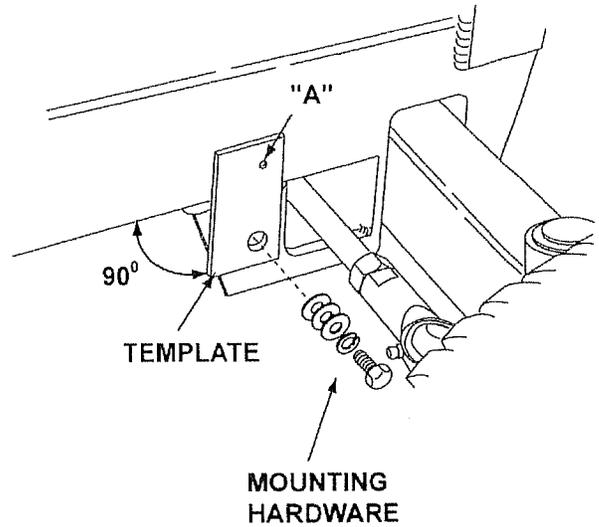


FIGURE 2

1. Install barrel nut in both sides of chassis. (See figure 1)
2. (See Figure 2) Position template (C47237) as shown. Fasten with 1/2" bolt, lockwasher and three 1/2" flat washers.
3. Center punch at hole "A". Remove template. (Do not drill through template, as it will be used to locate hole on other side)
4. Use 1/8" drill bit to make a pilot hole at punch mark. Finish hole by first using 5/16" and then 33/64" drill bits. Remove burrs from hole.
5. Use steps 1-3 to add hole to other side of chassis.
6. (See figure 3) Install mounting pins as shown to both sides of chassis. Use 1/2" lockwasher and jam nut. Position the flat sides of mounting pins parallel to frame.

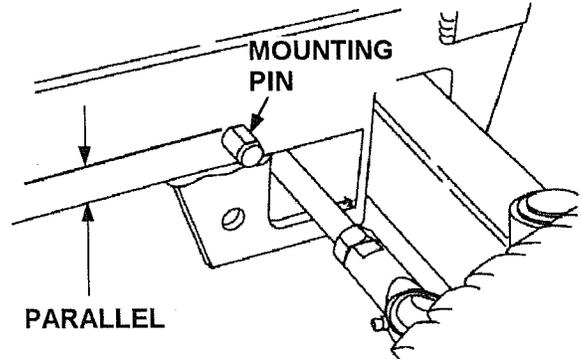


FIGURE 3

LIFT ARM AND LIFT CYLINDER MOUNTING BRACKET INSTALLATION

CHASSIS FRAME REWORK

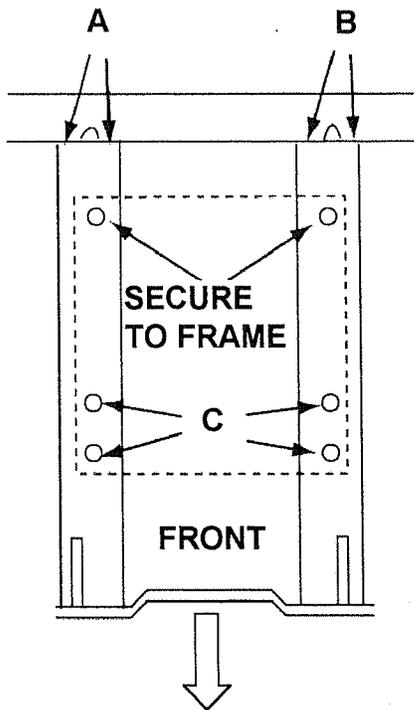


FIGURE 4

1. (See Figure 4) Grind excess weld at joints "A" and "B". These surfaces must be flush. Paint bare areas red for protection.
2. Use two 3/8" bolts and nuts to secure template (C47238) to frame. Make sure template is parallel to side of frame.
3. Center punch four holes at "C". Remove template. Do not drill through template.
4. Use 1/8" drill bit to make four pilot holes at punch marks. Finish with 13/32" drill bit. Remove burrs from holes.

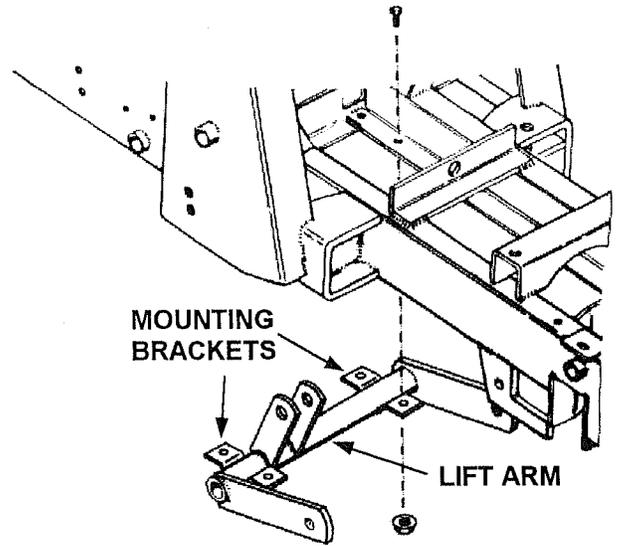


FIGURE 5

6. (See Figure 6) Assemble cylinder and mounting bracket as shown. Use 1/2" x 3.81" mounting pin and 1/8" x 1" cotter pin. Make sure that tube is facing to the side.

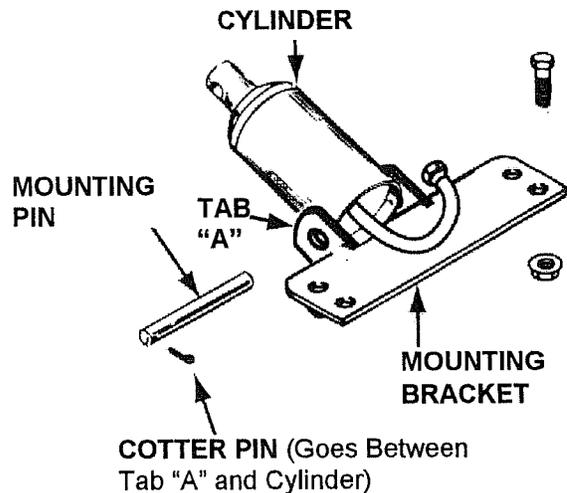
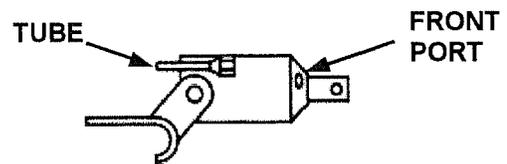


FIGURE 6

5. (See figure 5) Use four 3/8" x 1" bolts and locking flange nuts to attach mounting brackets and lift arm to loader frame.

7. Mount cylinder and bracket to loader frame with four 3/8" x 1-1/4" bolts and 3/8" top lock flange nuts. Use holes "C" shown in figure 4.

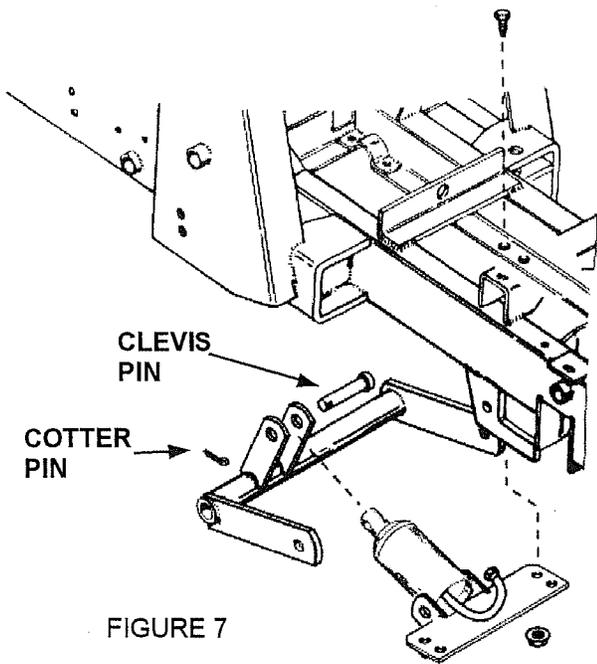


FIGURE 7

8. (See Figure 7) Attach cylinder to lift arm. Use 1/2" x 1.75" clevis pin and 1/8" x 1" cotter pin.
9. Drain hydraulic oil into large clean container.

10. (See figure 8) Remove 3 PT hitch hoses from bottom of travel valve.
11. Loosely install "tee" fittings onto the existing fittings in the bottom of travel valve. Tighten after hoses are secure.
12. Route hoses from cylinder through opening in cross bulkhead and between travel and brake rod to travel valve. Hose "B" should lie on bottom.
13. Apply pipe thread sealant to pipe thread on hose "A" (20" hose). Install tightly into rod end of cylinder. Install other end to the side port of front "tee" fitting at travel valve.
14. Install hose "B" to side port of rear "tee" fitting at travel valve. Install other end to cylinder.
15. Tighten "tee" fittings. Install 3 PT hitch hoses to bottom of "tee" fittings and tighten.

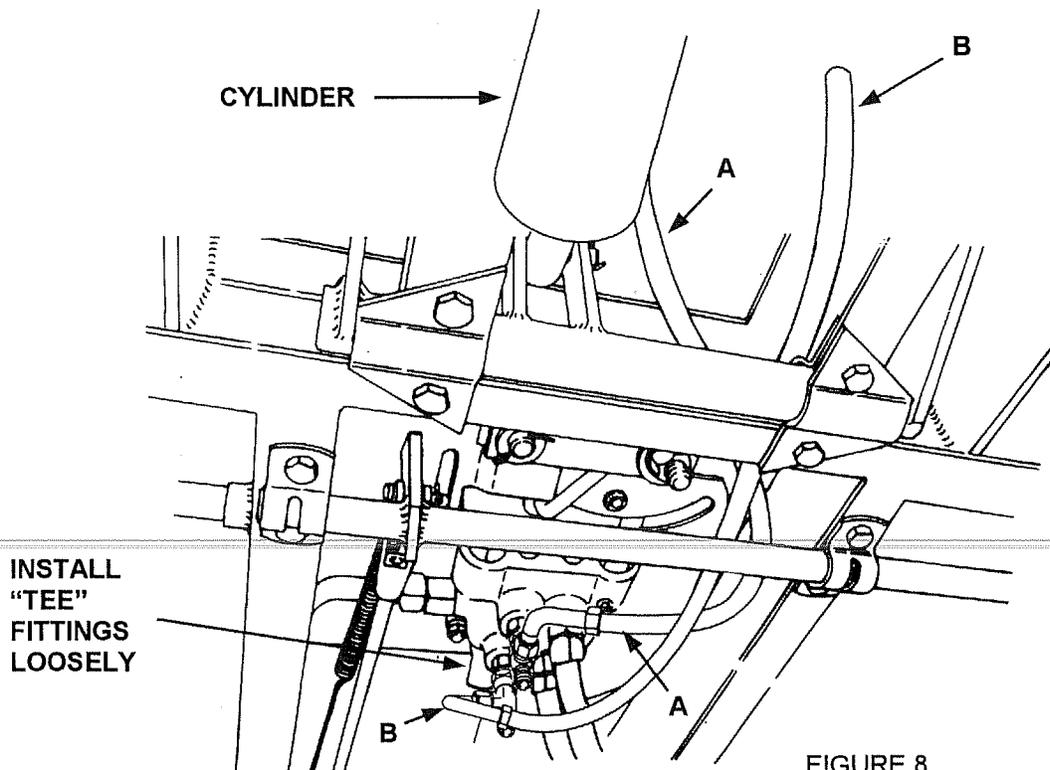


FIGURE 8

RIGHT FENDER PREPARATION

1. (See figure 9) Remove mounting bolts from PTO valve on rear fender.
2. Insert template (C47310) between valve and fender. Secure with original bolts.
3. Center punch four holes at locations (A) and (B). Remove template. Do not drill through template.
4. Use 1/8" drill bit to make four pilot holes at (A) and (B). Finish with 11/32" drill bit at (A) and 9/32" drill bit at (B).

NOTE: Do not secure PTO valve to fender. You must remove fender to install wire harness.

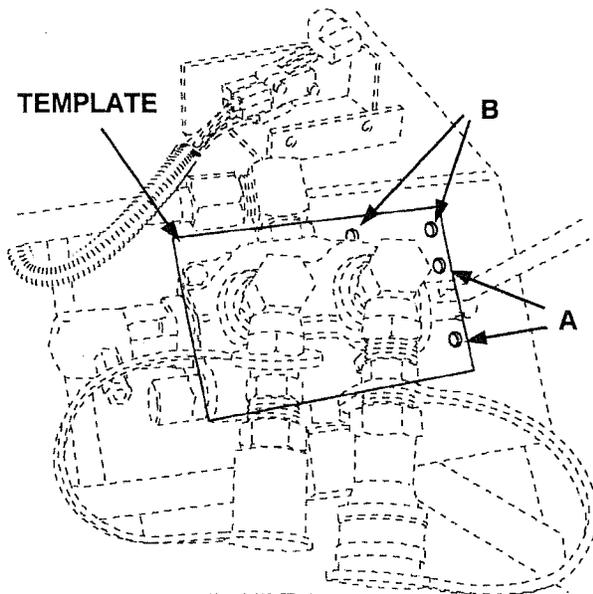


FIGURE 9

TOOL TRAY AND SEAT PREPARATION

1. Remove tool tray and seat assembly from seat support.
2. Remove hinge pin to separate tool tray from seat assembly.
3. Remove seat from seat hinge.
4. (See figure 10) Enlarge hole (B) in tool tray to 7/8". Remove burrs and paint bare metal.

5. (See figure 11) Install switch in seat pan. Insert through large square hole with clips facing the pan. Snap into place between the two holes.
6. Install seat on seat hinge. The switch wires must pass through hole (A) in hinge.

NOTE: Loaders built before S/N 17191387 (1997) will need 3" diameter hole (A) added. Remove burrs and paint bare metal. (See figure 10)

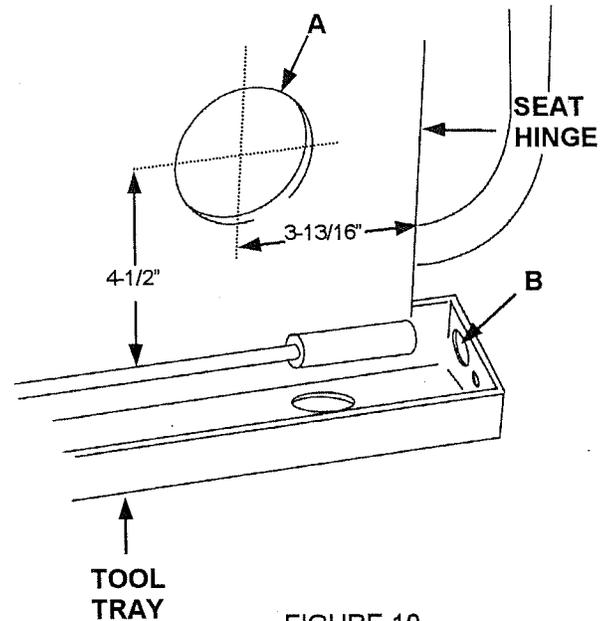


FIGURE 10

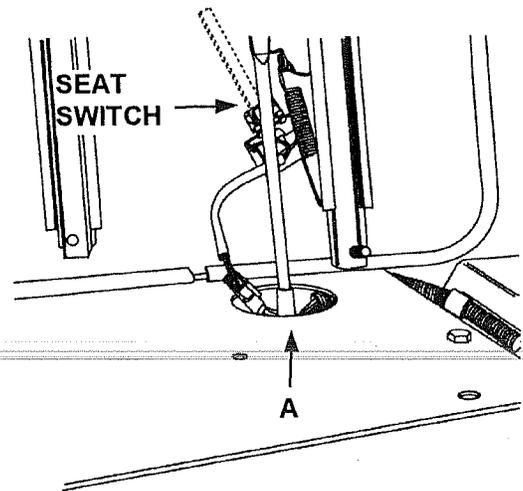
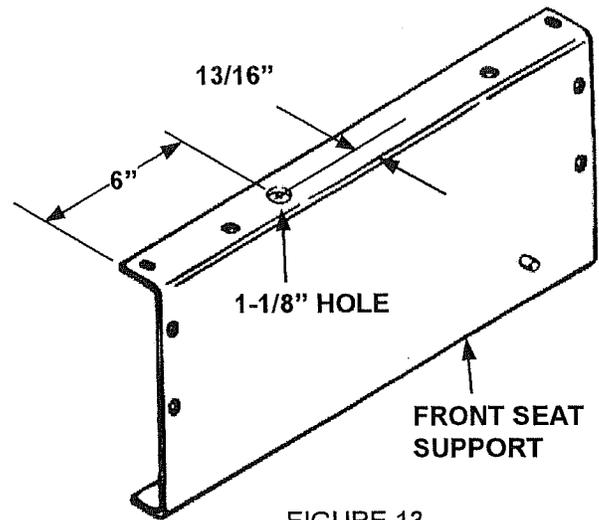
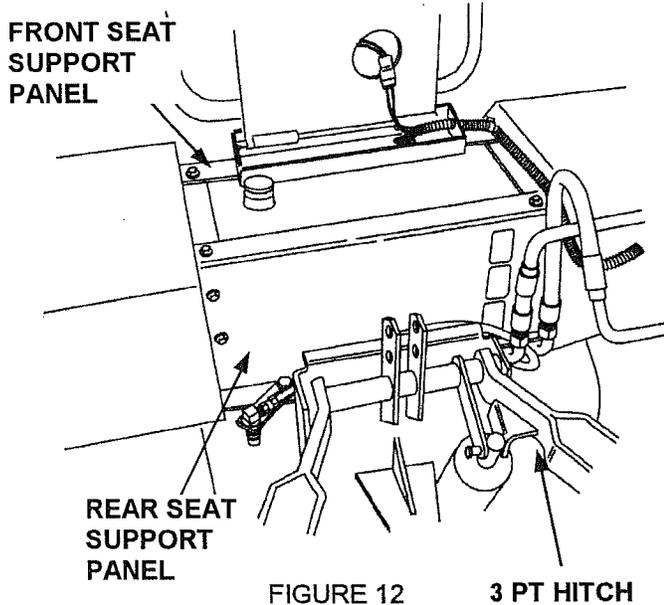


FIGURE 11

FRONT SEAT SUPPORT PREPARATION

1. (See figure 12) Raise rear of loader. Support loader with jack stands under rear axles.
2. Remove both rear tires.
3. Remove both fenders.
4. Dismount 3 PT hitch from loader chassis. Do not disconnect hydraulic hoses. Lay hitch on floor.
5. Remove rear seat support panel.
6. Move fuel tank rearward 4" to provide clearance for hole saw.



7. (See figure 13) Add a 1-1/8" diameter hole to front seat support panel. Remove burrs and paint bare metal.
8. Do not reassemble until the interlock wire harness is routed.

WIRE HARNESS INSTALLATION



WARNING: Operator present safety interlock circuit must be installed to prevent serious injury or death.

1. (See figure 14) Route the rear of wire harness. (with corrugated end)
 - a. rearward between fuel tank and transaxle
 - b. up recessed cavity at rear of fuel tank
 - a. around top corners of fuel tank
2. Route the corrugated end of the wire harness through the hole previously drilled in the front seat support. Pull through until 2" of next section and the seat connector protrudes.

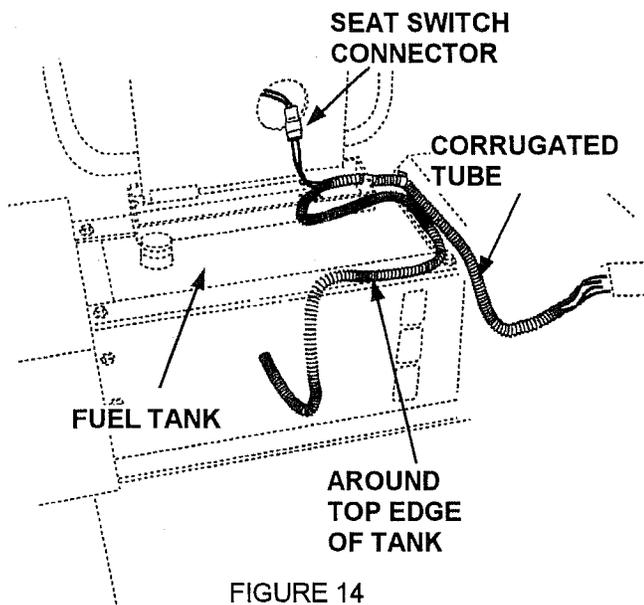


FIGURE 14

3. Move fuel tank forward and install rear seat support.
4. (See figure 15) Install tool tray. Route corrugated end of wire harness up through slot and out the right side of the tool tray.
5. Install seat and seat hinge on tool tray.
6. Connect seat switch to the wire harness.

7. (See figure 15) Install fenders. Fasten the corrugated tube to the top fender bolts. Use wire retainer clips.

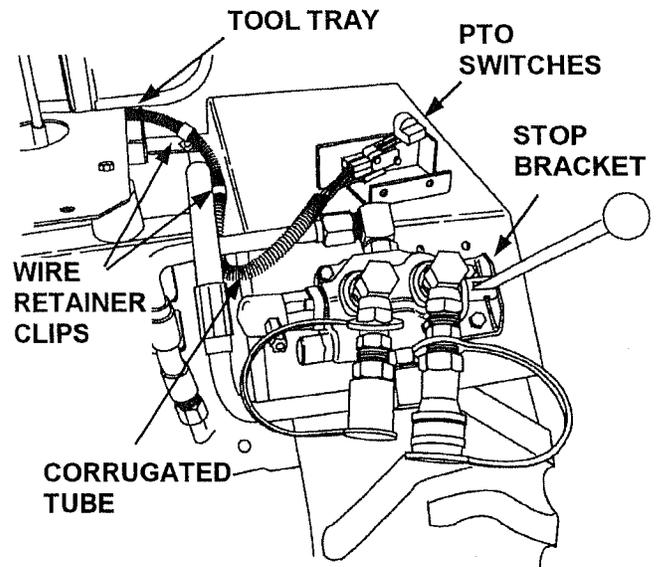


FIGURE 15

8. Connect harness to PTO switches. The connectors can go on either switch.
9. Install the rear wheels, 3pt hitch and PTO valve
10. (See figure 16) Loosely install the PTO switch bracket to the rear fender. Use two 1/4" x 5/8" bolts and 1/4" flange lock nuts.

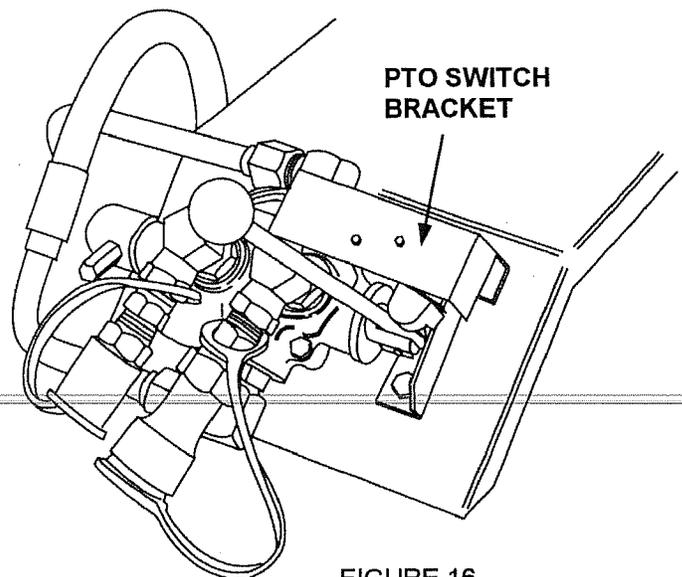


FIGURE 16

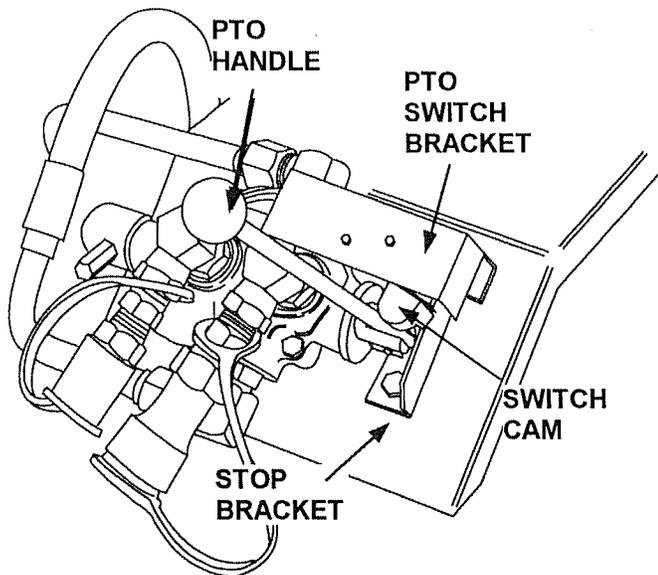


FIGURE 17

PTO SWITCH CAM ALIGNMENT

1. (See figure 17) Put PTO handle in the "OFF" or neutral position.
2. Align the switch cam to center of PTO handle and tighten.
3. Fasten PTO switch bracket securely.
4. Check the function of the switches. The switches should click each time you move the PTO handle between the "OFF" and "ON" positions.

PTO STOP BRACKET INSTALLATION

1. (See figure 17) Put the PTO handle into the "OFF" or neutral position.
2. Install the stop bracket tight against the end of the valve spool.
3. Fasten with two 5/16" x 3/8" bolts and 5/16" flange lock nuts.

LOADER WIRE HARNESS MODIFICATION ON UNITS WITH ONAN ENGINES

1. (See figure 18) Remove dash panel.
2. Remove ignition switch from the control tower.

3. Remove the ignition switch wire connector body from the ignition switch.

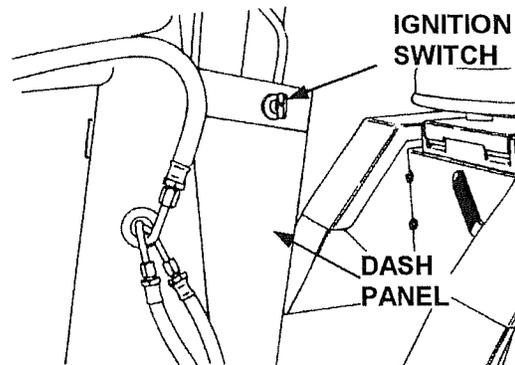


FIGURE 18

4. (See figure 19) Remove the wire shown (black w/white tracer) from the ignition switch connector. Use a small screwdriver (1/16" blade) inserted into the front of the connector to release the locking tab.

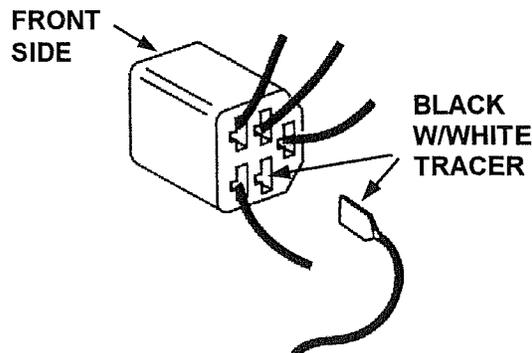


FIGURE 19 IGNITION SWITCH CONNECTOR BODY

5. Set the travel control hand lever to the forward position. Depress the travel control foot pedal and clamp it to the footrest.
6. Remove interlock switch from the travel control bracket.
7. Remove the connector body from the interlock switch.
8. (See figure 20) Remove the green wire from the connector body. Use a small screwdriver (1/16" blade) inserted into the front of the connector to release the locking tab.

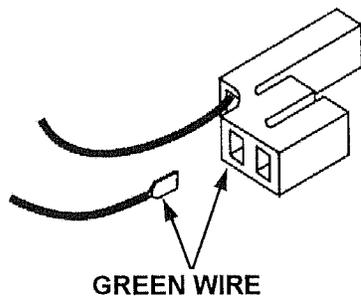


FIGURE 20 INTERLOCK CONNECTOR BODY

12. Install the connector body to the ignition switch.
13. Secure the interlock harness to the existing wire harness with "tie wrap". Make sure you secure the wires away from any moving parts.
14. Install the ignition switch in the control tower.
15. Install dash panel on control tower.

9. (See figure 21) Mount interlock switches to travel control bracket. Two are now required. Use the two #40 x 1-1/8" screws and #40 nuts. Remove the clamp from the foot pedal.
10. Connect wires as shown in figure 21. Make sure the connectors are locked in place.
11. Install the interlock connector bodies on the interlock switches. Connect to either switch.

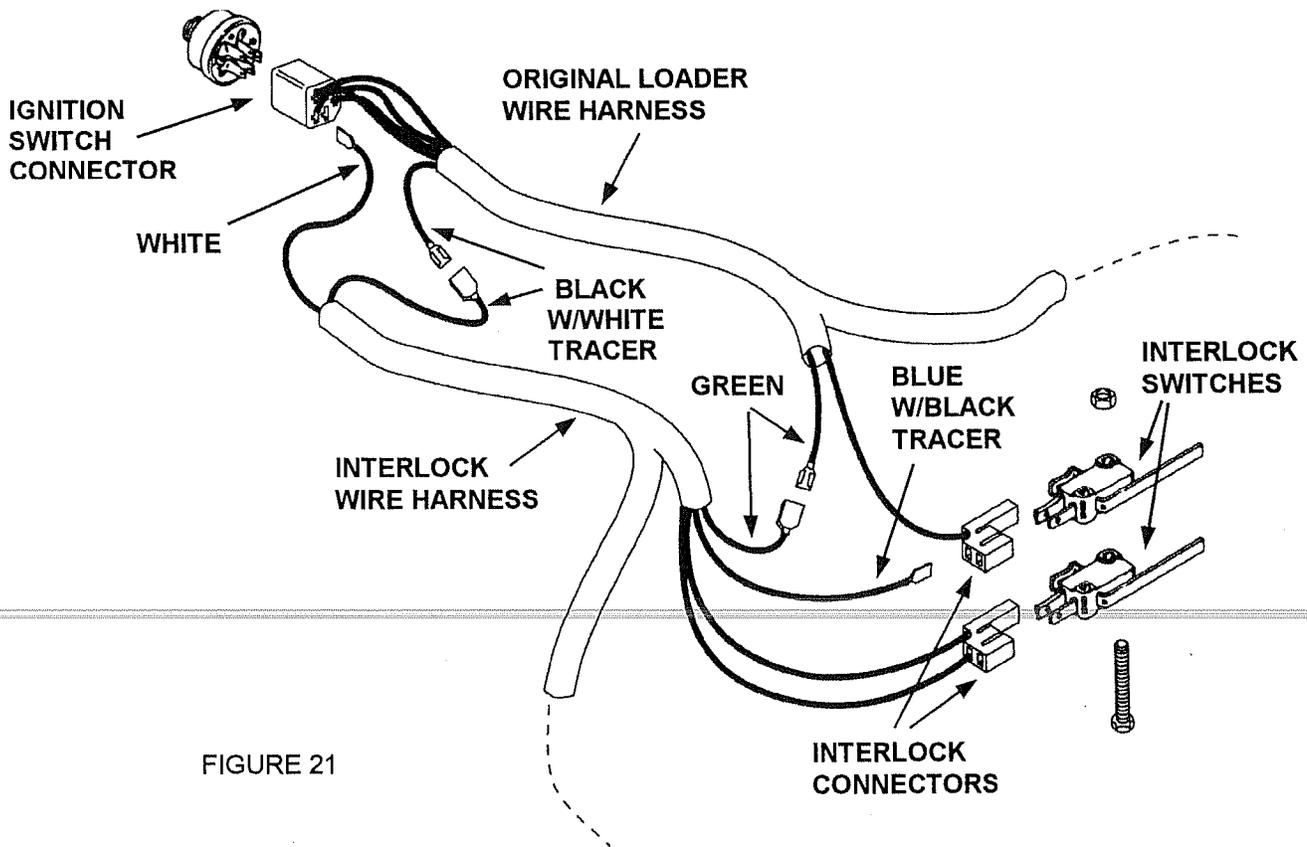


FIGURE 21

LOADER WIRE HARNESS MODIFICATION ON UNITS WITH HONDA ENGINES

1. (See figure 18) Remove dash panel.
2. Remove ignition switch from the control tower.
3. Remove the ignition switch wire connector body from the ignition switch.
4. (See figure 22) Remove the (black w/red tracer) wire from the ignition switch connector. Use a small screwdriver (1/16" blade) insert into the front of the connector to release the locking tab.
5. Remove the connector body from the interlock switch on the travel control bracket.

6. (See figure 23) Remove the tan wire from the connector body. Use a small screwdriver (1/16" blade) insert into the front of the connector to release the locking tab.

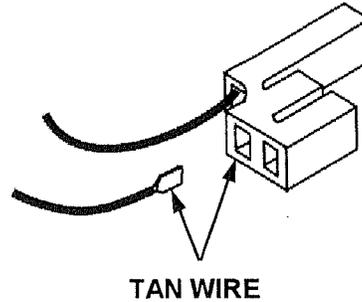


FIGURE 23 INTERLOCK CONNECTOR BODY

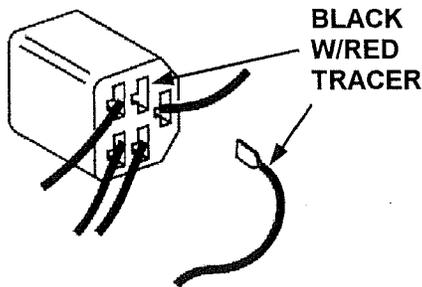


FIGURE 22 IGNITION SWITCH CONNECTOR BODY

7. (See figure 24) Connect wires as shown. Make sure the connectors are locked in place.
8. Install the connector bodies to the ignition switch and the interlock switch.
9. Secure the interlock harness to the existing wire harness with "tie wrap". Make sure you secure the wires away from any moving parts.
10. Install the ignition switch in the control tower.
11. Install dash panel on the control tower.

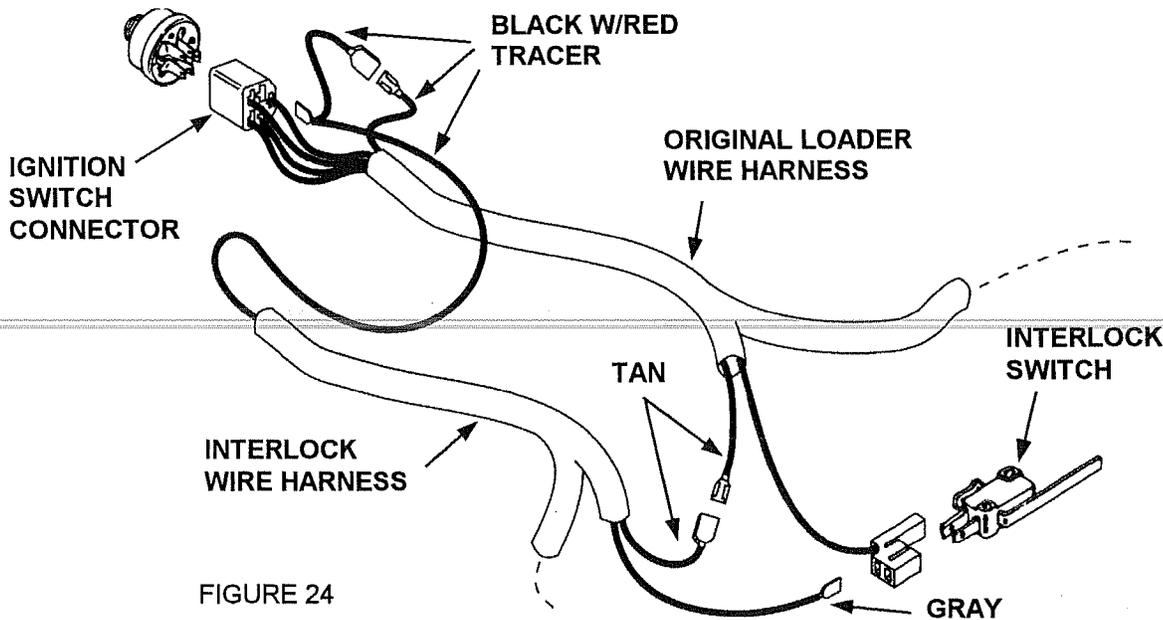


FIGURE 24

INSTALLING CASE DRAIN LINE

NOTE: This hydraulic mower requires a case drain to protect the hydraulic motor. A matching female coupler is provided with the mower. To make sure oil flows through connected couplers always check that brand name of couplers match. Restricted oil flow from attachment hydraulic motor can damage the motor.

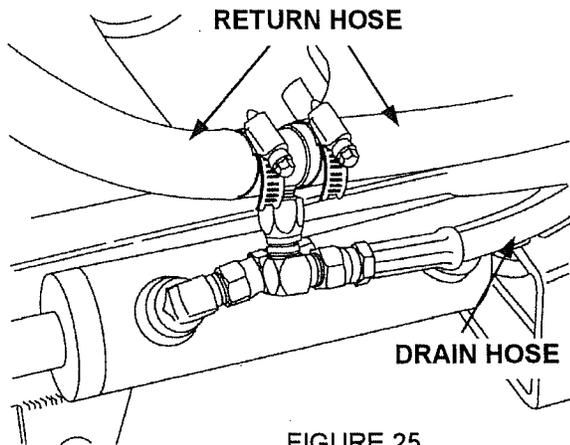


FIGURE 25

1. See figure 25) The loader hydraulic return hose must be cut approximately 9" from the oil filter. To minimize oil loss, use two long nose vise grips and clamp the hose on both sides of cut.
2. Install a "tee" fitting in return line as shown. Use two hose clamps provided.
3. Install elbow in case drain hose and secure to "tee". Use tie wrap to secure hoses together.
4. Suggested hose routing:
 - a. Between tower and heat exchanger.
 - b. Between brake pedal rod and speed pedal rod.
 - c. Above 1/4" hose to lift cylinder.
 - d. Between brake rod and frame. Use a "J" clip to secure the hose to the loader frame in this area.
 - e. Between the PTO tubes at the rear seat support.
 - f. Between the rear seat support and 3PT hitch to the mounting bar.
5. (See figure 26) Fasten the mounting bar to the rear seat support. Use the 1/2" x 1-1/4" bolt and 1/2" lockwasher.

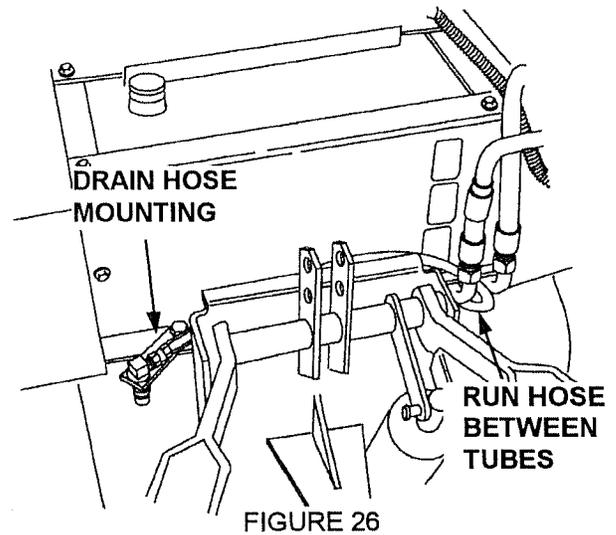


FIGURE 26

6. Connect the 90-degree fitting to the drain hose.
7. Use washers as spacers and install the 90-degree fitting through the mounting bar. Fasten with the male coupler. Make sure the dust plug is installed on the coupler when the mower is disconnected.

NOTE: To use this case drain for other existing attachments, replace 90-degree fitting with P/N 217-1015

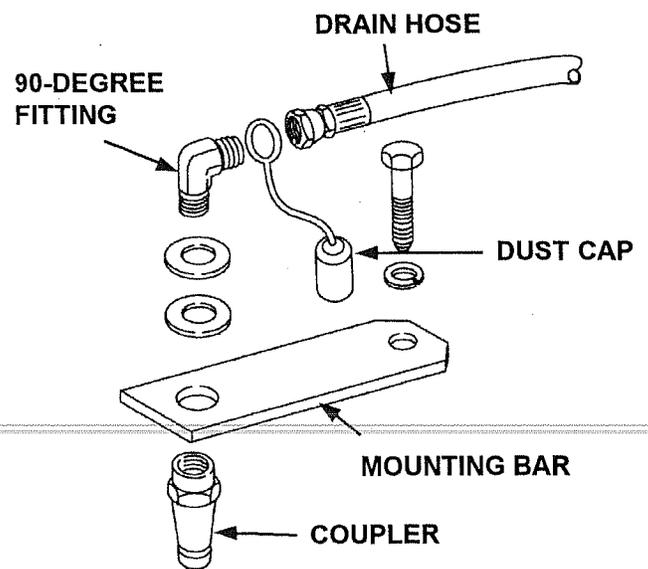
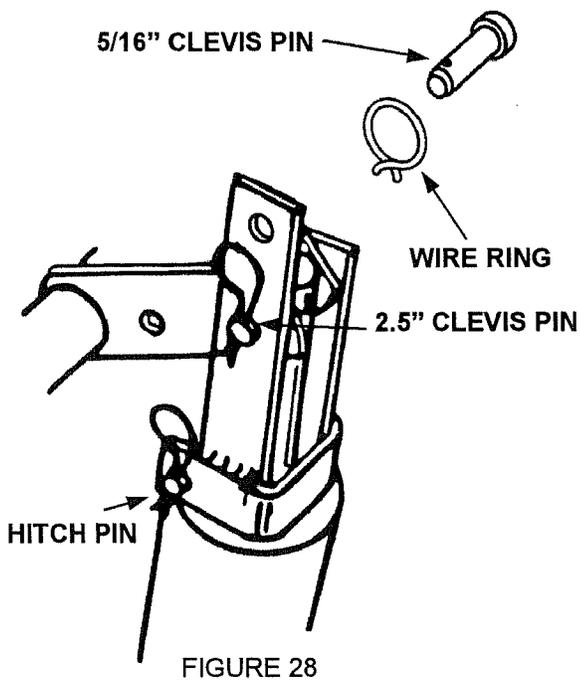


FIGURE 27 DRAIN HOSE MOUNTING

CYLINDER STOP BRACKET INSTALLATION

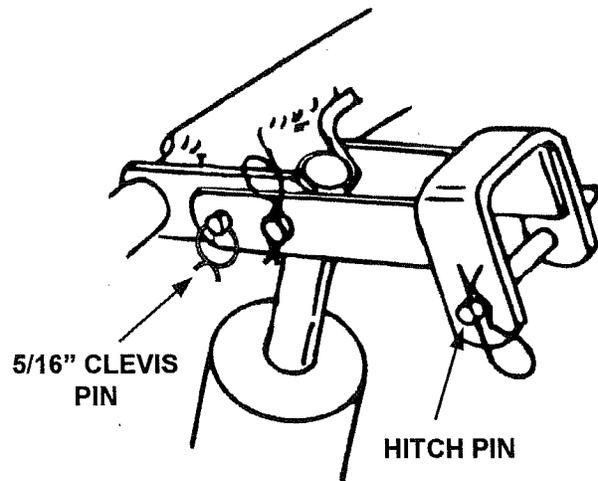
NOTE: This bracket must be installed to prevent the 3PT hitch from moving each time the mower is raised or lowered.

1. (See figure 28) Raise the 3PT hitch arms to maximum height. Block arms in place.
2. Remove the clevis pin from cylinder rod end.
3. Position the cylinder stop bracket as shown against the cylinder rod. Secure with the new $1/2" \times 2.5"$ clevis pin and original hair pin. Secure the bottom with the new $1/2" \times 3.25"$ hitch pin and hair pin.
4. Install the $5/16"$ clevis pin and wire ring into the bracket for storage.



CYLINDER STOP BRACKET STORAGE

1. (See figure 29) When the cylinder stop bracket is not needed, it can be stored on the cylinder as shown.
2. Remove the $5/16"$ clevis pin and the $3.25"$ hitch pin.
3. Rotate the stop bracket into the position shown.
4. Install the pins.



INSTALLING THE MOWER DECK

DECK PREPARATION

1. Fasten the lift links to the deck as shown in figure 30. Use the 1/2" x 1" clevis pins and wire rings.

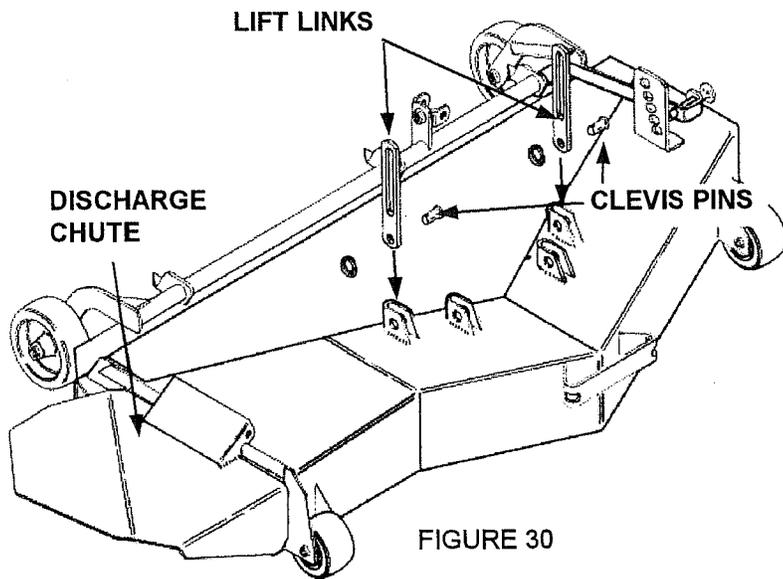


FIGURE 30

2. Secure the discharge chute to the deck. Use the pivot rod, spring and two push nuts.

Note: The spring must be positioned to hold the chute downward. (See figure 31)

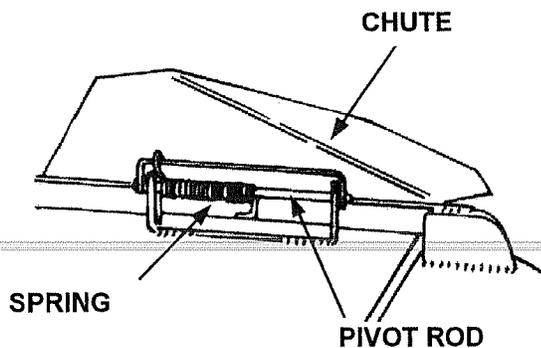


FIGURE 31

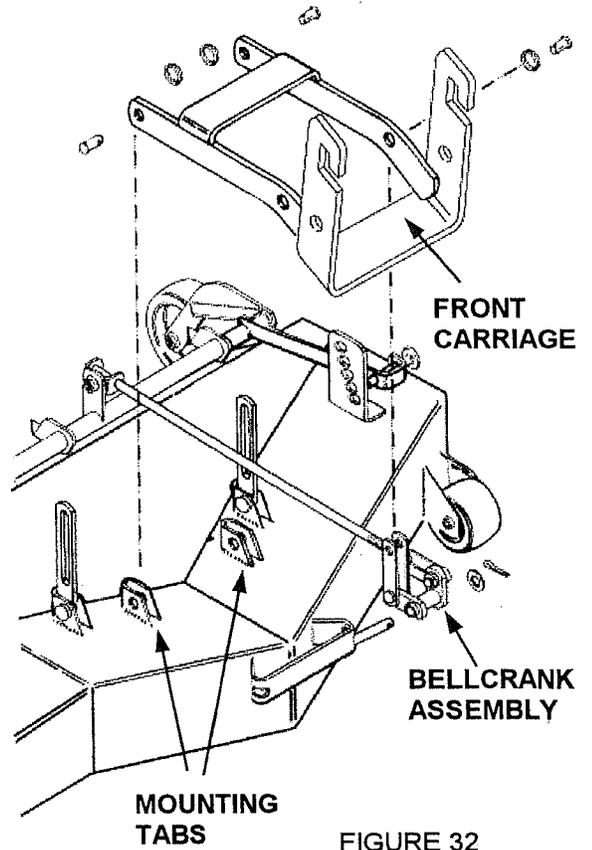


FIGURE 32

3. (See figure 32) Mount the front carriage to the mounting tabs on the mower deck. Use 1/2" x 1" clevis pins and retaining rings.
4. The bellcrank, leveling rod and the leveling links are assembled. Install as shown.
 - a. Fasten the bellcrank to the pivot rod at the front of the mower deck. Use The washer and cotter pin provided.
 - b. Put the leveling rod into position on the mower axle. Fasten securely.
 - c. Connect the leveler links to the front carriage. Use the 1/2" x 1" clevis pin and retaining ring.

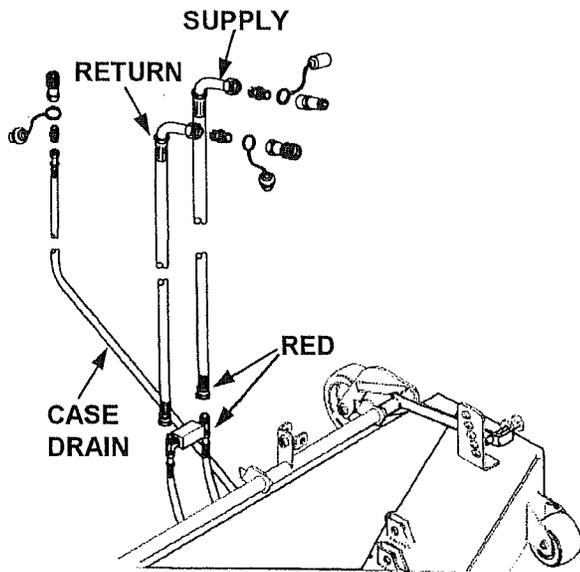


FIGURE 33

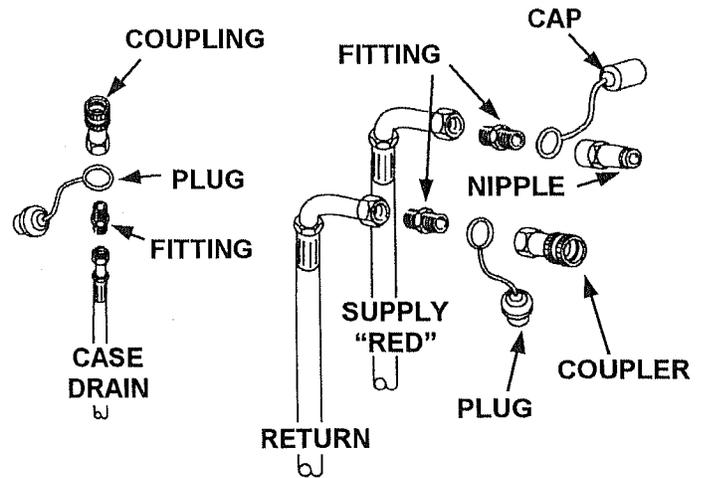


FIGURE 34

5. Connect the hydraulic hoses as shown in figure 33. Do not tighten until hoses are routed to the PTO.
 - a. The supply hose (1/2" x 46") has a red marker. Connect this hose to the red marked hose at the rear of the mower deck.
 - b. Connect the return hose (1/2" x 40") to the other hose.
 - c. The case drain hose (1/4") is installed at the factory.

6. Figure 34 shows the correct installation of fittings and couplings. Make sure they are securely fastened in place.

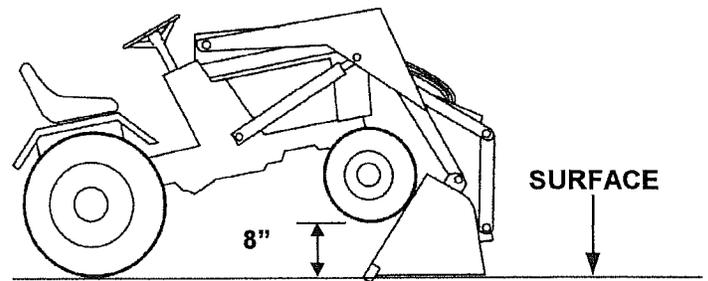


FIGURE 35

DECK INSTALLATION

1. (See figure 35) Position the bucket as shown. Raise the front of the loader about 8" off the surface. Use jack stands to hold the loader in the raised position.
2. Slide the mower and hoses under the loader from the right side. Center the deck side to side and move it near the rear tires.
3. Remove the jack stands and lower the loader down to the surface.

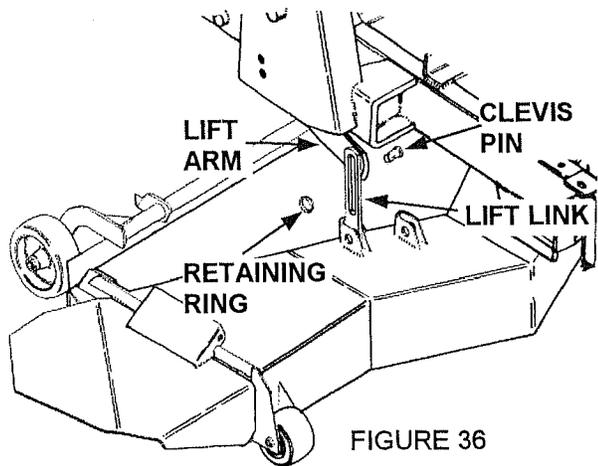


FIGURE 36

4. (See figure 36) Move the loader lift arms down until they align with the slots on the lift links. Secure with 1/2" x 1" clevis pins and retaining rings.

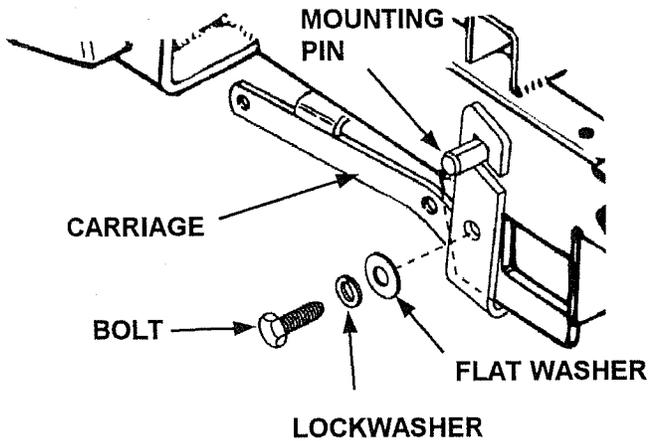


FIGURE 37

5. (See figure 37) Raise the front of the deck to mount the carriage on the mounting pins. Secure to loader frame with 1/2" x 1" bolts, flat washers and lockwashers.
6. (See figure 38) Rotate the PTO hydraulic couplers about 10 degrees towards the center of the loader. Tighten securely.
7. Connect the hoses from the deck to the couplers on the PTO valve. Secure hoses away from any pinch points. Tighten the fittings at the deck.

8. Connect the case drain hose to the coupler on the rear of the loader. Secure away from any pinch points.

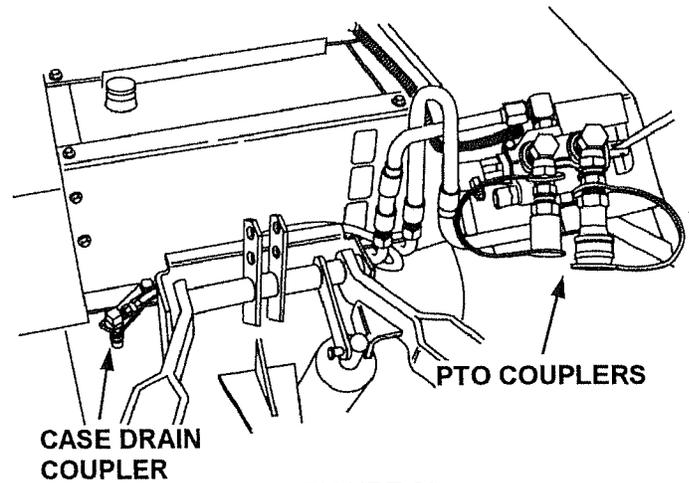


FIGURE 38

9. Check the air pressure of the tires. Inflate the tires to 12 PSI front and 20 PSI at the rear.
10. Level the mower deck. Refer to the operator's manual for the correct procedure.

2
1
3

7
1
2
3
4

