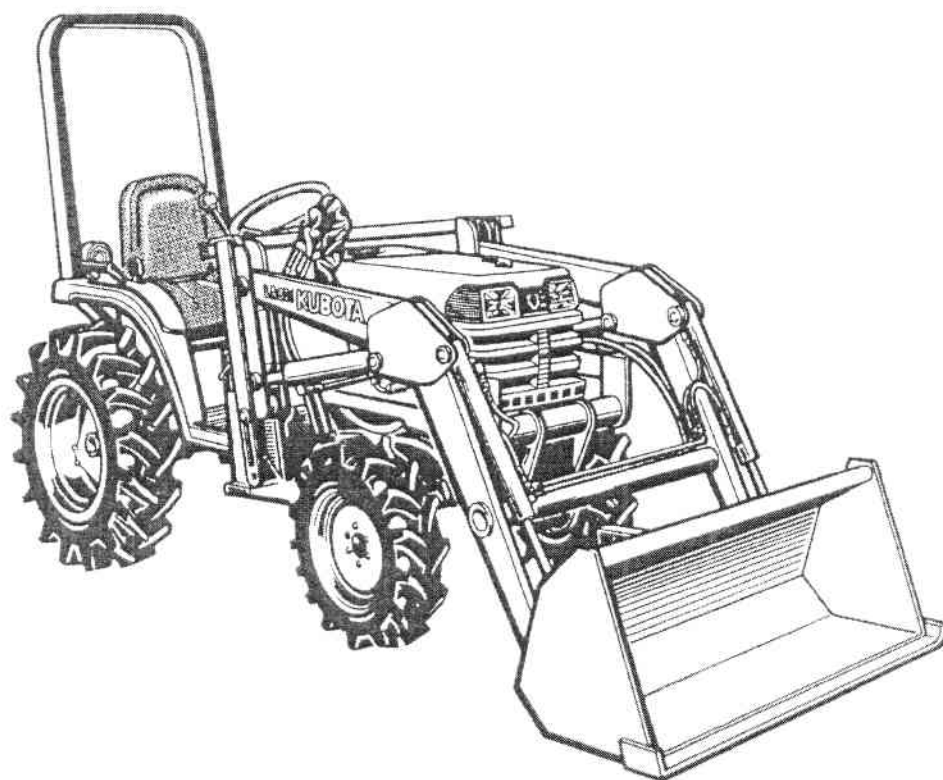


# OPERATOR'S MANUAL

# KUBOTA

## FRONT LOADER

MODEL LA271  
LA301  
LA351



*READ AND SAVE THIS BOOK*

**Kubota**

# FOREWORD

You are now the proud owner of a KUBOTA Loader. This loader is a product of Kubota quality engineering and manufacturing. It is made of fine materials and under a rigid quality control system. It will give you long, satisfactory service. To obtain the best use of your loader, please read this manual carefully. It will help you become familiar with the operation of the loader and contains many helpful hints about loader maintenance. It is Kubota's policy to utilize as quickly as possible every advance in our research. The immediate use of new techniques in the manufacture of products may cause some small parts of this manual to be outdated. Kubota distributors and dealers will have the most up-to-date information. Please do not hesitate to consult with them.



## SAFETY FIRST

This symbol, the industry's "Safety Alert Symbol", is used throughout this manual and on labels on the front loader itself to warn of the possibility of personal injury. Read these instructions carefully. It is essential that you read the instructions and safety regulations before you attempt to assemble or use this unit.



**DANGER :** Indicates an imminently hazardous situation which, if not avoided, will result in death or serious injury.



**WARNING :** Indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury.



**CAUTION :** Indicates a potentially hazardous situation which, if not avoided, may result in minor or moderate injury.

**IMPORTANT :** Indicates that equipment or property damage could result if instructions are not followed.

**NOTE :** Gives helpful information.



# SAFETY PRECAUTIONS

Most loader equipment accidents can be avoided by following simple safety precautions. These safety precautions, if followed at all times, will help you operate your loader safely.

1. Read and understand both the tractor and the Loader Operator's Manuals before using the loader. Lack of knowledge can lead to accidents.
2. For your safety, ROPS with a seat belt is strongly recommended by KUBOTA in almost all applications. If you have any questions consult your local KUBOTA dealer. Always use seat belt when the tractor is equipped with a ROPS. Never use the seat belt when the tractor is not equipped with a ROPS.
3. Do not lift or carry anybody on the loader, bucket or attachment.
4. Never allow anyone to get under the loader bucket or reach through the boom when the bucket is raised.
5. Do not walk or work under a raised loader bucket or attachment unless it is securely blocked and held in position.
6. When operating on a slope, always operate up and down the slope, never across the slope.
7. Operate the loader from the "Operators' Seat Only".
8. For tractor stability and operator's safety, rear ballast should be added to the 3-point hitch and to the rear wheels.
9. Move the wheels to the tractor manufacturer's widest recommended settings to increase stability.
10. Move and turn the tractor at low speeds.
11. Carry loader boom at a low position during transport.
12. Exercise caution when operating the loader with a raised bucket or fork.
13. Avoid loose fill, rocks and holes. They can be dangerous for loader operation or movement.
14. Be extra careful when working on inclines.
15. Avoid overhead wires and obstacles when loader is raised. Contacting electric lines can cause electrocution.
16. Allow for the loader length when making turns.
17. Gradually stop the loader boom when lowering or lifting.
18. Use caution when handling loose or shiftable loads.
19. When loader work has been completed, lower loader boom, stop engine and lock brakes before leaving the tractor seat.
20. Make sure all parked loaders on stands are on a hard, level surface. Engage all safety devices.
21. Operate the loader controls only when properly seated at the controls.
22. Visually check for hydraulic leaks and broken, missing, or malfunctioning parts. Make necessary repairs before operation.
23. Escaping hydraulic oil under pressure can have sufficient force to penetrate the skin, causing serious personal injury. Do not use HANDS to search for suspected leaks. If injured by escaping fluid, obtain medical treatment immediately.
24. Before disconnecting hydraulic lines, relieve all hydraulic pressure.
25. Do not tamper with the relief valve setting. The relief valve is pre-set at the factory. Changing the setting can cause overloading of the loader and tractor which may result in a serious personal injury.
26. Using loaders for handling large heavy objects, such as large round or rectangular bales, logs and oil drums is not recommended.
27. Handling large heavy objects can be extremely dangerous due to :
  - Danger of rolling the tractor over.
  - Danger of upending the tractor.
  - Danger of the object rolling or sliding down the loader boom onto the operator.
28. If you must perform this sort of work (item 27), protect yourself by :
  - Never lift the load higher than necessary to clear the ground.
  - Adding rear ballast to the tractor to compensate for the load.
  - Never lift large object with equipment that may permit it to roll back onto the operator.
  - Moving slowly and carefully, avoiding rough terrain.
29. It is the loader owner's responsibility to be certain anyone operating the loader read this manual first to be aware of the safe way of operating the loader.
30. Always wear safety goggles when servicing or repairing the machine.

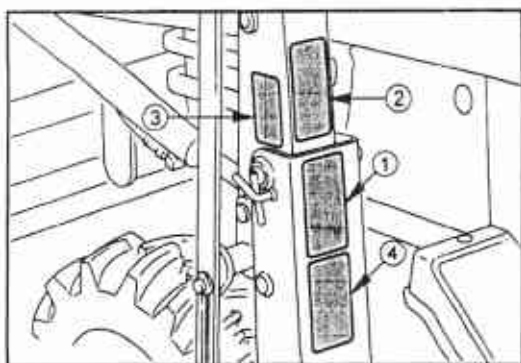
31. When servicing or replacing pins in cylinder ends, bucket, etc., always use a brass drift and hammer. Failure to do so could result in injury from flying metal fragments.
32. Replace damaged or illegible safety labels. See following page for required labels.
33. Do not modify, alter, or permit anyone else to modify or alter the loader, any of its components, or any loader function without first consulting a KUBOTA dealer.
34. Assemble, remove and reinstall the loader only as directed in this manual. Failure to do this could result in serious personal injury or death.

35. When operating another implement on a hillside, be sure to remove the loader to reduce the risk of roll over.
36. Never lift or pull any load from any point of the loader with a chain, rope, or cable. Doing so could cause a roll over or serious damage to the loader.
37. When a front loader is mounted on the tractor, enter and exit the operator's seat only from left side of the tractor.

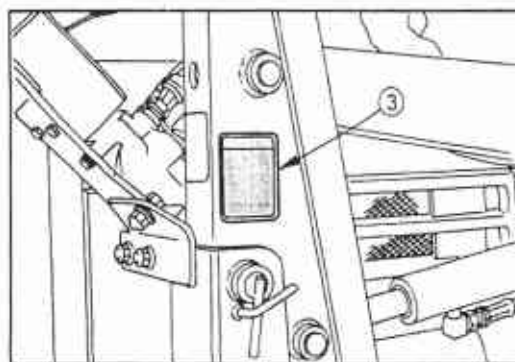
## ABBREVIATION LIST

Abbreviations	Definitions
2WD	Two Wheel Drive
4WD	Four Wheel Drive
API	American Petroleum Institute
ASAE	American Society of Agricultural Engineers, USA
ASTM	American Society for Testing and Materials, USA
DIN	Deutsches Institut für Normung, GERMANY
DT	Dual Traction [4WD]
fpm	Feet Per Minute
GST	Glide Shift Transmission
Hi-Lo	High Speed-Low Speed
HST	Hydrostatic Transmission
m/s	Meters Per Second
PTO	Power Take Off
RH/LH	Right-hand and left-hand sides are determined by facing in the direction of forward travel
ROPS	Roll-Over Protective Structure
rpm	Revolutions Per Minute
r/s	Revolutions Per Second
SAE	Society of Automotive Engineers, USA
SMV	Slow Moving Vehicle
UDT	KUBOTA UDT fluid (Transmission-hydraulic fluid)

## SAFETY LABELS

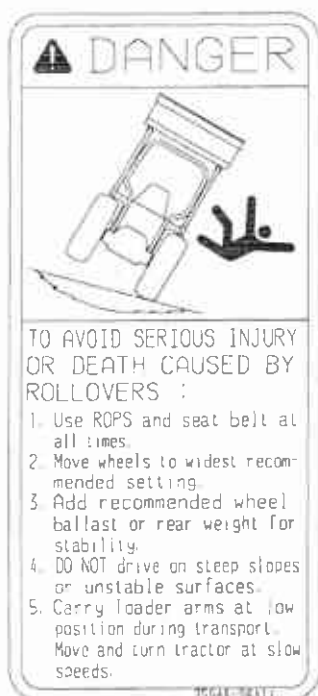


(1) 75546-5641-0

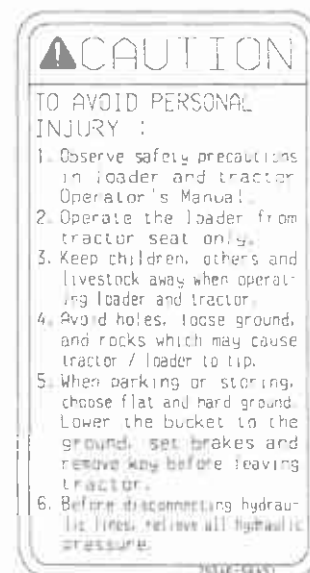


(2) 75546-5643-0

(3) 75546-5644-0 (Both sides)



(4) 75546-5645-0



### CARE OF SAFETY LABELS

- (1) Keep safety labels clean and free from obstructing material.
- (2) Clean safety labels with soap and water, dry with a soft cloth.
- (3) Replace damaged or missing safety labels with new labels from your Kubota dealer.
- (4) If a component with safety label(s) affixed is replaced with new part, make sure new label(s) is (are) attached in the same location(s) as the replaced component.
- (5) Mount new safety labels by applying on a clean dry surface and pressing any bubbles to outside edge.

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# 1. INTRODUCTION

This manual provides safety, set-up, operation, maintenance, removing, storing and reinstalling instructions for your new LA271, LA301 and LA351 loader.

Your loader has been designed to give many years of satisfactory service. Successful operation and long life of the loader depends, of course, on proper operation and care. Please read this manual carefully and follow the instructions. Correct operation and maintenance will save much time and expense.

OBSERVE and FOLLOW all CAUTION instructions to help prevent personal injury and damage to the loader.

The reference to left hand and right hand used in this manual refers to the position when standing at the rear of the unit and facing forward.

If at any time, you have a service problem with your loader or need new parts, contact your local Kubota dealer. Your dealer will need the loader model number and serial number to give you prompt, efficient service. The serial number is located on the outside of the side frame LH.

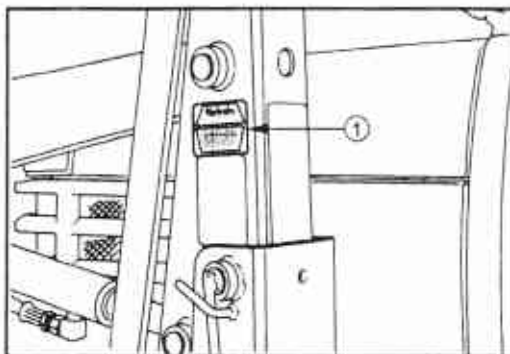
## KUBOTA LOADER

MODEL \_\_\_\_\_

SERIAL NUMBER \_\_\_\_\_

DATE OF PURCHASE \_\_\_\_\_

NAME OF DEALER \_\_\_\_\_



(1) Serial No.

## 2. SPECIFICATIONS

### 2.1 SUITABLE TRACTOR

B7300 All Models	: LA271
B1700 All Models	: LA301
B2100 All Models	: LA301
B2400 GEAR MODELS (N/A IN USA)	: LA301
B2400 HST Models	: LA351

### 2.2 LOADER SPECIFICATIONS

Item		LA271	LA301	LA351
ASAE Rated Lift Capacity		595 lbs. (270 kg)	660 lbs. (300 kg)	770 lbs. (350 kg)
ASAE Rated Breakout Force		1000 lbs. (450 kg)	1150 lbs. (520 kg)	1335 lbs. (605 kg)
Boom Cylinder	Bore	1.50 in. (38mm)	1.50 in. (38 mm)	1.75 in. (44.5 mm)
	Stroke	12.10 in. (307 mm)	12.10 in. (307 mm)	11.40 in. (289 mm)
Bucket Cylinder	Bore	1.50 in. (38 mm)	1.50 in. (38 mm)	1.75 in. (44.5 mm)
	Stroke	13.00 in. (330 mm)		
Control Valve		One Detent Float Position, Two Stage Bucket Dump, Power Beyond Circuit		
Net Weight (Approx.)		460 lbs. (208 kg)	475 lbs. (216 kg)	500 lbs. (226 kg)

### 2.3 BUCKET SPECIFICATIONS

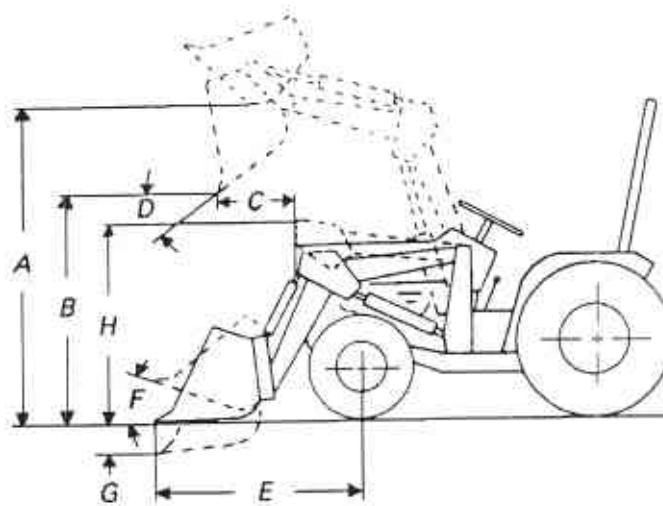
Item		LA271, LA301	LA351
Width		48.0 in. (1220 mm)	50.0 in. (1270 mm)
Length		18.3 in. (465 mm)	19.3 in. (490 mm)
Height		19.2 in. (490 mm)	
Capacity	Struck	5.19 cu.ft. (0.15 m <sup>3</sup> )	5.50 cu.ft. (0.16 m <sup>3</sup> )
	Heaped	6.20 cu.ft. (0.17 m <sup>3</sup> )	6.50 cu.ft. (0.18 m <sup>3</sup> )
Weight		120 lbs. (54 kg)	137 lbs. (62 kg)



## 2.4 OPERATING DIMENSIONS

Item		LA271	LA301	LA351
		B7300	B1700, B2100, B2400 GEAR	B2400 HST
Maximum lift height	(A)	70.1 in. (1780 mm)	70.5 in. (1790 mm)	
Clearance with bucket dumped	(B)	51.6 in. (1310 mm)	52.0 in. (1320 mm)	51.6 in. (1310 mm)
Reach at maximum height	(C)	26.8 in. (680 mm)	25.4 in. (645 mm)	25.0 in. (635 mm)
Maximum dump angle	(D)	45 deg.		
Reach with bucket on ground	(E)	50.4 in. (1280 mm)	51.0 in. (1295 mm)	52.0 in. (1320 mm)
Bucket roll-back angle	(F)	24 deg.		
Digging depth	(G)	4.3 in. (110 mm)	3.7 in. (95 mm)	
Overall height in carrying position	(H)	45.3 in. (1150 mm)	45.7 in. (1160 mm)	

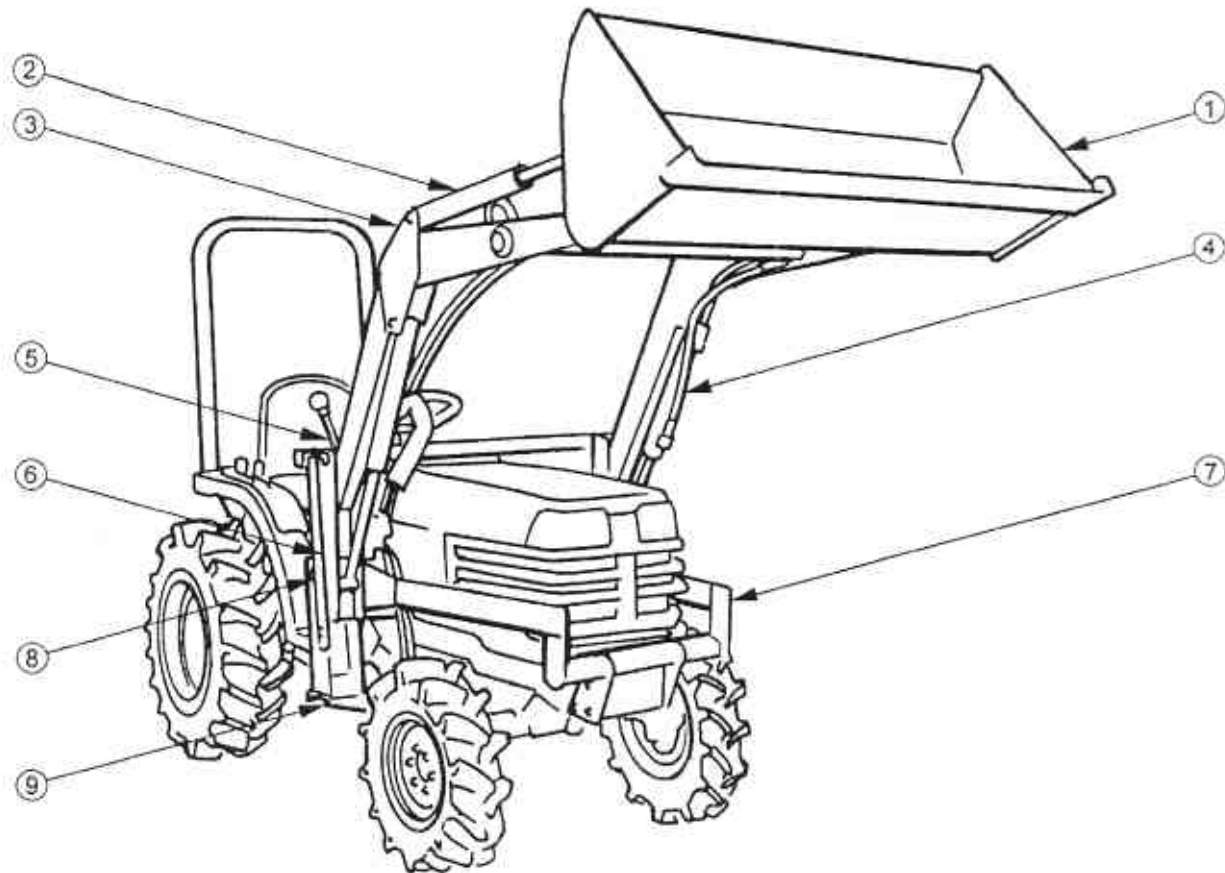
B7300DT (4WD) with 6-12 Front Tires and 8.3-16 Rear Tires.  
 B2400DT (4WD) with 7-12 Front Tires and 11.2-16 Rear Tires.



## 2.5 PERFORMANCE RATINGS (NO LOAD)

Item	LA271	LA301	LA351
Raise to full height	3.9 sec.	2.9 sec.	3.3 sec.
Lowering time	3.0 sec.	2.3 sec.	2.6 sec.
Attachment roll-back time	2.5 sec.	2.0 sec.	2.7 sec.
Attachment dump time	2.1 sec.	1.6 sec.	2.0 sec.

## 2.6 LOADER TERMINOLOGY



(1) Bucket  
(2) Bucket cylinder  
(3) Boom

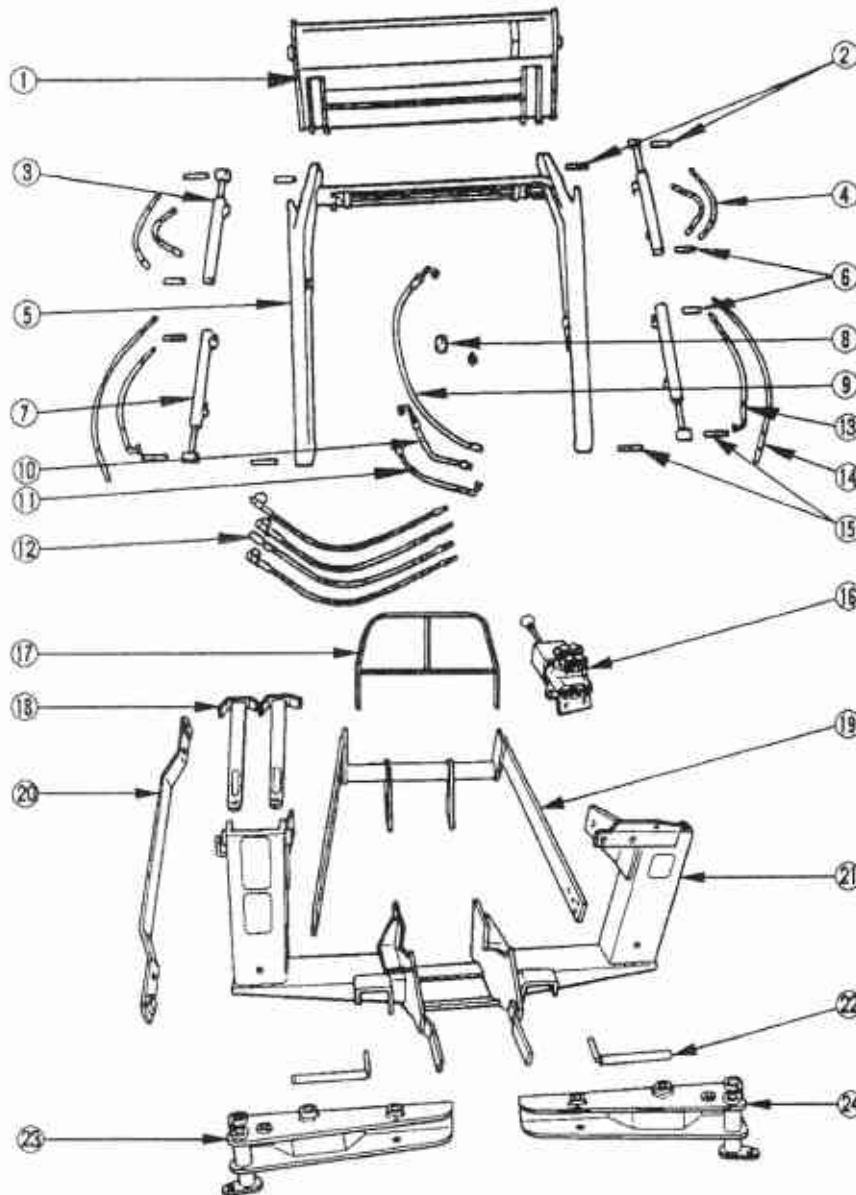
(4) Boom cylinder  
(5) Control valve  
(6) Side frame

(7) Brace  
(8) Mounting pin  
(9) Main frame

## 3. SETTING-UP INSTRUCTIONS

### 3.1 PRE-ASSEMBLY

Remove all loader components. Referring to the illustration, insure that all components have been included.



- (1) Bucket
- (2) 4 - Pin 4 [LA301]  
4 - Pin 3 [LA351]
- (3) 2 - Cylinder 2
- (4) 4 - Hose 10, 14.8 in. (376 mm)
- (5) Boom
- (6) 4 - Pin 1
- (7) 2 - Cylinder 1
- (8) Hydraulic block
- (9) 1 - Hose 7, 55.1 in. (1400 mm)
- (10) 1 - Hose 6, 29.5 in. (749 mm)
- (11) 1 - Hose 5, 33.5 in. (851 mm)
- (12) 4 - Hose 1, 29.8 in. (757 mm)
- (13) 2 - Hose 8, 22.5 in. (572 mm)
- (14) 2 - Hose 9, 34.0 in. (864 mm)
- (15) 4 - Pin 4 [LA301]  
4 - Pin 2 [LA351]
- (16) Control valve
- (17) Front guard
- (18) 2 - Stand
- (19) Brace
- (20) 1 - Side frame connector
- (21) Main frame
- (22) 2 - Mounting pin
- (23) Side frame LH
- (24) Side frame RH

## 3.2 TRACTOR PREPARATION

- (1) Locate the tractor on a firm level surface. Stop engine.

## 3.3 INSTALLATION INSTRUCTIONS

### [IMPORTANT NOTICE]

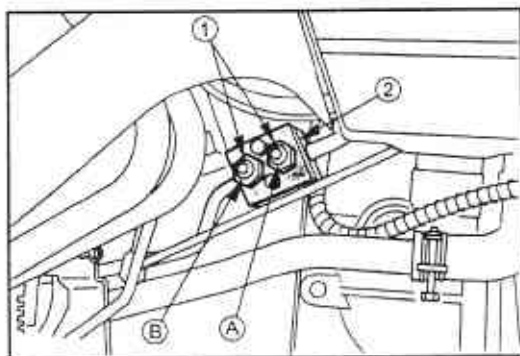
- This loader has both standard and metric fasteners. Insure that the proper fasteners are placed in the correct locations. Metric fasteners that are marked 8.8 bolt to the tractor. The bolts that go only in the loader are standard.
- Do not tighten any bolts firmly until most components are attached onto the tractor.
- Before finally tightening all mounting hardware, start the engine and apply down pressure to the bucket until the loader raises the front wheels slightly. Torque all bolts and nuts in this position.
- To avoid damage to hoses, adjust all connections to route hoses away from sharp edges.

### 3.3.1 Hydraulic Lines

- (1) Remove the cover of the hydraulic block on the tractor.
  - (2) Install the loader hydraulic block to the tractor hydraulic block.
- Tightening torque : 17 ft-lbs, 23.1 N-m, 2.35 kgf-m

### [NOTE]

- Reuse the bolts fastening the hydraulic block cover.

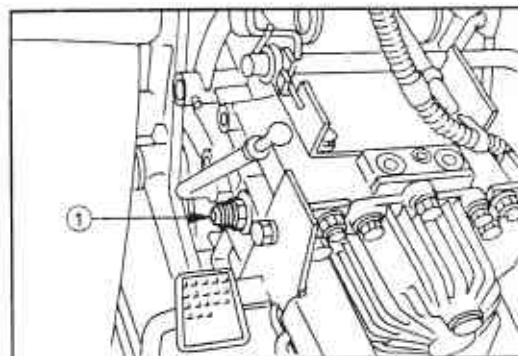


- (1) Adapters  
(A) Pump port
- (2) Hydraulic block  
(B) Power beyond port

- (3) Remove the plug from the transmission case. Install the return fitting so that thread is facing to the direction as shown.

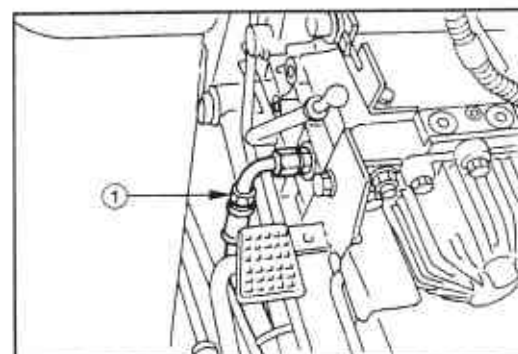
### [NOTE]

- Use seal tape on the thread of the return fitting.



(1) Return fitting

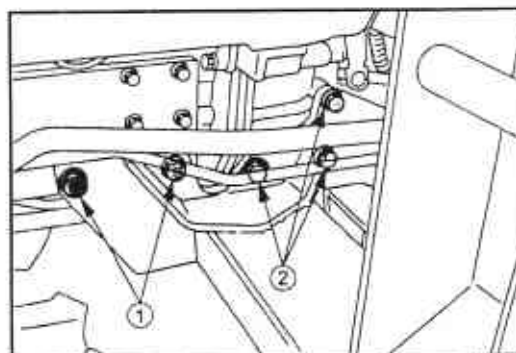
- (4) Connect the Hose 7 (55.1 in. , 1400 mm) to the return fitting.



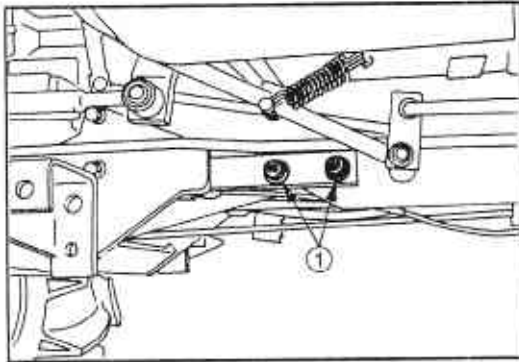
(1) Hose 7

### 3.3.2 Main Frame and Brace

- (1) Attach the main frame to the tractor as shown.

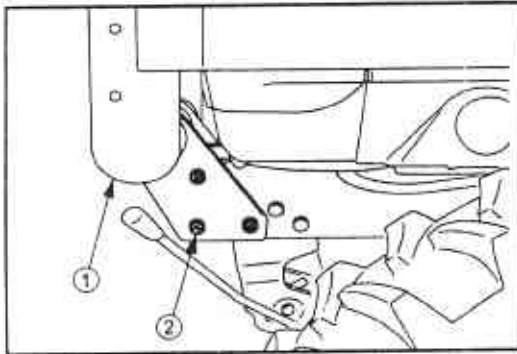


- (1) 4 - M14x35 Bolts  
4 - 9/16 Spring lock washers
- (2) 6 - M12x35 Bolts (Pitch 1.75)  
6 - M12 Spring lock washers



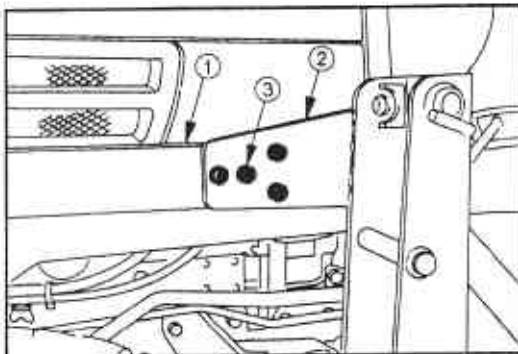
- (1) 4 - M12x30 Bolts (Pitch 1.25)  
 4 - M12 Spring lock washers  
 4 - 1/2 Plain washers

- (2) Attach the brace to the tractor front frame as shown. (Do not tighten bolts until all other related components have been installed.)



- (1) Brace  
 (2) 6 - 9/16-18UNFx1 3/4 Bolts  
 6 - 9/16-18UNF Nuts  
 6 - 9/16 Spring lock washers

- (3) Attach the rear ends of brace to the main frame as shown.



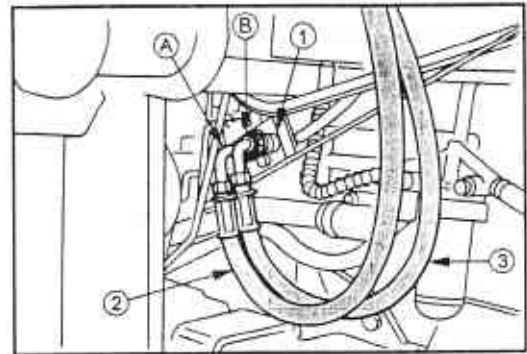
- (1) Brace (2) Main frame  
 (3) 8 - 9/16-18UNFx1 1/2 Bolts  
 8 - 9/16-18UNF Nuts  
 8 - 9/16 Spring lock washers

#### [NOTE]

- Install all the bolts on each brace from the outside.

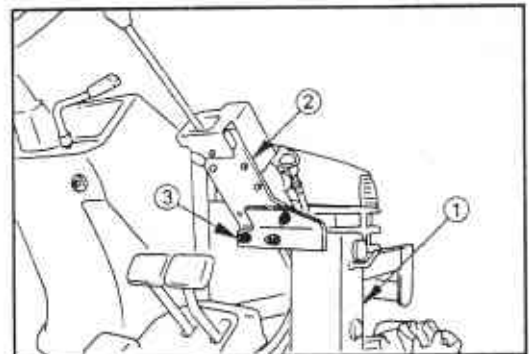
### 3.3.3 Hydraulic Valve and Hoses

- (1) Connect Hose 5 (33.5 in. , 851 mm) to the power beyond port of the hydraulic block.
- (2) Connect Hose 6 (29.5 in. , 749 mm) to the pump port of the hydraulic block.



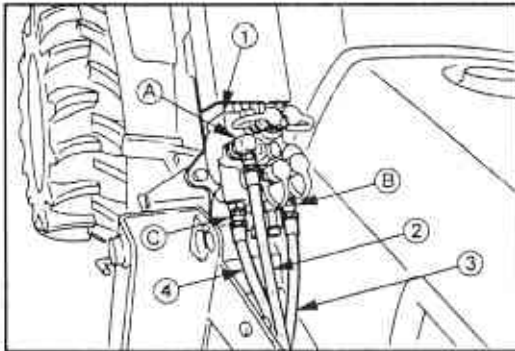
- (1) Hydraulic block (2) Hose 5  
 (3) Hose 6 (A) Power beyond port (B) Pump port

- (3) Attach the valve stay to the main frame as shown.



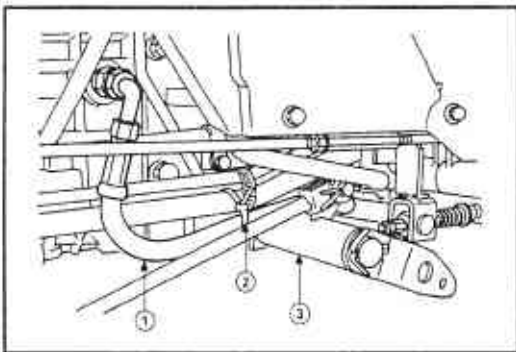
- (1) Main frame (2) Valve stay  
 (3) 3 - 1/2-13UNCx1 1/4 Bolts  
 3 - 1/2-13UNC Nuts  
 3 - 1/2 Spring lock washers

- (4) Connect Hose 5 (33.5 in. , 851 mm) to the power beyond port of the hydraulic control valve.
- (5) Connect Hose 6 (29.5 in. , 749 mm) to the pump port of the hydraulic control valve.
- (6) Route Hose 7 (55.1 in. , 1400 mm) from the return fitting as shown and connect it to the tank port of the hydraulic control valve. Route Hose 7 above mower linkage, and clear of all moving parts.

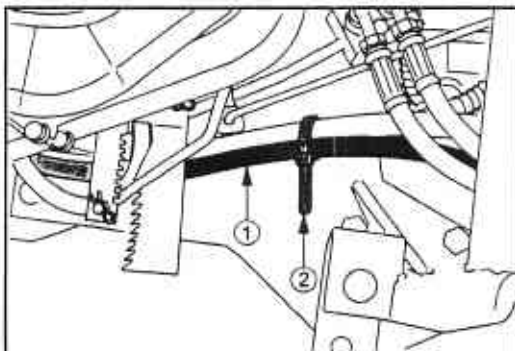


- |                             |               |
|-----------------------------|---------------|
| (1) Hydraulic control valve | (2) Hose 5    |
| (3) Hose 6                  | (4) Hose 7    |
| (A) Power beyond port       | (B) Pump port |
| (C) Tank port               |               |

- (7) Clamp Hose 7 with two plastic ties as shown.

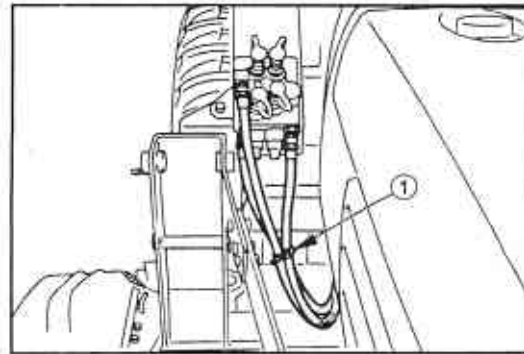


- |            |                 |                   |
|------------|-----------------|-------------------|
| (1) Hose 7 | (2) Plastic tie | (3) Mower linkage |
|------------|-----------------|-------------------|



- |            |                 |
|------------|-----------------|
| (1) Hose 7 | (2) Plastic tie |
|------------|-----------------|

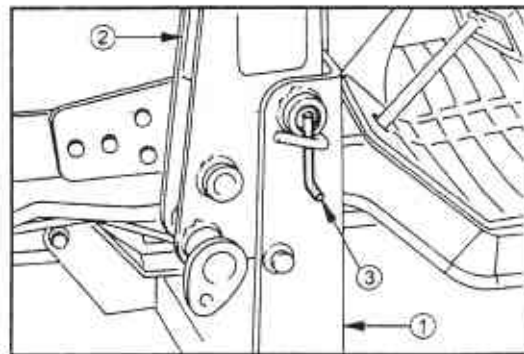
- (8) Clamp three hoses with plastic tie as shown.



- (1) Plastic tie

### 3.3.4 Side Frames

Set the side frame LH and RH onto the main frame. Insert the mounting pins through the main frame and side frames and rotate them to the lock position.



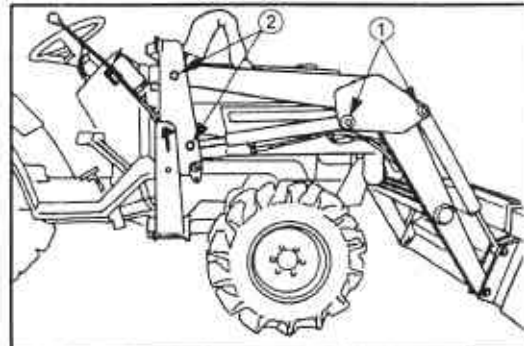
- |                  |                |
|------------------|----------------|
| (1) Main frame   | (2) Side frame |
| (3) Mounting pin |                |

### 3.3.5 Boom, Hydraulic Cylinders and Bucket

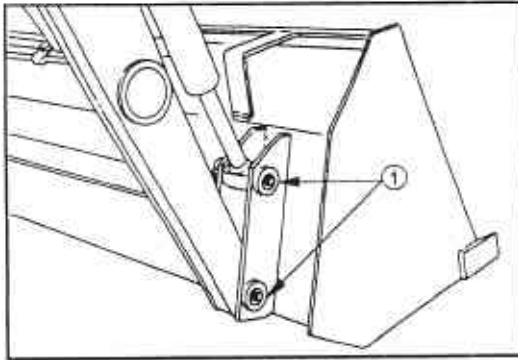
Attach the boom, hydraulic cylinders and bucket as shown.

#### [IMPORTANT]

Cylinder 1 has straight and 90° elbow fittings.  
Cylinder 2 has two 90° elbow fittings.



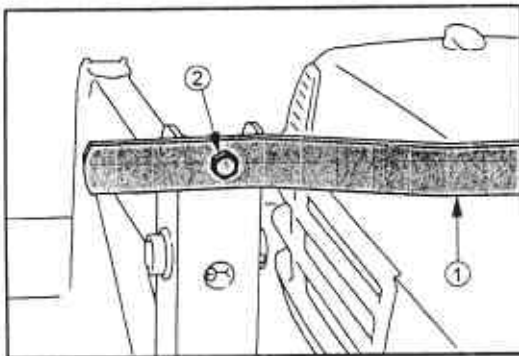
- |                       |
|-----------------------|
| (1) 4 - Pin 1         |
| (2) 4 - Pin 4 [LA301] |
| 4 - Pin 2 [LA351]     |



- (1) 4 - Pin 4 [LA301]  
4 - Pin 3 [LA351]

### 3.3.6 Side Frame Connector

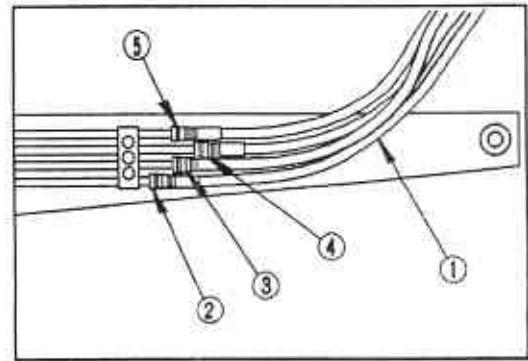
Attach the side frame connector to the top of the side frame as shown.



- (1) Side frame connector  
(2) 2 - 9/16-18UNFx1 1/4 Bolts  
2 - 9/16-18UNF Nuts  
2 - 9/16 Spring lock washers

### 3.3.7 Hydraulic Hoses

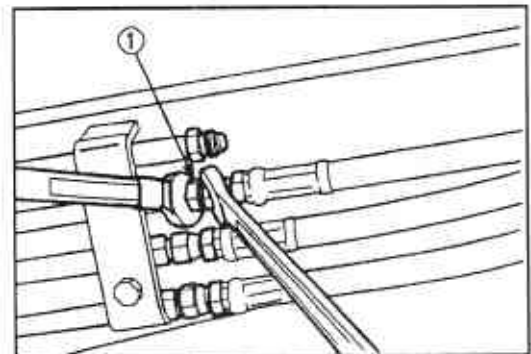
- (1) Remove the caps from the hydraulic lines on the boom.
- (2) Insert four Hose 1 through the nylon sleeve.
- (3) Clamp the nylon sleeve to the hoses with plastic tie.
- (4) Connect four Hose 1 with couplers to the hydraulic tubes so that color dots match with color marks on the hydraulic tubes.



- (1) Hose 1  
(2) Hydraulic tube 2  
(3) Hydraulic tube 2  
(4) Hydraulic tube 3  
(5) Hydraulic tube 4

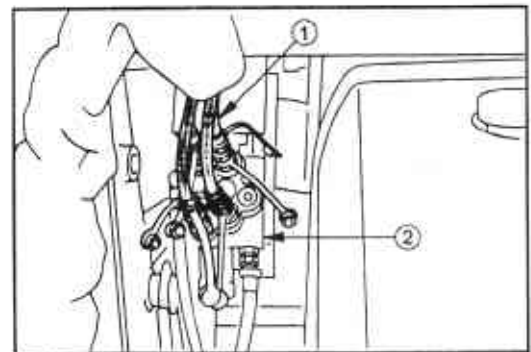
#### [NOTE]

- When connecting Hose 1 to the hydraulic tubes, assemble Hose 1 to Hydraulic Tube 3, Hydraulic Tube 2, Hydraulic Tube 1 and Hydraulic Tube 4 in order.
- For fastening hydraulic hose to tube fitting, use two wrenches. Holding the fitting with a wrench, turn the swivel nut on the hose with another wrench to avoid damaging the hydraulic tube.



- (1) Tube fitting

- (5) Connect Hose 1 to the nipples on the control valve so that color dots match each other.

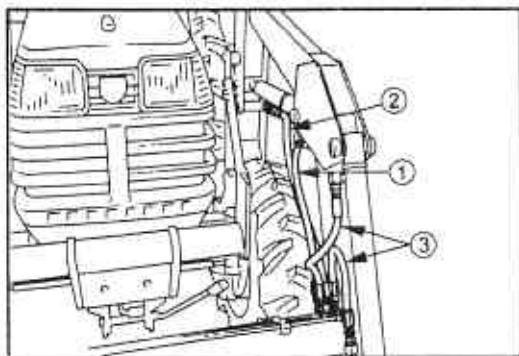


- (1) Hose 1  
(2) Control valve

(4) Connect Hose 8, Hose 9 and Hose 10 between hydraulic tubes and cylinders as indicated by color marks.

- Hose 8 (22.5 in. , 572 mm) :  
Base end of Cylinder 1 to Hydraulic Tube 2
- Hose 9 (34.0 in. , 864 mm) :  
Rod end of Cylinder 1 to Hydraulic Tube 1
- Hose 10 (14.8 in. , 376 mm) :  
Base end of Cylinder 2 to Hydraulic Tube 3  
Rod end of Cylinder 2 to Hydraulic Tube 4

(5) Clamp Hose 9 to Cylinder 1 with plastic tie.

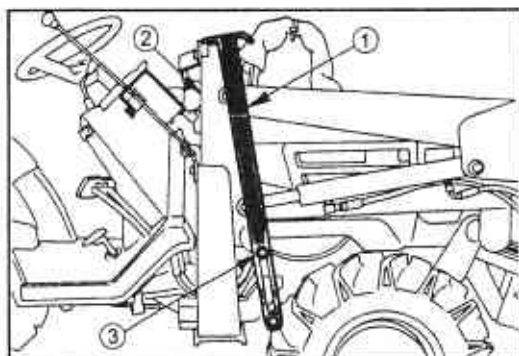


(1) Hose 8  
(3) Hose 10

(2) Hose 9

### 3.3.8 Stands

Attach the stands to the side frames as shown.



(1) Stand  
(3) 2 - Collar  
2 - 1/2-20UNFx1 1/2 Bolts  
2 - 1/2-20UNF Nuts  
2 - 1/2 Plain washers  
2 - 1/2 Spring lock washers

(2) Side frame

### 3.3.9 Bolts and Nuts Tightening

Tighten all bolts and nuts in the following order with required torque.

#### [NOTE]

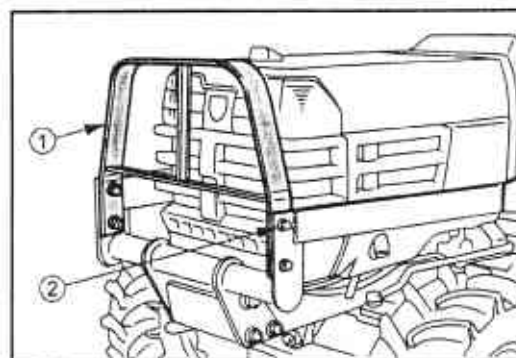
- Before finally tightening all mounting hardware, start the engine and apply down pressure to the bucket until the loader raises the front wheels slightly.

Tighten all bolts and nuts in this position.

Location	Bolt/Nut	Required Torque ft-lbs (kgf-m, N-m)
Main frame	10-M12 bolts	61 (8.5 , 83)
	4-M14 bolts	108 (15 , 147)
Brace	14-9/16 nuts	100 (14 , 135)
Valve stay	3-1/2 nuts	61 (8.5 , 83)

### 3.3.9 Front Guard (Option for LA271)

Attach the front guard to the front loader brace so that the cushion is facing the tractor.



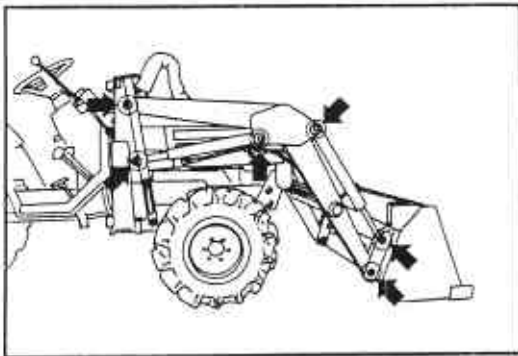
(1) Front guard  
(2) 4 - 1/2-20UNFx1 1/2 Bolts  
4 - 1/2-20UNF Nuts  
4 - 1/2 Spring lock washers



## 4. PRE-OPERATION INSTRUCTIONS

### 4.1 LUBRICATION

Lubricate all grease fittings with SAE multipurpose grease.



### 4.2 TRANSMISSION FLUID

Check tractor transmission fluid level. Add fluid if necessary. Refer to the tractor's Operator's Manual for instructions and proper fluid. Repeat this check after purging air from the system, step 4.6. At that time, it will be necessary to add transmission fluid.

### 4.3 REAR BALLAST



#### [CAUTION]

TO AVOID PERSONAL INJURY :

- FOR TRACTOR STABILITY AND OPERATOR'S SAFETY, REAR BALLAST SHOULD BE ADDED TO THE 3-POINT HITCH AND TO THE REAR WHEELS AS INDICATED IN THIS CHART.

Implement as Counter Weight	
4' Land Scraper	Approx. 495 lbs. (225 kg)
Rear Blade	
Rotary Tiller	Approx. 440 lbs. (200 kg)
Backhoe	

*Weight of Tire Liquid (Calcium Chloride)			
Tire size	8.3-16	9.5-16	11.2-16
2 lbs./gal.	77 lbs. (35 kg)	119 lbs. (54 kg)	155 lbs. (70 kg)
3.5 lbs./gal.	82 lbs. (37 kg)	126 lbs. (57 kg)	163 lbs. (74 kg)
5 lbs./gal.	86 lbs. (39 kg)	132 lbs. (60 kg)	172 lbs. (78 kg)

\*Weight per tire with 75% filled.

#### [NOTE]

- Do not fill rear tires more than 75% full (to valve stem level).
- When mounting a heavy implement such as backhoe, trencher, etc, liquid in the tire may not be required.
- Do not fill the following tire with liquid.  
5.00-10    6-12    6.50-10    7-12

### 4.4 TIRE INFLATION

Insure that the tractor tires are properly inflated. Refer to the tractor's Operator's Manual for optional tires.

#### ■ Inflation pressure

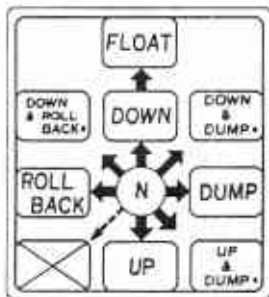
	Tire Sizes	Inflation Pressure
Rear	8.3-16, 4PR	140kPa (1.4kgf/cm <sup>2</sup> , 20psi)
	9.5-16, 4PR	140kPa (1.4kgf/cm <sup>2</sup> , 20psi)
	11.2-16, 4PR	130kPa (1.3kgf/cm <sup>2</sup> , 18psi)
Front	5.00-10, 4PR	270kPa (2.8kgf/cm <sup>2</sup> , 40psi)
	6-12, 4PR	200kPa (2.0kgf/cm <sup>2</sup> , 28psi)
	6.50-10, 4PR	200kPa (2.0kgf/cm <sup>2</sup> , 28psi)
	7-12, 4PR	170kPa (1.7kgf/cm <sup>2</sup> , 24psi)

## 4.5 TEST OPERATION



### [CAUTION]

- (1) KEEP ENGINE SPEED AT LOW IDLE DURING TEST OPERATION.
- (2) ESCAPING HYDRAULIC FLUID UNDER PRESSURE CAN HAVE SUFFICIENT FORCE TO PENETRATE SKIN, CAUSING SERIOUS PERSONAL INJURY. BEFORE DISCONNECTING LINES, BE SURE TO RELIEVE ALL PRESSURE. BEFORE APPLYING PRESSURE TO SYSTEM, BE SURE ALL CONNECTIONS ARE TIGHT AND THAT LINES, TUBES AND HOSES ARE NOT DAMAGED. FLUID ESCAPING FROM A VERY SMALL HOLE CAN BE ALMOST INVISIBLE. USE A PIECE OF CARDBOARD OR WOOD, RATHER THAN HANDS TO SEARCH FOR SUSPECTED LEAKS. IF INJURED BY ESCAPING FLUID, SEE A DOCTOR AT ONCE. SERIOUS INFECTION OR REACTION CAN DEVELOP IF PROPER MEDICAL TREATMENT IS NOT ADMINISTERED IMMEDIATELY.



### [NOTE]

- When the lever is at each corner position marked by "\*", boom and bucket cylinders work at the same time. However, the position marked by cross is not recommended for scooping because of insufficient lift force.

To begin test operation, slightly move the control lever from the "N" position. Slowly raise the loader boom just enough for the bucket to clear the ground when fully dumped. Slowly work through the dump and roll back cycles.

### [IMPORTANT]

- IF THE BOOM OR BUCKET DOES NOT WORK AS THE DIRECTIONS INDICATE ON THE LABEL, LOWER THE BUCKET TO THE GROUND, STOP THE ENGINE, AND RELIEVE ALL HYDRAULIC PRESSURE. RECHECK AND CORRECT ALL HYDRAULIC CONNECTIONS.

This loader control valve has two stage dump positions. The first dump position by moving the lever to the right is the "Regular" dump position. It has good power and control for dumping precisely. This position should be used when operating another implement with the loader's control valve. The second dump position (to further right) features greater speed for dumping. These two positions are separated by a "Feel" position for your convenience.

## 4.6 REMOVING AIR FROM HYDRAULIC SYSTEM

Repeat raising and lowering the boom and bucket operations until all the air is removed from the system and the system responds properly.

### [IMPORTANT]

- DO NOT MOVE THE CONTROL LEVER INTO FLOAT POSITION WHEN THE BUCKET IS OFF THE GROUND.

## 5. OPERATING INSTRUCTIONS

### OPERATING THE LOADER

The loader should be operated with the tractor engine running from 1700 to 2200 rpm. Excessive speeds are dangerous, and may cause bucket spillage and unnecessary strain on the tractor and loader. When operating in temperatures below 30°F, run the tractor engine below 1200 rpm until the oil temperature exceeds 30°F.

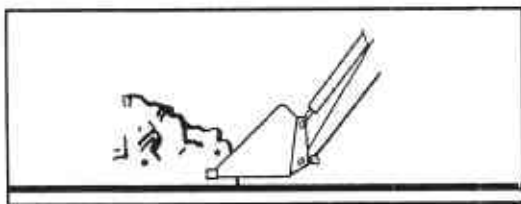
The following text and illustrations offer suggested loader and tractor operating techniques.

#### [NOTE]

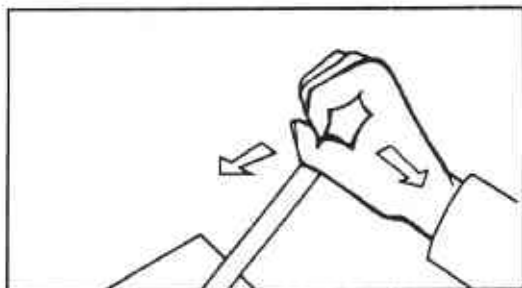
- When operating the loader in rough terrain, remove the mower to avoid damage to the mower.

### 5.1 FILLING THE BUCKET

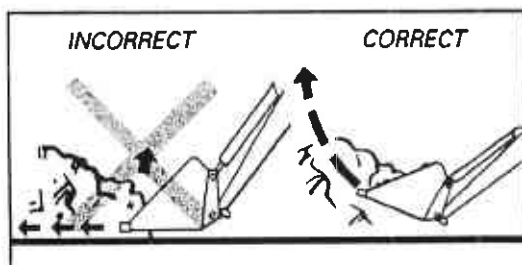
Approach and enter the pile with a level bucket.



Ease control lever toward you and then back to rollback and lift the bucket.



The rollback and lifting of the bucket will increase efficiency because a level bucket throughout the lifting cycle resists bucket lift and increases break-away effort.

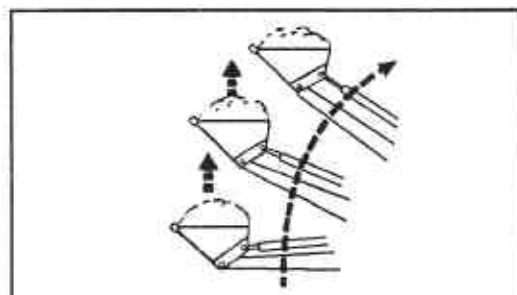


#### [NOTE]

- Do not be concerned if the bucket is not completely filled during each pass. Maximum productivity is determined by the amount of material loaded in a given period of time. Time is lost if two or more attempts are made to fill the bucket on each pass.

### 5.2 LIFTING THE LOAD

When lifting the load, keep the bucket positioned to avoid spillage.



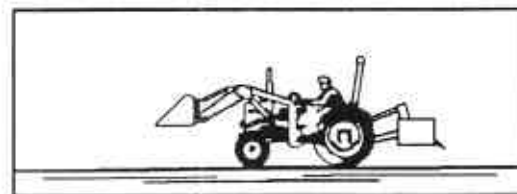
#### [CAUTION]

TO AVOID PERSONAL INJURY :

- DO NOT ATTEMPT TO LIFT BUCKET LOADS IN EXCESS OF THE LOADER CAPACITY.

### 5.3 CARRYING THE LOAD

Position the bucket just below the level of the tractor hood for maximum stability and visibility, whether the bucket is loaded or empty.



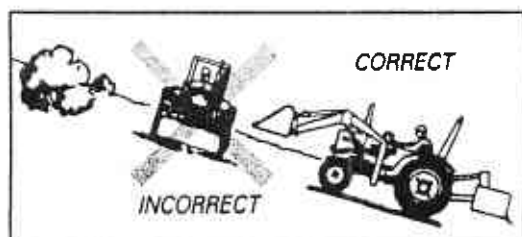
Use extreme care when operating the loader on a slope. Keep the bucket as low as possible. This keeps the bucket and tractor center of gravity low and will provide maximum tractor stability.



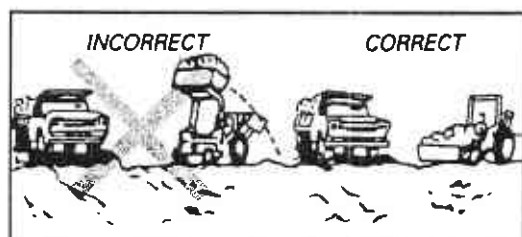
#### [CAUTION]

TO AVOID PERSONAL INJURY:

- OPERATING THE LOADER ON A HILL SIDE IS DANGEROUS AND IS NOT RECOMMENDED.

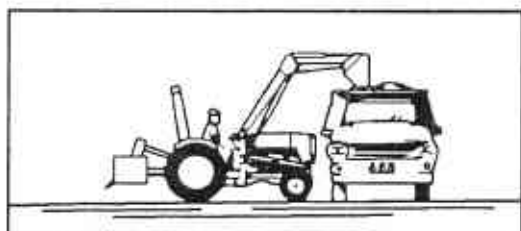


When transporting a load, keep the bucket as low as possible to avoid tipping, in case a wheel drops in a rut.



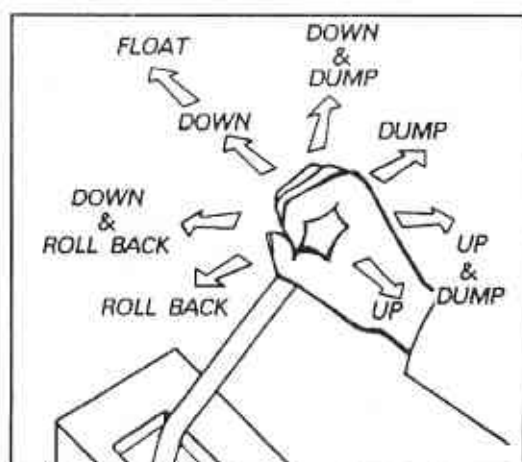
## 5.4 DUMPING THE BUCKET

Lift the bucket just high enough to clear the side of the vehicle. Move the tractor in as close to the side of the vehicle as possible, then dump the bucket.



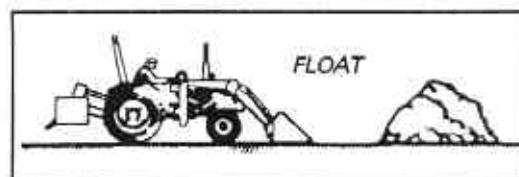
## 5.5 LOWERING THE BUCKET

After the bucket is dumped, back away from the vehicle while lowering and rolling back the bucket.

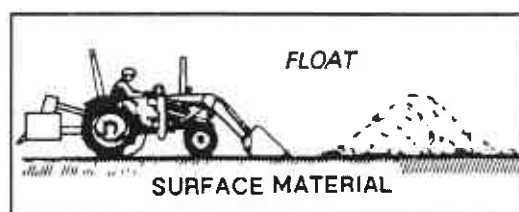


## 5.6 OPERATING WITH FLOAT CONTROL

During operation on hard surface, keep the bucket level and put the lift control in the float position to permit the bucket to float on the working surface. If hydraulic down pressure is exerted on the bucket it will wear faster than normal.

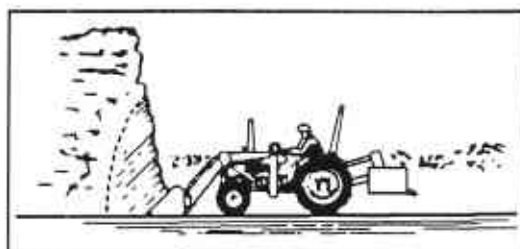


The float position will also avoid mixing of surface material with stockpile material. The float position will reduce the chance of surface gouging while removing snow or other material, or when working with a blade.



## 5.7 LOADING FROM A BANK

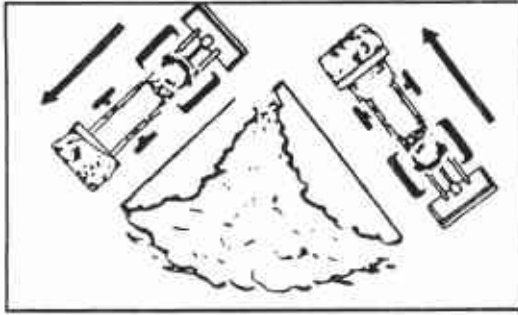
Choose a forward gear that provides a safe ground speed and power for loading.



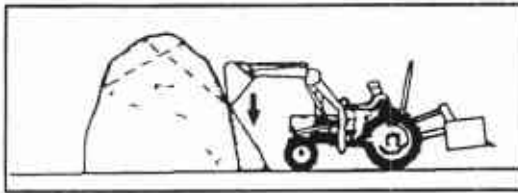
### [CAUTION]

TO AVOID PERSONAL INJURY:

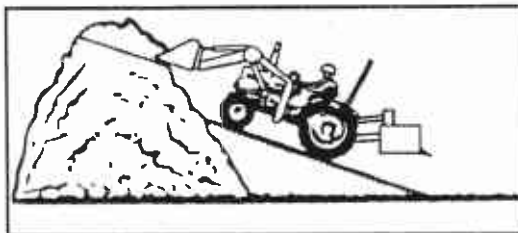
- EXERCISE CAUTION WHEN UNDERCUTTING HIGH BANKS. DIRT SLIDES CAN BE DANGEROUS.
- LOAD FROM AS LOW AS POSSIBLE FOR MAXIMUM EFFICIENCY.
- LOADER LIFT AND BREAK-AWAY CAPACITY DIMINISH AS LOADING HEIGHT IS INCREASED.



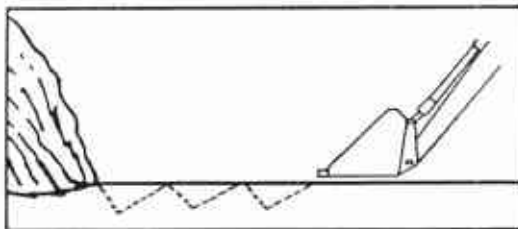
Side cutting is a good technique for cutting down a big pile.



If the pile sides are too high and liable to cause cave-in, use the loader to break down the sides until a slot can be cut over the top.

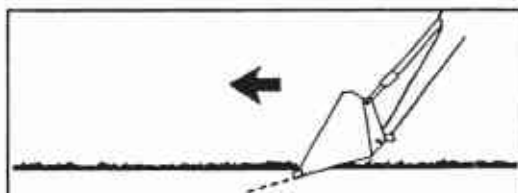


Another method for large dirt piles is to build a ramp approach to the pile.

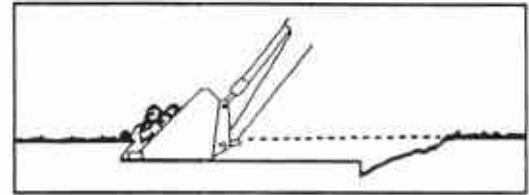


It is important to keep the bucket level when approaching a bank or pile. This will help avoid gouging the work area.

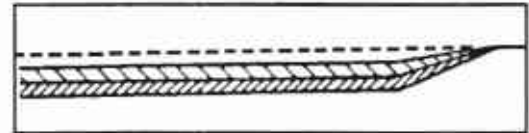
## 5.8 PEELING AND SCRAPING



Use a slight bucket down angle, travel forward, and hold the lift control forward to start the cut. Make a short cut and break-out cleanly.

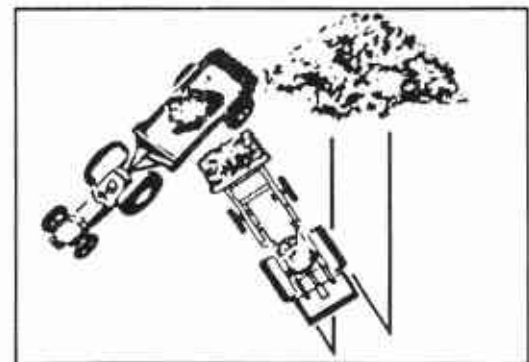


With the bucket level, start a cut at the notch approximately 2 in. deep. Hold the depth by feathering the bucket control to adjust the cutting edge up or down. When the front tires enter the notch, adjust the boom cylinder to maintain proper depth.

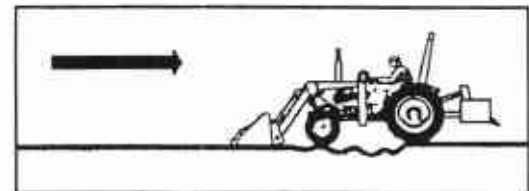


Make additional passes until the desired depth is reached. During each pass, use only the bucket control while at working depth. This will allow you to concentrate on controlling the bucket angle to maintain a precise cut.

## 5.9 LOADING LOW TRUCKS OR SPREADERS FROM A PILE

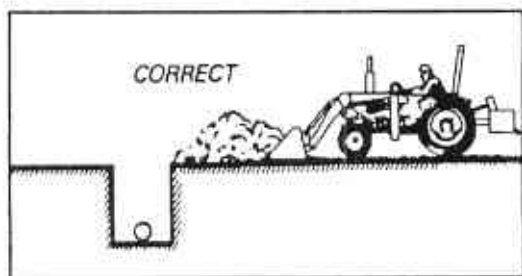


For faster loading, minimize the angle of turn and length of run between pile and spreader.

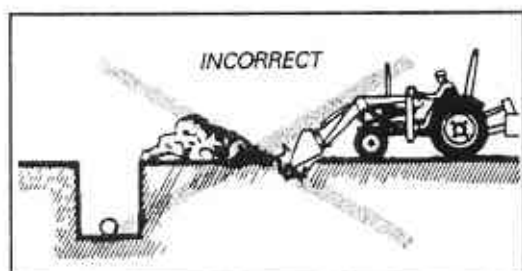


Backgrade occasionally with a loaded bucket to keep the work surface free of ruts and holes. Also, hold the lift control forward so the full weight of the bucket is scraping the ground. Use the heel of the bucket.

## 5.10 BACKFILLING

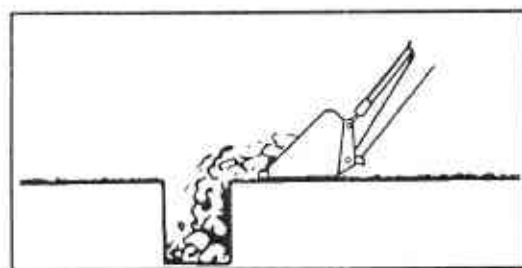


Approach the pile with the bucket flat.

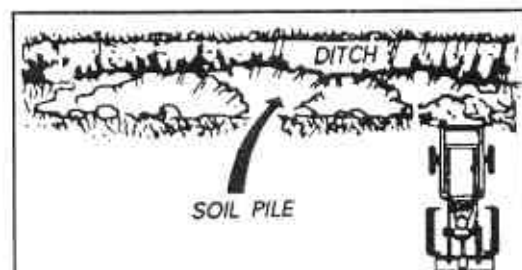


Poor operating methods actually move no more dirt and make it more difficult to hold a level grade.

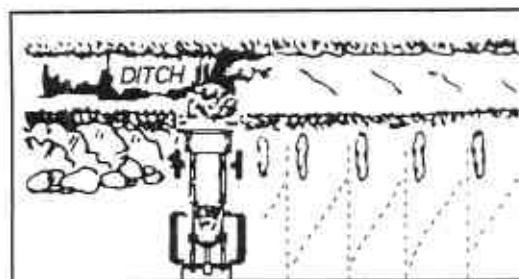
Do not use the bucket in the dumped position for bulldozing. This method, shown above, will impose severe shock loadings on the dump-linkage, the bucket cylinders, and the tractor.



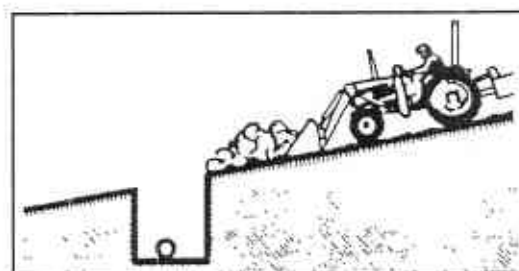
Leave dirt in the bucket because dumping on each pass wastes time.



Operate at right angles to the ditch. Taking as big a bite as the tractor can handle.



Leave dirt which drifts over the side of the bucket for final clean-up.



Pile dirt on the high side for easier backfilling on a slope.

## 5.11 HANDLING LARGE HEAVY OBJECTS



### [CAUTION]

TO AVOID PERSONAL INJURY :

- (1) HANDLING LARGE HEAVY OBJECTS CAN BE EXTREMELY DANGEROUS DUE TO :
  - (A) DANGER OF ROLLING THE TRACTOR OVER.
  - (B) DANGER OF UPENDING THE TRACTOR.
  - (C) DANGER OF THE OBJECT ROLLING OR SLIDING DOWN THE LOADER BOOM ONTO THE OPERATOR.
- (2) IF YOU MUST PERFORM THE ABOVE WORK, PROTECT YOURSELF BY :
  - (A) NEVER LIFT THE LOAD HIGHER THAN NECESSARY TO CLEAR THE GROUND WHEN MOVING.
  - (B) ADD REAR BALLAST TO THE TRACTOR TO COMPENSATE FOR THE LOAD.
  - (C) NEVER LIFT LARGE OBJECTS WITH EQUIPMENT THAT DOES NOT HAVE AN ANTI-ROLLBACK DEVICE.
  - (D) MOVE SLOWLY AND CAREFULLY, AVOID ROUGH TERRAIN.

## 6. MAINTENANCE

### 6.1 LUBRICATION

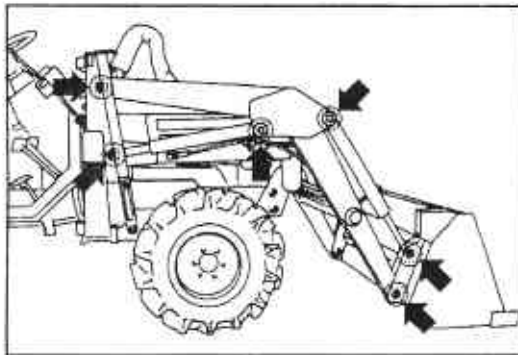


#### [CAUTION]

TO AVOID PERSONAL INJURY :

- BE SURE TO CHECK AND SERVICE THE TRACTOR ON A FLAT PLACE WITH THE BUCKET ON THE GROUND, ENGINE SHUT OFF AND THE PARKING BRAKE ON.

- (1) Lubricate all 12 grease fittings every 10 hours of operation. Also, lubricate joints of control lever linkage every 10 hours. High quality grease designating "extreme pressure" and containing Molybdenum disulfide is recommended. This grease may specify "Moly EP" on its label.



- (2) Daily before operation, check the tractor hydraulic fluid level. If low add as described in the tractor's Operator's Manual. Also change the filter element and the hydraulic fluid as recommended in the tractor's Operator's Manual.

### 6.2 DAILY CHECKS

- (1) Check all hardware daily before operation. Tighten hardware to torque values as specified in the "Tightening Torque Chart".
- (2) With the engine off and the bucket on the ground, inspect all hoses for cuts or wear. Check for signs of leaks and make sure all fittings are tight.

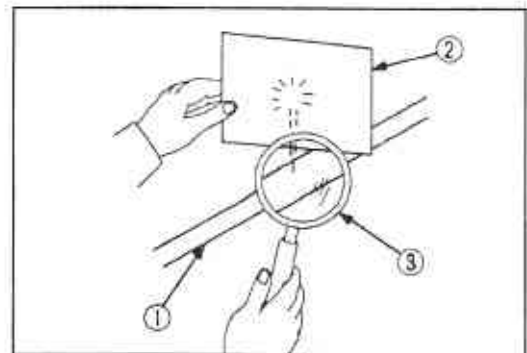


#### [CAUTION]

TO AVOID PERSONAL INJURY :

- (1) ESCAPING HYDRAULIC FLUID UNDER PRESSURE CAN HAVE SUFFICIENT FORCE TO PENETRATE SKIN, CAUSING SERIOUS PERSONAL INJURY. BEFORE DISCONNECTING LINES, BE SURE TO RELIEVE ALL PRESSURE. BEFORE APPLYING PRESSURE TO SYSTEM, BE SURE ALL CONNECTIONS ARE TIGHT AND THAT LINES, TUBES, AND HOSES ARE NOT DAMAGED.

FLUID ESCAPING FROM A VERY SMALL HOLE CAN BE ALMOST INVISIBLE. USE A PIECE OF CARDBOARD OR WOOD, RATHER THAN HANDS, TO SEARCH FOR SUSPECTED LEAKS. IF INJURED BY ESCAPING FLUID, SEE A DOCTOR AT ONCE. SERIOUS INFECTION OR REACTION CAN DEVELOP IF PROPER MEDICAL TREATMENT IS NOT ADMINISTERED IMMEDIATELY.



(1) Hydraulic line  
(3) Magnifying glass

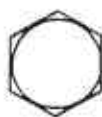
(2) Cardboard

- (2) WHEN REMOVING THE ENGINE SIDE COVERS, BE CAREFUL NOT TO TOUCH HOT LOADER CYLINDERS. ALLOW ALL SURFACES TO COOL BEFORE PERFORMING MAINTENANCE.

### General torque specification

American standard cap screws with UNC or UNF threads			Metric cap screws		
SAE grade No.		GR 5 or GR 8	Property class		8.8 Approx. SAE GR 5
1/4	(ft-lbs) (N-m) (kgf-m)	7.2 to 8.6 9.8 to 11.7 1.0 to 1.2	M6	(ft-lbs) (N-m) (kgf-m)	7.2 to 8.3 9.8 to 11.2 1.0 to 1.1
5/16	(ft-lbs) (N-m) (kgf-m)	14 to 17 19 to 23.1 1.9 to 2.4	M8	(ft-lbs) (N-m) (kgf-m)	17.4 to 20.2 23.6 to 27.4 2.4 to 2.8
3/8	(ft-lbs) (N-m) (kgf-m)	25 to 30 33.9 to 40.7 3.5 to 4.2	M10	(ft-lbs) (N-m) (kgf-m)	35.5 to 41.2 48.1 to 55.8 4.9 to 5.7
1/2	(ft-lbs) (N-m) (kgf-m)	65 to 78 88.1 to 105.8 9.0 to 10.8	M12	(ft-lbs) (N-m) (kgf-m)	57.2 to 66.5 77.5 to 90.1 7.9 to 9.2
9/16	(ft-lbs) (N-m) (kgf-m)	90 to 108 122 to 146.4 12.4 to 14.9	M14	(ft-lbs) (N-m) (kgf-m)	91.2 to 108 124 to 147 12.6 to 15.0
5/8	(ft-lbs) (N-m) (kgf-m)	130 to 156 176.3 to 211.5 18.0 to 21.6	M16	(ft-lbs) (N-m) (kgf-m)	145 to 166 196 to 225 20.0 to 23.0

Top of bolt



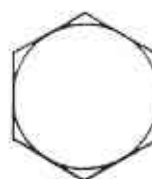
M8



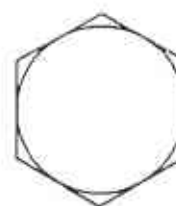
M10



M12

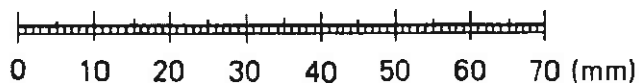


M14



M16

Length



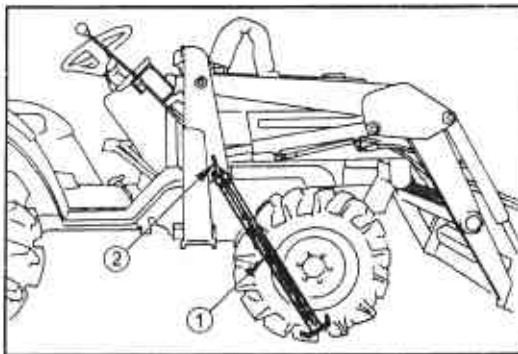


## 7. REMOVING THE LOADER

### [IMPORTANT]

- FOR REMOVING THE LOADER, CHOOSE FLAT AND HARD GROUND, PREFERABLY CONCRETE. WHEN STARTING THE ENGINE OR USING THE HYDRAULIC CONTROL VALVE, ALWAYS SIT IN THE OPERATOR'S SEAT.  
IF THE GROUND SURFACE IS SOFT, PLACE A BOARD ON THE GROUND FOR THE BUCKET AND SIDE FRAME STANDS.  
MAKE SURE BUCKET IS AT NEARLY GROUND LEVEL AND PARKING BRAKE IS DISENGAGED.

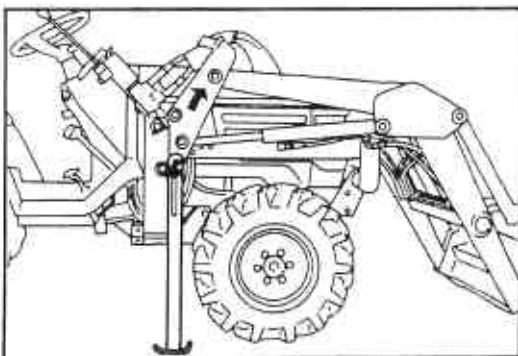
- (1) Lower the boom and level the bucket.
- (2) Raise the front wheels slightly.
- (3) Stop the engine.
- (4) Remove the mounting pins from the loader main frames.
- (5) Pull the stands from the top of the loader side frames and rotate them to the level with the ground. Slide the stands toward the front of the tractor. Then rotate stands to the ground level and insert the mounting pins through the stands and side frames.



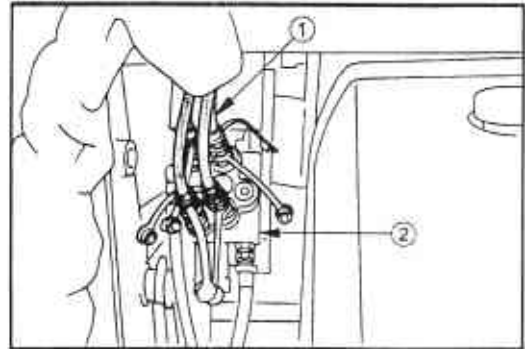
(1) Stand

(2) Mounting pin

- (6) Start the engine and run at a low idle.
- (7) Slowly move the hydraulic control lever to up position to raise the loader side frames up and out of the main frame sockets until the stands are straight as shown.



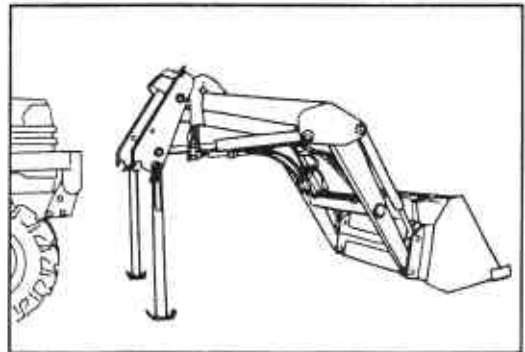
- (8) Stop the engine.
- (9) Slowly release all hydraulic pressure by moving the hydraulic control lever in all directions. Disconnect four Hose 1 with quick couplers from the control valve at the right side of the tractor.



(1) Hose 1

(2) Control valve

- (10) Place protective caps or plugs on the quick coupler ends and the nipple ends.
- (11) Start the engine and slowly back the tractor away from the loader.



## 8. STORING THE LOADER

- (1) Store the loader in a clean dry place.
- (2) Check hydraulic hose and connections. Repair or replace if necessary.
- (3) Repair or replace any worn, damaged or missing parts.
- (4) Lubricate complete loader as described on page 17.
- (5) Apply a coat of grease to all exposed cylinder rods to prevent rusting.
- (6) Repaint the parts worn or scratched.

## 9. REINSTALLING THE LOADER

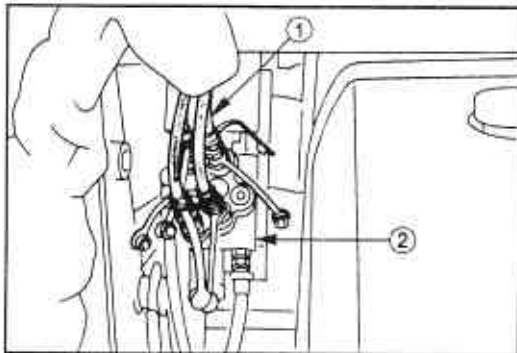


### [CAUTION]

TO AVOID PERSONAL INJURY :

- WHEN STARTING THE ENGINE AND OPERATING THE CONTROL VALVE, ALWAYS SIT IN THE OPERATOR'S SEAT.

- (1) Drive the tractor between the loader side frames.
- (2) Stop the engine.
- (3) Connect four Hose 1 with quick couplers to the nipples on the control valve as indicated with color dots.



(1) Hose 1

(2) Control valve

- (4) Start the engine and run at a low idle.
- (5) Slowly move the tractor forward until the rear side of the side frames touch to the sockets of the main frame.



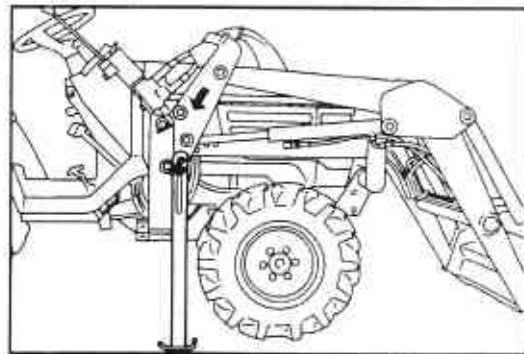
### [CAUTION]

TO AVOID PERSONAL INJURY :

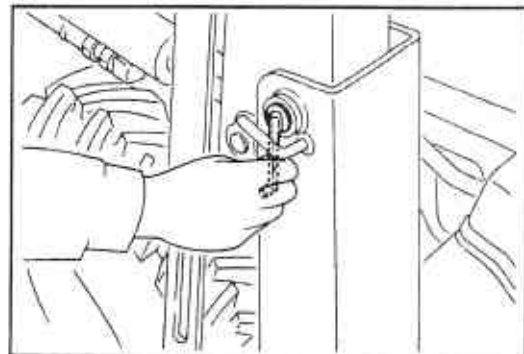
- KEEP YOUR FINGERS AND HANDS CLEAR OF THE LOADER SIDE FRAMES AND THE MAIN FRAME AND MAKE SURE THAT PARKING BRAKE IS DISENGAGED.

### [NOTE]

- When reinstalling the loader to a tractor with mid-mount mower, lift up the mower and turn the gauge wheels to the rear.
- (6) Slowly move the control lever to "Lower" position to lower the loader side frames into the sockets of the main frame and raise the front wheels slightly.



- (7) Stop the engine
- (8) Remove the mounting pins from the stands and reinstall the stands to their original positions. Insert the mounting pins through the main frame and side frames and rotate them to the lock position.



- (9) Start the engine and lower the front wheels.

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