

# MAHINDRA

T R A C T O R S

OPERATOR'S MANUAL  
PARTS CATALOGUE  
INSTALLATION INSTRUCTIONS  
**'35' Series** 3535/4035  
GEAR  
ML 120



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**Includes: Operator's Manual, Parts  
Catalogue and Installation Instructions**

# **Mahindra, Ltd**

## **Model ML120**

### **Front End Loader**



1503-1139  
February 2008

35 Series 4WD, Model - 3535 & 4035 Loader June'08

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# WARRANTY CONDITIONS

## Warranty Coverage:

Mahindra, Ltd, Inc., herein referred to as Mahindra, undertakes to replace or repair any part of a Mahindra loader where damage has been proven to be caused by defects in material or workmanship.

This Warranty is valid for a period of 1 year for all hydraulic components and attachments and for a period of 2 years for all other loader components from the date of the original retail sale. Parts replaced or repaired under the terms of this Warranty are guaranteed only until the original warranty expires.

It is further understood and agreed that the defect should be immediately reported to the Selling Dealer. The Selling Dealer will generally perform Warranty repairs or replacements and the Purchaser shall deliver the Mahindra Loader to the Dealer's place of business for repair. In the event Purchaser is located more than 75 miles from the Selling Dealer, any Mahindra Dealer authorized to sell and service Mahindra Products may perform the repair at its dealership.

The obligation of Mahindra to the Purchaser under this Warranty is limited to the repair or replacement of defective parts by an authorized Mahindra dealer. Repair or replacement in accordance with this Warranty shall constitute fulfillment of all liabilities of Mahindra and the Selling Dealer in respect to Mahindra Loaders.

**There are no warranties beyond those which expressly appear herein. Any implied warranty of merchantability or fitness for a particular purpose is specifically excluded here from.**

## Warranty Provisions:

Mahindra's liability under this Warranty is subject to the observance by the Purchaser of the following provisions:

- The purchaser shall at all times in the operation of any Mahindra Product, use those brands and grades of lubricating oils, lubricants or fuel and spare parts officially approved by Mahindra.
- The Mahindra Loaders shall have been used in accordance with the procedures specified in the Operator's Manual. This Warranty does not extend to damage resulting from misapplication, abuse, misuse, failure to perform maintenance, negligence, fire, accidents or changes or faulty mounting carried out by the Purchaser. When making a Warranty exchange of parts, the Purchaser shall compensate Mahindra for the time that the parts have been used if they have been exposed to extreme wear.
- Compensation is not paid for physical harm, deadlock, resulting damages, or other losses.
- To obtain warranty service, the Purchaser must (1) report the product defect to an authorized Mahindra dealer and request repair within the applicable warranty term and (2) present evidence of purchase or date of original use.
- The Warranty shall be void if the Mahindra Loader has been altered or repaired outside of a Mahindra dealership in a manner, which, in the sole judgment of Mahindra, affects its performance, stability, or reliability.
- The customer shall be responsible for transportation expenses for the Mahindra Loader to the dealership or travel of dealer personnel to customer location for Warranty repair. The customer shall also pay any premium for overtime labor requested by the customer.
- Temporary repairs or additional costs due to the work being performed after normal working hours will not be compensated.
- The above warranty is in lieu of all other warranties on Mahindra's behalf and neither party assumes any other liability in connection with Mahindra's Products.
- Any dispute arising between Mahindra and the Purchaser concerning the liability of Mahindra under this warranty shall be subject to the laws of the State of Texas.

## Right To Make Design and Product Changes:

Mahindra reserves the right to make changes in the design and other changes in its Mahindra Products at any time without incurring any obligation with respect to any product previously ordered, sold or shipped.



# CONGRATULATIONS

You are now the proud owner of a MAHINDRA Loader. This loader is a product of 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. The immediate use of new techniques in the manufacture of products may cause some small parts of this manual to be outdated. Mahindra dealers will have the most up-to-date information. Please do not hesitate to consult with them.

## SAFETY ALERTS

This symbol, the industry's "Safety Alert Symbol," is used throughout this manual and on labels to warn of the possibility of personal injury. When you see this symbol, carefully read the messages and be alert to the possibility of injury or death. It is essential you read these 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

Most tractor and/or loader equipment accidents can be avoided by following simple safety precautions. The safety information given in this manual does not replace safety codes, insurance requirements, federal, state, and local laws. Make sure your machine has the correct equipment required by your local laws and regulations. Understand that your safety and the safety of other persons are measured by how you service and operate this loader.

Know the position and operations of all controls before you try to operate. Make sure you check all controls in a safe area before starting.

Read this manual completely and thoroughly and make sure you understand all controls. All equipment has a limit. Make sure you are aware of the stability and load characteristics of this loader before you begin operation.



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.



## SAFETY PRECAUTIONS



### READ MANUALS AND DECALS

1. Read and understand both the tractor and the loader Operator Manuals and all decals before using the loader.
2. Lack of knowledge can lead to accidents.
3. It is the loader owner's responsibility to make sure anyone operating the loader reads and understands this manual first before operating the machine.
4. Follow all safety, operating, and service instructions.
5. Replace damaged or illegible safety labels. See following pages for required labels.

### ROPS AND SEAT BELT

6. Equip your tractor with an approved rollover-protective structure (ROPS) or ROPS Cab and seat belt for your protection.
7. ROPS (Roll-Over Protective Structures) and seat belt equipped tractors are recommended for operator use in all loader operations.
8. Operator should wear safety hard hat, safety glasses, safety shoes, and other PPE. Avoid wearing loose clothing or jewelry that may catch in moving parts.
9. Use seat belt as specified by tractor/ROPS manufacturer.

### YOURSELF

10. Do not stand, walk, or work under a raised loader bucket or attachment unless it is securely blocked and held in position.
11. Operate controls only when properly seated in the operator's seat.
12. Only one person, the operator, should be on the machine when it is in operation.
13. Accidental movement of valve handle/handles or leak in the hydraulic system could cause the loader to drop, or attachment to dump, causing severe injury.

### OTHERS

14. Do not allow anyone in loader work area, under raised loader, or to reach through the loader boom when the bucket or attachment is raised.
15. A frequent cause of personal injury or death is persons falling off and being run over. Inadvertent movement of the loader or attachment could result in serious injury or death.
16. Do not permit others to ride on your tractor, loader, bucket, or any attachment.
17. Do not lift or carry anyone on buckets, forks, probes, or any other portion of the loader or loader attachments.
18. Do not allow children or unqualified persons to operate equipment.

### PREPARATION

19. Move the wheels to the tractor manufacturer's widest recommended settings to increase stability.
20. For better stability, always use a tractor equipped with a wide front axle, never use a tractor equipped with a tricycle type front axle.
21. Add rear ballast or rear weight to the tractor to compensate for the load and increase stability.
22. Add recommended rear tire liquid weight or rear wheel weights for increased stability.
23. 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 Mahindra dealer.
24. Assemble, remove, and reinstall the loader only as directed in this manual. Failure to do this could result in serious personal injury or death.
25. The loader may shift during shipping and handling, making it unstable on the pallet. Support loader with an overhead hoist or other suitable means prior to removing bands or attaching straps securing loader to pallet. Failure to do so could result in accidental tip-over of the loader that could cause serious injury to you and/or bystanders.





## SAFETY PRECAUTIONS



### BEFORE OPERATION

26. Before starting the engine of your tractor, make sure all operating controls are in park lock or neutral position.
27. Be certain lights and safety markings, as provided by the tractor manufacturer, are clean and operating when transporting the tractor/loader on public roads. Be certain that the Slow Moving Vehicle (SMV) emblem is visible. Check with local law enforcement for specific requirements.
28. Rear tractor ballast is required after installation of loader on the tractor. To allow for proper steering of the tractor always remove 3-point weight when the loader is parked from the tractor. Never operate the unit with the loader parked. Failure to follow these instructions could cause loss of steering causing personal injury and damage to property.

### OPERATION

29. Add wheel ballast and/or rear weight to counterbalance tractor/loader for stability at maximum loader capacity.
30. Additional counterweight requirements will vary with loader attachments and equipment application.
31. Move and turn the tractor at low speeds.
32. Carry loader boom at a low position during normal operation.
33. Never travel at high speeds with bucket loaded.
34. Use caution when operating the loader with a raised bucket or attachment.
35. Avoid driving over loose fill, rocks, holes, or anything that may be dangerous for loader operation or movement.
36. Allow for the loader length when making turns.
37. Use caution when handling loose or unstable loads.
38. Gradually stop the loader boom when lowering or lifting loads.
39. When using remote hydraulic tractor valves on some tractors, the loader lift and dump cylinders will continue moving unless the valve handle/handles are manually returned to neutral, or until relief pressure is reached at the ends of piston strokes. Observe the bucket movement and maintain control with valve handle/handles.
40. Travel speed should be such that complete control and machine stability is maintained at all times. Where possible, avoid operating near ditches, embankments, and holes. Reduce speed when turning, crossing slopes, and on rough, slick or muddy surfaces.
41. A loader attachment should be transported in a low position at slow ground speeds. Make turns slowly and use the tractor brakes cautiously. A loaded attachment in the raised position alters the center of gravity location of the machine and increases the possibility of mishaps.
42. Be careful during loading, transporting, and stacking to minimize rolling bales and tractor tip over.
43. Do not use buckets, forks, or other attachments without bale retaining devices.
44. Operate the tractor and loader such that complete control and machine stability is maintained at all times.
45. When using a loader, be alert of bucket or attachment position at all times. Loader in raised position with bucket or attachment rolled back can dump material onto tractor causing damage or injury to tractor and/or operator.

### LARGE HEAVY OBJECTS

46. Never use loader for handling large heavy objects, such as large round or rectangular bales, logs, and oil drums unless loader is equipped with attachment that is designed to handle such objects.
47. Handling large heavy objects can be extremely dangerous due to danger of rolling the tractor over.
48. Handling large heavy objects can be extremely dangerous due to danger of upending the tractor.
49. Handling large heavy objects can be extremely dangerous due to danger of the object rolling or sliding down the loader boom onto the operator.





## SAFETY PRECAUTIONS



50. If you must handle large heavy objects, protect yourself by using caution, moving slowly, and avoiding bumps and rough ground.
51. If you must handle large heavy objects, protect yourself by never lifting load higher than necessary to clear the ground.
52. If you must handle large heavy objects, protect yourself by adding rear ballast to the tractor to compensate for weight of load.
53. If you must handle large heavy objects, protect yourself by never lifting large heavy objects that may roll or fall on the operator.
54. Never lift any load from any point of the loader with a chain, rope, or cable unless loader is equipped with a Factory approved attachment that was designed and built for this type of lifting. Always follow lifting instructions included with these attachments.
55. Use only Factory bale probe or bale retaining device handler attachment when handling round bales.
56. Do not handle large square bales without a retaining device handler attachment.
57. Do not use buckets, forks, or other attachments without bale retaining devices.
58. Do not use loader for handling large, heavy objects such as logs, tanks, etc.

### SLOPES

59. Stay off of slopes too steep for safe operation.
60. Shift down before you start up or down a hill with a heavy load. Avoid "free wheeling."
61. Use extreme caution when operating on a slope.
62. Always operate up and down the slope, never across the slope.

### ELECTRICAL

63. Avoid contact with overhead wires, power lines, and obstacles when loader bucket or attachment is raised.
64. Electrocutation from power lines can occur with or without contact.
65. Check for underground utilities before digging below grade level.
66. Contact with overhead power lines can cause severe electrical burns or death from electrocution. Make sure there is enough clearance between raised equipment and overhead power lines.

### HYDRAULIC

67. Do not tamper with the relief valve setting. This will void warranty and could cause damage to loader and/or tractor.
68. Escaping hydraulic fluid 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.
69. Visually check for hydraulic leaks and broken, missing, or malfunctioning parts. Never use your hand to check for suspected leaks under pressure. Use a piece of cardboard or wood for this purpose. Escaping hydraulic fluid or diesel fuel leaking under pressure can have sufficient force to penetrate the skin and cause serious infection or other personal injury. If injured by leaking fluid, seek medical attention immediately.
70. To prevent personal injury, relieve all pressure before disconnecting fluid lines.
71. Before applying hydraulic pressure, make sure all hydraulic connections are tight and components are in good condition.
72. Be sure to purge all the air from the hydraulic system before attempting to raise or lower this machine.
73. When using remote hydraulic tractor valves on some tractors, the loader lift and dump cylinders will continue moving unless the valve handle/handles are manually returned to neutral, or until relief pressure is reached at the ends of piston strokes. Observe the bucket or attachment movement and maintain control with valve handle/handles.
74. Raised loader or boom can fall due to hydraulic system failure.
75. To avoid serious injury or death: Block up or securely support loader and boom before working underneath.
76. To avoid serious injury or death: Purge all air from hydraulic system before attempting to raise or lower loader or boom.
77. To avoid serious injury or death: Stand clear if lowering or raising loader or boom.
78. Do not use hand or skin to check for hydraulic leaks. Use cardboard or wood. Wear eye protection.





## SAFETY PRECAUTIONS



79. High pressure oil leaks can penetrate skin causing serious injury and gangrene. Consult a physician immediately.
80. Lower the loader or boom and release hydraulic pressure before loosening fittings.

### AFTER OPERATION

81. Before leaving the tractor seat, lower attachment or loader boom to ground, stop engine, lock parking brakes, put all controls in neutral, relieve hydraulic pressure, and remove key before leaving operator's seat.
82. Before disconnecting hydraulic lines, relieve all hydraulic pressure.
83. Make sure all parked loaders on stands are on a hard level surface with all safety devices engaged to prevent loader from falling and being damaged or injuring someone.
84. Always park loader with bucket attached to loader.
85. When a front loader is mounted on the tractor, enter and exit the operator's seat only from left side of the tractor.
86. Special care should be taken to park or store attachments with points or sharp edges in a safe manner.
87. Make sure all parked loaders are on a hard level surface. Engage all safety devices to prevent loader from falling and being damaged or injuring someone. Do not repair loader if it is not mounted on the tractor. Loss of hydraulic fluid or removal of parts could cause loader to collapse resulting in injury.

### REPAIR

88. Visually check for hydraulic leaks and broken, missing, or malfunctioning parts.  
Make necessary repairs before operation.
89. To keep mounting kit hardware from loosening during loader operation, hardware must be torqued to specifications noted in operator manual.
90. Always wear safety goggles when servicing or repairing the machine.
91. 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.
92. Never tow 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.







## DANGER, WARNING, AND CAUTION DECAL SAFETY MESSAGES



### 0595-3000 WARNING DECAL

Add recommended rear wheel ballast and/or rear counter-weight for stability.  
Move wheels to widest recommended setting to increase stability.  
Move and turn tractor at low speeds.  
In transport carry the load low.  
Lower loader to the ground when parked.  
Before servicing or adjusting equipment:  
\* lower loader to the ground.  
\* shut off engine.  
Relieve hydraulic pressure before disconnecting oil lines.  
Observe safety recommendations in Loader Operations Manual.

### 0595-3001 WARNING DECAL

Crushing Hazard  
Stay away from under lift arms and bucket!  
Do not stand or work under a raised loader.  
Support bucket and lift arms before working under loader.  
Lower loader to the ground before leaving seat.

### 0595-3002 DANGER DECAL

Keep machine clear of overhead power lines to avoid death or serious injury.

### 0595-3003 WARNING DECAL

To prevent rollback onto operator use special loader attachments for handling large objects such as stumps and large round bales. Transport load as low as possible to avoid overturning.

### 0595-3004 WARNING DECAL

Read the operator's manual for complete operating instructions and safety information before operating the loader.  
Be certain anyone operating the loader is aware of safe operating practices and potential hazards.  
Operate the loader from the operator's seat only.  
Do not lift or carry anyone on loader or work from bucket or attachment.  
Do not walk or work under raised loader or bucket or attachment unless it is securely supported.  
Avoid loose fill, rocks, and holes; they can be dangerous for loader operation or, movement.  
Use extra caution when working on inclines.  
Avoid overhead powerlines or obstacles when loader is raised.





## DANGER, WARNING, AND CAUTION DECAL SAFETY MESSAGES



### 0595-2190 CAUTION DECAL

To prevent bodily injury and loader instability when detaching loader, equip loader with a material bucket.

### 0595-3050 DANGER DECAL

To avoid serious injury or death:  
Unload only on a level surface.  
Keep bystanders clear of work area when loading and unloading bales.

### 0595-3051 WARNING DECAL

Do not operate without confirmation that coupler pins are fully engaged.  
Loader attachment can fall off if not properly attached.  
To avoid serious injury or death:  
Only use loader manufacturer approved attachments.  
Read all operators manuals and decals before operating. Follow all safety operating and service instructions.  
Contact dealer for replacement parts.

### 0595-3052 WARNING DECAL

To avoid serious injury or death:  
Do not use pallet fork attachment to lift large objects, round bales, or items that may roll or slide down loader arms onto the operator.  
Always transport loads with pallet forks low and level to ground.  
Always keep pallet forks level when raising loads.  
Avoid raising loads to full heights with pallet forks rolled back.  
ROPS (Roll-Over Protective Structures) and seat belt equipped tractors are recommended for operator use in all pallet fork operations.  
Do not lift or carry anyone on buckets, forks, probes, or any other portion of the loader or loader attachments.  
Do not allow riders on tractor, loader, or forks.  
Avoid contact with electrical power lines by loader or attachments.

### 0595-3053 WARNING DECAL

Maximum load limit on combined pair of forks is 3700 pounds.

### 0595-3054 CAUTION DECAL

To avoid serious injury or death:  
Read operators manual and decals before operating.  
Follow all safety operating, and service instructions. Contact dealer for replacement.  
Be careful during loading transporting, and stacking to minimize rolling bales and tractor tip over. ROPS (Roll-Over Protective Structures) and seat belt equipped tractors are recommended for operator use in all bale probe operations.  
Do not allow riders on tractor loader or bale probe.  
Avoid loading/unloading bales on sloping or uneven surfaces.  
Avoid transporting with bales raised high. Keep bales tilted back and low to the surface while moving.  
Approach, penetrate, and transport bales at low speeds. Reduce speeds on curves, hills rough ground, or when turning.  
Do not lift anything with bale probe except round bales.  
Never raise round bale to full height with bale probe rolled back.  
Park and store bale probe points pointed against bale, building, or other stable object.

### 0595-3144 3145 IMPORTANT DECAL

Loader attachment cylinders must be pinned to correct hole or cylinder damage will occur voiding warranty.



## SAFETY DECALS



**⚠ WARNING**



**To prevent rollback onto operator - use special loader attachments for handling large objects such as stumps and large round bales.**

**Transport load as low as possible to avoid overturning.**

**0595-3003**

**⚠ WARNING**

1. Read the operator's manual for complete operating instructions and safety information before operating the loader.
2. Be certain anyone operating the loader is aware of safe operating practices and potential hazards.
3. Operate the loader from the operator's seat only.
4. Do not lift or carry anyone on loader or work from bucket or attachment.
5. Do not walk or work under raised loader or bucket or attachment unless it is securely supported.
6. Avoid loose fill, rocks and holes; they can be dangerous for loader operation or movement.
7. Use extra caution when working on inclines.
8. Avoid overhead powerlines or obstacles when loader is raised.

**0595-3004**



0595-3003

0595-3004

**Left Hand Bearing Box**

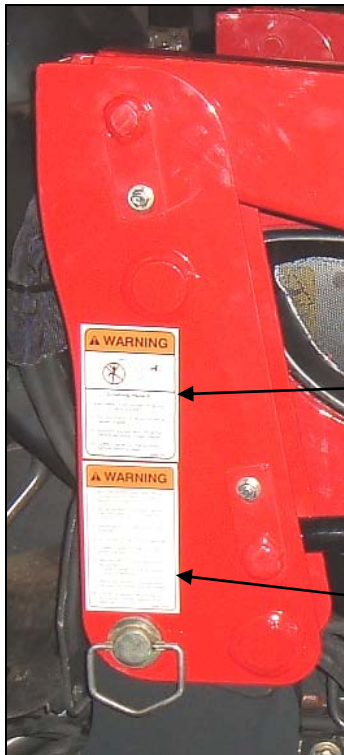
### Safety Decal Locations

*Important: Safety decals 0595-3003 and 0595-3004 are located on the loader LH bearing box and are visible as you mount the tractor.*

### Care of Safety Decals

1. Keep safety decals clean and free of obstructing material.
2. Clean safety decals with soap and water and dry with a soft cloth.
3. Replace damaged or missing safety decals with new decals from your Mahindra Dealer.
4. If a component with a safety decal(s) affixed is replaced with a new part, make sure new safety decal(s) are attached in the same location(s) as the replaced components.





Right Hand Bearing Box

## Safety Decal Locations

*Important: Safety decals 0595-3000, 0595-3001 are located on the loader RH bearing box. Danger decal 0595-3002 is located on the boom cross tube.*

## Care of Safety Decals

5. Keep safety decals clean and free of obstructing material.
6. Clean safety decals with soap and water and dry with a soft cloth.
7. Replace damaged or missing safety decals with new decals from your Mahindra Dealer.
8. If a component with a safety decal(s) affixed is replaced with a new part, make sure new safety decal(s) are attached in the same location(s) as the replaced components.

**WARNING**

1. Add recommended rear wheel ballast and/or rear counterweight for stability.
2. Move wheels to widest recommended setting to increase stability.
3. Move and turn tractor at low speeds.
4. In transport carry the load low.
5. Lower loader to the ground when parked.
6. Before servicing or adjusting equipment;
  - \* lower loader to the ground.
  - \* shut off engine.
7. Relieve hydraulic pressure before disconnecting oil lines.
8. Observe safety recommendations in Loader Operations Manual.

0595-3000

**DANGER**

**Keep machine clear of overhead power lines to avoid death or serious injury.**

0595-3002

**WARNING**

**Crushing Hazard**

Stay away from under lift arms and bucket!

1. Do not stand or work under a raised loader.
2. Support bucket and lift arms before working under loader.
3. Lower loader to the ground before leaving seat.

0595-3001



Boom Crosstube

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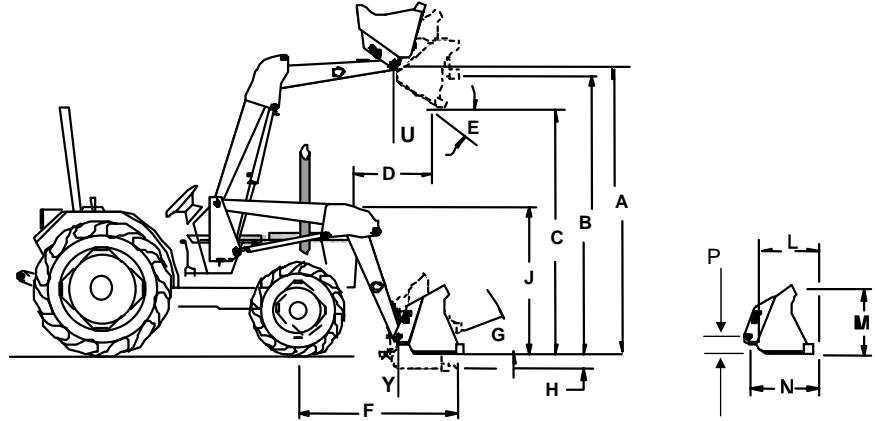
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## NOTES:

# 1. SPECIFICATIONS

**Model ML120  
Front End Loader**

**For Use with  
Models  
3 Cylinder 35 Series  
Tractors**



SPECIFICATIONS OF LOADER:	.....ML120
A.	Maximum Lift Height to Pivot Pin..... 8' 9" (105")
B.	Maximum Lift Height under Level Bucket..... 8' 4.5" (100.5")
C.	Clearance with Bucket Fully Dumped ..... 7' 1" (85")
D.	Reach at Maximum Lift Height (to Grill Guard) ..... 2' 1/2" (24.5")
E.	Maximum Dump Angle ..... 40 degrees
F.	Reach with Bucket on Ground..... 5' (60")
G.	Maximum Rollback Angle ..... 19 degrees
H.	Digging Depth ..... 3 3/8"
J.	Overall Height in Carry Position ..... 4' 8"* (55.6"*)
L.	Bucket Depth ..... 21"
M.	Bucket Height ..... 20"
N.	Loader Bucket Pin to Front of Front Cutting Edge ..... 25.6"
P.	Loader Bucket Pin to Bottom of Front Cutting Edge ..... 4.48"
U.	Lift Capacity to Maximum Height at Pivot Pin..... 1960 lb.
Y.	Breakout Force at Ground Line at Pivot Pin..... 3900 lb.

\*Top of Arm with Bucket 12" off ground.

Specifications taken with Ag. Tires (12-16.5 front and 16.9 x 24 rear) with 72" skid steer bucket installed on unit.

	1000 rpm	1500 rpm	2000 rpm	Full rpm
Cycle time	10.1 sec.	7.7 sec.	6.1 sec.	4.9 sec.
Raise time	5.4 sec.	5.5 sec.	4.8 sec.	4.1 sec.
Lower time	5.5 sec.	4.5 sec.	4.2sec.	3.8 sec.
Dump time w/regen	5.3 sec.	4.1 sec.	3.6 sec.	3 sec.
Rollback time				

Lift Cylinder Dia. ....	2" x 1-1/4" Rod
Tilt Cylinder Dia. ....	2" x 1-1/4" Rod
Relief Valve Setting (Tractor relief).....	2950 psi
Loader Package Weight .....	1425#

Specifications taken with Mounting Kit, Hose Kit, and 72" Skid Steer Bucket.

Specifications based on ASAE standards S301.3 and furnished for general information only as they can vary with different tractor models. Specifications are subject to change without notice and without liability therefore.

## 1.1. BUCKET SPECIFICATIONS

**BUCKET CAPACITY**  
72" Skid Steer Bucket

**STRUCK CAPACITY**  
12.5 cu. ft.

**RATED SIZE CAPACITY**  
16.3 cu. ft

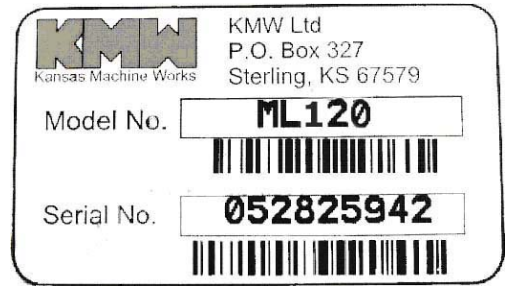
## 2. INTRODUCTION

This manual provides safety, installation, operation, maintenance, mounting, storing, and dismounting instructions for your new mid-mount 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, WARNING, and DANGER instructions to help prevent personal injury and damage to the loader. The reference to right hand (RH) and left hand (LH) 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 Mahindra dealer. Your dealer will need the loader model number and serial number to give you prompt, efficient service. The serial number plate is located on the LH inside front area of boom.



**Before operating loader, check that your Dealer has covered the following information with you:**

- \_\_\_\_\_ Equipment has been completely assembled as directed.
- \_\_\_\_\_ Equipment has been functionally tested for proper operation.
- \_\_\_\_\_ Purchaser has been instructed in proper & safe operating methods:
  - \_\_\_\_\_ Operators Safety Precautions
  - \_\_\_\_\_ Tractor Wheel Tread-Tire & Inflation Recommendations
  - \_\_\_\_\_ Tractor Hydraulic System & Loader Controls
  - \_\_\_\_\_ Rear Ballast Recommendations
  - \_\_\_\_\_ Hydraulic System Oil Level
  - \_\_\_\_\_ Proper Loader Operation
  - \_\_\_\_\_ Loader Removal
  - \_\_\_\_\_ Loader Installation
  - \_\_\_\_\_ Lubrication - Service Care
  - \_\_\_\_\_ Storage
- \_\_\_\_\_ Warranty Coverage & Operators Manual explained to purchaser.

### Mahindra ML120 Loader Serial Number Information

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

DATE PURCHASED \_\_\_\_\_

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

TELEPHONE NUMBER \_\_\_\_\_



## 3. INSTALLATION INSTRUCTIONS



**CAUTION:** Equip your tractor with a ROPS cab or frame for your protection. See your tractor/ROPS Operator Manual for correct seat belt usage.

Read entire instructions before beginning to install the loader. Personal injury and machine damage may be prevented if you read and understand these instructions and special safety messages.

When you are in the tractor seat looking forward, the RH and LH sides of the tractor and loader are the same as your right hand and left hand.

### 3.1. TRACTOR PREPARATION

#### 3.1.1. Tractor Front Tires

Use front tires of equal size and maintain equal pressure in each tire. The pressure of the front tractor tires must be increased to the maximum approved pressure recommended by the tire manufacturer to compensate for additional load placed on the tires with the Front End Loader. See your tractor Operator Manual. Adjust the front tires to the widest recommended setting on adjustable models for maximum stability. Front end weights must NOT be used while loader is on the tractor.

#### 3.1.2. Tractor Rear Tires

Maintain equal pressure in each of the rear tires. Use the widest recommended rear wheel setting for maximum stability.

#### 3.1.3. Remove all loader components from shipping packaging.



**WARNING:** To avoid serious injury or death: Read before cutting bands or removing attaching straps. The loader may shift during shipping and handling, making it unstable on the pallet. Support loader with an overhead hoist or other suitable means prior to removing bands or attaching straps securing loader to pallet. Failure to do so could result in accidental tip-over of the loader that could cause serious injury to you and/or bystanders.



**CAUTION:** Lift and support all loader components safely.



### 3.1.4. Recommended Rear Tractor Ballast



**CAUTION: To help prevent rollover, use recommended rear tractor ballast and widest wheel settings to maximize stability. See your tractor Operator Manual for recommendations**

Rear tractor ballast is required after installation of loader on the tractor. Following is recommended ways to ballast your tractor.

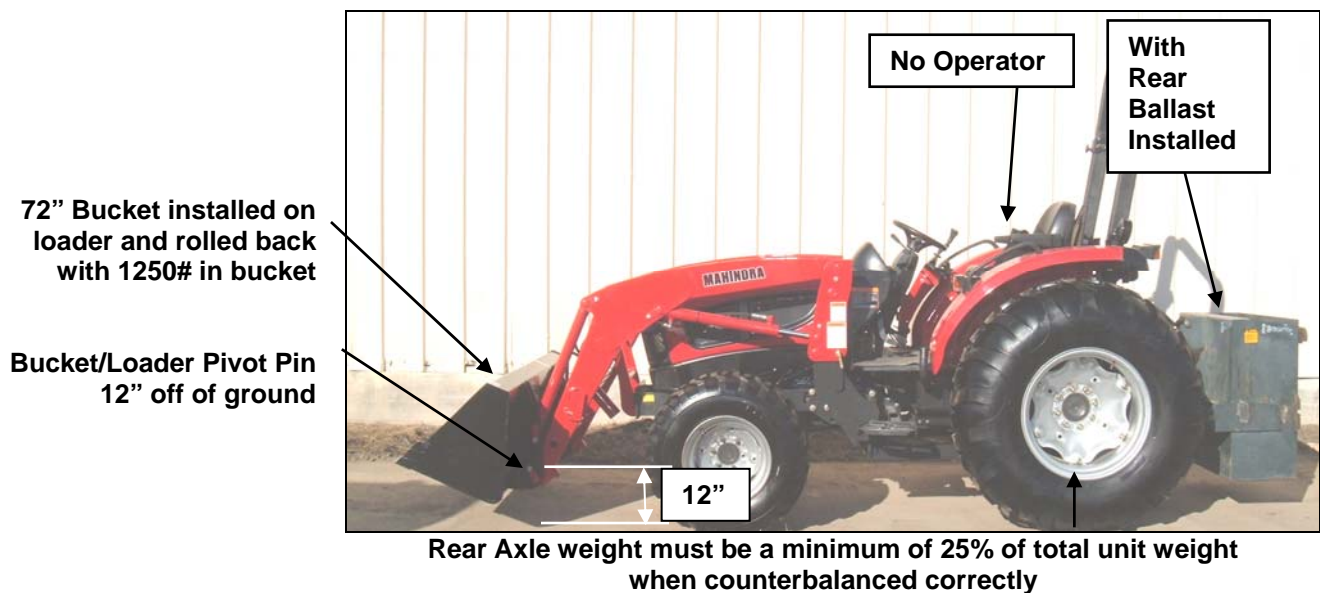
- Install factory rear wheel weights to tractor.
- Install a Mahindra weight box to tractor 3-point.
- Install some type of 3-point attachment to tractor.
- Install a Mahindra backhoe to the tractor.

**NOTE: You may need to use one or a combination of the above rear ballast methods depending on your tractor and loader application.**

To check if your tractor is properly ballasted you should conduct the following rear axle weight check.

- With 72" bucket installed on loader
- With no operator on tractor
- With bucket/loader pivot pin 12" off of ground with 1250# in bucket and bucket rolled back.
- With ballast installed on rear of tractor.
- Weigh rear axle of tractor.

Weight of rear axle should be a minimum of 25% of total unit weight when counterbalanced correctly. If your rear axle weight does not meet this minimum specification change your tractor rear ballast until your tractor rear axle weight is a minimum of 25% of total unit weight.



**CAUTION: To allow proper steering of the tractor always remove 3-point weight from tractor when the loader is parked from the tractor. Never operate the unit with the loader parked and the backhoe installed. Failure to follow these instructions could cause loss of tractor steering causing personal injury and damage to property.**

Front tractor weights must only be used when the loader is parked. Weights must be removed before remounting loader or serious damage will occur to loader or tractor front axle due to excessive weight. The use of adequate rear counterweight to counterbalance for maximum loader capacity is required for safe loader operation. Weight added to the rear of the tractor provides better traction and easier, more efficient loader operation.

**IMPORTANT: Do not exceed the maximum load capacity of the tires on your tractor. See Tire and Wheel Specifications in tractor Operator Manual for more information.**

**NOTE: Rear tractor ballast must be added equally to tractor to allow loader bucket to set parallel to the ground. After installation, check that the tire pressure is equal and the center of rear axle off of ground is equal from right and left sides of tractor. This inspection must be done on a hard level surface.**

### 3.2. MOUNTING KIT INSTALLATION

3.2.1. Position the tractor and loader on a hard level surface under a hoist.

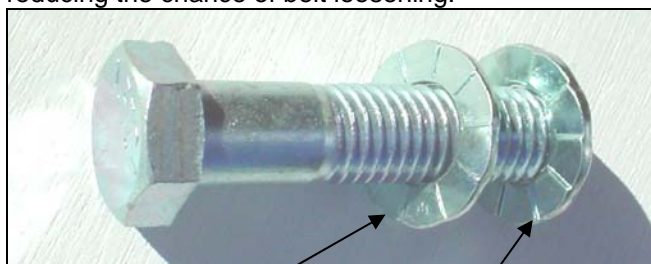
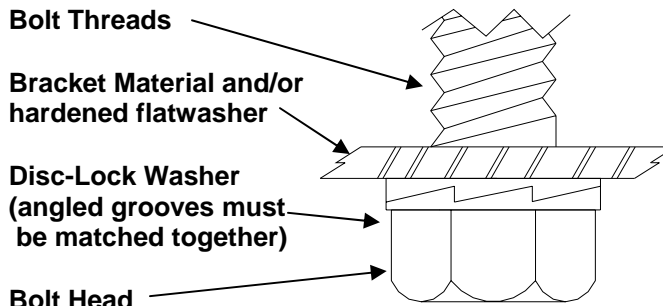
3.2.2. Remove front weights from tractor if applicable.

**IMPORTANT: Do not tighten any hardware until all components are attached onto the tractor.**



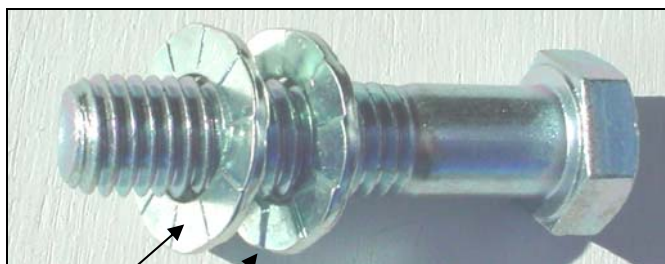
**CAUTION: Lift and support all loader components safely.**

1. **CRITICAL INFORMATION:** To install the Disc-Lock Washer, simply mate the cams together and place between the bolt head and the bracket. As the bolt is tightened, one center of the Disc-Lock Washer is seated to bracket material and the other to the head of the bolt. When the bolt elongates due to vibration and shock, the bolt will attempt to rotate loose. As one center of the Disc-Lock Washer tries to rotate with the bolt, the interlocking cams work against each other. This will increase the preload, further locking the assembly and reducing the chance of bolt loosening.



Flat Grooves go toward bolt head

Angular Grooves must be matched together



Flat Grooves go toward bracket material

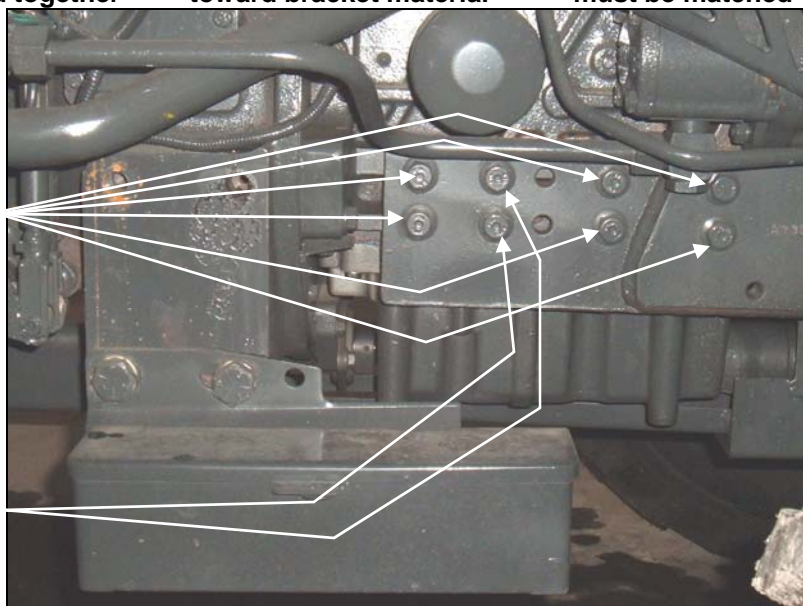
Angular Grooves must be matched

3.2.3. Remove the tractor toolbox, right hand tractor step, tractor tie down hooks and six tractor engine bolts as indicated. Discard tractor hardware. Remove tractor tie down hook if equipped.

**Remove these engine bolts**

**Remove Tractor Toolbox, right hand Step and Tractor Tie Down Hooks**

**IMPORTANT: DO NOT REMOVE THESE BOLTS**



**IMPORTANT: Proper use of flatwasher, disc-lock washer and lockwasher will ensure that bolt will not bottom out in tractor castings. Be sure to follow detailed instructions on following page for correct washer and bolt usage.**

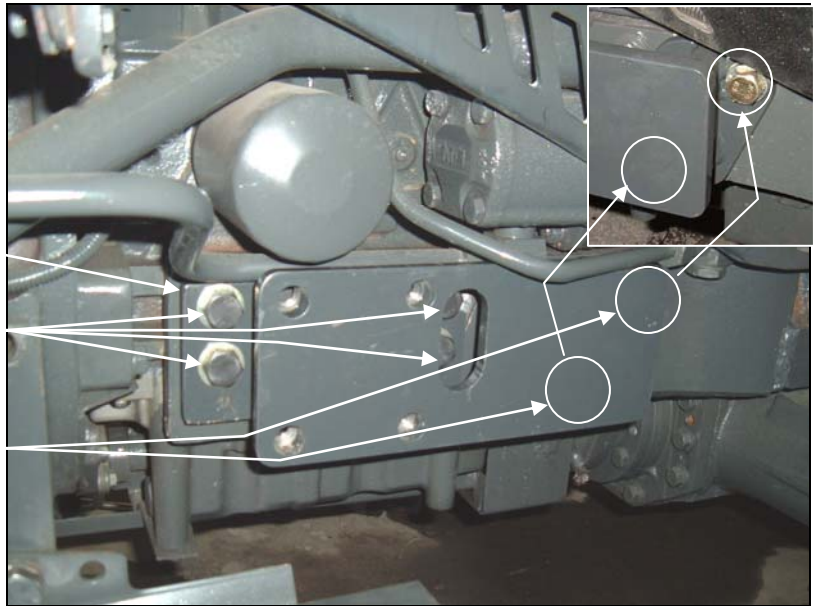
3.2.4. Install RH engine spacer assembly using two 14-2.0 x 35 mm bolts and 9/16" disc-lock washers in two holes closest to the front of tractor. Install four 14-1.5 x 65 mm bolts and 9/16" disc-lock washers in remaining four holes.

**RH engine spacer assembly**

**14-1.5 x 65mm Gr. 10.9 bolts,  
9/16" Disc-Lock washers, 4 places**

**14-2.0 x 35mm Gr. 10.9 bolts,  
9/16" Disc-Lock washers (Not visible  
in photo)**

These bolts must be torqued to 107 ft. lbs. before continuing loader installation.



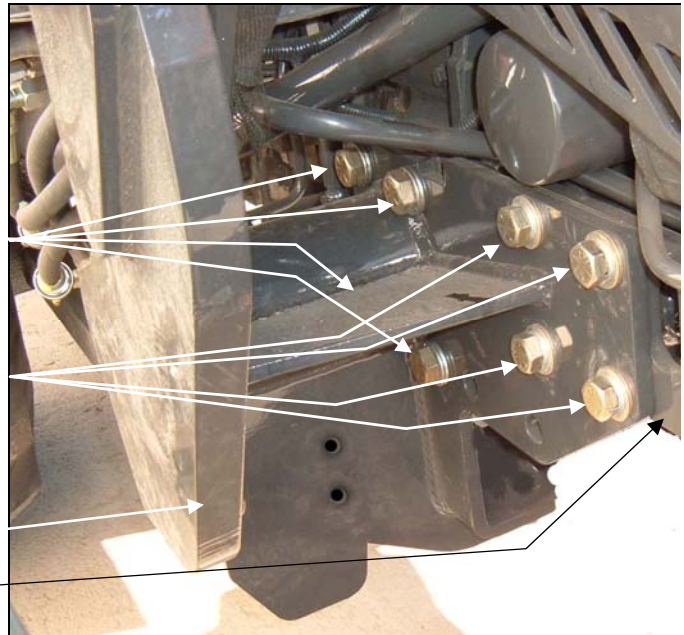
3.2.5. Using a hoist, install the right hand center bracket to the tractor clutch housing using four 3/4"-10 x 1.75" Gr. 8 bolts and 3/4" disc-lock washers. Then install four 5/8"-12 x 2.0" bolts and 5/8" disc-lock washers in front four holes of center bracket and into RH engine spacer assembly.

**3/4"-10 x 1.75" Gr. 8 bolts,  
3/4" Disc-Lock washers,  
4 places**

**5/8"-12 x 2.0" Gr. 8.8 bolts,  
5/8" Disc-Lock washers,  
4 places**

**Right hand center bracket**

**RH Engine Spacer assembly**



3.2.6. After installation check to make sure 3/4" disc-lock washers in center clutch housing areas are resting against bracket material completely and there is no weld interference with these disc-lock washers.

**Make sure 3/4" Disc-Lock Washers do not interfere  
with weld in these areas**

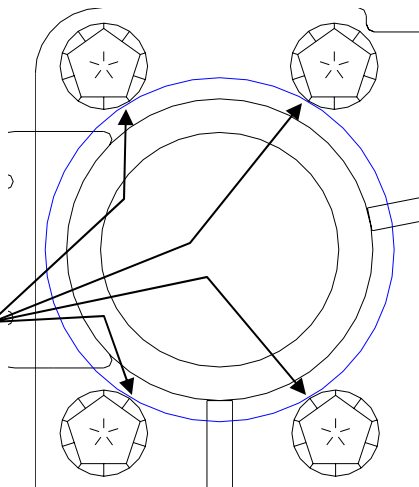


Photo shows overall view of installed right hand center bracket

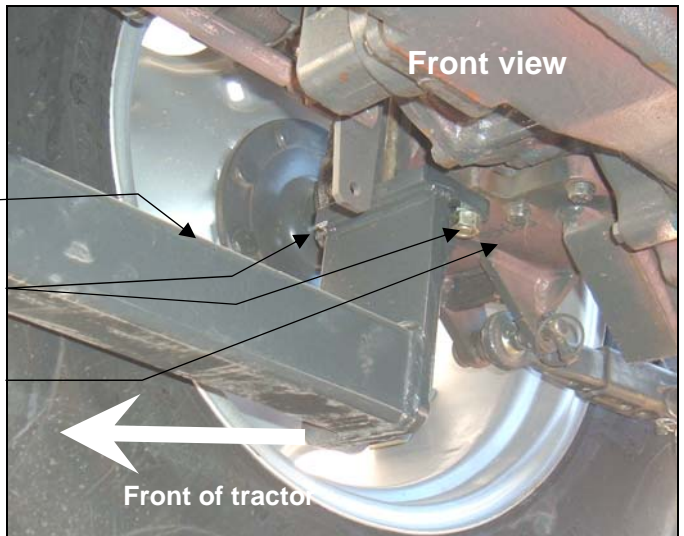


3.2.6. Remove nuts and lockwashers from front two bolts on 3-point link plate located on the tractor right rear axle housing. Install RH rear rail over two 3-point link plate bolts and secure with hardened flatwasher 5/8" supplied with loader on slotted hole and link plate hardware removed.

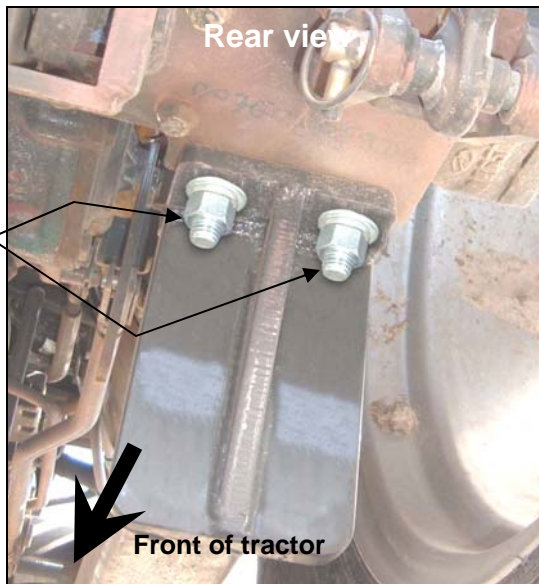
RH Rear Rail

Secure using Hardened Flatwasher 5/8" and 3-Point Link Plate hardware

3-Point Link Plate



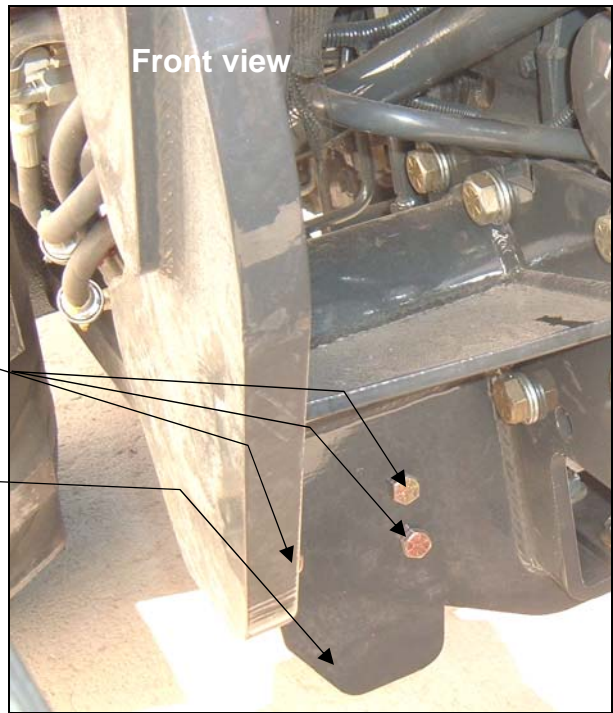
Secure using Hardened Flatwasher supplied with loader and 3-Point Link Plate hardware



3.2.7. Install right hand side rear rail to RH center bracket using three 1/2"-13 x 2.0" Gr. 5 bolts and 1/2"-13 stover hex locknuts

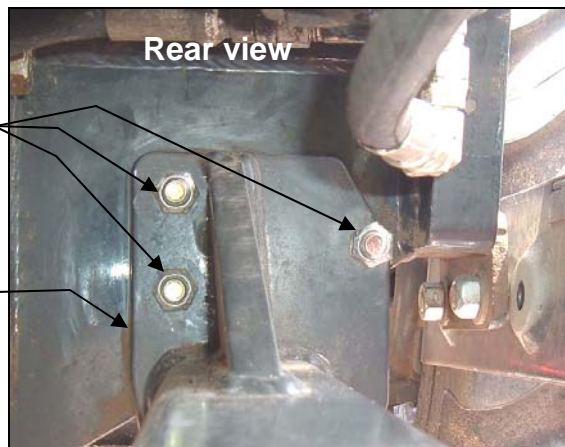
**1/2"-13 x 2.0" Gr. 5 bolts,  
1/2"-13 Stover Hex Locknuts,  
3 places**

**RH Rear Rail**



**1/2"-13 x 2.0" Gr. 5 bolts,  
1/2"-13 Stover Hex Locknuts,  
3 places**

**RH Rear Rail**



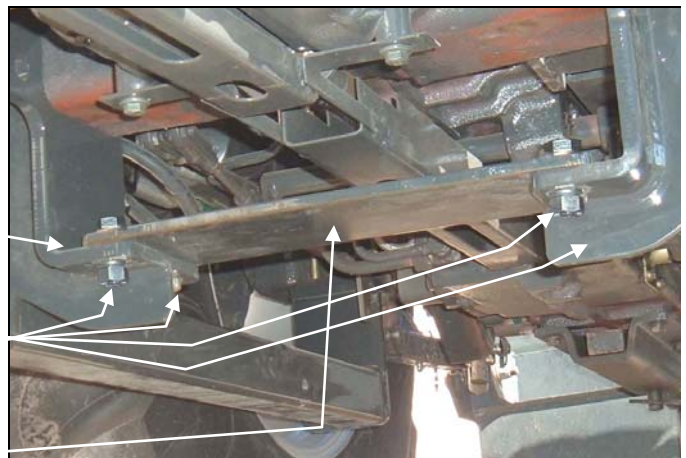
3.2.7. Repeat steps 3.2.3. through 3.2.7. to install LH center bracket.

3.2.10. After left hand side engine spacer assembly, center bracket and rear rail are installed, install cross member to right hand and left hand center brackets as shown using four 5/8"-12 x 2.0" Gr. 8 bolts, 5/8" hardened flatwashers and 5/8" stover hex locknuts.

**Right hand center bracket**

**5/8" x 2" Gr. 8 bolts,  
5/8" Hardened Flatwashers on slotted holes,  
5/8" Stover Hex Locknuts,  
4 places**

**Crossmember**



**CRITICAL: Torque mounting kit hardware in the sequence as shown on next page to prevent stress in tractor casting due to installation of loader brackets.**

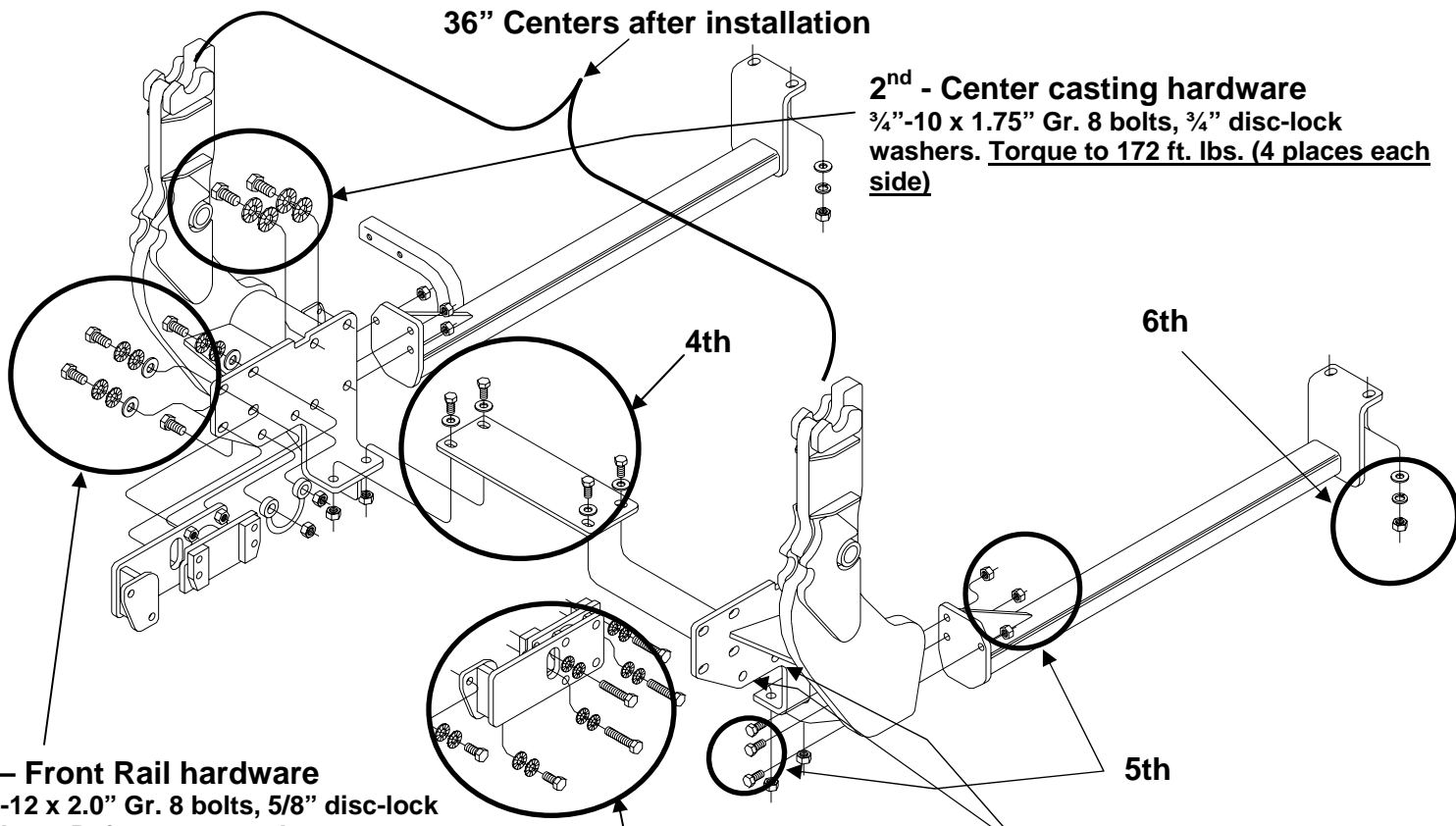
A. Identify hardware size and grade.  
 B. Torque hardware to specification noted on torque chart, page 82, unless otherwise specified below.

**IMPORTANT NOTE: To keep mounting kit hardware from loosening during loader operation, hardware must be torqued to specifications.**

- 1st LH & RH center brackets spacer assembly hardware.
- 2nd LH & RH center casting hardware.
- 3rd LH & RH side rail hardware. Refer to torque chart, page 82.
- 4th LH & RH cross member hardware. Refer to torque chart, page 82.
- 5th LH & RH rear rail hardware. Refer to torque chart, page 82.
- 6th LH & RH rear rail hardware. Refer to torque chart, page 82.

36" Centers after installation

2<sup>nd</sup> - Center casting hardware  
 3/4"-10 x 1.75" Gr. 8 bolts, 3/4" disc-lock washers. Torque to 172 ft. lbs. (4 places each side)



3<sup>rd</sup> – Front Rail hardware  
 5/8"-12 x 2.0" Gr. 8 bolts, 5/8" disc-lock washers. Refer to torque chart, page 82. (4 places each side)

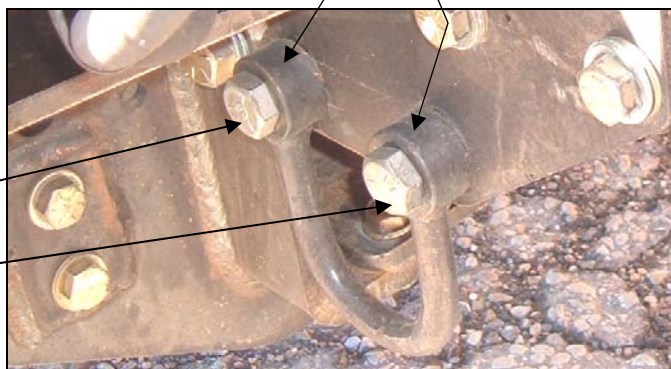
1<sup>st</sup> - Engine hardware  
 14-2 x 35mm bolts, 9/16" disc-lock washers, 14-1.5 x 65mm bolts, 9/16" disc-lock washers Torque to 107 ft. lbs. (6 places each side)

Use these loader mount plate holes to install Tractor Tie Down Hooks.

3.2.8. If equipped, install tractor tie down hook to each loader centerbracket using hex head cap screw 3/4"-10 x 2.0" Grade 8 and stover hex locknut 3/4"-10, 2 places as shown.

Hex Head Cap Screw 3/4"-10 x 2.0" Grade 8, Stover Hex Locknut 3/4"-10, 2 places

Tractor Tie Down Hook



### 3.3. LOADER INSTALLATION

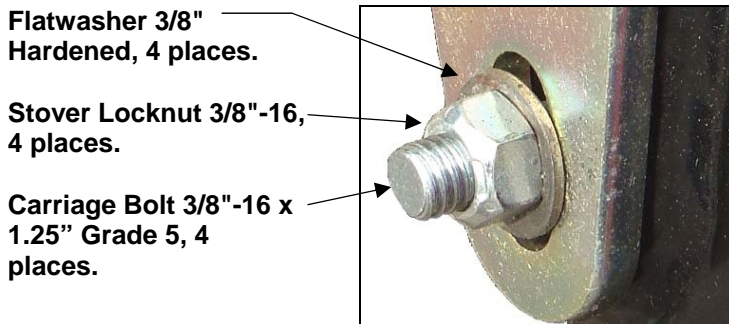
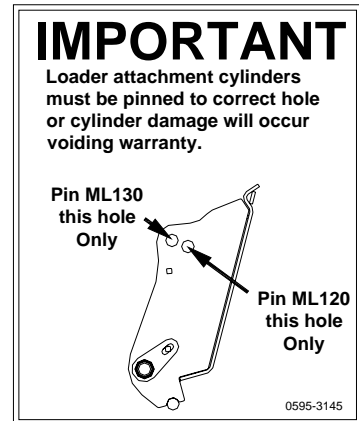
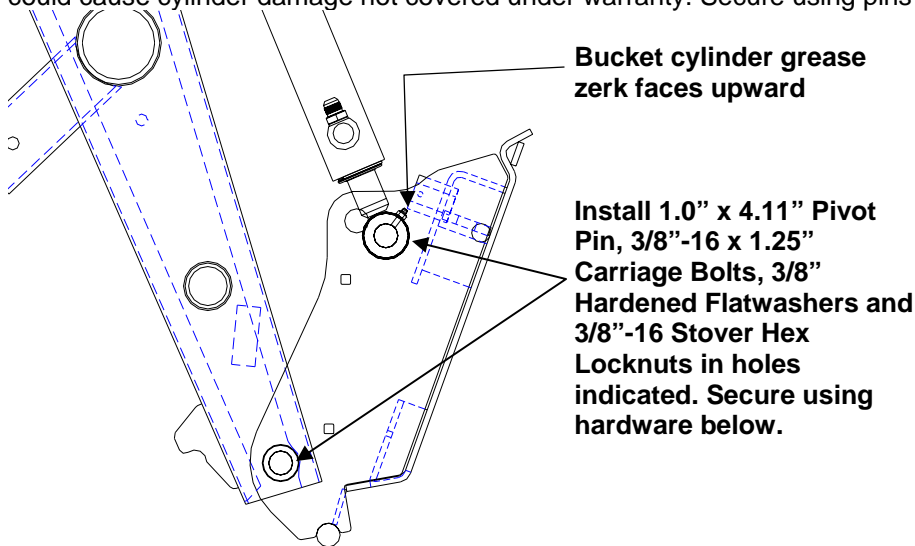


**CAUTION:** Lift and support all loader components safely.

**IMPORTANT:** Do not extend tilt cylinders without attachment pinned to loader. Failure to follow these instructions could cause loader damage and void warranty.

3.3.1. Loader valve hoses and quick couplers have been pre-assembled on loader. Unwrap these hoses by cutting nylon ties securing them to side of loader.

3.3.2. Before installing loader to tractor, use a hoist to install skid steer tool carrier if not factory installed and bucket on loader. Loader attachment cylinders must be pinned to correct holes. Failure to follow these instructions could cause cylinder damage not covered under warranty. Secure using pins and hardware, 4 places.



Refer to Section 10 to 13 for Skid Steer Tool Carrier System, Pages 56 to 64.

3.3.3. Following these instructions will add stability to loader package and will allow easier handling of loader with hoist.



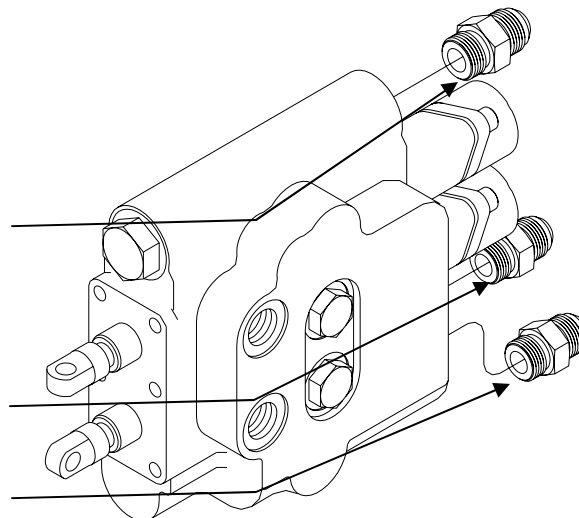
### 3.4. HYDRAULIC INSTALLATION

3.4.1. Install three 3/4" ORBM x 3/4" JICM straight fittings into the "In", "Out" and "PB" ports of the loader valve.

3/4" ORBM x 3/4" JICM straight fitting in "In" Port of Loader Valve

3/4" ORBM x 3/4" JICM straight fitting in "Out" Port of Loader Valve

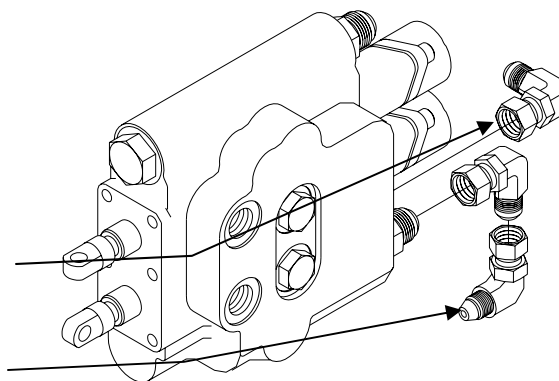
3/4" ORBM x 3/4" JICM straight fitting in "PB" Port of Loader Valve



3.4.2. Install 3/4" JICF x 3/4" JICM 90° fitting to fitting installed in the "Out" port of the loader valve. Position this fitting as shown. Install two 3/4" JICF x 3/4" JICM 90° fittings to fitting installed in the "PB" port of the loader valve. Position these fittings as shown.

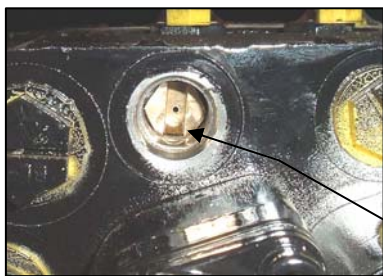
3/4" JICM x 3/4" JICF 90° fitting in "Out" Port of Loader Valve

3/4" JICM x 3/4" JICF 90° fittings in "PB" Port of Loader Valve



3.4.3. Install four 9/16" ORBM x 9/16" JICF straight fittings to ports A, B, C and D. Install orifice plate in port "D" with the slotted side facing out or away from valve body as shown.

9/16" ORBM x 9/16" JICF straight fitting



Port "B"

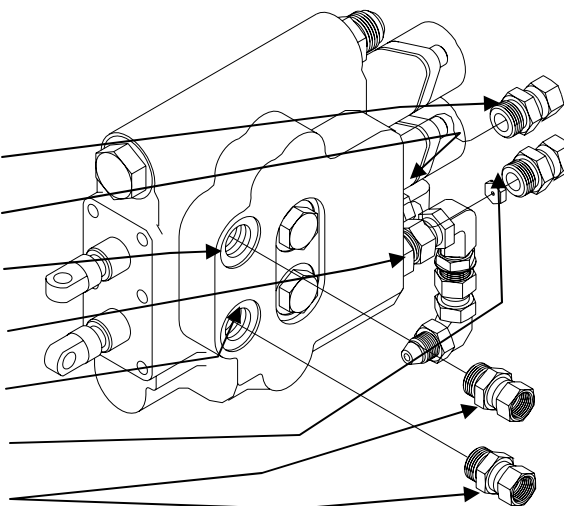
Port "A"

Port "D"

Port "C"

Orifice Plate

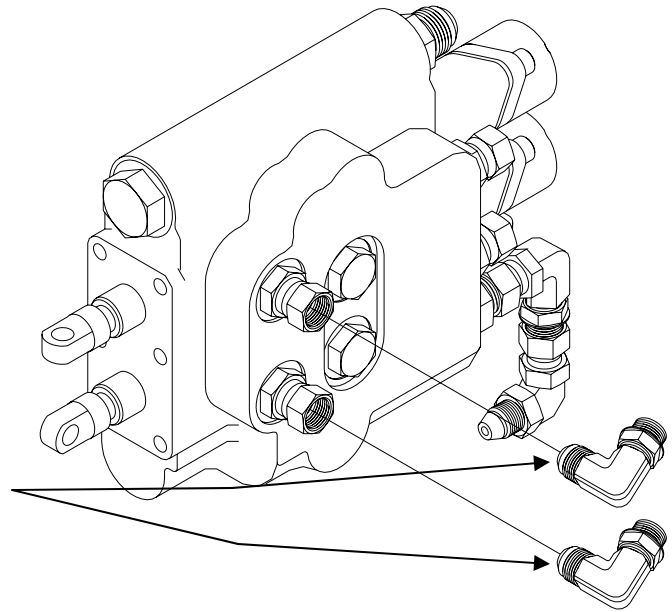
9/16" ORBM x 9/16" JICF straight fitting



**NOTE:** Orifice is used to reduce bucket cylinder cavitation during regular dump operation. If your operation requires a different orifice size, contact factory for blank orifice plate. Blank orifice can be drilled to your loader application. Smaller hole will reduce cavitation at low RPM but it will decrease dump speed. Larger hole will increase cavitation at low RPM but it will increase dump speed. Use of regen during operation will eliminate any cylinder cavitation. See valve operation instructions in this manual for further loader valve operation instructions.

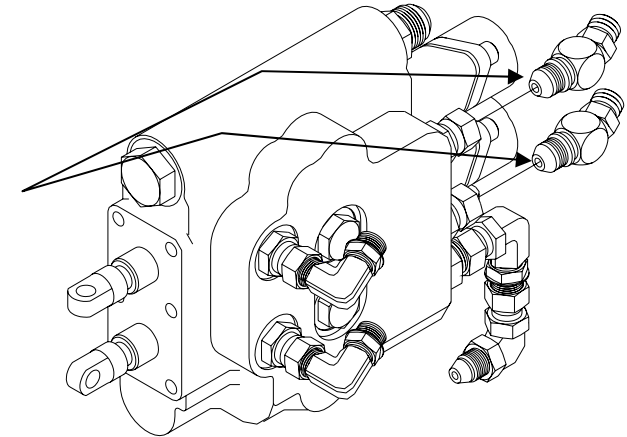
3.4.4. Install two 9/16" JICM x 9/16" ORBM 90° fittings on two fittings installed in the "A" and "C" ports of the loader valve. Position these fittings as shown.

**9/16" JICM x 9/16" ORBM 90° fittings in ports "A" and "C"**



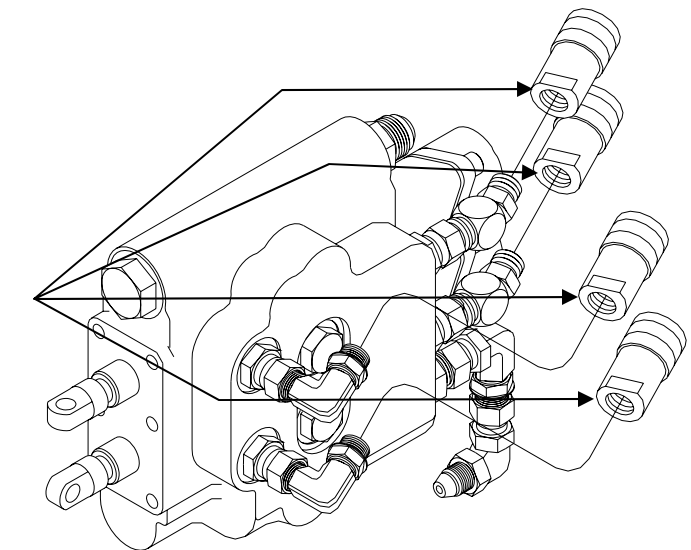
3.4.5. Install two 9/16" JICM x 9/16" ORBM 45° fittings on two fittings installed in the "B" and "D" ports of the loader valve. Position these fittings as shown. Install these fittings at a 40° angle upward as shown.

**9/16" JICM x 9/16" ORBM 90° fittings in ports "B" and "D"**



3.4.6. Install female quick couplers on fittings installed in ports "A", "B", "C" and "D". Make sure female quick couplers are at a 40° angle upward.

**Female Quick Couplers in ports "A", "B", "C" and "D"**



3.4.7. Install valve mount to RH center bracket using hex head cap screw 5/16" x 1.25", 5/16" flatwasher and 5/16" stover hex locknut as shown. Valve mount should be installed as shown and angle slightly towards the center of the tractor.

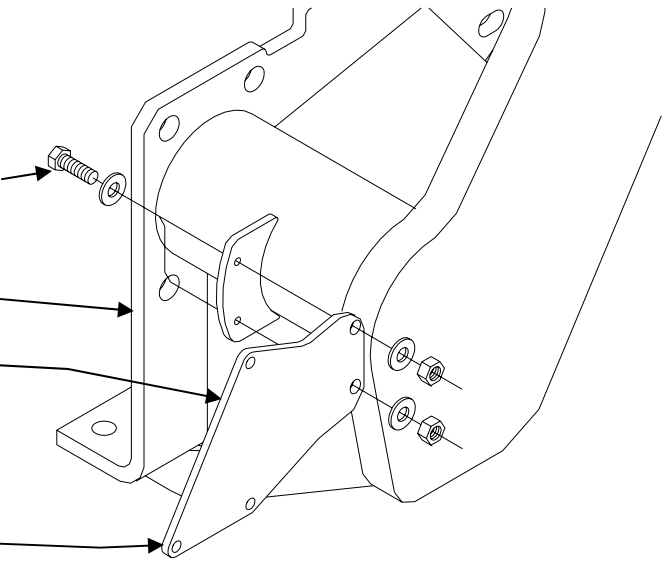
**Hex Head Cap Screw 5/16" x 1.25", 5/16" Flatwasher, 5/16" Stover Hex Locknut**

**Rh Center Bracket**

**Valve Mount**

**NOTE: After installation is completed position valve and components so they clear all tractor components then tighten 5/16" valve mount hardware.**

**Third hole downward**

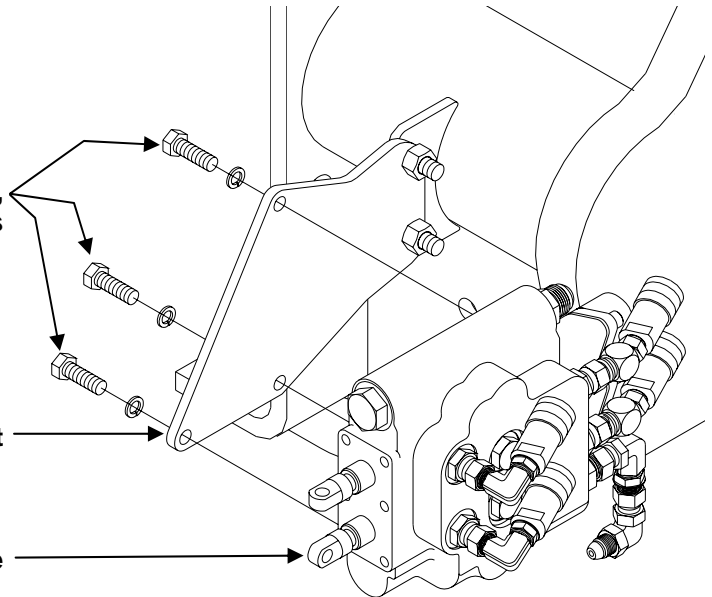


3.4.8. Install loader valve to valve mount using hex head cap screw 5/16" x 5/8" and 5/16" lockwasher, 3 places as shown. Valve will angle in slightly toward the center of the tractor.

**Hex Head Cap Screw 5/16" x 5/8", 5/16" Lockwasher, 3 places**

**Valve Mount**

**Loader Valve**



**NOTE: It is very important that fittings are rotated correctly so hose and fitting routing have a good appearance. See page 28 photo.**

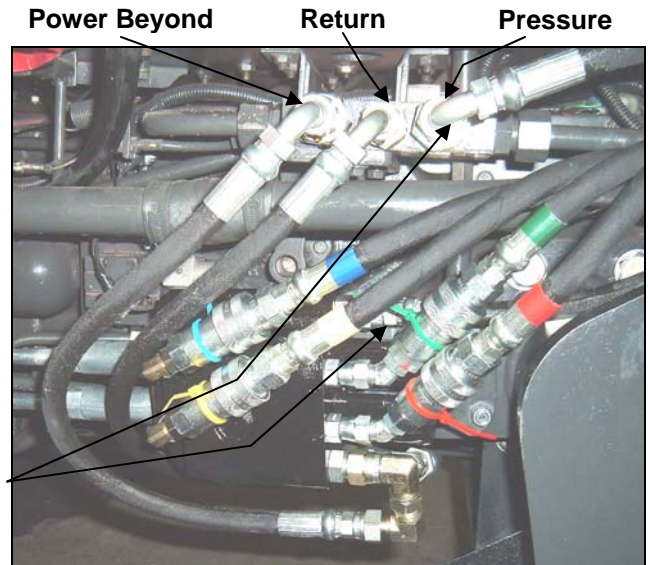
3.4.9. Remove plugs from tractor hydraulic block located under the right hand side of tractor floorboard.

Install 22" hydraulic hose assembly  $\frac{3}{4}$ " JICF 90° x  $\frac{3}{4}$ " JICF to pressure port of tractor and connect to fitting in "In" port of loader valve. Route hose as shown.

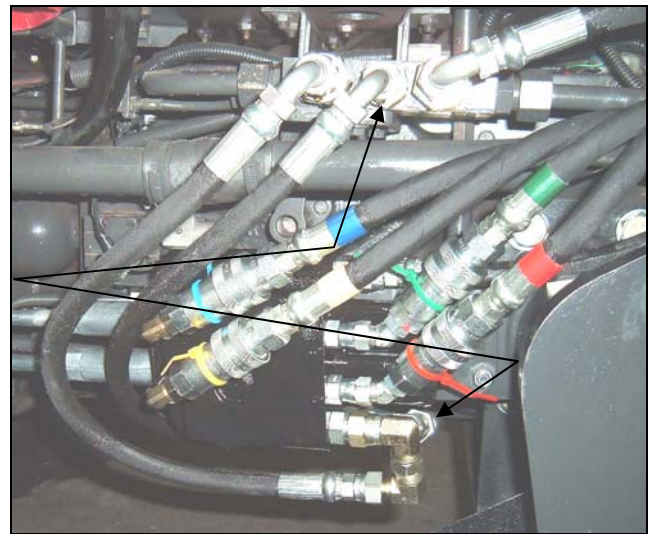
Install 32" hydraulic hose assembly  $\frac{3}{4}$ " JICF 90° x  $\frac{3}{4}$ " JICF to return port of tractor and connect to fittings in "Out" port of loader valve.

Install 22" hydraulic hose assembly  $\frac{3}{4}$ " JICF 90° x  $\frac{3}{4}$ " JICF to power beyond port of tractor and connect to fittings in "PB" port of loader valve.

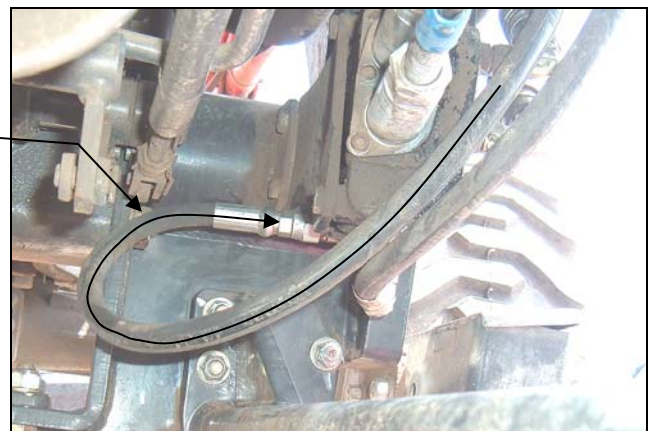
**22" Hydraulic Hose Assembly  $\frac{3}{4}$ " JICF 90° x  $\frac{3}{4}$ " JICF connected to Pressure port of Tractor and connected to fitting in "In" port of loader valve. Route hose as shown**



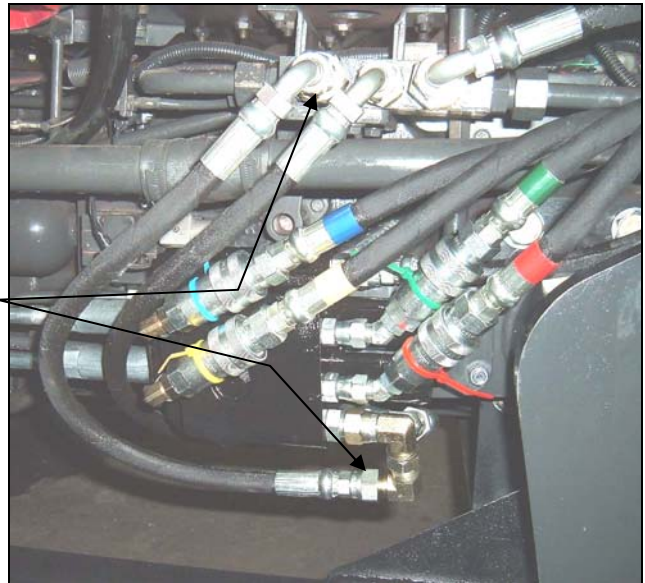
**32" Hydraulic Hose Assembly  $\frac{3}{4}$ " JICF 90° x  $\frac{3}{4}$ " JICF connected to Return port of Tractor and connected to fitting in "Out" port of loader valve. Route hose under tractor as shown in photo below**



**Route hose toward center of tractor and back toward 90° fitting as shown**

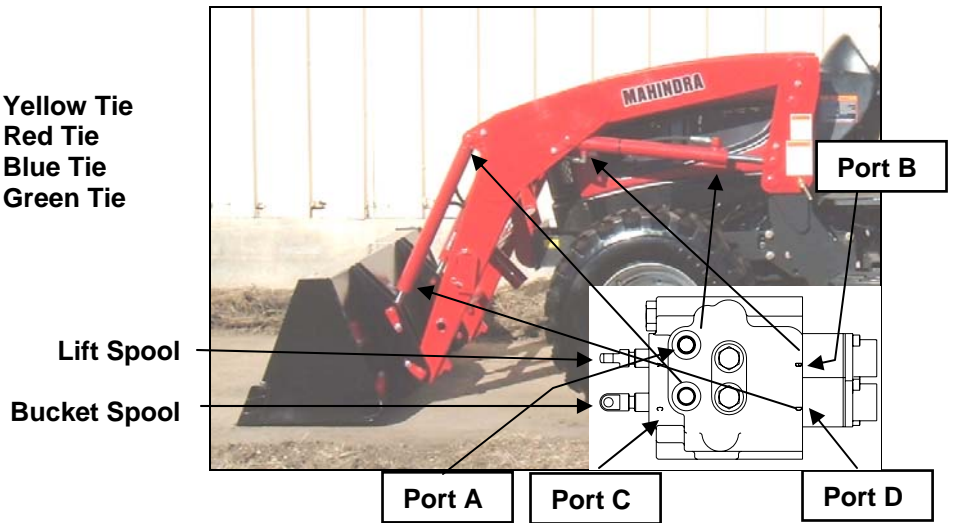


**22" Hydraulic Hose Assembly 3/4" JICF 90° x 3/4" JICF connected to Power Beyond port of Tractor and connected to fitting in "PB" port of loader valve. Route hose as shown**

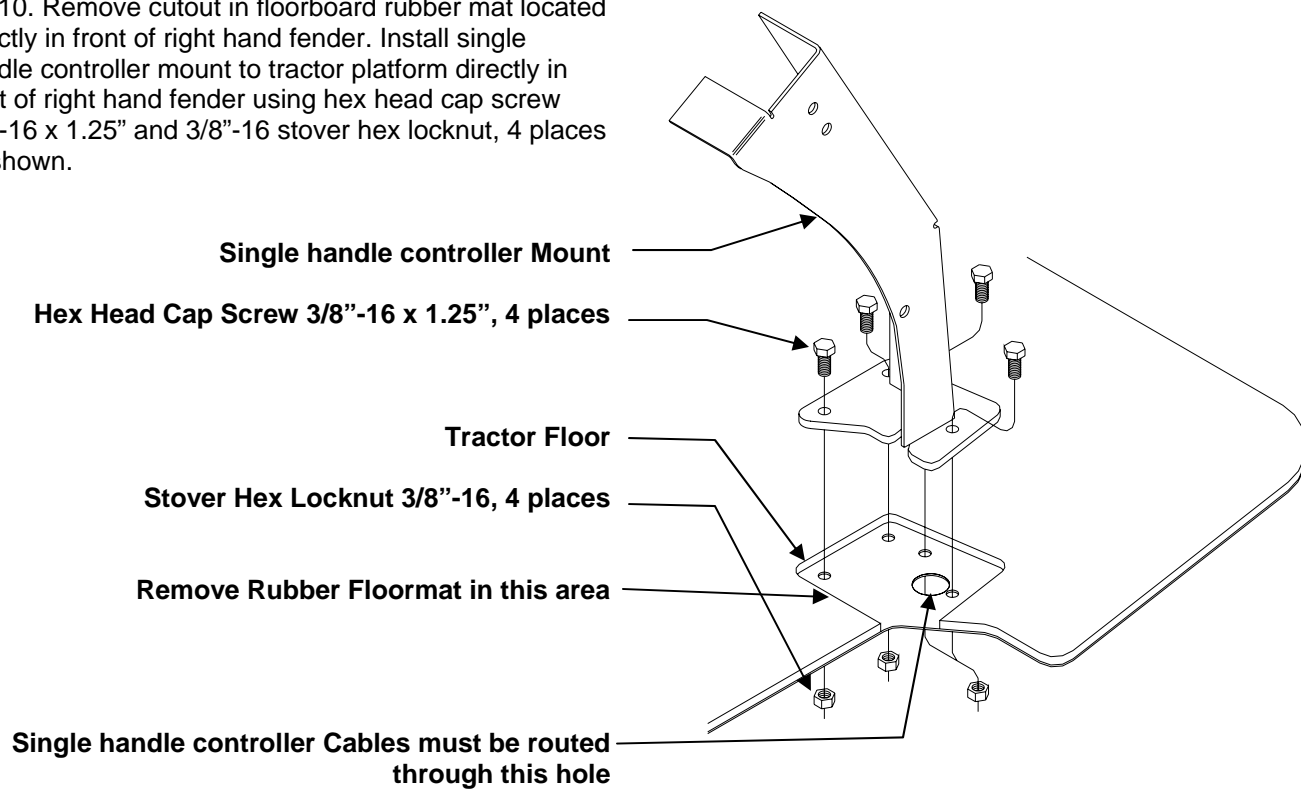


**Valve Port Circuit Information:**

- Port "A" to Tilt Cylinder Base End – Yellow Tie
- Port "B" to Tilt Cylinder Rod End – Red Tie
- Port "C" to Lift Cylinder Rod End – Blue Tie
- Port "D" to Lift Cylinder Base End – Green Tie



3.4.10. Remove cutout in floorboard rubber mat located directly in front of right hand fender. Install single handle controller mount to tractor platform directly in front of right hand fender using hex head cap screw 3/8"-16 x 1.25" and 3/8"-16 stover hex locknut, 4 places as shown.



3.4.11. Route single handle controller cables through platform hole then install spacer plate, single handle controller with cables and cover plate using hex head cap screw 5/16"-18 x 3.5", flatwasher 5/16" and stover hex locknut 5/16"-18 as shown. Install spacer in bottom hole of single handle controller mount as shown.

**Stover Hex Locknut 5/16"-18,  
Flatwasher 5/16", 3 places each**

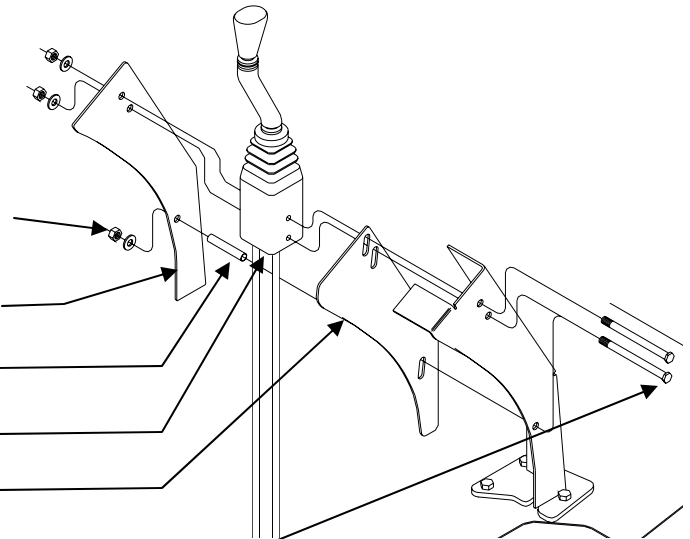
**Cover Plate**

**Spacer**

**Single handle controller w/ Cables**

**Spacer Plate (Before tightening bolts position  
Spacer Plate within 1/4" of Fender then tighten all  
bolts)**

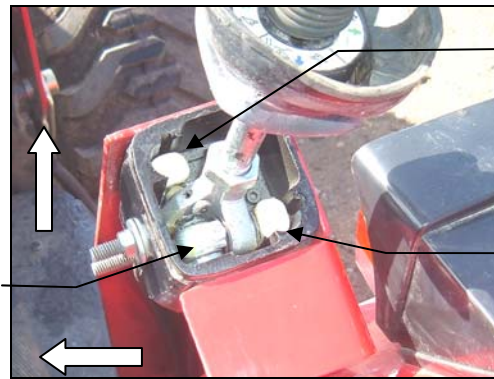
**Hex Head Cap Screw 5/16"-18 x 3.5", 3 places**



3.4.12. Make sure single handle controller is installed with the single handle controller pivot point located to the lower left corner of single handle controller housing. This will ensure proper single handle controller operation.

**Front of Tractor**

**Single handle controller Pivot Point must be  
located to the lower left of the Single handle  
controller housing**



**Lift Circuit  
Cable  
connects to  
this position**

**Bucket Circuit  
Cable  
connects to  
this position**

**Center of Tractor**

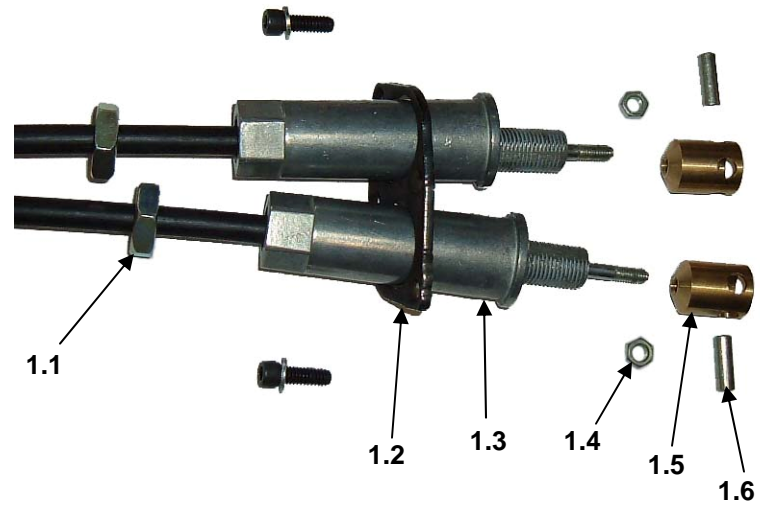
**CRITICAL: Single handle controller rubber boot must be positioned and sealed correctly to prevent moisture and contaminants from entering cables. Cable damage caused by moisture and/or contaminants is not covered under loader warranty.**

**IMPORTANT: Always replace damaged rubber boot immediately. This will reduce the chance of cable and controller damage caused by environmental contamination.**

3.4.13. To allow handle to function correctly connect single handle controller to loader valve as described in next step.

3.4.14. Install the following components to both cables in order they are numbered.

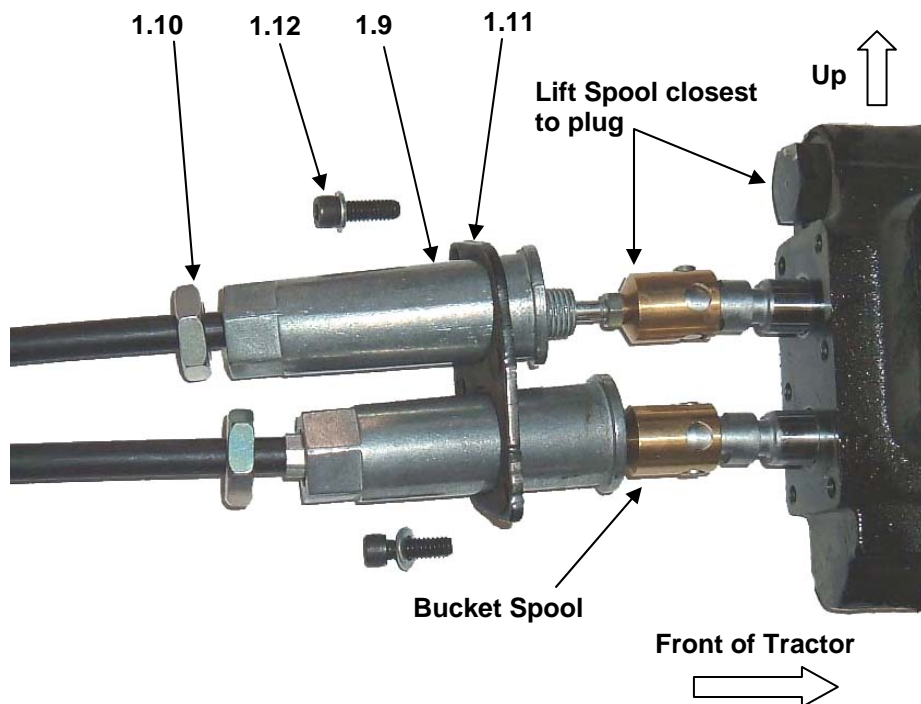
- 1.1. Thread jam nut the entire length of threads on cable so it rests on cable.
- 1.2. Slide dual flange on cable towards nut.
- 1.3. Thread cable adjuster onto cable.
- 1.4. Thread nut onto end of cable to the end of the threads.
- 1.5. **CRITICAL:** Thread spool adapter onto end of cable until the end of the cable is flush with the inside of the spool adapter. **NOTE:** Move single handle controller forward and rearward and check to see which cable end moves. Install this cable on top or lift spool of valve. (Ref. page 32)
- 1.6. When installing cable to valve, install pin through hole in spool adapter and valve spool.
- 1.7. Lock (1.5) spool adapter in this position using (1.4) nut. (Ref. page 32) **IMPORTANT: Make sure these components are locked together before completing cable installation. Failure to follow these instructions will allow cables to come apart during operation.**
- 1.8. Repeat procedure for additional cable.





3.4.15. Install cables to valve.

- 1.9. Turn cable adjuster onto threads until flush with valve surface. Make sure handle remains in neutral position.
- 1.10. Tighten jam nut against cable adjuster to lock in position.
- 1.11. Slide dual flange over cable adjusters and bolt to valve housing.
- 1.12. Tighten metric bolts supplied in adapter kit to securely hold dual flange against valve surface.  
**CAUTION:** Over-tightening will distort flange.



See fig. 1

- 1.12.1. Cable adjuster
- 1.12.2. Jam nut
- 1.12.3. Dual Flange
- 1.12.4. Cable.
- 1.12.5. Jam nut
- 1.12.6. Spool adapter
- 1.12.7. Valve spool end
- 1.12.8. Pin
- 1.12.9. Metric bolt.

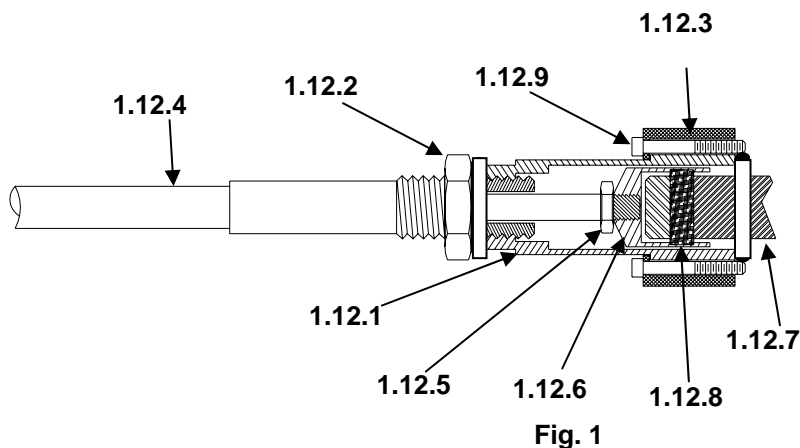


Fig. 1

3.4.16. Support the loader by using a hoist. Install loader to mounting brackets previously installed on tractor. Refer to Section 8 — Mounting the Loader, Pages 52 to 55.



**CAUTION:** Lift and support all loader components safely.

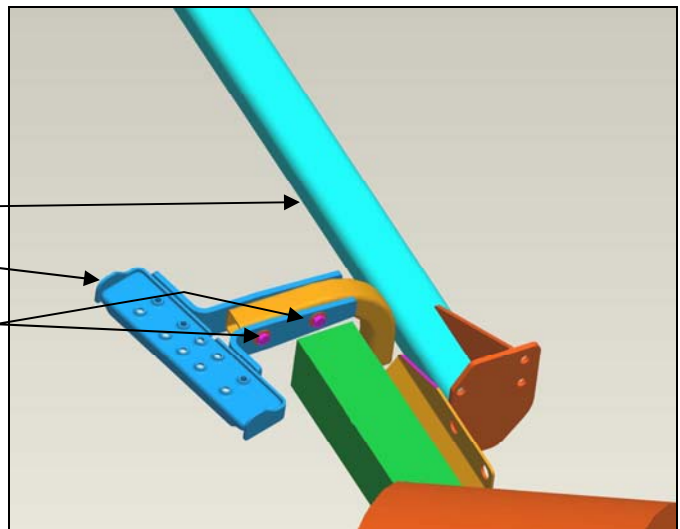
3.4.17. Install toolbox to right hand centerbracket using hex head cap screw 5/8"-12 x 2.5" and stover hex locknut 5/8"-12 as shown.

**Toolbox**  
**Hex Head Cap Screw 5/8"-12 x 2.5", Stover Hex Locknut 5/8"-12, 2 places**



3.4.18. Install step removed in step 3.2.3 on right hand rear rail using original step hardware as shown.

**Right hand Rear Rail**  
**Right Hand Step**  
**Install using original hardware**



## 4. PRE-OPERATION INSTRUCTIONS

### 4.1. HYDRAULIC FLUID

Check the tractor hydraulic fluid level and fill, if required.

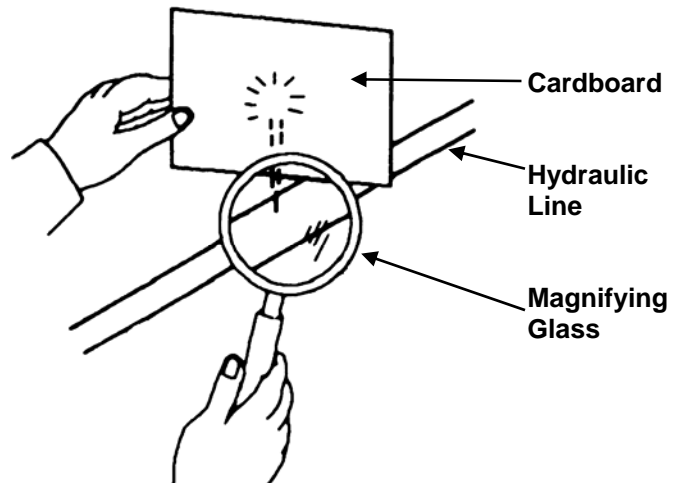
### 4.2. INITIAL LOADER OPERATION

**NOTE:** If any loader cavitation is noticed during loader operation, check tractor hydraulic fluid level and correct.

**NOTE:** Keep engine speed at low idle during the initial loader operation.



**CAUTION:** 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.



### 4.3. EXTERNAL LOADER VALVE



**CAUTION:** When properly installed, the loader valve handle will control loader hydraulic circuits as described below.

**IMPORTANT:** Contaminants in hydraulic fluid can cause valve spools to stick. **BE ALERT** when operating loader and follow your tractor Operator Manual hydraulic fluid maintenance schedule.



**CAUTION:** Do not tamper with 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 serious injury.

### 4.4. SINGLE HANDLE CONTROLLER

4.4.1. Single handle controller will have some freeplay when installed on unit. This is normal on all cable operated units. Cable damage due to contamination and/or moisture in cables is not covered under warranty.

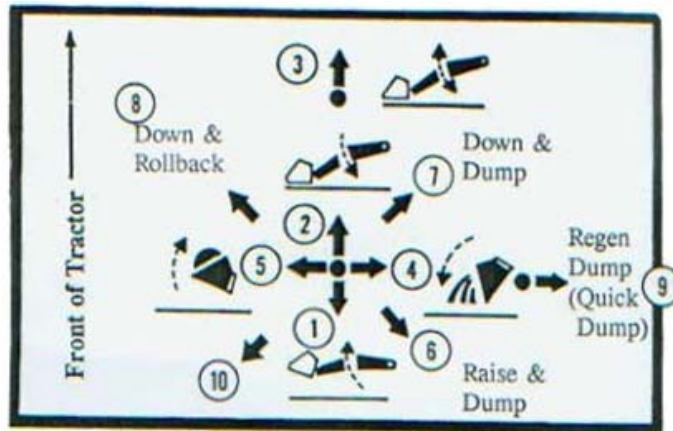
4.4.2. Cables must be adjusted properly to allow loader valve to operate correctly. Cable adjustment is not covered under warranty.

4.4.3. Single handle controller components will wear over time and use. Normal wear is not covered under warranty.

4.4.4. Never use single handle controller lever as a handle when getting on or off of tractor. Failure to follow these instructions will cause single handle controller lever damage not covered under warranty.

## 4.5. LOADER MOUNTED VALVE EQUIPPED WITH SINGLE HANDLE CONTROLLER

4.5.1. Your loader utilizes a series type loader mounted valve equipped with single handle controller and it will function as described.



### Number 1 Position:

Pull single handle controller back to raise loader.

### Number 2 Position:

Push the single handle controller forward slightly to lower loader.

### Number 3 Position:

Push the single handle controller full forward to activate float position.

### Number 4 Position:

Push the single handle controller outward to dump attachment (normal dump).

### Number 5 Position:

Pull the single handle controller inward to roll back attachment.

### Number 6 Position:

Pull the single handle controller downward and push the single handle controller outward to raise loader and to dump attachment simultaneously.

### Number 7 Position:

Push the single handle controller forward and push the single handle controller outward to lower loader and to dump attachment simultaneously.

### Number 8 Position:

Push the single handle controller forward and pull the single handle controller inward to lower loader and to roll back attachment simultaneously.

### Number 9 Position:

Push the single handle controller fully outward to activate regen position on the loader valve which will dump attachment at a faster rate.

### Number 10 Position:

Pulling the single handle controller downward while pulling the single handle controller inward is not recommended for scooping because of insufficient lifting force plus loader will not operate after bucket contacts rollback stops.

**NOTE: This loader valve is a series valve. If you, the operator, extend or retract bucket cylinders fully with valve handle in a two function position (positions 6, 7, 8 or 10), loader will stop raising or lowering when bucket cylinders reach the end of their stroke. Operator must then position single handle controller to a one function position (positions 1, 2, 4 or 5) to allow the loader to continue to operate.**

**IMPORTANT: If the bucket or attachment does not operate as indicated on the directional decal, lower the bucket to the ground, stop the engine, and relieve all hydraulic pressure. Recheck hydraulic circuit hookup to loader valve and correct.**

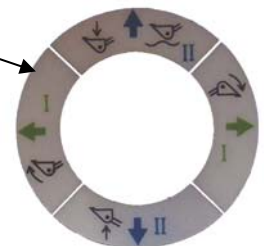
## 4.6. NEUTRAL POSITION

The loader external valve has a "neutral position" which prevents movement of the loader or attachment. When the valve handle is manually released from the work position, the valve spool will return to the neutral position. If this does not function correctly check cable adjustment and/or check for damage to cable or single handle controller.

## 4.7. FLOAT POSITION

The loader valve has a "float position" incorporated into the lift cylinder circuit which allows the loader to float. This float feature is important for satisfactory operation when scraping, sweeping, leveling, or any job where it is necessary to follow the contour of the surface. To activate float position, lower the bucket or attachment and push the single handle controller all the way forward into detent. The valve will stay in float detent position until the operator manually pulls the single handle controller out of detent position to deactivate float.

Directional decal



## 4.8. REGENERATIVE DUMPING POSITION

Your valve is equipped with a regen position in the bucket circuit. When digging with the loader, feather the single handle controller outward to angle the bucket forward and put the weight of the tractor on the cutting edge. If you position the loader valve into regen position, weight of the tractor may not remain on the cutting edge. The loader valve has a "Regenerative Spool" incorporated in the bucket spool. The tilt cylinders must be connected to this spool allowing the operator to choose normal dump or fast dump during loader operation. While using regen position some oil will bypass over relief which could cause a small amount of hose chatter and hydraulic relief noise which is normal to operation.

**NOTE:** Regen position will speed up dump operation in most applications. However, operator may not see significant speed increase at high RPM due to some oil being forced relief. Use of regen position will eliminate bucket cylinder cavitation.

**NOTE:** Use normal dump position when digging with loader. This will allow operator to put full tractor weight on cutting edge during this operation. The regenerative function can then be used when dumping load from bucket.

**NOTE:** Valve circuits must be hooked up correctly to allow regen to operate correctly.

**IMPORTANT:** If the bucket or attachment does not operate as indicated on the directional decal, lower the bucket to the ground, stop the engine, and relieve all hydraulic pressure. Recheck hydraulic circuit hookup to loader valve and correct.

**NOTE:** Use of regen function during dumping will eliminate attachment cylinder cavitation, which will reduce or eliminate any free movement of bucket or attachment during loader operation.



**CAUTION:** Do not tamper with 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 serious injury.

**IMPORTANT:** If the bucket and lift circuits do not operate correctly check single lever controller pivot position along with cable position.

## 4.9. INITIAL LOADER OPERATION

**NOTE:** Keep engine speed at low idle during the initial loader operation.

Before operating the loader, fully raise and lower the boom two or three times. Then raise the loader bucket approximately four (4) feet above the ground and cycle the tilt cylinders two or three times. Lower the bucket or attachment to the ground. Check the tractor hydraulic fluid level and fill as required. Refer to the tractor Operator Manual for the proper hydraulic fluid and the correct hydraulic fluid level.



**CAUTION:** Before leaving the tractor seat, lower attachment or loader boom to ground, stop engine, lock brakes, relieve hydraulic pressure, and remove key.

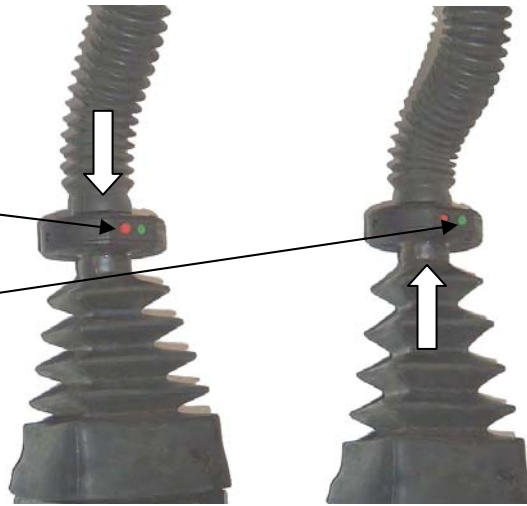
**IMPORTANT:** Always keep the cylinders in a retracted position when the loader is not in use to guard against rust and contamination which may cause damage to the cylinder rods and hydraulic system.

**IMPORTANT:** Always lock loader valve handle in locked position when loader is not in use or when loader has been parked from tractor.

Push lock downward until red button is exposed for locked position

Pull lock upward until green button is exposed for unlocked position

**NOTE:** The Single Handle Controller is equipped with a handle lock that locks loader valve in neutral position. This lock will not prevent leak down of loader.



**NOTE:** The Single Lever Controller lock is used to prevent accidental actuation of loader valve when loader is not in use or during transportation.

#### 4.10. REMOVING AIR FROM HYDRAULIC SYSTEM

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

Check the tractor hydraulic fluid level and fill, if required.

**NOTE:** Your loader lift and attachment circuits will have some leak down. This drift down is normal and is caused by loader valve spool leakage. Always position loader on the ground when not in use and be alert while transporting large loads a long distance. To check for acceptable leak down, see section 18. Leak Down Inspection. This test must be run and leak down must be above these rates before any warranty is applied for.

**NOTE:** Always change hydraulic oil in tractor as specified in tractor manual. Contaminants in hydraulic system will cause damage to loader valve spools, increasing leakage rate which is not covered under warranty.

**NOTE:** Use only recommended hydraulic oil as specified in tractor operators manual. Failure to follow these instructions could cause damage to loader hydraulic components and can increase loader leak down rate.

## 5. DAILY MAINTENANCE & LUBRICATION

### 5.1. DAILY CHECKS

5.1.1. **CRITICAL:** Check all hardware daily before operation. Tighten hardware to torque values as specified in the Torque Chart, page 82 unless otherwise specified in this manual.

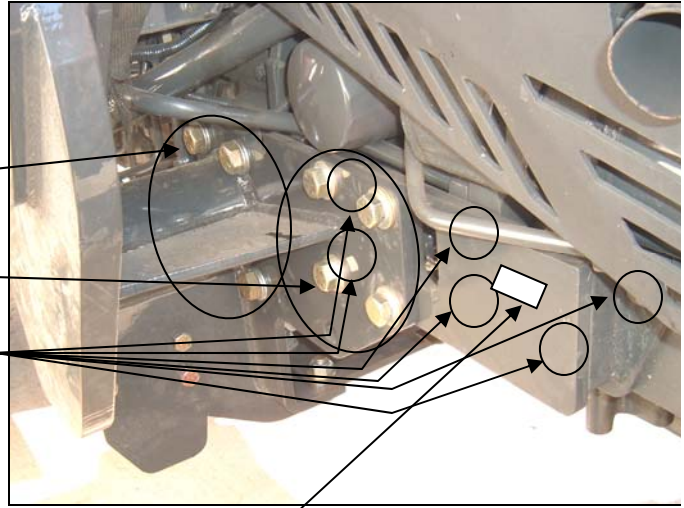
**IMPORTANT NOTE:** To prevent mounting kit hardware from loosening during operation always torque mounting kit hardware to specified torque noted in loader operator manual. Check bolt torque every 25 hours of loader operation.

Check torque on these 14 bolts and all other mounting kit hardware after every 25 hours of operation

Center Casting Hardware should be torqued to 172 ft. lbs.

Check torque value in the Torque Chart, page 82 for Front Rail Hardware

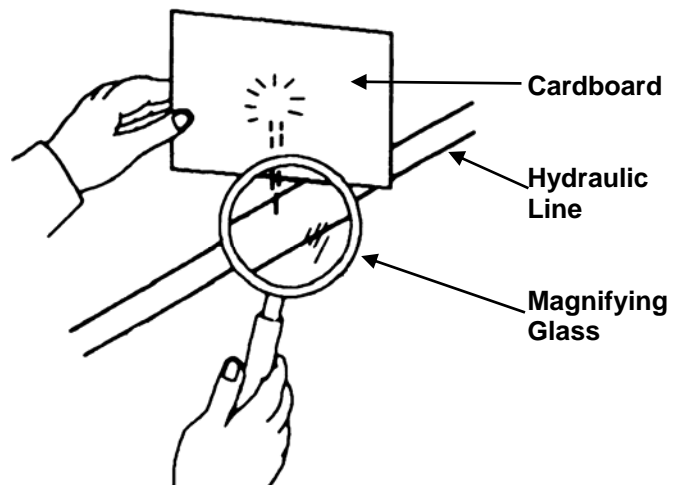
Engine Rail Hardware should be torqued to 107 ft. lbs.



5.1.2. 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:** 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.



5.1.3. Service your loader at the intervals and locations as specified. When you service your loader, use only high quality lubricants. The engine hour meter on the tractor shows the amount of hours the engine has worked. Use the hour meter to service your loader at the correct time periods.

**IMPORTANT:** Lower the loader boom to the ground and relieve pressure in loader hydraulic lines prior to doing any service or maintenance operations on the tractor or loader. Check the tractor hydraulic fluid level as specified in the tractor operator manual.

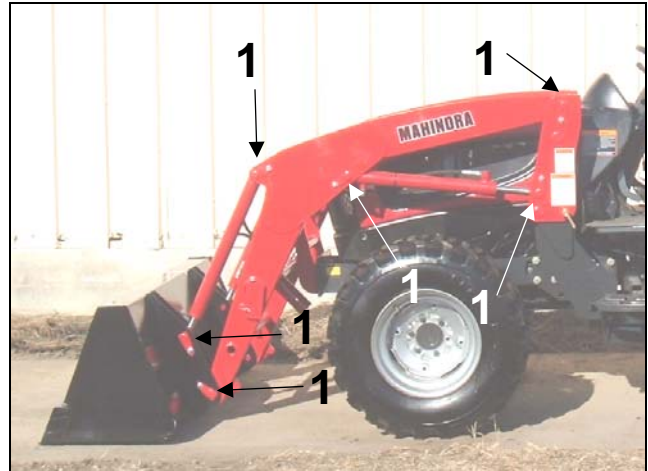
**NOTE:** When checking hydraulic system fluid level, the loader boom must be on the ground with the bucket or attachment resting flat on a level surface.

## 5.2. LOADER LUBRICATION AND SERVICE

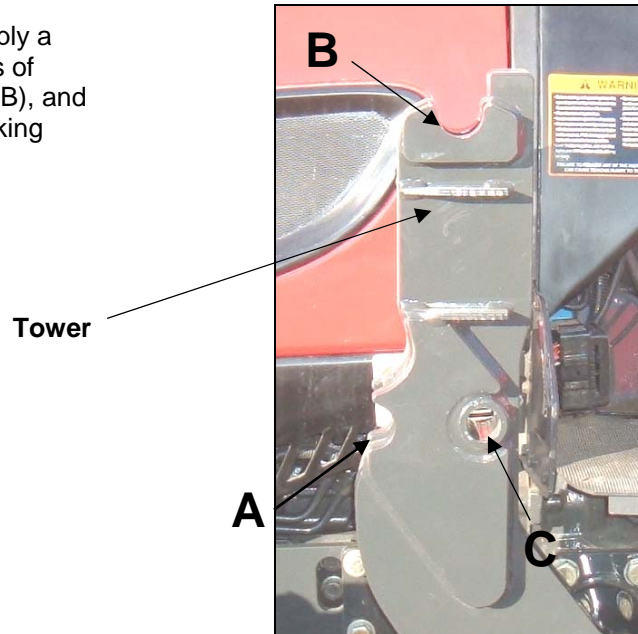
5.2.1. There are 12 grease fittings on this loader, one at each pivot. Lubricate pivots as specified. Use a grease gun with a flexible hose.

5.2.2. Lower loader boom until bucket or attachment rests on ground, and relieve all hydraulic pressure before lubricating.

**(1) Lubricate these 12 pivot points every 5 hours of operation.**



5.2.3. During initial setup, and as required; apply a small amount of grease to each tower in areas of tower bottom receiver (A), tower top receiver (B), and inside handle pin hole (C). This will aid in parking loader.







**CAUTION:** Do not stand, walk, or work under a raised loader or attachment unless it is securely blocked or held in position. Accidental movement of the valve handle/handles or leaks in the hydraulic system could cause the loader to drop, or attachment to dump, causing severe injury.

Before servicing your tractor, always do one of the following.



**A.** Park the loader off of the tractor.  
(See Grill Guard operation page 56)

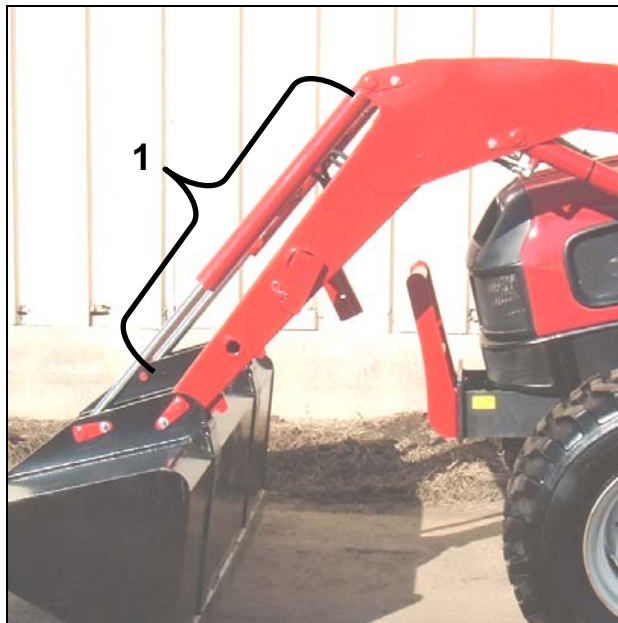


**B.** Position loader with bucket and/or attachment level with ground, then relieve all hydraulic pressure.



**CAUTION:** Do not stand, walk, or work under a raised loader or attachment unless it is securely blocked or held in position. Accidental movement of valve handle/handles or leaks in the hydraulic system could cause the loader to drop, or attachment to dump, causing severe injury.

5.2.4. Clean areas identified of all material if build up occurs during operation. This will help prevent damage to attachment cylinders and your loader attachments caused by frozen or packed material.



**1.** Top of loader boom arms.



Generic Photo

**2.** Between attachment attaching plates.

## 6. OPERATING INSTRUCTIONS

The loader should be operated with the tractor engine running at mid 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 hydraulic fluid temperature exceeds 30°F.

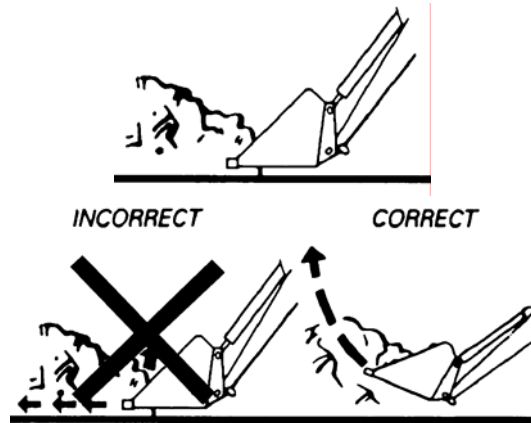
The following text and illustrations offer suggested loader and tractor operating techniques.

### 6.1. FILLING THE BUCKET

Approach and enter the pile with a level bucket. Then 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 breakaway 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.**

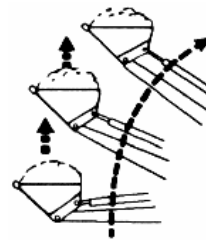


### 6.2. LIFTING THE LOAD

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



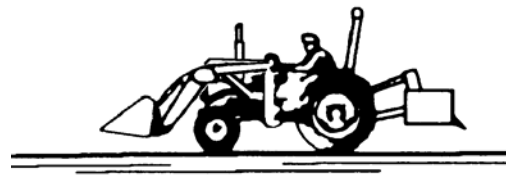
**CAUTION: Do not attempt to lift bucket or attachment loads in excess of the loader capacity.**



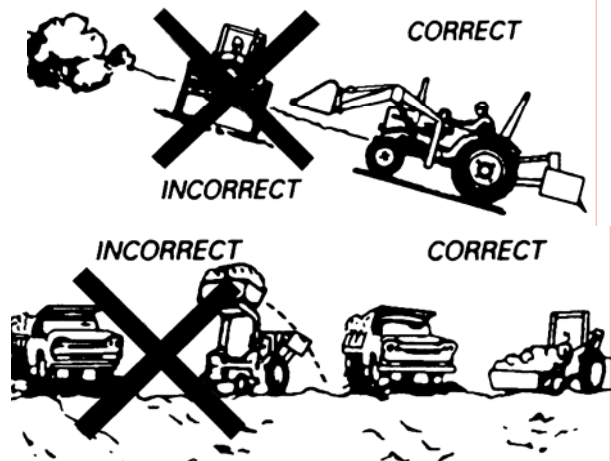
### 6.3. CARRYING THE LOAD

Position the loader in a low position when transporting a loaded or empty bucket or attachment.

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: Operating the loader on a hillside 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.

## 6.4. 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.



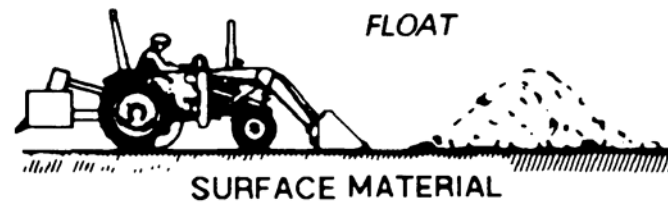
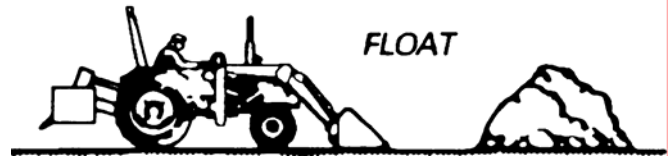
## 6.5. LOWERING THE BUCKET

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

## 6.6. OPERATING WITH FLOAT CONTROL

During operation on hard surface, keep the bucket level and position the lift control in the float position to permit the bucket to float on the work surface. If hydraulic down pressure is exerted on the bucket, the cutting edge 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.

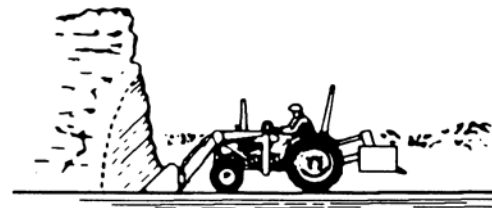


## 6.7. LOADING FROM A BANK

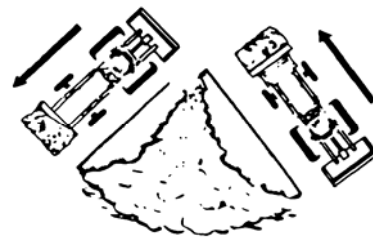
Choose a forward gear that provides a safe ground speed and power for loading.



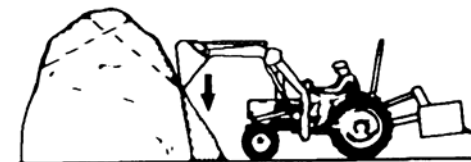
**CAUTION:** Exercise caution when undercutting high banks. Dirt slides can be dangerous. Load from as low as possible for maximum efficiency. Loader lift and breakaway capacity diminish as loading height is increased.



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



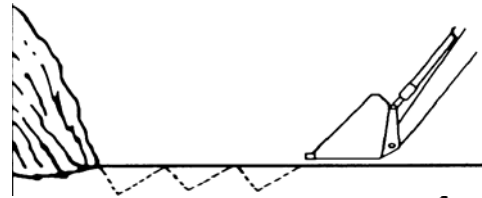
If the pile sides are too high and liable to cause cave-in, use the loader to break down the sides until a slot can be cut over the top.



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.

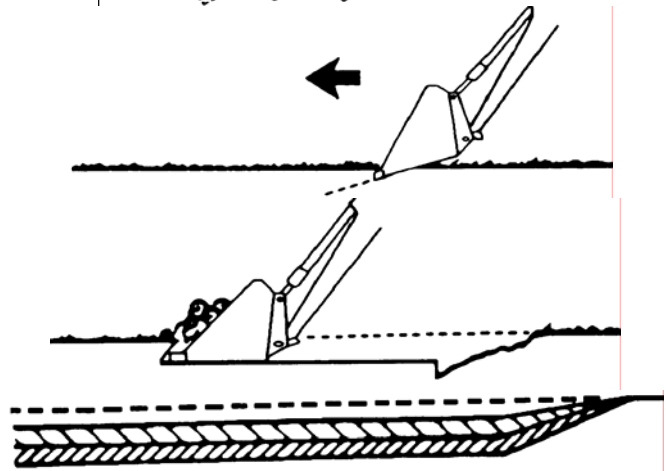


## 6.8. PEELING AND SCRAPING

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

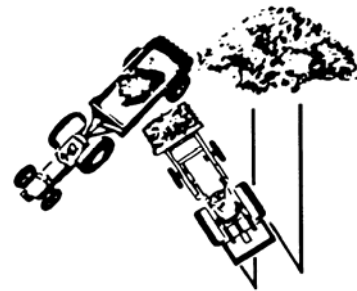
With the bucket level, start a cut at the notch approximately 2 in. deep. Hold the depth by feathering the tilt control to adjust the cutting edge up or down. When the front tires enter the notch, adjust the lift cylinder to maintain proper depth.

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



## 6.9. LOADING LOW TRUCKS OR SPREADERS FROM A PILE

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



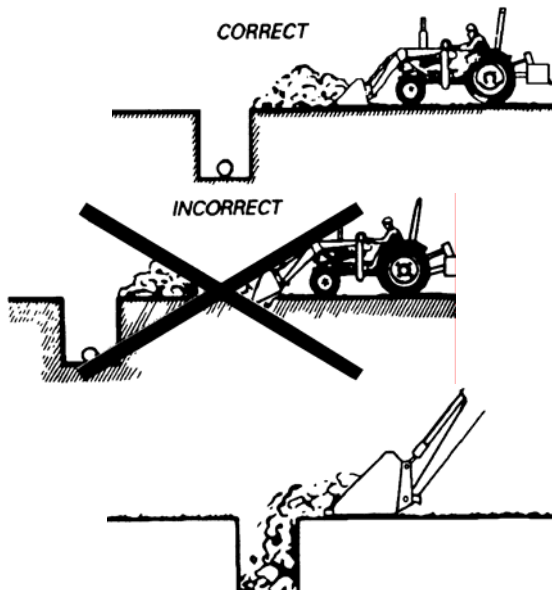
Back grade occasionally with a loaded bucket to keep the work surface free of ruts and holes. Also, hold the lift control forward so the full weight of the bucket is scraping the ground. Use the heel of the bucket.



## 6.10. 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 will impose severe shock loading on the dump-linkage, the tilt cylinders, and the tractor.

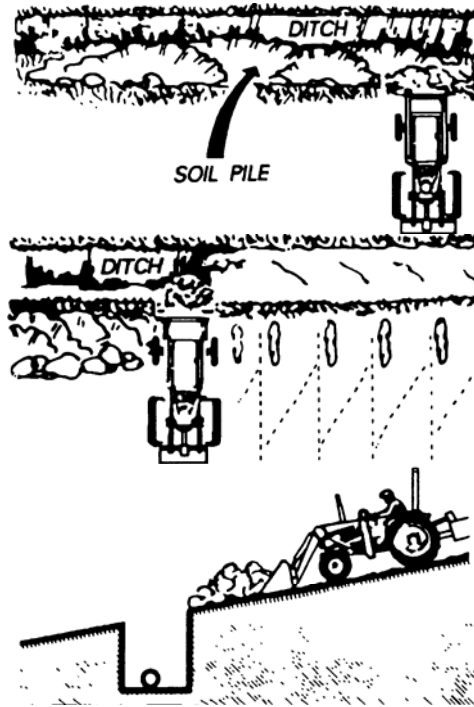


Leave dirt in the bucket because dumping on each pass wastes time.

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

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

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



## 6.11. HANDLING LARGE HEAVY OBJECTS



**CAUTION:** Handling large heavy objects can be extremely dangerous due to:

- Danger of rolling the tractor over.
- Danger of upending the tractor.
- Danger of object rolling or sliding down the loader boom onto the operator.



**CAUTION:** If you must perform the above work, protect yourself by:

- Never lifting the load higher than necessary to clear the ground when moving.
- Adding rear ballast to the tractor to compensate for the load.
- Never lifting large objects with equipment that does not have an anti-rollback device.
- Moving slowly and carefully; avoiding rough terrain.

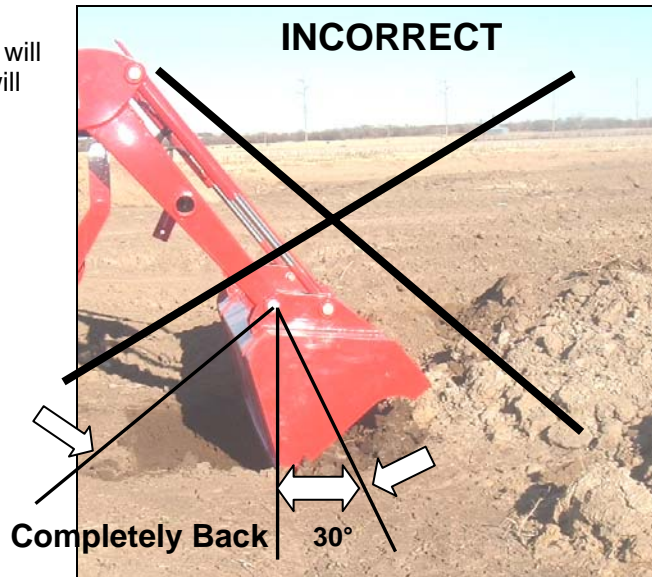
○

## 6.12. BACK GRADING OR DOZING MATERIAL

When back grading, the angle between the bottom of the bucket and the ground must not be more than 15 degrees. Failure to follow these instructions could cause loader tilt cylinders to fail and void warranty.



Never use bucket or other attachment in position shown when back grading or dozing material. This will cause excessive pressure in bucket cylinder and will cause failure to your loader, which is not covered under warranty.



**Never back grade or doze with tractor/loader combination when bucket or attachment is in this position.**

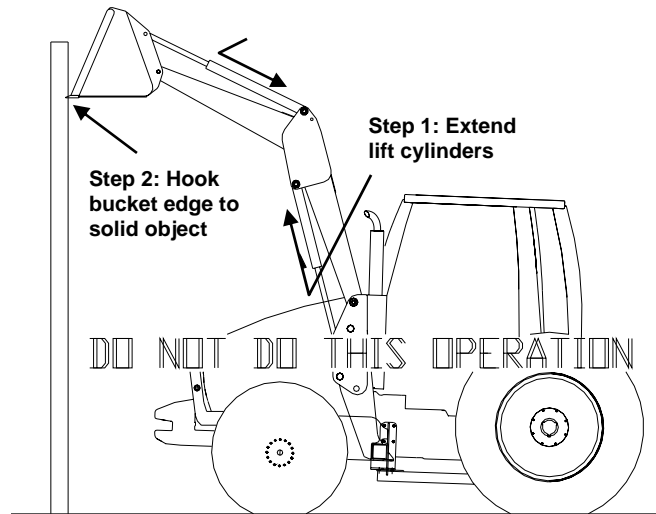
## 6.13. PROHIBITED OPERATIONS

6.13.1. Never perform following operation with a loader. Failure to follow these instructions could cause high pressure spikes in system causing failure or damage to cylinders, hoses or loader frame members.

**Step 1: Extend lift cylinder**

**Step 2: Hook bucket edge to solid object**

**Step 3: Apply force with bucket cylinders**



**CAUTION:** Doing this type of operation with your tractor and loader could result in personal injury or death.

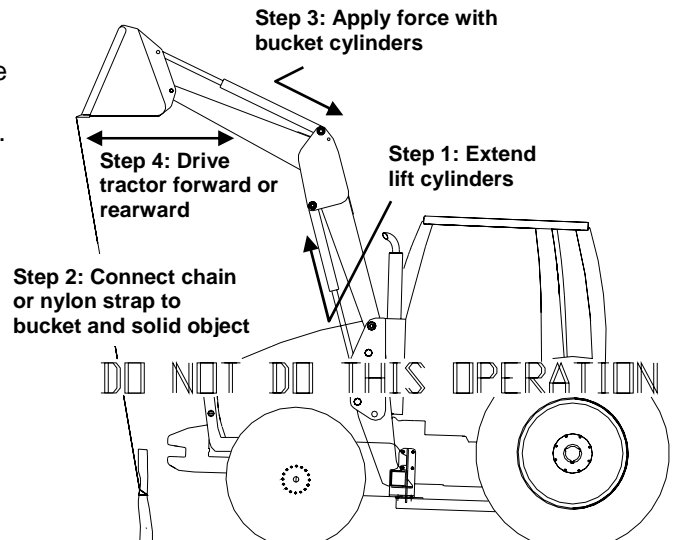
6.13.2. Never perform following operation with a loader. Failure to follow these instructions could cause high pressure spikes in system causing failure or damage to cylinders, hoses or loader frame members.

**Step 1: Extend lift cylinder**

**Step 2: Connect chain or nylon strap to bucket and solid object**

**Step 3: Apply force with bucket cylinders**

**Step 4: Drive tractor forward or rearward**



**CAUTION:** Doing these types of loader operations with your tractor and loader could result in personal injury or death.

Damage caused to any of these components due to these types of loader operations are not covered under warranty.

## 7. DISMOUNTING THE LOADER



**CAUTION:** Always park loader with material bucket attached to the loader. Never park loader with Bale Spear or Pallet Fork attached to loader.



**CAUTION:** Before leaving the tractor seat, lower attachment or loader boom to ground, stop engine, lock brakes, relieve hydraulic pressure, and remove key.



**CAUTION:** Do not stand, walk, or work under a raised loader or attachment unless it is securely blocked or held in position. Accidental movement of valve handle/handles or leaks in the hydraulic system could cause the loader to drop, or attachment to dump, causing severe injury.



**CAUTION:** Do not allow bystanders in loader work area.

**IMPORTANT:** Never allow weight of tractor to be placed on parking stand when mounting or dismounting loader.

7.1.1. Position the loader on a hard level surface. The more level the surface the easier the loader is to mount and dismount.

7.1.2. Raise loader, dump bucket over, and then lower loader so that bucket cutting edge is approximately 1/2" off of ground.

Bearing box

Tower

Cutting edge of bucket  
1/2" off of ground



**CAUTION:** Never park loader with Bale Spear or Pallet Fork attached to loader. Failure to follow these instructions could cause instability of parked loader causing personal injury or property damage.

7.1.3. Remove snap pins from handle pins located in bearing boxes.

Bearing box

Handle pin

Snap pin





7.1.4. Remove handle pins from bearing boxes.

**Bearing box**

**Handle pin**



7.1.5. Remove parking stand from storage position in the boom cross tube. Return hairpin cotter in storage position.

**Hairpin cotter  
in storage position**

**Parking stand  
in storage position**



7.1.6. Position parking stand in attaching bracket located in center of cross tube. Secure using clevis pin and hairpin cotter.

Attaching bracket  
 Clevis pin and hairpin cotter in park position  
 Parking Stand in park position



7.1.7. Photo shows parking stand in park position and handle pins removed from bearing boxes. Loader is ready to be dismantled.

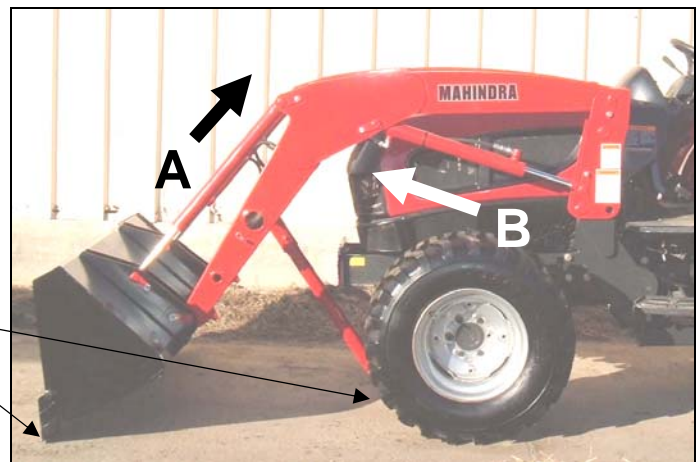
Parking stand in park position  
 Handle pins removed from bearing boxes



7.1.8. Retract tilt cylinders (A) to roll bucket back and retract lift cylinders (B) to lower loader boom down until parking stand makes firm contact with ground.

**NOTE: Driving the tractor forward slowly while positioning loader will allow parking stand to contact ground firmly.**

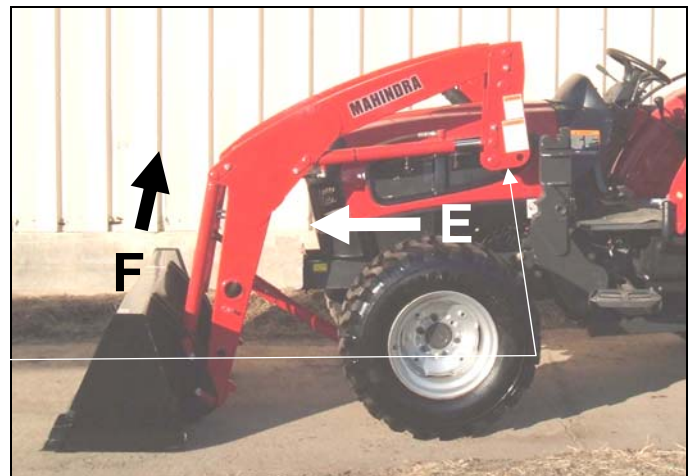
Parking stand contacting ground firmly  
 Bucket resting on ground



7.1.9. Retract lift cylinders (C) until bearing box pins (D) rotates out of tower hooks and loader bracket towers.



7.1.10. Slowly drive tractor forward (E) while retracting tilt cylinders (F). Doing this will allow bearing boxes to guide loader as it is being parked off of tractor.



**Bearing boxes**

7.1.11. Retract tilt cylinders (G) completely.

7.1.12. Make sure all loader components clear tractor. Back tractor away (H) slightly.

7.1.13. Stop the tractor engine and then work valve handle/handles to relieve hydraulic fluid pressure in lines. Refer to tractor operator manual for additional information.



7.1.14. Reinstall handle pins and snap pins to bearing boxes for storage.

7.1.15. Disconnect loader hoses from quick couplers. Start tractor and slowly back tractor away from the loader



**IMPORTANT:** To avoid hydraulic hose damage, be alert and make sure hoses do not catch on tractor and/or loader during mounting or dismounting.



**WARNING:** Make sure parked loader is on a hard level surface. Engage all safety devices to prevent loader from falling and being damaged or injuring someone. Do not repair loader if it is not mounted on the tractor. Loss of hydraulic fluid or removal of parts could cause loader to collapse resulting in injury.



**CAUTION:** To allow proper steering of the tractor always remove 3-point weight from tractor when the loader is parked from the tractor. Failure to follow these instructions could cause loss of steering causing personal injury and damage to property.

## 8. MOUNTING THE LOADER



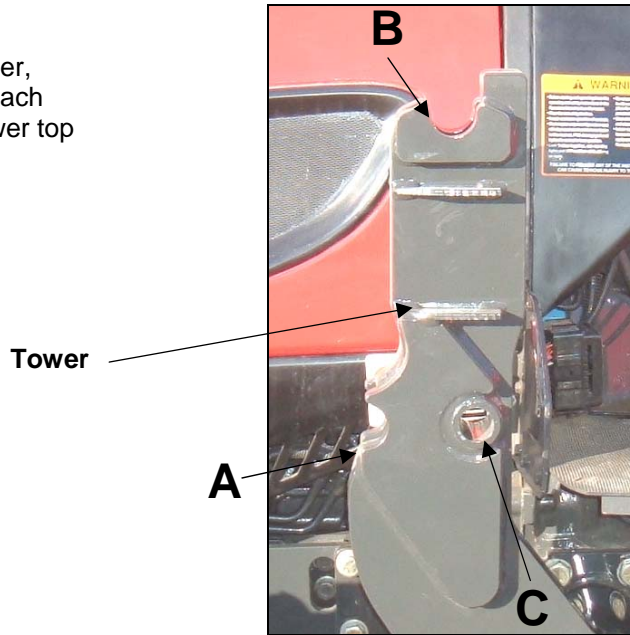
**CAUTION:** Do not stand, walk, or work under a raised loader or attachment unless it is securely blocked or held in position. Accidental movement of valve handle/handles or leaks in the hydraulic system could cause the loader to drop, or attachment to dump, causing severe injury.



**CAUTION:** Do not allow bystanders in loader work area.

**IMPORTANT:** Never allow weight of tractor to be placed on parking stand when mounting or dismounting loader.

8.1.1. To aid in mounting and dismounting loader, apply a small amount of grease, if needed, to each tower in areas of tower bottom receiver (A), tower top receiver (B), and inside handle pin hole (C).



8.1.2. Slowly drive tractor forward to a position where the hoses can be connected to the loader quick couplers.

8.1.3. Stop the engine. Connect the loader hydraulic hoses to the correct quick couplers by matching colored nylon ties.

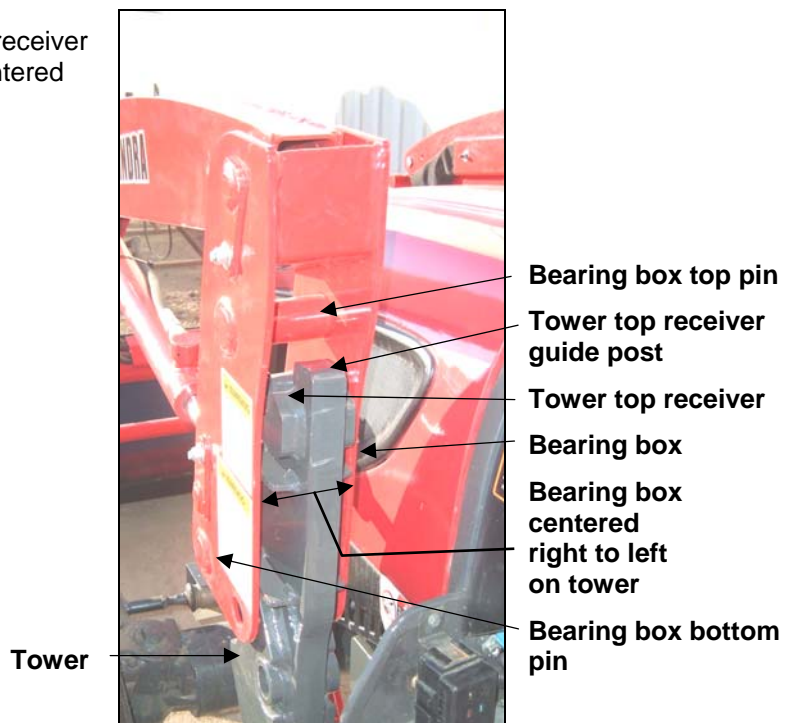
8.1.4. Remove handle pins and snap pins from bearing boxes.



8.1.5. Position lift cylinders so they are fully retracted. Then drive tractor forward. Use tilt cylinders to position height of bearing box top pin making sure all loader components clear all tractor components.

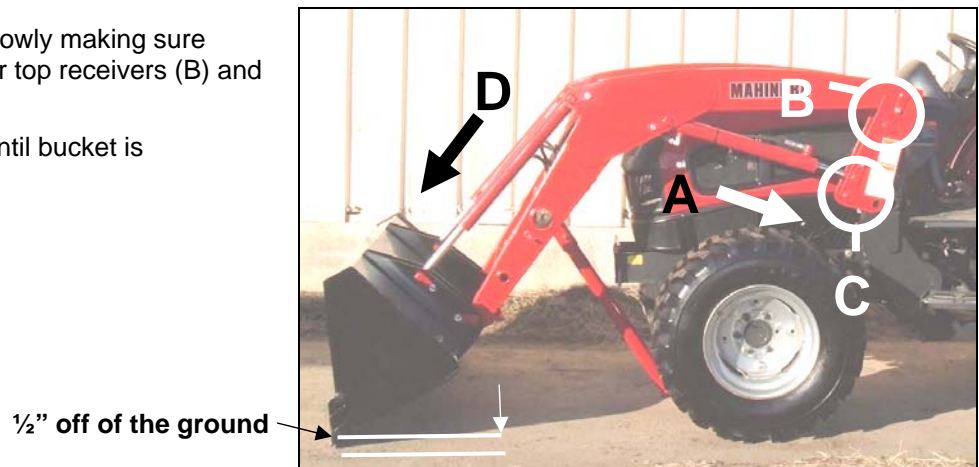


8.1.6. Align bearing box top pin with tower top receiver guide post, both sides. Make sure loader is centered right to left on both towers.

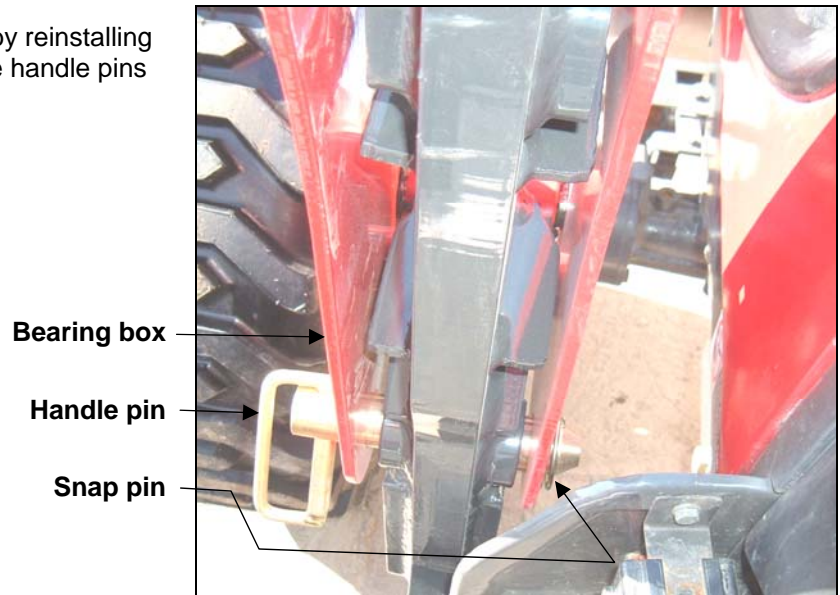


8.1.7. Extend lift cylinders (A) slowly making sure loader seats completely in tower top receivers (B) and tower bottom receivers (C).

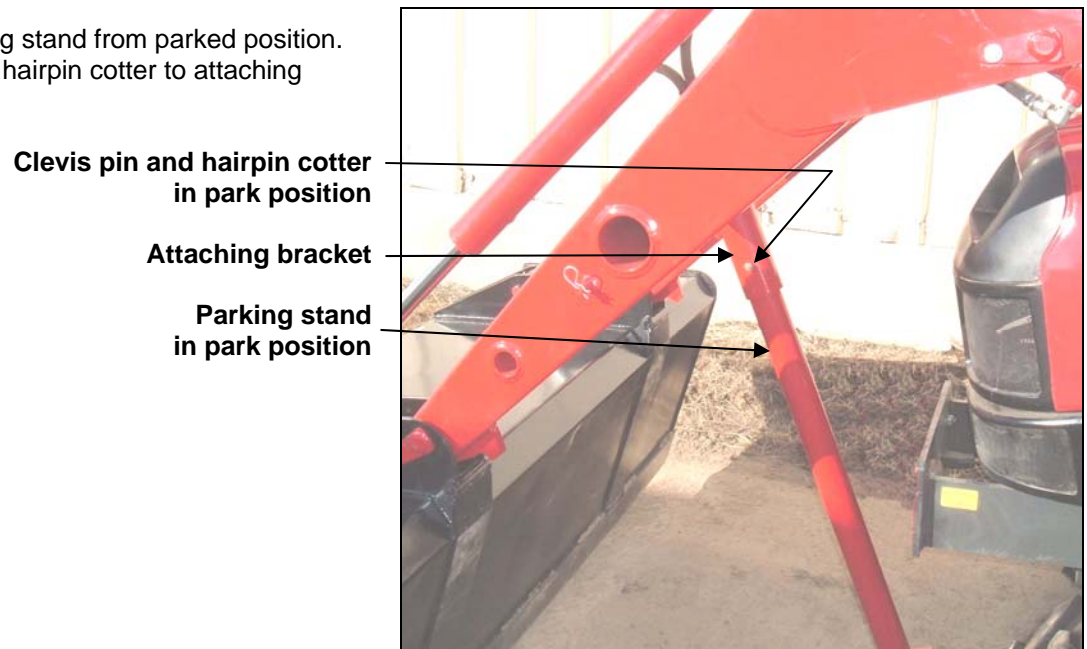
8.1.8. Extend tilt cylinders (D) until bucket is approximately 1/2" off ground.



8.1.9. Secure loader to center brackets by reinstalling handle pins to bearing boxes and secure handle pins using snap pins.



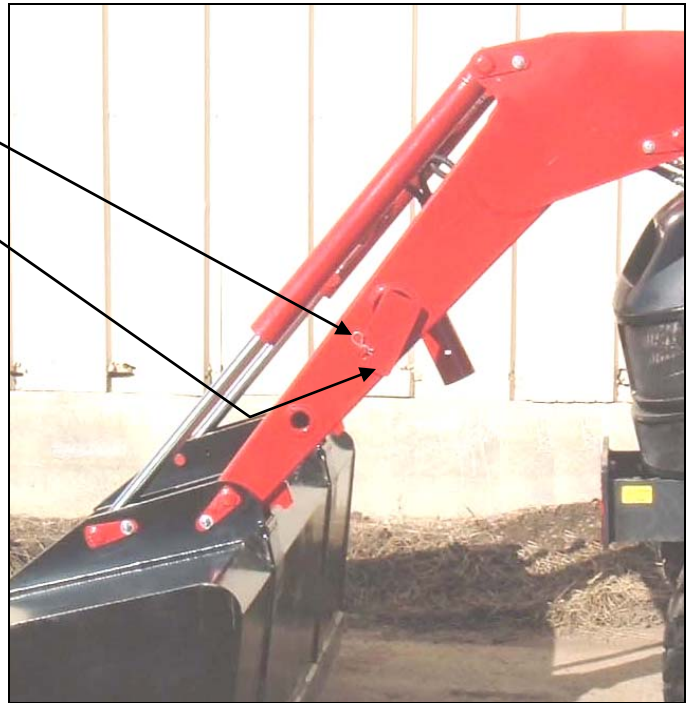
8.1.9. Remove parking stand from parked position. Return clevis pin and hairpin cotter to attaching bracket for storage.



8.1.10. Return parking stand to storage position in the boom cross tube. Secure using hairpin cotter.

Hairpin cotter  
in storage position

Parking stand  
in storage position



**IMPORTANT: To avoid hydraulic hose damage, be alert and make sure hoses do not catch on tractor and/or loader during mounting or dismounting.**

After loader is mounted, reinstall original rear 3-point ballast.

Install original rear 3-point ballast





## 9. OPTIONAL GRILL GUARD

### 9.1. INSTALLATION INSTRUCTIONS

9.1.1. Install attachment assembly to tractor using hardware indicated. Install locking spring pull pins into attachment assembly as shown.

**Attachment Assembly**

**Locking Spring Pull Pins**

**Hex Head Cap Screw 5/8"-12 x 2.0"  
Gr. 8,  
Hardened Flatwasher 5/8",  
Stover Hex Locknut 5/8"-12,  
4 places each**

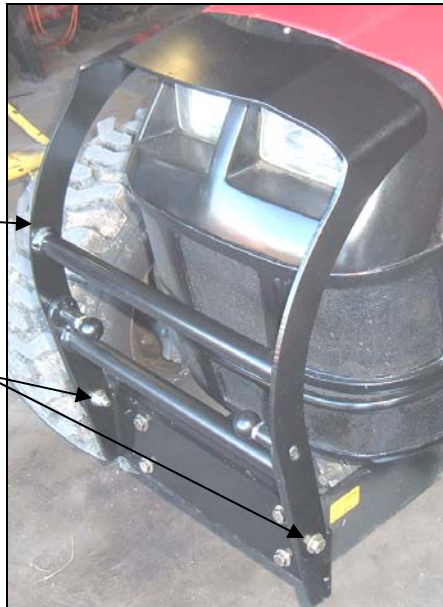


9.1.2. Install headlight protector assembly to attachment assembly using hardware indicated.

**Headlight Protector Assembly**

**Hex Head Cap Screw 1/2"-13 x 2.0",  
Hardened Flatwasher 1/2" on both  
sides, Stover Hex Locknut 1/2"-13,  
2 places.**

**(IMPORTANT: These bolts must  
not be over tightened or Headlight  
Protector will be difficult to rotate)**

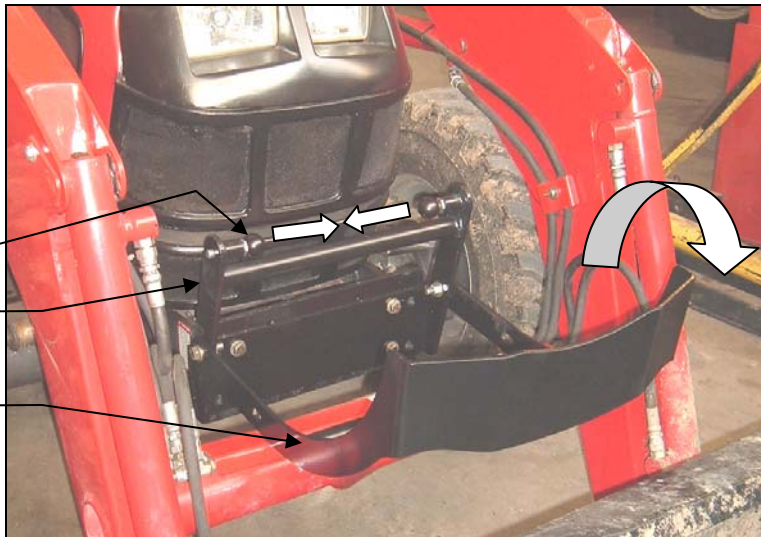


9.1.3. To open hood, pull and twist release pins then rotate headlight protector assembly toward front of tractor.

**Pull and twist Release Pins**

**Attachment Assembly**

**Rotate Headlight Protector  
Assembly**



# 10. SKID STEER TOOL CARRIER SYSTEM

NOTE: Some photos in this section are generic photos.

**IMPORTANT:** Read safety information in this section and on decal before operating attachment.

**WARNING**

Do not operate without confirmation that coupler pins are fully engaged. **Loader attachment can fall off if not properly attached. To avoid serious injury or death:**

- Only use loader manufacturer approved attachments.
- Read all operators manuals and decals before operating. Follow all safety, operating, and service instructions. Contact dealer for replacement parts.

0595-3051

NOTE: Skid Steer Tool Carrier System is optional equipment



**WARNING:** Always read and follow operating instructions before operating Skid Steer Tool Carrier System.



**IMPORTANT**

Loader attachment cylinders must be pinned to correct hole or cylinder damage will occur voiding warranty.

0595-3145

## 10.1. RECOMMENDED LOADER FACTORY APPROVED ATTACHMENTS

10.1.1. Use only Loader Factory Approved Attachments for mounting on this Skid Steer Tool Carrier System. 72" bucket, Bale spear, and Pallet fork.



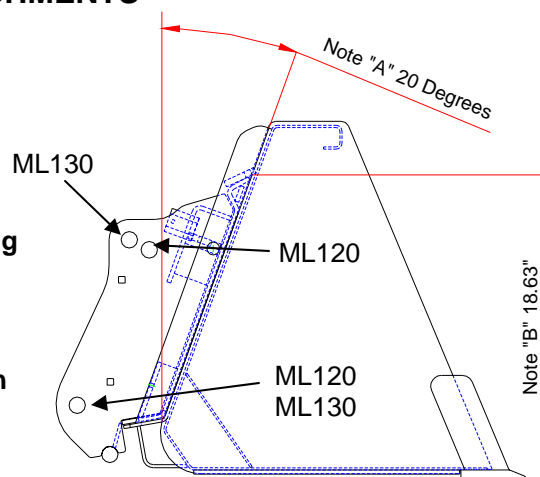
**CAUTION:** Only use 72" bucket, bale spear, and pallet fork at specified capacities on ML120 loader. All other attachment use will void tractor/loader warranty and could cause instability of unit causing personal injury or death.

## 10.2. NON-LOADER FACTORY ATTACHMENTS

10.2.1. If you are going to connect a non-Loader Factory Attachment to this Skid Steer Tool Carrier System, read and understand the following instructions and safety information. Always make sure Skid Steer Tool Carrier is locked onto all attachments.

**NOTE "A":** If your attachment back is not running at a 20 degree angle, your loader rollback and dump angles will change per attachment angle change.

**NOTE "B":** If your attachment point is lower than this, your attachment may not touch the ground when loader is fully lowered.



**NOTE:** Never install a Non-loader Factory Bucket that is larger than 72" and has more than 12.5 cubic feet struck capacity. Over-load of tractor can occur voiding tractor warranty.

**NOTE:** Never install a grapple attachment to the ML120 loader. Overload of tractor and damage to loader can occur voiding tractor and loader warranty.

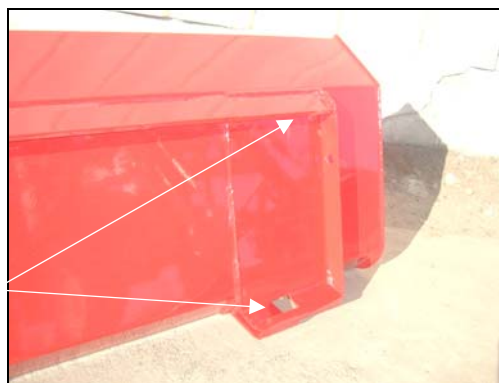
### 10.3. SKID STEER TOOL CARRIER SYSTEM SERVICE & LUBRICATION

**IMPORTANT:** To maintain your Skid Steer Tool Carrier System functioning properly, always keep handle components and latching areas clean.

Keep these areas clean



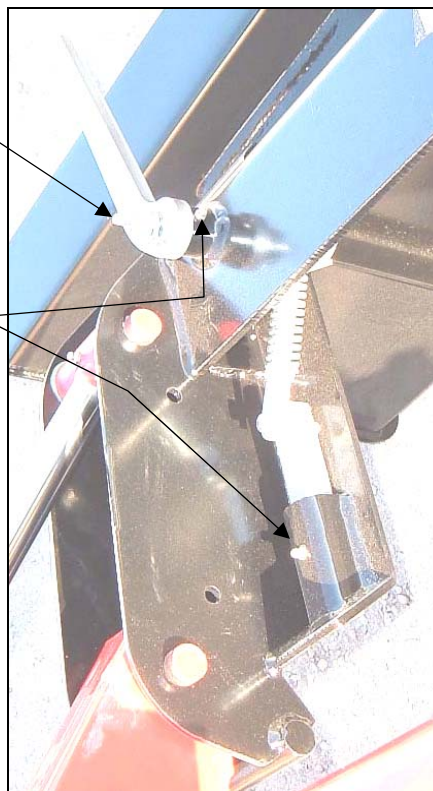
Keep these areas clean on your attachment



10.3.1. Inspect latching components and pins. If damaged, only replace with Factory approved components.

**Check and tighten this 1/2" bolt after every 20 hours of operation, 1 place each side**

**Lubricate these 2 grease fittings, 2 places each side, every 2 months of operation.**



**IMPORTANT:** To maintain your Skid Steer Tool Carrier System functioning properly, always inspect Skid Steer Tool Carrier System components for damage or wear. If damage or wear exists, replace components immediately.

# 11. INSTALLATION & OPERATION OF SKID STEER TOOL CARRIER SYSTEM

**IMPORTANT:** Read safety information in this section and on decal before operating attachment.



## WARNING

**Do not operate without confirmation that coupler pins are fully engaged. Loader attachment can fall off if not properly attached.**

**To avoid serious injury or death:**

- Only use loader manufacturer approved attachments.
- Read all operators manuals and decals before operating. Follow all safety, operating, and service instructions. Contact dealer for replacement parts.

0595-3051



**WARNING:** Always read and follow operating instructions before operating Skid Steer Tool Carrier System.

## 11.1. INSTALLATION INSTRUCTIONS

**IMPORTANT:** Do not extend bucket cylinders without Skid Steer Tool Carrier installed on loader. Failure to follow these instructions could cause loader damage and void warranty.

Install Skid Steer Tool Carrier to loader using 1.0" x 4.11" Pivot Pin, 3/8"-16 x 1.25" Carriage Bolts, 3/8" Hardened Flatwashers and 3/8"-16 Stover Hex Locknuts, 4 places as shown.

Install 1.0" x 4.11" Pivot Pin,  
3/8"-16 x 1.25" Carriage Bolts,  
3/8" Hardened Flatwashers,  
3/8"-16 Stover Hex Locknuts,  
4 places

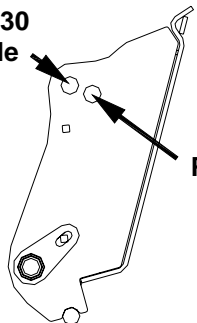


**NOTE:** Locate tilt cylinder grease zerk downward.

## IMPORTANT

Loader attachment cylinders must be pinned to correct hole or cylinder damage will occur voiding warranty.

Pin ML130  
this hole  
Only

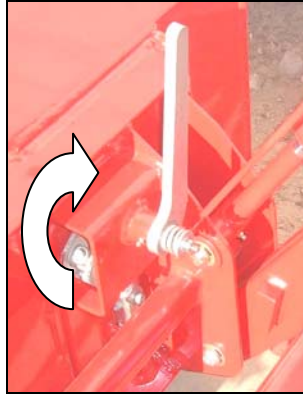


Pin ML120  
this hole  
Only

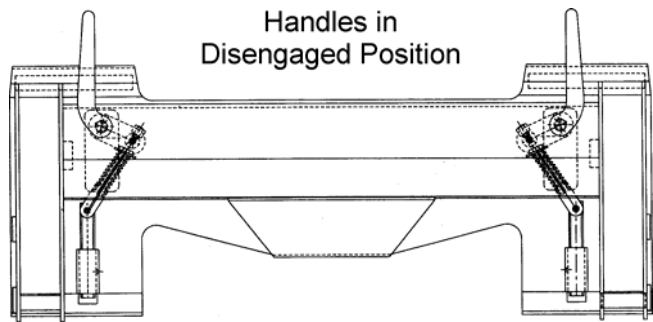
0595-3145

## 11.2. SKID STEER TOOL CARRIER HANDLES IN DISENGAGED POSITION

11.2.1. To position handles into the handle disengaged position, rotate skid steer tool carrier handle upward.

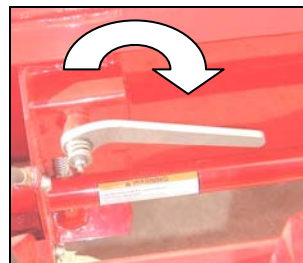


Rotate handles upward

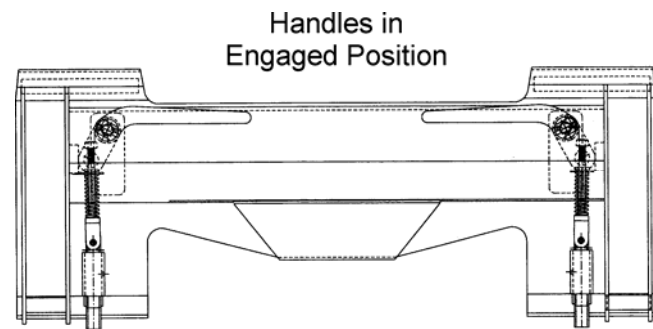


## 11.3. SKID STEER TOOL CARRIER HANDLES IN ENGAGED POSITION

11.3.1. To position handles into the handle engaged position, rotate skid steer tool carrier handle downward until they latch into position.



Rotate handles downward.



**NOTE: Handles should be positioned parallel to ground if properly latched.**

## 12. INSTALLING BUCKET OR ATTACHMENT TO SKID STEER TOOL CARRIER

**IMPORTANT:** Refer to Page 60 for instructions concerning Skid Steer Tool Carrier Handles Disengaged and Engaged Positions.



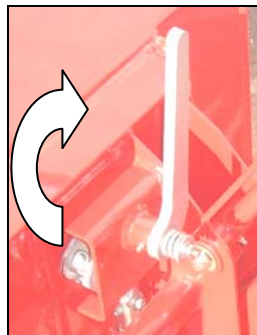
**CAUTION:** Before leaving the tractor seat, stop the engine and lock brakes when installing or removing bucket or attachment.

### 12.1. OPERATING INSTRUCTIONS

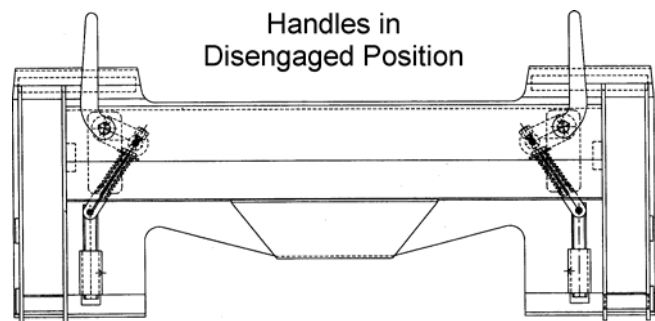
12.1.1. To attach bucket or attachment to loader, lower loader boom to ground with Skid Steer Tool Carrier attachment rolled forward slightly.



12.1.2. Position handles into the handle disengaged position, rotate skid steer tool carrier handle upward.



Rotate handles upward



12.1.3. Roll Skid Steer Tool Carrier attachment forward by extending tilt cylinders just enough to allow Skid Steer Tool Carrier upper vee to engage Skid Steer attachment vee channel. Drive tractor forward, aligning Skid Steer Tool Carrier vee components.

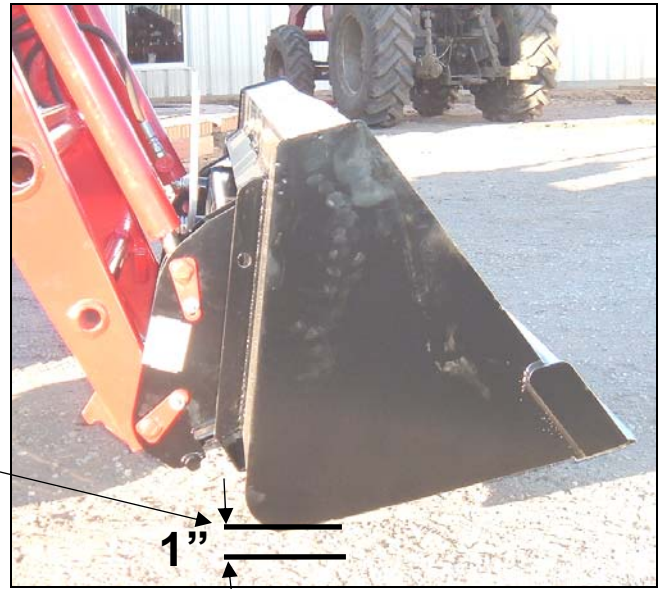
**Align Skid Steer Tool Carrier vee with Skid Steer Attachment vee channel**

**NOTE:** Over extension of tilt cylinders during this operation could cause damage to Skid Steer Tool Carrier handles due to handles contacting bucket or attachment.



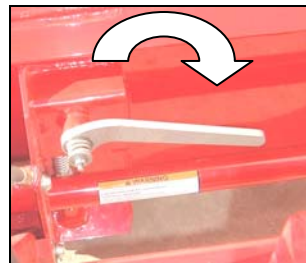
12.1.4. When Skid Steer Tool Carrier attachment is aligned with bucket or attachment, raise loader boom slowly making sure Skid Steer Tool Carrier vee components engage. Then roll Skid Steer bucket or attachment back slowly.

12.1.5. Position loader so attachment is approximately 1" off ground.

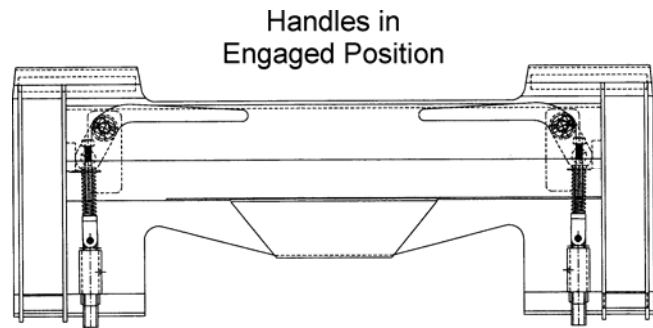


12.1.6. Position handles into the handle engaged position, rotate skid steer tool carrier handle downward until they latch into position.

**NOTE: Handles should be positioned parallel to ground if properly latched.**



**Rotate handles downward.**



12.1.7. Check that bucket or attachment is securely attached to Skid Steer Tool Carrier by raising loader boom 3 to 4 feet, dumping bucket or attachment against stops, and checking to be sure bottom of bucket or attachment does not roll forward away from Skid Steer Tool Carrier Assembly.



**CAUTION: Do not allow anyone in loader work area, under raised loader, or to reach through the loader boom when the loader is raised.**

12.1.8. Inspect Skid Steer Tool Carrier attaching areas to verify that Skid Steer Tool Carrier pins have engaged bucket or attachment fully.

**Bucket or attachment support bar**  
**Skid steer tool carrier pin assembly engaging bucket or attachment**



**IMPORTANT:** If properly latched into skid steer tool carrier attachment, the lower groove pin should be contacting pin support bar.

**Lower groove pin**  
**Pin support bar**



**WARNING:** A bucket or attachment that is not securely locked into skid steer tool carrier could come off during loader operation causing serious injury or death.



# 13. REMOVING BUCKET OR ATTACHMENT FROM SKID STEER TOOL CARRIER

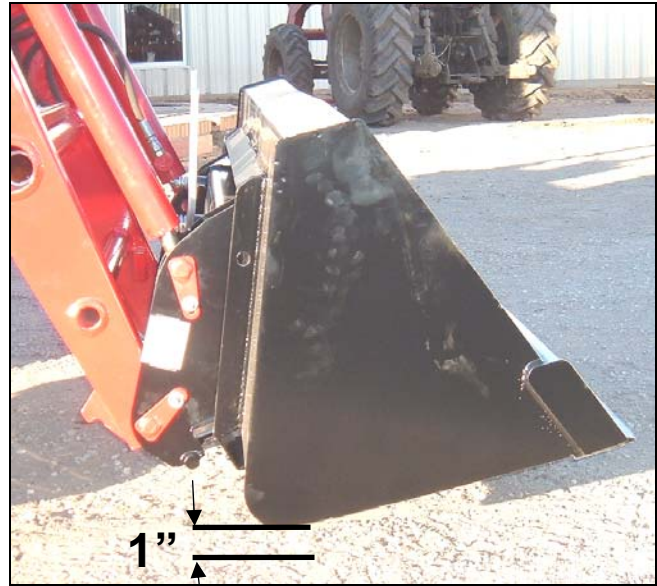
**IMPORTANT:** Refer to Pages 60 for instructions concerning Skid Steer Tool Carrier Handles Disengaged and Engaged Positions.



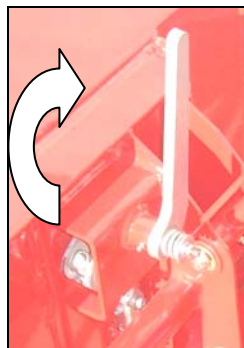
**CAUTION:** Before leaving the tractor seat, stop the engine and lock brakes when installing or removing bucket or attachment.

## 13.1. OPERATING INSTRUCTIONS

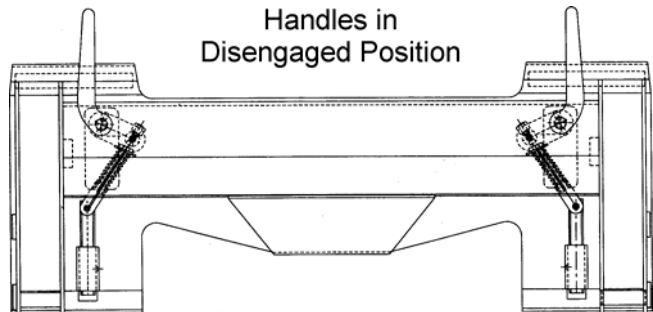
13.1.1. To disconnect bucket or attachment from loader, position bucket or attachment slightly rolled back and approximately 1" off of ground.



13.1.2. Position handles into the handle disengaged position by rotating skid steer tool carrier handle upward.



**Rotate handles upward**



13.1.3. Roll bucket or attachment forward and lower to ground. Back loader away from bucket or attachment.

**NOTE:** Over extension of tilt cylinders during this operation could cause damage to Skid Steer Tool Carrier handle due to handle contacting bucket or attachment.



# 14. SKID STEER BUCKET

**IMPORTANT:** Read safety information in this section and on decals before operating attachments.



**WARNING:** To avoid serious injury or death from large round or square hay bale handling:

- Use only Factory bale spear or bale retaining device handler attachment when handling round bales.
- Do not handle large square bales without a retaining device handler attachment
- Do not use buckets, forks, or other attachments without bale retaining devices.
- Do not use loader for handling large, heavy objects such as logs, tanks, etc.



**WARNING:** To avoid serious injury or death, realize 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 arms onto the operator.



**WARNING:** To avoid serious injury or death:

- Do not lift or carry anyone on buckets, forks, probes, or any other portion of the loader or loader attachments.
- Avoid contact with electrical power lines by loader or attachment



**WARNING:** Inadvertent movement of the loader or attachment could result in serious injury or death.

## 14.1. SKID STEER BUCKET

**NOTE:** Factory skid steer bucket comes in 72" width only. Never use a bucket wider than 72" and with a higher struck capacity than 12.5 cu. ft. on ML120 Mahindra loader. Failure to follow these instructions will cause tractor over-load and void warranty.



## 14.2. INSTALLATION INSTRUCTIONS TO SKID STEER TOOL CARRIER

**IMPORTANT:** Refer to Pages 61 to 63 for instructions concerning Installing Attachment to Skid Steer Tool Carrier.

**IMPORTANT:** Refer to Page 64 for instructions concerning Removing Attachment from Skid Steer Tool Carrier.

## 15. SKID STEER BALE SPEAR



**CAUTION:** To improve tractor and loader stability and to prevent overloading tractor front axle never handle any material with the following attachments that exceed weight specifications noted.

<b>CAUTION</b>		
<p><b>To avoid serious injury or death:</b></p> <ul style="list-style-type: none"> <li>• Read operators manual and decals before operating. Follow all safety, operating, and service instructions. Contact dealer for replacement.</li> <li>• Be careful during loading, transporting, and stacking to minimize rolling bales and tractor tip over.</li> <li>• ROPS (Roll-Over Protective Structures) and seat belt equipped tractors are recommended for operator use in all bale probe operations.</li> <li>• Do not allow riders on tractor, loader, or bale probe.</li> <li>• Avoid loading/unloading bales on sloping or uneven surfaces.</li> <li>• Avoid transporting with bales raised high. Keep bales tilted back and low to the surface while moving.</li> <li>• Approach, penetrate, and transport bales at low speeds. Reduce speeds on curves, hills, rough ground, or when turning.</li> <li>• Do not lift anything with bale probe except round bales.</li> <li>• Never raise round bale to full height with bale probe rolled back.</li> <li>• Park and store bale probe points pointed against bale, building, or other stable object.</li> </ul> <p style="text-align: right;">0595-3049</p>		

**IMPORTANT:** Read safety information in this section and on decals before operating attachments.

<b>DANGER</b>
<p><b>To avoid serious injury or death:</b></p> <ul style="list-style-type: none"> <li>• Unload only on a level surface.</li> <li>• Keep bystanders clear of work area when loading and unloading bales.</li> </ul> <p style="text-align: right;">0595-3050</p>

<b>CAUTION</b>
<p><b>To prevent bodily injury and loader instability when detaching loader, equip loader with a material bucket or a manure fork.</b></p> <p style="text-align: right;">0595-2190</p>

**IMPORTANT:** Always detach loader with factory bucket attached to loader.

Bale spear Attachment -- Skid Steer type --- Maximum round bale weight 1200# (24" forward of front side of attachment frame)



**CAUTION:** When transporting a round bale, tilt the bale spear slightly back from level and carry the load in a low position.



**CAUTION:** Never raise round bale to full height with bale spear rolled back as serious injury or death could occur.



**CAUTION:** Never park loader with Bale Spear or Pallet Fork attached to loader. Failure to follow these instructions could cause instability of parked loader causing personal injury or property damage.



**CAUTION:** To prevent bodily injury, park and store bale spear with points pointed against bale, building, or other stable object.

## 15.1. SKID STEER BALE PROBE

**IMPORTANT:** This spear is a high strength alloy – drop forged steel and should not be welded or heat treated.

**IMPORTANT:** Maximum load limit on super penetrator bale spear is 2,000 pounds. Do not handle round bales that weigh over 1,200 pounds with this unit.

## 15.2. ASSEMBLY INSTRUCTIONS

15.2.1. Install Bale Spears into tapered sleeves and secure with nuts. Torque nuts as specified. Failure to follow these instructions could cause damage to spear and void your warranty.

(1) Upper Spear (short spear)

(2) Tapered Sleeve

(3) Upper Spear Nut, 22mm.

Torque nut to 425 ft. lb.

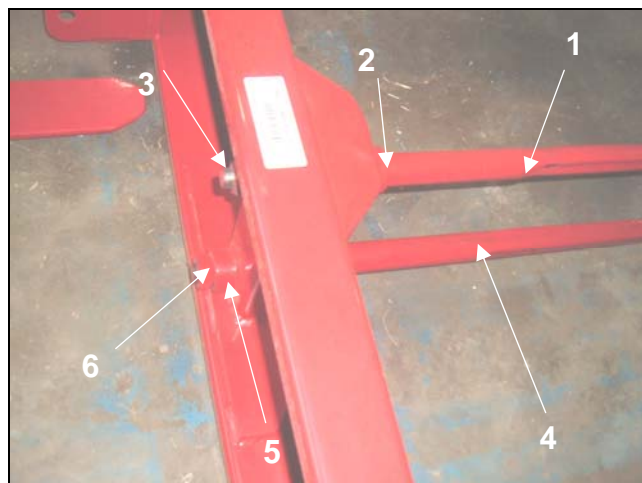
(4) Lower Spear (long spear)

Flat surface of spear located upward.

(5) Tapered Sleeve

(6) Lower Spear Nut, 28mm.

Torque nut to 515 ft. lb.



## 15.3. INSTALLATION INSTRUCTIONS TO SKID STEER TOOL CARRIER

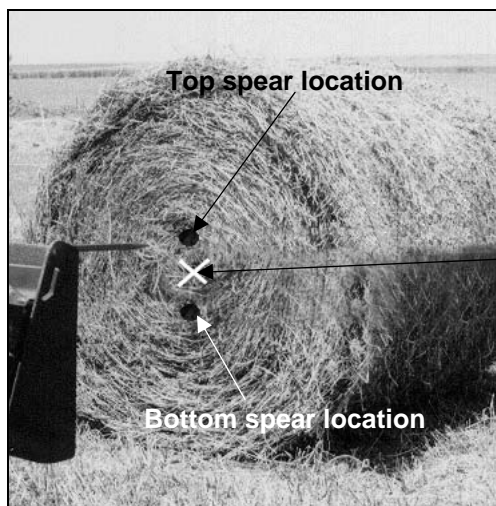
**IMPORTANT:** Refer to Pages 61 to 63 for instructions concerning Installing Attachment to Skid Steer Tool Carrier.

**IMPORTANT:** Refer to Page 64 for instructions concerning Removing Attachment from Skid Steer Tool Carrier.

## 15.4. OPERATING INSTRUCTIONS

15.4.1. With bale spear level with ground, slowly spear bale with top spear slightly above center of the bale.

15.4.2. With both spears completely engaged into bale, tilt bale spear slightly back from level and transport the load in a low position.



Spear bale slightly above and below center of bale.



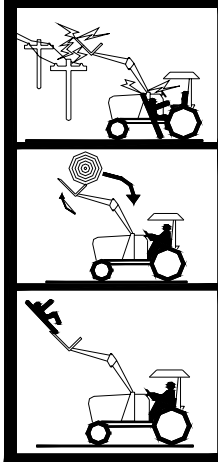
**CAUTION:** Never park loader with Bale Spear or Pallet Fork attached to loader. Failure to follow these instructions could cause instability of parked loader causing personal injury or property damage.

## 16. SKID STEER PALLET FORK



**CAUTION:** To improve tractor and loader stability and to prevent overloading tractor front axle never handle any material with the following attachments that exceed weight specifications noted.

**IMPORTANT:** Read safety information in this section and on decals before operating attachments.



### **! WARNING**

**To avoid serious injury or death:**

- Do not use pallet fork attachment to lift large objects, round bales, or items that may roll or slide down loader arms onto the operator.
- Always keep pallet forks level when raising loads.
- Avoid raising loads to full heights with pallet forks rolled back.
- Always transport loads with pallet forks low and level to ground.
- ROPS (Roll-Over Protective Structures) and seat belt equipped tractors are recommended for operator use in all pallet fork operations.
- Do not lift or carry anyone on buckets, forks, probes, or any other portion of the loader or loader attachments.
- Do not allow riders on tractor, loader, or forks.
- Avoid contact with electrical power lines by loader or attachments.

0595-3105



0595-3133



0595-2190



**WARNING:** The pallet fork attachment is specifically designed to engage and load palletized materials. Do not use forks to handle large loads such as bales, posts, etc. as they can fall or roll back onto operator causing serious injury or death.

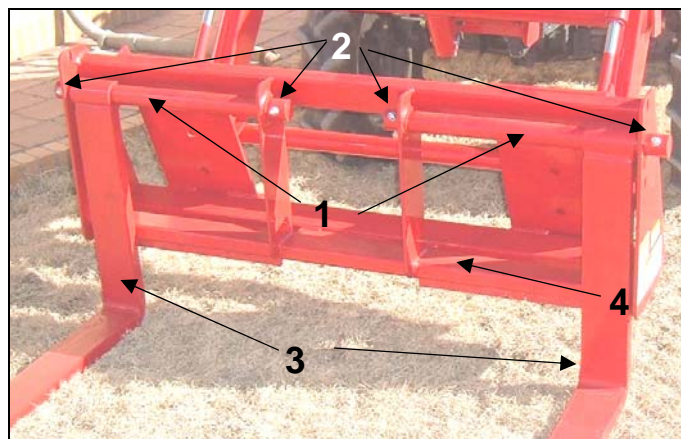
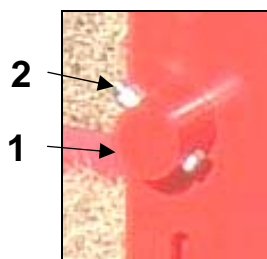
**Pallet Fork Attachment -- Skid Steer type --- Maximum load on forks is 1200# (24" forward of front side of attachment frame)**

## 16.1. SKID STEER PALLET FORK

16.1.1. The Skid Steer Pallet Fork has two tines each 1-1/4" x 4" x 42".

## 16.2. ASSEMBLY INSTRUCTIONS

16.2.1. Install (3) pallet fork tines to (4) pallet fork frame using (1) pins, 2 places secure using (2) 3/8" x 2-1/2" bolts, lockwashers, and nuts, 4 places.



## 16.3. INSTALLATION INSTRUCTIONS TO SKID STEER TOOL CARRIER

**IMPORTANT:** Refer to Pages 61 to 63 for instructions concerning Installing Attachment to Skid Steer Tool Carrier.

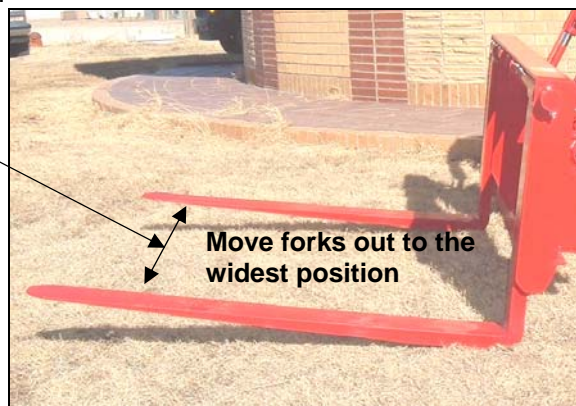
**IMPORTANT:** Refer to Page 64 for instructions concerning Removing Attachment from Skid Steer Tool Carrier.

## 16.4. OPERATING INSTRUCTIONS

16.4.1. The operator must keep the load centered and as far back on the forks as possible. Operator must always keep load level. Carry the load low and at a slow speed.

## 16.5. PARKING INSTRUCTIONS

16.5.1. If parking Pallet Fork from loader with pallet fork attachment, move forks outward to widest position to improve stability of parked attachment.



**CAUTION:** Never park loader with Bale Spear or Pallet Fork attached to loader. Failure to follow these instructions could cause instability of parked loader causing personal injury or property damage.

## 17. OPTIONAL BALLAST BOX

Category 1 ballast boxes listed below are available from your authorized Mahindra dealer.

Category 1 3-point hitch 7.0 cubic feet capacity.

Category 1 3-point hitch 5.0 cubic feet capacity.



Refer to section 3.1.4. Recommended Rear Tractor Ballast in front of this manual for correct ballast for your tractor/loader combination.

## 18. LEAK DOWN INSPECTION

**IMPORTANT NOTE:** Following leakage test should only be done by a qualified mechanic.

### 18.1. FRONT END LOADER FIELD LEAK DOWN INSPECTION AND TEST



**CAUTION:** Do not stand, walk, or work under a raised loader tilt or attachment unless it is securely blocked and held in position.



**CAUTION:** Escaping hydraulic fluid 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.



**CAUTION:** Visually check for hydraulic leaks and broken, missing, or malfunctioning parts. Never use your hand to check for suspected leaks under pressure. Use a piece of cardboard or wood for this purpose. Escaping hydraulic fluid or diesel fuel leaking under pressure can have sufficient force to penetrate the skin and cause serious infection or other personal injury. If injured by leaking fluid, seek medical attention immediately.



**CAUTION:** To prevent personal injury, relieve all pressure before disconnecting fluid lines.



**CAUTION:** Before applying hydraulic pressure, make sure all hydraulic connections are tight and components are in good condition.



**CAUTION:** Be sure to purge all the air from the hydraulic system before attempting to raise or lower this machine.

18.1.1. Make sure all fittings are tight and not leaking. Make sure that there is no external leakage from the valve, fittings or cylinders. If leakage exist repair before doing any of the following test.

18.1.2. Make sure that there is adequate hydraulic fluid in the reservoir.

18.1.3. Install pressure gauge in the circuit you are testing. If testing Lift cylinder leak down install pressure gauge in base and rod end circuit of lift cylinder between the loader valve and the lift cylinder. If testing the tilt cylinder leak down install pressure gauge in rod end circuit of the tilt cylinder between the loader valve and the cylinder.

18.1.4. Photo shows typical pressure gauge setup. Connect 5000 psi min. pressure gauge between loader valve and cylinder circuit you are checking.

18.1.5. Either quick couple or solid mount the pressure gauge in the circuit you are testing. Make sure there are no hydraulic line leaks in system before testing your loader

18.1.6. Cycle or operate the hydraulic system till the control valve is warm to the touch.





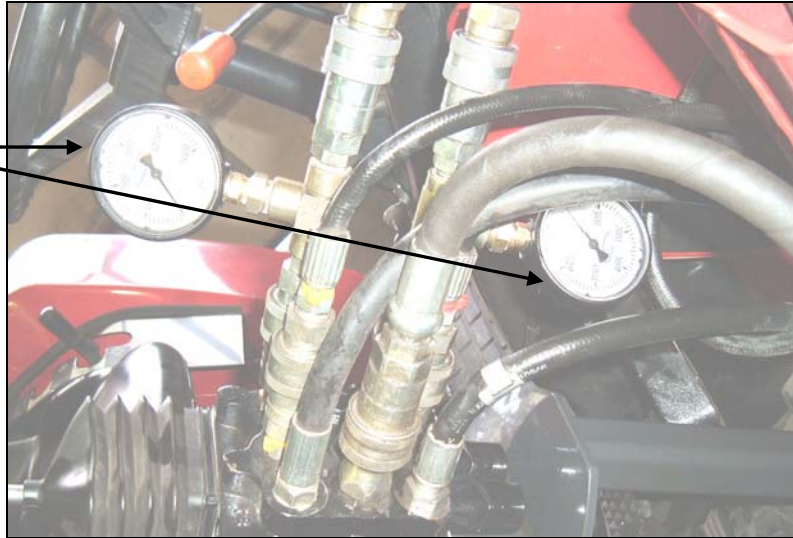
**IMPORTANT: Always check leakage of lift cylinder seals before you test lift circuit loader valve spool leakage.**

## 18.2. LEAKAGE TEST FOR LIFT CYLINDER SEALS (Open Center Systems)

NOTE: Clean all parts thoroughly before disassembling any fittings. Cycle or operate the hydraulic system till the control valve is warm to the touch.

18.2.1. Install pressure gauges in the lift cylinder rod and base end circuit.

Install pressure gauge in the base and rod end of Lift cylinder



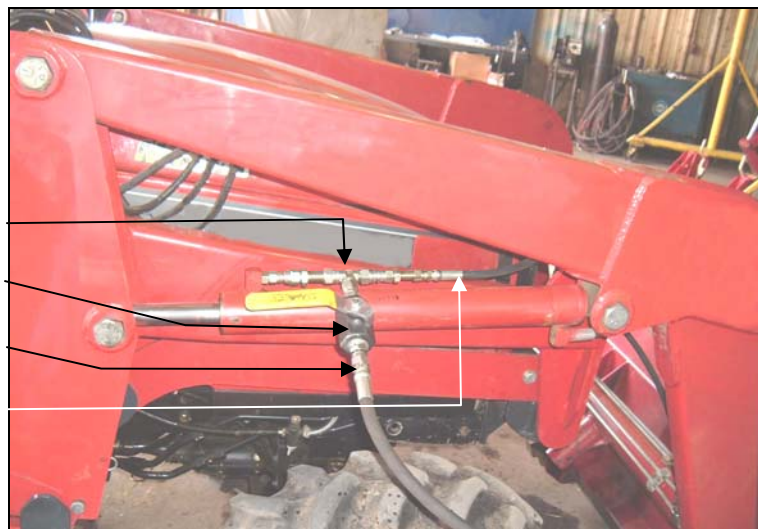
18.2.2. With no load in bucket raise loader to full height and then hold pressure on unit for a few seconds. Read Base end pressure it should equal tractor hydraulic system pressure. Leave unit raised for a 5 to 10 minutes and then read rod end pressure. Rod end pressure should read zero. If pressure starts to increase in rod end and or base end of cylinder. Lower loader and repair or replace damaged lift cylinder. If rod end pressure does not increase no cylinder repair is required. This test can also be done with some load in bucket and with the loader only raised slightly off of ground. This will increase the pressure in the cylinder and check the seals at a higher pressure.

**NOTE: Make sure that the pressure in the rod end circuit is zero or very low when starting this test.**

## OPTIONAL WAY TO CHECK LIFT CYLINDER SEAL LEAKAGE ON OPEN CENTER SYSTEMS. (FOLLOW THESE INSTRUCTIONS IF CHECKING A CLOSED CENTER OR LOAD SENSE SYSTEM)

18.2.3. Remove lift cylinder rod end hose. Install tee fitting with a high pressure ball valve and drain hose assembled to the rod end of the lift cylinder circuit. Insert end of drain hose into a drain pan.

Tee Fitting  
High Pressure Ball Valve  
Drain Hose  
Lift Cylinder Rod End Hose



**High Pressure Ball Valve and fittings installed on a loader.**

Lift Cylinder Rod End Hose

Tee Fitting

High Pressure Ball Valve

Drain Hose



18.2.4. Install a pressure gauge in the lift circuit base end.

18.2.5. With high pressure ball valve in off position, place a load in the bucket and raise loader to some height. The load in the bucket and the lift height should be such that it induces a target reference pressure of 1500 psi in the cylinders.

18.2.6. Disconnect rod end lift cylinder circuit from loader valve by disconnecting quick coupler. If quick coupler does not exist install one in line before proceeding with this test.

18.2.7. **Slowly** open high pressure ball valve directing drain hose to drain pan.

Note: If oil flows out of drain hose and loader lowers, cylinders will need to be repaired or replaced.

Note: If no flow is seen, no repair of lift cylinder is required.

18.2.8. Reconnect rod end of lift cylinder circuit by reconnecting quick coupler.

18.2.9. Lower loader to ground. Relieve pressure and remove high pressure ball valve and tee fitting. Re-connect loader hose and fitting.



Base end  
Of lift  
cylinder.

Rod end  
of lift  
cylinder.

**IMPORTANT: Always check leakage of lift cylinder seals before you test lift circuit loader valve spool leakage.**

### 18.3. LEAKAGE TEST FOR LIFT CIRCUIT LOADER VALVE SPOOL

**NOTE: Clean all parts thoroughly before disassembling any fittings. Cycle or operate the hydraulic system till the control valve is warm to the touch.**

18.3.1. Install a pressure gauge in the lift circuit base end.

18.3.2. Cycle the lift cylinders to full extend and then full retract a minimum of 5 times to expel any air in the system. The cylinders should be cycled with the engine near maximum rpm. The bucket should not be loaded during cycling.

18.3.3. Place a load in the bucket and raise to some height. The load in the bucket and the lift height should be such that it induces a target pressure of 1000 psi in the lift cylinder base end circuit.

18.3.4. Disconnect rod end lift cylinder circuit from loader valve by disconnecting quick coupler. If quick coupler does not exist install one in line before proceeding with this test.

18.3.5. Use a permanent marker and mark a line on the cylinder rod 3 inches away from the tube end of the cylinder. (See photo on following page)

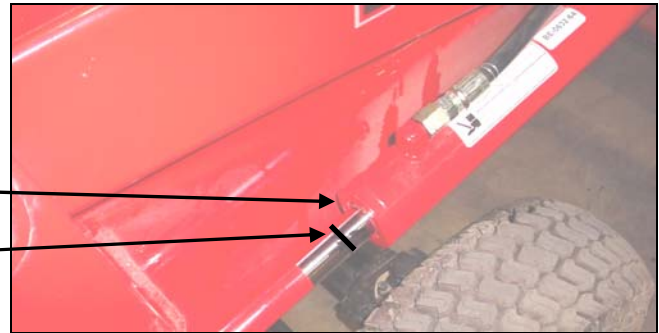
18.3.6. After a 10 minute period of time measure the distance between the line and the end of the cylinder and subtract the distance from 3 inches to determine how much the cylinder has retracted.

18.3.7. Refer to Leak down Rate chart in these instructions for the acceptable leak down rate for your specific cylinder sizes.

**Step A: Mark cylinder rod with a permanent marker 3" from cylinder end.**

**Step B: Then measure the distance between end of cylinder and mark after a 10 minute period of time.**

Rod End of Lift Cylinder  
Initial Mark on Lift Cylinder Rod  
3" from end of cylinder



### 18.4. LEAKAGE TEST FOR TILT OR BUCKET CYLINDER, SEALS

**NOTE: Clean all parts thoroughly before disassembling any fittings. Cycle or operate the hydraulic system till the control valve is warm to the touch.**

18.4.1. Install a pressure gauge in the tilt circuit rod end.

18.4.2. Cycle the tilt cylinders to full extend and then full retract a minimum of 5 times to expel any air in the system. The cylinders should be cycled with the engine near maximum rpm. The bucket should not be loaded during cycling. Use regen function of valve (If equipped) when expelling air from the tilt circuit.

18.4.3. Lower the loader to the ground, relieve hydraulic pressure and disconnect rod end tilt cylinder circuit from loader valve by disconnecting quick coupler. If quick coupler does not exist install one in line before proceeding with this test.

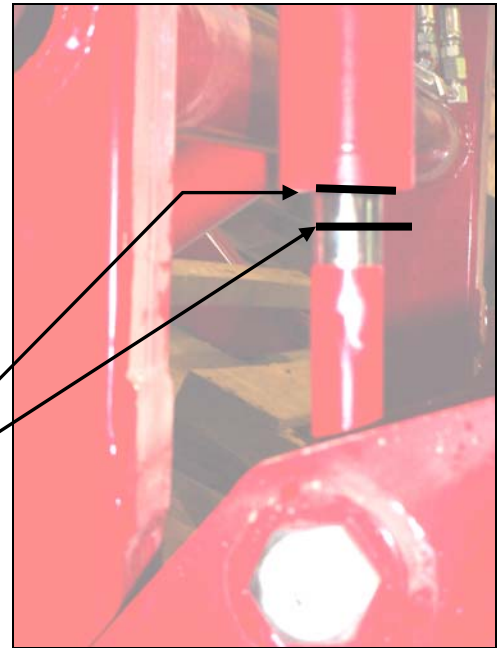
18.4.4. Place a load in the bucket and raise the boom slightly off the ground. The load should be such that it induces a target reference pressure between 1000 to 1500 psi in the cylinders refer to pressure gauge previously installed.

18.4.5. Place a mark using a permanent marker on the cylinder rod at the end of the cylinder.

**NOTE: Never mark the cylinder until the weight has been applied to the loader and your pressure gauge reads 1000 to 1500 psi.**

Measure from end of cylinder  
after 10 minutes

Initial Mark on Tilt Cylinder Rod



18.4.6. After a 10 minute period of time measure the distance from the end of cylinder to the mark.

18.4.7. If this distance has increased then some internal leakage is present. If excessive leakage is found cylinder will need to be replaced or repaired.

18.4.8. Lower the loader and bucket to the ground, and re-connect the rod end hose.

## 18.5. TILT OR BUCKET CYLINDER VALVE SPOOL LEAKAGE

**NOTE:** Clean all parts thoroughly before disassembling any fittings. Cycle or operate the hydraulic system till the control valve is warm to the touch.

18.5.1. Install a pressure gauge in the tilt circuit rod end

18.5.2. Cycle the tilt cylinders to full extend and then full retract a minimum of 5 times to expel any air in the system. The cylinders should be cycled with the engine near maximum rpm. The bucket should not be loaded during cycling. Use regen function of valve (if your loader is equipped with it) when expelling air from the tilt circuit.

18.5.3. With the bucket lip approximately level and on the ground, place a load in the bucket and raise the boom slightly off the ground. The load should be such that it induces a pressure of 1000 psi in the cylinder rod end. Refer to pressure gauge previously installed. Place a mark using permanent marker on the cylinder rod at the end of the cylinder after load has been applied. (Refer to previous page photo.) After a 10 minute period of time measure the distance from the cylinder end to the mark to determine how much the cylinder has extended. Then refer to Leak down Rate Chart in these instructions for the acceptable leak down rate for your specific cylinder sizes.

18.5.4. If valve leak down rate is found to be more than allowable rate contact factory before returning valve.

**IMPORTANT: These tests must be done very accurately to make sure the results are accurate. Any valve that is returned and not found to exceed the manufacture's allowable leakage rate will not be covered under warranty.**

**IMPORTANT: Contamination in hydraulic system will cause damage to the loader valve which will increase valve spool leakage rates. If a returned valve is found to be damaged because of contamination it will not be covered under warranty. Keep your hydraulic system maintained at all times and make sure you clean all fittings and etc. when disconnecting or connecting hydraulic fittings.**

## 18.6. ACCEPTABLE LIFT CYLINDER LEAK DOWN RATES

**IMPORTANT:** Always double check your cylinder size to make sure it matches the information below.

18.6.1. Following are the allowable leak down rates specific to your loader **lift cylinder** sizes. If your loader is equipped with a load sense system acceptable leakage rates can be 30% higher than shown in this chart.

Lift Cylinder Bore Size	Lift Cylinder Outside Diameter	Leak Down Rate per 10 minutes	Loader Model Numbers
1-1/2"	1-7/8"	1.72"	ML102
1-3/4"	2-1/8"	1.27"	ML25, ML104, ML105, ML106, ML108, ML108H
2"	2-3/8"	.97"	ML110, ML111, ML112, ML114, ML120
2-1/4"	2-5/8"	.76"	KL1470, KL1470S
2-1/2"	2-7/8"	.62"	ML230, ML260, KL1590, KL1590S
2-3/4"	3-1/8"	.51"	ML245, ML255
3"	3-3/8"	.43"	ML170, ML264, ML265, ML270, ML275, KL1730, 1440
3-1/4"	3-5/8"	.37"	1660
3-1/2"	3-7/8"	.32"	1750, 1760, 1860

## 18.7. ACCEPTABLE TILT OR BUCKET CYLINDER LEAK DOWN RATES

**IMPORTANT:** Always double check your cylinder size to make sure it matches the information below.

18.7.1. Following are the allowable leak down rates specific to your **tilt cylinder** sizes. If your loader is equipped with a load sense system leakage rate can be 30% higher than shown in this chart.

Tilt Cylinder Bore Size	Tilt Cylinder Outside Diameter	Tilt Cylinder Rod Diameter	Leak Down Rate per 10 minutes	Loader Model Numbers
1-1/2"	1-7/8"	1"	3.13"	ML102
1-3/4"	2-1/8"	1"	1.9"	ML25, ML104, ML105, ML106, ML108, ML108H, ML110, ML111
2"	2-3/8"	1-1/4"	1.6"	ML112, ML114, ML120, ML230, ML260, KL1470
2-1/4"	2-5/8"	1-1/4"	1.11"	ML245, KL1470S, KL1590, KL1595
2-1/2"	2-7/8"	1-1/4"	.83	ML264, KL1595S, KL1730
2-1/2"	2-7/8"	1-3/8"	.88	1440
2-1/2"	2-7/8"	1-1/2"	.97"	ML170, ML255, ML265, ML270, ML275
2-3/4"	3-1/8"	1-1/2"	.73"	1660, 1760
3"	3-3/8"	1-3/4"	.65"	1750
3-1/4"	3-5/8"	1-3/4"	.51"	1860

# 19. TROUBLE SHOOTING PROCEDURES

This Trouble Shooting Chart is provided for reference to possible loader operational problems.

Determine the problem that best describes the operational problem being experienced and eliminate the possible causes as listed by following the correction procedures.

For further assistance contact your dealer.

PROBLEM	POSSIBLE CAUSE	CORRECTION
<b>Lift and Tilt Cylinders inoperative</b>	Low hydraulic fluid level.	Check and replenish hydraulic fluid.
	Hydraulic hoses connected improperly.	Check and correct hydraulic hose connections
	Hydraulic Hoses to/from loader valve blocked.	Check for damaged (kinked) hoses, etc.
	Loader valve or tractor main relief valve stuck open.	Check system pressure. Repair or replace relief valve.
	Low system pressure supplied from hydraulic pump.	Check system pressure. Repair or replace pump.
	Loader valve linkage broken.	Inspect. Repair as required.
	Quick disconnect coupler(s) are not fully connected.	Check coupler connections. Replace coupler(s) if necessary.
	Hydraulic hose or tubeline blockage.	Check all hoses and tubes for leaks, damage, or restrictions. Replace damaged or restricted hoses or tube lines.
<b>Lift and/or tilt cylinders operate in wrong direction relative to valve handle position</b>	Cylinder piston assembly defective (not sealing).	Check cylinders for internal leakage as described in service section under cylinder leakage tests.
	Loader valve blockage.	Inspect for blockage. Disassemble valve if necessary.
<b>Attachment will dump but will not rollback</b>	Hydraulic hoses connected incorrectly.	Correct hydraulic hose connections.
<b>Slow or erratic lift</b>	Hydraulic circuit connected incorrectly.	Refer to plumbing diagram on Page 29 and correct hose connections.
	Low hydraulic fluid level.	Check and replenish hydraulic fluid.
	Cold hydraulic fluid.	Allow hydraulic system to warm up to operating temperature.
	Engine R.P.M. too slow (hydraulic pump R.P.M. too slow).	Increase engine speed to obtain satisfactory loader operation.
	Excessive weight in bucket. Material weight exceeds maximum specified loader capacity.	Reduce material load.
	Loader valve linkage binding/defective.	Check loader valve linkage and repair if worn/defective.
	Aeration of hydraulic fluid	Refer to "Aeration of Hydraulic Fluid".

<b>PROBLEM</b>	<b>POSSIBLE CAUSE</b>	<b>CORRECTION</b>
<b>Inadequate lifting capacity</b>	Quick disconnect coupler restriction or coupler.	Check coupler connections. Repair or replace.
	Hydraulic hose or tubeline restriction (hoses/tubeline kinked or pinched).	Check hoses and tubelines for evidence of restriction.
	Lift cylinder piston assembly leakage.	Check cylinders for leakage. Repair as needed.
	Relief valve erratic or set below specifications.	Check and reset relief valve setting as needed.
	Loader valve leaking internally. (Bypassing fluid within valve.)	Replace loader valve and recheck operation.
	Inadequate hydraulic pump capacity.	Refer to "Hydraulic Pump Capacity Inadequate".
	Engine R.P.M. too slow.	Increase engine R.P.M.
	Excessive load – material weight exceeds specified loader capacity.	Reduce Load. Maximum load limit on Bale Spear and Pallet Fork is 500 lbs.
	Relief valve setting below specifications.	Check and reset relief valve setting as needed.
	Lift cylinder piston assembly leakage.	Check cylinders for leakage. Repair as needed.
<b>Aeration of Hydraulic Fluid (generally indicated by foamy appearance of fluid).</b>	Loader valve leaking internally.	Replace loader valve and recheck operation.
	Hydraulic pump defective.	Refer to "Hydraulic Pump Capacity Inadequate".
	Low hydraulic fluid level.	Check and refill hydraulic system to proper level.
	Air leaking into suction side of hydraulic pump.	Check for loose or defective connections between reservoir and hydraulic pump.
<b>System relief valve squeals.</b>	Hydraulic fluid foaming due to improper hydraulic oil usage.	Refer to Tractor Operator's Manual and replace hydraulic oil using recommended hydraulic oil.
	Cold Hydraulic Fluid.	Allow hydraulic fluid to warm up to operating temperature.
	Excessive load in bucket. Weight exceeds specified loader capacity.	Reduce load.
	Relief valve setting below specifications.	Check and reset valve setting as needed.
	Hydraulic hose, tubeline, or quick disconnect coupler restriction.	Check for evidence of restriction in hydraulic oil flow. Repair or replace defective components.

<b>PROBLEM</b>	<b>POSSIBLE CAUSE</b>	<b>CORRECTION</b>
<b>Loader drops with loader valve spool in "Centered" position (no external oil leakage evident.)</b>	Cylinder Piston assembly leakage.	Check cylinders for leakage.
	Loader valve internal leakage. Note: A gradual drop over an extended period of time is a normal condition.	Replace loader valve and recheck.
<b>Loader valve spool(s) will not return to centered position.</b>	Valve handle linkage binding.	Determine origin of binding and repair.
	Loader valve spool centering is broken.	Replace centering spring.
	Loader valve spool binding in valve body spool bore.	Disassemble valve for inspection and repair.
<b>Loader bucket moves freely after dumping load</b>	Tilt cylinder cavitation has occurred.	Use of regen function while dumping load will eliminate problem. Refer to Page 36.
<b>External hydraulic fluid leakage.</b>	Loose hydraulic connection.	Tighten loose connections.
	Defective hydraulic hose, tubeline, adapter fitting or adapter fitting o-ring.	Check for origin of oil leak and replace defective part.
	Loader valve o-rings defective.	Replace defective o-rings.
	Loader valve spool or body damaged or worn.	Replace loader valve.
	Cylinder rod packing set leakage.	Check cylinders for leakage. Repair as needed.
<b>Hydraulic pump capacity inadequate.</b>	Cold hydraulic fluid.	Allow hydraulic fluid to warm up to operating temperature.
	Engine R.P.M. too slow.	Increase engine R.P.M.
	Low hydraulic fluid supply.	Refer to Tractor Operator's Manual for service recommendations.
	Hydraulic hose restriction.	Check for evidence of restriction in hydraulic hoses.
	Hydraulic pump defective.	Refer to Tractor Operator's manual for recommended service procedures. Replace hydraulic pump if determined to be defective.
<b>Lift cylinder rods bend when lift cylinders extended.</b>	Excessive shock load on lift cylinders during transport.	Replace defective parts. Review and observe proper and safe operational practices.
<b>Bucket cutting edge wear is uneven side to side</b>	Bucket is not level to ground.	Check rear tire inflation and adjust to level bucket to ground. Make sure ballast box is equally added to from right and left side of tractor.



<b>PROBLEM</b>	<b>POSSIBLE CAUSE</b>	<b>CORRECTION</b>
<b>Bucket cutting edge wear rate is excessive. (Wear rate is even across full width of bucket).</b>	<p>Incorrect operational practices. Excessive down pressure placed on bucket when used on hard abrasive surfaces. Bucket wear pads worn.</p> <p>Note: Extensive use of bucket on concrete or asphalt surfaces will accelerate wear rate of bucket cutting edge.</p>	<p>Refer to operation – scraping section for correct operating procedures. Utilize float position.</p> <p>Replace wear pads.</p>
<b>Loader is slow and/or will not dump.</b>	<p>Hydraulic oil too heavy.</p> <p>Oil filter plugged.</p> <p>Hydraulic pump worn.</p> <p>Oil line restricted or leaking.</p> <p>Loader valve does not shift properly.</p> <p>Cylinder leaks internally.</p> <p>Faulty valve.</p>	<p>Change to proper oil.</p> <p>Clean or replace filter.</p> <p>Repair or replace pump.</p> <p>Check all hoses and tubes for leaks, damage or restrictions. Replace damaged or restricted hoses or tube lines.</p> <p>Inspect clean, repair, or replace valve.</p> <p>Replace seals.</p> <p>Repair or replace valve.</p>
<b>Loader chatters or vibrates when raising or lowering.</b>	<p>Air in hydraulic system.</p>	<p>Cycle lift cylinders and tilt cylinders.</p>
<b>Slow leakdown.</b>	<p>Oil level too low.</p> <p>Worn loader valve.</p> <p>Worn cylinder piston seals.</p>	<p>Add oil as required.</p> <p>Have authorized Mahindra dealer replace seals.</p> <p>Have authorized Mahindra dealer replace seals.</p>
<b>Attachment will dump but will not rollback.</b>	<p>Hydraulic circuit connected incorrectly.</p>	<p>Check that Port "C" of loader valve is connected to tilt cylinder base end and that Port "D" of loader valve is connected to rod end of tilt cylinder.</p>
<b>Loader stops operating when doing 2 function operations.</b>	<p>Loader is equipped with a series valve which can cause loader operation to stop when loader and valve spool are in certain positions.</p>	<p>Review valve function information in this manual and be alert of loader and valve positions when doing 2 function operations.</p>

## 19.1. TROUBLE SHOOTING CABLES AND SINGLE LEVER CONTROLLER

PROBLEM	POSSIBLE CAUSE	CORRECTION
<b>Single handle controller will not operate all valve functions.</b>	Cable not adjusted properly.	With single lever controller handle lock disengaged, readjust cable for correct valve operation.
	Check for damage to single lever controller or cable.	Replace damaged part and readjust cables.
<b>Single lever controller hard to operate.</b>	Cables contaminated.	Remove cables. Replace or clean cables.
<b>Single Handle Controller will not operate valve correctly.</b>	Cables not connected to proper spools.	Check cable routing from valve to single handle controller.
	Single handle controller not rotated correctly.	Check location of single handle controller main pivot. If not positioned correctly disassemble and correct.

## 20. TORQUE CHART

### SAE FASTENER TORQUE CHART

**NOTE:** Use these torques, unless special torques are specified. Values are for UNC and UNF thread fasteners, plated or unplated, as received from supplier. Fasteners can be dry or lubricated with normal engine oil. Values do not apply if graphite, moly-disulphide or other extreme pressure lubricant is used.

SAE Grade No.	2				5				8*			
Bolt head identification (See Note 1)												
Bolt Size	LB FT		Nm		LB FT		Nm		LB FT		Nm	
	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.
1/4	5	6	7	8	9	11	12	15	12	15	16	20
5/16	10	12	14	16	17	20.5	23	28	24	29	33	39
3/8	20	23	27	31	35	42	48	57	45	54	61	73
7/16	30	35	41	47	54	64	73	87	70	84	95	114
1/2	45	52	61	70	80	96	109	130	110	132	149	179
9/16	65	75	88	102	110	132	149	179	160	192	217	260
5/8	95	105	129	142	150	180	203	244	220	264	298	358
3/4	150	185	203	251	270	324	366	439	380	456	515	618
7/8	160	200	217	271	400	480	542	651	600	720	814	976
1	250	300	339	406	580	696	787	944	900	1080	1220	1464
1-1/8					800	880	1085	1193	1280	1440	1736	1953
1-1/4					1120	1240	1519	1681	1820	2000	2468	2712
1-3/8					1460	1680	1980	2278	2380	2720	3227	3688
1-1/2					1940	2200	2631	2983	3160	3560	4285	4827

NOTE 1: Bolt head identification marks as per grade. Manufacturing marks will vary. \*Thick nuts must be used with Grade 8 bolts

### METRIC FASTENER (ISO) TORQUE CHART

**NOTE:** Use these torques, unless special torques are specified. Values are for course thread fasteners, plated or unplated, as received from supplier. Fasteners can be dry or lubricated with normal engine oil. Values do not apply if graphite, moly-disulphide or other extreme pressure lubricant is used.

ISO Class No.	8.8				10.9				12.9			
Bolt head identification (See Note 1)												
Bolt Size	Nm		LB FT		Nm		LB FT		Nm		LB FT	
	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.
M4	3	4	2	3	4	5	3	4	Because of the low ductility of these fasteners, the torque range is to be determined individually for each application. As a general rule, the torque ranges specified for grade 10.9 fasteners can be used satisfactorily on 12.9 fasteners.  *M14 is not a preferred size			
M5	6.5	8	5	6	9.5	11	7	8				
M6	10.5	12	8	9	15	17.5	11	13				
M8	26	31	19	23	37	43	27	32				
M10	52	61	38	45	73	87	54	64				
M12	90	107	66	79	125	150	93	112				
*M14	144	172	106	127	200	245	149	179				
M16	217	271	160	200	310	380	230	280				
M20	434	515	320	380	610	730	450	540				
M24	675	815	500	600	1050	1275	780	940				
M30	1250	1500	920	1100	2000	2400	1470	1770				
M36	2175	2600	1600	1950	3500	4200	2580	3090				

NOTE 1: Bolt head identification marks as per grade. Manufacturing marks will vary

# 21. PARTS MANUAL

## Illustrations

All parts are illustrated in "exploded views" which show the individual parts in their normal relationship to each other. Reference numbers are used in the illustrations. These numbers correspond to those in the "Reference Number" column and are followed by the quantity required and description.

## Directional Reference

Right hand (RH) and left hand (LH) sides are determined by standing at the rear of the unit and facing in the direction of forward travel.

## Parts Order

Orders must give the complete description, correct part number, the total amount required, the product model, all the necessary serial numbers, the method of shipment and the shipping address.

## 22. DECALS & MANUALS

**⚠ WARNING**

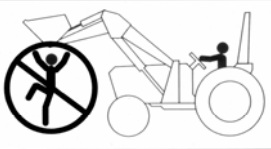
1. Add recommended rear wheel ballast and/or rear counterweight for stability.
2. Move wheels to widest recommended setting to increase stability.
3. Move and turn tractor at low speeds.
4. In transport carry the load low.
5. Lower loader to the ground when parked.
6. Before servicing or adjusting equipment;
  - \* lower loader to the ground.
  - \* shut off engine.
7. Relieve hydraulic pressure before disconnecting oil lines.
8. Observe safety recommendations in Loader Operations Manual.

0595-3000

1

3

**⚠ WARNING**



**Crushing Hazard**

Stay away from under lift arms and bucket!

1. Do not stand or work under a raised loader.
2. Support bucket and lift arms before working under loader.
3. Lower loader to the ground before leaving seat.

0595-3001

2

4

**⚠ WARNING**

1. Read the operator's manual for complete operating instructions and safety information before operating the loader.
2. Be certain anyone operating the loader is aware of safe operating practices and potential hazards.
3. Operate the loader from the operator's seat only.
4. Do not lift or carry anyone on loader or work from bucket or attachment.
5. Do not walk or work under raised loader or bucket or attachment unless it is securely supported.
6. Avoid loose fill, rocks and holes; they can be dangerous for loader operation or movement.
7. Use extra caution when working on inclines.
8. Avoid overhead powerlines or obstacles when loader is raised.

0595-3004

5

**⚠ DANGER**



Keep machine clear of overhead power lines to avoid death or serious injury.

0595-3002

**⚠ WARNING**



To prevent rollback onto operator - use special loader attachments for handling large objects such as stumps and large round bales.

Transport load as low as possible to avoid overturning.

0595-3003

**Mahindra**

6

**⚠ CAUTION**

To prevent bodily injury and loader instability when detaching loader, equip loader with a material bucket or a manure fork.

0595-2190

7

8

**⚠ WARNING**

Do not operate without confirmation that coupler pins are fully engaged. Loader attachment can fall off if not properly attached.

To avoid serious injury or death:

- Only use loader manufacturer approved attachments.
- Read all operators manuals and decals before operating. Follow all safety, operating, and service instructions. Contact dealer for replacement parts.

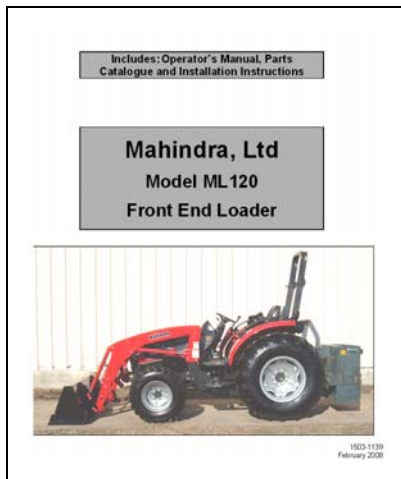
0595-3051

# DECALS & MANUALS

Reference	Description	Part No.	Qty.
1	Decal – Warning	0595-3000	1
2	Decal – Warning	0595-3001	1
3	Decal – Danger	0595-3002	1
4	Decal – Warning	0595-3003	1
5	Decal – Warning	0595-3004	1
6	Decal – Mahindra	0595-3101	2
7	Decal – Caution	0595-2190	1
8	Decal – Warning	0595-3051	1
9	Manual, Operator and Parts	1503-1139	1
10	Decal, ML120	0595-3127	2
11	Decal, Important	0595-3087	2

# ML120

10



9

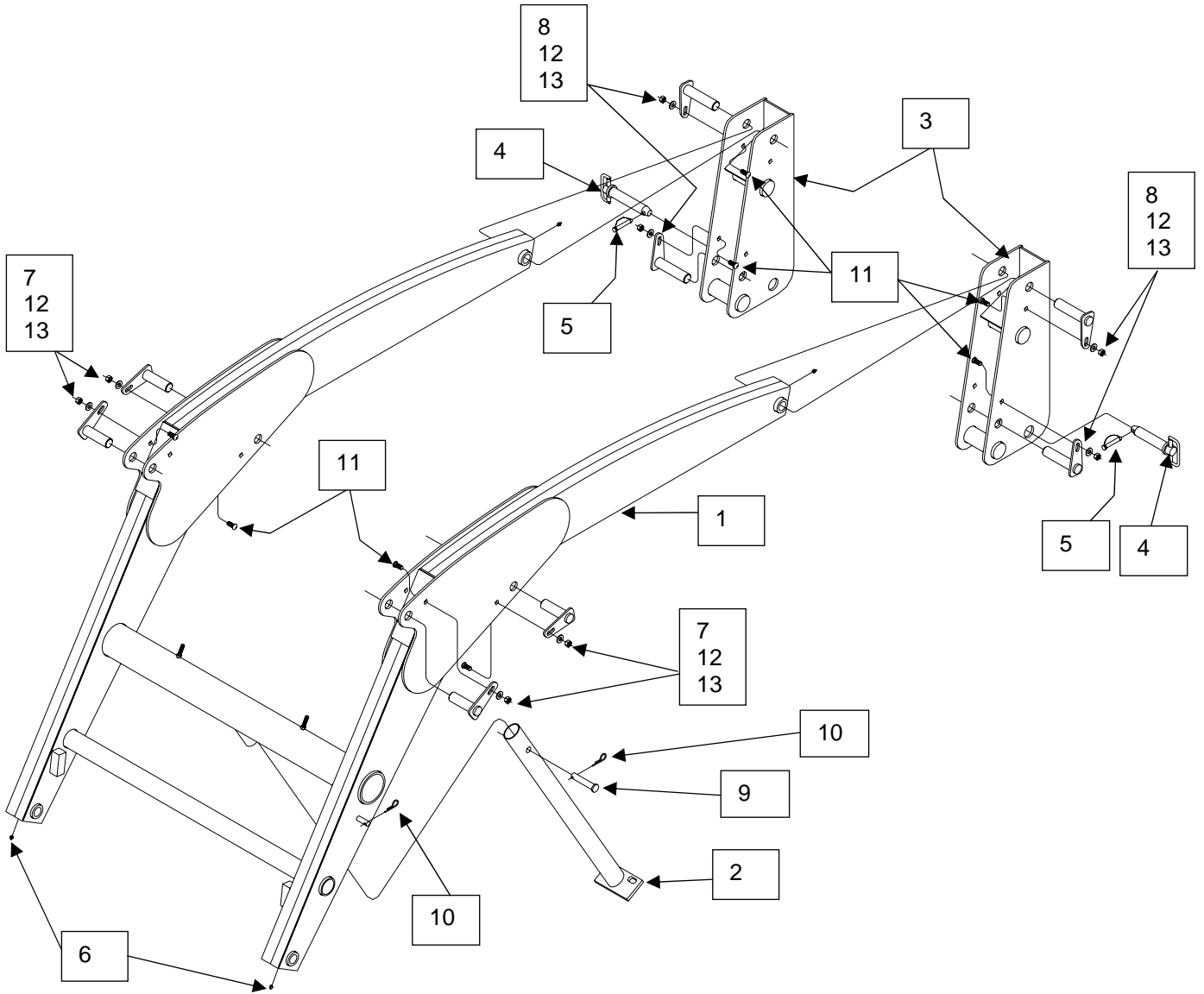
11

## IMPORTANT

To keep mounting kit hardware from loosening during loader operation, hardware must be torqued to specifications noted in operator manual.

0595-3087

# 23. BOOM ASSEMBLY



# BOOM ASSEMBLY

Reference	Description	Part No.	Qty.
1	Boom Assembly	1100-3043	1
2	Parking Leg Assembly	1104-3059	1
3	Bearing Box, LH	1002-3132	2
4	Plated Pin Assembly	0551-3029	2
5	Lynch Pin	0553-4503	2
6	Grease Fitting Straight 1/4"-28	0530-1038	4
7	Pivot Pin 1" x 3-1/4"	0550-3072	4
8	Pivot Pin 1" x 4-3/8"	0550-3071	4
9	Clevis Pin	0551-1234	1
10	Hitch Pin Clip	0553-1000	2
11	Carriage Bolt 3/8"-16 x 1.25"	0546-1137	8
12	Hardened Flatwasher 3/8"	0540-2021	8
13	Stover Hex Locknut 3/8"-16	0546-1119	8
14	Decal Warning	0595-3000	1
15	Decal Warning	0595-3001	1
16	Decal Danger	0595-3002	1
17	Decal Warning	0595-3003	1
18	Decal Warning	0595-3004	1

*Loader Decal Locations LH Bearing Box*



0595-3003  
0595-3004

*Loader Decal Locations RH Bearing Box*



0595-3001  
0595-3000

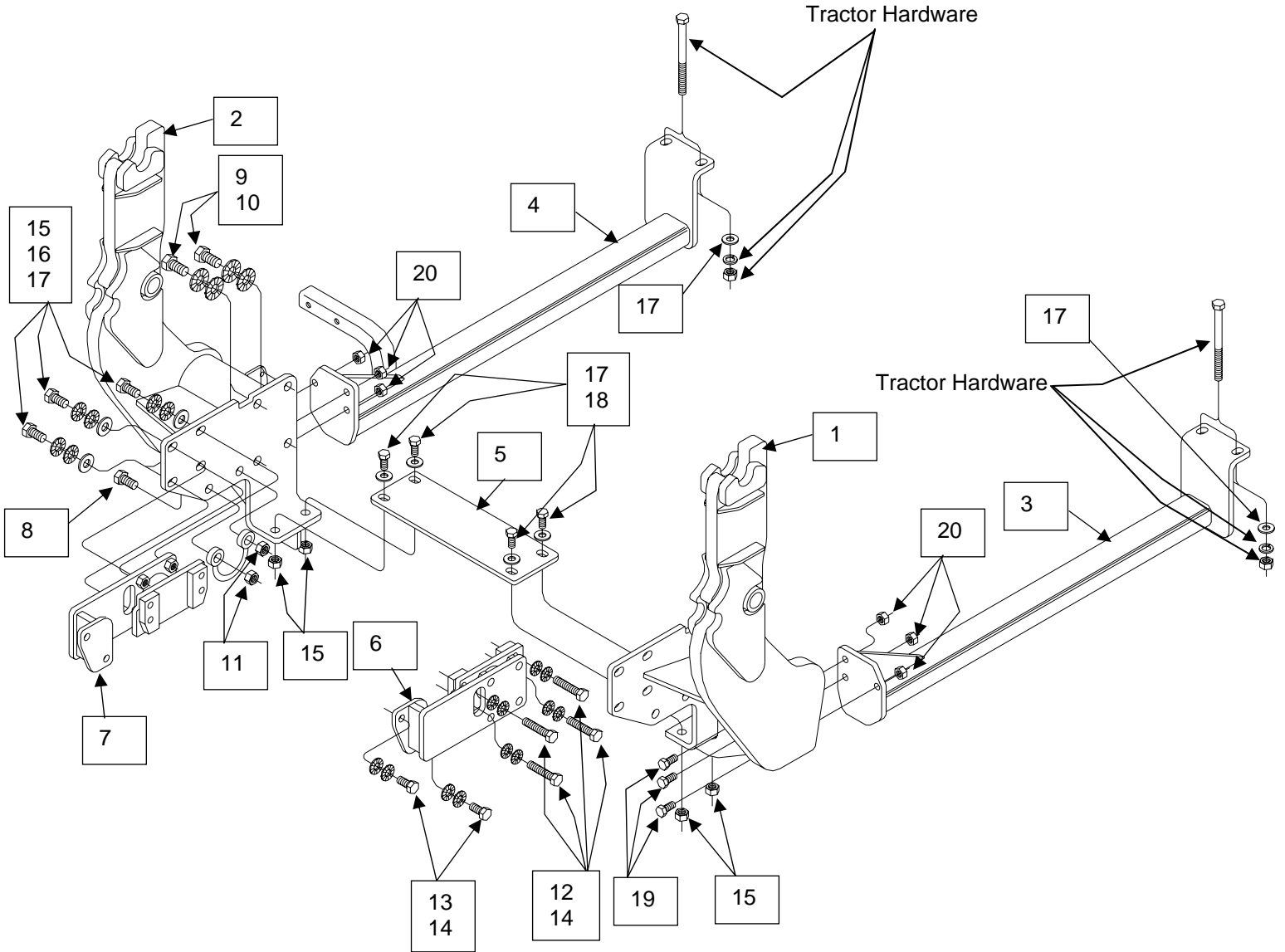
*Loader Decal Locations Loader Crosstube*



0595-3002



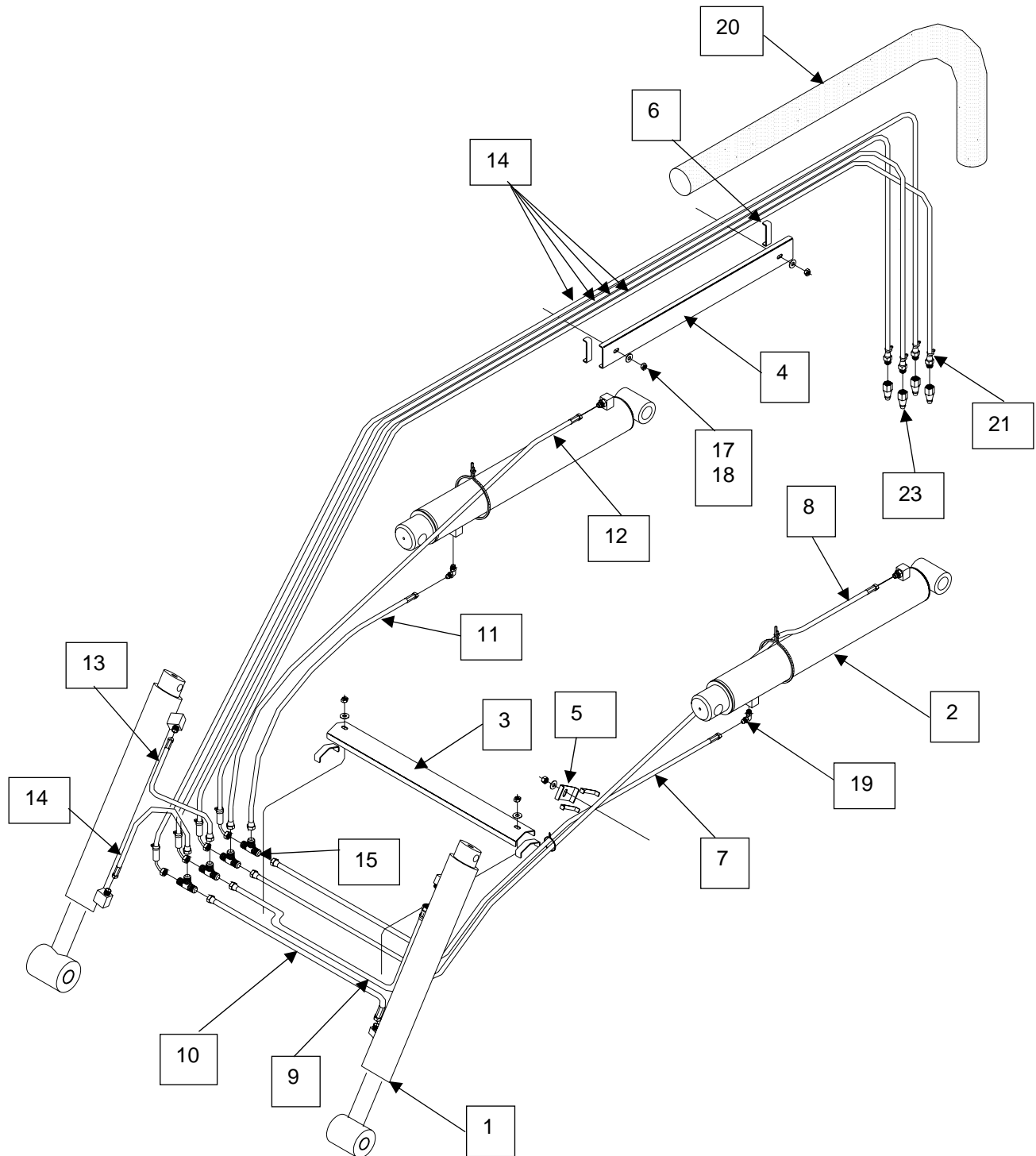
# 24. MOUNTING BRACKETS AND HARDWARE



## MOUNTING BRACKETS AND HARDWARE

Reference	Description	Part No.	Qty.
1	Center Bracket LH.....	1245-3516 .....	1
2	Center Bracket RH.....	1245-3517 .....	1
3	Rear Rail LH.....	1207-3110 .....	1
4	Rear Rail RH.....	1207-3111 .....	1
5	Cross Member.....	1209-3066 .....	1
6	Spacer Assembly LH.....	1245-3602 .....	1
7	Spacer Assembly RH.....	1245-3603 .....	1
8	Hex Head Cap Screw ¾"-10 x 2.0" Grade 8.....	0548-2230 .....	4
9	Hex Head Cap Screw ¾"-10 x 1.75" Grade 8.....	0548-2229 .....	8
10	Disc-Lock Washer ¾".....	0540-2017 .....	16
11	Stover Hex Locknut ¾"-10 .....	0546-1130 .....	4
12	Hex Head Cap Screw 14-1.50 x 65mm Grade 10.9 .....	0569-2401 .....	8
13	Hex Head Cap Screw 14-2.0 x 35mm Grade 10.9 .....	0569-2147 .....	4
14	Disc-Lock Washer 9/16".....	0540-2009 .....	24
15	Hex Head Cap Screw 5/8"-12 x 2.0" Grade 8.....	0548-2166 .....	18
16	Disc-Lock Washer 5/8".....	0540-2020 .....	16
17	Hardened Flatwasher 5/8" .....	0540-2004 .....	18
18	Stover Hex Locknut 5/8"-12 .....	0546-1134 .....	10
19	Hex Head Cap Screw ½"-13 x 2.0" Grade 5.....	0545-2108 .....	6
20	Stover Hex Locknut ½"-13 .....	0546-1122 .....	6

## 25. HYDRAULIC CYLINDERS AND HOSES

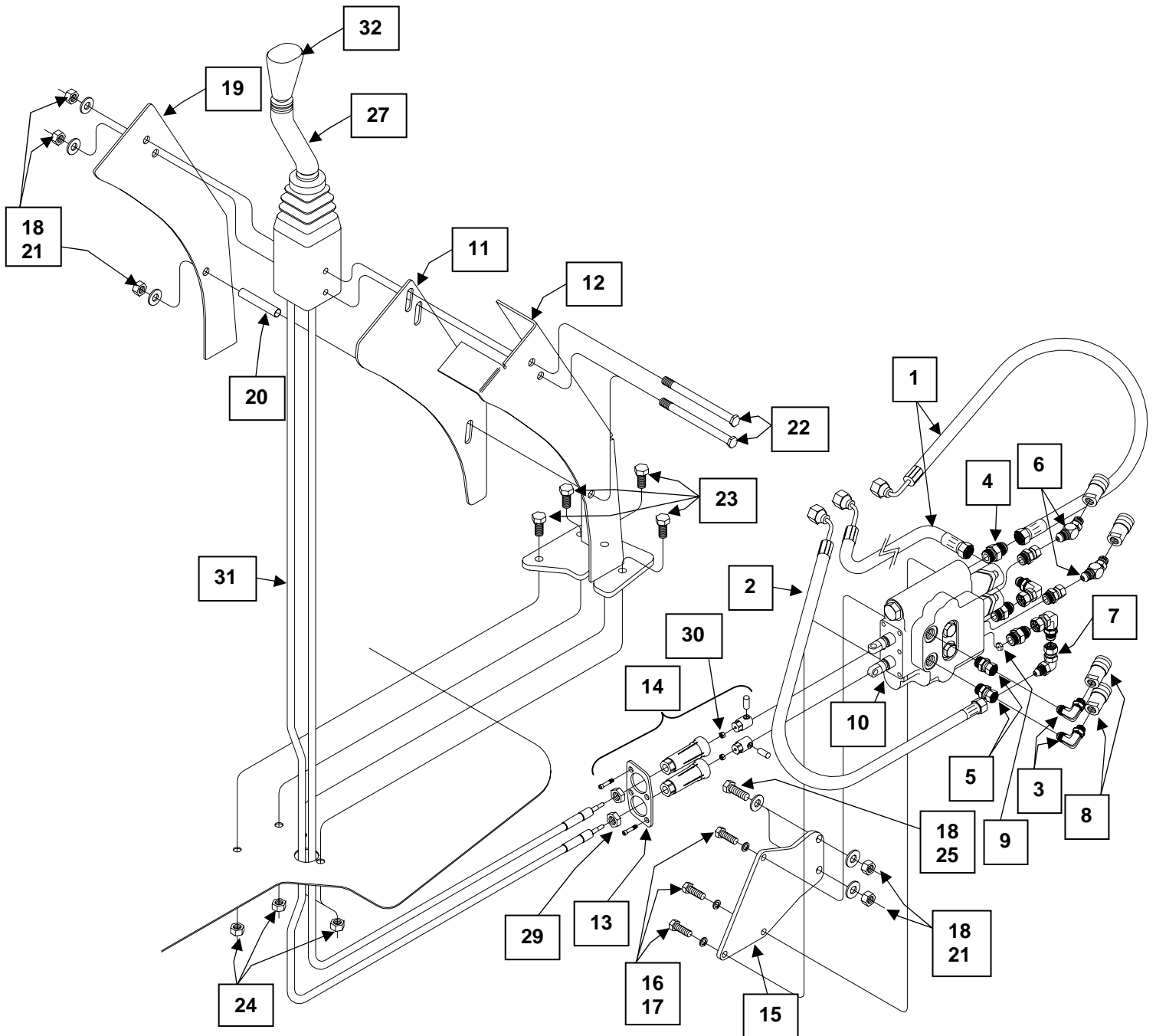


# HYDRAULIC CYLINDERS AND HOSES

Reference	Description	Part No.	Qty.
1	Cylinder, Tilt	3150-2106	2
2	Cylinder, Lift	3160-2076	2
3	Hose Cover	1212-2020	1
4	Top Hose Cover	1212-2019	1
5	Side Hose Cover	1212-2021	1
6	Sponge Rubber 3"	0554-2010	6
7	Hydraulic Hose Assembly 3/8" x 54" LHLCBE	0582-2508848054	1
8	Hydraulic Hose Assembly 3/8" x 75" LHLCRE	0582-2508848075	1
9	Hydraulic Hose Assembly 3/8" x 44" LHTCBE	0582-2508848044	1
10	Hydraulic Hose Assembly 3/8" x 46" LHTCRE	0582-2508848046	1
11	Hydraulic Hose Assembly 3/8" x 25" RHLCBE	0582-2508848025	1
12	Hydraulic Hose Assembly 3/8" x 45" RHLCRE	0582-2508848045	1
13	Hydraulic Hose Assembly 3/8" x 17" RHTCBE	0582-2508848017	1
14	Hydraulic Hose Assembly 3/8" x 22" RHTCRE	0582-2508848022	1
15	Hydraulic Hose Assembly 3/8" x 103" Tee to Quick Couplers	0582-2106888103	4
16	Fitting Tee	0586-4828-828	4
17	Flatwasher 5/16"	0543-2006	5
18	Stover Hex Nut 5/16"-18NC	0546-1121	5
19	Hydraulic Adapter	0586-3108-408	2
20	Hose Sock – 2.6" I.D. x 48"	0554-2030	1
21	Tie Strap Blue .14" x 5.5"	0554-2001	2
	Tie Strap Red .14" x 5.5"	0554-2002	2
	Tie Strap Yellow .14" x 5.5"	0554-2003	2
	Tie Strap Green .14" x 5.5"	0554-2004	2
22	Tie Strap Black 5/16" x 14"	0554-1013	4
23	Male Quick Coupler	0580-6202	4

**NOTE: See cylinder drawing for grease zerk information.**

## 26. HYDRAULIC VALVE AND HARDWARE



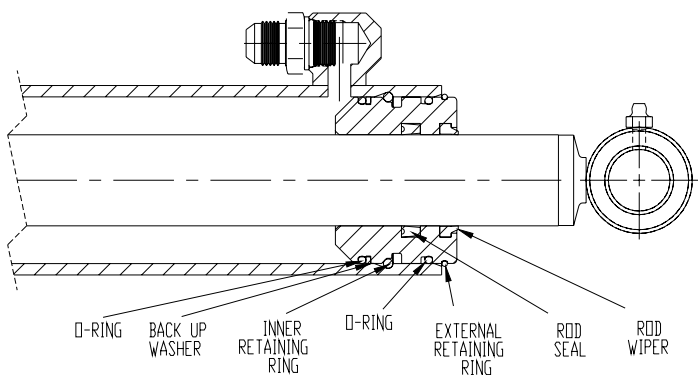
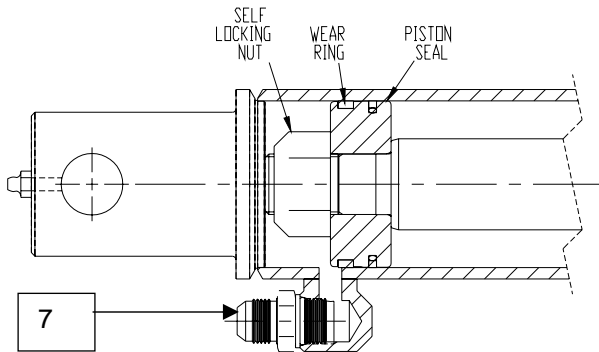
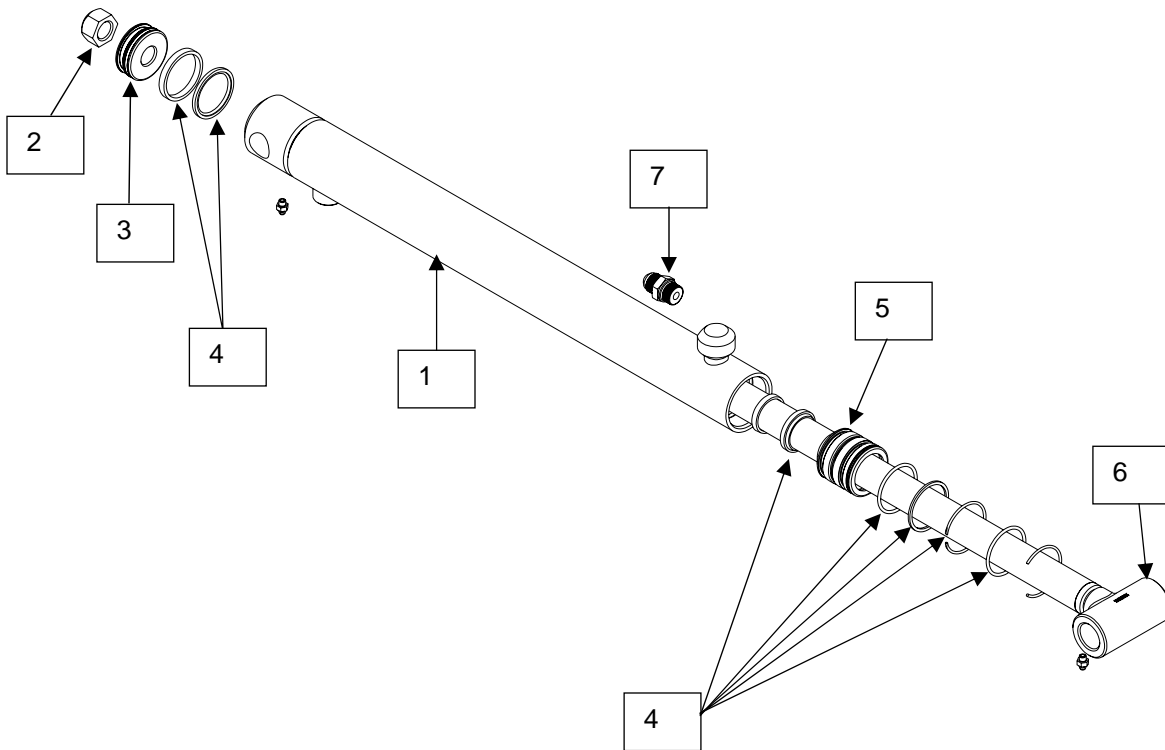
# HYDRAULIC VALVE AND HARDWARE

Reference	Description	Part No.	Qty.
1	Hydraulic Hose Assembly 3/8" x 22" 3/4" JICF x 3/4" JICF 90° "In" and "Out"	0582-2508808022	2
2	Hydraulic Hose Assembly 3/8" x 32" 3/4" JICF x 3/4" JICF 90° "PB"	0582-1508808032	1
3	Hydraulic Adapter 90° 9/16" ORBM x 9/16" JICM	0586-3106-406	2
4	Hydraulic Adapter Straight 3/4" ORBM x 3/4" JICM	0586-1108-408	3
5	Hydraulic Adapter Straight 9/16" ORBM x 9/16" JICF	0586-1106-506	4
6	Hydraulic Adapter 45° 9/16" ORBM x 9/16" JICM	0586-2106-406	2
7	Hydraulic Adapter 90° 3/4" JICF x 3/4" JICM	0586-3408-508	3
8	Quick Coupler Female	0580-6203	4
9	Orifice Plate .116" ID	0580-6307	1
10	Hydraulic Control Valve	0580-6311	1
11	Spacer Plate	1204-3160	1
12	Single handle controller Mount	1204-3147	1
13	Dual Flange	1408-3010	1
14	Cable Adapter Kit	1408-3032	1
15	Valve Mount	1204-3146	1
16	Hex Head Cap Screw 5/16"-18 x .625"	0545-2023	3
17	Lockwasher 5/16"	0544-2009	3
18	Flatwasher 5/16"	0543-2006	5
19	Cover Plate	1204-3151	1
20	Spacer	1204-3150	1
21	Stover hex Locknut 5/16"-18	0546-1121	5
22	Hex Head Cap Screw 5/16"-18 x 3.5"	0545-2036	3
23	Hex Head Cap Screw 3/8"-16 x 1.25"	0545-2052	4
24	Stover hex Locknut 3/8"-16	0546-1119	4
25	Hex Head Cap Screw 5/16"-18 x 1.25"	0545-2027	2
26	Tie Strap Blue .14" x 5.5"	0554-2001	2
	Tie Strap Red .14" x 5.5"	0554-2002	2
	Tie Strap Yellow .14" x 5.5"	0554-2003	2
	Tie Strap Green .14" x 5.5"	0554-2004	2
27	Single handle controller (Complete)	1408-3025	1
28	Tie Strap Black 5/16" x 14"	0554-1013	5
29	Jam Nut M16-1.5	0559-2016	2
30	Jam Nut M6-1	0559-2002	2
31	Control Cable 1000mm	1408-3041	2
32	Knob	1409-3170	1

# 27. LIFT CYLINDER

2.0" x 1.25" Rod x 31.25" Ret. x 50.38" Ext.

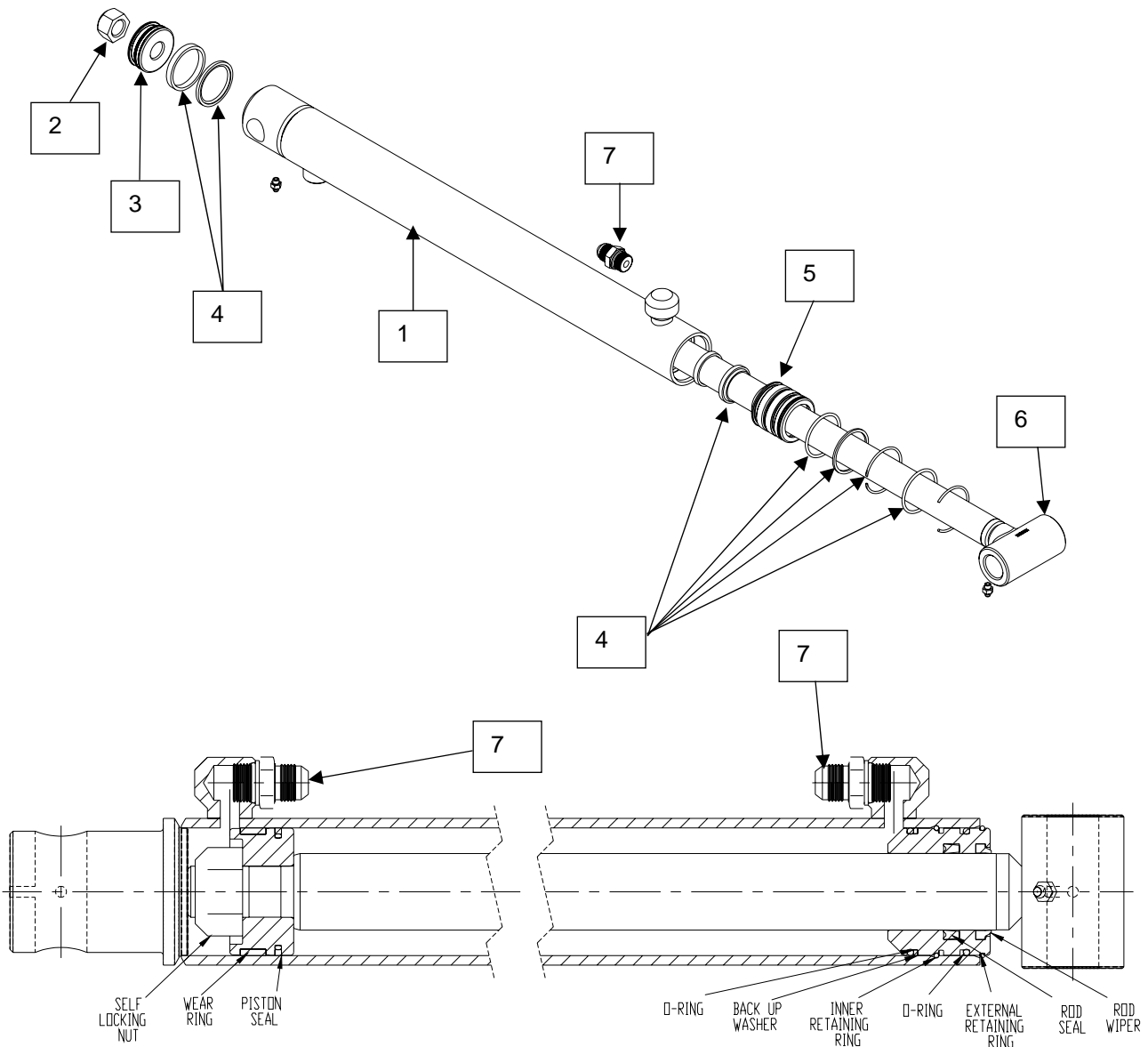
Reference	Description	Part No.	Qty.
0	Lift Cylinder (complete)	3160-2076	1
1	Tube Assembly	0100-2126	1
2	Nut	0530-2020	1
3	Piston	0405-2041	1
4	Seal Kit	0590-2082	1
5	Head	0330-2046	1
6	Rod Assembly	0200-2116	1
	Grease Fitting Straight	0530-1038	2
7	Hydraulic Adapter	0586-1108-408	2



# 28. TILT CYLINDER

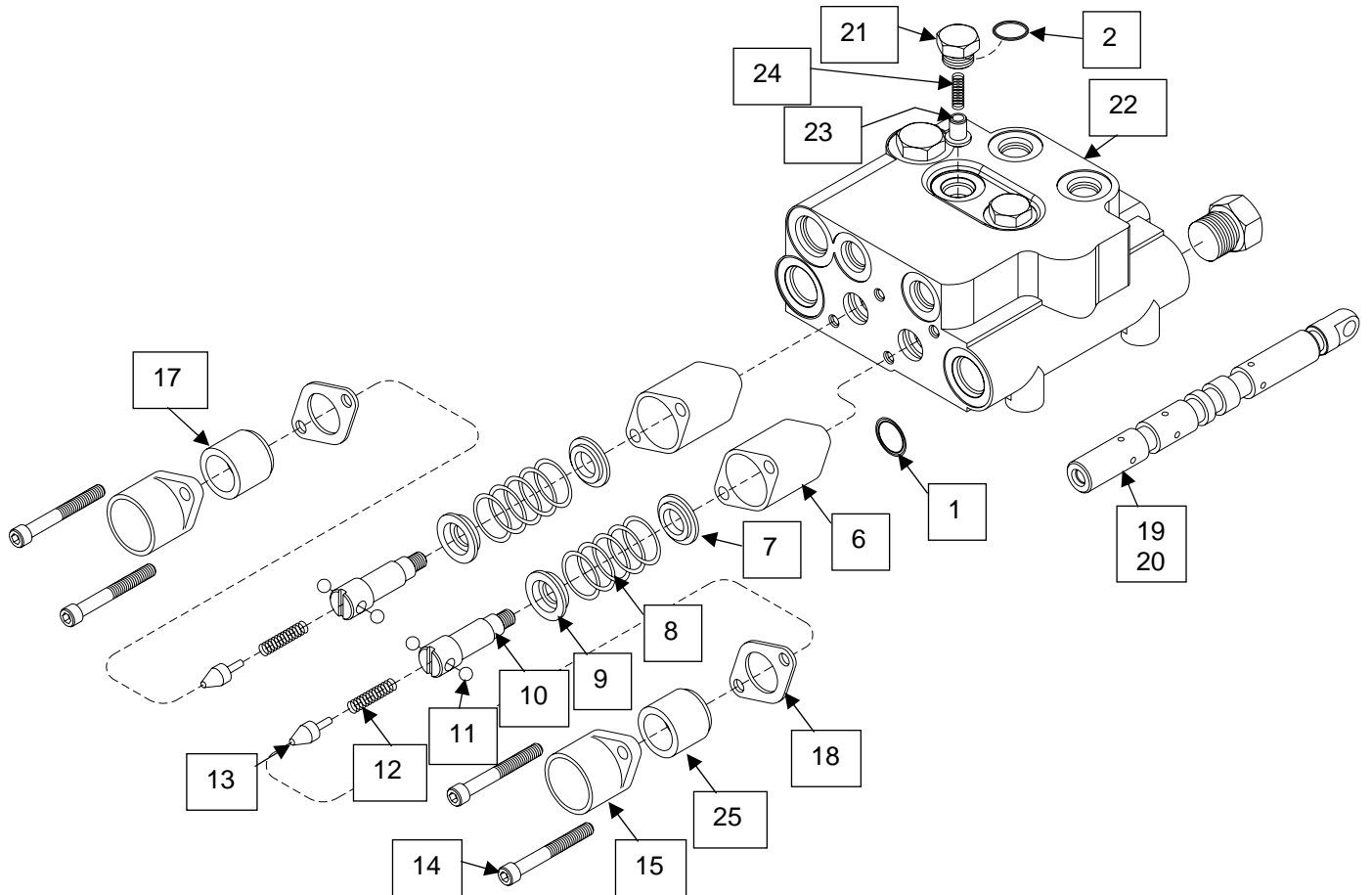
2.0" x 1.25" Rod x 27.38" Ret. x 48.07" Ext.

Reference	Description	Part No.	Qty.
0	Tilt Cylinder (complete)	3150-2106	1
1	Tube Assembly	0100-2127	1
2	Nut	0530-2020	1
3	Piston	0405-2041	1
4	Seal Kit	0590-2082	1
5	Head	0330-2045	1
6	Rod Assembly	0200-2117	1
	Grease Fitting Straight	0530-1038	2
7	Hydraulic Adapter	0586-1108-408	2





## 29. LOADER VALVE



Reference	Description	Part No.	Qty.
<b>Seal Kit Complete (contains all of the following :)</b> .....			<b>0580-6347</b> .....
1	O-Ring (Spool/Casting Seal).....	SK.....	4
2	O-Ring (Load Check Seal).....	SK.....	1
<b>Spool End Float Kit Complete (contains all of the following :)</b> .....			<b>0580-6351</b> .....
6	Spacer .....	NSS .....	1
7	Stop Cup .....	NSS .....	1
8	Spring .....	NSS .....	1
9	Washer .....	NSS .....	1
10	Detent Retainer .....	NSS .....	1
11	Steel Ball .....	NSS .....	2
12	Spring .....	NSS .....	1
13	Poppet.....	NSS .....	1
14	Cap Screw.....	NSS .....	2
15	End Cap .....	NSS .....	1
17	Float Detent Sleeve.....	NSS .....	1
18	Retainer.....	NSS .....	1

<b>Spool End Regen Kit Complete (contains all of the following :)</b> .....	<b>0580-6352</b> .....	<b>1</b>
6..... Spacer .....	NSS .....	1
7..... Stop Cup .....	NSS .....	1
8..... Spring .....	NSS .....	1
9..... Washer .....	NSS .....	1
10..... Detent Retainer .....	NSS .....	1
11..... Steel Ball .....	NSS .....	2
12..... Spring .....	NSS .....	1
13..... Poppet .....	NSS .....	1
14..... Cap Screw .....	NSS .....	2
15..... End Cap .....	NSS .....	1
25..... Regen Sleeve .....	NSS .....	1
18..... Retainer .....	NSS .....	1

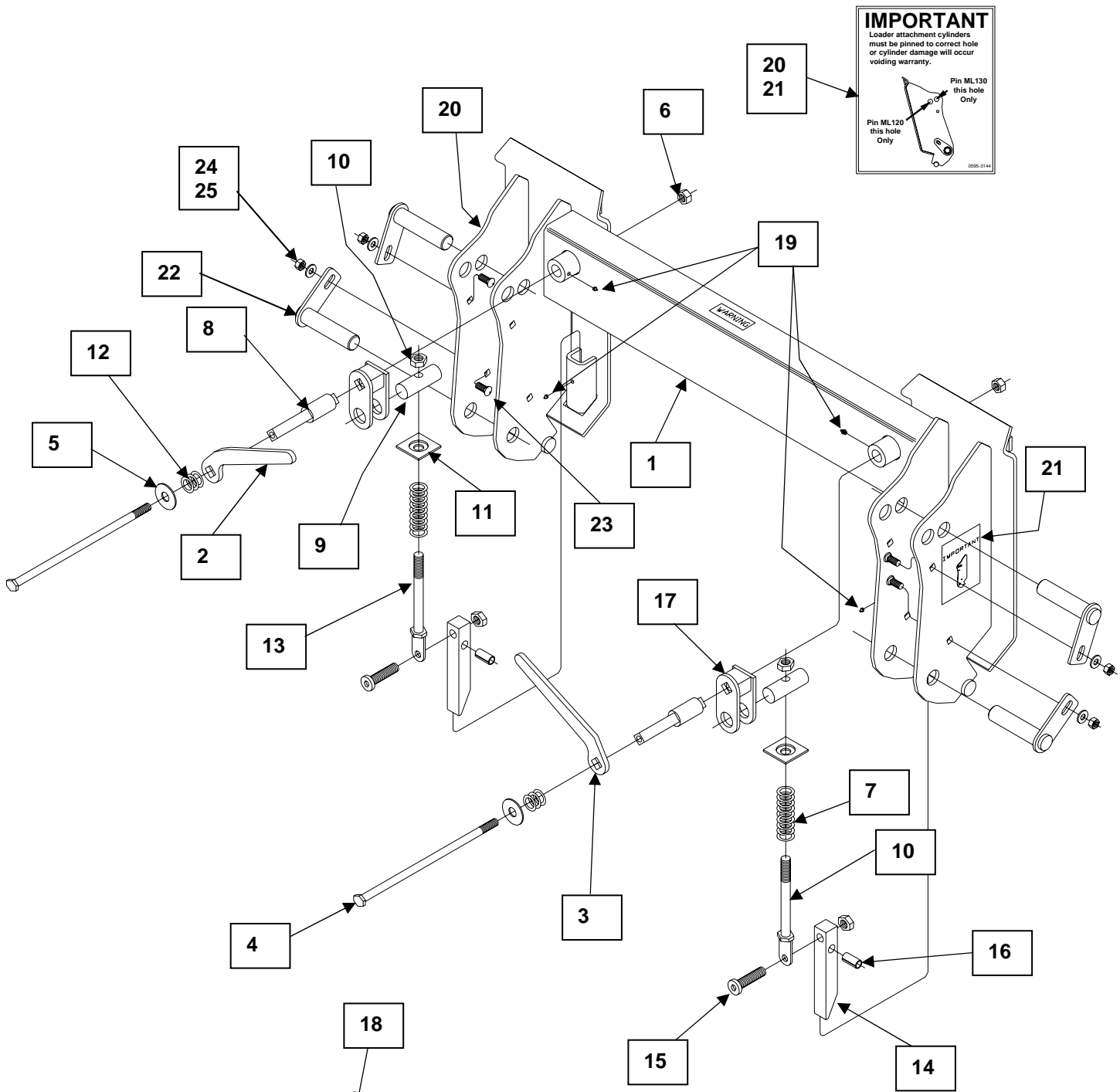
**Valve Body**

19..... Spool, Regen.....	NSS .....	1
20..... Spool, Float .....	NSS .....	1
21..... L/C Plug Assembly .....	0580-6099 .....	1
22..... Valve Body .....	NSS .....	1
23..... L/C Poppet .....	0580-6097 .....	1
24..... L/C Spring .....	0580-6098 .....	1

NSS – Not Servicable Seperately

SK -- Seal Kit

# 30. SKID STEER TOOL CARRIER ATTACHMENT



**IMPORTANT**  
 Loader attachment cylinders must be pinned to correct hole or cylinder damage will occur voiding warranty.

Pin ML130 this hole Only

Pin ML120 this hole Only

0595-3144

**WARNING**

Do not operate without confirmation that coupler pins are fully engaged. Loader attachment can fall off if not properly attached.

To avoid serious injury or death:

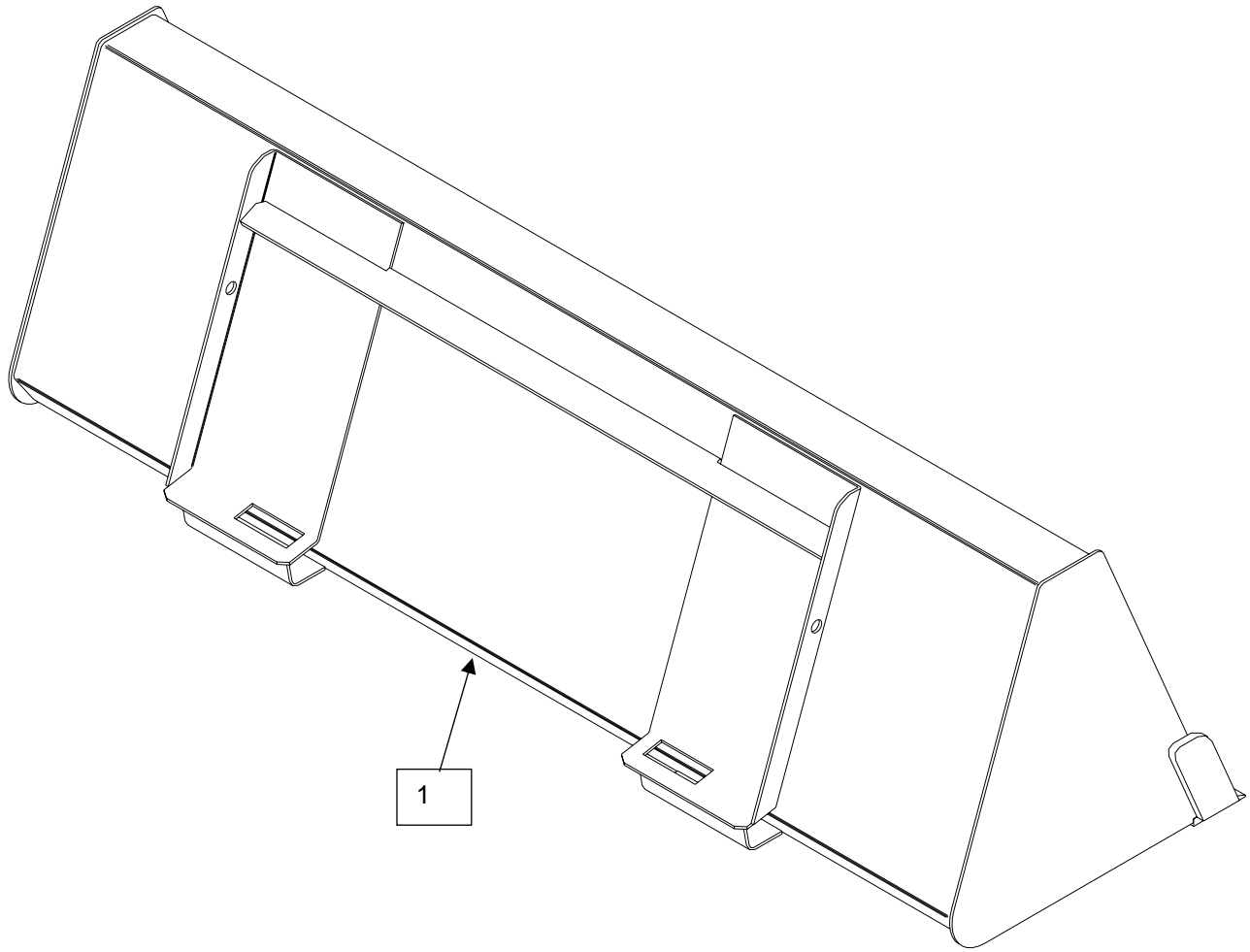
- Only use loader manufacturer approved attachments.
- Read all operators manuals and decals before operating. Follow all safety, operating, and service instructions. Contact dealer for replacement parts.

0595-3051

# SKID STEER TOOL CARRIER ATTACHMENT

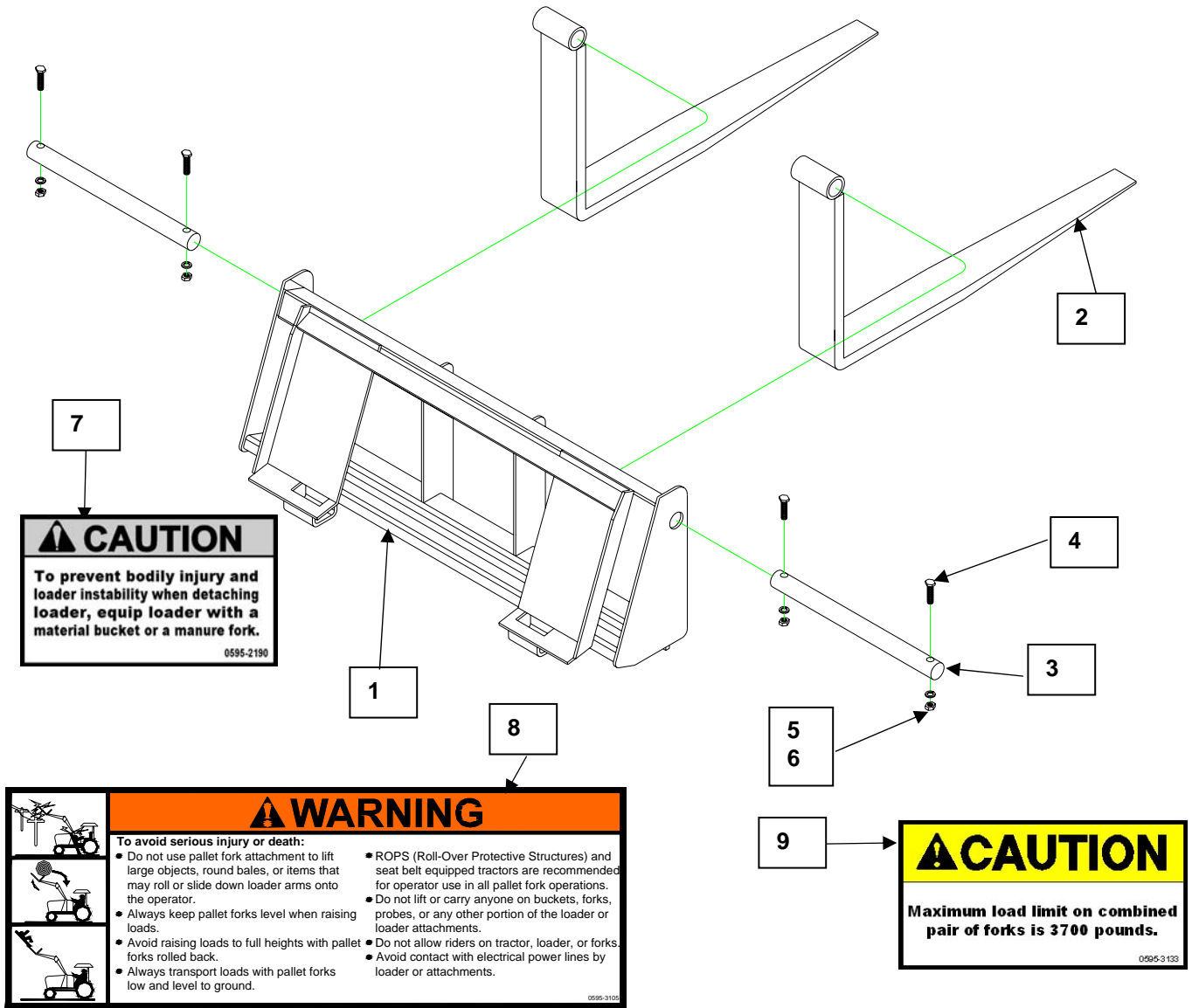
Reference	Description	Part No.	Qty.
0	Skid Steer Tool Carrier Attachment (complete)	1304-3164	1
1	Skid Steer Tool Carrier Frame	1304-3165	1
2	Handle, LH	1304-3060	1
3	Handle, RH	1304-3061	1
4	Hex Head Cap Screw 5/16"-18NC x 5-1/2"	0545-2044	2
5	Flat Washer 5/16"	0540-2001	2
6	Hex Lock Nut – Nylock 5/16"-18NC	0555-2133	2
7	Compression Spring	0565-2003	2
8	Pivot Pin	1304-3067	2
9	Pivot Pin	1304-3041	2
10	Hex Lock Nut – Dimpled 1/2"-13NC	0555-2136	4
11	Stop Assembly	1304-3045	2
12	Compression Spring	0565-2004	2
13	Rod Assembly	1304-3068	2
14	Locking Pin	1304-3066	2
15	Socket Head Shoulder Bolt 3/8"	0546-1102	2
16	Roll Pin 5/16" x 1-3/4"	0561-3277	2
17	Pivot Assembly	1304-3070	2
18	Decal Warning	0595-3051	1
19	Grease Zerk 1/4"-28	0530-1038	4
20	Decal Important, LH	0595-3144	1
21	Decal Important, RH	0595-3145	1
22	Pivot Pin 4.11"	0551-3073	4
23	Carriage Bolt 3/8"-16 x 1.25"	0546-1137	4
24	Hardened Flatwasher 3/8"	0540-2021	4
25	Stover Hex Locknut 3/8"-16	0546-1119	4

# 31. SKID STEER BUCKET



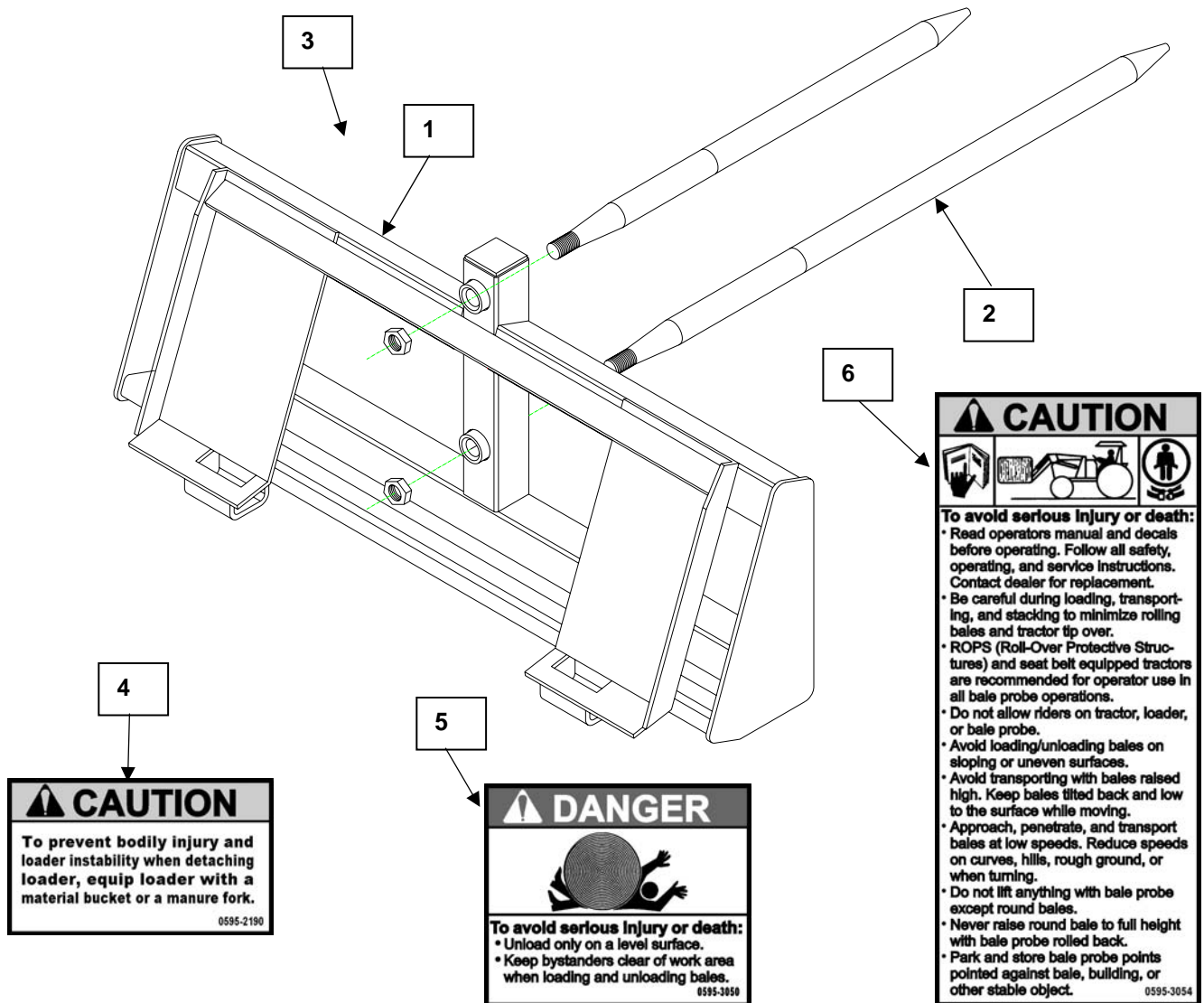
Reference	Description	Part No.	Qty.
1	Skid Steer Bucket 72"	1300-3605	1

# 32. SKID STEER PALLET FORK



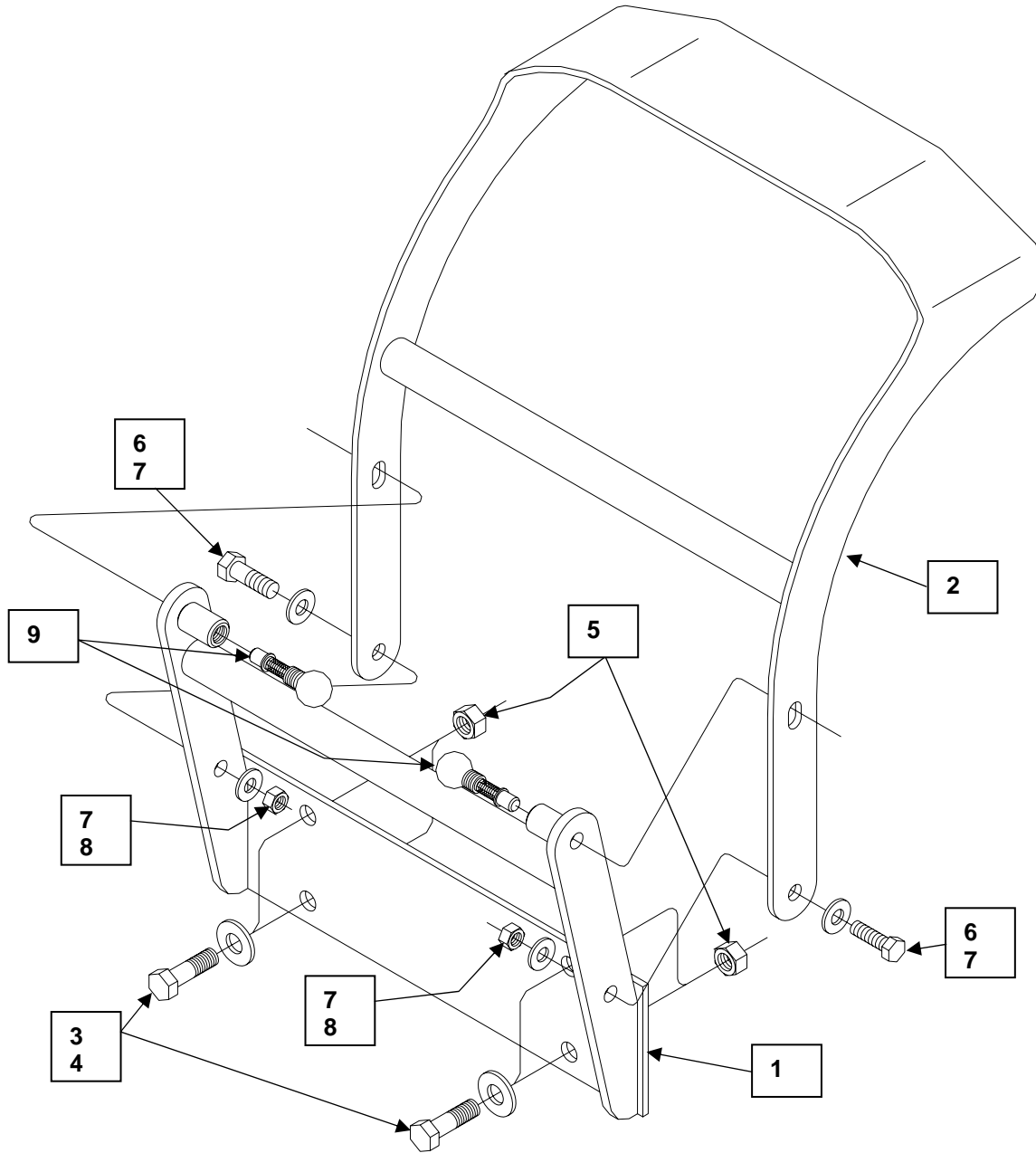
Reference	Description	Part No.	Qty.
0	Skid Steer Pallet Fork (complete)	1302-2033	1
1	Pallet Fork Frame	1302-2040	1
2	Pallet Fork 42"	1302-2016	2
3	Shaft	1302-2010	2
4	Hex Head Cap Screw 3/8"-16NC x 2-1/2"	0545-2057	4
5	Lockwasher 3/8"	0544-2010	4
6	Hex Nut 3/8"-16NC	0555-2002	4
7	Decal Caution	0595-2190	1
8	Decal Warning	0595-3105	1
9	Decal Caution	0595-3133	1

### 33. SKID STEER BALE SPEAR



Reference	Description	Part No.	Qty.
0.....	Skid Steer Bale Spear .....	1305-2023 .....	1
1.....	Bale Spear Frame .....	1305-2024 .....	1
2.....	Tine Assembly w/ nut, 1250 mm .....	1305-2013 .....	1
3.....	Tine Assembly w/ nut, 900 mm .....	1305-2012 .....	1
4.....	Decal Caution.....	0595-2190 .....	1
5.....	Decal Danger .....	0595-3050 .....	1
6.....	Decal Danger .....	0595-3054 .....	1

## 34. OPTIONAL GRILL GUARD



Reference	Description	Part No.	Qty.
1	Grill Guard Assembly	1008-3201	1
2	Headlight Protector Assembly	1008-3221	1
3	Hex Head Cap Screw 5/8"-12 x 2.0" Gr. 8	0548-2166	4
4	Hardened Flatwasher 5/8"	0540-2004	4
5	Stover Hex Locknut 5/8"-12	0546-1134	4
6	Hex Head Cap Screw 1/2"-13 x 2.0" Gr. 5	0545-2108	2
7	Hardened Flatwasher 1/2"	0540-2003	4
8	Stover Hex Locknut 1/2"-13	0546-1122	2
9	Locking Spring Pull Pin	0551-3077	2