GEHL®

Form No.
904590

4610 (After SN8501)

4615 (After SN14200)

Skid Loaders

OPERATOR'S MANUAL

Warranty

GEHL COMPANY
New Loader Equipment
(Skid Loader and Attachments)

GEHL Company (Inc.), hereinafter referred to as GEHL, warrants new GEHL machinery and attachments (the "Equipment") to be free from defects in material and workmanship at the time of delivery to the original purchaser if properly set up and operated in accordance with the recommendations set forth in GEHL's Operator's Manual.

GEHL's liability for any defect shall be limited to repair or replacement of the Equipment. GEHL's obligation shall terminate twelve (12) months/or 1000 hours after the delivery of the goods to the original user or when the Equipment is first put into use, whichever combination of events occurs first.

This warranty shall not apply to tires which are subject to the warranty of the tire manufacturer. Please contact your GEHL dealer for further information on tire warranties.

This warranty shall not apply to any item of Equipment which shall have been repaired or altered outside the GEHL factory or authorized GEHL dealership or which has been subject to misuse, negligence or accident; neither shall it apply to Equipment which has not been operated in accordance with GEHL's printed instructions or has been operated beyond the Company's recommended machine rated capacity.

EXCLUSION OF WARRANTIES

Except as otherwise expressly stated herein, **GEHL makes no representation or warranty of any kind, express or implied, including merchantability or fitness for a particular purpose in respect to the Equipment.** GEHL shall not be liable for incidental or consequential damages for any breach of warranty, including but not limited to inconvenience, rental or replacement equipment, loss of profits or other commercial loss.

No agent, employee or representative of GEHL has any authority to bind GEHL to any affirmation, representation or warranty concerning its machinery and attachments except as specifically set forth herein.

Certain limitations expressed herein are excludable in accordance with provisions of local law. Such provisions shall be deemed struck if such local law is applicable. All other provisions shall continue to apply.

TABLE OF CONTENTS

CHAPTER 1
INTRODUCTION

Your decision to purchase this piece of GEHL® equipment was a good one. We are sure that your decision was strongly considered and that you are looking forward to many years of work from this machine.

We, as a Company, have invested a great deal of time and effort in developing our line of industrial and agricultural equipment. The equipment you have purchased is built with a great deal of pride and designed to give you long life, efficient operation, durability and dependability.

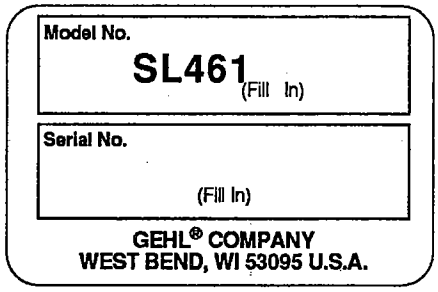
This manual was developed specifically for the machine you have purchased. The information, contained within, is for your assistance in preparing, adjusting, maintaining and servicing your machine. More importantly, this manual provides an operating plan for safe and proper use of your machine. Major points of safe operation are detailed in the SAFETY chapter of this manual. Refer to the Table of Contents for an outline (by chapters) of this manual. Use the Index, located at back of this manual, for specific chapter and topic page number references. A chart depicting standard hardware torques is located on the inside back cover of this manual.

A Plastic Pouch is provided on this unit for storing the Operator's Manual. After using the Manual, please return it to the Pouch and keep it with the unit at all times! Furthermore, GEHL Company recommends that this Manual (and separate Engine manual) be given to the new owner if this machine is resold.

Modern machinery has become more sophisticated and, with that in mind, GEHL Company asks that you read and understand the contents of this manual COMPLETELY and become familiar with your new machine, BEFORE attempting to operate it.

Our extensive Dealership network stands by to provide you with any assistance you may require, including genuine GEHL service parts. All parts should be obtained from or ordered through your GEHL Dealer. Give complete information about the part as well as the model number and the serial number of your machine. Record the serial numbers in the spaces provided, as a handy record for quick reference.

The model and serial numbers for this unit are on a Decal located inside the Right Chassis Riser, between the Lift Arm and Lift Cylinder.



Typical Model & Serial Number Plate

"Right" and "left" are determined from a position sitting on the Seat and facing forward. From this position, the Propulsion (Traction) Control T-bar is on the "left" and the Lift/Tilt Control T-bar is on the "right".

GEHL Company reserves the right to make changes or improvements in the design or construction of any part without incurring the obligation to install such changes on any unit previously delivered.

Throughout this manual, information is provided which is set in *italic* type and introduced by the bold word **NOTE.** BE SURE to read carefully and comply with the message or directive given. Following this information will improve your operating or maintenance efficiency, help you to avoid costly breakdowns or unnecessary damage and, extend your machine's life.

The GEHL Company, in cooperation with the American Society of Agricultural Engineers and the Society of Automotive Engineers, has adopted this SAFETY ALERT SYMBOL

to pinpoint characteristics which, if not properly followed, can create a safety hazard. When you see this symbol in this manual or on the unit itself, you are reminded to BE ALERT! Your personal SAFETY is involved.

CHAPTER 2

SPECIFICATIONS

All Dimensions are in Inches (Millimeters) Unless Otherwise Noted

Model/Description ..... SL4615 Industrial Skid Loader
SL4610 Agricultural Skid Loader
Engine ..... Perkins 104-19 (2 liter) Diesel, SAE 41 hp (30.6 kw) @ 2800 RPM with 88 ft-lb (119.3 Nm) Torque @ 1700 RPM
Electrical System Characteristics ..... 12 volt D.C. Wet-cell Battery w/650 CCA, 12 volt D.C. Starter and 35 Ampere Alternator
SAE Operating Capacity† ..... 1225 lb (556 kg)
Shipping Weight ..... **4615** - 4445 lb (2015 kg)
4610 - 4345 lb (1970 kg)
Volumetric Capacities & Delivery Rates
Fuel Tank .....13 U.S. Gallon (49 Liter)
Hydraulic Reservoir .....14 U.S. Gallon (53 Liter) with 10 Micron Filtration
Hydraulic System Pump
Standard ..... 16 gpm (1.01 liter/s)
High Flow (Optional) ..... 32 gpm (2.02 liter/s)

† Operating capacity rated with 65 (1651) wide Utility Bucket, 10.00 x 16.5 Tires and a 175 lb (79 kg) operator in accordance with SAE J818

Standard Features

Tandem-mounted Hydrostatic Pumps
SAE Approved ROPS-FOPS (Overhead Guard), Spring-balanced with Self-activating Rollback Lock Safety Mechanism
Side-mounted Propulsion and Lift/Tilt Control T-bars
Attachment Self-leveling Lift Action
0 to 6.5 mph (0 to 10.5 kph) Travel Speed
Seat and Operator Secondary Restraint Interlock for Starter and Lift Cylinders
Hand-operated Parking/Emergency Disc-type Brake
SAE J386 Construction-approved Seat Belt
Secondary Operator Restraint Bar with Arm Rests
Mechanical Lift Cylinder Lock
Hand-operated Throttle with Foot-operated Accelerator Pedal
Overhead Instrument and Control Panel
Hinged Rear Grill
Louvered and Hinged Engine Cover
Removable Bellyplate Access Cover
Front Auxiliary Hydraulics and Backhoe Connections
Operating Lights*
Sound-deadening*
Lower Radiator Hose Heater*
Quick-Lock Attachment Mounting
Dual Air Cleaner w/ Safety Element*

***Standard on 4615 and optional on 4610**

Optional Features (Selectable**)

7.00 x 15 6-ply Tire & Wheel Set
10.00 x 16.5 6-ply Flotation Tire & Wheel Set
6.50 x 16 Solid Rubber Tire & Wheel Set
7.00 x 15 6-ply Steel-capped Tire Set
31 x 13.5 x 15 4-ply Extra-wide Soft-trac Tire Set
29 x 12.5 x 15 6-ply Extra Wide Lug Tire Set

Attachments**

Auger	Pallet Forks
Backhoe	Snow Blower
Breaker	Sweeper with Pick-up Bucket
Broom	Tracks
Cold Planer	Tree Digger
Industrial Grapple	Trencher

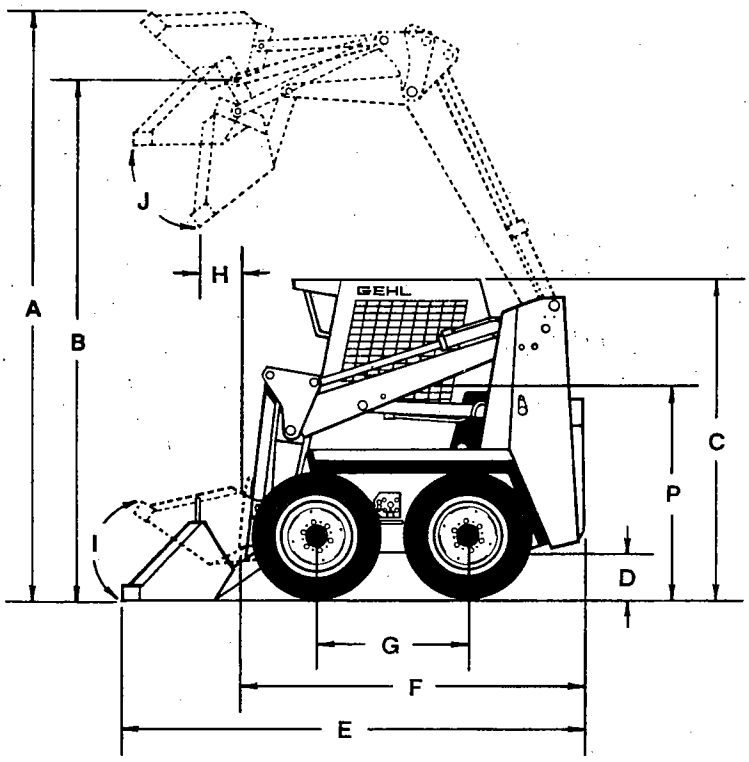
Accessories**

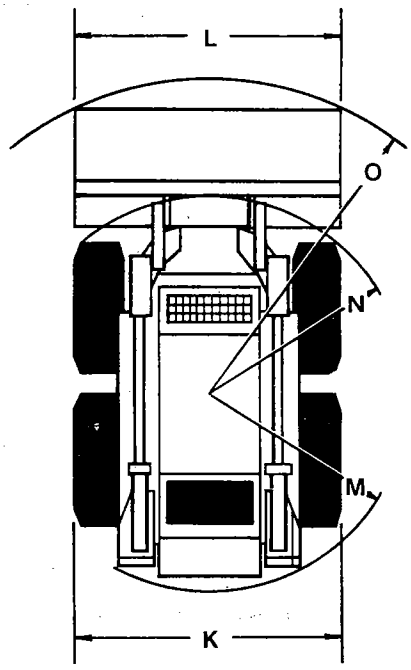
Audible Backup Alarm
Enclosed Alternator
Dual Stage High Flow Pump
Drawbar
Rigid All-weather Operating Enclosure
Amber Dual Flasher
Engine Block Heater
Hydraulic Reservoir Heater
Heater/Defroster Kit
Attachment Mounting Hook Kit
Horn Kit
Amber Strobe Light
Pre-cleaner
High Flow Pump Kit
Suspension Seat
Weld-on Dirt and Rock Teeth for Buckets
Tandem-wheel Towing Trailer
Windshield Wiper Kit

Buckets** & Capacities***

Width	Bucket Description	Capacity (Heaped) cu ft	cu m
40(1015)	Cement	10.5	0.32
60(1525)	Utility	12	0.34
60(1525)	Industrial (4615 Only)	12	0.34
65(1650)	Light Material	13	0.37
65(1650)	Dirt/Construction	10.5	0.32
65(1650)	Dirt/Construction w/Teeth	10.5	0.32
65(1650)	4-in-1 (4610 Only)	11.5	0.33
65(1650)	Granular Fertilizer	17	0.48
72(1830)	Produce	22	0.66

**** Consult Price Sheets for ordering information**
***** Refer to the Material Densities Topic in the Operation Chapter of this manual for average weight/volume of various materials.**





A	Overall Operation Height - Fully Raised	136	(3454)
B	Height to Hinge Pin - Fully Raised	114-1/2	(2908)
C	Overall Height - Top of Operator Guard	76	(1930)
D	Ground Clearance	8	(203)
E	Overall Length (w/Utility Bucket)	114-3/4	(2915)
F	Overall Length (less Bucket)	88-1/2	(2248)
G	Wheel Base	36	(914)
H	Dump Reach	18	(457)
I	Rollback at Ground	33°	
J	Dump Angle	41°	
K	Overall Width (w/10.00 x 16.5 Tires)	63	(1600)
L	Bucket (Utility) Width	65	(1651)
M	Clearance Circle - Rear	54	(1372)
N	Clearance Circle - Front (less Bucket)	45-1/2	(1156)
O	Clearance Circle - Front (w/ Utility Bucket)	70	(1778)
P	Seat to Ground Height	36	(914)

Operating capacity rated with 65 (1651) Wide Utility Bucket and 10.00 x 16.5 Tires

CHAPTER 3
CHECKLISTS

(Remove Dealer's File Copy at Perforation)

PRE-DELIVERY

The following Checklist is an important reminder of valuable information and inspections which MUST be made before delivering the Loader to the Customer. Check off each item after prescribed action is taken.

Check that:

- ☐ NO parts of unit have been damaged in shipment. Check for such things as dents and loose or missing parts; correct or replace components as required.
- ☐ Battery is securely mounted and NOT cracked. Cable connections are tight and Electrolyte is at proper level and strength. (Batteries for domestic sales are filled at the factory.)
- ☐ Lift and Tilt Cylinders, Hoses and Fittings are NOT damaged, leaking or loosely connected.
- ☐ Radiator Hoses and Fittings are NOT damaged, leaking or loosely connected.
- ☐ Oil Filters are NOT damaged, leaking or loosely secured.
- ☐ Wheels are properly and securely attached and Tires are properly inflated.
- ☐ Entire Loader is properly lubricated and NO Fittings are missing.
- ☐ Hydraulic System Reservoir, Engine Crankcase, Drive Chaincases, and the Diesel Governor are filled to their proper operating levels.
- ☐ All adjustment are made to comply with settings given in the Adjustments chapter of this manual.
- ☐ All Guards, Shields and Decals are in place and securely attached.
- ☐ Model and Serial Numbers, for this unit, are recorded in space provided on this page and page 2.

Start Loader Engine and test-run the unit while checking that proper operation is exhibited by all controls.

Check that:

- ☐ Drive Chains are properly adjusted.
- ☐ Propulsion Control and Lift/Tilt Control T-bars operate properly and are NOT damaged or binding.
- ☐ Propulsion Control T-bar is properly adjusted for a correct "neutral" position so that Loader does NOT creep.
- ☐ Lift Cylinder and Starter Interlock system functions properly. By design, the Engine will NOT start unless the Operator is sitting on the Seat and the Restraint Bar is "lowered". Furthermore, the Lift Arms will NOT lower unless the Operator is sitting on the Seat, the Restraint Bar is "lowered" and, the Starter Key Switch is in the "Run" position.

I acknowledge that pre-delivery procedures were performed on this unit at outlined above.

_____
Dealership Name

_____
Dealer Representative's Name

_____
Date Checklist Filled-out

_____ _____ _____
Loader Model No. Loader Serial No. Engine Serial No.*

*The Engine Number is on the fuel injection pump.

DELIVERY

The following Checklist is an important reminder of valuable information that MUST be passed on to the Customer at the time the unit is delivered. Check off each item as you explain it to the Customer.

- ☐ Give the Operator's Manual, which is stored in a pouch attached to the inside of the Overhead Guard, to the Customer and instruct the Customer to be sure to read and completely understand its contents BEFORE operating the unit.
- ☐ Direct the Customer on how to use the **Index** of this manual as a quick page number locating guide.
- ☐ Explain and review with the Customer the **SAFETY** chapter of this manual.
- ☐ Explain and review with the Customer the **Controls & Safety Equipment** chapter of this manual.
- ☐ Explain that regular lubrication is required for continued proper operation and long life. Review with the Customer the **Lubrication** chapter of this manual.
- ☐ Explain and review with the Customer the **Service** chapter of this manual.
- ☐ Explain to the Customer the importance of his thorough understanding of and familiarity with the Loader Controls. Refer to the appropriate information in the **Operation** chapter.
- ☐ Explain that the Customer MUST consult the Engine Manual (provided) for related specifications, operating adjustments and maintenance instructions.
- ☐ Completely fill out the Owner's Registration, including Customer's signature and, return it to the company.

_____
Customer's Signature

_____
Date Delivered

Dealer's File Copy

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(To be removed as Dealer's File Copy)

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_____
Customer's Signature

_____
Date Delivered

(Pages 5 and 6 Have Been Removed at Perforation)

CHAPTER 4

SAFETY

The above Safety Alert Symbol means ATTENTION! BECOME ALERT! YOUR SAFETY IS INVOLVED! It stresses an attitude of "Heads Up for Safety" and can be found throughout this Operator's Manual and on the machine itself.

BEFORE YOU ATTEMPT TO OPERATE THIS EQUIPMENT, READ AND STUDY THE FOLLOWING SAFETY INFORMATION. IN ADDITION, MAKE SURE THAT EVERY INDIVIDUAL WHO OPERATES OR WORKS WITH THIS EQUIPMENT, WHETHER FAMILY MEMBER OR EMPLOYEE, IS FAMILIAR WITH THESE SAFETY PRECAUTIONS.

Our Company ALWAYS takes the operator and his/her safety into consideration when designing its machinery and guards exposed moving parts for his/her protection. However, some areas can NOT be guarded or shielded in order to assure proper operation. In addition, this Operator's Manual and Decals, on the machine, warn of further danger and should be read and observed closely.

DANGER

"DANGER" indicates an imminently hazardous situation which, if not avoided, will result in death or serious injury.

WARNING

"WARNING" indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury.

CAUTION

"CAUTION" indicates a potentially hazardous situation which, if not avoided, may result in minor or moderate injury. May also alert against unsafe practices.

MANDATORY SAFETY SHUTDOWN PROCEDURE

BEFORE unclogging, cleaning, adjusting, lubricating or servicing the unit:

1. Move the Propulsion Control T-bar to the "neutral" position.
2. Lower the Lift Arm completely and roll the Attachment forward so that the front edge is in contact with the ground. Also, see Step 5, below.
3. Engage the Hand Brake.
4. Move the Throttle to the slow idle position, shut the Engine off and remove the Key.
5. If the Lift Arm MUST be left in the "raised" position, BE SURE to properly engage the Lift Cylinder Mechanical Lock instead of performing step 2.

ONLY when you have taken these precautions can you be sure it is safe to proceed. Failure to follow the above procedure, could lead to death or serious bodily injury.

ADDITIONAL SAFETY REMINDERS

Some photographs, used in this manual, may show Doors, Guards and Shields open or removed for illustration purposes ONLY. BE SURE that all Doors, Guards and Shields are in their proper operating positions BEFORE starting the tractor engine to operate the unit.

GEHL Skid Loaders are designed and intended to be used ONLY with a mounted GEHL Company Attachment or with a GEHL Company approved Referral Attachment. The GEHL Company can NOT be responsible for operator safety if the Loader is used without a recommended and approved Attachment.

SAFETY
(Continued)

The stability of a Skid Loader is determined by its desirable but short wheel base. Any or all of the following elements: the terrain, Engine speed, load being carried or dumped, and/or abrupt T-Bar movements, can affect stability. **IF MISUSED, ANY OF THE ABOVE FACTORS CAN CAUSE THE LOADER TO TIP, THROWING YOU FORWARD OR OUT OF THE UNIT, CAUSING DEATH OR SERIOUS BODILY INJURY.** Therefore, ALWAYS have the Operator Secondary Restraint Bar "lowered" and wear the Seat Belt. Operate the Control T-Bars smoothly and gradually at an appropriate Engine speed which matches the operating conditions.

For additional stability when operating on inclines or ramps, ALWAYS travel with the heavier end of the Loader in the same direction as the top of the incline.

NEVER attempt to by-pass the Keyswitch to start the Loader Engine. Only use the jump-starting procedure detailed in the service chapter of this manual.

Do NOT attempt to remove the Radiator Cap after the Engine has reached operating temperature or if it is overheated because the Engine Coolant will be extremely HOT and under pressure. ALWAYS wait for the Engine to cool down BEFORE attempting to relieve pressure and remove the Radiator Cap. Failure to heed could result in severe burns.

NEVER use your hands to search for hydraulic fluid leaks, use a piece of paper or cardboard. Escaping fluid under pressure can be invisible and can penetrate the skin and cause a serious injury. If any fluid is injected into your skin, see a doctor at once. Injected fluid MUST be surgically removed by a doctor familiar with this type of injury or gangrene may result.

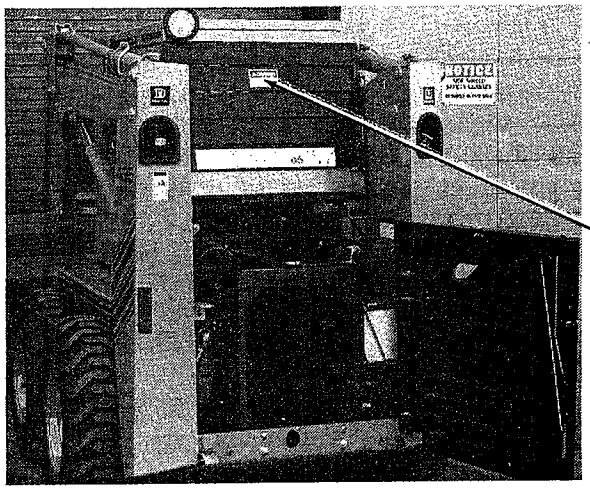
ALWAYS wear safety glasses with side shields when striking metal against metal. In addition, it is also recommended that a softer (non-chipable material) be used to cushion the blow. Failure to heed could lead to serious injury to the eye(s) or other part(s) of the body.

DO NOT raise or drop a loaded Bucket or Fork suddenly. Abrupt movements under load can cause serious instability.

DO NOT push the Lift/Tilt Control T-bar all the way forward (into the "float" position) with the Attachment loaded and the Lift Arm raised as this will cause the Lift Arm to drop.

DO NOT drive too close to an excavation or ditch; BE SURE that the surrounding ground has adequate strength to support the weight of the Loader and the load.

DO NOT smoke while filling the Fuel Tank or while working on the fuel or hydraulic systems.



DANGER

IMPROPERLY GROUNDED HEATING UNIT CAN CAUSE ELECTRIC SHOCK OR ELECTROCUTION.

MAKE SURE LOADER IS GROUNDED WHEN USING ELECTRIC HEATER.

FAILURE TO HEED WILL RESULT IN DEATH OR SERIOUS INJURY.

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SAFETY

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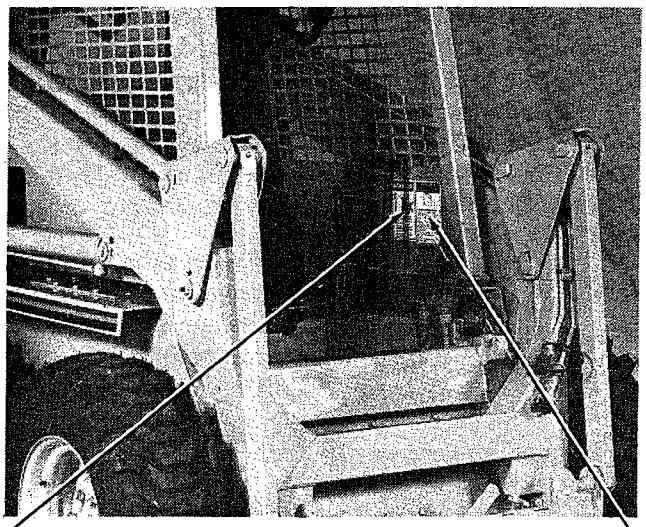
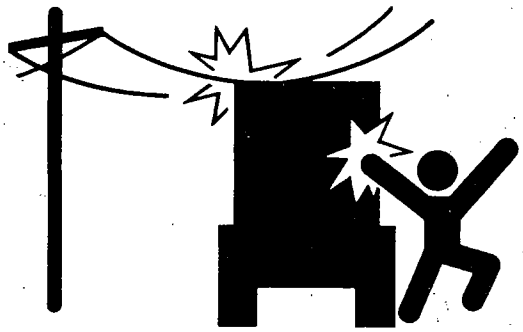


DANGER



MAINTAIN SAFE CLEARANCE FROM ELECTRIC POWER LINES AND AVOID CONTACT WITH ANY ELECTRICALLY CHARGED CONDUCTOR.

CONTACT WITH ELECTRICAL POWER SOURCE CAN RESULT IN ELECTRICAL SHOCK OR ELECTROCUTION.

FAILURE TO HEED WILL RESULT IN DEATH OR SERIOUS INJURY.

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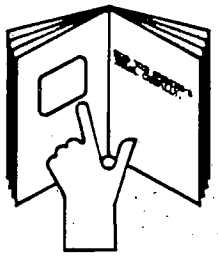
WARNING



THE OWNER IS RESPONSIBLE FOR MAKING INFORMATION AVAILABLE ON THE SAFE USE AND PROPER MAINTENANCE OF THIS MACHINE.

DO NOT START, OPERATE OR WORK ON THIS MACHINE UNTIL YOU HAVE CAREFULLY READ AND UNDERSTAND THE CONTENT'S OF THIS MANUAL. IF YOU HAVE QUESTIONS ON OPERATION, ADJUSTMENT OR MAINTENANCE OF THIS MACHINE OR NEED AN OPERATOR'S MANUAL, CONTACT YOUR GEHL DEALER OR

GEHL COMPANY, WEST BEND, WISCONSIN 53095

MODEL AND SERIAL NUMBERS WILL BE REQUIRED.

FAILURE TO HEED COULD RESULT IN DEATH OR SERIOUS INJURY.

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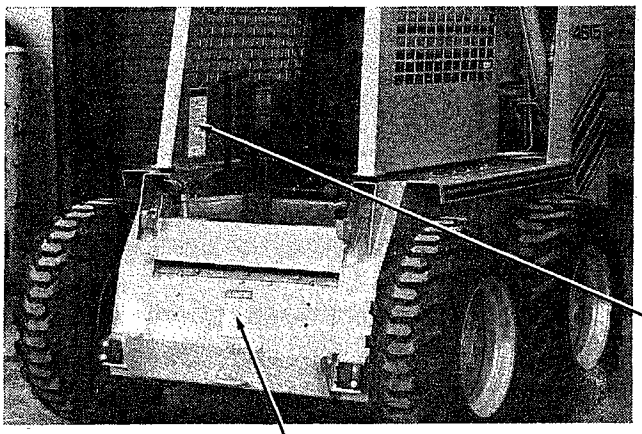
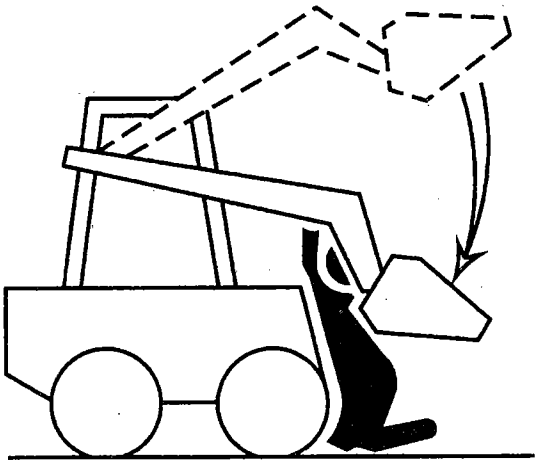
SAFETY

(Continued)



⚠ DANGER



DO NOT WORK UNDER LIFT ARMS WHEN RAISED UNLESS SUPPORTED BY LIFT ARM STOP WITH ENGINE STOPPED.

REMOVING HOSES OR COMPONENT FAILURE CAN CAUSE LIFT ARMS TO DROP.

FAILURE TO HEED WILL RESULT IN DEATH OR SERIOUS INJURY.

091035

⚠ WARNING

KEEP ALL GUARDS AND SHIELDS IN PLACE.

KEEP HANDS, FEET, AND ARMS INSIDE ENCLOSURE WHILE ENGINE AND MACHINE ARE OPERATING AND AWAY FROM POWER DRIVEN COMPONENTS.

KEEP CHILDREN AND BYSTANDERS OFF AND AWAY FROM MACHINE.

DO NOT WEAR LOOSE OR BAGGY CLOTHING WHILE OPERATING OR SERVICING MACHINE.

WEAR PROPER PERSONAL SAFETY GEAR CALLED FOR BY JOB OR CONDITIONS.

DO NOT START ENGINE OR OPERATE LOADER OR ATTACHMENT CONTROLS FROM ANY POSITION OTHER THAN PROVIDED.

DO NOT OPERATE MACHINE IN ENCLOSED AREA WITHOUT PROPER VENTILATION.

TRAVEL SLOWLY OVER ROUGH TERRAIN WHEN RAISING LIFT ARM AND APPROACHING DUMP AREA. NEVER MAKE SHARP MANUEVERS WITH LIFT ARMS RAISED.

BEFORE LEAVING OPERATOR'S SEAT, LOWER LIFT ARMS AGAINST FRAME, STOP ENGINE AND ENGAGE PARKING BRAKE.

IF LIFT ARMS MUST BE LEFT IN RAISED POSITION, ALWAYS INSTALL LIFT ARM LOCK.

DO NOT CHANGE BUCKET WITH LIFT ARMS RAISED.

ESCAPING FLUID UNDER PRESSURE CAN BE INVISIBLE AND CAN PENETRATE SKIN. DO NOT USE HANDS TO SEARCH FOR LEAKS. RELIEVE PRESSURE PRIOR TO DISCONNECTING. HYDRAULIC LINES AND COMPONENTS CAN BE HOT. DO NOT TOUCH.

NEVER SMOKE WHILE FILLING FUEL OR WORKING ON FUEL OR HYDRAULIC SYSTEM.

FAILURE TO HEED COULD RESULT IN DEATH OR SERIOUS INJURY

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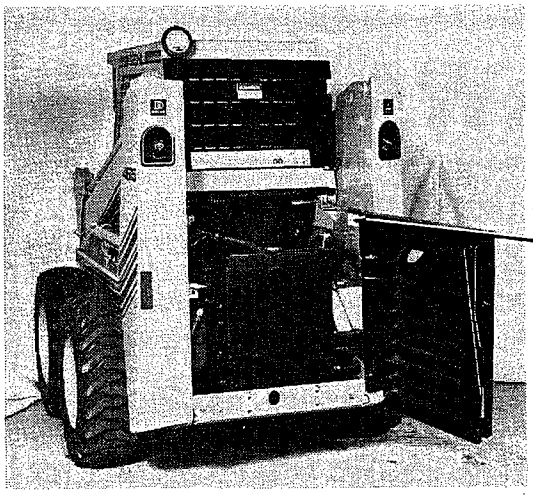
SAFETY
(Continued)



⚠ WARNING

DO NOT BYPASS IGNITION KEY BY CONNECTING ACROSS THE STARTER TERMINALS TO JUMP START. FOLLOW RECOMMENDED PROCEDURE IN THE OPERATOR'S MANUAL FOR JUMP STARTING USING THE IGNITION KEY.

STARTING IN GEAR COULD OCCUR IF THE SEAT SAFETY START SWITCH IS BY-PASSED AND T-BAR IS NOT IN NEUTRAL.

FAILURE TO HEED COULD RESULT IN DEATH OR SERIOUS INJURY.

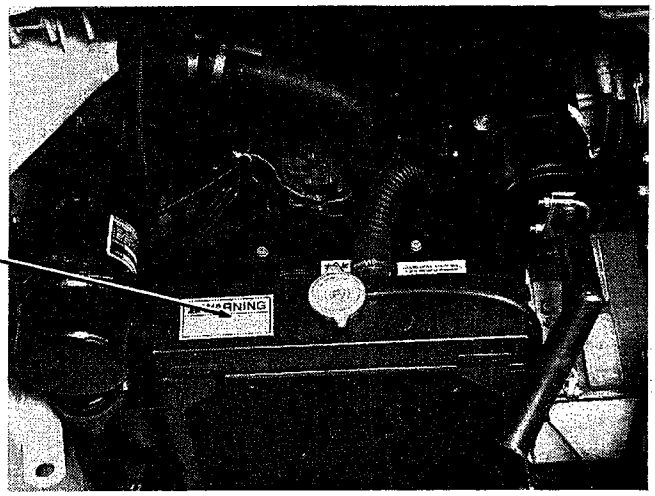
091033

⚠ WARNING

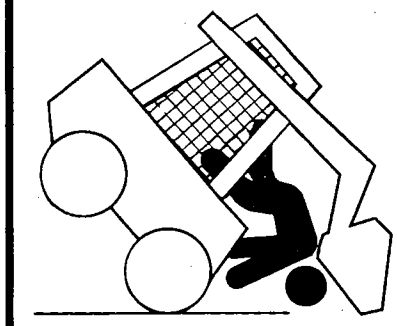
ROTATING COMPONENTS CAN CATCH/CUT/PINCH HAND.
KEEP HANDS OUT. CLOSE OR REPLACE GUARD BEFORE OPERATING MACHINE.

FAILURE TO HEED COULD RESULT IN DEATH OR SERIOUS INJURY.

093365



SAFETY
(Continued)

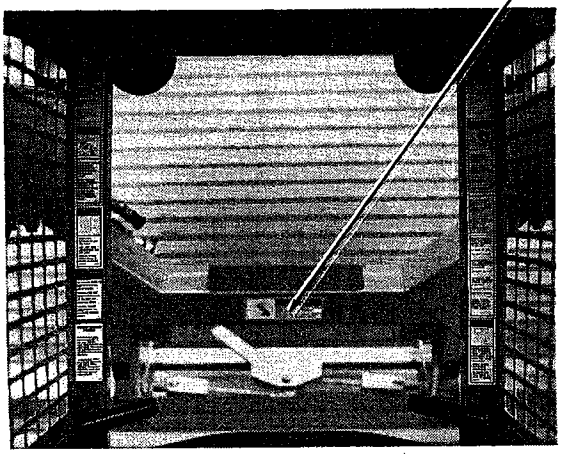


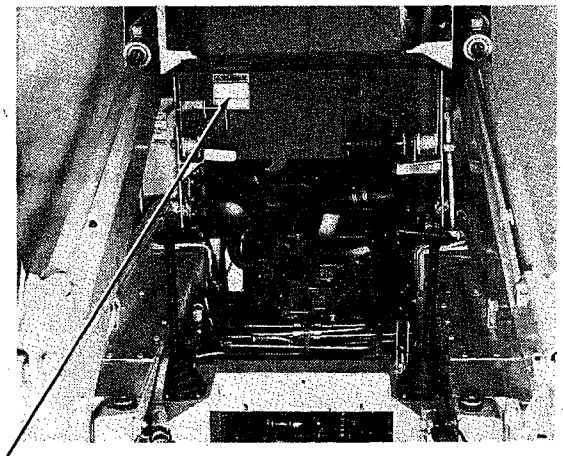
⚠ WARNING

FOR MAXIMUM STABILITY CARRY LOAD AS LOW AS POSSIBLE

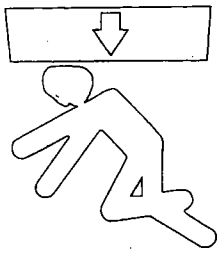
FAILURE TO HEED COULD RESULT IN DEATH OR SERIOUS INJURY.

093479





⚠ WARNING



BE SURE SAFETY PIN IS SECURELY ENGAGED BEFORE WORKING UNDER OVERHEAD GUARD.

FAILURE TO HEED COULD RESULT IN DEATH OR SERIOUS INJURY.

093477

SAFETY

(Continued)

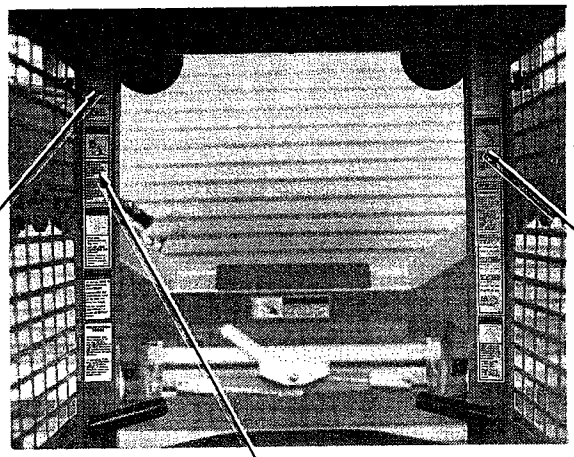
⚠WARNING

OPERATING CONDITIONS COULD PRODUCE JERKY MOVEMENT.

BEFORE STARTING ENGINE FASTEN SEAT BELT.

FAILURE TO HEED COULD RESULT IN DEATH OR SERIOUS INJURY.

093476



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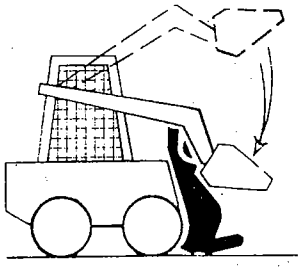


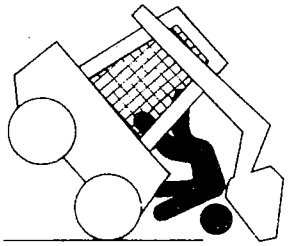
ALWAYS USE MECHANICAL LOCK WHEN LEAVING LIFT ARM IN RAISED POSITION FOR SERVICING LOADER.

BEFORE SERVICING LOADER, PROCEED AS SPECIFIED IN THE OPERATOR'S MANUAL.

FAILURE TO HEED COULD RESULT IN DEATH OR SERIOUS INJURY.

093480

⚠WARNING



FOR MAXIMUM STABILITY CARRY LOAD AS LOW AS POSSIBLE.

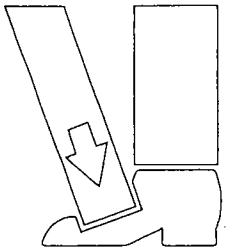
FAILURE TO HEED COULD RESULT IN DEATH OR SERIOUS INJURY.

093483

SAFETY

(Continued)

⚠WARNING

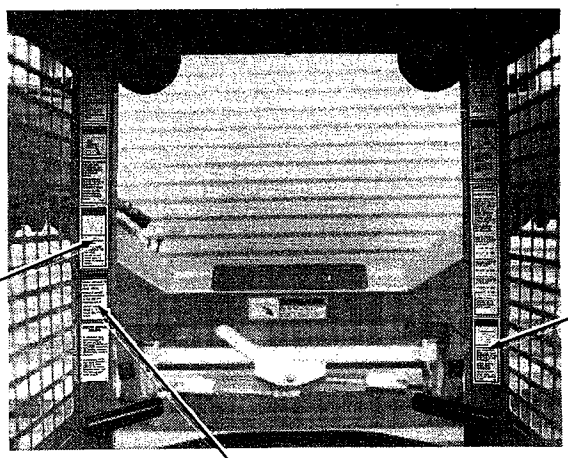


PINCH POINT BETWEEN LIFT ARM AND LEDGE.

KEEP FEET INSIDE COMPARTMENT AND OFF LEDGE.

FAILURE TO HEED COULD RESULT IN DEATH OR SERIOUS INJURY.

093478



⚠WARNING

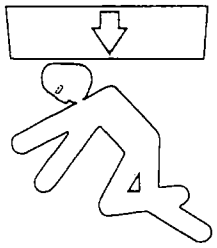
DO NOT USE BRAKE TO TEST HYDROSTATIC DRIVE TORQUE.

OVERHEATING AND ACCELERATED WEAR OF THE DISC AND PADS CAN OCCUR.

FAILURE TO HEED COULD RESULT IN DEATH OR SERIOUS INJURY.

091048

⚠WARNING



BEFORE OPERATING WITH ATTACHMENT CHECK LOCKING PIN ENGAGEMENT OF THE RAPID TACH TO THE ATTACHMENT.

HANDLE MUST BE ON THE RIGHT AGAINST STOP.

FAILURE TO HEED COULD RESULT IN DEATH OR SERIOUS INJURY.

093482

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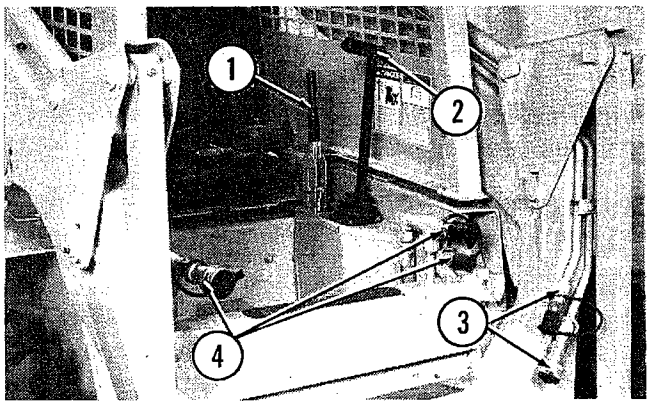
CHAPTER 5
CONTROLS & SAFETY EQUIPMENT

This Skid Loader is provided with features for operator safety and convenience.

⚠ CAUTION

Become familiar with and know how to use ALL safety devices and controls on the Skid Loader BEFORE attempting to operate it. Know how to stop Loader operation BEFORE starting it. This GEHL Skid Loader is designed and intended to be used ONLY with a mounted GEHL Company Attachment (Bucket or Fork) or a GEHL Company approved accessory or referral attachment. The GEHL Company can NOT be responsible for operator safety if the Loader is used with an unapproved attachment.

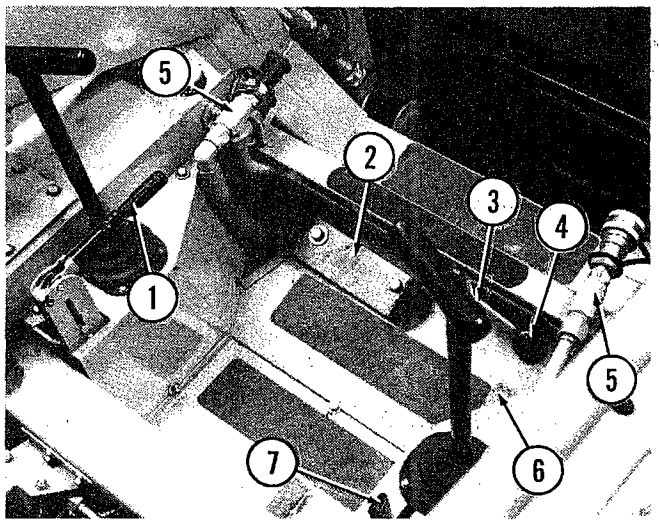
AUXILIARY FRONT HYDRAULICS (Figs. 5-1 & 5-2)



1 - Adjustment Handle of Hand Brake in Activated Position
2 - Propulsion Control T-Bar
3 - Auxiliary Hydraulics Quick-disconnects
4 - Optional High Flow Pump Quick-disconnects

Fig. 5-1

Auxiliary Front Hydraulic connections can be either factory or field-installed on the Skid Loader. A Foot-pedal is used to control operation of the Auxiliary Valve, which is interconnected with the Main Control Valve, and the direction of oil flow into and out of the Male and Female Quick-disconnect Fittings. A Loader with the basic Auxiliary Hydraulics system has a pair of Disconnect Fittings attached to the front of the Lift Arms on the left side. A unit which is equipped with expanded Auxiliary Hydraulics also has an additional pair of Disconnect Fittings in the front inside corners of the Fenders. A unit which is equipped with an optional High Flow Pump has both pairs of Disconnect Fittings and an additional Drain Quick-disconnect Fitting in the front corner of the Left Fender.



1 - Hand Brake Handle in Deactivated Position
2 - Auxiliary Hydraulics Control Pedal
3 - Backhoe or High Flow Output Diverter Valve Control Lever
4 - High Flow Output Selector Valve
5 - Backhoe or High Flow Output Quick-disconnects
6 - Foot Accelerator Pedal
7 - Hand Throttle

Fig. 5-2

GUARDS & SHIELDS

Whenever possible and without affecting Loader operation, Guards and Shields are used to protect potentially hazardous areas. In many places, Decals are also provided to warn of potential dangers and/or to display special operating procedures.

⚠ WARNING

Read and thoroughly understand ALL Safety Decals on the Loader BEFORE attempting to operate it. Do NOT attempt to operate this equipment unless ALL factory installed Guards and Shields are properly secured in place.

HAND BRAKE (See Fig. 5-1)

The Skid Loader is furnished with a Hand Brake which functions as both a parking brake and an emergency brake. The Hand Brake Handle is linked by Cables to a Disc Brake assembly on each Hydrostatic Drive Motor. As an emergency brake, the Hand Brake can be gradually engaged to slow down and stop Wheel rotation. The Hand Brake Lever has an Extension Bracket which is contacted by the Propulsion Control T-Bar. This Bracket serves to disengage the Hand Brake as the Propulsion Control T-Bar is moved forward thus helping to prevent unintentionally leaving the Brake engaged when starting to operate the Loader.

⚠ WARNING

Function and adjustment of the Hand Brake should be checked on a routine basis to maintain proper operation at all times. The Hand Brake should NEVER be used as a means of checking Hydrostatic torque as this will cause overheating and accelerated wear of the Discs and Pads resulting in early and unexpected Hand Brake failure.

IN-LINE ENGINE WIRING HARNESS FUSE

An In-line 25 ampere Fuse is provided to protect the wiring in the Engine Wiring Harness from overloads due to circuit malfunction or accidental grounding. Refer to the Electrical Wiring Diagram provided in the Service chapter of this manual for Fuse location.

INSTRUMENT & CONTROL PANEL (Fig. 5-3)

The Instrument and Control Panel contains several Loader and Engine control Switches and Indicators. Internationally recognized standard symbols are provided on the Panel to represent various functions, conditions and Switch positions.

Battery Charge and Oil Pressure Warning Lights

Square-framed Indicator Lights are provided on the right and left sides of the Hourmeter to warn (when lighted) of malfunctions in the respective Engine Oil and Battery Charge systems, when the Engine is running. When the Engine is NOT running and the Ignition Key is in either the "On" (run) position or the "Accessory" position, both Indicator Lights will be lighted; this can be termed the "Bulb-test" position. BE SURE to return the Keyswitch Key to "Off" and remove the Key when leaving the Operator's Compartment.

NOTE: *If the Battery Charge Indicator comes ON during normal operation, a problem may exist in the charging system. Refer to the Troubleshooting Chapter in this manual for problem solving details.*

NOTE: *If the Oil Pressure Warning Light comes ON during normal operation, STOP the Engine immediately! Wait a few minutes for the Engine oil to drain back into the Oil Pan and then check the oil level. Maintain the oil level just below the "full" mark on the Dipstick.*

Cold Start Pushbutton

A push (and hold) type Button is provided, to the right of the Water Temperature Gauge for operating the Glow Plugs for cold starting assistance. Push and hold the Button for 30 seconds to 1 minute, depending on outside temperature.

Control Panel Fuses

Two Fuse Holders are provided on the Panel. An SAE 30 ampere in-line Fuse, located to the right of the Seat Belt Indicator Light, protects the Starter circuit and Glow Plug circuit wiring and an SAE 20 ampere in-line Fuse, located to the left of the Glow Plug Indicator, protects the wiring to the Switches, Gauges and Indicators. Both Fuses provide protection against circuit malfunction and accidental grounding. BE SURE to use the correct size Fuse in each Holder.

NOTE: *Do NOT attempt to defeat the fusing by jumping across the Fuse or by using a higher amperage Fuse.*

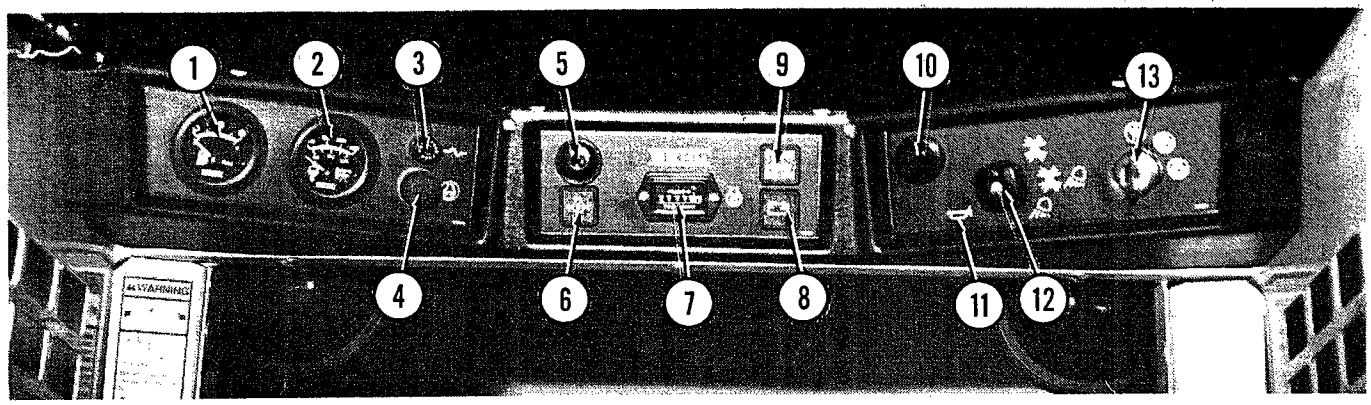
Fuel Level and Water Temperature Gauges

Two Gauges are provided on the left side of the Panel for monitoring the fuel level and the cooling system water temperature. The Fuel Gauge has three division marks between empty and full to represent the amount of fuel remaining in the 13 gallon (49 liter) Fuel Tank.

The Water Temperature Gauge has both Fahrenheit and Celsius scales for full range coolant temperature indication. Under normal operating conditions the water temperature will be at approximately 185 °F (85 °C). Under peak loading conditions, operating temperatures may rise as high as 220°F (105°C).

Glow Plug Indicator

A Glow Plug Indicator, located above the Oil Pressure Light, is provided to show that the Glow Plugs are sufficiently heated and ready for the Engine to be started.



1 - Fuel Gauge
2 - Coolant Temperature Gauge
3 - 20 Ampere Fuse Holder
4 - Cold Start Pushbutton
5 - Glow Plug Indicator
6 - Oil Pressure Indicator Light
7 - Hourmeter
8 - Battery Charge Warning Light
9 - Seat Belt Warning Light
10 - 30 Ampere Fuse Holder
11 - Optional Horn Pushbutton Mounting Position
12 - Operating Light Switch
13 - Keyswitch

Fig. 5-3: Overhead Instrument & Control Panel

Horn Pushbutton (Optional)

When desired, an optional Horn Kit can be installed on the Skid Loader. By design, the Horn is installed on the underside of the Overhead Guard. The location for the Horn Pushbutton Switch is already marked on the Panel. The power connection lead, between the Pushbutton and Horn, is already provided in the Main Wiring Harness.

Hourmeter

An Hourmeter, located in the middle of the Panel, is provided for added convenience in proper routine maintenance performance. The Hourmeter has an operating time capacity of 9999 hours, a 1/10th of an hour indication and a "running" indicator. The Hourmeter is especially useful for logging time in the Maintenance Schedule at the back of this manual

Keyswitch

The Keyswitch, located on the right side of the Panel, is a four-position, Key-operated switch similar in function and operation to the Keyswitch on a car or truck. International symbols, located around the perimeter of the Switch, denote the functions and positions that the Key can be moved to. In a clockwise rotation, these positions are: Accessories, Off, On (Run) and Start.

Accessories Position - When the Key is turned one position counterclockwise from the vertical (OFF) position, power from the Battery is supplied to all Control and Instrument Panel electrical circuits to allow all electrically-powered accessories to be operated without the Engine running.

Off Position - When the Key is vertical in the Keyswitch, power from the Battery is disconnected to the Control and Instrument Panel electrical circuits. Also, this is the only position in which the Key can be inserted or removed from the Keyswitch.

On or Run Position - When the Key is turned one position clockwise from the vertical (OFF) position, power from the Battery is supplied to all Control and Instrument Panel electrical circuits.

NOTE: *The Battery Charge, Oil Pressure and Fasten Seat Belt Indicators will light and the Buzzer will sound when the Key is turned to the "ON" position; the Fasten Seat Belt Indicator and the Buzzer will turn off after a few seconds. The Battery Charge and Oil Pressure Indicators will remain "on" until after the Engine is started.*

Start Position - When the Key is turned and held two positions clockwise from the vertical (OFF) position, the electric Starter will be energized for starting the Engine. Release the Key (it will return to the ON position) as soon as the Engine starts.

NOTE: *The Key MUST always be returned to the Off position between starting attempts.*

Light Switch (Optional)

When desired, an optional Operating Light Kit can be installed on the Skid Loader. The Operating Lights are controlled by the Light Switch mounted on the Panel to the left of the Keyswitch. Operation of either the optional Amber Flashing Lights Kit or the Flashing Strobe Light Kit, when installed on the Loader, is also controlled by this Switch.

International symbols denote the four positions of the Light Switch. In a clockwise direction these are: Off, Flashers, Headlight/Taillight with Flashers and, Headlight/Taillight only. For the Lights to function, the Keyswitch MUST be in the "On"(Run) position.

Seat Belt Warning Light (& Buzzer)

Audible and visual indications are provided to remind the operator to fasten the Seat Belt. The circuit which activates the Seat Belt Indicator Light and Buzzer is energized, for a few seconds, after the Keyswitch Key is turned to the "On" (Run) position. The length of time that the Light and Buzzer are on is controlled by a timer in the Buzzer.

INTERLOCKS

Lift Cylinder

The rear ports of the Lift Arm Hydraulic Cylinders are connected through an electrically-operated Solenoid Valve. This Valve is controlled by a Relay which is activated by pressure-sensitive Switches mounted in the Seat and the Operator Secondary Restraint Bar Pivot assembly.

When the Operator sits on the Seat, with the Restraint Bar lowered and the Keyswitch "On", both Switch contacts close. This allows current to flow through the Relay contacts which, in turn, activates the Solenoid Valve and allows normal oil flow through the Lift Cylinders. If the Operator leaves the Seat, turns the Keyswitch to "Off", or raises the Restraint Bar, the Relay contacts open and power to the Solenoid Valve is turned off. This closes the Solenoid Valve and blocks oil flow from the rear ports of the Cylinders. When the flow is blocked, the Cylinders will hold their positions and prevent Lift Arm travel.

⚠ CAUTION

Operation of the Lift Cylinder Interlock should be tested frequently to insure proper operation at all times. NEVER attempt to defeat system function by mechanically or electrically bypassing the Switches, Relay or Solenoid Valve.

Starter

A second Relay, which is activated by the pressure-sensitive Switches mounted in the Seat and the Operator Secondary Restraint Bar Pivot assembly, is provided to control operation of the system's starter circuit.

When the Operator sits on the Seat, with the Operator Secondary Restraint Bar lowered, both Switch contacts close. This energizes the Relay which, in turn, allows current to flow in the starter circuit when the Keyswitch is in "Start".

These Switches are safety devices which make it necessary for the operator to always be seated on the Seat and have the Restraint Bar lowered in order to start the Engine. The Engine will NOT stop however, if the operator leaves the Seat with the Engine running or if he raises the Restraint Bar.

⚠ CAUTION

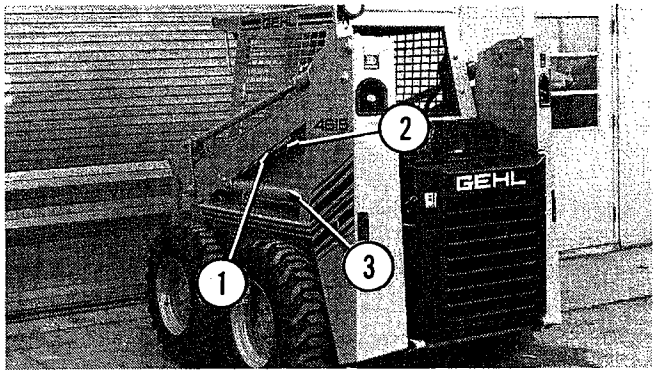
Operation of the Starter Interlock should be tested frequently to insure proper operation at all times. NEVER attempt to defeat system function by mechanically or electrically bypassing the Switches or Relay.

LIFT CYLINDER MECHANICAL LOCK (Figs. 5-4 & 5-5)

⚠ WARNING

BEFORE leaving the Operator's Compartment to work around the outside of the Loader with the Lift Arm raised, ALWAYS engage the Lift Cylinder Mechanical Lock.

A Mechanical Lock is provided on the left Lift Cylinder and it is to be used as a Cylinder block to prevent the raised Lift Arm from unexpectedly lowering while servicing the Loader. BE SURE that the Lock is engaged whenever the Lift Arm is raised and any hoses are removed.

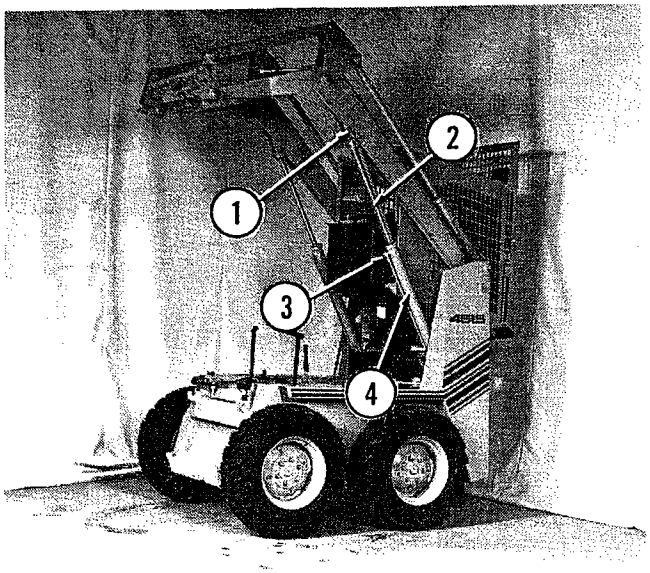


1 - Lift Cylinder Mechanical Lock in "Storage" Position
2 - Lock Pin Chain
3 - Left Side Lift Cylinder

Fig. 5-4

When the Lock is NOT being used, it should be secured to the Anchor Pin on the underside of the Lift Arm using the Lockpin provided. Refer to the details in the Adjustments chapter for correct engagement and disengagement procedure.

The Lift Cylinder Lock is a safety device which should always be kept in proper operating condition at all times.



1 - Lift Arm
2 - Lift Cylinder Mechanical Lock "Engaged"
3 - Lock Pin & Chain
4 - Left Side Lift Cylinder

Fig. 5-5: Lift Arm Raised & Lock "Engaged"

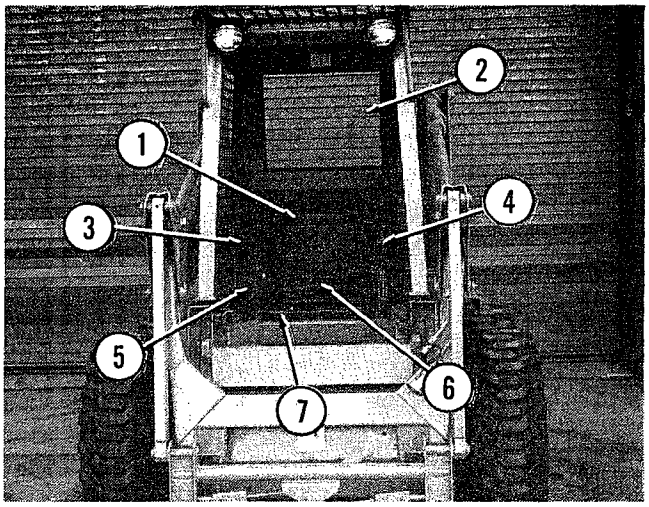
OPERATOR SECONDARY RESTRAINT BAR (Fig. 5-6)

The Operator Secondary Restraint Bar (Seat Bar) is a sturdy Bar which is securely anchored to the Overhead Guard. It is designed to be pivoted up, when leaving or down, after entering the Operator's Compartment. When used in conjunction with the Seat Belt, the Restraint Bar serves to keep you in the Operator's Compartment. For operator comfort and convenience, the Restraint Bar is fully padded and intended to serve as an arm rest while operating the Loader.

The Restraint Bar Switch is wired in series with the Seat Switch to form an interlock for the Lift Arm and Starter circuits. The Lift Arm will NOT lower and the Engine can NOT be started unless the operator is on the Seat and the Restraint Bar is "lowered"

⚠ WARNING

NEVER attempt to electrically or mechanically defeat the Operator Secondary Restraint Bar and, in addition, ALWAYS wear your Seat Belt; both are there to protect you.

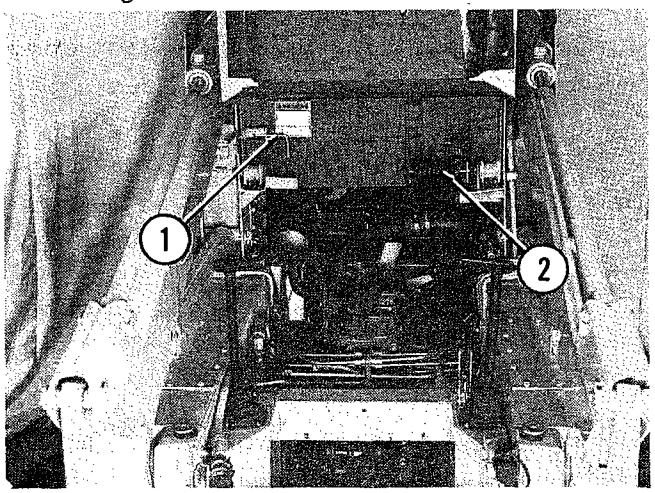


1 - Operator Secondary Restraint Bar (Shown In "Lowered" Position)
2 - Rear Window
3 - Lift/Tilt Control T-Bar
4 - Propulsion Control T-Bar
5 - Throttle Lever
6 - Seat Belt
7 - Seat Adjustment Lever

Fig. 5-6

OVERHEAD GUARD (ROPS/FOPS) & LOCK MECHANISM (Fig. 5-7)

The Overhead Guard, provided on all Skid Loaders, is SAE ROPS and FOPS approved. The Guard is designed to protect the operator from falling objects and to be a life-saving protection if the Loader is accidentally tipped-over or rolled, provided the operator is secured within the confines of the Overhead Guard by the Seat Belt and Restraint Bar. A Window is provided in the back side of the assembly for rear visibility and to help reduce Engine noise.



1 - Self-actuating Lock Mechanism Handle (Engaged)
2 - Torsion Balance Spring

Fig. 5-7:Overhead Guard Unbolted, Rolled-back & Locked

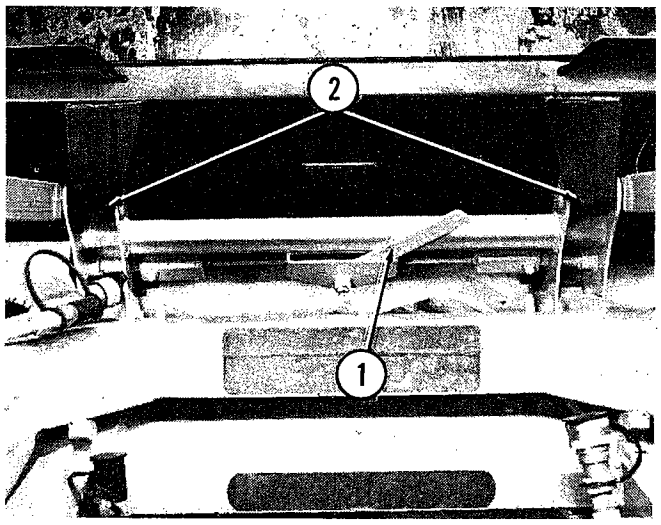
For service, the Guard can be unbolted and tilted back. A self-actuating Lock Mechanism engages to maintain the Guard in the rolled-back position. A Torsion Balance Spring is provided for aid in lifting the Overhead Guard. To lower the Guard, unlatch the Lock Mechanism and rotate the Handle to latch it to in the disengaged position. Then, lower the Guard into contact with the Chassis and replace and resecure the anchor bolts.

⚠ WARNING

NEVER attempt to operate the Skid Loader with the Overhead Guard removed or locked-back. BE SURE that the Lock Mechanism Pin is securely engaged when the Guard is tilted back. Properly support the Overhead Guard while unlatching the Lock Mechanism Handle and lowering the Overhead Guard. BE SURE to reinstall and secure the front anchor bolts and locknuts BEFORE resuming Loader operation.

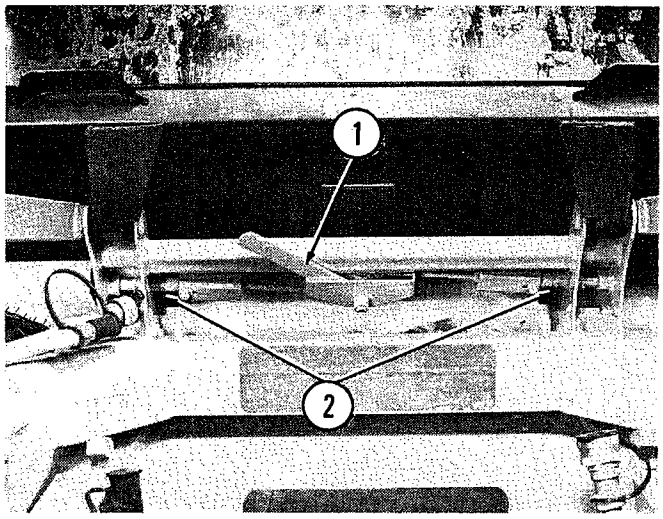
QUICK LOCK ATTACHMENT MOUNTING (Figs. 5-8 & 5-9)

A single Lever is provided for operating the Quick Lock Mechanism (Tool Bar) for mounting and releasing a Bucket or other Attachment. The Latch Pins of the Quick Lock Mechanism are mechanically linked to the Lever and are spring-loaded to insure positive engagement/disengagement. Rotating the Lever to the right (clockwise, as viewed sitting on the Operator's Seat) engages the Pins and rotating the Lever to the left (counterclockwise) disengages the Pins.



1 - Quick Lock Lever (Locked to the Right)
2 - Bucket Hook

Fig. 5-8: Quick Lock Mechanism Engaged & Locked Onto Bucket



1 - Quick Lock Lever (Unlocked to the Left)
2 - Latch Pin

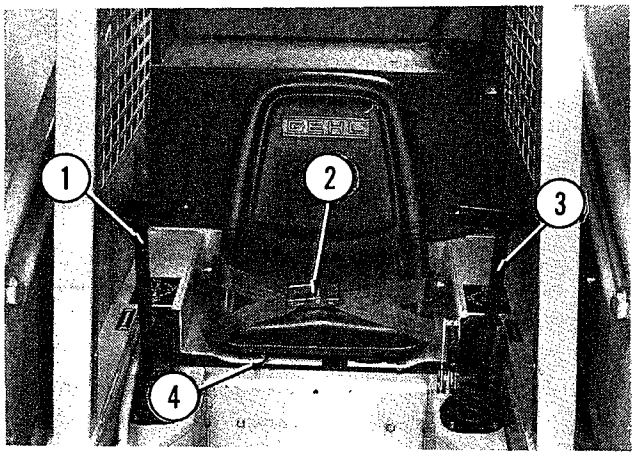
Fig. 5-9: Quick Lock Mechanism Disengaged & Unlocked From Bucket

⚠ CAUTION

To prevent unexpected and undesired Attachment release from the Lift Arms, BE SURE to properly secure the Lockpins by rotating the Quick Lock Lever completely clockwise (as viewed sitting on the Operator's Seat).

SEAT POSITIONING (Fig. 5-10)

The Loader Seat is mounted on Rails to provide forward or backward repositioning to adapt to the operator's size and comfort. A spring-loaded Latch Handle is provided for activating the Seat Adjustment mechanism.



1 - Lift/Tilt Control T-Bar
2 - Seat Belt
3 - Propulsion (Traction) Control T-Bar
4 - Seat Adjustment Latch Handle

Fig. 5-10

NOTE: *For additional comfort, a Suspension Seat is available as a separately ordered accessory.*

T-BARS (See Fig. 5-10)

Side-mounted T-Bars are provided on the Skid Loader to control the hydraulic and hydrostatic functions of the Loader. Both T-Bars return to their "neutral" positions when released.

⚠ CAUTION

ALWAYS make sure that both T-Bars are in their "neutral" positions BEFORE attempting to start the Engine. Also, operation of the T-Bar controls should be smooth and with safety in mind. Excessive travel speed together with quick T-Bar movements, with NO regard for conditions and circumstances, is hazardous and could upset the Loader.

Propulsion Control T-Bar

The left-hand T-Bar is the Propulsion Control which is linked to the Hydrostatic Drives. Push the T-Bar straight forward (without twisting) from the neutral position to cause a forward Loader movement. Pull the T-Bar straight backwards (without twisting) from the neutral position to cause a rearward Loader movement.

Twisting the T-Bar clockwise will cause a spin turn to the right. Twisting the T-Bar counterclockwise will cause a spin turn to the left. On a spin turn, the Wheels (opposite the direction of the turn) will rotate forward and the Wheels (on the same side as the direction of the turn) will rotate rearward.

When the T-Bar is moved slightly forward or rearward and twisted, a slow gradual forward or rearward turn will be maneuvered. The farther the T-Bar is moved forward or rearward or twisted in either direction, the faster the maneuver will be made. Engine RPM also has a directly proportional affect on movement. The Propulsion T-Bar is power-assisted and will return to "Neutral" when your hand is taken off the T-Bar.

Lift/Tilt Control T-Bar

The right-hand T-Bar is the Lift (Arm) and Tilt (Attachment) Control which is linked to the Loader's Main Hydraulic Control Valve. Twisting the T-Bar clockwise dumps the Bucket (Attachment) and twisting it counterclockwise rolls the Bucket (Attachment) up or back.

Pushing the T-Bar straight forward (without twisting) lowers the Lift Arm and pulling the T-Bar straight back (without twisting) raises the Lift Arm. Pushing the T-Bar all the way forward, past the detent, places the Lift Arm in the "float" condition.

⚠ WARNING

NEVER push the Lift/Tilt T-Bar into the "Float" position with the Bucket or Attachment loaded and/or raised. Doing so could cause the Lift Arm to lower rapidly and the Bucket or Attachment to dump.

The speed of all movements controlled by the Lift/Tilt T-Bar is directly proportional to the amount of T-Bar movement and the Engine RPM. The Lift/Tilt T-Bar is Spring-centered so that when you remove your hand from the T-Bar, movement of the Lift Arm and/or Bucket or Attachment will stop.

THROTTLE & ACCELERATOR PEDAL (See Fig. 5-2)

A right-hand controlled Throttle Lever is provided for adjusting the Engine RPM. A right-foot operated Accelerator Pedal is also provided to control the Engine RPM to match increased power requirements. The Pedal linkage is spring-loaded to return to the adjusted hand-operated Throttle setting.

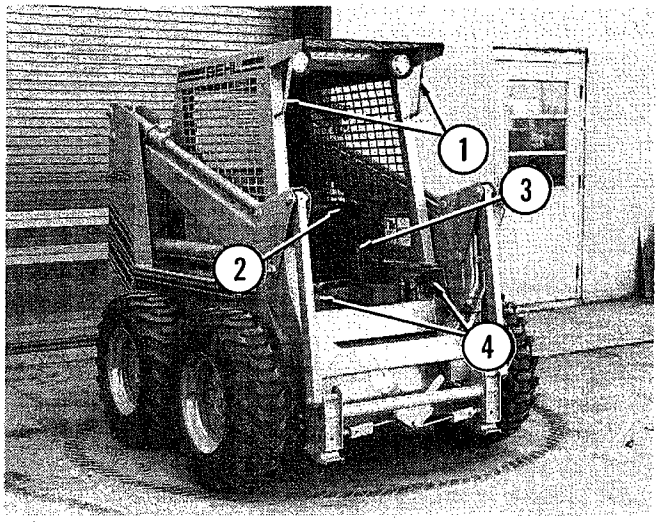
Pushing the Throttle forward or pushing down on the Accelerator Pedal increases the RPM and pulling the Throttle Lever backwards or letting-up on the Accelerator Pedal decreases the RPM.

CHAPTER 6
OPERATION

⚠ CAUTION

BEFORE starting the Engine and operating the Loader, review and comply with ALL safety recommendations set forth in the SAFETY chapter of this manual. Know how to STOP the Loader BEFORE starting it. Also, BE SURE to fasten and properly adjust the Seat Belt and lower the Operator Secondary Restraint Bar.

GENERAL INFORMATION (Figs. 6-1 & 6-2)



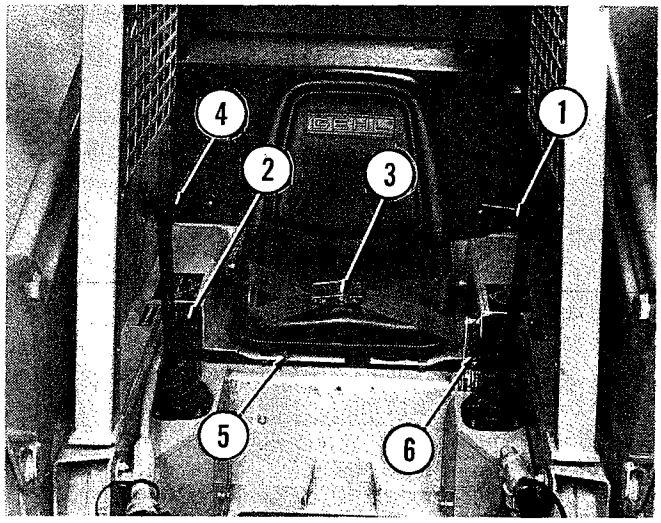
1 - Hand Holds
2 - Operator Secondary Restraint Bar (Shown In "Lowered" Position)
3 - Hand Brake In "Engaged" Position
4 - Overhead Guard Front Anchor Bolts & Nuts

Fig. 6-1

Stopping the Loader

The following procedure is the recommended sequence for stopping the Loader:

1. Check that Propulsion Control T-Bar is in the "Neutral" position.
2. Using the Lift/Tilt Control T-Bar, completely lower the Lift Arms and rest the Attachment on the ground.
3. Pull the Throttle Lever back to the Idle position (toward the Turtle symbol) and take your foot off the Accelerator Pedal.
4. Turn the Keyswitch Key to the Off position to shut the Engine off.
5. Engage Hand Brake, raise Restraint Bar, unlatch the Seat Belt and grasp the Hand Holds while climbing out of the Operator's Compartment.



1 - Propulsion (Traction) Control T-Bar
2 - Throttle Lever
3 - Seat Belt
4 - Lift/Tilt Control T-Bar
5 - Seat Adjustment Handle
6 - Hand Brake In "Disengaged" Position

Fig. 6-2

Before Starting Engine

Before starting the Engine and running the Loader, familiarize yourself with the Control T-Bars to coordinate your mind with your hand movements. Grasp the T-Bars and simulate moving them in the appropriate directions to obtain the various movements of the Loader, Lift Arm and Bucket (or Attachment).

Starting the Engine

The following procedure is recommended for starting the Loader Engine:

1. Step up onto the back of the Bucket while grasping the Hand Holds. Then, pivot around and move backwards into the Operator's Compartment.
2. Sit on the Seat, fasten the Seat Belt and lower the Restraint Bar.

3. Check that both Control T-Bars are in their "Neutral" positions.

4. Push the Throttle forward to about the midpoint of travel.

⚠ WARNING

ALWAYS fasten your Seat Belt BEFORE starting the Loader Engine. Leave the Hand Brake "engaged" until the Engine is running and you are ready to operate the Loader.

5. If required (as determined by the ambient temperature), push and hold the COLD START Pushbutton until the Glow Plug Indicator glows. Then, turn the Key clockwise to the START position to start the Engine. Do NOT crank the Starter for more than 20 seconds at a time.

NOTE: *If the Engine runs for a short time and dies-out or will NOT start, turn the Key to the OFF position, wait at least two minutes to allow the Starter to cool and then repeat step 5 until the Engine can be started and kept running. Allow a sufficient warm-up time before attempting to operate the Control T-Bars.*

Stopping Loader Movement

⚠ CAUTION

Operate the Propulsion Control T-Bar gradually and smoothly when starting, stopping, turning and reversing Loader directions.

The Hydrostatic Drive of the Skid Loader controls forward and reverse direction and speed. As rapidly as the Propulsion Control T-Bar is moved to the straight "Neutral" position, movement of the Wheels is slowed accordingly. By all means, BE SURE to move the Propulsion Control T-Bar gradually and smoothly to slow-down and stop the Wheels.

First Time Practice Running

⚠ CAUTION

BE SURE the area being used for test-running is clear of spectators and obstructions. For the first time, operate the Loader with an empty Bucket.

Smoothest and most efficient Loader operation is achieved while running the Engine at half-throttle. Make sure the Engine is warm and then, using your right hand, slowly and smoothly pull straight back on the Lift/Tilt Control T-Bar to raise the Lift Arm. Twist the T-Bar to roll the Bucket forward or back. Attempt all raising and lowering functions, and combinations of the two functions before proceeding to operate the Propulsion Control T-Bar. ALWAYS lower the Lift Arm and roll the Bucket back BEFORE proceeding to operate the Propulsion T-Bar.

With your right hand off the Lift/Tilt T-Bar, use your left hand to slowly and smoothly move the Propulsion Control T-Bar straight forward to travel ahead. Then, slowly pull the T-Bar backward to "Neutral" to stop forward movement. To travel backwards, slowly and smoothly move the T-Bar straight back. Then, return the Propulsion Control T-Bar to the "Neutral" position to stop reverse movement. Next, twist the Propulsion T-Bar slowly clockwise to turn right and counterclockwise to turn left. Attempt all forward, reverse and turning movements before proceeding to operate both T-Bars at the same time.

Skid Loader operating skills are only obtained through proper coordination of the Loader's forward and reverse movements, with raising and lowering the Lift Arm and with rolling the Bucket forward and back. To gain proficiency, practice all Control T-Bar operations until you are capable of performing the movements without mistake or hesitation.

⚠ CAUTION

Excessive speed for conditions and circumstances can be hazardous. ALWAYS exercise caution and good judgement while operating the Skid Loader.

NOTE: *If the Loader Engine kills while the Lift/Tilt T-Bar is being operated to raise the Lift Arm, the Lift Arm will stop and hold at its present level. Lower the Lift Arms and return the T-Bar to "Neutral" before attempting to restart the Engine. If the Loader Engine kills while the Lift/Tilt T-Bar is being operated to lower the Lift Arm, the Arm will continue lowering until they rest against the Loader Frame. Return the T-Bar to "Neutral" before attempting to restart the Engine.*

HAND BRAKE (See Figs. 6-1 & 6-2)

⚠ CAUTION

BEFORE leaving the Operator's Compartment, engage the Hand Brake and remove the Keyswitch Key. Also, BE SURE to lower the Lift Arm or engage the Lift Cylinder Mechanical Lock, as appropriate.

The proper sequence for correct Loader operation is to always engage the Hand Brake before shutting off the Loader Engine or to disengage the Brake ONLY after the Engine is running and you are ready to move the Propulsion T-Bar. In an EMERGENCY, when it becomes necessary to STOP the Loader forward or reverse movement, IMMEDIATELY, pull up on the Hand Brake.

⚠ WARNING

Function and adjustment of the Hand Brake should be checked on a routine basis to maintain proper operation at all times. NEVER use the Hand Brake as a means of checking Hydrostatic torque as this will cause overheating and accelerated wear of the Discs and Pads resulting in early and unexpected Hand Brake failure.

NOTE: *The Hand Brake is NOT designed for, NOR intended to be used as, the primary means of stopping forward or reverse movement of the Loader. The Propulsion Control T-Bar, when it is returned to the "Neutral" position, provides Hydrostatic braking and is the primary means for stopping Loader movement.*

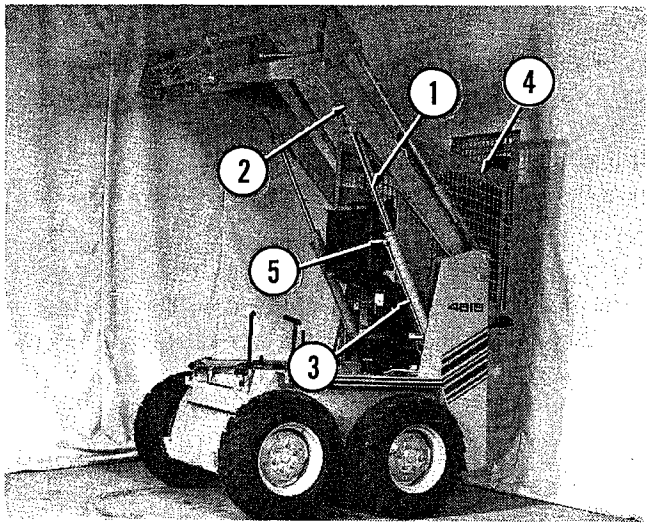
LIFT CYLINDER MECHANICAL LOCK (Figs. 6-3 & 6-4)

⚠ WARNING

BEFORE leaving the Operator's Compartment to work around the outside of the Loader with the Lift Arm raised, ALWAYS engage the Lift Cylinder Mechanical Lock and the Hand Brake. Also, turn the Keyswitch to the Off position, remove the Key and take it with you.

The Lift Cylinder Mechanical Lock will hold the Lift Arm in the raised position and prevent it from dropping if the Lift/Tilt Control T-Bar is accidentally moved or if a hydraulic Hose or connection breaks or is disconnected.

Lock Engagement

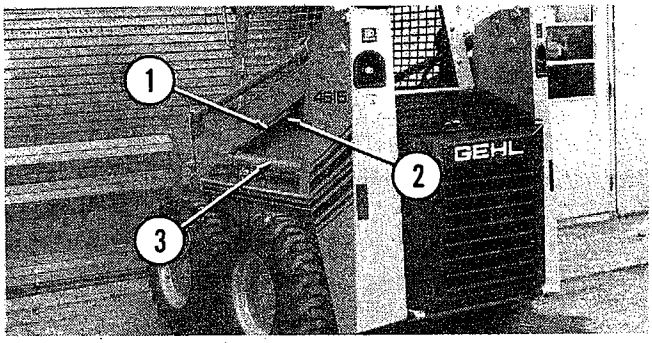


1 - Lift Cylinder Mechanical Lock "Engaged"
2 - Lift Arm
3 - Left Side Lift Cylinder
4 - Overhead Guard
5 - Lock Pin & Chain

Fig. 6-3: Lift Arm Raised & Lock "Engaged"

To engage the Lift Cylinder Mechanical Lock, proceed as follows:

1. Lower the Lift Arm into contact with the Loader Frame.
2. Turn the Keyswitch to the Off position to Stop the Engine, remove the Key and take it with you.
3. Engage the Hand Brake.
4. Leave the Operator's Compartment and pull the Klik Pin which holds the Lock up against the Lift Arm and allow the Lock to come down into contact with the Lift Cylinder.
5. Return to the Operator's Compartment and restart the Engine.
6. Move the Lift/Tilt T-Bar to raise the Lift Arm until the Lock drops over the end of the Lift Cylinder Housing and around the Cylinder Rod. Then, slowly lower the Lift Arm until the free-end of the Lock contacts the top end of the Lift Cylinder Housing.
7. Look, to make sure that the Lock is secure against the Cylinder End.



1 - Lift Cylinder Mechanical Lock in "Storage" Position
2 - Lock Pin & Chain
3 - Left Side Lift Cylinder

Fig. 6-4: Lift Cylinder Lock "Secured"

Lock Disengagement

WARNING

NEVER attempt to disengage the Lift Cylinder Lock by leaving the Operator's Compartment while the Engine is running.

To return the Lift Cylinder Mechanical Lock to its "storage" position, proceed as follows:

1. Raise the Lift Arm completely.
2. Turn the Keyswitch to the Off position to Stop the Engine, remove the Key and take it with you.
3. Engage the Hand Brake.

CAUTION

BEFORE performing Step 4, below, MAKE SURE the area BELOW the Lift Arm and Attachment is clear of all personnel and any object which would be damaged if the weight of the Arm and Attachment fell on it.

4. Before leaving the Operator's Compartment, check to make sure that the Lift Arm is being held in the raised position by the action of Solenoid Valve. With the Keyswitch OFF, and the Solenoid Valve properly working, the Arm should remain in the raised position when the Lift/Tilt T-Bar is moved forward. If the Valve does NOT hold the Arm and the Arm begins to lower, do NOT leave the Operator's Compartment until the Lift Arm has been lowered or, have another person place the Lock into the "storage" position for you.
5. To store the Lock, raise it up until it contacts the Lift Arm and install the Klik Pin through the hole in the Lock Anchor Pin under the Lift Arm.

MATERIAL DENSITIES

Table of Common Materials, Densities & Bucket Capacities

Material	Density in (lb/ft^3)	Bucket Size in ft^3					
		10	12	13	14	17	22
Ashes	35-50						X
Brick-common	112	X					
Cement	110	X					
Charcoal	23						X
Clay	80-100		X				
Coal	53-63					X	
Concrete	115	X					
Cinders	50						X
Coal-anthracite	94			X			
Coke	30						X
Earth-dry loam	30						X
Earth-wet loam	65					X	
Granite	93-111	X					
Gravel-dry	66					X	
Gravel-wet	90			X			
Gypsum-crushed	115	X					
Iron Ore	145	X					
Lime	60					X	
Lime Stone	90			X			
Manure-liquid	65				X		
Manure-solid	45						X
Peat-solid	47						X
Phosphate-granular	90			X			
Potash	68					X	
Quartz-granular	110	X					
Salt-dry	100		X				
Salt-Rock-solid	135	X					
Sand-dry	108	X					
Sand-wet	125	X					
Sand-foundry	95	X					
Shale-crushed	90			X			
Slag-crushed	70					X	
Snow	15-50						X
Sulpha	95		X				
Taconite	107	X					

The Table (on the preceding page) lists densities for some common materials which could be carried in a Bucket. The densities listed are average values and intended only as a guide for Bucket selection.

NOTE: *The SAE operating capacity of the Loader is 1225 lb (556 kg). To prevent exceeding the operating capacity of the Loader, use the Table of Common Material Densities to determine the proper size Bucket to use, based on the type of material to be carried.*

To use the table, find the material name and follow across the table until an "X" appears in one of the right hand columns. Then follow that column up to the top where the proper size Bucket is shown.

NOTE: *The Bucket Size, listed at the top of each column in the Table, is the maximum size Bucket that should be used to carry a heaped load of the particular type of material listed (See Example, below). Of course, a smaller size Bucket can be used.*

EXAMPLE: If **dry salt** (density of 100 lbs/cu-ft) is to be hauled, the maximum Bucket size is 12 cu-ft (100 x 12 = 1200).

For a material which is NOT in the Table, obtain its density value before selecting the appropriate Bucket.

⚠ WARNING

NEVER exceed the rated operating capacity.

LOADER OPERATION

Digging with and Loading a Bucket (Figs. 6-5 through 6-8)

To dig with and load a Bucket, first lower the Lift Arm down into contact with the Loader Frame and then roll the Bucket's Cutting Edge down into contact with the ground. Move the Loader into material and, as Engine loads, roll Bucket back slowly and, at same time, pull back gradually on Propulsion T-Bar to decrease travel speed while still maintaining Wheel torque.

⚠ WARNING

ALWAYS maintain a safe clearance from electric power lines and avoid contact with any electrically charged conductor or gas line! Contact or rupture can result in electrocution or an explosion! Contact the "Digger's Hotline" or proper local authorities for utility line locations BEFORE starting to dig!

NOTE: *Loader working ability is increased when travel speed is decreased. To obtain maximum Wheel torque, move the Propulsion Control T-Bar only a slight amount forward from its "neutral" position, while filling the Bucket.*

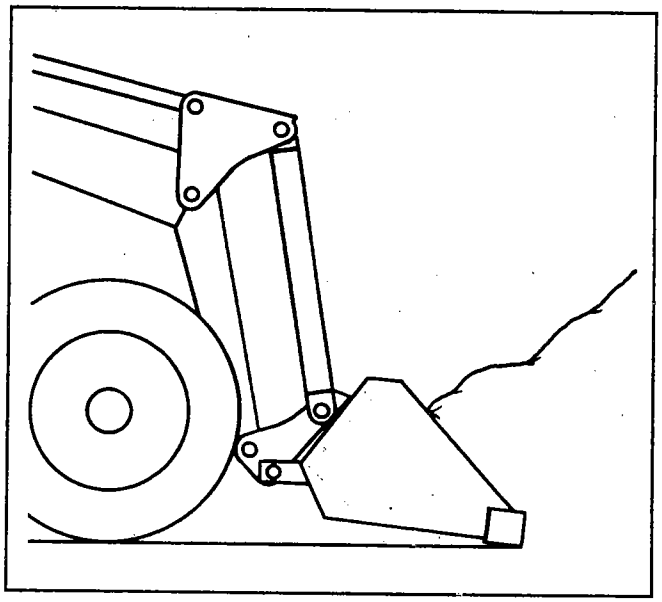


Fig. 6-5: Digging in Loose Materials

When attempting to fill the Bucket while working with most hard-packed materials, it will usually be necessary to raise the Lift Arm while rolling the Bucket back. Also, avoid driving onto the material to be picked-up, if at all possible.

Traveling with a Load

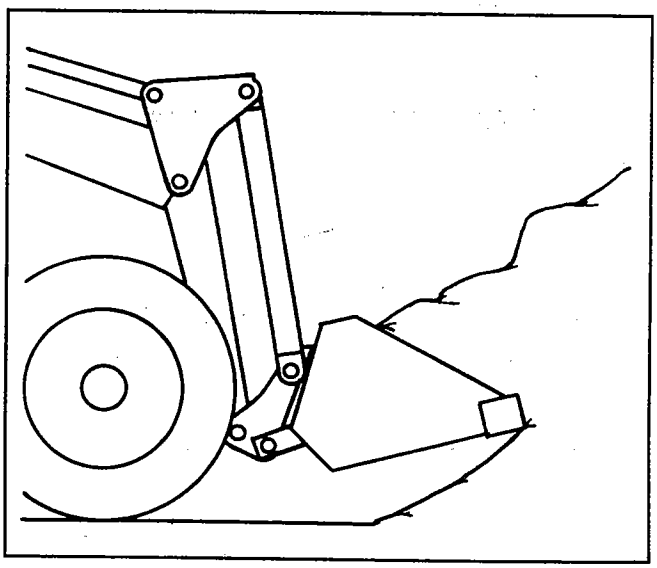


Fig. 6-6: Loading the Bucket

⚠ WARNING

ALWAYS carry loaded Bucket or Fork with Lift Arm resting on Loader Frame. For additional stability when operating on inclines, ALWAYS travel with heavier end of Loader in the same direction as top of the incline.

With the Bucket filled, back the Loader away from the material and rest the Lift Arm against the Loader Frame before proceeding to the dumping area.

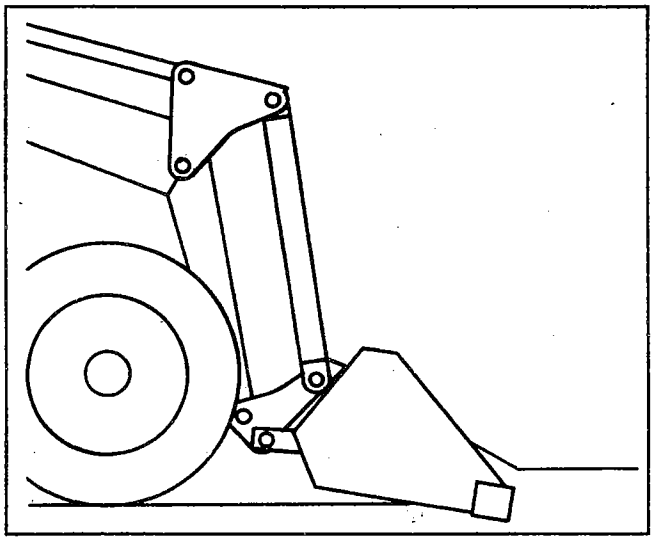


Fig. 6-7: Digging in Hard-packed Materials

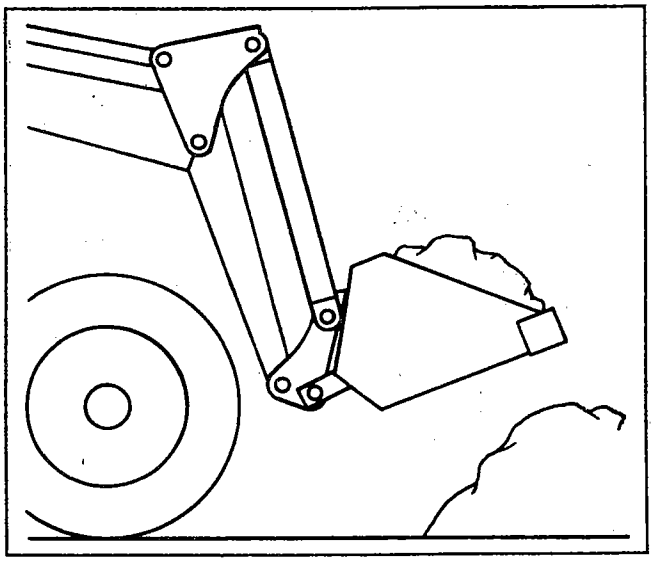


Fig. 6-8: Carrying the Load

Dumping the Load Onto a Pile

Carry loaded Bucket or Fork as low as possible until reaching the pile. Slowly stop forward motion and raise the Lift Arm high enough so that the Bucket or Fork clears the top of the pile. Then, slowly move the Loader ahead to position the Bucket or Fork to dump the material on top of the pile. Empty the Bucket or Fork and back the Loader away while lowering the Lift Arm and rolling the Bucket back.

⚠ WARNING

NEVER push the Lift/Tilt T-Bar into the "Float" position with the Bucket or Attachment loaded and/or raised.

Dumping the Load into a Box

Carry the loaded Bucket or Fork low and approach the truck, trailer or spreader box squarely with the side of the box. Stop your approach as close to the side of the box as possible while still allowing clearance for raising the Lift Arm and loaded Bucket or Fork. Then, raise the Lift Arm until the Bucket clears the top of the box and slowly move the Loader ahead to position the Bucket or Fork over the inside of the box. After the material is dumped, slowly back away from the box and lower the Lift Arm while rolling the Bucket back.

Dumping the Load Over a Solid Embankment

⚠ CAUTION

Do NOT drive too close to an excavation or ditch; BE SURE the surrounding ground has adequate strength to support the weight of the Loader and the load.

Carry the loaded Bucket or Fork as low as possible while slowly traveling toward the dumping area. Stop the Loader at the position where the Bucket extends half-way over the edge of the embankment. Then, roll the Bucket or Fork forward and raise the Lift Arm to dump the material. After the material is dumped, back away from the embankment slowly while lowering the Lift Arm and rolling the Bucket back.

Scraping with a Bucket (Figs. 6-9 & 6-10)

For scraping, the Skid Loader should be operated in the forward direction. First, position the Lift Arm down against the Loader Frame. Tip the Bucket Cutting Edge at a slight angle to the surface being scraped. While traveling slowly forward, with the Bucket in this position, material can flow over the Cutting Edge and collect inside the Bucket.

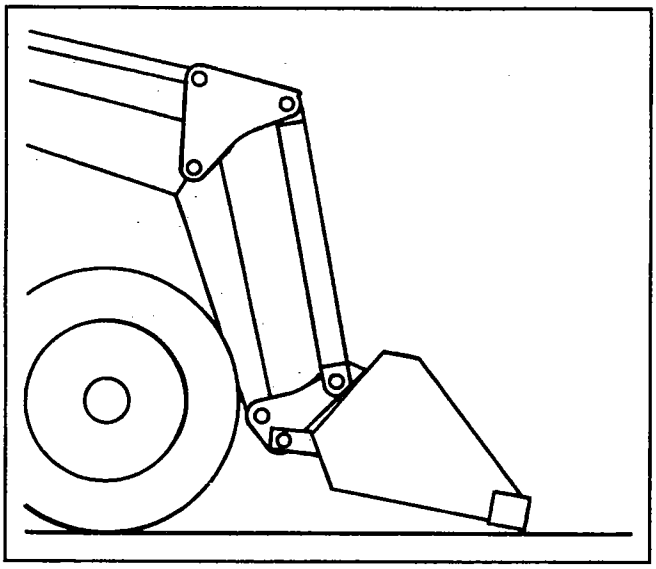


Fig. 6-9: Positioning Bucket for Scraping

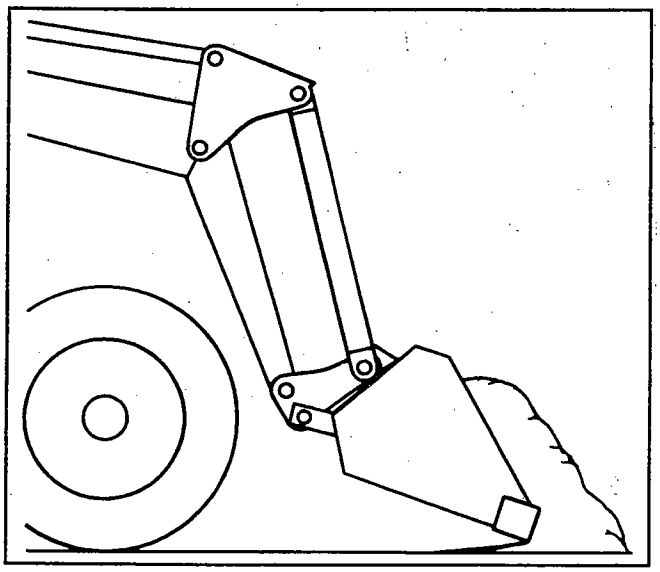


Fig. 6-10: Scraping with a Bucket

Leveling with a Bucket (Fig. 6-11)

First drive the Loader to the outer edge of the area to be leveled. Then, with the Lift Arm down against the Frame, push the Lift/Tilt T-Bar into the "float" position and roll the Bucket forward to place the Bucket Cutting Edge at a 30 to 45 degree angle to the surface being leveled. Proceed to drive the Loader backwards dragging the dirt and, at the same time, leveling it.

NOTE: *The "float" (detent) position for the Lift/Tilt Control T-Bar is reached by pushing the T-Bar all the way forward. This T-Bar position opens both work ports to the Reservoir and thus allows the Lift Arm to "float" while the Bucket follows the ground contour.*

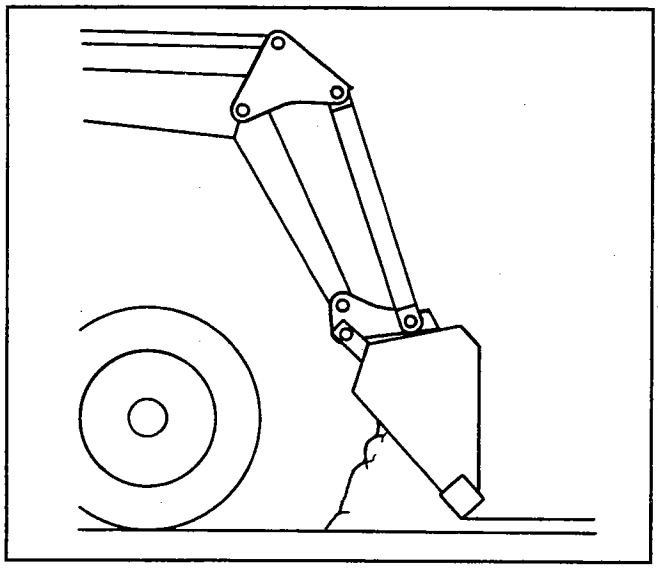


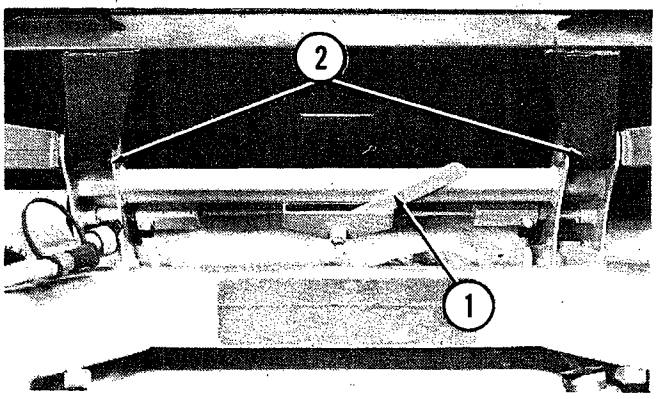
Fig. 6-11: Leveling with a Bucket

CHANGING ATTACHMENTS (Figs. 6-12 & 6-13)

⚠ WARNING

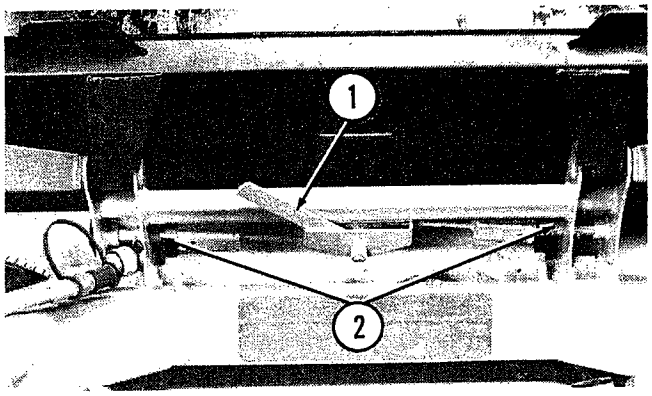
To prevent unexpected and undesired Attachment release from the Lift Arm, BE SURE to properly secure the Quick Lock Mechanism Latchpins by rotating the Latch Lever completely clockwise.

The Skid Loader features a Quick Lock Latching and Locking Mechanism (Tool Bar) for mounting an Attachment to the front of the Lift Arm. The Quick Lock mechanism uses a single Latch Lever control for attaching and detaching the Bucket.



1 - Quick Lock Lever (Locked to the Right)
2 - Bucket Hook

Fig. 6-12: Quick Lock Mechanism Engaged & Locked



1 - Quick Lock Lever (Unlocked to the Left)
2 - Latch Pin

Fig. 6-13: Quick Lock Mechanism Disengaged & Unlocked From Bucket

Attaching

To attach a Bucket or other Attachment, proceed as follows:

1. Rotate the Latch Lever completely to the left (counterclockwise, as viewed from the Operator's Compartment) to fully retract the Latchpins.
2. Start the Loader Engine and make sure that the Lift Arm is lowered and in contact with the Loader Frame.
3. Align the Loader squarely with the back of the Attachment.
4. Roll the Quick Lock mechanism forward until the mating parts of the mechanism are in-line with and slightly below the Hooks on the back of the Attachment.
5. Slowly drive the Loader forward and, at the same time, roll the Quick Lock mechanism back to engage the Hooks on the Attachment.
6. Stop forward travel when the Hooks are engaged but, continue to roll the Quick Lock mechanism back to pick the Attachment up off the ground. When the Quick Lock is rolled-back completely, exercise the **MANDATORY SAFETY SHUTDOWN PROCEDURE (page 8).**
7. With the Loader Engine OFF, leave the Operator's Compartment, and swing the Latch Lever completely to the right (clockwise, as viewed from the Operator's Compartment) to fully engage the Latchpins.

Detaching

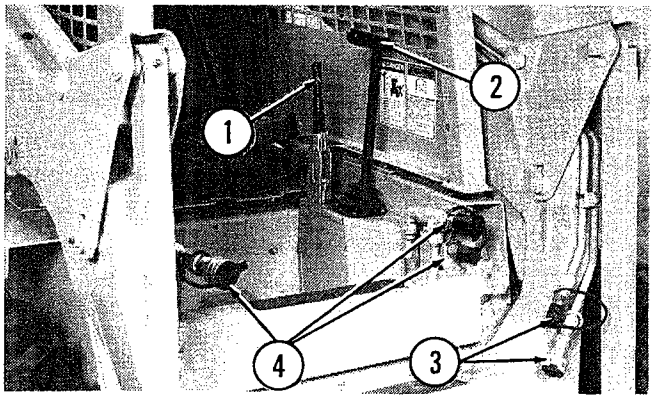
To detach a Bucket or Attachment, proceed as follows:

1. Roll the Quick Lock mechanism backward as far as it will go. Once the Quick Lock is rolled all the way back, exercise the **MANDATORY SAFETY SHUTDOWN PROCEDURE (page 8).**
2. With the Loader Engine OFF, leave the Operator's Compartment, and rotate the Latch Lever completely to the left (counterclockwise, as viewed from the Operator's Compartment) to fully retract the Latchpins.
3. Start the Loader Engine and make sure that the Lift Arm is lowered and in contact with the Loader Frame.
4. Roll the Quick Lock mechanism forward and slowly back the Loader until the Attachment is free from the Loader.

AUXILIARY FRONT HYDRAULICS (Figs. 6-14 & 6-15)

The Skid Loader can be equipped with a basic optional factory or field-installed Auxiliary Front Hydraulics system which has Male and Female Quick-disconnect Fittings for convenient hook-up to the appropriately terminated hose connections of an accessory hydraulically-operated device, such as a Grapple Fork. Operation of the Auxiliary Flow Control Valve is controlled by a Footpedal which is in the front left corner of the Floorplate. Pushing down on the left side of the Pedal causes flow out of the Male Fitting and pushing down on right side of the Pedal causes flow out the Female Fitting. When there is NO hose coupling made to both Quick-disconnects and the Footpedal is actuated, the Main System Relief Valve will operate to bypass the Auxiliary Hydraulics system. A Pedal Lock Bracket is provided for maintaining continuous flow, when required.

The Loader can also be equipped with an optional factory or field-installed expanded Auxiliary Hydraulics system which has a pair of additional Disconnect Fittings in the front inside corners of the Fenders. Constant oil flow through these two Disconnect Fittings is controlled by a Diverter Valve in the middle of the Front Panel.



1 - Adjustment Handle of Hand Brake In Activated Position
2 - Propulsion Control T-Bar
3 - Auxiliary Hydraulics Quick-disconnects
4 - Optional High Flow Pump Quick-disconnects

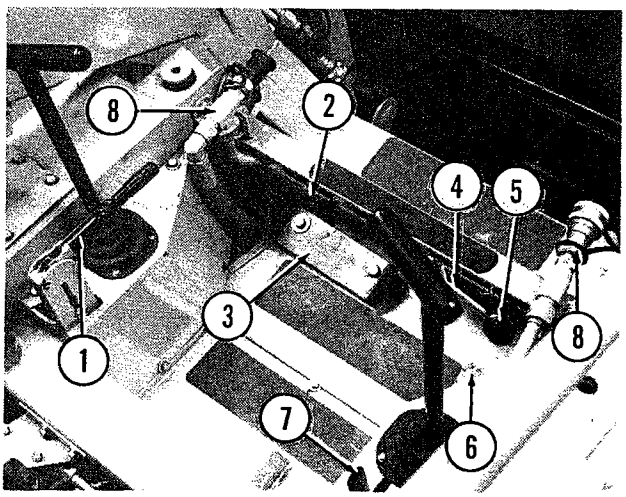
Fig. 6-14

The Loader can also be equipped with an optional factory or field-installed High Flow Pump which doubles the oil flow through the expanded Auxiliary Hydraulics system. A Push-Pull On-Off Valve is provided in the front right corner of the Floorplate for activating and de-activating the High Flow Pump.

The Fittings are mounted on the left side of the Lift Arm to facilitate convenient hook-up to appropriately terminated hose connections of a hydraulically operated accessory device, such as a grapple fork.

⚠ WARNING

ALWAYS perform connections to or disconnections from all Hydraulics Quick-disconnect Fittings with the Loader Engine shut off.



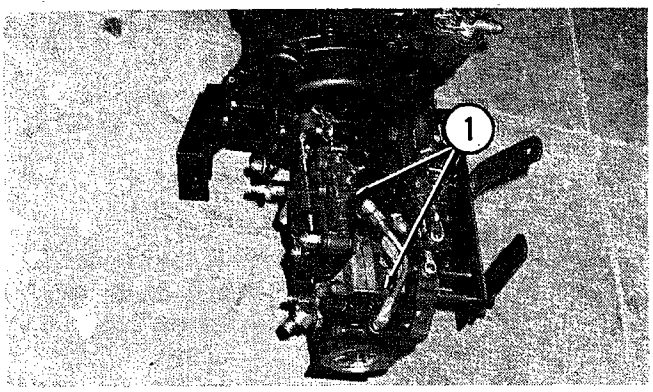
1 - Hand Brake Handle in Deactivated Position
2 - Auxiliary Hydraulics Pedal Lock
3 - Auxiliary Hydraulics Control Pedal
4 - Backhoe or High Flow Output Diverter Valve Control Lever
5 - High Flow Output Selector Valve
6 - Foot Accelerator Pedal
7 - Hand Throttle
8 - Backhoe or High Flow Output Quick-disconnects

Fig.6-15

TOWING & HIGHWAY TRAVEL (Fig. 6-16)

NOTE: *This Skid Loader is equipped with Emergency Hydrostatic Lockouts for use if the Loader becomes disabled and requires a tow. Access to the Lockouts is gained by temporarily removing the Rear Floorplate.*

When it becomes necessary to frequently move the Loader over long distances, obtain and use a GEHL LT8500 Loader Trailer. For short distance highway travel, use the SMV (Slow Moving Vehicle) Emblem Mounting Bracket provided, to attach an SMV Emblem (purchased locally). For extensive highway operation or when desired, obtain and install accessory Amber Dual Flashers or an Amber Strobe Light.



1 - Tow Valve

Fig. 6-16

CHAPTER 7
ADJUSTMENTS

LOADER RAISING PROCEDURE (Fig. 7-1)

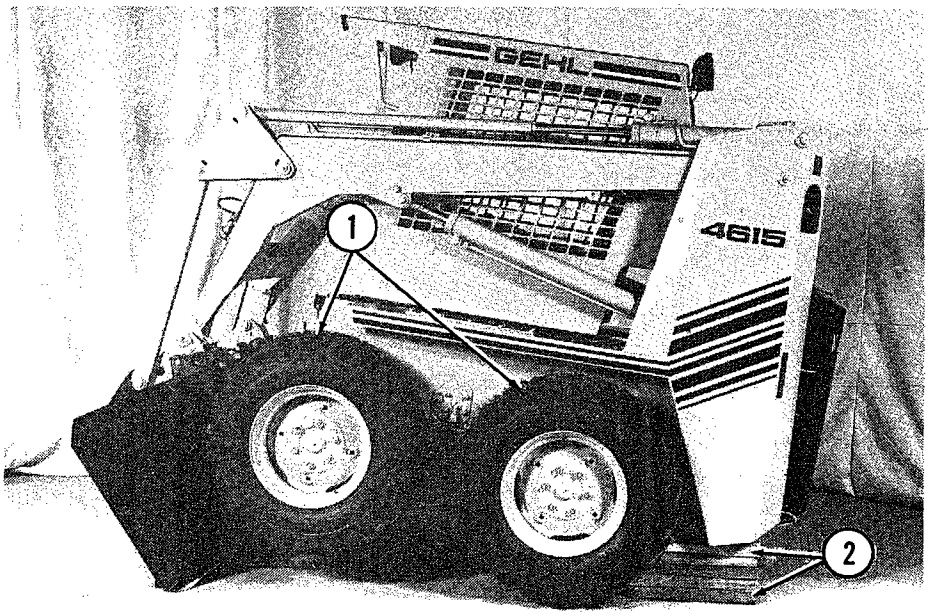
Whenever it becomes necessary to raise the Loader, so the Tires are NOT contacting the ground, the mounted Bucket and Lift Arm can be used to pick the Loader up off its Tires and Wheels.

⚠ WARNING

The procedure below, for raising the Loader, MUST only be used to do just that. Do NOT leave the Operator's Compartment with the Engine running and the Loader in the "raised" position. Shut off the Engine and carefully climb out of the Operator's Compartment, making sure to avoid disturbing the Lift/Tilt Control T-Bar while getting out of the Loader. Once out of the Operator's Compartment and BEFORE proceeding to work on Loader, carefully and properly install additional blocking and supports under both front and back ends of Loader. Do NOT rely on Loader Hydraulics system to maintain "raised" position without additional blocking and supports.

To Raise and block the Skid Loader, proceed as follows:

1. Place two equal height, solid blocks of wood [approximately 8-1/2" (216 mm) tall by at least 24" (610 mm) long] parallel, but NOT in contact with the rear Wheels and centered under the horizontal portions of the rear of the Loader Frame.
2. Climb into the Operator's Compartment, fasten your Seat Belt and lower the Restraint Bar.
3. Start the Engine and raise the Lift Arm high enough to allow the Bucket to be rolled forward so that the Cutting Edge is straight and perpendicular with the ground.
4. Lower the Lift Arm while making sure that the Bucket Cutting Edge clears the Tires until the Cutting Edge contacts the ground.
5. Continue to slowly lower the Lift Arm, which will raise the Loader up, until all four Tires are off the ground.
6. Shut off the Loader Engine and climb out of the Operator's Compartment, making sure NOT to disturb the Lift/Tilt Control T-Bar.



1 - Tires Off the Ground
2 - Solid Blocks* of Equal Height on Both Sides

* - Blocks should be Approximately 24" (610 mm) Long by 8-1/2" (215 mm) High by 3-1/2 to 8" (90 to 205 mm) Wide

Fig. 7-1

7. Once out of the Loader, carefully and properly install additional blocking and supports under the front of the Loader.

8. Climb back into the Operator's Compartment, fasten your Seat Belt, lower the Restraint Bar, start the Engine and raise the Lift Arm until the Loader is supported securely on the blocking before proceeding to perform service or adjustments with the Loader in the "raised" position.

To remove the Loader from the raised position, proceed as follows:

1. Lower the Lift Arm to raise the Loader up off the front blocks.

2. Shut off the Loader Engine and climb out of the Operator's Compartment, making sure NOT to disturb the Lift/Tilt Control T-Bar.

3. Once out of the Loader, carefully remove the blocking under the front of the Loader.

4. Climb back into the Operator's Compartment, fasten your Seat Belt, lower the Restraint Bar, start the Engine and lower the Lift Arm until the Loader is resting on the Loader Tires.

5. Remove the blocking at the rear of the Loader before continuing Loader operation.

⚠ CAUTION

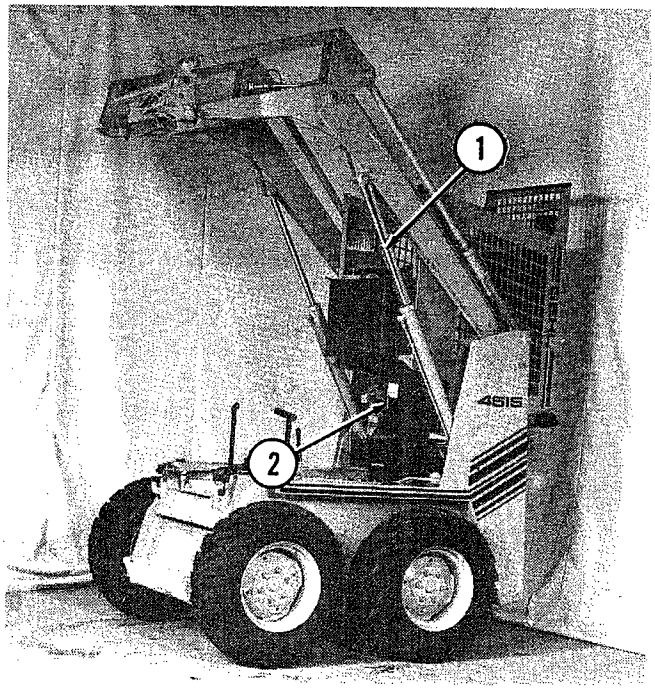
BEFORE Proceeding to perform any adjustments on the Skid Loader, exercise the MANDATORY SAFETY SHUTDOWN PROCEDURE (page 8).

CONTROL T-BARS (Fig. 7-2)

Both Control T-Bars are factory adjusted for proper operating characteristics and should require NO further readjustment unless Linkages have to be disturbed from their original factory set positions. Adjustment access is gained by first raising the Lift Arms and engaging the Mechanical Lift Cylinder Lock. Then, unbolt, roll-back and secure the Overhead Guard in the raised position. With the Overhead Guard rolled-back and locked, remove and retain the appropriate fasteners and the Right (Lift/tilt) and Left (Propulsion) T-Bar Consoles for access to the Linkage Rods and Ball Joints.

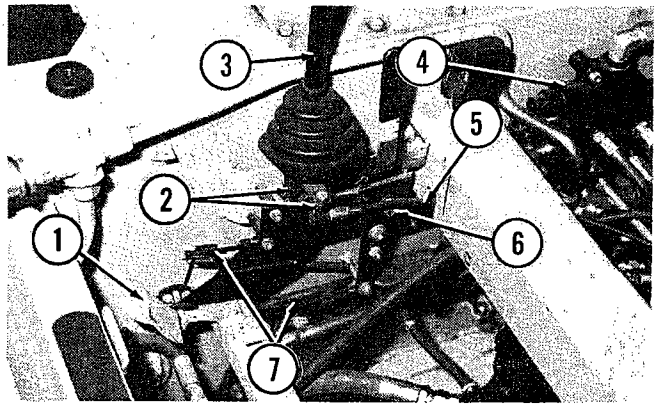
Lift/Tilt T-Bar (Figs. 7-3 & 7-4)

The Lift/Tilt T-Bar has two Ball Joints which are connected through Control Rods to the Spools of the Main System Valve. The Lift Control Rod is coupled directly to the Lift Spool of the Valve. The Tilt Control Rod is connected through a Valve Lever to the Tilt Spool. If a Control Rod has to be uncoupled from either the Lift Spool or the Tilt Spool Lever and then later reinstalled, the Rod length may have changed and can be readjusted, if necessary, into or out of the Ball Joints before the opposite ends of the Rods are reconnected.



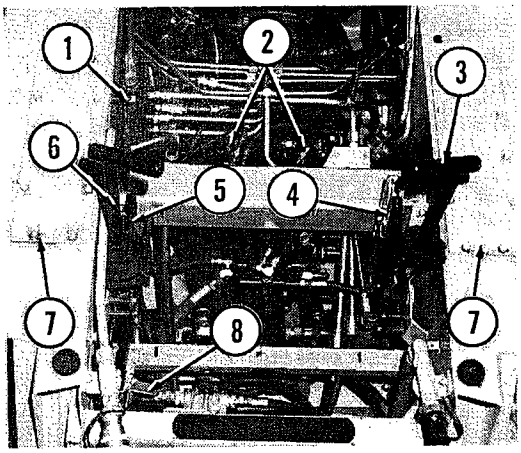
1 - Mechanical Lift Cylinder Lock Engaged
2 - Self-actuating Locking Mechanism Handle Engaged

Fig. 7-2: Lift Arms Raised, Mechanical Lift Cylinder Lock "Engaged" and Overhead Guard Unbolted, Rolled-back and Locked



1 - Accelerator Pedal
2 - Lift/Tilt Control Rod Ball Joints
3 - Lift/Tilt Control T-Bar
4 - Main Control Valve
5 - Lift Control Rod Coupled Directly to Lift Spool
6 - Throttle Lever & Compression Spring and Lock Nut
7 - Accelerator & Throttle Linkage Rod & Lever

Fig. 7-3



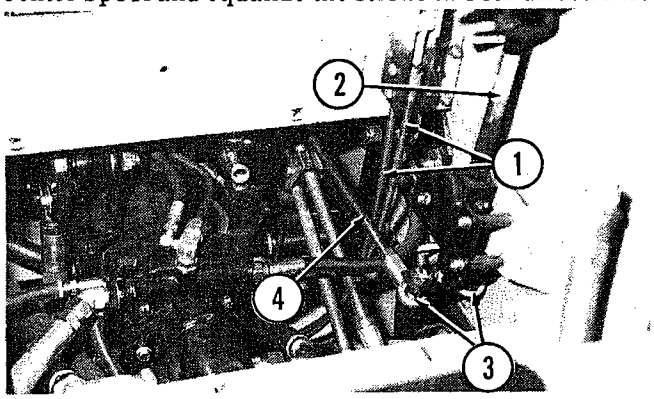
1 - Main System Control Valve
2 - Boost Control Servo Units
3 - Propulsion (Traction) Control T-Bar
4 - Hand Brake Handle & Linkage Cables
5 - Throttle Lever
6 - Lift/Tilt Control T-Bar
7 - Chain Housing Cover & Gasket
8 - Accelerator Pedal

Fig. 7-4

NOTE: *BE SURE the Locknuts are tightened against the Ball Joint connectors, to fix the positions of the Rods, anytime that the Linkage Rods are removed, replaced or readjusted.*

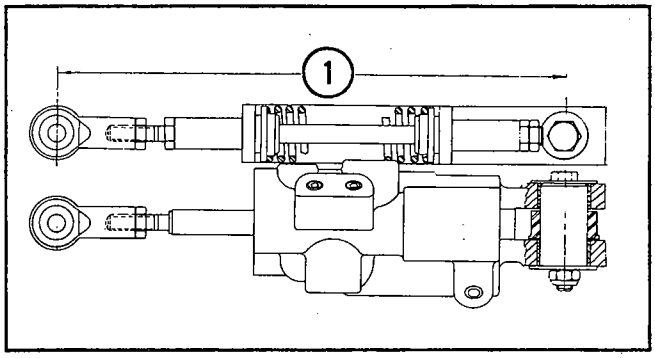
Propulsion T-Bar (Figs. 7-4, 7-5 & 7-6)

The Propulsion Control T-Bar is linked to the Control Arms of the front and rear Hydrostatic Pump Arms through Boost Controls (Servo units). Linkage adjustment involves re-establishing each Pump Arm neutral position, to stop right and left Wheel rotation, by readjusting the Centering Spring on each Servo unit. Refer to the illustration provided for location of the correct point of adjustment. Do NOT disturb the connection to the Pump Arm NOR the Ball Joint connection to the Servo Valve Spool; this position is factory adjusted to center Spool and equalize the stroke in both directions.



1 - Hand Brake Cables
2 - Propulsion (Traction) Control T-Bar
3 - Propulsion Control Linkage Rod Ball Joints
4 - T-Bar to Hydrostatic Pump Arm Linkage Rod

Fig. 7-5

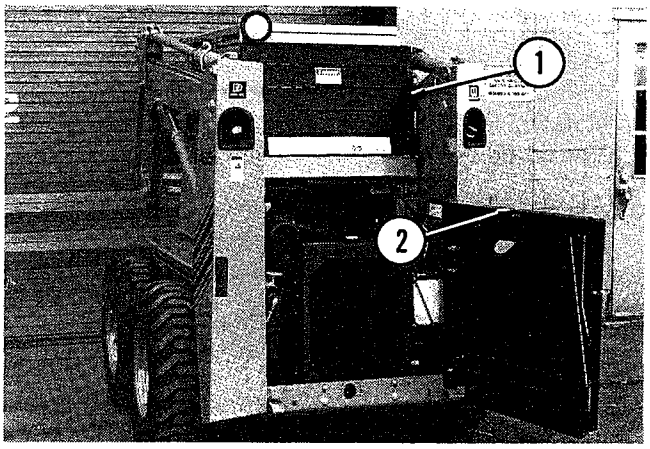


1 - 10-3/8" (263.5 mm)

Fig. 7-6: Boost Control Setting

ALTERNATOR DRIVE BELT (Fig. 7-7)

The Alternator Drive Belt tension should be checked and readjusted, if necessary, after every 100 hours of operation. Access to the Drive Belt is gained by opening the Louvered Engine Cover and then unlatching and swinging open the Hinged Rear Grill.



1 - Louvered Engine Cover
2 - Hinged Rear Grill

Fig. 7-7

The Alternator is mounted on a pivot and secured in a slotted Adjustment Bracket. To adjust Belt tension, first loosen the Bolt in the slotted Bracket slightly and pry against the Alternator to reposition it. Proper tension is adjusted by applying a thumb pressure of approximately 22 lb (10 kg) force at the midpoint between the Alternator and Water Pump to deflect the Belt approximately 1/2" (13 mm). After proper tension is obtained, tighten both the Bolt in the slot and the Pivot Bolt.

DRIVE CHAINS (Fig. 7-8 & see Figs. 7-2 & 7-4)

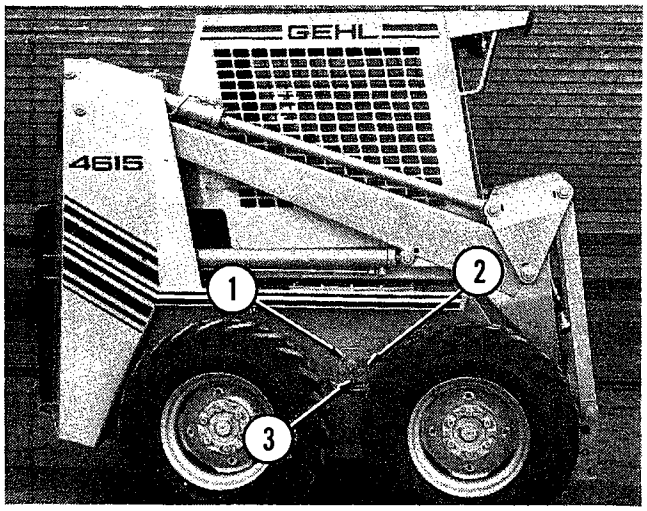
Skid Loader Drive Chain tension should be checked initially after the first 50 hours of operation and thereafter following every 200 hours of operation. To properly adjust the Drive Chain tension on either side of the Loader, the procedure is the same. First, raise

the Lift Arms and engage the Mechanical Lift Cylinder Lock. Then, unbolt, roll-back and secure the Overhead Guard in the raised position. Then, remove and retain the Chain Housing Access Cover to observe the Chain tension adjustment on either side, as appropriate. The Loader can be left on its Tires to make the Chain tension adjustment. To adjust the tension, proceed as follows:

1. Loosen (but do NOT remove) the four (4) 3/8 Nuts which secure each Hydraulic Motor Mounting Plate and withdraw the Adjustment Screw enough to allow full travel of the Plate.

2. Loosen (but do NOT remove) the (4 each) 3/8 Nylon-insert Locknuts and Plain Washers which secure both the Outside and the Inside Takeup Plates to allow the Jackshaft to be repositioned. Also, loosen (but do NOT remove) the Locknuts on both the Inside and the Outside Takeup Plate Cams.

3. Rotate the Adjustment Screws on the Take-up Plates clockwise until a maximum deflection of approximately 1/4" (6 mm) for about 20 lb (9 kg) of force is obtained for each of the Secondary Drive Chains. Tighten the Adjustment Screws equally in order to square the Jackshaft Sprocket vertically inside the Housing. Tighten or loosen the Cams, as necessary, to adjust the Jackshaft Sprocket horizontally inside Chaincase Housing.



1 - 3/8 Nylon-insert Locknut and Plain Washer (1 each of 4)
2 - Outside Takeup Plate & Cam
3 - Adjusting Screw & Locking Nut

Fig. 7-8

4. Tighten the Adjustment Screw on the Motor Mounting Plate until a maximum deflection of approximately 1/4" (6 mm) is obtained for 20 lb (9 kg) of force applied to the Primary Drive Chain.

5. After the proper Chain tension is obtained, retighten the (4) 3/8 Nuts on the Motor Mounting Plate and the (4 each) 3/8 Nylon-insert Locknuts and Plain Washers on the Inside and Outside Takeup Plates.

6. Repeat the above adjustments (steps 1 through 5) for the other side of the Loader. Then, replenish the Chaincase oil level to approximately 1" (25.4 mm) deep, if necessary. Replace and resecure both Chaincase Housing Access Covers and Gaskets before attempting to resume operation.

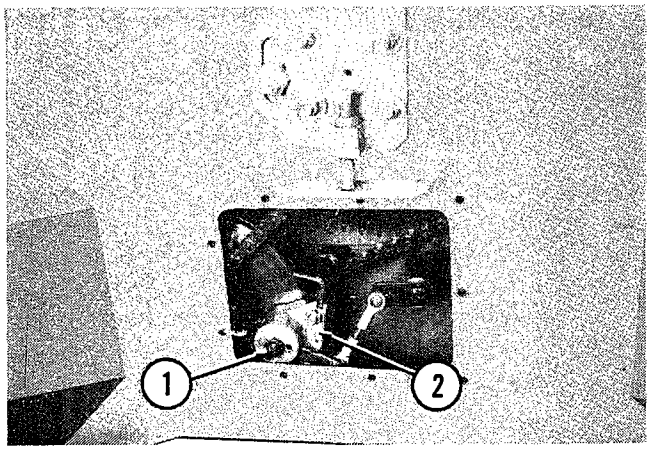
ENGINE

SL4610 Series Skid Loader are diesel-powered units. A separate Engine manual is provided for specifications, adjustment, maintenance and service information.

HAND BRAKE (Fig. 7-9 & see Figs. 7-4 & 7-5)

The Hand Brake is linked by Cables to Disc Brake assemblies on the end of each Hydrostatic Drive Motor. The end of the Brake Handle can be rotated to remotely adjust the Cable lengths and, in turn, the Brake Calipers. After every 200 hours of operation, the Hand Brake function should be checked and the Brakes adjusted by rotating the end of the Brake Handle.

After numerous adjustments, the end of the Handle will reach its limit of travel and NO longer affect Brake adjustment. At this time, the end of the Brake Handle should be turned back to the opposite end of its rotating limits and the Adjustment Screw on each Brake assembly MUST be readjusted to obtain a Brake Pad to Disc gap of 0.010 to 0.015" on each assembly (measured with a feeler gauge).



1 - Caliper Adjustment Bolt
2 - Brake Disc

Fig. 7-9: Brake Caliper Access Through Chaincase Side Access Hole

Access to the Adjustment Screw for each Brake is gained by removing the Access Cover on the outside of the Gearcase. BE SURE to readjust the Brake Handle before proceeding to adjust the Screw on each Brake assembly. Loosen the Lock Nut before turning the Adjustment Screw and BE SURE to retighten the Nut after the adjustment is made.

After the Brake assemblies have been readjusted twice, the Pads of both Caliper Brake assemblies will require replacement.

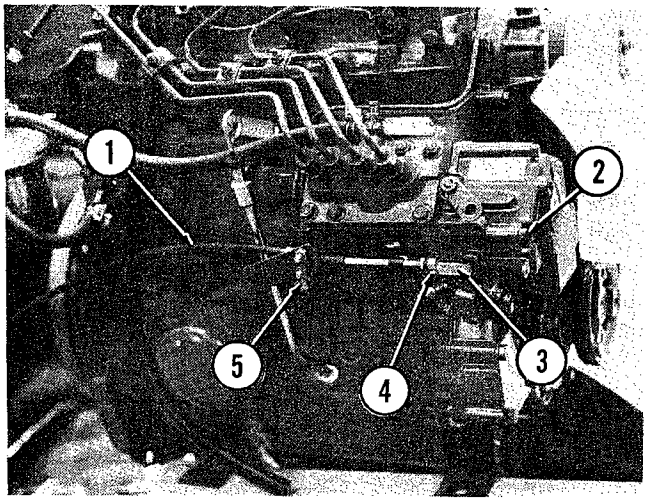
THROTTLE LEVER & ACCELERATOR PEDAL (Fig. 7-10 & see Figs. 7-3 & 7-4)

The Skid Loader is equipped with a right hand-operated Throttle Lever and a right foot-operated Accelerator Pedal.

The Throttle Cable, used to interconnect the Accelerator Pedal to the Injection Pump, has adjustable Yokes for altering the Cable length and resultant amount of travel required to go from idle to full Throttle.

Access to the Throttle Handle and Accelerator Pedal Cable Linkages is gained by removing the Right T-Bar Console and the Rear Floorplate. Access to the Throttle Cable Linkage is gained by unbolting, tilting-back and locking the Overhead Guard. Access to the Injection Pump Cable Linkage is gained by opening the Louvered Engine Cover. BE SURE to fix the adjusted Cable length by re-tightening the Lock Nuts against the Cable Yokes, after any adjustments have been made.

Besides the Throttle Cable adjustment, the Throttle Lever Friction Pad pressure can be readjusted if the Throttle Lever does NOT hold its position. A Compression Spring and Lock Nut are provided for making this adjustment.



1 - Throttle Cable
2 - Injection Pump
3 - Yoke
4 - Lock Nut
5 - Throttle Cable Anchor

Fig. 7-10

CHAPTER 8
LUBRICATION

GENERAL INFORMATION

CAUTION

NEVER attempt to lubricate or service this unit when any part of the machine is in motion. ALWAYS BE SURE to exercise the MANDATORY SAFETY SHUTDOWN PROCEDURE (page 8) BEFORE proceeding to lubricate or service this equipment.

NOTE: *The Maintenance Log Chapter in this manual has provisions for recording the dates and Hourmeter readings after lubrication or other service has been performed; use those spaces to keep a log for maintaining a current service interval record. Proper routine lubrication is an important factor in preventing excessive part wear and early failure.*

LUBRICANTS

The chart below lists the locations, temperature ranges and types of recommended lubricants to be used when servicing this machine. Also refer to the separate Engine Manual (provided) for additional information regarding recommended Engine lubricants, quantities required and grades.

NOTE: *Refer to Operator Services topic in Service Chapter of this manual for detailed information regarding periodical checking and replenishing of lubricants.*

GREASING

NOTE: *Grease all of the fittings indicated at the intervals of operation listed. Use a good grade of Lithium-based grease.*

Wipe dirt from the fittings before greasing them to prevent the dirt from being forced into the Bearing or pivot. Replace any missing or damaged fittings when noticed. To minimize dirt build-up, avoid excessive greasing.

Lubricants Chart

Perkins Diesel Engine(Crankcase Oil)		Hydraulic System Reservoir
Ambient Temperature	**Grade**	Use an Automotive Transmission Fluid (ATF), Type A (Suffix A) or Dexron II { or a Hydraulic Fluid containing anti-rust, anti-foam and anti-oxidation additives and having a Viscosity Index (VI) of 135 to 200 with viscosity levels similar to ATF}
SINGLE GRADE OILS*		
0°F to 30°F (-18°C to -1°C)	SAE 10 or 10W	
30°F to 80°F (-1°C to 27°C)	SAE 20 or 20W	**Chaincases**
Above 80°F (27°C)	SAE 30	Use SAE 10W40 motor oil.
MULTI-GRADE OILS*		**All Grease Fittings**
0°F to 30°F (-18°C to -1°C)	SAE 5W-20 or 5W-30	Use No. 2 Lithium-based Grease
Above 30°F (-1°C)	SAE 10W-30	

Service Classification: API - CC/SE, CD/SE or Better*

**** CD/SE 10W-30 should NOT be used during the first 50 hours of Loader operation.**

Grease Fitting Locations

Grease Every 10 Hours (or daily)

1. Lift Cylinder Rear Pivot (each side)
2. Quick Lock Pivot (each side)
3. Leveling Link (2 Places each side)
4. Tri-link Pivot (each side)
5. Tilt Cylinder Front Pivot (each side)
6. Lift Cylinder Front Pivot (each side)
7. Tilt Cylinder Rear Pivot (each side)
8. Lift Arm Rear Pivot (each side)

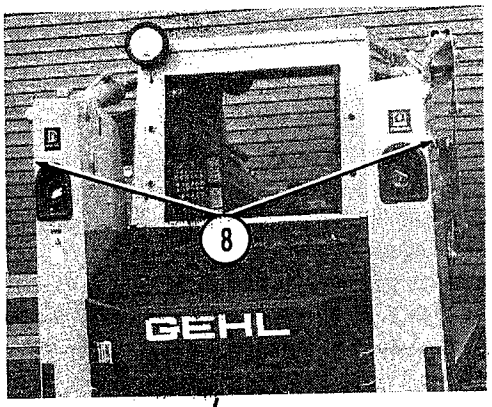
Grease Every 100 Hours

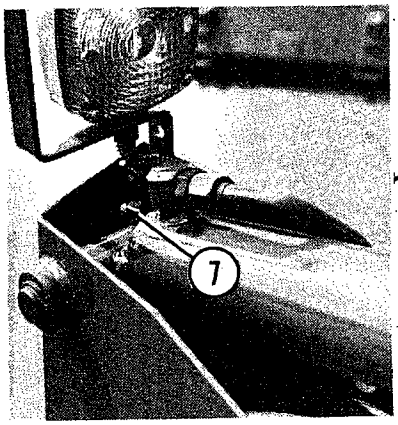
9. Lift/Tilt T-Bar Pivot*
10. Propulsion T-Bar Pivot*

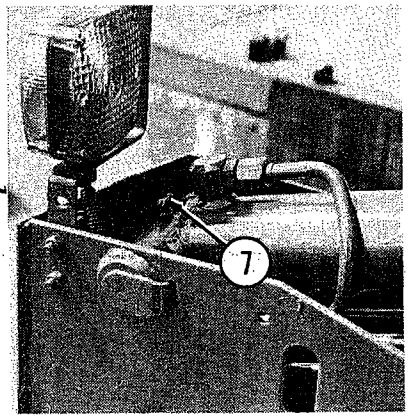
Grease Every 500 Hours (Or Once Annually)

11. Front Outside Wheel Bearing (each side)
12. Rear Outside Wheel Bearing (each side**)
13. Front Inside Wheel Bearing (each side***)
14. Remote Rear Inside Wheel Bearing

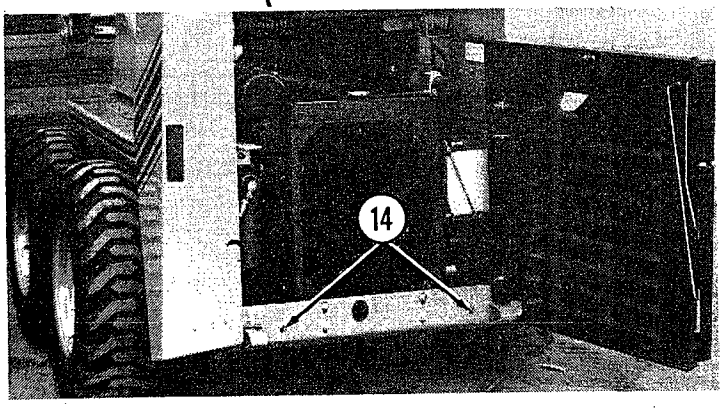
* Remove T-Bar Consoles for Access to Fittings
** Remove Wheels for Access to Fittings
*** Remove Front Floorplate for Access to Fittings

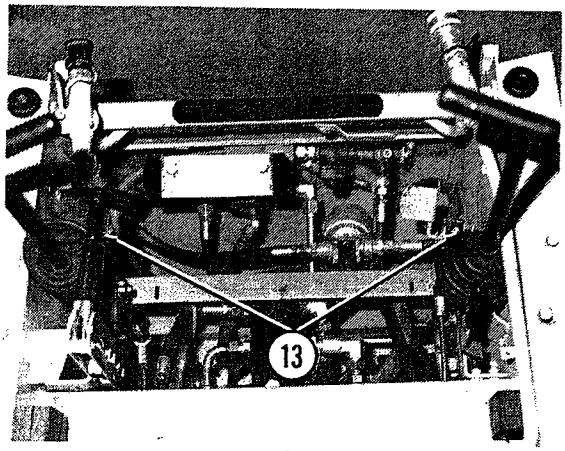


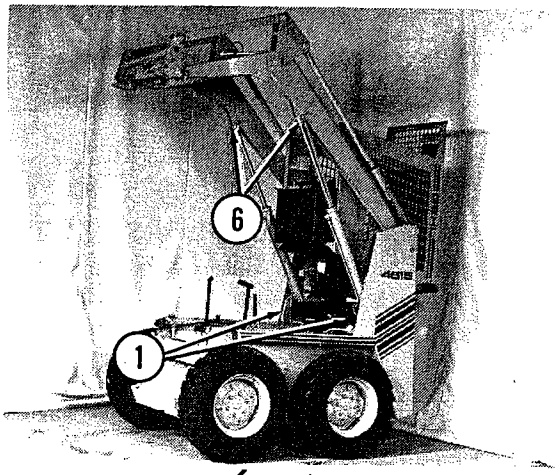


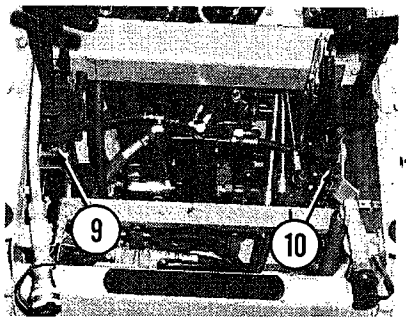


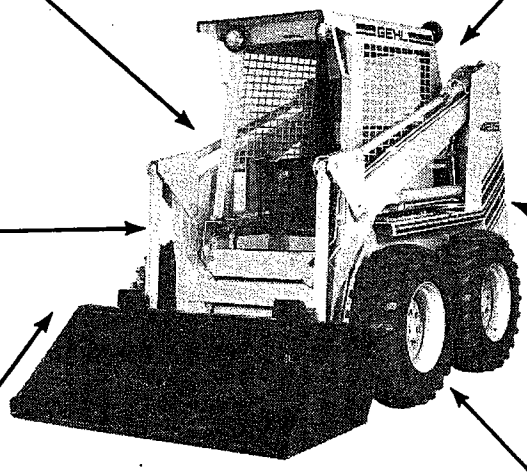
Rear Master

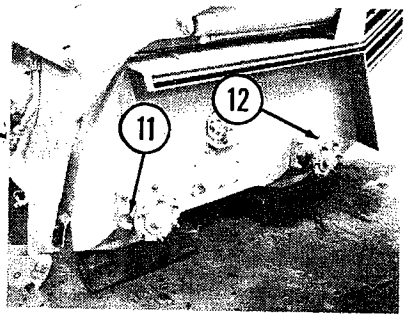




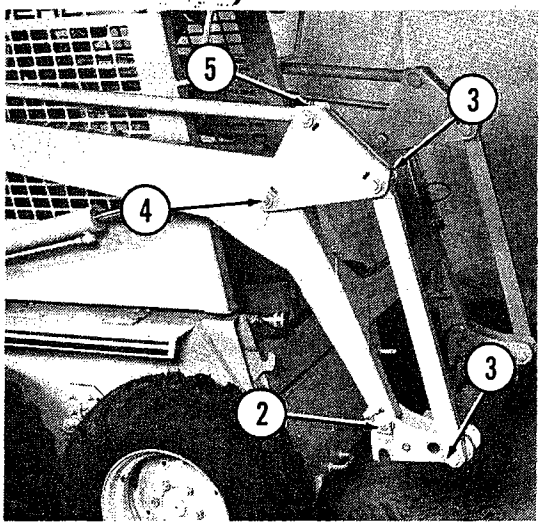


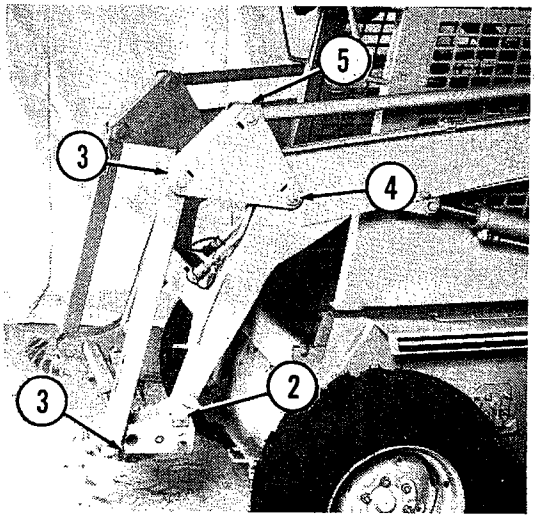






Front Master





CHAPTER 9

OPTIONAL FEATURES & ACCESSORIES

ATTACHMENTS

Attachment Mounting Bolt-on Hook Kit

An Attachment Mounting Bolt-on Hook Kit is available by stock number 803862. The Mounting Kit consists of bolt-on type Right and Left Bucket Hook assemblies which match the Quick-Lock Attachment mount on the front of the Loader Lift Arms to enable convenient attachment/detachment of special components mounted on the Lift Arms.

Auger (Post Hole Digging)

The Skid Loader can be equipped with an Auger Attachment that consists of a Mounting Plate, Auger Drive Head and Auger. To obtain the desired Auger for your needs, order by stock number from the following list:

Description	Stock Number
Mounting Plate*	803553
Auger Drive Head*	803351
9" diameter, double flight Auger**	803555
12" diameter, double flight Auger**	803556
18" diameter, double flight Auger**	803557
14" long, Auger Shaft Extension**	803558

* Required ** Selectable

Backhoe

The Skid Loader is equipped from the factory with provisions for operating a Backhoe. The Mounting Hooks and the Hydraulic Hose Couplings are built into the Load Arm. Backhoe attaching and operating information is contained in a separate Operator's Manual provided with the Backhoe.

Breaker Lift Arm Mounting Kit

A Breaker Lift Arm Mounting Kit is available by stock number 803208. The Mounting Kit enables mounting a Short or Long Stroke Breaker onto the front of the Loader Lift Arm.

Broom

A 6-foot wide Broom Attachment can be obtained by stock number 803570.

Buckets

As listed in the Specifications chapter of this manual, several size Buckets for different purposes are available. Refer to the Operation chapter for mounting and removal information. To obtain the desired Bucket, order it by the appropriate stock number as listed below:

Description	Stock Number
40" (1015mm) Cement	804093
60" (1525mm) Utility	804094
60" (1525mm) Industrial	803774
65" (1650mm) Light Material	804097
65" (1650mm) Wide Dirt/ Construction	804095
65" (1650mm) Wide Dirt/ Construction w/Teeth	804096
65" (1650mm) 4-in-1	804810
65" (1650mm) Granular Fertilizer	804098
72" (1830mm) Produce	804099

Grapple Fork

When desired, an Industrial Grapple Fork (for the 60" wide Industrial Bucket ONLY) can be obtained by ordering stock number 803649. The Grapple assembly is designed to be secured to the 60" Industrial Bucket using the hardware provided with the Kit.

Similarly, an Agricultural Grapple Fork (for the 60" wide Manure Fork or Utility Bucket ONLY) can be obtained by stock number 802424 (for field installation ONLY). Mounting details are provided in separate installation details furnished.

Manure Fork

An Agricultural 60" wide Manure Fork Attachment is available for the 4610 Agricultural Skid Loader by ordering stock number 802425.

Pallet Fork

A Pallet Fork Attachment is available with a choice of two sizes of Forks: stock number 802449, with two 36" long Forks or stock number 803569, with two 42" long Forks. Each Pallet Fork Assembly consists of a Carriage and two Forks. The Forks have built-in locking Handles and Pins which engage equally spaced holes in the Carriage.

ACCESSORIES

All-weather Enclosures

When desired or where operating conditions require, a Rigid All-weather Enclosure can be obtained by stock number 802838 (for factory-installed) or 802826 (for field-installed). Mounting details are provided in separate installation instructions furnished with the field installation package.

Similarly, a Vinyl All-weather Enclosure can be obtained by stock number 802518 (for field installation ONLY). Mounting details are provided in separate installation details furnished.

Amber Strobe Light

When desired or where required, an Amber Strobe Light can be obtained by stock number 802836 (for factory-installed) or 802824 (for field-installed). Mounting details are provided in separate installation details furnished with the field installation package.

Audible Back-up Alarm

When desired or where required, an Audible Back-up Alarm can be obtained by stock number 802837 (for factory-installed) or 802825 (for field-installed). Mounting details are provided in separate installation instructions furnished with the field installation kit.

Auxiliary Hydraulics Package

On a 4610 Agricultural model Loader ONLY, a Front Outlet Auxiliary Hydraulics systems can be obtained by stock number 802349 (for factory-installed) or 802503 (for field-installed). Mounting details are provided in separate installation instructions furnished with the field installation package.

NOTE: *Front Outlet Auxiliary Hydraulics is standard equipment on all 4615 Industrial model Loaders.*

Dirt & Rock Teeth

When desired, the 60 or 65" Utility Buckets can be equipped with a Dirt and Rock Teeth package (stock number 800679) which contains a total of eight (8) Teeth. The Teeth are designed to be evenly spaced and welded onto the Bucket Cutting Edge. Refer to separate mounting instructions furnished with the package of parts.

Drawbar

When desired, the Loader can be equipped with a Drawbar by ordering stock number 802437 (for field installation ONLY). The Drawbar is designed to attach directly to the bottom of the Loader, below the Rear Grill, using the hardware provided in the Kit.

Dual Stage High Flow Pump Package

On a 4615 Industrial model Loader ONLY, a Dual Stage High Flow Pump Package is available factory-installed by ordering Loader stock number 804436. A Dual Stage High Flow Pump Package is also available for field installation on all 4610 Series Loaders by ordering stock number 803259. Mounting details are provided in separate installation details furnished.

Enclosed Alternator

When desired or where operating conditions require, an Enclosed Alternator can be obtained by stock number 805078 (for field installation ONLY). The Enclosed Alternator is designed to be exchanged and installed in place of the standard Alternator furnished.

Heater/Defroster

When desired or where operating conditions require, a Heater/Defroster Kit can be obtained by stock number 802840 (for factory-installed) or 802831 (for field-installed). Mounting details are provided in separate installation details furnished with the package.

NOTE: *The Heater and Defroster is designed for use with a Rigid All-weather Enclosure.*

Horn

When desired or where required, a Horn package can be obtained by stock number 802516 (for factory-installed) or 802255 (for field-installed). Mounting details are provided in separate installation instructions furnished with the field installation package.

Hydraulic Reservoir Heater

When desired or where operating conditions require, a Hydraulic Reservoir Oil Heater can be obtained by stock number 802517 for field installation ONLY. The Heater operates on a regular line cord 120 volt A.C., 60 hz connection to warm the Reservoir oil when the Loader is NOT running and is standing in below 0° F temperatures. The Oil Heater is designed to be installed into a plugged hole in the Chassis Riser wall. BE SURE to use pipe sealing compound when making the pipe fitting connection.

Light Kit

On a 4610 Agricultural model Loader ONLY, a Light Kit can be obtained by stock number 802626 (for factory-installed) or 802627 (for field-installed). Mounting details are provided in separate installation details furnished with the field installation package.

NOTE: *A Light Kit is standard equipment on all 4615 Industrial model Loaders.*

Pre-Cleaners

When desired or where operating conditions require, a Pre-Cleaner assembly can be obtained for field installation ONLY. Order stock number 805111 for a Loader which is equipped with a Single Stage Air Cleaner. Order stock number 804301 for a Loader which is equipped with a Two Stage Air Cleaner. Mounting details are provided in separate installation details furnished with either package.

Sound Deadening Package

On a 4610 Agricultural model Loader ONLY, a Sound Deadening Package can be obtained by stock number 802469 (for factory-installed) or 802470 (for field-installed). Mounting details are provided in separate installation instructions furnished with the field installation package.

NOTE: *A Sound Deadening Package is standard equipment on all 4615 Industrial model Loaders.*

Spark Arrestor Muffler

When desired or where operating conditions require, a Spark Arrestor Muffler can be obtained by stock number 802703 for field installation ONLY. The Spark Arrestor Muffler is designed to be installed in place of the standard Muffler furnished from the factory.

Suspension Seat

For additional operator comfort or otherwise as desired, a custom made Suspension (spring-loaded) Seat can be obtained by stock number 802904 for field installation ONLY. The Suspension Seat is designed to be installed in place of the standard Seat furnished from the factory.

Tandem-wheel Towing Trailer

For frequent road travel and hauling the Skid Loader from job site to job site, order and obtain an LT8500 Trailer by stock number 803683. The LT8500 is specifically designed with appropriate provisions for loading and unloading and, for maintaining the Loader in a parked/locked position. This Trailer also features electric Brakes and a Lighting package. Additional information is contained in the LT8500 Operator's Manual (ordered separately).

Tire & Wheel Sets

The Skid Loader is available with six types of factory installed Tire & Wheel Sets. Order by stock number as follows:

- 803546 for a set of (4) mounted 7.00 x 15 6-ply Tires and Wheels.
- 803548 for a set of (4) mounted 10.00 x 16.5 6-ply Flotation Tires and Wheels
- 803951 for a set of (4) mounted Extra Wide Lug 29 x 12.5 x 15 6-ply Tires and Wheels
- 804207 for a set of (4) mounted 7.00 x 15 6-ply Steel-capped Tires and Wheels
- 803819 for a set of (4) mounted 31 x 13.5 x 15 4-ply Extra-wide Soft-trac Tires and Wheels
- 803511 for a set of (4) mounted Solid Rubber 6.50 x 16 Tires and Wheels

⚠ WARNING

The Split Rim Wheels for the Hard-rubber Tires MUST NOT be used with any other type of Tire; this could result in death or serious bodily injury!

Tracks

The Skid Loader, when equipped with 10.00 x 16.5 6-ply Flotation Tires, can also be equipped with Steel Tracks. A pair of Tracks can be obtained by stock number 803514.

Two Stage Air Cleaner

On a 4610 Agricultural model Loader ONLY, a Two Stage Air Cleaner can be obtained by stock number 804709 (for field installation ONLY). Mounting details are provided in separate installation instructions furnished with the field installation package.

NOTE: *A Two Stage Air Cleaner is standard equipment on all 4615 Industrial model Loaders.*

Water Tank

When desired for use with the Cold Planer Attachment, a Water Tank can be mounted on the Loader to provide water to reduce dust while operating the Planer. The Water Tank Kit can be obtained by ordering by stock number 804498.

Windshield Wiper for Enclosure

When desired or where operating conditions require, a Windshield Wiper package can be obtained by stock number 802841 (for factory-installed) or 802832 (for field-installed). Mounting details are provided in separate installation instructions furnished with the field installation package.

NOTE: *Windshield Wiper is designed to be used in conjunction with a Rigid All-weather Enclosure.*

CHAPTER 10
TROUBLESHOOTING

NOTE: This Troubleshooting guide presents problems, causes and suggested remedies beyond the extent of loose, worn or missing parts and it was developed with the understanding that the machine is in otherwise good operating condition. Refer to the Index at the back of this manual for Chapter and Topic page references.

ELECTRICAL SYSTEM

PROBLEM	CAUSE	REMEDY
Starter will NOT crank.	Main 30 ampere Fuse is blown.	Refer to Wiring Diagram, troubleshoot circuit to locate trouble and correct problem before replacing 30 ampere Fuse.
	Battery connections are loose or corroded, Starter Solenoid is defective or, Seat-actuated Switch and/or Restraint Bar Switch is/are defective.	Clean Battery terminals and Cables and retighten them or replace Solenoid and/or Switch(es).
Battery will NOT recharge.	Electrolyte level is low.	Add distilled water to replenish electrolyte.
	Terminals or Cables are loose or corroded, Battery is defective or Alternator (or Regulator) is defective.	Clean Battery Terminals and Cables and retighten them or replace Battery. Alternator output can be tested by your dealer.
Entire Electrical System does NOT function.	Main 30 ampere Fuse is blown.	Refer to Wiring Diagram and troubleshoot circuit and locate trouble before replacing 30 ampere Fuse.
Panel Gauges and Switches do NOT work.	20 ampere Fuse is blown.	Troubleshoot circuit to locate trouble and correct problem before replacing 20 ampere Fuse.

ENGINE

Engine will NOT turn over.	Battery Terminals or Cables are loose or corroded.	Clean Battery Terminals and Cables and tightly secure them.
	Battery is discharged or defective.	Recharge Battery (refer to Battery topic in Service chapter) or replace Battery.
	Starter Relay is NOT functioning.	Troubleshoot circuit per Wiring Diagram to locate trouble and repair or replace Starter Relay.
	Starter or Pinion is faulty.	Contact dealer for directives.
Engine will NOT turn over.	Driver is NOT sitting on Seat to activate Switch or Restraint Bar is NOT down.	Sit on Seat and lower Restraint Bar; if Engine still does NOT start, troubleshoot circuit and replace faulty Switch or Wiring, as necessary.
	Wiring to and from Keyswitch, Seat Switch, Restraint Bar Switch, etc. are loose or disconnected.	Inspect wiring for poor connections or broken leads and repair wiring or connections, as necessary.

ENGINE (Con't)

PROBLEM	CAUSE	REMEDY
Engine turns over but will NOT start.	Battery is weak or drained.	Check Battery charge; if the Battery does NOT hold a charge after recharging, replace it.
	Engine cranking speed is too slow.	Battery requires recharging or, in cold temperatures, pre-warm Engine and Hydraulic oils.
	Fuel Tank is empty.	Refill Fuel Tank; check for faulty Fuel Gauge Sender.
	Fuel Shutoff Solenoid is NOT energizing Pump.	Check electrical connections to and voltage at Fuel Shutoff Solenoid.
	Engine and/or fuel is NOT warm enough.	Activate Glow Plugs or otherwise check Glow Plug wiring and connections.
	Fuel Pump is NOT working.	Refer to Engine Manual or contact your nearest Perkins Engine Service center.
	Air or moisture in fuel line.	Bleed fuel system per details in separate Engine Manual.
Engine overheats.	Crankcase oil is too low or too full.	Add or remove oil, as required.
	Engine is overloaded.	Operate Loader at 1/2 to full Throttle.
	Coolant level is too low.	Add coolant, as necessary.
	Fan air circulation is blocked or restricted.	Remove blockage or restriction.
	Fan Shroud is improperly positioned.	Readjust Radiator so that the Fan is 1/3 to 1/2 inside the Shrouded.
	Engine oil is improper Grade or excessively dirty.	Drain and replace oil with proper Grade.
	Fuel Atomizer is NOT functioning.	Loosen fuel line nut; if Engine speed lowers, the Atomizer is plugged and MUST be cleaned or replaced.
	Exhaust is restricted.	Allow Exhaust system to cool and then remove restriction.
	Air Cleaner Filter is restricted.	Replace Filter.

HYDRAULIC LIFT & BUCKET

NO response to Lift Arm or Bucket.	Gear Pump is damaged.	Inspect Gear Pump Drive Shaft and/or internal components.
	System Relief Valve NOT functioning.	Check pressure at Cylinder.
	Oil flow to Pump blocked.	Inspect Suction Hose and Reservoir.
Lift Arm does NOT raise but Bucket operates properly.	First (top) Spool In Valve NOT actuated or is leaking.	Check connection to Valve. Test pressure and flow.
Hydraulic Cylinder action is slow.	System Pump is worn and pressure is low.	Check pressure and oil flow.
Lift Arm does NOT lower.	Secondary Operator Restraint Bar raised, the Electrical Solenoid is NOT functioning and/or the Relay is defective.	Lower the Restraint Bar, check the Switch, check the electrical connections and/or replace the Relay.

HYDRAULIC LIFT & BUCKET (Cont.)

PROBLEM	CAUSE	REMEDY
Tilt Cylinder leaks-down.	Oil is leaking past the Cylinder packing or the system Valve Spool is leaking.	Order the appropriate Seal Kit and replace the Seals.
Bucket does NOT level on the "lift" cycle.	Leveling Valve is misadjusted.	Loosen the Locking Nut and turn the Hexagon Set Screw "in" to level more or "out" to level less.

HYDROSTATIC DRIVE

Hydrostatic drive overheating.	Traction system overloaded continuously.	Improve efficiency of operation.
	Lift and Tilt system overloaded continuously.	Improve efficiency of operation.
	Internal Pump or Motor leakage.	Repair or replace Pumps or Motors.
	Unit being operated in high temperature area with NO air circulation.	Reduce duty cycle and improve air circulation.
NO response from either the Hydrostatic Drive or Lift/Tilt systems.	Oil is too heavy.	Allow longer warm-up or replace existing oil with the proper viscosity (weight) oil.
	Oil supply is too low.	Check for low oil level in Reservoir. Add oil, as necessary.
	Reservoir Strainer is plugged.	Remove Reservoir Cover and clean Strainer. Also, inspect Reservoir for any debris plugging the system.
	Drive is disconnected.	Check for broken or worn Coupling and replace, if necessary.
	Sheared Spline or broken Shaft in Tandem Pump assembly.	Check for broken or worn splined Shaft on Pump closest to Engine. Replace Shaft if broken or if Splines are sheared.
Wheels turn with Servo in Neutral.	Centering Spring needs adjustment.	Adjust connection of Spring Rod at Ball Joint.
Traction Drive will NOT operate in either direction.	Hand Brake on.	Disengage Hand Brake.
	Oil supply too low.	Allow longer warm-up. Replace existing oil with the proper viscosity (weight) oil.
	Control linkage disconnected.	Check linkage connection at T-Bar and Servos. Reconnect linkage, if necessary.
	Low or NO drive Pump charge pressure.	Check charge pressure; pressure should be 100 to 200 PSI.
	Transmission Charge Pump Relief Valve damaged.	Replace Valve on lower right side of Pump.
	Gear Pump NOT pumping oil.	Repair or replace Pump.
	Return line Relief Valve defective.	Replace Cartridge.

HYDROSTATIC DRIVE (Con't)

PROBLEM	CAUSE	REMEDY
Drive Wheels do NOT turn in proper direction for T-Bar movement.	One or both Drive Motors mounted upside-down.	Remount Motors with small drain port in proper direction.
	Hydraulic lines between Pumps and Motors are connected to wrong ports.	Reconnect the lines to the proper ports on Motor and/or Pumps.
Hydrostatic (drive) system is noisy.	Oil is too heavy.	Allow longer warm-up or replace existing oil with the proper viscosity (weight) oil.
	Air in system.	Check for low oil level in Reservoir. Add oil, if necessary.
	Loose connection to Charge inlet.	Tighten fitting, as necessary.
	Internal Pump or Motor damage.	Repair or replace Pumps or Motors, if defective.
Neutral is difficult to maintain.	Control linkage Ball Joints loose at T-Bar or Drive Pump Pivot Arm.	Check and retighten or replace components.
	Control linkage misadjusted.	Readjust linkage.
	Key missing or loose in one or both Drive Pump Pivot Arms.	Inspect and replace Key(s) or other worn parts, as necessary.
Sluggish response to acceleration.	Air in system.	Check for low oil in Reservoir. Add oil, as necessary.
	Low Drive Pump Charge pressure causing Replenishing Valve to open.	Check Charge pressure; it should be 80 to 200 PSI.
	Return line Valve is malfunctioning.	Check Charge inlet pressure. It should be 80 to 200 PSI. If necessary, replace Cartridge.
	Internal Motor or Pump damage.	Repair or replace Motors and/or Pumps, as necessary.
	Engine NOT responding to load.	Troubleshoot and adjust Engine.
Right side does NOT drive in either direction. (Left side operates normally).	Excessive leakage in right Drive Motor.	Remove Motor drain line and measure leakage. Repair or replace Motor if defective.
	Excessive leakage in Rear Pump.	Repair or replace Pump.
	Key missing on Rear Pump Pivot Arm and Arm is loose on Control Shaft.	Replace Key. Torque Cap Screw on Coupler to 35-40 ft-lb.
	Both Pump Relief Valves malfunctioning.	Switch Valves with those of Front Pump. If this corrects problem, clean or replace defective Relief Valve.
	Damaged Check Valves.	Clean or replace Check Valves, as necessary.
Right side does NOT operate in forward direction.	Relief Valve on right side below rear Hose malfunctioning.	Switch Relief Valve with one from left side of Rear Pump. Problem should switch to the reverse direction. Clean or replace faulty Valve, as necessary.
	Control linkage to Rear Pump Servo disconnected.	Reattach Linkage.
	Key missing on Rear Pump Pivot Arm.	Replace Key. Torque Cap Screw on Coupler to 35-40 ft-lb.
	Check Valves malfunctioning on Rear Pump.	Disassemble and check if Valves are faulty or damaged. Repair or replace Valves, as necessary.

HYDROSTATIC DRIVE (Con't)

PROBLEM	CAUSE	REMEDY
Right side does NOT operate in reverse direction.	Relief Valve on left side below rear Hose malfunctioning.	Switch Relief Valve with one from right side of Rear Pump. Problem should switch to the forward direction. Clean or replace faulty Valve, as necessary.
	Control Linkage to Front Pump Servo disconnected.	Reattach Linkage.
	Key missing on rear Pump Pivot Arm.	Replace Key. Torque Cap Screw on Coupler to 35-40 ft-lb.
	Check Valves malfunctioning on Rear Pump.	Disassemble and check if Valves are faulty or damaged. Repair or replace Valves, as necessary.
Left side does NOT drive in either direction. (Right side operates normally).	Excessive leakage in left Drive Motor.	Remove Motor drain line and measure leakage. Repair or replace Motor if defective.
	Excessive leakage in Front Pump.	Repair or replace Pump.
	Key missing on Front Pump Pivot Arm.	Replace Key. Torque Cap Screw on Coupler to 35-40 ft-lb.
	Both Pump Relief Valves malfunctioning.	Switch Valves with those of Rear Pump. If this corrects problem, clean or replace defective Relief Valve.
	Damaged Check Valves.	Clean or replace Check Valves, as necessary.
Left side does NOT operate in forward direction.	Relief Valve on left side below front Hose malfunctioning.	Switch Relief Valve with one from right side of Front Pump. Problem should switch to the reverse direction. Clean or replace faulty Valve, as necessary.
	Control linkage to Front Pump Servo disconnected.	Reattach Linkage.
	Key missing on Front Pump Pivot Arm.	Replace Key. Torque Cap Screw on Coupler to 35-40 ft-lb.
	Check Valves malfunctioning on Front Pump.	Disassemble and check if Valves are faulty or damaged. Repair or replace Valves, as necessary.
Left side does NOT operate in reverse direction.	Relief Valve on right side below front Hose malfunctioning.	Switch Relief Valve with one from left side of Front Pump. Problem should switch to the forward direction. Clean or replace faulty Valve, as necessary.
	Control linkage to Front Pump Servo disconnected.	Reattach Linkage.
	Key missing on Front Pump Pivot Arm.	Replace Key. Torque Cap Screw on Coupler to 35-40 ft-lb.
	Check Valves malfunctioning on Front Pump.	Disassemble and check if Valves are faulty or damaged. Repair or replace Valves, as necessary.

CHAPTER 11
SERVICE

GENERAL INFORMATION

⚠ CAUTION

BEFORE proceeding to perform any Service routines on the Skid Loader, or unless expressly instructed to the contrary, exercise the MANDATORY SAFETY SHUTDOWN PROCEDURE (page 8). After Service has been performed, BE SURE to restore all Guards, Shields and Covers to their original positions BEFORE resuming Loader operation.

NOTE: *All Service routines, with the exception of those described under the major topic titled "Dealer Services", are understood to be owner-operator responsibilities. "Dealer Services" should be performed only by (or under the direction of) an authorized GEHL Skid Loader dealer. All Operator Services described under the 10 hour, 100 hour, 200 hour and 500 hour subtopics, are also referred to on a Decal which is located on the underside of the Engine Access Cover. Refer to the Lubrication Chapter of this manual for lubrication information.*

This Service Chapter details procedures to follow for making routine maintenance checks, adjustments and replacements. The majority of the procedures are also referred to in both the Troubleshooting and Maintenance Log Chapters of this manual. For Engine related adjustments and servicing procedures, BE SURE to refer to the separate Engine Manual provided.

NOTE: *ALWAYS dispose of waste lubricating oils, anti-freeze and hydraulic fluids according to local regulations or take them to a recycling center for disposal; do NOT pour them onto the ground or down the drain.*

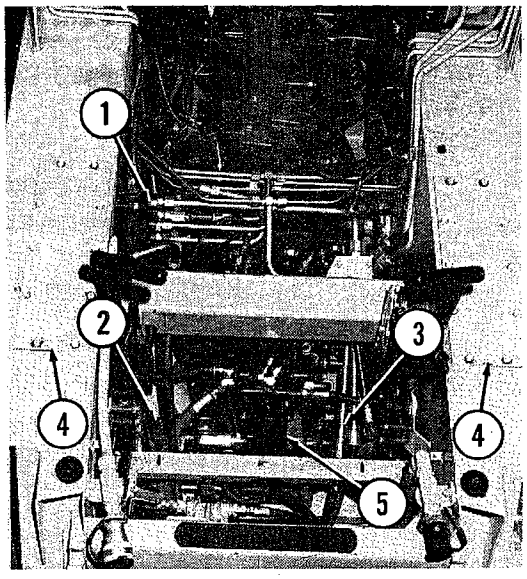
DEALER SERVICES

NOTE: *The following areas of internal components service, replacement and operating adjustments should only be attempted by (or under the direction of) an authorized GEHL Skid Loader dealer.*

Hydrostatic Components (Fig. 11-1)

The Hydrostatic Tandem Pumps are coupled directly to each other (in tandem) and to the Engine Crankshaft. All Service routines, related to the internal components of the Pumps, are precise and critical to proper operation. The Hydrostatic Drive Motors are also very sophisticated devices which require special know-how and tools for servicing.

NOTE: *If the Tandem Pumps and Drive Motors are suspected of faulty operation, contact your GEHL dealer for further information and directives.*



1 - Main System Control Valve
2 - Right Drive Motor
3 - Left Drive Motor
4 - Chaincase Access Cover & Gasket
5 - Dual Stage High Flow Gear Pump

Fig. 11-1:Hydraulic & Hydrostatic Systems with Overhead Guard Rolled-back and Locked and Floorplates and Consoles Removed

Hydraulic System Pump (Fig. 11-1)

The Hydraulic System Gear Pump is coupled directly to the front of the Tandem Hydrostatic Pumps. This Pump also requires special tools and know-how for internal component servicing. However, if faulty operation is suspected and confirmed through test directives from your dealer, the Hydraulic System Pump can be removed and taken to your dealer for service or replacement. To remove the Hydraulic System Gear Pump, proceed as follows:

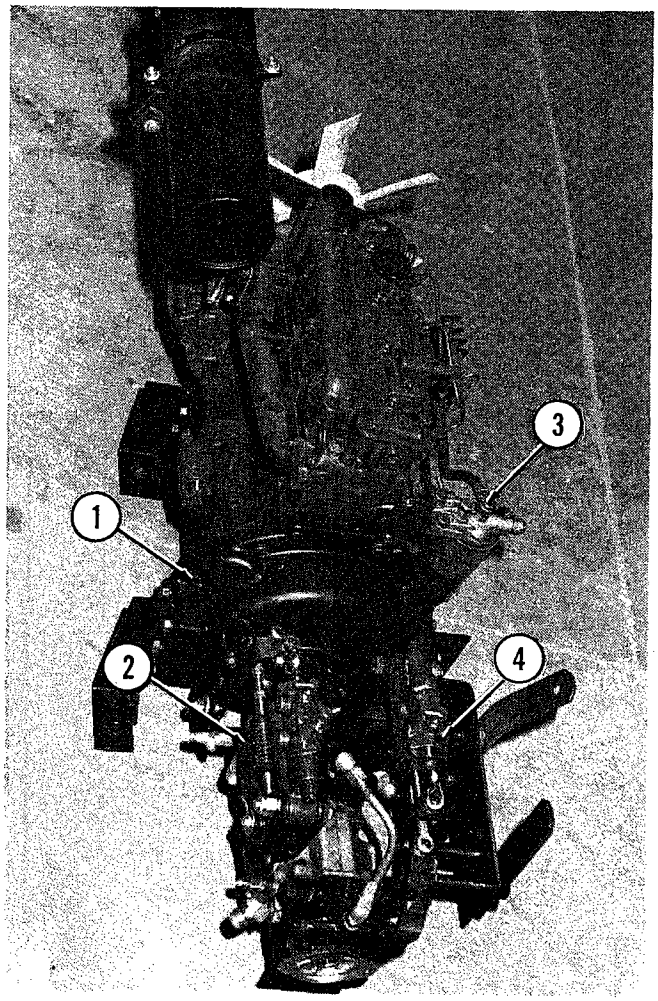
1. Raise the Lift Arms and (following proper procedures) engage the Mechanical Lift Cylinder Lock. With the Lift Arms raised, exercise the MANDATORY SAFETY SHUTDOWN PROCEDURE (page 8).

2. Temporarily remove and retain the Front and Rear Floorplates.

3. Refer to the "Replacing Hydraulic Reservoir Fluid" subtopic under the 500 Hours Operator Services topic in this chapter and drain the Hydraulic Reservoir to a level below the Suction Line port of the Reservoir.

4. Clearly and accurately identify the Hose connections to the Gear Pump and then, remove the Hose connections from the Gear Pump.

5. Disconnect the Hydraulic System Gear Pump from the Tandem Hydrostatic Pumps and take it to your dealer.



1 - Front Housing
2 - Rear (Tandem) Pump Boost Control Valve
3 - Spin-on Fuel Filter
4 - Front (Tandem) Pump Boost Control Valve

Fig. 11-2: Diesel Engine & Tandem Pumps Assembly Removed from Loader

Valves

Internal component service on the Main System Valve for Lift and Tilt Cylinder control circuits, the Auxiliary Control Valve, the Relief Valve, the Lift Solenoid and, the Servo (Boost) Valves on the Tandem Hydrostatic Pumps should only be attempted by (or under the direction of) an authorized dealer.

Access to the various Valves is gained by either unbolting, rolling-back and locking the Overhead Guard and/or by opening the Engine Access Cover and Rear Grill. After the hydraulic connections and mechanical linkages are carefully marked and removed, any one of these Valves can be removed and taken to your dealer for service or replacement.

Cylinders

All Hydraulic Cylinders used on the Skid Loader are appropriately designed with particular strokes, diameters and hose connection provisions unique to the Skid Loader application requirements. In addition, internal Cylinder component service and replacement requires special know-how and tools.

Any one of the Hydraulic Cylinders can be removed from the Loader and taken to the dealer for service or replacement. To remove a Cylinder from the Loader, proceed as follows:

1. Make sure that the Lift Arm is lowered and in contact with the Loader Frame.

2. Exercise the **MANDATORY SAFETY SHUTDOWN PROCEDURE (page 8)**.

3. Relieve ALL pressure in the lines by moving the T-Bar Controls in all directions.

4. Disconnect the Hydraulic Hose connections at the desired Cylinder.

5. Remove the Rod-end Anchor Pin, first.

6. Lastly, remove the Cylinder-end Anchor Pin.

Cylinder replacement is in reverse order of removal.

Hydraulic Hoses & Tubing (Fig. 11-3 & see Fig. 1)

Numerous hydraulic Hoses, Tubes and Fittings are used to interconnect the various hydraulic and hydrostatic components shown in the hydraulic system diagram. Refer to the diagram for system troubleshooting and contact your dealer for service parts assistance.

Electrical Components (Fig. 11-4)

An electrical system diagram is provided which includes instrumentation, electrical component and switch connections (both standard and accessory). The diagram provides a guide for troubleshooting and service parts reference, as required.

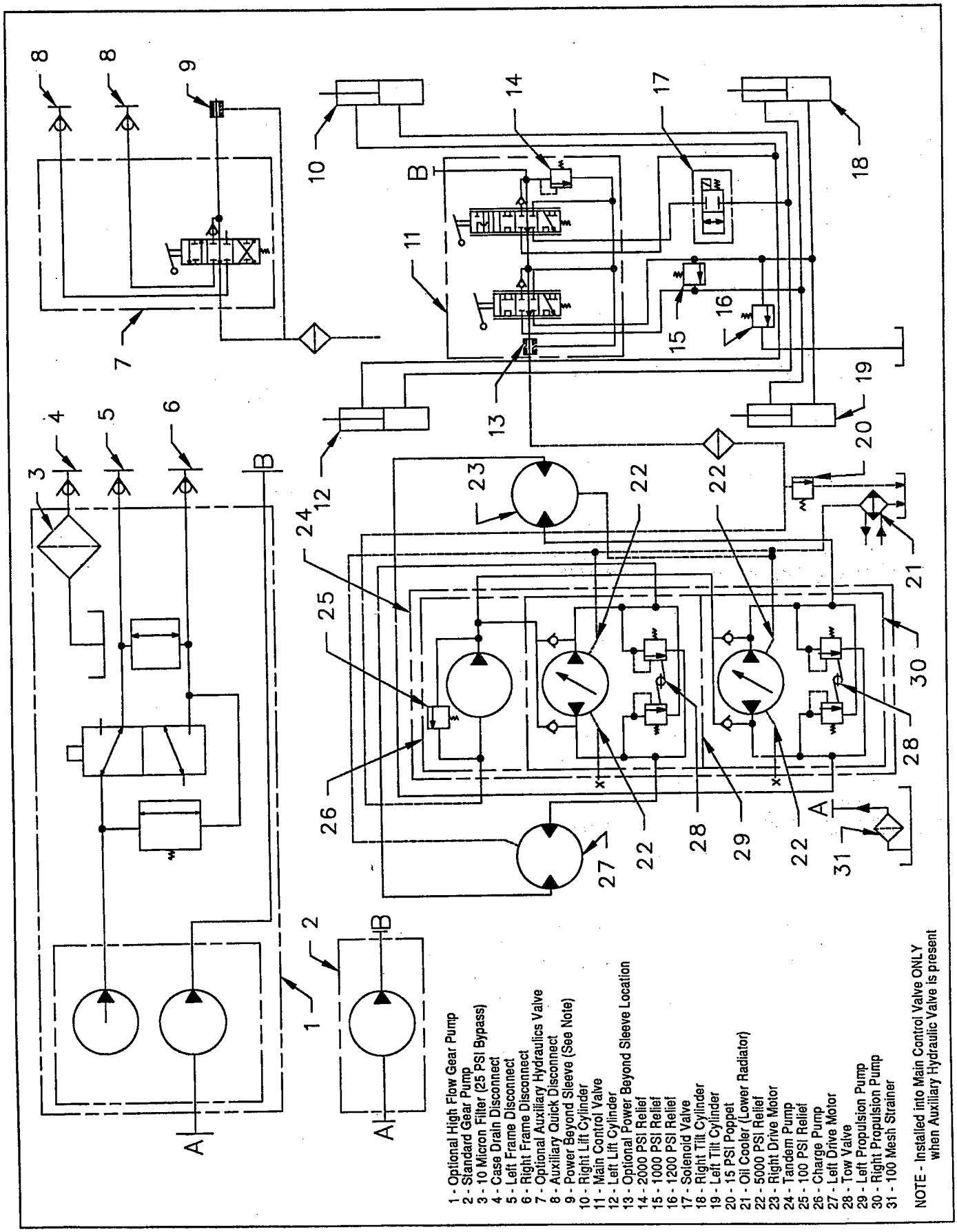


Fig. 11-3: Hydraulics System Diagram

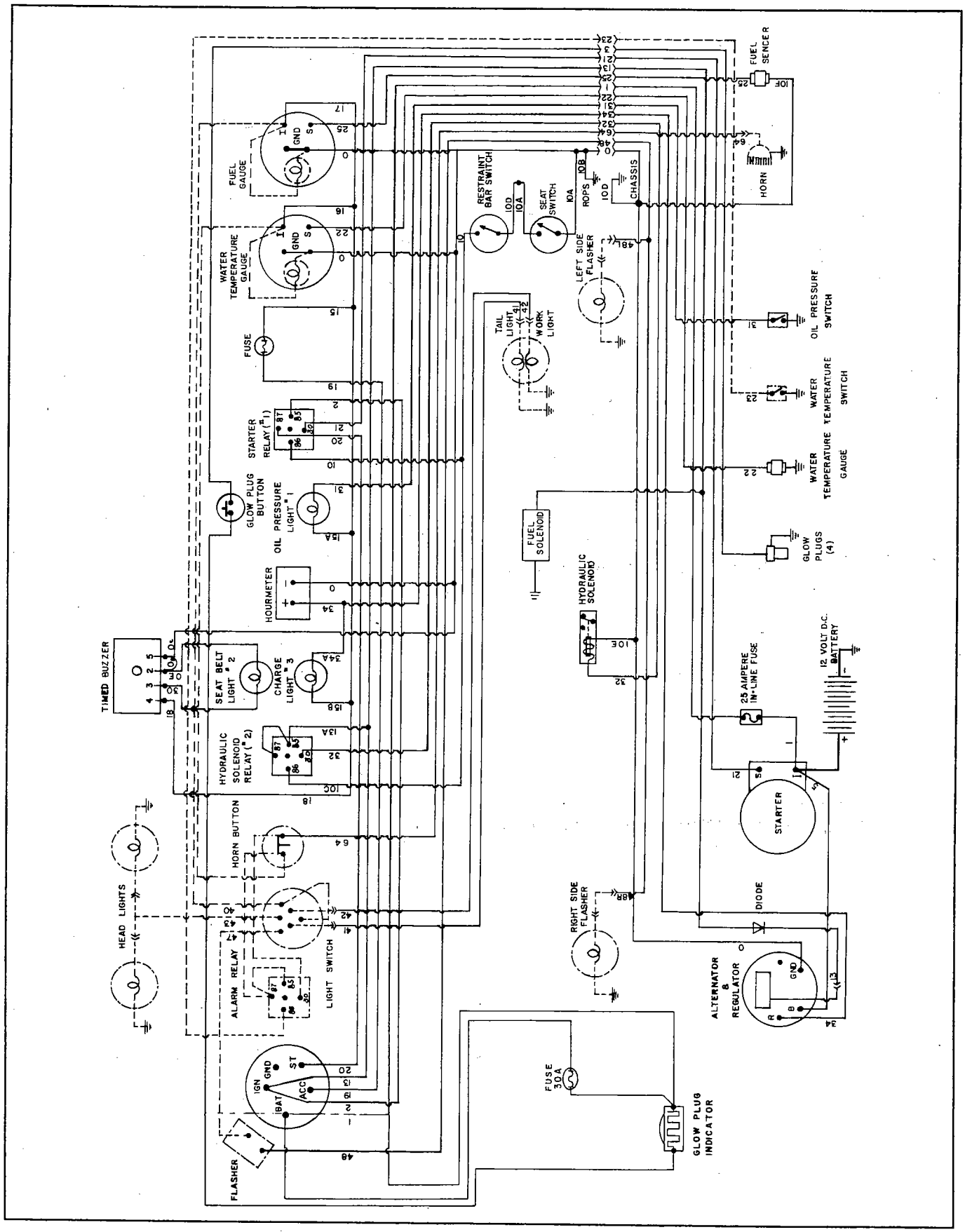


Fig. 11-4: Electrical System Diagram

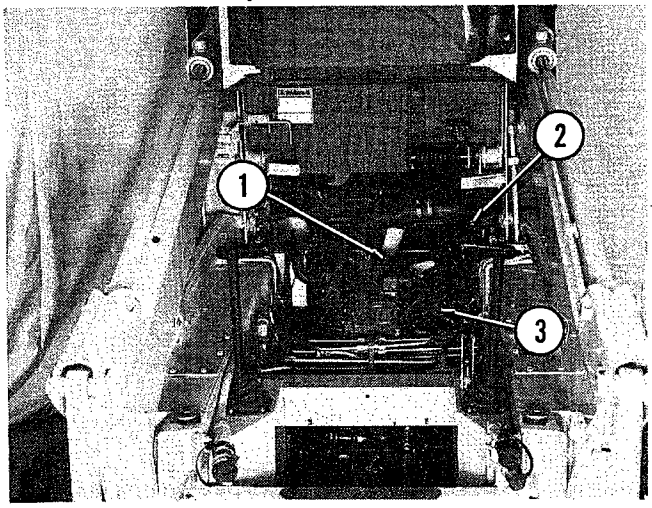
OPERATOR SERVICES

Service Every 10 Hours or Daily

Perform all of the following services after every 10 hours (or daily) of Skid Loader operation:

1. Air Cleaner Indicator (Fig. 11-5)

A Condition Indicator is provided for visual monitoring of the Air Cleaner Filter Element. When the Indicator shows "Red" the Filter Element requires removal and cleaning or replacement. After the Filter Element has been cleaned and reinstalled or a new Element has been installed, the Condition Indicator will automatically reset. To see the Indicator, open the Engine Access Cover and look at the Outlet end of the Air Cleaner assembly.



1 - Engine Oil Filler Cap
2 - Air Cleaner Condition Indicator
3 - Engine Oil Level Dipstick Filter (Spin-on)

Fig. 11-5

2. Lubricate All Cylinder Pivots

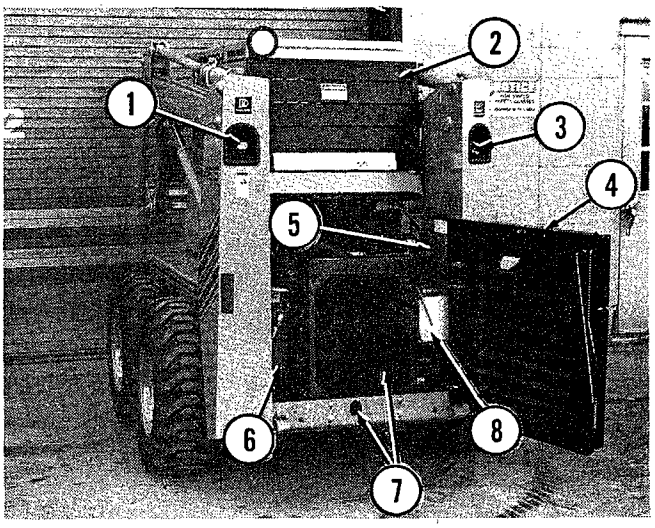
Lubricate the fittings on both ends of all four Cylinders; refer to details in the Lubrication chapter.

3. Check Engine Oil Level (Fig. 11-5)

The Engine crankcase oil level is conveniently checked with a dipstick located on the left side of the Engine. Access is gained by opening the Louvered Engine Cover. Markings on the dipstick represent both full and low (add oil) levels. Refer to the "Changing Engine Oil & Filter" subtopic under the Service Every 100 Hours topic in this chapter for the proper location and procedures for adding Engine oil. Also, refer to the Lubrication Chapter and/or the separate Engine manual for additional oil viscosity and requirements information.

4. Hydraulic Reservoir Oil Level Check (Fig. 11-6)

A Cap with Integral Dipstick is provided on the Hydraulic Reservoir which is housed in the Right Chassis Riser. The Dipstick bears a single oil level mark. Refer to the Lubrication chapter for oil recommendations and to the Hydraulic Reservoir Oil subtopic, under the 500 hour or Once Year topic, for draining and replacement information.



1 - Diesel Fuel Inlet
2 - Louvered Engine Cover
3 - Hydraulic Reservoir Fluid Inlet Cap & Dipstick
4 - Rear Grill
5 - Hydraulic Oil Strainer Access Cover
6 - Spin-on Hydraulic Filter
7 - Radiator & Drain Cock Outlet
8 - Battery

Fig. 11-6

5. Lubricate Leveling Links & Lift Arm Pivots

Lubricate both Fittings on each Leveling Link and all eight (8) Lift Arm Pivot Fittings; refer to details in the Lubrication chapter.

6. Check Radiator Coolant Level (Fig. 11-6)

⚠ WARNING

Do NOT remove the Radiator Cap when the Engine is HOT or overheated. Coolant is extremely HOT and under pressure and it can burn your skin. Wait for the Engine to cool down BEFORE relieving the pressure and removing the Radiator Cap.

The Radiator coolant level MUST ALWAYS be checked when the Engine is cool. Access to the Radiator Cap is obtained by opening the Louvered Engine Cover and unlatching and opening Rear Grill. Maintain the coolant level just below the neck of the Filler Hole. Refer to the Engine Manual for anti-freeze recommendations and to the "Flushing Radiator & Replacing Anti-freeze" subtopic, under the 500 Hour or One Year topic in this chapter, for coolant draining and replacement details.

Service Every 100 Hours

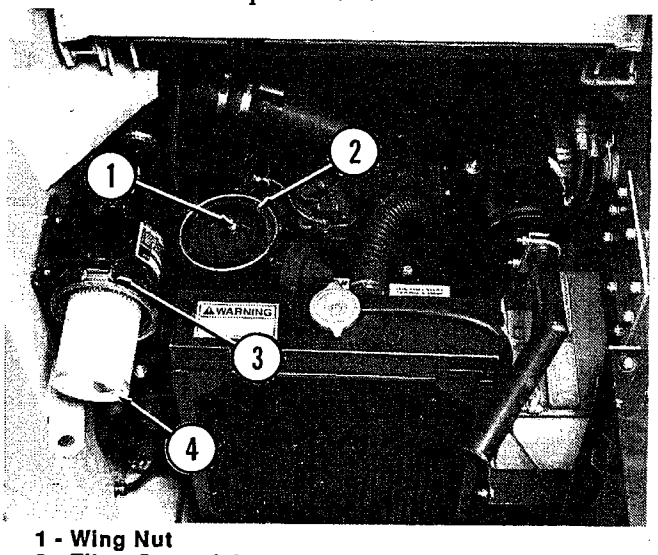
Perform all of the following services after every 100 hours of Skid Loader operation:

1. Clean/Replace Air Cleaner Element (Figs. 11-7 & 11-8)

NOTE: *Depending on operating conditions, the Air Cleaner Element may require more frequent servicing than once every 100 hours.*

Air Cleaner Element(s) Removal & Installation

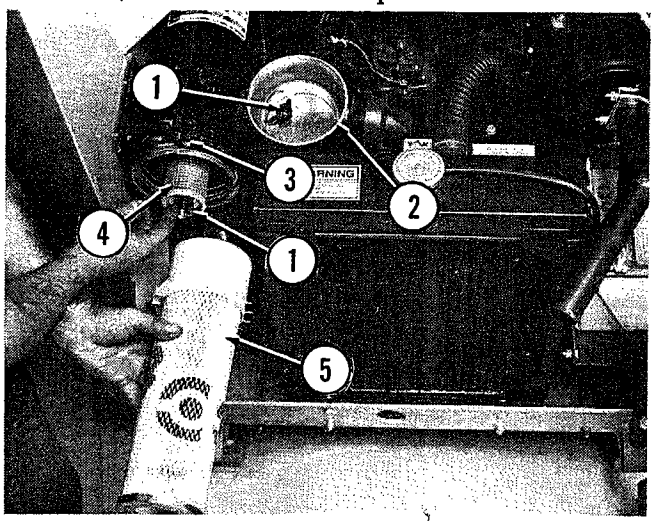
Single Element Type Air Cleaner - To remove the Air Cleaner Element, first open the Engine Cover and unlatch and open the Rear Grill. Next, loosen (but do NOT remove) the Clamp Band Eyebolt which secures the Element Cover and remove the Cover. Then, remove the Wing Nut which secures the Element and remove the Element from the Housing. To replace the Element after cleaning or to install a NEW Element, reverse the removal procedure.



1 - Wing Nut
2 - Filter Cover & Inlet Assembly
3 - Clamp Band & Tightener Eyebolt
4 - Filter Cartridge

Fig. 11-7: Single Element Type Air Cleaner

Dual Element Type Air Cleaner - To remove the Air Cleaner Elements, first open the Engine Cover and unlatch and open the Rear Grill. Next, loosen (but do NOT remove) the Clamp Band Eyebolt which secures the Element Cover and remove the Cover. Then, remove the Wing Nut which secures the Outer Element and remove the Outer Element from the Housing. Next, remove the Wing Nut which secures the Inner Element and remove the Inner Element from the Housing. To replace the Elements after cleaning or to install NEW Elements, reverse the removal procedure.



1 - Wing Nut
2 - Filter Cover & Inlet Assembly
3 - Clamp Band & Tightener Eyebolt
4 - Inner Filter Cartridge
5 - Outer Filter Cartridge

Fig. 11-8: Dual Element Type Air Cleaner

NOTE: *Make sure that the word TOP on the Air Cleaner Cover is positioned properly BEFORE tightening the Clamp Band Eyebolt after cleaning or replacing the Filter Element(s).*

Air Cleaner Element Cleaning

To clean the Air Cleaner Element proceed as follows:

1. Using clean, dry, compressed air with a pressure of less than 30 PSIG (210 kPa) blow air up and down the pleats from the inside of the Element.

To wash an oil and soot-laden Element, continue with Steps 2, 3 & 4 otherwise, go to Step 5.

2. Use a Filter Cleaner solution (following the solution manufacturer's directions) and soak the Element.

3. After soaking the Element, thoroughly rinse-off all residue and solution with clean water from a faucet or garden hose.

Using clean, dry, compressed air with a pressure of less than 30 PSIG (210 kPa), blow dry the Element or otherwise suspend the Element to let it drip-dry.

After the Element is cleaned and dried, use a light bulb (from the inside of the Element) to inspect for thin spots, pin holes or ruptures; replace the Element, if any damage is noted.

2. Alternator Belt Tension & Condition Checks

The Alternator Drive Belt can be checked by first opening the Engine Access Cover and Rear Guard. Refer to the Adjustments chapter for tension adjustment procedures. To replace a Belt, loosen (but do NOT remove) the Alternator Bracket Bolt and Pivot Bolt and release Belt tension. Remove the worn Belt and replace it. Refer to the Adjustments chapter for retensioning details. To obtain a new Alternator Drive Belt specify GEHL part number 113891.

3. Check Battery (See Fig. 11-6)

The Battery furnished on the Skid Loader is a 12 volt, wet-cell Battery. Access to the Battery is gained by opening the Engine Cover and Rear Grill.

The top of the Battery MUST always be kept clean. Clean the Battery with a brush dipped in an alkaline solution (ammonia or baking soda and water). After the foaming has stopped, flush the top of the Battery with clean water. If the terminals and Cable connection clamps are corroded or have a build-up, disconnect the Cables and clean the terminals and clamps with the same alkaline solution.

Handling Battery Safely

WARNING

Explosive gas is produced while a Battery is in use or being charged. Keep flames or sparks away from the Battery area. Make sure Battery is charged in a well-ventilated area.

NEVER lay a metal object on top of a Battery as a short circuit can result.

Battery acid is harmful on contact with skin or fabrics. If acid spills, follow these first aid tips:

1. **IMMEDIATELY remove any clothing on which acid spills.**
2. **If acid contacts the skin, rinse the affected area with running water for 10 to 15 minutes.**
3. **If acid contacts the eyes, flood the eyes with running water for 10 or 15 minutes. See a doctor at once. NEVER use any medication or eye drops unless prescribed by the doctor.**
4. **To neutralize acid spilled on the floor, use one of the following mixtures:**
   a. **1 Pound (0.5 kg) of baking soda in 1 U.S. Gallon (4 liters) of water**
   b. **1 Pint (0.4 liters) of household ammonia in 1 U.S. Gallon (4 liters) of water**
5. **Acid from the Battery can damage the paint and metal surfaces of the machine. Avoid overfilling the Battery cells.**

Whenever Battery is removed from the unit, BE SURE to disconnect the negative (-) Battery terminal connection Cable first.

Jump-starting

If the Loader Battery becomes discharged or does NOT have enough power to start the Engine, use jumper cables and the following procedure to jump-start the Loader Engine.

⚠ WARNING

The ONLY safe method for jump-starting a discharged Battery is for TWO PEOPLE to carry-out the following process. The second person is needed for removing the jumper cables so that the operator does NOT have to leave the Operator's Compartment while the Engine is running.

⚠ WARNING

Do NOT attempt to jump-start the Loader Battery if it is frozen as this may cause it to rupture or explode. Closely follow the procedures, in the order listed, to avoid personal injury. In addition, BATTERIES PRODUCE EXPLOSIVE GASES! ALWAYS keep sparks, flames and cigarettes away from Batteries. Also, wear safety glasses to protect your eyes and avoid leaning over the batteries while jump-starting.

NOTE: *BE SURE that the jumper battery is also a 12 volt D.C. battery.*

1. Turn the Keyswitches of both vehicles to OFF and make sure that both vehicles are in "Neutral" and NOT touching each other.
2. Remove the Battery Filler Caps and make sure that the electrolyte solution is up to the proper level. In addition, place a clean cloth over the uncapped filler holes to prevent the heated electrolyte solution from overflowing.

⚠ WARNING

If acid comes in contact with your skin, eyes or clothing, flush the area IMMEDIATELY with large amounts of water. In addition, NEVER attempt to make the jumper cable connections directly to the Starter Solenoid of either Engine. Do NOT start the Engine from any position other than the Operator's Seat and then ONLY after making sure ALL Controls are in "neutral".

3. Connect one end of the positive (+) jumper cable to the positive (+) Battery Terminal on the disabled Loader first. Do NOT allow the jumper's positive cable clamps to touch any metal other than the positive (+) battery terminals. Connect the other end of the positive jumper cable to the jumper battery positive (+) terminal.
4. Connect one end of the negative (-) jumper cable to the jumper battery negative (-) terminal.
5. Make the final jumper cable connection (the other end of the negative (-) jumper cable) to the disabled Loader's Engine Block or Loader Frame (ground) -- NOT to the disabled Battery's Negative Post. If making the connection to the Engine, keep the jumper clamp away from the Battery, Fuel Lines or moving Parts.

NOTE: *Twist the jumper cable clamps a couple of times on the battery terminals and ground connection to ensure a good electrical path for conducting current.*

6. Proceed to start the Loader. If it does NOT start immediately, start the jumper vehicle engine to avoid excessive drain on the booster battery.
7. After the Loader is started and running smoothly, have the second person remove the jumper cables from the jumper vehicle battery and then from the disabled Loader Battery while making sure NOT to short the two cables together.

Allow sufficient time for the Skid Loader Alternator to build-up a charge in the Battery before attempting to operate the Loader or shut the Engine off. BE SURE to discard the cloths and then reinstall the Battery Filler Caps removed in Step 2, above.

NOTE: *If the Loader Battery frequently becomes discharged, have the Battery checked for a possible dead cell(s) or troubleshoot the electrical system for possible short circuits or damaged insulation on wires.*

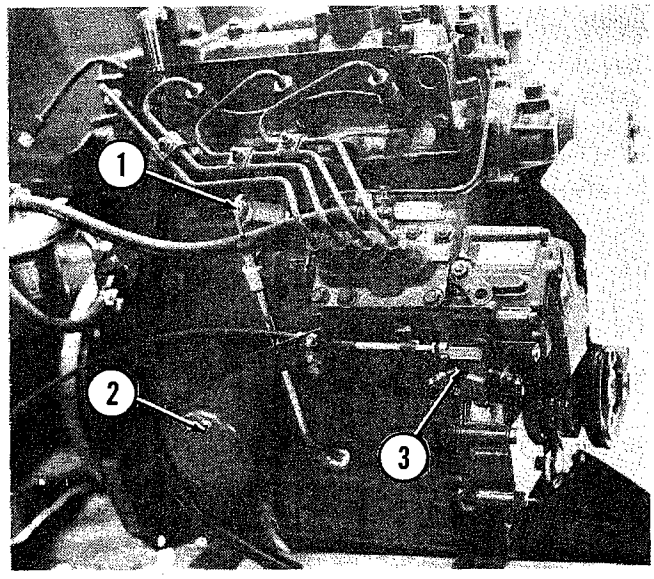
4. Check Drive Chains Tension (See Fig. 11-1)

To gain access into the Chaincases for the Drive Chain tension checks and adjustments, the Overhead Guard MUST be unbolted, rolled-back and locked. Remove the Chaincase Covers by loosening and removing the ten (10) Thread-forming Screws which secure each Cover. Refer to the Adjustments chapter for additional information on actual tension adjustment procedures.

5. Change Engine Oil & Filter (Fig. 11-9 & see Fig.11-6)

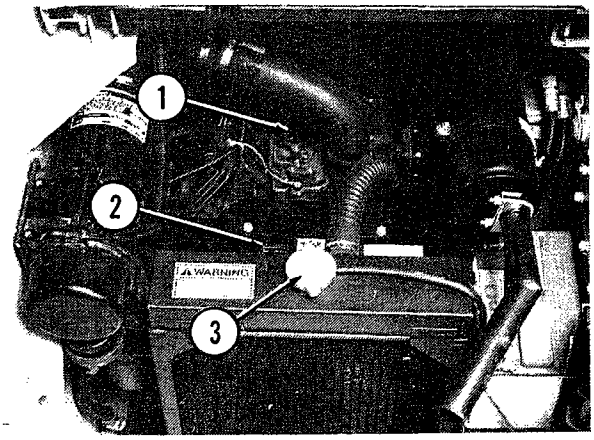
Access for draining the Engine oil and changing the Filter is gained by removing the Bellyplate Cover. The Crankcase Oil Pan is provided with two drain plugs: a standard Drain Plug on the right side and an Elbow and Cap on the left side. The Oil Filter assembly is located on the right side of Engine. A Spin-on Oil Filter Element can be obtained by ordering GEHL part number 113889. The crankcase oil capacities are 7-1/2 U.S. Quarts (7.1 liters) with Filter change or 6-7/8 U.S. Quarts (6.5 liters) without Filter change.

Open the Engine Cover and unlatch and open the Rear Grill to gain access for adding or replacing the oil. Refer to the Lubrication Chapter for oil recommendations and quantity.



1 - Engine Crankcase Dipstick
2 - Engine Oil Spin-on Filter
3 - Injector Pump

Fig. 11-9



1 - Engine Crankcase Oil Inlet Plug
2 - Inspection Hole Plug
3 - Radiator Cap

Fig. 11-10

6. Check Tire Pressures

⚠ WARNING

Inflating or servicing tires can be dangerous. Whenever possible, trained personnel should be called to service and/or mount tires. In addition, do NOT place your fingers on the tire bead or rim during inflation; serious injury or amputation could result. In any event, to avoid possible death or serious injury, follow the safety precautions below:

- **BE SURE the Rim is clean and free of rust.**
- **Lubricate both the tire beads and rim flanges with a soap solution. Do NOT use oil or grease.**
- **Use a clip-on tire chuck with a remote hose and gauge which allows you to stand clear of the tire while inflating it.**
- **NEVER inflate beyond 35 PSI (240 kPa) to seat the beads. If the beads have NOT seated by the time the pressure reaches 35 PSI, deflate the assembly, reposition the tire on the rim, relubricate both parts and re-inflate it. Inflation pressure beyond 35 PSI with unseated beads may break the bead or rim with explosive force sufficient to cause death or serious injury.**
- **After seating the beads, adjust the inflation pressure to the recommended operating pressure listed.**
- **Do NOT weld, braze, or otherwise attempt to repair and use a damaged rim.**

Proper Tire pressure should be equally maintained for all four Tires to enhance operating stability and extend Tire life. Refer to the chart for the proper inflation pressure:

Table of Tire Inflation Pressure

Tire Size & Description	Inflation Pressure	
	PSIG	kPa
7.00 x 15 6-ply	55	385
10.00 x 16.5 6-ply Flotation	45	315
29 x 12.5 x 15 6-ply Extra Wide Lug	45	315
7.00 x 15 6-ply Steel-capped	55	385
31 x 13.5 x 15 4-ply Soft-trac Extra-wide	45	315

When Skid Loader Tires are replaced, BE SURE that there is NOT too much tread difference between Tires on the same side of the Loader. ALWAYS replace Tires with the same size furnished as original equipment; replacement Tires MUST be purchased locally.

7. Tighten Wheel Lug Bolts

The Lug Bolts, which secure the Wheels to the Skid Loader Axles, have 9/16-18 threads requiring 90 to 110 ft-lbs (122 to 149 Nm) torque to properly secure them.

Service Every 200 Hours or Six Months

The following services should be performed after every 200 hours (or 6 months) of Skid Loader operation:

1. Adjust Hand Brake

NOTE: *Hand Brake adjustment details are covered in the Adjustments Chapter.*

2. Replace Hydraulic Filter Element (See Fig. 11-6)

As prescribed, the Hydraulic Oil Filter Element should be removed and a new Element installed. Access to the Element is gained by first unlatching and opening the Rear Grill. BE SURE to allow the Hydraulic Oil to warm-up sufficiently before removing and replacing the Element. Drain the oil out to a level which is at least below the point where the Filter attaches to the Reservoir.

3. Oil & Tighten All Linkage Ball Joints

Ball Joint style pivoting connectors are used for coupling the Control T-Bars and the Throttle and Accelerator Pedal. The metal to metal type Ball Joints should be lubricated with a couple of drops of oil to help maintain freedom of movement. At the same time the Ball Joints are lubricated, all Linkage Locking Nuts should be tightened.

4. Radiator & Oil Cooler (Fig. 11-10 & see Fig. 11-6)

The Radiator and Oil Cooler assemblies are mounted between the Engine and the Hinged Rear Grill. When functioning properly, air is blown through the openings between the coils and fins by the Engine Fan. Over a period of normal operation, dust and debris will build-up on the Engine side of the Radiator and Oil Cooler and restrict air flow through the fins. To reduce or remove this restriction, use a garden hose and direct the water flow through the fins from the rear of the Radiator.

NOTE: *An Inspection Hole is provided for looking into the area between the Oil Cooler and Radiator. BE SURE to reinstall the Inspection Hole Plug BEFORE resuming operation.*

Service Every 500 Hours or One Year

The following services should be performed after every 500 hours (or annually) of Skid Loader operation:

1. Replace Oil in Chaincases (See Fig. 11-1)

Each Drive Chaincase requires 1 U.S. gallon (3.8 liters) of multi-viscosity (or equivalent good quality) motor oil. This quantity of oil should be maintained at all times. The oil in both Chaincases should be removed and new oil installed, after every 500 hours of operation, or annually.

To replace the Chaincase oil, remove the Access Cover and Gasket from each Chaincase Housing then siphon or pump the old oil out. Clean any debris or sludge from the Chaincase and then fill it with the proper amount of new oil. After making sure that the Gasket is NOT defective, reinstall the Cover and Gasket.

2. Retighten Engine Mounting Hardware

All Engine mounting hardware should be kept properly tightened at all times. ALL Bolts which secure the Engine Mounting Brackets to both the Engine and the Loader Frame should be checked and re-tightened, as necessary.

3. Replace Fuel Filter (See Fig. 11-2)

The Skid Loader is furnished with an in-line Fuel Filter with a disposable Spin-on Element. A replacement Spin-on Fuel Filter Element can be obtained by ordering GEHL part number 113890. To gain access to the Fuel Filter which is located on the left front side of the Engine, the Overhead Guard MUST be unbolted and the Guard rolled-back and locked.

4. Replace Hydraulic Reservoir Fluid (See Fig. 11-6)

The Hydraulic fluid is contained in the Reservoir (and the Hoses and other components of the hydraulic system). The Reservoir is built into the Right Chassis Riser and a Drain Plug is provided in the bottom of the Riser. Refer to the Lubrication chapter for recommended fluid types and viscosity information. BE SURE to replace and tightly secure the Drain Plug before installing new oil.

5. Clean Hydraulic Reservoir Strainer (See Fig. 11-6)

The hydraulic fluid Strainer is located inside the Hydraulic Reservoir. The hydraulic fluid MUST be drained to a level below the Strainer inlet before attempting to service the Strainer. Access for Strainer removal is gained by raising the Engine Cover and unlatching and opening the hinged Rear Grill. To remove and clean the Strainer, proceed as follows:

1. Remove the Access Cover from the inside Right Riser wall.
2. Reaching in through the Access Cover hole, unscrew and remove the Strainer and Band Magnet.
3. Use a filter cleaner solution (mixed according to the cleaner manufacturer's specifications) and soak the Strainer for about 15 to 30 minutes.
4. While waiting, clean the Strainer Band Magnet.
5. After the Strainer has been soaked, thoroughly rinse off all residue and solution with clean water from a faucet or garden hose. Then, use clean, dry, compressed air with a pressure of less than 30 PSIG (210 kPa) to blow the Strainer dry.
6. Once the Strainer is thoroughly dry, install the Band Magnet onto the end of the Strainer and then reinstall the Strainer in the reverse order of disassembly.

6. Clean & Backflush Radiator (See Figs. 11-6 & 11-10)

The Radiator is accessible when the Engine Cover is opened and hinged Rear Grill is unlatched and swung open. A Drain Tube and Valve are provided at the bottom of the Radiator for draining purposes.

Using a garden hose, direct water through the Radiator Cap opening to flush out the coils. After the Radiator is flushed, close the Drain Valve and replenish the anti-freeze. The capacity of the Loader cooling system is 3 U.S. Gallon (11.3 Liters). Refer to the Engine manual for coolant recommendations.

7. Check and Adjust Valve Tappets

NOTE: *The Valve Tappets should be checked and adjusted with the Engine cold for a tip clearance of 0.012 (0.3 mm).*

Contact your GEHL dealer or nearest Perkins Engine Service center for additional directives. BE SURE to check and, if necessary, replace the Valve Cover Gasket when reinstalling the Valve Cover.

CHAPTER 12
DECAL LOCATIONS

GENERAL INFORMATION

Decal Locations information is provided to assist in the proper selection and application of new decals, in the event the original decal(s) become(s) damaged or the machine is repainted. Refer to the listing for the illustration reference number, part number, description and quantity of each decal provided in the Kit. Refer to the appropriate illustration(s) for replacement location(s).

NOTE: *Refer to the SAFETY Chapter for the specific information provided on all of the various Safety Decals furnished in the Decal Kit(s).*

To ensure proper selection for correct replacement decal(s), compare all of the various closeup location photographs to your machine **BEFORE** starting to refinish the unit. Then, circle each pictured decal (applicable to your machine) while checking-off its part number in the listing. After you have verified all of the decal needed for replacement, set aside unneeded decals for disposal.

NEW DECAL APPLICATION

Surfaces **MUST** be free from dirt, dust, grease and other foreign material before applying the new decal. To apply a solid-formed decal, remove the smaller portion of the decal backing paper and apply this part of the exposed adhesive backing to the clean surface while maintaining proper position and alignment. Slowly peel off the other portion of the backing paper while applying hand pressure to smooth-out the decal surface. To apply a die-cut Decal, first remove the backing paper. Then, properly orient and position the Decal onto the clean mounting surface. After the Decal is firmly applied and smooth pressed-down, remove the front covering paper.

⚠ CAUTION

ALWAYS read and abide by the Safety Rules and Information shown on Decals. If Decal(s) become(s) damaged, unreadable or if the unit is repainted, the Decal(s) MUST be replaced. If repainting, MAKE SURE ALL Decals which apply to your machine are properly affixed to your unit in their proper locations.

IC LOADER PAINT NOTICE

For refinishing, order paint from this list:

903892	One Gallon Industrial Yellow Paint
902873	One Gallon Black Paint
903891	6 (12oz Spray Cans) Industrial Yellow Paint
902875	6 (12oz Spray Cans) Black Paint

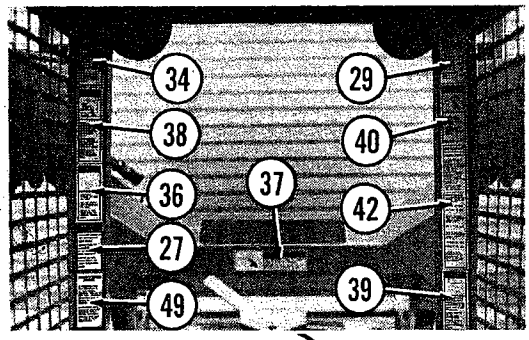
AGRICULTURAL LOADER PAINT NOTICE

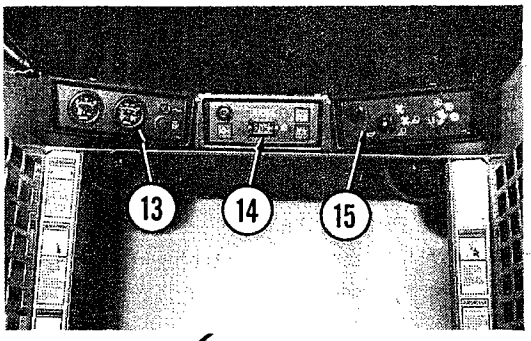
Use this list to order paint for refinishing:

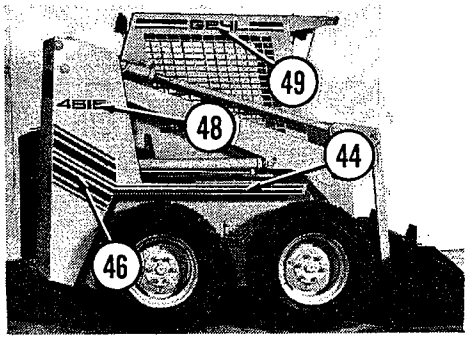
901225	One Gallon Blaze Paint
901226	One Gallon Maize Paint
610239	6 (12oz Spray Cans) Blaze Paint
610240	6 (12oz Spray Cans) Maize Paint

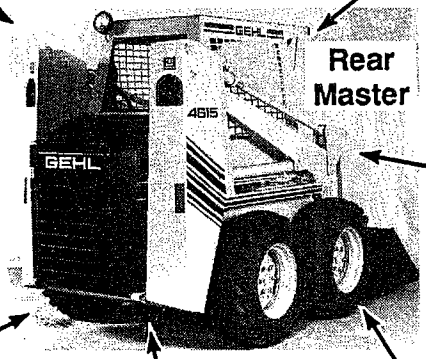
The Decal Set Number for the SL4515 (Gasoline-powered) and SL4615 (Diesel-powered) Industrial Skid Loaders is 096833. The Set includes the following:

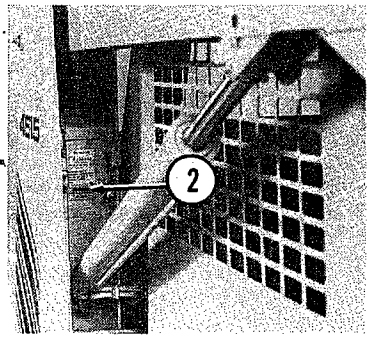
Ref. No.	Part No.	Description & Quantity
1	056859	Coolant Mixture
2	059406	Patent
3	064873	Non-skid Surface Strip (3 Places - NOT Shown)
4	067493	Red Reflector Strip (2 Places)
5	072793	Engine Oil Symbol
6	072794	Hydraulic Oil Symbol
7	072795	Choke Symbol (4515 Only - NOT Shown)
8	072797	Diesel Fuel Symbol
	072796	Gas Fuel Symbol (4515 Only- NOT Shown)
9	072798	Coolant Under Pressure
10	072817	Engine Shutdown Decal (Early 4615 Units Only - NOT Shown)
11	072853	Lift/Tilt Lever Decal
12	072854	Traction Lever Decal
13	072935	Left Side Face Panel
14	079360	Middle Face Panel (Current)
	076130	Middle Face Panel (Early Units Only - NOT Shown)
15	079359	Right Face Panel (Current)
	072937	Right Face Panel (Early Units Only - NOT Shown)
16	073030	GEHL 1-13/16 x 5-11/16
17	073075	Slow-Fast (Turtle-Rabbit) Symbol
18	073076	Brake Symbol
19	073081	GEHL 2-1/2 x 16
20	073458	Non-skid Surface Strip (NOT Shown)
21	074673	Certification Plate
22	074674	Service Guide
23	088790	(Optional) Auxiliary Hydraulics Operation
24	088791	Decal - Glow Plug Operation
25	091033	WARNING - Jump-starting Loader

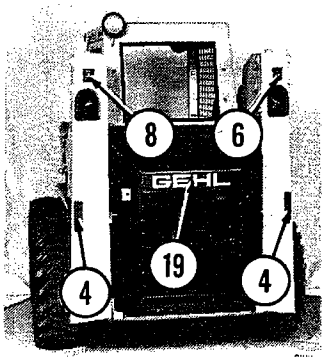


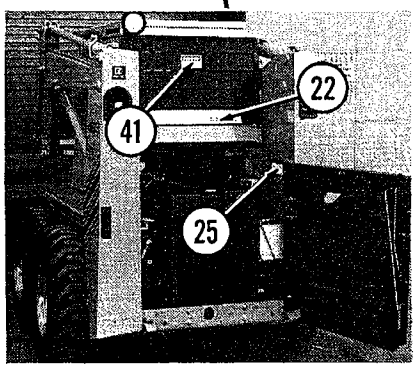


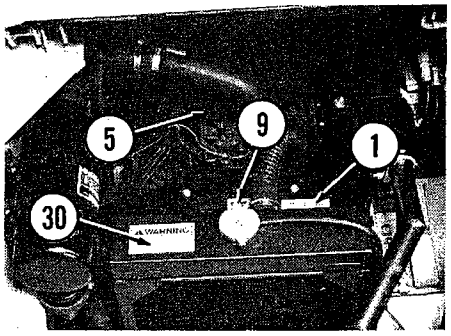




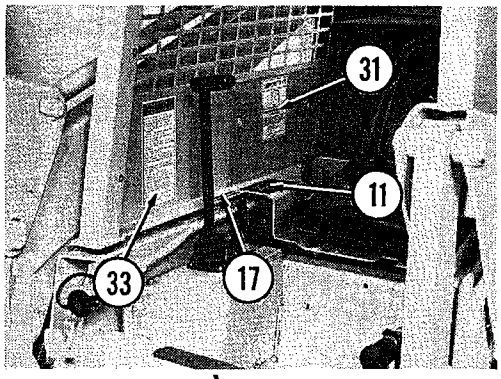


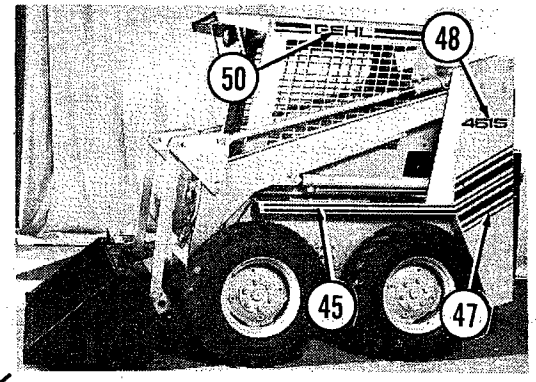


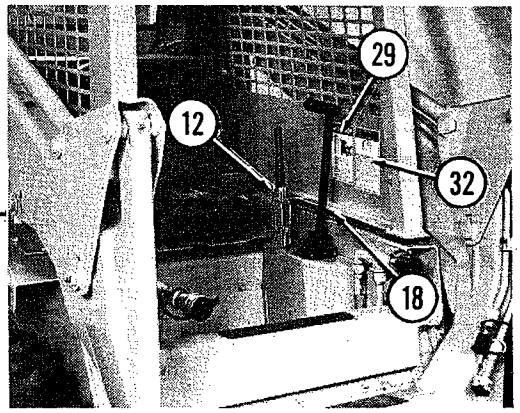


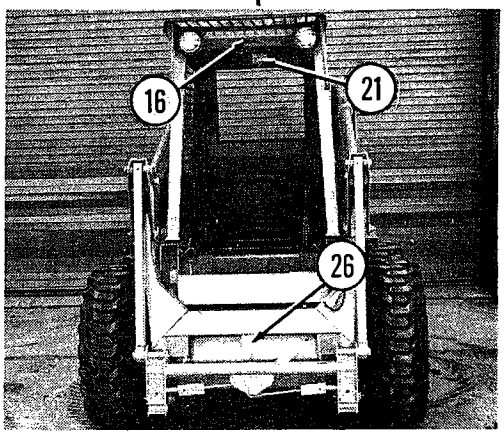


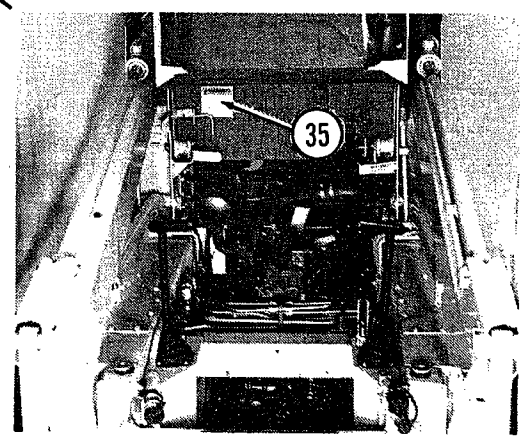
26	091035	DANGER - Lift Arm Raised
27	091048	WARNING - Disc Brake Function
28	091050	DANGER - Rotating Component (4515 Only - NOT Shown)
29	093202	DANGER - Avoid Electrical Contact
30	093365	WARNING - Rotating Component
31	093366	IMPORTANT - Locate Manual Here
32	093367	WARNING - Owner's Responsibility & Read Manual
33	093474	WARNING - General Safety Precautions
34	093476	WARNING - Fasten Seat Belt
35	093477	WARNING - Overhead Guard Safety Pin
36	093478	WARNING - Keep Feet Inside
37	093479	WARNING - Carry Load Low
38	093480	WARNING - Mechanical Lift Cylinder Lock
39	093482	WARNING - Rapid Tach Locking Pin Engagement
40	093483	WARNING - Carry Load Low
41	093484	DANGER - Proper Heating Unit Ground
42	093485	IMPORTANT - Operating Capacity
43	093486	WARNING - Fuel May Be Under Pressure (4515 Only - NOT Shown)
44	080055	Right Front Stripe
45	080056	Left Front Stripe
46	080057	Right Rear Stripe
47	080058	Left Rear Stripe
48	082343	4615 (2 Places)
	082342	4515 (2 Places -4515 Only - NOT Shown)
49	082345	ROPS Right Stripe
50	082346	ROPS Left Stripe
51		(Intentionally Blank)





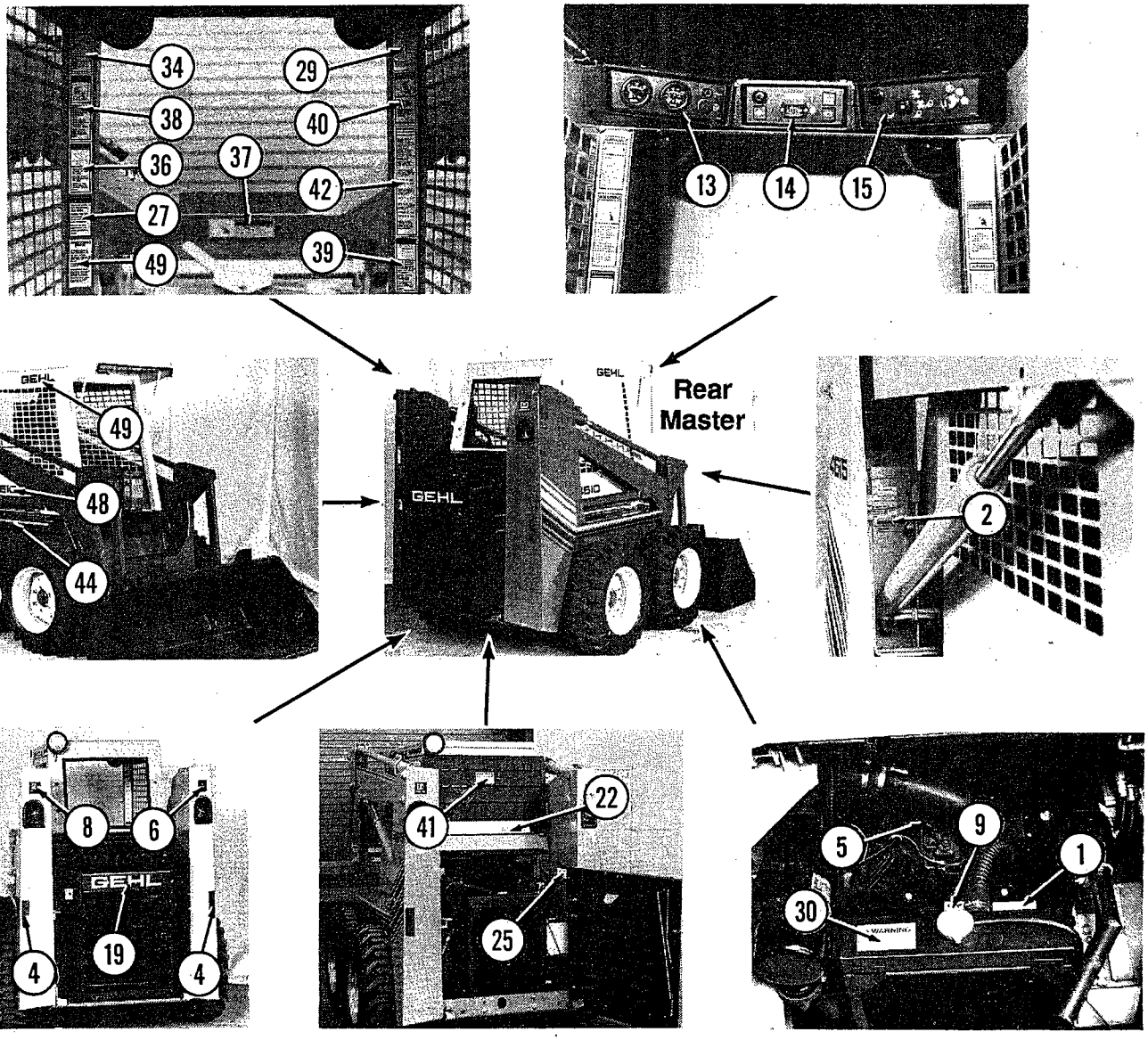




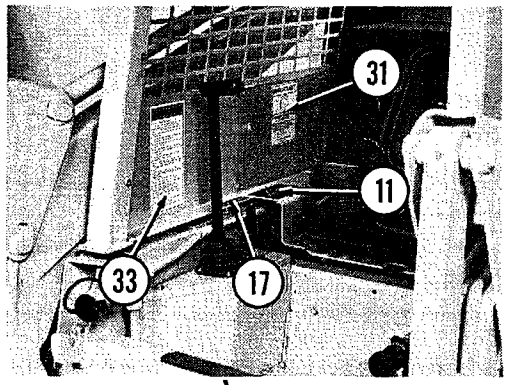


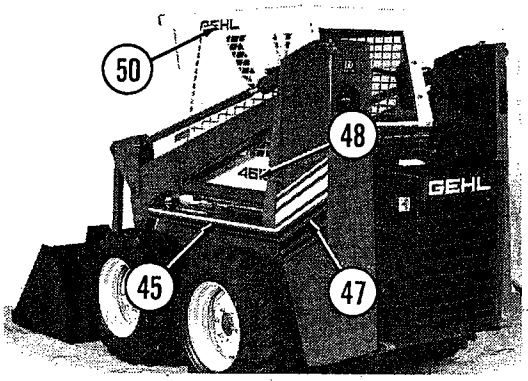
The Decal Set Number for the SL4510 (Gasoline-powered) and SL4610 (Diesel-powered) Agricultural Skid Loaders is 096832. The Set includes the following:

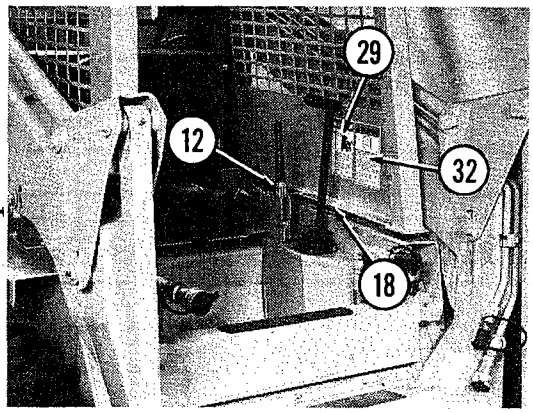
Ref. No.	Part No.	Description & Quantity
1	056859	Coolant Mixture
2	059406	Patent
3	064873	Non-skid Surface Strip (3 Places - NOT Shown)
4	067493	Red Reflector Strip (2 Places)
5	072793	Engine Oil Symbol
6	072794	Hydraulic Oil Symbol
7	072795	Choke Symbol (4510 Only - NOT Shown)
8	072797	Diesel Fuel Symbol
	072796	Gas Fuel Symbol (4510 Only - NOT Shown)
9	072798	Coolant Under Pressure
10	072817	Engine Shutdown Decal (Early 4610 Units Only - NOT Shown)
11	072853	Lift/Tilt Lever Decal
12	072854	Traction Lever Decal
13	072935	Left Side Face Panel
14	079360	Middle Face Panel (Current)
	076130	Middle Face Panel (Early Units Only - NOT Shown)
15	079359	Right Face Panel (Current)
	072937	Right Face Panel (Early Units Only - NOT Shown)
16	073030	GEHL 1-13/16 x 5-11/16
17	073075	Slow-Fast (Turtle-Rabbit) Symbol
18	073076	Brake Symbol
19	073081	GEHL 2-1/2 x 16
20	073458	Non-skid Surface Strip (NOT Shown)
21	074673	Certification Plate
22	074674	Service Guide
23	088790	(Optional) Auxiliary Hydraulics Operation
24	088791	Decal - Glow Plug Operation
25	091033	WARNING - Jump-starting Loader

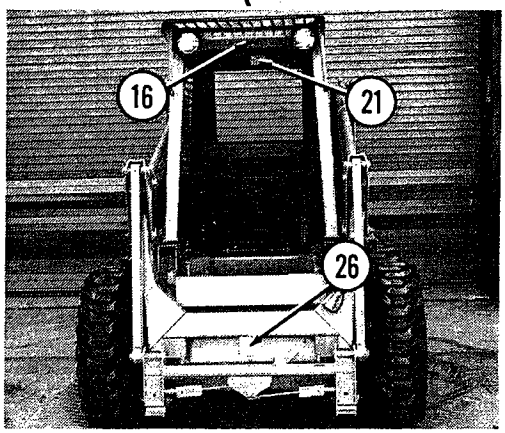


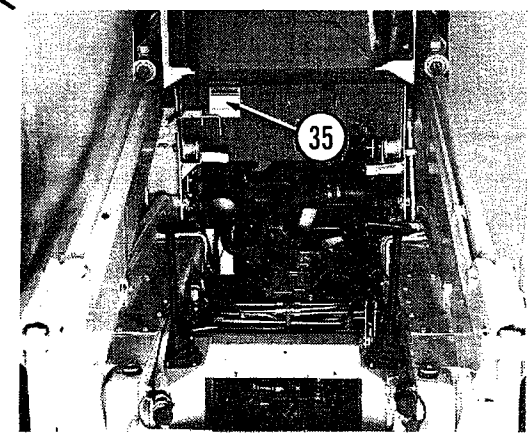
26	091035	DANGER - Lift Arm Raised
27	091048	WARNING - Disc Brake Function
28	091050	DANGER - Rotating Component (4510 Only - NOT Shown)
29	093202	DANGER - Avoid Electrical Contact
30	093365	WARNING - Rotating Component
31	093366	IMPORTANT - Locate Manual Here
32	093367	WARNING - Owner's Responsibility & Read Manual
33	093474	WARNING - General Safety Precautions
34	093476	WARNING - Fasten Seat Belt
35	093477	WARNING - Overhead Guard Safety Pin
36	093478	WARNING - Keep Feet Inside
37	093479	WARNING - Carry Load Low
38	093480	WARNING - Mechanical Lift Cylinder Lock
39	093482	WARNING - Rapid Tach Locking Pin Engagement
40	093483	WARNING - Carry Load Low
41	093484	DANGER - Proper Heating Unit Ground
42	093485	IMPORTANT - Operating Capacity
43	093486	WARNING - Fuel May Be Under Pressure (4510 Only - NOT Shown)
44	074267	Right Front Stripe
45	074268	Left Front Stripe
46	074269	Right Rear Stripe
47	074270	Left Rear Stripe
48	074273	4610 (2 Places)
	074271	4510 (2 Places -4510 Only - NOT Shown)
49		(Intentionally Blank)
50		(Intentionally Blank)
51	073031	GEHL 3-5/8 x 14-3/8 (2 Places)











CHAPTER 13
MAINTENANCE LOG

COMPONENT and SERVICE REQUIRED	PROCEDURE and/or CHAPTER TOPIC REFERENCE (Check Pg. # In Index)
Service Every 10 Hours or Daily	
Check Air Cleaner Indicator.	Clean or replace Air Cleaner Element and reset Indicator; refer to **Service** chapter.
Apply grease to appropriate Fittings as prescribed.	Refer to **Lubrication** chapter for Grease Fitting locations and intervals.
Check and replenish Engine Oil.	Refer to separate Engine Manual.
Check Hydraulic Reservoir fluid level and replenish, if necessary	Refer to **Service** & **Lubrication** chapters.
WHEN ENGINE IS COOL, check Radiator Coolant level.	Add clean, distilled water/anti-freeze mixture until it reaches bottom of Filler Neck.
Date After Service Is Completed	

MAINTENANCE LOG (cont.)

COMPONENT and SERVICE REQUIRED	PROCEDURE and/or CHAPTER TOPIC REFERENCE (Check Pg. # in Index)
Service Every 100 Hours	
Check and/or replace Air Cleaner Element.	Refer to details in **Service** chapter.
Check Alternator Belt tension and condition.	Refer to details in **Adjustments** chapter.
Check Battery, as necessary.	Refer to details in **Service** chapter.
Check and adjust Drive Chains tension, as required.	Refer to details in **Service & Adjustments** chapters.
Replace Engine Crankcase oil and Oil Filter.	Refer to details in **Service** chapter.
Check Tire pressures..	Refer to details in **Service** chapter.
Re-torque Wheel Lugs	Refer to details in **Service** chapter.

Date After Service Is Completed						

Service Every 200 Hours	
Check Hand Brake function and test for proper operation of Seat and Restraint Bar Switches.	Refer to **Adjustments** and **Controls & Safety Equipment** chapters, respectively.
Replace Hydraulic Reservoir Filter Element.	Refer to details in **Service** chapter.
Oil all Linkage Ball Joints and tighten Lock Nuts.	Refer to details in **Service** chapter.
Clean and backflush Oil Cooler and Radiator Fins.	Refer to details in **Service** chapter.

Date After Service Is Completed						

MAINTENANCE LOG (cont.)

COMPONENT and SERVICE REQUIRED	PROCEDURE and/or CHAPTER TOPIC REFERENCE (Check Pg. # in Index)
Service Every 500 Hours	
Grease all Axle Bearing Fittings.	Refer to **Lubrication** chapter.
Drain and replace oil in both Chaincases.	Refer to details in **Service** chapter.
Re-torque Engine mounting hardware.	Refer to details in **Service** chapter.
Replace Fuel Filter.	Refer to details in **Service** chapter.
Drain and replace Hydraulic Reservoir fluid and remove/clean Reservoir Strainer.	Refer to details in **Service** chapter.
Flush Radiator and replace anti-freeze.	Refer to details in **Service** chapter.
Check and adjust Valve Tappets.	Refer to details in **Service** chapter.

Date After Service Is Completed						

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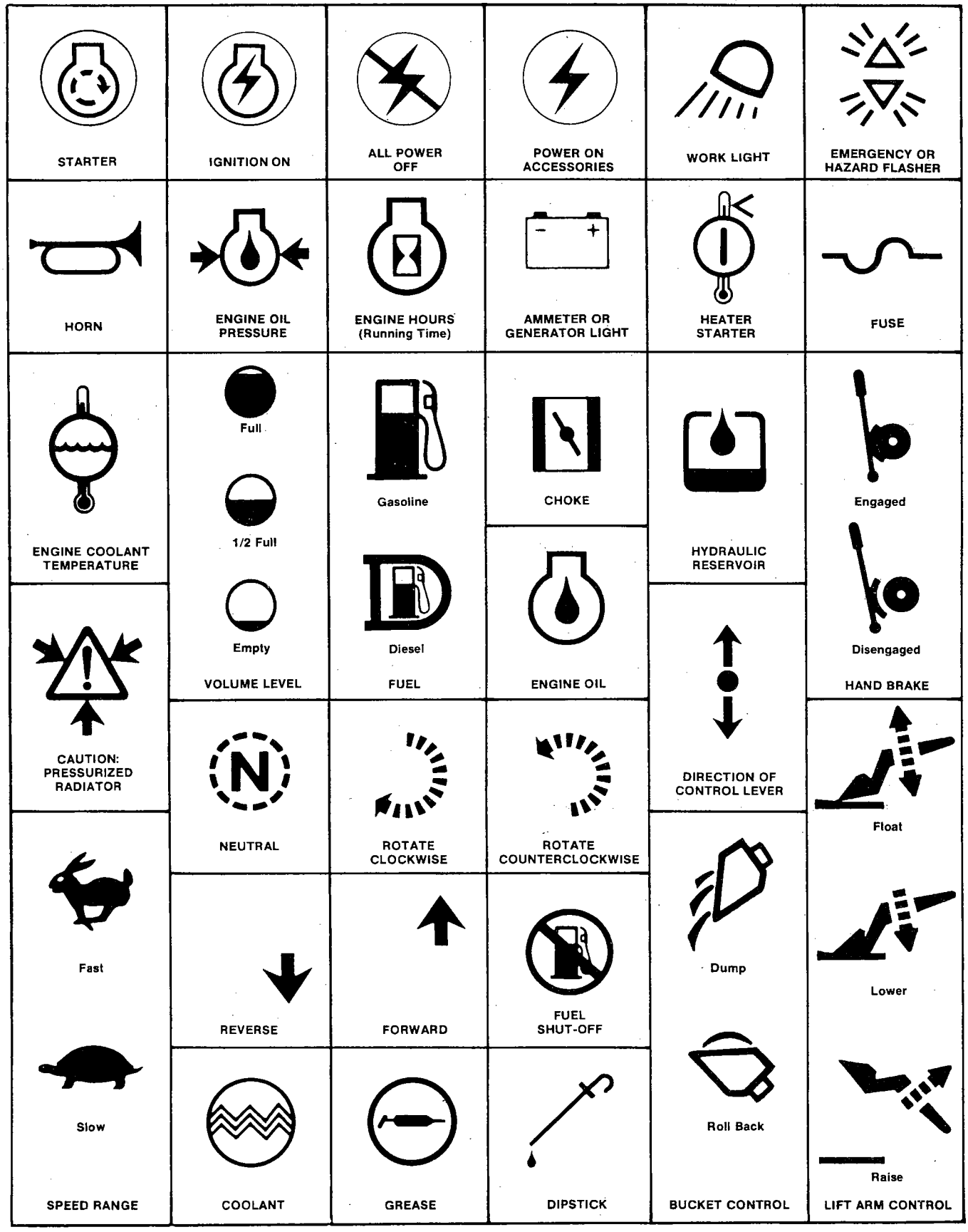
(Continued)

International Symbols Explanation



TORQUE SPECIFICATIONS FOR STANDARD MACHINE HARDWARE

All Torque Values are in Ft-Lbs unless otherwise stated.
(Multiply In-Lb value* by 0.113 or Ft-Lb value by 1.355 to obtain metric Nm value.)

Bolt Size	GR. 2		GR. 5		GR. 8	
	Dry	Lub.	Dry	Lub.	Dry	Lub.
8-32	19*	14*	30*	22*	41*	31*
8-36	20*	15*	31*	23*	43*	32*
10-24	27*	21*	43*	32*	60*	45*
10-32	31*	23*	49*	36*	68*	51*
1/4-20	66*	50*	9	75*	12	9
1/4-28	76*	56*	10	86*	14	10
5/16-18	11	9	17	13	25	18
5/16-24	12	9	19	14	25	20
3/8-16	20	15	30	23	45	35
3/8-24	23	17	35	25	50	35
7/16-14	32	24	50	35	70	55
7/16-20	36	27	55	40	80	60
1/2-13	50	35	75	55	110	80
1/2-20	55	40	90	65	120	90
9/16-12	70	55	110	80	150	110
9/16-18	80	60	120	90	170	130
5/8-11	100	75	150	110	220	170
5/8-18	110	85	180	130	240	180
3/4-10	175	130	260	200	380	280
3/4-16	200	150	300	220	420	320
7/8-9	170	125	430	320	600	460
7/8-14	180	140	470	360	660	500
1-8	250	190	640	480	900	680
1-12	270	210	710	530	1000	740

* In-Lb

NOTE: *These torque values are to be used for all **GEHL** hardware excluding: Locknuts, Self-tapping Screws, Thread Forming Screws and Sheet Metal Screws. Unless otherwise specified, all torque values must meet this specification.*

TORQUE SPECIFICATIONS FOR METRIC HARDWARE

Metric Bolt Size	Grade					
	GR. 8.8		GR. 10.9		GR. 12.9	
	Dry	Lub.	Dry	Lub.	Dry	Lub.
M6	8.0	6.0	11.0	8.0	13.5	10.0
M8	19.0	14.0	27.0	20.0	32.5	24.0
M10	37.5	28.0	53.0	39.0	64.0	47.0
M12	65.0	48.0	91.5	67.5	111.5	82.0
M14	103.5	76.5	145.5	108.0	176.5	131.0
M16	158.5	117.5	223.5	165.5	271.0	200.5

GEHL®

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California Proposition 65 Warning

Diesel engine exhaust and some of its constituents are known to the State of California to cause cancer and birth defects or other reproductive harm.

Battery posts, terminals and related accessories contain lead and lead compounds, chemicals known to the State of California to cause cancer and birth defects or other reproductive harm. Wash hands after handling battery.

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