HYUNDAI EQUIPMENT LIABILITY WARRANTY

THE WARRANTY IS THE ONLY OBLIGATION OF HYUNDAI OR A HYUNDAI DEALER TO THE PURCHASER OR ANYONE ELSE CONCERNING A PRODUCT, ITS SERVICE, ITS USE OR PERFORMANCE OR ITS LOSS OF USE OR FAILURE TO PERFORM. NEITHER HYUNDAI NOR A HYUNDAI DEALER HAVE MADE AND NEITHER WILL MAKE ANY OTHER EXPRESSED OR IMPLIED REPRESENTATION, WARRANTY OR AGREEMENT CONCERNING A PRODUCT. NEITHER HYUNDAI NOR AHYUNDAI DEALER HAVE MADE OR WILL MAKE ANY REPRESENTATION, WARRANTY OR AGREEMENT CONCERNING A PRODUCTS MERCHANTABILITY OR OTHER QUALITY, ITS SUITABILITY FOR PURCHASERS PURPOSE (EVEN IF A PURCHASER HAS INFORMED HYUNDAI OR A HYUNDAI DEALER OF THAT PURPOSE), ITS DURABILITY, PERFORMANCE OR OTHER CONDITIONS.

EVEN IF HYUNDAI OR A HYUNDAI DEALER WAS ADVISED OF THE POSSIBILITY OF SUCH LOSS, NEITHER HYUNDAI NOR AHYUNDAI DEALER WILL BE LIABLE TO PURCHASER OR ANYONE ELSE FOR ANY INDIRECT, INCIDENTAL CONSEQUENTIAL, PUNITIVE, ECONOMIC, COMMERCIAL, OR SPECIAL LOSS WHICH IS IN ANY WAY ASSOCIATED WITH A PRODUCT. THIS INCLUDES ANY LOSS OF USE OR NON-PERFORMANCE OF A PRODUCT, ANY REPLACEMENT RENTAL OR ACQUISITION COST, ANY LOSS OF REVENUE OR PROFITS, ANY FAILURE TO REALIZE EXPECTED SAVINGS, ANY INTEREST COSTS, ANY IMPAIRMENT OF OTHER GOODS, ANY INCONVENIENCE OR ANY LIABILITY OF PURCHASER TO ANY OTHER PERSON.

PURCHASER MAY NOT ATTEMPT TO ENLARGE ITS RIGHTS UNDER THE WARRANTY BY MAKING A CLAIM FOR INDEMNITY, FOR BREACH OF CONTRACT, FOR BREACH OF COLLATERAL WARRANTY, FOR A TORT (INCLUDING NEGLIGENCE, MISREPRESENTATION OR STRICT LIABILITY) OR BY CLAIMING ANY OTHER CAUSE OF ACTION.

THE WARRANTY IS A CONDITION OF SALE OF THE PRODUCT TO PURCHASER AND WILL THEREFORE APPLY EVEN IF PURCHASER ALLEGES THAT THERE IS A TOTAL FAILURE OF THE PRODUCT.

N.B. *Read and practice your HYUNDAI operating and servicing instructions. Failure to do this may void your warranty.*

PUBLICATION NUMBER 48343

FOREWORD

This book has been written to give the Owner / Operator necessary operating, servicing and preventative maintenance instructions on the Mini-Loader.
Read this manual completely and know the Mini-Loader before operating or servicing it.
Do not perform any service procedures that are not in this manual.
Only service personnel that have had training in the service of this Mini-Loader can perform these service procedures.

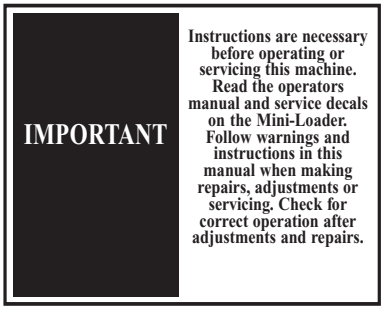
Reference Information

Write the correct information for your Mini-Loader in the spaces below. Always use these numbers when referring to your machine.

Model No. _____
Serial No. _____
Dealer Name _____
Address _____
Phone _____

Throughout this manual the terms DANGER, WARNING and CAUTION are used to indicate the degree of hazard in terms of personal safety. These words will be used in conjunction with the Safety - Alert symbol, a triangle with an exclamation mark.
Throughout this manual, the term IMPORTANT is used:

* To indicate that instructions are necessary before operating or servicing the Mini-Loader.
* To show important procedures which must be followed to prevent damage to the Mini-Loader attachment.



INDEX

1...SAFETY PRECAUTIONS

The following precautions are suggested to help prevent accidents.

A careful operator is the best operator. Most accidents can be avoided by observing certain precautions. Read and take the following precautions before operating the Mini-Loader to help prevent accidents. Equipment should be operated only by those who are responsible and instructed to do so.

1. Read this manual carefully before using the Mini-Loader. Working with unfamiliar equipment can lead to accidents.
2. Do not allow any passengers on the Mini-Loader while being operated.
3. Never run the engine in a closed building without adequate ventilation as the exhaust fumes can cause death.
4. Do not operate the Mini-Loader unless all safety equipment, shields and hydraulic controls are working properly, as well as all safety and instruction decals are in place.
5. Wear close fitting clothing and safety equipment appropriate for the job.
6. Loud noise can cause impairment or loss of hearing. Wear a suitable protective device such as earplugs.
7. Do not wear radio or music headphones while operating the machine. Safe operation requires your full attention.

OPERATING THE MINI-LOADER

1. Inspect the machine before you operate it. Be sure hardware is tight. Repair or replace damaged, badly worn or missing parts. Be sure guards and shields are in good condition and fastened in place. Make any necessary adjustments before you operate.
2. Avoid jerky turns, starts, stops, or reverses.
3. Use care when operating on steep grades to maintain proper stability.
4. Carry load low while turning.
5. Be careful when driving through door openings or under overhead objects. Always make sure there is enough clearance.
6. Always be sure of water, gas, sewage and electrical line locations before you start to dig.
7. Watch out for overhead and underground high-voltage electrical lines when operating the loader.
8. Always park the mini-loader on level ground. If the mini-loader is to be parked on an incline, always lower the attachment so it contacts the ground. Set the parking brake and block the wheels.
9. Do not leave the mini-loader while loader is running.
10. Do not dismount from the mini-loader and leave the lift arms raised unless following specific service procedures. Always lower the lift arms down and drop the attachment down to contact the ground.
11. Always be watchful of bystanders when operating the mini-loader.
12. Always carry the attachment low for maximum stability and visibility.
13. Exercise extreme caution when operating the loader with a raised attachment.
14. Never attempt to lift loads in excess of the mini-loaders capacity.
15. Keep hands on the control levers and grab handle while loader is in motion.
16. Do not operate loader unless standing on operator's platform.

MAINTENANCE

1. Stop the engine before performing any service on the mini-loader.

2. Never refuel the mini-loader while smoking or with the engine hot or running.

3. Replace all missing, illegible or damaged safety and warning decals.

4. Do not modify or alter, or permit anyone to modify or alter this mini-loader or any of its components or any mini-loader functions.

5. Do not make mechanical adjustments while the loader is in motion or when the engine is running. However, if minor engine adjustments must be made, ensure safety system is active by shutting off the engine and restarting the loader without depressing the system unlock buttons. Cycle levers slowly to ensure locks are working properly.

6. Do not bypass the safety system. Consult your HYUNDAI Dealer if your safety system is malfunctioning.

7. Do not attempt to repair or tighten hydraulic hoses when the system is under pressure, when the engine is running or when the lift arms are raised.

8. Do not get under the lift arms or reach through the lift arms while they are raised.

9. **If service is required with lift arms in the raised position, the following procedure is mandatory:**

   To engage the lift arm support, remove any attachment and raise the lift arms to their maximum height. Remove key from ignition. Remove hitch pin by pulling the ring while holding the lift arm support with your other hand. Slowly swing the lift arm support into position against the cylinder shaft, taking care not to damage the cylinder shaft. Fasten lift arm support in place using the hitch pin.

   Ensure nylon lanyard does not get pinched or broken. If it does, replace immediately.

10. Whenever servicing or replacing pins in the cylinder ends, buckets, etc., always use a brass drift and a hammer. Failure to do so could result in injury from flying metal fragments.

11. Keep the operator area free from debris.

12. When lifting or towing/transporting is required, please refer to instruction in section 3.5 of this manual.

ALWAYS USE CAUTION
AROUND RAISED LIFT ARMS.

CONTROLS

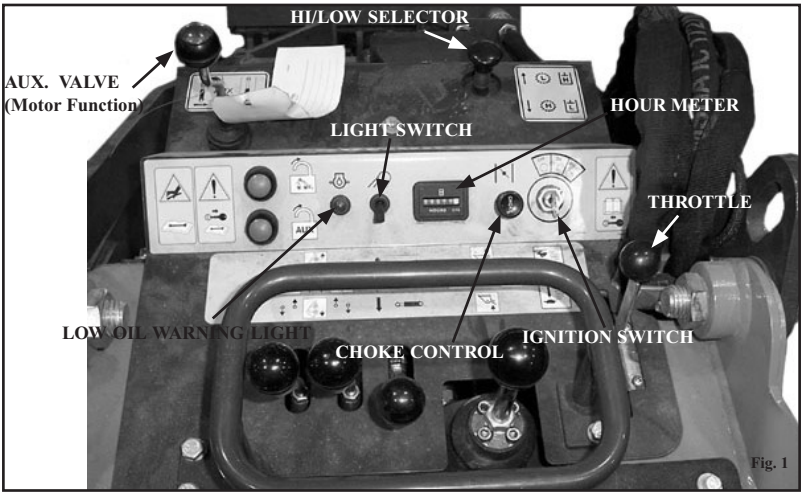


Fig. 1

It is necessary to become familiar with the location and purpose of each control before operating the mini-loader.

2.1 ENGINE CONTROLS

IGNITION SWITCH - The ignition switch is a three position switch. Clockwise from the OFF position are the ON and START position.

THROTTLE CONTROL - When the throttle control lever is set fully to the rearward position, the engine is at idle speed. Pushing the control to the forward position increases the engine speed.

CHOKE CONTROL - Pull choke control out to start a cold engine. As engine warms up, gradually push the choke control in.

LOW OIL PRESSURE LIGHT - This light illuminates if the engine oil pressure is low. Stop the engine immediately and determine cause.

LIGHT SWITCH - Turns working light on and off.

IMPORTANT	**Remove key when not in operation!**

IMPORTANT	**For maximum power while working, the engine should be running at full throttle.**

2.2 CONTROL PANEL

The HYUNDAI mini-loader features two independent hydraulic systems for loader and attachment operation.

Each of these systems is powered by a separate hydraulic pump. The primary pump produces approximately 8.5 G. P. M. at full engine speed, while the secondary pump produces approximately 3 G. P. M.

One system is dedicated to attachment operation only, while the second system controls all other functions. The pumps can be instantly switched back and forth between the two systems as the need arises. For example, for normal operation, one would have the large, primary pump operating the loader.

However, if one was trenching, one would switch the pumps so that the primary pump was operating the trencher drive, while the small secondary pump was operating the loader, thus allowing the operator to drive slowly while trenching.

All functions are controlled from the top console of the mini-skid as shown in fig. 2A and 2B.

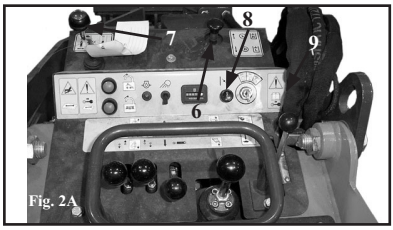


Fig. 2A

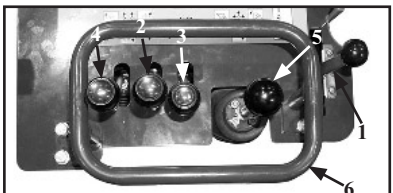


Fig. 2B

WARNING

Do not move any of the control levers unless standing with both feet on the platform and gripping the grip handles.

PRIMARY CONTROLS

1. Throttle
2. LH, RH Drive
3. Auxiliary Lever, Cylinder Driven Attach.
4. Lift & Tilt Controls
5. Handle Grip

SECONDARY CONTROLS

6. Hi-Low Range Selector
7. Auxiliary Lever, Motor Driven Attach.
8. Choke
9. Key Switch

The HYUNDAI mini-loader features single-hand steering. For normal operation, the most comfortable hand position is to operate the steering levers with the palm of the left hand, with the fingers gripping the grip handle. Flexing the fingers will allow forward travel, and simply rotating the palm will allow normal steering. To reverse, slip the palm back to the rear of the grip handle, and use the tips of the fingers to pull the steering levers backwards.

This position will allow for better control of the unit. At the same time, the right hand should grip the grip handle for operator stability, but can also be used to operate the tilt and dump functions as required.

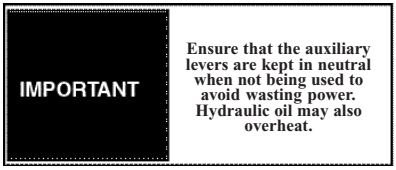
WARNING

Keep BOTH HANDS on the grip handle at all times when operating the machine.

Lift And Tilt Control Lever

The control lever located on the right hand side controls the lift and tilt. Pushing the lever forward lowers the lift arm and pulling the lever back raises the lift arm. In these two positions, the lever is spring centered to neutral upon release of the lever.

The control lever located on the right hand side controls the tilting action of attachments such as buckets, forks, etc. Moving the lever left tilts the attachment back. Moving the lever to the right tilts the attachment ahead. The lever is spring centered to neutral upon release.



Auxiliary Control Lever-Cylinder Operation

The HYUNDAI mini-loader features two separate auxiliary systems. The auxiliary lever shown as item #3 is part of the primary controls, and is located between the main levers. This control is connected to the pair of quick connect couplings located on the right side of the loader arms.

This lever can be used to operate attachments such as post hole augers, trenchers, brooms, etc., but is mainly intended to operate attachment hydraulic cylinders. This would include such attachments as angling dozer blades, grapple forks, paving stone movers, and loose material handlers, which must operate from this control only.

Pushing this lever forward extends the attachment hydraulic cylinder, while pulling it back reverses the motion. This lever is not spring centered and must be returned to neutral (center position) manually.

SECONDARY CONTROLS:

Hi/Low Range Selector

The hi/low range selector knob is located ahead and to the right of the primary controls. This knob switches the pumps back and forth between the primary and the secondary circuits. This is a "push-pull" knob, which moves up and down.

When the knob is pushed down, the large, primary pump is connected to the loader drives, and the small pump is connected to the secondary auxiliary valve. This would be the normal position for most loader operations.

When this knob is pulled up, however, the pumps are reversed so that the larger, primary pump is connected to the auxiliary valve, while the smaller pump is operating the loader drives. This would be the position used when operating attachments such as trenchers, sweepers, roto-tillers, snowblowers, and post hole augers, as it provides for increased speed and power to the attachment while allowing a low speed drive for the loader itself.

As well, when the selector is in this position, it provides a low speed drive which can be used to allow new operators a learning period to become familiar with operating the mini-loader.

When moving the knob up or down, stop the machine, reduce engine speed to an idle, and push or pull the knob quickly and cleanly to a new position. **Do not leave this knob in the middle position. Be sure it is either fully up or fully down.**

**AUXILIARY LEVER-
HYDRAULIC MOTOR OPERATION**

This lever is located to the left and forward of the primary controls, and operates the set of quick connect couplings located on the front of the frame.

This is a dedicated hydraulic motor control valve, to be used to operate such attachments as trenchers, post hole augers, sweepers, hammers, and similar units. **Do not connect hydraulic cylinders to this control.** When this control is in the neutral position, the auxiliary couplers are connected together, which provides a "free-wheeling" or "slow-down" position for hydraulic motors, preventing attachment damage and internal pressure buildups.

A hydraulic cylinder connected to this line will not hold pressure in the neutral position and will be free to move! This can result in damage or injury.

Always use the auxiliary couplers located on the loader lift frame for hydraulic cylinder use!

This lever operates side to side, moving the lever to the left provides oil flow to the female coupler, while moving it to the right to provide oil flow to the male coupler. Centering the lever provides a neutral, off position. This lever locks in all three positions and must be moved manually between them.

IMPORTANT	**Ensure that the auxiliary lever is kept in neutral when not being used to avoid wasting power. Power is greatly reduced, and the hydraulic oil will overheat if the lever is engaged without an attachment connected to it.**

2.3 SAFETY SYSTEM

The Mini Loader is equipped with a hydraulic interlock safety system.

When the loader is started, all hydraulic flow is directed to the hydraulic reservoir, bypassing all hydraulic valves.

To direct flow to the main control valve (which includes drive control, lift and tilt control, and primary auxiliary control) and the second auxiliary valve, there are two electric switches labeled LOADER UNLOCK and AUX. UNLOCK.

These switches are located on the left hand side of the instrument panel and must be depressed momentarily to activate each hydraulic circuit. Each circuit is independent of each other.

To re-engage the hydraulic interlock safety system once the loader has been operated the engine must be shut down by turning the key to the off position.

2.4 PARKING BRAKE

Prior to exiting the machine, apply parking brake located near the right hand rear tire. Pull towards rear of machine to engage, push towards front of machine to disengage. Ensure brake is fully engaged before dismounting the machine. (Wheel Mini-Loader only).

2.5 ATTACHMENT LOCK PINS

ATTACHMENT LOCK PINS

The quick tach design allows changing from one attachment to another quickly and easily by disengaging pins.

Attachments are secured on the unit with two spring loaded cam action locking pins. Rotating the handles on the pins one half turn moves the pins from the locked to the unlocked position.

To **unlock** attachments, rotate both pins so that their handles are both pointing to the **outside** of the quick-tach.(Fig. 4)

To **lock** attachments, rotate both pins inwards so that both handles are pointing towards the **center** of the machine. This will allow the springs to push the pins downwards through the mounting holes in the attachment and secure it to the unit. (Fig. 5)

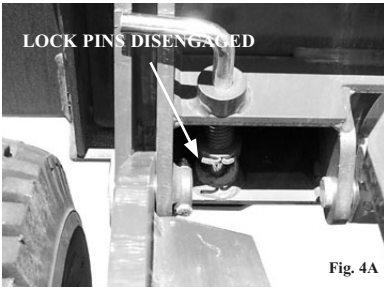


Fig. 4A

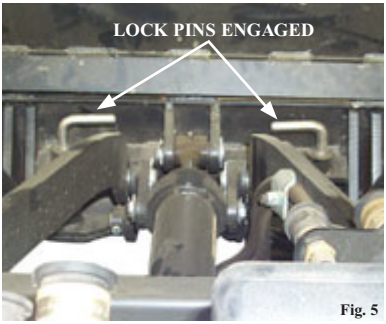


Fig. 5

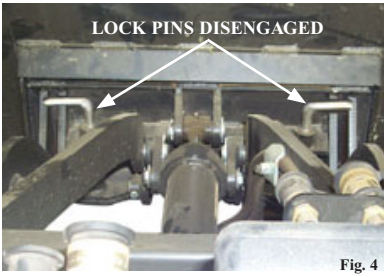


Fig. 4

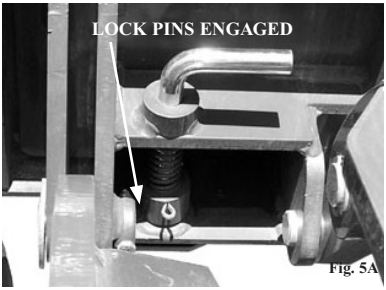


Fig. 5A

WARNING

After hook-up to attachment, check to be sure pins are fully engaged, and locked into position.

3...OPERATION

3.1 PRE-STARTING INSPECTION AND PREPARATION

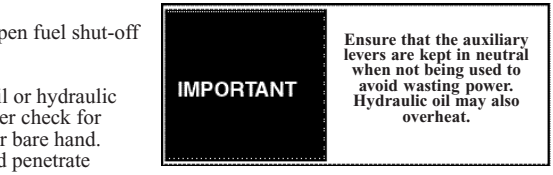
Before you start the mini-loader for the first time each day, perform the following checks and services:

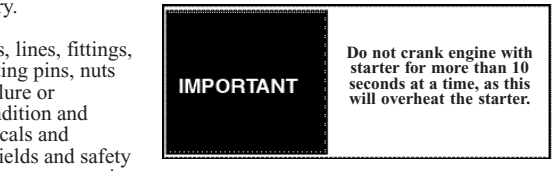
1. Check engine crankcase oil level.
2. Check engine fuel and open fuel shut-off valve if closed.
3. Check for fuel, engine oil or hydraulic leaks. **WARNING!** Never check for hydraulic leaks with your bare hand. High pressure fluid could penetrate your skin and cause injury.
4. Visually inspect all hoses, lines, fittings, tires, pivot points, mounting pins, nuts and bolts for possible failure or looseness. Check the condition and operation of all safety decals and equipment. Ensure all shields and safety screens are in place. If necessary repair or replace before starting.
5. Check that all controls are in the neutral position.
6. Inspect bushings and grease where applicable.

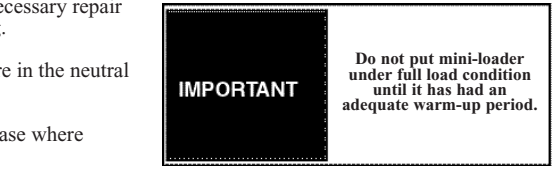
Do not move any of the control levers unless standing with both feet on the platform and holding the grip handles.

3.2 STARTING PROCEDURE-GASOLINE ENGINE

1. Push the throttle lever ahead slightly.
2. Pull choke control completely out.
3. Turn the ignition switch to "ON" and then through to the "START" position. (If the ignition fails to start by cranking for ten seconds, wait five seconds before trying again).
4. As the engine warms up, push in on the choke control gradually.
5. Set the throttle lever for idling speed. Avoid excessive engine speed during warm-up.
6. To restart a warm engine, move throttle control slightly ahead of idle position and turn ignition key to "START".







3.3 SHUT-OFF PROCEDURE-GASOLINE ENGINE

1. Park the mini-loader on level ground.
2. Lower the lift arms and ground the attachment.
3. Engage parking brake (wheel loader only).
4. Return throttle control to "idle" position, and allow engine to idle for a short while.
5. Turn ignition key off.
6. Place control levers in neutral position, and remove the key.
7. If it is necessary to park on a slope, park across the grade and block the wheels.

IMPORTANT

Remove key when not in operation.

3.4 MOUNTING ATTACHMENTS

INSTALLATION OF ATTACHMENT

1. Rotate lock pins to the unlock position (handle pointing outward).
2. Tilt the attachment frame forward so that the top round edge of the attachment frame will fit under the lip on the attachment. (Fig. 6)
3. Drive into the attachment, raising the arms so that the top of the attachment frame slips under the lip on the attachment, and the attachment lifts slightly.
4. Using the tilt cylinder, roll back the attachment so that it drops into place.
5. Rotate the lock pins to the locked position (handles facing inwards), and check that the lock pins are fully inserted through the lock holes in the attachment.
6. Connect attachment hydraulic hoses (if required) to the quick couplers. (Fig. 7)

WARNING

After hook-up to attachment, check to be sure lock pins are fully engaged.

REMOVAL OF ATTACHMENTS

1. Lower lift arms and tilt forward on the attachment so that the attachment is resting on the ground.
2. If the attachment is hydraulically equipped, stop the engine, relieve hydraulic pressure in the attachment lines by turning the key switch to the on position and activate the hydraulic interlock switch.
   Shift the auxiliary lever back and forth and disconnect the attachment hydraulic hoses. Then turn the key to the off position.
3. Rotate the lock pins to the unlocked (handles pointing outwards) position.
4. Start engine, activate the hydraulic safety interlock switches, tilt the attachment forwards (dump) until the top edge of the attachment mount frame clears the lip on the attachment, and back the mini-loader away from the attachment.

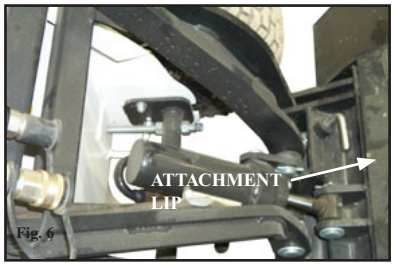
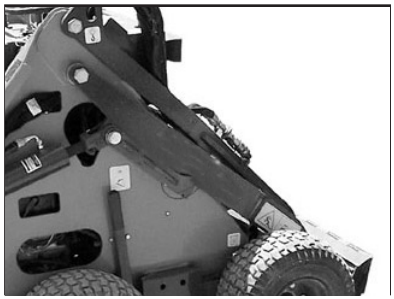


Fig. 6



3.5 OPERATIONAL PROCEDURE

Mini-loader operational procedure and suggestions in this manual are based on the use of a bucket.
Refer to operational manual of independant attachment.

OPERATING SUGGESTIONS

1. Install an attachment (bucket). Drive carefully to a clean and level area and practice operating the mini-loader at a slow rate until familiar with the operation of all controls.

2. Hydraulic power transmission is instantaneous. When using the drive levers, sudden movement will result in acceleration to full speed and a very jerky ride. Use smooth and gradual movements when using the drive levers.

3. For efficient operation of the mini-loader, keep the work area small, and as level as possible.

4. Decrease cycle time by "skid" turning rather than backing up, using a slow turn, then going forward.

5. When driving on slopes, keep the heaviest end of the mini-loader upward. When driving on a slope with an empty bucket, back up the slope in reverse, and drive down a slope forward (Fig. 8). When driving on a slope with a load, drive up the slope forward and back down the slope in reverse. (Fig. 9).

6. To increase machine life, let the engine warm completely before starting operations each day. Avoid "over-loading" or "lugging" the mini-loader.

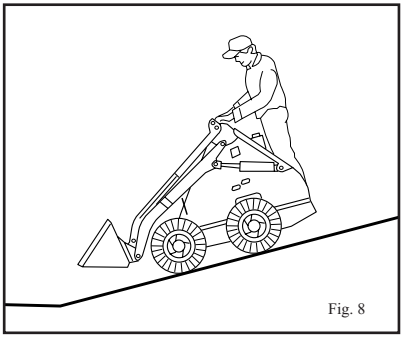


Fig. 8

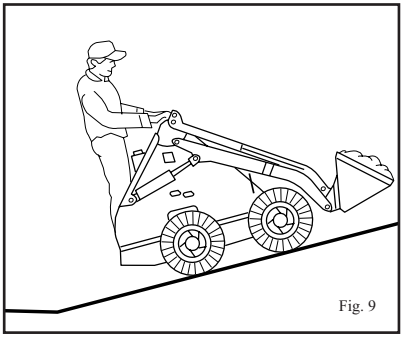


Fig. 9

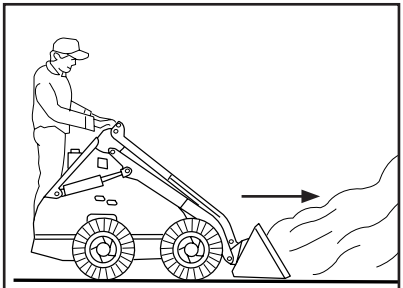


Fig. 10

Always carry the bucket low while moving. Drive directly up and down instead of across a slope.

To avoid personal injury: When starting or operating loader in an enclosed area make sure there is enough ventilation. Exhaust fumes can kill.

FILLING AND DUMPING A BUCKET

1. Approach the pile with the lift arms fully down and bucket cutting edge just skimming the top of the ground. (Fig. 11).
2. As soon as the bucket is full, tilt bucket back and back away from the pile. (Fig. 12).
3. When dumping, raise bucket high enough to clear stock pile or sides of container being loaded.
4. Drive slowly forward until bucket is over dumping area and tilt bucket forward until it completely empties.
5. Tilt bucket back up if necessary to clear container side and back away.

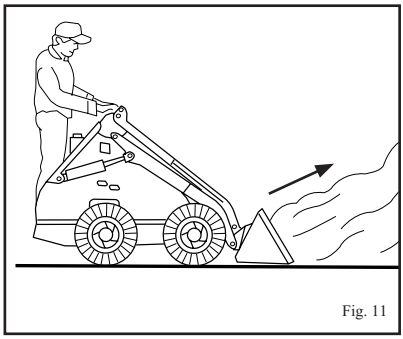


Fig. 11

Use extreme caution when stopping. If the bucket or attachment is raised, the machine can tip. Keep all movements smooth and general when manoeuvering with lift arms raised. All new operators must work the machine in a safe open area to become familiar with its operating characteristics.

To ensure safe operation, never leave the operator's platform without lowering the lift arms to the ground. Do not load over the rated capacity.

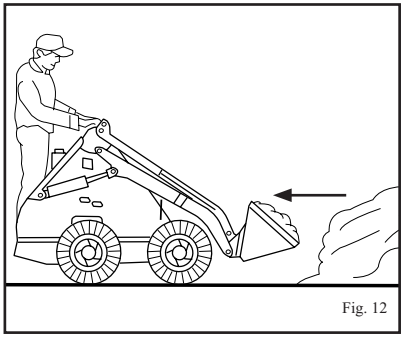


Fig. 12

DIGGING WITH A BUCKET

1. Lower lift arms fully and tilt bucket forward until cutting edge is on the ground.
2. Drive machine forward slowly and continue to tilt bucket forward until it enters the ground to desired depth and then tilt it back a small amount to keep an even depth. (Fig. 13).
3. Continue driving forward until bucket is full and then tilt bucket fully back while driving slowly forward or stopping the machine.

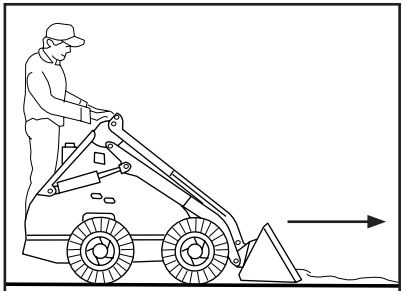


Fig. 13

LEVELLING

1. To spread material on uneven ground, raise lift arms and tilt bucket forward while driving slowly forward. (Fig. 14).

2. To level a filled area, tilt bucket forward and drive machine backwards to drag bucket and spread material. (Fig. 15).

3. Another method of levelling is to travel forward with bucket down and level, full of material and pushing excess into low areas. Depth is controlled by tilting the bucket slightly up or down. (Fig. 16).

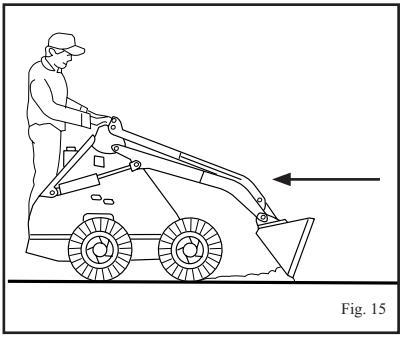


Fig. 15

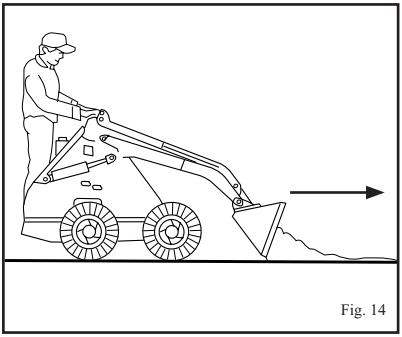


Fig. 14

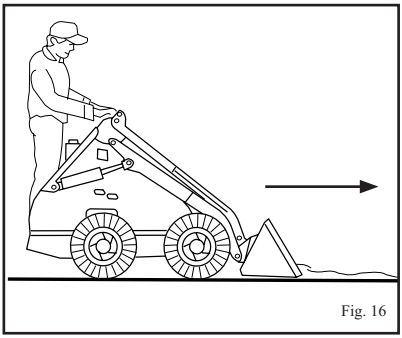


Fig. 16

BACKFILLING

1. When filling a trench or a hole, drive up to the hole with bucket low to push material up to the edge.

2. Tilt bucket forward as soon as it reaches the edge of the hole and when necessary raise the arms to empty the bucket.

TRANSPORTING THE MINI-LOADER

1. When the machine is transported on a truck or trailer, proper ramps must be used for loading.

2. A mini-loader should be driven backwards up a ramp onto the trailer or forward down a ramp. (Fig. 17).

3. After the mini-loader is driven onto the transporting vehicle apply the parking brake (if applicable), lower any attachments, and install chains to hold the mini-loader from moving during sudden stops or when travelling up and down grades (Fig. 18).

4. Close the fuel valve when the mini-loader is to be transported. Vibration during transport could cause the carburetor to flood.

IMPORTANT

Never tow the mini-loader! Damage may result.

WARNING

When transporting on a road or highway during the day or at night, be sure that the trailer is equipped with lights and signs as required by law.

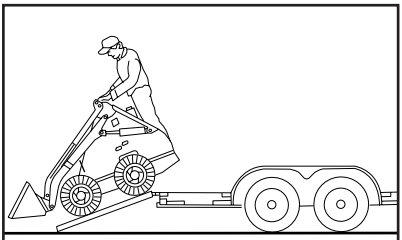
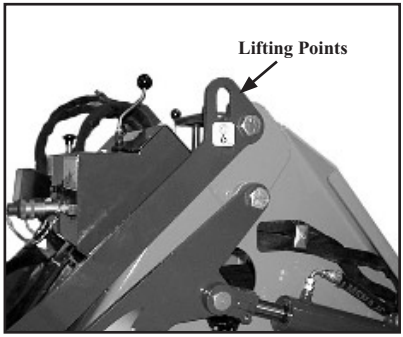


Fig. 17

LIFTING THE MINI-LOADER

Attach properly rated cables, chains or straps to the lift points.



3.6 OPERATIONAL TIPS

1. Hydraulic power transmission is instantaneous. When using the drive levers, sudden movement will result in acceleration to full speed and very jerky handling. Ease the levers either forward or reverse.

3. When approaching the heap or pile, always have the bucket level. To achieve this, lower the loader arm and activate the bucket tilt cylinder to bring the bucket level with the ground.

4. Towards the end of the run, when the bucket is nearly full, gently roll the bucket backwards. This decreases the lifting resistance when the arms are raised and promotes an efficient tear out.

5. When transporting material in the bucket on hillsides or rough ground, keep the bucket as close to ground level as possible. This lowers the center of gravity of the loader and maximizes stability.

6. When scooping, leveling and surface stripping, lower the bucket to ground level, tilt it downward. The bucket will bite into the soil as you move forward.

7. The material may then be dumped into a trailer or utility truck for removal or repositioning on the site. Do not step off the operator platform with the load raised.

8. Maneuvering is made possible by individual controls for the hydraulic motor on each side of the mini loader. A turn may be achieved by ranging the amount and/or direction of power supplied to each side of the machine. The machine is capable of turning in its own length by applying equal forward and reverse power to opposite sides of the machine.

4...MAINTENANCE

4.1 PARTS ORDERING

Maintenance and service intervals recommended in this manual are based on operation under average conditions. When operating the mini-loader in severe conditions of heat, cold, dust, humidity or other extremes, service the mini-loader at more frequent intervals.

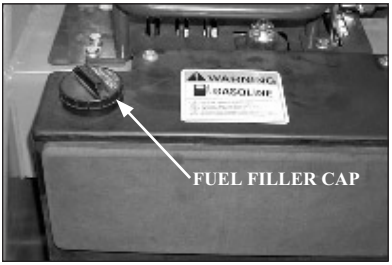
Failure to perform regular maintenance will result in damage to the mini-loader. Periodic maintenance and service is the key to trouble free operation.

4.2 FUELS, LUBRICANTS AND CAPACITIES

The service obtained from your Mini-Skid is greatly affected by the quality of the petroleum products used in it. It requires only common products which are commercially available through the outlets of major refineries. The following chart shows which lubricant to use in the various components of the Mini-Skid.

COMPONENT	TYPE OF LUBRICANT/FLUID	CAPACITY Liter(Imp. Gals.)	
Engine Oil.	SAE 10W30	2 Liters	
Fuel Tank	87 Octane, Regular	8.5 L. (2.2 U.S. Gal.)	
Hydraulic Oil Reservoir	SAE 10W30 Oil	44 Liters (39 Quarts)	

NOTE: For warm climates a 20 or 30 weight oil can be used.



Do not get under the lift arms or reach through the lift arms while they are raised.

If service is required with lift arms in the raised position, the following procedure is mandatory:

To engage the lift arm support, remove any attachment and raise the lift arms to their maximum height. Remove hitch pin by pulling the ring while holding the lift arm support with your other hand. Slowly swing the lift arm support into position against the cylinder shaft, taking care not to damage the cylinder shaft. Fasten lift arm support in place using the hitch pin.

Ensure nylon lanyard does not get pinched or broken. If it does, replace immediately.

4.3 ENGINE MAINTENANCE

OIL LEVEL CHECK

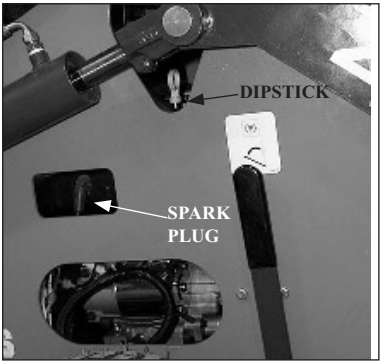
1. Ensure that the Mini-Skid is standing level.

2. Remove dipstick on the right hand side of the engine and visible check the level. Top up with recommended oil. See the chart if required.

For proper engine maintenance, refer to your Engine Owner's Manual. This pertains to all applicable maintenance on your engine.

NOTE: Spark Plug Removal

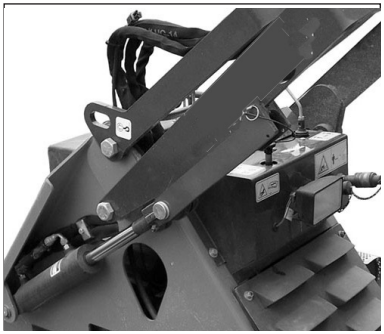
The spark plug is removed by removing spark plug wire and inserting a 5/8" socket wrench through the access holes on either side of the Mini-Skid.

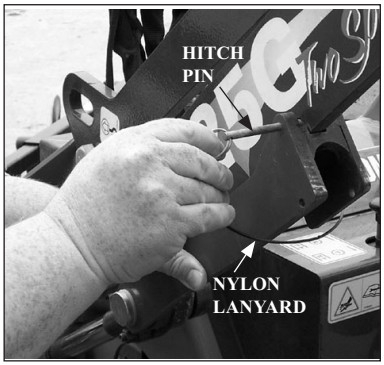


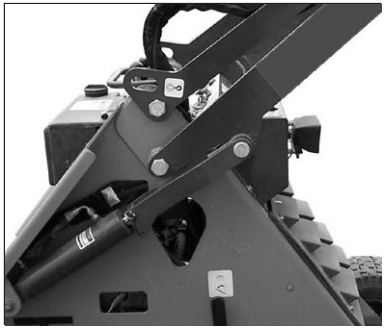
4.4 LIFT ARM SUPPORT

Prior to any maintenance operation requiring the lift arms to be raised, the lift arm support must be used.

To engage the lift arm support, remove any attachment and raise the lift arms to their maximum height. Remove hitch pin by pulling the ring while holding the lift arm support with your other hand. Slowly swing the lift arm support into position against the cylinder shaft, taking care not to damage the cylinder shaft. Fasten lift arm support in place using the hitch pin.







Ensure nylon lanyard does not get pinched or broken. If it does, replace immediately.

Never work under lift arms without the lift arm support engaged in the lock position.

4.5 BATTERY MAINTENANCE

NOTE: Raise lift arms and apply lift arm support device. See section 4.4.

Remove the plastic louver cover and oil cooler assembly.

Check the battery hold down bracket for tightness.
Do not overtighten.

Remove any acid corrosion from the battery terminals and cables with baking soda and water solution. Coat the terminals with a dielectric grease.

4.6 HYDRAULIC/ HYDROSTATIC SYSTEM MAINTENANCE

NOTE: Raise lift arms and apply lift arm support device. See section 4.4.

Remove the plastic louver cover and oil cooler assembly for access. Lay oil cooler/fan forward onto front axle using caution to ensure cooler is not damaged.

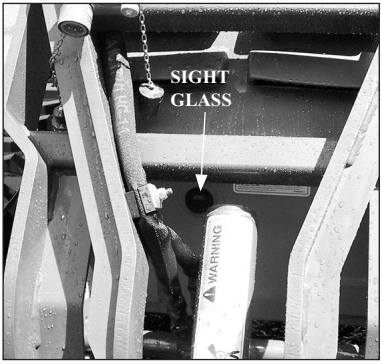
HYDRAULIC OIL LEVEL CHECK

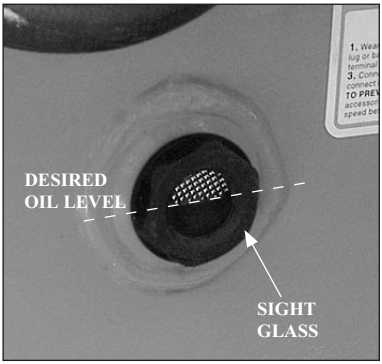
1. Ensure that the Mini-Skid is standing level, the lift arms are down and the tilt cylinder is closed.
2. Check visible oil level in sight glass. A dark color indicates oil presence.
3. If necessary, add the proper type and grade of oil, until it appears at the check point.

CHANGING HYDRAULIC OIL

The hydraulic oil normally needs to be changed after 1000 operating hours or annually. However, if the oil becomes contaminated, or a major repair has been done to the hydrostatic transmission, it should be changed at once.

1. Remove the oil drain plug and drain the oil. Remove the oil cap to ensure a better flow.
2. Replace the oil drain plug, and refill the reservoir with clean oil of proper grade and type.
3. Start engine and check for leaks. Stop the engine and recheck the oil level.





CHANGING HYDRAULIC OIL FILTER

1. With the engine stopped, remove bolts from the filter cover and remove the oil filter cartridge and bypass valve.
2. Remove bypass valve from used cartridge and install the bypass valve on new cartridge and install in filter housing.
3. Replace cover and tighten bolts.
4. Start the engine and check for leaks.
5. Stop the engine and check the hydraulic oil levels.

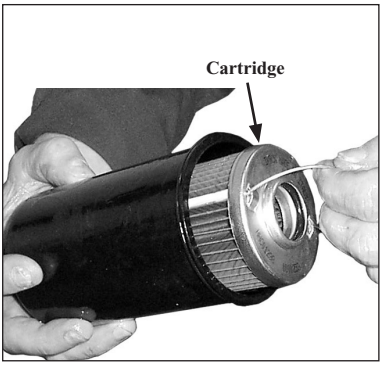
IMPORTANT

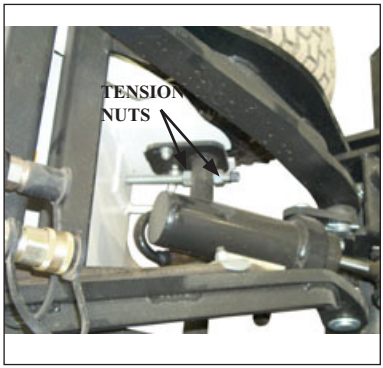
Do not allow dirt to enter the hydraulic/hydrostatic system.

4.7 FINAL DRIVE MAINTENANCE

DRIVE CHAIN (Wheel Loader Only)

To obtain proper chain tension, loosen 8 mounting bolts, and adjust the four tensioning nuts (2 on each side) to move the front axle forward or backward.





4.8 TRACK LOADER

Every 8 hours:

To perform this check, raise and block the front of loader using the bucket tilt function, and the rear of the loader with a suitable lifting device.

Check The Following Items:

-Torques on 5/8" idler mount bolts (80 ft.lbs.).

-3/4" jam nuts, present and tight. Ensure the nuts are not touching the idler mount.

-Coil spring, check condition.

-Plastic idler wheels, greased and rotating freely. Check 1/2" bolts to ensure tightness.

-Sprocket wear.

-Inspect tracks and springs for cracks and premature failure.

-Gap between idler wheels and track should be 1/4" - 1/2" (6mm - 13mm).

-Sprocket bolt torque (80 ft.lbs.)

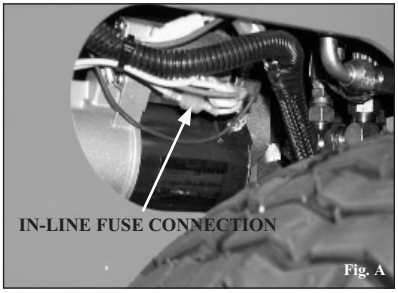
Do not operate if "ratcheting" occurs.

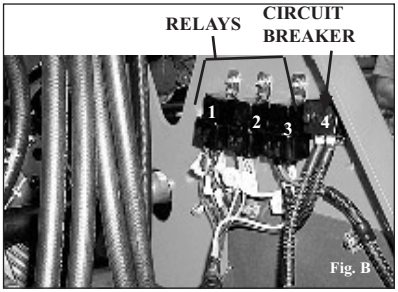
Ratcheting is the term given to sprocket/ track slippage. (When the sprocket spins inside the track). This is a symptom of component failure and must be diagnosed and corrected immediately.

4.9 ELECTRICAL

The mini-skid loader is equipped with a 12 volt, negative ground electrical system. The in-line fuse connection is located in the engine compartment near the starter on the R.H. side of the loader (Fig. A).

The relays and fan circuit breaker are located in the engine compartment near the battery on the L.H. side of the mini-loader (Fig. B).





1. Diverter Solenoid Relay - Aux. Unlock
2. Diverter Solenoid Relay - Loader Unlock
3. Fan Relay
4. Fan Circuit Breaker, 20 Amp.

4.10 PERIODIC MAINTENANCE AND SERVICE SCHEDULE

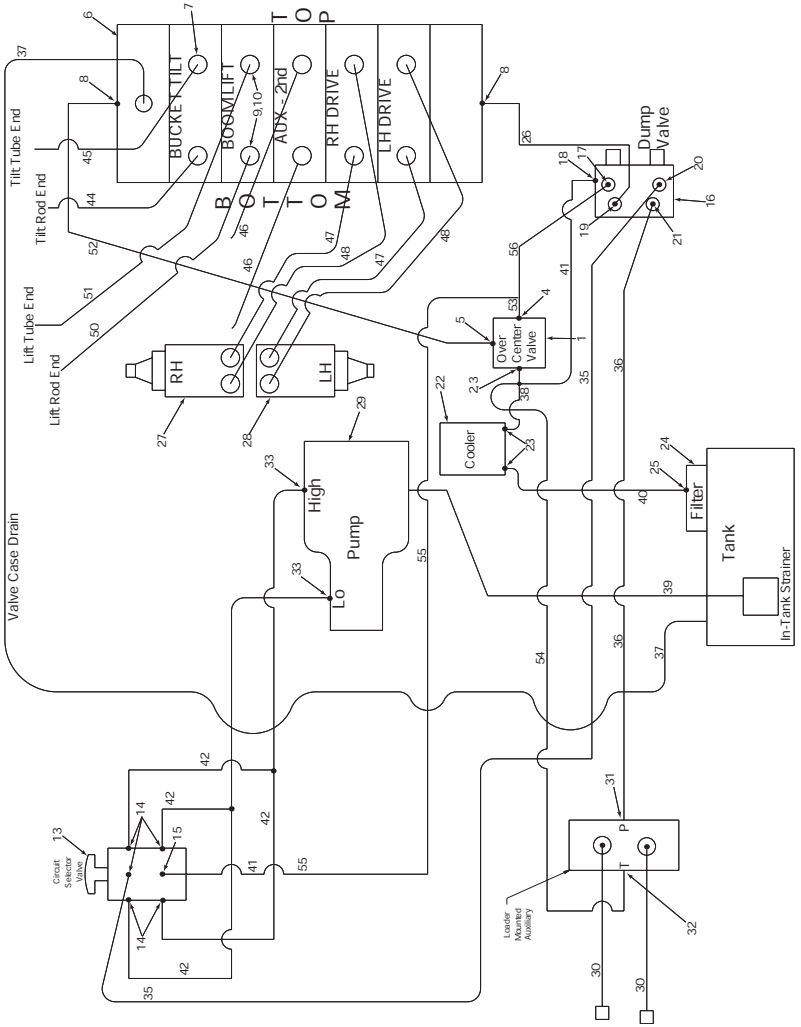
ITEMS	SERVICE REQUIRED	8 HRS./ DAILY	25 HRS./ WEEKLY	50 HRS./ BI-WEEKLY	100 HRS./ MONTHLY	1000 HRS./ ANNUALLY
Engine Oil	Check level of engine oil and top up if necessary.	X				
Engine Fuel	Check level, and if necessary, top up.	X				
Tires And Wheel Nuts	Check tire pressure and wheel nuts.	X				
Decals	Check. If safety or instructional decals are damaged replace.	X				
Engine Oil	Change oil after first 20 hours of operation.			X		
Wheel Drive Chain	Check and adjust tension if necessary.		X			
Air Cleaner	Service element.		X			
Battery	Clean and protect battery terminals.			X		
Engine Oil	Replace engine oil.				X	
Fuel Filter	Replace.				X	
Spark Plug	Clean and check gap.				X	
Hydraulic System	Check all hoses, tires, fittings, etc. thoroughly. Replace if needed.				X	
Hydraulic Oil Filter	Replace Oil Filter.				X	
Hydraulic Oil	Change hydraulic oil.					X
Engine Oil Filter					X	
Safety System	Verify Safety System is functional.	X				
Grease	Grease tilt cylinder and brake mechanism (If applicable).	X				
Hinge Points	Inspect pins and hardened bushings.				X	

4.11 TROUBLE SHOOTING

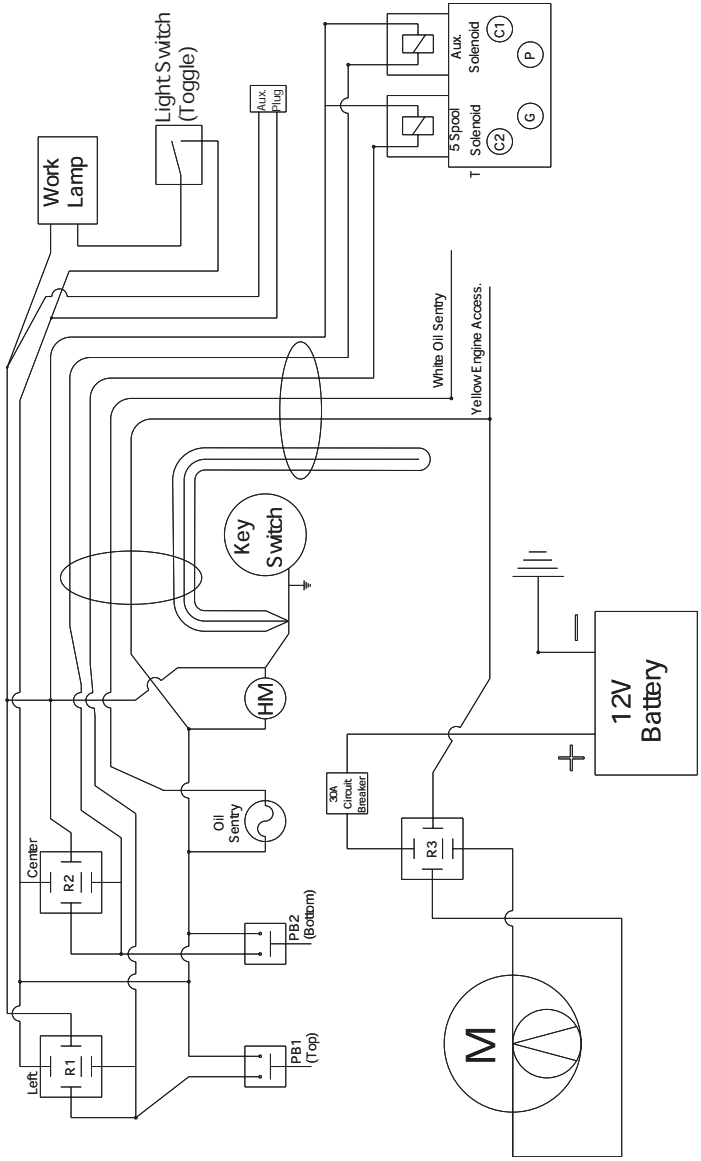
The following chart is intended to help isolate troubles and list possible remedies.

SYMPTOM	POSSIBLE CAUSES	POSSIBLE REMEDIES
Starter does not crank engine.	Low battery output.	Recharge or replace battery.
	Loose or disconnected battery cable.	Check and tighten all connections.
Engine turns over but does not start.	No fuel in tank.	Fill tank with clean fuel.
	Fuel shut-off valve closed.	Open shut-off valve.
	Improper starting procedure.	Refer to starting procedure.
	Choke engaged	Push in choke button
	Spark plug fouled.	Check spark plug gap and clear or replace spark plug.
Noisy Hydraulic system.	Air in system.	Check oil level, add if necessary.
	Loose suction line and/or fittings.	Tighten all fittings and connections.
	Clogged oil filter.	Replace oil filter.
	Hydraulic oil too heavy.	Warm up hydraulic oil when too cold.
	Internal pump or motor damage.	Contact dealer.
Erratic or no output on drive.	Hydraulic oil too heavy.	Use proper viscosity oil.
	Hydraulic oil level too low.	Check oil level. Add if necessary.
	Drive coupling between engine and pump broken.	Check couplings, replace if necessary.
Loss of hydraulic oil flow from gear pump.	Reservoir low on oil.	Check oil level. Add if necessary.
	Drive couplings between engine and pump broken.	Check couplings, replace if necessary.
	Hydraulic gear pump not functioning.	Inspect and repair if necessary.
Hydraulic cylinders do not function properly.	Loss of hydraulic flow from gear pump.	See above.
	Safety system not releasing.	Trouble shoot system operations.
Oil overheating.	Reservoir low on oil.	Check oil level. Add if necessary.
	Auxiliary control lever engaged.	Return auxiliary lever to neutral.
	Setting of relief valve too high or too low.	Set to correct pressure.
No drive of either wheel on one side.	Key sheared on motor shaft.	Inspect shaft and hub for damage or wear. Replace key and tighten on slotted nut.
No drive of front wheel on one side.	Chain failure.	Inspect and replace.
Noisy drive operation.	Chains too loose.	Tighten chain.
No electrical functions.	Fuse blown.	Check inline fuse located in engine harness near starter motor.

4.12 HYDRAULIC CIRCUIT



4.13 ELECTRICAL CIRCUIT



5...SPECIFICATIONS

5.1 SPECIFICATIONS

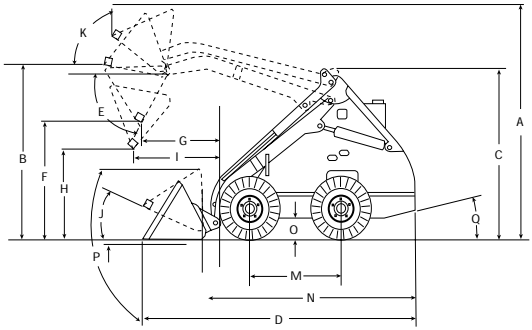
HSL215T Mini Loader

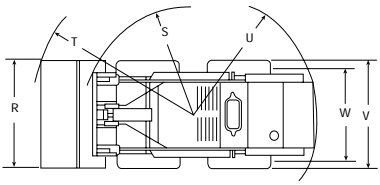
Rated Operating Capacity
.....475 lbs. (215 kg.
Shipping Weight (Crated):
With 8" wheels, gasoline engine
.....1500 lbs.

Travel Speed.....(hi.) 3.1 mph (5 km/h)
.....(low)1.4 mph (2 km/h)

DIMENSIONS:
(Standard Tire 18 x 8.50 - 8 NHS)

A. Overall Operating Height, in. (mm.).....84 (2134)
B. Height To Hinge Pin 68 1/4 (1734)
C. Overall Height Of Mini- Skid.....49 1/2"
D. Overall Length With 31 " Bucket .....80 1/4"
E. DumpAngel.....70˚
F. Dump Height 48.75 (1238)
G. Reach-Fully Raised 9.5 (241)
H. Height @ 45˚ Dump Angel 48.75 (1238)
I. Reach @ 45˚ Dump Angel 18.25 (464)
J. Maximum Roll Back @ Ground .....35˚
K. Maximum Rollback-Fully Raised ....35˚
M. Wheelbase 27.3 (693)
N. Overall Length, Less Bucket 61.25 (1556)
O. Ground Clearance 4.25 (108)
P. Maximum Grading Angel-Bucket ....70˚
Q. Angel Of Departure .....21˚
R. Bucket Width 42 (1067)
S. Clearance Circle, Front-Less Bucket 30 1/4 (768)
T. Clearance Circle, Front-With Bucket.....47 3/8 (1203)
U. Clearance Circle, Rear 36 1/4 (921)
V. Over-all Width-Less Bucket 39.9 (1013)
W. Tread 31 (787)





5...SPECIFICATIONS

ENGINE-GASOLINE

Make And Model.....Kohler Command Pro
Type.....Twin cylinder, air cooled gasoline, over head valve
Displacement.....44 cu.in.
Maximum Output (Horsepower)...25 HP (18.4 kW) @ 3600 RPM, SAE J1349
Output Torque.....40 ft.lb (54.2 N.m) @ 2200 RPM.

FLUID CAPACITIES

Fuel Tank.....2.2 US gal.(8.3 l.)
Engine Oil With Filter Change.....2.1 US qt. (2 l.)
Hydraulic Oil Reservoir.....11.6 US gal.(44 l.)

TIRES AND BUCKETS

TIRE (Turf Saver)	PRESSURE
18 x 8.5 x 8 4 ply	22 psi max.

BUCKET	Struck Capacity	Rated Capacity	Weight
42" General Purpose	3.8 $ft.^3$ (.108 m^3)	4.70 $ft.^3$ (.133 m^3)	120 lbs. (54.5 kg.)

5.2 SPECIFICATIONS

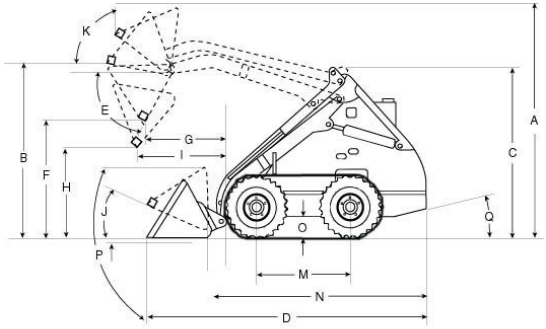
HSL240T Mini Loader

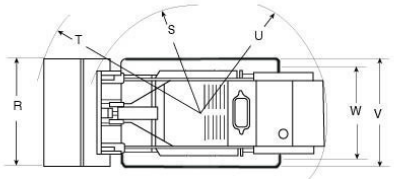
Rated Operating Capacity
.....370 lbs. (167 kg.)
Shipping Weight (Crated):
.....1800 lbs. (814 kg.)

Travel Speed.....(hi.) 3.2 mph (5 km/h)
.....(low)1.5 mph (2 km/h)

DIMENSIONS:

A. Overall Operating Height, in.(mm.)
.....82" (2083)
B. Height To Hinge Pin .....66" (1676)
C. Overall Height Of Mini- Skid
.....51" (1295)
D. Overall Length With 31 " Bucket
.....79 1/4" (2013)
E. DumpAngel.....71˚
F. Dump Height .....43" (1092)
G. Reach-Fully Raised .....10" (254)
H. Height @ 45˚ Dump Angel
.....46 3/4" (1187)
I. Reach @ 45˚ Dump Angel
.....20 1/4" (514)
J. Maximum Roll Back @ Ground .....34˚
K. Maximum Rollback-Fully Raised ....35˚
M. Wheelbase .....27.3" (692)
N. Overall Length, Less Bucket
.....60.5" (1537)
O. Ground Clearance .....7 3/8" (187)
P. Maximum Grading Angel-Bucket ....70˚
Q. Angel Of Departure .....25˚
R. Bucket Width .....42" (1067)
S. Clearance Circle, Front-Less Bucket
.....31 5/8" (805)
T. Clearance Circle, Front-With Bucket
.....47 3/8" (1208)
U. Clearance Circle, Rear
.....36 1/4" (924)
V. Over-all Width-Less Bucket
.....42 1/4" (1073)
W. Tread .....33" (838)





5...SPECIFICATIONS

ENGINE-GASOLINE

Make And Model.....Kohler Command Pro
Type.....Twin cylinder, air cooled gasoline, over head valve
Displacement.....44 cu.in.
Maximum Output (Horsepower)...25 HP (18.4 kW) @ 3600 RPM, SAE J1349
Output Torque.....40 ft.lb (54.2 N.m) @ 2200 RPM.

FLUID CAPACITIES

Fuel Tank.....2.2 US gal.(8.3 l.)
Engine Oil With Filter Change.....2.1 US qt. (2 l.)
Hydraulic Oil Reservoir.....11.6 US gal.(44 l.)

TRACK AND BUCKET

TRACK
Imbedded steel rubber track.

BUCKET	Struck Capacity	Rated Capacity	Weight
42" General Purpose	3.8 $ft.^3$ (.108 m^3)	4.70 $ft.^3$ (.133 m^3)	120 lbs. (54.5 kg.)