

MANDAKO



INLINE LAND ROLLER 50 SERIES

OPERATORS MANUAL

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Section 1: INTRODUCTION

Congratulations on your choice of a Mandako Inline Land Roller to compliment your operation. This equipment has been designed and manufactured to meet the needs of a discerning agricultural industry.

Safe, efficient and trouble free operation of your Mandako Inline Land Roller requires that you and anyone else who will be using or maintaining the roller, read and understand the Safety, Operation, Maintenance and Trouble Shooting information contained within this Operator's Manual.

This manual covers all sizes of the Mandako Inline Land Roller. Keep this manual handy for frequent reference and to pass on to new operators or owners. Call your Mandako dealer if you need assistance, information or additional copies of the manual.

NOTE:

The directions left, right, front and rear, as mentioned throughout this manual, are as seen from the tractor driver's seat and facing in the direction of travel.

1.1 SERIAL NUMBER LOCATION



Fig. 1 Serial Number Location

Always give your dealer the serial number of your Inline Land Roller when ordering parts or requesting service or other information.

The serial number plate is located where indicated above. Please mark the number in the space provided for easy reference.

Model Number _____

Serial Number _____

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Section 2: SAFETY

Why is SAFETY important to you?

3 Big Reasons:

- ▲ Accidents Disable and Kill
- ▲ Accidents Cost
- ▲ Accidents Can Be Avoided

This Safety Alert symbol means:
ATTENTION!
BECOME ALERT!
YOUR SAFETY IS INVOLVED!



The Safety Alert symbol identifies important safety messages on the 3 Plex Land Roller and in this manual.

When you see this symbol, be alert to the possibility of personal injury or death.

Follow the instructions in the safety message.

SIGNAL WORDS:

Note the use of the signal words DANGER, WARNING, CAUTION and ATTENTION along with the accompanying safety messages. The appropriate signal word for each message has been selected using the following guidelines:

DANGER

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

This signal word is to be limited to the most extreme situations typically for machine components which, for functional purposes, cannot be guarded.

WARNING

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

It identifies hazards that are exposed when guards are removed. It may also be used to alert against unsafe practices.

CAUTION

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

It may also be used to alert against unsafe practices.

ATTENTION

ATTENTION - Indicates practices or situations which may result in the malfunction of, or damage to, the equipment.

2.1 SAFETY ORIENTATION

You are responsible for the SAFE operation and maintenance of your Mandako Inline Land Roller. Ensure that you and anyone else who will use, maintain or work around the Inline Land Roller be familiar with the Safety, Operating and Maintenance procedures in this manual.


This manual will take you step-by-step through your working day and alerts you to all good safety practices that should be used while operating the Inline Land Roller.


Remember, you are the key to safety. Good safety practices not only protect you but also the people around you. Make these practices a working part of your safety program. Be certain that everyone using this equipment follows all safety precautions, as well as the detailed operating and maintenance procedures.

Most accidents can be prevented. Do not risk injury or death by ignoring good safety practices:

- Inline Land Roller owners must give operating instructions to operators or employees before allowing them to operate the machine, and review annually thereafter.
- The most important safety device on this equipment is a SAFE operator. It is the operator's responsibility to read and understand ALL Safety and Operating instructions in the manual and to follow these. Most accidents can be avoided.
- A person who has not read and understood all using and safety instructions is not qualified to use the machine. An untrained operator exposes himself and bystanders to the possibility of serious injury or death.
- Do not modify the equipment in any way. Unauthorized modification may impair the function and/or safety and could affect the life of the equipment.
- Think SAFETY! Work SAFELY!

2.2 GENERAL SAFETY

- Read and understand the Operator's Manual and all safety signs before using, maintaining, adjusting or cleaning the Land Roller. 

- Have a first-aid kit available for use should the need arise and know how to use it. 

- Have a fire extinguisher available for use should the need arise and know how to use it.


- Do not allow riders.

- Wear appropriate protective gear. This list includes but is not limited to:

- Hard hat
- Protective shoes with slip resistant soles
- Protective glasses, goggles or face shield
- Heavy gloves
- Hearing Protection



- Install and secure all guards before starting.

- Wear suitable ear protection for prolonged exposure to excessive noise. 

- Lower machine to ground, place all controls in neutral, set park brake, stop engine, remove ignition key and wait for all moving parts to stop before servicing, adjusting, repairing or unplugging.


- Clear the area of people, especially small children, before operating the unit.

- Review safety related items annually with all personnel who will operating or maintaining the Inline Land Roller.

2.3 EQUIPMENT SAFETY GUIDELINES


- Safety of the operator and bystanders is one of the main concerns in the design and development of equipment. However, every year many accidents occur, which could have been avoided, by a few seconds of thought and a more careful approach to handling equipment.

You, the operator, can avoid many accidents by following the precautions in this section. Insist those working with you, or for you, follow them also.

- In order to provide a better view, certain photographs or illustrations in this manual may show an assembly with a safety shield removed. Equipment should never be used in this condition. Keep all shields in place. If shield removal becomes necessary for repairs, replace the shield prior to use. 
- Replace any safety or instruction sign that is missing or illegible. The location of these safety signs are indicated in this manual.
- Never use alcoholic beverages or drugs which can hinder alertness or coordination while using this equipment. Consult your doctor about using this machine while taking prescription medications.
- Under no circumstances should young children be allowed to work with this equipment.

- The operator should be a responsible, properly trained and physically able person. They should be familiar with machinery and trained in this equipment's operations.

If the elderly are assisting with work, their physical limitations need to be recognized and accommodated.

- Use a tractor equipped with a Roll Over Protective Structure (ROPS) and a seat belt. 
- Never exceed the limits of a piece of machinery. If its ability to do a job, or to do so safely, is in question - DON'T TRY IT.
- Do not modify the equipment in any way. Unauthorized modification may impair the function and life of the equipment, and result in serious injury or death.

2.5 SAFETY TRAINING

- Safety is a primary concern in the design and manufacturing of our products. Unfortunately, our efforts to provide safe equipment can be wiped out by a single careless act of an operator or bystander.
- Accident prevention and identifying hazards are dependent upon the proper training of personnel. Their awareness, concern and common sense are crucial when involved with the operation, transport, maintenance and storage of the equipment.
- Working with unfamiliar equipment can lead to careless injuries. Read this manual to become acquainted with the machine.
- Whether the machine owner is the operator, loans or rents it out, it is their responsibility to make certain that the borrower reads and understands the operator's manuals.
- Know your controls, how to stop the tow unit, the engine and machine quickly in an emergency.
- Train all new personnel and review instructions frequently with existing workers. Be certain only a properly trained and physically able person will use the machinery.



A person who has not read and understood all operating and safety instructions is not qualified to use the machine. An untrained operator exposes himself and bystanders to the possibility of serious injury or death.

If the elderly are assisting with the work, their physical limitations need to be recognized and accommodated.

2.4 SAFETY DECALS

- Keep safety decals clean and legible at all times.
- Replace decals that are missing or have become illegible.
- Replaced parts that displayed a safety decal should also display the current sign.
- Safety decals displayed in Section 2.13 each have a part number in the lower right hand corner. Use this part number when ordering replacement parts.
- Safety decals are available from your authorized Distributor or Dealer Parts Department or the factory.

2:4:1 How to Install Safety Decals:

1. Be sure that the installation area is clean and dry.
2. Be sure temperature is above 50°F (10°C).
3. Determine exact position before you remove the paper backing. See Section 2.13
4. Remove the smallest portion of the split backing.
5. Align the decal over the specified area and carefully press the small portion with the exposed adhesive in place.
6. Slowly peel back the remaining paper and carefully smooth the rest of the decal in place.
7. Small air pockets can be pierced with a pin and smoothed out using the piece of the paper backing.

2.6 PREPARATION

- Never use the engine and machine until you have read, this Manual and the engine Operator's Manual. Take note of each Safety Message found on the safety decals on the tractor and machine.



- Personal protective equipment including a hard hat, safety glasses, safety shoes, gloves are recommended during assembly or installation, operation, adjustment, maintaining or repairing, cleaning or moving the unit.



Do not allow long hair, loose fitting clothing or jewelry to be around equipment.

- **PROLONGED EXPOSURE TO LOUD NOISE MAY CAUSE PERMANENT HEARING LOSS!**

- Power equipment with or without equipment attached can often be noisy enough to cause permanent, partial hearing loss. We recommend that you wear hearing protection on a full-time basis if the noise in the Operator's position exceeds 80db.



Noise over 85db on a long-term basis can cause severe hearing loss. Noise over 90db adjacent to the Operator over a long-term basis may cause permanent, total hearing loss.

NOTE:




Hearing loss from loud noise (from tractors, chain saws, radios, and other such sources close to the ear) is cumulative over a lifetime without hope of natural recovery.

- Operate the machine only with a tractor equipped with an approved Roll-Over-Protective-Structure (ROPS). Always wear a seat belt. Serious injury or even death could result from falling off the tractor. If a roll-over occurs, the operator could be pinned under the ROPS or inside the tractor.






- Clear working area of stones, branches or hidden obstacles that might be hooked or snagged, causing damage or injury.
- Be sure the machine is properly attached, adjusted and in good operating condition.
- Ensure that all safety shielding and safety decals are properly installed and in good condition.



2.7 OPERATING SAFETY

- Read and understand the Operator's Manual and all safety signs before using. 
- Lower machine to the ground, place all controls in neutral, stop engine, set park brake, remove ignition key, and wait for all moving parts to stop before servicing, adjusting, repairing or unplugging.
- Install and secure all guards and shields before starting or operating.
- Keep hands, feet, hair and clothing away from all moving and/or rotating parts. 
- Do not allow riders on the roller or tractor during operation or transporting.
- Clear the area of all bystanders, especially children, before starting.
- Stay away from rollers when folding or extending frame. Keep others away.
- Clean reflectors, SMV (Slow Moving Vehicle) emblem and lights before transporting. 
- Attach securely to towing unit using a hardened pin with a retainer and a safety chain.
- Install wheel cylinder lock brackets and frame lock pins and close valves in hydraulic lines before transporting or working under the frame.
- Do not exceed a safe travel speed.
- Use hazard flasher on tractor when transporting.
- Before applying pressure to the hydraulic system, make sure all components are tight and that steel lines, hoses and couplings are in good condition.
- Review safety instructions annually.



2.8 MAINTENANCE SAFETY

- Good maintenance is your responsibility. Poor maintenance is an invitation to trouble.
- Follow good shop practices.
 - Keep service area clean and dry.
 - Be sure electrical outlets and tools are properly grounded.
 - Use adequate light for the job at hand. 
- Lower machine to the ground. Place all controls in neutral, stop engine, set the tractor's park brake, remove ignition key, and wait for all moving parts to stop before servicing, adjusting, repairing or unplugging.
- Place stand or blocks under the frame before working beneath the machine or when changing tires.
- Always use personal protective equipment such as safety glasses, gloves and hearing protection, when performing any service or maintenance work. 
- Where replacement parts are necessary for periodic maintenance and servicing, genuine factory replacement parts must be used to restore your equipment to original specifications.
- A fire extinguisher and first aid kit should be kept readily accessible while performing maintenance on this equipment. 
- Relieve pressure from the hydraulic circuit before servicing or disconnecting from tractor.
- Before applying pressure to a hydraulic system, make sure all components are tight and that steel lines, hoses and couplings are in good condition.
- When completing a maintenance or service function, make sure all safety shields and devices are installed before placing unit in service. 

2.9 HYDRAULIC SAFETY

- Always place all tractor hydraulic controls in neutral before dismounting.
- Make sure that all components in the hydraulic system are kept in good condition and are clean.
- Replace any worn, cut, abraded, flattened or crimped hoses and steel lines.
- Relieve pressure from hydraulic circuit before servicing or disconnecting from tractor.
- Do not attempt any makeshift repairs to the hydraulic lines, fittings or hoses by using tape, clamps or cements. The hydraulic system operates under extremely high-pressure. Such repairs will fail suddenly and create a hazardous and unsafe condition.
- Wear proper hand and eye protection when searching for a high-pressure hydraulic leak. Use a piece of wood or cardboard as a backstop instead of hands to isolate and identify a leak. 
- If injured by a concentrated high-pressure stream of hydraulic fluid, seek medical attention immediately. Serious infection or toxic reaction can develop from hydraulic fluid piercing the skin surface. 
- Before applying pressure to the system, make sure all components are tight and that lines, hoses and couplings are in good condition.

2.10 TRANSPORT SAFETY

- Read and understand ALL the information in the Operator's Manual regarding procedures and SAFETY when operating the roller in the field and/or on the road. 
- Do not raise the frame or transport with fluid in the rollers.
- Check with local authorities regarding roller transport on public roads. Obey all applicable laws and regulations.
- Always travel at a safe speed. Use caution when making corners or meeting traffic.
- Make sure the SMV (Slow Moving Vehicle) emblem and all the lights and reflectors that are required by the local highway and transport authorities are in place, are clean and can be seen clearly by all overtaking and oncoming traffic. 
- Install additional lights on the rear of the machine to safeguard against rear end collisions. Daybreak and dusk are particularly dangerous and pilot vehicles are recommended.
- Be sure that the machine is securely hitched to the towing vehicle and a retainer is used through the drawbar pin. Always attach a safety chain between the frame and the towing machine.
- Install wheel cylinder lock brackets and frame lock pins and close valves in hydraulic lines before transporting or working under the frame.
- Keep to the right and yield the right-of-way to allow faster traffic to pass. Drive on the shoulder of the road, if permitted by law.
- Do not exceed 32 km/h (20 mph) on highway transport. Reduce speed on rough roads and surfaces.
- Always use hazard warning flashers on tractor when transporting unless prohibited by law.

2.11 TIRE SAFETY

- Failure to follow proper procedures when mounting a tire on a wheel or rim can produce an explosion which may result in serious injury or death.
- Do not attempt to mount a tire unless you have the proper equipment and experience to do the job.
- Have a qualified tire dealer or repair service perform required tire maintenance.
- When replacing worn tires, make sure they meet the original tire specifications. Never under size.



2.12 STORAGE SAFETY

- Store the unit in an area away from human activity.
- Lower rollers to the ground and raise tires for storage.
- Do not allow children to play on or around the stored machine.
- Store the unit in a dry, level area. Support the frame with planks if required.

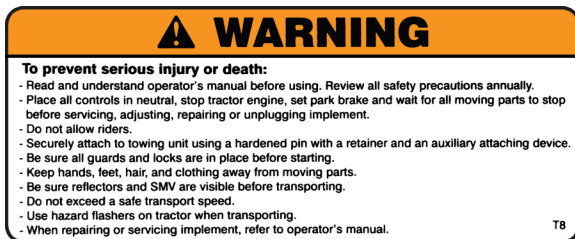
2.13 SAFETY DECALS

The various safety decals, and their locations on the equipment are shown in the illustrations to follow.

Good safety practices require familiarizing yourself with the decals. Read the warning messages, and note the area, or particular function related to that area, that the decal highlights.

If safety decals have been damaged, removed, become illegible, or replacement parts do not have the decal; new ones must be applied. Safety decals are available from your authorized dealer.

Mandako reserves the right to update safety decals without notice. Safety decals may not be to scale or exactly as shown.



Part No. T8 / R9913114



Part No. R9913103



Part No. MLR-14-D / R9913110



Part No. T7 é R9913113



Part No. R9913073



Part No. R9913101

Remember - Safety Decals are for your protection!

If they have been damaged, removed, become illegible, or replacement parts do not have the decal; new ones must be applied. Safety decals are available from your authorized dealer.

2.14 SAFETY DECAL LOCATION



Fig. 2 Decal Location

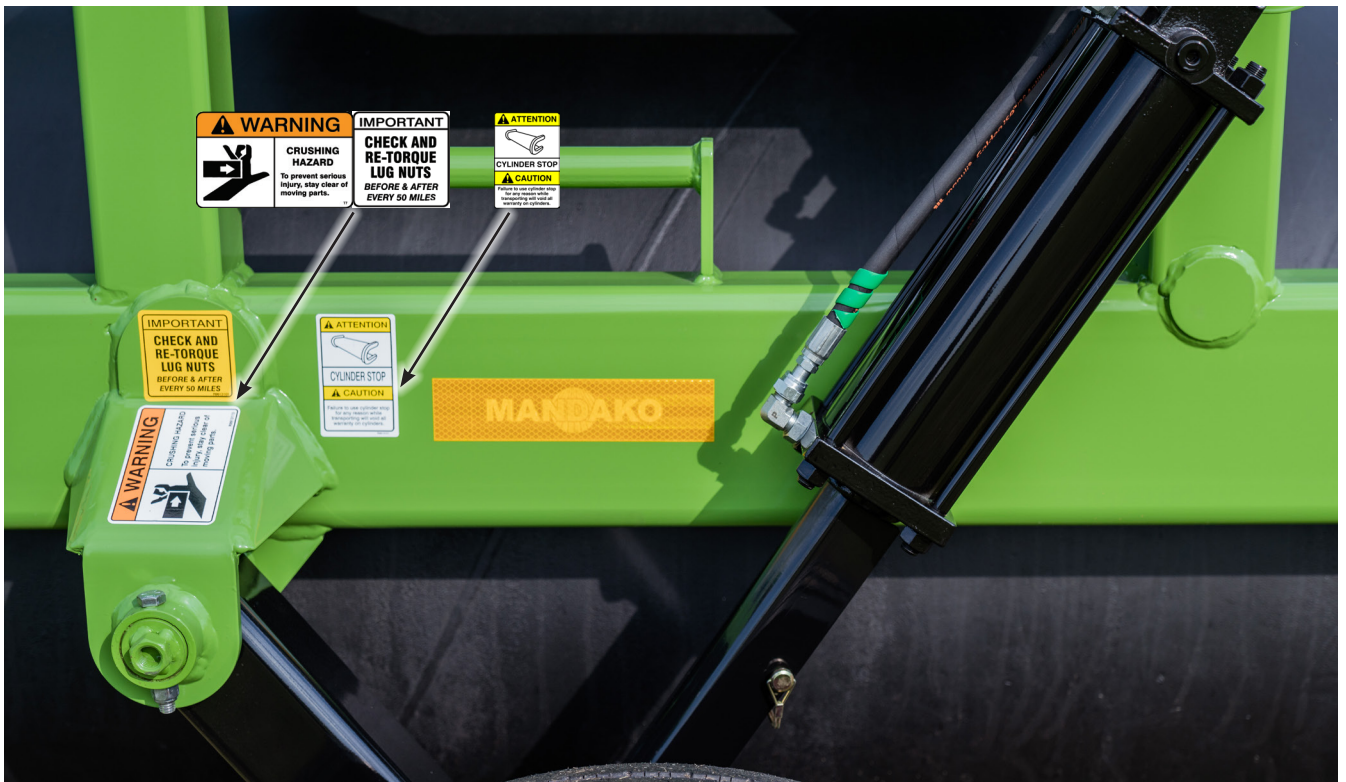
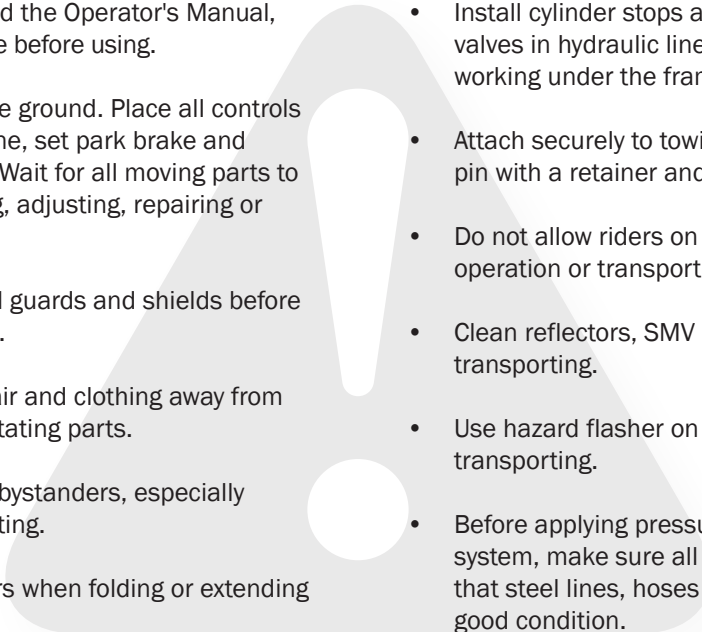


Fig. 3 Decal Location

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Section 3: OPERATION

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- 
- Read and understand the Operator's Manual, and all safety signage before using.
 - Lower machine to the ground. Place all controls in neutral, stop engine, set park brake and remove ignition key. Wait for all moving parts to stop before servicing, adjusting, repairing or unplugging.
 - Install and secure all guards and shields before starting or operating.
 - Keep hands, feet, hair and clothing away from all moving and/or rotating parts.
 - Clear the area of all bystanders, especially children, before starting.
 - Stay away from rollers when folding or extending frame.
 - Install cylinder stops and frame lock pins. Close valves in hydraulic lines before transporting or working under the frame.
 - Attach securely to towing unit using a hardened pin with a retainer and a safety chain.
 - Do not allow riders on the roller or tractor during operation or transporting.
 - Clean reflectors, SMV and lights before transporting.
 - Use hazard flasher on tractor when transporting.
 - Before applying pressure to the hydraulic system, make sure all components are tight and that steel lines, hoses and couplings are in good condition.
-

It is the responsibility of the owner and operator to read this manual. They must train all others before starting to work with the machine. Follow all safety instructions exactly. Safety is everyone's business. By following recommended procedures, a safe working environment is provided for the operator, bystanders and the area around the work site.

Many features incorporated into this machine are the result of suggestions made by customers like you.

This manual will describe how to set the roller to provide maximum field efficiency. By following the operating instructions in conjunction with a good maintenance program, your Inline Land Roller will provide many years of trouble-free service.

3.1 MACHINE COMPONENTS

The Mandako Inline Land Roller consists of a single roller drum mounted inside a folding frame to easily be converted from field configuration to narrow transport configuration. The Frame Pivot Cylinder allows the frame to fold and unfold.

Two sets of wheel assemblies on the frame are used to raise the roller to transport the machine and then pivot up off the ground for field operation.

Cylinder Stops and Frame Lock Pins are vital parts to ensure the machine is used safely and help eliminate possible damage to the machine.

The main components of the unit are as follows:

- a. Roller Drum
- b. Wheel Lift Axle Arm
- c. Frame Lock Pin - Transport Position
- d. Frame Lock Pin - Field Position
- e. Cylinder Stops/Transport Lock Brackets
- f. Hitch
- g. Jack
- h. Frame Pivoting Cylinder
- i. Hydraulic Hose Retainer
- j. Hydraulic Hose Storage Plate
- k. Wheel Lift Cylinders
- l. Operators Manual Cannister

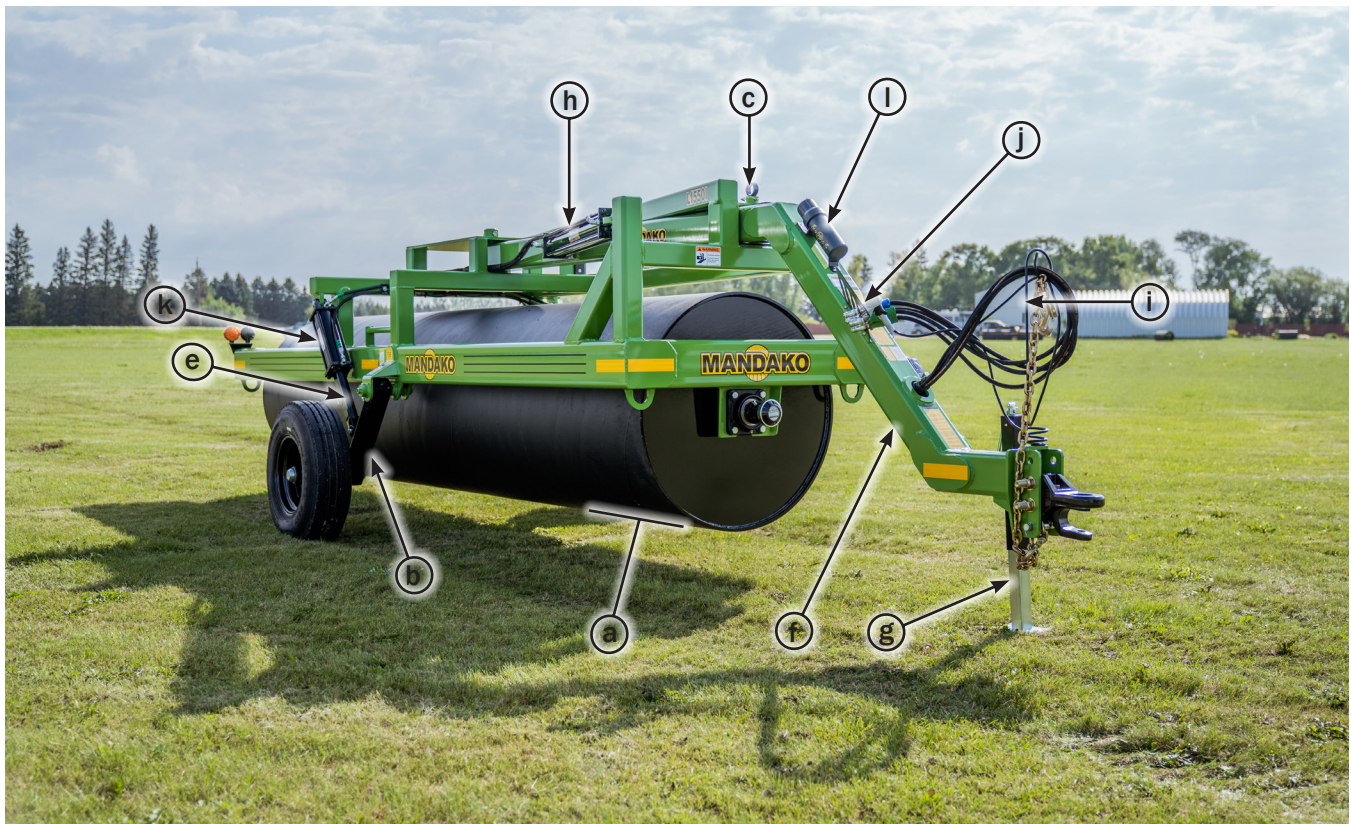


Fig. 4 Machine Components



Fig. 5 Machine Components



Fig. 6 Machine Components

3.2 MACHINE BREAK-IN

There are no operational restrictions on the Inline Land Roller when used for the first time.

Although, it is recommended that the following mechanical items be checked:

After operating for 1/2 hour:

1. Re-torque all wheel bolts.
2. Re-torque all fasteners and hardware.
3. Check that no hydraulic lines are being pinched or crimped. Re-route as required.
4. Inspect all hydraulic lines, hoses, fittings and couplers for leaks. Tighten any leaking fittings.
5. Check for, and remove all entangled material.
6. Lubricate all grease fittings except bearings.

After 5 hours and 10 hours of operation:

7. Re-torque all wheel bolts, fasteners and hardware.
8. Inspect all hydraulic lines, hoses, fittings and couplers for leaks. Tighten any leaking fittings.
9. Go to the normal servicing and maintenance schedule as defined in the Service and Maintenance Section.

3.3 PRE-OPERATION CHECKLIST

Efficient and safe operation of the Mandako InlineLand Roller requires that each operator reads the manual. They must understand the procedures, and all related safety precautions.

A pre-operation checklist is provided for the operator. It is important for personal safety, and to maintain the good mechanical condition of the Inline Land Roller that this checklist is followed.

Before operating the Inline Land Roller and each time thereafter, the following areas should be checked off:

1. Lubricate the machine according to the schedule outline in the Maintenance Section.
2. Use a tractor of adequate power and weight to operate the Inline Land Roller. See Section 3.4 for recommendations.
3. The machine must be properly attached to the tractor. Be sure that a mechanical retainer is installed through the drawbar pin. Also, attach the safety chain to the tractor.
4. Inspect all hydraulic lines, hoses, fittings and couplers for leaks. Tighten any leaking fittings.
5. Check the tires. Ensure they are inflated to their specified pressure.
6. Remove all entangled material.

3.4 EQUIPMENT MATCHING

To ensure the safe and reliable operation of the Inline Land Roller, it is necessary to use a tractor with appropriate specifications.

As a guideline, be certain that these requirements are met:

1. **Horsepower:**
The Inline Land Roller needs both power and mass to pull and stabilize the unit in all operating conditions.

The lower levels of power are appropriate for hard, level terrain. Higher levels for soft or hilly land. Extra mass is also required to maintain stability when slowing down or travelling downhill.

2. **Hydraulic System:**
The tractor's hydraulic system must be capable of 5 gpm (19 lpm) at 2800 psi (19,320 kPa).

The Inline Land Roller requires 2 hydraulic circuits. One to function the wheel lift cylinders and another to operate the frame pivoting cylinder.



Fig. 7 Inline Land Roller

Size	Recommended Tractor Horsepower
10	60+
13	60+
15	70+
20	80+

Table 1 - Horsepower Recommendation

3.5 ATTACHING/UNHOOKING

The Inline Land Roller can be attached to a pickup or a tractor depending on the application. Since the roller generates a vertical load on the hitch, care must be taken to properly attach the tow vehicle.

3:5:1 ATTACHING INLINE LAND ROLLER TO PICKUP

Follow this procedure when attaching the Inline Land Roller to a pickup.

1. Ensure all bystanders, especially small children, are clear of the working area.
2. Make sure there is enough room and clearance to safely back up to the roller.
3. Use the Jack to move the hitch to the desired height.
4. Slowly back the tow vehicle until the hitch is aligned.
5. Lower Hitch into position.
6. Install safety pin or locking bolt. Tighten to its specified torque.



Fig. 8 Clear Working Area



Fig. 9 Aligning



Fig. 10 Hitch Lowered

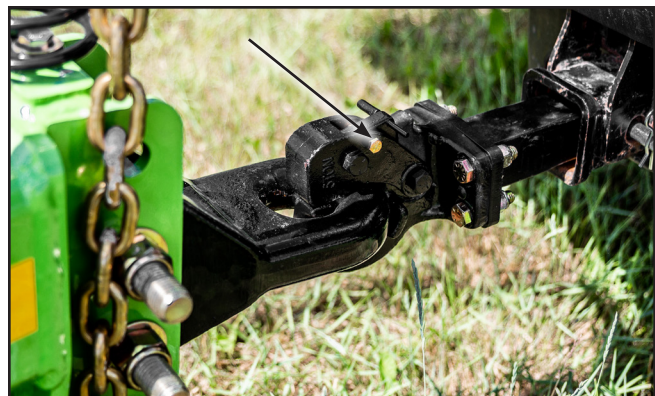


Fig. 11 Lock Pin/Bolt

7. Attach the safety chain to the truck frame to prevent unexpected separation.



Fig. 12 Safety Chain

8. Connect the wiring harness plug on the pickup. Always use the optional adaptor in harness to convert 7 pin terminal to plug on pickup if necessary.



Fig. 13 Wiring Harness

9. Retract the Jack.
 - Pull out the pin.
 - Rotate 90°, and store in this position.
 - Install the pin.

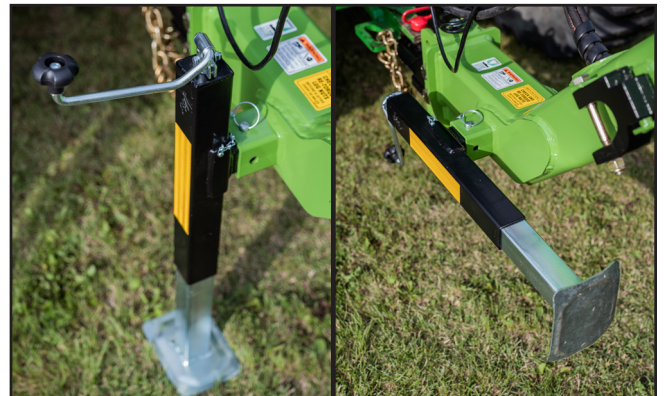


Fig. 14 Jack Installed/Stowed

3:5:2 ATTACHING INLINE LAND ROLLER TO TRACTOR

Follow this procedure when attaching the Land Roller to a tractor:

1. Ensure all bystanders, especially small children, are clear of the working area.
2. Make sure there is enough room and clearance to safely back up to the Land Roller.
3. Use the jack to move the hitch to the required height.
4. Slowly back the tow vehicle until hitch is aligned.



Fig. 15 Clear Working Area



Fig. 16 Aligning

5. Install the drawbar pin and the retainer.

IMPORTANT:

Use a drawbar pin with provisions for a mechanical retainer. Always install the retainer.



Fig. 17 Drawbar Pin and Retainer

6. Attach the safety chain around the drawbar cage to prevent unexpected separation.



Fig. 18 Safety Chain

3.6 CONNECT THE HYDRAULIC + ELECTRICAL SYSTEM



WARNING: High Pressure Fluid
Wear eye and hand protection when searching for leaks. Relieve pressure before adjusting. Keep components in good repair.

1. Use a clean cloth or paper towel to clean the dirt and build-up from around the couplers and male tips.
2. Ensure the hoses are routed through the Hydraulic Hose Retainer on the hitch to prevent the hoses from dragging on the ground.
3. Insert the male tips into the couplers. Be sure they are locked in place.
4. Attach the hoses to each hydraulic circuit.



Fig. 19 Hydraulic Circuits Stored

2. Ensure the hoses are routed through the Hydraulic Hose Retainer on the hitch to prevent the hoses from dragging on the ground.
3. Insert the male tips into the couplers. Be sure they are locked in place.
4. Attach the hoses to each hydraulic circuit.

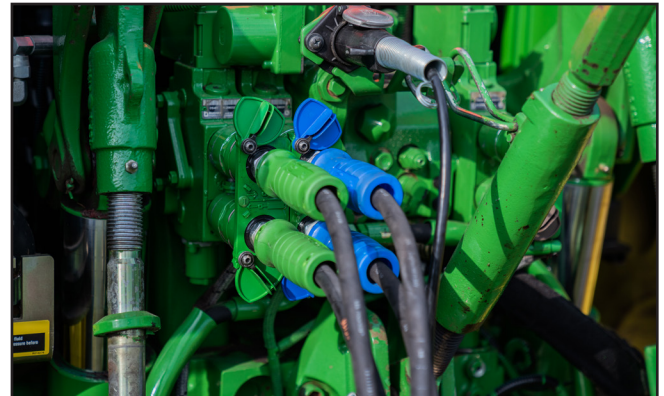


Fig. 20 Hydraulic Circuits Connected

5. Connect the wiring harness to the tractor if transporting on a public road.

Ensure the harness is routed through the Hydraulic Hose Retainer on the hitch to prevent it from dragging on the ground.

6. Insert Plug into holder on the Hydraulic Storage Plate when not in use.
7. Put hose tips into the Hydraulic Hose Storage Plate when not in use. See Fig. 19
8. Retract the Jack.
 - Pull out the pin.
 - Rotate 90°, and store in this position.
 - Install the pin.

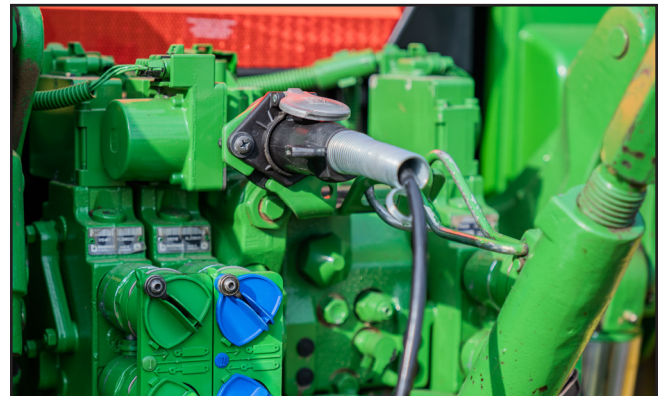


Fig. 21 Wiring Harness Connected

Reverse the above procedures when unhooking from the tractor.

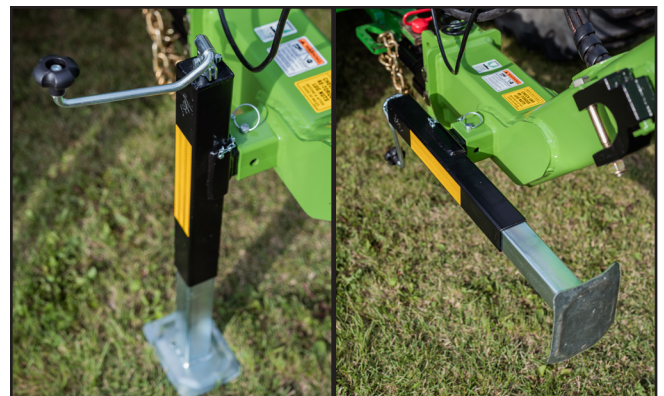


Fig. 22 Jack Installed/Stowed

3.7 FIELD OPERATION

The Inline Land Roller is easy to use. Still, each operator should review this manual to familiarize themselves with the Safety and Operating procedures.

When using this machine, follow this procedure:

1. Clear the area of bystanders, especially small children.
2. Attach the machine to the tractor. See Section 3.5
3. Check the unit to be sure it is level and set.
4. Transport to the working area.
5. Convert to field position. See Section 3.8

3:7:1 STARTING:

With the tractor engine at approximately 1/3 throttle position, release the clutch and move forward. Increase throttle position until desired engine RPM is reached.

3:7:2 STOPPING:

Reduce engine RPM and press clutch to stop machine.

3:7:3 ROLLER WEIGHT:

Rollers are hollow and equipped with a Bung. Water may be added to the roller to increase its weight. This is helpful for rolling pasture land or an area with heavy plant growth.

The axle assembly and frame are not designed to lift and carry more weight than the base unit. Ensure the rollers are drained of liquid before folding the frame and transporting.



Fig. 26 Clear Working Area



Fig. 23 Enroute to Field Position



Fig. 24 Field Position



Fig. 25 Roller Bung



ATTENTION: Equipment Damage Imminent
Always remove fluid from rollers before folding frame, lifting the roller using its wheels or transporting.

3:7:4 BALLASTING:

Ballasting or adding weight to the rollers is optional for certain applications including, but are not limited to; forage crops, pasture and grazing land.

Normally water is used for ballast:

- Rotate unit, bringing the Bung to the top of roller.
- Remove Bung and add water.
- Generally, filling 1/4 to 1/2 full provides sufficient extra weight for most applications.
- Install and tighten the Bung.

To drain the ballast:

- Remove the Bung.
- Move roller to bring the Bung to the bottom.
- Allow water to drain fully.
- Rotate the machine to bring the Bung to top again.
- Install and tighten Bung.

3:7:5 SOIL MOISTURE:

Do not use the machine to roll a field if the soil sticks together or adheres to the roller(s). In addition to sticking to the rollers, wet conditions can cause the soil to form a crust on the surface of the field. This will prevent plant emergence.

Wait until the surface is dry before rolling.

3:7:6 HITCH TYPE:

The Inline Land Roller is designed with a Category 3 Pintle Hitch, installed at the factory.

An optional Clevis hitch attachment is available. It mounts to the bottom of the hitch and allows the roller to be attached to a tractor with a straight hitch.

Be sure to match the machine and tractor hitches before attaching to the tractor and moving the machine.



Fig. 27 Ballasting



Fig. 28 Roller Bung



Fig. 29 Sticky Soil

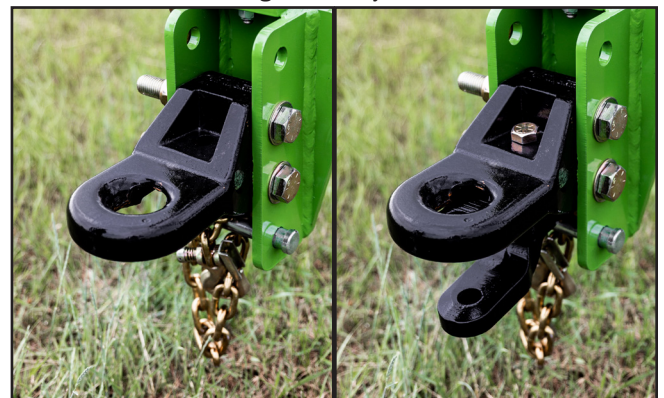


Fig. 30 Pintle Hitch/Clevis

3:7:7 HITCH HEIGHT:

The height of the Pintle Hitch can be adjusted by the clevis mounting position on the front of the hitch frame.

Use the jack to match the machine hitch height to the tractor hitch when hooking up.

3:7:8 TRAVEL SPEED:

The operator must determine the appropriate speed for the terrain and field conditions. It is not recommended to travel faster than 10 km/h (6 mph) in the field to prevent bouncing.

Slow down for rough, hilly or rolling terrain. To be effective, the rollers must keep contact with the ground during operation. Select a speed that will keep the roller operating properly.

3:7:9 TURNING (CORNERING) SPEED:

It is recommended that the speed be reduced by half when approaching the end of the field, or a corner. By slowing to half speed or less, the roller will be more controllable.

If the terrain results in the turn taking place while going down-hill, you must slow down well before the turn.

Note:

Slowing down ensures control is maintained.
This prevents pushing the tractor
into a jackknife condition.
Particularly important in hard soil conditions.

Slowing down before turning allows the driver to better judge what distance the outer end of the roller is from the end of the field or corner.

Note:

Misjudging the distance can result in hitting
an obstacle at the end of the field.
Do not take the chance.



Fig. 31 Hitch Height



Fig. 32 Equipment

3:7:10 OPERATING HINTS:

- Be sure there is sufficient clearance to fully pivot the frame when changing configurations.

IMPORTANT:

Do not stand next to frame when pivoting to prevent pinching. Keep others away.

- When converting from field to transport configuration, remove frame lock pin from field position and place in storage bracket.

Pivot frame into transport configuration and install frame lock pin into transport lock position.

- Raise frame into its fully up position (wheels down) and install cylinder stops onto the wheel lift cylinders before transporting.
- When ballasting the machine, bring the water truck to the field.
 - Add water to the rollers.
 - Level field.
 - Drain water before leaving the field.



ATTENTION: Equipment Damage Imminent
Frame is not designed to carry the weight of a ballasted machine. It will damage the machine and void warranty.

- Remember: Do not back up with the roller. It is designed to move forward only.



Fig. 33 Transport Roller To Field



Fig. 34 Frame Lock Pin; Transport Position

3.8 TRANSPORT TO FIELD CONVERSION

The Inline Land Roller is designed to be easily converted from transport to field configuration with minimal effort.

Follow this procedure:

1. Transport the roller to the field where it will be used.
2. Stop the machine in an open area with sufficient space to pivot the frame.
3. Clear the area of bystanders, especially small children.
4. Remove the frame lock pin and its retainer, from its transport position.
5. Remove cylinder stops from both wheel lift cylinders.
6. Place cylinder stops over the storage rod on the frame.



Fig. 35 Clear Working Area



Fig. 36 Frame Lock Pin; Installed/Removed



Fig. 37 Cylinder Stop installed



Fig. 38 Cylinder Stop removed and stored

7. Unfold the frame using the hydraulic circuit for the Frame Pivoting Cylinder. Pivot the roller fully perpendicular to the tractor, into field configuration.



Fig. 39 Enroute to field position



Fig. 40 Field Position

8. Raise the wheels to their fully UP position.



Fig. 41 Raise Wheels

9. Place the frame lock pin into its field position and secure with retainer.

The roller arm is now fastened in place, and ready for field work.

Reverse this procedure when converting from field configuration to transport position.



Fig. 42 Frame Lock Pin; Field Position

3.9 TRANSPORTING

Mandako Inline Land Rollers are designed to be easily and conveniently moved from field to field.

When transporting, follow this procedure:

1. Be sure all bystanders are clear of the machine.
2. Be sure that the roller is hitched securely to the towing vehicle. Always attach the safety chain between the machine and the tractor. Install a retainer through the drawbar pin.

3. Convert into transport configuration. (Refer to section 4.8)

IMPORTANT:

Do not raise the frame or transport with ballast in rollers.

4. Raise the cylinder to its fully up position.
5. Install cylinder stops on both wheel lift cylinders.
6. Install the frame anchor lock and secure with retainer.
7. Do not allow riders on the roller.
8. Keep to the right and yield right-of-way to allow faster traffic to pass. Drive on the road shoulder, if permitted by law.
9. Make sure the SMV (Slow Moving Vehicle) emblem, all lights and reflectors that are required by local highway and transport authorities, are in place, are clean and can be seen clearly by all overtaking and oncoming traffic.
10. It is not recommended that the machine be transported faster than 32 km (20 mph) (32 kph).

Table 2 gives the acceptable transport speed as the ratio of tractor weight to roller weight.

11. Always use hazard flashers on the tractor when transporting unless prohibited by law.
12. During periods of limited visibility, use pilot vehicles and use extra lights on the machine.



Fig. 43 Clear Working Area



Fig. 44 Transport Configuration



Fig. 45 Ensure Cylinder Stops and Frame Lock Pin are in place and secure

Road Speed	Weight of Fully Equipped or Loaded Implement(s) relative to weight of tow vehicle
Up to 32 km (20 mph)	1 to 1, or less
Up to 16 km (10 mph)	2 to 1, or less
Do not tow	More than 2 to 1

Table 2 - Travel Speed vs Weight

3.10 STORAGE

3:10:1 PLACE IN STORAGE:

At the end of the season, the machine should be thoroughly inspected and prepared for storage.

To prevent any unnecessary down time at the beginning of the next season, repair or replace any worn or damaged components.

Follow this procedure before storing:

1. Remove all entangled material.
2. Thoroughly wash the machine with a pressure washer or water hose to remove all dirt, mud or debris.
3. Lubricate all grease points as required. See Section 4.2

Be sure all grease cavities have been filled with grease to remove any water residue from washing.

4. Inspect all hydraulic hoses, couplers and fittings. Tighten any loose fittings. Replace any hose that is badly cut, nicked, abraded or is separating from the crimped end of a fitting.
5. Touch up all paint nicks and scratches to prevent rusting.
6. Select an area that is dry, level and free of debris.
7. Move the machine to its storage area.
8. Place the machine into its transport configuration.

Ensure Cylinder Stops are securely in place to relieve the pressure on the hydraulic circuit.

9. Place planks under the jack for added support if required.
10. Unhook the machine from the tractor.
Refer to section 4.6
11. Apply a rust inhibitor or heavy grease to the exposed hydraulic cylinder rams to prevent rusting.

IMPORTANT:

Remove inhibitor or grease before using machine again.



Fig. 46 Clean Roller



Fig. 47 Lubricate Equipment



Fig. 48 Store Equipment

3:10:2 REMOVE FROM STORAGE:

When removing this machine from storage, follow this procedure:

1. Clear the area of bystanders, especially small children.
2. Attach the machine to the tractor (See Section 3.5).
3. Check the following:
 - Electrical harness connections and components.
 - All hardware. Tighten as required.
 - Tire pressure.
 - All hydraulic lines, fittings and connections. Tighten as required.
4. Lubricate all grease fittings except the bearings.
5. Clean rust inhibitor or grease from exposed cylinder ram ends.
6. Replace any worn or defective parts.
7. Go through the Pre-Operation Checklist before using machine. (See Section 3.3)

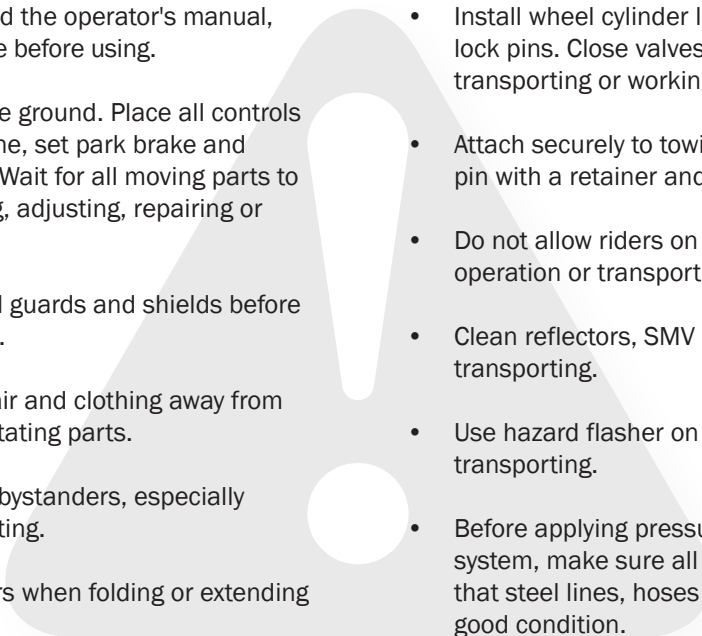


Fig. 49 Stored Equipment



Fig. 50 Check Equipment, Fittings and Hardware

Section 4: SERVICE AND MAINTENANCE

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- 
- Read and understand the operator's manual, and all safety signage before using.
 - Lower machine to the ground. Place all controls in neutral, stop engine, set park brake and remove ignition key. Wait for all moving parts to stop before servicing, adjusting, repairing or unplugging.
 - Install and secure all guards and shields before starting or operating.
 - Keep hands, feet, hair and clothing away from all moving and/or rotating parts.
 - Clear the area of all bystanders, especially children, before starting.
 - Stay away from rollers when folding or extending frame.
 - Install wheel cylinder lock brackets and frame lock pins. Close valves in hydraulic lines before transporting or working under the frame.
 - Attach securely to towing unit using a hardened pin with a retainer and a safety chain.
 - Do not allow riders on the roller or tractor during operation or transporting.
 - Clean reflectors, SMV and lights before transporting.
 - Use hazard flasher on tractor when transporting.
 - Before applying pressure to the hydraulic system, make sure all components are tight and that steel lines, hoses and couplings are in good condition.
-

4.1 FLUIDS AND LUBRICANTS

4:1:1 GREASE:

Use an SAE multipurpose high temperature grease with extreme pressure (EP) performance. Also acceptable is an SAE multipurpose lithium base grease.

4:1:2 STORING LUBRICANTS:

Your machine can operate at top efficiency only if clean lubricants are used. Use clean containers to handle all lubricants. Store them in an area protected from dust, moisture and other contaminants.

4:1:3 GREASING:

Refer to Section 4.1.1 for the type of recommended grease.

Use the Maintenance Checklist provided to keep a record of all scheduled maintenance.

1. Use a hand-held grease gun for all greasing.
2. Wipe grease fitting with a clean cloth before greasing, to avoid injecting dirt and grit.
3. Replace and repair broken fittings immediately.
4. If fittings will not take grease, remove and clean thoroughly. Also, clean lubricant passageway. Replace fittings if necessary.

4.2 SERVICING INTERVALS

The periods recommended is based on normal operating conditions. Severe or unusual conditions may require more frequent checks of the equipment and lubrication.

IMPORTANT:

This Roller is designed with sealed bearings on the rollers and bushings in all other locations.

The bushings in the knuckles need to be greased every five hours or twice per day, to insure they provide the expected life.

Only give roller bearings one shot of grease once a year.

4:2:1 EVERY 10 HOURS OR DAILY:

1. Grease wheel lift axle arms (2 grease points).
2. Grease frame pivot pin (1 grease point).

4:2:2 MONTHLY OR EVERY 1000 ACRES:

3. Check tire pressure.

4:2:3 ANNUALLY OR EVERY 3000 ACRES:

4. Grease the Land Roller drum bearings with 1 shot of grease (2 grease points).

5. Grease the hitch jack (1 grease point).



Fig. 51 Wheel Axle Arm



Fig. 52 Frame Pivot Pin



Fig. 53 Land Roller Drum Bearing



Fig. 54 Jack

6. Clean and wash machine.



Fig. 56 Wash Equipment

4:2:4 BI-ANNUALLY

7. Repack wheel hubs.



Fig. 55 Wheel Hub

4.3 SERVICE RECORD

The Servicing Intervals section is only a guide under good conditions. Under extreme, or unusual circumstances adjust service timing accordingly.

Copy this page to continue record.

Maintenance	Date												
	Serviced By												
EVERY 10 HOURS OR DAILY													
Grease Wheel Lift Axle Arms													
Grease Frame Pivot Pin													
MONTHLY OR EVERY 1000 ACRES													
Check Tire Pressure													
ANNUALLY OR EVERY 3000 ACRES													
Grease Land Roller Drum Bearings													
Grease the Hitch Jack													
Clean and Wash Machine													
BI-ANNUALLY													
Repack Wheel Hubs													

Maintenance	Date												
	Serviced By												
EVERY 10 HOURS OR DAILY													
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MONTHLY OR EVERY 1000 ACRES													
Check Tire Pressure													
ANNUALLY OR EVERY 3000 ACRES													
Grease Land Roller Drum Bearings													
Grease the Hitch Jack													
Clean and Wash Machine													
BI-ANNUALLY													
Repack Wheel Hubs													

Section 5: TROUBLE SHOOTING

This Inline Land Roller is a simple and reliable system that requires minimal maintenance.

The problems you may encounter, their causes and solutions, are listed below.

If you encounter a problem which is difficult to solve, even after having read through this section, please contact your local distributor or dealer. Before you call, please have this Operator's Manual and the unit's serial number ready.

Problem

Possible Cause	Possible Solution
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Settling of implement from raised position

Leaking wheel cylinder	Replace cylinder seals
Leaking tractor hydraulic control valve	Repair tractor

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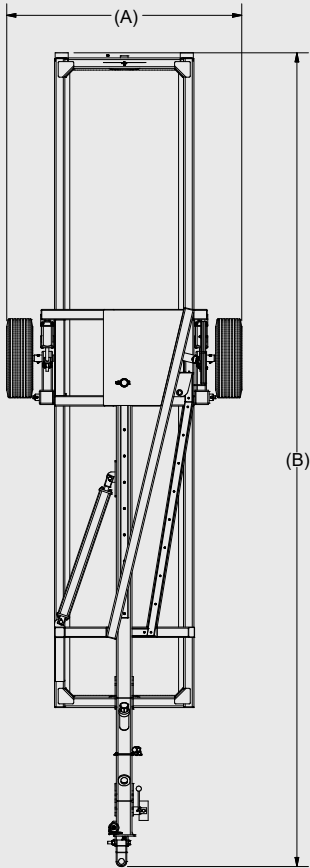
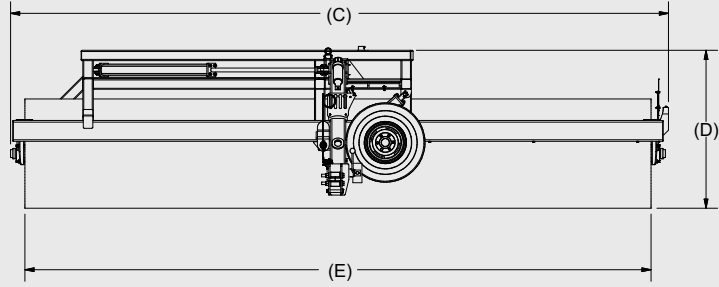
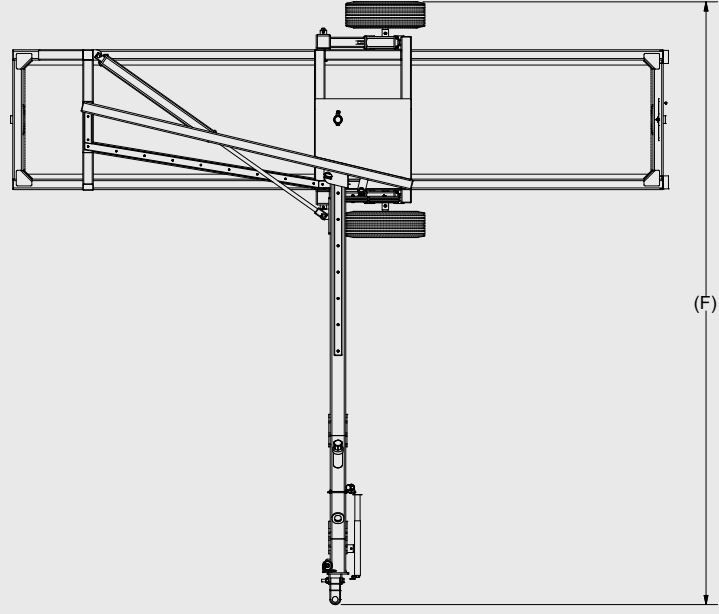
Section 7: REFERENCE

For information not included here, or for a digital copy of this manual, please call your dealer, or Mandako directly for assistance (1-888-525-5892).

Specifications may change without notice.

INLINE LAND ROLLER SPECIFICATIONS



	Unit Size			
Dimension	10'	13'	15'	20'
Transport Width (A)		7'-7"	7'-7"	7'-7"
Transport Length (B)		18'-3"	22'-8"	26'-2"
Overall Width (C)		14'-1"	16'-7"	21'-1"
Overall Height (D)		5'-1"	5'-1"	5'-1"
Working Width (E)		13'-1"	15'-7"	20'-1"
Working Length (F)		15'	18'-2"	19'-4"
Hyd. Req. (@2800PSI)	5 GPM (19 LPM)	5 GPM (19 LPM)	5 GPM (19 LPM)	5 GPM (19 LPM)
Hyd. Req. (Ports)	2	2	2	2
Horsepower Req.	60+	60+	70+	80+
Approx. Weight (lbs/ft)				
Drum Size	36" x 1/2" 42" x 5/8" 42" x 3/4"			
Tire Size	ST235/85R16E 14 Ply	ST235/85R16E 14 Ply	ST235/85R16E 14 Ply	ST235/85R16E 14 Ply



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