

HOLT

OPERATOR'S MANUAL



Holtindustrial

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1. INTRODUCTION

Thank you for purchasing a Holt Industrial Tree Spade.

You must read, understand, and follow all instructions in this manual before operating, adjusting or servicing this machine.

If you do not understand any part of this manual or you are unsure about any aspect of this machine, contact Holt Industrial.

Information provided in this manual was current as of the issue date.

Information furnished in this manual does not include all of the details of design, production, or variations of equipment. It does not cover all the possible contingencies, which may arise during operation or maintenance.

Should special issues arise, or further information be desired, contact your dealer.

This manual covers the Holt Tree Spade models 34S, 38S, 44S, 48S and 50S.

This manual is provided to assist in the safe operation and maintenance of the equipment.

Equipment modifications from original design and specifications without written permission are strictly prohibited.

Modifications may compromise safe operation of machine, subject users to serious injury or death and may void any remaining warranty.

This operator's manual does not replace, nor does its use discharge the operator from observing all safety codes or operating limitations as well as any applicable federal, state, provincial or local regulations.

All references to left and right are made from the operator's seat and facing the tree spade.



2. WARRANTY

This product is warranted to be free of defects in materials and workmanship under normal use and service, for a period of one year from the date of purchase, when operated and maintained in accordance with the Operating and Maintenance Instructions supplied with this unit. This warranty does not cover misuse or negligence.

Under no circumstances will the manufacturer be liable for any consequential damage or expense of any kind, including loss of profits. The manufacturer is under no circumstances liable for tractor damage of any kind. The manufacturer is not liable for the maintenance of the product.

This warranty is extended only to the original purchaser. Warranty is void if repairs are attempted by anyone other than an Authorized Service Center.

If a difficulty develops with the product, you should contact your nearest Authorized Repair Centre, or distributor. Only these locations are authorized to make repairs to the product or affect the replacement of defective parts, which will be done at no charge within a reasonable time after the receipt of the product. Units or parts should be returned at the customer's expense to the nearest repair location or Authorized Service Center. Pack unit in a strong carton and pad tightly to avoid damage. Damage in-transit is not covered by warranty. Include original purchase receipt with any claim (keeping a copy for your files).

The Manufacturer's Liability is limited to repair of the product and/or replacement of parts and is given to the purchaser in lieu of all other remedies including incidental and consequential charges. There are no warranties, expressed or implied other than those specified herein. For the nearest Authorized Service Center, call the manufacturer.

Please note the following details and file this information in an appropriate place.

Model Number: _____

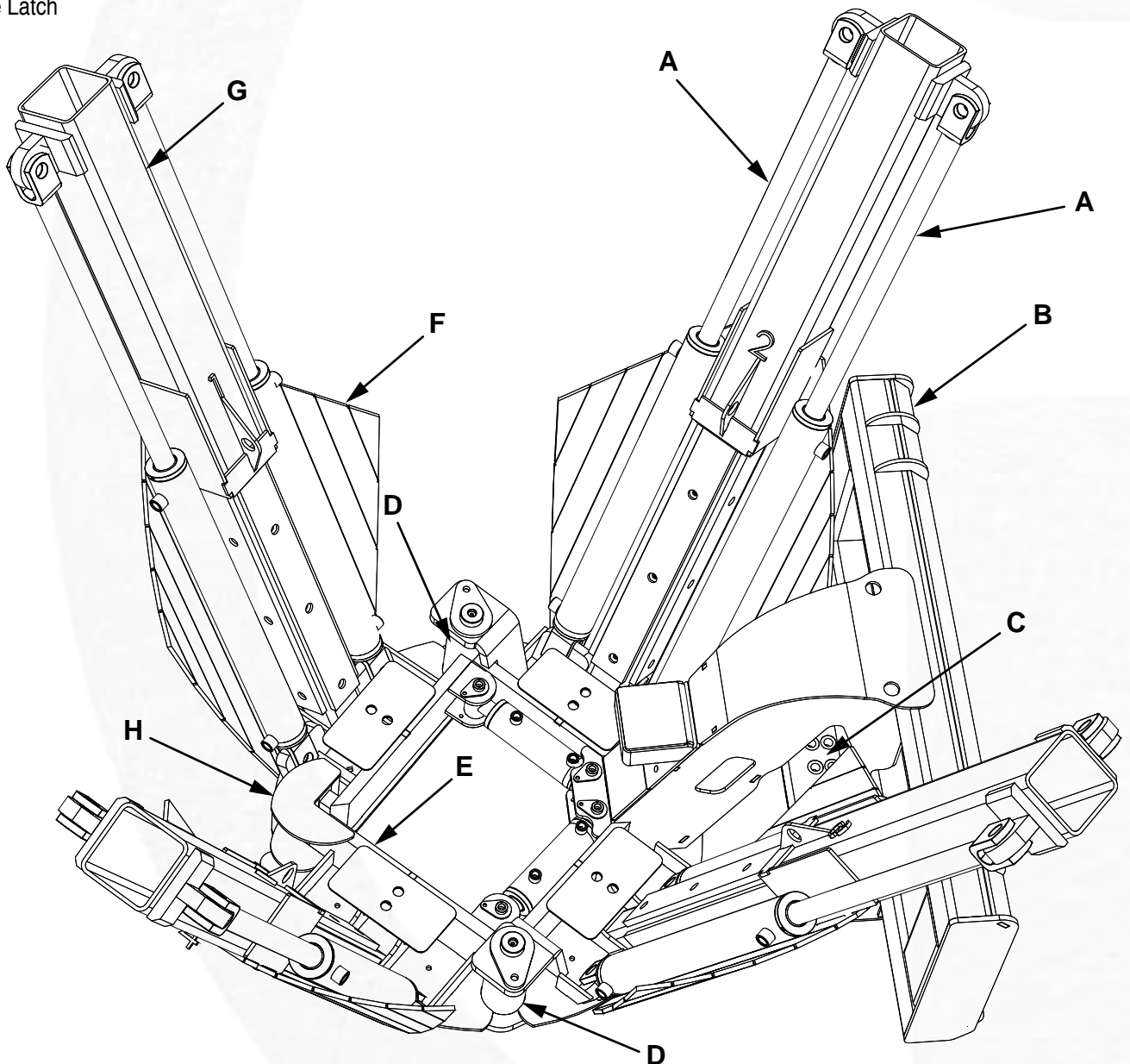
S/N: _____

Date of Purchase: _____

Owner's Name _____

3. COMPONENTS

- A. Hydraulic Cylinder
- B. Quick-Attach Hitch
- C. Hydraulic Valve
- D. Pivot Hinge
- E. Base
- F. Blade
- G. Blade Tower
- H. Hinge Latch



4. SPECIFICATIONS

MODEL	34S	38S	44S	48S	50S
Root Ball Diameter (Inches)	34	38	44	48	50
Depth (Inches)	24	28	32	40	48
Maximum Tree Size	3.5 Inch Evergreen 3 Inch Hardwood	4 Inch Evergreen 3.5 Inch Hardwood	4.5 Inch Evergreen 4 Inch Hardwood	5 Inch Evergreen 4.5 Inch Hardwood	5.5 Inch Evergreen 5 Inch Hardwood
Number Of Blades	4	4	4	4	4
Blade Angle (Degrees)	25	25	25	25	25
Blade Thickness (Inches)	5/16	5/16	5/16	5/16	5/16
Hydraulic Flow Required (GPM)	5-25	5-25	5-25	5-25	5-25
Hydraulic Pressure Required (PSI)	2000 Minimum	2000 Minimum	2000 Minimum	2000 Minimum	2000 Minimum
Hydraulic Remotes Required	1	1	1	1	1
Unit Shipping Weight (Lbs)	1650	1920	2210	2740	-
Unit Weight With Maximum Size Root Ball	2100	2720	3410	5240	-

5. SAFETY

5.1 Safety Alert Symbol And Signal Words

You must read, understand and follow the instructions given by the operating unit manufacturers, as well as the instructions in this manual.

The safety information in this manual is denoted by the safety alert symbol:



This symbol means **ATTENTION! BECOME ALERT! YOUR SAFETY IS INVOLVED!**

The level of risk is indicated by the following signal words:

DANGER

DANGER - Indicates a hazardous situation, which, if not avoided, **WILL** result in death or serious injury.

WARNING

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

CAUTION

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

NOTICE

NOTICE - *Indicates a situation that could result in damage to the equipment or other property.*

5.2 Operational Hazards

WARNING

Prevent serious injury or death.

Read and understand this manual before operating tree spade.

Always stop engine and remove key before leaving operators seat.

Never allow anyone near the tree spade during operation.

Travel at a safe speed.

WARNING

Prevent serious injury or death from moving parts.

Moving parts can crush and dismember. Do not operate without guards and shields in place.

Lockout operating unit before adjusting or performing maintenance.

WARNING

Use tree spade only for the designed applications.

Any other use may result in personal injury, damage to equipment and may void the warranty.

⚠ WARNING

Prevent serious injury or death.

Verify tree spade is locked to quick attach hitch before operation or transport.

⚠ WARNING

Safely operate equipment.

Allow only properly trained and qualified personnel to operate this equipment.

Carefully read all safety messages in this manual and on equipment safety signs. Keep safety signs in good condition and replace missing or damaged safety signs.

New equipment components and repair parts must include the current safety decal.

Learn how to properly operate equipment. NEVER operate or work around this equipment without proper instruction, while fatigued or under the influence of alcohol, prescription or non-prescription medication or if feeling ill.

Keep your equipment in proper working condition. Know the regulations and laws that apply to you and your industry. This manual is not to replace any regulations or laws. Additional information may be found at:

www.asae.org or www.osha.gov.

If you do not understand any part of this manual, contact your dealer.

5.2.1 Replace Safety Signs

Replace missing or damaged safety signs.

Safety sign location are identified in Section 4.5 of this manual.

Replacement safety signs are available from your dealer.

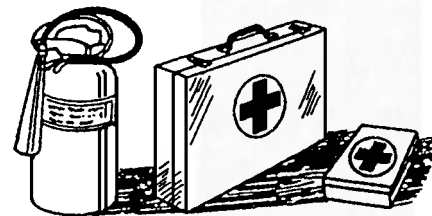
5.2.2 Prepare For Emergencies

Be prepared in case of emergencies.

Keep a fire extinguisher and first aid kit close to the machine.

Keep emergency phone numbers close to your phone.

Know your address so emergency services can locate you if an emergency arises.



5.2.3 Do Not Allow Riders

NEVER lift or carry anyone on tree spade.

NEVER use tree spade as a work platform.

NEVER allow passengers on tree spade.

5.2.4 Lower Operating Speed

Keep tree spade low and move at slow speeds on rough or uneven terrain.

5.2.5 Prevent Rollover

The equipment may rollover, resulting in death or serious injury. To help prevent rollover:

- Travel at a slow speed.

- Avoid sharp turns & sudden movement on slopes.
- Carry tree spade close to the ground.
- Avoid holes, ditches and other obstructions which may cause equipment to rollover.
- Use caution when operating on slopes and do not operate on excessively steep slopes.
- Do not exceed load capacity of equipment.

5.2.6 Avoid Power Lines And Underground Utilities

WARNING

Prevent electrocution.

Death or serious injury can result if equipment comes near or contacts power lines.

Electrocution can occur without direct contact.

Check clearance before raising equipment.

Have local utilities locate and mark under ground wires, cables, pipelines and other hazards before digging.

DO NOT leave the operator's seat if any part of the equipment contacts electric lines or cables.

5.2.7 Detach Spade Safely

Detach tree spade on a firm and level surface. Tree spade may fall over if detached on unlevel or soft surface.

5.2.8 Transport Safely

Carry tree spade low. Travel slow and avoid slopes.

5.2.9 Raised Attachment

WARNING

Crushing hazard.

Raised, unsupported tree spade can fall, resulting in death or serious injury.

Never enter the area under a raised tree spade.

A raised tree spade can lower unexpectedly, resulting in death or serious injury.

NEVER enter area under a raised tree spade.

Lower tree spade to ground, engage parking brake, shut off engine and remove key before servicing.

5.2.10 Avoid High Pressure Fluids

WARNING

Pressurized fluids can penetrate the skin.

Hydraulic hoses can fail from age, damage and exposure.

Use body and face protection while searching for leaks. A tiny, almost invisible leak can penetrate the skin, thereby requiring immediate medical attention.

Use wood or cardboard to detect hydraulic leaks, never use your hands.

Escaping fluid under pressure can penetrate the skin causing serious injury.

Prevent the hazard by relieving pressure before connecting or disconnecting hydraulic lines. Verify all connections are tight before applying pressure.

Search for leaks with a piece of cardboard or wood.

Protect hands and body from high pressure fluids. If an accident occurs, see a doctor immediately. Any fluid injected into the skin must be surgically removed within a few hours or serious infection may result.

Doctors unfamiliar with this type of injury should reference a knowledgeable medical source.

5.3 Maintenance Hazards

Before servicing, park machine on a firm and level surface, set parking brake, chock wheels, and place a “Do Not Operate” tag on control panel. Read and understand this manual. If you do not understand any part of the manual, contact your dealer.

Always wear face and/or eye protection, safety shoes, and other protective equipment appropriate for the job.

Always use Holt Industrial replacement parts.

WARNING

Moving parts can crush and cut.

Keep clear of moving components.

WARNING

Crushing and severing hazard.

Before performing inspections, service or maintenance, lockout operating unit by:

- Park machine on firm, level surface.
- Engage parking brake.
- Turn engine off and remove key.
- Place “Do Not Operate” tag on control panel.

WARNING

Entanglement hazard.

Keep clear of moving components.

WARNING

Burn hazard.

Hot and high pressure hydraulic oil.

Allow oil to cool before servicing.

WARNING

Prevent serious injury or death.

Wear proper protective equipment appropriate for the job.

5.4 Hazards From Modifying Equipment

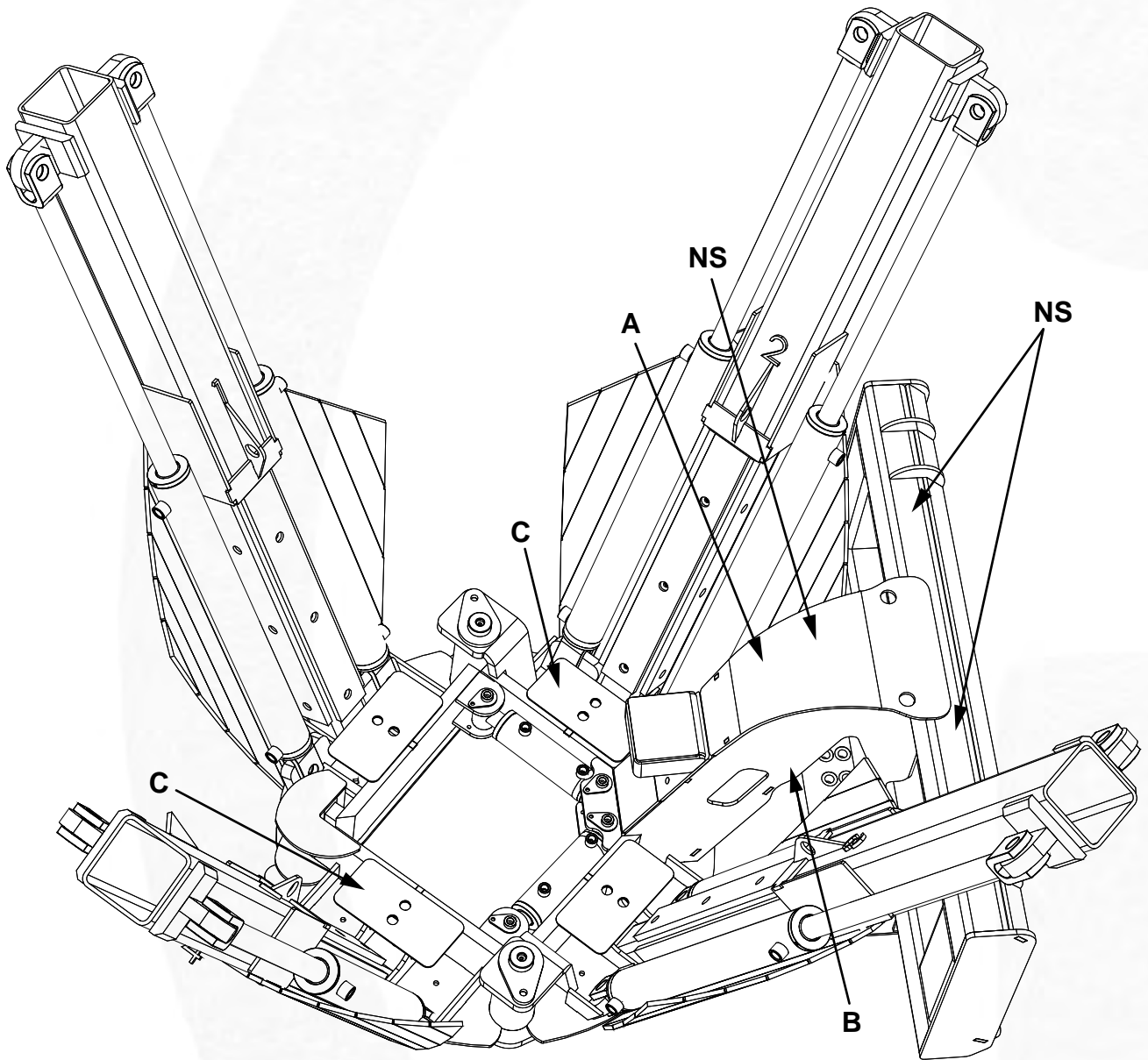
Do not make any alterations to your tree spade. Altering may cause your equipment to be unsafe and may void the manufacturers' warranty.

5.5 Safety Warning Labels

WARNING

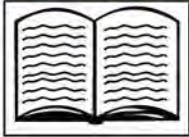
To protect you and others against death or serious injury, all labels shown must be on tree spade and must be legible.

If any of these labels are missing or cannot be read, contact your dealer for replacement labels.



NS - Non-Slip Pad

Decal A

CAUTION	
<ul style="list-style-type: none"> • Read and understand the operator's manual before starting. Review safety instructions annually. • Do not permit riders on the carrier or equipment. Never carry children on the machine. • Do not allow children to operate the equipment. • Operate only with guards installed and in good condition. • Keep away from moving parts. • Operate only with carrier equipped with ROPS and seat-belts. • Before operating, clear debris away from production area. • Do not operate in raised position. • Turn machine off, lower machine to ground, stop engine, set park brake, remove ignition key and wait for all moving parts to stop before servicing, repairing, adjusting or unplugging. • Support equipment securely before working beneath unit. • Keep hydraulic components in good repair. • Wear Personal Protective Equipment (PPE) including but not limited to hard hat, safety shoes with slip resistant soles, safety goggles or face shield and hearing protection whenever operating equipment. • Transport with clean reflectors, SMV and working lights as required by federal, provincial and local laws. 	

MTB-175

Decal B

WARNING	
	
HIGH PRESSURE FLUID HAZARD To prevent serious injury or death from high pressure fluid:	
<ul style="list-style-type: none"> • Relieve pressure on system before repairing or adjusting. • Wear proper head and eye protection when searching for leaks. Use wood or cardboard instead of hands. • Keep all components in good repair. 	

Decal C

WARNING	
	CRUSHING HAZARD KEEP AWAY To prevent serious injury or death from crushing:
<ul style="list-style-type: none"> • Turn machine off, lower machine to ground, stop engine, set park brake, remove ignition key and wait for all moving parts to stop before servicing, repairing, adjusting or unplugging. • Stay away from pinch point when engine is running. Keep others away. 	

6. OPERATION

- ⚠️ Verify quick-attach is engaged and in the locked position.
- ⚠️ Keep bystanders, livestock, pets, etc away from work area.
- ⚠️ Always wear protective equipment appropriate for the job.
- ⚠️ Do not operate, work on or around this machine while under the influence of alcohol, drugs or if feeling ill.
- ⚠️ Keep clear of moving machinery at all times.
- ⚠️ Stop skid steer engine before exiting operator station.
- ⚠️ It is your responsibility to operate this equipment safely. You must be familiar with the equipment and all safety practices before use.
- ⚠️ Do not allow untrained or unqualified people to operate this equipment.

6.1 Pre-Operation Check List

It is operators responsibility to perform the following checks prior to operation of equipment.

- Review and understand this manual and skidsteer manual.
- Verify safety decals are installed and legible. Replace if damaged or missing.
- Verify that all hardware is tight.
- Inspect hoses and fittings for wear, damage and leaks. Replace damaged or leaking hoses before use.
- Verify that local utilities have marked all underground utilities.

6.2 Attach Skid Steer To Tree Spade

1. Read and follow all safety instructions.
2. Move skid steer close to tree spade.
3. Hook top part of skid steer adapter plate under lip of tree spade mounting plate.

4. Tilt skid steer mounting plate so that it just lifts the tree spade.
5. Operate locking levers to lock adapter plate to tree spade mounting plate.
6. Connect hydraulic hoses. Verify hydraulic hoses are clear of pinch areas and moving parts.
7. Connect remote pendent to skid steer 12 volt power supply.
8. Ballast skid steer as recommended in skid steer operators manual.

⚠️ WARNING

Prevent rollover.

See the skid steer operators manual for ballast recommendations. Add ballast as recommended.

6.3 Operation

⚠️ WARNING

Prevent serious injury or death.

Keep clear of moving machinery.

NOTICE

Prevent equipment damage.

Never open or close swing hinge with blades extended.

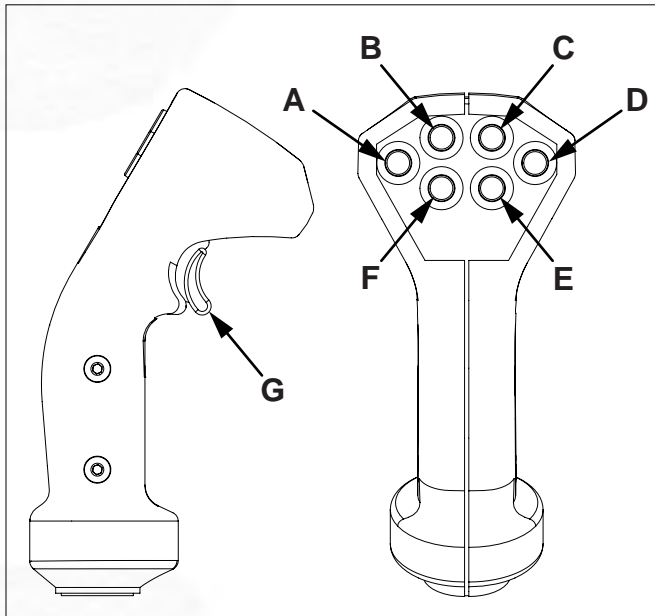
Never operate blades with swing hinge open.

Never move skid steer with blades in the ground.

Move to a clear open area to test functions.

Operate all functions in an open area with skid steer at low idle to get a feel for the controls.

6.3.1 Pendent Operation



To operate a spade function, press and hold the desired button on pendent and move skid steer forward/reverse lever.

- A. Left Swing Hinge Cylinder
- B. Left Front Tower
- C. Right Front Tower
- D. Right Swing Hinge Cylinder
- E. Right Rear Tower
- F. Left Rear Tower
- G. Trigger - Backup in the event of a button failure.

6.3.2 Digging A Tree

Use this procedure to dig a hole for a tree also.

1. Position tree spade close to ground.
2. Open swing hinges.
3. Drive skid steer forward so tree is in center of base.
4. Close swing hinges.
5. Lower tree spade to ground. Spade should be level and straight with tree.
6. It is important to keep tree spade base from lifting off ground during digging process. In hard soil, you may need to slightly retract blades after every downward push to keep base in contact with the ground.
7. Starting with left rear blade, extend blade until blade is about 8 in. (203 mm) deep.
8. Extend rear right blade, right front blade and left front blade one at a time, to about 8 in. (203 mm) depth.
9. Extend each blade individually about 8 in. (203 mm) until all blades have reached full depth.
10. Lift tree out of ground and tilt tree spade back.
11. Move away from hole.

WARNING

Prevent serious injury or death.

Keep clear of moving machinery.

12. Lower tree spade to ground, set parking brake, stop engine and remove key.
13. Cut any protruding roots.

6.3.3 Planting A Tree

1. Position tree above hole for tree.
2. Tilt and lower tree spade into hole.
3. Retract blades.
4. Raise tree spade off ground a few inches.
5. Open swing hinges.
6. Back tree spade away from tree.

6.3.4 Basketing A Tree

It is recommended that you basket the tree in the hole it was removed from. The tree will be more stable in a hole in a basket than sitting on top of the ground.

Most baskets are flat on the bottom. To get a flat cone, you can slightly retract each blade. You must remove the dirt tip. This will make the root ball fit the basket.

6.4 Detach Tree Spade

1. Read and follow all safety instructions.
2. Park skid steer on a firm and level surface. Tree spade may fall over if detached on unlevel or soft surface.
3. Stop skid steer engine.
4. Disconnect remote pendent from power supply.
5. Disconnect hydraulic hoses.
6. Disengage lock levers on mounting plate.
7. Tilt skid steer mounting plate forward and back away from tree spade.

7. ROUTINE MAINTENANCE

7.1 Maintenance Intervals

ITEM	DAILY BEFORE USE	WEEKLY	MONTHLY
Check hoses and fittings for leaks.	•		
Inspect spade for damage. Repair or replace damaged parts as needed.	•		
Check and tighten all mounting hardware.		•	
Lubricate pivot pins		•	
Check tower slides for wear.			•
Check pivot points for wear.			•

WARNING

Moving parts can crush and cut.

Keep clear of moving components.

Lockout operating unit before performing inspections or maintenance.

WARNING

Prevent serious injury or death.

Wear proper protective equipment appropriate for the job.

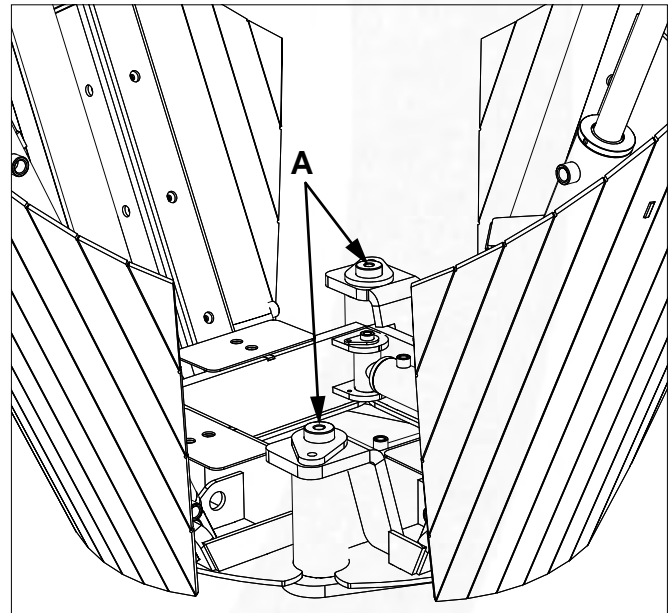
7.2 Inspections

Check hydraulic hoses and fittings daily for leaks. Replace worn or damaged parts.

Inspect the unit for any damage. Repair or replace parts as needed.

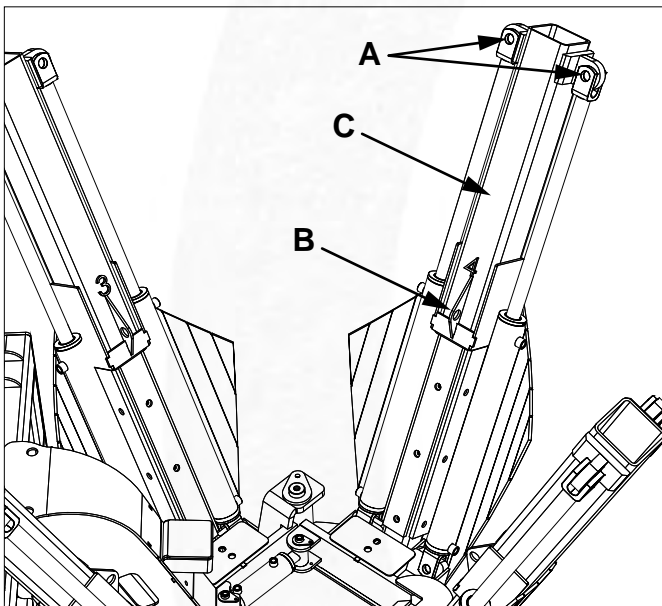
7.3 Lubrication

1. Lower tree spade to ground.
2. Set parking brake, stop engine and remove key.
3. Pump grease into grease fittings (A) on each pivot pin.

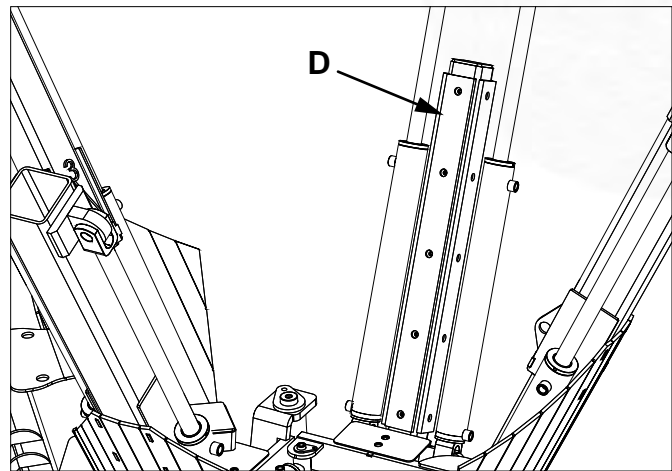


7.4 Check Tower Slides For Wear

1. Lower tree spade to ground.
2. Set parking brake, stop engine and remove key.
3. Remove rod end cylinder pins (A) for tower to be inspected.
4. Connect lifting device to bracket (B) and remove tower/blade assembly (C).



5. Inspect slides (D) on each side of tower. Replace worn slides. Replace all four slides on tower as a set.
6. Install tower/blade assembly (C). Remove lifting device.



7. Install cylinder rod pins (A).
8. Repeat steps 3-7 to inspect remaining towers slides.

8. TROUBLESHOOTING

PROBLEM	PROBABLE CAUSE	SOLUTION
Spade will not operate.	No electrical power to valve.	Check all electrical connections, fuses and plugs
	No hydraulic flow to valve.	Connect hoses correctly.
One or more functions do not operate while other functions do.	Faulty button on pendant.	Replace button.
	Defective solenoid	Replace defective solenoid.
Blades will not cut into the ground.	Insufficient hydraulic pressure.	Check hydraulic oil level. Add as needed.
	Hydraulic hoses not connected properly.	Connect hoses correctly.
	Slides obstructed by dirt.	Clean slides.
Spade lifts off the ground when extending blades.	Started with the blade that is farthest from the operator.	Start with the closest blade first.
	Ground may be too dry.	Wait until the ground is moist.

9. WORKING WITH TREES

9.1 Sizing And Selecting A Tree

Spade size and the amount of water available for your landscape should reflect your choice of tree size. An average root system will be about the same size below ground as the branches are above ground.

If no care is planned for the planted trees the root ball should not be bigger than the size of the spade; if some care is planned for the tree cutting 25% of the roots still leaves a 90% survival rate and cutting 50% of the roots also leaves a 90% survival rate if very good care is planned.

If you live in a dry environment you need to provide more water to ensure fast growth. Fast growing trees will have a better survival rate then slow growing trees.

Selection of trees also depends on the desired effect and the purpose trees will satisfy in the landscape.

- Will they attract birds to the area?
- Shade a patio?
- Screen an unsightly view?
- Enhance the view of the home?
- Identify an entrance or exit?

Trees should provide contrast and relief from surrounding buildings and create seasonal interest in areas near the home.

9.2 Planting Procedure

Transplanting is not successful until the tree returns to a normal growth rate. This transplant recovery period normally takes three years, but may range from two to eight years. To get the most satisfactory performance from trees, attention must be given to planting details. Using quality plants and following good cultural practices such as watering, pruning, and fertilizing will not compensate for poor planting techniques or poor plant selection.

1. Try to position spade at same angle (right/left) when digging and planting so the flats on the blades match, this will leave less air space under the root ball.
2. When lowering the first trees take a close look or have someone

with you to insure root ball is well centered because if it is released off center the root ball will drop and tilt and it could damage the tree roots (it is easy to get a feel for it after planting a number of trees).

3. Raise blades one inch each until the root ball seems loose then extract each blades completely, if the tree is leaning raise the blade that trunk is leaning towards first, this will spin it up a little. Note if you are transplanting without baskets do not try to twist, spin, or move the root ball; just leave it and within a week try staking the tree if it is tilted.
4. Use water to settle the soil around the root ball.
5. Mulch two to four inches deep with woodchips, bark mulch, or other suitable mulch.
6. Trees should be pruned to remove broken, damaged, or dead branches.

9.3 Care for Your Trees

You should consider each of the following as important in caring for your trees:

- Fertilizer
- Mulching
- Watering
- Pruning
- Staking and guying
- Tree wraps

9.3.1 Fertilizing

Fertilizing generally is not necessary until the tree begins recovering from the shock of transplanting and establishes itself in its new home. This usually takes at least one year in non-tropical areas. In tropical and sub-tropical areas, this can take less than a year to occur. In some circumstances, the tree care company may recommend fertilizing a recently planted tree.

9.3.2 Mulching

Mulching is very important for several reasons. Functionally, mulches discourage weeds from growing, conserve moisture during drought periods, and allow better use of water by controlling runoff and increasing water-holding capacity of light, sandy soils. Mulch also helps maintain a uniform soil temperature.

A 3- to 4-inch layer of mulch can add to the aesthetic value of a garden while protecting the base of trees from being injured by equipment, such as lawn mowers. Mulch rings also decrease competition from lawn grass. Lawn grass, especially when lush, robs trees of valuable nutrients and moisture.

Trees often are wounded by careless use of yard equipment like lawn mowers, weed whips, and other trimming equipment. These injuries cut through important vascular tissue just inside the bark, which can lead to decay and ultimately death of the tree. A bed of mulch around the tree eliminates the need to trim or mow close to the tree's base. Extreme care should be taken when digging up or tilling the soil under a tree. Many large and small roots will be cut by such digging, especially if it occurs close to the trunk.

9.3.3 When To Apply

Mulch can be applied just about any time of the year when trees and shrubs are being planted. The best time, however, to apply mulch in established bed areas would be in mid spring when the soil temperature has warmed up enough for sufficient root growth. If applied earlier, the mulch will keep the soil temperature lower and root growth could be delayed.

9.3.4 How To Apply

It should be applied 2 to 3 or 4 inches in depth over relatively clean, weed-free soils. Do not pile mulch more than 4 inches. Identify and eradicate the weeds before the mulch is applied. Keep mulch pulled 12 inches back from the tree trunk.

9.3.5 Types Of Mulch

Most arborists consider organic mulches as the most compatible with trees. Many organic materials can be used as mulch. Bark mulches and wood chips are the two most commonly used mulches in most of the country. In the south, pine needles are included in that list.

There are several inorganic materials used as mulches. These include weed barriers such as plastic that is sometimes used to discourage weeds; however, plastic interferes with the normal oxygen and water supply to the tree's roots. When the plastic is used, a very shallow root system is created and during drought periods the plants may not withstand the stress.

It is recommended not to use black plastic around trees. There are several landscape fabric "mulches" available that will function the same as plastic, but allow for normal water and oxygen exchange. These materials, sometimes called geotextiles or weed barriers, are placed on bare soil around trees and shrubs with mulches used on top. There are many brands and types of materials from which to choose. They have proven to be beneficial in discouraging weeds and conserving soil moisture.

9.3.6 Watering

Moisture is critical to trees, but too much moisture can cause serious damage. The amount of water to apply depends on the tree and when it was planted.

9.3.7 Selecting The Proper Plant

Selecting the proper plant is very important for dry, desert-like climates to avoid heavy watering requirements. It is usually recommended to choose plants that are suited for dry conditions; this type of landscaping is called xerophytic.

9.3.8 Watering Newly Planted Trees

Watering should be done at the time of planting to settle the soil and to assure adequate soil moisture. The first watering is normally done by

the planting crew soon after planting. After the first watering, adequate water must be provided by the property owner unless there has been sufficient rain to keep the soil moist. The critical months for watering are May through September (this period of time may be extended in warm climates).

9.3.9 Watering After Planting

Most trees need to be watered for two to three years after transplanting to provide adequate soil moisture while root systems are becoming established. In the past it was recommended that a “saucer” be formed around the soil ball to make a water-holding reservoir. Recent studies have shown that this practice actually encourages roots to stay in the area of the soil ball instead of growing into the surrounding soil. This can increase the time it takes for the tree to get established in the landscape. It is now recommended that the root ball and surrounding area of a newly transplanted tree be watered.

To determine the level of moisture, remove a small amount of soil at the edge of the ball with a hand trowel and squeeze it. If you can form a moist sticky ball, it is too wet. If it crumbles like chalk, it is too dry. You must provide enough water to keep at least the top 4 inches of soil moist. The exact amount of water needed will vary.

A 3-inch diameter tree moved by a tree spade may require 60 to 80 gallons of water every 10 days if rain does not occur.

Distributed soils are frequently high in clay subsoil and tend to drain poorly. If these conditions exist, watering for a prolonged period of time may result in over watering and cause the roots to drown from lack of adequate soil aeration. Adding large quantities of water too frequently to heavy clay soils is detrimental and will result in death of the tree. Conversely, waiting until the tree wilts and the leaves start to turn brown is too late to water.

9.3.10 Watering Established Trees

Large trees can be watered with lawn sprinklers. Apply water at rate of 1 inch per watering, 2 inches if there is vigorous lawn grass near and under the tree. Water at a rate low enough to keep water from running off. Do not water daily; this can damage your tree by suffocating its roots. Instead plan you're watering based on the severity of the drought conditions. Generally anywhere from once every two weeks to once every 4 to 5 days will suffice.

Most tree roots are not very deep (within the upper four to eight inches of soil), and deep roots will receive water if enough is applied to the soil surface. Tree roots can extend away from the tree at a distance as far as the tree is tall, and in many cases much farther. Therefore, it is usually beneficial to water the entire yard to be certain the tree is watered. You can also alternate the sides of the tree you water, from one watering to the next, making tree watering easier while conserving water.

9.3.11 Pruning

Pruning trees, especially when younger, helps promote healthy trees with good branch architecture. Again, think of a tree in its native environment, the forest. There the tree is in stiff competition with other trees. It is forced to grow fast and upright to fill what is usually a very limited space. Trees growing in man-made conditions usually have much more space and less competition. They will spread out to form much broader trees than they would if located in the forest. The branch structure will often be inadequate if the tree is left to develop on its own. These trees can develop hazard limbs that eventually could fail, leading to an early tree death.

Tree Pruning:

- Promotes good branch structure,
- Can correct poor branch structure,
- Reduces potential hazards,
- Improves overall health by removing dead, diseased, and dying branches,

- Gives the arborist a chance to examine the tree more closely than possible from the ground.

9.3.12 Newly Planted Trees

Generally, when a young tree is planted, any dead, broken, and split branches should be removed. Once the tree is established (up to one year or more after planting) a central trunk or leader or well-spaced multiple trunks or leaders should be developed by removing competing leaders and heading or thinning vigorously growing branches that compete with the selected leader(s). Branches should be retained on the lower trunk to increase taper.

It is important to prune young trees in order to develop a strong scaffold branch structure. Pruning of young trees can avoid more expensive problems that could occur if the tree is allowed to grow with branch defects.

9.3.13 Limiting The Need For Pruning

Many tree problems, and even maintenance requirements, can be avoided by knowing the growth habit of a specific tree. Find out how fast and how large a tree normally grows. Logic and reason also apply. For example, don't plant a white oak directly beneath utility lines. As the tree grows and interferes with the lines, the tree will be pruned. This could destroy the natural character of the tree and lead to its early decline and death. Warning: Home owners should limit their tree pruning to small, lightweight branches which can be reached from the ground or they could subject themselves to severe injury and even death. The pruning of large branches and/or working off the ground should be left to professional tree experts with proper equipment.

9.3.14 Protecting After Pruning

In the past, part of the standard recommendation was to apply a generous coating of a tree wound dressing to all fresh cuts. It was believed this would prevent decay-causing infection. Research has proven that all of the wound dressings currently available do nothing to prevent decay, and some serve as a food source for microorganisms.

They also can hold moisture against the cut wood, promoting the growth of decay-causing microorganisms. A light coating of non-toxic wound dressings can be used for cosmetic purposes.

9.3.15 Guying And Staking

Guys or stakes should only be used when necessary, such as when roots are not solid in the planting hole or where the tree could be dislodged by high winds. Bare-Root and Container Grown trees are more likely to require staking or guying than Balled and Burlapped trees. In most instances, the weight of the root ball is normally sufficient to hold the tree in place, assuming it was properly planted. Research has shown that trees not guyed or staked will actually become established and grow faster than guyed or staked trees. It is best to have guys or stakes professionally installed. Many new products are available to the arborist so that a long lasting tree guy or staking system that does not harm the tree can be installed. Eventually guys and stakes must be removed to prevent damage to the tree.

9.3.16 Tree Wraps

Tree wrap should only be used when necessary. It is usually reserved for thin-barked trees, exposed trees, or trees in danger of rodent and mammal feeding. Consult an arborist to determine if trunk wrap is needed. If you do use trunk wrap, use one made of new, synthetic materials. They generally work better and are designed to avoid girdling the trunk. Always remove tree wraps after the specified time period to avoid damaging the trunk.

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