

# TREE SPADE

Baumalight

## Operator's Manual



MTB Manufacturing

## CONTENTS

<b>Section 1 – Introduction</b> .....	<b>4</b>
Models .....	4
Operator Orientation .....	4
Technical Description.....	5
General Operation .....	5
Components.....	5
Base .....	5
Blades .....	5
Controls .....	5
Mounts .....	8
<b>M-22 Trailer</b> .....	<b>9-11</b>
<b>Section 2 – Safety</b> .....	<b>12</b>
Hazard Notices: Dangers, Warning, and Cautions.....	12
Replacing Safety Signs.....	13
<b>Section 3 – Attaching the Tree Spade</b> .....	<b>14</b>
Attaching the Tree Spade to a Skid Steer/Loader.....	14
Attaching the Tree Spade to a Tractor.....	14
<b>Section 4 – Operating the Tree Spade</b> .....	<b>17</b>
Removing a Tree .....	17
Planting a Tree .....	18
Basketing a Tree.....	18
<b>Section 5 – Maintenance</b> .....	<b>19</b>
Operator Maintenance .....	19
Repairs .....	19
<b>Section 6 – Troubleshooting</b> .....	<b>20</b>
<b>Section 7 – Specifications</b> .....	<b>21</b>
<b>Section 8 – Illustrated Parts List</b> .....	<b>22</b>
<b>Section 9 – Warranty</b> .....	<b>23</b>
Conditions .....	23
Contacting Baumalight.....	24

Mail Bag Form ..... 24

Warranty Form..... 24

**Section 10 – Working With Trees ..... 26**

Sizing and Selecting a Tree..... 26

Planting Procedure ..... 26

Care For Your Trees ..... 27

    Fertilizing ..... 27

    Mulching ..... 27

        When to Apply..... 27

        How to Apply ..... 28

        Types of Mulch ..... 28

    Watering ..... 28

        Selecting the Proper Plant..... 28

        Watering Newly Planted Trees..... 28

        Watering After Planting..... 28

        Watering Established Trees..... 29

    Pruning..... 29

        Newly Planted Trees..... 29

        Limiting the Need for Pruning ..... 30

        Protecting After Pruning..... 30

    Guying and Staking ..... 30

    Tree Wraps..... 30

# Section 1 – Introduction

Congratulations on your choice of a Baumalight Tree Spade. This equipment has been designed and manufactured to provide a safe, rugged, reliable, and efficient tool. To ensure that your Tree Spade provides you with the highest level of safe, trouble-free, and efficient operation, please ensure that you use this tool as specified in this operator's manual. This means that you and anyone else who will be operating or maintaining the Tree Spade must read and understand this manual.

## Models

This manual covers the following models:

Model	Description	Notes
<b>ST324</b> <b>(ST330)</b>	Size: 24" diameter Tree size: 2" Required down pressure: 1,200 lb Unit weight: 990 lb Weight with tree: 1,160	Fixed base
<b>SS330</b>	Size: 30" diameter Tree size: 3" Required down pressure: 1,800 lb Unit weight: 1,450 lb Weight with tree: 2,050 lb	Outer blade swings outward
<b>ST440</b>	Size: 40" diameter Tree size: 4" Required down pressure: 2,200 lb Unit weight: 1,850 lb Weight with tree: 2,450 lb	Both outer blades swing outward
<b>ST650</b>	Size: 50" diameter Tree size: 5" Required down pressure: 1,800 lb Unit weight: 3,025 lb Weight with tree: 5,150 lb Required lifting capacity; 8,583 lb	Both outer blades swing outward

All models can be mounted on a skid steer, a tractor with three point hitch (3PTH), or a loader. More detailed technical specifications on the tree spade models are provided in *Section 7 Specifications*.

## Operator Orientation

All references to left and right are made from the operator's position which is sitting in the operator's seat and facing the Tree Spade with the controls (the adjustable valve stand) in front of the operator. The inner blades are those closest to the operator. The outer blades are those furthest from the operator. Movement of the control levers is either forward (push away) or back (pull towards).

## Technical Description

### General Operation

The Tree Spade is a multi-bladed, hydraulically-operated spade that you position around the tree that you want to move. Using the controls provided on the adjustable valve stand, you insert the blades one at a time into the ground surrounding the tree. Once all the blades are inserted, they completely surround the tree's root ball so that you can lift and tilt the Tree Spade to remove the tree from the ground.

Once you have removed the tree, you can basket it or you can move it to the place where you want to plant the tree. For planting, once the tree is in position, you lower the tree into the hole and then retract each blade. Once all blades are retracted, you can move the Tree Spade away from the tree.

On all models except the Model ST324, the Tree Spade has a hinged base. This base opens under operator control so that you can place the Tree Spade in position around the tree and it closes so that you can insert the blades into the ground. This feature helps to protect the lower branches of the tree from damage.

You can also use the Tree Spade to dig the hole where you will plant the tree and you can use it to basket a tree by putting the basket in a hole dug using the Tree Spade and depositing the tree in the basket.

### Components

The components of the Tree Spade are as follows:

- Base
- Blades
- Controls
- Mounts (loader, skid steer, and 3PTH)

#### Base

This is the frame that supports the blades in their mounting tracks and provides an open frame that you can locate around the tree. The Models SS330, ST440, and the ST650 have hinged bases that use a hydraulic cylinder to open the frame to allow you to manoeuvre the Tree Spade around the tree. The base is moved up and down by the arms of the skid steer or loader. A tractor, with its three point hitch is lifted and tilted by a separate hydraulic cylinder attached to the three point hitch connection.

#### Blades

Each blade is located in a track which is attached to the base and it is operated individually by a hydraulic cylinder that has its own control.

#### Controls

The controls are grouped in a valve block that is located on an adjustable arm that the operator can position for ease of access. Each blade has a control lever to either lift or insert the blade. A separate control is provided to open or close the hinged base (all except Model ST324). The general function of the controls is shown in the following diagram.

Figure 1 is a simple overview of the general function of the controls. By pushing a control lever forward, the hydraulic cylinder will extend. By pulling the control lever back, the cylinder will retract. Back means towards the operator; forward means pushing away from the operator.

The valve block has a safety port which will blow out if reverse hydraulic flow is provided and the levers are actuated.



**Danger:** The working pressure of the hydraulic fluid is 3000 psi. Unsafe operation of the Tree Spade controls may result in discharge of the fluid through the safety port. To prevent injury, you must follow the operating instructions that are documented in this manual.

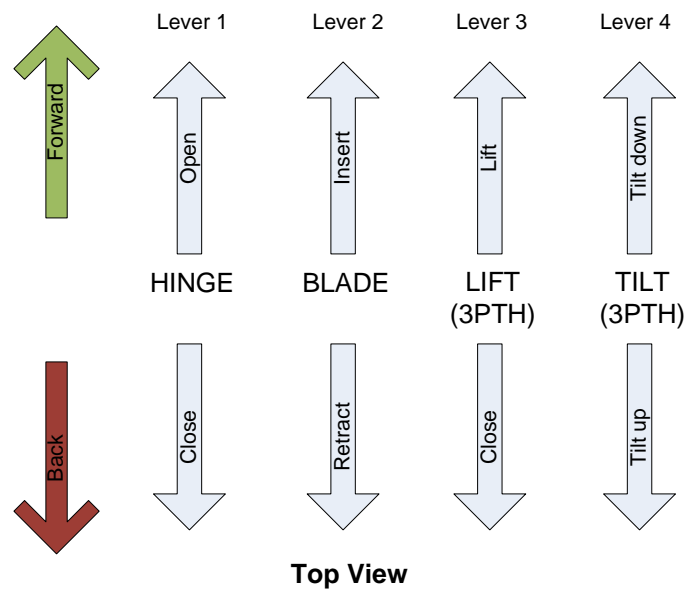
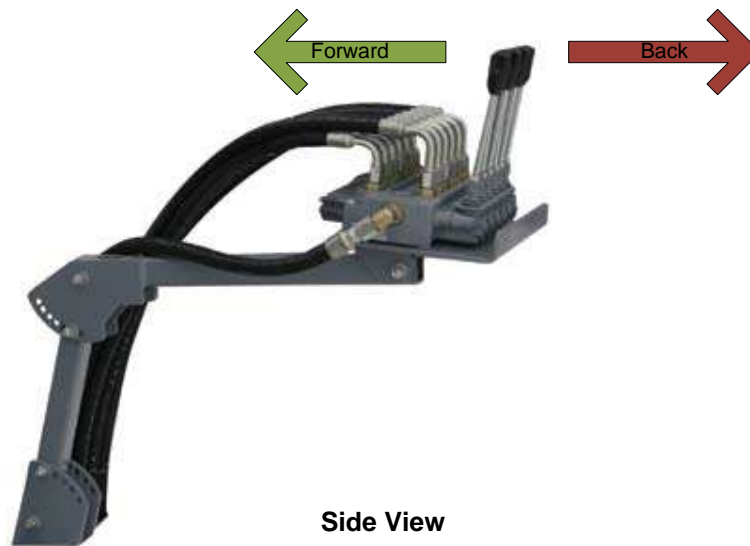


Figure 1 General Function of Control Levers

### Controls for Each Tree Spade Model

While Figure 1 provides a basic overview of the controls and their operation, each Tree Spade has its own set of controls which are different for the type of application (skid steer/loader or 3PTH). The following table lists the available controls for each model and mounting type starting from the left side of the control block.

Model	Mounting Type	Lever 1	Lever 2	Lever 3	Lever 4	Lever 5	Lever 6
<b>SS324</b>	Skid Steer/Loader	Front Right blade	Rear Middle blade	Front Left blade			
	3pth	Front Right blade	Rear Middle blade	Front Left blade	Lift	Tilt	
<b>ST330</b>	Skid Steer/Loader	Front Right blade	Rear Middle blade	Front Left blade			
	3pth	Front Right blade	Rear Middle blade	Front Left blade			
<b>SS330</b>	Skid Steer/Loader	Rear Left blade	Rear Right blade	Front Middle blade	Swing		
	3pth	Rear Left blade	Rear Right blade	Front Middle blade	Swing	Lift	Tilt
<b>ST440</b>	Skid Steer/Loader	Left Swing	Front Left blade	Rear Left blade	Rear Right blade	Front Right blade	Right Swing
	3pth	Left Swing	Front Left blade	Rear Left blade /Lift	Rear Right blade /Tilt	Front Right blade	Right Swing
<b>ST650</b>	Skid Steer/Loader	Front Left blade	Middle Left blade	Rear Left blade /Left Swing	Rear Right blade /Right Swing	Middle Right blade	Front Right
	3pth	Front Left blade	Middle Left blade/Left Swing	Rear Left blade/Right Swing	Rear Right blade/Lift	Middle Right blade/Tilt	Front Right blade

### Skid Steer Controls

There is a control for each blade cylinder and a control to operate each hinged base (except Model ST324). Each control works in the same way. Push the control lever forward to extend the cylinder and pull the lever backward to retract the cylinder.

Use the skid steer controls to lift and tilt the Tree Spade.

### 3PTH Controls

As well as the controls provided for the skid steer, the tractor-mounted Tree Spade has two additional controls: LIFT and TILT. At all times when moving the Tree Spade, the LIFT and TILT controls are used, not the lifting cylinders for the three point hitch. The control levers work the same way as the blade controls: push the control lever forward to extend the cylinder and pull it back to retract the cylinder.

- Extending the lift cylinder lowers the Tree Spade; retracting it lifts the Tree Spade. The lift cylinder must be fully retracted when moving the Tree Spade.
- Extending the tilt cylinder tilts the Tree Spade forward; retracting the tilt cylinder tilts the Tree Spade backward. The tilt cylinder must be fully retracted when moving the Tree Spade.

### Loader Controls

There is a control for each blade cylinder and a control to operate each hinged base (except Model ST324). Each control works in the same way. Push the control lever forward to extend the cylinder and

pull the lever backward to retract the cylinder. Because the controls are located on the frame of the Tree Spade, a second operator is needed to operate them. Two hoses, each 25 feet in length are provided to connect the Tree Spade to the Loader's hydraulic supply.

Use the loader controls to lift and tilt the Tree Spade.

## Mounts

### *Mounting Plate (Skid Steer)*

The Tree Spade mounting plate is attached to the base of the Tree Spade. It has a projecting lip that fits above the two tabs on the top of the skid steer mounting place and holes along the bottom for the projecting pins on the skid steer. Once the Tree Spade is attached to the skid steer, you extend the pins to lock the Tree Spade in place.

### *Mounting Points (3PTH)*

There are three mounting points to attach the Tree Spade to a tractor three point hitch. The two lower mounts are at the bottom of the Tree Spade. Each mount has a pin and lock ring to secure it in place. The top mounting point consists of a link plate that connects the top mount of the three point hitch to the Tree Spade.

The link plate is an assembly of four plates held together by six nuts and bolts (½ inch). The middle plate's attaches to the tractor and the two outer plates attach to the Tree Spade.

The link has a single hole on the end that attaches to the tractor. A pin and lock ring attach the link to the tractor. On the other end of the link, three holes are provided to attach the link to the frame of the Tree Spade. You position the link on the Tree Spade frame according to the size of the tractor. With a larger, taller tractor, you position the link closer to the top of the Tree Spade frame. With a smaller, shorter tractor, you position the link closer to the bottom.

When attaching the link to the Tree Spade, you may have to loosen off the ½ inch fasteners to allow enough width for the link to fit the Tree Spade frame.

### *Mounting Plate (Loader)*

The Tree Spade mounting plate is attached to the base of the Tree Spade. While each loader is custom fit to the Tree Spade, generally the mounting plate has a projecting lip that fits above the two tabs on the top of the loader mounting place and holes along the bottom for the projecting pins on the skid steer. Once the Tree Spade is attached to the loader, you extend the pins to lock the Tree Spade in place.





### TR440/TR650 Trailer Operator Guide

Operating instructions: Safety First.

Watch 10 minute DVD before operating the unit.

Always ensure that people and animals are clear of moving parts.

When transporting units ensure that safety chains, pins & braces are attached.

Operating controls (10 spool hydraulic control levers for ST440) are on the driver side of the unit (operate hydraulic levers while standing clear of moving parts).

Move tree spade components slowly and steadily.

Controls --- Hydraulic Control Levers left to right.

Lever 1- Control Tongue Extension- (Shorten and Lengthen tongue)

Lever 2- Control Platform- (Swing Tree spade side to side)

Lever 3- Angle Bucket- (Angle Tree Spade up and down)

Lever 4- Lift Tree Spade- (Lower and Raise Tree Spade)

Lever 5- Rear Passenger Side Blade- (Lower and Raise blade)

Lever 6- Front Passenger Side Blade- (Lower and Raise blade)

Lever 7- Swing Blade Passenger Side- (Swing Blade in and out)

Lever 8- Swing Blade Driver Side – (Swing Blade in and out)

Lever 9- Front Driver Side Blade- (Lower and Raise Blade)

Lever 10- Rear Driver Side Blade- (Lower and raise Blade)



Safety Brace for Transport



Safety Pin for Transport

### Operating Step by Step Instruction

#### Prepare Planting Location

- 1) Position Tree Spade (Center of Spade place over desired tree location)  
(Remove Safety Chains, Safety Brace and Safety Pin)
- 2) Final location positioning can be made by adjusting levers 1 & 2
- 3) Lower tree spade using lever 4 and level tree spade using lever3. Make sure that the frame of tree spade is flat on the ground.
- 4) Make sure rear blades are in the “closed” position Levers 7 & 8
- 5) Push blades into the ground using levers 5, 6, 9 and 10. Rotate around the spade pushing one blade at a time until the spade begins to lift then ease it back until frame rest solidly on the ground until. Continue until all four blades are extended fully.
- 6) Lift the ground plug out using lever 4.

- 7) Lift the spade and ground plug to transport position. Shorten tongue as far as it will go. Attach safety chains, Safety Pin and Safety Brace.
- 8) Transport ground plug and deposit near tree that is to be moved. By lowering spade using levers 3 & 4 after removing safety chains.
- 9) Raise the blades using levers 5, 6, 9&10 to release ground plug.

#### Lifting out tree to be moved:

- 1) Open blades using levers 7 & 8. To avoid breaking tree branches, swing blades to outward position.
- 2) Back tree spade, centering tree in the center of blades.
- 3) Swing blades to closed position using Levers 7&8.
- 4) Follow steps 2-7 used in preparing planting location.
- 5) Transport tree too Planting Location.
- 6) Remove excess Roots

#### Planting Tree:

- 1) Position tree spade over prepared hole.
- 2) Remove Safety Chains, Safety Pin and Safety Brace.
- 3) Final positioning using levers 1&2.
- 4) Lower tree into hole using levers 3&4.
- 5) When tree is positioned properly raise blades using levers 5, 6, 9 and 10 removing one blade at a time.
- 6) Lift Tree Spade a bit using lever 4 and swing out rear blades using levers 7&8.
- 7) Lift tree spade completely using levers 3&4 to transport position and pull ahead with truck.
- 8) Swing blades to closed position when clear of tree.
- 9) Shorten tongue to shortest position and attach safety chains, pin and brace.  
Water your tree and move to next job.

## Section 2 – Safety

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The Tree Spade is an efficient and powerful piece of equipment that must be used properly to prevent injury or death to you or anyone else. At all times, you must ensure that you follow the instructions in this manual. If you are not sure how to carry out the tasks that this manual explains, stop immediately and contact your dealer or Baumalight for assistance.

1. Do not, for any reason, try to operate this equipment without having read and understood this manual.
2. Ensure that you follow the safety requirements explained by the manufacturers of any equipment that you use with the Tree Spade such as a skid steer or a tractor.
3. If for any reason you do not understand how to safely operate the Tree Spade, contact your dealer or Baumalight ([www.baumalight.com](http://www.baumalight.com)).

### Hazard Notices: Dangers, Warning, and Cautions

Throughout this manual, you will see hazard notices. Each of these notices will appear before the step where the hazard could occur.

You must follow the instructions provided in this manual as well as any applicable local workplace safety requirements to ensure your safety and that of your colleagues, and to avoid damaging the equipment. Do not proceed if you do not understand these instructions. You must also keep the manuals in a convenient location close to the equipment for reference. A container for this purpose is attached to the Tree Spade.

Hazard notices that are included in the text of the manual will alert you to hazardous situations that may arise in routine operation and maintenance, as well as unforeseeable misuse of the equipment. These hazards are grouped according to severity into three categories: danger, warning, and caution. You must obey all of these hazard notices.

#### **DANGER**

**INDICATES AN IMMEDIATELY HAZARDOUS SITUATION WHICH, IF NOT AVOIDED, WILL RESULT IN DEATH OR SERIOUS INJURY.**

#### **WARNING**

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

#### **CAUTION**

**Indicates a situation which, if not avoided, could result in property damage only.**

## Replacing Safety Signs

If the safety signs provided with the Tree Spade have been damaged and you can't read them, you can order spares. Each sign has a part number. Use this part number to order a replacement label. It is your responsibility to make sure that all labels are clearly displayed.

## Section 3 – Attaching the Tree Spade

The Tree Spade can be attached to a skid steer/loader using the mounting place or to a tractor using a three point hitch (3PTH).

### Attaching the Tree Spade to a Skid Steer/Loader

Before you attempt to attach the Tree Spade, you must read and understand all safety instructions. In this procedure, it should be noted that all loader mounting plates work more or less the same and so these are general instructions. Your Tree Spade has been built in accordance with the information provided by the manufacturer of your loader.

#### *Proceed as follows:*

1. Check the Tree Spade for any damage such as broken hydraulic lines, damaged slides, obstructions, or any other condition that prevents safe operation.
2. Ensure that the Tree Spade is on level ground and that you have clear, unobstructed access to the connection point of the Tree Spade.
3. Move the skid steer/loader close enough to the Tree Spade mounting plate to hook the top part of the skid steer adaptor plate under the lip of the Tree Spade mounting plate.
4. Tilt the skid steer/loader mounting plate so that it just lifts the Tree Spade.
5. Operate the locking lever on the adaptor plate to insert the locking pins into the holes in the bottom of the Tree Spade mounting plate.

#### **DANGER**

**ENSURE THAT THE HYDRAULIC LINE LABELLED TANK LINE (RETURN FLOW TO TANK) IS CONNECTED TO THE TANK RETURN PORT OF THE HYDRAULIC SUPPLY. FAILURE TO DO SO WILL RESULT IN REVERSE FLOW THAT WILL RUPTURE THE SAFETY PLUG IN THE VALVE BLOCK. THE PLUG AND A HOT SPRAY OF HYDRAULIC FLUID WILL STRIKE THE OPERATOR ON THEIR FACE OR BODY LEADING TO SERIOUS INJURY, INCLUDING POSSIBLE BLINDNESS.**

6. Attach the hydraulic lines. Connect the hose labelled PRESSURE LINE to the pressure supply port and the hose labelled TANK LINE to the TANK return line.
7. Position the controls so that you can access them and so that they do not hit any part of the skid steer/loader.

### Attaching the Tree Spade to a Tractor

Before you attempt to connect the Tree Spade to your tractor, you must read and understand all safety instructions. The first time you perform this procedure, you should allow for an hour or more. While this job can be done by one person, it is recommended that two people carry out this task:

- One person to operate the tractor and Tree Spade controls

- Another to connect the three point hitch links and hydraulic lines.

*Proceed as follows:*

1. Check the Tree Spade for any damage such as broken hydraulic lines, damaged slides, obstructions, or any other condition that prevents safe operation.
2. Ensure that the Tree Spade is on level ground and that you have clear, unobstructed access to the connection point of the Tree Spade.

**DANGER**

**BEFORE ALLOWING A PERSON TO GET BETWEEN THE TRACTOR AND THE TREE SPADE TO MAKE THE CONNECTIONS, ENSURE THAT THE TRACTOR DOES NOT MOVE BECAUSE IT COULD CRUSH THE PERSON STANDING BETWEEN THE TRACTOR AND THE TREE SPADE. REFER TO THE TRACTOR MANUFACTURER'S DOCUMENTATION SO THAT YOU CAN SAFELY PREVENT THE TRACTOR FROM MOVING.**

3. Back the tractor into position, leaving enough room to allow one person to work in between the tractor and the Tree Spade.

**WARNING**

**Because the controls are attached to the Tree Spade and they will move when the Tree Spade is lifted or tilted, ensure that you do not let them contact the Roll over Protection System (ROPS) when you operate the controls. It is possible that you may be pinched between the ROPS and the controls.**

4. Position the controls so that you can access them with enough clearance so that they do not contact the Roll over Protection System (ROPS) or any other part of the tractor. This is important because when you operate the controls to lift the Tree Spade, the controls will move.

**DANGER**

**ENSURE THAT THE HYDRAULIC LINE LABELLED TANK LINE (RETURN FLOW TO TANK) IS CONNECTED TO THE TANK RETURN PORT OF THE HYDRAULIC SUPPLY. FAILURE TO DO SO WILL RESULT IN REVERSE FLOW THAT WILL RUPTURE THE SAFETY PLUG IN THE VALVE BLOCK. THE PLUG AND A HOT SPRAY OF HYDRAULIC FLUID WILL STRIKE THE OPERATOR ON THEIR FACE OR BODY LEADING TO SERIOUS INJURY, INCLUDING POSSIBLE BLINDNESS.**

5. Attach the hydraulic lines. Connect the hose labelled PRESSURE LINE to the pressure supply port and the hose labelled TANK LINE to the tank return line.
6. Ensuring that there are no other people in between the tractor and the Tree Spade, move the tractor close enough to align the lower two points of the three point hitch to the mounting points on the Tree Spade. Lock the tractor in place.
7. Position the lower links a distance of 10 inches above the ground (important to do before attaching top link).
8. Insert the locking pins and secure them with the locking rings.
9. Ensure that the frame of the tree spade is vertical (with pin centres 10 inches above ground level). If this is not done, this will limit the ability of the spade to tilt.

10. Attach the top link to the Tree Spade. Position the link so that the mounting hole on the tractor end is at the same height as the upper link on the tractor. The frame of the Tree Spade must be as close to vertical as possible (very important to do this after step 7).

**Note:** If the link will not fit on the Tree Spade, you may have to loosen the six fasteners that hold the link together.

**Note:** It is extremely important to ensure that when you position the tractor that the tractor end of the link is aligned with the upper mount on the tractor. The mating surfaces of the link and the yoke on the tractor should be parallel. If these two points are not aligned, it will be extremely difficult to insert the locking pin. Once the link is attached to the Tree Spade, you should not remove it for any reason other than attaching the tree spade to a different tractor.

**DANGER**

**WHEN MOVING THE TREE SPADE WITH THE LIFT AND TILT CONTROLS, THE VALVE BLOCK WILL MOVE TOWARDS YOU AS YOU LIFT THE TREE. THIS MOVEMENT, IF NOT ALLOWED FOR, CAN EXERT PRESSURE ON THE CONTROL LEVERS IN ADDITION TO THE PRESSURE THAT YOU ARE APPLYING. YOU MUST ALLOW FOR THIS POSSIBLE INCREASE IN CONTROL LEVER MOVEMENT AND REDUCE YOUR MOVEMENT OF THE LEVERS TO MAINTAIN CONTROL OF LIFT AND TILT. OTHERWISE, THE VALVE BLOCK CAN PIN YOU AGAINST THE TRACTOR CAUSING DEATH OR SERIOUS INJURY. AT ALL TIMES, YOU MUST BE AWARE OF HOW FAST THE MOVEMENTS TAKE PLACE AND HOW THE VALVE BLOCK IS MOVING.**

11. Using the LIFT and TILT controls of the Tree Spade, move the rigid link into position so that the hole in the link aligns with the two holes of the yoke on the tractor.
12. Insert the locking pin and secure it with the locking ring.
13. Check the following:
  - a. All mounts to ensure that the pins are fully inserted and that all locking rings are securely in place.
  - b. All fasteners must be tight. This includes the three fasteners that attach the link to the Tree Spade and the six fasteners that hold the link plates together.
  - c. Both hydraulic hoses are securely attached (no leaking).
  - d. The control valves are positioned so that they will not hit the ROPS or any other part of the tractor when the Tree Spade is moved (lift, lower, and tilt).



## Section 4 – Operating the Tree Spade

### Removing a Tree

Ensure that you have read and understood all safety instructions.

If the tree is on a grade, move the prime mover so that it is above the tree on the grade. This will give you the advantage of having more weight on the blades as they cut into the ground. When inserting the blades, the prime mover should be in park position. This will prevent the tractor from rolling and bending the blades.

This same procedure can be used to dig a hole for a tree.

#### *Proceed as follows:*

1. If the Tree Spade is equipped with a hinged base, open the hinged base.
2. Position the Tree Spade so that the tree is centred in the Tree Spade base.
3. Close the hinged base.

**CAUTION**

**If the frame does not completely touch the ground, do not reposition or tilt the Tree Spade if the blades are in the ground as this could bend the blades.**

4. Lower the inside (closest to the operator) blade about a quarter of its length. Then retract the blade a small amount to make sure the base touches the ground. This applies to all blades.
5. Insert the second blade a quarter of its length and retract it slightly.
6. Continue inserting each blade a quarter length (and slightly retracting it) until all blades are inserted to their full depth.

**CAUTION**

**The base of the Tree Spade must be on the ground before operating the next blade. If you try to dig with a raised base, you will have a smaller root-ball which could damage the tree.**

7. Lift the Tree Spade completely and then tilt it all the way back.

**CAUTION**

**With a tractor-mounted Tree Spade, when lifting the tree out of the hole, use the Tree Spade controls to lift and tilt the tree. You cannot use the three point hitch because the frame of the tree spade is rigid between the top and bottom links. If you try to lift using the lower arms of the three point hitch, you may damage the tractor's links.**

8. Apply the brake to ensure the prime mover is not going to move and then cut any projecting roots.
9. Once all roots are cut, you can move the tree to its new location.

## Planting a Tree

Ensure that you have read and understood all safety instructions.

If the tree is on a grade, move the prime mover so that it is above the hole where you will plant the tree on the grade.

1. Position the tree above the hole where you want to plant the tree.
2. Tilt and lower the Tree Spade so that the tree fits into the hole.
3. Retract the three blades.
4. Open the hinged base.
5. Back the prime mover away from the tree.

## Basketing a Tree

It is recommended that you basket the tree in the hole that you removed the tree from. The benefits of putting the basket in the hole is that the tree will not topple over as easily and it keeps the control levers down at a lower (more comfortable) position if the spade does not have to be raised up. It also means that the tree will be more stable in a hole in a basket than sitting on top of the ground.

Most baskets are slightly flat at the bottom. To get a flat cone or slightly flat bottom on the cone (truncated), you can retract each blade six inches. This will allow the point of the cone to be compressed. You must remove the dirt tip by either rubbing the bottom of the cone on the ground or knocking it off by hand. This will make the root ball fit hand in glove into the cone of the basket.

For the 3PTH, it is recommended that the tree be basketed in the hole it was removed from so that you will have enough clearance to lift the tree when you are ready to move it. If the basket is in the hole, the top edge is not as high and thus you will have enough clearance to lift the tree spade.

# Section 5 – Maintenance

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## Operator Maintenance

Maintenance of your Tree Spade is very simple. All that you have to do is carry out the following tasks:

1. Before use, make sure the slides are clean and free of obstructions. Remove any excess dirt.
2. If needed, lubricate the slides with graphite. Avoid the use of oil or grease as they will cause dirt to collect. In turn, this accumulation of dirt will act as an abrasive which may lead to premature wear of the slides.
3. With a dry, clean rag, wipe the surface of the hydraulic pistons. No lubrication of these surfaces is required. However, if you will not be using the Tree Spade for a period of time, you may want to apply a surface coat of lubricant or other anti-corrosion agent to prevent surface corrosion of the piston. Ensure that this material is removed before you operate the Tree Spade.
4. Grease the grease nipples for the hinged base. These grease nipples are found at each end of the cylinder and on the top of the hinge. At a minimum, these should be greased once a month or more if the Tree Spade is used frequently.
5. Grease the pivot points for the frame of the 3PTH mount. This includes the attachment points for the cylinders and the hinges for the links.
6. Keep hydraulic level close to bottom level indicator plug but make sure the cylinders are all collapsed to check this. Be sure to leave room in top of tank for excess return.

## Repairs

For any repairs that are required, contact your authorized dealer.

## Section 6 – Troubleshooting

Fault	Probable Cause	Remedy
<b>Blades will not cut into the ground</b>	Insufficient pressure because of low hydraulic oil level	Check level of oil in the tractor supply. Replenish as needed.
	Hydraulic hoses not connected properly	Connect the hose labelled PRESSURE LINE to the pressure supply port and the hose labelled TANK LINE to the tank return line.
	Slides obstructed by dirt	Clean the slides.
<b>Prime mover lifts off the ground when attempting to drive the blades into the ground</b>	Started with the blade that is farthest from the operator. The ground may be too dry.	<ul style="list-style-type: none"> <li>• Insert the closest blade first.</li> <li>• Wait until the ground is moist. You can soak the ground for about half an hour.</li> </ul>
<b>3PTH – cannot move the Tree Spade because there is not enough clearance between the Tree Spade and the ground</b>	The frame of the Tree Spade tilts away from the tractor which reduces the lifting height of the Tree Spade	Re-connect the Tree Spade so that the frame is vertical when it is connected to the tractor. Refer to <i>Attaching the Tree Spade to a Tractor</i> on page 17 for the correct positioning.
<b>3PTH – the tree spade does not touch the ground (not enough ground pressure)</b>	The Tree Spade frame is tilts towards the tractor.	Re-connect the Tree Spade so that the frame is vertical when it is connected to the tractor. Refer to <i>Attaching the Tree Spade to a Tractor</i> on page 17 for the correct positioning.

## Section 7 – Specifications

FEATURE	ST324	SS330	ST440	ST650
<b>Tree Size (Evergreen)</b>	2"	3"	4"	5"
<b>Tree Size (Hardwood)</b>	1.5"	2.5"	3"	4"
<b>Root Ball Diameter</b>	24"	30"	40"	50"
<b>Root Ball Depth</b>	23"	29"	30"	43"
<b>Blade Angle</b>	25	25	25	25
<b>No. of Blades</b>	3	3	4	6
<b>Blade Thickness</b>	1/4" High Alloy	3/8" Mild Steel	1/4" High Alloy	1/4" High Alloy
<b>Slides</b>	Steel	Steel	Steel	Steel
<b>Blade Truncation</b>	Semi	Semi	Full	Semi
<b>Outside Towers Swing Open (Swing Hinge Frame)</b>	No	Yes	Yes	Yes
<b>Operator Controls</b>	Hydraulic	Hydraulic	Hydraulic	Hydraulic
<b>Hydraulic Flow Requirement (GPM)</b>	5-25	5-25	5-25	5-25
<b>Hydraulic PSI (minimum)</b>	2,500	2,500	2,500	2,500
<b>Hydraulic Remotes Required</b>	1	1	1	1
<b>Skid Steer Attachment</b>	Universal skid steer plate on all models			
<b>3-Point Hitch Adapter - Availability / Model</b>	Yes / 6M	Yes / 7M	Yes / 7M	Yes / 9M
<b>Loader Adapter - Availability / Model</b>	Yes / 10M	Yes / 10M	Yes / 10M	Yes / 15M
<b>Rec. HP for Front Loaders Mounted</b>	50	65	120	200
<b>Rec. HP for Skid Steer Mounted</b>	45	60	80	110
<b>Rec. HP for 3-PTH (no loader for counter weight)</b>	40	55	90	120
<b>Rec. HP for 3-PTH (with loader)</b>	30	45	65	90
<b>Unit Shipping Weight (lbs.)</b>	990	1,450	1,850	3,025
<b>Unit Weight with Root Ball</b>	1,290	1,950	3,050	5,150
<b>Unit Shipping Dimensions (L x W)</b>	4'x6'	4'x7'	5'x7'	8'x8'
<b>Width- Bottom (Top)</b>	48" (75")	48" (90")	66" (84")	50" (96")
<b>Length - Bottom (Top)</b>	48" (68")	50" (81")	58" (84")	86" (112")

## Section 8 – Illustrated Parts List

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An illustrated parts list is available online at [www.baumaligh.com](http://www.baumaligh.com) or you can obtain one by fax or from your local dealer.

## Section 9 – Warranty

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### Conditions

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 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 Centre.

If a difficulty develops with the product, you should contact your nearest Authorized Service 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.

Unit or parts should be returned at the customer's expense to the nearest repair location or Authorized Service Centre. Damage in-transit is not covered by warranty. Include original purchase receipt with any claim (keeping a copy for your files).

The distributor's liability under warranty 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 Centre, call the manufacturer.

**THE WARRANTY IS VOID IF YOUR TREE SPADE IS NOT REGISTERED.**







# Section 10 – Working With Trees

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While your Tree Spade from Baumalight makes it easy to transplant trees, Baumalight wants you to be aware of what it takes to protect your trees while you are working with them.

## 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 than 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.

## 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.

## 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

### 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.

### 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.

### 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.

## 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.

## 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.

## 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.

## 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.

## 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).

## 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.

### 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 your 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.

### 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.

### 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.*

### 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.

### 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.

### 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.

### 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.