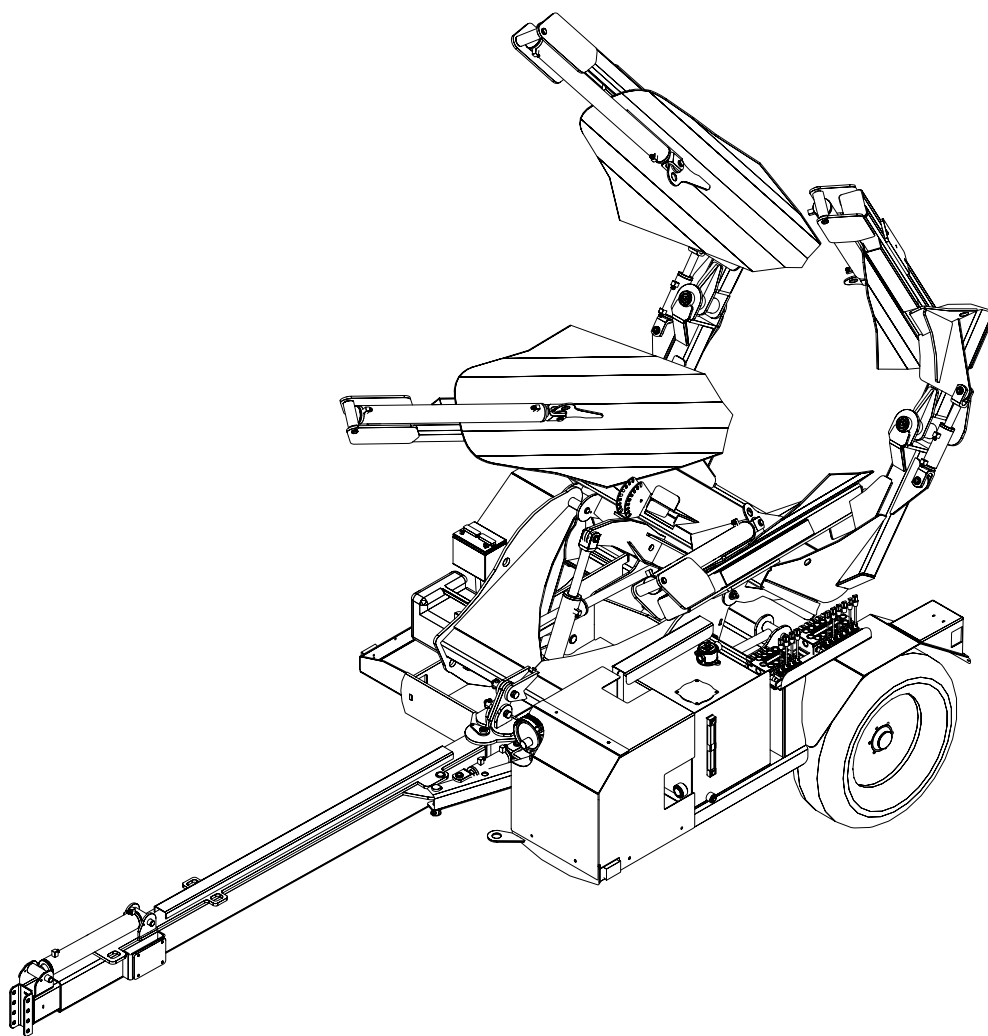




BAUMALIGHT™

TR330, TR440 And TR650 Tree Spades

OPERATOR'S MANUAL

Issue Date: May 2023



WARNING

Breathing engine exhaust exposes you to chemicals known to the State of California to cause cancer and birth defects or other reproductive harm.

Always start and operate the engine in a well-ventilated area.

If in an enclosed area, vent the exhaust to the outside.

Do not modify or tamper with the exhaust system.

Do not idle the engine except as necessary.

For more information go to www.P65Warnings.ca.gov.



WARNING

Batteries, battery posts, battery terminals, and related accessories can expose you to chemicals including lead and lead compounds, which are known to the State of California to cause cancer and birth defects or other reproductive harm.

For more information go to www.P65Warnings.ca.gov.



Following is a list of videos and documents available on Baomalights website and also on YouTube to help and enhance maintaining the tree spade. The list below was current at the time this manual was issued. Additional content may be available.

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1 INTRODUCTION

1.1 Overview

Congratulations on your choice of a Baumalight Tree Spade. This equipment has been designed and manufactured to meet the needs of a discriminating buyer for efficient operation.

Safe, efficient and trouble free operation of your tree spade requires that you and anyone else who will be operating or maintaining the tree spade, read and understand this Operator's Manual.

This manual covers the Baumalight TR Series Tree Spades. Use the Table of Contents as a guide to locate required information.

Keep this manual handy for frequent reference and to pass on to new operators or owners. Call your Baumalight dealer, distributor or the factory if you need assistance, information or additional copies of the manuals.

When this machine is worn out and no longer in use, it should be returned to the retailer or other party for recycling.

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

1.2 Intended Use And Foreseeable Misuse

The Tree Spade is designed to be used by experienced operators, trained in the safe operation of an tractor and trained in the hazards related to using the tree spade and the safe use of the tree spade for the intended purpose. Operators will require personal protective equipment to reduce the risk from some hazards that cannot be completely eliminated or controlled by the design of the tool.

Care is required to ensure that the tree spade will not come across metallic objects, stones or other materials.

The tree spade is not designed for use in hazardous atmospheres where there is a risk of fire or explosion due to flammable gases or vapors. Use in hazardous, explosive atmospheres is prohibited.

Serious injury or death of the operator or bystanders may be caused if the tree spade is misused. Misuse may also cause damage to the machine carrying the implement.

2 SAFETY

2.1 Safety Alert Symbol And Safety 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.

2.2 Operational Hazards



WARNING

Prevent serious injury or death.

Read and understand this manual before operating the tree spade.

Always stop engine and remove key before leaving operators station.

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.

Disconnect and lockout power source before adjusting or servicing.



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 properly attached to towing vehicle before operation or transport.



WARNING

Protect from flying debris.

Wear proper safety glasses, goggles, or a face shield to protect from flying debris.

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 Baumalight.

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.

Replace Safety Signs

- Replace missing or damaged safety signs.
- Safety signs are identified in Section 3 of this manual.
- Replacement safety signs are available from your Baumalight dealer.

Do Not Allow Riders

- NEVER lift or carry anyone on the Tree spade.
- NEVER use Tree spade as a work platform.
- NEVER allow passengers on the Tree spade.

Lower Operating Speed

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

Avoid 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.

Avoid Powerlines & Underground Utilities

Have underground utilities located before beginning work. In the US or Canada, call 811 (US) or 888-258-0808 (US and Canada). Also contact any local utilities that do not participate in the One-Call service. In countries that do not have a One-Call service, contact all local utility companies to have underground utilities located.



DANGER

Prevent electrocution and/or explosion.

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

Electrocution can occur without direct contact.

Contacting a gas line may result in an explosion.

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

Detach Tree Spade Safely

Detach tree spade on a firm and level surface. Tree spade may fall over if detached on sloping or soft surface. Be sure people, livestock and pets are clear of machinery.

Relieve hydraulic pressure before disconnecting hydraulic hoses. See your tractor Operator's Manual.

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.

Avoid Loud Noise



WARNING

Prolonged exposure to loud noise can cause impairment or loss of hearing.

Wear a suitable hearing protective device such as earmuffs or earplugs to protect against objectionable or uncomfortable loud noises.

Hazards From Modifying Equipment

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



WARNING

Carbon monoxide hazard.

Always start and operate the engine in a well-ventilated area.

If in an enclosed area, vent the exhaust to the outside.

For more information go to www.P65Warnings.ca.gov.

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 (See Tractor Operator's Manual) before connecting or disconnecting hydraulic hoses. 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.

2.3 Maintenance Hazards

Before servicing, park machine on a firm and level surface, remove key, set parking brake 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 Baumalight.

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

Do not make unauthorized modifications. Contact Baumalight before you weld, cut/drill holes, or make any other modifications.

Always use Baumalight replacement parts.



WARNING

Moving parts can crush and cut.

Keep clear of moving components.

Follow lockout procedure before servicing.



WARNING

Entanglement hazard.

Keep clear of moving components.

Wear proper protective equipment appropriate for the job.



WARNING

Crushing hazard.

Before performing inspections, service or maintenance:

- Park machine on firm, level surface.
- Engage parking brake on towing vehicle or chock tires on tree spade.
- Turn engine off and remove key.
- Place “Do Not Operate” tag on control panel.



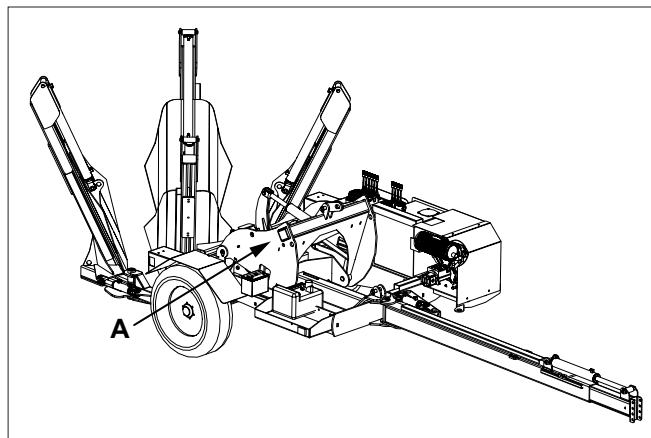
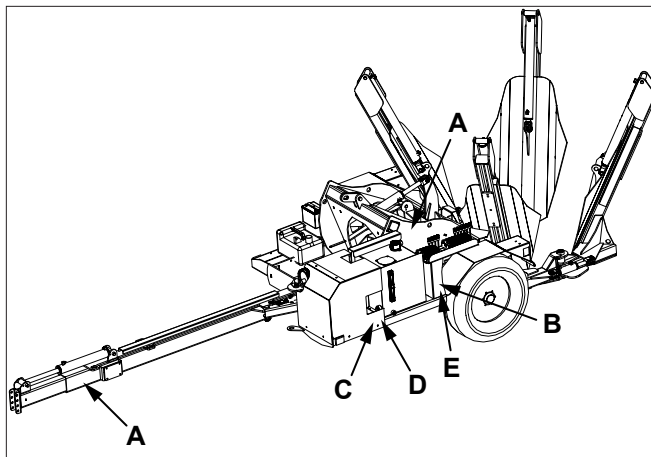
WARNING

Burn hazard.

Hot and high pressure hydraulic oil.

Allow oil to cool before servicing.

3 SAFETY SIGNS



- A. D005127  WARNING - Pinch hazard. Keep back while machine is operating.



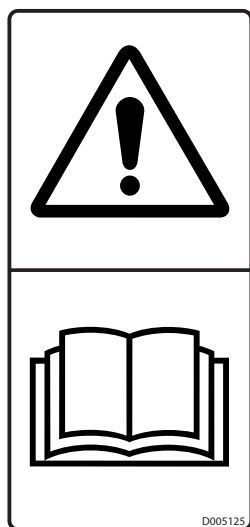
- B. D005262  WARNING - P65 warning information.



WARNING: This product can expose you to chemicals including 1,3-Butadiene and lead, which are known to the state of California to cause cancer and birth defects or other reproductive harm. For more information go to www.P65Warnings.ca.gov.

D005262

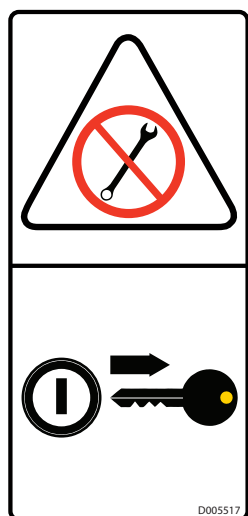
- C. D005125  WARNING - Read and understand safety signs on the machine and operating instructions in this manual before operating machine.



- E. D005126  WARNING - Pressurized fluid hazard. Pressurized fluids can penetrate the skin. Do not check for leaks with your hands. Keep back a safe distance when pressurized.



- D. D005517  WARNING - Remove key before servicing.



4 ASSEMBLY

4.1 Install Blade Assembly

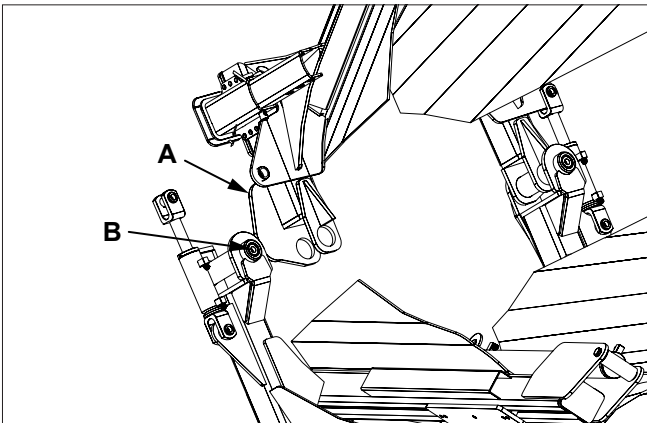
CAUTION

Prevent injury.

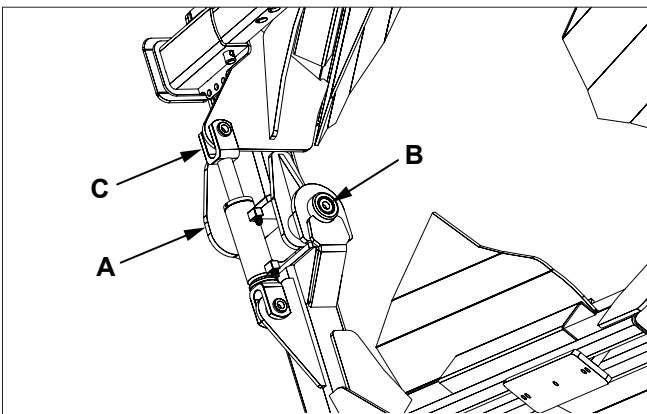
The blade assembly weight is 397 lbs (180 kg).

Use an adequate lifting device to install blade assembly.

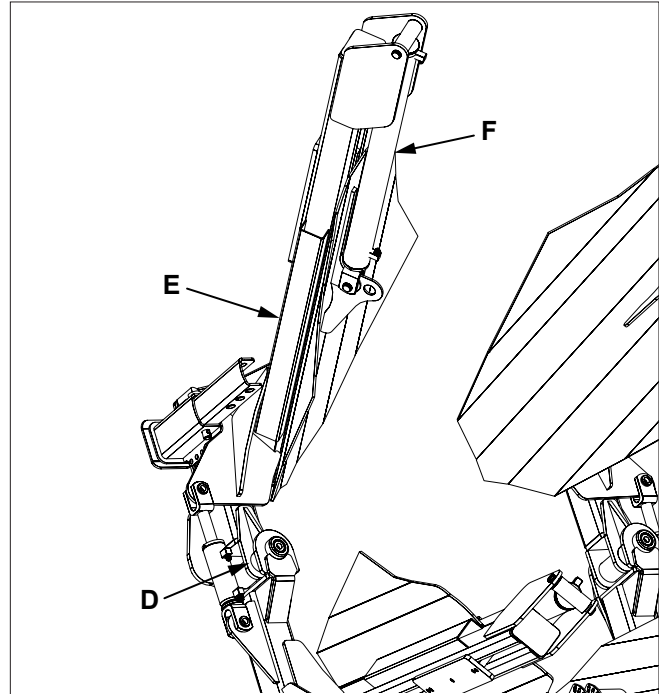
1. Connect an adequate lifting device to blade assembly (A).
2. Remove pivot pin (B).



3. Position blade assembly (A) and install pivot pin (B).
4. Connect hydraulic cylinder clevis (C) to blade assembly (A) with pin.



5. Route hydraulic hoses on the outside of pivot point (D) and under cover (E) to shovel cylinder (F).



6. Connect hose with red cable tie to cylinder fitting with red cable tie. Connect other hose to other cylinder fitting. Verify hoses are clear of pinch points.

4.2 Install Hitch

CAUTION

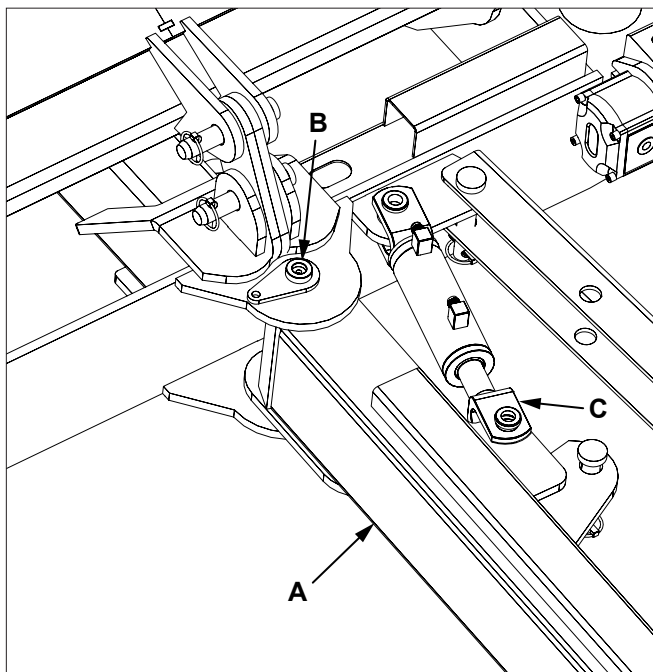
Prevent injury.

The hitch assembly weight is 303 lbs (138 kg).

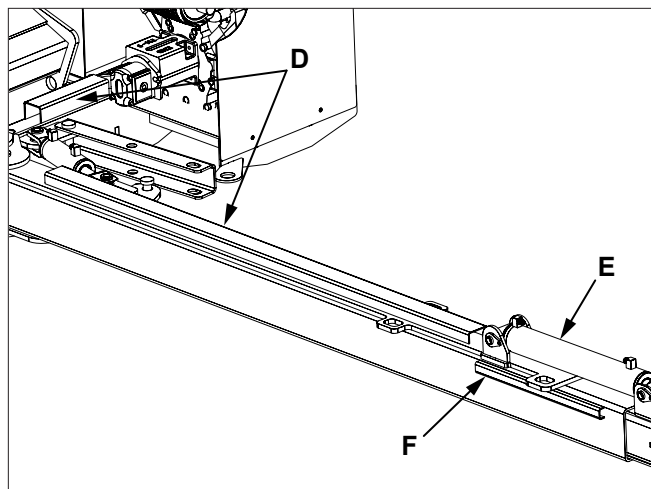
Use an adequate lifting device to install hitch assembly.

1. Connect an adequate lifting device to hitch assembly (A).

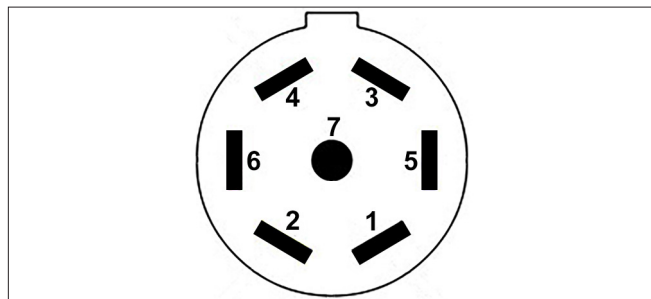
2. Remove pin (B).
3. Position hitch assembly (A) and install pin (B).
4. Connect hydraulic cylinder clevis (C) to hitch (A) with pin.



5. Route hydraulic hoses coiled on the main frame under covers (D) and over top of hitch cylinder (E).
6. Connect hose with red cable tie to hitch cylinder fitting with red cable tie. Connect other hose to other hitch cylinder fitting. Verify hoses are clear of pinch points.
7. Route trailer wire harness under covers (D) and cover (F).



8. Use cable ties to secure hoses away from pinch points and moving parts. Do not tie hose to telescoping part of hitch.
9. Connect wire harness to trailer plug using the below diagram. Trailer may not use all pins on the connector.



Male Trailer Connector With Female Pins

1. Ground
2. Trailer Brake Control
3. Tail Lights / Running Lights
4. Auxiliary
5. Left Turn Signal And Brake Light
6. Right Turn Signal And Brake Light
7. Backup Lights

5 OPERATION

5.1 Preparation For Use

- ⚠ 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 engine before leaving operators 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.

⚠ WARNING

Pressurized fluids can penetrate the skin.

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.

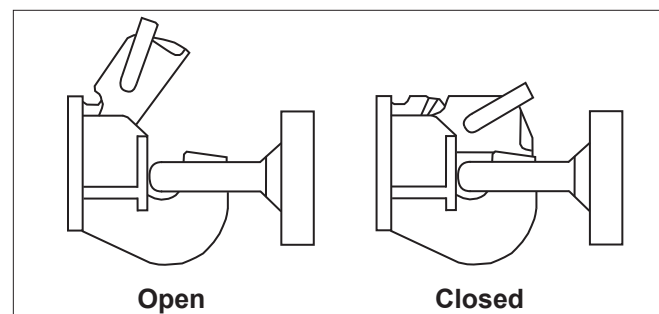
5.2 Attach To Tow Vehicle

⚠ WARNING

To prevent injury or machine damage put transmission in park.

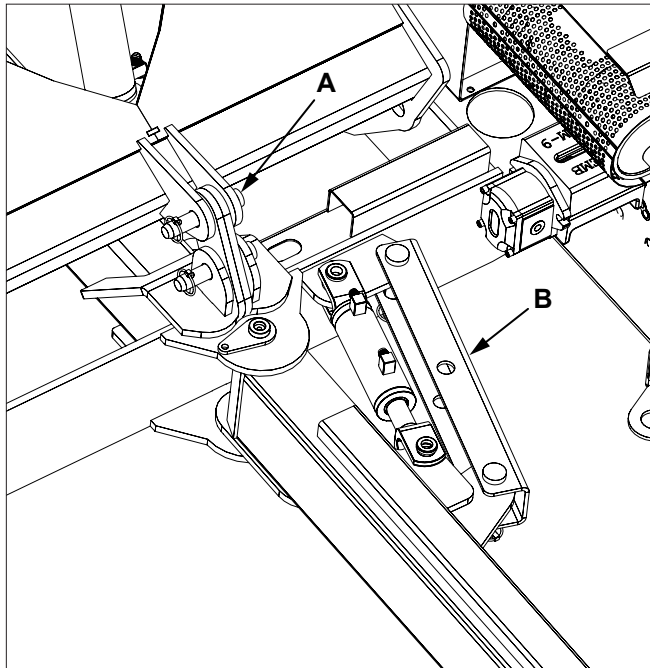
Never position yourself between tow vehicle and tree spade.

1. Read and follow all safety instructions.
2. Lubricate the pintle and ring with a thin layer of automotive bearing grease. Using the jack, raise the ring above the open pintle height.
3. Slowly back up the tow vehicle so pintle is near or aligned under the ring.
4. Using the trailer jack, lower the trailer so the ring enters the pintle. If the ring does not line up with the pintle, adjust the position of the tow vehicle.
5. Close the pintle catch and install and secure the lock-pin or padlock so the pintle catch cannot be opened.

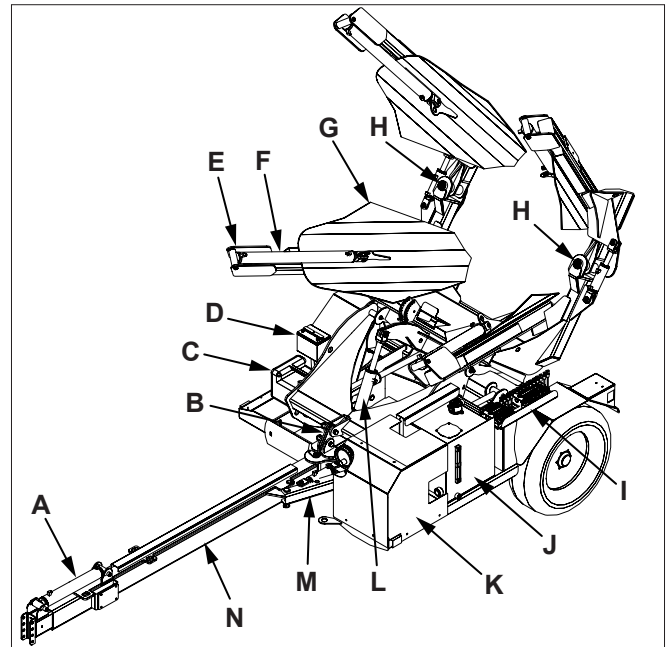


6. Verify pintle is securely closed and latched.
7. If the ring cannot be secured to the pintle, do not tow the trailer. Contact your dealer for assistance.
8. Lower the trailer so that its full tongue weight is held by the pintle and tow vehicle. Pivot jack to the horizontal position and latch with pin.

9. Visually inspect the safety chains and hooks for wear or damage. Replace worn or damaged safety chains and hooks before towing.
10. Rig safety chains so that they cross under the coupler. Loop around a frame member of the tow vehicle or to holes provided in the hitch system. Do not attach safety chains to an interchangeable part of the hitch assembly.
11. Provide enough slack to permit tight turns, but not be close to the road surface to drag.
12. Connect electrical connect to tow vehicle.
13. Verify transport pins (A) and plates, and hitch stabilizer (B) are installed and locked in position before towing trailer.

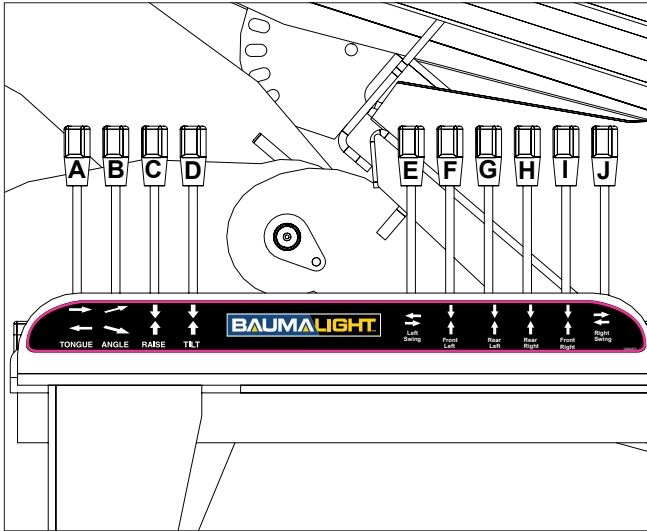


5.3 Machine Components



- A. Hitch Telescoping Cylinder
- B. Transport Latch
- C. Engine Fuel Tank
- D. Engine Battery
- E. Spade Tower
- F. Spade Hydraulic Cylinder
- G. Spade
- H. Hinged Spade Frame
- I. Hydraulic Control Valves
- J. Hydraulic Reservoir
- K. Engine Enclosure
- L. Spade Tilt Cylinder
- M. Hitch Stabilizer
- N. Hitch

5.4 Hydraulic Functions



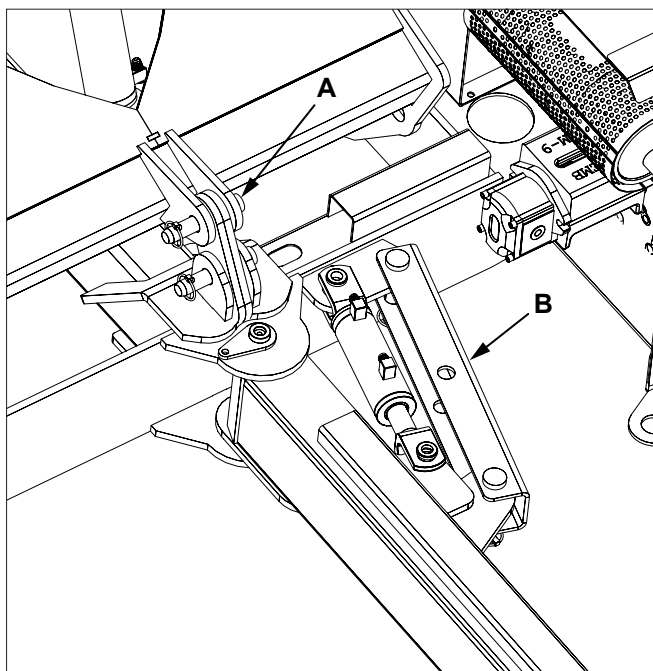
- A. Hitch Tongue Extend / Retract
- B. Hitch Angle
- C. Spade Frame Raise / Lower
- D. Spade Frame Tilt
- E. Left Swing Cylinder
- F. Front Left Blade Cylinder
- G. Rear Left Blade Cylinder
- H. Rear Right Blade Cylinder
- I. Front Right Blade Cylinder
- J. Right Swing Cylinder

5.5 Pre-Operation Check List

- Verify that tree spade is properly attached to tow vehicle.
- It is operators responsibility to perform the following checks prior to operation of equipment.
 - Review and understand this manual and operating unit 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 wires, cables and pipelines.
 - Refer to engine OEM operator's manual for prestarting instructions.

5.6 Transporting

1. Verify tree spade is properly connected to tow vehicle. See section 5.2 Attach To Tow Vehicle.
2. Raise and tilt spade frame into storage position.
3. Install transport pins (1) and plates, and hitch stabilizer (2) before towing trailer.



4. Shut off on-board engine.
5. Travel at a reasonable and safe speed.

5.7 Detach Tree Spade

WARNING

Prevent serious injury or death.

1. Park machine on firm, level surface.
2. Engage parking brake.
3. Disconnect hydraulic drive.
4. Shut off engine and remove key.

1. Park on a level surface.
2. Chock tree spade tires.
3. Shut off on-board engine and remove key.
4. Rotate and lock tongue jack in the vertical position.
5. Disconnect safety chains and electrical connector from tow vehicle.
6. Open pintle and rotate jack to raise ring above pintle.
7. Slowly drive tow vehicle away from tree spade.

5.8 First Time User Tips

- First, operate all functions in a clear area with throttle at low idle to get a good feel for the controls.
- Move the tree spade slowly until you have a better feel how much the unit can take.
- Each operator must experiment to find a technique that works for them in their application.

WARNING

Always shut off engine before leaving operator controls.

5.9 Digging A Tree

Have local utilities locate and mark underground wires, cables, pipelines and other hazards before operation.

DANGER

Prevent electrocution and/or explosion.

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

Electrocution can occur without direct contact.

Contacting a gas line may result in an explosion.

Have underground utilities located before beginning work. In the US or Canada, call 811 (US) or 888-258-0808 (US and Canada). Also contact any local utilities that do not participate in the One-Call service. In countries that do not have a One-Call service, contact all local utility companies to have underground utilities located.

WARNING

Moving parts can crush and cut.

Keep clear of moving components.

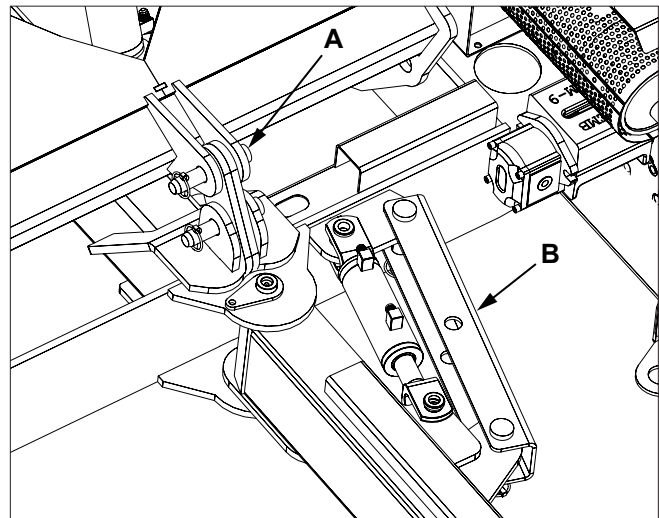
NOTICE

Prevent equipment damage.

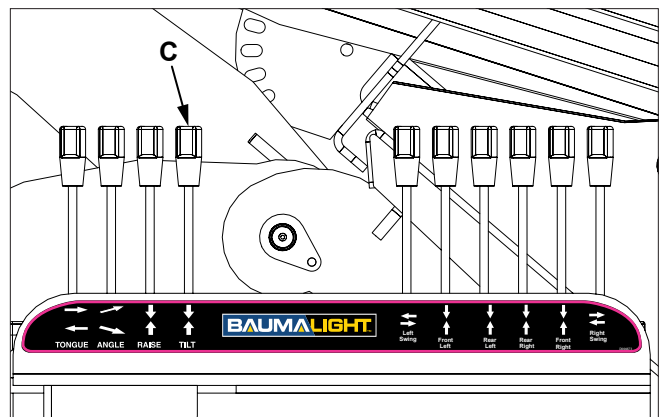
Never open or close swing hinge with spades extended.

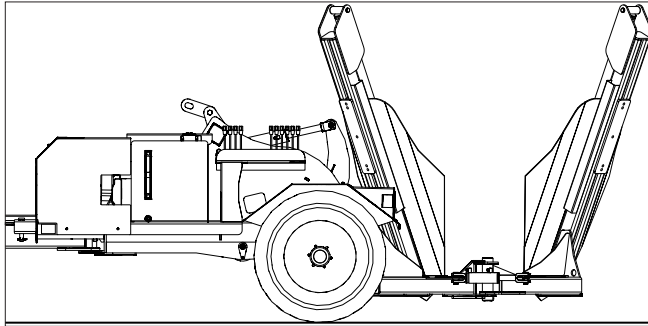
Never operate spades with swing hinge open.

1. Attach tow vehicle to tree spade. See 5.2 Attach To Tree Spade in this section.
2. Start on-board engine.
3. Increase engine RPM to operating speed.
4. Disconnect transport pin (A) and remove hitch stabilizer (B).

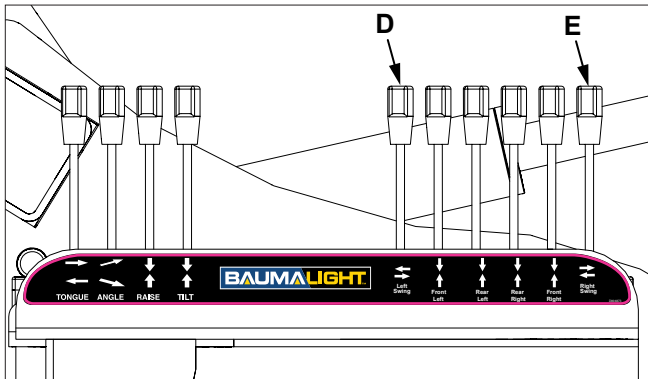


5. Move tilt lever (C) to position tree spade in the working position.

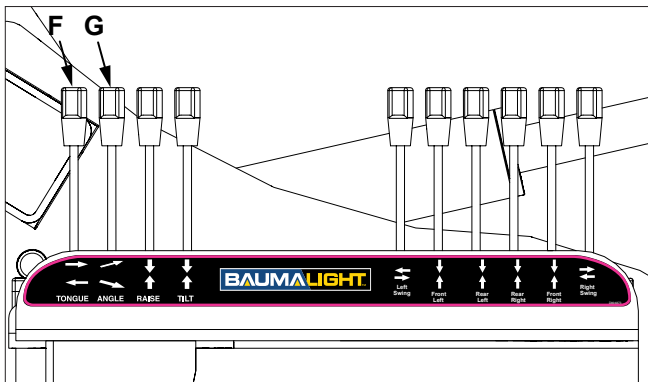




6. Move levers (D) and (E) to open swing hinges.

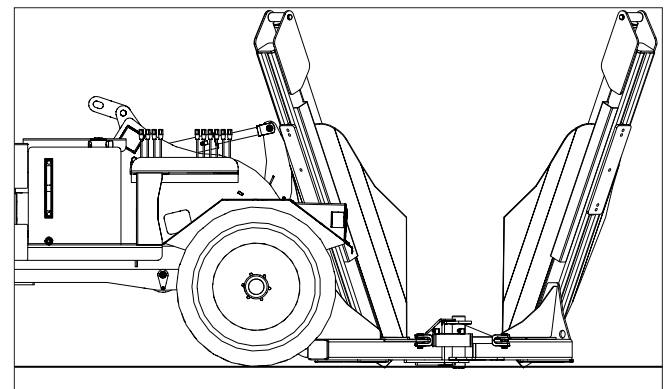
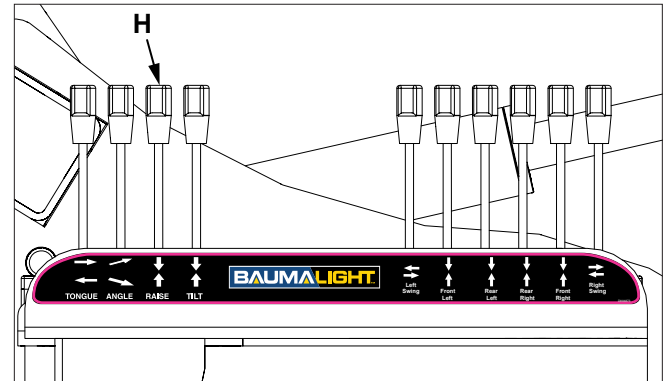


7. Move tow vehicle as needed to position tree spade so tree is in center of base. Use tongue lever (F) and angle lever (G) to make small adjustments as needed to center tree in base.



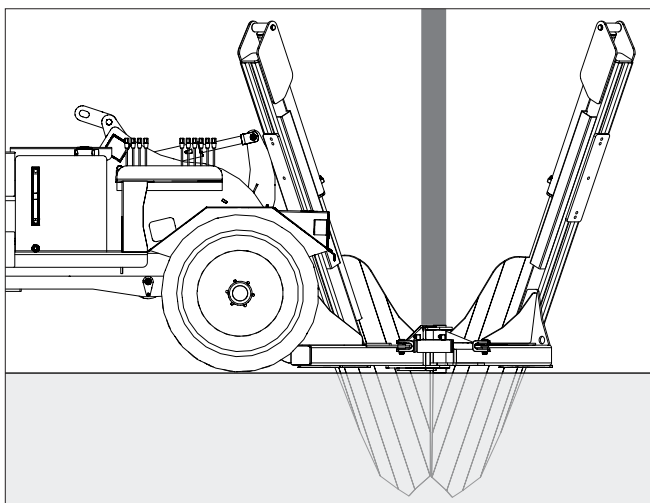
8. Move levers (D) and (E) to close swing hinges.

9. Move raise lever (H) to lower tree spade to ground. Spade should be level and straight with tree.



It is important to keep tree spade from lifting off ground during digging process. In hard soil, it may be necessary to slightly retract spades after every downward push to keep tree spade flat on the ground.

10. Extend rear left spade. Slightly retract as needed to keep frame flat on the ground.
11. Extend rear right spade and front middle spade one at a time. Slightly retract as needed to keep frame flat on the ground.
12. Extend each spade individually until all spades have reached full depth.



13. Move raise lever (H) to lift tree out of ground.
14. Move tilt lever (C) to tilt tree spade back.
15. Shut off on-board engine.
16. If you will be traveling on a road, connect transport pin (A) and install hitch stabilizer (B).
17. Move tree spade away from hole.



WARNING

Moving parts can crush and cut.

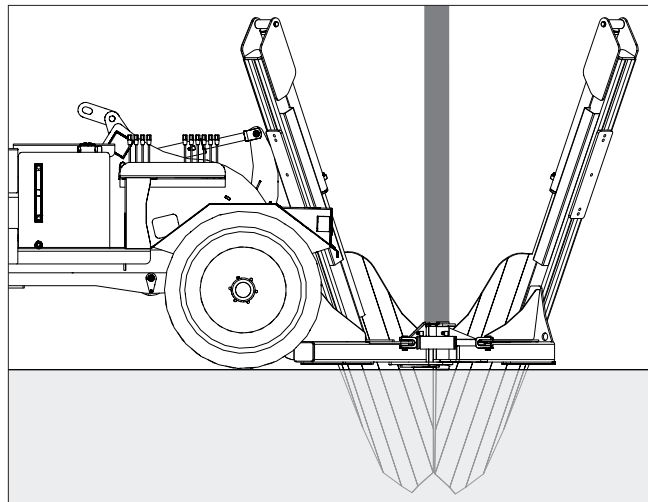
Keep clear of moving components.

Lockout operating unit before leaving operators seat.

18. Shut off tow vehicle engine, set parking brake, stop engine and remove key.
19. Cut any protruding roots.

5.10 Planting A Tree

1. Position tree above hole.
2. Tilt and lower the tree spade so that the tree fits into the hole.



3. Retract spades.
4. Move raise lever to raise tree spade off ground a few inches.
5. Open swing hinges.
6. Move tilt lever to tilt tree spade back.
7. Move tree spade away from tree.

5.11 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 spade. You must remove the dirt tip. This will make the root ball fit the basket.

6 SERVICE AND MAINTENANCE

6.1 Maintenance



WARNING

Moving parts can crush and cut.

Keep clear of moving components.

Lockout operating unit before performing inspections or maintenance.

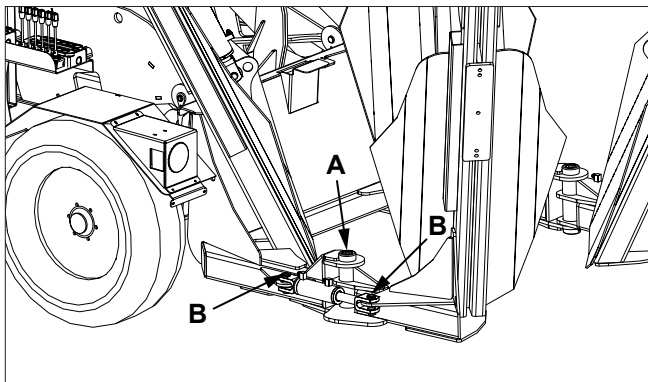
6.2 Inspections

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

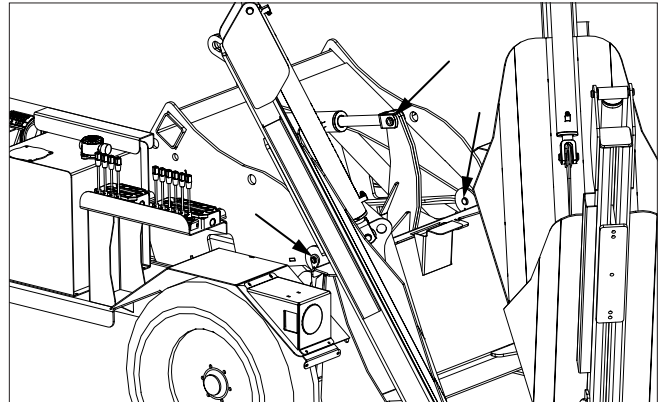
Inspect the unit for any damage. Repair or replace parts as needed.

6.3 Lubrication

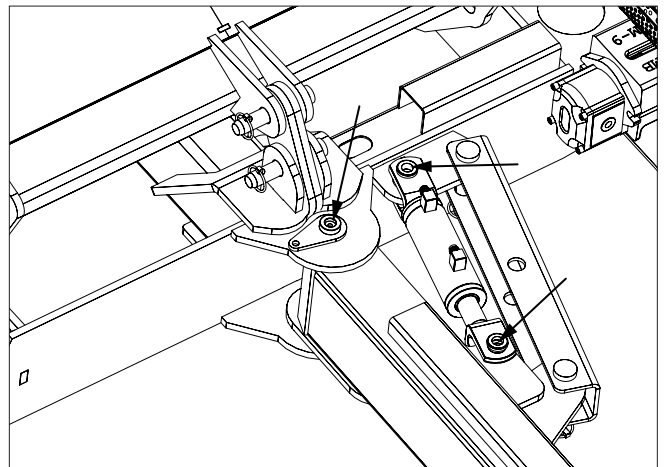
1. Lower tree spade to ground.
2. Set tow vehicle parking brake, stop tow vehicle and on-board engine and remove keys.
3. **Every 16 Hours** - Pump grease into grease fittings on each end of swing cylinders (A), swing pivots (B) and rod end of spade cylinders.



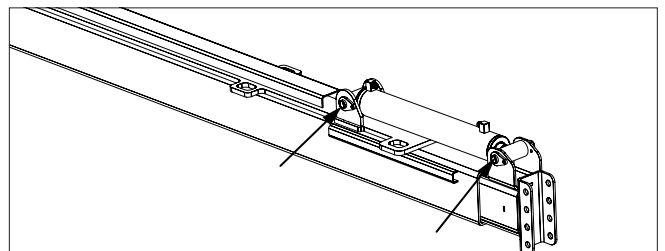
4. **Every 100 Hours** - Pump grease into grease fittings on tilt frame pivots and both end of tilt cylinder.



5. **Every 100 Hours** - Pump grease into grease fittings on hitch pivot and both end of hitch cylinder.



6. **Every 100 Hours** - Pump grease into grease fittings on hitch extension cylinder.



6.4 Hydraulic Fluid

NOTICE

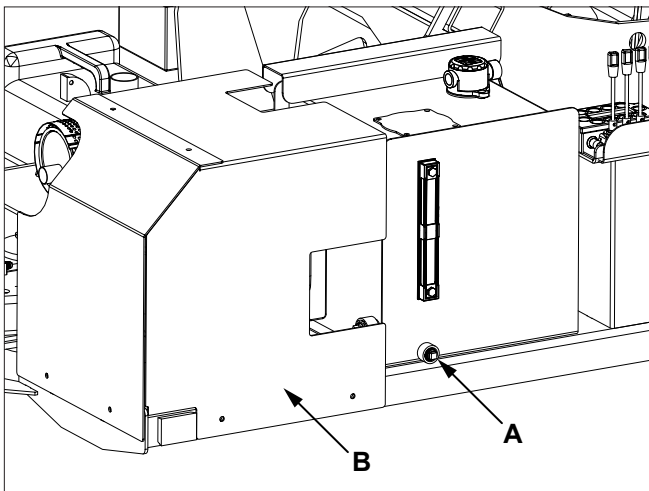
Dispose of waste properly.

Improper disposal of waste can harm the environment.

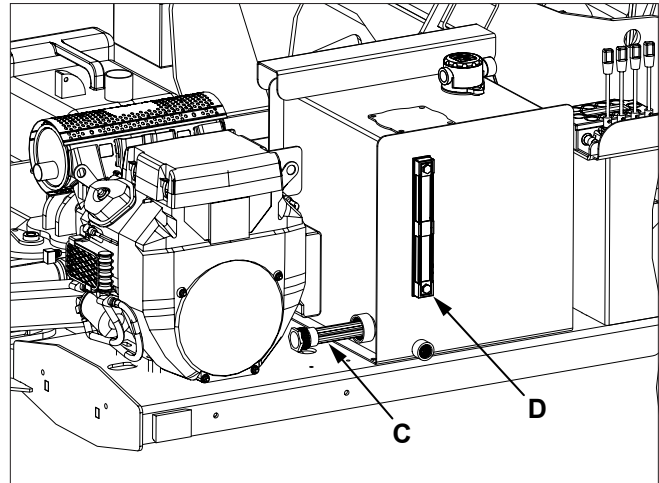
Use leak proof container when draining fluids. Do not use food or beverage containers.

Contact your local environmental or recycling center for the proper way to recycle or dispose of waste.

1. Set tow vehicle parking brake, stop tow vehicle and on-board engine and remove keys.
2. Remove drain plug (A) and drain hydraulic fluid into a suitable container. Install plug after draining.
3. Remove engine cover (B).



4. Disconnect hose and remove strainer (C).



5. Clean and inspect strainer. Replace strainer if damaged.
6. Install strainer and hose.
7. Add new hydraulic fluid until fluid fills approximately 75% of sight glass (D). AW32 is recommended for general conditions and climates.
8. Install engine cover.

7 WORKING WITH TREES

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.

7.1 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.

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.

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).

Raise blades one inch each until the root ball seems loose then extract each blade completely, if the tree is leaning raise the blade that trunk is leaning towards first, this will spin it up a little. 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.

Use water to settle the soil around the root ball.

Mulch two to four inches deep with woodchips, bark mulch, or other suitable mulch.

Trees should be pruned to remove broken, damaged, or dead branches.

7.2 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

7.2.1 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.

7.2.2 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 3-4 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.

7.2.3 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.

7.2.4 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.

7.2.5 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.

7.2.6 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.

7.2.7 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.

7.2.8 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).

7.2.9 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.

7.2.10 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.

7.2.11 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.

7.2.12 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.

7.2.13 Staking And Guying

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.

7.2.14 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.

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.

7.2.15 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.

7.2.16 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.

8 TROUBLESHOOTING

PROBLEM	CHECK	SOLUTION
Spades will not cut into the ground.	Insufficient pressure.	Check hydraulic oil level. Add as needed.
	Slides obstructed by dirt.	Clean the slides.
Spade lifts off the ground when extending spades	Started with the spade that is farthest from the operator.	Start with the closest spade first.
	Ground may be too dry.	Wait until the ground is moist.
Tree spade does not touch the ground.	Tree spade frame is not level.	Adjust frame tilt.

9 STORAGE

9.1 Storing

1. Store tree spade in a dry place.
2. Clean tree spade thoroughly. Dirt will draw moisture and cause rust.
3. Check for loose or missing hardware.
4. Paint parts as necessary.

9.2 Remove From Storage

1. Review Operator's Manual.
2. If parts have been replaced, verify they operate properly.

BAUMALIGHT ATTACHMENT WARRANTY

The 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. This warranty covers parts and labor, but does not cover misuse, negligence or dealer travel time.

Replacement of individual parts vs. assemblies are at the discretion of the manufacturer.

Baumalight products when purchased new are automatically registered for warranty on the date of purchase.

Warranty claims must include the bill of sale to the original purchaser.

This product must be operated and maintained in accordance with the Operating and Maintenance Instructions supplied with this unit.

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 carrier unit damage of any kind. The manufacturer is not liable for the maintenance of the product.

This warranty is extended only to the original purchaser and there never is any warranty on anything sold through auction.

Units are to be returned at the customer's expense to the nearest Authorized Service Center. Damage in transit is not covered by warranty.

The work may be performed by the end user, if they are a qualified mechanic.

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.

Model Number: _____ S/N: _____

Date of Purchase: _____ Owner's Name _____

For parts, specifications and the latest machine information please visit our website.

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