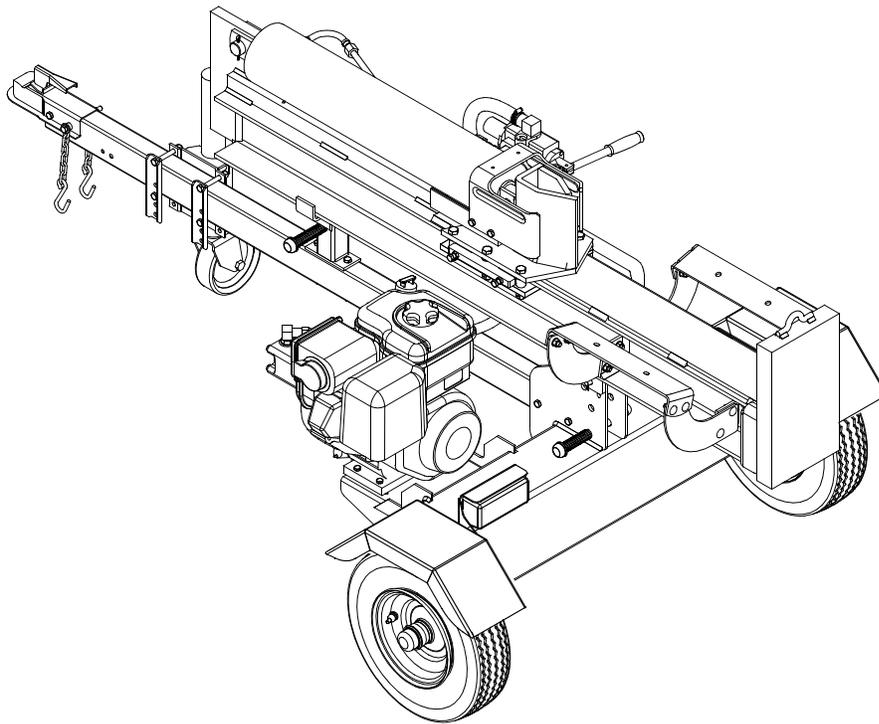


# Cub Cadet

## Operator's Manual

### Log Splitter

Model LS33T  
(24AD598A710)



### IMPORTANT: READ SAFETY RULES AND INSTRUCTIONS CAREFULLY

**Warning:** This unit is equipped with an internal combustion engine and should not be used on or near any unimproved forest-covered, brush-covered or grass-covered land unless the engine's exhaust system is equipped with a spark arrester meeting applicable local or state laws (if any). If a spark arrester is used, it should be maintained in effective working order by the operator. In the State of California the above is required by law (Section 4442 of the California Public Resources Code). Other states may have similar laws. Federal laws apply on federal lands. A spark arrester for the muffler is available through your nearest engine authorized service dealer or contact the service department, P.O. Box 368023 Cleveland, Ohio 44136-9722.

**CUB CADET CORP. P.O. BOX 368023 CLEVELAND, OHIO 44136-9722**

PRINTED IN U.S.A.

FORM NO. 770-10011E.

(7/7/2005)

## Table of Contents

Content	Page
Important Safe Operation Practices .....	3
Assembling Your Log Splitter .....	5
Know Your Log Splitter .....	10
Operating Your Log Splitter .....	10
Adjusting Your Log Splitter .....	12
Maintaining Your Log Splitter .....	13
Conditions That Will Void Warranty .....	14
Troubleshooting .....	15
Parts List .....	18

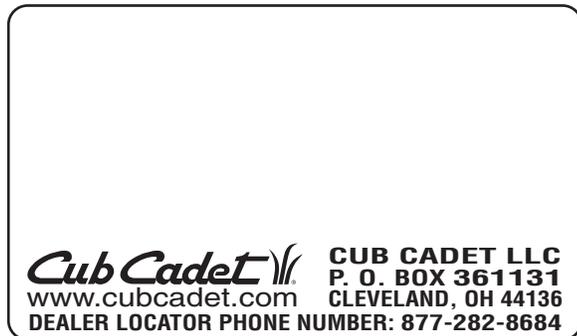
## Finding Model Number

This Operator's Manual is an important part of your new log splitter. It will help you assemble, prepare and maintain the unit for best performance. Please read and understand what it says.



**Before you start assembling your new equipment**, please locate the model plate on the equipment and copy the information from it in the space provided below. The information on the model plate is very important if you need help from your *Cub Cadet* dealer.

- You can locate the model number by standing behind the unit and looking down at the hydraulic tank. A sample model plate is explained below. For future reference, please copy the model number and the serial number of the equipment in the space below.



Copy the model number here: \_\_\_\_\_

Copy the serial number here: \_\_\_\_\_

## Engine Information

The engine manufacturer is responsible for all engine-related issues with regards to performance, power-rating, specifications, warranty and service. Please refer to the engine manufacturer's Owner's Manual packed separately with your log splitter for more information.

## Calling Customer Support

If you have difficulty assembling this product or have any questions regarding the controls, operation or maintenance of this unit, please call our Dealer Referral Line for contact information on your local *Cub Cadet* dealer.



Call **1- (800)-528-1009** to reach the Customer Dealer Referral Line. Please have your unit's model number and serial number ready when you call. See previous section to locate this information.

For more details about your unit, visit our website at [www.cubcadet.com](http://www.cubcadet.com)

---

## SECTION 1: IMPORTANT SAFE OPERATION PRACTICES



**WARNING:** This symbol points out important safety instructions which, if not followed, could endanger the personal safety and/or property of yourself and others. Read and follow all instructions in this manual before attempting to operate this machine. Failure to comply with these instructions may result in personal injury. When you see this symbol - **heed its warning**.

**WARNING:** Engine Exhaust, some of its constituents, and certain vehicle components contain or emit chemicals known to State of California to cause cancer and birth defects or other reproductive harm.

**DANGER:** This machine was built to be operated according to the rules for safe operation in this manual. As with any type of power equipment, carelessness or error on the part of the operator can result in serious injury. This machine is capable of amputating hands and feet and throwing objects. Failure to observe the following safety instructions could result in serious injury or death.

### TRAINING

1. Read, understand, and follow all instructions on the machine and in the manual(s) before attempting to assemble and operate. Keep this manual in a safe place for future and regular reference and for ordering replacement parts.
2. Be familiar with all controls and their proper operation. Know how to stop the machine and disengage them quickly.
3. Never allow children under 14 years old to operate this machine. Children 14 years old and over should read and understand the operation instructions and safety rules in this manual and should be trained and supervised by a parent.
4. Never allow adults to operate this machine without proper instruction.
5. Many accidents occur when more than one person operates the machine. If a helper is assisting in loading logs, never activate the control until the helper is a minimum of 10 feet from the machine.
6. Keep bystanders, helpers, pets, and children at least 20 feet from the machine while it is in operation.
7. Never allow anyone to ride on this machine.
8. Never transport cargo on this machine.
9. Hydraulic log splitters develop high fluid pressures during operation. Fluid escaping through a pin hole opening can penetrate your skin and cause blood poisoning, gangrene, or death. Give attention to the following instructions at all times:
  - a. Do not check for leaks with your hand.
  - b. Do not operate machine with frayed, kinked, cracked, or damaged hoses, fitting, or tubing.
  - c. Stop the engine and relieve hydraulic system pressure before changing or adjusting fittings, hoses, tubing, or other system components.
  - d. Do not adjust the pressure settings of the pump or valve.
10. Leaks can be detected by passing cardboard or wood, while wearing protective gloves and safety glasses, over the suspected area. Look for discoloration of cardboard or wood.
11. If injured by escaping fluid, see a doctor immediately. Serious infection or reaction can develop if proper medical treatment is not administered immediately.
12. Keep the operator zone and adjacent area clear for safe, secure footing.
13. If your machine is equipped with an internal combustion engine and it is intended for use near any unimproved forest, brush, or grass covered land, the engine exhaust should be equipped with a spark arrester. Make sure you comply with applicable local, state, and federal codes. Take appropriate firefighting equipment with you.
14. This machine should be used for splitting wood only, do not use it for any other purpose.
15. Follow the instructions in the manual(s) provided with any attachment(s) for this machine.

### PREPARATION

1. Always wear safety shoes or heavy boots.
2. Always wear safety glasses or safety goggles during operating this machine.
3. Never wear jewelry or loose clothing that might become entangled in moving or rotating parts of the machine.
4. Make sure this machine is on level surface before operating.
5. Always block the machine as required to prevent unintended movement, and lock in either the horizontal or vertical position.
6. Always operate this machine from the operator zone(s) specified in the manual.
7. Logs should be cut with square ends prior to splitting.
8. Use your log splitter in daylight or under good artificial light.

9. To avoid personal injury or property damage use extreme care in handling gasoline. Gasoline is extremely flammable and the vapors are explosive. Serious personal injury can occur when gasoline is spilled on yourself or your clothes which can ignite. Wash your skin and change immediately.
  - a. Use only an approved gasoline container.
  - b. Extinguish all cigarettes, cigars, pipes, and other sources of ignition.
  - c. Never fuel machine indoors.
  - d. Never remove gas cap or add fuel while the engine is hot or running.
  - e. Allow engine to cool at least two minutes before refueling.
  - f. Never overfill the fuel tank. Fill tank to no more than 1/2 inch below bottom of filler neck to provide space for fuel expansion.
  - g. Replace gasoline cap and tighten securely.
  - h. If gasoline is spilled, wipe it off the engine and equipment. move machine to another area. Wait 5 minutes before starting the engine.
  - i. Never store the machine or fuel container inside where there is an open flame, spark or pilot light as on a water heater, space heater, furnace, clothes dryer or other gas appliances.
  - j. Allow machine to cool at least 5 minutes before storing.
10. For logs which are not cut square, the least square end and the longest portion of the log should be placed toward the beam and wedge, and the square end placed toward the end plate.
11. When splitting in the vertical position, stabilize the log before moving the control. Split as follows:
  - a. Place log on the end plate and turn until it leans against the beam and is stable.
  - b. When splitting extra large or uneven logs, the log must be stabilized with wooden shims or split wood between the log and the end plate or ground.
12. Always keep fingers away from any cracks that open in the log while splitting. They can quickly close and pinch or amputate your fingers.
13. Keep your work area clean. Immediately remove split wood around the machine so that you do not stumble over it.
14. Never move this machine while the engine is running.
15. This machine should not be towed on any street, highway or public road without checking the existing federal, state, or local vehicle requirements. Any licensing or modifications such as taillights, etc., needed to comply, is the sole responsibility of the purchaser. If a "Statement of Origin" is required in your state, see your local dealer.
16. See the towing section in this manual for proper towing instructions once all federal, local, or state requirements are met.

## OPERATION

1. Before starting this machine, review the "Safety Instructions". Failure to follow these rules may result in serious injury to the operator or bystanders.
2. Never leave this machine unattended with the engine running.
3. Do not operate machine while under the influence of alcohol, drugs, or medication.
4. Never allow anyone to operate this machine without proper instruction.
5. Always operate this machine with all safety equipment in place and working. Make sure all controls are properly adjusted for safe operation.
6. Do not change the engine governor settings or overspeed the engine. The governor controls the maximum safe operating speed of the engine.
7. When loading a log, always place your hands on the sides of the log, not on the ends, and never use your foot to help stabilize a log. Failure to do so, may result in crushed or amputated fingers, toes, hand, or foot.
8. Use only your hand to operate the controls.
9. Never attempt to split more than one log at a time unless the ram has fully extended and a second log is needed to complete the separation of the first log.

## MAINTENANCE AND STORAGE

1. Stop the engine, disconnect the spark plug and ground it against the engine before cleaning, or inspecting the machine.
2. Stop the engine and relieve hydraulic system pressure before repairing or adjusting fittings, hoses, tubing, or other system components.
3. To prevent fires, clean debris and chaff from the engine and muffler areas. If the engine is equipped with a spark arrester muffler, clean and inspect it regularly according to manufacturers instructions. Replace if damaged.
4. Periodically check that all nuts and bolts, hose clamps, and hydraulic fittings are tight to be sure equipment is in safe working condition.
5. Check all safety guards and shields to be sure they are in the proper position. Never operate with safety guards, shields, or other protective features removed.
6. The pressure relief valve is preset at the factory. Do not adjust the valve.
7. Never attempt to move this machine over hilly or uneven terrain without a tow vehicle or adequate help.

8. For your safety, replace all damaged or worn parts immediately with original equipment manufacturer's (O.E.M.) parts only. "Use of parts which do not meet the original equipment specifications may lead to improper performance and compromise safety!"
9. Do not alter this machine in any manner, alterations such as attaching a rope or extension to the control lever, or adding to the width or height of the wedge may result in personal injury.



**WARNING:** - YOUR RESPONSIBILITY: Restrict the use of this power machine to persons who read, understand and follow the warnings and instructions in this manual and on the machine.

**NOTE:** Not all safety labels may apply to your log splitters.

**WARNING - TO AVOID INJURY AND/OR PROPERTY DAMAGE**

<p><b>MOVING LOG SPLITTER BY HAND:</b></p> <ul style="list-style-type: none"> <li>• Lock beam in horizontal position.</li> <li>• Lock jack stand in down position.</li> <li>• Do not attempt to move log splitter up or down a slope by hand</li> </ul> <p>S30230</p>	<p><b>TOWING LOG SPLITTER:</b></p> <ul style="list-style-type: none"> <li>• Lock beam in horizontal position.</li> <li>• Attach coupler to Class I or higher hitch with 1-7/8" ball. Latch securely.</li> <li>• Raise jack stand and latch securely in full up position.</li> <li>• Attach safety chains to tow vehicle.</li> <li>• Do not tow faster than 45 mph. High speed may cause loss of control.</li> <li>• Check local, state and federal requirements before towing on any public road.</li> </ul>
---	--

**VERTICAL**

**OPERATOR'S INSTRUCTIONS**

1. Place log splitter on flat dry solid ground.
2. Lock in either the Horizontal or Vertical position.
3. Set the engine throttle at maximum speed.
4. Place the log against the end plate.
5. Stabilize the log when needed on its sides, NEVER on the end between the log and the splitting wedge.
6. Only one adult should stabilize the log and operate the control.
7. Move the control handle in the splitting direction.
8. Release the control handle to stop the wedge movement.
9. Move the control handle opposite the splitting direction to return the wedge.

**READ OPERATOR'S MANUAL**

**HORIZONTAL**

**HORIZONTAL POSITION LOCK**

**DANGER**

**AVOID SERIOUS INJURY OR DEATH**

- KEEP HANDS AWAY FROM WEDGE, END PLATE, PARTLY SPLIT WOOD AND MOVING PARTS.
- HOLD LOG ON ITS SIDES NOT ON ENDS. ONLY ONE OPERATOR PERMITTED. ADULT WHO LOADS AND HOLDS LOG MUST BE THE ONE WHO OPERATES CONTROL HANDLE. KEEP BYSTANDERS, HELPERS AND CHILDREN AT LEAST 10 FEET AWAY.
- HIGH PRESSURE FLUID CAN ESCAPE THROUGH A PIN HOLE LEAK AND CAUSE SERIOUS INJURY BY PUNCTURING THE SKIN AND CAUSING BLOOD POISONING. NEVER CHECK FOR LEAKS WITH YOUR HANDS.
- OPERATE THE LOG SPLITTER ON LEVEL SURFACE. LOCK IT IN VERTICAL OR HORIZONTAL POSITION.
- WEAR PROTECTIVE WORK GLOVES, SAFETY SHOES AND SAFETY GLASSES, WATCH YOUR FOOTING.
- NEVER OPERATE UNDER THE INFLUENCE OF ALCOHOL OR DRUGS.
- DO NOT REFUEL A HOT OR RUNNING ENGINE.

## SECTION 2: ASSEMBLING YOUR LOG SPLITTER

**IMPORTANT:** Be certain to check engine oil level

**IMPORTANT:** as instructed in the separate engine manual before operating your machine.

**NOTE:** Reference to right or left hand side of the log splitter is observed from the operating position.

**NOTE:** Engine styles and models vary. The engine found on your log splitter may not resemble the engine pictured on illustrations throughout this manual. Refer to the Kohler engine manual packed separately for all engine information and specifications.

### Removing Unit From Carton

- Pry the top, sides, and ends off crate.
- Set panels aside to avoid tire punctures or personal injury.
- Remove and discard plastic bag that covers unit.

- Remove wheels and loose parts if included with unit (i.e., operator's manual, etc.)
- Cut and remove straps which secure parts to bottom of crate. Unbolt any remaining parts which may be bolted to the bottom of the crate.

### Loose Parts In Carton

- Reservoir Tank and Engine-Pump Assembly
- Engine-Pump Assembly Hardware
- Wedge, Beam, and Cylinder Assembly
- Tongue Assembly
- Wheels
- Hitch Assembly
- Beam Support/Latch Bracket
- Log Cradle Brackets and Hardware
- Fenders
- Adjustable Jack Stand Assembly
- Tail Light Kit
- 2 Hub Caps

5



**WARNING:** Use extreme caution unpacking this machine. Some components are very heavy and will require additional people or mechanical handling equipment.

## Assembling The Tongue

### Attaching The Beam Support/Latch Bracket (See Figure 1)

- Remove two hex bolts, lock washers, and hex nuts from the tongue.
- Place the beam support/latch bracket on the tongue and secure with the hex bolts, lock washers, and hex nuts previously removed. Tighten securely.

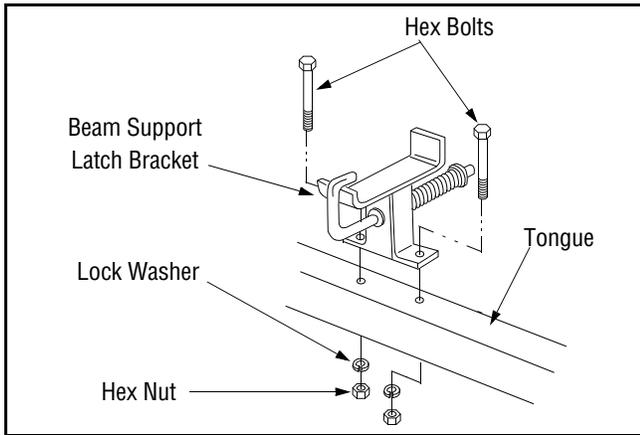


Figure 1

### Attaching The Adjustable Jack Stand (See Figure 2)

- Remove four hex bolts, lock washers, and hex nuts for securing jack stand mounting brackets from the hardware pack.
- Place adjustable jack stand halfway between beam support/latch bracket and end of tongue.

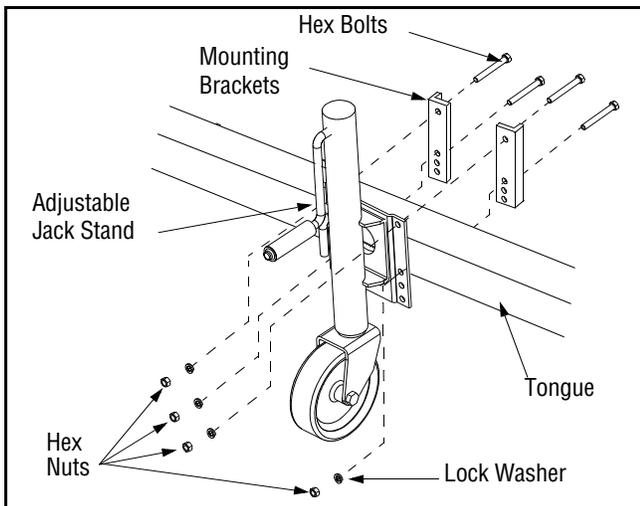


Figure 2

- Insert hex bolts through top holes in jack stand mounting brackets and holes in the adjustable jack stand and secure with lock washers and hex nuts. Do NOT tighten at this time.
- Insert hex bolts through upper holes in the bottom of the mounting brackets and adjustable jack stand and secure with lock washers and hex nuts.
- Tighten all hardware.
- The adjustable jack stand is raised by turning the crank clockwise and lowered by turning counter-clockwise.

### Attaching The Hitch Assembly (See Figure 3)

- Remove the hardware assembled on the hitch assembly and place the hitch on the end of the tongue.
- Insert hex bolt through end of safety chain, spacer, and then rear hitch hole. Pivot the end of safety chain so it faces the ball end of hitch.

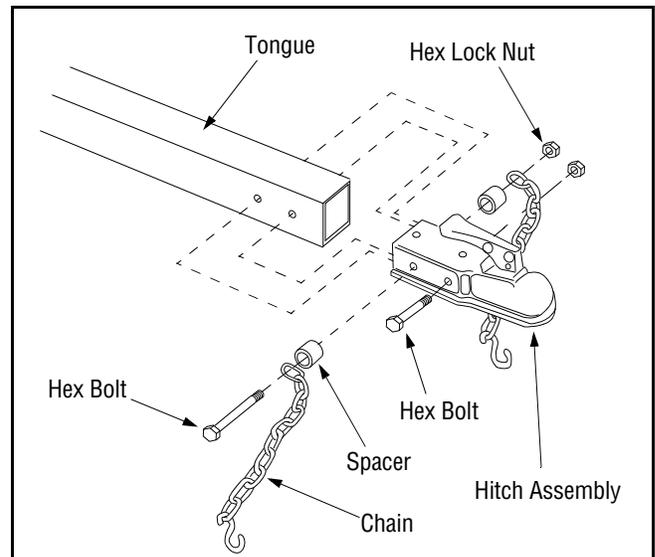


Figure 3

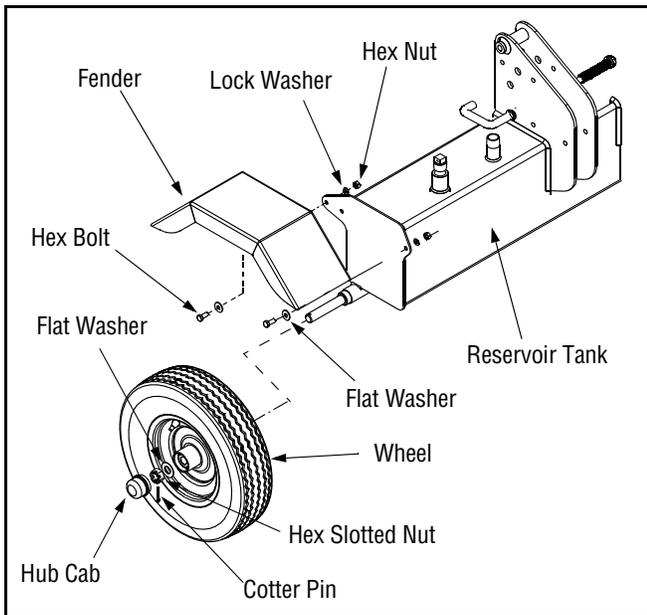
- Insert other spacer and safety chain on the other end of the hex bolt and secure with hex lock nut.
- Insert hex bolt through the front hole of hitch and secure with hex lock nut. Tighten both hex nuts to 23 ft-lbs.

## Assembling The Wheels, Tongue, Fenders and Beam

**NOTE:** Install the taillight kit (instructions are provided with kit) and fenders prior to securing the wheels.

### Attaching The Wheels To The Reservoir Tank Assembly (See Figure 4)

- Block up the reservoir tank assembly about eight to twelve inches.
- Remove and discard plastic shipping caps on the outside of the wheels.



- Remove the cotter pin, hex slotted nut, and flat washer from each axle.

**NOTE:** It is recommended that you wipe the axles with emery cloth before you install the wheels.

**Figure 4**

- Place a wheel on each axle with the valve stem facing outward.
- Place a flat washer on each axle and secure with hex slotted nut.
- Tighten slotted nut until snug and then back off approximately 1/3 turn or until one of the slots on the slotted nut lines up with the hole in the axle.
- Insert cotter pins through slots in nuts and holes in axle and secure by bending the ends of the cotter pins in opposite directions.
- The wheels should spin freely and there should be no side to side play.
- Place hub caps in position on wheels and tap onto axle with a soft hammer or mallet.



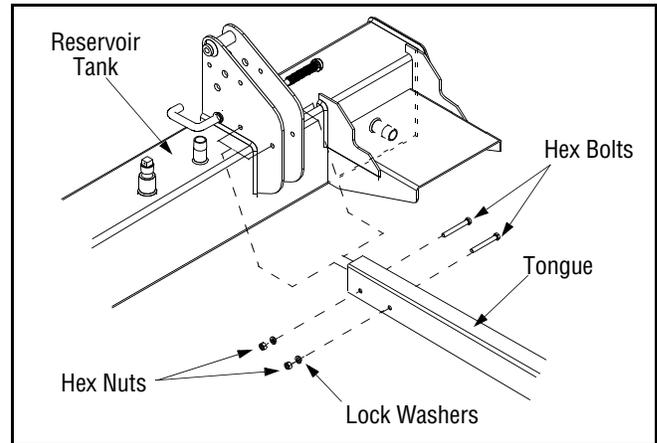
**WARNING:** Maximum tire pressure under any circumstance is 30 psi. Equal tire pressure should be maintained at all times.

- If equipped with fenders, proceed to next step.
- Remove the hex nuts, lock washers, flat washers, and hex bolts from the side of tank.
- Determine the proper assembly holes in the fenders over the tires against the tank.
- Insert hex bolts through flat washers, holes in fenders, and tank. Secure fender with lock washers and hex nuts. Tighten securely.

#### Attaching The Tongue (See Figure 5)

- Remove two hex bolts, lock washers, and hex nuts on the front of the reservoir tank.

- Place the tongue in position and secure with hardware just removed.
- Remove the reservoir tank from the blocks.



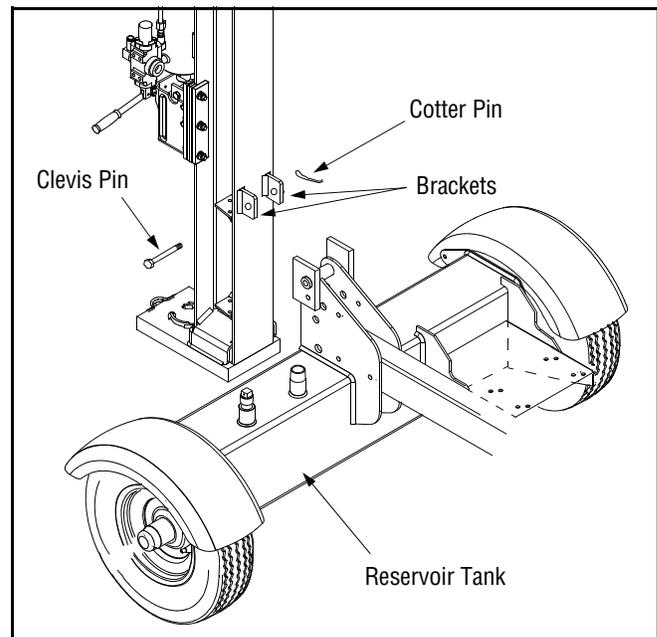
**Figure 5**

#### Attaching Beam To Reservoir Tank (See Figure 6)

- Disconnect the pressure hose from the adapter on the pump.

**NOTE:** The following step might require two people.

- Stand the wedge, beam, and cylinder assembly upright with cylinder toward the top.
- Remove cotter pin and clevis pin from tank brackets and move the reservoir tank assembly in position against the beam.
- Insert clevis pin just removed through brackets on beam and reservoir tank assembly. Secure with cotter pin by bending the ends of the pin in opposite directions.



**Figure 6**

## Attaching Engine-Pump Assembly

(See Figure 7)

- Place the engine and pump assembly in position on the engine mounting bracket with the pump facing out.
- Align holes in base of engine with appropriate holes in engine mounting bracket.
- Secure the engine and pump assembly with four hex bolts, bell washers, and hex nuts found packed with the Operator's Manual.
- Secure with lock washers and hex nuts. Using a torque wrench, tighten to 14 ft-lbs.

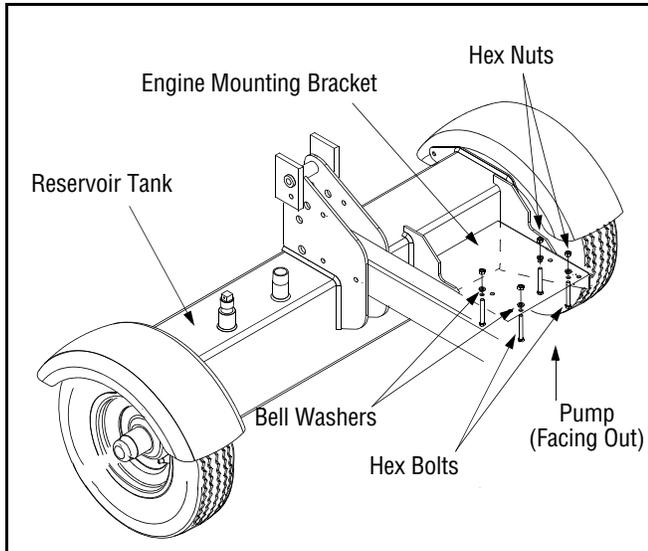


Figure 7

## Attaching The Hoses

**Suction Hose (See Figure 8)**

- The suction is attached to the reservoir tank, beneath the engine mounting bracket. Loosen the hose clamp on the free end of the hose. Remove any protective insert from the end of the hose.

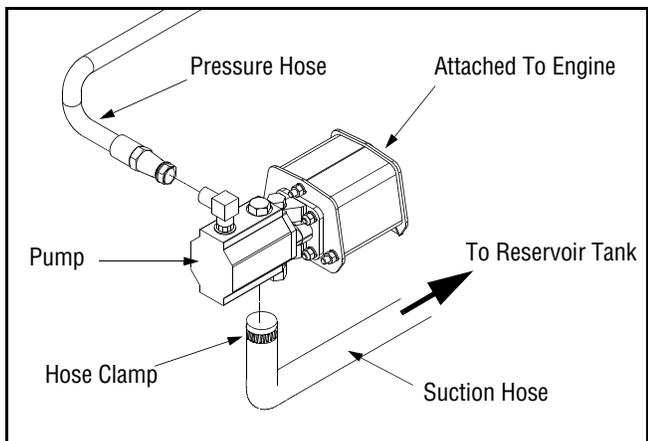


Figure 8

- Remove the protective cap from the fitting on the bottom of the pump (some oil may flow from pump). Attach the end of the suction hose to the fitting on the bottom of the pump. Place the hose clamp at the base of the fitting and tighten securely.

**Pressure Hose (See Figure 8)**

The pressure hose is attached to the control valve. Route the hose between the beam and the tongue. Secure the pressure hose to the adapter on the top of the pump.

**Return Hose (See Figure 9)**

- The return hose is attached to the top of the control valve with a securing strap. Loosen the hose clamp on the free end of the hose. Remove any protective insert from the end of the hose.
- Remove the protective cap from the fitting on top of the filter head. Attach the end of the hose to the fitting on top of the filter. Place the hose clamp at the base of the fitting and tighten securely.
- Cut the securing strap.

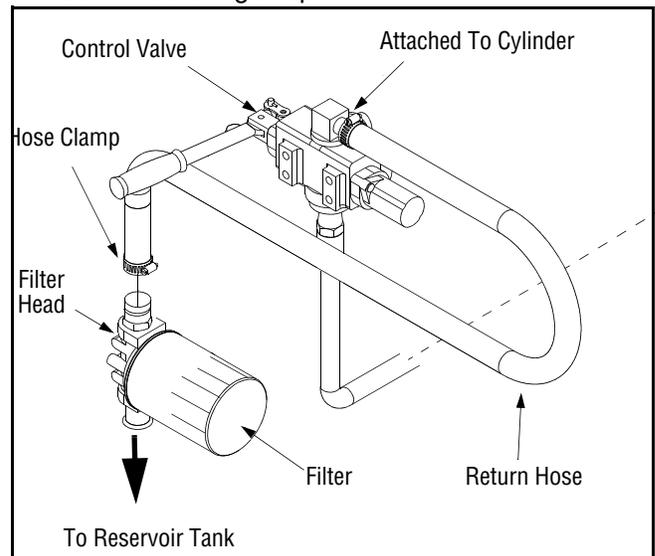


Figure 9

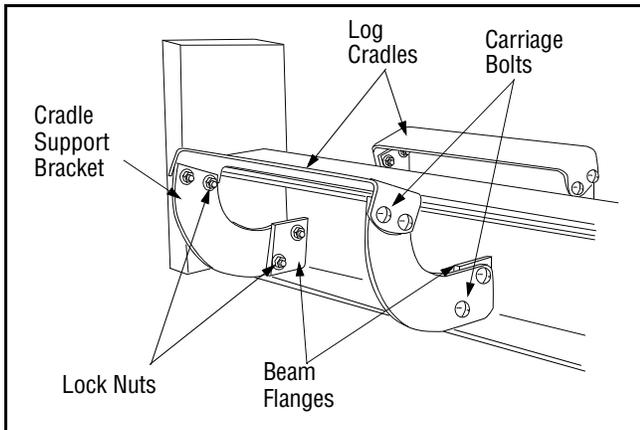
## Attaching The Log Cradle

- Pull the beam lock on the beam support/latch bracket out and pivot it down. Carefully lower the wedge, beam, and cylinder assembly to the horizontal position. Pull out and rotate beam lock to secure beam in the horizontal position.

**NOTE:** The hardware for attaching the log cradle may be found packed with the Operator's Manual.

- Place one cradle support bracket against the lower outside surface of one of the beam flanges. See Figure 10.
- Insert two carriage bolts through the cradle support bracket and the beam flange. Secure with two flange lock nuts. Do not tighten at this time.

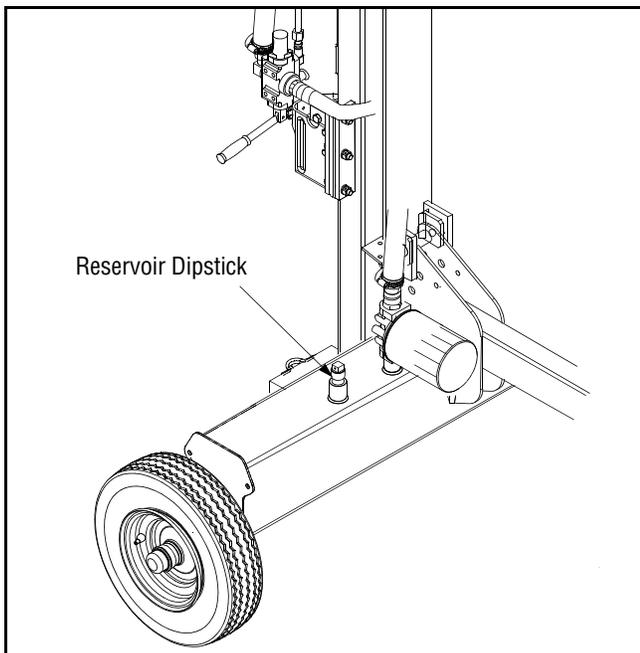
- Attach the second cradle support bracket to the same side of the beam in the same manner.
- Place one log cradle over the support brackets and align the bolt holes.
- Insert four carriage bolts through the log cradle and cradle support brackets. Secure with lock nuts and tighten all eight carriage bolts and lock nuts securely.
- Attach the other cradle support brackets and log cradle to the other side of the beam in the same manner.



**Figure 10**

## Preparing The Log Splitter

- Lubricate the beam area where the splitting wedge will slide with engine oil (DO NOT USE GREASE).
- Remove vented reservoir dipstick, which is located in front of the engine on top of the reservoir tank. See Figure 11.

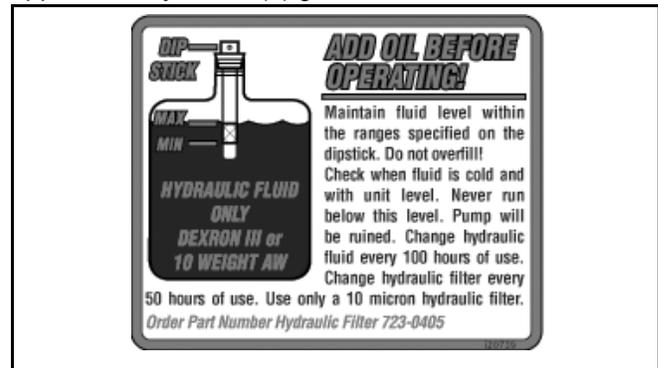


**Figure 11**

- Fill the reservoir tank with Dexron III automatic transmission fluid or 10 Weight AW hydraulic fluid.

- Check fluid level using the dipstick. See Figure 12.
- Add fluid if necessary. Do not overfill!
- Replace and tighten vented dipstick.

**IMPORTANT:** The reservoir tank has a capacity of approximately seven (7) gallons.



**Figure 12**

- If not already, disconnect the spark plug wire and prime the pump, by pulling the recoil starter to turn the engine over approximately 10 times.
- Reconnect the spark plug wire.
- Start engine according to Starting the Engine in the OPERATION section.
- Use the control handle to engage the wedge to the farthest extended position and then retract the wedge.
- Refill tank to within the range specified on the dipstick.
- Extend and retract the wedge twelve (12) complete cycles to remove trapped air in the system (system is "self-bleeding").
- Much of the original fluid has been drawn into the cylinder and hoses. Make certain to refill the reservoir to prevent extreme damage to the hydraulic pump. Failure to refill the tank will void your warranty.

**NOTE:** Some fluid may overflow from the vented reservoir dipstick as the system builds heat and the fluid expands and seeks a balanced level.

**IMPORTANT:** Do not operate the log splitter without the proper amount of transmission fluid in the reservoir tank.

## SECTION 3: KNOW YOUR LOG SPLITTER



**WARNING:** Be familiar with all controls and their proper operation. Know how to stop the machine and disengage them quickly.

### Control Handle

The control handle has three positions. See Figure 13.

**Forward:** Push the control handle forward or down. Splitting wedge moves toward the end plate.

**Neutral:** Control handle will return to neutral position when handle is released. Splitting wedges stops in place.

**Reverse:** When pulling the control handle up or back, the splitting wedge moves toward the cylinder. The control handle will lock in the disengaged position. It will return to neutral automatically when the disengage stroke is complete.

### Beam Locks

There are two position locks for each operating position. See Figure 13.

**Vertical:** The vertical position lock is located next to the oil filter.

**Horizontal:** The horizontal position lock is part of the beam support latch bracket.

### Engine Controls

See the separate engine manual for the location and function of the controls on the engine.

### Starter Handle

The starter handle is located on the engine. Pull the starter handle to start engine.

### Stopping Engine

- Move throttle control lever to STOP or OFF position.
- Disconnect spark plug wire and ground against the engine to prevent accidental starting while the equipment is unattended.

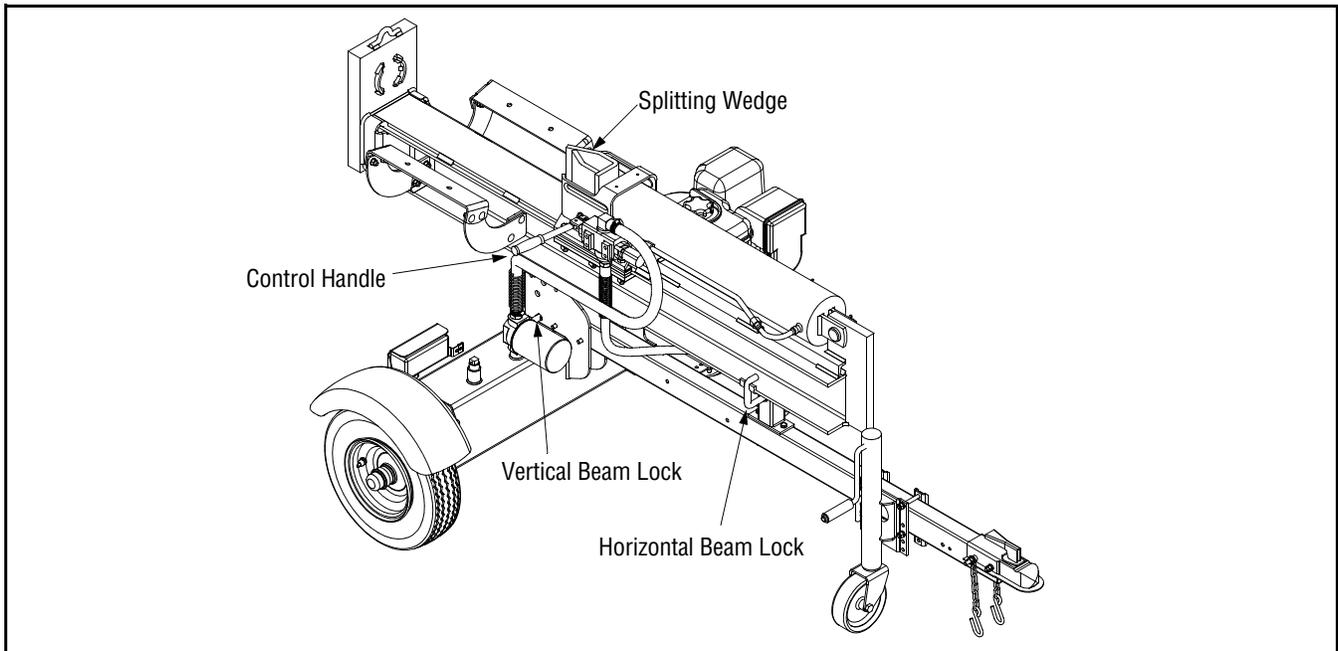


Figure 13

## SECTION 4: OPERATING YOUR LOG SPLITTER



**WARNING:** Read, understand, and follow all instructions and warnings on the machine and in this manual before operating.

### Gas And Oil Fill-Up

Service the engine with gasoline and oil as instructed in the separate engine manual packed with your log splitter. Read instructions carefully.



**WARNING:** Use extreme care when handling gasoline. Gasoline is extremely flammable and the vapors are explosive. Never fuel machine indoors or while the engine is hot or running.

## Starting Engine

- Attach spark plug wire to spark plug. Make certain the metal cap on the end of the spark plug is fastened securely over the metal tip on the spark plug.
- **Engines with choke lever:**  
Move choke lever on engine to CHOKE position. (A warm engine may not require choking).
- **Engines with primer:**  
Prime engine as instructed in separate engine manual.
- The throttle control lever is located on the engine. Move engine throttle control lever to FAST or START position.
- Grasp starter handle and pull rope out slowly until engine reaches start of compression cycle (rope will pull slightly harder at this point).
- Pull rope with a rapid, continuous, full arm stroke. Keep a firm grip on starter handle. Let rope rewind slowly.
- Repeat the previous steps until engine fires. When engine starts, move choke control (if equipped) gradually to RUN position.
- If weather is cold, run wedge up or down beam 6 to 8 times to circulate the hydraulic fluid.



**WARNING:** When starting a warm engine, the muffler and surrounding areas are hot and can cause a burn. Do not touch.

### Always:

- Use clean fluid and check fluid level regularly.
- Use Dexron III Automatic Transmission Fluid or 10 Weight AW hydraulic fluid.
- Use a filter (clean or replace regularly)
- Use a breather cap on fluid reservoir.
- Make certain pump is mounted and aligned properly.
- Use a flexible “spider” type coupling between engine and pump drive shafts.
- Keep hoses clear and unblocked.
- Bleed air out of hoses before operating.
- Flush and clean hydraulic system before starting after any malfunction or servicing.
- Use “pipe dope” on all hydraulic fittings.
- Allow time for warm-up before splitting wood.
- Prime the pump before initial start-up by turning over the engine with spark plug disconnected.
- Split wood with the grain (lengthwise) only.

### Never:

- Use when fluid is below 20° F or above 150° F.
- Use a solid engine /pump coupling.
- Operate through relief valve for more than several seconds.
- Attempt to adjust unloading or relief valve settings without pressure gauges.
- Operate with air in hydraulic system.
- Use teflon tape on hydraulic fittings.
- Attempt to cut wood across the grain.

## Using The Log Splitter

- Place the log splitter on level, dry, and solid ground.
- Place the beam in either the horizontal or vertical position and lock in place with the appropriate locking rod.
- Block the front and back of both wheels.
- Place the log against the end plate and only split wood in the direction of the grain.
- When necessary to stabilize the log, place your hand only on sides of log. **NEVER place hand on the end between the log and splitting wedge.**
- Only one adult should stabilize the log and operate the control handle, so the operator has full control over stabilizing the log and movement of the splitting wedge.



**WARNING:** Wear leather work gloves, safety shoes, and safety glasses when operating log splitter. Ensure safe footing.

### Control Handle Positions

- Move control handle FORWARD or DOWN to split wood.
- Release the control handle to stop the wedge movement.
- Move control handle BACK or UP to return the wedge.

### Vertical Position

- Pull the horizontal beam lock out and pivot it down to release the beam. Pivot the beam to the vertical position.
- To lock the beam in the vertical position, pull out on the vertical beam lock and pivot it to secure the beam. See Figure 14.
- Stand in front of the log splitter to operate the control handle and to stabilize the log.

### Horizontal Position

- Pull the vertical beam lock out and pivot it down. Pivot the beam to the horizontal position.
- To lock the beam in the horizontal position, pull out on the horizontal beam lock and pivot it to secure the beam. See Figure 15.
- Stand behind the reservoir tank to operate the control handle and to stabilize the log.

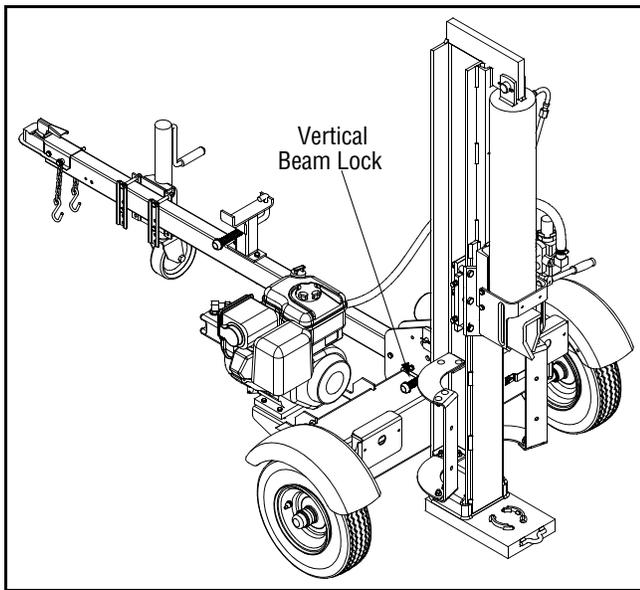


Figure 14

### Transporting The Log Splitter

- Lower the beam to its horizontal position. Make certain the beam is locked securely with the horizontal beam lock.
- Raise the adjustable jack stand by turning the crank clockwise.

- Attach hitch coupler to a class I or higher hitch with a 1-7/8" ball on the towing vehicle, making certain to latch securely.
- Connect the safety chains to the towing vehicle.
- Do not tow faster than 45mph and check local, state, and federal requirements before towing on any public road.
- Plug in the taillights as instructed in the taillight kit manual included with your log splitter.

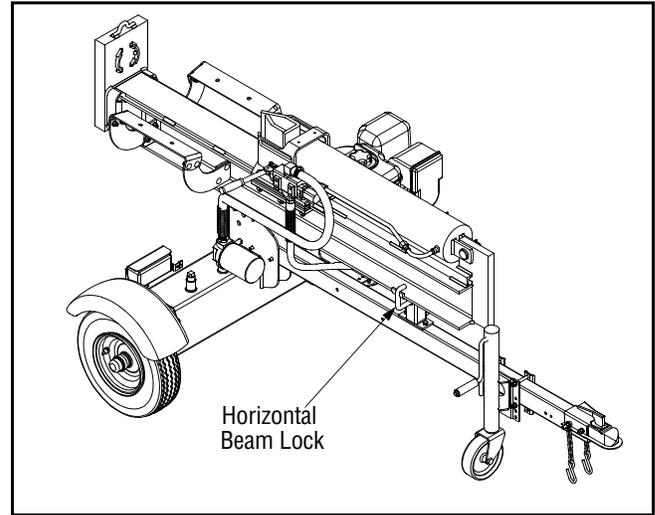


Figure 15

## SECTION 5: ADJUSTING YOUR LOG SPLITTER



**WARNING:** Do not at any time make any adjustments without first stopping engine, disconnecting spark plug wire, and grounding it against the engine.

### Wedge Assembly Adjustment

As normal wear occurs and there is excessive “play” between the wedge and beam, adjust the bolts on the side of the wedge assembly to eliminate the excess space between the wedge and beam. See Figure 16.

- Loosen the jam nuts on the two adjustment bolts on the side of the wedge. Turn the adjustment bolts in until snug and then back them off approximately one turn until the wedge assembly will slide on the beam.
- Tighten the jam nuts securely against the side of the wedge to hold the adjustment bolts in this place.

### Gib Adjustment

Periodically remove and replace the “gibs” (spacers) between the wedge assembly and the back plate. See Figure 16.

**NOTE:** The gibs may be rotated and/or turned over for even wear.

- Loosen the lock nuts under the each back plate and slide the gibs out.
- Turn or replace the gibs.
- Reassemble the back plate and secure with the lock washers and lock nuts.
- Readjust the bolts on the side of the wedge assembly.

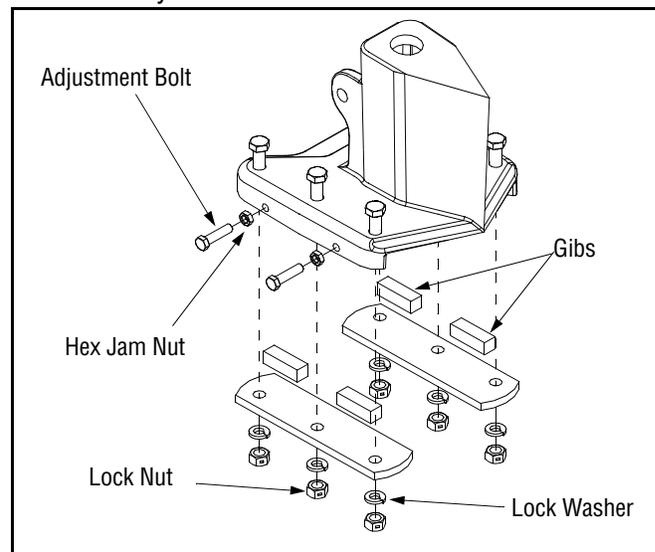


Figure 16

---

## SECTION 6: MAINTAINING YOUR LOG SPLITTER



**WARNING:** Before cleaning, lubricating, repairing, or inspecting, disengage the control lever and stop engine. Disconnect the spark plug wire and ground it against the engine to prevent unintended starting.

### Hydraulic Fluid

- Check the hydraulic fluid level in the log splitter reservoir tank before each use. Maintain fluid level within the range specified on the dipstick at all times.
- Change the hydraulic fluid in the reservoir every 100 hours of operation. Disconnect the suction hose from the bottom of the reservoir tank and drain the fluid into a suitable container. Refill using only Dexron III automatic transmission fluid or 10 Weight AW hydraulic fluid.

**NOTE:** Drain the fluid and flush the reservoir tank and hoses with kerosene whenever any repair work is performed on the tank, hydraulic pump or valve. Contaminants in the fluid will damage the hydraulic components. Any repair to the hydraulic components should be performed by a authorized service center.



**WARNING:** Use extreme caution when working with kerosene. It is an extremely flammable fluid.

### Hydraulic Filter

Change the hydraulic filter every 50 hours of operation. Use only a 10 micron hydraulic filter. Order part number 723-0405.

### Beam And Splitting Wedge

Lubricate both sides of the beam (where it comes into contact with the splitting wedge) before each use with engine oil. The wedge plate on the log splitter is designed so the gibs on the side of the wedge plate can be removed and rotated and/or turned over for even wear. Make certain to readjust the adjustment bolts so wedge moves freely, but no excess space exists between the wedge plate and beam.

### Hose Clamps

Check the hose clamps on the suction hose (attached to side of the pump) for proper tightness before each use. Check the hose clamps on the return hose at least once a season.

### Engine

Refer to the separate engine manual for all engine maintenance instructions.

### Flexible Pump Coupler

The flexible pump coupler is a nylon “spider” insert, located between the pump and engine shaft. Over a period of time, the coupler will harden and deteriorate. Replacement is needed if you detect vibration or noise coming from the area between the engine and the pump. If the coupler fails completely, you will experience a loss of power.

**IMPORTANT:** Never strike the engine shaft or the coupler in any manner. Doing so may permanent damage to the engine.

When replacing the flexible pump coupler, proceed as follows:

- Remove three nuts and lock washers that secure the pump to the coupling shield. Two nuts are at the bottom corners and one is in the top center.
- Remove the pump.
- Rotate the engine by pulling starter handle until engine coupling half set screw is at bottom. Loosen set screw using allen wrench and slide coupling half off of engine shaft.
- Loosen set screw on pump coupling half and remove coupling half.
- Slide new engine coupling half onto the engine shaft until the end of the shaft is flush with the inner portion of the coupling half. (There must be space between end of the engine support bracket and coupling half). Tighten set screw.
- Install pump coupling half and key on pump shaft. Rotate coupling half until set screw faces down. Do not tighten set screw.
- Install nylon “spider” onto engine coupling half.
- Align pump coupling half with nylon “spider” by rotating engine using starter handle. Slide coupling half into place while guiding three mounting bolts through holes in pump support bracket.
- Secure with nuts and washers removed earlier.
- Set .010” to .060” clearance/gap between the nylon “spider” and the engine coupling half by sliding a feeler gauge (or matchbook cover) between the nylon “spider” and the engine coupling half and moving pump coupling half as needed. Secure pump coupling half with set screw. See Figure 17.

**NOTE:** Make certain proper clearance/gap is obtained before tightening set screw.

- Reattach spark plug wire to spark plug.

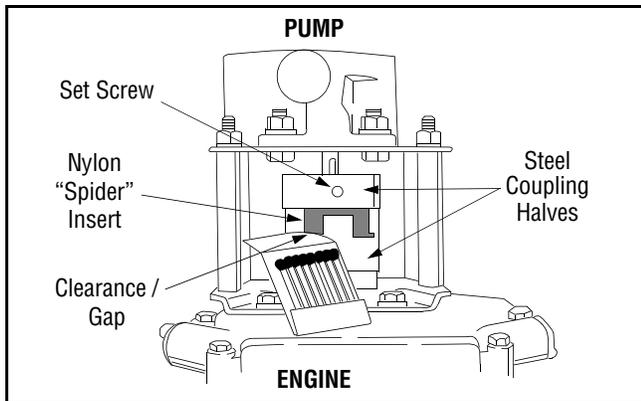


Figure 17

## Tires

See sidewall of tire for recommended pressure. Maximum tire pressure under any circumstances is 30 p.s.i. Equal tire pressure should be maintained on all tires.



**WARNING:** Excessive pressure (over 30 p.s.i.) when seating beads may cause tire/rim assembly to burst with force sufficient to cause serious injury.

## Storing Your Log Splitter

- Clean the unit thoroughly.
- Wipe equipment with an oiled rag to prevent rust.
- Refer to engine manual for correct engine storage instructions
- Store unit in a clean, dry area. Do not store next to corrosive materials such as fertilizer.



**WARNING:** Never store the machine or fuel container indoors where there is an open flame, spark, or pilot light such as on water heater, furnace, clothes dryer, or other gas appliance.



**WARNING:** Drain fuel into an approved container outdoors, away from an open flame. Allow engine to cool. Extinguish cigarettes, cigars, pipes, and other sources of ignition prior to draining fuel. Fuel left in engine for extended periods deteriorates and will cause starting problems.

## SECTION 7: CONDITIONS THAT WILL VOID WARRANTY

- Failure to maintain proper fluid level in reservoir will cause permanent damage to pump by allowing air to be drawn into pump. Fluid will become foamy.
- Changing the relief valve setting or pressure adjustment of control valve without proper knowledge and instruction from the factory will void your warranty. A very minor adjustment could destroy the structural and safety limits for which the unit was designed. The system will produce more power than the structure will withstand. Higher pressure could cause the hoses to burst, cylinder to rupture, and intense fluid releases, which could result in serious personal injury.
- Disassembling the pump will void your warranty. If replacement is necessary, merely disconnect and replace. Do not attempt to adjust pump settings, as they are adjusted by the manufacturer at the factory.
- Use of incorrect hydraulic fluid will void your warranty. Use only Dexron III automatic transmission fluid or 10 Weight AW hydraulic fluid.
- The flexible pump coupler must be inspected regularly. Allowing the coupler to deteriorate will void your warranty. Deterioration of spider insert and prolonged use after its deterioration will destroy pump bearings, engine bearings and the coupler hubs.
- Improper beam lubrication will cause premature wear and looseness. Lubricate the beam regularly. Lack of lubrication will void your warranty.
- Improper adjustment of splitting wedge will void your warranty. If wedge is too loose, cylinder beam and wedge wear will result. Allowing the wedge to loosen and be used under operating stress will cause damage which will not be covered under warranty. If wedge is too tight, severe beam damage will result which will not be covered under warranty.
- Do not overheat the hydraulic system. Excessive heat will destroy the hydraulic system with hardened O-rings and excessive friction.
- Do not attempt to start in temperatures under 20°F without pre-heating fluid in reservoir. Excessively cold fluid can not circulate and draw into pump.
- Repair any leaks in hydraulic system immediately. Unattended leaks will cause air to enter system and/or decrease fluid level in reservoir, causing damage to the hydraulic system which will not be covered by warranty.

## SECTION 8: TROUBLESHOOTING

Problem	Cause	Remedy
Engine fails to start	<ol style="list-style-type: none"> <li>1. Spark plug wire disconnected.</li> <li>2. Fuel tank empty or stale fuel.</li> <li>3. Throttle control lever not in correct starting position. (If Equipped)</li> <li>4. Choke not in CHOKE position. (If Equipped)</li> <li>5. Blocked fuel line.</li> <li>6. Faulty spark plug.</li> </ol>	<ol style="list-style-type: none"> <li>1. Connect wire to spark plug.</li> <li>2. Fill tank with clean, fresh gasoline.</li> <li>3. Move throttle lever to FAST position.</li> <li>4. Move choke to CHOKE position.</li> <li>5. Clean fuel line.</li> <li>6. Clean, adjust gap, or replace.</li> </ol>
Engine runs erratic	<ol style="list-style-type: none"> <li>1. Spark plug wire loose.</li> <li>2. Unit running on CHOKE. (If Equipped)</li> <li>3. Blocked fuel line or stale fuel.</li> <li>4. Water or dirt in fuel system.</li> <li>5. Dirty air cleaner.</li> <li>6. Carburetor out of adjustment.</li> </ol>	<ol style="list-style-type: none"> <li>1. Connect and tighten spark plug wire.</li> <li>2. Move choke lever to OFF position.</li> <li>3. Clean fuel line; fill tank with clean, fresh gasoline</li> <li>4. Drain fuel tank. Refill with fresh fuel.</li> <li>5. Clean or replace air cleaner.</li> <li>6. See authorized service dealer.</li> </ol>
Engine overheats	<ol style="list-style-type: none"> <li>1. Engine oil level low.</li> <li>2. Dirty air cleaner.</li> <li>3. Carburetor not adjusted properly.</li> </ol>	<ol style="list-style-type: none"> <li>1. Fill crankcase with proper oil.</li> <li>2. Clean or replace air cleaner.</li> <li>3. See authorized service dealer.</li> </ol>

**NOTE:** For repairs beyond the minor adjustments listed above, contact your nearest authorized service dealer.

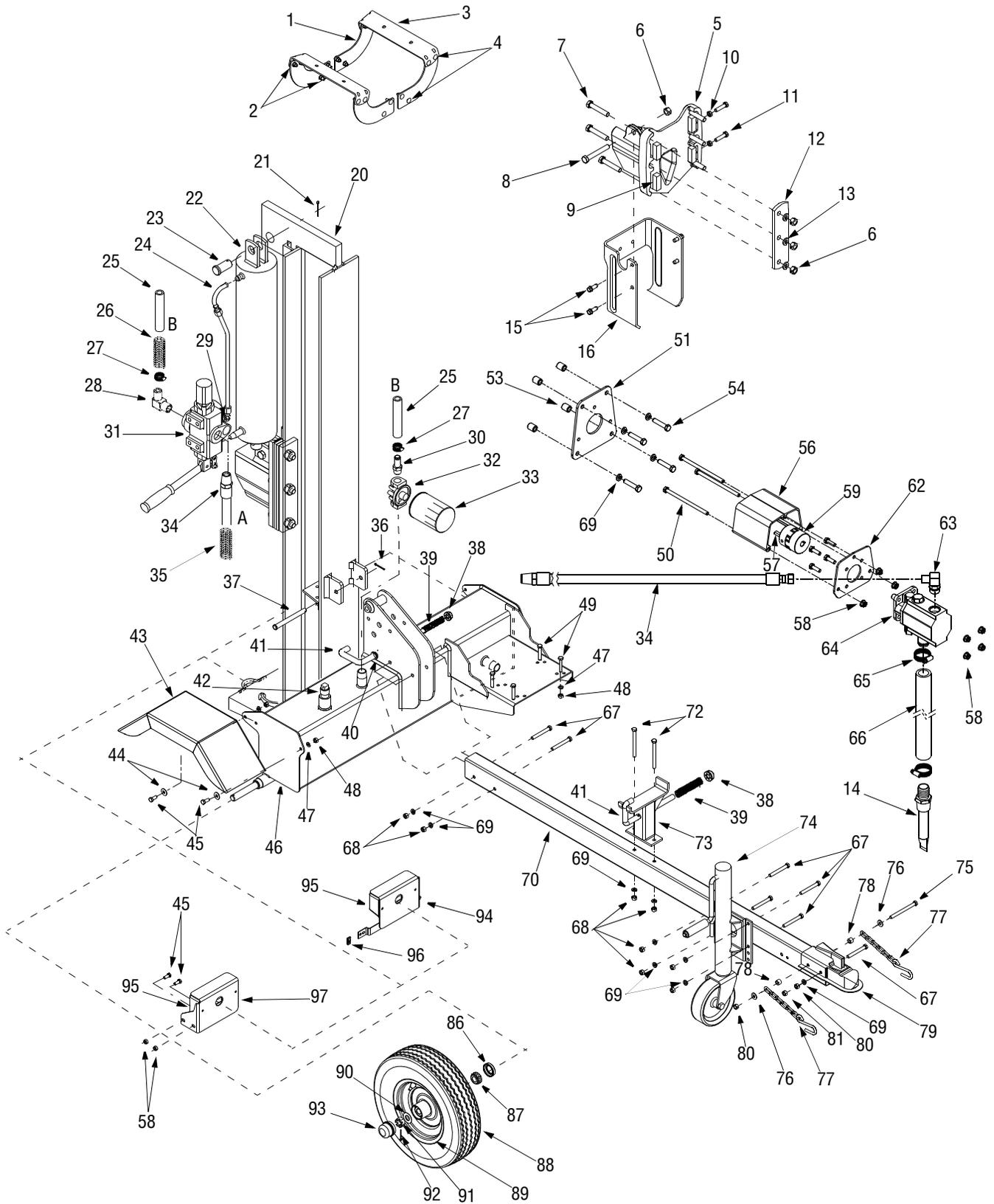
## HYDRAULIC TROUBLESHOOTING

Problem	Cause	Remedy
Cylinder rod will not move	<ol style="list-style-type: none"> <li>1. Broken drive shaft.</li> <li>2. Shipping plugs left in hydraulic hoses.</li> <li>3. Set screws in coupling not adjusted properly.</li> <li>4. Loose shaft coupling.</li> <li>5. Gear sections damaged.</li> <li>6. Damaged relief valve.</li> <li>7. Hydraulic lines blocked.</li> <li>8. Incorrect oil level.</li> <li>9. Damaged directional valve.</li> <li>10. Blocked directional valve.</li> </ol>	<ol style="list-style-type: none"> <li>1. See authorized service dealer.</li> <li>2. Disconnect hydraulic hoses, remove shipping plugs, reconnect hoses.</li> <li>3. See operator's manual for correct adjustment.</li> <li>4. Correct engine/pump alignment as necessary.</li> <li>5. See authorized service dealer.</li> <li>6. See authorized service dealer.</li> <li>7. Flush and clean hydraulic system.</li> <li>8. Check oil level.</li> <li>9. See authorized service dealer.</li> <li>10. Flush and clean hydraulic system.</li> </ol>
Slow cylinder shaft speed while extending and retracting.	<ol style="list-style-type: none"> <li>1. Gear sections damaged.</li> <li>2. Excessive pump inlet vacuum.</li> <li>3. Slow engine speed.</li> <li>4. Damaged relief valve.</li> <li>5. Incorrect oil level.</li> <li>6. Contaminated oil.</li> <li>7. Directional valve leaking internally.</li> <li>8. Internally damaged cylinder.</li> </ol>	<ol style="list-style-type: none"> <li>1. See authorized service dealer.</li> <li>2. Make certain pump inlet hoses are clear and unblocked-use short, large diameter inlet hoses.</li> <li>3. See authorized service dealer.</li> <li>4. See authorized service dealer.</li> <li>5. Check oil level.</li> <li>6. Drain oil, clean reservoir, and refill.</li> <li>7. See authorized service dealer.</li> <li>8. See authorized service dealer.</li> </ol>
Leaking cylinder	<ol style="list-style-type: none"> <li>1. Broken seals.</li> <li>2. Scored cylinder.</li> </ol>	<ol style="list-style-type: none"> <li>1. See authorized service dealer.</li> <li>2. See authorized service dealer.</li> </ol>

<b>Problem</b>	<b>Cause</b>	<b>Remedy</b>
Engine runs but wood will not split or wood splits too slowly	<ol style="list-style-type: none"> <li>1. Small gear section damaged.</li> <li>2. Pump check valve leaking.</li> <li>3. Excessive pump inlet vacuum.</li> <li>4. Incorrect oil level.</li> <li>5. Contaminated oil.</li> <li>6. Directional valve leaking internally.</li> <li>7. Overloaded cylinder.</li> <li>8. Internally damaged cylinder.</li> </ol>	<ol style="list-style-type: none"> <li>1. See authorized service dealer.</li> <li>2. See authorized service dealer.</li> <li>3. Make certain pump inlet hoses are clear and unblocked.</li> <li>4. Check oil level.</li> <li>5. Drain oil, clean reservoir, and refill.</li> <li>6. See authorized service dealer.</li> <li>7. Do not attempt to split wood against the grain.</li> <li>8. See authorized service dealer.</li> </ol>
Engine stalls during splitting	<ol style="list-style-type: none"> <li>1. Low horsepower/weak engine.</li> <li>2. Overloaded cylinder.</li> </ol>	<ol style="list-style-type: none"> <li>1. See authorized service dealer.</li> <li>2. Do not attempt to split wood against the grain or see authorized service dealer.</li> </ol>
Engine will not turn or stalls under low load conditions	<ol style="list-style-type: none"> <li>1. Engine/pump misalignment.</li> <li>2. Frozen or seized pump.</li> <li>3. Low horsepower/weak engine.</li> <li>4. Hydraulic lines blocked.</li> <li>5. Blocked directional valve.</li> </ol>	<ol style="list-style-type: none"> <li>1. Correct alignment as necessary.</li> <li>2. See authorized service dealer.</li> <li>3. See authorized service dealer.</li> <li>4. Flush and clean hydraulic system.</li> <li>5. Flush and clean hydraulic system.</li> </ol>
Leaking pump shaft seal	<ol style="list-style-type: none"> <li>1. Broken drive shaft.</li> <li>2. Engine/pump misalignment.</li> <li>3. Gear sections damaged.</li> <li>4. Poorly positioned shaft seal.</li> <li>5. Plugged oil breather.</li> </ol>	<ol style="list-style-type: none"> <li>1. See authorized service dealer.</li> <li>2. Correct alignment as necessary.</li> <li>3. See authorized service dealer.</li> <li>4. See authorized service dealer.</li> <li>5. Make certain reservoir is properly vented.</li> </ol>

## NOTES

# SECTION 9: MODEL LS33T PARTS LIST



# Model LS33T

Ref. No.	Part No.	Part Description	Ref. No.	Part No.	Part Description
1.	781-0686	Log Tray Bracket	47.	736-0119	Lock Washer 5/16
2.	712-0431	Flanged Lock Nut 3/8-16	48.	712-3010	Hex Nut 5/16-18
3.	781-0682	Log Tray	49.	710-0409	Hex Cap Screw 5/16-24 x 1.75
4.	710-3097	Carriage Bolt 3/8-16 x 1.0	50.	710-3226	Hex Cap Screw 5/16-18 x 5.50
5.	719-0550	Wedge Assembly	51.	781-1100	Front Support Bracket Coupling
6.	712-3022	Lock Nut 1/2-13	53.	711-0396	Spacer, .385 x .623 x .750
7.	710-1018	Hex Cap Screw 1/2-20 x 2.75	54.	710-0347	Hex Cap Screw 3/8-16 x 1.75
8.	710-1806	Hex Cap Screw 1/2-13 x 3.25	56.	719-0315	Coupling Shield
9.	781-0351	Adjustable Gib	57.	714-0114	Key
10.	712-0711	Hex Jam Nut 3/8-24	58.	712-04063	Hex Flange Lock Nut, 5/16-18
11.	710-0459A	Hex Cap Screw 3/8-24 x 1.5	59.	718-04135	Flex Coupling
12.	781-0790	Back Plate	62.	781-0097	Rear Coupling Support Bracket
13.	736-0921	Lock Washer 1/2	63.	737-0264	Adapter 7/8-14
14.	737-04093	Inlet Filter	64.	718-04128	Pump
15.	710-0654A	Hex Washer Screw 3/8-16 x 1.0	65.	726-0132	Hose Clamp
16.	781-0525	Dislodger	66.	727-0451	Suction Hose
20.	681-0129	Beam Assembly	67.	710-0521	Hex Cap Screw 3/8-16 x 3.0
21.	714-0211	Cotter Pin	68.	712-0798	Hex Nut 3/8-16
22.	718-0313	Hydraulic Cylinder 31/33 Ton	69.	736-0169	Lock Washer 3/8
23.	711-1135	Clevis Pin	70.	781-0680A	Tube
24.	727-0471	Hydraulic Tube	72.	710-0411	Hex Cap Screw 3/8-16 x 4.0
25.	727-0443	Return Hose 3/4" ID x 44"	73.	681-0110	Support Beam Assembly
26.	781-0526	Hose Guard	74.	681-04029	Adjustable Jack Stand
27.	726-0132	Hose Clamp 5/8"	75.	710-0944	Hex Cap Screw 3/8-16 x 4.25
28.	737-0153	Return Elbow	76.	736-0262	Flat Washer .385 ID x .870 OD
29.	737-0192	90 Degree Solid Male Adapter	77.	713-0433	Chain
30.	737-0235	3/4" Hose Adapter	78.	750-0497	Spacer
31.	718-0481	Control Valve	79.	727-04030	Hitch Coupler, 2-inch
32.	737-0316	Filter Housing	80.	712-0375	Lock Nut 3/8-16
33.	723-0405	Oil Filter	81.	712-3008	Hex Jam Nut 3/8-16
34.	727-0502	High Pressure Hydraulic Hose	86.	721-0168	Bearing Seal
35.	781-0538	Hose Guard	87.	741-0987	Bearing Cone
36.	714-0470	Cotter Pin 1/8"	88.	634-0187	Wheel Assembly
37.	738-0805	Hinge Pin 1/2 x 4.8" Lg.	89.	634-0181	Rim Assembly
38.	726-0214	Push Cap	90.	736-0351	Flat Washer .76" ID x 1.5" OD
39.	732-0583	Compression Spring 4"	91.	712-0359	Slotted Nut 3/4-16
40.	736-0116	Flat Washer .635 ID x .93 OD	92.	714-0162	Cotter Pin 5/32" x 1-1/4"
41.	781-0690	Locking Rod	93.	734-0873	Hub Cap
42.	737-0348	Vented Dipstick	94.	681-0074	Light Bracket Assembly LH
43.	781-04002	Fender	95.	625-0009	Tail Light Assembly
44.	736-0371	Flat Washer, .343 x .880 x .062	96.	712-0292	Nut 1/4-20
45.	710-3038	Hex Cap Screw 5/16-18 x .875	97.	781-0624	Light Bracket Assembly RH
46.	681-04041	Frame Assembly 7.0 Gal			

# MANUFACTURER'S LIMITED WARRANTY FOR:



The limited warranty set forth below is given by Cub Cadet LLC with respect to new merchandise purchased and used in the United States, its possessions and territories.

"Cub Cadet" warrants this product against defects in material and workmanship for a period of two (2) years commencing on the date of original purchase and will, at its option, repair or replace, free of charge, any part found to be defective in materials or workmanship. This limited warranty shall only apply if this product has been operated and maintained in accordance with the Operator's Manual furnished with the product, and has not been subject to misuse, abuse, commercial use, neglect, accident, improper maintenance, alteration, vandalism, theft, fire, water, or damage because of other peril or natural disaster. Damage resulting from the installation or use of any part, accessory or attachment not approved by Cub Cadet for use with the product(s) covered by this manual will void your warranty as to any resulting damage.

Normal wear parts are warranted to be free from defects in material and workmanship for a period of thirty (30) days from the date of purchase. Normal wear parts include, but are not limited to items such as: batteries, belts, blades, blade adapters, grass bags, rider deck wheels, seats, snow thrower skid shoes, shave plates, auger spiral rubber and tires.

**HOW TO OBTAIN SERVICE:** Warranty service is available, WITH PROOF OF PURCHASE, through your local authorized service dealer. To locate the dealer in your area, check your Yellow Pages, or contact Cub Cadet at P.O. Box 361131, Cleveland, Ohio 44136-0019, call 1-877-282-8684 or log on to our Web site at [www.cubcadet.com](http://www.cubcadet.com).

This limited warranty does not provide coverage in the following cases:

- a. The engine or component parts thereof. These items may carry a separate manufacturer's warranty. Refer to applicable manufacturer's warranty for terms and conditions.
- b. Log splitter pumps, valves, and cylinders have a separate one year warranty.
- c. Routine maintenance items such as lubricants, filters, blade sharpening, tune-ups, brake adjustments, clutch adjustments, deck adjustments, and normal deterioration of the exterior finish due to use or exposure.
- d. Service completed by someone other than an authorized service dealer.
- e. Cub Cadet does not extend any warranty for products sold or exported outside of the United States, its possessions and territories, except those sold through Cub Cadet's authorized channels of export distribution.
- f. Replacement parts that are not genuine Cub Cadet parts.
- g. Transportation charges and service calls.

**No implied warranty, including any implied warranty of merchantability of fitness for a particular purpose, applies after the applicable period of express written warranty above as to the parts as identified. No other express warranty, whether written or oral, except as mentioned above, given by any person or entity, including a dealer or retailer, with respect to any product, shall bind Cub Cadet. During the period of the warranty, the exclusive remedy is repair or replacement of the product as set forth above.**

**The provisions as set forth in this warranty provide the sole and exclusive remedy arising from the sale. Cub Cadet shall not be liable for incidental or consequential loss or damage including, without limitation, expenses incurred for substitute or replacement lawn care services or for rental expenses to temporarily replace a warranted product.**

Some states do not allow the exclusion or limitation of incidental or consequential damages, or limitations on how long an implied warranty lasts, so the above exclusions or limitations may not apply to you.

In no event shall recovery of any kind be greater than the amount of the purchase price of the product sold. **Alteration of safety features of the product shall void this warranty.** You assume the risk and liability for loss, damage, or injury to you and your property and/or to others and their property arising out of the misuse or inability to use the product.

This limited warranty shall not extend to anyone other than the original purchaser or to the person for whom it was purchased as a gift.

**HOW STATE LAW RELATES TO THIS WARRANTY:** This limited warranty gives you specific legal rights, and you may also have other rights which vary from state to state.

**IMPORTANT:** Owner must present Original Proof of Purchase to obtain warranty coverage.