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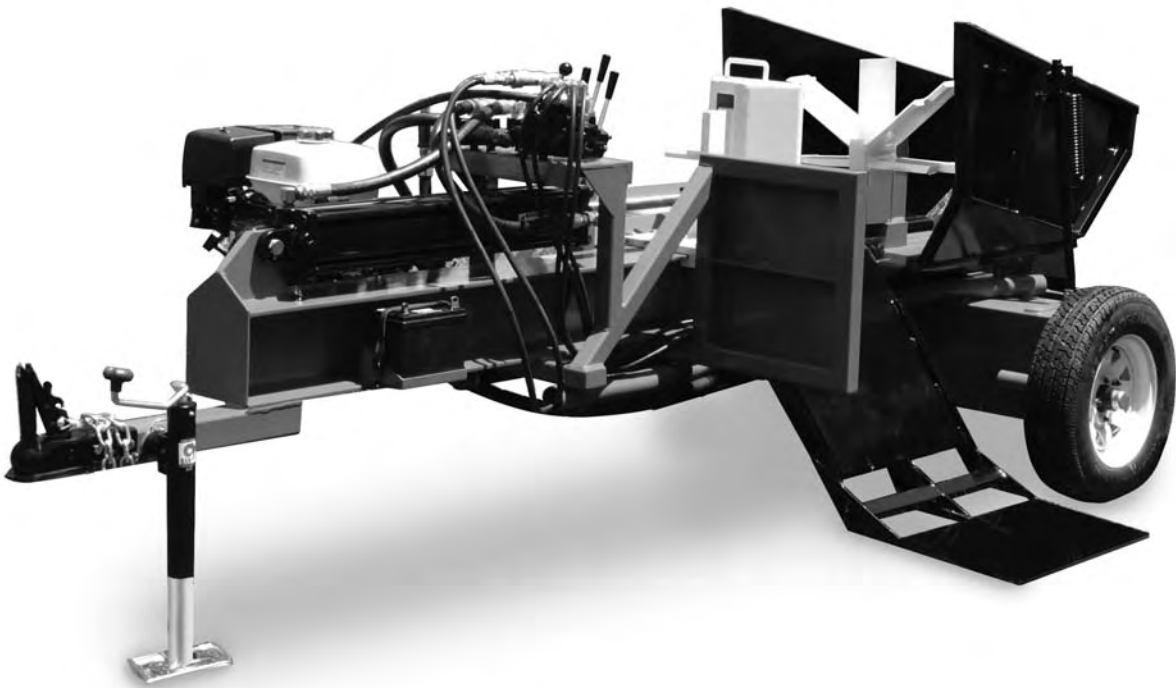
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# Model LS-30

## Commercial Wood Splitter

# OPERATOR'S MANUAL WITH ILLUSTRATED PARTS BREAKDOWN



Mighty Ox™ Products are manufactured by Zook's Welding, LLC, Honey Brook, PA

Zook's Welding, Inc.  
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Honey Brook, PA 19344

Phone 717-455-9007

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Note: Zook's Welding, LLC, manufacturer of Mighty Ox™ Wood Splitters reserves the right to make technical changes for product improvement. This manual may contain illustrations and photographs that are intended for demonstration purposes and which slightly deviate from the actual product design.

**Serial Number** \_\_\_\_\_

**Date of Purchase** \_\_\_\_\_



Enter the serial number and purchase date of your log splitter in the space provided. This manual should be kept for future reference.



## **Read This Entire Manual Before Operating the Machine**

**Improper use of this equipment can result in serious injury or death.**

It is important that you read and understand and comply with heeding the procedures described in this document. For assistance in assembly, use, safety or maintenance of the equipment, call Zook's Welding at 717-455-9007.

The machinery described in this document produces powerful mechanical forces required to split whole logs in to firewood, and the machine and its use must be according the respect, personal responsibility and all due caution that powerful equipment must be given.

Be careful when using this equipment.

Lifting, handling and maneuvering heavy logs, exposure of hands and limbs to hydraulic ram operation and sharp splitting tools all require an extra degree of concentration, awareness, sober operation and mental and physical awareness to help avoid injury or death. Never operate machinery under the influence of alcohol or drugs.

Never let youngsters operate the equipment. Keep children and youths away from the equipment when in operation to avoid contact with all moving parts and split wood pieces that may fall to the ground.

The safety of others is the sole responsibility of the equipment operator, for which Zook's Welding, Inc., shall not be held liable.

Zook's Welding, Inc. shall not be responsible for personal injury based on the use or misuse of this equipment. No safety guarantees are offered, expressed or implied.

## INDEMNIFICATION

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Operator or observer safety is not guaranteed or to be inferred by this document. Operator actions or acts of omission are the operator's sole responsibility.

Zook's Welding, Inc., its suppliers and vendors, shall be indemnified against liability for any injury or damages resulting from the use of the equipment described in this document, whether the conditions of any damages are explicitly expressed in this document or are not expressed in this document. As there are always unforeseen circumstances, and the maker and seller of the equipment cannot anticipate all such circumstances, Zook's Welding, Inc. and its vendors and suppliers shall not be responsible for injuries, death or damages resulting from such unforeseen circumstances.

This indemnification shall continue regardless of other users of the equipment by the first purchaser, including the equipment being lent, rented, leased or sold to other parties.

This manual must be kept with the equipment at all times.

Agreed:

Purchaser \_\_\_\_\_

Address \_\_\_\_\_

City, State, Zip \_\_\_\_\_

Date \_\_\_\_\_

Signature \_\_\_\_\_

For Zook's Welding, Inc.

Name \_\_\_\_\_

Title \_\_\_\_\_

Date \_\_\_\_\_



## Caution! Residual Hydraulic Energy!

Residual hydraulic energy (pressure) must be released prior to any maintenance or repair work begins on the splitter. Even with the engine off, hydraulic pressure is stored within the system. When pressurized hydraulic fluid escapes under high pressure, the fluid can penetrate the skin and cause serious injury.

Releasing stored hydraulic pressure.

1. Turn engine off.
2. Move hydraulic control valves from one limit of travel to the other at least four times to dissipate the stored hydraulic energy.
3. Hold the valve in the extreme positions for at least four seconds.

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**Read this entire manual before starting the engine or beginning use of this wood splitter. Failure to do so could result in serious injury or death to you or to others.**



## **Attention Rental Companies**

It is your responsibility to familiarize your customer operators with the following safety instructions. This manual must be with the machine at all times. Require and ensure that users are aware of all of the safety hazards and warning, and read this entire manual before beginning operation.



## **High Pressure Warning!**

Even upon the first use, there may be high-pressure hydraulic energy remaining in the unit resulting from factory testing prior to shipment. If maintenance or repair is needed prior to first use, you must release that hydraulic pressure before any work can begin on the equipment. See page 3 for the procedure for releasing stored hydraulic pressure.



## GENERAL USE

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Mighty Ox Wood Splitting equipment is designed to split whole or partial logs into firewood sized pieces. Do not use this equipment for any other purposes. Contact Zook's Welding, Inc. before using the equipment for any purpose beyond splitting logs into firewood.



**18+  
ONLY**



Only trained and authorized operators may operate the log splitter, and only after becoming completely familiar with this manual and its warnings. Operators unfamiliar with the dangers inherent in the use of this powerful equipment risk injury or death for themselves and for others.



Operators must know the emergency shut down procedure before operating equipment.



Do not stand or sit or lean against any part of the equipment when it is running. Pinching or crushing injury is possible. Do not allow any bystanders within 20 feet of the equipment while it is operating.

**18+  
ONLY**

When working as a team, make sure that there is good visual and gestural communication between team members. Do not initiate and hydraulic power movements without checking to see that there is no person in close proximity to the power operation of the equipment. This includes the log lifting mechanisms, the ram block operation, the elevator operation, the Tension Wings and locations where wood being split may cause shards or pieces to snap and become airborne when under tension.



Do not use alcohol or drugs, including prescription medications that carry warnings against the use of power equipment, including driving.



Do not touch parts of the engine, which can cause burns.



Do not operate this equipment indoors or without adequate ventilation. Carbon monoxide is generated by operation of internal combustion engines. This is an odorless and colorless gas that can cause people to lose consciousness and can lead to death due to exposure to high concentrations of CO gas.



Physical protection is required for the safe operation of this equipment. These include:

1. Safety glasses or goggles
2. Hearing protection
3. Sturdy gloves
4. Steel toes boots or shoes
5. No loose or hanging clothing that can get caught in any moving parts



### **Drawing In / Trapping Hazard**

There are points in the equipment where objects, including people, may be pulled into the equipment. Heavy logs lifted above the cradle are an example, as well as the forward movement of the ram block or splitting block. Remember: machines can't think for themselves. Do not attempt to remove stuck wood pieces, for example, when any part of the equipment is in movement. Guards and safety devices included in the equipment are not a substitute for common sense and acute awareness when operating this powerful machinery.



### **Impact Hazard**

An impact hazard is where two parts of the heavy steel components in the equipment come together under power. Be aware of all parts of the equipment that are in motion, and make sure that you and others are never in the direct line of parts that are moving under power. Be careful when handling heavy wood logs around the equipment. For example, if you are carrying a heavy log and trip and fall against the equipment, that impact could cause serious injury or death. Be careful. Be aware. Always stay out of the path of a moving piece or component of the equipment when under power. This equipment is designed for use of only one operator at a time.



### **Burn Hazard**

Read the manufacturer's safety warnings regarding the safe use of the engine. Do not touch the engine during or after operation to avoid contact with hot surfaces that can cause burns. Follow all manufacturer safety warnings carefully.



## **Fire Hazard - Flammable**

This equipment uses a gasoline-powered engine, and so there is a risk of fire or explosion if gasoline is mishandled. Read and follow all engine manufacturer warnings and instructions regarding the safe use of the engine and the gasoline fuel it requires.

Store fuel and oils in an approved flammable liquid storage container

Dispose of waste liquids, spill-cleaning material and oil-soaked rags in an appropriate fireproof container, located at least 30 feet from the wood splitter

Do not use water to attempt to extinguish and gasoline or oil fire. The result may be the spreading of the fire.

Use only CO2 or dry powder fire extinguisher types on this equipment, should a fire occur.



## **Moving the Splitter**

This equipment is heavy and requires proper equipment to hitch, or load on to a trailer, and move it. Observe all proper safety procedures when moving the equipment, including any necessary lifting, pushing or other required maneuvering.

Use only transport devices (trailers, hitches, towing vehicles) rated and equipment to handle this type of equipment.

For safety, always wear steel-toed boots when moving or operating the wood splitter.



## **Residual Risk**

Even when all necessary safety procedures and cautions have been observed, there is always the unexpected circumstance that can occur. Zook's Welding, Inc. has taken every precaution to test the equipment for safety, to inform the operator about safe operation and safe maintenance procedures. However, not all possible risks can be eliminated. This manual describes and shows how to recognize potentially hazardous conditions and parts of the equipment.



## **Crushing Hazard**

Where two pieces of equipment move toward one another a crush hazard exists. An obvious example is where the ram block pushes toward the splitting wedge. Be aware of any other such circumstances where crushing can occur and avoid exposure to such hazards.



## **Shear Hazard**

A shear hazard is where cutting can occur. Powerful torque and sharp surfaces create circumstances where hands, feet, limbs or other body parts can be cut by the shear hazards inherent in some parts of this equipment. Be aware of and stay away from any exposure of yourself as the operator and any other co-workers or bystanders to any observed or potential shear hazards related to this equipment.



## Entanglement Hazard

Most entanglement injuries are related to contact with rotating or spinning shafts. Long hair, a pant cuff, a loose sleeve, a scarf, the edge of a coat or even a stray thread can become caught in rotating machine parts, drawing the person into contact with the moving equipment parts. The resulting injury can be serious or deadly. Clothing can become wrapped so tight that suffocation results. You can be thrown off balance into other moving parts. Rotating shafts can have rough surfaces that grab clothing or hair and cause serious injury. Be aware of all moving parts of the equipment and take the necessary precautions for you to avoid injury, and take responsibility to make others around the equipment to stay clear of it to avoid entanglement danger.

## GENERAL SAFETY WARNINGS

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### Always DO the following



- Read the manual before operation of the splitter

- Operate the splitter only on solid level soil or gravel or paved surface



- Avoid working in slippery conditions, such as wet grass, where slips and fall can occur

- Remove trip hazards at the work site, such as sticks, branches, protruding roots, stones, debris and other such trip hazards



- Wear the recommended safety equipment: Safety glasses or goggles, hearing protection, snug fitting leather gloves, steel toed shoes or boots, and a hard hat if working beneath trees that are being felled or where branches may fall in the work area where equipment is being used.

- Stay clear of the splitting area, the log cradle, the ram block and wedge, when operating equipment.

### Log Handling

- Always handle logs by the middle and not at the ends. This helps reduce the chance that you'll lose grip and drop the log possibly on your feet or legs. It also keeps your hands from being exposed to the crushing surfaces of the equipment—the ram block and wedge.

- A partially split log is especially dangerous as it is under tension forces and may close suddenly, so never place an object into a partially split log

- Never put anything between the log and the cradle

- Never attempt to climb over or straddle the splitter

## General Cautions

- Do not split anything other than wood logs
- Do not attempt to reposition the splitter with the engine running
- Do not alter or modify the equipment
- The equipment is designed for use by a single operator. Do not use a helper. Take turns, but only one operator at a time to reduce the potential for accidental crushing, shearing or entanglement accidents.
- Keep observers or bystanders at least 20 feet from the equipment when operating
- Do not use the equipment when under the influence of alcohol, drugs, prescription medications or over the counter remedies that can cause drowsiness or dizziness.
- Avoid using the equipment when you are fatigued or physically tired. Safe operation is better achieved when the operator is physically well rested and mentally alert.
- Do not allow anyone to operate the equipment who has not read the entire manual and received training on safe operation
- No person under the age of 18 years old may operate the equipment
- Do not allow the machine unattended when the engine is running

## Do These Things



- Inspect hydraulic hoses daily. Look for any places where hoses are frayed, worn, abraded, kinked or cracked. Replace those hoses before using the equipment.

- Placing a sheet of cardboard or similar material beneath the equipment helps detect any hydraulic leaks



- Before making any repairs of any kind, follow these steps:

- a. Turn engine off.

- b. Move the hydraulic controls back and forth, from one limit of travel to the other, three or four times.

- c. Hold the control at each limit of travel for a few seconds.

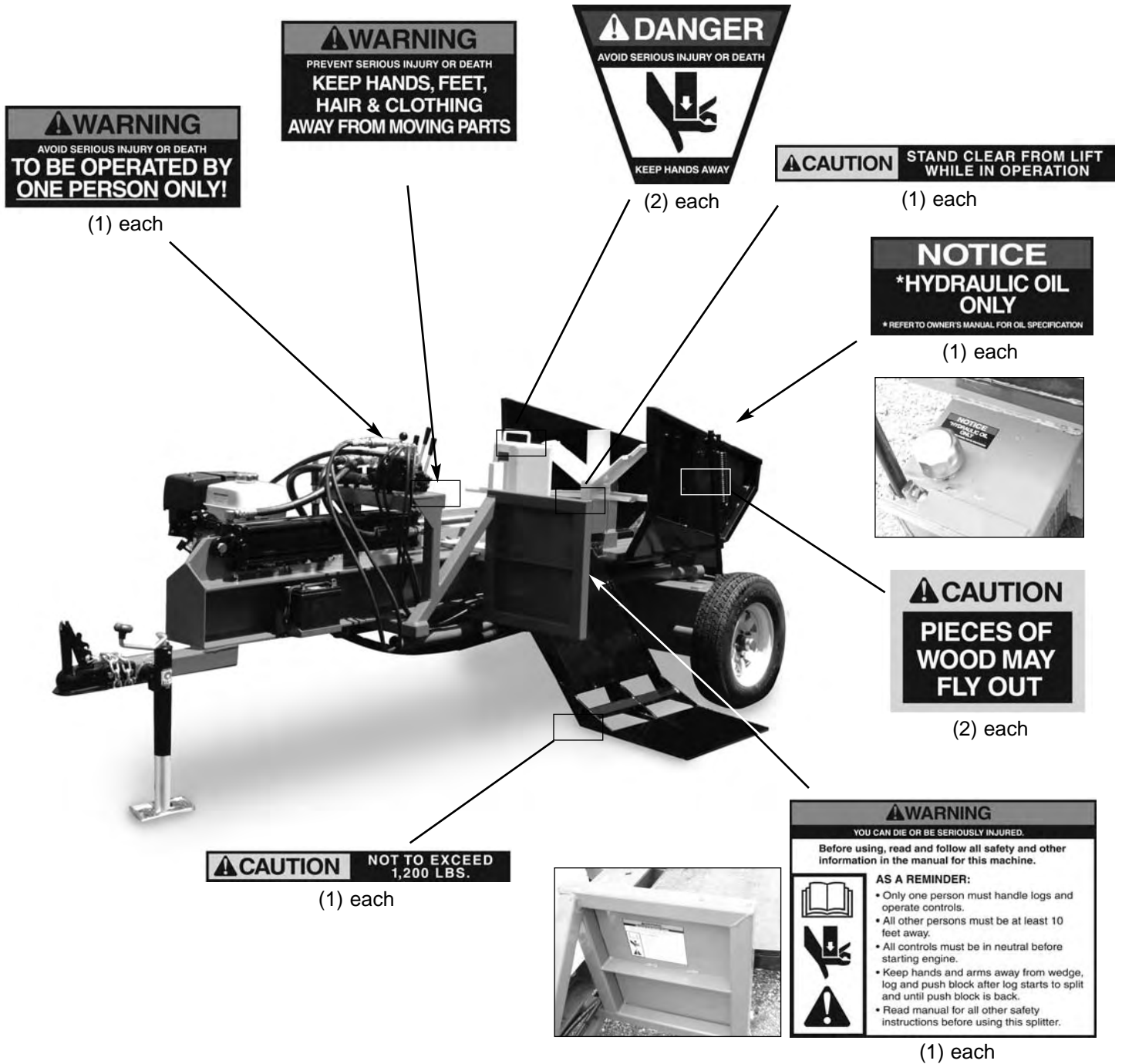
- d. High pressure energy has dissipated when there is no resulting part or system movement, which indicates that high hydraulic pressure has been released from the system. When disconnecting hydraulic hoses or pumps, always use caution in case any low hydraulic pressure remains.

- Contact Mighty-Ox, made by Zook's Welding, Inc. for any necessary parts required for repair.

## More Things NOT to Do

- Never split anything other than wood
- Do not handle logs by their ends when positioning logs in the cradle, exposing hands to crushing surfaces
- Keep hands away from crush points, where the ram block and wedges come into contact with logs, or under heavy logs as they come to rest in the cradle
- Stay clear of the open cracks of any partially split logs. These cracks can suddenly close with great force and grab hold of loose clothing, hands and the like.
- Do not place anything at the side of a log that is being split. Logs spread sideways when being split, exerting great force in a sideways direction, and creating a crush hazard between the wood and the Tension Wings, for example. Stay clear.
- Do not sit on, climb over or attempt to straddle the splitter at any time, even when the machine is not operating. Falling on sharp surfaces can cause injury even when equipment power is turned off.
- Don't move the splitter when it is moving.
- Do not move or reposition the splitter when the engine is running.
- Do not modify the splitter. It is engineered to function the way we built it. Changing it can result in increasing danger and hazards in unexpected ways.
- Operation of this equipment is designed for one person at a time. If you have a team, take turns in operating the splitter.
- No alcohol, no drugs, no prescription or over-the-counter medications that cause drowsiness or dizziness.
- Make sure anyone who uses the splitter has been properly trained in all safety and operation procedures.
- Do not allow anyone under the age of 18 to operate the equipment.
- If the engine is running, do not walk away and leave the splitter unattended.
- The engine and hydraulic systems both generate high heat. Do not remove the cap from the hydraulic tank when the system is running or is hot following operation. Give it plenty of time to cool down, release residual hydraulic energy (see steps on page 3) before removing cap.
- Only use connectors, valves, hoses or fittings that are original to the equipment. Substitutes from original equipment may cause unexpected consequences, as their performance criteria may not be the same, even though they fit the equipment.

## DECAL LOCATIONS





## WARNING

In order to avoid personal injury or death, carefully read and make certain you understand all instructions pertaining to your Mighty Ox™ log splitter.

Make sure you read and understand all of our instructions and safety precautions before operating or maintaining our product. Do not operate the log splitter unless you read and understand the instructions and warnings in this manual. If you have any doubt or questions about the correct or safe method of performing anything found in this or other Zook's Welding, LLC product manuals, contact your Zook's Welding, LLC, Mighty Ox™ Wood Splitter dealer or call the Sales and Service representatives at our headquarters office. Proper care is your responsibility.



## WARNING

By being alert and recognizing potentially hazardous situations, accidents can often be avoided. Any individuals operating, maintaining or repairing products manufactured by Zook's Welding, LLC should have the necessary training, skills and tools required to perform these functions properly and safely. The safety information in this manual serves as a fundamental guide in an attempt to prevent injury or death.

Zook's Welding, LLC cannot anticipate every circumstance that might involve a potential hazard. The warnings in the manual and on the product itself are, therefore, not all inclusive. If you are using tools, procedures, work methods or operating techniques not specifically mentioned by Zook's Welding, LLC, you must satisfy yourself that they are safe for you and for others. Make sure the log splitter will not be damaged or made unsafe by any operation, lubrication, maintenance or repair procedures that you choose to use.

**DO NOT** proceed if you have any doubt about the correct or safe method of performing anything found in this or other Zook's Welding, LLC manuals. Seek expert assistance from a qualified person before continuing.



## WARNING

### CALIFORNIA PROPOSITION 65

Engine exhaust from this product contains chemicals known to the state of California to cause cancer, birth defects or other reproductive harm.



## INTRODUCTION

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The commercial Mighty Ox™ LS-30 Log Splitter is designed for tough applications. With 30 tons of splitting force, a 14 second cycle time and a 13 hp engine, this model will handle most of your commercial log splitting needs.

An attractive, durable powder-coated finish provides the finest protection available, and Zook's Welding, LLC's rigid quality control and component testing help ensure years of productive, reliable service. The name Mighty Ox™ stands for quality and reliability when it comes to log splitters and wood processing products.

Mighty Ox™ offers the finest commercial log splitter on the market today!

### You can expect

- Heavy-duty, rugged construction offers years of exceptional service.
- Ergonomic design.
- Rigid quality control during manufacturing assures you of greater reliability.
- Factory testing of all major components and hydraulic tank.
- Powder-coated finish for the best appearance along with protection from weather.
- Year-round manufacturing, parts and support.

## SAFETY

---

The following list of safety rules are critical for you to follow in order to use your log splitter safely.

### Personal Protection

In order to avoid personal injury or death, carefully read and understand all instructions pertaining to the Mighty Ox™ LS-30, including the operating and maintenance instruction manual from the engine's manufacturer.

Always protect yourself with proper gear including but not limited to safety goggles, tight-fitting gloves without drawstrings or loose cuffs, steel-toed shoes and a protective hearing device.

To prevent injury, make sure all decals are installed on the log splitter and are legible at all times.



## Worksite Safety

To avoid tripping and possible injury, do not leave tools, logs or other components lying around the work area.

## NEVER:

- Operate your log splitter on surfaces that are slippery, wet, muddy or icy. The location you choose should be flat, dry and free from any tall grass, brush or other interferences.
- Operate the engine in an enclosed area. Make sure the area is well ventilated, as exhaust fumes contain carbon monoxide that can be deadly when inhaled.
- Attempt to move your log splitter over hilly, rough or uneven terrain without a tow vehicle.
- Use your log splitter at night or in the dark.

## ALWAYS

- Operate your log splitter on level ground that is dry and firm.
- Block the wheels in order to prevent movement of the machine while in operation.

## Operating Safety

ALLOW ONLY ONE (1) PERSON TO LOAD AND OPERATE THE LOG SPLITTER.

Only adults should be permitted to operate a log splitter. No one under the age of 18 should be permitted to operate a log splitter.

Bystanders, including children and pets, should be kept at least twenty-five (25) feet away from the work area. Only the operator should stand near the equipment and only within the safe operating area prescribed in this manual (see the photos on safe and unsafe operating zones in the “Operation” section).

When the ram of the log splitter is in the return mode, your hands must be kept off the machine—the log splitter is designed to automatically stop when the cylinder is fully retracted.



**ALWAYS DISCONNECT THE SPARK PLUG WIRE WHEN THE LOG SPLITTER IS NOT IN OPERATION.**

## Operating Safety, continued

No person should be permitted to operate the log splitter until they have read and understood the safe operating instructions contained in this manual.

Do not alter your log splitter under any circumstances. This equipment was designed and engineered to be used in accordance with the operating instructions. Altering the equipment, or using the equipment in such a way as to circumvent its design capabilities and capacities, could result in serious or fatal injury and **WILL VOID THE WARRANTY.**

**NEVER** operate, or allow anyone else to operate, this equipment while under the influence of drugs, alcohol or medication.

**NEVER** wear any loose clothing or jewelry that may be caught or become entangled in the log splitter.

**NEVER** place hands or feet between log and splitting wedge or between log and ram during the forward or reverse stroke.

**NEVER STRADDLE OR REACH ACROSS THE SPLITTING AREA WHEN OPERATING THE LOG SPLITTER.**

**NEVER** step over your log splitter when the engine is running as you may trip or accidentally engage the ram.

**NEVER** attempt to load your log splitter while the ram is in motion.

Use only your hand to operate the control lever. **NEVER** use your foot, knee, a rope or any other extension device.

## Log Splitting Safety

### ALWAYS

- Keep your fingers and hands away from any cracks that open in the log during the splitting operation.
- Make sure that both ends of the log you are splitting are cut as square as possible. Square cuts will prevent the log from sliding out of position while under pressure. Logs should be 30 inches or shorter in length.
- Pile logs to be split in a manner that WILL NOT cause you to reach across the log splitter

### NEVER

- Try to split logs on top of each other.

## Maintenance and Repair

All safety rules must be followed. Most accidents involving the operation, maintenance or repair of products occur because the assembler/owner/operator failed to observe basic safety rules or operating instructions.

### BEFORE USING YOUR MIGHTY OX™

#### ALWAYS:

- Inspect your log splitter before each use.
- Make certain that all nuts, bolts, screws, hydraulic fittings, hose clamps, etc. are tightened securely.
- Check the oil level in the hydraulic oil tank and engine reservoir.

#### NEVER:

- Operate the log splitter when it is in need of repair or is in poor mechanical condition.
- Tamper with the engine in order to run it at excessive speeds. The maximum engine speed has been preset and is within safety limits.
- Make alterations to your log splitter in any manner. Any such alteration may cause the log splitter to become unsafe and **WILL VOID THE WARRANTY.**
- Attach a rope or extension to the control lever or add width or height to the splitting wedge. Such **ALTERATIONS** may cause the log splitter to become **UNSAFE** and **WILL VOID THE WARRANTY.**

## Maintenance and Repair, continued

### ALWAYS:

- Make certain to clean the unit after each use.
- When possible, store the unit inside.
- If it is stored outside, cover it completely.

## Towing

Before towing make certain your log splitter is securely, and correctly, attached to the towing vehicle. Make sure that the ball hitch you are using is the proper size for the hitch coupler on the log splitter (see "Specifications" section). Make sure the safety chains are properly hooked to the vehicle and leave enough slack for turning.

Allow for added length of the log splitter in all driving situations, including turning, parking, and crossing intersections.

Use care when backing up to prevent the log splitter from jackknifing.

Disconnect your log splitter from the towing vehicle before attempting to use it.

**NEVER exceed 35 M.P.H. when towing your log splitter.** Obey all state and local regulations when towing on state and local roads and highways. Your speed should be adjusted for terrain and conditions as necessary and extra caution should be taken when towing over rough terrain, especially over a railroad crossing.

### NEVER:

- Tow your log splitter when there is fuel in the engine's tank.
- Allow anyone to sit or ride on your log splitter.
- Carry any cargo or wood on your log splitter.

## Refueling:

- Only refuel the log splitter outdoors in a clear area that is void of gas fumes or spilled gasoline.
- Always use a proper fuel container with a safety fuel spout to carry gasoline.
- Always replace the gas cap on the log splitter and ensure that the cap on the fuel container cap secure.

If a gasoline spill occurs, move the machine away from the spill area and avoid creating any source of ignition until the spilled gasoline has completely evaporated.

A class B fire extinguisher should accompany you when operating the log splitter in dry areas as a precautionary measure against possible flying sparks.

Always store gasoline in an approved, tightly sealed container with an approved safety spout. The container should be stored in a cool, dry place. Do not store the container in a house or near any heating appliance.

Do not smoke or have open flames present when refueling the engine. If fuel should spill, quickly wipe up the spill and allow the excess to evaporate before continuing. Make sure gasoline soaked rags are properly disposed of.



**DO NOT fill the gas tank while the engine is hot or running. The engine should be allowed to cool down before refueling.**

## Preventing Fires

### NEVER:

- Operate the log splitter near an open flame or a spark. Oil and gasoline are flammable and can explode.
- Never smoke while you are operating or refueling the log splitter. Gasoline, oil and even gas fumes can explode.



### **IMPORTANT NOTICE**

*The log splitter 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 that meets local or state laws (if any). If a spark arrester is used, make sure it is maintained in effective working order by the owner and/or operator.*

## START-UP PROCEDURE

**Follow all of the instructions in the “Start-up Procedure” before starting the engine or operating the log splitter. Failure to follow this recommendation will result in engine and hydraulic pump damage.**

**NOTE:** Any unauthorized changes or modifications to the log splitter will void all warranties.

**IMPORTANT:** Before starting the engine, read the engine manufacturer’s operating and maintenance instruction manual. If an engine manual was not supplied with the log splitter, it is your responsibility to obtain a manual. You can start by contacting the dealer from whom you purchased the splitter. If they cannot help you, contact the engine manufacturer.



**Step 1**  
Remove lift arm chain from hook.



**Step 1**  
Remove cap to check to ensure that there is sufficient hydraulic fluid in the reserve tank. Fluid level should be approximately two inches from the top of the tank. If necessary add only SAW46 high quality hydraulic fluid. NOTE: The total hydraulic system oil capacity is 80 quarts.



**Step 2**  
The engine’s crank case must be filled with the engine manufacturer’s recommended oil.



**Step 3**  
With the splitting wedge in the forward position lubricate the slide rails with high quality grease. This will help to prevent wear between the slide plates and the slide rail.

## START-UP PROCEDURE

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### WARNING

**Take care not to spill fuel when filling the engine. If fuel should spill, quickly wipe off and allow the excess fuel to evaporate before continuing. Fuel and fuel vapors are highly flammable and can cause personal injury or even death when ignited.**

5. Fill the fuel tank of the engine with fresh, clean, lead-free automotive gasoline.
6. Now start the engine following the manufacturer's instructions.
7. When the engine is running, push the valve control handle to the retract position and retract the cylinder piston. The cylinder valve will automatically stop the cylinder from retracting when it reaches the end of its stroke. Cycle the log splitter several times.
8. The log splitter is now ready to use.



## TOWING



### WARNING

Maximum speed limit of the splitter is 35 M.P.H.

The log splitter is built on a solid, unsuspended axle. In order to prevent damage or possible loss of vehicle control, use extreme caution when towing and do not exceed a vehicle speed of 35 M.P.H., especially when driving on a bumpy road.



#### Step 1

Wind the jack crank until the hitch is higher than the towing ball.



#### Step 2

Position the splitter hitch over the towing vehicle ball. Pull the latch assembly on the hitch coupler up and into the open position. Wind the jack crank until the hitch is fully engaged with the ball.

#### Step 3

Release the latch assembly on the hitch coupler and lock the hitch coupler onto the tow ball. Then attach the towing safety chains to the tow vehicle.



#### Step 4

Pull on the spring pin to raise the jack to the towing position. If it is not already secure, make sure the hitch coupler is properly and securely attached to the tow ball.

## TOWING

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### Step 5

Hook safety chains onto the towing vehicle hitch. If the chains are not off of the ground the chains may be twisted until they are safely off of the ground when the vehicle is moving. Do not overtighten the chains, causing them to bind when turning.



### Step 6

Place an owner supplied lock or lock pin into the latch assembly of the hitch coupler.



### WARNING

**Making certain that the log splitter is securely attached to the vehicle is the responsibility of the owner/operator. Failure to securely attach the log splitter can cause loss of control of the vehicle or cause the log splitter to be separated from the towing vehicle, resulting in serious injury or death.**

## OPERATION



### WARNING

Do not attempt to operate the Mighty Ox™ without fully understanding all instructions, safety precautions and/or warnings. If any doubt or question arises about the correct or safe method of performing anything found in this or other Zook's Welding, LLC products' manuals, contact your Mighty Ox™ dealer or call the Sales and Service representatives at our headquarters. Taking proper care is your responsibility.



When operating the log splitter, stand in the **safe operating area** as shown in these pictures. The operator must stay in the **safe operating area** at all times when the splitting wedge is in motion (whether extending or retracting). No part of your body should be placed into a position that causes an unsafe operating condition.

### Step 1

Set the log splitter on flat, dry ground. Make certain you read all the recommendations for the "Safety" section before using the log splitter.

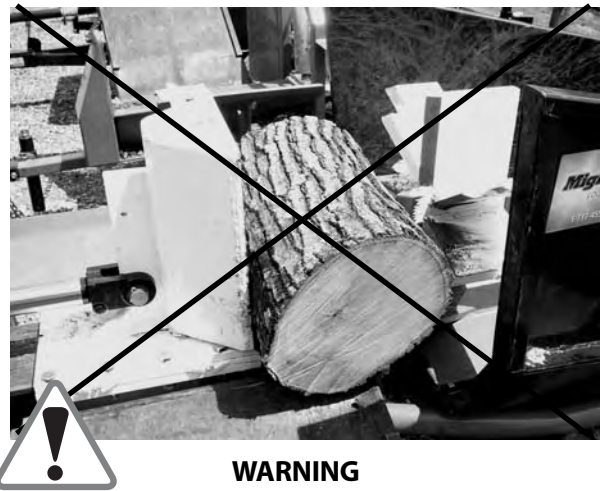


### Step 2

Check to make sure that both ends of the log you are splitting are cut as square as possible. This will prevent the log from sliding out of position while under pressure. All logs should be 30 inches or shorter.

### Step 3

Start the engine following the instructions from the engine manual. If the log splitter has not been running (has a cold engine), warm up the engine and hydraulic system by running the engine at half throttle for 3 to 4 minutes, then advance the engine throttle control to maximum speed.



### WARNING

**Never split wood across the grain. The log splitter was not designed for cross-grain splitting, and doing so may damage the log splitter and may cause personal injury.**

## OPERATION



### WARNING

Before loading and operating the log splitter, always wear protective gear including but not limited to safety goggles/glasses, face shield, hearing protection, tight-fitting gloves without drawstrings or loose cuffs, and steel toed shoes.

Use the following photos for the correct and incorrect methods of splitting logs. Never attempt to split a log using an incorrect or unsafe method.



### Step 1

Place the log on the lift arm. Grasp the log on the sides near the middle of the block. Center the log side to side on the lift arm.



### Step 2

Using the lift arm control, raise lift arm. Stand clear of lift arm while in operation



### Step 3

Make sure log is centered on the rail.

## OPERATION



### Step 4

Positioning the 6-way wedge to the desired height.



### Step 5

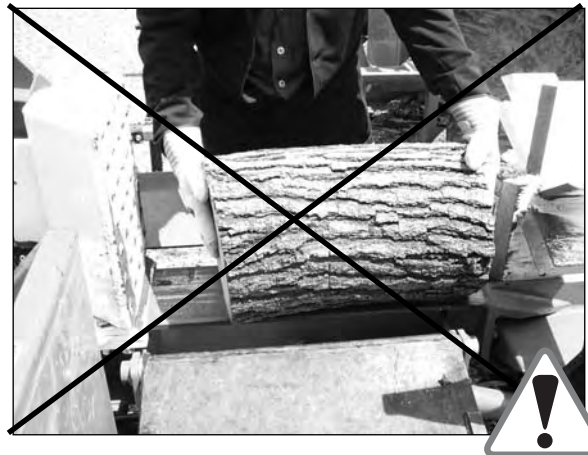
Using only your hand, push the control lever forward (toward the log). If the log moves before it is contacted by the splitting wedge, release the control lever and reposition the log. Operate the log splitter only when standing in the safe operating area as shown in Step 1 on page 24.



### Step 6

Once the wedge reaches its full forward travel, pull back on the control lever to the full retract position. The ram of the cylinder will automatically retract into the cylinder. It is not necessary to hold the control lever as the cylinder retracts. When the cylinder is fully retracted, the control valve will automatically shift to a neutral position.

**DO NOT** load another log or remove split pieces until the wedge has completely stopped and the control handle has automatically returned to the neutral position.



### CAUTION

**Under no circumstances place your hands on the ends of the log when loading the log splitter. This is a very UNSAFE method and could result in injury to your hands.**

## OPERATION

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### Ram block / Single Wedge



#### Step 1

If you find a log that has many forks and knots to split with the 6-way wedge, simply pull the ram block off the single wedge.



#### Step 2

Now you have all of your power on a single wedge to break down the log

## OPERATION



**Step 1**  
If you have logs that are more than 24" in diameter, you will need to lower the tension wings.



**Step 2**  
Remove D-Lock Pin.



**Step 1**  
Wings now ready in low position for large diameter logs.

## CONTROLS



The LS-30 comes with (2) valves and (4) levers.



Lift are lever is on center of stack valve.



Wedge adjustment lever is on right side of stack valve.



Auxillary lever is thwards the inside.



Ram block extending.



Ram block retract.

**CAUTION**



It is important to stand clear of the engine's exhaust. Hot exhaust is intense and can cause serious injury.



**WARNING**

Never try to operate in front of the lift arm. This UNSAFE method could cause personal injury or even death. Make sure you are positioned behind the lift arm and next to the controls



**WARNING**

Never have bystanders behind the splitter when in operation. This is UNSAFE and could cause personal injury or even death.



**WARNING**

Never allow bystanders near the tension wings, or any part of the splitter while in operation. This is UNSAFE and could cause personal injury or even death.



## INSPECTION AND MAINTENANCE

---

### General Maintenance Check (before operating the log splitter)

Carefully inspect the hydraulic system (hoses, cylinder and pump) before each use. Also inspect the mechanical parts at the same time. Make sure all clamps, nut, bolts, fittings, etc. are properly installed and tightened.



#### WARNING

**Do not use your hand to check for leaks. Locate leaks by passing a piece of cardboard or wood around the suspected leak and look for discoloration. High pressure fluid escaping from a very small hole can be almost invisible. Escaping fluid under pressure can have sufficient force to penetrate the skin, causing serious injury or even death. If fluid is injected into your skin, it must be treated immediately by a doctor familiar with this type of injury.**

Always replace frayed, kinked or cracked hoses and/or other damaged hydraulic components with Zook's Welding, LLC authorized parts and components specified in the "Parts" section of this manual. Replacement with unauthorized parts from secondary suppliers (not original Zook's Welding, LLC parts) can lead to product damage and/or personal injury and will void the warranty.



#### CAUTION

**Do not remove the cap from the hydraulic tank or reservoir while the log splitter is running. Hot oil, under pressure, could be expelled and result in serious injury.**

If it becomes necessary to loosen or remove any hydraulic fitting or line, be sure to relieve all hydraulic pressure by shutting off the engine, removing spark plug wire and moving the valve control handle back and forth several times until no cylinder movement is visible.

### Engine Service

Refer to the engine manufacturer's manual for engine maintenance and repair.

### Storage

When not in use, store the splitter in a dry place out of the elements. This will allow the longest possible service life of the wear pads.

Refer to the engine manufacturer's manual for engine storage.

### Hydraulic Oil Change

Zook's Welding, LLC recommends an oil and filter change after every 200 hours of operation. Refer to the "Specifications" section of this manual for the type and quantity of oil.

### IMPORTANT NOTICE

*Never run the log splitter unless the hydraulic oil level is two to three inches from the top.*

**Note: Before performing any maintenance on the Mighty Ox remove the spark plug wire to ensure that the unit cannot be started accidentally by someone who is not aware that maintenance is being done.**

## 1. Drain the hydraulic tank.



- a. Place a waste oil container that is at least 80 qts in capacity under the drain plug on the bottom of the hydraulic tank.
- b. Loosen the tank cap.
- c. Remove the drain plug from the bottom of the hydraulic fluid reserve tank.
- d. Drain the tank completely.
- e. Replace the drain plug and tighten fully.
- f. Dispose of the used oil in an environmentally safe manner. Check with the recycling center in your area for instructions.

## 2. Remove and replace the oil filter.



- a. Remove the existing oil filter by turning it clockwise when looking at it from above and dispose of it properly.
- b. A thin coat of oil should be applied to the rubber seal of the new oil filter.
- c. Screw the filter onto the filter head. Once the filter makes contact with the filter head, turn it an additional 1/2 turn. Hand-tighten only.

## 3. Refill the hydraulic tank.



- a. Fill the reserve tank with high quality AW46 hydraulic fluid to within three inches from the top of the tank and replace the cap.

## 4. Start the engine and cycle the cylinder.

- a. Replace the spark plug and spark plug wire.
- b. Start the engine and cycle the cylinder several times.
- c. Retract the cylinder and shut off the engine.
- d. Recheck the hydraulic tank to make sure oil is filled to within, approximately, three inches from the top of the tank.

## Wheel and tire maintenance



1. Check tires daily for proper pressure. Do not use or tow the splitter if tires are low.
2. Lubricate wheel hub bearings at the end of the season.

## SPECIFICATIONS

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### Mechanical Specifications (Model LS-30)

Beam .....	8" heavy duty, I-Beam
Ram Block .....	16" high carbon steel (replaceable)
Wedge .....	10" high carbon steel, compound angle (replaceable)
Force/Tonnage.....	30 tons
Cylinder Stroke .....	30"
Log Opening .....	30" maximum
Cycle Time .....	14 seconds (approx.)
Operating Positions .....	Horizontal
Wheels & Tires .....	high speed, 8.00 x 3.75 x 8" (bolt on)
Safety Chains.....	standard
Hitch Coupler .....	2" locking ball (standard)
Standard Engine .....	13 hp Electric start Honda

## **TROUBLESHOOTING - Reference numbers found on Illustrated Parts Breakdown drawings**

The following section will provide detail on procedures for checking your log splitter. If you find a malfunction, we suggest that you do not attempt to make a repair to the splitter yourself. We recommend that you take your log splitter to a servicing lawn and garden dealer for repairs.

**Problem:** When the control handle is pushed forward (extended) the splitting wedge does not move.

1. Check the hydraulic tank to make sure the oil level is 2" from top of the tank.
2. Check the engine to pump coupler to make certain the drive keys are in place and that there is no damage to the black urethane spider.
3. Disconnect the splitting wedge from the cylinder. Grasp the hydraulic cylinder shaft and attempt to pull it out. If the rod is easily removed, you will need to rebuild or replace the cylinder.
4. Once you have determined that the engine to pump coupler is intact and the cylinder is in good condition, you will need to replace the pump.

**Problem:** The engine stalls when the splitting wedge engages the wood.

1. The engine may not be adjusted properly. The engine should be taken to a service center for repair and/or adjustment.
2. If all the engine settings are correct, you will need to replace the pump.

**Problem:** The splitting wedge will split wood, but moves slowly.

1. Check the oil level in the hydraulic tank and fill if necessary.
2. Check the high pressure hose, fitting and valve openings to see if dirt, or debris, has obstructed the openings.
3. If the ram speed is still slow, you will need to replace the pump.

**Problem:** The ram will not automatically retract.

1. Check the slide rail or splitting wedge for any damage.
2. Push the valve handle to the retract position. If the handle does not stay in this position, adjust the valve detent as suggested below:

### **Detent Adjustment Procedure:**

- a. Locate the adjustment bolt, found on the side of the valve body.
  - b. Loosen locknut.
  - c. Turn the adjustment bolt in a clockwise direction one half turn and then retighten the locknut.
  - d. Start the engine and test for detent operation. If the detent does not work, repeat steps b. and c. once again.
3. If adjustment of the detent does not correct the problem, the detent assembly should be replaced.



## **TROUBLESHOOTING - Reference numbers found on Illustrated Parts Breakdown drawings**

The following section will provide detail on procedures for checking your log splitter. If you find a malfunction, we suggest that you do not attempt to make a repair to the splitter yourself. We recommend that you take your log splitter to a servicing lawn and garden dealer for repairs.

### Hydraulic Specifications for Model LS-30

Cylinder size .....	5 x 30 inch, clevis type cylinder with 2 inch rod
Hydraulic System Capacity (including cylinder, tank, hoses, filter) ....	80 quarts
Hydraulic Oil Filte .....	Spin on, 10 micron filter
Safety Release Control Valve .....	Detent
Gear Pump .....	2 stage, 22 GPM
Shipping Weight .....	1950 lbs.

### **Replacement Filters**

NAPA 1553

FRAM PF1654

WIX 51552

### **Hydraulic Oil Specifications (non-foaming)**

AW46

## ORDERING DECALS



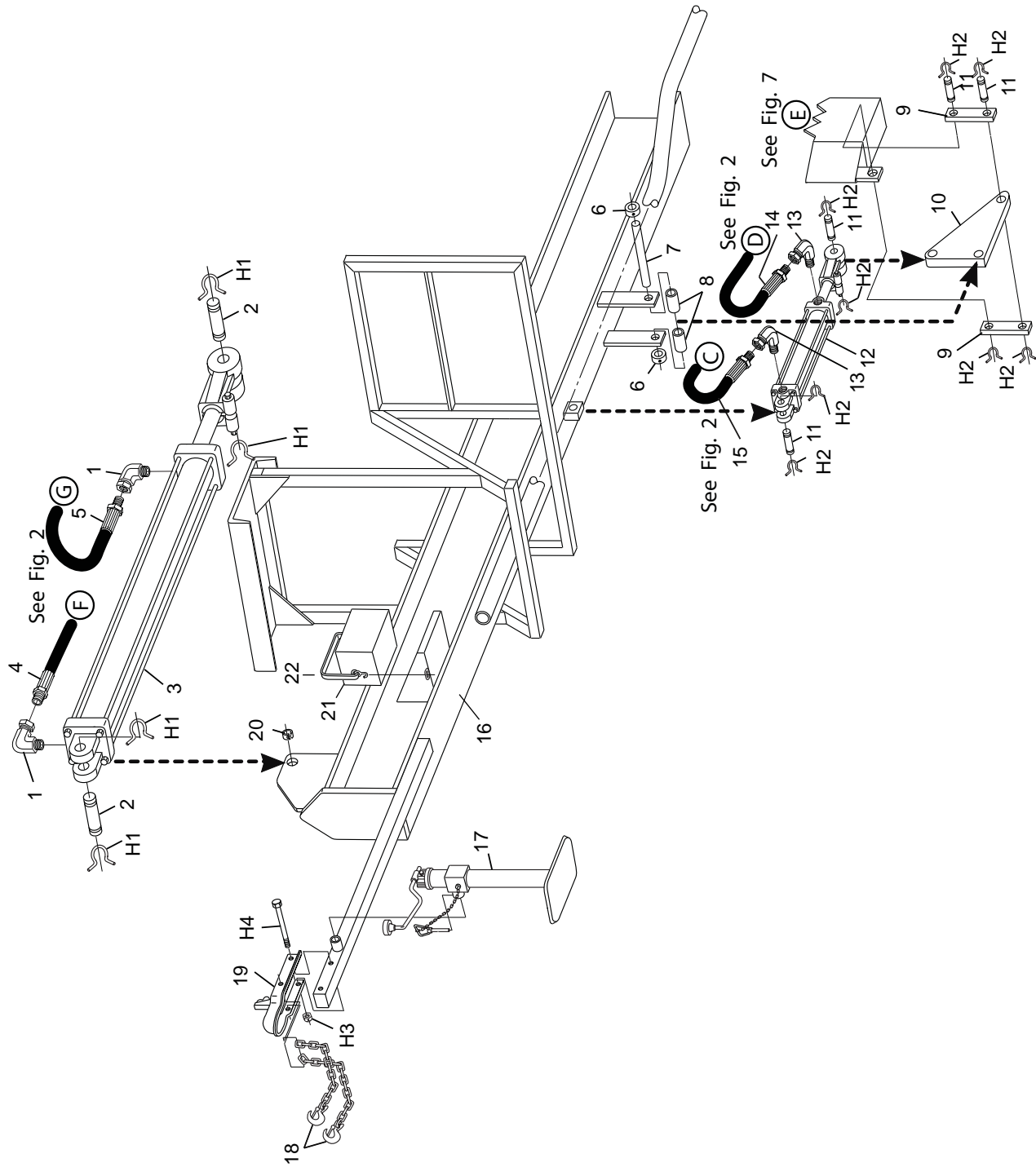
### DECALS

Item#	Part#	Description	Part#
1	42838	Hands, Hair, Feet	1 each
2	42837	Hydraulic Oil Only	1 each
3	42837	One Person Only	1 each
4	42832	Keep Hands Away	2 each
5	42839	Before Using	1 each
6	42841	Caution Stand Clear	1 each
7	42842	Caution Not to Exceed	1 each



# ILLUSTRATED PARTS BREAKDOWN





**FIGURE 1**

Item#	Part#	Description	Quantity
H1	34209	5/32" X 2" Cotter Pin	4
H2	220133	Hair Pin Clip	4
H3	34211	1/2" Lock Nut	2
H4	34428	1/2" X 4" Bolt	2

Item#	Part#	Description	Quantity
1	240307	10MB-12FPX90 Adapter	2
2	240365	1 1/4" Cylinder Pin	2
3	240330	Cylinder	1
4	243722	3/4" Hose 32" Long	1
5	243721	3/4" Hose 27" Long	1
6	210226	1" Shaft Collar	2
7	250202	Pivot Shaft	1
8	250128	Pipe Spacer	2
9	250173	Wedge Adjustment Linkage	2
10	250183	Wedge Bell Crank	1
11	240349	1" Cylinder Pin	2
12	240345	Wedge Adjustment Cylinder	1
13	240104	6MP-4FPX90 Adapter	2
14	243716	1/4" Hose 69" Long	1
15	243714	1/4" Hose 62" Long	1
16	250117	LS-30 Main Frame WA	1
17	215320	Jack	1
18	250113	Safety Chain	2
19	215397	2" Coupler Hitch	1
20	210503	Hardened Bushing	1
21	210449	Battery	1
22	210542	Battery Strap	1

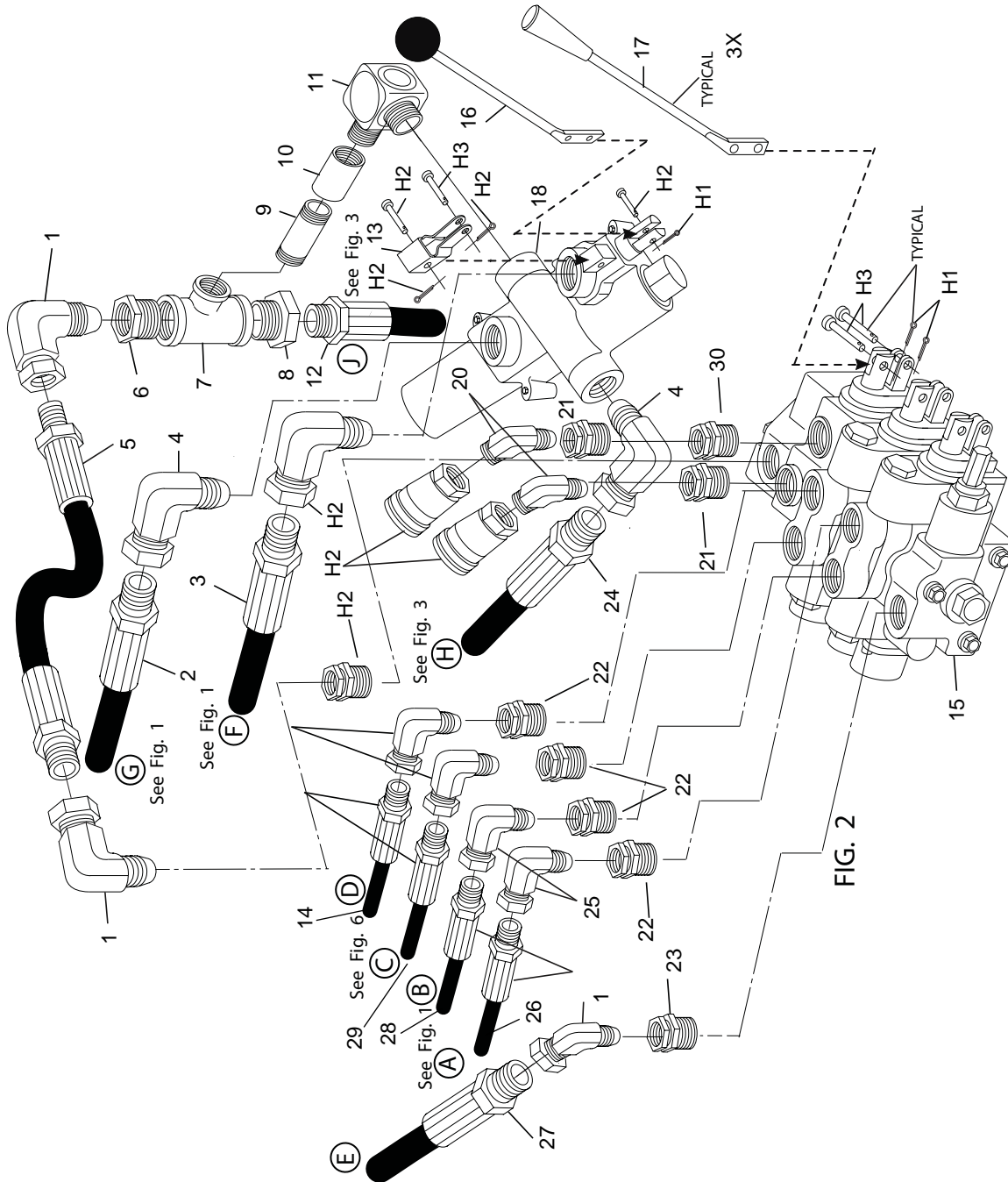


FIG. 2

FIGURE 2

Item#	Part#	Description	Quantity
H1	34461	1/16" X 3/4" Cotter Pin	9
H2	220275	3/16" X 1" Clevis Pin	2
H3	220276	3/16" X 3/4" Clevis Pin	7

Item#	Part#	Description	Quantity
1	240299	8MP-8FPX90 Adapter	3
2	243721	3/4" Hose 27" Long	1
3	243722	3/4" Hose 32" Long	1
4	240310	12MP - 12FPX90 Adapter	3
5	243717	1/2" Hose 7.5" Long	1
6	240360	3/4" X 1/2" Reducer Bushing	1
7	240359	3/4" Tee	1
8	240302	12MP-12FPX Adapter	1
9	240358	3/4" X 4" Black Nipple	1
10	240357	3/4" Black Coupling	1
11	240354	12MP-12MP90 Adapter	1
12	243719	3/4" Hose 18" Long	1
13	240413	Handle Clevis	1
14	243716	1/4" Hose 69" Long	1
15	240332	Stack Valve	1
16	240414	Splitter Valve Handle	1
17	240396	Handle	1
18	240380	Spoolvalve	1
19	240296	1/2" Ag Coupler	1
20	240297	8MP-8MP 90 Elbow	2
21	240356	8MB-8FPX Adapter	2
22	240279	Adapter 8MB-6FJX	4
23	240298	10MB-8FPX Adapter	2
24	243720	3/4" Hose 25" Long	1
25	240104	Adapter 6MP - 4FPX90	4
26	243713	1/4" Hose 58" Long	1
27	243718	1/2" Hose 38" Long	1
28	243715	1/4" Hose 64" Long	1
29	243714	1/4" Hose 62" Long	1
30	240309	8MP - 8FPX Adapter	1



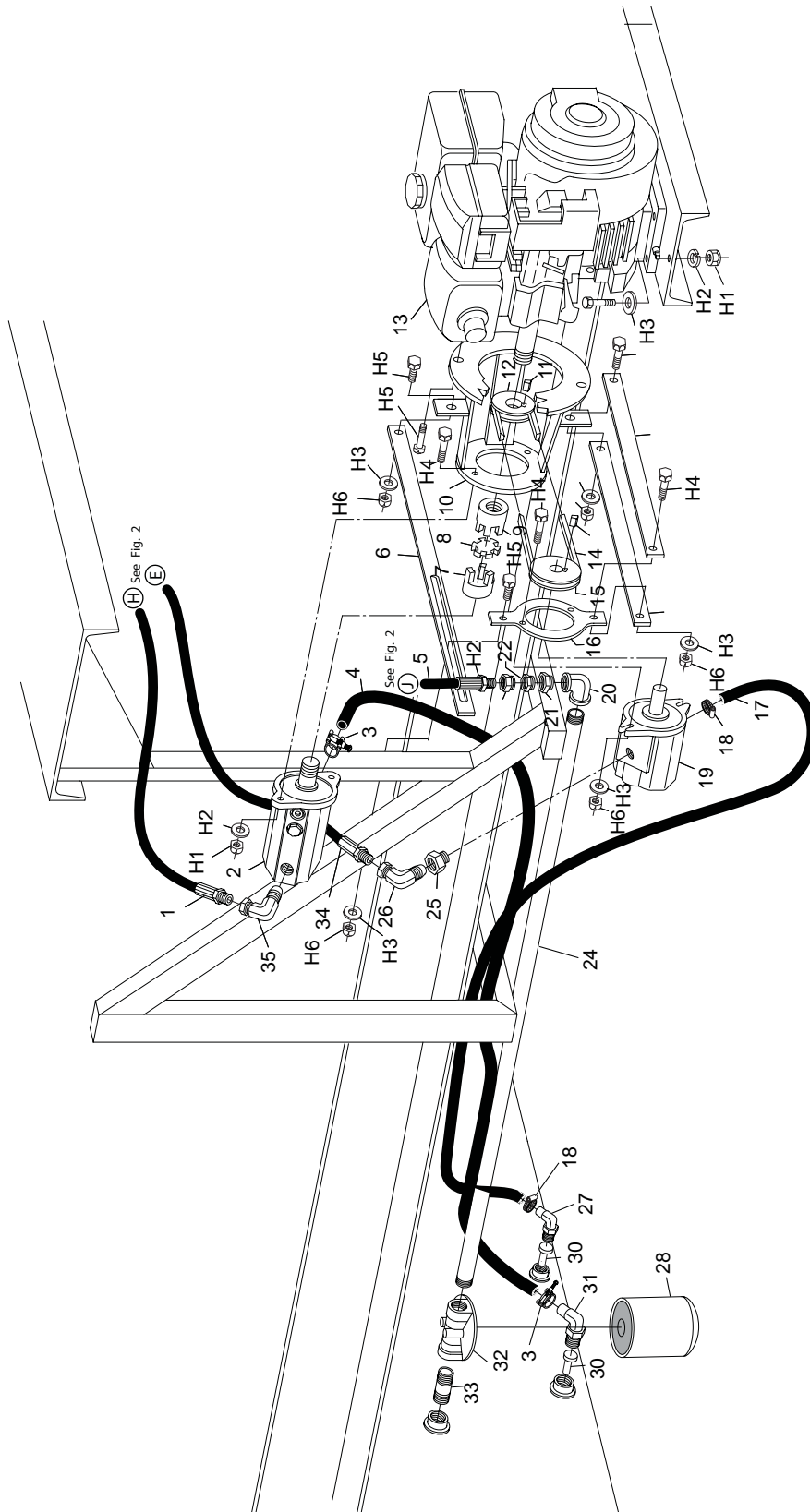


FIGURE 3

Item#	Part#	Description	Quantity
H1	34087	3/8" Nut	6
H2	34141	3/8" Lock Washer	6
H3	34018	3/8" Flat Washer	11
H4	34255	3/8" X 1 1/2" Bolt	5
H5	34224	3/8" X 1 1/4" Hex Head Bolt	4
H6	34210	3/8" Lock Nut	5
H7	34278	3/8" X 2" Bolt	4

Item#	Part#	Description	Quantity
1	243720	3/4" Hose 25" Long	1
2	240322	Main Hydraulic Pump	1
3	240138	Suction Hose Clamp	2
4	243723	1 1/4" Suction Hose 72" Long	1
5	243719	3/4" Hose 18" Long	1
6	250169	Tightner Slot Bracket	1
7	210506	Coupler	1
8	210508	Spider	1
9	210507	Coupler	1
10	250116	Pump Mount WA	1
11	220246	Key 1/4" X 2 1/2"	1
12	210510	2 3/4" Pulley	1
13	210513	Honda Engine	1
14	210511	A24 Belt	1
15	210509	4.25" Pulley	1
16	250203	Auxiliary Pump Mount WA	1
17	243724	3/4" Suction Hose 90" Long	1
18	240353	Clamp For 3/4" Suction Hose	2
19	240325	Auxiliary Pump	1
20	240361	1 1/4" Elbow	1
21	240362	1 1/4" X 3/4" Reducer Bushing	1
22	240302	12MP-12FPX Adapter	1
23	240363	10MB - 3/4" Suction Stem	1
24	240348	1 1/4" Black Pipe 58" Long	1
25	240298	10MB-8FPX Adapter	1
26	240306	8MB - 8FPX90	1
27	240352	3/4" Suction Stem	1
28	240131	Filter	1
29	240370	3/4" x 1 1/4" Bushing Strainer	1
30	240369	1 7/8" x 2" Bushing Strainer	1
31	240303	1 1/4" Suction Stem	1
32	240347	Filter Head	1
33	240364	1 1/4" Pipe Fitting	1
34	243718	1/2" Hose 38" Long	1
35	240310	12MP - 12FPX90 Adapter	1

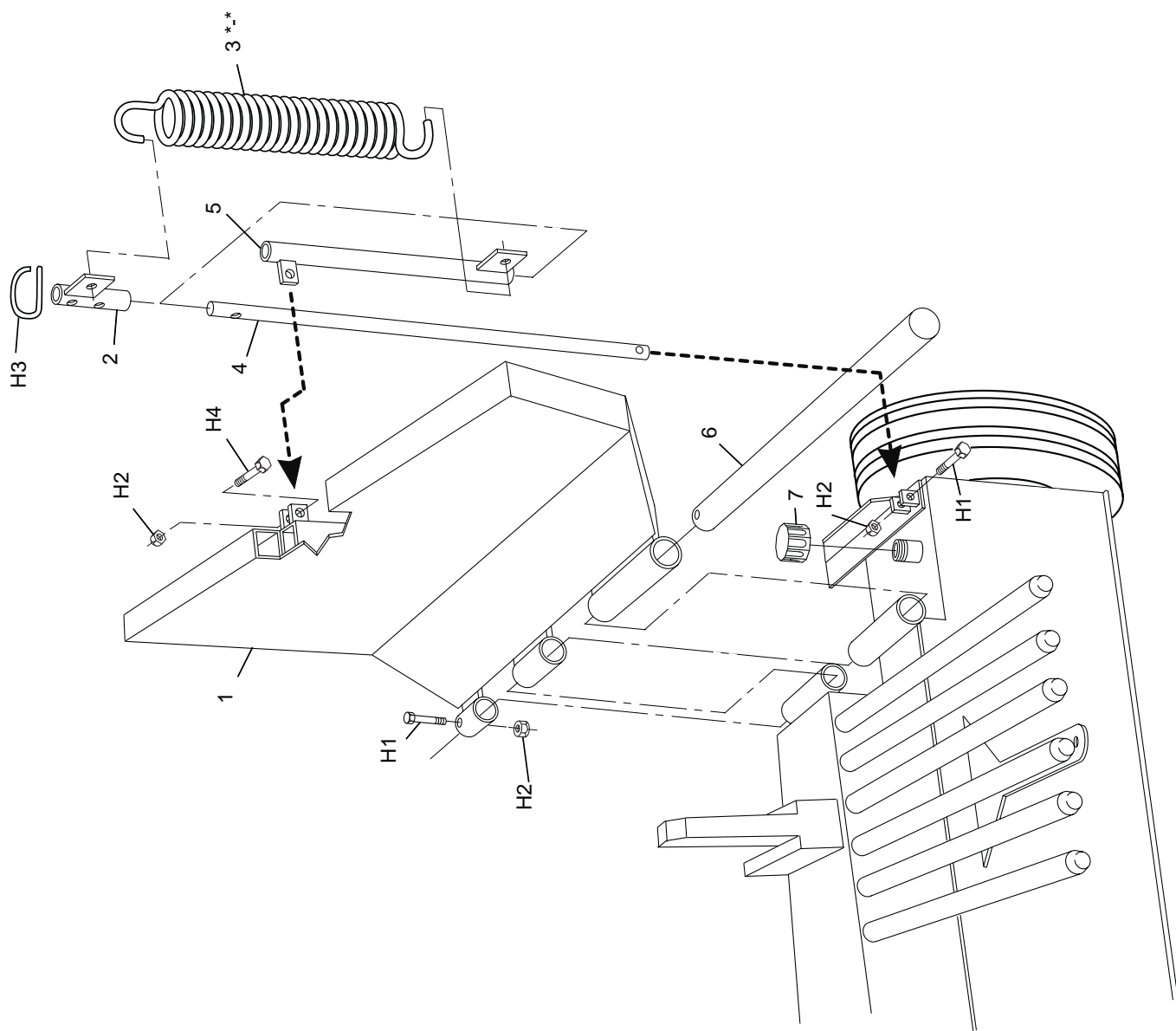


**FIGURE 4**

Item#	Part#	Description	Quantity
H1	34209	5/32" X 2" Cotter Pin	4
H2	34216	1" Flat Washer	4

Item#	Part#	Description	Quantity
1	250109	Lift Arm	1
2	240349	1" Cylinder Pin	2
3	240320	3 X 8 Cylinder	1
4	250115	1" Lift Arm Rod	1
5	210226	1" Shaft Collar	2
6	240309	8MP-8FPX Adapter	1
7	243713	1/4" Hose 58" Long	1
8	243715	1/4" Hose 64" Long	1
9	240299	8MP-8FPX90 Adapter	1





LS-30 FIG.5

**FIGURE 5**

Item#	Part#	Description	Quantity
H1	34242	3/8" X 2 1/2" Bolt	4
H2	34210	3/8" Lock Nut	6
H3	34413	3/8" X 2" Bolt	2

Item#	Part#	Description	Quantity
1	250204	Tension Wing RH	1
1.1	250205	Tension Wing LH	1
2	250206	Tension Spring Bracket WA	2
3	250207	Tension Spring	2
4	250171	Tension Spring Rod	2
5	250208	Tension Slide Pipe	2
6	250159	Tension Wing Hinge Shaft	2
7	240319	Fill Cap	1



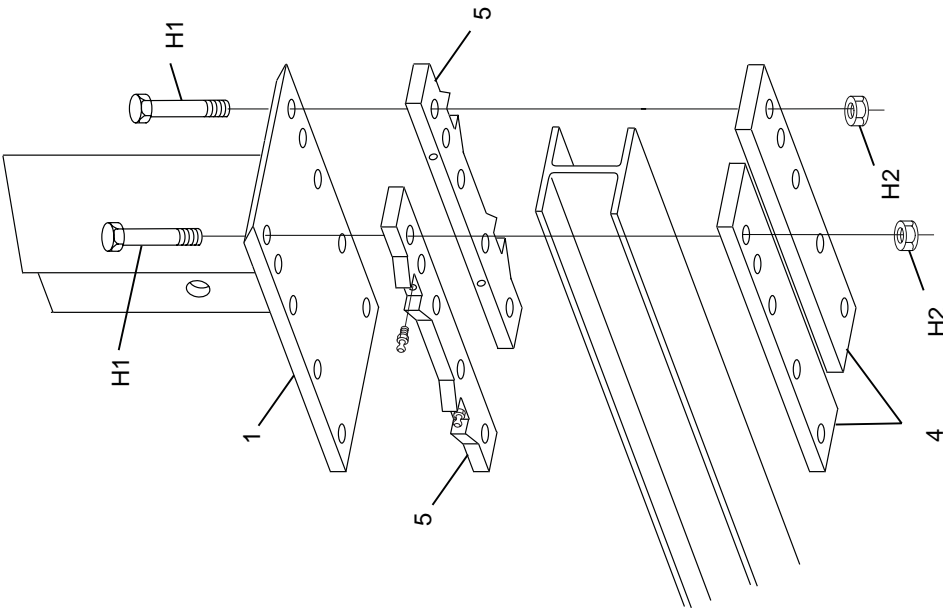
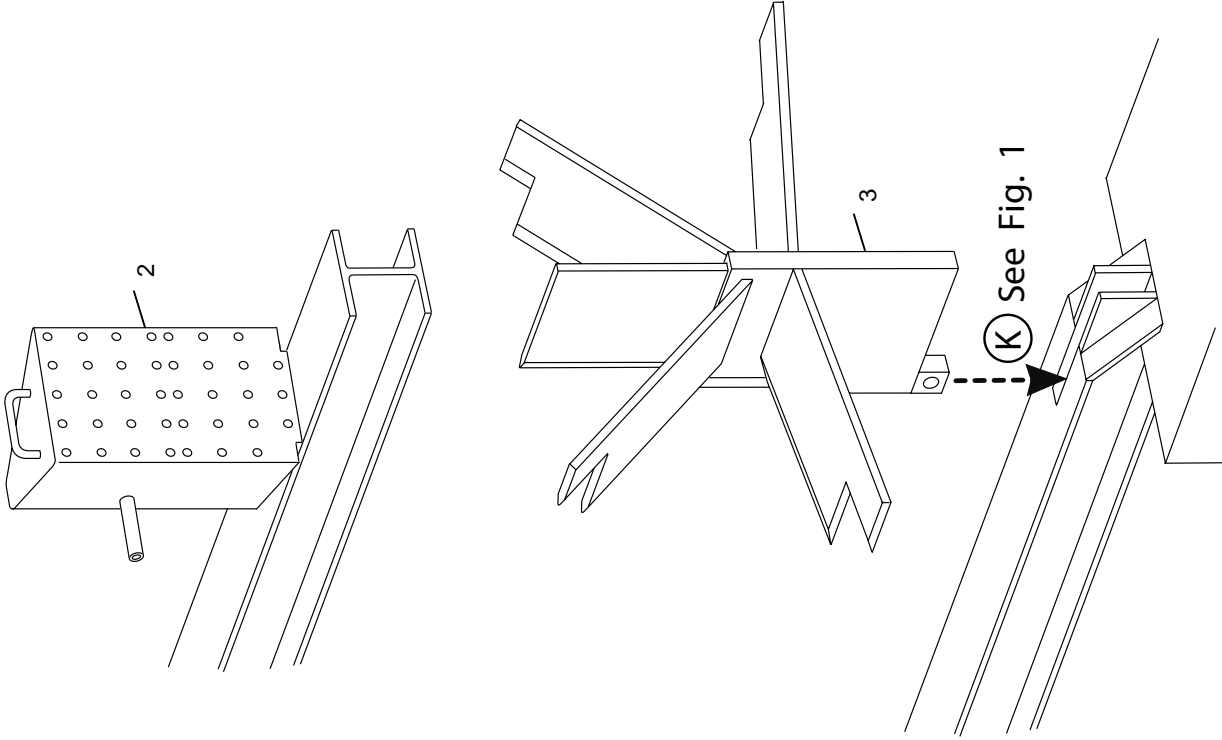


FIG. 6

**FIGURE 6**

Item#	Part#	Description	Quantity
H1	34435	5/8 X 2 1/2" Bolt	10
H2	34436	5/8" Nut	10

Item#	Part#	Description	Quantity
1	250127	Wedge	1
2	250118	Push Plate	1
3	250194	6-Way Wedge	1
4	250195	Wedge Guide	2
5	250196	Wedge Guide Spacer	2
6	220166	Lube Fitting	4



## **MIGHTY OX 1-YEAR LIMITED WARRANTY**

Zook's Welding, LLC warrants to the original purchaser all Machinery or Equipment, manufactured by it, to be free from defects in materials and workmanship under normal use and service. Its obligation under this Warranty shall be limited to replacement or repair of any parts thereof, free of charge to the original Purchaser, at its place of business, provided, however, that the part(s) to be replaced or repaired, shall within one (1) year after delivery to the original Purchaser, be demonstrated to be defective; which determination shall be made by the Company. The said components or parts must be returned through the Selling dealer or distributor directly to the Company with all transportation charges prepaid. Notice of defect shall be furnished in writing to the Seller and to the agent through whom the machinery was received, disclosing in full all known defects and failure in operation and use, and reasonable time shall be given to the Seller to remedy any such defects and failures. Failure to make such trial or give such notice shall be deemed an absolute acceptance by the Buyer and satisfaction on full of this Limited Warranty.

This Warranty does not cover, under any circumstances, any parts, components, or materials which, in opinion of the Seller and Company, have been subject to neglect, misuse, alteration, accident, or if repaired, with other parts other than those manufactured by and obtained from Zook's Welding, LLC.

This Warranty does not cover components which are already covered by a separate Warranty provided by the supplier of said parts or components.

The Company's obligation under this Warranty is limited to repair or replacement, free of charge to the original Purchaser, of any part which in judgment of the Company is defective. This Warranty does not cover normal wear and tear.

THIS WARRANTY IS MADE EXPRESSLY IN LIEU OF ALL OTHER WARRANTIES, EXPRESSED OR IMPLIED, INCLUDING ANY WARRANTY OR MERCHANTABILITY AND FITNESS FOR USE AND PURPOSE AND ALL OTHER OBLIGATIONS OF LIABILITIES ON ITS PART AND ANY IMPLIED WARRANTY. AND IN NEITHER ASSUMES NOR AUTHORIZES ANY OTHER LIABILITY IN CONNECTION WITH A SALE OF THIS MACHINE. THIS WARRANTY SHALL NOT APPLY TO THIS MACHINE OR TO ANY PART THEREOF WHICH HAS BEEN SUBJECT TO ACCIDENT, NEGLIGENCE, ALTERATION, ABUSE, OR MISUSE.

The company makes no Warranty whatsoever in respect to accessories or parts not supplied by the Company. The term "original Purchaser" as used in this Warranty shall be deemed that person for whom the Machine or Equipment, is originally supplied. This Warranty shall apply only within the boundaries of the continental United States.

Under the Warranty, the Company cannot guarantee that existing conditions beyond its control will not affect its ability to obtain materials or manufacture necessary replacement parts.

No one is authorized to alter, modify, or change the terms of the Warranty in any manner.

The Company warrants the Construction of the equipment sold herein and will replace at its expense for a period of one (1) year from the date thereof, any parts which prove defective as determined under the terms of this Limited Warranty.



### **MANUFACTURED BY**

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