POWERHORSE®

Owner's Manual

M1175B

ITEM NUMBER: 1175, 1169

SERIAL NUMBER: _____

Instructions for Assembly, Testing, Operation, Servicing, & Storage

Log Splitter: Outdoor hydraulic powered machine that splits wood logs.

⚠ WARNING

READ and UNDERSTAND this manual completely before using log splitter.

All operators of this equipment must read and completely understand all safety information, operating instructions, maintenance and storage instructions. Failure to properly operate and maintain the log splitter could result in serious injury to the operator and bystanders from moving parts that can crush or cut, flying objects, burns, fire or explosion, escaping high pressure hydraulic fluid, or carbon monoxide poisoning in particular, be aware of the following hazards.

Crush and Cut Hazards

Moving parts can crush and cut hands and fingers. Keep hands clear of end plate, wedge, logs, and log strippers while splitting.

High Pressure Hydraulic Fluid Hazards

High fluid pressures and temperatures are developed in hydraulic log splitters. Hydraulic fluid escaping through even a pin-size hole opening can puncture skin and cause severe blood poisoning. Inspect hydraulic system regularly for possible leaks. Never check for leaks with your hand while the system is pressurized. Seek medical attention immediately if injured by escaping fluid.

Fire Hazards

- If your log splitter is intended for use near an ignitable forest, brush, or grassy covered land, the engine exhaust should be equipped with a spark arrestor. See the "Specifications" section of this manual to determine if your splitter already has a spark arrestor. If not equipped, call Powerhorse Product Support for ordering information.
- Keep a fire extinguisher with you that is rated for ordinary combustibles and flammable liquids.

STOP!

ADD OIL TO ENGINE BEFORE USING: Engine is shipped without oil. DO NOT start log splitter without first adding oil.

ADD HYDRAULIC OIL: Your log splitter was shipped without hydraulic oil. Refer to Periodic Maintenance section of this manual for instructions on filling the hydraulic reservoir

INSPECT COMPONENTS: Closely inspect to make sure no components are missing or damaged.

See Initial Unpacking & Set-up for instructions and for whom to contact to report missing or damaged parts.

Prime the Pump: The pump on your log splitter needs to be primed before use. Refer to initial setup for instructions.

Any Questions, Comments, Problems or Parts Orders

Call PowerHorse Product Support 1-866-443-2576

Hazard Signal Word Definitions

	This is the safety alert symbol. It is used to alert you to potential personal injury hazards. Obey all safety messages that follow this symbol to avoid possible injury or death.
⚠DANGER	DANGER (red) indicates an imminently hazardous situation which, if not avoided, will result in death or serious injury.
⚠WARNING	WARNING (orange) indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury.
⚠CAUTION	CAUTION (yellow) indicates a potentially hazardous situation which, if not avoided, may result in minor or moderate injury.
CAUTION	CAUTION (yellow) used without the safety alert symbol indicates a potentially hazardous situation which, if not avoided, may result in property damage. fig01453

Table of Contents

About Your Log Splitter

Thank you for purchasing your Powerhorse log splitter!

About Your Log Splitter:

This log splitter is a machine designed to split wood logs using a hydraulically powered moving wedge. The log splitter's gasoline engine is used to pressurize the hydraulic system.

This log splitter is designed to split logs *lengthwise with the grain only.*

This log splitter model is capable of splitting logs up to 25" long and 14" in diameter.

Your splitter can be used in either a vertical or horizontal splitting position:

- When the splitter is set up to operate in the horizontal splitting position, a log is placed on the horizontal beam and the wedge moves horizontally into the end of the log to split it.
- When the splitter is set up to operate in the vertical splitting position, the log is placed on the end plate, upright on its end, and the wedge moves down into the top of the log to split it.

The horizontal splitting position is used for lighter logs that can be easily loaded onto the beam. The vertical splitting position is used for heavier logs that are difficult to load onto the beam.

The technical specifications for your log splitter are provided in the Specifications section of this manual.

⚠ WARNING

This log splitter uses a high-pressure hydraulic system to generate a very strong splitting force.

Read the manual completely before using the machine to understand how to safely operate and maintain it.

Follow all safety precautions presented throughout this manual. A summary of important safety information can be found at the end of this manual.

Contact Powerhorse Product Support at 1-866-443-2576 for any questions about the appropriate use of this log splitter and/or optional accessories.

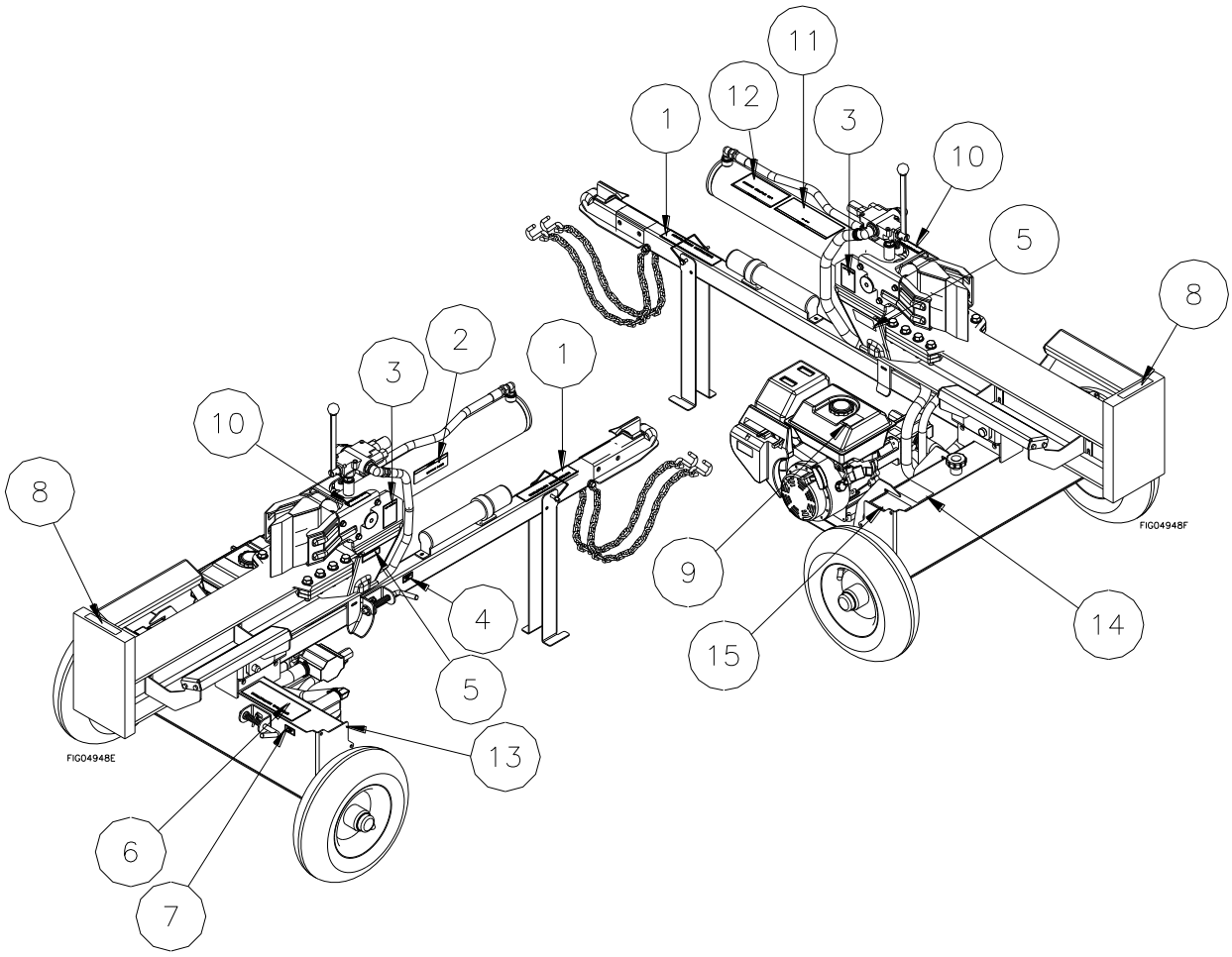
Warranty Registration:

Please fill in the warranty registration information in the back of this manual and have it on hand when you call in on a warranty claim or replacement parts.

Attention: All Rental Companies and Private Owners who loan this equipment to others!

All persons to whom you rent/loan the log splitter must have access to and read this manual. Keep this owner's manual with the splitter at all times and advise all persons who will operate the machine to read it. You must provide instruction on how to safely operate the splitter and remain available to answer any questions a renter/borrower might have.

Safety Label Locations



Reference #	Part Number	Description	Qty
1	791105	Decal, Moving/Towing Instructions	1
2	777891	Decal, Escaping Fluid	1
3	778717	Decal, Log Stripper	2
4	778597	Decal, Horizontal Lock	1
5	777890	Decal, Fire Hazard Warning	2
6	777887	Decal, Operation Instructions	1
7	778714	Decal, Vertical Lock	1
8	787944	Decal, Pinch Point	1
9	788936	Decal, Burn Hazard Warning	1
10	778609	Decal, Split Control	1
11	777889	Decal, Stuck Log	1
12	778610	Decal, Log Splitter Warning	1
13	791123	Decal, 45 mph	1
14	788937	Decal, Poisonous Gas	1
15	788935	Decal, Fuel Fire, Explosion Hazard	1

Always make sure safety labels are in good condition. If a safety label is missing or not legible, order new labels or unsafe operation could result. Contact Powerhorse Product Support at 1-866-443-2576.

Safety Label Locations

1

MOVING/TOWING INSTRUCTIONS

Moving log splitter by hand:
- Lock beam in horizontal position (tip-up models only).
- Lock towbar leg or jack stand in DOWN position.
- Lock support leg in UP position (if equipped)
- Do not attempt to move log splitter up or down slope by hand.

Towing log splitter:
- Latch coupler securely to class 2 or higher hitch with 2" ball.
- Lock towbar leg/jack stand or support leg (if equipped) in the UP position.
- Attach safety chains to tow vehicle.
- Close fuel shut-off valve on engine (if equipped)
- Do not tow faster than 45 mph. Higher speeds can cause loss of control.
- Check local, state, and federal requiements before towing on public roads.

PN 791105

2

⚠ WARNING

ESCAPING HIGH PRESSURE HYDRAULIC FLUID HAZARD

High fluid pressures and temperatures are developed in the hydraulic system. Hydraulic fluid escaping through even a pin-size hole opening can puncture skin and cause blood poisoning.
- Inspect hydraulic system regularly for leaks
- Never check for leaks with your hand while system is pressurized.
- Seek medical attention immediately if injured by escaping fluid.

PN 777881

3

LOG STRIPPER
RETRACT WEDGE TO REMOVE STUCK WOOD

⚠WARNING

PINCH POINT
Keep hands clear of wedge and log stripper

778717

4

HORIZONTAL LOCK

PN 778597

5

⚠ WARNING

FIRE HAZARD

Hot exhaust can ignite dry brush, trees, or grass.
- Equip engine with a spark arrestor if you will be using near ignitable forest, brush or grassy covered land.
- Keep a fire extinguisher on hand that is rated for ordinary combustibles & flammable liquids.

PN 777880

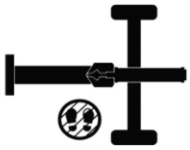
6

OPERATING INSTRUCTIONS

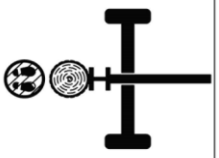
GENERAL
- Stay in the OPERATOR POSITION while actuating controls.
- Never actuate controls until the helper is 10ft away from log splitter, including any helpers assisting to load logs.
- Wear eye protection, hearing protection, snug fitting gloves, and safety shoes or heavy boots. No loose or dangling apparel.

SETTING UP
- Place log splitter on dry, level ground.
- Secure splitter for unintended movement.
- Place splitter in horizontal or vertical position.
- Start engine

SPLITTING LOG
- Position log on beam, against endplate.
- Move split control to extend wedge and split log.
- Release split control to stop wedge.
- Move split control to return wedge.
- Remove split wood from work area.



Operator Position - horizontal



Operator Position - vertical

PN 777887

7

VERTICAL LOCK

PN 778714

8

⚠WARNING

PINCH POINT
Keep hands clear during operation.

787944

9

⚠ WARNING

Burn Hazard

Do not touch hot muffler.
Muffler may be hot even if the unit is stopped.

Allow unit to cool before servicing.

788936

10

SPLIT CONTROL LEVER OPERATION

Split Log | Neutral | Return

11

⚠ WARNING

Moving parts can crush and cut. Pieces can fly out while splitting. Follow safety rules for operating the log splitter or serious injury could result.
- READ the Owner's Manual completely before operating.
- Only one person should operate the log splitter. If an assistant is helping to load logs, the operator should not actuate controls until the assistant is at least 10 ft away.
- Stay in the designated OPERATOR POSITION while actuating the controls.
- Split wood in direction of the grain only.
- Hold bark side of logs when loading.
- Keep hands away from wedge, endplate/ram, and partly split logs.
- Never leave log splitter unattended during operation.
- Stay off slopes and slippery surfaces.

See additional safety rules in the Owner's Manual.

PN 778610

12

⚠ WARNING

IF LOG BECOMES STUCK ON WEDGE

A log can become stuck to the wedge if the wedge becomes embedded in the log and the log doesn't split and separate. This can happen if the log is too stringy or tough to split completely.

A stuck log will move back with the wedge on the initial attempt to retract the wedge. **If this happens, STOP retracting the wedge immediately** and follow the directions below.

NEVER attempt to remove a stuck log by:
- Using the hydraulic force of the splitter
- Modifying the splitter
- Adding attachments to the splitter

Personal injury could result from log or metal pieces flying out at high speed toward the operator or bystanders, or the splitter could become damaged.

ALWAYS remove the log MANUALLY using the following procedure:
1. If there is already 1" or more of clearance between the log and endplate, go to step 2. Otherwise, retract wedge just enough to remove pressure between the log and endplate - about 1" clearance.
2. Turn engine OFF.
3. Remove stuck log from the wedge manually with a pry bar or sledgehammer.
   Important: Be extremely careful as log pieces may fly off as they separate from the wedge. Wear safety goggles and make sure bystanders are clear.
4. Do not attempt to resplit a stuck log once it has been removed from the wedge.

PN 777889

13

MAX TOWING SPEED
45
MPH

14

⚠WARNING

Poisonous Gas

This product gives off carbon monoxide, a poisonous gas that can kill you. You CANNOT smell it, see it, or taste it.
- ONLY use outside & far away from windows, doors, & vents.
- NEVER use inside homes, garages, or sheds, EVEN if you run a fan or open doors or windows.

See owner's manual for more details.

788937

15

⚠WARNING

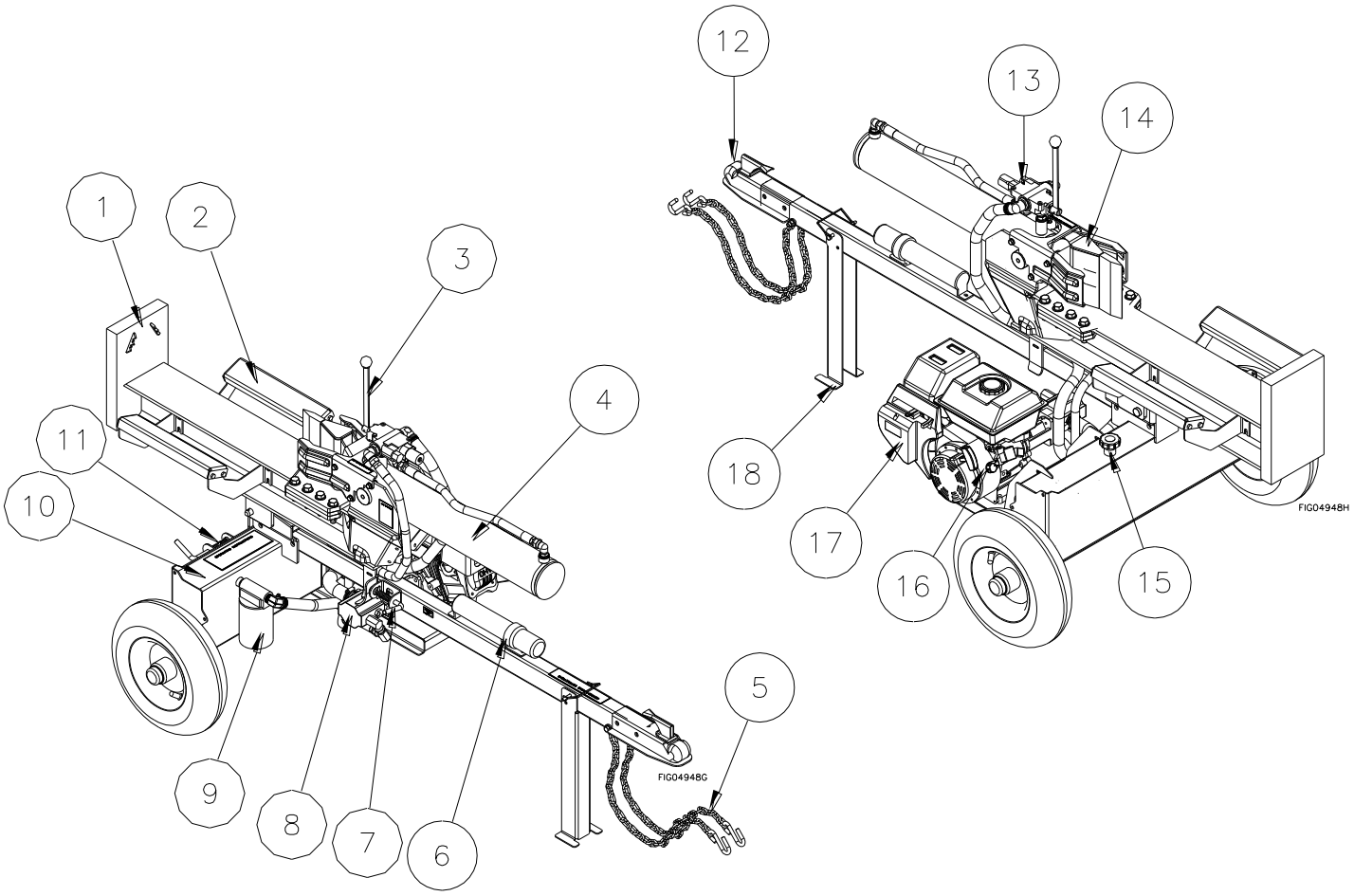
Fuel Fire/Explosion Hazard

Fuel is flammable and explosive.

Never fuel a running or hot engine.
Clean up fuel spills immediately.
Ensure there are no fuel leaks before starting.
Keep sources of sparks and flames away.
Hot exhaust may also ignite spilled fuel.
No Smoking.
Keep a fire extinguisher nearby.

788935

Machine Component Identification

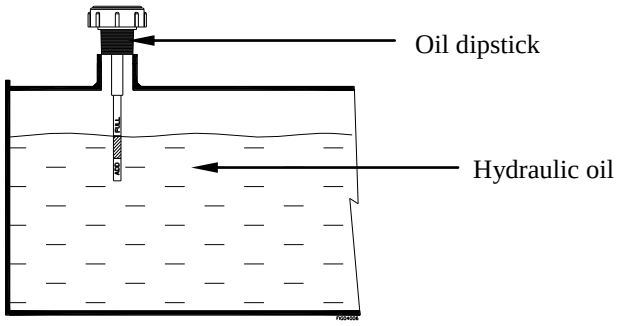


Ref	Description
1	End Plate
2	Log Cradles
3	Split Control Lever
4	Cylinder
5	Safety Chains
6	Manual Tube
7	Horizontal Lock
8	Hydraulic Pump
9	Return Line Filter

Ref	Description
10	Axle/Hydraulic Tank
11	Vertical Lock
12	2” Ball Coupler
13	Control Valve
14	Wedge
15	Hydraulic Breather/Dipstick
16	Engine On/Off Switch
17	Engine
18	Support Leg

Initial Set-up

IMPORTANT!
Engine is shipped <u>without</u> oil. DO NOT start the engine before adding oil.
See Assembly Instructions section of this manual to assemble the log splitter before setup.

<u>Step One:</u> **Inspect Log Splitter Components.**	**Closely inspect all log splitter components.** (See Machine Components section of this manual for diagram of components.) • If you have missing or damaged components, please contact Product Support at 1-866-443-2576.
<u>Step Two:</u> **Add Oil to Engine** **<u>Step Three:</u>** **Add Hydraulic Oil to Reservoir and Prime the Pump**	**Add oil to the engine.** Using a funnel, add SAE 10W-30 oil up to the FULL mark on the dipstick. (See engine Owner's Manual for oil capacity and location of fill cap.) ⚠ **WARNING:** High fluid pressures and temperatures are developed in hydraulic log splitters. Hydraulic fluid escaping through a pin hole sized opening can burn or puncture skin, resulting in wounds that could cause blood poisoning, infection, disability, gangrene, amputation, or death. Therefore, the following instructions should be heeded at all times when inspecting or servicing the hydraulic components of the log splitter. • NEVER check for leaks with your hand. Leaks can be located by holding a piece of cardboard or wood (at least two feet long) with your hand at one end and passing the other end over the suspected area (wear eye protection). Look for discoloration of the cardboard or wood. • NEVER adjust the pressure of the pump or valve. • If injured by escaping fluid, no matter how small the wound is, see a doctor at once. A typical injection injury may be a small wound that does not look serious. However, severe infection or reaction can result if proper medical treatment is not administered immediately by a doctor who is familiar with injection injuries. 1. Remove hydraulic oil dipstick. 2. Refer to the **Specifications** section for approximate hydraulic oil capacity. 3. Fill reservoir with 10 wt AW32, ASLE H-150, or ISO 32 oil. Use a funnel 4. Replace hydraulic oil dipstick and check that oil level reads full. Note: Do not thread in dipstick when checking oil level. 5. Disconnect the spark plug wire from the spark plug 6. Pull on the starter grip recoil at least 20 times so that hydraulic fluid has cycled through the pump 7. Reconnect the spark plug wire to the spark plug 8. Start engine and use control valve handle to extend and retract wedge 5 (five) times to remove air from the high pressure lines. 9. With wedge retracted, check oil level again. 

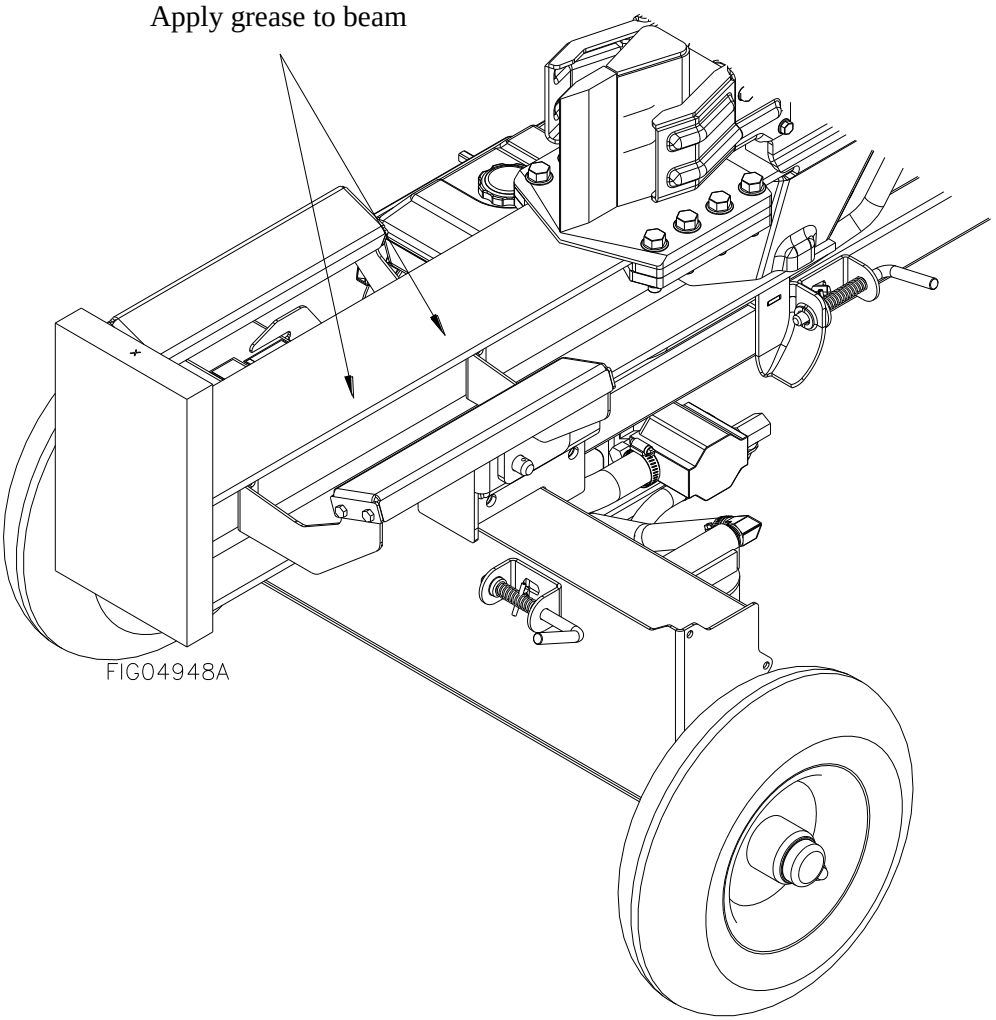
10. Replace hydraulic oil fill/vent cap.
11. Start engine and use control valve handle to extend and retract wedge five (5) times to remove air from the high-pressure lines.
12. With wedge retracted, check oil level again. Fill if necessary.

⚠ **WARNING:** NEVER remove the hydraulic oil dipstick when the engine is running or hot. Hot oil can escape causing severe burns. Allow log splitter to cool completely before removing hydraulic oil dipstick.

Note: If the log splitter will be run for long periods of time in outdoor temperatures above 70°F, we recommend changing the hydraulic oil to DEXRON III.

Step Four:
Lubricate Beam

Apply grease to beam. This will help prevent wear between the wedge and beam.



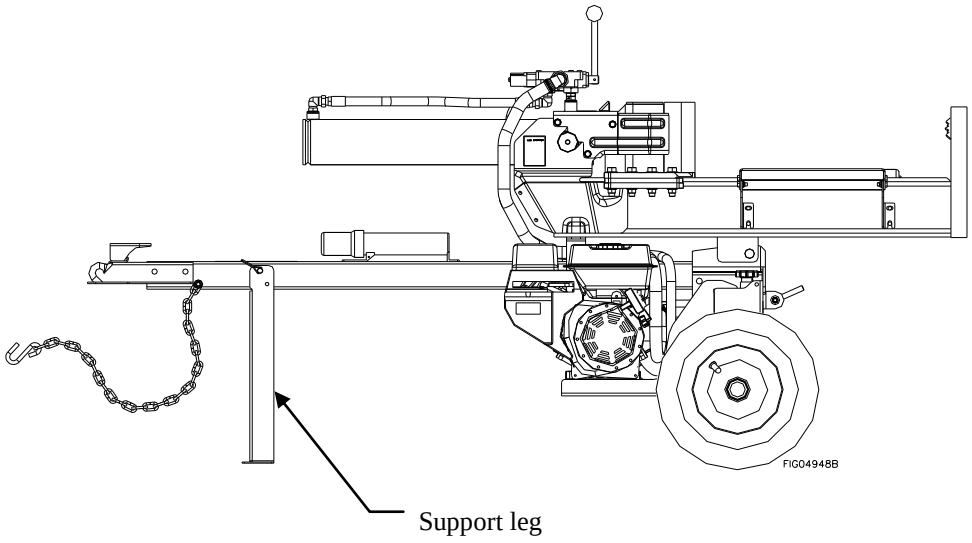
Moving and Towing to the Job Site

⚠ WARNING

The log splitter is heavy. It can crush and cause serious injury if it rolls out of control or tips over.

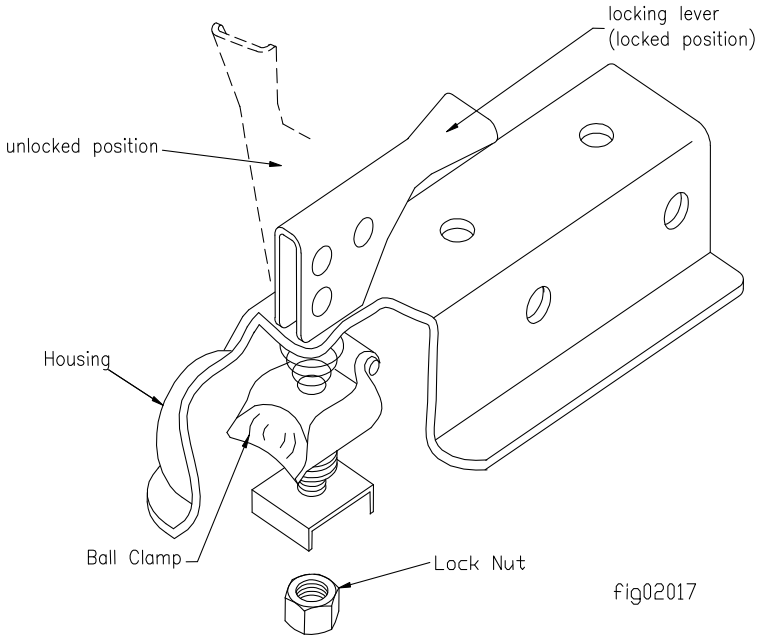
Follow the instructions below for safely moving and towing the log splitter.

Moving the log splitter:

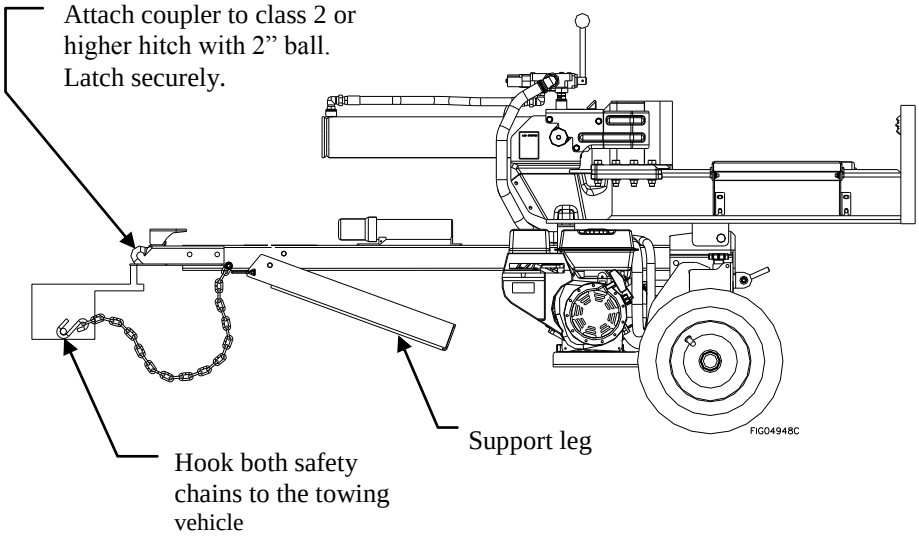
1. Place in Horizontal position	**Make sure the log splitter is locked in the horizontal position with latch rod before moving.** NEVER move log splitter when it is in vertical configuration because it will be unstable and could tip.
2. Engine off.	**IMPORTANT: Make sure log splitter engine is off.** Never move the log splitter with its engine running.
3. Fuel valve off (if equipped)	**Turn fuel valve off** to prevent carburetor flooding and reduce the chance of fuel leakage. Refer to Engine owner's manual for fuel valve location.
4. Lock: Support leg DOWN	**Lock the support leg in the "DOWN" position** before you move the log splitter. 
5. Move log splitter to work site or tow hitch	**Move log splitter by hand either directly to chosen work site or to vehicle hitch for towing.** (See Before Each Use: Step Three: instructions on selecting a work site) **Important Safety Instructions**: • **Hills.** Do not move the log splitter up or down hills by hand - use a towing vehicle. • **No riding.** Never allow anyone to sit or ride on the log splitter. • **No cargo.** Never transport cargo or wood on the log splitter.

Moving and Towing to the Job Site

Towing:

1. Read instructions	**Review towing safety instructions in your vehicle manual.**
2. Check tires	**Make sure tires are fully inflated and in good repair.** **⚠WARNING:** • Do not over-inflate tires. Serious injury can occur if tire explodes. • When seating a bead after repair, do not exceed 30 PSI. Pressures higher than 30 PSI can cause the tire and wheel to rupture and explode.
3. Attach to hitch (2" ball)	**Attach log splitter to vehicle hitch** 1. Attach log splitter's coupler to a class 2 or higher hitch with 2" ball (only). 2. Adjust coupler to ball by raising locking lever and turning lock nut with fingers. 3. Proper adjustment is obtained when coupler is as tight as possible on ball and locking lever can still be opened and closed. 4. Lock lever closed to secure the attachment. An optional locking pin or padlock may be inserted in the locking lever hole for extra security. 
4. Attach safety chains	**Attach safety chains.** 1. Two safety chains must be used while towing. 2. Cross safety chains under the coupler, allowing only enough slack for vehicle turns.

Moving and Towing to the Job Site

5. Put support leg UP	**Move the <u>support leg</u> to the "UP" position and lock.** 
6. Tow to desired location	**Tow log splitter carefully to desired work site.** (See Before Each Use section on selecting an appropriate work site) **<u>Important safety instructions</u>**: • **Added length**. Be aware of the added length of the splitter. • **Speed limit**. Never tow this log splitter over 45 mph. Faster speeds may result in loss of control. • **Rough terrain**. Drive slowly and take extra caution when traveling over rough terrain. • **On public roads**. If towing on a public road, make sure to comply with all local, state, and federal towing requirements. It is the sole responsibility of the purchaser to obtain licensing, trailer lights, safety chains or signage as needed to comply. • **Unattended**. Turn off the towing vehicle before leaving the splitter unattended. • **Under the influence**. Never tow or operate this splitter while under the influence of alcohol, drugs, or medication.
7. Lock support leg down & unhitch	**Lock support leg in the DOWN position and disconnect from vehicle.** NEVER operate log splitter while it is attached to the vehicle.

Before Each Use-Inspection/Maintenance

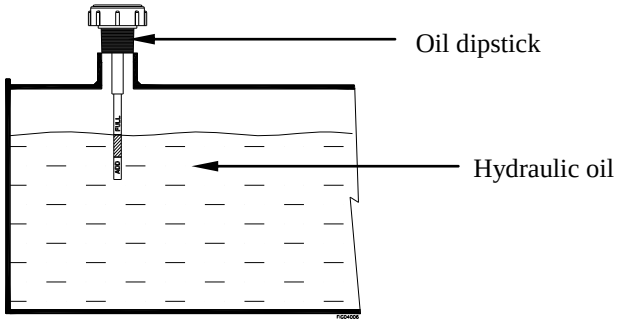
Step One: Inspect and maintain log splitter before each use

If the log splitter has been used previously, it must be inspected and maintained BEFORE EACH SUBSEQUENT USE.

⚠ WARNING
ALWAYS shut off the engine, disconnect the spark plug, and relieve system pressure before inspecting, cleaning, adjusting, or repairing the splitter. Relieve system pressure by moving Split Control Lever back and forth several times.

IMPORTANT:
If a part needs replacement, only use parts that meet the manufacturer's specifications. Replacement parts that do not meet specifications may result in a safety hazard or poor operation of the log splitter.

1. Engine off / relieve pressure	**Perform all inspections/repairs with the engine off and hydraulic system pressure relieved.** 1. Make sure engine is off and cool. 2. Disconnect the spark plug 3. Relieve all hydraulic system pressure by moving the Split Control Lever back and forth several times.
2. Remove debris	**Remove debris from engine, muffler, and moving parts.** 1. Engine debris. Debris on a hot engine can be a fire hazard. Clean debris and chaff from engine cylinder head, cylinder head fins, blower housing rotating screen, and muffler areas. Avoid contact with hot muffler. 2. Other debris. Debris on moving parts can cause excess wear. Clear debris from the slide beam, wedge, and endplate.
3. Fuel tank/lines	**Check fuel tank and fuel lines for leaks.** Any fuel leak is a fire hazard. Fix any fuel leaks before starting engine.
4. Mechanical parts	**Check to be sure that all nuts and bolts are tight** to make sure the log splitter is in safe working condition.
5. Hydraulic system	**Check the hydraulic system carefully:** 1. Visually inspect all hoses, tubing, clamps/fittings, pump, and cylinder for cracks, fraying, kinks, or other damage. 2. Check all components for oily residue, which may indicate a leak. Do NOT operate the log splitter if there is any indication of damage or oily residue. Small leaks in hydraulic lines can cause severe injuries and can also be an indication of catastrophic failure in the near future. The life of hydraulic hoses may be from a few months to a few years, depending on use and storage patterns. ⚠ **WARNING**: High fluid pressures and temperatures are developed in hydraulic log splitters. Hydraulic fluid escaping through a pin hole sized opening can burn or puncture skin, resulting in wounds that could cause blood poisoning, infection, disability, gangrene, amputation, or death. Therefore, the following instructions should be heeded at all times when inspecting or servicing the hydraulic components of the log splitter:

	• Stop the engine, disconnect the spark plug, and move all control valve handles back • and forth to relieve pressure before changing or adjusting hydraulic system components such as hoses, tubing, fittings or other components. • NEVER check for leaks with your hand. Leaks can be located by holding a piece of cardboard or wood (at least two feet long) with your hand at one end and passing the other end over the suspected area (wear eye protection). Look for discoloration of the cardboard or wood. • NEVER adjust the pressure setting of the pump or valve. • If injured by escaping fluid, no matter how small the wound is, see a doctor at once. A typical injection injury may be a small puncture wound that does not look serious. However, severe infection or reaction can result if proper medical treatment is not administered immediately by a doctor who is familiar with injection injuries.
6. Hydraulic oil level	**Check the hydraulic oil level.** Fill as needed. Note: Do not thread in the oil dipstick when checking hydraulic oil level.  ⚠ **WARNING:** NEVER remove the hydraulic oil dipstick when the engine is running or hot. Hot oil can escape causing severe burns. Allow log splitter to cool completely before removing hydraulic dipstick.
7. Engine	**Inspect and perform engine maintenance as directed in the engine section of this manual.**
8. Spark arrestor muffler	**If the engine is equipped with a spark arrestor muffler, clean and inspect it regularly (follow spark arrestor service instructions found in the engine section of this manual).** Replace if damaged.
9. Tires	**Make sure tires are fully inflated and in good repair if you will be towing the splitter.** See tire sidewall for recommended tire pressure. ⚠ **WARNING:** • Do not over-inflate tires. Serious injury can occur if tire explodes. • When seating a bead after repair, do not exceed 30 PSI. Pressures higher than 30 PSI can cause the tire and wheel to rupture and explode.
10. Shields/guards	**Replace all guards and shields after servicing the log splitter.**

Before Each Use - Fueling

Step Two: Fueling

⚠ WARNING
Gasoline is highly flammable and explosive. You can be burned or seriously injured when handling fuel. Use extreme care when handling gasoline.

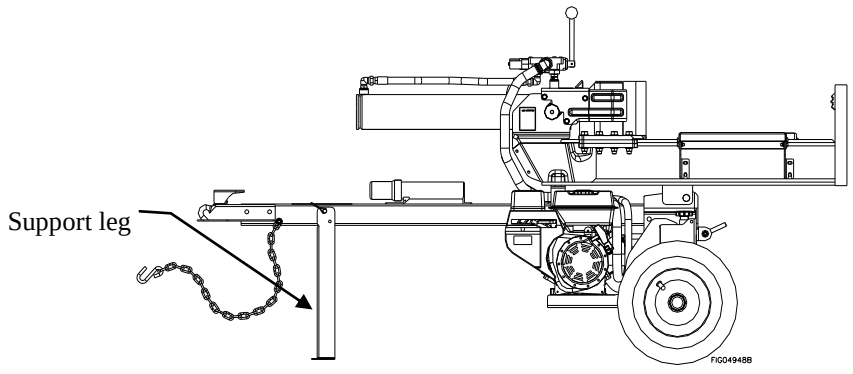
1. Engine off/cool	**The engine must be off and allowed to cool at least two minutes before adding fuel.** ⚠ **WARNING:** A running engine is hot enough to ignite fuel. Never add fuel or remove gas cap if engine is running or still hot.
2. Outdoor location	**Fill fuel tank outdoors – never indoors.** ⚠ **WARNING:** Gasoline vapors can ignite if they collect inside an enclosure. Explosion can result.
3. Remove gas cap	**Remove engine gas cap.**
4. Add gasoline	**Add gasoline through fill opening from a UL-listed container.** **Important Safety Instructions:** • **Use approved container**. NEVER pump fuel directly into engine at gas station. Static charge can build and ignite fuel. Use a UL listed fuel container to transfer gas to the engine. • **Don't overfill**. DO NOT overfill the gas tank. Allow at least 1/2" of empty space below the fill neck to allow for fuel expansion • **Heat/flames/sparks**. Stay away from sources of heat, flame, or sparks while adding fuel. 
5. Spills/splashes	**Clean up fuel spills /splashes immediately.** 1. Move the log splitter away from spilled fuel on the ground. 2. Wipe fuel off engine and wait 5 minutes for excess fuel to evaporate before starting engine. 3. Gas soaked rags are flammable and should be disposed of properly. 4. If gasoline is spilled on your skin or clothes, change clothes and wash skin immediately.
6. Replace gas cap	**Replace gas cap securely before starting engine.**
7. Gasoline storage	**Store extra gasoline in a cool, dry place in a UL listed, tightly sealed container.**

Before Each Use – Work Site Selection and Setup

Step Three: Work site selection and log splitter setup

⚠ WARNING

It is important to select an appropriate work site and properly set up the log splitter in order to minimize the risk of slips and falls, equipment rolling or tipping over, carbon monoxide poisoning, and accidental fires.

1. Select location	**Select an appropriate location for operating the log splitter.** Requirements: 1. Dry, with a level surface with good footing. Stay clear of areas with mud, ice, tall grass, weeds, brush, or snow. 2. Outdoors, away from air intakes. ⚠ **WARNING:** The running engine gives off carbon monoxide, a poisonous gas that can kill you. You CANNOT smell it, see it, or taste it. • ONLY run log splitter OUTDOORS and away from air intakes. NEVER run log splitter inside homes, garages, sheds, or other buildings or semi-enclosed spaces. These spaces can trap poisonous gases, EVEN if you run a fan or open windows. • If you start to feel sick, dizzy, or weak while using the log splitter, shut off the engine and get to fresh air RIGHT AWAY. See a doctor. You may have carbon monoxide poisoning.
2. Fire precautions	**Take the following precautions against fire:** 1. **IMPORTANT: If your splitter will be used near any unimproved forest, brush, or grassy covered land, *then engine must be equipped with a spark arrestor*.** (See the "Specifications" section of this manual to determine if your splitter already has a spark arrestor. Contact Powerhorse Product Support at 1-866-443-2576 for information about obtaining a spark arrestor for your log splitter if it is unequipped.) 2. Make sure you comply with applicable local, state and federal codes. 3. Keep a fire extinguisher available (classified for both ordinary combustibles & flammable liquids) as a precautionary measure when operating the log splitter in dry areas.
3. Position splitter 7' from any combustibles or flammable liquids	**Position muffler at least 7 feet from combustible objects during operation.** Hot exhaust fumes from engine could cause fire. Also, hydraulic oil leaking or spraying on hot engine can ignite.
4. **Lock support leg DOWN**	**Lock the support leg in the "DOWN" position.** 
5. Block wheels	**Block the wheels to prevent unintended movement of the log splitter.**
6. Apply grease	**Apply grease to the beam.**

Splitting Operation

⚠ WARNING

Before starting this log splitter, review the following instructions and safety information for safe operation of the log splitter.

Failure to follow these rules may result in serious injury to the operator or bystanders from moving parts that crush, cut, or entangle from flying objects, burns, fire, falling or tripping, or from carbon monoxide poisoning.

General safety information:

- **Read manual.** Do not allow anyone to operate the log splitter who has not read the Owner's Manual or has not been instructed on the safe use of the splitter. The log splitter owner should instruct all operators in safe log splitter operation.
- **Age restrictions**. Never allow anyone under 16 years old to operate the log splitter. Anyone 16 years and older must be trained and supervised by a trained adult.
- **Intended use**. Log splitters should only be used for splitting wood logs, lengthwise with the grain. Do not use for other purposes as unforeseen hazards may result.
- **Modifications**. Never modify or alter the log splitter in any way. Modifications can create serious safety hazards and will void the warranty**:**
- **Attachments**. Never add attachments to the splitter, except for authorized accessories supplied by the manufacturer with instructions for safe installation and use.
- **Engine speed**. The maximum engine speed is preset at a safe limit. Never attempt to modify the engine speed setting to run at a higher speed.
- **Fuel/exhaust system**. NEVER modify or add to the exhaust system, fuel tanks, or fuel lines. Fire can result.
- **Remote control**. NEVER attach a rope, cable, or other remote device to the splitting control.
- **Splitting wedge**. NEVER attempt to change the height or speed of the splitting wedge.
- **Pressure setting.** NEVER increase the pressure setting of the pump or control valve.
- **Safety equipment/controls**. Always operate the log splitter with all safety equipment in place and in good working order, and all controls properly adjusted for safe operation.
- **Know how to stop**. Be thoroughly familiar with all controls and with the proper use of the equipment. Know how to stop the log splitter and relieve system pressures quickly if needed.
- **Operating speed**. Always operate the log splitter at the manufacturer's recommended speed. The maximum speed of the engine pump and wedge are preset within safe limits.
- **Daylight only**. Only use the log splitter in daylight so you can see what you are doing.
- **Smoking/sparks**. Never smoke while operating the log splitter, and never operate near sources of sparks or flames.
- **Under the influence**. Never operate, or let anyone else operate, the log splitter while under the influence of alcohol, drugs, or medication.
- **Unattended**. Never leave the machine unattended while the engine is running.
- **Refueling**. Never refuel the engine until it has cooled at least two minutes.
- **Adjusting/repairing**. Always make sure the engine is off before cleaning, repairing or adjusting the splitter, except as recommended by the manufacturer. In addition, disconnect the spark plug and move all control handles back and forth to relieve system pressure *before changing or adjusting hydraulic system components* such as hoses, tubing, fittings or other components.
- **Replace labels**. Always make sure safety labels are in place and in good condition. If a safety label is missing or not legible, order new labels because unsafe operation can result. Call 1-866-443-2576 to order new safety labels.

Splitting Operation

1. Put on protective clothing / gear

Wear the following protective clothing and safety gear:

1) **Eye protection**. Always wear safety glasses or goggles when operating the machine. Pieces of log may fly out and serious eye injury can occur.
2) **Boots**. Falling logs can crush feet. Always wear safety shoes or heavy boots when operating or helping to load logs.
3) **Gloves**. Wear snug fitting gloves without drawstrings or loose cuffs.
4) **Hearing protection**. The use of earplugs or other hearing protection device is recommended.
5) **No Loose/dangling apparel**. Loose or dangling apparel can become entangled in moving parts. Never wear jewelry or loose-fitting clothing.

2. Block wheels

Block the wheels to prevent unintended movement of the log splitter.

3. Set to horizontal or vertical:

Set log splitter into either the horizontal or vertical splitting position

The <u>HORIZONTAL</u> splitting position is used for lighter logs that can be easily loaded onto the beam. The <u>VERTICAL</u> splitting position is used for light logs as well as heavy logs that are difficult to load onto the beam.

<u>Note</u>:

Musculoskeletal injury can result from lifting logs onto the log splitter if proper lifting techniques are not used or the logs are too heavy for a person's size, weight, or strength. In some cases, logs as small as 8" in diameter and 14" in length may be heavier than what some persons should be repeatedly lifting onto the splitter.

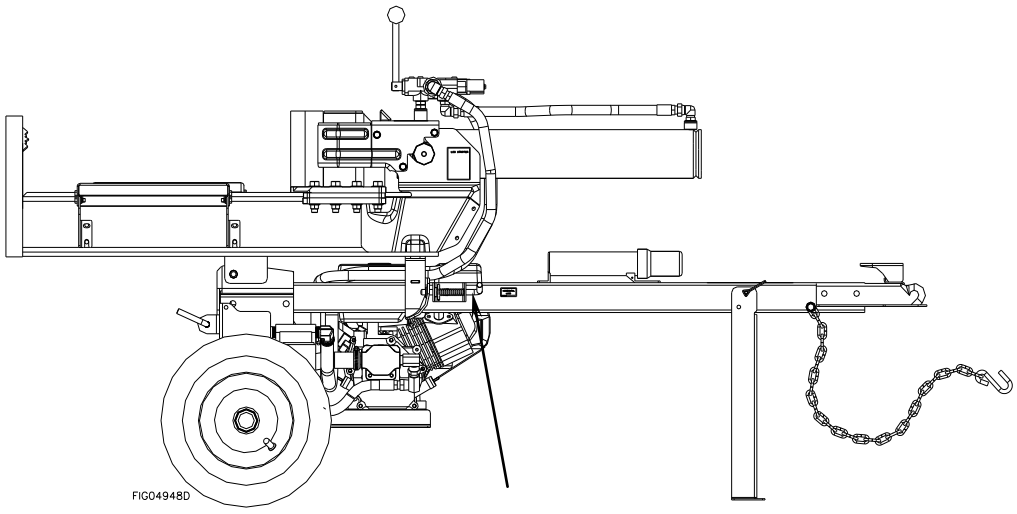
The use of the vertical splitting position can greatly reduce the need to lift logs onto the splitter. Employers are advised to consider NIOSH lifting guidelines when assigning employees to log splitting tasks for an extended period of time.

⚠ **WARNING**: NEVER change splitting positions with the engine running. You may contact the muffler and receive serious burns.

a) Set to Horizontal position

Horizontal Splitting Position.

Make sure beam is locked securely in the horizontal position by checking the horizontal lock.



Horizontal Lock

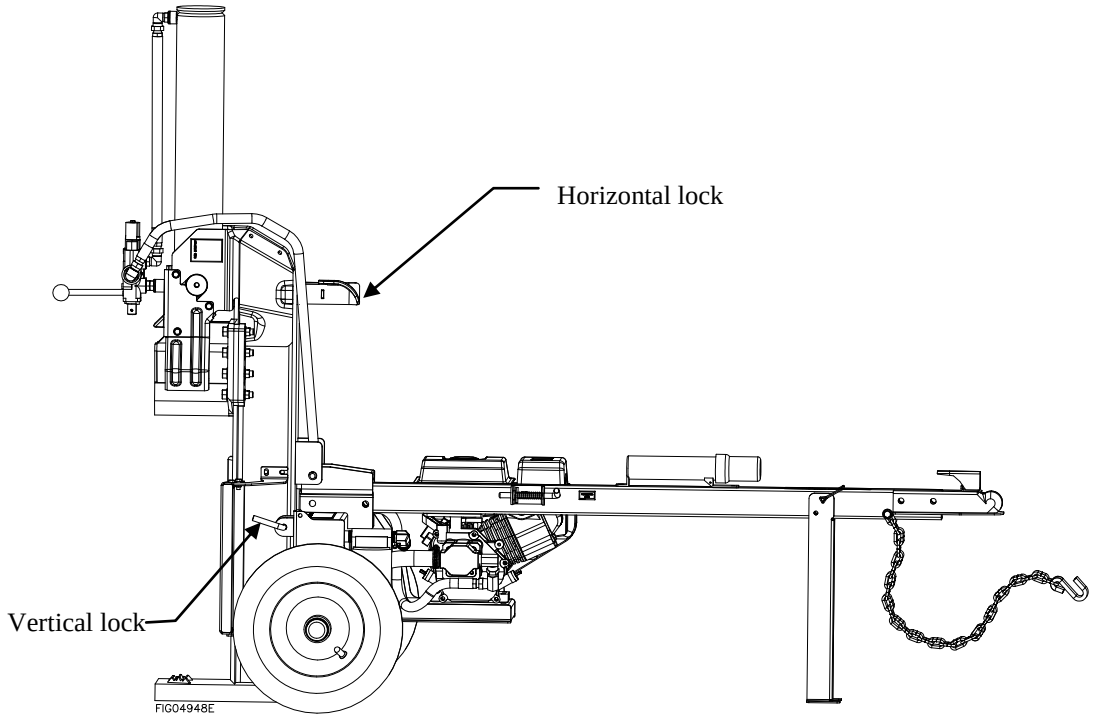
Splitting Operation

b) Set to Vertical position

Vertical Splitting Position

Pull out horizontal lock latch rod, grasp and lift beam until it rotates into vertical position.

⚠**WARNING**: Crush hazard. The beam is heavy – do not let it just drop. It could crush fingers or cause damage to the splitter.



1) **Lock in vertical position using latch rod through the vertical lock.**
2) **To return to horizontal position, unlock vertical latch rod, grasp and lower beam carefully in a controlled manner until it rests on the tow bar then lock beam in the horizontal position with latch rod.**

4. Start engine

Start the engine.

See the engine owner's manual for engine starting instructions.

NOTE:

a) Make sure the hydraulic oil is above 10°F before starting the engine. Cold hydraulic oil can damage the hydraulic pump.

b) If outdoor air temperature is below 32°F, allow log splitter to warm up by extending and returning the wedge several times before splitting wood.

⚠**WARNING:**

Burns. To avoid burns, stay clear of hot muffler if you are starting a warm engine.

Carbon monoxide. The running engine gives off carbon monoxide, a poisonous gas that can kill you. You CANNOT smell it, see it, or taste it. If you start to feel sick, dizzy, or weak while using the log splitter, shut off the engine and get to fresh air RIGHT AWAY. See a doctor. You may have carbon monoxide poisoning.

Other exhaust dangers. Engine exhaust, some of its constituents, and certain vehicle components contain or emit chemicals known to the State of California to cause cancer, birth defects, or other reproductive harm. Avoid inhalation of exhaust.

Splitting Operation

5. Load log

Load log onto beam with a cut end against the end plate – positioned for a lengthwise cut.

Notes:

a) The log splitter is designed only for cutting lengthwise with the grain, NOT for cutting across the grain.

b) This log splitter is designed for cutting logs only up to a maximum of 14" in diameter and 25" long. Larger diameter logs could get stuck on the wedge and longer logs will not fit on the beam.

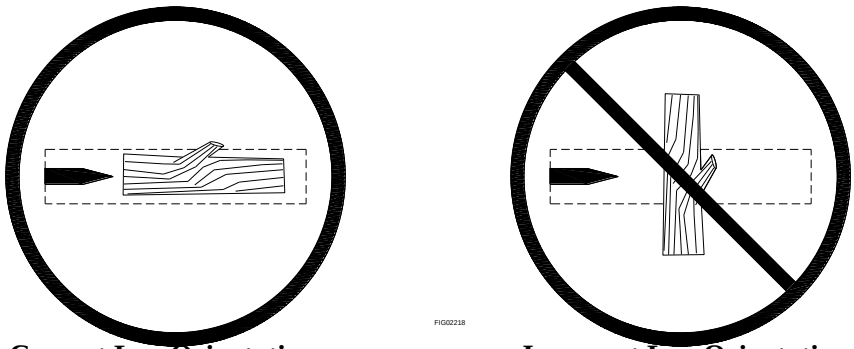


FIG02218

Correct Log Orientation **Incorrect Log Orientation**

⚠**WARNING:** ALWAYS keep hands and feet away from the end plate, wedge, and partially split logs while loading, operating and unloading the log splitter.

Important safety instructions:

- **Hold bark side**. Hold the bark side of logs when loading or positioning, never the ends. Never place your hands or any part of your body between a log and any part of the log splitter.

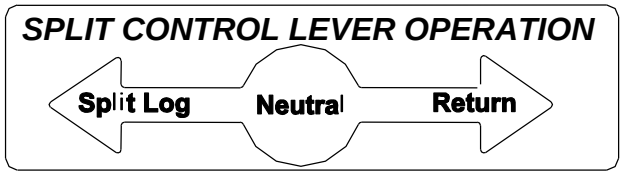
  NOTE for vertical position loading: Place the log on the endplate and turn it until it leans against the beam and is stable. If the log is too big or oddly shaped, stabilize the log with wooden shims between the log and endplate or ground. DO NOT use your leg or knee to stabilize the log. NEVER stabilize the log by placing your hand on top of the log.

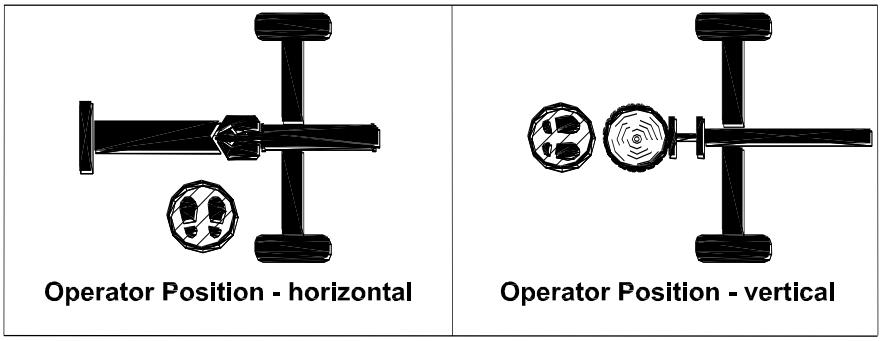
- **Wedge moving**. NEVER load or unload logs while the wedge is moving.
- **Straddling/reaching across**. Never straddle, reach across, or step over the beam while the engine is running and the log splitter is in the horizontal position. You could trip, actuate the controls, and get seriously injured.
- **Unsplit log pile**. Do not pile logs to be split in a place that will make you reach across the log splitter in order to load them.
- **Square log ends**. Logs that are not cut square can slide out while splitting and become a safety hazard or cause excessive force to log splitter components. Use a chain saw to cut logs square on each end before attempting to split them.
- **Single log**. Never attempt to split more than one log at a time. Pieces of log can unexpectedly be thrown from the machine, causing serious injury.
- **Split along grain**. Do not use the log splitter to split logs across the grain. Doing so will damage the log splitter and could also cause pieces of log to be thrown, injuring the operator or bystanders.
- **Changing splitting position**. Do not change splitting positions (horizontal/vertical) with the engine running. You may contact the muffler and receive serious burns. Be careful to avoid contact with hot muffler even after the engine is turned off.

Splitting Operation

6. Extend wedge

Move Split Control Lever toward end plate to extend wedge and split log.





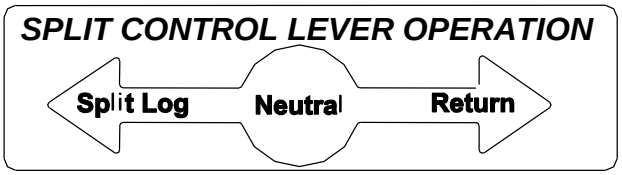
Important safety instructions:

- **Operator position**. ALWAYS operate the log splitter from the manufacturer's indicated OPERATOR POSITION. (See diagram above.) Other positions are unsafe because they can increase the risk of injury from crushing, cutting, flying objects, or burns.
- **Remove hands**. Remove both hands from log before activating Split Control Lever.
- **Hand activate**. Use only your hand to operate the Split Control Lever. Never use any other body part, or a rope, cable, or other remote device to actuate the control.
- **Second person**. Many accidents occur when there is more than one person involved in loading and operating the log splitter. Only one person should operate the controls. *If a second person is assisting in loading logs, the operator must NEVER actuate the Split Control Lever until the assistant and all bystanders are at least 10 feet away. NEVER allow an assistant to hold the log in place while the operator actuates the Split Control Lever.*

7. Stop wedge

Release Split Control Lever to stop wedge movement when log is split.

⚠**WARNING:** Cracks in logs can close quickly and pinch fingers. Keep fingers away from any cracks that open in partially split logs.



8. Important STUCK LOG procedure

If a log does not split completely and becomes stuck on the wedge, follow the instructions below to remove the log.
A log can become stuck to the wedge if the wedge becomes embedded in the log and the log doesn't split and separate. This can happen if the log is too stringy or tough to split completely. A stuck log will move back with the wedge on the initial attempt to retract the wedge. If this happens, retract the wedge completely to allow the splitter to strip the log from the wedge. Keep hands clear of log and wedge while wedge is retracting.

Splitting Operation

⚠WARNING: NEVER attempt to remove a stuck log by:

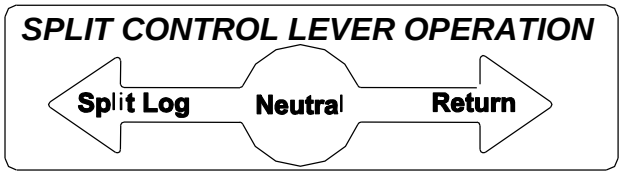
- Modifying the splitter.
- Adding attachments to the splitter.

Personal injury could result from log or metal pieces flying out at high speed toward the operator or bystanders, or the splitter could become damaged.

9. Return wedge

Move Split Control Lever away from end plate to return wedge.

Once the control valve is actuated in the return direction, the wedge is designed to keep returning by itself completely and then stop automatically.



⚠WARNING:

Stay clear while the wedge is returning. It is still powerful enough on the return stroke to cause serious injury.

10. Remove split wood

Remove split wood from area.

Move each log away from log splitter after it is split. Split logs left near the log splitter are a trip hazard.

11. After use

1. **Turn off engine.**
2. **Remove engine debris**.
   Debris on a hot engine can be a fire hazard. After the engine is off, clean debris and chaff from engine cylinder head, cylinder head fins, blower housing rotating screen, and muffler areas.

⚠ WARNING: Avoid contact with hot muffler.

3. **Return to horizontal position**.
   If in the vertical position, return log splitter to the horizontal position for greater stability and to prepare for transportation. Avoid contact with hot muffler.

Storage

⚠ WARNING

Gasoline vapors can ignite and cause a fire. Select a well-ventilated storage away from sources of heat, flame, or sparks.

Follow the instructions below for storing your log splitter between uses.

1. Retract wedge	**Retract the wedge completely to keep the rod protected from corrosion.**
2. Cool	**Allow the machine to cool 5 minutes before storing.** ⚠ **WARNING:** A hot engine can be a fire hazard.
3. Wipe with oily rag	**Wipe the beam and wedge with an oily rag to prevent corrosion.**
4. Engine manual	**Refer to the engine manual for proper engine storage instructions.** **CAUTION:** Gasoline will oxidize and deteriorate in storage. Old gasoline in the engine will cause hard starting and leave gum deposits that can clog the fuel systems. Deterioration problems may occur within a few months, or even less if gasoline was not fresh when you filled the tank. **Short-Term Storage:** 1. Consider adding a fuel stabilizer to extend fuel storage life. 2. Leave the fuel valve lever in the OFF position to reduce the possibility of fuel leakage. **Long-Term Storage:** (between infrequent uses and at end of season) Drain the fuel tank and carburetor as instructed in the engine owner's manual. **Important Safety Instructions** • Always drain fuel from tank in outdoor, well-ventilated area. • Stay away from sources of heat, flame, or sparks while handling fuel. • Clean up fuel spills/splashes immediately.
5. Splitter storage location	**Store the log splitter in a location away from corrosive material, sources of heat, open flames, sparks or pilot lights.** ⚠ **WARNING:** Never store log splitter inside where there is a source of heat or an open flame, spark or pilot light – such as water heaters, space heaters, furnaces, clothes dryers, or other gas appliances – EVEN IF the log splitter's gas tank is empty, residual gasoline vapors could ignite. NOTE: Do not store the log splitter near fertilizer or any other corrosive material.
6. Gasoline storage	**Store gasoline in a cool, dry place in an UL listed tightly sealed container.** ⚠ **WARNING:** Gasoline vapors can ignite if they collect inside an enclosure and explosion can result.

Periodic Maintenance

In addition to the maintenance performed with each use, periodic maintenance should also be performed according to the following schedule.

⚠ WARNING

ALWAYS shut off the engine, disconnect the spark plug, and relieve system pressure before cleaning, adjusting, or repairing the splitter. Relieve system pressure by moving Split Control Lever back and forth several times.

IMPORTANT:
If a part needs replacement only use parts that meet the manufacturer's specifications. Replacement parts that do not meet specifications may result in a safety hazard or poor operation of the log splitter.

1. Engine maintenance	**Perform engine maintenance as specified in engine owner's manual.**
2. Hydraulic Oil Change	**Change Hydraulic Oil Annually or Every 100 Hours.** ⚠ **WARNING:** High fluid pressures and temperatures are developed in hydraulic log splitters. Hydraulic fluid escaping through a pin hole sized opening can burn or puncture skin, resulting in wounds that could cause blood poisoning, infection, disability, gangrene, amputation, or death. Therefore, the following instructions should be heeded at all times when inspecting or servicing the hydraulic components of the log splitter. • NEVER check for leaks with your hand. Leaks can be located by holding a piece of cardboard or wood (at least two feet long) with your hand at one end and passing the other end over the suspected area (wear eye protection). Look for discoloration of the cardboard or wood. • NEVER adjust the pressure of the pump or valve. • If injured by escaping fluid, no matter how small the wound is, see a doctor at once. A typical injection injury may be a small wound that does not look serious. However, severe infection or reaction can result if proper medical treatment is not administered immediately by a doctor who is familiar with injection injuries. 1. **Use 10wt AW32, ASLE H-150, or ISO32 oil.** 2. **Relieve hydraulic system pressure by moving Split Control Lever back and forth several times.** 3. **Remove hydraulic oil fill/vent cap.** ⚠ **WARNING:** NEVER remove the hydraulic oil fill/vent cap when the engine is running or hot. Hot oil can escape causing severe burns. Allow the log splitter to cool completely before removing hydraulic oil fill/vent cap. 4. **Remove the suction strainer from the hydraulic tank to drain the hydraulic oil into a 10-gallon pan.** 5. **Clean suction strainer and wipe off debris with a dry cloth.** 6. **Fill the hydraulic tank with wedge retracted.** 7. **Dispose of used oil at an oil-recycling center. Used hydraulic oil is hazardous waste.** 8. **Extend and retract wedge five (5) times to purge air from the system.** 9. **Check hydraulic oil level and fill if necessary.**
3. Spark arrestor muffler	**If the engine is equipped with a spark arrestor muffler, clean and inspect it regularly (follow manufacturer's service instructions).** Replace if damaged.

Troubleshooting

⚠ WARNING

Before troubleshooting or attempting to service, read the following safety instructions to avoid serious injury to the operator or bystanders from moving parts that can crush or cut, burns, fire or explosion, or escaping high pressure hydraulic fluid.

Important Safety Instructions:

1. **Engine off.** Always make sure the engine is off before cleaning, repairing or adjusting the splitter, except as recommended by the manufacturer.
2. **Hydraulic safety.** High fluid pressures and temperatures are developed in the hydraulic log splitters. Hydraulic fluid escaping through a pin hole sized opening can burn or puncture skin, resulting in wounds that could cause blood poisoning, infection, disability, gangrene, amputation, or death. Therefore, the following instructions should be heeded at all times when inspecting or servicing the hydraulic components of the log splitter:
   - Stop the engine, disconnect the spark plug, and move all control valve handles back and forth to relieve pressure before changing or adjusting hydraulic components such as hoses, tubing, fittings, or other components.
   - Do not remove the hydraulic oil fill cap when the engine is running. Hot oil can escape causing severe burns. Allow the log splitter to cool completely before removing the hydraulic oil fill cap.
   - Do not adjust the pressure setting to the pump or valve.
   - Do not check for leaks with your hands. Leaks can be located by holding a piece of cardboard or wood (at least 2 feet long) with your hand at one end and passing the other end suspected area (wear eye protection). Look for discoloration of the cardboard or wood.
   - If injured by escaping fluid, no matter how small the wound is, see a doctor at once. A typical injection injury may be a small puncture that does not look serious. However, severe infection or reaction can result if proper medical treatment is not administered immediately by a doctor who is familiar will injection injuries.

Problem	
Wedge will not move	Solution: A,D,E,H,J
Slow wedge speed when extending or retracting	Solution: A,B,C,H,I,K
Wood will not split or splits extremely slow	Solution: A,B,C,F,I,K
Engine bogs down during splitting	Solution: G
Engine stalls under low load condition	Solution: D,E

Cause	**Solution**
A- Insufficient oil to pump	Check oil level in reservoir
B- Air in oil	Check oil level in reservoir, check for leaks in the suction line
C- Excessive pump inlet vacuum	Check pump inlet hose for blockage or kinks
D- Blocked hydraulic lines	Flush and clean the splitter hydraulic system
E- Blocked control valve	Flush and clean the splitter hydraulic system
F- Low control valve setting	Adjust control valve with a pressure gauge
G- High control valve setting	Adjust control valve with a pressure gauge
H- Damaged control valve	Return control valve for authorized repair
I- Internal control valve leak	Return control valve for authorized repair
J- Damaged cylinder piston	Return cylinder for authorized repair
K- Internally damaged cylinder	Return cylinder for authorized repair

Any Questions, Comments, Problems or Parts Orders

Call Powerhorse Product Support 1-866-443-2576

Specifications

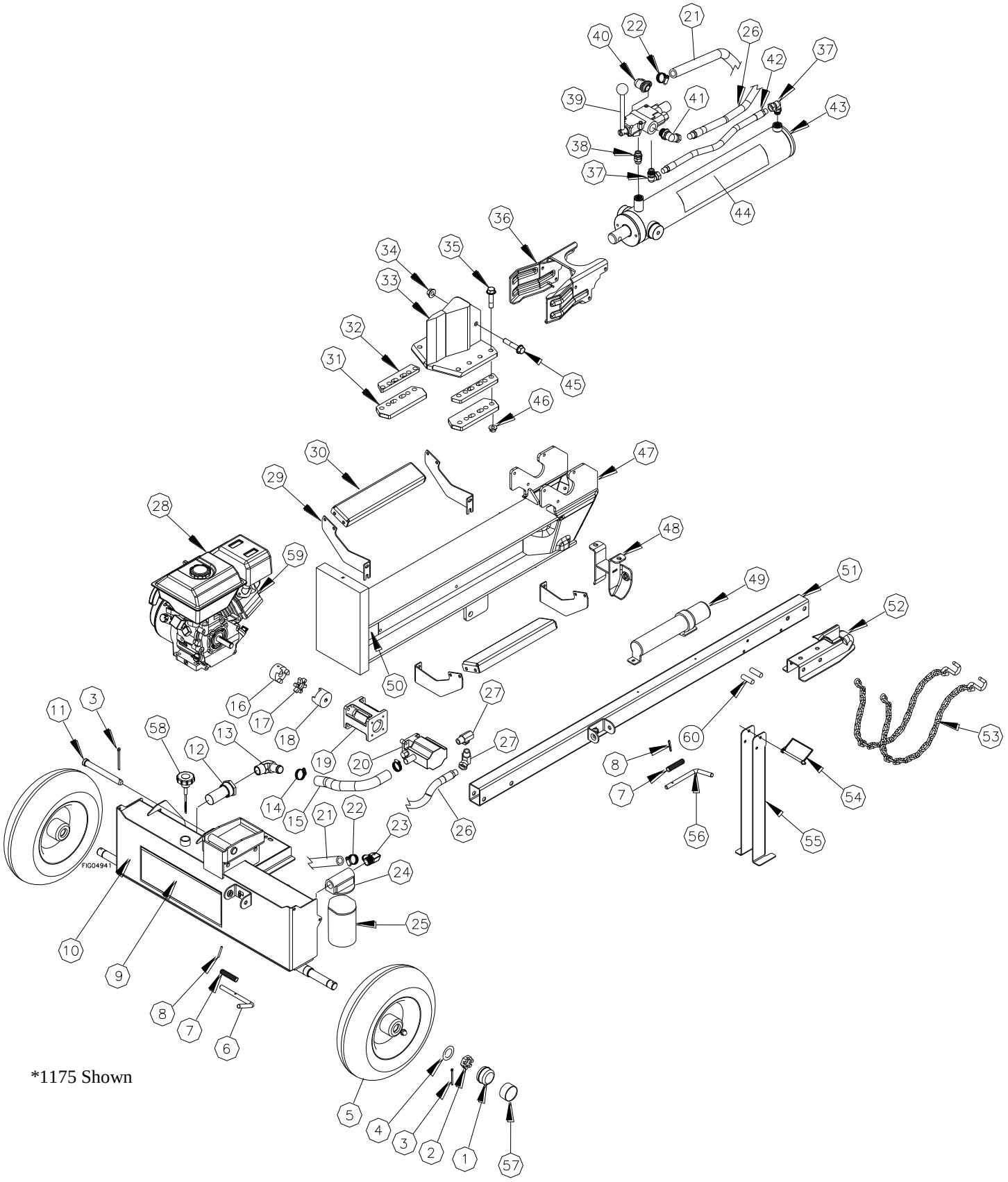
Item # ……..	1175	1169
Tonnage……	22 TON	35 TON
Pressure……	3000 PSI	3350 PSI
Flow…….	11 GPM	16 GPM
Engine cc…….	208cc	420cc
Hydraulic Cylinder Bore….	4”	5”
Hydraulic Cylinder Stroke ..	24 in	24 in
Maximum Log Diameter….	14”	14”
Maximum Log Length	25”	25”
Hydraulic Fluid Type……..	10wt AW32, ASLE H-150, or ISO32	10wt AW32, ASLE H-150, or ISO32
Hydraulic Oil Capacity……	6 gallons	6.6 gallons
Maximum Towing Speed…	45 MPH	45 MPH
Coupler Size……	2” Ball	2” Ball
Spark Arrestor…….	No	No
Fuel Valve……	Yes	Yes
Overall Dimensions	86.5”L x 43”W x 15.5”H	86.5”L x 43”W x 15.5”H
Dry Weight……..	532 lb	592 lb

The manufacturer reserves the right to make improvements in design and/or changes in specifications at any time without incurring any obligation to install them on units previously sold.

Any Questions, Comments, Problems or Parts Orders

Call Powerhorse Product Support 1-866-443-2576

Parts Breakdown – Exploded View 1175/1169 – Rev B



*1175 Shown

Parts Breakdown – Exploded View 1175/1169 – Rev B

Item	Part No.	Description	Qty.	Model
1	124A	Dust cap	2	All
2	777124	Axle nut	2	All
3	778674	1/8” x 2” Cotter pin	3	All
4	778844	Wheel washer	2	All
5	790350	Wheel	2	All
6	790897	Latch rod	1	1175
	788243		1	1169
7	788245	Latch spring	2	All
8	788244	Latch rod pin	2	All
9	790805	Powerhorse tank decal	1	All
10	790181	Tank weldment	1	All
11	790472	Pivot pin	1	All
12	790470	Suction strainer	1	All
13	788504	Suction elbow fitting	1	All
14	777835	Hose clamp	2	All
15	790482	Suction hose 1” x 14”	1	1175
	790483	Suction hose 1” x 18”	1	1169
16	777910	Engine coupler	1	1175
	777911		1	1169
17	777912	Coupler insert	1	All
18	777909	Pump coupler	1	All
19	790747	Pump Mount	1	1175
	779683		1	1169
20	790519	11 GPM Pump	1	1175
	790520	16 GPM Pump	1	1169
21	790485	3/4” x 59” Return hose	1	All
22	17141	Hose clamp, 3/4”	2	All
23	778829	Return Line Fitting	1	All
24	791244	Return Line Filter Head	1	All
25	791246	Return Line Filter Canister	1	All
26	790489	Supply hose 1/2” x 56”	1	All
27	50RAS8	Pump Fitting	2	1175
			1	1169
28	789712	Powerhorse Engine 208cc	1	1175
	790160	Powerhorse Engine 420cc	1	1169
29	790533	Log cradle mount	4	All
30	790540	Log cradle face plate	2	All
31	790359	Keeper	2	All
32	790357	Spacer	2	1169
	790861		2	1175
33	790514	Wedge	1	1175
	790515		1	1169
34	82570	Wedge Nut	1	All
35	82525	Keeper Bolt	8	1175
			12	1169

Parts Breakdown – Exploded View 1175/1169 – Rev B

Item	Part No.	Description	Qty.	Model
36	790560	Log stripper weldment	1	1175
	790405		1	1169
37	778827	Small swivel fitting	2	All
38	790488	Valve fitting	1	All
39	791867	Control valve	1	1175
	791869	Control valve	1	1169
40	778642	Hose barb fitting	1	All
41	778831	Large swivel fitting	1	All
42	778619	Cylinder extension hose	1	All
43	790420	Cylinder 4” x 24”	1	1175
	790228	Cylinder 5” x 24”	1	1169
44	790812	22 Ton Decal	2	1175
	790813	35 Ton Decal	2	1169
45	82554	Wedge bolt	1	1175
	82573		1	1169
46	82570	Keeper Nut	8	1175
			12	1169
47	790510	Beam weldment	1	1175
	790511		1	1169
48	790522	Horizontal beam lock	1	All
49	790471	Manual tube, mini	1	All
50	791066	Powerhorse beam decal	2	All
51	790204	Tow bar weldment	1	All
52	778423	Coupler	1	All
53	1130	Safety chains	2	All
54	778916	Pin catch, 5/16” x 3 1/2”	1	All
55	790344	Support leg	1	All
56	788243	Latch rod	1	All
57	780599	Dust cap tool	1	All
58	784470	Breather/Dipstick	1	All
59	N/A	Serial Number Decal	1	All
60	791545	Spacer	2	All

Summary of Important Safety Information for Operation

⚠ WARNING

Carefully read and make sure you understand the following safety information before using the log splitter.

Improper use or maintenance of the log splitter can result in serious injury to the operator or bystanders from moving parts that can crush or cut, flying objects, burns, fire or explosion, escaping high pressure hydraulic fluid, or carbon monoxide poisoning.

Introduction

- **Read Manual.** Read this operator's manual and the engine Owner's Manual completely before attempting to use the log splitter. Serious injury or death can result if safety instructions are not followed.
- **Instruct operators.** The log splitter owner should instruct all operators in safe log splitter operation.
- **Intended use.** Log splitters should only be used for splitting wood logs, lengthwise with the grain. Do not use for other purposes, as unforeseen hazards may result.

Prohibition Against Modifications

Never modify or alter the log splitter in any way. Modifications can create serious safety hazards and will void the warranty.

- **Attachments.** Never add attachments to the splitter, except for authorized accessories supplied by the manufacturer with instructions for safe installation and use.
- **Engine Speed.** The maximum engine speed is preset at a safe limit. Never attempt to modify the engine speed setting to run at a higher speed.
- **Fuel/Exhaust system.** NEVER modify or add to the exhaust system, fuel tanks, or fuel lines. Fire can result.
- **Remote Control.** NEVER attach a rope, cable, or other remote device to the splitting control.
- **Splitting Wedge.** NEVER attempt to change the height or speed of the splitting wedge.
- **Pressure Setting.** NEVER increase the pressure setting of the pump or control valve.

Operator Restrictions

- **Untrained Operators.** Do not allow anyone to operate the log splitter who has not read the owner's manual or been instructed on the safe use of the splitter.
- **Minimum Operator Age.** Never allow anyone under age 16 to operate the log splitter. Anyone 16 years of age and older must be trained and supervised by a trained adult.

Safety in Moving and Towing the Log Splitter

⚠ WARNING

The log splitter is very heavy. It can cause serious injury if it rolls out of control or tips over.

Follow the safety instructions below for safely moving the log splitter.

General Safety while Moving

- **Horizontal position.** Make sure the log splitter is secured in the horizontal position before moving the log splitter. DO NOT move the log splitter when it is in the vertical position because it will be unstable and could tip.
- **Hills.** Do not move the log splitter up or down hills by hand – use a towing vehicle.
- **Engine off.** Never move the log splitter with its engine running.
- **No riding.** Never allow anyone to sit or ride on the log splitter.
- **No cargo.** Never transport cargo or wood on the log splitter.

Safety During Towing

- **Read instructions.** Review towing safety instructions in your towing vehicle manual.
- **Securely attached.** Be sure the log splitter is securely attached to the towing vehicle before towing.

Summary of Important Safety Information for Operation

- **Tires.** Be sure the tires are fully inflated and in good repair before towing the log splitter. When adding air to the tires, do not over-inflate – serious injury could occur if tire explodes.
- **Added length.** Be aware of the added length of the splitter.
- **Speed limit.** Never tow this log splitter over 45 mph. Faster speeds may result in loss of control.
- **Rough terrain.** Be extra cautious and drive slowly when traveling over rough terrain.
- **Under the influence.** Never tow this splitter while under the influence of alcohol, drugs, or medication.
- **On public roads.** If towing on a public road, make sure to comply with all local, state, and federal towing requirements. It is the sole responsibility of the purchaser to obtain licensing, trailer lights, safety chains or signage, as needed to comply.
- **Unattended.** Turn off the towing vehicle before leaving the splitter unattended.
- **Disconnect before operating.** Do not use the log splitter while it is connected to the towing vehicle.

Safety – Before Use

Read/instruct

- **Read manual.** Do not allow anyone to operate the log splitter who has not read the owner's manual or has not been instructed on the safe use of the splitter.
- **Review safety rules.** Before starting this log splitter, review the "Rules for Safe operation." Failure to follow these rules may result in serious injury to the operator or bystanders.
- **Know how to stop.** Be thoroughly familiar with all controls and proper use of the equipment. Know how to stop the splitter and relieve system pressures quickly if needed.

Personal protective equipment

- **Eye protection.** Always wear safety glasses or goggles when operating the machine. Pieces of log may fly out and serious eye injury can occur.
- **Boots.** Falling logs can crush feet. Always wear safety shoes or heavy boots when operating or helping to load logs.
- **Loose/dangling apparel.** Loose or dangling apparel can become entangled in moving parts. Never wear jewelry or loose-fitting clothing.
- **Gloves.** Wear snug fitting gloves without drawstrings or loose cuffs.
- **Hearing protection.** The use of earplugs or other hearing protection device is recommended.

Safety During Inspection/Maintenance

Always inspect your log splitter before each use, and repair as needed, to keep it in safe working condition:

- **Engine off.** Always make sure the engine is off before cleaning, repairing or adjusting the splitter, except as recommended by the manufacturer.
- **Engine debris.** Debris on a hot engine can be a fire hazard. With the engine off, clean debris and chaff from engine cylinder head, cylinder head fins, blower housing rotating screen, and muffler areas. Avoid contact with hot muffler.
- **Other debris.** Debris on moving parts can cause excess wear. With the splitter engine off, clear debris from moving parts.
- **Fuel tank/lines.** Before each use, check fuel tank and fuel lines for leaks. Any fuel leak is a fire hazard. Fix any fuel leaks before starting engine.
- **Mechanical parts.** Check to be sure that all nuts and bolts are tight to make sure the log splitter is in safe working condition.
- **Hydraulic system.** Check the hydraulic system (hoses, tubing, clamps/fittings, pump, and cylinder) carefully before each use. Do not operate the log splitter with frayed, kinked, cracked or damaged hydraulic hoses, fittings, or tubing, or if oily residue is observed on any of the components. High fluid pressures and temperatures are developed in the log splitter. Hydraulic fluid escaping through a pin hole sized opening can burn or puncture skin, resulting in wounds that could cause blood poisoning, infection, disability, gangrene, amputation, or death. Therefore, the following instructions should be heeded at all times when inspecting or servicing the hydraulic components of the log splitter:
  - Do not remove the hydraulic oil fill/vent cap when the engine is running. Hot oil can escape causing severe burns. Allow log splitter to cool completely before removing hydraulic oil fill/vent cap.
  - Do not adjust the pressure setting of the pump or valve.

- Do not check for leaks with your hand. Leaks can be located by holding a piece of cardboard or wood (at least two feet long) with your hand at one end and passing the other end over the suspected area (wear eye protection). Look for discoloration of the cardboard or wood.
- Stop the engine, disconnect the spark plug, and move all control valve handles back and forth to relieve pressure before changing or adjusting hydraulic system components such as hoses, tubing, fittings or other components.
- If injured by escaping fluid, no matter how small the wound is, see a doctor at once. A typical injection injury may be a small puncture wound that does not look serious. However, severe infection or reaction can result if proper medical treatment is not administered immediately by a doctor who is familiar with injection injuries

- **Spark arrestor muffler**. If the engine is equipped with a spark arrestor muffler, clean and inspect it regularly (follow manufacturer's service instructions). Replace if damaged.
- **Tires**. Be sure tires are fully inflated and in good repair before towing the splitter. When adding air to tires, do not over-inflate -- serious injury could occur if tire explodes.
- **Guards/shields.** Make sure all guards and shields are replaced after servicing the log splitter.
- **Replacement parts.** If a part needs replacement, only use parts that meet the manufacturer's specifications. Replacement parts that do not meet specifications may result in a safety hazard or poor operation of the log splitter.

Safety During Fueling

- Gasoline is highly flammable and explosive. You can be burned or seriously injured when handling fuel. Use extreme care when handling gasoline:
- **Fuel outdoors**. Fill fuel tank outdoors – never indoors. Gasoline vapors can ignite if they collect inside an enclosure. Explosion can result.
- **Use approved container**. Never pump fuel directly into engine at gas station. Static charge can build and ignite fuel. Use an UL listed fuel container to transfer gas to the engine.
- **Running/hot engine**. A running engine is hot enough to ignite fuel. Never add fuel or remove gas cap if engine is running or still hot. Stop the engine and allow to cool at least two minutes before adding fuel.
- **Heat/flames/sparks**. Stay away from sources of heat, flame, or sparks while adding fuel.
- **Don't overfill**. DO NOT overfill the gas tank. Allow at least 1/2" of empty space below the fill neck to allow for fuel expansion.
- **Replace cap**. Replace gas cap securely before starting engine.
- **Spills**. Clean up fuel spills immediately. Move log splitter away from spilled fuel on the ground. Wipe fuel off engine and wait 5 minutes for excess fuel to evaporate before starting engine. Gas soaked rags should be disposed of properly.
- **On skin/clothes**. If gasoline is spilled on your skin or clothes, change clothes and wash skin immediately.
- **Gasoline storage**. Store gasoline in a cool, dry place in an UL listed, tightly sealed container.

Safety in Work Site Selection

- **Spark arrestor**. If your splitter will be used near any unimproved forest, brush, or grassy covered land, then engine should be equipped with a spark arrestor. See the "Specifications" section of this manual to determine if your splitter already has a spark arrestor. Make sure you comply with applicable local, state and federal codes.
- **Hot exhaust**. Hot exhaust fumes from engine can cause fire. Position muffler at least 7' from combustible objects during operation.
- **Fire extinguisher**. Have a Class B fire extinguisher available as a precautionary measure when operating the log splitter in dry areas**.**
- **Level, dry surface**. To prevent accidental falls and equipment tip over, make sure the splitter is situated on a dry, level surface with good footing. Stay clear of areas with mud, ice, tall grass, weeds, brush, or snow.
- **Block wheels**. Always block the wheels to prevent unintended movement of the log splitter.
- **Carbon monoxide**. The running engine gives off carbon monoxide, a poisonous gas that can kill you. You CANNOT smell it, see it, or taste it. ONLY run log splitter OUTDOORS and away from air intakes. NEVER run log splitter inside homes, garages, sheds, or other semi-enclosed spaces. These spaces can trap poisonous gases, EVEN if you run a fan or open windows. If you start to feel sick, dizzy, or weak while using the log splitter, shut off the engine and get to fresh air RIGHT AWAY. See a doctor. You may have carbon monoxide poisoning.

Summary of Important Safety Information for Operation

Safety – During Use

General Safety During Use

⚠WARNING: Before starting this log splitter, review the following rules for safe operation. Failure to follow these rules may result in serious injury to the operator or bystanders.

- **Safety equipment / controls**. Always operate the log splitter with all safety equipment in place and in good working order, and all controls properly adjusted for safe operation.
- **Operating speed.** Always operate the log splitter at the manufacturer's recommended speed. The maximum speed of the engine, pump and wedge are preset within safe limits.
- **Know how to stop**. Be thoroughly familiar with all controls and with the proper use of the equipment. Know how to stop the log splitter and relieve system pressures quickly if needed.
- **Daylight only**. Only use the log splitter in daylight so you can see what you are doing.
- **Smoking/sparks**. Never smoke while operating the log splitter, and never operate near sources of sparks or flames.
- **Hot muffler**. If you are starting a warm engine, stay clear of muffler. It may still be hot enough to burn you.
- **Unattended**. Never leave the machine unattended while the engine is running.
- **Under the influence**. Never operate, or let anyone else operate, the log splitter while under the influence of alcohol, drugs, or medication.
- **Adjusting/repairing**. Always make sure the engine is off before cleaning, repairing or adjusting the splitter, except as recommended by the manufacturer. In addition, disconnect the spark plug and move all control handles back and forth to relieve system pressure *before changing or adjusting hydraulic system components* such as hoses, tubing, fittings or other components.
- **Carbon monoxide**. The running engine gives off carbon monoxide, a poisonous gas that can kill you. You CANNOT smell it, see it, or taste it. If you start to feel sick, dizzy, or weak while using the log splitter, shut off the engine and get to fresh air RIGHT AWAY. See a doctor. You may have carbon monoxide poisoning.
- **Other exhaust dangers**. Engine exhaust, some of its constituents, and certain vehicle components contain or emit chemicals known to the State of California to cause cancer, birth defects, or other reproductive harm. Avoid inhalation of exhaust.

Safety in Loading, Operating, and Unloading

- **Square log ends**. Logs that are not cut square can slide out while splitting and become a safety hazard or cause excessive force to log splitter components. Use a chainsaw to cut logs square on each end before attempting to split them.
- **Single log**. Never attempt to split more than one log at a time. Pieces of log can unexpectedly be thrown from the machine causing serious injury.
- **Split along grain**. Do not use the log splitter to split logs across the grain. Doing so will damage the log splitter and could also cause pieces of log to be thrown, injuring the operator or bystanders.
- **Keep hands clear**. ALWAYS keep hands and feet away from the endplate, wedge, and partially split logs while loading, operating and unloading the log splitter.
- **Operator position**. ALWAYS operate the log splitter from the manufacturer's indicated OPERATOR POSITION. Other positions are unsafe because they can increase the risk of injury from crushing, cutting, flying objects, or burns.
- **Straddling/reaching across**. Never straddle, reach across, or step over the beam while the engine is running and the log splitter is in the horizontal position. You could trip, actuate the controls, and get seriously injured.
- **Second person**. Many accidents occur when there is more than one person involved in loading and operating the log splitter. Only one person should operate the controls. *If a second person is assisting in loading logs, the operator must NEVER actuate the Split Control Lever until the assistant and all bystanders are at least 10 feet away. NEVER allow an assistant to hold the log in place while the operator actuates the Split Control Lever*.
- **Loading/Unloading**
- **Unsplit log pile**. Do not pile logs to be split in a place that will make you reach across the log splitter in order to load them.
- **Hold bark side**. Hold the bark side of logs when loading or positioning, never the ends. Never place your hands or any part of your body between a log and any part of the log splitter.

Summary of Important Safety Information for Operation

- **NOTE for vertical position loading**: Place the log on the endplate and turn it until it leans against the beam and is stable. If the log is too big or oddly shaped, stabilize the log with wooden shims between the log and endplate or ground. DO NOT use your leg or knee to stabilize the log. NEVER stabilize the log by placing your hand on top of the log.
- **Wedge moving**. NEVER load or unload logs while the wedge is moving.
- **Cracks**. Cracks in logs can close quickly and pinch fingers. Keep fingers away from any cracks that open in partially split logs.
- **Split log pile**. Move each log away from log splitter after it is split. Split logs left near the log splitter are a trip hazard.
- **Remove hands**. Remove both hands from log before activating Split Control Lever.
- **Hand activate**. Use only your hand to operate the Split Control Lever. Never use any other body part, or a rope, cable, or other remote device to actuate the control.
- **Returning wedge**. Once the control valve is actuated in the return direction, the wedge is designed to keep returning by itself completely and then stop automatically. Stay clear while the wedge is returning. It is still powerful enough on the return stroke to cause serious injury.
- **Log stuck on wedge**. If a log does not split completely and becomes stuck on the wedge, follow the instructions below to remove the log. A log can become stuck to the wedge if the wedge becomes embedded in the log and the log doesn't split and separate. This can happen if the log is too stringy or tough to split completely. A stuck log will move back with the wedge on the initial attempt to retract the wedge. If this happens, retract the wedge completely to allow the splitter to strip the log from the wedge. Keep hands clear of log and wedge while wedge is retracting.

  ⚠**WARNING: NEVER** attempt to remove a stuck log by:
  - Modifying the splitter.
  - Adding attachments to the splitter.

  Personal injury could result from log or metal pieces flying out at high speed toward the operator or bystanders, or the splitter could become damaged.
- **Changing splitting position**. Do not change splitting positions (horizontal/vertical) with the engine running. You may contact the muffler and receive serious burns. Be careful to avoid contact with hot muffler even after the engine is turned off.
- **Refueling**. Never refuel the engine until it has cooled at least two minutes.

Safety – After use

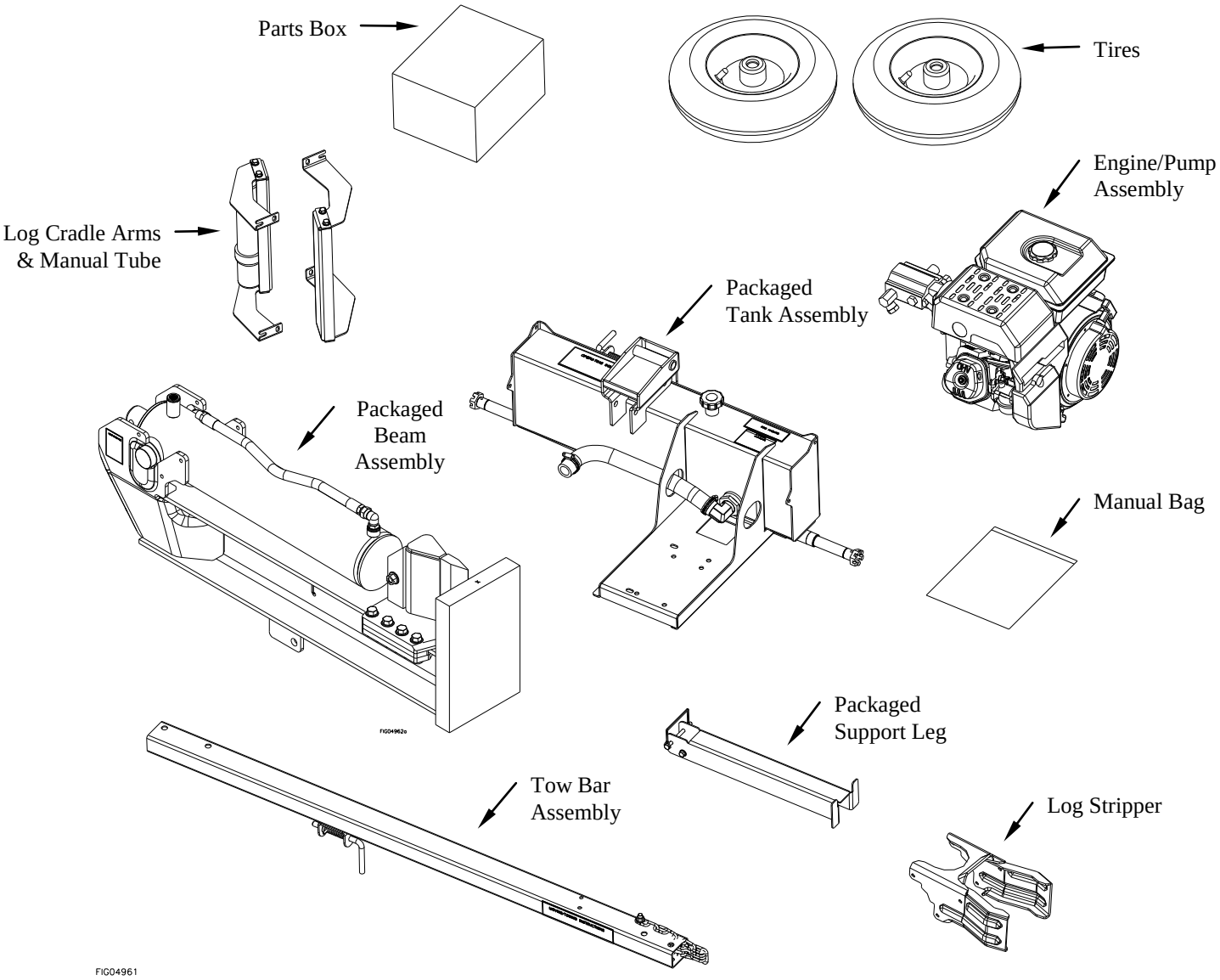
- **Return to horizontal**. If in the vertical position, turn off engine and return log splitter to the horizontal position for greater stability and to prepare for transportation. Avoid contact with hot muffler.
- **Remove engine debris**. Debris on a hot engine can be a fire hazard. With the engine off, clean debris and chaff from engine cylinder head, cylinder head fins, blower housing rotating screen, and muffler areas. Avoid contact with hot muffler.
- **Let engine cool before storing.** Let engine cool for at least five minutes before storing. A hot engine can be a fire hazard.
- **Storage location.** Store the log splitter in a location away from sources of heat, open flames, sparks or pilot lights – such as water heaters, space heaters, furnaces, clothes dryers, or other gas appliances. Even if the log splitter's gas tank is empty, residual gasoline vapors could ignite.
- **Gasoline storage.** Store extra gasoline in a cool, dry place in an UL listed, tightly sealed container. Gasoline vapors can ignite if they collect inside an enclosure.
- **Periodic maintenance.** Perform periodic maintenance as directed in this manual to keep the log splitter in safe working condition.

Assembly Instructions

Closely inspect all log splitter components.
If you have missing or damaged components, please contact Powerhorse Product Support at 1-866-443-2576.

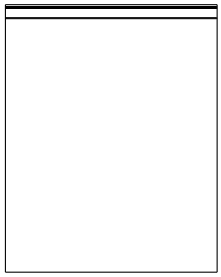
CAUTION! Heavy lifting required. Some of the components in these assembly instructions are heavy and cannot be lifted by one person safely. Please plan on assembling this product when another person can be available to help out.
CAUTION! Remove the cylinder from the beam/tank assembly before assembling. The cylinder is locked in place for shipping purposes in a backwards orientation.

Tools needed: Adjustable Wrenches, Torque Wrench, Soft Faced Mallet, Flat Blade Screw Driver, Socket Wrench

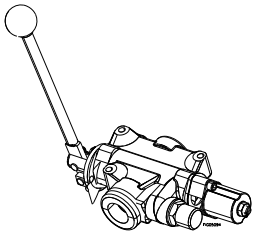


Assembly Instructions

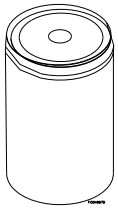
Manual Bag Contents



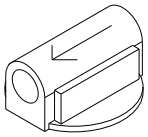
Manual



Valve

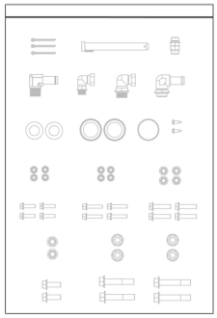


Filter Canister

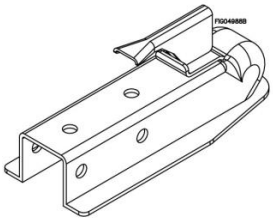


Filter Head

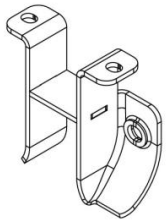
Parts Box Contents



Parts Bag



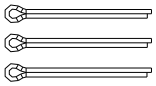
Coupler



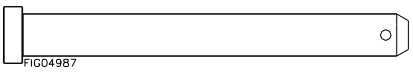
Horizontal Latch Bracket

Assembly Instructions

Fastener Bag Contents:

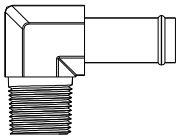


Part # 778674
Cotter Pin
Qty: 3

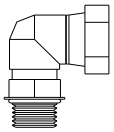


Part # 790472
Beam Pivot Pin
Qty: 1

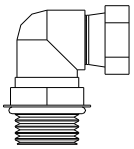
Part # 790488
Valve Fitting
Qty: 1



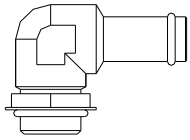
Part # 778829
Return Line Fitting
Qty: 1



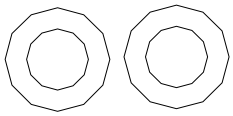
Part # 778827
Small Swivel Fitting
Qty: 1



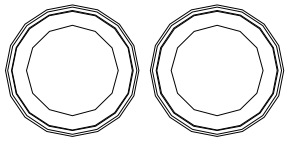
Part # 778831
Large Swivel Fitting
Qty: 1



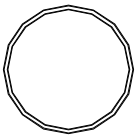
Part # 778642
Hose Barb Fitting
Qty: 1



Part # 778844
Wheel Washer
Qty: 2

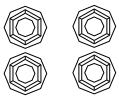


Part # 124A
Dust Cap
Qty: 2

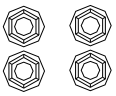


Part # 780599
Dust Cap Tool
Qty: 1

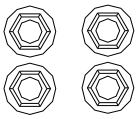
Part # 82529
Manual Tube to Tow Bar
M6 x 20mm Self Tapping Screw
Qty: 2



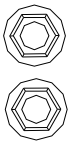
Part # 82281
Log Cradles to Beam
M8-1.25 HHSF Nut
Qty: 4



Part # 82281
Engine to Tank (1175)
M8-1.25 HHSF Nut
Qty: 4

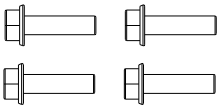


Part # 82271
Engine to Tank (1169)
M10-1.5 HHSF Nut
Qty: 4

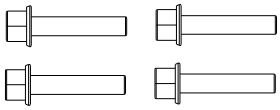


Part # 82273
Horz. Latch to Beam
M12-1.75 HHSF Nut
Qty: 2

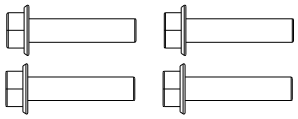
Part # 82570
M14-2 Nyloc Nut
Tow Bar to Tank
Qty: 2



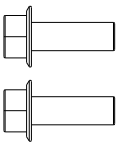
Part # 82545
Log Cradle to Beam
M8-1.25 x 30mm HHSF Bolt
Qty: 4



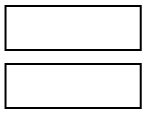
Part # 82280
Engine to Tank (1175)
M8-1.25 x 40mm HHSF Bolt
Qty: 4



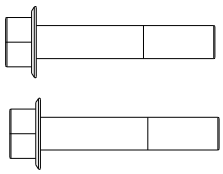
Part # 82536
Engine to Tank (1169)
M10-1.5 x 45mm HHSF Bolt
Qty: 4



Part # 82551
Horz. Latch to Beam
M12-1.75 x 35mm HHSF Bolt
Qty: 2

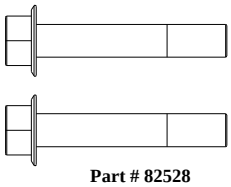


Part # 791545
Tow Bar Spacer
Qty: 2



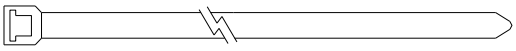
Part # 82267
Coupler to Tow Bar
M12-1.75 x 75mm HHSF Bolt
Otv: 3

Part # 82272
Coupler to Tow Bar
M12-1.75 Nyloc Nut
Qty: 2



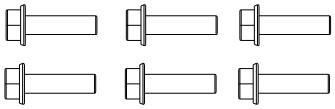
Part # 82528
Tow Bar to Tank
M14-2 x 85mm HHSF Bolt
Qty: 2

Part # 791168
Hoses to Beam
Small Zip Tie
Qty: 4

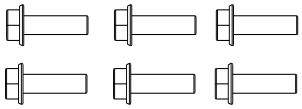


Part # 791167
Hoses
Large Zip Tie
Qty: 1

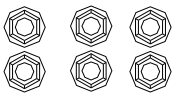
Fastener Bag Contents Cont.:



Part # 82545
Log Stripper to Beam (1169)
M8-1.25 x 30mm HHSF Bolt
Qty: 6



Part # 82561
Log Stripper to Beam (1175)
M8-1.25 x 25mm HHSF Bolt
Qty: 6



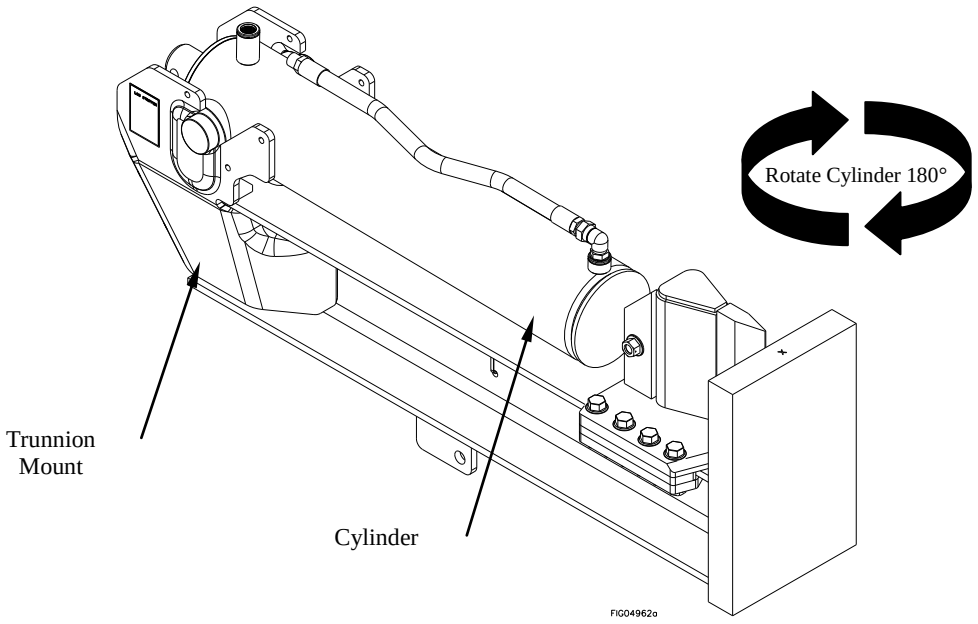
Part # 82281
Log Stripper to Beam
M8-1.25 HHSF Nut
Qty: 6

Assembly Instructions

Step 1 – Beam Assembly

- Rotate cylinder 180° and place cylinder in trunnion mounts on beam (see Step 2 image for the correct orientation)

Tools Needed



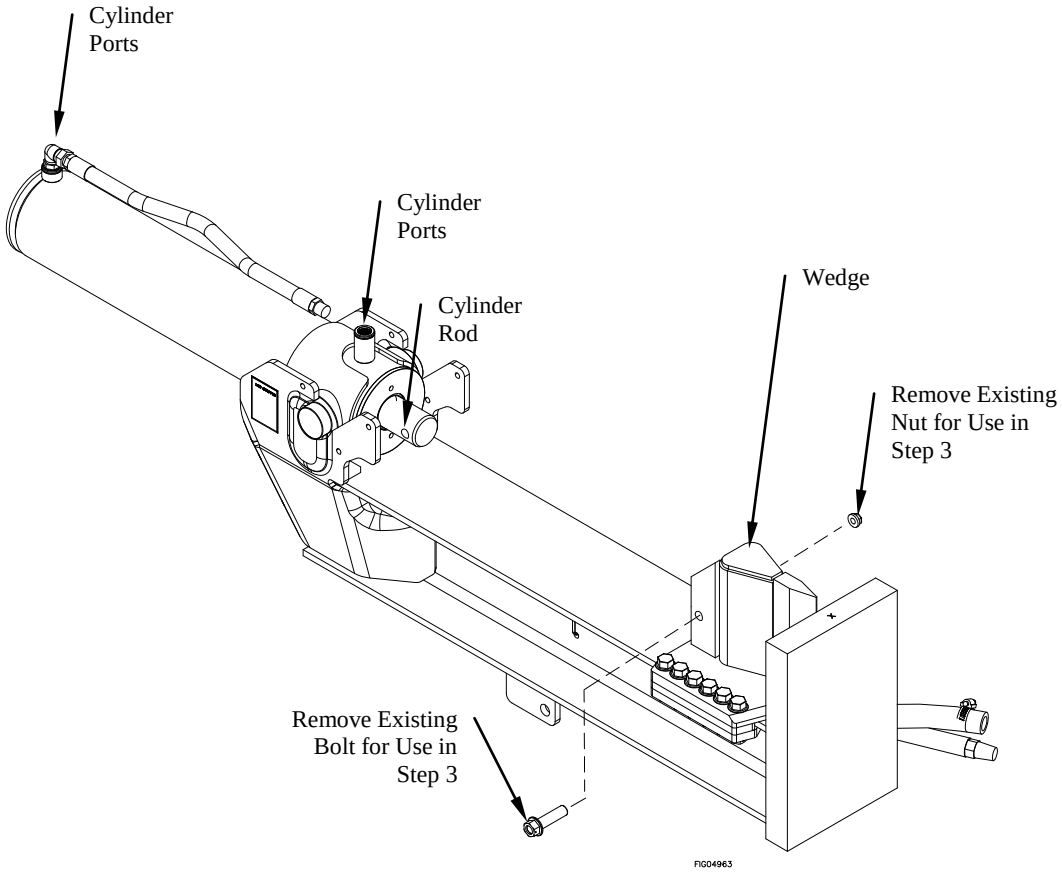
Assembly Instructions

Step 2 – Beam Assembly

- Support the end of the cylinder until connected to the wedge
- Ensure the ports on the cylinder are facing up
- Remove the existing bolt and nut from the wedge
- Slide wedge towards the cylinder rod

Tools Needed

- 22mm Wrench (2 needed)



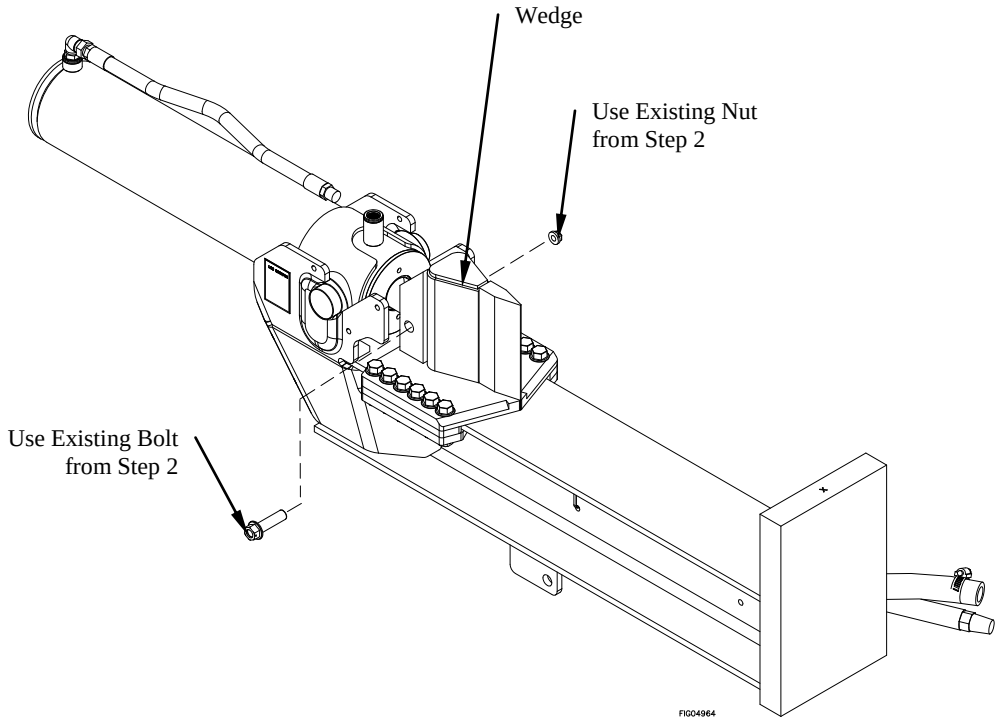
Assembly Instructions

Step 3 – Beam Assembly

- Align hole in wedge with the hole in the cylinder rod
- Install the existing bolt and nut to connect the wedge to the cylinder.
- Torque to 114 ft.-lb.

Tools Needed

- 22mm Wrench (2 needed)



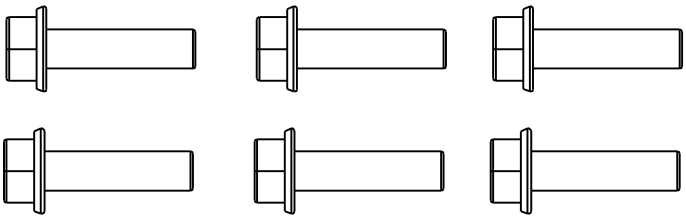
Assembly Instructions

Step 4 – Beam Assembly

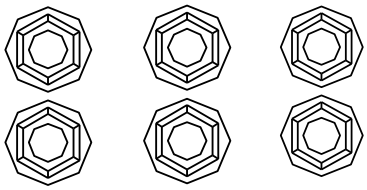
- Align holes in the log stripper with the holes in the trunnion mount
- Attach the log stripper to beam using (6) nuts and (6) bolts.
- Torque to 21 ft.-lb.
- Remove the low pressure return hose and high pressure supply hose.
- Remove lag bolts (2) located inside trunnion mounts and stand assembled beam onto the end plate in the vertical position. Carefully move beam off to side, clear of work area.

Tools Needed

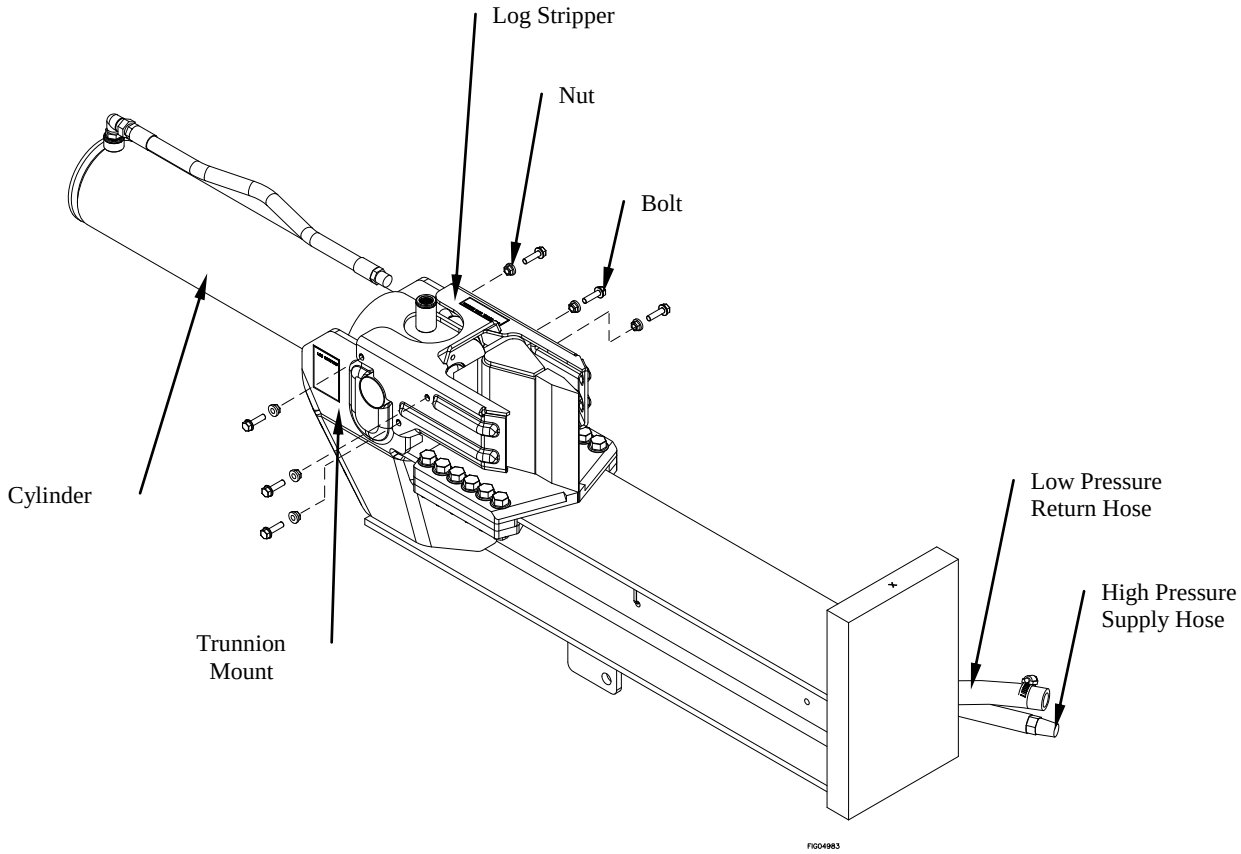
- 13mm Wrench



Log Stripper to Beam Bolt
Qty: 6



Log Stripper to Beam Nut
Qty: 6



Assembly Instructions

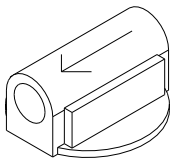
Step 5 – Tank Weldment

- Screw finger-tight (1) Return Line Filter Head onto hydraulic tank return port. *NOTE: the arrow on filter head should point towards the tank.*
- Wrench-tighten the fitting to 1.5-3.0 turns past "finger tight" position. Consider final orientation position as to not exceed the recommended TPFT. Properly assembled fittings total thread engagement should be 3.5-6 turns.
- CAUTION: Never back off an installed pipe fitting to achieve proper alignment. Loosening installed pipe fittings will corrupt the seal and contribute to leakage and failure.
- Screw finger-tight (1) Return Line Filter Canister onto bottom of return line filter head until gasket makes contact. Tighten filter an additional 1/2 turn.

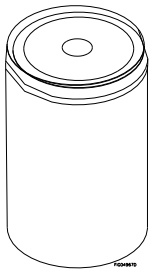
Tools Needed

- Pipe Wrench
  OR
- Crescent Wrench

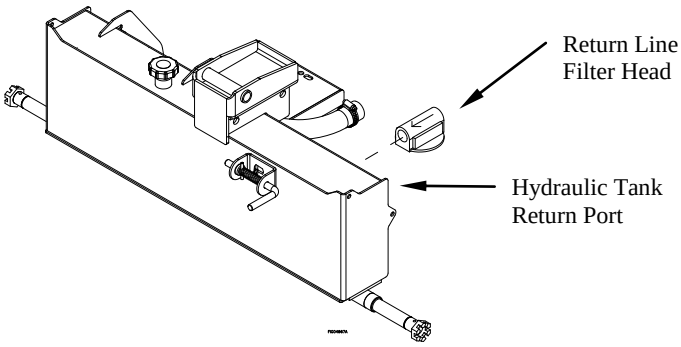
Parts Needed from Manual Bag:

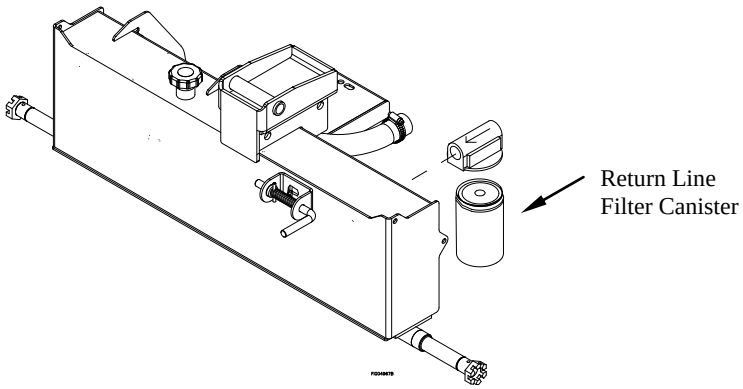


Return Line Filter Head
Qty: 1



Return Line Filter Canister
Qty: 1





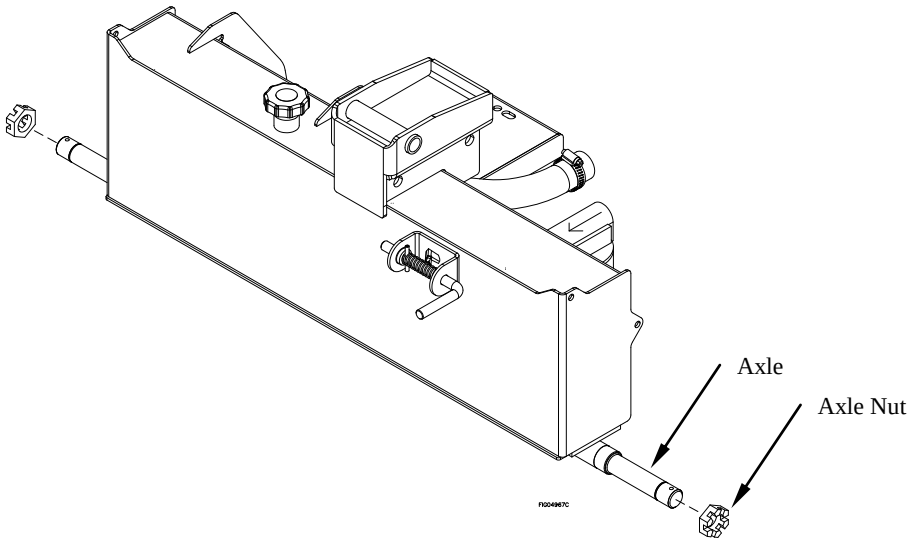
Assembly Instructions

Step 6 – Tank Weldment

- Remove axle nuts from axles

Tools Needed

- None



Assembly Instructions

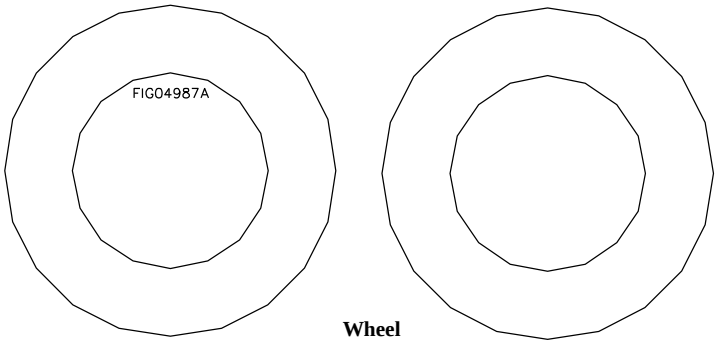
Step 7 – Tank Weldment

- Slide tire onto axle with valve stem facing out
- Slide wheel washer up against the wheel bearing
- Using a torque wrench, tighten the axle nut to 30-40 ft.-lb. Turn hub to ensure proper bearing seating.
- Loosen the axle nut until loose enough to turn the axle nut with your fingers.
- Re-tighten the axle nut until "finger tight".
- Insert cotter pin through hole in axle nut and axle. Bend and spread prongs in opposite directions so the axle nut will not come off (make sure the tire spins freely)

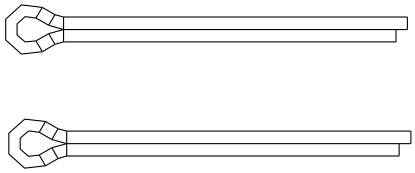
Tools Needed

- Pliers

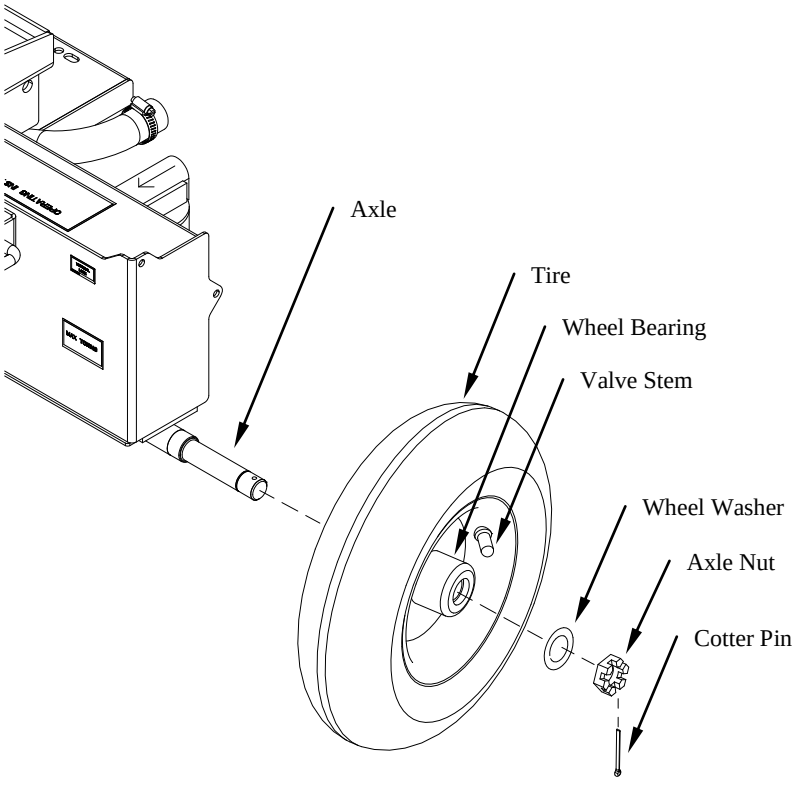
Fasteners Needed from Parts Bag:



Wheel Washers
Qty: 2



Cotter Pin
Qty: 2



Assembly Instructions

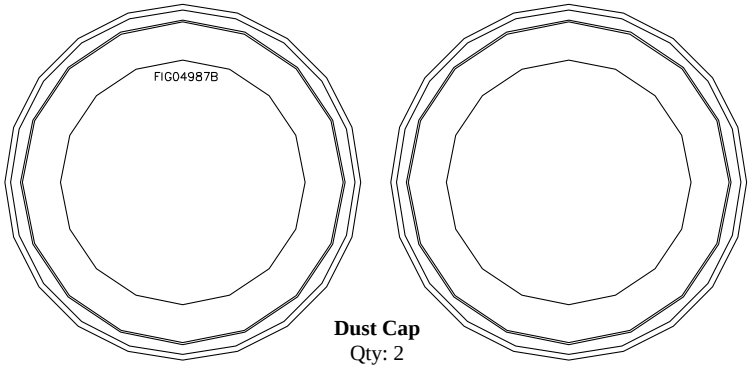
Step 8 – Tank Weldment

- Align the dust cap against the wheel hub
- Position the dust cap tool evenly onto the surface of the dust cap
- Place a piece of wood over the dust cap tool
- Using a soft faced mallet tap the piece of wood against the dust cap tool to install dust cap onto the wheel hub
- Repeat Steps 7 & Step 8 for the other wheel. Discard hub cap tool.

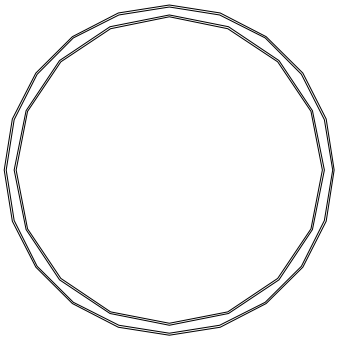
Tools Needed

- Soft Faced Mallet

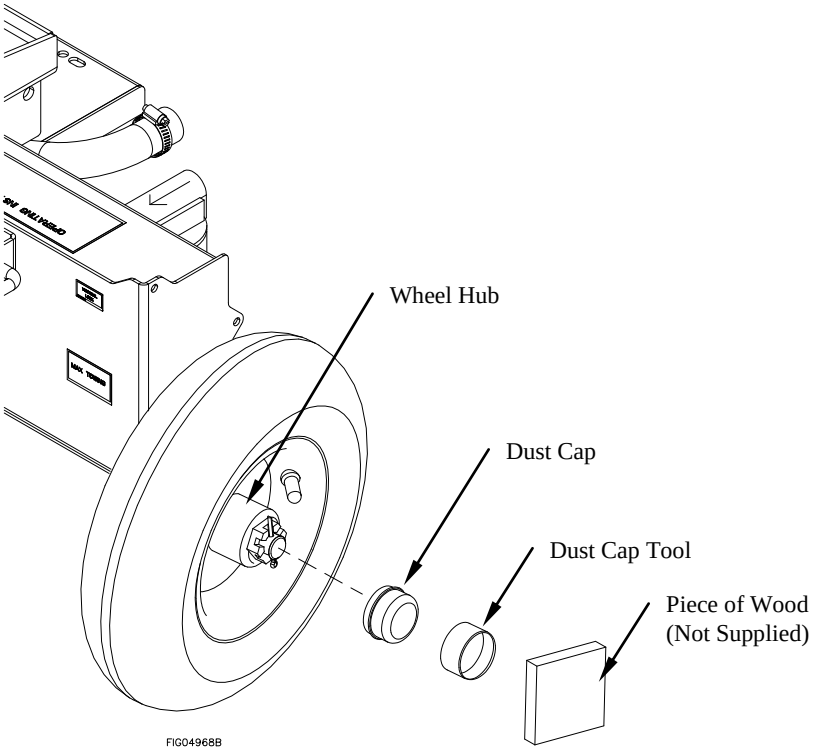
Fasteners Needed from Parts Bag:



Dust Cap
Qty: 2



Dust Cap Tool
Qty: 1



Assembly Instructions

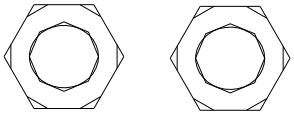
Step 9 – Coupler Assembly

- Place tow bar on level surface as shown below.
- Insert (2) tow bar spacers into tow bar. Align with bolt holes.
- Place coupler on to tow bar and align with holes used to align spacers.
- Secure coupler and tow bar spacers using (2) nuts and (2) bolts.
- Torque to 71 ft.-lb.

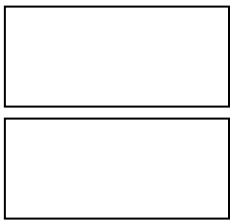
Tools Needed

- 18mm Wrench (2 Needed)

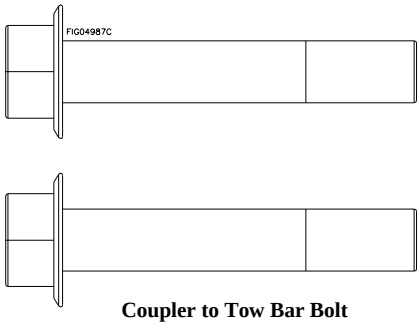
Fasteners Needed from Parts Bag:



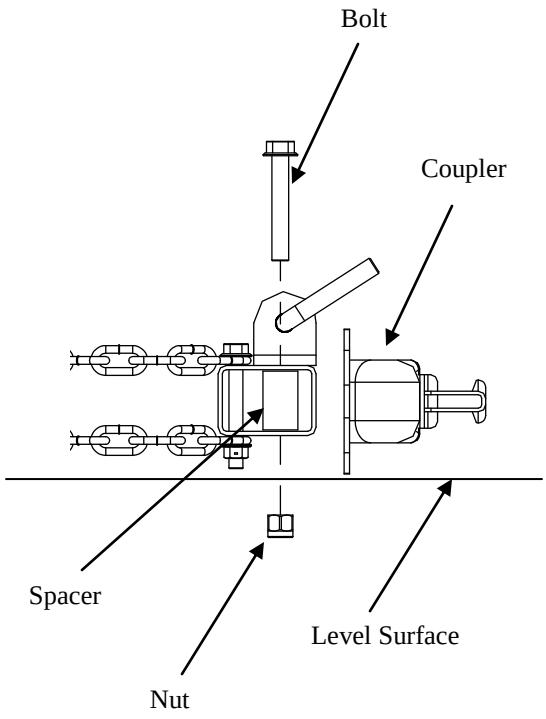
Coupler to Tow Bar Nut
Qty: 2

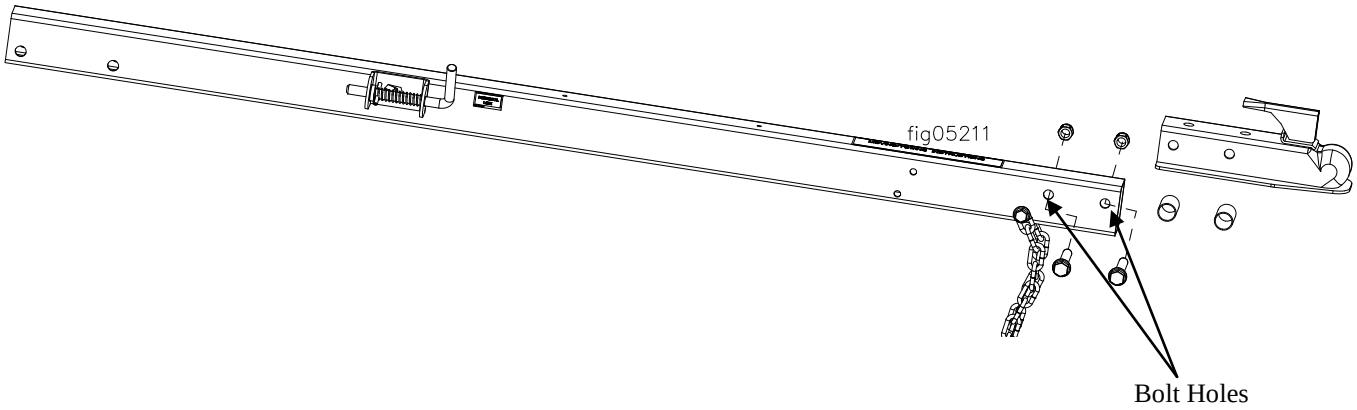


Tow Bar Spacer
Qty: 2



Coupler to Tow Bar Bolt
Qty: 2





Assembly Instructions

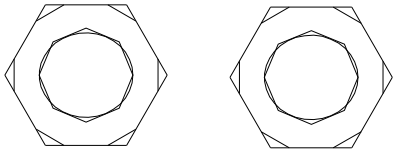
Step 10 – Tow Bar Assembly

- Insert tow bar into the tank pivot mount.
- Align holes in tow bar with holes in tank pivot mount.
- Connect the towbar to the tank using (2) Tow Bar Bolts and (2) Tow Bar Locknuts
- Torque to 114 ft.-lb.

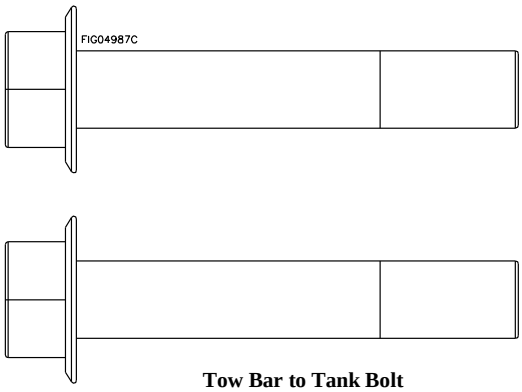
Tools Needed

- 22mm Wrench (2 Needed)

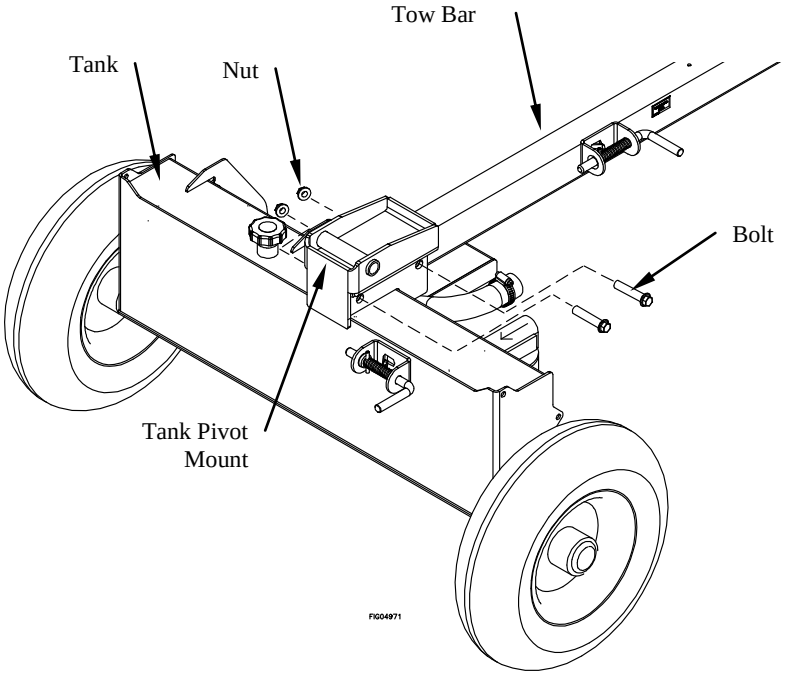
Fasteners Needed from Parts Bag:



Tow Bar to Tank Nut
Qty: 2



Tow Bar to Tank Bolt
Qty: 2



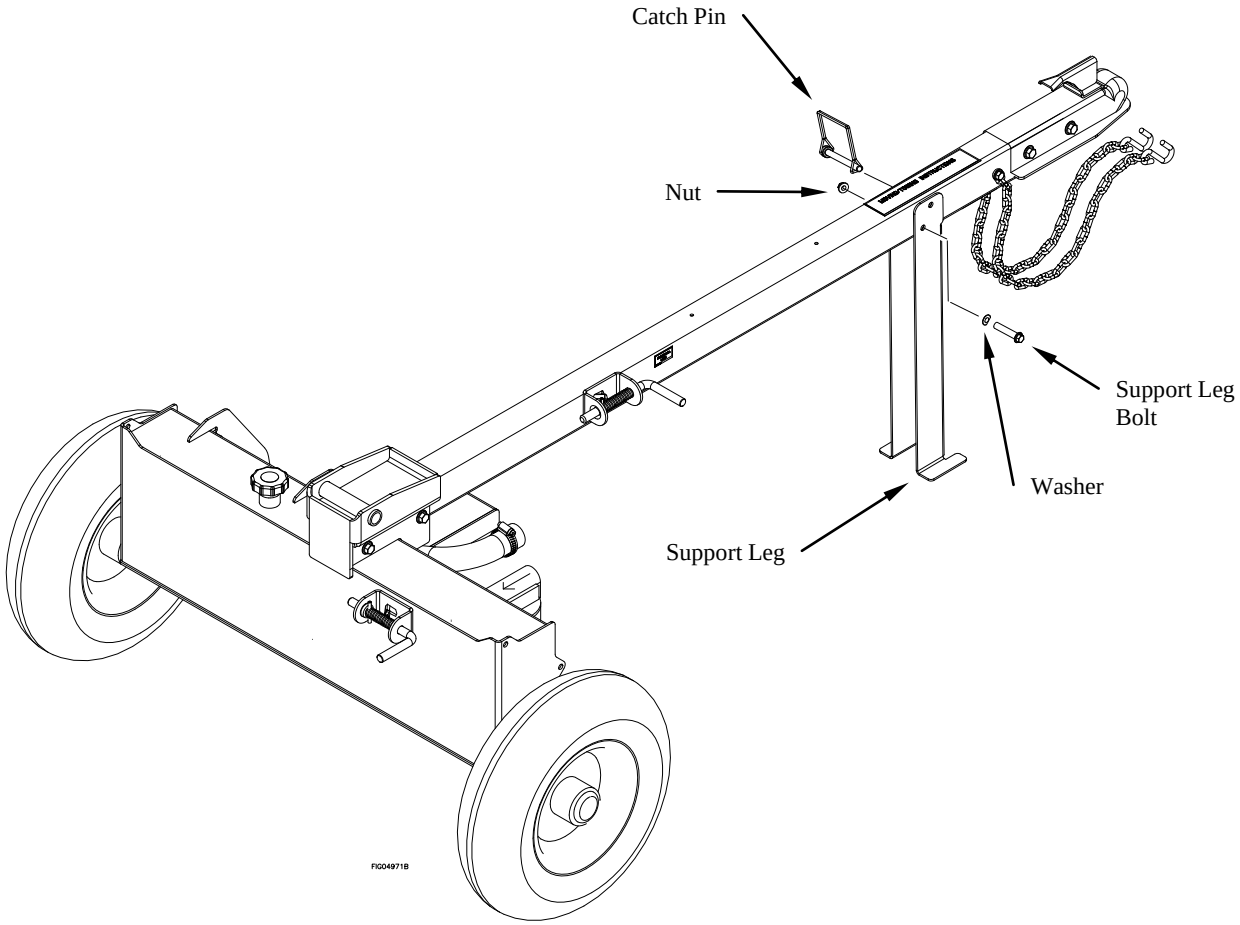
Assembly Instructions

Step 11 – Tow Bar Assembly

- Remove existing support leg bolt, washer, nut and catch pin from support leg.
- Position the support leg to the front of the tow bar.
- Insert catch pin to lock support leg in vertical position.
- Secure leg using existing support leg bolt, washer and nut.
- Tighten nut until snug then back off 1/2 turn.

Tools Needed

- 13mm Wrench (2 needed)



Assembly Instructions

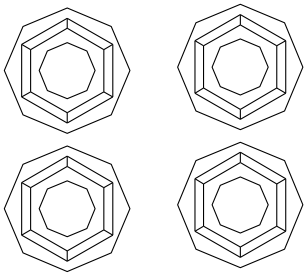
Step 12A – Engine for 1175

- Install Engine/Pump Assembly using engine mounting pattern shown below.
- Install Engine/Pump Assembly to tank mount plate using (4) 1175 Engine Bolts and (4) 1175 Engine Flange Nuts
- Torque to 21 ft.-lb.

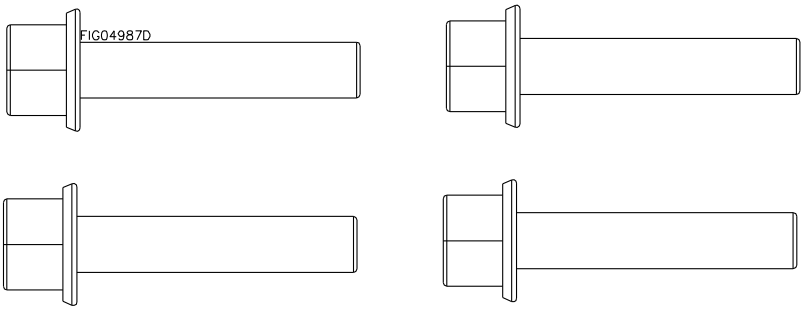
Tools Needed

- 13mm Wrench

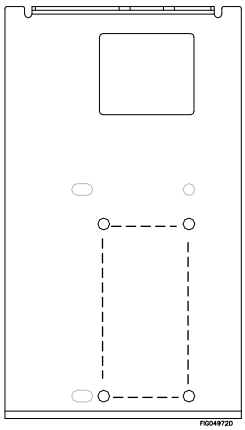
Fasteners Needed from Parts Bag:



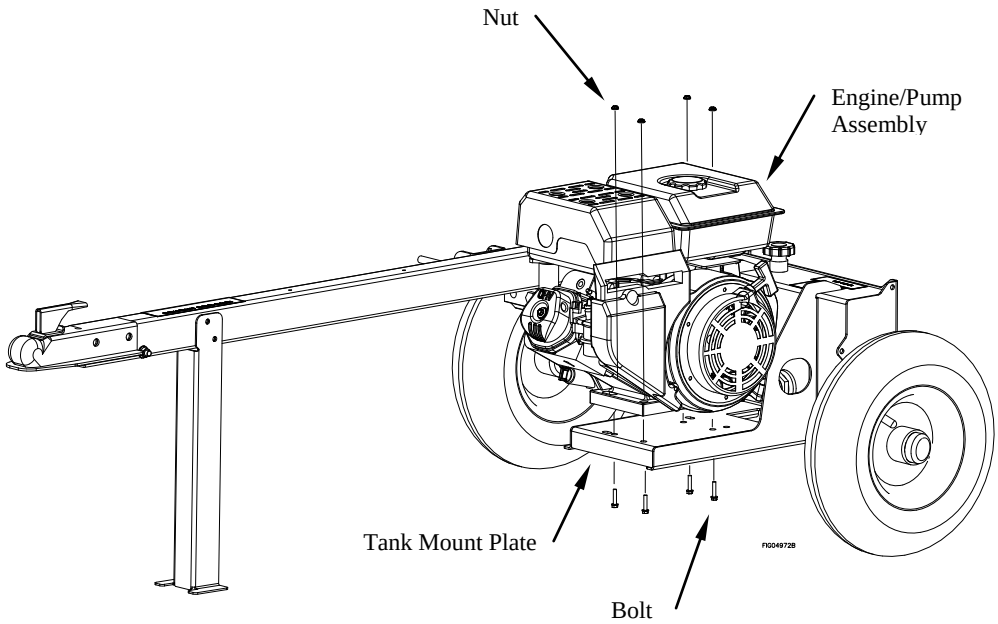
Engine to Tank Nut (1175)
Qty: 4



Engine to Tank Bolt (1175)
Qty: 4



Engine Mounting Pattern



Assembly Instructions

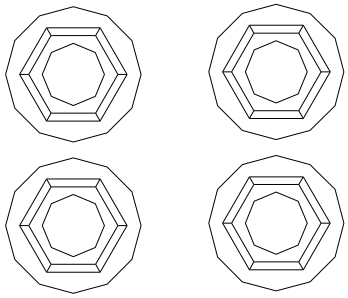
Step 12B – Engine for 1169

- Install Engine/Pump Assembly using engine mounting pattern shown below.
- Install Engine/Pump Assembly to tank mount plate using (4) 1169 Engine Bolts and (4) 1169 Engine Flange Nuts.
- Torque to 41 ft.-lb.

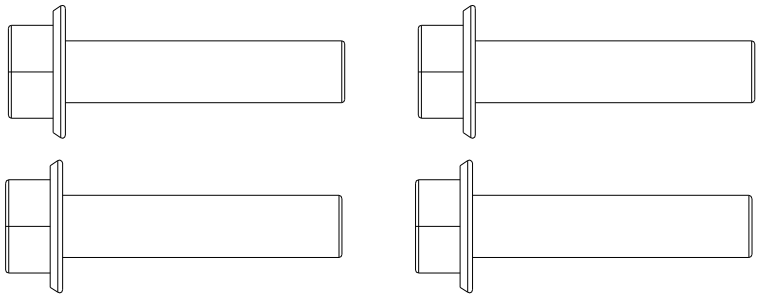
Tools Needed

- 16mm Wrench

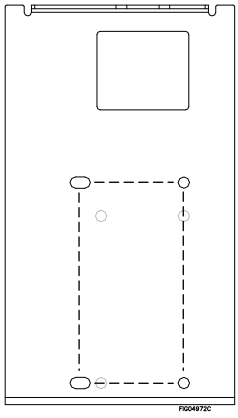
Fasteners Needed from Parts Bag:



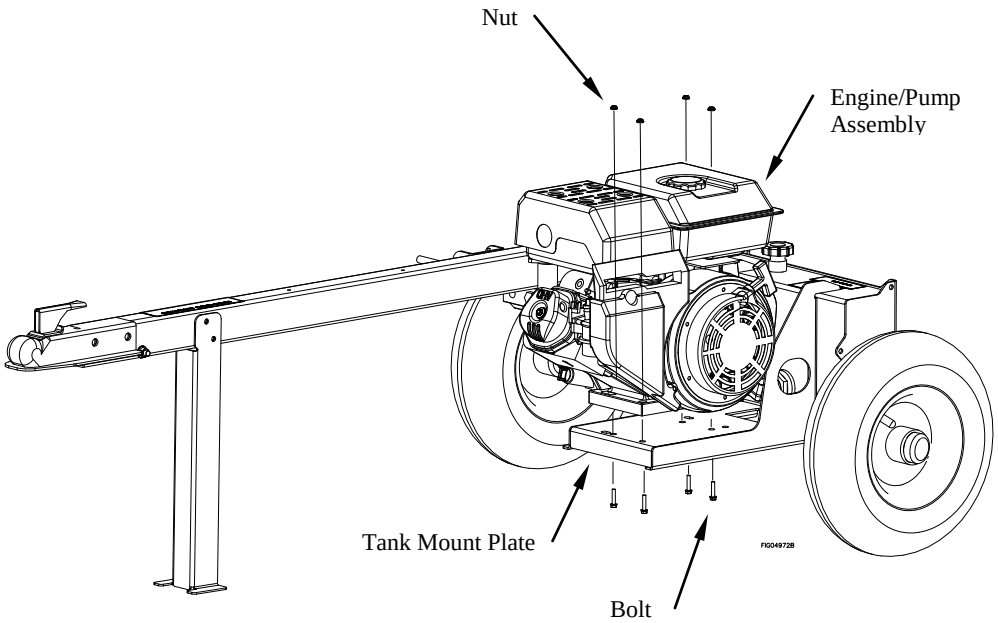
Engine to Tank Nut (1169)
Qty: 4



Engine to Tank Bolt (1169)
Qty: 4



Engine Mounting Pattern



Assembly Instructions

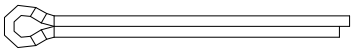
Step 13 – Beam to Tank

- Stand assembled beam onto the end plate in the vertical position.
- Orient the beam assembly and tank weldment as shown. Make sure a helper holds onto the top of the beam assembly during the remainder of this step. The beam is very heavy and dangerous if it tips over
- Align the pivot bracket on beam assembly to the pivot mount on the tank weldment and insert (1)beam pivot pin
- Insert (1) cotter pin through hole in beam pivot pin and spread and bend prongs in opposite directions to secure

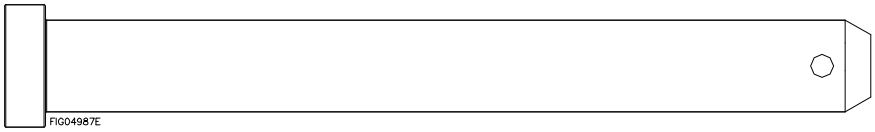
Tools Needed

- Pliers

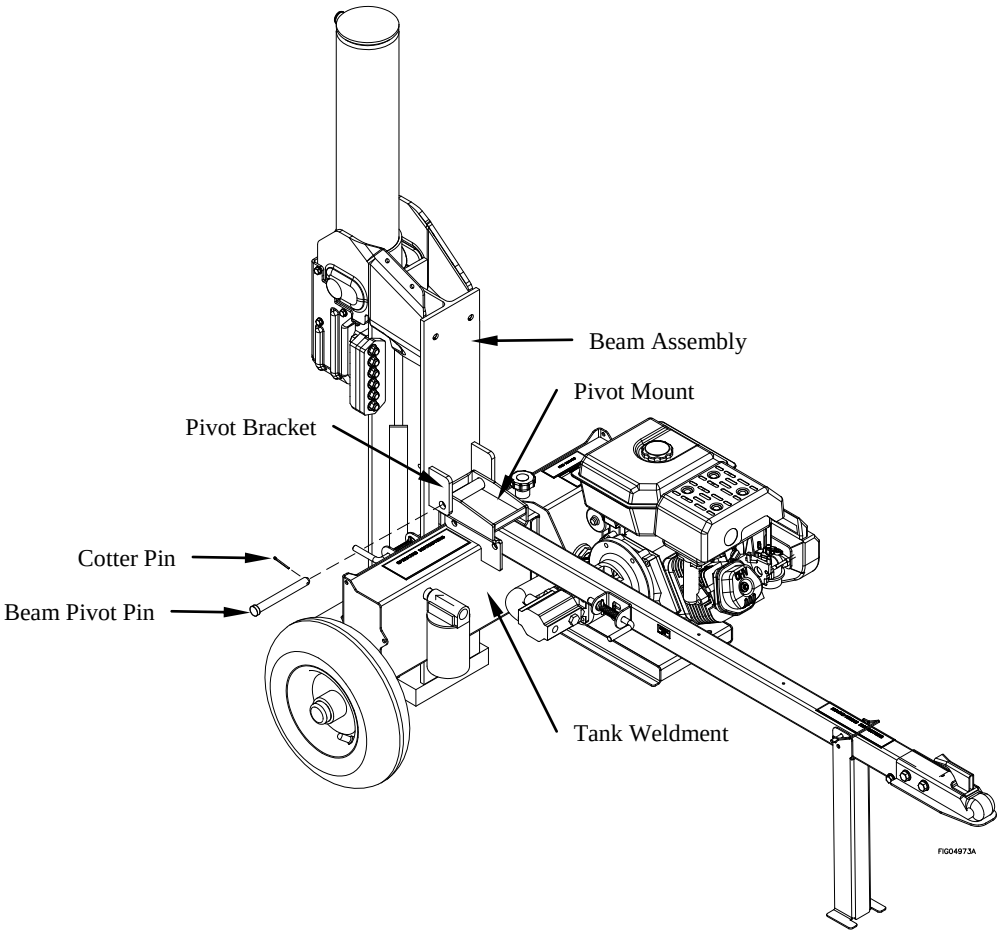
Fasteners Needed from Parts Bag:



Cotter Pin
Qty: 1



Beam Pivot Pin
Qty: 1



Assembly Instructions

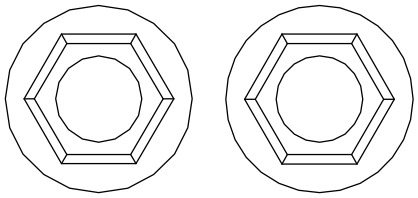
Step 14 – Beam to Tank

- Install the horizontal beam lock to the beam assembly using (2) Beam Lock Bolts and (2) Beam Lock Flange Nuts
- Torque to 71 ft.-lb.

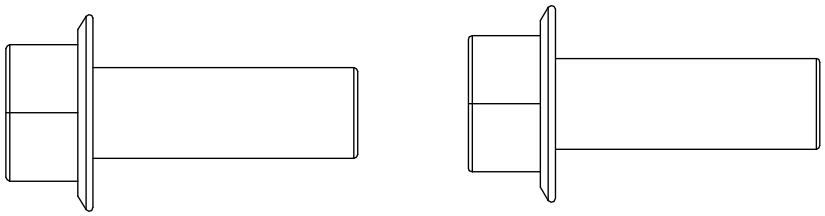
Tools Needed

- 18mm Wrench

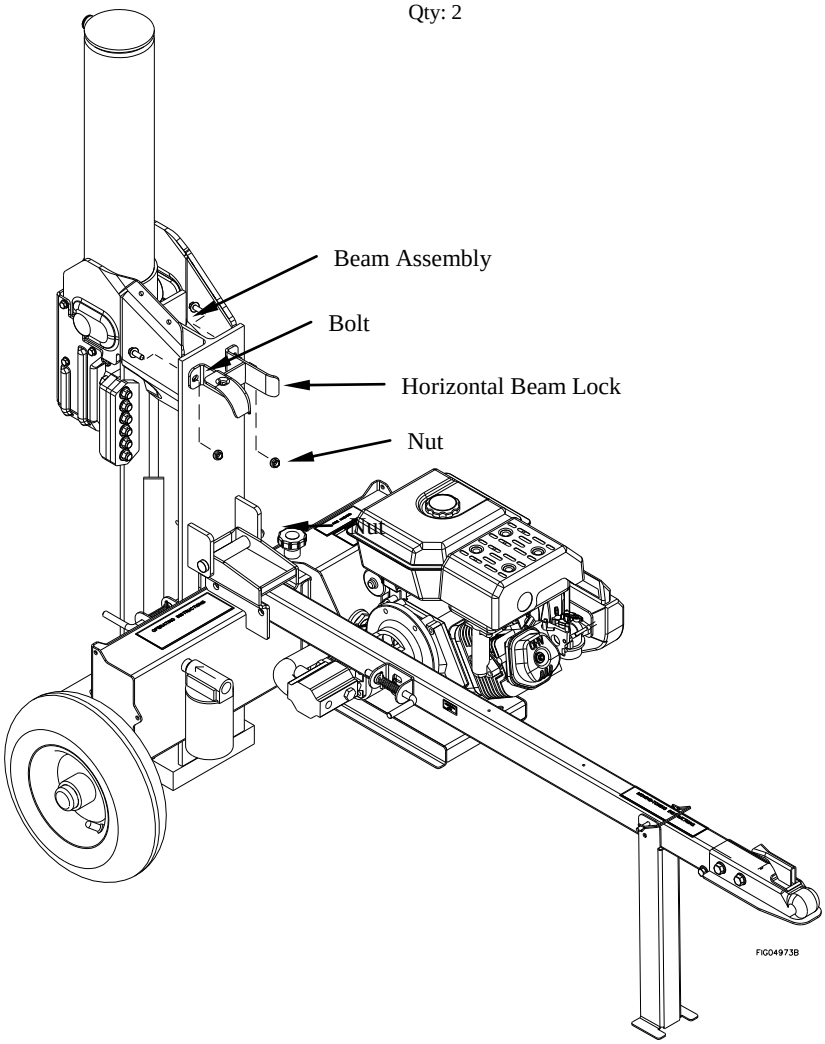
Fasteners Needed from Parts Bag:



Horz. Latch to Beam Nut
Qty: 2



Horz. Latch to Beam Bolt
Qty: 2



Assembly Instructions

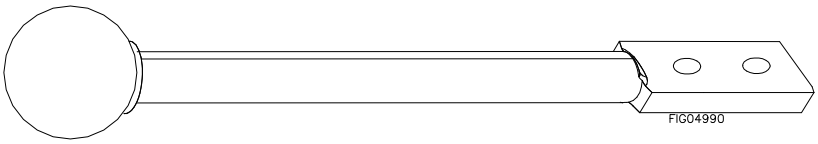
Step 15 – Control Valve

- Slide control valve handle into the clevis slots on the control valve.
- Align holes in handle with clevis holes.
- Insert the supplied pins through holes and secure with supplied bridge clips.

Tools Needed

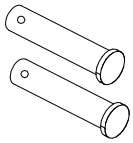
- Pliers

Parts Needed from Parts Bag:

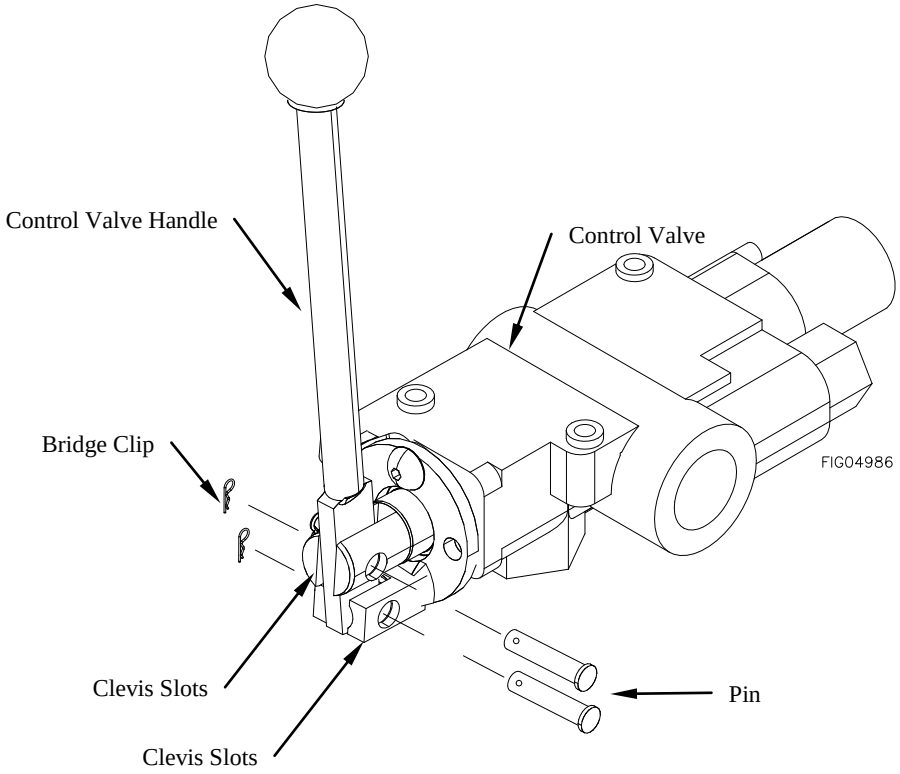


Control Valve Handle
Qty: 1

Bridge Clip
Qty: 2



Pin
Qty: 2



Assembly Instructions

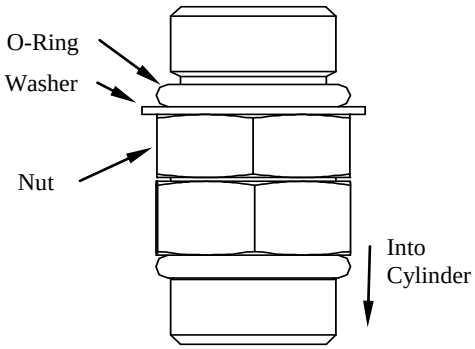
Step 16 -Fittings

- Lubricate O-ring and threads on fitting with clean oil
- Orientate (1) Valve Fitting so that nut/washer/O-ring assembly is facing up. Turn fitting into cylinder port until finger-tight
- Torque to 37-46 ft.-lb.
- Looking at fitting from end with nut/washer O-ring assembly, turn nut clockwise as far as possible
- Use valve port marked "A " to thread the control valve onto the fitting until control valve touches washer
- Hold control valve in orientation shown below and torque nut to 37-46 ft.-lb.

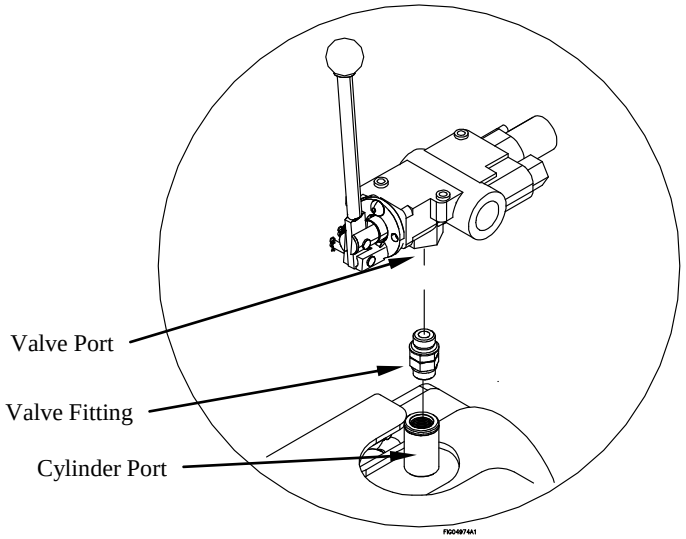
Tools Needed

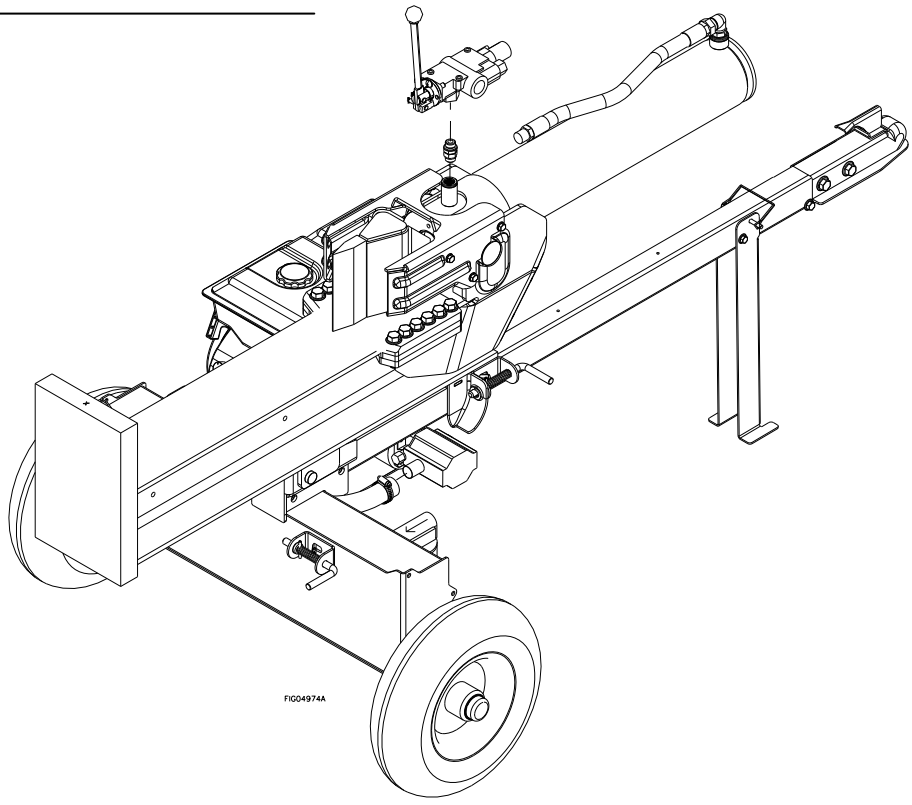
- 7/8" Wrench (2 needed)
  OR
- Crescent Wrench (2 needed)

Fastener Needed from Parts Bag:



Valve Fitting
Qty: 1





Assembly Instructions

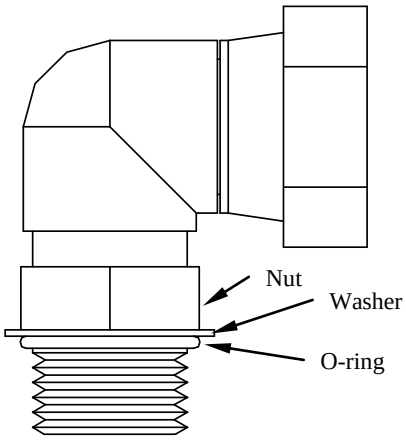
Step 17 - Fittings

- Lubricate O-ring and threads on fitting with clean oil
- Looking at fitting from end with nut/washer/O-ring assembly, turn nut clockwise as far as possible
- Using wrench, turn (1) Small Swivel Fitting into valve port marked "B" until washer touches control valve. Continue turning until washer touches thread nearest wrench pad
- Back off fitting counterclockwise not exceeding one revolution until it is oriented in the correct position
- Place wrench on the wrench pad of fitting to prevent fitting from turning and torque nut to 37-46 ft.-lb.
- Thread Small Swivel Fitting nut onto Cylinder Hose until hand tight.
- Wrench tighten 2-3 Turns past Finger Tight

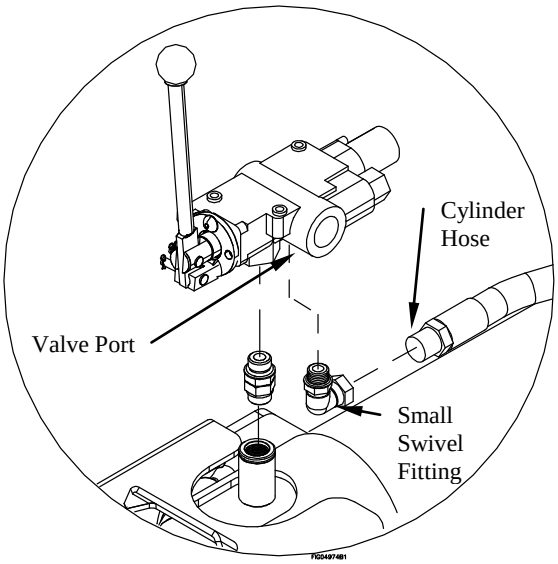
Tools Needed

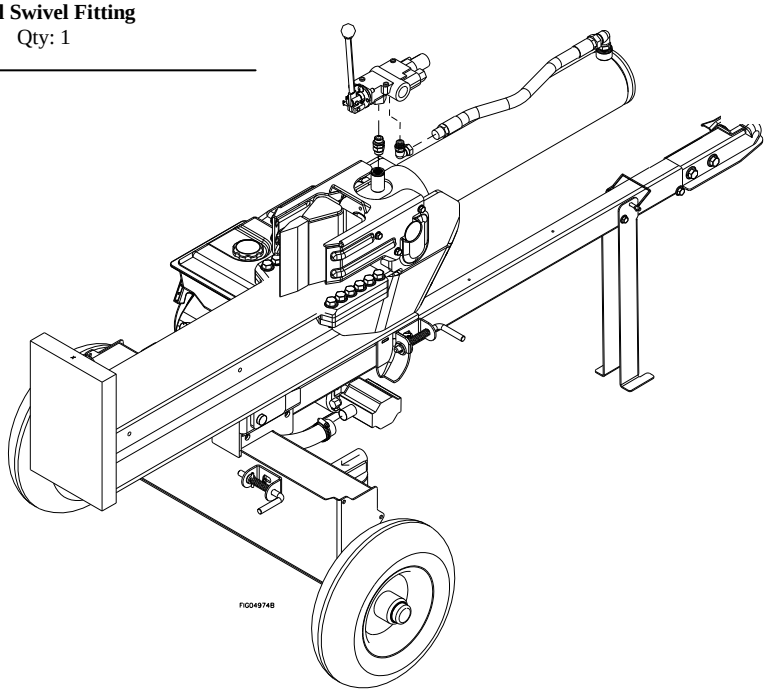
- 7/8" Wrench
- 3/4" Wrench
- 1" Wrench
  OR
- Crescent Wrench
  (2 needed)

Fastener Needed from Parts Bag:



Small Swivel Fitting
Qty: 1





Assembly Instructions

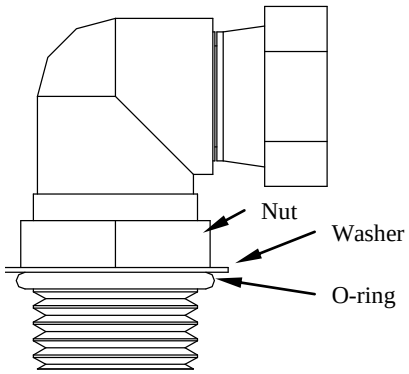
Step 18 - Fittings

- Lubricate O-ring and threads on fitting with clean oil
- Looking at fitting from end with nut/washer/O-ring assembly, turn nut clockwise as far as possible
- Using wrench, turn (1) Large Swivel Fitting into the valve port marked “In” until washer touches control valve. Continue turning until washer touches thread nearest wrench pad
- Back off fitting counterclockwise not exceeding one revolution until it is orientated in the correct position
- Place wrench on the wrench pad of fitting to prevent fitting from turning and torque nut to 70-87 ft.-lb.

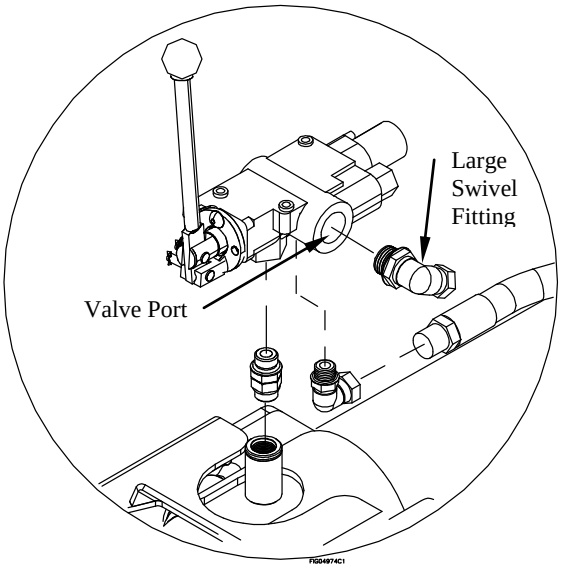
Tools Needed

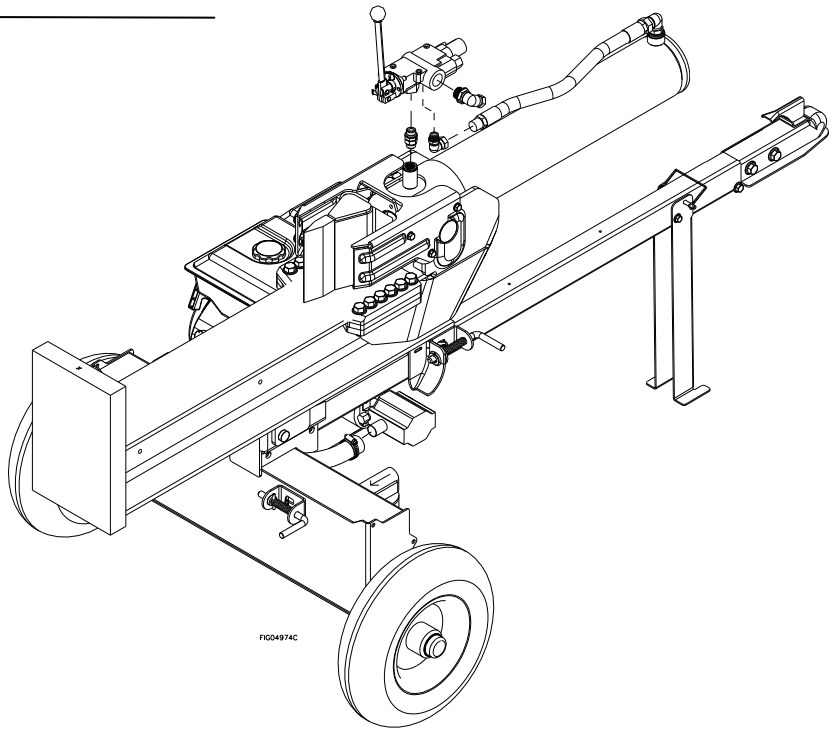
- 1 1/4” Wrench
- 1 1/16” Wrench OR
- Crescent Wrench (2 Needed)

Fasteners Needed from Parts Bag:



Large Swivel Fitting
Qty: 1





Assembly Instructions

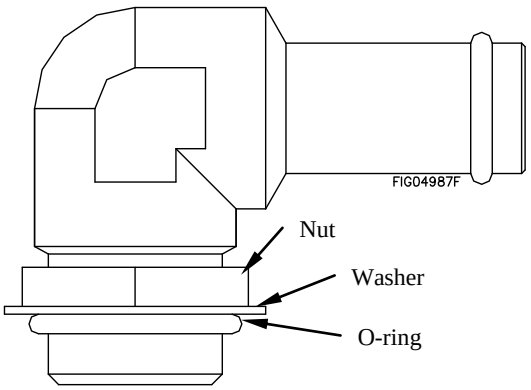
Step 19 - Fittings

- Lubricate O-ring and threads on fitting with clean oil
- Looking at fitting from end with nut/washer/O-ring assembly, turn nut clockwise as far as possible
- Using wrench, turn (1) Hose Barb Fitting into the valve port marked "Out" until washer touches control valve. Continue turning until washer touches thread nearest wrench pad
- Back off fitting counterclockwise not exceeding one revolution until it is orientated in the correct position
- Place wrench on the wrench pad of fitting to prevent fitting from turning and torque nut to 70-87 ft.-lb.

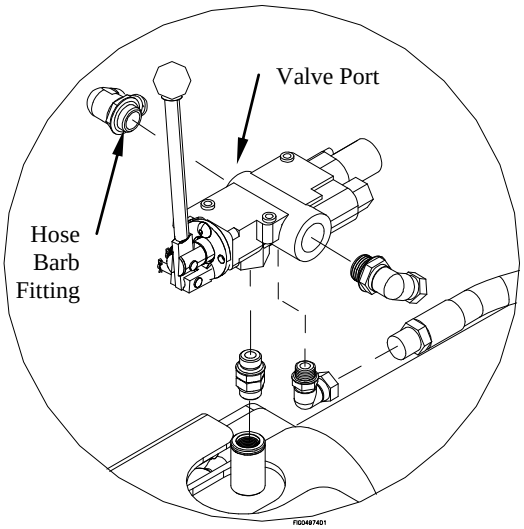
Tools Needed

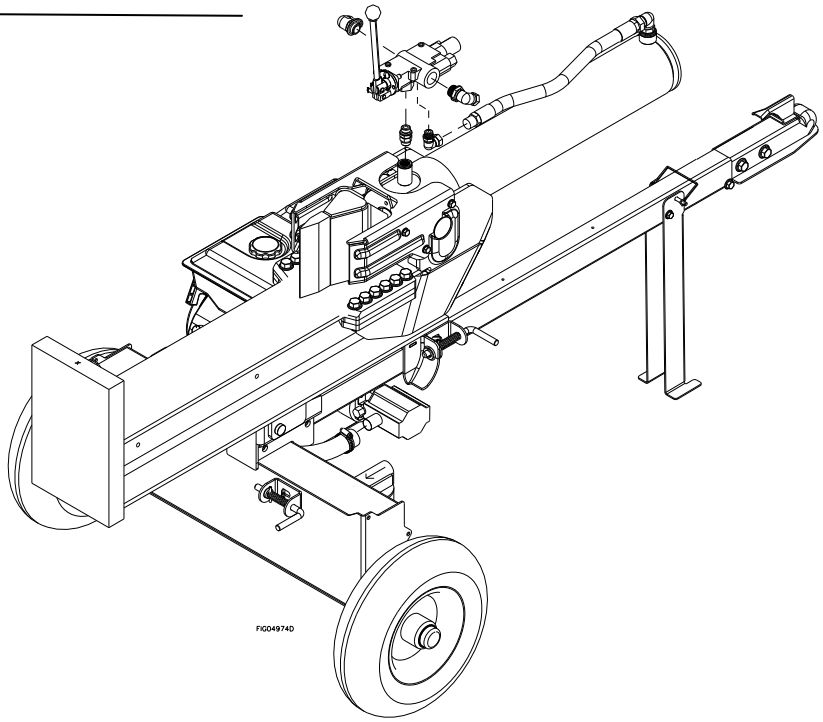
- 1 1/16" Wrench
- 1 1/4" Wrench OR
- Crescent Wrench (2 Needed)

Fasteners Needed from Parts Bag:



Hose Barb Fitting
Qty: 1





Assembly Instructions

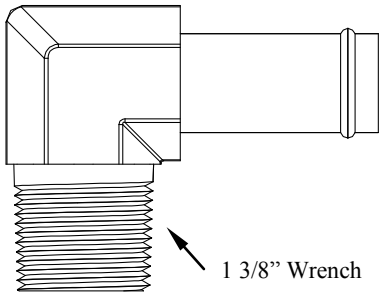
Step 20 - Fittings

- Screw finger-tight (1) Return Line Fitting into the return line filter head
- Wrench-tighten the fitting to 1.5-3.0 turns past “finger tight” position. Consider final orientation position as to not exceed the recommended TPFT. Properly assembled fittings total thread engagement should be 3.5-6 turns
- CAUTION: Never back off an installed pipe fitting to achieve proper alignment. Loosening installed pipe fittings will corrupt the seal and contribute to leakage and failure.
- Connect the end of the suction hose to the pump inlet.
- Secure the low pressure return hose to return line fitting with supplied hose clamp installed on hose. Torque to 77 in.-lb.

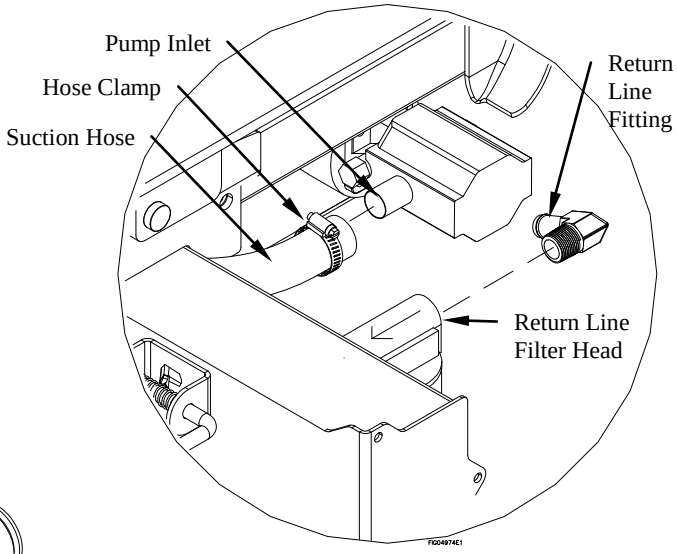
Tools Needed

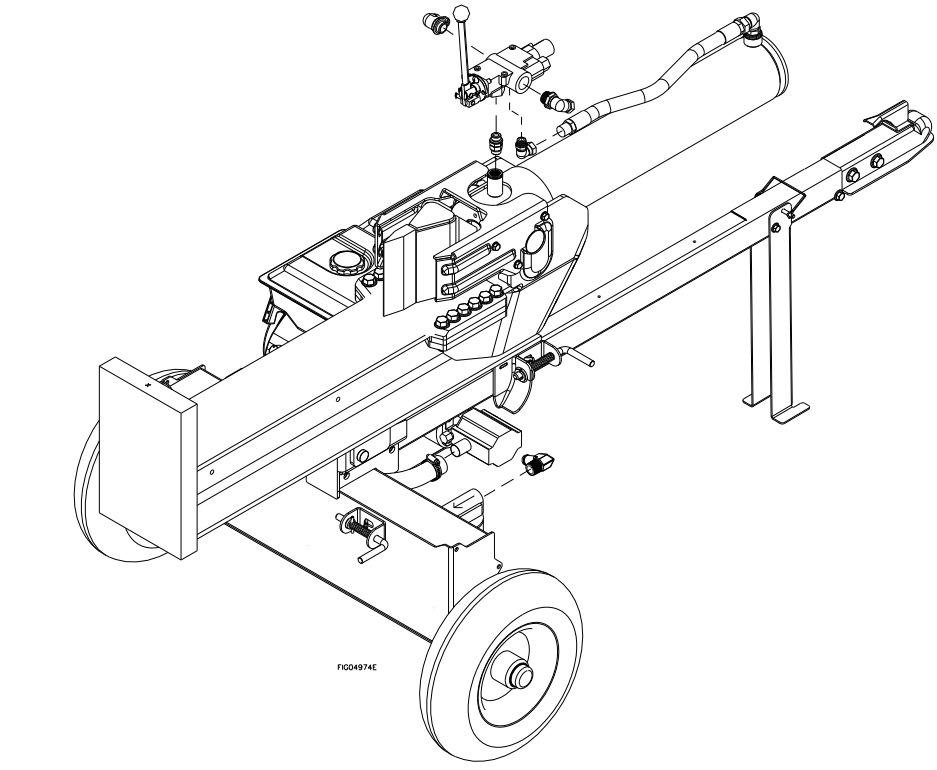
- Flat Blade Screw Driver
- Crescent Wrench OR
- 1 1/16” Wrench

Fasteners Needed from Parts Bag:



Return Line Fitting
Qty: 1





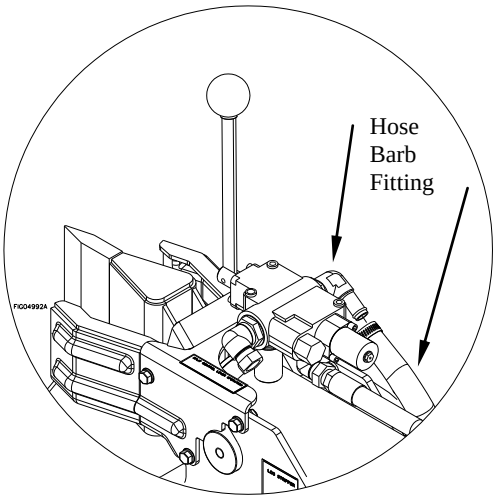
Assembly Instructions

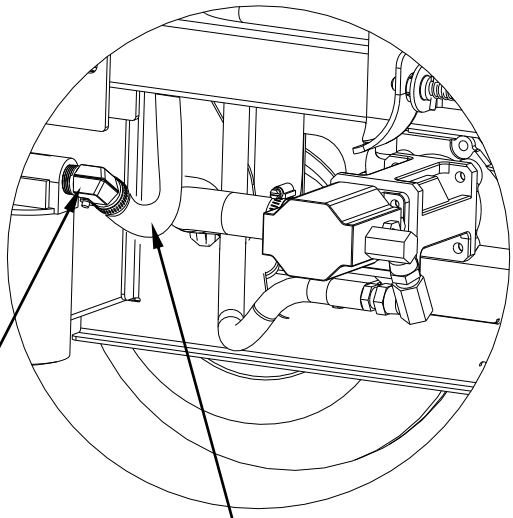
Step 21A – Low Pressure Return Hose 1175 Only

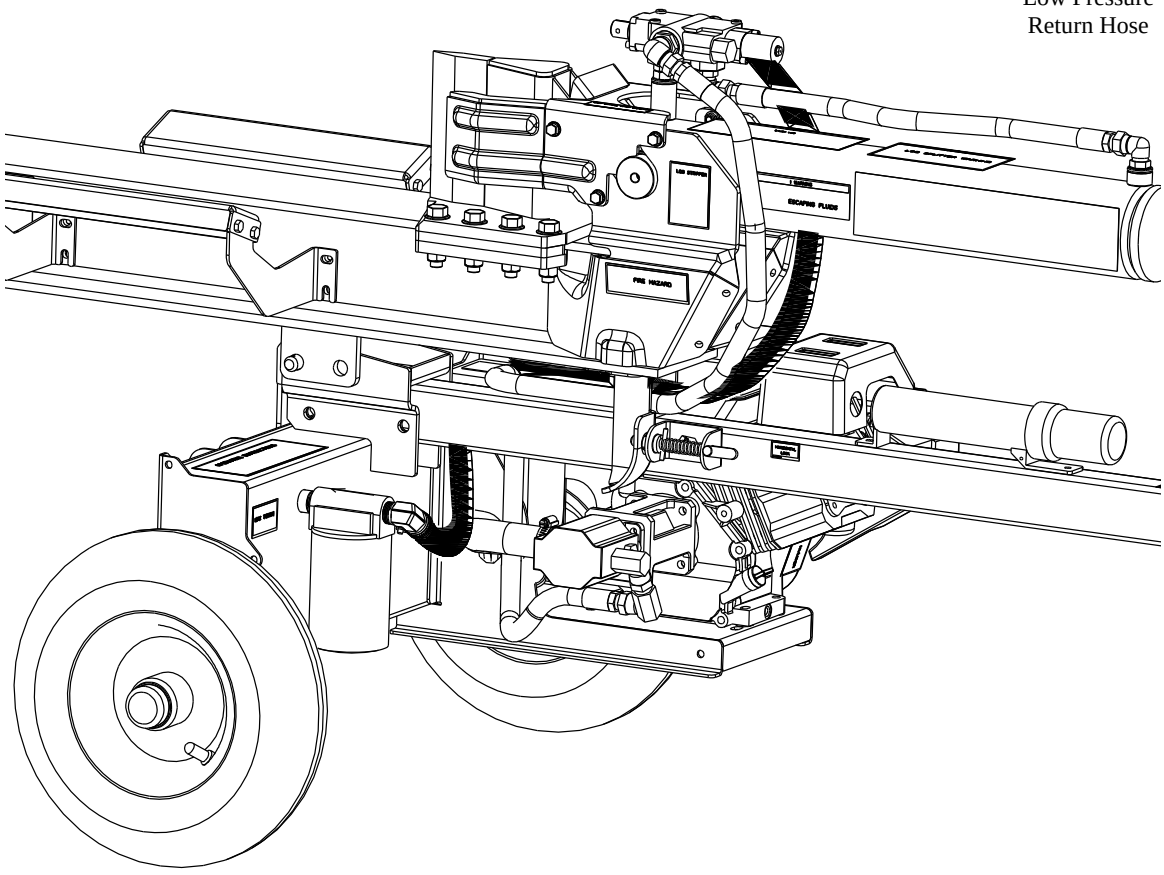
- Route the low pressure return hose from the valve outlet fitting down to the return line filter fitting
- Secure the low pressure return hose to return line fitting with supplied hose clamp installed on hose. Torque to 77 in.-lb.
- Secure the remaining end of the low pressure return hose to valve outlet fitting located on the control valve with supplied hose clamp installed on hose. Torque to 77 in.-lb.

Tools Needed

- Flat Blade Screw Driver







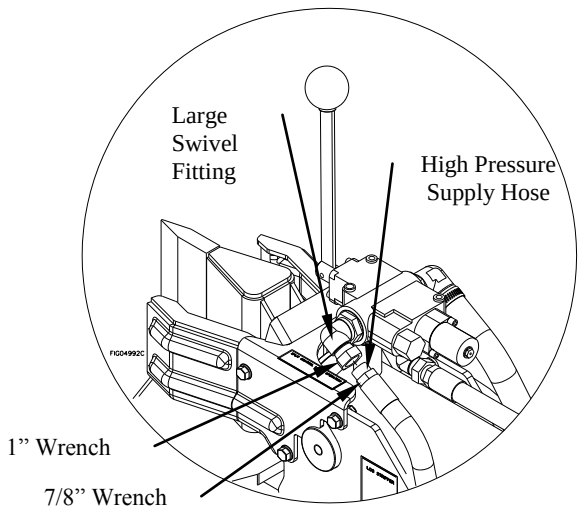
Assembly Instructions

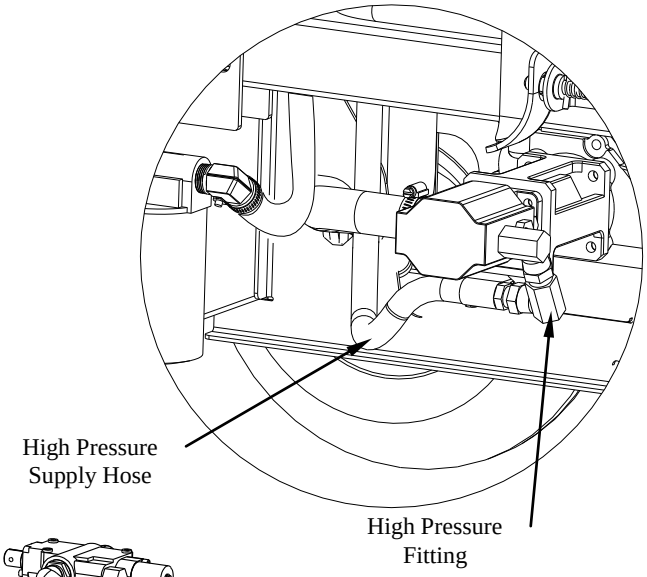
Step 21B – High Pressure Supply Hose for 1175 Only

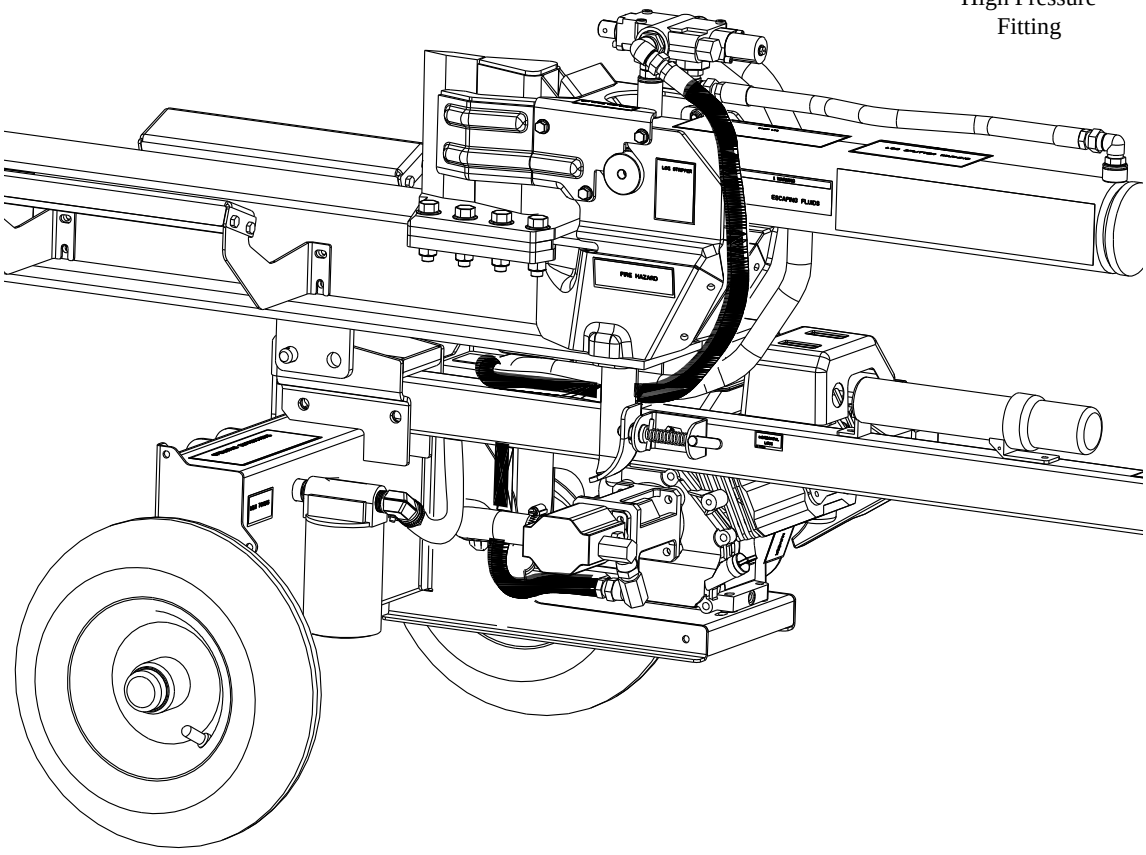
- Route the High-Pressure Supply Hose from the high pressure fitting on the pump up to the Large Swivel Fitting on the control valve inlet.
- Screw finger-tight High-Pressure Supply Hose to the high pressure fitting on the pump outlet.
- Wrench tighten 1.5-3.0 turns past "finger tight"
- Screw finger-tight remaining end of the High-Pressure Supply Hose to the Large Swivel Fitting on the control valve inlet.
- Wrench tighten 1.5-3.0 turns past "finger tight"

Tools Needed

- 1" Wrench
- 7/8" Wrench
  OR
- Crescent Wrench
  (2 Needed)







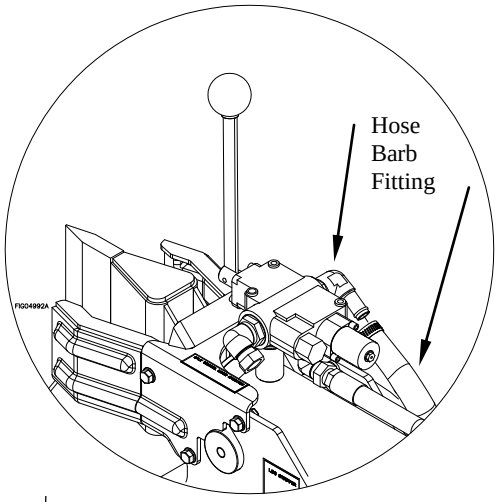
Assembly Instructions

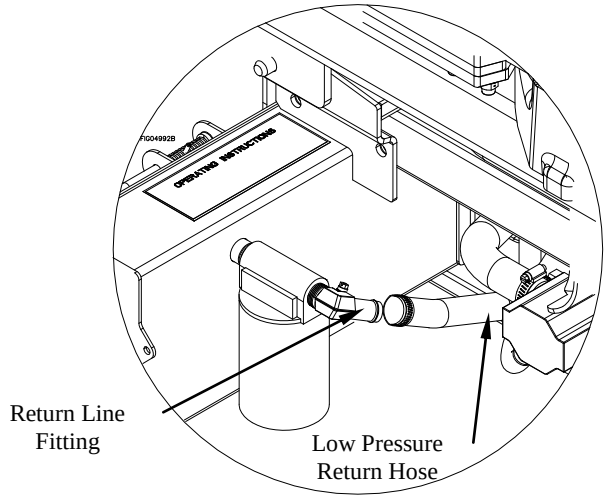
Step 22A – Low Pressure Return Hose 1169 Only

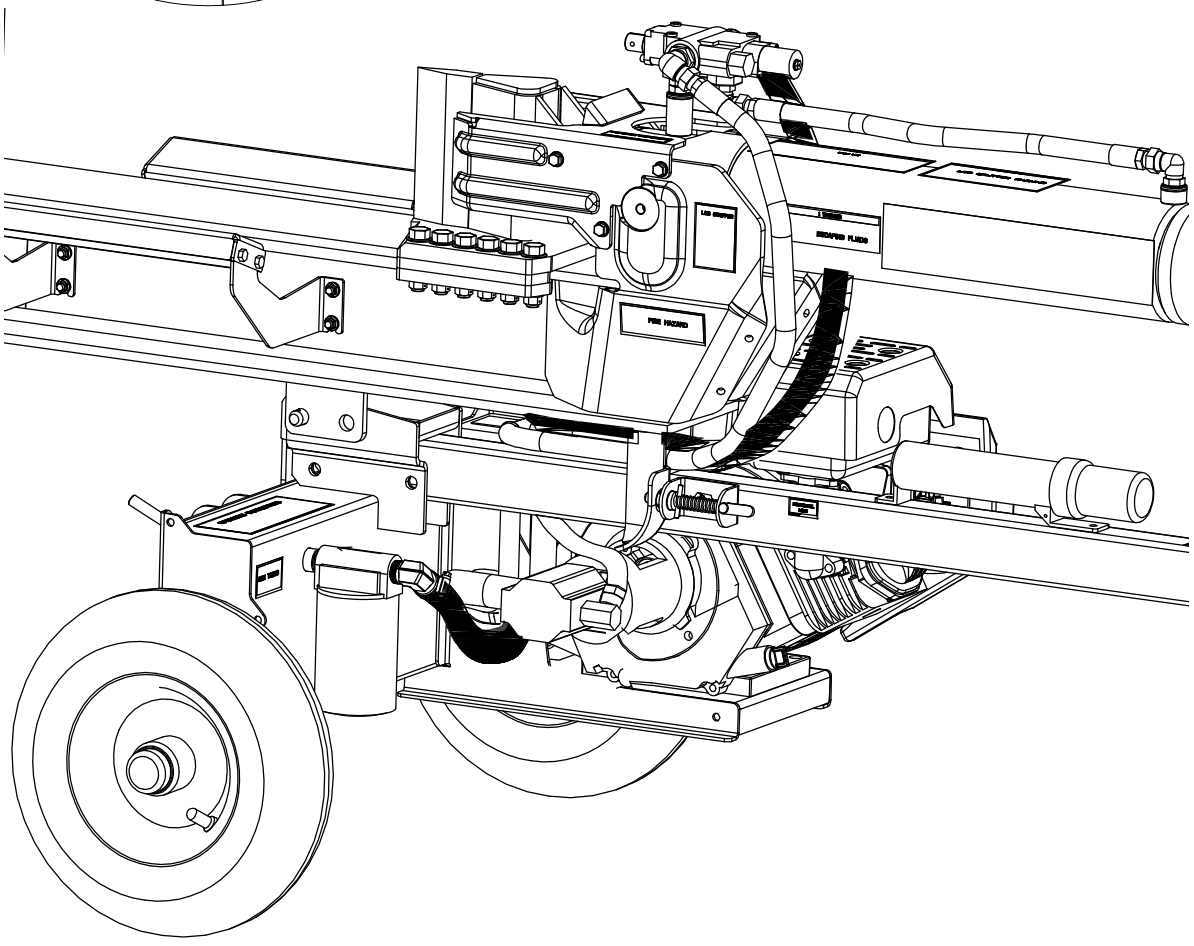
- Route the low pressure return hose from the valve outlet fitting down to the return line filter fitting
- Secure the low pressure return hose to return line fitting with supplied hose clamp installed on hose. Torque to 77 in.-lb.
- Secure the remaining end of the low pressure return hose to valve outlet fitting located on the control valve with supplied hose clamp installed on hose. Torque to 77 in.-lb.

Tools Needed

- Flat Blade Screw Driver







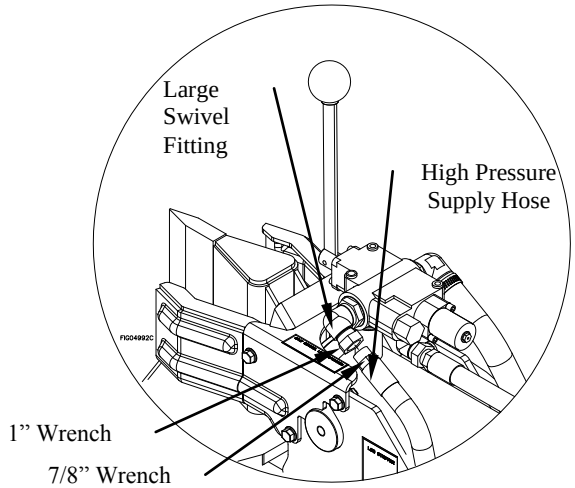
Assembly Instructions

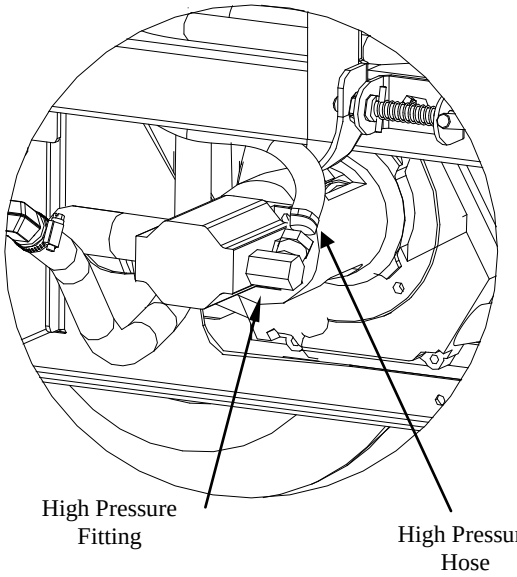
Step 22B – High Pressure Supply Hose for 1169 Only

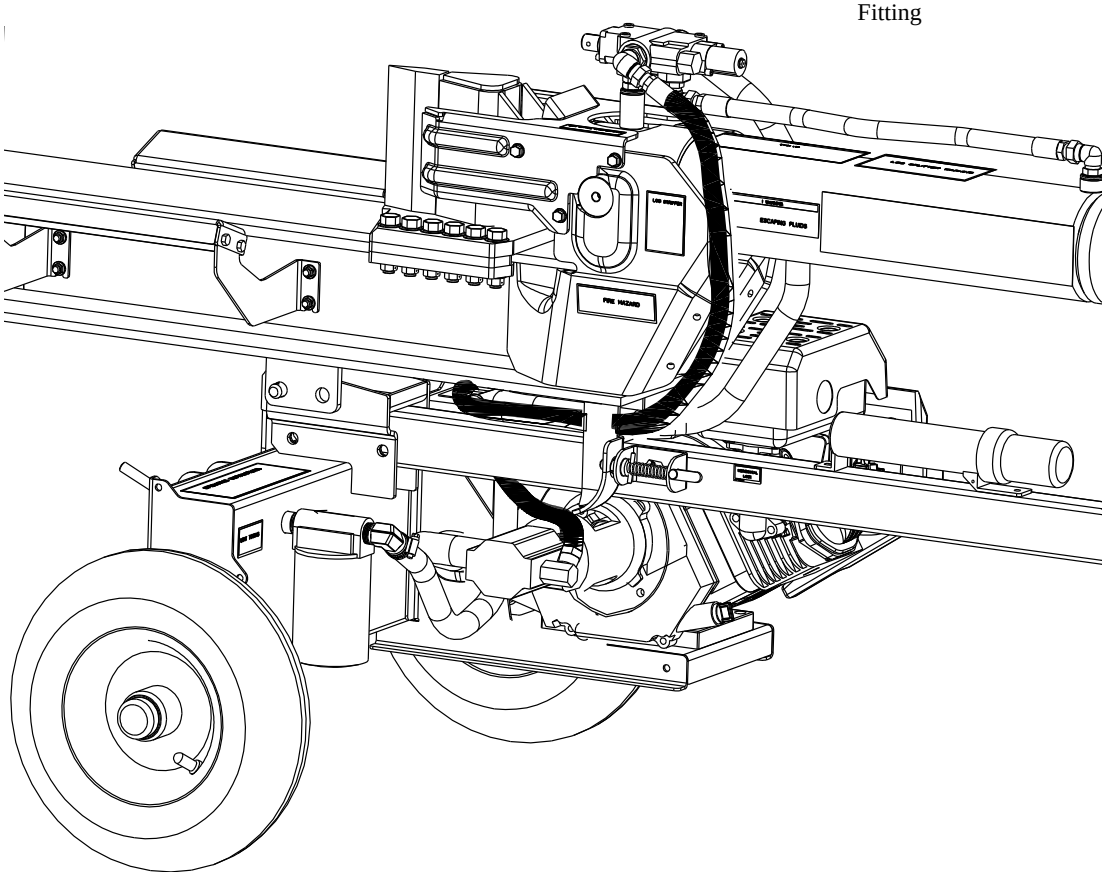
- Route the High-Pressure Supply Hose from the high pressure fitting on the pump up to the Large Swivel Fitting on the control valve inlet.
- Screw finger-tight High-Pressure Supply Hose to the high pressure fitting on the pump outlet.
- Wrench tighten 1.5-3.0 turns past "finger tight"
- Screw finger-tight remaining end of the High-Pressure Supply Hose to the Large Swivel Fitting on the control valve inlet.
- Wrench tighten 1.5-3.0 turns past "finger tight"

Tools Needed

- 1" Wrench
- 7/8" Wrench
  OR
- Crescent Wrench
  (2 Needed)







Assembly Instructions

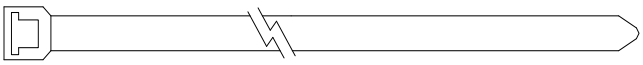
Step 23 – Zip Ties

- Route zip tie through hole in trunnion mount and around hose.
- Tighten zip tie and cut off excess length.
- Repeat for remaining three holes in trunnion mounts.

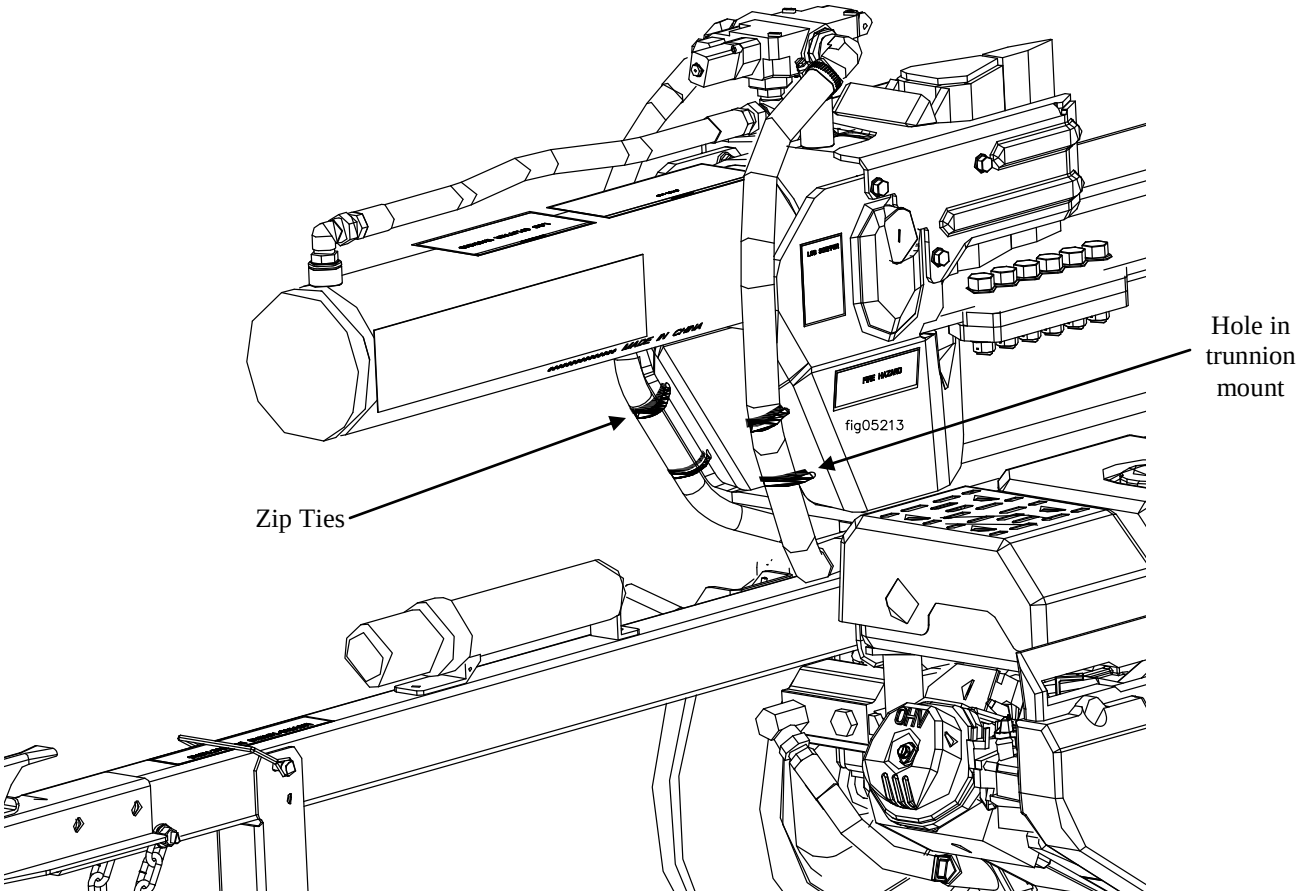
Tools Needed

- Wire Cutter

Fasteners Needed from Parts Bag:



Small Zip Tie
Qty: 4



Assembly Instructions

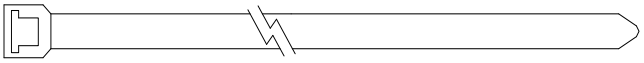
Step 23 – Zip Ties Continued

- Route zip tie around high and low pressure hoses as shown below.
- Tighten zip tie and cut off excess length.

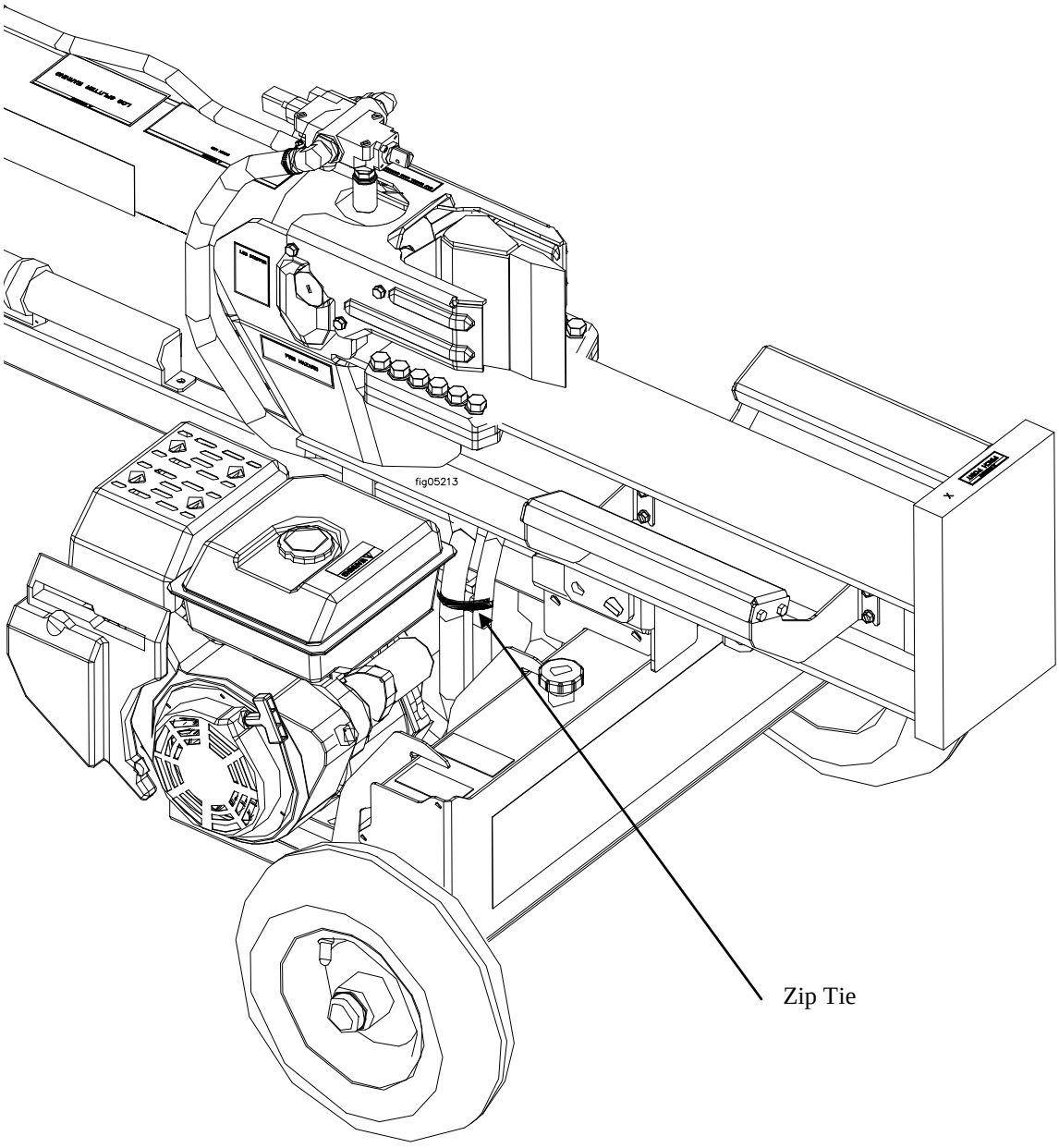
Tools Needed

- Wire Cutter

Fasteners Needed from Parts Bag:



Large Zip Tie
Qty: 1



Assembly Instructions

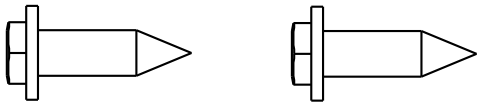
Step 24 – Manual Tube

- Remove the manual tube cover from manual tube
- Align holes in manual tube with holes in towbar
- Secure the manual tube to towbar using (2) Self-Tapping Screws
- Reattach the manual tube cover onto the manual tube

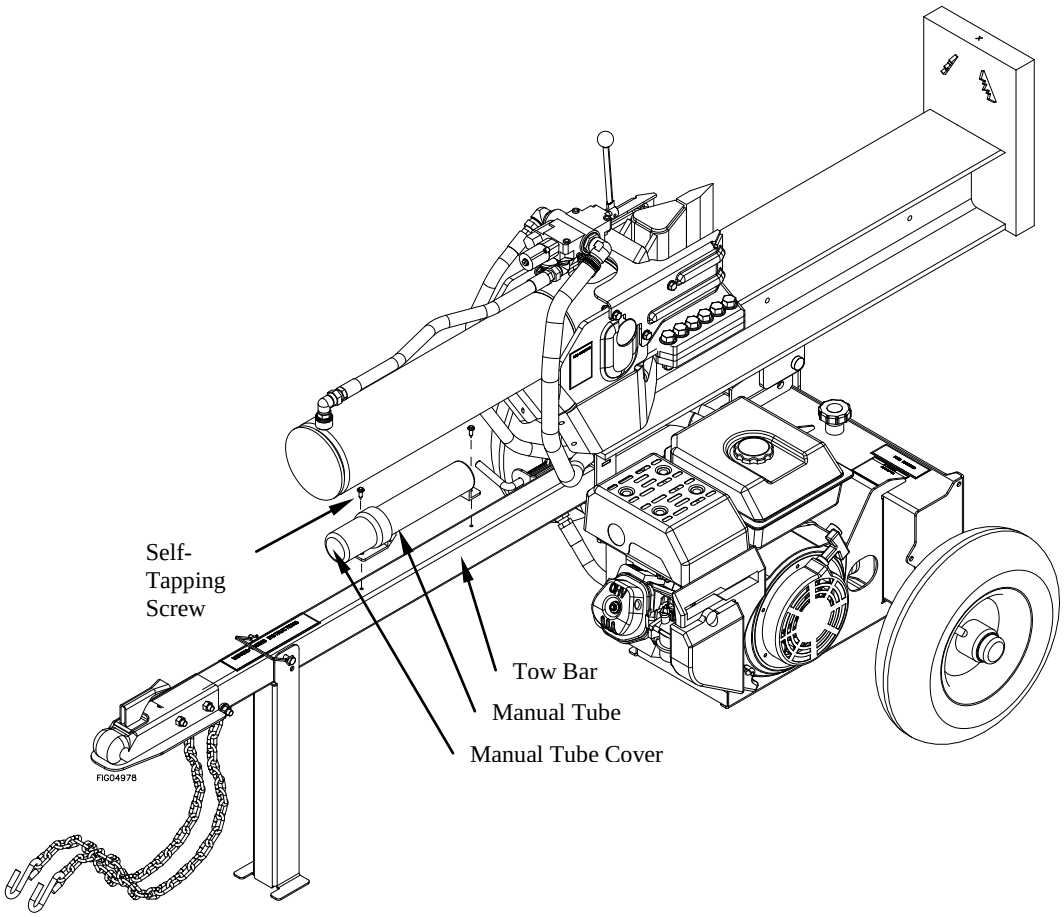
Tools Needed

- 11mm Socket Wrench

Fasteners Needed from Parts Bag:



Manual Tube to Tow Bar Screw
Qty: 2



Assembly Instructions

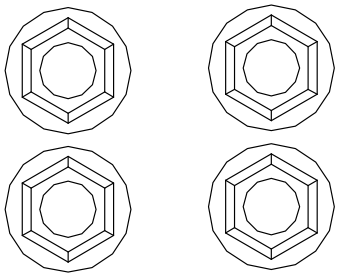
Step 25 – Log Cradles

- Install (2) Log Cradle Bolts and (2) Log Cradle Locknuts into the bottom holes of the beam.
- Using the slots in the bottom of each log cradle arm rest the log cradle arms on the installed bolts and nuts.
- Install the remaining (2) Log Cradle Bolts and (2) Log Cradle Locknuts into the top holes of the beam and log cradle arms.
- Torque to 21 ft.-lb.

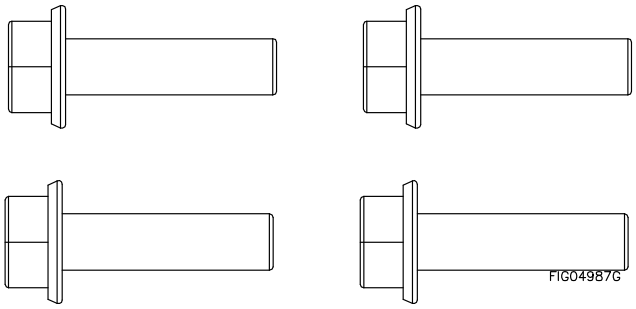
Tools Needed

- 13mm Wrench

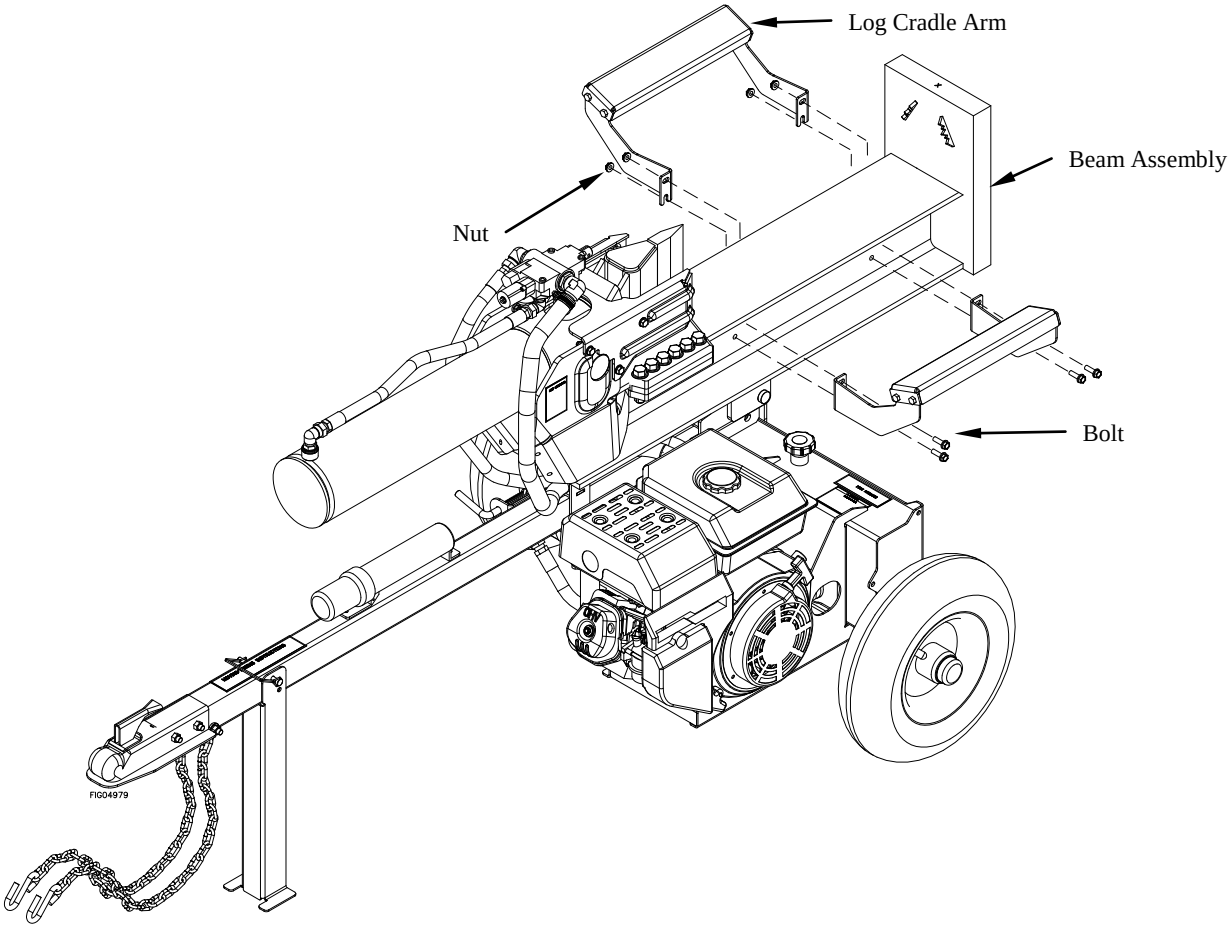
Fasteners Needed from Parts Bag:



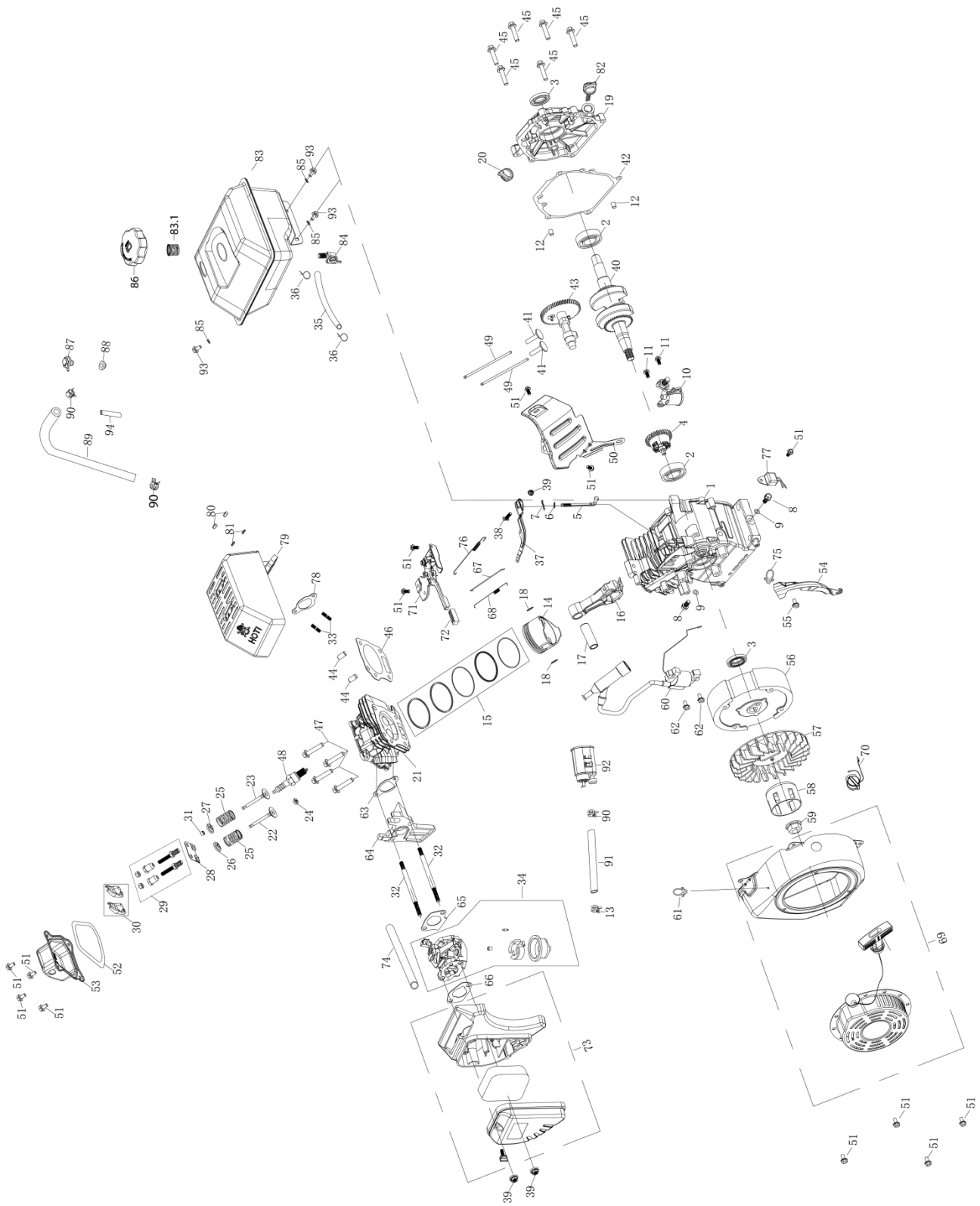
Log Cradles to Beam Nut
Qty: 4



Log Cradles to Beam Bolt
Qty: 4



789712 Engine Exploded View

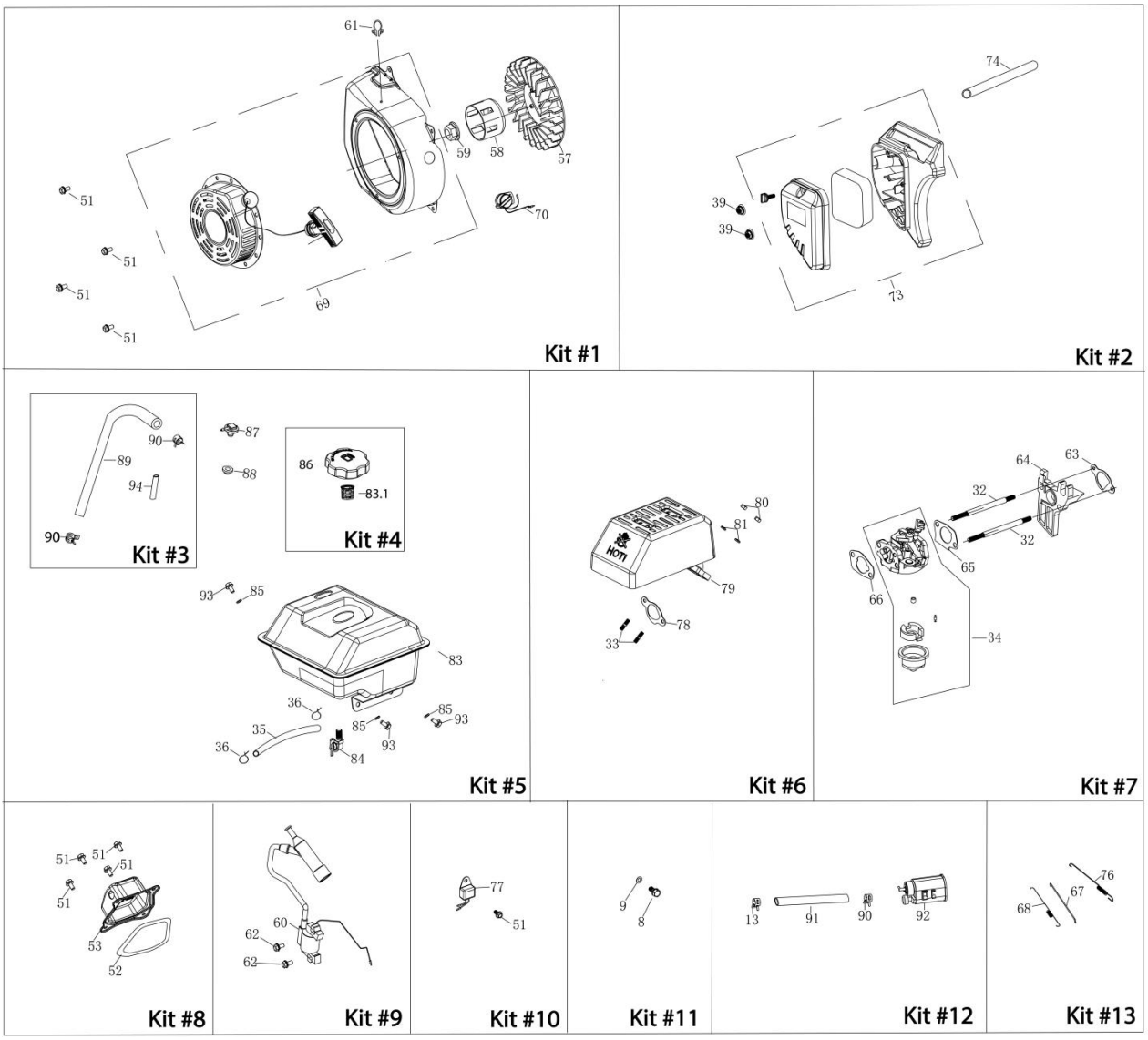


789712 Engine Parts List

Ref#	Part #	Description	Qty
1	N/A	CRANKCASE	1
2	N/A	BALL BEARING	2
3	N/A	OIL SEAL	2
4	N/A	GOVERNOR ASSEMBLY	1
5	N/A	SHAFT, GOVERNOR ARM	1
6	N/A	WASHER, GOVERNOR ARM SHAFT	1
7	N/A	PIN, LOCK	1
8	Kit # 11	BOLT, DRAIN PLUG	2
9		WASHER,DRAIN PLUG	2
10	788901	SWITCH ASSEMBLY, OIL LEVEL	1
11	N/A	BOLT	2
12	N/A	DOWEL PIN,CASECOVER	2
13	Kit # 12	CLIP, FUEL LINE	1
14	N/A	PISTON	1
15	N/A	SCRAPER RING SET ,PISTON	1
16	N/A	ROD ASSEMBLY, CONNECTING	1
17	N/A	PIN, PISTON	1
18	N/A	CLIP, PISTON	2
19	N/A	COVER ASSEMBLY, CRANKCASE	1
20	N/A	OIL PLUG	1
21	N/A	CYLINDER HEAD	1
22	N/A	VALVE, IN	1
23	N/A	VALVE EXHAUST	1
24	N/A	RETURNER,INTAKE VALVE	1
25	N/A	SPRING, VALVE	2
26	N/A	SEAT, VALVE SPRING,IN	1
27	N/A	SEAT, VALVE SPRING,EX	1
28	N/A	PLATE, PUSH ROD GUIDE	1
29	N/A	ROCKER FASTENYNG BOLT	2
30	N/A	ROCKER	2
31	N/A	ROTATOR	1
32	Kit # 7	BOLT, STUD	2
33	Kit # 6	BOLT, STUD	2
34	Kit # 7	CARBURETOR ASSEMBLY	1
35	Kit # 5	FUEL LINE	1
36	Kit # 5	CLIP, FUEL LINE	2
37	N/A	GOVERNOR ARM	1
38	N/A	BOLT, GOVERNOR ARM	1
39	Kit # 2	NUT	3
40	N/A	CRANKSHAFT ASSEMBLY	1
41	N/A	LIFTER,VALVE	2
42	N/A	PACKING, CASECOVER	1
43	N/A	CAMSHAFT ASSEMBLY	1
44	N/A	PIN, DOWEL	2
45	N/A	BOLT	6
46	N/A	GASKET, CYLINDER HEAD	1
47	N/A	BOLT	4
48	783127	SPARK PULG	1
49	N/A	ROD, PUSH	2
50	N/A	SHROUD	1
51	Kit # 1 Kit # 8, Kit # 10	BOLT	13

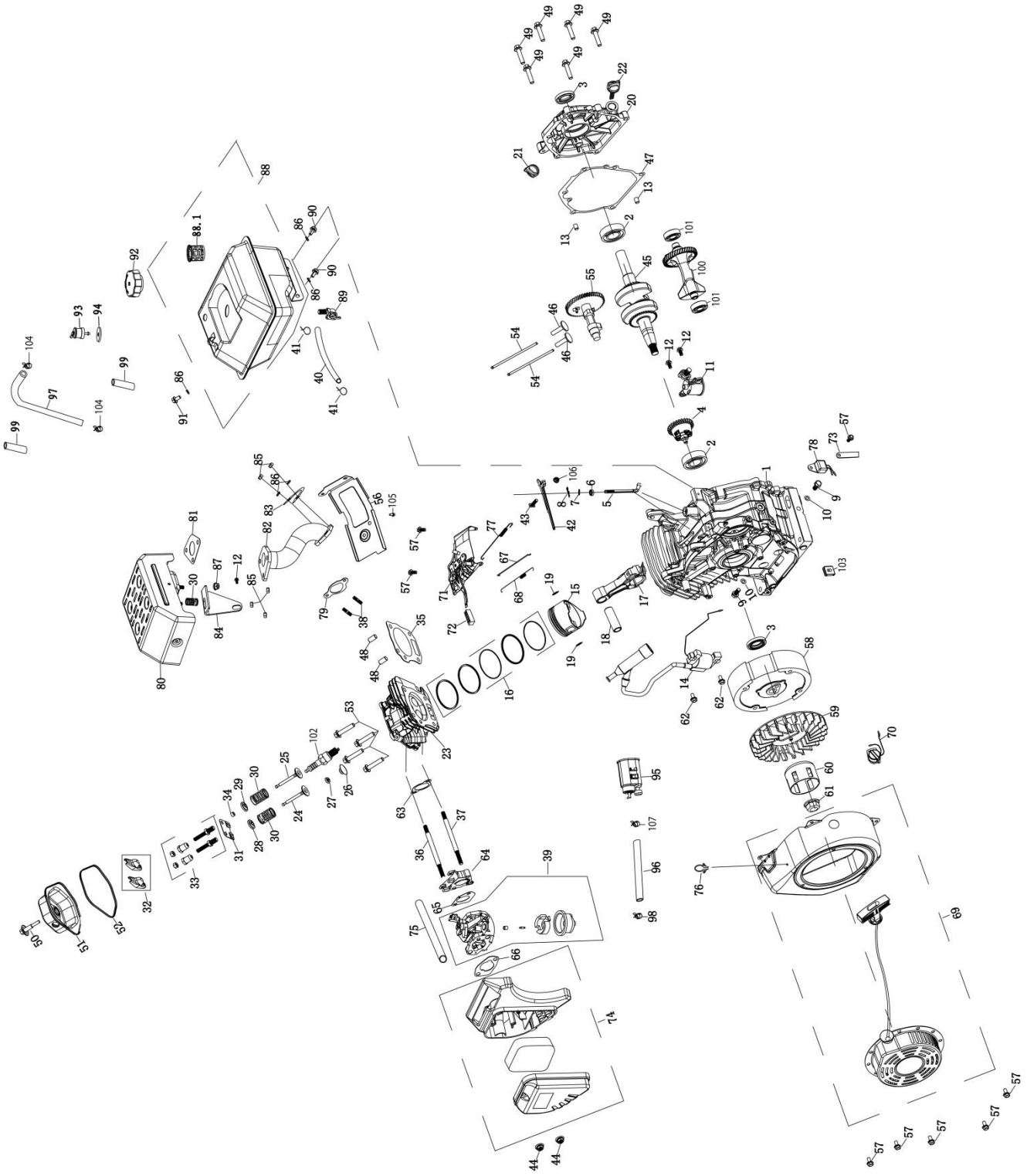
Ref#	Part #	Description	Qty
52	Kit # 8	PACKING, HEADCOVER	1
53		COVER COMP, CYLINDER HEAD	1
54	N/A	WIND SHIEL COMP.	1
55	N/A	BOLT	1
56	N/A	FLYWHEEL ASSEMBLY	1
57	Kit # 1	FAN, RECOIL STARTER	1
58		PULLEY, STARTER	1
59		NUT	1
60	Kit # 9	IGNITION COIL ASSY	1
61	Kit # 1	CLIP	2
62	Kit # 9	BOLT	2
63	Kit # 7	PACKING, INTAKE	1
64		INSULATOR, CARBURETOR	1
65		PACKING, CARBURETOR	1
66		SPACER, CARBURETOR	1
67	Kit # 13	ROD, GOVERNOR	1
68	Kit # 13	SPRING, THROTTLE RETURN	1
69	Kit # 1	RECOIL STARTER ASSEMBLY	1
70		SWITCH ASSEMBLY	1
71	N/A	SHROUD ASSY, UPPER	1
72	N/A	SPEED REGULATING HANDLE	1
73	Kit # 2	AIR CLEANER ASSEMBLY	1
74		TUBE, BREATHER	1
75	N/A	CLIP	1
76	Kit # 13	SPRING, GOVERNOR	1
77	Kit # 10	AMPLIFIER	1
78	Kit # 6	PACKING, EXHAUST	1
79		MUFFLER COMP	1
80		NUT	2
81		SPRING WASHER	2
82	783136	DIPSTICK	1
83	Kit # 5	FUEL TANK ASSEMBLY	1
83.1	Kit # 4, Kit # 5	FUEL FILTER	1
84	789697 & Kit # 5	FUEL COCK	1
85	Kit # 5	SPRING WASHER	3
86	Kit # 4, Kit # 5	FUEL TANK CAP COMP	1
87	Kit # 5	TANK VENT FITTING	1
88		PACKING WASHER, ONE-WAY VALVE	1
89	Kit # 3, Kit # 5	CONNECTING PIPE	1
90	Kit # 3, Kit # 5, Kit # 12	CLIP, FUEL LINE	3
91	Kit # 12	CONNECTING PIPE	1
92		CARBON TANK COMP	1
93	Kit # 5	BOLT	3
94	Kit # 3, Kit # 5	VENTILATION TUBE PROTECTOR	1

789712 Engine Kits



Kit Ref #	Kit Part #	Description	Qty
1	791621	Recoil & Fan Kit	1
2	791622	Air Filter Kit	1
3	791623	Vent Hose Kit	1
4	789262	Fuel Cap Kit	1
5	791624	Tank Kit	1
6	789693	Muffler Kit	1
7	791625	Carburetor Kit	1
8	791626	Valve Cover Kit	1
9	789696	Ignition Coil Kit	1
10	791627	Oil Alert kit	1
11	783126	Drain Bolt Kit	2
12	791628	Carbon Canister Kit	1
13	791629	Governor & Spring Kit	1

790160 Engine Exploded View

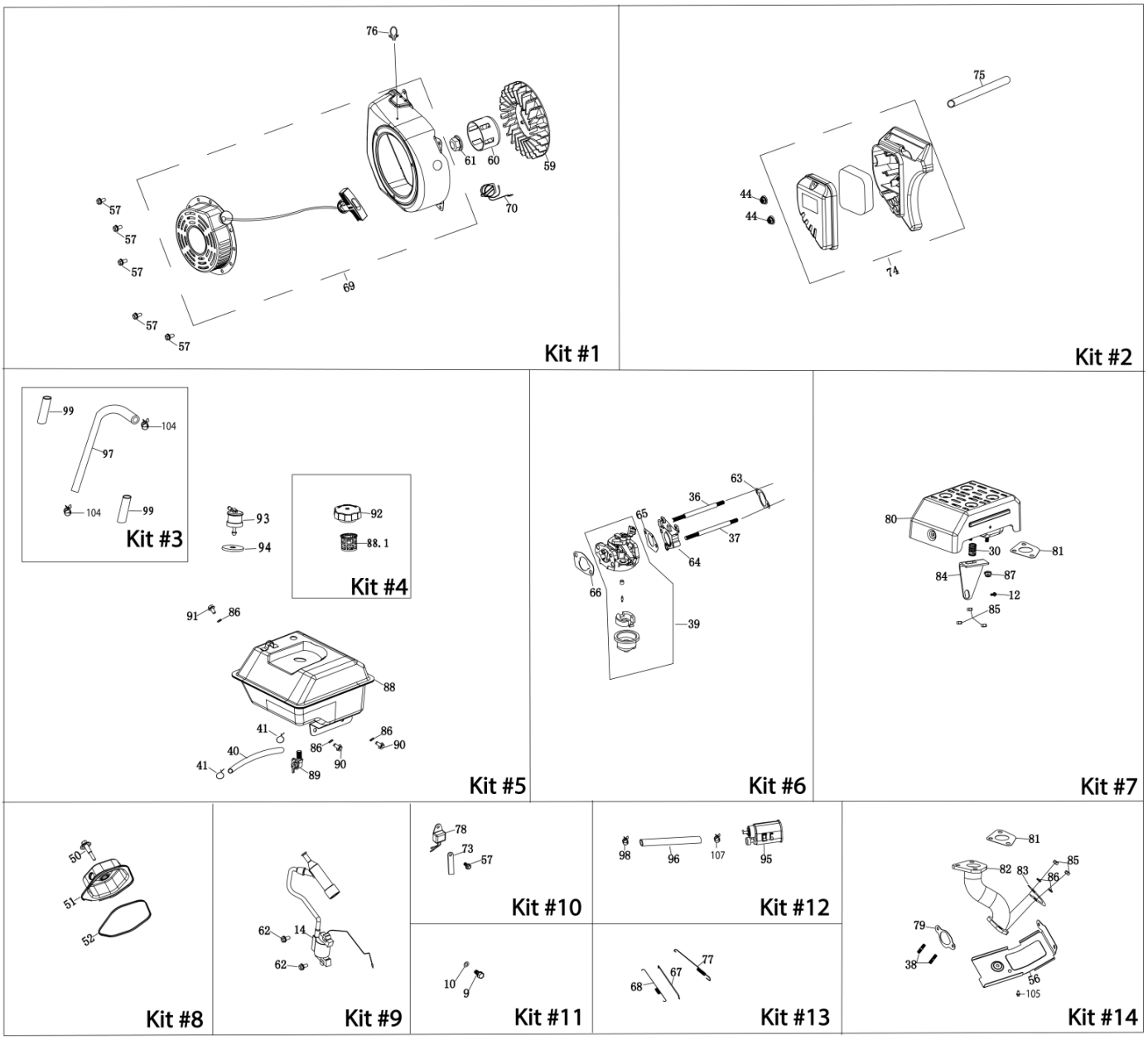


790160 Engine Parts List

Ref#	Part #	Description	Qty
1	N/A	CRANKCASE	1
2	N/A	BALL BEARING	2
3	N/A	OIL SEAL	2
4	N/A	GOVERNOR ASSEMBLY	1
5	N/A	SHAFT,GOVERNOR ARM	1
6	N/A	SEAL,GOVERNOR ARM SHAFT	1
7	N/A	WASHER,GOVERNOR ARM SHAFT	1
8	N/A	PIN,LOCK	1
9	Kit # 11	BOLT， DRAIN PLUG	2
10		WASHER,DRAIN PLUG	2
11	788902	SWITCH ASSEMBLY,OIL LEVEL	1
12	Kit # 7	BOLT	3
13	N/A	DOWEL PIN,CASECOVER	2
14	Kit # 9	IGNITION COIL ASSY	1
15	N/A	PISTON	1
16	N/A	SCRAPER RING SET ,PISTON	1
17	N/A	ROD ASSEMBLY., CONNECTING	1
18	N/A	PIN, PISTON	1
19	N/A	CLIP, PISTON	2
20	N/A	COVER ASSEMBLY, CRANKCASE	1
21	791586	OIL PLUG	1
22	791587	DIPSTICK	1
23	N/A	CYLINDER HEAD	1
24	N/A	VALVE,IN	1
25	N/A	VALVE EXHAUST	1
26	N/A	RETURNER,INTAKE VALVE	1
27	N/A	OIL SEAL,VALVE	1
28	N/A	SEAT, VALVE SPRING,IN	1
29	N/A	SEAT, VALVE SPRING,EX	1
30	Kit # 7	SPRING,VALVE	3
31	N/A	PLATE,PUSH ROD GUIDE	1
32	N/A	ROCKER	2
33	N/A	ROCKER ARM TIGHTENING BOLTS	2
34	N/A	ROTATOR	1
35	N/A	GASKET,CYLINDER HEAD	1
36	Kit # 6	BOLT, STUD	1
37		BOLT, STUD	1
38	Kit # 14	BOLT, STUD	2
39	Kit # 6	CARBURETOR ASSEMBLY	1
40	Kit # 5	FUEL LINE	1
41		CLIP,FUEL LINE	2
42	N/A	GOVERNOR ARM	1
43	N/A	BOLT,GOVERNOR ARM	1
44	Kit # 2	NUT	3
45	N/A	CRANKSHAFT ASSEMBLY	1
46	N/A	LIFTER,VALVE	2
47	N/A	PACKING,CASECOVER	1
48	N/A	PIN，DOWEL	2
49	N/A	BOLT	7
50	Kit # 8	LOCK BOLT	1
51		COVER COMP, CYLINDER HEAD	1
52		PACKING,HEADCOVER	1
53	N/A	BOLT	4
54	N/A	ROD,PUSH	2
55	N/A	CAMSHAFT ASSY	1
56	Kit # 12	SHROUD	1
57	Kit # 1 Kit # 10 Kit # 12	BOLT	9

Ref#	Part #	Description	Qty
58	N/A	FLYWHEEL ASSEMBLY	1
59	Kit # 1	FAN,RECOIL STARTER	1
60		PULLEY,STARTER	1
61		NUT	2
62	Kit # 9	BOLT	2
63	Kit # 6	PACKING,INTAKE	1
64		INSULATOR,CARBURETOR	1
65		PACKING,CARBURETOR	1
66		SPACER,CARBURETOR	1
67	Kit # 13	ROD,GOVERNOR	1
68		SPRING,THROTTL RETURN	1
69	Kit # 1	RECOIL STARTER ASSEMBLY	1
70	N/A	SWITCH ASSEMBLY	1
71	N/A	SHROUD ASSY,UPPER	1
72	N/A	SPEED REGULATING HANDLE	1
73	Kit # 10	CLIP,WIRE HARNESS	1
74	Kit # 2	AIR CLEANER ASSEMBLY	1
75		TUBE,BREATHER	1
76	Kit # 1	CLIP	1
77	Kit # 13	SPRING,GOVERNOR	1
78	Kit # 10	AMPLIFIER	1
79	Kit # 14	PACKING,EXHAUST	1
80	Kit # 7	MUFFLER COMP	1
81	Kit # 7 Kit # 14	GASKET,EXHAUST PIPE	1
82	Kit # 14	EXHAUST PIPE	1
83		CLAMP, MUFFLER LOCK	1
84	Kit # 7	MUFFLER BRACKET	1
85	Kit # 7 Kit # 14	NUT	5
86	Kit # 5 Kit # 14	SPRING WASHER	5
87	N/A	NUT	1
88	Kit # 5	FUEL TANK ASSEMBLY	1
88.1	Kit # 4 Kit # 5	FUEL FILTER	1
89	Kit # 5 or 789697	FUEL COCK	1
90	Kit # 5	BOLT	2
91	Kit # 5	BOLT	1
92	Kit # 4 Kit # 5	FUEL TANK CAP COMP	1
93	Kit # 5	MANUAL CHOKE ASSEMBLY	1
94	Kit # 5	PACKING WASHER,ONE-WAY VALVE	1
95	Kit # 12	CARBON TANK COMP	1
96	Kit # 12	CONNECTING PIPE	1
97	Kit # 3 Kit # 5	CONNECTING PIPE	1
98	Kit # 12	CLIP,FUEL LINE	1
99	Kit # 3 Kit # 5	VENTILATION TUBE PROTECTOR	2
100	N/A	BALANCING SHAFT	1
101	N/A	BALL BEARING	2
102	783127	SPARK PLUG	1
103	N/A	RUBBER, STARTER ASSY	1
104	Kit # 3 Kit # 5	CLIP,FUEL LINE	2
105	Kit # 14	BOLT	1
106	N/A	NUT	1
107	Kit # 12	CLIP,FUEL LINE	1

790160 Engine Kits



Kit Ref #	Kit Part #	Description	Qty
1	791588	Recoil & Fan Kit	1
2	791589	Air Filter Kit	1
3	791590	Vent Hose Kit	1
4	791591	Fuel Cap Kit	1
5	791592	Tank Kit	1
6	791593	Carburetor Kit	1
7	791594	Muffler Kit	1
8	791595	Valve Cover Kit	1
9	791596	Ignition Coil Kit	1
10	791597	Oil Alert kit	1
11	783146	Drain Bolt Kit	2
12	791598	Carbon Canister Kit	1
13	791599	Governor & Spring Kit	1
14	791600	Exhaust Pipe Kit	1

Safety

CAUTION

- This engine is shipped without oil. If you start the engine without oil, the engine will be damaged beyond repair and will not be covered under warranty.

WARNING

Gasoline and its vapors are extremely flammable and explosive.
Fire or explosion can cause severe burns or death.

WHEN ADDING FUEL

- Turn engine OFF and let engine cool at least 2 minutes before removing gas cap.
- Fill fuel tank outdoors or in well-ventilated area.
- Do not overfill fuel tank.
- Keep gasoline away from sparks, open flames, pilot lights, heat, and other ignition sources.
- Check fuel lines, tank, cap, and fittings frequently for cracks or leaks. Replace if necessary.

WHEN STARTING ENGINE

- Make sure spark plug, muffler, fuel cap and air cleaner are in place.
- Do not crank engine with spark plug removed.
- If fuel spills, wait until it evaporates before starting engine.
- If engine floods, set choke to OPEN/RUN position, place throttle in FAST and crank until engine starts.

WHEN OPERATING EQUIPMENT

- Do not choke carburetor to stop engine.

WHEN TRANSPORTING EQUIPMENT

- Transport with fuel tank EMPTY.

WHEN STORING GASOLINE OR EQUIPMENT WITH FUEL IN TANK

- Store away from furnaces, stoves, water heaters or other appliances that have pilot light or other ignition source because they can ignite gasoline vapors.

WARNING

Starting engine creates sparking.
Sparking can ignite nearby flammable gases.
Explosion and fire could result.

- If there is natural or LP gas leakage in area, do not start engine.
- Do not use pressurized starting fluids because vapors are flammable.

WARNING

Rapid retraction of starter cord (kickback) will pull hand and arm toward engine faster than you can let go.
Broken bones, fractures, bruises or sprains could result.

- When starting engine, pull cord slowly until resistance is felt, then pull rapidly.
- Direct coupled equipment components such as, but not limited to, blades, impellers, pulleys, sprockets, etc., must be securely attached.

WARNING

Rotating parts can contact or entangle hands, feet, hair, clothing, or accessories.
Traumatic amputation or severe laceration can result.

- Operate equipment with guards in place.
- Keep hands and feet away from rotating parts.
- Tie up long hair and remove jewelry.
- Do not wear loose-fitting clothing, dangling drawstrings or items that could become caught.

WARNING

Engines give off carbon monoxide, an odorless, colorless, poison gas.
Breathing carbon monoxide can cause nausea, fainting or death.

- Start and run engine outdoors.
- Do not start or run engine in enclosed area, even if doors or windows are open.

WARNING

Running engines produce heat. Engine parts, especially muffler, become extremely hot.
Severe thermal burns can occur on contact.
Combustible debris, such as leaves, grass, brush, etc. can catch fire.

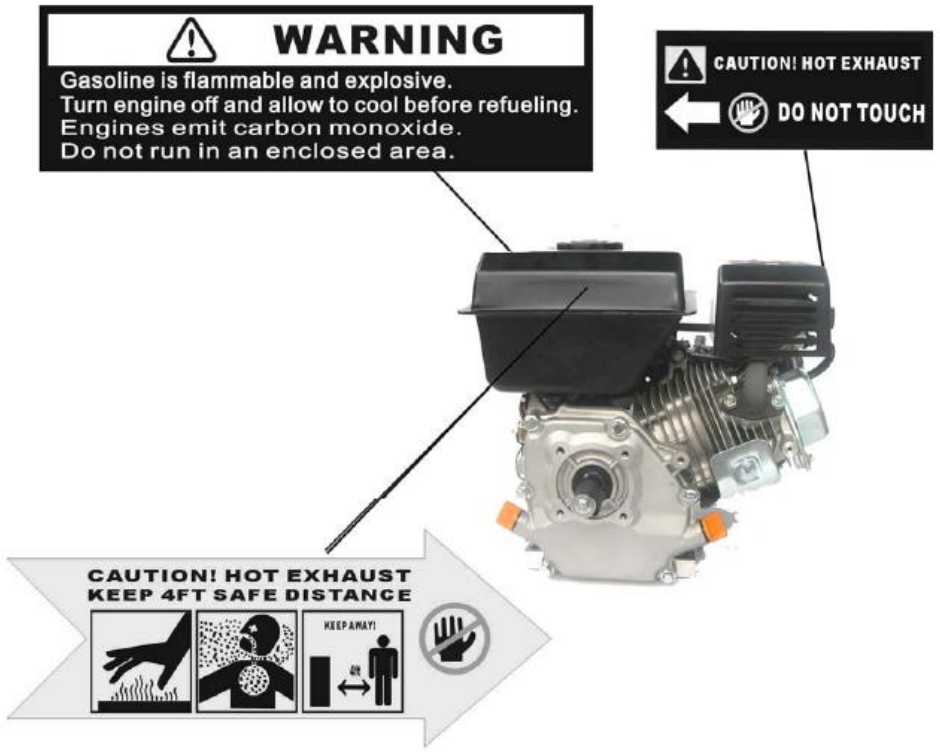
- Allow muffler, engine cylinder and fins to cool before touching.
- Remove accumulated debris from muffler area and cylinder area.
- Install and maintain in working order a spark arrester before using equipment on forest-covered, grass-covered, brush-covered unimproved land. The state of California requires this. Other states may have similar laws. Federal laws apply on federal land.

⚠ WARNING

Before operating the engine, be sure to read and familiarize yourself with the manual, otherwise personal injury or equipment damage may result.

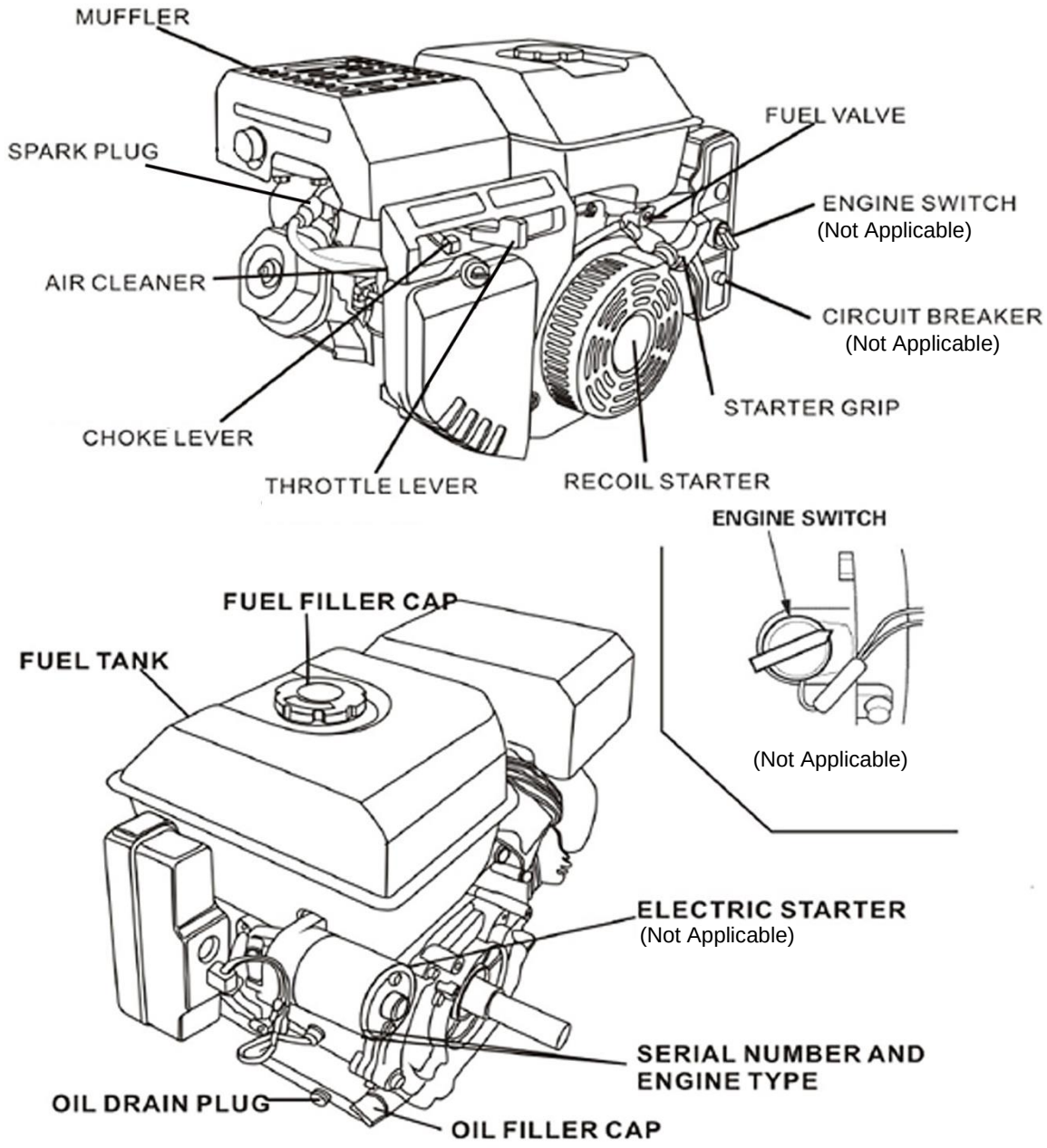
Pay special attention to the following:

1.) To prevent fire hazards and to provide adequate ventilation, keep engine at least 7 feet away from buildings and other equipment during operation. Do not place flammable objects close to the engine.
2.) Children and pets must be kept away from the area of operation due to a possibility of burns from hot engine components or injury from any equipment the engine may be used to operate.
3.) Know how to stop the engine quickly, and understand the operation of all controls. Never permit anyone to operate the engine without proper instructions.
4.) Gasoline is extremely flammable and is explosive under certain conditions.
5.) Refuel in a well-ventilated area with the engine stopped. Do not smoke or allow flames or sparks in the refueling area or where gasoline is stored.
6.) Do not overfill the fuel tank. After refueling, make sure the tank cap is closed properly and securely.
7.) Be careful not to spill fuel when refueling. Fuel vapor or spilled fuel may ignite. If any fuel is spilled, make sure the area is dry before starting the engine.
8.) Never run the engine in an enclosed or confined area. Exhaust contains poisonous carbon monoxide gas; exposure may cause loss of consciousness and may lead to death.
9.) The muffler becomes very hot during operation and remains hot for a while after stopping the engine. Be careful not to touch the muffler while it is hot. To avoid severe burns or fire hazards, let the engine cool before transporting or storing it indoors.



Parts Descriptions

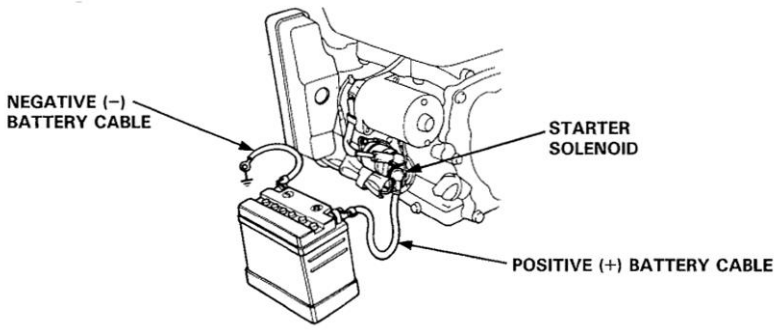
The main parts of engine are located as follows



Battery Connection (Electric-Star Type)

Use a 12 volt battery with an ampere-hour rating of at least 18AH.

1. Connect the battery positive (+) cable to the starter solenoid terminal, as show.
2. Connect the battery negative (-) cable to an engine mounting bolt, frame bolt, or other good engine ground connection.
3. Check the battery cable connections to be sure the cables are secured and free of corrosion. Remove any corrosion and coat the terminals and cable ends with grease.



⚠ WARNING

- The battery may give off explosive gas; keep sparks, flames, and cigarettes away. Charge or use it in an area with good ventilation.
- The battery contains sulfuric acid (electrolyte). Contact with skin or eyes may cause severe burns. Wear protective clothing and face shield.
- If electrolyte gets on your skin, flush with water.
- If electrolyte gets in your eyes, flush with water for at least 15 minutes and call a physician immediately.
- Electrolyte is poisonous. If swallowed, drink large quantities of water or milk and follow with milk of magnesia or vegetable oil and call a physician.
- KEEP OUT OF REACH OF CHILDREN.

⚠ CAUTION

- Be careful not to connect the battery in reverse polarity, as this will short circuit the battery charging system.

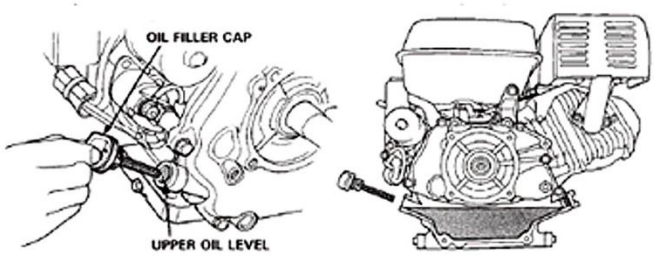
⚠ CAUTION

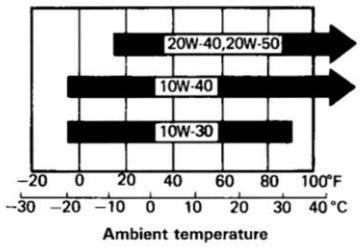
- Engine oil is a major factor affecting engine performance and service life. Non-detergent oils and vegetable oils are NOT recommended. Be sure to check the engine oil level on a level surface with the engine stopped.

1. Engine Oil

SAE-10W-30 is recommended for general, all temperature use. Other viscosities shown in the chart may be used when the average temperature in your area is within the indicated range.

1.) Ensure that the engine is stopped and on level ground.
2.) Remove the oil filler cap and wipe the dipstick clean.
3.) Insert the dipstick into the oil filler neck but do not screw it in.
4.) If the level is low, fill to top of the oil filler neck with the recommended oil.
5.) Reinstall the dipstick.





⚠ CAUTION

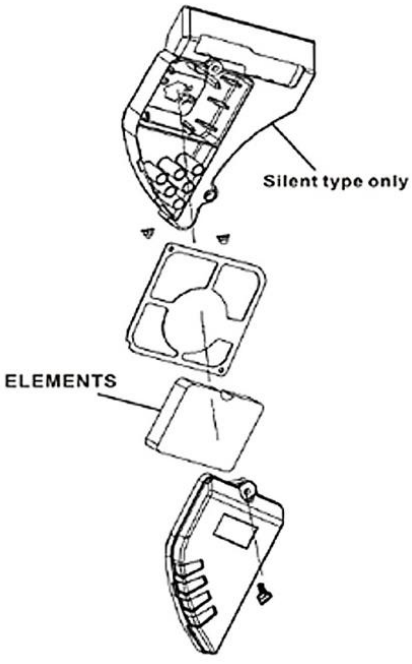
- Running the engine with insufficient oil can cause serious engine damage.

2. Air Cleaner

Dismantle the air cleaner housing and check its filter element, make sure it is clean and intact, otherwise clean or replace the filter.

⚠ CAUTION

- Never run the engine without the air cleaner. Rapid engine wear will result from contaminates, such as dust and dirt, being drawn through the carburetor and into the engine.

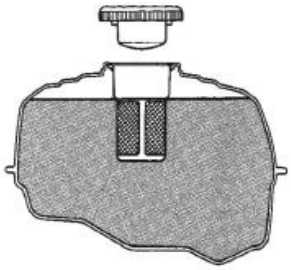


3. Fuel and Fuel Tank

Fuel

- Your engine is designed to use FRESH, UNLEADED GAS WITH AN OCTANE RATING OF 87 OR HIGHER.
- Unleaded gasoline is recommended because it produces fewer engine and spark plug deposits and extends the life of exhaust system components.
- Never use stale or contaminated gasoline or an oil/gasoline mixture. Avoid getting dirt, dust or water in the fuel tank.

1.) Remove the fuel filler cap and check fuel level.
2.) If the fuel level is too low, refuel the tank.
3.) Do not overfill.



Gasoline Containing Alcohol

If you decide to use gasoline containing alcohol (gasohol), be sure its octane rating is at least as high as that recommended by Powerhorse. There are two types of "gasohol". One contains ethanol, the other contains methanol.

⚠ WARNING

- Gasoline is extremely flammable and is explosive under certain conditions.
- Refuel in a well-ventilated area with the engine stopped. Do not smoke or allow flames or sprats in the area where the engine is refueled or where gasoline is stored.
- Do not overfill the fuel tank (there should be no fuel in the filler neck). After refueling, make sure the tank cap is closed properly and securely.
- Be careful not to spill fuel when refueling. Spilled fuel or fuel vapor may ignite. If any fuel is spilled, make sure the area is dry before starting the engine.
- Avoid repeated or prolonged contact with skin or breaking of vapor.
- KEEP OUT OF REACH OF CHILDREN.

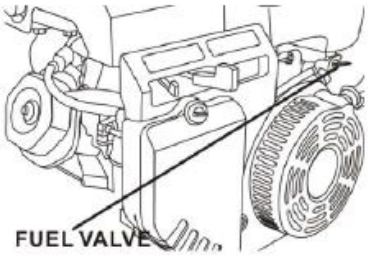
- DO NOT use gasohol that contains more than 10% ethanol.
- Do not use gasoline containing methanol (Methyl or Wood Alcohol) that does not also contain cosolvents and corrosion inhibitors for methanol.
- Never use gasoline containing more than 5% methanol, even if it has cosolvents and corrosion inhibitors.

If "spark knock" or "pinging" occurs at a steady engine speed under normal load, change brands of gasoline. If spark knock or pinging persists, consult an authorized Powerhorse dealer. If this continues, it could result in engine damage.

Fuel Tank Capacity: 208cc (3 Liters) (0.79 Gallons) 420cc (5 Liters) (1.32 Gallons)

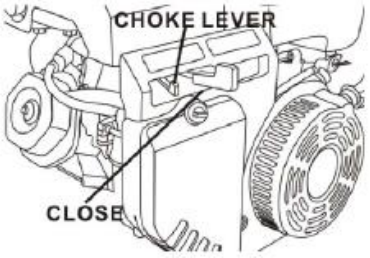
Starting the Engine

1. Push the fuel valve to the “ON” position.

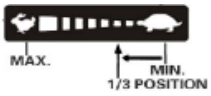


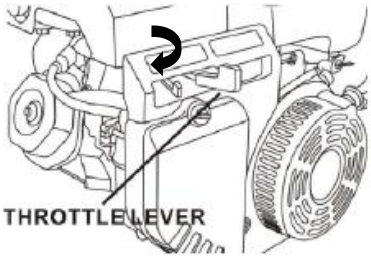
2. Move the Choke Lever to the “CLOSED” position.

Note: if the engine is hot, closing the choke is not necessary.



3. Move the throttle lever slightly to the left.





4. Start the engine.

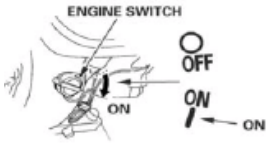
Recoil Start

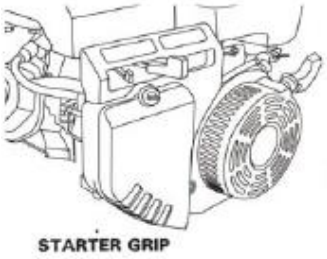
a. Turn engine switch to the “ON” position.

b. Pull the starter grip towards your shoulder, until you feel it catch, then pull briskly.

⚠ CAUTION

- Releasing the handle suddenly and allowing the starter grip to hit the engine may cause damage to the starter. Return it gently to prevent damage.

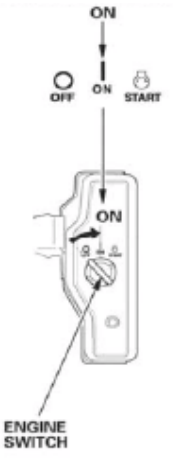




With Electric Start

a. Turn the engine switch to the “START” position and hold it until the engine starts.

b. Once engine starts, release the engine switch to “On”.



⚠ CAUTION

- Do not use the electric starter for more than 5 seconds or motor damage may occur. If the engine fails to start, release the switch and wait 10 seconds before operating the starter again.

Stopping the Engine

In emergency, push the engine switch to “OFF” to stall the engine; to stop it in normal, do so as follows:

1.) Push the throttle lever to the right.
2.) Turn the engine switch to the “OFF” position.
3.) Turn the fuel valve to the “OFF” position.

⚠ CAUTION

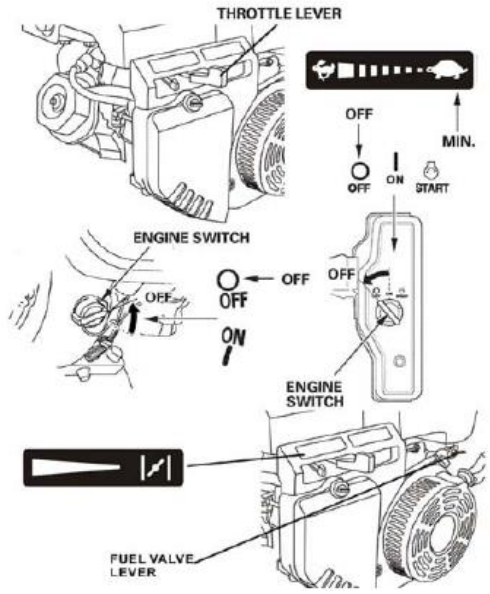
- Sudden stopping at high speed under heavy load is not recommended. Engine damage may result.

High Altitude Operation

At high altitude, the standard carburetor air-fuel mixture will be excessively rich. Performance will decrease, and fuel consumption will increase.

High altitude performance can be improved by installing a smaller diameter main fuel jet in the carburetor and re-adjusting the pilot screw. If you always operate the engine at altitudes high than 6,000 feet above sea level, have your Powerhorse dealer perform these carburetor modifications.

Even with suitable carburetor jetting, engine horsepower will decrease approximately 3.5% for each 1,000 foot increase in altitude. The effect of altitude on horsepower will be greater than this if no carburetor modifications are made.



⚠ CAUTION

- Operation of the engine at an altitude lower than the carburetor is jetted for, may result in reduced performance, overheating, and serious engine damage caused by excessively lean air/fuel mixture.

Exhaust Control System

While the engine is running, carbon monoxide, oxide of nitrogen and hydrocarbon will produce, and in certain conditions, oxide of nitrogen and hydrocarbon will react with each other chemically and create a toxic carbon monoxide.

1. Maintenance
   Maintain the engine periodically in accordance with the maintenance schedule. The maintenance schedule has been created based on normal use and normal conditions. If using heavy load, operating in dusty and wet conditions, or in extreme temperatures, service of the engine should be done more frequent.
2. Replacement of Parts
   It’s recommended that you should choose parts which are manufactured by Powerhorse. Using a lower standards or an incompatible part may impair the exhaust control system.

Exhaust Control System (cont'd)

3. Modifying
   Modifying the exhaust control system may affect the exhaust emissions to the point where it exceeds legal limits.
   Illegal modification such as:
   a.) Dismantling or modification of air intake or exhaust system.
   b.) Modification of takeoff speed-adjustment connection device or speed-adjustment device to result in the engines running beyond pre-set parameters.
4. Problems Affecting Exhaust Emissions
   a.) Difficult starting or difficult stopping.
   b.) Unstable idling.
   c.) Puffs of black smoke or excessive fuel consumption.
   d.) Poor ignition sparks or sparks returned.

Should you experience any of the problems listed above, please contact your Powerhorse dealer.

Maintenance

MAINTENANCE SCHEDULE

Frequency Item		Each Time	First Month of 20 Hrs	Each Season or 50 Hrs	Every 6 Months or 100 Hrs	Each Year or 300 Hrs
Engine Oil	Oil level check	✓				
	Replace		✓			
Air Cleaner	Check	✓				
	Clean			✓ ①	✓ ②*	
	Replace					✓ **
Sediment Cup	Clean				✓	
Spark Plug	Clean, Adjust				✓	
	Replace					✓
Spark Eliminator	Clean				✓	
Idling	Check, Adjust					✓ ②
Valve Clearance	Check, Adjust					✓ ②
Fuel Tank & Fuel Filter	Clean					✓ ②
Fuel Supply Line	Check	Every two years (do a replacement if necessary)				

* Only for inside-ventilated double core-carburetors.
** Only for paper core air cleaners. Every two years or 600 hours for dust collecting air cleaners.
① Service engine more frequent if used in dusty conditions.
② Should be done by your Powerhorse dealer, unless you are trained and equipped with the proper tools.

⚠ WARNING

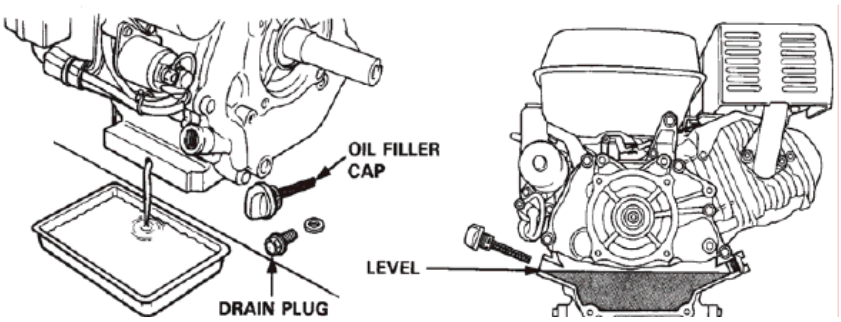
- Shut off the engine before performing any maintenance. If the engine must run, make sure the area is well ventilated. The exhaust contains poisonous carbon monoxide gas.

⚠ CAUTION

- Use replacement parts from a Powerhorse dealer or equivalent source; otherwise damage may result.

Change engine oil

While engine is still hot, drain all engine oil out from the crankcase.



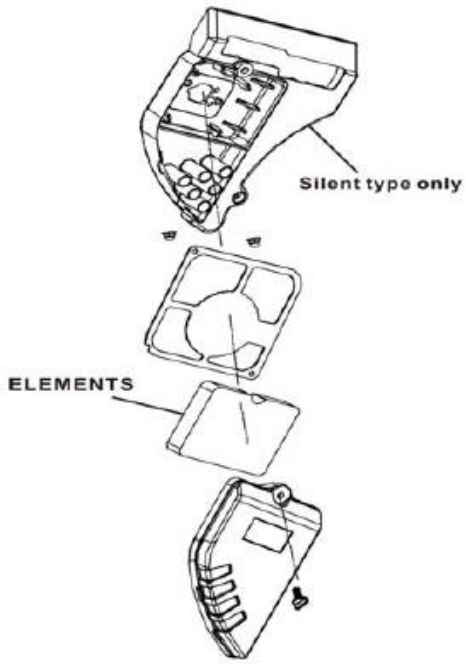
1.) Remove the oil filler cap and drain plug to drain oil
2.) Install the drain plug and tighten it securely.
3.) Refill with the recommended oil and check the oil level.
    208cc (.6 Liters/20 ounces)
    420cc (1.1 Liters/37 ounces)
4.) Install the oil filler cap.

Note: Please dispose of used motor oil in a manner that is compatible with the environment. Do not throw in trash or pour on the ground.

Air Filter

A dirty air cleaner may block air flowing into the carburetor. To keep the carburetor in good working condition, service the air filter periodically. If operating engine in a dusty environment, it should be cleaned frequently.

1.) Remove the wing nut and the air cleaner cover. Remove the element and separate them. Carefully check element for holes or tears and replace if damaged.
2.) Clean element with household detergents and warm water, rinse thoroughly. Allow element to dry completely.
3.) Soak element in clean engine oil and squeeze out the excess oil. Engine will smoke during initial start- up if too much oil is left on foam.
4.) Reinstall the filter element and air cleaner housing.

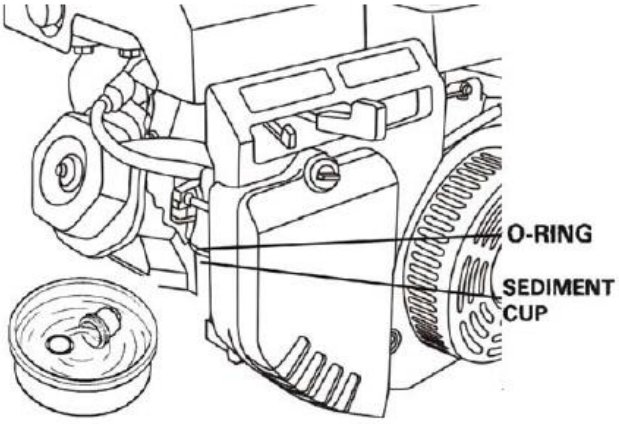


⚠ CAUTION

- Never run the engine without an air cleaner. Dirt and dust may enter the engine and cause it to ware.

Sediment Cup Cleaning

Turn the fuel valve to "OFF". Remove the sediment cup and o-ring and wash them in nonflammable or high flash point solvent. Dry them thoroughly and reinstall securely. Turn the fuel valve on and check for leaks.



Spark Plug

⚠ WARNING

- Gasoline is extremely flammable and is explosive under certain conditions. Do not smoke or allow flames or sparks in the area.
- If any fuel is spilled, make sure the area is dry before testing the spark plug or starting the engine. Fuel vapor or spilled fuel may ignite.

Recommended Spark Plug:

⚠ CAUTION

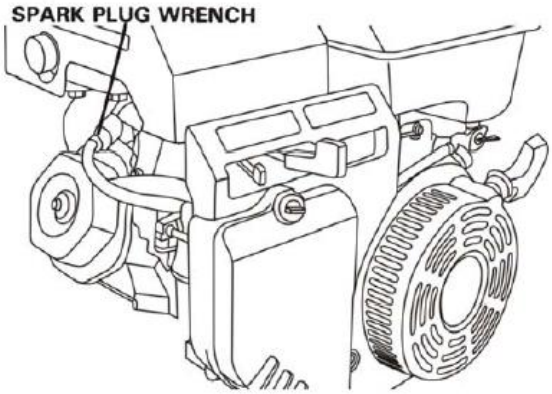
- Never use a spark plug of incorrect heat range.

⚠ WARNING

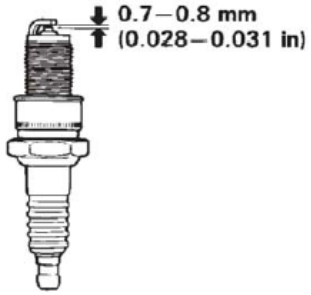
- If the engine has been running, the muffler will be very hot. Be careful not to touch the muffler.

To ensure the proper engine operation, the spark plug must be properly gapped and free of deposits.

1. Remove the spark plug cap and use a spark plug wrench to remove the plug.



2. Visually inspect the spark plug. Discard if the insulator is cracked or chipped. Clean the spark plug with a wire brush if it is to be reused.
3. Measure the plug gap with a feeler or gauge. The gap should be .07-.08mm (0.028-0.031 in). Correct as necessary by bending the side electrode.



4. Check that the spark plug washer is in good condition and thread the spark plug in by hand to prevent cross-threading. If spark plug is damaged, replace with a new one.
5. After the spark plug is seated, tighten with a spark plug wrench to compress the washer.

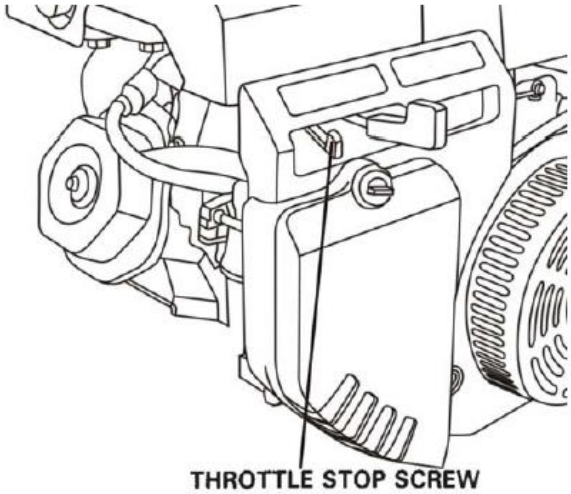
   NOTE: When installing a new spark plug, tighten ½ turn after the spark plug seats to compress the washer. When reinstalling a used spark plug, tighten 1/8-1/4 turn after the spark plug seats to compress the washer.

⚠ CAUTION

- The spark plug must be securely tightened. An improperly tightened spark plug can become very hot and may damage the engine.

Idling Adjustment

1. Start the engine and allow it to warm up to normal operating temperature.
2. With the engine idling, turn the pilot screw in or out to the setting that produces the highest idle rpm. Standard idling will be 1500 ± 150 rpm.



Transport, Storage, and Removal from Storage

Transport

Transport with the fuel vale turned to the “OFF” position. Only store the engine when it has cooled off to avoid fires or burns.

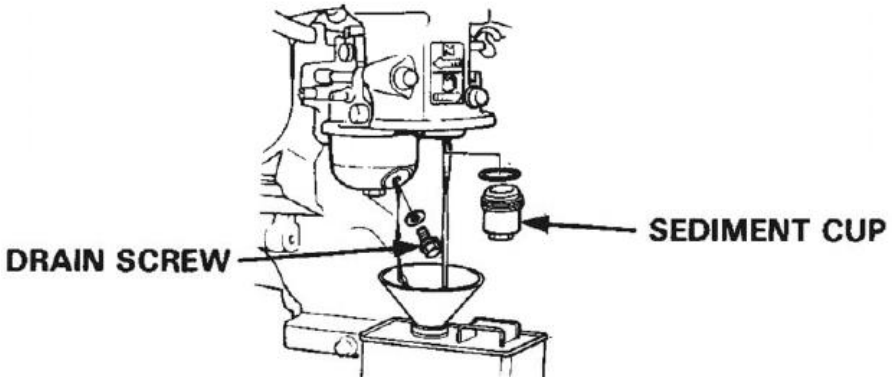
⚠ CAUTION

- Do not tilt engine, keep engine at a level position to prevent fuel spillage. Fuel vapor or spilled fuel may ignite.

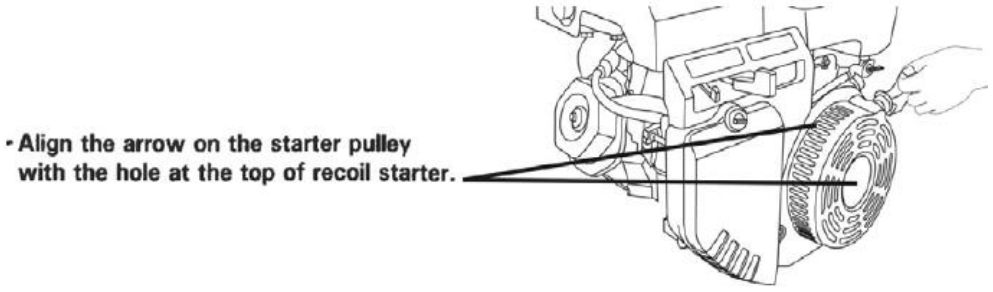
Storage Before Storing Engine

Before storing the unit for an extended period:

1. Be sure the storage area is free of excessive humidity and dust.
2. Drain the fuel.
    a. With the fuel valve in the “OFF” position, remove and empty the sediment cup.
    b. Turn the fuel valve to the “ON” position and drain the gasoline from the fuel tank into a suitable container.
    c. Replace the sediment cup and tighten securely.
    d. Draing the carburetor by loosening the drain screw. Drain the gasoline into a suitable container.



3. Change the engine oil.
4. Remove the spark plug and pour about a tablespoon of clean engine oil into the cylinder. Crank the engine several revolutions to distribute the oil, then reinstall the spark plug.
5. Pull the starter rope slowly until resistance is felt. Continue pulling until the notch on the starter pully aligns with the hole on the recoil starter. See illustration below. At this point, the intake and exhaust valves are closed, and this will help to protect the engine from internal corrosion.



6. Electric starter type: Remove the battery and store it in a cool, dry place. Recharge it once a month.
7. Cover the engine to keep out dust.

Transport, Storage, and Removal from Storage (cont'd)

Removing From Storage

Before reusing, service the engine.

STORAGE TIME	SERVICE
1-2 Months	• Drain out any old fuel in tank and refuel with fresh gasoline.
2 Months +	• Drain out any old fuel in tank and refuel with fresh gasoline. • Drain fuel from carburetor. • Empty sediment cup.

Note: Please dispose of fuel in a manner that is compatible with the environment. Do not throw in trash or pour on the ground.

⚠ WARNING

- Fuel is extremely flammable and explosive under certain conditions. Keep cigarette, open flames and sparks away from operating site.

Engine Specifications

	Powerhorse 208cc	Powerhorse 420cc
Engine Type	4-Stroke, OHV, Single Cyl., Forced Air Cooled	4-Stroke, OHV, Single Cyl., Forced Air Cooled
Bore x Stroke (mm)	70 x 54	90 x 66
Rated Power (kW/rpm)	4.2/3600	8.5/3600
Max Torque	13.2	28.5
Displacement (ml)	208	420
Starting Type	Recoil	Recoil
Ignition Type	Induction Ignition	Induction Ignition
Lubricating Type	Splashing	Splashing
Dry Weight	35.3 lbs	64 lbs
Dimension (L x W x H)	16.54 x 14.96 x 15.75	18.9 x 16.93 x 19.69

Tune-up Specifications

Model	208cc & 420cc
Spark Plug Gap	0.7~0.8mm (0.028~0.03in)
Spark Plug Torque	18~22N.m
Intake Valve Clearance	0.08~0.12mm (0.003~0.005in)
Exhaust Valve Clearance	0.13~0.18mm (0.005~0.007in)

Troubleshooting

Trouble	Cause	Remedy
Engine will not start using recoil starter.	1. Is the engine switch in the "ON" position? 2. Is the fuel valve "ON"? 3. Is there fuel in the fuel tank? 4. Is gasoline reaching the carburetor? 5. Is there spark at the plug?	1. See "Starting Engine" Section. 2. See "Starting Engine" Section. 3. See "Pre-Operating Instructions." 4. To check, loosen the drain screw with the fuel valve on. See "Storage" Section for instructions. 5. Remove the spark plug cap, clean, then remove spark plug. Install plug in cap, turn engine switch to "ON" position. Ground the side electrode to any engine ground, and pull the recoil starter to see if sparks jump across the gap. If nto spark, replace plug. If OK, reinstall spark plug and try to start engine again.
Engine will not start using electric starter.	1. Are the battery cables securely connected and free of corrosion? 2. Is the battery fully charged?	1. See "Battery Connection" Section. 2. Charge battery.
Engine shut down while running.	1. Engine out of fuel? 2. Is the carburetor clogged? 3. Is the spark plug bad?	1. Refuel. 2. See "Maintenance" Section. 3. See "Maintenance" Section.
Abnormal Noise or Pinging	1. Does the fuel have an octane rating of 87 or higher?	1. Change brands of fuel.

CALIFORNIA EMISSIONS CONTROL WARRANTY STATEMENT

YOUR WARRANTY RIGHTS AND OBLIGATIONS

The California Air Resources Board and Northern Tool & Equipment Company, Inc., Ltd. are pleased to explain the emissions control system warranty on your 2014 and later small off-road engine (SORE). In California, new SOREs must be designed, built and equipped to meet the State's stringent anti-smog standards. Northern Tool & Equipment Company, Inc. must warrant the emissions control system on your SOREs for the periods of time listed below provided there has been no abuse, neglect or improper maintenance of your SOREs

Your emission control system may include parts such as the carburetor, fuel tanks, fuel caps, fuel lines, the ignition system, and catalytic converter. Also included may be hoses, belts, clamps, connectors and other emission-related assemblies.

Where a warrantable condition exists, Northern Tool & Equipment Company, Inc. will repair your small off-road engine at no cost to you including diagnosis, parts and labor.

MANUFACTURER'S WARRANTY COVERAGE:

The emissions control system is warranted for two years. If any emissions-related part on your engine is defective, the part will be repaired or replaced by Northern Tool & Equipment Company, Inc.

OWNER'S WARRANTY RESPONSIBILITIES:

-As the SORE owner, you are responsible for the performance of the required maintenance listed in your owner's manual. Northern Tool & Equipment Company, Inc. recommends that you retain all receipts covering maintenance on your SORE, but Northern Tool & Equipment Company, Inc. can not deny warranty solely for the lack of receipts or for your failure to ensure the performance of all scheduled maintenance.

-As the SORE owner, you should however be aware that Northern Tool & Equipment Company, Inc. may deny your warranty coverage if your SORE or a part has failed due to abuse, neglect, improper maintenance or unapproved modifications.

-You are responsible for presenting your SORE to distribution center or service center authorized by Northern Tool & Equipment Company, Inc. as soon as the problem exists. The warranty repairs should be completed in a reasonable amount of time, not to exceed 30 days.

If you have any questions regarding your warranty coverage, you should contact Northern Tool & Equipment Company, Inc.:

Tell: 1-866-443-2576, or visit: www.northerntool.com.

DEFECTS WARRANTY COVERAGE

Adopted by the Air Resources Board, Northern Tool & Equipment Company, Inc. warrants to the ultimate purchaser and each subsequent purchaser that the small off-road engine (SORE) (1) has been designed, built and equipped so as to conform with all applicable regulations; and (2) is free from defects in materials and workmanship that cause the failure

of a warranted part to conform with those regulations as may be applicable to the terms and conditions stated below

(a)The warranty period begins on the date the engine is delivered to an ultimate purchaser or first placed into service. The warranty period is two years.

(b)Subject to certain conditions and exclusions as stated below, the warranty on emissions related parts is as follows:

(1)Any warranted part that is not scheduled for replacement as required maintenance in your ***Owner's Manual*** is warranted for the warranty period stated above. If the part fails during the period of warranty coverage, the part will be repaired or replaced by Northern Tool & Equipment Company, Inc. according to Subsection (4) below. Any such part repaired or replaced under warranty will be warranted for the remainder of the period.

(2)Any warranted part that is scheduled only for regular inspection in your ***Owner's Manual*** is warranted for the warranty period stated above. Any such part repaired or replaced under warranty will be warranted for the remaining warranty period.

(3) Any warranted part that is scheduled for replacement as required maintenance in your ***Owner's Manual*** is warranted for the period of time before the first scheduled replacement date for that part. If the part fails before the first scheduled replacement, the part will be repaired or replaced by Northern Tool & Equipment Company, Inc. according to Subsection (4) below. Any such part repaired or replaced under warranty will be warranted for the remainder of the period prior to the first scheduled replacement point for the part.

(4)Repair or replacement of any warranted part under the warranty provisions herein must be performed at a warranty station at no charge to the owner.

(5)Notwithstanding the provisions herein, warranty services or repair will be provided at all of our distribution centers that are franchised to service the subject engines.

(6) The engine owner must not be charged for diagnostic labor that leads to the determination that a warranted part is in fact defective, provided that such diagnostic work is performed at a warranty station.

(7) Northern Tool & Equipment Company, Inc. is liable for damages to other engine components proximately caused by a failure under warranty of any warranted part.

(8)Throughout the engine warranty period stated above, Northern Tool & Equipment Company, Inc. will maintain a supply of warranted parts sufficient to meet the expected demand for such parts.

(9) Any replacement part may be used in the performance of any warranty maintenance or repairs and must be provided without charge to the owner. Such use will not reduce the warranty obligations of Northern Tool & Equipment Company, Inc.

(10)Add-on or modified parts that are not exempted by the Air Resources Board may not be used. The use of any non-exempted add-on or modified parts by the ultimate purchaser will be grounds for disallowing a warranty claims. Northern Tool & Equipment Company, Inc. will not be liable to warrant failures of warranted parts caused by the use of a non-exempted add-on or modified part.

(11)The manufacturer issuing the warranty shall provide any documents that describe that

manufacturer's warranty procedures or policies within five working days of request by the Air Resources Board.

EMISSION WARRANTY PARTS LIST

The repair or replacement of any warranted part otherwise eligible for warranty coverage may be excluded from such warranty coverage if Northern Tool & Equipment Company, Inc. demonstrates that the engine has been abused, neglected, or improperly maintained, and that such abuse, neglect, or improper maintenance was the direct cause of the need for repair or replacement of the part. That notwithstanding, any adjustment of a component that has a factory installed, and properly operating, adjustment limiting device is still eligible for warranty coverage. The following emissions warranty parts for each engine family list is covered.

For engine families: ECDPS.1401GB, EDCDPS.2081DJ, ECDPS.1961DJ and ECDPS.4202DJ:

(1)Fuel Metering System:

(a)Gasoline carburetor assembly and its internal components

(b)Carburetor gaskets

(c) Fuel tank

(f) Fuel Line

(g) Fuel Line Fittings

(h) Clamps

(2) Air Induction System including:

(a)Intake pipe/manifold

(b)Air cleaner

(3)Ignition System including:

(a)Spark plug

(b)Ignition coil

(4)Catalytic Muffler Assembly including:

(a)Muffler gasket

(b)Exhaust manifold

(c)Catalytic

(5)Crankcase Breather Assembly including:

(a) Breather connection tube.

(6) Fuel tank evaporative emissions control system including:

(a) Purge Valves

(b) Carbon Canister

(c) Canister Mounting Brackets

(d) Fuel Cap

(7)Miscellaneous items Used in Above Systems including:

(a) Switches

(b) Hoses, belts, connectors, and assemblies

(8)Air injection system

(a) Pulse valve

The warranty is provided in accordance with the "California Emission Control Warranty Statement".

Limited Warranty

Dear Valued Customer:

The Powerhorse Product you just purchased is built with the finest material and craftsmanship. Use this product properly and enjoy the benefits from its high performance. By purchasing a Powerhorse product, you show a desire for quality and durability. Like all mechanical equipment this unit requires a due amount of care. Treat this unit like the high quality piece of machinery it is. Neglect and improper handling may impair its performance. Please thoroughly read the instructions and understand the operation before using your product. Always contact Powerhorse Product Support at 1-866-443-2576 prior to having any service or warranty work performed, as some services performed by parties other than Powerhorse approved service centers may void this warranty. This warranty is in lieu of any other warranty expressed or implied and Powerhorse assumes no other responsibility or liability outside that expressed within this warranty.

Limited Warranty

Powerhorse shall warranty any piece of equipment manufactured, or parts of equipment manufactured, to be free from defects in material or workmanship for a period of:

Powerhorse Warranty		
Item #	**Consumer Warranty Period**	**Commercial Warranty Period**
1175, 1169	3 years from date of purchase by user	N/A

Powerhorse Engine Warranty		
Item #	**Consumer Warranty Period**	**Commercial Warranty Period**
1175, 1169	2 years from date of purchase by user	N/A

"Consumer use" means personal residential household use by a consumer. "Commercial use" means all other uses, including use for commercial, income producing or rental purposes or when purchased by a business.

This warranty applies to the original purchaser of the equipment (verification of purchase, in the form of a receipt, is the responsibility of the buyer), is non-transferable, and covers parts and labor. Parts will be replaced or repaired at no charge, except when the equipment has failed due to lack of proper maintenance. If a part is no longer available, the part may be replaced with a similar part of equal function. Any misuse, abuse, alteration or improper installation or operations will void warranty. Determining whether a part is to be replaced or repaired is the sole decision of Powerhorse. Powerhorse will not provide for replacement of complete products due to defective parts. Any costs incurred due to replacement or repair of items outside of a Powerhorse approved facility is the responsibility of the buyer and not covered under warranty. Transportation costs to and from service center is the responsibility of the customer.

In addition to the normal warranty, Powerhorse shall warrant any normal wear item from defects in material or workmanship for a period of 90 days from the date of purchase by user. Normal wear items include, but are not limited to, tires and filter elements.

This warranty specifically excludes the following; failure of parts due to damage caused by accident, fire, flood, windstorm, acts of God, applications not approved by Powerhorse in writing, corrosion caused by chemicals, use of replacement parts which do not conform to manufacturer's specifications, damage related to rodent and/or insect infestation and damage caused by vandalism. Additional exclusions: loss of running time, inconvenience, loss of income, or loss of use, including any implied warranty of merchantability of fitness for a specific use. Also, Outdoor Power Equipment needs periodic parts and service to perform well, and this warranty does not cover instances when normal use has exhausted the life of a component or the engine.

This warranty does not cover any personal injury or damage to surrounding property caused by failure of any part. Repair or replacement of parts does not extend the warranty period.

The engine warranty is covered under the same terms and conditions as outlined above. Normal engine maintenance such as spark plugs, air filters, adjustments, fuel system cleaning and obstruction due to build up is not covered by this Powerhorse warranty.

Please fill in the following information and have it on hand when you call in on a warranty claim.

Customer Number: _____

Date of Purchase: _____

Powerhorse Serial Number: _____

Item Number: _____

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Manufactured by
Northern Tool + Equipment Co.,
2800 SouthCross Drive West
P.O. Box 1499 Burnsville, MN 55337-0499