# BILT HARD®

Using tips: Video on Youtube

# **20TON LOG SPLITTER**



## **Instruction & Assembly**

#### SAVE THESE INSTRUCTIONS FOR FUTURE REFERENCE

Customer Support (888) 680-2849 inquiry@bilthardusa.com

Packing details for BILT HATD 20TON LOG SPLITTER			
CARTON		INCLUDE	
CARTON 1/3	TLA-0109	BEAM ASSEMBLY X 1 STAND ASSEMBLY X 1 LOG CRADLE X 2 OIL INLET HYDRAULIC HOSE X 1 MANUAL X 1	
CARTON 2/3	TLA-0110	OIL TANK ASSEMBLY X 1 ENGINE & MANUAL X 1 TIRE ASSEMBLY X 2 0.9L HYDRAULIC OIL X 1 0.6L ENGINE OIL X 1	
CARTON 3/3	TLA-0111	HYDRAULIC CYLINDER X 1 HARDWARE PACK X 1	



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#### READ and UNDERSTAND this manual completely before using 20 Ton Log Splitter.

Operator must read and understand all safety and warning information, operating instructions, maintenance and storage instructions before operating this equipment. Failure to properly operate and maintain the log splitter could result in serious injury to the operator or bystanders.

#### **Operation Warnings**

- Do not carry passengers, sit or stand on the log splitter at any time.
- Do not allow children to play on, stand upon or climb on the log splitter.
- Always inspect the log splitter before using to assure it is in good working condition.
- Replace or repair damaged or worn parts immediately.
- Always check and tighten hardware and assembled parts before operation.
- Do not exceed equipment maximum load capacity of 20 tons.
- Avoid large holes and ditches when towing the equipment.
- Always operate the log splitter on clear and level ground.
- Do not operate the log splitter at night, only during daylight hours.
- Always slow down when towing over rough terrain, streams, ditches and hillsides.
- To avoid personal injury and/or equipment damage DO NOT EXCEED 25 MPH.
- Always refer to the vehicle owner's manual for proper towing.
- Always secure and lock the log splitter to the vehicle hitch before towing.

#### Crush and Cut Hazards

- Always keep hands and feet clear from moving parts while operating the equipment.
- Always clear and keep work area clean and free of debris when operating.
- Always wear safety gear, eye protection, gloves and work boots when operating the log splitter.

#### WARNING

The warnings, cautions, and instructions outlined in this instruction manual cannot cover all possible conditions or situations that may occur. It must be understood by the operator that common sense and caution are factors which cannot be built into this product and must be supplied by the operator.

#### PROP 65 WARNING

This product can expose you to chemicals including lead and lead compounds which are known to the State of California to cause cancer and birth defects or other reproductive harm. For more information, go to <u>www.P65Warnings.ca.gov</u>

#### Assembly Is Required

This product requires assembly before use. See "Assembly" section for instructions. Because of the weight and/or size of the log splitter, it is recommended that another adult be present to assist with the assembly. **INSPECT ALL COMPONENTS** closely upon receipt to make sure no components are missing or damaged.

# **Hazard Signal Word Definitions**



## ABOUT YOUR 20 TON LOG SPLITTER

This hydraulic log splitter has a heavy-duty steel construction and 20 tons of ram force. When there's work to be done, you need outdoor power equipment you can rely on, this log splitter will get the job done fast. It is designed to work in horizontal position only. It is easy to tow, easy to use and maintain. Never exceed the rated capacity of 20 tons when operating the log splitter.

Technical specifications on the log splitter are provided in the "Specifications" section of this manual.

## **Controls and Features Identification**

Read this owner's manual before operating the equipment. Familiarize yourself with the location and function of the controls and features. Save this manual for future reference.



- 1) Support Leg Assembly
- 2) Wedge
- 3) Push Plate
- 4) Tire / Wheel Assembly
- 5) Oil Return Hydraulic Hose
- 6) Hydraulic Cylinder
- 7) Oil Inlet Hydraulic Hose
- 8) Control Valve
- 9) Engine
- 10) Log Cradle
- 11) Beam

#### WARNING

Read and follow all instructions for assembly and operation. Failure to properly assemble this equipment could result in serious injury to the user or bystanders, or cause equipment damage.



#### Engine Shipped Without Oil.

Before starting engine, fill with SAE 10W-30 motor oil. See engine manual for engine oil capacity.

**Hydraulic Reservoir is Shipped Without Oil.** When adding oil verify the oil level using the Oil filter/Dip Stick on the top of hydraulic reservoir if marking is not shown fill to the L line.

**Inspect all Log Splitter Components.** If you have damaged components: Contact the freight company that delivered the log splitter and file a claim.

## 20 TON LOG SPLITTER ASSEMBLY

Set the shipping crate on a solid flat surface and carefully remove the lid. Use one people and take all parts out of the shipping crate and inspect the components to ensure there are no missing pieces before starting to assemble the log splitter follow steps 1 through 9.

#### **TOOLS REQUIRED**

- Rubber or Wooden Hammer
- 13 mm,17 mm and 19 mm Wrenches
- Large Adjustable Wrench
- Phillips or Standard Screwdriver
- Pliers

## **Assembly Instructions**

## **STEP 1: Wheel Assembly**

 Attach the wheels (#40) to the hydraulic reservoir axle secure using flat washer Ø16 (#41), thin hex slotted nut M16 (#42). After making sure that the wheel can rotate smoothly, insert cotter pin Ø4x30 (#43).



## STEP 2: Attach the Support Leg and Beam

- 1. Attach the support leg to the front of beam by using hex bolt M10x90 (#32), flat washer Ø10 (#23), and nylon lock nut M10 (#28). Then insert the lock pin (#33).
- Attach the beam assembly to the hydraulic reservoir assembly by using hex bolt M10x30 (#38), flat washer Ø10 (#23), and nylon lock nut M10 (#28). Tighten the bolts.



# STEP 3: Attach the Cylinder, Push Plate, Cylinder Cover and Hydraulic Hose

- 1. Remove the valve handle fix pin from valve and reinstall with handle in vertical position.
- Remove the hex bolt M8x20 (#14), lock washer Ø8 (#15), and flat washer Ø8 (#16) from the cylinder cover (#13). Remove the cylinder cover (#13). Attach the cylinder to the card slot of beam, then connect the push plate (#17) to the piston rod of cylinder using hex bolt M12x80 (#18) and nylon lock nut M12 (#19). Tighten the bolt and nut.
- 3. Attach the cylinder cover (#13) to the beam using hex bolt M8x20 (#14), lock washer Ø8 (#15), and flat washer Ø8 (#16).
- 4. Put the O Ring 17x2.5 (#29) to the oil return port on hydraulic reservoir, attach the hydraulic hose (#30) to the oil return port hydraulic reservoir and tighten.



## STEP 4: Attach the Engine and Hydraulic Hose

- 1. Attach the engine assembly to the engine plate on hydraulic reservoir secure with hex bolt M8x40 (#55), lock washer Ø8 (#15), flat washer Ø8 (#16), and nylon lock nut M8 (#56). Tighten the bolts.
- 2. Attach the clear oil pipe (#52) to the oil filter mounting plate of hydraulic reservoir and inlet port of gear pump (#70), tighten with two clamps (#51).
- 3. Put the O Ring 11x2.5 (#4) on the pump outlet connector (#69), tighten the hydraulic hose (#5) to the pump outlet connector.



## STEP 5: Attach the Log Cradle

1. Attach the log cradle (#26) to the sides of beam by using hex bolt M10x25 (#27), flat washer Ø10 (#23), and nylon lock nut M10 (#28). Tighten the bolts.



## STEP 6: Add Engine Oil

- 1. Make sure the log splitter is on a level surface.
- 2. Remove oil fill cap/dipstick to add oil.
- 3. Refer to the separate owner's engine manual for the amount needed of SAE10W-30 engine oil; replace oil fill cap/dipstick.
- 4. Check engine oil level daily and add as needed.

#### NOTE: During the break-in period check the engine oil level often.

#### CAUTION

DO NOT attempt to crank or start the engine before it has been properly filled with the recommended type and amount of oil. Damage to the log splitter as a result of failure to follow these instructions will void your warranty.

## STEP 7: Add Hydraulic Oil

- 1. The log splitter needs to be **cold** on a flat level surface before adding the hydraulic oil.
- 2. Remove the plastic plug from the hydraulic reservoir.
- Add 2.5 gallons of hydraulic oil AW32, AW46 & universal hydraulic oil are all acceptable types of fluid. Automatic transmission fluid should be used when operating in temperatures below 32 degrees (all units are tested and have excess oil in the ram).
- 4. Check the hydraulic oil level.
- 5. Start engine and use the control lever to extend and retract wedge several times to remove air from the lines.
- 6. With the wedge retracted, check hydraulic oil level again and fill if necessary.
- 7. Do not thread in the dipstick when checking the hydraulic oil level. The hydraulic oil should be checked when the machine is cold and level. The oil should be kept above the "COLD" line. Never fill the oil level above the "HOT" line when the unit is cold. This will result in oil being expelled through the vent on the dipstick.
- 8. Tighten the oil bolt (#53). Plastic plug can be discarded.



#### WARNING

DO NOT remove the hydraulic oil fill cap when the engine is running or hot. Hot oil can escape, causing severe burns. Always allow the log splitter to cool completely before removing the hydraulic oil cap.

High fluid pressure and temperatures are created in the hydraulic log splitters. Hydraulic fluid will escape through a pin-size hole opening and 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.** Make sure all fittings are tight and secure before applying pressure. Relieve system pressure before

servicing. Make sure the hydraulic hoses do not touch any hot surfaces or cutting areas.

Hoses need to be positioned were they are clear from the engine and cutting wedge. To avoid serious bodily injury always inspect the hoses before operating the log splitter.

## STEP 8: Add Gasoline to the Engine

- 1. Use only clean, fresh, regular unleaded fuel with a minimum 87 octane rating.
- 2. DO NOT mix oil with fuel.
- 3. Remove the fuel cap, and slowly add fuel to the tank. DO NOT overfill, allow approximately ¼ inch of space for fuel expansion.
- 4. Screw on the fuel cap and wipe away any spilled fuel.

## DANGER

Log splitter engine exhaust contains carbon monoxide, a colorless, odorless, poison gas. Breathing carbon monoxide will cause nausea, dizziness, fainting or death. If you start to feel dizzy or weak, get to fresh air immediately.

Operate log splitter outdoors only in a well-ventilated area.

DO NOT operate the log splitter inside any building, enclosure or compartment.

DO NOT allow exhaust fumes to enter a confined area through windows, doors, vents or other openings.

DANGER CARBON MONOXIDE, using a log splitter indoors CAN KILL YOU IN MINUTES.

### CAUTION

Fuel and fuel vapors are highly flammable and extremely explosive.

Fire or explosion can cause severe burns or death.

Unintentional startup can result in entanglement, traumatic amputation or laceration.

Only use regular unleaded gasoline with a minimum 87 octane rating.

DO NOT mix oil and gasoline together.

Fill tank approximately <sup>1</sup>/<sub>4</sub>" below the top of the tank to allow for fuel expansion.

DO NOT fill fuel tank indoors or when the engine is running or hot.

DO NOT light cigarettes or smoke when filling the fuel tank.

## **STEP 9: Towing the Log Splitter**

- 1. Pull out the R pin and lock pin, hold the handle and lower the log splitter to the ground, then insert the lock pin into the other hole as shown in the following figure.
- 2. Hang the hitch on the trailer, pull out the hitch pin to adjust the position, put in the bushing then insert the hitch pin and R pin.



## **Operation Instructions**

### WARNING

Before operating or using the log splitter, review the instructions below and all safety information. Failure to follow these instructions may result in property damage or injury to the operator or bystanders.

## WARNING

**ALWAYS** use the log splitter for its intended use.

ONLY use the log splitter to split wood logs, length wise with the grain.

**NEVER** modify, alter or change the log splitter in anyway, modifications will void the warranty. **NEVER** attach a rope, cable or other device to the control lever on the log splitter.

**ONLY** operate the log splitter in daylight.

**NEVER** leave the log splitter unattended while the engine is running.

**DO NOT** change the splitting position with the engine running. Contact with the muffler can cause serious burns.

ALWAYS make sure the beam is in the locked position.

**DO NOT** let the beam drop as it could crush fingers or cause damage to the log splitter.

**NEVER** operate or let anyone else operate the log splitter while under the influence of alcohol, drugs, or medication.

#### USING YOUR LOG SPLITTER

- 1. DO NOT carry passengers, sit or stand on the log splitter at any time.
- 2. Check the hydraulic oil level and visually inspect all hoses and attachments for problems.
- 3. Inspect the engine and make sure the engine oil level is correct.
- 4. Before towing the log splitter the tires need to be fully inflated.

#### TIRE WARNING

DO NOT over inflate tires. Serious injury can result if tires explode. DO NOT tow the log splitter if the tires are worn or will not hold air. DO NOT exceed the maximum 25 MPH towing speed.

5. Refer to the vehicle owner's manual for proper safety and towing instructions.

#### TOWING WARNING

Serious injury or death can occur if towing safety rules are not followed. Always use safety chains, secure and lock the log splitter to the vehicle hitch before moving. Drive safely. Be aware of the added length of the log splitter. Never exceed the maximum travel speed of 25 mph. Never ride or transport cargo on the log splitter. Turn off the vehicle before leaving the log splitter unattended.

Block the log splitter wheels to prevent unintended movement.

6. The log splitter must have at least seven feet of clearance from combustible material. It needs to be on a dry and level surface with good footing. Do not work on mud, ice, brush or snow. When using the log splitter the work zone must be maintained at all times.



#### NOTE: Serious accidents can happen when other people are allowed inside the work zone. Keep everyone else outside the work zone while operating the control lever.

- 7. Always wear safety gear, eye protection, gloves and work boots when operating the log splitter
- 8. Start the engine and make sure the log splitter is on level ground before operating.

# NOTE: The hydraulic oil needs to be above 10°F (-12C°) before starting the engine. Cold hydraulic oil can damage the hydraulic pump. If outdoor air temperature is below 32°F (0C°) allow the log splitter to warm up by extending and returning the wedge several times before splitting wood.

- 9. Put support leg in the down position to prevent the log splitter from moving during operation and block both tires.
- 10. Set the log splitter in horizontal position.
- 11. Load a log onto the beam against the wedge (Max Log Length-21")
- 12. Make sure hands are clear from the wedge and crush hazard areas.

### CRUSH WARNING

Wedge can cut through skin and break bones. Keep both hands away from wedge and beam slide. Serious accidents can happen when other people are allowed inside the work zone. Keep everyone else out of the work zone while operating control lever.

DO NOT wear loose clothing. It can get tangled in moving parts of log splitter.

Only use the log splitter in daylight so you can see what you are doing.

- 13. Push control lever FORWARD by one hand to split the log.
- 14. Push control lever BACKWARD by one hand to return push plate to its original position.

## CAUTION

If a log gets stuck, embedded or will not split completely, push the control lever in the reverse direction and allow the splitter to strip the log from the wedge.

If the log still remains stuck, embedded or will not split, turn the machine off and use a sledge hammer and crow bar to remove the log.

ALWAYS keep hands clear of the log and wedge while it is retracting.

15. Always keep work zone clean and free of split wood and debris.

## Maintenance and Storage

#### WARNING

Improper maintenance and storage of the log splitter may void your warranty.

#### MAINTENANCE

- Before performing maintenance, the log splitter must be placed in maintenance mode. Turn off the engine and move the control lever forward and backwards to relieve the hydraulic pressure.
- After performing any maintenance, make sure all guards, shields and safety features are put back in place before operating the log splitter.
- Before operating make sure the tires have the **RECOMMENDED TIRE PRESSURE**.
- Regularly grease axle and wheel bearing area or when needed.
- After the wheel bearings have been greased make sure the axle nuts and pins are in place and secure.
- Periodically check all fasteners and hoses for tightness and leaks.
- Annually clean and lightly lubricate all moving parts or when needed.
- Use a glossy enamel spray paint to touch up scratched or worn painted metal surfaces.
- Never exceed load capacity rating of 20 tons it will damage the log splitter.

What	When	How
Hoses	Each Use	Inspect hoses for exposed wire mesh and leaks. Replace all worn or damaged hoses before starting the engine.
Hydraulic Fittings	Each Use	Inspect fittings for cracks and leaks. Replace all damaged fittings before starting the engine.
Nuts and Bolts	Each Use	Check for loose bolts, tighten before operating.
Beam	Each Use	Apply grease to beam surface.
Moving Parts	Each Use	Clear debris from log splitter.

#### Refer to the Engine Owner's Manual for engine maintenance.

#### 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 operations.

#### STORAGE

- Before storing make sure the log splitter is clean and dry for years of trouble-free service.
- Lightly lubricate all log splitter surfaces and moving parts to prevent rust.
- Store indoors or protected area during severe weather and winter months.

## Troubleshooting

Ducklass	
Problem	
Cylinder rod will not move	SOLUTION: A, D
Slow cylinder rod speed when extending	SOLUTION: A, B, D, I
or retracting	
Wood will not split or splits extremely	SOLUTION: A, B, D, G, I
slowly	
Valve will not stay in detent or will not kick	SOLUTION: H
out of detent position	
Engine stalls under low load condition	SOLUTION: L
Engine will not start	SOLUTION: C, E, F, M
Engine is difficult to turn over and will not	SOLUTION: J, M
start when cold	
Engine runs but cylinder does not move	SOLUTION: D, K
Cause	Solution
A-Insufficient oil to pump	Check oil level in reservoir
<b>B</b> -Air in oil	Check oil level in reservoir
C-Low engine oil	Check and add engine oil
D-Blocked hydraulic lines	Check for restriction
<b>E</b> -"ON"/"OFF"	Move to "ON" position
<b>F</b> -Fuel shut off in "OFF" position	Move to "ON" position
G-Damaged control valve	Return control valve for authorized repair
H-Detent setting incorrect	Remove plastic cap on valve and adjust
	detent kick out pressure
I-Internally damaged cylinder	Return cylinder for authorized repair
J-Cold ambient temperature	Cold weather (below 32°) can result in
	difficult engine starting. Change to ATF.
K-Broken pump / Engine coupler	Check and replace coupler
L-Defective pump or engine	Contact service center
<b>M</b> -Log splitter valve in the return position	Push the control valve handle into the middle (neutral) position.

## Specifications

Max. Force	20 Ton
Cycle Time	7 Sec
Max. Log Length	21"
Hydraulic Cylinder	3.5" x 19"
Max. Pressure	25.5Mpa
Gear Pump	14GPM, 2-Stage
Max. Towing Speed	25 MPH
Wheel Size	
Engine	209cc
NOTE: For Engine Details Refer to the Engine Owner's Manua	nl.

## Parts Drawing & Parts List



Ref#	Drawing No.	Description	Qty
1	9110-08010-DX	Cross Recessed Pan Head Screws M8x10	4
2	LSA22-00025	Valve Plate	1
3	LSP25-00019-DX	Angle Connector	1
4	9901-11*2.5	O Ring Ø11x2.5	2
5	LS1800-00001	Hydraulic Hose (Valve – Gear Pump)	1
6	LS1800-00003-DX	Metal Hose	1
7	LSP25-06000	Connector	2
8	LS1800-08000	Cylinder	1
9	LSA22-09000	Control Valve	1
10	LSP25-17000	Combination Connector	1
11	9901-15*2.5	O Ring Ø15x2.5	1
12	LS1800-00004-DX	Angle Connector (oil return)	1
13	LS1800-00005	Cylinder Cover	1
14	9101-08020-DX8.8	Hex Bolt M8x20	6
15	9306-08000-DX	Lock Washer Ø8	18
16	9301-08000-DX	Flat Washer Ø8	14
17	LS12-02000	Push Plate	1
18	9101-12085-DX8.8	Hex Bolt M12x85	1
19	9206-12000-DX	Nylon Lock Nut M12	1
20	LS12-00001	Clamp Plate	2
21	LS12-00002	Pressure Plate	2
22	9101-10040-DX12.9	Hex Bolt M10x40	6
23	9301-10000-DX	Flat Washer Ø10	15
24	9306-10000-DX	Lock Washer Ø10	6
25	9201-10000-DX	Hex Nut M10	6
26	LS1800-00006	Log Cradle	2
27	9101-10025-DX8.8	Hex Bolt M10x25	4
28	9206-10000-DX	Nylon Lock Nut M10	9
29	9901-17*2.5	O Ring Ø17x2.5	2
30	LS1800-00002	Hydraulic Hose (Valve – Tank)	1
31	LS1801-01000	Beam Assembly	1
32	9101-10090-DX8.8	Hex Bolt M10x90	1
33	LSP25-16000	Lock Pin	1
34	LS1801-02000	Support Leg	1
35	E050-05002	Hand Grip	1
36	LSP3001-00001	Rubber Pad	1
37	9105-08025-DX	Hexagon Socket Cap Screw M8x25	2

Ref#	Drawing No.	Description	Qty
38	9101-10030-DX8.8	Hex Bolt M10x30	4
39	LS1800-02000	Oil Tank Assembly	1
40	NW01-11000-WHT	Wheel	2
41	9301-16000-DX	Flat Washer Ø16	2
42	9205-16000-DX	Hex Slotted Thin Nut M16	2
43	9404-04030-DX	Cotter Pin Ø4x30	2
44	LSP25-00010-DX	Oil Plug	1
45	LSP25-00022-DX	Oil Filter	1
46	LSP25-00021	Rubber Washer	1
47	LSP25-15000-DX	Oil Filter Mounting Plate	1
48	9101-06020-DX8.8	Hex Bolt M6x20	6
49	9306-06000-DX	Lock Washer Ø6	6
50	9301-06000-DX	Flat Washer Ø6	6
51	LSP25-00011-BXG	Clamp	2
52	LSP25-00018	Clear Oil Pipe	1
53	LSP25-13000	Oil Bolt	1
54	LSP25-10001	Engine	1
55	9101-08040-DX8.8	Hex Bolt M8x40	4
56	9206-08000-DX	Nylon Lock Nut M8	8
57	LSP25-10004-DX	Bushing	2
58	LSP25-10010	Engine Flat Key	1
59	LSP25-10002	Engine Coupling	1
60	9121-06010-FH	Set Screw M6x10	1
61	LSP25-10003	Gear Pump Coupling	1
62	LSP25-10009	Pump Flat Key	1
63	LSP25-10008-FH	Circlip for Shaft	1
64	LSP25-10005	Gear Pump Stand	1
65	9101-08030-DX8.8	Hex Bolt M8x30	4
66	9101-08025-DX8.8	Hex Bolt M8x25	4
67	9101-05010-DX8.8	Hex Bolt M5x10	4
68	LSP25-10006	Coupling Cover	1
69	LSP25-00014-DX	Pump Outlet Connector	1
70	LSP30-10001	Gear Pump 13/1.8	1
71	LSP25-00012-DX	R Pin	1
72	W040-00003-000	Hitch Pin	1