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Specifications

	PL1801V	PL1801H
Engine:	B&S VANGUARD 5.5HP w/6:1	HONDA GX120 W. gearbox
Engine Model No.	13L1520125F8	GX120U1HX2
Engine Fuel Capacity	3.0 qt. (2.84 L)	2.1 qt. (2 L)
Engine Oil Capacity	0.66 qt. (0.62 L)	0.59 qt. (0.56 L)
Total Unit Weight	242 lb (109.8 kg)	237 lb (107.5 kg)
Length	57" (1.45 m)	57" (1.45 m)
Width	24" (.61 m)	24" (.61 m)
Height	40" (1 m)	40" (1 m)
Maximum Operating Slope	15°	15°

Intended Use

AERATOR

This machine is designed for aerating established lawns and large grass covered areas. The machine should not be used for any other purpose than that stated above.

DO NOT OPERATE IF EXCESSIVE VIBRATION OCCURS!

If excessive vibration occurs, shut engine off immediately and check for damaged or worn reel, loose reel bearing, loose engine or lodged debris. To remove debris from the machine, see the machine specific trouble shooting section. Note: See parts list for proper bolt torque specifications.

HANDLING & TRANSPORTING

Always use two or more people to lift these machines. Lift holding on either side of the machine, using the handles and the frame. Secure in place during transportation. See specifications for unit weight.



For safety, use gloves when lifting.



Never lift any machine while the engine is running.

Warning Labels

The labels shown below were installed on your BILLY GOAT® Aerator. If any labels are damaged or missing, replace them before operating this equipment. Item numbers from the Illustrated Parts List and part numbers are provided for convenience in ordering replacement labels. The correct position for each label may be determined by referring to the Figure and Item numbers shown.



Fig. 1
DANGER KEEP HANDS
AND FEET AWAY
P/N 440424



Fig. 2
LABEL PINCH POINT PLP/N
100355



Fig. 3
DECAL, WARNING, HAND IN BELT,
ENG. ONLY P/N 5103184



Fig. 4
LABEL AERATING INST PL

Instruction Labels

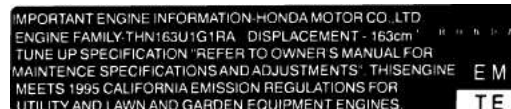
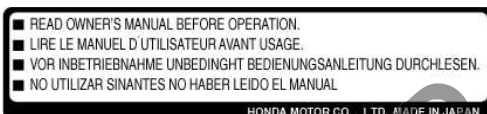


Fig. 5
LABEL TINE ENGAGE PL



Fig. 6
LABEL LOWER TINES PL

Engine Labels - Honda

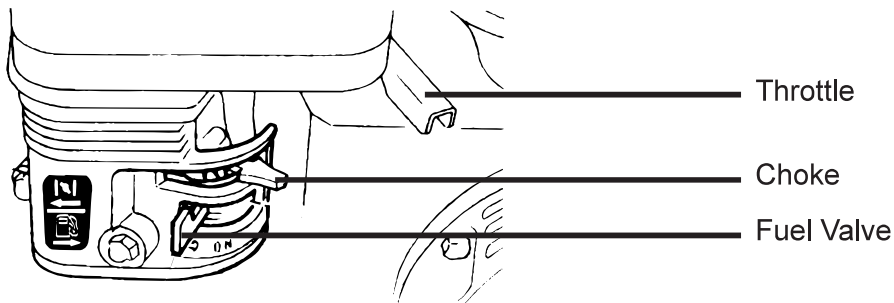


Engine Labels - Vanguard



THIS ENGINE EQUIPPED WITH A
LOW OIL SENSOR. IF ENGINE WILL
NOT START, CHECK OIL LEVEL.

Throttle Controls- Honda



Throttle Controls- Vanguard



Set lever to choke when starting cold.



Set lever to dictate engine speed. To stop the engine, move the lever completely to the left.

Packing Checklist

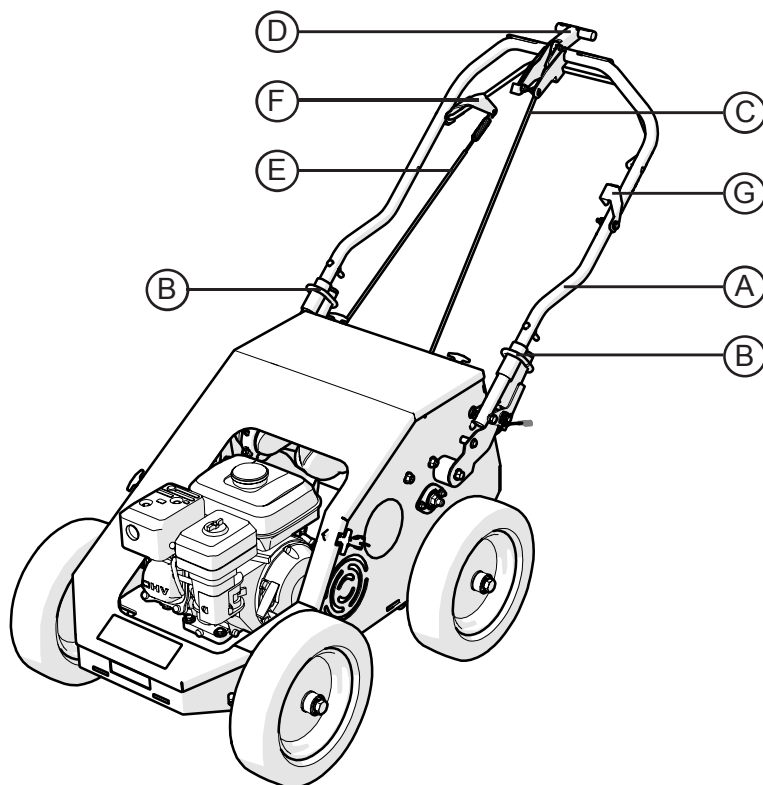
Your Billy Goat aerator is shipped from the factory in one carton, completely assembled with the cables detached.

READ all safety instructions before assembling unit.
TAKE CAUTION when removing the unit from its box or crate.

PUT OIL IN ENGINE BEFORE STARTING.

Boxing Parts Checklist

- ☐ Operator's Manual (382510)
- ☐ Engine Manual (Honda or Briggs and Stratton)



Initial Set-Up Assembly

Refer to Figure X in the Packing Checklist section to identify parts in Initial Set-Up Assembly.

1. **UNFOLD** the upper handle (A, Figure X) and slide handle lock loops (B, Figure X) into place to secure the upper handle to the lower.
2. **ATTACH** the tine lift cable (C, Figure X) to the tine lever (D, Figure X) in the center of the handle by inserting the pin into it. Then attach the bail cable (E, Figure X) to the bail (F, Figure X). Check to make sure the cables are functioning properly before operation and not binding.
3. **CHECK** engine oil level and fill to proper level. Also check oil in gear reduction reservoir and fill if necessary. See engine owner's manual for type and amount of oil to use.
4. **CONNECT** spark plug wire. Set the engine stop switch (G, Figure X) to the ON position.

Operation

STARTING THE ENGINE

See engine manufacturer's instructions for type and amount of oil and gasoline used. Engine must be level when checking and filling oil and gasoline.

ENGINE SPEED: Controlled by lever on the engine. Under normal conditions, operate at the minimum throttle speed to accomplish your task.

ON/OFF: Set the on/off switch to ON

FUEL VALVE: Move fuel valve to "ON" position. (Honda: Located below the air cleaner on the engine.)

CHOKE: Engage the choke when starting a cold engine. (Honda: Located below the air cleaner on the engine.)

THROTTLE: Move the throttle control lever on the engine to fast position. Pull starting rope to start engine. **If your unit fails to start, check trouble shooting section in operator's manual and also see engine manual.** Note: Honda engines are equipped with a low oil sensor to prevent engine damage. When it senses a low oil condition (i.e. unit is operating or sitting on a steep slope) the engine shuts down. The low oil condition must be corrected before the engine can be restarted. See the engine owner's manual for more information.

AERATING OPERATION

Note: Never park this unit on a slope of any kind. Always keep tines in the up position when parking the unit.

TINES RAISING/LOWERING: The tines are raised or lowered into the ground by operating the tine engagement lever on the upper handle. Tine penetration is very dependent on surface preparation. READ the entire operation section before aerating.

ENGAGE TINES: With the aerator in the work area, lower the tines by releasing the center lever on the handle. When the lever is in the forward position, pull up on the bail to engage the tines.

AERATE: Push the machine with the tines engaged. **NOTE:** In cold temperatures engage the tines in the up position for two minutes to warm the cam grease. For maximum tine penetration apply downward pressure on the handle.

Operation

TURNING: At the end of an aerating run, release the bail and raise the tines out of the ground. Then reposition the unit for another pass and lower the tines to begin another run.

TRANSPORT: Be sure to raise tines out of the ground (disengaging the bail and then raising the tines with the center lever) before transporting away from the work area.

TIPS

MOW: Mow the lawn to its normal cut height.

WATER: For the best performance and maximum tine penetration the lawn should be thoroughly watered the day before aeration.

INSPECT: Check the lawn before beginning work. Remove all rocks, wire, string, or other objects that can present a hazard during work prior to starting.

IDENTIFY: Mark all fixed objects to be avoided during work, such as sprinkler heads, water valves, buried cables, or clothes line anchors, etc.

SLOPES: Do not operate the aerator on steep slopes (exceeding 15°). Use extreme caution when operating on any sloped surface. For lesser sloped areas operate the unit, traversing up and down at a 45° angle to the slope rather than straight across. Extended operation on steep slopes can cause engine damage.

Maintenance

PERIODIC MAINTENANCE

Periodic maintenance should be performed at the following intervals:

Maintenance Operation	Every Use	Every 10 Hrs	Every 50 Hrs	Every 100 Hrs
Inspect for loose, worn or damaged parts	•			
Check engine oil*	•			
Clean debris from unit and tines	•			
Grease cam bearings		•		
Inspect belt for wear			•	
Replace tine bushings				•
Grease shaft bearings				•

*Engine must be level when checking or filling oil. Refer to your Honda or Briggs and Stratton engine manual for proper engine maintenance procedures.

Maintenance

COMMON MAINTENANCE PROCEDURES

Note: Refer to *Figure B* for tools needed for common maintenance procedures outlined in this section.



Figure B

Letter Identification	Tool
A	Impact Wrench
B	1/2" socket
C	9/16" socket
D	1/2" wrench
E	9/16" wrench
F	1/8" Allen wrench
G	1/4" curved Allen wrench
H	Pliers

Maintenance

ADJUSTING BELT TENSION

1. Loosen the mounting bolts for the engine and then slide it to apply or relieve tension on the belt.

Note: Sliding the engine forward (away from the operator) increases belt tension. Sliding the engine rearward (towards the operator) relieves tension. Check and adjust belt tension after the first 10 hours of use.

REPLACING THE DRIVE BELT

1. Lower the tines on the PL1801 unit and remove its hood. Use your hands to pull down on the rubber latches (4 latches total; 2 in the rear of machine, 1 on each side of machine). See *Figure C* for latched position and *Figure D* for unlatched position.

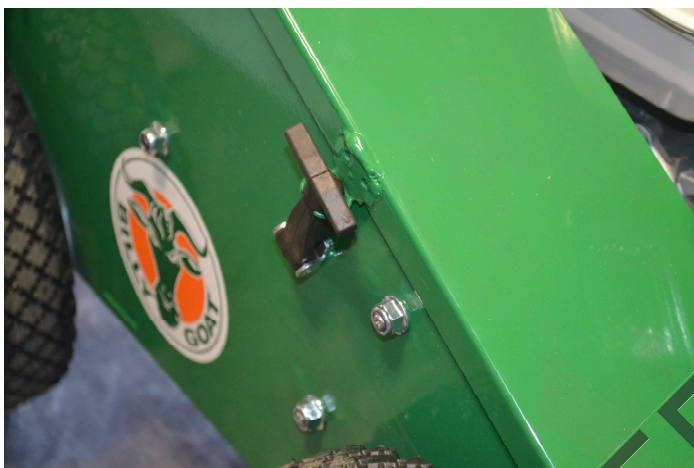


Figure C

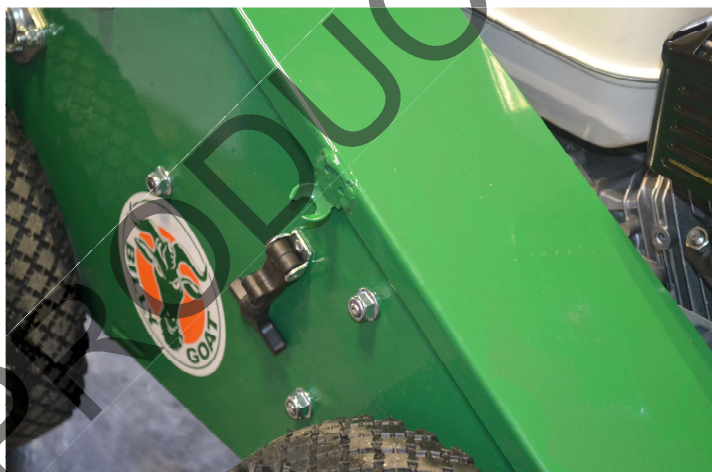


Figure D

2. Locate the wave spring attached to the tineshaft and inner pillow block bearing. See *Figure E*. Loosen the set screws with an 1/8" Allen wrench. Compress the wave spring by pressing against the end plate on the tineshaft. Once the wave spring is compressed, re-tighten the set screws. This will allow you to more easily move the tineshaft to remove the old or worn drive belt. See *Figure F*.

Note: If set-screws are missing, use a 0.250"-28 sized bolt.



Figure E

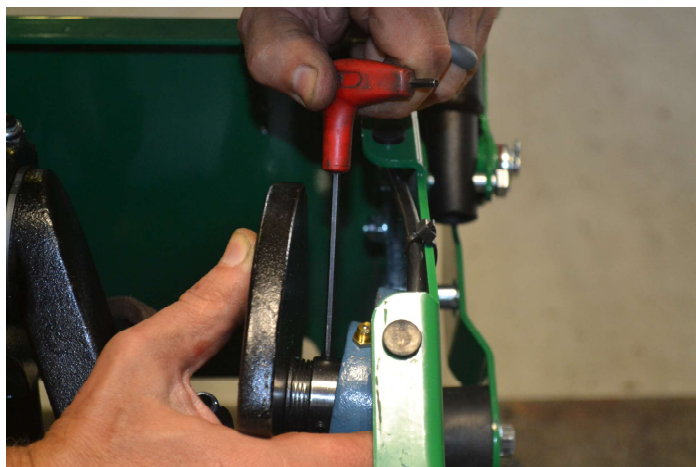


Figure F

Maintenance

3. Loosen the inner pillow block bearings on each side of the tineshaft. Simultaneously, use the impact wrench fitted with the 9/16" socket and the 9/16" wrench to remove the hardware from each pillow block bearing. See Figures G-J. Note the heavy weight of the tineshaft.



Figure G



Figure H



Figure I



Figure J

4. Use the 1/4" curved Allen wrench to remove the top belt-guide-bolt. Do not remove the bottom belt-guide-bolt. See Figure K. Note how the belt is positioned around the pulleys in the machine.

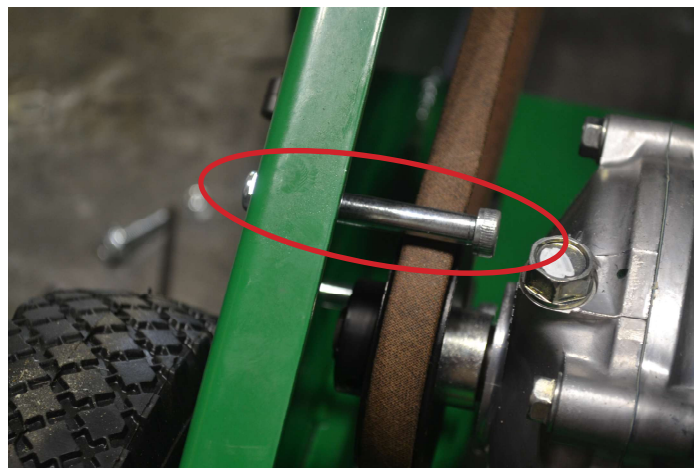


Figure K

Maintenance

5. Remove the broken or worn belt. Lift the tineshaft to maneuver the belt out completely. See Figure L.

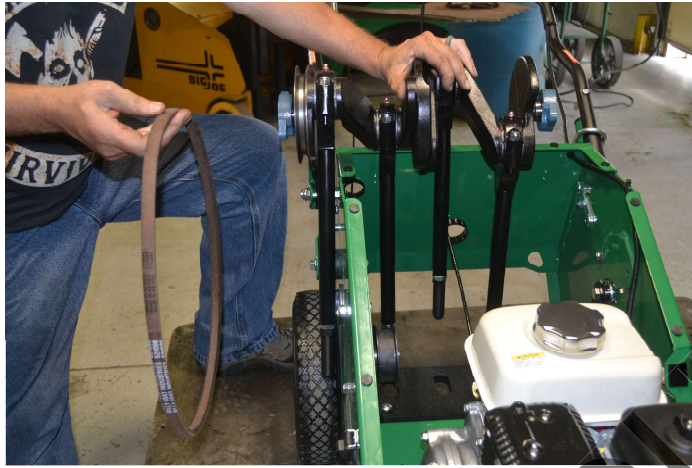


Figure L

6. Wrap the new belt around the drive pulley on the tineshaft and re-install the tineshaft into the machine. See Figure M. Ensure that the new belt is positioned around the pulleys correctly. See Figures N and O.

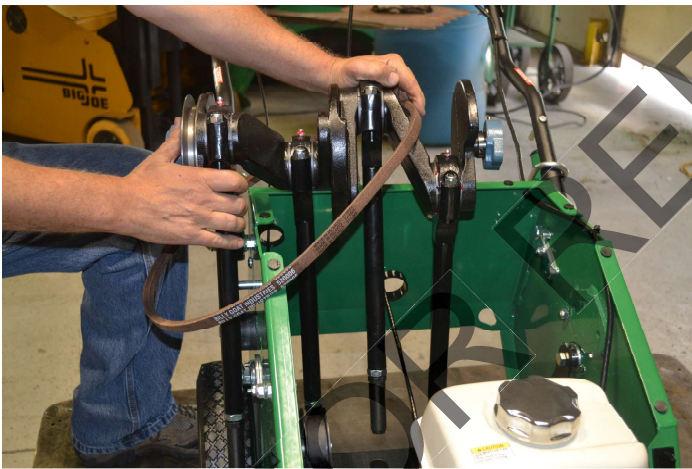


Figure M

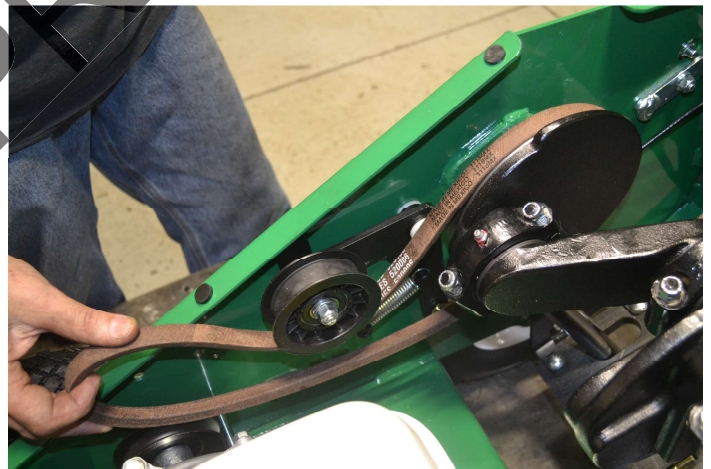


Figure N

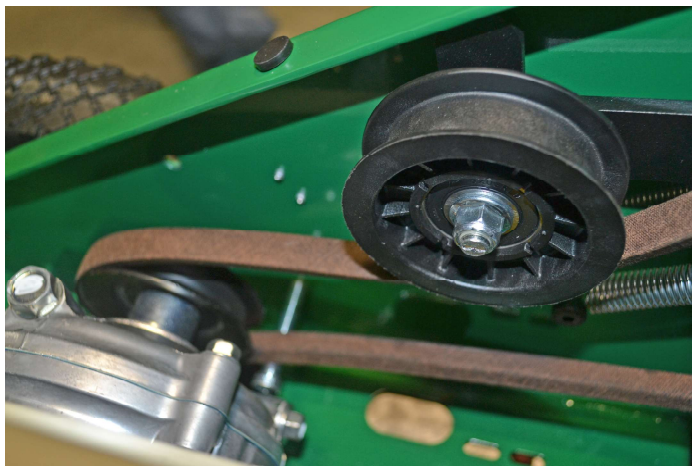


Figure O

Maintenance

6. Reverse steps 1-4 to reattach the top belt-guide-bolt, tineshaft, and hood.

REPLACING THE CLUTCH CABLE

1. Remove the hood of the PL1801 machine. Refer to Step 1 from the “REPLACING THE DRIVE BELT” section.
2. Remove the clutch idler pivot bolt. Simultaneously use the 1/4” curved Allen wrench with the impact wrench fitted with a 9/6” socket. See Figures P and Q.



Figure P

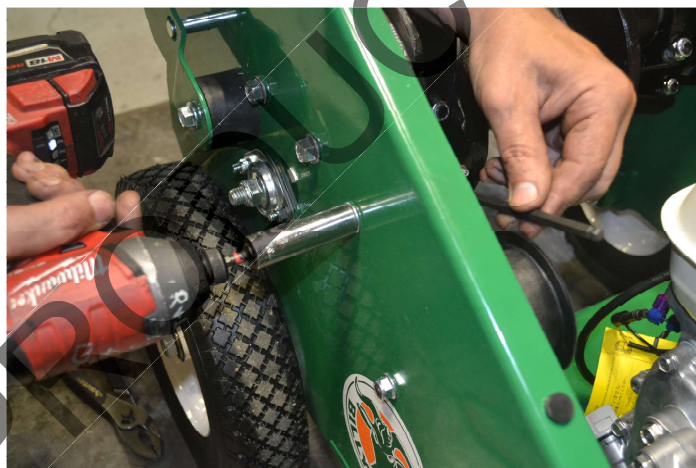


Figure Q

3. Detach the broken or worn cable from the idler bracket. Use pliers to remove the rue ring from the clevis pin holding the cable in place. Slide the cable off the clevis pin. Do not discard the clevis pin or rue ring. You will need these to attach the new cable. See Figures R and S.

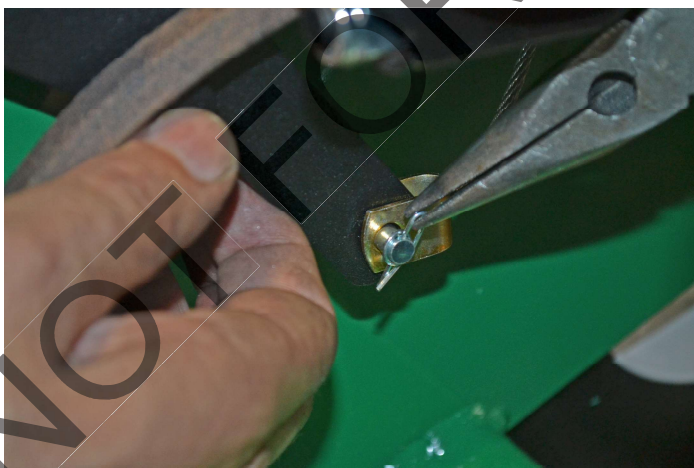


Figure R

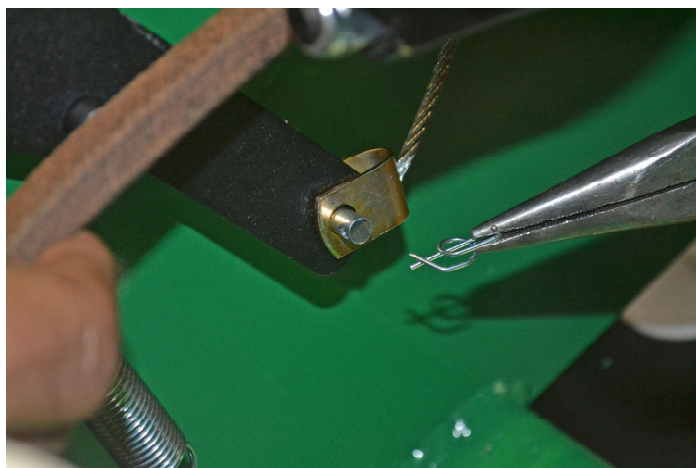


Figure S

Maintenance

- Slide the clutch cable out of the machine through the back and unhook the cable from the bail. See Figures T and U.

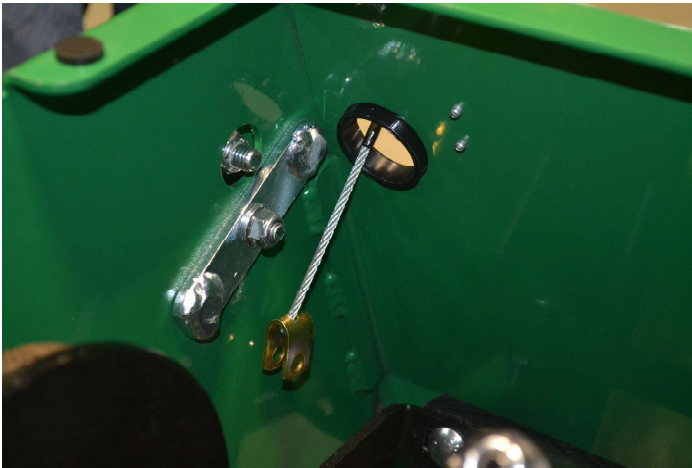


Figure T



Figure U

- Attach the new cable to the bail and route the cable through the back of the machine. Reverse step 3 to attach and secure the new cable to the idler bracket. Reverse step 2 to secure the idler bracket to the machine. Engage the cable to ensure proper function then put the hood back onto your PL1801 unit.

REPLACING ISO MOUNT BUSHINGS

- Remove the hood of the PL1801 machine. Refer to Step 1 from the “REPLACING THE DRIVE BELT” section.
- Move the chain link handle lock up for better maneuverability. See Figure V.



Figure V

Maintenance

3. Use the impact wrench fitted with the 9/16" socket simultaneously with the 9/16" wrench to remove the handle bolt. Do not discard the handle bolt. See Figures W and X.



Figure W

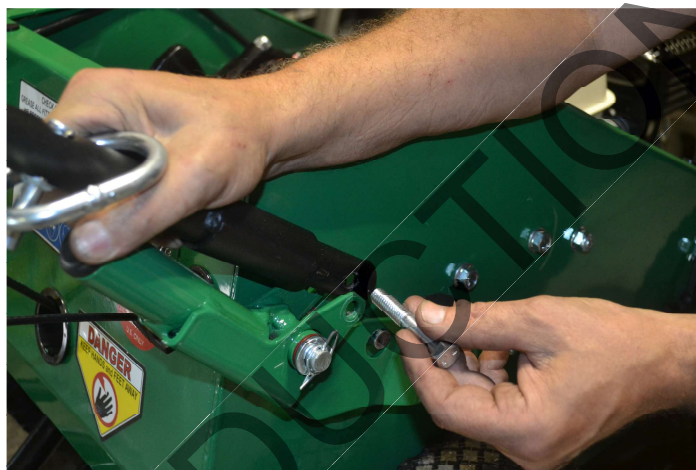


Figure X

4. Use pliers to remove the rue ring and accompanying washer from the handle clevis pin. Set these items aside to attach later. See Figures Y and Z.



Figure Y



Figure Z

Maintenance

5. Use the impact wrench fitted with the 9/16" socket to remove the outside mount bolt and inside nut. Do not discard. See Figure AA.

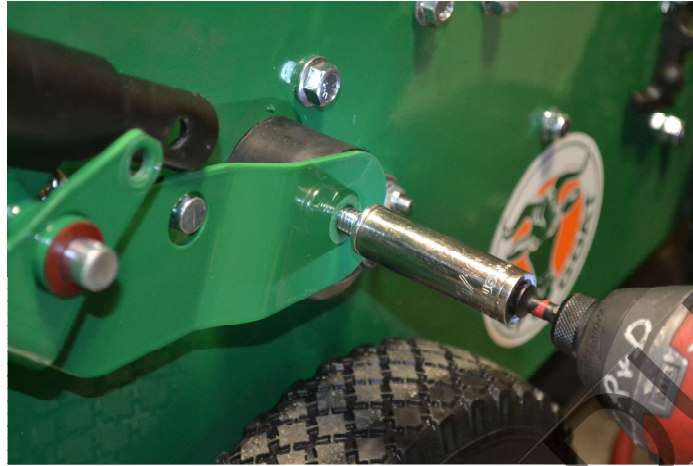


Figure AA

6. Pull out the handle isolation bracket and remove the old ISO mount bushing. See Figures AB and AC.



Figure AB



Figure AC

7. Install the new ISO mount bushing and ensure the stud faces the inside of the machine. Reverse step 5 to secure the new bushing. Do not overtighten!

8. Reverse steps 4, 3, and 2 to secure the handle.

9. Repeat the entire procedure on the opposite side of the machine to replace both ISO mount bushings.

REPLACING INDIVIDUAL TINES

1. Wait for engine to cool and disconnect spark plug.
2. Loosen the jam nut then unscrew the tine.
3. Replace the tine making sure to use the maximum amount of threads on the tine.

Note: Tines are a normal wear item and should be inspected regularly for signs of wear or damage.

REPLACING THE TINE PLATE

1. Lower the tines.
2. Use the impact wrench fitted with a 1/2" socket to remove the 5/16" carriage bolts from the four corners of the tine plate. This will detach the plate from the tine arms. See Figures AD and AE.



Figure AD

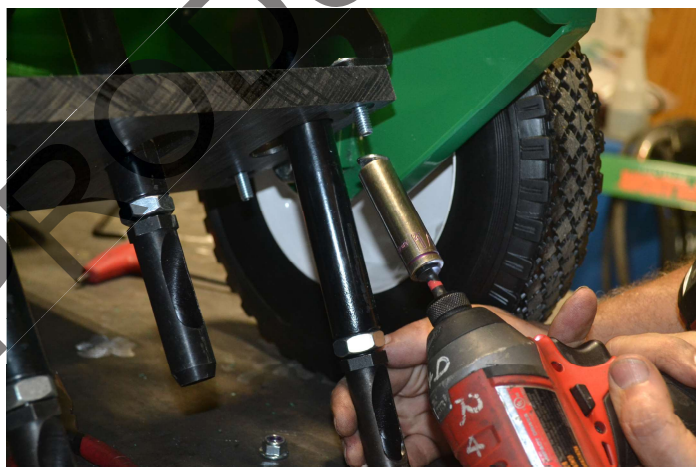


Figure AE

3. Unhook the engagement cable. See Figure AF. Slowly wiggle the plate out from the tines. See Figure AG.

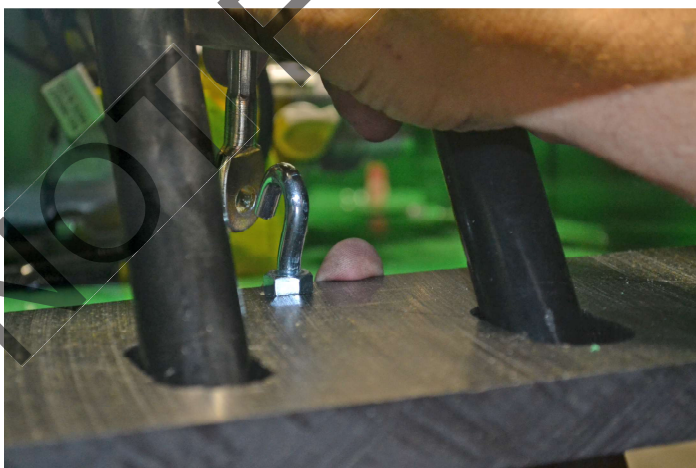


Figure AF



Figure AG

Maintenance

4. Remove the anchor from the old plate. See the part to remove circled in Figure AH. Hold the anchor in place with pliers and simultaneously use a 1/2" wrench to detach the bottom nut. Attach the anchor to the new plate.

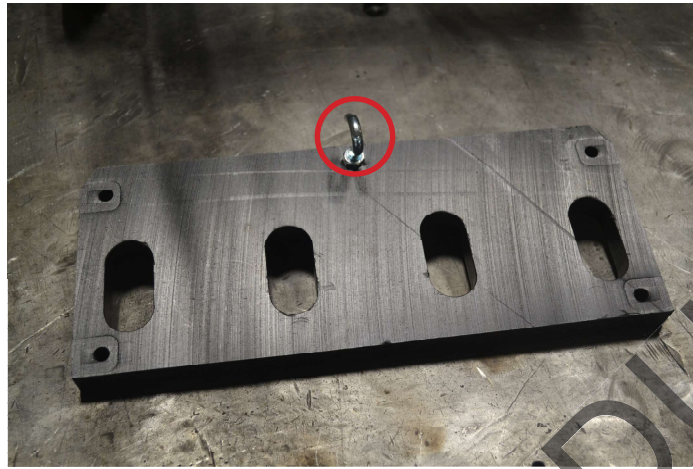


Figure AG

5. Attach the new plate. Slowly feed the new plate onto the tines. Note the position of the plate. The plate edge closest to the tine holes should face the operator. See Figure AI.



Figure AI

6. Reverse step 3 to secure the new plate to the engagement cable. Reverse step 2 to secure the new plate to the tine arms.

Troubleshooting

Problem	Possible Cause of Problem	Possible Solution to Problem
Engine will not start.	<ul style="list-style-type: none"> • Stop switch is in OFF position. • Throttle is in OFF position. • Engine is not in full choke position. • No gasoline in engine. • Gasoline in engine has expired. • Oil level in engine is too low. • Air filter is dirty. 	<ul style="list-style-type: none"> • Check stop switch, throttle, and choke positions. • Check engine's gasoline level and quality. • Check engine's oil level and quality. • Clean or replace air filter. • Contact a qualified engine servicer.
Machine vibrates abnormally.	<ul style="list-style-type: none"> • Tines are damaged or missing. • Handle bolts are loosened. • Engine bolts are loosened. 	<ul style="list-style-type: none"> • Stop work immediately! • Replace damaged or missing tines. • Tighten all loose nuts and bolts.
Engine stalls or labors when aerating.	<ul style="list-style-type: none"> • Slope is too steep for operation. • Engine oil level is too low. 	<ul style="list-style-type: none"> • Work at a 45° angle to the slope. • Work up and down the slope, not across. • Check engine oil level and add oil when appropriate.
Engine is locked and will not pull over.	<ul style="list-style-type: none"> • Debris is locked against drive pulleys. • Engine is malfunctioning. 	<ul style="list-style-type: none"> • Pull spark plug wire. • Remove debris from drive pulleys. • Contact a qualified engine servicer.
Machine does not move when the clutch is engaged.	<ul style="list-style-type: none"> • Drive belt is out of adjustment. • Drive belt is worn. • Pulleys are loose or damaged. • Clutch cable is damaged or broken. 	<ul style="list-style-type: none"> • Refer to subsection "Replacing the Drive Belt" in the Maintenance section of this manual to perform the belt replacement properly. • Contact a qualified engine servicer.

Spare Parts List

Please refer to this list of spare parts you may need to service your BILLY GOAT® Aerator. You can order these parts through our customer service team. Please refer to our website at www.billygoat.com.

Part	Part Number	Application
Tines	382244	Aerator Tine Assembly
Tine Plate	382325	Aerator Tine Assembly
ISO Mount Bushings	373257	Handlebar Assembly
Clutch Cable	380221	Controls
Drive Belt	520006	Drive Belt
Wheels	381768	Wheel and Tire

Warranty Information

When servicing engine refer to specific manufacturer's engine owner's manual. Engine warranty is covered by the specific engine manufacturer. If your engine requires warranty or other repair work contact your local servicing engine dealer. When contacting a dealer for service it is a good idea to have your engine model number available for reference (Refer to the Specifications section of this manual). If you cannot locate a servicing dealer in your area you can contact the manufacturer's national service organization.

American Honda: 800-426-7701
Briggs and Stratton: 414-479-8008

WARRANTY CLAIM PROCEDURE

Should a BILLY GOAT ® machine fail due to a defect in material and/or workmanship, the owner should make a warranty claim as follows:

- The machine must be taken to the dealer from whom it was purchased or to an authorized Servicing BILLY GOAT Dealer.
- The owner must present the remaining half of the Warranty Registration Card, or, if this is not available, the invoice or receipt.
- The Warranty Claim will be completed by the authorized BILLY GOAT Dealer and submitted to their respective BILLY GOAT Distributor for their territory Attention: Service Manager. Any parts replaced under warranty must be tagged and retained for 90 days. The model number and serial number of the unit must be stated in the Warranty Claim.
- The distributor service manager will sign off on the claim and submit it to BILLY GOAT for consideration.
- The Technical Service Department at BILLY GOAT will study the claim and may request parts to be returned for examination. BILLY GOAT will notify their conclusions to the distributor service manager from whom the claim was received.
- The decision by the Technical Service Department at BILLY GOAT to approve or reject a Warranty Claim is final and binding.

For online product registration go to www.billygoat.com