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*BILLY GOAT[®] BC2403 Series Brush Cutter
Owner's Manual*

Patent Number D386768



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Go to <http://www.billygoat.com> for French-Canadian translations of the product manuals.
Visitez <http://www.billygoat.com> pour la version canadienne-française des manuels de produits



BC 2403 SERIES SPECIFICATIONS

| | BC2403IC | BC2403ICF | BC2403HF | BC2403H | BC2403HEB |
|--|-------------------------------|-------------------------------|-------------------|-------------------|-------------------|
| Engine Type | Briggs and Stratton INTEK OHV | Briggs and Stratton INTEK OHV | Honda GXV | Honda GXV | Honda GXV |
| Model Number | 21A902-0149-E1 | 21A902-0149-E1 | GXV390UTIDABG | GXV390UTIDABG | GXV390K1DE33 |
| Horsepower | 13.0 (9.7 kW) | 13.0 (9.7 kW) | 13.0 (9.7 kW) | 13.0 (9.7 kW) | 13.0 (9.7 kW) |
| Fuel Capacity | 3.0 qt (2.80 L) | 3.0 qt (2.80 L) | 2.3 qt (2.18L) | 2.3 qt (2.18L) | 2.3 qt (2.18L) |
| Oil Capacity | 1.5 qt (1.4L) | 1.5 qt (1.4L) | 1.2 qt (1.13L) | 1.2 qt (1.13L) | 1.2 qt (1.13L) |
| Engine Weight | 58.0 lb (26.3 kg) | 58.0 lb (26.3 kg) | 70.5 lb (32.0 kg) | 70.5 lb (32.0 kg) | 72.5 lb (32.9 kg) |
| Unit Weight | 266 lb (120.7 kg) | 284 lb (128.8 kg) | 294 lb (133.4 kg) | 278 lb (126.4 kg) | 291 lb (132.3 kg) |
| In accordance with 2000/14/EEC standards | 106 dB(a) | 106 dB(a) | 106 dB(a) | 106 dB(a) | 106 dB(a) |
| Sound at Operator's ear | 93 dB(a) | 93 dB(a) | 93 dB(a) | 93 dB(a) | 93 dB(a) |
| Shipping Weight | 315 lb (143.2 kg) | 333 lb (151 kg) | 348 lb (157.9 kg) | 330 lb (150.0 kg) | 340 lb (154.7 kg) |
| Overall Length | 82.5 in (2.09 m) | | | | |
| Overall Width | 32.0 in (0.81 m) | | | | |
| Overall Height | 43 in (1.09 m) | | | | |
| Maximum Operating Slope | 15° | 15° | 20° | 20° | 20° |

SOUND DATA



SOUND LEVEL 93 Dba at Operator's position

106 dB

Sound tests were conducted in accordance with 2000/14/EEC and were performed on 2/21/2002 under the conditions listed below.

NOTE

Sound power level listed is the highest value for any model covered in this manual. Please refer to serial plate on the unit for the sound power level for your model.

| | |
|----------------------|----------------------|
| General Conditions: | Sunny |
| Temperature: | 80°F (25°C) |
| Wind Speed: | 2.0 mph (3.2 kph) |
| Wind Direction: | South |
| Humidity: | 63.5% |
| Barometric Pressure: | 29.98" Hg (761mm Hg) |

VIBRATION DATA


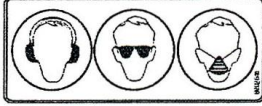
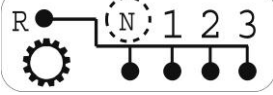




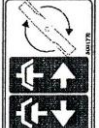






VIBRATION LEVEL .5g (4.87 m/s²)

Vibration levels at the operator's handles were measured in the vertical, lateral and longitudinal directions using calibrated vibration test equipment. Tests were performed on 5/19/1995 under the conditions listed below.


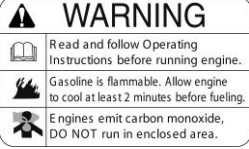
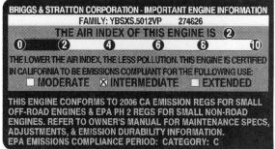
| | |
|----------------------|------------------------|
| General Conditions: | Sunny |
| Temperature: | 89°F (31.7°C) |
| Wind Speed: | 6.1 mph (9.9 kph) |
| Wind Direction: | West |
| Humidity: | 49.7% |
| Barometric Pressure: | 29.88" Hg (101.19 kPa) |

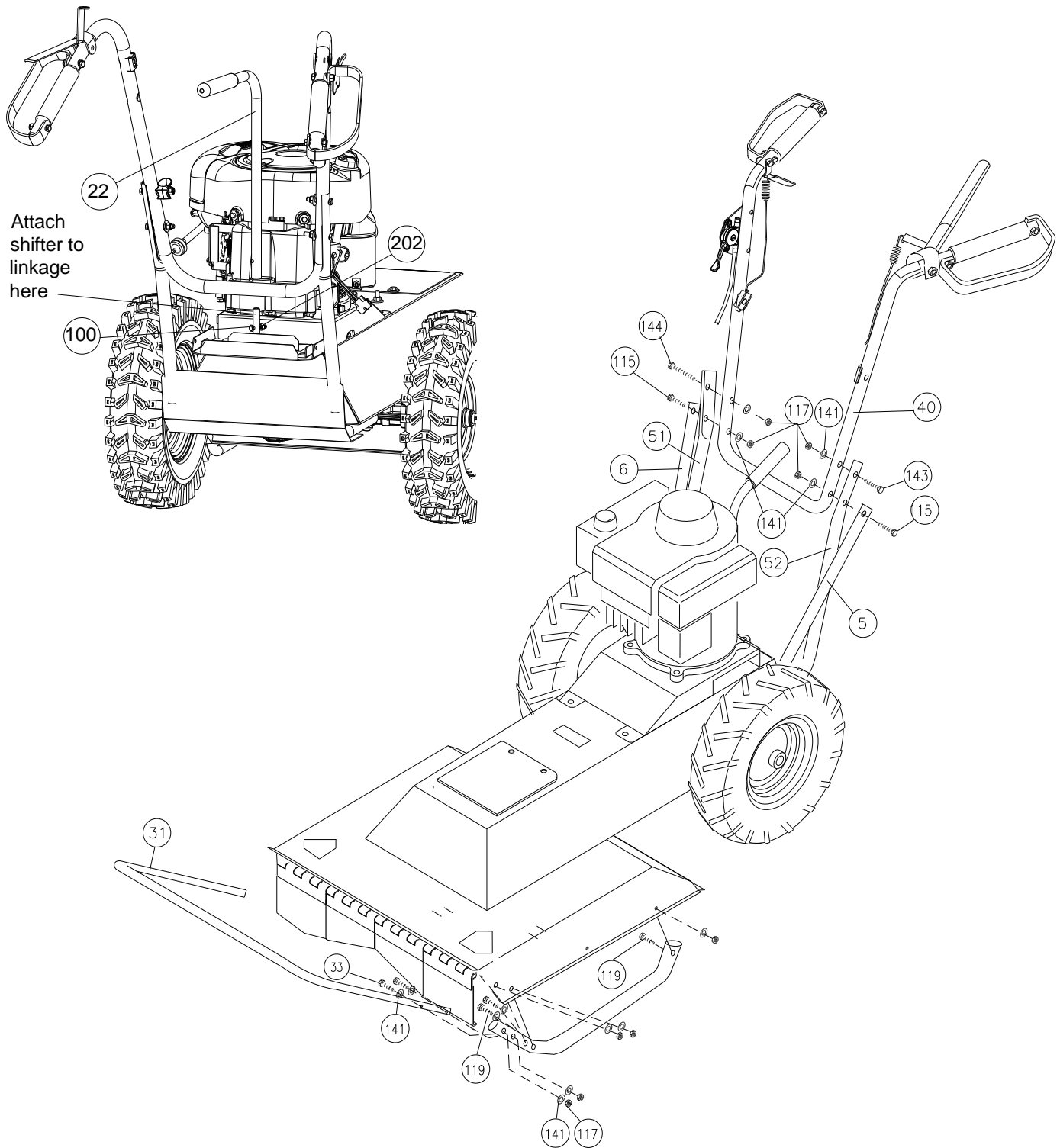
INSTRUCTION LABELS

The labels shown below were installed on your BILLY GOAT[®] Brush Cutter. 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.

| | | | |
|---|---|--|---|
|  <p>PN 400268 (Item 169)</p> |  <p>PN 890254 (Item 188)</p> |  <p>PN 500349 (Item 186)</p> |  <p>Item No 180 - PN 400424 (Item 180)</p> |
|  <p>Item No 184 - PN 810736 (Item 184)</p> |  <p>Item No 187 - PN 890301 (Item 187)</p> |  <p>PN 900327 (Item 185)</p> |  <p>Item No 192 - PN 500177 (Item 192)</p> |
|  <p>Item No 191 - PN 500176 (Item 191)</p> |  <p>Item No 189 - PN 500168 (Item 189)</p> |  <p>PN 500279 (Item 190)</p> |  <p>PN 100252</p> |
|  | |  | |

ENGINE LABELS

| | | |
|---|---|--|
|  |  |  |
| <p>Honda</p> | <p>Briggs and Stratton</p> | |



Brush Cutter Assembly Drawing
Figure 1



ASSEMBLY INSTRUCTIONS

Your BILLY GOAT® BC Self-Propelled Brush Cutter was shipped in one carton, completely assembled except for the upper handle assembly and the front guard bar. Mounting hardware for the handle and guard bar is temporarily installed on the lower handle and the front of the deck assembly.



READ all safety instructions before assembling unit.

NOTE

A CB18, C50, SC50 or MCB50 series dry or wet battery with a 17.2 Ah rating is required when replacing the battery.

NOTE

Numbers in parenthesis () refer to item numbers in the parts list.

1. Remove unit from carton. Make sure the following items that have been packed with unit:

- Upper Handle Assembly, P/N 500256
- Guard Bar, P/N 500356
- Bar Skids, P/N 500355
- Owner's Manual, P/N 500402
- General Safety and Warnings Manual 100296
- Honda or Briggs and Stratton Engine Manual
- Warranty Card, P/N 400972
- Ty-Wraps (4 ea)
- Tube shifter with grip, P/N 500370



WARNING: DISCONNECT spark plug wire before assembling unit.

2. Remove mounting hardware (143, 115, 117, and 141) from parts bag. Use this hardware to mount the upper handle (40) to the lower handle (51) and braces (5 and 6). See page 23 for bolt location. Tighten the hardware securely.
3. Tighten bolts and nuts (item 143 and 117) connecting the handle braces (5 and 6) on the transmission linkage.
4. Attach the shifter tube (item 22) with the hardware (100 and 202). Make sure the shifter moves freely.
5. Place a wood block under the deck and attach the skids (155) using the hardware (119, 141, and 117). Use the bottom two holes on the longer end to attach to the front of the deck. The bolts should run from the inside out.



Warning: When attaching the Skids be careful of the blade. Wear thick gloves and check the position of the blade before putting your hands into the deck to install the bolts through the Skids.

9. Attach guard bar (31) to Skids by installing with the hardware (33, 141, and 117) into the top two holes on the skids.
10. For electric start models secure the battery in the battery plate (164), hook one side of the strap into the hole then stretch the strap across the top of the battery and hook the opposite side into the opposing hole on the plate. Make sure the battery will not move then connect terminals.

NOTE

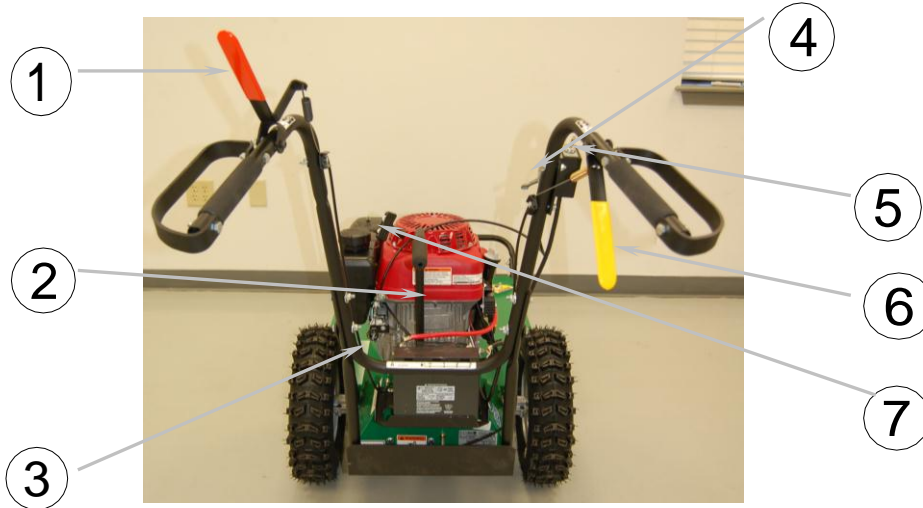
Items 117, 119 and 141 secure both front skid attachment and sides of front guard bar. Make sure both are securely attached.

11. Reconnect spark plug wire.

OPERATION

OPERATOR CONTROLS

The operator's station is at the rear of the machine between the handlebars. The operator should STAND in a position to allow both handlebars to be grasped firmly and which allows sufficient leverage to steer the machine. Operator's controls are shown below.



Operator Control Locations

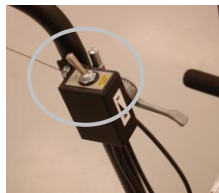
- | | | | |
|---|--------------------|---|--------------------|
| 1 | Blade Clutch Lever | 5 | ON/OFF Switch |
| 2 | Gear Shift Lever | 6 | Drive Clutch Lever |
| 3 | Choke | 7 | Pull Starter |
| 4 | Throttle | | |

STARTING



CHECK engine oil level before operating machine.

1. Place equipment on a level, firm surface that is free of rocks or other debris.
2. Place throttle in START position.



Throttle

3. Pull choke out (Honda engine only).



Choke



- Units equipped with electric starters: Pull up on the ON/OFF switch until engine starts.



ON/OFF (I/O)
(Manual start shown)



WARNING: DO NOT START equipment with drive or blade clutch engaged.

- Units equipped with manual starters: Pull starter rope to start engine.



WARNING: PULL STARTER CORD slowly until resistance is felt. Then pull cord rapidly to avoid kickback.

- Push choke in (Honda engine only).
- Pull throttle control back to and allow engine to reach correct operating speed.

CUTTING

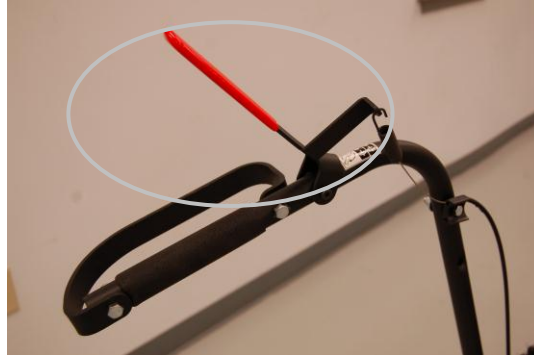
The best performance is achieved when cutting in dry conditions. The quality of the cut is directly related to ground speed during cutting. Under most conditions cutting should be done in first or second gear. Third gear should be reserved for conditions where weeds and brush are thinned out or not very tall. If the quality of the cut is not satisfactory, shift into a lower gear.

- Move shift lever to correct position (1, 2, 3 or Reverse) for desired gear.



Gear Shift Lever

2. Press blade clutch handle down to engage blade. Allow blade to spin up to normal operating speed.



Blade Clutch Lever

3. Pull drive clutch handle up to engage transaxle.



Drive Clutch Lever

SHUT DOWN

1. Release drive clutch handle to disengage transaxle.
2. Release blade clutch handle to disengage blade.
3. Pull throttle control all the way back to the STOP position.
4. Place the ON/OFF (I/O) switch in the OFF (O) position.

CLEARING A CLOGGED CUTTING DECK



WARNING: **DISCONNECT** spark plug wire before servicing unit.

1. Shut engine off and wait for blade to stop completely.
2. Disconnect spark plug wire.
3. Remove clog from cutting deck.



WEAR durable gloves. Clog may contain sharp materials.

4. Reconnect spark plug wire.



MAINTENANCE

PERIODIC MAINTENANCE

Periodic maintenance should be performed at the following intervals:

| Maintenance Operation | Every Use | Daily or Every 5 Hours | Every 25 Hours | Every 50 Hours | Every 100-150 Hours |
|---|-----------|------------------------|----------------|----------------|---------------------|
| Inspect for worn or damaged parts. | • | | | | |
| Check for excessive vibration | | • | | | |
| Inspect for loose parts. | | • | | | |
| Sharpen blade. | | | • | | |
| Inspect belts for wear. | | | • | | |
| Lubricate throttle control cable and linkage. | | | • | | |
| Check blade clutch cable tension. | | | | • | |
| Inspect battery for corrosion, damage or leaks (electric start units only). | | | | • | |
| Apply anti-seize compound to rear axles. | | | | • | |
| Check battery strap for excessive wear or rips | • | | | | |
| Replace blade drive and transaxle drive belts. | | | | | • |

COMMON REPLACEMENT PARTS

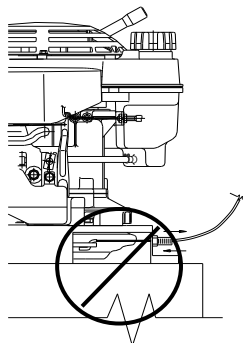
- Blade. P/N 500210. Original equipment replacement blade.
- High Lift Blade. P/N 500102. Optional replacement blade.
- Traction Drive Belt. P/N 500119. Original equipment replacement drive belt.
- Blade Drive Belt. P/N 500237. Original equipment replacement drive belt.
- Skid. P/N 500355. Side deck skid.
- Throttle Control Assembly. P/N 500213. Throttle control assembly, including cable.

CLEANING

Your BILLY GOAT® Brush Cutter should be cleaned periodically to ensure optimum performance and service life. Clogs and debris should be removed from the blade area and debris should be removed from the engine cooling fins. A garden hose or pressure washer may be used for cleaning.



DO NOT SPRAY WATER DIRECTLY ON THE BLADE CLUTCH WHEN USING A POWER WASHER. SEE FIGURE BELOW.



BLADE REMOVAL AND SHARPENING



READ all safety instructions before servicing unit.



Numbers in parenthesis (N) refers to the item number in Illustrated Parts List.

Tools required:

- 5/8" socket, 1/2" drive
- Torque wrench, 1/2" drive
- Jack stands or similar device adequate to support weight of machine.



WARNING:

DISCONNECT spark plug wire before servicing unit.

1. Disconnect spark plug wire.
2. Lift and support front of unit to allow access to underside.



WARNING:

UNIT IS HEAVY. Make sure support is adequate to support weight of machine.

3. Block blade to prevent it from rotating during removal.
4. Remove blade bolt (139), lock washer (140) and friction washer (54).



Blade bolt (139) is a standard right-hand thread bolt.

5. Remove blade (50) and install replacement blade.



When replacing the blade use BILLY GOAT Industries PN 500210 only.



When sharpening blade make sure to sharpen all cutting edges.

6. Attach new blade with bolt (139), lock washer (140) and friction washer (54 removed earlier).



Inspect fasteners for wear and replace if necessary.

7. Torque blade bolt to 55-60 ft-lbs.
8. Reconnect spark plug wire.



BLADE DRIVE BELT TENSION ADJUSTMENT



READ all safety instructions before servicing unit.



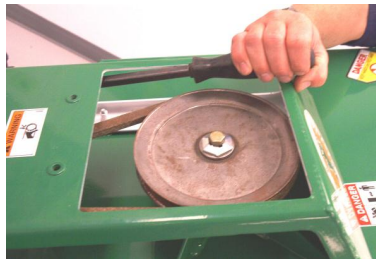
WARNING:

DISCONNECT spark plug wire before servicing unit.

NOTE

Numbers in parenthesis (N) refers to the item number in Illustrated Parts List.

1. Disconnect spark plug wire.
2. Remove two screws holding engine base door (7) and remove door.
3. Examine condition of belt and not position of idler assembly and amount of tension on belt.
4. Loosen, **but do not remove**, two nuts (116) on top on engine base.
5. Reset belt tension by reaching in through top of engine base with pry bar or long screwdriver and pushing idler pulley against belt to increase tension (see below).



Adjusting Blade Drive Belt Tension

6. While holding belt under tension tighten two nuts (116) holding idler pulley in place.
7. Replace engine base door (7) and secure with screws removed earlier.
8. Reconnect spark plug wire.
9. Check belt tension by operating unit under conditions that caused belt slippage. If belt continues to slip it may require replacement before operation may continue.

BLADE CLUTCH ADJUSTMENT



READ all safety instructions before servicing unit.



WARNING:

DISCONNECT spark plug wire before servicing unit.

1. Disconnect spark plug wire.
2. As the clutch/brake wears or begins slipping or squealing, adjustment may be required to maintain proper cable tension and clutch engagement. A properly adjusted blade clutch should require 10 lbs of force to depress the end of the clutch lever. The blade clutch cable spring should stretch 1/4" to 3/8" (6.4-9.5 mm).
3. Adjust cable tension by tightening or loosening cable adjustment nut on rear of engine base (see below). Be sure to leave enough slack in cable to allow blade brake to engage.



Blade Cable Adjustment



CAUTION:

If clutch continues to slip or squeal, do not operate equipment until adequate adjustment or repair has been performed. Improper adjustment can cause clutch to overheat and slip, greatly reducing performance and clutch life.

4. Reconnect spark plug wire.



BLADE DRIVE BELT REMOVAL AND REPLACEMENT



READ all safety instructions before servicing unit.

NOTE

Numbers in parenthesis (N) refers to the item number in Illustrated Parts List.

Tools required:

- 1/2" socket, 3/8" drive
- ratchet, 3/8"
- drive extension, 3/8" drive
- universal joint, 3/8" drive
- pry bar or long screwdriver
- jack stands or similar device adequate to support weight of machine.



WARNING: **DISCONNECT** spark plug wire before servicing unit.

1. Disconnect spark plug wire.
2. Lift and support rear of unit to allow access to underside.



WARNING: **UNIT IS HEAVY.** Make sure support is adequate to support weight of machine.

3. Remove two screws (103) and washers (141) holding engine base door (7) and remove door.
4. Loosen, but **do not remove**, two nuts (116) holding idler mounting plate (26) to relieve tension on blade drive belt (29).

NOTE

It may be necessary to pry idler pulley (9) away from its original position to release belt.

5. Using drive extension and universal joint, loosen, but **do not remove**, four screws (107) holding belt guides (149, 150) in place next to crankshaft drive pulley (9) at rear of machine.

NOTE

If extension and universal joint are not available, remove stop bolt (110) and nuts (116, 117) to allow idler arm to swing back and allow access to screws (107).

6. Pull transaxle drive belt (10) from groove on pulley (9).
7. Pull blade drive belt (29) from groove on pulley (9) and down past pulley.
8. Pull belt back through hole in top of engine base and remove it from machine.

NOTE

It will take some force to walk the belt past the front portion of the pulley.

9. Install new blade drive belt (29) on groove in pulley (9). Push remaining length of belt back through engine base toward clutch/brake drive pulley.
10. Install transaxle drive belt (10) on groove in pulley (9).
11. Reach through from rear of machine and pull new belt through and install it in the groove on the clutch/brake drive pulley.



CAUTION: Make sure blade drive belt is properly seated in clutch/brake drive pulley (23) and is not resting in gap between clutch/brake drive pulley (23) and transaxle drive pulley (46)

- Tighten four screws (103) to secure belt guides (149, 150).



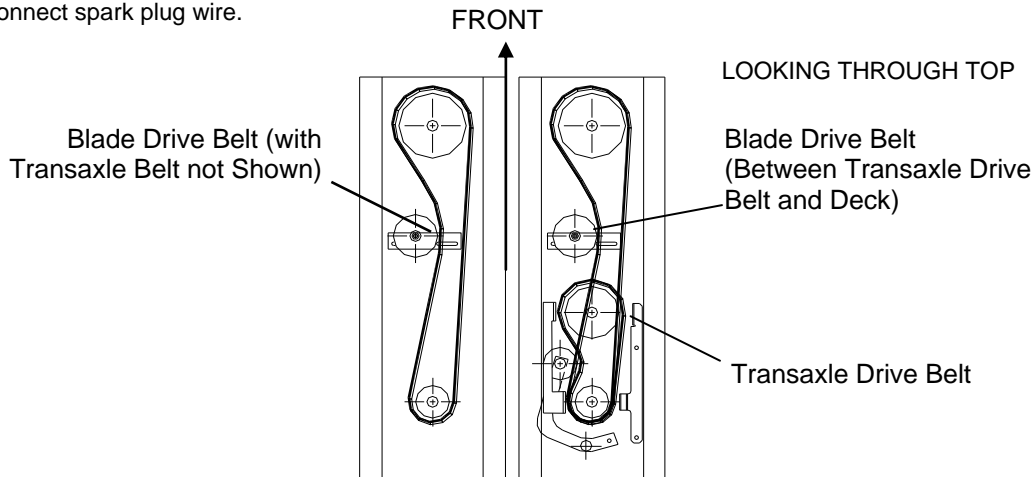
CAUTION: Make sure belt is correctly routed. (See Figure below).

- Adjust blade drive belt tension by reaching in through top of engine base with pry bar or long screwdriver and pushing idler pulley against belt to increase tension (see below).



Adjusting Blade Drive Belt Tension

- While holding belt under tension tighten two nuts (116) securing idler plate.
- Check belt tension by applying force on side of belt opposite idler pulley. Belt should deflect 3/16" - 1/4" (4.8-6.4 mm) with force applied perpendicular to belt.
- Replace engine base door (7) and secure with screws (103) and washers (141).
- Reconnect spark plug wire.



Belt Routing Diagram
(Top View of Machine)
Figure 2



TRANSAXLE DRIVE CLUTCH ADJUSTMENT



READ all safety instructions before servicing unit.

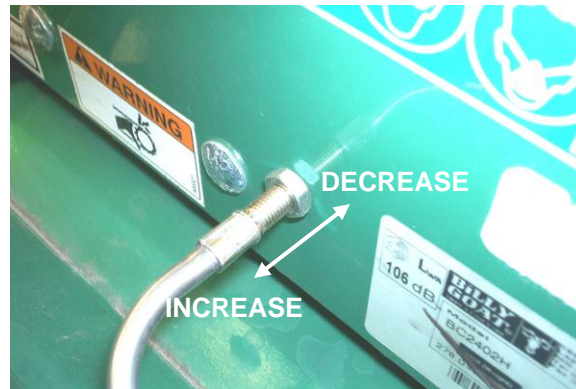


WARNING: **DISCONNECT** spark plug wire before servicing unit.

1. Disconnect spark plug wire.
2. As the belt wears or begins slipping or squealing, adjustment may be required to maintain proper cable tension and clutch engagement. A properly adjusted transaxle drive clutch should require 3 lbs of force to depress the end of the clutch lever.
3. Adjust cable tension by tightening or loosening cable adjustment barrel on rear of engine base (see below).

NOTE

Moving the cable adjustment barrel **IN** decreases clutch tension. Moving the barrel **OUT** increases tension.



Transaxle Cable Adjustment

4. Reconnect spark plug wire.

TRANSAXLE DRIVE BELT REMOVAL AND REPLACEMENT



READ all safety instructions before servicing unit.



Numbers in parenthesis (N) refers to the item number in Illustrated Parts List.

Tools required: 1/2" socket and ratchet, 1/2" universal extension bar, pry bar or long screwdriver, adequate support for machine.

- 1/2" socket, 3/8" drive
- ratchet, 3/8"
- drive extension, 3/8" drive
- universal joint, 3/8" drive
- pry bar or long screwdriver
- jack stands or similar device adequate to support weight of machine.



WARNING: **DISCONNECT** spark plug wire before servicing unit.

1. Disconnect spark plug wire.
2. Lift and support rear of unit to allow access to underside.



WARNING: **UNIT IS HEAVY.** Make sure support is adequate to support weight of machine.

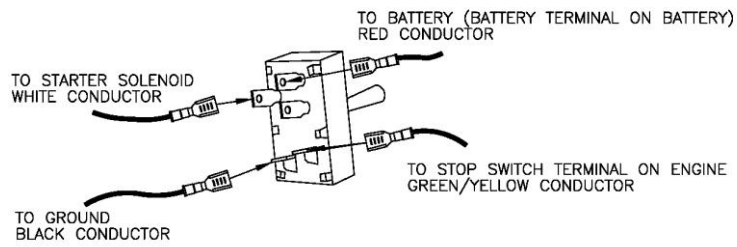
3. Using drive extension and universal joint, loosen, but **do not remove**, four screws (107) holding belt guides (149, 150) in place next to crankshaft drive pulley (9) at rear of machine.



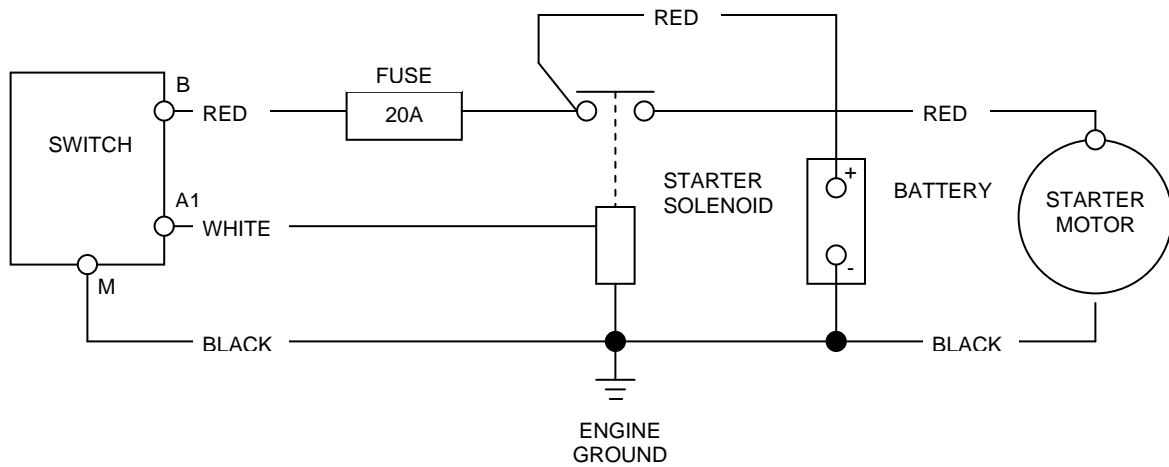
If extension and universal joint are not available, remove stop bolt (10) and nuts (116, 117) to allow idler arm to swing back and allow access to screws (107).

4. Pull belt (8-10) from groove on pulley (9) and down past pulley.
5. Slip belt (8-10) up and over pulley (9) and remove belt from machine.
6. Install new belt in grooves on pulley (46) and transaxle drive pulley (9).
7. Tighten four screws (107) to secure belt guides (149, 150).
8. Engage clutch levers and make sure belt guides do not touch belts.
9. Reconnect spark plug wire.

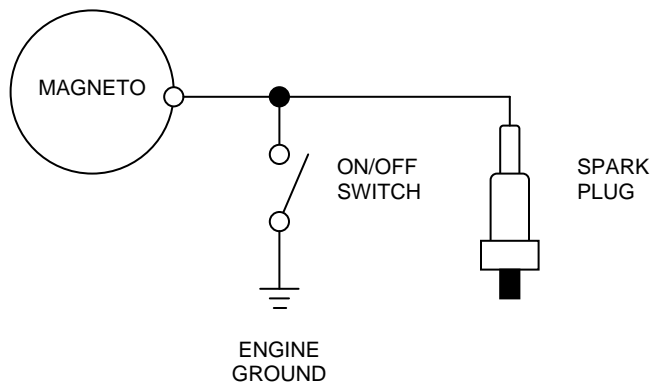
WIRING DIAGRAMS



**Starter Switch Wiring
Figure 3**



**Starter Circuit Schematic Diagram
Figure 4**



**ON/OFF Switch Circuit Schematic Diagram
Figure 5**



TROUBLESHOOTING

| Problem | Possible Cause | Corrective Action |
|---|---|---|
| Engine will not start. | ON/OFF switch is in OFF position. | Move switch to START position. |
| | Out of gasoline. | Fill gas tank. |
| | Old or contaminated gasoline. | Drain gas tank and fill with fresh gasoline. |
| | Spark plug wire disconnected. | Connect spark plug wire. |
| | Dirty air cleaner. | Clean or replace air cleaner. |
| Starter does not turn. (Electric start only) | Battery low or dead. | Charge or replace battery. |
| | Battery cable disconnected or corroded. | Clean and secure battery terminals. |
| | Defective starter switch or wiring harness. | Replace starter switch or wiring harness. |
| | Defective starter. | Replace starter. |
| Will not cut or cutting performance is poor. | Blade drive belt tension incorrect. | Adjust blade drive belt tension. |
| | Dull blade. | Sharpen or replace blade. |
| | Clogged deck. | Unclog deck. |
| | Excessive debris built up on or blocking blade. | Clear debris from blade area. |
| | Engine RPM set too low. | Check engine RPM. |
| Abnormal vibrations. | Blade loose or out of balance. | Check blade for tightness. Rebalance if necessary. |
| | Engine loose. | Check engine mounting bolts. |
| | Blade drive belt worn. | Replace blade drive belt. |
| Belt slips or smokes. | Belt tension too low. | Adjust belt tension. |
| | Belt worn or stretched. | Replace belt. |
| | Pulleys worn or damaged. | Replace pulleys. |
| Clutch slips or squeals. | Clutch cable tension too low. | Adjust clutch tension. |
| | Clutch worn or damaged. | Replace worn or defective clutch assembly parts. |
| Blade brake will not engage. | Inadequate slack in clutch cable. | Adjust clutch cable. |
| | Clutch worn or damaged. | Replace clutch/brake assembly. |
| Transaxle will not engage. | Clutch lever not engaging clutch. | Adjust clutch cable. |
| | Clutch cable defective. | Replace cable. |
| | Belt worn or broken. | Replace belt. |
| Transaxle will not disengage. | Clutch cable out of adjustment. | Adjust clutch cable. |
| Engine will not turn over. | Defective blade clutch. | Replace clutch. |
| | Engine problem. | Contact an authorized servicing dealer for your engine. |



Battery Care (For Electric-Starting Models)

Proper care can extend the life of a battery. Follow these recommendations to ensure your battery's best performance and long life:

- Do not allow the battery charge to get too low. If the machine is not used, charge the battery every 4 – 6 weeks. Operate the engine for at least 45 minutes to maintain proper battery charge.
- Store an unused battery in a dry area that does not freeze.
- Do not charge an already charged battery. In theory, you cannot overcharge our battery with a trickle charger; however, when a battery is fully charged and the charger is still on, it generates heat that could be harmful to the battery. A fully charged battery will read 12V-13.2V with a voltmeter.
- Do not continue to crank your engine when the battery charge is low.

Charging the Battery

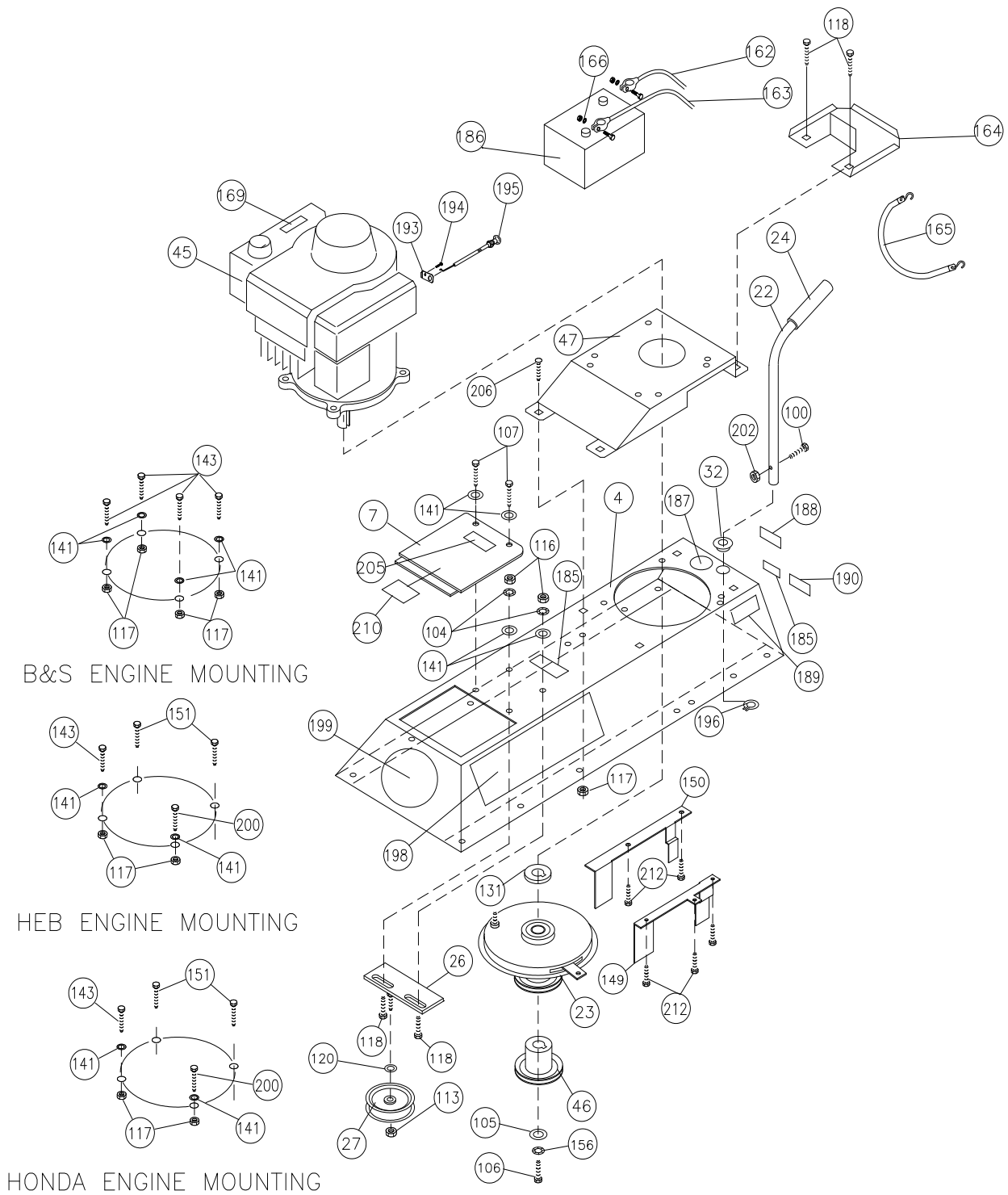
Operate the engine for at least 45 minutes to maintain proper battery charge. If the battery loses its charge, you will need to use a trickle charger to recharge it. **Caution:** The charger should have an output of 12 volts at no more than 2 amps. Using a charger with higher amps will cause significant damage to the battery.

- At 1 amp, the battery may need charging for as long as 48 hours.
- At 2 amps, the battery may need charging for as long as 24 hours.

NOTE: *Using the Recoil Starter and then running the engine will not recharge a dead or significantly discharged battery.*

WHEN YOU ARE FINISHED CHARGING THE BATTERY, DISCONNECT THE CHARGER FROM THE OUTLET FIRST, THEN DISCONNECT THE BATTERY CHARGER WIRES FROM THE BATTERY. IF YOU LEAVE THE BATTERY CHARGER WIRES CONNECTED TO THE BATTERY, THE BATTERY WILL DISCHARGE ITSELF BACK INTO THE CHARGER.

ILLUSTRATED PARTS LIST

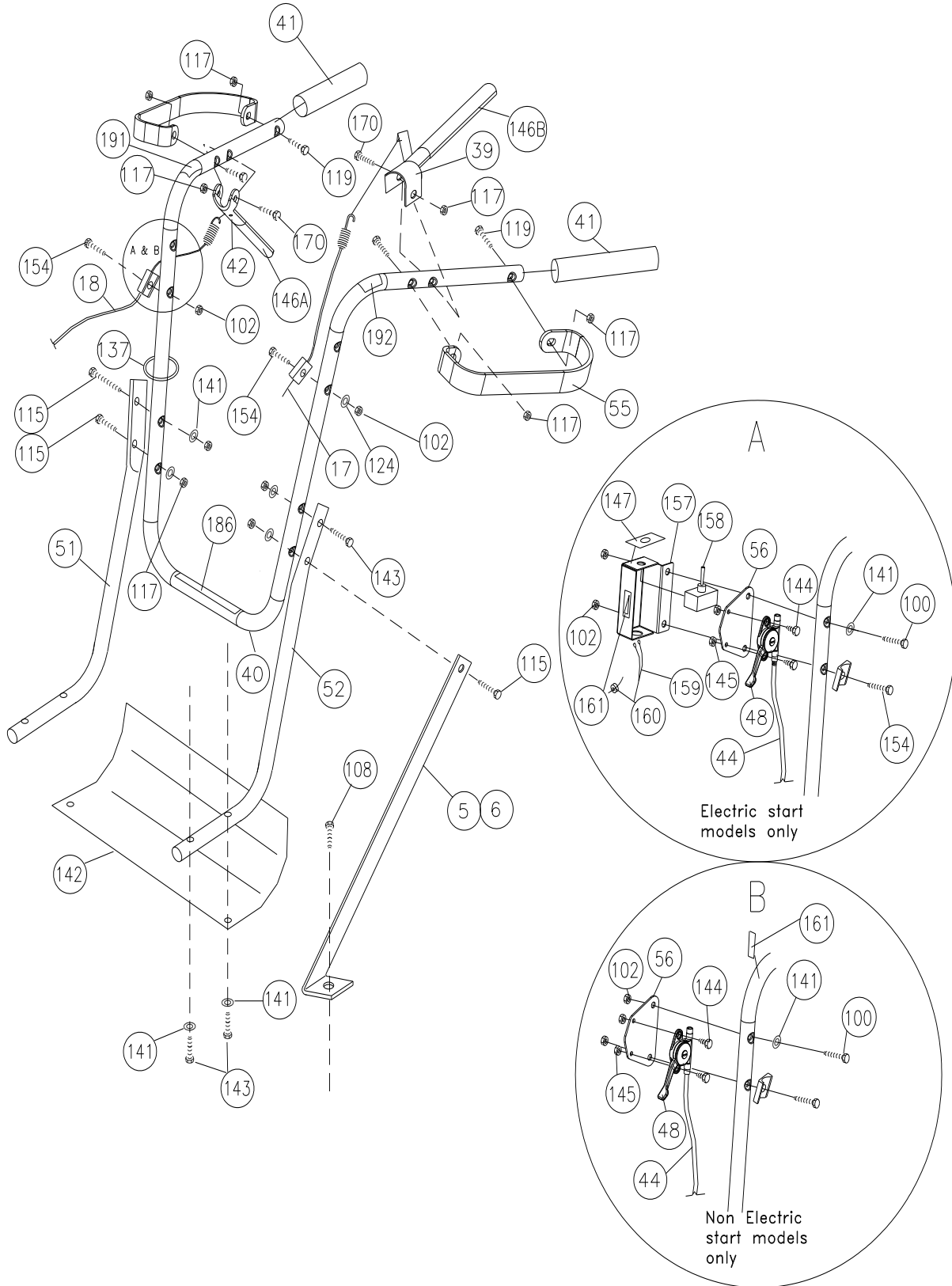


Engine and Engine Base Assembly
Figure 6



BC2403 Series Brush Cutter Owner's Manual

| ITEM NO | DESCRIPTION | BC2403HEB | | BC2403H | | BC2403IC | |
|---------|--|-----------|-----|----------|-----|----------|-----|
| | | Part No | QTY | Part No | QTY | Part No | QTY |
| 4 | Base Assembly with labels | 500240 | 1 | 500240 | 1 | 500240 | 1 |
| 7 | Door Base Engine | 500233 | 1 | 500233 | 1 | 500233 | 1 |
| 22 | Tube Shift With Grip | 500404 | 1 | 500404 | 1 | 500404 | 1 |
| 23 | Clutch Brake | 500338 | 1 | 500338 | 1 | 500338 | 1 |
| 24 | Grip 3/4 ID - Black | 610102 | 1 | 610102 | 1 | 610102 | 1 |
| 26 | Plate Mount Idler WA | 500228 | 1 | 500228 | 1 | 500228 | 1 |
| 27 | Pulley Idler 4.5" OD X 3/8" | 500270 | 1 | 500270 | 1 | 500270 | 1 |
| 32 | Bushing Shifter | 500130 | 1 | 500130 | 1 | 500130 | 1 |
| 45 | 13 HP Honda GXV390 Electric Start | 500333 | 1 | - | - | - | - |
| 45 | 13 HP Honda GXV390 | - | - | 500334 | 1 | - | - |
| 45 | 13 HP OHV B & S | - | - | - | - | 520046 | 1 |
| 46 | Pulley Drive Traction BC | 500238 | 1 | 500238 | 1 | 500238 | 1 |
| 47 | Spacer Engine WA 2401 | 500262 | 1 | 500262 | 1 | 500262 | 1 |
| 100 | Screw cap 1/4-20 x 1 1/4 | 8041007 | 1 | 8041007 | 1 | 8041007 | 1 |
| 104 | Washer Split Lock 5/16" | *8177011 | 2 | *8177011 | 2 | *8177011 | 2 |
| 105 | Plate Impeller Washer | 850443 | 1 | 850443 | 1 | 850443 | 1 |
| 106 | Screw Cap 7/16-20 X 2 3/4" | 440285 | 1 | 440285 | 1 | 440285 | 1 |
| 107 | Screw cap 5/16" - 18 x 1" HCS ZP | 8041028 | 6 | 8041028 | 6 | 8041028 | 6 |
| 113 | Nut Lock 3/8-16 | *8160003 | 1 | *8160003 | 1 | *8160003 | 1 |
| 116 | Nut Jam 5/16-18 | *8142002 | 2 | *8142002 | 2 | *8142002 | 2 |
| 117 | Nut Lock 5/16-18 | *8160002 | 8 | *8160002 | 8 | *8160002 | 10 |
| 118 | Bolt Carriage 5/16-18 x 1" | *8024040 | 2 | *8024040 | 2 | *8024040 | 2 |
| 120 | Washer 3/8 FC | *8171004 | 1 | *8171004 | 1 | *8171004 | 1 |
| 131 | Spacer Engine | 830113 | 1 | 830113 | 1 | 830113 | 1 |
| 141 | Washer 5/16" FC | *8171003 | 8 | *8171003 | 8 | *8171003 | 8 |
| 143 | Screw Cap 5/16-18 x 1-3/4" | *8041031 | 1 | *8041031 | 2 | *8041031 | 4 |
| 149 | Guide Belt LH | 500230 | 1 | 500230 | 1 | 500230 | 1 |
| 150 | Guide Belt RH | 500231 | 1 | 500231 | 1 | 500231 | 1 |
| 151 | Screw Cap 5/16-24 x 1" | *400164 | 2 | *400164 | 2 | - | - |
| 156 | Washer lock 7/16" ST Med | 8177013 | 1 | 8177013 | 1 | 8177013 | 1 |
| 162 | Cable Battery Red W/Charge | 500304 | 1 | - | - | - | - |
| 163 | Cable Battery Black 10" | 790133 | 1 | - | - | - | - |
| 164 | Bracket Battery Rear | 500347 | 1 | - | - | - | - |
| 165 | Strap Hold Down | 790303 | 1 | - | - | - | - |
| 166 | Washer 1/4" SAE | 8172007 | 2 | 8172007 | 2 | 8172007 | 2 |
| 169 | Label Fuel EN/SP | - | - | - | - | 100261 | 1 |
| 185 | Label Guards | 900327 | 2 | 900327 | 2 | 900327 | 2 |
| 186 | Battery 12v w/ Label and hardware (Hardware can be found at hardware store) | 520200 | 1 | - | - | - | - |
| 187 | Label Read | 890301 | 1 | 890301 | 1 | 890301 | 1 |
| 188 | Label Ear Eye Breathe | 890254 | 1 | 890254 | 1 | 890254 | 1 |
| 189 | Label Chock Wheels | 500168 | 1 | 500168 | 1 | 500168 | 1 |
| 190 | Label Patent No | 500279 | 1 | 500279 | 1 | 500279 | 1 |
| 193 | Plate Choke Mount BC | 500325 | 1 | - | - | - | - |
| 194 | Screw Machine 10-32 x 3/4" | 430248 | 1 | - | - | - | - |
| 195 | Control Cable Choke BC | 500326 | 1 | - | - | - | - |
| 196 | Ring Retaining External 3/4" | 520176 | 1 | 520176 | 1 | 520176 | 1 |
| 198 | Label Outback BC | 500293 | 2 | 500293 | 2 | 500293 | 2 |
| 199 | Label Product Decal | 890456 | 1 | 890456 | 1 | 890456 | 1 |
| 200 | Screwcap 5/16 -18 x 2 | 8041032 | 1 | - | - | - | - |
| 202 | Nut lock 1/4-20 2 way | 8142004 | 1 | - | - | - | - |
| 205 | Label Spark Arrestor | 100252 | 1 | 100252 | 1 | 100252 | 1 |
| 206 | Carriage bolt 5/16"-18 x 3/4" ZP | 8024039 | 4 | 8024039 | 4 | 8024039 | 4 |
| 210 | Label Made in U.S.A | 520116 | 1 | 520116 | 1 | 520116 | 1 |
| 212 | Screwcap 5/16"-18 x 3/4" | 8041026 | 5 | 8041026 | 5 | 8041026 | 5 |

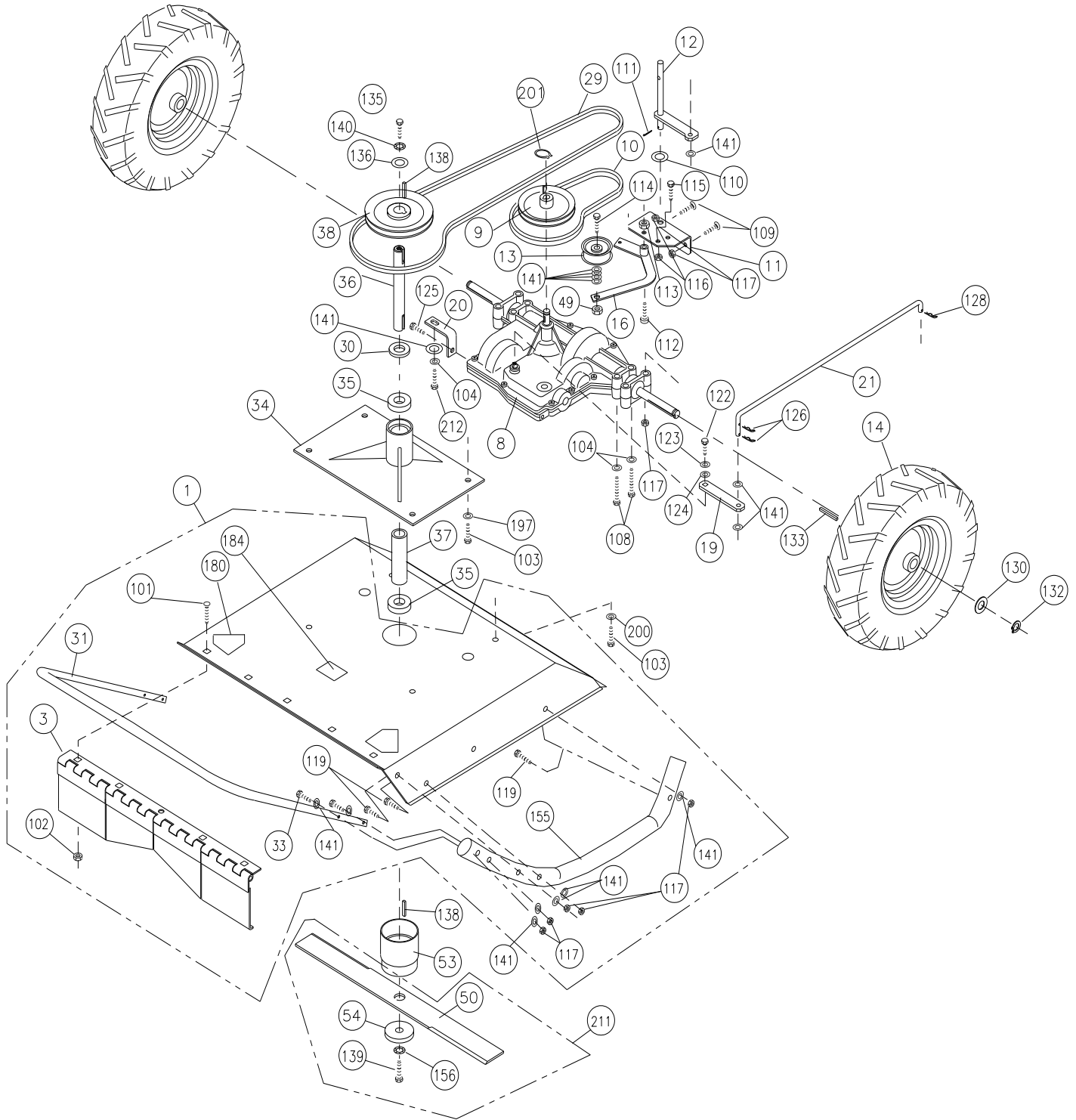


Handlebar Assembly
Figure 7



BC2403 Series Brush Cutter Owner's Manual

| ITEM NO | DESCRIPTION | BC2403HEB | | BC2403H | | BC2403IC | |
|---------|--------------------------------|-----------|-----|----------|-----|----------|-----|
| | | Part No | QTY | Part No | QTY | Part No | QTY |
| 5 | Handle Brace Left | 500196 | 1 | 500196 | 1 | 500196 | 1 |
| 6 | Handle Brace Right | 500200 | 1 | 500200 | 1 | 500200 | 1 |
| 17 | Cable Clutch Blade BC2402 | 500259 | 1 | 500259 | 1 | 500259 | 1 |
| 18 | Cable Clutch Drive BC2402 | 500327 | 1 | 500327 | 1 | 500327 | 1 |
| 39 | Lever Control Blade | 500312 | 1 | 500312 | 1 | 500312 | 1 |
| 40 | Handle Upper BC2403 | 500383 | 1 | 500383 | 1 | 500383 | 1 |
| 41 | Grip Handle 1" ID x 7.5" | 500267 | 2 | 500267 | 2 | 500267 | 2 |
| 42 | Lever Control Clutch | 500406 | 1 | 500406 | 1 | 500406 | 1 |
| 44 | Cable Throttle Control 36.0" | 440178 | 1 | 440178 | 1 | 440178 | 1 |
| 48 | Control Throttle | 440013 | 1 | 440013 | 1 | 440013 | 1 |
| 51 | Handle Lower RH BC2402 | 500141 | 1 | 500141 | 1 | 500141 | 1 |
| 52 | Handle Lower LH BC2402 | 500140 | 1 | 500140 | 1 | 500140 | 1 |
| 55 | Guard Hand BC2402 | 500339 | 2 | 500339 | 2 | 500339 | 2 |
| 56 | Throttle Plate BC2403 | 500385 | 1 | 500385 | 1 | 500385 | 1 |
| 100 | Screw cap 1/4-20 x 1 1/4 | 8041007 | 1 | 8041007 | 1 | 8041007 | 1 |
| 102 | Nut Lock 1/4-20 | *8160001 | 4 | *8160001 | 4 | *8160001 | 4 |
| 108 | Screw Cap 5/16-18 x 2-3/4" | *8041035 | 2 | *8041035 | 2 | *8041035 | 2 |
| 115 | Screw Cap 5/16-18 x 2" | *8041032 | 2 | *8041032 | 2 | *8041032 | 2 |
| 117 | Nut Lock 5/16-18 | *8160002 | 10 | *8160002 | 10 | *8160002 | 10 |
| 119 | Screw Cap 5/16-18 x 1-1/2" | *8041030 | 4 | *8041030 | 4 | *8041030 | 4 |
| 124 | Washer 1/4" FC | *8171002 | 1 | *8171002 | 1 | *8171002 | 1 |
| 137 | Ty Wrap | 900407 | 2 | 900407 | 2 | 900407 | 2 |
| 141 | Washer 5/16" FC | *8171003 | 9 | *8171003 | 9 | *8171003 | 9 |
| 142 | Bracket Clutch Cable Guard | 500321 | 1 | 500321 | 1 | 500321 | 1 |
| 143 | Screw Cap 5/16-18 x 1-3/4" | *8041031 | 6 | *8041031 | 6 | *8041031 | 6 |
| 144 | Screw Mach Flat HD Phil #10-24 | 830514 | 2 | 830514 | 2 | 830514 | 2 |
| 145 | Nut Lock LT #10-24 | 8164005 | 2 | 8164005 | 2 | 8164005 | 2 |
| 146A | Grip Lever Yellow | 500378 | 1 | 500378 | 1 | 500378 | 1 |
| 146B | Grip Lever Orange | 500379 | 1 | 500379 | 1 | 500379 | 1 |
| 147 | Label Start/Stop Toggle | 500329 | 1 | - | - | - | - |
| 154 | Screw Cap 1/4-20 x 1 3/4" | 8041009 | 1 | 8041009 | 1 | 8041009 | 1 |
| 157 | Switch box BC2403 | 500384 | 1 | - | - | - | - |
| 158 | Switch Toggle, ON/OFF | 500307 | 1 | - | - | - | - |
| 159 | Harness Assy | 500306 | 1 | - | - | - | - |
| 160 | Bushing Strain Relief | 500282 | 1 | - | - | - | - |
| 161 | Label Throttle Pull Start BC | 501314 | 1 | 501314 | 1 | 501314 | 1 |
| 170 | Bolt Shoulder 3/8-16 x 1-1/2" | 501313 | 2 | 501313 | 2 | 501313 | 2 |
| 186 | Label Shift BC2402 | 500349 | 1 | 500349 | 1 | 500349 | 1 |
| 191 | Label Clutch Drive | 500176 | 1 | 500176 | 1 | 500176 | 1 |
| 192 | Label Clutch Blade | 500177 | 1 | 500177 | 1 | 500177 | 1 |

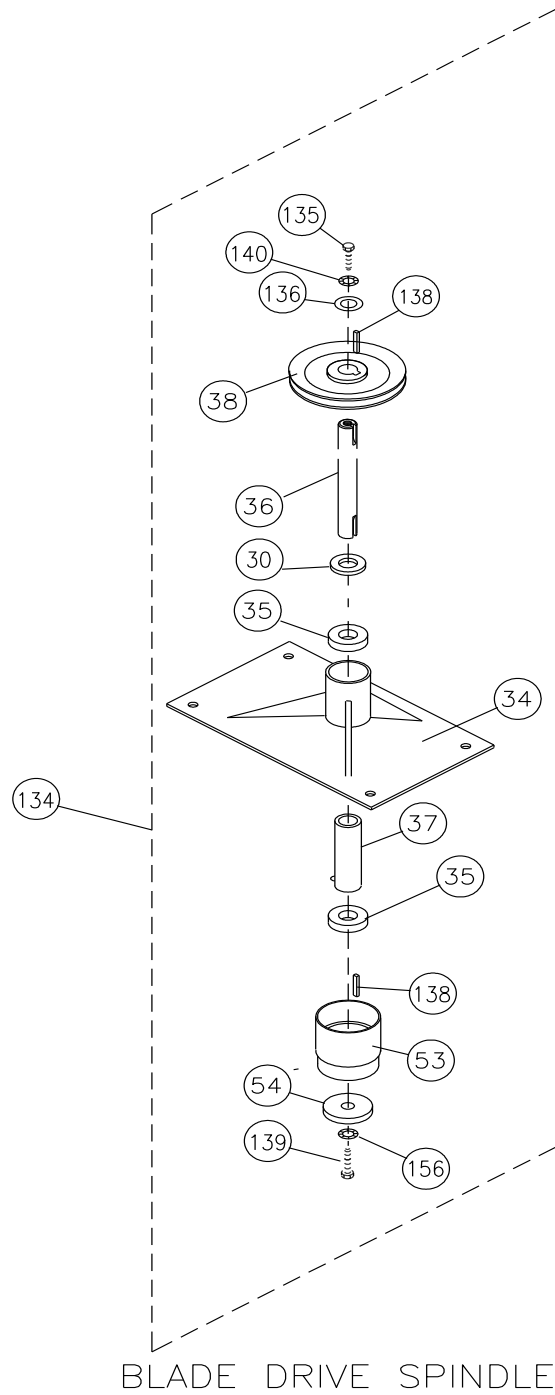


Transaxle and Blade Deck Assembly
Figure 8



BC2403 Series Brush Cutter Owner's Manual

| ITEM NO | DESCRIPTION | BC2403HEB | | BC2403H | | BC2403IC | |
|---------|---|-----------|-----|----------|-----|----------|-----|
| | | Part No | QTY | Part No | QTY | Part No | QTY |
| 1 | Deck Assembly with Labels | 500407 | 1 | 500407 | 1 | 500407 | 1 |
| 3 | Deflector Front BC2402 | 500125 | 1 | 500125 | 1 | 500125 | 1 |
| 8 | Transaxle 3 SPD BC2402 | 500365 | 1 | 500365 | 1 | 500365 | 1 |
| 9 | Pulley 5.0" OD 'A' Section | 830180 | 1 | 830180 | 1 | 830180 | 1 |
| 10 | Belt Traction Drive | 500119 | 1 | 500119 | 1 | 500119 | 1 |
| 11 | Plate Pivot Idler/Shifter | 500122 | 1 | 500122 | 1 | 500122 | 1 |
| 12 | Shifter Pivot WA | 500368 | 1 | 500368 | 1 | 500368 | 1 |
| 13 | Pulley Idler | 800260 | 1 | 800260 | 1 | 800260 | 1 |
| 14 | Wheel & Tire 16" SP LH | 500366 | 1 | 500366 | 1 | 500366 | 1 |
| | Wheel & Tire 16" SP LH Xtrac No flat BC2403HF and ICF only | - | - | 500371 | 1 | 500371 | 1 |
| 16 | Arm Idler WA | 500170 | 1 | 500170 | 1 | 500170 | 1 |
| 19 | Bar Shift T-axle | 500121 | 1 | 500121 | 1 | 500121 | 1 |
| 20 | Angle Support T-axle | 500127 | 1 | 500127 | 1 | 500127 | 1 |
| 21 | Rod Link Shifter | 500144 | 1 | 500144 | 1 | 500144 | 1 |
| 29 | Belt Blade Drive | 500237 | 1 | 500237 | 1 | 500237 | 1 |
| 30 | Spacer Spindle BC2402 | 500232 | 1 | 500232 | 1 | 500232 | 1 |
| 31 | Bar Guard BC2403 | 500356 | 1 | 500356 | 1 | 500356 | 1 |
| 33 | Screw Cap 5/16-18 x 1 3/4" | 8041031 | 4 | 8041031 | 4 | 8041031 | 4 |
| 34 | Spindle WA BC2402 | 500174 | 1 | 500174 | 1 | 500174 | 1 |
| 35 | Bearing 7/8" ID Sealed Press | 500101 | 2 | 500101 | 2 | 500101 | 2 |
| 36 | Shaft Drive Blade | 500107 | 1 | 500107 | 1 | 500107 | 1 |
| 37 | Spacer Spindle Bearing | 500115 | 1 | 500115 | 1 | 500115 | 1 |
| 38 | Pulley 7" OD x 7/8" Bore | 500253 | 1 | 500253 | 1 | 500253 | 1 |
| 49 | Nut Lock 3/8-16 Thin | 8161042 | 1 | 8161042 | 1 | 8161042 | 1 |
| 50 | Blade 24" BC2402 | 500210 | 1 | 500210 | 1 | 500210 | 1 |
| 53 | Adapter Blade WA | 500191 | 1 | 500191 | 1 | 500191 | 1 |
| 54 | Washer Friction Blade | 500108 | 1 | 500108 | 1 | 500108 | 1 |
| 101 | Bolt Carriage 1/4-20 x 3/4" | 8024021 | 5 | 8024021 | 5 | 8024021 | 5 |
| 102 | Nut Lock 1/4-20 | *8160001 | 5 | *8160001 | 5 | *8160001 | 5 |
| 103 | Screw Cap 5/16-18 x 1-1/4" | *8041029 | 6 | *8041029 | 6 | *8041029 | 6 |
| 104 | Washer Split Lock 5/16" | *8177011 | 5 | *8177011 | 5 | *8177011 | 5 |
| 108 | Screw Cap 5/16-18 x 2-3/4 " | *8041035 | 4 | *8041035 | 4 | *8041035 | 4 |
| 109 | Bolt Carriage 5/16-18 x 3/4 " | 8024039 | 2 | 8024039 | 2 | 8024039 | 2 |
| 110 | Washer Flat 1/2" | 900230 | 1 | 900230 | 1 | 900230 | 1 |
| 111 | Pin Cotter 3/32 x 3/4" | *8197016 | 1 | *8197016 | 1 | *8197016 | 1 |
| 112 | Bolt Shoulder 1/2 x 1" | 500114 | 1 | 500114 | 1 | 500114 | 1 |
| 113 | Nut Lock 3/8-16 | *8160003 | 1 | *8160003 | 1 | *8160003 | 1 |
| 114 | Bolt Idler | 800888 | 1 | 800888 | 1 | 800888 | 1 |
| 115 | Screwcap 5/16"-18 x 2" HCS ZP | 8041032 | 1 | 8041032 | 1 | 8041032 | 1 |
| 116 | Nut Jam 5/16-18 | *8142002 | 1 | *8142002 | 1 | *8142002 | 1 |
| 117 | Nut Lock 5/16-18 | *8160002 | 15 | *8160002 | 15 | *8160002 | 15 |
| 119 | Screw Cap 5/16-18 x 1-1/2" | *8041030 | 6 | *8041030 | 6 | *8041030 | 6 |
| 122 | Screw Cap 1/4-28 x 1/2" GR5 | 850408 | 1 | 850408 | 1 | 850408 | 1 |
| 123 | Washer lock 1/4" S/T Med | 8177010 | 1 | 8177010 | 1 | 8177010 | 1 |
| 124 | Washer 1/4" FC | *8171002 | 1 | *8171002 | 1 | *8171002 | 1 |
| 125 | Screw Self Tap 5/16" | *8123128 | 1 | *8123128 | 1 | *8123128 | 1 |
| 126 | Pin Hair Cotter | 900471 | 2 | 900471 | 2 | 900471 | 2 |
| 128 | Pin Cotter 3/32 x 3/4" | 8197016 | 1 | 8197016 | 1 | 8197016 | 1 |
| 130 | Washer 0.765 x 1.250 x 0.060" | 850238 | 2 | 850238 | 2 | 850238 | 2 |
| 132 | Ring Snap 0.750" | 850230 | 2 | 850230 | 2 | 850230 | 2 |
| 133 | Key 3/16 x 2-1/8" | 9201087 | 2 | 9201087 | 2 | 9201087 | 2 |
| 135 | Screw Cap 7/16-20 x 1-1/4" GR8 | 800554 | 1 | 800554 | 1 | 800554 | 1 |
| 136 | Washer 7/8 SAE | 350153 | 1 | 350153 | 1 | 350153 | 1 |
| 138 | Key Sq 3/16 x 5/8" | 9201072 | 2 | 9201072 | 2 | 9201072 | 2 |
| 139 | Screw Cap 7/16-20 x 2" GR8 | 500188 | 1 | 500188 | 1 | 500188 | 1 |
| 140 | Washer Lock 7/16" | 850132 | 1 | 850132 | 1 | 850132 | 1 |
| 141 | Washer 5/16 FC | *8171003 | 22 | *8171003 | 22 | *8171003 | 22 |
| 155 | Bar Skid BC2403 | 500355 | 2 | 500355 | 2 | 500355 | 2 |
| 156 | Washer lock 7/16 S/T Med | 8177013 | 1 | 8177013 | 1 | 8177013 | 1 |
| 180 | Label OPEI | 400424 | 2 | 400424 | 2 | 400424 | 2 |
| 184 | Label Flying Debris | 810736 | 1 | 810736 | 1 | 810736 | 1 |
| 197 | Washer Lock 5/16 twisted tooth | 800177 | 2 | 800177 | 2 | 800177 | 2 |
| 200 | Washer Lock 5/16 twisted tooth heavy | 430298 | 4 | 430298 | 4 | 430298 | 4 |
| 201 | Snap ring | 850233 | 1 | 850233 | 1 | 850233 | 1 |
| 211 | Blade kit | 500210-S | 1 | 500210-S | 1 | 500210-S | 1 |
| 212 | Screwcap 5/16"-18 x 3/4" | 8041026 | 1 | 8041026 | 1 | 8041026 | 1 |



Blade Drive Spindle Assembly Detail Drawing
Figure 9



BC2403 Series Brush Cutter Owner's Manual

| ITEM NO | DESCRIPTION | BC2403HEB | | BC2403H | | BC2403IC | |
|---------|--------------------------------|-----------|-----|---------|-----|----------|-----|
| | | Part No | QTY | Part No | QTY | Part No | QTY |
| 134 | Spindle Assembly Complete | 500242 | 1 | 500242 | 1 | 500242 | 1 |
| 30 | Spacer Spindle BC2402 | 500232 | 1 | 500232 | 1 | 500232 | 1 |
| 34 | Spindle WA BC2402 | 500174 | 1 | 500174 | 1 | 500174 | 1 |
| 35 | Bearing 7/8" ID Sealed Press | 500101 | 2 | 500101 | 2 | 500101 | 2 |
| 36 | Shaft Drive Blade | 500107 | 1 | 500107 | 1 | 500107 | 1 |
| 37 | Spacer Spindle Bearing | 500115 | 1 | 500115 | 1 | 500115 | 1 |
| 38 | Pulley 7" OD x 7/8" Bore | 500253 | 1 | 500253 | 1 | 500253 | 1 |
| 53 | Adapter Blade WA | 500191 | 1 | 500191 | 1 | 500191 | 1 |
| 54 | Washer Friction Blade | 500108 | 1 | 500108 | 1 | 500108 | 1 |
| 135 | Screw Cap 7/16-20 x 1-1/4" GR8 | 800554 | 1 | 800554 | 1 | 800554 | 1 |
| 136 | Washer 7/8 SAE | 350153 | 1 | 350153 | 1 | 350153 | 1 |
| 138 | Key Sq 3/16 x 5/8" | 9201072 | 2 | 9201072 | 2 | 9201072 | 2 |
| 139 | Screw Cap 7/16-20 x 2" GR8 | 500188 | 1 | 500188 | 1 | 500188 | 1 |
| 140 | Washer Lock 7/16" | 850132 | 1 | 850132 | 1 | 850132 | 1 |
| 156 | Washer lock 7/16 S/T Med | 8177013 | 1 | 8177013 | 1 | 8177013 | 1 |