

# BILLY GOAT KD VACUUM Owner's Manual KD612, KD512HC, KD512HCS

# Accessories

CE

## **Optional Debris bags**

R.ABI

| SHREDDER<br>KIT                                | ON BOARD<br>VACUUM<br>HOSE KIT                                              | NOZZLE WEAR<br>PLATES                                                                          | CASTER KIT               | STANDARD<br>TURF PRO<br>DEBRIS BAG                                | DEBRIS BAG<br>COVER                                | ZIPPERLESS<br>QUICK BAG                                         |
|------------------------------------------------|-----------------------------------------------------------------------------|------------------------------------------------------------------------------------------------|--------------------------|-------------------------------------------------------------------|----------------------------------------------------|-----------------------------------------------------------------|
| Shreds<br>leaves,<br>reducing total<br>volume. | 4"(102mm) x<br>7' (2.13m)<br>For<br>vacuuming in<br>hard to reach<br>areas. | (STD. ON<br>KD512HCS)<br>Extends nozzle<br>life when used<br>along curbs and<br>hard surfaces. | For use on hard surface. | For use in<br>leaves and<br>grass in non-<br>dusty<br>conditions. | Directs dust<br>downward<br>away from<br>operator. | For non-dusty<br>conditions that<br>are damaging<br>to zippers. |
| P/N 890209                                     | P/N 890041                                                                  | P/N 890413                                                                                     | P/N 890412               | P/N 890028                                                        | P/N 900801                                         | P/N 890309                                                      |



#### ABOUT THIS MANUAL

**THANK YOU** for purchasing a BILLY GOAT <sup>®</sup> *KD Vacuum*. Your new machine has been carefully designed and manufactured to provide years of reliable and productive service. This manual provides complete operating and maintenance instructions that will help to maintain your machine in top running order. Read this manual carefully before assembling, operating, or servicing your equipment.

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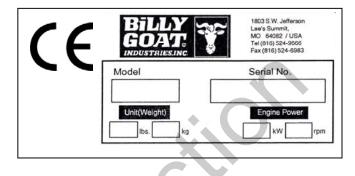


## SERIAL PLATE DATA

Record the model number, serial number, date of purchase, and where purchased.

Purchase Date:

Purchased From:



## **Specifications**

|    |                                                | KD612                          | KD512HC                        | KD512HCS                       |
|----|------------------------------------------------|--------------------------------|--------------------------------|--------------------------------|
|    | Engine: HP                                     | 6.0 (4.47 kW)                  | 5.5 (4.11 kW)                  | 5.5 (4.11 kW)                  |
|    | Engine: Type                                   | B & S QUANTUM                  | HONDA OHC                      | HONDA OHC                      |
|    | Engine: Model                                  | 112K020124E1                   | GCV160AN1A                     | GCV160AN1A                     |
|    | Engine: Fuel Capacity                          | 1.5 qt. (1.4 L)                | 1.16 qt. (1.1 L)               | 1.16 qt. (1.1 L)               |
|    | Engine: Oil Capacity                           | 0.63 qt. (0.6 L)               | 0.58 qt. (0.6 L)               | 0.58 qt. (0.6 L)               |
| 20 | Total Unit Weight:                             | 98# (44.5 kg)                  | 99# (45.0 kg)                  | 99# (45.0 kg)                  |
|    | Overall Length                                 | 62" (1.57m)                    | 62" (1.57m)                    | 62" (1.57m)                    |
|    | Overall Width                                  | 26.75" (0.68 m)                | 26.75" (0.68 m)                | 26.75" (0.68 m)                |
|    | Overall Height                                 | 42" (1.07m)                    | 42" (1.07m)                    | 42" (1.07m)                    |
|    | Max. operating slope                           | 20 <sup>0</sup>                | 20 <sup>0</sup>                | 20 <sup>0</sup>                |
|    | Sound in accordance with 2000/14/EEC standards | 111 dBa                        | 111 dBa                        | 111 dBa                        |
|    | Sound at operator's ear                        | 97 dBa                         | 97dBa                          | 97dBa                          |
|    | Vibration at operator position                 | 0.34 g (3.29m/s <sup>2</sup> ) | 0.27 g (2.86m/s <sup>2</sup> ) | 0.27 g (2.86m/s <sup>2</sup> ) |



## **GENERAL SAFETY INSTRUCTIONS and SYMBOLS**

The safety symbols shown below are used throughout this manual. You should become familiar with them before assembling, operating, or servicing this equipment.



WARNING: This symbol indicates important information that will prevent injury to yourself or others.



This symbol indicates ear protection is recommended when operating this equipment.



This symbol indicates eye protection is recommended when operating this equipment.



This symbol indicates gloves should be worn when servicing this equipment.



This symbol indicates that this manual and the engine manufacturer's manual should be read carefully before assembling, operation, or servicing this equipment.



This symbol indicates important information that will prevent damage to your BILLY GOAT <sup>®</sup> KD Vacuum.



This symbol indicates the engine oil level should be checked before operating this equipment.

Read and make sure you thoroughly understand the following safety precautions before assembling, operating or servicing this equipment:



**READ** this manual and the engine manufacturer's manual carefully before assembling, operating, or servicing this equipment.



**EAR PROTECTION** is recommended when operating this equipment.



EYE PROTECTION is recommended when operating this equipment.



BREATHING PROTECTION is recommended when operating this equipment.



**EXHAUST** from this product contains chemicals known to the State of California to cause cancer, birth defects or other reproductive harm.

**DO NOT** operate this equipment on any unimproved forested, brushy, or grass covered land unless a spark arrester is installed on the muffler as required by Section 4442 of the California Public Resources Code. The arrester must be maintained in good working order. Other states may have similar laws. Federal laws apply on federal lands.

**DO NOT** run engine in an enclosed area. Exhaust gases contain carbon monoxide, an odorless and possibly fatal poison.



## KD Owner's Manual

**DO NOT** run this equipment indoors or in any poorly ventilated area. Refueling outdoors is recommended.

- **DO NOT** refuel this equipment while the engine is running. Allow engine to cool for at least two minutes before refueling.
- **DO NOT** store gasoline near an open flame.
- **DO NOT** remove gas cap while engine is running.
- **DO NOT** start or operate engine if strong odor of gasoline is present.
- **DO NOT** start or operate engine if gasoline is spilled. Move equipment away from spill until gasoline has completely evaporated.
- **DO NOT** smoke while filling the fuel tank.
- **DO NOT** check for spark with spark plug or spark plug wire removed. Use an approved spark tester.
- DO NOT operate engine without a muffler. Inspect muffler periodically and replace if necessary. If equipped with muffler deflector, inspect deflector periodically and replace if necessary.
- **DO NOT** operate engine with grass, leaves or other combustible material near the muffler.
- **DO NOT** touch muffler, cylinder, or cooling fins when hot. Contact with hot surfaces may cause severe burns.
- **DO NOT** leave equipment unattended while in operation.
- **DO NOT** park equipment on a steep grade or slope.
- **DO NOT** operate equipment with bystanders in or near the work area.
- **DO NOT** allow children to operate this equipment.
- **DO NOT** operate equipment with guards removed.
- **DO NOT** operate equipment near hot or burning debris or any toxic or explosive materials.
- **DO NOT** operate equipment on slopes greater than specified in Specifications section of this manual.
- **DO NOT** place hands or feet underneath unit, or near any moving parts.

ALWAYS remove spark plug wire when servicing equipment to prevent accidental starting.

ALWAYS check fuel lines and fittings frequently for cracks or leaks. Replace if necessary.

ALWAYS keep hands and feet away from moving or rotating parts.

ALWAYS store fuel in approved safety containers.

## WARNING: Important

Remove all rocks, wire, string, plastic, etc. that can present a hazard during work prior to starting.

**DO** identify and mark all fixed objects to be avoided during work such as sprinkler heads, water valves, buried cables, or clothes line anchors, etc.



#### SOUND

111 dB

SOUND LEVEL 97 dB(a) at Operator Position

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

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:         | 45°F (7.2°C)         |
| Wind Speed:          | 5 mph (8.1 kmh)      |
| Wind Direction:      | South West           |
| Humidity:            | 60%                  |
| Barometric Pressure: | 30.18"Hg (767 mm Hg) |
|                      |                      |

#### VIBRATION DATA

#### VIBRATION LEVEL 0.34g (3.29m/s<sup>2</sup>)

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 5-25-2006 under the conditions listed below.

| General Conditions:<br>Temperature: | Sunny<br>89°F (31.7°C) |
|-------------------------------------|------------------------|
| Wind Speed:                         | 13.6 mph (21.9kph)     |
| Wind Direction:                     | East                   |
| Humidity:                           | 22.8%                  |
| Barometric Pressure:                | 29.9Hg (101.3kpa)      |
|                                     |                        |

#### INTENDED USE

**INTENDED USE:** This machine is designed for vacuuming leaves, grass clippings and other types of organic litter and for chipping brush, limbs, corn and sunflower stalks and palm fronds.

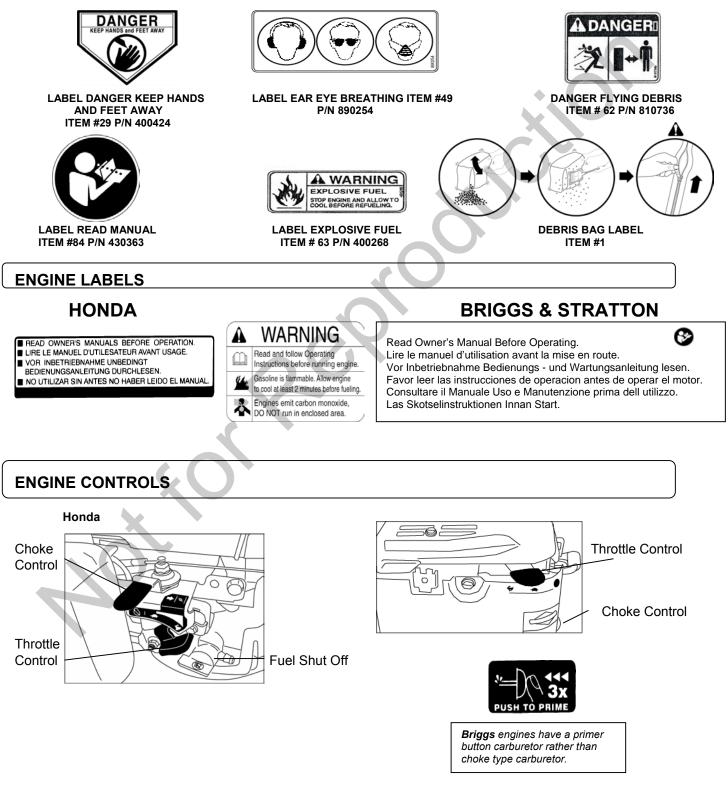
Debris mixed with cans, bottles and small amounts of sand can be vacuumed; however, it is not this machine's primary purpose. Vacuuming cans, bottles and sand will affect the longevity of your machine.

Do not operate if excessive vibration occurs. If excessive vibration occurs, shut engine off immediately and check for damaged or worn impeller, loose impeller bolt, loose impeller key, loose engine or lodged foreign objects. Note: See parts list for proper impeller bolt torque specifications. (See trouble shooting section on page 12).



## **INSTRUCTION LABELS**

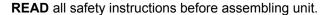
The labels shown below were installed on your BILLY GOAT <sup>®</sup> KD Vacuum. If any labels are damaged or missing, replace them before operating this equipment. Item numbers from the Illustrated Parts List and part numbers are provided for convenience in ordering replacement labels. The correct position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





## PACKING CHECKLIST

Your Billy Goat KD Vacuum is shipped from the factory in one carton, completely assembled except for the upper handle, debris bag, and bag quick disconnect.

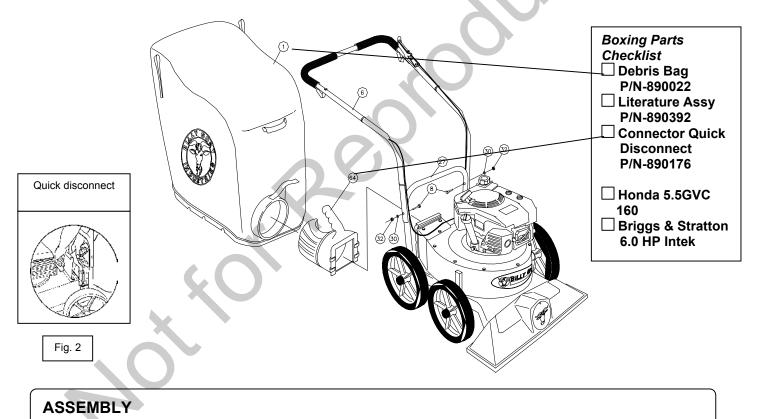


**TAKE CAUTION** when removing the unit from the box the Handle Assembly is attached by cables and folded over



## PARTS BAG & LITERATURE ASSY

Warranty card P/N- 400972, Owner's Manual P/N-890033, Declaration of Conformity P/N-890393.



1. **ASSEMBLE** Lift upper handle (item 6), remove items 8, 30, & 32 from lower handle (item 27). Attach and secure upper handle as shown using same hardware.

2. **UNFOLD** the debris bag (item 1) and fasten bag neck to bag quick disconnect (item 64). Attach firmly to housing exhaust (item 52) see fig. 2.

3. ATTACH bag hanger strap to bag supports (item 11), preassembled to upper handle.

4. **CONNECT** spark plug wire.



### OPERATION

Like all mechanical tools, reasonable care must be used when operating machine. Inspect machine work area and machine before operating. Make sure that all operators of this equipment are trained in general machine use and safety.

#### ℃ PUT OIL IN ENGINE BEFORE STARTING

#### STARTING

**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 throttle lever on the engine. Under normal conditions, operate at minimum throttle to accomplish your current cleaning task.

FUEL VALVE: Move fuel valve to "ON" position (when provided on engine).

CHOKE: Located on engine and must be controlled manually.

**PRIMER:** Push primer per engine instructions (B&S only).

**THROTTLE:** Located on engine and must be controlled manually.

#### IF YOUR UNIT FAILS TO START:

See Troubleshooting on page 12.

#### HANDLING & TRANSPORTING:

This unit requires two people to lift it. With the handle in the folded position, lift holding the lower handle and belt/shaft guard one on each side of the machine. Secure the machine in place during transport. See page 3 for weight specifications

 $\triangle O$  Never lift the machine while the engine is running.

#### STORAGE

Never store engine indoors or in enclosed poorly ventilated areas with fuel in tank, where fuel fumes may reach an open flame, spark or pilot light, as on a furnace, water heater, clothes dryer or other gas appliance. If engine is to be unused for 30 days or more, prepare as follows:

A Remove all gasoline from carburetor and fuel tank to prevent gum deposits from forming on these parts and causing possible malfunction of engine. Drain fuel outdoors, into an approved container, away from open flame. Be sure engine is cool. Do not smoke. Run engine until fuel tank is empty and engine runs out of gasoline.



## OPERATION

#### VACUUMING OPERATION

**VACUUM NOZZLE HEIGHT ADJUSTMENT:** is raised and lowered by pulling slightly upward on handle and pulling height adjust knob on the handle (item 23) up at left rear of machine.

**FOR MAXIMUM PICKUP:** Adjust nozzle close to debris, but without blocking airflow into the nozzle. *NOTE*: Never bury nozzle into debris.

**CLEARING A CLOGGED NOZZLE & EXHAUST:** Turn engine off and wait for impeller to stop completely and disconnect spark plug wire. Wearing durable gloves, remove clog. **Danger**, the clog may contain sharp materials. Reconnect spark plug wire.

#### DEBRIS BAG

#### Debris bags are normal replaceable wear items.

Note: Frequently empty debris to prevent bag overloading with more weight than you can lift.

An optional bag and dust cover is available for use where debris will be vacuumed in dusty conditions (see Optional Accessories shown on page 1).

**DO NOT place bag on or near hot surface**, such as engine. Run engine at 1/2 throttle for first 1/2 hour to condition new bag. Your new bag requires a break-in period to condition the pores of the material against premature blockage. The entire bag surface serves as a filter, and must be able to breath to have good vacuum performance. Be sure engine has come to a complete stop before removing or emptying bag.

This vacuum is designed for picking up trash, organic material and other similar debris (see Safety Warnings page 4-5).

However, many vacuums are used where dust is mixed with trash. Your unit can intermittently vacuum in dusty areas. Dust is the greatest cause of lost vacuum performance. However, following these rules will help maintain your machine's ability to vacuum in dusty conditions:

• Run machine at idle to quarter throttle.

• The debris bag must be cleaned more frequently. A vacuum with a clean, pillow soft bag will have good pickup performance. One with a dirty, tight bag will have poor pickup performance. If dirty, empty debris and vigorously shake bag free of dust.

• Pressure-wash debris bag if normal cleaning does not fully clean bag. Bag should be thoroughly dry before use. **NOTE:** Having one or more spare debris bags is a good way to reduce down time while dirty bags are being cleaned. **DO NOT** leave debris in bag while in storage.

#### <u>COMPOST</u>

Vacuumed leaves, grass and other organic material from your own yard can be emptied into a pile or composter to provide enriched soil for later use as fertilizer in gardens and flower beds **NOTE:** Allow green chips to dry before spreading around living plants.



### MAINTENANCE

#### PERIODIC MAINTENANCE

Periodic maintenance should be performed at the following intervals:

| Maintenance Operation                     | Every Use (daily) | Every 5 hrs (daily) | Every 25 Hours |
|-------------------------------------------|-------------------|---------------------|----------------|
| Inspect for loose, worn or damaged parts. |                   | •                   |                |
| Clean Debris bag                          | •                 |                     |                |
| Check bag strap tightness                 | •                 |                     |                |
| Engine (See Engine Manual)                |                   | <u>^</u>            | $\frown$       |
| Check for excessive vibration             |                   | •                   |                |
| Lubricate wheels                          |                   |                     | •              |

#### **IMPELLER REMOVAL**

1. Wait for engine to cool and disconnect spark plug.

- 2. Drain fuel and oil from the engine.
- 3. Remove bag, quick release, and upper handle. Do not kink, stretch, or break control cables, control housings, or end fittings while removing handles.
- 4. Remove housing top plate by removing bolts around outside of housing.
- 5. Leaving engine fastened to top plate, turn it upside down so the impeller is on top.
- 6. Remove impeller bolt and lock washer.
- 7. Lift impeller upward. If impeller slides freely, proceed to (step 10).
- 8. Place two crowbars between impeller and housing on opposite sides. Pry impeller away from engine until it loosens. Using a penetrating oil can help loosen a stuck impeller.
- 9. If the impeller does not loosen, obtain a 1" (25.4mm) longer bolt of the same diameter and thread type as the impeller bolt. Thread longer bolt by hand into the crankshaft until bolt bottoms. Using a suitable gear or wheel puller against the bolt head and the impeller back-plate (near the blades), remove impeller from shaft.
- 10. Using a new impeller bolt and lockwasher, reinstall new impeller in reverse order.
- 11. Tighten impeller bolt. Torque impeller bolt to 50 Ft. Lbs. (68 N.m) (see item 51 on page 15).
- 12. Reinstall engine onto housing in reverse order of removal.
- 13. Gas and oil (0.69 quart).
- 14. Reinstall spark plug wire.



#### Troubleshooting

| Problem                                            | Possible Cause                                                                                                                                                                                          | Solution                                                                                                                                                                                 |
|----------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Abnormal vibration.                                | · Loose or out of balance impeller or loose engine                                                                                                                                                      | · Check impeller and replace if required.<br>Check engine                                                                                                                                |
| W ill not vacuum or has poor<br>vacuum performance | <ul> <li>dirty debris bag. Nozzle height set too<br/>high or low. Hose kit cap missing.</li> <li>Clogged nozzle or exhaust. Excessive<br/>quantity of debris.</li> </ul>                                | <ul> <li>Clean debris bag. Shake bag clean or<br/>wash. Adjust nozzle height. Check for<br/>hose kit cap. Unclog nozzle or exhaust.<br/>Allow air to feed with debris</li> </ul>         |
| Engine will not start.                             | <ul> <li>Stop switch off. Throttle in off position.</li> <li>Engine not in full choke position. Out of<br/>gasoline. Bad or old gasoline. Sparkplug<br/>wire disconnected. Dirty air cleaner</li> </ul> | <ul> <li>Check stop switches, throttle, choke<br/>position and gasoline. Connect spark<br/>plug wire. Clean or replace air filter. Or<br/>contact a qualified service person.</li> </ul> |
| Engine is locked, will not pull over.              | · Debris locked in impeller. Engine<br>problem.                                                                                                                                                         | <ul> <li>See page 5. Contact a engine service<br/>dealer for engine problems</li> </ul>                                                                                                  |
| Nozzle scrapes ground in<br>lowest height setting. | Nozzle height out of adjustment                                                                                                                                                                         | Adjust nozzle height (See Nozzle height<br>fine adjustment for hard surfaces on<br>page 5                                                                                                |

When servicing engine refer to specific manufacturers 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 (See table page 3). If you cannot locate a servicing dealer in your area you can contact the manufacturers national service organization. To reach:

American Honda: 800-426-7701

#### WARRANTY CLAIM PROCEDURE

Should a BILLY GOAT <sup>®</sup> 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 <u>www.billygoat.com</u>

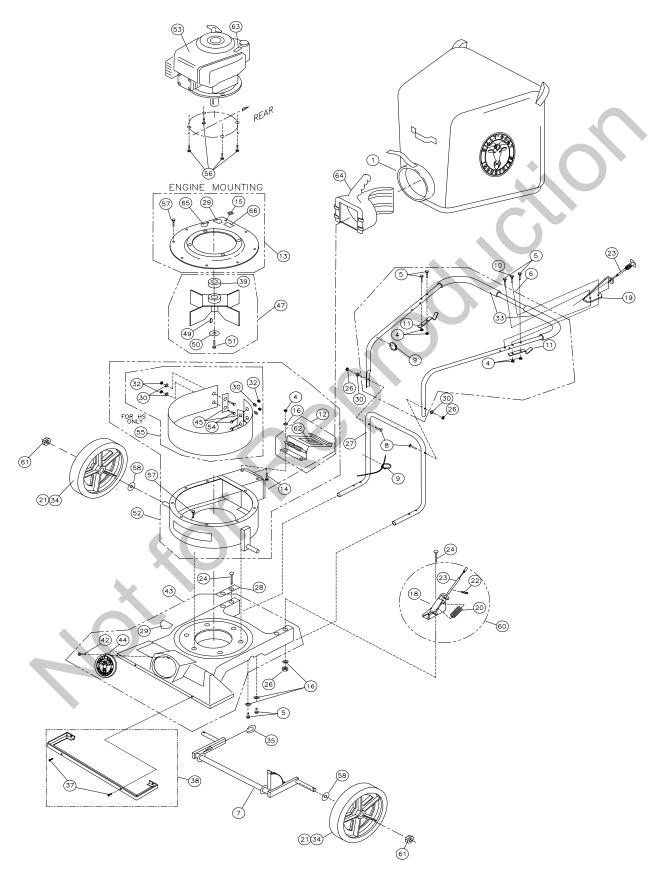


## MAINTENANCE RECORD

| Date | Service Performed |
|------|-------------------|
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## PARTS DRAWING KD





## PARTS LIST

\* Denotes standard hardware item that may be purchase d locally.

| LIS                                                | I                                                                                                                                                                                                                                                  |                                                  |                       |                                                  |                  |                                      |             |
|----------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------|-----------------------|--------------------------------------------------|------------------|--------------------------------------|-------------|
|                                                    | DESCRIPTION                                                                                                                                                                                                                                        | KD612                                            | QTY                   | KD512HC                                          | QTY              | KD512HCS                             | QTY         |
| NO.                                                | PRO DEBRIS BAG (service)                                                                                                                                                                                                                           | Part No.<br>890305                               | 1                     | Part No.<br>890023                               | 1                | Part No.<br>890023                   | 1           |
| 2                                                  | FRO DEDRIS BAG (Service)                                                                                                                                                                                                                           | 090303                                           |                       | 090023                                           |                  | 090023                               | -           |
| 3                                                  |                                                                                                                                                                                                                                                    |                                                  |                       |                                                  |                  |                                      |             |
|                                                    | NUT LOCK (1/4 - 20 )                                                                                                                                                                                                                               | *8160001                                         | 7                     | *8160001                                         | 7                | *8160001                             | 7           |
|                                                    | SCREW CAP ( 1/4 - 20 x 1-1/2 HEX )                                                                                                                                                                                                                 | *8041008                                         | 8                     | *8041008                                         | 8                | *8041008                             | 8           |
|                                                    | HANDLE ASS'Y (incl. items 4(5),5(5),11(2),75(2),76)                                                                                                                                                                                                | 900054                                           | 1                     | 900054                                           | 1                | 900054                               | 1           |
|                                                    | AXLE HEIGHT ADJUST                                                                                                                                                                                                                                 | 890389                                           | 1                     | 890389                                           | 1                | 890389                               | 1           |
| 8                                                  | SCREW HANDLE 5/16 - 18 x 1 - 3/4                                                                                                                                                                                                                   | *8041031                                         | 2                     | *8041031                                         | 2                | *8041031                             | 2           |
| 9                                                  | CLAMP CABLE                                                                                                                                                                                                                                        | 900407                                           | 2                     | 900407                                           | 2                | 900407 🔊                             | 2           |
| 10                                                 | SCREW CAP 1/4 - 20 x 1 3/4                                                                                                                                                                                                                         | *8041009                                         | 1                     | *8041009                                         | 1                | *8041009                             | 1           |
| 11                                                 | BAR BAG SUPPORT                                                                                                                                                                                                                                    | 900039                                           | 2                     | 900039                                           | 2                | 900039                               | 2           |
| 12                                                 | DOOR EXHAUST ASS'Y (incl. item 62)                                                                                                                                                                                                                 | 890148                                           | 1                     | 890148                                           | 1                | 890148                               | 1           |
|                                                    | PLATE TOP ASS'Y (incl. items 29, 57, 65)                                                                                                                                                                                                           | 890402                                           | 1                     | 890402                                           | 1                | 890402                               | 1           |
| 14                                                 | SCREWCAP 1/4-20 X3/4 HCS ZP                                                                                                                                                                                                                        | 8041004                                          | 2                     | 8041004                                          | 2                | 8041004                              | 2           |
|                                                    | WASHER FLAT 5/16                                                                                                                                                                                                                                   | 8172008                                          | 1                     | 8172008                                          | 1                | 8172008                              | 1           |
|                                                    | WASHER 1/4 FC ZP                                                                                                                                                                                                                                   | *8171002                                         | 10                    | *8171002                                         | 10               | *8171002                             | 10          |
| 17                                                 |                                                                                                                                                                                                                                                    | 000004                                           | 4                     | 000004                                           |                  | 000004                               | 4           |
|                                                    | BRACKET - HEIGHT ADJUSTMENT PLATE UPPER HEIGHT ADJUST                                                                                                                                                                                              | 890021                                           | 1                     | 890021                                           | 1                | 890021                               | 1           |
| -                                                  | SPRING                                                                                                                                                                                                                                             | 890005<br>900136                                 | 1                     | 890005<br>900136                                 | 1                | 890005<br>900136                     | 1           |
|                                                    | TIRE - ONLY (PER ASSY)                                                                                                                                                                                                                             | 900136                                           | 1                     | 900136                                           | 1                | 900136                               | 1           |
|                                                    | PIN - HAIR COTTER                                                                                                                                                                                                                                  | 900307                                           | 1                     | 900307                                           | 1                | 900307<br>900471                     | 1           |
|                                                    | CABLE HEIGHT ADJUSTMENT                                                                                                                                                                                                                            | 890019                                           | 1                     | 890019                                           | 1                | 890019                               | 1           |
|                                                    | BOLT - CARRIAGE 5/16 - 18 x 4 1/2                                                                                                                                                                                                                  | *8024054                                         | 4                     | *8024054                                         | 4                | *8024054                             | 4           |
| 25                                                 |                                                                                                                                                                                                                                                    | 0021001                                          |                       | 0021001                                          | ·                | 0021001                              | ·           |
| _                                                  | NUT LOCK 5/16 - 18 HEX                                                                                                                                                                                                                             | *8160002                                         | 6                     | *8160002                                         | 6                | *8160002                             | 6           |
|                                                    | HANDLE LOWER KD510                                                                                                                                                                                                                                 | 890346                                           | 1                     | 890346                                           | 1                | 890346                               | 1           |
| 28                                                 | PLATE HANDLE SUPPORT                                                                                                                                                                                                                               | 900933                                           | 1 -2                  | 900933                                           | 1 -2             | 900933                               | 1 -2        |
| 29                                                 | LABEL DANGER CUT FINGER                                                                                                                                                                                                                            | 400424                                           | 2                     | 400424                                           | 2                | 400424                               | 2           |
| 30                                                 | WASHER FLAT CUT 5/16                                                                                                                                                                                                                               | *8171003                                         | 2                     | *8171003                                         | 2                | *8171003                             | 6           |
| 31                                                 |                                                                                                                                                                                                                                                    |                                                  |                       |                                                  |                  |                                      |             |
| 32                                                 | NUT LOCK 5/16 - 18 THIN HT.                                                                                                                                                                                                                        |                                                  |                       |                                                  |                  | *8161041                             | 4           |
| 33                                                 | GRIP HANDLE                                                                                                                                                                                                                                        |                                                  |                       | 400570                                           | 2                | 400570                               | 2           |
|                                                    | WHEEL ASS'Y (incl. items 21)                                                                                                                                                                                                                       | 900509                                           | 4                     | 900509                                           | 4                | 900509                               | 4           |
| _                                                  | WASHER 0.75 "C"                                                                                                                                                                                                                                    | 900997                                           | 0 -1                  | 900997                                           | 0 -1             | 900997                               | 0 -1        |
| 36                                                 |                                                                                                                                                                                                                                                    |                                                  |                       |                                                  |                  | *******                              |             |
|                                                    | SCREW SM 1/4x3/4 TYPE A                                                                                                                                                                                                                            | -                                                | -                     | -                                                | -                | *8122082                             | 4           |
|                                                    | PLATE SKID (incl. items 54) SPACER IMPELLER                                                                                                                                                                                                        | -                                                | -                     | -                                                | -                | 890413                               | 1           |
| 39<br>40                                           | SPACER INIFELLER                                                                                                                                                                                                                                   | -                                                | -                     | 890616                                           | 1                | 890616                               | - 1         |
| 40                                                 |                                                                                                                                                                                                                                                    |                                                  |                       |                                                  |                  |                                      |             |
| _                                                  | SCREW SELF TAPPING 10 - 24 x 1/2                                                                                                                                                                                                                   | *8123086                                         | 1                     | *8123086                                         | 1                | *8123086                             | 1           |
|                                                    | NOZZLE MAINFRAME ASS'Y (incl. one of items 29,44,42)                                                                                                                                                                                               | 890391                                           | 1                     | 890391                                           | 1                | 890391                               | 1           |
|                                                    | PLUG                                                                                                                                                                                                                                               | 900146                                           | 1                     | 900146                                           | 1                | 900146                               | 1           |
|                                                    | LINER HOLD PLATE                                                                                                                                                                                                                                   | 890618                                           | 2                     | 890618                                           | 2                | 890618                               | 2           |
| 46                                                 |                                                                                                                                                                                                                                                    | -                                                | -                     | -                                                | -                |                                      |             |
| 47                                                 | IMPELLER ASS'Y (incl. items 49, 50, 51)                                                                                                                                                                                                            | 900215                                           | 1                     | 890615                                           | 1                | 890615                               | 1           |
| 48                                                 |                                                                                                                                                                                                                                                    |                                                  |                       |                                                  |                  |                                      |             |
| 49                                                 | KEY                                                                                                                                                                                                                                                | 900162                                           | 2                     | 900162                                           | 2                | 900162                               | 2           |
| 50                                                 | WASHER LOCK 3/8 TWISTED TOOTH                                                                                                                                                                                                                      | 400502                                           | 1                     | 400502                                           | 1                | 400502                               | 1           |
| 51                                                 | SCREW CAP 3/8 -24 x 1 GR 8 (TORQ.50 FT-LBS)(68N.m)                                                                                                                                                                                                 | 900154                                           | 1                     | 900154                                           | 1                | 900154                               | 1           |
| 52                                                 | HOUSING ASS'Y (incl. items 12, 14, 15, 16, 66)                                                                                                                                                                                                     | 890371-S                                         | 1                     | 890371-S                                         | 1                | 890417-S                             | 1           |
| 53                                                 | ENGINE HONDA 5.5 H.P. GC160                                                                                                                                                                                                                        | -                                                | -                     | 890614                                           | 1                | 890614                               | 1           |
|                                                    | ENGINE BRIGGS & STRATTON 6 H.P. QUANTUM IC                                                                                                                                                                                                         | 890622                                           | 1                     | -                                                | -                |                                      | -           |
| 54                                                 | BOLT CARRIAGE 5/16-18x3/4"                                                                                                                                                                                                                         | -                                                | -                     | -                                                | -                | 8024039                              | 4           |
|                                                    | LINE PVC                                                                                                                                                                                                                                           | -                                                | -                     | -                                                | -                | 900732-S                             | 1           |
| 55                                                 |                                                                                                                                                                                                                                                    | 890408                                           | 3                     | 890408                                           | 4                | 890408                               | 4           |
| 55<br>56                                           | SCREW CAP 3/8 - 1-1/2 TAPTITE                                                                                                                                                                                                                      | 0000                                             |                       | 890359                                           | 15               | 890359                               | 15<br>8     |
| 55<br>56<br>57                                     | SCREW CAP 1/4 - 20 x 1/2 HWH                                                                                                                                                                                                                       | 890359                                           | 15                    |                                                  | •                | *0470044                             | ×           |
| 55<br>56<br>57<br>58                               | SCREW CAP 1/4 - 20 x 1/2 HWH<br>WASHER FLAT 1/2 SAE                                                                                                                                                                                                | 890359<br>*8172011                               | 8                     | *8172011                                         | 8                | *8172011                             | 0           |
| 55<br>56<br>57<br>58<br>59                         | SCREW CAP 1/4 - 20 x 1/2 HWH<br>WASHER FLAT 1/2 SAE<br>SCREW SOCKET HD. 5/16 - 18 x 3/4 GR. 8                                                                                                                                                      | *8172011                                         | 8                     | *8172011                                         |                  |                                      |             |
| 55<br>56<br>57<br>58<br>59<br>60                   | SCREW CAP 1/4 - 20 x 1/2 HWH<br>WASHER FLAT 1/2 SAE<br>SCREW SOCKET HD. 5/16 - 18 x 3/4 GR. 8<br>HGT ADJUST ASSY (INCL. ITEMS 18, 20, 22, 23)                                                                                                      | *8172011<br>890013                               | 8                     | *8172011<br>890013                               | 1                | 890013                               | 1           |
| 55<br>56<br>57<br>58<br>59<br>60<br>61             | SCREW CAP 1/4 - 20 x 1/2 HWH<br>WASHER FLAT 1/2 SAE<br>SCREW SOCKET HD. 5/16 - 18 x 3/4 GR. 8<br>HGT ADJUST ASSY (INCL. ITEMS 18, 20, 22, 23)<br>1/2-13 CAP NUT NP W/PATCH                                                                         | *8172011<br>890013<br>890530                     | 8<br>1<br>4           | *8172011<br>890013<br>890530                     | 1<br>4           | 890013<br>890530                     | 1 4         |
| 55<br>56<br>57<br>58<br>59<br>60<br>61<br>62       | SCREW CAP 1/4 - 20 x 1/2 HWH<br>WASHER FLAT 1/2 SAE<br>SCREW SOCKET HD. 5/16 - 18 x 3/4 GR. 8<br>HGT ADJUST ASSY (INCL. ITEMS 18, 20, 22, 23)<br>1/2-13 CAP NUT NP W/PATCH<br>LABEL DANGER FLYING MATERIAL                                         | *8172011<br>890013<br>890530<br>810736           | 8<br>1<br>4<br>1      | *8172011<br>890013<br>890530<br>810736           | 1<br>4<br>1      | 890013<br>890530<br>810736           | 1<br>4<br>1 |
| 55<br>56<br>57<br>58<br>59<br>60<br>61<br>62<br>63 | SCREW CAP 1/4 - 20 x 1/2 HWH<br>WASHER FLAT 1/2 SAE<br>SCREW SOCKET HD. 5/16 - 18 x 3/4 GR. 8<br>HGT ADJUST ASSY (INCL. ITEMS 18, 20, 22, 23)<br>1/2-13 CAP NUT NP W/PATCH<br>LABEL DANGER FLYING MATERIAL<br>LABEL DO NOT FILL WHEN ENGINE IS HOT | *8172011<br>890013<br>890530<br>810736<br>400268 | 8<br>1<br>4<br>1<br>1 | *8172011<br>890013<br>890530<br>810736<br>400268 | 1<br>4<br>1<br>1 | 890013<br>890530<br>810736<br>400268 | 1<br>4<br>1 |
| 55<br>56<br>57<br>58<br>59<br>60<br>61<br>62       | SCREW CAP 1/4 - 20 x 1/2 HWH<br>WASHER FLAT 1/2 SAE<br>SCREW SOCKET HD. 5/16 - 18 x 3/4 GR. 8<br>HGT ADJUST ASSY (INCL. ITEMS 18, 20, 22, 23)<br>1/2-13 CAP NUT NP W/PATCH<br>LABEL DANGER FLYING MATERIAL                                         | *8172011<br>890013<br>890530<br>810736           | 8<br>1<br>4<br>1      | *8172011<br>890013<br>890530<br>810736           | 1<br>4<br>1      | 890013<br>890530<br>810736           | 1<br>4<br>1 |



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