

# BUFFALO TURBINE LLC

180 Zoar Valley Road

Springville, NY 14141

TEL: 716 592 2700 FAX: 716 592 2460

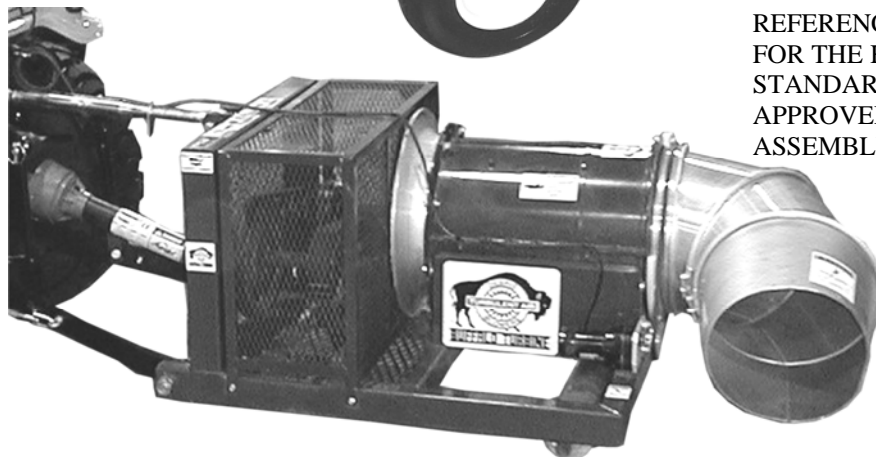
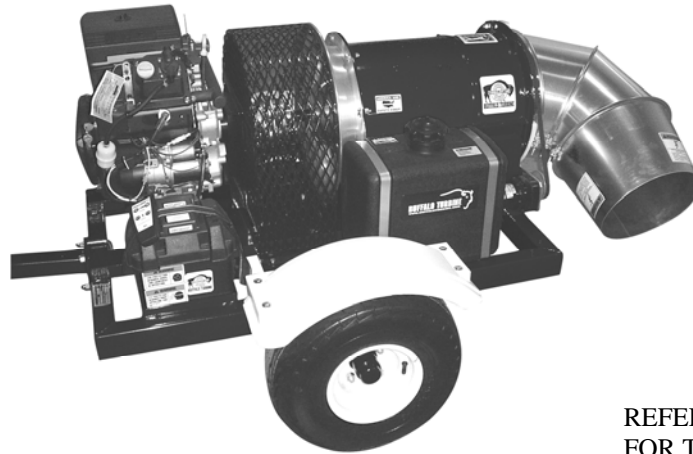
EMAIL: [info@buffaloturbine.com](mailto:info@buffaloturbine.com)

[www.buffaloturbine.com](http://www.buffaloturbine.com)



## **WIRELESS REMOTE** AFTER SERIAL # 13990

Remote instructions begin  
on page 30



REFERENCE PAGE 23  
FOR THE KB SERIES  
STANDARD AND D.O.T.  
APPROVED TRAILER  
ASSEMBLY INSTRUCTIONS

Rotation motor guard removed for clarity (used on CE units only)

## **BUFFALO TURBINE'S CYCLONE KB3, HONDA KB and HURRICANE/PTO OPERATOR'S MANUAL AND PARTS BOOK**

EC Declaration of Conformity – Page 41

04/08 -BT MAN

# BUFFALO TURBINE

## WARRANTY REGISTRATION FORM & INSPECTION REPORT

Any units not registered with Buffalo Turbine are not eligible for warranty claims

### WARRANTY REGISTRATION

This form must be filled out by the dealer and signed by both the dealer and the customer at the time of delivery

Customer's Name \_\_\_\_\_ Dealer's Name \_\_\_\_\_

Address \_\_\_\_\_ Address \_\_\_\_\_

City, State, Zip, Country \_\_\_\_\_ City, State, Zip, Country \_\_\_\_\_

Email Address (important) \_\_\_\_\_ Email Address \_\_\_\_\_

Telephone Number \_\_\_\_\_

Blower Model \_\_\_\_\_

Serial Number \_\_\_\_\_

Delivery Date \_\_\_\_\_

**Circle one:**

Commercial Use

Private Use

### DEALER INSPECTION REPORT

\_\_\_\_\_ Tire Pressure Check -- Model KB

\_\_\_\_\_ Wheel Bolts

\_\_\_\_\_ Belt Tension

\_\_\_\_\_ Lubricate Machine

\_\_\_\_\_ Fasteners Tight

### SAFETY CHECKS

\_\_\_\_\_ All Decals Installed

\_\_\_\_\_ Review Operating and

Safety Instructions

\_\_\_\_\_ Guards in Place

\_\_\_\_\_ Trailer assembly bolts properly installed and tightened

### **ALL 3 POINT HITCH MODELS: PTO SHAFTS MUST TELESCOPE IN EVERY POSITION**

I have thoroughly instructed the buyer on the above described equipment which review the included Operator's Manual content, equipment care, adjustments, safe operation and applicable warranty policy.

Date \_\_\_\_\_ Dealer's Rep. Signature \_\_\_\_\_

The above equipment and Operator's Manual has been received by me and I have been thoroughly instructed as to the care, adjustments, safe operation and applicable warranty policy.

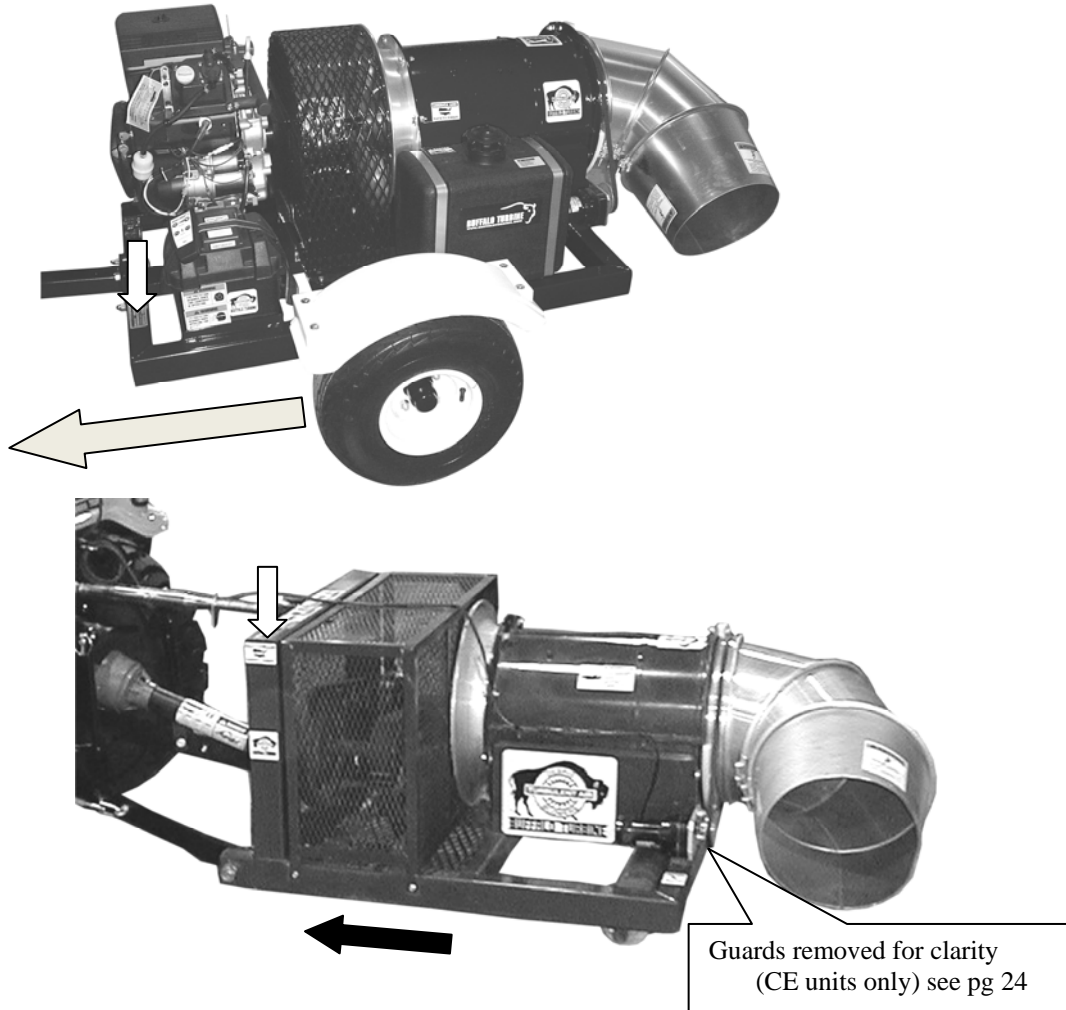
Date \_\_\_\_\_ Owner's Signature \_\_\_\_\_

**PLEASE FAX A COPY TO BUFFALO TURBINE AT 716 592 2460**

# SERIAL NUMBER LOCATION

Always give your dealer the serial number of your Debris Blower when ordering parts or requesting service or other information.

The serial number plate(s) is located where indicated in the pictures below. Please document the number in the space provided for easy reference.



THE DIRECTION OF TRAVEL DETERMINES THE FRONT OR REAR OF BLOWER UNITS

**CYCLONE MODEL KB3**  
LEFT FRONT TOP SURFACE OF FRAME

Serial Number: \_\_\_\_\_

**HURRICANE / PTO**  
UPPER TOP LEFT FRONT OF FRAME

Serial Number: \_\_\_\_\_

# **BUFFALO TURBINE DEBRIS BLOWERS**

## **WARRANTY**

Buffalo Turbine LLC, Inc. warrants the DEBRIS BLOWER to be free from defects in material and workmanship, under normal use and service. Obligation under this warranty shall extend for a period of 1 year (12 months) and shall be limited to, at the option of Buffalo Turbine, replacement of any parts found, upon inspection by Buffalo Turbine, to be defective.

Buffalo Turbine reserves the right to incorporate improvements in material and design of its products without notice and is not obligated to make the same improvements to equipment previously manufactured.

### **WARRANTY CLAIMS- Buffalo Turbine Must be Notified Prior to Performing any Warranty Repairs**

The purchaser claiming under this warranty shall submit a warranty claim in the prescribed form to Buffalo Turbine or an Authorized Dealer for inspection by an authorized company representative.

**Factory ordered Buffalo Turbine parts must be used when filing a warranty claim.**

### **LIMITATIONS OF LIABILITY**

This warranty is expressly in lieu of all other warranties expressed or implied and all other obligations or liabilities on our part of any kind or character, including liabilities for alleged representations or negligence. We neither assume nor authorize any other person to assume on our behalf, any liability in connection with the subsequent sale of the **DEBRIS BLOWER**.

This warranty shall not apply to any DEBRIS BLOWER, which has been altered outside the factory in any way so as, in the judgement of Buffalo Turbine, to affect its operation or reliability, or which has been subject to misuse, neglect, or accident.

This warranty does not cover parts and accessories, which are under separate guarantee from the manufacturers and service can be, obtained from their service facilities. No warranty is extended to regular service items such as lubricants, belts, paint and the like. **(See Page 5)**

### **OPERATION MANUAL**

The Purchaser acknowledges having receiving training in the safe operation of the DEBRIS BLOWER and further acknowledges that Buffalo Turbine does not assume any liability resulting from the operation of the DEBRIS BLOWER in any manner other than described in the Operator's Manual supplied at the time of purchase.

### **WARRANTY VOID IF NOT REGISTERED**

If there are any questions regarding any of our products call Buffalo Turbine at 716 592 2700.

**DO NOT SPLIT THE TURBINE HOUSING FOR ANY REASON.**

**DO NOT ATTEMPT TO SERVICE OR DISASSEMBLE THE TURBINE BLOWER.**

**DO NOT USE THE TOP OF THE TURBINE HOUSING TO STRAP OR TIE DOWN BLOWER UNITS.**

**Unauthorized service work on the Turbine Blower will null and void all warranties.**

	Manufacturer's Warranty	Who to Contact
Buffalo Turbine Manufactured Items. Any Portion of the Turbine assembly, Blower wheel, Frame, Engine Mounting rails, Rotation motor mounting bracket, Tongue, Axle Assembly, Hub assembly, All Belt Driven components*, and any other components manufactured by Buffalo Turbine.	1 Year Parts and Labor	Buffalo Turbine (716) 592-2700 Or Local Authorized Buffalo Turbine Representative
Rotation Motor	1 Year Parts	Buffalo Turbine (716) 592-2700
Blue Box Wireless Transmitter, Receiver, Wiring Harness	1 Year Parts	Buffalo Turbine (716) 592-2700
Black Box Wireless transmitter, Receiver, Wiring harness.	1 Year Parts	Buffalo Turbine (716) 592-2700
Battery	1 Year Parts Reimbursement with Faxed receipt from new battery and Defective Battery Serial #. Up to \$30.00	El-Don Battery (716)-896-0404 Fax: (716)-896-0406
Gas Tanks	1 Year Parts	Buffalo Turbine (716) 592-2700
Battery Box	1 Year Parts	Buffalo Turbine (716) 592-2700
Tires and Wheels	1 Year Parts	Buffalo Turbine (716) 592-2700
Kohler Engines	See owner's Manual	Kohler Dealer <a href="http://kohlerplus.com">http://kohlerplus.com</a> go to: Dealer Locator
Honda Engines	See owner's Manual	Honda Authorized Dealer <a href="http://www.honda-engines.com/">http://www.honda-engines.com/</a> go to: Dealer Locator
Briggs & Stratton Engines	See owner's Manual	Briggs & Stratton Authorized Dealer
Terratopper and Sandevil Units		Buffalo Turbine (716) 592-2700
EQUIPMENT REGISTRATION, TO INCLUDE THE SERIAL NUMBER OF THE UNIT, WILL BE REQUIRED FOR ALL WARRANTY REPAIRS. PRE-APPROVAL BY A FACTORY PERSON (FROM BUFFALO TURBINE) PRIOR TO COMMENCING WITH A WARRANTY REPAIR, WILL BE REQUIRED BY THE END USER AND AT THE DEALER / DISTRIBUTOR LEVEL.		

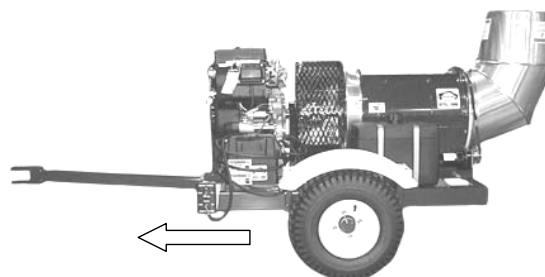
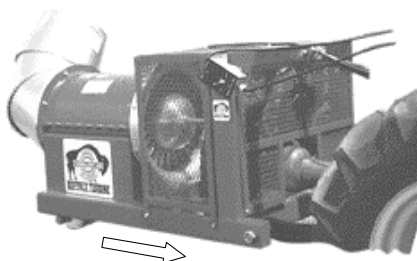
# 1. INTRODUCTION

Congratulations on your choice of a Buffalo Turbine Debris Blower. This equipment has been designed and manufactured to meet the needs of a discerning Turf Care Industry.

Safe, efficient and trouble-free operation of your Buffalo Turbine Blower requires that you and anyone else who will be operating or maintaining the Blower, read and understand all of the safety, operation, maintenance and trouble shooting information contained within this Operator's manual.

This Manual covers the Cyclone KB3, Honda KB and the Hurricane/PTO Turbine Blowers.

Keep this manual handy for frequent reference and to pass on to new operators or owners. Call your Buffalo Turbine dealer or distributor if you need assistance, information, or additional copies of the manuals.



**OPERATOR ORIENTATION** – The directions left, right, front and rear, as mentioned throughout the manual, are as seen from the driver's seat and facing in the direction of travel.

## 2. SAFETY

### SAFETY ALERT SYMBOL

This safety Alert symbol means **ATTENTION! BECOME ALERT! YOUR SAFETY IS INVOLVED!**

The Safety Alert symbol identifies important safety messages on the Buffalo Turbine Blower and in the manual. When you see this symbol, be alert to the possibility of personal injury or death. Follow the instructions in the safety message.

Why is **SAFETY** important to you?



**3 Big Reasons: Accidents Disable and Kill  
Accidents Cost  
Accidents Can Be Avoided**

**SIGNAL WORDS:** Note the use of the signal words **DANGER**, **WARNING** and **CAUTION** with the safety messages. The appropriate signal word for each message has been selected using the following guidelines:

1. **DANGER** – An immediate and specific hazard that **WILL** result in severe personal injury or death if the proper precautions are not taken.
2. **WARNING** -- A specific hazard or unsafe practice that **COULD** result in severe personal injury or death if proper precautions are not taken.
3. **CAUTION** – Unsafe practices that **COULD** result in personal injury if proper practices are not taken, or as a reminder of good safety.

## 2. SAFETY

**YOU** are responsible for the **SAFE** operation and maintenance of your Buffalo Turbine Debris Blower. **YOU** must ensure that you and anyone else who is going to operate, maintain or work around the Buffalo Turbine Blower be familiar with the operating and maintenance procedures and related **SAFETY** information contained in this manual. This manual will take you step-by-step through your working day and alerts you to all good safety practice while operating the Blower.

Remember **YOU** are the key to safety. Good safety practices not only protect you but also the people around you. Make these practices a working part of your safety program. Be certain that **EVERYONE** operating this machine is familiar with the procedures recommended and follows safety precautions. Remember most accidents can be prevented. Do not risk injury or death by ignoring good safety practices.

- Blower owners must give operating instructions to operators or employees before allowing them to operate the Blower, and at least annually thereafter.
- The most important safety device on this equipment is a **SAFE** operator. It is the operator's responsibility to read and understand ALL Safety and Operating instructions in the manual and to follow these. All accidents can be avoided.
- A person who has not read and understood all operating instructions is not qualified to operate the machine. An untrained operator exposes themselves and bystanders to possible serious injury or death.
- Do not modify the equipment in any way. Unauthorized modification may impair the function and/or safety which could affect the life of the equipment.
- Think **SAFETY!** Work **SAFELY!**

### 2.1 GENERAL SAFETY

1. Read and understand the Operator's Manual and all safety signs before operating, maintaining, and adjusting.
2. Provide a first-aid kit for use in case of an accident. Store in a highly visible place.
3. Provide a fire extinguisher for use in case of an accident. Store in a highly visible place.
4. Wear appropriate protective gear. This list includes but is not limited to:
  - A hard hat
  - Protective shoes with slip resistant soles
  - Protective glasses or goggles
  - Heavy gloves
  - Wet weather gear
  - Hearing protection
5. Do not operate without guards or shields properly installed.
6. Do not allow riders.
7. **Wear appropriate ear protection for prolonged exposure to excessive noise.**
8. **(All Models) Set Blower on the ground, disengage PTO, stop engine, set park brake, remove ignition key and wait for all moving parts to stop before dismounting to service or adjust.**
9. Clear the area of people, especially small children, before starting the unit.
10. Review all safety related items annually with all personnel who will be operating or maintaining the Blower.
11. Keep hands, feet, hair and clothing away from moving parts.
12. Operate equipment only while seated in the operator's seat.

## 2.2 OPERATING SAFETY

1. Read and understand the Operator's Manual and all safety signs before operating, servicing or adjusting.
2. Before servicing or repairing the Model KB Series, **Turn Off Engine, remove key and Disconnect Battery Terminals.**

## MAINTENANCE SAFETY

1. Read and follow ALL general, operating, maintenance and safety information in this manual.
2. Support the machine with blocks or safety stands when changing tires or working beneath it.
3. (All Models) Set Blower on the ground, disengage PTO, stop engine, set park brake, remove ignition key and wait for all moving parts to stop before operating, servicing or adjusting.
4. Do not adjust the drive belt when it is rotating.
5. Make sure all guards are in place and properly secured when operating or maintaining the Blower.

## 2.4 TRANSPORT SAFETY

1. Make sure you are in compliant with all local DOT regulations regarding transporting Buffalo Turbine equipment on public roads and highways. DOT APPROVED TRAILERS ARE AVAILABLE FROM BUFFALO TURBINE.
2. **ALL SKID MOUNTED UNITS MUST BE SECURELY ANCHORED TO THE VEHICLE BEING USED BEFORE TRANSPORTING OR OPERATING.**

## 2.5 STORAGE SAFETY

1. Store the Blower on a firm, level surface.
2. Store away from areas of human activity. Do not permit children to play on or around the stored machine.
3. Make sure the unit is sitting, or blocked up firm and solid and will not tip or sink into a soft area.
4. Cover with a weatherproof tarpaulin and tie down securely.

## 2.6 TIRE SAFETY (Model KB Series)

1. Do not attempt to mount a tire unless you have the proper equipment and experience to do the job.
2. Have a qualified tire dealer or repair service perform required tire maintenance.

## 2.7 SAFETY DECALS

Keep safety decals and signs clean and legible at all times.

1. Replace safety decals and signs that are missing or have become illegible.
2. Replaced parts that displayed a safety sign should also display the current sign.
3. Safety decals or signs are available from your Dealer Parts Department.



## 2.8 SIGN-OFF FORM

Buffalo Turbine recommends that anyone who will be operating and/or maintaining the Buffalo Turbine Blower must read and clearly understand ALL Safety, Operating and Maintenance information presented in this manual.

Do not operate or allow anyone else to operate this equipment until such information has been reviewed. Annually review this information before the season start-up.

Make these periodic reviews of SAFETY and OPERATION a standard practice for all of your equipment. We feel that an untrained operator is unqualified to operate this machine.

A sign-off sheet is provided for your record keeping to show that all personnel who will be working with the equipment have read and understand the information in the Operator's Manual and have been instructed in the operation of the equipment.

## SIGN-OFF FORM

[illegible]

### 3. SAFETY DECALS

The types of decals on the blower unit are shown below. For locations of each label, see parts reference in the back of this manual.

Good safety requires that you familiarize yourself with the various Safety Decals, the type of warning and the area, or particular function related to that area that requires your **SAFETY AWARENESS**.

**\* THINK SAFETY! WORK SAFELY!**

#### **! ATTENTION !**

1. **KEEP HANDS, FEET AND CLOTHING AWAY FROM POWER DRIVEN PARTS.**
2. **STOP ENGINE AND REMOVE KEY BEFORE LEAVING OPERATOR'S POSITION.**
3. **MACHINE MUST COME TO A COMPLETE STOP BEFORE ANY MAINTENANCE, TO INCLUDE ADJUSTING, LUBRICATING OR CLEANING, IS PERFORMED.**
4. **KEEP PEOPLE AND PETS AT SAFE DISTANCE FROM MACHINE.**
5. **KEEP ALL GUARDS AND SHIELDS IN PLACE.**



**REMEMBER – If safety Decals have been damaged, removed, become illegible or parts replaced without decals, new decals must be applied. New decals are available from your authorized dealer.**

## 4. OPERATIONS

### 4.1 TO THE NEW OPERATOR OR OWNER

Buffalo Turbine Debris Blowers are designed to quickly and efficiently, blow away leaves, cuttings and other debris. The material is conveyed on a stream of high volume and velocity of air to remove it from the area of concern. When the material is removed, it gives a neat, professional look to the working area.

Many of the features incorporated into the machine are the result of suggestions made by customers like you. Read the manual carefully to learn to operate the machine safely and how to set it to provide maximum efficiency. The manual will take you step-by-step through your working day. By following the operating instructions in conjunction with a good maintenance program, your Blower will provide many years of trouble-free service.

### 4.2 BREAK-IN

Although there are no operational restrictions on the Blower when it is used for the first time, it is recommended that the following mechanical items be checked:

#### A. Operating for first ½ hour

1. Re-torque all wheel bolts, axle nuts and trailer mounting bolts and nuts.  
(Model KB Series)
2. Re-torque all other fasteners and hardware.
3. **Check that the drive line shield turns freely on the shaft and that it can telescope easily without BOTTOMING OUT. (PTO Models)**

#### B. Operating for first 5 hours

1. Re-torque all hardware and fasteners.
2. Check the tension of the input drive belt. Adjust as required.
3. Go to the normal servicing and maintenance schedule as defined in the Maintenance Section of the manual.

### 4.3 PRE-OPERATION CHECKLIST

Efficient and safe operation of the Buffalo Turbine Blower requires that each operator reads and understands the operating procedures and all related safety precautions outlined in this section. A pre-operation checklist is provided for the operator. It is important for both personal safety and maintaining the good mechanical condition of the machine that this checklist is followed.

#### Hurricane/PTO

Before operating the Blower and each time thereafter, the following areas should be checked off:

1. Lubricate the machine per the schedule outlined in the "Maintenance Section".
2. Use only with the power unit appropriate for the design of the machine.
3. Ensure that the machine is properly attached to the power unit attaching arms and that the mounting pins are secured in position.
4. Ensure that the PTO driveline is securely attached on both ends and can telescope easily.
5. Check that the PTO driveline shield rotates freely.
6. Check the belts and pulleys for proper tension and alignment. Adjust as required.
7. Ensure that all bearings turn freely.
8. Make sure all guards and shields are in place, secured and functioning as designed.

#### PTO DRIVE LINE

Use only the PTO Driveshaft supplied with the Buffalo Turbine Debris Blower (Hurricane/PTO). The overall length of the PTO Shaft is 30".

#### **THE PTO SHAFT MUST TELESCOPE !!!**

**CHECK THE LENGTH FROM THE INPUT SHAFT OF THE BLOWER UNIT TO THE POWER TAKE OFF SHAFT OF THE TRACTOR BEFORE ATTEMPTING TO OPERATE. DO NOT ATTEMPT TO MODIFY PTO SHAFT !!!!!**

### 4.3 PRE-OPERATION (CONTINUED) / MODEL KB Series

#### BATTERY MUST BE CONNECTED BEFORE OPERATION (DISCONNECTED FOR SHIPPING).

Before Operating the Blower and each time thereafter, the following areas should be checked off.

1. For fuel, oil, and operating information of the Kohler or Honda Engine, refer to the Manufacturers specs included with this manual.
2. The Model KB turf trailer is not designed for highway towing. For highway use or speeds above 15 mph (24k) an optional DOT approved trailer must be used.
3. Insure the Blower unit is attached to a proper receiver mounted on the towing vehicle. A pin hitch receptacle is standard with the Model KB. **Attach the KB trailer using the proper size hitch pin with a locking presto pin.**
4. Make sure all guards and shields are in place, secured and functioning as designed.

#### **Remote Nozzle and Throttle Control (PRIOR TO SERIAL # 12410)**

(REFERNECE PAGES 30-33 FOR WIRELESS REMOTE INSTRUCTIONS – CYCLONE KB3)

The control box contains 2 toggle or rocker switches for the remote nozzle and throttle control kits. The momentary toggle or rocker switch will shut off the power when it is released. The throttle control adjusts the engine RPM from an idle to maximum RPM and the nozzle control adjusts the rotation of the nozzle assembly (360° in either direction).

### 4.5 ATTACHING THE BLOWER TO THE TRACTOR (Hurricane/PTO)

#### **Follow this procedure when attaching the Hurricane PTO Blower to a tractor:**

1. Clear the area of bystanders, especially small children.
2. Make sure the tractor has proper HP and is in good working order, including 3PT hitch, PTO out put shaft, and safety equipment.
3. Make sure there is enough room and clearance from obstacles to safely back up to the Blower. Align 3PT hitch lift pins to match tractors. Lower lift pins may have to be positioned either inside or outside of frame depending on the width of the tractor's 3PT hitch arms. Tighten lift pins securely.
4. Back up to the Blower--attach lower lift pins to lower lift arms of the tractor. Insert retainers. Now attach upper or top link using the mounting pin provided. Insert retainer pin.
5. Adjust top link so Blower unit is level to the ground.
6. Install PTO shaft. Ensure that the PTO driveline is securely attached on both ends and can telescope easily every position. Check that the PTO driveline shield rotates freely. Install and tighten clamping bolt from PTO shaft to blower unit input shaft (early models) or insure that both spring loaded locking pins are locked and in proper position on both splined shafts. Never attempt to maintain or attach PTO shaft while tractor is running!
7. To unhook the Blower unit from the tractor, reverse the above procedure. Always park the Blower unit and tractor in a dry, level area.
8. **Hurricane/PTO with electric remote nozzle kit:** Connect the remote nozzle control to a 12- volt system only.
9. **The built in rear roller** is used when the blower unit is operated close to the ground or on hilly terrain.

## 4.5 (continued) Model KB Series

Turf Trailer assembly instructions for the Model KB and HKB Series.

1. Attach 2 axle mounts (Part # 1713) with 2 bolts each (Part # 1137), do not tighten at this time.
2. Attach axle (Part # 1407) to axle mounts using 2 bolts, do not tighten at this time.
3. Tighten 4 axle mount bolts and the 2 bolts holding the axle. Use ½-13 Nyloc nuts (part # 1180).
4. Attach the trailer tongue (part # 1490) using 2 U-bolts (part # 1707).
5. Attach both fenders (part # 1150) using (4) 3/8-16 x 1" carriage bolts (part # 1154) and (4) 3/8-16 hex nuts for each fender.
6. Recheck the trailer mounting bolts to assure they are tightened securely.
7. Bolt on tires and rims.
8. Attach battery terminals.

### **USE PRESTO PIN TO KEEP HITCH PIN IN PLACE WHILE OPERATING**

## 4.6 FIELD OPERATION

### **OPERATION SAFETY –**

**Do not direct debris blower towards people, pets, autos, windows, etc.**

## 4.7 Starting Blower Unit / (Hurricane/PTO)

**Engage the tractor PTO control at a low idle engine speed.**

### **Stopping the Blower Unit**

- a. Gradually slow the tractor RPM down to low idle using the throttle
- b. Slowly disengage or switch off the PTO clutch and allow the blower fan to come to a stop. Place PTO control into the neutral lock position.

## 4.9 Operating RPM (Both Models)

The tractor manufacture normally recommends that the unit always be run at maximum RPM or wide open throttle. This recommendation is made to insure efficient attachment operation and hydrostatic drive function. The Blower can operate at a slower RPM if it can effectively move the debris material. Vary ground speed with the hydrostatic transmission. Increase engine RPM to improve tractor efficiency.

Moving light material, such as dry leaves, requires less wind than wet or heavier material.

Always try to blow with the wind. The Blower can be used for a wide variety of applications to move leaves, grass clippings, aeration plugs and debris. Drying wet areas has been another use with these powerful Debris Blowers.

1. PTO Models and Model KB Series Electric Remote Nozzle controls: (12v system)  
(Ref. Pages 27-31 for Cyclone KB3 controls)

Moving the toggle or rocker switch in either direction on the hand held control box changes the air stream direction. The nozzle will stop turning by releasing the toggle or rocker switch. **USE CAUTION WHEN OPERATING THE NOZZLE IN THE DOWN POSITION DUE TO MINIMAL GROUND CLEARANCE (360 degree rotation)**  
NOTE: Make sure the cable is clear of all moving parts including the PTO shaft.

**CAUTION ! DO NOT ALLOW LEAVES OR DEBRIS TO ACCUMULATE ON OR NEAR THE ENGINE OR EXHAUST SYSTEM OF THE MODEL KB BLOWER, TRACTOR ENGINE OR ANY INTERNAL COMBUSTION ENGINE.**

## 5. TRANSPORTING

### PTO Unit (attached to tractor)

1. Raise the lift arms.
2. Do not run the PTO Blowers when raised to its maximum height. At the raised or highest position, the driveline angles are severe and can cause machine vibration and damage.
3. It is not recommended that the machine be transported faster than 15 mph (24 k). Slow down for corners or rough roads and terrain. Always retain control of the vehicle.

### 5.1- Transporting the Model KB Series

1. **Turf Trailer Receptacle Uses A Pin Hitch Only. Use Presto Pin. Do Not Exceed 15 MPH (24 k) At Any Time. Use a DOT approved trailer for Highway Use and for speeds exceeding 15 MPH (24 k).**

2. The Skid Model KB can easily be transported and operated in the bed of a standard pick-up truck or utility vehicle. Be sure to block, anchor and secure the unit before operating or transporting. **Do not use the top of the Turbine housing to strap or tie down blower unit.**

### 5.2 STORAGE

At the end of the working season or before storing the blower unit, prepare the machine by following this procedure:

1. Select a storage area that is dry, level and free of debris.
2. Thoroughly wash the machine with a water hose to remove all debris and residue.
3. Lubricate all grease fittings with one shot of grease to displace any accumulated water.
4. Run the machine at low RPM to dry the Blower Components.
5. Unhook the tractor (See section 4.6).
6. Remove the free portion of the PTO drive line and store in a safe place.

7. Apply a fresh coat of grease to the telescoping portion of the shaft to prevent rusting.
8. Touch up all paint chips and scratches to prevent rusting.
9. Inspect for worn or failed components. Order the replacement parts and repair the blower unit when time allows. This will eliminate unnecessary down time at the start of next season.
10. Store in an enclosed building. If space is not available, cover with a waterproof tarpaulin and tie it down securely.
11. Store the machine away from areas of human activity.
12. Do not allow children to play around the stored unit.

### Model KB Series:

Wash Blower unit, then run at lower rpm's to dry blower and engine. Change oil per manufacturer's specs (see engine owner's manual section). If necessary, spray a Teflon lubricant in the nozzle base groove to insure freer rotation. Park and block unit so the tires clear the ground.

### 5.3 SERVICE & MAINTENANCE

#### ! MAINTENANCE SAFETY !

1. Set Blower on a level surface, disengage PTO, stop engine, set park brake, remove ignition key and wait for all moving parts to stop before dismounting to service, adjust or repair.
2. Reinstall and secure all shields removed for servicing before starting to use machine again.
3. Securely support machine with blocks or safety stands when changing tires or working beneath it.

## SERVICE

### 5.4.1 FLUIDS & MAINTENANCE

#### **Grease** (Hurricane/PTO)

Use SAE multi-purpose high temperature grease for all applications. SAE multi-purpose lithium base grease is also acceptable. If necessary use a Teflon spray lubricant only on the nozzle base and slides provides for freer rotation.

#### **USE ONLY CLEAN LUBRICANTS**

**Model KB Series:** Change oil per Manufacturer's specification (see engine owner's manual section). A Teflon spray type lubricant on the nozzle base and slides provides for freer rotation.

### 5.6 Servicing Interval

Grease all fittings on your new equipment after the first 8 hours of operation.

**THE PTO SHAFT MUST TELESCOPE IN EVERY POSITION!!! CHECK THE OVERALL LENGTH BEFORE OPERATION. DAMAGE TO THE DRIVE SYSTEM OF THE DEBRIS BLOWER WILL OCCUR WITHOUT PROPER CLEARANCE AND LUBRICATION !!!!!!!**

#### **PTO SHAFT LUBRICATION**

##### **40 Hours**

1. PTO drive line greasing- See photo



2. 5 pillow blocks- approx. 2 shots of grease. Use a grease gun extension. **The holes in the top of the guard line up with the pillow block grease fittings. Removal of guards is not necessary to grease pillow blocks.** (See page 17)
3. **DO NOT OVER GREASE**
4. Periodic Teflon spray lubricant on the elbow base and slides will assure smooth operation of nozzle.

## 5.7 SERVICE RECORD

See Lubrication and Maintenance sections for details of service. Copy this page to continue record.

### **TURN OFF, REMOVE KEY & DISCONNECT BATTERY BEFORE SERVICING BLOWER UNIT REMOVE PTO SHAFT ON THE HURRICANE AND FRONT MOUNT UNITS**

CODE: LUBRICATE-(L) / CHECK-(\*) / CHANGE-(C) / REPLACE-(B) / CLEAN-(CL)

**SCHEDULED MAINTENANCE HOURS** \_\_\_\_\_

**SERVICED BY** \_\_\_\_\_

#### **MAINTENANCE**

##### **8 hrs or daily**

ALL UNITS – Remove all debris that has settled between the blower wheel fan and the stationary vanes. Helps maintain peak performance.

(L) PTO Drive line greasing (new blower unit)

##### **20 hours**

(L) PTO Drive line greasing

##### **40 hours**

(L) PTO Drive line greasing

(L) Pillow block and flange bearing greasing (5)

(L) Driveshaft bearings (2)

(\*) **Check condition of coupling (center section # 1256) connecting bolts and nuts during each oil change or when experiencing vibration or unusual noises. (see page 26)**

(L) Nozzle base slides(Teflon spray)

(\*) Belt tension- SEE SECTION 5.2.1.

(\*) Wash and Clean any dirt or grime build up that has accumulated on blower wheel fan blades. Helps to minimize vibration balance and maintain peak performance.

##### **200hrs or annually**

(CL) Machine

(CL) &(L) Driveline shield

**DO NOT OPERATE BLOWER UNIT WITHOUT GUARDS SECURELY ATTACHED**



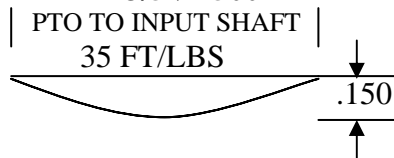
# MAINTENANCE

## 5.8 BELT TENSION

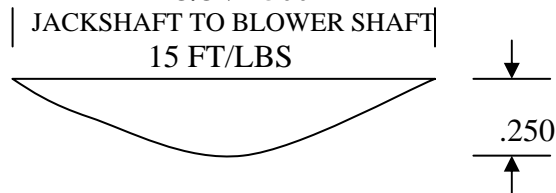
**Efficient machine operation requires that the belts always be properly tensioned. To adjust the belt tension, follow this procedure:**

1. Disengage PTO, shut off tractor, remove key and disconnect PTO shaft before removing guards.
2. The flange bearing (1) is fixed and pinned. This will be your starting point for belt adjustment. Do not loosen the bolts on the flange bearing unless you are planning on replacing this bearing.
3. Loosen pillow block bearings 2 and 3 (2 bolts each). Leave a slight tension on the bearing bolts. This will prevent unnecessary movement. Loosen the lock nuts on each of the adjustment screws. These are located at the base of the bearings. Turn both adjustment screws equally to achieve proper tension on belt # 6. Securely tighten both bolts on pillow block bearings 2 & 3. Tighten lock nuts on adjustment screws. Check pulley alignment with a straight edge and re-check belt tension.
4. Repeat this procedure for the adjustment of input belt #7. The pillow block bearings 4 and 5 are used to adjust belt #7. Check pulley alignments and belt tension when completed.
5. If there's proper belt tension and pulley alignment, install the safety guards, start tractor and engage PTO. Visually check for any belt slippage or misalignment.

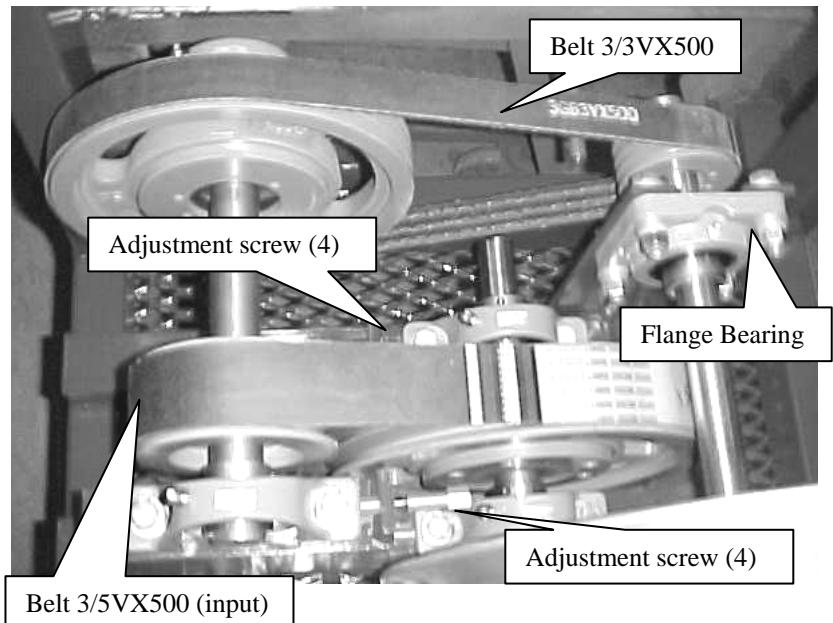
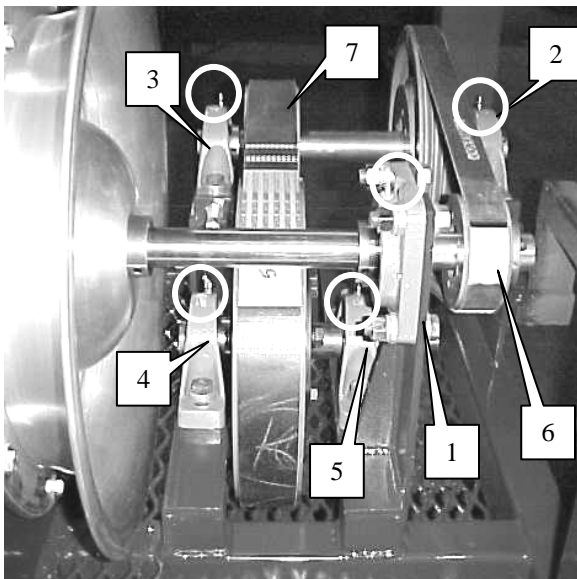
### TENSION SPECS FOR BELT # 3/5VX500



### TENSION SPECS FOR BELT # 3/3VX500



Designates grease-fitting location. GUARDS REMOVED FOR CLARITY



## 5.9 CHANGING THE BELTS

### USE THE ILLUSTRATION FROM THE PREVIOUS PAGE FOR REFERENCE

After using the Blower unit for a long period of time, the belts will stretch and wear. To change the belts follow this procedure:

1. Lower the blower unit on to secure stands or wooden blocks, disengage PTO clutch, stop engine, set park brake, remove ignition key and wait for all moving parts to stop before dismounting.
2. Remove the guards around belt and pulleys.
3. Remove PTO driveshaft.
4. Scribe 2 location lines at the base of each pillow block bearing. This will help to re-locate the bearings in their proper location after they are removed. Loosen lock nuts on adjustment screw, loosen bolts at the base of the pillow block bearings then loosen adjustment screw at location 2, 4 and 5 only.
5. Remove bolts from pillow block bearings 2, 4, and 5.
6. Raise #2 pillow block (note: #3 pillow block remains secure at this point), and remove belt (6) 3/3VX500 off of pulleys. Next remove input shaft assembly (bearings 4 and 5) and remove belts 3/5VX500 off of pulleys.

### 5.9a INSTALLING NEW BELTS

1. Reverse procedure to install new belts.
2. Install the new belt (7) around pulleys on input shaft assembly, then mount pillow blocks (4 & 5).
3. Install bolts into 2, 4, and 5 pillow blocks and lightly snug the bolts. Be sure to use the scribed lines to help in bearing and pulley alignment. Tighten adjustment screws to snug all belts.
4. Loosen 3 pillow block bolts enough so adjustments may be made for belt adjustment. Use adjustment screws at the base of the pillow blocks.
5. Go to section 5.2.1 and use belt adjustment procedure.
6. **Install all guards before operating blower unit!**

## 6 TROUBLE SHOOTING

The Buffalo Turbine Debris Blower uses a high volume and velocity of air to move material from one place to another. The system is simple and reliable requiring minimal maintenance.

In the following section, we have listed many of the problems, causes and solutions to the problems that you may encounter.

If you encounter a problem that is difficult to solve, even after reading through this trouble shooting section, please call your local dealer or distributor. **Before calling, please have this Operator's Manual and the serial number from your Blower ready.**

**TURN OFF ENGINE, REMOVE KEY, DISCONNECT BATTERY AND REMOVE PTO SHAFT BEFORE SERVICING BLOWER UNITS. INSTALL GUARDS BEFORE OPERATING.**

PROBLEM	CAUSE	SOLUTION
Blower does not turn	PTO shaft not attached  Belts slipping.  Belts broken Broken coupling (KB Series)	Attach PTO shaft  (Check that coupling is properly seated on input shaft)  Adjust belt tension  Replace belts Replace coupling
Belts or pulleys overheat	Belts slipping	Adjust belt tension
No air flow	Blower fan not turning	See solutions above
Reduced or no air flow	Blower fan turns	Air intake or exhaust Restricted. Shut off Engine (KB Series) Blower or tractor- Remove restrictions Debris cannot be allowed to build up between the blower fan and stationary vanes.
Machine vibrates Or unusual sounds	Bearing or coupling failure  Out-of-balance    Drive line angle too large (PTO Models)	Replace bearings or coupling  Have your dealer check blower for damaged blades. Wash and clean blower fan blades  Level machine

## 7 SPECIFICATION

	Model HURRICANE/PTO	Model KB Series
Length:	58" with nozzle/ 38" without nozzle	Frame size 28 wide x 48 long 102" with nozzle 82" without nozzle 69" without trailer arm 48" without trailer arm and nozzle.
Width:	32"	48" with axle and tires
Height:	32"	38.5" with axle and tires
Weight:	395 lbs.	470 lbs.
Fuel Capacity:		6 gallons unleaded (Serial # 9560 to present)
Tires:	Built in rear roller	Turf 18 x 8.50-8 18.5 x 8.50 – 8 (Model KB3)
Electrical System:	12Volt with Electric Remote	12Volt Battery/ 300 CCA
Input Power:	Min. 16 hp at PTO	23 hp Kohler Engine
Input RPM:	Max. 540	3600 RPM (Model KB2) 3900 RPM (Model KB3)
Air Flow:	10,000 CFM	10,000 CFM 10,500 CFM Model KB3
Outlet Size:	12"	12"
Outlet Velocity:	175+MPH	175 MPH 180 MPH Model KB3

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### SenDEC Maintenance Meter / *Flash Alert* -- Option for KB Series.

Flash Alert is designed as a reminder to service actual maintenance. Intervals may vary by manufacturer - read your owner's manual for actual recommended service intervals.

#### Functions:

*Hour Meter* - Records actual running of engine. Non-erasable.

*Tachometer* - Shows engine RPMs (reads up to 9,000 RPMs).

*Flash Alert* - Alerts you to LUBE (grease) & CHANGE OIL (25 hour intervals).

#### Operation:

*Fully Automatic* - Upon engine start, meter will show RPMs, at engine shut down meter displays total accumulated running time.

Flash Alert Alarms will flash automatically for a 2 hour period (2 hours of engine run time) at 25 hour intervals as a service reminder.

Installation: Find a convenient mounting location, be sure the pick-up wire will reach the spark plug wire. If not, substitute with a wire of the same outside diameter of no less than 22 gauge, up to 8' long. DO NOT mount meter where surface temperature exceeds 125 degrees F. As a general guide line, if you can place your hand on the mounting surface without discomfort while equipment is at full operating temperature, then it will be suitable for mounting in that location.

Wrap pick-up wire around spark plug wire 4 to 5 times. Secure with the supplied tie-wrap.

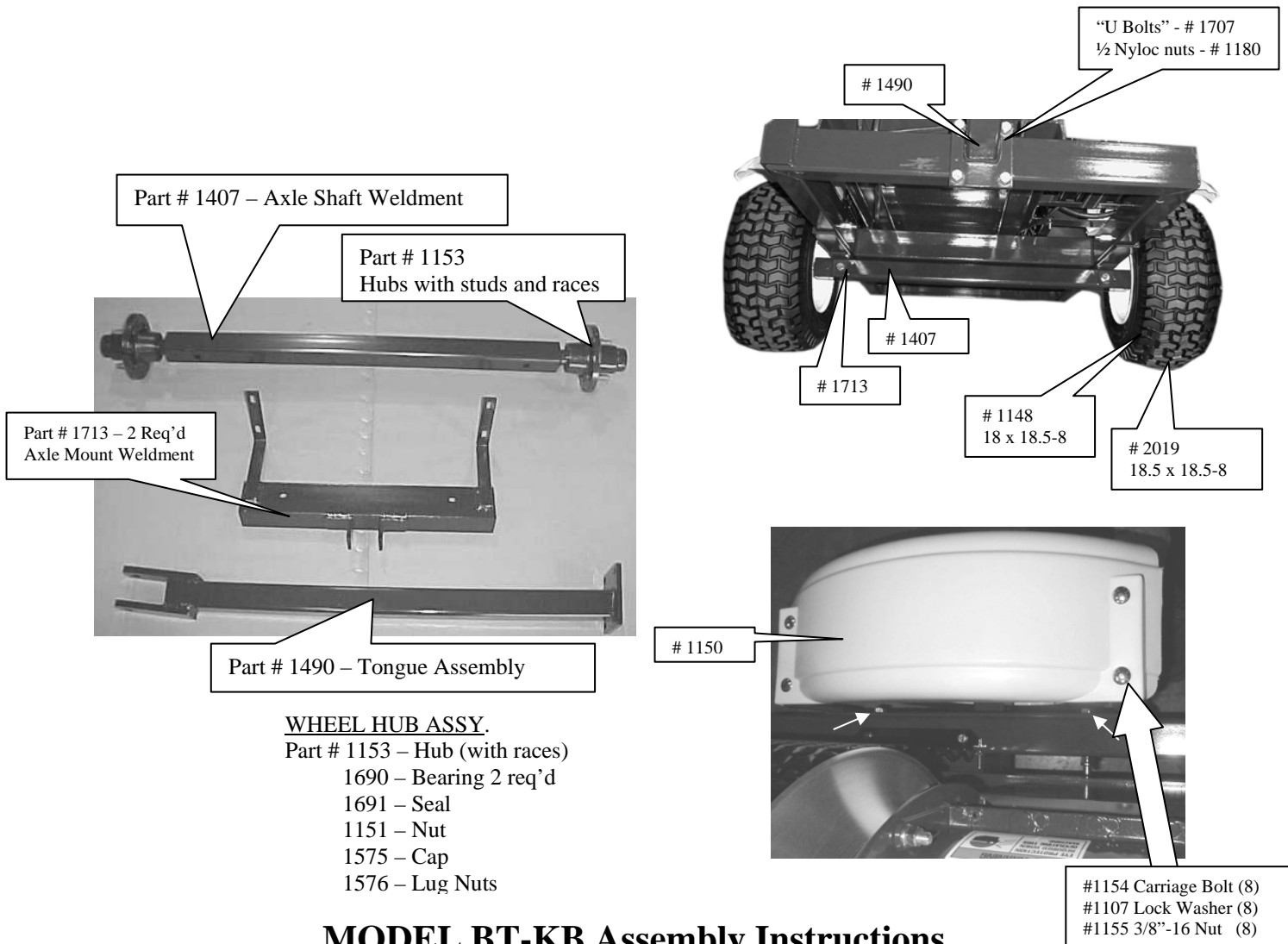
DO NOT DRILL INTO GAS TANKS OR ENGINE CRANKCASE. Contact your dealer with any questions.

### Model KB Parts List

Options: SenDec Maintenance Meter.....1372 DOT Approved Trailer ... 1613-DOT  
 Fitted Waterproof Protective Cover.....BT-PC-1  
 Rectangular Nozzle.....1425  
 Short Rectangular Nozzle .....1469

<u>Reference #</u>	<u>Quantity</u>	<u>Description</u>	<u>Part#</u>
1	1	23 HP Kohler Engine (before serial # 12410)	1163
1	1	23 HP Kohler Engine (after serial # 12410)	2003
1A	1	20 HP Honda Engine (Optional)	1427
2	1	Frame With Cradle	1140
3	1	Tongue Assembly	1490
4	1	Elbow Base, Short	1141
5	2	Fender	1150
6	2	Turf Tire and Rim Assembly	1148
8	2	Tank Straps, for fuel tank 1772 (6 gallon)	1788
9	1	Battery Box with cover	1378
10	1	Battery 300 CCA	1132
11	1	Cap, fuel tank	1773
12	1	Fuel Tank, 6 Gallon	1772
13			
14	1	Morflex Coupling (See page 26)	1256
15	1	Nozzle, Round	1172
16	2	Elbow Segment	1171
17	3	Elbow Clamp Bands (includes 1174 & 1175)	1173
18	3	Bolt, Clamp Band	1174
18A	3	Nut, Clamp Band	1175
19	1	Guard Kohler Engine Model KB	1159
20	2	Engine Mount Brkt	1406
21	1	Blower Assembly	1164
22	1	12V DC Rotation Motor (Bison)	1143
23	1	Motor Bracket	1144
24	1	Short Rectangular Nozzle (Optional)	1469
25	1	Belt, A54	1142
26	1	Sheave, AK32 X ½	1145
27	3	Thrown object decal	1227
28	1	Control Box w 12' of cable	1567
29	1	Remote Cable For Control Box	1292
30	2	Toggle Switch For Control Box (Discontinued)	1277
31	2	Rubber Grommet For Toggle Switch (Discontinued)	1278
32	1	Slide Actuator, 4" Standard Model KB2	1409
33	1	Bellmouth	1119
34	1	Shaft Collar, 1-1/4	1117
35	2	Slides, nylon	1138
36	1	Eye Protection Decal	1184
37	1	Ear Protection Decal	1185
38	1	8x10 BT Decal	1187
39	1	Do Not Operate Without Guard Decal	1186
40	2	2-1/2 x 2-1/2 BT Decal	1232
41	2	America & Safety First Decal	1233

## BOLT ON TRAILER ASSEMBLY

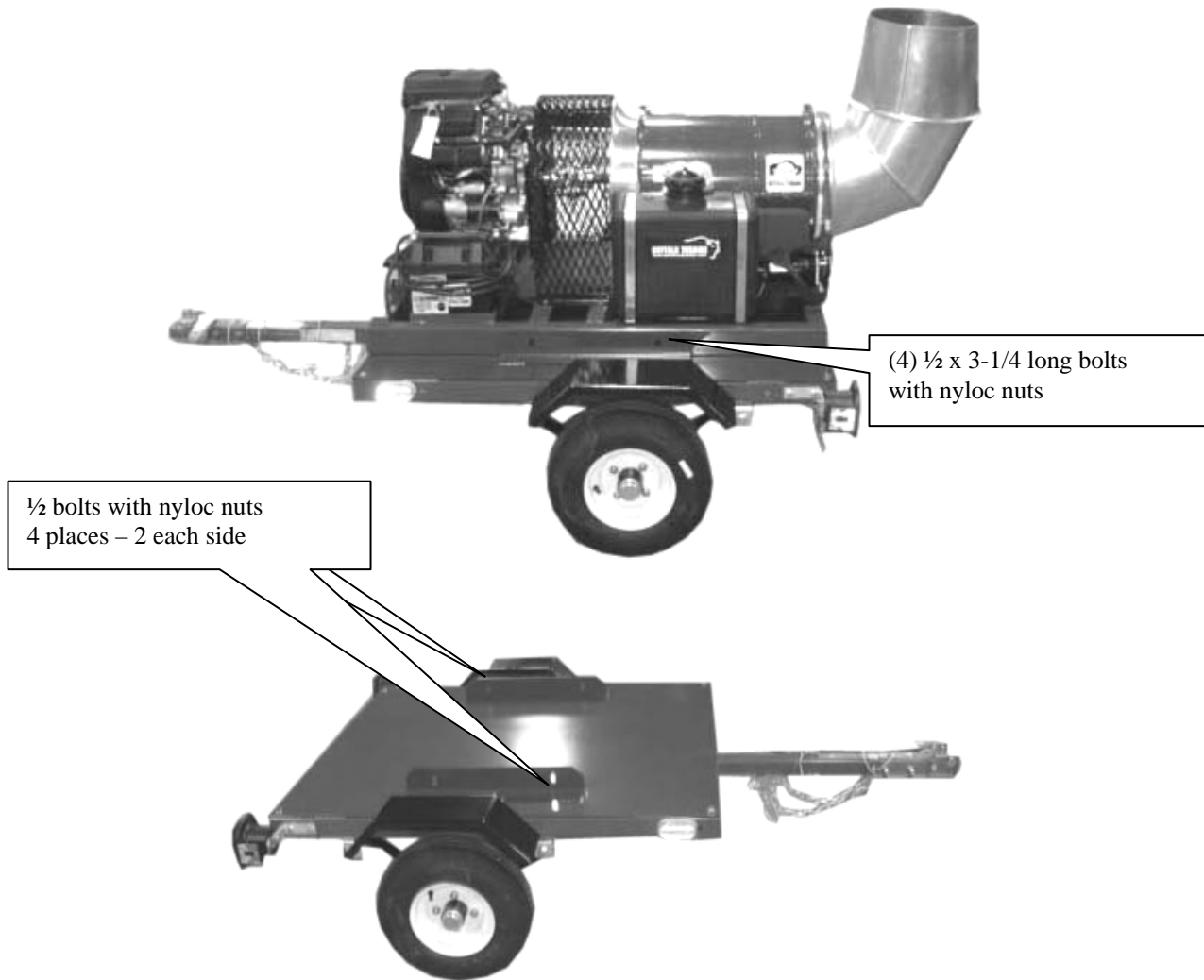


### MODEL BT-KB Assembly Instructions

1. Fill engine oil to proper level. (overseas shipments)
2. Fill each cell to proper level (Dry Cell Battery) with battery-grade sulfuric acid of 1.265 specific gravity. Battery and acid must be at a temperature of 60°F to 100°F (16°C to 38°C) at the time of filling (overseas shipments).
3. Attach 2 axle mounts with 2 bolts each. Do not tighten.
4. Attach axle to axle mounts using 2 bolts. Do not tighten.
5. Tighten 4 axle mount bolts then tighten the 2 bolts holding the axle.
6. Attach the tongue using the 2 U-bolts, center on the frame then tighten evenly. Equal pressure must be applied on each hex. Note: The tongue is reversible and will allow for 2 different heights. Determine the desired height before attaching the tongue.
7. Attach Fenders
8. Recheck all mounting bolts to assure that they are tight.
9. Bolt on tires.
10. Reattach positive battery cable (RED) and ground cable (Black) to proper terminals.

## BUFFALO TURBINE'S D.O.T. APPROVED TRAILER

BT-1613-DOT



### ***Bolt on Buffalo Turbine Model KB Skid blower unit***

**Mounting:** (4) 1/2" x 3-1/4 long HHCS and (4) 1/2 Nyloc Nuts – 2 each side

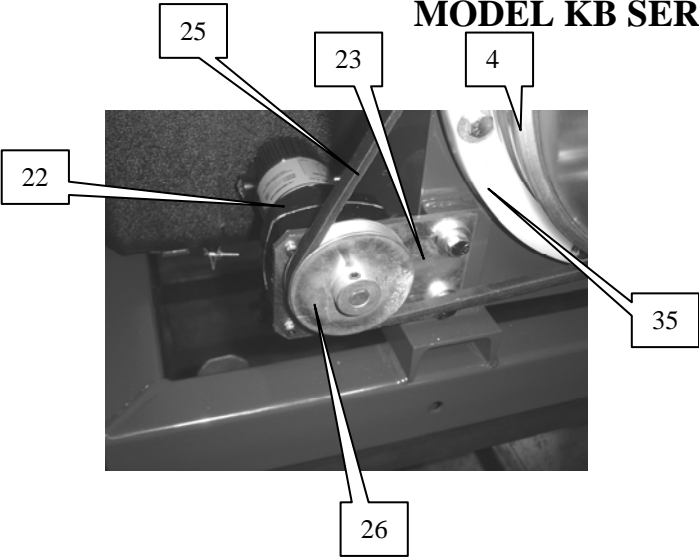
**800 lb Capacity**

**2" Ball Hitch Receiver**

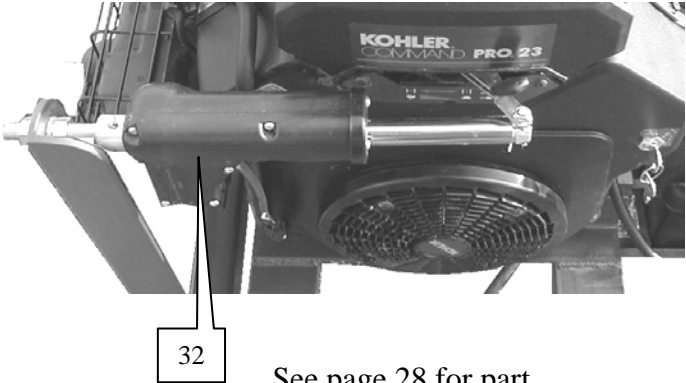
**40" x 48" deck**

**Safety chains and lights**

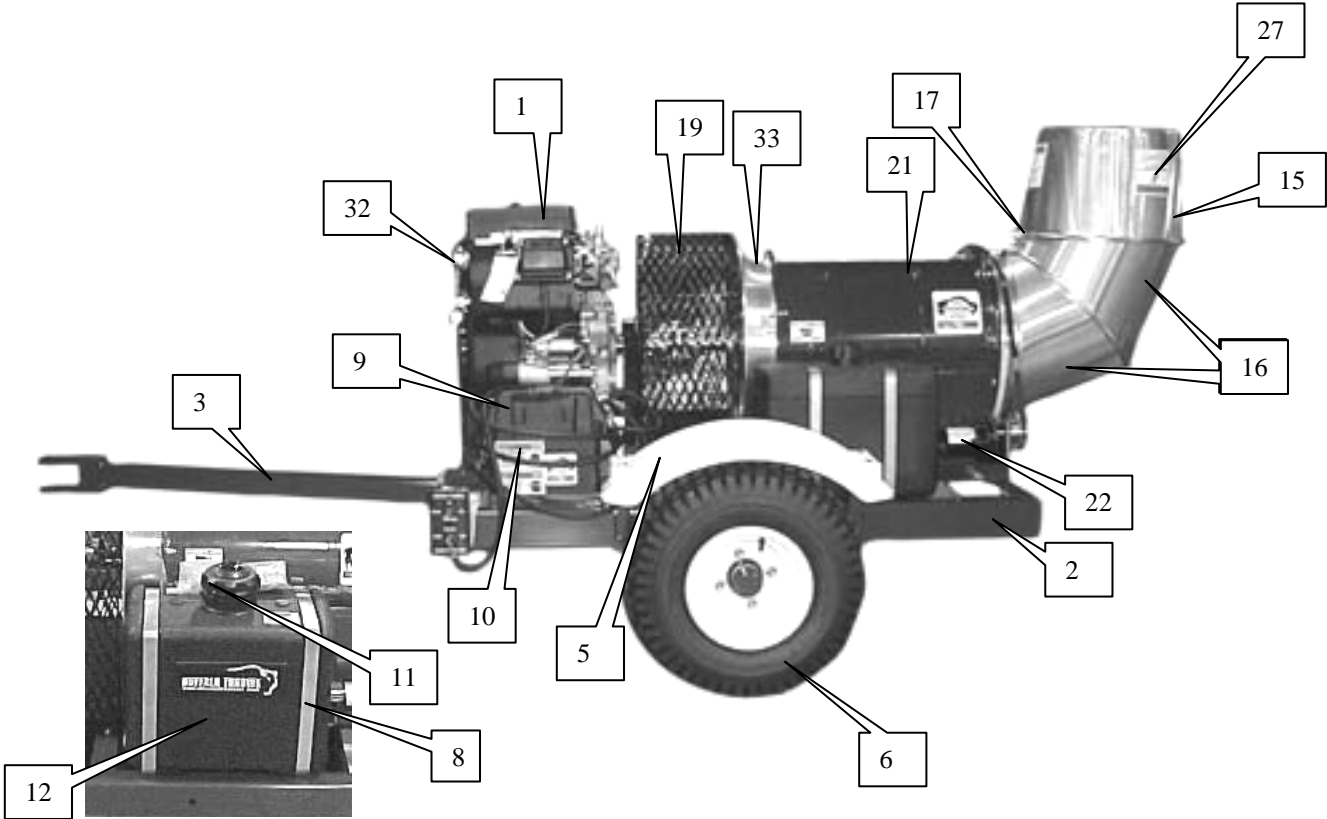
# **MODEL KB SERIES PART LOCATIONS**



Guards removed for clarity  
(CE unit only)



See page 28 for part details on slide actuator



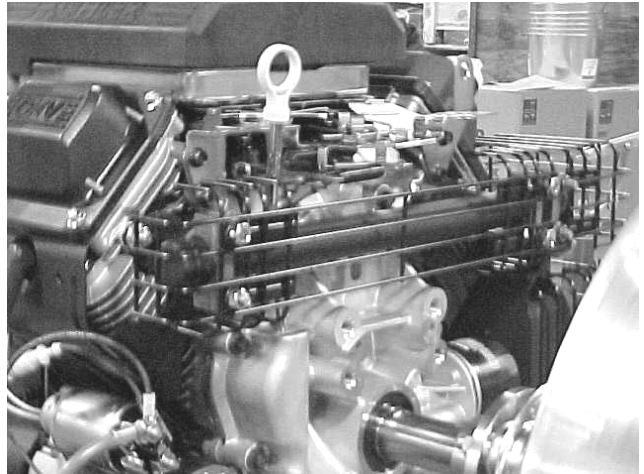
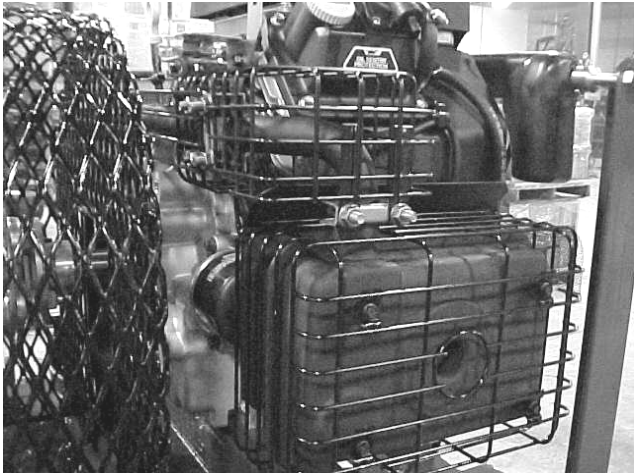
New 6-gallon tank – Serial # 9560 to present



## Model KB Series Muffler Guards

(Used For CE Conformity Only)

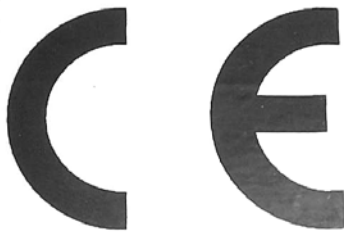
Kohler Part # 28 755 29-S



**CE Certified Guard and Label Kit**

**Hurricane PTO Units  
Part # 2501**

**Model KB Units  
Part # 2415**



**Part # 1783  
CE Label**



**Rotation Belt  
Guard  
Part # 1785  
(CE units only)**

## Cushman Truckster Mounting Bracket Part # 1614

**Nozzle Extension  
Part # 1468 – 12"**



**Truckster Bracket Part # 1614**

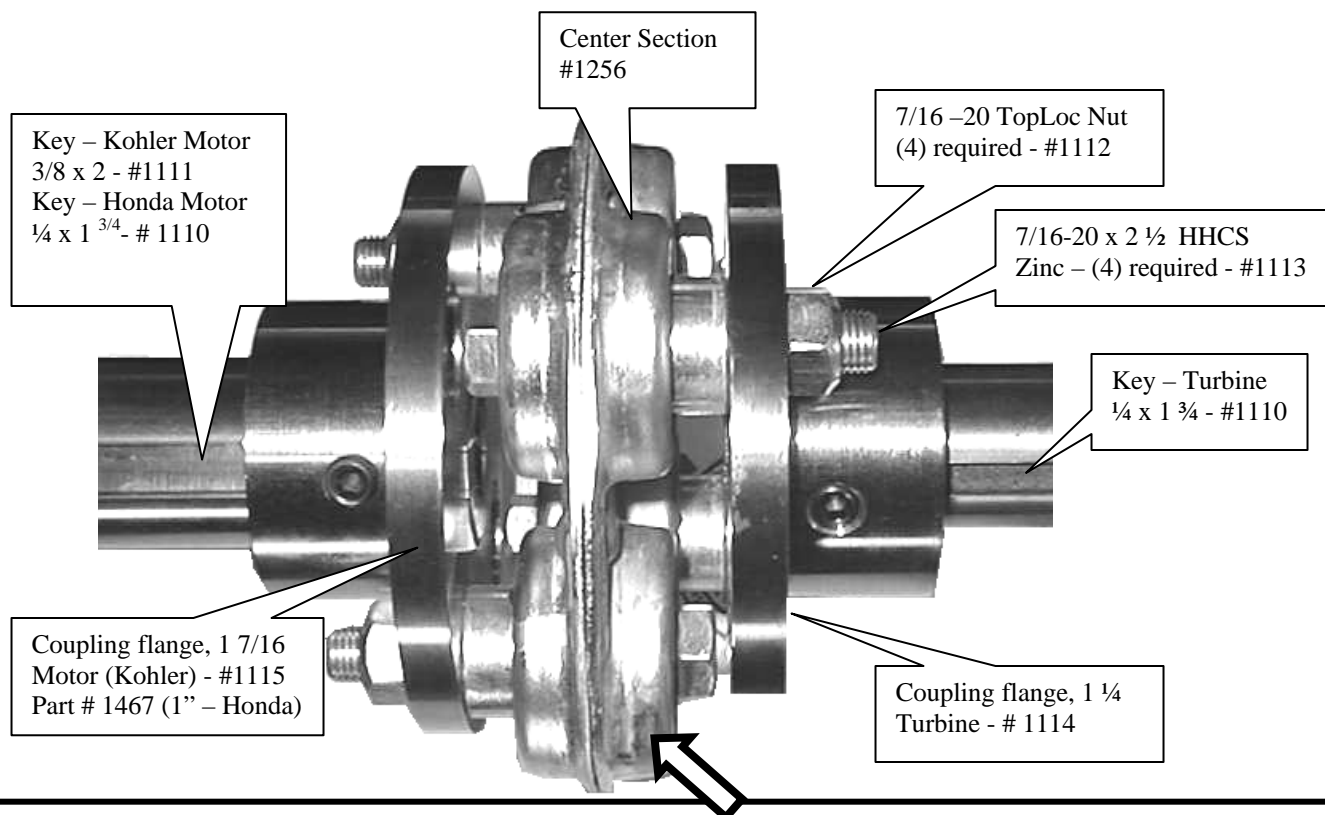
## INSTALLATION INSTRUCTIONS & PARTS FOR THE MOREFLEX COUPLING

PART # 1746 – COUPLING COMPLETE, KOHLER ENGINE

PART # 1747 – COUPLING COMPLETE, HONDA ENGINE

### ALIGNMENT OF TURBINE SHAFT WITH SHAFT OF ENGINE IS CRITICAL

1. Install keys in both shafts.
2. Slide coupling flanges on both shafts (engine and turbine shafts)
3. Place Moreflex coupling CENTER SECTION between coupling flanges and secure with 4 bolts and TOPLOC nuts. The bolt heads are positioned against the coupling in alternating directions. Tighten all 4 bolts. DO NOT TIGHTEN SET SCREWS AT THIS TIME.
4. Check key for proper position under the set screw hole on both shafts.
5. Place a couple of drops of Loctite 271 into these two holes only. Set screws and tapped screw holes must be free of dirt and oil for Loctite to work properly.
6. Install the set screws over the keys and tighten firmly.
7. Using a drill point, dimple each shaft through the other 2 set screw holes. Clean drill chips, oil and dirt before applying Loctite.
8. Place a couple of drops of Loctite 271 in these 2 holes.
9. Install and tighten set screws in these 2 holes.
10. Check and retighten the 4 bolts that hold the coupling center section in place.
11. Visually inspect the unit and replace the guard. DO NOT OPERATE WITHOUT THE GUARDS IN PLACE.

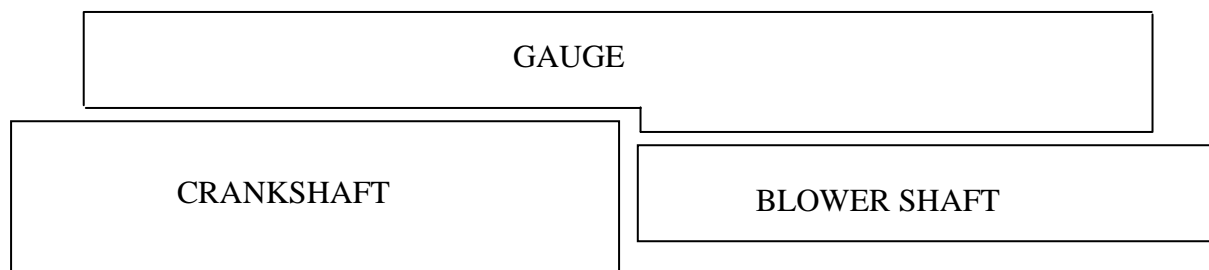


Part # 1256 (center section) is a **“WEAR”** item that should be visually checked each time the engine oil is changed. This coupling is equipped with special lock nuts. Occasionally check that all 4 nuts are securely fastened. **LOOK FOR CRACKS IN THE RUBBER COMPOSITION THAT SURROUNDS THE 4 BUSHINGS.** **Replace the center section when the rubber composition begins to show ANY signs of cracking OR an increase in vibration OR unusual sounds. When in doubt, call our Service Department.**

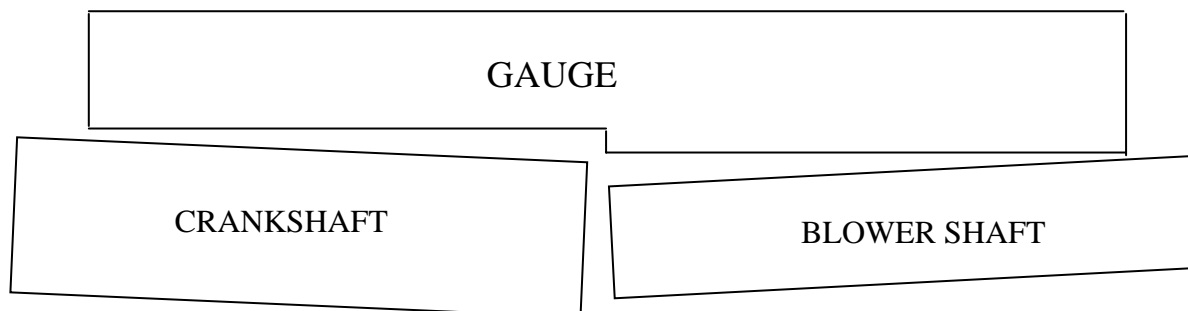
## **MOUNTING BLOWER ASSEMBLY ONTO FRAME** **AND ALIGNMENT RECOMMENDATIONS**

1. Install blower assembly onto frame and tighten all of the bolts.
2. Remove all burrs and oil from the shafts and keyways (engine and blower shafts).
3. Using the supplied gauge, align the shafts parallel to each other (very important).
4. Check in four places around the shafts at 90° to each other.
5. When properly aligned, gauge should have little to no gap between itself and the shafts at any point along the gauge.
6. To adjust, move the engine. The 2 mounting brackets have tapped holes in each corner to help support and adjust the position of the engine. The 4 roll pins may need to be repositioned after alignment is completed and bolts are tightened.
7. Tighten all engine bolts and recheck alignment. Drill and install 4 roll pins in new position.

### **ACCEPTABLE**

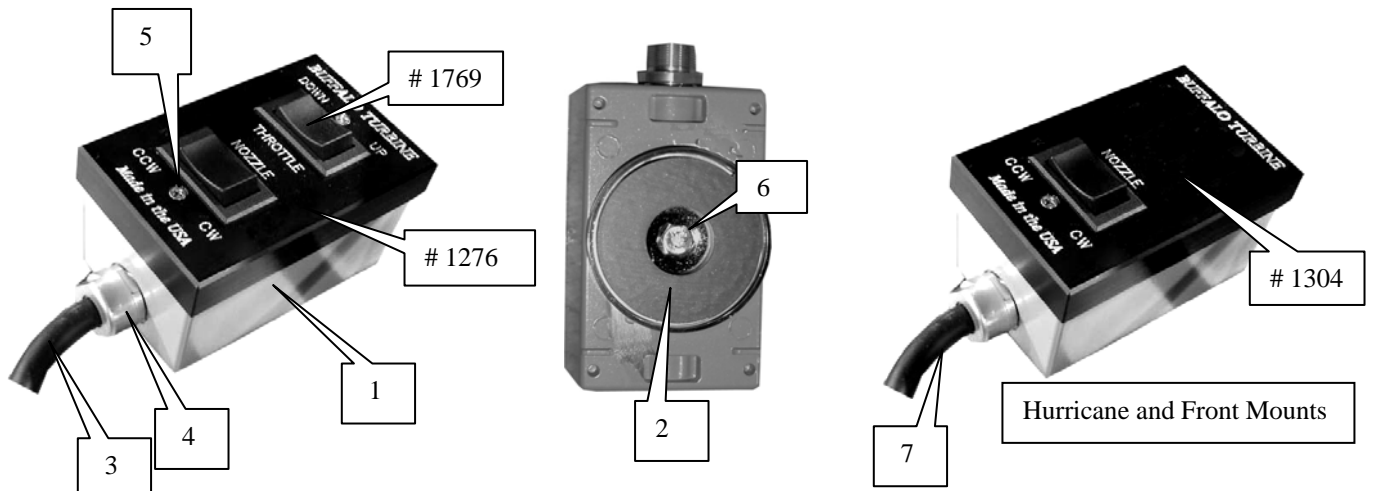


### **NOT ACCEPTABLE**



SECURELY ATTACH GUARDS BEFORE OPERATING BLOWER UNITS

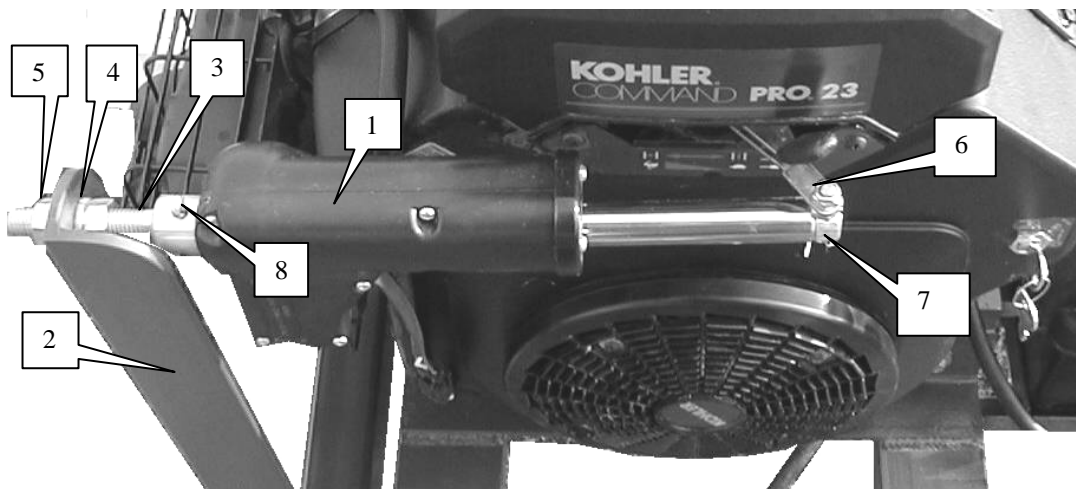
## CONTROL BOX ASSEMBLY (Excluding Cyclone KB3)



<u>Ref #</u>	<u>Part #</u>	<u>Description</u>
1	1281	Control Box Housing
2	1300	Magnet
3	1292	18/6 Wire, 144"
4	1289	Wire Nut
	1360	Control Box Assy w/ 144" Cable (KB Nozzle Control Only)
	1265	Control Box Assy w/ 144" Cable (3 point hitch & Front Mounts)
	1567	Control Box Assy w/ 144" Cable (KB Nozzle & Throttle Control)
5	1310	6-32 x 1" Phillip head screws
6	1258	1/4-20 x 3/4 screw to attach magnet to control box
7	1305	16/4 Wire, 144" (Hurricane / PTO)

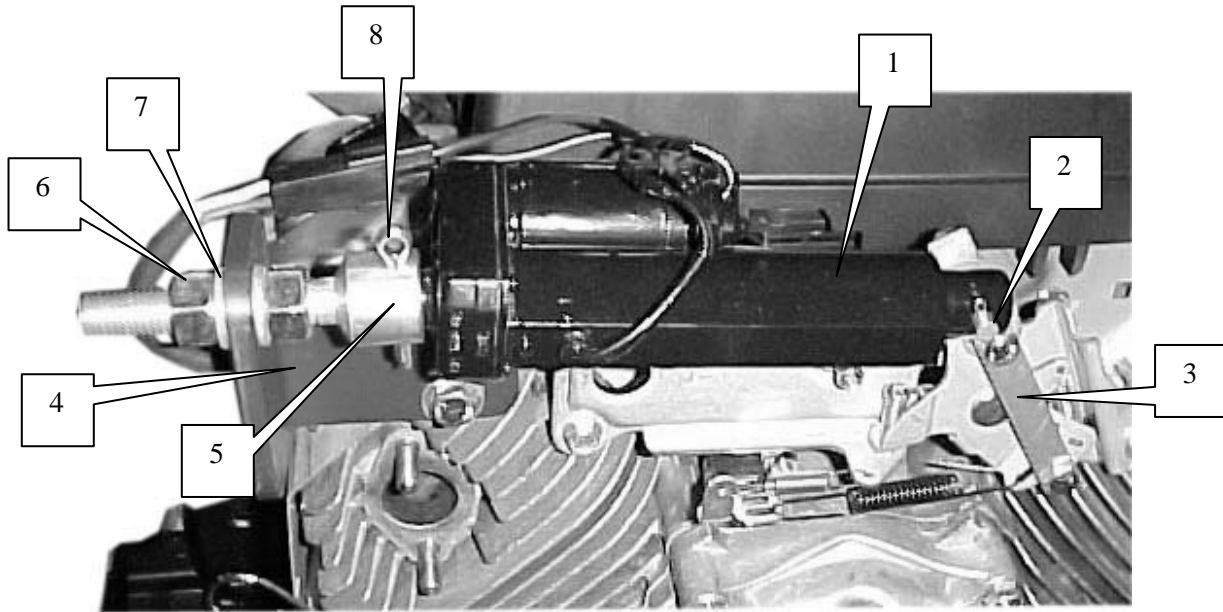
## Slide Actuator (Kohler Engine)

(Before serial # 12410)

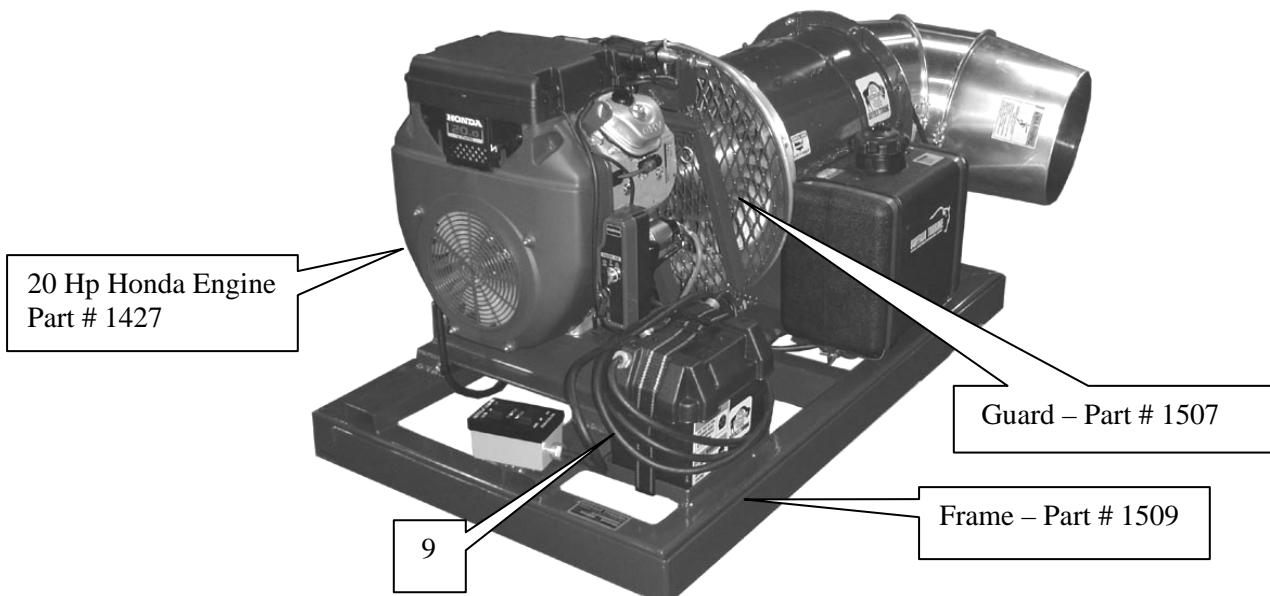


<u>Ref #</u>	<u>Description</u>	<u>Part #</u>
1	Slide Actuator, 4" Stroke	1409
2	Angle Brkt Mount	1488
3	Actuator Mount	1451
4	1/2 Lock Washer, Zinc Plated	1222
5	1/2 -13 Hex Nut, Zinc Plated	1231
6	KB Remote Throttle Pin	1414
7	1/16 Cotter Pin Zinc	1193
8	3/16 Cotter Pin Zinc	1194

## HONDA KB PARTS LIST



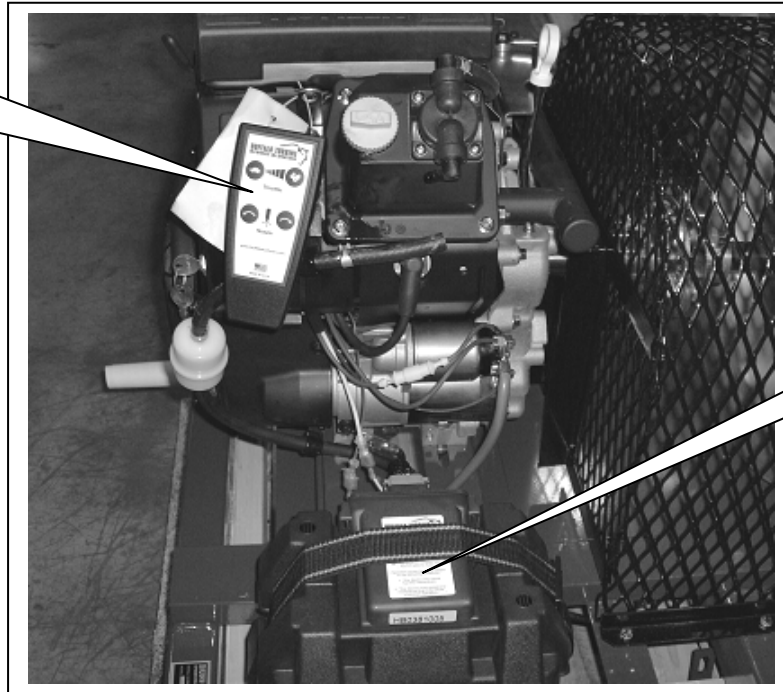
Ref #	Part #	Description
1	1542	Linear Actuator – 2" Stroke
2	1414	KB Remote Throttle Pin
3	1514	Throttle Arm
4	1511	Actuator Bracket
5	1451	Actuator Mount
6	1231	½-13 Hex Nut Zinc Plated (2 req'd)
7	1222	½ Lock Washer (2 req'd)
8	1194	3/16 Cotter Pin, Zinc
9	1292	18/6 Wire, 144" (Nozzle and Throttle)



TRAILER PACKAGE NOT SHOWN  
SEE PAGE 21 FOR TRAILER PACKAGE INSTRUCTIONS

Figure 1.3 Transmitter Buttons

Transmitter  
Part # 2289

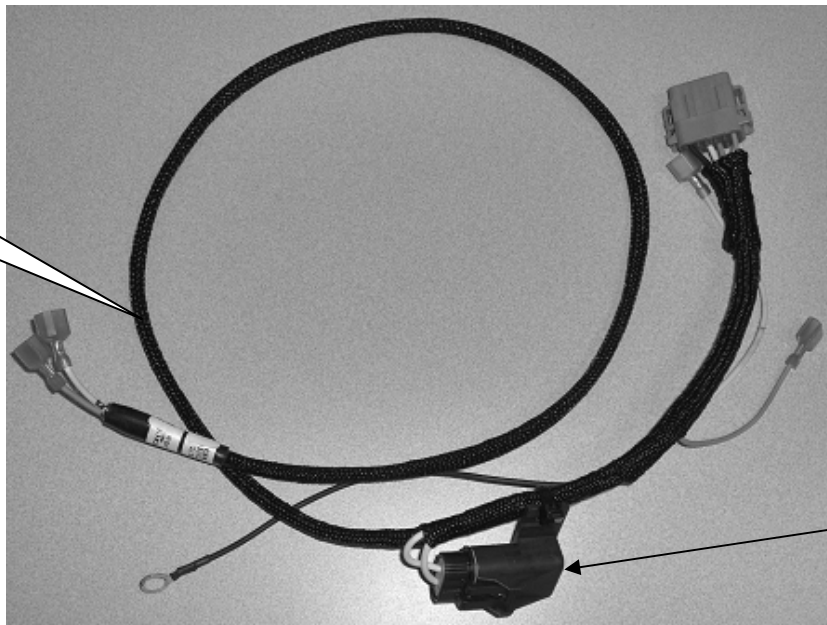


Receiver  
Part # 2427

**CYCLONE KB3 BATTERY BOX ASSEMBLY (WIRELESS REMOTE) PART # 2294**

Includes Transmitter, Receiver box, Battery Box, Connectors, Wire Harness

Wire Harness  
Part # 2291



7.5 Amp Fuse  
Only

# Buffalo Turbine's Wireless Transmitter (Part # 2289) and Receiver (Part # 2427) Programming Instructions.

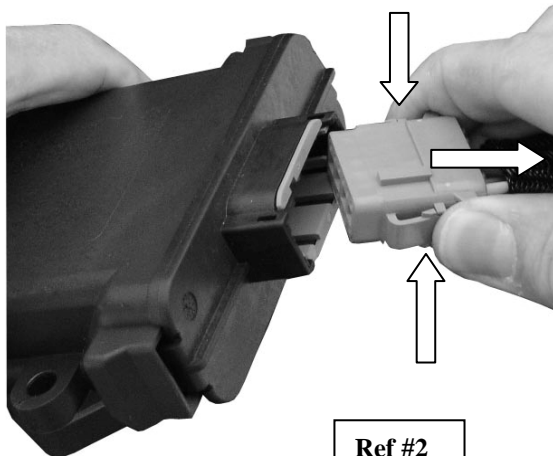
**DO NOT ATTEMPT TO TROUBLESHOOT WIRELESS SYSTEM WITHOUT REVIEWING INSTRUCTIONS**



Ref #1

The Buffalo Turbine wireless control system (**Ref # 1**) allows multiple transmitters to be learned to the receiver for convenience and multiple operators. The following instructions will guide you through ***learning a new transmitter*** to your existing receiver.

Review the following instructions in the event a transmitter is lost, has a security issue or simply need to clear the memory of learned transmitters. ***Clearing the transmitter memory will also be covered.***

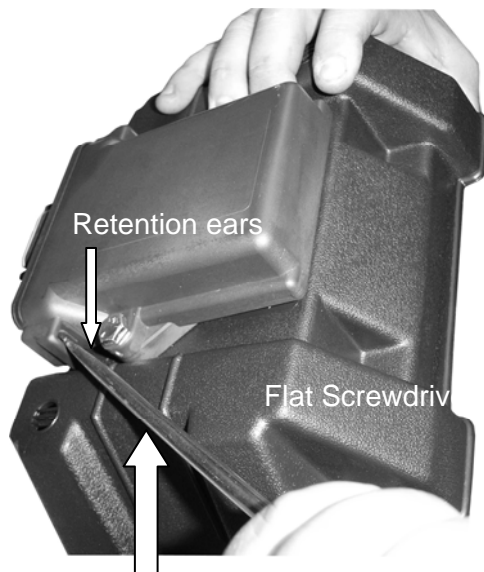


Ref #2

Begin by removing power from the receiver unit. ***Make sure the engine key switch is in the off position.***

Disconnect the gray function plug by pressing both sides (latches) simultaneously and pulling (working back and forth) the receiver connector socket. **Ref # 2**

Note: The gray function plug had one key on the top and two keys on the bottom to prevent improper installation.

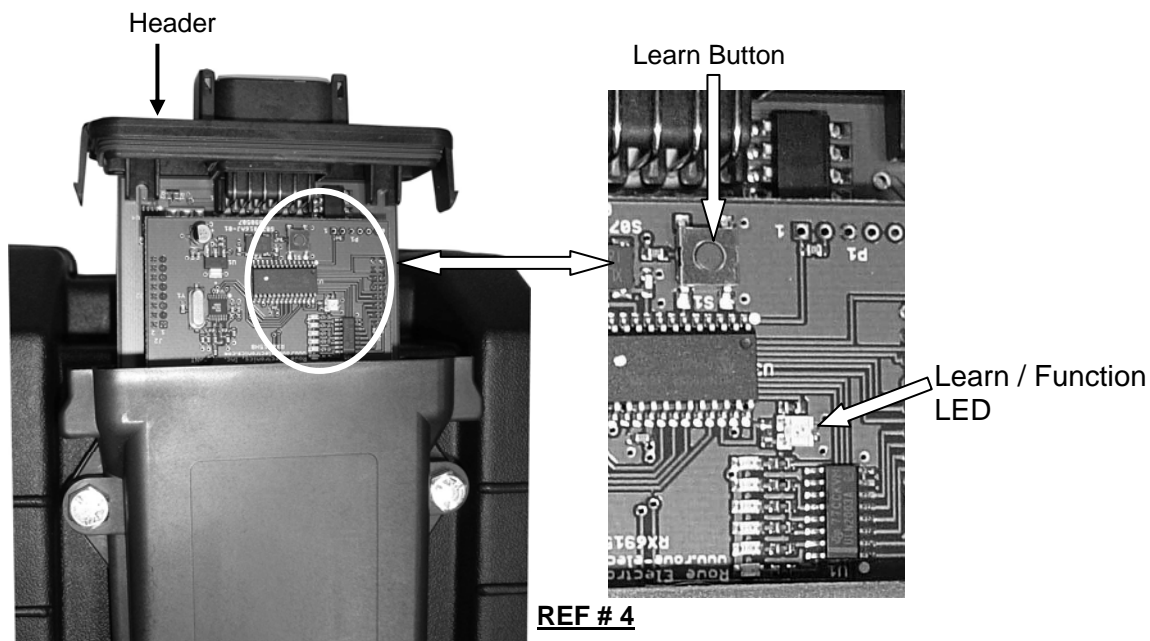


Ref #3

## ***Unlatching the header and circuit board***

Using a large flat screwdriver, push in and forward on the retention clip (see arrows) until the ears release. This may require alternating from side to side with controlled pressure. **Caution: Do not pry on the retention ears!!**  
**Ref # 3**

It is only necessary to slide header board out enough to expose the learn button and learn / function LED. **See Ref # 4**



Once the header is separated from the enclosure box, slide the circuit board assembly out enough to expose the LEARN BUTTON and the LEARN / FUNCTION LED. If the circuit board assembly is removed completely from the enclosure, NEVER lay this component on conductive material (use wood or cardboard).

Reconnect the function plug to the connector socket. Locate the LEARN BUTTON (**REF # 4**) on the circuit board and apply power to the receiver (Turn the engine key switch to the on position).

Upon application of power, the LEARN / FUNCTION LED (**Ref # 4**) will flash RED three times. Now press and release the learn button (REF # 4). You now have 20 seconds to press any button on the transmitter (**REF # 1**) and look for a GREEN / YELLOW illumination of the LED. This confirms that the transmitter has been LEARNED or programmed to the receiver and is ready to function properly.

If the receiver fails to learn the transmitter, wait until the RED LED extinguishes and repeat the above programming procedures. In the event that there is a second "failure to learn", press and hold the learn button until the LED goes out (approximately 10 seconds). This will clear the memory of all learned transmitter codes and the LEARN programming process can be initiated again.

If the receiver still fails to learn, check the batteries in the transmitter. Battery voltage should be less than 2.7 volts.

Once the learn procedure has been successfully completed, turn the engine key switch to the off position and carefully replace (slide) the circuit board assembly into the enclosure. There will be an audible "click" on both sides of the enclosures and should be no orange seal visible when properly closed.

**DO NOT ATTEMPT TO TROUBLESHOOT WIRELESS SYSTEM WITHOUT REVIEWING INSTRUCTIONS**

CONTACT BUFFALO TURBINE AT 716-592-2700 WITH ANY QUESTIONS YOU MAY HAVE REGARDING THE WIRELESS UNIT.



## **Troubleshooting For Cyclone KB3 Black Box Receiver**

**Symptom – Does not throttle up properly.**

- 1. Check Remote Transmitter by changing batteries or making sure they are secure inside compartment.**
    - If not replace Batteries or replace transmitter.**
    - If Batteries and Battery compartment are fine go to step 2.**
  - 2. With engine running separate power wire (red/yellow stripe) between motor and battery box at the quick disconnect.**
  - 3. With engine running jump power with alternate wire from Red cable on starter solenoid to red/yellow stripe throttle wire leading to motor.**
  - 4. Rpm's should be at idle to start and after jumper connection is made Rpm's should go to max.**
  - 5. Break connection to drop Rpm's to idle.**
- After result of test contact Buffalo Turbine for corrective action.**

**716-592-2700 Ask for Service .**

## Model Hurricane Parts List- BT-HPTO10G

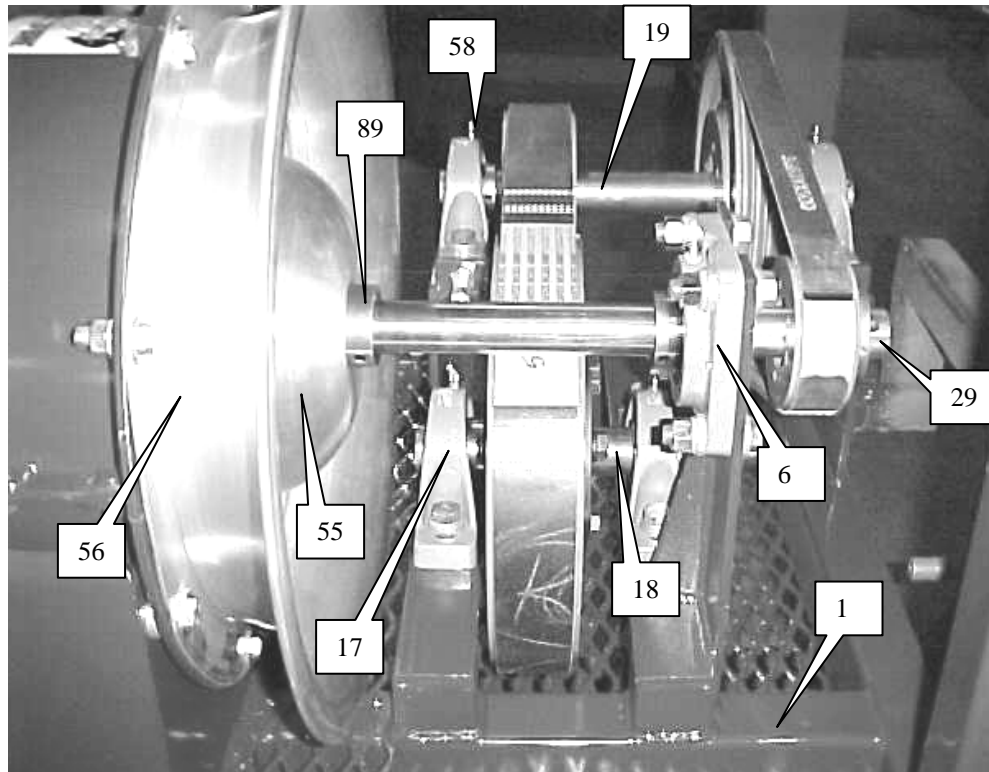
Options:

Support Stand	1471
Fitted Waterproof Protective Cover	BT-PC-1
Rectangular Nozzle (19" long)	1425
Short Rectangular Nozzle (10" long)	1469
Grease Gun Extension	1470

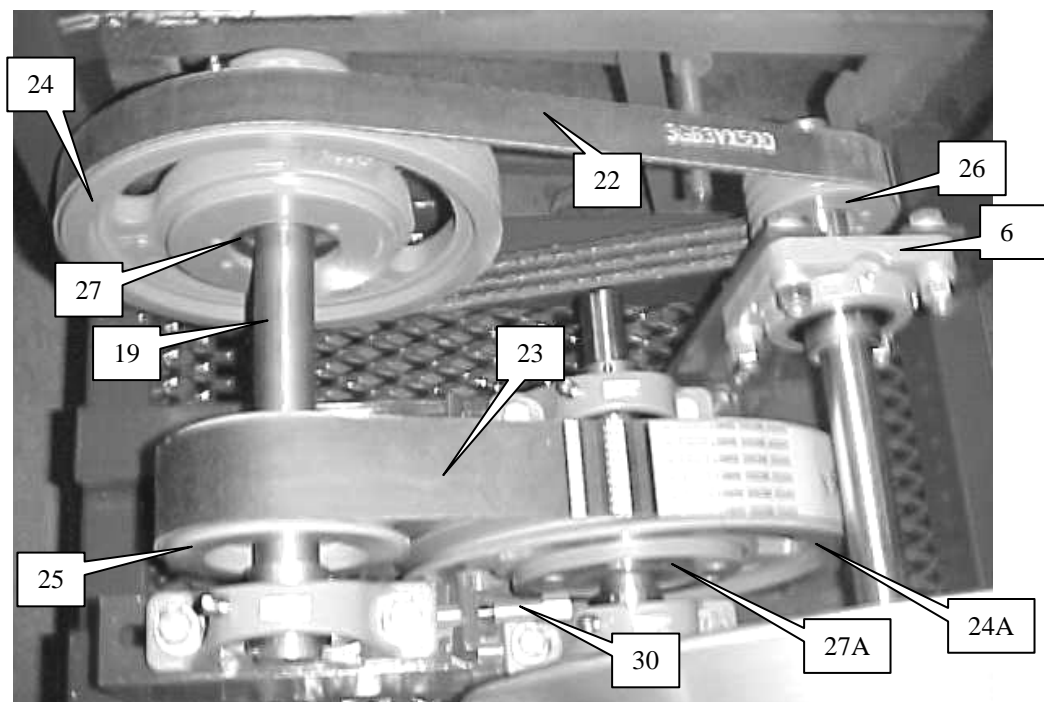
Reference #	Quantity	Description	Part #
1	1	Main Frame Hurricane	1388
2	2	Lift Pins	1198
3	1	Guard	1389
4	1	Guard, Front	1200
5	1	Bearing Mount	1201
6	1	Flange Mount Bearing 1 ¼	1262
7	2	Elbow Segment	1171
8	1	Round Nozzle, 12"	1172
9	1	Elbow Base, Short	1141
10	3	Clamp Band	1173
12	1	Rotation Motor	1143
13	1	Round Nozzle, 10" (Optional)	1417
14	1	Motor Bracket	1144
15	1	Belt, A-52 (Optional )	1241
15A	1	Belt, A-54 ( Standard )	1142
16	1	Sheave AK32x1/2 (Standard)	1145
17	4	Pillow Block, Bearing 1 7/16	1204
18	1	Shaft, Input (Splined) (Serial # 8504 to present)	1253
19	1	Shaft, Jack	1386
20	1	Shaft PTO	1553
21	1	Top Pin, Upper	1208
22	1	Belt, 3/3VX500 Power Band	1255
23	1	Belt, 3/5VX500-(Serial #5122,5124- Present)	1210
24	1	Sheave, 3/3V10.60SK-(Serial # 5080-Present)	1235
24A	1	Sheave, 3-5V12.5E	1211
25	1	Sheave, 3/5V5.5 SDS (Serial # 5080-Present)	1238
26	1	Sheave, 3GR3V3.65-(Serial # 5080-Present)	1212
27	1	Bushing, SK 1 7/16	1213
27A	1	Bushing, E 1-7/16-(For 1211)	1214
28	1	Bushing, SDS 1 7/16	1215
29	1	Bushing, SH 1 1/4	1216
30	4	Bolt, ½ Pushover	1218
31	1	Blower Assembly	1390
32	1	Shaft Collar, 1-1/4	1117
33	1	Wheel, Hand (Optional)	1246
34	1	Sheave, 4.1 x ¾ (Optional)	1251
35	2	Collar, Shaft ¾ (Optional)	1250
36	1	Bearing, Pillow Locking (Optional)	1248
37	1	Bearing, ¾ Pillow Block (Optional)	1247
38	8	Nut Plate, ½	1219
39	6	Spacer, 3/16 X 1	1106
42	1	Retaining washer, 3/8 x 1-5/8	1220

43	10	¼ Self Tapping Screws	1116
44	8	½"- 20 X 2" HHCS Pillow Block Bolts	1221
45	12	½" Lock Washers, Pillow Block	1222
46	10	½" X 3/16" Thick Washers Pillow Block	1223
47	4	½"-13 X 2" HHCS Blower Bearing Bracket	1224
48	18	3/8" – 24 X 1-1/2" HHCS	1101
49	7	3/8" – 24 X 1-1/4" HHCS	1100
50	14	3/8" Flat Washer	1108
51			
52	3	Lynch Pin	1225
53	4	½" Flat Washer	1226
54	6	3/16" Roll Pin	1236
55	1	Spinner	1118
56	1	Bellmouth	1119
57	2	Plastic Slides	1138
58	5	45 Degree Grease Fitting	1217
59	4	3/8 Notched Washer	1139
60	3	¼- 20 X 2-1/4 Stove Bolt	1174
61	5	¼- 20 Square Nut	1175
62	3	5/16-18 X ¼ Set Screw	1130
63	1	Serial Tag	1156
64	4	Drive Pin For Serial Tag	1157
65	2	3/8-24 X 2 HHCS Zinc	1104
66	1	3/8-24 X 2 Faced Head Screw	1103
67			
68	2	½-13 Hex Nut	1231
69	15	3/8-24 Hex Nut	1105
70	4	3/8 Nylon Nut (Optional)	1242
71	1	Hand Wheel Support (Optional)	1243
72	2	3/8 X 4-1/2 Allen Cap Screw (Optional)	1244
73	2	3/8 X 2-1/2 Allen Cap Screw (Optional)	1245
74	1	Shaft, Nozzle Turning 58" (Optional)	1249
75	2	¼-20 X 1 HHCS (Standard)	1169
76	4	5/16 x ¼ Covered Wire Clamp (Standard)	1167
76A	1	Control Box (Standard) See Control Box Page 28	1265
76B	1	Rocker Switch For Control Box (Standard)	1277
76C	1	Rubber Grommet For Toggle Switch (Standard)	1278
76D	1	Remote Cable For Control Box (Standard)	1305
77	3	Thrown Object Decal	1227
78	1	4 X 4 BT Decal	1182
79	1	Ear Protection Decal	1185
80	1	Eye Protection Decal	1184
81	3	Rotating Drive Hazard Decal	1228
82	1	Keep Hands Clear Decal	1229
83	2	8 X 10 BT Decal	1187
84	1	Do Not Operate without Guard Decal	1186
85	2	2-1/2 X 2-1/2 BT Decal	1232
86	2	America & Safety First Decal	1233
87	1	Rear Roller with end caps	1374
88	1	Mounting Shaft (rear roller)	1375
89	1	Shaft Collar, 1-1/4	1117

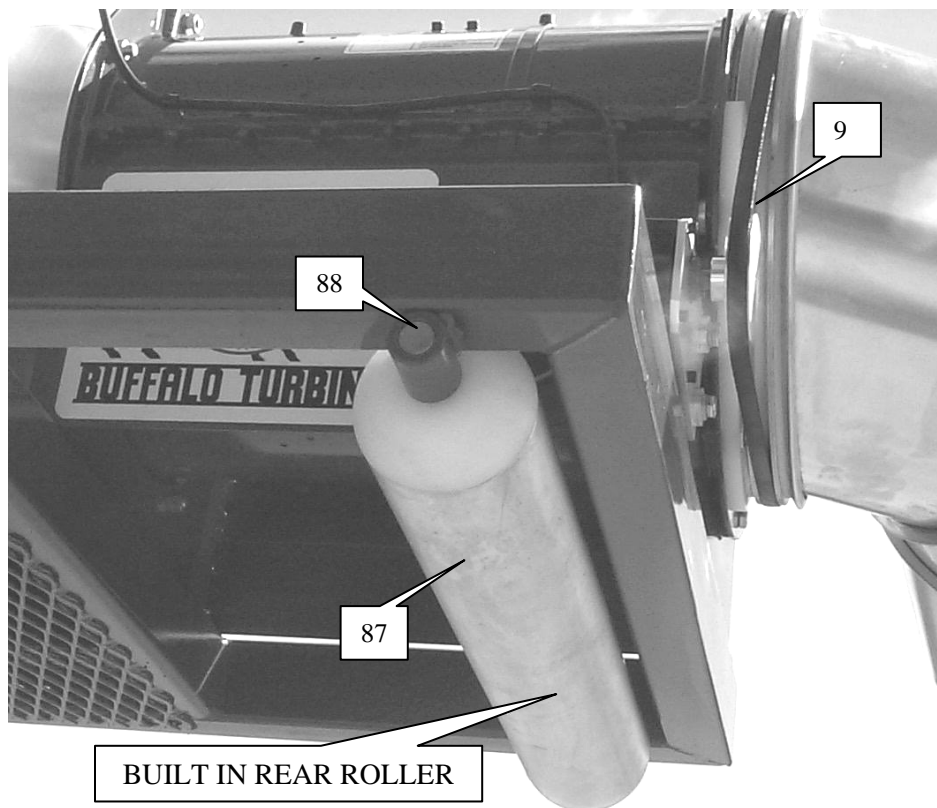
## Hurricane/PTO parts reference



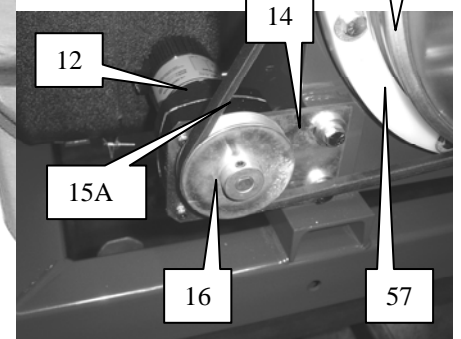
GUARDS REMOVED FOR CLARITY



## Hurricane PTO Shaft -- 1553



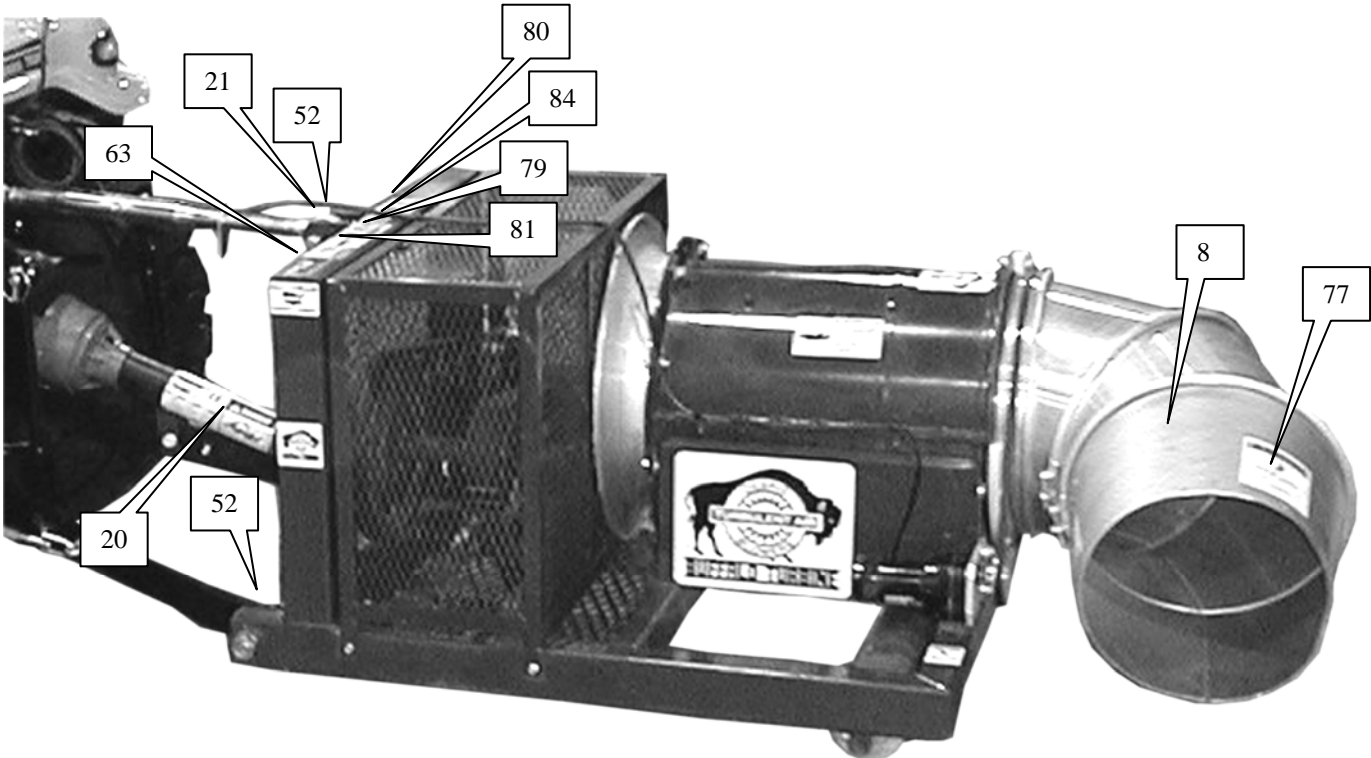
Rotation Belt Guard  
Part # 1785



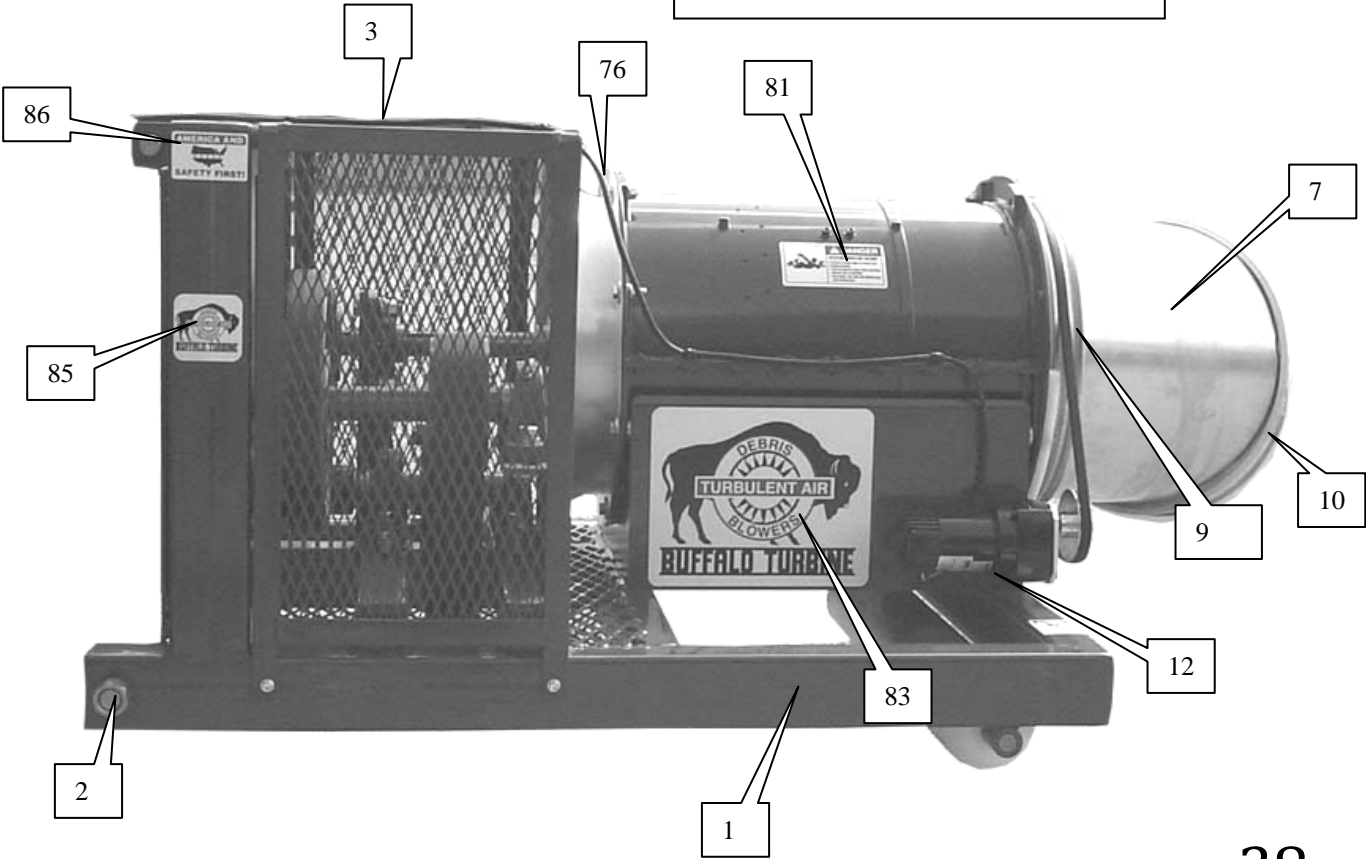
GUARD REMOVED FOR CLARITY  
(CE Units Only)

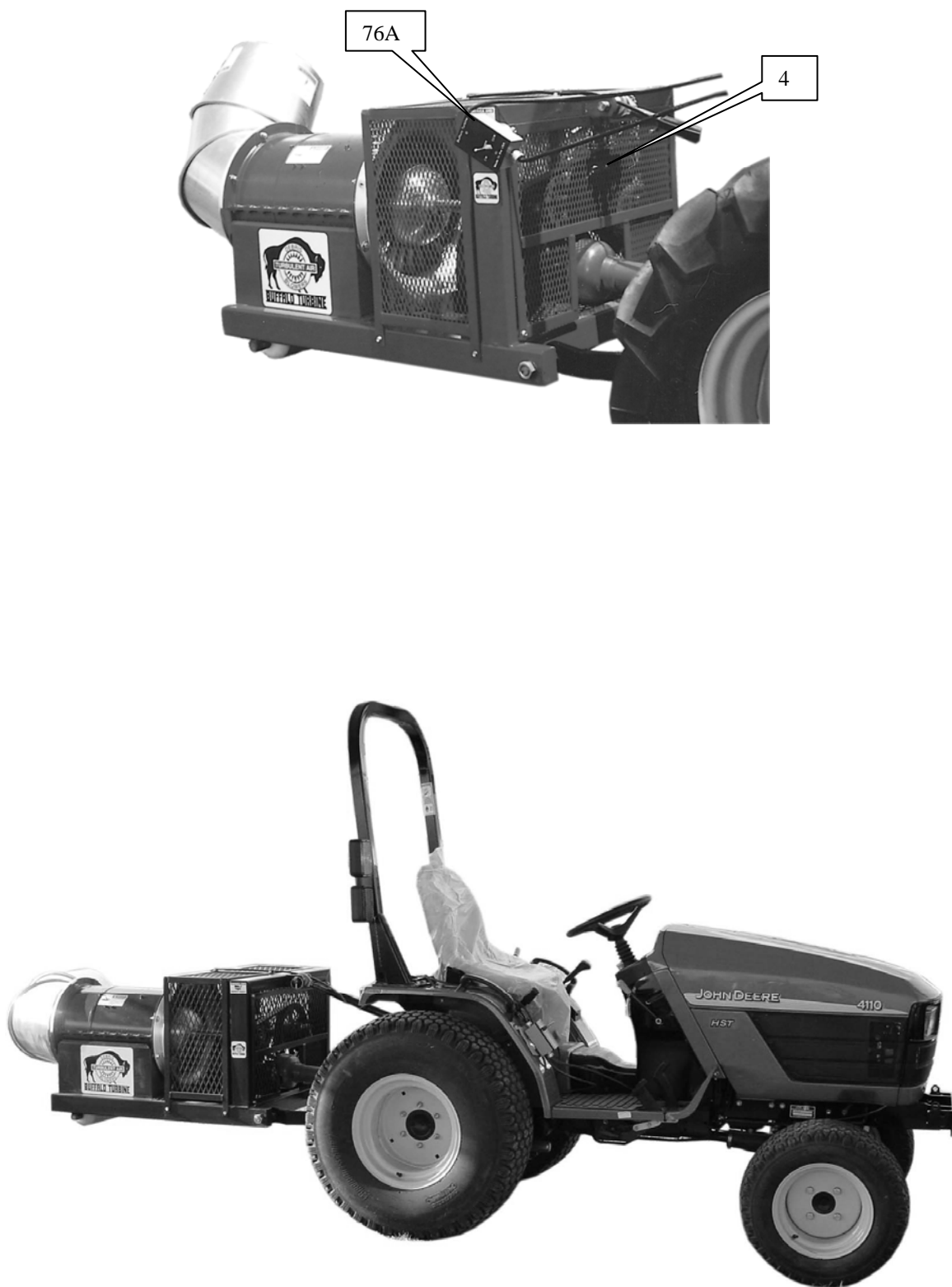
Bottom View of Hurricane/PTO

**Hurricane/PTO Parts Reference**



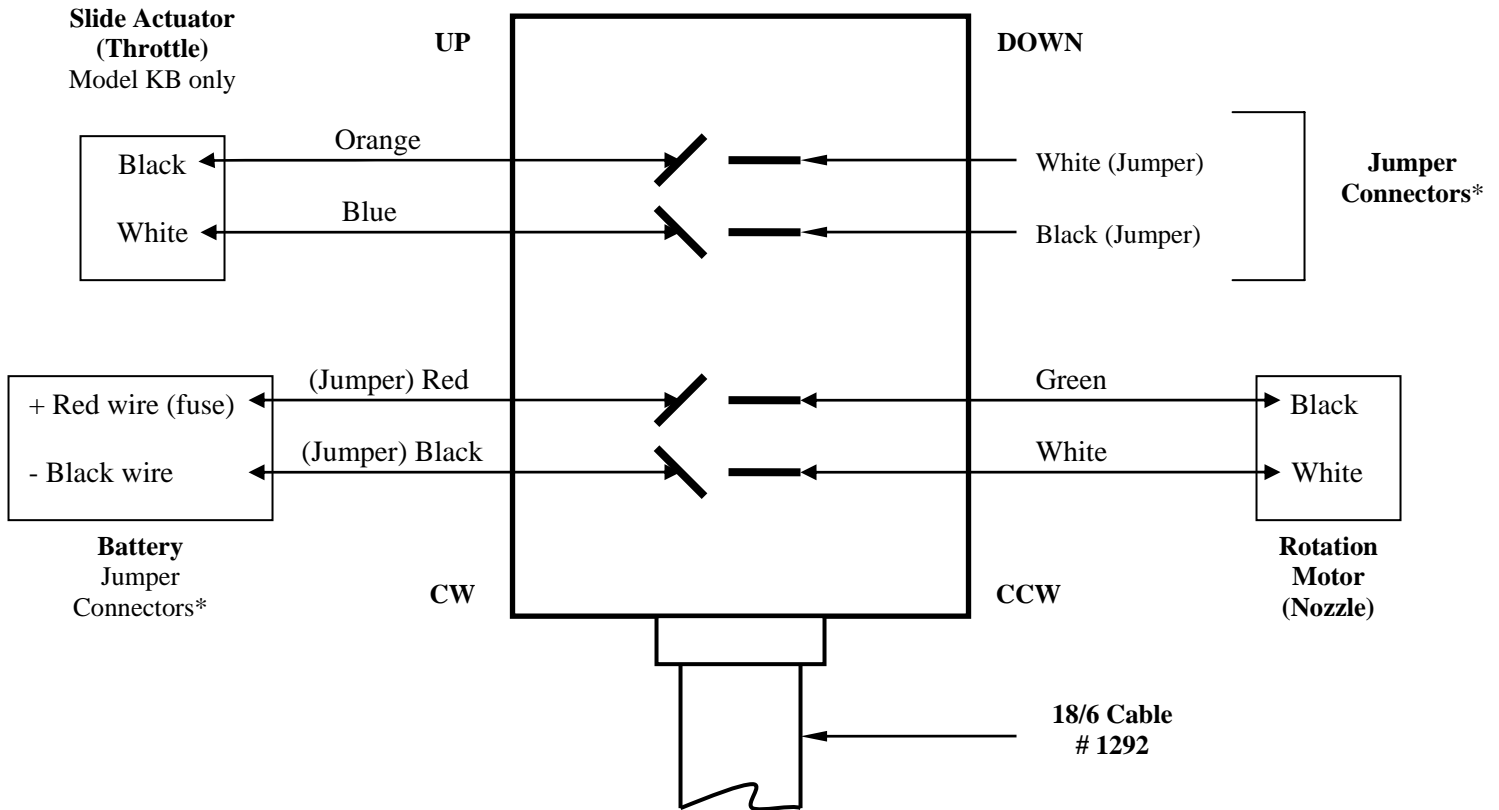
GUARDS REMOVED FOR CLARITY





## WIRING DIAGRAM FOR THE MODEL KB (NOZZLE & THROTTLE CONTROL KIT)

(For Hurricane / PTO wiring use nozzle diagram only)



**\*Jumper Connectors are connected using Tap Connectors #1301:**

**Red to White**

**Black to Black**

Wires should be connected using **Flag Terminals #1282**.





**Buffalo  
Turbine LLC**

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***Debris Blowers, Greens Fans, Sprayers, Dusters and Top Dressers***  
**EC Declaration of Conformity**

**We, Buffalo Turbine LLC of Springville New York, USA**

**Declare that:**

**Debris blowers, Models KB and Hurricane PTO**

**In accordance with the following directives:**

**Machinery Directive 98/37/EC and it's amending directives**

**Noise in the Environment Directive 2000/14/EC and it's amending directives**

**Has been designed and manufactured to the following specifications:**

**ISO 11094:1991**

**With a guaranteed sound power level of:**

**Lwa 120dB**

**Buffalo Turbine certifies that the equipment named above has been designed to comply with the relevant sections of the above referenced specifications. The units comply with all essential requirements of these directives.**



Part # 1783



Part # 1784

ATTENTION ALL BUFFALO TURBINE PRODUCT USERS,  
DEALERS, DISTRIBUTORS, SERVICE AND EQUIPMENT  
MANAGERS, AND MAINTENANCE PERSONNEL.

ANY ENGINE SERVICE, ENGINE PARTS OR ENGINE  
WARRANTY CONCERNS, CONTACT YOUR LOCAL KOHLER  
OR HONDA REPRESENTATIVE.

REPAIR PARTS MUST BE ORDERED THROUGH YOUR  
BUFFALO TURBINE DEALER.

PLEASE CONTACT BUFFALO TURBINE'S SERVICE  
DEPARTMENT AT 716 592 2700 FOR ANY SERVICE  
QUESTION YOU MAY HAVE REGARDING THE BUFFALO  
TURBINE BLOWERS OR SPRAYERS.

THANK YOU FOR YOUR COOPERATION.

Notes: