

**SMITHCO**

Wayne, Pennsylvania 19087

**OPERATOR &  
SERVICE MANUAL**

**G-STAR  
MODEL # 9430**

**For Customer Service  
Call: (888) 422-5173**

**Starting Serial # G343**

**June, 2005**

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## INTRODUCTION

Thank you for purchasing a **SMITHCO** product.

Read this manual and all other manuals pertaining to the G-Star carefully as they have safety, operating, assembly and maintenance instructions. Failure to do so could result in personal injury or equipment damage.

Keep manuals in a safe place after operator and maintenance personnel have read them. Right and left sides are from the operator's seat, facing forward.

All **SMITHCO** machines have a Serial Number and Model Number. Both numbers are needed when ordering parts. The serial number plate on the G-Star is located on the right of the rear main frame. Refer to engine manual for replacement of the engine serial number.

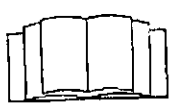





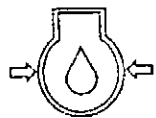


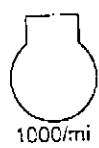
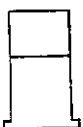


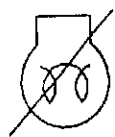

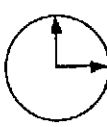
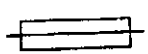




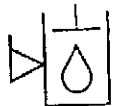
For easy access record your Serial and Model numbers here.

<b>SMITHCO</b>		DATE OF MFG.
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MODEL NO.	kg/lb	
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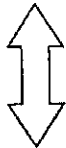
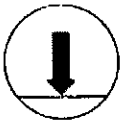






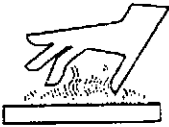
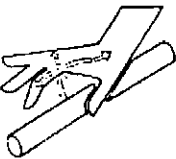
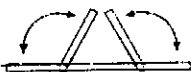
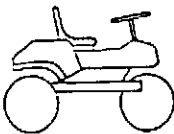
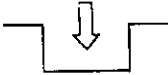
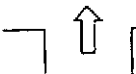

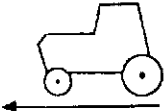



Information needed when ordering replacement parts:

1. Model Number of machine
2. Serial Number of machine
3. Name and Part Number of part
4. Quantity of parts

# SYMBOLS

	Read Operator's Manual		Electrical Power		No Electrical Power
	Engine - Stop		Engine - Start		Engine - Run
	Engine Oil		Temperature Light		Water Temperature
	RPM		Gasoline		Diesel
	Glow Plug - On		Glow Plug - Off		Glow Plug
	Hour Meter		Hour Meter		Fuse
	Hand Throttle		Choke - Closed		Choke - Open
	Park Brake		Park Brake Release		Hydraulic Oil Level

# SYMBOLS

	Up/Down Arrow		Down/Lower		Up/Raise
	No Smoking		Moving Parts		Manual Operation
	Pinch Point		Step		Hot Surface
	Hydraulic Fluid Penetration		Lift Arm		Tractor
	Engage		Disengage		PTO
	Ground Speed		Fast		Slow
<b>H</b>	High	<b>L</b>	Low	<b>F</b>	Forward
<b>R</b>	Reverse	<b>N</b>	Neutral		Warning Danger Caution

## SAFE PRACTICES

1. It is your responsibility to read this manual and all publications associated with this machine (engine, accessories and attachments).
2. Never allow anyone to operate or service the machine or its attachments without proper training and instructions. Never allow minors to operate any equipment.
3. Learn the proper use of the machine, the location and purpose of all the controls and gauges before you operate the equipment. Working with unfamiliar equipment can lead to accidents.
4. Wear all the necessary protective clothing and personal safety devices to protect your head, eyes, ears, hands and feet. Operate the machine only in daylight or in good artificial light.
5. Inspect the area where the equipment will be used. Beware of overhead obstructions and underground obstacles. Stay alert for hidden hazards.
6. Never operate equipment that is not in perfect working order or without decals, guards, shields, or other protective devices in place.
7. Never disconnect or bypass any switch.
8. Carbon monoxide in the exhaust fumes can be fatal when inhaled, never operate a machine without proper ventilation.
9. Fuel is highly flammable, handle with care.
10. Keep engine clean. Allow the engine to cool before storing and always remove the ignition key.
11. After engine has started, machine must not move. If movement is evident, the neutral mechanism is not adjusted correctly. Shut engine off and readjust so the machine does not move when in neutral position.
12. This machine demands your attention. To prevent loss of control or tipping of the vehicle:
  - A. Use extra caution in backing up the vehicle. Ensure area is clear.
  - B. Do not stop or start suddenly on any slope.
  - C. Reduce speed on slopes and in sharp turns. Use caution when changing directions on slopes.
  - D. Stay alert for holes in the terrain and other hidden hazards.
13. Before leaving operator's position for any reason:
  - A. Disengage all drives.
  - B. Lower all attachments to the ground.
  - C. Shut engine off and remove the ignition key.
14. Keep hands, feet and clothing away from moving parts. Wait for all movement to stop before you clean, adjust or service the machine.
15. Keep the area of operation clear of all bystanders.
16. Never carry passengers.
17. Stop engine before making repairs/adjustments or checking/adding oil to the crankcase.
18. Use parts and materials supplies by **SMITHCO** only. Do not modify any function or part.

These machines are intended for professional maintenance on golf courses and baseball fields. Other use is forbidden.

## **SPECIFICATIONS**

### **WEIGHT AND DIMENSIONS**

Length 69" (176 cm)

Width 54" (137 cm)

Height 45" (114 cm)

Weight 695 lbs. (313 kg)

### **DRIVE**

2-Wheel gear drive torque converter clutch

### **POWER**

16 HP Vanguard B&S gasoline engine; electric start

### **DRIVE SYSTEM**

Speed sensitive torque converter drive; forward and reverse; Dana Transaxle

### **DRIVE CONTROL**

Foot pedal controls engine speed; manual shift

### **BRAKES**

Foot pedal and parking; drum brakes

### **STEERING**

Front wheel steering 15" soft grip type steering wheel; 10:1 reduction sealed components.

### **ELECTRICAL**

12-Volt electric start

### **SEAT**

Low-Back; one piece foam rubber for operator comfort

### **FRAME**

Structural steel tubing; all welded; body plastic

### **SPEED**

12 mph (19 kph)

### **TIRES**

(3) 22 x 11 x 8

### **FLUIDS CAPACITY**

Gasoline- approximately 5 gallons, estimated 4 hrs runtime under load

### **AIR FILTRATION**

Replaceable cartridge

### **ATTACHMENT CONTROLS**

Rake electric lift/lower; cultivator manual lift/lower; plow manual lift/lower

## **OPTIONAL IMPLEMENTS**

### **FRONT MOUNTED PLOW**

Model 42-011 – 40" wide replaceable aluminum blade; manual for operation; moving and leveling soil.

### **REAR RAKE**

Model 13-606 – Lexan Rake 72"

### **SCARIFIER**

Model 42-178 – Infield scarifier (with gauge wheels, vertical blades)

### **CULTIVATOR**

Model 42-008 – Sand cultivator

## **SETUP**

The G-Star arrives from **SMITHCO** with some assembly required before service.

1. Remove banding holding unit down. Set Park Brake: Push top of brake pedal down until it locks. The parking brake is now engaged.
2. To mount wheels block front wheel and jack up the rear of machine being careful not to damage underside of machine. Place wheel on hub, lining up bolt holes. Use the eight lug nuts provided, then torque to 64-74 ft/lb (87-100 nm) using a cross pattern. Retorque after first 10 hours and every 200 hours thereafter. Lower machine to ground and remove blocks and jack.

**Connecting battery cables to the wrong post could result in personal injury and/or damage to the electrical system. Make sure battery and cables do not interfere or rub on any moving part. Connect the red positive (+) cable (A) to the battery first. When disconnecting remove the black negative (-) cable (B) first.**

3. Check engine oil and add as necessary. See engine manual for recommended motor oil. **DO NOT OVERFILL.**
4. Fill gas tanks with Unleaded 87 Octane gasoline (minimum).

**Gasoline is flammable. Caution must be used when storing or handling it. Do not fill fuel tank while engine is running or in an enclosed area. Fumes are explosive and dangerous to inhale. DO NOT SMOKE while filling the fuel tank. DO NOT OVERFILL.**

5. Check hydraulic oil level on the tank. The level should be 2 – 2 ½" (5-6.35 cm) from top of tank. If level is low, add SAE 10W-40 API Service SJ or higher motor oil.
6. Machine should be greased before starting.
7. Read operating instructions before starting machine.



## **CONTROLS & INSTRUMENTS**

### **GEAR SHIFT LEVER**

To shift, you must come to a complete stop. Shift the shift lever into desired gear, which is marked at the base of the shift lever. No clutching is necessary to change gears.

### **IGNITION SWITCH**

Located on right side of console. This is a three-position ignition switch; Stop – Run – Start.

A. **Choke:** Choke is located on the right side of the console. Pull choke control knob upwards to close choke plate when starting a cold engine. A warm engine may not require “choking” to start.

B. **Fuse & Fuse Holder:** 30 AMP fuse is used.

### **STEERING**

Acquaint yourself with steering before operating machine. The automotive type steering wheel is connected to the front wheel assembly by a chain driven sprocket. This allows for quick turns and short turning radius.

### **SEAT ADJUSTMENT**

Seat adjustment lever is located under front of seat on left side. It provides seat adjustment forward or backward for operator's comfort.

### **RIGHT RUNNING BOARD**

Accelerator pedal is located on right running board. When pedal is depressed, unit will move in direction chosen on Forward/Neutral/Reverse (F-N-R) lever. Under the right running board, the SPEED BOSS is fastened to the accelerator pedal, and connects to the rake assembly lift bracket at the rear of the unit. When lift bracket is in “down” position, this pulls on the SPEED BOSS cable, causing the unit to slow down to the adjustable desired raking speed. When lift bracket is in the “up” position, the unit will speed up to transport speed.

### **LEFT RUNNING BOARD**

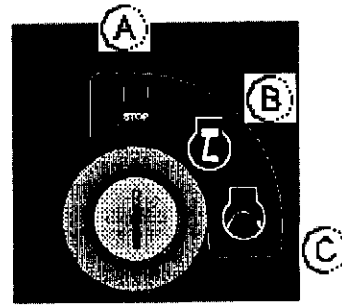
The brake pedal is located on the left running board. To lock the park brake, push the top of the two-piece brake pedal down until pedal locks. To release park brake, push down on the bottom part of the brake pedal until top of pedal springs back into place, and then take foot off of pedal.

## OPERATION

### STARTING ENGINE

Before operating this machine, become familiar with all controls and functions of these units. Also complete all maintenance requirements and read all safety warnings. By knowing the machine thoroughly, how it operates and by doing the prescribed maintenance steps, you can expect relatively trouble-free operation for years to come.

1. Make sure the fuel flow valve, located on the engine, is "ON"
2. Set park brake.
3. The ignition switch is a three-position. Insert key (A) and turn clockwise until engine starts (C). Release key and it will return to run position (B). Use choke as necessary.



4. Allow engine to idle and warm up a few minutes.
5. To select a direction of travel, shift to forward or reverse. Release park brake and push down on gas pedal to move. **NOTE:** When shifting from forward to reverse, always come to a full stop before shifting to another direction.
6. To shut off engine, turn key to the stop position.

## DAILY CHECKLIST

### DAILY CHECKLIST

**NOTE:**

Use all procedures and parts prescribed by the manufacturers.  
Read the engine manual before operation.

The suggested maintenance checklist is not offered as a replacement for the manufacturer's list, but as a supplement. You must adhere to guidelines established by manufacturer for warranty coverage. In adverse conditions such as dirt, mud or extreme temperatures, maintenance should be more frequent.

1. Check to make sure the parking brake will hold on a hill and that when disengaged it does not drag or prevent the vehicle from rolling freely. Adjust as required.
2. Check engine oil level. Add as needed. DO NOT OVERFILL.
3. Tire pressure should be inspected on a daily basis. Recommended pressure is 5 psi maximum. Inflation pressures should be checked on a weekly basis when the tires are cool.
4. Examine vehicle for damage or anything unusual to normal wear.
5. Inspect electrical system for loose connections or frayed wiring, including battery cables. Replace any faulty equipment or tighten if loose.
6. Check hardware for loose or missing nuts, bolts, screws, etc., and tighten or replace as needed.
7. Listen for any noise, such as rattles due to loose hardware, scraping sounds, brakes dragging, or unusual motor noises. Be sensitive to abnormal performance.
8. Inspect hydraulic lines for damage or leaks. Never use hands to inspect leaks.
9. Inspect all lubrication areas around pedal shafts, chassis parts, etc.
10. Inspect steering, throttle and shift linkages for good hookups and clear travel.
11. Assure that all switches are operating normally.
12. Check rear axle oil. To replenish, use 10W-40 Motor Oil API Service SG.
13. Check controls for smooth, proper working operation. Lubricate as needed.
14. Wash accumulated dirt **daily** from motor compartment and under body.

## HOW TO RAKE A SAND TRAP

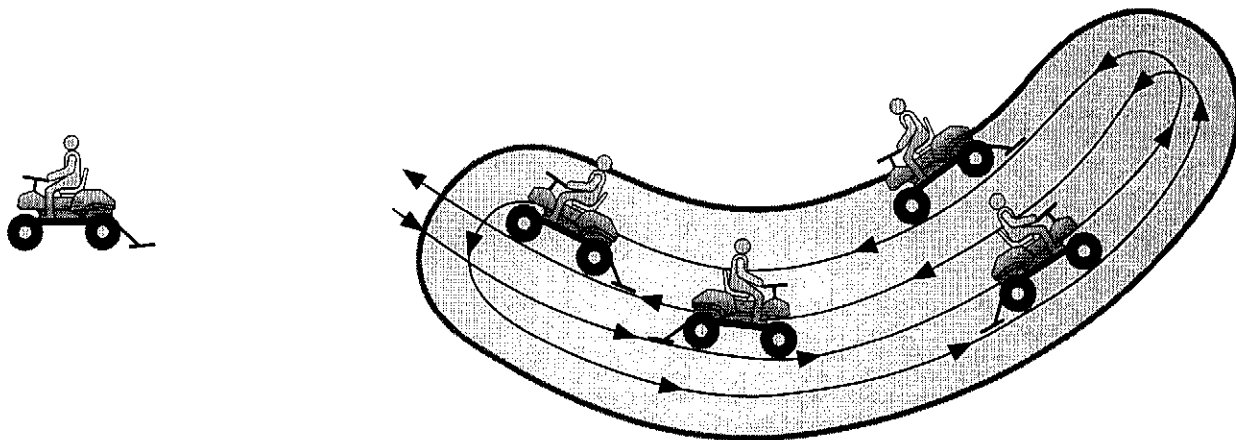
### HOW TO RAKE A SAND TRAP

View bunker to determine the most efficient pattern to follow so that rake pattern and configuration of bunker will flow in the same general direction and look attractive.

Enter bunker at its lowest point. Perhaps drain area or another point where "lip" of the trap is minimal.

Operate at 2-4 mph (3-6.5 kph) for best raking results.

Once fully inside bunker, lower rear rake and proceed forward as described above.



First pass should be directly down center of trap. This helps avoid extremely sharp turns that will spoil sands' appearance. Once at far end, turn machine and drive down one side of trap and come back up other side.

Grass or other materials may build up on rake tines as machine passes "enter/exit" point in Figure 1. Lift rake briefly while still moving forward.

Do not rake closer than 6" (15 cm) to edge of trap.

Do not rake slopes in trap. The weight of machine will pull sand down.

Use cultivator or other center mounted accessories only as necessary for compacted sand. Frequent use will leave sand too soft and objectionable to some golfers.

Use front mounted plow to push sand to desired locations within trap.

After exiting trap, secure machines in accordance with practices described in this manual. Rake trap edges, slopes and "enter/exit" area with a hand rake.

After returning to maintenance area, thoroughly clean machine, check fluids, and lubricate as advised in this manual.

## MAINTENANCE



Before servicing or making adjustments to machine, stop engine and remove key from ignition.

### **NOTE:**

Use all procedures and parts prescribed by the manufactures. Read the engine manual.

### AIR CLEANER ON ENGINE

1. Remove the thumbscrews on top of the cover and remove the cover.
2. Carefully remove paper element to prevent debris from entering carburetor. To service, clean by tapping gently on flat surface. Do not oil paper element. Replace if very dirty or damaged.

### **NOTE:**

Do not use petroleum solvents, e.g., kerosene, which will cause cartridge to deteriorate. Do not use pressurized air to clean cartridge. Pressurized air can damage cartridge.

3. Reinstall paper element.
4. Replace cover and reattach thumb screws.

## MAINTENANCE

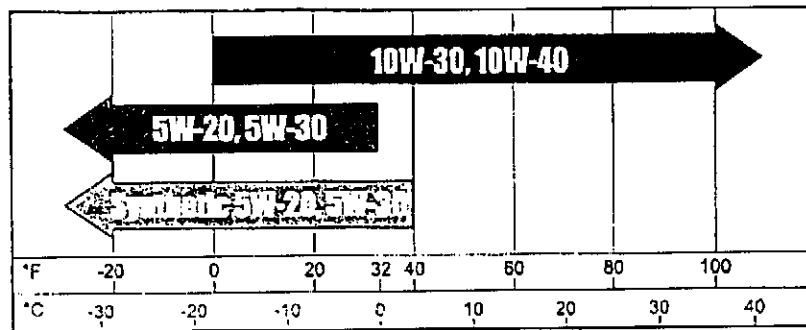
### TIRE PRESSURE

Caution must be used when inflating a low tire to recommended pressure. Over inflating can cause tires to explode. Tires should be 5 psi. Improper inflation will reduce tire life considerably.

### ENGINE

Change and add oil according to chart below. Do not overfill. Use a high quality detergent oil. Use no special additives with recommended oils. Do not mix oil with gasoline.

### SAE VISCOSITY GRADES



### Starting Temperature Range Anticipated Before Next Oil Change

**NOTE:** Use of multi-viscosity oils (10W-30, etc.) will result in increased oil consumption. Check oil level more frequently if using these types of oils.

## **MAINTENANCE**

### **WHEEL MOUNTING PROCEDURE**

1. Turn machine off and remove key.
2. Block one of the other wheels.
3. Loosen nuts slightly on wheel to be removed.
4. Jack up machine being careful not to damage underside of machine.
5. Remove nuts. Remove wheel.
6. Place new wheel on hub lining up bolt holes.
7. Torque nuts to 64-74 ft/lb (87-100 Nm) using a cross pattern. Re-torque after first 10 hours and every 200 hours thereafter.
8. Lower machine to ground and remove blocks and jack.

### **BATTERY**

Batteries normally produce explosive gases which can cause personal injury. Do not allow flames, sparks or any ignited object to come near the battery. When charging or working near battery, always shield your eyes and always provide proper ventilation.

Battery cable should be disconnected before using "Fast Charge".

Charge battery at 15 amps for 10 minutes or 7 amps for 30 minutes. Do not exceed the recommended charging rate. If electrolyte starts boiling over, decrease charging.

Always remove grounded (-) battery clamp first and replace it last. Avoid hazards by:

1. Filling batteries in well-ventilated areas.
2. Wear eye protection and rubber gloves.
3. Avoid breathing fumes when electrolyte is added.
4. Avoid spilling or dripping electrolyte.



**Battery Electrolyte is an acidic solution and should be handled with care. If electrolyte is splashed on any part of your body, flush all contact areas immediately with liberal amounts of water. Get medical attention immediately.**

## MAINTENANCE

### JUMP STARTING

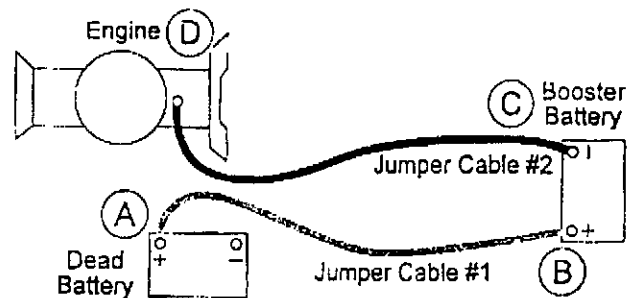


**Use of booster battery and jumper cables: Particular care should be used when connecting a booster battery. Use proper polarity in order to prevent sparks.**

To jump start (negative grounded battery):

1. Shield eyes.
2. Connect ends of one cable to positive (+) terminals of each battery, first (A) then (B).
3. Connect one end of other cable to negative (-) terminal of "good" battery (C).
4. Connect other end of cable (D) to engine block on unit being started (NOT to negative (-) terminal of battery)

To prevent damage to other electrical components on unit being started, make certain that engine is at idle speed before disconnecting jumper cables.





## SERVICE CHART

### CAUTION!

Before servicing or making adjustments to the machine, stop engine, set park brake, block wheels and remove key from ignition.

### NOTE:

Follow all procedures and ONLY use parts prescribed by the manufacturer. Read the engine manual before maintenance.

	Daily	As Required	100 Hours	200 Hours	250 Hours	300 Hours	400 Hours	Every 500 Hours/Yearly
§ Engine Oil	C		R	R		R	R	R
Engine for Leaks and Loose Parts	C		C	C		C	C	C
□ Air Cleaner (Paper Element)		C	C	C		C	C	R
== Spark Plugs		R		C			C	R
Idle Speed					C			C
Belts	C				C			C
* Tire Pressure	C		C	C		C	C	C
Fuel Level	C	C						
Fuel Filter		R						R
Battery Electrolyte Level			C	C		C	C	C
Clean Battery Terminals					C			C
=Torque Lug Nuts				C			C	C
Lubricate			C	C		C	C	C

**C = Check or Clean at specified intervals**

**R = Replace at specified intervals**

**\* Tire pressure: 5 psi**

**= Torque tire nuts after the first 10 hours and every 200 hours there after (64 to 74 ft/lb (87-100 NM))**

**§ Change oil and filter after first 5 hours.**

**== Gap .03 (.76 mm) Torque to 18-22 ft/lb (24-30 Nm)**

**□ Clean more often under dusty conditions or when airborne debris is present, replace air cleaner parts, if very dirty.**

The suggested maintenance checklist is not offered as a replacement for the manufacturer's engine manual but as a supplement. You must adhere to the guidelines established by the manufacturer for warranty coverage. In adverse conditions such as dirt, mud or extreme temperatures, maintenance should be more frequent.

## END USER'S SERVICE CHART

	Daily	As Required	100 Hours	200 Hours	250 Hours	300 Hours	400 Hours	Every 500 Hours/Yearly
§ Engine Oil								
Engine for Leaks and Loose Parts								
□ Air Cleaner (Paper Element)								
== Spark Plugs								
Idle Speed								
Belts								
* Tire Pressure								
Fuel Level								
Fuel Filter								
Battery Electrolyte Level								
Clean Battery Terminals								
=Torque Lug Nuts								
Lubricate								

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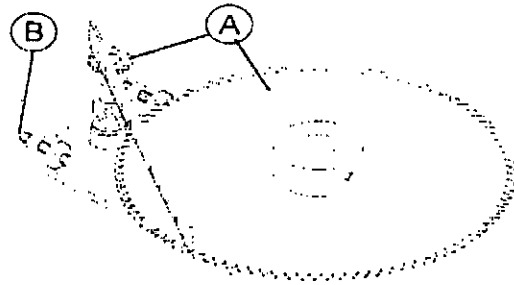
## ADJUSTMENTS

### CAUTION!

When the rear rake attachment is lowered while the machine is in forward motion, the forward speed of the machine will slow drastically. Operator should be prepared for a rapid change in speed.

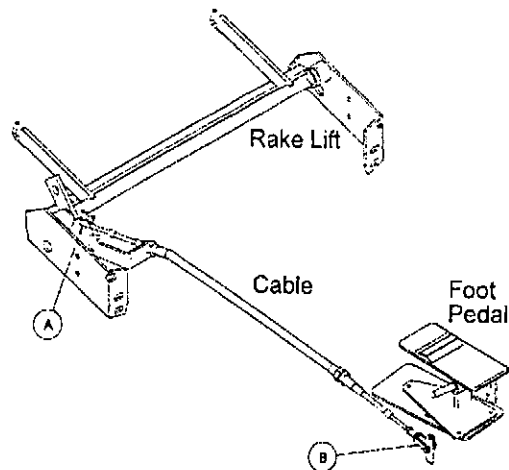
### STEERING CHAIN ADJUSTMENT

Steering Sprockets (A) should be level with each other. Check with straight edge. Make any adjustments. Adjust set screw (B) so that the chain is snug. Tighten all nuts and bolts in place.



### SPEED BOSS

The SMITHCO patented SPEED BOSS controls the machine to operate at a slower speed while raking sand traps on golf courses. This SPEED BOSS has been factory set at an approximate speed of 3-4 m.p.h. (5-6.5 kph). The SPEED BOSS will limit the speed while the rake is lowered into the operating position. The speed setting may be adjusted by turning the Ball Joint (A) and/or Yoke (B) to counterclockwise to make the machine operate slower or turn clockwise to go faster. Tighten jam nut. Check to make sure nothing is binding and test drive to check desired speed.



## **STORAGE**

When storing, remove the key from the key switch to avoid unauthorized persons from operating machine.

1. Before storing, clean machine thoroughly.
2. Check bolts and nuts, tighten as necessary.
3. Make all repairs that are needed and remove any debris.
4. Remove the battery, adjust the electrolyte level and recharge it. Store the battery in a dry, dark place.
5. Store in a clean and dry area, but NOT near a stove, furnace or water heater which uses a pilot light or any device that can create a spark.
6. Engines stored over 30 days need to be protected or drained of fuel to prevent gum from forming in a fuel system or on essential carburetor parts. Check the engine manual and follow the instructions for the storage of the engine.

**EC Declaration of Conformity**  
according to Directive 89/392/EEC

We

**SMITHCO INC.**

*(Name of supplier)*

**34 West Ave. Wayne, PA 19087 USA**

*(Full address of the manufacture - authorized representative established in the Community must also give the business name and address of the manufacture)*

declare under our sole responsibility, that the product

G-Star Model 9430

*(Make, Model)*

to which this declaration relates corresponds to the relevant basic safety and health requirements of the Directive 89/392/EEC,

*(if applicable)*

and to the requirements of the other Directives:

EN292-1

EN292-2

EN294

EN349

92/59

89/392

*(Title and/or number and date of issue of the other Directives)*

*(if applicable)*

For the relevant implementation of the safety and health requirements mentioned in the Directives, the following standard(s) and/or technical specification(s) has (have) been respected:

ISO 37-1983

PREN 836

ISO 1219-1976

SAE HS-2800

SAE J1362

*(Title and/or number and date of issue of standard(s) and/or technical specification(s))*

**Humboldt, Kansas USA**

*(Place and date of issue)*



## LIMITED WARRANTY

SMITHCO warrants this product to be free from defects in material and workmanship under normal use for one year from the date of purchase by the original user. (60 days if product is used for rental purposes.) All warranty claims must be handled through a SMITHCO authorized dealer or by SMITHCO, INC. All transportation charges must be paid by the purchaser.

There is no further express warranty. All implied warranties, including those of merchantability and fitness for a particular purpose, are limited to one year. (60 days if product is used for rental purposes) from date of purchase by the original user, and, to the extent permitted by law any and all implied warranties are excluded and disclaimed after the expiration of such period.

All incidental and consequential damages, including pick-up and delivery of the unit, communication, mileage charges and/or rental of a replacement unit during repair, are not covered under this warranty, or is any loss of income and/or other loss resulting from the failure of the product to function due to a warranty defect.

The following items are not covered under the SMITHCO warranty and are warranted by their respective manufacturer.

- a) Engine and engine parts including starters, generators, alternator and filters.
- b) Transaxle, differentials, gear boxes, and mechanical pumps.
- c) Hydrostatic transmissions, hydraulic pumps and motors.
- d) Batteries
- e) Wheels and tires.

A copy of the warranty for the above items is furnished if necessary with each SMITHCO product.

Some states do not allow limitations on how long an implied warranty lasts, or the exclusion of limitations of incidental or consequential damages, so the above limitations or exclusions may not apply to you. This warranty gives you specific legal rights, and you may also have other rights, which vary from state to state.

Federal law now requires disclosure of the warranty which applies to this product prior to the sale to a consumer. Please leave this statement attached to the product and allow the buyer to remove it after purchase.

**SMITHCO**  
Wayne, Pennsylvania 19087

