

KWIK-WAY[®]
Seat Grinding Equipment & Supplies

MFG BY

GOODSON
Tools and Supplies for Engine Builders

**SGH-110-KIT
SGH-220-KIT**

SEAT GRINDER

INSTRUCTION and OPERATION MANUAL



Goodson Tools and Supplies

Toll Free 800-533-8010 www.goodson.com Phone at 507-452-1830

156 Galewski Drive, Winona, MN 55987 USA

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Equipment specifications, options and accessories subject to change without notice

SGH SEAT GRINDER

SAFETY FIRST

This manual has been prepared for the owner and those responsible for the maintenance of this machine. Its purpose aside from proper maintenance and operations, is to promote safety through the use of accepted practice. READ THE SAFETY AND OPERATING INSTRUCTIONS THOROUGHLY BEFORE OPERATING THE MACHINE.

In order to obtain maximum life and efficiency from your machine, follow all the instructions in the operating manuals carefully.

The specifications put forth in this manual were in effect at the time of publication. However, due to continuous improvement, changes to these specifications may be made at any time without obligation.



SAFETY INSTRUCTIONS

1. Read, understand and follow the safety and operating instructions found in this manual. Know the limitations and hazards associated with operating the machine.
2. Eye Safety: Wear an approved safety face shield, goggles or safety glasses to protect eyes when operating the machine.
3. Grounding the Machine: Machines equipped with three prong grounding plugs are so equipped for your protection against shock hazards and should be plugged directly into a properly grounded three-prong receptacle in accordance with national electrical codes and local codes and ordinances. A grounding adapter may be used. If one is used, the green lead should be securely connected to a suitable electrical ground such as a ground wire system. Do not cut off the grounding prong or use an adapter with the grounding prong removed.
4. Work Area: Keep the floor around the machine clean and free of tools, tooling, stock scrap and other foreign material and oil, grease or coolant to minimize the danger of tripping or slipping. *Goodson Mfg* recommends the use of anti-skid floor strips on the floor area where the operator normally stands and that each machine's work area be marked off. Make certain the work area is well lighted and ventilated. Provide for adequate workspace around the machine.
5. Guards: Keep all machine guards in place at all times when machine is in use.
6. Do Not Overreach: Maintain a balanced stance and keep your body under control at all times.
7. Hand Safety: NEVER wear gloves while operating this machine.
8. Machine Capacity: Do not attempt to use the machine beyond its stated capacity or operations. This type of use will reduce the productive life of the machine and could cause the breakage of parts, which could result in personal injury.
9. Avoid Accidental Starting: Make certain the main switch is in the OFF position before connecting power to the machine.
10. Careless Acts: Give the work you are doing your undivided attention. Looking around, carrying on a conversation and horseplay are careless acts that can result in serious injury.
11. Job Completion: If the operation is complete, the machine should be emptied and the work area cleaned.
12. Disconnect All Power and Air to Machine before performing any service or maintenance.
13. Replacement Parts: Use only **Goodson** replacement parts and accessories; otherwise, warranty will be null and void.
14. Misuse: Do not use the machine for other than its intended use. If used for other purposes, **Goodson** disclaims any real or implied warranty and holds itself harmless for any injury or loss that may result from such use.

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PURCHASER'S WARRANTY

Goodson guarantees all parts of its equipment, to the original purchaser, for one full year from date of recorded warranty (except as provided below) against defects in material or workmanship when the equipment is installed in strict accordance with pertinent specifications and procedures. The warranty on electric motors or electrical component parts is for a period of ninety days from date of delivery.

Goodson will repair and/or replace free of charge all such defective parts *only* when returned to the factory in Winona MN, with shipping charges *prepaid*.

This warranty *does not cover* damage caused by accident, abuse or improper installation, nor repair or replacement of parts worn or consumed in normal operation of the machine.

Additionally, this warranty does not cover such items as dresser diamonds, ball bearings, grinding wheels, belts, carbide tool bits, hex drive, armature brushes and other accessory items, except at the discretion of the company.

This warranty is at no time intended to mean the entire machine. Upon taking delivery of your machine, carefully inspect the assembly before removing the crating and packing materials.

If evidence of damage exists, contact the shipper and **Goodson** immediately. Although **Goodson** is not responsible for damage incurred during transit, you will be provided assistance in preparation and filing of any necessary claims.

CAREFULLY READ THIS MANUAL BEFORE ATTEMPTING TO SET-UP OR OPERATE THIS MACHINE.

Important Note:

Always have your serial number ready when communicating with **Goodson Tools and Supplies** regarding parts or service. Keep this manual in a safe place.

DATE RECEIVED: _____

SERIAL #: _____



SAFETY GUIDE FOR SEAT GRINDER WHEELS
(Read before installing the Wheel)

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Importance of Proper Machine Maintenance

The most common cause of wheel breakage is due to improper mounting and abusive and/or careless operation. Only through proper use, regular machine maintenance, service and inspection procedures can wheel breakage be prevented.

It is the responsibility of the user to inspect, at regular intervals, to be certain that mounting flanges are in usable condition, are of proper size and shape and that no damage has occurred to the wheel or the machine.

The following **DO'S** and **DONT'S** should be used as a guide to safer grinding

DO	DON'T
1) CHECK all wheels for CRACKS or other DAMAGE before mounting.	1) DON'T USE wheels WHICH HAVE BEEN DROPPED or otherwise damaged.
2) USE MOUNTING BLOTTERS and LEATHER WASHERS supplied with the wheel holder.	2) DON'T USE EXCESSIVE PRESSURE WHEN MOUNTING wheel. Tighten nut only enough to hold wheel firmly.
3) Be sure WHEEL HOLE, threaded or unthreaded, FITS machine pilot PROPERLY and that flanges are clean, flat and of the proper type for the wheel you are mounting.	3) DON'T USE HEAVY GRINDING PRESSURE
4) Always SPIN GRINDING WHEEL FIRST prior to dressing the stone.	4) DON'T USE MACHINE FOR ANY PURPOSE OTHER THAN GRINDING VALVE SEATS.
5) Always WEAR PROTECTIVE SAFETY GLASSES or proper face shield.	
6) Wear a DUST RESPIRATOR, as dust conditions are present in most grinding operations	

WARNING:
IMPROPER USE MAY CAUSE BREAKAGE AND SERIOUS INJURY

WHEEL DRESSER SET-UP

1. Loosen handle (#3) and rotate the pointer line until it aligns to the index angle desired and retighten.
2. After attaching the correct grinding wheel to the grinder unit, carefully lower the grinder unit onto the dresser pilot (item #1)
3. Loosen item #5 and raise or lower the pilot until the face of the wheel is in relative position to the diamond (#6). Retighten (# 5)
4. Adjust the diamond (#6) by turning the knurled knob (#2) until the diamond is nearly in contact to the face of the grinding wheel.
5. Start the motor and begin dressing the wheel using handle (#4) and slowly sweeping the face.



WARNING: Take the lightest cut possible – never jam the diamond into the grinding wheel.
DRESSING OR TRUING THE VALVE SEAT WHEEL

It is necessary to true or dress seat wheels that have become dull or loaded, or have lost their form (angle). To obtain the best possible dress, observe the following.

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1. Feed the diamond into the wheel very slowly until the diamond just touches the wheel.
2. Move the diamond across the face of the wheel beginning from the bottom and sweep up.
A slow sweep will provide a smoother finish while a rapid sweep will provide a coarse finish.

NOTE:

How the wheel is dressed will directly influence the finish of the valve seat. Take care when dressing the seat wheels, this will improve valve seat finish and increase diamond life. Check the dress of the wheel frequently during the seat grinding operation. It is better to dress frequently and remove a slight amount of wheel than to wait too long and have a necessity to remove an excessive amount to correct the wheel. Changing a valve seat stone angle is only advised if it is to increase the stone angle, i.e., taking a 15-degree angle wheel and making it a 30-degree. It is not cost effective to attempt to reduce an angle, too much abrasive and diamond is required to perform this operation.

REPLACING MOTOR UNIT HEX DRIVE

It is recommended that when you replace a hex drive cap on your grinder unit you also replace the hex drive on your motor unit. A badly worn drive cap can quickly wear out a hex drive or vise-versa.

Helpful Hint:

An 11/16" hex nut or a hex nut and bolt threaded together will allow you to remove a worn hex drive when used in conjunction with an 11/16" socket and impact wrench.

Caution:

Do not insert a screwdriver or punch into the fan blade to hold the shaft in an attempt to remove the hex drive, you will damage the fan and or armature.

SEAT GRINDING

In preparation for grinding valve seats the following should be observed:

1. Select the correct pilot for the valve guide. The correct pilot should extend approximately 2 3/4" above the valve seat.
2. Make sure pilot is clean before inserting into valve guide. DO NOT squirt oil into the valve guide.
3. Insert the pilot into the valve guide. Care should taken to insure the valve guide is clean and in good repair.

NOTE:

Worn guides will not allow correct reseating of the valve.

4. Select the correct size wheel and angle to grind the valve seat angle. The wheel should be trued prior to attempting to service the seat. Always true the wheel to the manufacturers recommended angle for the valve seat to be serviced. (See dressing the wheel)

TECH TIP:

Place a piece of fine sandpaper between the face of the grinding wheel and the seat (Abrasive facing the valve seat). Turn the stone holder by hand, this will remove any excess carbon and place it into the sandpaper and not into the wheel. This increases the life of the wheel by reducing excess dressing to remove carbon from the face of the wheel or use carbon removal brush prior to grinding.

5. Hold the grinding motor up and support its weight, do not push down with the motor during the grinding operation. Try to maintain as high of an RPM as possible while grinding. Run the stone for approximately 45 seconds then stop and evaluate the seat.

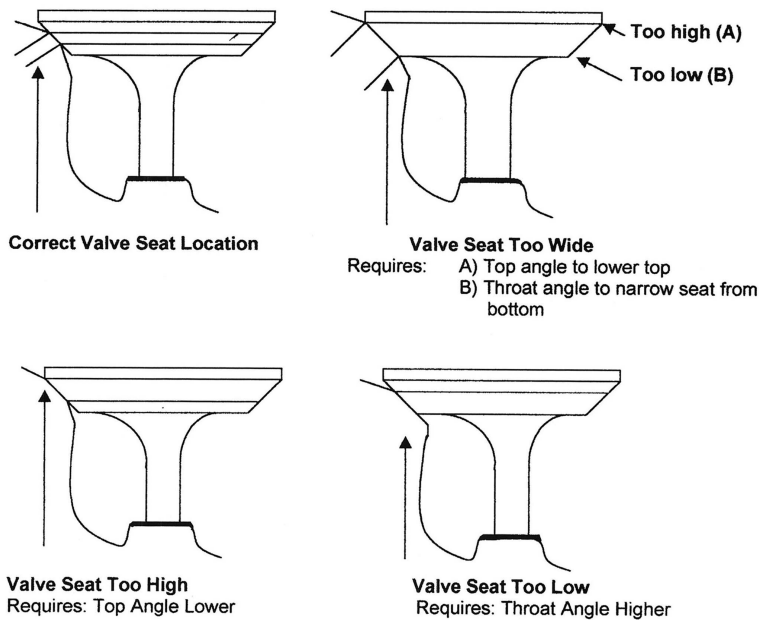
EVALUATION:

Seat run-out and surface finish are very critical. Seat width should be to manufacturer specification and runout generally MUST be below .002" for seats over 1.50" in diameter and .0015" for seats smaller in diameter than 1.50".

6. Top angle and throat angle should be ground first to obtain the correct location of valve seat to valve face. It is also used to narrow a seat angle that is too wide. (see illustration on top of next page). Grind main seat angle last.

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VALVE PRINTS



The above illustrations provide guidelines to correct seat width and location. Seat width should be to manufacturer specifications and seat run-out should be as close to 0 as possible. Maximum not to exceed .002" on 1.5" seats or larger and .0015" on seats below 1.5".

MAINTENANCE

Your **Goodson** SGH Seat Grinder is designed to require minimal maintenance. However, some basic maintenance assures the unit will continue to operate in a satisfactory manner.

1. The motor features permanently sealed bearings that require no routine oiling.
2. The gears located in the nose housing may require lubrication on a yearly basis. (depending on use) We recommend the following:
 - a. Remove the four cap screws and two pan head screws holding the nose to the motor housing.
 - b. Remove nose cone. DO NOT remove armature from housing. Call Tech Support with questions.
 - c. Once removed, add approximately one teaspoon of grease to the gear cavity of the housing.

CAUTION: Do not overfill, excess grease will cause the gears to run hot.

3. The hex drive is supplied with leather vibration button to assist in vibration control. This leather button will need to be replaced periodically so as not to damage the hex nut on stone holder.
4. Brushes should be removed and inspected for wear every 3 months or sooner depending on use, replace them as required.

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OPERATION

Wheel selection and truing are the same as with a non-spring loaded grinder unit.

When the seat grinder unit and wheel to be used are placed over the pilot, the grinding wheel should be slightly off the valve seat using the supplied bounce spring **BSS-100**. Engage the hex drive of the motor to the hex cap on the grinder unit.

Bring the motor up to speed and then push down against the spring tension to contact seat surface. Move the motor unit carefully up and down so that the grinding wheel contacts and then is moved away from the seat in an even motion. Repeat the contact on and off every five to ten seconds.

CAUTION:

In case a wheel becomes damaged or be bumped against a head or block, it may become fractured without you knowing it. NEVER USE A QUESTIONABLE SEAT WHEEL.

In case a wheel is dropped on the floor or bumped against a head or block, it may become fractured without you knowing it. Whenever you may have doubt regarding the strength of a wheel, run it on the guarded wheel dresser to make sure it will not come apart before using it on the valve seat.

TIGHT GRINDING WHEEL REMOVAL



If the valve seat wheel should become over tightened to the grinder unit, it can usually be removed by using the supplied KW-SRT seat removal tool properly to the work bench. Place the hex drive into the KW-SRT by gripping the wheel with your hand, remove the grinding wheel from the stone holder.

CAUTION:

Never grip either the grinder unit or the valve seat wheel directly in a vise. The grinder body can easily be distorted or damaged by doing so or the wheel very likely broken.

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TECH TIPS

- A. PRELIMINARY
 - 1. Be sure to remove the carbon from the valve seats, the ports, and be sure to clean the valve stem guides.
 - 2. It is good practice to insure all pilots are clean prior to instaling into valve guide.
 - 3. DO NOT SQUIRT OIL IN THE VALVE GUIDE.
 - 4. Forcing the pilot to a very tight fit may distort the guide. Valve seats ground under these conditions may not end up being concentric. (Check seats for looseness).
 - 5. Use a pilot that will extend approximately 2-3/4" above the valve seat when properly set in the guide. Using a pilot that does not extend above the valve seat is likely to allow the inner key of the stone holder to continually disengage and engage. This will break the key and cause premature wear in the sleeve of the guide unit as well as cause considerable difficulty in grinding accurate valve seats.
- B. DRESSING THE WHEEL
 - 1. Feed the diamond to the wheel to take a very light cut; then move it across the wheel face until the wheel is entirely trued up. (Never jam the diamond into the wheel nor the wheel against the diamond).
 - 2. Dress the wheel only after the wheel face becomes "worn" or "loaded" by contact with the seat.
- C. GRINDING (USE A TAPPING MOTION WHEN GRINDING TO KEEP THE WHEEL CLEAN)
 - 1. Before starting the motor, LOWER THE UNIT CAREFULLY ON THE PILOT UNTIL THE WHEEL ALMOST CONTACTS THE SEAT.
 - 2. The motor angle drive should be held directly in line with the grinder unit, so as to exert a minimum of side pressure against the pilot.
- D. TIGHT GRINDING WHEEL REMOVAL
 - 1. If the valve seat wheel should become over tightened to the grinder unit, it can usually be removed by using the supplied KW-SRT seat removal tool properly to the work bench. Place the spline drive into the KW-SRT by gripping the wheel with a gloved hand, remove the grinding wheel from the stone holder.

CAUTION: Never grip either the grinding unit or grinding wheel directly in a vise. The body of the grinding unit could easily be distorted by doing so or the wheel very likely broken.

TROUBLE SHOOTING

CONDITIONS	POSSIBLE CAUSES
Rough finish on grinding wheel	Truing cut too heavy or travel of diamond too quick
	Damaged diamond
Frequent redressing of grinding wheel necessary	Carbon residue on valve seats
	Wrong type grinder wheel for valve seat material
Valve seat finish (rough or chatter) and/or vibration	Rough finish on grinder wheel
	Loose pilot in guide
	Worn hex driver
	Worn inner sleeve of grinder body
	Worn hex on grinder body
	Worn pilot
	Worn bearings in grinder unit
Valve seat not concentric	Worn pilot
	Loose pilot in guide
	Side pressure
	Bent pilot