

**HIGH SPEED ALLOY GRINDER  
MODEL AG04**

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***Ray Foster***

## **Operating and Maintenance Instructions**



**Sales, Service, and Technical Assistance  
Call Toll Free 800 / 654-4519**

***Ray Foster***

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## INTRODUCTION

Thank you for purchasing a quality **Foster** product. Your *Foster Alloy Grinder* is designed to give years of trouble free service with minimal care and maintenance. Before putting your new machine to work, please become familiar with this operator's manual to obtain maximum performance and satisfaction.

## IMPORTANT SAFETY INSTRUCTIONS

**WARNING!** When using electrical tools, basic safety precautions should always be followed to reduce the risk of fire, electrical shock, and personal injury including the following:

- ✓ **Read and Save** this manual.



- ✓ **Use Proper Grounding.** Your Foster Alloy Grinder is equipped with a three-conductor grounded cord and plug. It should be plugged into a three hole grounded receptacle of the same voltage as inscribed on the machine.

- ✓ **Power Cord.** Power supply, plug configuration, and electrical codes vary from country to country. The cord supplied with your Foster Alloy Grinder is approved for use in the country of destination. Use only this power cord or one that is approved for use in your country.

- ✓ **Plug into a Branch Circuit with 16A Circuit Breaker.** To reduce the risk of fire and to protect the units electrical system plug into a branch circuit with a 16 amp circuit breaker.



- ✓ **Disconnect the Power Cord.** Before performing any maintenance or repairs turn the unit off and unplug the power cord to prevent electrical shock or unintentional starting.



- ✓ **Wear Additional Eye Protection.** In conjunction with the fully adjustable light shield installed on your machine, use additional approved safety glasses or goggles when operating the Foster Alloy Grinder.



- ✓ **Wear Respirator Dust Mask.** To protect against the inhalation of dust and fumes a dust mask should be worn while grinding. Additionally, the unit should always be connected to a dust collection system, such as the *Ray Foster Cyclone Dust Collector*.



- ✓ **Do Not Exceed Maximum R.P.M.** Use ONLY grinding stones, cutters, burrs, buffing wheels, and other tools that are rated above 24,000 RPM. Insufficiently rated tools may break apart, bend, or come loose causing serious personal injury.

- ✓ **Keep Guards in Place.** Be certain that the belt guard is securely attached and the safety shield is properly positioned over the work piece before operating the machine.

- ✓ **Wear Gloves.** To minimize personal injury due to friction or abrasion with the rotating tool appropriate gloves must be used.
- ✓ **Wear Proper Clothing.** Do not wear loose clothing or jewelry which may get caught in rotating parts. Tie back long hair.
- ✓ **Maintain the Unit.** Inspect periodically for damaged or worn parts. Follow the instructions for maintenance. Don't use if the power cord, motor, switch, or other parts are in poor condition. Don't use if the unit has been dropped, damaged, or exposed to water. Have a qualified service person inspect and replace parts when necessary.
- ✓ **For Laboratory Use Only.** The Foster High Speed Alloy Grinder is intended for use by trained professional laboratory personnel only.

## GENERAL INFORMATION AND INSTRUCTIONS

### Spindle Mounting Instructions

If it becomes necessary to remove and reinstall the High Speed Spindle, follow the steps listed below:

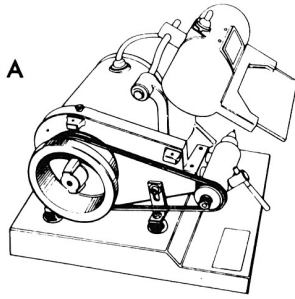
1. Turn the unit off and unplug the power cord.
2. Unscrew the knurled screws and remove the belt guard.
3. Remove the drive belt.
4. Loosen the two socket set screws that secure the spindle to the bracket with the 5/32" hex wrench supplied with your machine and remove the spindle by pulling forward.
5. **To reinstall spindle:** Align and insert the spindle in the mounting holes.
6. Force the spindle back against the tension spring (located in the left mounting hole) and install the belt allowing the spring to apply tension to the belt.
7. Push the collet end of the spindle forward slightly, and align it with the front edge of the base. Tighten the set screw on the collet end of the spindle first. Do not over tighten the belt.
8. Reinstall the belt guard before operating the grinder.

## How To Change Spindle Speeds

To change spindle speeds, it is necessary to adjust the position of the drive belt with regard to the motor and spindle pulleys. Follow these steps:

1. Turn the unit off and unplug the power cord.
2. Unscrew the knurled screws and remove the belt guard.
3. **10,000 RPM Operation:** For 10,000 RPM operation, adjust the drive belt on the inner step (small diameter) of the motor pulley, and on the inner pulley (large diameter) of the spindle. (refer to drawing "A")

DRAWING A

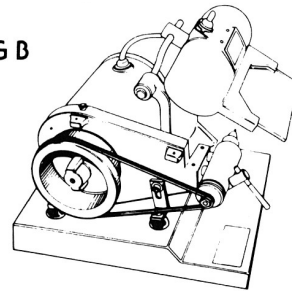


FOR 10,000 RPM  
NOTE POSITION OF DRIVE BELT  
ON INNER STEP OF EACH PULLEY

4. **24,000 RPM Operation.** For 24,000 RPM operation, the drive belt should be aligned on the outer step (large diameter) of the motor pulley, and the outer pulley (small diameter) of the spindle. (Refer to drawing "B")

DRAWING B

FOR 24,000 RPM  
NOTE POSITION OF DRIVE BELT ON  
OUTER STEP OF EACH PULLEY



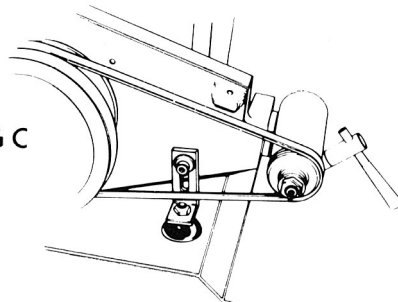
5. It may be necessary to readjust the belt tension after changing spindle speeds. Refer to the spindle mounting instructions preceding.
6. reinstall the belt guard before operating grinder.

## Working Height Adjustment

The working height of your Foster High Speed Grinder is adjustable.

1. The adjustment is located on the left front of the mounting bracket (refer to drawing "C"), and is accessible by removal of the belt guard. **CAUTION**, turn off and unplug the machine before removing the belt guard.

DRAWING C



NOTE SLOTTED BRACKET AND  
LOCKSCREW ADJUSTMENT

2. Loosen the hex head adjustment screw with a 7/16" wrench.
3. Make the desired up or down adjustment in working height, retighten the adjustment screw firmly, and reinstall the belt guard.

## **Light Bulbs**

There are two light bulb choices that work well with the *Ray Foster* High Speed Alloy Grinder:

1. Phillips brand ***Traditional Fan Light***, 60 watts. These bulbs are small and fit easily into the lamp housing. They are vibration resistant, produce good working light, and are economical. They are available at Home Depot stores, item number 343-844, Phillips code number BC60A15/FAN/W
2. Philips brand ***Halogená*** light bulbs, 60 watts, **white** only. These bulbs are compact and fit easily into the lamp housing. They produce a very bright, white light at low wattage. The *Halogená* bulbs are available at Home Depot stores, item number 630-355.

## **PREVENTATIVE MAINTENANCE**

### **Electric Motor**

The motor installed on this machine is an American built, totally enclosed, capacitor start, ball bearing motor manufactured especially for the Ray Foster High Speed Alloy Grinder. No maintenance is required.

### **Belt Drive System**

The 3-V belt drive system provides positive tracking and traction with minimal tension. Do not over tighten the belts, as this will cause excessive wear on the pulleys, bearings, and the belt itself. The forward thrust of the tension spring (located inside the mounting hole) will tighten the belts sufficiently.

### **Dust Collector**

*Remove and empty the dust collector bag frequently.* As the fibers in the cloth of the bag become clogged with dust and grinding debris, the air flow through the dust collector system is diminished resulting in reduced suction. It is recommended that the bag be removed and emptied often, and replaced with a new bag when needed. We suggest that a spare dust collector bag be kept on hand.

**The dust collector requires no lubrication.**

## High Speed Automatic Spindle

**Operation** – To open the collet and change tools move the clutch handle counterclockwise to the right. This will disengage the clutch, stop the rotation of the tool, and open the collet. Tools can now be removed and replaced while the machine is running.

**Collet Adjustment** - If tools slip or become loose while working, it is possible to adjust the collet for added life. It is best to turn the Alloy Grinder off while performing this maintenance.

1. Open the collet by rotating the clutch handle counterclockwise.
2. The collet wrench is located in the end of the clutch handle. Remove it by loosening the set screw that secures the handle and slip it out.
3. Insert the wrench into the jaws of the open collet, unscrew counterclockwise, and remove the collet.
4. The collet adjustment screw is located in the nose of the spindle behind the collet. To adjust the collet tighter insert the long end of the 3/32" hex wrench (supplied with the machine) into the nose of the spindle, making sure that the wrench seats into the socket of the screw, and turn ¼ turn clockwise.
5. Reinstall collet, insert tool and close collet. If the tool is still not tight in the collet, make further adjustment. It might be necessary to replace the old collet with a new one if adjusting the collet stop screw does not solve the problem.

**Caution:** NEVER close the collet without a tool inserted. This will cause the spindle to bind and stop and could damage the spindle.

**Maintenance** – The collet should be removed and cleaned on a weekly basis to prevent it from becoming stuck. Once removed you may use solvent to clean the collet, but be sure to dry the collet of solvent and put a thin film of grease or Vaseline on the collet before reinstalling. Do not use oil on the collet. NEVER oil any part of the spindle. No lubrication is required other than cleaning and lightly lubricating the collet.

# TROUBLESHOOTING

## Isolate the Problem

If a malfunction occurs such as unusual vibration, bearing whine or noise, inoperative motor, or inability to run at the proper RPM, the first step in the correction process is to detect and isolate the source of the problem.

## Follow These Isolation Steps

1. Remove both drive belts and run the motor. If the original malfunction persists, investigate the electric motor and power supply. **CAUTION:** Be sure to **unplug the power cord** before proceeding.
2. If the motor operates properly, and the malfunction is not evident, begin a further diagnostic check by reinstalling the belt to the dust collector first. Operate the grinder with this one belt in place, and if this generates the malfunction you can suspect the bearings in the dust collector spindle, or a broken fan blade which can cause excessive vibration and noise. Also make a careful inspection of the drive belt and pulleys for excessive wear.
3. If the dust collector operates properly, remove the dust collector drive belt and install the spindle drive belt. Operate the grinder with this belt in place, and if this discloses the problem consider the High Speed Spindle to be the source.
4. When ordering replacement parts or requesting service always give the machine model number, **AG04**, and individual serial number which is inscribed on the nameplate located on the left front of the base.

# REPLACEMENT PARTS

When ordering replacement parts always include the machine model number (AG04), serial number, and individual part number.

<u>P/N</u>	<u>Description</u>	<u>P/N</u>	<u>Description</u>
R116	Belt 24" 3-V, Spindle Drive	L418	Double Light Socket
R118	Belt 21" 3-V, Vacuum Drive	V585	Vacuum Dust Bag
F030	High Speed Spindle	M081	Motor Switch
F106	Spindle Collet	L405	Safety Glass
R300	Electric Motor	L412	Light Switch

## WARRANTY

Ray Foster Dental Equipment Company warrants this High Speed Alloy Grinder to be free of defects in material and workmanship for a period of one year from date of purchase by the original retail buyer.

To obtain warranty service, the machine or defective part, together with proof of date of purchase, must be delivered freight prepaid to our factory in Huntington Beach, California. At its option, Ray Foster Dental Equipment Company will repair or replace the defect free of charge, provided the machine has not been subjected to abuse, damage, or used in a capacity other than which it was intended.

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