

NON-LUBE AIR TURBINE  
90 DAY WARRANTY

# EASY-TO-REMOVE BUR

SIMPLY TURN RELEASE RING



## Ultra High-Speed Rotary Handpiece

### INTRODUCTION

The GRS 850 Turbo Handpiece uses regular friction grip burs. The rotor spindle uses a non-lube bearing and requires no further lubrication. Work on porcelain, wood and other materials completely free of the problems associated with use of lubricating oils. Turbine exhaust from the nose of this handpiece helps keep the workpiece clear of debris.

### SPECIFICATIONS

#### RECOMMENDED AIR PRESSURE:

30-35 psi max. (2.5kg/cm<sup>2</sup>) [0.2-0.25MPa]

**SPEED:** 320,000 rpm

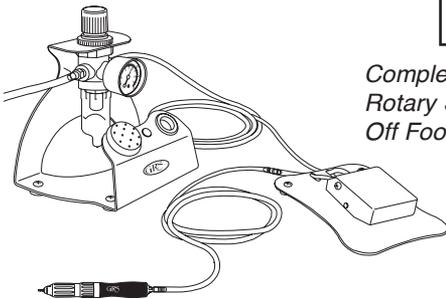
**AIR FLOW:** 1.34 CFM (38 l / min)

#### HANDPIECE DIMENSIONS:

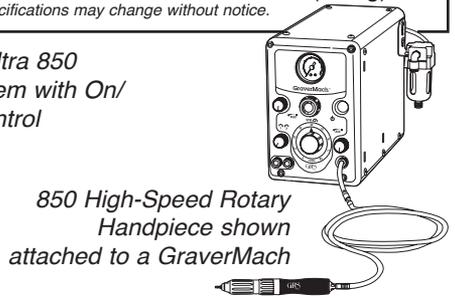
Approx. 5/8" dia. X 5 1/8" long  
(16.6mm dia. X 130mm long)

**HANDPIECE WEIGHT:** 2.5 oz. (70.8g)

*Specifications may change without notice.*



*Complete Ultra 850  
Rotary System with On/  
Off Foot Control*

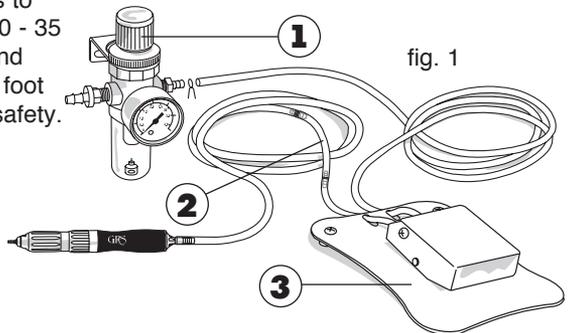


*850 High-Speed Rotary  
Handpiece shown  
attached to a GraverMach*

There are a few things the 850 needs to work properly, a clean air supply of 30 - 35 psi at 1.34 CFM, regulator/air filter, and a on/off air switch. We recommend a foot switch for working convenience and safety.

fig. 1:

- 1 #004-762 Air Regulator/Filter (not included)
- 2 Short Hose Connector
- 3 #004-863 GRS Foot Switch (not included)



## HOOK-UP

(fig. 1) Attach the short hose with coupler (included) to the foot switch. Connect handpiece hose to the short hose coupler. Attach hose to the handpiece by slipping hose clamp ring over the air hose and position it close to the end (fig. 2). Forcibly insert the tube and clamp ring over the barb connector of the handpiece. (fig. 3). Connect the hose between the switch and the air regulator/filter. Attach your air supply to the regulator/filter. You are ready to test the handpiece.

## INSERTING BUR

Insert bur into chuck and press (fig. 4-5). You will feel it “pop” into place when it’s properly seated. Use the bur push-in tool (fig. 4) that came with the handpiece to install a pointed bur. This will keep the point from bending or breaking. Press in other burs on a wood or plastic surface (fig. 5).

## REMOVING BUR

To release bur, turn the Chuck Release Ring as shown in Fig 6. until you feel it push the bur outward. Then remove bur with your finger tips.

**IMPORTANT: ALL THAT IS REQUIRED TO REMOVE A BUR IS TO TURN THE RELEASE RING. DO NOT REMOVE CHUCK OR ROTOR NUT.**

## ATTENTION

**GraverMach, GraverMaxSC, GraverMax or GraverMate users:**

Attach handpiece to auxiliary air output. It is designed to operate at a maximum of 35 psi (2.4 bar). Stop the rotary handpiece by turning the auxiliary knob until the air is shut OFF. For frequent ON / OFF usage, we recommend adding a GRS foot switch in the air line.

fig. 2



fig. 3



fig. 4

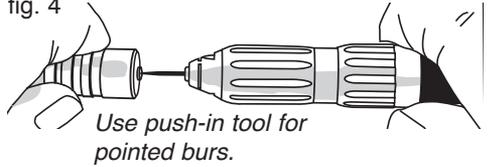


fig. 5

*Press bur into chuck until you feel it seat.*

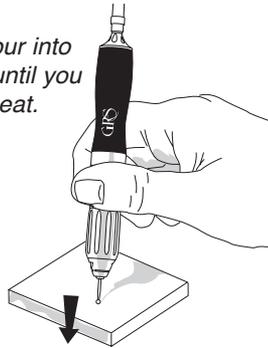
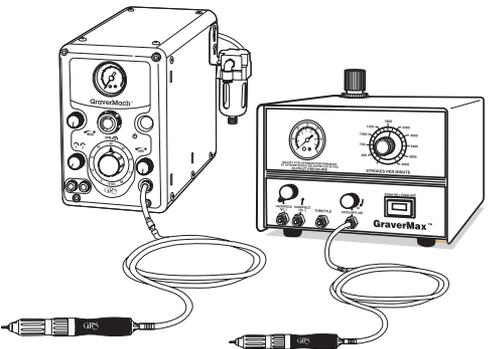
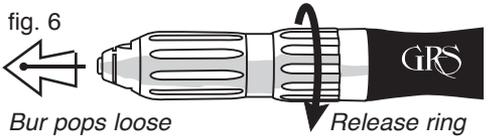


fig. 6



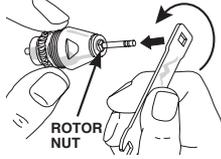
*Included with the handpiece are two air hose clamps. Use these to position your hose in a user friendly way. We suggest working with the tool first to discover the best placement of the clamps and hose.*



## OLD CHUCK REMOVAL & REPLACEMENT

Insert a bur or dummy bur and remove the cartridge. Hold the rotor with two fingers as shown in fig. 7, place the wrench on the rotor nut and loosen by turning counterclockwise. When the rotor nut is loose, carefully push out the chuck from the back of cartridge (fig. 8) with the shank of a bur. This will push out the guide-bush and the chuck.

fig. 7



**NOTE:** The guide-bush is a very small part, be careful not to lose it.

- Clean the inside of rotor shaft with oil spray after the removal of chuck

fig. 8

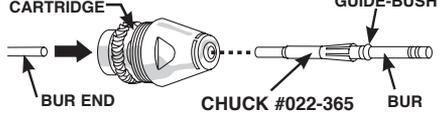


fig. 9

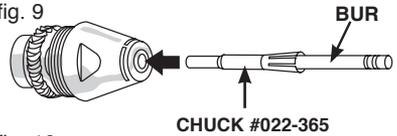


fig. 10

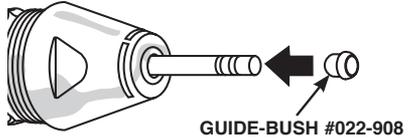
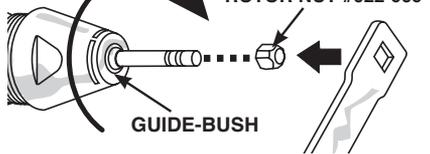


fig. 11



## NEW CHUCK INSTALLATION

Insert a bur into a new chuck and push it into the rotor shaft (fig. 9). Mount the guide-bush on the bur (fig. 10) making sure the longer part of the guide-bush is facing the rotor. Attach the rotor nut and tighten with the wrench provided (fig. 11).

## PREVENTING DAMAGE

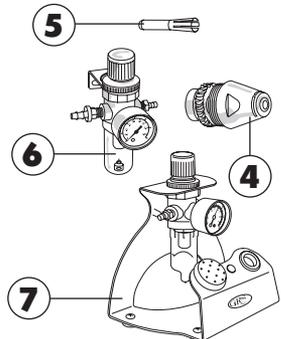
1. The recommended air pressure is 30 - 35 psi (0.25MPa) [2.5kg/cm2]. Higher air pressure may lead to bearing failure.
2. Requires NO Lubrication. Oil will damage handpiece.
3. Remove all lubricant from air regulators or systems with lubricators in line. Lubricant will damage the handpiece.
4. Clean moisture condensation and dirt from your air filter bowl and filter element frequently.
5. The turbine cartridge should be securely tightened with the enclosed Cartridge Wrench.
6. **When using a rotary handpiece, use light pressure and allow the bur to do the work. Excessive**

**pressure and/or the use of dull burs will lead to premature failure of the cartridge bearing and is not covered by the 90 day warranty.**

7. When carborundum or white point is used, use it carefully. If worn irregularly, do not use it. Dress it for concentricity before use. Follow the manufacturer's instructions.
8. Wear safety eye protection.

## REPLACEMENT PARTS AND ACCESSORIES

- |   |          |  |
|---|----------|--|
| 4 | #022-174 | 850 Handpiece Cartridge with Chuck                     |
|   | #022-365 | Chuck ONLY   |
| 6 | #004-762 | Air Filter-Regulator (as shown)                        |
|   | #004-863 | GRS On / Off Foot Control (3 on front of instructions) |
| 7 | #004-862 | Ultra 850 Stand Assembly (as shown)                    |
|   | #004-511 | Carbide Bur Set (6 Piece Bur Set)                      |
|   | #004-512 | Diamond & Stone Bur Set (4 Diamond, 2 Stone)           |



## **BUR CHECK LIST**

- USE ONLY .062" dia.(1.6mm) shank burs.
- Do NOT use broken or damaged burs. You may damage the handpiece or yourself.
- Before use make sure the bur is properly seated in the chuck. Press the bur into the chuck until you feel a slight "pop." The bur is then seated. (See INSERTING BUR fig. 4 - 5)
- To remove bur turn release ring until you feel the bur push outward. (See REMOVING BUR fig. 6)
- WEAR SAFETY EYE GLASSES

## **LONG-TERM WEAR SYMPTOMS**

- **BUR DOES NOT SEAT PROPERLY**  
If bur is loose after proper seating procedure is followed, you probably need a new chuck (collet) #022-365  
You may try other brands of burs. Manufacturing tolerances vary on shank diameters with budget brands of burs. Use only quality dental burs.
- **ROTARY POWER IS ERRATIC OR STOPS COMPLETELY WHEN LIGHT PRESSURE IS APPLIED**  
Assuming the air line is clear of moisture / oil and the turbine is not clogged, you may need a new handpiece cartridge, #022-174.

## **USAGE HINTS**

Our customers who use the NSK air tool get a very long service life out of them. We have discovered over the 10 or so years that we have supplied this product to the engraving industry, if you do not exceed 32-35psi, and use a light touch to allow the sharp burr to remove the material (do not force it into the material) they go for years on a single cartridge. Several issues have been discovered when using this handpiece in engraving and jewelry that go beyond its original design that was intended for the dental industry.

1. Do not force the bur to cut, use light wiping motions when removing background material or cutting a pattern during layout of a design.
2. Always use a sharp bur, when it becomes dull, do not push it harder to make it cut, replace it. This is especially true when working in steel or other alloys and hard woods.
3. Do not allow the handpiece to fall onto a hard surface such as a floor or table top. This pushes the front and rear bearings out of position and will cause very rapid failure.
4. Always gently press the handpiece against a piece of plastic or hard wood when seating a burr in the collet. Just like dropping the handpiece on a hard surface, these are precision instruments and must be handled as such.
5. NSK recommends the user remove and clean the collet every 40 hours of use with alcohol and a q-tip.

NSK warranties it's air handpieces for 90 days. This does not include failures due to misuse or miss-application.



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