

NOTE: Due to the high speed/low torque nature of air spindles this product is recommended for engraving, polishing and grinding only and not for machining.

**SHERLINE**  
**PRODUCTS**  
INCORPORATED 1974

## High-Speed Engraving Head

P/N 8900

### Installing the Air Spindle into the Headstock

Insert the air spindle body into the hole in the headstock body and slide it down until the part of the body below the knurled silver speed control portion is approximately centered in the headstock. Using the 7/64" hex key provided, tighten the 6-32 socket head screw to secure the spindle in the headstock body.

### Mounting the Headstock to the Saddle

Fit the headstock/spindle unit over the pin on the mill column saddle. Make sure the alignment key (P/N 40260) is seated in the slot in the saddle and align the corresponding slot in the back of the headstock to fit over the key. Tighten the 10-32 set screw (P/N 40540) in the side of the headstock tab (P/N 89024). The point of the set screw will engage the tapered groove in the pin to pull the headstock down tightly against the saddle, using the alignment key to align it.

### Connecting the High-speed Spindle Air Line

It is very important that you provide clean, dry air to run your high-speed spindle. Dirty and/or wet air will cause the spindle to wear out prematurely. Follow the manufacturer's instructions included with the spindle when connecting the air lines. A compressor of at least 1.5 horsepower producing about 90 PSI of air pressure is appropriate for this spindle. Continuous high-speed use requires about 3 cu. ft/min of air volume. The manufacturer recommends a break-in period for the first 2-3 hours of use. During this period, restrict air pressure to 50-55 PSI. Once broken in, do not use pressures over 90 PSI, as this will also cause excessive wear.

If extending the air line provided, use 1/4" line up to 25' in length. If length longer than that is needed, it is recommended that you increase the line size to 3/8" to provide sufficient volume of air for the tool.

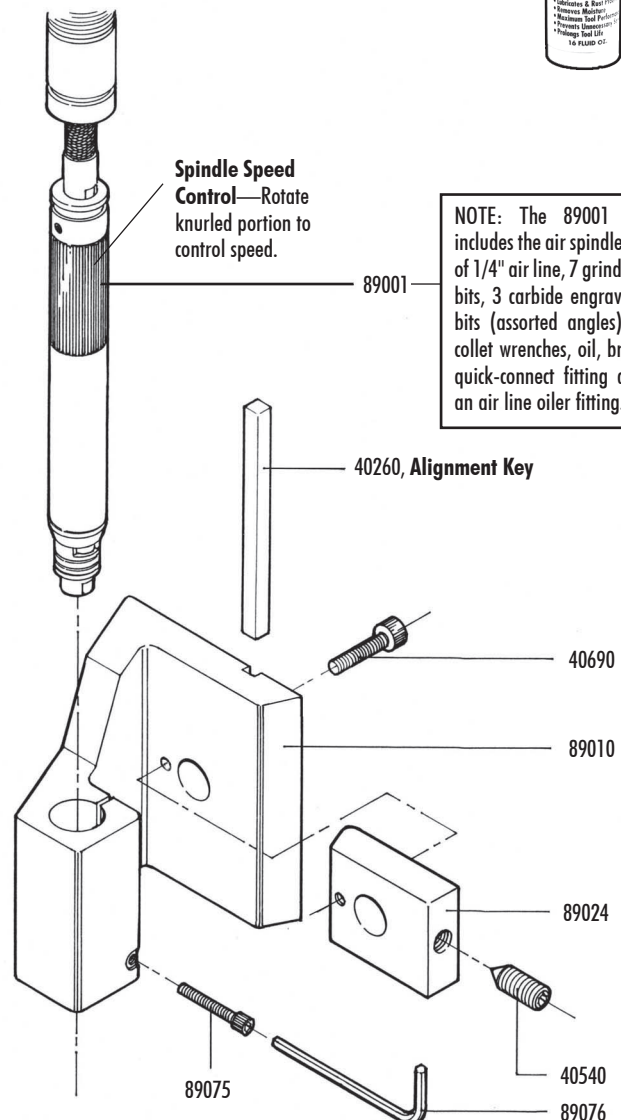
### Precautions When Using the Spindle

Do not overload the carbide cutter by taking too heavy a cut. In most cases it is not necessary to use the full 54,000 RPM capacity of the spindle. 40,000-45,000 RPM will usually do just as good a job, and the lower speed will extend the life of your spindle bearings. Because you are using a brittle carbide tool and the extremely high RPM, the wearing of proper eye protection is of utmost importance.

### Lubrication

The spindle manufacturer recommends using an air line lubricator supplying SAE #10 oil at a rate of two drops per

minute. A lubricator fitting is supplied with your spindle kit. Also included is a small bottle of oil to get your started. For long term use we recommend an air tool lubricant such as the one available in 16 oz bottles from NAPA Auto Parts stores as NAPA part number 765-1400 or the equivalent from any other supplier.



NOTE: The 89001 kit includes the air spindle, 6' of 1/4" air line, 7 grinding bits, 3 carbide engraving bits (assorted angles), 2 collet wrenches, oil, brass quick-connect fitting and an air line oiler fitting.

FIGURE 1—Exploded view with part numbers.

### Special Tool Posts

To hold the air grinder horizontally on the lathe at centerline height a special tool post was developed (P/N 8976). A taller version (P/N 8987) was also made available for those using riser blocks on the lathe. A split hole in the body of the tool post holds the grinder body, and tightening the two screws holds it in place.

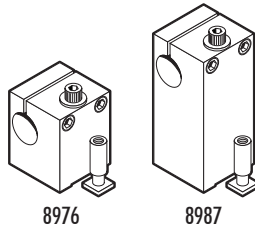


FIGURE 2—A standard height and a riser version of the grinder tool post allows the P/N 8900 air grinder to be used on the lathe at centerline height for light duty grinding operations.

### Engraving Tips and Suggestions

To get a very clean engraving with no burrs, we would suggest using a 1/16" Carbide ball end mill. Here is a link to one that MSC offers (<https://www.mscdirect.com/product/details/89997555>).

You can hold this in a 1/4" mill collet and it should work fine. You will need to play around with the depth of cut to acquire the correct line width for your engraving.

Also, know that you may have to use slower feed rates. The carbide cuts very well unless the cutter starts to chatter. If you get chatter, you will need to lower your RPMs, or the carbide end mill will snap right off. If chatter is a problem, you may want to change to a good quality HSS or Cobalt end mill.

If you buy one with a 1/8" shank like this one (<https://www.mscdirect.com/product/details/09137852>), you can use it with the Sherline high-speed engraving spindle (<http://sherline.com/product/8900-high-speed-engraving-spindle/>).

## Software Engraving Programs

Here are a couple of free or low cost programs that can get you started in engraving type, line art and even pictures. Sherline does not offer technical support for these programs, but we felt it would be helpful to our customers to let you know these resources exist. The first program offers a great start and a lot of good features for free. As your needs increase you may want to upgrade to the second program which offers more sophisticated features at a very reasonable price.

### DeskEngrave (Free)

DeskEngrave allows you to enter text in any TrueType font and export to a DXF file or create G-code directly from the outline of the entered text. Text can be straight or wrapped around a radius. When creating G-code directly from DeskEngrave, engraving depth, rapid height, feed rate, plunge rate, and the precision of the created text are all controllable parameters. Exporting to a DXF (the standard for vector drawings) gives you the opportunity to combine multiple texts with a CAD program, allowing for highly-complex engraving designs, which can then be

saved as a single vector image and converted to G-code by any number of DXF-to-G-code converters.

DeskEngrave is small, easy to install, and should run on any Windows-based system (Win95 or better). It is included in the Utilities folder on the backup instruction CD included with Sherline CNC systems or 8760 driver boxes. You can also download DeskEngrave at: <http://www.deskam.com/deskengrave.html>.

Direct download is at: <http://www.deskam.com/DLOAD/DeskEngrave.Exe>.

### Using DeskEngrave

When you open the DeskEngrave program, use the Help feature to find instructions for its use. This is a very simple program to get started with.

### DeskART—Free 30-Day Demo

DeskART is a more full-featured program than DeskEngrave. While not free past the 30-day trial, it does offer a larger range of features. (Current price is about \$175.00 for purchase of download version.) It can take the most common graphics file formats (JPG, BMP, GIF, TIF, and PCX) and, using the levels of brightness in the image as a topographical projection, create G-code to mill a 3D engraving (black areas are engraved deepest; white areas are set as ZØ and not engraved). When creating the G-code, the image can be rescaled to match the size of the engraving you wish to make, and parameters such as engraving depth, depth per pass, feed rate, rapid height, and axis increment size can be set.

More details about DeskART and a 30-day demo, are available at: <http://www.deskam.com/deskart.html>

Direct download is at: <http://www.deskam.com/DLOAD/DeskART.Exe>

### Using DeskART

Instructions for use of DeskART are available from the Help menu once you have installed the program. The size of the increments you enter will determine the detail of your image. Engraving a one-inch square image in .005 increments, for instance, will give you a more detailed picture than one done in .010 increments, but the duration of the engraving process will also be twice as long, since you will be milling the image in two hundred passes instead of one hundred.

**NOTE:** DeskART reduces the size of the engraving by 25%, so you will have to increase the size of the picture you want to convert to G-code by 133% to compensate.

### Parts List

NO. REQ.	PART NO.	DESCRIPTION
1	40540	5/16-18 X 3/4" Cone Point Set Screw
1	40690	10-32 X 3/4" SHC Screw
1	89001Q1	High-speed Micro Air Grinder
1	89010	Engraving Headstock W/O Grinder
1	89024	Engraving Headstock Pivot Pin Tab
1	89075	6-32 X 7/8" SHC Screw
1	89076	7/64" Hex Key