



(P/N 6509 shown)



#### PRODUCT DESCRIPTION

- 6509—3/4-16 Spindle w/ 30-tooth timing belt pulley
- 6510—3/4-16 Spindle w/ 2-step V-belt pulley
- 6511—ER-16 Spindle w/ 30-tooth timing belt pulley
- 6512—ER-16 Spindle w/ 2-step V-belt pulley

## Industrial 2.25" Round Cartridge Spindles

P/N 6509, 6510, 6511, 6512

### Spindle Precautions

It is important to realize that this spindle should be considered light duty. To make the spindle versatile on Models 6509 and 6510, the spindle nose includes both a 3/4-16 external thread and a #1 Morse internal taper. A .405 (10 mm) through hole allows long stock to be passed through the spindle. This design provides a lot of versatility, but was not intended for long or out-of-round parts to be rotated at high RPM. The same precaution regarding long stock applies to the ER-16 collet models. It is up to the operator to determine if the spindle and the setup are adequate and safe for the job being attempted.

The spindle is equipped with a dust cap, but it is not totally sealed. The presence of dust from grinding operations can shorten bearing life considerably. It was also not designed to be operated in a coolant bath. The spindle shaft should be shielded from coolant spray.

### Introduction

These cartridge spindles feature two 20 mm, class 5, lifetime lubricated ball bearings with an adjustable preload nut. The preload is adjusted at the factory to .0002" (.005 mm) of endplay. This is controlled by the outer races of the bearings being held apart by the headstock case and the inner races being pulled together by the preload nut. This is appropriate for extended running at speeds in the range of 4000 RPM or less. You may need a slightly looser preload setting of .0003" for operating speeds up to 10,000 RPM.

### Optional Nickel/Teflon Spindles

Most of our spindles are available with a Nickel/Teflon plating as a rustproof option for an additional cost. You can select the option to add the Nickel/Teflon plating to your spindle order.

### Adjusting the Spindle Bearing Preload

To reduce the preload adjustment, remove the spindle pulley, loosen the set screw in the preload nut and back the preload nut off four degrees of rotation (counterclockwise). The bearings are lightly pressed into the case, so the inner race will not move without a sharp tap with a plastic mallet to

the end of the spindle where the pulley was attached. When adjusted, retighten the set screw and reinstall the pulley.

If you find your bearings are set too loose, you may want to take up on the endplay. You can check them with an indicator or by spinning the spindle without the drive belt engaged. If the spindle spins freely with a chuck or faceplate on it, the spindle is too loose for normal work. Adjust the preload nut until the spindle turns approximately one and a half revolutions when spun by hand.

### Installing the Spindle

The Sherline Round cartridge spindle has an OD of 2.2495"–2.2500" on the cartridge. This cartridge is designed to be mounted in a 2.2505"–2.2520" diameter hole.

### Accessories Available

Sherline manufactures a complete line of accessories for the headstock, including 3-jaw and 4-jaw chucks, drill chucks, collets, and special tool holders. These accessories will fit the 3/4-16 external spindle thread or the #1 Morse internal taper. See our tools and accessories website at [Sherline.com](http://Sherline.com), or call for a catalog.

### Purchasing ER-16 Collets

ER-16 collets and collet nuts are available from major tool suppliers including the following:

- Manhattan Supply Co. (MSC)—(800) 645-7270
- McMaster-Carr—(562) 692-5911
- Travers Tool Co.—(800) 221-0270

### Specifications

- Spindle diameter: 2.250" (57.15 mm)
- Spindle body length: 3.0" (76.2 mm)
- Hole through spindle: .405" (10 mm)
- Spindle nose thread (Models 6509, 6510): 3/4-16
- Spindle nose internal taper (Models 6509, 6510): #1 Morse
- Spindle nose thread and taper (Models 6511, 6512): ER-16

- Bearings: (2) 20 mm, class 5, lifetime lubricated ball bearings with adjustable preload
- Runout at spindle nose: 0.001" (Most are within .0005")
- End play (factory preload adjustment): .0002" (.0051 mm)
- Recommended continuous spindle speed: 4000 RPM or less
- Maximum spindle speed: 10,000 RPM
- Mounting provision: None

Thank you,  
Sherline Products Inc.

### Parts List

NO. REQ.	PART NO.	DESCRIPTION
1-2*	31080	10-32 x 3/8" Set Screw
1	40160	Preload Nut
1	40230	Spindle, 3/4-16 (6509, 6510)
1	40320	Bearing Dust Cover Washer
2	40410	Headstock Class 5 Bearings
2	40440	#2 x 14" Self-Tapping Bearing Washer Screws
2	40600	10-32 X 1/4" Flat PT Set Screw
1	43230	2-Step V-Belt Pulley (6510, 6512)
1	65016	Cog Timing Belt Pulley (6509, 6511)
1	65023	Spindle, ER-16 (6511, 6512)
1	65026	ER-16 collet nut (6511, 6512)
1	65041	2.25" Round Cartridge Spindle Body

\*1 set screw required for pulley on P/N 6510 and 6512, 2 set screws used on cog pulley, P/N 6509 and 6511

## 2.25" Round Cartridge Spindle Diagram

### 2.25" ROUND CARTRIDGE SPINDLE P/N 65041

Used with P/N 6505-6508

