



## 16SL Speed Lathe Manual

### *Standard Features*

- 2 HP
- Air-Collet Closure
- 0-3000 RPM, Variable Speed
- Dynamic Brake
- Cast Housing
- 16C Collets
- 1 or 3 Phase / 240 Volts



### **DESCRIPTION:**

You can now off load the deburring and polishing work to optimize the speed of the CNC. The speed lathe can be placed near the CNC so the operator can do the second operation work while the CNC is producing the parts. The Model 16SL is equipped with the Crozier designed air-collet closure. The collet closure is activated by a foot pedal leaving the operators hands free to do the work.

## SPECIFICATIONS:

### ***Collet***

Collet Type	16C
Collet Capacity	1.625 inches
Collet Closure Operation	Air

### ***Spindle***

Housing Construction	Cast
Bearing Type	Ball
Front Bearing	Double Row
Rear Bearing	Single Row
Rear Lubrication	Sealed
Standard Spindle Speed	0–3000 RPM
Maximum Spindle Speed	3000 RPM
Spindle through Hole	1.700 inches
Spindle Brake	Dynamic

### ***Drive System***

Motion	Multi-groove V Belt
Motor Speed	1800 RPM
Motor Horsepower	2 HP
Motor Phase	Three

### ***General Notes***

Electrical	Three Phase/240 Volts/6 Amps
Base Width	22 inches
Base Depth	22 inches
Machine Height	20 inches
Machine Weight	175 lbs.
Shipping Weight	200 lbs.

## OPERATION MANUAL:

### UNPACKING

The Crozier Model 16SL Speed Lathe is attached to a wooden pallet. The Speed Lathe is attached to the bottom of the container with four carriage bolts. Remove the bolts from the mounting holes. The Speed Lathe is ready for installation. Check the box for all parts. If any damage is noted call the freight company immediately. The freight company is responsible for the safe delivery of the machine and if immediate notification of damage is not reported, you might not be able to file a claim for damages.

### INSTALLATION

The Crozier Model SL16 Speed Lathe must be secured to a suitable stand at all times.

### LUBRICATION

The Crozier Model 16SL Speed Lathe is designed to operate with sealed bearings. No provision has been made for introducing grease into the bearings. Should it become necessary to change bearings only sealed bearings of electric motor quality C/3 fit with seals or shields on both sides should be used. No bearing spacers are required.

### POWER CONNECTION

The Crozier Model 16SL Speed Lathe input requirement is 240 Volts, three-phase power. Motor rotation is counter-clockwise, looking directly at the shaft. A qualified electrician is required to install the electrical connection. The machine must have a power disconnect placed near the machine. The electrician must run the wire through conduit from the disconnect to the control box. The incoming power is hooked up to the #1, #2, and #3 terminals. Ground is terminal #4. Make sure all connections are tight before energizing the motor.

### AIR REQUIREMENTS

The Crozier Model 16SL Speed Lathe requires 90 PSI dry air for proper operation. The air operates the collet closure. Never operate the Speed Lathe without the air connection hooked up. Under no circumstance should the machine be run with a part in the collet and the air off.

### AIR-COLLET CLOSURE

Wait for the Speed Lathe to come to a complete stop before attempting to open the collet closure. DO NOT open the collet closure with the Speed Lathe running. Make sure the part is secured in the collet and the collet is closed under air pressure before turning the machine on. DO NOT place long parts that can whip or extremely heavy parts that are not in balance or straight.

The foot pedal activates the air closure, in the text, the valve is referred to as a foot valve. The foot pedal is normally hooked up when the machine is received. If not, it is important to make the right connection. The collet is drawn into the spindle with the foot pedal untouched. When you push down on the foot pedal, the collet is pushed off the taper and the collet opens. If the operation is backwards reverse the two (2) air lines going into the back of the machine. To load the collet, find the collet key in the spindle nose. Check the collet threads and drive slot on the collet. Make sure the collet threads



and drive slot are clean. Insert the collet in the spindle nose lining up the key. Press the collet firmly against the draw tube. Turn the draw tube hand wheel clockwise drawing the collet into the nose. When the collet is nearly in the spindle place the part in the collet. Continue turning the hand wheel until the part is tight in the collet. When the part is tight in the collet push down on the pedal at the same time turn the hand wheel two (2) detents clockwise. Release the pedal. The part should now be tight. If not push down again and repeat the procedure turning one (1) detent each time.

## **COLLETS**

If the collet sticks or is hard to open, polish the collet surface that slides into the precision hole. Only high quality collets should be used. For best results, we recommend, Hardinge®: 16C collets. [Hardinge® Collets](#) are available from factory outlets in major cities or from reputable tool houses. If the machine is used in an abrasive environment the spindle hole should be cleaned when you change collets.

The threads on the draw tube can wear from extended use or using worn or undersized collets. If this occurs the collet will not lock into the spindle and the work piece will not be held. The draw tube must be replaced if this happens. Always check the collet threads for damage or foreign material. In an abrasive environment clean the collet threads at regular intervals. If the collet keeps working itself loose check the rotation. If the rotation is correct make sure the drive key has not sheared off. If this happens replacement of the key is necessary.

There should be a minimum of .075 inches in the opening and closing movement of the collet. The standard 16C collet can accept a work piece variance of .005 inches. Any larger variance will cause the collet to distort and not hold the part properly. Do not under any circumstance force the collet to hold a undersized part. Serious damage can result from such actions.

## **BRAKE**

The Speed Lathe is equipped with dynamic braking. It is automatically activated when the motor is shut off. After the motor stops, the spindle will turn freely. There is no adjustment required on the brake. The motor can be cycled on and off continually without damage to the unit.

## **INVERTER**

The Model 16SL Speed Lathe is a variable speed unit equipped with a solid state frequency inverter. Alternating Current (AC), 60 Hz voltage is converted to Direct Current (DC). This DC voltage is reconstructed to a variable (0-90 Hz) voltage. This allows the spindle speed to operate from 0-3000 RPM. Additionally, the advantage of the inverter is the ability to ramp the motor up to speed without a voltage spike associate with normal motor operation. It also stops the motor by turning the motor into a generator and dissipating the heat through a resistor pack. There is a special motor noise associated with inverters and can cause concern for those not used to it. A whine or gearshift noise is normal as is a pulsing of the spindle at low RPM (less than 100 RPM). The speed pot on the control box is for varying the spindle speed. The start and stop buttons are located on the same box.

## GENERAL NOTES

As with all equipment proper care should be taken. Safety glasses must be worn at all times while operating the Speed Lathe. It is the responsibility of the end user to determine the suitability of the Speed Lathe in their application.

This machine is a precision machine tool. The components used in its manufacture are of the highest quality and the machined parts are held to very exact tolerances. If you expect the machine tool to last, you must take proper care of it.

The Crozier Model 16SL Speed Lathe can be cycled on and off as fast as you can do the work.

## PARTS LIST:

Part #	Description	Qty.	Price
PL6-01	Draw Tube	1	\$ 150.00
PL6-02	Hand Wheel	1	\$ 25.00
PL6-03	Adjusting Plate	1	\$ 165.00
PL6-05	Center Cam	1	\$ 195.00
PL6-06	Outer Cam	1	\$ 145.00
PL6-07	Operating Housing	1	\$ 425.00
PL6-08	Inner Cam	1	\$ 145.00
PL6-09	Set Screw	2	\$ 1.75
PL6-10	Spring	2	\$ 1.75
PL6-11	Steel Ball	2	\$ 1.75
PL6-12	Spindle Housing	1	\$ 900.00
PL6-13	Spindle Pulley	1	\$ 95.00
PL6-19	Collet Key	1	\$ 10.50
PL6-20	Collet Insert	1	\$ 165.00
PL6-21	Woodruff Key	1	\$ 1.75
PL6-24	Snap Ring	2	\$ 7.50
PL6-26	Spindle	1	\$ 475.00
PL6-28	Detent Plate	1	\$ 185.00
PL6-34	Spiral Lock Ring	1	\$ 6.00
PL6-40	Base	1	\$ 225.00
PL6-45	Drive Belt	1	\$ 25.00
PL6-46	Motor Pulley	1	\$ 135.00
PL6-50	Felt Ring	1	\$ 6.00
PL6-54	Front Bearing Cap	1	\$ 175.00

Part #	Description	Qty.	Price
M-108	Motor	1	\$ 375.00
E-110	Control Box	1	\$ 200.00
E-300	Motor Contactor	1	\$ 85.00
E-320	4PDT-120VAC Relay	1	\$ 25.00
E-321	Relay Holder	1	\$ 15.00
E-509	Knob Kit	1	\$ 15.00
E-510	Speed Pot	1	\$ 15.00
E-577	Power Cord	1	\$ 25.00
E-600	Start Button	1	\$ 45.00
E-601	Stop Button	1	\$ 65.00
E-604	Toggle Switch	2	\$ 45.00
E-606	Contact Block N/O	1	\$ 15.00
E-607	Contact Block N/C	1	\$ 15.00
E-610	Label-Start	1	\$ 4.00
E-611	Label-Stop	1	\$ 4.00
E-701	Inverter	1	\$ 895.00
E-885	Din Rail	1	\$ 1.00
B-115	Bearing-5211ZZ	2	\$ 135.00
B-116	Bearing-6211ZZ	1	\$ 78.00
F-100	Set Screw 1/4-20 x 1/4	6	\$ 1.75
F-107	Set Screw 5/16-18 x3/8	2	\$ 1.75
F-204	Allen Cap 5/16-18 x 1/2	8	\$ 1.75
F-209	Allen Cap 3/8-16 x 1/2	4	\$ 1.75
F-301	Allen Flat 8/32 x 3/4	8	\$ 1.75

**CONTACT INFORMATION:**

***New Sales - Parts - Service***

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