

## Variable Speed Retrofit Kit Installation Instructions

This kit will convert any of the following single speed lathes to variable speed:  
Jet Midi Lathe #JML-1014, Delta Midi Lathe #DEL46-250, PSI Midi Lathe #TCLPRO.

### Specifications

Motor: 1/2HP, 100V, 980 RPM – 3450RPM max

Lathe Speed: Varies with Pulleys: Max about 3800 RPM<sup>†</sup>

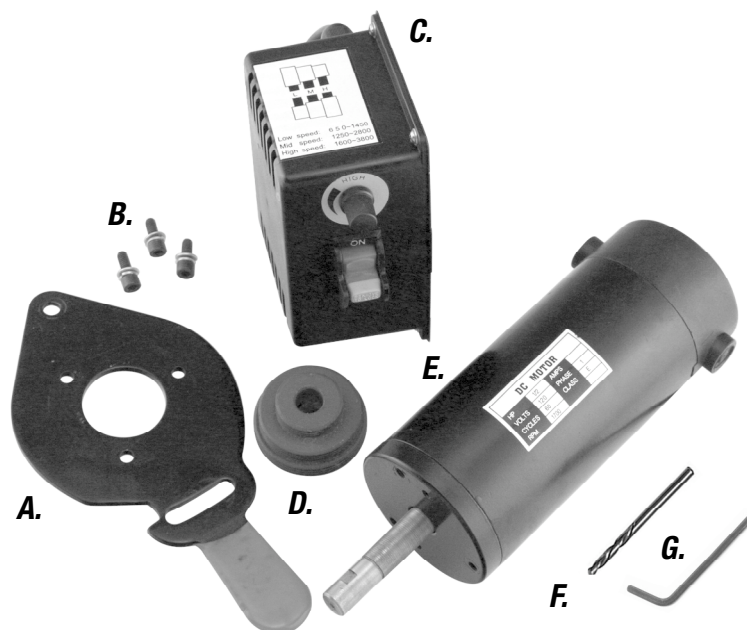
<sup>†</sup> *except for Delta, see specific instructions*

### Kit Components:

- A. 1 ea motor mounting plate/template
- B. 3 ea allen head screws  
3 ea lock washer  
3 ea large flat washers
- C. 1 ea switch box controller/assembly
- D. 1 ea motor pulley
- E. 1 ea variable speed motor
- F. 1 ea 7mm drill bit
- G. 1 ea metric allen wrench

### Item Number

- #TCLVS-48
- #TCLVS-76
- #TCLVS-50
- #TCLVS-49
- #TCLVS-61
- #TCLVS-51
- #TCLVS-70
- #TCLVS-80
- #TCLVS-81



### Retrofit Instructions

#### Step 1 Disassemble the single speed motor from your lathe

Unplug the lathe. Remove your existing speed chart since it will no longer apply to your lathe. Remove the control switch and wiring hold downs. Detach the motor leads from the switch. Remove the fasteners holding the motor tension to the lathe. Remove the motor pulley (a small puller may be required). Remove the motor from the mounting plate. You can discard the motor but save the plate and fasteners that hold the plate to the lathe since they will be needed to re-mount the variable speed motor. Jet and Delta owners continue to Step 2. #TCLPRO owners go to Step 4.

#### Step 2 Align your existing mounting plate with the template plate

Use Item A (Part #TCLVS-48) the motor mounting plate/template to mark your old plate with the necessary mounting holes. It is very important that the shaft holes are concentric in order for the variable speed motor to mount and operate properly. For best results, turn a round spindle to fit snug in the shaft hole in Item A (Part #TCLVS-48) then turn a 5/8" step to match the hole in your Jet or Delta plate. Align the shaft holes of the template and your motor plate concentrically, mark a center line in your plate as shown in Fig #1, align the template mounting hole over the line as in Fig #2 then clamp together.

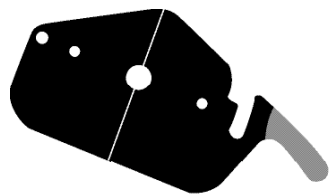


Fig #1 Original plate

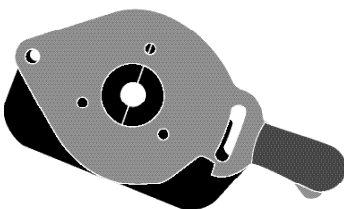


Fig #2 Aligned with template

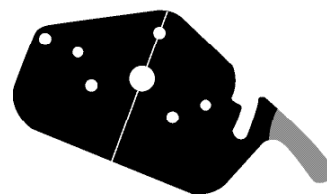


Fig #3 Modified plate

#### Step 3 Drill holes

Use Item F (Part #TCLVS-80) the 7mm drill bit and drill the first hole through the template then through your plate. Pin the holes in place with a bolt (not supplied). Drill the second and third holes. Check alignment with the variable speed motor. If not aligned, use a round file to correct the holes as necessary.

#### Step 4 Attach motor

Attach Item E (Part #TCLVS-70) the variable speed motor to the modified plate with Item B (Parts #TCLVS-49, #TCLVS-50, #TCLVS-76) the three screws, washers and lock washers included with kit. Note: For owners of #TCLPRO - attach to Item A (Part #TCLVS-48) mounting plate.

**Step 5 Mount pulley**

For Delta owners, reuse Delta pulley on variable speed motor shaft\*- for others position Item D (Part #TCLVS-52) the pulley with the large end towards the motor (see Figure 4). Slide onto the motor shaft and tap into place on the motor shaft. Do not tighten the pulley onto the shaft at this time.

**Step 6 Attach motor to lathe**

Attach the motor and mounting plate to the lathe bed with the original fasteners provided with the lathe.

**Step 7 Adjust belt**

Adjust the pulley so that the belt with the pulley installed aligns with the drive pulley of the lathe. When aligned, tighten the pulley's set screw with Item G (Part #TCLVS-81) the metric allen wrench. Adjust the belt tension as necessary.

**Step 8 Connect motor cord**

Connect the motor cord end to Item C (Part #TCLVS-61) the switch box cord end. Place the switch sox in any convenient location.

**Step 9 Test the assembly**

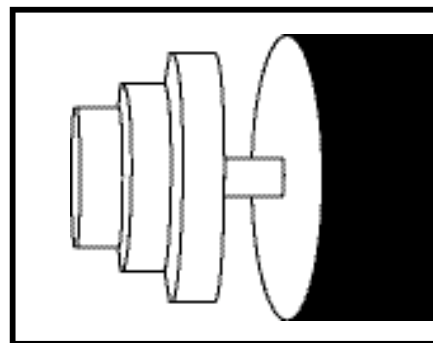
Turn off the controller switch. Attach any headstock accessory tightly to the lathe's spindle (i.e. lathe chuck). Plug the power cord into an appropriate 110V outlet. Turn on the controller switch. There will be a momentary delay before the motor starts. Adjust the speed control knob up and down. Note that motor deceleration may cause any mounted accessory to de-thread from the spindle so wear protective gear and be prepared to move away from the lathe, if necessary.

**\*NOTE for Delta users**

The pulley configuration for your lathe will run approximately at the speeds below.

BELT POSITION	LOW	HIGH
1	425	990
2	700	1625
3	1030	2385
4	1500	3500
5	2175	5060
6	2840	6600

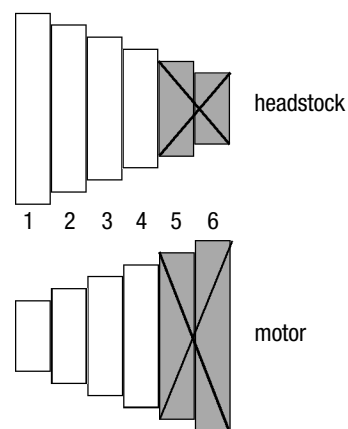
As per the chart above, using Belt Positions 1 through 4 will allow continuous speeds from 425 to 3500RPM. In Positions 5 & 6 the speeds are excessive; it is **not** recommended to use those positions while turning. It is highly recommended to place either tape or a marking those positions in some way in order to prevent them from being used and to avoid any damage to the motor, the lathe or to yourself. See Figure 5 for proper pulley configuration.



**Figure 4 - Pulley orientation**

**Brush Maintenance**

Your lathe has a motor equipped with carbon brushes (ZTCL4-68). They and the commutator need periodic maintenance. During break in and high power usage, a carbon track may be formed on the commutator. This carbon track will insulate the brushes from the commutator causing poor performance and eventually stopping the lathe. Remove the brushes and clean the commutator with a new pencil eraser through the brush port. If the brushes are not broken in, shape them with a round file leaving a crescent shaped indentation in the brush end approximating the diameter of the commutator. Reinstall brushes so this indentation is oriented to the shape of the commutator.



**Figure 5 - Delta Pulley Configuration**

