

# #SP-300

# REEDY MICRO LATHE

Congratulations on purchasing your new Reedy motor commutator lathe. In the following written instructions you will find out how to finish the assembly of your lathe and how to properly use it to its full advantage. In order to correctly use it you will need to get a 6 cell 7.2 volt battery pack (any old battery pack will work) or 5 volt power supply.

When you open the box you will find the lathe itself (with the motor and motor wiring installed) and three plastic bags (two of which should be stapled together). The contents of each bag are:

## Bag #1

Adjustment knobs (2)  
Set screws (2) (already installed in knobs)

## Bag #3

Steel Thrust Washers (2), Fig. 4  
Bronze Thrust Bushing (1), Fig. 4  
Steel Collar (1), Fig. 4  
4-40 x 1/8" set screw, Fig. 4  
.050" Allen wrench (1)

## Bag #2

2.5mm Allen wrench (1)  
2mm Allen wrench (1)  
1.5mm Allen wrench (1)  
3mm Fiber Flat Washers (10) (black)  
Motor Drive Pulley (1)  
Motor Drive Belt (1)  
2mm x 5mm Set Screw, Fig. 1  
Plastic Spacers (2) (white)  
Tool Holder Shim .060" (yellow brass), Fig. 2  
Tool Holder Shim .012" (4), Fig. 2  
1/4" Tool Holder (1), Fig. 1  
#SP-301 Carbide Tool Insert (1), Fig. 1  
Tool Insert Screw (1), Fig. 1

**STEP 1** In bag #1 you will find two knobs with set screws already installed. One of the knobs has a handle and the other does not. The knob without the handle will be installed on the "depth of cut" shaft. This is the shaft that points in between the two saddle blocks that will support the armature. Install the knob over the adjustment shaft so the set screw will line up over the flat spot that is ground into the shaft. Slide the knob all the way on, but leave just enough gap so that it will not rub on the shaft support plate. Now tighten the set screw using the 2mm Allen wrench from bag #2.

Install the knob with handle onto the "cutter feed" shaft. This is the shaft that runs parallel with the drive motor. Again, leave just enough gap so that the knob will not rub on the shaft support plate. Use the same Allen wrench to tighten this set screw.

**STEP 2** Remove the motor drive pulley and the 2mm x 5mm set screw from bag #2. Use the 1.5mm Allen wrench to thread the set screw into the pulley so it will not fall out. The pulley should slide onto the shaft of the drive motor as far as it will go, leaving just enough end play so that it will not hit the motor can when the shaft moves. You want the motor to be as high as possible in the saddle block, so loosen the motor mounting screws and see if the motor will move any higher, then retighten the screws.

Now check the pulley to see if it is running true. Connect your battery pack or power supply and turn on the motor switch. If you see any wobbling of the pulley (the outer edges of the pulley will look blurred), shut off the power and readjust the pulley and set screw. Keep checking this until the pulley runs true. For your safety, disconnect the power source when you are done.

**STEP 3** In a small bag inside bag #2 you will find the tool holder, the carbide tool insert and the tool insert special screw. One side of the tool insert is flat and the other has a recess in the center for the screw head. Install the flat side against the tool holder and secure the insert with the special screw (see Fig. 1). **Note: the insert has three cutting tips. When one becomes dull you can remove the screw and rotate the insert to a different corner, giving you a fresh cutting edge. Replacement carbide inserts #SP-301 can be ordered through your dealer or directly from Associated.**

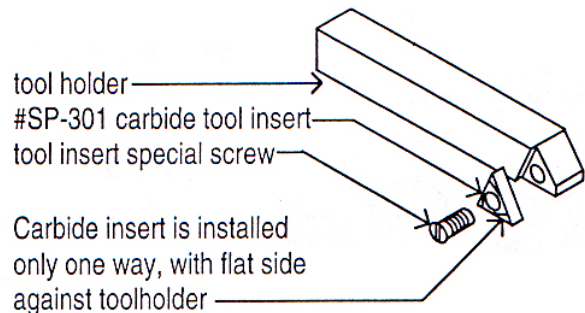


FIG. 1

**STEP 4** Remove the .060" shim from bag #2 and center it in the tool holder clamping area. Now take the tool/insert combo and turn it upside down so the insert is on the bottom. Slide the tool all the way into the clamping area with the insert on the bottom and the cutting side over the saddle blocks (see Fig. 2). Lightly tighten the tool clamping screws.

Set the end of the tool insert tip to between .450" and .500" from the clamping block face. This will make sure that the clamping block does not hit the belt or armature when cutting a small commutator armature, which would cause problems. Once you have the tool spaced correctly, then secure the clamping screws.

**Installing the optional diamond cutting tool.** For those who are looking for the best tool insert life you can purchase a diamond-tipped cutting tool #FF250-182 directly from E.C. Kitzel & Son, 4775 Manufacturing Ave., Cleveland, OH. 44135 (1-800-227-0431). The diamond tool has a 5/16" shank instead of the standard 1/4" shank, so you must remove the .060" brass shim when using it. Secure and space the tool the same as in step #4.

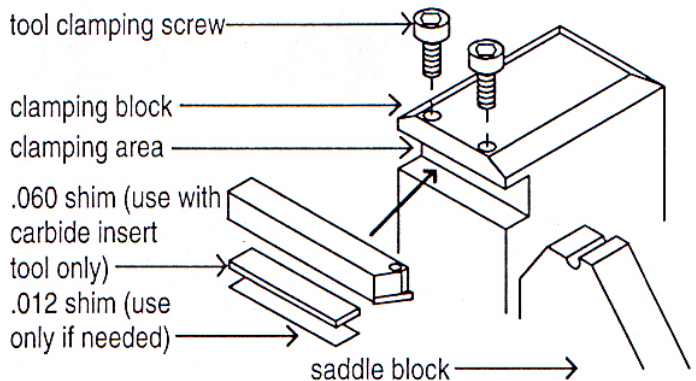
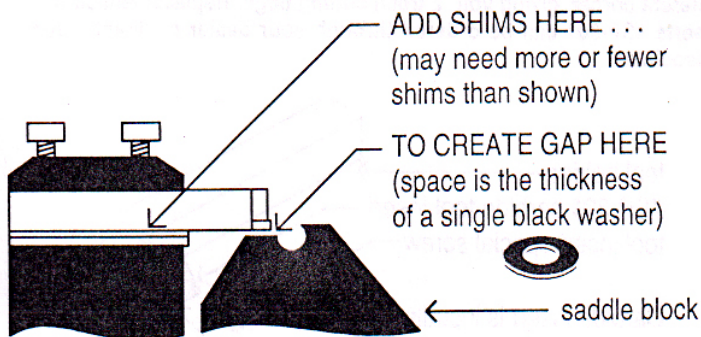


FIG. 2



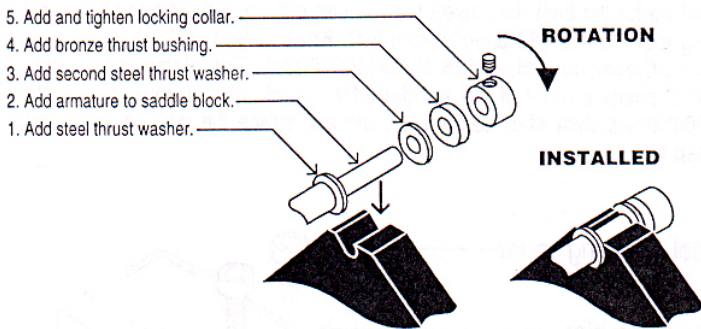
**STEP 5** We now need to verify the clearance of the tool insert tip over the saddle blocks. Normally the stock setup will be perfect, but it is always a good idea to double-check it. Remove one of the black fiber washers from bag #2. You will notice that the left saddle block has one side that is lower than the other. Place the fiber washer on the lower side of the saddle block (see Fig. 3). Then check the clearance of the carbide tool cutting tip by moving the tip back and forth over the washer. If the spacing is correct the tip should just clear the washer. If it does more than just lightly scrape the washer then you will need to add one of the .012" shims under the cutting tool. Normally this is not necessary. This same adjustment is done for the diamond cutting tool as well; just remove the thick .060" shim before installing the diamond cutting tool. **WARNING!** The single fiber washer clearance is necessary for both the carbide and diamond tools.



**FIG. 3**

**Step 6** Now we are ready to set up the armature. Fig. 4 shows the parts that will go onto the output shaft side of the armature. From bag #3 remove one of the steel thrust washers and slide it onto the output shaft. Remove the drive belt from bag #2 and slide it over the armature. Now place the armature between the two saddle blocks, making sure the commutator and washer are on the carbide tool insert side. If the tool insert tip is too far over the saddle block so that it hits the commutator or interferes with the installation of the armature, back off the tool insert so that it will not interfere. Now install the second steel thrust washer, the bronze thrust bushing and the locking collar and its set screw, all from bag #3.

**PUT O-RING AROUND MOTOR THEN DO THE FOLLOWING:**



**FIG. 4**

To correctly set the end play, place a piece of paper between the outer thrust washer and the thrust bushing and then tighten the locking collar screw (using the .050" Allen wrench from bag #3). Before we turn on the lathe to verify which way the armature rotates, check that the tool insert tip is backed away from the armature so that it cannot accidentally damage any parts of the armature or commutator. Next stretch the drive belt over the motor pulley. Place one or two drops of oil on each end of the armature shaft where it rests in the saddle blocks. Now turn on the lathe. When everything is set up correctly the top of the armature will be rotating away from the cutting tool.

**STEP 7** Our final adjustment is to the tool insert end stop. You will find it next to the drive motor on the right saddle block. This 4-40 screw and its silver locking collar control how far the cutting tool can go across the commutator. It is very important that the tool insert tip not hit the soldered or welded taps on the inside end of the commutator. Adjust this stop as necessary. **WARNING!** You should check this clearance each time you work on a different brand motor armature.

**IMPORTANT INFORMATION BEFORE CUTTING**

Before you actually begin to make your first cuts on the commutator you will need to understand a few important facts:

- (1) First, you should only cut *going into* the commutator. You should back the cutting bit off before you bring the cutter back for another pass.
- (2) You also should take as light a cut as possible, even if this requires several more passes before you are finished cutting the commutator.
- (3) ALWAYS use oil on the saddles, the thrust washers, and thrust bushing where the armature shaft rides.
- (4) ALWAYS use a lubricant, cutting oil, on the commutator when cutting.
- (5) To protect the tool insert tip from damage when transporting, always store the lathe with the tip over the left saddle block. This makes it harder to damage the cutting surface.

**CUTTING PROCEDURES**

Apply cutting oil with a small brush directly to the surface of the commutator. Make sure the cutting tip is backed away from the commutator and then move the cutting tip all the way to the right of the armature (closer to the cutter feed shaft knob). Now turn in the depth of cut knob until the cutting tip is very close to the commutator. Connect your power source and turn on the lathe. **WARNING!** Make sure you oil the saddle blocks where the armature shaft rides. Now feed the tool insert tip across the commutator. If no contact was made with the commutator, then move the cutter back away from the commutator and increase the depth of cut by moving the cut adjustment knob clockwise, using very small adjustments. Keep doing this until the tip actually makes contact with the commutator. When you finally make contact with the commutator go ahead and complete this cut. **Remember:** the object is to take off as little as possible each time you make a pass. It is always better to make several light cuts as opposed to one heavy cut. Heavy cuts cause more chatter and shaft movement and reduces the life of the cutting tip greatly and can even chip the diamond tip, destroying the cutting tool. Now back off the cutter and move it all the way back to the right. Turn off the power with the on/off switch. Now rotate the armature by hand and look at the commutator. If you still see black or discolored areas on the comm then you know that you will need to make at least one more pass. Recoat the comm with cutting oil and go through the cutting procedures again until the commutator brush surface appears polished and no discoloration remains. After you have made your final cut, take an X-Acto knife and very carefully pull the back side of the blade through each of the slots in the commutator to remove any burrs. Then spray the commutator with motor cleaning spray.

Good luck and good racing!



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