NYRS

Turntable Indexing That Works

PTC Model 4

Programmable Turntable Controller

Basic Motor Mount Kit

P/N 09-820

Installation Instructions

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OVERVIEW

The Basic Motor Mount Kit provides a method for installing the PTC Model III turntable motor to your turntable, without actually suspending the motor from the turntable or in any other way stressing the model that it will be driving.

The PTC Model III Motor Mount Kit is designed to be mounted under the benchwork, suspended from the surface that supports the turntable and pit. The motor is mounted in the bracket, and the motor is connected to the turntable shaft via the supplied coupler.

Please review these instructions thoroughly before you begin. Certain aspects of the installation are important for smooth operation; they will be noted with a "· check" to remind you.

MOTOR MOUNT KIT - PARTS LIST

The Basic Motor Mount Kit includes the following parts:

- Motor mount bracket, 20"
- 2 – 8" Threaded rod (will be used to create mounting studs)
- Motor mount hardware kit, including:
  - 2 T-nuts
  - 6 hex nuts
  - 4 brass thumb nuts
  - 6 washers
- These instructions

TOOLS YOU WILL NEED

To complete the installation, you will need to have the following tools on hand:

- Straight edge
- Power drill with 1/4" drill bit
- Allen wrench, 3/32" (for motor coupler)
- Razor saw, cut-off tool, or jeweler's saw (to cut threaded rod)
- Small crescent wrench or 3/8" open-end wrench
- Lock-Tite™, Thread-Lok™, or cyanoacrylate (CA) gel

INSTALLATION

1. SETTING UP—SURVEY THE CONSTRUCTION SITE

Review Figure 1: "*Motor Mount Cross Section"*. This drawing is a side view that shows the bracket assembled and mounted in position under the turntable. More details will follow; the idea at this point is to just get an idea of where we are going.

The important part of the survey operation is to (a) check the bracket length for clearance and (b) find suitable locations to drill the two mounting holes for the bracket mounting studs (see Figure 1).

Check Bracket Length

The bracket in your kit is 20" long. For most cases, this will be fine. In some cases (certain bookshelf or corner layout situations, for example) it may not be possible to fit the full length bracket. Examine the area under the turntable to see if this situation applies to you. If you determine that one or both ends of the bracket must be cut down, mount the bracket in a padded vise and cut it on the "endmost" side of the bracket webs that are provided for this purpose. These preferred cut points are noted in Figure 2. However, before cutting the bracket, determine and double check your mounting hole locations (next step).

Determine Mounting Hole Locations

Using your straight edge, try to sight a line that passes through the center of your turntable pit (i.e. between the tracks) out to clear area around the pit—you are looking for two points that you can drill through to install the bracket mounting studs. In general, you are looking for locations that are easily accessible, easy to re-scenic later, and have about 3/4" diameter clearance around them. This clearance is necessary for the head of the T-nut that will hold the bracket mounting studs in place (Figure 1).

The slots in the bracket define the possible locations for the mounting holes: if using the short slot, the hole must be in a radius range of 4" to 5-1/2" from the turntable center. If using the long slot, the hole must be in a radius range of 6-1/2" to 9-1/4" from the turntable center. In general, it is best to place the holes as far apart as possible as it makes adjustment of the bracket easier later on.

· **Tip:** If your turntable pit is too large (greater than 18") such that the bracket cannot be mounted as described, it may be possible to mount the bracket to the *underside* of the turntable pit itself. Cut 2 blocks of 3/4" plywood approximately 3" x 3" square. Mount the studs through these blocks (cut to length first, see below), then using hot melt glue or quick set epoxy, affix the blocks (with studs) directly to the bottom of the pit. Set the blocks as far apart as possible, to facilitate easier adjustment later. Be sure the bottom of the pit is free of dust to provide maximum adhesion.

Determine Length of Mounting Studs

Now that you have an idea of where the mounting holes will go and how you will situate the Mounting Bracket, determine the length of the bracket mounting studs you will need.

The length of the stud, "L" is as follows:

$$L = T + S + 2.5$$

where "T" is the thickness of the layout surface and "S" is the distance from the tip of your turntable shaft to the underside of the layout. These measurements are noted as "T" and "S" in Figure 1. These measurements are not critical, just be sure you make the stud long enough. Example: If your layout surface is 1/2" thick and the tip of the shaft is about 3-1/2" inches from the underside of the layout, the length of the mounting stud will be approximately 1/2" + 3-1/2" + 2-1/2" = 6". If extra length is not a problem you an just use the full 8" studs. It is not recommened to use longer studs as they may flex and cause alignment issues.

· **Check:** Be sure the thickness of the layout surface is at least 1/2", which is the minimum thickness necessary for the T-nut to work. If needed, additional thickness can be achieved by gluing scrap material (plywood, Homosote, etc.) under the layout surface. · **Tip:** Although it is awfully tempting to just cut the rod in two, this is not recommended unless you don't really climb around under the layout often. Minimizing the length of the rod minimizes the chance of running into a low-hanging threaded rod (ouch!) and knocking the bracket out of alignment.

2. PREPARE BRACKET, THREADED ROD, and MOTOR

Adjust Bracket Length

After you have determined the mounting hole locations, cut the bracket if necessary. Be careful not to twist or bend the bracket while cutting. **Check:** Be sure to cut the bracket so the web remains after the cut!

Cut Threaded Rod to Length

Cut the threaded rod to the length required. · **Tip:** Screw one of the Knurled Nuts onto the threaded rod before cutting; after cutting, unscrewing the knurled nut will deburr the cut end.

Install Motor in Bracket

After cutting the bracket (if needed), install the motor into the bracket using the screw kit provided with the motor. Use the four 100 degree counter sunk screws for this. See Figure 1.

3. INSTALL MOTOR COUPLER

Install Shaft Coupler

Install the coupler on the turntable shaft and tighten securely. The shaft of the turntable should be installed about halfway into the length of the shaft coupler. · **Check:** Be sure that the shaft of your turntable has a flat section on it to prevent rotation of the coupler on the shaft, and that the coupler set screw is positioned securely on the flat (you can turn the coupler as you tighten to find the most secure spot). · **Tip:** Measure your coupler (they are different lengths depending on the shaft bore size), and mark off half that length on your turntable shaft. This will make it easier for you to determine when you have inserted the shaft into the coupler the correct distance.

4. INSTALL MOUNTING STUDS

Drill Mounting Holes

Clear away any scenic material around the location of the mounting holes. Using a 1/4" bit, drill the mounting holes. It is important that you make the holes as plumb (vertical) as possible so that the mounting stubs hang straight down. Use a center punch to start the holes to minimize drill bit creeping. It is important that the two holes line up through the center of the turntable as accurately as possible. · **Tip:** If your layout surface is Homosote, use a slightly smaller drill (7/32").

Install T-Nuts and Mounting Stud Assembly

Screw a T-nut onto each of the threaded rods (mounting studs). Screw the rod into the T-nut until it is almost flush with the top of the T-nut. Drop the T-nut/mounting stud assembly into the layout mounting holes, and from the underside, install a washer and steel hex nut. Tighten securely. · **Check:** Be sure that the rods hang down as straight as possible. If necessary, *CAREFULLY* bend the rods into vertical alignment. · **Tip:** Before completely tightening, use a drop of Lock- Tite™, Thread-Lok™, or CA gel on the threads to keep the T-nut and Hex Nut in place.

5. INSTALL BRACKET & MOTOR ASSEMBLY

Using Figure 1 as an example, install a hex nut and knurled nut on each stud, with the flared flat of the knurled nut facing down. Screw them sufficiently high up the stud as to be out of the way for now.

Install another washer on each stud, and slide the bracket onto the studs. Install another washer, knurled nut (flared flat facing up), and hex nut on each stud. · **Check:** Although high quality de-burred washers are supplied with your kit, double check the washers to be sure that there are no significant burrs on them. This will improve the smoothness (sliding action) during adjustment later.

Carefully screw the lower knurled nuts up the studs until the motor and turntable shaft coupling are close to linking. Turn the turntable bridge so the set screws on the coupler align with the flat on the motor shaft, then continue raising up the lower knurled nuts until the motor is securely in the coupler.

6. FINAL ADJUSTMENTS

Adjustment Checks

At this point the motor is only loosely supported by the bracket. Screw the upper knurled nuts down to the bracket, *lightly* snugging them down. Carefully observe the orientation of the bracket from the side and along its length. Double check that:

- ☐ The bracket is level length-wise, relative to the layout surface. This can be checked by measuring from each end of the bracket to the underside of the layout.
- ☐ That the bracket (and thereby, the motor) is level edge-to-edge relative to the turntable bottom: measure from each edge of the bracket to the underside of the turntable (or underside of the layout).

Testing

After having made these checks, the installation should be tested for smoothness. Connect the PTC controller to the motor and bring up the controller in "Index Mode" (refer to controller documentation for information on initializing the controller in Index Mode). While in Index Mode, the motor will simply drive the turntable bridge round and round—carefully observe the bridge's movement for any signs of binding. Assuming the bridge's original movement is smooth, binding or uneven movement is almost always the result of misalignment between the motor and the turntable shaft. If necessary, re-adjust the motor bracket to achieve correct alignment.

· **Tip:** Although most users do not experience this, you may experience hearing a very low hum during operation. This is a result of the fact that the stepper motor is making hundreds of little "steps" each second. Depending on the surface of your layout, your motor installation, and other variables, these little steps can produce an audible hum. For example, if your layout surface is made from thin plywood, this effect can be quite noticeable. This hum can be greatly reduced (usually eliminated) by installing Dum-Dum® or high density soft foam to the motor mount bracket (Dum-Dum® is a heavy, self adhesive clay-like material used by auto body repair shops to deaden the sound of loose body panels).

Lock in the Adjustments

After all final adjustments have been made, screw the upper and lower hex nuts into the knurled nuts and tighten securely; do not overtighten. The hex nuts serve as lock nuts to prevent the knurled nuts from moving out of adjustment. · **Tip:** It is not recommended to use CA gel or other thread locking agents to secure the knurled nuts. Loosening and re-alignment would be more difficult if it becomes necessary (e.g. in the event that the bracket is bumped while doing layout maintenance).

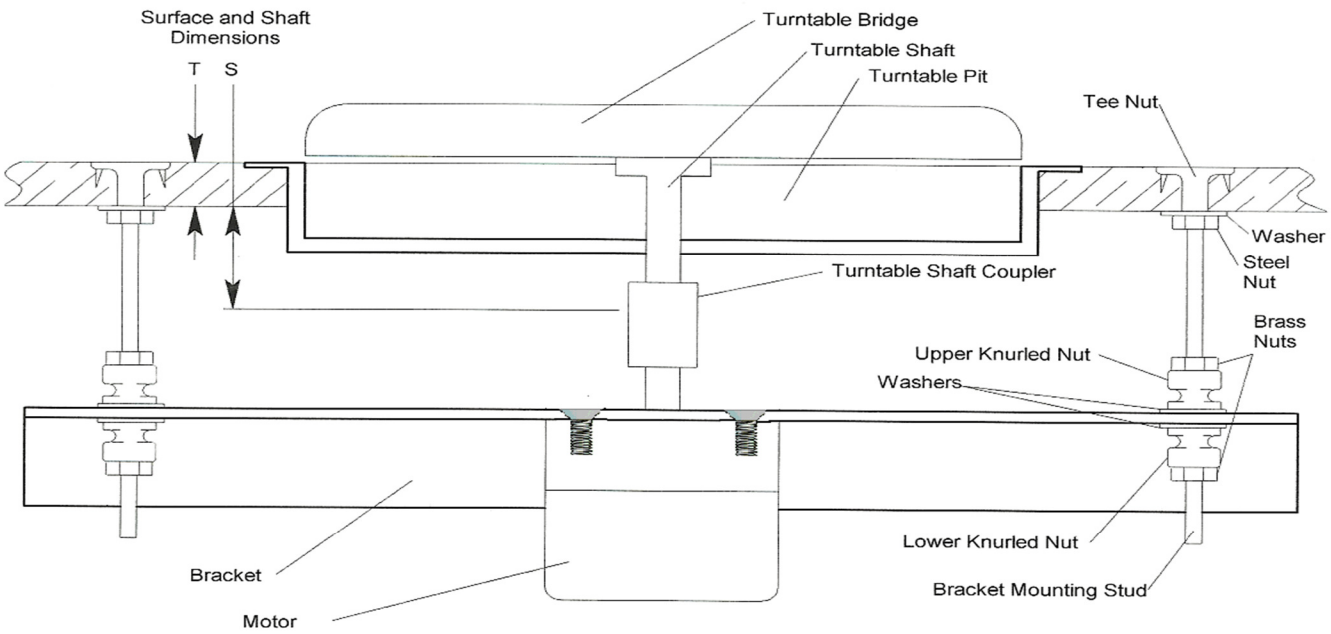

Figure 1: Motor Mount Cross Section
(Not to Scale)

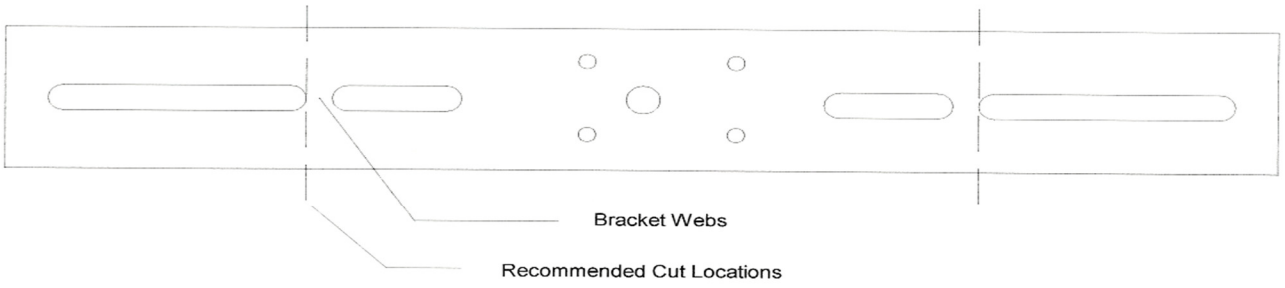

Figure 2: Mounting Bracket Top View
(Not to Scale)

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