***Application Note #2***

# Walthers® Turntable Adaptor Installation

## Extending the shaft of the Walthers® 95' HO Scale Plastic Turntable Shaft for Use With the PTC Model III Indexing System


**OVERVIEW**

This application note describes the conversion of the Walthers® 95' HO scale styrene plastic turntable kit for use with the PTC Model III Turntable Indexing System.

The standard Walthers kit does not provide an extended turntable shaft required for connection to the PTC. The objective of the modification is to install an extension to the Walthers turntable shaft so that the PTC motor can be connected to it.

It is recommended that these modifications be undertaken prior to the final painting and assembly of the turntable.

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.

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**OVERVIEW**

Completely read the instructions supplied with your Walthers turntable kit, understanding the general theory of assembly and operation. The modifications to be accomplished will include:

1) Omission of the Walthers gearing system. In particular, note the that large primary gear should **NOT** be installed. Installing the gear will prevent disassembly of the bridge from the turntable pit, if subsequent maintenance or repair of the turntable is necessary.
2) Omission of the Walthers motor drive system. However, the components of the motor drive that support the *shaft wipers* will be used. The shaft wipers provide power to the turntable bridge rails.
3) Modification of the motor enclosure to provide for an exit for the bridge extension to extend below it (for connection to the PTC motor) and an access opening to the bridge wipers for cleaning and maintenance.
4) Modification of the turntable bridge substructure (bridge girder and shaft assembly) to attach the shaft extension.

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**TOOLS REQUIRED**

The following tools will be required:

- Center punch or awl
- 1/8" drill bit
- 3/8" drill bit
- Drill press (recommended, although not strictly necessary)
- Razor saw
- Medium tooth file
- Gap filling CA adhesive, such as SloZap®

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**CONVERSION**

It is recommended that the motor enclosure modifications be completed first, then those required of the turntable substructure.

**MOTOR ENCLOSURE MODIFICATION**

The motor drive that comes with the Walthers Turntable will not be used, although the portion of the drive assemble that supports the bridge power wipers *will* be used since this is the only convenient way to get power to the bridge rails themselves. Refer to Figure 1, "Walthers Motor Enclosure, Modified" (below) to get an idea of what the final enclosure will look like.

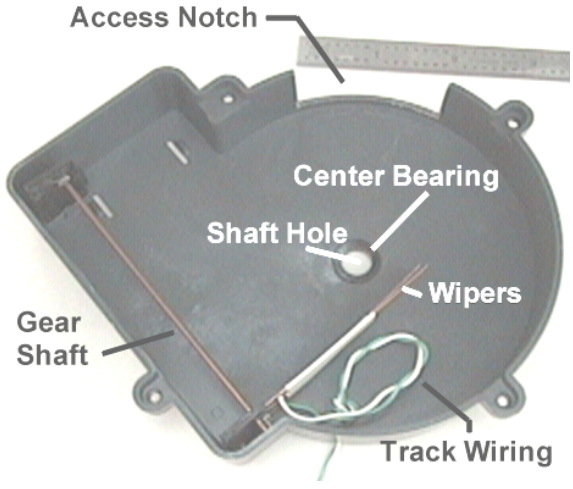


Figure 1: Walthers Motor Enclosure, Modified

The conversion can be implemented by executing the following steps:

**Drill out the motor enclosure to accommodate the extension.**

1) Turn the motor enclosure upside down on a hard surface. Using you're a center punch or awl, carefully mark the center of the circular boss that receives the black plastic center bearing.
2) Using a drill press if available, drill out the center of the bearing boss with a 3/8" bit. The objective is to create a hole big enough to clear the Shaft Extension, yet leave enough material around the rim of the boss to still seat the black plastic bearing.
3) Clean the edge of the hole, and test fit the bearing. Confirm that the hole is big enough to clear the Shaft Extension by sliding the extension through the hole with the bearing in place. ✓**Important:** Be sure that the bearing sits flat in the bearing boss.
4) Remove the black plastic bearing and set aside.

**Cut out an access notch in the side of the motor enclosure.**

5) Refering to Figure 1, mark a notch about 2" wide and 5/8" deep on the side of the motor enclosure.
6) Using your razor saw, carefully cut out the access notch. Use a file to trim and debur the edges of the notch.

**Assemble wipers and bearing in the motor assembly.**

7) Refering to Figure 1 and the standard Walthers turntable assembly instructions, install the gear shaft supports, gear shaft, shaft wipers, and wipers wires. Omit the Walthers motor and associated gearing. *Note*: The gear shaft is installed primarily to provide additional structural strength to the shaft support holding the shaft wipers. It is not otherwise needed by the PTC. ◆**Tip:** If you have some on hand, install heat shrink tubing over the bridge wipers prior to final assembly. This has been found to help prevent short circuits if the wipers become loose within the enclosure.

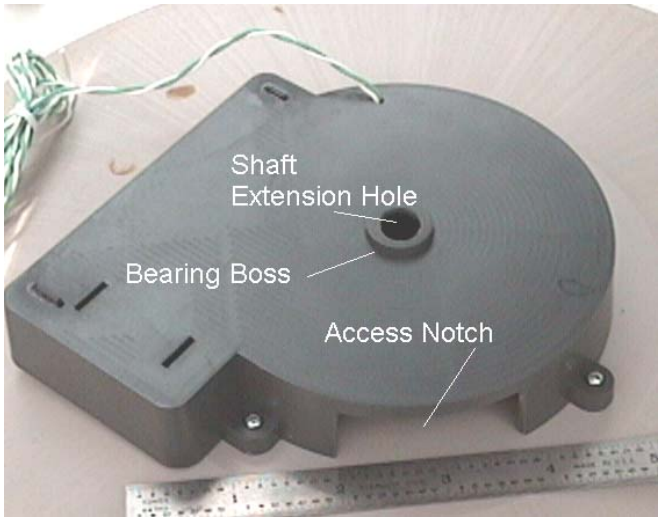


Figure 2: Motor Enclosure Installed on Turntable Pit

8) Install the black plastic bearing in the bearing boss with a small amount of gap filling CA, placing the CA in the vertical gap between the bearing edge and the side of the bearing boss. ✓**Important:** Be sure to avoid getting CA on the center surface of the bearing itself (the surface that will come in contact with the turntable shaft).
9) After the bearing CA has "set up", install the motor enclosure to the bottom of the turntable pit. Reference Figure 2. Set the pit/motor enclosure assembly aside.

**Drill out the end of the turntable shaft and install the shaft extension.**

10) Turn the turntable bridge substructure upside down on a hard surface. Using a center punch or awl, mark the center point of the end of the turntable shaft.
**11)** Using a drill press if available, drill a 1/8" diameter hole in the end of the turntable shaft. ◆**Tip:** If the end of the turntable shaft has excess flash from the styrene molding process, carefully flatten the end of the shaft with a file before marking and drilling. ✓**Important: It is essential that the end of the shaft be flat, and that the hole in the end of the shaft be drilled accurately on center.** Otherwise, it is possible that the shaft extension will not end up being perpendicular and on center with respect to the turntable shaft.

12) Carefully debur the hole, and test fit the shaft extension in the end of the turntable shaft by inserting the small machined end of the extension into the shaft. Refer to Figure 3 and Figure 4.

**Note:** The shaft extension shown installed in Figure 4 is the prototype version; your extension will look like that shown in Figure 3 and will not have a separate metal base. [*Editor's Note: a photo of the production extension installed on the turntable is not available, since removing the prototype from our test turntable by cracking the CA bond would have likely destroyed the turntable shaft.*]

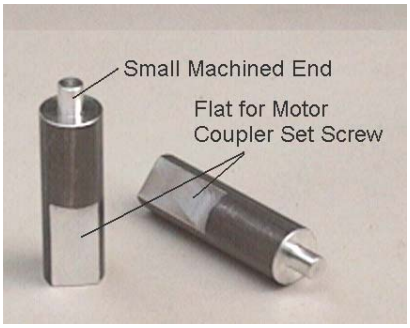


Figure 3: Walters Shaft Extension

**Note:** Figure 4 shows the bridge wiper rings installed. It is recommended that these be installed prior to installation of the shaft extension.

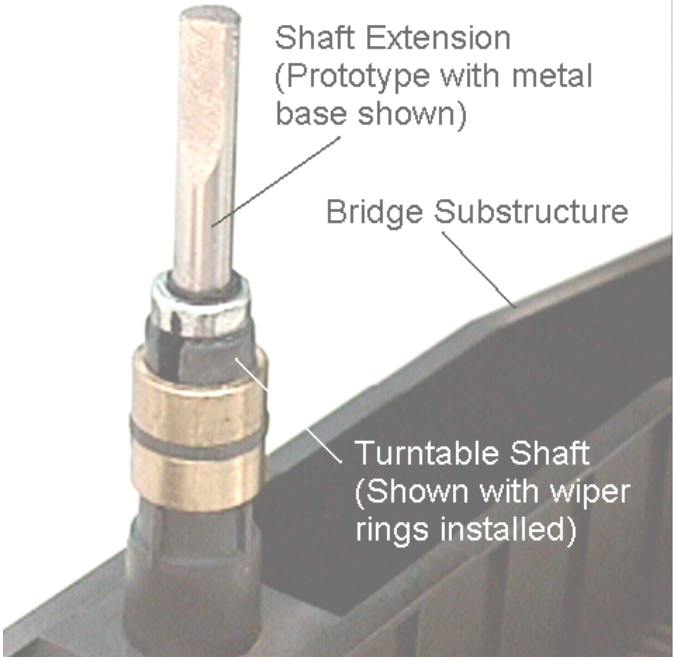


Figure 4: Turntable Bridge with Shaft Extension Installed

13) After carefully test fitting the shaft extension to the turntable shaft and checking for proper perpendicular alignment, carefully install the shaft extension with a modest amount of gap filling CA. ✓**Important: Do not let the CA run over the end (down the sides) of the turntable shaft.** The part of the shaft right at the end is the portion that rests in the black plastic bearing installed in Step 8, above. CA stuck on the sides of the shaft will produce a "bump" that will prevent the turntable shaft from turning smoothly in the center of bearing.
◆**Tip:** If you do get some CA on the side of the shaft, try to resist the impulse to wipe it off. It's better to let the glue set up first, then carefully trim it off with a razor.
◆**Tip:** If you have one available, use your drill press as a jig to hold the shaft extension in place and perpendicular to the turntable shaft. Do this by placing the turntable substructure upside down on the drill press work surface, and placing the shaft extension in the drill chuck. You can then lower the shaft extension into place very accurately, easily holding it in place while the CA sets.
14) After the CA holding the shaft extension sets up, set it aside to cure fully before proceeding.
15) After the CA has cured fully (at least 15 minutes), complete the assembly of the bridge substructure (installation of the shaft wiper rings, bridge deck, arch, etc.) following the standard Walthers instructions. ◆**Tip:** If you have some available, use of a CA accelerator will be useful in curing any CA adhesive that may ooze out and bead around the base of the shaft extension..

After the bridge assembly is completed, install the bridge into the turntable pit with the shaft extension protruding from the hole in the motor enclosure. You are now ready to attach the shaft to the PTC Motor! Refer to your PTC User's Manual to complete your installation.

## WALTHERS TURNTABLE TIP: SHAFT BRAKE

The Walthers turntable is a well made turntable, but the turntable bridge is substantially lighter than most others that the PTC was designed for. If your bridge experiences undesirable vibration while turning with no locomotive, a shaft brake will largely eliminate this problem. One as simple as a tightly sprung clothes pin can be effective. The figures below show one that we built for our turntable, which is used to demonstrate the PTC at shows and conventions. It is a nylon cable clamp (available from Radio Shack, DigiKey, etc.) mounted to a small bracket we fabricated. The bracket is held in place by one of the screws that holds the PTC motor to the Motor Mount Bracket:

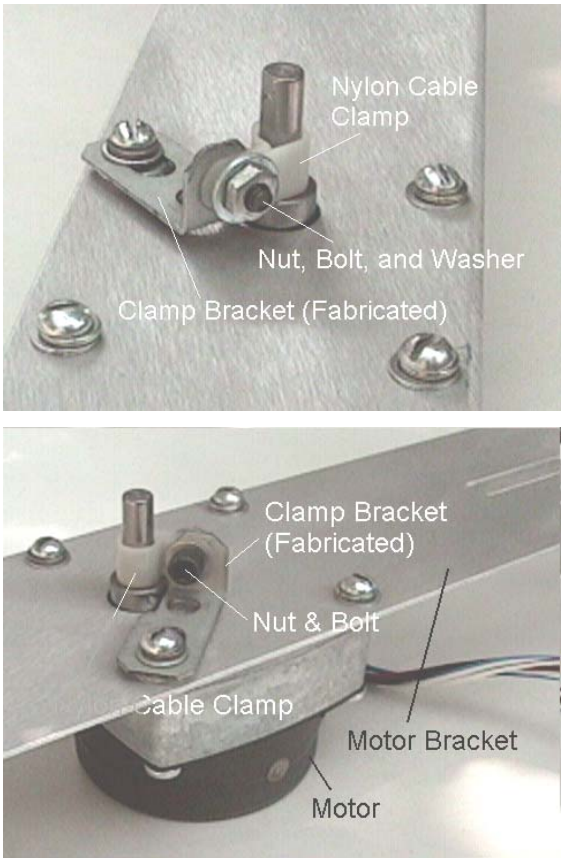


Figure 5: Walthers Shaft Brake, Top and Side Views

## FOR MORE INFORMATION

Your comment and feedback on this document are valuable and are of interest to us. To forward comments or questions, contact us at sales.service@nyrs.com, or by phone or mail at:

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