

## INSTALLATION GUIDE: PATHPILOT UPGRADE KIT

**Product Identification:** PathPilot Upgrade Kit

**Purpose:** This document gives instructions to identify the PathPilot upgrade path for Tormach controllers.

### Before You Begin

If you're not sure whether your controller will correctly function with an upgrade to PathPilot, the safest option is to purchase a new PathPilot controller from Tormach and keep your existing controller for backup.

Verify that you have the correct kit for your controller before starting modifications:

- PCI Slot Kit (PN 38708 or PN 38709): see **Figure 4** (on page 3)
- PCI-E Slot Kit (PN 38710 or PN 38711): see **Figure 3** (on page 3)

### Identify the Controller

1. Power off the controller.
2. Disconnect the controller from the machine, and examine the top of the controller. Find the Tormach part number (PN) decal.

For example: “**PN 34917**”

3. Use the following table to identify your Tormach controller:

<b>Tormach Controller Part Number (PN)</b>	<b>Upgrade Instructions</b>	<b>Special Notes</b>
34917	Requires PathPilot v2.0.x Installation USB Drive only.	Purchase a PathPilot v2.0.x Installation USB Drive (PN 38249).
31519-V (all versions with V suffix)	Identify the controller slot type by following the instructions detailed below.	Purchase a PathPilot Upgrade Kit and follow controller-specific installation instructions.
31520	Identify the slot type by following the instructions detailed below.	Purchase a PathPilot Upgrade Kit and follow controller-specific installation instructions.



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Tormach Controller Part Number (PN)	Upgrade Instructions	Special Notes
31275	Identify the slot type by following the instructions detailed below.	These controllers are 5+ years old and may exhibit sluggish response time, especially with a CNC scanner. <b>NOTE:</b> No Mach3 restore DVD exists for these controllers.
34119	Identify the slot type by following the instructions detailed below.	Purchase a PathPilot Upgrade Kit and follow controller-specific installation instructions.
Other part numbers	Upgrade not supported.	Continue to use Mach3 or purchase a new PathPilot controller.
No part number found	Contact sales@tormach.com and include name/company and machine serial number.	

- Once you've determined that your controller can be upgraded to PathPilot, remove the four screws holding the cover to the controller (see **Figure 1**).
- Move the cover off (see **Figure 2**).



Figure 1



Figure 2

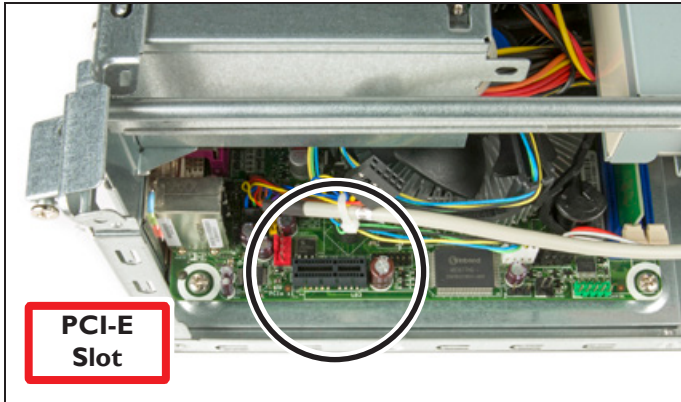


Figure 3



Figure 4

- Put the controller on its side so that either the *PCI* or *PCI-E* expansion slot is visible (see Figure 3 and Figure 4).
- Identify the slot type in your controller, and then purchase one of the following PathPilot Upgrade Kits:
  - PCI-E Slot:
    - PathPilot 2.0 Upgrade Kit, PCNC 1100 (PN 38710)
    - PathPilot 2.0 Upgrade Kit, PCNC 770 (PN 38711)
  - PCI Slot:
    - PathPilot 2.0 Upgrade Kit, PCNC 1100 (PN 38708)
    - PathPilot 2.0 Upgrade Kit, PCNC 770 (PN 38709)

## Install the PathPilot Upgrade Kit

- Remove the protective PCI slot cover from the back panel of the controller (see **Figure 5**).
- Remove the cover hinge retaining screw and swing the hinge open (see **Figure 5 inset**).



Figure 5

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3. Insert the new controller card into the empty PCI or PCI-E slot. Push down firmly to seat the card (see **Figure 6**).

**NOTE:** If necessary, carefully move wiring to make room to insert the new card.

The card is fully seated when the gold contacts are buried in the plastic header and the mounting tab is flush with the hinge on the rear panel (see **Figure 6** and **inset**).

**NOTE:** **Figure 6** shows a PCI slot and card — the procedure is the same for the smaller PCI-E slot.

4. Close the hinge and re-attach the cover hinge retaining screw.
5. Move the cover back onto the controller.

Verify that the tabs on the cover move under the slots in the plastic front panel and the back side of the controller. Take care to properly align the cover. Don't force the cover if it's not engaging the slots.

## Convert from Mach3 to PathPilot

1. With the controller powered off, disconnect the DB-25 cable from the native parallel port and connect it to the mill interface port as shown in **Figure 7**.

Remove any decals from the mill interface port before making the connection.

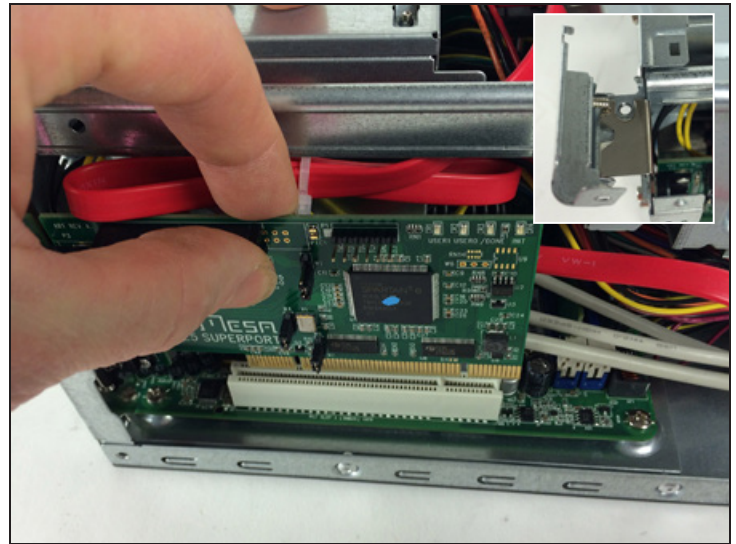


Figure 6



Figure 7



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**NOTICE! Installation of this software completely erases the existing operating system. You must save important files to a USB drive or external hard drive. If you don't, there's a risk of total data loss.**

2. Power on the controller.  
Mach3 starts automatically.
3. Close Mach3 and return to the desktop.
4. Save any important files to a USB drive or an external hard drive.
5. Double-click the clock (in the lower right-hand corner of the screen) to verify that the date and time are correctly set.

**NOTE:** Some upgrades have failed when the controller's BIOS detects the current time is before the timestamp of the files which will be installed with the new operating system.

6. Put the PathPilot v2.0.x Installation USB Drive into the controller and restart the controller.
7. Follow the default options and select **Yes** or **OK** on all dialog boxes.

**NOTE:** If the controller boots back to Windows/Mach 3, check the boot order setting in the BIOS (hold F2 on startup) and make sure that the optical drive (DVD drive) is first in the boot order.

8. At the end of the installation process, a prompt to remove the PathPilot v2.0.x Installation USB Drive and restart the system displays.

Remove the PathPilot v2.0.x Installation USB Drive. Then, power the controller off and back on.

9. From the Tormach Machine Controller Configuration screen, select the machine that you're using with the PathPilot operating system (see **Figure 8**).

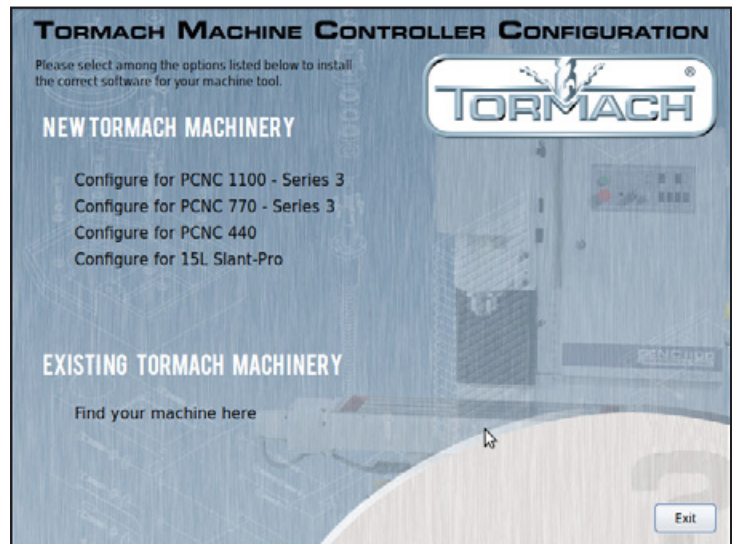


Figure 8

10. After choosing the configuration, the hardware card may require re-programming with new firmware.

If the dialog box shown in **Figure 9** displays, select **OK** to flash new firmware. Firmware flash will require a restart, and on-screen instructions will prompt you to power off the controller.

11. After restarting, the new software loads.

12. Before using PathPilot, verify that all of your accessories — like an automatic tool changer (ATC) — are enabled on the **Settings** tab.

For more information, see the machine operator's manual (for the most recent version, see [tormach.com/support](http://tormach.com/support)).

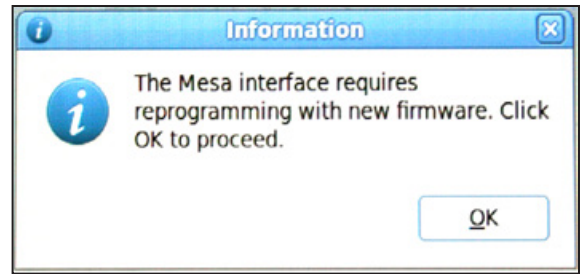


Figure 9

## Troubleshooting

**Problem:** After inserting PathPilot v2.0.x Installation USB Drive and restarting controller, it restarts back to Windows/Mach 3.

*Solution:*

Enter BIOS (press F2 on startup) and make sure that the optical drive (DVD drive) is first in the boot priority order.

**Problem:** After installing the new operating system, controller boots to a black screen.

*Solution:*

Verify that the time is set correctly in BIOS. If the controller perceives the files you just installed as part of the operating system install are in the future, it fails to load the operating system.

**Problem:** After installing the new operating system, the controller fails to boot.

*Solution:*

Verify that the hard drive mode in BIOS is set to AHCI and not IDE. Enter BIOS by pressing F2 on startup, go to the drive configuration tab, and then choose AHCI.