

TECHNICAL DOCUMENT

DRIVE REPLACEMENT INSTALLATION

Product Identification: Axis Drive (PN 32793)

Purpose: This document details axis drive replacement on a mill and 4th Axis drive installation on a mill.

IMPORTANT! Depending on the application (ATC, X-, Y-, Z-, or A-axis), DIP switch settings are different from the factory-installed drive. Do not power on drive before verifying DIP switch settings and wire connections. Failure to do so could result in damage to the replacement drive.

This document is only applicable to:


- PCNC 1100 serial number 001-1999
- PCNC 770 serial number 70000-70199
- Tormach Automatic Tool Changer (ATC)
- Tormach 4th axis kit

If the factory-installed equipment has been upgraded to poly-phase (series 3) axis drives, this drive is not a replacement for X-, Y-, or Z-axis drives. Use the wiring and DIP switch settings detailed in this document; do not refer to those in the original *Operator Manual*.



Installation

- 1. Power off mill according to *Power On/Off Procedure* detailed below.

 **WARNING! Electrical Shock Hazard:** Be sure to power off machine before making any electrical modifications. Failure to do so may result in serious injury or death.

Power Off/On Procedure

Power Off	1. Push red E-stop button in
	2. Click <i>Exit</i> on screen; when prompted click <i>OK</i> to power off
	3. Turn Main Disconnect <i>Off</i> (see image at right)
Power On	1. Turn Main Disconnect <i>On</i> (see image at right)
	2. After software loads, turn red E-stop clockwise to release
	3. Press green <i>Start</i> button
	4. Click <i>Reset</i> on screen



- 2. Identify and remove the axis drive in need of replacement from the electrical cabinet.
- 3. Remove the Connector Plug and Ribbon Cable from the old axis drive (see **Figure 1**).

IMPORTANT! Depending on the application (ATC, X-, Y-, Z-, or A-axis), DIP switch settings are different from the factory-installed drive. Do not power on drive before verifying DIP switch settings and wire connections. Failure to do so could result in damage to the replacement drive.

- 4. Match settings on DIP switch (see **Figure 1**) as detailed in *DIP Switch Settings* section later in this chapter.

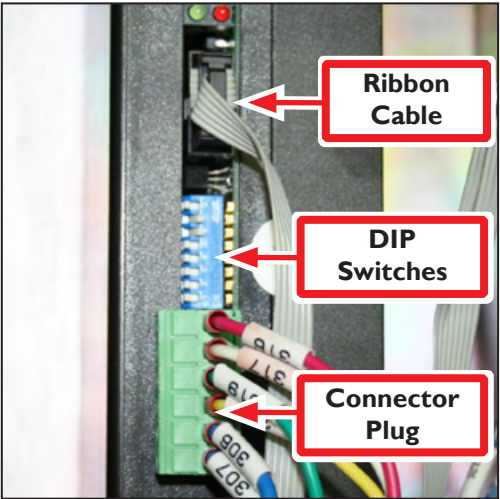
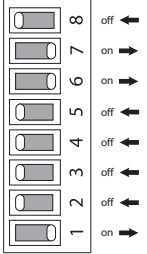
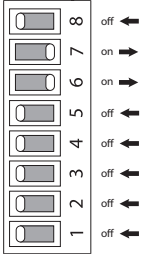
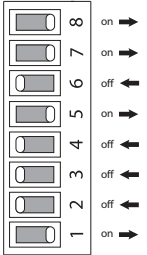


Figure 1

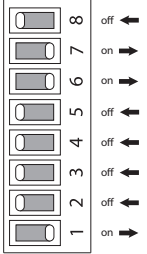
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DIP Switch Settings

PCNC 1100 or PCNC 770

Drive Replacement	Motor Settings	Dip Switch Settings
X-, Y-axis PCNC 1100	<ul style="list-style-type: none"> Set current = 5.4 A Set idle current mode = <i>half current</i> Set microsteps = 2000 pulses/rev 	
Z-axis PCNC 1100	<ul style="list-style-type: none"> Set current = 6.0 A Set idle current mode = <i>half current</i> Set microsteps = 2000 pulses/rev 	
X-, Y-, Z-axis PCNC 770	<ul style="list-style-type: none"> Set current = 5.4 A Set idle current mode = <i>half current</i> Set microsteps = 1600 pulses/rev 	

4th Axis Kit

Drive Replacement	Motor Settings	Dip Switch Settings
4th axis NEMA ¹ 34 motor (8" Standard or 8" Tilting Rotary Table; 6" and 8" Super Spacer Rotary Tables)	<ul style="list-style-type: none"> Set current = 5.4 A Set idle current mode = <i>half current</i> Set microsteps = 2000 pulses/rev 	

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4th axis NEMA ¹ 23 motor (6" Standard or 6" Tilting Rotary Table)	<ul style="list-style-type: none"> Set current = 4.3 A Set idle current mode = <i>half current</i> Set microsteps = 2000 pulses/rev 	
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¹National Electrical Manufacturers Association

ATC

Drive Replacement	Motor Settings	Dip Switch Settings
ATC carousel PCNC 1100 or PCNC 770	<ul style="list-style-type: none"> Set current = 3.2 A Set idle current mode = <i>full current</i> Set microsteps = 1600 pulses/rev 	

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5. Match drive pin function printed on the front of the replacement drive (see **Figure 2**) to corresponding wire number (see **Figure 3**). For additional details, see table below.

			Wire Number				
Motor Connections		Pin Function (on drive)	X-axis	Y-axis	Z-axis	A-axis (4th axis)	ATC
	A	A+	308	312	316	320	511
	B	A-	309	313	317	321	510
	C	B+	310	314	318	322	509
	D	B-	311	315	319	323	508
PCNC 1100							
Power Connections	E	+V (AC)	302	304	306	325	506
	F	GND (AC)	303	305	307	324	507
			PCNC 770				
	E	+V (AC)	163	165	167	170	506
	F	GND (AC)	164	166	168	169	507

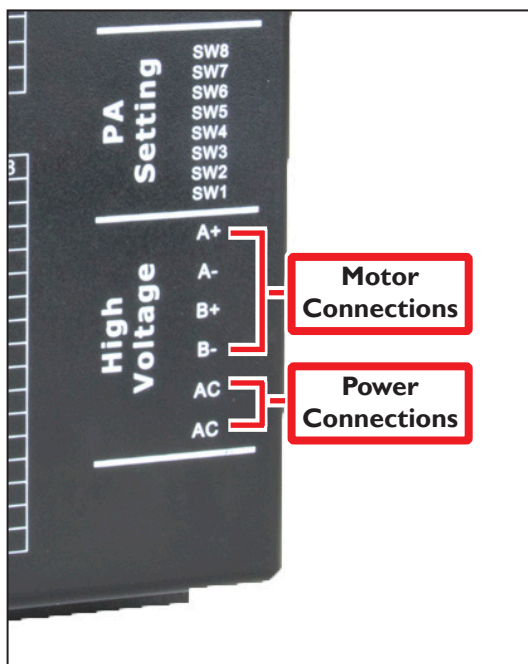


Figure 2

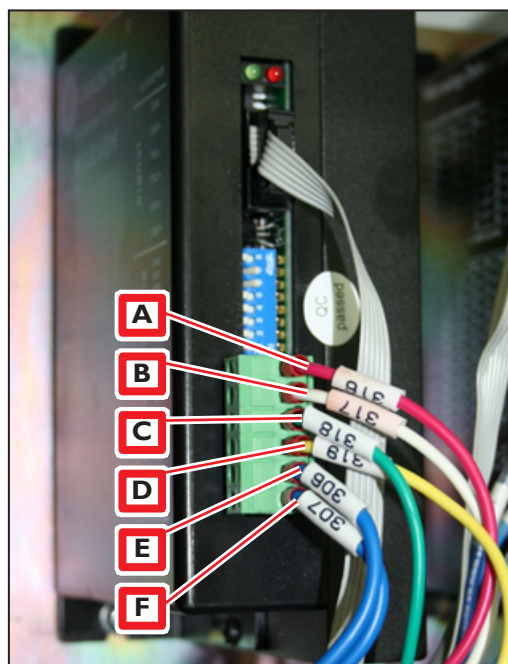


Figure 3

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Troubleshooting

Problem	Cause
Axis moves in opposite direction from commanded motion	Motor coils are reversed; switch A+ with B+ and A- with B-
Motor overheats	Current setting incorrect; check DIP switch settings
Axes moves different amount from commanded motion	Pulse/Rev setting incorrect; check DIP switch settings
Axis moves in one direction correctly, but shutters in the other direction.	Current setting incorrect; check DIP switch settings