# EMCO Original Board for PC turn tool Turrent – rewired for a CNC control board BOB

**DC Motor**

A1

A2

FWD = +12VDC (Relay 2 NO);
'REV = GND (Relay 2 NC)

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REV =+12VDC (Relay 2 NC)

**X2 Tool Turret Motor** 3 2 1

**External relay 1 (SPST) to switch on 24VDC – ACTIVATE TOOL TURRET**

1. 24 VDC (0.2A) connected to C1,
2. NO connected to X1 pin 2
3. Relay must have low current TTL (5VDC to 24VDC) control signal from CNC BOB - **OUTPUT1**

Relay NC = +24VDC

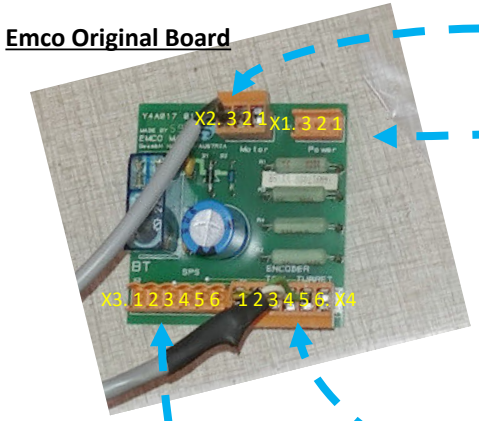
GND

**24 VDC Supply**

Pre-connected and converted to +12 VDC on Emco board

Pre-connected on original Emco board

**Emco Original Board**




## X1 Turret 24 VDC power

1. Board drops this to 12 VDC for DC motor.
2. 24 VDC used for the board relay used to reverse the motor. DC voltage is reduced through the board

POWER Supplies +5VDC for 2 optical encoders

GND (Shield) to encoder

5VDC to encoder

Pre-connected on EMCO board

Pre-connected on EMCO board

**External relay 2 (SPST) to reverse A1 and A2**

1. 24 VDC (0.2A) connected to C1 from relay 1 already
2. NO connected to X3 pin 6
   a. forward when not switched on
   b. Reverse when switched on (holds tool on internal pawl)
3. GND from supply already connected to X1 pin 1
4. Relay must have low current TTL (5VDC to 24VDC) control signal from CNC BOB - **OUTPUT2**

**INPUT2 -BOB**

**INPUT1 -BOB**

1 2 3 4 5 6

GND +5VDC

**5 VDC Supply**

**X4 Tool Turret encoder** 1 2 3 4 5 6

Output Signal from 2 optical encoders

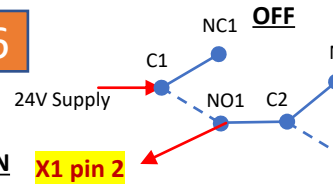
Probe from encoder (all tool pos)

Sync from encoder (tool 1 pos)

Pre-connected on EMCO board

Pre-connected on MCO board

**Relay connections**




**OUTPUT1 – H1 & GND**
**OUTPUT2 – H2 & GND**

**24V to C1, NO1 to X1 pin 2**
**LINK NO1 to C2**
**NO2 to X3 pin 6**

## X3 SPS

2 Signals here are available here (pin 4 and 5) from encoder:

**1. Strobe (pin 4)** = signal 5VDC when each tool Optical encoder passes each tool position (6)

**2. Sync (pin5)** = signal 5VDC when tool position 1 passes another optical encoder

## Relay example

https://oceancontrols.com.au/RLD-242.html

**Connections:**

| | |
|---|---|
| Vs | +12V or +24V Power Connection |
| L1 | Relay 1 LO Input |
| H1 | Relay 1 HI Input |
| L2 | Relay 2 LO Input |
| H2 | Relay 2 HI Input |
| GND | Common Ground Connection |

| | |
|---|---|
| NC1 | Relay 1 Normally Closed Connection |
| C1 | Relay 1 Common Connection |
| NO1 | Relay 1 Normally Open Connection |
| NC2 | Relay 2 Normally Closed Connection |
| C2 | Relay 2 Common Connection |
| NO2 | Relay 2 Normally Open Connection |