

Note 1: Black Line is 24V supply available when 24V power is latched. This is SOURCE LOGIC. Relays and logic terminals are energized using the External 24V Power Supply. The VFD 24V power is NOT used.

Note 2: JOG supply is only available in NC relay position (Relays are OFF). Both, Forward and Reverse Relays have to be off for JOG to function. When either, Forward or Reverse Relays, are energized, the JOG supply is cut off. Follow the black 24V latched supply from the Power Relay.

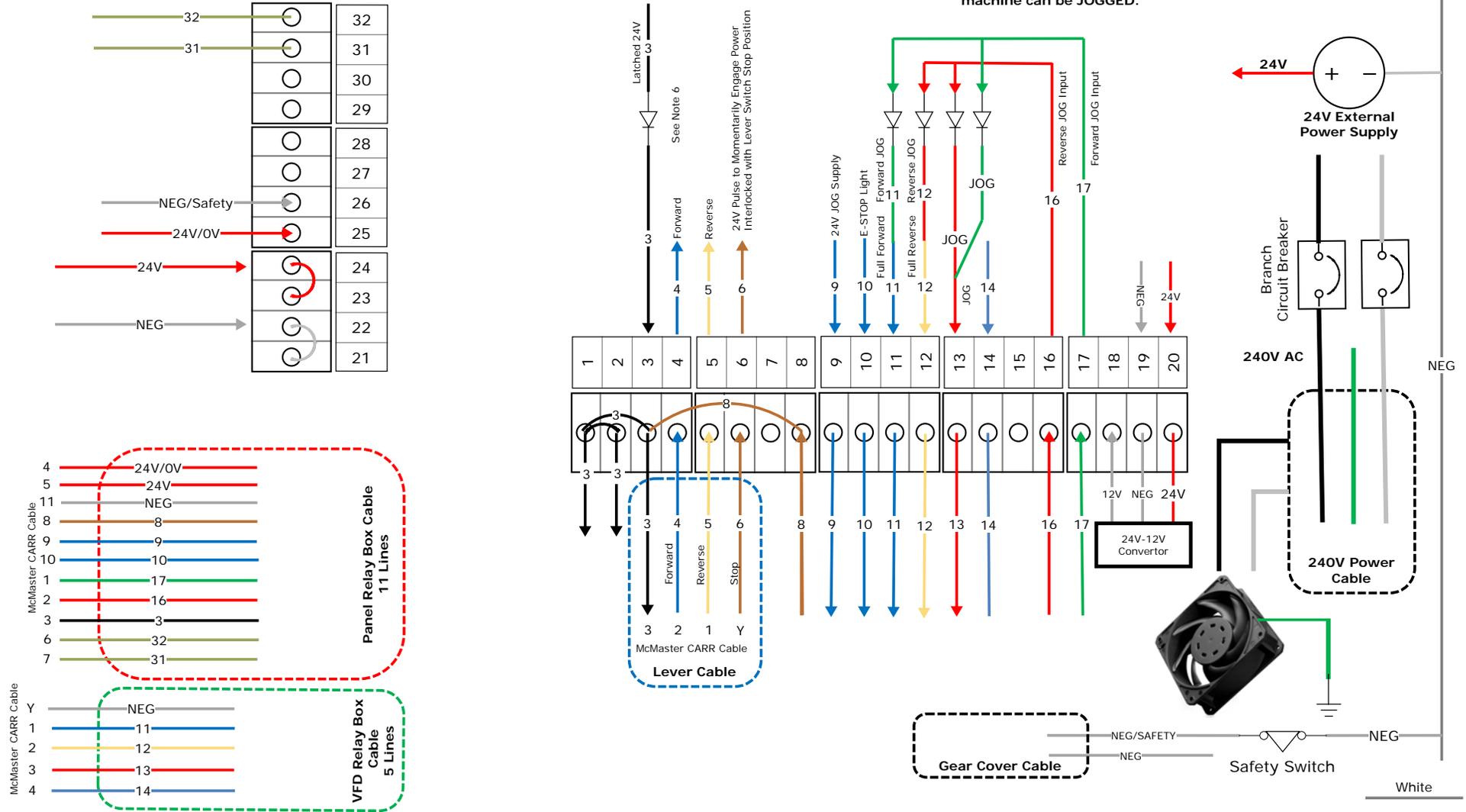
Note 3: Line 14 (STOP NO RESTART). From the Programming Notes by Mark, this will inhibit the VFD after an E-Stop from restarting. This is a similar problem to what I had to deal with when a restart with the Lever engaged, will cause an immediate rotation of the spindle. I solved this problem already by having the NEG for the forward and reverse relays latched through one of the power relay contacts. To do this right, I had to put a diode on the Latching line 3. You need to study the signal paths for this particular case to understand the problem and the solution. None the less, my previous reservations about line 14 are contradicted by Mark's notes. I still don't know what resets the VFD after an E-Stop. I wired 14 to test it during full implementation.

Name:	PM1340 Lathe Control Panel Design	Drawing:	001	Project:	18-F1006	Drawn:	Salah Zenieh	Notes:	Based in part on Mark Jacobs design ideas on hobbiymachinist.com	NCTronics Inc. Motion Dynamics and Control 1881 Rosebella Avenue Ottawa, Ontario K1T 1G6
Cat:	Machine Shop	Scale:	N/A	Date:	March 12 2019	Rev:	1.0			

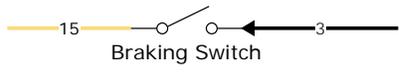
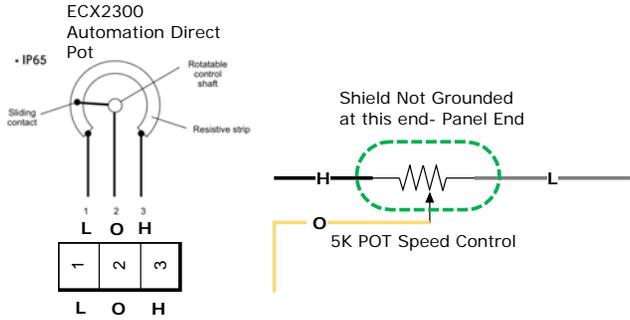
Note 4: Diodes. You need the diodes on the JOG line. During JOG, they keep Lines 11 and 12 separate/isolated. You also need two diodes on Line 11 and 12. When Full Forward or Reverse, diodes isolate the JOG switch from 24V coming on either line 11 or 12. JOG switch also does not get 24V from the relays in full speed motion as the relays, when energized, cutoff 24V JOG Supply.

Note 6: The diode on line 3 as well as the latching of "Latched NEG" through the relay is to make use of the lever Stop position following an E-Stop. Without these two interlock features, the machine will continue to operate after an E-Stop is cleared if the lever remained in, either the forward or the reverse positions. This is an important safety feature.

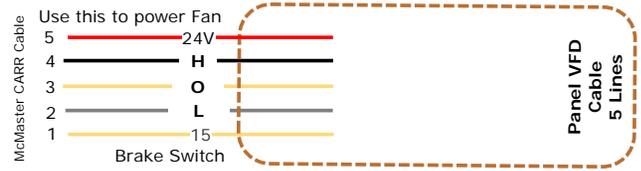
Note 5: (9) is supplied by 24V (Port 1 NC Reverse Relay). JOG will only be available if reverse relay is **inactive** (NC Port). Sequentially, the reverse relay (1 NC) is fed through (1 NC) Forward Relay. So, JOG can only happen if both Relays are **inactive**. The forward relay gets (24V-Latched) from (Port 8 NO) Power Relay. This will supply the (24V-Latched) only when Power Relay is turned on. So, as soon as Power is Latched, machine can be JOGGED.



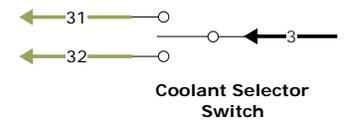
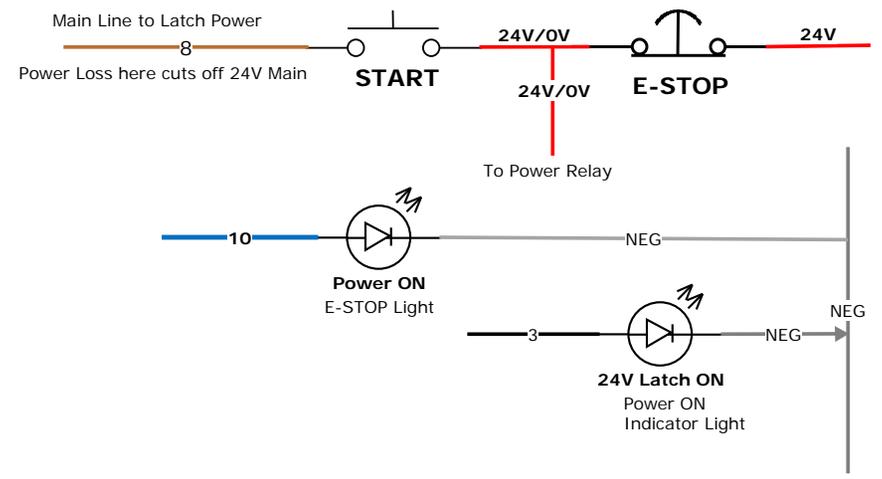
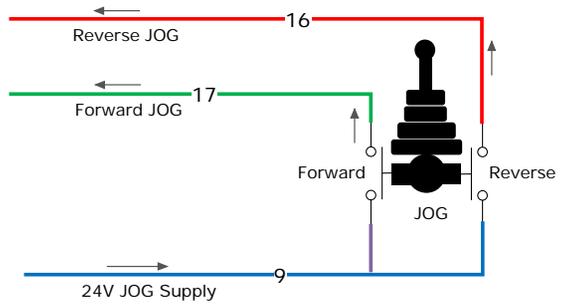
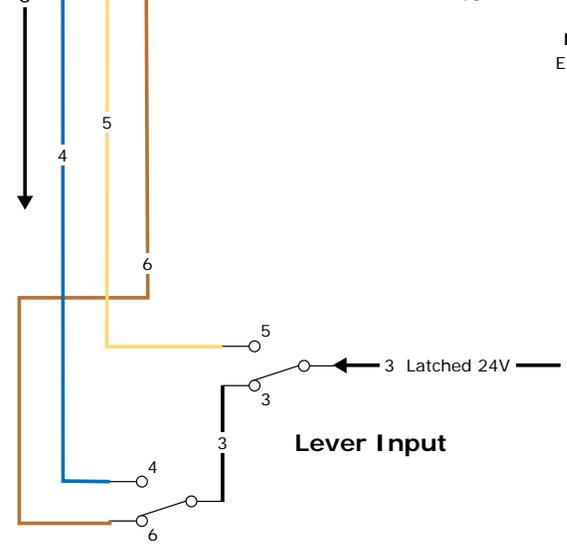
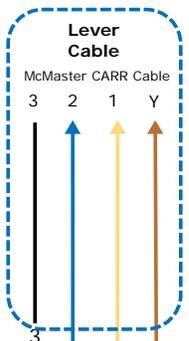
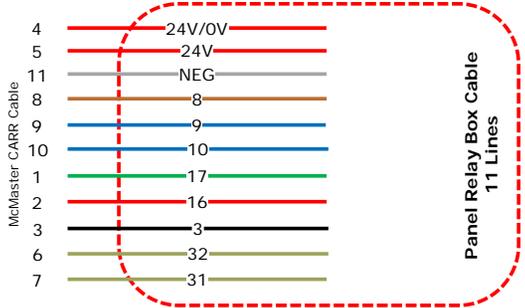
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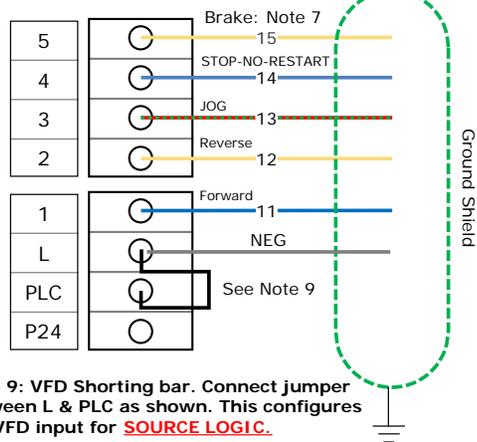
Note 7: Braking Switch:
 SW Closed = 2 Stage Braking (3 sec)
 SW Open = 1 Stage Braking (1 sec).
 E-Stop is 1 Stage Braking.



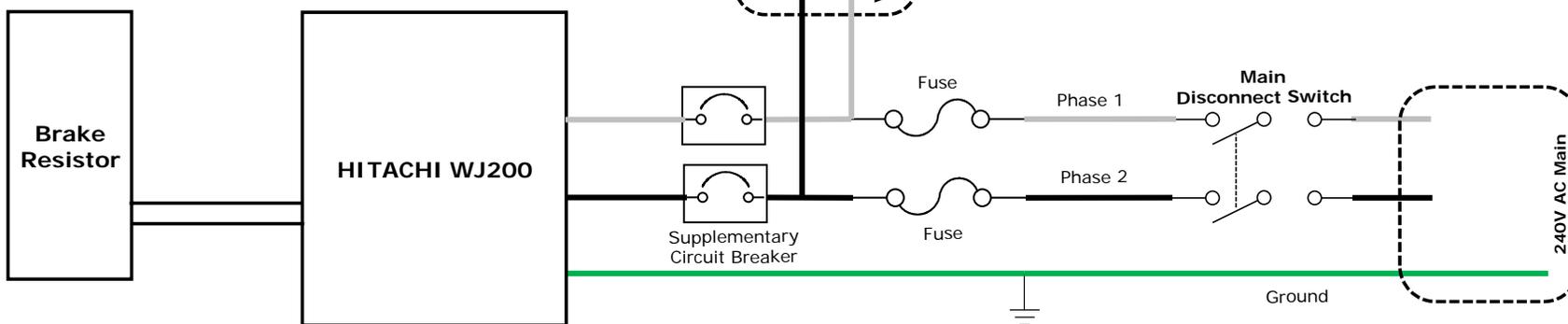
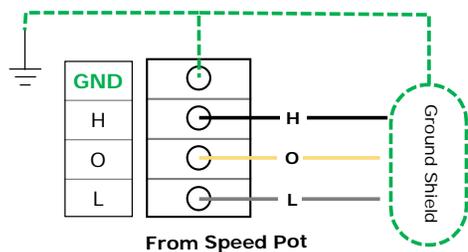
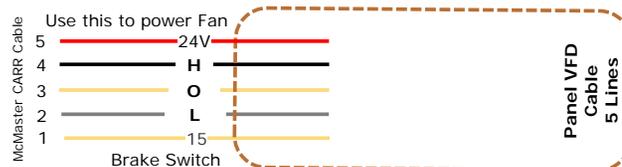
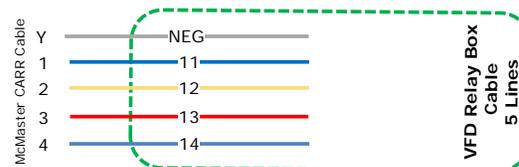
Note 8: Speed Control Pot + Brake + 24V. Use 5 conductor shielded cable. Ground shield wire at VFD terminals only.



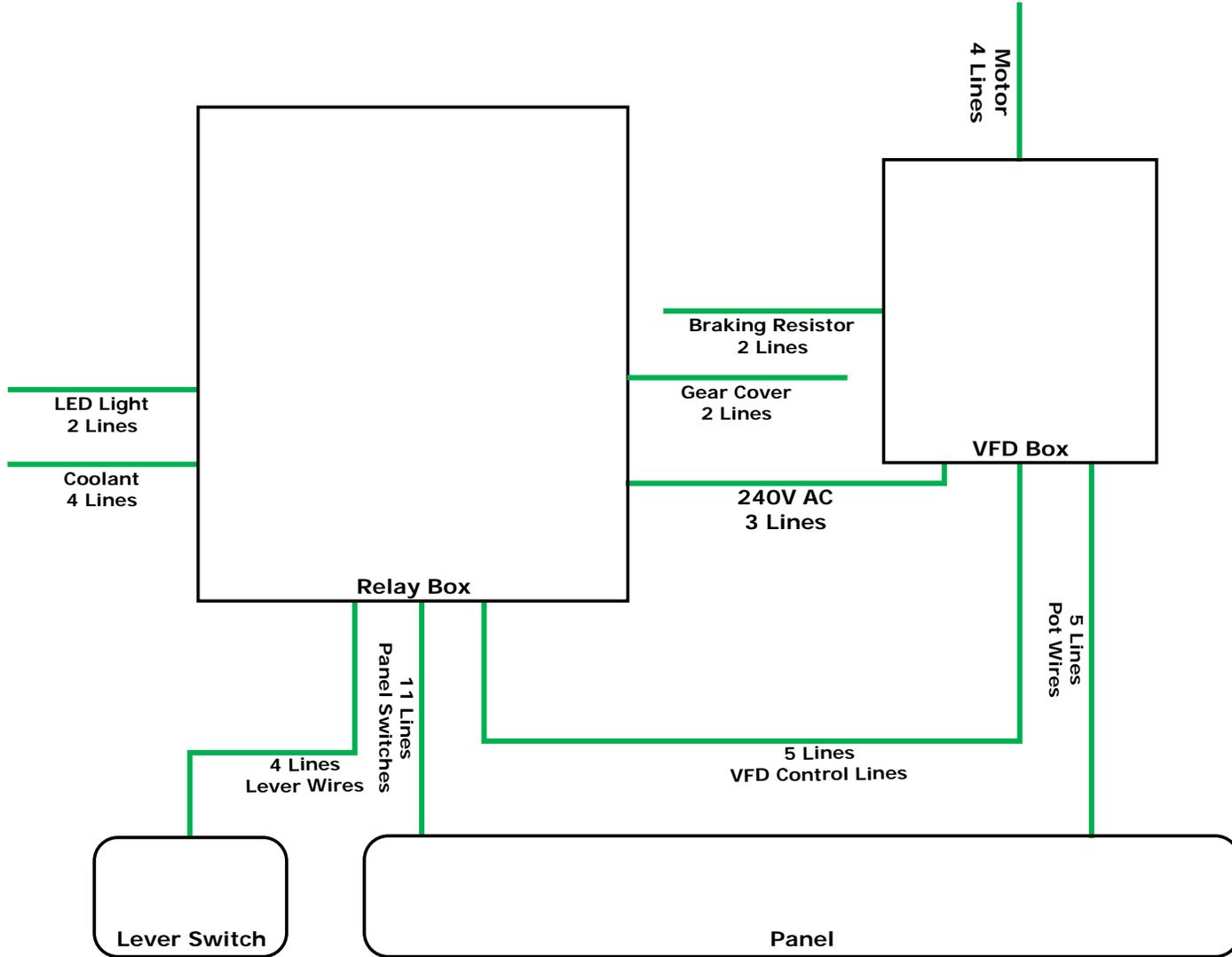
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Note 9: VFD Shorting bar. Connect jumper between L & PLC as shown. This configures the VFD input for **SOURCE LOGIC**.



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