

PM1340GT VFD Wiring Diagram for Hitachi WJ200 E-

Stop safety, FOR/REV JOG

Note: VFD P24 Max. current is 100mA, the relay and LED PWR light is ~80mA. **Incandescent bulbs draw too much**
 Relay: 784-4C-24D (4 pole, 24 VDC)
 Relay Socket: 784-4C-SKT-1
 Lighted JOG Switch GCX1202-24L 24 VDC LED Green pushbutton, 22mm metal, momentary SW with guard
 Solid state optical trigger relay 20A; Omron G3NA-220B, AD-SSR810-DC-28Z or similar (must draw <10mA)
 Speed pot: 5KΩ ECX2300-5K.
 Brake Resistor Required: 50Ω, 300-500W



Diode 1N400X type: 1N4004
 LED, 24VDC (use terminals on switch if lighted SW used.
 Note + and - polarity wiring)



Normally Open SW



Normally Closed SW



Control box



VFD Connections



Front Panel Connections



FOR/STOP/REV Connections

● Wires connected

— White Wires

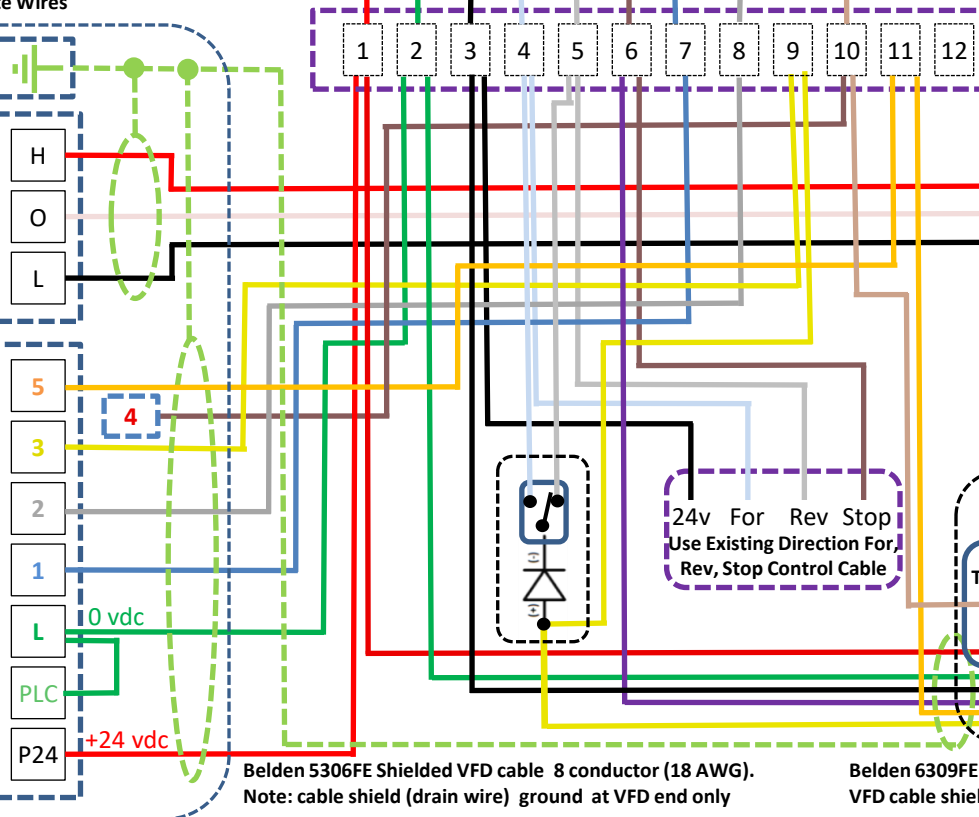
Speed Control
 Use 4 conductor shielded cable (green wire is not used). ground cable shield on this VFD end only

Input Terminal 5:
 SW Closed 2 stage braking (3 sec)
 SW Open 1 stage braking (1 sec.) E-Stop & Prox. Stop is 1 stage only

Optional:
 Input 4 = STOP and red light goes on

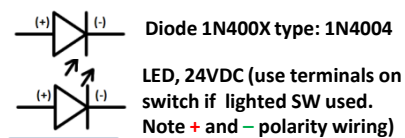
Input 3 = JOG
 Input 2 = Reverse
 Input 1 = Forward

VFD Shorting bar, remove stock blue wire: connect green wire as shown make sure this is correct



Belden 5306FE Shielded VFD cable 8 conductor (18 AWG).
 Note: cable shield (drain wire) ground at VFD end only

Belden 6309FE Shielded Control Cable 12 conductor (18 AWG), cable shield is connected to VFD cable shield (do not ground at control box).



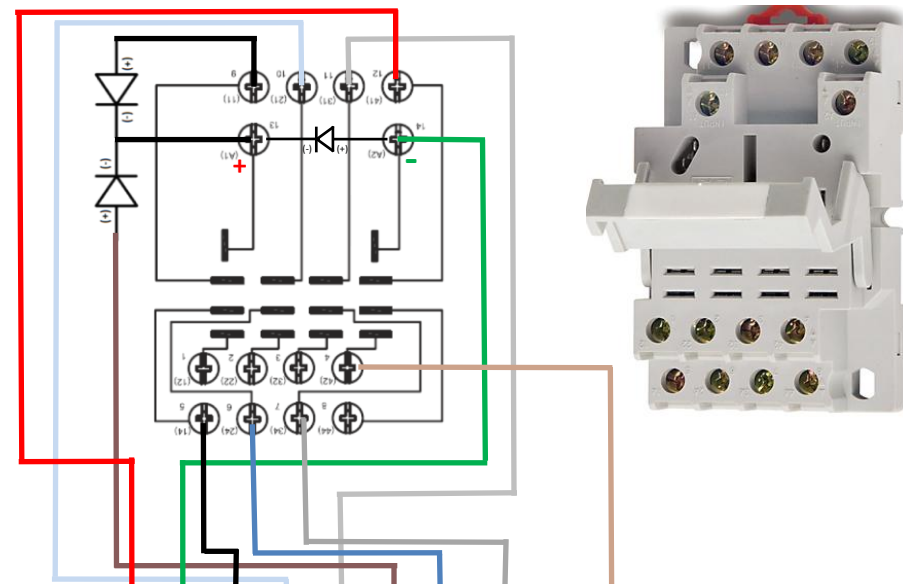
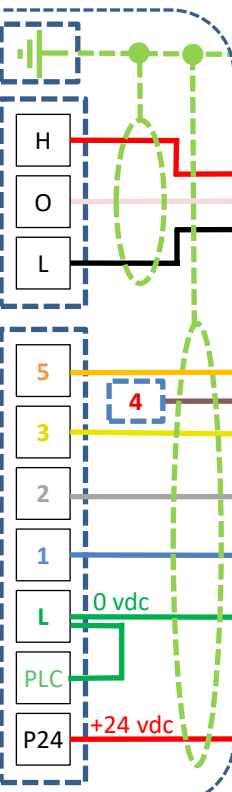
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PM1340GT VFD Wiring Diagram for Hitachi WJ200 PREWIRED

Proximity Limit SW, E-Stop safety, FOR/REV JOG

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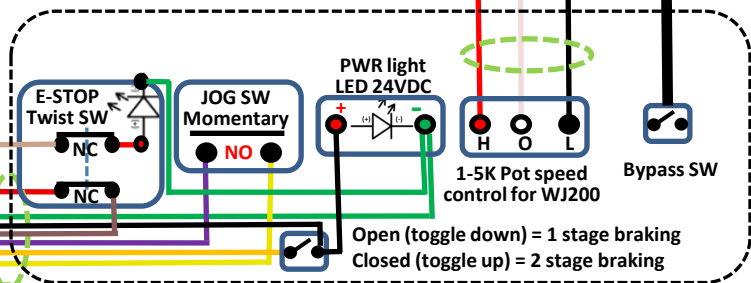
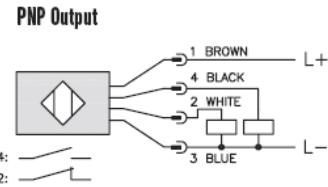
Speed pot: 5KΩ ECX2300-5K.

Brake Resistor Required: 50Ω, 300-500W

Proximity Switch: PNP, NC, 10-30VDC, 200mA

Automation Direct PFK1-BP-3H Cable: EVC178

Proximity SW must be: PFK1-BP-3H



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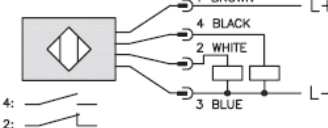
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Wires connected

White Wires

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 Use 4 conductor shielded cable (green wire is not used). ground cable shield on this VFD end only

Input Terminal 5:
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VFD Shorting bar, remove stock blue wire: connect green wire as shown make sure this is correct

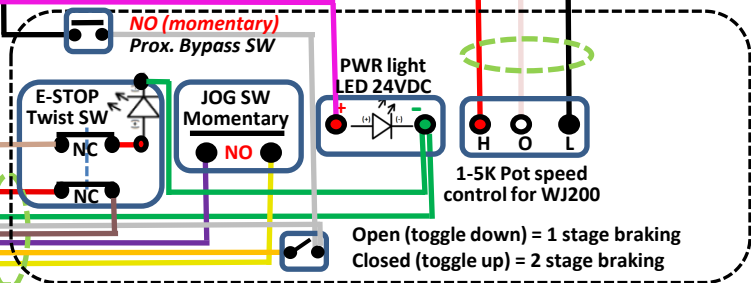
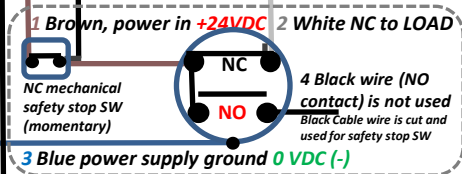
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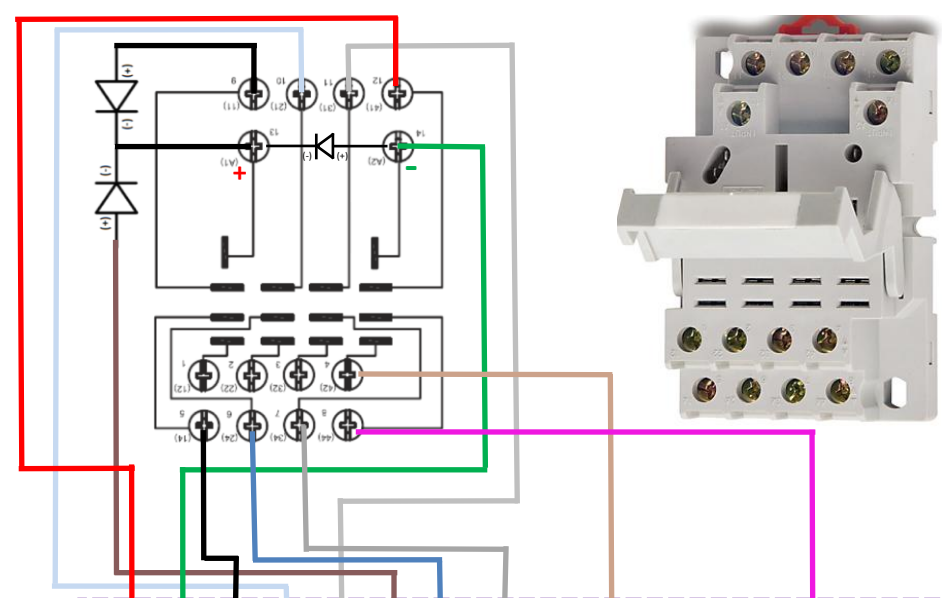
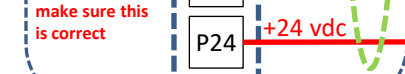
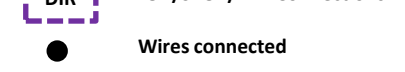
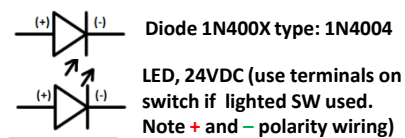
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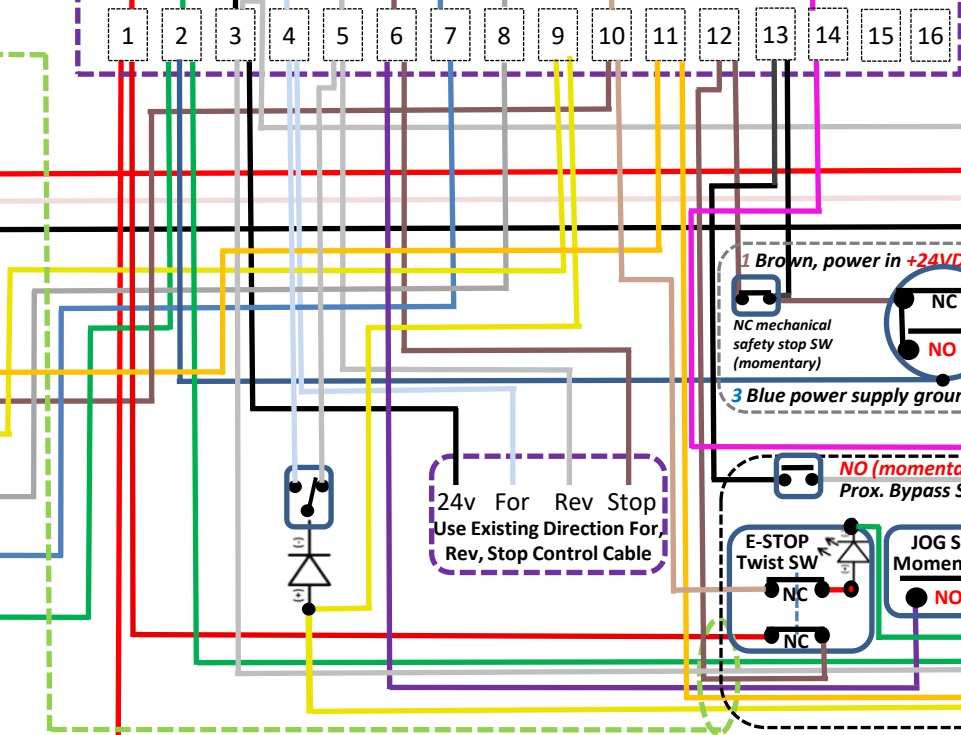
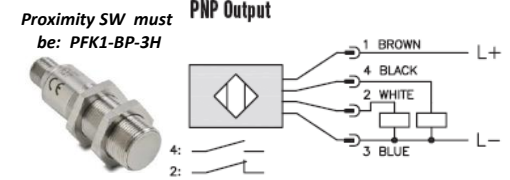
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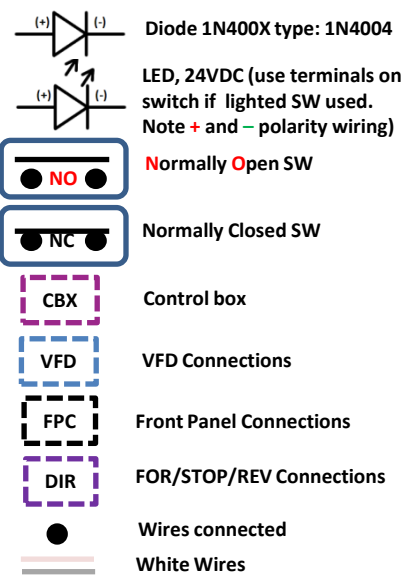
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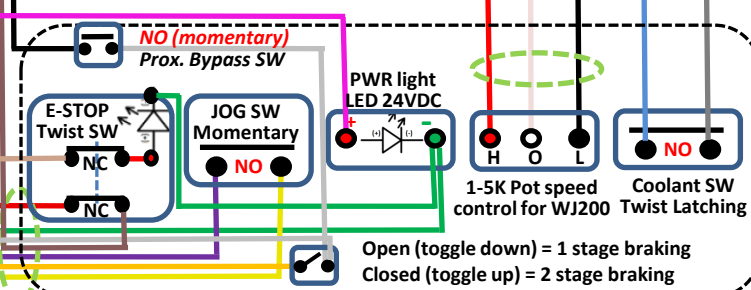
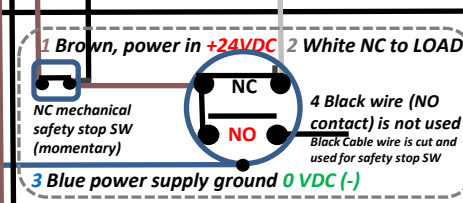
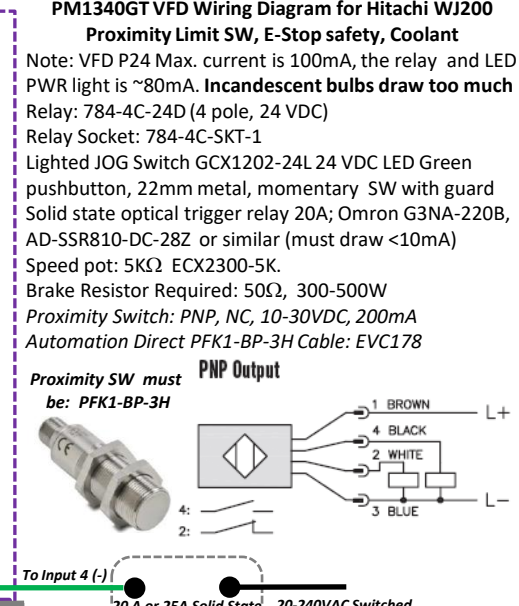
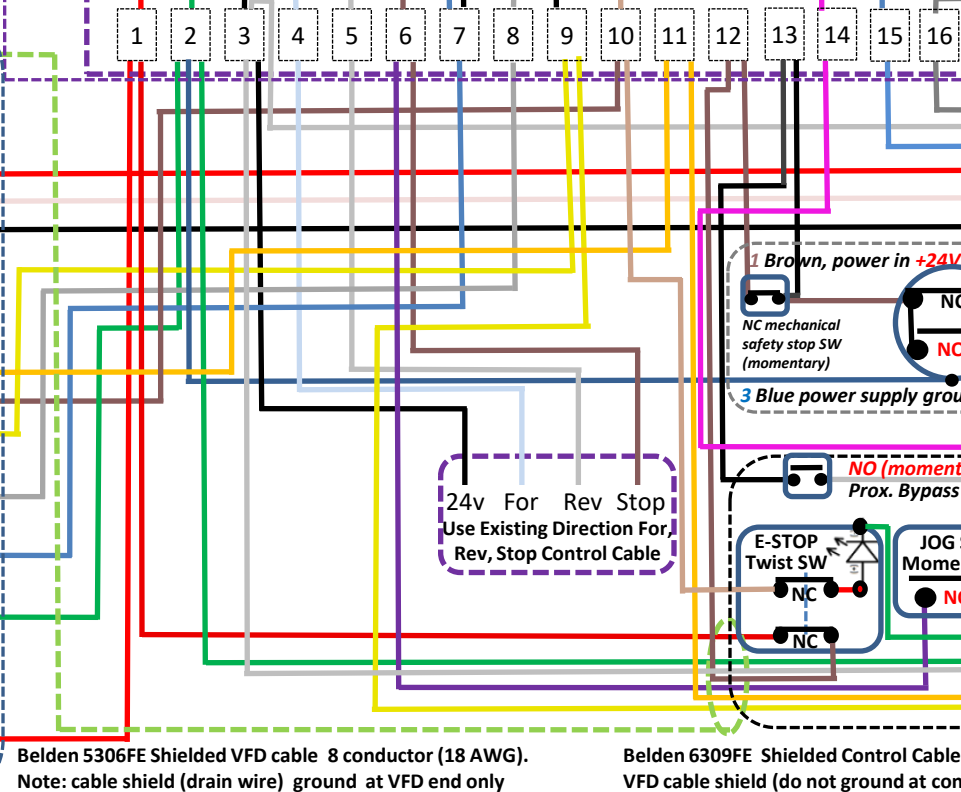
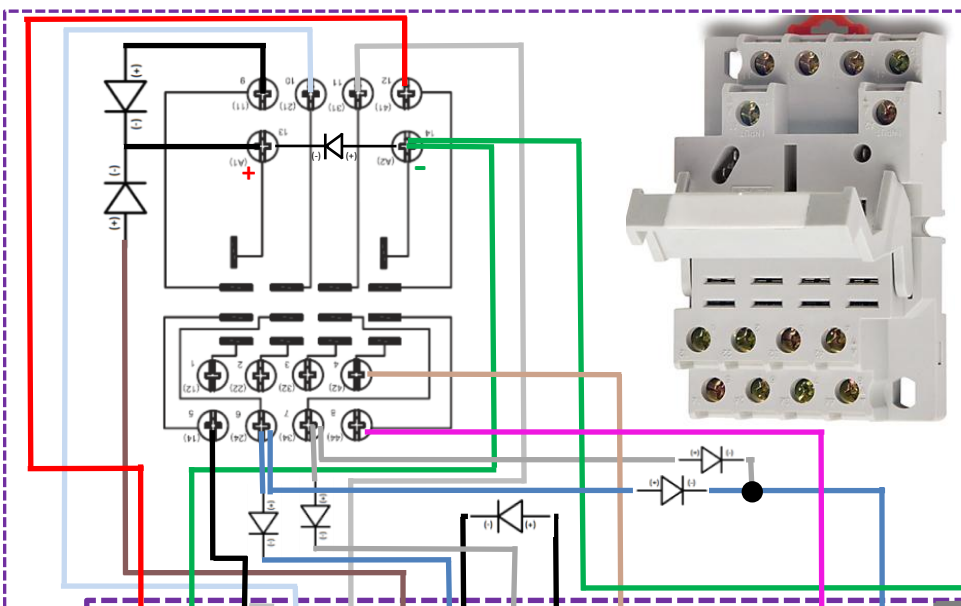
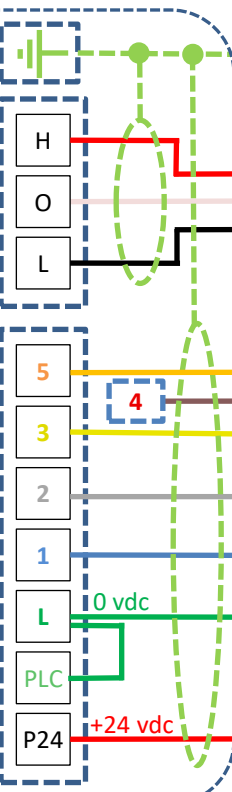
Speed Control
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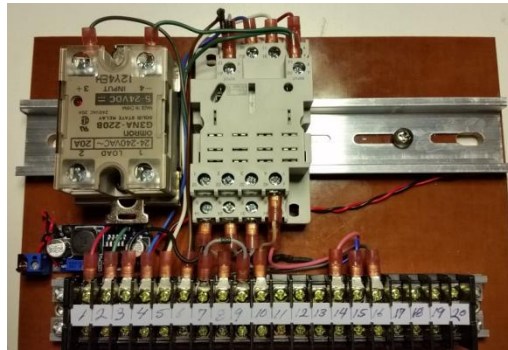
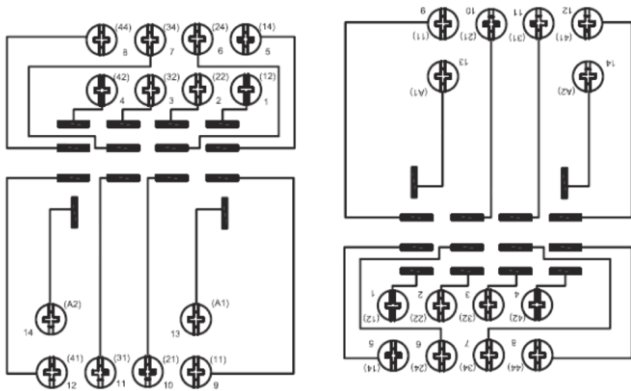


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Relay base/sockets views looking down

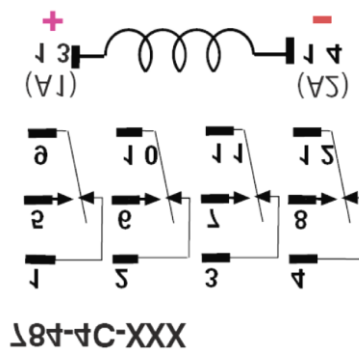
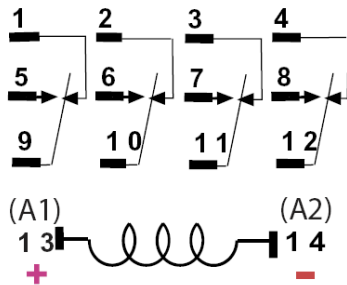
Note: Red Release is mounted UP as shown, A1 is POS Coil, A2 is NEG Coil



20 connection terminal strip, position 17 ground, 18 neutral, 19 L1 (120V), 20 L2 (120V). Includes step down converter 24VDC to 9-12VDC for tach, etc.

Note that relay connections in sockets is different then the relay, connect via the labeled numbers on the socket screw terminals. Note proper polarity and orientation of diodes and LEDs, the banded side is the (-) cathode

784-4C-XXX



AD-ASMD-250 RELAY PROTECTION DIODE
5/PK 6-250V PLUG-IN FOR 783, 784 & 750 SERIES

AUTOMATION DIRECT

E-Stop control panel #1

GCX1131 Pushbutton, 22mm metal, latch with twist-to-release, 40mm mushroom operator, 1 N.C. contact block. **\$12.50** (add separate NO switch block to control emergency stop or Unattended Start Protection input to VFD). Or look at the Idec E-Stop 22 mm switches which (AVLW49922D-R-24V or similar) are better quality but 3x the cost.

Jog Button Green with clear guarded shield around the button, with separate green LED light used to indicate power #1

(Can also use separate LED pilot light (GCX1232-24LG) do not use an incandescent bulb due to the high power draw.)

GCX1202-24L Pushbutton, 22mm metal, momentary, LED illuminated, green, 24 VAC/DC, flush operator with colored plastic ring, 1 N.O. contact block. F/R requires additional NC switch blocks. **\$19.50** **Note:** If you use the an Idec E-Stop with a 24V light, that can be used as the power on light instead.

Speed potentiometer #1

ECX2300-5K 22mm potentiometer with 5 Kohm resistance, black handle. Legend plate ECX2640 sold separately **\$36.50**. I have plenty of spare small 5K pots if you want instead.

ECX2640 22mm legend plate for potentiometer with 0% to 100% marking **\$3.50**

Alternate is 1K or 2K 2-4W potentiometer with knob (eBay, Mouser Electronics, etc.), ~\$5-10. You need to machine an adapter plate if fitted to a 22mm hole.

Additional Switch blocks, N.O. needed with dual control E-Stop. A sustained on coolant switch can be added as shown if required.

ECX1040-2 CONTACT BLOCK 22mm 2/PK N.O. GREEN FOR GCX SERIES ONLY **\$6.25**

ECX1030-2 CONTACT BLOCK 22mm 2/PK N.C. RED FOR GCX SERIES ONLY **\$6.25** (needed for this schematic)

Relays and socket mount #1:

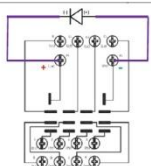
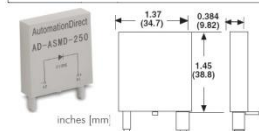
783-4C-24D Ice cube control relay, 24 VDC coil voltage, 4PDT, 15A contact rating, with LED indicator and push-to-test button. Purchase 783-4C-SKT mounting socket separately. **\$8.25**

783-4C-SKT RELAY SOCKET FOR 783 SERIES **\$4.50**

Diodes: **1N4004** or **1N4007** (1A 400V min) for relay logic (prevents back feed of voltage), inexpensive on eBay ~\$5 for 10-50

Relay protection diode Required: **AD-ASMD-250** plugs into relay socket (\$9.75) or use 1N4004 between A1 and A2 terminal as shown)

Protection Device Selection Guide					
Part Number	Price	Description	Nominal Input Voltage	Dimensions & Package	Mating Socket
AD-ASMD-250	\$9.75	Protection diode module for 784 and 75 series relays. Plug-in modules come in package of 5.	6-250VDC	Figure 1	783-3C-SKT 784-4C-SKT-1 758-2C-SKT 758-3C-SKT



Misc: Control cable 18-20 G 8-12 wire (multi wire flexible, depends on the number of controls; 8 or more wires between control box and VFD for commands), 4 wire 18-20G shielded cable to connect the speed pot (use 3 wires, red high side, white wiper, black low side 0V, green not used) to the VFD, and control box and VFD. Motor cable between VFD and motor, 14G 4 conductor 14/4 (3 wire + ground + shield), preferably shielded, but regular 4 conductor will work. Ground is connected at VFD and motor, drain wire shield for all cables are connected only at VFD end. Use a single star connecting point. Power wire should be 600V rating. Power cable to VFD: SEOOW or SOOW Flexible portable cord, Type SEOOW, 3 or 4 conductors, 12AWG (2HP 240 VAC) up to 25', 600V maximum, -50 to 105 degrees C, fully annealed stranded copper conductors, rated for outdoor use, oil-resistant and water-immersible, 20 foot coil \$22.50. You will need assorted connectors, spades and pins to connect the wires to the VFD. **DO NOT RUN VFD CONTROL WIRES WITH MOTOR CABLE, SEPARATE BY AT LEAST 6"** Additional or replacement terminal strips may be needed.

1/4" electrical phenolic resin board if stock electrical board is replaced (CE grade, electrical, phenolic linen or phenolic canvas). Buy a 12" x 12" sheet and cut to size (~\$20.00)

Optional DIN rail power supply for light: Delta (60W) DRC-24V60W1AZ sold by Mouser Electronics or REIGNPOWER (100W) NL1100D-24 24VDC 4.2A (only 100W that will fit in control box, sold on eBay), otherwise use stock 24VAC transformer with fuse. Tachometers are usually 9-12VDC and require a small step-down buck converter.

Breaker/Power Disconnect: FAZ-D30-2-NA2 Pole supplementary - DIN rail, Breaker D trip curve (\$35.00 Automation Direct) or fuse cartridges/holder, optional power disconnect switch

Proximity Switch: Automation Direct PFK1-BP-3H (\$49.50) requires M12 2 meter (6.5') cable for proximity switch: EVC178 (\$11.00) included with custom holder which is \$60.

Mini Switches: Toggle ON-ON for 1 or 2 stage braking (\$10.00); Proximity mechanical safety stop/bypass switches (2 required), Momentary pushbutton, NC and NO (\$20) ON-(ON)

Coolant Switch (No light) GCX1310 22mm metal, 2-position, spring return from right, black knob, 1 N.O. contact block (\$11.00), requires solid state electronic relay 20 or 25A (240D25)