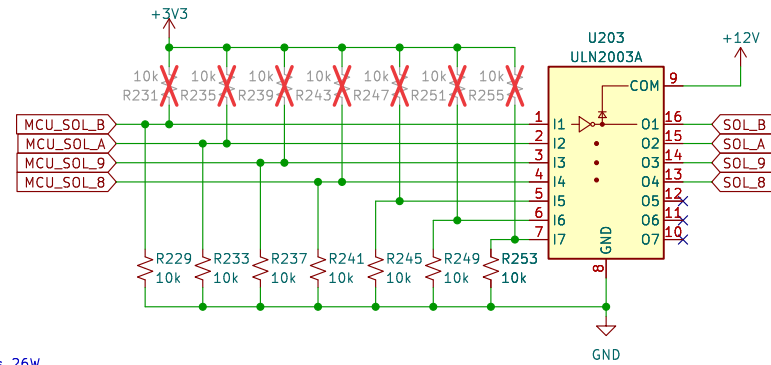
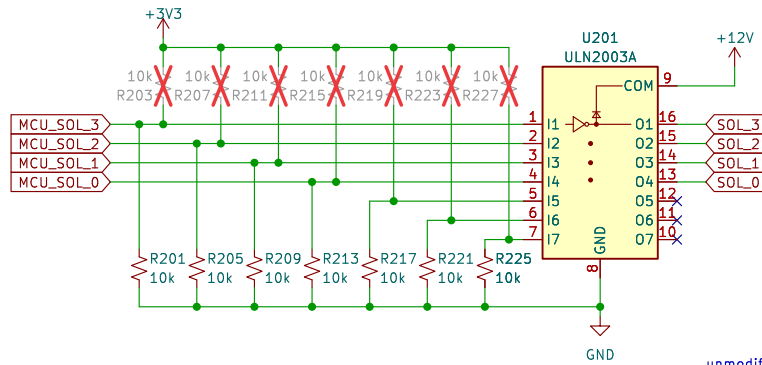
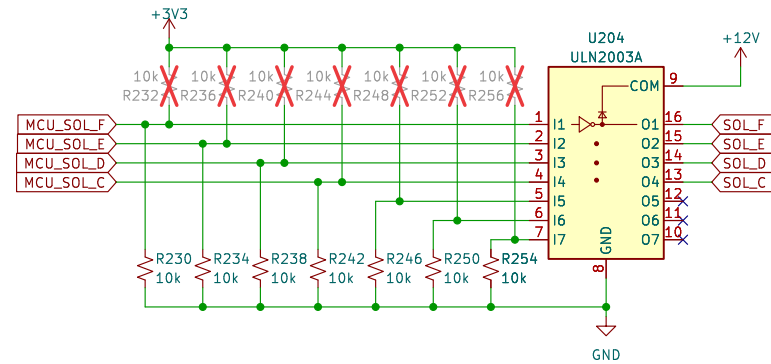
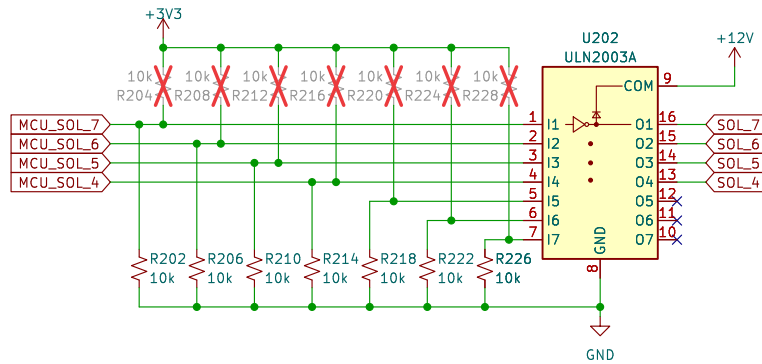




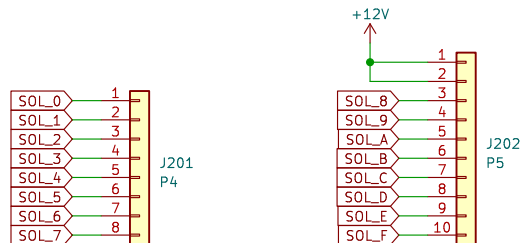
# SOLENOID DRIVERS



unmodified machine is 26W  
assuming all power is  
used by solenoids = 130mA each  
ULN2003A dissipation is 500mA



## SOLENOID CONNECTORS



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Sheet: /SOLENOIDS/

File: solenoids.kicad\_sch

**Title: MECHANICAL INTERFACE**

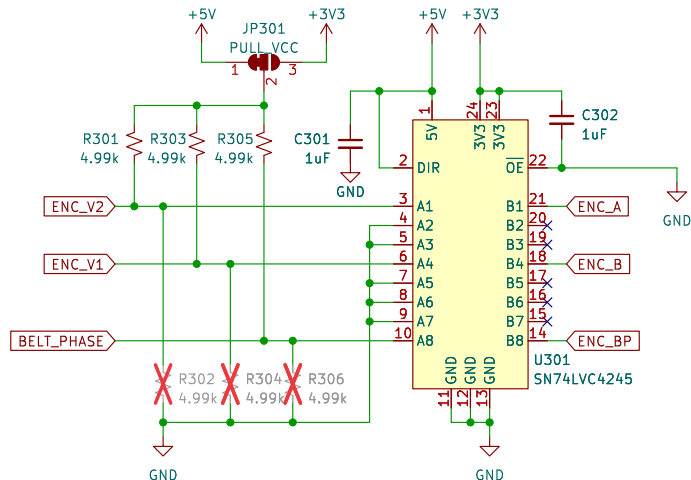
Size: A4 Date: 2023-04-16

KiCad E.D.A. kicad 7.0.1-0

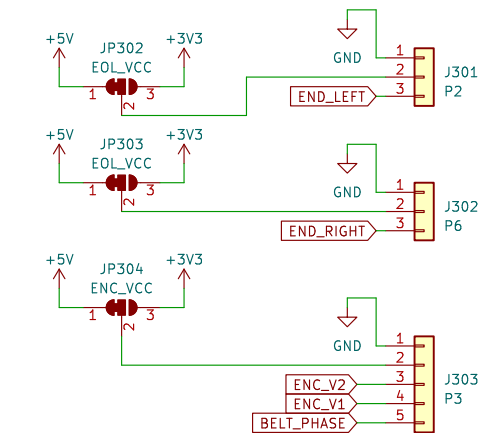
Rev: 1.0

Id: 2/4

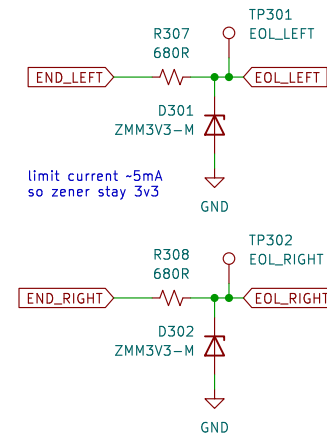
#### LEVEL SHIFTER



#### ALIGNMENT CONNECTORS



#### ADC INPUT PROTECTION



### 5.4 Encoder PC Board

The encoder PC board emits signals required in the detection of the direction and amount of carriage movement and in solenoid selection. It is connected to the main PC board by a connector (S3).

The V1 (Pin 4 of S3), V2 (Pin 3 of S3), and BP (Pin 5 of S3) signals are configured as shown in figure 5-3 below:

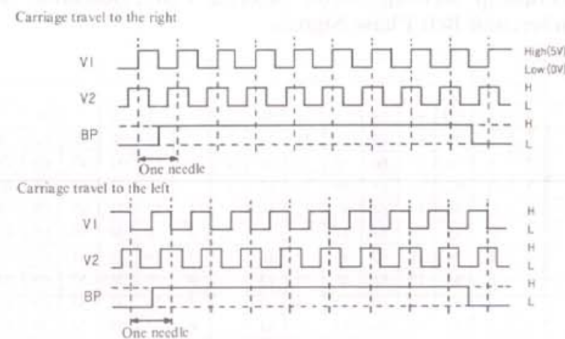


Figure 5-3

The amount and direction of movement of the carriage are detected via the V1 and V2 signals, and the type of engagement between the belt and the carriage is detected via the BP signal (Belt phase signal). There are two types of engagement, discriminated between by sensing whether the BP signal is high or low when the carriage passes the position sensor.

### 5.3 Left Position Sensor PC Board and Right Position Sensor PC Board

The left and right position sensor PC boards are what send out the carriage position signal. It is connected to the main PC board by a connector (S2, S6).

The position sensor signal (pin 3 of S2, S6) is normally DC 1.6 - 1.8V, but when the K carriage sensor magnet approaches the position sensor, it becomes DC 3.5V or more, and less than DC 0.7V when the L carriage approaches. When G carriage sensor magnet approaches, it begins at DC 0.7V and thereafter immediately changes to DC 3.2V or more. It is by these changes in voltage that the computer is able to determine which carriage has passed by (refer to Fig. 5-2).

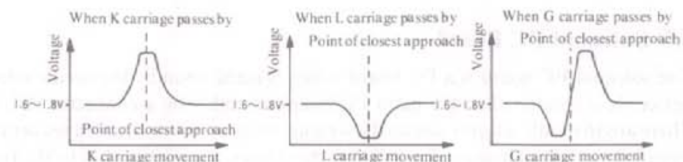


Figure 5-2

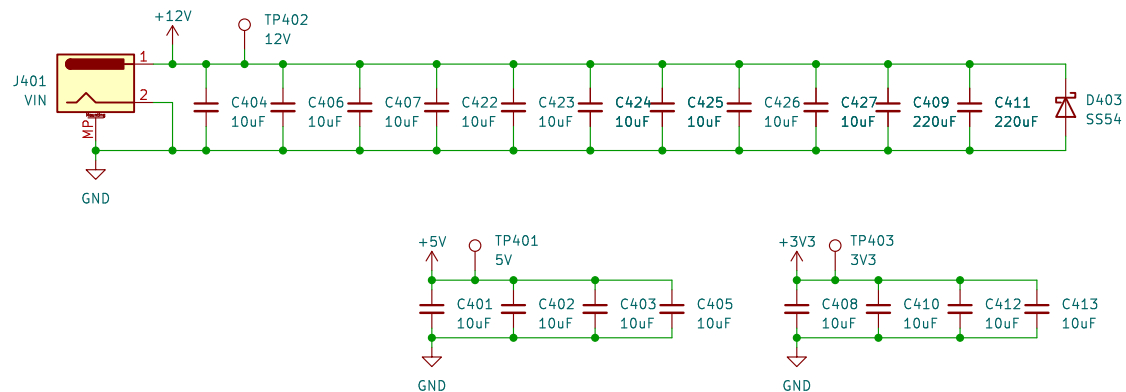
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File: alignment.kicad\_sch

Title:

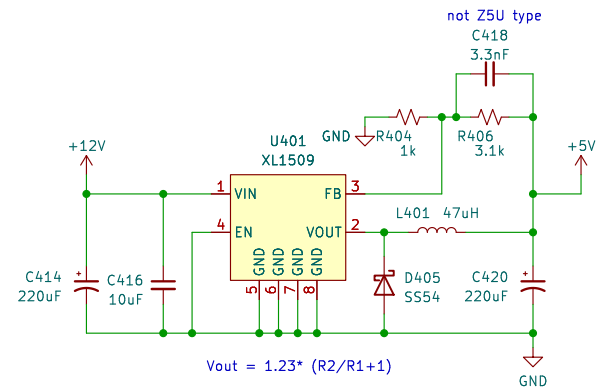
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KiCad E.D.A. kicad 7.0.1-0

Date:  
Rev: 3/4

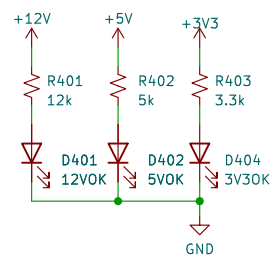
# INPUT, FILTERING REVERSE POLARITY PROTECTION



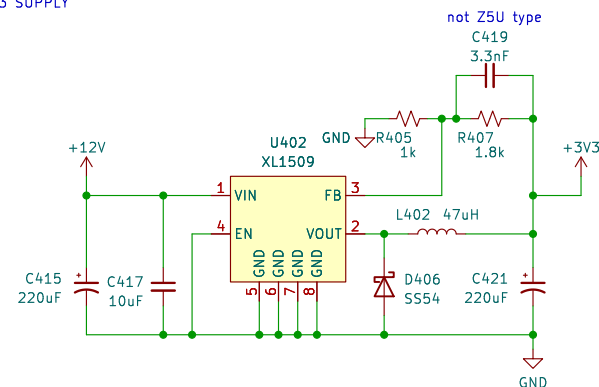
## 5V SUPPLY



## INDICATORS



## 3V3 SUPPLY



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Sheet: /POWER SUPPLY/

File: psu.kicad\_sch

**Title: POWER SUPPLY**

Size: A4

Date: 2023-04-16

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**Rev: 1.0**

Id: 4/4