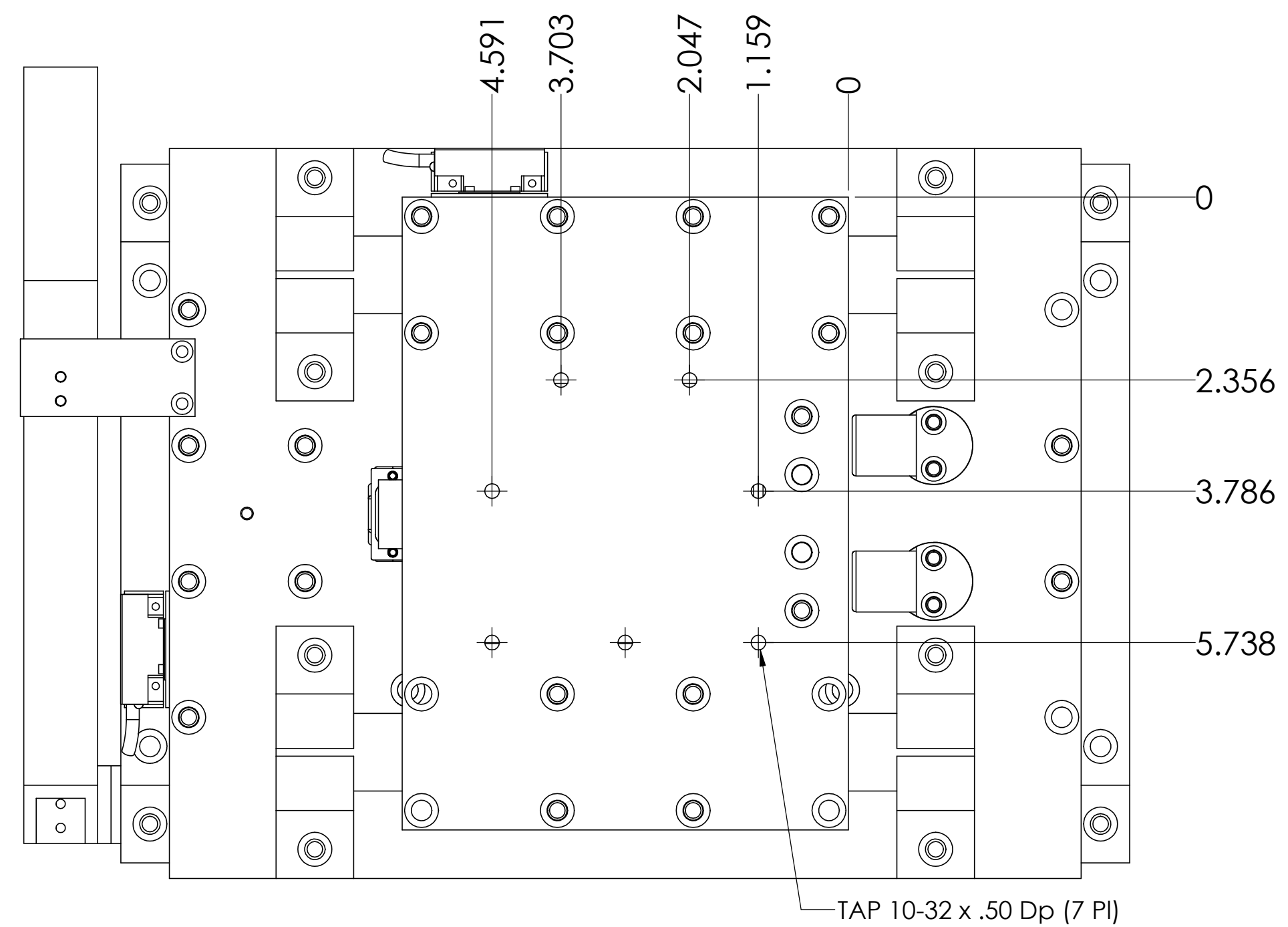
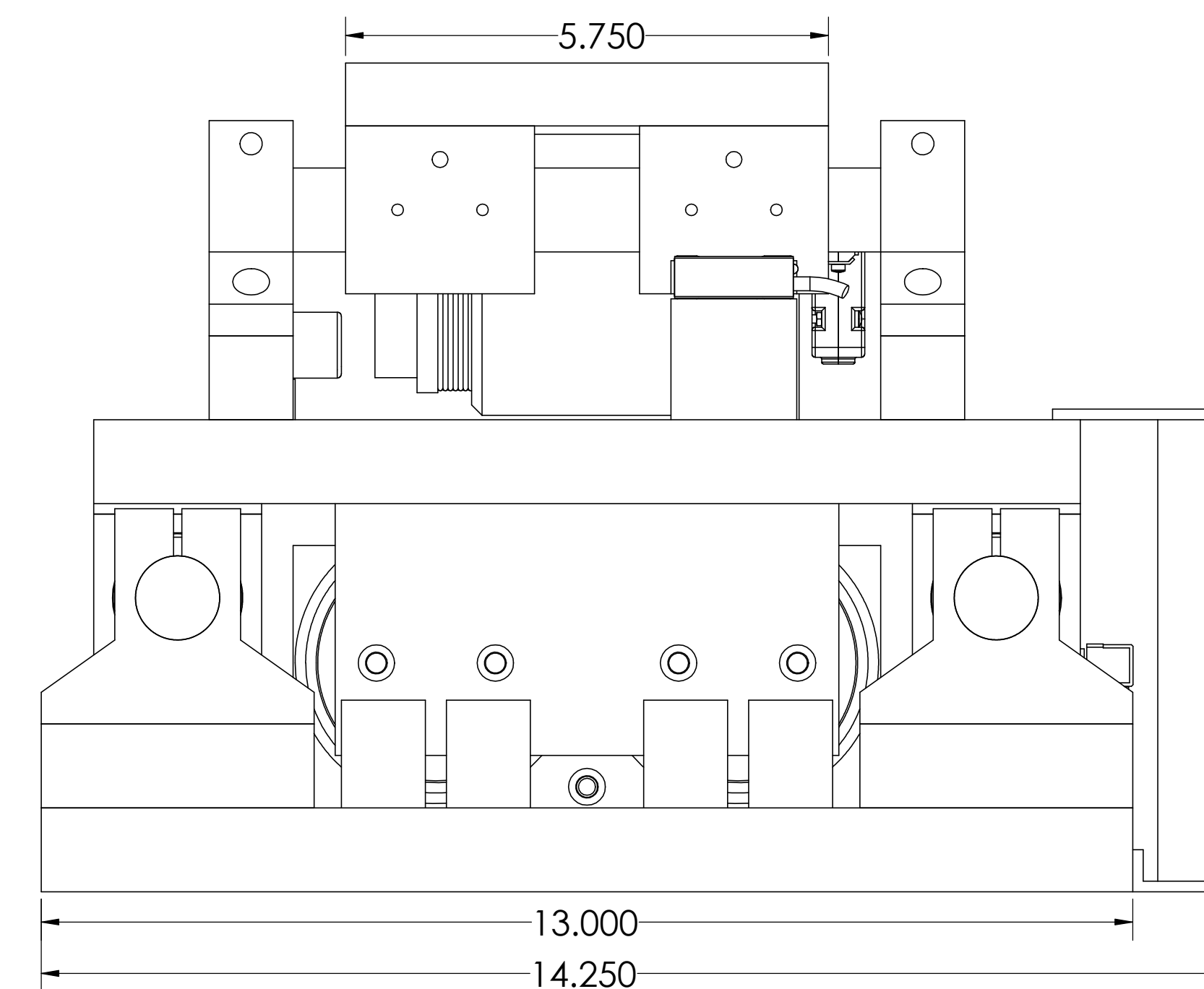
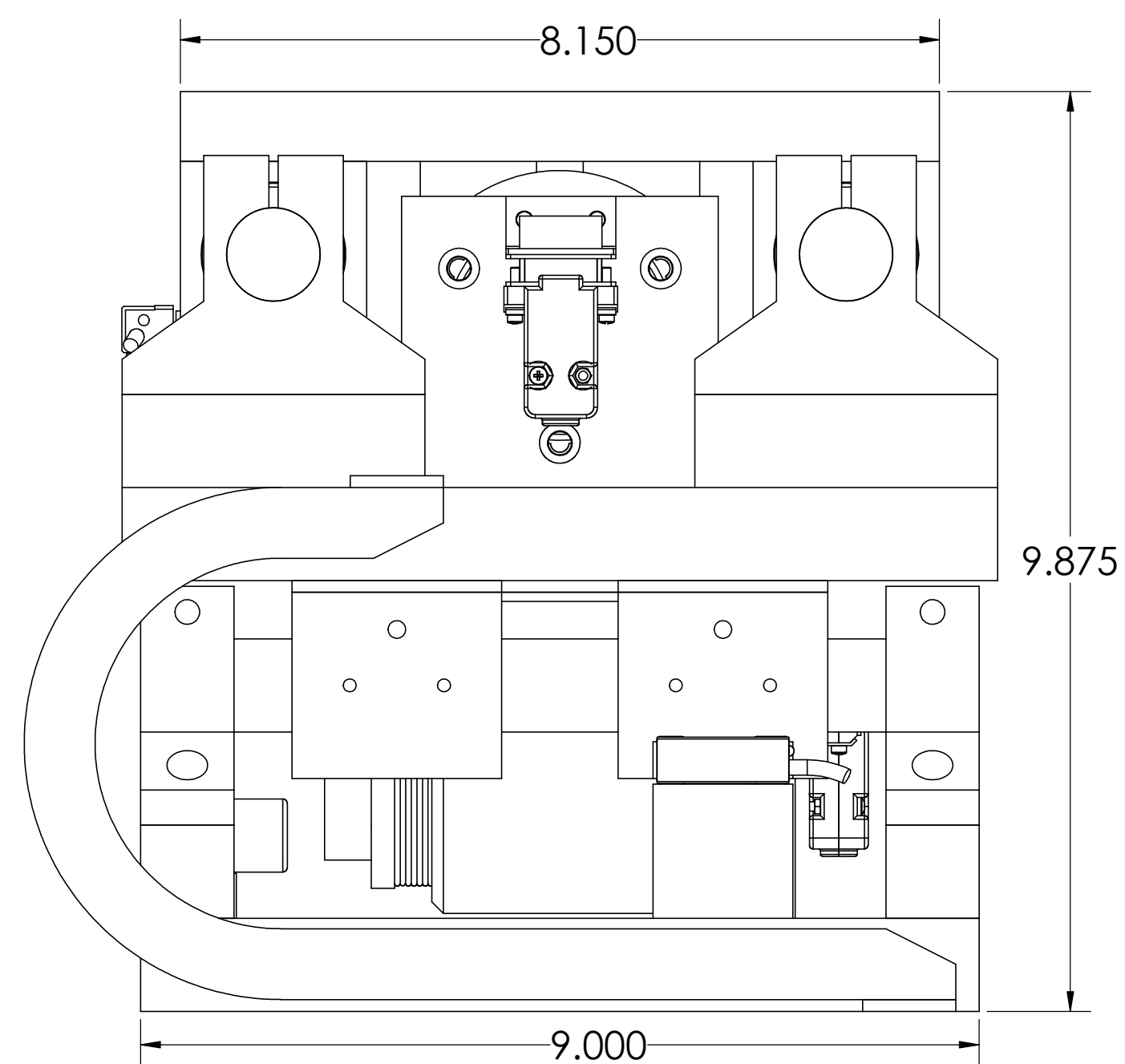
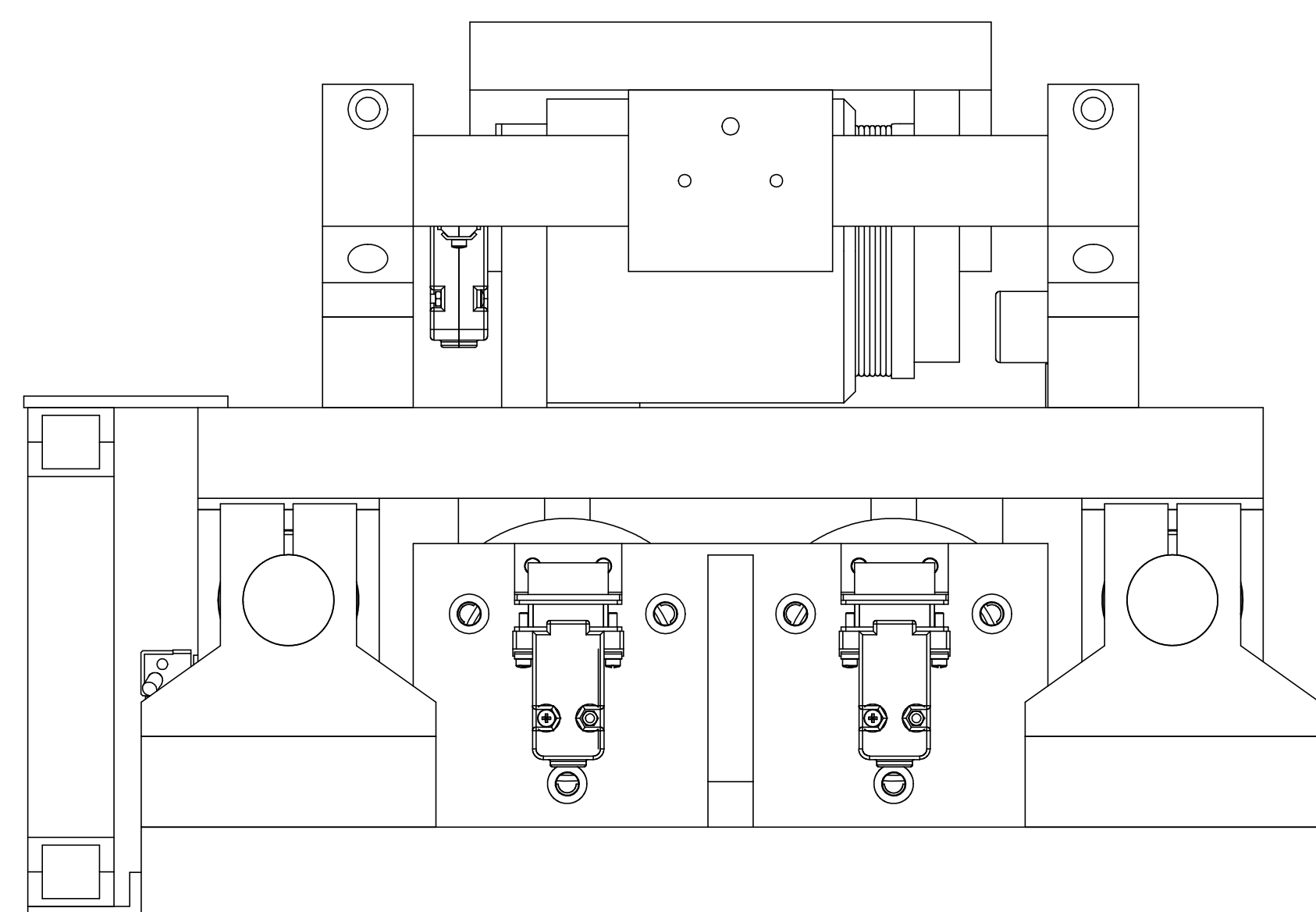
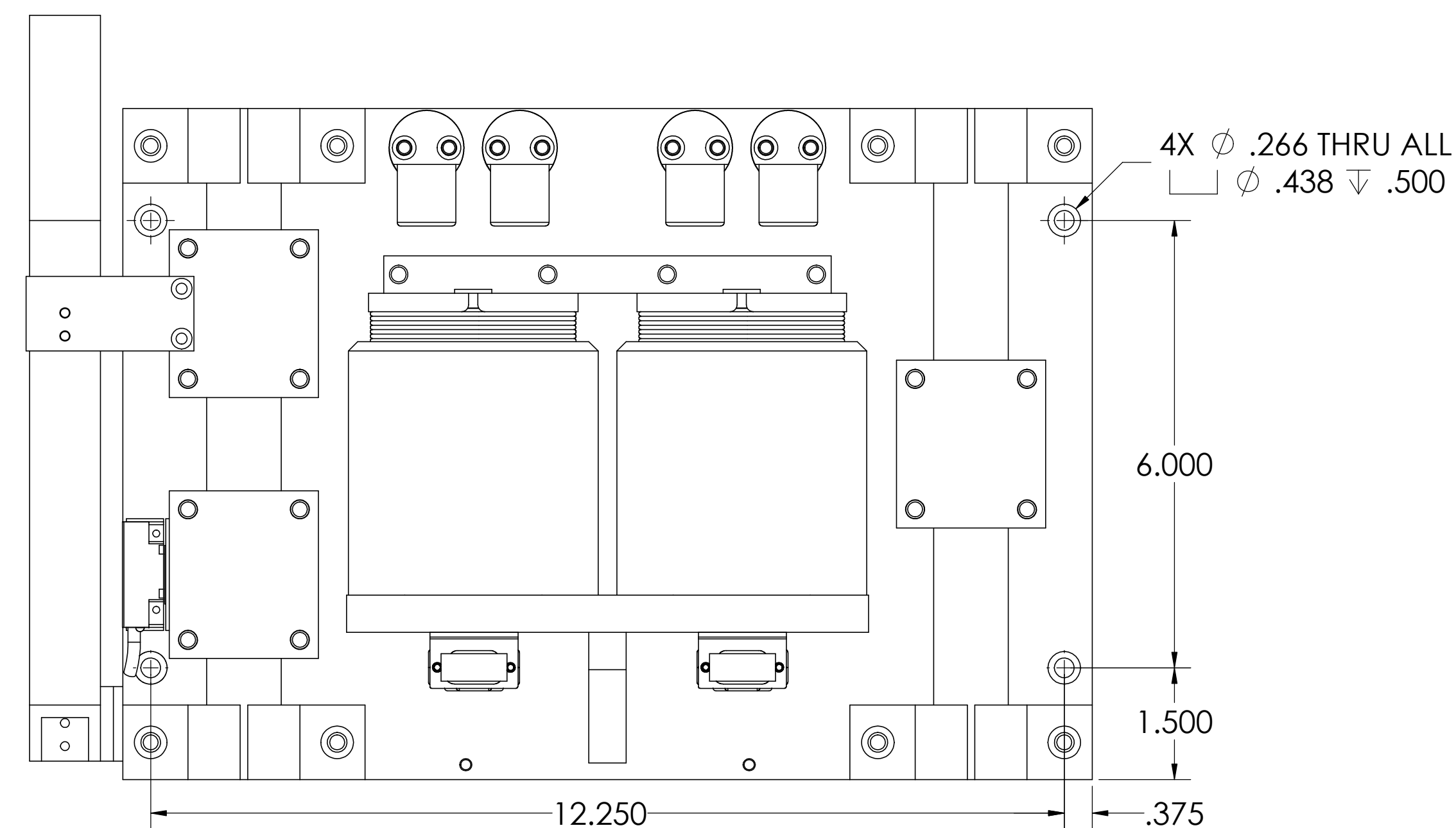


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| REVISION TABLE |      |                  |        |          |         |
|----------------|------|------------------|--------|----------|---------|
| REV            | ECN# | DESCRIPTION      | REV BY | APPROVED | DATE    |
| ---            | ---  | Original Drawing | OOG    | MPW      | 5-13-14 |

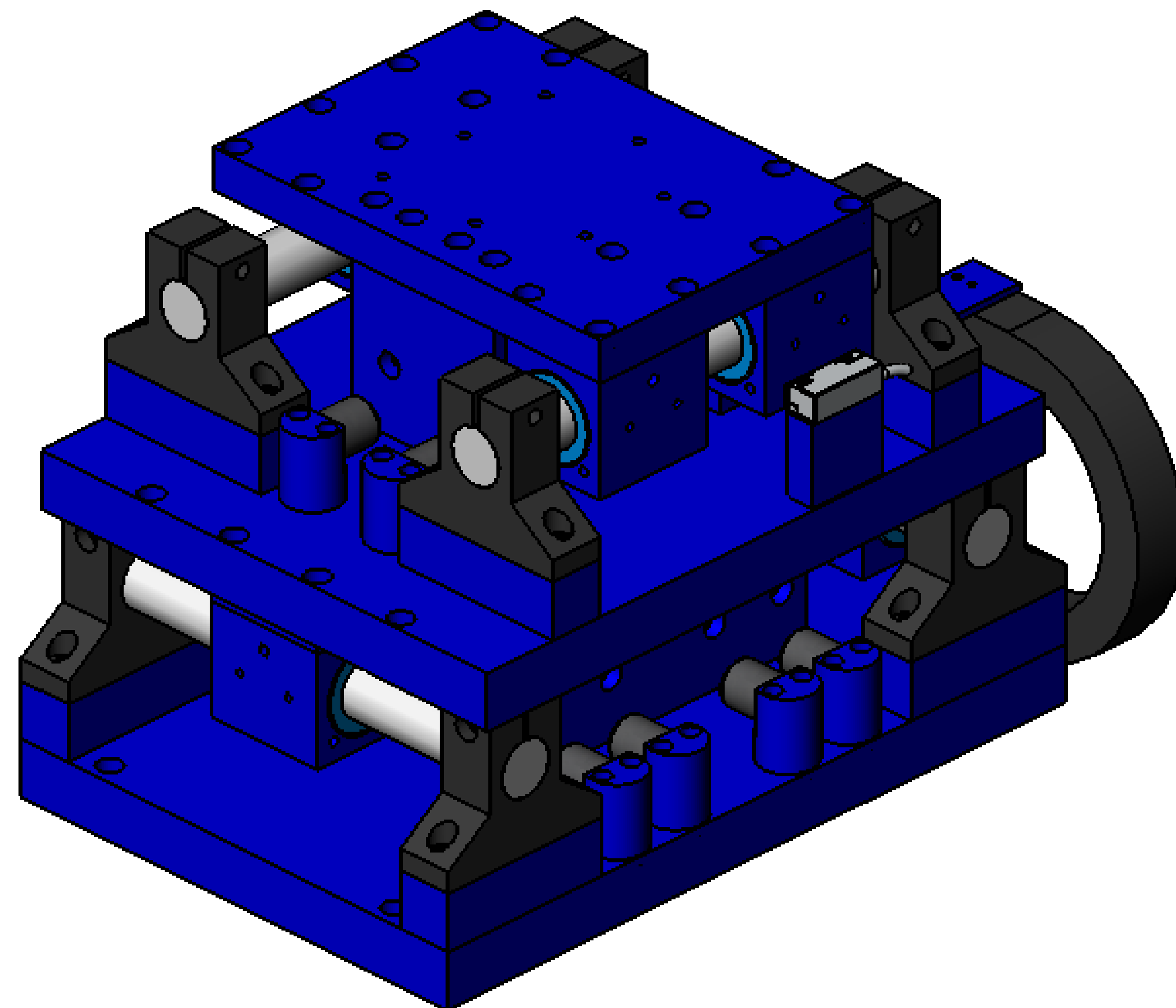
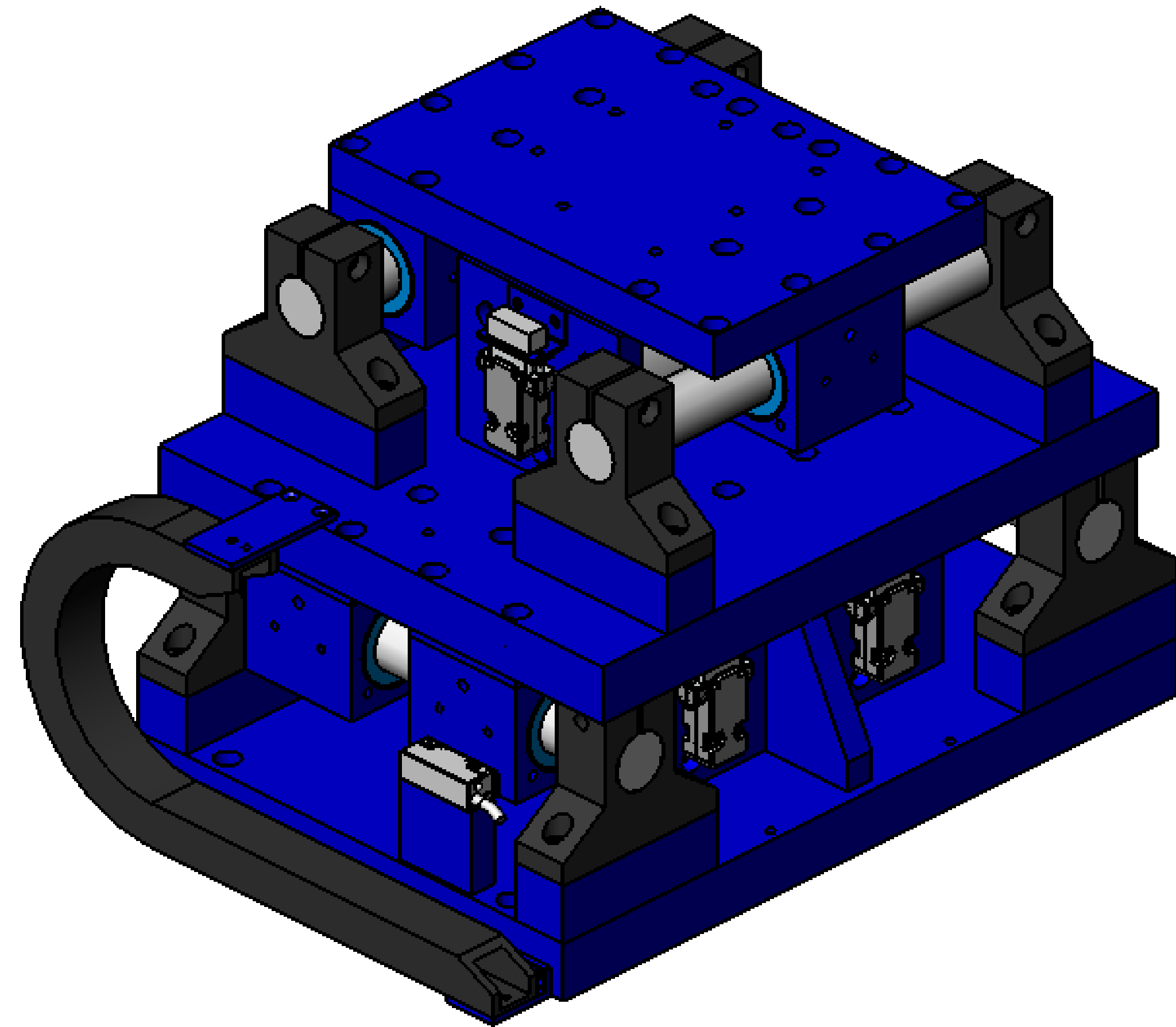


PARTS HAVE BEEN HIDDEN TO SHOW BASE MOUNTING HOLES



| UNLESS SPECIFIED OTHERWISE:         |        | MATERIAL | TITLE                          |         |
|-------------------------------------|--------|----------|--------------------------------|---------|
| ALL DIMENSIONS ARE IN INCHES        | FINISH |          | Voice Coil Positioning Stage   |         |
| STANDARD TOLERANCES ARE AS FOLLOWS: |        |          | VCS08-700/08-350-AB-01-MC-XY-1 |         |
| XXX .001                            |        |          | REV 31-0677                    |         |
| XX .005                             |        |          | ---                            |         |
| X .010                              |        |          | 1 of 2                         |         |
| Ø .015                              |        |          |                                |         |
| REMOVE ALL BURS AND SHARP EDGES     | DRAWN  | DATE     | APPROVED                       | DATE    |
|                                     | OOG    | 5-13-14  | MPW                            | 5-13-14 |

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| VOICE COIL POSITIONING STAGE SPECIFICATIONS (Top Axis) |                     |                   |
|--|---------------------|-------------------|
| Motor P/N  | NCC08-34-350-2X     |                   |
| Stroke   | 0.80"               | 20.3 mm           |
| Encoder Resolution                                     | 1 micron            |                   |
| Encoder Type   | Magnetic            |                   |
| Bearing Type   | Air Bushing         |                   |
| Moving Mass  | 7 lbs               | 3.2 kg            |
| Total Mass   | 31.5 lbs            | 14.25 Kg          |
| Resistance @ 20C                                       | 6.25 ohms           |                   |
| Inductance @ 20C                                       | 5.0 mH              |                   |
| Electrical Time Constant                               | 0.80 msec           |                   |
| Motor Constant   | 5.80 LBS/SQRT(Watt) | 25.8 N/SQRT(Watt) |
| Force Constant   | 14.5 LBS/Amp        | 64.2 N/Amp        |
| Back EMF   | 1.6 V/ips           | 64.2 V/m/sec      |
| Force @ 100% Duty                                      | 35 LBS              | 156 N             |
| Power @ 100% Duty                                      | 36 Watts            |                   |
| Current @ 100% Duty                                    | 2.4 amps            |                   |
| Force @ 10% Duty                                       | 105 LBS             | 467 N             |
| Power @ 10% Duty                                       | 330 Watts           |                   |
| Current @ 10% Duty                                     | 7.3 amps            |                   |
| Moving Part  | Coil Assembly       |                   |

| VOICE COIL POSITIONING STAGE SPECIFICATIONS (Bottom Axis) |                     |                   |
|---|---------------------|-------------------|
| Motor P/N (2 Motors)                                      | NCC08-34-350-2X     |                   |
| Stroke  | 0.80"               | 20.3 mm           |
| Encoder Resolution  | 1 micron            |                   |
| Encoder Type  | Magnetic            |                   |
| Bearing Type  | Air Bushing         |                   |
| Moving Mass   | 15.5 lbs            | 7 kg              |
| Total Mass  | 48.5 lbs            | 22 Kg             |
| Resistance @ 20C  | 12.5 ohms           |                   |
| Inductance @ 20C  | 10.0 mH             |                   |
| Electrical Time Constant                                  | 0.80 msec           |                   |
| Motor Constant  | 11.6 LBS/SQRT(Watt) | 51.6 N/SQRT(Watt) |
| Force Constant  | 29 LBS/Amp          | 129 N/Amp         |
| Back EMF  | 3.2 V/ips           | 128.4 V/m/sec     |
| Force @ 100% Duty   | 70 LBS              | 312 N             |
| Power @ 100% Duty   | 72 Watts            |                   |
| Current @ 100% Duty                                       | 4.8 amps            |                   |
| Force @ 10% Duty  | 210 LBS             | 935 N             |
| Power @ 10% Duty  | 660 Watts           |                   |
| Current @ 10% Duty  | 14.6 amps           |                   |
| Moving Part   | Coil Assembly       |                   |

NOTE:  
 - Electrical specs & masses are per individual axis  
 - Total stage weight = 69.5 lbs (31.5 Kg)