

# **QUADREL**

## LABELING SYSTEMS

Operating & Maintenance  
Manual  
For

**COLGATE PALMOLIVE**

# **MLE125 DUAL SIDE BELT Automatic Labeling System**

Labeler Model #: Q125 SERVO  
Serial #: 84251-100

QUADREL LABELING SYSTEMS  
7670 Jenther Drive  
Mentor, Ohio 44060  
440.602.4700

customerservice@quadrel.com  
parts@quadrel.com

# TERMS AND CONDITIONS OF SALE

## QUADREL, INC

### D/B/A Quadrel Labeling Systems Hereinafter Referred to as Quadrel

#### PERFORMANCE GUARANTEE:

If the surface of the product to be labeled is free from contamination so as to ensure proper label adhesion, the labels are manufactured in accordance with label specifications provided and the equipment is operated and maintained in accordance with the instructions contained in the Quadrel manual (two copies of the manual will be supplied by Quadrel with the labeling system; one printed copy, and one electronic copy). Quadrel guarantees the EQUIPMENT to perform after installation as stated.

1. Provided a sufficient amount of products are presented to the labeling system.
2. Dimensional inconsistency from one like product to be labeled to the other may result in additional label placement inaccuracy in direct relationship to the product inconsistency.
3. Slitting inconsistency within a given roll of labels or from one like roll to another may result in additional label placement inaccuracy in direct relationship to the slitting inconsistency.
4. If the Quadrel labeling system proposed herein does not include physical control of the product during label application, additional placement inaccuracy can occur in direct relationship to the product control inconsistency.
5. Label Placement Accuracy: Within Sigma 2 (approximately 95.5%) to be normal.

In the event of the failure if the Quadrel system to meet customer's specifications, as quoted by Quadrel or subsequently agreed to by Quadrel. Quadrel upon written notice from buyer shall, at its option, repair the system, or refund the purchase price upon return of the system. The warranty provided in this article and the obligations and liabilities of Quadrel thereunder are exclusive and in lieu of, and buyer hereby waived, other remedies warranties, guarantees or liabilities, express or implied arising by law or otherwise (including without limitation, any obligations of Quadrel with respect to fitness for a particular purpose, merchantability, specific performance, incidental and consequential damages) whether or not occasioned by Quadrel's negligence. This warranty should not be extended altered or varied except by written instrument signed by Quadrel and buyer.

**EXCLUSIVE TERMS OF SALE:** The proposal attached hereto or to which these Terms and Conditions of Sale apply (the "Proposal"), together with these Terms and Conditions of sale (collectively, the "Sale Agreement"), constitutes the complete and exclusive statement of the agreement between Quadrel and the purchaser specified in the Proposal ("Purchaser") concerning the equipment and other goods specified in the Proposal (collectively, the "Equipment"), as well as any and all services specified in the Proposal (collectively, the "Services"), and supersedes all prior contemporaneous agreements, representations and/or communications, either oral or written, between Quadrel and Purchaser or any representative such as parties with the respect to the subject matter of the Sale Agreement. No change to the Sale Agreement or waiver of any provision thereof will be binding on Quadrel unless made in writing and signed off by and authorized officer of Quadrel. Acceptance of the Equipment, in whole or part, or other express or implied assent by Purchaser to the terms hereof shall constitute Purchaser's agreement to the terms of the Sale Agreement. Acceptance of any purchase order or other document of Purchaser by Quadrel is expressly made conditional on the Purchaser's assent to the Sale Agreement. ANY ATTEMPTED MEMORIALIZATION OF THIS SALE BY A PURCHASE ORDER OR OTHER DOCUMENT CONTAINING TERM AND CONDITIONS INCONSISTANT WITH OR IN ADDITION TO THE CONDITIONS CONTAINED IN THE SALE AGREEMENT SHALL NOT BE BINDING UPON QUADREL AND QUADREL HEREBY EXPRESSLY OBJECTS TO AND REJECTS THE SAME.

#### GENERAL WARRANTY (EXCLUDES TABLETOP LABELERS)

Time from date of shipment	Covered Expenses
Up to 90 Days	All Parts , service time, living and travel expenses
UP to 12 Months	All parts

**THE WARRANTIES PROVIDED ABOVE ARE IN LIEU OF ANY AND ALL OTHER WARRANTIES AND LIABILITIES, EXPRESSED OR IMPLIED, INCLUDING BUT NOT LIMITED TO ANY WARRANTIES OF MERCHANTABILITY OR FITNESS FOR ANY PARTICULAR PURPOSE.** NO OTHER WARRANTIES ARE OFFERED BY QUADREL WITH RESPECT TO THE EQUIPMENT OR SERVICES AND QUADREL HAS NOT AUTHORIZED ANY EMPLOYEE OR AGENT TO OFFER ANY WARRANTIES EXCEPT THOSE PROVIDED ABOVE. PURCHASER AND QUADREL EXPRESSLY AGREE THAT THE WARRANTIES PROVIDED ABOVE SHALL SERVE AS PURCHASER'S SOLE AND EXCLUSIVE REMEDY WITH RESPECT TO THE EQUIPMENT AND SERVICES.

PURCHASER REQUIREMENTS. Purchaser must provide Quadrel descriptions and specifications of all labels and items to be labeled, including, without limitation, label material, product and label dimensions, and any other items required by Quadrel. Further, purchaser shall furnish Quadrel one (1) production size roll of each label and 100 samples of each item to be labeled for testing purposes. **Quadrel shall have no liability (whether under its Limited One-Year Warranty or otherwise) for labeling performance on labels or items to be labeled:**

- (a) Which were not specified or sufficiently described in the Proposal: or**
- (b) With respect to which Purchaser fails to provide Quadrel the samples specified herein, even if such labels or items to be labeled were specified in the Proposal. Further, Quadrel shall have no liability for delays caused by Purchaser's failure to furnish samples as specified herein.**

LIMITATION OF WARRANTIES. Quadrel shall have no obligation to honor its warranties and shall have no liability with respect to defective Equipment if:

- (a) The Equipment has been modified, altered, damaged, abused or used for any other than those purposes intended by Quadrel.
- (b) The Equipment has been changed without prior written consent from Quadrel.
- (c) The equipment has not been operated and maintained in accordance with generally accepted commercial practices for similar equipment and Quadrel's specifications and instructions, as published in the Quadrel manual.
- (d) The surface if the product to be labeled is not clean and free of contamination, including, but not limited to, mold release agents, condensation, dirt and oil.
- (e) Labels are not manufactured in accordance with label specifications provided by Quadrel, or are not from defects such as cracked edges, deep die strikes, *etc.*
- (f) Labels and items to be labeled are not set forth in the Proposal.
- (g) Samples of all products and labels were not provided to Quadrel for testing prior to Equipment shipment as required under "Purchaser Requirements" outlined above.
- (h) There is dimensional inconsistency from one like roll of labels to another.
- (i) *The Equipment does NOT include physical control of the product.*

LIMITATION OF REMEDIES. All warranty claims shall be subject to review and approval by Quadrel. Quadrel's obligation to honor warranties is in all cases limited to, at Quadrel's sole option:

- (a) Repair of defective Equipment or components: or
- (b) Providing a cash refund or credit, after Purchaser has returned Equipment to Quadrel.

Where warranty service is to be provided at the Quadrel facility, Purchaser shall return Equipment claimed to be defective to Quadrel, freight prepaid, for review. No Equipment shall be returned to Quadrel, whether for inspection, repair, refund, or any other reason, without prior return authorization from Quadrel. Quadrel may charge Purchaser cost resulting from testing, handling and disposition of Equipment claimed to be defective by Purchaser which is found by Quadrel to conform to Quadrel's warranties.

LIMITATION OF LIABILITY. QUADREL SHALL HAVE NO LIABILITY FOR ANY CONSEQUENTIAL, INCIDENTAL, PUNITIVE OR SPECIAL DAMAGES BY REASON OF ANY ACT OR OMISSION OR ARISING OUT OF OR IN CONNECTION WITH THE (a) EQUIPMENT OR ITS SALE, DELIVERY, INSTALLATION, MAINTENANCE, OPERATION, OR PERFORMANCE, OR (b) SERVICES. IN NO EVENT SHALL QUADREL'S LIABILITY EXCEED THE PRICE OF THE EQUIPMENT (OR THE PRICE OF THE SERVICES IF A CLAIM IS MADE WITH RESPECT TO THE SERVICES) WITH RESPECT TO WHICH A CLAIM IS MADE REGARDLESS OF WHETHER SUCH CLAIM IS BROUGHT

AT LAS OR IN EQUITY AND REGARDLESS OF WHETHER SUCH CLAIM IS BROUGHT UNDER CONTRACT, BREACH OF WARRANTY, TORT OR ANY OTHER THEORY OF LAW OR EQUITY.

**ORDERS:**

Orders entered, verbal or written, cannot be cancelled except upon terms that will compensate Quadrel against any and all claims

**START-UP SERVICE:**

Quadrel will provide, at standard installation rates, the number of normal eight-hour working days for the Quadrel Field Service Technician to start the EQUIPMENT and to train PURCHASER'S operating and maintenance personnel. EQUIPMENT is not uncrated and emplaced in desired location by PURCHSER prior to arrival of Quadrel Field Service Technician, or if the EQUIPMENT cannot be made operational due to non-availability of products, labels, appropriate utilities and/or related production equipment, PURCHASER shall pay Quadrel for additional service time required including travel expenses, if applicable, in accordance with Quadrel's Field Service rates. It is PURCHASER's obligation to schedule the start-up service at a time when PURCHSER'S engineering, maintenance and selected production personnel are available.

**SERVICE AFTER INSTALLATION:**

Quadrel Field Service Technicians are available to customers who do not maintain their own service departments. This can be handles on a per visit basis. Field Service rates are available on request.

**PAYMENT TERMS:**

Payment terms are as follows: 50% of purchase with purchase order, 40% of purchase at the time of shipment, 10% of purchase (plus freight charges) due net 30 days. If shipment is delayed beyond 30 days after the EQUIPMENT has been made ready for shipment, and the delay is caused directly or indirectly by the PURCHASER, then the total of the unpaid balance, at option of Quadrel, may become immediately due and payable upon written notice. Payments not paid when due shall thereafter bear monthly service charges at the rate of 1.5% per month on the unpaid balance until paid. If, in Quadrel's opinion, PURCHASER'S financial condition does not justify continuance of production or shipment on the terms of payment specified above, Quadrel may require payments in advance.

FINANCIAL IMPAIRMENT. Quadrel may, at its option, suspend performance if in its opinion the credit of the Purchaser becomes impaired until such time as Quadrel has received full payment, including any general price increases or surcharges, is satisfactory security for deliveries made and is satisfied as to Purchasers credit for future deliveries. Quadrel reserves the right to cancel Purchaser's credit at any time for any reason. In addition, Quadrel reserves the right by written notice to cancel any order or require full or partial payment or adequate assurance of performance from Purchaser without Liability to Quadrel in the event of:

- (a) Purchaser's insolvency
- (b) Filing of a voluntary petition in bankruptcy by Purchaser
- (c) Filing of an involuntary petition in bankruptcy against Purchaser
- (d) Appointment of a receiver or trustee for Purchaser
- (e) Execution by Purchaser of an assignment for the benefit of creditors

**TAXES:**

The amount of any present or future federal, state, local or other taxes applicable to the sale of EQUIPMENT shall be added to the price and paid by PURCHASER unless PURCHASER provides a valid exemption certificate acceptable to Quadrel and the appropriate tax authority.

GOVERNING LAW AND JURISDICTION. The sale agreement shall be governed and construed in accordance with the domestic laws of the State of Ohio without giving effect to any choice or conflict of law provision or rule that would cause the application of the laws of any jurisdiction other than the State of Ohio. Any legal action, suit or proceeding relating to the Sale Agreement shall be heard and determined exclusively in the United States District Court for the Northern District of Ohio or the Court of Common Pleas of Lake County, Ohio, and each party irrevocably submits to the jurisdiction of either such courts and waives any objection which such party may have to the laying of venue of any such legal action, suit or proceeding in any such court.

The Sale Agreement shall not be governed by the United Nations Convention on the International Sales of Goods. No actions arising out of the sale of Equipment or Services may be brought by either party more than one (1) year after shipment.

**RETURNS:**

EQUIPMENT sold by Quadrel is returnable only in accordance with the provisions hereof. Before returning of any EQUIPMENT or items thereof, PURCHASER must obtain Quadrel's written return authorization and instructions.

**FORCE MAJEURE:**

Quadrel shall not be liable for any loss, damage, delay, changes in shipment schedules or failure to deliver due to act of God, accidents, fires, strikes, riots, civil commotion, insurrection, war, the elements, embargoes, failure of carriers, inability to obtain electricity or other type of energy, transportation facilities, raw material, equipment or any problem or any similar or different contingency beyond its reasonable control which would make performance commercially impractical whether or not the contingency is of the same class as those above. Quadrel shall in no event be liable for any consequential damages.

**TITLE AND RISK OF LOSS:**

Title and risk of loss to EQUIPMENT shall pass to PURCHASER upon delivery by Quadrel to a common carrier, regardless of the freight terms stated or method of payment for transportation charges. Quadrel reserves the right to specify routing of shipments.

**ENTIRE AGREEMENT:**

This agreement embodies the entire agreement and understanding between the parties, is intended as complete and exclusive statement of terms of the agreement between the parties and supersedes any prior agreements or understandings between the parties relating to the subject matter hereof. PURCHASER acknowledges that Quadrel has not made any representations to PURCHASER other than those which are contained herein. Except as provided in this agreement, no change in or addition to the terms contained herein shall be valid as between the parties unless set forth in writing which is signed by an authorized representative of both parties and which specifically states that it constitutes an amendment to this agreement.

The parties may use their normal commercial forms in connection herewith: however, any such forms shall be used for convenience only and any terms or provisions which may be contained therein inconsistent with or in addition to those contained herein shall have no force or effect whatsoever between parties hereto.

**EFFECTIVE:**

This proposal is based upon the current cost of labor and materials and shall remain in effect for a period of sixty (60) days from the date hereof unless revoked by Quadrel in writing prior to acceptance.

**INDEMNIFICATION:**

The purchaser of this product ("Customer") hereby agrees to release, indemnify and hold harmless Quadrel and its agents, assignees and representatives for any and all liabilities, losses, costs, damages and expenses (including attorneys' fees and expenses) arising, directly or indirectly, from any and all manner of claims, demands, actions and proceedings that may be instituted against Quadrel on any grounds.

The Customer agrees to, at the Customer's own expense, promptly defend and continue the defense of any such claim, demands, actions or proceeding that may be brought against Quadrel, provided that Quadrel shall, within thirty (30) days of Quadrel receiving notice thereof, notify the Customer of such claims, demand, action or proceeding.

Quadrel shall at all times retain the right to defend itself and/or to otherwise participate in the defense of any such claim or action, and no settlement or other resolution of any such claims or action shall be finalized without Quadrel's written approval. Any failure by Quadrel to give prompt notice or provide copies of documents or furnish relevant data shall not constitute a defense in whole or in part to any claim by Quadrel against the Customer except to extend that such failure by Quadrel shall result in a material prejudice to the Customer.

The forgoing notwithstanding, if suit shall have been against Quadrel and the Customer shall have failed, after the lapse of a reasonable time after written notice to it of such suit, to take action to defend the same. Quadrel shall have the sole right to

defend the claim and shall be entitled to charge the customer with the reasonable cost of any such defense, including reasonable attorney's fees, and Quadrel shall have the right, after notifying but without consulting the Customer, to settle or compromise such claim on any terms reasonably provided by Quadrel.

This release and indemnification is and shall be binding upon the Customer, as well as the Customer's respective heirs, subsidiaries, affiliates, successors, assigns, agents and employees. If any provision or provisions of this release and indemnification shall be held to be invalid, illegal or unenforceable for any reason whatsoever, the validity, legality and enforceability of the remaining provisions of this Agreement shall not in any way be affected or impaired thereby. No supplement, modification or amendment of this Agreement shall be binding unless executed in writing by all of the parties hereto.

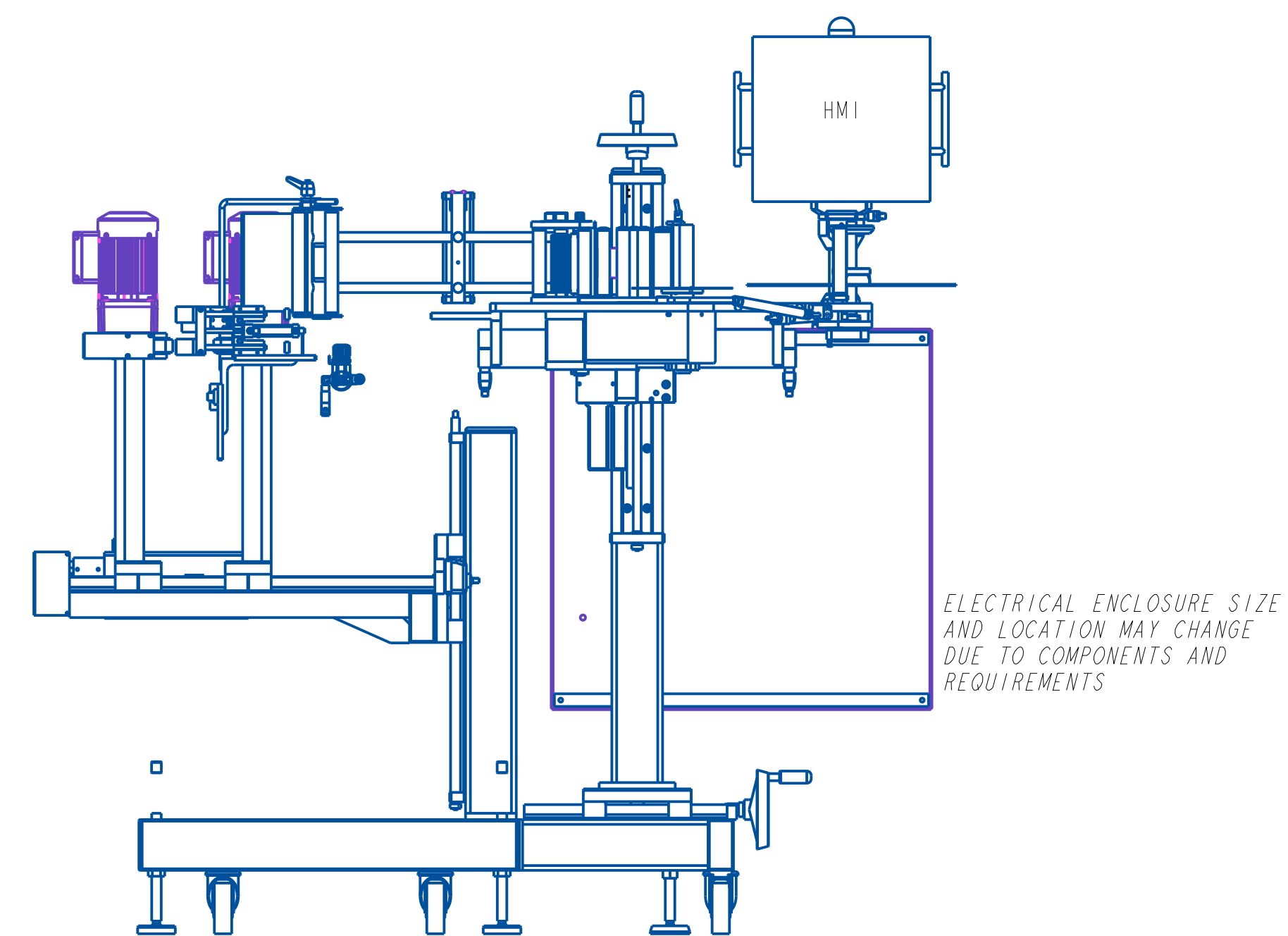
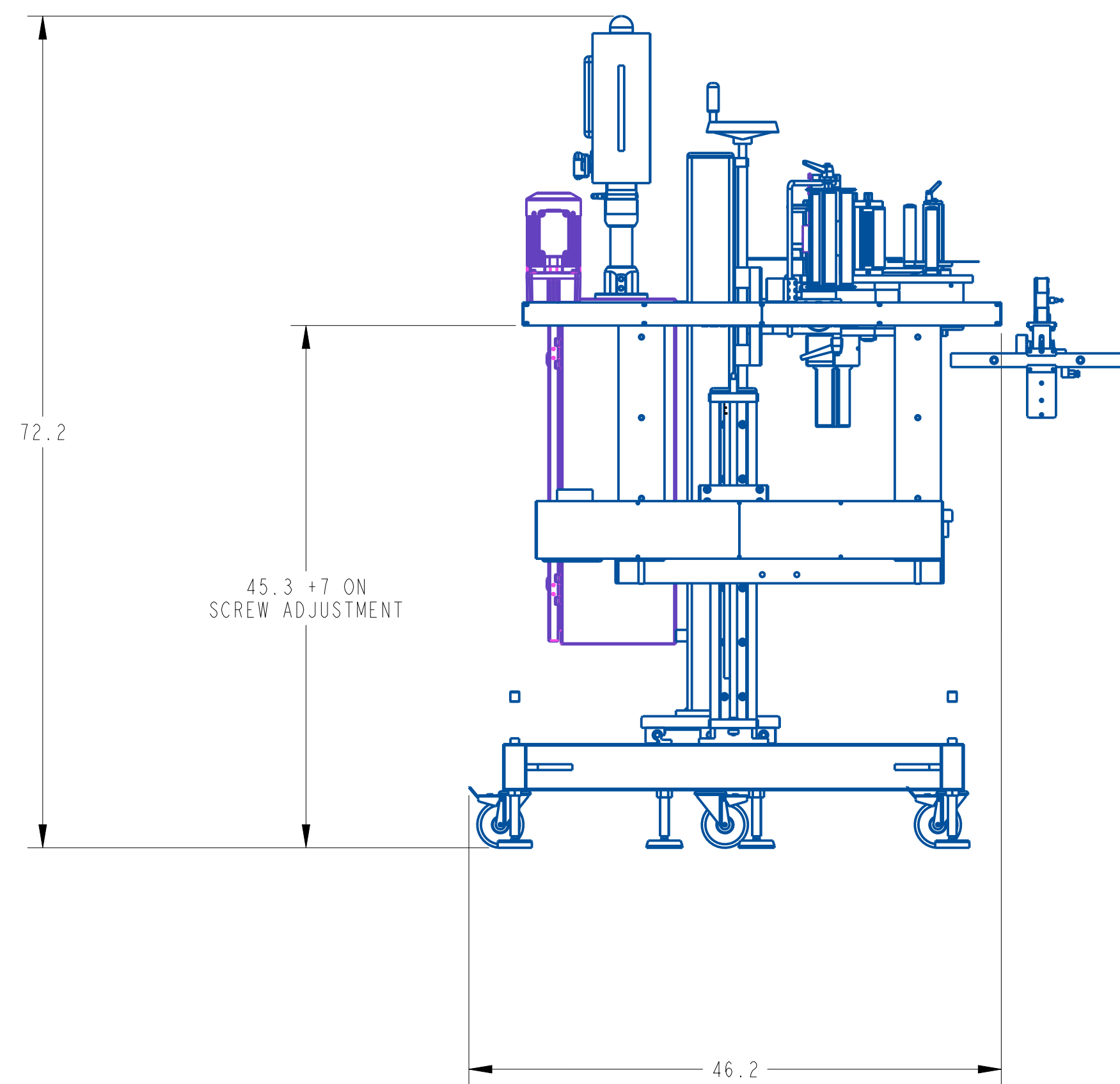
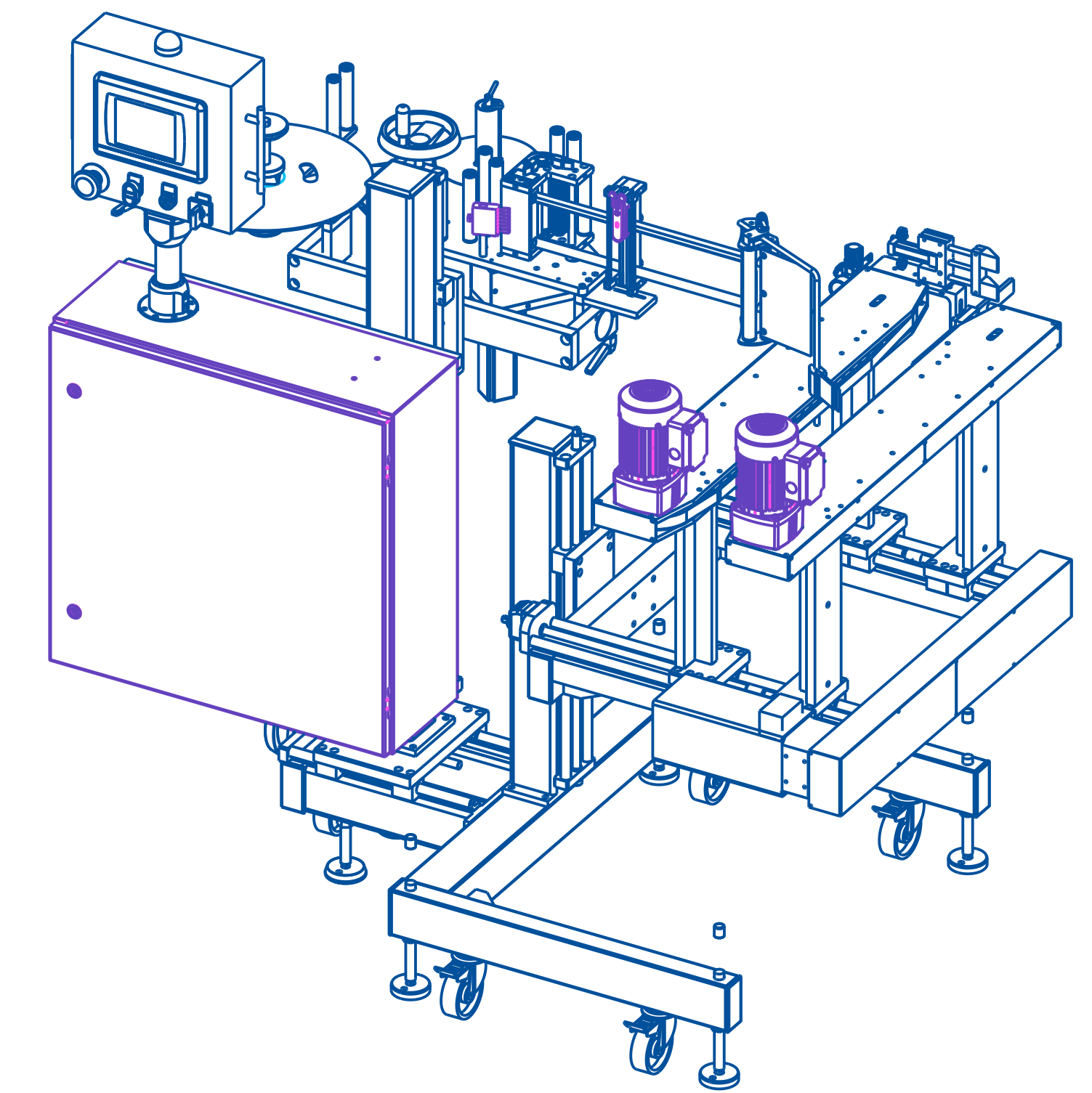
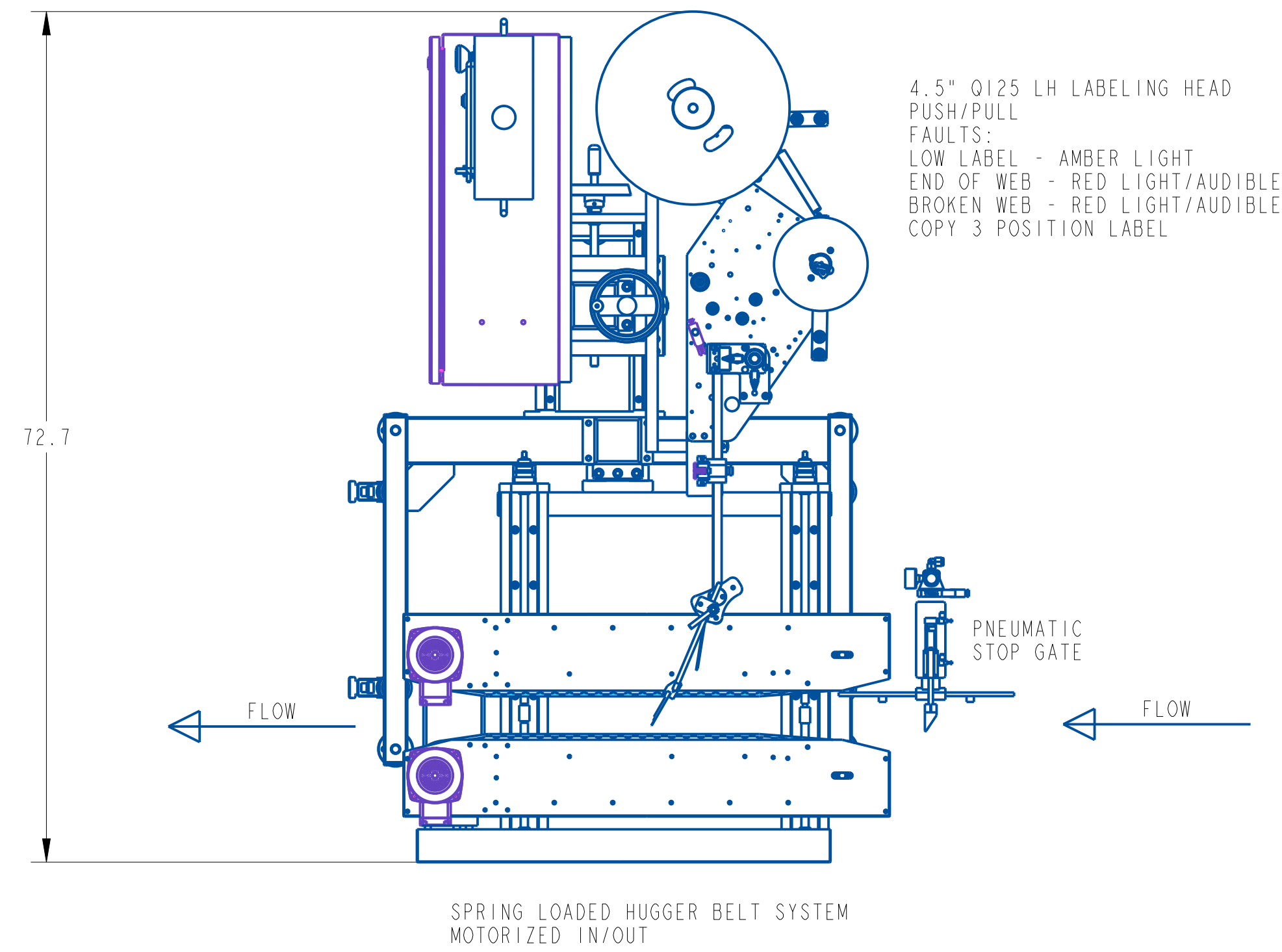
Any order put on hold or left dormant for any reason for 90 days will be considered cancelled. See Cancellation Policy below.

**CANCELLATION POLICY:**

In the event of order cancellation, the 50% down payment is non-refundable. Customer may also be responsible for additional charges covering engineering resources expended and committed materials depending upon the custom nature of the project and the point in the order process in which the cancellation occurs.

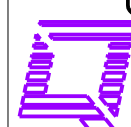
**NOTE.** No salesman, representative or agent of Quadrel is authorized to give a guarantee, warranty or make any representation contrary to above.

Please sign and acknowledge acceptance to these terms and conditions \_\_\_\_\_ Date \_\_\_\_\_



REV	DATE	DESCRIPTION	BY
A	Dec-01-25	NEW DRAWING	TAZ

**THIS IS A PRO-ENGINEER DOCUMENT AND MAY NOT BE MODIFIED MANUALLY**

<small>UNLESS OTHERWISE SPECIFIED          DIMENSIONAL TOLERANCE</small> .x ± .1 .xx ± .01 .xxx ± .005 ANGLES ± .30° SURFACE FINISH 125 BREAK ALL EDGES .005/0.15 CORNER RADIUS .010/0.30 ALL ANGLES ARE 90°	 <b>QUADREL LABELING SYSTEMS</b> 7670 JENTHER DRIVE MENTOR, OHIO 44060 (440) 602-4700	SCALE: 3/32
		DATE: Dec-01-25
		DRW BY: TAZ
		CHK BY:

**ML125 DUAL SIDE BELT LABELING SYSTEM**

MAT'L	COLGATE-PALMOLIVE APPROVAL DRAWING	84251-100
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# Quadrel Labeling Systems Quality Manual

## Quality Statement:

Quadrel Labeling Systems strives to provide our customers with the highest quality labeling/sleeving solutions available on the market. In order to achieve total customer satisfaction, we shall adhere to the following objectives:

100% on-time delivery

zero defects

Value added service and support

Engineered solutions

Employee development and diversity

We will commit to continuously improve each facet of our business operations through implementation of, and compliance of this manual.

A handwritten signature in black ink that reads "C. Wepler".

---

Chuck Wepler  
General Manager / President

## 1 MANUAL PREFACE

Thank you for choosing Quadrel Labeling Systems. We have designed and manufactured this equipment with the upmost pride and care ensuring you the absolute best quality, maximum versatility and reliability.

This equipment is intended to be used only as described in this document. Quadrel Labeling Systems Inc. cannot be held responsible for the improper use or functioning of non-described functions of this machinery. Liability for any personal injury, loss of production or revenues, or property damage occasioned by the use of this manual in effect maintenance, operation, or repair of the equipment is in no way assumed by Quadrel Labeling Systems Inc. Anyone one using a procedure not recommended by the end user should first completely satisfy himself/herself that personal safety and equipment integrity will not be jeopardized in the method selected.

**DO NOT** attempt to install, operate, or adjust the labeling system without first reading and understanding the contents of this manual.

Only a trained person is to be permitted to operate this equipment. Training should include instruction in operation under normal conditions and emergency situations. Under no circumstances should an untrained person operate this machine.

This manual will provide operating instructions, parts listing and schematics. The information contained in this manual will help the user in his/her operations, troubleshooting, and maintaining the machine in good operating conditions. Information, illustrations and specifications contained in this manual are based on the latest product information available at the time of this manual release. Quadrel Labeling Systems Inc. reserves the right to alter and substitute information contained herein at any time.

Due to the customization it is also possible that you have received a different variation of this equipment, with several different options. Some pictures used in this manual may not totally reflect your configuration, although the labeling is completely the same.

**All rights reserved** while every precaution has been taken in the preparation of this manual, Quadrel Labeling Systems Inc. cannot be held responsible for errors, omissions, damages, loss of production, or revenues resulting from the use of the information contain herein.

## **2 GENERAL DISCRIPTION - TECHLINE**

In-line labeling machines apply labels to a wide variety of container shapes. In addition to conventional cylindrical containers, the in-line labeler can be used with specially contoured, elliptical or flat-sided containers. In-line labelers are manufacturing in a variety of configuration. Diagrams illustrate standard in-line labeler arrangements for different container designs.

The Techline labeling system is a high performance, economically priced labeling system for front/ back, wrap or custom applications with production rates up to 275 ppm. Built with quality, versatility and durability from the bottom up. This system surpasses all equipment in its price range and is suitable for multi-shift operations where long-term reliability is important. All critical components are designed for 24/7 reliability. The versatility of Techline makes it ideal for contract packagers or companies requiring frequent changeovers on a wide variety of products. Features such as PLC control with color touchscreen and simple “no tool/ no change parts” operation provide maximum flexibility for today’s packagers. This system has a compact footprint, suitable for harsh/ multi-shift environments. Allen-Bradley PLC control with color touchscreen with 50 programmable product presets. Encoder-based speed compensation. AC inverter controlled product handling. Ideal for Pharmaceutical, Food, Personal Care, Automotive and other markets.

### 3 WARNING/CAUTION SAFETY INSTRUCTION

Where safety is dependent upon starting or stopping devices, or both, they are to be kept free of obstructions that could endanger personnel.

The areas around loading and unloading points are to be kept free of obstructions that could endanger personnel. Instruct personnel working on or near this equipment as to the location and operation of pertinent stopping devices.

This equipment is to be used only for the purpose for which it is constructed.

Under no circumstances are the safety characteristics of this equipment to be altered.

Conduct routine inspections and corrective / preventive maintenance measures to ensure that all guards are installed and function properly. Alert personnel to the potential hazards indicated by the safety labels on this equipment.


#### 3.1 SAFETY INTEGRATION


The end user's safety risk assessment will be the guiding document for proper integration of the equipment provided. Consideration of the following guidelines is recommended in order to achieve a safe result:


- Open areas under the equipment are to be guarded by the end user to prevent entry.
- Where conveyor flight lugs or product enters or exits the equipment, proper guarding and interlock are put in place by the end user to ensure mitigation of shear/jam points.
- The end user is responsible for properly guarding drive components on equipment that requires mechanical drive integration.

#### 3.2 GENERAL SAFETY INFORMATION

This Quadrel Labeling System is engineered to feed and apply labels on your products. In designing the device, Quadrel valued personal safety; however we would like to draw your attention to the following safety acknowledgments.

 **WARNING** Hazards or unsafe practices, which **COULD** result in severe personal injury or death.

 **CAUTION** Hazards or unsafe practices, which **COULD** result in minor injury

 **CAUTION** The presence of safety systems in these units does not exempt the operators to act cautiously, avoiding behaviors that could

endanger their health or the equipment. These models are engineered to feed and apply labels on your products. In designing this device, Quadrel valued personal safety; however we would like to draw your attention to the following safety acknowledgments.

- Operators should know the basic operations and setup procedures before operating this equipment.
- Safe operations should be maintained at all times.
- Know the location of E-stops and power switches prior to operating machinery such as this.

 **WARNING**

To reduce risk of fire, electrocution, or other personal injury when operating. Follow basic safety precautions, including the following:

- This equipment must have an operator attending the machine at all times to monitor the operations. **DO NOT** leave this equipment unattended during maintenance or perform any maintenance unless the e-stop condition has been activated or power turned off.
- The electrical power to device is:   220   Volts,   \_SINGLE (1)\_Phase,  60   Hz,   15   Amps. While installing make sure it's properly configured and connected by a qualified electrical technician.
- **DO NOT** by pass any of the safety circuits or safety features designed into this equipment.



- ALWAYS turn off **power and pneumatics** before performing repairs.
- The doors on all electrical enclosures must be closed. All covers on labeling heads must be on labeling heads. (if applicable)
- This device is built to perform in humid conditions, but must not be pressure washed. Wiping down the device is the recommended cleaning method.



- Do not stand, sit, or allow any personnel to be within reach of the tamp cylinder/ swing arm activation (if so equip).
- Report any malfunctions, or problems with the equipment to qualified maintenance personnel for repair or adjustments that may be required.
- Keep hands clear of moving parts. Do not place hands near labeling head when in operation.



For systems containing conveyors, you must be vigilant with loose clothing or bodily parts as they can get caught in the conveyor's belt or chains as direct injury or death can incur. **DO NOT** use the conveyor as a working platform or walkway.

**TUCK IN ANY LOOSE CLOTHING. DO NOT WEAR TIES. PENDANTS, JEWELRY OR ANY OTHER ARTICLE OF CLOTHING OR ACCESSORY THAT MAY GET CAUGHT ON ANY PORTION OF THE SYSTEM.**

**\*FOR PROLINE SYSTEMS ONLY\***

**CASTERS WERE IMPLEMENTED FOR EASE OF SHIPPING PURPOSES ONLY. PLEASE USE CAUTION WHEN MOVING PROLINE THROUGH FACILITY. THE PROLINE RECOMMENDED USE: SET IN PLACE/POSITION WITH LEVELING PADS DOWN TO SECURE.**

# **WARNING**

- 1. READ AND UNDERSTAND THE OPERATION MANUAL AND ALL SAFETY LABELS BEFORE OPERATING THIS MACHINE.**
- 2. ONLY A TRAINED PERSON IS TO BE PERMITTED TO OPERATE THIS MACHINE. TRAINING SHOULD INCLUDE INSTRUCTION IN OPERATION UNDER NORMAL CONDITIONS AND EMERGENCY SITUATIONS.**
- 3. THIS MACHINE IS TO BE SERVICED ONLY BY TRAINED AND AUTHORIZED PERSONNEL. FOLLOW LOCK-OUT PROCEDURES BEFORE SERVICING.**
- 4. NEVER REACH INTO THE MACHINE FOR ANY REASON UNLESS THE MACHINE IS AT A COMPLETE STOP.**
- 5. NEVER LEAVE THE MACHINE STOPPED IN SUCH A MANNER THAT ANOTHER WORKER CAN START THE MACHINE WHILE YOU ARE WORKING ON OR WITHIN THE MACHINE.**
- 6. NEVER CHANGE OR DEFEAT THE FUNCTION OF ELECTRICAL INTERLOCKS OR OTHER MACHINE "SHUTDOWN" SWITCHES.**
- 7. BEFORE STARTING THIS MACHINE, CHECK THAT: ALL PERSONS ARE CLEAR OF THE MACHINE; NO MAINTENANCE WORK IS BEING PERFORMED ON THE MACHINE, ALL GUARDS ARE IN PLACE.**
- 8. ROUTINE INSPECTIONS AND CORRECTIVE/PREVENTATIVE MAINTENANCE MEASURES ARE TO BE CONDUCTED TO ENSURE THAT ALL GUARDS AND SAFETY FEATURES ARE RETAINED AND FUNCTION PROPERLY.**

# Using VFDs On GFCI Devices

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The National Electrical Code, or NEC, continues to expand protection requirements for safety reasons resulting in an increase in Ground-Fault Circuit-Interrupter (GFCI) outlets being used in more environments. As a result, the Variable Frequency Drives (VFDs) industry is finding more instances of VFDs being powered from GFCIs. VFDs introduce high frequency harmonic content which may cause nuisance tripping on some GFCI devices. This paper is intended to assist anyone that needs to use a VFD on a circuit with GFCI protection. KB Electronics has developed special VFDs suitable for use with most GFCIs\*.

\* Please contact KB Electronics with information regarding your specific GFCI.

## What is a VFD?

A VFD (also termed adjustable frequency drive, variable speed drive, AC drive, adjustable speed drive, micro drive, motor control, or inverter drive) is a power conversion device that will accept normal fixed branch circuit voltage of (115V or 230V) and frequency (50 Hz or 60 Hz) and allow the operator to control the speed of an induction motor (AC Motor) by varying the output voltage and frequency. A simplistic version of a typical VFD system is shown in Figure-1.

In addition to operator controllability, the VFD with soft start/stop features offers extended equipment life, increased performance, reduced maintenance, protection from excessive currents and voltages, as well as energy savings.

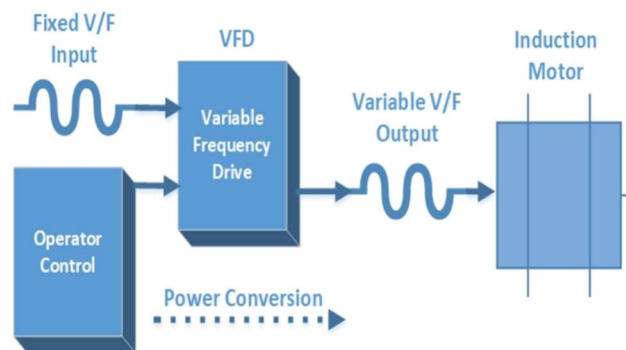


Figure-1: Typical VFD System

## What is a GFCI?

A GFCI (shown in Figure-2) is a circuit breaker device which is designed to protect people from hazardous shock or electrocution by shutting off an electric power circuit when it detects current flowing in a way that it is not meant to, such as through water or a person.



Figure-2: Typical GFCI Outlet

The GFCI is intended to protect people from electrical shock, therefore, it is completely different from a fuse in the sense that it needs to shut off the electric power circuit at a low current, typically no more than 5 mA, in a quick amount of time (less than 1/10 of a second).

The GFCI does this by measuring and comparing the amount of current flowing in the ungrounded (hot) and grounded (neutral) conductors of the circuit. If the GFCI detects an imbalance in the circuit, it immediately shuts off the circuit.

### **Why Nuisance Trips Occur with Standard VFDs**

Standard VFDs, when powered from GFCI outlets, can cause the GFCI to trip due to the leakage currents generated from the high switching frequency of the VFD's power devices and the harmonics associated with them. These high frequency leakage currents are not at the base frequency of the drive output which is normally 50 Hz or 60 Hz. These high frequency leakage currents, typically greater than 4 kHz, may cause the GFCI to trip because the GFCI is designed to work with 50 Hz or 60 Hz frequency inputs, not this higher value.

The high switching frequency of the VFD's power devices induce more capacitive-coupled currents, since a capacitor approximates a short circuit at high frequencies. This creates common-mode noise, referred to as leakage current, which travels through ground and can cause the GFCI to trip. The path to ground is made through the motor bearings or auxiliary equipment bearings.

In addition to the high switching frequency of the drive, there can be many other contributing factors which cause the GFCI to trip. Some drives have built-in filters which couple additional leakage current to earth ground. Other drives use external filters and replacing them with a low leakage filter may help.

One way to help determine if the GFCI tripping is occurring from the input filter or the VFD output is to remove either the input filter or the motor and observe if the GFCI still trips. For example, if the input filter is easily removed and doing so

prevents the GFCI from tripping, the source of the leakage currents tripping the GFCI was largely from the input filter.

Another method is to disconnect the motor. If doing so prevents the GFCI from tripping the contributing source of leakage current is most likely from the output stage of the VFD. However, most often than not, the GFCI is tripping from a combination of the two and improvements on both the input and output will help.

Long motor power cables can also create noise spikes. These long leads add more capacitance which increases noise spikes from the fast switching power devices of the VFD. Use a VFD rated cable with the shortest leads possible when connecting the motor power cables. A choke on the VFD's motor outputs may help reduce noise spikes.

In addition, ensure that motor cables are properly shielded, sized, routed, terminated, and grounded at both the motor and drive.

### **KB's GFCI Solution**

KB's engineering team has studied VFDs powered from a variety of GFCI devices. A solution has been created which considers all contributing factors to get a best-case scenario that successfully works with most GFCIs.

KB investigated switching frequencies and developed custom switching frequency algorithms to reduce audible noise and leakage currents. High frequency noise spikes and ringing were reduced by modifying our proprietary power circuits for optimal results. In addition, output chokes, low leakage filters, and shielded cable were introduced, if needed, to find a GFCI solution.

## Conclusion

KB has had great success providing VFDs that work with GFCIs for numerous original equipment manufacturers (OEMs). KB offers a full range of motor controls (shown in Figure-3) which can be customized to work with GFCIs. Let KB Electronics provide a solution for you.



*Figure-3: VFDs Available from KB Electronics*

# Unboxing & Installation of your Quadrel Labeling Systems Machine

This section of your manual is aimed towards making the transition from Shipping Crate to Assembly line less Dramatic. If you have scheduled an install with one of our Professional Technicians the set-up of your machine will be a breeze. If not your manual as all of the information needed to get you going. In this section there may be some equipment shown that does not apply to the machine you purchased.

\*NOTE\* This is general instruction for all equipment (your equipment may vary slightly).

Let's get started...

First things first, check your crate/box/machine for damage. If there is damage please note the exception and contact Quadrel immediately. Any extra boxes or pallets will be either in your crate or tethered to the crate or pallet. Once you have inspected your shipment you can open the crate. Check packing slip Bill of lading against boxes received. Notify Quadrel of any discrepancies.



Carefully remove all banding on the legs, misc. boxes and assemblies in the crate or on the pallet. If your machine is

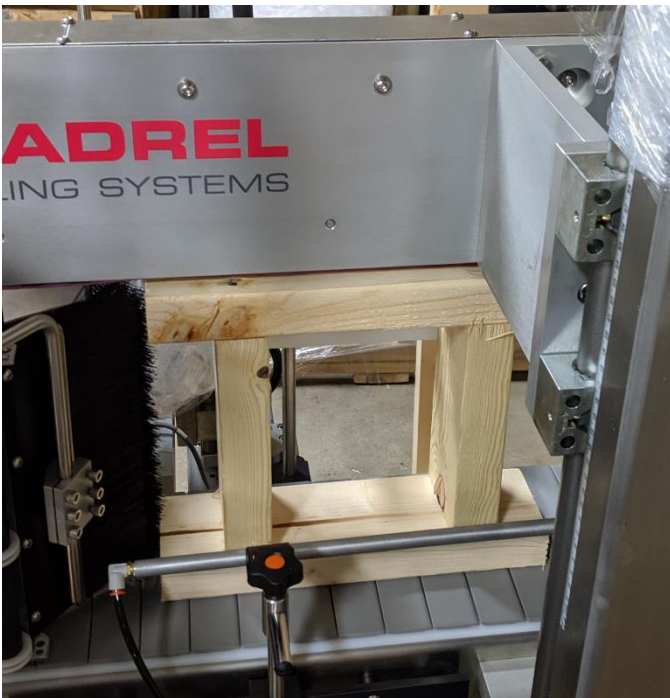


wrapped in bubble wrap or plastic wrap go ahead and carefully cut and remove that as well. Ensure you are wearing the appropriate safety gear when removing your machine from the crate.



Ensure all plastic wrap is removed from the assembly you are removing the support from before removing the support.

Remove the supports under your labeling heads, wrap station, top trap, HMI, Pacing wheel or belt. See images for various supported assemblies.



Most assemblies supported have a tool-less vertical adjustment using a knob or hand wheel.

The hand wheel may be wrapped to the assembly to prevent damage.

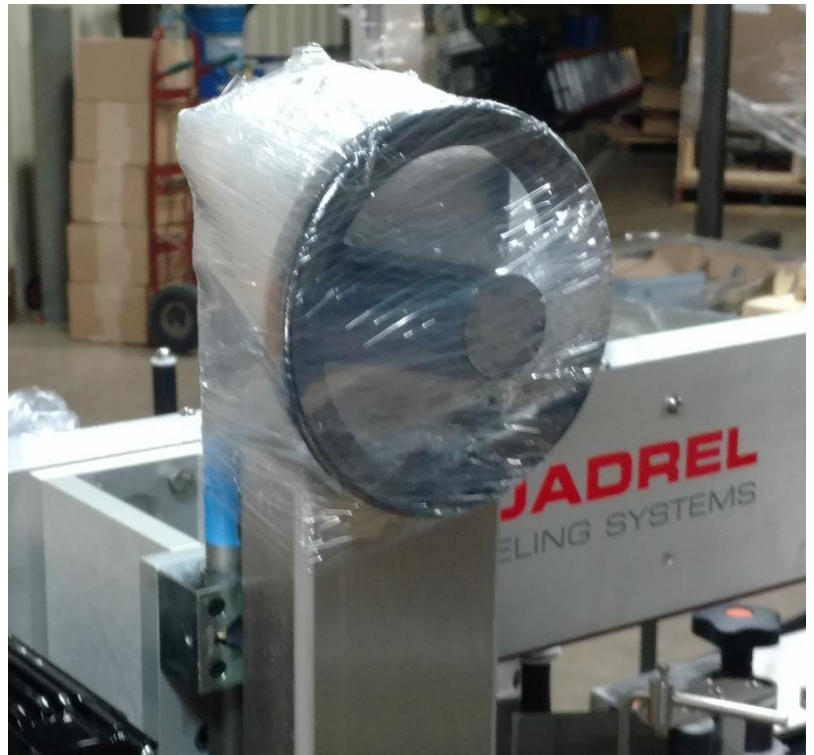
Remove the hand wheel from the wrap, then fasten the hand wheel to the square end on the lead screw using a 3/32 "L" handle Allen wrench.

Turn the handle/knob to raise the assembly this will take the weight off the supports so you can remove them.

Top Trap Support (top) Labeler Head Support (bottom) Plastic wrapped hand wheel (right)



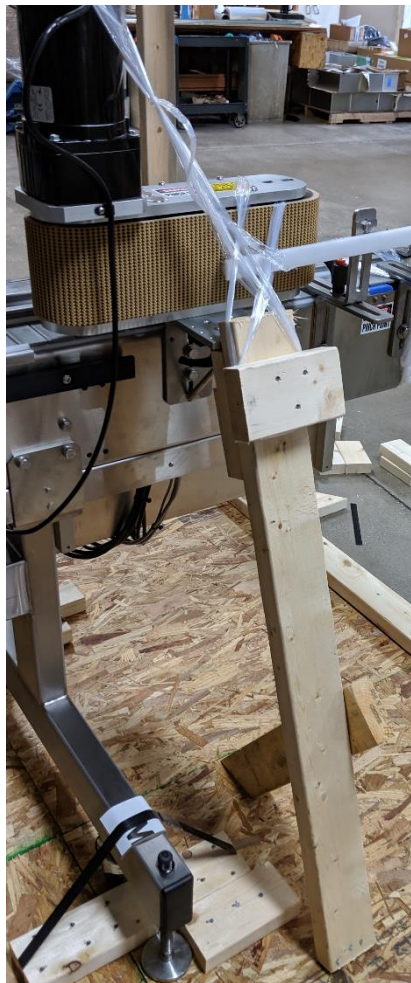
All top and bottom labeling heads will be supported



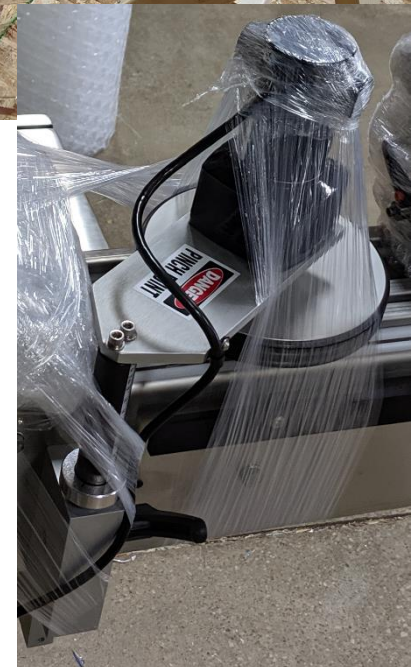
similar to the image shown on the left.

Wrap stations will have supports similar to the image to the right. These supports do not require moving the assembly.

Pacing belt assembly supports can be removed without raising the assembly.

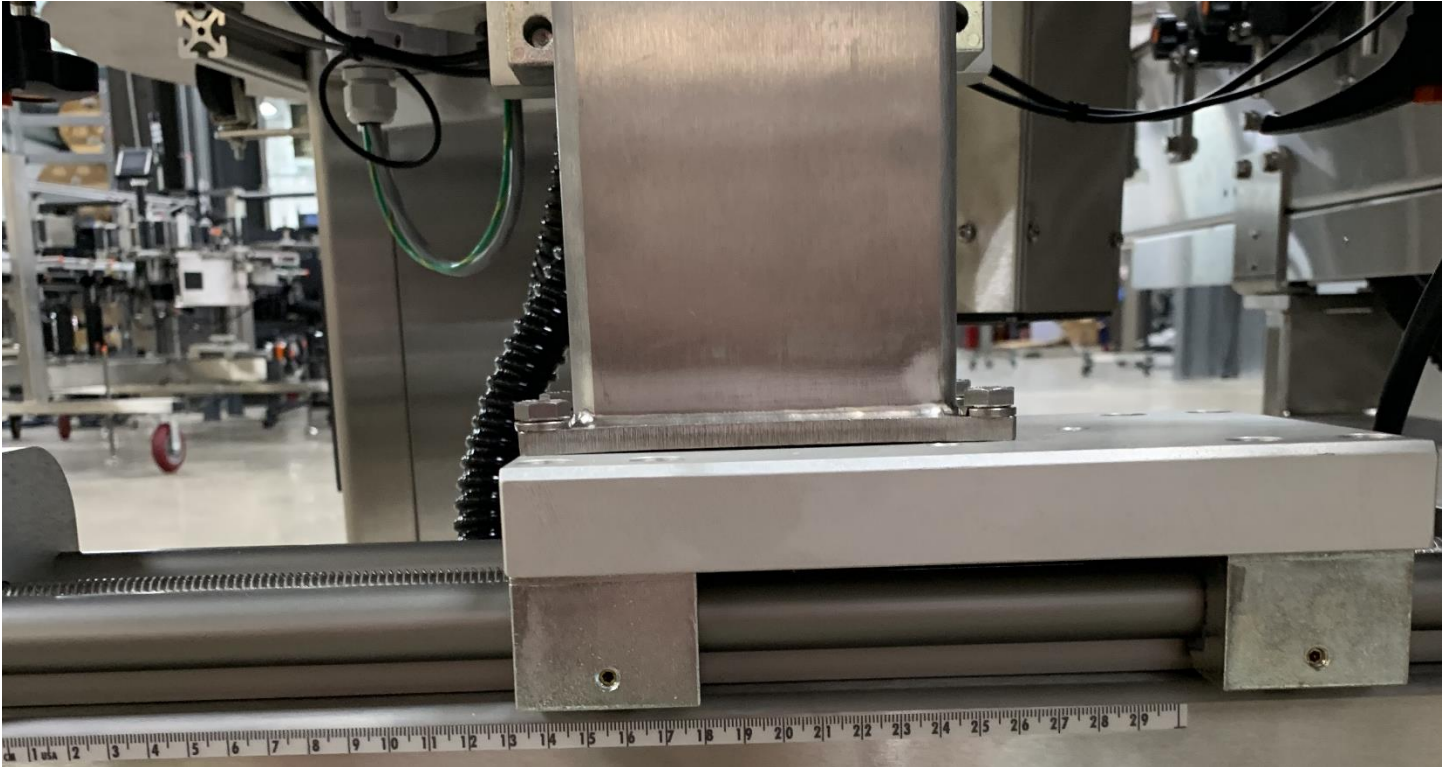


Pacing wheels supported as shown





Often the head support will be moved in shipping or moved to be supported. When you are setting up your machine refer to your set up sheet in this manual. There are scales on the side of the assembly to line the carriage up to (as shown in the Image to the left and below).



Peel plates with or without the rods may be removed from the labeling head to move the head all the way in during shipping.

All assemblies removed will be bubble wrapped then plastic wrapped to the machine (as shown in image on the right) or in box on the pallet the machine is on (as shown in image below).



Mount the peel plate assembly using a 5/16 L handle Allen wrench (as shown in image on the left). The bolts are located in the assembly. You simply put the wrench in the quick change access holes to loosen or tighten the assembly.

**\*NOTE\*** When you are setting up your machine make sure the peel plate assembly is perpendicular to the conveyor. When the peel plate assembly is on the rods there is a small amount of play allowing you to make small adjustments to the assembly.

If you have the peel plate rods removed with the peel plate assembly and the label detect assembly (as shown below).

All assemblies removed will be bubble wrapped then plastic wrapped to the machine or in box on the pallet the machine is on.

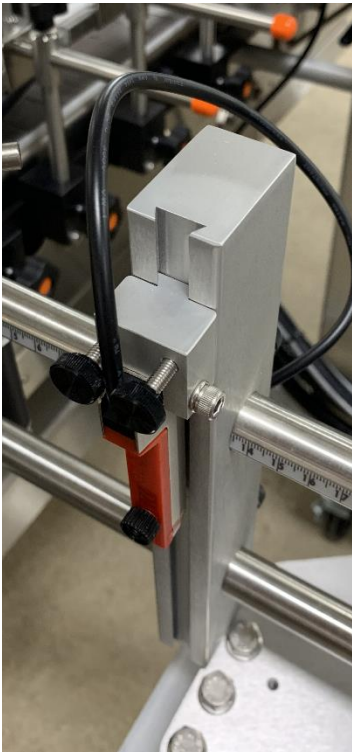


First back the head out all the way. Locate your peel plate assembly and slide it into the holes in the drive roll assembly (as shown on the left of the image above). Make sure you take the bolts out of the end of the rods before putting them into the drive roll assembly.



Fasten the assembly to the drive roll with the bolts supplied using a 5/16 L handle Allen wrench. Make sure you have the lock washers on the bolts.

*\*NOTE\** When you are setting up your machine make sure the peel plate assembly is perpendicular to the conveyor. When the peel plate assembly is on the rods there is a small amount of play allowing you to make small adjustments to the assembly.



When the peel plate rods are removed the label detect sensor is removed with it (shown in image to the left). The sensor is locked into place so it won't move or need adjusted. All that will need done is simply reconnect the sensor to the zip port. To re-connect the sensor first locate the zip port (as shown in image on the right). The zip port is located under the head on the chassis or mounting plate. Take the cable coming from the sensor, route it neatly under the head, and screw it into the zip port where it says "label detect".



Some machines may have the unwind flange (shown in image to the right) removed to protect the flange during shipping do to the width of the machine.

All assemblies removed will be bubble wrapped then plastic wrapped to the machine or in box on the pallet the machine is on.

First, slide the unwind flange (with the collar facing towards you as shown in image to the right) over the unwind shaft. Make sure the top of the flange is 1 ¼ inches off the side plate.

Then, lock into place by tightening the collar with a 5/32 L handle Allen wrench.

Slide the quick lock collar over the shaft by lining the set screw up with the flat. The collar locks into place by rotating the collar 90 degrees.



Some machines may have the rewind flange (shown in image to the right) removed to protect the flange during shipping do to the width of the machine.

All assemblies removed will be bubble wrapped then plastic wrapped to the machine or in box on the pallet the machine is on.

First, slide the rewind flange (with the collar facing away from you as shown in image to the right) over the rewind hub make sure the flange just above the rubber bumper roughly 1/2 inch off the side plate.

Then, lock into place by tightening the collar with a 5/32 L handle Allen wrench.



Rails and transfers on the infeed and outfeed may be removed for shipping purposes. They will be wrapped in bubble wrap and wrapped to the machine. Carefully remove wrap and place in position as shown lock into place by tightening the knobs or ratchet handles.

\*NOTE\* Your machine may have a different rail system either adjustment is tool-less and fastened by a knob of ratchet handle.



End transfers will be wrapped in bubble wrap and plastic wrap. They will be located in a box on the pallet with your machine or wrapped to the machine itself.

Fasten the end transfer plate to the machine using a 5/32 L handle Allen wrench and the supplied 10-32 socket head screws. Ensure the transfer plate is both level with the conveyor and DOES NOT hit the conveyor chain.

Stack lamps are usually placed at the highest point of the machine and for that reason they are either removed or rotated 180 degrees. The stack lamp will wrapped in bubble wrap and wrapped to the machine.

If the stack lamp is rotated then all you need to do is remove one of the bolts, rotate the stack lamp and put the screw back in. We use various screws on stack lamps you will need one of the following tools for the job.

- 3/32 L handle Allen wrench
- 1/8 L handle Allen wrench
- 5/32 L handle Allen wrench
- 3/16 L handle Allen wrench
- 1/2 open end wrench



HMI over head touch screen displays may be laid flat across the top of the enclosure wrapped in bubble wrap and plastic wrap.

Carefully remove the plastic wrap and bubble wrap.

Rotate the HMI 90 degrees and slide into the mount on the enclosure.

Fasten the pole in place by tightening the 2 set screws on the mount with a 6MM L handle Allen wrench.



The HMI may be enclosed in a wooden support off the enclosure to hold it in place during shipping.

If HMI is located remotely off the enclosure it will still be supported during shipping.

If so, carefully remove the supports and you are done.

All printers, printer controllers and lasers are removed from the machine when shipping and placed in the manufacturer's box. The cabling will remain on the machine for ease of installation.

The printer is mounted to the printer mount with 1 ¼-20 ratchet handle. Make sure you line up the indents in the plates with the brass nut on the threaded rod. Then slide the ratchet handle through the center of all of the blocks and tighten. Plug in the cables and you are done.



Table top printers with printer tables will ship in separate boxes or pallets (as shown to the left) the printer will be disconnected and placed in the manufacturer's box. The table will either get banded to the pallet with the machine or a separate pallet tethered to the machine pallet. Printer tables may be connected to the machine via weldment or a remote from machine. If you have a weldment connected table, refer to the lay out drawing of your machine in this manual. Fasten the weldment to the frame of the conveyor using the supplied hardware and an open end wrench. If the table is remote then move into the desired position referring to your layout drawing. Remove the printer from the box set on the table and plug in the pre-wired connectors.

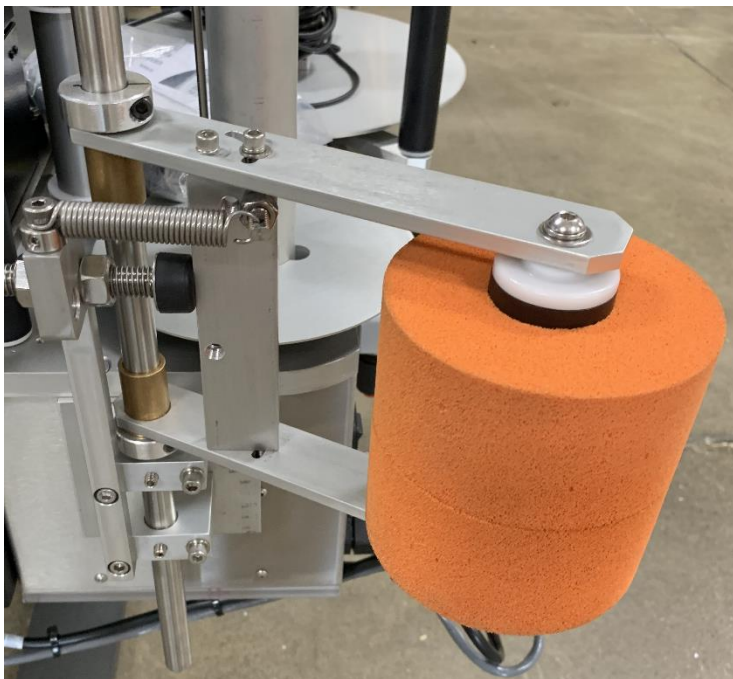




Print and apply printers will be removed from the labeling head as well and placed in the manufacturer's box. Your labeling head will likely ship in its own boxes with a few of the assemblies or flanges removed. Occasionally your head on a stand will ship on a framed pallet which will require little work to get started.

The unwind flange is installed like the previous one discussed previously.

Remove the printer from the box and place it into the opening of the labeling head (as shown in image to the right). Fasten the printer to the side plate of the labeling head using the supplied (5) 10-32 socket head screws and a 5/32 L handle Allen wrench. Then, plug the printer in.



The corner wrap modules will be removed for shipping purposes. They will be wrapped in bubble wrap, plastic wrap, and placed into the box with the labeler.

Take out of the box, carefully remove the wrapping.

Then mount to the labeling head with (4) 1/4-20 bolts using a 3/16 L handle Allen wrench.

To prevent kinking of the air lines during shipping on our q34 print and apply labeling heads. All lines are pulled and labeled to the corresponding color. The hoses are color coded and marked. Simply plug in hose into the matching color (as shown in image to the right).



Rotary accumulation tables are banded to a pallet and wrapped.

These tables usually operate independently to the machine.

Carefully un-band and unwrap the table.

Line it up to the transfer plate on the conveyor.

Level the table using the leveling pads.

Plus in and adjust speed through the control box.



Sleeving applicators are typically on a stand and will ship on a pallet. They will be banded have many supports and be wrapped to protect the machine during the shipping process.

Carefully remove the banding and wrapping.

Raise the head and remove the supports.

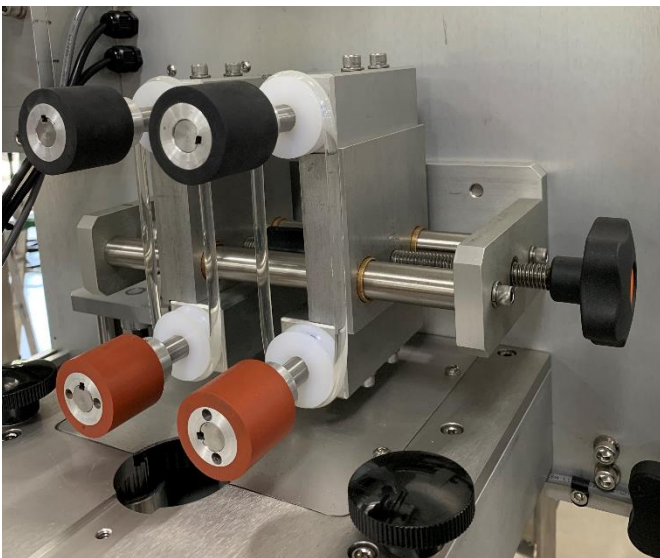
The pallet will contain boxes with. Misc assemblies and or parts (ie mandrels).



Below is an image of the mandrel. The mandrel is the most precise and important part of the sleeve system. Always handle the mandrel extremely carefully.



Your mandrel will be located on the machine pallet tethered to the machine. It will be wrapped and in a box or tube (as shown below).



Carefully remove the mandrel from the packaging.

Rotate the black handle to move the throw down rollers apart far enough to slide the mandrel in.

Ensure each roller is between 2 bearings, the fin on the top is between the sensor, and the cutter blades are in line with the cut in the mandrel.

Rotate the black handle to move the throw down rollers closer to the mandrel pinching it in the middle. DO NOT OVER TIGHTEN THE THROW

DOWN ROLLERS INTO THE MANDREL. They need to be just tight enough that the bearing spins and a label feeds through.

Proline machines with guarding will either be left on the machine and have wooden supports to protect during shipping or the guards are removed and placed on a pallet.

If the guarding has supports carefully remove the supports from the guarding.

If the guarding is removed from the machine each panel will be labeled and the machine will be labeled to make it easy to figure out which door goes where.



The doors are fastened to the frame of the machine with the supplied hardware.

Line the hinges up to the holes on the frame put the bolt through.

Tighten a nut on the opposite end with the supplied flat and lock washer.





During shipment if the conveyor gets skewed you may need to re-square it. First check the conveyor with a square to verify (as shown in images below). If the conveyor needs adjusted, adjust the conveyor by slightly loosening the 4 bolts connecting the 2 sections on conveyor you would like to adjust (as shown in image to left).

Make your adjustments and check the top and side with a square. Placing a square across the top will check the squareness vertically. Placing a square along the side will check squareness horizontally.



When the conveyor is square tighten the bolts and you are all set.

When shipping a proline with an extended boom the dual swiveling elbows in the center of the boom get flipped 180 degrees to allow the machine to have enough over head clearance to ship safely (shown in image below).



Below are the instructions to flip the elbows to the correct configuration (as shown in image below)



Ensure the overhead controls are safely supported by a tow motor or at least 2 people so it does not fall when disconnecting the elbows.

Locate the 2 screws on the top and 2 screw on the bottom holding the prospective covers on.



With a t25 torx bit screw driver, loosen the 2 bolts holding the cover on the top and bottom.

With the cover off you can now access the 4 bolts holding each of the tubes in place.

Ensure the overhead enclosure is supported enough to hold for a few minutes while you loosen the bolts and flip the elbow.

Using a 6MM L handle Allen wrench loosen the 4 bolts on the top and bottom tube.



Quickly pull the tubes out and rotate the elbow as shown below.



BEFORE



AFTER

Slide the tubes in. the overhead enclosures elevation is going to change when flipping the elbows if you have it supported via tow motor you will have to raise it.

Fasten the 8 bolts with a 6MM L handle Allen wrench.

Fasten the covers to the top and bottom elbow using a T25 torx bit screw driver.



To the left shows the correct orientation of the dual elbow boom for the overhead enclosure.

If you have any questions please give our professional technicians a call.

# FAMILY GUIDE



**Operator Interface Guide**

**Techline Labeling System**

For 82451\_v000 files.

**Panelview touch screen with CompactLogix PLC**

## Opening Splash Screen

Upon initial power up, the terminal will initialize and display a splash screen. Once the screen and PLC boot up, the “Touch Screen to Continue” text will appear.



### Button / Indicator Reference:

**Menu Navigation Buttons:** Navigation buttons will appear on the left side of the screen when the "System Menus" button in the top left corner is pressed.

**Standard Buttons:** Standard buttons are used to turn features on/off, reset faults, clear counters, or various other functions that require operator control. Toggle buttons will typically have icons to reflect the status of the function that is being toggled while momentary buttons like Resets are circular and do not change images/colors.

Many buttons and toggles may be password protected, which will appear differently if the current user does not have proper access.

**Indicators:** Status Indicators will be oval in shape and will change color and text based on states.

**Numeric and Text Displays:** Numbers or Text displays typically will have a light orange background with black text (some indicators may be other colors). These are used to reflect numbers or recipe descriptions.

**Numeric and Text Inputs:** If a number or text can be entered, the button will have a dark green background with white text. The right side of the button will have a touch icon signify that it is an entry box.

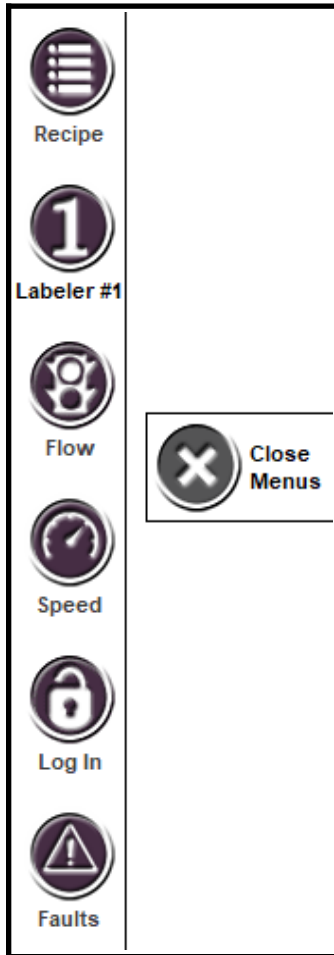
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## System Menu:

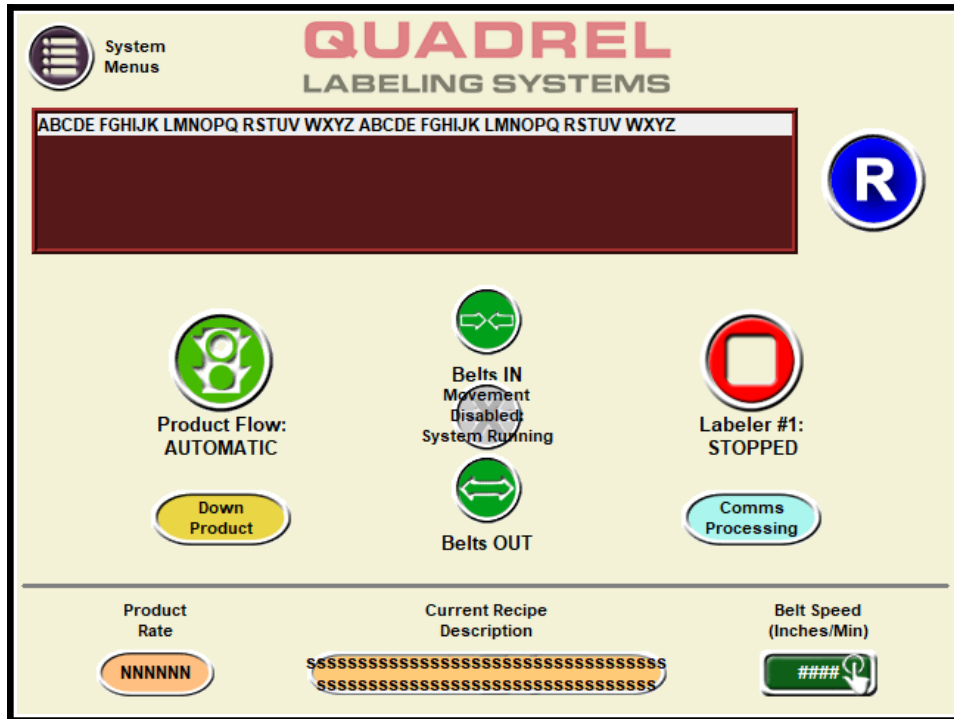
Pressing this button in the top left will bring up the System Menu bar





## Main Screen:

After touching the splash screen, the touch screen will display the Main screen. You can also get to the Main screen by pressing the Home icon (pictured left), which is typically in the top right corner.



### Alarm/Message window:

Displays current alarms and status messages about the status of the labeling system. The Faults Menu button can be used to display more messages or a history if needed. Pressing a reset button on the touch screen or physical button on the machine will clear these messages if the fault was remedied.

### Labeler Run/Stop:

The Labeler can be toggled between Run and Stop (pending fault conditions). The Run/Stop button will change colors and text based on the current status.



Green “Running” Button: This indicates the labeler is currently running and cannot be jogged. While running, the labeler will automatically apply labels to passing products. To **stop** the labeler, press this button.



Red “Stopped” Button: This indicates the labeler is currently stopped and may be jogged. While stopped, the labeler will ignore products passing by. To **run** the labeler, press this button.

### Labeler Status Indicator:

The status indicator below the Run/Stop buttons will identify which fault state the labeler is in.

Green: Ready / OK. The labeler has no fault conditions and may operate normally.

Yellow: Warning. The labeler has a warning present (typically low on labels). The labeler may operate normally, but will require attention soon.

Red: Faulted. The labeler has a fault on it that will prevent it from dispensing labels.

Grey: Disabled. The labeler is disabled. Power to the drive is turned off and all functions are bypassed.

Pink: Processing New Speed. If the Speed Cal is changed while the Labeler is running, it will automatically stop itself momentarily to process the new speed reference

### Product Rate (Parts Per Minute):

This indicator will reflect how many parts per minute are being labeled by the system. This number will average out over a period of time and may need at least 10 products in order to start calculating a rate.

**Current Recipe:**

This display reflects the description for the currently selected recipe. Recipes are explained in the Recipe / Labeler Menu.

**Target Speed:**

The Target Speed entry box changes the speed of the system. It will be entered as inches per minute (100-1600).

**Fault Reset:**

Pressing this blue button with white "R" will clear and reset any active faults on the machine.

**Belt Adjustment:**

The side hugger belts can be adjusted in and out from these buttons on the Main screen. These buttons are only visible when the system is stopped.



**Belt IN Button:** Pressing this button will bring the belts in towards each other. Note that if the inner limit switch is active, the belts will not move In.



**Belt OUT Button:** Pressing this button will move the belts away from each other. Note that if the outer limit switch is active, the belts will not move out.

**Product Flow Control:**

The pacing system can be stopped independently of the main system in order to prevent products from flowing into the system. This can be useful during setup or to purge the system. A pacing system can be a feedscrew, pacing wheel, pacing belt, stop gate, or combination of listed items.



**Green "Automatic" Button:** This indicates the pacing system will stop and start the pacing system based on external conditions.

**The Pacing System will stop/close when:**

- The system is stopped
- The infeed sensor is not blocked by products or "starved".
- The outfeed sensor is blocked by products or "full".
- The Product Flow button has been toggled to "Stopped"
- A Cycle Stop is active



**Red "Stopped" Button:** This indicates the pacing system is stopped and will not allow products into the system until toggled back to Automatic.

**Product Flow Status Indicator:**

The indicator below the Product Flow Control button identifies the actual status of the pacing system.

**Green:** Running. The pacing system is currently allowing products into the system.

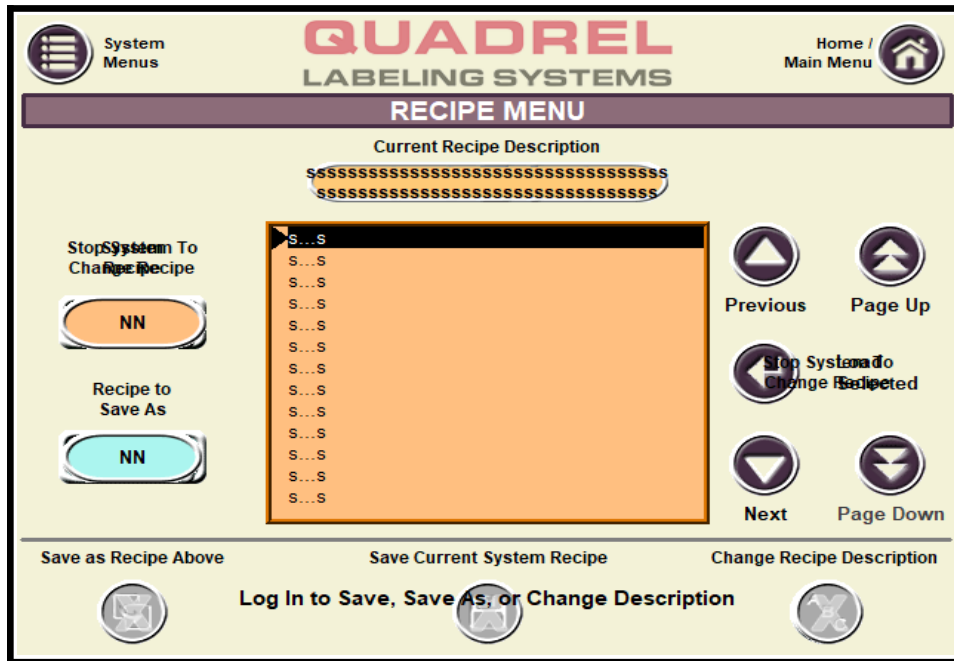
**Yellow:** Waiting. The system is running but the pacing system is stopped because of a condition listed above.

**Red:** Stopped. The pacing system has been stopped manually and will not function until placed in the Automatic Mode.



## Recipe Menu:

The Recipe Menu allows the user to change recipes, view all recipes by descriptions, save recipes, and save recipes as new.



### Recipe:

Recipes are presets that contain parameters unique to each product. Setting Recipes for different products expedites changeover times. A total of 50 recipes can be stored and descriptions can be changed by pressing the bottom description box when logged in at a Supervisor Level.

Recipes store the following information:

Description (displayed in the list on the center of the screen)

System Speed Parameters: Target Speed

Labeler Parameters: Product Delay, Label Stop, Max Feed, Speed Ratio

### Loading:

Recipes can be loaded by entering a new Recipe number on the left side. Once entered, all stored toggles and parameters will be loaded to the system. Note that a recipe cannot be loaded while the system is Running.

A user can also use the buttons next to the description list to select a recipe by its description. Once a recipe description is highlighted, the “Load Selected” button must be pressed to load that recipe from the list.



### Saving (Maintenance Level):

Pressing the pink Save button in the bottom center will save all current recipe parameters to the current Recipe number.

### Recipe to Save As (Supervisor Level):

This number can be used to create a copy of the current recipe when using the Save As button.



### Save As (Supervisor Level):

Pressing the teal Save As button in the bottom left will save all current recipe parameters to the Save As Recipe number. Note that this button does not save the current values to the current recipe.



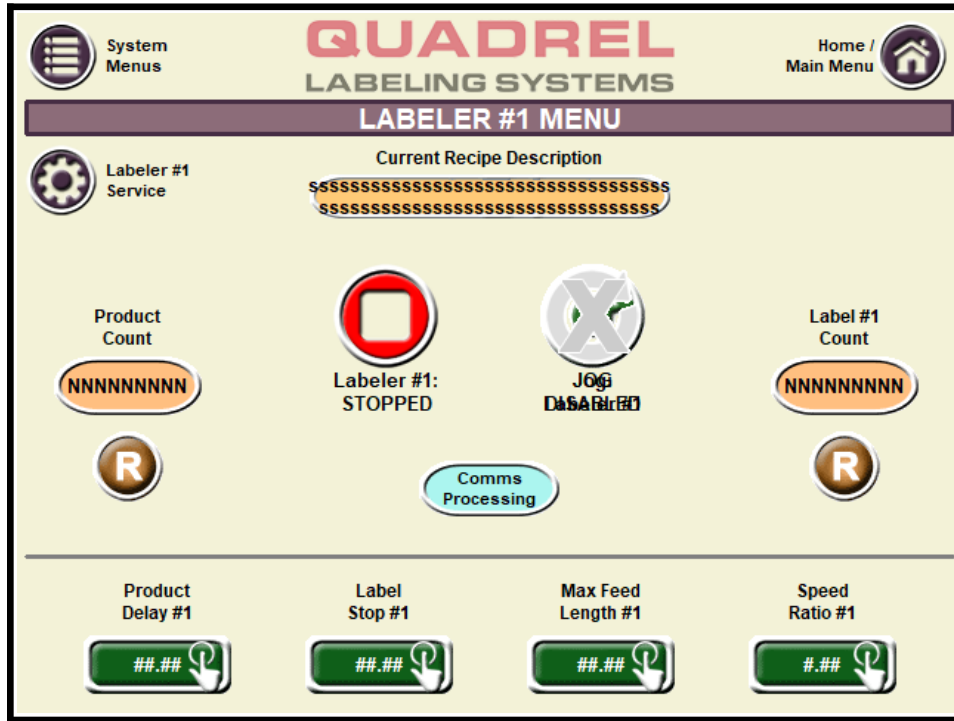
### Change Description (Supervisor Level):

Pressing this button will bring up a keyboard that allows the user to enter a new description for the current recipe.

# 1

## Labeler Menu:

The Labeler Menu contains parameters related to dispensing labels on products.



### Labeler Run/Stop:

The Labeler can be toggled between Run and Stop (pending fault conditions). The Run/Stop button will change colors and text based on the current status.



**Green "Running" Button:** This indicates the labeler is currently running and cannot be jogged. While running, the labeler will automatically apply labels to passing products. To **stop** the labeler, press this button.



**Red "Stopped" Button:** This indicates the labeler is currently stopped and may be jogged. While stopped, the labeler will ignore products passing by. To **run** the labeler, press this button.

### Labeler Status Indicator:

The status indicator below the Run/Stop buttons will identify which fault state the labeler is in.

**Green:** Ready / OK. The labeler has no fault conditions and may operate normally.

**Yellow:** Warning. The labeler has a warning present (typically low on labels). The labeler may operate normally, but will require attention soon.

**Red:** Faulted. The labeler has a fault on it that will prevent it from dispensing labels.

**Grey:** Disabled. The labeler is disabled. Power to the drive is turned off and all functions are bypassed.

**Pink:** Processing New Speed. If the Speed Cal is changed while the Labeler is running, it will automatically stop itself momentarily to process the new speed reference

**Labeler Jog:**

When the Labeler is stopped, the Jog button becomes available. Pressing the Jog button will cause the labeler to dispense one label (pending proper threading and label gap detection). It is important to jog labels upon threading or changing over to verify the labeler is threaded and functioning properly.



Green “Jog” Button: This indicates the labeler can be jogged. Press this button to start a jog process. This button will be grey while the labeler is jogging.



Greyed out “Jog” Button: This indicates the labeler is currently running, and may not be manually jogged.

**Product Count and Reset:**

This counter reflects how many Products have passed the product detect sensor while any labeler is Running. The reset button below the counter will set this value to 0.

**Label Count and Reset:**

This counter reflects how many Labels have been dispensed when Jogging and Running. The reset button below the counter will set this value to 0.

**Product Delay:**

The Product Delay (in inches) is used to center the label on the product in the left/right direction. A higher value in the Product Delay parameter will move the label towards the infeed side of the conveyor.

**Label Stop:**

Label Stop (in inches) controls the label’s stop position. Typically the label should stop with 1/8” to ¼” sticking off of the peel plate. A higher Label Stop will result in more label off of the peel plate.

**Max Feed Length:**

The Max Feed Length (in inches) determines how much of the liner will advance when no label division is detected by the Label Sensor. If this value is lower than the physical length of the label, poor label stop will result. This value is typically set to a value at least ¼” longer than the actual label length. The system also uses this distance to determine if a label is missing on the liner and warning message generation.

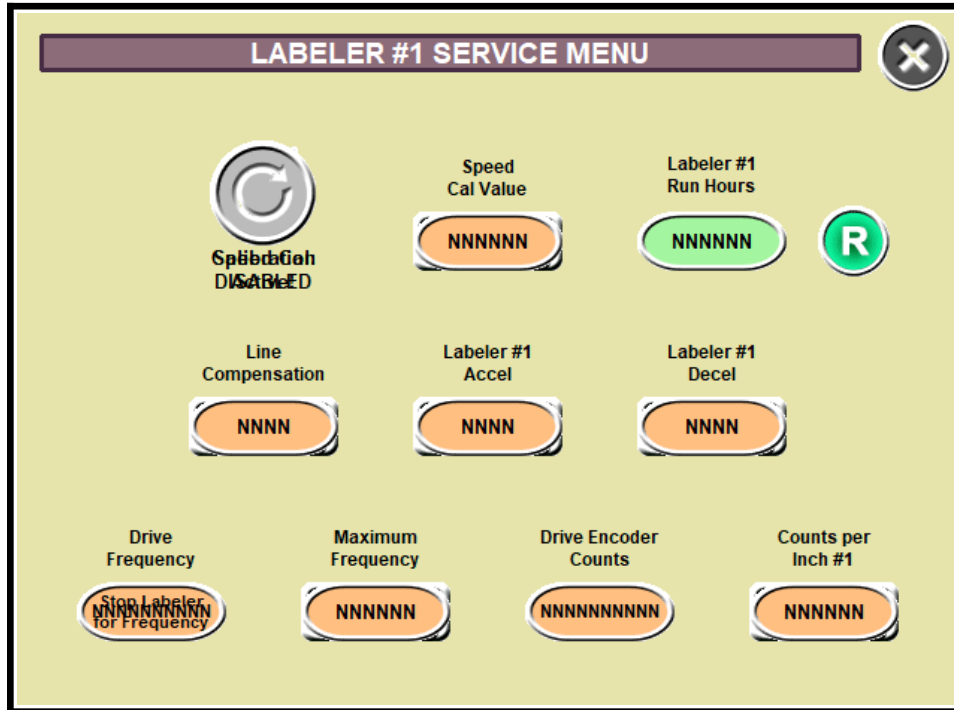
**Speed Ratio:**

Speed Ratio is the value that determines the actual dispensing speed. A value of 1.00 means that the labeler will dispense the label at the speed of the conveyor (which is typical). Slowing it down will cause the label to “stretch” in certain applications.



## Labeler Service / Options Menu:

The Labeler Service / Options Menu contains parameters and toggles related to the Labeler that are not typically accessed on a regular basis. All toggles and parameters on this screen are protected to the Supervisor Level.



**Calibration:** Pressing this button will put the labeler into a Calibration Mode. While active, the labeler's drive system will continue to spin until Calibration Mode is turned off.

**Use Caution and make sure the drive and rewind drum are clear before turning the Calibration on!**

While the Calibration is active, the Speed Cal value can be changed so the labeler's drive roll speed is equal to that of the master encoder (conveyor). The Labeler should be Stopped to use the Calibration mode.

### Speed Cal (Supervisor Level):

The Speed Calibration number is a factor that allows the labeler to dispense at the conveyor speed for encoder based systems.

### Labeler Run Hours and Reset (Supervisor Level):

This counter will count the hours that the Labeler has been in the run mode while the conveyor is running. The reset button is only visible when logged in at the Supervisor Level.

### Line Compensation (Supervisor Level):

The Compensation value adds and subtracts product delay based on the master encoder frequency. This allows the labeler to be accurate across all speed ranges. The Compensation value is set at the factory by running products at a slow speed & max speed and then altering the value until the labeler applies the labels in the same location. Note that the Compensation is based off of the Max Frequency value. Changing the Max Frequency will force the need to change the Compensation value.

### Accel and Decel (Supervisor Level):

These are the ramp values used by the labeler drive when dispensing labels while running. A lower value results in a longer Accel or Decel rate.

**Drive Frequency:**

This display will show the encoder frequency value in the labeler drive. Use this to determine the max frequency value.

**Max Frequency (Supervisor Level):**

The Max Frequency is calculated by running the system at max speed and adding 200 to 300 Hz to the displayed Drive Frequency. This is used for line compensation purposes.

**Encoder Count:**

This is the current encoder count as interpreted by the Labeler drive.

**Encoder Counts per Inch (Quadrel Level):**

The Encoder Counts per Inch value tells the labeler how many encoder pulses are counted for every inch of conveyor travel. This value is set at the factory and typically does not need adjusted. Note that this value will not equal the PLC Encoder Counts per Inch value.

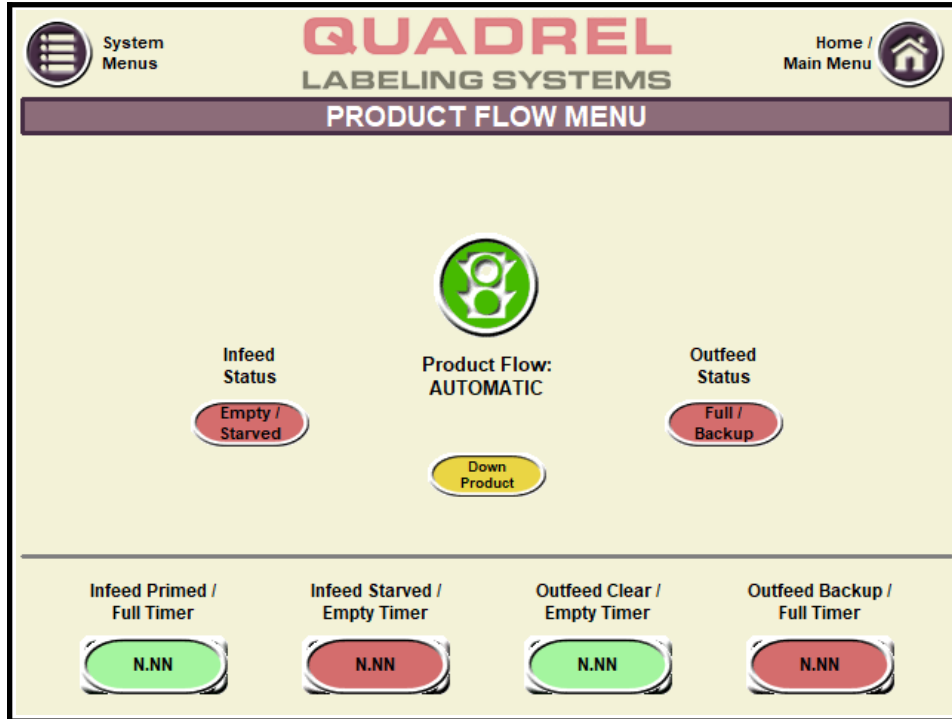
Re-enable the drive after changing the counts to properly take effect.





## Product Flow Menu:

The Product Flow Menu contains timers associated with the pacing devices and allowing products to enter the system.



### Product Flow Control:

The pacing system can be stopped independently of the main system in order to prevent products from flowing into the system. This can be useful during setup or to purge the system. A pacing system can be a feedscrew, pacing wheel, pacing belt, stop gate, or combination of listed items.



Green “Automatic” Button: This indicates the pacing system will stop and start the pacing system based on external conditions.

#### The Pacing System will stop/close when:

- The system is stopped
- The infeed sensor is not blocked by products or “starved”.
- The outfeed sensor is blocked by products or “full”.
- The Product Flow button has been toggled to “Stopped”
- A Cycle Stop is active



Red “Stopped” Button: This indicates the pacing system is stopped and will not allow products into the system until toggled back to Automatic.

### Product Flow Status Indicator:

The indicator below the Product Flow Control button identifies the actual status of the pacing system.

Green: Running. The pacing system is currently allowing products into the system.

Yellow: Waiting. The system is running but the pacing system is stopped because of a condition listed above.

Red: Stopped. The pacing system has been stopped manually and will not function until placed in the Automatic Mode.

**Infeed Empty Delay (Maintenance Level):**

This timer will start when the Infeed sensor does NOT see products, which results in an Empty/Starved condition. After this timer expires, the product flow will stop.

**Infeed Full Delay (Maintenance Level):**

This timer will start when the Infeed sensor sees products, which results in a Primed/Full condition. After this timer expires, the product flow will start.

**Outfeed Empty Delay (Maintenance Level):**

This timer will start when the Outfeed sensor does NOT see products, which results in a Clear/Empty condition. After this timer expires, the product flow will start.

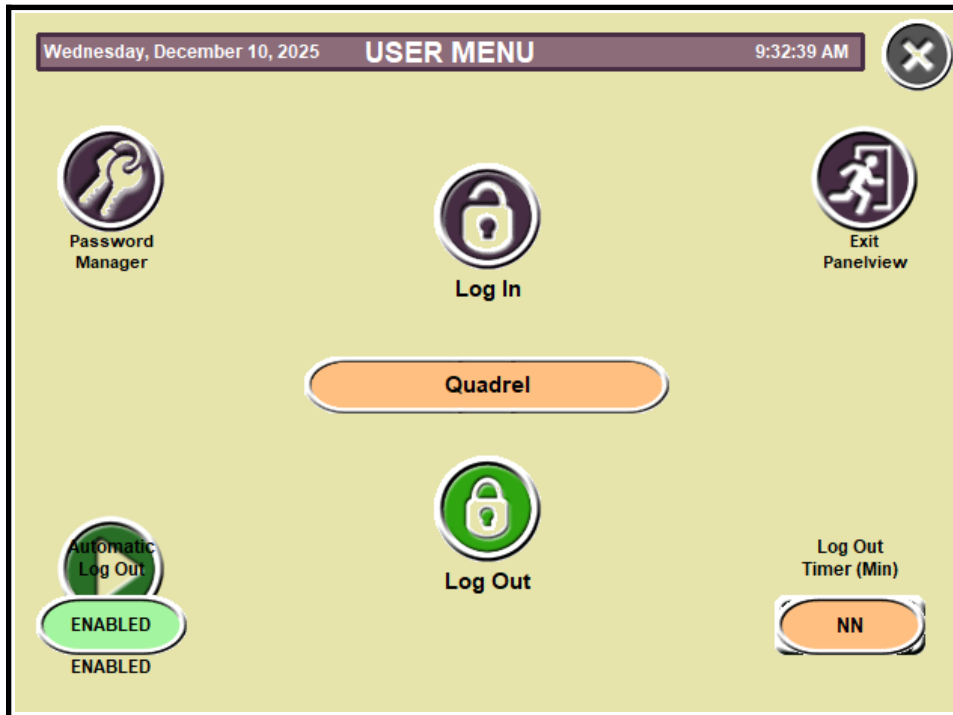
**Outfeed Full Delay (Maintenance Level):**

This timer will start when the Outfeed sensor sees products, which results in a Backed Up/Full condition. After this timer expires, the product flow will stop.



## User Menu:

The User Menu enables alternate login levels to access protected screens and buttons. You can access this Menu by pressing the Lock icon (pictured left).



**Password Input:** Press this button to enter a user password.



**Log Out:** Press this button to enter to log the current user out.



**Password Menu:** This will open up a security prompt before opening the password menu, where the passwords for the Maintenance and Supervisor levels are set.

### Auto Log Out (Supervisor Level):

When Enabled (button will be Green), the logged in user will automatically be logged off at a set amount of time. Note that the system automatically enables the Auto Log Out feature upon startup.

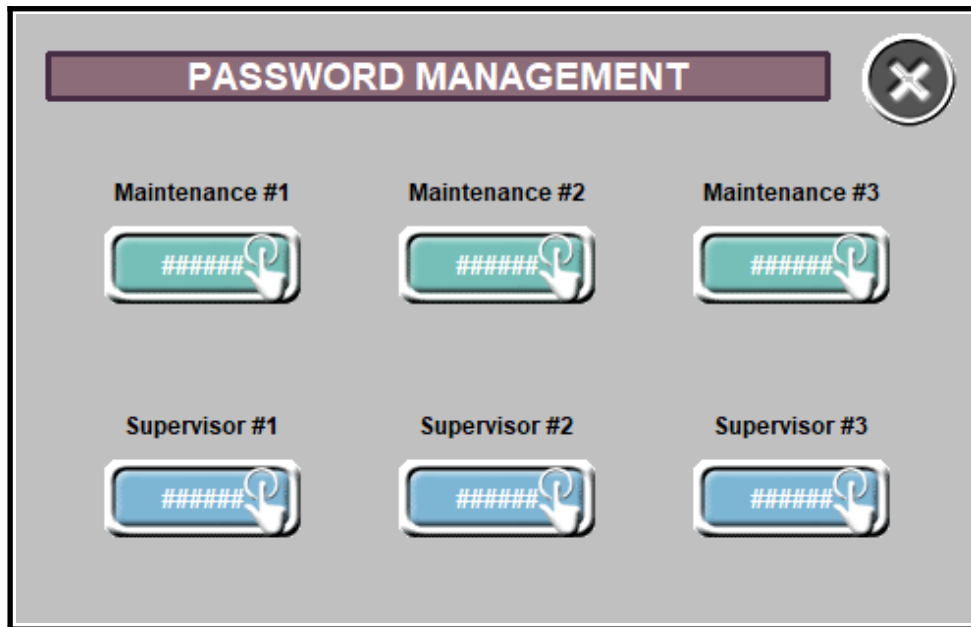
### Log Out Timer (Supervisor Level):

This timer (in minutes) determines the time it takes to log off a user if Auto Log Out is enabled.



## Password Menu:

The Password Menu allows the creation and editing of the passwords for different security levels.



### **Maintenance:**

There can be 3 user defined passwords for the Maintenance level. Note that there is one hard coded Maintenance Level password that cannot be viewed or changed.

### **Supervisor:**

There can be 3 user defined passwords for the Supervisor level. Note that there is one hard coded Supervisor Level password that cannot be viewed or changed.

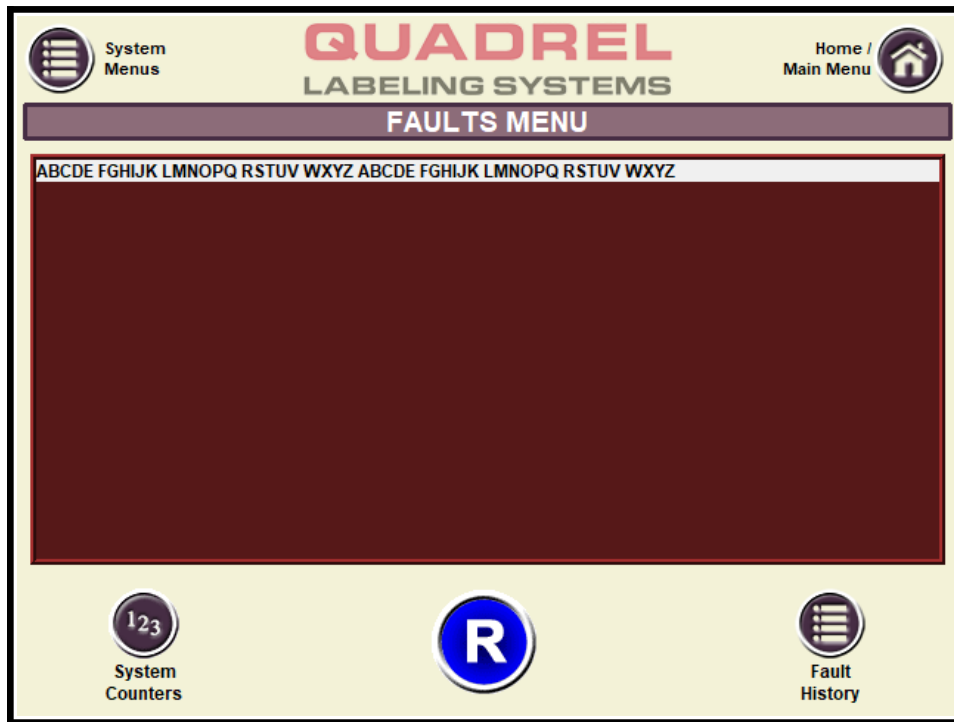
If a Maintenance and Supervisor password are the same, the system will log that user in at the Maintenance level.

The password(s) to open the Password Menu are stored in the HMI and cannot be modified. This will prevent any password loss in the event the PLC logic is altered.



## Fault Menu:

The Fault Menu displays all fault messages, shows system level counters, and gives access to a Fault History. You can access this Menu by pressing the Alert icon (pictured left).



### Fault Display:

The Fault dialog box will display all of the active faults on the machine.

### Fault Reset:

Used to reset active faults displayed above.



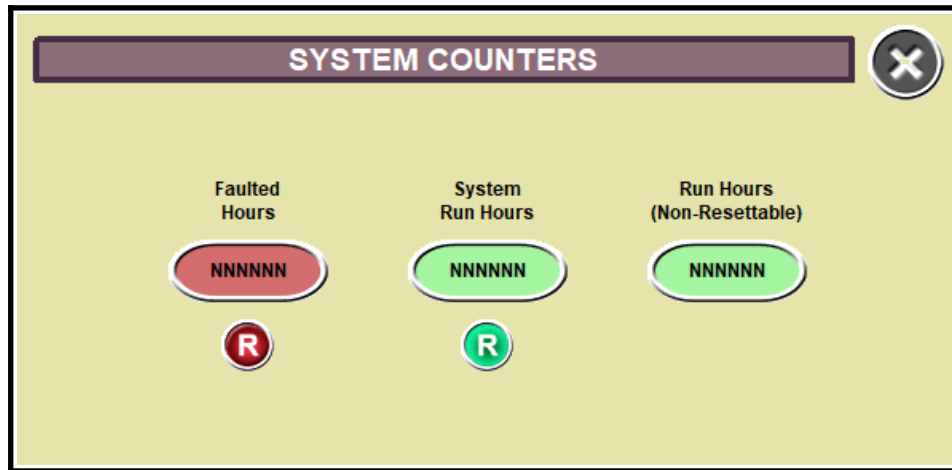
**System Counters:** System running and faulted hours



**Fault History:** Press this button to have a Fault History list appear.

## System Counters:

This menu contains various counters associated with the entire system.



### Faulted Hours:

This counts how many hours the system has had an active fatal fault on it, preventing the system from running. The reset button next to the counter will reset this value to 0 and is only visible when logged in at a Supervisor Level.

### System Run Hours:

This counts how many hours the system has been physically running. The reset button next to the counter will reset this value to 0 and is only visible when logged in at a Supervisor Level.

### System Run Hours (Non-Resettable):

This counts how many hours the system has been physically running since initial setup. This cannot be reset from the HMI.



## Fault Messages and Indicators:

Green Lamp (option): A steady green lamp identifies the system is running and no warning messages are present. A flashing green lamp identifies the system is running but there is a warning message active.

Amber Lamp (option): A flashing amber lamp will signal that there is a warning condition present on the system. Warning conditions typically allow the system to function normally, but action will be needed soon to replace labels, ribbon, etc. Some warning messages will turn into fatal faults if they are not addressed before taking additional actions.

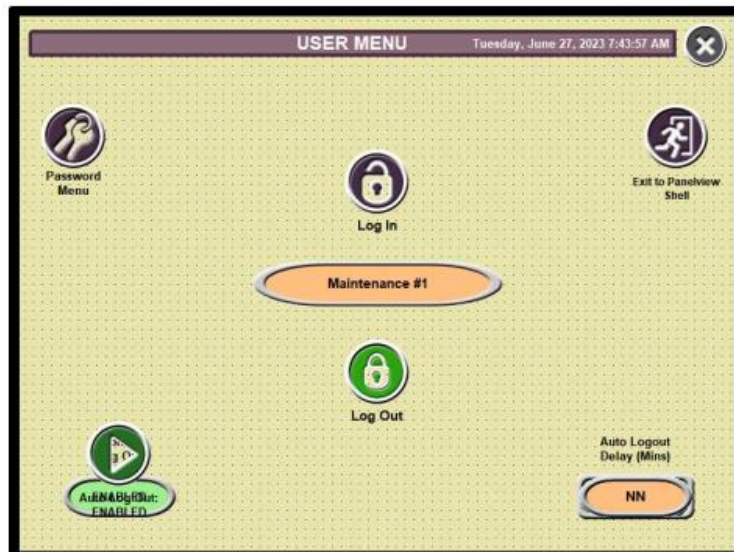
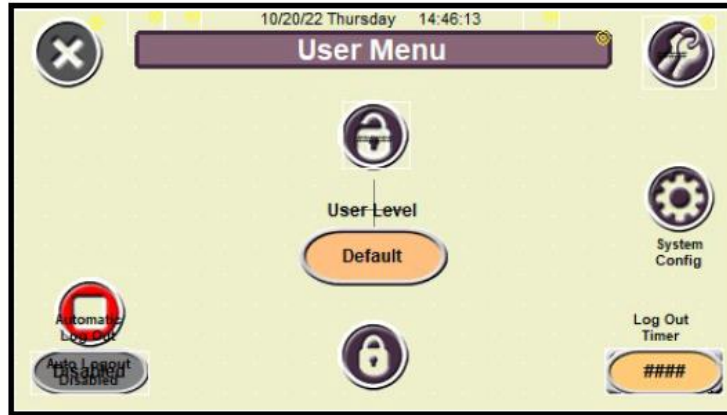
Red Lamp (option): A flashing red lamp indicates that a fatal fault occurred and the system is unable to run properly.


Buzzer (option): The buzzer will pulse twice before the conveyor starts. pulse opposite the red lamp when a fatal fault is active on the machine, and pulse while the belts are being manually moved in and out.

Messages	Cause/Solution
<b>Warning Messages</b>	
<b>Labeler #x Drive Faulted Warning</b>	The labeler drive has an alarm present on it. The warning indicated the labeler is Stopped. Placing the Labeler into Run will generate a Fatal Fault.
<b>Labeler #x Low Label Supply</b>	The label supply on the labeler has been determined low by the sensor fiber under the flange.
<b>Labeler #x End of Web Warning</b>	The End Of Web sensor (between the drive system and unwind) on the Labeler is active and the Labeler is Stopped. Placing the Labeler into Run will generate a Fatal Fault.
<b>Labeler #x Broken Web Warning</b>	The Broken Web sensor (between the drive system and rewind) on the Labeler is active and the Labeler is Stopped. Placing the Labeler into Run will generate a Fatal Fault.
<b>Program #x Stopped Warning. Cycle Drive Power</b>	The internal program of the listed labeler drive is not executing logic. Pressing the Reset button or cycling the safety circuit may re-start the program.
<b>Labeler #x Max Feed Reached / Missing Label on Liner Warning</b>	The labeler has reached the maximum feed distance without detecting a gap. This can be from a splice, missing label on the liner, or incorrect max feed parameter setting.
<b>Labeler #X Communications Loss Warning</b>	Communications to the listed labeler drive have been lost. This can be from a cable being unplugged or gateway failure.
<b>Labeler #X Unplugged / Disabled Warning</b>	The listed labeler is internally disabled, which is typically from being disconnected from the safety circuit. Verify the I/O cable is plugged into the drive properly.
<b>Infeed Starved / Outfeed Full. Product Flow Stopped</b>	The Product Flow device is currently stopped because the Infeed area is starved of products and/or the outfeed area is full of products.
<b>(motor) Drive (DRx) Faulted / Turned Off Warning</b>	The drive that controls the listed motor is faulted or turned off. If pressing the reset button does not clear this message, verify that the drive is powered up.
<b>PLC Power Cycled without Screen. Cycle System.</b>	The PLC will not execute logic until the touch screen starts up. If the PLC is cycled or downloaded without the screen re-starting, the PLC will not execute logic until the screen restarts.


<b>Fatal Fault Messages</b>	
<b>Labeler #x Drive Faulted</b>	The labeler drive has become faulted. Cycle labeler power and reset. This fault will become active if the labeler is Running or placed into Run.
<b>Labeler #x Broken Web Fault</b>	The Broken Web sensor (between the drive system and rewind) on the Labeler is active and the Labeler was Running or placed into Run.
<b>Labeler #x End of Web Fault</b>	The End Of Web sensor (between the drive system and unwind) on the Labeler is active and the Labeler was Running or placed into Run.
<b>Program #x Stopped Fault. Cycle Drive Power</b>	The internal program of the listed labeler drive is not executing logic. Pressing the Reset button or cycling the safety circuit may re-start the program.
<b>Labeler #x Max Feed Reached / Missing Label on Liner Fault</b>	The labeler has reached the maximum feed distance without detecting a gap. This can be from a splice, missing label on the liner, or incorrect max feed parameter setting.
<b>Labeler #X Unplugged / Disabled Fault</b>	The listed labeler is internally disabled, which is typically from being disconnected from the safety circuit. Verify the I/O cable is plugged into the drive properly.
<b>Safety Relay Active. Check E-Stops and Reset</b>	The Safety relay has been activated by an Emergency Stop. Unlatch all Emergency Stops and press the Reset button to reset the safety relay.
<b>PLC Faulted. Cycle Power</b>	The PLC has encountered a fault and must be reset.
<b>(motor) Drive (DRx) Faulted / Turned Off</b>	The drive that controls the listed motor is faulted or turned off. If pressing the reset button does not clear this message, verify that the drive is powered up.


To set user passwords during initial setup navigate to the passwords screen, then Log in using password "7670" Once logged in users can set passwords per HMI Guide.




**USER MENU** 


Sunday    mm/dd/yy    HH:MM:SS


 Passwords



Current User:  
**Default**



 Log Out  
Disabled

Log Out  
Timer:  
12:34 

# Setup sheets

# QUADREL

## LABELING SYSTEMS

Machine: 84251-100  
Label Size/Product: 0.75"x1.75"/Deodorant Stick  
Recipe: 1

### Labeler #1 Menu

	FACTORY	USER
Product Delay #1	5.90	
Label Stop #1	1.20	
Max Feed Length #1	4.00	
Speed Ratio # 1	0.95	

### Labeler #1 Service/Options Menu

	FACTORY	USER
Speed Cal Value	495	
Line Compensation	20	
Labeler #1 Accel	2000	
Labeler #1 Decel	2000	
Maximum Frequency	21500	
Counts per Inch #1	1441	

### Product Flow Menu

	FACTORY	USER
Infeed Primed/Full Timer	1.00	
Infeed Starved/Empty Timer	1.00	
Outfeed Clear/Empty Timer	1.00	
Outfeed Backup/Full Timer	1.00	

### System Setup Menu

	FACTORY	USER
Belt Speed (in/min)	1000	
Belt Calibration	5.500	
Cycle Stop	DISABLED	
Cycle Stop Distance (inch)	5.00	

### Mechanical Settings (Changeover/Dial Settings)

	FACTORY	USER
Huggers In/Out	98148	
Huggers Up/Down	210	
Labeler #1 Up/Down	285	
Stop Gate Regulator	50	

# QUADREL

## LABELING SYSTEMS

Machine: 84251-100

Label Size/Product: 0.75"x1.75"/Deodorant Stick

Recipe: 1



0.75"

1.75"

Preset 1



1"

1 5/8"

Preset 2

# QUADREL

## LABELING SYSTEMS

Machine: 84251-100  
Label Size/Product: 1-5/8"x1"/Deodorant Stick  
Recipe: 2

### Labeler #1 Menu

	FACTORY	USER
Product Delay #1	5.95	
Label Stop #1	0.50	
Max Feed Length #1	4.00	
Speed Ratio # 1	0.95	

### Labeler #1 Service/Options Menu

	FACTORY	USER
Speed Cal Value	495	
Line Compensation	20	
Labeler #1 Accel	2000	
Labeler #1 Decel	2000	
Maximum Frequency	21500	
Counts per Inch #1	1441	

### Product Flow Menu

	FACTORY	USER
Infeed Primed/Full Timer	1.00	
Infeed Starved/Empty Timer	1.00	
Outfeed Clear/Empty Timer	1.00	
Outfeed Backup/Full Timer	1.00	

### System Setup Menu

	FACTORY	USER
Belt Speed (in/min)	1000	
Belt Calibration	5.500	
Cycle Stop	DISABLED	
Cycle Stop Distance (inch)	5.00	

### Mechanical Settings (Changeover/Dial Settings)

	FACTORY	USER
Huggers In/Out	98148	
Huggers Up/Down	210	
Labeler #1 Up/Down	300	
Stop Gate Regulator	50	

# QUADREL

## LABELING SYSTEMS

Machine: 84251-100

Label Size/Product: 1-5/8"x1"/Deodorant Stick

Recipe: 2



0.75"

1.75"

Preset 1



1"

1 5/8"

Preset 2

# WARNING



**! WARNING**

1. READ AND UNDERSTAND THE OPERATION MANUAL AND ALL SAFETY LABELS BEFORE OPERATING THIS MACHINE.
2. ONLY A TRAINED PERSON IS TO BE PERMITTED TO OPERATE THIS MACHINE. TRAINING SHOULD INCLUDE INSTRUCTION IN OPERATION UNDER NORMAL CONDITIONS AND EMERGENCY SITUATIONS.
3. THIS MACHINE IS TO BE SERVICED ONLY BY TRAINED AND AUTHORIZED PERSONNEL. FOLLOW LOCK-OUT PROCEDURES BEFORE SERVICING.
4. NEVER REACH INTO THE MACHINE FOR ANY REASON UNLESS THE MACHINE IS AT A COMPLETE STOP.
5. NEVER LEAVE THE MACHINE STOPPED IN SUCH A MANNER THAT ANOTHER WORKER CAN START THE MACHINE WHILE YOU ARE WORKING ON OR WITHIN THE MACHINE.
6. NEVER CHANGE OR DEFEAT THE FUNCTION OF ELECTRICAL INTERLOCKS OR OTHER MACHINE "SHUTDOWN" SWITCHES.
7. BEFORE STARTING THIS MACHINE, CHECK THAT: ALL PERSONS ARE CLEAR OF THE MACHINE; NO MAINTENANCE WORK IS BEING PERFORMED ON THE MACHINE, ALL GUARDS ARE IN PLACE.
8. ROUTINE INSPECTIONS AND CORRECTIVE/PREVENTATIVE MAINTENANCE MEASURES ARE TO BE CONDUCTED TO ENSURE THAT ALL GUARDS AND SAFETY FEATURES ARE RETAINED AND FUNCTION PROPERLY.

- KEEP HAND CLEAR OF MOVING PARTS. DO NOT PLACE HANDS NEAR LABELING HEAD WHEN IN OPERATION




- DO NOT OPERATE EQUIPMENT WITHOUT GUARDS OR COVERS INSTALLED



## 6.1 LABELING HEAD INFORMATION

### 6.1.1 LOADING AND UNLOADING STOCK ROLL

-  **CAUTION** To avoid injuries, you must keep the labeler stopped/paused. You can manually jog labels with the JOG button.

Look carefully at the diagram and follow the threading procedures indicated below.

You will also find the threading diagram directly on the labeling head.

- 1) Place the label stock roll on the unwind shaft. Press the roll firmly against the flange. Then slide the locking collar over the unwind shaft aligning the set screw with the shaft. Press into the roll and twist to lock the collar in place.



- 2) Pull Approximately 36-40" of stock from label stock roll.

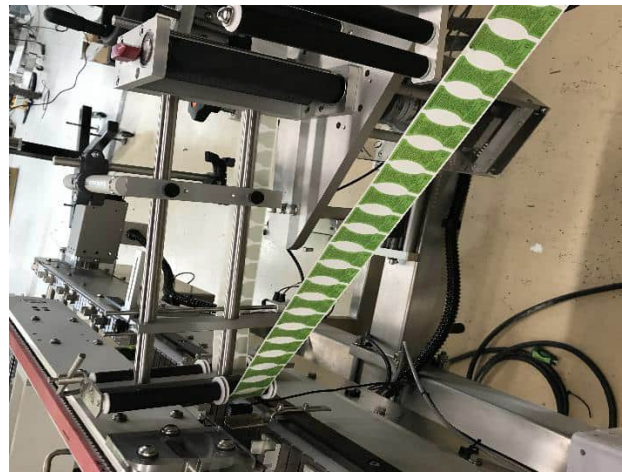
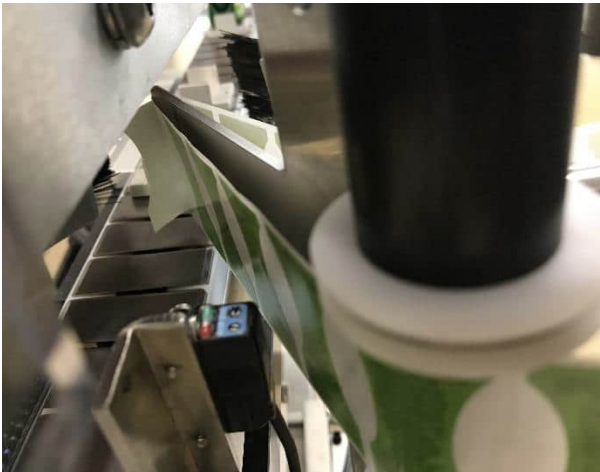


- 3) Follow the threading diagram on the labeling head for routing the web.
- 4) Thread through the dancer to the peel plate.

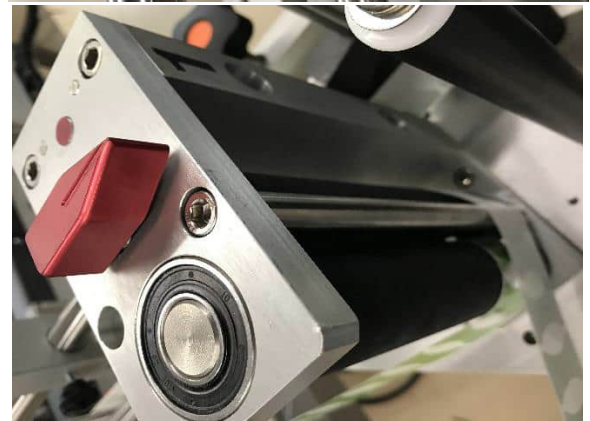
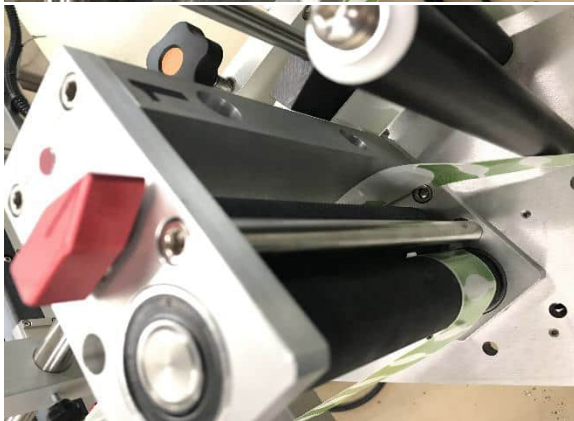
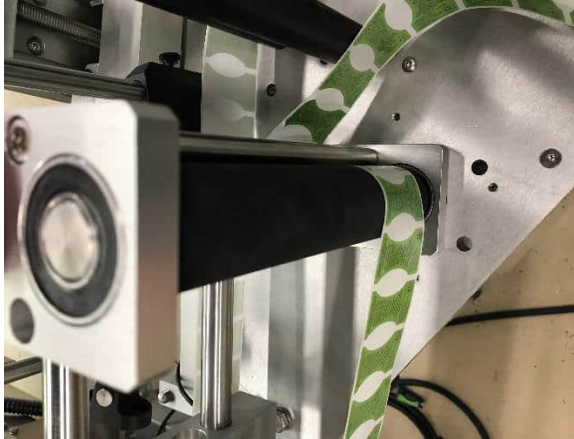




- 5) Feed the label around the peel plate and under the pressure shoe if (if there is one). Feed the label up the head to the pull roll. Pull all the slack out.



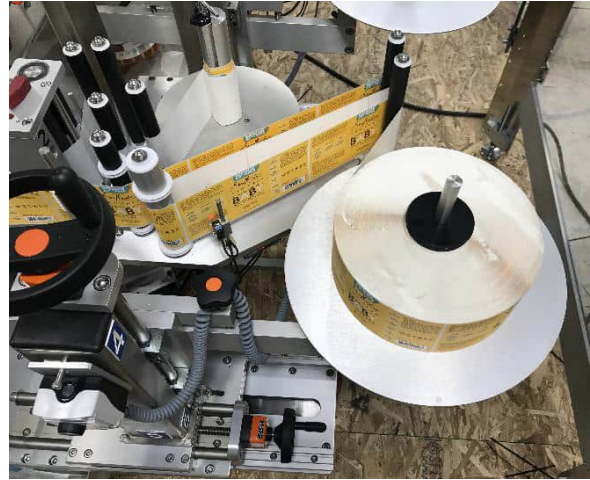
- 6) Wrap labels around the rubber roller as shown, then around the knurled roller. Make sure the knurled roller is not locked in by turning the red knob to the left or right of the red dot on the drive roll. When you have the labels completely threaded you can turn the knob to the red dot.



- 7) Thread the labels through the rewind dancers to the rewind shaft. Place the end of the label through the clip and rotate the rewind hub to take up the slack.



- 8) The finished product should look similar to the pictures below. Some heads are threaded differently depending on the style head you have. See threading diagrams on the head itself or the manual.



- 9) To unload the rewind loosen (counter clockwise) the "clevis" bolt on the top of the rewind hub. this will collapse the rewind and you can pull the liner off the hub.

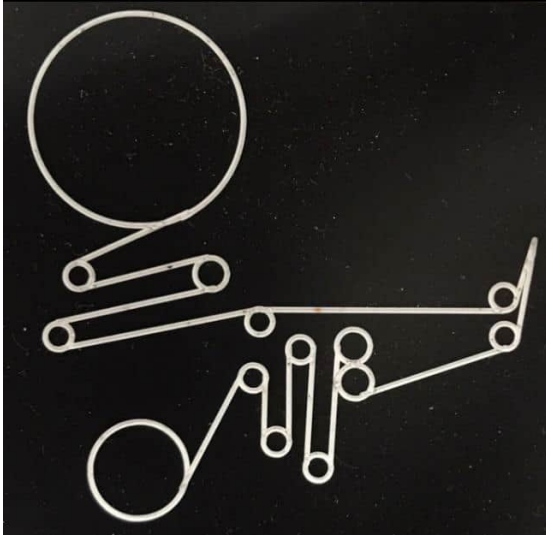


### CAUTION

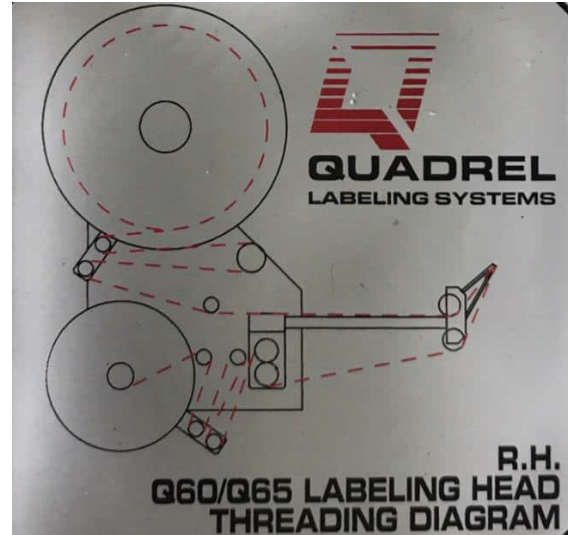
There are many pinch points on a labeler. to avoid injury read and understand the owner's manual before operating.

## 6.1.2 THREADING DIAGRAMS

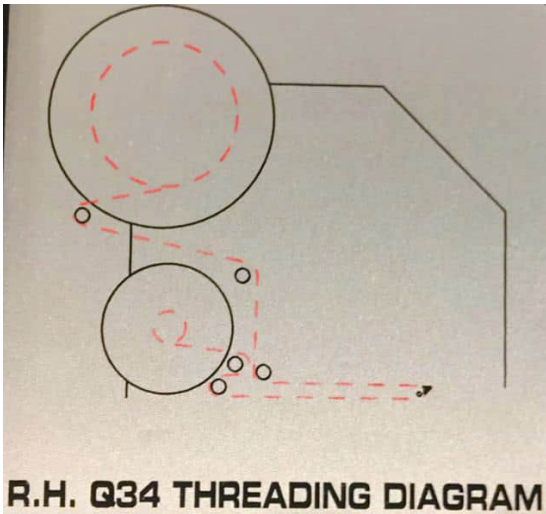
Here are the following threading diagrams for our standard labeling heads.



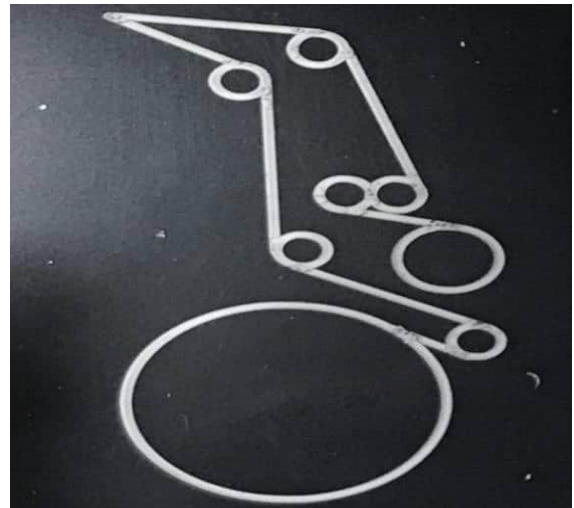
Q120/Q125/Q115/Q110



Q60/Q65



Q34



E100

### 6.1.3 LABELER ADJUSTMENTS

The vertical adjustment is to position the label on the container at different heights. It's practical if you have different size labels and/or containers. To adjust the height you simply rotate the handwheel at the top of the labeler counter clockwise to go down and clockwise to go up.



Horizontal adjustments are made the same way except you rotate the hand wheel under the labeler. Rotating the hand wheel counter clockwise will move the labeler in and rotating clockwise will move the labeler out.



To adjust the angle of the labeling head you first need to loosen the large  $\frac{3}{4}$ -10 nut with a  $1\frac{1}{4}$  "wrench and the  $\frac{5}{16}$ -18 hex head bolt. The angular adjustment is very important to increase the repeatability of the process. A good adjustment is when the exit of the label is tangent with the surface of the application.



**CAUTION**

DO NOT remove the nut & bolt.



Now to adjust the tilt of the labeling head by tightening and loosening the jack screws.



Rotate adjustment is achieved by loosening the 2 ratchet handles under the labeling head. There is a jack screw holding the labeling head in place, but still use caution when loosening the ratchet handles the labeling head can rotate

freely when loose. This is a fine adjustment that increases the parallelism of the label to the shape of the container.



### CAUTION

When loosening the labeling head, the head may rotate freely. Keep positive pressure against the head to prevent the head from rotating on its own.





# **QUADREL LABELING SYSTEMS**

Q125

LABELING HEAD

## GENERAL DESCRIPTION

- The Q125 has been developed as a heavy duty automatic labeling head system for integration into high speed, high rate production environments. The labeling head can be configured for either wrap or wipe on applications. The Q125 uses a servo drive and motor system that can be used independently or in conjunction with a PLC. All settings are controlled from a touch screen interface for easy setup and adjustments. In addition, a built in system of fault logic can easily interface with a host of optional sensors.

## PRINCIPLE OF FUNCTION

- The Q125 labeling head applies pressure sensitive labels onto moving products. Various principles are involved to achieve accurate label application. In general, a labeling system integrates three (3) basic functions:
  - **Product Handling:** The most common product handling component is the conveyor. Conveyors allow the product to transport smoothly through the labeling station. The Q125 labeler can be supplied either as a stand alone head (head on a stand) or integrated into a complete conveying/product handling system. An encoder from the product handling system must be tied into the labeler's drive.
  - **Label Application:** Usually the label is "tacked" directly to the product during the label dispensing cycle. Secondary label applicators such as brushes, roller or wrap belts are used to finish the label application and to ensure good adhesion.
  - **Label Dispensing:** The Q125 utilizes two movement types to dispense labels. The first movement is a fixed speed, "jog" movement that is used during setup purposes. Jogging labels verifies proper label threading and labeler operation prior applying labels to products. The second movement is a synchronized "run" movement that is used to apply labels on passing products. The labeler's drive system will synchronize speed with the product handling system from an encoder. This eliminates the need to change settings based on system speed and allows for accurate and repeatable labeling.

## SEQUENCE OF OPERATION:

- The electrical and mechanical operating sequence described below is intended only to acquaint the operator with the operation of the label dispensing head and its related control circuitry.
  
- The Jog function is used for manual set-up of label dispensing. Under proper conditions, a jog sequence will dispense one label. Labels must be threaded properly and the labeler stopped (indicated on the touch screen) before Jogging labels.
  
- The Jog cycle is described in the following manner:
  1. After verifying that labels are threaded properly and the labeler is stopped, a jog button (physical green button near the labeler or a button on the touch screen) must be pressed.
  2. The labeler will start dispensing labels at a fixed speed.
  3. The labeler's drive will monitor a label gap sensor input before finishing a dispensing cycle.
  4. Once the label's gap is detected by the sensor, the labeler will continue dispensing the label for a length defined by the "Label Stop" parameter on the touch screen. This distance is entered as inches.
  5. After the Label Stop distance is reached, the Jog cycle is complete and the labeler stops dispensing labels.
  6. If no label gap is detected, the labeler will only index a maximum distance which is set by the "Max Feed" parameter on the touch screen. This distance is entered as inches.
  
- When the labeler is in the "Run" mode it will automatically dispense labels on products that are passing by. Labels must be threaded properly and the labeler placed in the Run mode (indicated on the touch screen) to automatically dispense labels
  1. A product activates the Product Detect sensor.
  2. The labeler drive captures the position of the product on the product handling system and starts an internal delay, which is the "Product Delay" parameter on the touch screen.
  3. The Product Delay is equal to inches, so once the product travels the Product Delay distance from the product detect sensor, a label will be dispensed.
  4. The labeler dispenses a label at the speed of the product which is multiplied by the "Speed Ratio" parameter found on the touch screen. The ratio is a multiplier, so a value of 1.0 determines the labeler will dispense at the exact speed of the conveyor.
  5. The labeler monitors the label gap sensor in the same manner of the Jog movement before finishing the dispensing cycle.

**ASSEMBLY TITLE: Q125 LABELING HEAD ASSEMBLY**

**DRAWING NO.: NONE**

**GENERAL FUNCTION:**

- Applies labels to the front and/or back, top/bottom of the products
- Wraps labels around cylindrical products

**SET-UP AND ADJUSTMENTS:**

- Tighten all loose connections and screws
- As noted in each sub-assembly

**MAINTENANCE:**

- Remove glue residue and labels from all rollers and idlers
- As noted in each sub-assembly

**TROUBLESHOOTING:**

- As noted in each sub-assembly

**ASSEMBLY TITLE:**

**Q125 LABELING HEAD - THREADING**

**GENERAL FUNCTION:**

- This section is used to guide the user through loading and feeding the label through the web path.

**SET UP AND ADJUSTMENTS:**

- Load label spool onto unwind hub. Secure unwind retainer onto hub and lock. Pull 3-4 feet of web from unwind and strip labels free of web.
- Unlock the drive roller locking handle.
- Using the threading diagram located on the labeling head, feed the web through the labeling head. Start at the unwind dancer assembly and work forward.
- Feed the web through the drive roller assembly.
- Feed the web around the rewind dancer assembly and onto the rewind hub. Wrap the web around the hub once. Lock the web in place with the rewind retaining bracket.
- Once the web has been threaded, lock down the drive roll assembly by rotating the drive roll locking arm into the locked position. (Towards the drive roller assembly)

**MAINTENANCE:**

- None this section.

**TROUBLESHOOTING:**

PROBLEM

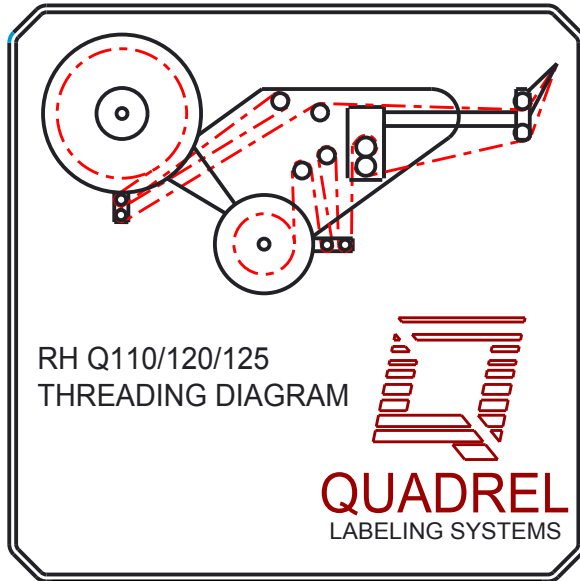
WHAT TO DO

- Web break

- Check web path and insure web routed correctly.
- Debris causing web tear and break. Clear as needed.

- No Web Tension

- Check web path through unwind and dancer assembly.
- Check drive roller lock position.




NOTES:

- 1) LABEL MATERIAL IS .003" ALUMINUM FOIL W/PERMANENT PRESSURE SENSITIVE ADHESIVE.
- 2) ALL LETTERING IS .125" HIGH EUROSTYLE 2, BOLD EXTENDED 2.
- 3) USE QUADREL STANDARD LOGO.
- 4) ALL LINES AND LETTERS ARE BLACK ON A SILVER BACKGROUND QUADREL AND (WEB PATH) ARE RED #(199c) LINES ARE DASHED LINES.
- 5) LABEL SIZE 3.0" X 3.0".

A	5-8-19	NEW DRAWING
REV	DATE	DESCRIPTION

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UNLESS OTHERWISE SPECIFIED DIMENSIONAL TOLERANCE  $X \pm .1$ $.XX \pm .01$ $.XXX \pm .005$ ANGLES $\pm 30'$  SURFACE FINISH 125 BREAK ALL EDGES .005/.015 CORNER RADIUS .010/.030	 <b>QUADREL LABELING SYSTEMS</b> 7670 JENTHER DRIVE MENTOR, OHIO 44060 (440) 602-4700	SCALE: DRAWING SCALE DATE: 5-8-19 DRW BY: TJS CHK BY: APPR BY:
	<b>Q110/120/125 R.H. THREADING DIAGRAM</b>	
MAT'L	SEE NOTES	A26222-110RH

**ASSEMBLY TITLE: Q110 SIDE PLATE ASSEMBLY**

**DRAWING NO.: D24272-000**

**GENERAL FUNCTION:**

- To provide a rigid mounting surface for outboard labeling components, electronic components, and system components.
- The side plate also supports the system mount

**SET UP AND ADJUSTMENTS:**

- None

**MAINTENANCE:**

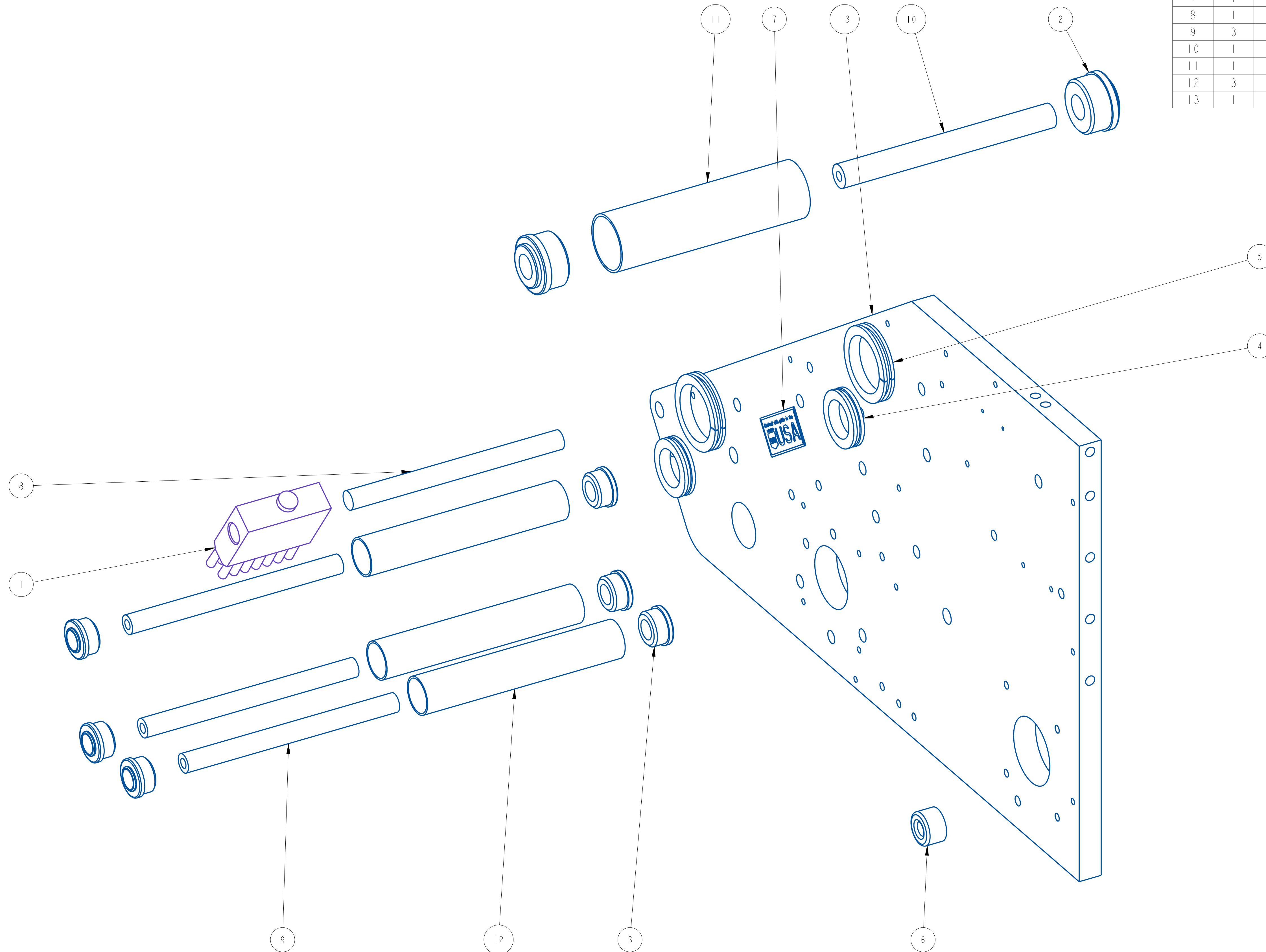
- None

**TROUBLESHOOTING:**

- None

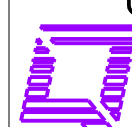


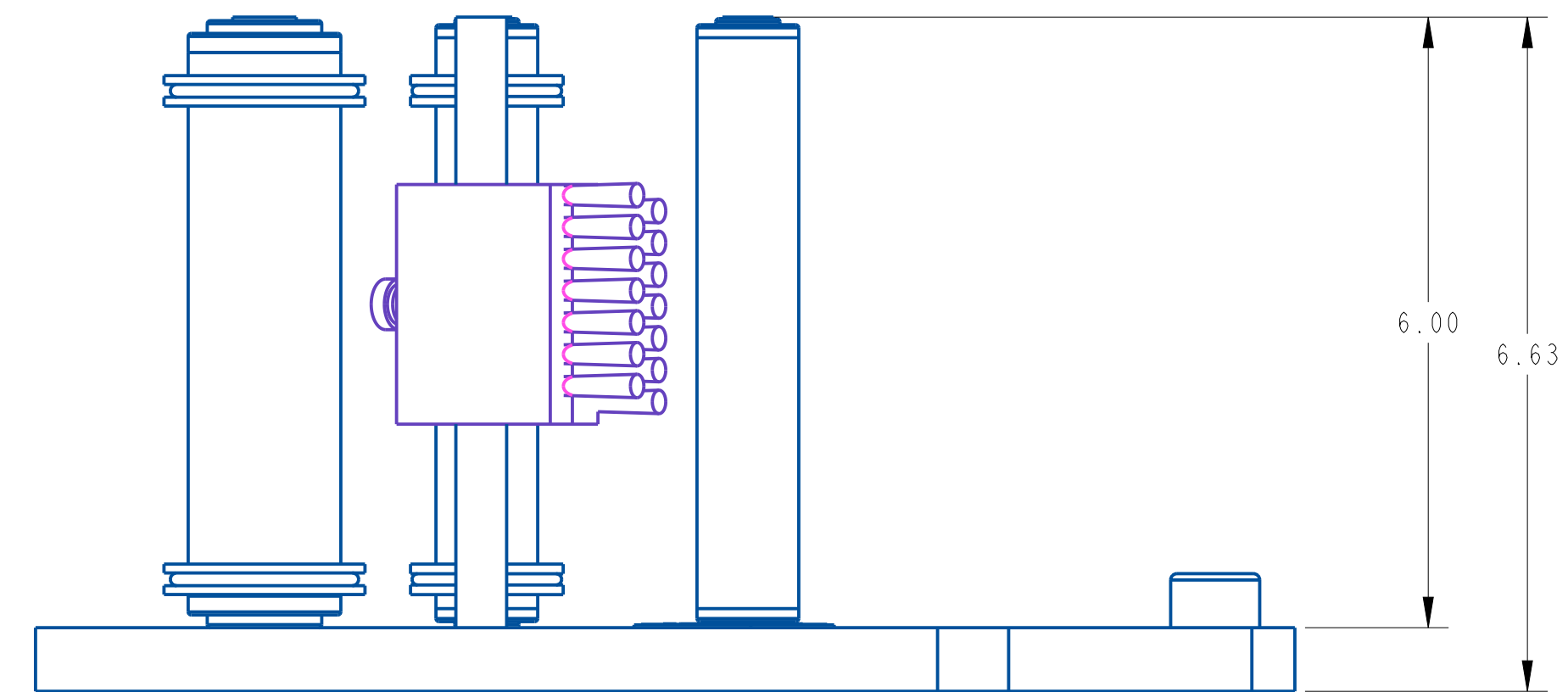
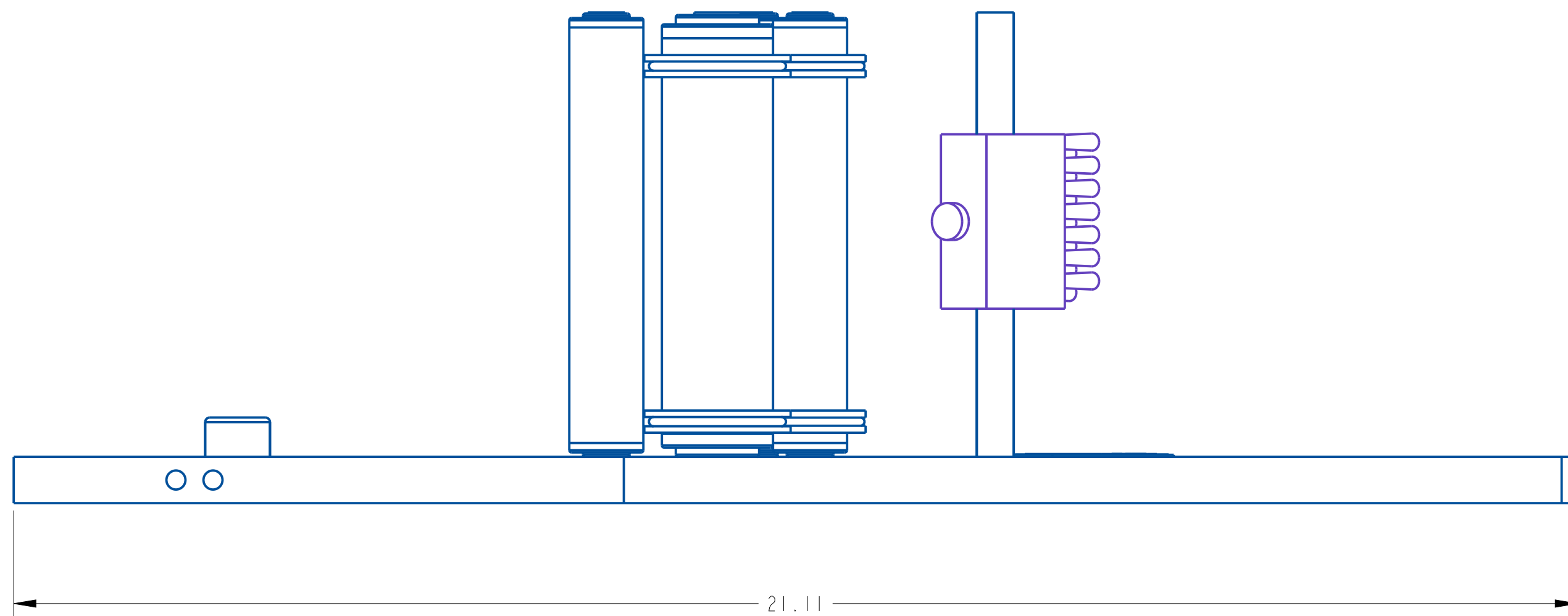
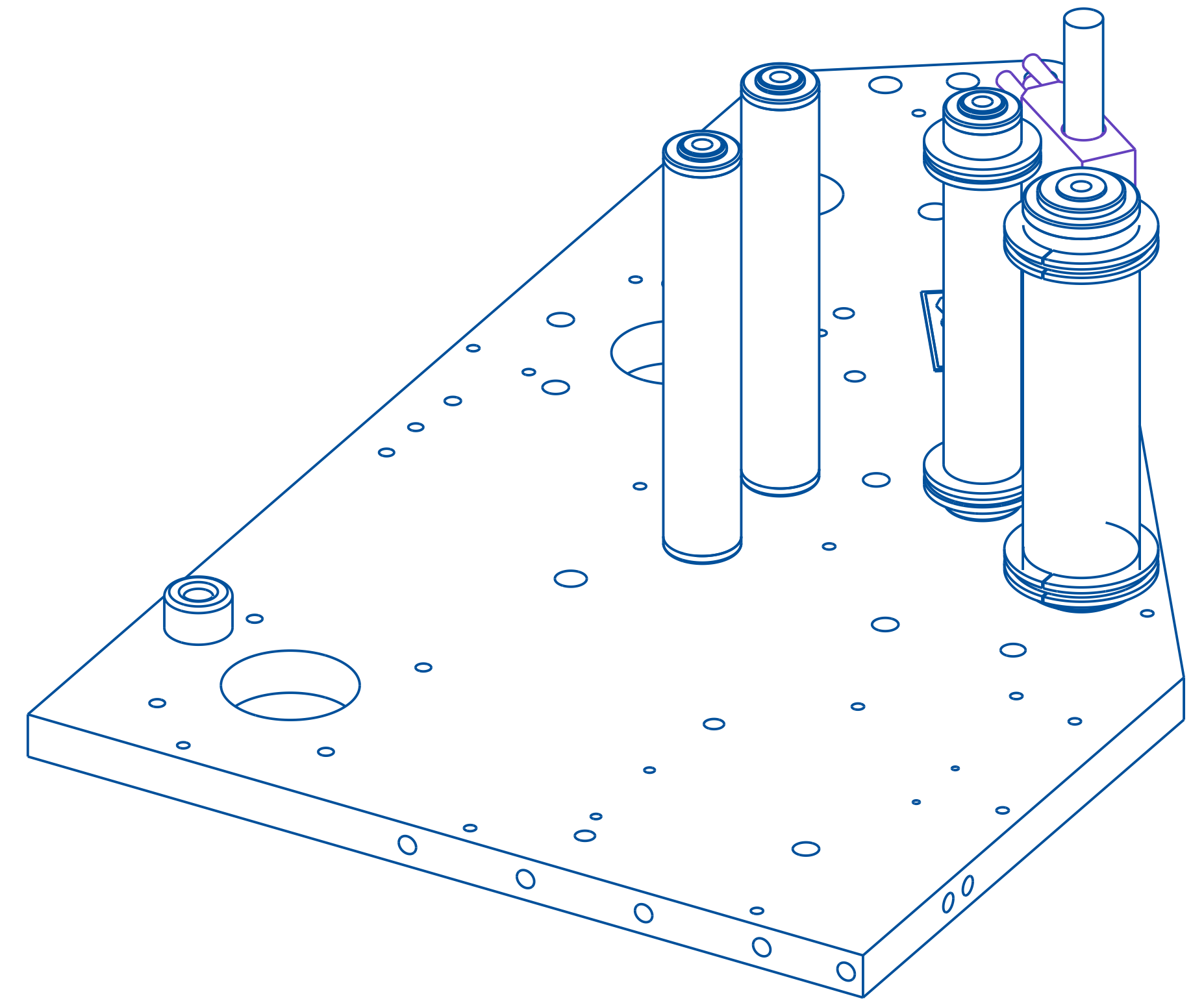
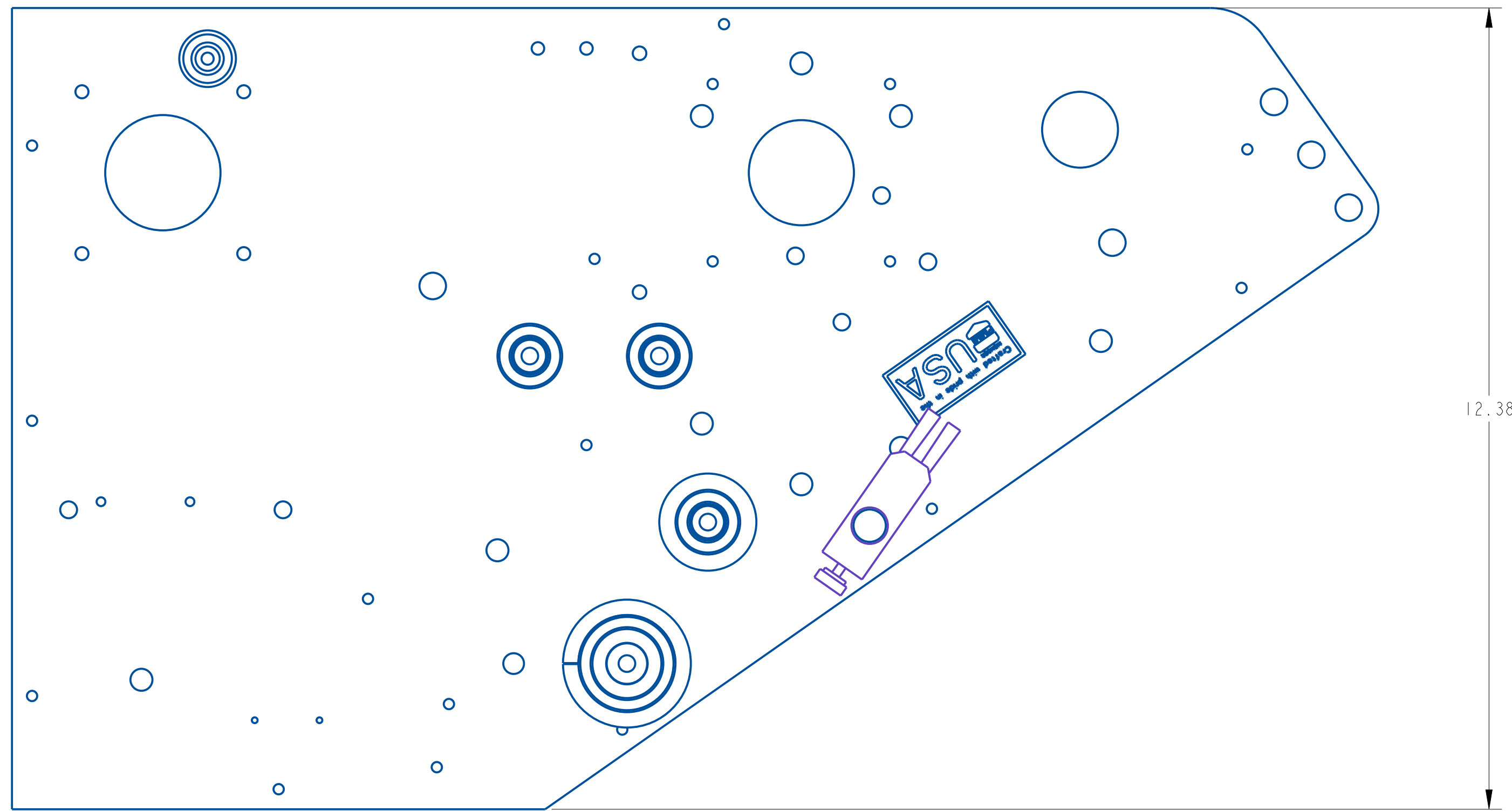
ITEM	QTY	PART NO.	DESCRIPTION	PARENT ITEM
1	1	00669-01	BRAKE BRUSH 2 x 7 nylon	23100SP-004LH
2	2	181062-000	BEARING, ROLL END	23100SP-004LH
3	6	181063-000	BEARING, ROLL END	23100SP-004LH
4	2	361198-000	COLLAR, GUIDE, 1" ID	23100SP-004LH
5	2	361199-000	COLLAR, GUIDE, 1-1/2 IN. ID	23100SP-004LH
6	1	791459-000	RUBBER BUMPER	23100SP-004LH
7	1	791789-000	NAMEPLATE	23100SP-004LH
8	1	A20653-008	CLAMPING ROD	23100SP-004LH
9	3	A20928-009	ROLLER SHAFT	23100SP-004LH
10	1	A21618-005	IDLER SHAFT	23100SP-004LH
11	1	A22291-021	ROLLER	23100SP-004LH
12	3	B20071-000	IDLER ROLLER (DANCER)	23100SP-004LH
13	1	D22800-120	SIDE PLATE, MOD.	23100SP-004LH



REV	DATE	DESCRIPTION	BY
B	01/29/26	REVISED DRAWING	SEM
A	Sep-08-25	NEW DRAWING	RDL

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UNLESS OTHERWISE SPECIFIED DIMENSIONAL TOLERANCE .X ± .1 .XX ± .01 .XXX ± .005 ANGLES ± 30° SURFACE FINISH 125 BREAK ALL EDGES .005/0.15 CORNER RADIUS .010/0.30	 <b>QUADREL LABELING SYSTEMS</b> 7670 JENTHER DRIVE MENTOR, OHIO 44060 (440) 602-4700	SCALE: 3/4
		DATE: Sep-08-25
		DRW BY: RDL
		CHK BY: RDL
4 1/2" SIDE PLATE ASSEMBLY, LHH		MAT'L
		23100SP-004LH



REV	DATE	DESCRIPTION	BY
A	Sep-08-25	NEW DRAWING	RDL

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UNLESS OTHERWISE SPECIFIED  
 DIMENSIONAL TOLERANCE  
 .XX ± .01  
 .XXX ± .005  
 ANGLES ± .30°  
 SURFACE FINISH 125  
 BREAK ALL EDGES .005/ .015  
 CORNER RADIUS .010/ .030  
 ALL ANGLES ARE 90°

QUADREL LABELING SYSTEMS  
 7670 JENTHER DRIVE  
 MENTOR, OHIO 44060  
 (440) 602-4700

SCALE: 5/8  
 DATE: Sep-08-25  
 DRW BY: RDL  
 CHK BY:  
 APPR BY:

4 1/2" SIDE PLATE ASSEMBLY, LHH  
 MAT'L  
 23100SP-004LH

**ASSEMBLY TITLE:**

**Q120 UNWIND ASSEMBLY**

**GENERAL FUNCTION:**

- Unwind flange provides support for label rolls (side application)
- Dual flanges prevent roll and label movement (top application)
- Dancer arm prevents roll run-away.
- Idler roller with guide collars guides web through slot sensor.
- Brake brush prevents web buckling through slot sensor.

**SET UP AND ADJUSTMENTS:**

- Move flange to required height and tighten set screw in flange hub.
- For top labeling, add second flange and tighten ratchet knob.
- Adjust dancer tension by turning check nut so that dancer roll snaps back to braking position when labeling head is threaded.
- Slide brake brush so that center of brush lines up with center of web. Rotate brush to provide web tension, then lock into place using the locking knob.
- Position guide collars on idler roll, one slightly above, the other slightly below the web.

**DANCER TENSION ADJUSTMENT LOCATION:**

- **The unwind tension adjustment is located on the middle underside of the Q120 head. Use the knurled ring to adjust the dancer tension.**

**MAINTENANCE:**

- Clean all the parts that may acquire glue residue

**TROUBLESHOOTING:**

**PROBLEM**

- Unwind roll run-away
- Unwind roll not stopping
- Drive roll stalling
- Brush taking fixed shape

**WHAT TO DO**

- Tighten dancer spring, check nut or replace dancer spring, if necessary.
- Replace brake ring-belt if broken, or unevenly worn.
- Release web tension produced by brake brush.
- Turn brush around



**ASSEMBLY TITLE: Q120 LABELING HEAD - DANCER ARM ASSEMBLY**

**DRAWING NO.: None Applicable**

**GENERAL FUNCTION:**

- The dancer arm and braking mechanism are used to control the unwind unit which will only advance a few inches of web at any time
- The position of the dancer arm affects the advancement of the web off the label roll.

**SET UP AND ADJUSTMENTS:**

- The dancer normal position of the dancer arm is reached when the dancer arm locks the supply reel.
- The spring tension can be adjusted to correctly locate the dance arm
- The spring may be adjusted by turning the threaded tensioner located near the unwind unit.
- The spring should be tight enough to bring the dancer arm back to its normal position and hold it with some force, but not tight enough to tear the web during label feed.
- Spring adjustment is also possible by rotating the spring mounting pin on the spring take up pulley around the mounting shaft.
- While in its normal position, the dancer arm roller should not interfere with the supply reel flange.

**MAINTENANCE:**

- Replace dancer spring if final spring tension is too soft.

**TROUBLESHOOTING:**

PROBLEM

- Web break
- Too much web slack
- Dancer arm hits supply flange position by loosening the brake cam.

WHAT TO DO

- Lower spring tension on dancer arm
- Increase spring tension
- Correct dancer arm final

**ASSEMBLY TITLE:**

**Q120 LABELING HEAD - BRAKE BRUSH  
ASSEMBLY**

**GENERAL FUNCTION:**

- The brake brush establishes web tension and controls backlash

**SET UP AND ADJUSTMENTS:**

- For accurate label feeds, the web must establish proper tension.
- Loosen the holding set screw in the brake brush body. The brake brush assembly can now be rotated on axis.
- Turn brush body into the web and tighten. To check for proper web tension, jog a label and check for web slack. If the web is tight and the label feeds correctly, the brush tension is set correctly.
- If backlash persists, continue to increase brake brush tension.

**MAINTENANCE:**

- Replace brake brush when brush body contour no longer viable or bristles are worn down.

**TROUBLESHOOTING:**

PROBLEM

- Web break

- Motor stall

- Too much web slack

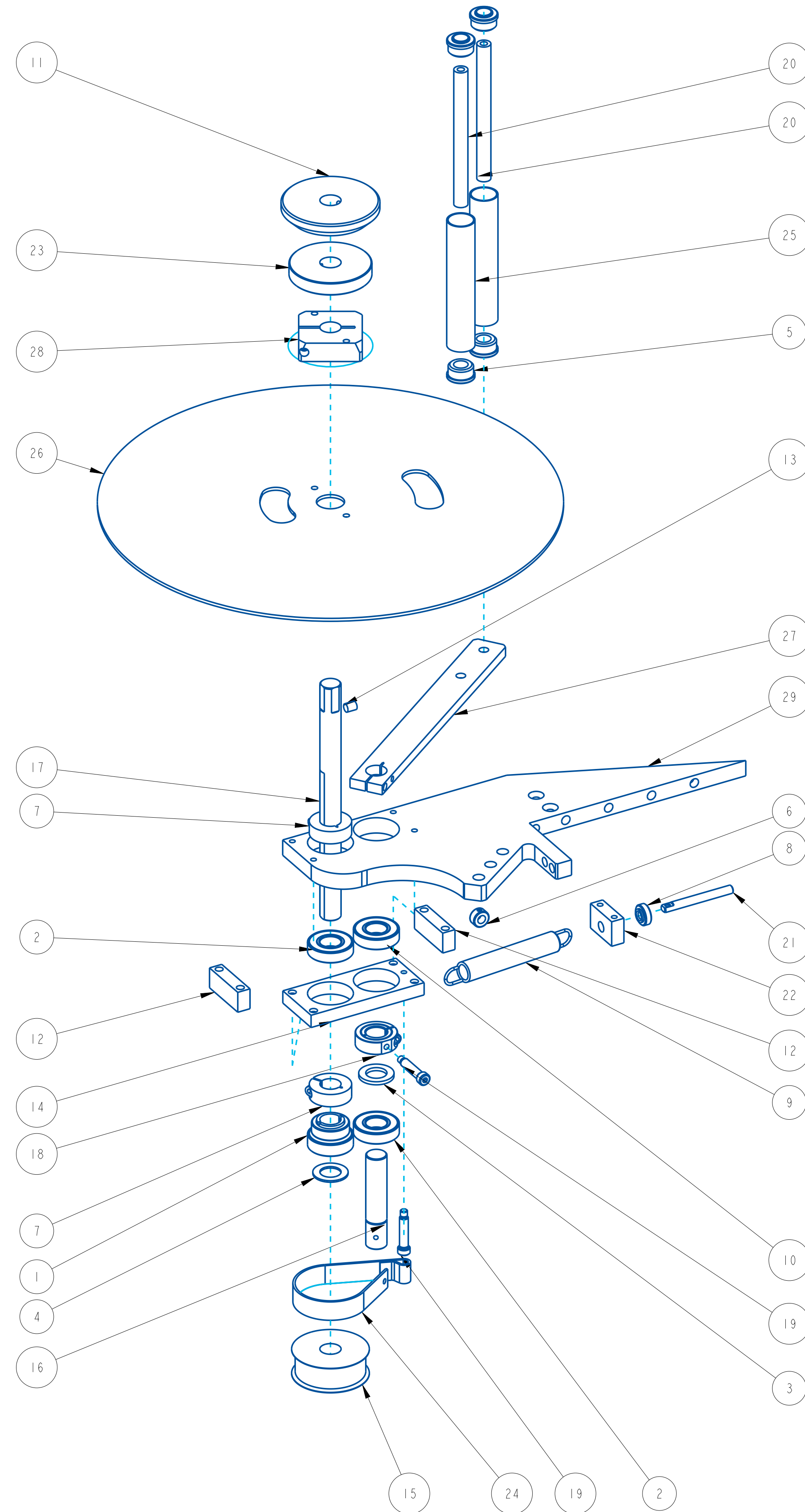
WHAT TO DO

- Too much brake tension. Decrease until no slack in web.

- Debris or brake flaw causing web tear

- Decrease brake tension

- Increase brake tension



ITEM	QTY	PART NO.	DESCRIPTION	PARENT ITEM
1	1	111044-000	BEARING, 3/4 ID CLAMP TYPE	23100U-004LH
2	3	111074-000	BEARING, BALL	23100U-004LH
3	1	151001-000	BEARING, THRUST WASHER	23100U-004LH
4	1	151006-000	BEARING, THRUST WASHER	23100U-004LH
5	4	181063-000	BEARING, ROLL END	23100U-004LH
6	1	361165-000	COLLAR, SETSCREW, 5/16" BORE	23100U-004LH
7	2	361183-000	COLLAR, 3/4 ID ONE PIECE- S.S.	23100U-004LH
8	1	801601-000	CHECK NUT	23100U-004LH
9	1	811216-000	EXTENSION SPRING, STAINLESS	23100U-004LH
10	1	871025-000	EXTERNAL SNAP RING	23100U-004LH
11	1	A20583-000	QUICK LOCK COLLAR REWORK	23100U-004LH
12	2	A20585-000	SUPPORT SPACER	23100U-004LH
13	1	A20586-000	WHITE NYLON SLUG	23100U-004LH
14	1	A20590-000	BEARING PLATE	23100U-004LH
15	1	A20591-000	UNWIND BRAKE DRUM	23100U-004LH
16	1	A20592-200	UNWIND DANCER SHAFT	23100U-004LH
17	1	A20593-000	UNWIND SHAFT	23100U-004LH
18	1	A20595-000	DANCER COLLAR	23100U-004LH
19	2	A20596-000	DANCER BOLT	23100U-004LH
20	2	A20928-004	ROLLER SHAFT	23100U-004LH
21	1	A23131-000	STUD	23100U-004LH
22	1	A23298-000	BLOCK, SPRING TENSION	23100U-004LH
23	1	A23406-000	SUPPLY REEL CENTER HUB	23100U-004LH
24	1	A25825_000	BRAKE BAND	23100U-004LH
25	2	B20071-001	IDLER ROLLER (DANCER)	23100U-004LH
26	1	B20980-001	UNWIND FLANGE	23100U-004LH
27	1	B21113-000	DANCER ARM, 16" UNWIND	23100U-004LH
28	1	B21931-001	CORE HUB	23100U-004LH
29	1	C21236-120	UNWIND SUPPORT PLATE	23100U-004LH

REV	DATE	DESCRIPTION	BY
A	Sep-04-25	NEW DRAWING	RDL

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UNLESS OTHERWISE SPECIFIED  
DIMENSIONAL TOLERANCE  
 X ± .1  
 XX ± .01  
 XXX ± .005  
 ANGLES ± 30°

SURFACE FINISH 125  
 BREAK ALL EDGES .005/.015  
 CORNER RADIUS .010/.030

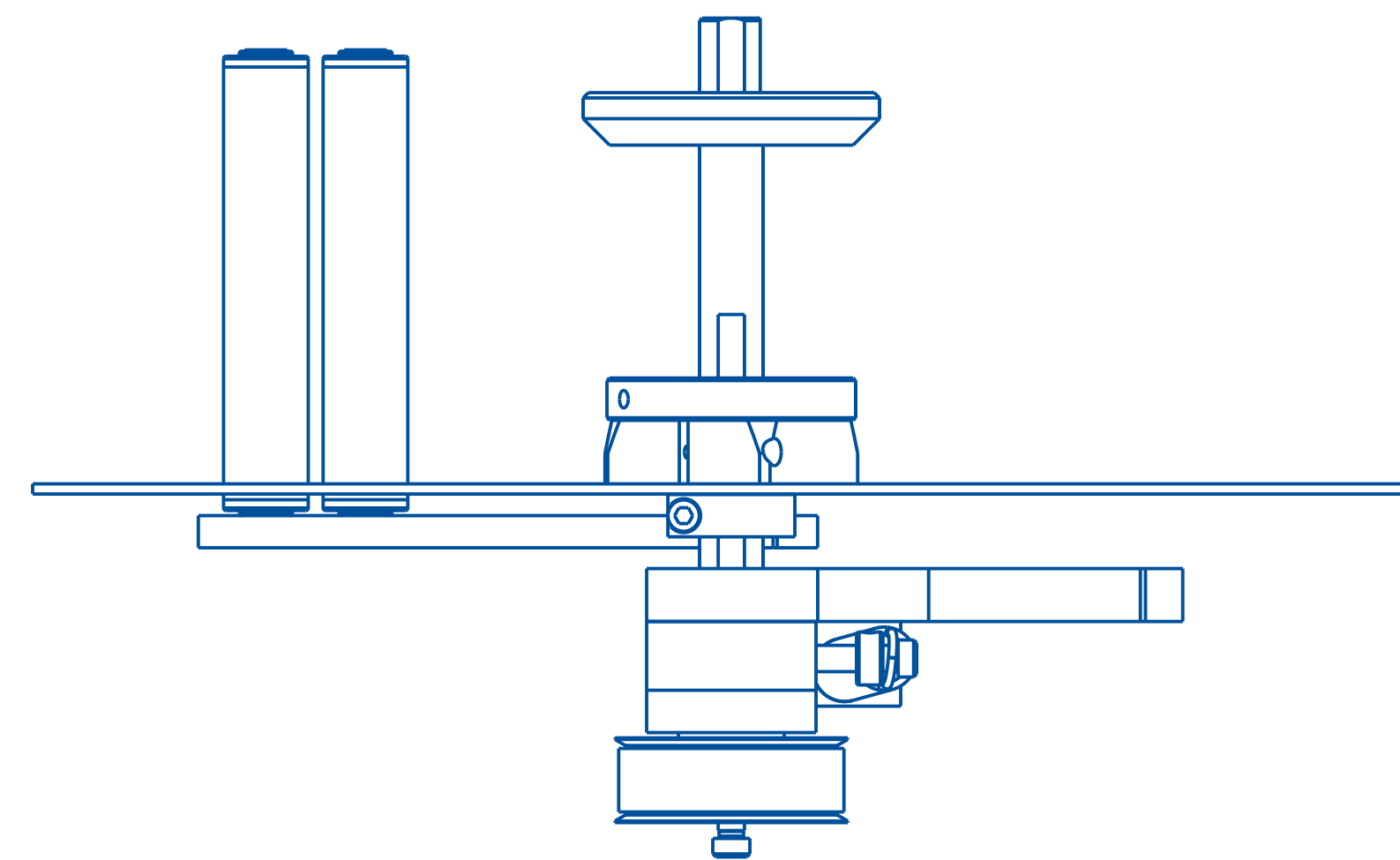
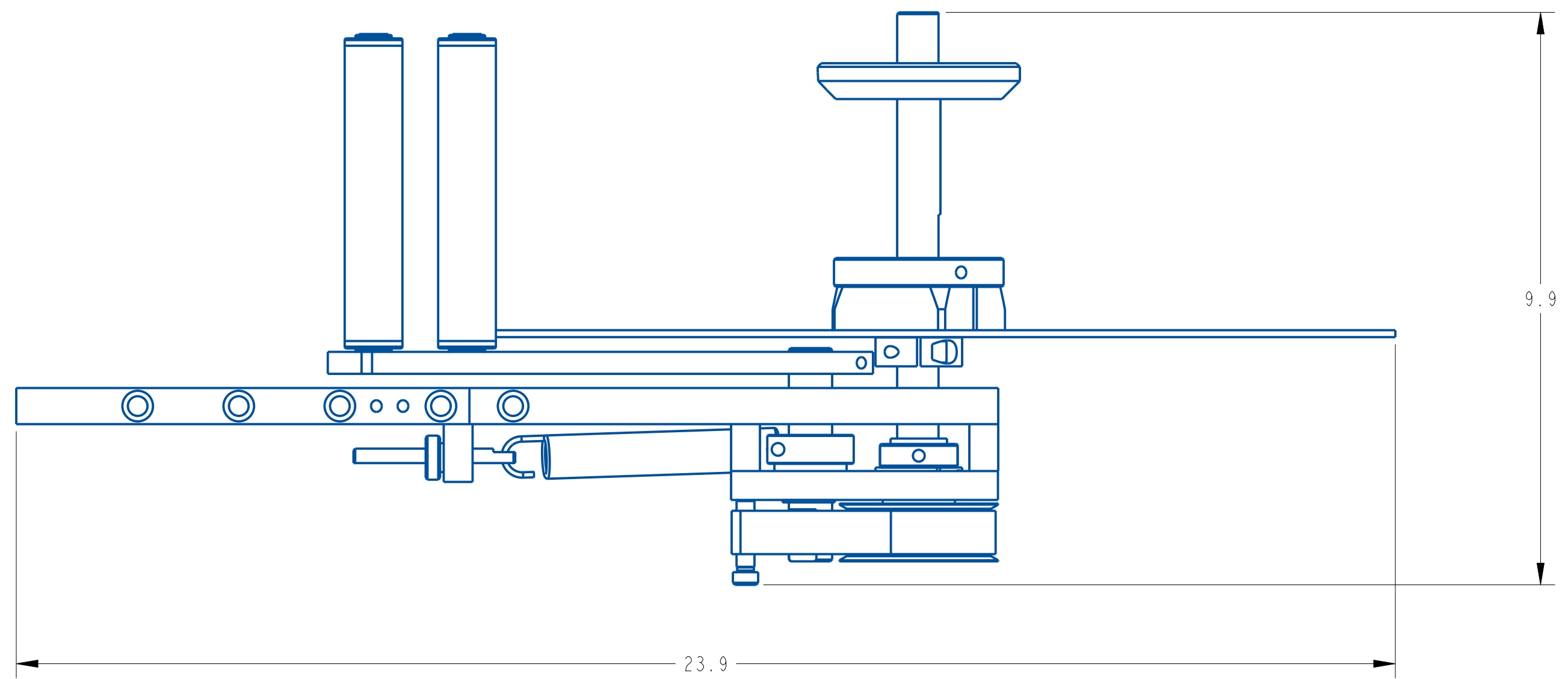
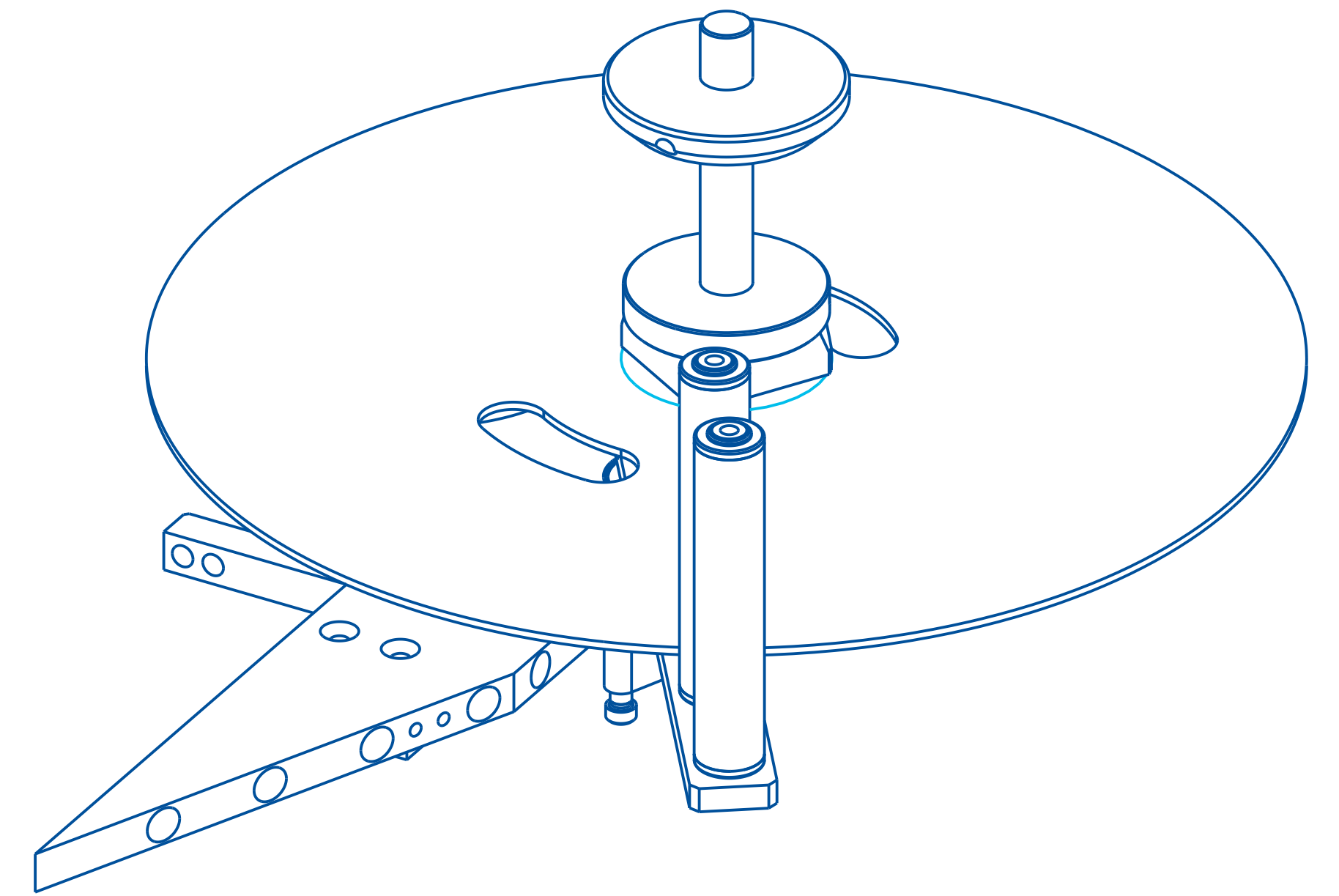
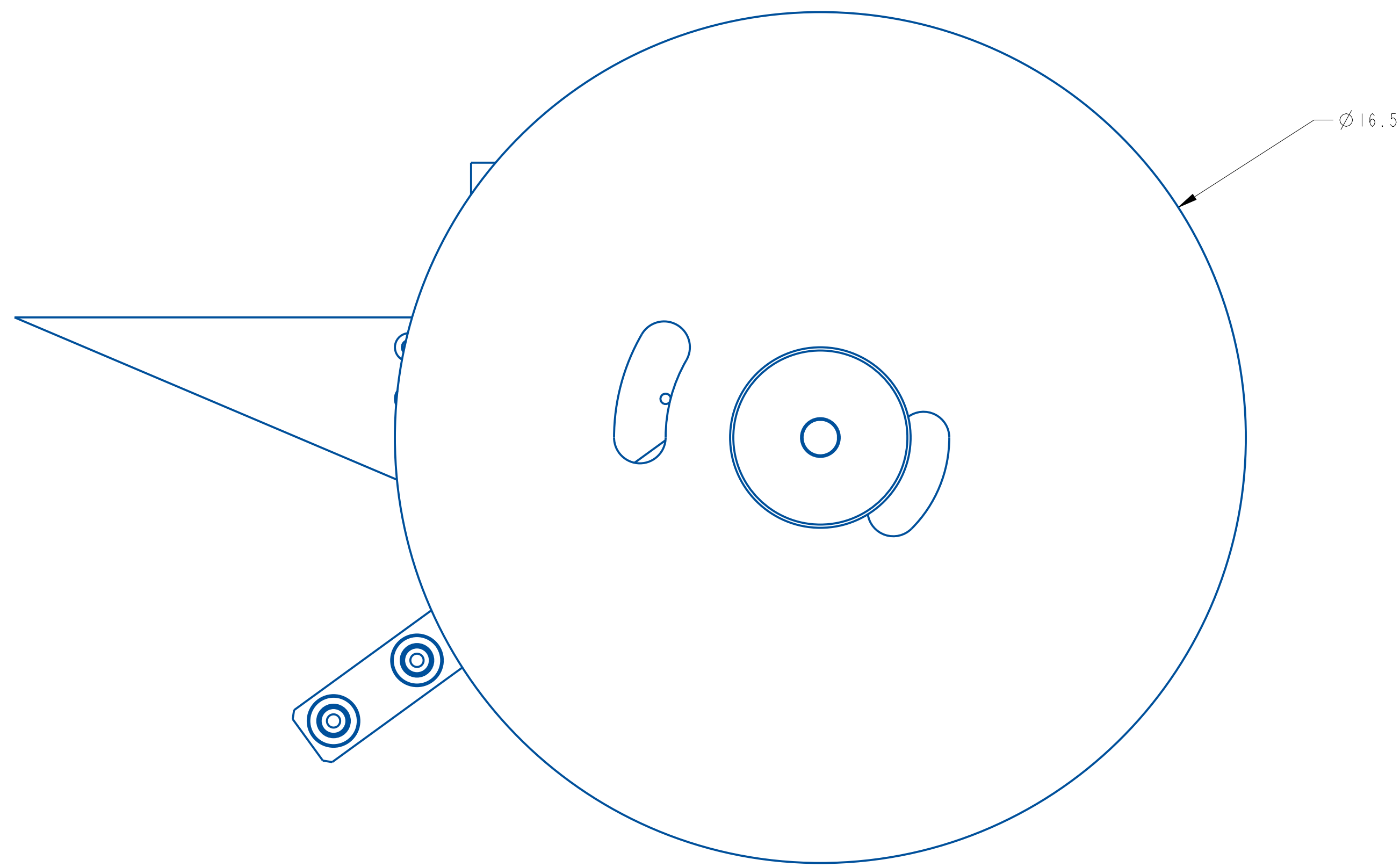
**QUADREL LABELING SYSTEMS**  
 7670 JENTHER DRIVE  
 MENTOR, OHIO 44060  
 (440) 602-4700

SCALE: 3/8  
 DATE: Sep-04-25  
 DRW BY: RDL  
 CHK BY:  
 APPR BY:

4 1/2" UNWIND ASSEMBLY, LHH

MAT'L

23100U-004LH



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A	Sep-04-25	NEW DRAWING	RDL
REV	DATE	DESCRIPTION	BY
UNLESS OTHERWISE SPECIFIED DIMENSIONAL TOLERANCE		<b>QUADREL LABELING SYSTEMS</b> 7670 JENTHER DRIVE MENTOR, OHIO 44060 (440) 602-4700	SCALE: 1/2 DATE: Sep-04-25 DRW BY: RDL CHK BY: APPR BY:
.X ± .1 .XX ± .01 .XXX ± .005 ANGLES ± .30° SURFACE FINISH 125 BREAK ALL EDGES .005/.015 CORNER RADIUS .010/.030 ALL ANGLES ARE 90°		4 1/2" UNWIND ASSEMBLY, LHH MAT'L 23100U-004LH	

**ASSEMBLY TITLE: Q120 PEEL PLATE ASSEMBLY**

**GENERAL FUNCTION:**

- The peel plate separates the label from the liner and puts the label in a "Flag" position.
- The mounting rods support the slot sensor assembly.
- The guide collars and the idler roller guide the web position over the peel plate
- The pivot pin provides for yoke mounting of the labeling head.

**SET UP AND ADJUSTMENTS:**

- On machines so equipped, the peel plate may be pivoted at various angles relating to the product by loosening the peel plate mounting bar. (The peel plate of all other models is mounted at a fixed angle and cannot be adjusted)
- To advance label flag on peel plate, move the slot sensor towards the peel plate. To decrease label flag, move slot sensor away from the peel plate.
- Position guide collars on idler roll, one slightly above and the other slightly below the web.

**MAINTENANCE:**

- Clean all the parts that may acquire labels or glue residue.

**TROUBLESHOOTING:**

PROBLEM

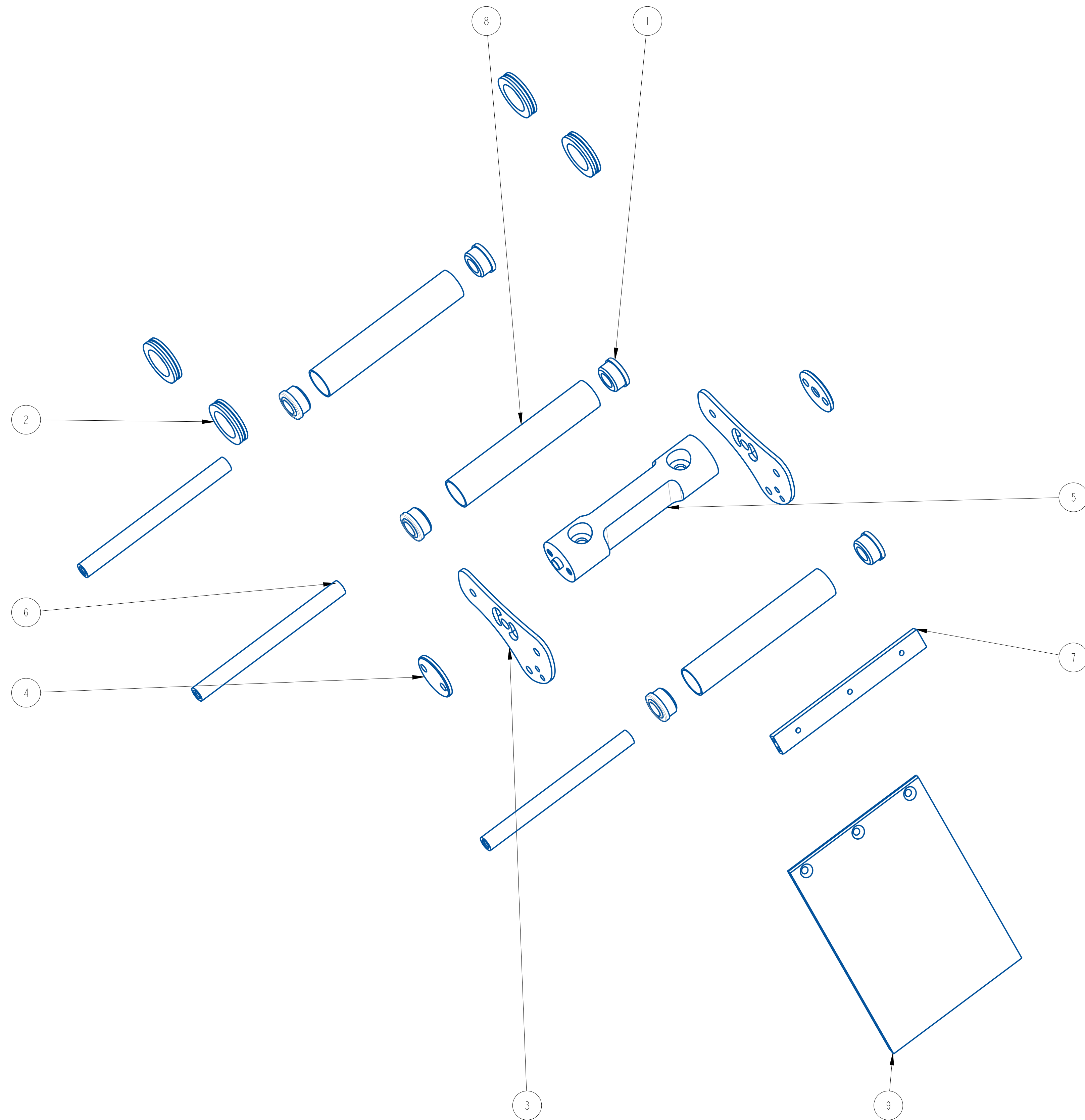
- Too much label flag at peel plate
- Too little label flag at peel plate
- Web moving up and down peel plate

WHAT TO DO

- Move slot sensor away from peel edge
- Move slot sensor towards peel plate edge
- Make sure guide collars are properly positioned on idler roll.




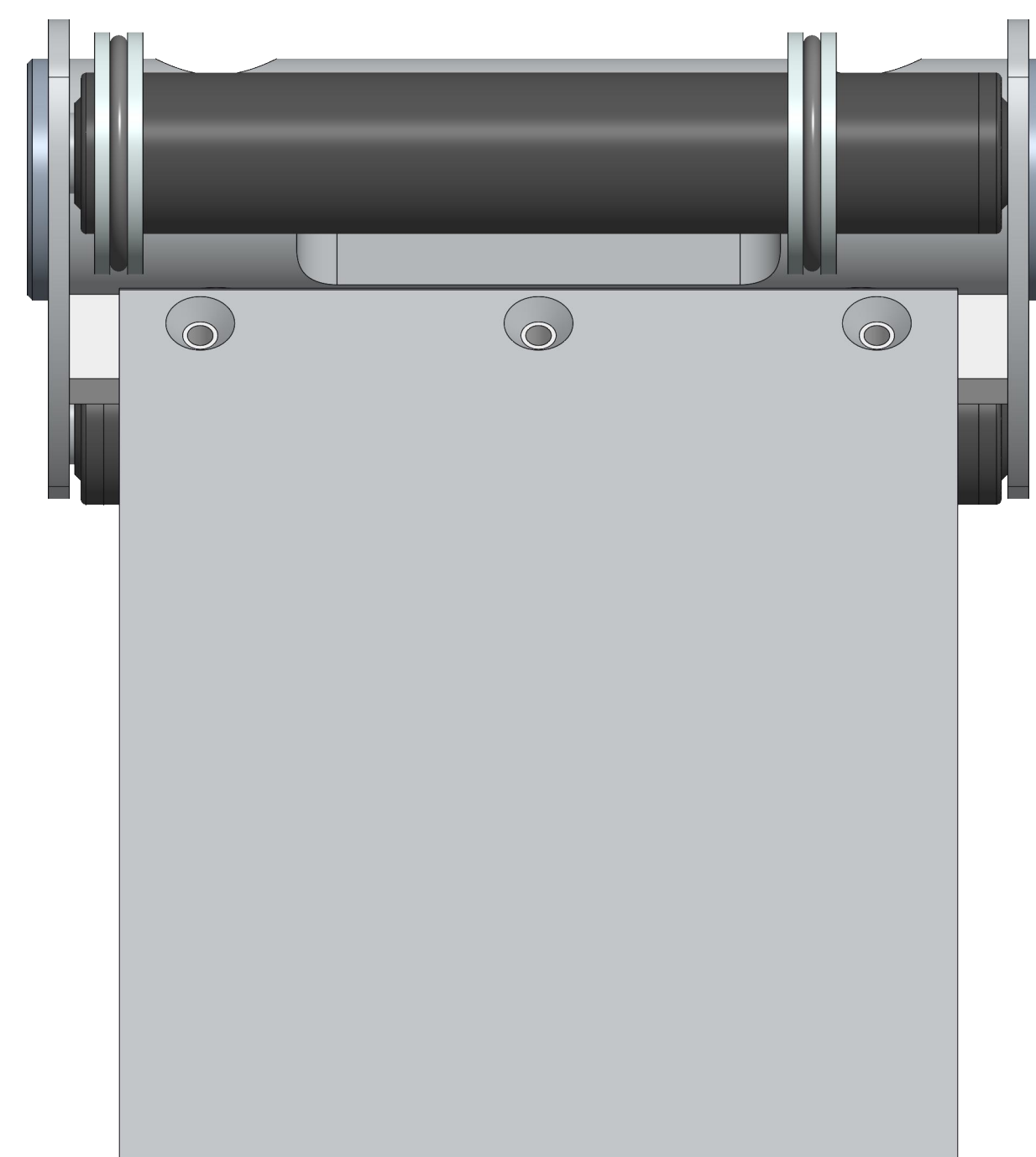
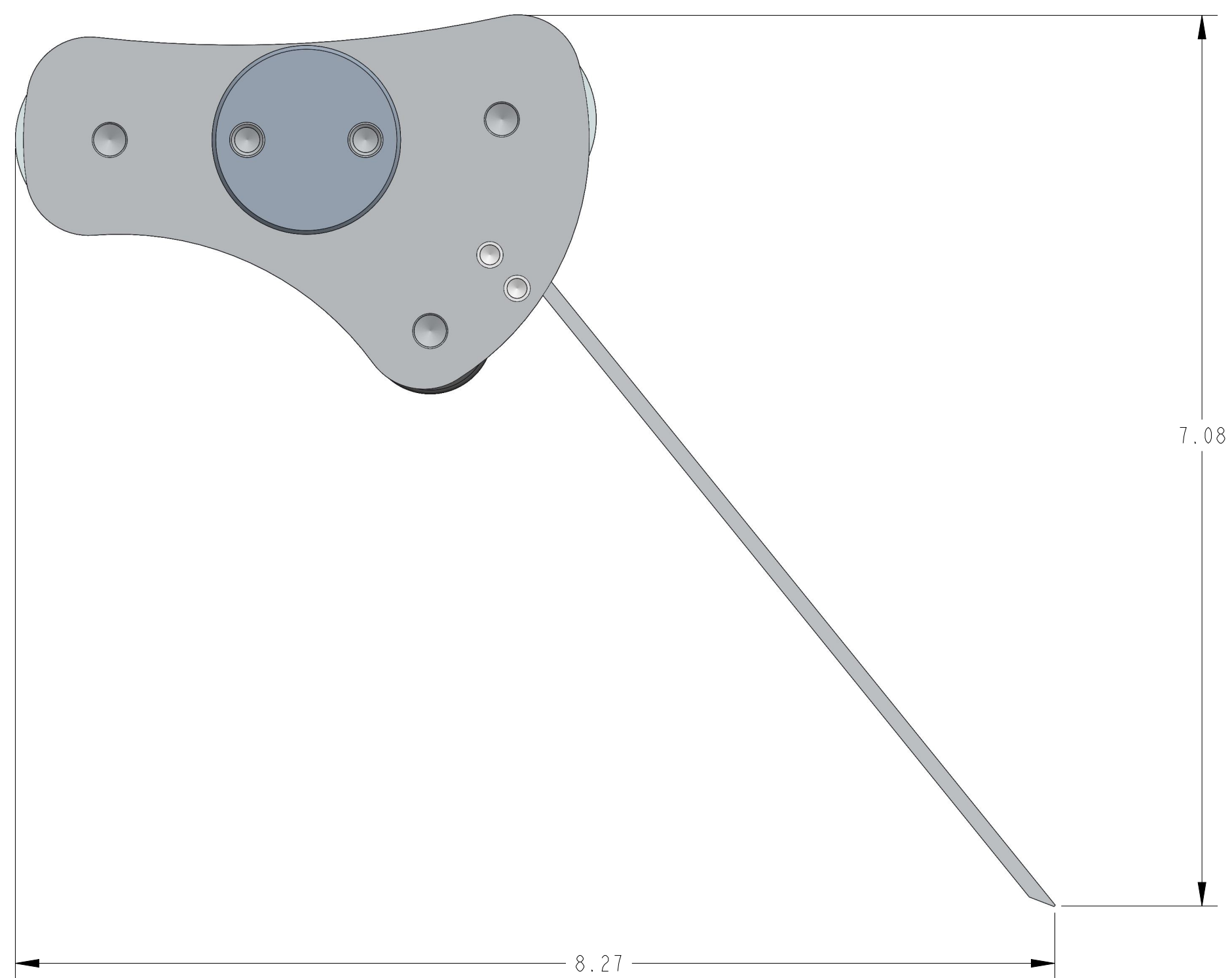
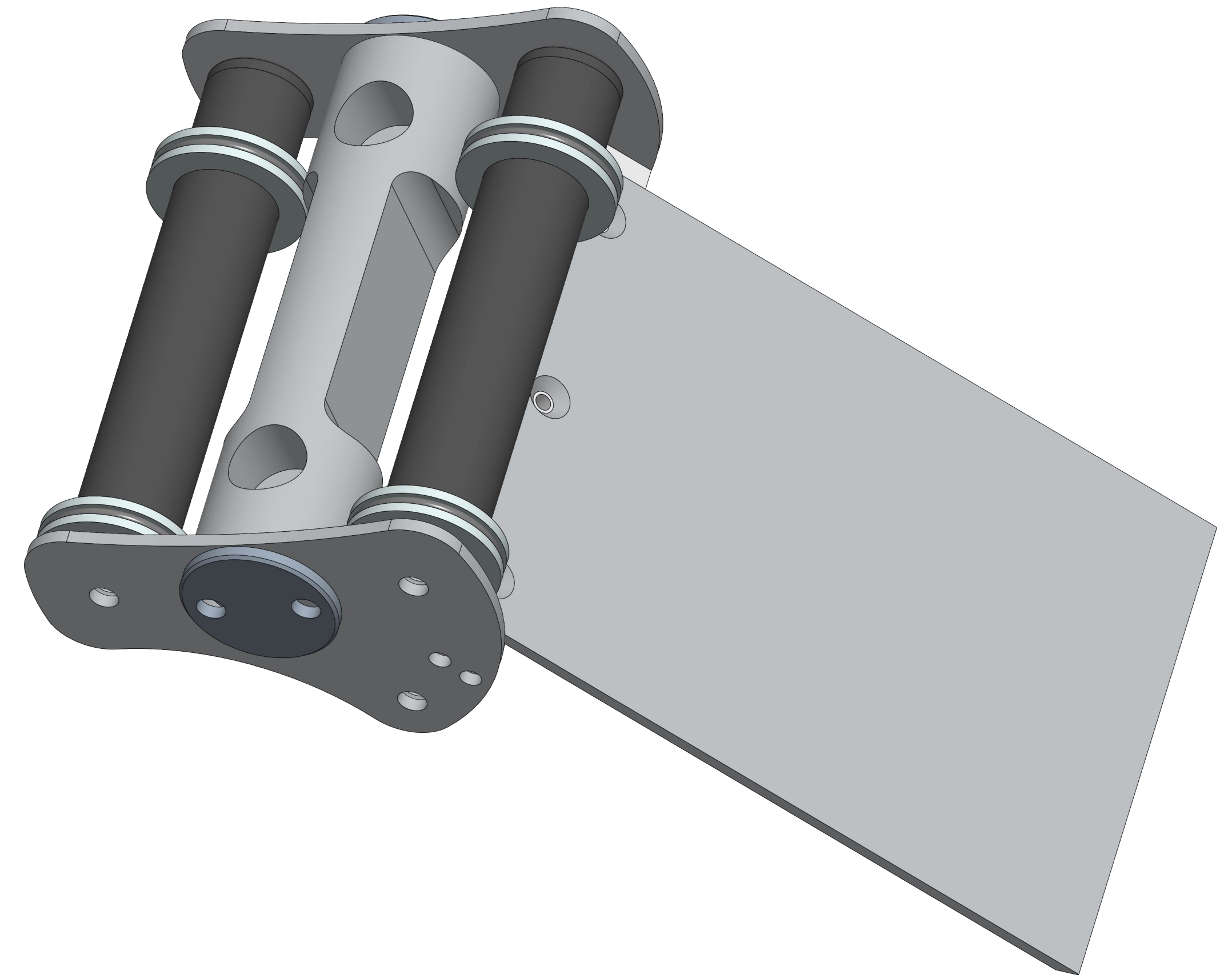
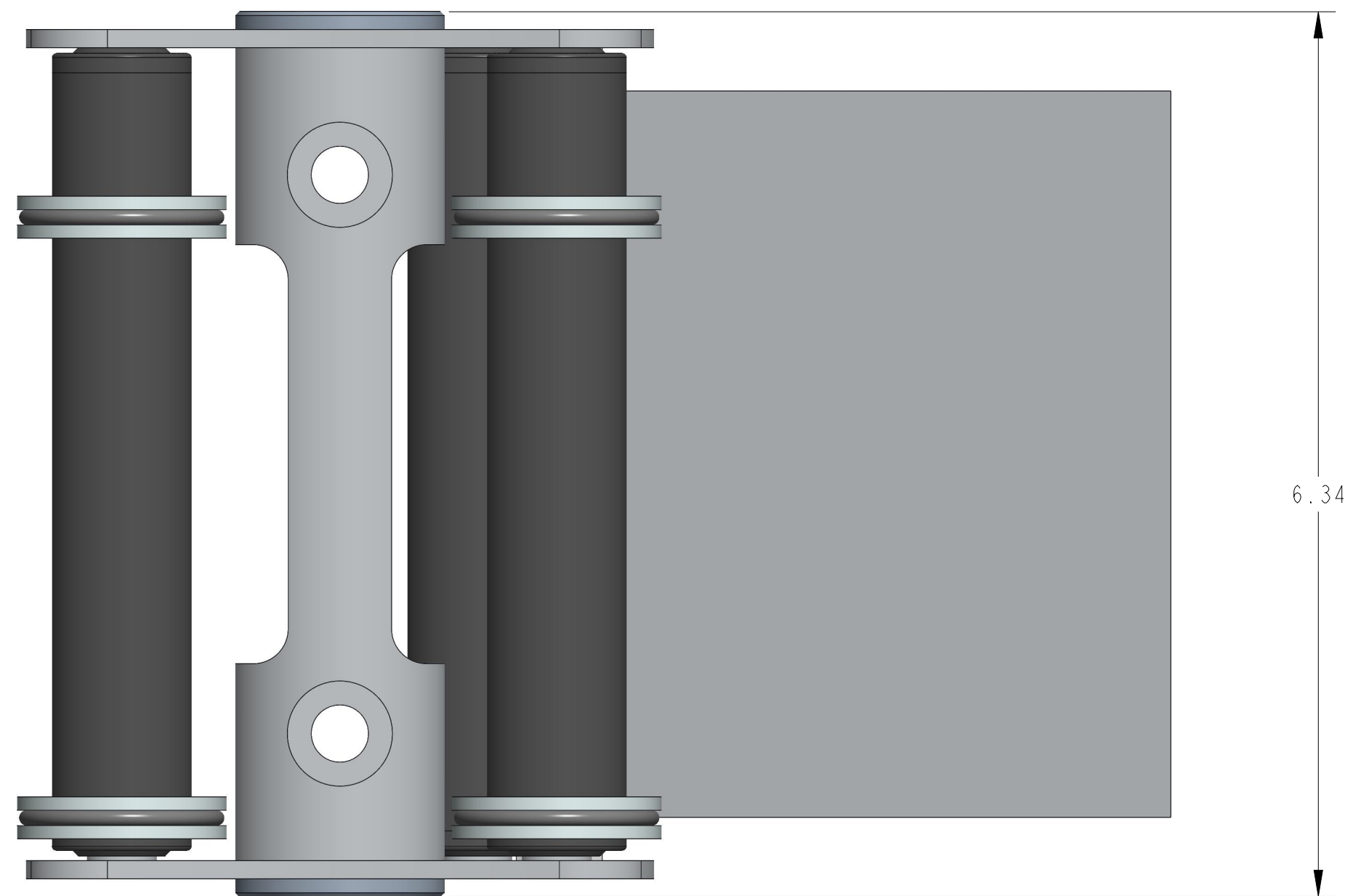
ITEM	QTY	PART NO.	DESCRIPTION	PARENT ITEM
1	6	181063-001	BEARING, ROLL END, ANTI-STATIC	21719-000
2	4	361198-000	COLLAR, GUIDE, 1" ID	21719-000
3	2	A22065-000	PEEL PLATE MOUNTING PLATE	21719-000
4	2	A22066-000	WASHER	21719-000
5	1	A22094-000	PEEL PLATE ROD MTG BAR	21719-000
6	3	A22102-000	P.P. IDLER SHAFT	21719-000
7	1	A23945-000	PEEL PLATE MOUNTING BAR, 4-1/2"	21719-000
8	3	B20740-000	IDLER ROLLER-( PEEL PLATE)	21719-000
9	1	B21280-000	PEEL PLATE, 4-1/2", Q15	21719-000



REV	DATE	DESCRIPTION	BY
A		NEW DRAWING	MAW

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UNLESS OTHERWISE SPECIFIED DIMENSIONAL TOLERANCE X ± .1 XX ± .01 XXX ± .005 ANGLES ± .30°	 <b>QUADREL LABELING SYSTEMS</b> 7670 JENTHER DRIVE MENTOR, OHIO 44060 (440) 602-4700	SCALE: 1/2 DATE: DRW BY: MAW CHK BY: 03/15/2024-SEM APPR BY:
<b>4 1/2" PEEL PLATE ASSEMBLY</b>		
SURFACE FINISH 125 BREAK ALL EDGES .005/0.15 CORNER RADIUS .010/0.30	MAT'L BOM 21719-000	21719-000



UNLESS OTHERWISE SPECIFIED		NEW DRAWING	
DIMENSIONAL TOLERANCE		REV	DATE
X ± .1		DESCRIPTION	
XX ± .01		BY	
XXX ± .005		SCALE: 1/1	
ANGLES ± 30°		DATE:	
SURFACE FINISH 125		DRW BY: mow	
BREAK ALL EDGES .005/0.15		CHK BY: 03/15/2024-SEM	
CORNER RADIUS .010/0.30		APPR BY:	
<b>THIS IS A PRO-ENGINEER DOCUMENT AND MAY NOT BE MODIFIED MANUALLY</b>			
<b>QUADREL LABELING SYSTEMS</b>		4 1/2" PEEL PLATE ASSEMBLY	
7670 JENTHER DRIVE MENTOR, OHIO 44060 (440) 602-4700		MATERIAL	
BOM 21719-000		21719-000	

**ASSEMBLY TITLE:           FIXED BRUSH IMPRESSER**

**DRAWING NO.:               D21651-000**

**GENERAL FUNCTION:**

- The fixed roller impresser is an option used in applications where a secondary wipe down or label wipe is necessary.

**SET UP AND ADJUSTMENTS:**

- When installed, the brush assembly will be mounted by an adjustable clamp. The mounting assembly is fastener to the option rail located on the peel plate side wall.
- Four axis of adjustment is available by loosening the set screw locking the roller arm in place.
- Locate the brush as necessary and re-tighten the clamping screws.
- Run a product through the brush area and insure the brush layed on the product but do not impede product travel. The brush can be adjusted too close to the product which will prevent the product from smoothly traversing through the brush area.

**MAINTENANCE:**

- Keep the brush free of label flash, glue and debris. This will prevent jamming and web tears.

**NOTE:** Exercise caution when removing bad labels from brush. Careless removal can result in brisals being pull out which may leave the labeler inoperable until the brush is replaced!

**TROUBLESHOOTING:**

**PROBLEM**

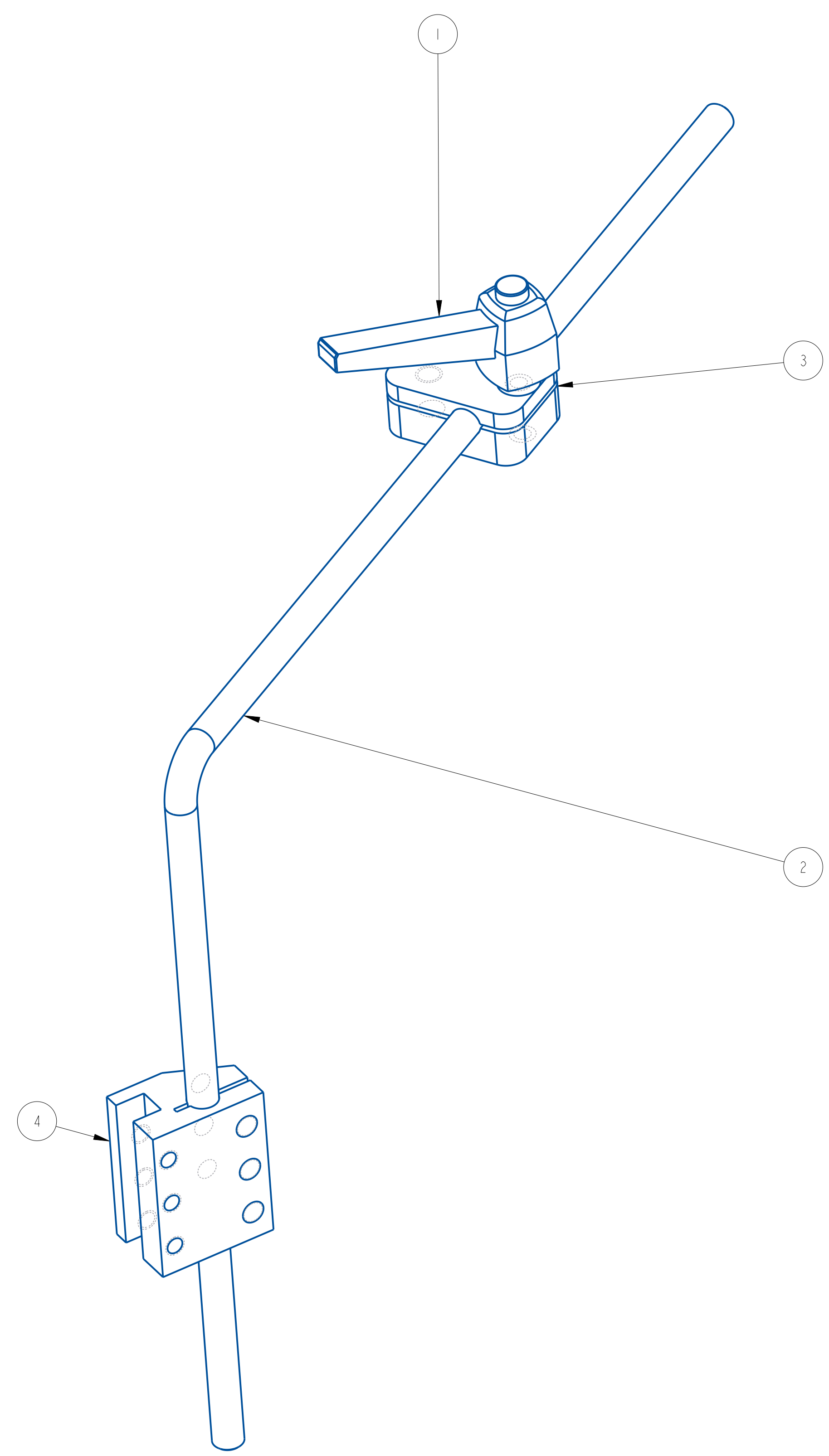
- Product jams at brush area
- Bubbles in label
- Label edge curling
- Wipedown inadequate

**WHAT TO DO**

- Increase brush spacing.
- Decrease labeling speed
- Decrease product delay
- Decrease brush spacing.

ITEM	QTY	PART NO.	DESCRIPTION	PARENT ITEM
1	1	801868-000	CLAMPING LEVER	10228-007
2	1	A21264-018	CROSS ARM	10228-007
3	1	A21693-301	IMPRESSOR MOUNTING BLOCK	10228-007
4	1	A23463-100	BRUSH HOLDER	10228-007

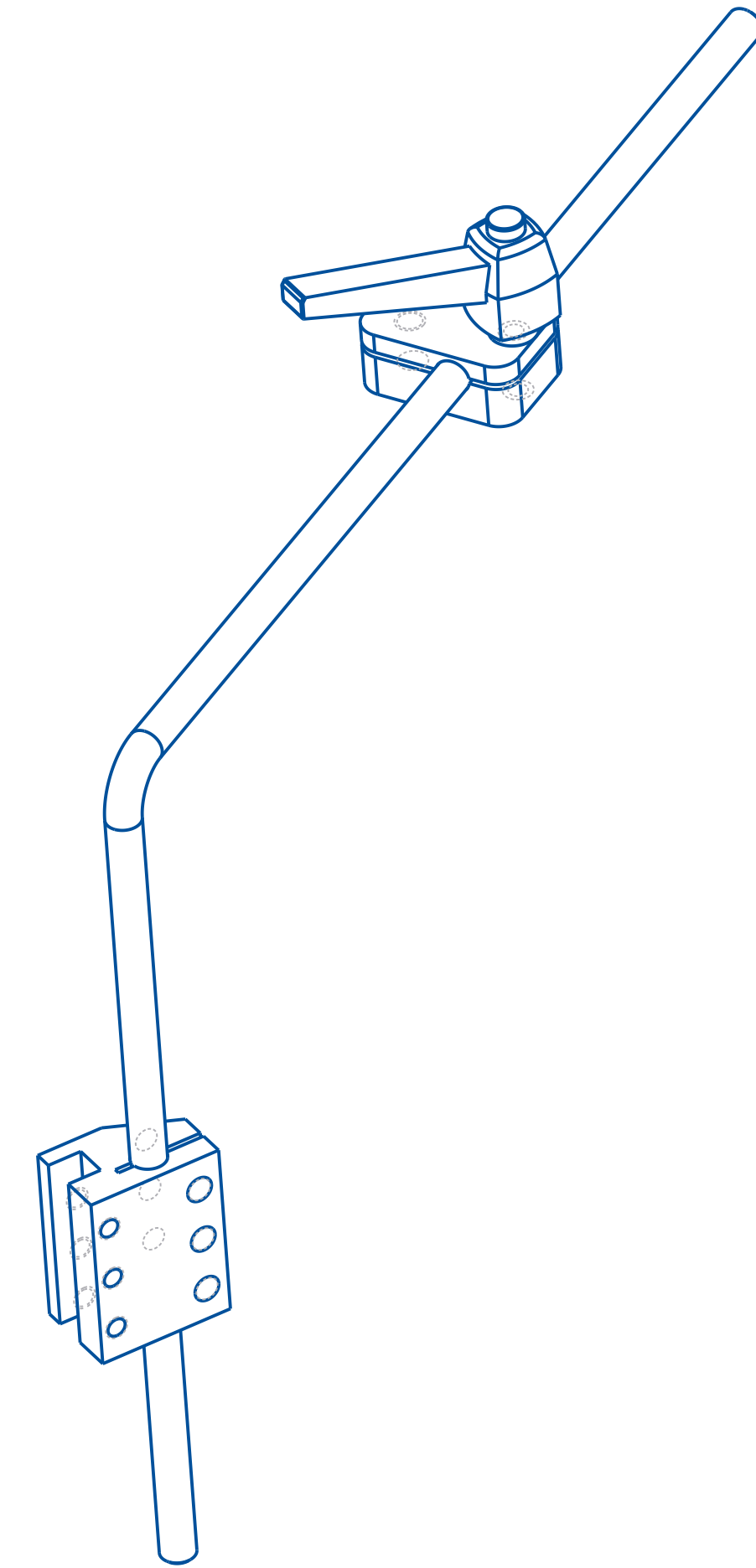
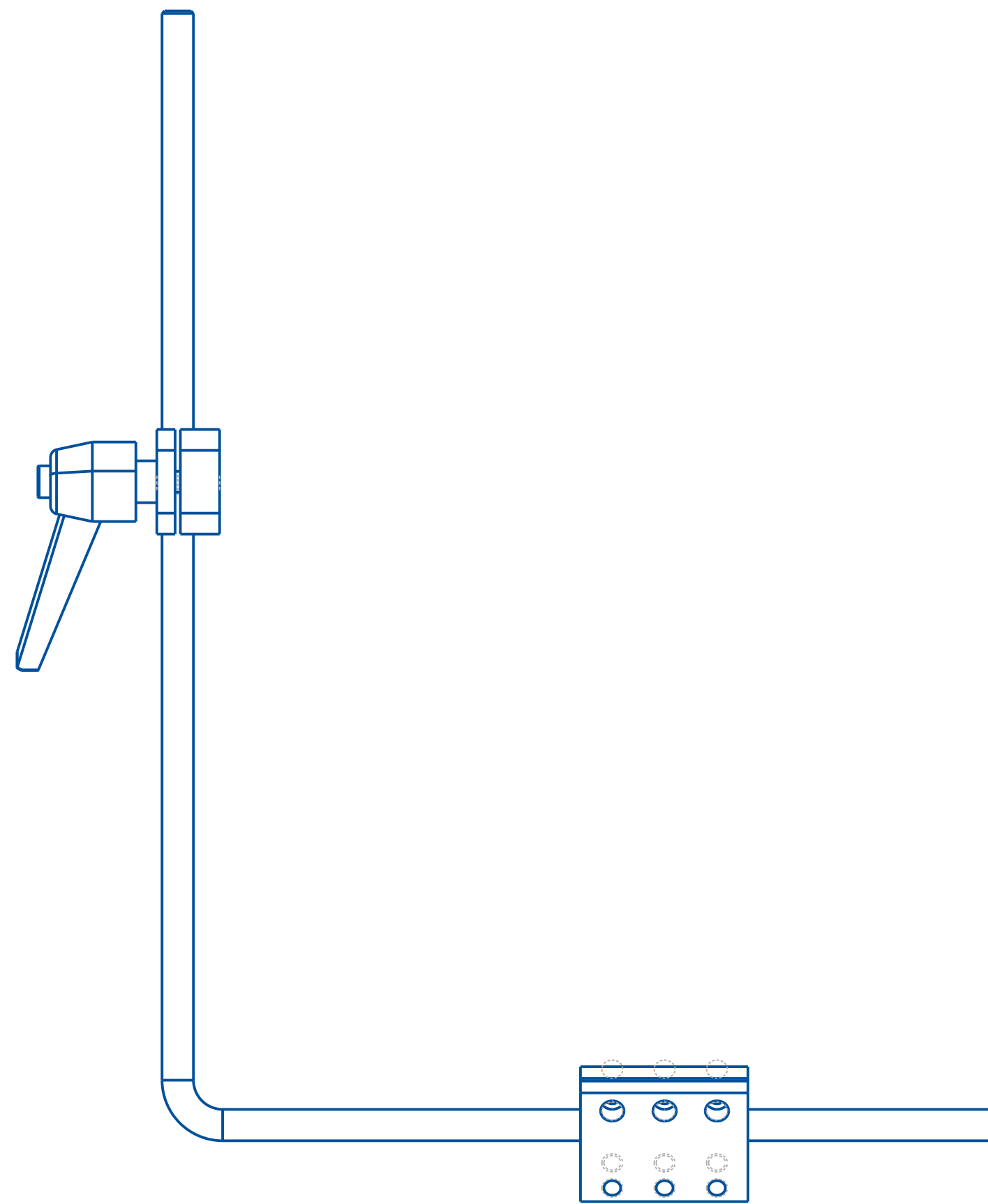
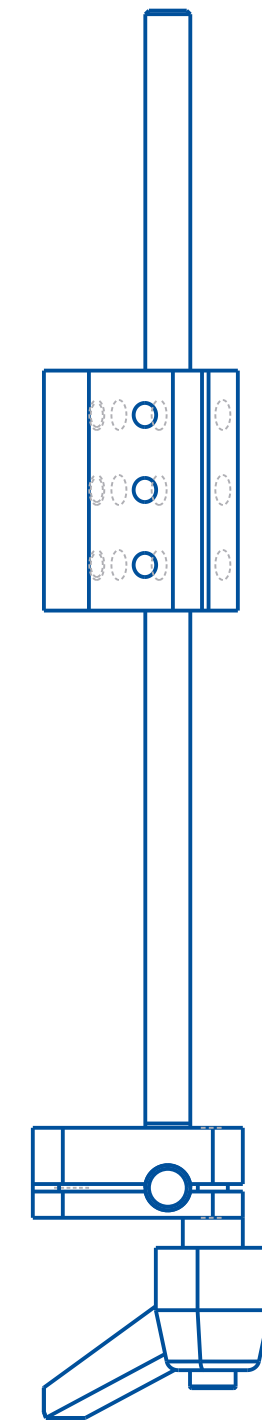
NOT SHOWN:  
A28416-020 - SQUEEGEE 2"



REV	DATE	DESCRIPTION	BY
A	11-13-23	NEW DRAWING	SEM

THIS IS A PRO-ENGINEER DOCUMENT AND MAY NOT BE MODIFIED MANUALLY

UNLESS OTHERWISE SPECIFIED DIMENSIONAL TOLERANCE .X ± .1 .XX ± .01 .XXX ± .005 ANGLES ± 30° SURFACE FINISH 125 BREAK ALL EDGES .005/0.15 CORNER RADIUS .010/0.30	7670 JENTHER DRIVE MENTOR, OHIO 44060 (440) 602-4700	SCALE: 1/1
		DATE: 11-13-23
		DRW BY: SEM
		CHK BY: 02/23/2024-SEM
HEAVY DUTY IMPRESSOR MOUNTING		MAT'L
		10228-007



**THIS IS A PRO-ENGINEER DOCUMENT AND MAY NOT BE MODIFIED MANUALLY**

UNLESS OTHERWISE SPECIFIED	QUADREL LABELING SYSTEMS	SCALE:	5/8
DIMENSIONAL TOLERANCE	7670 JENTHER DRIVE	DATE:	11-13-23
X ± .1	MENTOR, OHIO 44060	DRW BY:	SEM
XX ± .01	(440) 602-4700	CHK BY: 02/23/2024-SEM	
XXX ± .005		APPR BY:	
ANGLES ± .30°			
SURFACE FINISH 125			
BREAK ALL EDGES .005/0.15			
CORNER RADIUS .010/0.30			
ALL ANGLES ARE 90°			

HEAVY DUTY IMPRESSOR MOUNTING

MAT'L 10228-007

A	11-13-23	NEW DRAWING	SEM
REV	DATE	DESCRIPTION	BY

**ASSEMBLY TITLE:**

**Q120 DRIVE AND PINCH ROLL ASSEMBLY**

**GENERAL FUNCTION:**

- The drive roll pulls the liner through the entire labeling head. As the liner is pulled over the peel edge, the label dispenses.
- The spring-loaded pinch roll squeezes the liner against the drive roll to provide positive drive.
- The primary roll is the pull or drive roll as shown. The knurl roll provides a constant pressure against the pull roll.

**SET UP AND ADJUSTMENTS:**

- When threading the labeling head, use the pinch roll lever to release the pinch roll from the drive roll.
- Use the spring plunger adjustment screws to adjust the contact pressure between the knurl and pull rollers.
- The pressure should be adjusted as tight as necessary to prevent a loose liner, while still allowing full rotation of the pressure release arm.

**MAINTENANCE:**

- Clean all parts that may have acquired label or glue residue

**TROUBLESHOOTING:**

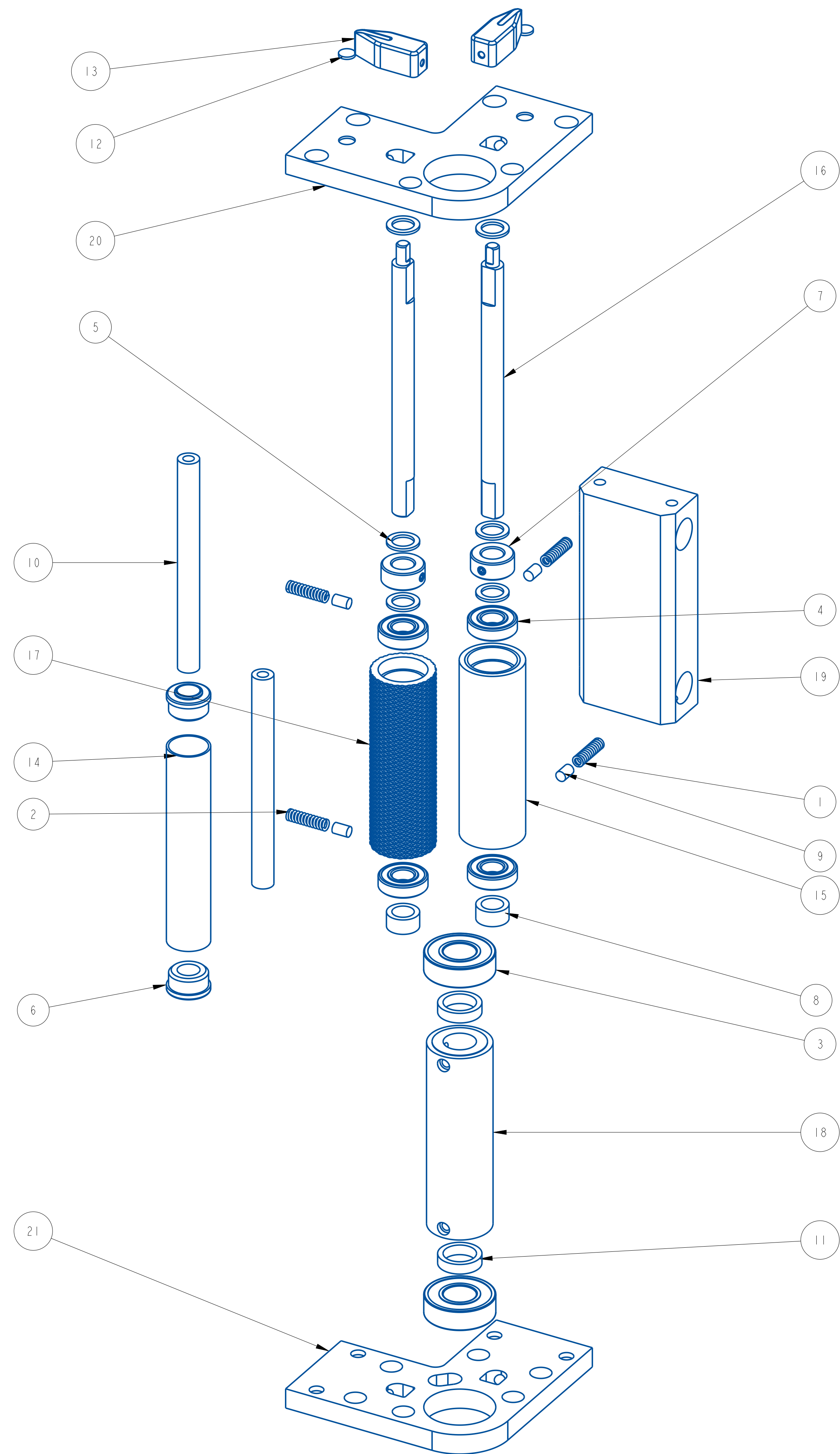
PROBLEM

- Meter pulley rubbing against side plate
- Web slips
- Drive roll not rotating when stepping motor rotates
- Pinch roll not providing enough pressure against drive roll
- Drive roll unevenly worn causing tracking problem

WHAT TO DO

- Center pulley on motor shaft and tighten two (2) set screws in pulley.
- Drive roller not closed. Turn drive roll arm to closed position.
- Replace timing belt from motor to drive roll
- Replace pinch roll spring
- Increase tension on drive roll by adjusting spring loaded locking pins.
- Replace drive roll





ITEM	QTY	PART NO.	DESCRIPTION	PARENT ITEM
1	2	00301-17	SPRING, .275 x .052 x .94	22620LPP-RH4
2	2	00301-18	SPRING, 69.91b/in	22620LPP-RH4
3	2	111052-000	BEARING	22620LPP-RH4
4	4	111072-000	BEARING, BALL	22620LPP-RH4
5	6	151004-000	BEARING, THRUST WASHER	22620LPP-RH4
6	2	181063-000	BEARING, ROLL END	22620LPP-RH4
7	2	362161-000	COLLAR, SETSCREW, 1/2 IN. ID	22620LPP-RH4
8	2	A20507-000	SPACER	22620LPP-RH4
9	4	A20567-000	WHITE NYLON SLUG	22620LPP-RH4
10	2	A20928-015	ROLLER SHAFT	22620LPP-RH4
11	2	A23752-000	SPACER	22620LPP-RH4
12	2	A25249-000	INDEX DOT	22620LPP-RH4
13	2	A25250-000	IND KNOB	22620LPP-RH4
14	1	B20071-050	IDLER ROLLER	22620LPP-RH4
15	1	B20095-000	SILICON PINCH ROLL	22620LPP-RH4
16	2	B20125-000	KNURLED ROLL SHAFT,	22620LPP-RH4
17	1	B20126-000	KNURL ROLLER	22620LPP-RH4
18	1	B20137-000	PULL ROLL, 4-1/2"	22620LPP-RH4
19	1	B21616-450	YOKE FILLER BAR	22620LPP-RH4
20	1	D21006-120	YOKE SIDE PLATE	22620LPP-RH4
21	1	D21007-120	YOKE SIDE PLATE	22620LPP-RH4



REV	DATE	DESCRIPTION	BY
A	12-9-22	NEW DRAWING	ATT

**THIS IS A PRO-ENGINEER DOCUMENT AND MAY NOT BE MODIFIED MANUALLY**

UNLESS OTHERWISE SPECIFIED  
 DIMENSIONAL TOLERANCE  
 .125 ± .01  
 .005 ± .005  
 ANGLES ± 30°

SURFACE FINISH 125  
 BREAK ALL EDGES .005/0.15  
 CORNER RADIUS .010/0.30

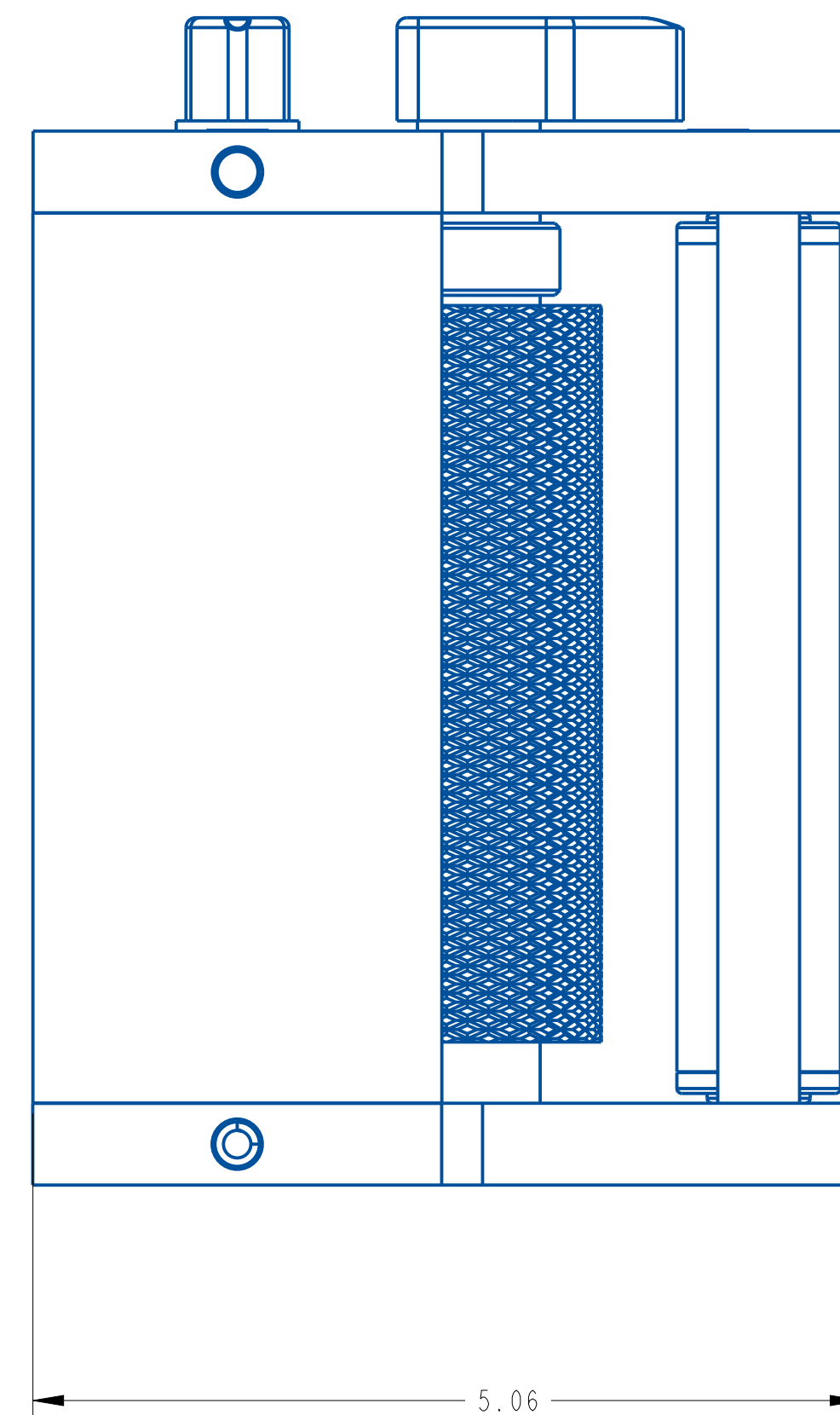
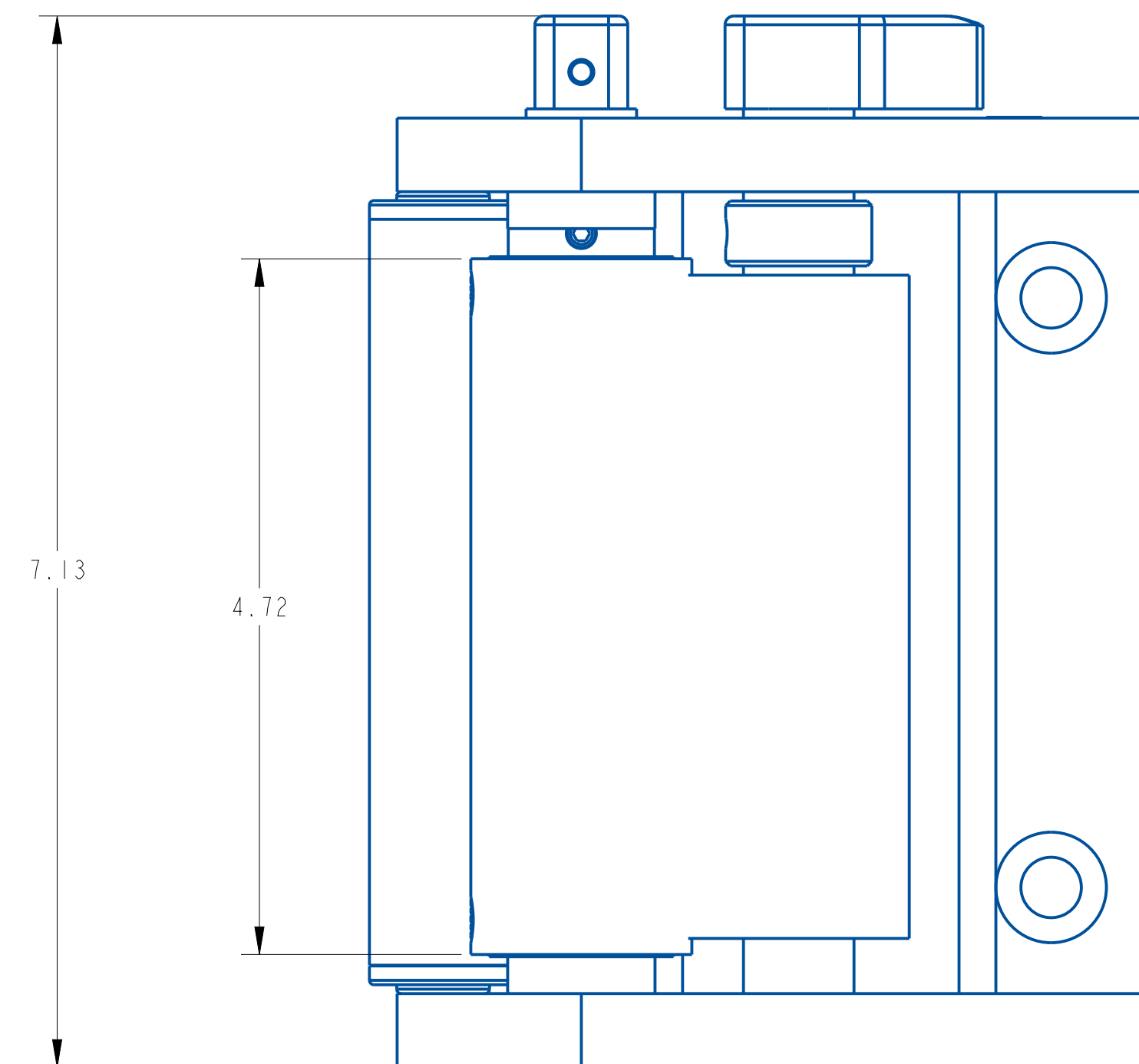
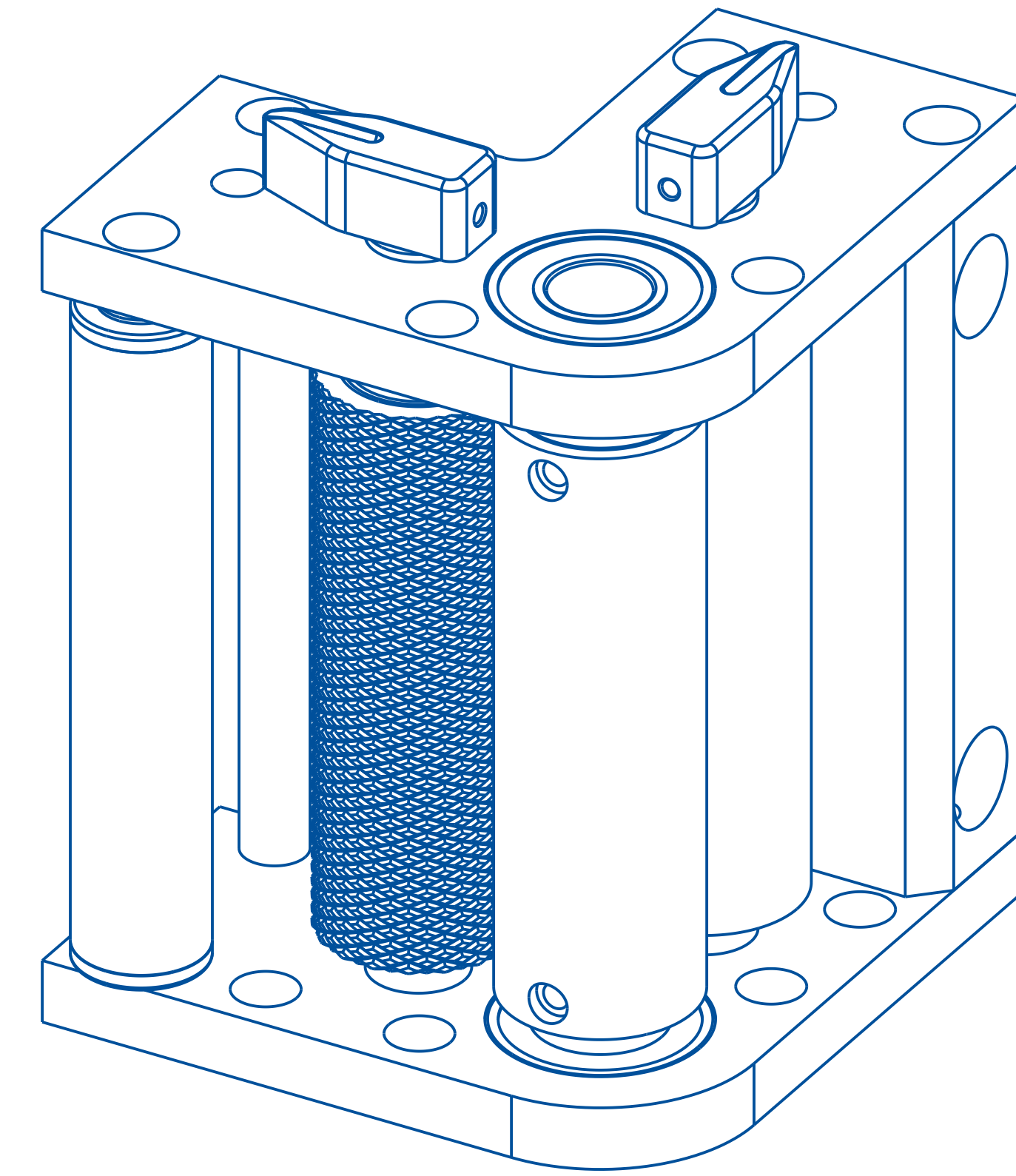
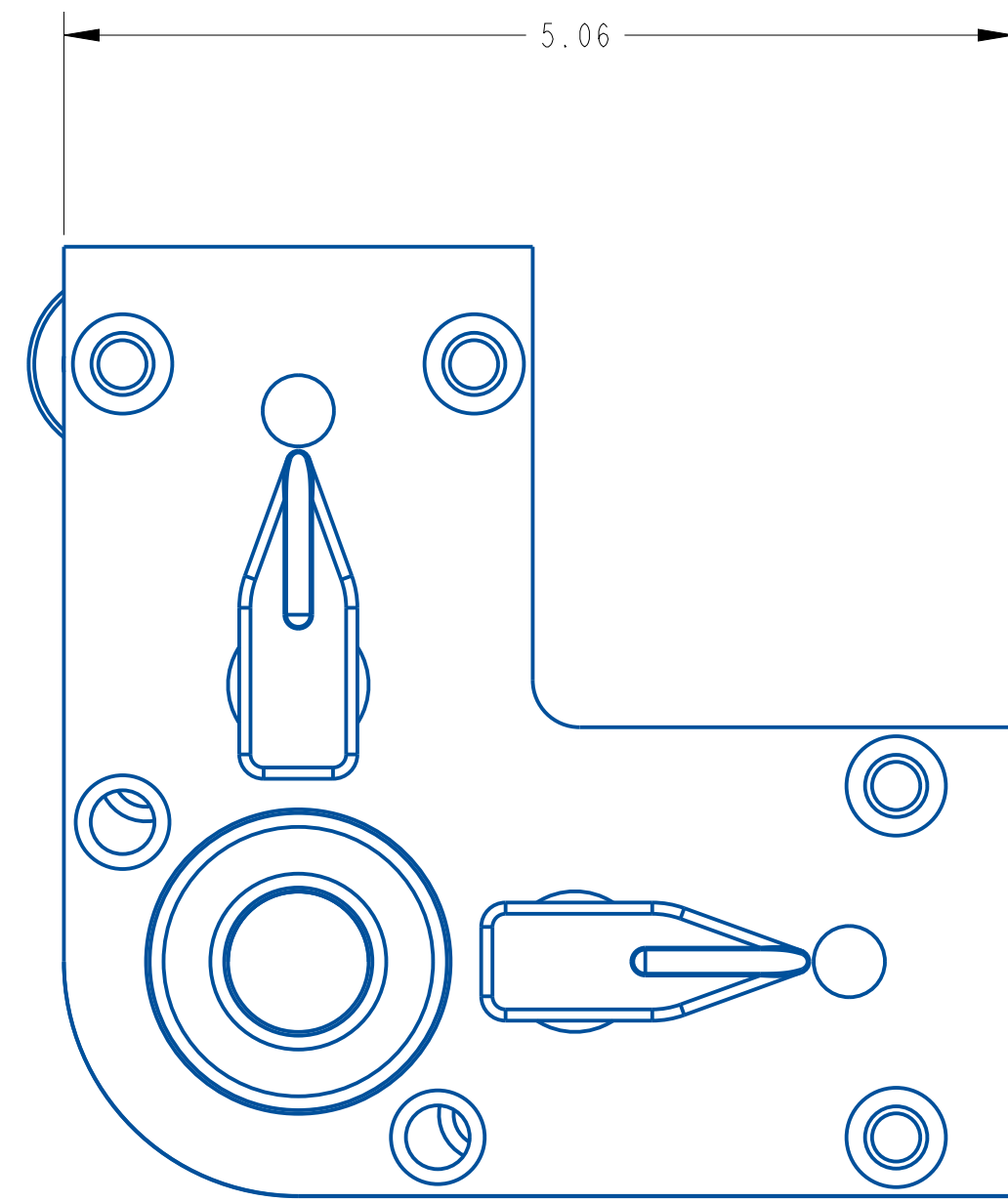
**QUADREL LABELING SYSTEMS**  
 7670 JENTHER DRIVE  
 MENTOR, OHIO 44060  
 (440) 602-4700

SCALE: 5/8  
 DATE: 12-9-22  
 DRW BY: ATT  
 CHK BY: 01/15/2026-SEM  
 APPR BY:

4.5" Q120 PUSH/PULL DRIVE ROLL ASSEMBLY

MAT'L

22620LPP-RH4



REV	DATE	DESCRIPTION	BY
A	12-9-22	NEW DRAWING	ATT

**THIS IS A PRO-ENGINEER DOCUMENT AND MAY NOT BE MODIFIED MANUALLY**

**QUADREL LABELING SYSTEMS**  
 7670 JENTHER DRIVE  
 MENTOR, OHIO 44060  
 (440) 602-4700

SCALE: 1/1  
 DATE: 12-9-22  
 DRW BY: ATT  
 CHK BY: 01/15/2026-SEM  
 APPR BY:

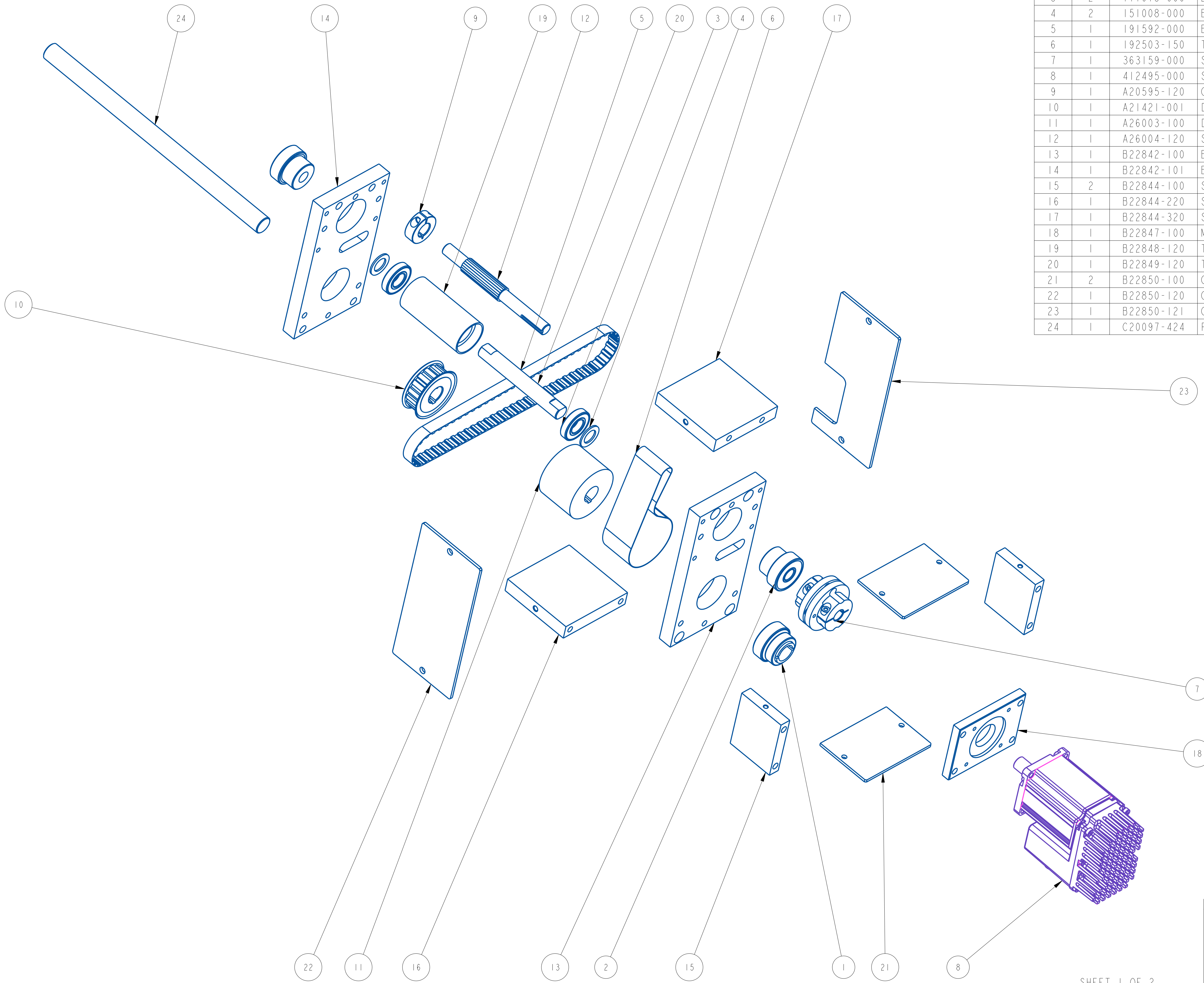
4.5" Q120 PUSH/PULL DRIVE ROLL ASSEMBLY

MAT'L

22620LPP-RH4

UNLESS OTHERWISE SPECIFIED  
 DIMENSIONAL TOLERANCE  
 X ± .1  
 XX ± .01  
 XXX ± .005  
 ANGLES ± .30°  
 SURFACE FINISH 125  
 BREAK ALL EDGES .005/.015  
 CORNER RADIUS .010/.030  
 ALL ANGLES ARE 90°

ITEM	QTY	PART NO.	DESCRIPTION	PARENT ITEM
1	1	111044-000	BEARING, 3/4 ID CLAMP TYPE	23125D-014LH
2	2	111072-100	BEARING BALL, LOCKING COLLAR .5"IDx1.574"OD	23125D-014LH
3	2	111075-000	BEARING, BALL	23125D-014LH
4	2	151008-000	BEARING, THRUST WASHER	23125D-014LH
5	1	191592-000	BELT, TIMING, 1/2P	23125D-014LH
6	1	192503-150	TIMING BELT	23125D-014LH
7	1	363159-000	SERVO COUPLING-1/2"BORE & KEY 14 MM BORE	23125D-014LH
8	1	412495-000	SERVO MOTOR/DRIVE, 60mm	23125D-014LH
9	1	A20595-120	COLLAR REWORK	23125D-014LH
10	1	A21421-001	DRIVE PULLEY (MODIFIED)	23125D-014LH
11	1	A26003-100	DRIVE PULLEY	23125D-014LH
12	1	A26004-120	SERVO MOTOR PULLEY	23125D-014LH
13	1	B22842-100	BEARING PLATE	23125D-014LH
14	1	B22842-101	BEARING PLATE	23125D-014LH
15	2	B22844-100	SPACER	23125D-014LH
16	1	B22844-220	SPACER	23125D-014LH
17	1	B22844-320	SPACER	23125D-014LH
18	1	B22847-100	MOTOR MOUNTING PLATE	23125D-014LH
19	1	B22848-120	TENSION ROLLER	23125D-014LH
20	1	B22849-120	TENSIONER SHAFT	23125D-014LH
21	2	B22850-100	COVER	23125D-014LH
22	1	B22850-120	COVER	23125D-014LH
23	1	B22850-121	COVER	23125D-014LH
24	1	C20097-424	PULL ROLL DRIVE SHAFT	23125D-014LH



REV	DATE	DESCRIPTION	BY
A	11/10/25	NEW DRAWING	SEM

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UNLESS OTHERWISE SPECIFIED  
DIMENSIONAL TOLERANCE  
X ± .1  
XX ± .01  
XXX ± .005  
ANGLES ± .30°

SURFACE FINISH 125  
BREAK ALL EDGES .005/.015  
CORNER RADIUS .010/.030

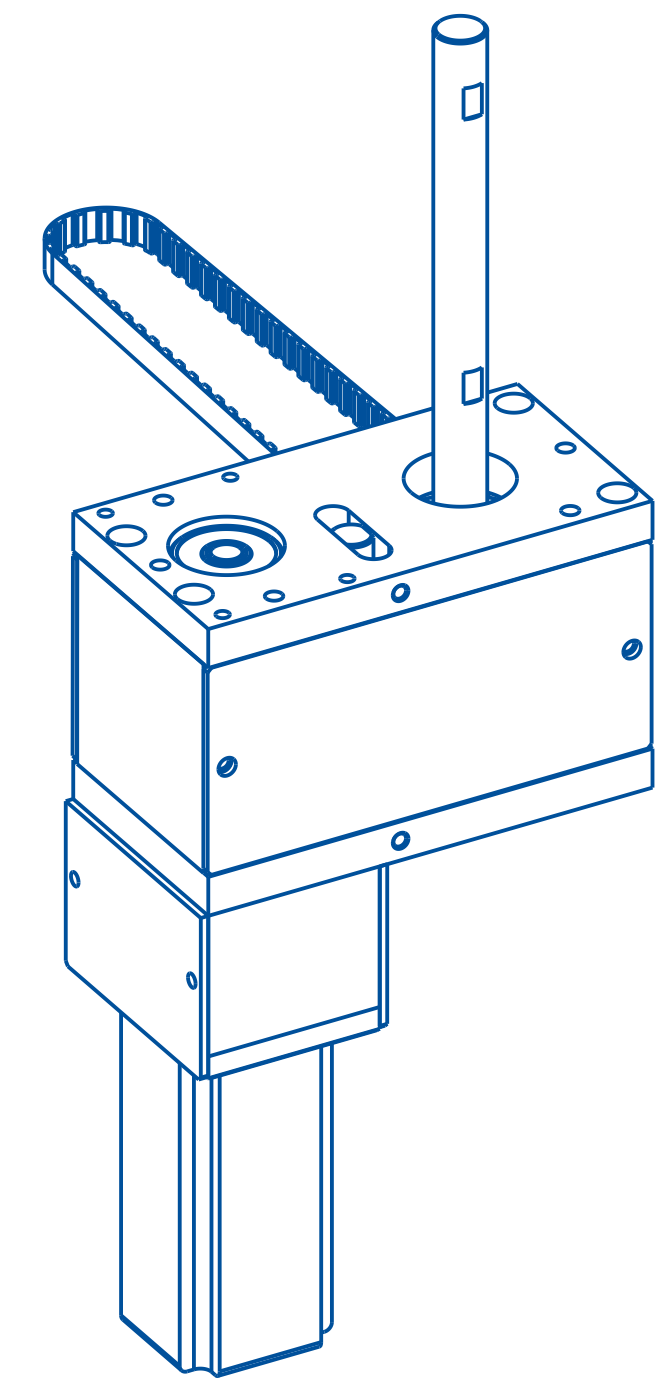
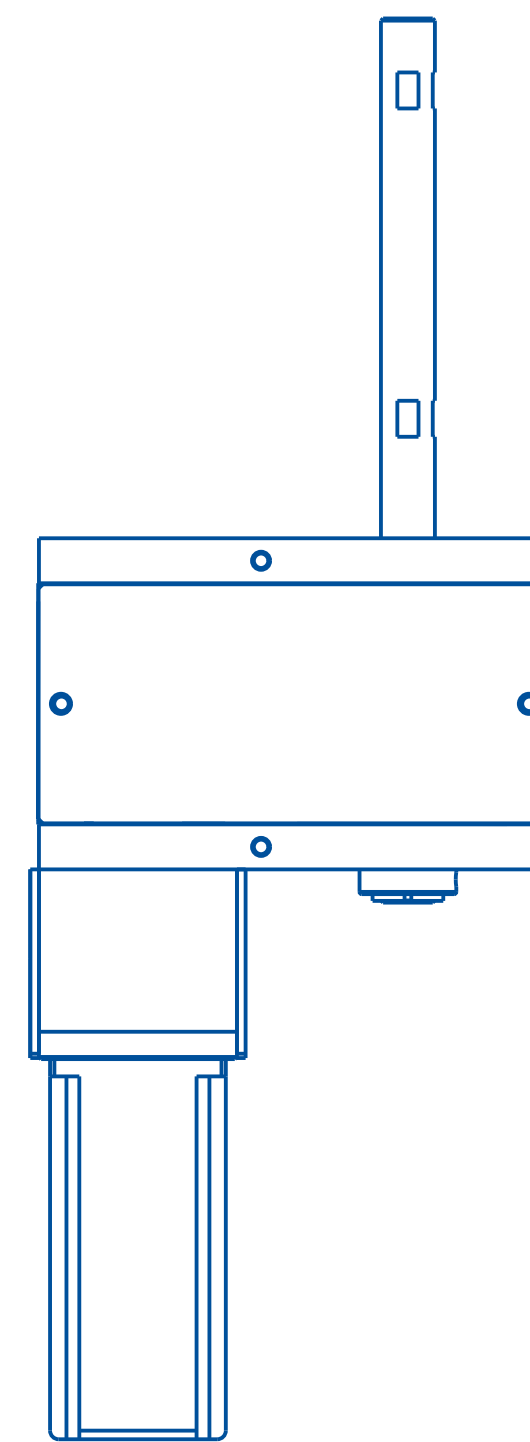
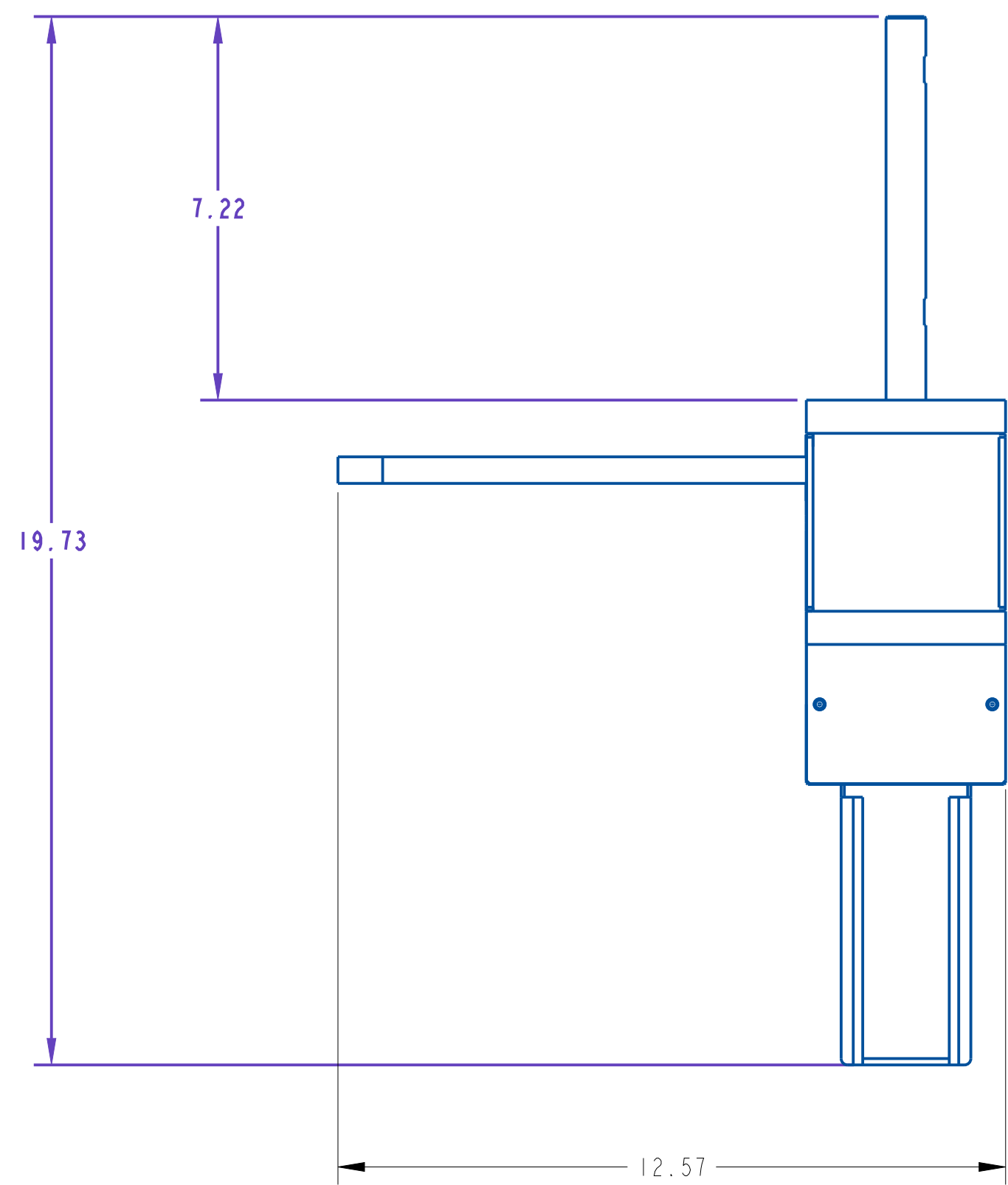
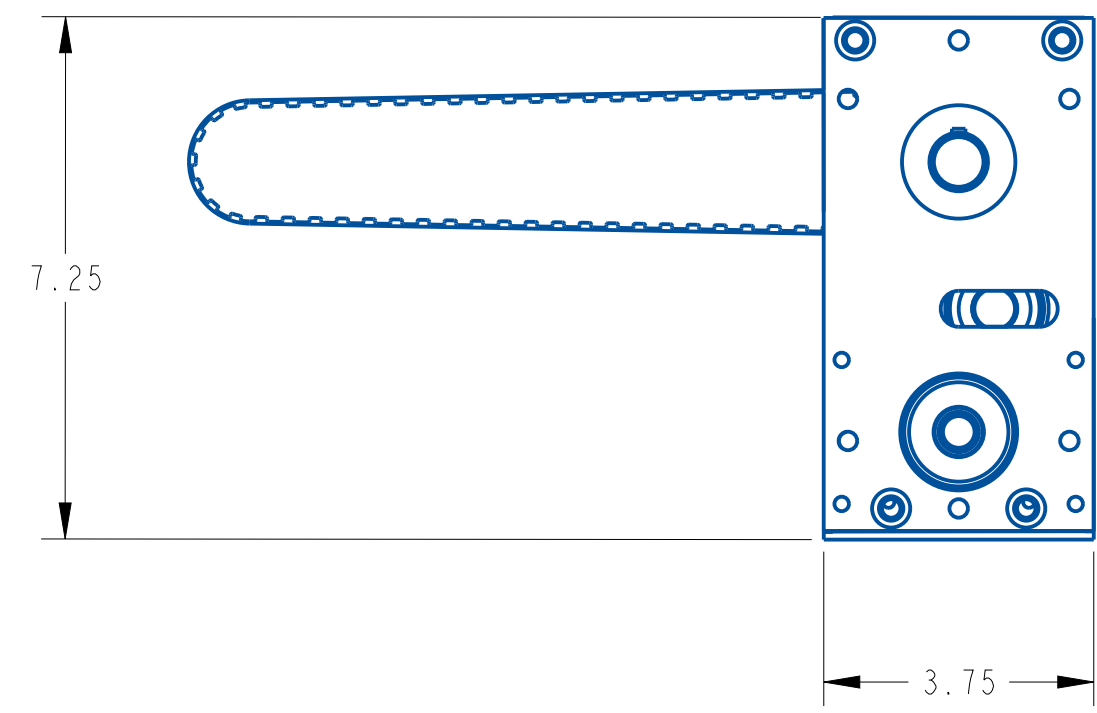
**QUADREL LABELING SYSTEMS**  
7670 JENTHER DRIVE  
MENTOR, OHIO 44060  
(440) 602-4700

SCALE: 1/2  
DATE: 11/10/25  
DRW BY: SEM  
CHK BY: 12/05/2025-SEM  
APPR BY:

4 1/2" SERVO DRIVE, LHH

MAT'L

23125D-014LH



REV	DATE	DESCRIPTION	BY
A	11/10/25	NEW DRAWING	SEM

**THIS IS A PRO-ENGINEER DOCUMENT AND MAY NOT BE MODIFIED MANUALLY**

UNLESS OTHERWISE SPECIFIED DIMENSIONAL TOLERANCE	x ± .1 xx ± .01 xxx ± .005 ANGLES ± .30°	SCALE: 3/8 DATE: 11/10/25 DRW BY: SEM CHK BY: APPR BY:
SURFACE FINISH: 125 BREAK ALL EDGES .005/.015 CORNER RADIUS .010/.030 ALL ANGLES ARE 90°		<b>QUADREL LABELING SYSTEMS</b> 7670 JENTHER DRIVE MENTOR, OHIO 44060 (440) 602-4700
4 1/2" SERVO DRIVE, LHH		MAT'L
		23125D-014LH

## Servo Belt Removal & Installation

Remove the clear cover on the side of the coupling of the servo motor. Then loosen the 4 5/16-18 socket heads holding the motor mounting plate to the spacer blocks. (Shown in image on the right)



Loosen the 2 bolts on the coupling. Then remove the motor and coupling assembly. (Shown in image on the left)



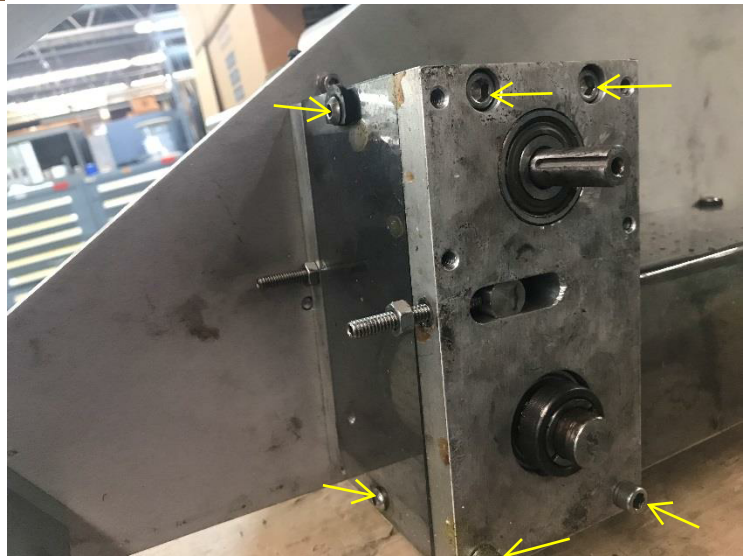
Loosen the tension on the servo belt by removing loosening the 2 jam nuts on the set screws shown and removing the set screws. (Shown in image on the right)





Loosen set screw in the collar on the end of the drive shaft. Then remove the collar. (Shown in image on the left)

Remove the 4 5/16-18 socket head bolts that hold the bottom plate to the spacer blocks. Then remove the two button head screws holding the lexan cover on and remove cover. (Shown in image on the right)



Remove the set screw on the eccentric collar then spin the collar to loosen from shaft. (Shown in image on the left)

Once the bolts are removed, remove the bottom plate. This may take some prying and finessing, be careful to not bend the plate, shafts, or ruin the bearings during the removal of the plate. Once removed clean the plate and bearings. (Shown in image on the right & bottom)



### If Equipped

Remove the cover over the rewind kinetrol and other side of the servo belt. (Shown in image on the left)

Remove the tensioner, belt and smaller diameter shaft with the pulley teeth on it. (Shown in image on the right)

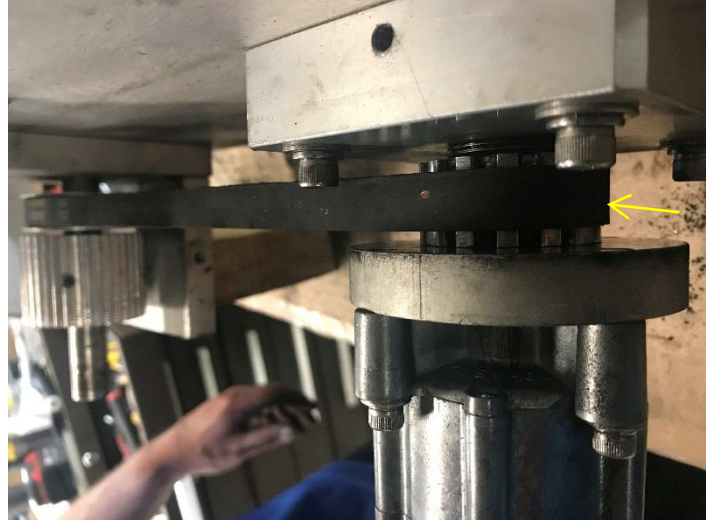


Once removed clean all surfaces shafts bearing and check the rewind belt for cracks or uneven wear. You can use a scotch brite pad the clean up the shafts and ect. (Shown in image on the left)

Check the lock collar on the shaft with the pulley grooves ensure the collar is tight and the stack up is correct. The washer goes on top of the collar and shall be flush with the end of the pulley grooves as shown in the image below. Slide the collar over the end of the shaft as shown. This stack up is extremely important.



Ensure your belt is riding properly on the kinetrol pulley. The belt should be running in the middle of the pulley of as close to centered as you can get. Spin the kinetrol and ensure the belt is tracking well. (Shown below)



To adjust this rotate the pulley until you see the set screw. Loosen the set screws and slide the pulley accordingly. Slide the larger pulley down or up as well these pulleys should be together. (Shown in image on the right)

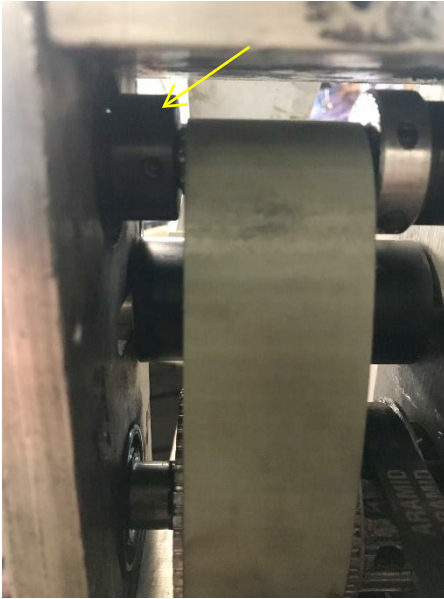


After you have cleaned everything up, checked the rewind belt and properly checked alignment of the pulleys. It is now time to re-assemble. Start by putting the belt in then the tensioner. Ensure the idler has the oil lite washers installed on the top and bottom of the idler. (Shown in the image to the left)

\*NOTE\* Blue Loctite is recommended on all fasteners.

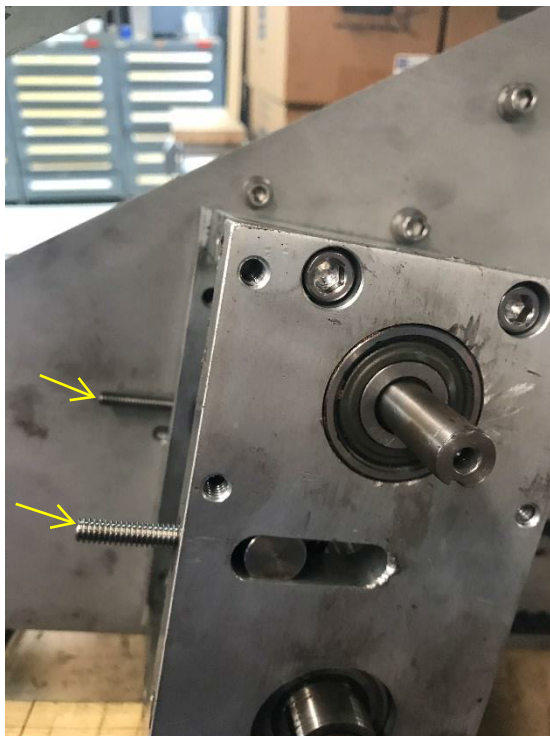
Place the eccentric collar over the smaller diameter shaft and slide the bottom servo plate on. Ensure the tensioner is positioned properly in the slot on the bottom plate with the oil lite washer in place. Fasten the plate to the spacer blocks. Once fastened rotate the eccentric collar to lock it into place make sure it is tight this is very important. Lock into place with set screw. (Shown in image below)

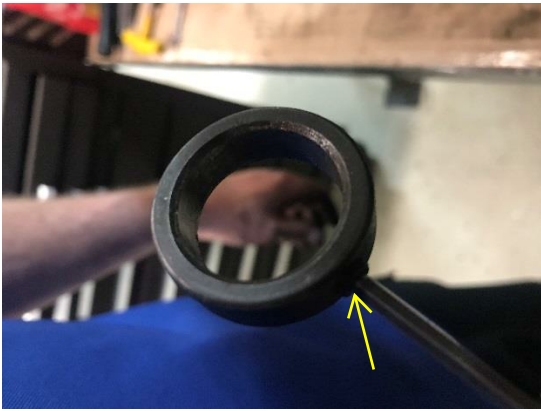
\*NOTE\* Blue Loctite is recommended on all fasteners.



Thread in the set screws evenly to set tension on the belt the belt should not be too tight if you reach around the back you can push against the belt as you tighten it. This is more of a touch setting you do not want the belt to be solid to the touch more like 1/8<sup>th</sup> - 1/4<sup>th</sup> inch of travel when you push on the belt. If it is too loose it can skip teeth. When the tension is set lock into place using the jam nuts. (Shown in image below)

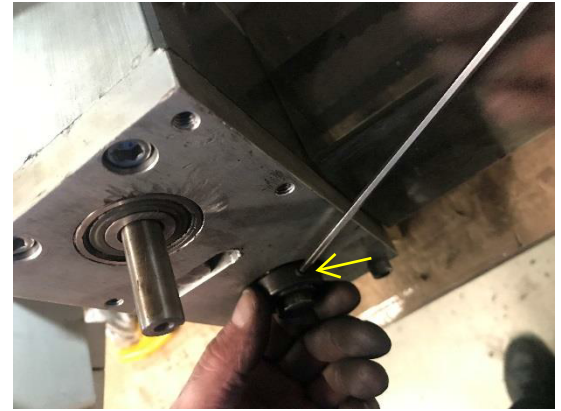
\*NOTE\* Do NOT loctite set screws for the tensioner.





Fasten the collar to the end of the larger diameter shaft as shown.

\*NOTE\* Blue Loctite is recommended on all fasteners.



Place the lexan covers on the 2 sides of the servo belt assembly and the cover over the rewind kinetrol assembly. Make sure the fasteners has blue Loctite and rubber grommets. (Shown in image on the left)

Place the servo motor coupling over the end of the smaller diameter shaft. Fasten the motor mounting assembly to the bottom plate using blue Loctite. Align the coupling centered between the shafts so the coupling has enough to fasten to on each of the shafts. Fasten the coupling to the shafts. Mount the lexan covers make sure the fasteners has blue Loctite and rubber grommets. (Shown in image on the right)

\*NOTE\* Blue Loctite is recommended on all fasteners.



**ASSEMBLY TITLE:**

**Q120 REWIND ASSEMBLY**

**GENERAL FUNCTION:**

- The rewind drum rolls up the liner
- The rewind pin, when pulled out, allows the liner to be released from the rewind drum.
- The rewind flange supports and guides the liner.
- The friction clutch allows for slippage to accommodate for varying speeds between the drive roll and rewind drum.
- The adjusting knob controls the torque adjustment of the drum.

**SET UP AND ADJUSTMENTS:**

- Position the rewind flange slightly below the web path and lock with the set screw in the hub.
- When threading liner to the rewind, place the liner between the drum and pin.
- Tighten adjusting knob just enough to allow the rewind drum to keep up with the drive roll.

**NOTE:** Excessive tightening will cause the web to be wound very tight, causing difficulty in removal and possible step motor stall.

**MAINTENANCE:**

- Clean all parts that have acquired label or glue residue
- Replace friction disc when worn out.

**TROUBLESHOOTING:**

**PROBLEM**

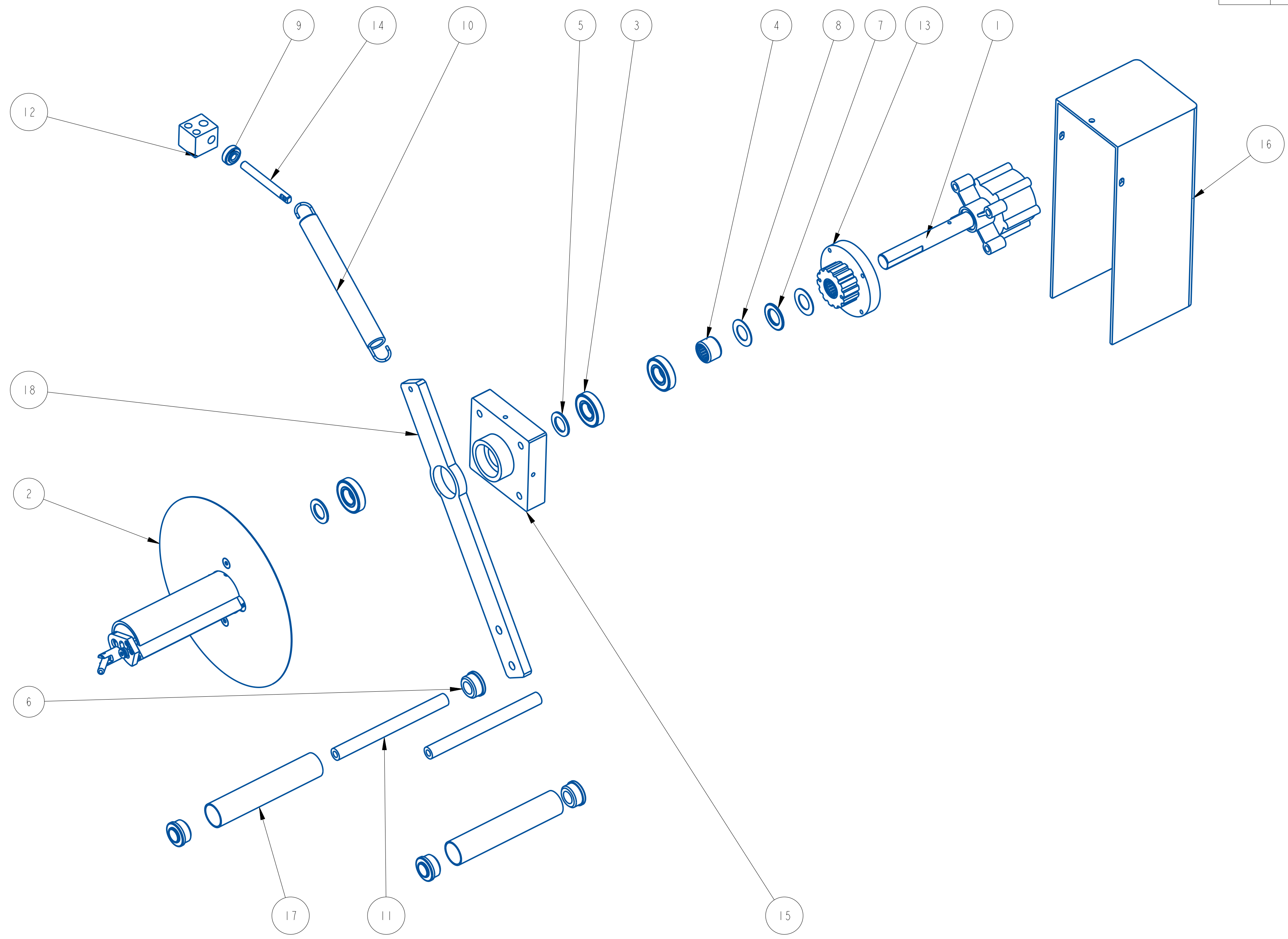
- Rewind drum not rotating when stepping motor rotates
- Rewind drum not keeping up with drive roll
- Web winding too tight on hub
- Grinding in rewind hub

**WHAT TO DO**

- Replace timing belt from motor to rewind
- Tighten adjusting knob
- Loosen adjusting knob
- Replace friction disc by removing knob and sliding off rewind drum



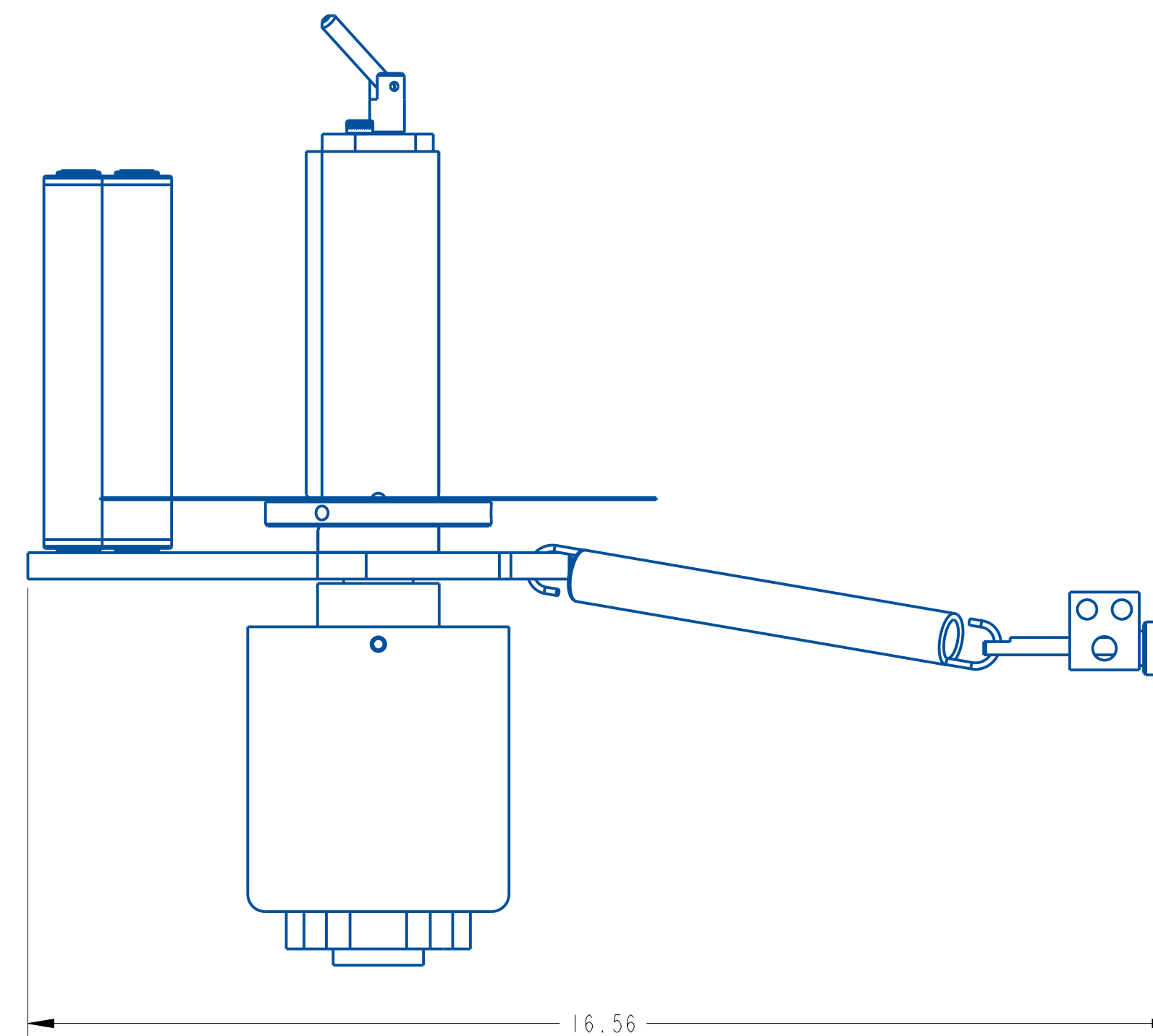
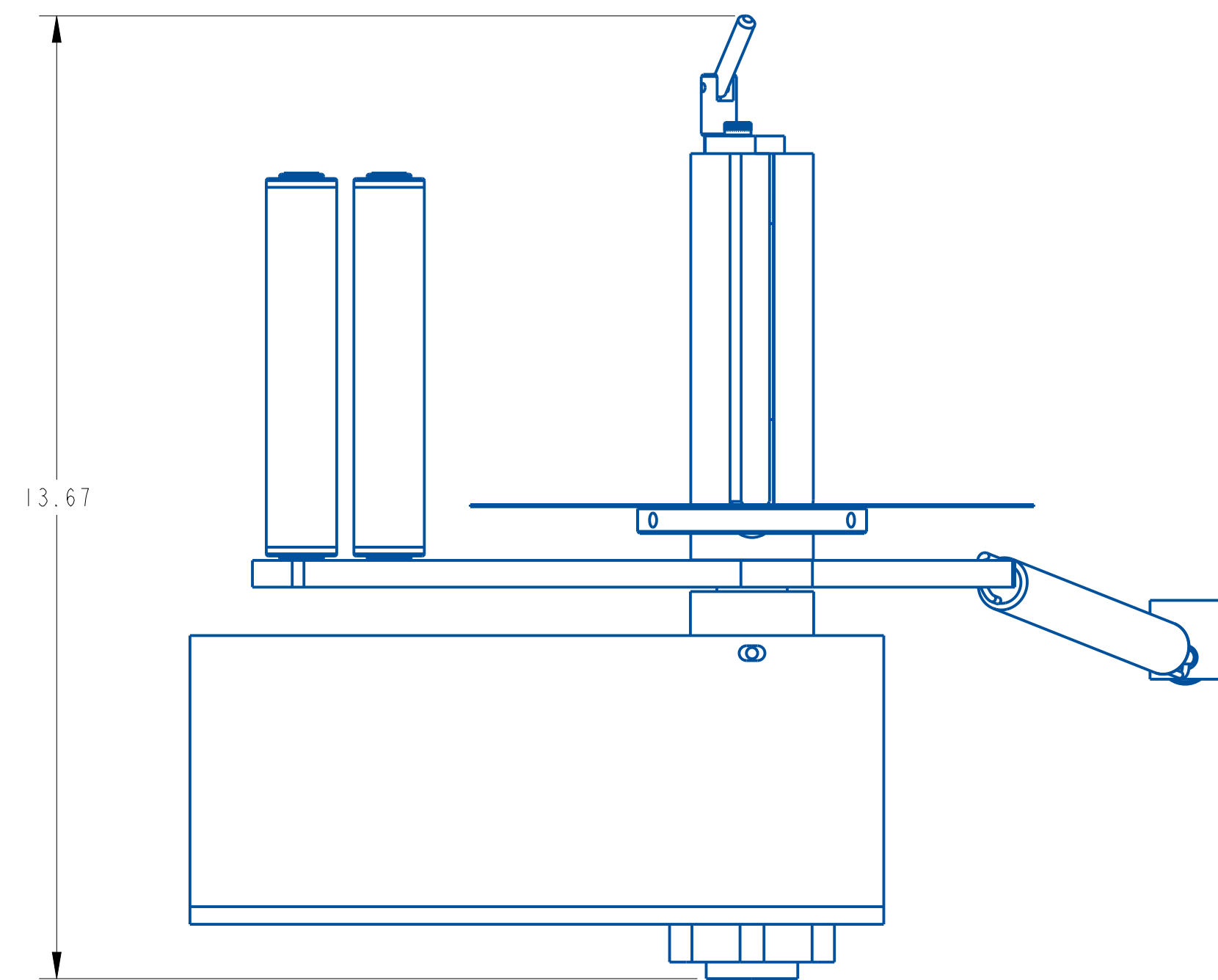
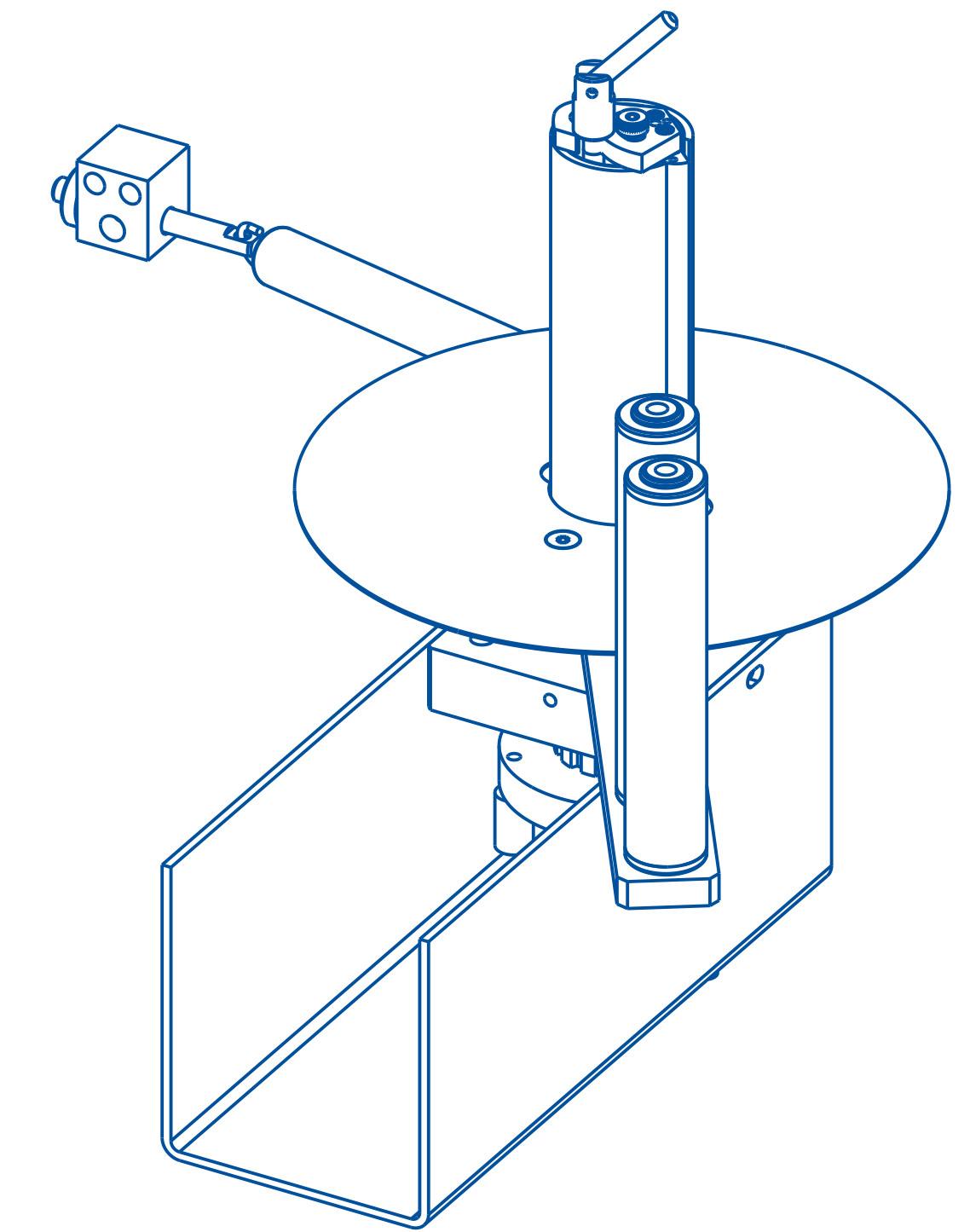
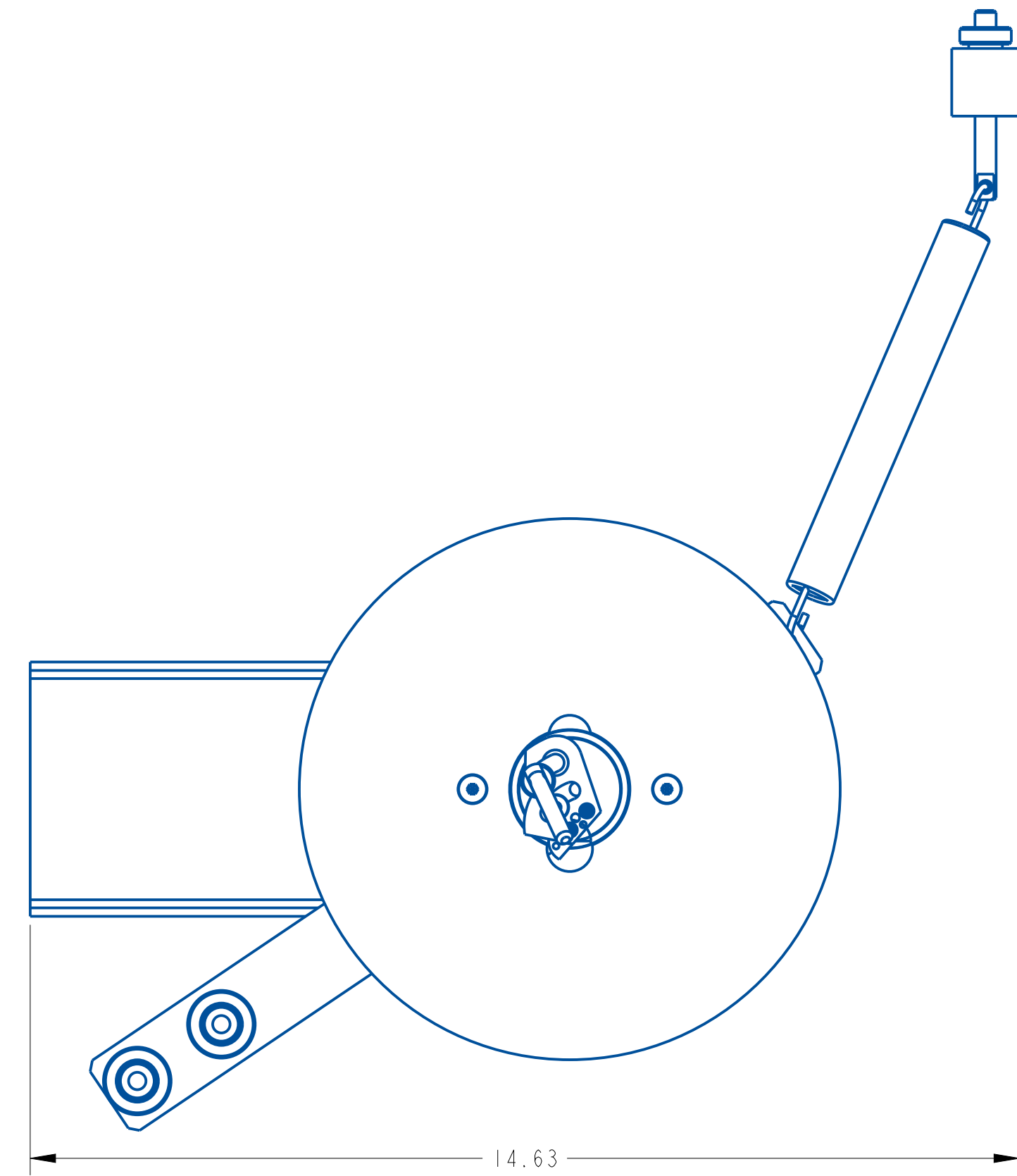
ITEM	QTY	PART NO.	DESCRIPTION	PARENT ITEM
1	1	20499-001	DASHPOT & SHAFT ASSEMBLY	23100R-004LH
2	1	22187-000	COLLAPSIBLE REWIND ASSEMBLY, 4-1/2"	23100R-004LH
3	3	111075-000	BEARING, BALL	23100R-004LH
4	1	121067-000	BEARING, NEEDLE	23100R-004LH
5	2	151008-000	BEARING, THRUST WASHER	23100R-004LH
6	4	181063-000	BEARING, ROLL END	23100R-004LH
7	1	181081-000	BEARING, NEEDLE ROLLER	23100R-004LH
8	2	181082-000	BEARING, THRUST WASHER	23100R-004LH
9	1	801601-000	CHECK NUT	23100R-004LH
10	1	811216-000	EXTENSION SPRING, STAINLESS	23100R-004LH
11	2	A20928-004	ROLLER SHAFT	23100R-004LH
12	1	A21479-000	SPRING ADJUSTMENT BLOCK	23100R-004LH
13	1	A22120-000	REWIND PULLEY ASSEMBLY	23100R-004LH
14	1	A23131-000	STUD	23100R-004LH
15	1	B20004-007	REWIND BEARING PLATE	23100R-004LH
16	1	B20005-120	GUARD	23100R-004LH
17	2	B20071-001	IDLER ROLLER (DANCER)	23100R-004LH
18	1	C20894-004	REWIND DANCER ARM	23100R-004LH



REV	DATE	DESCRIPTION	BY
A	Sep-08-25	NEW DRAWING	RDL

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<small>UNLESS OTHERWISE SPECIFIED DIMENSIONAL TOLERANCE</small> x ± .1 xx ± .01 xxx ± .005 ANGLES ± .30°	<b>QUADREL LABELING SYSTEMS</b>		SCALE: 3/8
	7670 JENTHER DRIVE MENTOR, OHIO 44060 (440) 602-4700		DATE: Sep-08-25
			DRW BY: RDL
			CHK BY: APPR BY:
4 1/2" REWIND ASSEMBLY LHH			
SURFACE FINISH 125 BREAK ALL EDGES .005/.015 CORNER RADIUS .010/.030	MAT'L	23100R-004LH	23100R-004LH

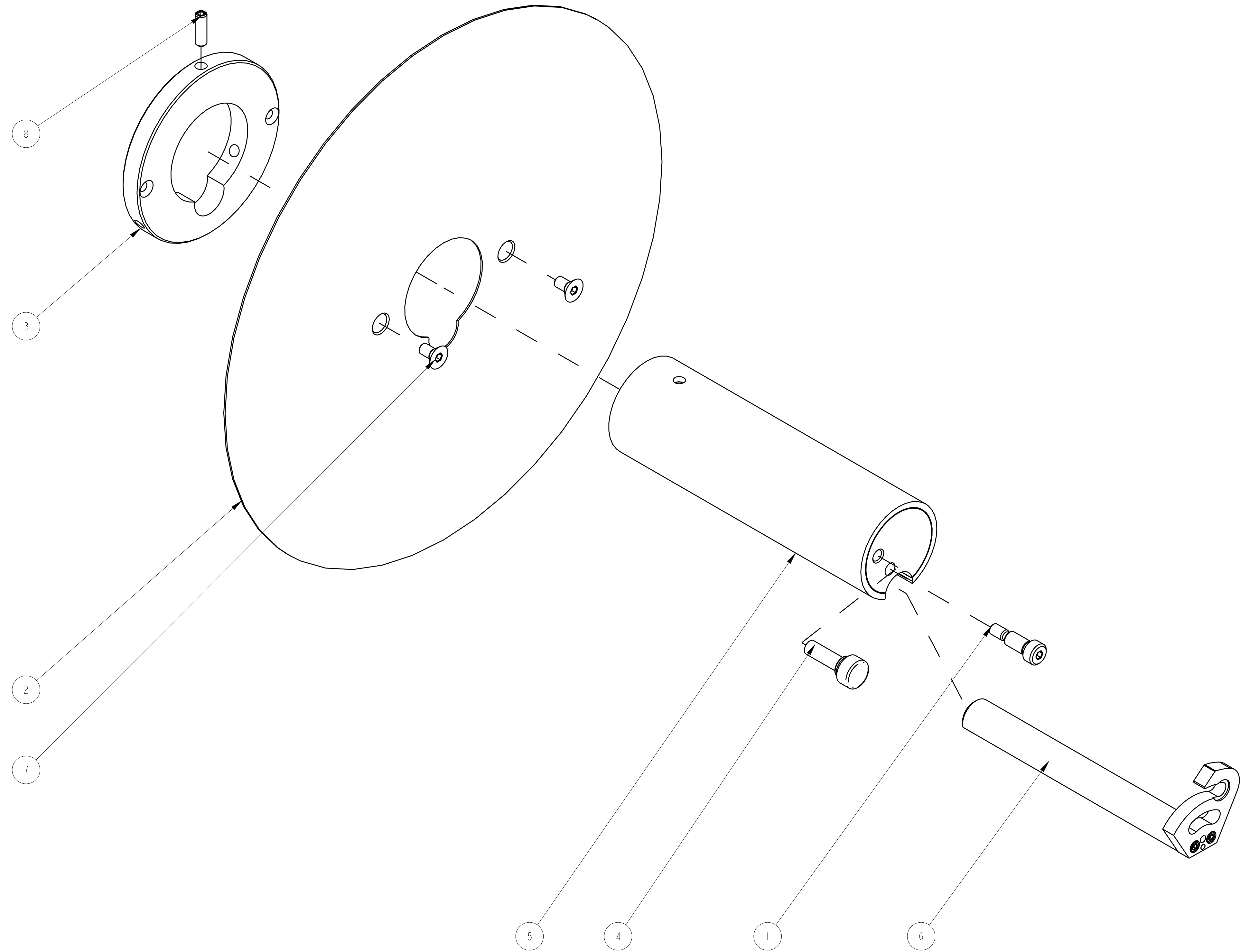


REV	DATE	DESCRIPTION	BY
A	Sep-08-25	NEW DRAWING	RDL

**THIS IS A PRO-ENGINEER DOCUMENT AND MAY NOT BE MODIFIED MANUALLY**

UNLESS OTHERWISE SPECIFIED DIMENSIONAL TOLERANCE	.x ± .1 .xx ± .01 .xxx ± .005 ANGLES ± .30° SURFACE FINISH 125 BREAK ALL EDGES .005/.015 CORNER RADIUS .010/.030 ALL ANGLES ARE 90°	<b>QUADREL LABELING SYSTEMS</b> 7670 JENTHER DRIVE MENTOR, OHIO 44060 (440) 602-4700	SCALE: 1/2 DATE: Sep-08-25 DRW BY: RDL CHK BY: APPR BY:
4 1/2" REWIND ASSEMBLY LHH		MAT'L	
23100R-004LH		23100R-004LH	

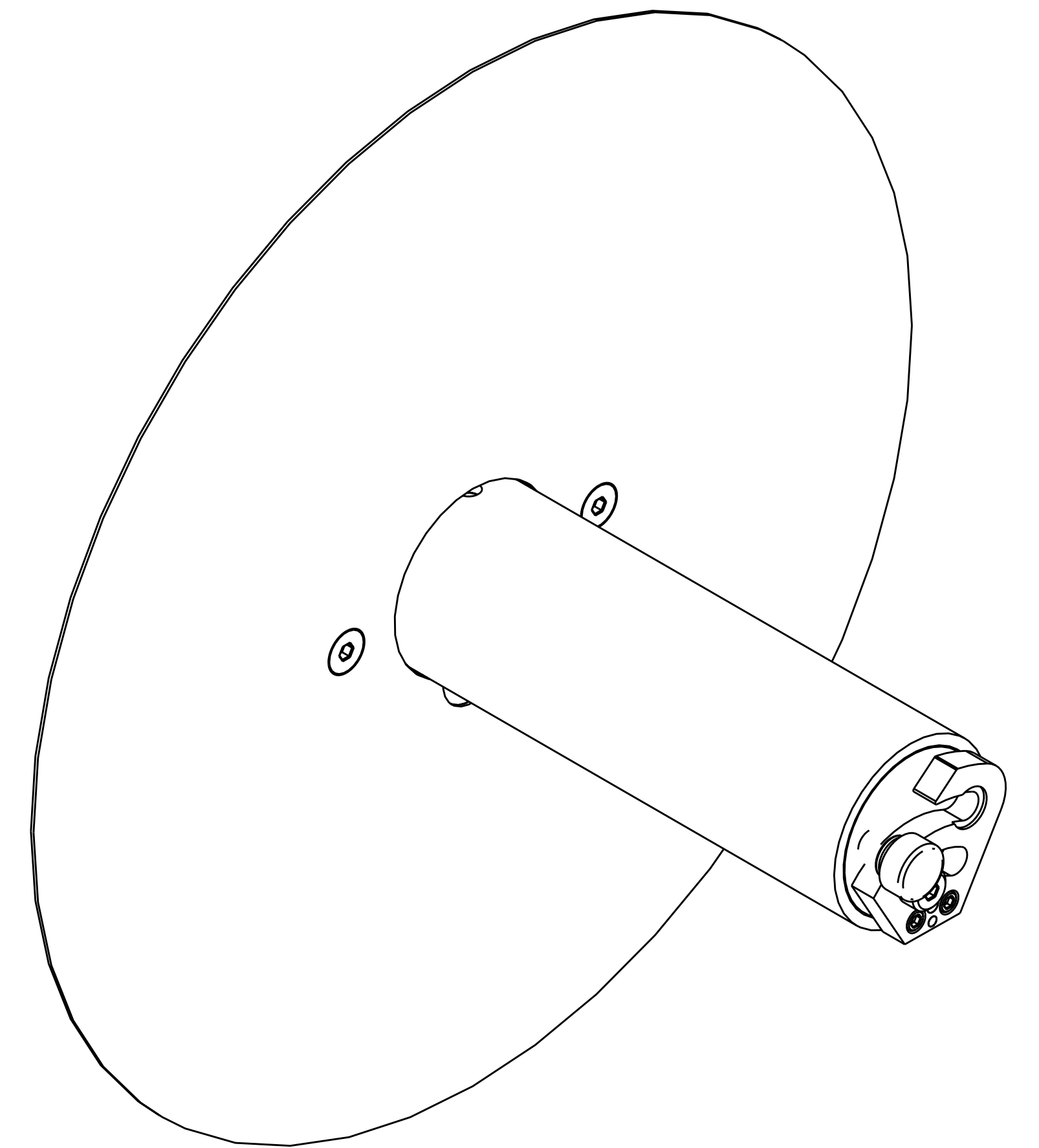
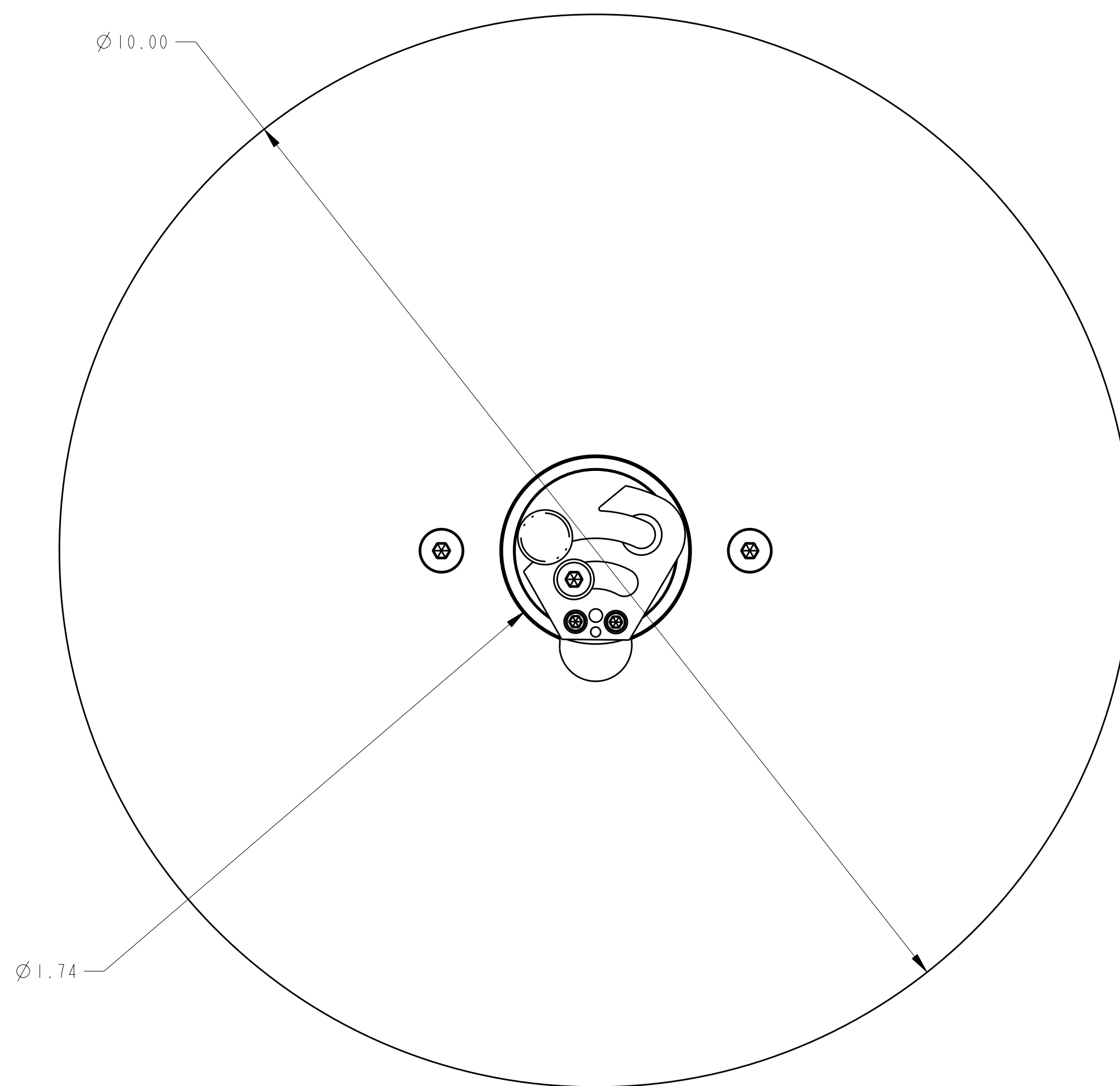
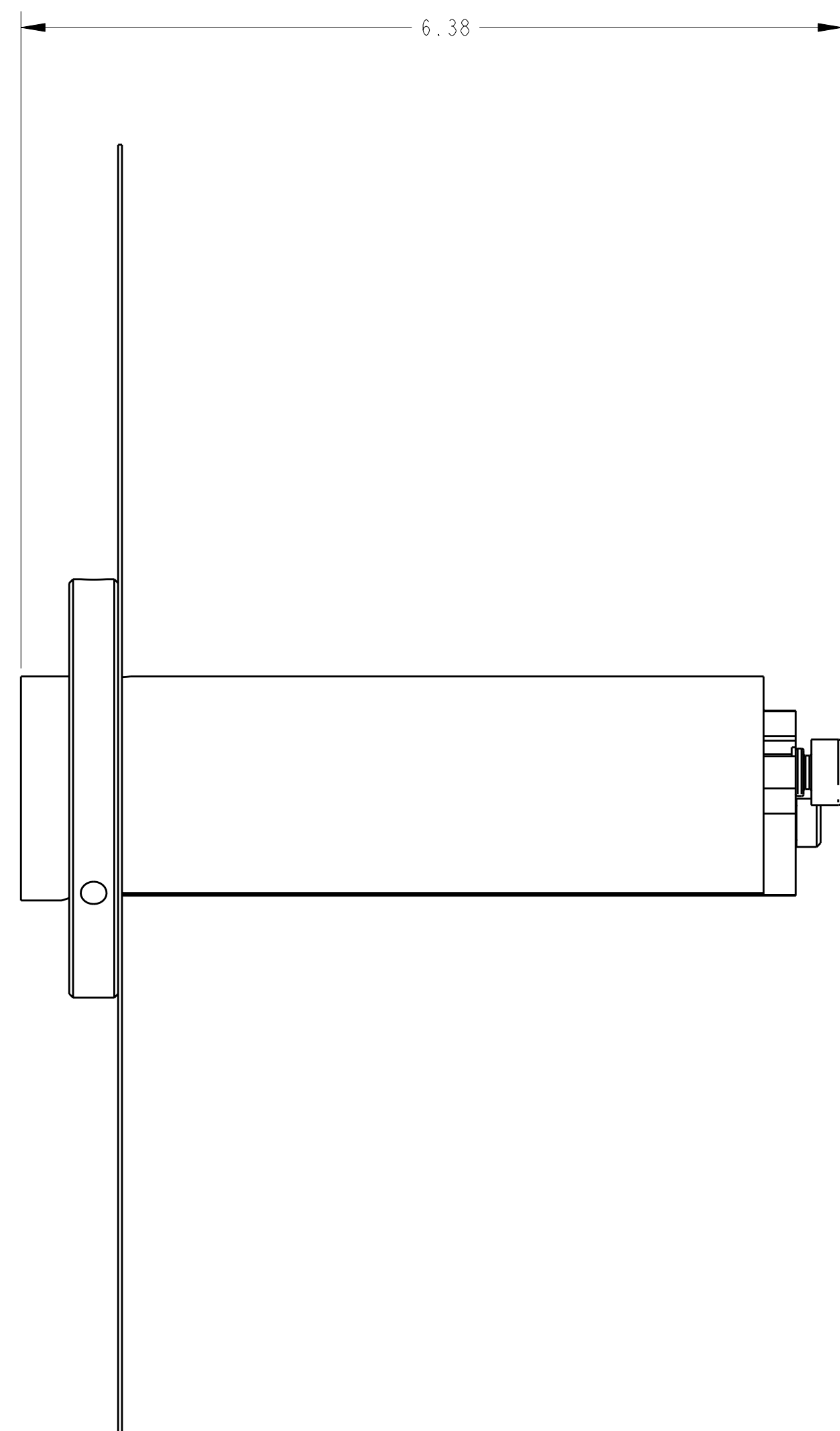
ITEM	QTY	PART NO.	DESCRIPTION
1	1	841145-000	1/4 X 1/2 LG. SHOULDER BOLT
2	1	A22085-001	COLLAPSIBLE REWIND REEL
3	1	A22090-001	COLLAPSIBLE REWIND REEL HUB
4	1	A25263-000	KNOBE, THUMB SCREW
5	1	B22103-000	HUB ASSEMBLY
6	1	B22141-000	SHAFT ASSEMBLY
7	2	SHFS	10-32 X 3/8 LG. FLAT HEAD
8	1	SHSS	10-32 X 5/8 LG. SET SCREW



REV	DATE	DESCRIPTION
A	06/09/2008	NEW DRAWING

**THIS IS A PRO-ENGINEER DOCUMENT AND MAY NOT BE MODIFIED MANUALLY**

UNLESS OTHERWISE SPECIFIED DIMENSIONAL TOLERANCE	<b>QUADREL LABELING SYSTEMS</b> 7670 JENTHER DRIVE MENTOR, OHIO 44060 (440) 602-4700	SCALE: 1/1 DATE: 06/09/2008 DRW BY: SEM CHK BY: APPR BY:
XX ± .1 XXX ± .01 XXX ± .005 ANGLES ± .50°	<b>COLLAPSIBLE REWIND ASSEMBLY, 4-1/2"</b>	
SURFACE FINISH: 125 BREAK ALL EDGES: .005/.015 CORNER RADIUS: .010/.030	MAT'L	BOM 22187-000
		D22391-000

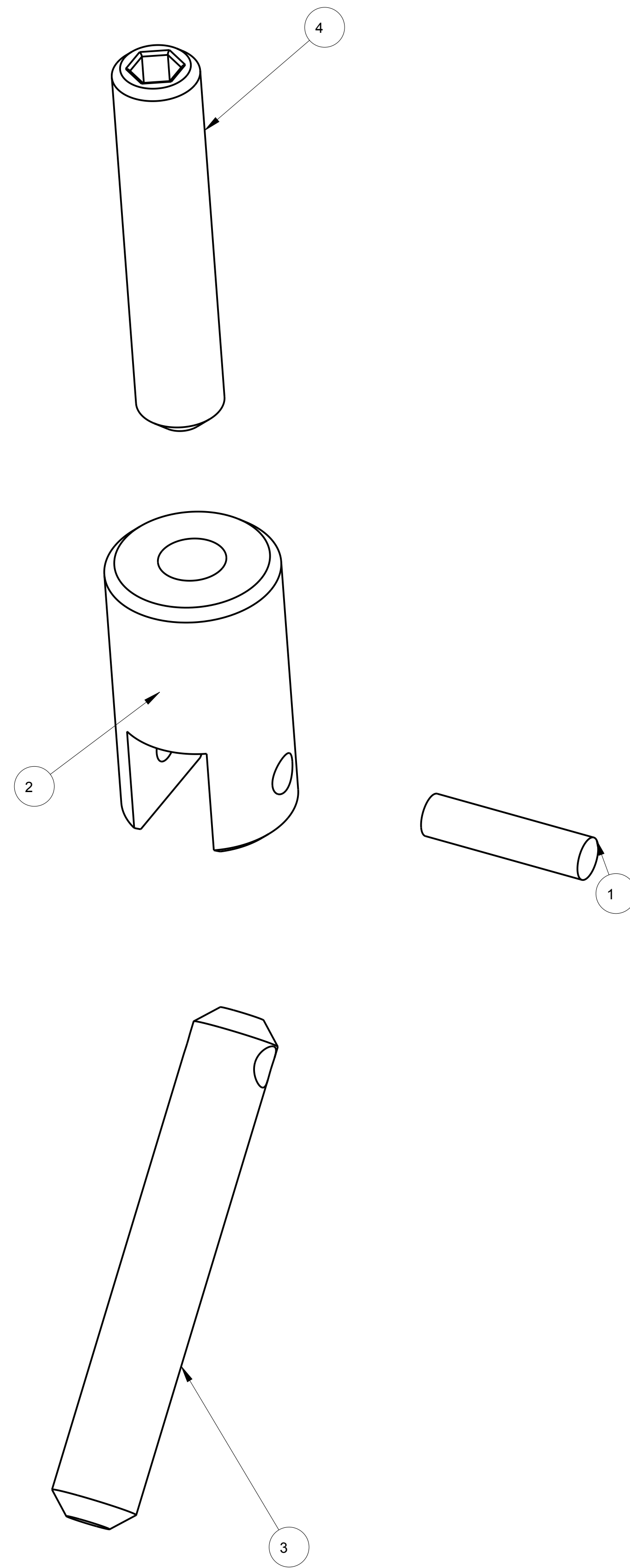


REV	DATE	DESCRIPTION
A	06/09/2008	NEW DRAWING

**THIS IS A PRO-ENGINEER DOCUMENT AND MAY NOT BE MODIFIED MANUALLY**

UNLESS OTHERWISE SPECIFIED DIMENSIONAL TOLERANCE  XX ± .1 XXX ± .005 ANGLES ± .50°  SURFACE FINISH 125 BREAK ALL EDGES .005/.015 CORNER RADIUS .010/.030	<b>QUADREL LABELING SYSTEMS</b> 7670 JENTHER DRIVE MENTOR, OHIO 44060 (440) 602-4700	SCALE: 1/1 DATE: 06/09/2008 DRW BY: SEM CHK BY: APPR BY:	
	COLLAPSIBLE REWIND ASSEMBLY, 4-1/2"		
	MAT'L	BOM 22187-000	D22391-000

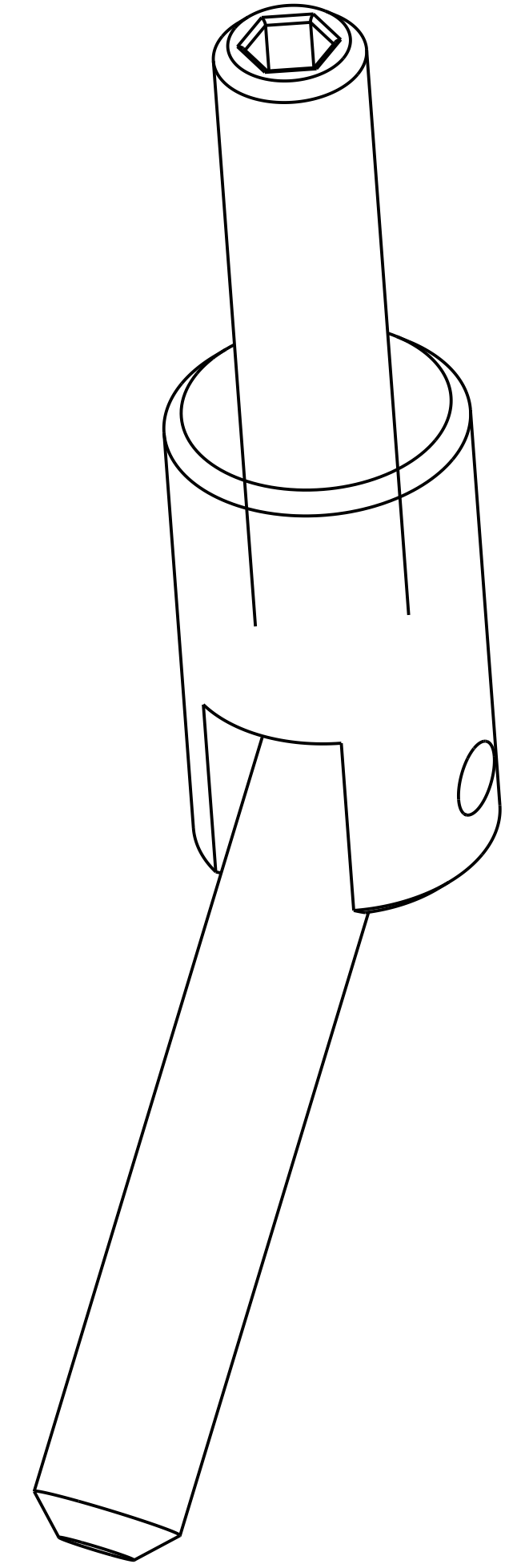
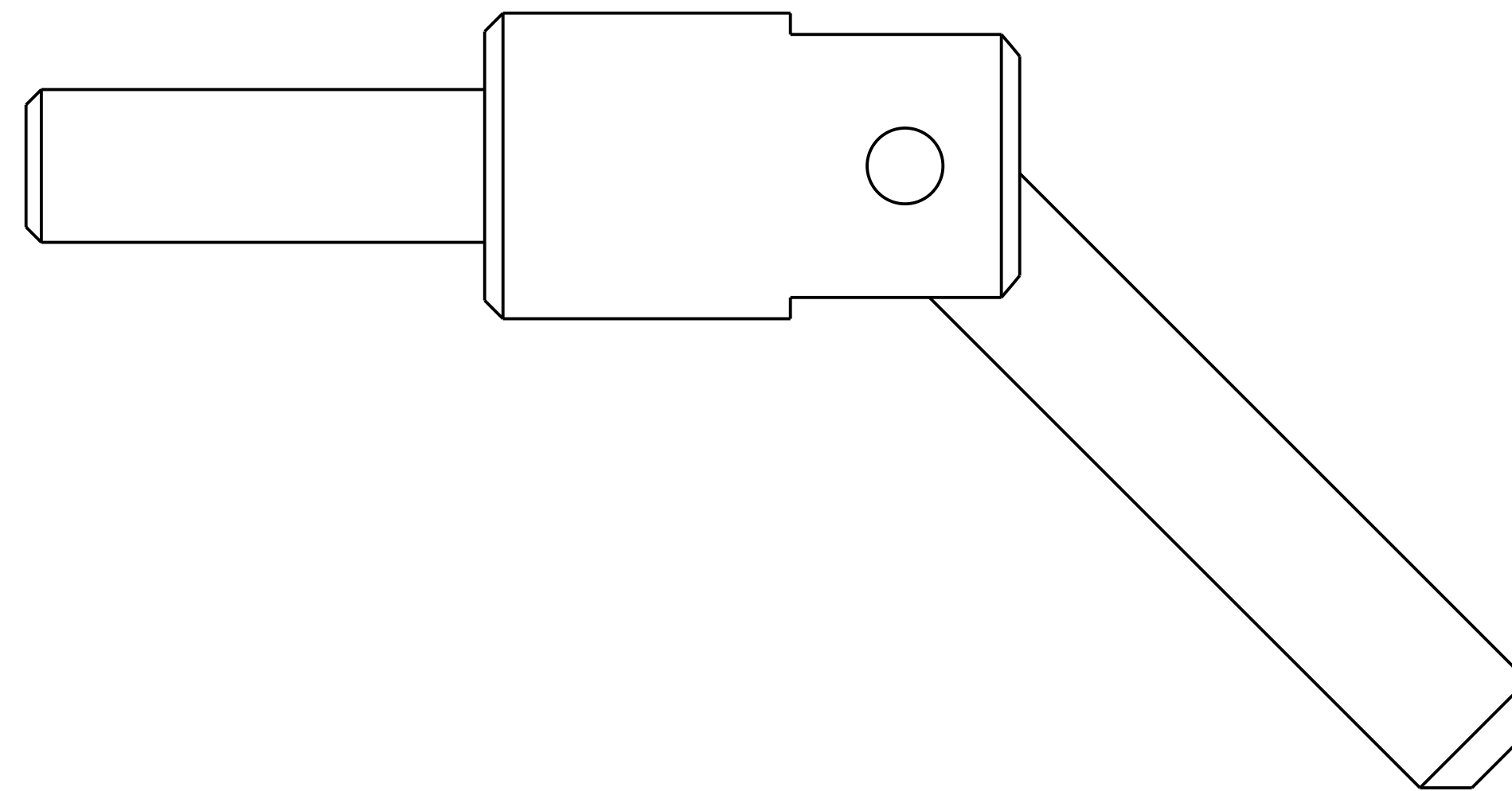
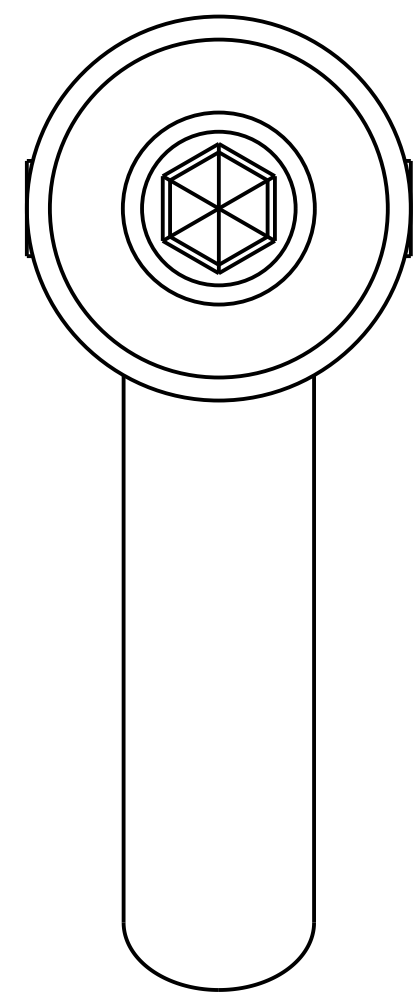
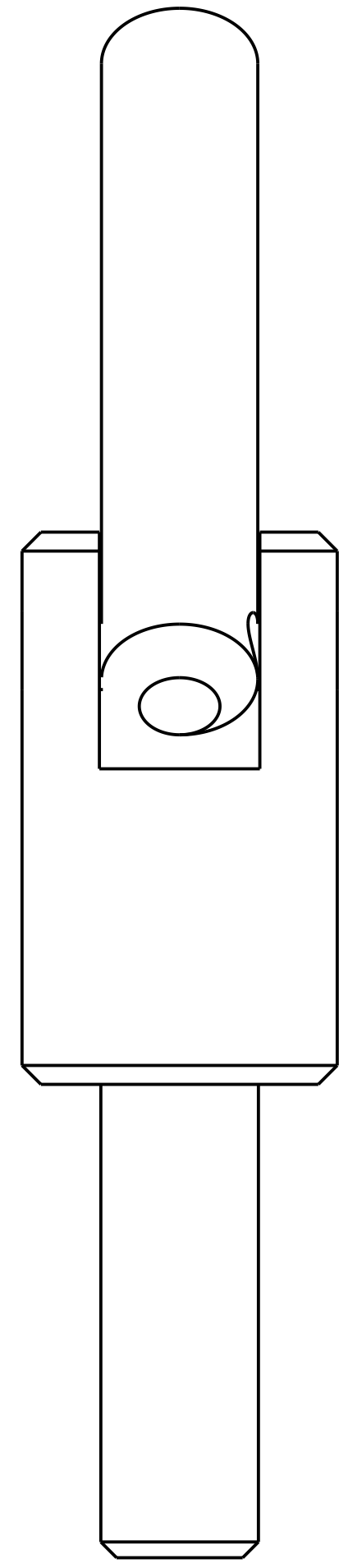
ITEM	QTY	PART NO.	DESCRIPTION
1	1	871352-000	DOWELL,PIN 1/8" x 1/2" SS.
2	1	A26128-000	CLEVIS
3	1	A26129-000	HANDLE
4	1	SYE601	1/4-20 X 1-1/4 LG. SET SCREW



REV	DATE	DESCRIPTION	BY
A	12-11-14	NEW DRAWING	

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UNLESS OTHERWISE SPECIFIED DIMENSIONAL TOLERANCE .X± .1 .XX± .01 .XXX± .005 ANGLES ± .30°	QUADREL LABELING SYSTEMS 7670 JENTHER DRIVE MENTOR, OHIO 44060 (440) 602-4700		SCALE 4/1 DATE 12-11-14 DRAWN BY ATT
	<b>COLLAPSIBLE REWIND LOCKING HANDLE</b>		
	SURFACE FINISH 125 BREAK ALL EDGES .005/.015 CORNER RADIUS .010/.030	MAT'L 22597-000	22597-000



UNLESS OTHERWISE SPECIFIED DIMENSIONAL TOLERANCE		X± .1 XX± .01 XXX± .005 ANGLES ± .30°	
SURFACE FINISH 125 BREAK ALL EDGES .005/015 CORNER RADIUS .010/030		MAT'L 22597-000	

THIS IS A PRO-ENGINEER DOCUMENT AND MAY NOT BE MODIFIED MANUALLY			
REV	DATE	DESCRIPTION	BY
A	12-11-14	NEW DRAWING	
QUADREL LABELING SYSTEMS 7670 JENTHER DRIVE MENTOR, OHIO 44060 (440) 602-4700		SCALE	4/1
		DATE	12-11-14
		DRAWN BY	ATT
<b>COLLAPSIBLE REWIND LOCKING HANDLE</b>			
			22597-000

**ASSEMBLY TITLE: Q60 KINETROL REWIND**

**GENERAL FUNCTION:**

- The rewind drum rolls up the liner
- The collapsible rewind shaft when closed allows the liner to be removed easily. The normal running position for the shaft is in the open position
- The rewind flange supports and guides the liner
- The Kinetrol clutch allows for slippage to accommodate for varying speeds between the drive roll and rewind drum
- The adjusting knob controls the torque adjustment of the drum and is set at the factory.

**SET UP AND ADJUSTMENTS:**

- Position the rewind flange slightly below the web path and lock with the set screw in the hub
- When threading liner to the rewind, place the liner between the drum and pin
- Tighten adjusting knob just enough to allow the rewind drum to keep up with the drive roll.
- Loosen set screw before adjustment and re-tighten after adjustment

**NOTE:** Excessive tightening will cause the web to be wound very tight, causing difficulty in removal and possible step motor stall.

**MAINTENANCE:**

- Clean all parts that have acquired label or glue residue

**TROUBLESHOOTING:**

**PROBLEM**

- Rewind drum not rotating when stepping motor rotates
- Rewind drum not keeping up with drive roll
- Web winding too tight on hub
- Grinding in rewind hub

**WHAT TO DO**

- Replace timing belt from motor to rewind
- Adjust clutch dial (1 being loosest & 10 being tightest)
- Loosen adjusting knob
- Replace Kinetrol

Set screw location



**ASSEMBLY TITLE:        SLOT SENSOR ASSEMBLY**

**GENERAL FUNCTION:**

- The slot sensor detects the separation between labels. This signals the electronics to stop the drive motor.
- The two (2) liner support rods prevent the liner from wearing out the slot sensor.
- The knob and thumbscrew lock the sensor firmly on the mounting rods.
- The male connector provides quick connection to the labeling head.

**SET UP AND ADJUSTMENTS:**

- See attached cut sheet

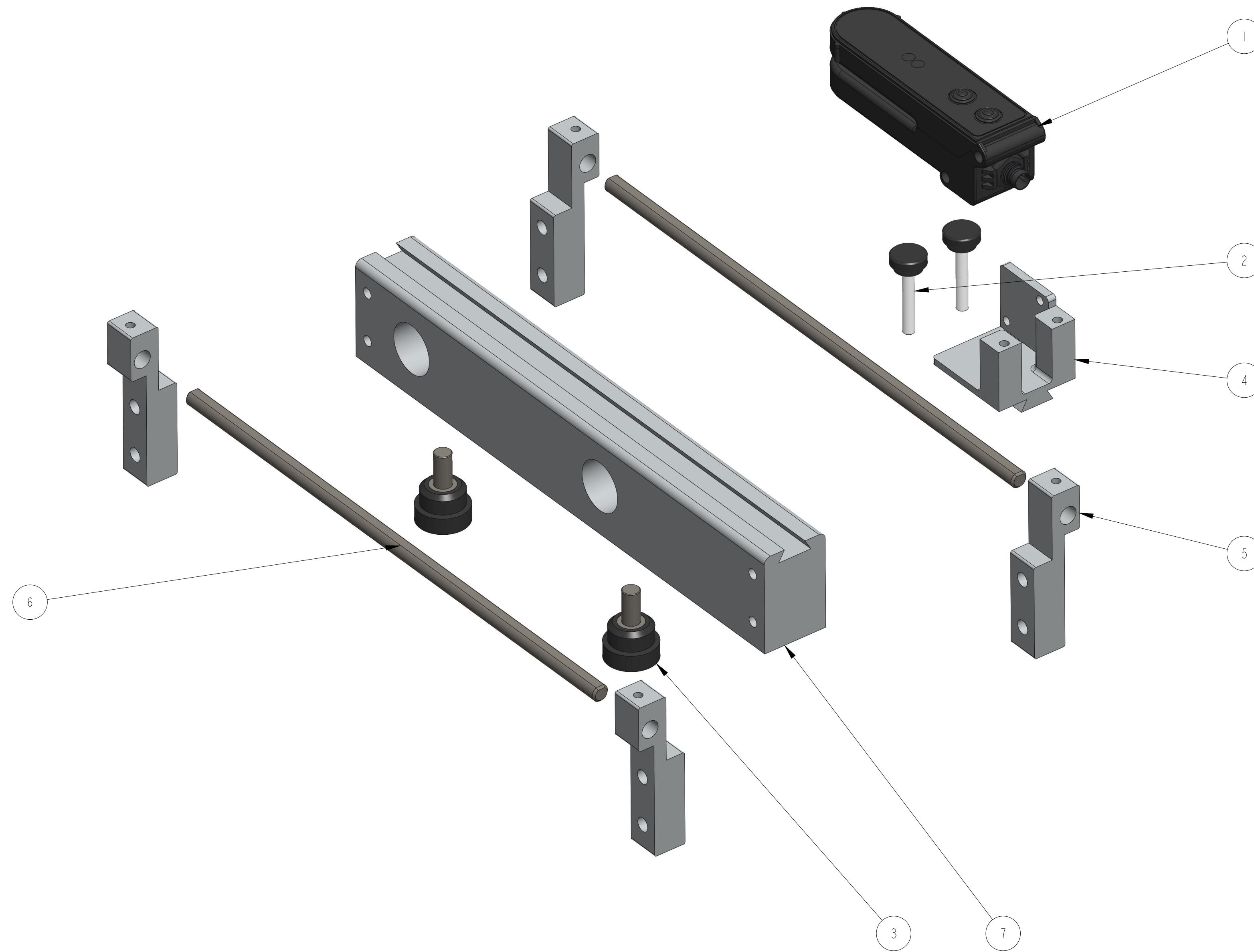
**MAINTENANCE:**

- Keep the sensor optical area clean from label and glue residue

**TROUBLESHOOTING:**

<u>PROBLEM</u>	<u>WHAT TO DO</u>
- No power to the sensor	- Check male connector and tightly secure connection to the head.
- Liner dragging over the slot	- Loosen knob and rotate slot sensor slot sensor surface liner rests on both support rods
- Too much slack through slot sensor	- Adjust brake brush tension
- Slot sensor moving with web	- Tighten all three (3) adjusting knobs

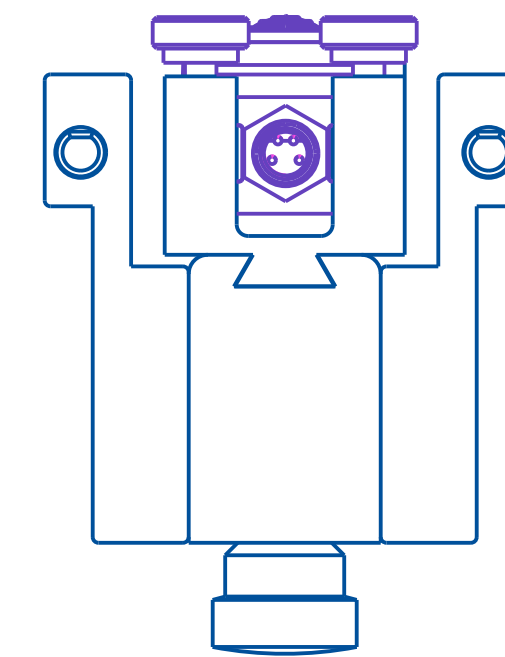
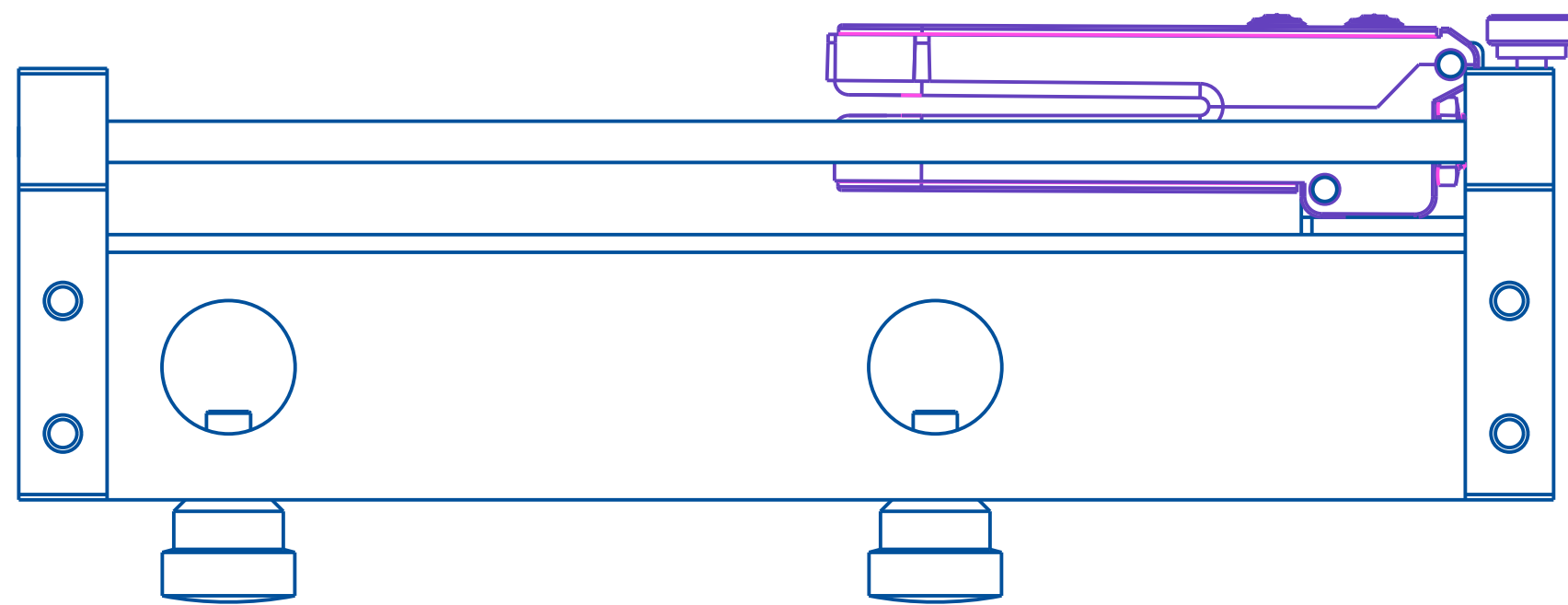
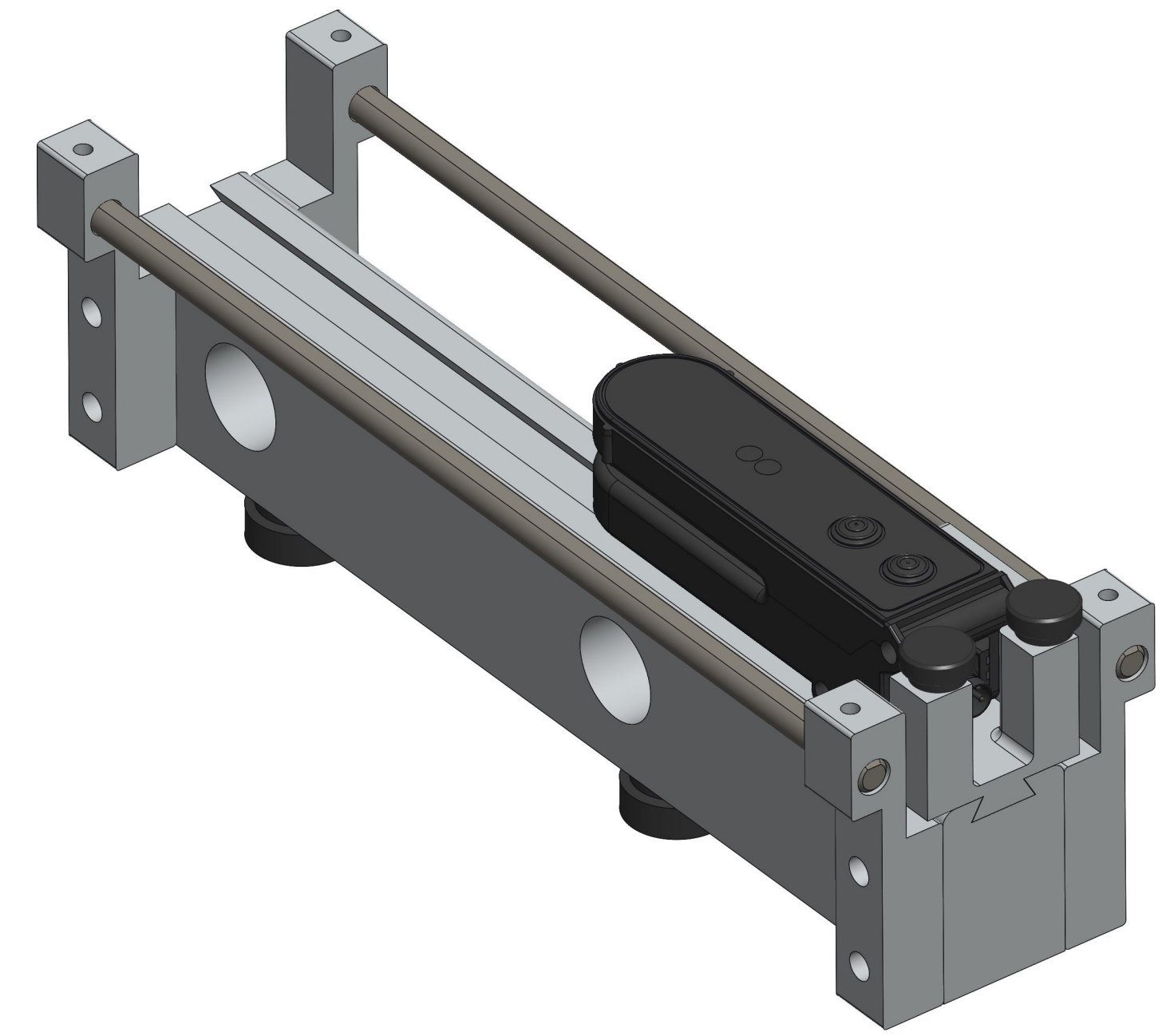
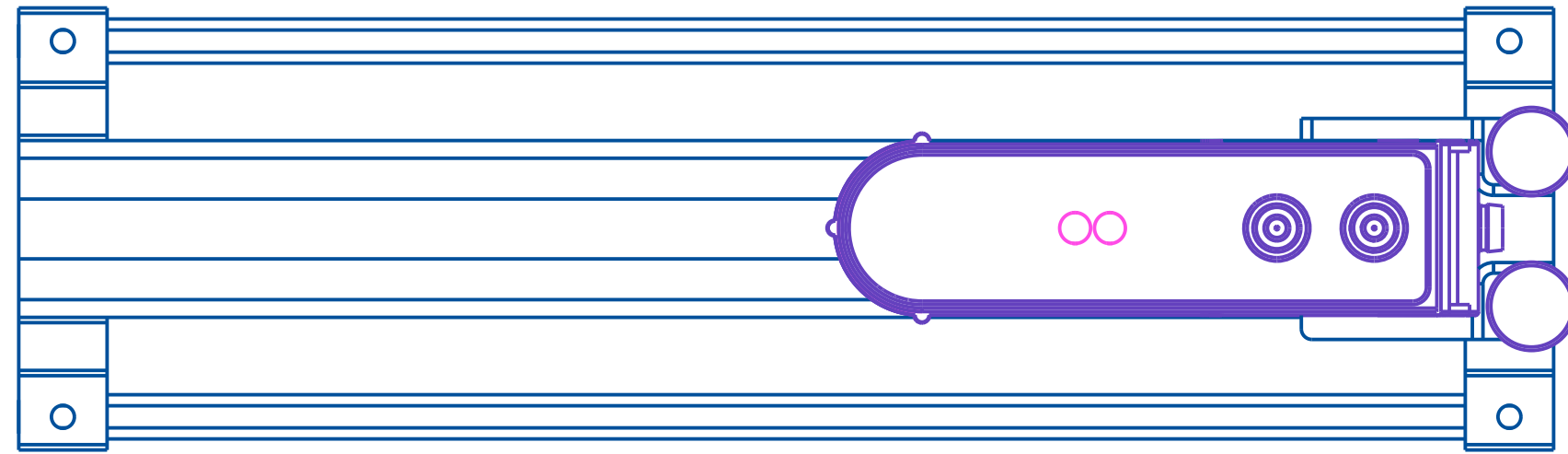
ITEM	QTY	PART NO.	DESCRIPTION	PARENT ITEM
1	1	201444-300	TRITRONICS MODEL LERC	20033-340
2	2	801297-000	THUMB SCREW PLSTC HEAD 8-32x1	20033-340
3	2	801299-000	KNOB WITH STUD	20033-340
4	1	A21391-301	SLOT SENSOR ADAPTER	20033-340
5	4	A21749-300	SLOT SENSOR SUPPORT ROD MTG BLOCK	20033-340
6	2	A21770-340	SUPPORT ROD WITH FLAT	20033-340
7	1	B20852-340	4.5 IN. WEB SLOT SENSOR MTG. BAR	20033-340



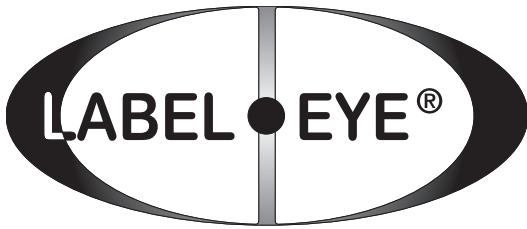
REV	DATE	DESCRIPTION	BY
A	Mar-22-23	NEW DRAWING	TJS

**THIS IS A PRO-ENGINEER DOCUMENT AND MAY NOT BE MODIFIED MANUALLY**

UNLESS OTHERWISE SPECIFIED DIMENSIONAL TOLERANCE X ± .1 XX ± .01 XXX ± .005 ANGLES ± 30°	<b>QUADREL LABELING SYSTEMS</b> 7670 JENTHER DRIVE MENTOR, OHIO 44060 (440) 602-4700	SCALE: 1/1 DATE: Mar-22-23 DRW BY: TJS CHK BY: 03/18/2024-SEM APPR BY:
SURFACE FINISH 125 BREAK ALL EDGES .005/0.15 CORNER RADIUS .010/0.30		LABEL DETECT ASSEMBLY MAT'L 20033-340



A		Mar-22-23	NEW DRAWING	TJS
REV	DATE	DESCRIPTION	BY	
<b>THIS IS A PRO-ENGINEER DOCUMENT AND MAY NOT BE MODIFIED MANUALLY</b>				SCALE: 1/1
UNLESS OTHERWISE SPECIFIED DIMENSIONAL TOLERANCE X ± .1 XX ± .01 XXX ± .005 ANGLES ± .30°		<b>QUADREL LABELING SYSTEMS</b> 7670 JENTHER DRIVE MENTOR, OHIO 44060 (440) 602-4700		DATE: Mar-22-23 DRW BY: TJS CHK BY: 03/18/2024-SEM APPR BY:
SURFACE FINISH: 125 BREAK ALL EDGES: .005 / .015 CORNER RADIUS: .010 / .030 ALL ANGLES ARE 90°			LABEL DETECT ASSEMBLY	
MAT'L			20033-340	



# LABEL•EYE Set-Up Instructions

## Standard LABEL•EYE

### Normal Label Opacity AUTOSET Button

This category includes most paper or metallized film labels adhering to paper or transparent backing materials. To implement the one button AUTOSET routine, utilize the external alignment guides to position the gap between labels in line with the dot shown in the center of the detection zone. Then push the AUTOSET button marked "Normal."

An alternative set up procedure would be to remove a label and the push the "Normal" AUTOSET button.

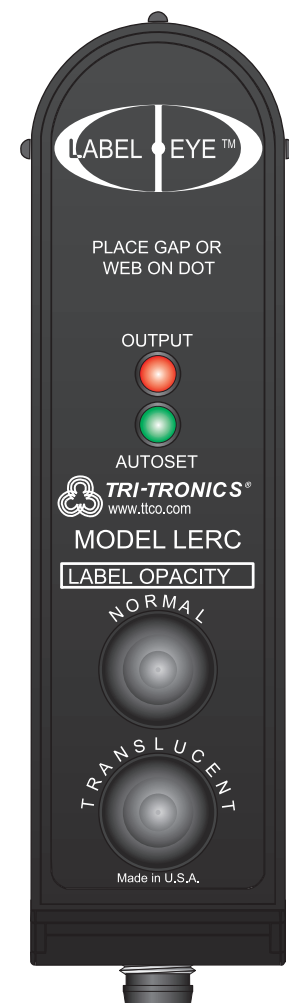
On rare occasions, when the light is unable to penetrate the backing materials, both the red and green led indicators will blink four times. When this indication occurs, the sensor will be unable to detect the presence of the labels.

### Translucent Label Opacity AUTOSET Button

This category includes translucent labels adhering to transparent or paper backing materials. To implement the one button AUTOSET routine, utilize the external alignment guides to position the gap between labels in line with the dot shown in the center of the detection zone. Then push the AUTOSET button marked "Translucent".

*Note: This sensor cannot detect transparent labels.*

**INVERT OUTPUT:** The status of the red LED and output transistors can be inverted by pressing both buttons simultaneously. When the output status has been inverted, the red LED and the output transistors will turn off when the label comes into view.



# SPECIFICATIONS



## SUPPLY VOLTAGE

- 10 to 30Vdc
- Polarity Protected
- Intended for use in class two circuits

## CURRENT REQUIREMENTS

- 45 milliamps (exclusive of load)

## OUTPUT TRANSISTORS

- (1) NPN and (1) PNP output transistors
- Sensor outputs can sink or source up to 150 milliamps (current limit)
- All outputs are continuously short circuit protected

## REMOTE AUTOSET INPUT

- opto isolated momentary sinking input (10 milliamps)
- Note: Remote models only*

## RESPONSE TIME

- Light state response = 100 microseconds
- Dark state response = 100 microseconds

## LED LIGHT SOURCE

- High intensity red LED
- Pulse modulated

## PUSH BUTTON CONTROL

- Automatic set-up routines based on web opacity
- One push button set-up
- Simultaneously pushing both buttons inverts the output

## HYSTERESIS

- Minimal hysteresis promotes the detection between the backing material and the label depending on the settings

## LIGHT IMMUNITY

- Responds to sensor's pulsed modulated light source ... immune to most ambient light

## INDICATORS

- Green LED flashes when AUTOSET routine is activated and stays illuminated when AUTOSET is completed
  - Red LED illuminates when sensors output transistors are ON.
- Note: The status of the output transistors can be inverted by pushing both buttons simultaneously. If Output LED flashes, a short circuit condition exists.*

## AMBIENT TEMPERATURE

- -40°C to 70°C (-40°F to 158°F)

## RUGGED CONSTRUCTION

- Chemical resistance to harsh cleaners such as detergents, alcohols, and ketones
- Type 1 Enclosure
- Conforms to heavy industry grade CE and UL requirements



RoHS Compliant  
Product subject to change without notice.

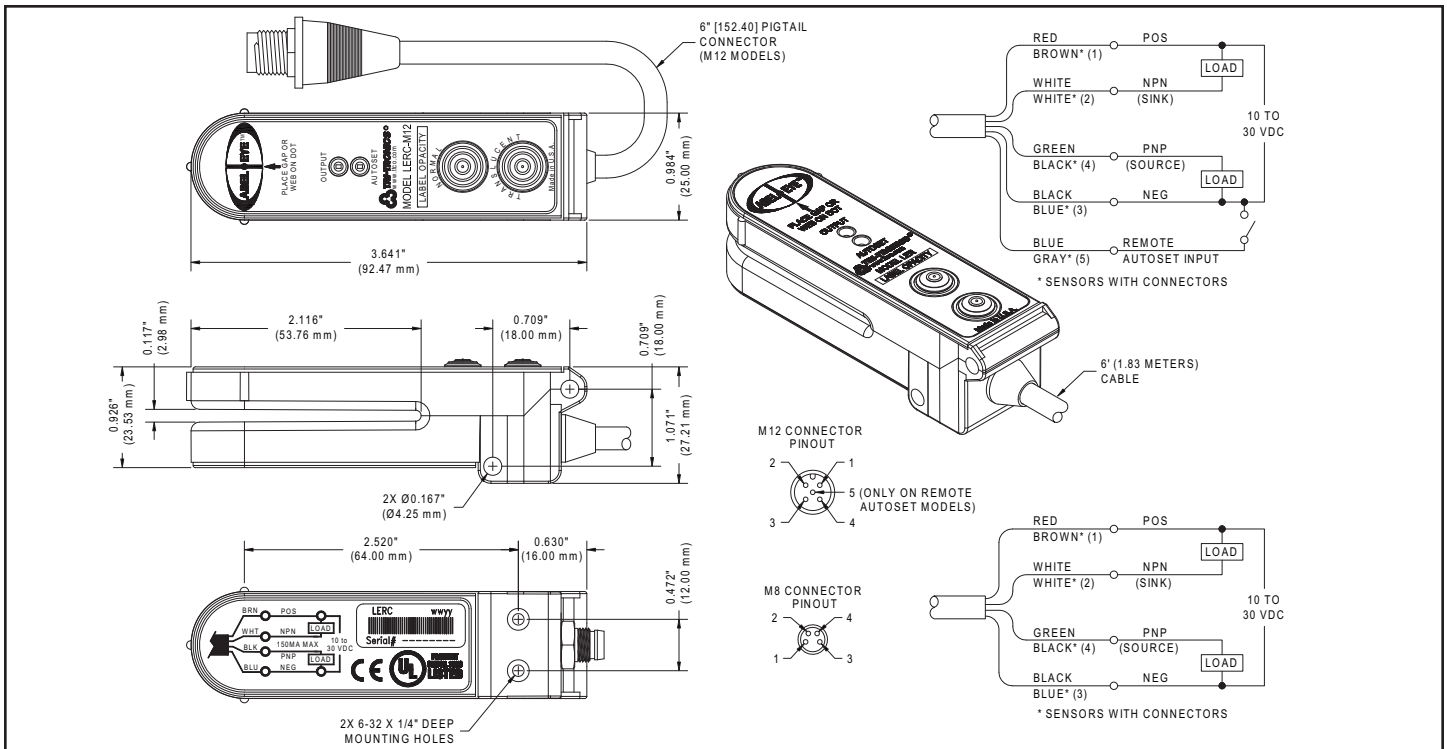
### Model Numbers:

Label•Eye	Description
LER	Red LED, 4 Conductor 6ft Cable
LERC	Red LED, 4-pin M8 Connector
LERR	Red LED, 5 Conductor, 6ft Cable
LERRC-M12	Red LED, 5-Pin M12 Pigtail Connector
LERC-M12	Red LED, 4-Pin M12 Pigtail Connector

### Nano Cable (M8) Selection Guide

P/N	Length	Thread Coupling
GEC-6	6ft (1.8m)	Straight Female
GEC-15	15ft (4.6m)	Straight Female
RGEC-6	6ft (1.8m)	90° Female
RGEC-15	15ft (4.6m)	90° Female

# DIMENSIONS



P.O. BOX 25135, TAMPA, FL 33622-5135  
813-886-4000 / 800-237-0946  
tco.com / info@tco.com

070-0150 Rev 5

**ASSEMBLY TITLE:        LOW LABEL FAULT ASSEMBLY**

**DRAWING NO.:**

**GENERAL FUNCTION:**

- The low label supply fault indicates a depleting supply of labels. It consists of a fiber optic sensor that is set at the desired position on the roll of labels.
- When the label supply passes below the sensor range, a signal is generated this will light the yellow stack lamp and enunciate a low label condition on the operator's touch screen display.
- The male connector provides quick connection to the labeling head.

**SET UP AND ADJUSTMENTS:**

- Set the sensor eye just before the cardboard inner core, approximately ¼" below the supply reel flange and lined up with the sensing hole in the flange.

**MAINTENANCE:**

- Keep the sensor optical area clean from label and glue residue

**TROUBLESHOOTING:**

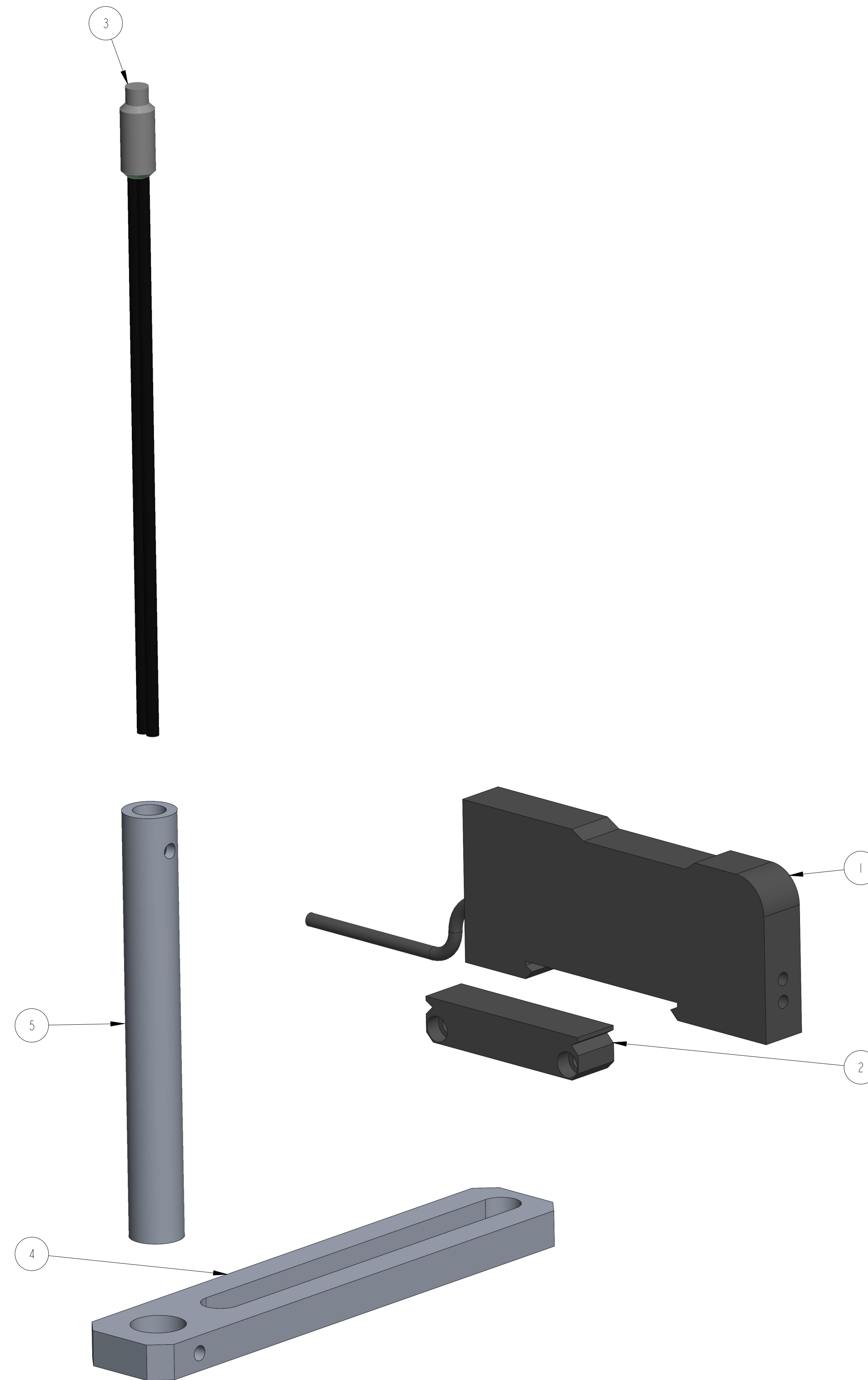
<u>PROBLEM</u>	<u>WHAT TO DO</u>
- No power to the sensor	- Check male connector and tightly secure connection to the head.

**NOTE:** The labeler will continue to operate until the operator pauses the labeler or the label supply completely depletes past the broken web sensor.

To reset the fault condition, replenish the label supply and press the labeler run button from run to pause and back to run.

ITEM	QTY	PART NO.	DESCRIPTION	PARENT ITEM
1	1	202201-000	DUAL DIGITAL FIBER AMPLIFIER	20776-006
2	1	202201-001	DUAL DIGITAL FIBER AMPLIFIER	20776-006
3	1	203170-000	CABLE, FIBER , REFLECTIVE, KEYENCE #FU-67V	20776-006
4	1	A23727-000	LOW LEVEL BRACKET	20776-006
5	1	A23728-000	LOW LEVEL SENSOR TUBE	20776-006

\*NOT SHOWN  
252019-000 CONNECTOR



REV	DATE	DESCRIPTION	BY
A	Apr-07-21	NEW DRAWING	TJS

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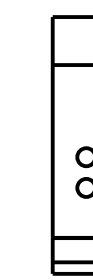
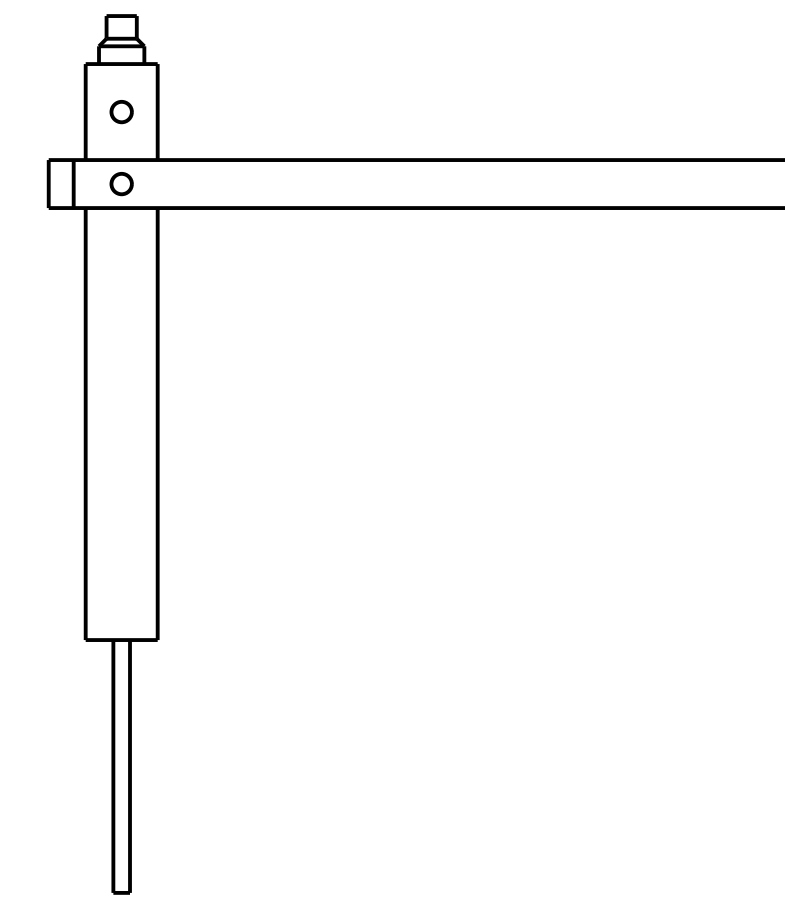
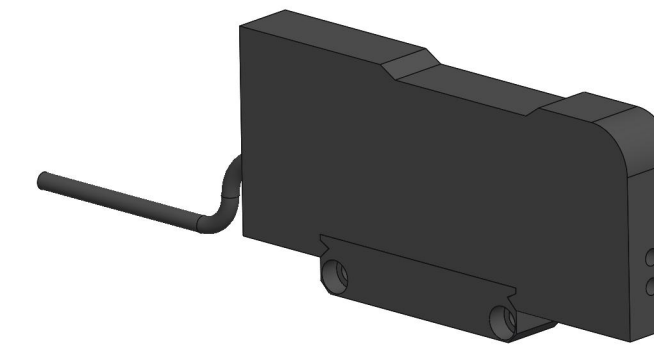
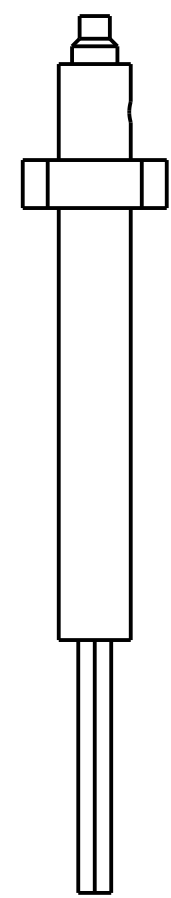
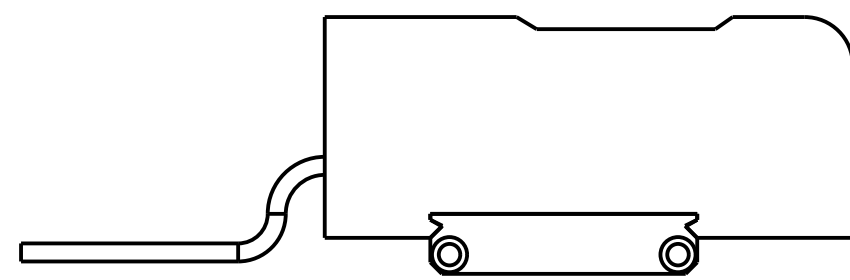
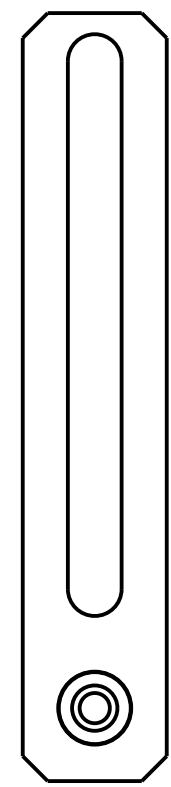
**QUADREL LABELING SYSTEMS**  
7670 JENTHER DRIVE  
MENTOR, OHIO 44060  
(440) 602-4700

SCALE: 2/1  
DATE: Apr-07-21  
DRAWN BY: TJS

MAT'L: 20776-006 & 20776-006P  
20776-006

LOW LABEL

UNLESS OTHERWISE SPECIFIED  
DIMENSIONAL TOLERANCE  
XX ± .01  
XXX ± .005  
ANGLES ± 30°  
SURFACE FINISH 125  
BREAK ALL EDGES .005/.015  
CORNER RADIUS .0107.030



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REV	DATE	DESCRIPTION	BY
A	Apr-07-21	NEW DRAWING	TJS

UNLESS OTHERWISE SPECIFIED  
DIMENSIONAL TOLERANCE

X ± .1  
XX ± .01  
XXX ± .005  
ANGLES ± 30°

SURFACE FINISH 125  
BREAK ALL EDGES .005/.015  
CORNER RADIUS .010/.030

QUADREL LABELING SYSTEMS  
7670 JENTHER DRIVE  
MENTOR, OHIO 44060  
(440) 602-4700

SCALE: 1/1  
DATE: Apr-07-21  
DRAWN BY: TJS

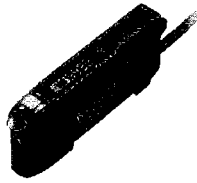
MAT'L 20776-006 & 20776-006P

LOW LABEL

20776-006



## Digital Fiberoptic Sensor FS-N40 Series Instruction Manual



Read this manual before using the product in order to achieve maximum performance. Keep this manual in a safe place after reading it so that it can be used at any time.

For detailed FS-N40 Series setting methods and for details on the functions of the FS-N40 Series, see the "FS-N40 Series User's Manual".

### ■ Symbols

The following symbols are used in this instruction manual to enable the recognition of important information at a glance. Be sure to read these messages carefully.

	It indicates a hazardous situation which, if not avoided, will result in death or serious injury.
	It indicates a hazardous situation which, if not avoided, could result in death or serious injury.
	It indicates a hazardous situation which, if not avoided, could result in minor or moderate injury.
	It indicates a situation which, if not avoided, could result in product damage as well as property damage.

## 1 Before Operation

### Safety Precautions

	<ul style="list-style-type: none"> <li>This product is only intended to detect objects. Do not use this product for the purpose of protecting a human body or a part of a human body.</li> <li>This product is not intended for use as an explosion-proof product. Do not use this product in a hazardous location and/or potentially explosive atmosphere.</li> </ul>
	<ul style="list-style-type: none"> <li>This is a direct current (DC) power supply type sensor. Application of an alternating current may result in explosion or fire.</li> </ul>
	<ul style="list-style-type: none"> <li>Use separate conduits for power lines and high-voltage lines. Use of a common conduit may result in device malfunction due to noise or damage to the sensor.</li> <li>Always ground the frame ground terminal when using an off-the-shelf switching regulator.</li> <li>Do not use this product outdoors.</li> </ul>

### Precautions on Regulations and Standards

#### ■ CE Marking

KEYENCE Corporation has confirmed, on the basis of the following specifications, that this product complies with the essential requirements of the applicable EU Directive(s). Be sure to consider the following specifications when using this product in the member states of the European Union.

#### ● EMC Directive, applicable standard: EN60947-5-2, Class A

Ensure that the cable length is 30 meters or less. These specifications do not give any guarantee that the end-product with this product incorporated complies with the essential requirements of the EMC Directive. The manufacturer of the end-product is solely responsible for confirming the compliance of the end-product itself according to the EMC Directive.

#### ■ UL Certificate

This product is a UL/c-UL certified product.

- UL File No.: E301717
- Category: NRKH/NRKH7(NRKH2/NRKH8: FS-N42N(P))
- Enclosure Type 1 (based on UL50)

Be sure to consider the following specifications when using this product as a UL/c-UL certified product.

- Use a power supply with Class 2 output defined in NFPA70 (NEC: National Electrical Code).
- Connect the power supply, external input, and control output to a single power supply with Class 2 output.
- Use OP-73864, OP-73865 or OP-85498 cable with FS-N41C when the field wiring is required.

#### ■ FCC Regulations

This product complies with the following regulations specified by the FCC.

- Applicable regulation FCC Part 15 Subpart B Class A
- This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

• FCC Caution

Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

### Package Contents

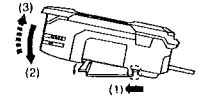
- Main unit
- Instruction manual

## 2 Installation and Wiring

### Mounting the Main Unit

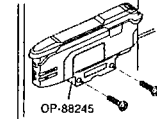
#### ■ Mounting the Main Unit on a DIN rail

- 1 Align the claw at the bottom of the main unit with the DIN rail, as shown in the figure. While pushing the main body in the direction of arrow 1, push down in the direction of arrow 2.
- 2 To remove the sensor, raise the main body in the direction of arrow 3 while pushing the main body in the direction of arrow 1.



#### ■ Installation on a wall (main unit only)

- 1 Attach the main unit to the optional mounting adapter (OP-88245), and then insert M3 screws into the two locations shown in the figure to secure the main unit in place.

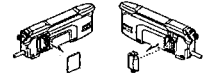


### Connecting Multiple Amplifiers

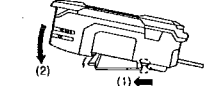
Up to 16 expansion units can be connected to 1 main unit. However, each dual output type will be treated as 2 expansion units.

	When connecting to multiple amplifiers or when mounting main units together, mount the units on a DIN rail installed on a metal surface.
	<ul style="list-style-type: none"> <li>• Be sure to turn the power off before connecting multiple expansion units.</li> <li>• Do not touch the expansion connector.</li> </ul>

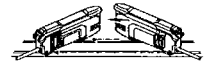
- 1 Remove the protection covers from the main unit and expansion unit(s).



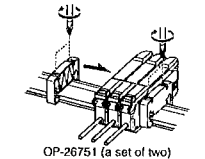
- 2 Install the amplifiers on the DIN rail one at a time.



- 3 Slide the main unit and expansion unit(s) together. Mate the two claws of the expansion unit with the recesses on the main unit side until a click is heard/felt.



- 4 Attach the end units (optional, sold separately: OP-26751) to the DIN rail on both sides of the amplifiers in the same way as step (2).



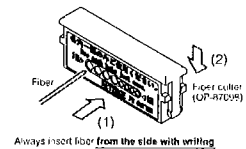
- 5 Secure the amplifiers between the end units. Tighten the screws from the top (two screws x two units) with a Phillips screwdriver to fix the end units in place.

OP-26751 (a set of two)

### Fiber Unit Installation

#### ■ Using a fiber cutter

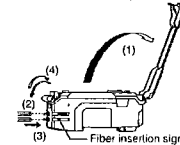
- 1 Insert the fiber into the cutter hole.
- 2 Bring down the blade in a single, swift motion to cut the fiber. (Do not use a hole that has already been used.)



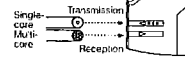
Always insert fiber from the side with writing

#### ■ Connecting to the amplifier unit

- 1 Open the cover (1), and then lower the lever in the direction indicated by (2).
- 2 Insert the fiber unit into the installation holes (approximately 14 mm). (3)
- 3 Move the lever back in the direction indicated by (4).

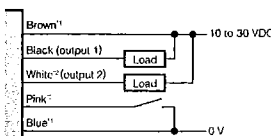


	When installing a coaxial reflective fiber in the main unit, install the single-core fiber in the transmission installation hole and the multi-core fiber in the reception installation hole.
--	---



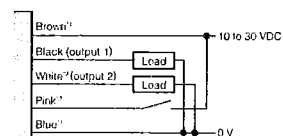
### Wiring (Cable Type)

#### ● FS-N41N/N42N/N43N/N44N



- \*1 FS-N41N/N43N only
- \*2 FS-N43N/N44N only

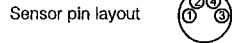
#### ● FS-N41P/N42P/N43P/N44P



- \*1 FS-N41P/N43P only
- \*2 FS-N43P/N44P only

## Wiring (M8 Connector Type: FS-N41C)

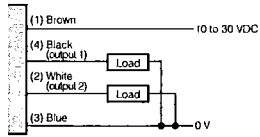
Select NPN or PNP and the function of I/O pin (2) during the initial settings.



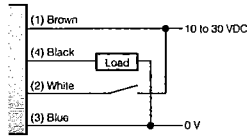
FS-N41C supports "IO-Link: Specification V.1.1/COM2 (38.4 kbps)". The setting file (IODD) can be downloaded from Keyence's web site (<http://www.keyence.com>).

### ● When using the sensor in PNP mode

OUT1 + OUT2

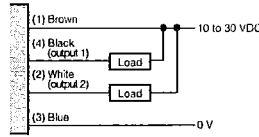


OUT1 + INPUT

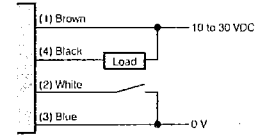


### ● When using the sensor in NPN mode

OUT1 + OUT2



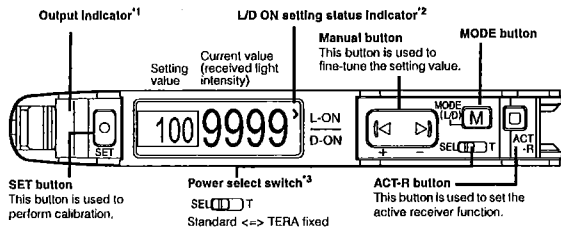
OUT1 + INPUT



The wire colors indicate the colors when using an OP-73864/73865 M8 connector cable (sold separately).

## 3 Basic Settings

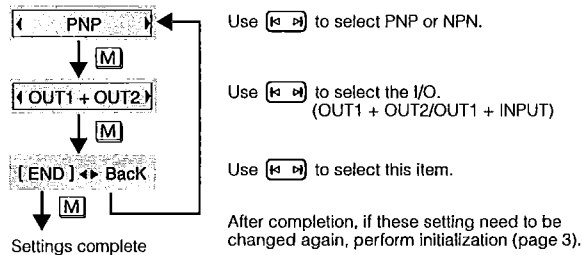
### ■ Names and functions



- \*1 On dual output types (including the FS-N41C), the indicator operates according to the output channel selected with the output channel selection switch.
- \*2 On dual output types (including the FS-N41C), this becomes the output indicator. It displays the current output status of channels 1 and 2.
- \*3 On dual output types (including the FS-N41C), this becomes the output channel selection switch. It is not present on zero line types (FS-N40).

### ■ Initial settings (FS-N41C only)

When turning on the sensor for the first time, or when the sensor has been initialized, select the initial settings shown below.



### ■ Basic settings

#### ● Switching the output style (Light ON/Dark ON)

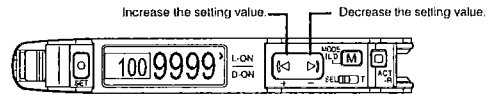
- 1 Press **[M]** once. Switch L-On/D-On
- 2 Use **[< >]** to switch the output style.
- 3 Press **[M]** three times.

#### ● Switching the display language

- 1 Press **[M]** twice. Language / 语言
- 2 Use **[< >]** to select the language.
- 3 Press **[M]** twice.

#### ● Fine-tuning the setting value (threshold)

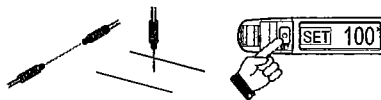
Use **[< >]** to adjust the value. Hold down the button to make adjustments more quickly.



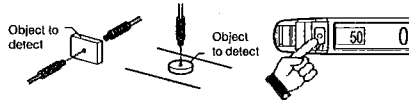
### ■ Basic calibration methods

#### ● 2-point calibration (the most basic setting method)

- 1 Press **[SET]** with no object to detect present.



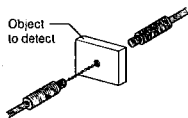
- 2 Press **[SET]** with an object to detect present.



This sets the setting value to the midpoint between the received light intensities of points 1 and 2. If "..." blinks for 2 seconds on the display, the difference between the received light intensities is small, and detection may be unstable.

#### ● Maximum sensitivity calibration

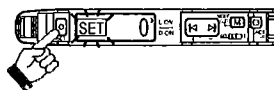
**Through-beam model:** With an object to detect present



**Reflective model:** With no object to detect present



- 1 With the items arranged as shown in the figures on the left, hold down **[SET]** for 3 seconds or more. When **[SET]** blinks, release this button.



The setting value is set slightly higher than the received light intensity when the setting was configured.

## 4 Useful Functions

### ● Initialization

Initialize all the settings and return the sensor to its factory default state.

- 1 Hold down and for 3 seconds or more.
- 2 Press once.
- 3 Press once.
- 4 Press once.

### ● Key lock

Disable button operations.

- 1 Hold down and for 3 seconds or more.

Cancel: Use the same procedure.

### ● Active receiver (ACT-R)

This function makes the fiber unit's receiver blink in green.

#### Operation when the sensor is shipped from the factory

When the sensor output is ON, the fiber unit's receiver lights in green. (This is linked to the output.)

To change the normal lighting status of the receiver (change the settings)

- 1 Press three times.
- 2 Use to select the status from those shown below.

Output Link: The receiver will light when the output is ON.  
Reversed Op: The receiver will light when the output is OFF.  
Always On: The receiver will be lit always.  
Disable: The receiver will be off always.

- 3 Press twice to return to the normal status.

To force the receiver to blink in green (pairing mode)

- 1 Press once.
- 2 Press .
- 3 The light-receiving side blinks in green.
- 4 Press four times to return to the normal status.

### ● Saturation avoidance function

Use this function when the received light intensity does not change from the maximum displayed value.

- 1 Press and simultaneously.

Cancel: Use the same procedure.

### ● Zero shift function

Use this function to change the received light intensity display to zero.

- 1 Press and simultaneously.

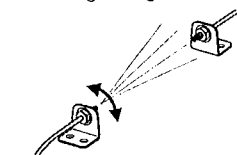
Cancel: Hold down and for 3 seconds or more.

To make it easy to perform optical-axis alignment (optical-axis alignment assist mode)

- 1 Press twice.
- 2 Press to make the light-receiving side blink in green.
- 3 Move the tip of the fiber unit within the movable range.

The light-receiving side lights in green near the peak light intensity within the range in which the tip moved.

Align the optical axis within the middle of the range in which the light-receiving side lights.



- 4 When you finish the alignment, press three times.

The sensor returns to the normal status.

## 5 Specifications

The response times are listed on the following page.

Model	NPN output		FS-N41N	FS-N42N	FS-N43N	FS-N44N	FS-N41C <sup>1</sup>		FS-N40
	PNP output		FS-N41P	FS-N42P	FS-N43P	FS-N44P	(selectable output)		
Cable/connecter	Cable						MS connector <sup>2</sup>		-
Main unit/expansion unit	Main unit		Expansion unit		Main unit		Expansion unit		Expansion unit
Number of control outputs	1		1		2		2 <sup>3</sup>		None <sup>4</sup>
Number of external inputs	-		-		1		1		1 <sup>3</sup>
Light source LED	Transmitter side: Red, four-element LED (wavelength: 660 nm)								
Control output	Open-collector, 30 V or less 100 mA or less per output, 100 mA or less total for 2 outputs (when used as a solitary unit) 20 mA (when used as an expansion unit)								
	Residual voltage	NPN 1.4 V or less (output current: 10 mA or less) 2 V or less (output current: 10 to 100 mA) PNP 1.6 V or less (output current: 10 mA or less) 2.2 V or less (output current: 10 to 100 mA)							
External input	Input time: 2 ms (ON)/20 ms (OFF) or longer <sup>5</sup>								
Unit expansion (excluding the FS-N41C)	Up to 16 units (17 units connected in total including the main unit). However, each two output type will be treated as two expansion units.								
Protection circuit	Protection against reverse power connection, output overcurrent, output surge, and reverse output connection								
Mutual interference prevention	S-HSPD/HSPD: 0 units, FINE: 4 units, TURBO/SUPER/ULTRA/MEGA/TERA: 8 units (The mutual interference prevention values are twice those shown here when Double Is set.)								
Power supply	Power supply voltage								
	10 to 30 VDC (including 10% ripple (P-P) or less), class 2 or LPS <sup>6</sup>								
Power consumption <sup>7</sup>	NPN FS-N40								
	During normal operation: 870 mW or less (34 mA or less at 24 V/62 mA or less at 12 V) ECO ON: 800 mW or less (31 mA or less at 24 V/56 mA or less at 12 V) ECO FULL: 710 mW or less (28 mA or less at 24 V/49 mA or less at 12 V)								
Power consumption <sup>7</sup>	PNP FS-N41C								
	One output type (FS-N41P/N42P) and FS-N41C During normal operation: 910 mW or less (36 mA or less at 24 V/65 mA or less at 12 V) ECO ON: 840 mW or less (33 mA or less at 24 V/60 mA or less at 12 V) ECO FULL: 750 mW or less (30 mA or less at 24 V/52 mA or less at 12 V)								
Power consumption <sup>7</sup>	Two output type (FS-N43P/N44P)								
	During normal operation: 990 mW or less (39 mA or less at 24 V/72 mA or less at 12 V) ECO ON: 920 mW or less (36 mA or less at 24 V/66 mA or less at 12 V) ECO FULL: 830 mW or less (33 mA or less at 24 V/59 mA or less at 12 V)								
Ambient light	Incandescent lamp: 20,000 lx or less, sunlight: 30,000 lx or less								
Ambient temperature	-20°C to +55°C (no freezing) <sup>8</sup>								
Vibration resistance	10 to 55 Hz; double amplitude 1.5 mm, 2 hours each for X, Y, and Z axes								
Shock resistance	500 m/s <sup>2</sup> ; 3 times each for X, Y, and Z axes								
Case material	Main unit and cover: polycarbonate								
Weight	Approx. 79 g	Approx. 48 g	Approx. 83 g	Approx. 73 g	Approx. 25 g	Approx. 23 g			

<sup>1</sup> IO-Link Specification V1, MCOM2 (38.4 kbps) is supported.  
<sup>2</sup> Ensure the cable length is 30 m or less for the MS connector type. In case of connecting with IO-Link, set it to 20 m or less.  
<sup>3</sup> Output 2 and the external input are selectable.  
<sup>4</sup> This counts as 1 output when connecting multiple units to the FS-MCBNP, NLP Series.  
<sup>5</sup> The input time becomes 25 ms (ON)/25 ms (OFF) when external calibration input is selected.

<sup>6</sup> When expanding the system to 9 or more units, use a power supply voltage of 12 V or higher.  
<sup>7</sup> The load current is excluded. The power consumption including the load when the maximum number of units are connected is 38 W max.  
<sup>8</sup> When expanded by 1 to 2 units: -20°C to +55°C. When expanded by 3 to 10 units: -20°C to +50°C. When expanded by 11 to 16 units: -20°C to +45°C. When using 2 outputs, 1 unit is counted as 2 units. Note that all the temperature prescriptions assume that the sensor has been mounted on a DIN rail installed on a metal surface. Exercise special care when installing the product in an airtight space.

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- (2) KEYENCE is pleased to offer suggestions on the use of its various Products. They are only suggestions, and it is Buyer's responsibility to ascertain the fitness of the Products for Buyer's intended use. KEYENCE will not be responsible for any damages that may result from the use of the Products.
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If the Products/Samples purchased by Buyer are to be resold or delivered to a third party, Buyer must provide such third party with a copy of this document, all specifications, manuals, catalogs, leaflets and written information provided to Buyer pertaining to the Products/Samples.

E 1101-3

# 6 Detailed Settings

Hold down **[M]** for 3 seconds or more to enter the settings menu. Then, press **[M]** to change the item and press **[← →]** to switch the setting value. Press **[M] + [↶ ↷]** when an item is being set to return to the previous item.

**A Power Modes** Press **[← →]** to select the value.

Select from eight power modes. The initial setting is FINE.

Mode	S-HSPD <sup>*1</sup>	HSPD	FINE	TURBO
Response time	23 μs	50 μs	250 μs	500 μs
Maximum displayable light intensity	9999			

Mode	SUPER	ULTRA	MEGA	TERA
Response time	1 ms	4 ms	16 ms	64 ms
Maximum displayable light intensity	9999			

**B Switch L-on/D-on** Press **[← →]** to select the value.

- Light ON
- Dark ON

**C Display Bar** Press **[← →]** to select the value.

- OFF
- ON

**[END] <> ADVANCE** Press **[← →]** to select the value.

End **[M]** ADVANCE  
Settings complete

**D Detection Mode** <sup>\*3</sup> Press **[← →]** to select the value.

Select from the following operation modes.

- Standard
- Preset
- Percent
- Zeroshift
- Area detection
- Area % Mode
- DATUM
- Rising edge
- Falling edge

**E Output timer** <sup>\*4</sup> Press **[← →]** to select the value.

**F Ext. Input** Press **[← →]** to select the value.

This can only be used on types that support an external input. It is possible to select from the following values.

- OFF
- External Set
- Zero shift
- Reset
- LED OFF
- Pause
- Sleep

When connected to the multi-output unit FS-MC8N/P or the communication unit NU Series, this setting can be configured on types that do not support an external input.

**G Saturate Cancel** Press **[← →]** to select the value.

**H Attenuation** Press **[← →]** to select the value.

**I Zero Shift** Press **[← →]** to select the value.

**J Limit Detection** <sup>\*4</sup> Press **[← →]** to select the value.

If Limit Detection is set to ON, a notification of a drop in light intensity is shown on the display when the light intensity drops due to factors such as dirt. With dual output types, it is also possible to output alarms to an external device. When connected to the multi-output unit FS-MC8N/P, it is possible to output alarms from the "common output" of the FS-MC8N/P even for types that do not support the alarm output.

**K Auto Power** Press **[← →]** to select the value.

**L Hysteresis** Press **[← →]** to select the value.

**M Language** Press **[← →]** to select the value.

Select from English (initial setting), Japanese, Chinese, and German.

**N Flip Display** Press **[← →]** to select the value.

**O Sub Display** Press **[← →]** to select the value.

**P ACT-R** Press **[← →]** to select the value.

**Q Brightness** Press **[← →]** to select the value.

**R ECO** <sup>\*5</sup> Press **[← →]** to select the value.

**S Initialize** Press **[← →]** to select the value.

**T Custom Setting** Press **[← →]** to select the value.

**U Interference** <sup>\*5</sup> <sup>\*7</sup> Press **[← →]** to select the value.

**V Key Lock Method** Press **[← →]** to select the value.

**W Display Gain** <sup>\*5</sup> Press **[← →]** to select the value.

**X IO-Link Mode** <sup>\*8</sup> Press **[← →]** to select the value.

**Y IO Data Format** <sup>\*8</sup> Press **[← →]** to select the value.

**Z I/O Selection** <sup>\*8</sup> Press **[← →]** to select the value.

Settings complete

## Output 2 setting

**1** **2** When using a dual output type, if the output channel selection switch is set to the "2" side, output 2 can be set.

Hold down **[M]** for 3 seconds or more to enter setup mode.

**a Second Output** Press **[← →]** to select the value.

**b Switch L-On/D-On** Press **[← →]** to select the value.

**c Output timer 2** Press **[← →]** to select the value.

Settings complete

<sup>\*1</sup> When S-HSPD is selected for Power Modes Output 2 of dual output types is fixed to OFF.  
<sup>\*2</sup> This is 65535 when connected to an NU Series unit.  
<sup>\*3</sup> When S-HSPD is selected for Power Modes Area detection, Area % Mode, DATUM, Rising edge, or Falling edge cannot be selected.  
<sup>\*4</sup> This cannot be used when S-HSPD is selected for Power Modes.  
<sup>\*5</sup> This cannot be used when S-HSPD or HSPD is selected for Power Modes.  
<sup>\*6</sup> When S-HSPD is selected for Power Modes, FULL cannot be selected for the ECO function.  
<sup>\*7</sup> The IO-Link communication cannot be used when FULL is selected for ECO (FS-N41C).  
<sup>\*8</sup> This item is not displayed on the FS-N41C.  
<sup>\*9</sup> This item is only displayed on the FS-N41C.

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<b>FRANCE</b> Ph: +33 1 56 37 78 00	<b>MALAYSIA</b> Ph: +60-3-7883-2211	<b>SLOVENIA</b> Ph: +386 1-4701-666	
<b>GERMANY</b> Ph: +49 6102 36 89-0	<b>MEXICO</b> Ph: +52-55-8850-0100	<b>SWITZERLAND</b> Ph: +41 43-45577 30	

**ASSEMBLY TITLE:                      BROKEN WEB / END OF WEB**

**DRAWING NO:**

**GENERAL FUNCTION:**

- The broken web fault indicates that the labeler label stock has broken after the labeler pull roll. It consists of a reflective sensor and a reflector. The sensor is capable of reading clear or opaque label liner.

-When the broken web passes through the sensor, a signal is generated, that signal will shut the conveyor system down and light the red lamp on the stack lamp assembly.

-To reset the fault condition, rethread labels and press labeler run/pause to turn off the red light and place the labeler in run mode. The conveyor will restart and the labeling process will continue.

**SET-UP AND ADJUSTMENTS:**

- The sensor is set in light on operation mode. It is a retro-reflective operation. To set the sensor, refer to the following manufacture's instruction sheet.

- Ensure that all label material is removed from the sensor and reflector area for proper set up.

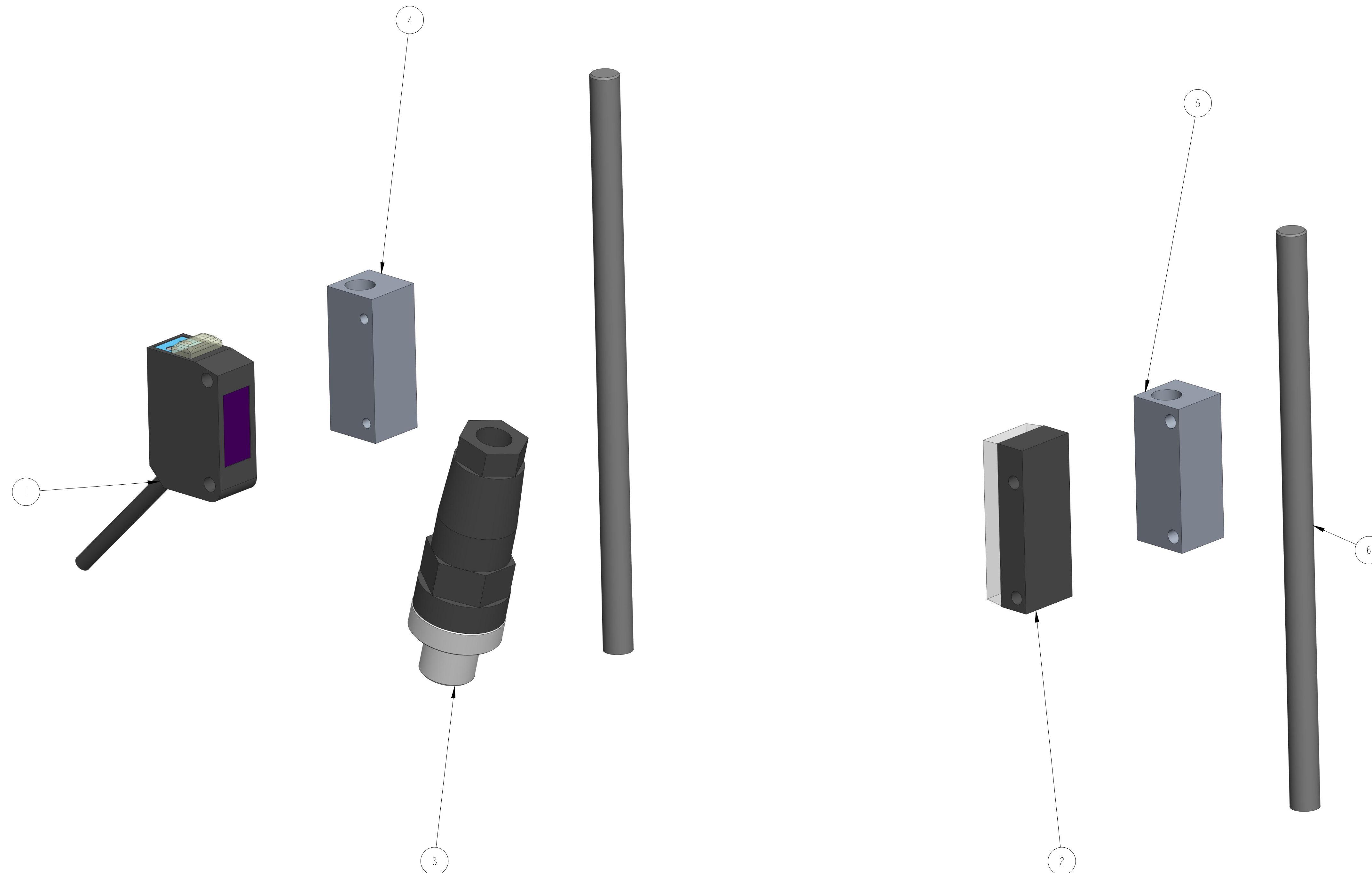
**MAINTENANCE:**

- See Maintenance Section

**TROUBLESHOOTING:**

- See Troubleshooting Section

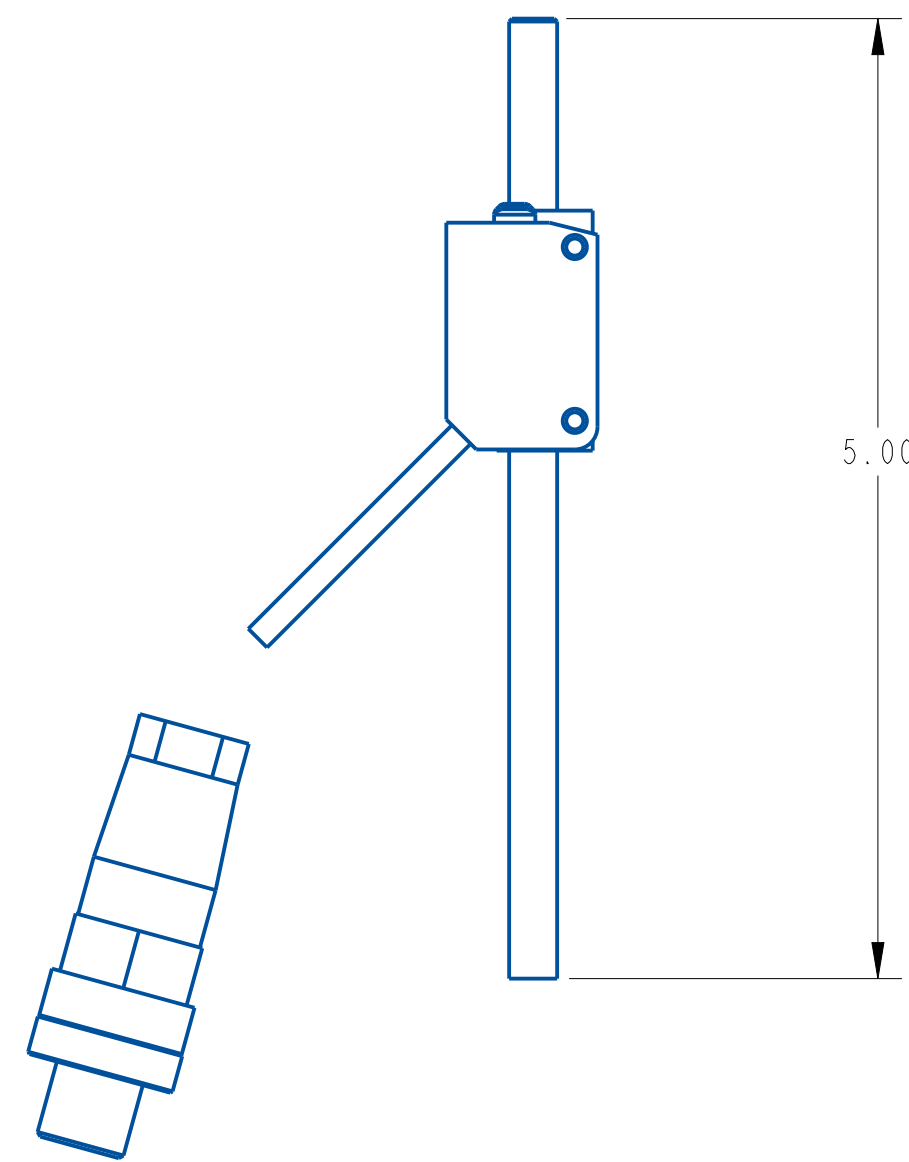
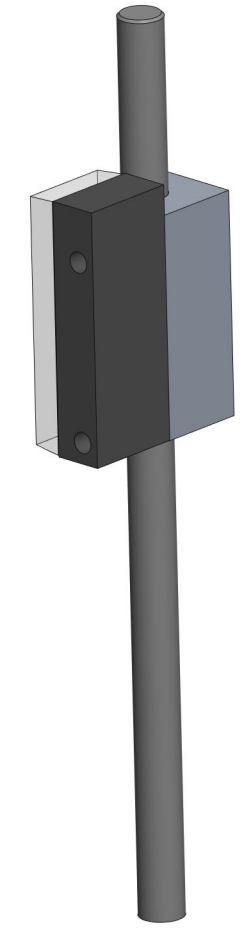
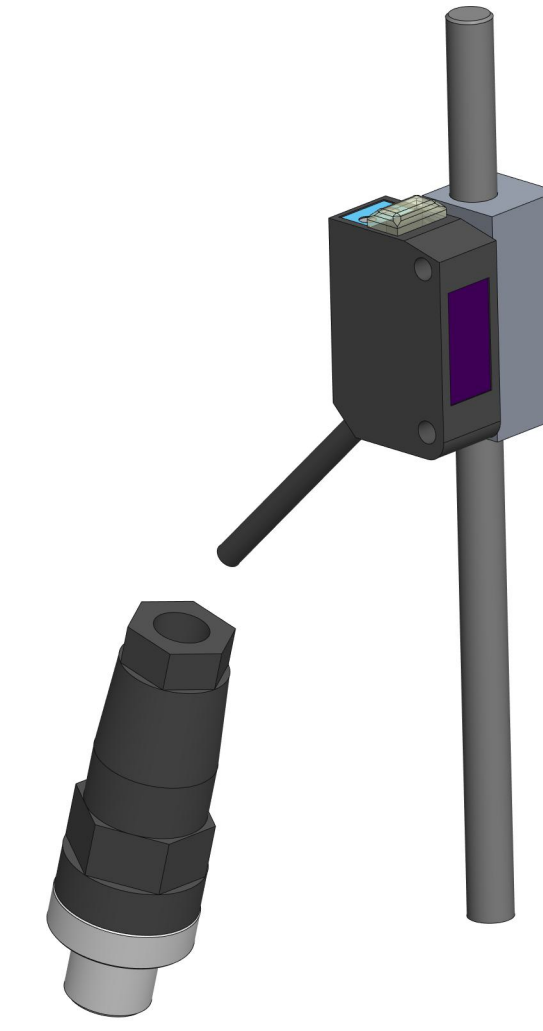
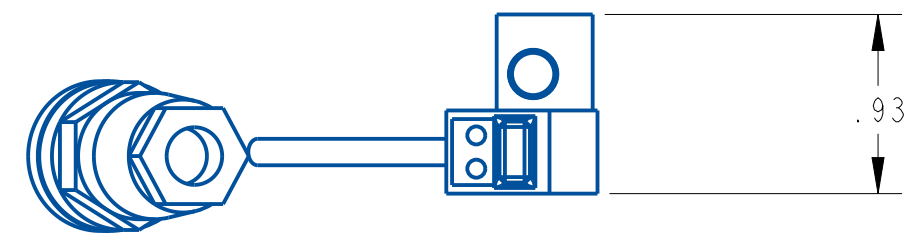
ITEM	QTY	PART NO.	DESCRIPTION	PARENT ITEM
1	1	202192-002	CLEAR PRODUCT SENSOR	21606-012
2	1	203161-000	REFLECTOR	21606-012
3	1	252019-000	4 PIN MALE CONNECTOR	21606-012
4	1	A24242-000	SENSOR MTG. BLOCK	21606-012
5	1	A24243-000	REFLECTOR MTG. BLOCK	21606-012
6	2	A25772-000	POST, SENSOR	21606-012



REV	DATE	DESCRIPTION	BY
A	11/11/24	NEW DRAWING	SEM

**THIS IS A PRO-ENGINEER DOCUMENT AND MAY NOT BE MODIFIED MANUALLY**

UNLESS OTHERWISE SPECIFIED DIMENSIONAL TOLERANCE	<b>QUADREL LABELING SYSTEMS</b> 7670 JENTHER DRIVE MENTOR, OHIO 44060 (440) 602-4700	SCALE: 2/1 DATE: 11/11/24 DRW BY: SEM CHK BY: CREO_CHK APPR BY:
.1 .01 .005 ANGLES ± 30°	BROKEN WEB/END OF WEB, PNP DUAL POSTS, USE PZ-G62P	
SURFACE FINISH 125 BREAK ALL EDGES .005/0.15 CORNER RADIUS .010/0.30	MAT'L	21606-012



REV	DATE	DESCRIPTION	BY
A	11/11/24	NEW DRAWING	SEM

THIS IS A PRO-ENGINEER DOCUMENT AND MAY NOT BE MODIFIED MANUALLY

UNLESS OTHERWISE SPECIFIED		QUADREL LABELING SYSTEMS		SCALE:
DIMENSIONAL TOLERANCE		7670 JENTHER DRIVE		1/1
x ± .1		MENTOR, OHIO 44060		DATE: 11/11/24
xx ± .01		(440) 602-4700		DRW BY: SEM
xxx ± .005				CHK BY: CREO_CHK
ANGLES ± .30°				APPR BY:
SURFACE FINISH 125		BROKEN WEB/END OF WEB, PNP DUAL POSTS, USE PZ-G62P		
BREAK ALL EDGES .005/0.15		MAT'L		
CORNER RADIUS .010/0.30				
ALL ANGLES ARE 90°				

# PZ-G Series

## Instruction Manual

Read this manual thoroughly before using the product.  
Keep this manual readily available for future reference.

96M11227



### Safety precautions

- Avoid running the PZ-G cable along with power and high voltage lines, as this may cause interference and/or permanent damage.
- When using a commercially available switching regulator, ground its chassis grounding and earth grounding terminals.
- Do not use in locations where direct ambient light or external light directly shines on the light receiving surface.
- With retro-reflective type sensors, when detecting highly reflective materials (such as mirrored surfaces), stabilization may be difficult. To correct this, change the angle of the sensor head, or adjust the sensitivity.
- Avoid using power which exceeds the specifications for ripple (10% max)
- Avoid using excess force when rotating the operation mode selector switch (Light-on, Dark-on) and the sensitivity adjustment trimmer.
- This product is just intended to detect the object(s). Do not use this product for the purpose to protect a human body or a part of human body.
- This product is not intended for use as explosion-proof product. Do not use this product in a hazardous location and/or potentially explosive atmosphere.

### Precautions on Regulations and Standards

#### UL Certificate

This product is an UL/C-UL Listed product.

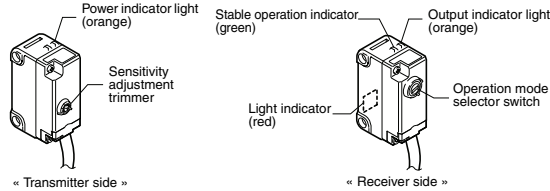
- UL File No. E301717
- Category NRKH,NRKH7
- Enclosure Type 1 (Based on UL50)

Be sure to consider the following specifications when using this product as an UL/C-UL Listed Product.

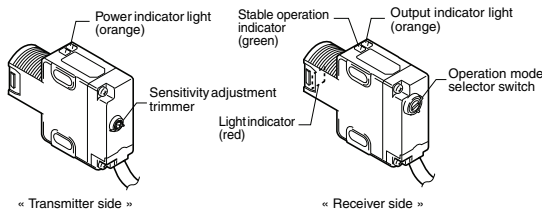
- Use the power supply with Class 2 output defined in NFPA70 (NEC: National Electrical Code).
- Power supply/ Control input/ Control output circuits shall be connected to a single Class 2 source only.
- Use with the over current protection device which is rated 30V or more and not more than 1A.

### Part Names

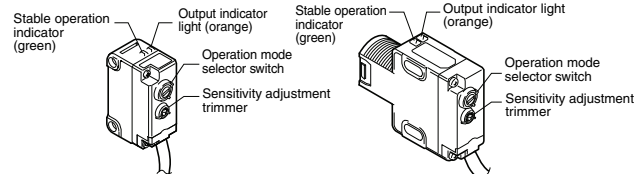
#### PZ-G5xN/G5xP



#### PZ-G5xB



#### PZ-G4xN/G4xP/G10xN/G10xP/G6xN/G6xP

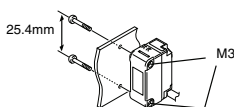


\* The model name with "C" (PZ-GxxCx) is the connector type, and the model name with "E" (PZ-GxxEx) is the pigtail quick disconnect type.

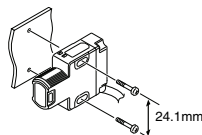
### Mounting Method

#### Side Mounting (Prepare M3 screws)

Tightening torque: 0.5 N·m or less



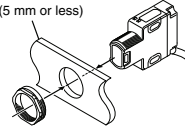
Tightening torque: 0.5 N·m or less



### Mounting with the M18 nut (includes nut type)

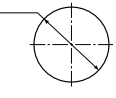
The M18 nut is also available separately as OP-84225 (2 pcs. supplied).  
Tightening torque: 1.0 N·m or less

Panel (5 mm or less)



Panel cut size

$\phi 18.5 \pm 0.2$  mm



#### Note

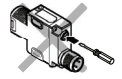
- Mount the M18 nut (supplied) straight in. If mounted at an angle it cannot be tightened properly.
- When tightening the M18 nut (supplied), firmly hold the main body down. The case of the main body may be damaged if held in place with a tool such as pliers.
- When tightening the M18 nut (supplied), if excess force is applied to the nut with a tool such as pliers, it may bend it out of shape. Therefore, do not apply excess force.

### Sensitivity Adjustment Method

#### Caution



Avoid using excess force when rotating the sensitivity adjustment trimmer and operation mode selector switch as it may cause damage.



### Operation mode selector switch

With the operation mode selector switch, you can select either the LIGHT-ON mode (L) or the DARK-ON (D) mode.



### Reflective type (PZ-G41/G42/G101/G102/G10R/G10G/G10B Series)

The following assumes LIGHT-ON (L) is set.

Sequence	Adjustment method	Sensitivity adjustment trimmer
①	Position target in place. Slowly rotate the sensitivity trimmer from the MIN position towards the MAX position until the (orange) output indicator turns on (Position "A"). If the output indicator does not turn off, even at MIN, then MIN is considered Position "A".	A
②	Remove the target. Adjust the sensitivity trimmer from MIN towards MAX until the (orange) output indicator turns on (Position "B"). If the output indicator does not light up, the MAX position is considered Position "B".	B
③	Adjust the sensitivity trimmer to the midpoint between "A" and "B". Verify that the (green) stable operation light turns on with and without a target in place.	A B

**Reference** To use the sensor in DARK-ON mode, adjust the mode selector switch to "D".

### Thrubeam type (PZ-G51/G52 Series) / Retro-reflective type (PZ-G61/G62 Series)

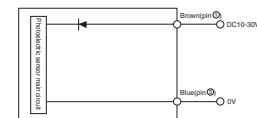
The following assumes DARK-ON (D) is set.

Sequence	Adjustment method	Sensitivity adjustment trimmer
①	Remove the target. Adjust the sensitivity trimmer to MAX. Mount the sensor heads in place so the (orange) output indicator turns off (on thrubeam models, the red light on the receiver face will turn on)	MIN MAX
②	Position target in place. Verify that the orange output indicator turns on (on thrubeam models, the red light on the receiver face will turn off). Adjust sensitivity lower if the output indicator does not turn on (or if the red light on the receiver face does not turn off on thrubeam models)	

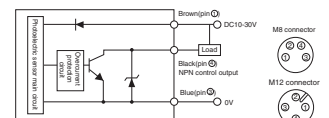
**Reference** To use the sensor in LIGHT-ON mode, adjust the mode selector switch to "L".

### I/O Circuit Diagram

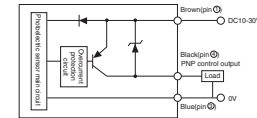
#### PZ-G5xN/G5xP/G5xB (Transmitter side)



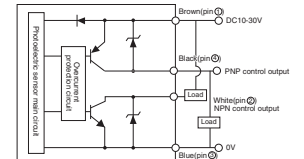
#### PZ-G5xN (Receiver side)/ G4xN/G10xN/G6xN



#### PZ-G5xP (Receiver side)/ G4xP/G10xP/G6xP



#### PZ-G5xB (Receiver side)/ G4xB/G10xB/G6xB



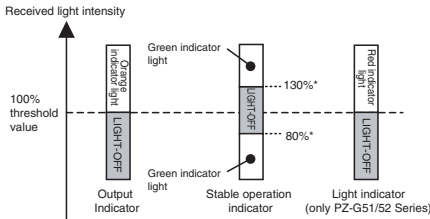
\* The pin numbers represent those of the connector type / pigtail quick disconnect type. The model name with "C" (PZ-GxxCx) is the connector type, and the model name with "E" (PZ-GxxEx) is the pigtail quick disconnect type.

[ PZ-GxxCN/GxxCP..... M8 connector  
PZ-GxxCB/GxxEN/GxxEP..... M12 connector ]

## Indicators

The following describes each ON/OFF condition of indicator when LIGHT-ON (L) is set.

**Reference** When the DARK-ON (D) is set, the output indicator ON/OFF will reverse.



\* For PZ-G62, the upper limit is 107% and the lower limit is 93%.

If the stable operation indicator turns off during operation, readjust or fine-adjust the sensitivity.

## Mutual interference

- For reflective type / retro-reflective type sensors, mutual interference protection can be set for up to 2 units. However, when the sensors are mounted facing each other, change the angle of the sensor head to prevent light being emitted into each unit. (The mark detection type does not include the mutual interference function.)
- Mutual interference prevention can be set when mounting a polarizing filter attachment (optional with thru-beam type sensors) (If operation is unstable even after mounting the polarizing filter, slightly lower the sensitivity.)
- For more detailed information about mutual interference or attachment, see the PZ-G Series catalog or contact your nearest KEYENCE office.

## Specifications

Type		Thru-beam		Reflective				Retro-reflective		Mark detection				
Configuration	Cable shape	Output mode	Normal	High-power	Diffuse-reflective Long-detecting distance	Diffuse-reflective Short-detecting distance	Narrow-view reflective	Definite reflective	Long detecting distance (with P.R.O. function)	Transparent target detection (without P.R.O. function)	Red	Green	Blue	
Rectangular	Cable	NPN	PZ-G51N	PZ-G52N	PZ-G41N	PZ-G42N	PZ-G101N	PZ-G102N	PZ-G61N	PZ-G62N				
		PNP	PZ-G51P	PZ-G52P	PZ-G41P	PZ-G42P	PZ-G101P	PZ-G102P	PZ-G61P	PZ-G62P				
	M8 connector	NPN	PZ-G51CN	PZ-G52CN	PZ-G41CN	PZ-G42CN	PZ-G101CN	PZ-G102CN	PZ-G61CN	PZ-G62CN	PZ-G10RCN	PZ-G10GCN	PZ-G10BCN	
		PNP	PZ-G51CP	PZ-G52CP	PZ-G41CP	PZ-G42CP	PZ-G101CP	PZ-G102CP	PZ-G61CP	PZ-G62CP	PZ-G10RCP	PZ-G10GCP	PZ-G10BCP	
Nut	Cable	NPN	PZ-G51EN	PZ-G52EN	PZ-G41EN	PZ-G42EN	PZ-G101EN	PZ-G102EN	PZ-G61EN	PZ-G62EN				
		PNP	PZ-G51EP	PZ-G52EP	PZ-G41EP	PZ-G42EP	PZ-G101EP	PZ-G102EP	PZ-G61EP	PZ-G62EP				
Nut	M12 connector	Bipolar	PZ-G51B	PZ-G52B	PZ-G41B	PZ-G42B	PZ-G101B	PZ-G102B	PZ-G61B	PZ-G62B				
		(NPN+PNP)	PZ-G51CB	PZ-G52CB	PZ-G41CB	PZ-G42CB	PZ-G101CB	PZ-G102CB	PZ-G61CB	PZ-G62CB				
Detecting distance <sup>1</sup>			20 m	40 m	1 m (30 x 30 cm white mat paper)	300 mm (10 x 10 cm white mat paper)	200 mm	5 to 45 mm	0.1 to 4.2 m (when R-2L reflector is used)	0.1 to 1 m (when R-2L reflector is used)	8 to 15 mm			
Spot diameter			-	-	-	-	Approx. φ 5 mm (when the detecting distance is 100 mm)	Approx. φ 2 mm (when the detecting distance is 40 mm)	-	-	Approx. 1.5 x 4 mm (when the detecting distance is 10 mm)			
Light source (LED)			Red LED	Infrared LED x 2	Red LED				Infrared LED		Red LED	Green LED	Blue LED	
Sensitivity adjustment		1-turn trimmer (230 degrees)												
Response time		500 μs										50 μs		
Operation mode		LIGHT-ON/DARK-ON, trimmer-selectable												
Indicator (LED)		Transmitter: power (orange) Receiver: output (orange), stable operation (green), light (red)			Output (orange), stable operation (green)									
Control output		Open-collector 100 mA max. (30 V max.), Residual voltage 1 V max.												
Protection circuit		Reverse-polarity protection, over-current protection, output surge absorber												
Ratings	Power voltage	10 to 30 VDC, Ripple (P-P): ±10% max, Class 2.												
	Current consumption	Transmitter: 20 mA max. Receiver: 28 mA max.	Transmitter: 25 mA max. Receiver: 28 mA max.	34 mA max.										
Environmental resistance	Enclosure rating	IEC/JEM: IP67 / NEMA: 4X,6,12 / DIN: IP69K												
	Ambient light	Incandescent lamp: 5,000 (lx) max, Sunlight: 20,000 (lx) max.												
	Ambient temperature	-20 °C to +55 °C (No freezing)												
	Relative humidity	35 to 85 % RH (No condensation)												
	Vibration resistance	10 to 55 Hz, 1.5 mm double amplitude in X, Y, Z directions, 2 hours each												
Shock resistance	1000 m/s <sup>2</sup> in X, Y, Z directions, 6 times each													
Interference prevention		2 units (when polarizing filter attachment is used)		2 units (with the automatic different cycle function)										
Material		Case, M18 nut (nut type only): reinforced glass polybutylene terephthalate (PBT), Trimmer: reinforced glass polyamide (PA) Cable (Cable type / pigtail quick disconnect type only): Polyvinyl chloride (PVC), Screw (Case connection): Steel, zinc-nickel plated, Packing (Case connection): Nitrile-butadiene rubber (NBR) Connector (pigtail quick disconnect type only): Brass-nickel plated, Polybutylene terephthalate (PBT), Polyvinyl chloride (PVC)												
Lens cover		Polyarylate (PAR)				Acrylic plastic (PMMA)			Polyarylate (PAR)					
Tightening torque		Rectangular type (side screw part): 0.5 N·m max. Nut type (front M18 part): 1.0 N·m max., (side slot part): 0.5 N·m max.												
Accessory <sup>2</sup>		Instruction manual, M18 nut x 2 (nut thru-beam type), M18 nut x 1 (other nut types)												
Weight		Rectangular cable type: Approx. 60 g (Approx. 50 g for thru-beam transmitter), Rectangular M8 connector type: Approx. 10 g, rectangular M12 pigtail quick disconnect type: Approx. 30 g Nut type cable type: Approx. 65 g (Approx. 55 g for thru-beam transmitter), Nut type M12 connector type: Approx. 15 g												

<sup>1</sup> The detection distance is measured with the maximum sensitivity.

<sup>2</sup> The cable for the connector type / pigtail quick disconnect type is sold separately. The reflector for the retro-reflective type is sold separately.

## WARRANTY

KEYENCE products are strictly factory-inspected. However, in the event of a failure, contact your nearest KEYENCE office with details of the failure.

### 1. WARRANTY PERIOD

The warranty period shall be for one year from the date that the product has been delivered to the location specified by the purchaser.

### 2. WARRANTY SCOPE

(1) If a failure attributable to KEYENCE occurs within the abovementioned warranty period, we will repair the product, free of charge. However, the following cases shall be excluded from the warranty scope.

- Any failure resulting from improper conditions, improper environments, improper handling, or improper usage other than described in the instruction manual, the user's manual, or the specifications specifically arranged between the purchaser and KEYENCE.
- Any failure resulting from factors other than a defect of our product, such as the purchaser's equipment or the design of the purchaser's software.
- Any failure resulting from modifications or repairs carried out by any person other than KEYENCE staff.
- Any failure that can certainly be prevented when the expendable part(s) is maintained or replaced correctly as described in the instruction manual, the user's manual, etc.
- Any failure caused by a factor that cannot be foreseen at a scientific/technical level at the time when the product has been shipped from KEYENCE.
- Any disaster such as fire, earthquake, and flood, or any other external factor, such as abnormal voltage, for which we are not liable.

(2) The warranty scope is limited to the extent set forth in item (1), and KEYENCE assumes no liability for any purchaser's secondary damage (damage of equipment, loss of opportunities, loss of profits, etc.) or any other damage resulting from a failure of our product.

### 3. PRODUCT APPLICABILITY

KEYENCE products are designed and manufactured as general-purpose products for general industries.

Therefore, our products are not intended for the applications below and are not applicable to them. If, however, the purchaser consults with us in advance regarding the employment of our product, understands the specifications, ratings, and performance of the product on their own responsibility, and takes necessary safety measures, the product may be applied. In this case, the warranty scope shall be the same as above.

- Facilities where the product may greatly affect human life or property, such as nuclear power plants, aviation, railroads, ships, motor vehicles, or medical equipment
- Public utilities such as electricity, gas, or water services
- Usage outdoors, under similar conditions or in similar environments

E 1040-1

## KEYENCE CORPORATION

1-3-14, Higashi-Nakajima, Higashi-Yodogawa-ku,  
Osaka, 533-8555, Japan

PHONE: +81-6-6379-2211 [www.keyence.com](http://www.keyence.com)

Specifications are subject to change without notice.

A7WW1-MAN-0069

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11227E 1070-1 96M11227J

Printed in Japan



**ASSEMBLY TITLE:                    BROKEN WEB / END OF WEB**

**DRAWING NO:**

**GENERAL FUNCTION:**

- The broken web fault indicates that the labeler label stock has broken after the labeler pull roll. It consists of a reflective sensor and a reflector. The sensor is capable of reading clear or opaque label liner.

-When the broken web passes through the sensor, a signal is generated, that signal will shut the conveyor system down and light the red lamp on the stack lamp assembly.

-To reset the fault condition, rethread labels and press labeler run/pause to turn off the red light and place the labeler in run mode. The conveyor will restart and the labeling process will continue.

**SET-UP AND ADJUSTMENTS:**

- The sensor is set in light on operation mode. It is a retro-reflective operation. To set the sensor, refer to the following manufacture's instruction sheet.

- Ensure that all label material is removed from the sensor and reflector area for proper set up.

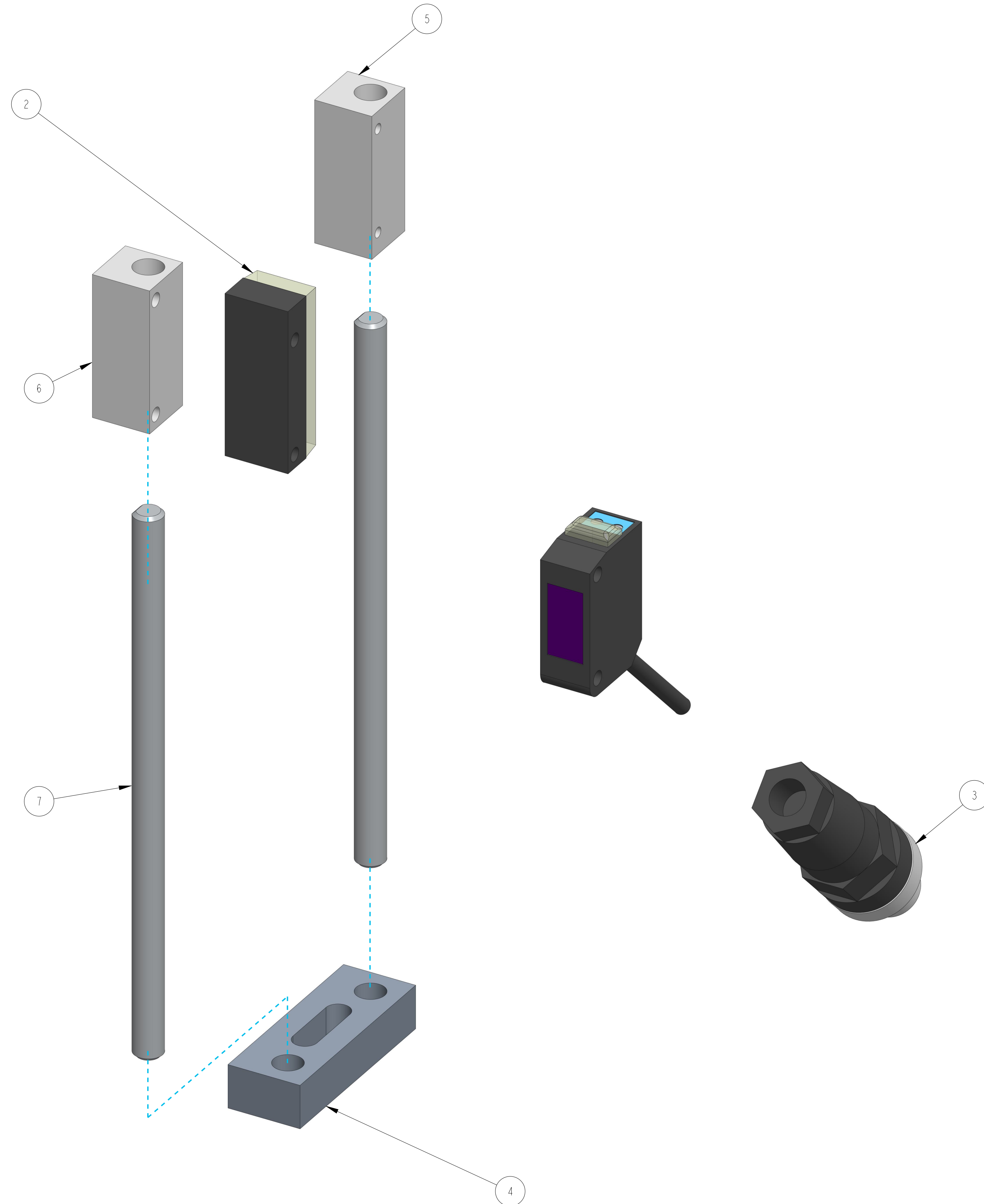
**MAINTENANCE:**

- See Maintenance Section

**TROUBLESHOOTING:**

- See Troubleshooting Section

ITEM	QTY	PART NO.	DESCRIPTION	PARENT ITEM
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2	1	203161-000	REFLECTOR	21606-013
3	1	252019-000	4 PIN MALE CONNECTOR	21606-013
4	1	A24241-000	MOUNTING BLOCK	21606-013
5	1	A24242-000	SENSOR MTG. BLOCK	21606-013
6	1	A24243-000	REFLECTOR MTG. BLOCK	21606-013
7	2	A24244-000	SUPPORT ROD WITH FLAT	21606-013



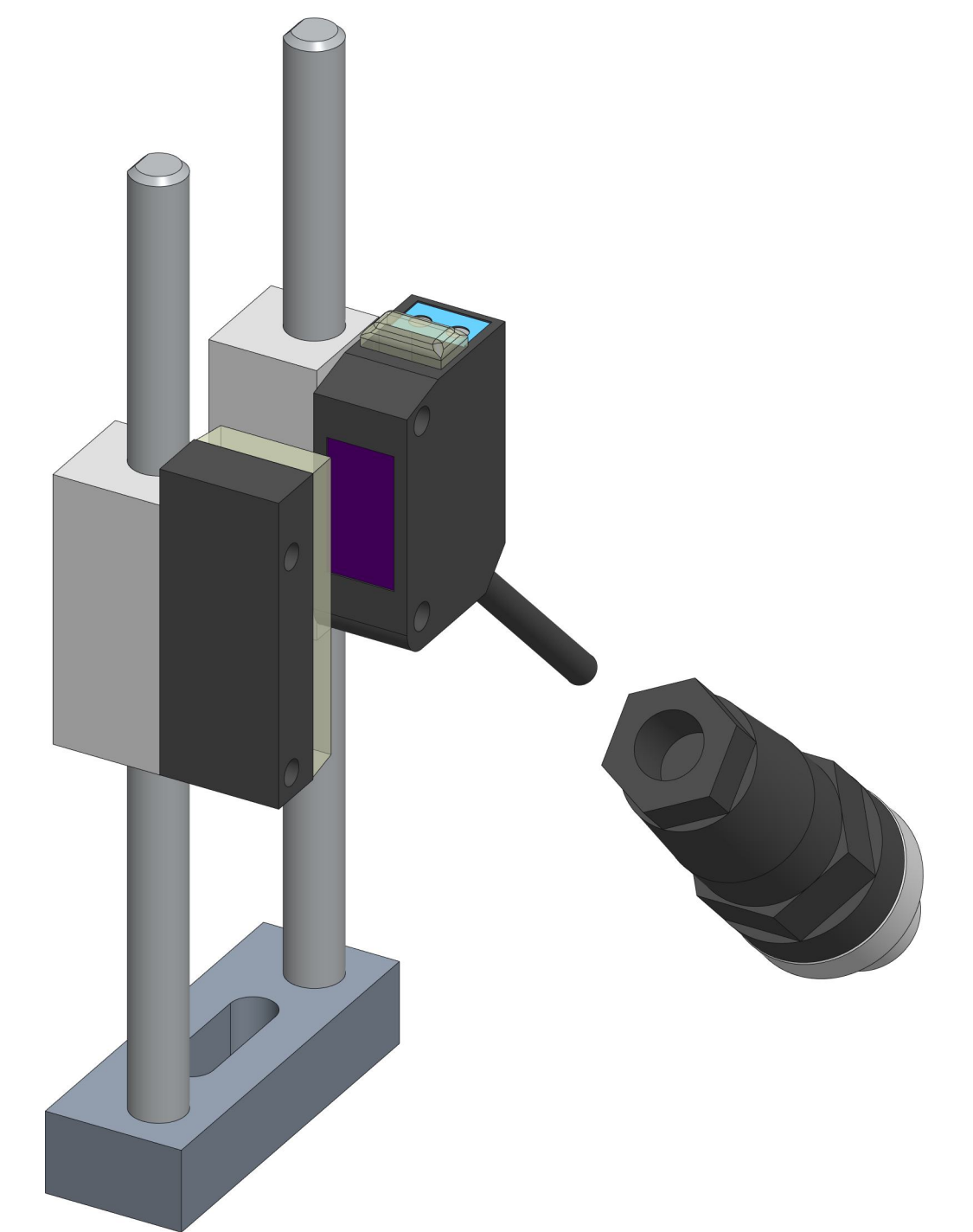
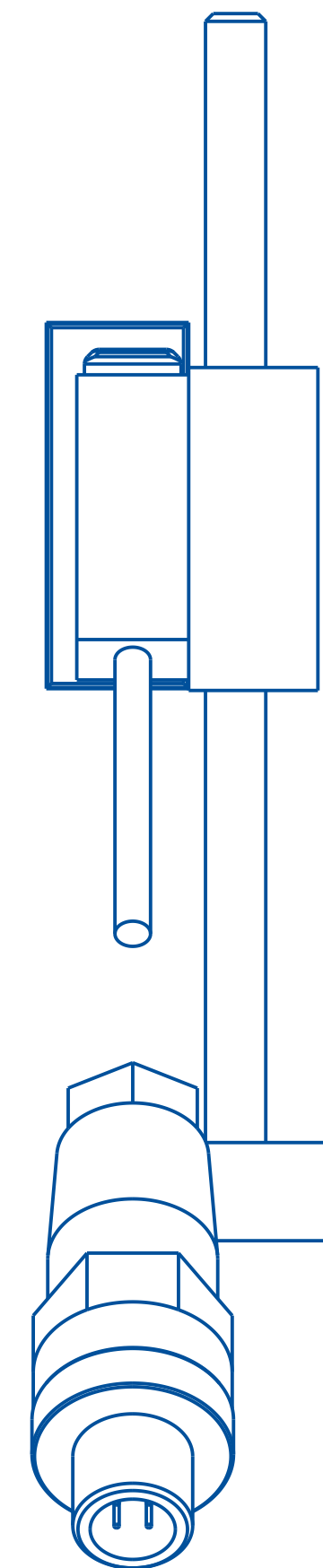
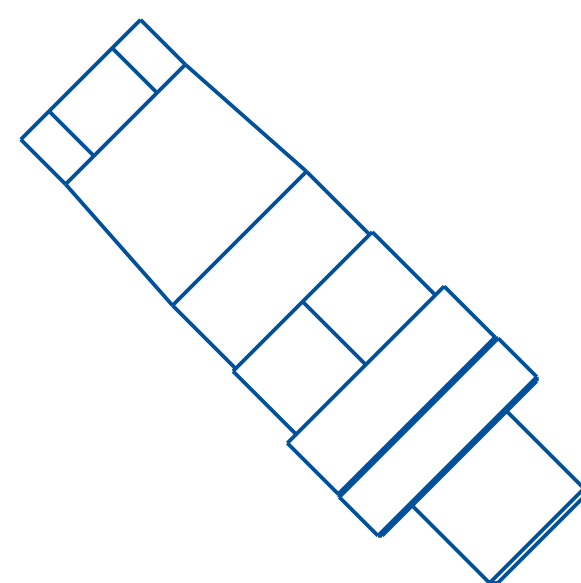
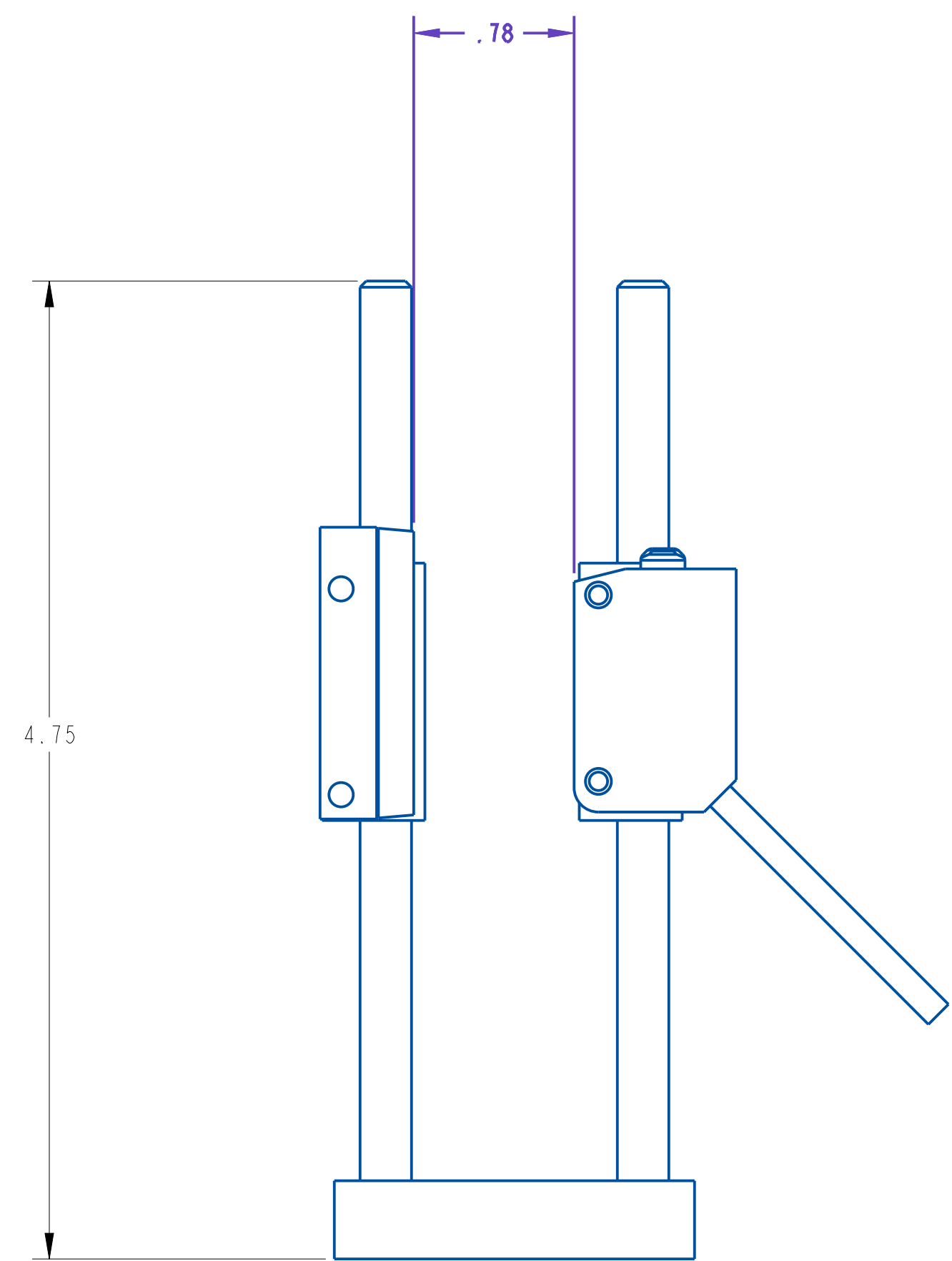
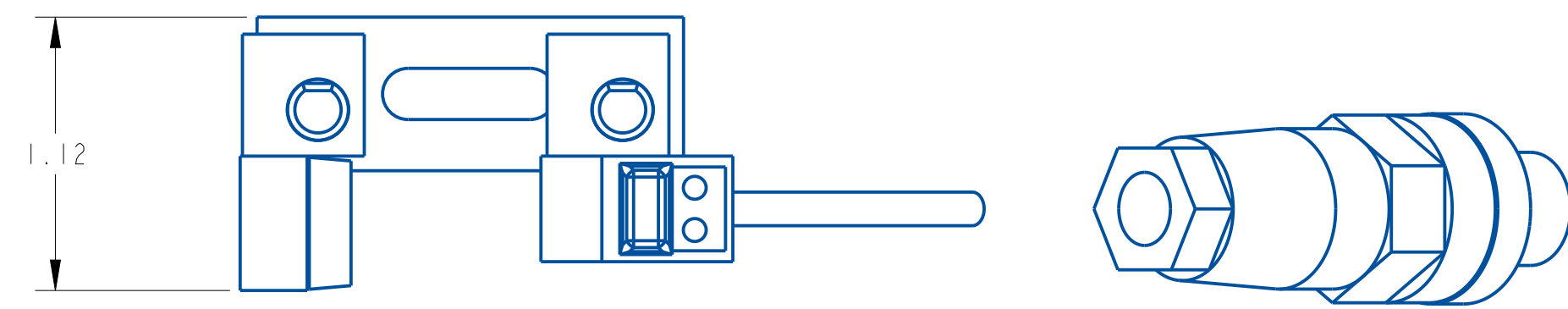
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A	11/11/24	NEW DRAWING	SEM

**THIS IS A PRO-ENGINEER DOCUMENT AND MAY NOT BE MODIFIED MANUALLY**

UNLESS OTHERWISE SPECIFIED DIMENSIONAL TOLERANCE .1 .01 .005 ANGLES ± 30° SURFACE FINISH 125 BREAK ALL EDGES .005/.015 CORNER RADIUS .010/.030	<b>QUADREL LABELING SYSTEMS</b> 7670 JENTHER DRIVE MENTOR, OHIO 44060 (440) 602-4700	SCALE: 2/1 DATE: 11/11/24 DRW BY: SEM CHK BY: &CREO_CHK APPR BY:
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BROKEN WEB/END OF WEB, PNP SINGLE BASE, USE PZ-G62P

MAT'L	21606-013
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REV	DATE	DESCRIPTION	BY
A	11/11/24	NEW DRAWING	SEM

**THIS IS A PRO-ENGINEER DOCUMENT AND MAY NOT BE MODIFIED MANUALLY**

UNLESS OTHERWISE SPECIFIED  
DIMENSIONAL TOLERANCE

.x ± .1  
 .xx ± .01  
 .xxx ± .005  
 ANGLES ± .30°

SURFACE FINISH 125  
 BREAK ALL EDGES .005/.015  
 CORNER RADIUS .010/.030  
 ALL ANGLES ARE 90°

**QUADREL LABELING SYSTEMS**  
 7670 JENTHER DRIVE  
 MENTOR, OHIO 44060  
 (440) 602-4700

SCALE: 3/2  
 DATE: 11/11/24  
 DRW BY: SEM  
 CHK BY: CREO\_CHK  
 APPR BY:

BROKEN WEB/END OF WEB, PNP SINGLE BASE, USE PZ-G62P

MAT'L

21606-013

# PZ-G Series

## Instruction Manual

Read this manual thoroughly before using the product.  
Keep this manual readily available for future reference.

96M11227



### Safety precautions

- Avoid running the PZ-G cable along with power and high voltage lines, as this may cause interference and/or permanent damage.
- When using a commercially available switching regulator, ground its chassis grounding and earth grounding terminals.
- Do not use in locations where direct ambient light or external light directly shines on the light receiving surface.
- With retro-reflective type sensors, when detecting highly reflective materials (such as mirrored surfaces), stabilization may be difficult. To correct this, change the angle of the sensor head, or adjust the sensitivity.
- Avoid using power which exceeds the specifications for ripple (10% max)
- Avoid using excess force when rotating the operation mode selector switch (Light-on, Dark-on) and the sensitivity adjustment trimmer.
- This product is just intended to detect the object(s). Do not use this product for the purpose to protect a human body or a part of human body.
- This product is not intended for use as explosion-proof product. Do not use this product in a hazardous location and/or potentially explosive atmosphere.

### Precautions on Regulations and Standards

#### UL Certificate

This product is an UL/C-UL Listed product.

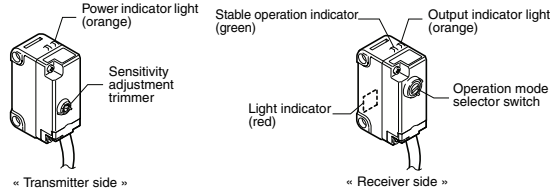
- UL File No. E301717
- Category NRKH,NRKH7
- Enclosure Type 1 (Based on UL50)

Be sure to consider the following specifications when using this product as an UL/C-UL Listed Product.

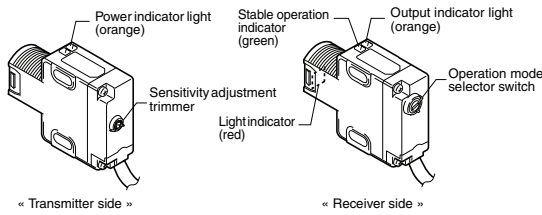
- Use the power supply with Class 2 output defined in NFPA70 (NEC: National Electrical Code).
- Power supply/ Control input/ Control output circuits shall be connected to a single Class 2 source only.
- Use with the over current protection device which is rated 30V or more and not more than 1A.

### Part Names

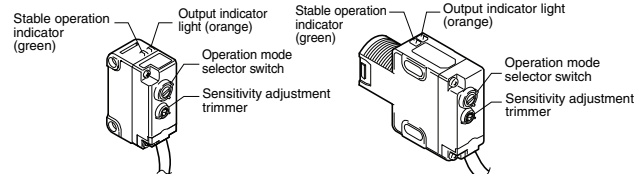
#### PZ-G5xN/G5xP



#### PZ-G5xB



#### PZ-G4xN/G4xP/G10xN/G10xP/G6xN/G6xP

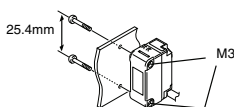


\* The model name with "C" (PZ-GxxCx) is the connector type, and the model name with "E" (PZ-GxxEx) is the pigtail quick disconnect type.

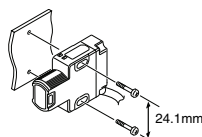
### Mounting Method

#### Side Mounting (Prepare M3 screws)

Tightening torque: 0.5 N·m or less



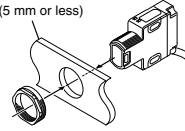
Tightening torque: 0.5 N·m or less



### Mounting with the M18 nut (includes nut type)

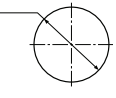
The M18 nut is also available separately as OP-84225 (2 pcs. supplied).  
Tightening torque: 1.0 N·m or less

Panel (5 mm or less)



Panel cut size

$\phi 18.5 \pm 0.2$  mm



#### Note

- Mount the M18 nut (supplied) straight in. If mounted at an angle it cannot be tightened properly.
- When tightening the M18 nut (supplied), firmly hold the main body down. The case of the main body may be damaged if held in place with a tool such as pliers.
- When tightening the M18 nut (supplied), if excess force is applied to the nut with a tool such as pliers, it may bend it out of shape. Therefore, do not apply excess force.

### Sensitivity Adjustment Method

#### Caution



Avoid using excess force when rotating the sensitivity adjustment trimmer and operation mode selector switch as it may cause damage.



### Operation mode selector switch

With the operation mode selector switch, you can select either the LIGHT-ON mode (L) or the DARK-ON (D) mode.



### Reflective type (PZ-G41/G42/G101/G102/G10R/G10G/G10B Series)

The following assumes LIGHT-ON (L) is set.

Sequence	Adjustment method	Sensitivity adjustment trimmer
①	Position target in place. Slowly rotate the sensitivity trimmer from the MIN position towards the MAX position until the (orange) output indicator turns on (Position "A"). If the output indicator does not turn off, even at MIN, then MIN is considered Position "A".	A
②	Remove the target. Adjust the sensitivity trimmer from MIN towards MAX until the (orange) output indicator turns on (Position "B"). If the output indicator does not light up, the MAX position is considered Position "B".	B
③	Adjust the sensitivity trimmer to the midpoint between "A" and "B". Verify that the (green) stable operation light turns on with and without a target in place.	A B

**Reference** To use the sensor in DARK-ON mode, adjust the mode selector switch to "D".

### Thrubeam type (PZ-G51/G52 Series) / Retro-reflective type (PZ-G61/G62 Series)

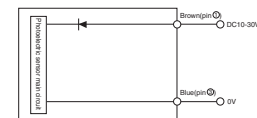
The following assumes DARK-ON (D) is set.

Sequence	Adjustment method	Sensitivity adjustment trimmer
①	Remove the target. Adjust the sensitivity trimmer to MAX. Mount the sensor heads in place so the (orange) output indicator turns off (on thrubeam models, the red light on the receiver face will turn on)	MIN MAX
②	Position target in place. Verify that the orange output indicator turns on (on thrubeam models, the red light on the receiver face will turn off). Adjust sensitivity lower if the output indicator does not turn on (or if the red light on the receiver face does not turn off on thrubeam models)	

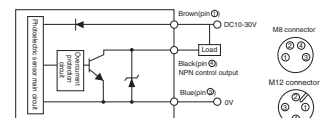
**Reference** To use the sensor in LIGHT-ON mode, adjust the mode selector switch to "L".

### I/O Circuit Diagram

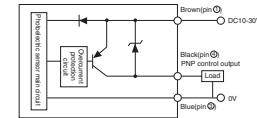
#### PZ-G5xN/G5xP/G5xB (Transmitter side)



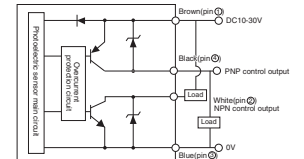
#### PZ-G5xN (Receiver side)/ G4xN/G10xN/G6xN



#### PZ-G5xP (Receiver side)/ G4xP/G10xP/G6xP



#### PZ-G5xB (Receiver side)/ G4xB/G10xB/G6xB



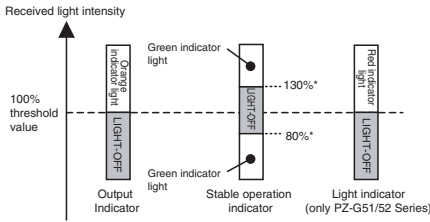
\* The pin numbers represent those of the connector type / pigtail quick disconnect type. The model name with "C" (PZ-GxxCx) is the connector type, and the model name with "E" (PZ-GxxEx) is the pigtail quick disconnect type.

[ PZ-GxxCN/GxxCP..... M8 connector  
PZ-GxxCB/GxxEN/GxxEP..... M12 connector ]

## Indicators

The following describes each ON/OFF condition of indicator when LIGHT-ON (L) is set.

**Reference** When the DARK-ON (D) is set, the output indicator ON/OFF will reverse.



\* For PZ-G62, the upper limit is 107% and the lower limit is 93%.

If the stable operation indicator turns off during operation, readjust or fine-adjust the sensitivity.

## Mutual interference

- For reflective type / retro-reflective type sensors, mutual interference protection can be set for up to 2 units. However, when the sensors are mounted facing each other, change the angle of the sensor head to prevent light being emitted into each unit. (The mark detection type does not include the mutual interference function.)
- Mutual interference prevention can be set when mounting a polarizing filter attachment (optional with thru-beam type sensors) (If operation is unstable even after mounting the polarizing filter, slightly lower the sensitivity.)
- For more detailed information about mutual interference or attachment, see the PZ-G Series catalog or contact your nearest KEYENCE office.

## Specifications

Type		Thru-beam		Reflective				Retro-reflective		Mark detection				
Configuration	Cable shape	Output mode	Normal	High-power	Diffuse-reflective Long-detecting distance	Diffuse-reflective Short-detecting distance	Narrow-view reflective	Definite reflective	Long detecting distance (with P.R.O. function)	Transparent target detection (without P.R.O. function)	Red	Green	Blue	
Rectangular	Cable	NPN	PZ-G51N	PZ-G52N	PZ-G41N	PZ-G42N	PZ-G101N	PZ-G102N	PZ-G61N	PZ-G62N				
		PNP	PZ-G51P	PZ-G52P	PZ-G41P	PZ-G42P	PZ-G101P	PZ-G102P	PZ-G61P	PZ-G62P				
	M8 connector	NPN	PZ-G51CN	PZ-G52CN	PZ-G41CN	PZ-G42CN	PZ-G101CN	PZ-G102CN	PZ-G61CN	PZ-G62CN	PZ-G10RCN	PZ-G10GCN	PZ-G10BCN	
		PNP	PZ-G51CP	PZ-G52CP	PZ-G41CP	PZ-G42CP	PZ-G101CP	PZ-G102CP	PZ-G61CP	PZ-G62CP	PZ-G10RCP	PZ-G10GCP	PZ-G10BCP	
Nut	Cable	NPN	PZ-G51EN	PZ-G52EN	PZ-G41EN	PZ-G42EN	PZ-G101EN	PZ-G102EN	PZ-G61EN	PZ-G62EN				
		PNP	PZ-G51EP	PZ-G52EP	PZ-G41EP	PZ-G42EP	PZ-G101EP	PZ-G102EP	PZ-G61EP	PZ-G62EP				
Nut	M12 connector	Bipolar	PZ-G51B	PZ-G52B	PZ-G41B	PZ-G42B	PZ-G101B	PZ-G102B	PZ-G61B	PZ-G62B				
		(NPN+PNP)	PZ-G51CB	PZ-G52CB	PZ-G41CB	PZ-G42CB	PZ-G101CB	PZ-G102CB	PZ-G61CB	PZ-G62CB				
Detecting distance <sup>1</sup>			20 m	40 m	1 m (30 x 30 cm white mat paper)	300 mm (10 x 10 cm white mat paper)	200 mm	5 to 45 mm	0.1 to 4.2 m (when R-2L reflector is used)	0.1 to 1 m (when R-2L reflector is used)	8 to 15 mm			
Spot diameter			-	-	-	-	Approx. φ 5 mm (when the detecting distance is 100 mm)	Approx. φ 2 mm (when the detecting distance is 40 mm)	-	-	Approx. 1.5 x 4 mm (when the detecting distance is 10 mm)			
Light source (LED)			Red LED	Infrared LED x 2	Red LED				Infrared LED		Red LED	Green LED	Blue LED	
Sensitivity adjustment		1-turn trimmer (230 degrees)												
Response time		500 μs										50 μs		
Operation mode		LIGHT-ON/DARK-ON, trimmer-selectable												
Indicator (LED)		Transmitter: power (orange) Receiver: output (orange), stable operation (green), light (red)			Output (orange), stable operation (green)									
Control output		Open-collector 100 mA max. (30 V max.), Residual voltage 1 V max.												
Protection circuit		Reverse-polarity protection, over-current protection, output surge absorber												
Ratings	Power voltage	10 to 30 VDC, Ripple (P-P): ±10% max, Class 2.												
	Current consumption	Transmitter: 20 mA max. Receiver: 28 mA max.	Transmitter: 25 mA max. Receiver: 28 mA max.	34 mA max.										
Environmental resistance	Enclosure rating	IEC/JEM: IP67 / NEMA: 4X, 6, 12 / DIN: IP69K												
	Ambient light	Incandescent lamp: 5,000 (lx) max, Sunlight: 20,000 (lx) max.												
	Ambient temperature	-20 °C to +55 °C (No freezing)												
	Relative humidity	35 to 85 % RH (No condensation)												
	Vibration resistance	10 to 55 Hz, 1.5 mm double amplitude in X, Y, Z directions, 2 hours each												
Shock resistance	1000 m/s <sup>2</sup> in X, Y, Z directions, 6 times each													
Interference prevention		2 units (when polarizing filter attachment is used)		2 units (with the automatic different cycle function)										
Material		Case, M18 nut (nut type only): reinforced glass polybutylene terephthalate (PBT), Trimmer: reinforced glass polyamide (PA) Cable (Cable type / pigtail quick disconnect type only): Polyvinyl chloride (PVC), Screw (Case connection): Steel, zinc-nickel plated, Packing (Case connection): Nitrile-butadiene rubber (NBR) Connector (pigtail quick disconnect type only): Brass-nickel plated, Polybutylene terephthalate (PBT), Polyvinyl chloride (PVC)												
Lens cover		Polyarylate (PAR)				Acrylic plastic (PMMA)			Polyarylate (PAR)					
Tightening torque		Rectangular type (side screw part): 0.5 N·m max. Nut type (front M18 part): 1.0 N·m max., (side slot part): 0.5 N·m max.												
Accessory <sup>2</sup>		Instruction manual, M18 nut x 2 (nut thru-beam type), M18 nut x 1 (other nut types)												
Weight		Rectangular cable type: Approx. 60 g (Approx. 50 g for thru-beam transmitter), Rectangular M8 connector type: Approx. 10 g, rectangular M12 pigtail quick disconnect type: Approx. 30 g Nut type cable type: Approx. 65 g (Approx. 55 g for thru-beam transmitter), Nut type M12 connector type: Approx. 15 g												

<sup>1</sup> The detection distance is measured with the maximum sensitivity.

<sup>2</sup> The cable for the connector type / pigtail quick disconnect type is sold separately. The reflector for the retro-reflective type is sold separately.

## WARRANTY

KEYENCE products are strictly factory-inspected. However, in the event of a failure, contact your nearest KEYENCE office with details of the failure.

### 1. WARRANTY PERIOD

The warranty period shall be for one year from the date that the product has been delivered to the location specified by the purchaser.

### 2. WARRANTY SCOPE

(1) If a failure attributable to KEYENCE occurs within the abovementioned warranty period, we will repair the product, free of charge. However, the following cases shall be excluded from the warranty scope.

- Any failure resulting from improper conditions, improper environments, improper handling, or improper usage other than described in the instruction manual, the user's manual, or the specifications specifically arranged between the purchaser and KEYENCE.
- Any failure resulting from factors other than a defect of our product, such as the purchaser's equipment or the design of the purchaser's software.
- Any failure resulting from modifications or repairs carried out by any person other than KEYENCE staff.
- Any failure that can certainly be prevented when the expendable part(s) is maintained or replaced correctly as described in the instruction manual, the user's manual, etc.
- Any failure caused by a factor that cannot be foreseen at a scientific/technical level at the time when the product has been shipped from KEYENCE.
- Any disaster such as fire, earthquake, and flood, or any other external factor, such as abnormal voltage, for which we are not liable.

(2) The warranty scope is limited to the extent set forth in item (1), and KEYENCE assumes no liability for any purchaser's secondary damage (damage of equipment, loss of opportunities, loss of profits, etc.) or any other damage resulting from a failure of our product.

### 3. PRODUCT APPLICABILITY

KEYENCE products are designed and manufactured as general-purpose products for general industries.

Therefore, our products are not intended for the applications below and are not applicable to them. If, however, the purchaser consults with us in advance regarding the employment of our product, understands the specifications, ratings, and performance of the product on their own responsibility, and takes necessary safety measures, the product may be applied. In this case, the warranty scope shall be the same as above.

- Facilities where the product may greatly affect human life or property, such as nuclear power plants, aviation, railroads, ships, motor vehicles, or medical equipment
- Public utilities such as electricity, gas, or water services
- Usage outdoors, under similar conditions or in similar environments

E 1040-1

## KEYENCE CORPORATION

1-3-14, Higashi-Nakajima, Higashi-Yodogawa-ku,  
Osaka, 533-8555, Japan

PHONE: +81-6-6379-2211 [www.keyence.com](http://www.keyence.com)

Specifications are subject to change without notice.

A7WW1-MAN-0069

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11227E 1070-1 96M11227J

Printed in Japan



System

**ASSEMBLY TITLE:        FRAME ASSEMBLY**

**GENERAL FUNCTION:**

- Provides solid mounting for labeling head if not installed on a system that allows for vertical and horizontal adjustment.
- Allows for vertical and horizontal adjustment in the setup of the labeling head operation.

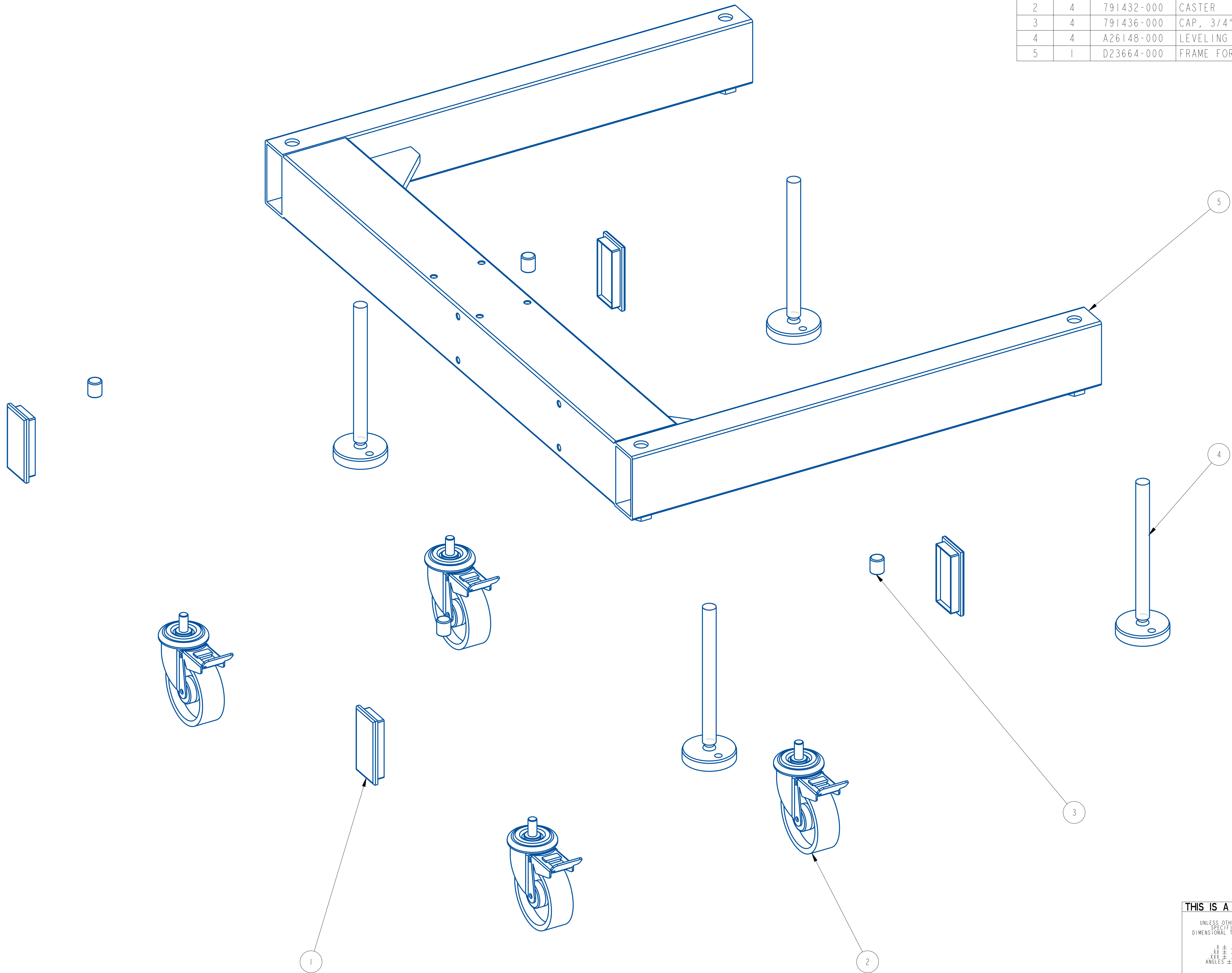
**SET-UP AND ADJUSTMENTS:**

- Rotate leveling pads to appropriate position. Secure locknut when proper height is achieved.
- Using ratchet handle, adjust labeling head vertical and horizontal position.

**MAINTENANCE:**

- Clean wipe down rails with clean cloth.

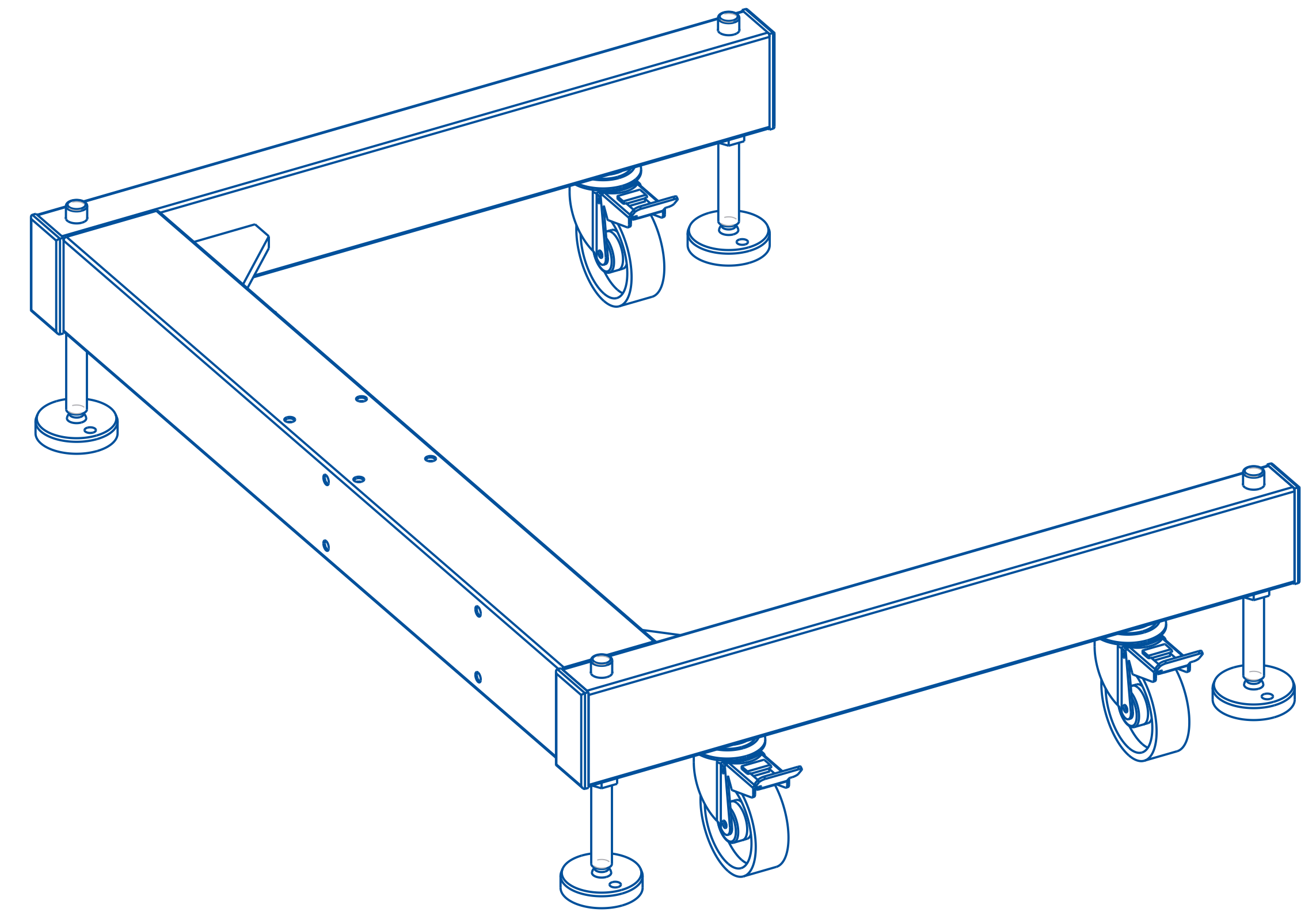
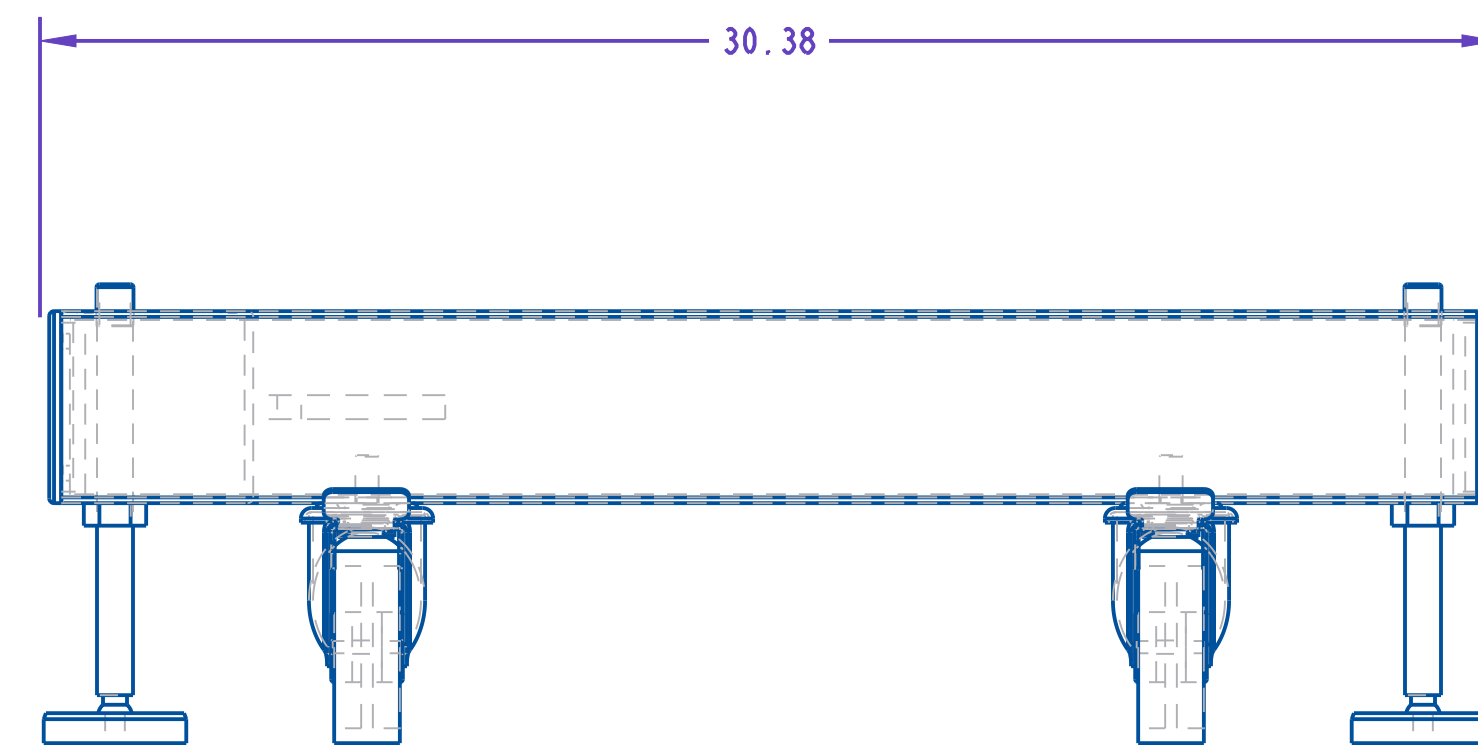
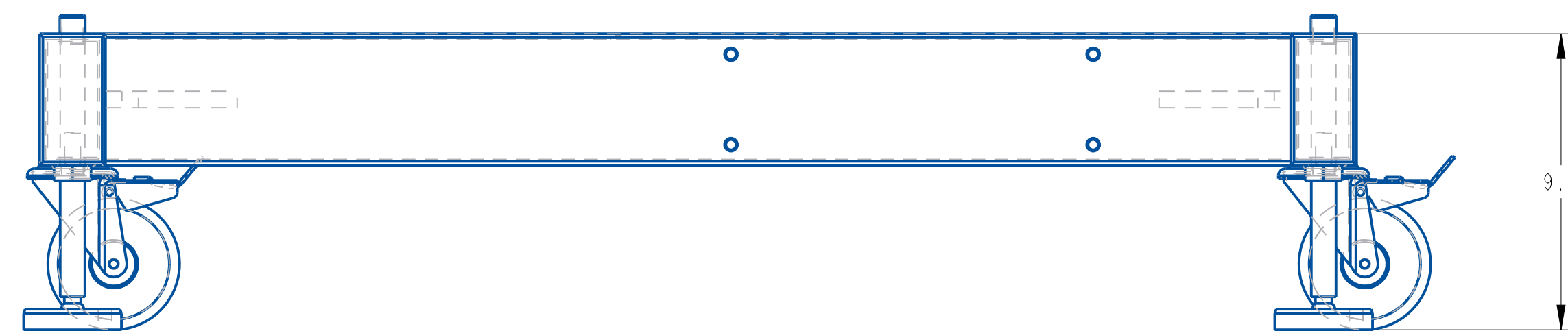
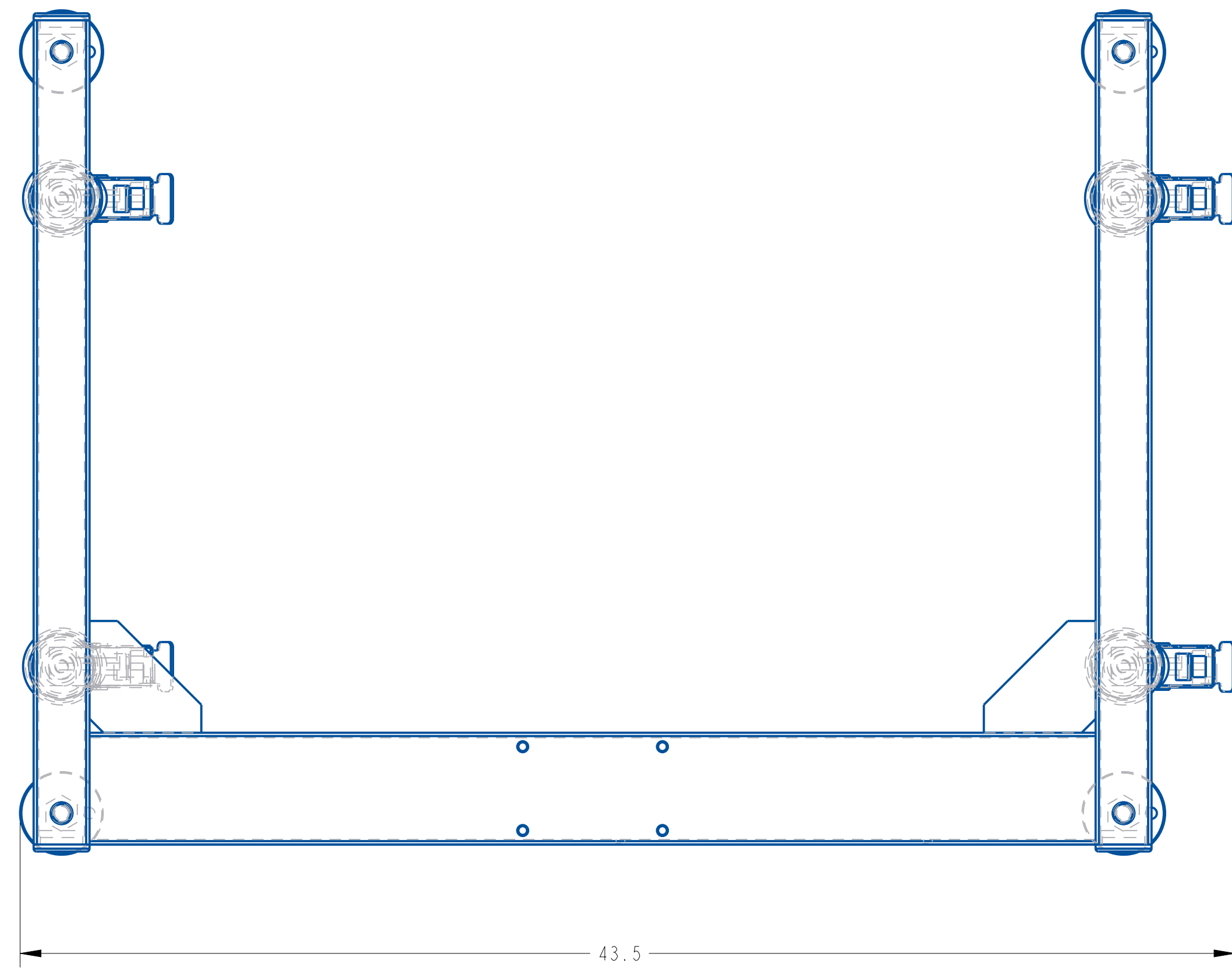
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1	4	729006-000	CAP INSERT FOR 2 X 4 TUBE	80422R-000
2	4	791432-000	CASTER	80422R-000
3	4	791436-000	CAP, 3/4" HIGH X 5/8" I.D.	80422R-000
4	4	A26148-000	LEVELING MOUNT	80422R-000
5	1	D23664-000	FRAME FOR BOTTOM SYSTEM w/ HUGGER BELT	80422R-000



REV	DATE	DESCRIPTION	BY
A	3-2-2011	NEW DRAWING	ATT

**THIS IS A PRO-ENGINEER DOCUMENT AND MAY NOT BE MODIFIED MANUALLY**

UNLESS OTHERWISE SPECIFIED DIMENSIONAL TOLERANCE	<b>QUADREL LABELING SYSTEMS</b> 7670 JENTHER DRIVE MENTOR, OHIO 44060 (440) 602-4700	SCALE: 3/8 DATE: 3-2-2011 DRW BY: ATT CHK BY: &CREO.CHK APPR BY:
FRAME FOR HUGGER BELT		
MAT'L	80422R-000	D23665-000



REV	DATE	DESCRIPTION	ATT	BY
A	3-2-2011	NEW DRAWING	ATT	

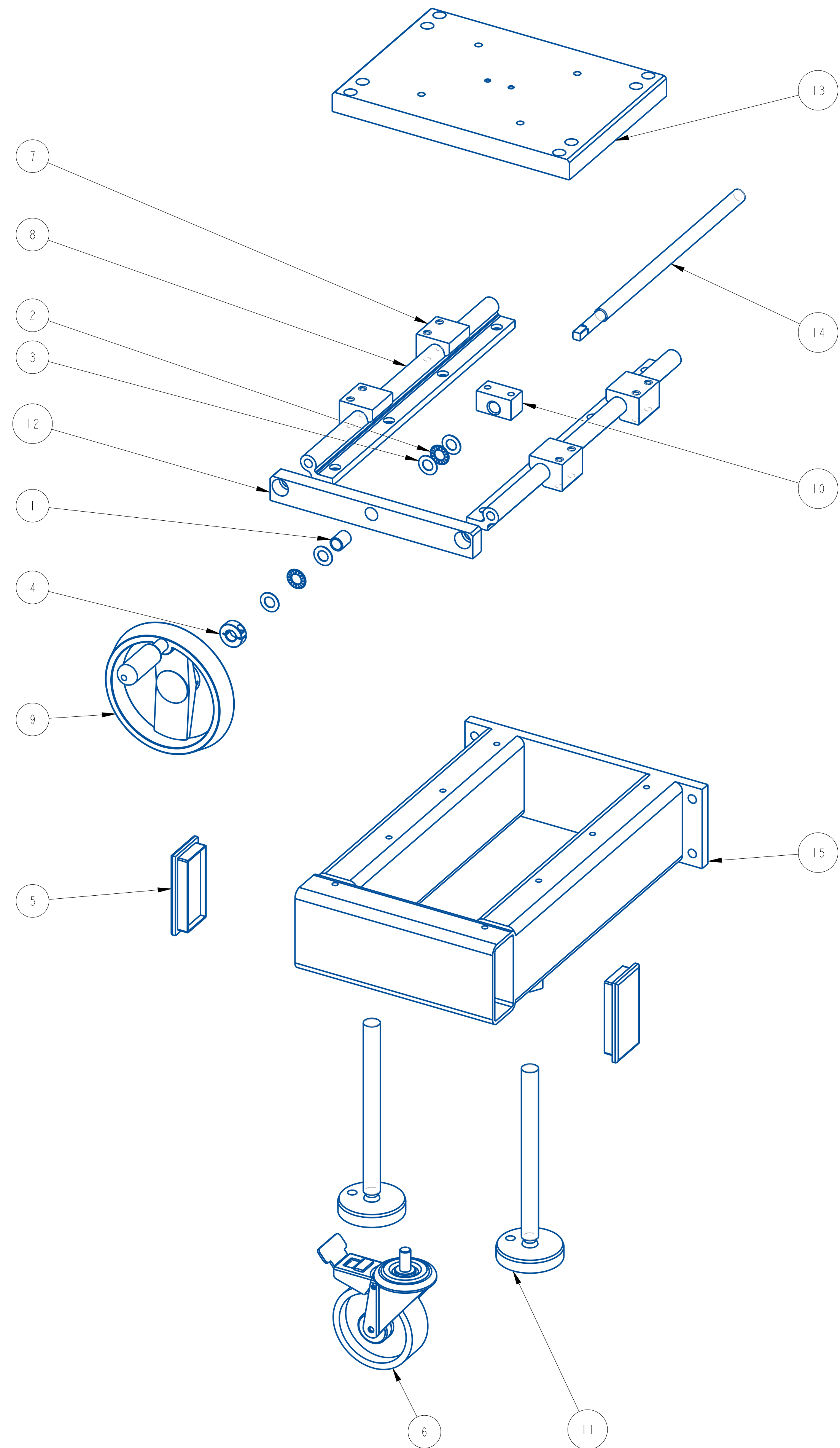
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UNLESS OTHERWISE SPECIFIED  
DIMENSIONAL TOLERANCE  
X ± .1  
XX ± .01  
XXX ± .005  
ANGLES ± .30°  
SURFACE FINISH 125  
BREAK ALL EDGES .005/ .015  
CORNER RADIUS .010/ .030  
ALL ANGLES ARE 90°

**QUADREL LABELING SYSTEMS**  
7670 JENTHER DRIVE  
MENTOR, OHIO 44060  
(440) 602-4700

SCALE: 1/4  
DATE: 3-2-2011  
DRW BY: ATT  
CHK BY: 01/16/2026-SEM  
APPR BY:


FRAME FOR HUGGER BELT	
MAT'L	
80422R-000	D23665-000

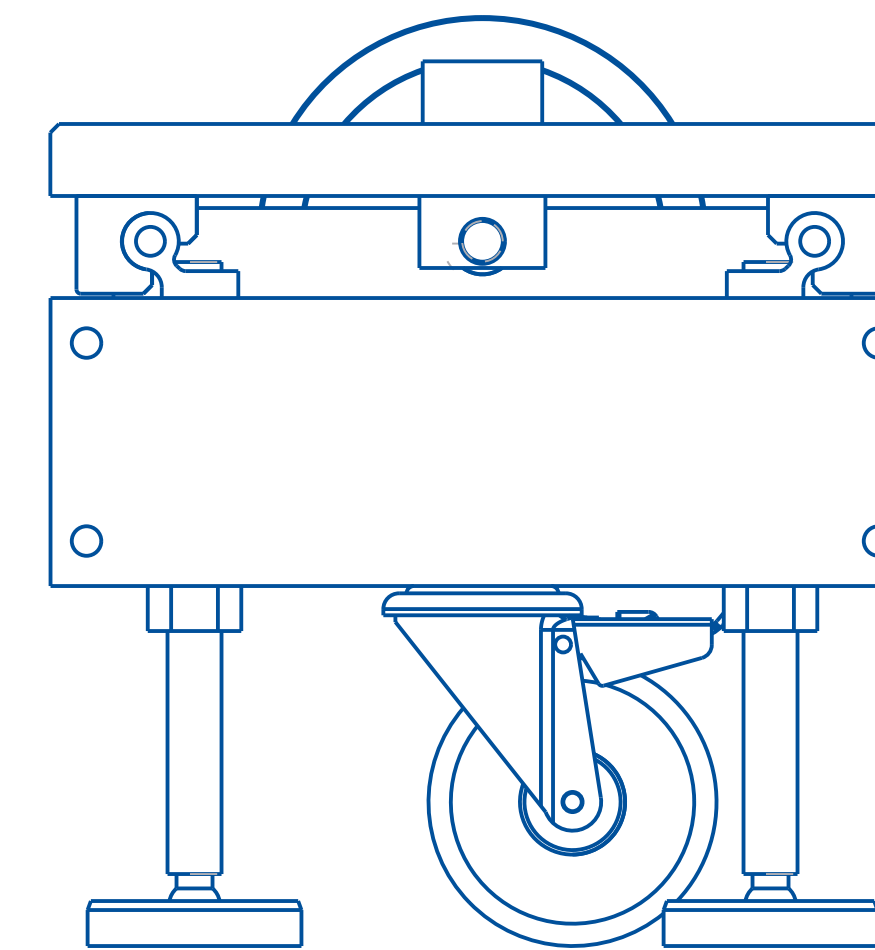
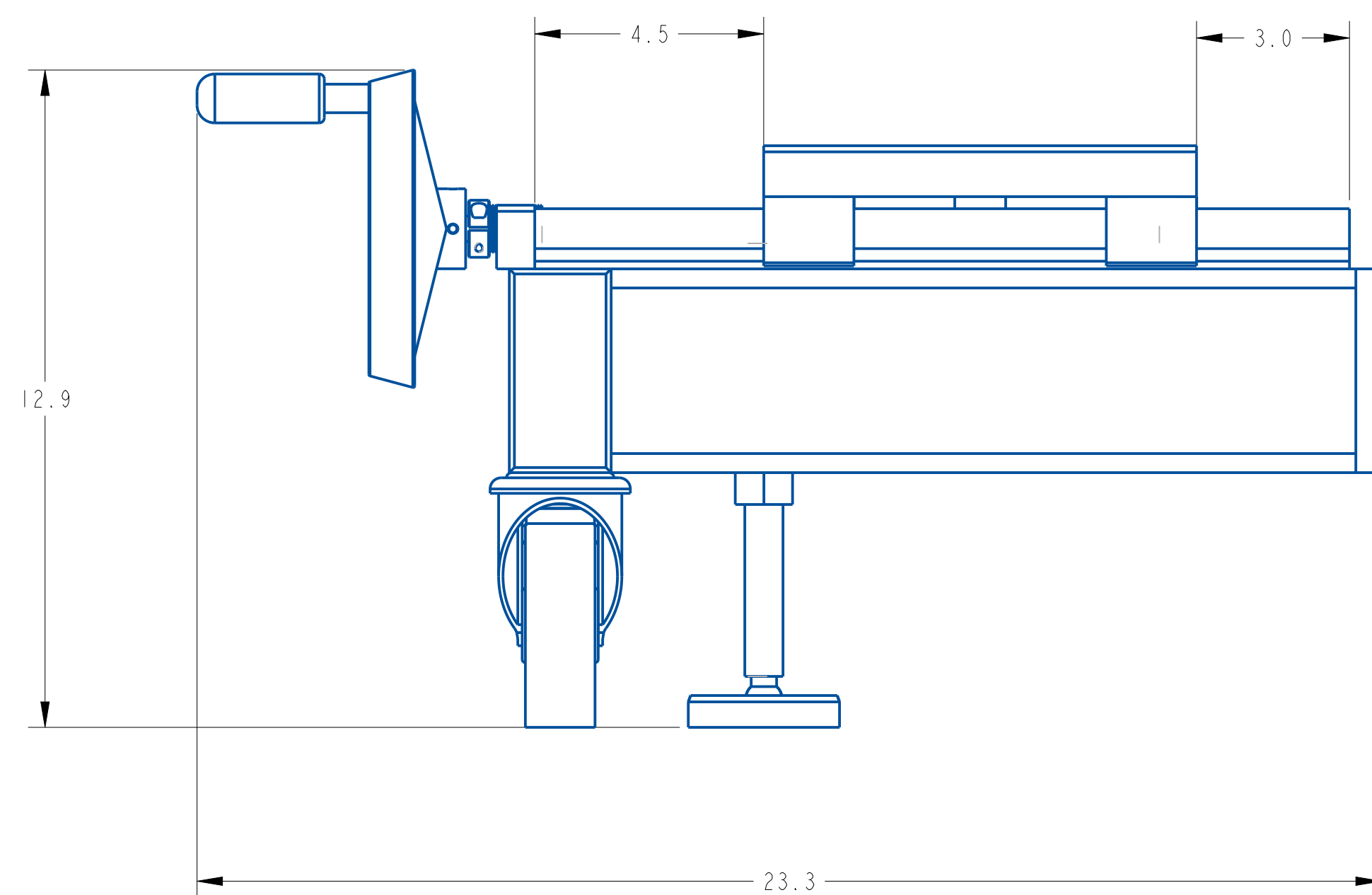
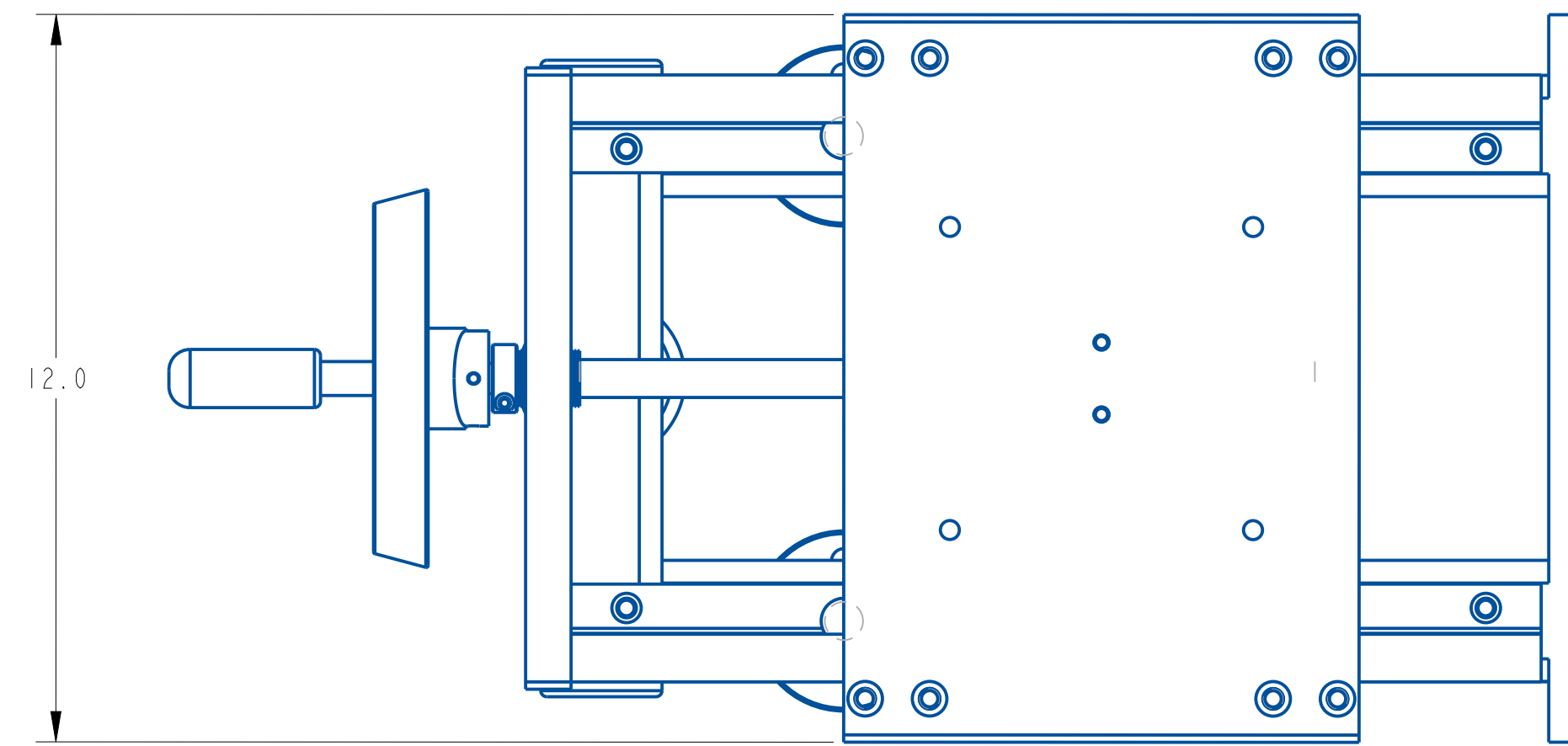


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1	1	141177-000	SLEEVE BEARING, 5/8OD. x 1/2ID. x 3/4LNG	22350-002
2	2	181079-000	BEARING, NEEDLE ROLLER	22350-002
3	4	181080-000	BEARING, THRUST WASHER	22350-002
4	1	361169-000	COLLAR, 1/2 IN. ID ONE-PIECE CLAMP	22350-002
5	2	729006-000	CAP INSERT FOR 2 X 4 TUBE	22350-002
6	1	791432-000	CASTER	22350-002
7	4	792248-001	PILLOW BLOCK	22350-002
8	2	792276-000	DRYLIN RAIL	22350-002
9	1	801080-000	6" HANDWHEEL	22350-002
10	1	A24077-000	BRONZE NUT, RH	22350-002
11	2	A26148-000	LEVELING MOUNT	22350-002
12	1	B21620-000	BEARING PLATE	22350-002
13	1	C20753-000	HORIZONTAL SLED, WIDE VERSION	22350-002
14	1	C20801-000	THREADED ROD	22350-002
15	1	D22142-007	HORIZONTAL OUTRIGGER, LOW COST IGUS	22350-002

REV	DATE	DESCRIPTION	BY
A	Dec-18-25	NEW DRAWING	TAZ

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UNLESS OTHERWISE SPECIFIED DIMENSIONAL TOLERANCE X ± .1 XX ± .01 XXX ± .005 ANGLES ± .30° SURFACE FINISH 125 BREAK ALL EDGES .005/.015 CORNER RADIUS .010/.030	 <b>QUADREL LABELING SYSTEMS</b> 7670 JENTHER DRIVE MENTOR, OHIO 44060 (440) 602-4700	SCALE: 5/16
		DATE: Dec-18-25
		DRW BY: TAZ
		CHK BY: 01/15/2026-SEM
HORIZONTAL ADJUST OUTRIGGER		MAT'L 22350-002
		22350-002

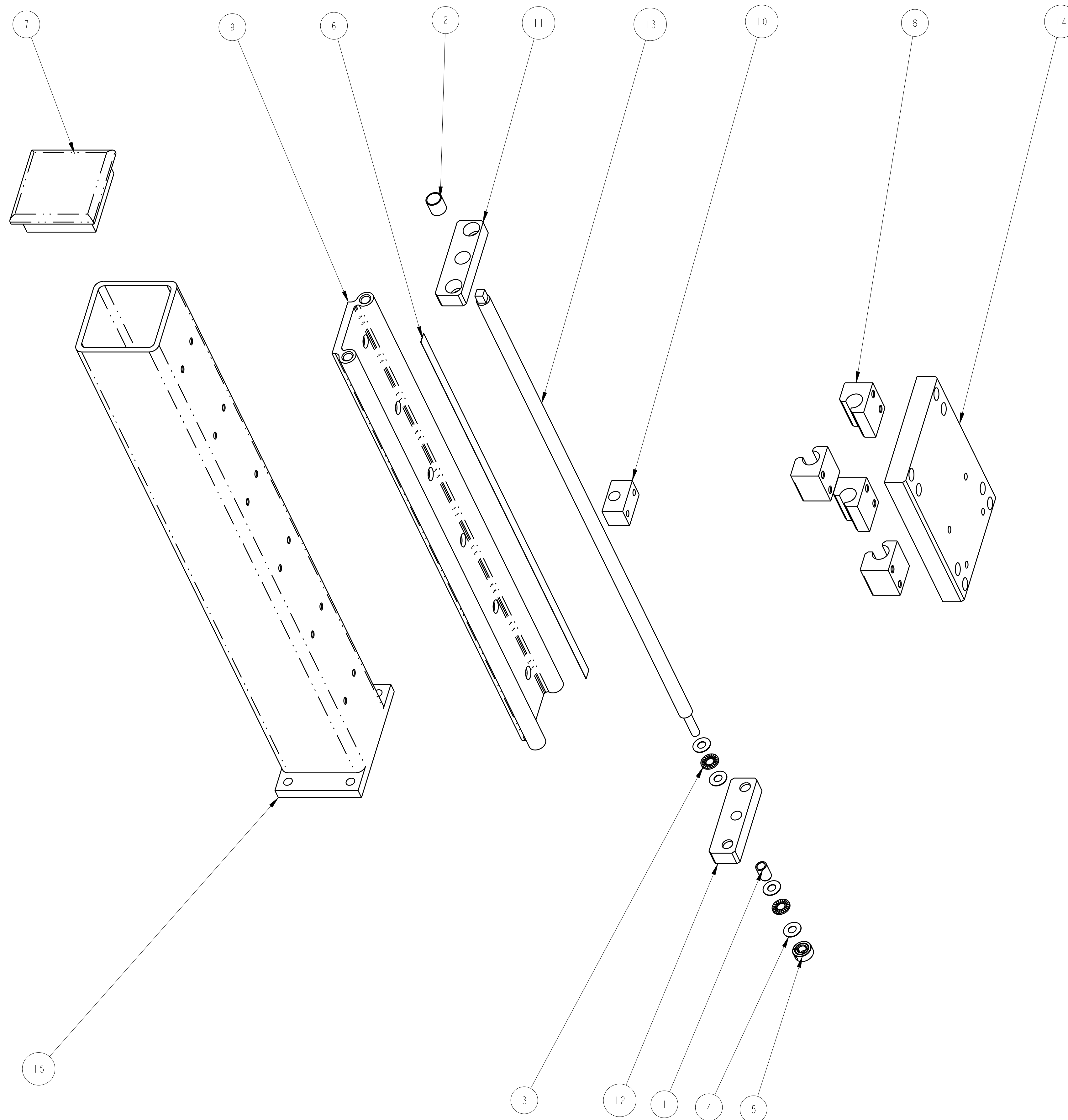


REV	DATE	DESCRIPTION	BY
A	Dec-18-25	NEW DRAWING	TAZ

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UNLESS OTHERWISE SPECIFIED DIMENSIONAL TOLERANCE	x ± .1 xx ± .01 xxx ± .005 ANGLES ± .30°	SCALE: 3/8 DATE: Dec-18-25 DRW BY: TAZ CHK BY: 01/15/2026-SEM APPR BY:
SURFACE FINISH 125 BREAK ALL EDGES .005/0.15 CORNER RADIUS .010/0.30 ALL ANGLES ARE 90°		<b>QUADREL LABELING SYSTEMS</b> 7670 JENTHER DRIVE MENTOR, OHIO 44060 (440) 602-4700
HORIZONTAL ADJUST OUTRIGGER		MAT'L 22350-002

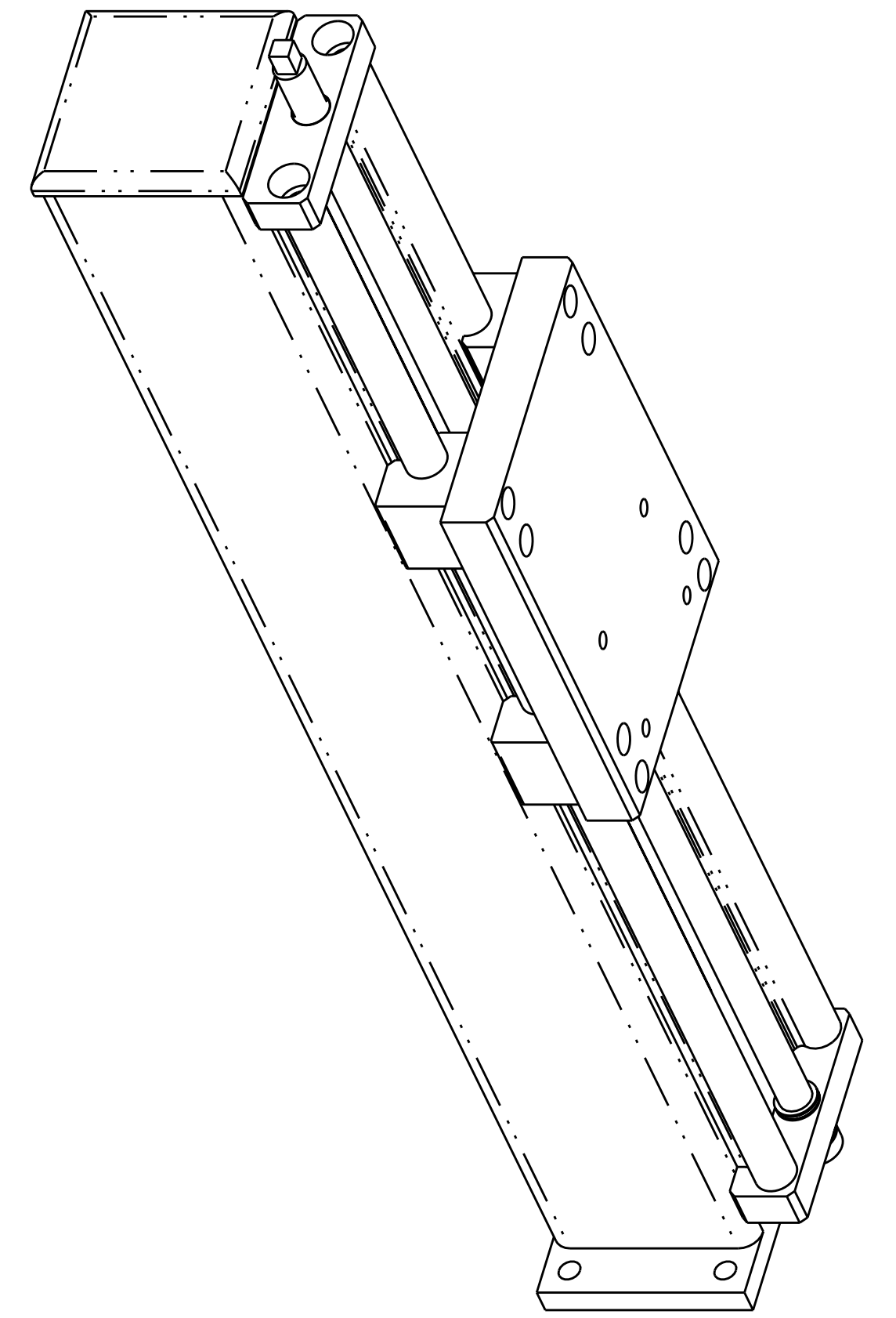
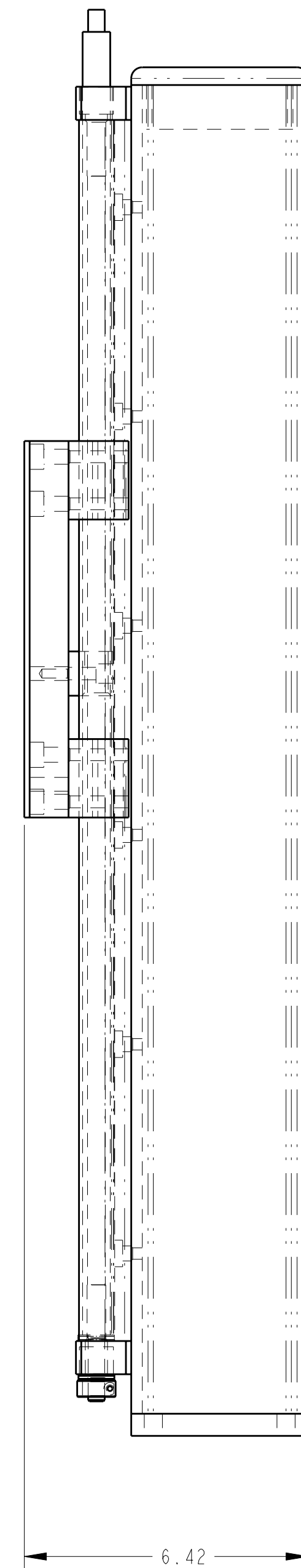
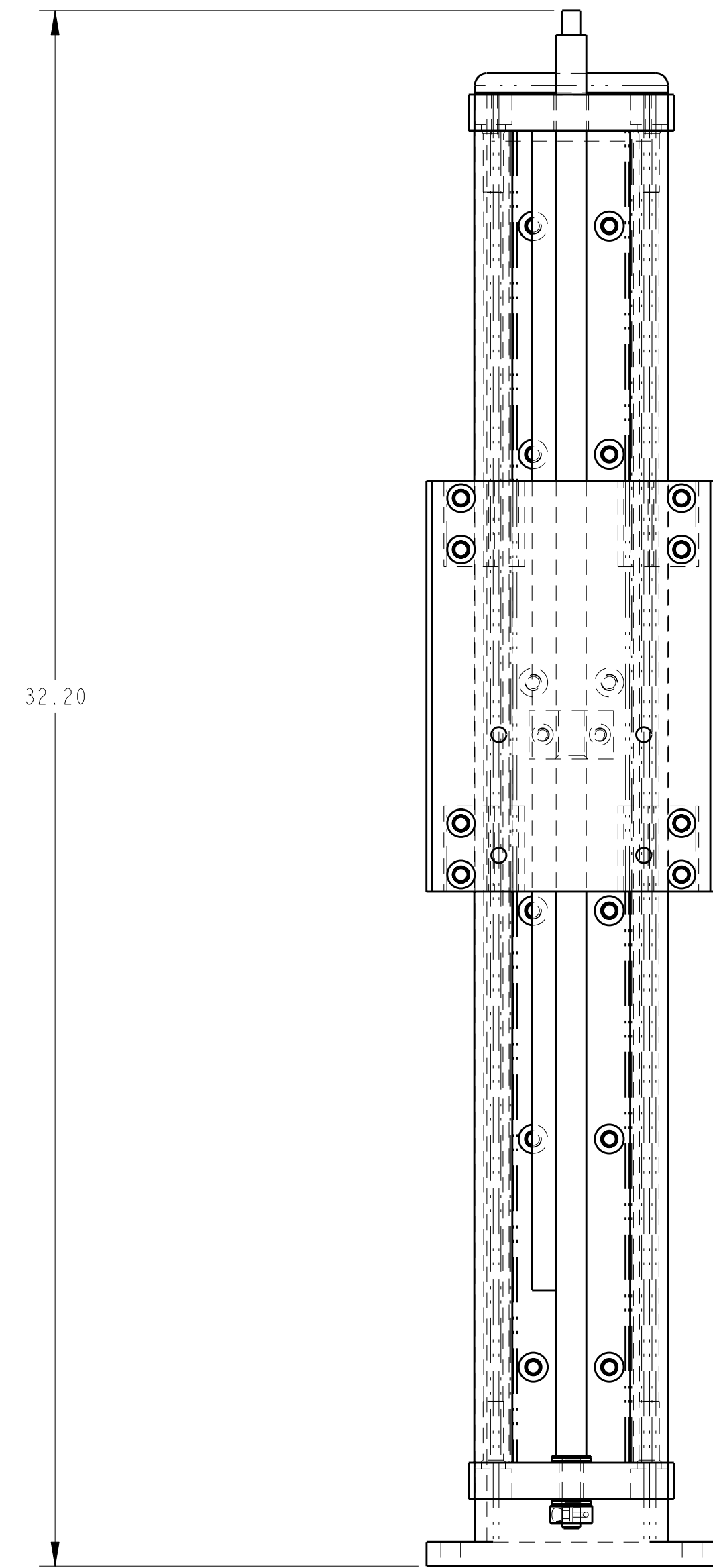
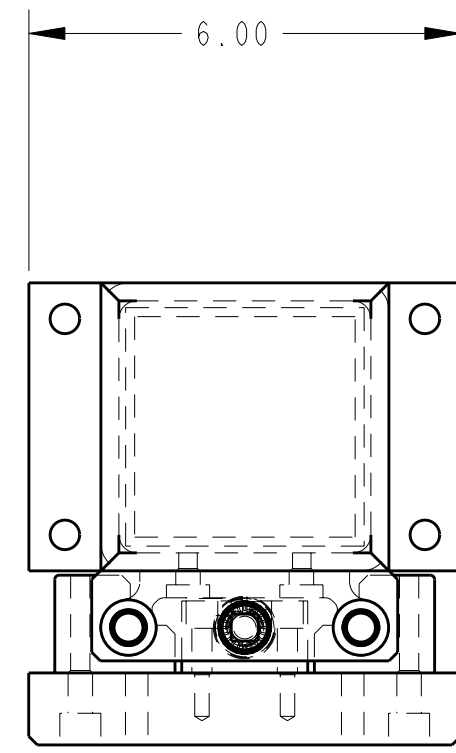
ITEM	QTY	PART NO.	DESCRIPTION
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3	2	181108-000	BEARING, NEEDLE ROLLER
4	4	181111-000	THRUST WASHER
5	1	362186-000	COLLAR, 3/8 IN. ID ONE-PIECE CLAMP
6	1	791914-001	MYLAR SCALE, QUADREL LOGO
7	1	792065-000	CAP INSERT FOR 4X4 TUBE (1/4WALL)
8	4	792248-000	PILLOW BLOCK
9	1	792264-000	DRYLIN RAIL
10	1	A24077-000	BRONZE NUT, RH
11	1	B21345-000	TOP BEARING PLATE
12	1	B21346-000	BOTTOM BEARING PLATE
13	1	C20717-000	THREADED ROD
14	1	C21221-000	STAND SLED
15	1	D23667-000	VERTICAL RISER, 30"



REV	DATE	DESCRIPTION
A	3-2-2011	NEW DRAWING

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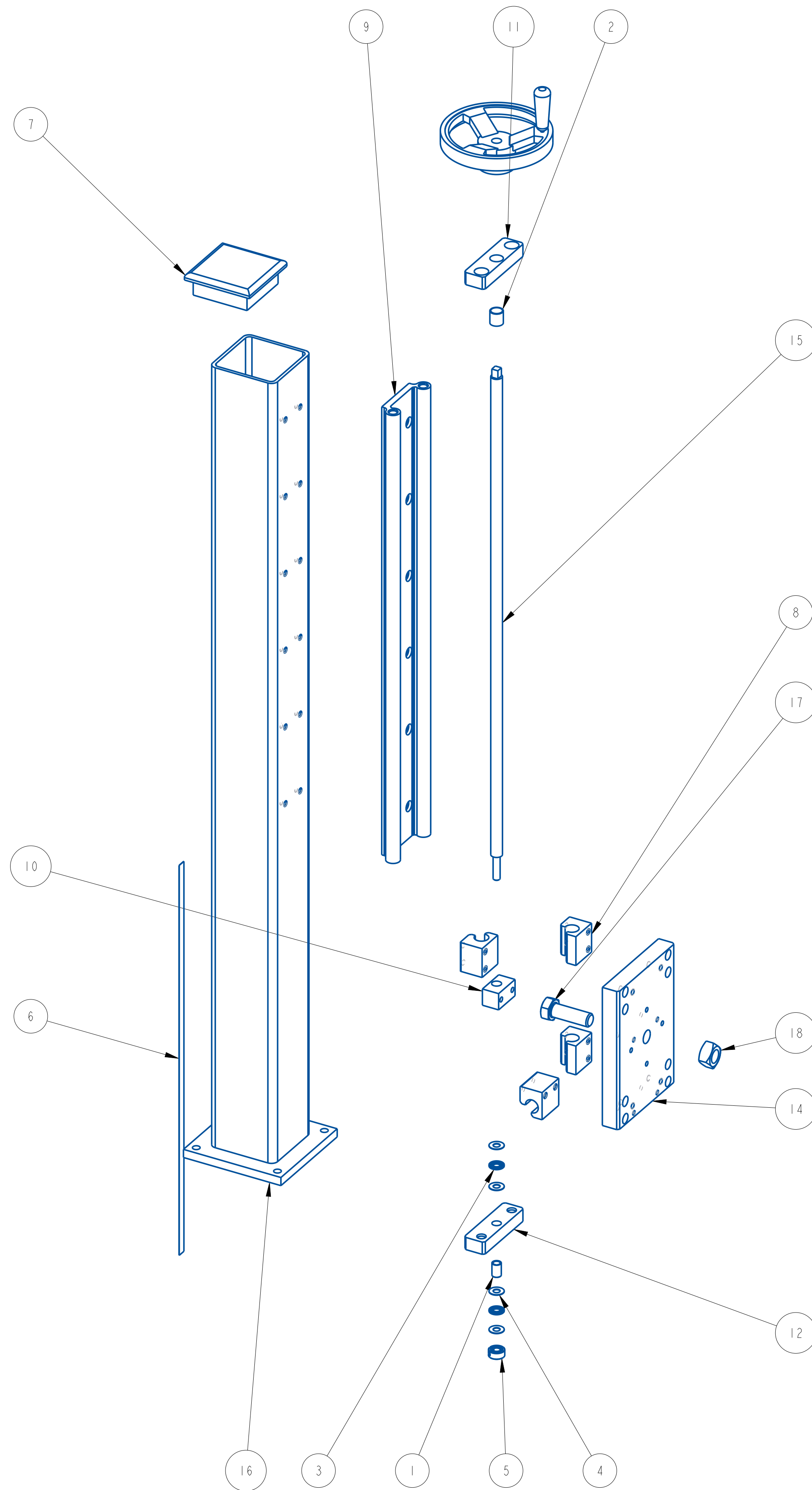
UNLESS OTHERWISE SPECIFIED DIMENSIONAL TOLERANCE .XX ± .01 .XXX ± .005 ANGLES ± .50° SURFACE FINISH 125 BREAK ALL EDGES .005/.015 CORNER RADIUS .010/.030	<b>QUADREL LABELING SYSTEMS</b> 7670 JENTHER DRIVE MENTOR, OHIO 44060 (440) 602-4700	SCALE: 3/8
		DATE: 3-2-2011
		DRW BY: ATT
		CHK BY:
		APPR BY:
<b>HUGGER BELT VERTICAL STAND</b>		
MAT'L	80422V-000	D23666-000



REV	DATE	DESCRIPTION
A	3-2-2011	NEW DRAWING

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<small>UNLESS OTHERWISE SPECIFIED DIMENSIONAL TOLERANCE</small> .XX ± .01 .XXX ± .005 ANGLES ± .30° SURFACE FINISH .125 BREAK ALL EDGES .005/.015 CORNER RADIUS .010/.030	<b>QUADREL LABELING SYSTEMS</b> 7670 JENTHER DRIVE MENTOR, OHIO 44060 (440) 602-4700	SCALE: 3/8 DATE: 3-2-2011 DRW BY: ATT CHK BY: APPR BY:	
	<b>HUGGER BELT VERTICAL STAND</b>		
	MAT'L	80422V-000	D23666-000



ITEM	QTY	PART NO.	DESCRIPTION	PARENT ITEM
1	1	141172-000	SLEEVE BEARING, 1/2OD. x 3/8ID. x 3/4LNG	21654-001-48
2	1	141173-000	SLEEVE BEARING	21654-001-48
3	2	181108-000	BEARING, NEEDLE ROLLER	21654-001-48
4	4	181111-000	THRUST WASHER	21654-001-48
5	1	362186-000	COLLAR, 3/8 IN. ID ONE-PIECE CLAMP	21654-001-48
6	1	791914-001	MYLAR SCALE, QUADREL LOGO	21654-001-48
7	1	792065-000	CAP INSERT FOR 4X4 TUBE (1/4WALL)	21654-001-48
8	4	792248-001	PILLOW BLOCK	21654-001-48
9	1	792264-000	DRYLIN RAIL	21654-001-48
10	1	A24077-000	BRONZE NUT, RH	21654-001-48
11	1	B21345-000	TOP BEARING PLATE	21654-001-48
12	1	B21346-000	BOTTOM BEARING PLATE	21654-001-48
13	1	B22454-000	HANDLE WHEEL, MODIFIED	21654-001-48
14	1	C20626-000	STAND SLED	21654-001-48
15	1	C20717-000	THREADED ROD	21654-001-48
16	1	D21045-001	VERTICAL RISER, 48"	21654-001-48
17	1	HCS281		21654-001-48
18	1	SNQ022		21654-001-48

REV	DATE	DESCRIPTION	BY
A	8-16-06	NEW DRAWING	ATT

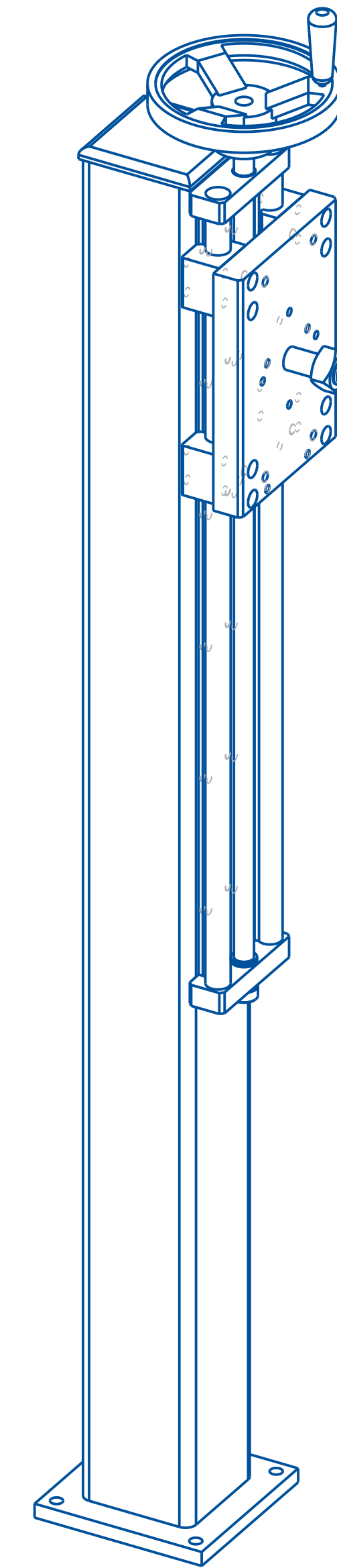
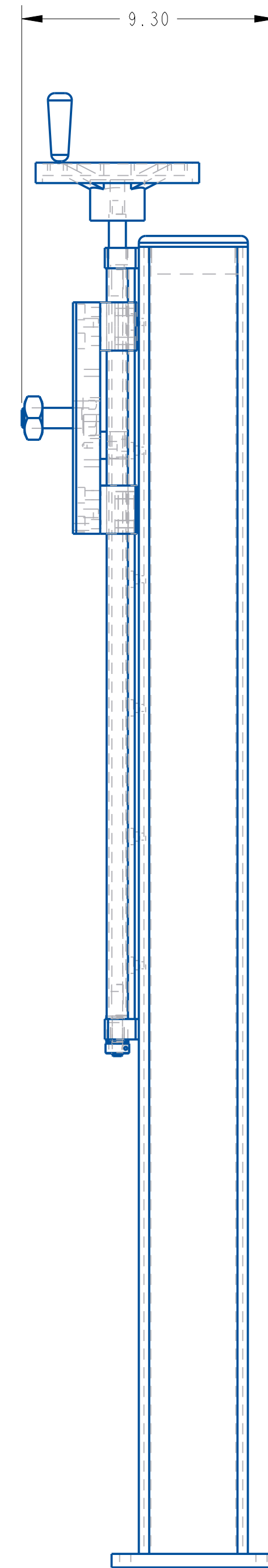
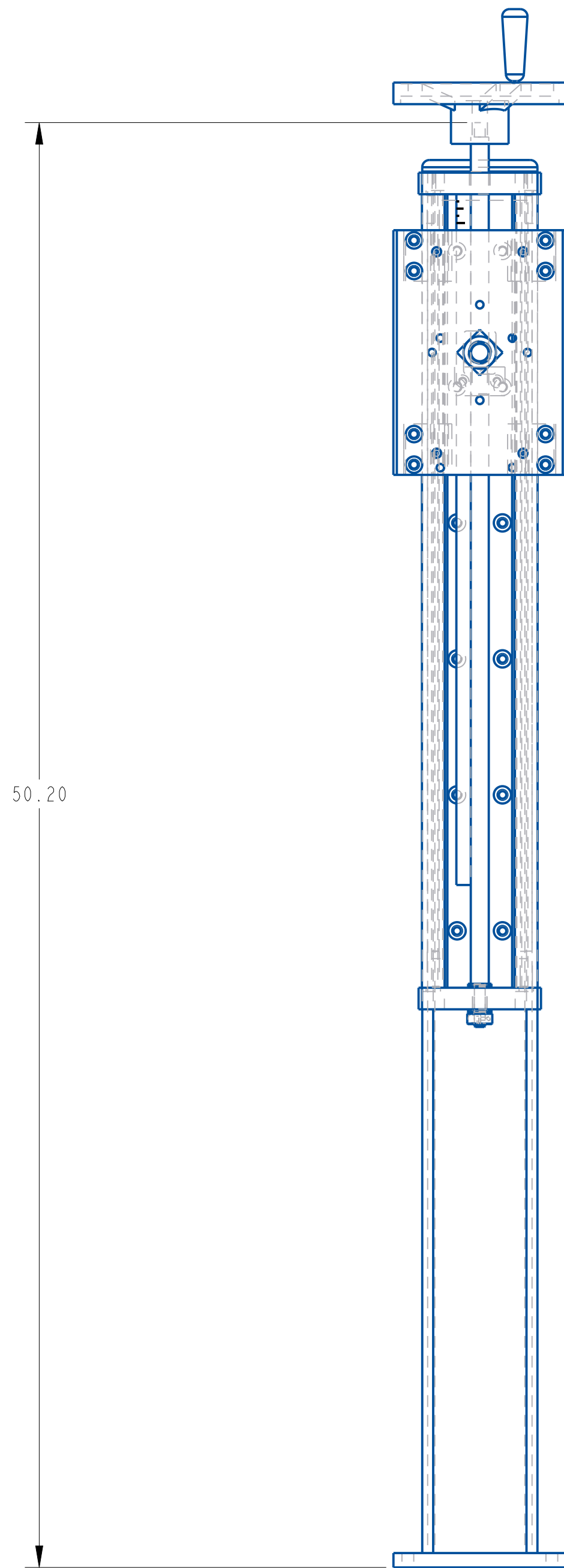
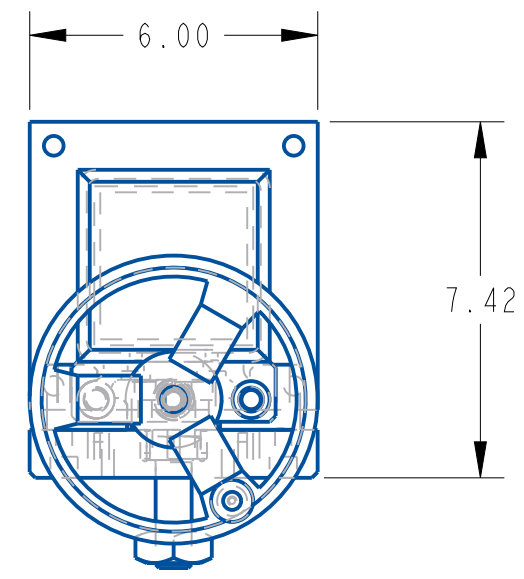
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**QUADREL LABELING SYSTEMS**  
 7670 JENTHER DRIVE  
 MENTOR, OHIO 44060  
 (440) 602-4700

SCALE: 1/4  
 DATE: 8-16-06  
 DRW BY: ATT  
 CHK BY: 01/15/2026-SEM  
 APPR BY:

VERTICAL STAND W/ IGUS SLIDE

MAT'L 21883-000



REV	DATE	DESCRIPTION	BY
A	8-16-06	NEW DRAWING	ATT

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UNLESS OTHERWISE SPECIFIED  
DIMENSIONAL TOLERANCE

X ± .1  
XX ± .01  
XXX ± .005  
ANGLES ± .30°

SURFACE FINISH 125  
BREAK ALL EDGES .005/ .015  
CORNER RADIUS .010/ .030  
ALL ANGLES ARE 90°

**QUADREL LABELING SYSTEMS**  
7670 JENTHER DRIVE  
MENTOR, OHIO 44060  
(440) 602-4700

SCALE: 1/4  
DATE: 8-16-06  
DRW BY: ATT  
CHK BY: 01/15/2026-SEM  
APPR BY:

VERTICAL STAND W/ IGUS SLIDE  
MAT'L 21883-000

**ASSEMBLY TITLE:                      YOKE ASSEMBLY**

**DRAWING NO.:**

**GENERAL FUNCTION:**

- The yoke assembly is the main mounting bracket assembly to mount the labeling head to the stand.
- Adjustments are provided to set the labeling head up for either top or side labeling applications.

**SET UP AND ADJUSTMENTS:**

- Loosen both locking handles to adjust the angular position of the labeling head.
- Re-tighten each handle when the correct angular position is set.

**NOTE:** Make sure each handle is secure, the labeling head is heavy and could rotate if the locking handles are not firmly secured.

**MAINTENANCE:**

- No scheduled maintenance for this assembly.

**TROUBLESHOOTING:**

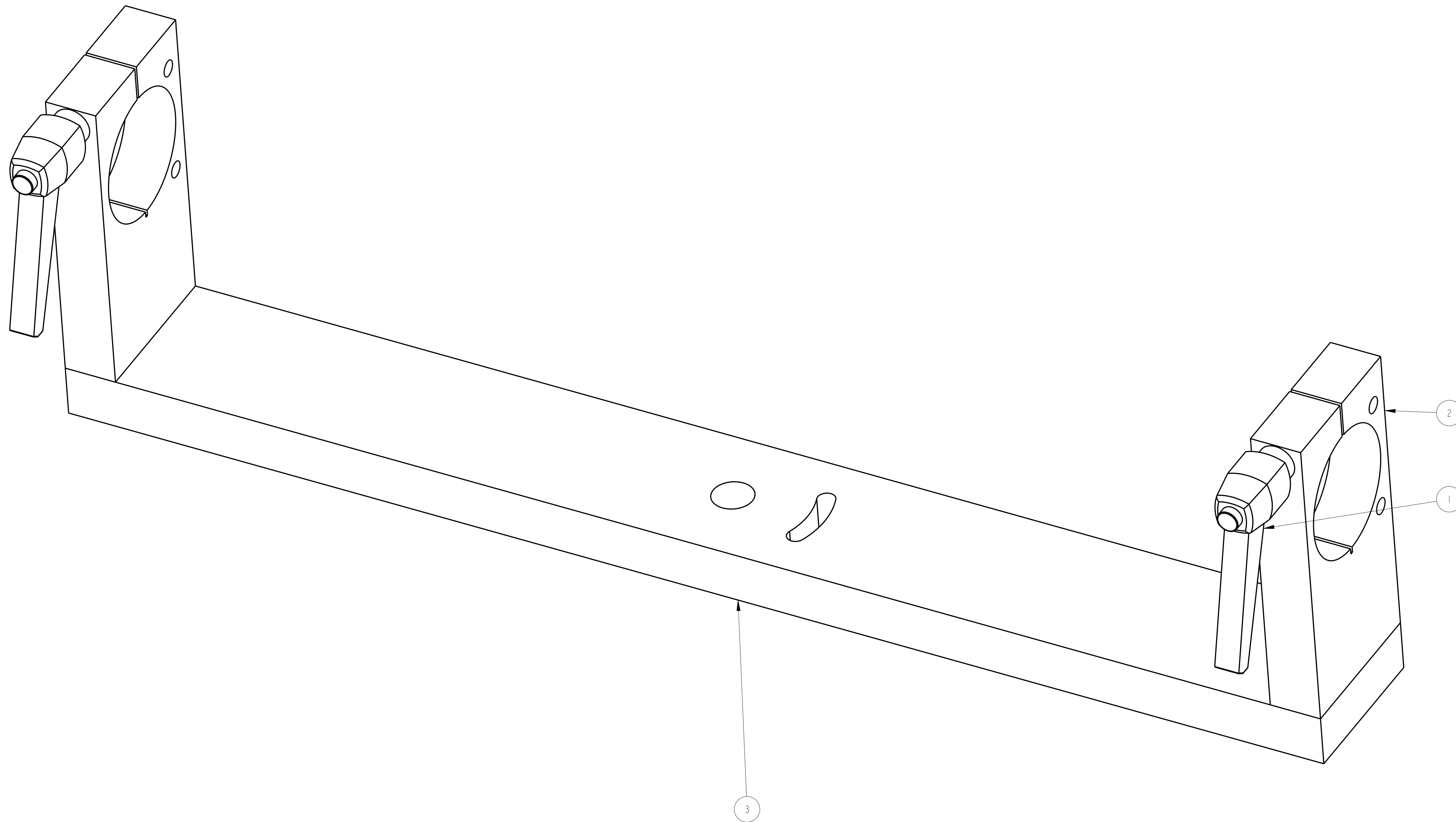
**Problem**

- Labeler angular position moves

**What To Do**

- Secure locking tension by turning locking handles clock-wise

ITEM	QTY	PART NO.	DESCRIPTION	PARENT ITEM
1	2	801850-000	CLAMPING LEVER	22620Y-RHH
2	2	B21190-114	YOKE SIDE PLATE	22620Y-RHH
3	1	B21555-000	MTG YOKE BACK PLATE	22620Y-RHH



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A	11-26-13	NEW DRAWING	ATT

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UNLESS OTHERWISE SPECIFIED  
 DIMENSIONAL TOLERANCE  
 X ± .1  
 XX ± .01  
 XXX ± .005  
 ANGLES ± 30°



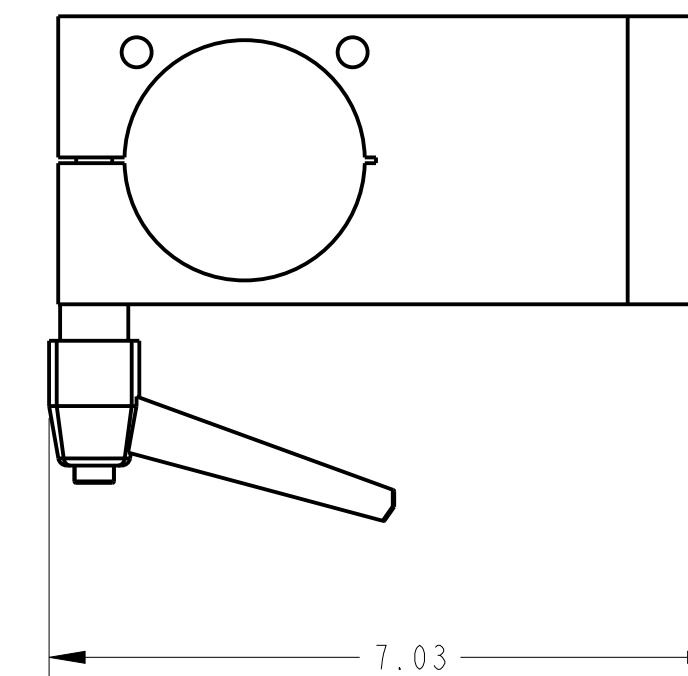
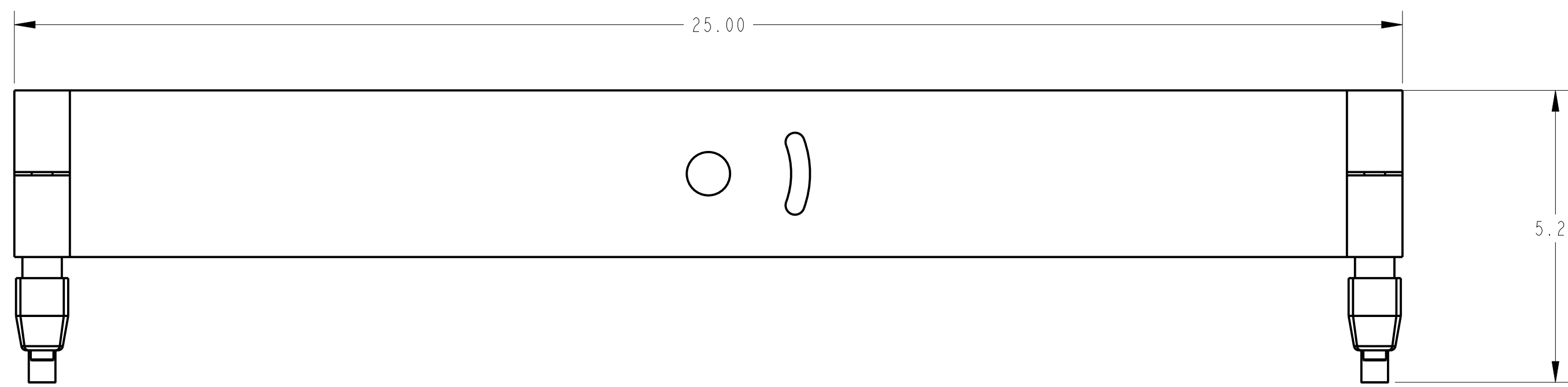
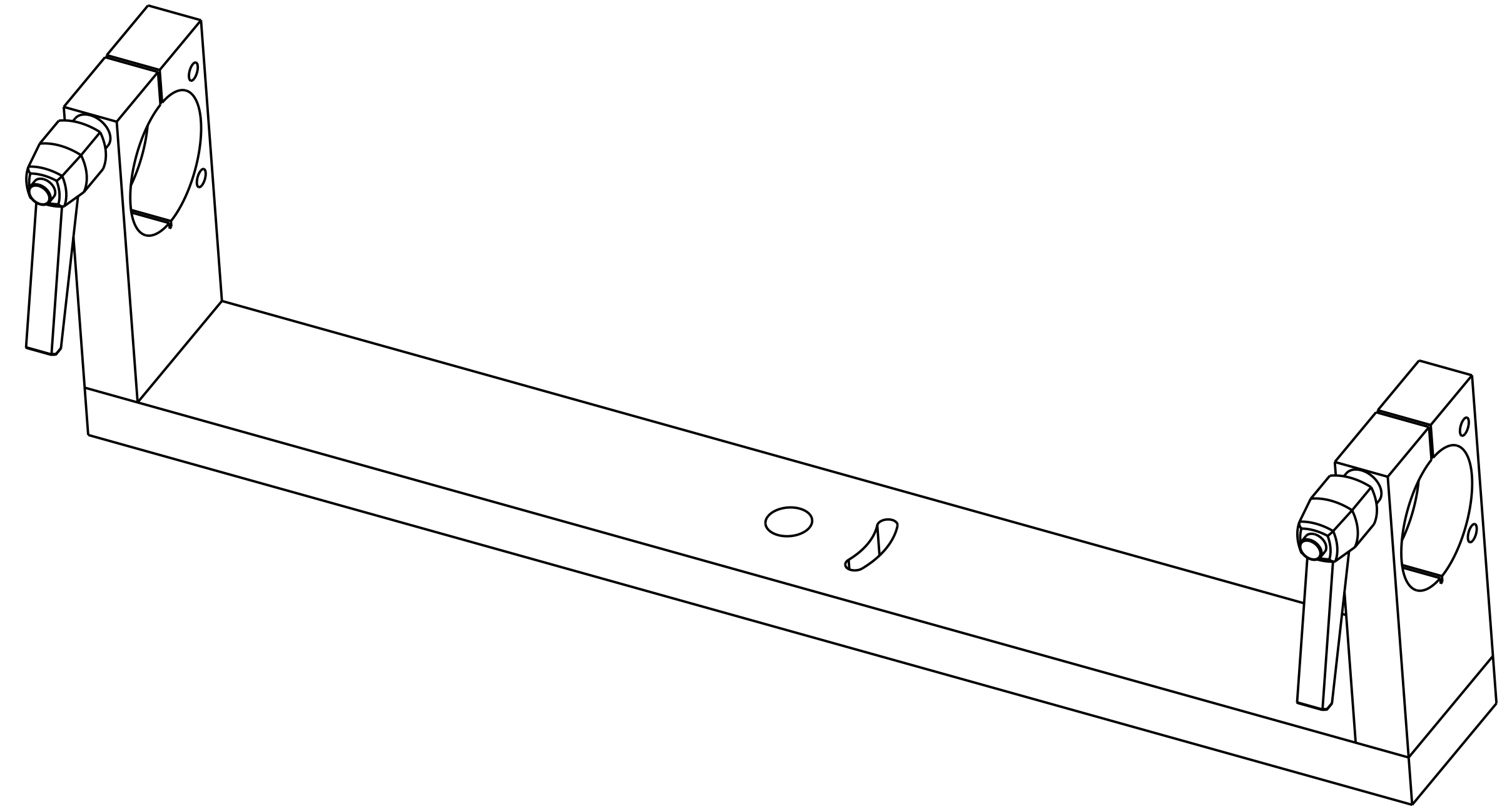
**QUADREL LABELING SYSTEMS**  
 7670 JENTER DRIVE  
 MENTOR, OHIO 44060  
 (440) 602-4700

SCALE: 1/1  
 DATE: 11-26-13  
 DRW BY: ATT  
 CHK BY: 03/07/2024-SEM  
 APPR BY:

Q120 YOKE ASSEMBLY

SURFACE FINISH 125  
 BREAK ALL EDGES .005/0.15  
 CORNER RADIUS .010/0.30

MAT'L 22620Y-RHH



REV	DATE	DESCRIPTION	BY
A	11-26-13	NEW DRAWING	ATT

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UNLESS OTHERWISE SPECIFIED  
DIMENSIONAL TOLERANCE  
X ± .1  
XX ± .01  
XXX ± .005  
ANGLES ± .30°  
SURFACE FINISH 125  
BREAK ALL EDGES .005/ .015  
CORNER RADIUS .010/ .030  
ALL ANGLES ARE 90°

**QUADREL LABELING SYSTEMS**  
7670 JENTHER DRIVE  
MENTOR, OHIO 44060  
(440) 602-4700

SCALE: 1/2  
DATE: 11-26-13  
DRW BY: ATT  
CHK BY: 03/07/2024-SEM  
APPR BY:

Q120 YOKE ASSEMBLY  
MAT'L 22620Y-RHH

**ASSEMBLY TITLE:        PRODUCT DETECT ASSEMBLY**

**DRAWING NO:**

**GENERAL FUNCTION:**

The product detect signal is used to trigger the labeling cycle. Optimum placement and setup of the product detect sensor is critical to accurate and repeatable label placement.

**SETUP AND ADJUSTMENTS:**

Set the position of the product detect sensor at a point up-stream of the peel plate area. Set the vertical position of the sensor at a point on the product that provides a stable and repeatable sense area. Loosen the vertical adjustment knobs to move the assembly along the vertical axis.

Follow the manufactures data sheet for a particular set and calibration.

**MAINTENANCE:**

No scheduled maintenance is required for this assembly. Always keep the drive areas free of label flash and debris.

**CAUTION:** Before performing any maintenance or cleaning make sure the system is powered down.

**TROUBLESHOOTING:**

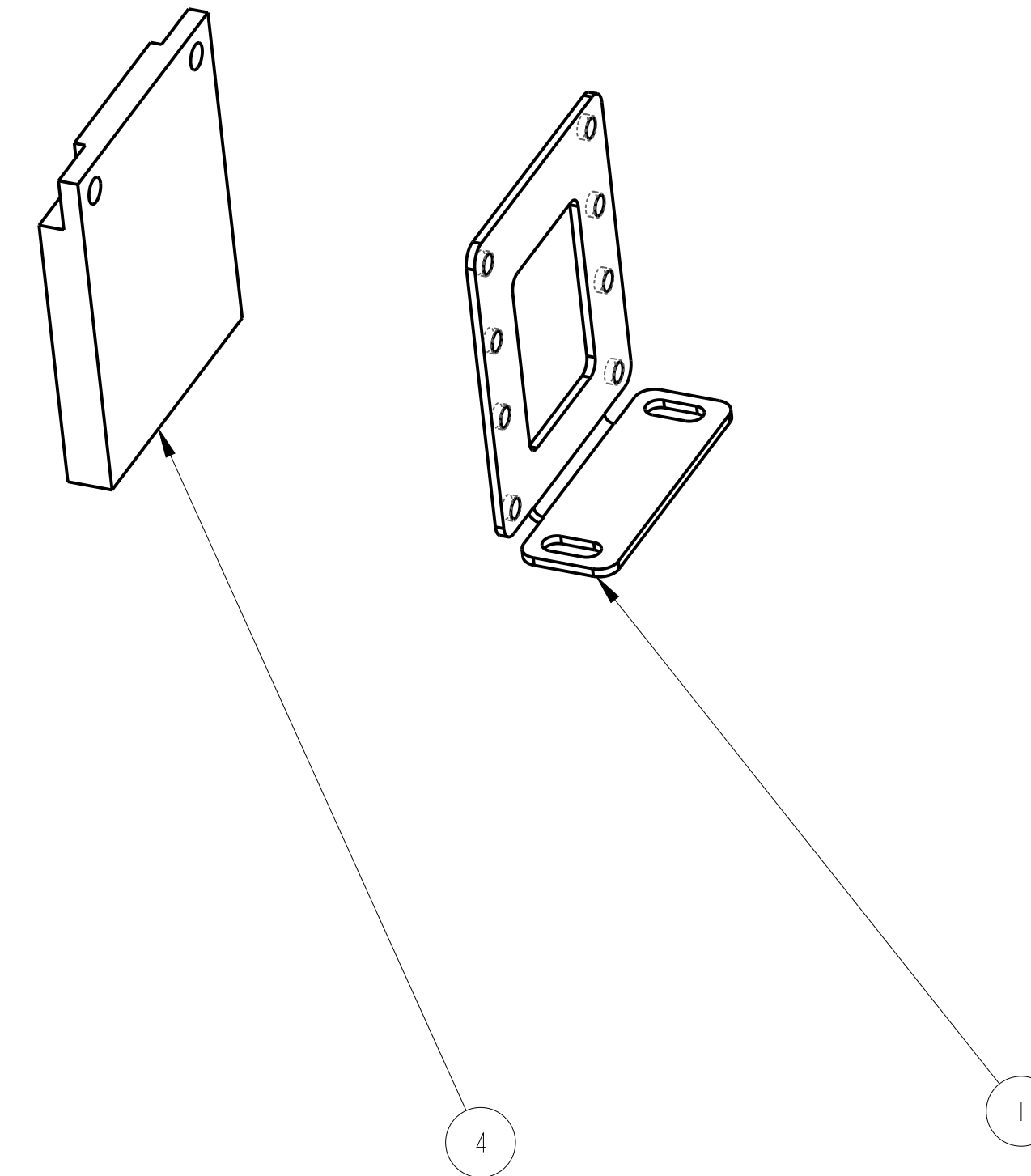
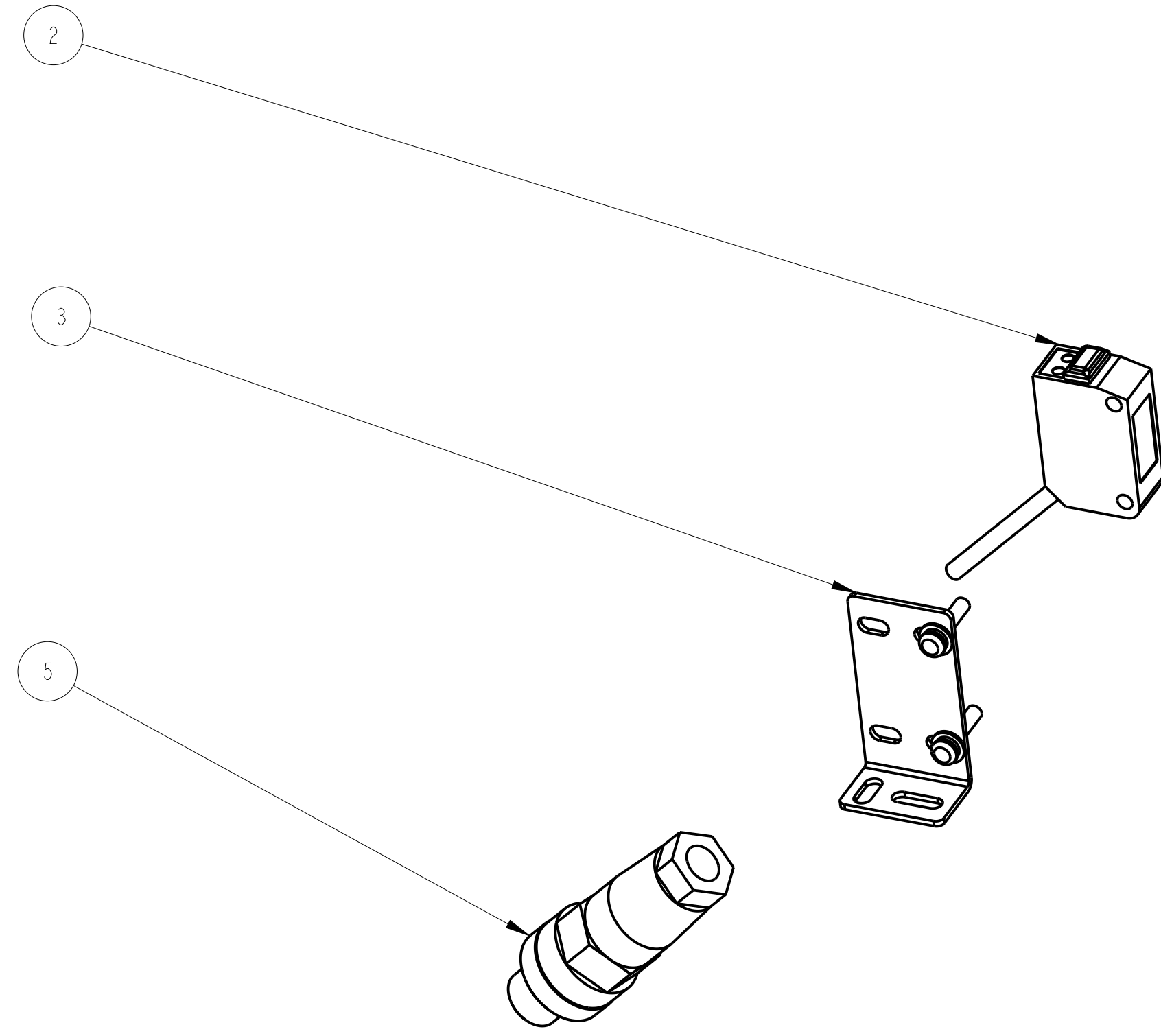
**PROBLEM:**

- No label trigger or intermittent trigger.

**WHAT TO DO:**

- Product does not intersect sensor scan field. Adjust sensor position until sensor detects product.
- Sensor gain set is too low. Increase gain until sensor indicator displays ON status(with product in sensor field).

ITEM	QTY	PART NO.	DESCRIPTION	PARENT ITEM
1	1	202099-001	REFLECTOR MOUNT	21679-009
2	1	202192-002	CLEAR PRODUCT SENSOR	21679-009
3	1	203005-001	PRODUCT DETECT	21679-009
4	1	203160-000	REFLECTOR	21679-009
5	1	252019-000	4 PIN MALE CONNECTOR	21679-009



REV	DATE	DESCRIPTION	BY
A	11-16-22	NEW DRAWING	ATT

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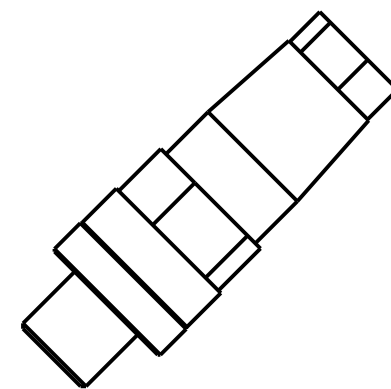
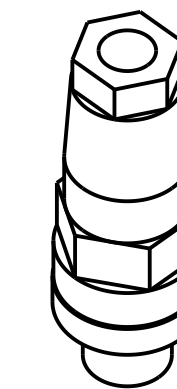
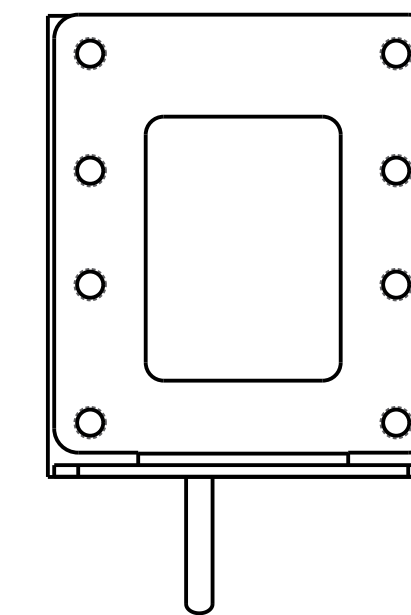
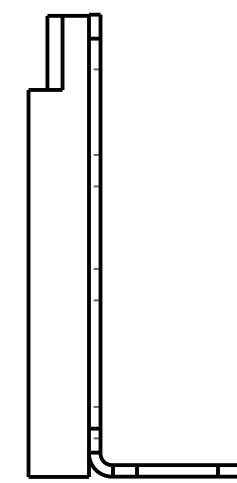
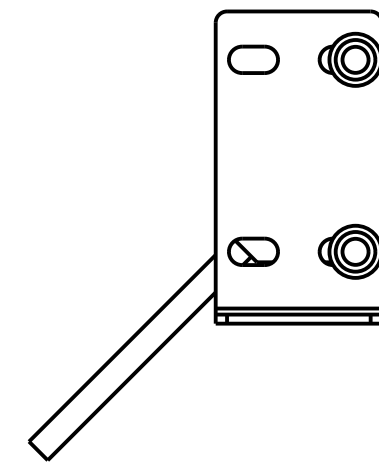
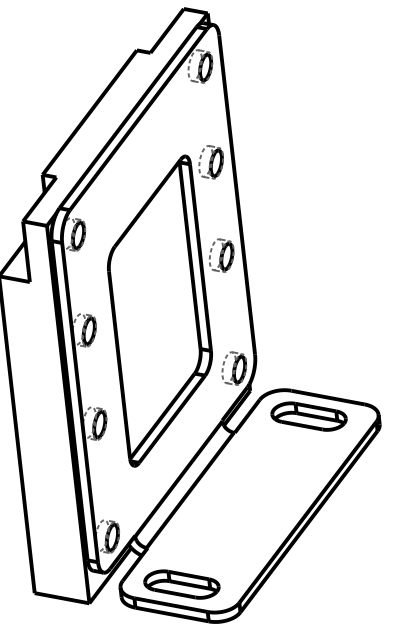
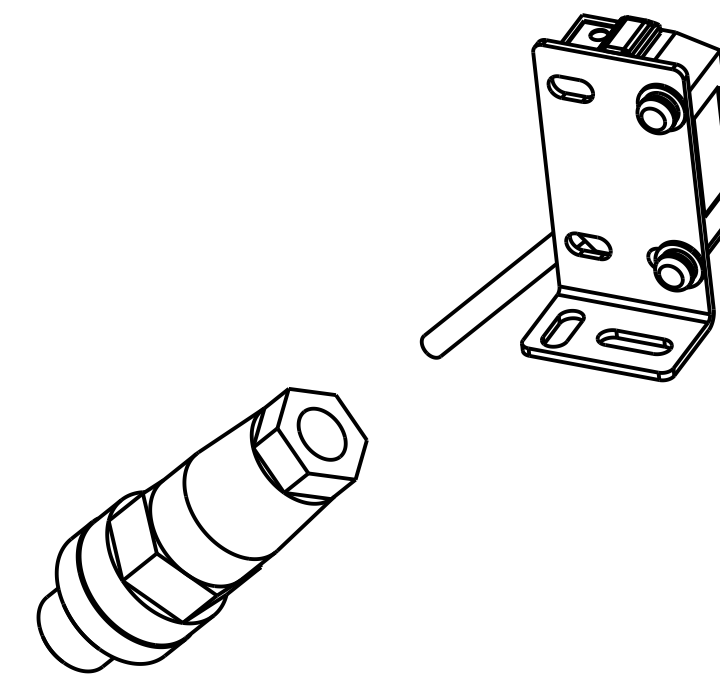
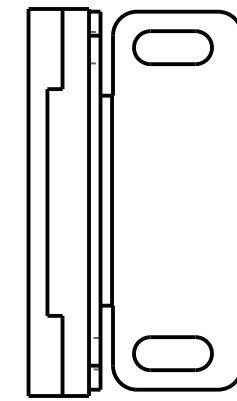
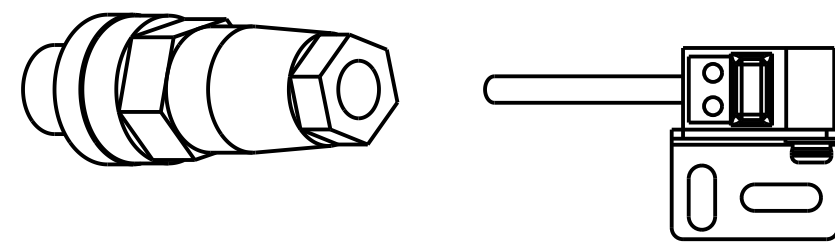
**QUADREL LABELING SYSTEMS**  
7670 JENTHER DRIVE  
MENTOR, OHIO 44060  
(440) 602-4700

SCALE: 1/1  
DATE: 11-16-22  
DRAWN BY: ATT

PRODUCT DETECT, HUGGER MOUNT

MAT'L	21679-009	21679-009
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UNLESS OTHERWISE SPECIFIED  
DIMENSIONAL TOLERANCE  
XX ± .01  
XXX ± .005  
ANGLES ± 30°  
SURFACE FINISH 125  
BREAK ALL EDGES .005/.015  
CORNER RADIUS .010/.030



REV	DATE	DESCRIPTION	BY
A	11-16-22	NEW DRAWING	ATT

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QUADREL LABELING SYSTEMS  
 7670 JENTHER DRIVE  
 MENTOR, OHIO 44060  
 (440) 602-4700

PRODUCT DETECT, HUGGER MOUNT

SURFACE FINISH: 125  
 BREAK ALL EDGES: .0057, .015  
 CORNER RADIUS: .0107, .030

# PZ-G Series

## Instruction Manual

Read this manual thoroughly before using the product.  
Keep this manual readily available for future reference.

96M11227



### Safety precautions

- Avoid running the PZ-G cable along with power and high voltage lines, as this may cause interference and/or permanent damage.
- When using a commercially available switching regulator, ground its chassis grounding and earth grounding terminals.
- Do not use in locations where direct ambient light or external light directly shines on the light receiving surface.
- With retro-reflective type sensors, when detecting highly reflective materials (such as mirrored surfaces), stabilization may be difficult. To correct this, change the angle of the sensor head, or adjust the sensitivity.
- Avoid using power which exceeds the specifications for ripple (10% max)
- Avoid using excess force when rotating the operation mode selector switch (Light-on, Dark-on) and the sensitivity adjustment trimmer.
- This product is just intended to detect the object(s). Do not use this product for the purpose to protect a human body or a part of human body.
- This product is not intended for use as explosion-proof product. Do not use this product in a hazardous location and/or potentially explosive atmosphere.

### Precautions on Regulations and Standards

#### UL Certificate

This product is an UL/C-UL Listed product.

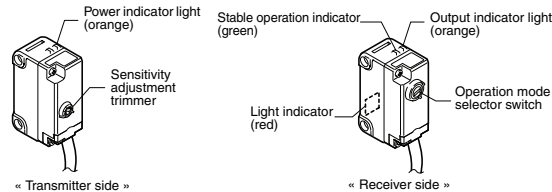
- UL File No. E301717
- Category NRKH,NRKH7
- Enclosure Type 1 (Based on UL50)

Be sure to consider the following specifications when using this product as an UL/C-UL Listed Product.

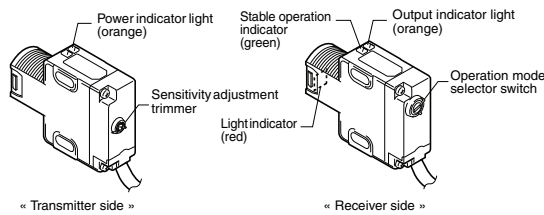
- Use the power supply with Class 2 output defined in NFPA70 (NEC: National Electrical Code).
- Power supply/ Control input/ Control output circuits shall be connected to a single Class 2 source only.
- Use with the over current protection device which is rated 30V or more and not more than 1A.

### Part Names

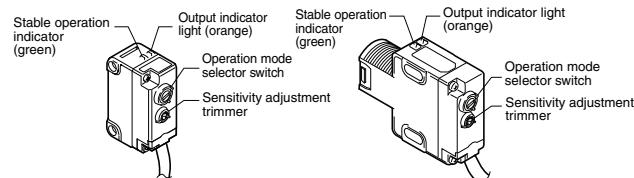
#### PZ-G5xN/G5xP



#### PZ-G5xB



#### PZ-G4xN/G4xP/G10xN/G10xP/G6xN/G6xP

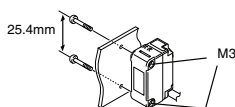


\* The model name with "C" (PZ-GxxCx) is the connector type, and the model name with "E" (PZ-GxxEx) is the pigtail quick disconnect type.

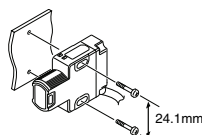
### Mounting Method

#### Side Mounting (Prepare M3 screws)

Tightening torque: 0.5 N·m or less



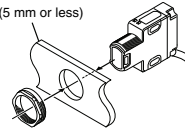
Tightening torque: 0.5 N·m or less



### Mounting with the M18 nut (includes nut type)

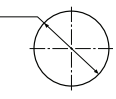
The M18 nut is also available separately as OP-84225 (2 pcs. supplied).  
Tightening torque: 1.0 N·m or less

Panel (5 mm or less)



Panel cut size

$\phi 18.5 \pm 0.2$  mm



#### Note

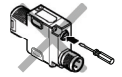
- Mount the M18 nut (supplied) straight in. If mounted at an angle it cannot be tightened properly.
- When tightening the M18 nut (supplied), firmly hold the main body down. The case of the main body may be damaged if held in place with a tool such as pliers.
- When tightening the M18 nut (supplied), if excess force is applied to the nut with a tool such as pliers, it may bend it out of shape. Therefore, do not apply excess force.

### Sensitivity Adjustment Method

#### Caution



Avoid using excess force when rotating the sensitivity adjustment trimmer and operation mode selector switch as it may cause damage.



### Operation mode selector switch

With the operation mode selector switch, you can select either the LIGHT-ON mode (L) or the DARK-ON (D) mode.



### Reflective type (PZ-G41/G42/G101/G102/G10R/G10G/G10B Series)

The following assumes LIGHT-ON (L) is set.

Sequence	Adjustment method	Sensitivity adjustment trimmer
①	Position target in place. Slowly rotate the sensitivity trimmer from the MIN position towards the MAX position until the (orange) output indicator turns on (Position "A"). If the output indicator does not turn off, even at MIN, then MIN is considered Position "A".	
②	Remove the target. Adjust the sensitivity trimmer from MIN towards MAX until the (orange) output indicator turns on (Position "B"). If the output indicator does not light up, the MAX position is considered Position "B".	
③	Adjust the sensitivity trimmer to the midpoint between "A" and "B". Verify that the (green) stable operation light turns on with and without a target in place.	

**Reference** To use the sensor in DARK-ON mode, adjust the mode selector switch to "D".

### Thrubeam type (PZ-G51/G52 Series) / Retro-reflective type (PZ-G61/G62 Series)

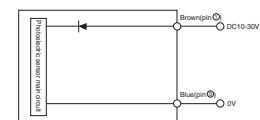
The following assumes DARK-ON (D) is set.

Sequence	Adjustment method	Sensitivity adjustment trimmer
①	Remove the target. Adjust the sensitivity trimmer to MAX. Mount the sensor heads in place so the (orange) output indicator turns off (on thrubeam models, the red light on the receiver face will turn on)	
②	Position target in place. Verify that the orange output indicator turns on (on thrubeam models, the red light on the receiver face will turn off). Adjust sensitivity lower if the output indicator does not turn on (or if the red light on the receiver face does not turn off on thrubeam models)	

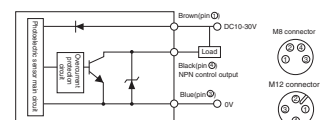
**Reference** To use the sensor in LIGHT-ON mode, adjust the mode selector switch to "L".

### I/O Circuit Diagram

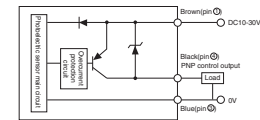
#### PZ-G5xN/G5xP/G5xB (Transmitter side)



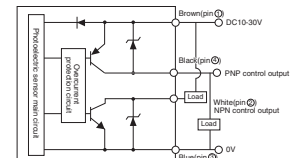
#### PZ-G5xN (Receiver side)/ G4xN/G10xN/G6xN



#### PZ-G5xP (Receiver side)/ G4xP/G10xP/G6xP



#### PZ-G5xB (Receiver side)/ G4xB/G10xB/G6xB



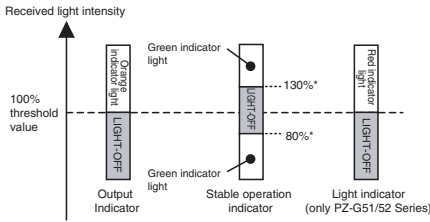
\* The pin numbers represent those of the connector type / pigtail quick disconnect type. The model name with "C" (PZ-GxxCx) is the connector type, and the model name with "E" (PZ-GxxEx) is the pigtail quick disconnect type.

[ PZ-GxxCN/GxxCP..... M8 connector  
PZ-GxxCB/GxxEN/GxxEP..... M12 connector ]

## Indicators

The following describes each ON/OFF condition of indicator when LIGHT-ON (L) is set.

**Reference** When the DARK-ON (D) is set, the output indicator ON/OFF will reverse.



\* For PZ-G62, the upper limit is 107% and the lower limit is 93%.

If the stable operation indicator turns off during operation, readjust or fine-adjust the sensitivity.

## Mutual interference

- For reflective type / retro-reflective type sensors, mutual interference protection can be set for up to 2 units. However, when the sensors are mounted facing each other, change the angle of the sensor head to prevent light being emitted into each unit. (The mark detection type does not include the mutual interference function.)
- Mutual interference prevention can be set when mounting a polarizing filter attachment (optional with thru-beam type sensors) (If operation is unstable even after mounting the polarizing filter, slightly lower the sensitivity.)
- For more detailed information about mutual interference or attachment, see the PZ-G Series catalog or contact your nearest KEYENCE office.

## Specifications

Type		Thru-beam		Reflective				Retro-reflective		Mark detection			
Configuration	Cable shape	Output mode	Normal	High-power	Diffuse-reflective Long-detecting distance	Diffuse-reflective Short-detecting distance	Narrow-view reflective	Definite reflective	Long detecting distance (with P.R.O. function)	Transparent target detection (without P.R.O. function)	Red	Green	Blue
Rectangular	Cable	NPN	PZ-G51N	PZ-G52N	PZ-G41N	PZ-G42N	PZ-G101N	PZ-G102N	PZ-G61N	PZ-G62N			
		PNP	PZ-G51P	PZ-G52P	PZ-G41P	PZ-G42P	PZ-G101P	PZ-G102P	PZ-G61P	PZ-G62P			
	M8 connector	NPN	PZ-G51CN	PZ-G52CN	PZ-G41CN	PZ-G42CN	PZ-G101CN	PZ-G102CN	PZ-G61CN	PZ-G62CN	PZ-G10RCN	PZ-G10GCN	PZ-G10BCN
		PNP	PZ-G51CP	PZ-G52CP	PZ-G41CP	PZ-G42CP	PZ-G101CP	PZ-G102CP	PZ-G61CP	PZ-G62CP	PZ-G10RCP	PZ-G10GCP	PZ-G10BCP
Nut	Cable	Bipolar	PZ-G51B	PZ-G52B	PZ-G41B	PZ-G42B	PZ-G101B	PZ-G102B	PZ-G61B	PZ-G62B			
		(NPN+PNP)	PZ-G51CB	PZ-G52CB	PZ-G41CB	PZ-G42CB	PZ-G101CB	PZ-G102CB	PZ-G61CB	PZ-G62CB			
Detecting distance <sup>*1</sup>			20 m	40 m	1 m (30 x 30 cm white mat paper)	300 mm (10 x 10 cm white mat paper)	200 mm	5 to 45 mm	0.1 to 4.2 m (when R-2L reflector is used)	0.1 to 1 m (when R-2L reflector is used)	8 to 15 mm		
Spot diameter			-	-	-	-	Approx. φ 5 mm (when the detecting distance is 100 mm)	Approx. φ 2 mm (when the detecting distance is 40 mm)	-	-	Approx. 1.5 x 4 mm (when the detecting distance is 10 mm)		
Light source (LED)			Red LED	Infrared LED x 2	Red LED				Infrared LED		Red LED	Green LED	Blue LED
Sensitivity adjustment		1-turn trimmer (230 degrees)											
Response time		500 μs										50 μs	
Operation mode		LIGHT-ON/DARK-ON, trimmer-selectable											
Indicator (LED)		Transmitter: power (orange) Receiver: output (orange), stable operation (green), light (red)				Output (orange), stable operation (green)							
Control output		Open-collector 100 mA max. (30 V max.), Residual voltage 1 V max.											
Protection circuit		Reverse-polarity protection, over-current protection, output surge absorber											
Ratings	Power voltage	10 to 30 VDC, Ripple (P-P): ±10% max, Class 2.											
	Current consumption	Transmitter: 20 mA max. Receiver: 28 mA max.	Transmitter: 25 mA max. Receiver: 28 mA max.	34 mA max.									
Environmental resistance	Enclosure rating	IEC/JEM: IP67 / NEMA: 4X,6,12 / DIN: IP69K											
	Ambient light	Incandescent lamp: 5,000 (lx) max, Sunlight: 20,000 (lx) max.											
	Ambient temperature	-20 °C to +55 °C (No freezing)											
	Relative humidity	35 to 85 % RH (No condensation)											
	Vibration resistance	10 to 55 Hz, 1.5 mm double amplitude in X, Y, Z directions, 2 hours each											
Interference prevention		2 units (when polarizing filter attachment is used)		2 units (with the automatic different cycle function)									
	Material	Case, M18 nut (nut type only): reinforced glass polybutylene terephthalate (PBT), Trimmer: reinforced glass polyamide (PA) Cable (Cable type / pigtail quick disconnect type only): Polyvinyl chloride (PVC), Screw (Case connection): Steel, zinc-nickel plated, Packing (Case connection): Nitrile-butadiene rubber (NBR) Connector (pigtail quick disconnect type only): Brass-nickel plated, Polybutyleneterephthalate (PBT), Polyvinyl chloride (PVC)											
Tightening torque	Lens cover	Polyarylate (PAR)				Acrylic plastic (PMMA)			Polyarylate (PAR)				
	Accessory <sup>z</sup>	Rectangular type (side screw part): 0.5 N·m max. Nut type (front M18 part): 1.0 N·m max., (side slot part): 0.5 N·m max.											
Weight		Instruction manual, M18 nut x 2 (nut thru-beam type), M18 nut x 1 (other nut types)											
		Rectangular cable type: Approx. 60 g (Approx. 50 g for thru-beam transmitter), Rectangular M8 connector type: Approx. 10 g, rectangular M12 pigtail quick disconnect type: Approx. 30 g Nut type cable type: Approx. 65 g (Approx. 55 g for thru-beam transmitter), Nut type M12 connector type: Approx. 15 g											

\*1 The detection distance is measured with the maximum sensitivity.

\*2 The cable for the connector type / pigtail quick disconnect type is sold separately. The reflector for the retro-reflective type is sold separately.

## WARRANTY

KEYENCE products are strictly factory-inspected. However, in the event of a failure, contact your nearest KEYENCE office with details of the failure.

### 1. WARRANTY PERIOD

The warranty period shall be for one year from the date that the product has been delivered to the location specified by the purchaser.

### 2. WARRANTY SCOPE

(1) If a failure attributable to KEYENCE occurs within the abovementioned warranty period, we will repair the product, free of charge. However, the following cases shall be excluded from the warranty scope.

- Any failure resulting from improper conditions, improper environments, improper handling, or improper usage other than described in the instruction manual, the user's manual, or the specifications specifically arranged between the purchaser and KEYENCE.
- Any failure resulting from factors other than a defect of our product, such as the purchaser's equipment or the design of the purchaser's software.
- Any failure resulting from modifications or repairs carried out by any person other than KEYENCE staff.
- Any failure that can certainly be prevented when the expendable part(s) is maintained or replaced correctly as described in the instruction manual, the user's manual, etc.
- Any failure caused by a factor that cannot be foreseen at a scientific/technical level at the time when the product has been shipped from KEYENCE.
- Any disaster such as fire, earthquake, and flood, or any other external factor, such as abnormal voltage, for which we are not liable.

(2) The warranty scope is limited to the extent set forth in item (1), and KEYENCE assumes no liability for any purchaser's secondary damage (damage of equipment, loss of opportunities, loss of profits, etc.) or any other damage resulting from a failure of our product.

### 3. PRODUCT APPLICABILITY

KEYENCE products are designed and manufactured as general-purpose products for general industries.

Therefore, our products are not intended for the applications below and are not applicable to them. If, however, the purchaser consults with us in advance regarding the employment of our product, understands the specifications, ratings, and performance of the product on their own responsibility, and takes necessary safety measures, the product may be applied. In this case, the warranty scope shall be the same as above.

- Facilities where the product may greatly affect human life or property, such as nuclear power plants, aviation, railroads, ships, motor vehicles, or medical equipment
- Public utilities such as electricity, gas, or water services
- Usage outdoors, under similar conditions or in similar environments

E 1040-1

## KEYENCE CORPORATION

1-3-14, Higashi-Nakajima, Higashi-Yodogawa-ku,  
Osaka, 533-8555, Japan

PHONE: +81-6-6379-2211 [www.keyence.com](http://www.keyence.com)

Specifications are subject to change without notice.

A7WW1-MAN-0069

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11227E 1070-1 96M11227

Printed in Japan



**ASSEMBLY TITLE: HUGGER BELT**

**GENERAL FUNCTION:**

- The hugger belt assembly provides positive drive through the labeling station. It is controlled by a variable speed AC motor.

**SET-UP AND ADJUSTMENTS:**

- To adjust in/out spacing, turn handle at either end of the horizontal screw.

**MAINTENANCE:**

- Ensure that the hugger belts are free of labels. Remove label material using an environmentally safe adhesive cleaner.
- Inspect the belt weekly for evidence of excessive wear or stretching. Ensure that belt tension is correct to prevent these conditions.

**TROUBLESHOOTING:**

PROBLEM

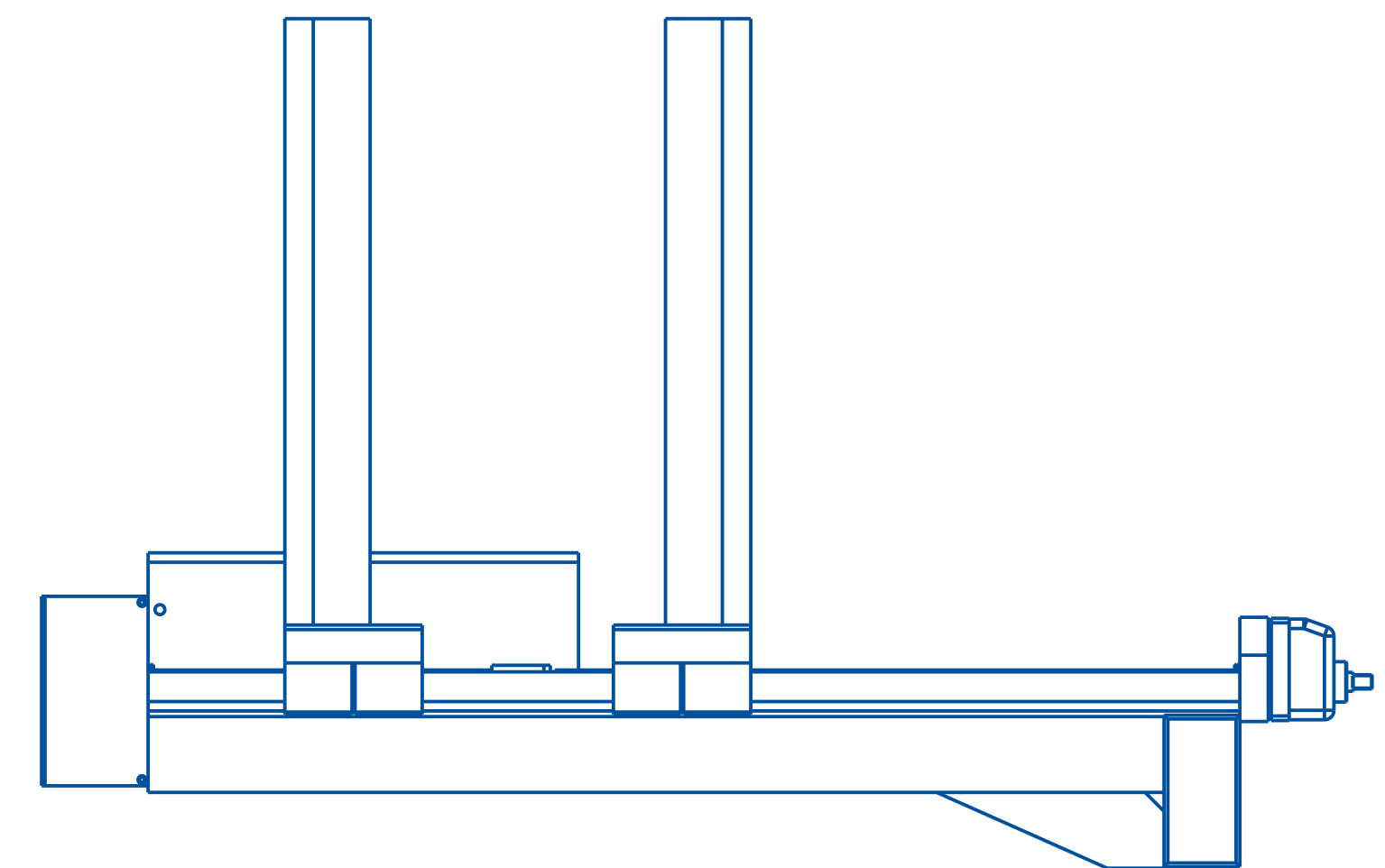
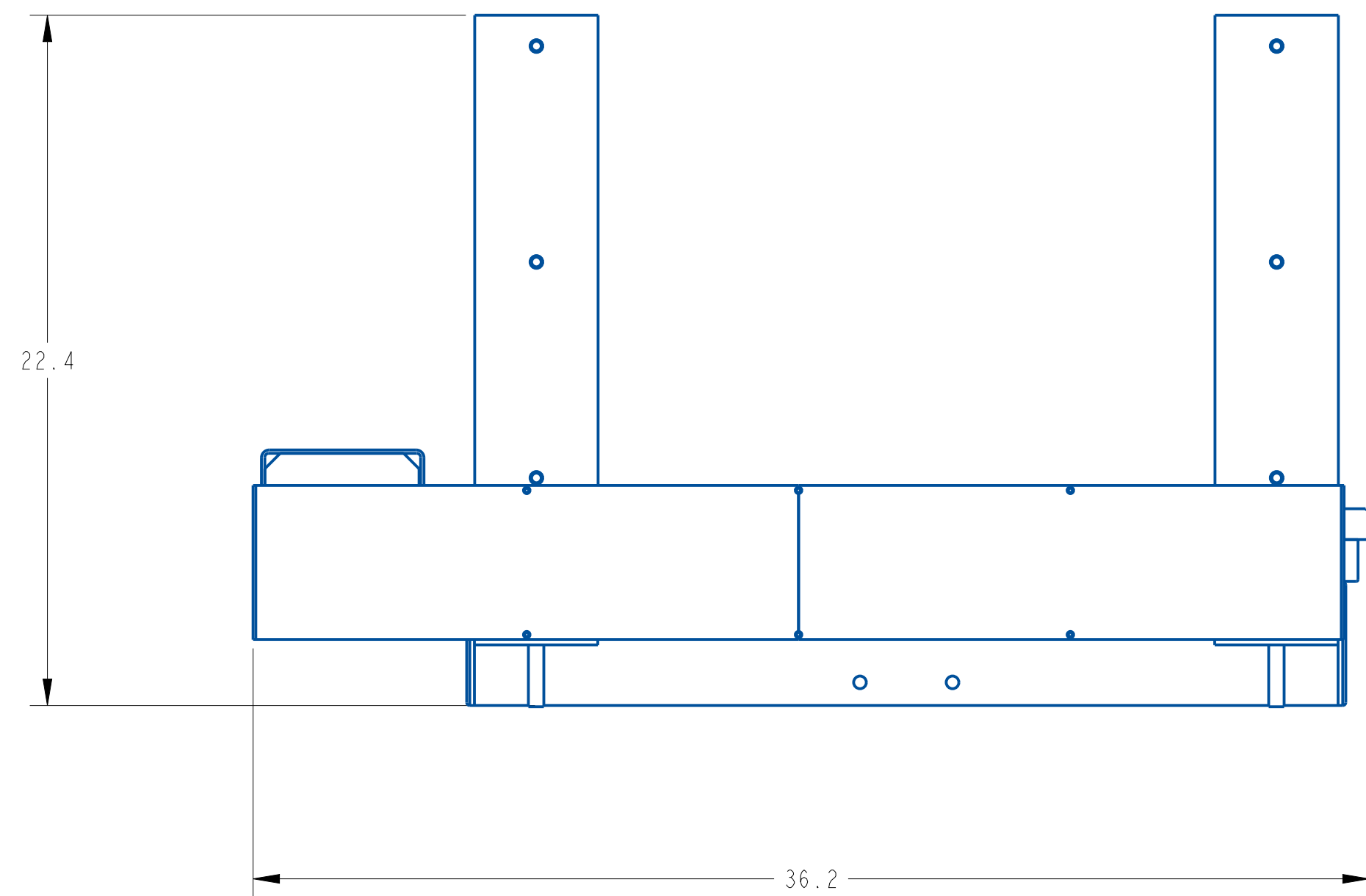
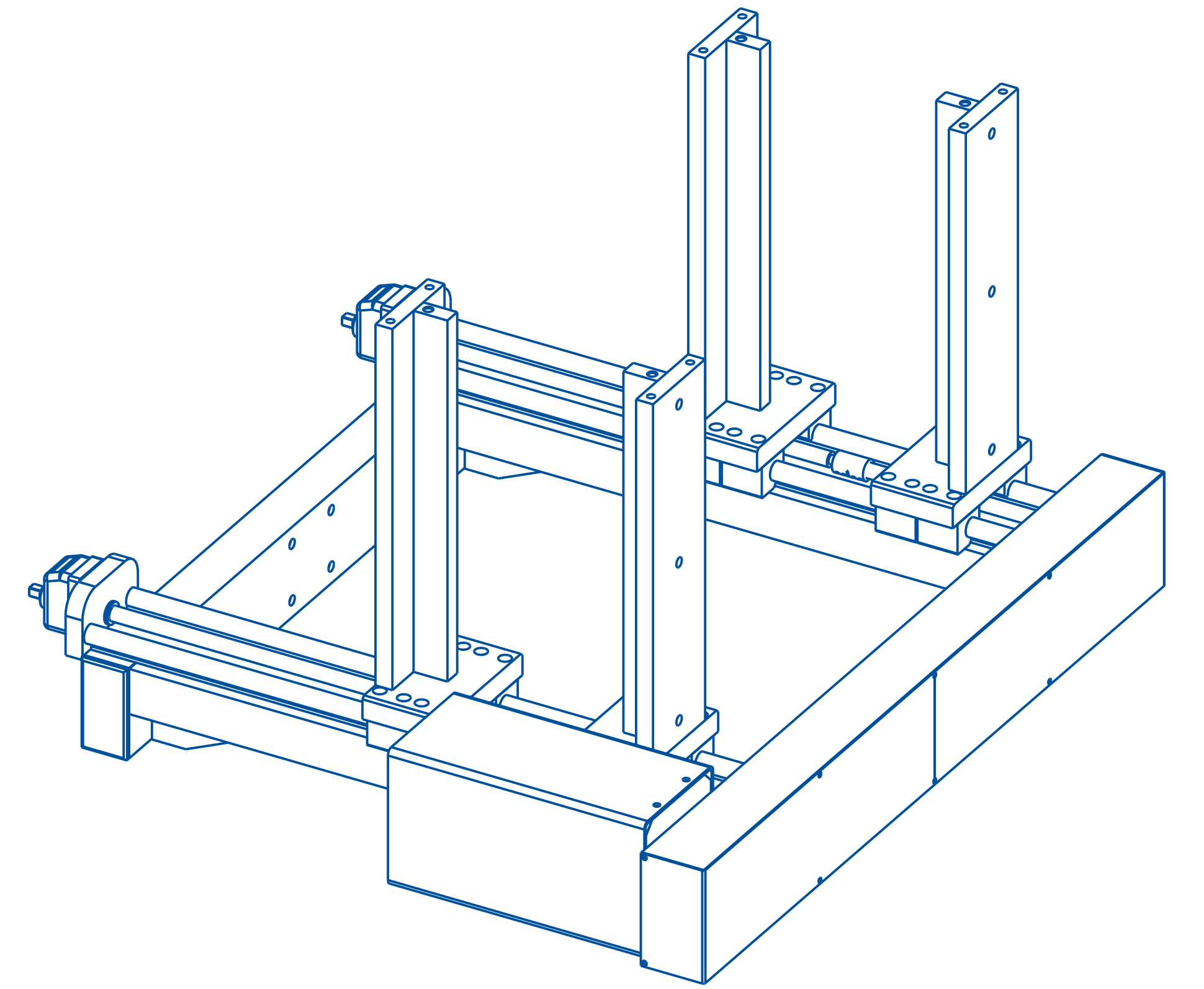
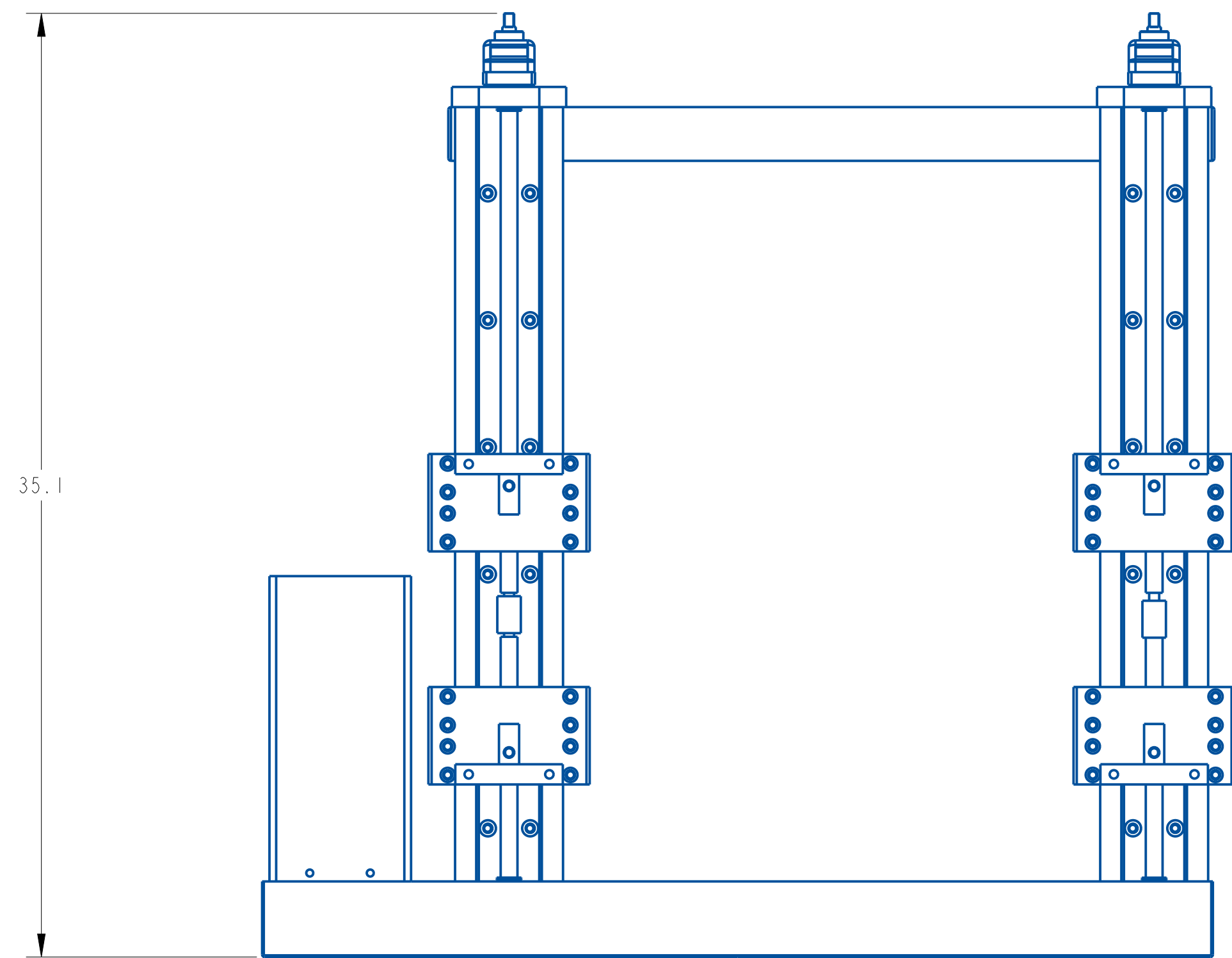
WHAT TO DO

Will not hold product

Adjust in/out spacing to apply more pressure to product. See SET UP AND ADJUSTMENTS.







REV	DATE	DESCRIPTION	BY
A	Dec-19-25	NEW DRAWING	TAZ

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UNLESS OTHERWISE SPECIFIED  
DIMENSIONAL TOLERANCE

X ± .1  
XX ± .01  
XXX ± .005  
ANGLES ± .30°

SURFACE FINISH 125  
BREAK ALL EDGES .005/ .015  
CORNER RADIUS .010/ .030  
ALL ANGLES ARE 90°

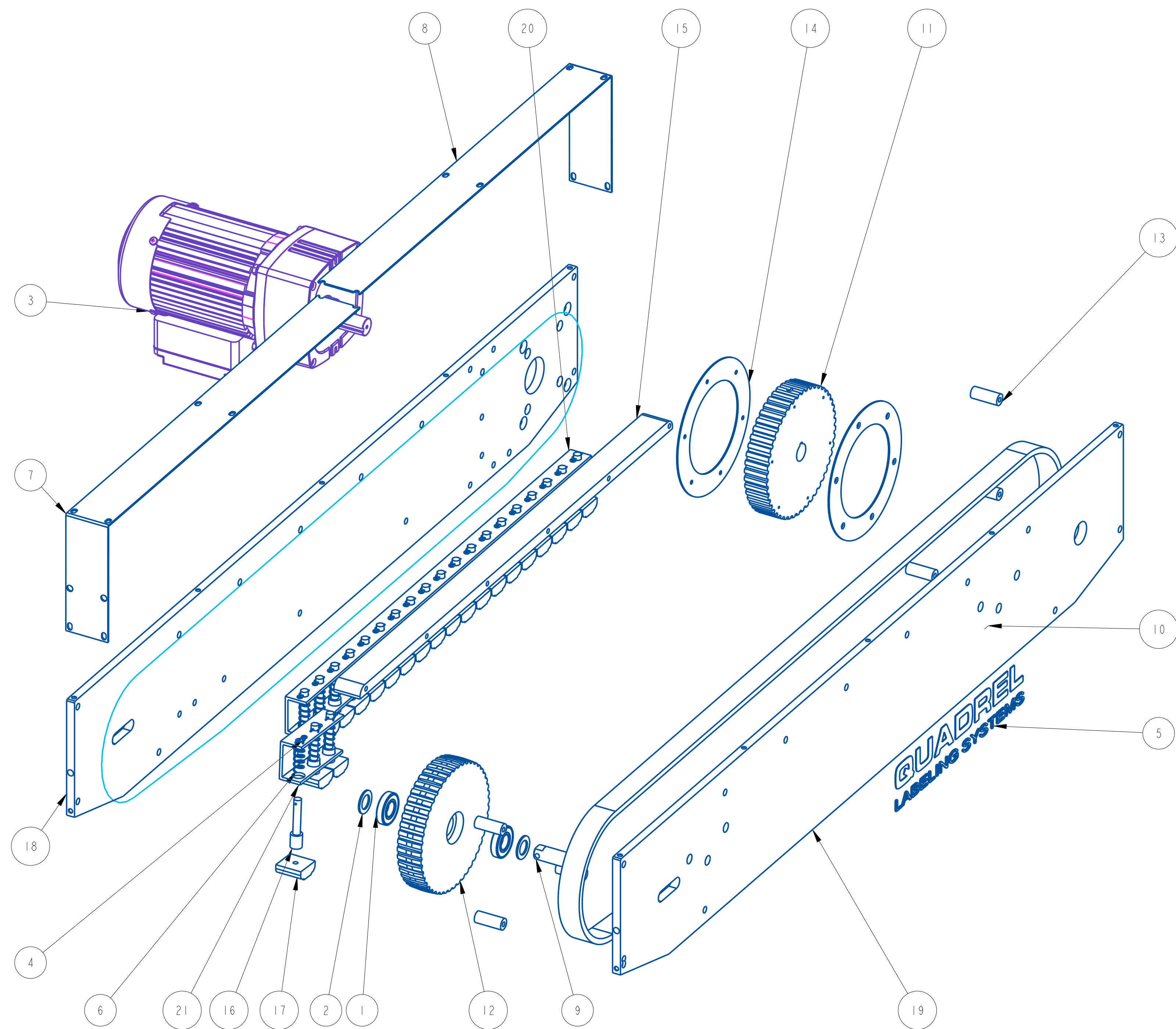
**QUADREL LABELING SYSTEMS**

7670 JENTHER DRIVE  
MENTOR, OHIO 44060  
(440) 602-4700

SCALE: 7/32  
DATE: Dec-19-25  
DRW BY: TAZ  
CHK BY: 01/15/2026-SEM  
APPR BY:

**HUGGER BELT ADJUST**

MAT'L 84251HBA-000 84251HBA-000

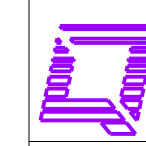


ITEM	QTY	PART NO.	DESCRIPTION	PARENT ITEM
1	2	111075-000	BEARING, BALL	22868-84251R
2	2	151008-000	BEARING, THRUST WASHER	22868-84251R
3	1	413016-000	GEARMOTOR-3/8HP-57 RPM 3PHASE	22868-84251R
4	22	791975-001	R-CLIP	22868-84251R
5	1	793013-000	QUADREL Logo ( 3"x11" )	22868-84251R
6	22	811256-000	COMPRESSION SPRING	22868-84251R
7	1	A21578-040	TOP TRAP COVER PLATE	22868-84251R
8	1	A21578-041	TOP TRAP COVER PLATE	22868-84251R
9	1	A21823-000	IDLER SHAFT	22868-84251R
10	1	A21830_601	TIMING BELT, RED LINOTEX	22868-84251R
11	1	A25122-600	DRIVE PULLEY	22868-84251R
12	1	A25122-602	IDLER PULLEY	22868-84251R
13	6	A26053-000	SPACER	22868-84251R
14	2	A26197-000	PULLEY FLANGE	22868-84251R
15	1	B21769-000	TOP TRAP SPACER	22868-84251R
16	22	B22784-000	SPRING BLOCK STEM	22868-84251R
17	22	B22785-000	SPRING BLOCK PLATE	22868-84251R
18	1	C21268-840	INSIDE TOP TRAP PLATE	22868-84251R
19	1	C21268-84251	INSIDE TOP TRAP PLATE	22868-84251R
20	1	D24415-000	SPRING BLOCK MOUNTING CHANNEL	22868-84251R
21	1	D24415-001	SPRING BLOCK MOUNTING CHANNEL	22868-84251R

REV	DATE	DESCRIPTION	BY
A	Jan-15-26	NEW DRAWING	TAZ

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 DIMENSIONAL TOLERANCE  
 .XX ± .01  
 .XXX ± .005  
 ANGLES ± 30°  
 SURFACE FINISH 125  
 BREAK ALL EDGES .005/.015  
 CORNER RADIUS .010/.030  
 ALL ANGLES ARE 90°

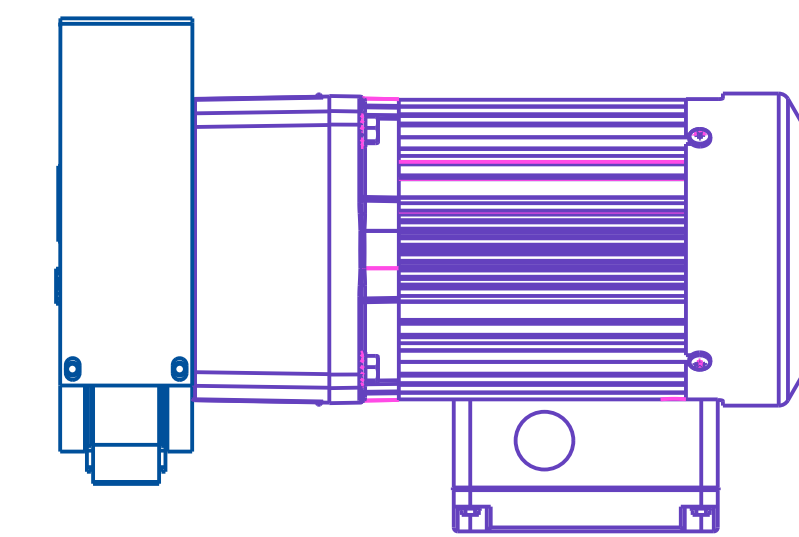
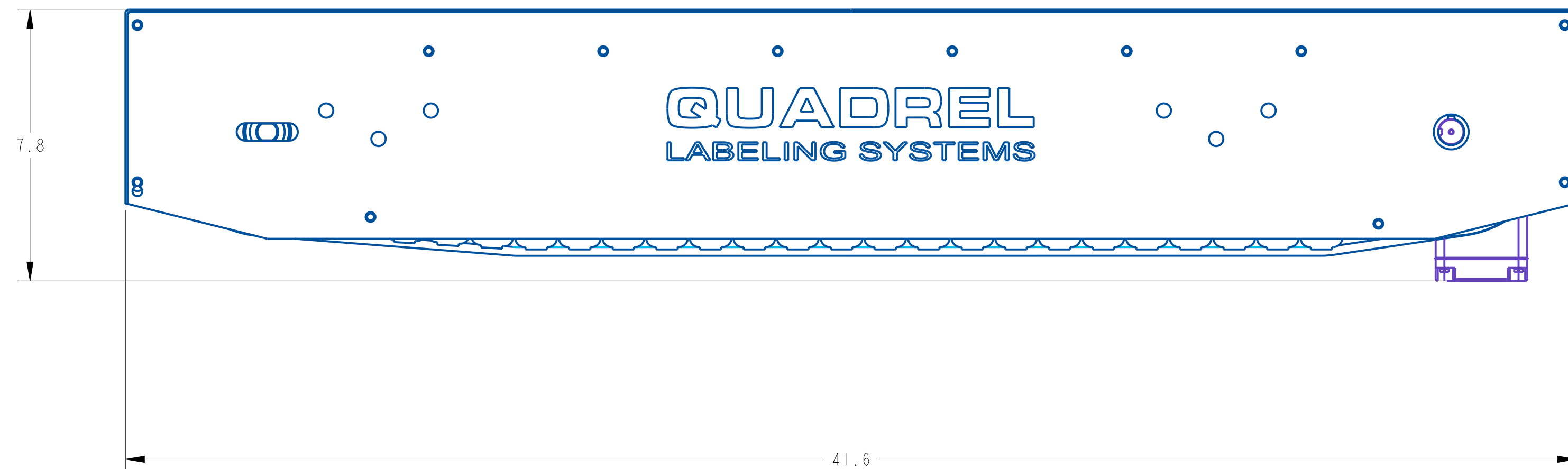
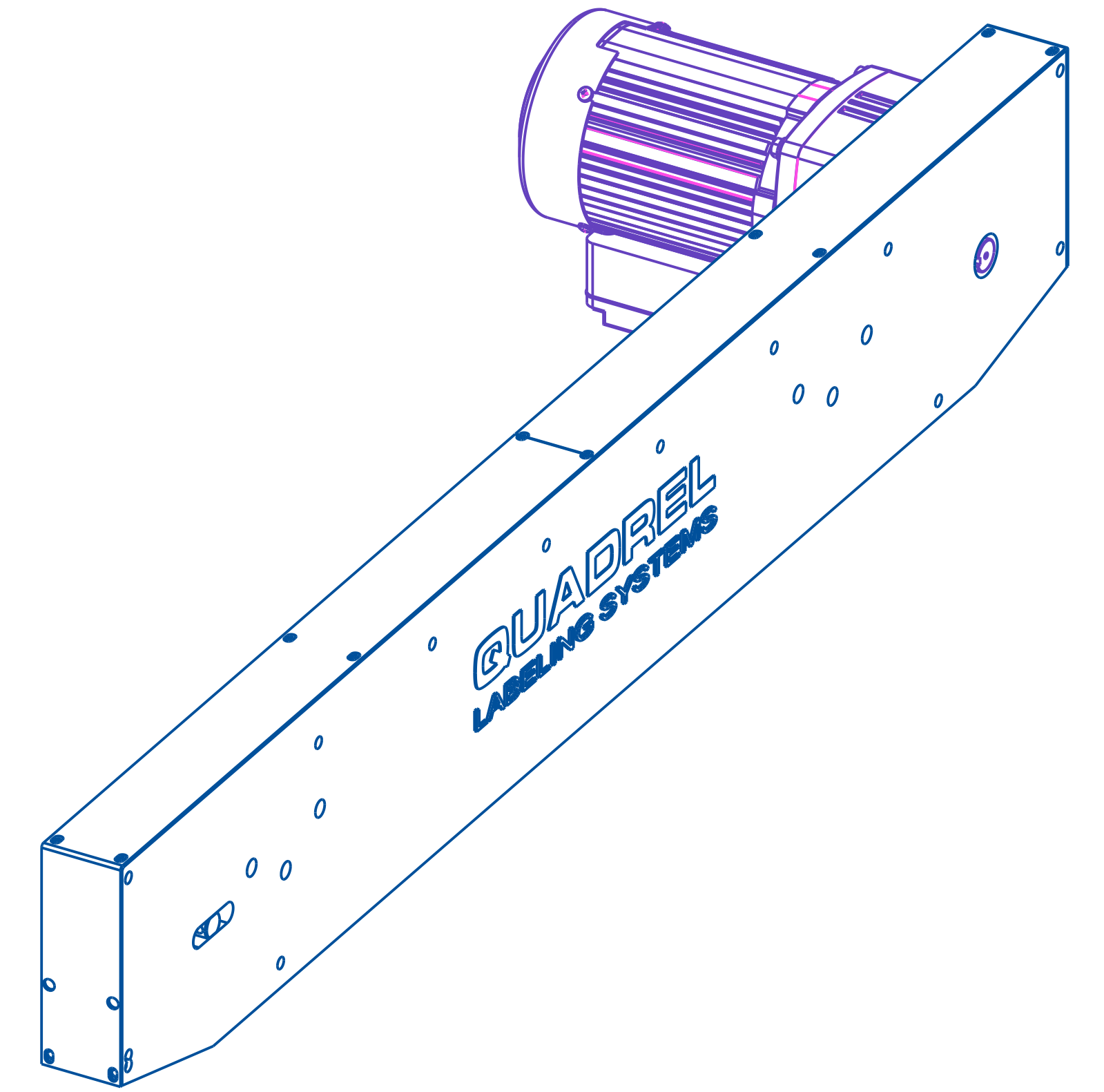
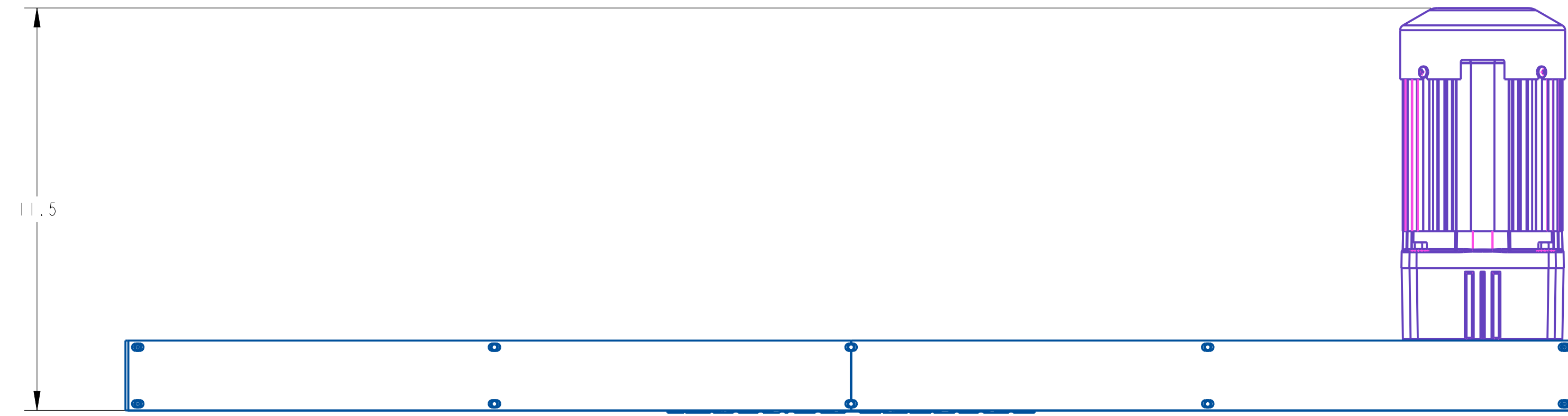


QUADREL LABELING SYSTEMS  
 7670 JENTHER DRIVE  
 MENTOR, OHIO 44060  
 (440) 602-4700

SCALE: 11/32  
 DATE: Jan-15-26  
 DRW BY: TAZ  
 CHK BY: 01/15/2026-SEM  
 APPR BY:

HUGGER BODY ASSEMBLY RH

MAT'L 22868-84251R

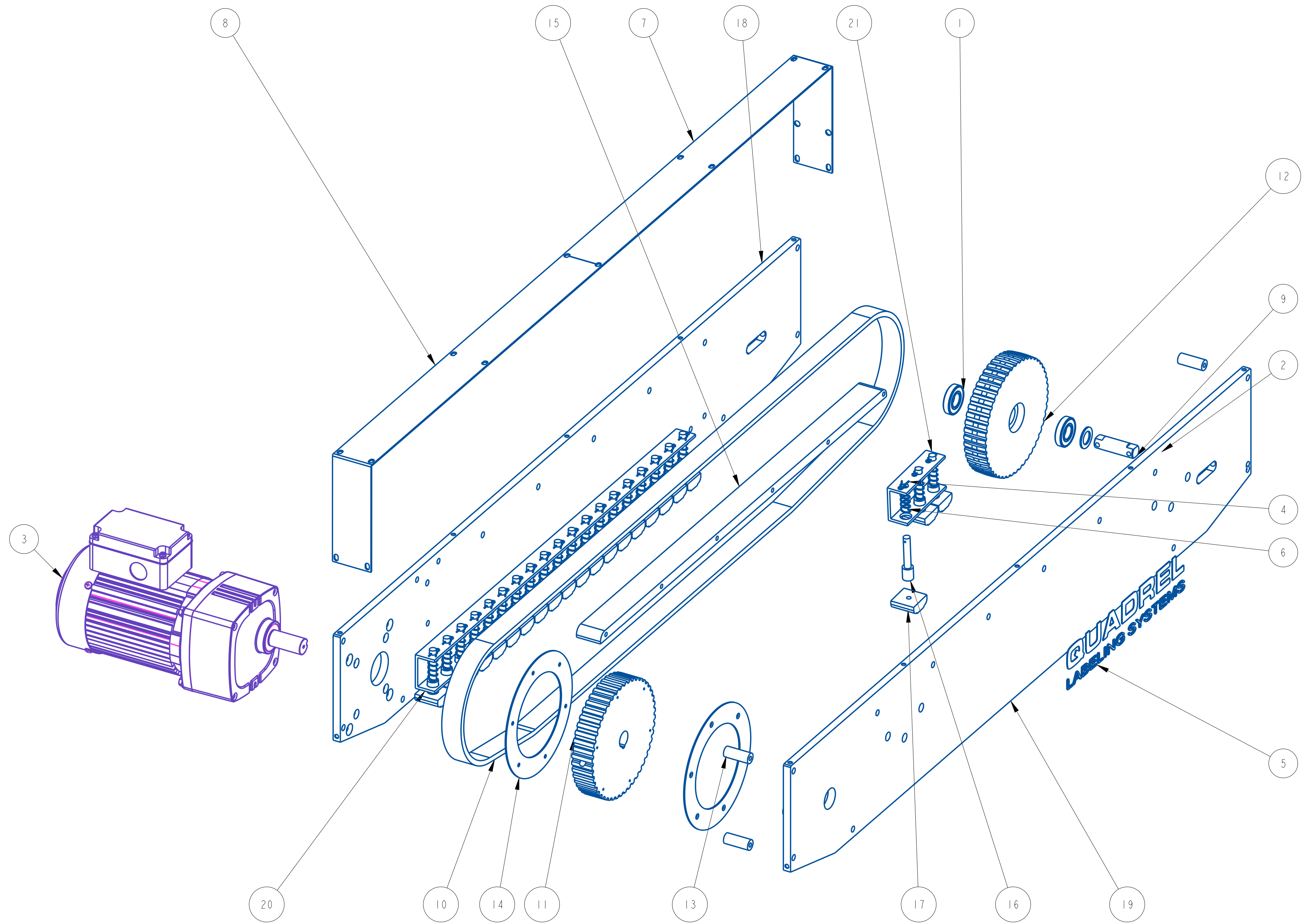


REV	DATE	DESCRIPTION	BY
A	Jan-15-26	NEW DRAWING	TAZ

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UNLESS OTHERWISE SPECIFIED DIMENSIONAL TOLERANCE	<p>SCALE: 11/32</p> <p>DATE: Jan-15-26</p> <p>DRW BY: TAZ</p> <p>CHK BY: 01/15/2026-SEM</p> <p>APPR BY:</p>
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<p>QUADREL LABELING SYSTEMS</p> <p>7670 JENTHER DRIVE</p> <p>MENTOR, OHIO 44060</p> <p>(440) 602-4700</p>	
<p>HUGGER BODY ASSEMBLY RH</p>	
MAT'L	22868-84251R
22868-84251R	



ITEM	QTY	PART NO.	DESCRIPTION	PARENT ITEM
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2	2	151008-000	BEARING, THRUST WASHER	22868-84251L
3	1	413016-000	GEARMOTOR-3/8HP-57 RPM 3PHASE	22868-84251L
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REV	DATE	DESCRIPTION	BY
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DIMENSIONAL TOLERANCE  
 X ± .1  
 XX ± .01  
 XXX ± .005  
 ANGLES ± .30°

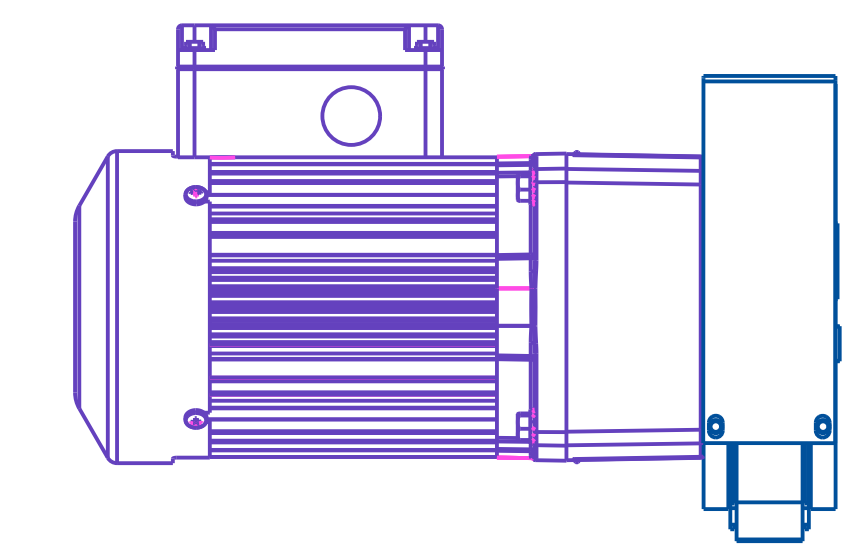
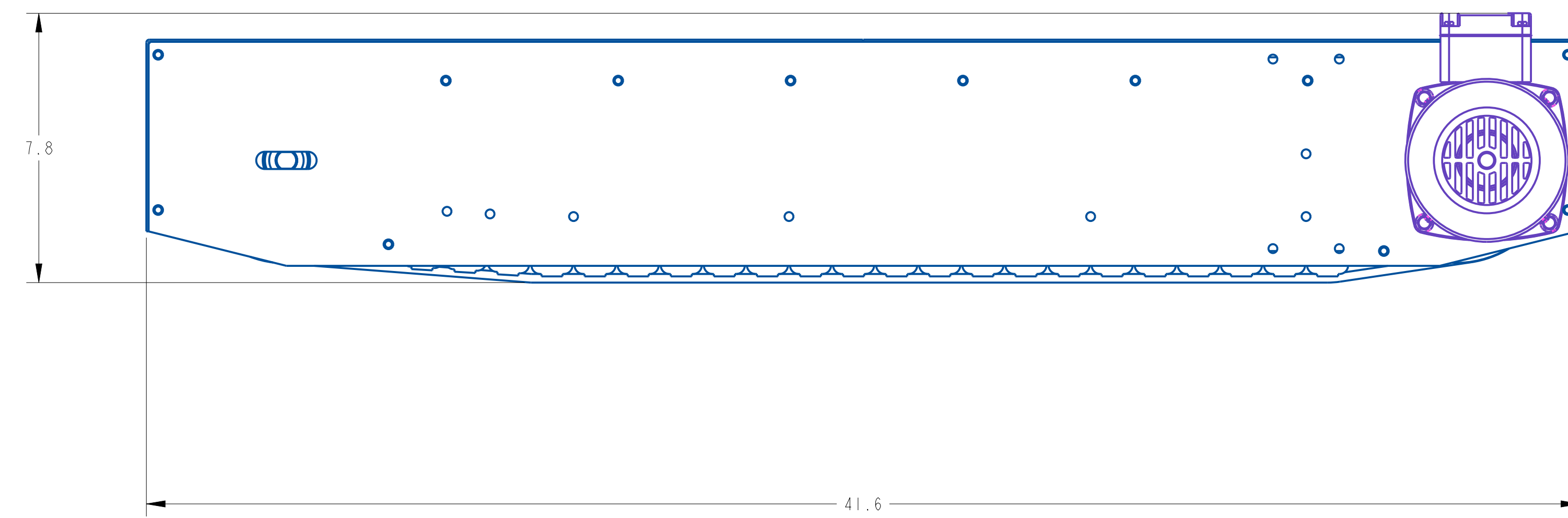
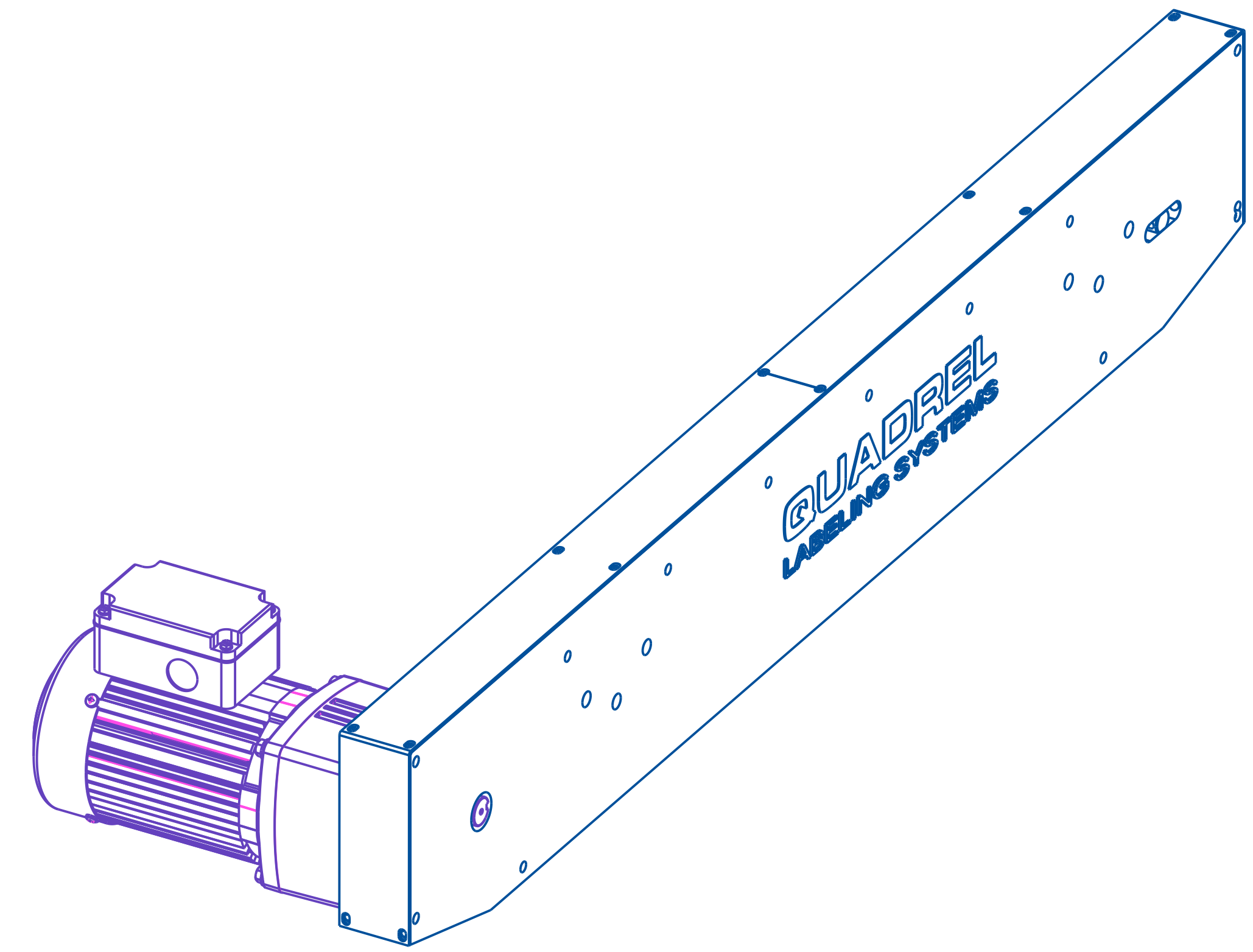
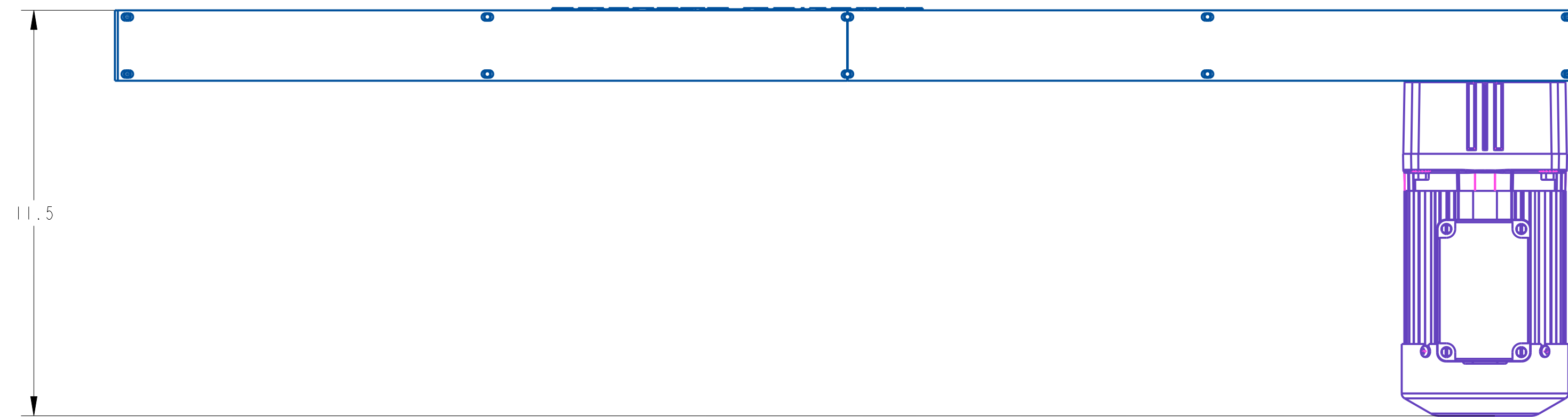
SURFACE FINISH 125  
 BREAK ALL EDGES .005/.015  
 CORNER RADIUS .010/.030  
 ALL ANGLES ARE 90°

**QUADREL LABELING SYSTEMS**  
 7670 JENTHER DRIVE  
 MENTOR, OHIO 44060  
 (440) 602-4700

SCALE: 11/32  
 DATE: Jan-15-26  
 DRW BY: TAZ  
 CHK BY: 01/15/2026-SEM  
 APPR BY:

**HUGGER BODY ASSEMBLY LH**

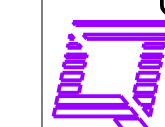
MAT'L 22868-84251L 22868-84251L



REV	DATE	DESCRIPTION	BY
A	Jan-15-26	NEW DRAWING	TAZ

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 DIMENSIONAL TOLERANCE  
 .x ± .1  
 .xx ± .01  
 .xxx ± .005  
 ANGLES ± .30°  
 SURFACE FINISH 125  
 BREAK ALL EDGES .005/.015  
 CORNER RADIUS .010/.030  
 ALL ANGLES ARE 90°



**QUADREL LABELING SYSTEMS**  
 7670 JENTHER DRIVE  
 MENTOR, OHIO 44060  
 (440) 602-4700

SCALE	DATE	DESCRIPTION	BY
11/32	Jan-15-26	HUGGER BODY ASSEMBLY LH	TAZ

SHEET 2 OF 2

MATERIAL	QUANTITY	DESCRIPTION
MAT'L	22868-84251L	22868-84251L

QUADREL LABELING SYSTEMS  
 INDENTED BILL OF MATERIAL

Items: 22287-003 Thru 22287-003 Location: 01 QUADREL WHSE

Activity Codes: Active Items Only

1 Levels With No Blow Through

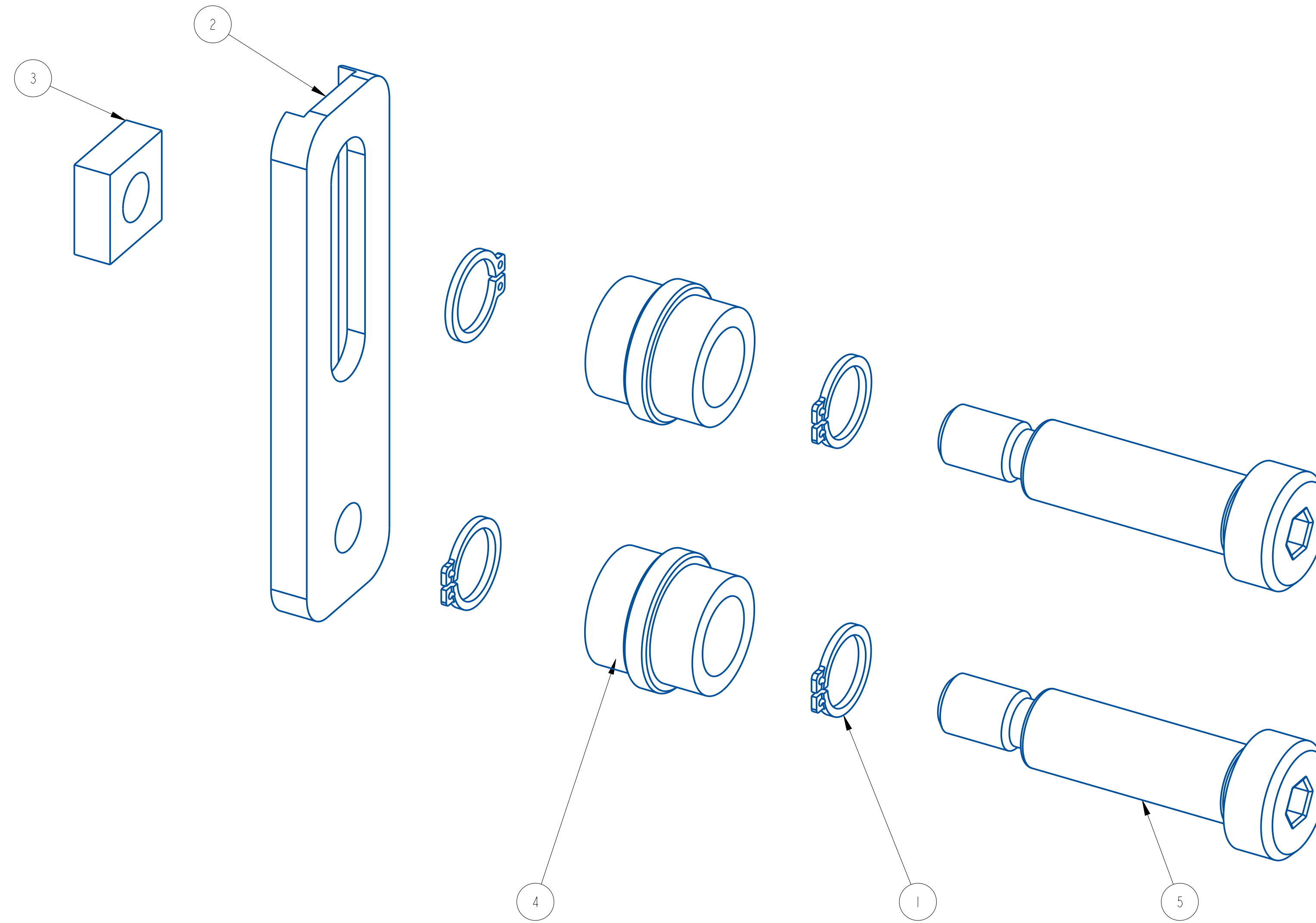
No Selection On Basis Of Effectivity Date

No Selection On Basis Of Obsolete Date

Level	Seq	Component-Item	Component-Description	Loc	Opr	UOM	Scrap	Act	Stk	B/I	Qty On-Hand	Qty-Per-Parent
							REV	P/M	Ctl	B/F	Qty-Allocated	Qty-On-Order

=====												
Parent Item: 22287-003      SHAFT ENCODER KIT, 120PPR      Loc: 01    LLC: 6												
ENCODER OC, BRACKET, SPACER												
1	5	202057-001	ENCODER, SHAFT MNT W/CPL.EPC		0	EA	.0	A	Y	N		1.000000
			15H-02SF-0120NV1ROC-F/12-S1CE*	01	7			P	Y	N		
1	45	0964	ENCODER SHAFT KIT		0	EA	.0	A	Y	N		1.000000
			BODINE# 0964	01	7			P	Y	N		
1	50	22888-000	ENCODER MOUNT/COVER ASSY, STD		0	EA	.0	A	N	N		1.000000
			DC AND AC 3/8HP MOTORS	01	7			M	N	N		

ITEM	QTY	PART NO.	DESCRIPTION	PARENT ITEM
1	4	871039-000	EXTERNAL SNAP RING	23426-000
2	1	A24062-101	MOUNTING BRACKET	23426-000
3	1	A25413-002	TENSIONER MOUNTING PLATE	23426-000
4	2	A25539-000	IDLER PULLEY	23426-000
5	2	CSSD0409		23426-000



REV	DATE	DESCRIPTION	BY
A	Feb-05-26	NEW DRAWING	TAZ

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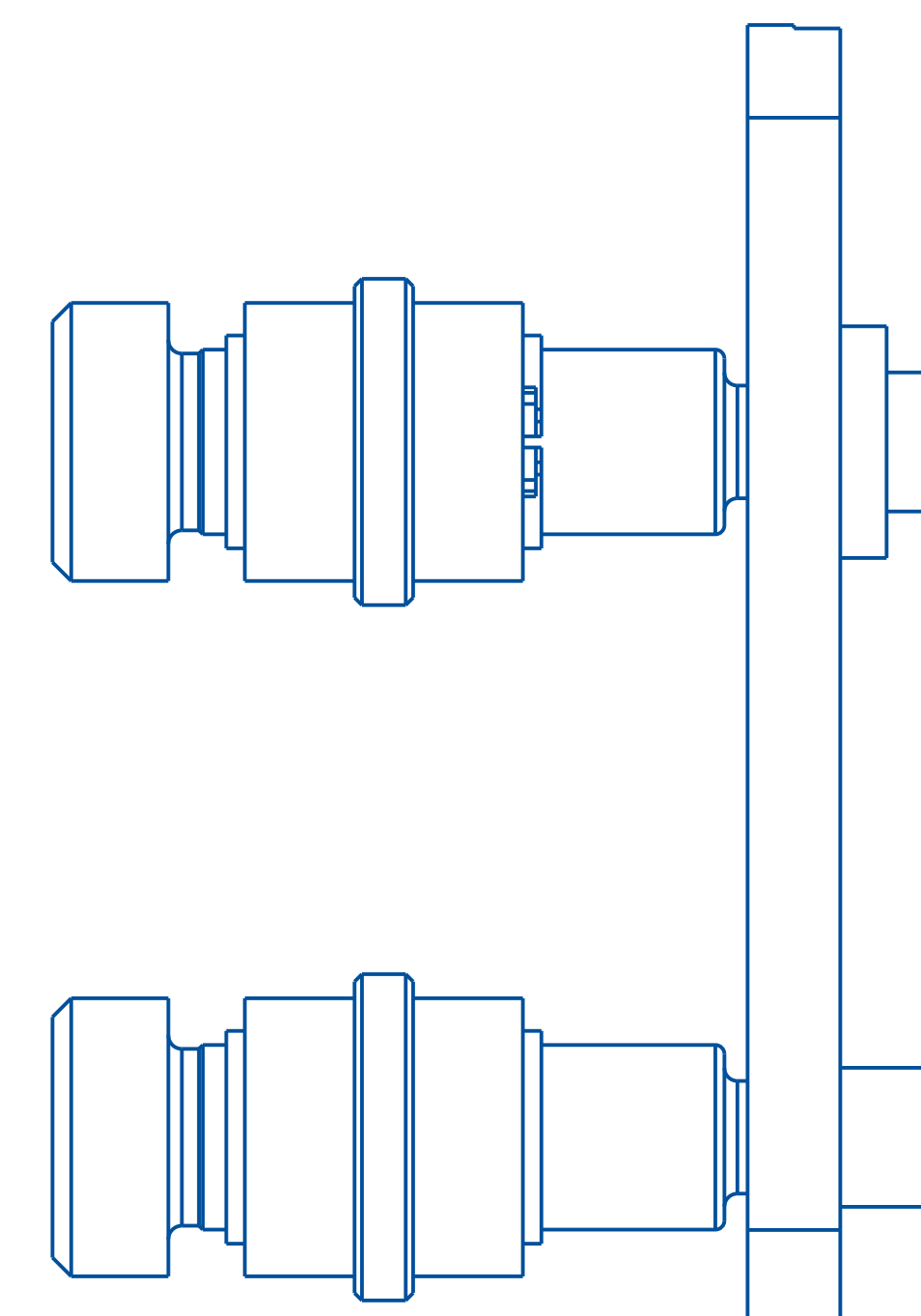
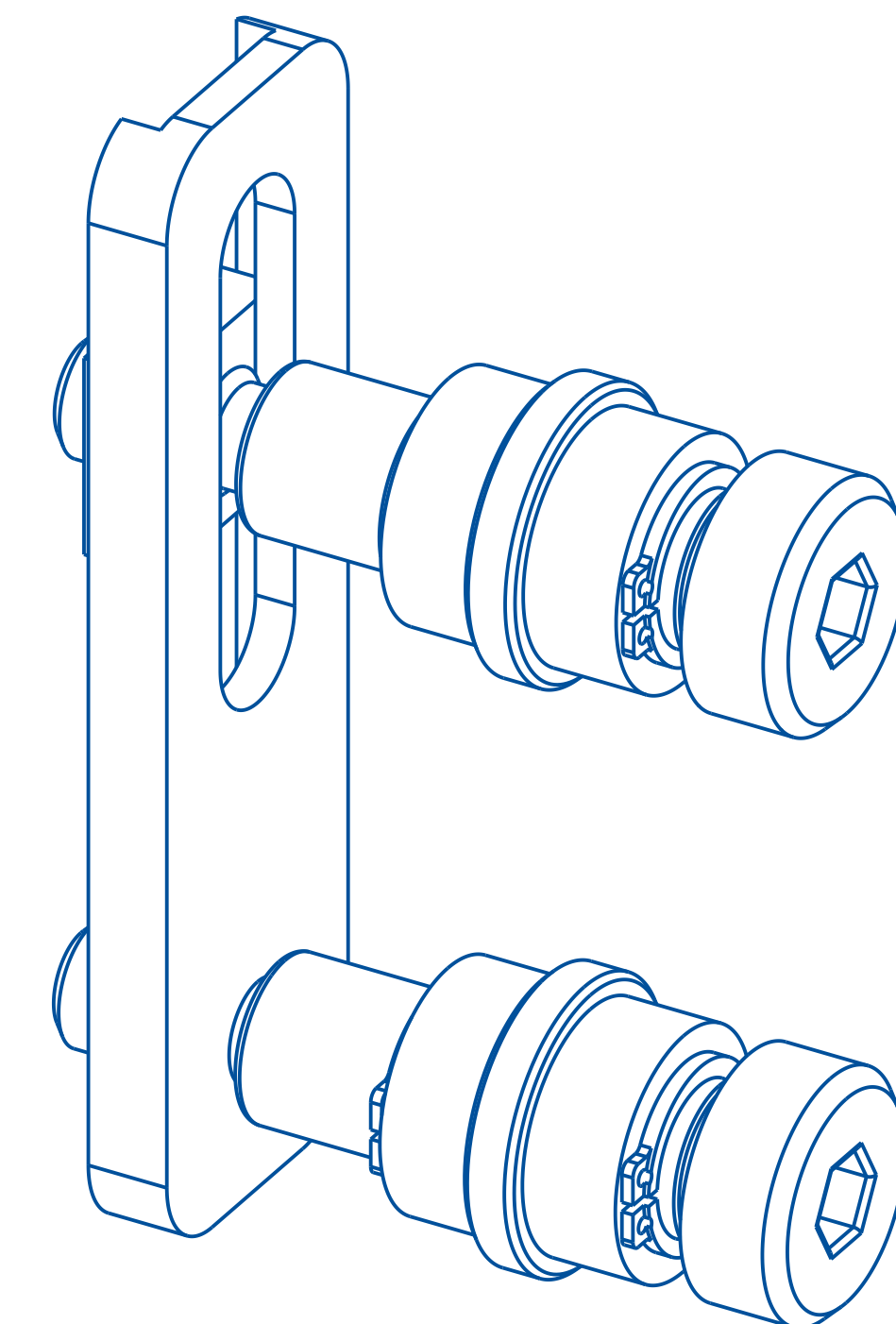
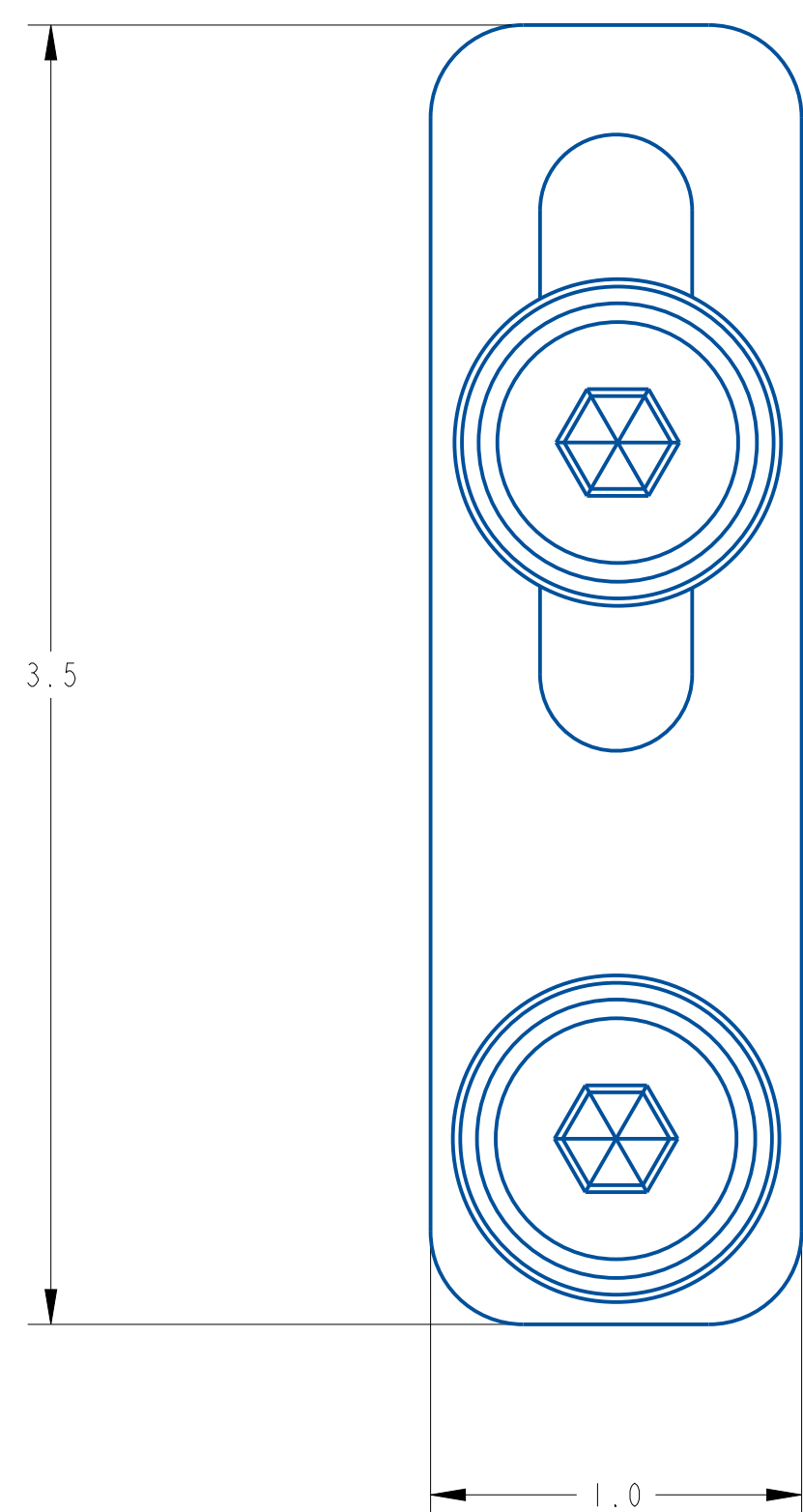
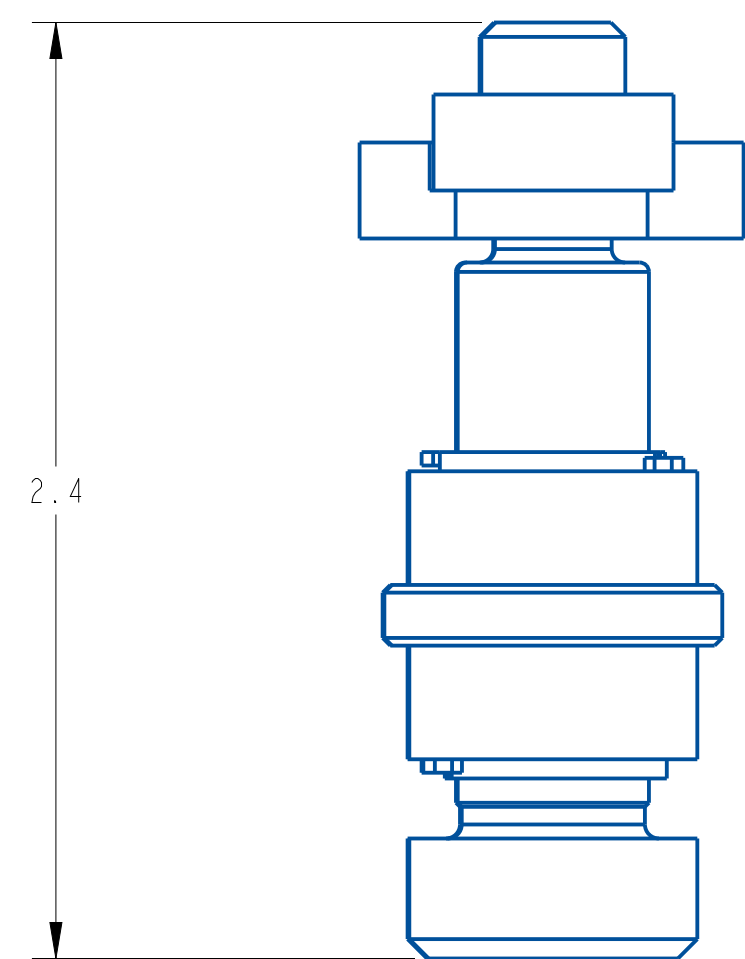
**QUADREL LABELING SYSTEMS**  
 7670 JENTHER DRIVE  
 MENTOR, OHIO 44060  
 (440) 602-4700

UNLESS OTHERWISE SPECIFIED  
 DIMENSIONAL TOLERANCE  
 .X ± .1  
 .XX ± .01  
 .XXX ± .005  
 ANGLES ± .30°  
 SURFACE FINISH 125  
 BREAK ALL EDGES .005/.015  
 CORNER RADIUS .010/.030  
 ALL ANGLES ARE 90°

SCALE: 2/1  
 DATE: Feb-05-26  
 DRW BY: TAZ  
 CHK BY:  
 APPR BY:

CHAIN TENSIONER

MAT'L	23426-000	23426-000
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REV	DATE	DESCRIPTION	BY
A	Feb-05-26	NEW DRAWING	TAZ

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QUADREL LABELING SYSTEMS  
 7670 JENTHER DRIVE  
 MENTOR, OHIO 44060  
 (440) 602-4700

SCALE: 2/1  
 DATE: Feb-05-26  
 DRW BY: TAZ  
 CHK BY:  
 APPR BY:

CHAIN TENSIONER  
 MAT'L 23426-000 23426-000

UNLESS OTHERWISE SPECIFIED  
 DIMENSIONAL TOLERANCE  
 X ± .1  
 XX ± .01  
 XXX ± .005  
 ANGLES ± .30°  
 SURFACE FINISH 125  
 BREAK ALL EDGES .005/ .015  
 CORNER RADIUS .010/ .030  
 ALL ANGLES ARE 90°

**ASSEMBLY TITLE: STOP GATE**

**DRAWING NO.: D20218-000**

**GENERAL FUNCTION:**

- The stop gate assembly is usually used to create a bank of products into a feed or pacing screw. In some instances it is used to inhibit the flow of products if the labeler should go into a fatal fault condition, or if a sensor is used on the out feed end of the conveyor to sense a back up of products.

**SET UP AND ADJUSTMENTS:**

- The Stop gate assembly is generally mounted to versaline rail and can be slid back and forth by loosening the clamping blocks on the mounting plate. If used in conjunction with pacing or feed screws the stop gate should be placed as close as possible without inhibiting the operation or change over of the screws. To adjust the in and out of the stop gate loosen the 3/8-16 H.H.C.S. or ratchet handle located under the air cylinder and move to the desired location and retighten.

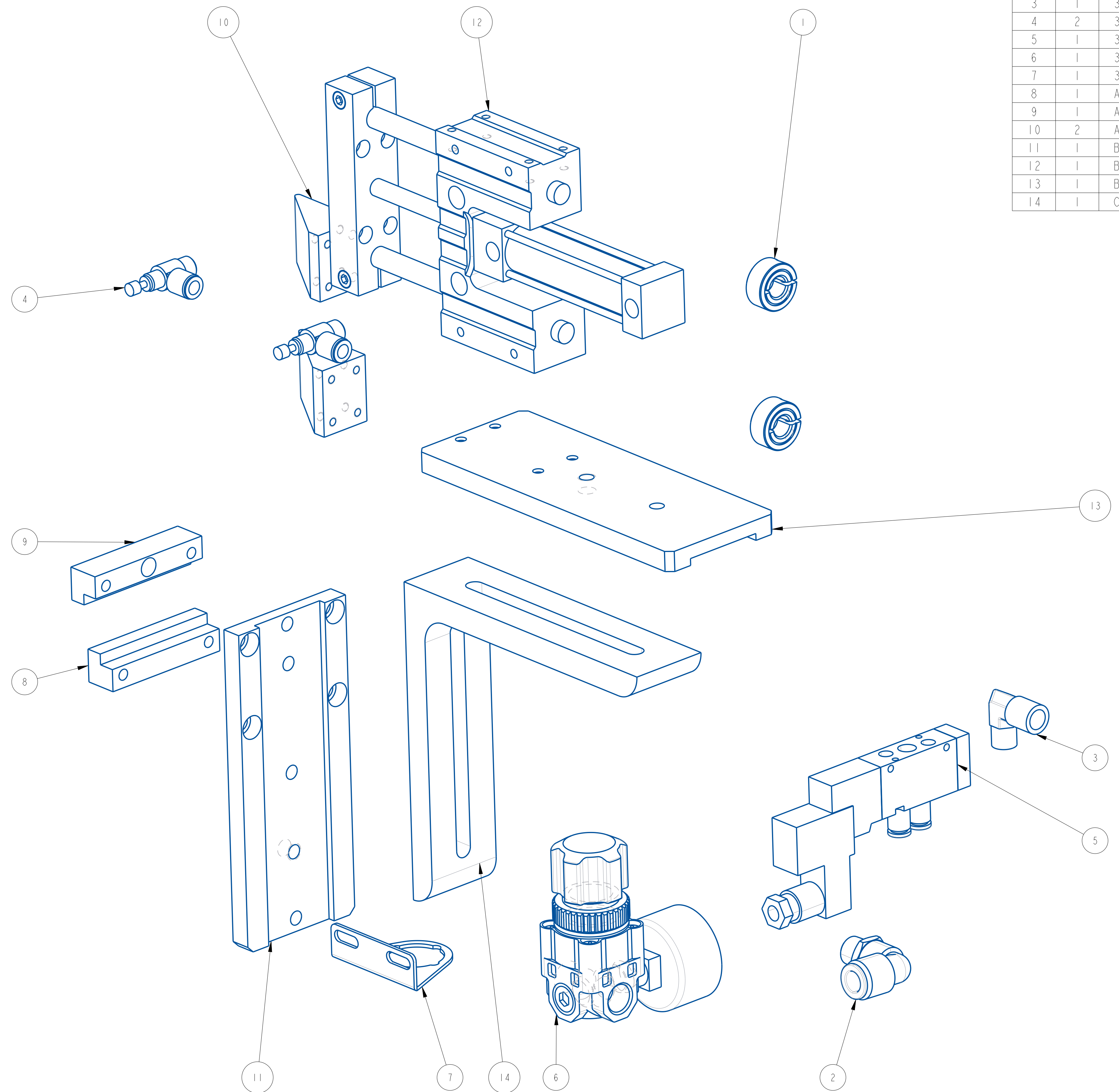
**MAINTENANCE:**

- Keep the stop gate free of discarded labels and debris. This will allow for free product movement.

**CAUTION:**

- **Before performing any maintenance or cleaning make sure the system is powered down.**





ITEM	QTY	PART NO.	DESCRIPTION	PARENT ITEM
1	2	362186-000	COLLAR, 3/8 IN. ID ONE-PIECE CLAMP	21081-000
2	1	391809-000	FITTING, ELBOW 3/8" X 1/4"	21081-000
3	1	391969-000	ELBOW, 1/8NPT MALE X 1/4NPT MALE, 90°	21081-000
4	2	392029-000	FLOW CONTROL FITTING	21081-000
5	1	392268-000	VALVE,	21081-000
6	1	392270-000	REGULATOR W/GAUGE (INCL.NUT)	21081-000
7	1	392809-000	REGULATOR, MOUNTIN BRACKET	21081-000
8	1	A20844-000	GUIDE RAIL CLAMP BAR	21081-000
9	1	A20845-000	GUIDE RAIL CLAMP BAR	21081-000
10	2	A20859-008	PRODUCT STOP	21081-000
11	1	B20266-000	CONVEYOR MOUNTING PLATE	21081-000
12	1	B20277-000	PNEUMATIC SLIDE	21081-000
13	1	B20278-000	CYLINDER MOUNTING PLATE	21081-000
14	1	C20175-000	MOUNTING ANGLE	21081-000

REV	DATE	DESCRIPTION	BY
B	06/07/2005	UPDATE BILL OF MATERIAL	SEM
A	10-18-02	NEW DRAWING	JMC

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**QUADREL LABELING SYSTEMS**  
 7670 JENTHER DRIVE  
 MENTOR, OHIO 44060  
 (440) 602-4700

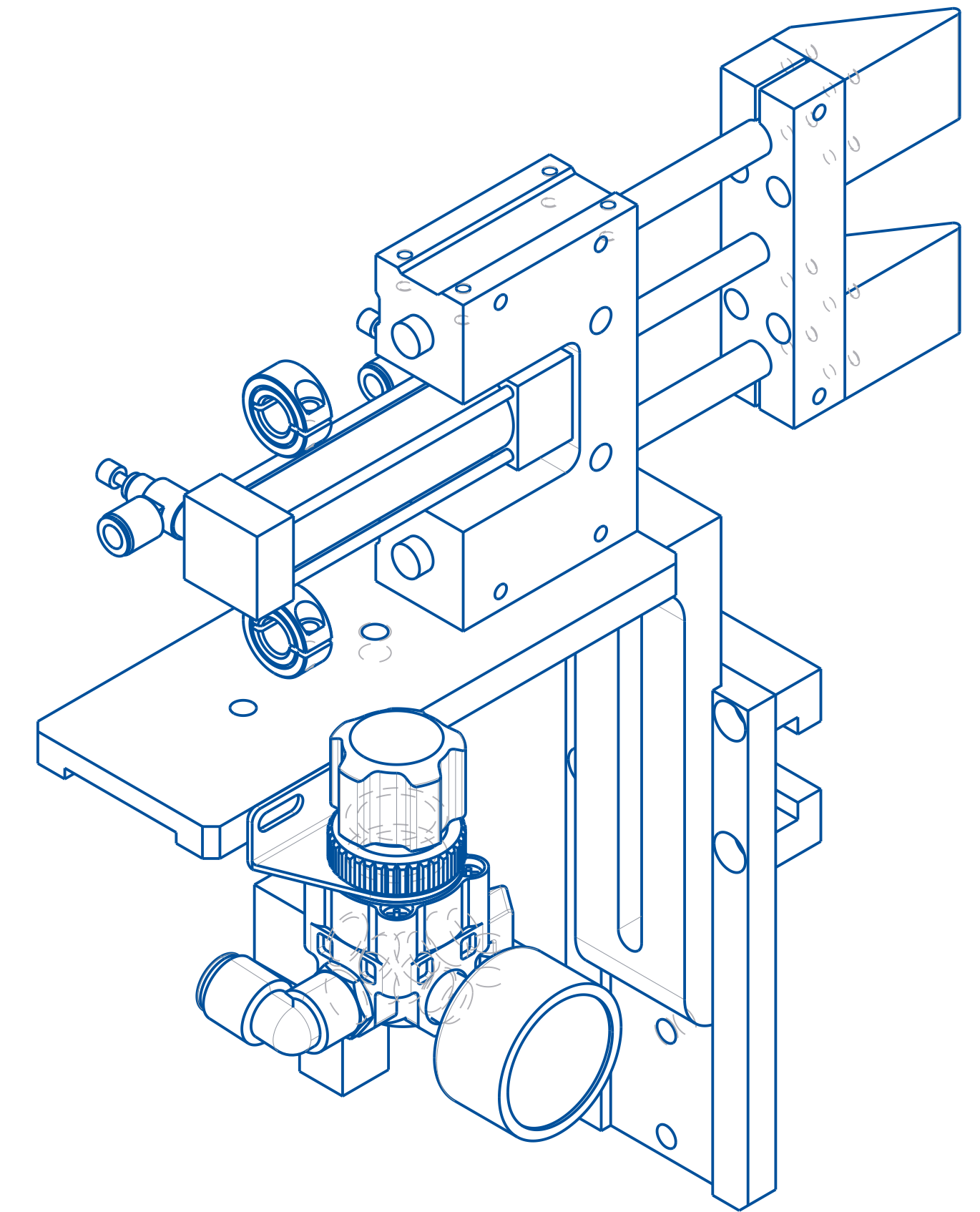
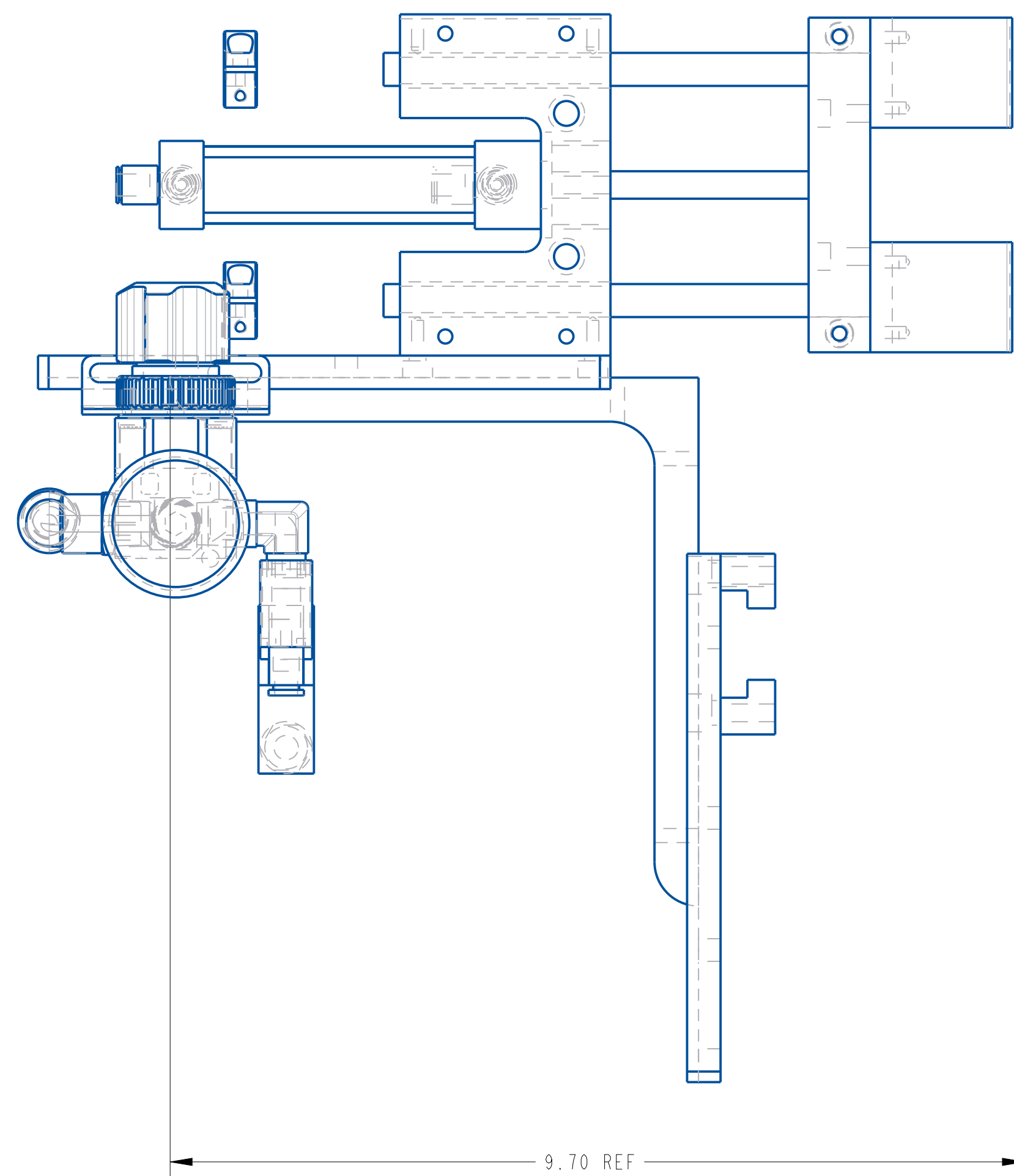
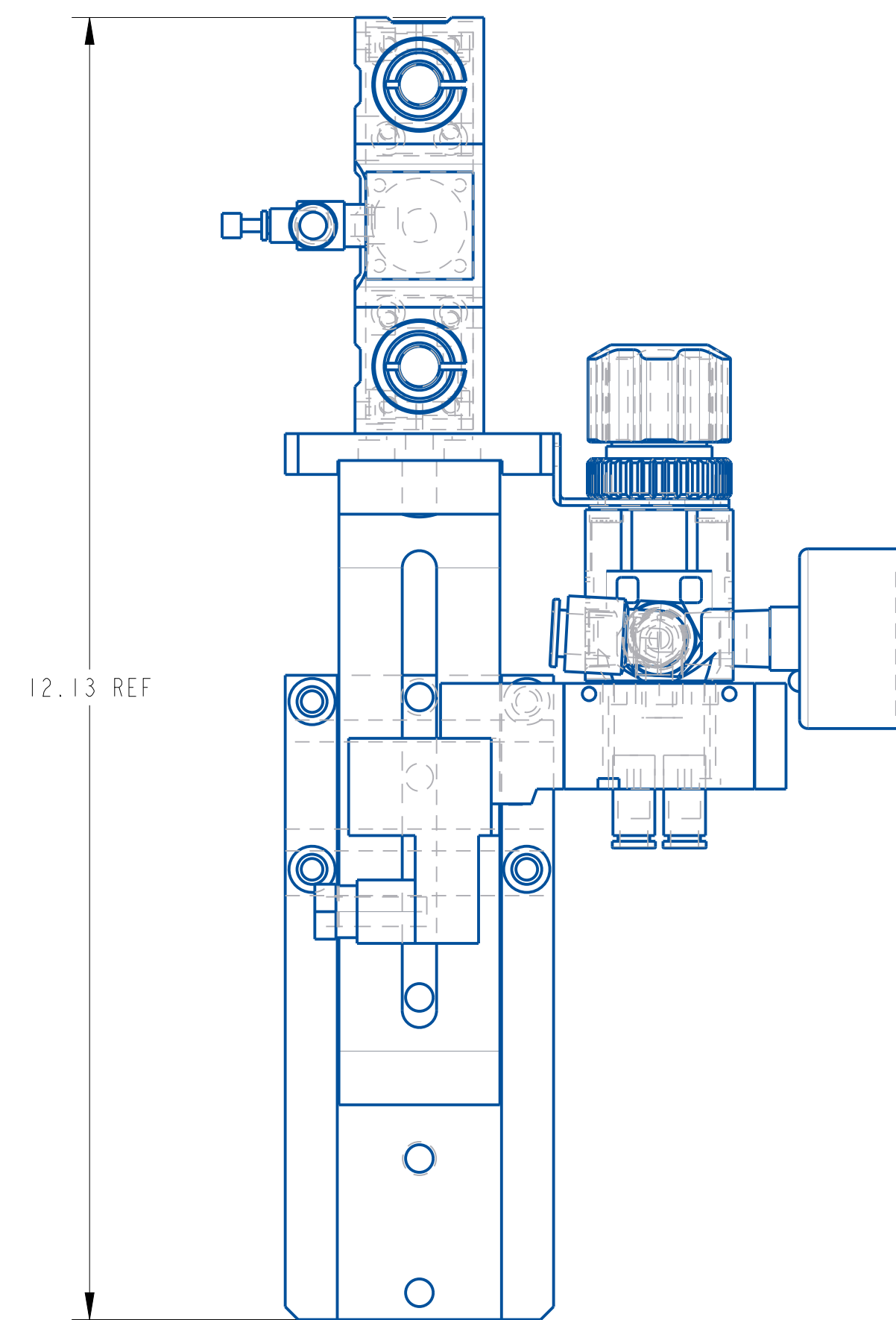
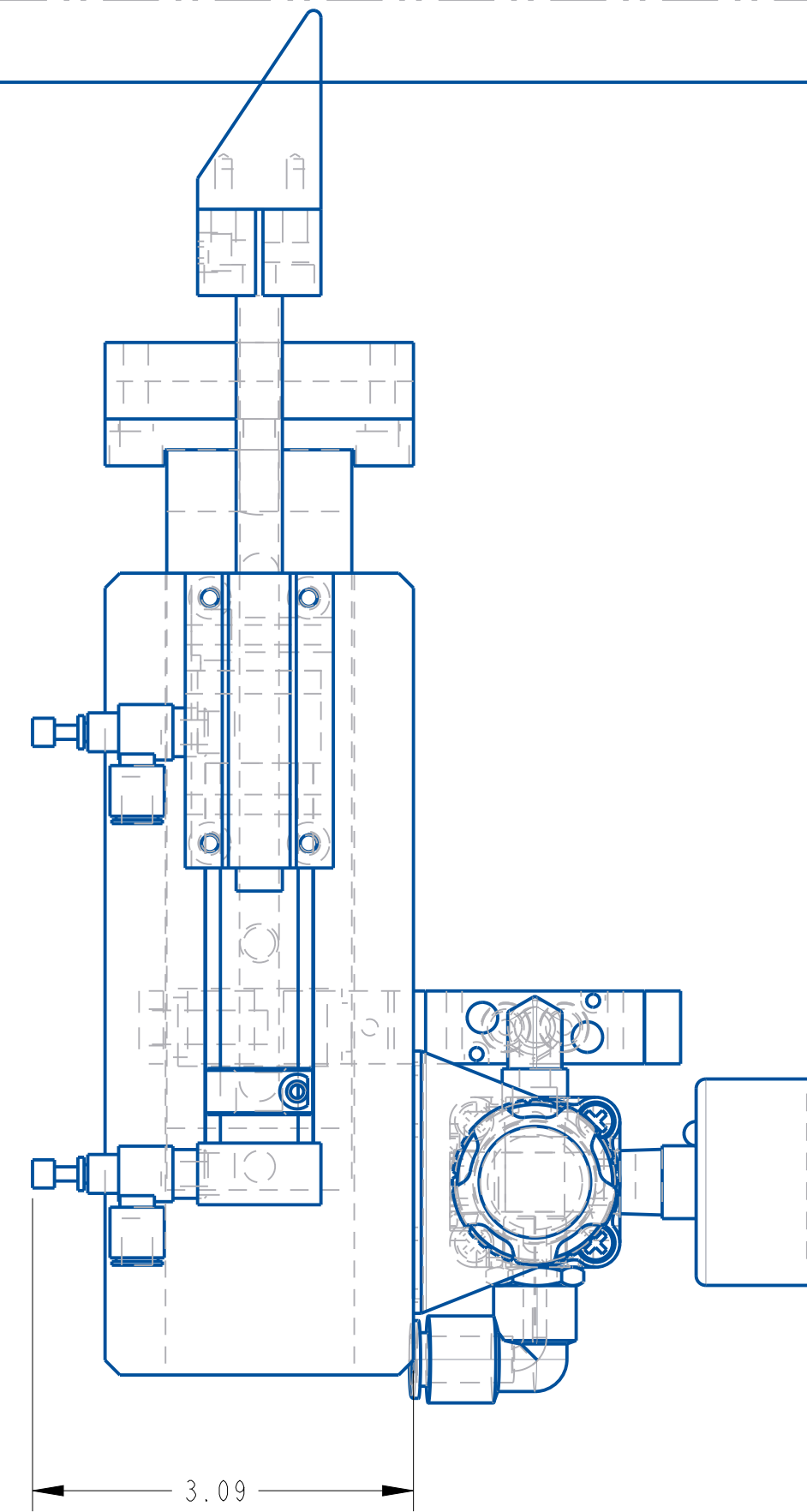
SCALE: 1/1  
 DATE: 10-18-02  
 DRW BY: JMC  
 CHK BY: 04/11/2024-SEM  
 APPR BY: MAW

PRODUCT STOP GATE ASSEMBLY

MAT'L 21081-000

UNLESS OTHERWISE SPECIFIED  
 DIMENSIONAL TOLERANCE  
 X ± .1  
 XX ± .01  
 XXX ± .005  
 ANGLES ± 30°

SURFACE FINISH 125  
 BREAK ALL EDGES .005/0.15  
 CORNER RADIUS .010/0.30



REV	DATE	DESCRIPTION	BY
B	06/07/2005	UPDATE BILL OF MATERIAL	SEM
A	10-18-02	NEW DRAWING	JMC

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<small>UNLESS OTHERWISE SPECIFIED DIMENSIONAL TOLERANCE</small> .x ± .1 .xx ± .01 .xxx ± .005 ANGLES ± 30°	<b>QUADREL LABELING SYSTEMS</b> 7670 JENTHER DRIVE MENTOR, OHIO 44060 (216) 975-0006	SCALE: 3/4 DATE: 10-18-02 DRW BY: JMC CHK BY: 04/11/2024-SEM APPR BY: MAW	
	PRODUCT STOP GATE ASSEMBLY		
	SURFACE FINISH 125 BREAK ALL EDGES .005/0.15 CORNER RADIUS .010/0.30	MAT'L	21081-000

**ASSEMBLY TITLE:        INFEEED / OUTFEED BANK SENSOR**

**DRAWING NO.:**

**GENERAL FUNCTION:**

- The Infeed & Outfeed bank sensors are usually used to create a bank of products into a feed or pacing screw. In some instances it is used to inhibit the flow of products if the labeler should go into a fatal fault condition, or if a sensor is used on the out feed end of the conveyor to sense a back up of products.

**SET UP AND ADJUSTMENTS:**

- The Infeed / Outfeed bank sensors are generally mounted to versaline rail or guide rail and can be slid back and forth by loosening the clamping blocks on the mounting plate or rail clamp. If used in conjunction with pacing or feed screws the sensors should be placed as close as possible without inhibiting the operation or change over of the screws.

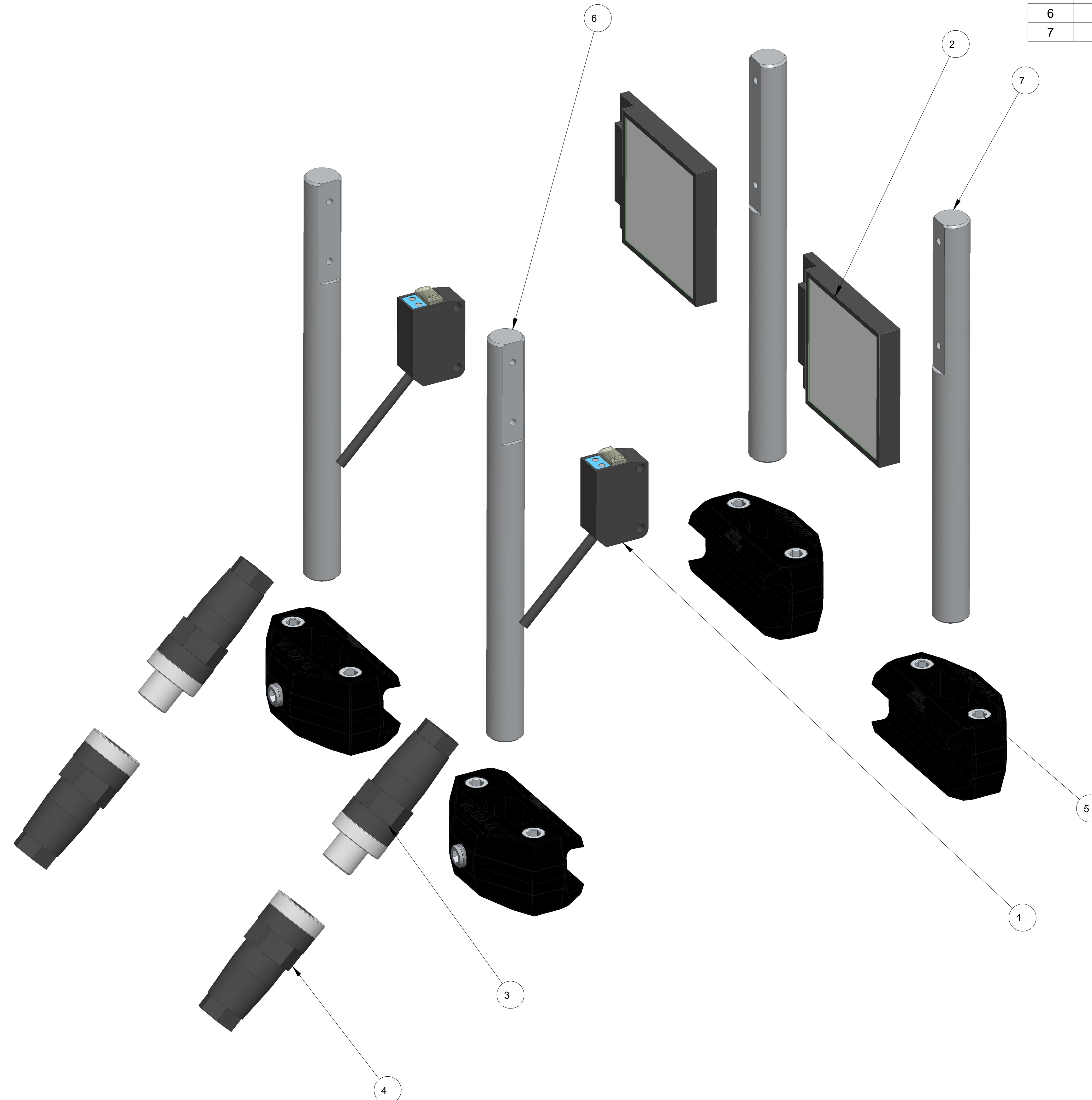
**MAINTENANCE:**

- Keep the sensor and reflectors clean of debris and dirt.
- Clean at regular intervals

**CAUTION:**

- **Before performing any maintenance or cleaning make sure the system is powered down.**

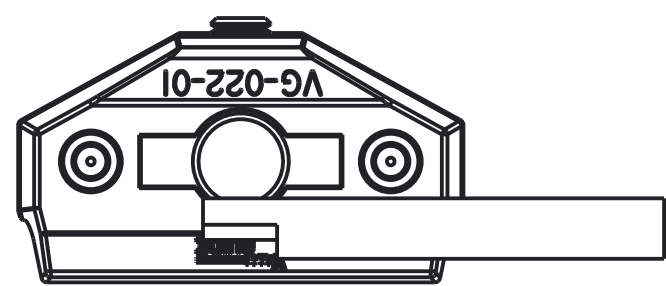
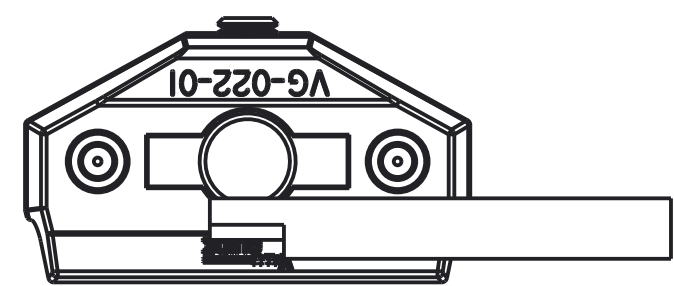
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2	2	203160-000	REFLECTOR	22546-001
3	2	252019-000	4 PIN MALE CONNECTOR	22546-001
4	2	252019-001	4 PIN MALE CONNECTOR	22546-001
5	4	791460-000	GUIDE RAIL CLAMP, SENSOR MOUNT	22546-001
6	2	A24278-001	SENSOR MTG. SHAFT	22546-001
7	2	A24279-000	REFLECTOR MTG. SHAFT	22546-001



REV	DATE	DESCRIPTION	BY
A	Mar-12-20	NEW DRAWING	TJS

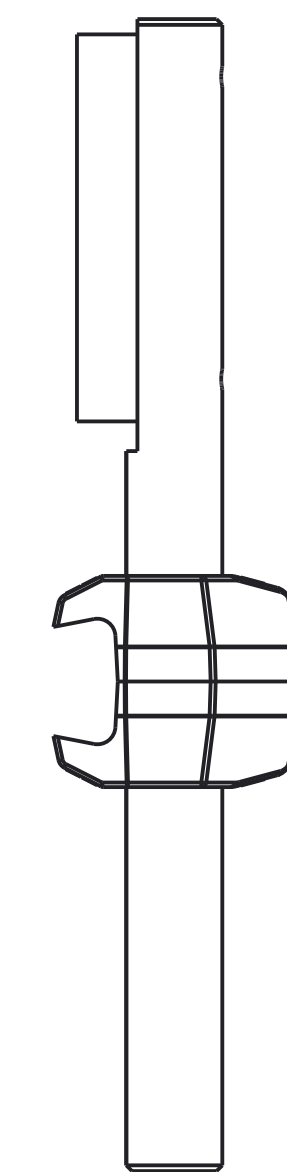
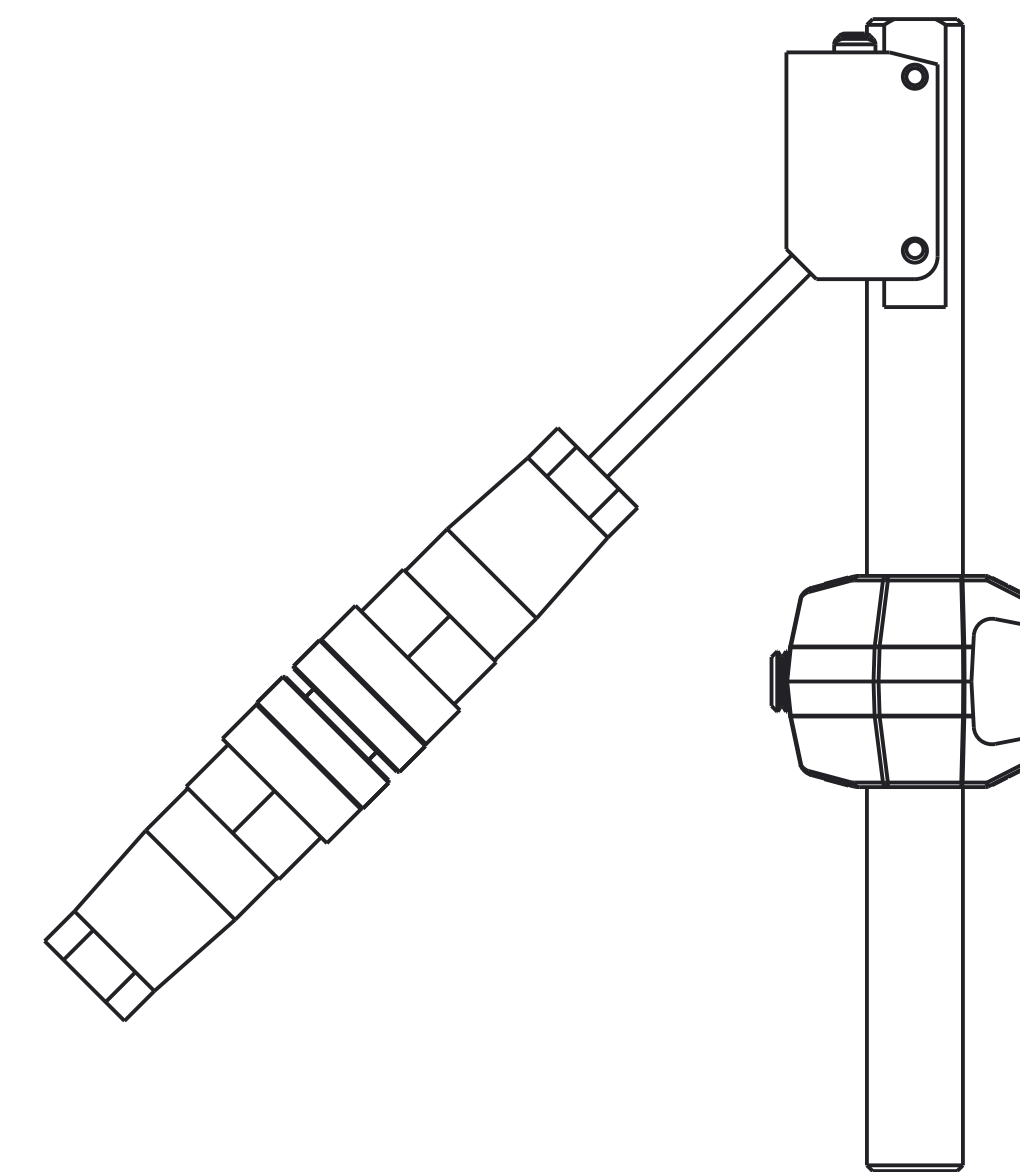
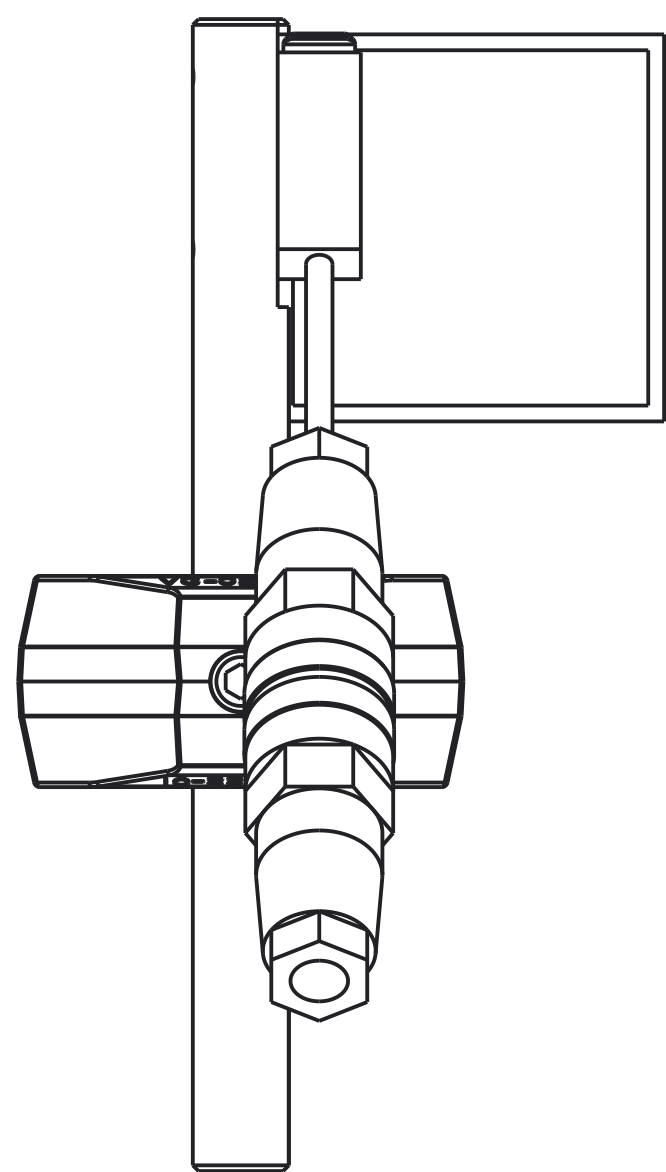
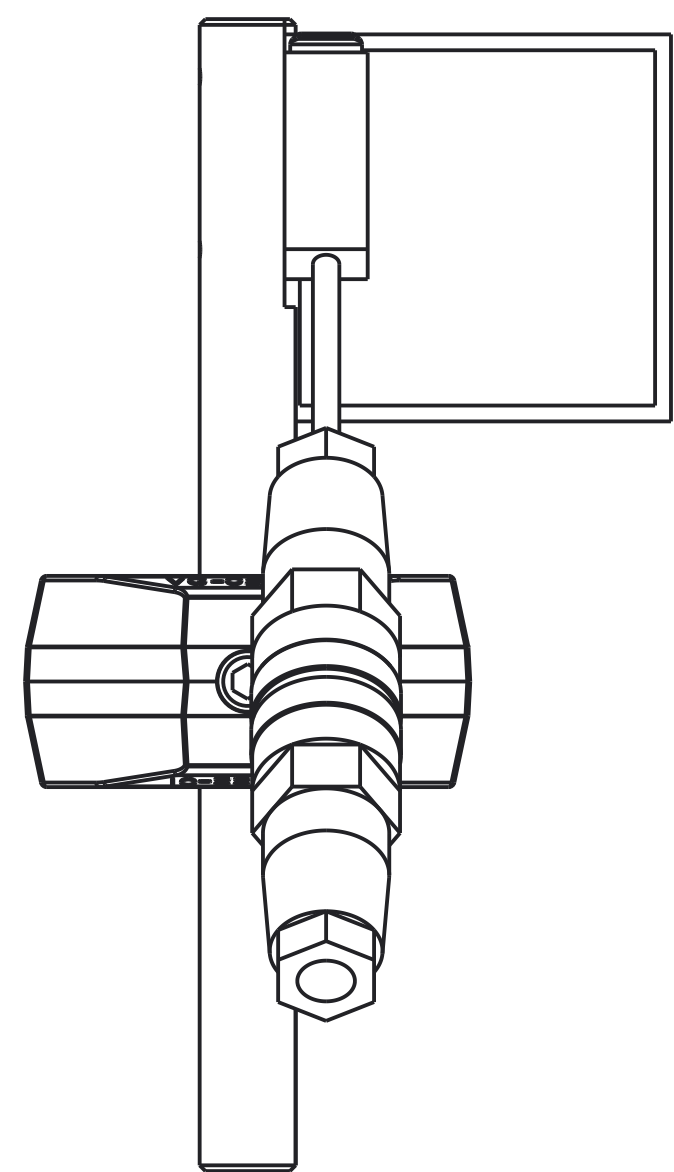
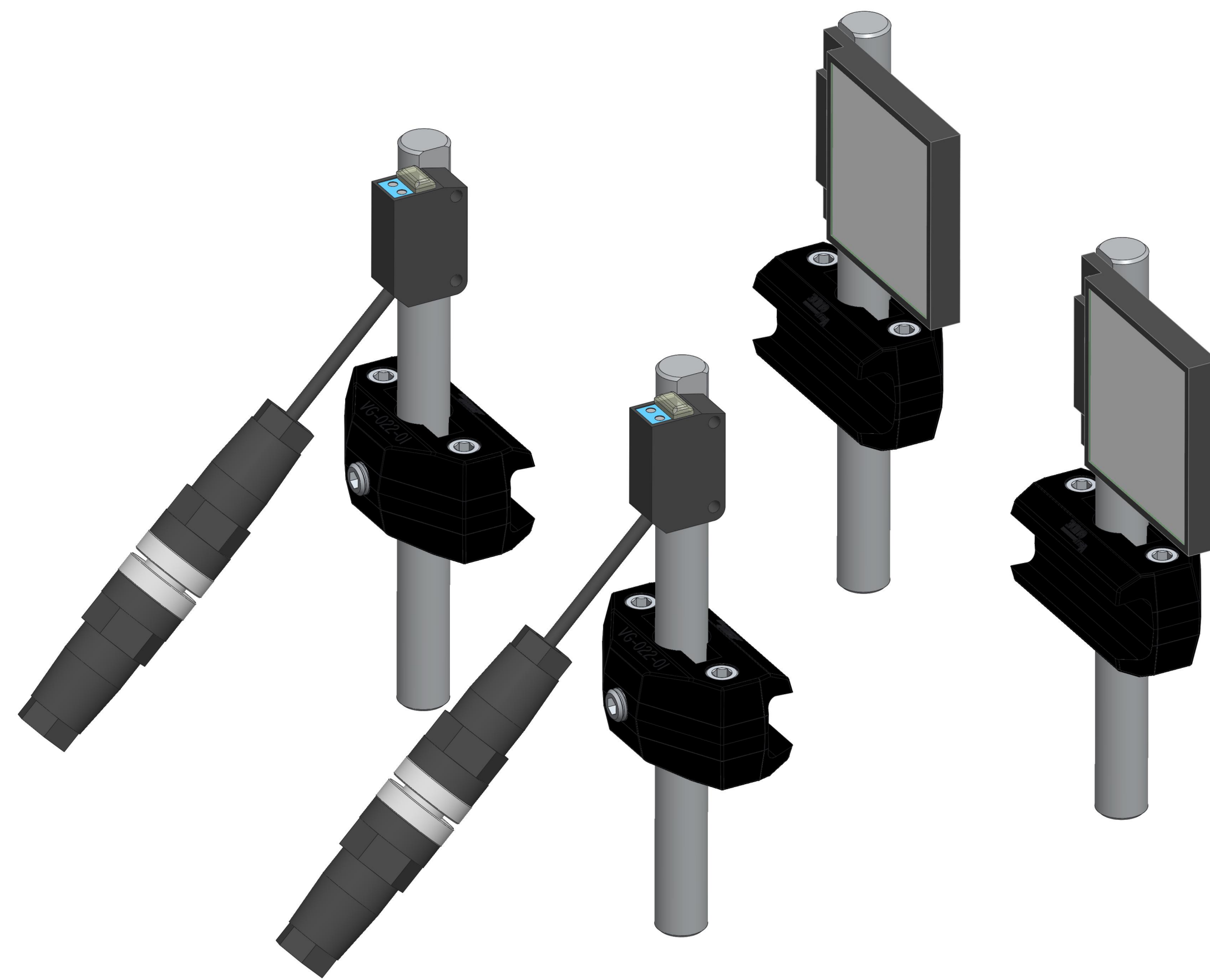
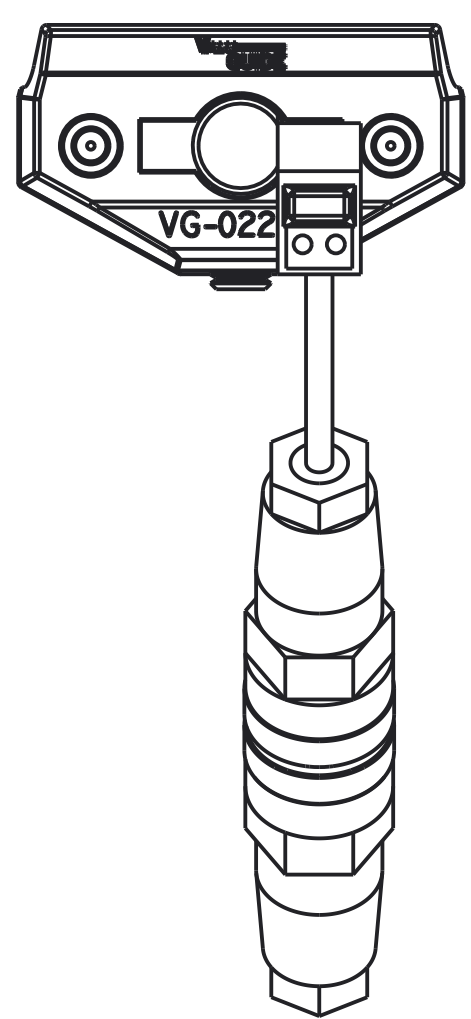
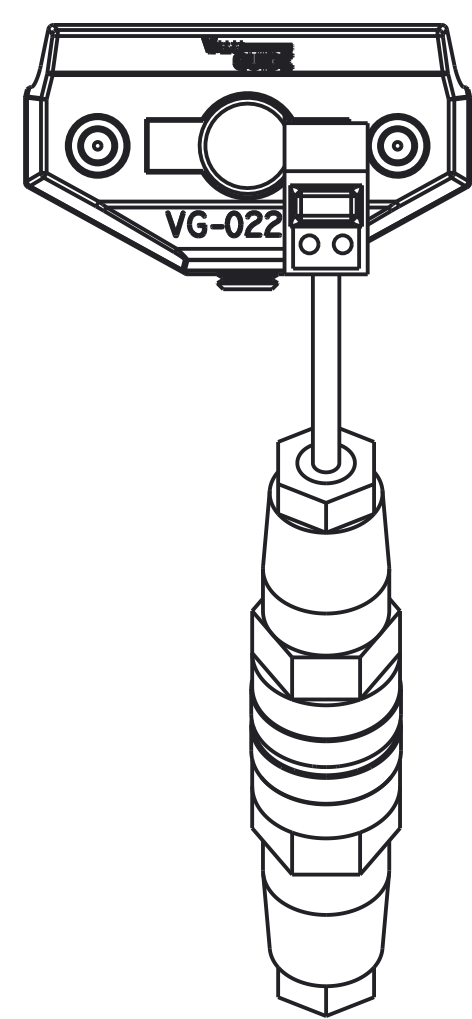
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UNLESS OTHERWISE SPECIFIED DIMENSIONAL TOLERANCE	SCALE	5/4
	DATE	Mar-12-20
.X± .1 .XX± .01 .XXX± .005 ANGLES ± 30°	DRAWN BY	TJS
<b>INFEED &amp; OUTFEED BANK SENSOR ASSEMBLY</b>		
SURFACE FINISH 125 BREAK ALL EDGES .005/015 CORNER RADIUS .010/030	MAT'L	22546-003
		22546-003



INFEED

OUTFEED



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REV	DATE	DESCRIPTION	BY
A	Mar-12-20	NEW DRAWING	TJS

UNLESS OTHERWISE SPECIFIED  
DIMENSIONAL TOLERANCE

X± .1  
XX± .01  
XXX± .005  
ANGLES ± .30°

SURFACE FINISH 125  
BREAK ALL EDGES .005/015  
CORNER RADIUS .010/030

QUADREL LABELING SYSTEMS  
7670 JENTHER DRIVE  
MENTOR, OHIO 44060  
(440) 602-4700

SCALE 1/1  
DATE Mar-12-20  
DRAWN BY TJS

INFEED & OUTFEED BANK SENSOR ASSEMBLY

MAT'L	22546-003	22546-003
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# PZ-G Series

## Instruction Manual

Read this manual thoroughly before using the product.  
Keep this manual readily available for future reference.

96M11227



### Safety precautions

- Avoid running the PZ-G cable along with power and high voltage lines, as this may cause interference and/or permanent damage.
- When using a commercially available switching regulator, ground its chassis grounding and earth grounding terminals.
- Do not use in locations where direct ambient light or external light directly shines on the light receiving surface.
- With retro-reflective type sensors, when detecting highly reflective materials (such as mirrored surfaces), stabilization may be difficult. To correct this, change the angle of the sensor head, or adjust the sensitivity.
- Avoid using power which exceeds the specifications for ripple (10% max)
- Avoid using excess force when rotating the operation mode selector switch (Light-on, Dark-on) and the sensitivity adjustment trimmer.
- This product is just intended to detect the object(s). Do not use this product for the purpose to protect a human body or a part of human body.
- This product is not intended for use as explosion-proof product. Do not use this product in a hazardous location and/or potentially explosive atmosphere.

### Precautions on Regulations and Standards

#### UL Certificate

This product is an UL/C-UL Listed product.

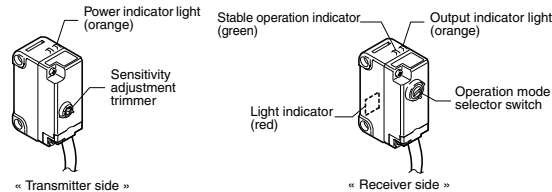
- UL File No. E301717
- Category NRKH,NRKH7
- Enclosure Type 1 (Based on UL50)

Be sure to consider the following specifications when using this product as an UL/C-UL Listed Product.

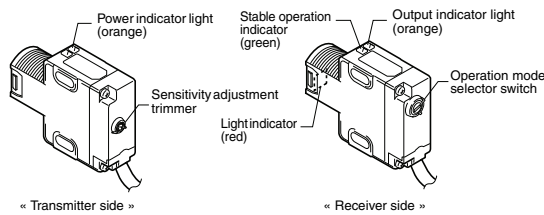
- Use the power supply with Class 2 output defined in NFPA70 (NEC: National Electrical Code).
- Power supply/ Control input/ Control output circuits shall be connected to a single Class 2 source only.
- Use with the over current protection device which is rated 30V or more and not more than 1A.

### Part Names

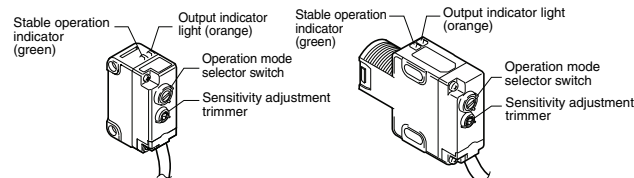
#### PZ-G5xN/G5xP



#### PZ-G5xB



#### PZ-G4xN/G4xP/G10xN/G10xP/G6xN/G6xP

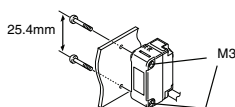


\* The model name with "C" (PZ-GxxCx) is the connector type, and the model name with "E" (PZ-GxxEx) is the pigtail quick disconnect type.

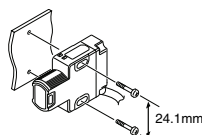
### Mounting Method

#### Side Mounting (Prepare M3 screws)

Tightening torque: 0.5 N·m or less



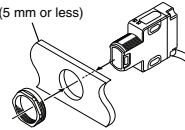
Tightening torque: 0.5 N·m or less



### Mounting with the M18 nut (includes nut type)

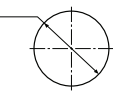
The M18 nut is also available separately as OP-84225 (2 pcs. supplied).  
Tightening torque: 1.0 N·m or less

Panel (5 mm or less)



Panel cut size

$\phi 18.5 \pm 0.2$  mm



#### Note

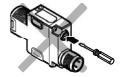
- Mount the M18 nut (supplied) straight in. If mounted at an angle it cannot be tightened properly.
- When tightening the M18 nut (supplied), firmly hold the main body down. The case of the main body may be damaged if held in place with a tool such as pliers.
- When tightening the M18 nut (supplied), if excess force is applied to the nut with a tool such as pliers, it may bend it out of shape. Therefore, do not apply excess force.

### Sensitivity Adjustment Method

#### Caution



Avoid using excess force when rotating the sensitivity adjustment trimmer and operation mode selector switch as it may cause damage.



### Operation mode selector switch

With the operation mode selector switch, you can select either the LIGHT-ON mode (L) or the DARK-ON (D) mode.



### Reflective type (PZ-G41/G42/G101/G102/G10R/G10G/G10B Series)

The following assumes LIGHT-ON (L) is set.

Sequence	Adjustment method	Sensitivity adjustment trimmer
①	Position target in place. Slowly rotate the sensitivity trimmer from the MIN position towards the MAX position until the (orange) output indicator turns on (Position "A"). If the output indicator does not turn off, even at MIN, then MIN is considered Position "A".	
②	Remove the target. Adjust the sensitivity trimmer from MIN towards MAX until the (orange) output indicator turns on (Position "B"). If the output indicator does not light up, the MAX position is considered Position "B".	
③	Adjust the sensitivity trimmer to the midpoint between "A" and "B". Verify that the (green) stable operation light turns on with and without a target in place.	

**Reference** To use the sensor in DARK-ON mode, adjust the mode selector switch to "D".

### Thrubeam type (PZ-G51/G52 Series) / Retro-reflective type (PZ-G61/G62 Series)

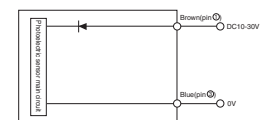
The following assumes DARK-ON (D) is set.

Sequence	Adjustment method	Sensitivity adjustment trimmer
①	Remove the target. Adjust the sensitivity trimmer to MAX. Mount the sensor heads in place so the (orange) output indicator turns off (on thrubeam models, the red light on the receiver face will turn on)	
②	Position target in place. Verify that the orange output indicator turns on (on thrubeam models, the red light on the receiver face will turn off). Adjust sensitivity lower if the output indicator does not turn on (or if the red light on the receiver face does not turn off on thrubeam models)	

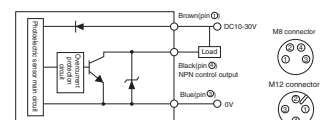
**Reference** To use the sensor in LIGHT-ON mode, adjust the mode selector switch to "L".

### I/O Circuit Diagram

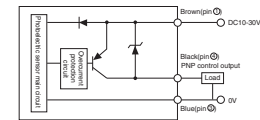
#### PZ-G5xN/G5xP/G5xB (Transmitter side)



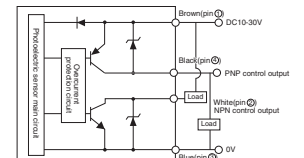
#### PZ-G5xN (Receiver side)/ G4xN/G10xN/G6xN



#### PZ-G5xP (Receiver side)/ G4xP/G10xP/G6xP



#### PZ-G5xB (Receiver side)/ G4xB/G10xB/G6xB



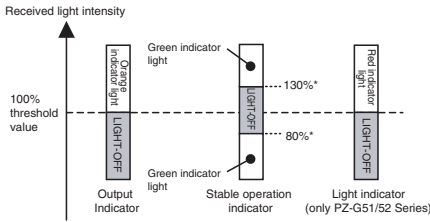
\* The pin numbers represent those of the connector type / pigtail quick disconnect type. The model name with "C" (PZ-GxxCx) is the connector type, and the model name with "E" (PZ-GxxEx) is the pigtail quick disconnect type.

[ PZ-GxxCN/GxxCP..... M8 connector  
PZ-GxxCB/GxxEN/GxxEP..... M12 connector ]

## Indicators

The following describes each ON/OFF condition of indicator when LIGHT-ON (L) is set.

**Reference** When the DARK-ON (D) is set, the output indicator ON/OFF will reverse.



\* For PZ-G62, the upper limit is 107% and the lower limit is 93%.

If the stable operation indicator turns off during operation, readjust or fine-adjust the sensitivity.

## Mutual interference

- For reflective type / retro-reflective type sensors, mutual interference protection can be set for up to 2 units. However, when the sensors are mounted facing each other, change the angle of the sensor head to prevent light being emitted into each unit. (The mark detection type does not include the mutual interference function.)
- Mutual interference prevention can be set when mounting a polarizing filter attachment (optional with thru-beam type sensors) (If operation is unstable even after mounting the polarizing filter, slightly lower the sensitivity.)
- For more detailed information about mutual interference or attachment, see the PZ-G Series catalog or contact your nearest KEYENCE office.

## Specifications

Type		Thru-beam		Reflective				Retro-reflective		Mark detection			
Configuration	Cable shape	Output mode	Normal	High-power	Diffuse-reflective Long-detecting distance	Diffuse-reflective Short-detecting distance	Narrow-view reflective	Definite reflective	Long detecting distance (with P.R.O. function)	Transparent target detection (without P.R.O. function)	Red	Green	Blue
Rectangular	Cable	NPN	PZ-G51N	PZ-G52N	PZ-G41N	PZ-G42N	PZ-G101N	PZ-G102N	PZ-G61N	PZ-G62N			
		PNP	PZ-G51P	PZ-G52P	PZ-G41P	PZ-G42P	PZ-G101P	PZ-G102P	PZ-G61P	PZ-G62P			
	M8 connector	NPN	PZ-G51CN	PZ-G52CN	PZ-G41CN	PZ-G42CN	PZ-G101CN	PZ-G102CN	PZ-G61CN	PZ-G62CN	PZ-G10RCN	PZ-G10GCN	PZ-G10BCN
		PNP	PZ-G51CP	PZ-G52CP	PZ-G41CP	PZ-G42CP	PZ-G101CP	PZ-G102CP	PZ-G61CP	PZ-G62CP	PZ-G10RCP	PZ-G10GCP	PZ-G10BCP
Nut	Cable	NPN	PZ-G51EN	PZ-G52EN	PZ-G41EN	PZ-G42EN	PZ-G101EN	PZ-G102EN	PZ-G61EN	PZ-G62EN			
		PNP	PZ-G51EP	PZ-G52EP	PZ-G41EP	PZ-G42EP	PZ-G101EP	PZ-G102EP	PZ-G61EP	PZ-G62EP			
Nut	M12 connector	Bipolar	PZ-G51B	PZ-G52B	PZ-G41B	PZ-G42B	PZ-G101B	PZ-G102B	PZ-G61B	PZ-G62B			
		(NPN+PNP)	PZ-G51CB	PZ-G52CB	PZ-G41CB	PZ-G42CB	PZ-G101CB	PZ-G102CB	PZ-G61CB	PZ-G62CB			
Detecting distance <sup>1</sup>			20 m	40 m	1 m (30 x 30 cm white mat paper)	300 mm (10 x 10 cm white mat paper)	200 mm	5 to 45 mm	0.1 to 4.2 m (when R-2L reflector is used)	0.1 to 1 m (when R-2L reflector is used)	8 to 15 mm		
Spot diameter			-	-	-	-	Approx. φ 5 mm (when the detecting distance is 100 mm)	Approx. φ 2 mm (when the detecting distance is 40 mm)	-	-	Approx. 1.5 x 4 mm (when the detecting distance is 10 mm)		
Light source (LED)			Red LED	Infrared LED x 2	Red LED				Infrared LED		Red LED	Green LED	Blue LED
Sensitivity adjustment		1-turn trimmer (230 degrees)											
Response time		500 μs										50 μs	
Operation mode		LIGHT-ON/DARK-ON, trimmer-selectable											
Indicator (LED)		Transmitter: power (orange) Receiver: output (orange), stable operation (green), light (red)			Output (orange), stable operation (green)								
Control output		Open-collector 100 mA max. (30 V max.), Residual voltage 1 V max.											
Protection circuit		Reverse-polarity protection, over-current protection, output surge absorber											
Ratings	Power voltage	10 to 30 VDC, Ripple (P-P): ±10% max, Class 2.											
	Current consumption	Transmitter: 20 mA max. Receiver: 28 mA max.	Transmitter: 25 mA max. Receiver: 28 mA max.	34 mA max.									
Environmental resistance	Enclosure rating	IEC/JEM: IP67 / NEMA: 4X, 6, 12 / DIN: IP69K											
	Ambient light	Incandescent lamp: 5,000 (lx) max, Sunlight: 20,000 (lx) max.											
	Ambient temperature	-20 °C to +55 °C (No freezing)											
	Relative humidity	35 to 85 % RH (No condensation)											
	Vibration resistance	10 to 55 Hz, 1.5 mm double amplitude in X, Y, Z directions, 2 hours each											
Interference prevention		2 units (when polarizing filter attachment is used)		2 units (with the automatic different cycle function)									
	Material	Case, M18 nut (nut type only): reinforced glass polybutylene terephthalate (PBT), Trimmer: reinforced glass polyamide (PA) Cable (Cable type / pigtail quick disconnect type only): Polyvinyl chloride (PVC), Screw (Case connection): Steel, zinc-nickel plated, Packing (Case connection): Nitrile-butadiene rubber (NBR) Connector (pigtail quick disconnect type only): Brass-nickel plated, Polybutylene terephthalate (PBT), Polyvinyl chloride (PVC)											
Tightening torque	Lens cover	Polyarylate (PAR)				Acrylic plastic (PMMA)			Polyarylate (PAR)				
	Accessory <sup>2</sup>	Rectangular type (side screw part): 0.5 N·m max. Nut type (front M18 part): 1.0 N·m max., (side slot part): 0.5 N·m max.											
Weight		Instruction manual, M18 nut x 2 (nut thru-beam type), M18 nut x 1 (other nut types)											
		Rectangular cable type: Approx. 60 g (Approx. 50 g for thru-beam transmitter), Rectangular M8 connector type: Approx. 10 g, rectangular M12 pigtail quick disconnect type: Approx. 30 g Nut type cable type: Approx. 65 g (Approx. 55 g for thru-beam transmitter), Nut type M12 connector type: Approx. 15 g											

<sup>1</sup> The detection distance is measured with the maximum sensitivity.

<sup>2</sup> The cable for the connector type / pigtail quick disconnect type is sold separately. The reflector for the retro-reflective type is sold separately.

## WARRANTY

KEYENCE products are strictly factory-inspected. However, in the event of a failure, contact your nearest KEYENCE office with details of the failure.

### 1. WARRANTY PERIOD

The warranty period shall be for one year from the date that the product has been delivered to the location specified by the purchaser.

### 2. WARRANTY SCOPE

(1) If a failure attributable to KEYENCE occurs within the abovementioned warranty period, we will repair the product, free of charge. However, the following cases shall be excluded from the warranty scope.

- Any failure resulting from improper conditions, improper environments, improper handling, or improper usage other than described in the instruction manual, the user's manual, or the specifications specifically arranged between the purchaser and KEYENCE.
- Any failure resulting from factors other than a defect of our product, such as the purchaser's equipment or the design of the purchaser's software.
- Any failure resulting from modifications or repairs carried out by any person other than KEYENCE staff.
- Any failure that can certainly be prevented when the expendable part(s) is maintained or replaced correctly as described in the instruction manual, the user's manual, etc.
- Any failure caused by a factor that cannot be foreseen at a scientific/technical level at the time when the product has been shipped from KEYENCE.
- Any disaster such as fire, earthquake, and flood, or any other external factor, such as abnormal voltage, for which we are not liable.

(2) The warranty scope is limited to the extent set forth in item (1), and KEYENCE assumes no liability for any purchaser's secondary damage (damage of equipment, loss of opportunities, loss of profits, etc.) or any other damage resulting from a failure of our product.

### 3. PRODUCT APPLICABILITY

KEYENCE products are designed and manufactured as general-purpose products for general industries.

Therefore, our products are not intended for the applications below and are not applicable to them. If, however, the purchaser consults with us in advance regarding the employment of our product, understands the specifications, ratings, and performance of the product on their own responsibility, and takes necessary safety measures, the product may be applied. In this case, the warranty scope shall be the same as above.

- Facilities where the product may greatly affect human life or property, such as nuclear power plants, aviation, railroads, ships, motor vehicles, or medical equipment
- Public utilities such as electricity, gas, or water services
- Usage outdoors, under similar conditions or in similar environments

E 1040-1

## KEYENCE CORPORATION

1-3-14, Higashi-Nakajima, Higashi-Yodogawa-ku,  
Osaka, 533-8555, Japan

PHONE: +81-6-6379-2211 [www.keyence.com](http://www.keyence.com)

Specifications are subject to change without notice.

A7WW1-MAN-0069

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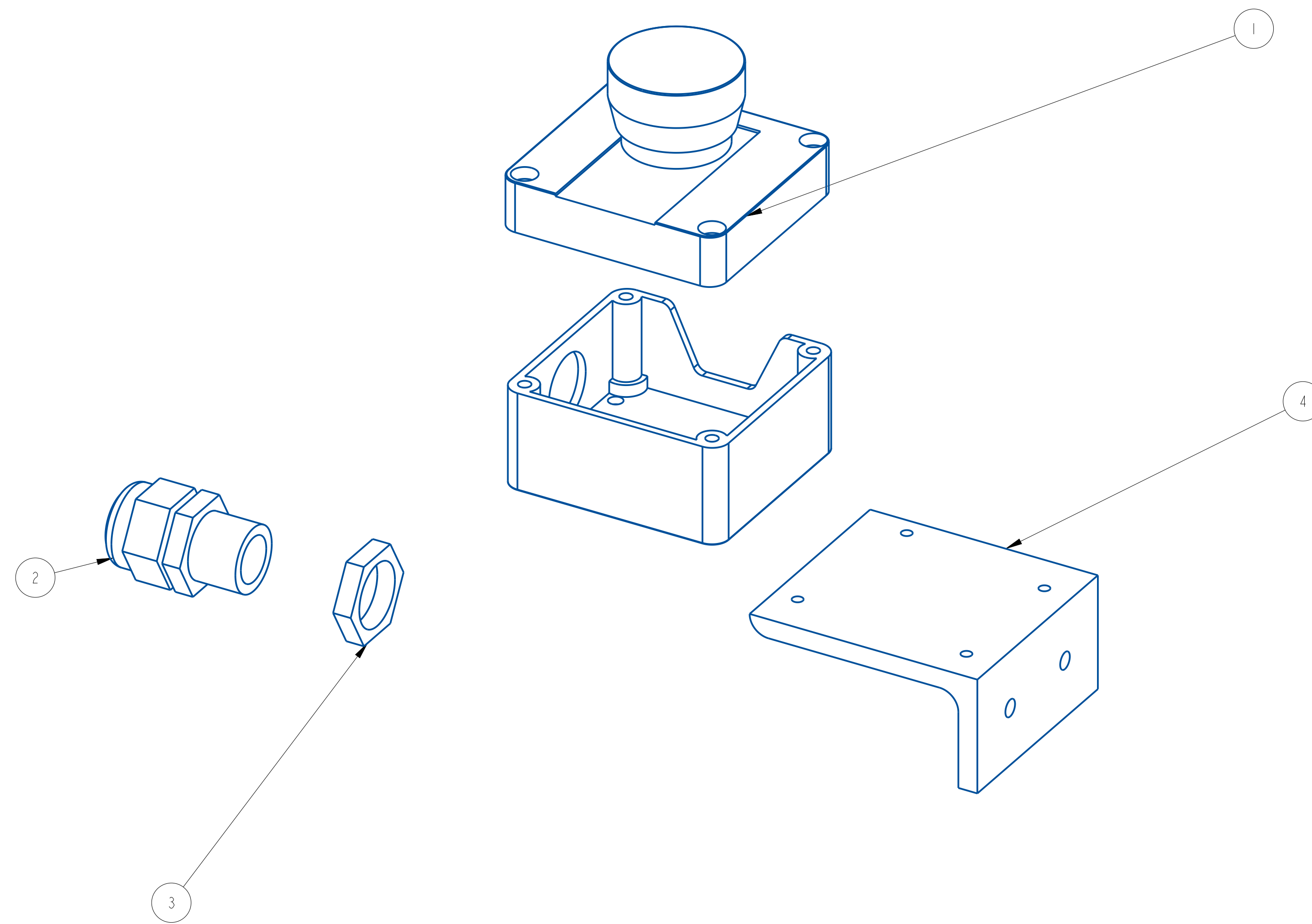
11227E 1070-1 96M11227J

Printed in Japan



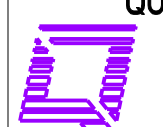
Electronics

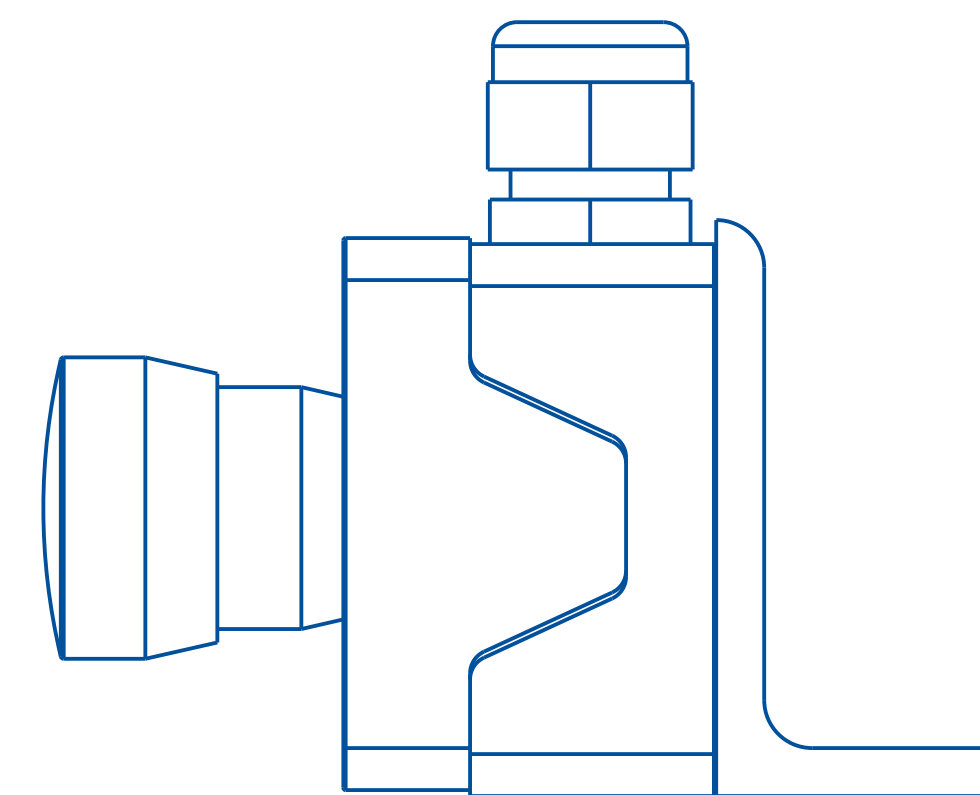
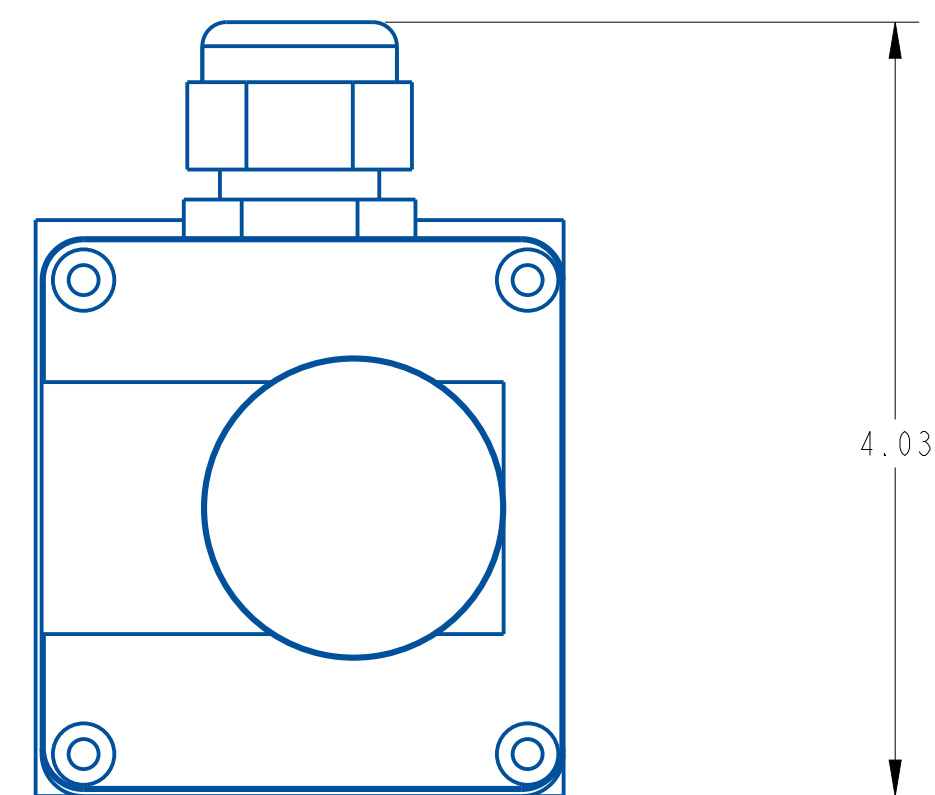
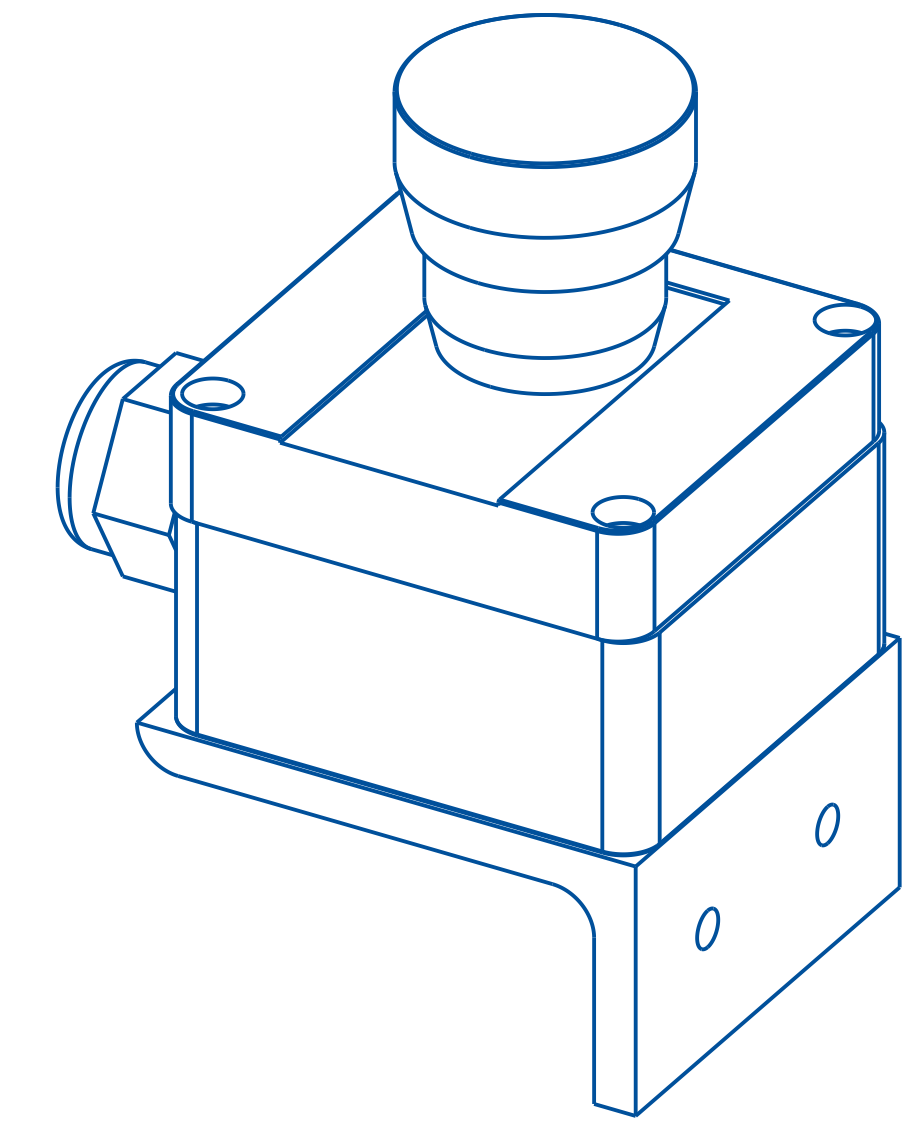
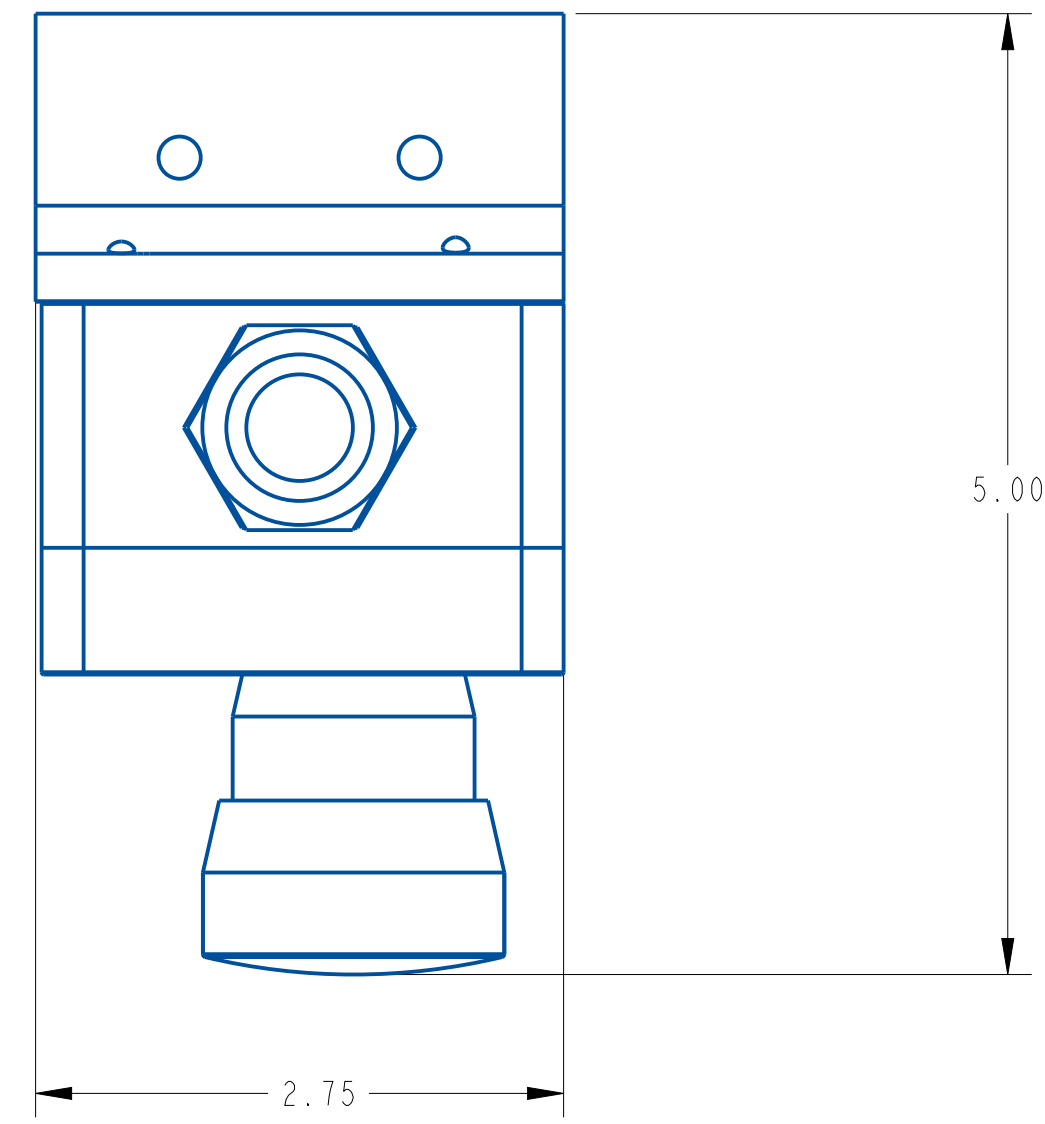
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1	1	221152-005	ENCLOSURE, E-STOP W/ BUTTON	20789-000
2	1	241780-000	STRAIN RELIEF, CABLE	20789-000
3	1	241780-001	STRAIN RELIEF, CABLE PANEL	20789-000
4	1	A25719-000	CYLINDER MOUNTING ANGLE	20789-000



REV	DATE	DESCRIPTION	BY
A	8-29-16	NEW DRAWING	TJS

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UNLESS OTHERWISE SPECIFIED DIMENSIONAL TOLERANCE	 <b>QUADREL LABELING SYSTEMS</b> 7670 JENTHER DRIVE MENTOR, OHIO 44060 (440) 602-4700	SCALE: 1/1 DATE: 8-29-16 DRW BY: TJS CHK BY: 03/08/2024-SEM APPR BY:
EMERGENCY STOP ASSEMBLY		
MATERIAL		20789-000



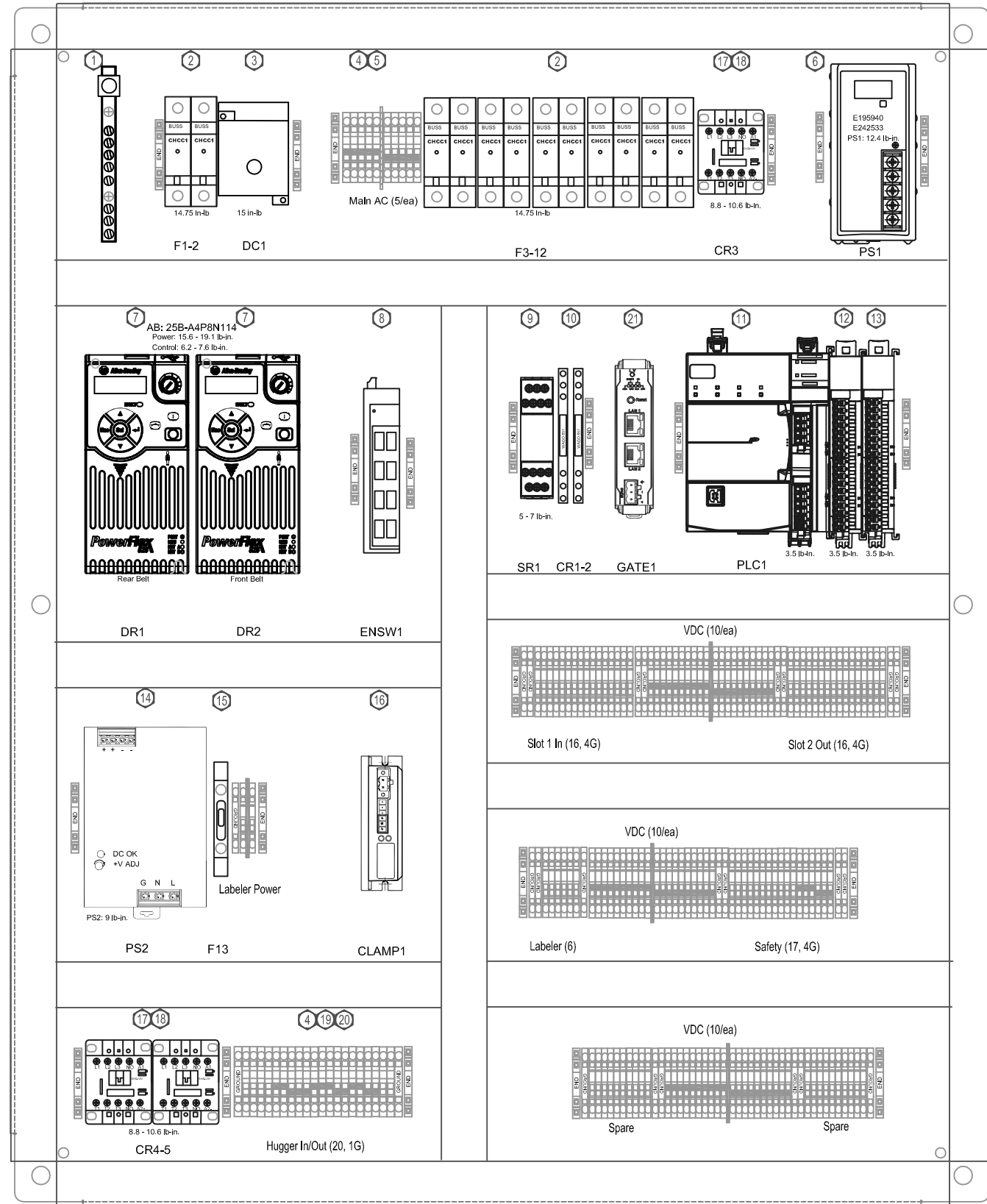
REV	DATE	DESCRIPTION	BY
A	8-29-16	NEW DRAWING	TJS

**THIS IS A PRO-ENGINEER DOCUMENT AND MAY NOT BE MODIFIED MANUALLY**

UNLESS OTHERWISE SPECIFIED DIMENSIONAL TOLERANCE	<p>xx ± .01</p> <p>xxx ± .005</p> <p>ANGLES ± .30°</p> <p>SURFACE FINISH 125</p> <p>BREAK ALL EDGES .005/ .015</p> <p>CORNER RADIUS .010/ .030</p> <p>ALL ANGLES ARE 90°</p>	<p>SCALE: 1/1</p> <p>DATE: 8-29-16</p> <p>DRW BY: TJS</p> <p>CHK BY: 03/08/2024-SEM</p> <p>APPR BY:</p>
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<p><b>QUADREL LABELING SYSTEMS</b></p> <p>7670 JENTHER DRIVE</p> <p>MENTOR, OHIO 44060</p> <p>(440) 602-4700</p>	
<p>EMERGENCY STOP ASSEMBLY</p>	
MAT'L	20789-000

-	222265-000	1	Enclosure, 36EL3010
-	222267-000	1	Panel, SCE-36P30
--	221609-003	2	Terminal Blocks, Expansion Cards
-	221609-001	1	Terminal Blocks, PLC
--	262822-006	3	Ethernet Cable, 2ft
--	241233-000	4	Fuse, 3A, CC
--	241142-000	6	Fuse, 6A, CC
--	241187-000	2	Fuse, 15A, CC
--	241085-001	1	Fuse, 10A, 1.25 x .25
--	251799-000	6	End Cover
--	251798-000	5	Partition Plate
--	251859-000	6	10-Pole Jumper
--	251856-000	2	3-Pole Jumper
-	251855-000	4	2-Pole Jumper
-	251795-000	24	Phoenix Contact End Terminal
-	251796-000	2	Phoenix Contact 3031238 Ground Terminal, ST2.5
-	251854-000	30	Phoenix Contact Ground Terminal, ST1.5
-	251853-000	150	Phoenix Contact Terminal Block, ST1.5
21	221713-003	1	Communication Gateway
20	251801-000	4	2 Pole Jumper, ST2.5
19	251802-000	2	3 Pole Jumper, ST2.5
18	202607-000	3	Altech Contactor Surge Suppressor
17	202604-000	3	Altech Contactor, 24VDC, GMD-12M-10-DC24V
16	221678-000	1	Regeneration Clamp, Applied Motion RC880 (E515393)
15	251788-001	1	Fuse Holder, 1.25 x .25. Phoenix Contact 3038778 (E60425)
14	211548-003	1	Power Supply, 48V, 10A. MeanWell NDR-480-48 (E215312)
13	221486-001	1	Output Expansion Module 5069-OB16 (E65584)
12	221489-001	1	Input Expansion Module 5069-IB16 (E65584)
11	221616-005	1	PLC, AB CompactLogix L306 (E194810)
10	202628-000	2	Relay, 24V, SPDT. Wago 857-304 (E175199)
9	221650-005	1	Phoenix 1301402 Safety Relay (E140324)
8	221683-000	1	Ethernet Switch, 8 Port. Phoenix Contact 1085256
7	411400-000	2	Allen Bradley PowerFlex 525 Drive, 1HP, 240V (14-05)
6	211534-001	1	Keyence MS2-H100 Power Supply, 24V, 4.5A (E195940, E242533)
5	251804-000	2	5 Pole Jumper, ST2.5
4	251797-000	30	Phoenix Contact Terminal Block 3031212, ST2.5
3	272117-003	1	Non-Fused Disconnect, 25A. C3 PDS2-325-PHGRY11 (E187641)
2	241285-000	10	Fuse Holder, CC. Shawmut USCC11 (E52283)
1	251830-002	1	Ground Bar
NO.	PART NO.	QTY	DESCRIPTION



1" Wireway Unless Noted  
 Component Hardware: 8-32 SHCS  
 Wireway/Din Rail Hardware: 8-32 BHCS

17FEB2026: CR3 Moved, CR5 added

UNLESS OTHERWISE SPECIFIED DIMENSIONAL TOLERANCE X ± .XTOL .XX ± .XXTOL .XXX ± .XXXTOL ANGLES ± ANGTOL SURFACE FINISH FINISH TO BREAK ALL EDGES .005/015 CORNER RADIUS .010/030	<b>QUADREL LABELING SYSTEMS</b> 7670 Jenther Drive Mentor, Ohio 44060 (440) 602-4700	SCALE: 1:1 DATE: 21NOV2025 DRAWN BY: CAV REVISED: 17FEB2026
Layout, Custom Techline		
MATL 84251E-000		B84251-000P

TECHLINE  
 220VAC SINGLE PHASE, 15A  
 COMPACTLOGIX PLC  
 APPLIED MOTION MDX SERVO  
 POWERFLEX 525 INVERTERS

Voltage: 208-240VAC  
 Phase: 1  
 Frequency: 60Hz  
 FLA: 14A  
 Largest Load: 2.4A  
 SCCR: 100kA

Fuse Table

Mersen ATQ or ATD series acceptable equivalents

F1, F2: 15A, Bussmann LP-CC-15  
 F3 - F8: 6A, Bussmann LP-CC-6  
 F9 - F12: 3A, Bussmann LP-CC-3

Torque Table

All Values listed as lb-in

F1-F12: 14.75  
 DC1: 15  
 CR1-CR3: 8.8 - 10.6  
 PS1:12.4  
 DR1-DR2 Power: 15.6 - 19.1  
 DR1-DR2 Control: 6.2 - 7.6  
 SR1: 5 - 7  
 PLC & Slots: 3.5  
 PS2: 9




Page Listing:

- 1: Main AC
- 2: Safety Relay, Network
- 3: Hugger Belts
- 4: Hugger Adjust
- 5: Labeler Drive
- 6: PLC
- 7: Operator Enclosure
- 8: Sensors

WIRE SIZE/COLOR TABLE (UNLESS OTHERWISE NOTED)

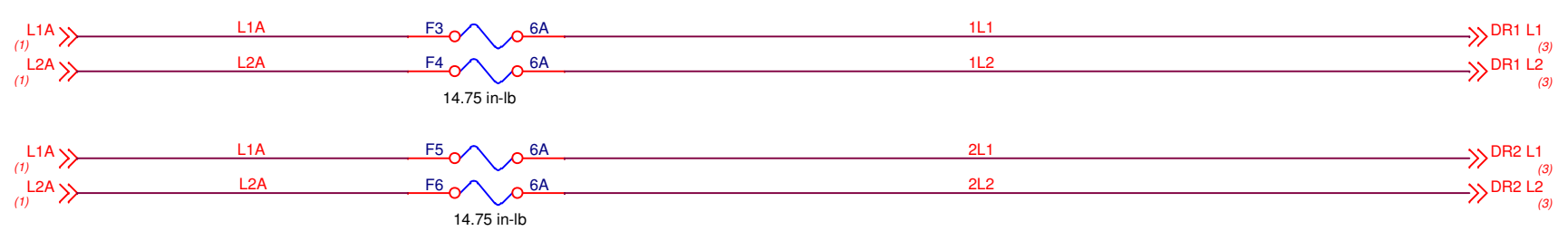
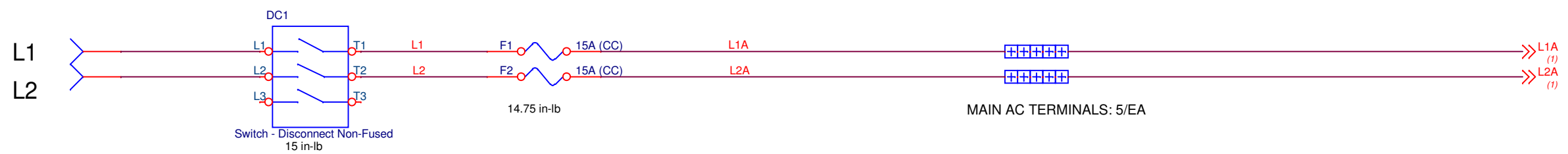
120,240VAC:14AWG BLACK  
 24VDC/SIGNAL: 18AWG BLUE  
 0VDC: 18AWG WHITE/BLUE  
 EARTH GROUND WIRES: 14 AWG GREEN/YELLOW  
 AC MOTOR WIRES: 4-16AWG

Description >>  
 (Pages)

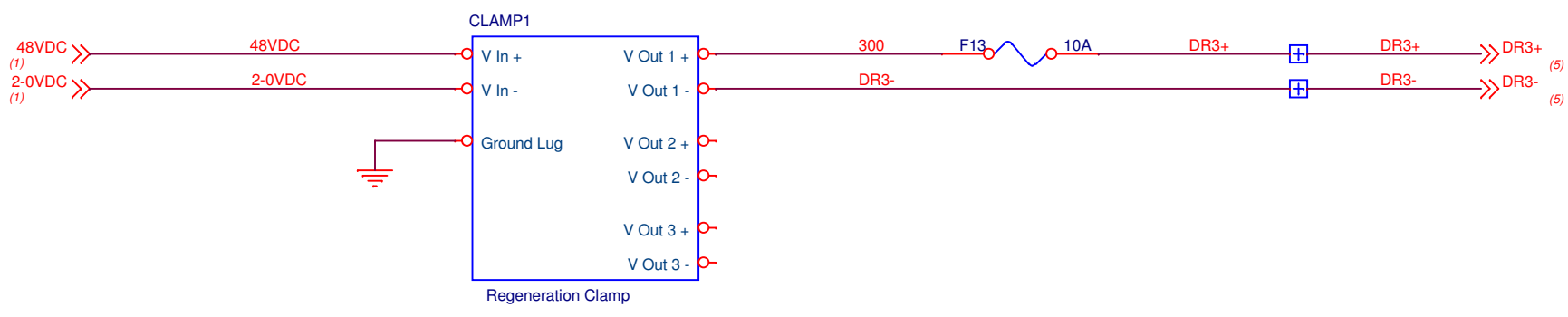
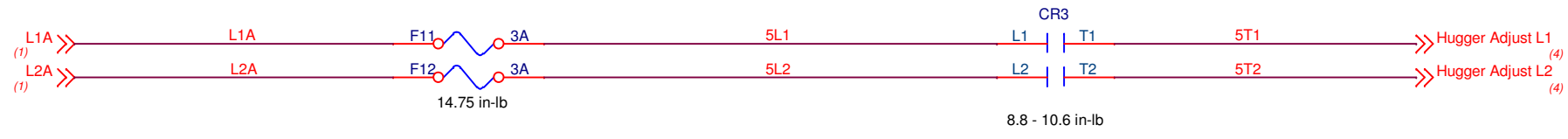
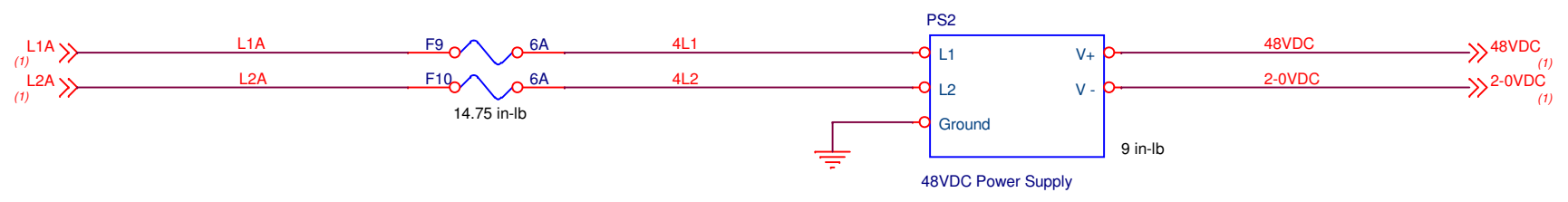
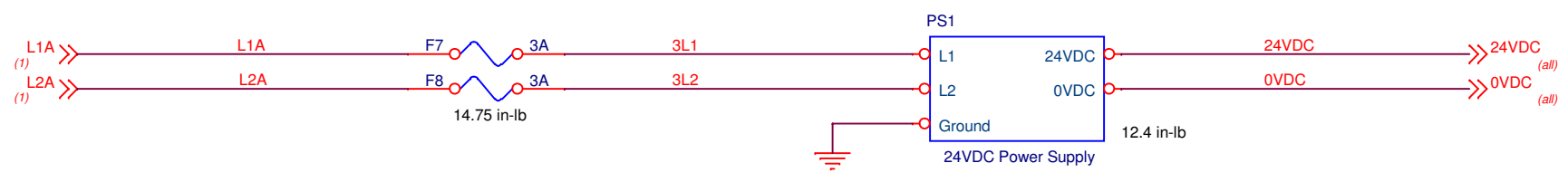
-  : Terminal Block
-  : 2 Jumpered Terminal Blocks
-  : 3 Jumpered Terminal Blocks, etc

<b>QUADREL</b>				
LABELING SYSTEMS				
7670 JENTHER DR.		B	Added Gateway	CAV 23MAR2026
MENTOR, OH		A	Updated Cover Page	CAV 20FEB2026
44060		-	Release	CAV SB84251-000
Drawn By: CAV	REV	DESCRIPTION	BY	DATE
Title				
<b>TECHLINE</b>				
Schematic #				Rev
<b>SB84251-000</b>				<b>B</b>
Date: Monday, March 23, 2026		Sheet 00 of 08		

208/220VAC 1PH. 15AMP



WIRES RUN INDIVIDUALLY TO FUSES FROM  
TERMINAL BLOCKS



Rear Belt  
Front Belt

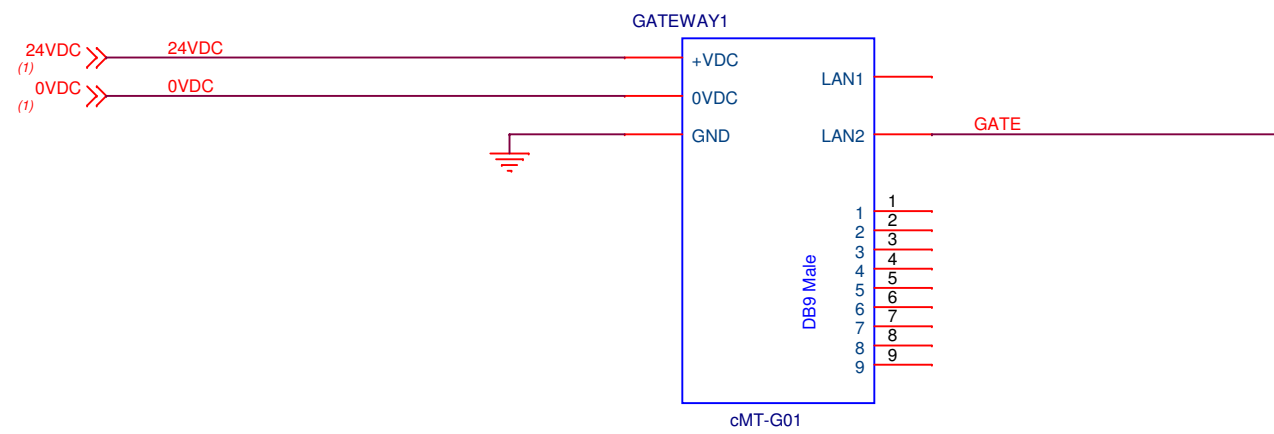
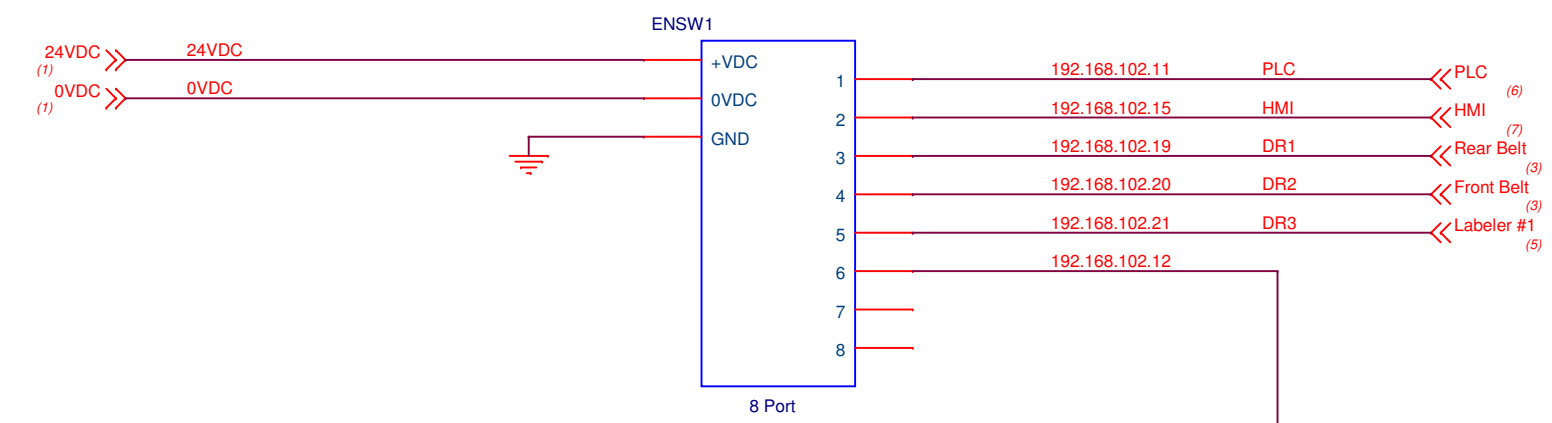
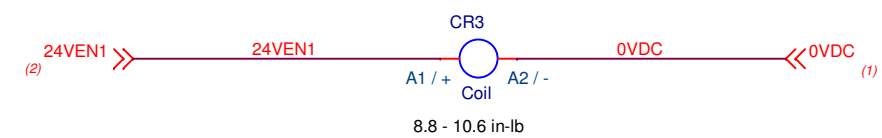
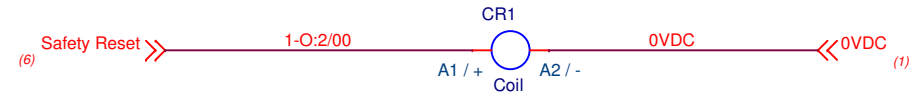
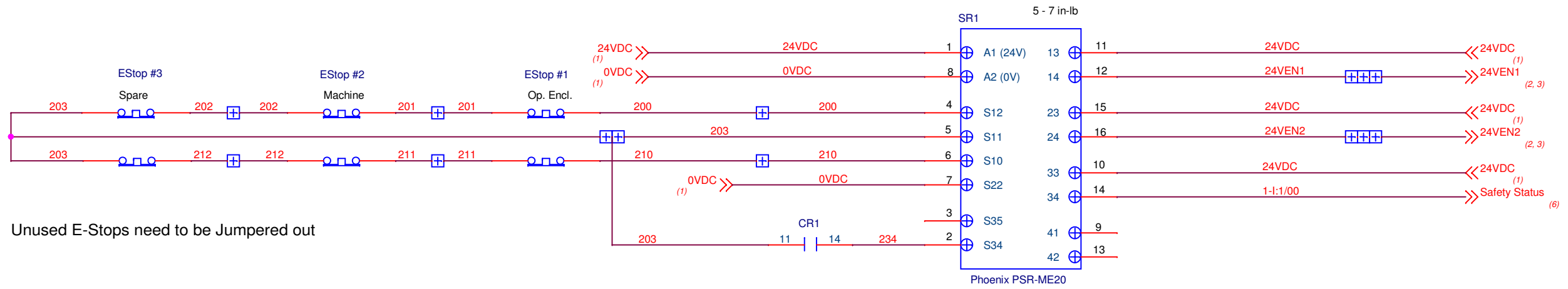
COLOR	TECHNICIAN	DATE

For Quadrel Assembly Use

**QUADREL LABELING SYSTEMS**  
7670 JENTHER DR.  
MENTOR, OH 44060

REV	DESCRIPTION	BY	DATE
B	Added Gateway	CAV	23MAR2026
A	Updated Cover Page	CAV	20FEB2026
-	Release	CAV	SB84251-000

Drawn By: CAV  
Title: **POWER**  
Schematic #: **SB84251-000** Rev **B**  
Date: Monday, March 23, 2026 | Sheet 01 of 08



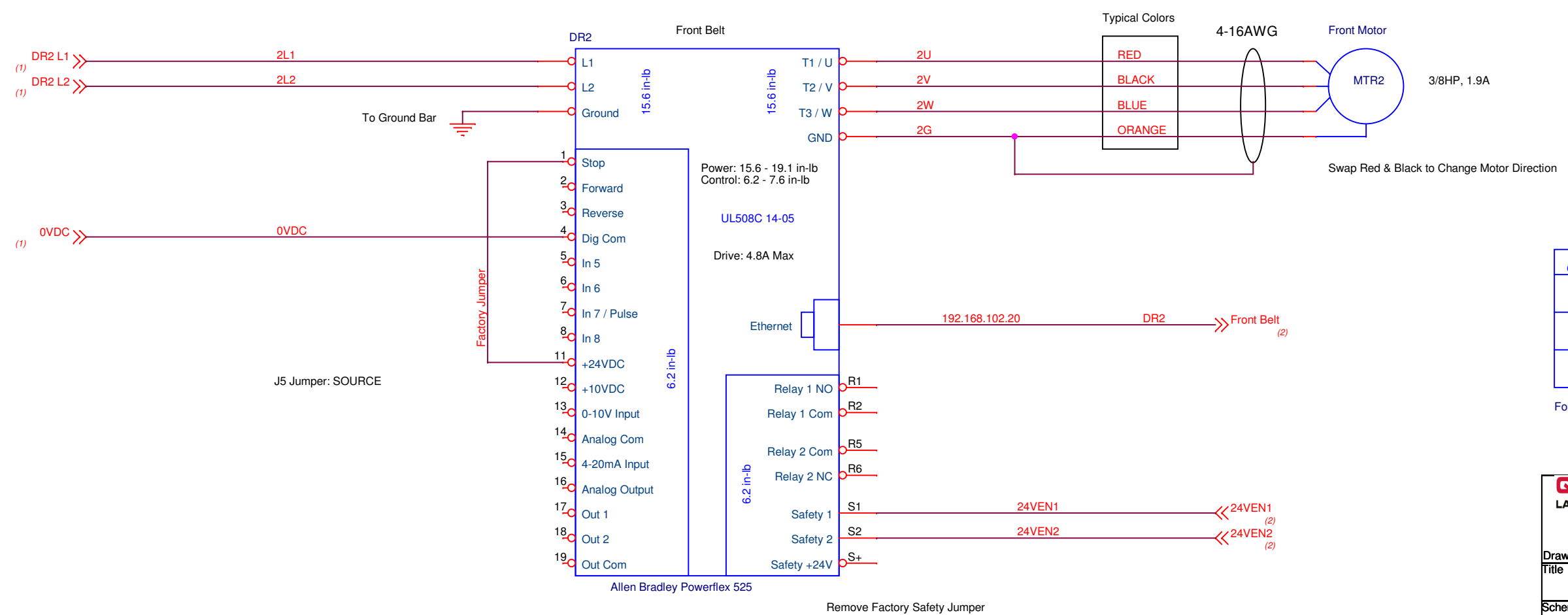
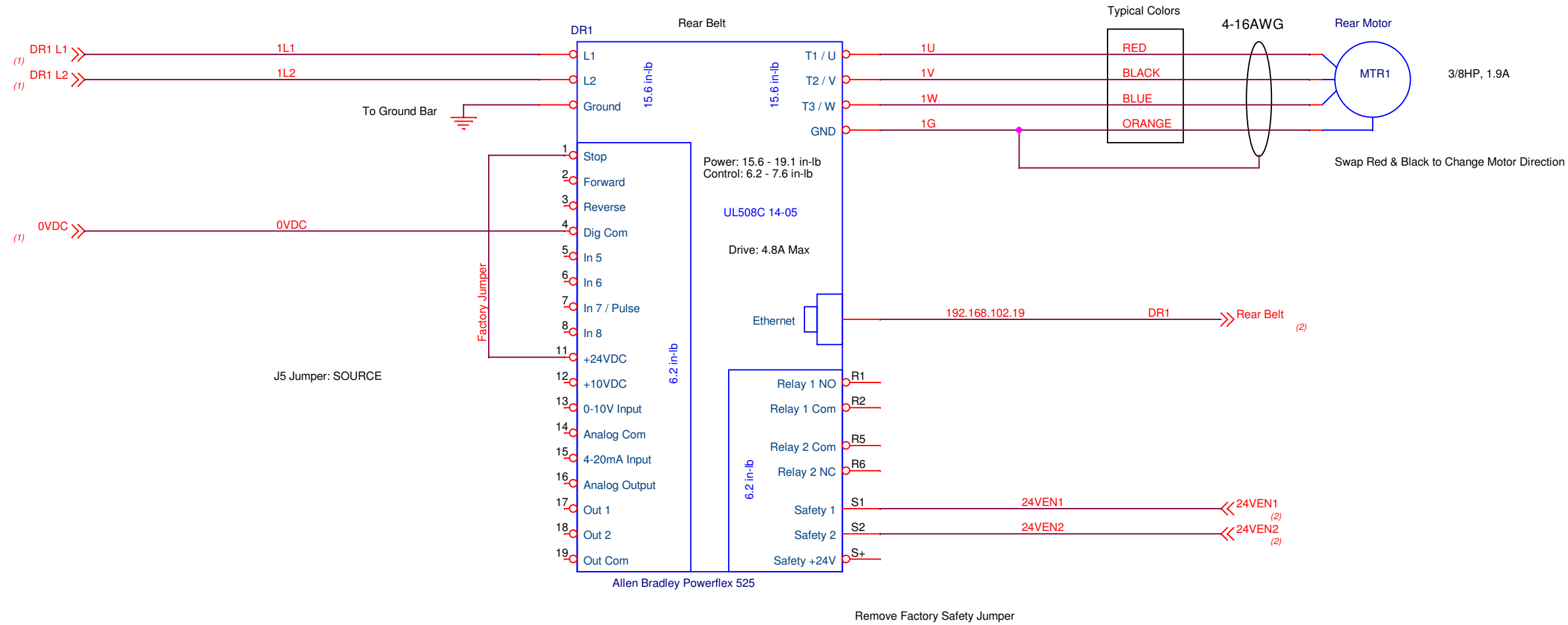
COLOR	TECHNICIAN	DATE

For Quadrel Assembly Use

**QUADREL LABELING SYSTEMS**  
7670 JENTHER DR.  
MENTOR, OH 44060

REV	DESCRIPTION	BY	DATE
B	Added Gateway	CAV	23MAR2026
A	Updated Cover Page	CAV	20FEB2026
-	Release	CAV	SB84251-000

Drawn By: CAV  
Title: **SAFETY**  
Schematic #: **SB84251-000** Rev: **B**  
Date: Monday, March 23, 2026 | Sheet 02 of 08



COLOR	TECHNICIAN	DATE

For Quadrel Assembly Use

**QUADREL LABELING SYSTEMS**  
 7670 JENTHER DR.  
 MENTOR, OH 44060

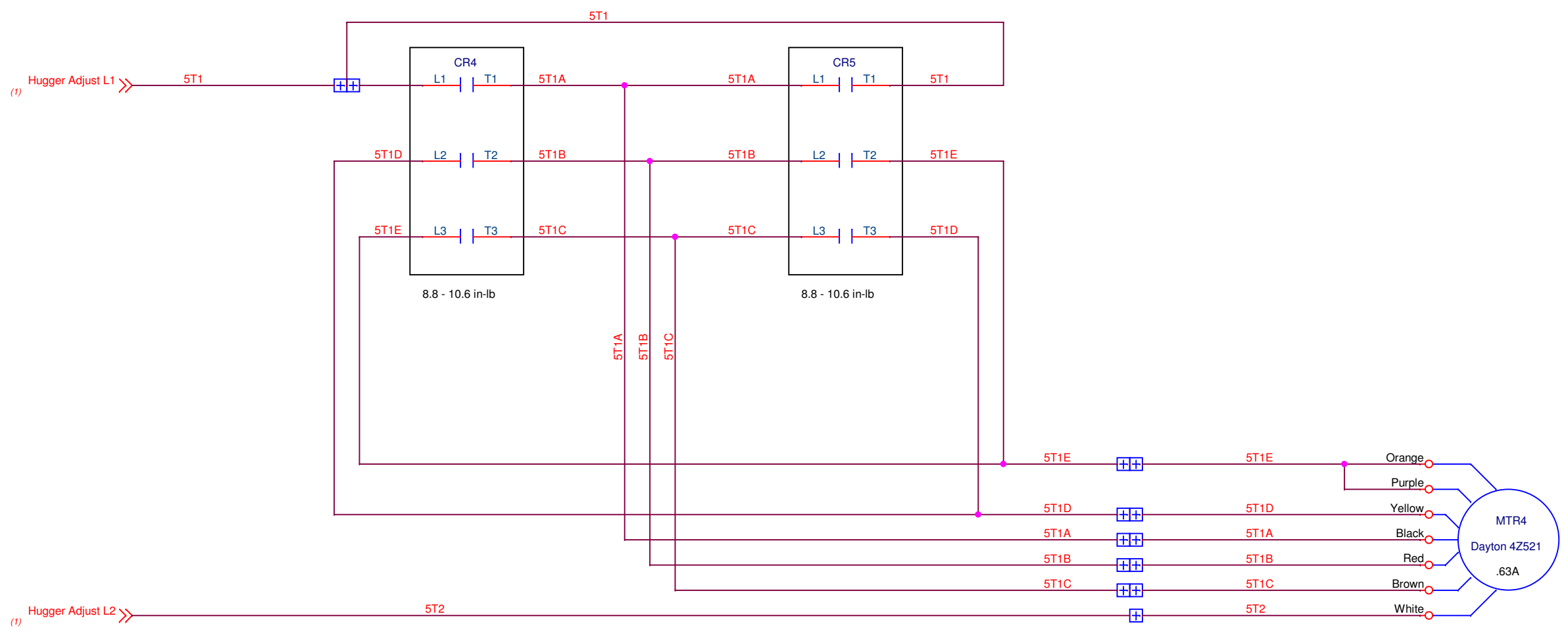
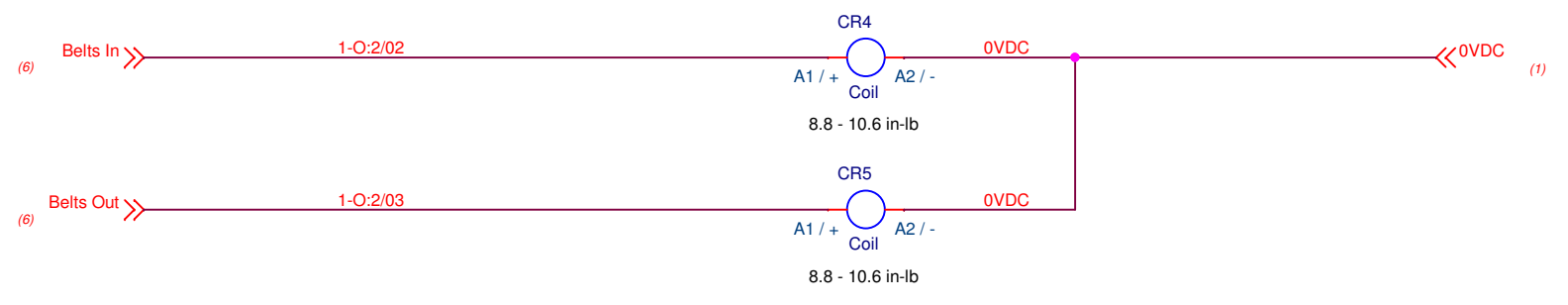
REV	DESCRIPTION	BY	DATE
B	Added Gateway	CAV	23MAR2026
A	Updated Cover Page	CAV	20FEB2026
-	Release	CAV	SB84251-000

Drawn By: CAV

**HUGGER BELTS**

Schematic # **SB84251-000** Rev **B**

Date: Monday, March 23, 2026 | Sheet 03 of 08



COLOR	TECHNICIAN	DATE

For Quadrel Assembly Use

**QUADREL LABELING SYSTEMS**  
7670 JENTHER DR.  
MENTOR, OH 44060

B	Added Gateway	CAV	23MAR2026
A	Updated Cover Page	CAV	20FEB2026
-	Release	CAV	SB84251-000

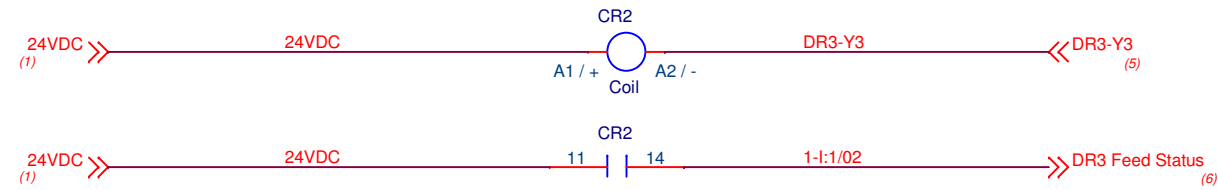
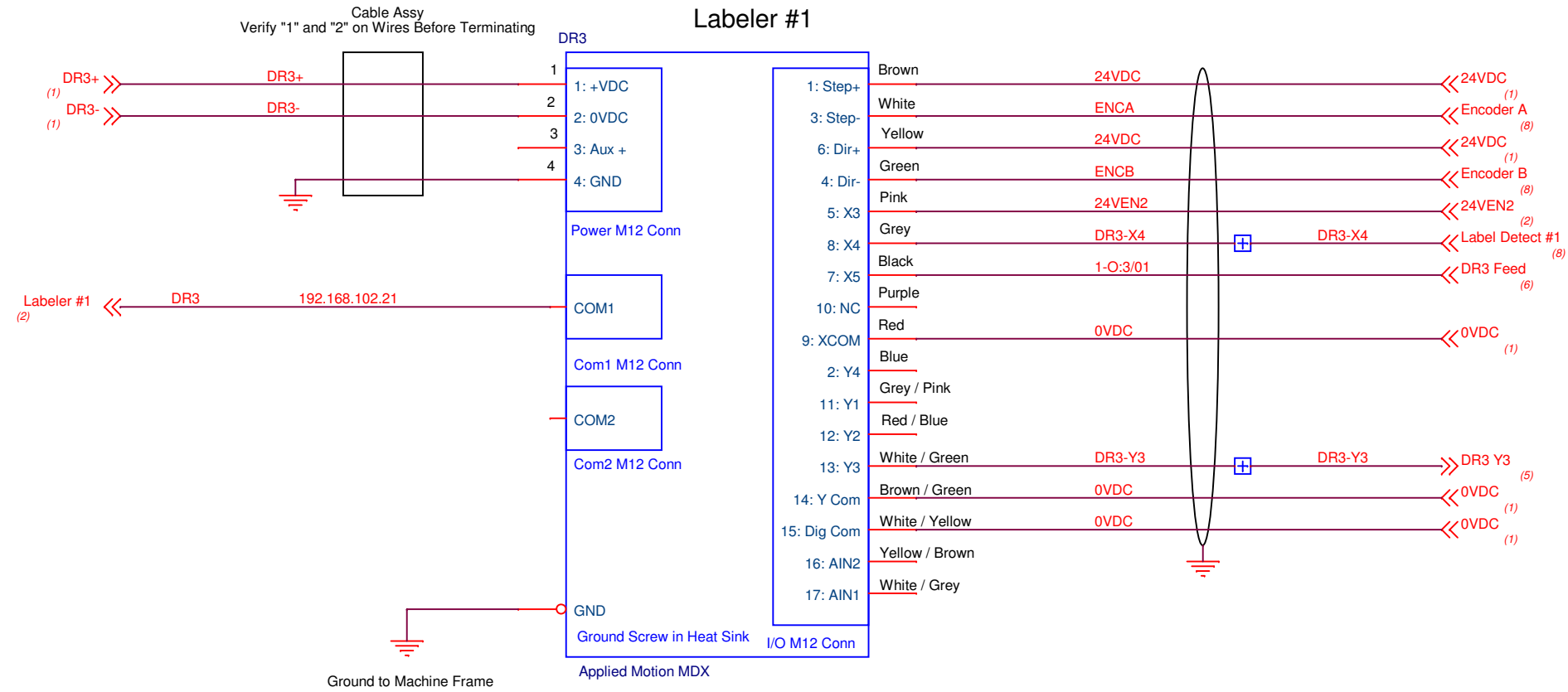
Drawn By: CAV

REV	DESCRIPTION	BY	DATE

Title  
**BELT ADJUST**

Schematic # **SB84251-000** Rev **B**

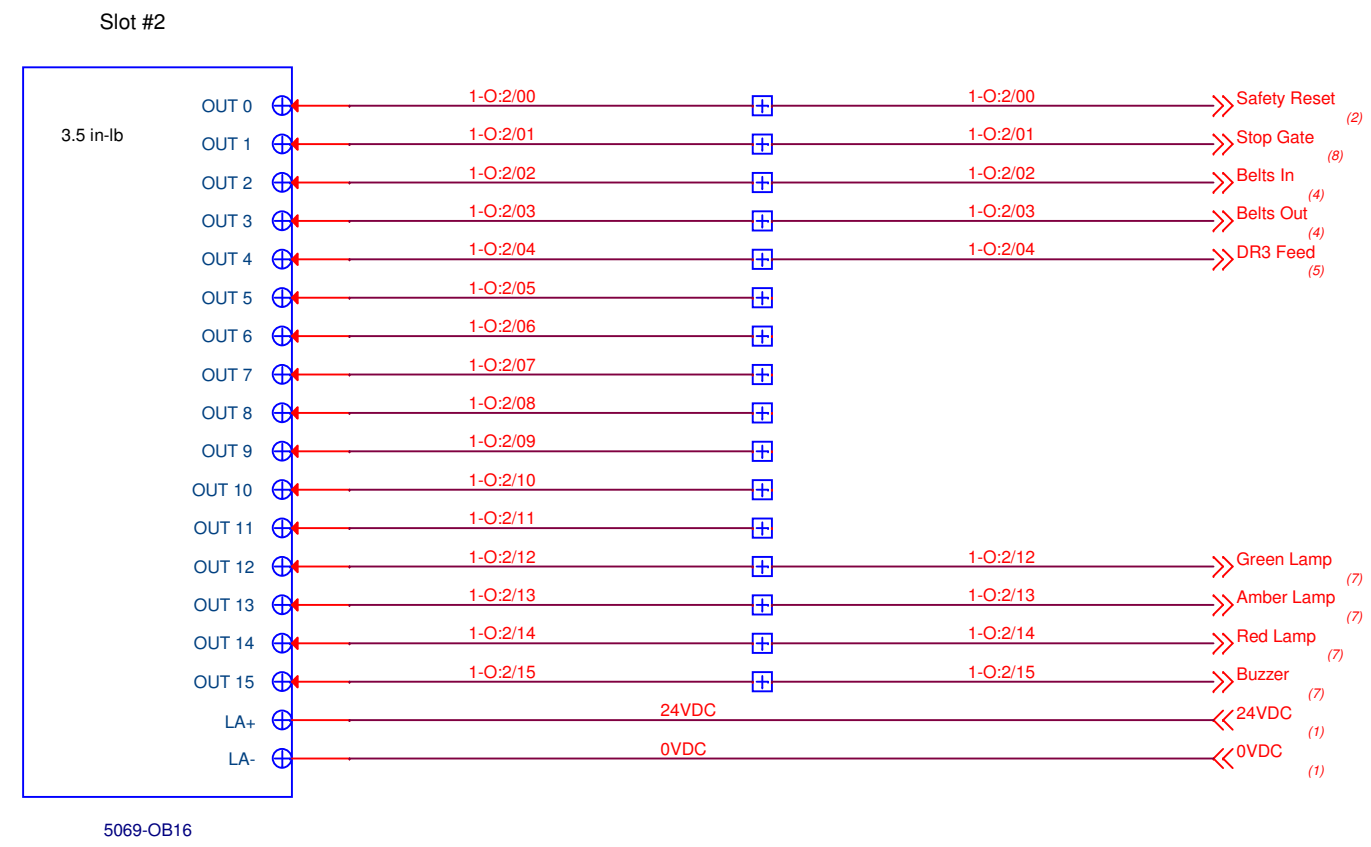
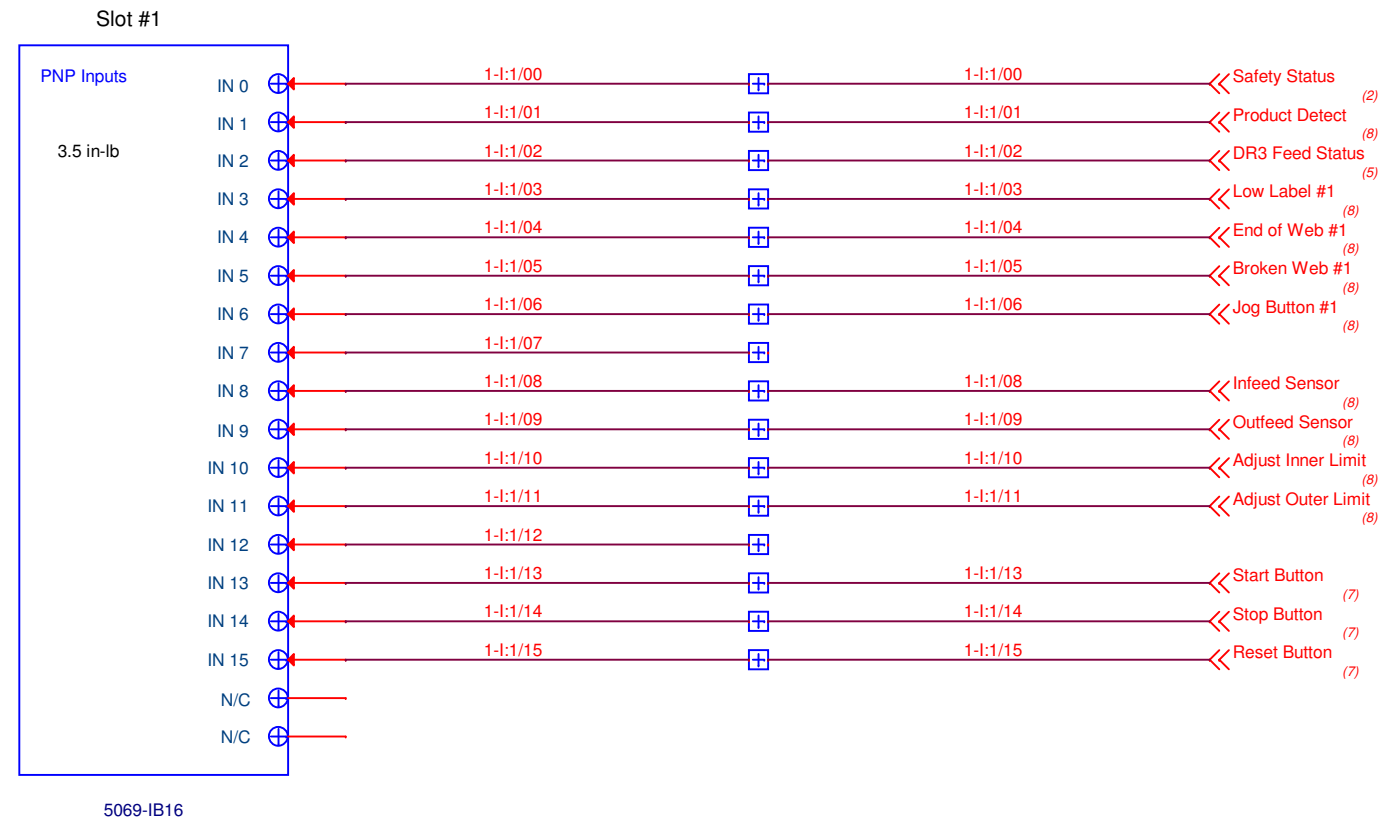
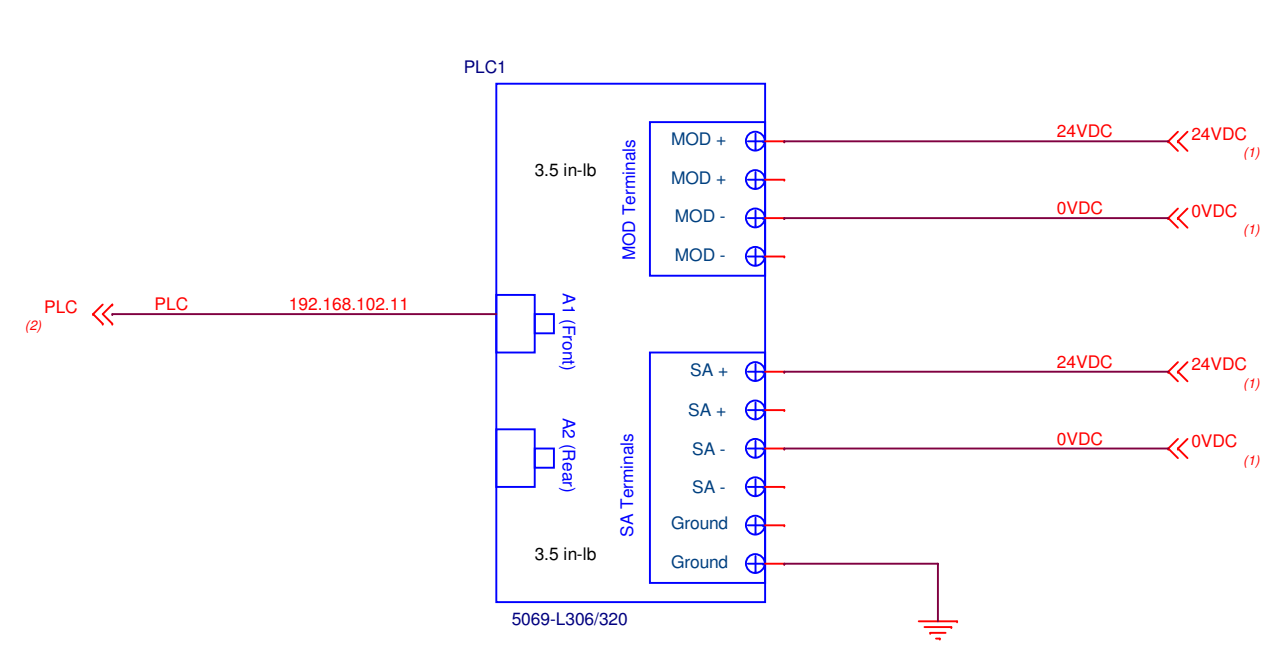
Date: Monday, March 23, 2026 | Sheet 04 of 08



COLOR	TECHNICIAN	DATE

For Quadrel Assembly Use

<b>QUADREL</b>				
LABELING SYSTEMS				
7670 JENTHER DR.		B	Added Gateway	CAV 23MAR2026
MENTOR, OH		A	Updated Cover Page	CAV 20FEB2026
44060		-	Release	CAV SB84251-000
Drawn By: CAV	REV	DESCRIPTION	BY	DATE
Title				
<b>LABELER</b>				
Schematic #				Rev
<b>SB84251-000</b>				<b>B</b>
Date: Monday, March 23, 2026		Sheet 05 of 08		



COLOR	TECHNICIAN	DATE

For Quadrel Assembly Use

**QUADREL LABELING SYSTEMS**  
7670 JENTHER DR.  
MENTOR, OH 44060

B	Added Gateway	CAV	23MAR2026
A	Updated Cover Page	CAV	20FEB2026
-	Release	CAV	SB84251-000
REV	DESCRIPTION	BY	DATE

Drawn By: CAV

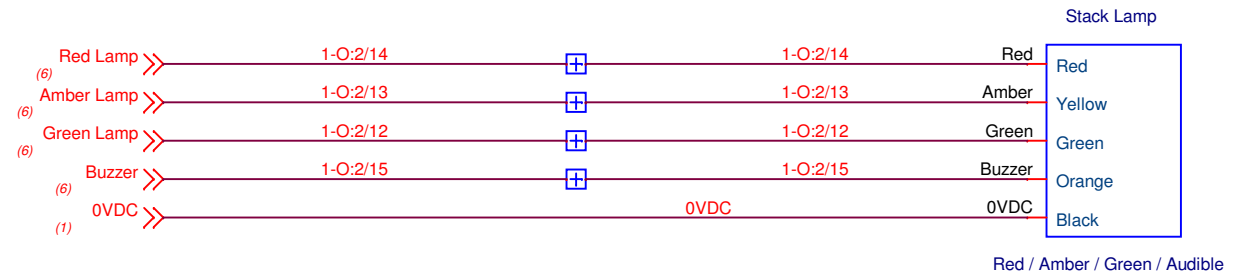
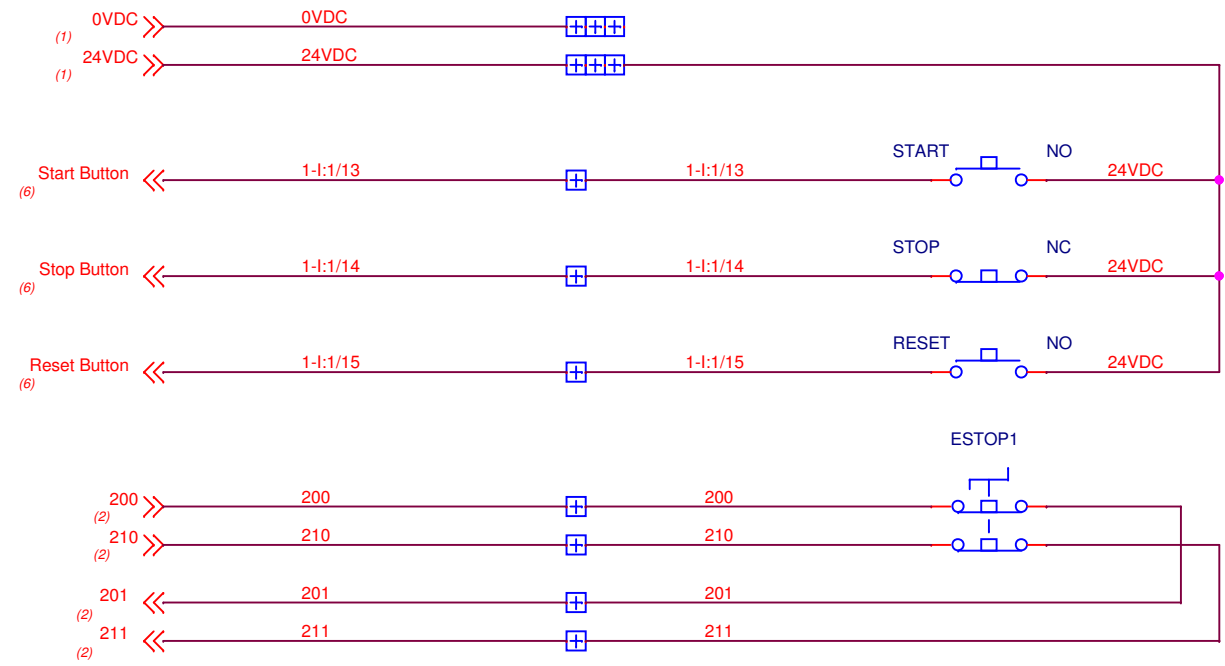
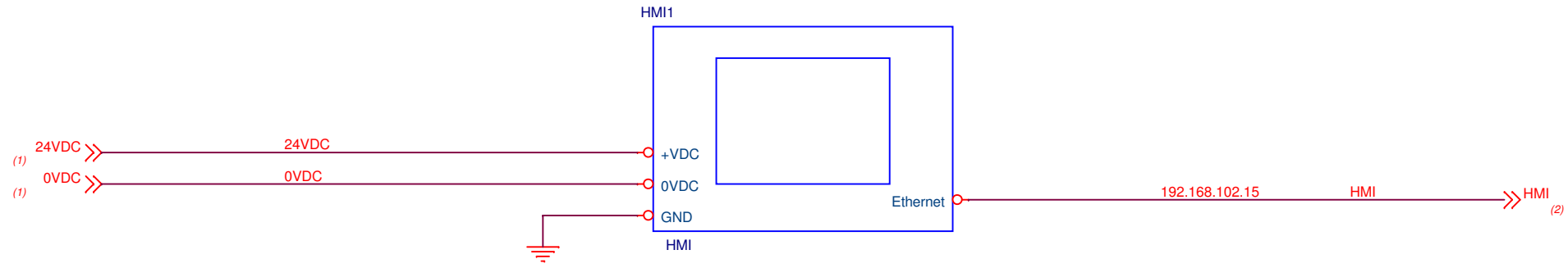
Title: **PLC**

Schematic #: **SB84251-000**

Date: Monday, March 23, 2026

Rev: **B**

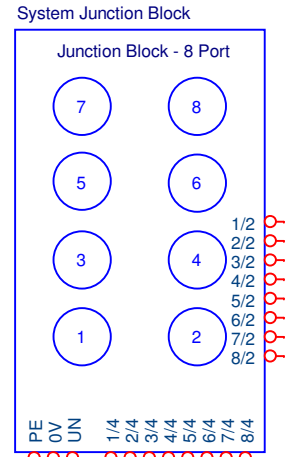
Sheet 06 of 08



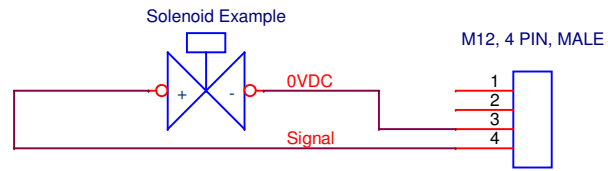
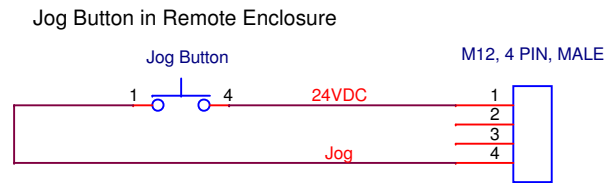
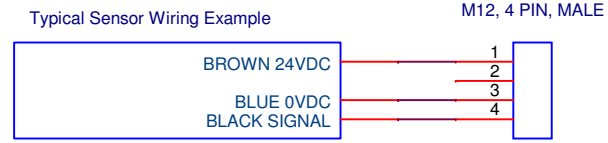
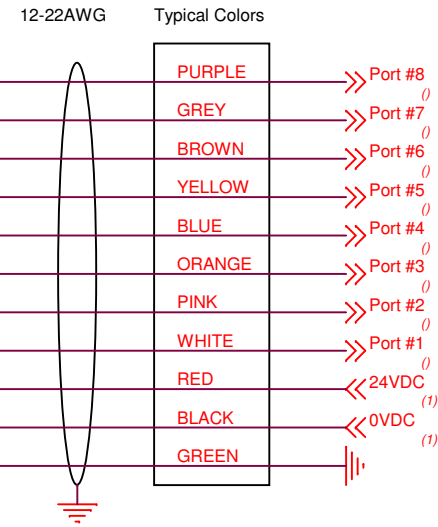
COLOR	TECHNICIAN	DATE

For Quadrel Assembly Use

<b>QUADREL LABELING SYSTEMS</b>			
7670 JENTHER DR. MENTOR, OH 44060			
Drawn By: CAV	REV	DESCRIPTION	BY DATE
	B	Added Gateway	CAV 23MAR2026
	A	Updated Cover Page	CAV 20FEB2026
	-	Release	CAV SB84251-000
<b>OPERATOR ENCLOSURE</b>			
Schematic # <b>SB84251-000</b>			Rev <b>B</b>
Date: Monday, March 23, 2026   Sheet 07 of 08			

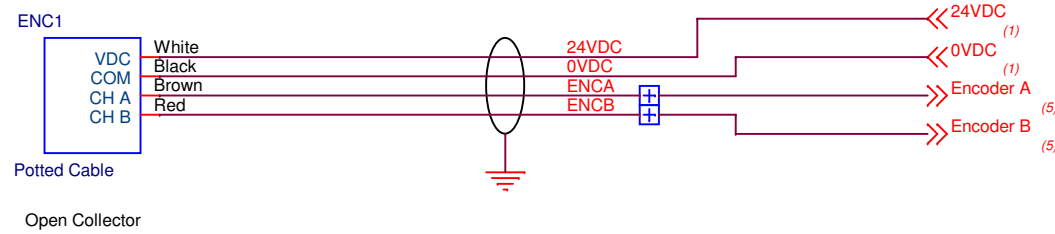


Port #	Labeler #1	Address	System	Address
#1	Label Detect #1	DR3-X4	Infeed Sensor	1-I:1/08
#2	Low Label #1	1-I:1/03	Stop Gate	1-O:2/01
#3	End of Web #1	1-I:1/04	Adjust Inner Limit	1-I:1/10
#4	Broken Web #1	1-I:1/05	Adjust Outer Limit	1-I:1/11
#5	Jog Button #1	1-I:1/06	Outfeed Sensor	1-I:1/09
#6	Product Detect	1-I:1/01	Spare	
#7	Spare		Spare	
#8	Spare		Spare	



COLOR	TECHNICIAN	DATE

For Quadrel Assembly Use



<b>QUADREL LABELING SYSTEMS</b>			
7670 JENTHER DR. MENTOR, OH 44060			
REV	DESCRIPTION	BY	DATE
B	Added Gateway	CAV	23MAR2026
A	Updated Cover Page	CAV	20FEB2026
-	Release	CAV	SB84251-000
Title: <b>SENSORS</b>			
Schematic # <b>SB84251-000</b>			Rev <b>B</b>
Date: Monday, March 23, 2026   Sheet 08 of 08			

## 9 MAINTENANCE

### 9.1 GENERAL INFORMATION

This labeler has been designed with the minimal maintenance requirement possible. There are however some things to take into consideration.

The system is built to perform in humid conditions, but must not be pressure washed. In case of wash down conditions, it is recommended to cover each labeling head with a plastic tarp.

For the overall cleaning, it is recommended to use compressed air and clean, damp wipes.

Always turn off the system before proceeding with cleaning and maintenance.

The following section explains the preventive maintenance for each section

After every 100 hours of operation, a visual inspection of the system should be done and where it is necessary, lubricate and cleaning should be performed.



#### CAUTION

WEAR PROTECTIVE EYEWEAR when performing any maintenance on this equipment.



#### CAUTION

To reduce risk of fire, electrocution or other personal Injury when operating or maintaining the labeling head, follow basic safety precaution, including the following:

DO NOT perform any servicing or maintenance with the power ON.

Always disconnect the electrical plug from the wall socket

Make sure that the power is OFF or that the available E-stop buttons have been activated.

## LABELING SYSTEM

This labeling system is reliable, versatile and durable. It will operate for years with very light maintenance if it is performed regularly. Most of the maintenance takes only a few minutes and substantially increases the operational life of the system and maintains label placement accuracy.

Not all sections may apply to your equipment.

Daily:	D
Weekly:	W
Monthly	M
Quarterly	Q
Semi-Annually	S

### ASSEMBLY TITLE: LABELING HEAD ASSEMBLY

**D-** Remove glue residue and labels from all rollers and idler. DO NOT use a knife or other tool to scrape the rollers. Adhesive Remover such as Goo-Gone or 3M Adhesive Remover is recommended. DO NOT use an adhesive remover that reacts with plastics or sensor lenses will be damaged.

**M-** Check for loose idlers and components and tighten as needed.

**S** – Lubricate all idler rollers shafts using 80w-90w gear lube on the white bearings where they contact the axle.

### ASSEMBLY TITLE: UNWIND ASSEMBLY

**S-** Check and adjust dancer spring. If final spring tension is too soft then replace.

**S-** Check and inspect band brake. Replace if torn

### ASSEMBLY TITLE: REWIND ASSEMBLY

**S-** Check and inspect friction disc (if applicable), Replace when worn out.

**S-** Check Kinetrol (if applicable) for leaks, Replace if necessary.

### ASSEMBLY TITLE: BRAKE BRUSH ASSEMBLY

**S-** Reverse brake brush direction

**S-** Inspect Brake brush when brush body contour no longer viable or bristles are worn down. Replace

### ASSEMBLY TITLE: SLOT SENSOR ASSEMBLY

**D-** Keep the sensor optical area clean from label and glue residue

### ASSEMBLY TITLE: SIDE PLATE ASSEMBLY

**S-** Lubricate all idler rollers shafts using 80w-90w gear lube on the white bearings where they contact the axle.

**ASSEMBLY TITLE: PEEL PLATE ASSEMBLY**

**D-** Clean all the parts that may acquire labels or glue residue. DO NOT use a knife or other tool to scrape the rollers. Adhesive removers are recommended.

**W-** Inspect Teflon tape on peel plate tip. Replace if the steel is exposed.

**S** – Lubricate all idler rollers shafts 80w-90w gear lube

**ASSEMBLY TITLE: DRIVE AND PINCH ROLL ASSEMBLY**

**D-** Remove glue residue and labels from drive roller. DO NOT use a knife or other tool to scrape the rollers. Isopropyl alcohol and adhesive removers are recommended.

**W-** Clean the knurled roll with a soft brass brush and adhesive remover.

**M-** Check and inspect drive roll. No play should be present when powered up. If there is a groove the width of the label liner, replace the worn roller.

**M** – Lubricate knurled roll shafts using 80w-90w gear lube.

**S-** Inspect and Lubricate, springs and slugs.

**ASSEMBLY TITLE: ROLLER/BRUSH IMPRESSER**

**D-** Check the rollers/brushes. They should be free of label flash, glue and debris. This will prevent jamming and web tears.

**W-** Check the foam rollers. If foam wear is noticeable, replace as necessary.

**NOTE:** Exercise caution when removing bad labels from foam. Careless removal can result in torn foam which may leave the labeler inoperable until the roller is replaced!

**ASSEMBLY TITLE: OPERATOR PANEL**

-No maintenance is required for the operator panel

-Occasionally, the keypad may be cleaned with any non-solvent based cleaning solution. Glass cleaner on a clean towel then wipe the membrane.

**ASSEMBLY TITLE: ELECTRICAL**

**W-** Check the foam filter for the fan. Clean or replace.

**ASSEMBLY TITLE: CONVEYOR**

**D** – Inspect conveyor chain for broken flights of table top chain

**W** – Inspect conveyor for labels / adhesive and remove as needed

**S** – Check gearbox oil levels and add as needed.

American Lubricants SHC-90W oil.

**ASSEMBLY TITLE: FEEDSCREW**

**W** – Remove glue residue and labels from feed screws

**W** – Lubricate internal feedscrew drive assembly, with multi-purpose grease.

**S** – Lubricate grease fittings / chains / bearings with quality multi-purpose grease – as needed

**ASSEMBLY TITLE: VERTICAL ROLLER**

**W** – Remove labels from rollers with adhesive remover / cleaner

**W** – Lubricate chains with food grade grease.

**ASSEMBLY TITLE: EJECT STATION**

**D** – Clean all parts that have acquired label or glue residue

**ASSEMBLY TITLE: INFEEED / OUTFEED BANK SENSOR**

**W** – Clean and glue residue or labels off sensor and/or reflectors

**ASSEMBLY TITLE: SLEEVE**

**M** – Drive rollers – Inspect for wear and clean with a citrus based adhesive removal

**M** – Inspect tension belts for cutter blade and cutter assembly for wear. Replace as needed.

**M** – Inspect cutter blades and bearings for wear. Replace as needed

**M** – Inspect perforation blades / bearings for wear and free of debris. Replace as needed.

**S-** Check, inspect, and grease all lead screws (threaded rods)

**S** – Inspect mandrel and bearings for wear. Ensure they spin freely  
Replace as needed.

**NOTES:**

## GENERAL PURPOSE FEEDSCREW LUBRICATION GUIDE

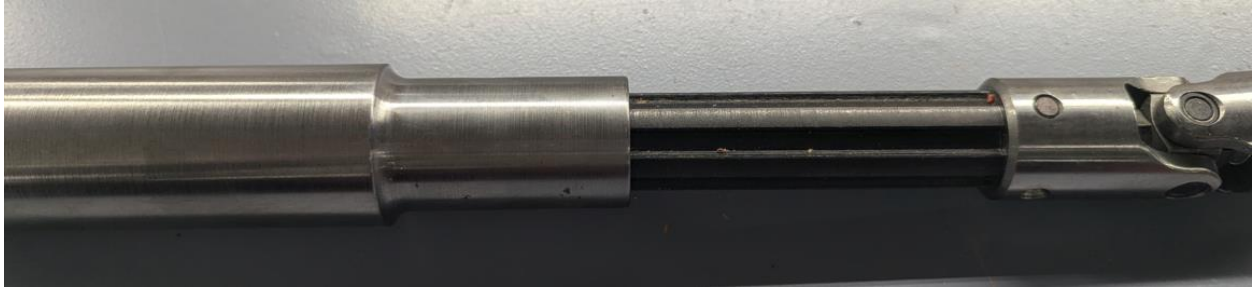
During your weekly maintenance of your Quadrel Labeling Systems equipment follow the steps below to ensure proper lubrication of the internal drive system for your feedscrew assembly.



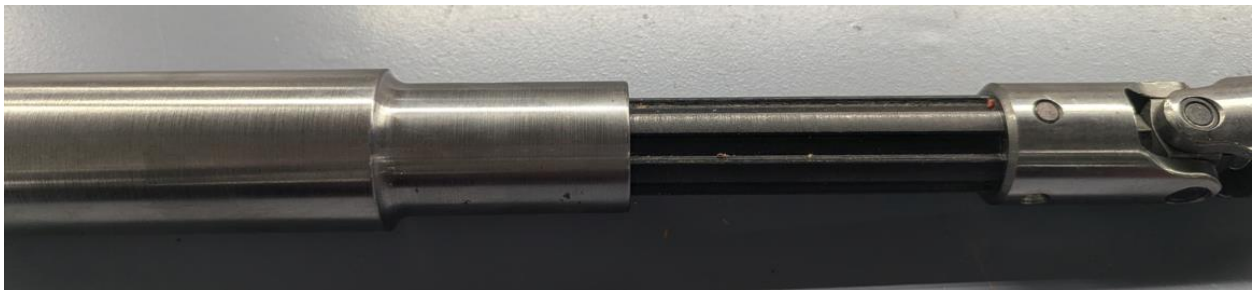
Step 1 – Your dual feedscrews are connected inside the conveyor with a spline shaft assembly. First remove the chain so you have easy access to the this.



Step 2 – Open your feedscrews to your largest product. This will expose the spline assembly shaft that you will be applying the multi-purpose grease to.



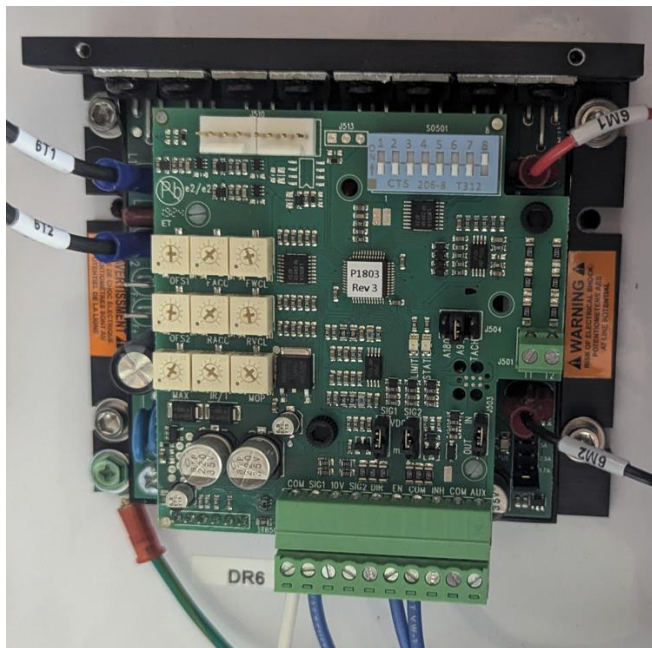
Step 3 – Apply multi-purpose grease to the now exposed spline shaft assembly. Ensure to apply multi-purpose grease all the way around the spline shaft– Top, bottom and sides



Step 4 – Slowly move the feedscrews in and out to so the grease can spread evenly over the length of entire spline shaft assembly.

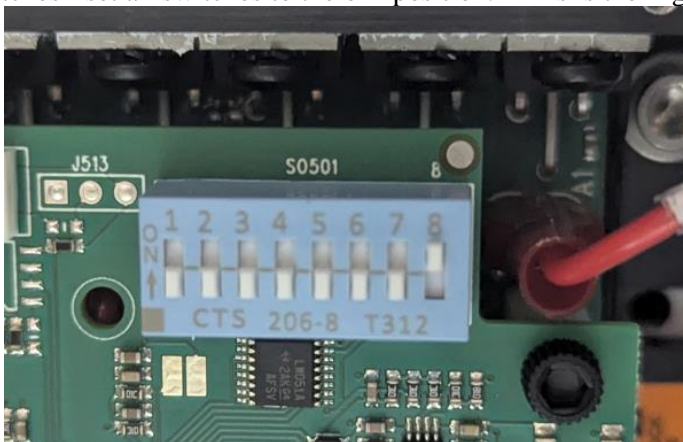
Step 5 – Reconnect conveyor chain

## Setup procedure for Powered rewind using MGC403-11-00MD drive

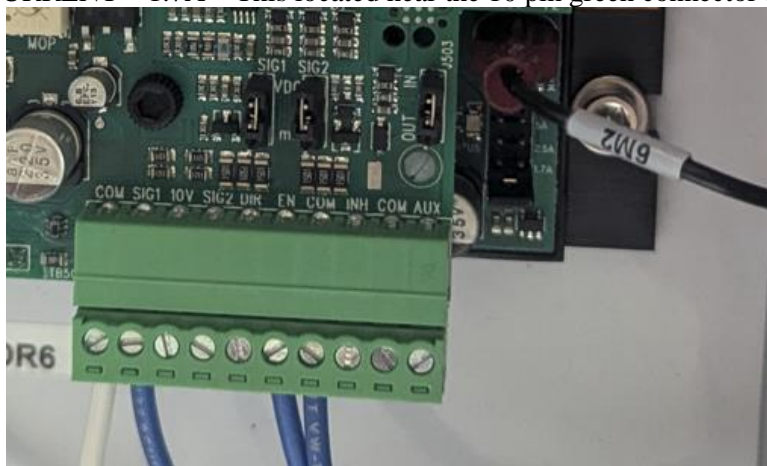


Upon receiving drive set the following **BEFORE** installing in the machine.

1. Dip switches - set all switches to the off position. This is the Light blue row of switches shown in the image below

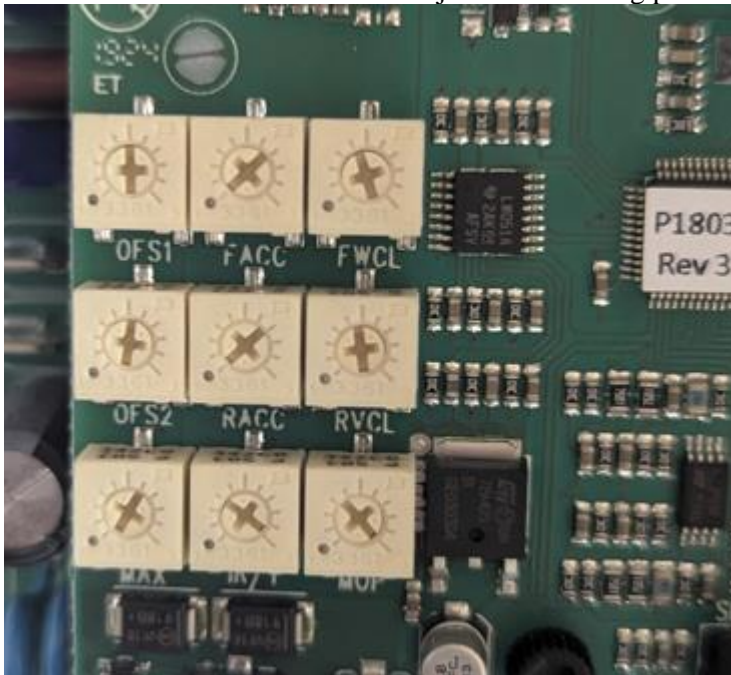


- a.
2. Set Jumpers on drive based on electrical schematic for your machine
  - a. SIG1 – VDC
  - b. SIG2 – VDC
  - c. J504 – A90
  - d. AMP CURRENT – 1.7A – This located near the 10 pin green connector that



i.

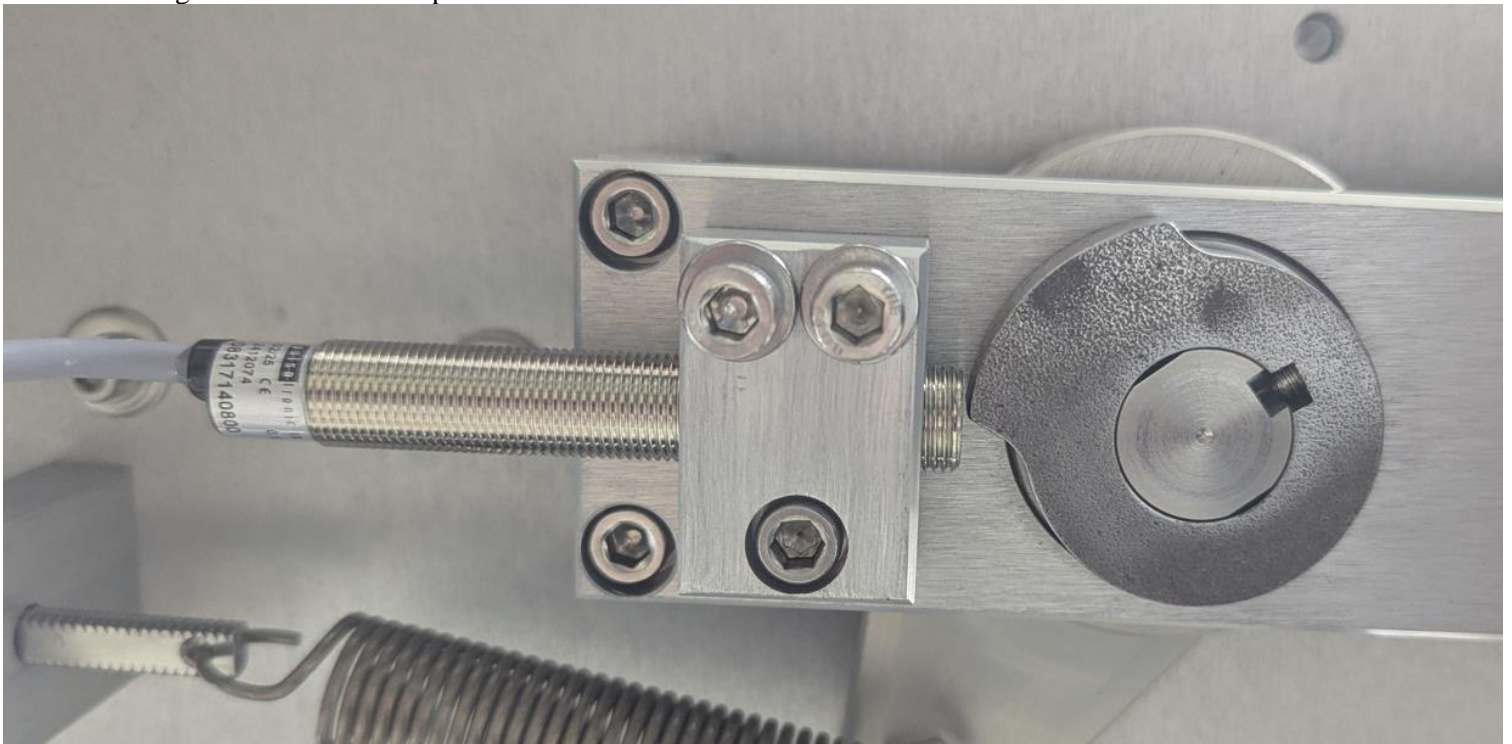
3. Using a small flat blade / Slot screwdriver adjust the following pots as indicated in the image below:



- a.
- i. Top row **OFS1** – WILL BE ADJUSTED AT LATER STEP
  - ii. Top row – **FACC** - turn counter clockwise until it stops.
  - iii. Top row **FWCL** – set to half way point – midpoint
  - iv. Middle row - **OFS2** – turn counter clockwise until it stops. This turns the pot OFF
  - v. Middle row – **RACC** - turn counter clockwise until it stops
  - vi. Middle row – **RVCL** – set to half way point – midpoint
  - vii. Bottom row – **MAX** – Set to 3/4 point
  - viii. Bottom row – **Leave other 2 pots at factory setting – DO NOT ADJUST**

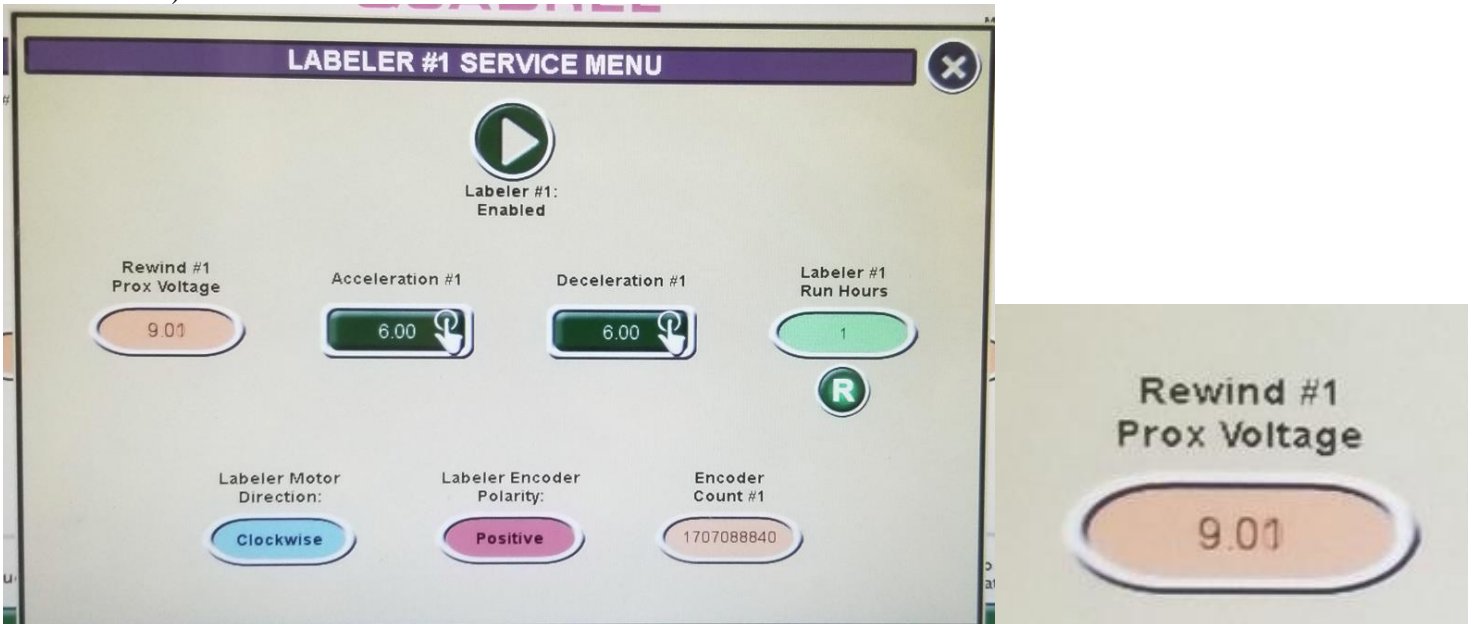
**4. Install drive in machine then proceed to next steps**

5. Set the Cam on the rewind dancer per image below when the dancer arm is at rest. Rest is when the arm is all the way back against the rubber bumper as shown

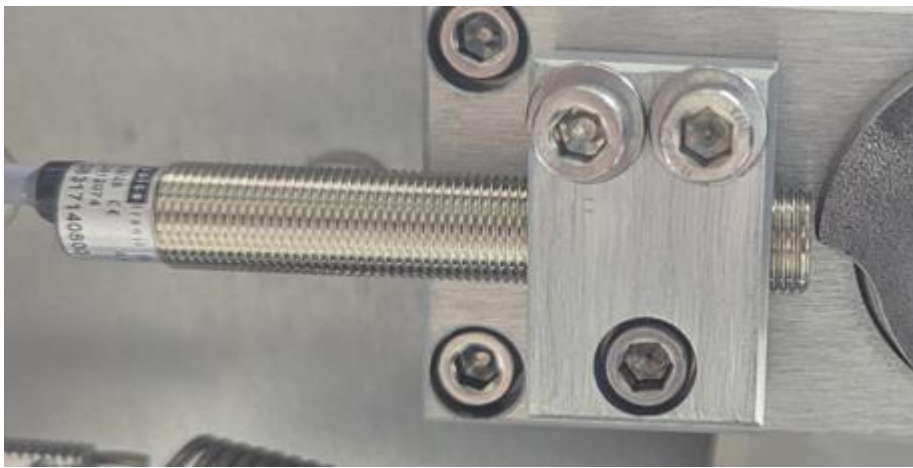




6. On the HMI go to into labeling head service menu. You will be looking at the REWIND PROX VOLTAGE (example below)



7. Adjust the sensor gap at the cam by loosening the bolt using an allen key so that the sensor can be moved forward or backward. The bolt does NOT touch the sensor. Loosening it opens the clamp so you can adjust.
8. Set the gap so the REWIND PROX VOLTAGE on the HMI reads **.90 it must be under 1 volt.**
  - a. **Retighten screw so the clamp sensor no longer moves**



b.

9. Test by moving the rewind dancer arm forward. When doing this you should see the rewind prox voltage on the HMI increase up to 9 volts

**a. If you do not see the voltage increase steadily, recheck cam sensor gap in step 7**

10. Turn on rewind switch on the back of the labeler. This will engage / turn on the motor.

11. Move the rewind dancer arm forward the rewind hub should start to turn clockwise. It will slow then stop as you move forward. Rewind hub should ALWAYS be turning clockwise. If it moves counter clockwise move to **step 11a**

a. While holding the arm in the position where it started to run counter clockwise, it MUST be running counter clockwise, you will adjust **OFS1** until the rewind hub stops moving.



i.

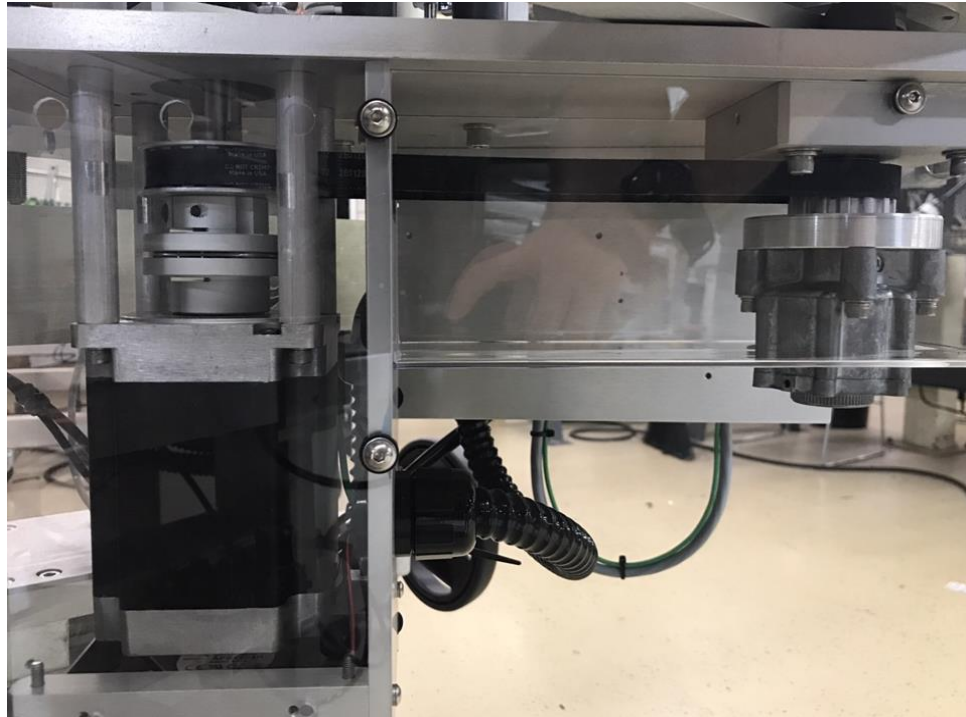
b. This adjustment may need to be done multiple times until it no longer moves counter clockwise when rewind arm is all the forward and at rest.

## 9.2 BELTS

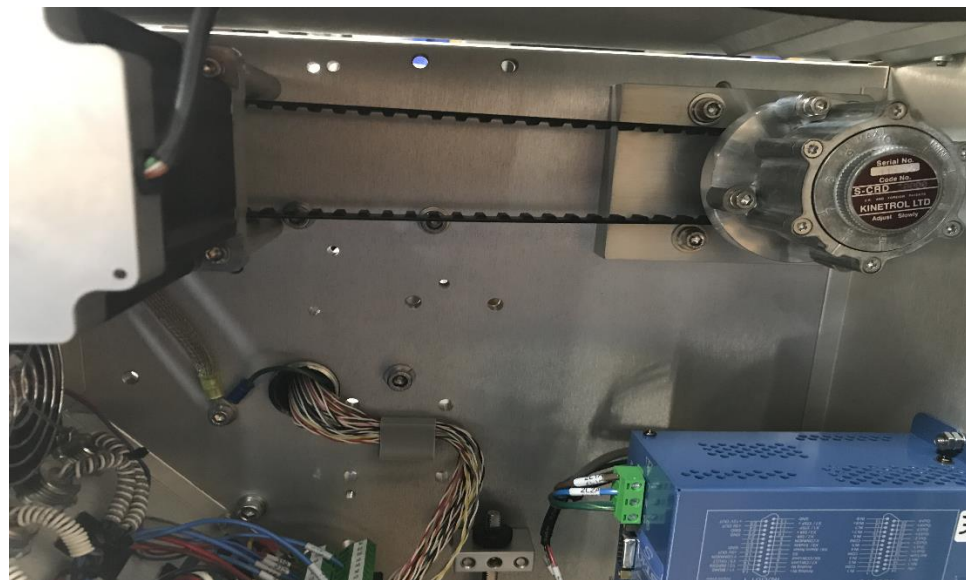
Monthly, a visual inspection of the rewind belt and timing belt, to do this depending on the labeling head you may need to remove the bottom cover on the head.

Refer to photos below.

Servo labeling head.



Stepping labeling head.



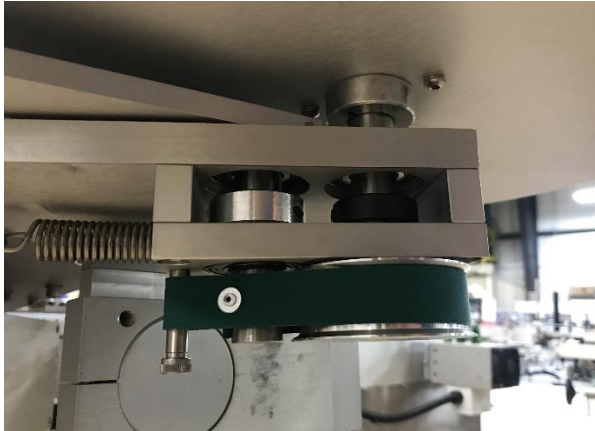
**CAUTION**

DO NOT ATTEMPT doing this with the equipment under tension (with power on).

The visual inspection should consist of looking for cracks or defects in the belts. If this is the case, change the belts that are defective. Refer to the parts listing in the labeling head section of this manual.

The brake band mechanism requires a monthly visual inspection as well. Also once every 12 months you should consider replacing the belt (it is possible that you may need to change it later or earlier than 12 months depending the usage of the labeling head).

The brake band belt assembly is located at the base of the unwind assembly. See images below for reference.

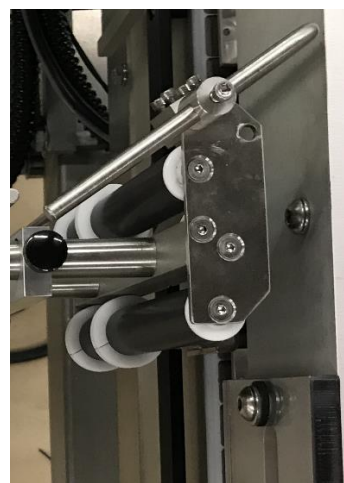
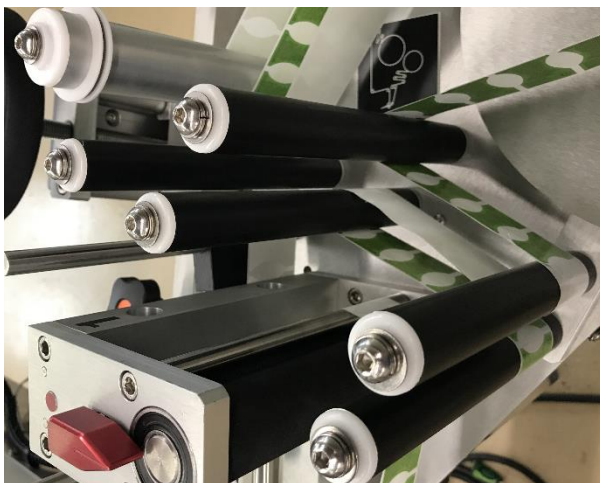


For replacement parts see the unwind assembly drawing for your labeling head in this manual.

### 9.3 ROLLERS

It is important that your labeler is as clean as possible in its environment in order for it to perform properly. Daily, it is suggested to clean all the rollers including the drive roller (the rubber roller), the pressure shoe and peel plate using a damp cloth with alcohol. Make sure those parts have no glue or labels on it.

Weekly, spray a silicone base lubricant on each end of the plastic bearing.



## 9.4 SENSORS

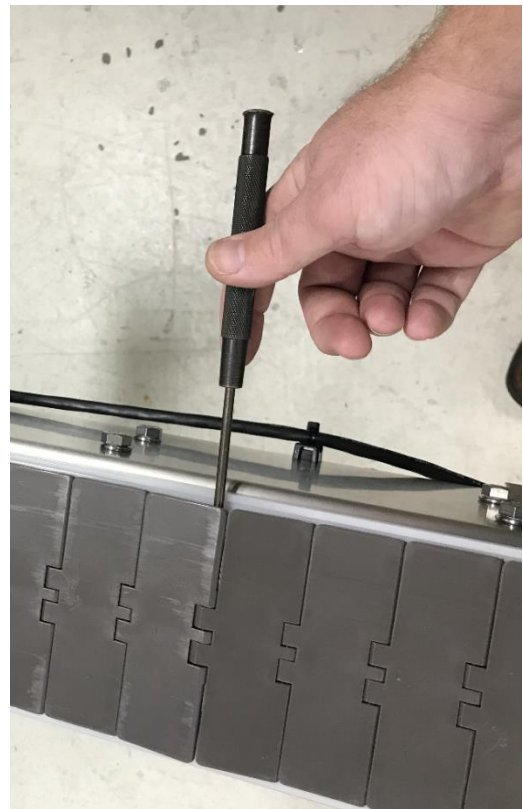
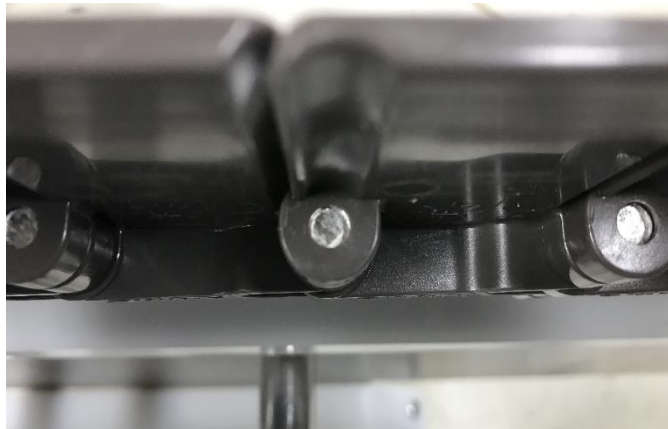
The sensors all have an electronic eye called a photocell; these must be free of lint or dirt. Since the photocells are generally made with glass or plastic lenses. They naturally attract substances which could easily trigger the sensor, use a cotton swap to gently clean the eye of the sensor as you would any lens, in a circular motion.

## 9.5 CONVEYOR

Always keep the belt or (chain) clean. To clean it simply use compressed air with an osha approved nozzle and/or damp wipes. If necessary, a soft cleaning agent can be used.

### 9.5.1 CLEANING

To clean the under carriage portion of the conveyor, simply remove the belt using an punch or similar tool and hammer to tap out the retaining belt link pin. (see images below, the chain has an orientation to the pins, you must tap it out from the narrow diameter) Clean the desired portion with a damp cloth and replace the pin to the belt. The pin will be tapped in the opposite side you tapped it out. \*You can also lift the chain and wipe under it.



## 10 CLEARING A JAM

In the event a jam occurs on your Quadrel Labeler reference the following steps to clear.

1. Press the conveyor stop button or the emergency stop if you are unable to reach the stop button.
2. Clear the jam manually in the affected area of the equipment where jam is located
3. Once jam is cleared reenergize the estop, if pressed, and press the reset button (where applicable) to clear faults.
4. Put equipment back into "run" and press start to turn the system back online to continue labeling

## 11 WARRANTY

The standard warranty period for Quadrel equipment is 12 months following invoicing. The warranty covers all parts with consideration taken towards reasonable use and normal wear and tear. Not covered by warranty are parts that have a limited wear factor, any required labor by Quadrel. Prior to return to Quadrel, parts must be verified defective.

### Return of defective parts

To return a defective part, you will need to get an RMA number from Quadrel. All RMA's are issued through our parts department. Please specify the serial number of the equipment, the client's name, address, phone number, contact name and the nature of the problem. To get a replacement part, a purchase order is required. You will be billed for the new part and credited for the defective part after return and evaluation. If the part is determined to be defective due to improper use, no credit will be issued.

### Appropriate Use of Equipment

The equipment supplied to the end user by Quadrel are to be used for the sole purpose for which they were intended and must follow Quadrel's specifications on usage as well as appropriate functions. Quadrel will not assume any responsibility for any inappropriate use or modifications to the said equipment other than for the use it was initially built for. The warranty will cease to apply forthwith, in Quadrel's opinion, the equipment has been used abnormally or in an abusive manner, if it has not been properly maintained, if it has not been carried on a truck equipped with an air-ride suspension when required by Quadrel or if it has been used, or maintained contrary to the owners manual provided by Quadrel.

### Responsibility Limits

The solution put forth has been prepared with the information that has been provided to Quadrel by the end user. Subsequently, Quadrel cannot assume any responsibility for the exactitude, precision, and the validity of the information which was supplied. Moreover, Quadrel cannot be responsible for (a) any damages, direct or indirect, secondary, or

accessory, including without limitations, the loss of profit, workflow interruption, loss of production, loss of profits and other; (b) any and all damages claimed against the end user by a third party; (c) any or all damages caused to the property of end user or any other third party; (d) any or all resulting in an act from the end user or third party, major force, or act of god, unforeseen cause, or event.

With all reservation, in the eventuality where the responsibility is that of Quadrel relative to any defect of quality of said equipment or proposed solution Quadrel would be able to accept the responsibility, to its entire discretion, with the replacement of part of the said equipment or solution. By a compatible or identical equipment or solution or by a reimbursement of value agreed upon. In no case can Quadrel's responsibility exceed the total monetary sums received for the said defective equipment or solution.