QUADREL
LABELING SYSTEMS

Operating & Maintenance
Manual
For

AMSOIL CENTER

PROLINE
ZDT FRONT/BACK
Automatic Labeling System

Labeler Model #: Q160 SERVO
Serial #: 84209-100

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 TERMAND CONDITIONS INCOSISTANT 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 REEQUIRMENTS. 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.

LIMITIATION 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 aft h 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.

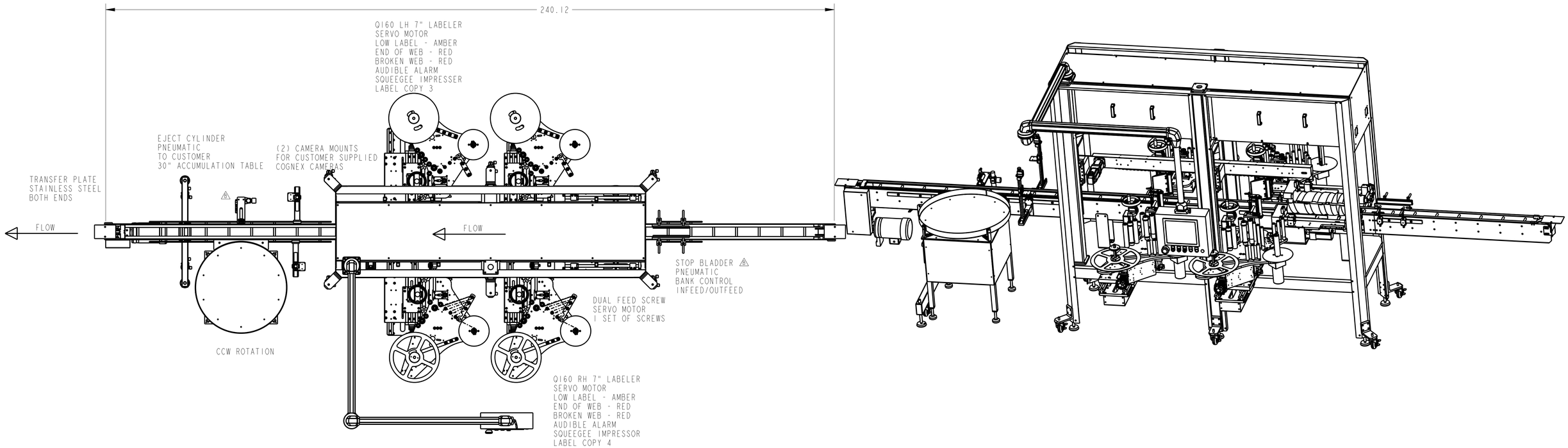
Any order put on hold or left dormant for any reason for 90 days will be considered cancelled. See Cancellation Policy below.

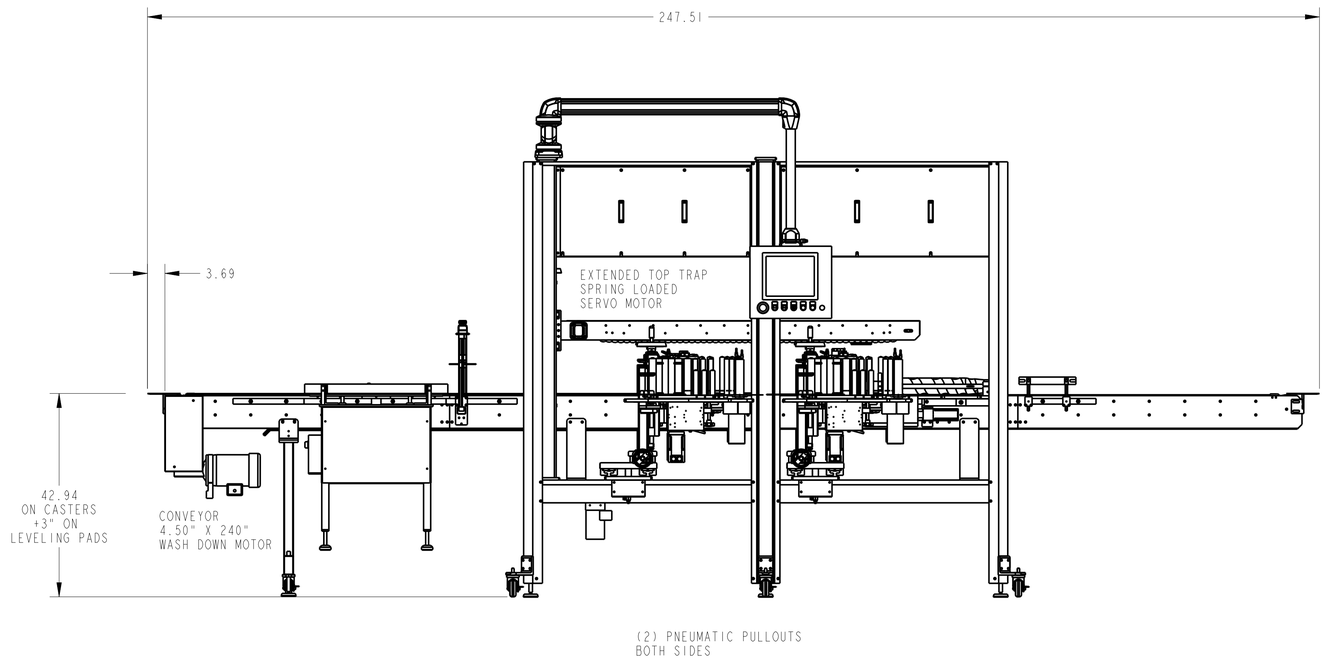
CANCELLATION POLICY:

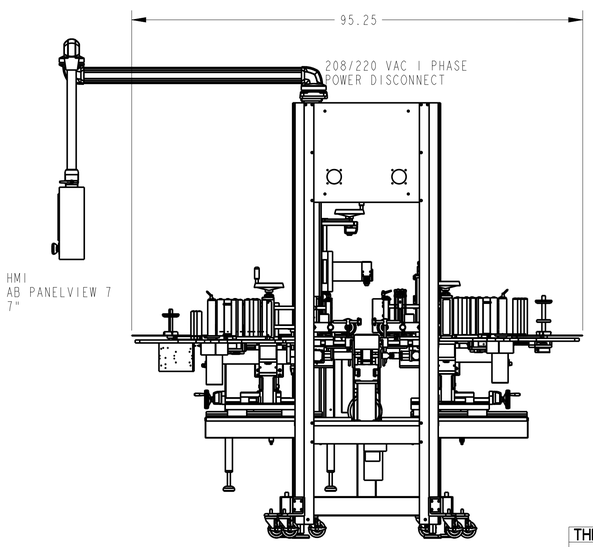
In the event of order cancellation, the 50% down payment is non-refundable. Customer may also be responsible for additional charges covering engineering resources expended and committed materials depending upon the custom nature of the project and the point in the order process in which the cancellation 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
B	9-4-25	ADDED ROTARY TABLE/SWITCHED EJECT SIDE AIR BLADDERS WAS CYLINDER.	ATT
A	8-25-25	NEW DRAWING	ATT

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:	1/16
DATE:	8-25-25
DRW BY:	ATT
CHK BY:	
APPR BY:	

PROLINE ZDT Q160 FRONT/BACK SYSTEM

MAT'L
AMSOIL CENTER

84209-100

SHEET 2 OF 2

TABLE OF CONTENTS

Quadrel Labeling Systems
Quality Manual

Quality Statment:

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.

C. Wepl

Chuck Wepler
General Manager / President

Approved by: Jim Brazee
Issue Date: 1/1/2018

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.

2 GENERAL DISCRIPTION - PROLINE

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 Proline is designed for 24/7 operation and features all overhead electronics, full internationally compliant guarding, Allen-Bradley PLC control, AB Panel View color touchscreen HMI, servo driven label applicators, and product handling. This premium quality labeling system sets a new standard for pressure sensitive product decoration. The Proline labeling system was designed specifically for packagers that require globally supported internationally compliant factory standardization. This system applies paper or film labels to a wide variety of oval, rectangular, cylindrical and uniquely shaped containers at speeds up to 400 products per minute with ±1/32” accuracy. Product infeed is controlled by ‘no change parts’ product alignment or self-powered electronically controlled feed screws. This unique feed screw drive unit eliminates the need for stop gates and ensures a smooth, jam-free product transition at high speeds. The Proline labeling system is available with up to six labeling stations for zero down time operation in most applications. The Proline is capable of being connected to an existing production Ethernet connection, which provides instant real time system status and machine coordination.

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, _35___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.

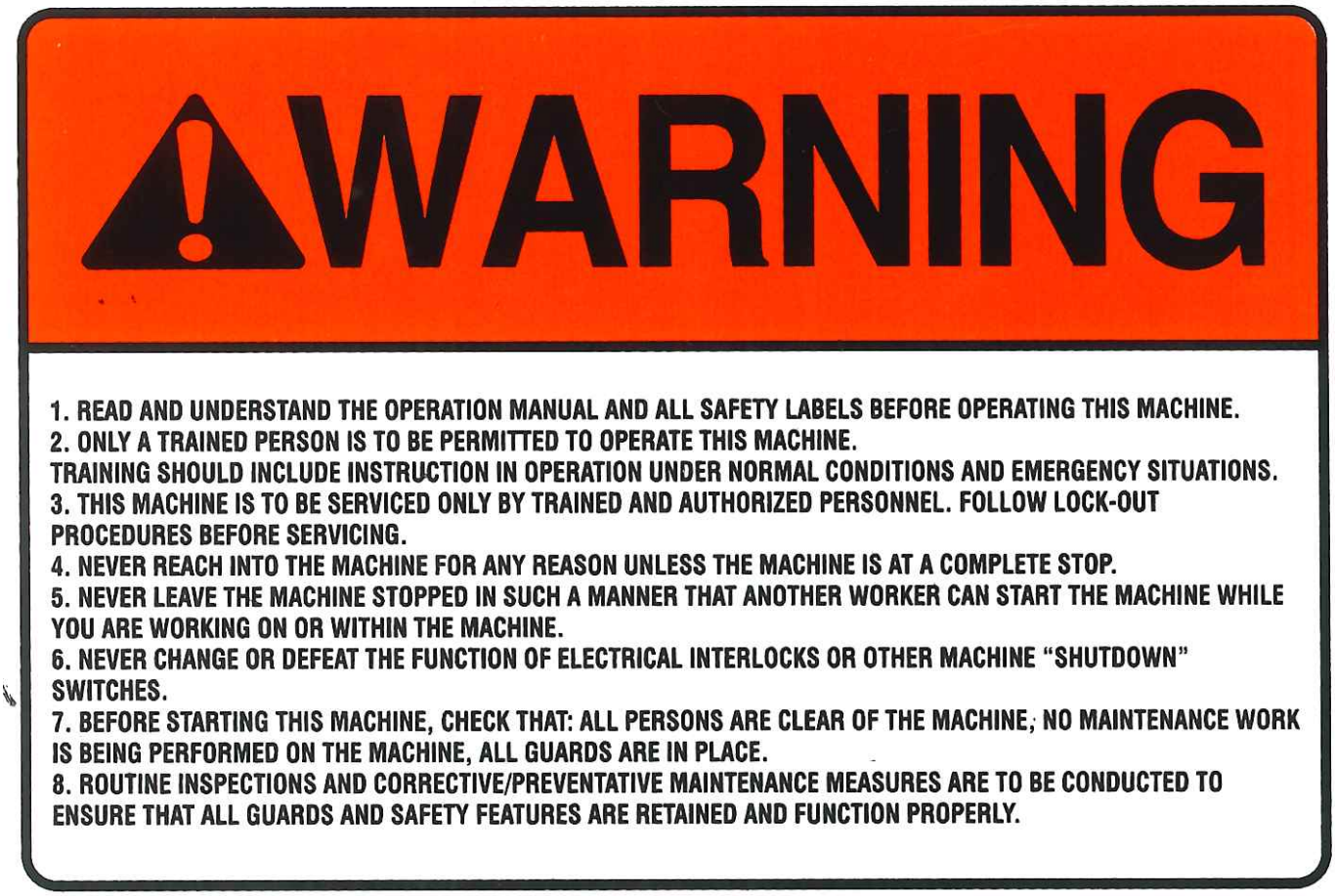
- Do not stand, sit, or allow any personnel to be within reach of the tamp cylinder/ swing arm activation (if so equip).
- Report any malfunctions, or problems with the equipment to qualified maintenance personnel for repair or adjustments that may be required.
- Keep hands clear of moving parts. Do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



Using VFDs On GFCI Devices

By Bill Szatkiewicz, Senior Software Engineer
KB Electronics
for more information, email: info@kbelectronics.net
or visit: www.kbelectronics.com

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.

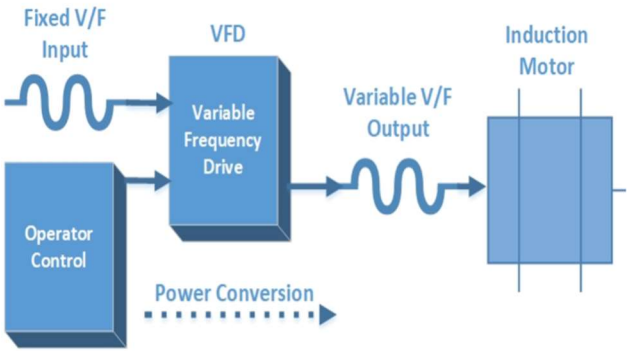


Figure-1: Typical VFD System

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).

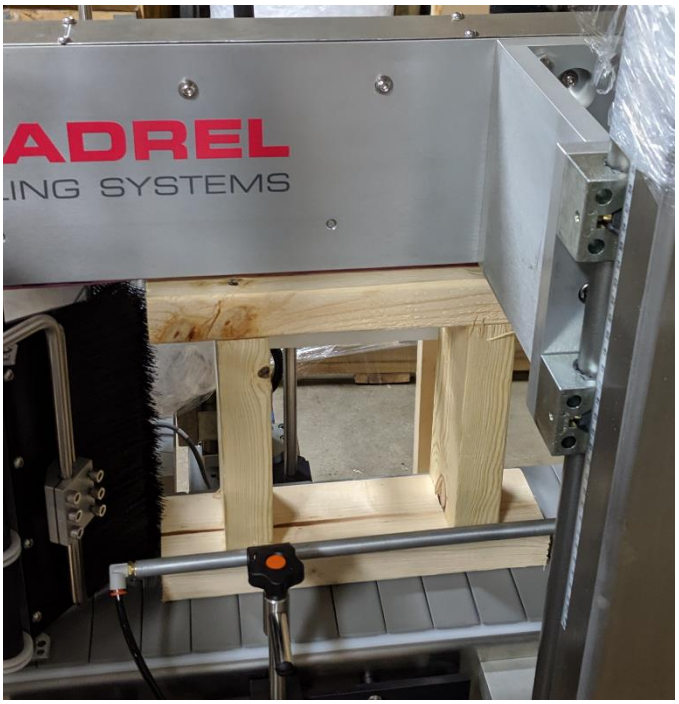
Let's get started…

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.



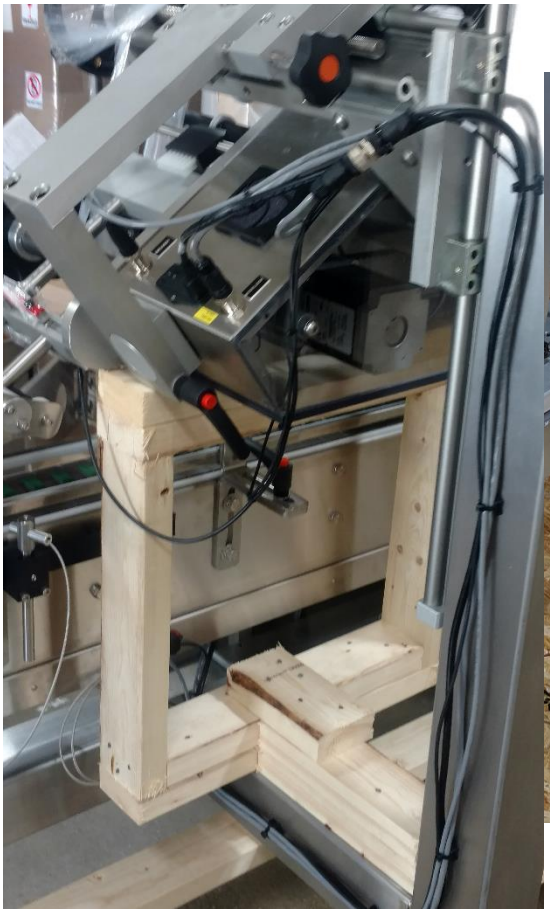
Most assemblies supported have a tool-less vertical adjustment using a knob or hand wheel.

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

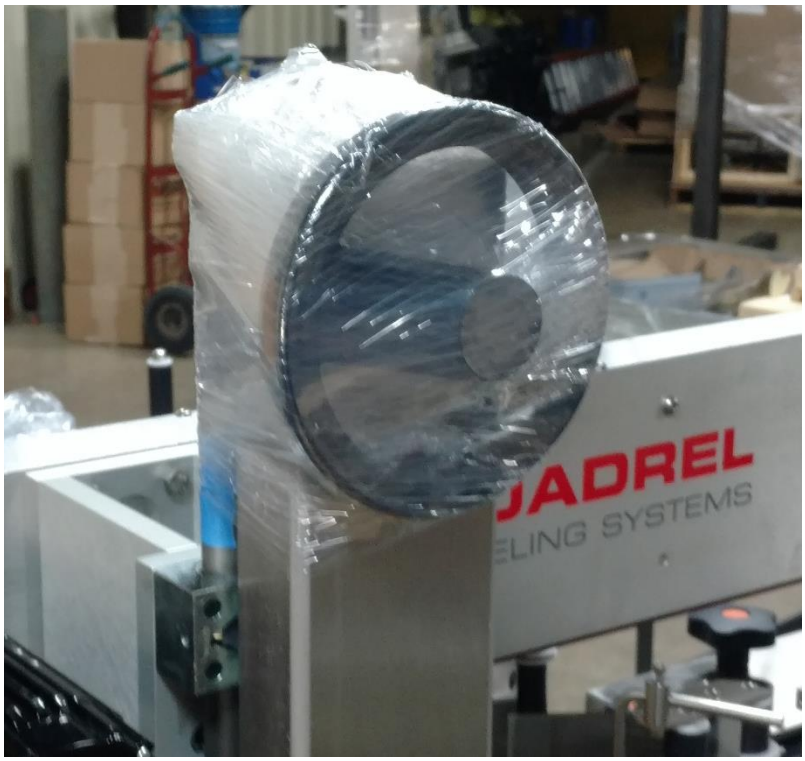
Remove the hand wheel from the wrap, then fasten the hand wheel to the square end on the lead screw using a 3/32 “L” handle Allen wrench.

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)



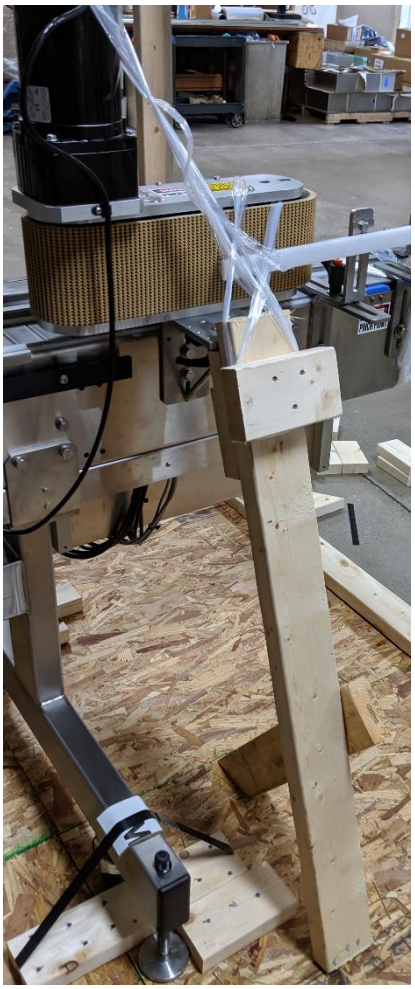
All top and bottom labeling heads will be supported



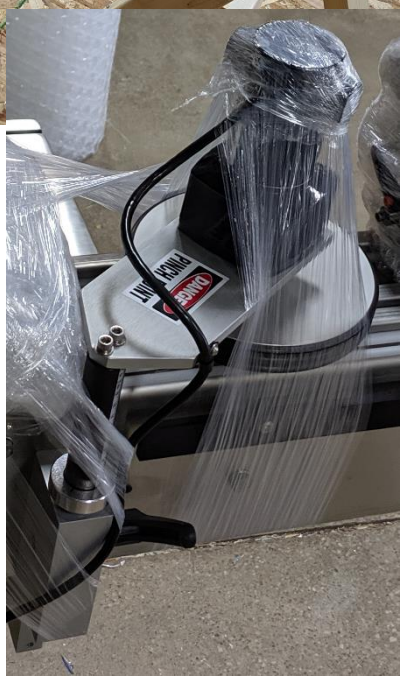
similar to the image shown on the left.

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

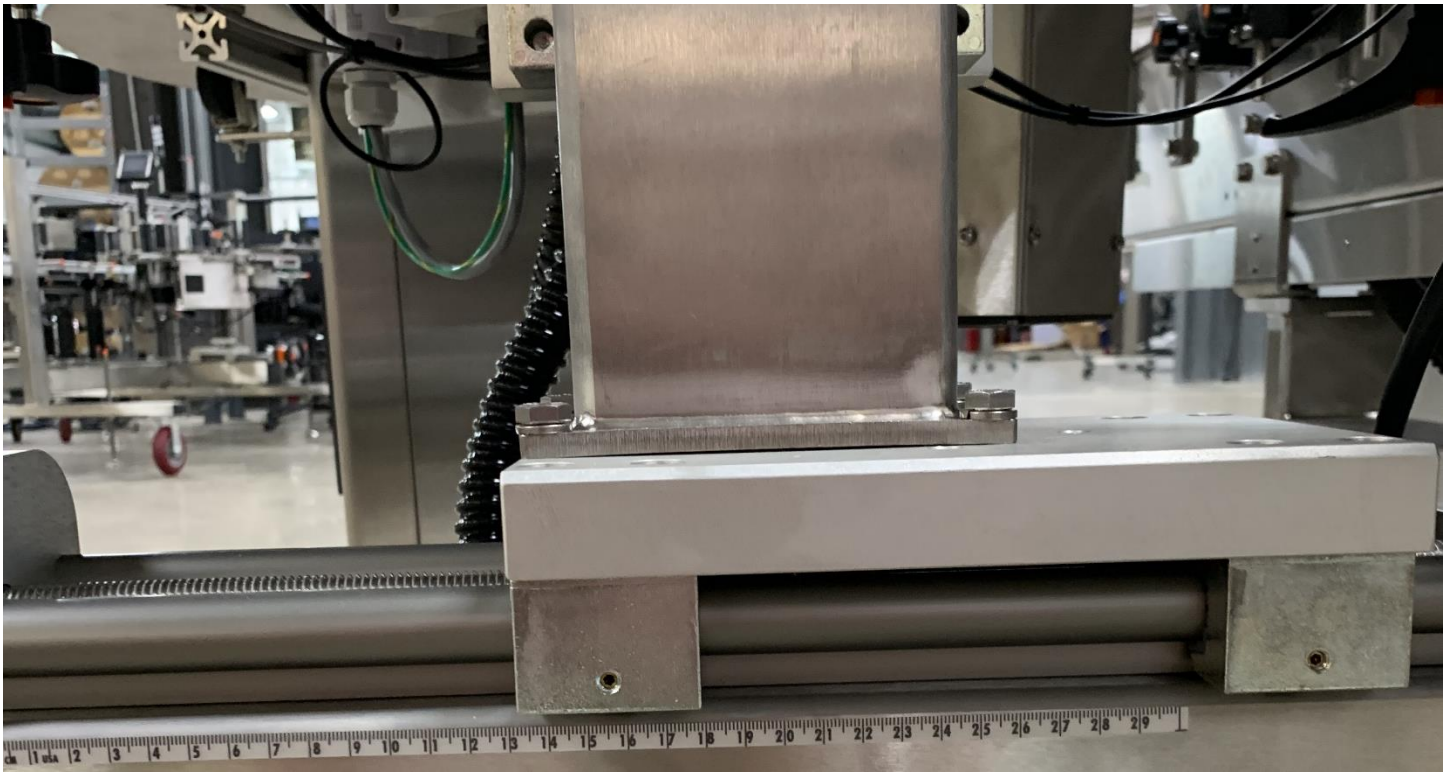
Pacing belt assembly supports can be removed will be without raising the assembly.



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.

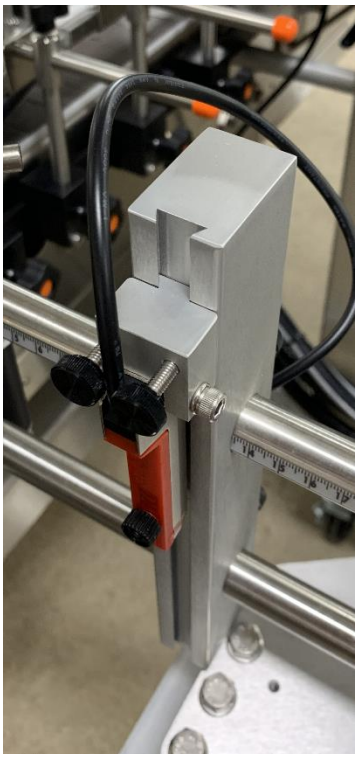
If you have the peel plate rods removed with the peel plate assembly and the label detect assembly (as shown below).

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 (show 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".

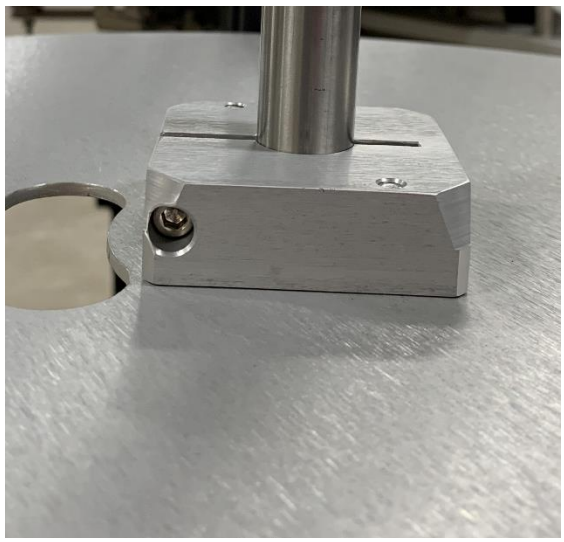
Some machines may have the unwind flange (shown in image to the right) removed to protect the flange during shipping do to the width of the machine.

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.

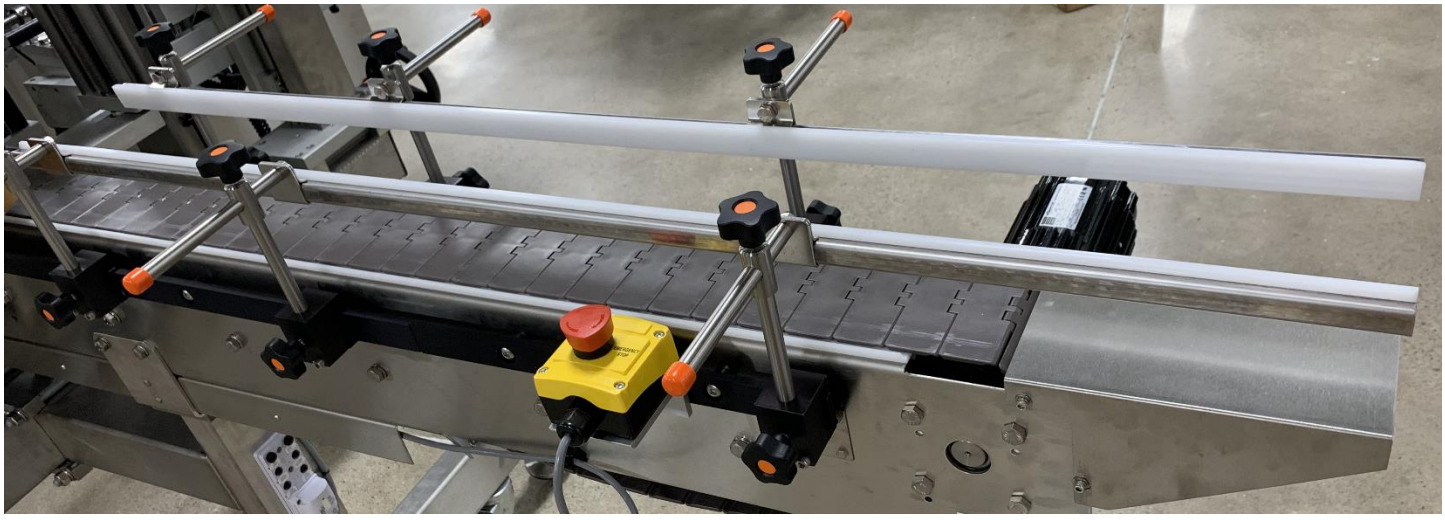
All assemblies removed will be bubble wrapped then plastic wrapped to the machine or in box on the pallet the machine is on.

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.

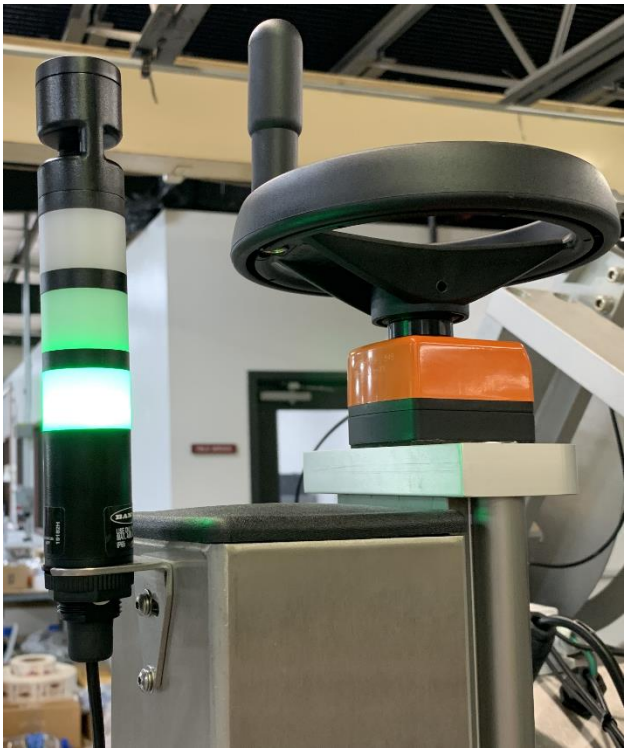
-3/32 L handle Allen wrench

-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.

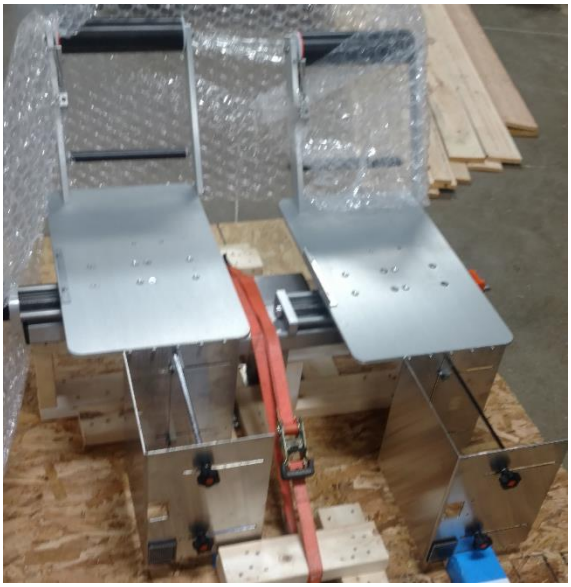
If HMI is located remotely off the enclosure it will still be supported during shipping.

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.

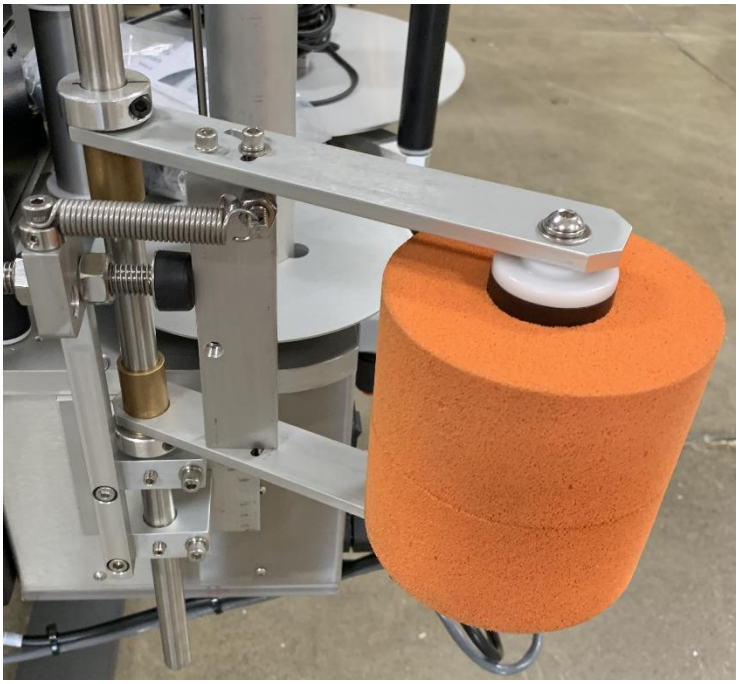
Table top printers with printer tables will ship in separate boxes or pallets (as shown to the left) the printer will be disconnected and placed in the manufacturer's box. The table will either get banded to the pallet with the machine or a separate pallet tethered to the machine pallet. Printer tables 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 requires 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.

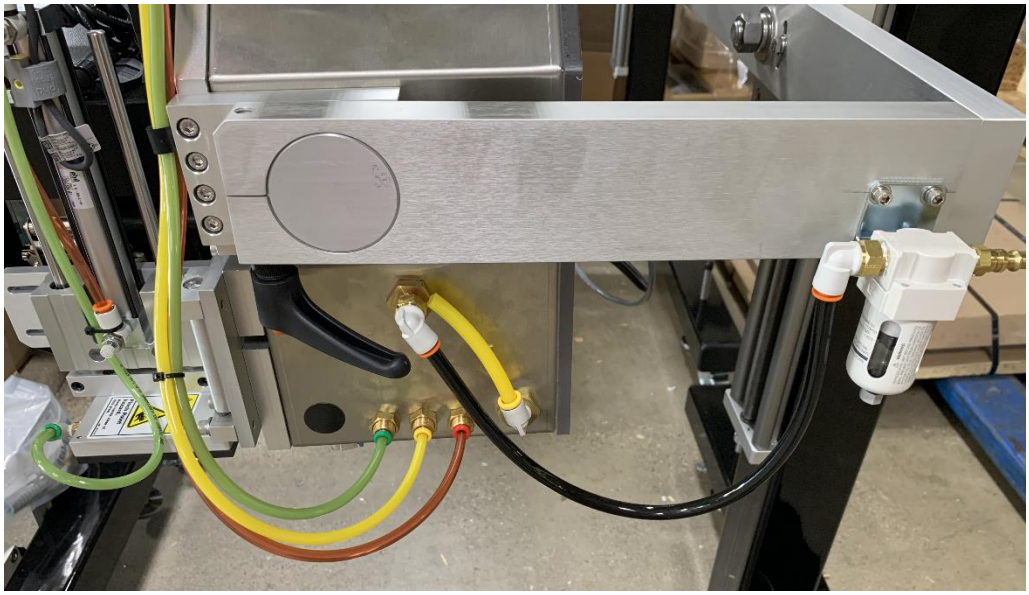


The corner wrap modules will be removed for shipping purposes. They will be wrapped in bubble wrap, plastic wrap, and placed into the box with the labeler.

Take out of the box, carefully remove the wrapping.

Then mount to the labeling head with (4) ¼-20 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.

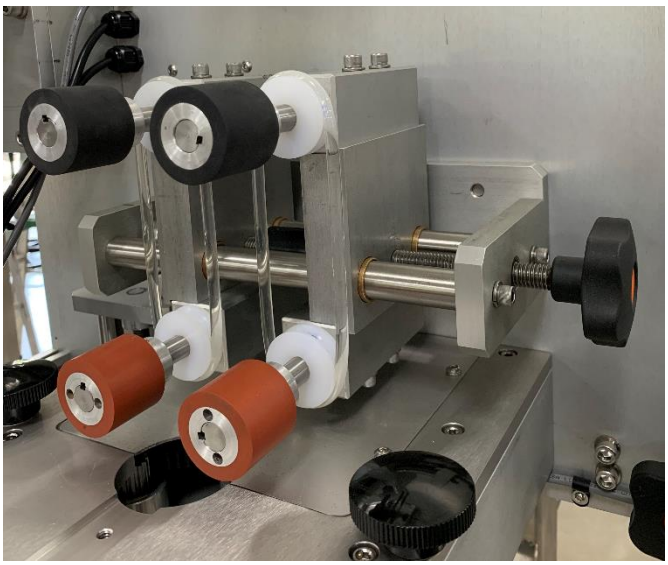
Carefully remove the banding and wrapping.

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 sleever 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 places 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.

HMI GUIDE

Operator Interface Guide

Proline Labeling System

84209_v000

Panelview touch screen with CompactLogix PLC

Table of Contents

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. Touch the screen to continue.

Button / Indicator Reference:

Menu Navigation Buttons: Navigation buttons will be purple circles with white outlines and icons of the target screen. Some buttons will have text below them to identify the target screen.

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.

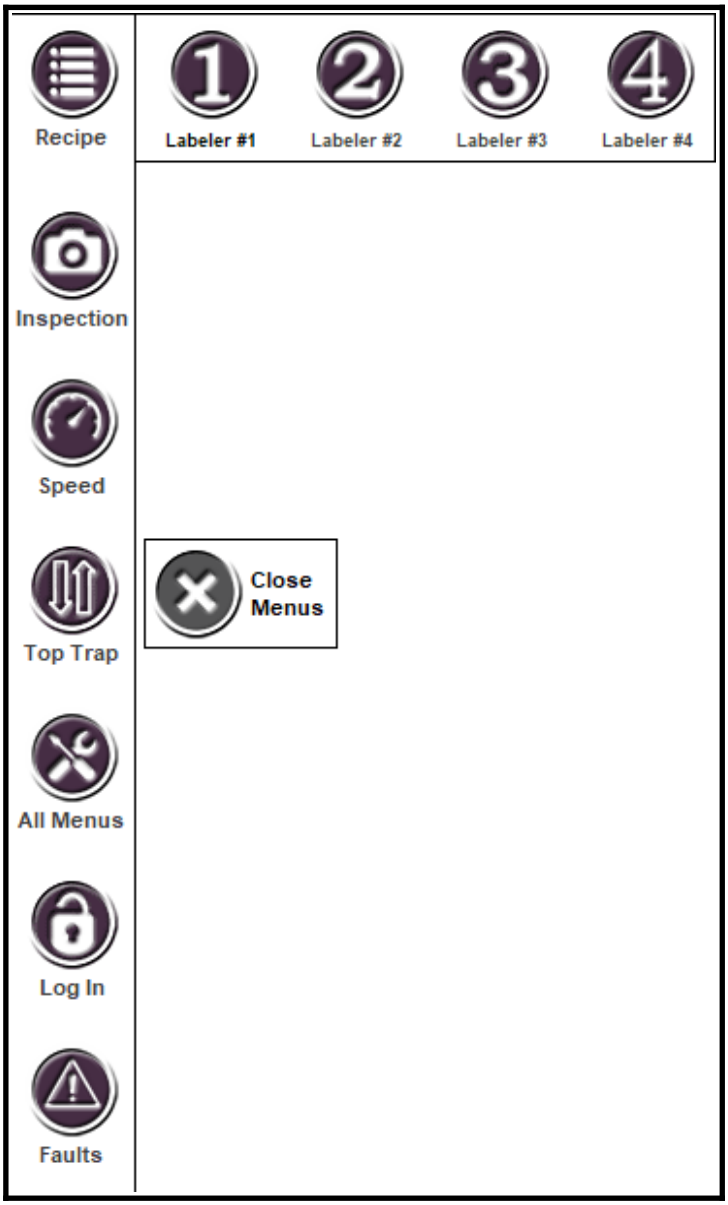
Indicators: Status Indicators will be circular and will change color based on states. Mode indicators will be oval in shape and will change colors and texts based on states.

Numeric and Text Displays: Numbers or Text displays will have a light orange background with black text and be oval in shape.

Numeric and Text Inputs: If a number or text can be entered, the button will have a dark green background (typical, but colors can change) with white text. The right side of the button will have a touch icon signify that it is an entry box. All numeric entries will have the touch icon regardless of color.

System Menu Bar:

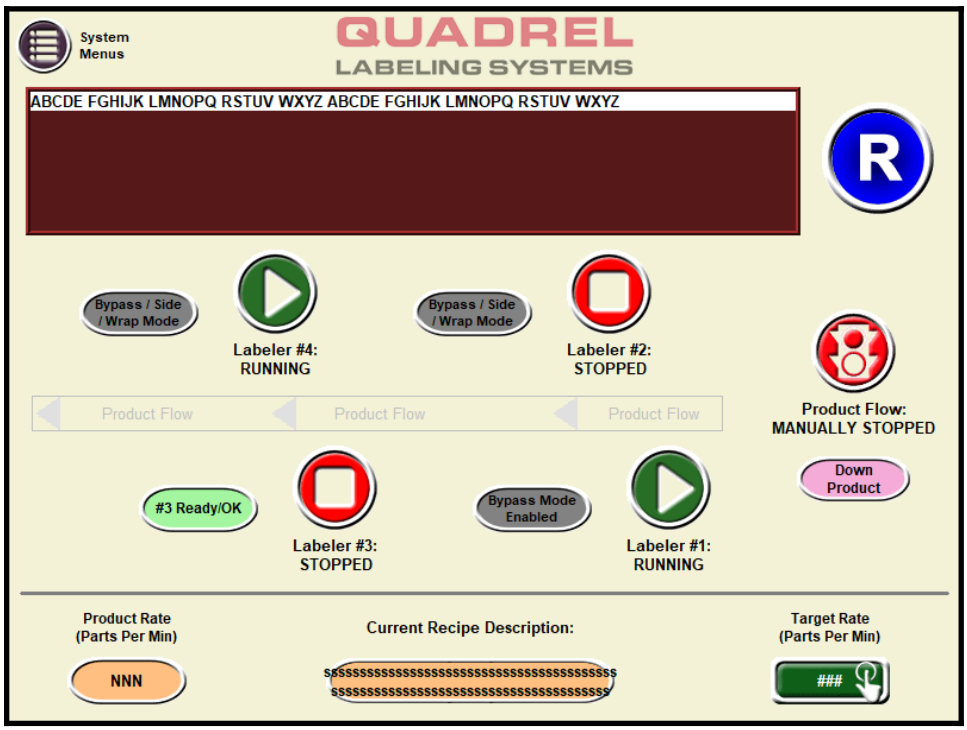
Pressing the System Menu button in the Top Left corner of the screen will cause the system menus to appear as pictured below.



Press any button to navigate to that menu, or the close button to make the system menu bar disappear.

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).



Fault/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:
Each 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.
Pink: Crossing. The listed crossover is in process
Grey: Disabled. The labeler is disabled. The Enable to the drive is turned off and all functions are bypassed.

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

Target Rate:
This entry box will change the speed of the system. It is entered as Parts Per Minute.

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

Product Flow Control:
The product flow 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 product flow system can be a feedscrew, pacing wheel, pacing belt, stop gate, or combination of those items.

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

The Product Flow System will stop/close when:

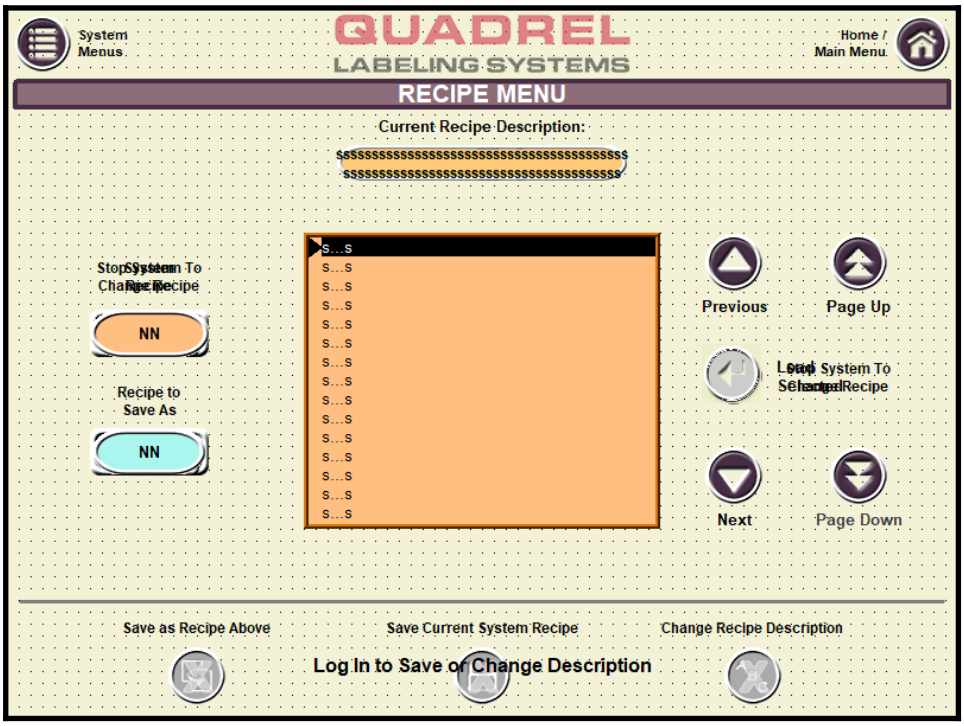
- The system is stopped
- The optional infeed sensor is not blocked by products or "starved".
- The optional outfeed sensor is blocked by products or "full".
- The Product Flow button has been toggled to "Stopped"
- A Cycle Stop or Purge is active

Red "Stopped" Button: This indicates the product flow 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 flow system.
Green: Running. The product flow system is currently allowing products into the system.
Yellow: Waiting. The system is running but the flow system is stopped because of a condition listed above.
Red: Stopped. The flow system has been stopped manually and will not function until placed in the Automatic Mode.
Pink: Down Product. Optional sensors have detected a product has fallen down. Press the reset button to clear this message and restart the Product Flow

Recipe Menu:

The Recipe Menu allows the changing and saving of recipes.



System Recipe:

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

System Recipes store the following information:

Description

Changeover Settings

Speed Parameters: Target Rate, Product Pitch, Bypass Mode, Feedscrew Stop Rotation

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

Crossover Parameters: Enables, Distances, Low Label Batch Count

Inspection Parameters: Enable, Inspect Delay, Eject Delay, Eject Duration

Load Recipe:

By number: Changing the Recipe number at the left will load the newly entered recipe to the system. Recipes can only be changed while the system is stopped.

By description: The center table shows the stored description for each recipe. The navigation buttons to the right of the table can be used to select descriptions. When the desired recipe is highlighted, the “Load Selected” button must be pressed to load that recipe to the system.

Current Recipe Description:

The description display at the top of the screen reflects the stored description for the recipe currently loaded on the system. When logged in at a Supervisor level, the change description button will appear in the bottom right which is used to enter a new recipe description.

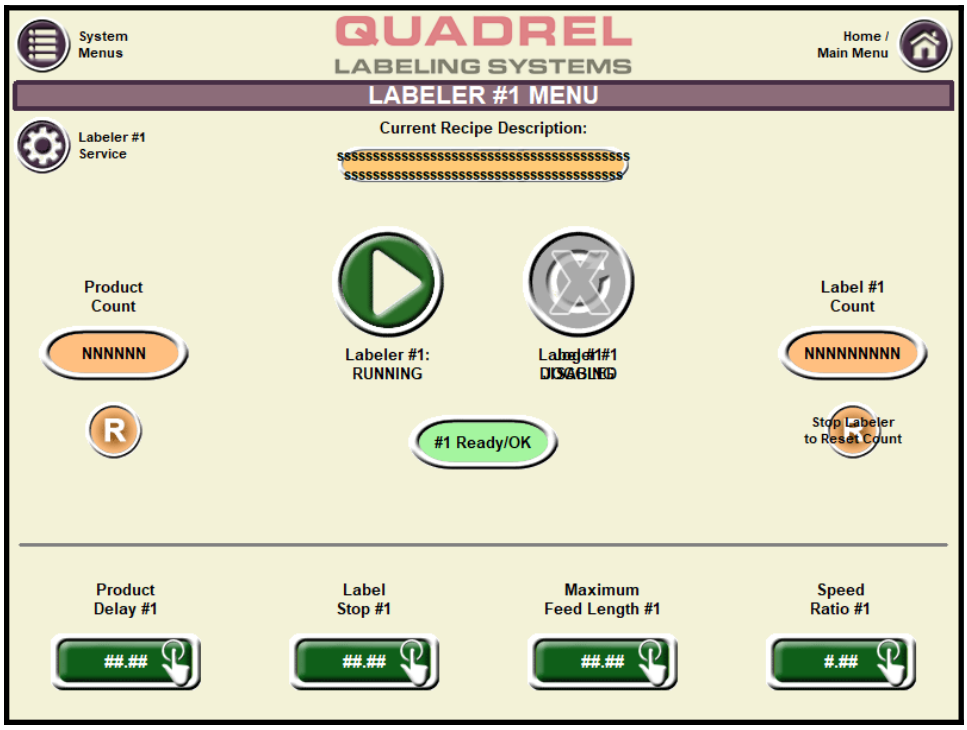
Save Recipe (Supervisor Level):
The Pink Save button must be pressed to save all current values to the currently selected recipe.

Save As Recipe (Supervisor Level):
The current settings can be saved to a new target recipe. First change the Recipe to Save As number (when logged in at a supervisor level) and then press the Save As Recipe button in the bottom left. The description will automatically be copied, but will start in "Copy_" to identify it's a copied recipe.

Change Recipe Description (Supervisor Level):
This button can be used to change the current recipe's description.

Labeler Menu:

The Labeler Menu contains the parameters and controls associated with dispensing labels. Labeler #1 is pictured, but all labeler menus are set up in the same fashion.



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 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.

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.
Pink: Crossing. The listed crossover is in process
Grey: Disabled. The labeler is disabled. Power to the drive is turned off and all functions are bypassed.

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.

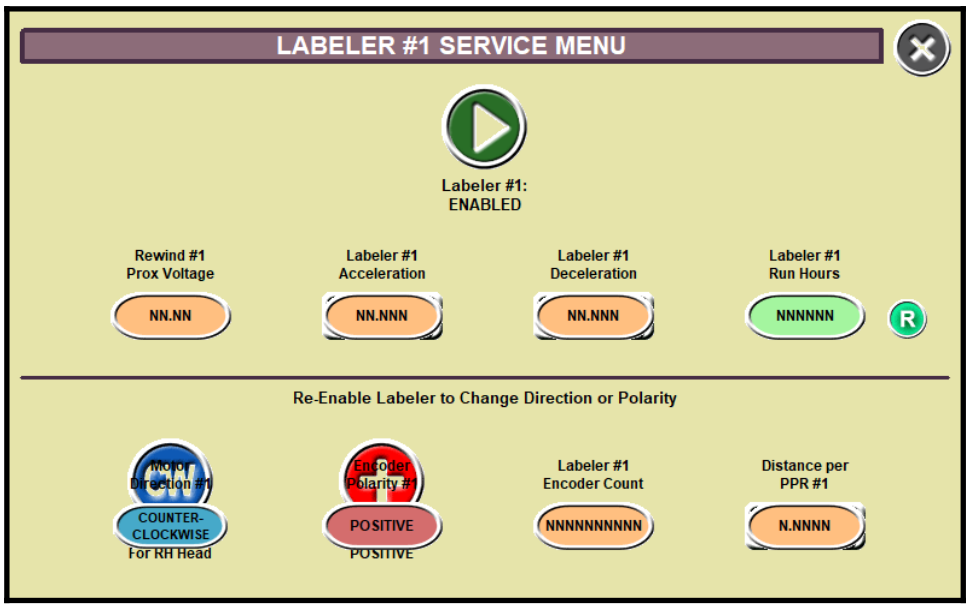
Label Stop:
Label Stop (in inches) controls the label's stop position. Typically the label should stop with 1/8" to ¼" sticking off of the peel plate. A higher Label Stop will result in more label off of the peel plate.

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:
This speed Ratio is the value that determines the actual dispensing speed of the labeler. A value of 1.00 means that the labeler will dispense the label at the speed of the conveyor.

Labeler Service Menu:

The Labeler Service Menu contains parameters and toggles related to the Labeler that are not typically accessed on a regular basis.



Enable Button:
The Labeler can be Enabled and Disabled by using the toggle button in the middle of the screen.
Green "Enabled": This indicates the labeler drive is enabled. While Enabled, the labeler may be jogged, placed into run, and will be monitored for faults.
Red "Disabled": This indicates the labeler is disabled. While disabled, the labeler drive roller will be free to spin so that any jams in the drive system can be cleared easily. Also while disabled, the labeler will not jog or dispense labels when running. It is necessary to disable the labeler when clearing jams or changing some settings found on this menu.

Rewind Prox Voltage:
This indicator reflects the voltage from the proximity sensor pointed at the rewind cam, 0-10V. The system will not energize the rewind if the voltage is 0-1V or 9-10V. This allows the rewind to stop moving when the arm is at rest or extended fully inward.
The voltage should be below 1.0V when the rewind dancer arm is at rest for proper operation.

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.

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.

Direction (Quadrel Level):
The Direction button sets the direction of the drive roller. This should be set at the factory and not need to be changed. Note that the drive must be re-enabled after changing the direction.

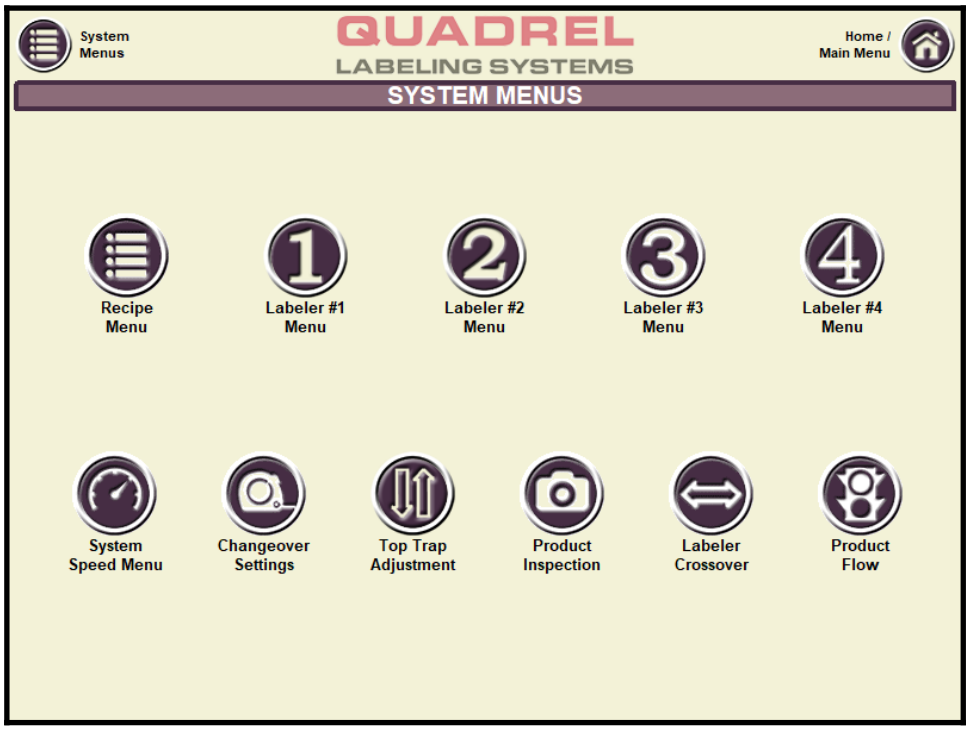
Polarity (Quadrel Level):
The polarity of the encoder count can be changed with this button. The encoder count must increment in a positive direction for the labeler to dispense labels while running. If the Encoder Count is counting in a negative direction, the Polarity button must be toggled (note that the Polarity may not match the actual counting direction).

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

Distance per PPR (Quadrel Level):
This value tells the drive how many inches the conveyor travels for every xxx amount of encoder pulses, where xxx is equal to the encoder's pulses per revolution.

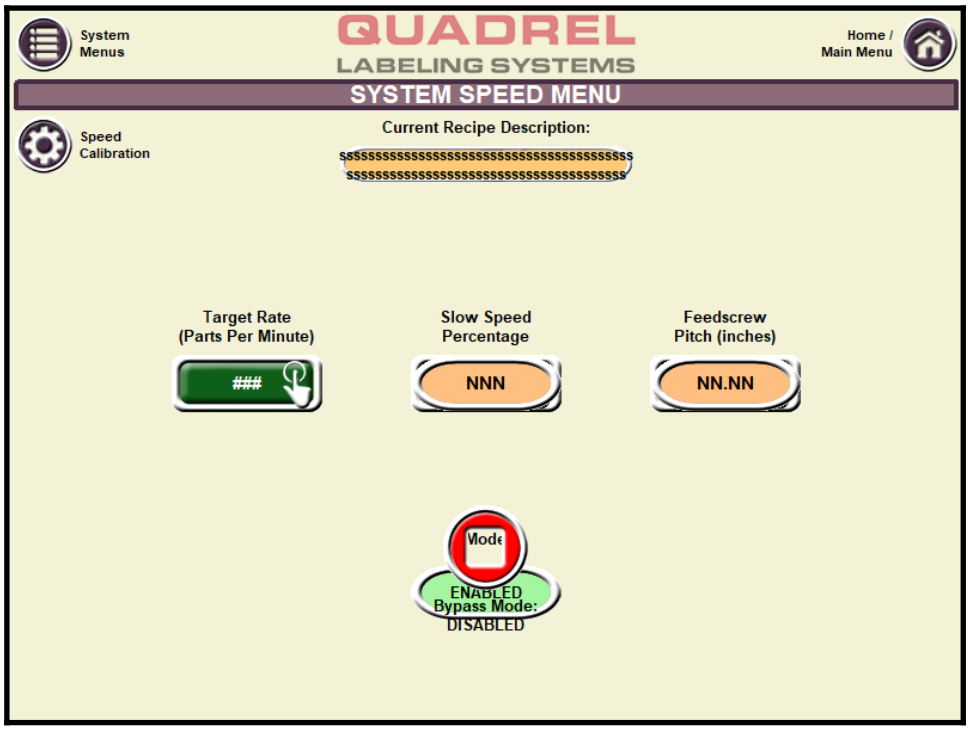
System Menus:

This menu will contain shortcuts to all of the various system menus.



Speed Menu:

The Speed Menu contains parameters directly related to the speed of the system.



Target Rate:
This entry box will change the speed of the system. It is entered as Parts Per Minute.

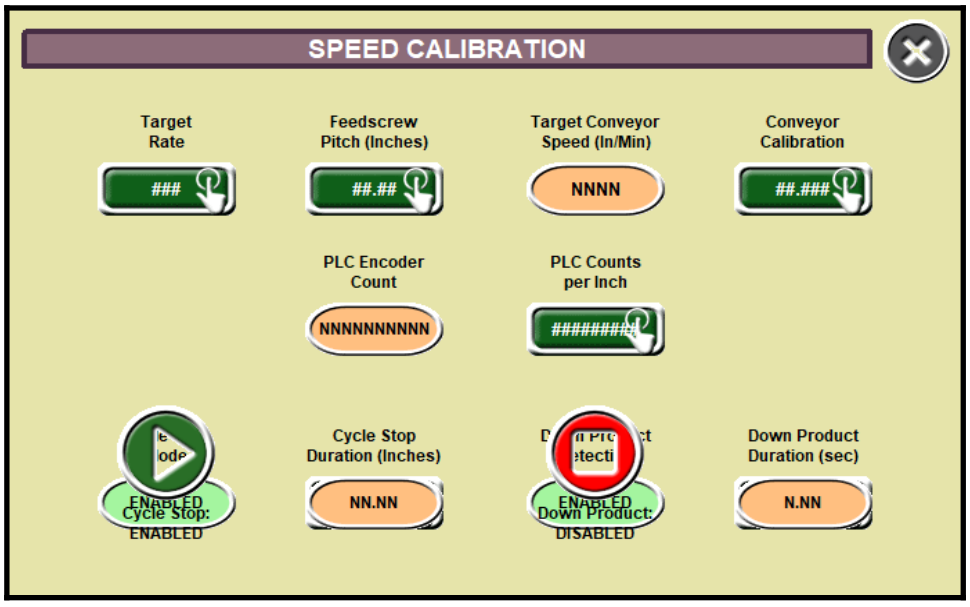
Slow Speed Percentage (Maintenance Level):
When the product flow is stopped and during a crossover, the machine will run at a reduced speed based on this percentage.

Feedscrew Pitch (Maintenance Level):
The system uses the Feedscrew Pitch (entered as inches) to determine the speed of Conveyor Belt. This value determines the spacing of the products as they exit the Feedscrew. Each Feedscrew is designed with a pitch, so refer to the feedscrew or documentation for the proper pitch for screw being used.

Bypass Mode (Supervisor Level):
Enabled: Pass through mode will disable the wrap, top trap, labelers, and feedscrew while enabled. Only the conveyor will run.
Disabled: When disabled, all options can be enabled/disabled on the system.

Calibration Menu:

The Calibration Menu contains the parameters and displays for making sure all motors are running at target speeds.



Target Rate:
This entry box will change the speed of the system. It is entered as Parts Per Minute.

Feedscrew Pitch (Maintenance Level):
The system uses the Feedscrew Pitch (entered as inches) to determine the speed of Conveyor Belt. This value determines the spacing of the products as they exit the Feedscrew. Each Feedscrew is designed with a pitch, so refer to the feedscrew or documentation for the proper pitch for screw being used.

Target Conveyor Speed:
This indicator shows the target linear speed of the conveyor in Inches per Minute. It is calculated by Target Rate x Pitch.

Conveyor Calibration (Supervisor Level):
This is the voltage multiplier that allows the Conveyor to run at the Target Linear Speed. This is calibrated at the factory and should not need further adjustment.

PLC Encoder Count:
This display shows the current encoder count in the PLC. Note that this rolls over at 1m and may not equal any of the Labeler Encoder Counts.

PLC Encoder Counts per Inch (Quadrel Level):
This value is how many PLC Encoder counts are received for every inch of conveyor travel. The system uses this for any distance tracking and functions like crossovers and cycle stops.

Cycle Stop Mode (Supervisor Level):
Enabled: When the Cycle Stop Mode is enabled, the system will continue running for a set amount of conveyor travel when a fatal fault occurs or the stop button is pressed. This is used to purge products out of the system when stopping.
Disabled: When disabled, the system will immediately stop when requested.

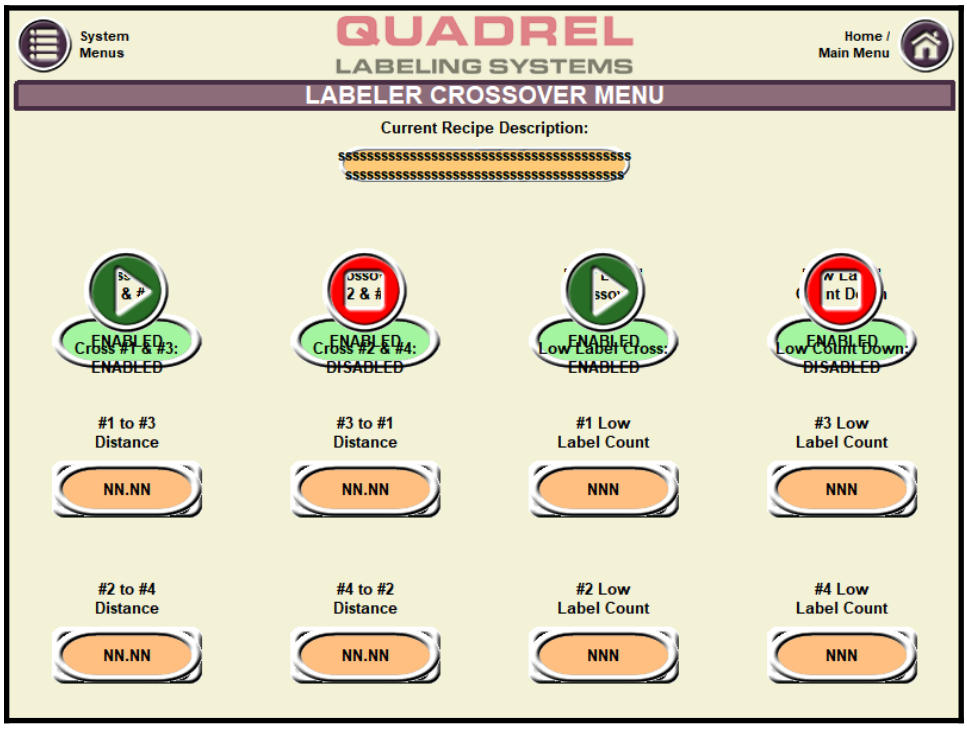
Cycle Stop Distance (Supervisor Level):
The Cycle Stop Distance is entered in inches, and is the distance the conveyor will travel when a cycle stop is activated.

Down Product Mode (Supervisor Level):
Enabled: When the Down Product Mode is enabled, the system will monitor two optional sensors to determine a product has fallen down where the sensors are located. When a product is deemed to have fallen over, the product flow system will stop until the reset button is pressed.
Disabled: When disabled, the system will immediately stop when requested.

Down Product Duration (Supervisor Level):
This timer (in seconds) starts when the optional lower down product sensor is blocked by a product. If this timer expires and the option upper sensor is not blocked, a down product fault will be generated and product flow will stop.

Crossover Menu:

The Crossover Menu contains toggles and parameters pertain to the Labelers automatically switching back and forth.



Crossover Mode (Supervisor Level):
Enabled: When the Crossover is enabled the labelers will automatically run and stop based on fault conditions. For example, if the running labeler runs out of labels by the End of Web sensor being activated, the other labeler will start running (if it does not have a fault).
To manually switch labelers, simply press the **running** labeler button.
Disabled: When disabled, the labelers will function independently of each other. Note that any fault to a running labeler while Crossover is disabled will result in the machine stopping.

Distances (Maintenance Level):
When crossing over, the labelers will either remain running or stopped for a specified distance of conveyor travel. This distance is related to the relation of label lengths and product detect sensors to peel plates.
Change these parameters to ensure that every product gets labeled during a changeover. For example, Labeler #1 runs out of labels and Labeler #3 takes over but starts running too late and misses 2 products. The operator would then look at the "1 to 3 Distance" and LOWER the number by at least 2 product pitch values. Now, Labeler #3 will start running earlier and should apply labels to all products on the next Crossover.

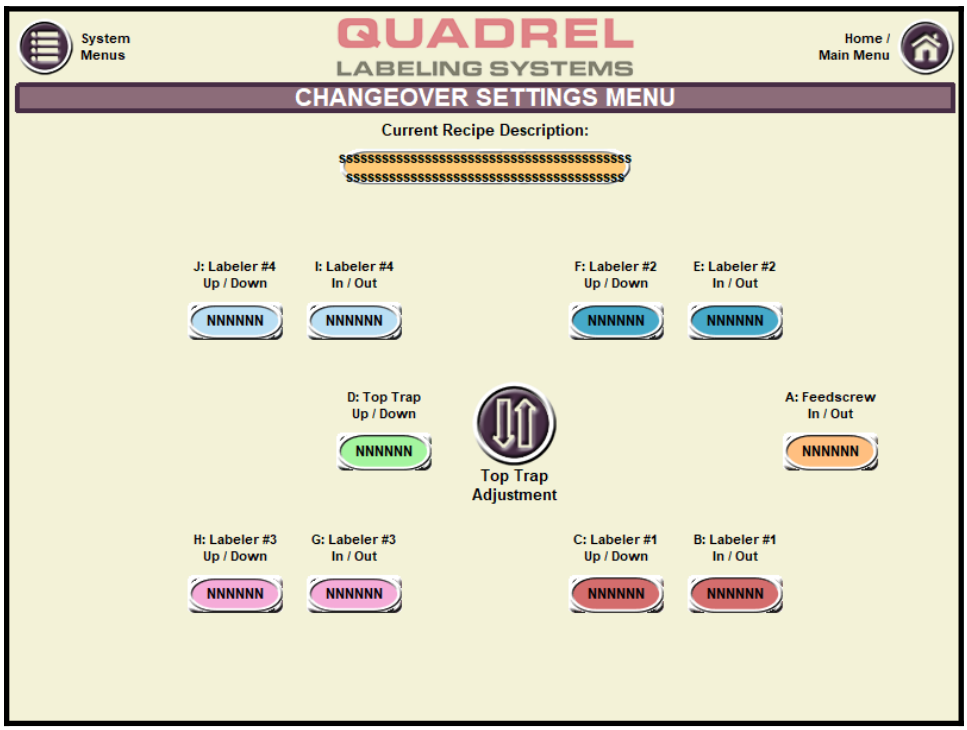
Low Label Crossover Mode (Supervisor Level):
A Crossover can be initiated from the low label sensor becoming active on either head when this is enabled.

Low Label Count Down Mode (Supervisor Level):
When a low label fault occurs, the system will start counting how many labels are fed out from the labeler. Once this count reaches the specified Low Label Count, a crossover will be triggered.

Low Label Count (Maintenance Level):
This it the amount of labels that will be counted if the Low Count Down Mode is enabled.

Changeover Settings:

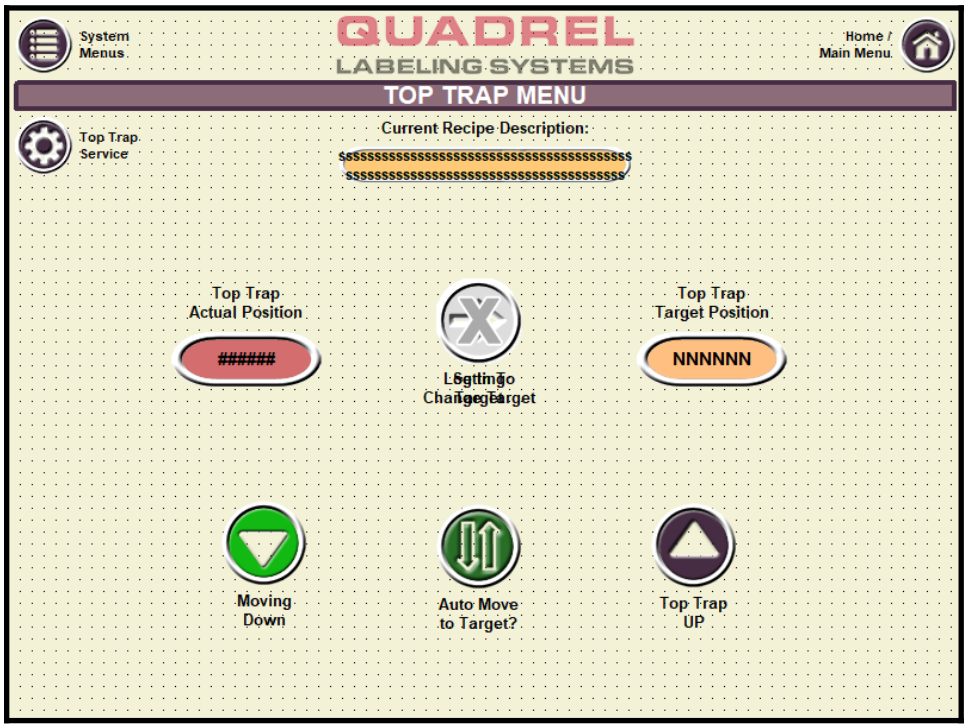
The Changeover Settings Menu can store the numbers for the various scales and position indicators on the machine. This menu can vary based on the actual machine.



Each Setting is protected to the Supervisor level.

Top Trap Menu:

The Top Trap can be raised/lowered manually with the up / down buttons or move automatically to a stored height setting. The Top Trap Menu contains these controls and set points.



Top Trap Actual Position:
This display shows the current output from the Top Trap position sensor. If this value is within 1% of the Target Position, the box will be green. If the value is +/- 5% of the value it will be yellow.
When the display box is red, the value is greater than 5% away from the Target Position.

Top Trap Target Position:
This display shows the target position for the Top Trap, based on the sensor's output.

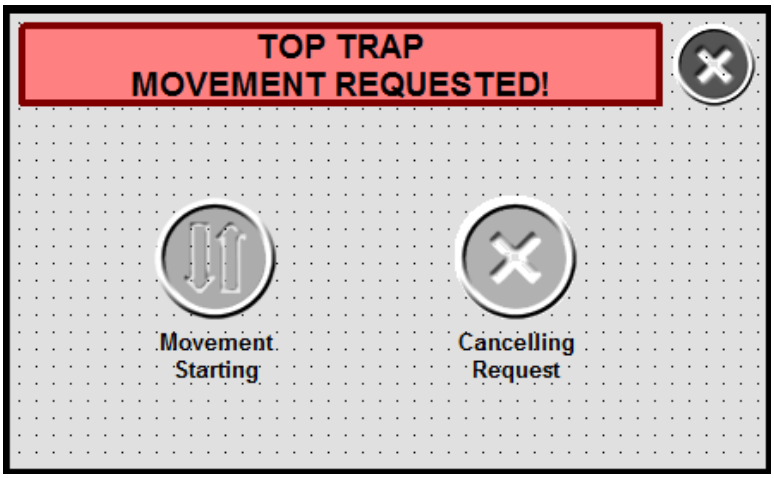
Set Current to Target (Supervisor Level):
When logged in at a Supervisor level, pressing the Change button will take the Actual Position and copy that to the Target Position setting.

Auto Move:
If the Current Position is not equal to the Target Position, the Auto Move button can be pressed to start the top trap movement. Note that pressing this button will pop up a movement confirmation page prior to actually moving. There is a 30s timeout value when the Top Trap begins moving. If moving from the extreme limits, it may be necessary to initiate two movements in the event the timeout is reached.

Up / Down Buttons:
Press and hold these buttons to move the top trap up or down manually. Note that if the top trap reaches a limit sensor it will not travel any further in that direction.

Top Trap Confirmation Menu:

The Top Trap Confirmation will appear any time that the Top Trap is requested to move. The Top Trap will be requested to move when a Recipe is changed or the Auto Set Height button is pressed in the Position Menu.



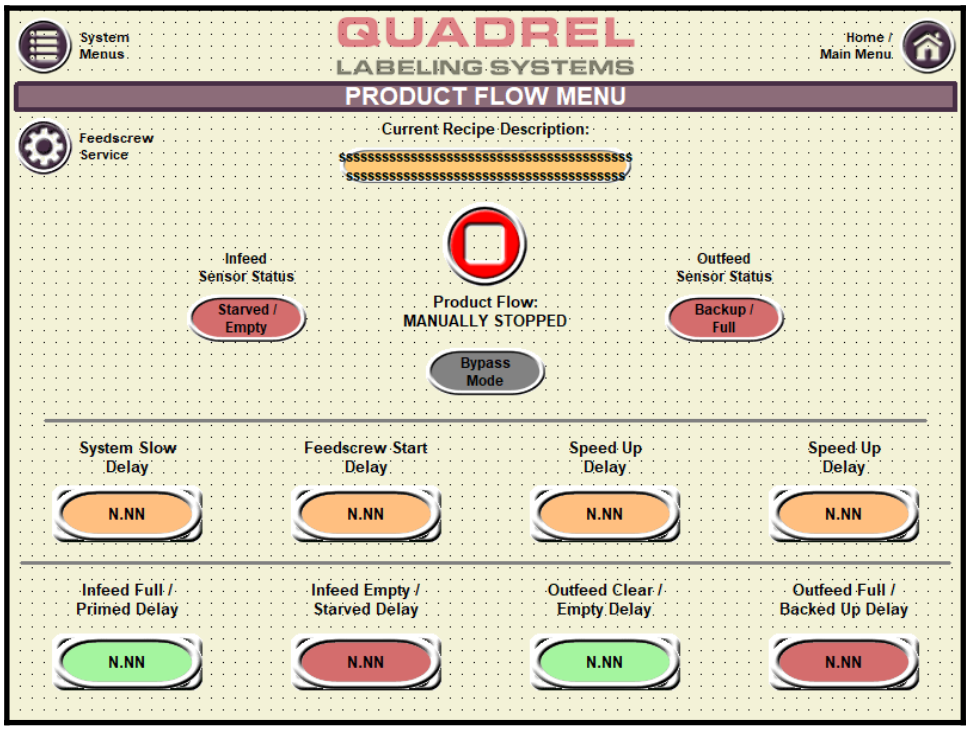
Confirm Movement:
Press this button to start the Top Trap movement to the Target Height. This pop up screen will close automatically if the top trap reaches its target position after movement starts.

Cancel Movement:
Press this button to cancel any automatic movement. This pop up screen will close if the Cancel button is pressed.

Movement Timeout:
Note that there is a 30 second timeout for the Top Trap movement. If the top trap times out, this pop up screen will not close automatically. Close the screen by pressing the X button in the top right corner.

Product Flow Menu:

The Product Flow Menu contains timers and toggles that control products entering the system.



Product Flow Control:

The product flow 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 those items.

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

The Product Flow will stop/close when:

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

Red "Stopped" Button: This indicates the Product Flow 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 flow system.
Green: Running. The product flow system is currently allowing products into the system.
Yellow: Waiting. The system is running but the flow system is stopped because of a condition listed above.
Red: Stopped. The flow system has been stopped manually and will not function until placed in the Automatic Mode.
Pink: Down Product. Optional sensors have detected a product has fallen down. Press the reset button to clear this message and restart the Product Flow

System Slow Down Delay (Maintenance Level):
When the product flow system is requested to stop products from entering, the system will slow down for this amount of time (in seconds) before the flow system stops.

System Speed Up Delay (Maintenance Level):
After the product flow system allows products to enter the system, the system will continue running at the slow rate for this amount of time (in seconds). This helps ensure products enter the system smoothly before ramping up to full speed. Note that this timer starts at the same time of the Screw Start Delay timer, not after.

Screw Start Delay (Maintenance Level):
After the product flow is requested to start, this timer will start. While this timer is active, an optional stop gate will allow product to enter but the screw will remain stopped. This is to allow back pressure if needed into the pacing device.

Screw Stop Rotation (Maintenance Level):
When the feedscrew is requested to stop, it uses this parameter (entered in revolutions) to determine the actual stopping position while monitoring a position sensor. This is used to stop the screw with the last pocket open so that stopped products are not grabbed by the top trap. It is entered as revolutions of the feedscrew.

Infeed Starved / 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.

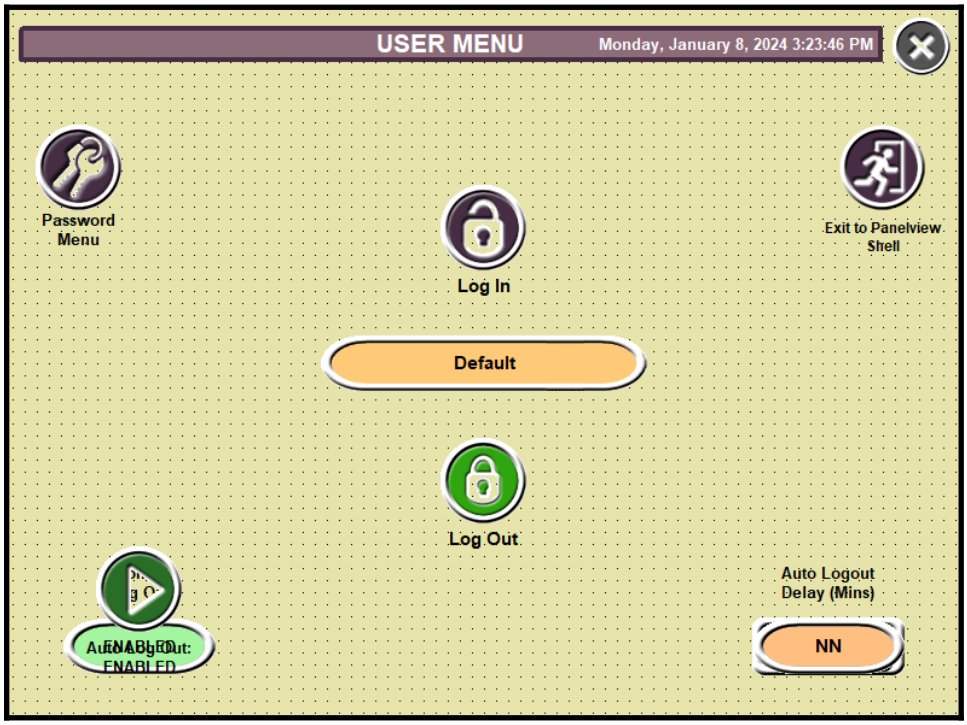
Infeed Primed / Full Delay (Maintenance Level):
This timer will start when the Infeed sensor sees products, which results in a Primed/Full condition. After this timer expires, the product flow will start.

Outfeed Clear / 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 Backup / 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 full User Menu enables alternate login levels to access protected screens and buttons.



Password Input: Press this button to enter a user password.
Passwords are user defined in the Password Manager Menu.

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

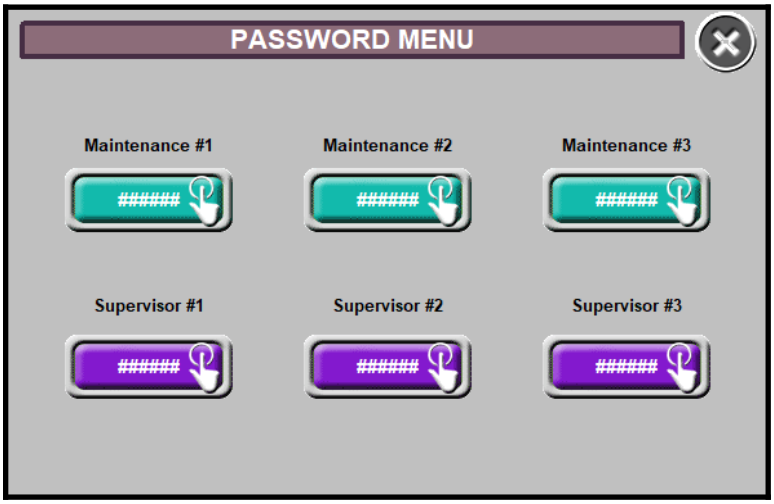
Password Manager: This will open up a security prompt before opening the password menu, where the passwords for the Maintenance and Supervisor levels are set.

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.

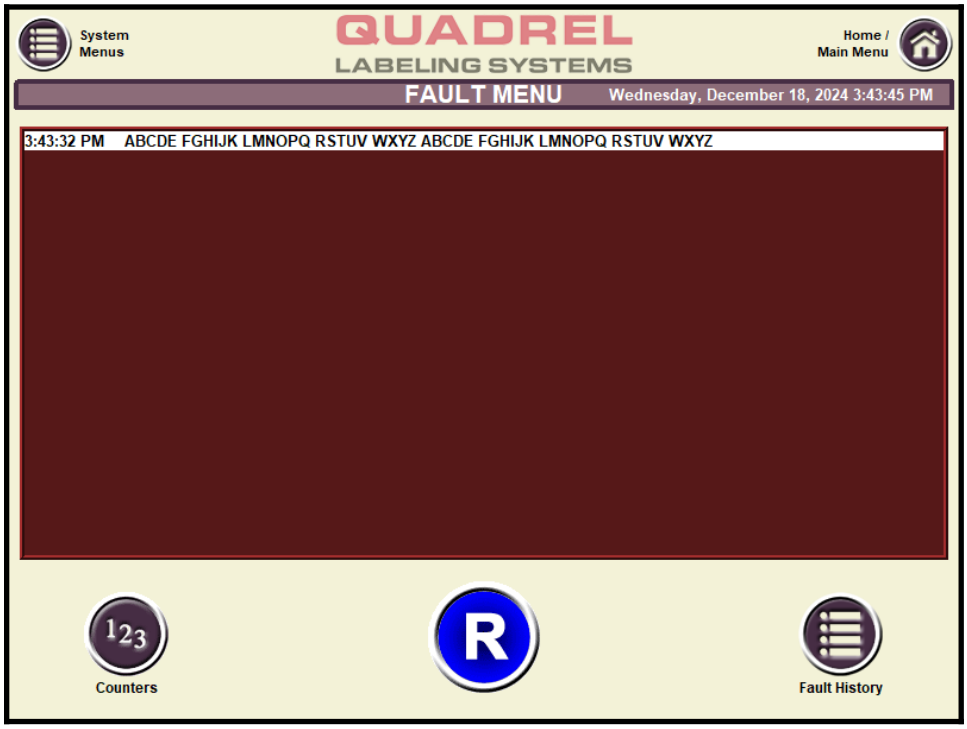
Supervisor:
There can be 3 user defined passwords for the Supervisor level. Note that there is one hard coded Supervisor Level password that cannot be viewed or changed.

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).



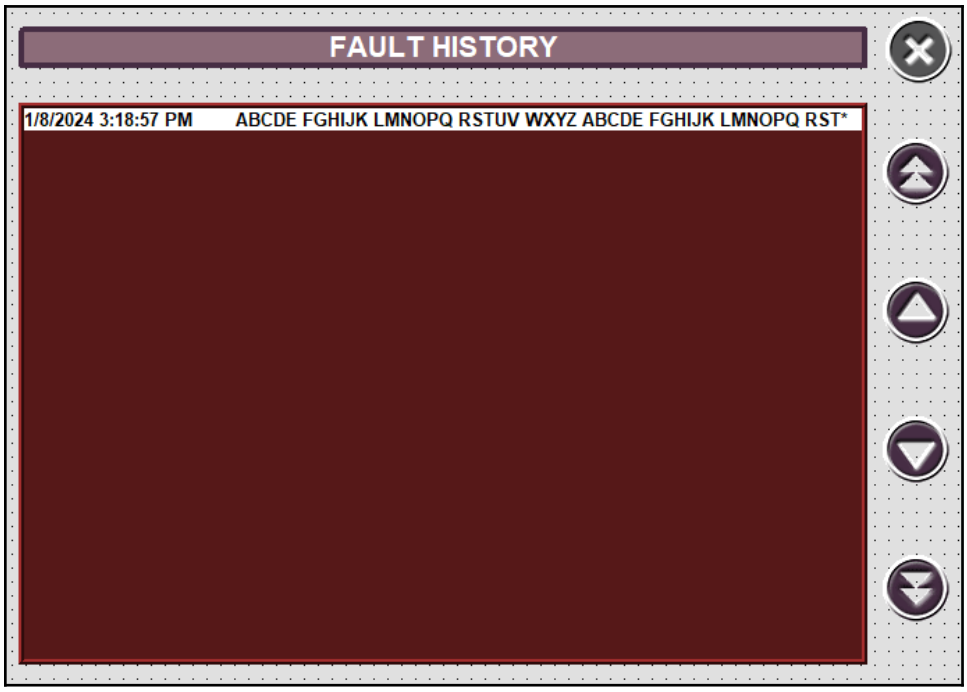
Fault Display:
The Fault dialog box will display all of the active faults on the machine.

Fault Reset:
Used to reset active faults displayed above.

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

Fault History:

The Fault History will store the last 128 fault message events.

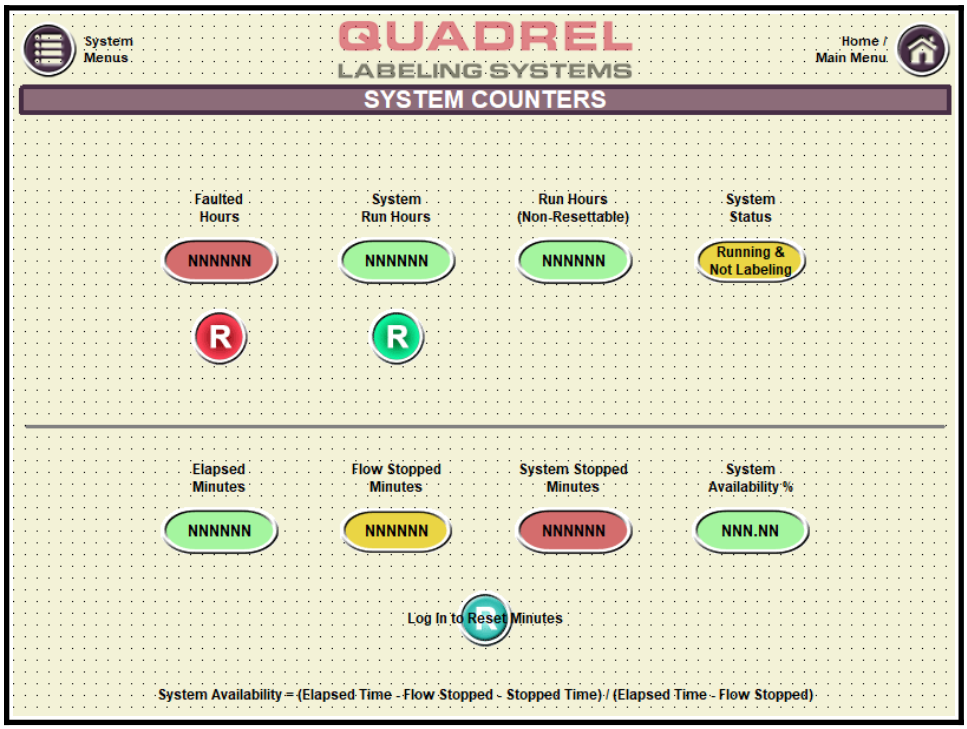


Note that Time and Date can be set from the HMI's shell utility.

The navigation buttons on the right are for highlighting or scrolling through the messages. Messages can only be cleared by cycling power to the screen (or system).

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.

Elapsed Minutes:
This is a free running timer that counts in minutes. It can be reset from the Reset button on the bottom of the screen when logged in at a Supervisor Level. This counter will roll over at 999,999.

Flow Stopped Minutes:
This counts how many minutes the System is Running but the Product Flow is stopped. It can be reset from the Reset button on the bottom of the screen when logged in at a Supervisor Level. This counter will roll over at 999,999.

System Stopped Minutes:
This counts how many minutes the System has been Stopped and conveyor not physically running. It can be reset from the Reset button on the bottom of the screen when logged in at a Supervisor Level. This counter will roll over at 999,999.

System Availability Percentage:
This is calculated by (Elapsed Minutes – Flow Stopped Minutes – System Stopped Minutes) / (Elapsed Minutes – Flow Stopped Minutes). The calculation is constantly updated.

Fault Messages and Indicators:

Green Lamp:
Steady: The Green lamp will be steady while the system is running.

Amber Lamp:
Flash: The Amber lamp will flash while any warning is active on the system.
The light strips above the top trap bill be steady amber while any warning is active.

Red Lamp:
Flash: The Red lamp will flash while any fatal fault is active.
The light strips above the top trap bill be steady red while any fatal fault is active.

Buzzer: The Audible Alarm will long pulse (1 second) when a fatal fault is present.
The buzzer will short pulse before the system starts, before a labeler is moved in/out, or while the top trap is moving.

Warning Messages: Warning messages identify a status or event that may need action soon. The machine will not stop from a warning message, but a warning may turn into a fatal fault that will stop the machine. Many warning messages will automatically clear once the problem is remedied.

Fatal Messages: Fatal messages will cause the system to stop immediately or initiate a cycle stop. Fatal faults are typically associated to events that prevent labels being applied properly, safety related faults, or other events that may prevent proper machine operation.

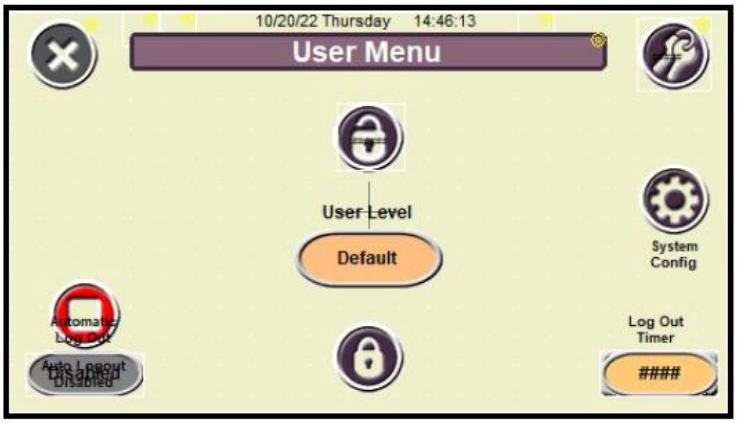
Messages	Cause/Solution
Warning Messages	
Labeler #x Drive Faulted / Turned Off Warning	The drive that controls the listed labeler is faulted or turned off. If pressing the reset button does not clear this message, verify that the drive is powered up.
Labeler #x Broken Web Warning	The Broken Web sensor (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.
Labeler #x End of Web Warning	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.
Labeler #x Low Label Supply	The label supply on the labeler has been determined low by the sensor fiber under the flange.
Labeler #x Program Stopped Warning. Reset / Re-Enable Drive	The internal program of the listed labeler drive is not executing logic. Pressing the Reset button or re-enabling the drive should remedy this problem.
Labeler #x Disabled Warning	The listed labeler has been disabled from its Service Menu. Re-Enable the drive before attempting to run it.
Labeler #x Torque Limit Reached / Drive Roll Jam. Clear Before Running	The listed labeler has reached its internal current limit, which typically indicates a jam at the drive roll area. Disable the labeler and clear any jams before continuing.
Labeler #x Out of Position Warning	The listed labeler is not in the “in” position. This can be due to the slide handle being in the out position, a loss of air, or the position sensor not being set properly.
Labeler #x Threading Mode Active. Turn Off before Running	The listed labeler’s threading mode switch is active. While active, the rewind will be off to allow threading of the labeler safely. Turn the Threading Mode switch off before running the labeler.
Labeler #x Communications Loss Warning	The listed labeler drive has stopped communicating with the PLC. This can indicate the drive is not powered up, is faulted, or physically disconnected from the local network.
Rewind #x Voltage Warning. Set to <1.0V at Rest	The sensor detecting the rewind dancer arm is above 1.0V while the arm is at rest, which can compromise optimum performance. Verify the sensor is less than 1.0V when the rewind dancer arm is at rest against its stop.
Cycle Stop in Progress. Please Wait or Press Stop Button	The machine is currently in a cycle stop and will stop once the cycle stop distance expires. Pressing the Stop button while a cycle stop is active will stop the machine immediately.

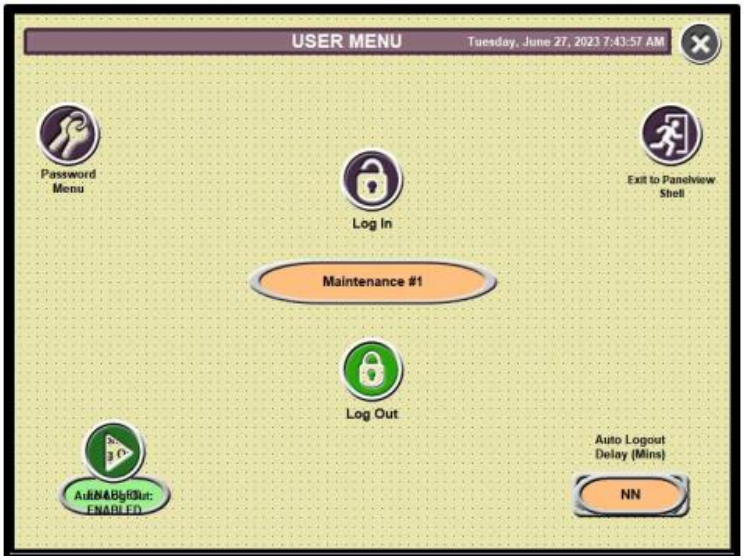
Warning Messages, cont.	
(motor) Drive (DRx) Faulted / Turned Off Warning	The drive that controls the listed motor is faulted or turned off. If pressing the reset button does not clear this message, verify that the drive is powered up.
Top Trap / Feedscrew Torque Limit Warning	The listed drive reached a Torque Command limitation. This can be due to a physical jam, gearbox failure, loosened hardware, motor failure, or cabling issue. It may be necessary to activate the safety relay in order to spin the axis manually to verify nothing is physically jammed.
Infeed Empty / Starved. Product Flow Stopped **Outfeed Full / Blocked. Product Flow Stopped**	The Product Flow has stopped because the Infeed and/or Outfeed sensors are not satisfied.
Screen Not Started Properly / PLC Power Cycled. Restart System	The PLC waits for a signal from the touch screen after power-up to verify communications before executing logic. If the PLC is cycled from power or downloading, the screen must be cycled as well.
Labeler #x Low Label Batch Count Started	The listed labeler encountered a low label fault and a label batch count down started before crossing over to the other labeler. This only occurs if Crossover and Batch modes are enabled.
Both Labelers Stopped Warning	When crossover is enabled, this message will alert the operator that one labeler must be placed into run before starting the system.
Top Trap Movement Timed Out. Check for Jams or Re-Start Movement	The Top Trap was requested to automatically move to a position but it timed out. This can happen if the current value and target values are too far apart, an issue with the position sensor, or the top trap did not physically move.
Feedscrew Stop Request Timed Out. Check Position Sensor	The Feedscrew was requested to stop, but did not stop within a set amount of time. This is typically due to the feedscrew position sensor not being set properly or an improper feedscrew parameter.
Conveyor Minimum Linear Speed Warning. Increase Rate, Slow %, or Pitch	The conveyor must run at a minimum of 450 inches per minute or the drive controlling the motor may fault out. Increase the Target Rate, Slow Speed Percentage, and/or Feedscrew Pitch to increase the target linear speed of the conveyor. Note that this warning will appear while jogging the system but will not prevent any movement.

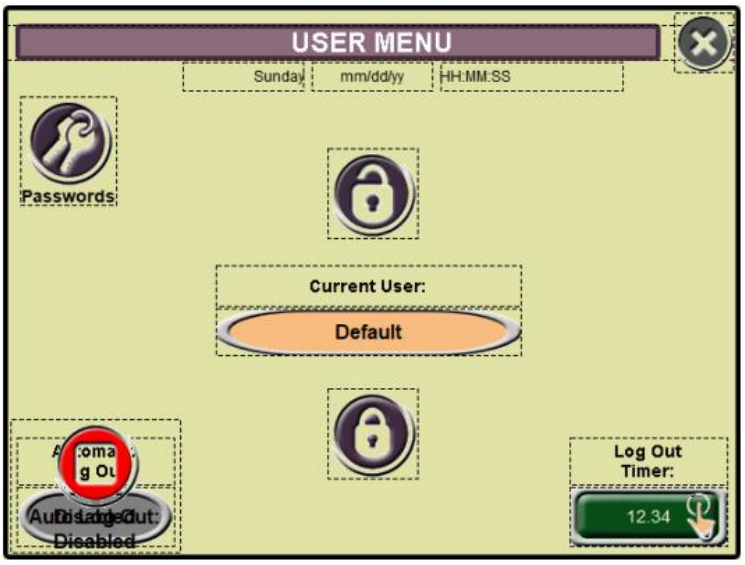
Messages	Cause/Solution
Fatal Messages	
Labeler #x Drive Faulted / Turned Off	The drive that controls the listed labeler is faulted or turned off. If pressing the reset button does not clear this message, verify that the drive is powered up.
Labeler #x Broken Web Fault	The Broken Web sensor (between the drive system and rewind) on the Labeler is active and the Labeler was Running or placed into Run.
Labeler #x End of Web Fault	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.
Labeler #x Program Stopped Fault. Reset / Re-Enable Drive	The internal program of the listed labeler drive stopped executing logic while it was running or attempted to run. Reset the drive or re-enable the drive.
Labeler #x Disabled Fault. Navigate to Labeler #X Service Menu	The listed labeler has been disabled from its Service Menu while it was running or attempted to run. Re-Enable the labeler from its service menu.
Labeler #x Out of Position Fault	The listed labeler is not in the “in” position and the labeler was running or attempted to run. This can be due to the In/Out switch being in the “Out” position, something bound up in the slide, or a faulty home sensor.
Labeler #x Threading Mode Active Fault	The listed labeler’s threading mode switch was turned on while the labeler was running. Verify the threading mode is off before placing the labeler back into run.
Labeler #x Communications Loss Fault	The listed labeler drive has stopped communicating with the PLC. This can indicate the drive is not powered up, faulted, or physically disconnected from the local network.
(motor) Drive (DRx) Faulted / Turned Off	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.

Messages	Cause/Solution
Fatal Messages, cont.	
Conveyor Speed Fault - Check Rate, Pitch, and Calibration Values.	The request speed output value has exceeded an internal PLC limit and cannot go any higher. Check the rate and calibration settings to correct. If needed, the High Speed value of the drive may need to be increased.
Labeler #X Not Ready for Crossover	A crossover sequence was initiated, but the target labeler had a fault condition that prevented it from running. Clear the faults on both labelers.
Both Labelers Stopped Fault	Both labelers are stopped and the machine was attempted to run. Place a labeler in run to start the system.
PLC Faulted.	The PLC has encountered a fault and must be reset.
Safety Relay Active: Check E-Stops & Doors then Reset	The Safety relay has been activated by an Emergency Stop. Unlatch all Emergency Stops, close all doors, and press the Reset button to reset the safety relay.
Crossover #x to #x Timed Out	The crossover sequence in the listed direction has timed out. This can be from a faulty encoder signal, an incorrect distance, or incorrect counts per inch entry.
Feedscrew Clutch Tripped. Rotate Screw to Re-Seat then Reset	The sensor at the Feedscrew Clutch has been activated. Clear any jams and rotate the feedscrew by hand slowly until the clutch pops back into place.
Conveyor Minimum Linear Speed Fault. Increase Rate, Slow %, or Pitch	The conveyor must run at a minimum of 450 inches per minute or the drive controlling the motor may fault out. Increase the Target Rate, Slow Speed Percentage, and/or Feedscrew Pitch to increase the target linear speed of the conveyor.
Top Trap / Feedscrew Torque Limit Fault	The listed drive reached a Torque Command limitation. This can be due to a physical jam, gearbox failure, loosened hardware, motor failure, or cabling issue. It may be necessary to activate the safety relay in order to spin the axis manually to verify nothing is physically jammed.
Consecutive Inspection Failures Reached	The listed camera failed results consecutively equal to the Consecutive Failures Allowed parameter.
Inspection Delay Lowered While Processing Fault	The listed Camera Inspect Delay was lowered while the system was processing/tracking a product. Clear the system and run products after faults are cleared.
Eject Delay Lowered While Processing	The listed Camera Eject Delay was lowered while the system was processing/tracking a product. Clear the system and run products after faults are cleared.
Inspection Buffer Fault. Check Trigger, Parameters, Encoder	The listed camera has encountered a buffer fault. This can be from a faulty trigger sensor, incorrect parameters, or a faulty encoder. Let the system run without products for at least a minute to clear out any remaining data. During this time another fault may occur, which is okay.
Inspection Trigger Blocked / Unplugged Fault	The product inspection trigger sensor is blocked by products, not seeing the reflector, set to the wrong operating state, or unplugged.
Ejected Product Not Verified	The system ejected a product, but did not not see the verification sensor change states within the verification duration window. Verify the eject device is properly removing products from the conveyor and the verification sensor is changing states.
Eject Verification Sensor #x Blocked / Unplugged Fault	The eject verification sensor is blocked by products, not seeing the reflector, set to the wrong operating state, or unplugged.

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
Timer:
12.34
Disabled

Setup Sheets

QUADREL
LABELING SYSTEMS

PROLINE PARAMETERS

SERIAL NUMBER: ____84209-100_____

LABEL SIZE: _____3 ¼ X 3_____

PRODUCT: _____1 QUART_____

RECIPE # _____1_____

FEEDSCREW P/N: ____B20660-1296 RXL___

LABELER 1 MENU

PRODUCT DELAY	8.20
LABEL STOP	1.10
MAX FEED	5.00
SPEED RATIO	1.00

LABELER 2 MENU

PRODUCT DELAY	8.50
LABEL STOP	0.60
MAX FEED	5.00
SPEED RATIO	0.95

LABELER 3 MENU

PRODUCT DELAY	8.90
LABEL STOP	0.80
MAX FEED	5.00
SPEED RATIO	1.00

LABELER 4 MENU

PRODUCT DELAY	8.85
LABEL STOP	0.90
MAX FEED	5.00
SPEED RATIO	1.00

CHANGEOVER SETTINGS

FEED SCREW IN/OUT	99648
TOP TRAP UP/DOWN	1679
LABELER 1 UP/DOWN	673
LABELER 1 IN/OUT	2875
LABELER 2 UP/DOWN	396
LABELER 2 IN/OUT	2026
LABELER 3 UP/DOWN	443
LABELER 3 IN/OUT	2109
LABELER 4 UP/DOWN	761
LABELER 4 IN/OUT	2050
CAMERA 1 UP/DOWN	1000
CAMERA 2 UP/DOWN	1000

TOP TRAP MENU

TOP TRAP TARGET POSITION	3448

LABELER 1 SERVICE MENU

ACCEL	1.500
DECEL	1.500
MOTOR DIRECTION	COUNTER CLOCKWISE
ENCODER POLARITY	NEGATIVE
COUNTS PER INCH	1.0100

LABELER 2 SERVICE MENU

ACCEL	1.500
DECEL	1.500
MOTOR DIRECTION	CLOCKWISE
ENCODER POLARITY	NEGATIVE
COUNTS PER INCH	1.0100

LABELER 3 SERVICE MENU

ACCEL	1.500
DECEL	1.500
MOTOR DIRECTION	COUNTER CLOCKWISE
ENCODER POLARITY	NEGATIVE
COUNTS PER INCH	1.0100

LABELER 4 SERVICE MENU

ACCEL	1.500
DECEL	1.500
MOTOR DIRECTION	CLOCKWISE
ENCODER POLARITY	NEGATIVE
COUNTS PER INCH	1.0100

SYSTEM SPEED MENU

TARGET RATE	300
SLOW RATE	85
FEED SCREW PITCH	6.00
BYPASS MODE	**ENABLE X DISABLE**

SPEED CALIBRATION MENU

TARGET RATE	300
SLOW RATE PERCENTAGE	85
FEED SCREW PITCH	6.00
CONVEYOR CALIBRATION	3.353
CYCLE STOP DURATION	20.00
CYCLE STOP	**ENABLE X DISABLE**
ENCODER COUNTS PER INCH (PLC)	686
DOWN PRODUCT DURATION	**2.00**
DOWN PRODUCT	**ENABLE X DISABLE**

PRODUCT FLOW MENU

SYSTEM SPEED UP DELAY	1.00
SYSTEM SLOW DOWN DELAY	1.00
FEEDSCREW START DELAY	2.00
FEEDSCREW STOP POSITION	0.06
INFEED FULL/ PRIMED	1.00
INFEED EMPTY/STARVED	1.00
OUTFEED FULL/BACKUP	1.00
OUTFEED EMPTY/CLEAR	1.00

FEEDSCREW SERVICE MENU

RUNNING ACCEL	0.10
RUNNING DECEL	0.10
STOPPING ACCEL	0.10
STOPPING DECEL	0.10
SCREW MOTOR DIRECTION	
SCREW ENCODER POLARITY	
DISTANCE PER PPR	1.0100

CROSSOVER MENU

CROSSOVER 1 & 3	**X ENABLE DISABLE**
CROSSOVER 2 & 4	**X ENABLE DISABLE**
1 TO 3 DISTANCE	33.62
3 TO 1 DISTANCE	45.00
2 TO 4 DISTANCE	39.00
4 TO 2 DISTANCE	45.00
LOW LABEL CROSSOVER	**ENABLE X DISABLE**
LOW COUNTDOWN	**ENABLE X DISABLE**
1 AND 3 LOW LABEL COUNT	2
2 AND 4 LOW LABEL COUNT	2

TOP TRAP SERVICE MENU

MOTOR DIRECTION	COUNTER CLOCKWISE
ENCODER POLARITY	NEGATIVE
DISTANCE PER PPR	0.9900

INSPECTION MENU

INSPECTION DELAY	7.00
EJECT DELAY	37.00
EJECT DURATION	0.25
CONSECUTIVE FAILURES	2
INSPECTION	**X ENABLE DISABLE**

QUADREL
LABELING SYSTEMS

PROLINE PARAMETERS

SERIAL NUMBER: _____

LABEL SIZE: _____

PRODUCT: _____

RECIPE # _____

FEEDSCREW P/N: _____

LABELER 1 MENU

PRODUCT DELAY	
LABEL STOP	
MAX FEED	
SPEED RATIO	

LABELER 2 MENU

PRODUCT DELAY	
LABEL STOP	
MAX FEED	
SPEED RATIO	

LABELER 3 MENU

PRODUCT DELAY	
LABEL STOP	
MAX FEED	
SPEED RATIO	

LABELER 4 MENU

PRODUCT DELAY	
LABEL STOP	
MAX FEED	
SPEED RATIO	

CHANGEOVER SETTINGS

FEED SCREW IN/OUT	
TOP TRAP UP/DOWN	
LABELER 1 UP/DOWN	
LABELER 1 IN/OUT	
LABELER 2 UP/DOWN	
LABELER 2 IN/OUT	
LABELER 3 UP/DOWN	
LABELER 3 IN/OUT	
LABELER 4 UP/DOWN	
LABELER 4 IN/OUT	
CAMERA 1 UP/DOWN	
CAMERA 2 UP/DOWN	

TOP TRAP MENU

TOP TRAP TARGET POSITION	

LABELER 1 SERVICE MENU

ACCEL	
DECEL	
MOTOR DIRECTION	
ENCODER POLARITY	
COUNTS PER INCH	

LABELER 2 SERVICE MENU

ACCEL	
DECEL	
MOTOR DIRECTION	
ENCODER POLARITY	
COUNTS PER INCH	

LABELER 3 SERVICE MENU

ACCEL	
DECEL	
MOTOR DIRECTION	
ENCODER POLARITY	
COUNTS PER INCH	

LABELER 4 SERVICE MENU

ACCEL	
DECEL	
MOTOR DIRECTION	
ENCODER POLARITY	
COUNTS PER INCH	

SYSTEM SPEED MENU

TARGET RATE	
SLOW RATE	
FEED SCREW PITCH	
BYPASS MODE	**ENABLE DISABLE**

SPEED CALIBRATION MENU

TARGET RATE	
SLOW RATE PERCENTAGE	
FEED SCREW PITCH	
CONVEYOR CALIBRATION	
CYCLE STOP DURATION	
CYCLE STOP	**ENABLE DISABLE**
ENCODER COUNTS PER INCH (PLC)	
DOWN PRODUCT DURATION	
DOWN PRODUCT	**ENABLE DISABLE**

PRODUCT FLOW MENU

SYSTEM SPEED UP DELAY	
SYSTEM SLOW DOWN DELAY	
FEEDSCREW START DELAY	
FEEDSCREW STOP POSITION	
INFEED FULL/ PRIMED	
INFEED EMPTY/STARVED	
OUTFEED FULL/BACKUP	
OUTFEED EMPTY/CLEAR	

FEEDSCREW SERVICE MENU

RUNNING ACCEL	
RUNNING DECEL	
STOPPING ACCEL	
STOPPING DECEL	
SCREW MOTOR DIRECTION	
SCREW ENCODER POLARITY	
DISTANCE PER PPR	

CROSSOVER MENU

CROSSOVER 1 & 3	**ENABLE DISABLE**
CROSSOVER 2 & 4	**ENABLE DISABLE**
1 TO 3 DISTANCE	
3 TO 1 DISTANCE	
2 TO 4 DISTANCE	
4 TO 2 DISTANCE	
LOW LABEL CROSSOVER	**ENABLE DISABLE**
LOW COUNTDOWN	**ENABLE DISABLE**
1 AND 3 LOW LABEL COUNT	
2 AND 4 LOW LABEL COUNT	

TOP TRAP SERVICE MENU

MOTOR DIRECTION	
ENCODER POLARITY	
DISTANCE PER PPR	

INSPECTION MENU

INSPECTION DELAY	
EJECT DELAY	
EJECT DURATION	
CONSECUTIVE FAILURES	
INSPECTION	**ENABLE DISABLE**

Allen Bradley PowerFlex 525 Setup Sheet v001

Serial # 84209-100 **Drive:** DR1

Motor Information:

Motor Manufacturer or Part #	LEESON	
Serial Number		60 HZ
Volts	240 | 480	1 HP or kW
Amps	2.9	RPM 1750

Drive Parameters:

Parameter	Description	Value
P031*	Motor nameplate voltage	230
P032*	Motor nameplate frequency (Hz)	60
P033	Maximum allowable motor current (P034x2)	4.8
P034	Motor nameplate current	2.9
P041	Accel time	3.00
P042	Decel Time	3.00
P043*	Minimum Frequency	0
P044*	Maximum Frequency	90
P046*, 48*	Start Source	2
P047, 49	Speed Reference	5
t062*	Digital Input block 2	48
t064*	2 wire selection	0
t076	Relay 1 Output	0
t105	Safety Open En	1
A543*	Start at Powerup	0
A544*	Reverse Disable	1

*: denotes drive needs to be stopped before editing

To Change Parameter Values:

1. From the initial display press the ESC key to get the numbers on the right to flash. Press the ESC key again and the letter on the left will flash.
2. Use the up and down keys to change the program group between P, t, and A. Select P to change any parameter starting with P, and likewise for the t and A parameters.
3. Press ENTER while your selected program group letter is selected. The numbers will now flash.
4. Use the up and down keys to select which parameter (number) you would like to edit. Press ENTER and you will now see the value of the selected parameter.
5. To change the value that is displayed, press ENTER again. The program LED will light up and the changeable digit or bit will flash. Use the SEL key to move to a different changeable digit or bit if needed.
6. Use the up and down keys to set your desired value. Pressing ENTER will save the changes. ESC will cancel the changes and restore the previous value.
7. Use the ESC key to return to the previous menus to change additional parameters.

WARNING

- **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.

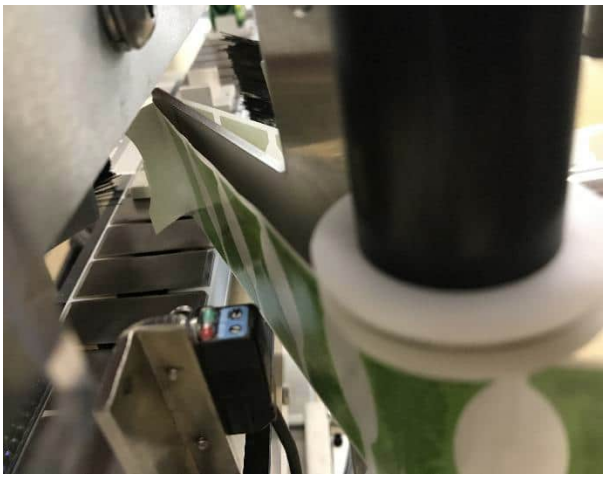
You will also find the threading diagram directly on the labeling head.

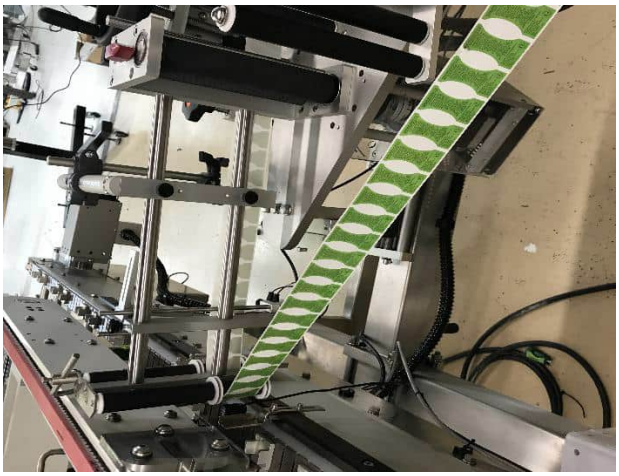
1) Place the label stock roll on the unwind shaft. Press the roll firmly against the flange. Then slide the locking collar over the unwind shaft aligning the set screw with the shaft. Press into the roll and twist to lock the collar in place.

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

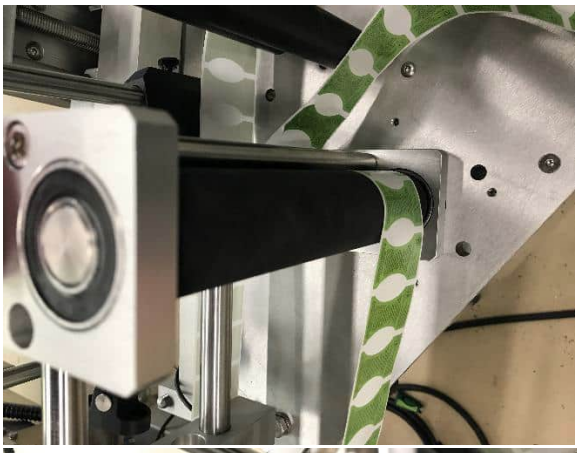
3) Follow the threading diagram on the labeling head for routing the web.
4) Thread through the dancer to the peel plate.

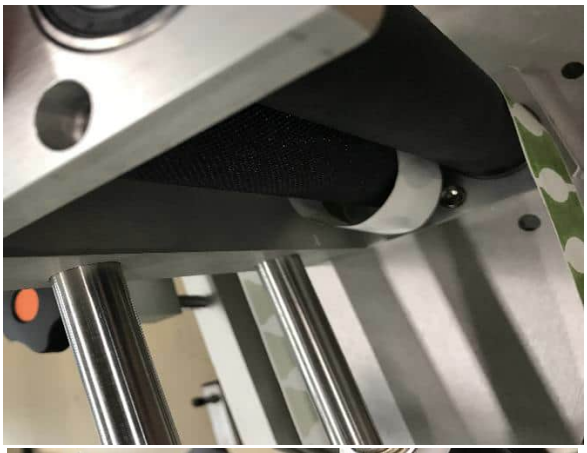
5) Feed the label around the peel plate and under the pressure shoe if (if there is one). Feed the label up the head to the pull roll. Pull all the slack out.

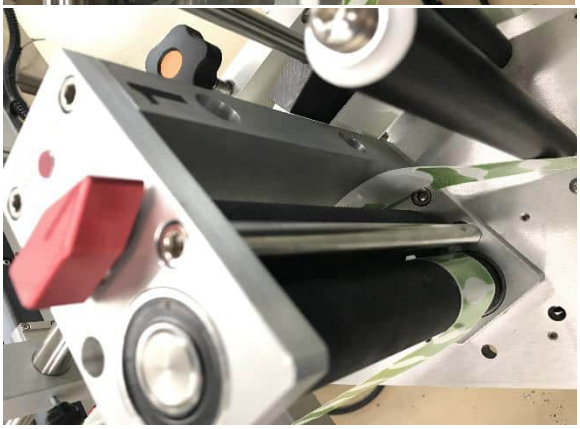




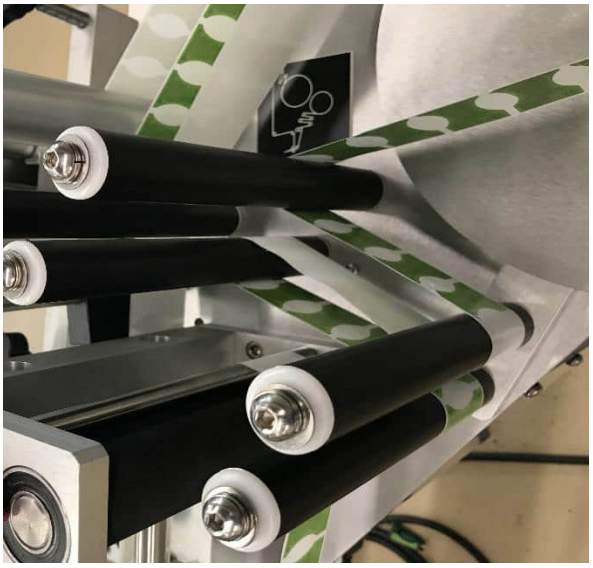
6) Wrap labels around the rubber roller as shown, then around the knurled roller. Make sure the knurled roller is not locked in by turning the red knob to the left or right of the red dot on the drive roll. When you have the labels completely threaded you can turn the knob to the red dot.



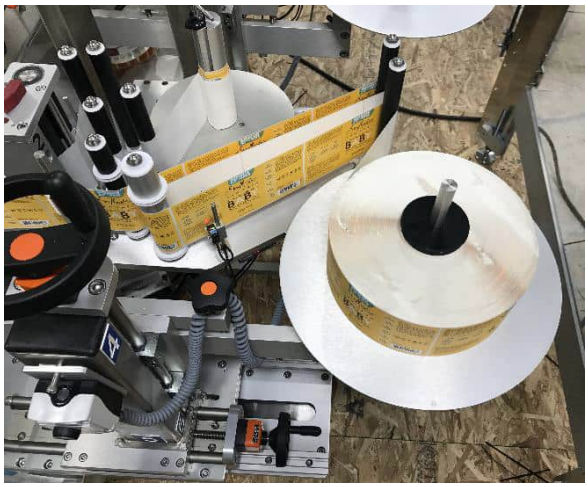




7) Thread the labels through the rewind dancers to the rewind shaft. Place the end of the label through the clip and rotate the rewind hub to take up the slack.



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.

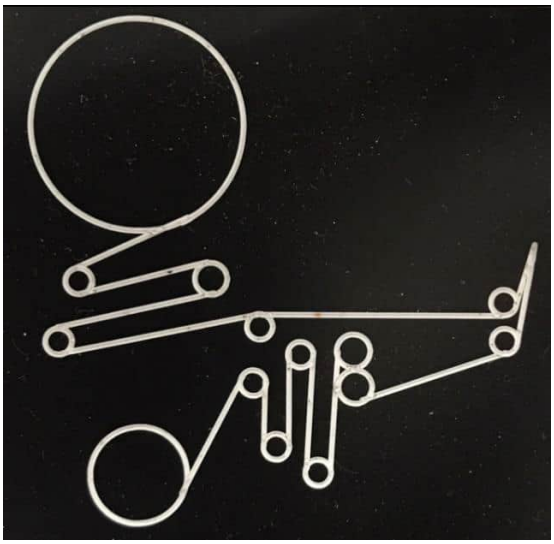


9) To unload the rewind loosen (counter clockwise) the “clevis” bolt on the top of the rewind hub. this will collapse the rewind and you can pull the liner off the hub.

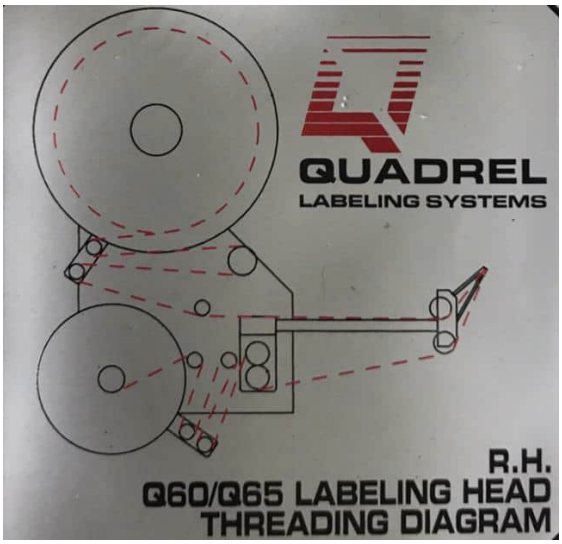
⚠ CAUTION There are many pinch points on a labeler. to avoid injury read and understand the owner’s manual before operating.

6.1.2 THREADING DIAGRAMS

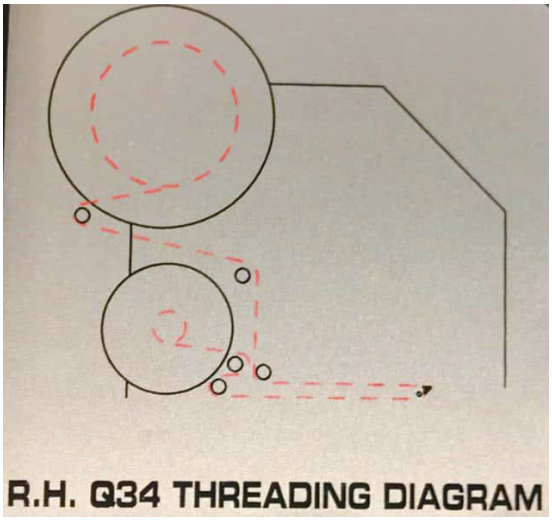
Here are the following threading diagrams for our standard labeling heads.



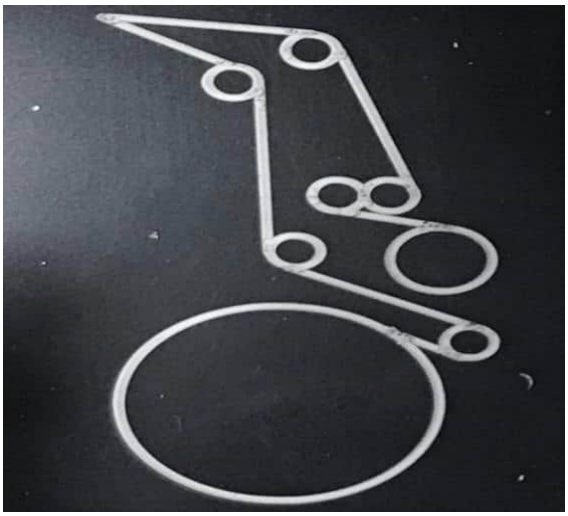
Q120/Q125/Q115/Q110



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 with move the labeler out.

To adjust the angle of the labeling head you first need to loosen the large ¾-10 nut with a 1 ¼ “wrench and the 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 Q160 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 Q160 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 Q160 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 Q160 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 Q160 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: Q160 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: **Q160 LABELING HEAD - BRAKE BRUSH ASSEMBLY**

DRAWING NO: **NONE**

GENERAL FUNCTION:

- The brake brush establishes web tension and controls backlash

SET UP AND ADJUSTMENTS:

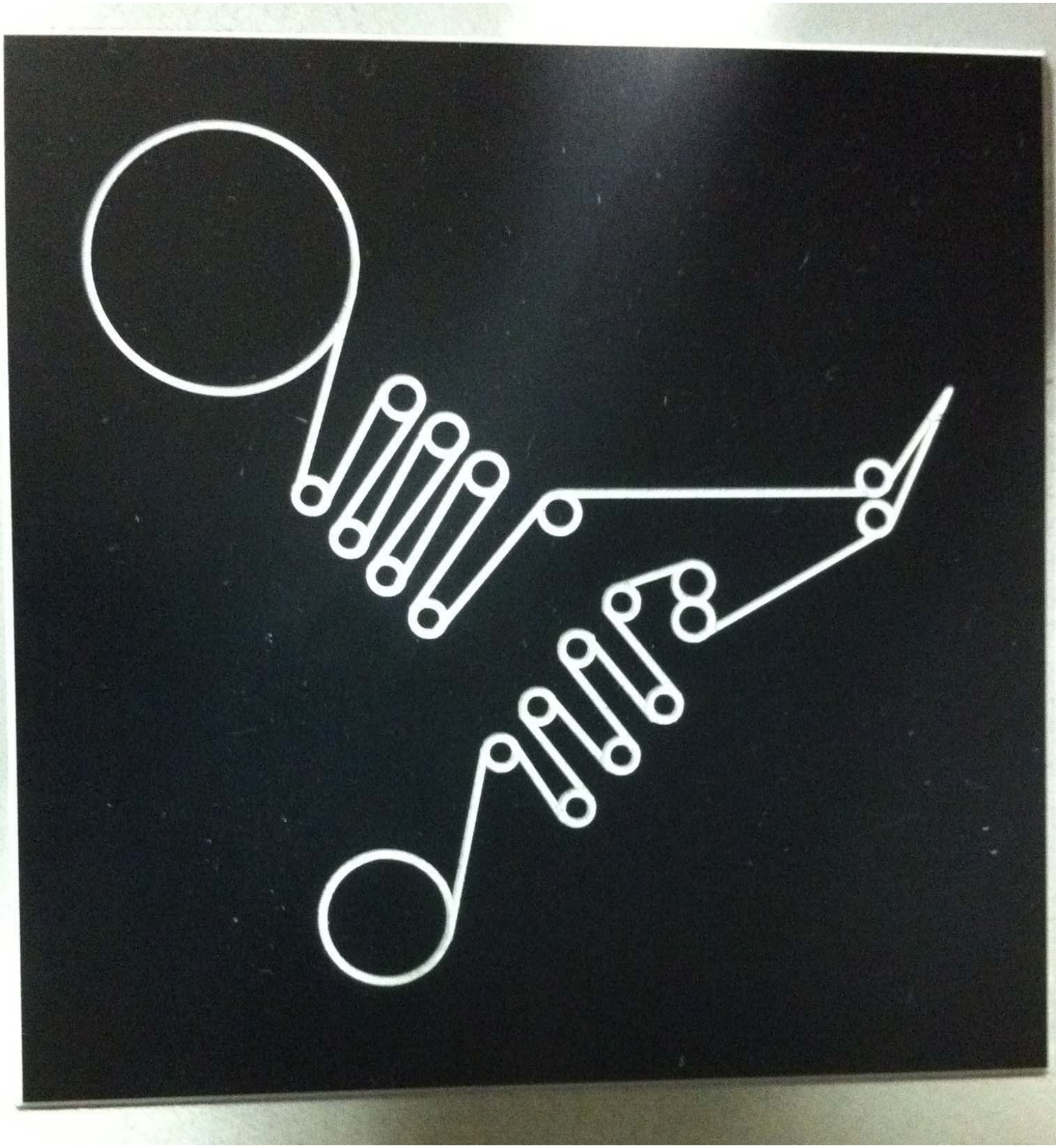
- For accurate label feeds, the web must establish proper tension.
- Loosen the holding set screw in the brake brush body. The brake brush assembly can now be rotated on axis.
- Turn brush body into the web and tighten. To check for proper web tension, jog a label and check for web slack. If the web 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	WHAT TO DO
- Web break	-Too much brake tension. Decrease until no slack in web. - Debris or brake flaw causing web tear
- Motor stall	- Decrease brake tension
- Too much web slack	- Increase brake tension



Before threading labels through the rewind, turn off the rewind switch illustrated above. Once the liner is passed through the rewind, turn the switch on and the rewind motor will take up the tension.

ASSEMBLY TITLE: **Q160 SIDE PLATE ASSEMBLY**

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:

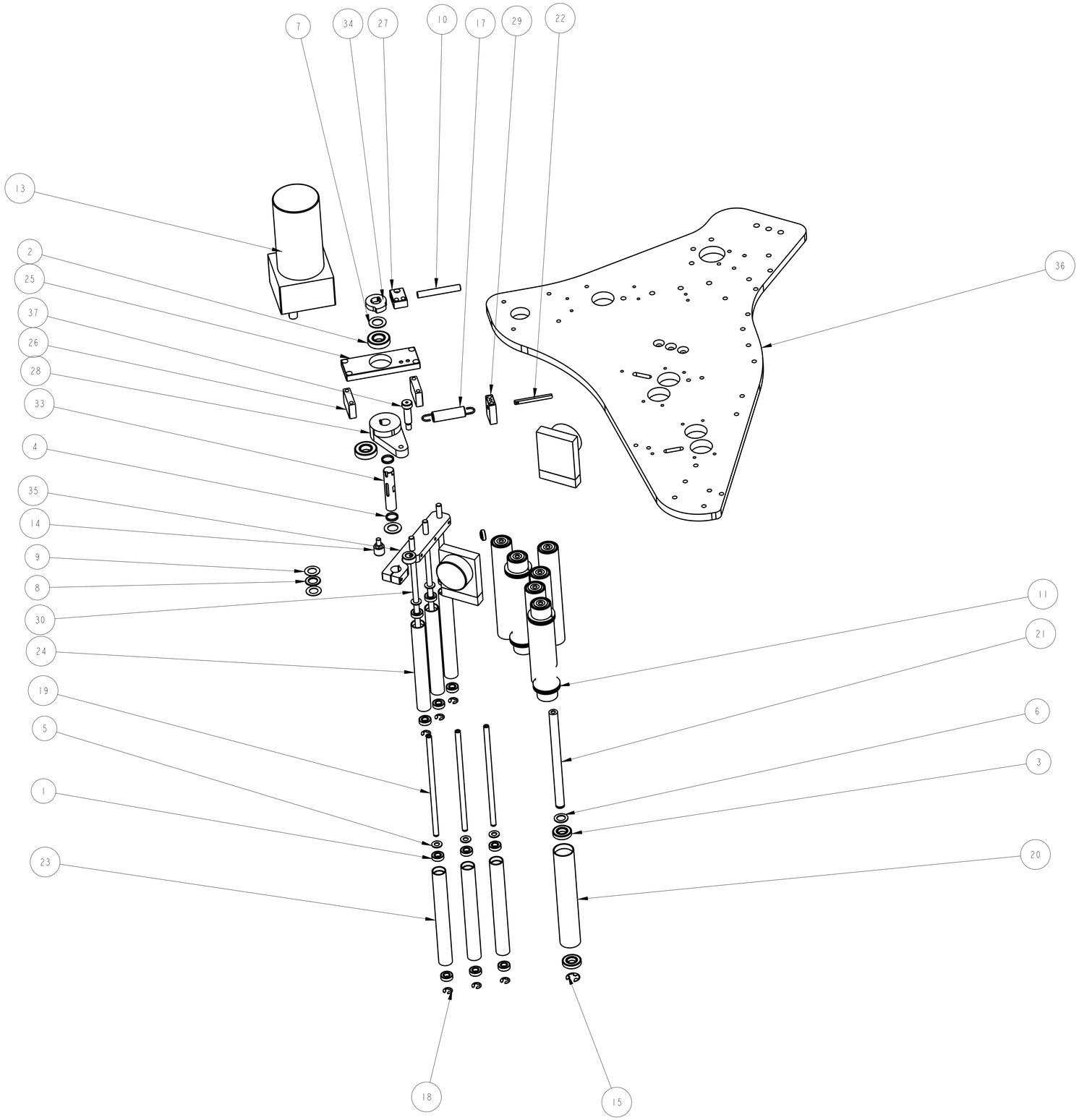
- None

MAINTENANCE:

- None

TROUBLESHOOTING:

- None



ITEM	QTY	PART NO.	DESCRIPTION	PARENT ITEM
1	12	111073-000	BEARING, BALL	22652S-RHH
2	2	111074-000	BEARING, BALL	22652S-RHH
3	14	111075-000	BEARING, BALL	22652S-RHH
4	2	141174-000	SLEEVE BEARING	22652S-RHH
5	6	151003-000	BEARING, THRUST WASHER	22652S-RHH
6	7	151008-000	BEARING, THRUST WASHER	22652S-RHH
7	2	151063-000	BEARING, THRUST WASHER	22652S-RHH
8	1	181081-000	BEARING, NEEDLE ROLLER	22652S-RHH
9	2	181082-000	BEARING, THRUST WASHER	22652S-RHH
10	1	202117-000	INDUCTIVE PROX. SENSOR	22652S-RHH
11	4	361199-000	COLLAR, GUIDE, 1-1/2 IN. ID	22652S-RHH
12	1	362161-000	COLLAR, SETSCREW, 1/2 IN. ID	22652S-RHH
13	1	412150-000	GEARMOTOR	22652S-RHH
14	1	791442-000	MALE THREAD HEX SHOULDER BUMPER	22652S-RHH
15	7	791776-000	E-RING, RETAINING	22652S-RHH
16	1	801601-000	CHECK NUT	22652S-RHH
17	1	811260-000	EXTENSION SPRING, STAINLESS	22652S-RHH
18	6	873011-000	E-RING	22652S-RHH
19	3	A20505-005	REWIND ARM IDLER SHAFT	22652S-RHH
20	7	A21958-002	IDLER ROLLER	22652S-RHH
21	7	A21959-000	IDLER SHAFT	22652S-RHH
22	1	A23131-000	STUD	22652S-RHH
23	3	A24164-005	REWIND ARM IDLER ROLLER	22652S-RHH
24	3	A24164-006	REWIND ARM IDLER ROLLER	22652S-RHH
25	1	A24167-000	BEARING PLATE	22652S-RHH
26	2	A24168-000	BEARING PLATE RISER	22652S-RHH
27	1	A24169-000	SENSOR MOUNTING BLOCK	22652S-RHH
28	1	A24170-001	SPRING MOUNT AND SPACER	22652S-RHH
29	1	A24171-001	SPRING ADJUSTMENT BLOCK	22652S-RHH
30	3	A24187-005	REWIND DANCER ARM IDLER SHAFT	22652S-RHH
31	2	A24905-006	PIVOT PIN MOUNTING PLATE	22652S-RHH
32	2	A25912-000	MOUNTING PIN SPACER	22652S-RHH
33	1	B21405-000	REWIND DANCER SHAFT	22652S-RHH
34	1	B21639-000	Q90 CAM	22652S-RHH
35	1	C20646-101	REWIND DANCER ARM	22652S-RHH
36	1	D24940-010	Q160 SIDE PLATE	22652S-RHH
37	1	SB_05-150	SHOULDER BOLT 1/2 x 1-1/2	22652S-RHH

REV	DATE	DESCRIPTION	BY
A	11-26-13	NEW DRAWING	

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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

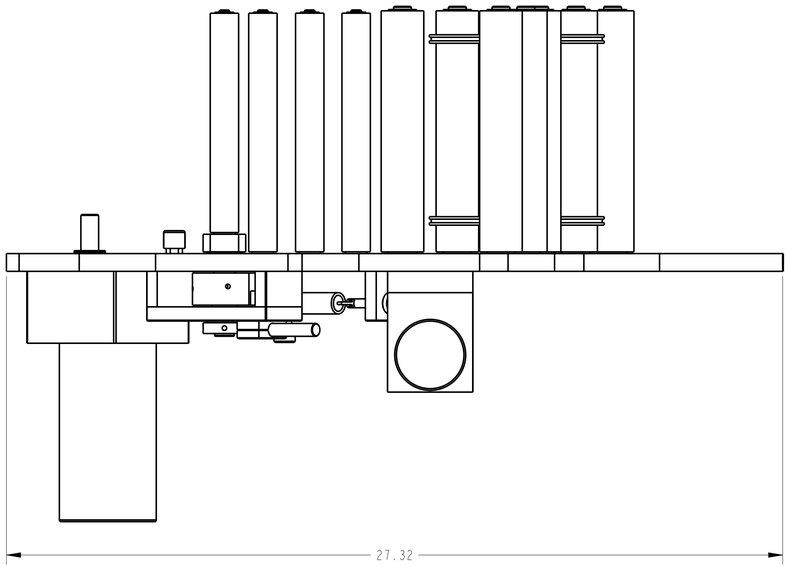
QUADREL LABELING SYSTEMS
7670 JENTHER DRIVE
MENTOR, OHIO 44060
(440) 602-4700

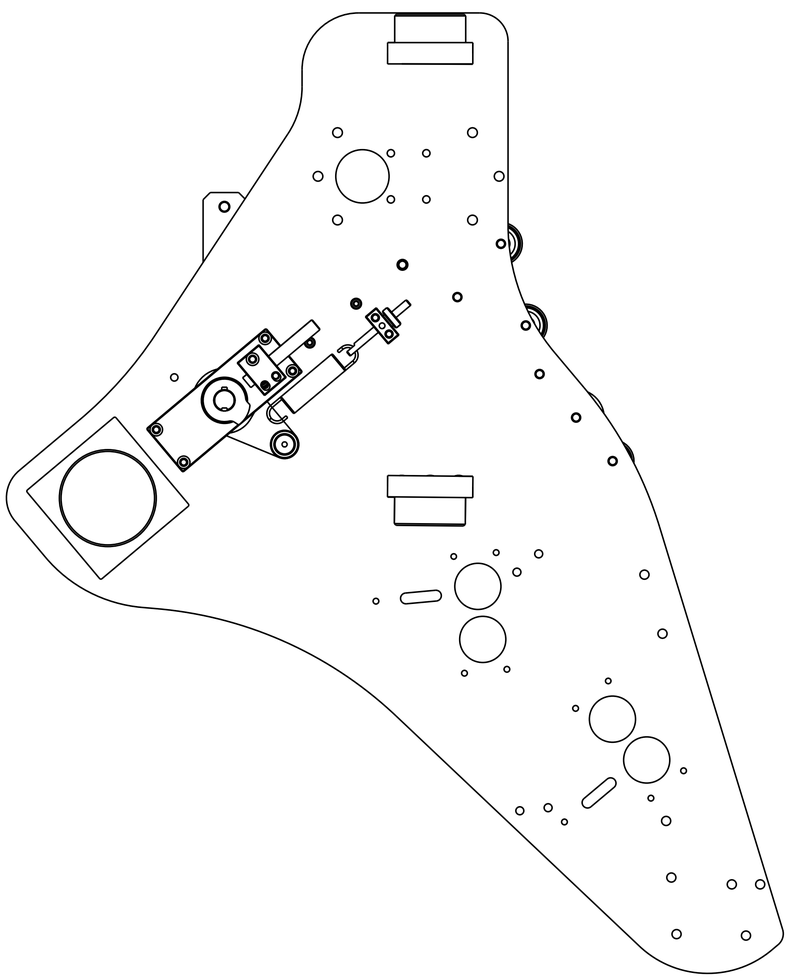
SCALE 1/4
DATE 11-26-13
DRAWN BY ATT

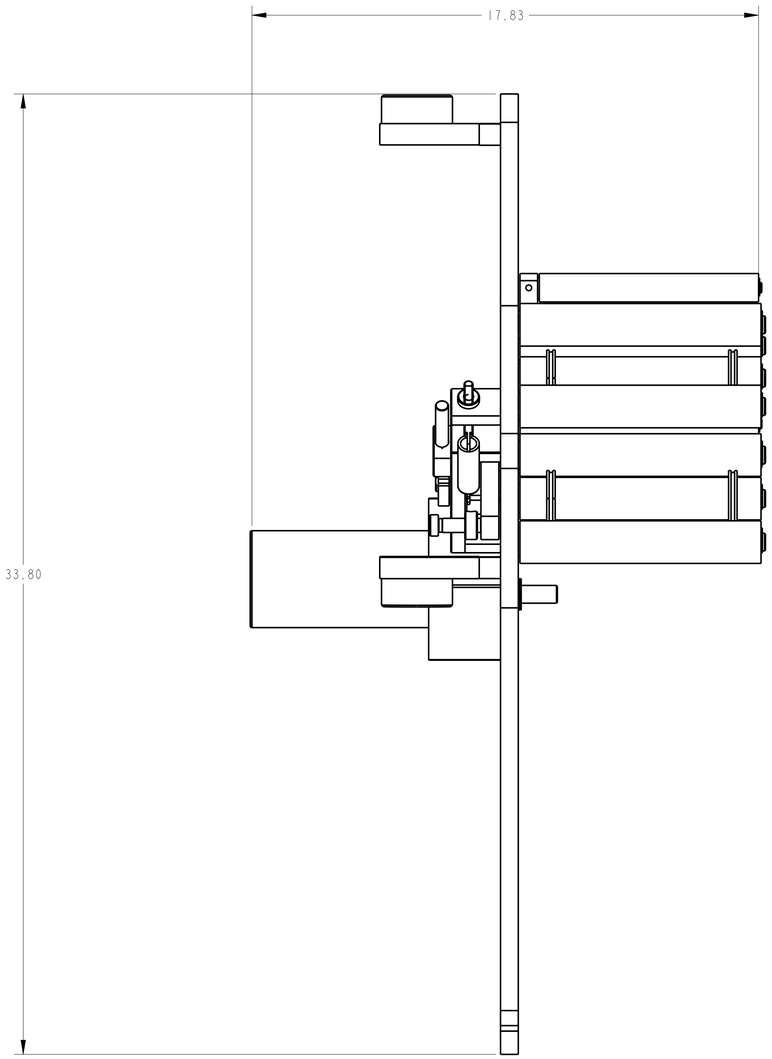
Q160 SIDE PLATE

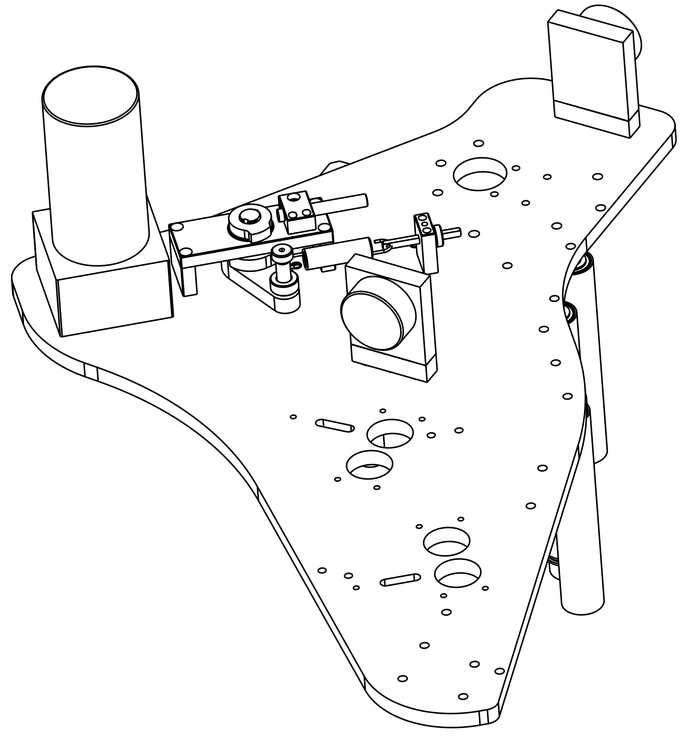
MAT'L 22652S-RHH

22652S-RHH









REV	DATE	DESCRIPTION	BY
A	11-26-13	NEW DRAWING	

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.XX ± .01
.XXX ± .005
ANGLES ± 30'

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

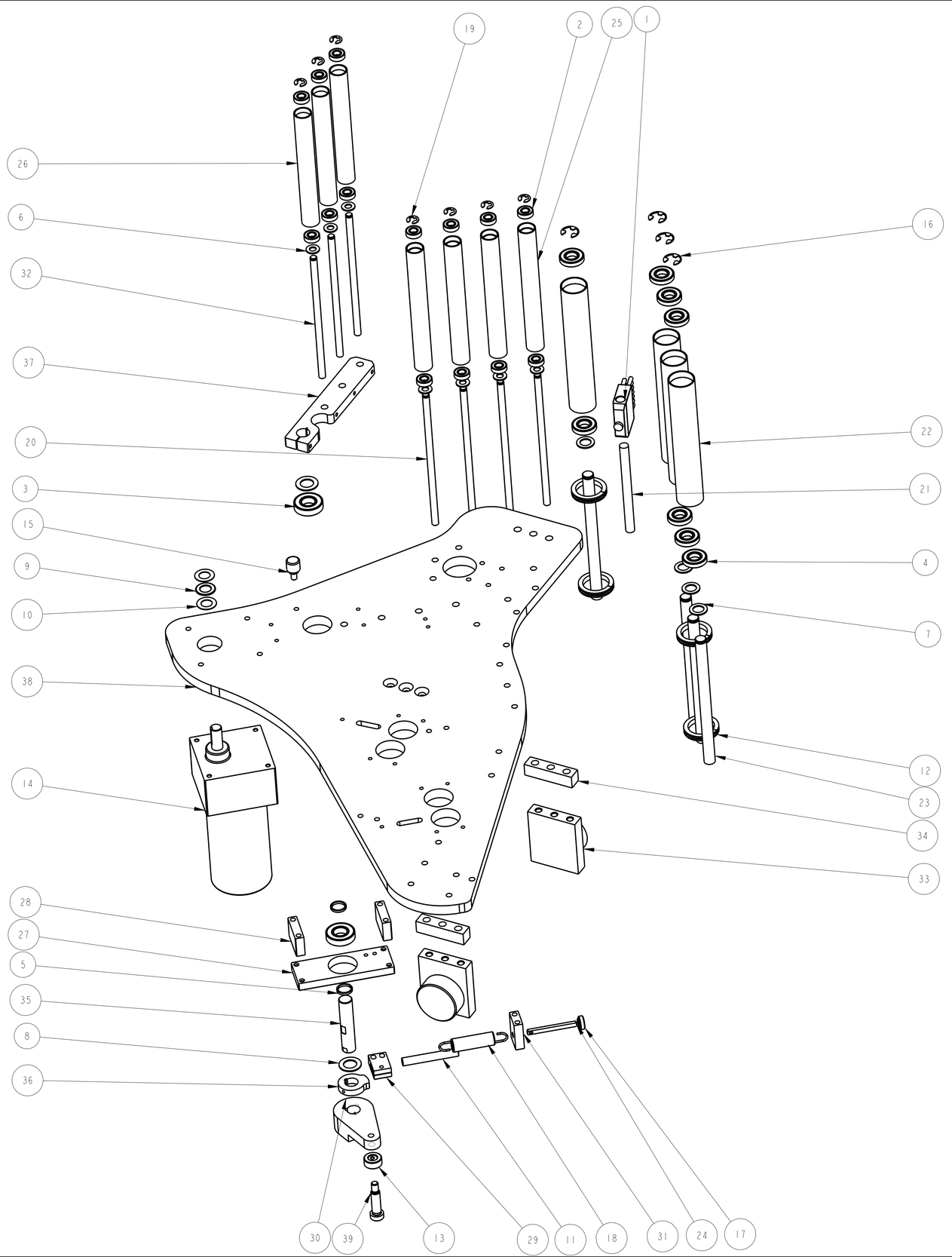
QUADREL LABELING SYSTEMS
7670 JENTHER DRIVE
MENTOR, OHIO 44060
(440) 602-4700

SCALE	3/8
DATE	11-26-13
DRAWN BY	ATT

Q160 SIDE PLATE

MAT'L 22652S-RHH

22652S-RHH



ITEM	QTY	PART NO.	DESCRIPTION	PARENT ITEM
1	1	00669-01	BRAKE BRUSH	22652S-LHH
2	14	111073-000	BEARING, BALL	22652S-LHH
3	2	111074-000	BEARING, BALL	22652S-LHH
4	8	111075-000	BEARING, BALL	22652S-LHH
5	2	141174-000	SLEEVE BEARING	22652S-LHH
6	7	151003-000	BEARING, THRUST WASHER	22652S-LHH
7	4	151008-000	BEARING, THRUST WASHER	22652S-LHH
8	2	151063-000	BEARING, THRUST WASHER	22652S-LHH
9	1	181081-000	BEARING, NEEDLE ROLLER	22652S-LHH
10	2	181082-000	BEARING, THRUST WASHER	22652S-LHH
11	1	202117-000	INDUCTIVE PROX. SENSOR	22652S-LHH
12	4	361199-000	COLLAR, GUIDE, 1-1/2 IN. ID	22652S-LHH
13	1	362161-000	COLLAR, SETSCREW, 1/2 IN. ID	22652S-LHH
14	1	412150-000	GEARMOTOR	22652S-LHH
15	1	791442-000	MALE THREAD HEX SHOULDER BUMPER	22652S-LHH
16	4	791776-000	E-RING, RETAINING	22652S-LHH
17	1	801601-000	CHECK NUT	22652S-LHH
18	1	811260-000	EXTENSION SPRING, STAINLESS	22652S-LHH
19	7	873011-000	E-RING	22652S-LHH
20	4	A20505-005	REWIND ARM IDLER SHAFT	22652S-LHH
21	1	A20654-000	ADJ. ROD	22652S-LHH
22	4	A21958-002	IDLER ROLLER	22652S-LHH
23	4	A21959-000	IDLER SHAFT	22652S-LHH
24	1	A23131-000	STUD	22652S-LHH
25	4	A24164-005	REWIND ARM IDLER ROLLER	22652S-LHH
26	3	A24164-006	REWIND ARM IDLER ROLLER	22652S-LHH
27	1	A24167-000	BEARING PLATE	22652S-LHH
28	2	A24168-000	BEARING PLATE RISER	22652S-LHH
29	1	A24169-000	SENSOR MOUNTING BLOCK	22652S-LHH
30	1	A24170-002	SPRING MOUNT AND SPACER	22652S-LHH
31	1	A24171-001	SPRING ADJUSTMENT BLOCK	22652S-LHH
32	3	A24187-005	REWIND DANCER ARM IDLER SHAFT	22652S-LHH
33	2	A24905-006	PIVOT PIN MOUNTING PLATE	22652S-LHH
34	2	A25912-000	MOUNTING PIN SPACER	22652S-LHH
35	1	B21405-000	REWIND DANCER SHAFT	22652S-LHH
36	1	B21639-000	Q90 CAM	22652S-LHH
37	1	C20646-101	REWIND DANCER ARM	22652S-LHH
38	1	D24940-010	Q160 SIDE PLATE	22652S-LHH
39	1	SB_05-150	SHOULDER BOLT 1/2 x 1-1/2	22652S-LHH

REV	DATE	DESCRIPTION	BY
A	2-24-23	NEW DRAWING	ATT

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

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

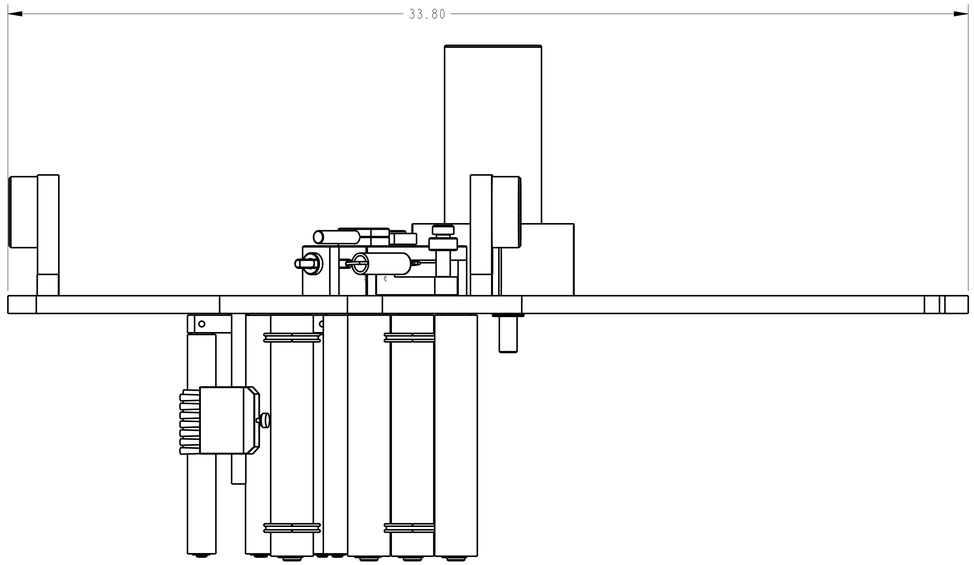
QUADREL LABELING SYSTEMS
7670 JENTHER DRIVE
MENTOR, OHIO 44060
(440) 602-4700

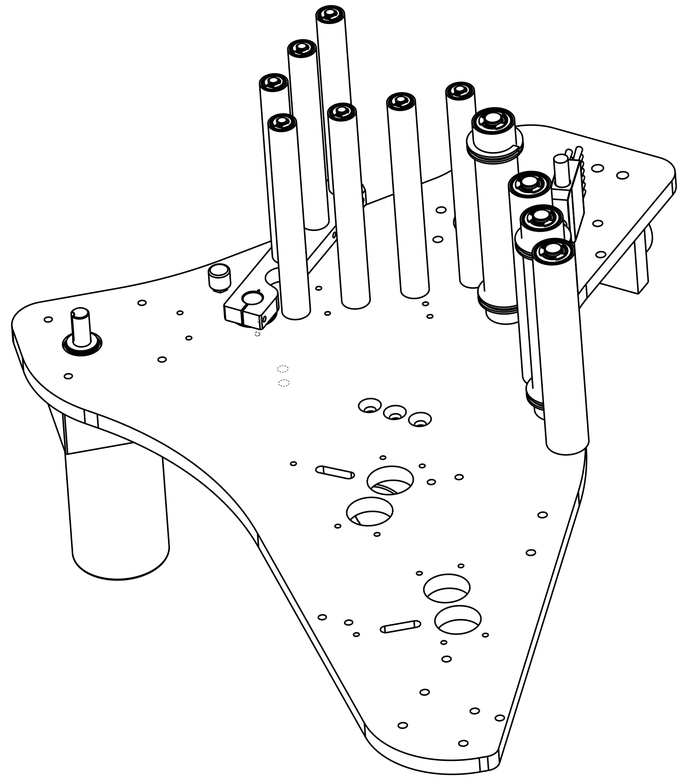
SCALE	5/16
DATE	2-24-23
DRAWN BY	ATT

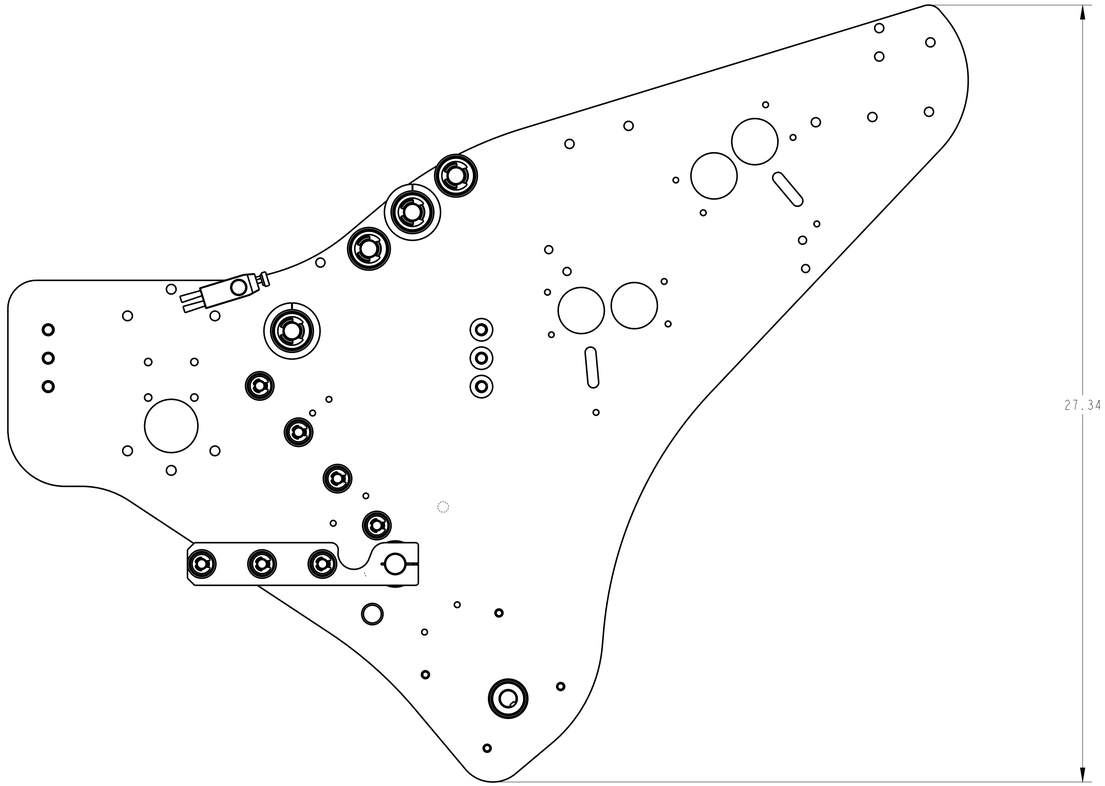
Q160 LH 7" SIDE PLATE

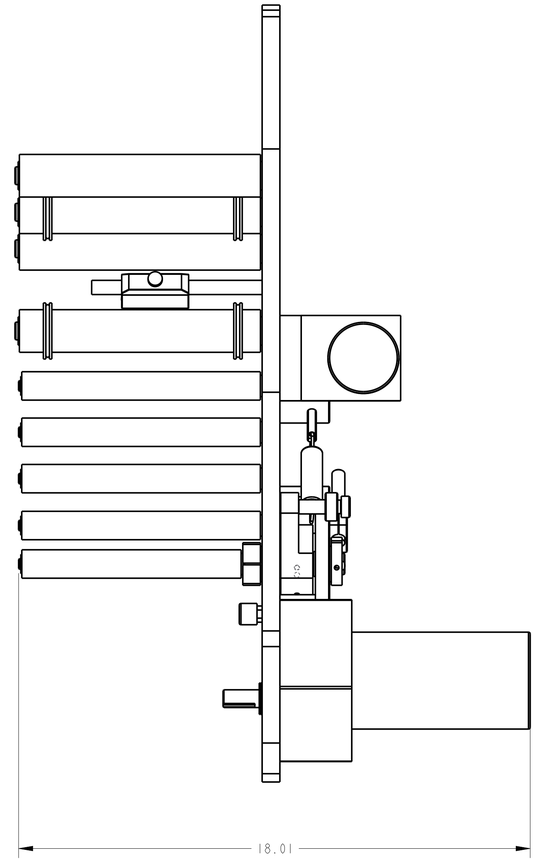
MAT'L 22652S-LHH

22652S-LHH









REV	DATE	DESCRIPTION	BY
A	2-24-23	NEW DRAWING	ATT

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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

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

SCALE	3/8
DATE	2-24-23
DRAWN BY	ATT

Q160 LH 7" SIDE PLATE

MAT'L | 22652S-LHH | 22652S-LHH

ASSEMBLY TITLE: **Q160 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:

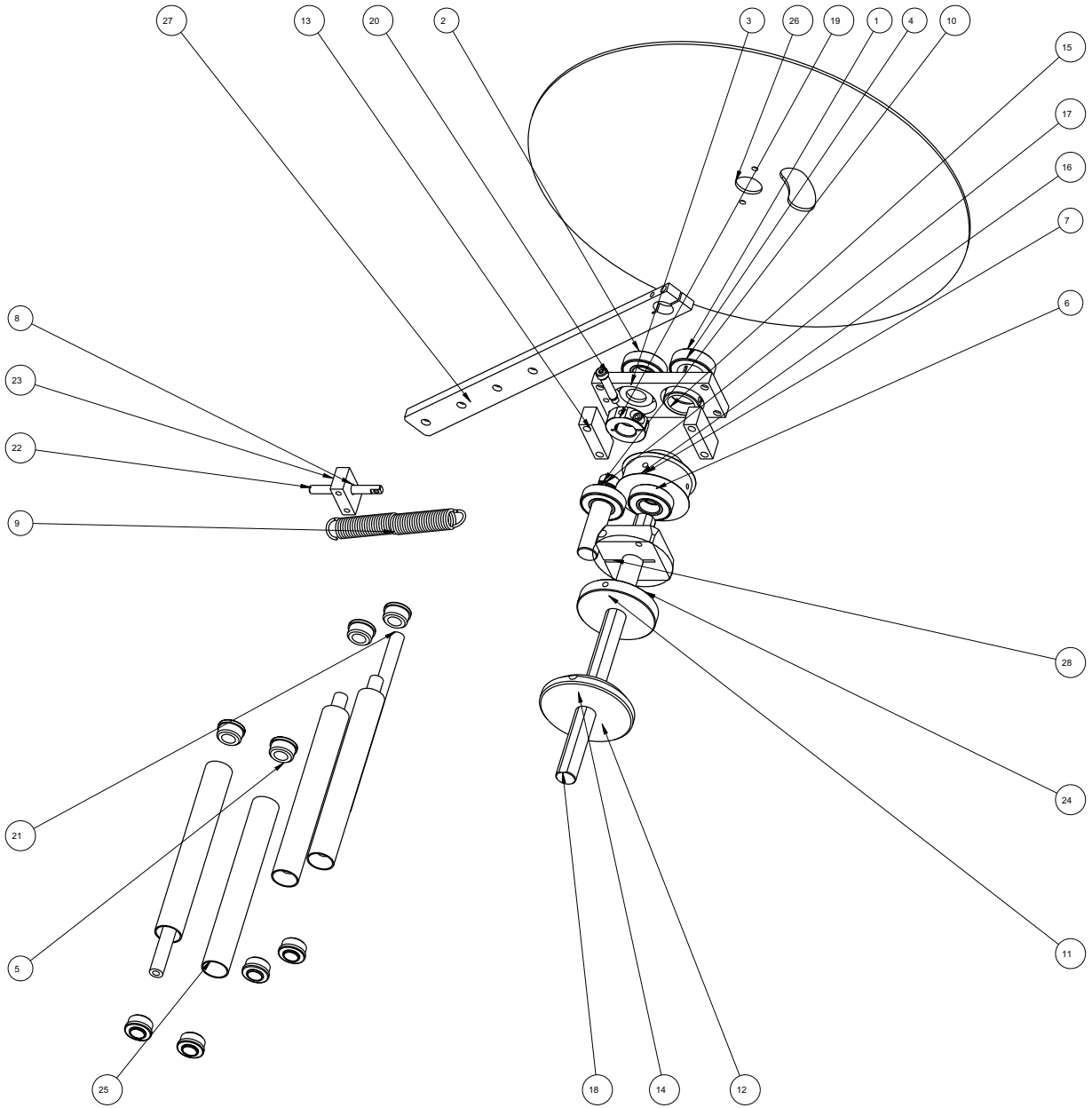
- **The unwind tension adjustment is located on the BACK of the Q160 head. Use the knurled ring to adjust the dancer tension.**

MAINTENANCE:

- Clean all the parts that may acquire glue residue

TROUBLESHOOTING:

PROBLEM	**WHAT TO DO**
- Unwind roll run-away	- Tighten dancer spring, check nut or replace dancer spring, if necessary.
- Unwind roll not stopping	- Replace brake ring-belt if broken, or unevenly worn.
- Drive roll stalling	- Release web tension produced by brake brush.
- Brush taking fixed shape	- Turn brush around



ITEM	QTY	PART NO.	DESCRIPTION
1	1	111044-000	BEARING, 3/4 ID CLAMP TYPE
2	3	111074-000	BEARING, BALL
3	1	151001-000	BEARING, THRUST WASHER
4	1	151006-000	BEARING, THRUST WASHER
5	8	181063-000	BEARING, ROLL END
6	1	361165-000	COLLAR, SETSCREW, 5/16" BORE
7	1	361183-000	COLLAR, 3/4 ID ONE PIECE- S.S.
8	1	801601-000	CHECK NUT
9	1	811216-000	EXTENSION SPRING
10	1	871025-000	EXTERNAL SNAP RING
11	1	A20567-000	WHITE NYLON SLUG
12	1	A20583-000	QUICK LOCK COLLAR
13	2	A20585-000	SUPPORT SPACER
14	1	A20586-000	WHITE NYLON SLUG
15	1	A20590-000	BEARING PLATE
16	1	A20591-000	UNWIND BRAKE DRUM
17	1	A20592-000	UNWIND DANCER SHAFT
18	1	A20593-001	UNWIND SHAFT
19	1	A20595-000	DANCER COLLAR
20	1	A20596-000	DANCER BOLT
21	4	A20928-002	ROLLER SHAFT
22	1	A23131-000	STUD
23	1	A23298-000	BLOCK, SPRING TENSION
24	1	A23406-000	SUPPLY REEL CENTER HUB
25	4	B20071-003	IDLER ROLLER (DANCER)
26	1	B20980-001	UNWIND FLANGE
27	1	B21113-100	DANCER ARM, 16" UNWIND
28	1	B21931-001	CORE HUB

BAND BRAKE (NOT SHOWN) A25825-000

REV	DATE	DESCRIPTION
A	11-22-13	NEW DRAWING

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DIMENSIONAL TOLERANCE
XX ± .1
XXX ± .01
XXXX ± .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: 11-22-13
DRW BY: MAW
CHK BY: MAW
APPR BY: MAW

UNWIND & DANCER ASSY, 7" Q60

MAT'L: 81213Q60U-LHH

D24915-000

SHEET 1 OF 1

ASSEMBLY TITLE: **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)
- Position guide collars on each idler roll, one slightly above and the other slightly below the web. Note that the labeler should be jogged and the web path allowed to “settle” before adjusting guide collars.

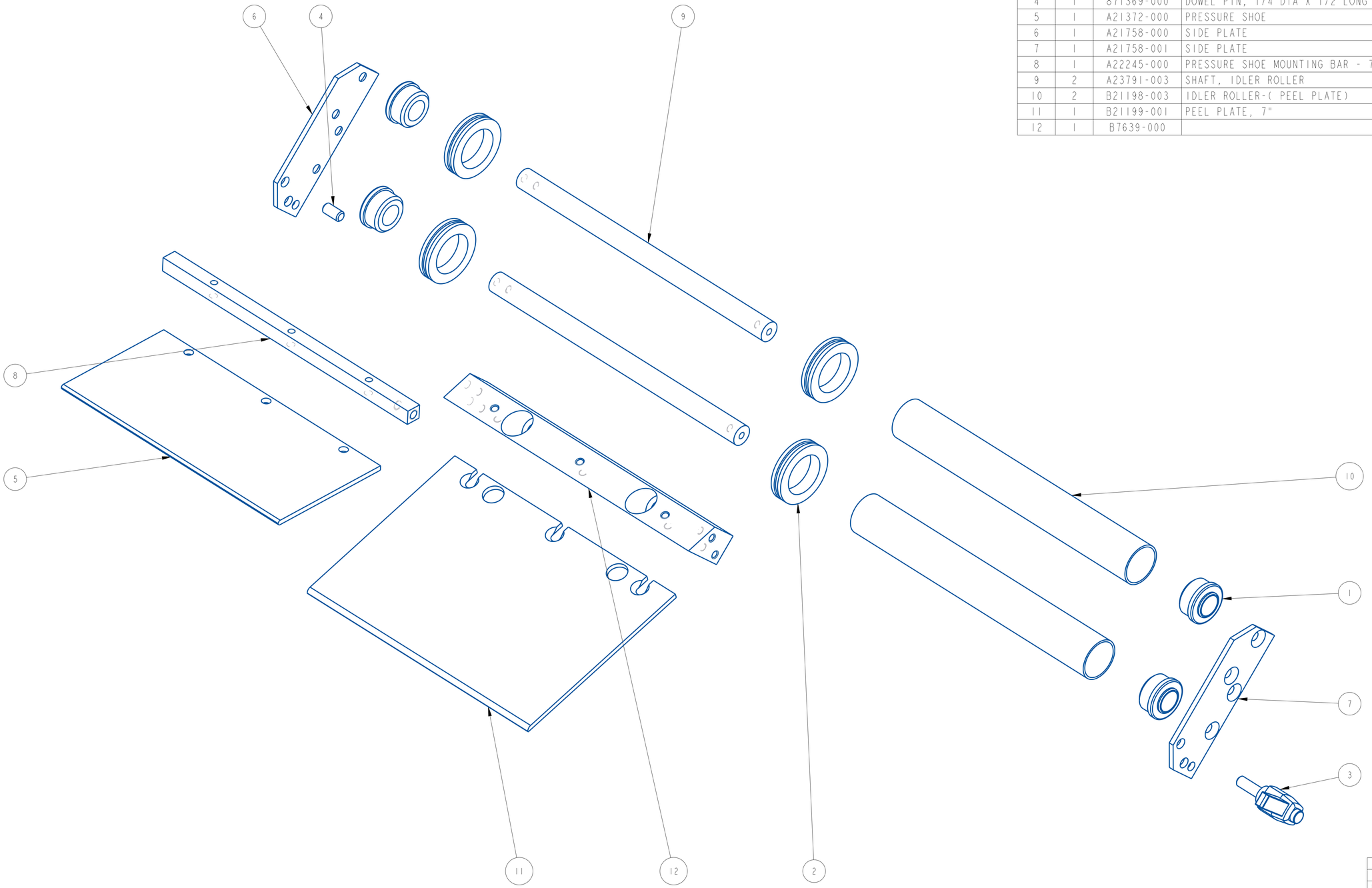
MAINTENANCE:

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

TROUBLESHOOTING:

PROBLEM	WHAT TO DO
- Web moving up and down peel plate	- Make sure guide collars are properly positioned on idler roll. - Verify all hardware is tight and Peel Plate is not moving while labels are dispensed.
- Liner tears are Peel Plate	-Verify Teflon Tape is installed and not excessively worn or dried out.

ITEM	QTY	PART NO.	DESCRIPTION	PARENT ITEM
1	4	181063-000	BEARING, ROLL END	21343PP-001
2	4	361198-000	COLLAR, GUIDE, 1" ID	21343PP-001
3	1	801857-000	ADJUSTABLE HANDLE	21343PP-001
4	1	871369-000	DOWEL PIN, 1/4 DIA X 1/2 LONG	21343PP-001
5	1	A21372-000	PRESSURE SHOE	21343PP-001
6	1	A21758-000	SIDE PLATE	21343PP-001
7	1	A21758-001	SIDE PLATE	21343PP-001
8	1	A22245-000	PRESSURE SHOE MOUNTING BAR - 7"	21343PP-001
9	2	A23791-003	SHAFT, IDLER ROLLER	21343PP-001
10	2	B21198-003	IDLER ROLLER-(PEEL PLATE)	21343PP-001
11	1	B21199-001	PEEL PLATE, 7"	21343PP-001
12	1	B7639-000		21343PP-001



REV	DATE	DESCRIPTION	BY
A	12/22/2010	NEW DRAWING	SEM

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

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

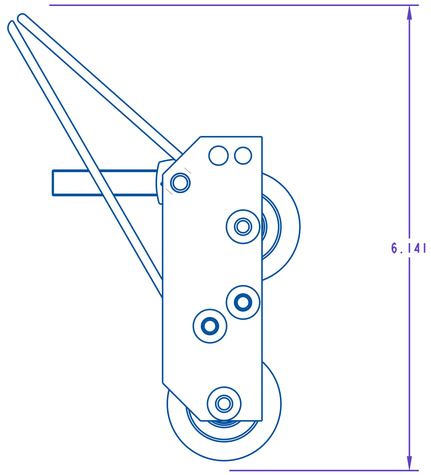
QUADREL LABELING SYSTEMS
7670 JENTHER DRIVE
MENTOR, OHIO 44060
(440) 602-4700

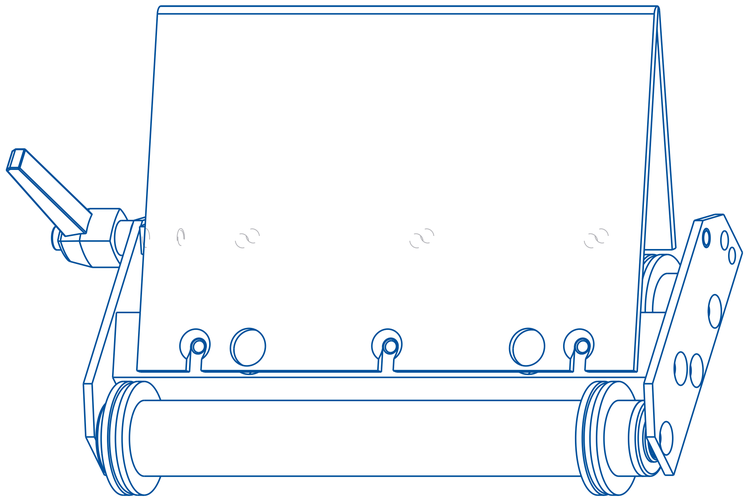
SCALE: 7/8
DATE: 12/22/2010
DRW BY: SEM
CHK BY: 03/12/2024-SEM
APPR BY:

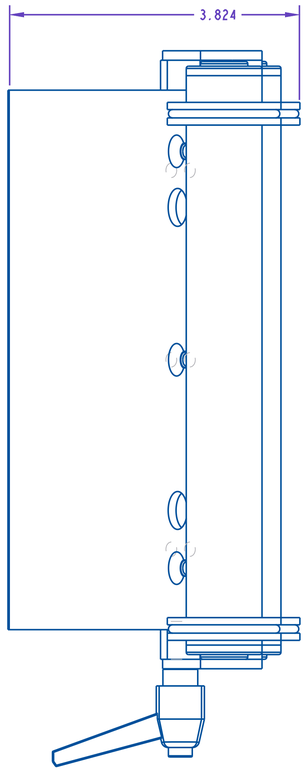
Q62 7" PEEL PLATE ASSEMBLY

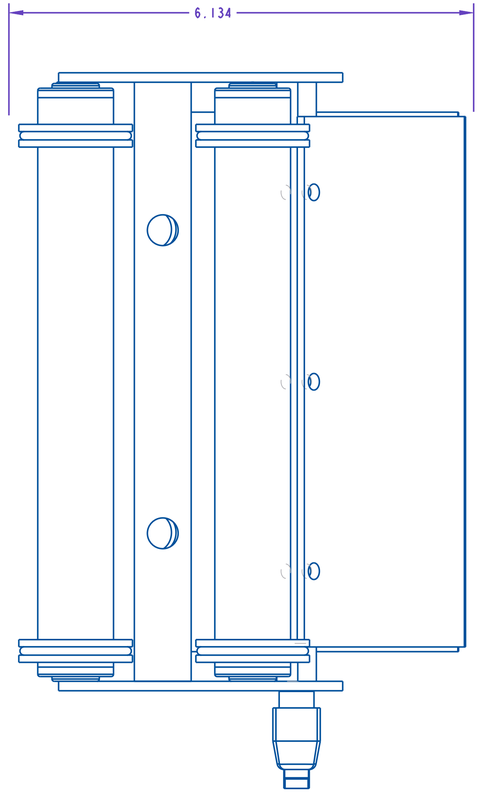
MAT'L

21343PP-000









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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: 12/22/2010
DRW BY: SEM
CHK BY: 03/12/2024-SEM
APPR BY:

Q62 7" PEEL PLATE ASSEMBLY

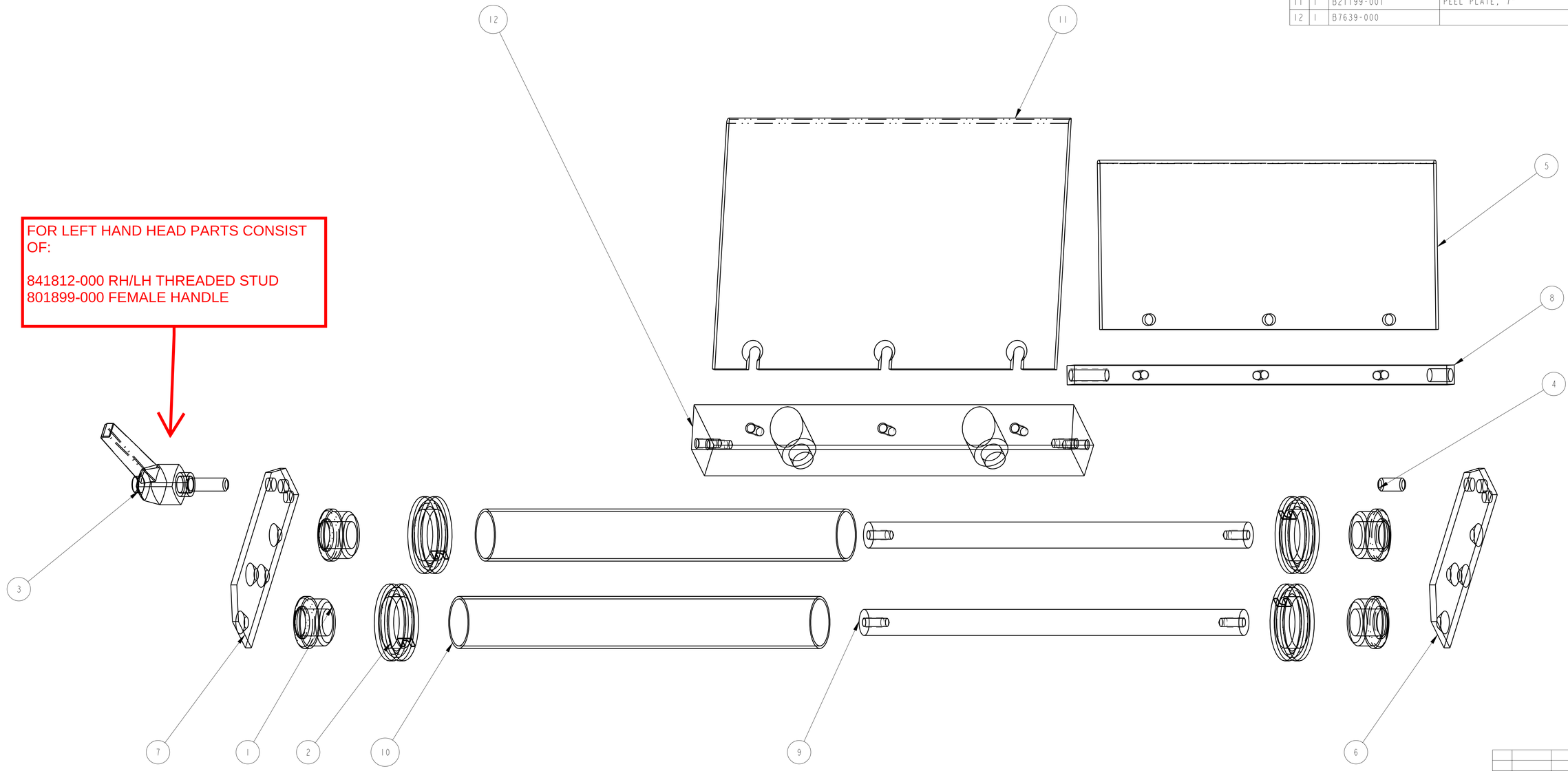
MAT'L
BOM:21343PP-000

21343PP-000

ITEM	QTY	PART NO.	DESCRIPTION
1	4	181063-000	BEARING, ROLL END
2	4	361198-000	COLLAR, GUIDE, 1 IN. ID
3	1	SEE NOTE	ADJUSTABLE HANDLE
4	1	871369-000	DOWEL PIN, 1/4 DIA X 1/2 LONG
5	1	A21372-000	PRESSURE SHOE
6	1	A21758-000	SIDE PLATE
7	1	A21758-001	SIDE PLATE
8	1	A22245-002	PRESSURE SHOE MOUNTING BAR - 7"
9	2	A23791-003	SHAFT, IDLER ROLLER
10	2	B21198-003	IDLER ROLLER-(PEEL PLATE)
11	1	B21199-001	PEEL PLATE, 7"
12	1	B7639-000	

FOR LEFT HAND HEAD PARTS CONSIST OF:

841812-000 RH/LH THREADED STUD
801899-000 FEMALE HANDLE



REV	DATE	DESCRIPTION
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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

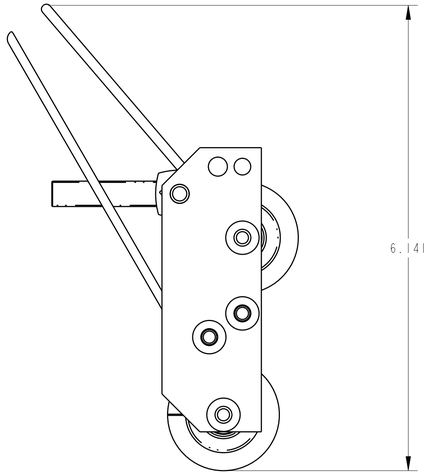
SCALE:	1/1
DATE:	12/22/2010
DRW BY:	SEM
CHK BY:	
APPR BY:	

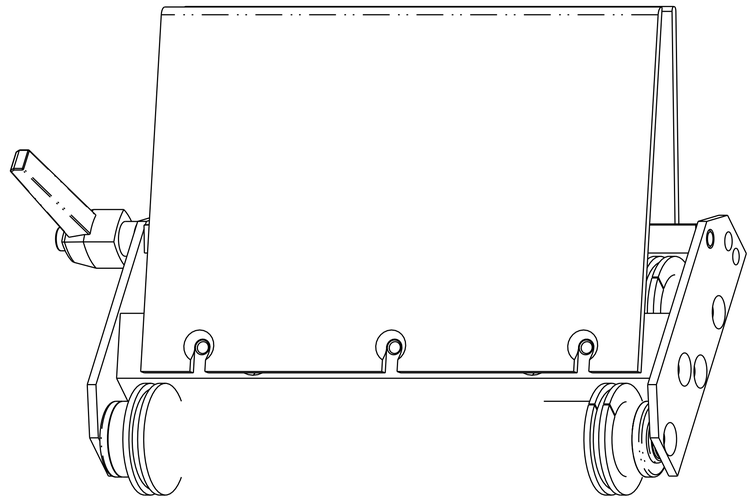
Q62 7" PEEL PLATE ASSEMBLY

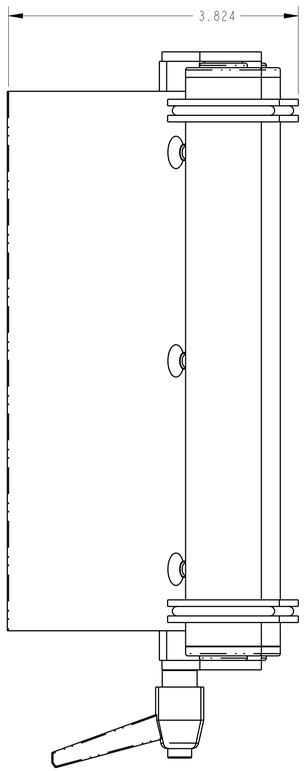
MAT'L

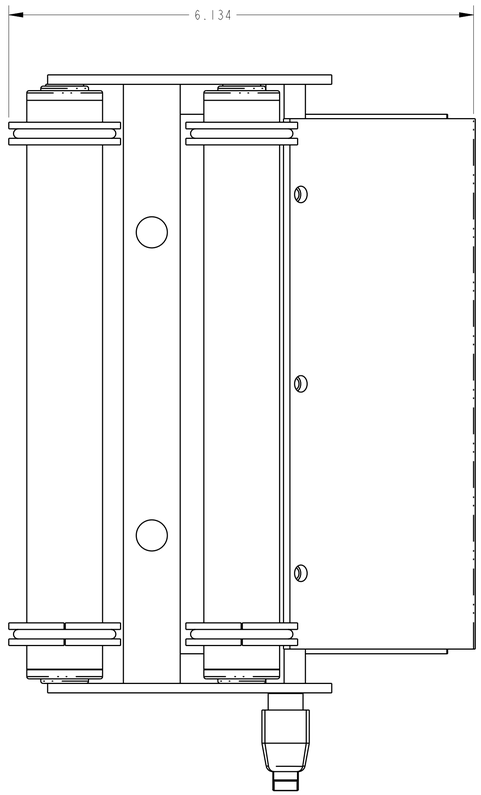
BOM:21343PP-LHH

D22168-002MOD









REV	DATE	DESCRIPTION
A	12/22/2010	NEW DRAWING

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 .0107.030

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

SCALE:	1/1
DATE:	12/22/2010
DRW BY:	SEM
CHK BY:	SEM
APPR BY:	

Q62 7" PEEL PLATE ASSEMBLY

MAT'L
BOM:21343PP-000

D22168-002

ASSEMBLY TITLE: **FIXED BRUSH IMPRESSER**

DRAWING NO.:

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:

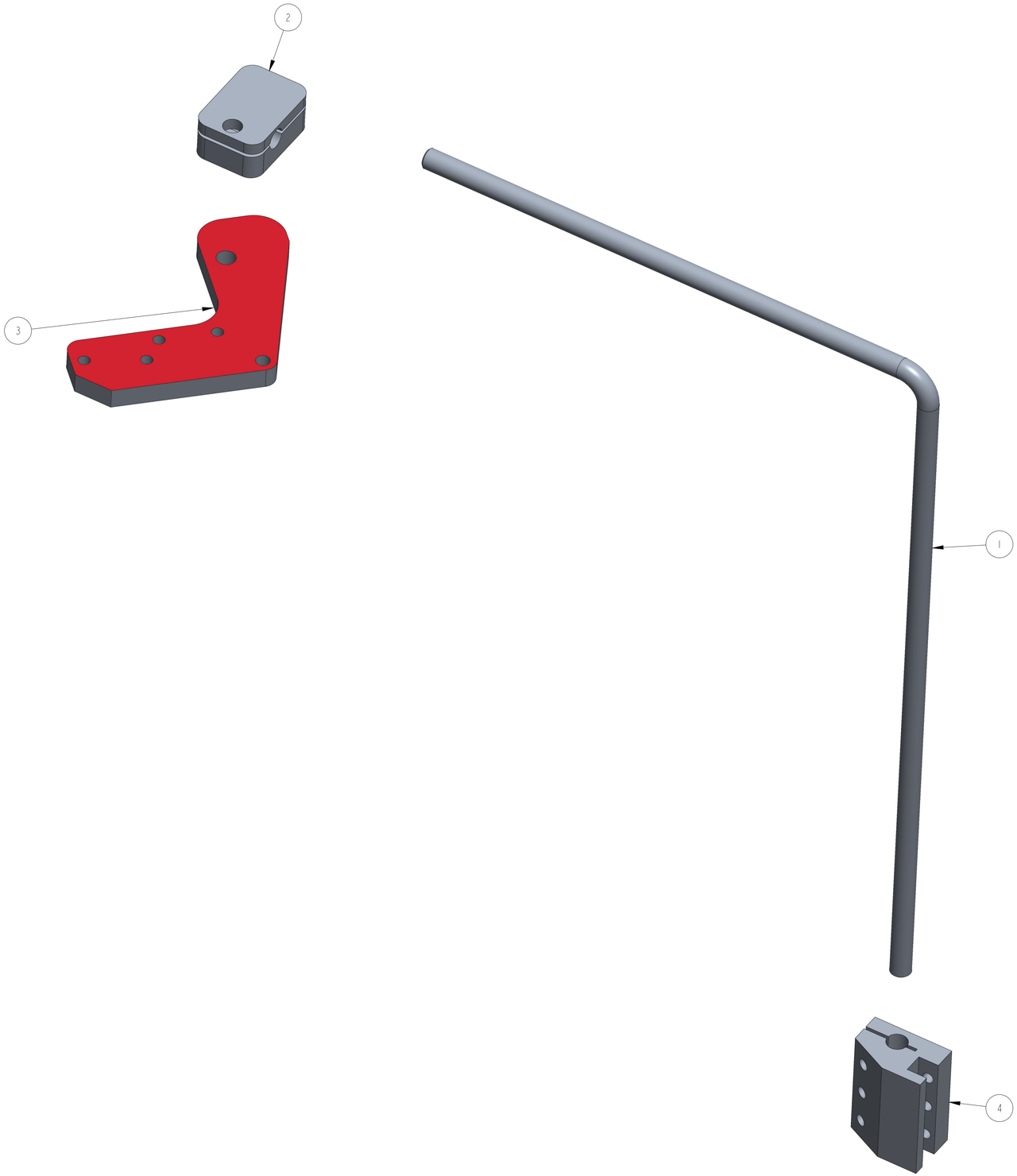
- Keep the brush free of label flash, glue and debris. This will prevent jamming and web tears.

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	WHAT TO DO
- Product jams at brush area	- Increase brush spacing.
- Bubbles in label	- Decrease labeling speed
- Label edge curling	- Decrease product delay
- Wipedown inadequate	- Decrease brush spacing.

ITEM	QTY	PART NO.	DESCRIPTION	PARENT ITEM
1	1	A21264-018	CROSS ARM	10228-005_R
2	1	A21693-300	IMPRESSOR MOUNTING BLOCK	10228-005_R
3	1	A21758-300	PEEL PLATE SIDE PLATE .375"THK	10228-005_R
4	1	A23463-100	BRUSH HOLDER	10228-005_R



REV	DATE	DESCRIPTION	BY
A	Mar-02-20	NEW DRAWING	TJS

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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

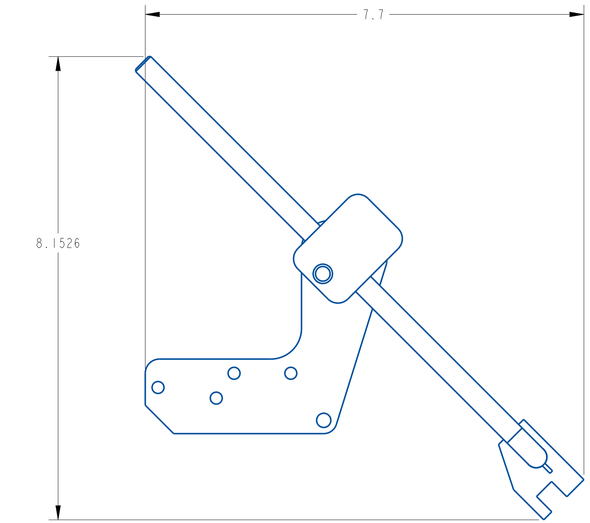
QUADREL LABELING SYSTEMS
7670 JENTHER DRIVE
MENTOR, OHIO 44060
(440) 602-4700

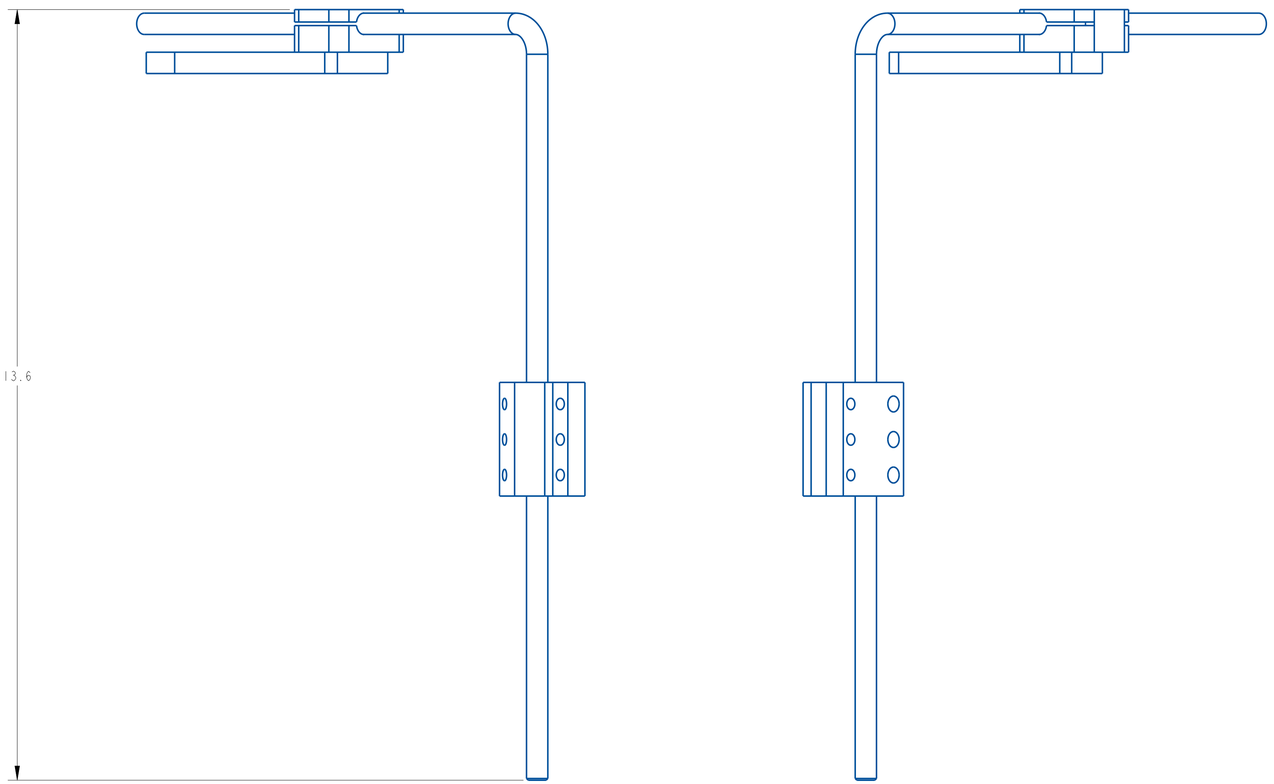
SCALE: 1/1
DATE: Mar-02-20
DRW BY: TJS
CHK BY: 03/06/2024-SEM
APPR BY:

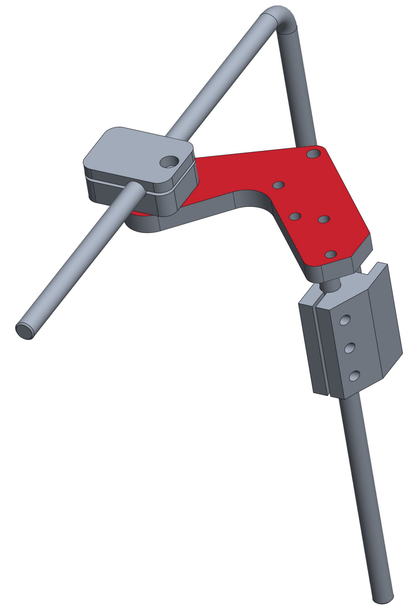
HEAVY DUTY IMPRESSOR

MAT'L

10228-005







A	Mar-02-20	NEW DRAWING	TJS
REV	DATE	DESCRIPTION	BY

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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: 3/4
DATE: Mar-02-20
DRW BY: TJS
CHK BY:03/06/2024-SEM
APPR BY:

HEAVY DUTY IMPRESSOR

MAT'L

10228-005

ASSEMBLY TITLE: **Q160 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 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:

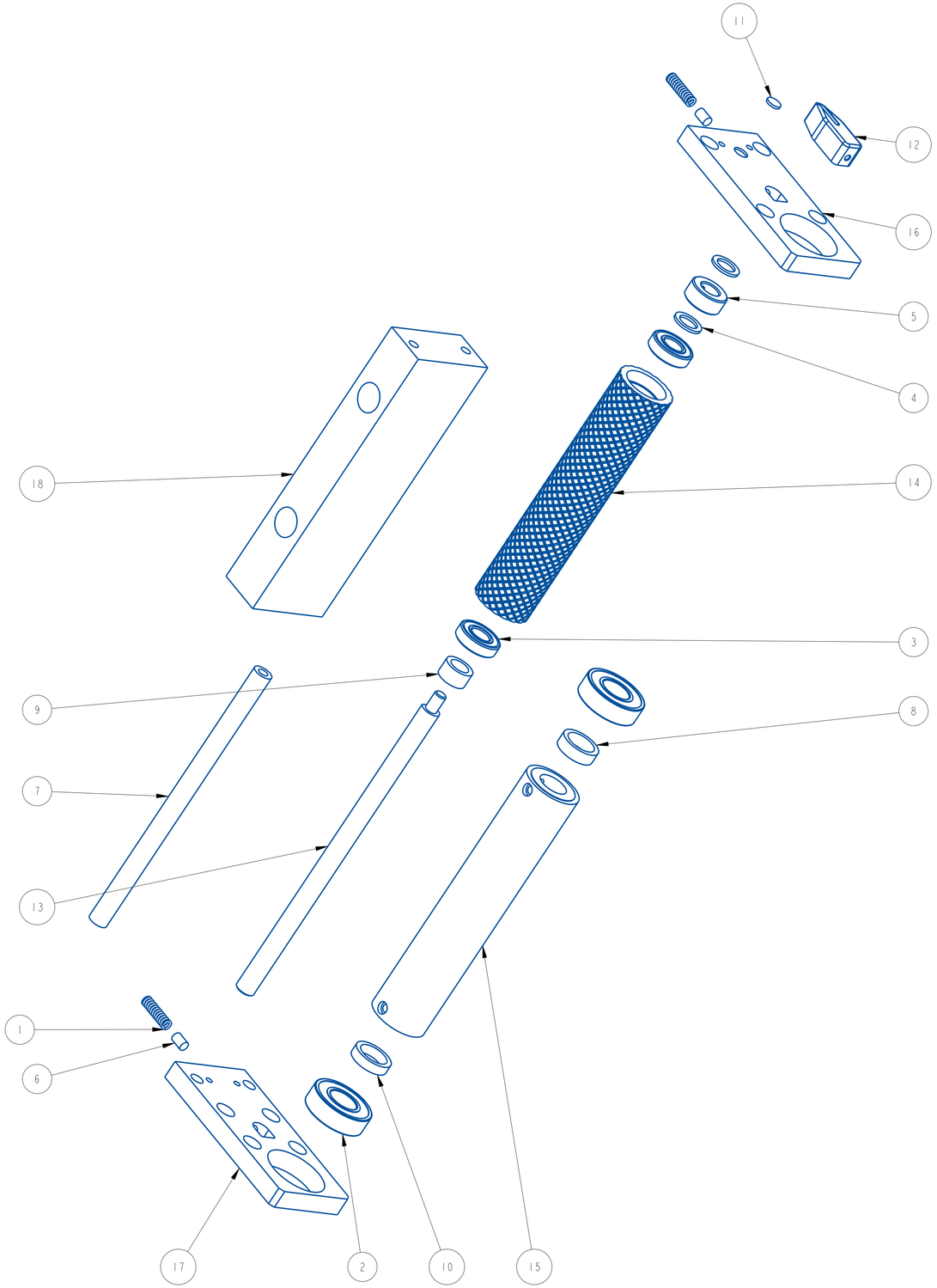
- When threading the labeling head, use the pinch roll lever to release the pinch roll from the drive roll.
- Use the spring plunger adjustment screws to adjust the contact pressure. between the knurl and pull rollers.
- The pressure should be adjusted as tight as necessary to prevent a loose liner,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

MAINTENANCE:

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

TROUBLESHOOTING:

PROBLEM	WHAT TO DO
- Meter pulley rubbing against side plate	- Center pulley on motor shaft and tighten two (2) set screws in pulley.
- Web slips	- Drive roller not closed. Turn drive roll arm to closed position.
- Drive roll not rotating when servo motor rotates	- Ensure motor coupling clamp screws are tight
- Pinch roll not providing enough pressure against drive roll	- Replace pinch roll springs - Increase tension on drive roll by adjusting spring tension set screws
- Drive roll unevenly worn causing tracking problem	- Replace drive roll



ITEM	QTY	PART NO.	DESCRIPTION	PARENT ITEM
1	2	00301-17	SPRING, .275 x .052 x .94	22620D-LHH
2	2	111052-000	BEARING	22620D-LHH
3	2	111072-000	BEARING, BALL	22620D-LHH
4	2	151004-000	BEARING, THRUST WASHER	22620D-LHH
5	1	362161-000	COLLAR, SETSCREW, 1/2 IN. ID	22620D-LHH
6	2	A20567-000	WHITE NYLON SLUG	22620D-LHH
7	1	A21750-000	PINCH POINT GUARD ROD	22620D-LHH
8	1	A23125-000	SPACER	22620D-LHH
9	1	A23751-000	SPACER	22620D-LHH
10	1	A23752-000	SPACER	22620D-LHH
11	1	A25249-000	INDEX DOT	22620D-LHH
12	1	A25250-000	IND KNOB	22620D-LHH
13	1	B20125-001	KNURLED ROLL SHAFT,	22620D-LHH
14	1	B20126-001	KNURLED ROLL	22620D-LHH
15	1	B20137-002	PULL ROLL, 7"	22620D-LHH
16	1	B21614-000	YOKE OUTSIDE PLATE	22620D-LHH
17	1	B21615-000	YOKE INSIDE PLATE	22620D-LHH
18	1	B21616-001	YOKE FILLER BAR	22620D-LHH

REV	DATE	DESCRIPTION	BY
B	19-FEB-2024	UPDATED DRAWING AND BOM	CRT
A	01-OCT-2015	NEW DRAWING	CRT

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

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

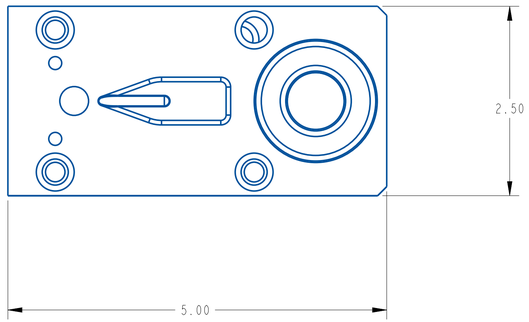
QUADREL LABELING SYSTEMS
7670 JENTHER DRIVE
MENTOR, OHIO 44060
(440) 602-4700

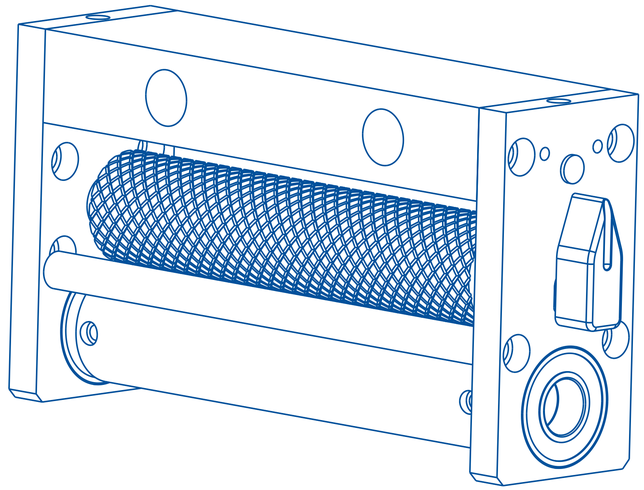
SCALE: 5/8
DATE: 05-OCT-15
DRW BY: CRT
CHK BY:03/26/2024-SEM
APPR BY:

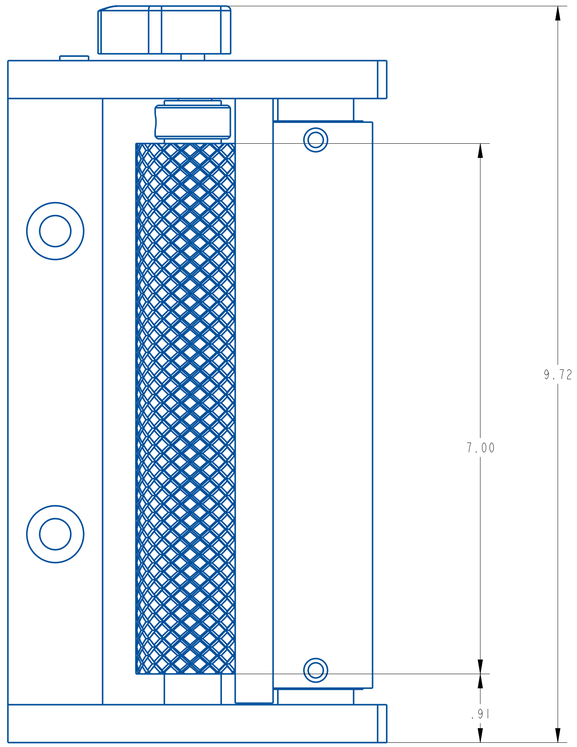
Q120 DRIVE ASSEMBLY, LHH

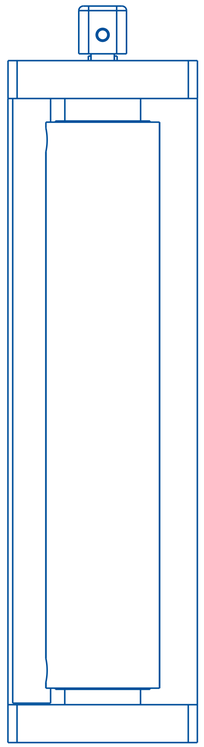
MAT'L 22620D-LHH

22620D-LHH









REV	DATE	DESCRIPTION	BY
A	CRT	NEW DRAWING	

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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°

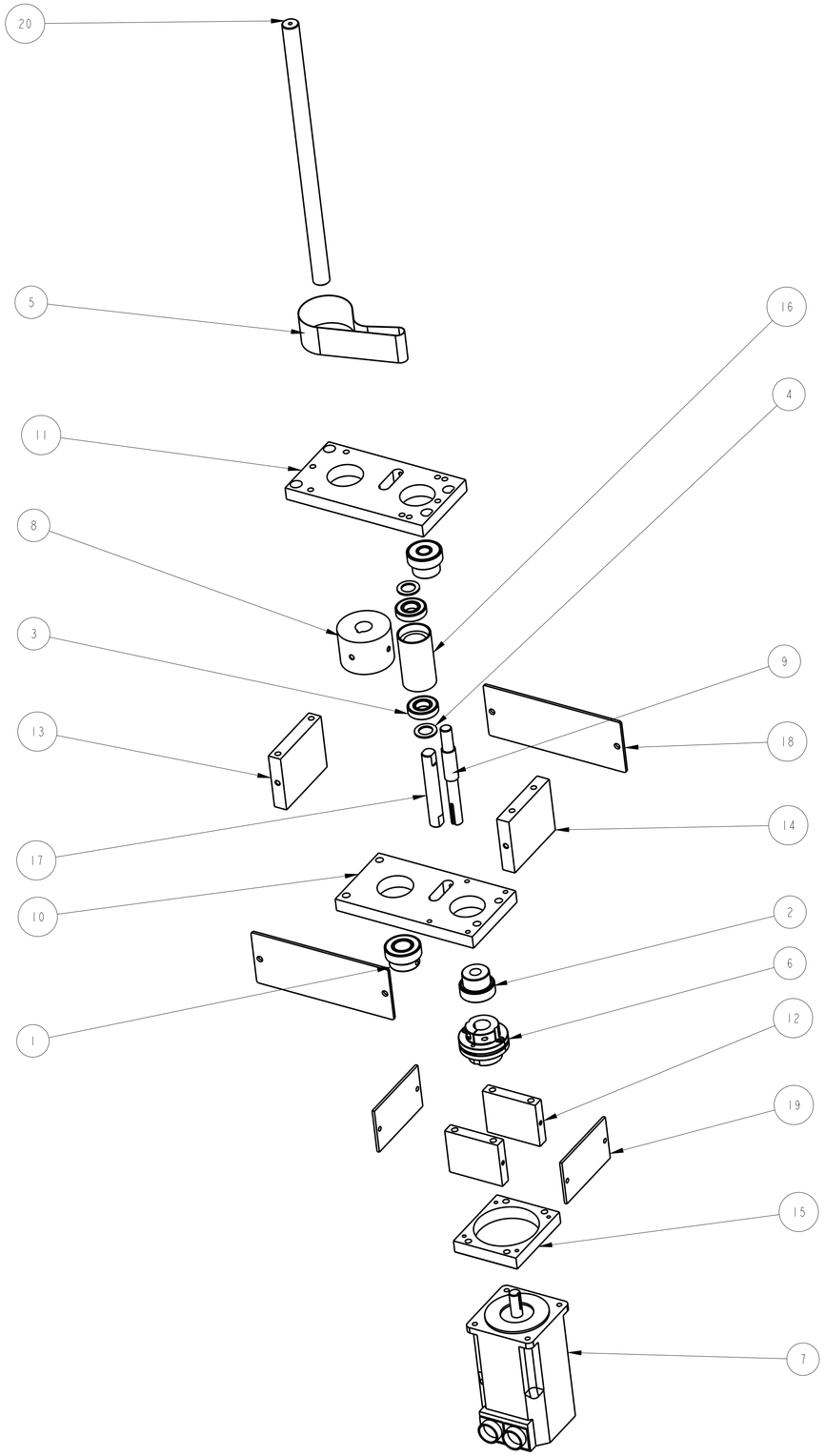
QUADREL LABELING SYSTEMS
7670 JENTHER DRIVE
MENTOR, OHIO 44060
(440) 602-4700

SCALE: 1/1
DATE: 05-OCT-15
DRW BY: CRT
CHK BY:03/26/2024-SEM
APPR BY:

Q120 DRIVE ASSEMBLY, LHH

MAT'L

22620D-LHH



ITEM	QTY	PART NO.	DESCRIPTION	PARENT ITEM
1	1	111044-000	BEARING, 3/4 ID CLAMP TYPE	22652D-RHH
2	2	111072-100	BEARING, BALL	22652D-RHH
3	2	111075-000	BEARING, BALL	22652D-RHH
4	2	151008-000	BEARING, THRUST WASHER	22652D-RHH
5	1	192503-150	TIMING BELT	22652D-RHH
6	1	363159-002	COUPLING	22652D-RHH
7	1	412088-000	SERVO MOTOR	22652D-RHH
8	1	A26003-100	DRIVE PULLEY	22652D-RHH
9	1	A26004-100	SERVO MOTOR PULLEY	22652D-RHH
10	1	B22842-100	BEARING PLATE	22652D-RHH
11	1	B22842-101	BEARING PLATE	22652D-RHH
12	2	B22844-100	SPACER	22652D-RHH
13	1	B22844-200	SPACER	22652D-RHH
14	1	B22844-300	SPACER	22652D-RHH
15	1	B22847-200	MOTOR MOUNTING PLATE	22652D-RHH
16	1	B22848-100	TENSION ROLLER	22652D-RHH
17	1	B22849-100	TENSIONER SHAFT	22652D-RHH
18	2	B22850-200	COVER	22652D-RHH
19	2	B22850-201	COVER	22652D-RHH
20	1	C20097-421	PULL ROLL DRIVE SHAFT	22652D-RHH

REV	DATE	DESCRIPTION	BY
A	8-3-20	NEW DRAWING	ATT

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XX ± .01
XXX ± .005
ANGLES ± 30'

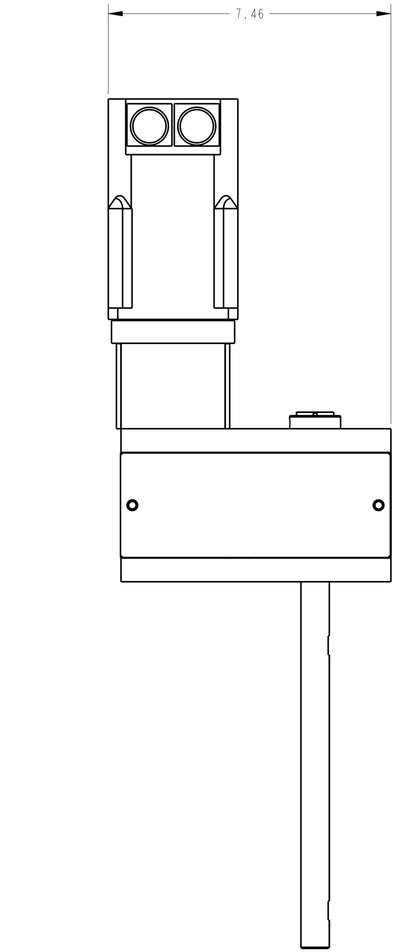
SURFACE FINISH 125
BREAK ALL EDGES .005/.015
CORNER RADIUS .010/.030

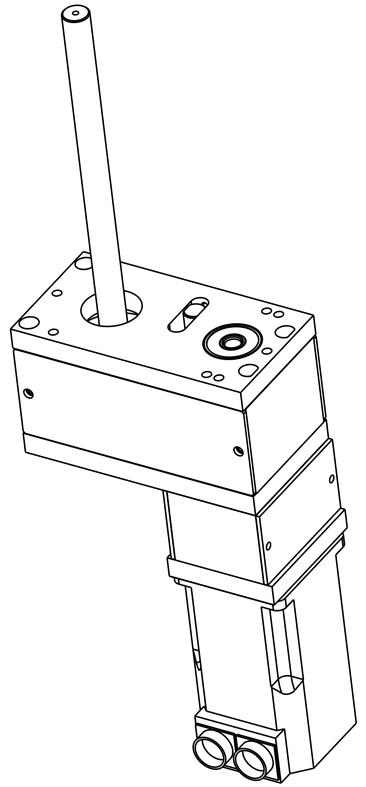
QUADREL LABELING SYSTEMS
7670 JENTHER DRIVE
MENTOR, OHIO 44060
(440) 602-4700

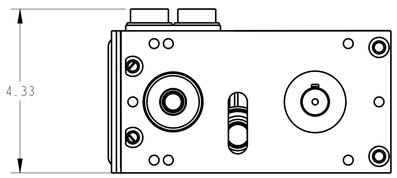
SCALE	5/16
DATE	8-3-20
DRAWN BY	ATT

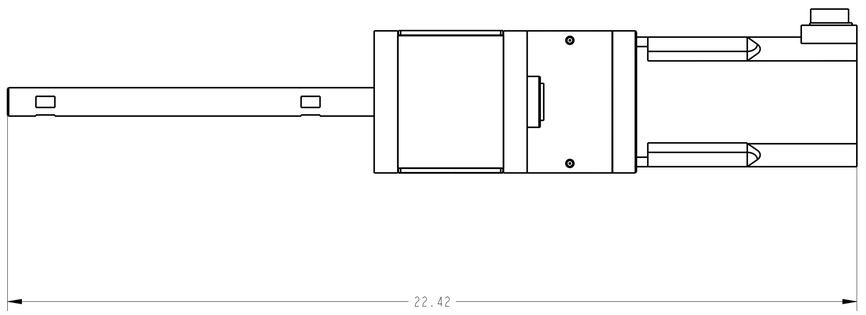
SERVO DRIVE

MAT'L | 22652D-RHH | 22652D-RHH









REV	DATE	DESCRIPTION	BY
A	8-3-20	NEW DRAWING	ATT

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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	8-3-20
DRAWN BY	ATT

SERVO DRIVE

MAT'L 22652D-RHH

22652D-RHH

Servo Belt Removal & Installation

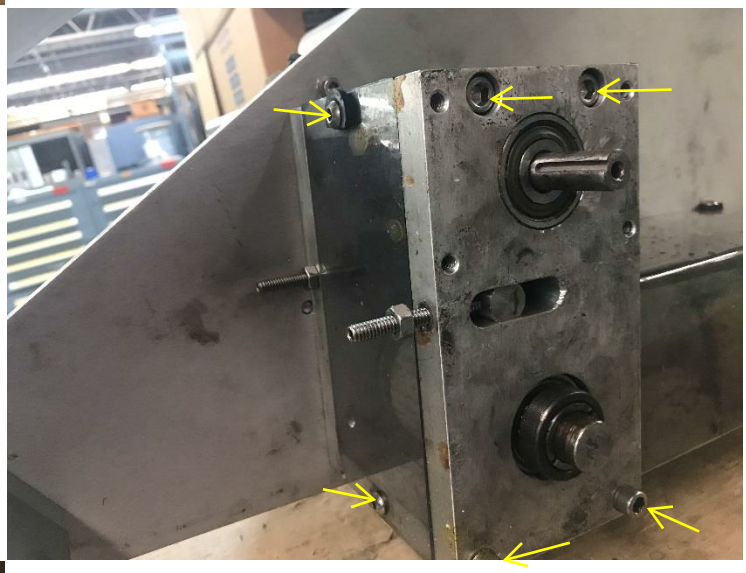
Remove the clear cover on the side of the coupling of the servo motor. Then loosen the 4 5/16-18 socket heads holding the motor mounting plate to the spacer blocks. (Shown in image on the right)

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)

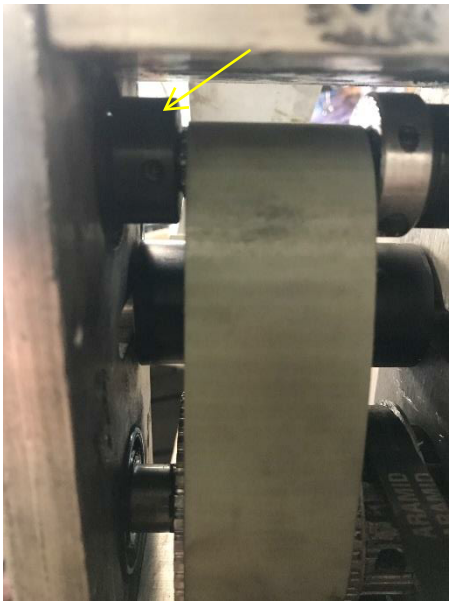
To adjust this rotate the pulley until you see the set screw. Loosen the set screws and slide the pulley accordingly. Slide the larger pulley down or up as well these pulleys should be together. (Shown in image on the right)

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 fasters.

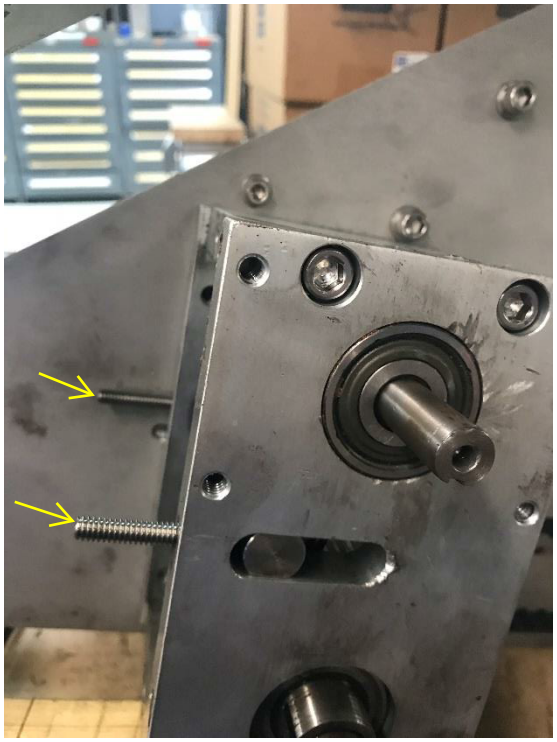
Place the eccentric collar over the smaller diameter shaft and slide the bottom servo plate on. Ensure the tensioner is positioned properly in the slot on the bottom plate with the oil lite washer in place. Fasten the plate to the spacer blocks. Once fastened rotate the eccentric collar to lock it into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

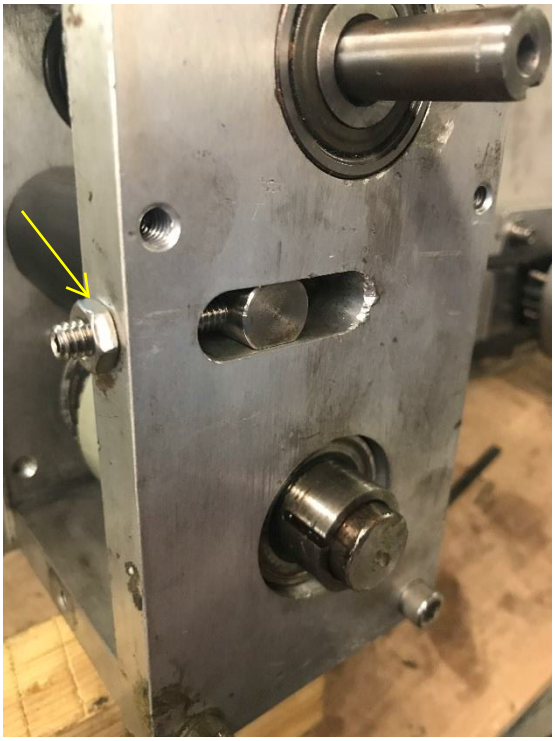
NOTE Blue Loctite is recommended on all fasteners.

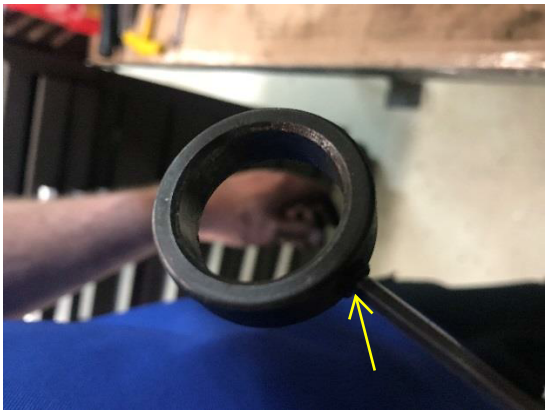


Thread in the set screws evenly to set tension on the belt the belt should not be too tight if you reach around the back you can push against the belt as you tighten it. This is more of a touch setting you do not want the belt to be solid to the touch more like $1/8^{th}$ -$1/4^{th}$ inch of travel when 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 <u>NOT</u> loctite set screws for the tensioner.

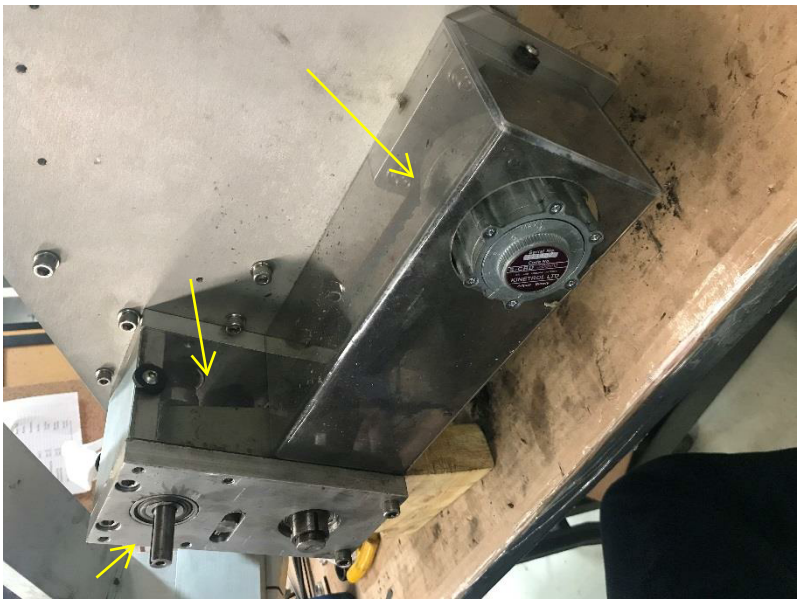






Fasten the collar to the end of the larger diameter shaft as shown.

NOTE Blue Loctite is recommended on all fasters.



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 fasters.

ASSEMBLY TITLE: **REWIND ASSEMBLY**

GENERAL FUNCTION:

- The labeling head provides a complete integrated powered unwind. The unwind system is driven by a DC gear motor. The DC motor is controlled by a DC regenerative drive and analog feedback system. Torque is automatically applied as the web rewind demand increases.

SET UP AND ADJUSTMENTS:

- Position the rewind flange slightly below the web path and lock with the set screw in the hub. Loosen the locking lever on the rewind hub.
- The rewind allows for automatic threading of the liner through the dancer assembly. Pull the dancer "comb" past the idler rollers and pass the liner through the dancer and idler rollers. Releasing the dancer will cause the rewind to rotate and take up the liner.
- When threading the liner onto the rewind hub, allow 2-3 rotations of web to be accumulated. Thread the liner in a clockwise direction.
- Lock down rewind hub when complete.

DANCER TENSION:

- Dancer tension may be adjusted by rotating the dancer tensioner located just under the rewind hub, located on the mounting arm. To increase tension, rotate the adjusting knob clockwise. When the correct tension is set, the dancer arm will maintain position 30-50 degrees from the inner position limit.

MAINTENANCE:

- Clean all parts that have acquired label or glue residue
- Periodically check the dancer tensioner for wear and adequate tension.

TROUBLESHOOTING:

PROBLEM	**WHAT TO DO**
- Rewind drum not rotating when drive roll indexing.	- Check dancer position. Normally the rewind drum will not rotate unless triggered by movement of the dancer arm assembly.
- Rewind drum not keeping up	- DC drive maximum speed set to low. Increase setting at corresponding DC drive.

ASSEMBLY TITLE: **Q160 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 (non-powered versions).
- The adjusting knob controls the torque adjustment of the drum (non-powered versions).
- The Rewind Prox sensor sends a varying voltage based on dancer arm position to a DC drive to control speed (powered versions).

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.

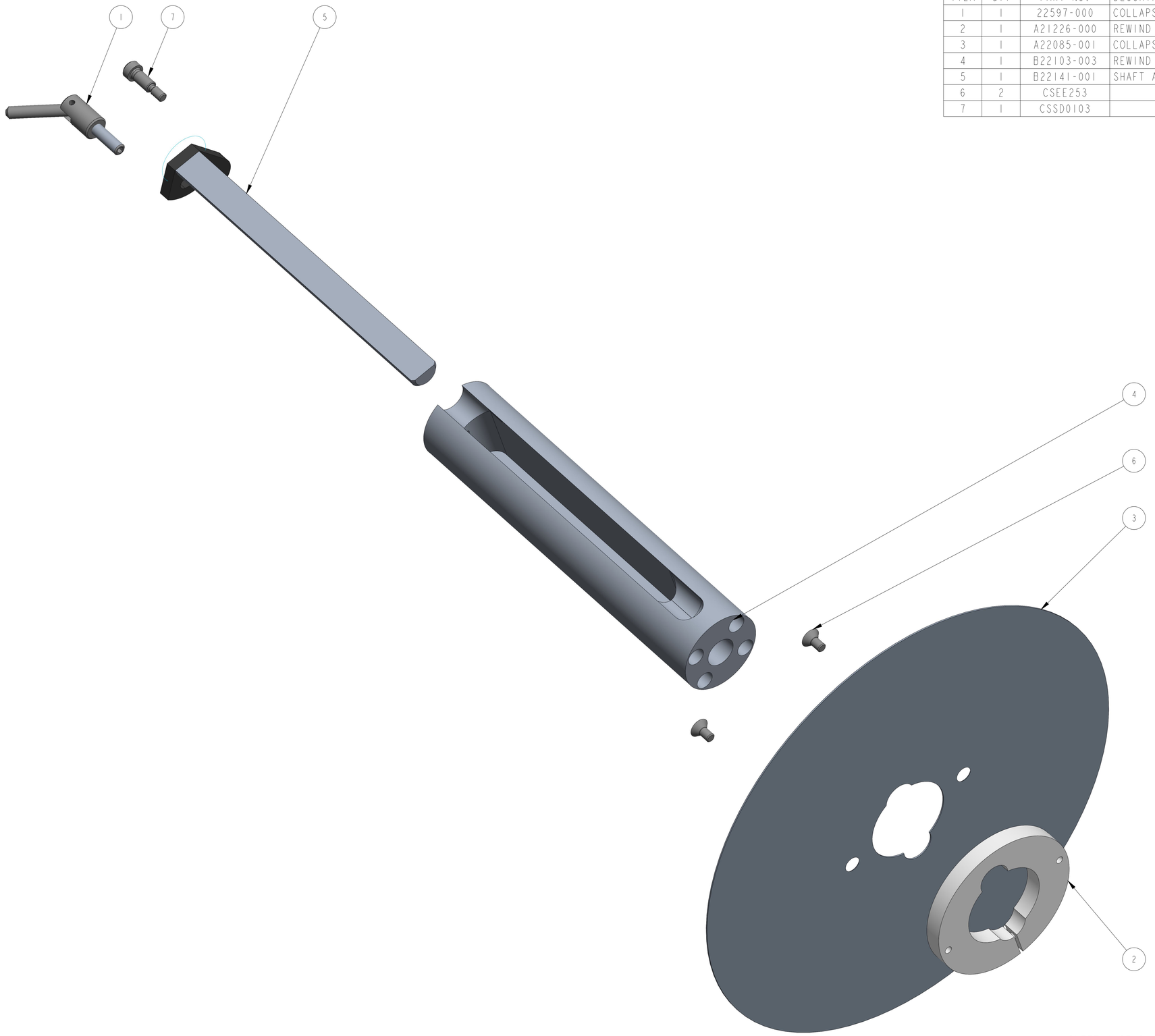
NOTE: Excessive tightening will cause the web to be wound very tight, causing difficulty in removal and possible step motor stall.

MAINTENANCE:

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

TROUBLESHOOTING:

PROBLEM	WHAT TO DO
- Rewind drum not rotating When motor rotates	- Replace timing belt from motor to rewind
- Rewind drum not keeping up with drive roll	- Tighten adjusting knob (non powered) - Increase drive speed (powered)
- Web winding too tight on hub	- Loosen adjusting knob (non powered) - Decrease drive speed (powered)



ITEM	QTY	PART NO.	DESCRIPTION	PARENT ITEM
1	1	22597-000	COLLAPSIBLE REWIND LOCKING HANDLE	22188-000
2	1	A21226-000	REWIND FLANGE HUB COLLAR	22188-000
3	1	A22085-001	COLLAPSIBLE REWIND REEL	22188-000
4	1	B22103-003	REWIND HUB 7"	22188-000
5	1	B22141-001	SHAFT ASSEMBLY	22188-000
6	2	CSEE253		22188-000
7	1	CSSD0103		22188-000

SHEET 1 OF 2

REV	DATE	DESCRIPTION	BY
A	MAR-30-21	NEW DRAWING	TJS

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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°

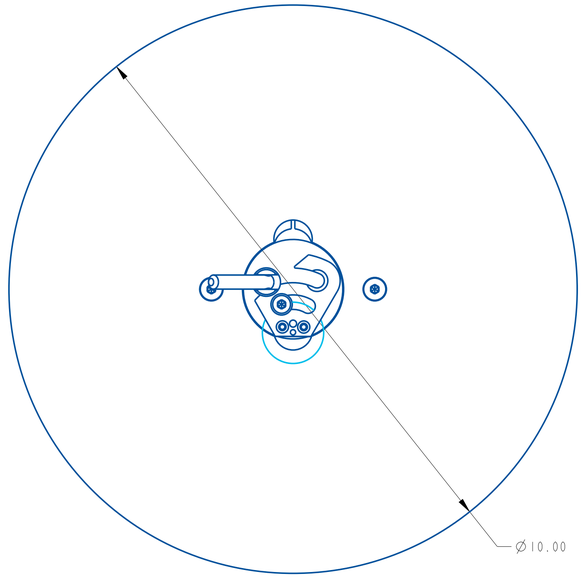
QUADREL LABELING SYSTEMS
7670 JENTHER DRIVE
MENTOR, OHIO 44060
(440) 602-4700

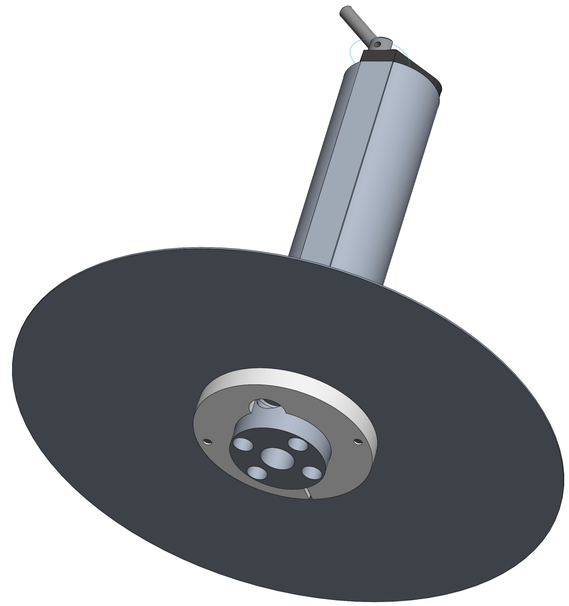
SCALE: 1/1
DATE: MAR-30-21
DRW BY: TJS
CHK BY:02/29/2024-SEM
APPR BY:

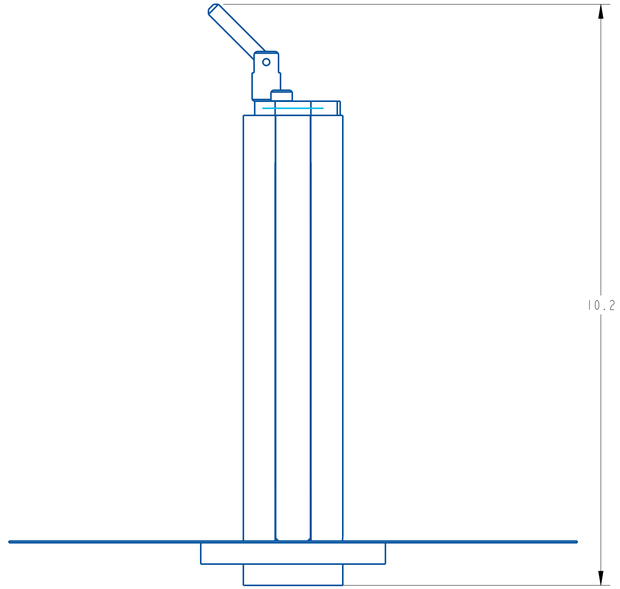
7" COLLAPSIBLE REWIND ASSEMBLY

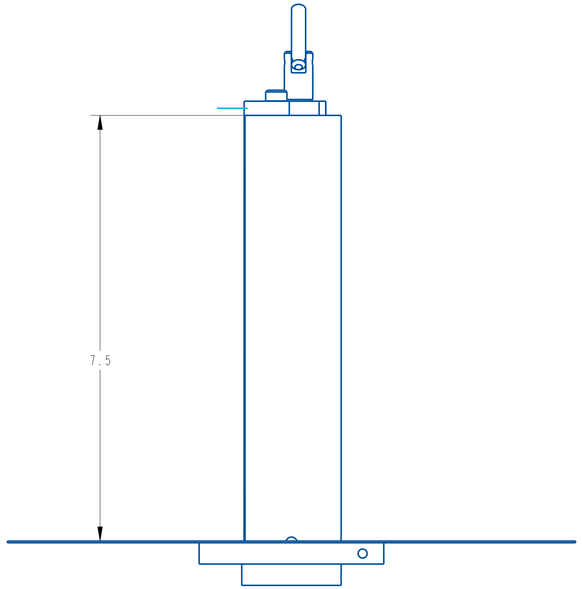
MAT'L
22188-000

22188-000









REV	DATE	DESCRIPTION	BYE
A	MAR-30-21	NEW DRAWING	TJS

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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: 3/4
DATE: MAR-30-21
DRW BY: TJS
CHK BY:02/29/2024-SEM
APPR BY:

7" COLLAPSIBLE REWIND ASSEMBLY

MAT'L
22188-000

22188-000

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

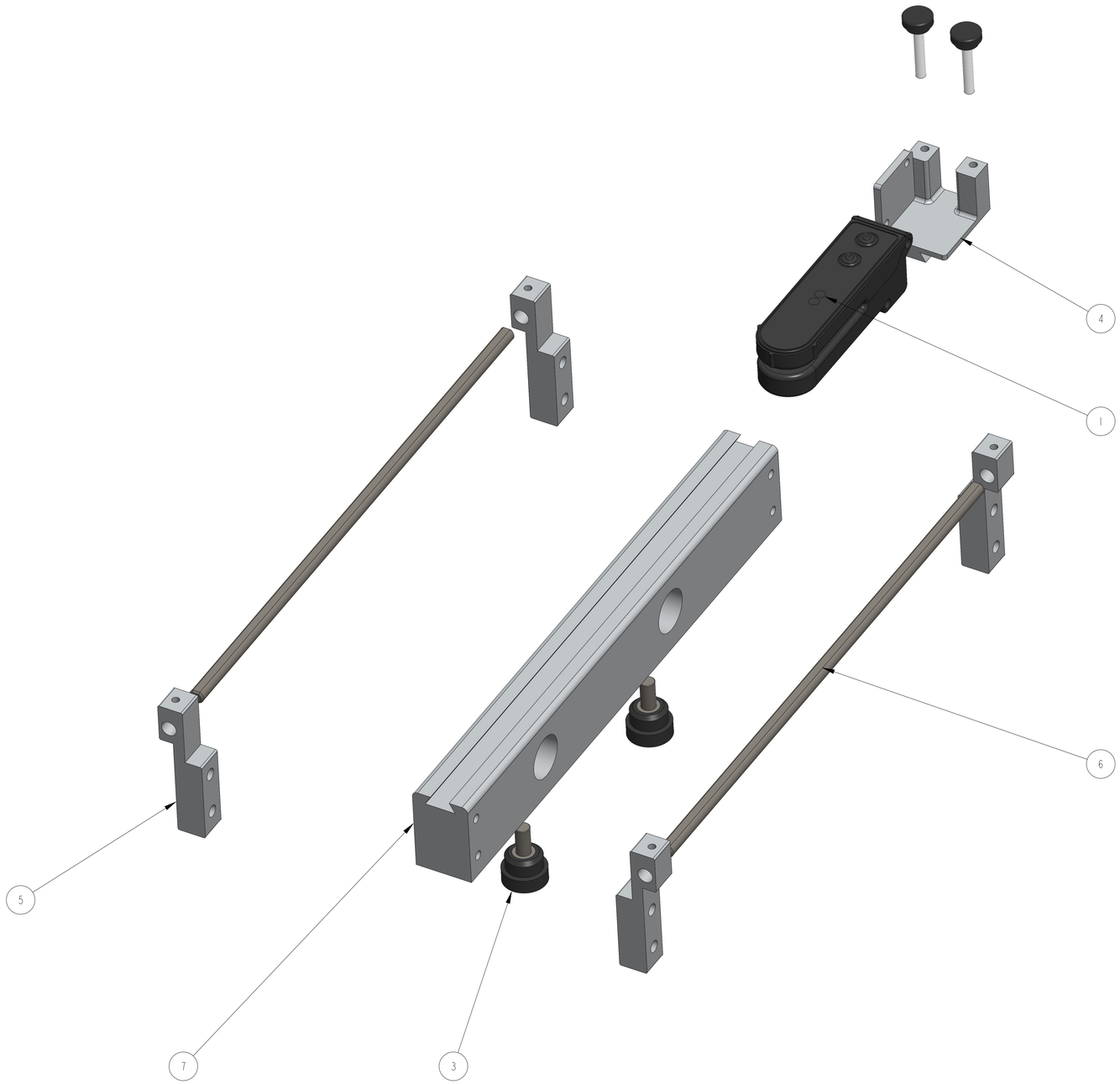
MAINTENANCE:

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

TROUBLESHOOTING:

PROBLEM	WHAT TO DO
- 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	20033-300
2	2	801297-000	THUMB SCREW PLSTC HEAD 8-32x1	20033-300
3	2	801299-000	KNOB WITH STUD	20033-300
4	1	A21391-301	SLOT SENSOR ADAPTER	20033-300
5	4	A21749-300	SLOT SENSOR SUPPORT ROD MTG BLOCK	20033-300
6	2	A21770-300	SUPPORT ROD WITH FLAT	20033-300
7	1	B20852-300	7 IN. WEB SLOT SENSOR MTG. BAR	20033-300
8	1	203035-000	CABLE, M8, 4COND	NOT SHOWN



REV	DATE	DESCRIPTION	BY
A	Mar-04-21	NEW DRAWING	TJS

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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
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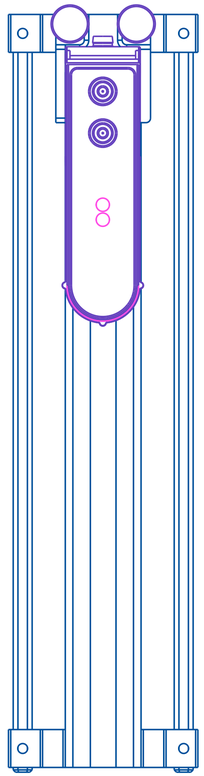
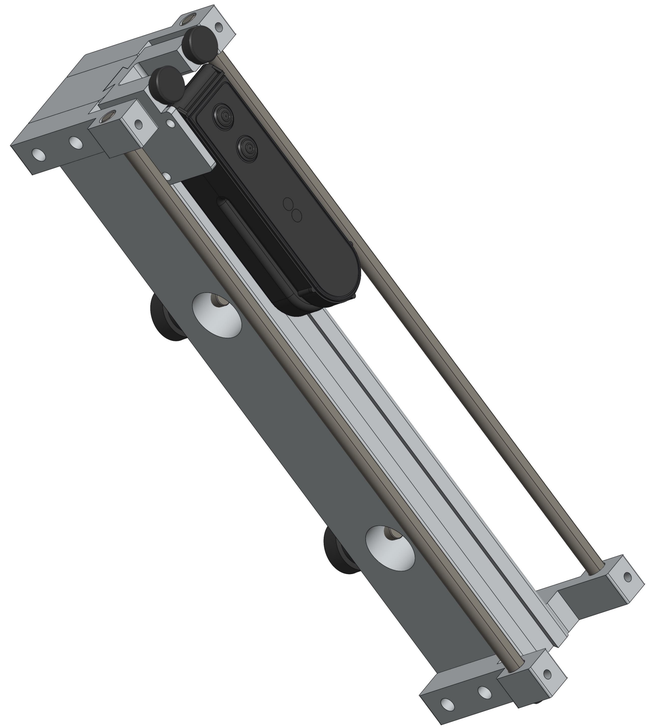
SCALE: 1/1
DATE: Mar-04-21
DRW BY: TJS
CHK BY:02/24/2024-SEM
APPR BY:

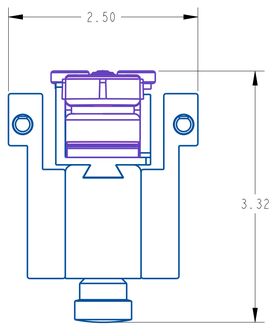
LABEL DETECT ASSEMBLY

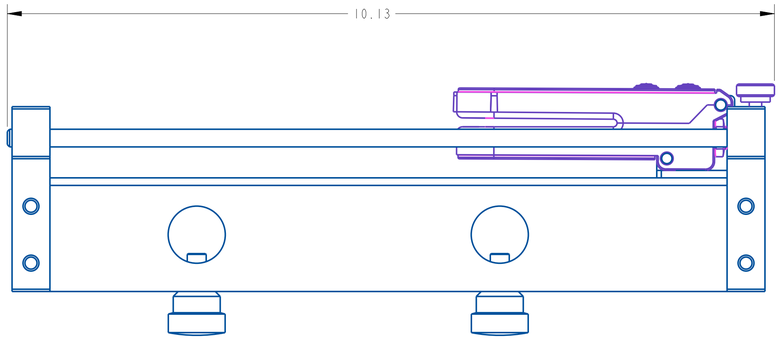
MAT'L

20033-300









REV	DATE	DESCRIPTION	BY
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QUADREL LABELING SYSTEMS
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SCALE: 1/1
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LABEL DETECT ASSEMBLY

MAT'L

20033-300

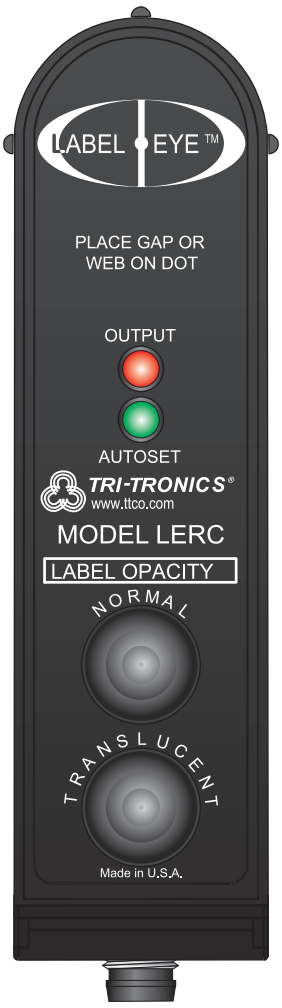
LABEL•EYE
Set-Up Instructions

Standard LABEL•EYE

Normal Label Opacity AUTOSET Button
This category includes most paper or melallized 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.

TRI-TRONICS®

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.

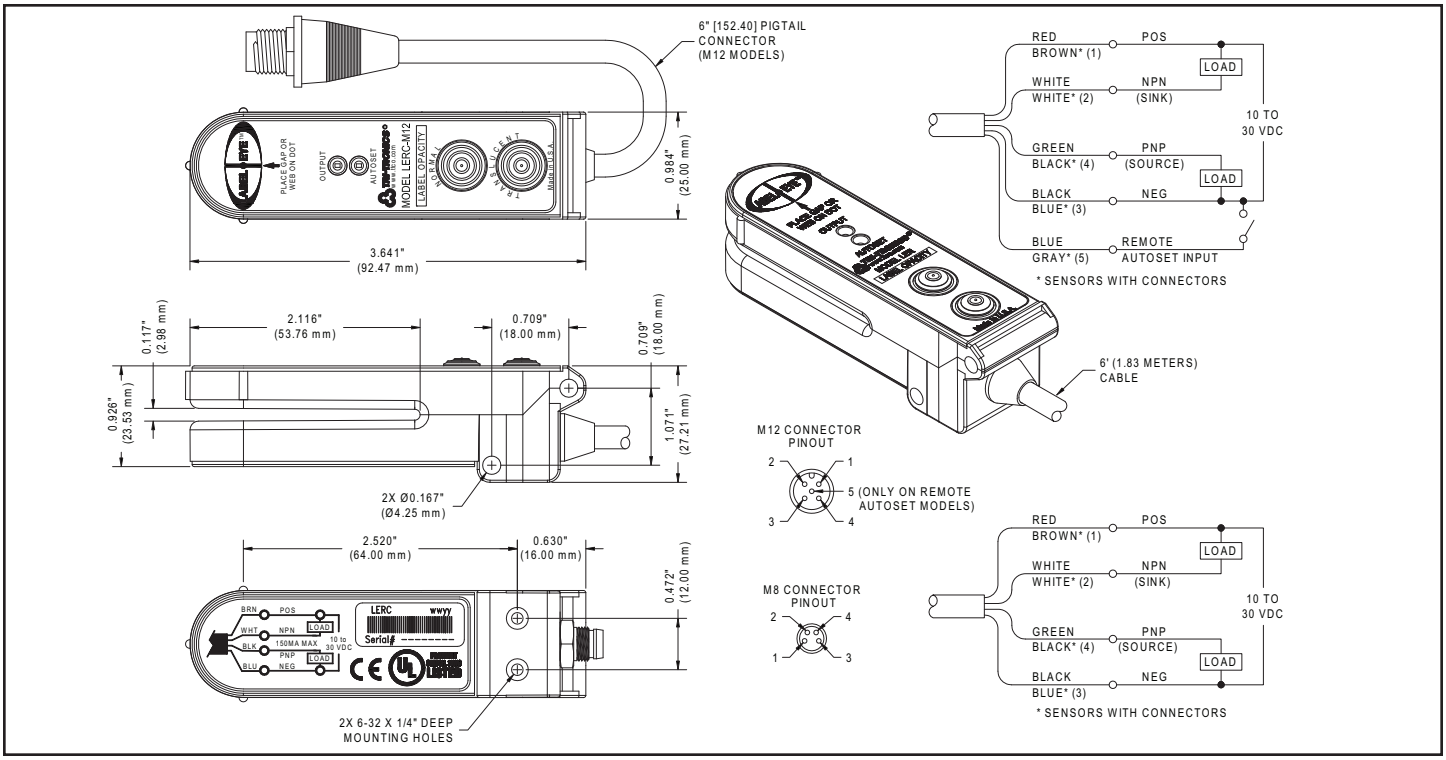
Model Numbers:

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



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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:

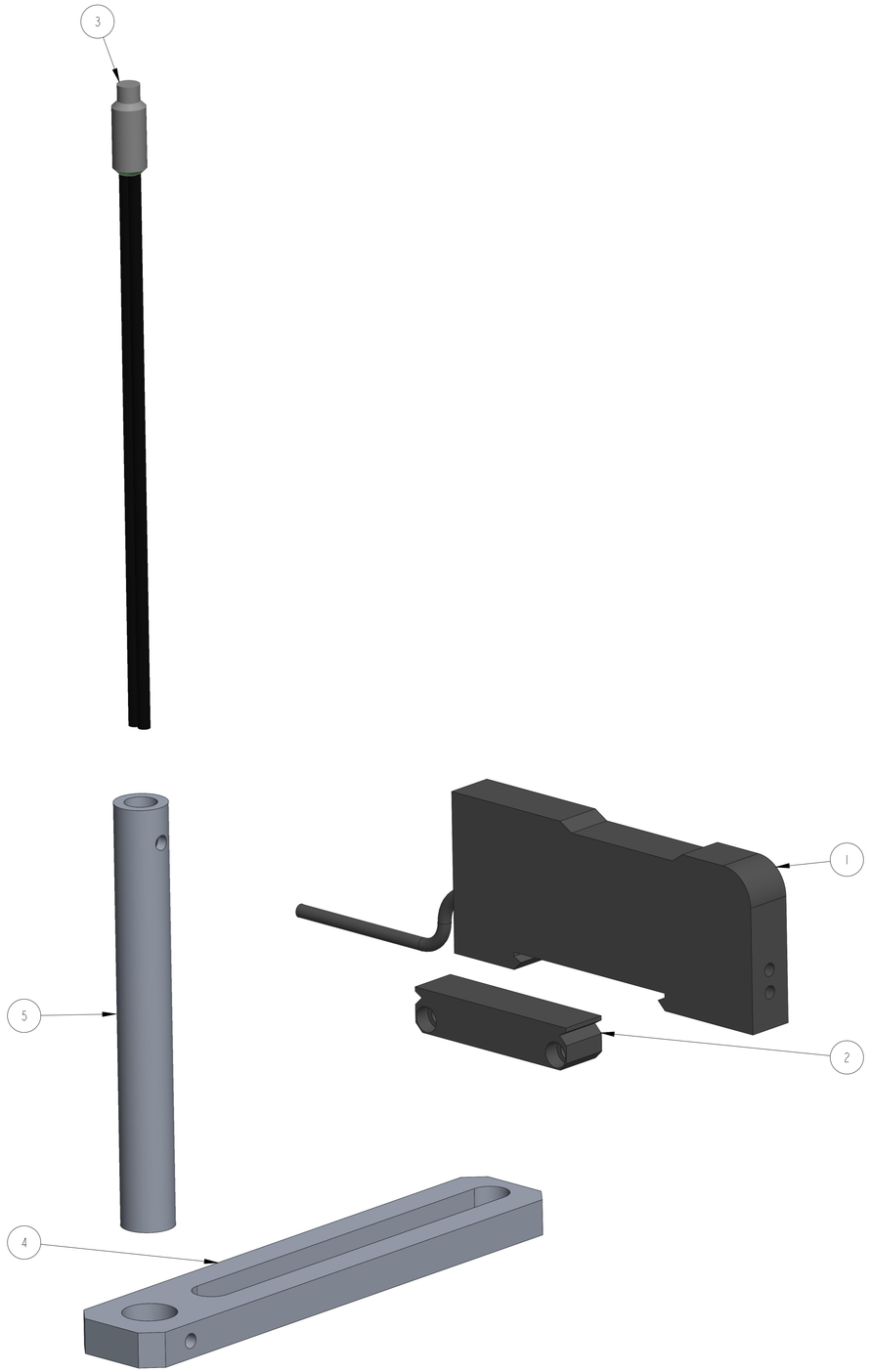
- Keep the sensor optical area clean from label and glue residue

TROUBLESHOOTING:

PROBLEM	WHAT TO DO
- 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

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A	Apr-07-21	NEW DRAWING	TJS

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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

QUADREL LABELING SYSTEMS
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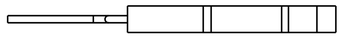
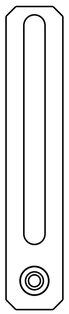
SCALE	2/1
DATE	Apr-07-21
DRAWN BY	TJS

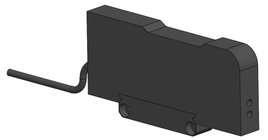
LOW LABEL

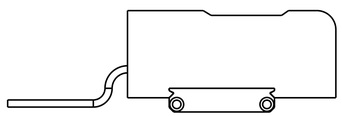
MAT'L 20776-006 & 20776-006P

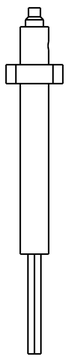
20776-006

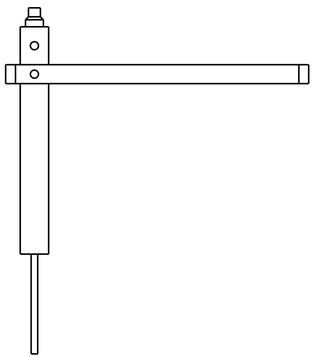


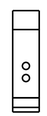












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QUADREL LABELING SYSTEMS
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(440) 602-4700

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

LOW LABEL

MAT'L 20776-006 & 20776-006P

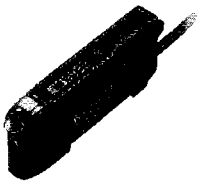
20776-006

KEYENCE

96M14746

* 9 6 M 1 4 7 4 6 - 2 *

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.

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

1 Before Operation

Safety Precautions

DANGER	• 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. • 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.
WARNING	• This is a direct current (DC) power supply type sensor. Application of an alternating current may result in explosion or fire.
NOTICE	• 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. • Always ground the frame ground terminal when using an off-the-shelf switching regulator. • Do not use this product outdoors.

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 interface, 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

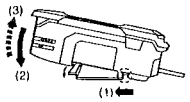
2 Installation and Wiring

Mounting the Main Unit

■ Mounting the Main Unit on a DIN rail

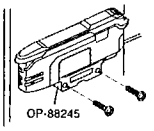
1 **Align the claw at the bottom of the main unit with the DIN rail, as shown in the figure. While pushing the main body in the direction of arrow 1, push down in the direction of arrow 2.**

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.**

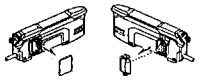


Connecting Multiple Amplifiers

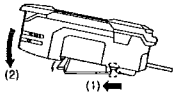
Up to 16 expansion units can be connected to 1 main unit. However, each dual output type will be treated as 2 expansion units.

CAUTION	**When connecting to multiple amplifiers or when mounting main units together, mount the units on a DIN rail installed on a metal surface.**
NOTICE	**• Be sure to turn the power off before connecting multiple expansion units. • Do not touch the expansion connector.**

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



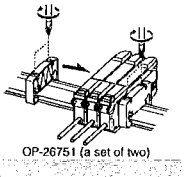
2 **Install the amplifiers on the DIN rail one at a time.**



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.**



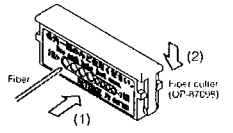
OP-26751 (a set of two)

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.)**



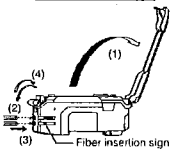
Always insert fiber from the side with writing

■ Connecting to the amplifier unit

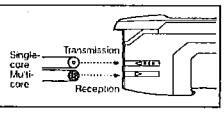
1 **Open the cover (1), and then lower the lever in the direction indicated by (2).**

2 **Insert the fiber unit into the installation holes (approximately 14 mm). (3)**

3 **Move the lever back in the direction indicated by (4).**

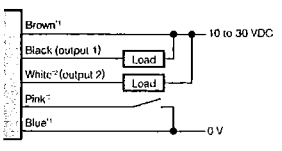


NOTICE	**When installing a coaxial reflective fiber in the main unit, install the single-core fiber in the transmission installation hole and the multi-core fiber in the reception installation hole.**



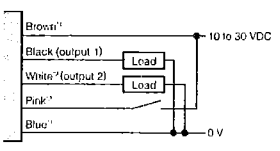
Wiring (Cable Type)

● 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)

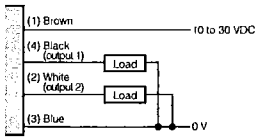
Select NPN or PNP and the function of I/O pin (2) during the initial settings.

Sensor pin layout 

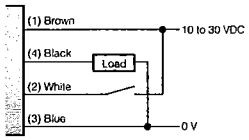
FS-N41C supports "IO-Link: Specification V.1.1/COM2 (38.4 kbps)". The setting file (IODD) can be downloaded from Keyence's web site (http://www.keyence.com).

● When using the sensor in PNP mode

OUT1 + OUT2

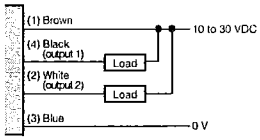


OUT1 + INPUT

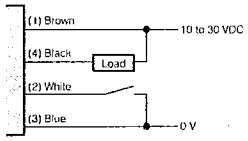


● When using the sensor in NPN mode

OUT1 + OUT2



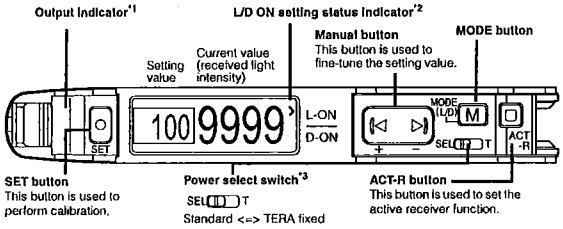
OUT1 + INPUT



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

3 Basic Settings

■ Names and functions



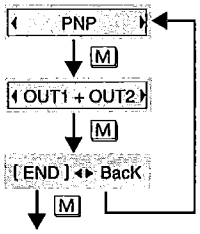
*1 On dual output types (including the FS-N41C), the indicator operates according to the output channel selected with the output channel selection switch.

*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.



Settings complete

Use [◁ ▷] to select PNP or NPN.

Use [◁ ▷] to select the I/O. (OUT1 + OUT2/OUT1 + INPUT)

Use [◁ ▷] to select this item.

After completion, if these setting need to be changed again, perform initialization (page 3).

■ Basic settings

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

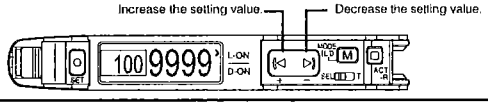
1 Press [M] once. Switch L-On/D-On
2 Use [◁ ▷] to switch the output style.
3 Press [M] three times.

● 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)

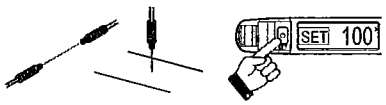
Use [◁ ▷] to adjust the value. Hold down the button to make adjustments more quickly.



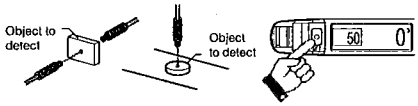
■ Basic calibration methods

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

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



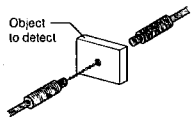
2 Press [SET] with an object to detect present.



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.

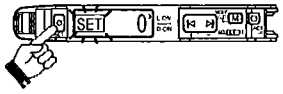
● Maximum sensitivity calibration

Thrubeam 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 SET and ACT-R for 3 seconds or more. Initialize

2 Press M once. Back

3 Press ◀ ▶ once. Execute

4 Press M once.

● Key lock

Disable button operations.

1 Hold down M and ◀ ▶ for 3 seconds or more.

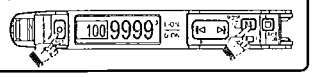
Cancel: Use the same procedure.

● Saturation avoidance function

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

1 Press M and SET simultaneously.

Cancel: Use the same procedure.

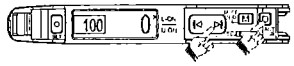


● Zero shift function

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

1 Press ACT-R and ◀ ▶ simultaneously.

Cancel: Hold down ACT-R and ◀ ▶ for 3 seconds or more.



● 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 ACT-R three times. Active Rec. Set

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 ACT-R twice to return to the normal status.

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

1 Press ACT-R once. ACT-R Blinking

2 Press ◀ ▶.

3 The light-receiving side blinks in green.

4 Press ACT-R four times to return to the normal status.

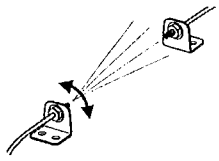
To make it easy to perform optical-axis alignment (optical-axis alignment assist mode)

1 Press ACT-R twice. Opt Axis Assist

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 ACT-R 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*1	FS-N40
	PNP output	FS-N41P	FS-N42P	FS-N43P	FS-N44P	(selectable output)	
Cable/connector		Cable				M8 connector*2	-
Main unit/expansion unit		Main unit	Expansion unit	Main unit	Expansion unit	Main unit	Expansion unit
Number of control outputs		1	1	2	2	2*3	None*4
Number of external inputs		-	-	1	1	1*3	-
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*5					
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*6					
	Power consumption*7 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*7 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)					
		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)*8					
Vibration resistance		10 to 55 Hz; double amplitude 1.5 mm, 2 hours each for X, Y, and Z axes					
Shock resistance		500 m/s², 3 times each for X, Y, and Z axes					
Case material		Main unit and cover: polycarbonate					
Weight		Approx. 78 g	Approx. 48 g	Approx. 83 g	Approx. 73 g	Approx. 25 g	Approx. 23 g

*1 IO-Link Specification V1.1/COM2 (38.4 kbps) is supported.
*2 Ensure the cable length is 30 m or less for the M8 connector type. In case of connecting with IO-Link, set it to 20 m or less.
*3 Output 2 and the external input are selectable.
*4 This counts as 1 output when connecting multiple units to the FS-MCBN/P, NU Series.
*5 The input time becomes 25 ms (ON)/25 ms (OFF) when external calibration input is selected.
*6 When expanding the system to 9 or more units, use a power supply voltage of 12 V or higher.
*7 The load current is excluded. The power consumption including the load when the maximum number of units are connected is 38 W max.
*8 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.

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.

[M] Select from eight power modes. The initial setting is FINE.

Mode	S-HSPD*1	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		99999*2	

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 *3 Press [◀ ▶] to select the value.

[M] Select from the following operation modes.
• Standard • Preset • Percent
• Zeroshift • Area detection • Area % Mode
• DATUM • Rising edge • Falling edge

E Output timer *4 Press [◀ ▶] to select the value.

F Ext. Input Press [◀ ▶] to select the value.

[M] 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 *4 Press [◀ ▶] to select the value.

[M] 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.

[M] 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 *6 Press [◀ ▶] to select the value.

S Initialize Press [◀ ▶] to select the value.

T Custom Setting Press [◀ ▶] to select the value.

U Interference *5 *7 Press [◀ ▶] to select the value.

V Key Lock Method Press [◀ ▶] to select the value.

W Display Gain *5 Press [◀ ▶] to select the value.

X IO-Link Mode *8 Press [◀ ▶] to select the value.

Y IO Data Format *8 Press [◀ ▶] to select the value.

Z I/O Selection *8 Press [◀ ▶] to select the value.

END

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.

END

Settings complete

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

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Specifications are subject to change without notice. A6WW1-MAN-1097

14746E 1127-2a [96M14746] 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.

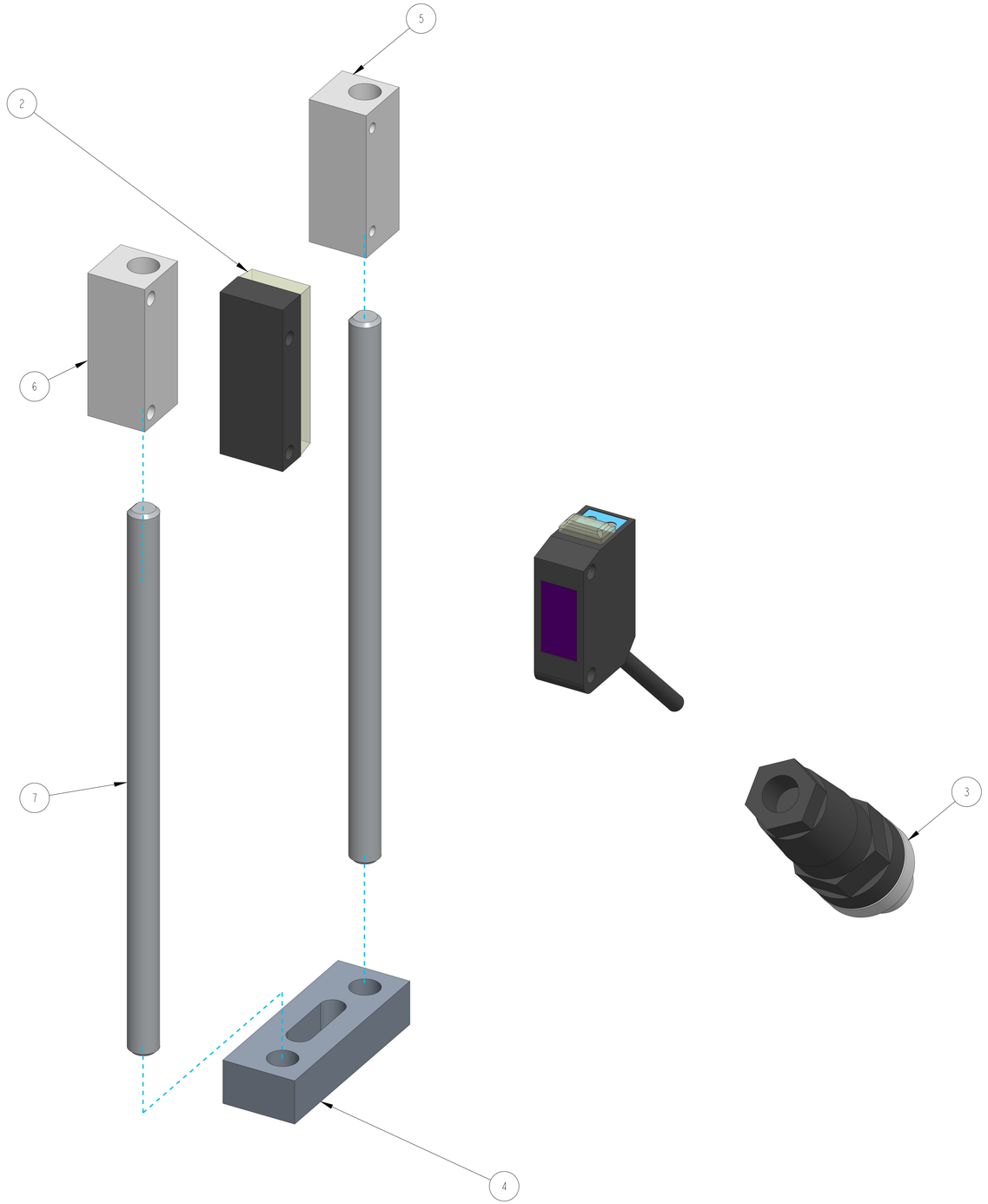
MAINTENANCE:

- See Maintenance Section

TROUBLESHOOTING:

- See Troubleshooting Section

ITEM	QTY	PART NO.	DESCRIPTION	PARENT ITEM
1	1	202192-002	CLEAR PRODUCT SENSOR	21606-013
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



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

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

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

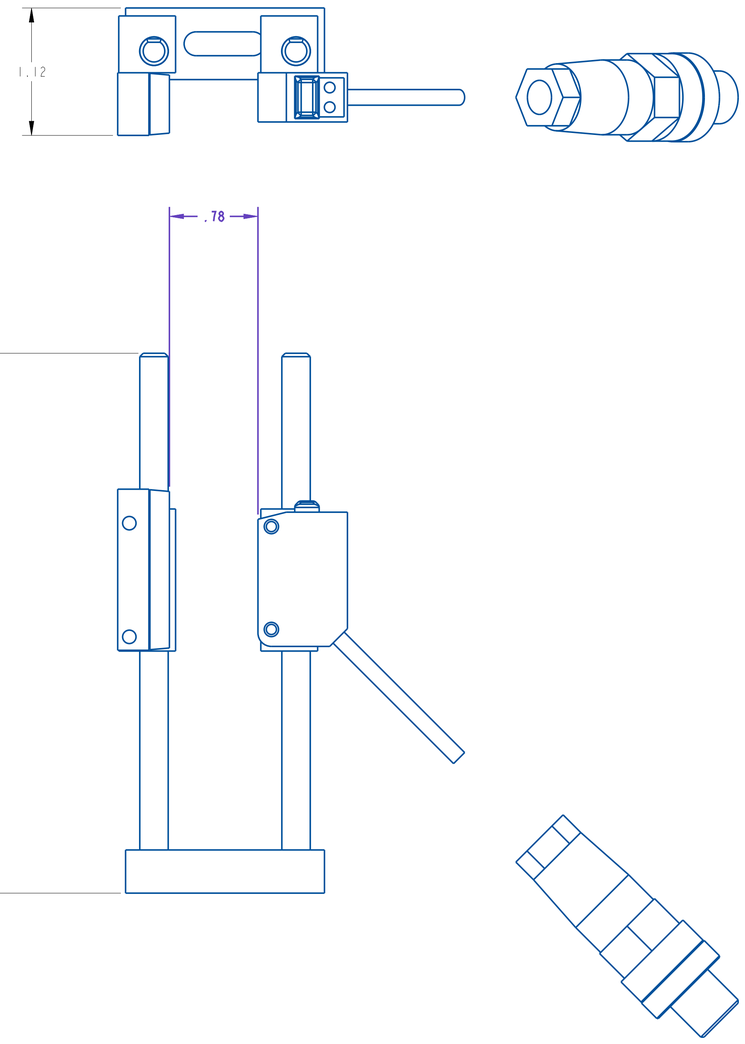
QUADREL LABELING SYSTEMS
7670 JENTHER DRIVE
MENTOR, OHIO 44060
(440) 602-4700

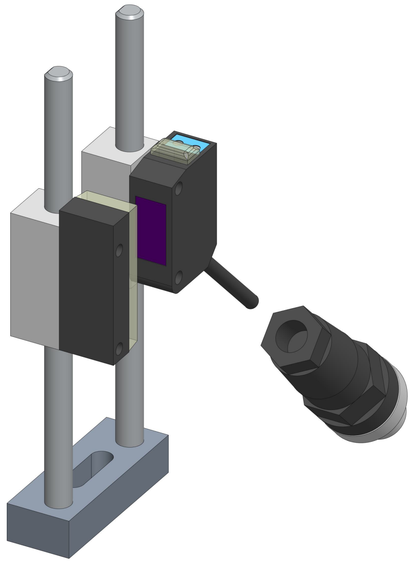
SCALE: 2/1
DATE: 11/11/24
DRW BY: SEM
CHK BY: &CREO_CHK
APPR BY:

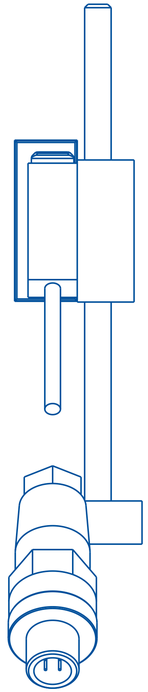
BROKEN WEB/END OF WEB, PNP SINGLE BASE, USE PZ-G62P

MAT'L

21606-013







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

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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:	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

KEYENCE

96M11227

Self-contained
Photoelectric Sensor

PZ-G Series
Instruction Manual

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

■ 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.

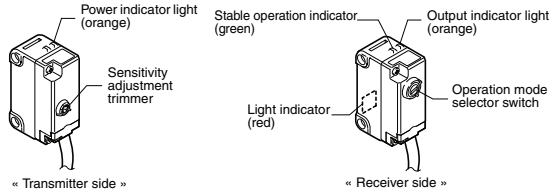
- UL File No. E301717
- Category NRKH,NRKH7
- Enclosure Type 1 (Based on UL50)

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

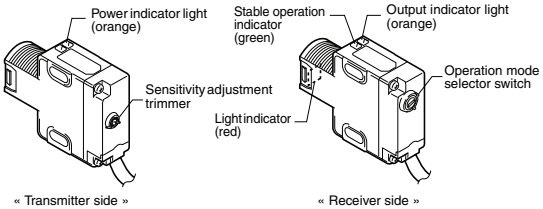
- Use the power supply with Class 2 output defined in NFPA70 (NEC: National Electrical Code).
- Power supply/ Control input/ Control output circuits shall be connected to a single Class 2 source only.
- Use with the over current protection device which is rated 30V or more and not more than 1A.

Part Names

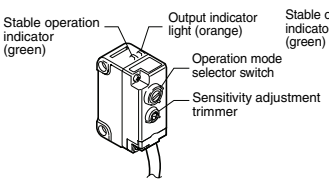
● **PZ-G5xN/G5xP**



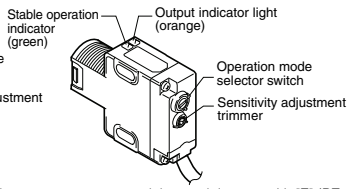
● **PZ-G5xB**



● **PZ-G4xN/G4xP/G10xN/ G10xP/G6xN/G6xP**



● **PZ-G4xB/G10xB/G6xB**

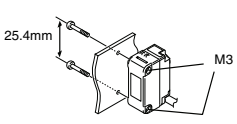


* The model name with "C" (PZ-GxxCx) is the connector type, and the model name with "E" (PZ-GxxEx) is the pigtail quick disconnect type.

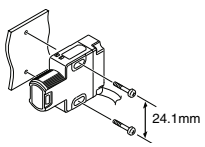
Mounting Method

■ Side Mounting (Prepare M3 screws)

Tightening torque: 0.5 N·m or less

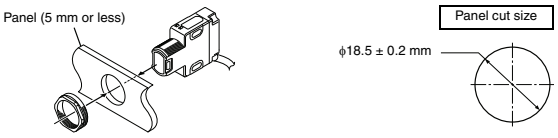


Tightening torque: 0.5 N·m or less



■ Mounting with the M18 nut (includes nut type)

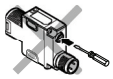
The M18 nut is also available separately as OP-84225 (2 pcs. supplied).
Tightening torque:1.0 N·m or less



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.

LIGHT-ON setting

DARK-ON setting

■ 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)

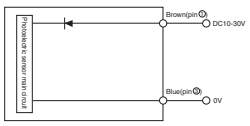
The following assumes DARK-ON (D) is set.

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)	

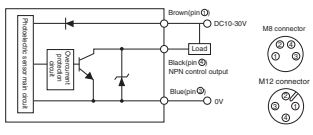
Reference To use the sensor in LIGHT-ON mode, adjust the mode selector switch to "L".

I/O Circuit Diagram

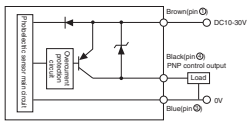
● **PZ-G5xN/G5xP/G5xB (Transmitter side)**



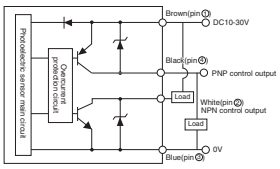
● **PZ-G5xN (Receiver side)/ G4xN/G10xN/G6xN**



● **PZ-G5xP (Receiver side)/ G4xP/G10xP/G6xP**



● **PZ-G5xB (Receiver side)/ G4xB/G10xB/G6xB**



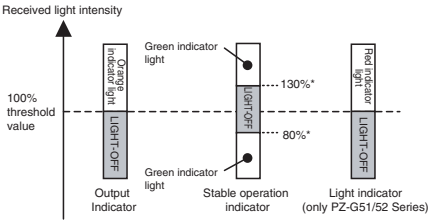
* The pin numbers represent those of the connector type / pigtail quick disconnect type. The model name with "C" (PZ-GxxCx) is the connector type, and the model name with "E" (PZ-GxxEx) is the pigtail quick disconnect type.

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 thrubeam 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			Thrubeam		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
	M12 pigtail quick disconnect	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	Cable	Bipolar (NPN+PNP)	PZ-G51B	PZ-G52B	PZ-G41B	PZ-G42B	PZ-G101B	PZ-G102B	PZ-G61B	PZ-G62B			
	M12 connector		PZ-G51CB	PZ-G52CB	PZ-G41CB	PZ-G42CB	PZ-G101CB	PZ-G102CB	PZ-G61CB	PZ-G62CB			
Detecting distance*1			20 m	40 m	1 m (30 × 30 cm white mat paper)	300 mm (10 × 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 × 4 mm (when the detecting distance is 10 mm)		
Light source (LED)			Red LED	Infrared LED × 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^2 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, Polybutyleneterephtalate (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*2			Instruction manual, M18 nut x 2 (nut thrubeam type), M18 nut x 1 (other nut types)										
Weight			Rectangular cable type: Approx. 60 g (Approx. 50 g for thrubeam 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 thrubeam 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

11227E 1070-1 96M11227
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.

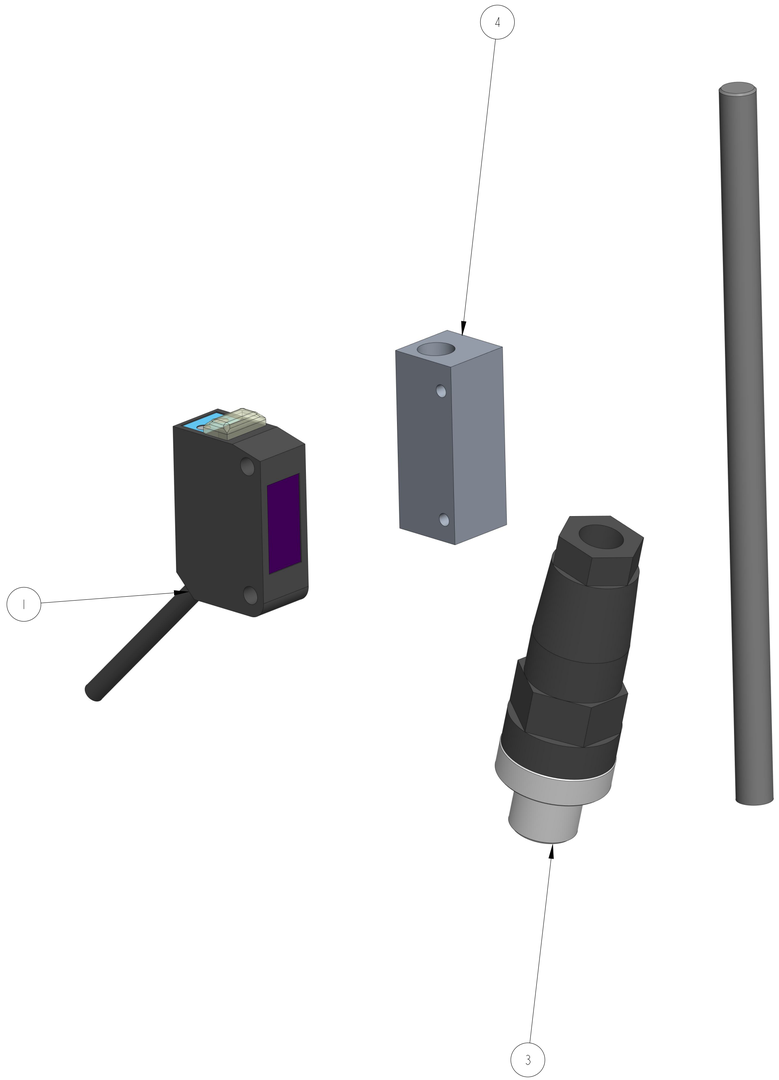
MAINTENANCE:

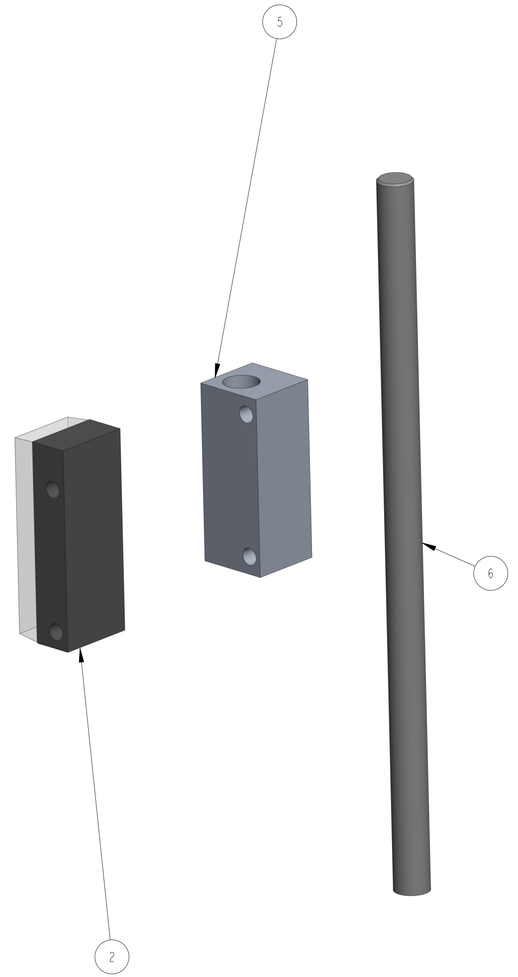
- See Maintenance Section

TROUBLESHOOTING:

- See Troubleshooting Section

ITEM	QTY	PART NO.	DESCRIPTION	PARENT ITEM
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





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SURFACE FINISH 125
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CORNER RADIUS .010/.030

QUADREL LABELING SYSTEMS
7670 JENTHER DRIVE
MENTOR, OHIO 44060
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SCALE: 2/1
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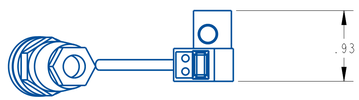
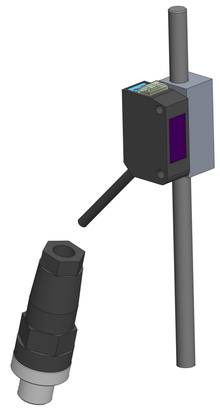
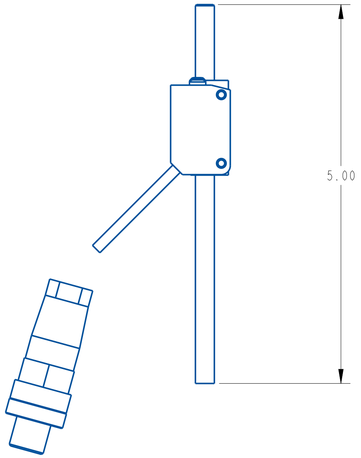
BROKEN WEB/END OF WEB, PNP DUAL POSTS, USE PZ-G62P

MAT'L

21606-012







REV	DATE	DESCRIPTION	BY
A	11/11/24	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
ALL ANGLES ARE 90°

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

SCALE:	1/1
DATE:	11/11/24
DRW BY:	SEM
CHK BY:	CREO_CHK
APPR BY:	

BROKEN WEB/END OF WEB, PNP DUAL POSTS, USE PZ-G62P

MAT'L

21606-012

KEYENCE

96M11227

Self-contained
Photoelectric Sensor

PZ-G Series
Instruction Manual

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

■ 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.

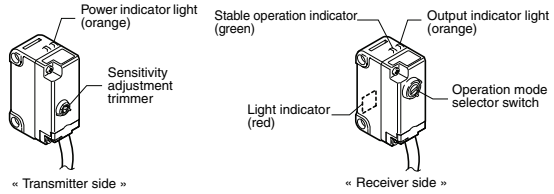
- UL File No. E301717
- Category NRKH,NRKH7
- Enclosure Type 1 (Based on UL50)

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

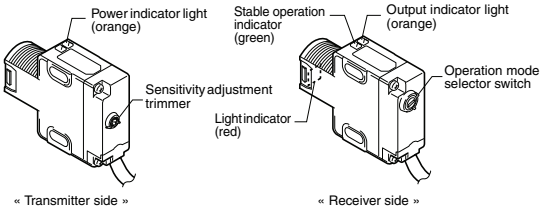
- Use the power supply with Class 2 output defined in NFPA70 (NEC: National Electrical Code).
- Power supply/ Control input/ Control output circuits shall be connected to a single Class 2 source only.
- Use with the over current protection device which is rated 30V or more and not more than 1A.

Part Names

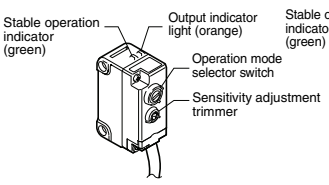
● **PZ-G5xN/G5xP**



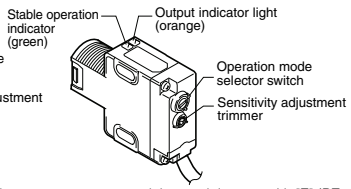
● **PZ-G5xB**



● **PZ-G4xN/G4xP/G10xN/ G10xP/G6xN/G6xP**



● **PZ-G4xB/G10xB/G6xB**

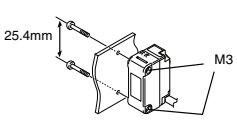


* The model name with "C" (PZ-GxxCx) is the connector type, and the model name with "E" (PZ-GxxEx) is the pigtail quick disconnect type.

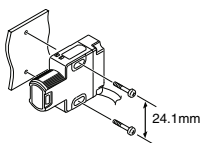
Mounting Method

■ Side Mounting (Prepare M3 screws)

Tightening torque: 0.5 N·m or less

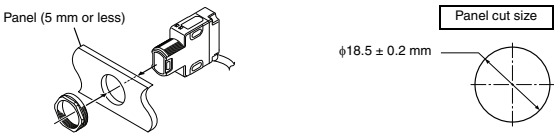


Tightening torque: 0.5 N·m or less



■ Mounting with the M18 nut (includes nut type)

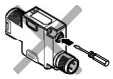
The M18 nut is also available separately as OP-84225 (2 pcs. supplied).
Tightening torque:1.0 N·m or less



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.

LIGHT-ON setting

DARK-ON setting

■ 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)

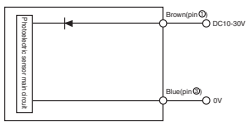
The following assumes DARK-ON (D) is set.

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)	

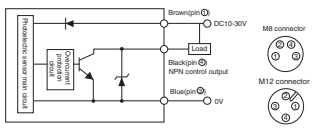
Reference To use the sensor in LIGHT-ON mode, adjust the mode selector switch to "L".

I/O Circuit Diagram

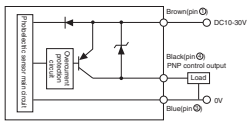
● **PZ-G5xN/G5xP/G5xB (Transmitter side)**



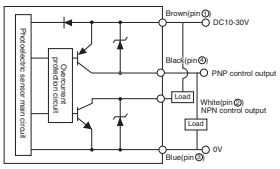
● **PZ-G5xN (Receiver side)/ G4xN/G10xN/G6xN**



● **PZ-G5xP (Receiver side)/ G4xP/G10xP/G6xP**



● **PZ-G5xB (Receiver side)/ G4xB/G10xB/G6xB**



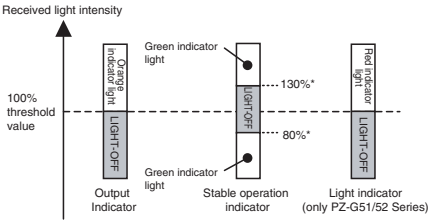
* The pin numbers represent those of the connector type / pigtail quick disconnect type. The model name with "C" (PZ-GxxCx) is the connector type, and the model name with "E" (PZ-GxxEx) is the pigtail quick disconnect type.

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 thrubeam 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			Thrubeam		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
	M12 pigtail quick disconnect	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	Cable	Bipolar (NPN+PNP)	PZ-G51B	PZ-G52B	PZ-G41B	PZ-G42B	PZ-G101B	PZ-G102B	PZ-G61B	PZ-G62B			
	M12 connector		PZ-G51CB	PZ-G52CB	PZ-G41CB	PZ-G42CB	PZ-G101CB	PZ-G102CB	PZ-G61CB	PZ-G62CB			
Detecting distance*1			20 m	40 m	1 m (30 × 30 cm white mat paper)	300 mm (10 × 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 × 4 mm (when the detecting distance is 10 mm)		
Light source (LED)			Red LED	Infrared LED × 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^2 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, Polybutyleneterephtalate (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*2			Instruction manual, M18 nut x 2 (nut thrubeam type), M18 nut x 1 (other nut types)										
Weight			Rectangular cable type: Approx. 60 g (Approx. 50 g for thrubeam 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 thrubeam 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

11227E 1070-1 96M11227
Printed in Japan


System

ASSEMBLY TITLE: **PROLINE BASE ASSEMBLY**

GENERAL FUNCTION:

- To house the electronics and, To provide support for the head supports, conveyor, top trap, pacing wheel, wrap station and the guide rails.

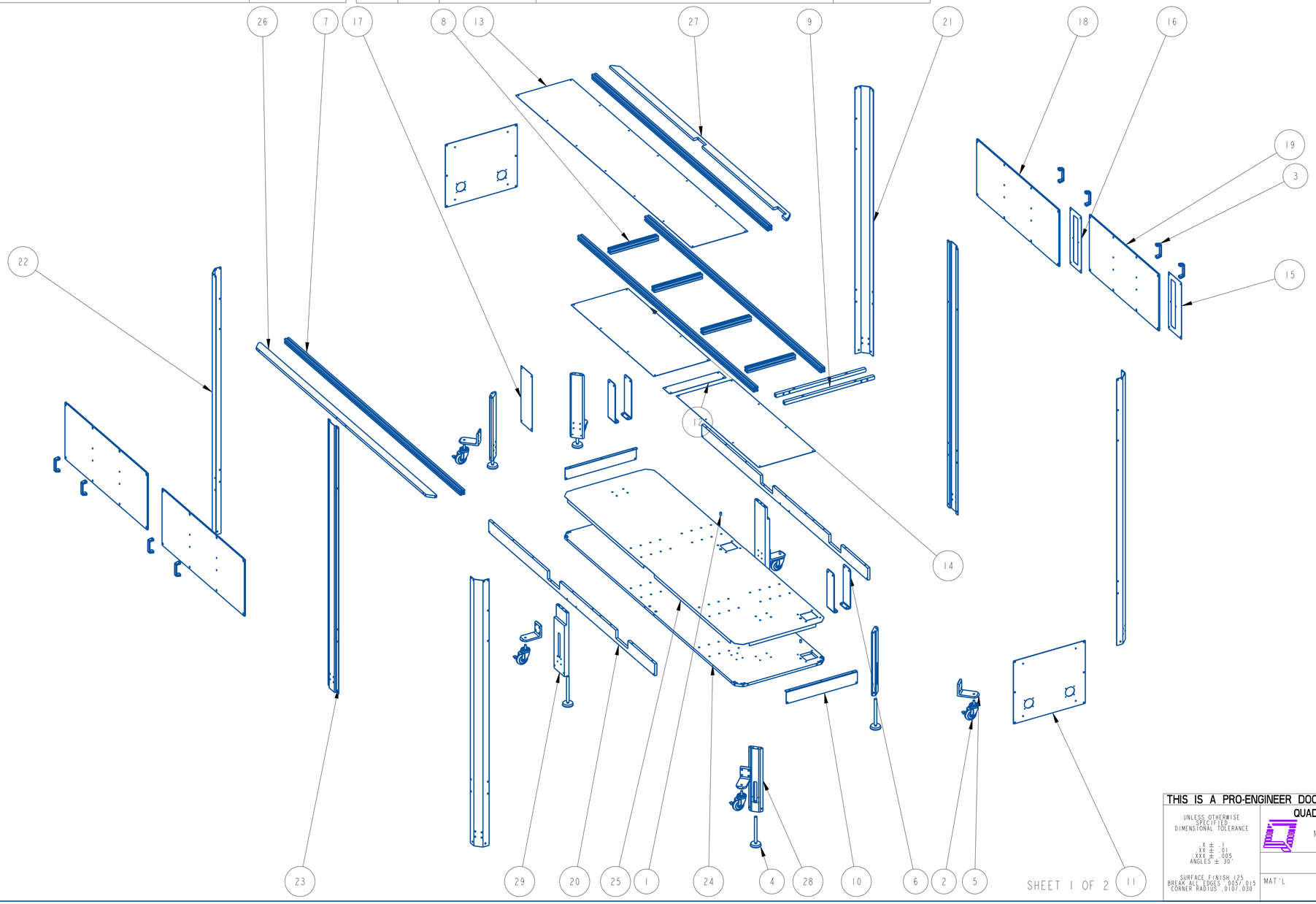
SET-UP AND ADJUSTMENTS:

- Adjust leveling pads by turning the threaded rod by the flats to adjust table top chain to the proper height. Secure lock nut when proper height is achieved.

- Safety doors must be closed for operation.

ITEM	QTY	PART NO.	DESCRIPTION	PARENT ITEM
1	2	141172-000	SLEEVE BEARING, 1/2OD. x 3/8ID. x 3/4LNG	84209B-000
2	6	791449-000	SWIVEL CASTER	84209B-000
3	8	792114-000	HANDLE, STD. DUTY	84209B-000
4	6	793020-000	LEVELING MOUNT	84209B-000
5	6	A23151-000	CASTER MOUNTING ANGLE	84209B-000
6	4	B20208-121	CONVEYOR RISER	84209B-000
7	4	B22644-001	SMOOTH EXTRUDED ALUMINUM	84209B-000
8	4	B22644-750	SMOOTH EXTRUDED ALUMINUM	84209B-000
9	2	B22681-002	SUPPORT BAR	84209B-000
10	2	C21237-090	SHORT GUSSET PANEL	84209B-000
11	2	C21237-754	ELECTRICAL ENCLOSURE END PANEL	84209B-000
12	1	D23861-019	ELECTRICAL ENCLOSURE COVER	84209B-000
13	1	D23861-026	TOP ELECTRICAL ENCLOSURE COVER	84209B-000
14	2	D23861-108	BOTTOM ELECTRICAL ENCLOSURE COVER	84209B-000

ITEM	QTY	PART NO.	DESCRIPTION	PARENT ITEM
15	1	D23861-504	ELECTRICAL ENCLOSURE COVER	84209B-000
16	1	D23861-505	ELECTRICAL ENCLOSURE COVER	84209B-000
17	1	D23861-516	ELECTRICAL ENCLOSURE COVER	84209B-000
18	3	D23861-916	ELECTRICAL ENCLOSURE COVER	84209B-000
19	1	D23861-919	ELECTRICAL ENCLOSURE COVER	84209B-000
20	2	D24004-168	SUPPORT PLATE	84209B-000
21	2	D24215-782	CORNER ANGLE	84209B-000
22	2	D24215-783	CORNER ANGLE	84209B-000
23	2	D24216-746	MID SUPPORT	84209B-000
24	1	D24217-502	BASE TOP PLATE, PRO LINE	84209B-000
25	1	D24217-503	BASE TOP PLATE COVER, PRO LINE	84209B-000
26	1	D24219-405	BASE TOP SUPPORT	84209B-000
27	1	D24219-410	BASE TOP SUPPORT	84209B-000
28	4	D24220-114	LEVELING PAD MOUNTING PLATE	84209B-000



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A	9-2-25	NEW DRAWING	ATT

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.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: 1/16
DATE: 9-2-25
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CHK BY: 09/03/2025-SEM
APPR BY:

PROLINE BASE

MAT'L

84209B-000

ITEM	QTY	PART NO.	DESCRIPTION	PARENT ITEM
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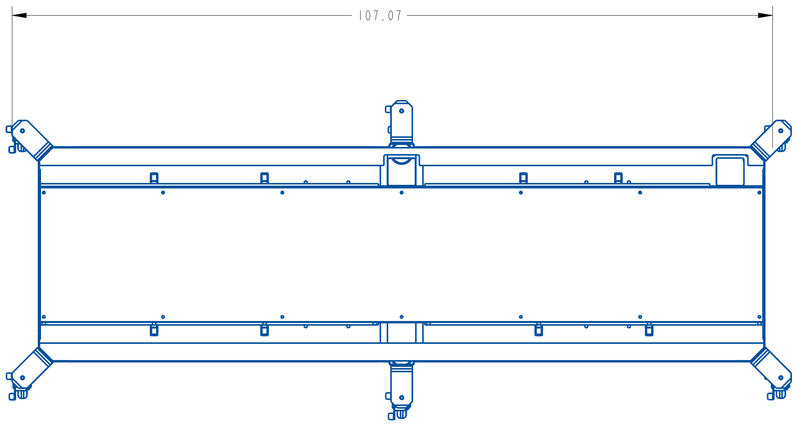

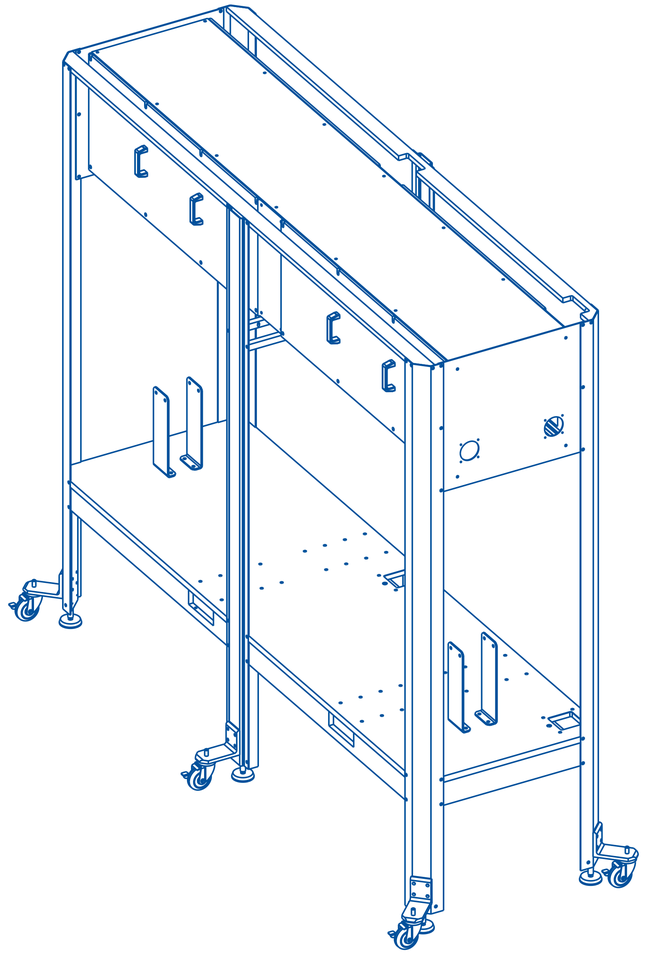

SHEET 2 OF 2

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A	10-30-24	NEW DRAWING	ATT

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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: 3/32
DATE: 10-30-24
DRW BY: ATT
CHK BY:09/03/2025-SEM
APPR BY:

PROLINE BASE

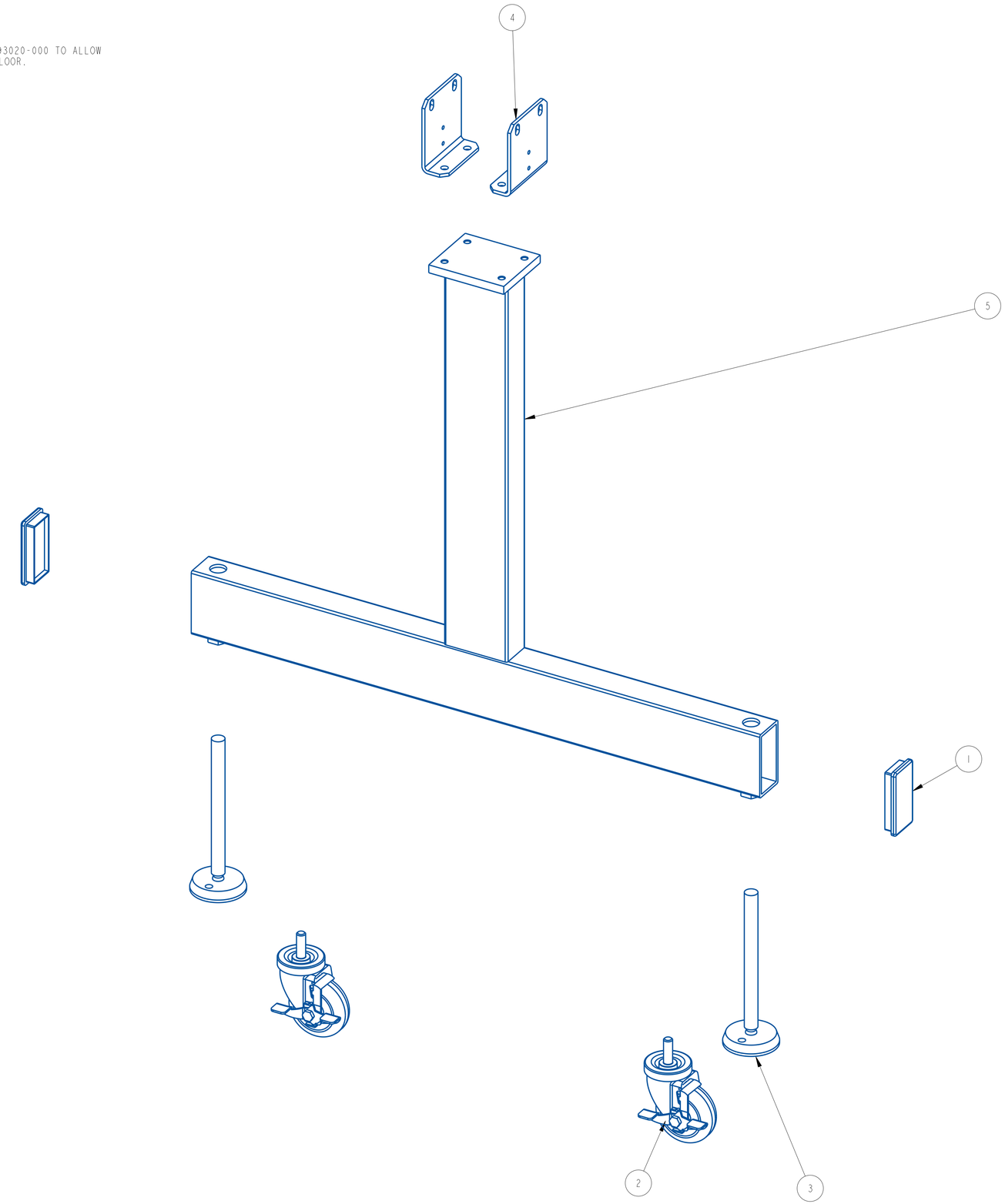
MAT'L

84209B-000

NOTES:

1. DRILL ONE Ø.41 HOLE THROUGH EACH 793020-000 TO ALLOW THE CONVEYOR TO BE SECURED TO THE FLOOR.

ITEM	QTY	PART NO.	DESCRIPTION	PARENT ITEM
1	2	729006-000	CAP INSERT FOR 2 X 4 TUBE	22614-043S
2	2	791449-000	SWIVEL CASTER	22614-043S
3	2	793020-000	LEVELING MOUNT	22614-043S
4	2	B22787-000	CONVEYOR RISER	22614-043S
5	1	D25009-043S	WELDED FRAME ASSEMBLY	22614-043S



REV	DATE	DESCRIPTION	BY
A	10-22-19	NEW DRAWING	ATT

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

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

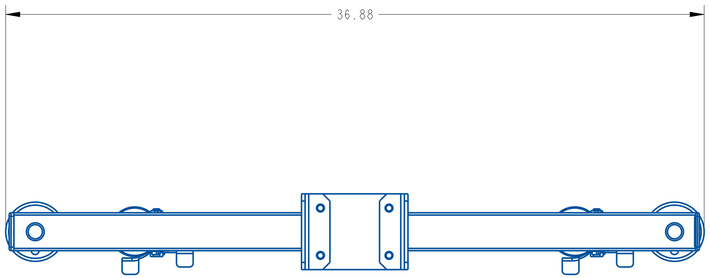
QUADREL LABELING SYSTEMS
7670 JENTHER DRIVE
MENTOR, OHIO 44060
(440) 602-4700

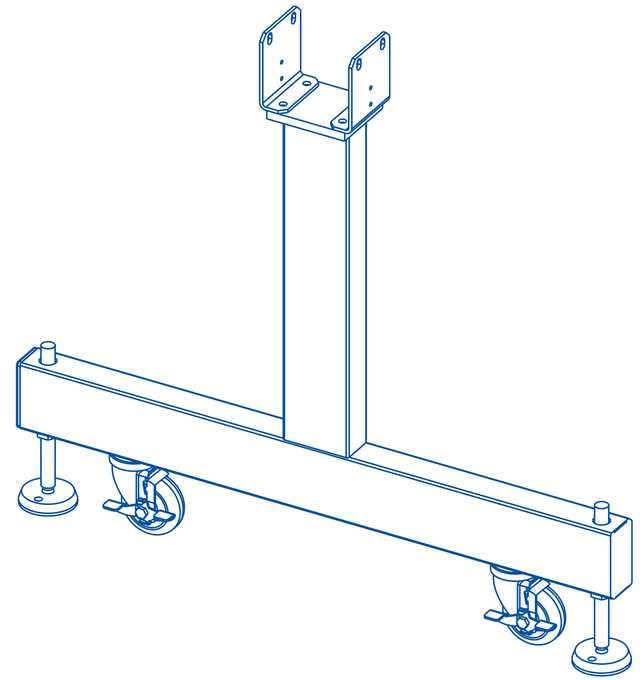
SCALE: 3/8
DATE: 10-22-19
DRW BY: ATT
CHK BY: 05/20/2024-SEM
APPR BY:

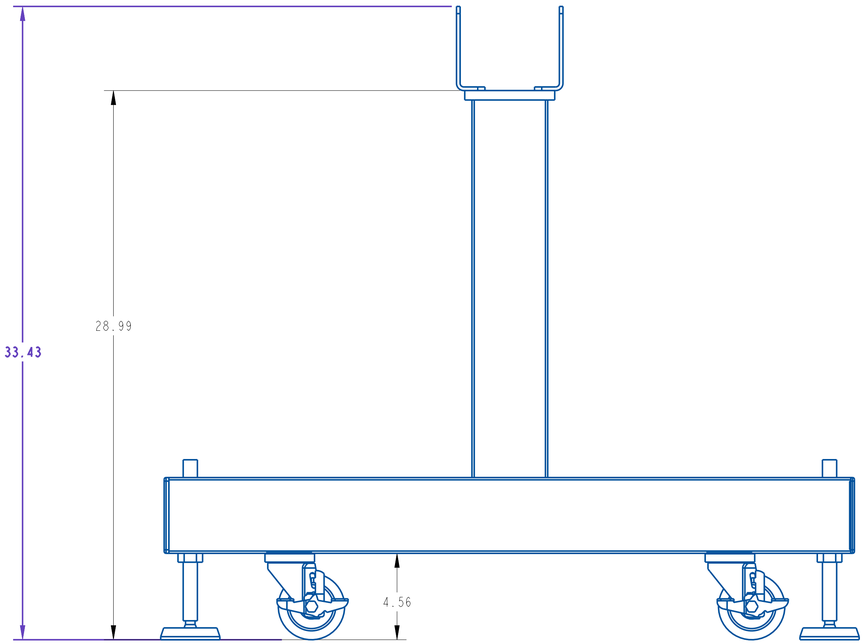
CONVEYOR SUPPORT

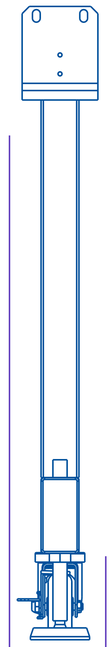
MAT'L

22614-043S









REV	DATE	DESCRIPTION	BY
A	10-22-19	NEW DRAWING	ATT

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.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:	10-22-19
DRW BY:	ATT
CHK BY:	05/20/2024-SEM
APPR BY:	

CONVEYOR SUPPORT

MAT'L

22614-043S

ASSEMBLY TITLE: **NON-INTEGRATED CONVEYOR**

GENERAL FUNCTION:

- To transfer the product to the labeling heads at a predetermined speed.
- To provide retention for the head support and guide rails.

SET-UP AND ADJUSTMENTS:

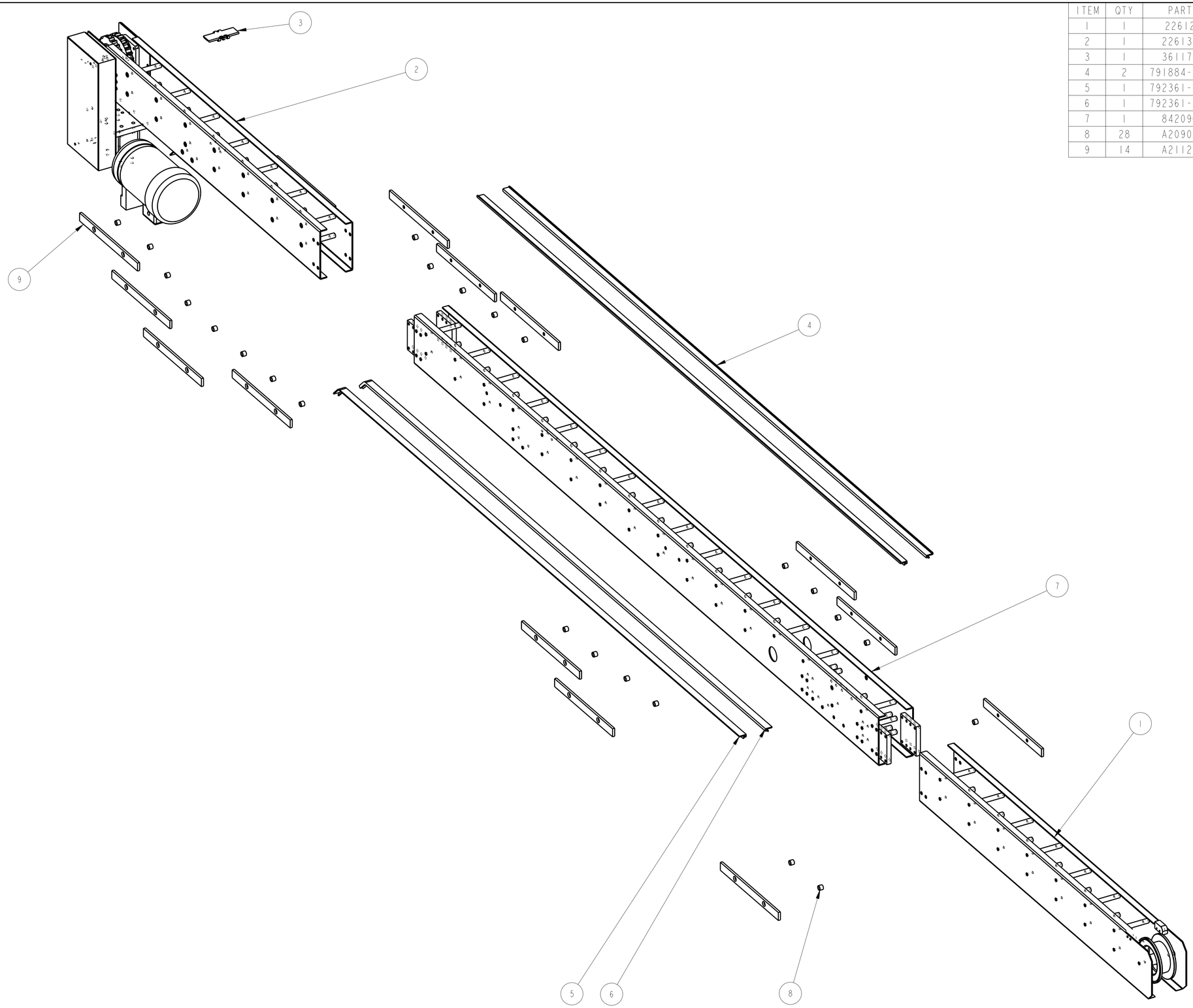
- Adjust conveyor to proper working height by rotating leveling pads to appropriate position. Secure locknut when proper height is achieved.
- Using ratchet handles, adjust guide rails to the product.
- Adjust conveyor speed by means of conveyor speed potentiometer (if applicable) located in the remote electronics enclosure mounted to the conveyor, or through the operator's touchscreen if provided.

MAINTENANCE:

- The conveyor drive chain must be greased with white lithium grease.
- Do not allow chain and sprockets to run dry, lubricate periodically.
- The gear motor gearbox should be checked quarterly and filled with Synthetic based Tivela Oil SC320 or an ISO320 Gear Lube lubricant.
- Grease flange bearings often to prevent them from running dry.

TROUBLESHOOTING:

PROBLEM	WHAT TO DO
- Excessive Noise	- Realign sprocket. - Check if chain and sprockets are lubricated. If dry, lubricate as discussed above.
- Chain too loose	- Slide gear motor downward to create more tension on chain.
- Uneven wear on sprockets.	- Realign sprockets.
- Shaft not running concentric	- Replace flange bearing.



ITEM	QTY	PART NO.	DESCRIPTION	PARENT ITEM
1	1	22612-060	CONVEYOR INFEED	84209C-000
2	1	22613-061P	PROLINE 60" OUTFEED CONVEYOR	84209C-000
3	1	361174-000	TABLE TOP CHAIN LINK	84209C-000
4	2	791884-000_109	WEAR STRIP, FLAT BAR CLIP-ON	84209C-000
5	1	792361-00L-103	WEAR STRIP, FLAT BAR CLIP-ON	84209C-000
6	1	792361-00R-103	WEAR STRIP, FLAT BAR CLIP-ON	84209C-000
7	1	84209C-MID	CONVEYOR PROLINE CENTER	84209C-000
8	28	A20904-000	RAIL SPACER, 1/2"	84209C-000
9	14	A21121-000	RAIL	84209C-000

REV	DATE	DESCRIPTION	BY
A	9-3-25	NEW DRAWING	ATT

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.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

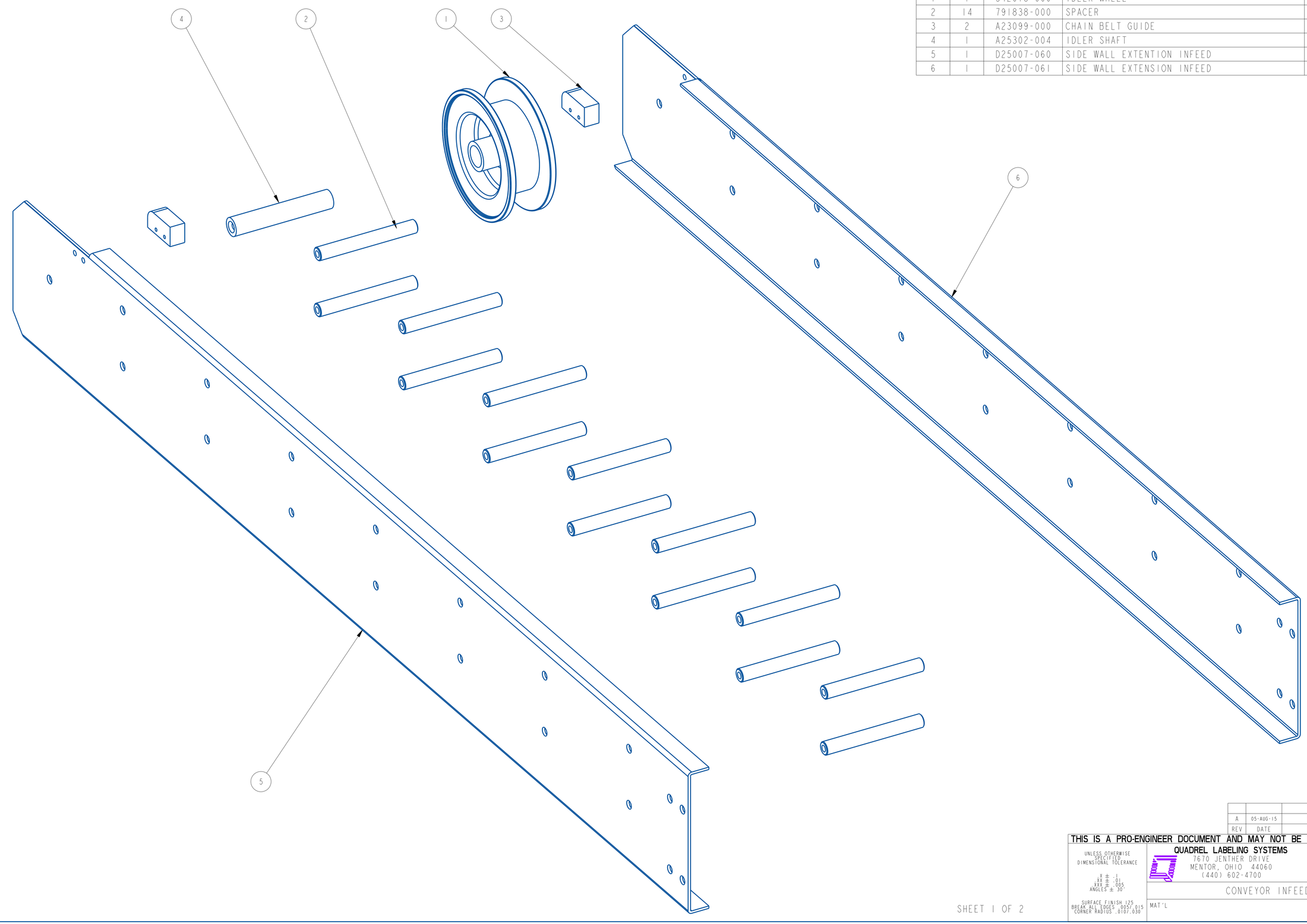
SCALE: 5/32
DATE: 9-3-25
DRW BY: ATT
CHK BY: 09/03/2025-SEM
APPR BY:

CONVEYOR, 20'

MAT'L

84209C-000

ITEM	QTY	PART NO.	DESCRIPTION	PARENT ITEM
1	1	342018-000	IDLER WHEEL	22612-060
2	14	791838-000	SPACER	22612-060
3	2	A23099-000	CHAIN BELT GUIDE	22612-060
4	1	A25302-004	IDLER SHAFT	22612-060
5	1	D25007-060	SIDE WALL EXTENTION INFEED	22612-060
6	1	D25007-061	SIDE WALL EXTENSION INFEED	22612-060



REV	DATE	DESCRIPTION	BY
A	05-AUG-15	NEW DRAWING	CRT

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ANGLES ± 30'

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

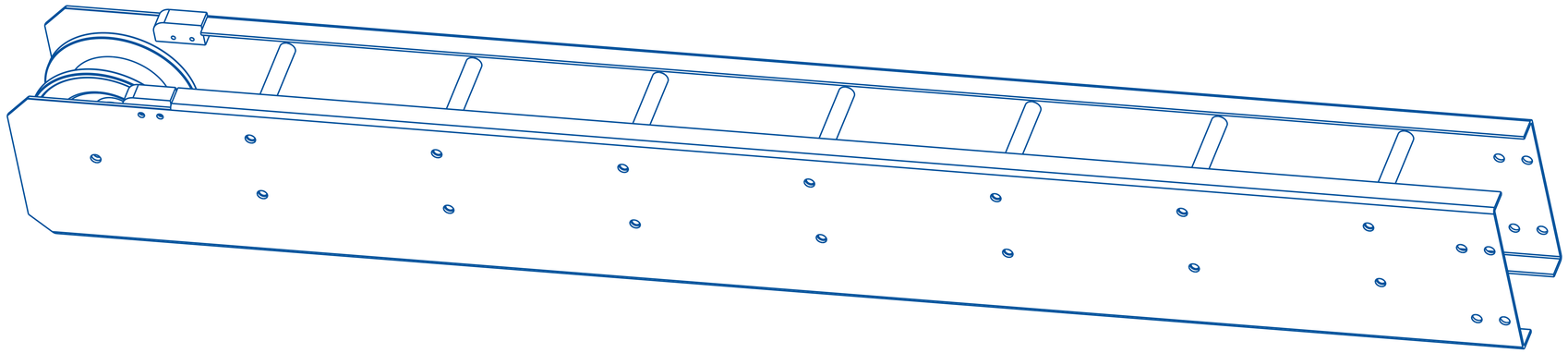
QUADREL LABELING SYSTEMS
7670 JENTHER DRIVE
MENTOR, OHIO 44060
(440) 602-4700

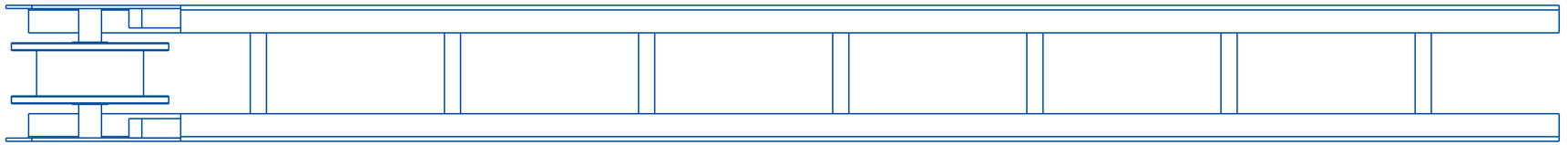
SCALE: 1/2
DATE: 05-AUG-15
DRW BY: CRT
CHK BY: 09/03/2025-SEM
APPR BY:

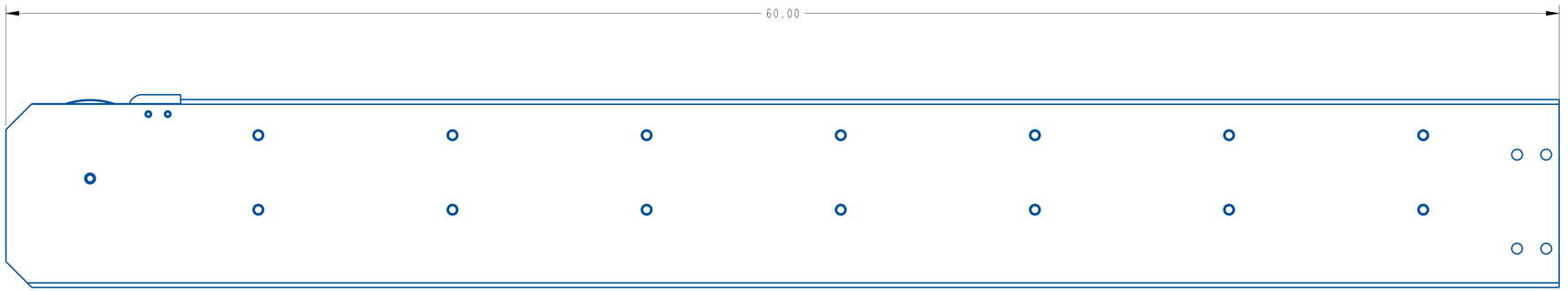
CONVEYOR INFEED

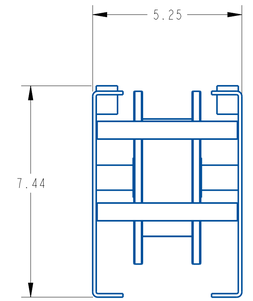
MAT'L

22612-060









REV	DATE	DESCRIPTION	BY
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SURFACE FINISH 125
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CORNER RADIUS .010/.030
ALL ANGLES ARE 90°

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

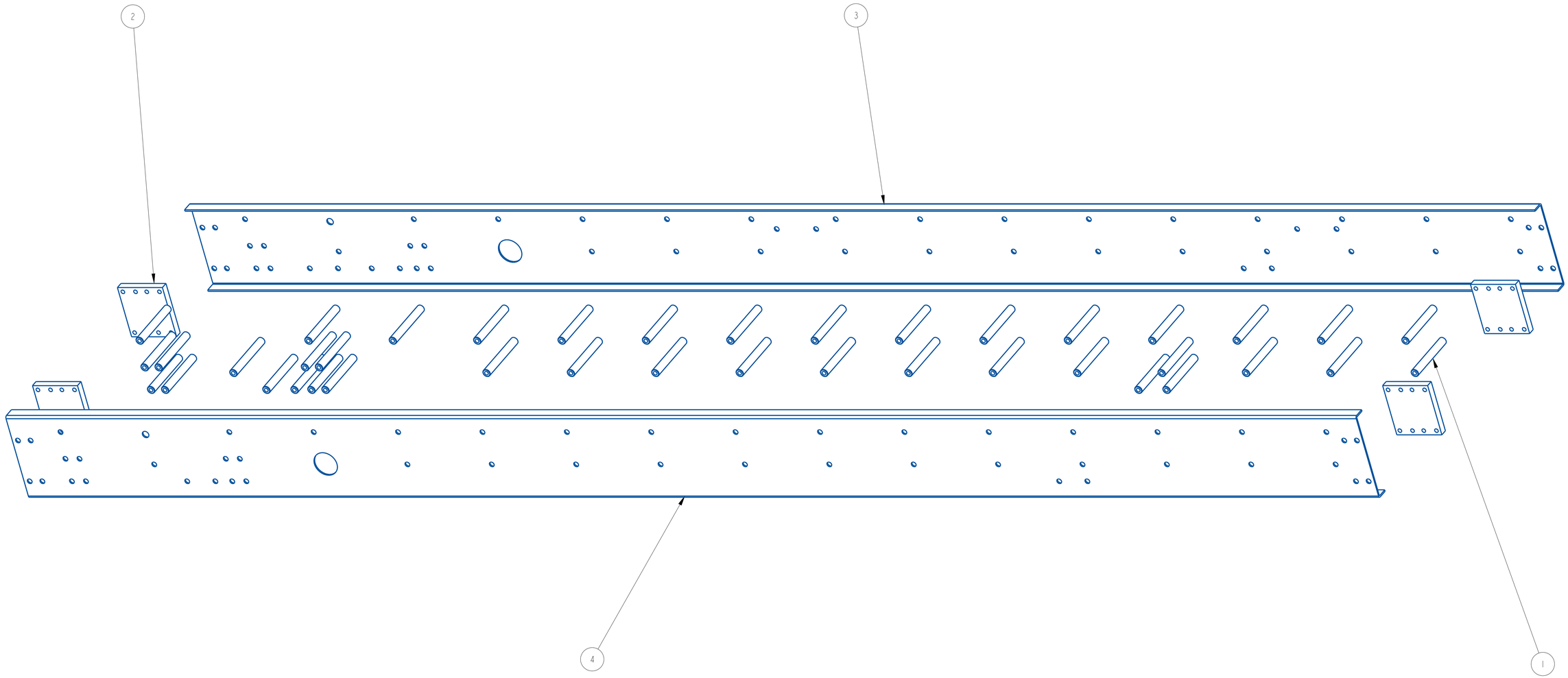
SCALE: 3/8
DATE: 05-AUG-15
DRW BY: CRT
CHK BY:09/03/2025-SEM
APPR BY:

CONVEYOR INFEED

MAT'L

22612-060

ITEM	QTY	PART NO.	DESCRIPTION	PARENT ITEM
1	40	791838-000	SPACER	84209C-MID
2	4	B22558-004	SPLICE PLATE	84209C-MID
3	1	D25001-840	CONVEYOR - CENTER SIDE WALL	84209C-MID
4	1	D25001-841	CONVEYOR CENTER SIDE WALL	84209C-MID



REV	DATE	DESCRIPTION	BY
A	9-3-25	NEW DRAWING	ATT

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ANGLES ± 30'

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

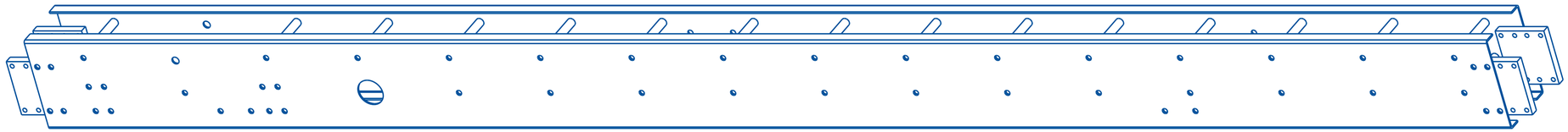
QUADREL LABELING SYSTEMS
7670 JENTHER DRIVE
MENTOR, OHIO 44060
(440) 602-4700

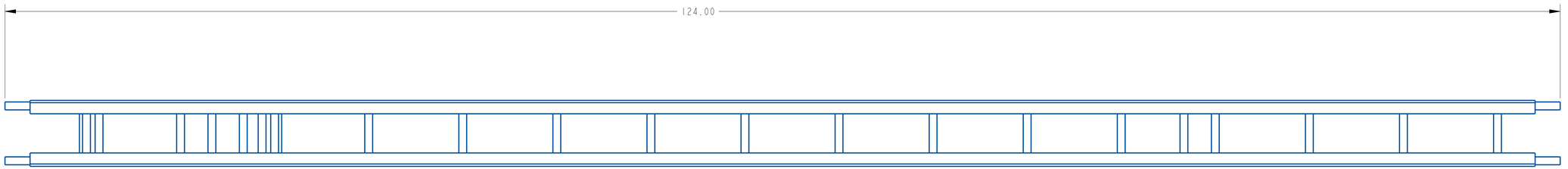
SCALE: 1/4
DATE: 9-3-25
DRW BY: ATT
CHK BY:
APPR BY:

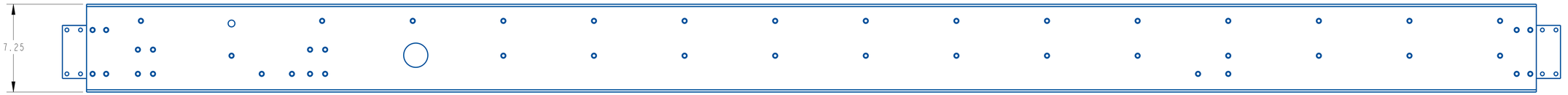
CONVEYOR PROLINE CENTER

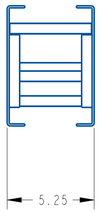
MAT'L

84209C-MID









REV	DATE	DESCRIPTION	BY
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CORNER RADIUS .010/.030
ALL ANGLES ARE 90°

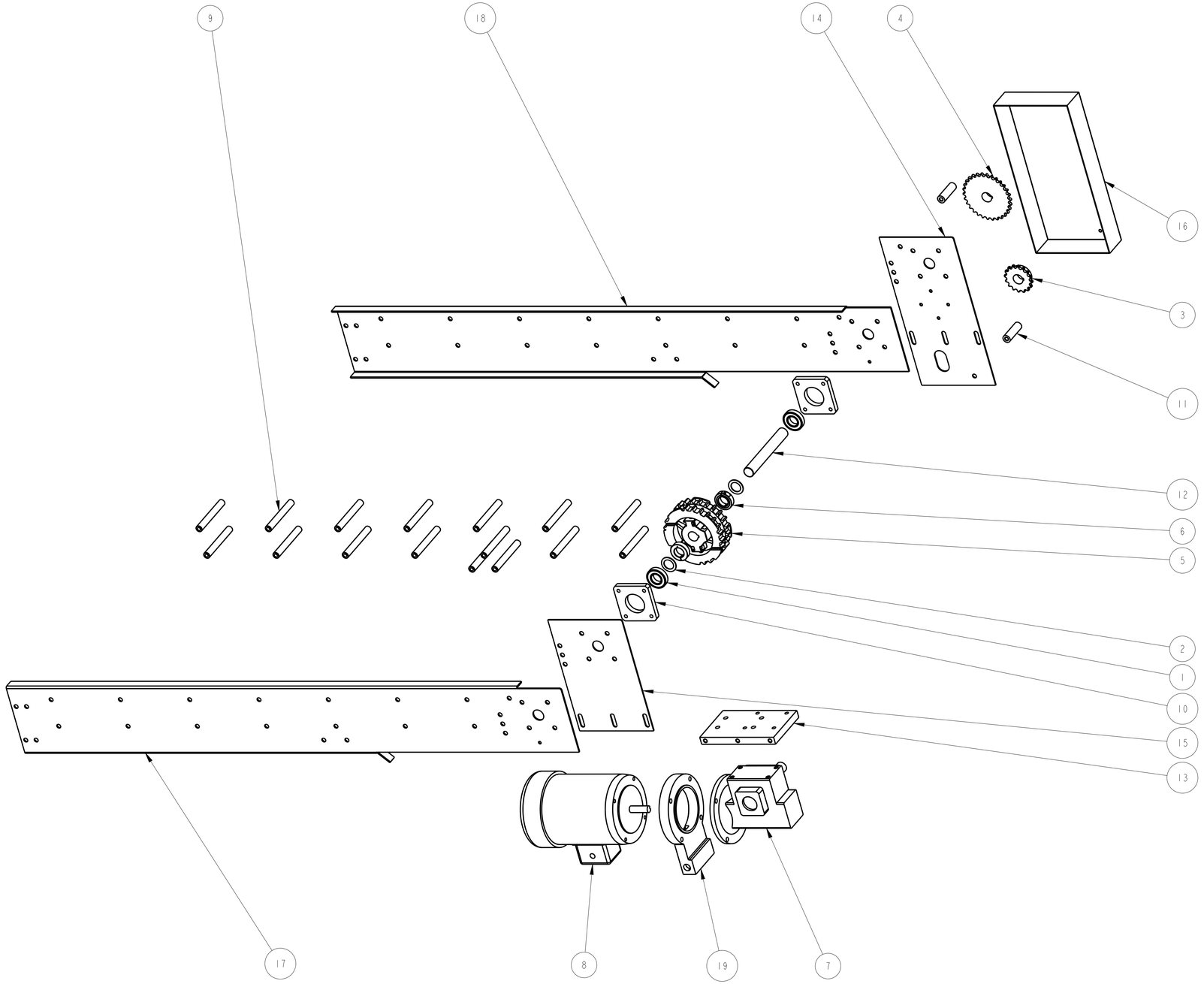
QUADREL LABELING SYSTEMS
7670 JENTHER DRIVE
MENTOR, OHIO 44060
(440) 602-4700

SCALE:	1/32
DATE:	9-3-25
DRW BY:	ATT
CHK BY:	
APPR BY:	

CONVEYOR PROLINE CENTER

MAT'L

84209C-MID



ITEM	QTY	PART NO.	DESCRIPTION	PARENT ITEM
1	2	111064-000	BEARING, BANDED THRUST BALL	22613-061P
2	2	151038-000	BEARING, THRUST WASHER	22613-061P
3	1	322103-000	SPROCKET, 16 TOOTH, 1" BORE	22613-061P
4	1	322172-000	SPROCKET, 30 TEETH	22613-061P
5	1	342019-000	DRIVE SPROCKET, MODULINE	22613-061P
6	2	361170-000	COLLAR, 1 IN. ID ONE-PIECE CLAMP	22613-061P
7	1	412529-000	GEARBOX, 10:1 RH	22613-061P
8	1	413005-000	MOTOR, 1 HP, 3 PHASE WASHGUARD	22613-061P
9	17	791838-000	SPACER	22613-061P
10	2	A21846-000	INTERNAL CONVEYOR BEARING BLOCK	22613-061P
11	2	A25452-012	GUARD STAND OFF	22613-061P
12	1	B20883-003	CONVEYOR DRIVE SHAFT	22613-061P
13	1	B22283-002	GEAR BOX MOUNTING PLATE	22613-061P
14	1	C20448-015	OUTFEED CONVEYOR CAP	22613-061P
15	1	C20478-004	OUTFEED CONVEYOR CAP	22613-061P
16	1	C21126-101	DRIVE GUARD	22613-061P
17	1	D25008-060P	OUT FEED CONVEYOR SIDE WALL	22613-061P
18	1	D25008-061P	SIDEWALL EXTENTION OUTFEED	22613-061P
19	1	203328-000	ENCODER	22613-061P

NOT SHOWN:

203355-000 ENCODER CONNECTOR, 7 PIN

REV	DATE	DESCRIPTION	BY
A	11-3-23	NEW DRAWING	ATT

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

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

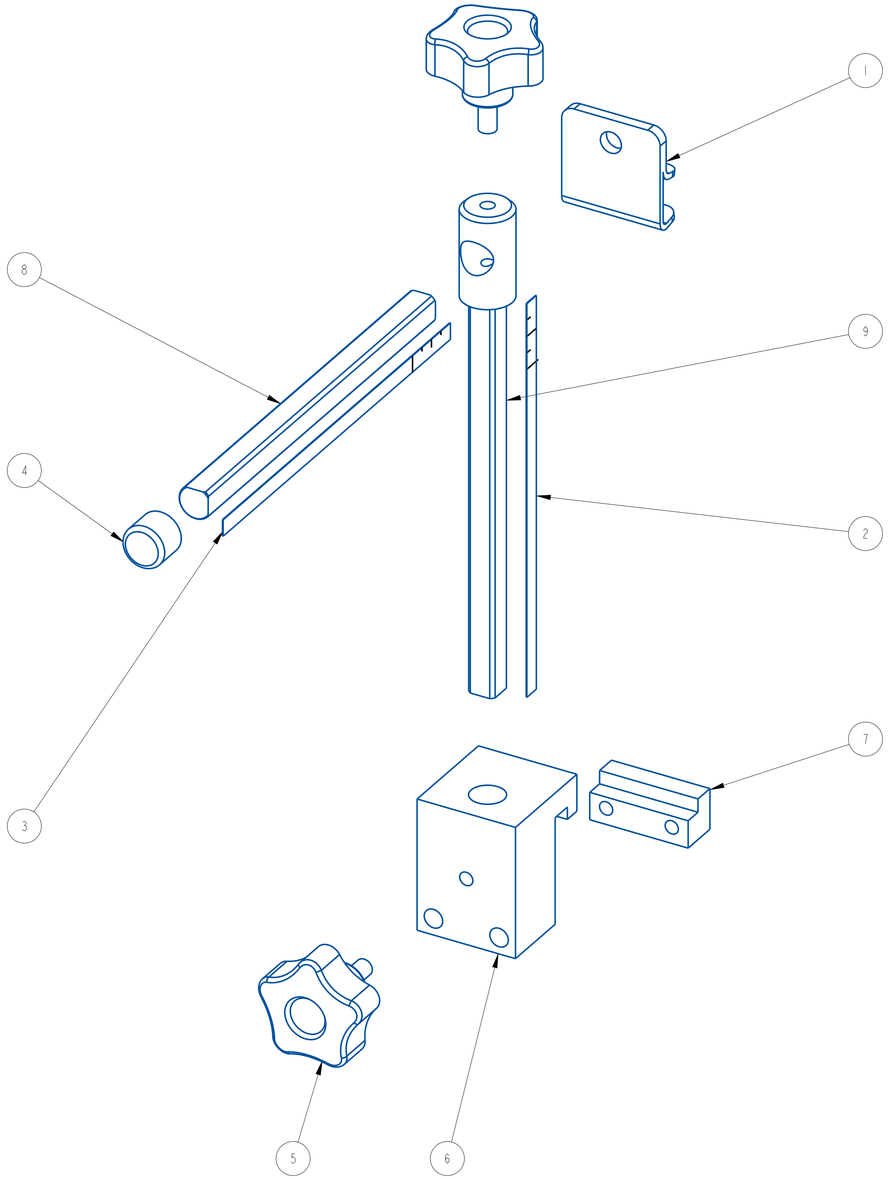
SCALE: 3/16
DATE: 11-3-23
DRW BY: ATT
CHK BY: 09/03/2025-SEM
APPR BY:

PROLINE 60" OUTFEED CONVEYOR

MAT'L

22613-061P

ITEM	QTY	PART NO.	DESCRIPTION	PARENT ITEM
1	1	791732-000	CLAMP FOR CONICAL SIDE GUIDE	22435-034
2	1	791914-002_06	MYLAR SCALE, QUADREL LOGO	22435-034
3	1	791914-003_06	MYLAR SCALE, QUADREL LOGO, 6" LG.	22435-034
4	1	792711-000	CAP, ORANGE	22435-034
5	2	801308-000	KNOB W/ 1/4-20 STUD	22435-034
6	1	A20875-000	RETAINER BLOCK, CONV. RAIL	22435-034
7	1	A20876-000	RETAINER BLOCK	22435-034
8	1	A21198-199	ADJUSTMENT ROD	22435-034
9	1	A28000-000	CLAMPING ROD ASSEMBLY 6"	22435-034



REV	DATE	DESCRIPTION	BY
A	Aug-07-25	NEW DRAWING	TAZ

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ANGLES ± 30'
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BREAK ALL EDGES .005/.015
CORNER RADIUS .010/.030
ALL ANGLES ARE 90°

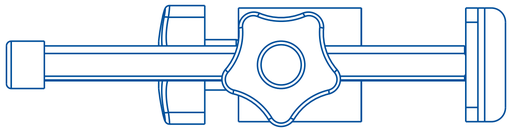
QUADREL LABELING SYSTEMS
7670 JENTHER DRIVE
MENTOR, OHIO 44060
(440) 602-4700

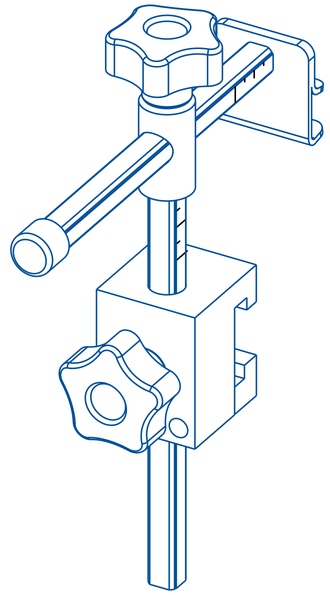
SCALE: 1/1
DATE: Aug-07-25
DRW BY: TAZ
CHK BY:08/28/2025-SEM
APPR BY:

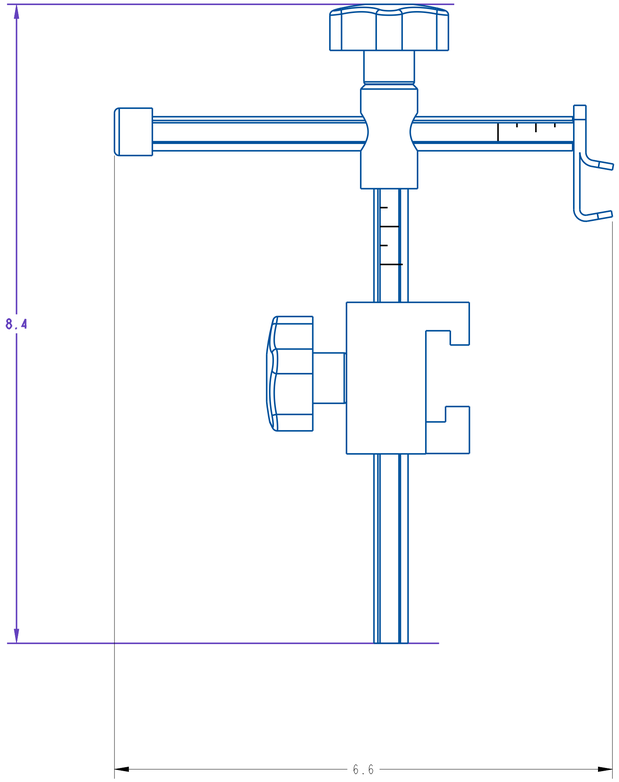
RAIL KIT WITH SCALES

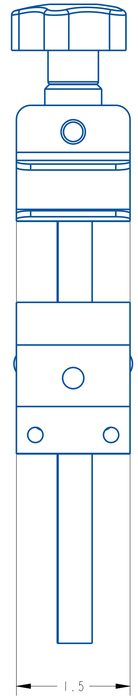
MAT'L

22435-034









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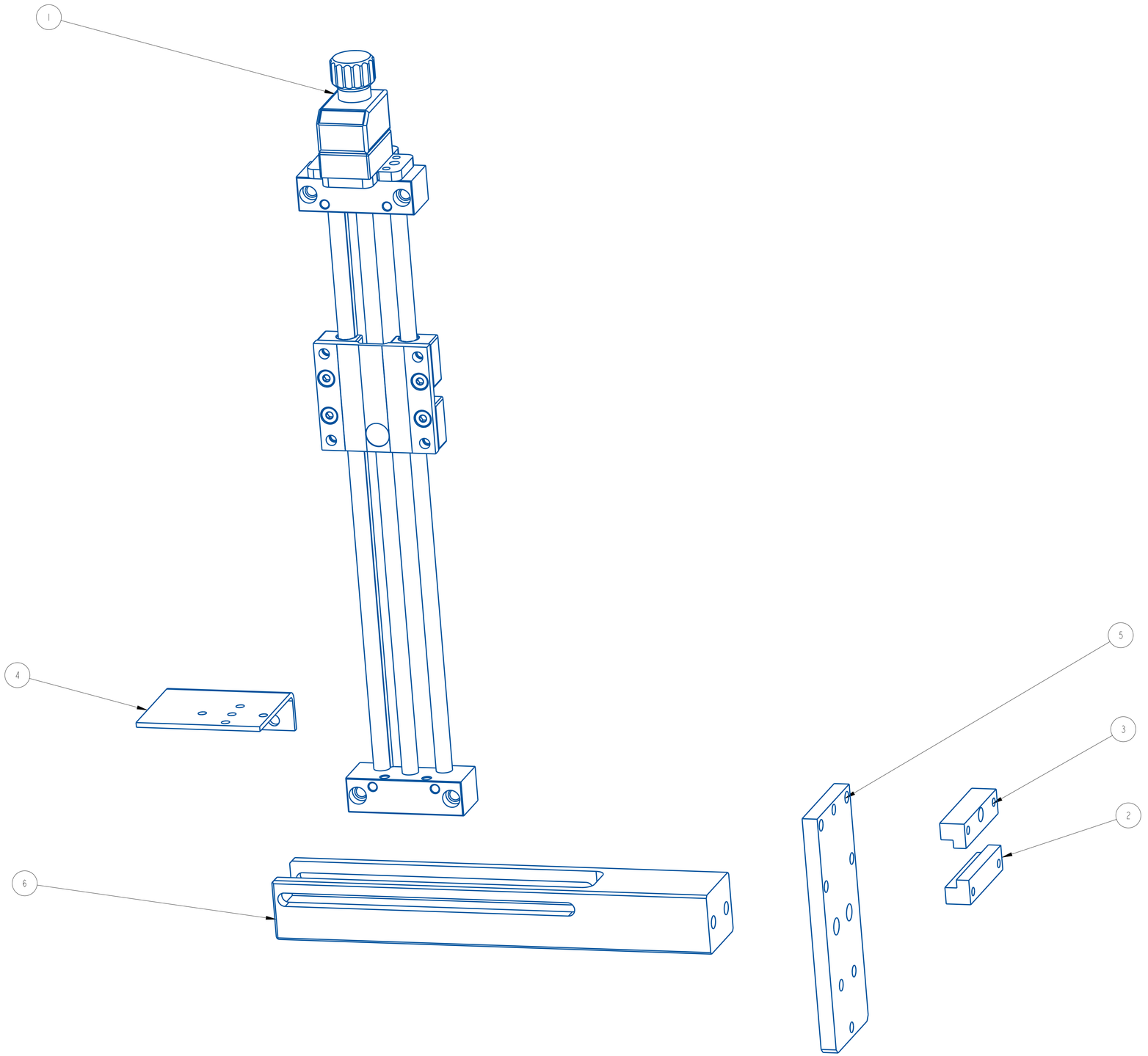
QUADREL LABELING SYSTEMS
7670 JENTHER DRIVE
MENTOR, OHIO 44060
(440) 602-4700

SCALE: 1/1
DATE: Aug-07-25
DRW BY: TAZ
CHK BY:08/28/2025-SEM
APPR BY:

RAIL KIT WITH SCALES

MAT'L

22435-034



ITEM	QTY	PART NO.	DESCRIPTION	PARENT ITEM
1	1	792745-010	IGUS SLIDE	22181-015
2	1	A20844-000	GUIDE RAIL CLAMP BAR	22181-015
3	1	A20845-000	GUIDE RAIL CLAMP BAR	22181-015
4	1	A24348-012	CAMERA MOUNTING PLATE	22181-015
5	1	B20266-200	CONVEYOR MOUNTING PLATE	22181-015
6	1	B22969-240	MTG PLATE	22181-015

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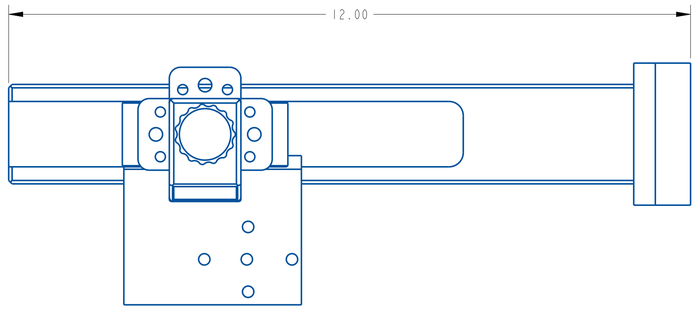
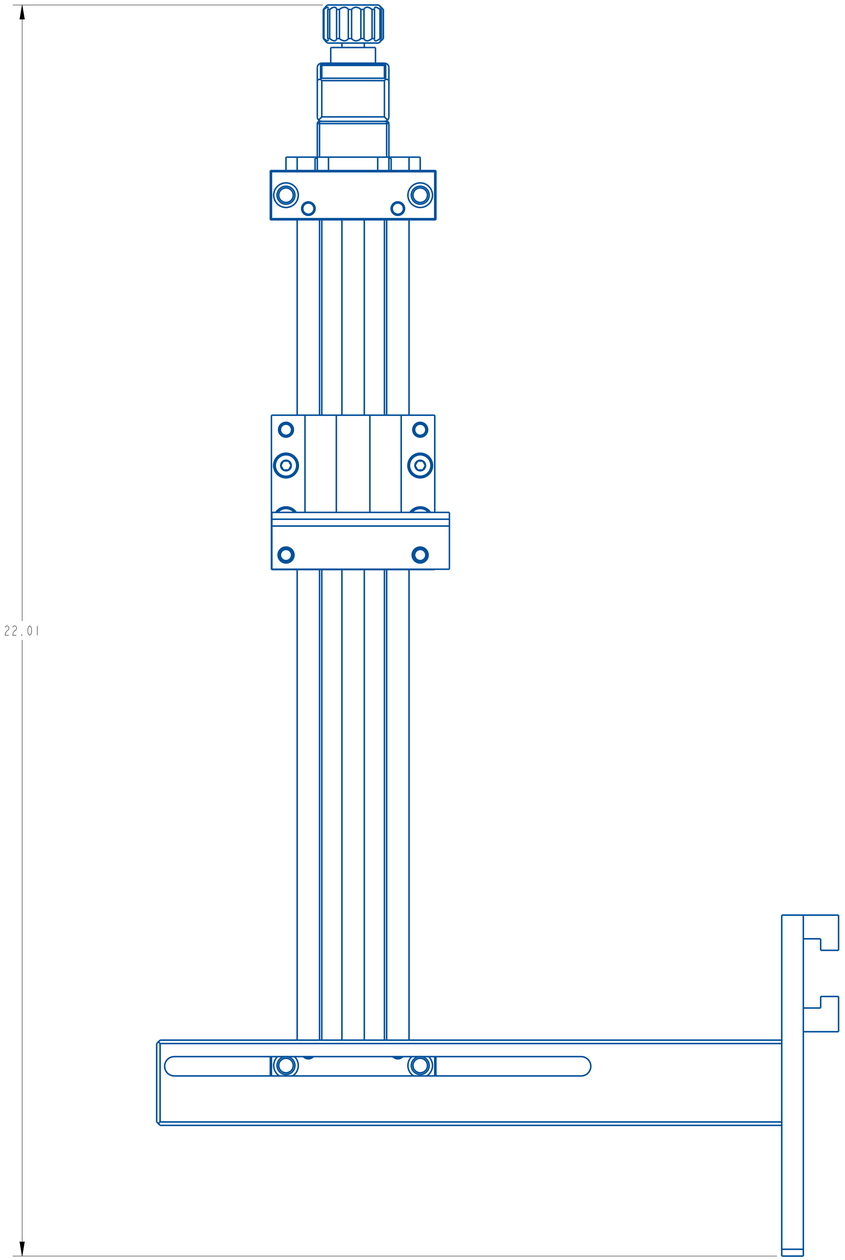
QUADREL LABELING SYSTEMS
7670 JENTHER DRIVE
MENTOR, OHIO 44060
(440) 602-4700

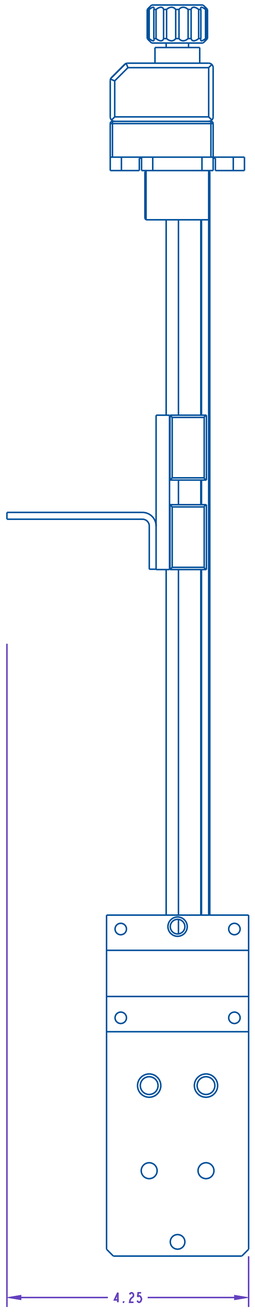
SCALE	3/4
DATE	11-13-25
DRAWN BY	ATT

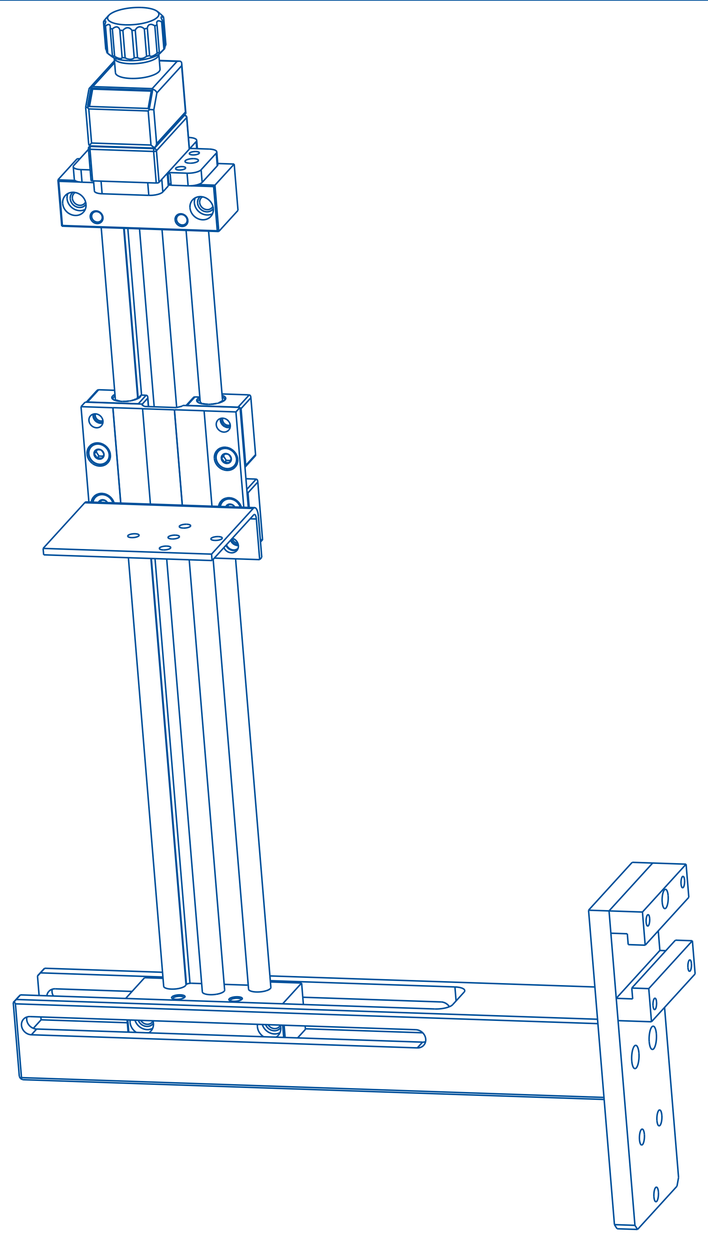
CAMERA CONVEYOR MOUNT

MAT'L | 22181-015 | 22181-015









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

SURFACE FINISH 125
BREAK ALL EDGES .005/.015
CORNER RADIUS .0107/.030

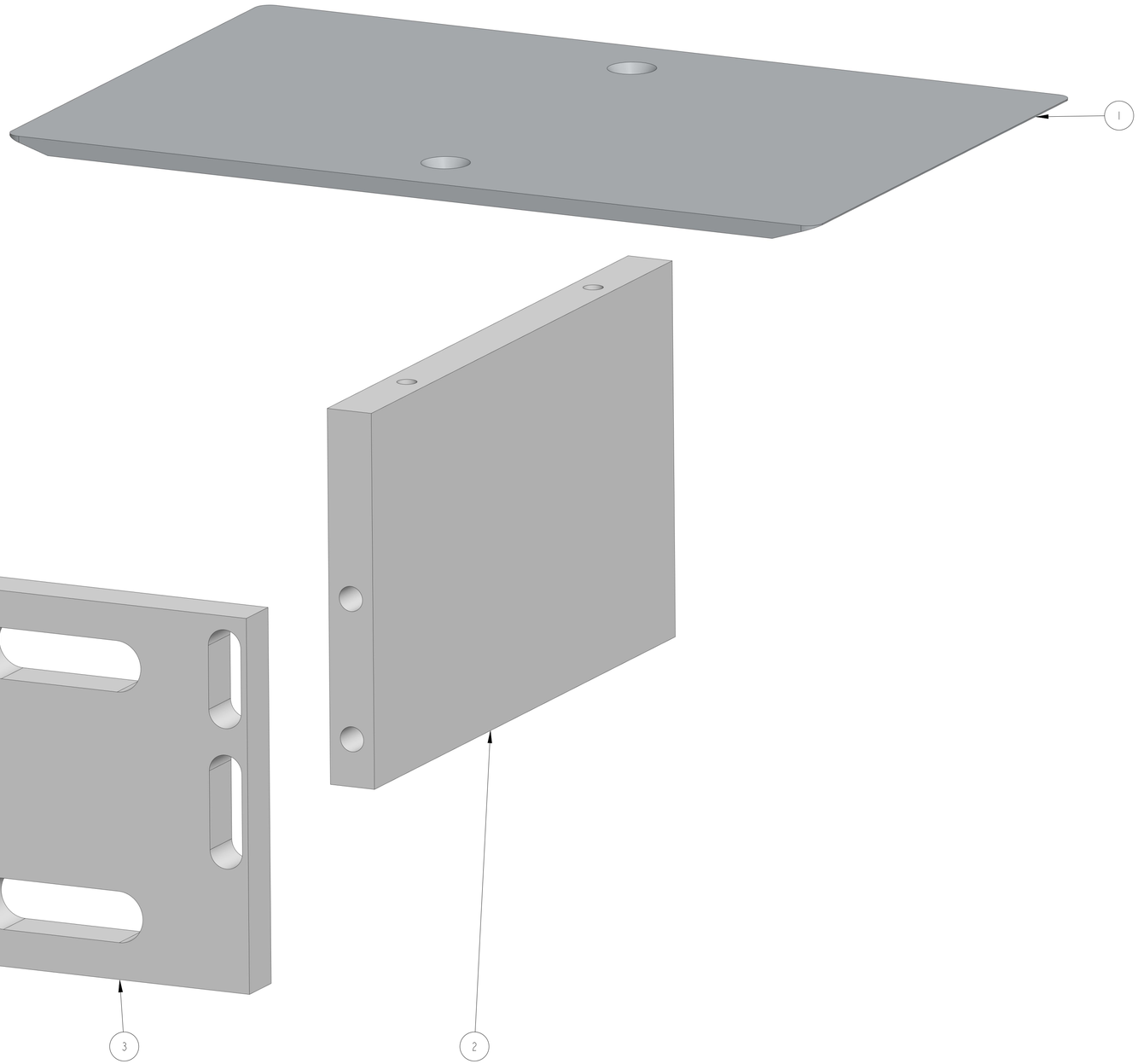
QUADREL LABELING SYSTEMS
7670 JENTHER DRIVE
MENTOR, OHIO 44060
(440) 602-4700

SCALE	3/4
DATE	11-13-25
DRAWN BY	ATT

CAMERA CONVEYOR MOUNT

MAT'L | 22181-015 | 22181-015

ITEM	QTY	PART NO.	DESCRIPTION	PARENT ITEM
1	1	B21924-100	TRANSFER PLATE	21180-100_RH
2	1	B21925-005	TRANSFER SUPPORT PLATE	21180-100_RH
3	1	B21926-003	TRANSFER CONNECTING PLATE	21180-100_RH



REV	DATE	DESCRIPTION	BY
A	May-25-21	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°

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

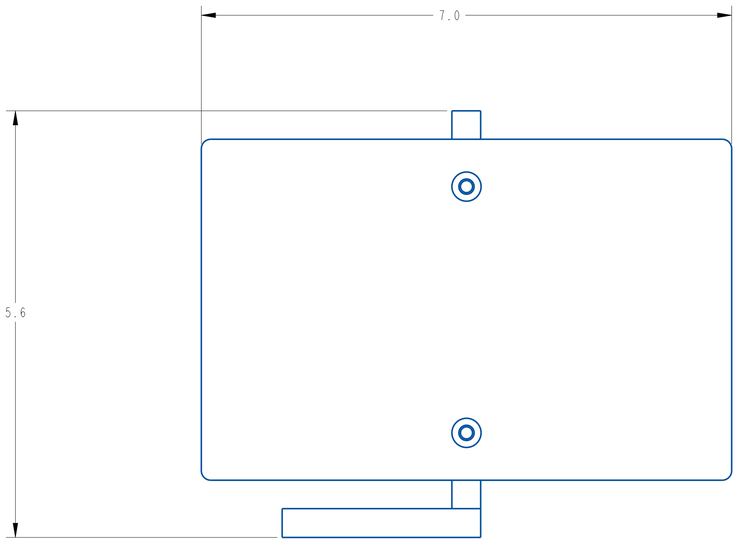
QUADREL LABELING SYSTEMS
7670 JENTHER DRIVE
MENTOR, OHIO 44060
(440) 602-4700

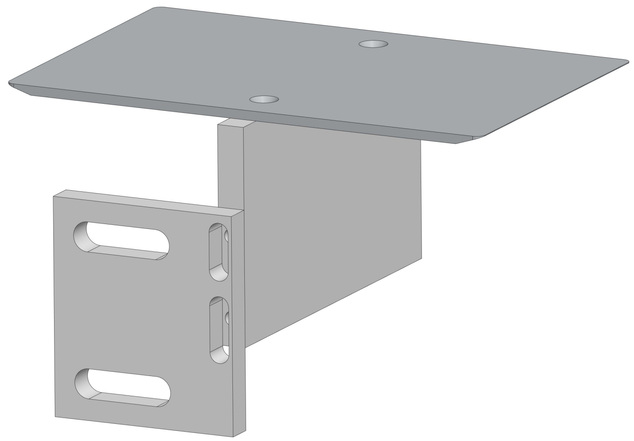
SCALE: 2/1
DATE: May-25-21
DRW BY: TJS
CHK BY: 10/17/2024-SEM
APPR BY:

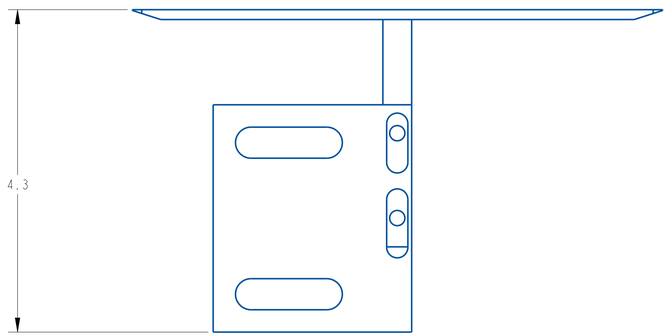
END TRANSFER

MAT'L

21180-100







REV	DATE	DESCRIPTION	BY
A	May-25-21	NEW DRAWING	TJS

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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

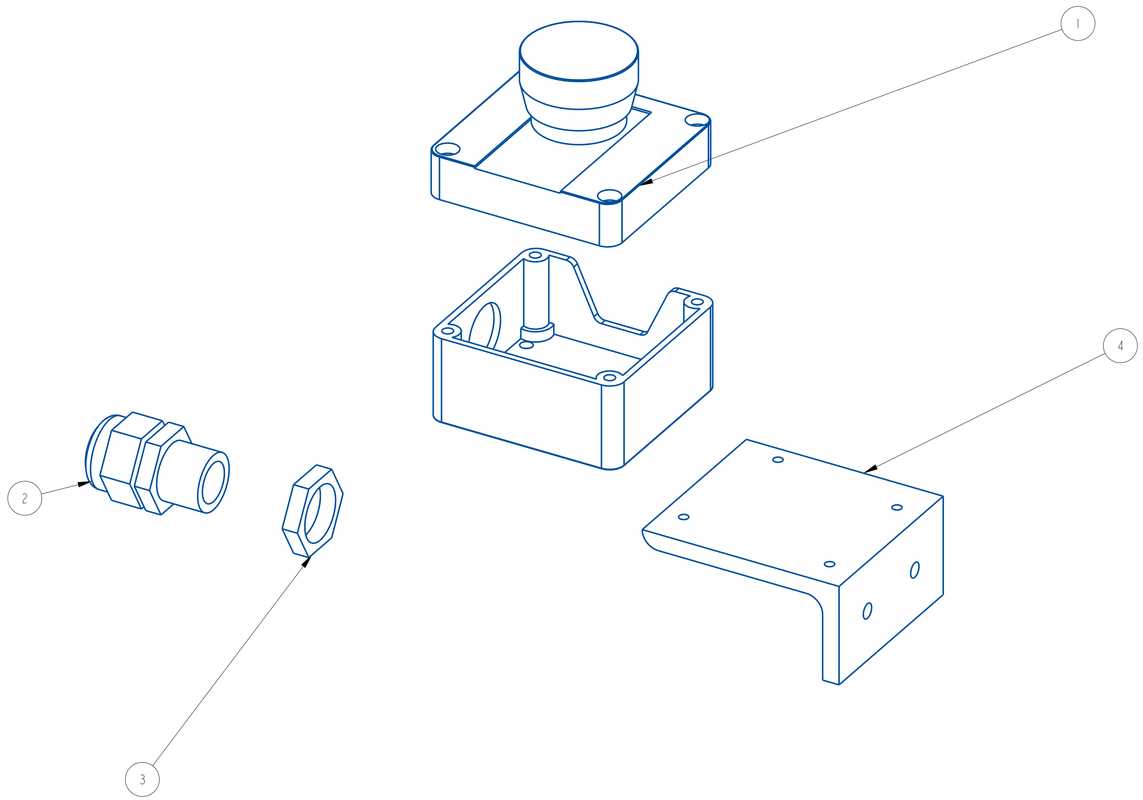
SCALE: 1/1
DATE: May-25-21
DRW BY: TJS
CHK BY: 10/17/2024-SEM
APPR BY:

END TRANSFER

MAT'L

21180-100

ITEM	QTY	PART NO.	DESCRIPTION	PARENT ITEM
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

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

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

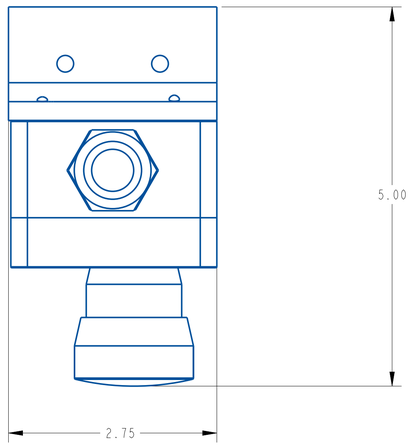
QUADREL LABELING SYSTEMS
7670 JENTHER DRIVE
MENTOR, OHIO 44060
(440) 602-4700

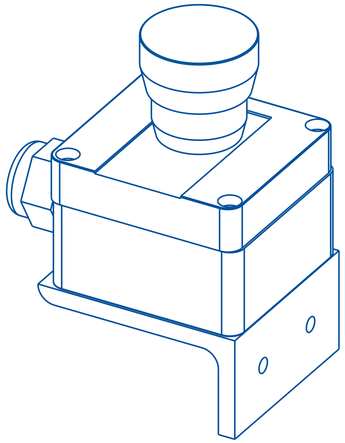
SCALE: 1/1
DATE: 8-29-16
DRW BY: TJS
CHK BY: 03/08/2024-SEM
APPR BY:

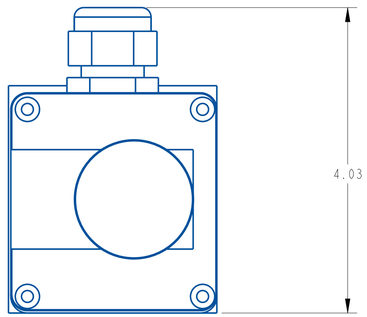
EMERGENCY STOP ASSEMBLY

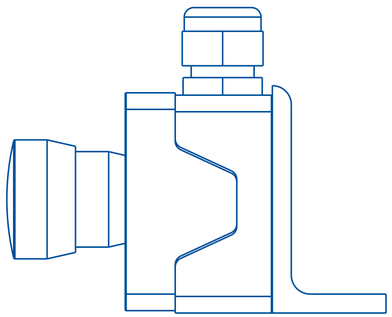
MAT'L

20789-000









REV	DATE	DESCRIPTION	BY
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X ± .1
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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: 1/1
DATE: 8-29-16
DRW BY: TJS
CHK BY:03/08/2024-SEM
APPR BY:

EMERGENCY STOP ASSEMBLY

MAT'L

20789-000

ASSEMBLY TITLE: HEAD SUPPORT ASSEMBLY

GENERAL FUNCTION:

The head support assembly keeps the labeling head in a “locked position” and prevents head vibration and wobbling as the label motor is engaged. The head support assembly is also used to set the camber or front/back tilt of the head.

SETUP AND ADJUSTMENTS:

HORIZONTAL ADJUSTMENT: To set the horizontal position of the labeling head, use the side mount wheel handle (some older systems may feature the ratcheted handle). Turn the handle clockwise to move the head towards the conveyor. Turn it counter clockwise to move the head away from the conveyor.

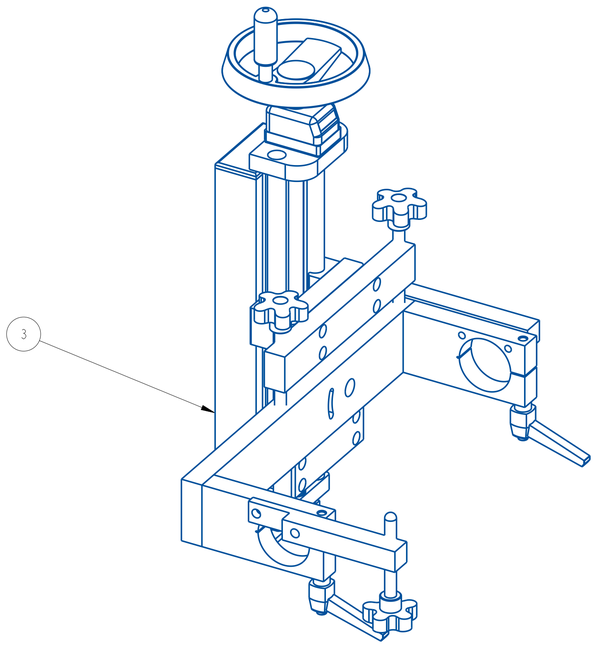
VERTICAL ADJUSTMENT: Using the lower wheel handle to set the vertical position of the labeling head. Turn the wheel clockwise to lower labeling head. Turn the wheel counter clockwise to raise the labeling head.

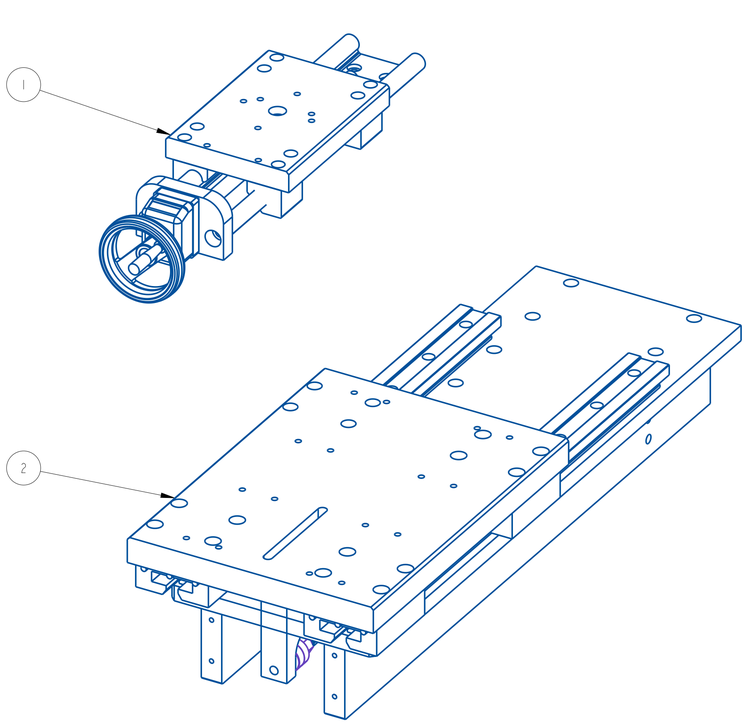
MAINTENANCE:

No scheduled maintenance is required for this assembly. Always keep the drive areas free of label flash and debris.

TROUBLESHOOTING: None this section.

ITEM	QTY	PART NO.	DESCRIPTION	PARENT ITEM
1	1	22626H-000	HORIZONTAL ADJUST	22626Q160-RHH
2	1	22626R-000	HEAD SUPPORT RETRACT	22626Q160-RHH
3	1	22626VQ160-RHH	VERTICAL HEAD SUPPORT	22626Q160-RHH





REV	DATE	DESCRIPTION	BY
A	11-26-13	NEW DRAWING	MAW

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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 .0107.030

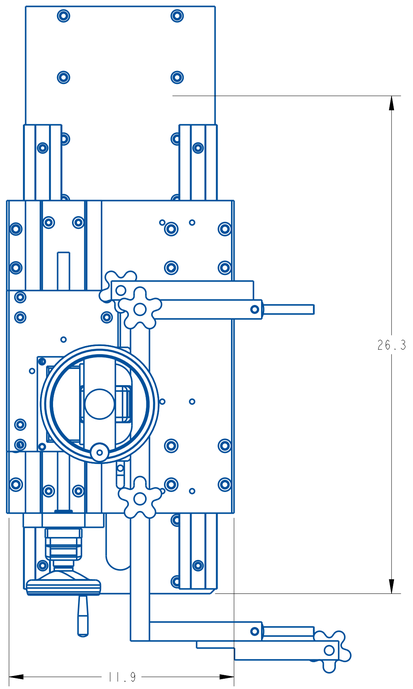
QUADREL LABELING SYSTEMS
7670 JENTHER DRIVE
MENTOR, OHIO 44060
(440) 602-4700

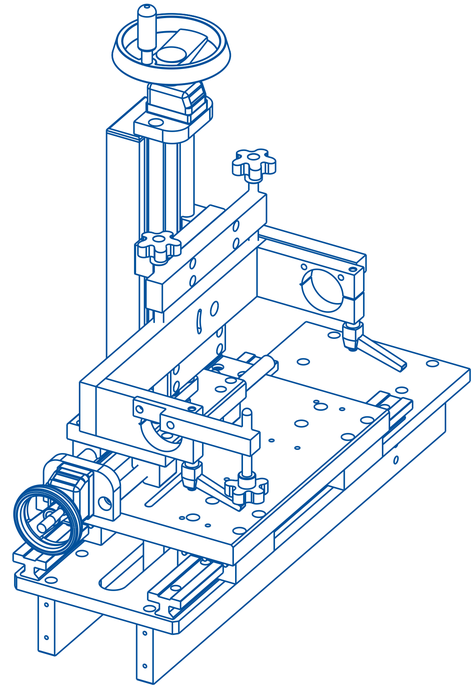
SCALE: 5/16
DATE: 11-26-13
DRW BY: MAW
CHK BY:06/06/2024-SEM
APPR BY:

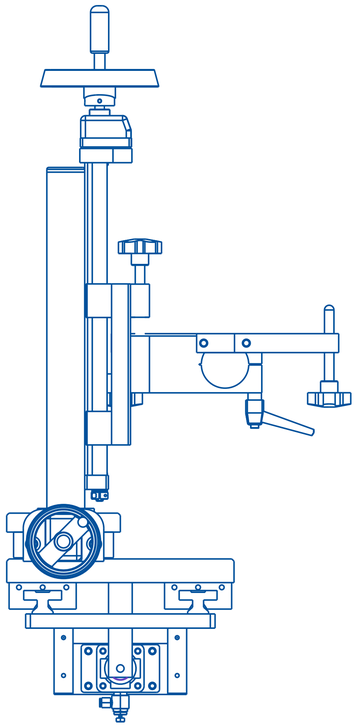
RHH RETRACTABLE HEAD SUPPORT

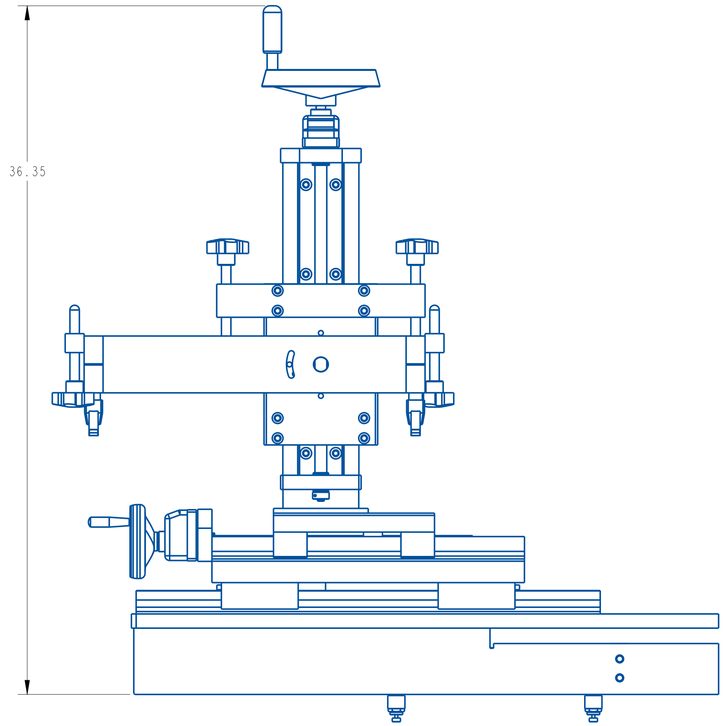
MAT'L

22626Q160-RHH









REV	DATE	DESCRIPTION	BY
A	11-26-13	NEW DRAWING	MAW

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

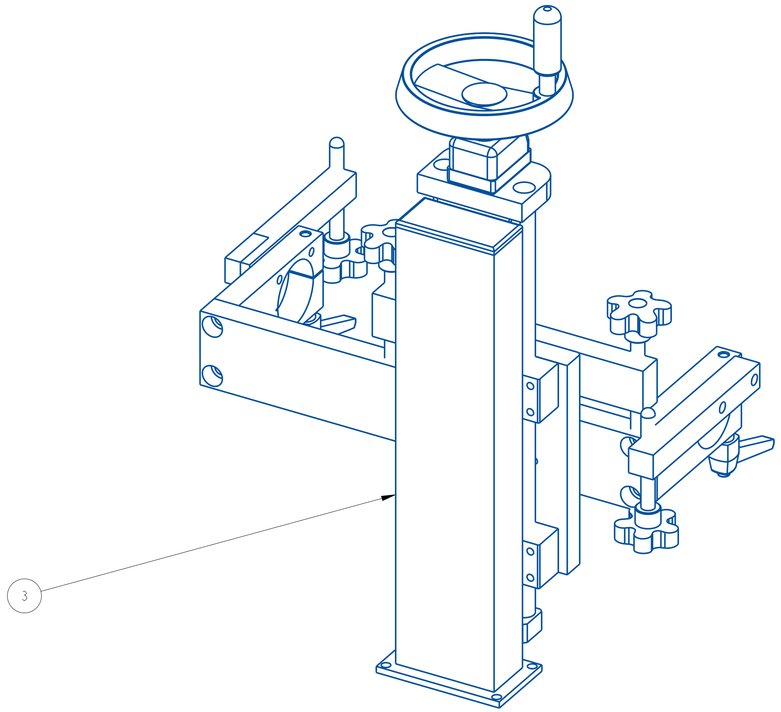
SCALE: 1/4
DATE: 11-26-13
DRW BY: MAW
CHK BY:06/06/2024-SEM
APPR BY:

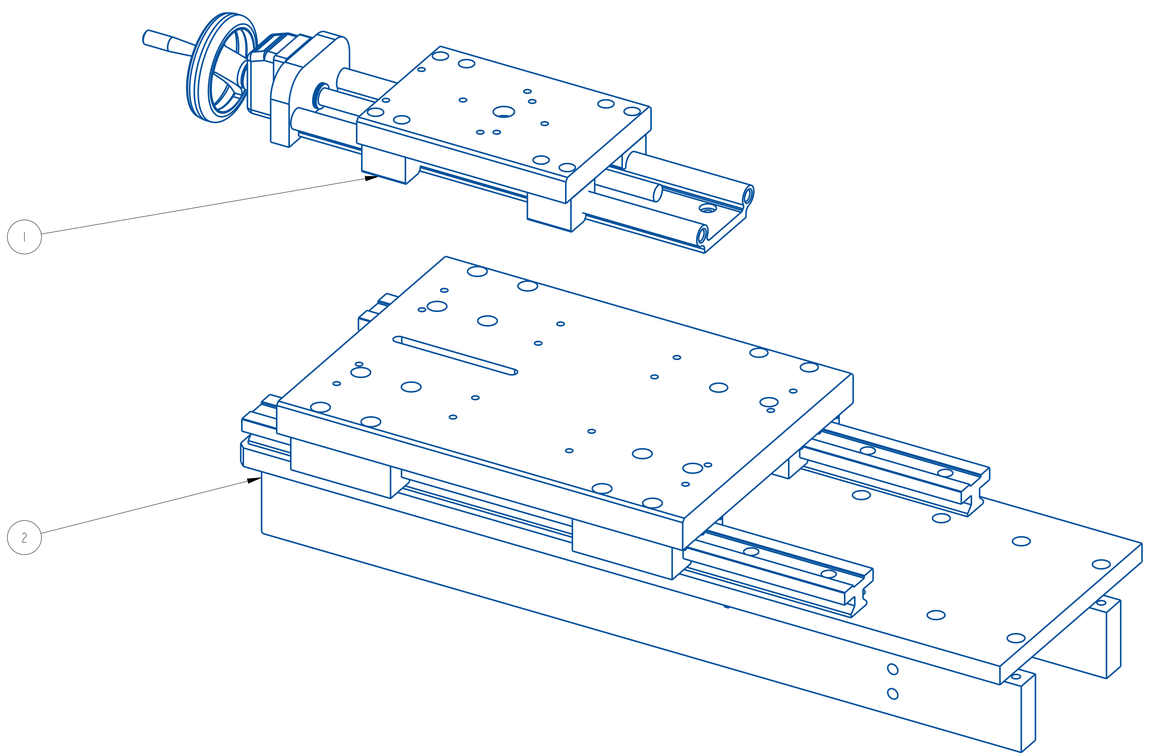
RHH RETRACTABLE HEAD SUPPORT

MAT'L

22626Q160-RHH

ITEM	QTY	PART NO.	DESCRIPTION	PARENT ITEM
1	1	22626H-000	HORIZONTAL ADJUST	22626Q160-LHH
2	1	22626R-000_RET	HEAD SUPPORT RETRACT	22626Q160-LHH
3	1	22626VQ160-LHH	VERTICAL HEAD SUPPORT	22626Q160-LHH





SHEET 1 OF 2

REV	DATE	DESCRIPTION	BY
A	11-26-13	NEW DRAWING	MAW

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.X ± .1
.XX ± .01
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ANGLES ± 30'

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

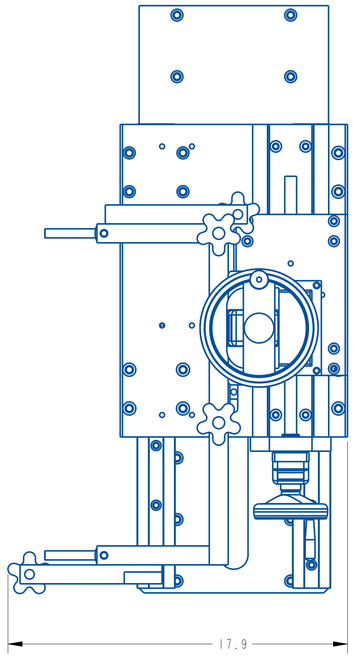
QUADREL LABELING SYSTEMS
7670 JENTHER DRIVE
MENTOR, OHIO 44060
(440) 602-4700

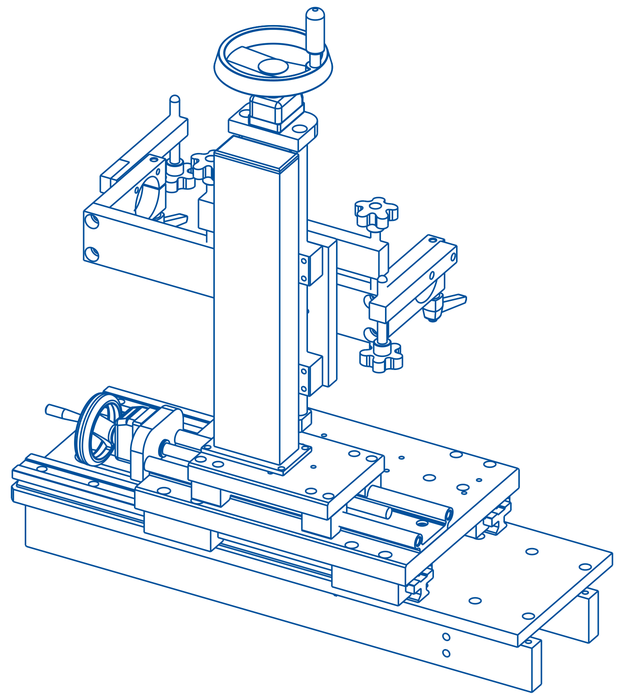
SCALE: 3/8
DATE: 11-26-13
DRW BY: MAW
CHK BY: 06/06/2024-SEM
APPR BY:

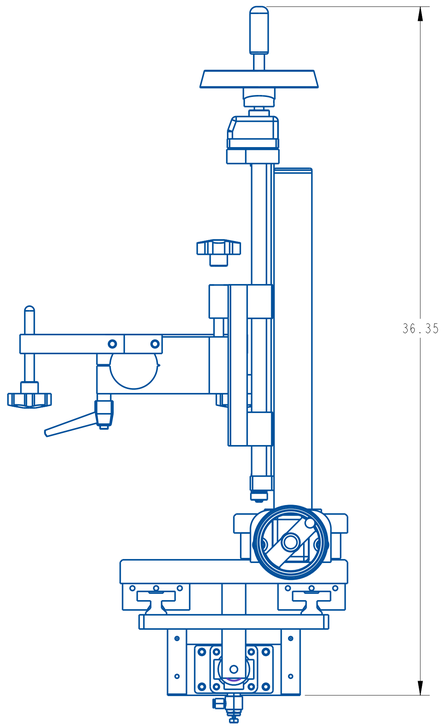
RHH RETRACTABLE HEAD SUPPORT

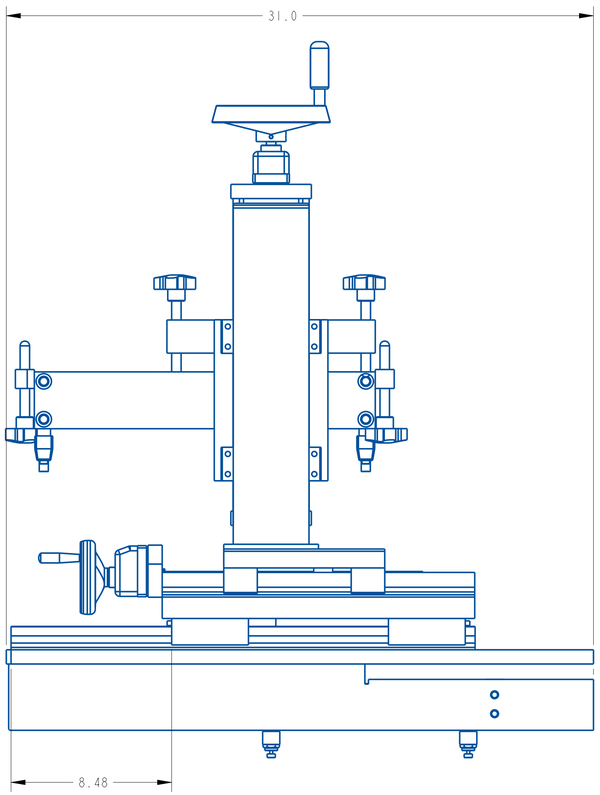
MAT'L

22626Q160-LHH









REV	DATE	DESCRIPTION	BY
A	11-26-13	NEW DRAWING	MAW

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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

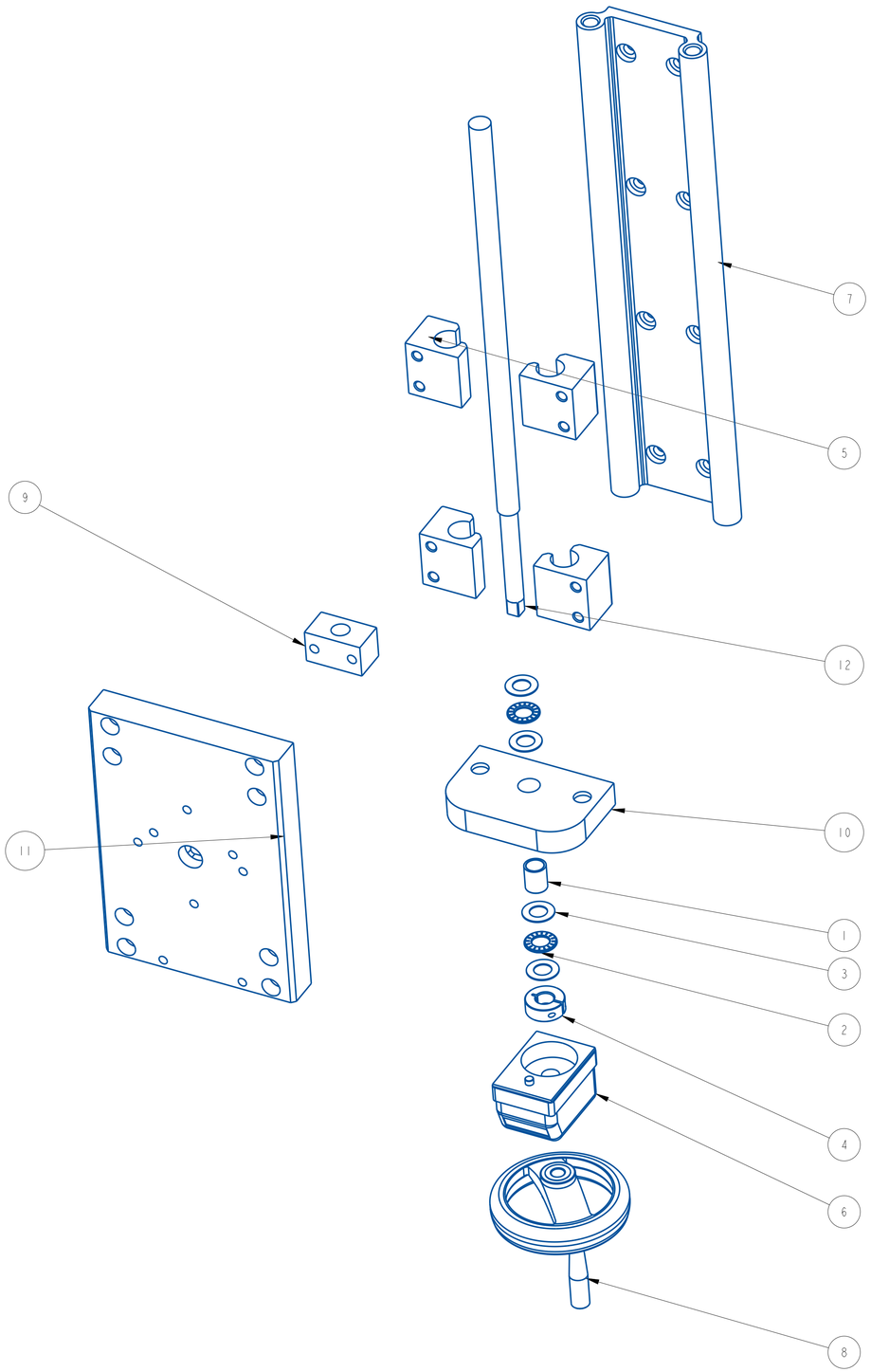
SCALE: 1/4
DATE: 11-26-13
DRW BY: MAW
CHK BY:06/06/2024-SEM
APPR BY:

RHH RETRACTABLE HEAD SUPPORT

MAT'L

22626Q160-LHH

ITEM	QTY	PART NO.	DESCRIPTION	PARENT ITEM
1	1	141177-000	SLEEVE BEARING, 5/8OD. x 1/2ID. x 3/4LNG	22626H-000
2	2	181079-000	BEARING, NEEDLE ROLLER	22626H-000
3	4	181080-000	BEARING, THRUST WASHER	22626H-000
4	1	361169-000	COLLAR, 1/2 IN. ID ONE-PIECE CLAMP	22626H-000
5	4	792248-001	PILLOW BLOCK	22626H-000
6	1	792354-000	DIGITAL POSITION INDICATOR	22626H-000
7	1	792355-000	DRYLIN RAIL	22626H-000
8	1	801079-000	4" DIA HANDWHEEL 1/2" BORE	22626H-000
9	1	A25120-000	BRONZE NUT, RH	22626H-000
10	1	B22005-001	BEARING PLATE	22626H-000
11	1	C20626-000	STAND SLED	22626H-000
12	1	C20977-030	THREADED ROD, RH	22626H-000



REV	DATE	DESCRIPTION	BY
A	11-26-13	NEW DRAWING	ATT

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.X ± .1
.XX ± .01
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ANGLES ± 30'

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

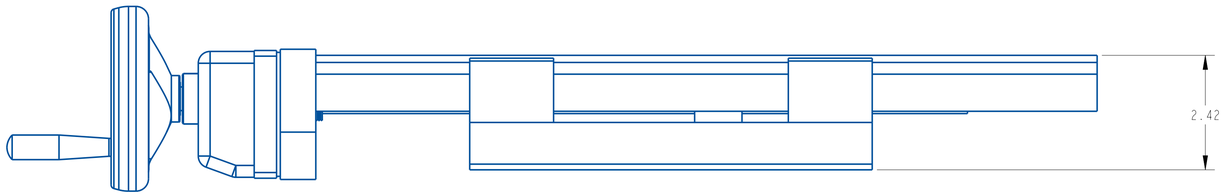
QUADREL LABELING SYSTEMS
7670 JENTHER DRIVE
MENTOR, OHIO 44060
(440) 602-4700

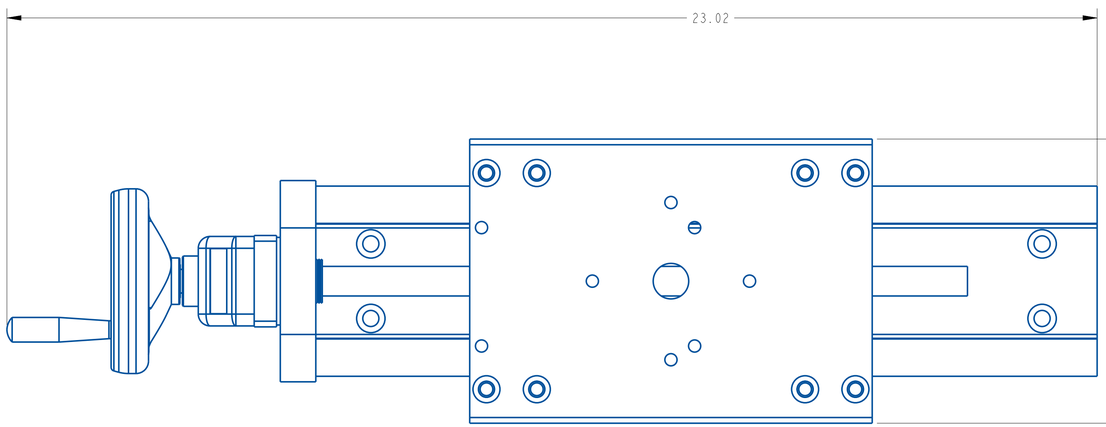
SCALE: 1/2
DATE: 11-26-13
DRW BY: ATT
CHK BY:04/02/2024-SEM
APPR BY:

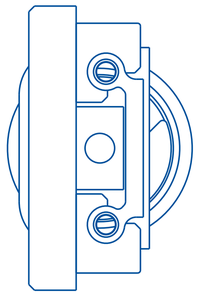
HORIZONTAL ADJUST

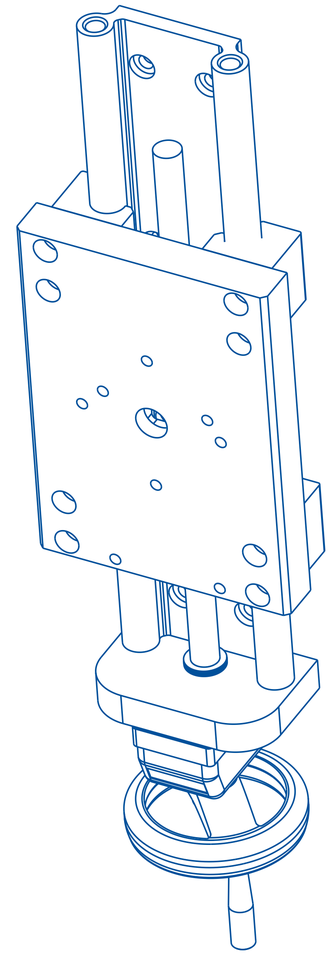
MAT'L

22626H-000









REV	DATE	DESCRIPTION	BY
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ANGLES ± 30'
SURFACE FINISH 125
BREAK ALL EDGES .005/.015
CORNER RADIUS .010/.030
ALL ANGLES ARE 90°

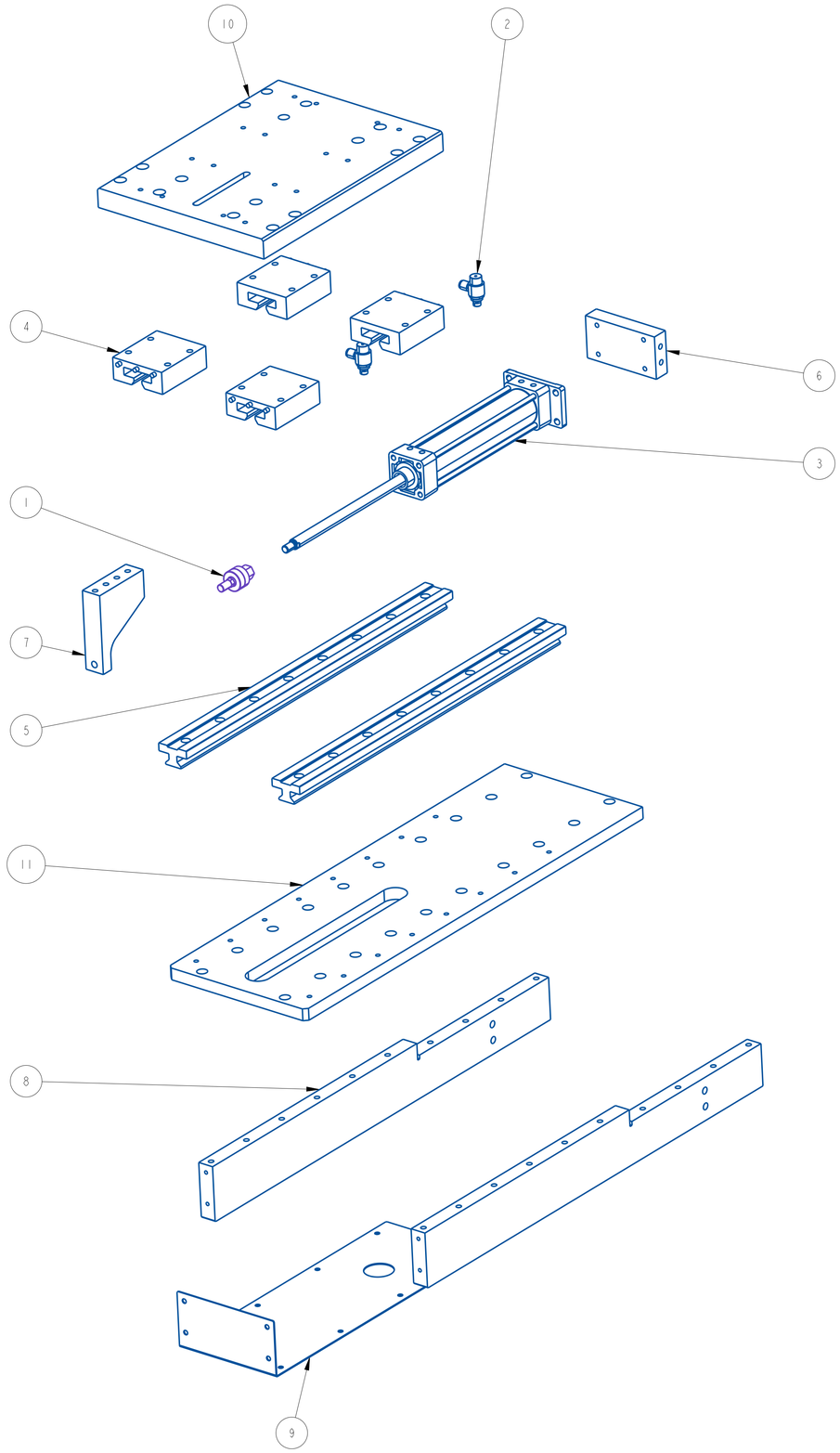
QUADREL LABELING SYSTEMS
7670 JENTHER DRIVE
MENTOR, OHIO 44060
(440) 602-4700

SCALE:	5/8
DATE:	11-26-13
DRW BY:	ATT
CHK BY:	04/02/2024-SEM
APPR BY:	

HORIZONTAL ADJUST

MAT'L

22626H-000



ITEM	QTY	PART NO.	DESCRIPTION	PARENT ITEM
1	1	392617-001	ALIGNMENT COUPLER-CYLINDER	22626R-000
2	2	393603-000	FLOW CONTROL, 3/8NPT X 1/4 TUBE	22626R-000
3	1	394418-008	CYLINDER, 2" BORE x 8" STROKE	22626R-000
4	4	793041-000	T CARRIAGE	22626R-000
5	2	793042-001	RAIL	22626R-000
6	1	A26172-000	CYLINDER MTG. PLATE	22626R-000
7	1	B22958-120	ROD ANCHOR	22626R-000
8	2	C21437-000	HEAD SUPPORT GUSSET	22626R-000
9	1	C21438-000	COVER	22626R-000
10	1	D24965-120	MTG PLATE	22626R-000
11	1	D24966-120	MTG PLATE	22626R-000

REV	DATE	DESCRIPTION	BY
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XXX ± .005
ANGLES ± 30'

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

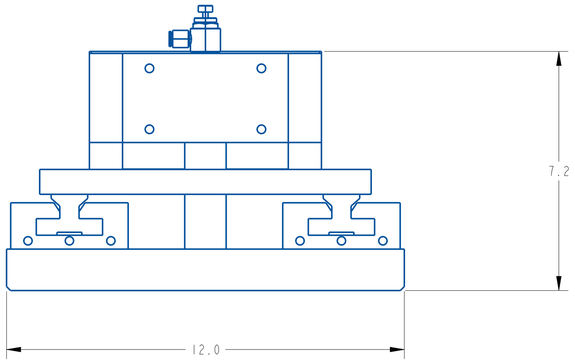
QUADREL LABELING SYSTEMS
7670 JENTHER DRIVE
MENTOR, OHIO 44060
(440) 602-4700

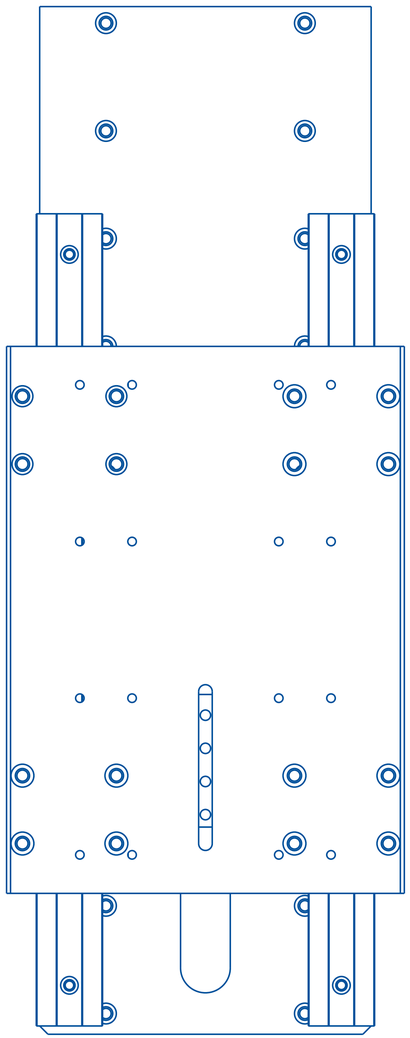
SCALE: 1/4
DATE: 11-26-13
DRW BY: MAW
CHK BY: 04/05/2024-SEM
APPR BY:

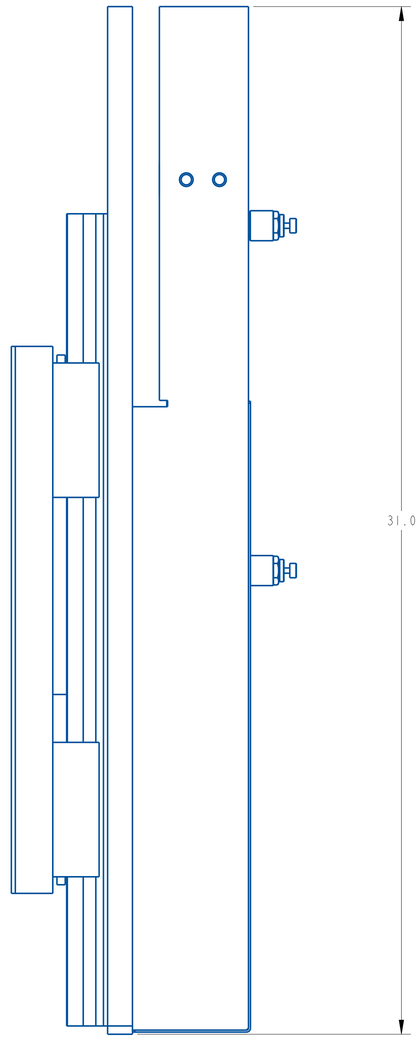
HEAD SUPPORT RETRACT

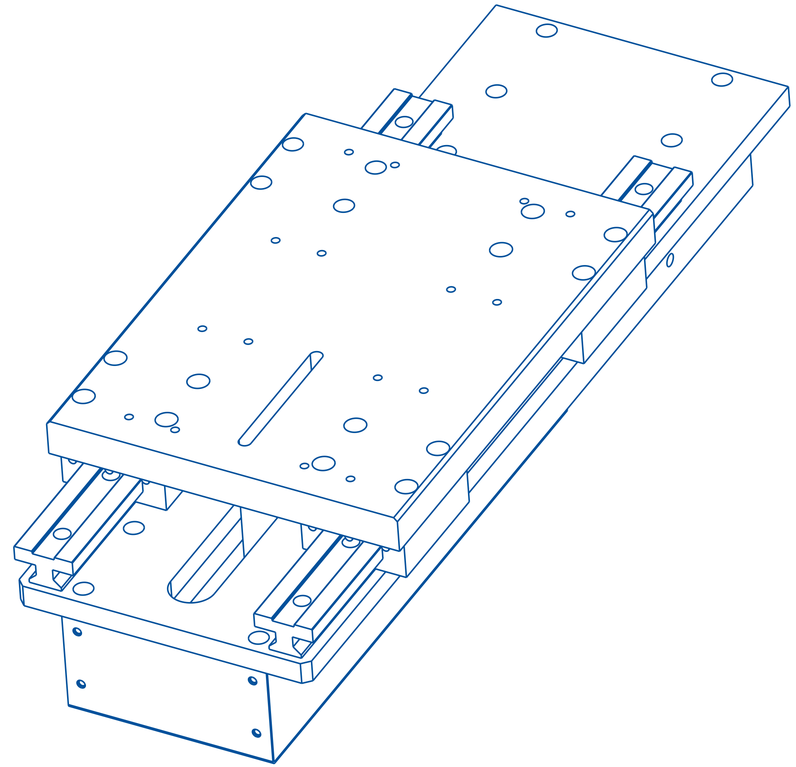
MAT'L

22626R-000









REV	DATE	DESCRIPTION	BY
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XXX ± .005
ANGLES ± 30'

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

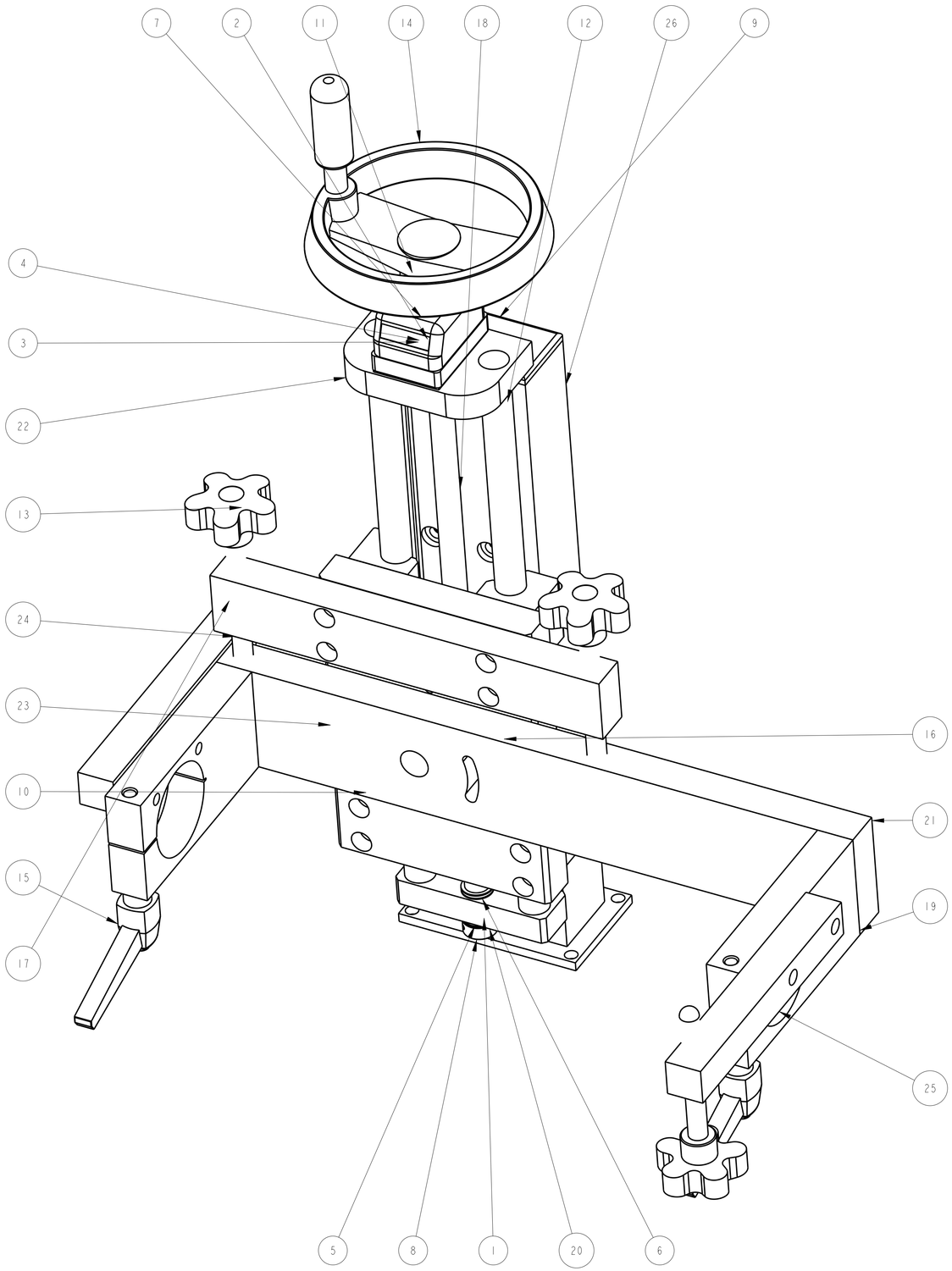
QUADREL LABELING SYSTEMS
7670 JENTHER DRIVE
MENTOR, OHIO 44060
(440) 602-4700

SCALE: 7/16
DATE: 11-26-13
DRW BY: MAW
CHK BY:04/05/2024-SEM
APPR BY:

HEAD SUPPORT RETRACT

MAT'L

22626R-000



ITEM	QTY	PART NO.	DESCRIPTION	PARENT ITEM
1	1	141172-000	SLEEVE BEARING	22626VQ160-LHH
2	1	141177-000	SLEEVE BEARING	22626VQ160-LHH
3	2	181079-000	BEARING, NEEDLE ROLLER	22626VQ160-LHH
4	4	181080-000	BEARING, THRUST WASHER	22626VQ160-LHH
5	2	181108-000	BEARING, NEEDLE ROLLER	22626VQ160-LHH
6	4	181111-000	THRUST WASHER	22626VQ160-LHH
7	1	361169-000	COLLAR, 1/2 IN. ID ONE-PIECE CLAMP	22626VQ160-LHH
8	1	362186-000	COLLAR, 3/8 IN. ID ONE-PIECE CLAMP	22626VQ160-LHH
9	1	729006-000	CAP INSERT FOR 2 X 4 TUBE	22626VQ160-LHH
10	4	792248-000	PILLOW BLOCK	22626VQ160-LHH
11	1	792354-000	DIGITAL POSITION INDICATOR	22626VQ160-LHH
12	1	792355-000	DRYLIN RAIL	22626VQ160-LHH
13	4	793045-000	DIAMOND KNURL KNOB	22626VQ160-LHH
14	1	801080-001	6" HANDWHEEL	22626VQ160-LHH
15	2	801850-000	CLAMPING LEVER	22626VQ160-LHH
16	1	A24077-000	BRONZE NUT, RH	22626VQ160-LHH
17	4	A26179-000	KNOB STUD	22626VQ160-LHH
B 18	1	B20045-111	THREADED ROD	22626VQ160-LHH
19	2	B21190-114	YOKE SIDE PLATE	22626VQ160-LHH
20	1	B21346-000	BOTTOM BEARING PLATE	22626VQ160-LHH
21	1	B21555-260	MTG YOKE BACK PLATE	22626VQ160-LHH
22	1	B22005-012	BEARING PLATE	22626VQ160-LHH
23	1	C20626-000	STAND SLED	22626VQ160-LHH
24	1	C21348-160	ADJUSTMENT PLATE	22626VQ160-LHH
25	2	C21349-120	ADJUSTMENT BLOCK	22626VQ160-LHH
26	1	D24433-120	HEAD SUPPORT RISER	22626VQ160-LHH

REV	DATE	DESCRIPTION	BY
B	Sep-30-22	WAS C20977-113	TAZ
A	11-26-13	NEW DRAWING	

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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

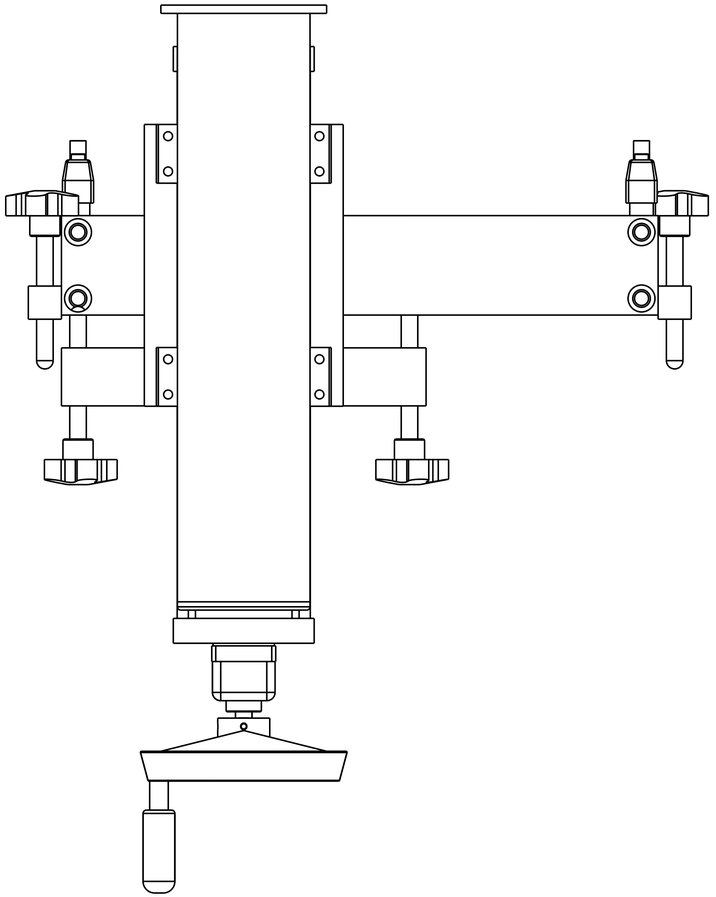
QUADREL LABELING SYSTEMS
7670 JENTHER DRIVE
MENTOR, OHIO 44060
(440) 602-4700

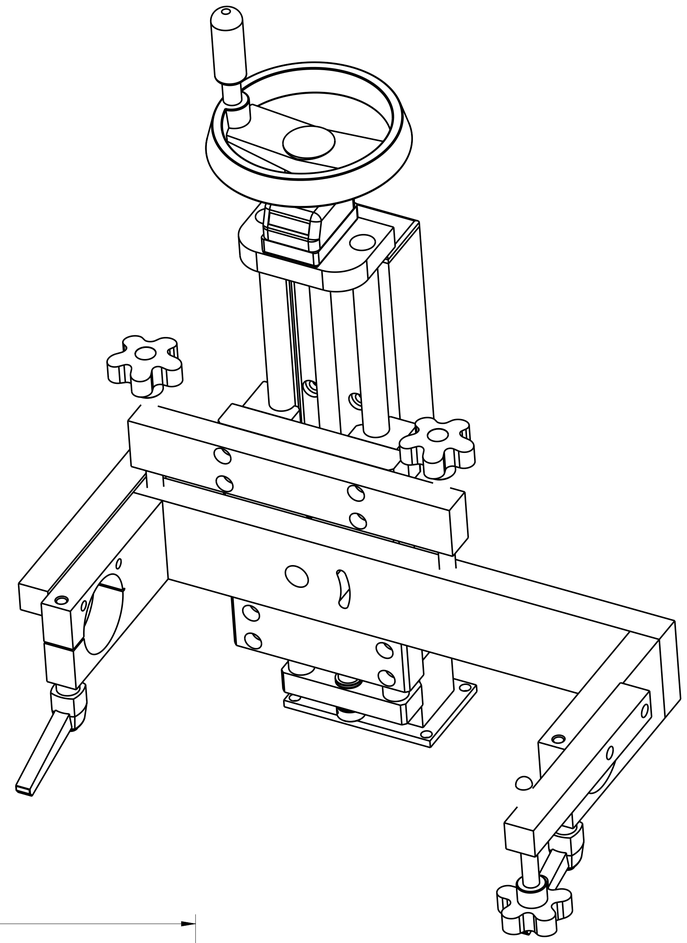
SCALE	5/8
DATE	11-26-13
DRAWN BY	MAW

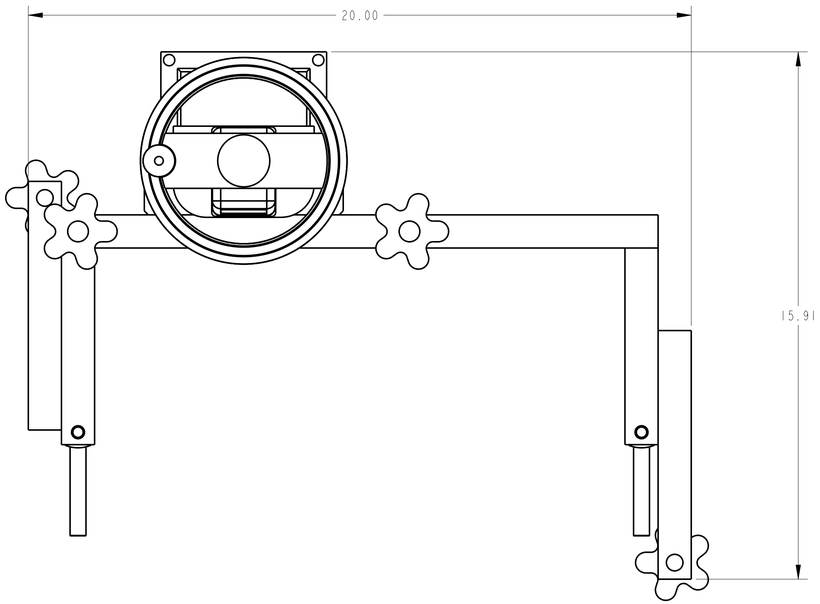
VERTICAL HEAD SUPPORT

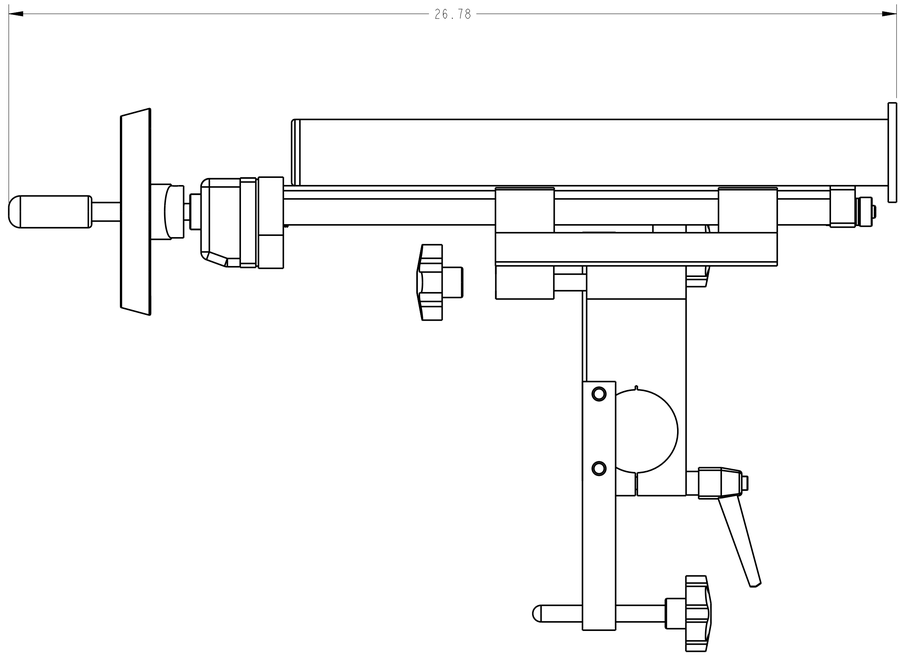
MAT'L 22626VQ160-LHH

22626VQ160-LHH









REV	DATE	DESCRIPTION	BY
A	11-26-13	NEW DRAWING	

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

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

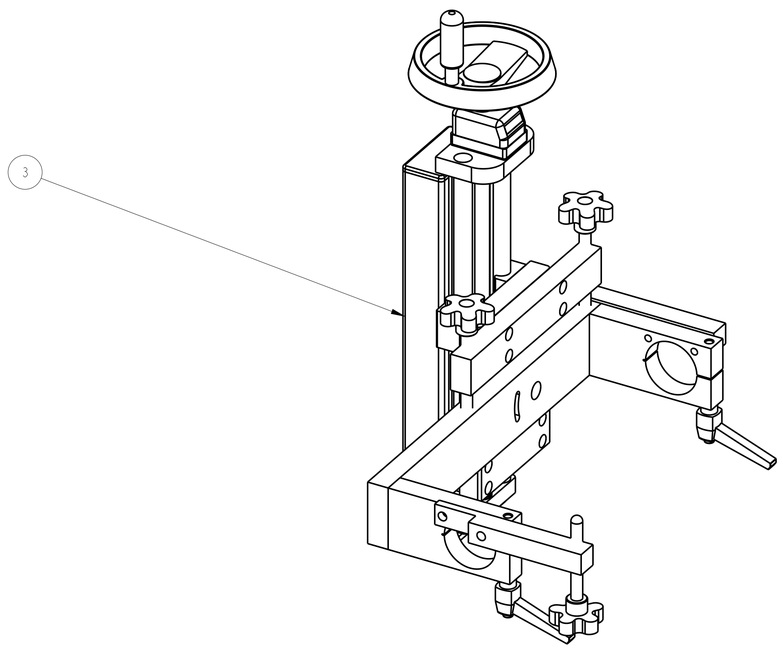
SCALE	7/16
DATE	11-26-13
DRAWN BY	MAW

VERTICAL HEAD SUPPORT

MAT'L 22626VQ160-LHH

22626VQ160-LHH

ITEM	QTY	PART NO.	DESCRIPTION	PARENT ITEM
1	1	22626H-000	HORIZONTAL ADJUST	22626Q160-RHHM
2	1	22626R-000	HEAD SUPPORT RETRACT	22626Q160-RHHM
3	1	22626VQ160-RHH	VERTICAL HEAD SUPPORT	22626Q160-RHHM



REV	DATE	DESCRIPTION	BY
A	11-26-13	NEW DRAWING	MAW

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

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

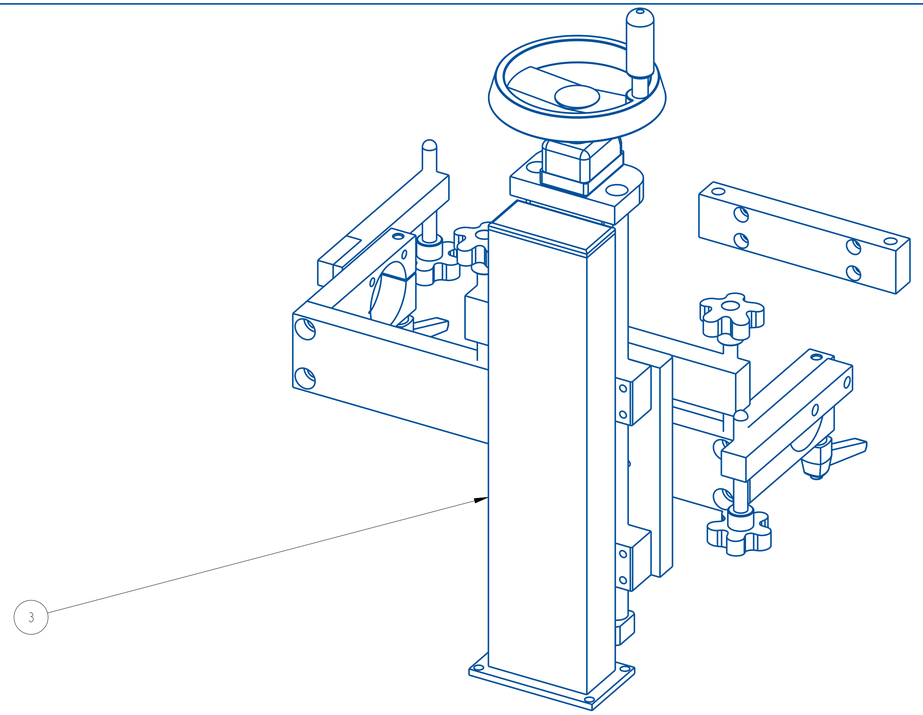
SCALE: 5/16
DATE: 11-26-13
DRW BY: MAW
CHK BY: 06/06/2024-SEM
APPR BY:

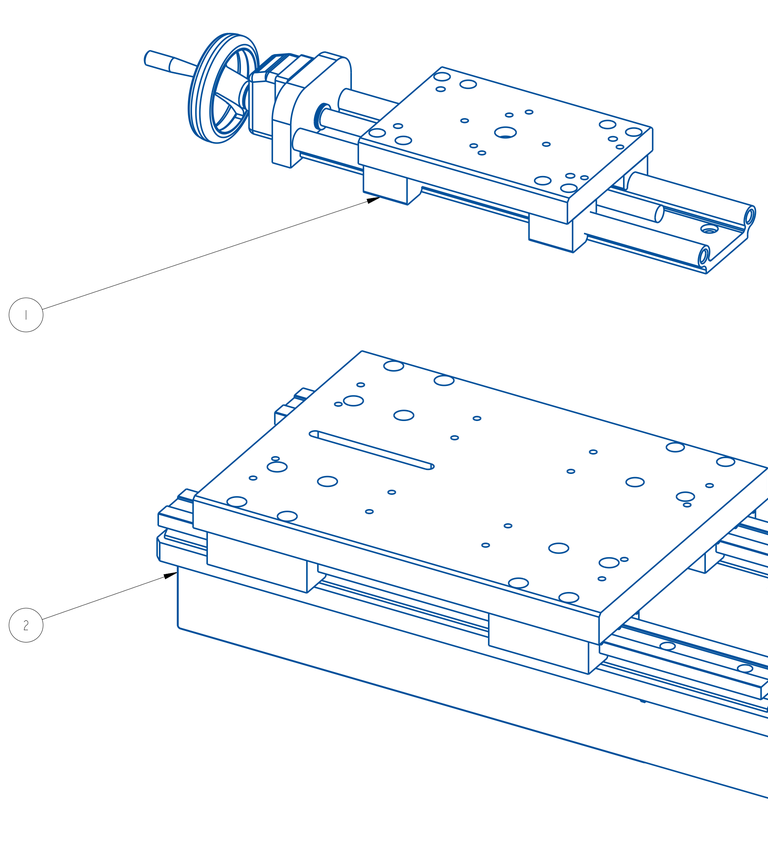
RHH RETRACTABLE HEAD SUPPORT

MAT'L

22626Q160-RHHM

ITEM	QTY	PART NO.	DESCRIPTION	PARENT ITEM
1	1	22626H-000	HORIZONTAL ADJUST	22626Q160-LHHM
2	1	22626R-000_RET	HEAD SUPPORT RETRACT	22626Q160-LHHM
3	1	22626VQ160-LHH	VERTICAL HEAD SUPPORT	22626Q160-LHHM
4	1	C21348-000	ADJUSTMENT PLATE	22626Q160-LHHM





REV	DATE	DESCRIPTION	BY
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.X ± .1
.XX ± .01
.XXX ± .005
ANGLES ± 30'

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

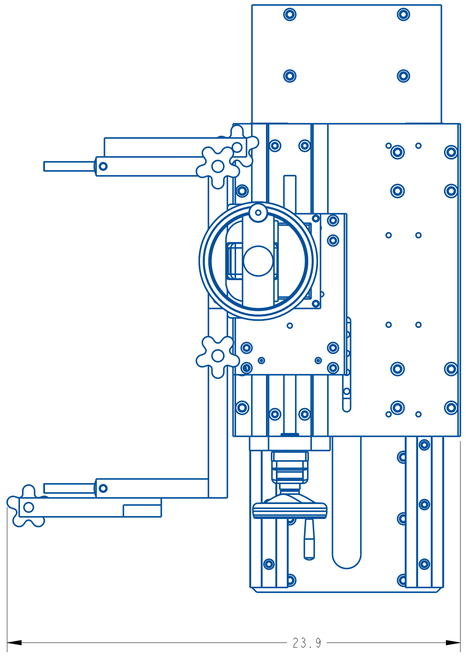
QUADREL LABELING SYSTEMS
7670 JENTHER DRIVE
MENTOR, OHIO 44060
(440) 602-4700

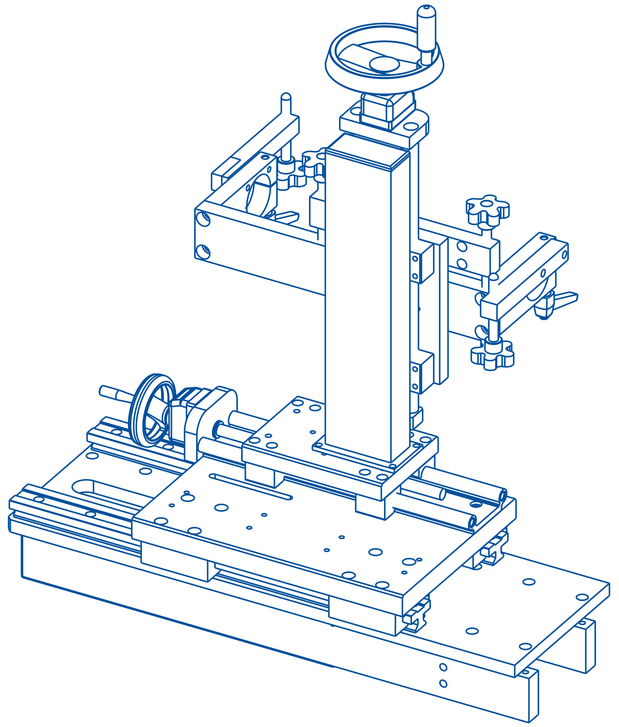
SCALE: 3/8
DATE: 11-26-13
DRW BY: MAW
CHK BY:06/06/2024-SEM
APPR BY:

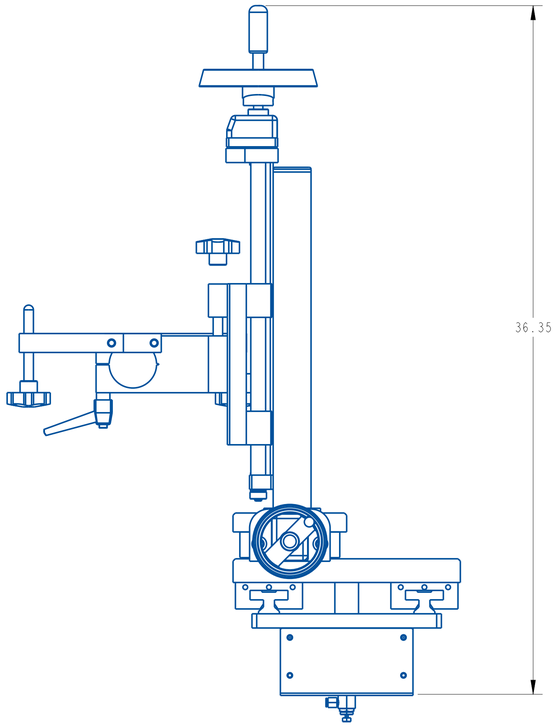
RHH RETRACTABLE HEAD SUPPORT

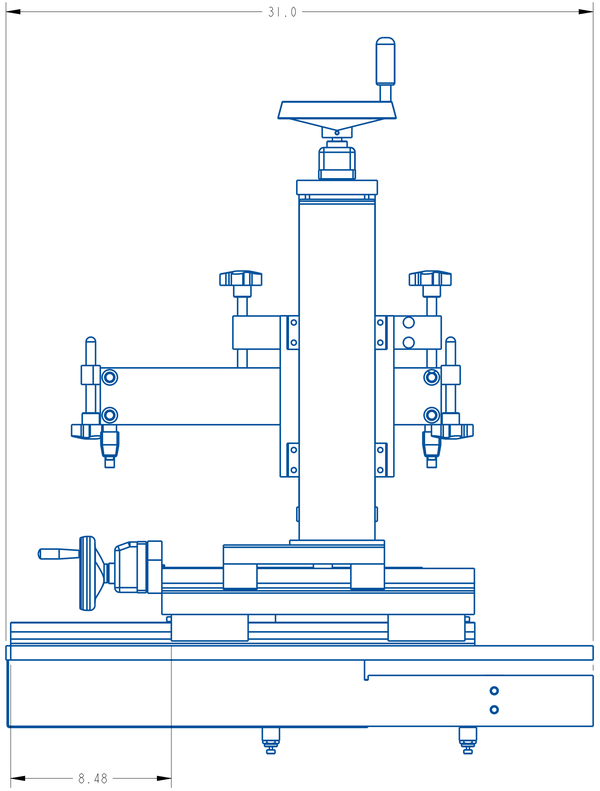
MAT'L

22626Q160-LHHM









SHEET 2 OF 2

REV	DATE	DESCRIPTION	BY
A	11-26-13	NEW DRAWING	MAW

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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

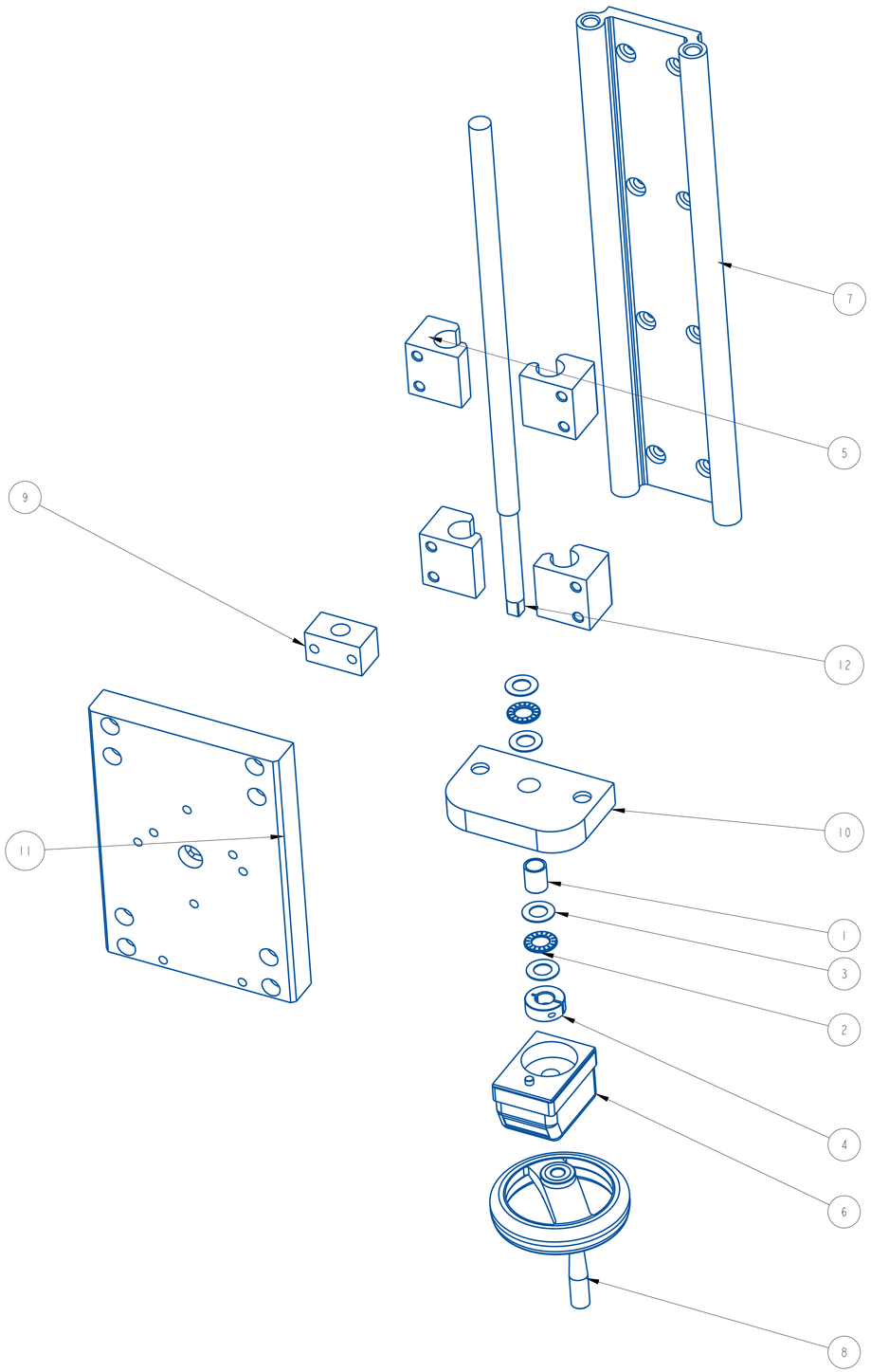
SCALE: 1/4
DATE: 11-26-13
DRW BY: MAW
CHK BY:06/06/2024-SEM
APPR BY:

RHH RETRACTABLE HEAD SUPPORT

MAT'L

22626Q160-LHHM

ITEM	QTY	PART NO.	DESCRIPTION	PARENT ITEM
1	1	141177-000	SLEEVE BEARING, 5/8OD. x 1/2ID. x 3/4LNG	22626H-000
2	2	181079-000	BEARING, NEEDLE ROLLER	22626H-000
3	4	181080-000	BEARING, THRUST WASHER	22626H-000
4	1	361169-000	COLLAR, 1/2 IN. ID ONE-PIECE CLAMP	22626H-000
5	4	792248-001	PILLOW BLOCK	22626H-000
6	1	792354-000	DIGITAL POSITION INDICATOR	22626H-000
7	1	792355-000	DRYLIN RAIL	22626H-000
8	1	801079-000	4" DIA HANDWHEEL 1/2" BORE	22626H-000
9	1	A25120-000	BRONZE NUT, RH	22626H-000
10	1	B22005-001	BEARING PLATE	22626H-000
11	1	C20626-000	STAND SLED	22626H-000
12	1	C20977-030	THREADED ROD, RH	22626H-000



REV	DATE	DESCRIPTION	BY
A	11-26-13	NEW DRAWING	ATT

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

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

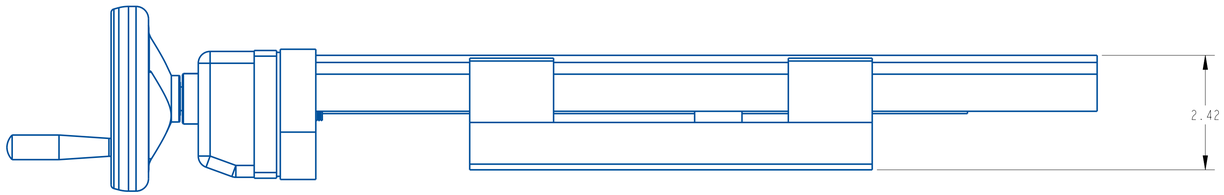
QUADREL LABELING SYSTEMS
7670 JENTHER DRIVE
MENTOR, OHIO 44060
(440) 602-4700

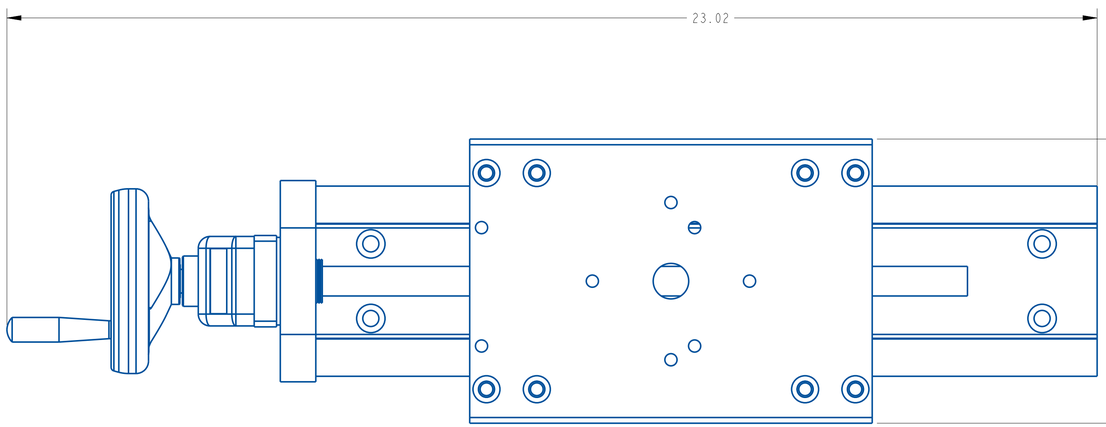
SCALE: 1/2
DATE: 11-26-13
DRW BY: ATT
CHK BY:04/02/2024-SEM
APPR BY:

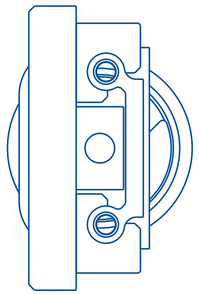
HORIZONTAL ADJUST

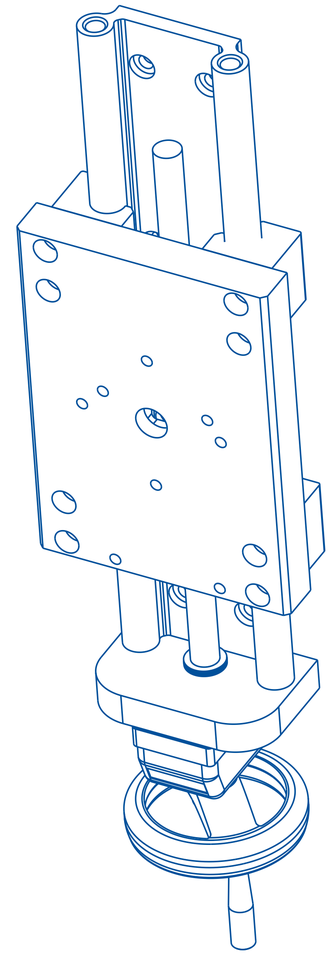
MAT'L

22626H-000









REV	DATE	DESCRIPTION	BY
A	11-26-13	NEW DRAWING	ATT

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

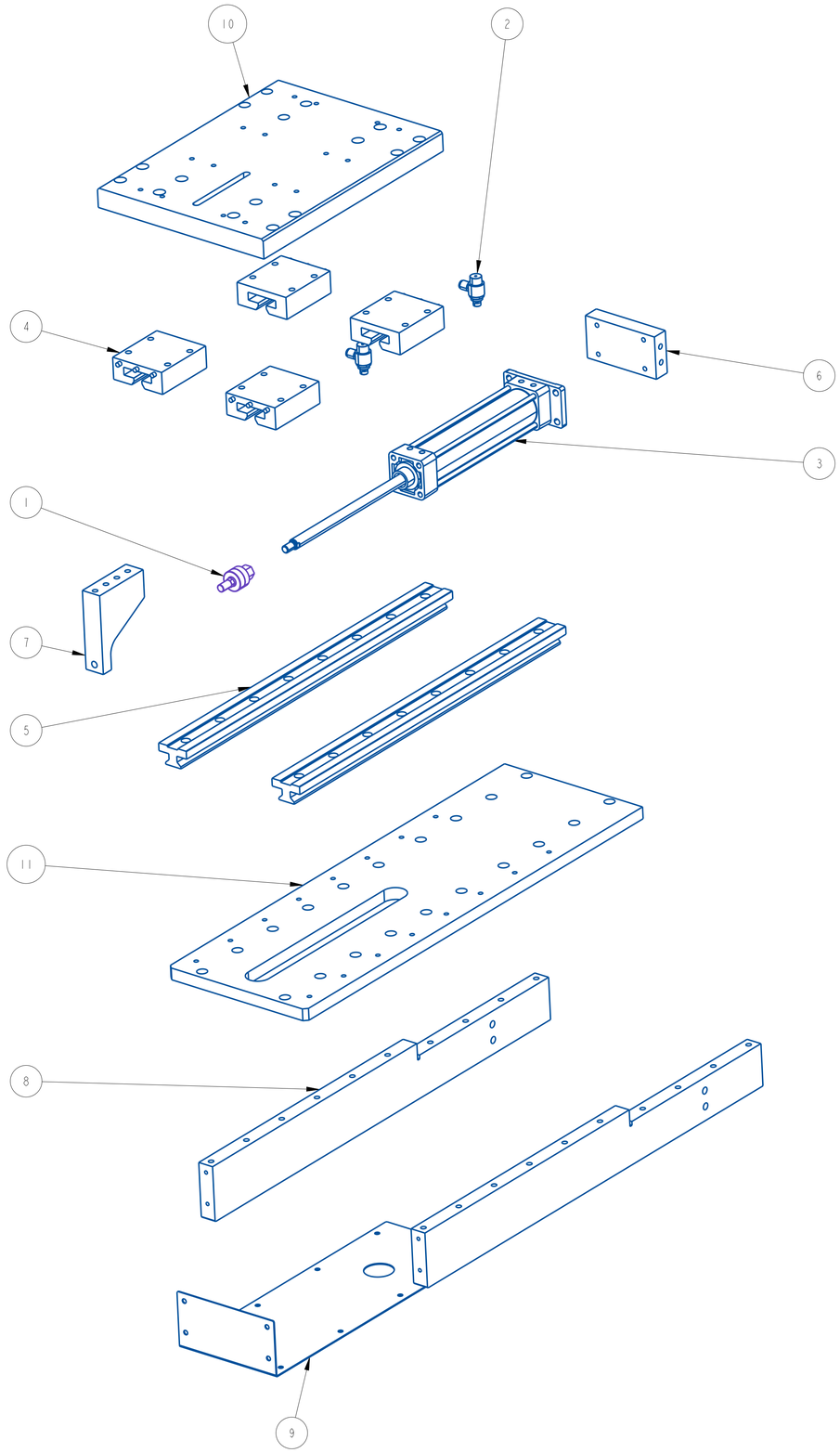
QUADREL LABELING SYSTEMS
7670 JENTHER DRIVE
MENTOR, OHIO 44060
(440) 602-4700

SCALE:	5/8
DATE:	11-26-13
DRW BY:	ATT
CHK BY:	04/02/2024-SEM
APPR BY:	

HORIZONTAL ADJUST

MAT'L

22626H-000



ITEM	QTY	PART NO.	DESCRIPTION	PARENT ITEM
1	1	392617-001	ALIGNMENT COUPLER-CYLINDER	22626R-000
2	2	393603-000	FLOW CONTROL, 3/8NPT X 1/4 TUBE	22626R-000
3	1	394418-008	CYLINDER, 2" BORE x 8" STROKE	22626R-000
4	4	793041-000	T CARRIAGE	22626R-000
5	2	793042-001	RAIL	22626R-000
6	1	A26172-000	CYLINDER MTG. PLATE	22626R-000
7	1	B22958-120	ROD ANCHOR	22626R-000
8	2	C21437-000	HEAD SUPPORT GUSSET	22626R-000
9	1	C21438-000	COVER	22626R-000
10	1	D24965-120	MTG PLATE	22626R-000
11	1	D24966-120	MTG PLATE	22626R-000

REV	DATE	DESCRIPTION	BY
A	11-26-13	NEW DRAWING	MAW

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

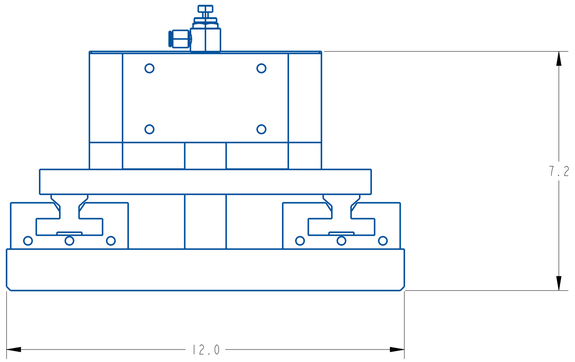
QUADREL LABELING SYSTEMS
7670 JENTHER DRIVE
MENTOR, OHIO 44060
(440) 602-4700

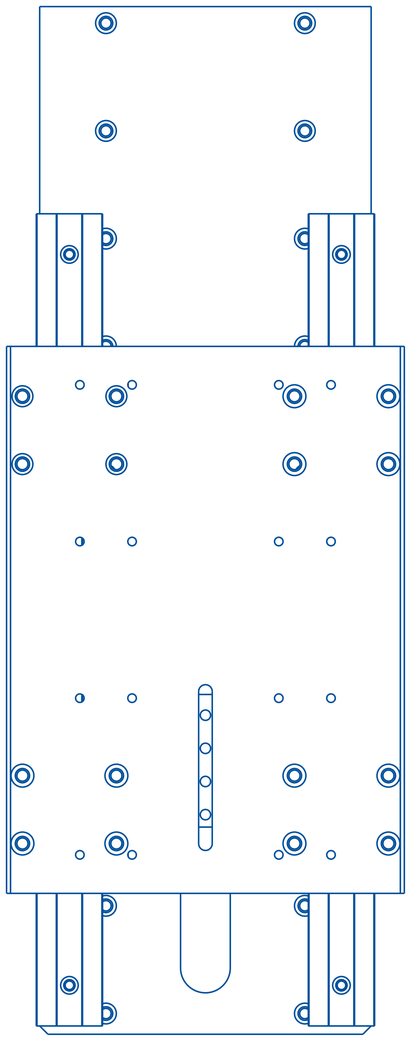
SCALE: 1/4
DATE: 11-26-13
DRW BY: MAW
CHK BY: 04/05/2024-SEM
APPR BY:

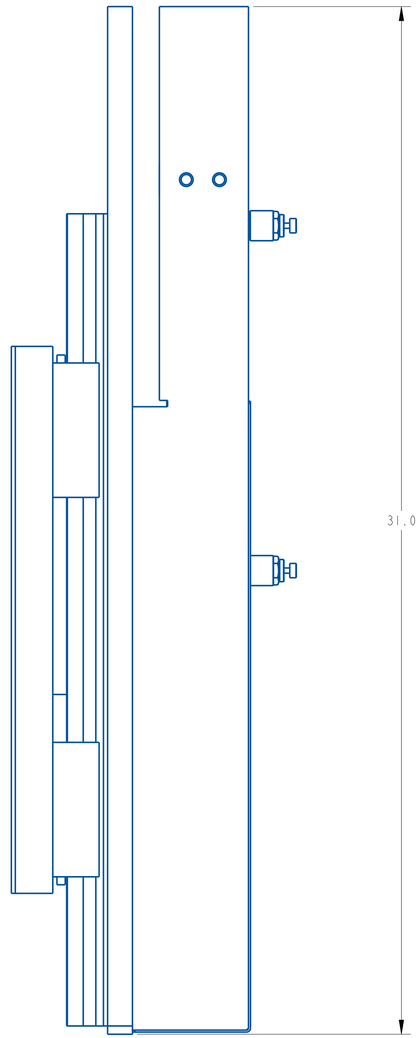
HEAD SUPPORT RETRACT

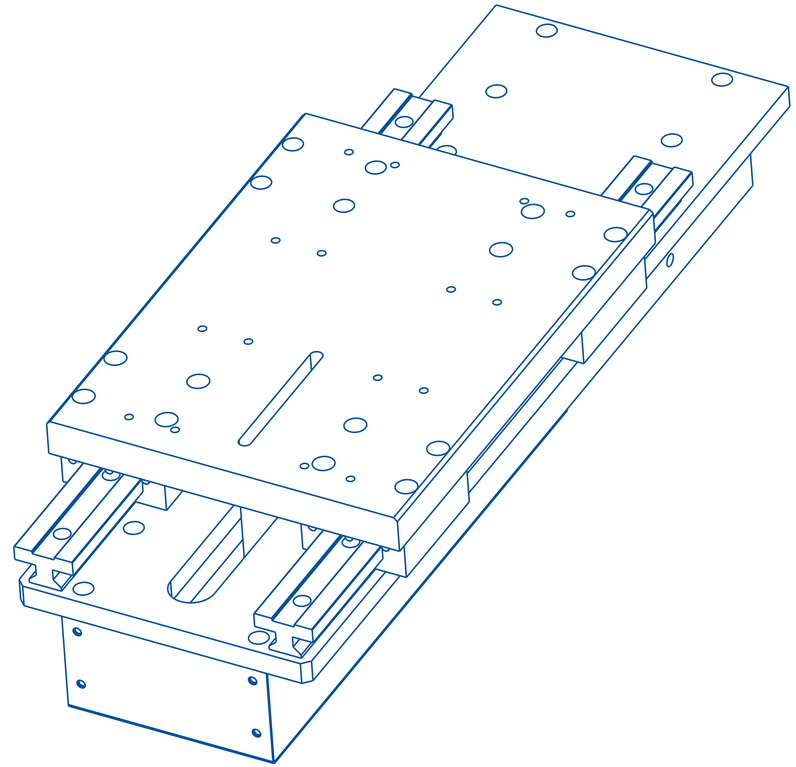
MAT'L

22626R-000









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ALL ANGLES ARE 90°

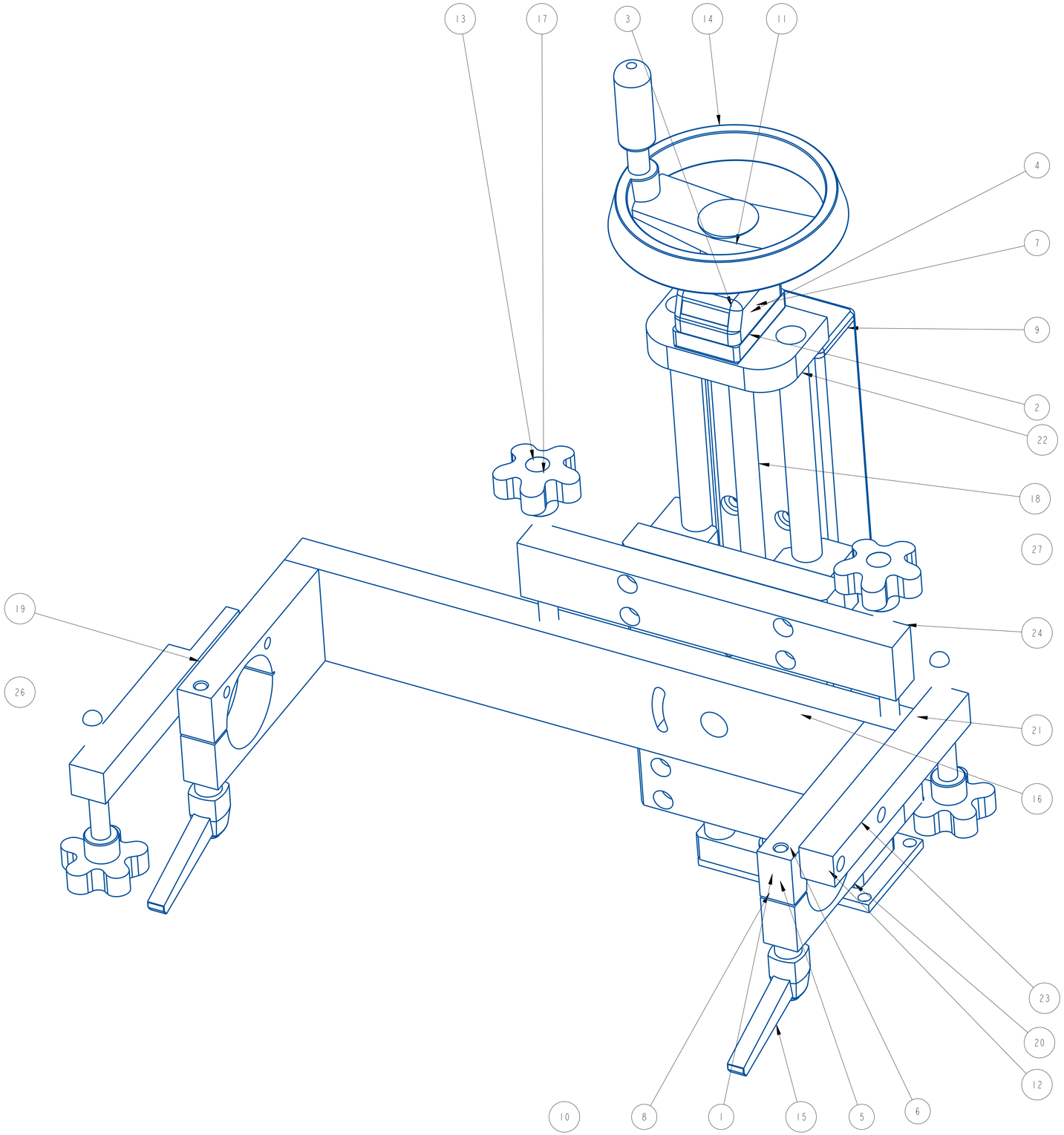
QUADREL LABELING SYSTEMS
7670 JENTHER DRIVE
MENTOR, OHIO 44060
(440) 602-4700

SCALE: 7/16
DATE: 11-26-13
DRW BY: MAW
CHK BY:04/05/2024-SEM
APPR BY:

HEAD SUPPORT RETRACT

MAT'L

22626R-000



ITEM	QTY	PART NO.	DESCRIPTION	PARENT ITEM
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2	1	141177-000	SLEEVE BEARING, 5/8OD. x 1/2ID. x 3/4LNG	22626VQ160-RHH
3	2	181079-000	BEARING, NEEDLE ROLLER	22626VQ160-RHH
4	4	181080-000	BEARING, THRUST WASHER	22626VQ160-RHH
5	2	181108-000	BEARING, NEEDLE ROLLER	22626VQ160-RHH
6	4	181111-000	THRUST WASHER	22626VQ160-RHH
7	1	361169-000	COLLAR, 1/2 IN. ID ONE-PIECE CLAMP	22626VQ160-RHH
8	1	362186-000	COLLAR, 3/8 IN. ID ONE-PIECE CLAMP	22626VQ160-RHH
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10	4	792248-001	PILLOW BLOCK	22626VQ160-RHH
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13	4	793045-000	DIAMOND KNURL KNOB	22626VQ160-RHH
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15	2	801850-000	CLAMPING LEVER	22626VQ160-RHH
16	1	A24077-000	BRONZE NUT, RH	22626VQ160-RHH
17	4	A26179-000	KNOB STUD	22626VQ160-RHH
⚠8	1	B20045-111	THREADED ROD	22626VQ160-RHH
19	2	B21190-114	YOKE SIDE PLATE	22626VQ160-RHH
20	1	B21346-000	BOTTOM BEARING PLATE	22626VQ160-RHH
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23	1	C20626-000	STAND SLED	22626VQ160-RHH
24	1	C21348-160	ADJUSTMENT PLATE	22626VQ160-RHH
25	1	C21349-120	ADJUSTMENT BLOCK	22626VQ160-RHH
26	1	C21349-160	ADJUSTMENT BLOCK	22626VQ160-RHH
27	1	D24433-125	HEAD SUPPORT RISER	22626VQ160-RHH

REV.	DATE	DESCRIPTION	BY
B	Sep-30-22	WAS C20977-113	TAZ
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BREAK ALL EDGES .005/.015
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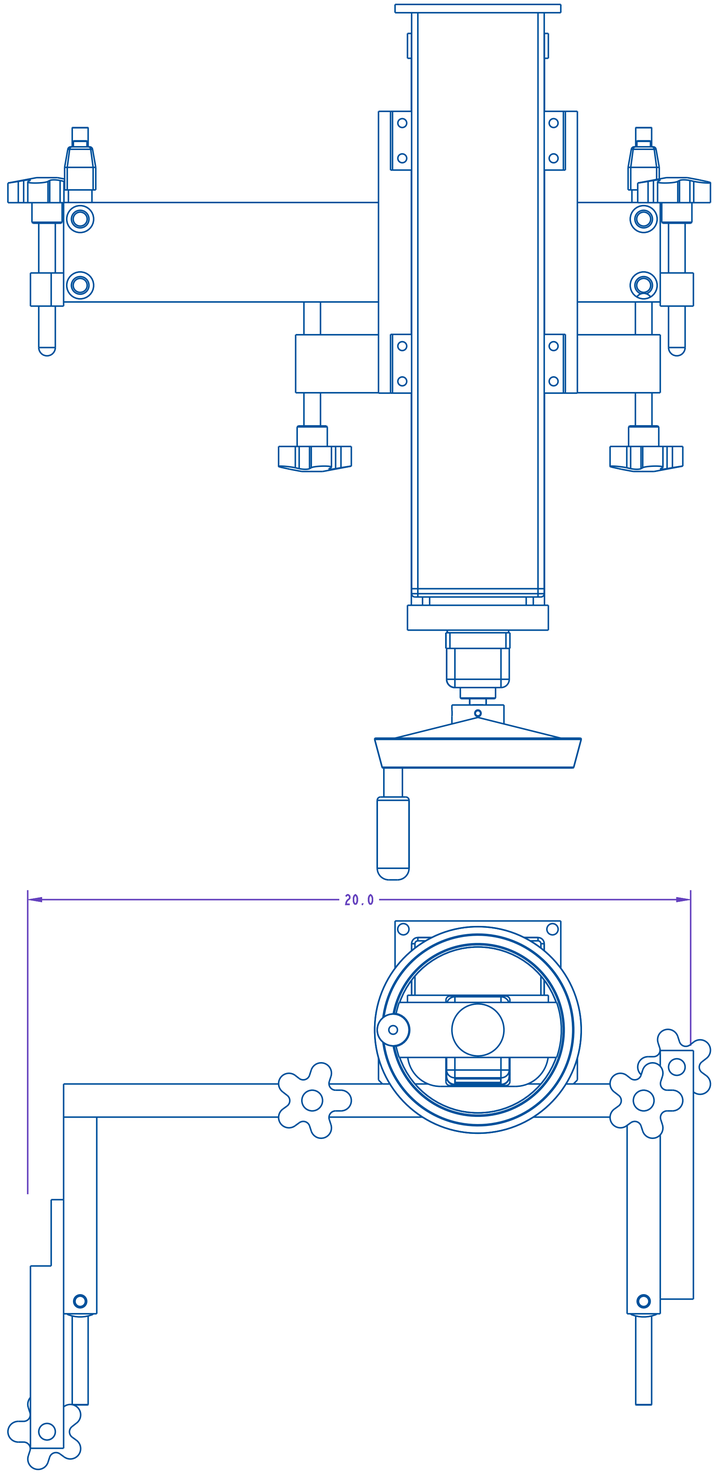
QUADREL LABELING SYSTEMS
7670 JENTHER DRIVE
MENTOR, OHIO 44060
(440) 602-4700

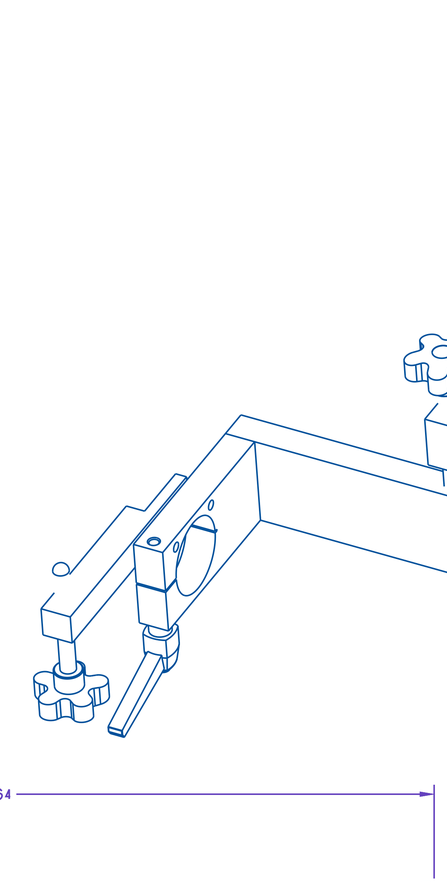
SCALE: 1/16
DATE: 11-26-13
DRW BY: MAW
CHK BY: 06/06/2024-SEM
APPR BY:

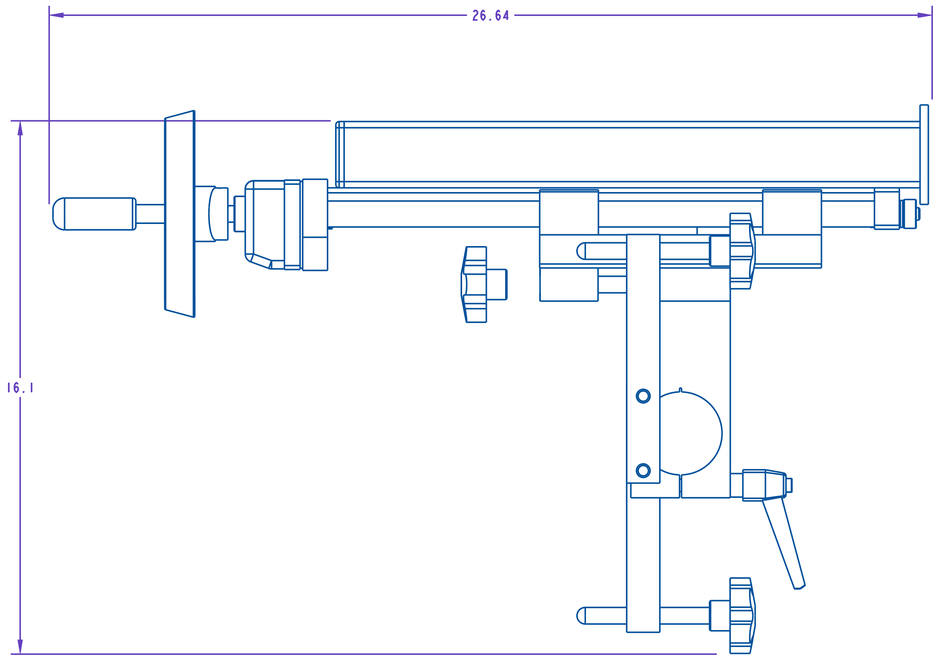
VERTICAL HEAD SUPPORT

MAT'L

22626VQ160-RHH







SHEET 2 OF 2

REV	DATE	DESCRIPTION	BY
A	11-26-13	NEW DRAWING	MAW

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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: 7/16
DATE: 11-26-13
DRW BY: MAW
CHK BY:06/06/2024-SEM
APPR BY:

VERTICAL HEAD SUPPORT

MAT'L

22626VQ160-RHH

7.4 FEEDSCREW ASSEMBLY

7.4.1 GENERAL INFORMATION

The feedscrew assembly is an optional module that is generally placed at the entrance of the conveyor. Each screw is custom designed for your product to a specifically engineered pitch that meets or exceeds your specified product per minute goal. This creates perfect absolute spacing of products as they travel towards the labeling head. Found primarily in high speed systems. This unit can be controlled by a DC, AC, or Servo motor paired with the appropriate drive located in the electrical enclosure.

7.4.2 ADJUSTMENTS

The feedscrew assembly is easily manageable. Adjusting the height is achieved by pivoting the top portion of the screw assembly up and down. To loosen the assembly to pivot simply loosen the (4) 3/8-16 socket head bolts that hold the bar in place. When at the proper height tighten the bolts and the height will be locked in place. To move the assembly in an out rotate the handle clockwise or counter clockwise.

⚠ **CAUTION** **Do not make any adjustments when assembly or conveyor are running. Read and understand manual before making any adjustments.**

ASSEMBLY TITLE: **FEEDSCREW ASSEMBLY**

GENERAL FUNCTION:

- The feed screw assembly provides proper spacing of the product for labeling application.
- The screws are self powered and electronically matched to the speed of the conveyor and top trap.

SET-UP AND ADJUSTMENTS:

- To adjust, loosen the bolts on the pivot clamps and rotate the screw assembly to the desired height.

- The horizontal position is set to align the product to the centerline of the top trap. To adjust, loosen to clamp bolts and turn the adjustment screw CW to move the screw across the conveyor, CCW to back the screw away from the conveyor.

- To change screws, remove the screw change bracket and feed-screw. Realign new feed-screw to placement pins on drive shaft and replace bracket.

- To change the speed of the feed-screw for proper products per minute, press the pacing speed button on the operator's touch-screen and enter the products per minute.

MAINTENANCE:

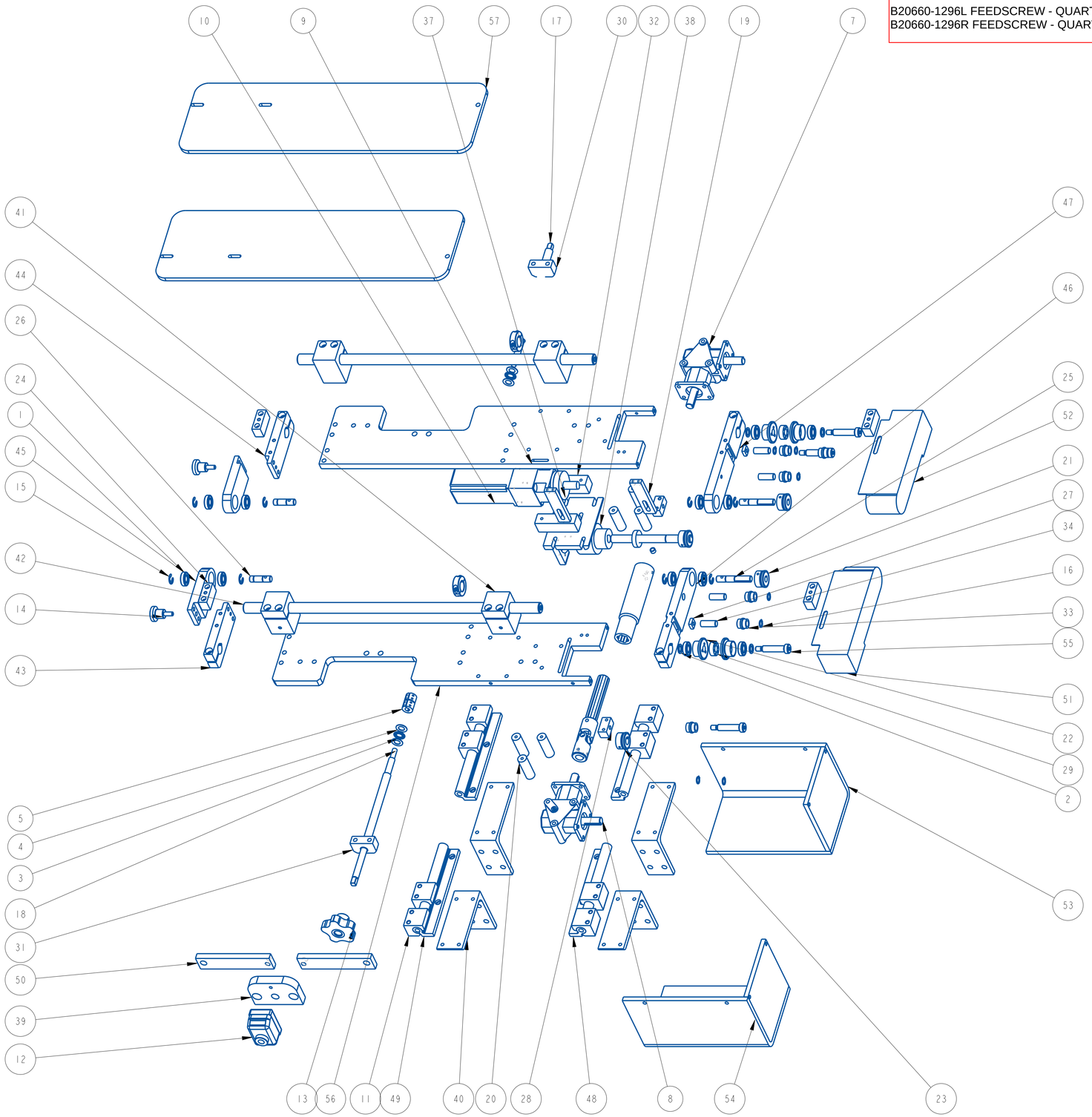
- Remove glue residue and labels from feed-screws
- Lubricate grease fittings and bearings with quality multi-purpose grease.

TROUBLESHOOTING:

- Several products are going through assembly at once.	-Adjust horizontally to increase pressure on the product.
- Products will not travel through feed-screw assy.	-Adjust horizontally to apply less pressure to the product.

NOT SHOWN

B20660-1296L FEEDSCREW - QUART OIL BOTTLE
B20660-1296R FEEDSCREW - QUART OIL BOTTLE



ITEM	QTY	PART NO.	DESCRIPTION	PARENT ITEM
1	12	111072-000	BEARING, BALL	22438-200
2	4	151004-000	BEARING, THRUST WASHER	22438-200
3	2	181079-000	BEARING, NEEDLE ROLLER	22438-200
4	4	181080-000	BEARING, THRUST WASHER	22438-200
5	1	362164-000	COUPLING, ONE PIECE CLAMP-ON	22438-200
6	2	363150-000	2 PIECE CLAMP-ON COLLAR	22438-200
7	1	412526-000	3-WAY GEAR BOX	22438-200
8	1	412530-000	GEARBOX, 2-WAY	22438-200
9	1	412542-002	SERVO GREARHEAD	22438-200
10	1	413025-000	SERVO MOTOR	22438-200
11	8	792248-000	PILLOW BLOCK *NOTE USE 792248-001*	22438-200
12	1	792354-000	DIGITAL POSITION INDICATOR	22438-200
13	1	801332-000	LOBE KNOB W/ ORANGE CENTER	22438-200
14	2	801885-000	ERGOSTYLE KNURLED KNOBS	22438-200
15	8	871009-000	E-RING	22438-200
16	12	871039-000	EXTERNAL SNAP RING	22438-200
17	1	A21559-010	THREADED ROD	22438-200
18	1	A21560-020	THREADED ROD	22438-200
19	2	A25139-002	PROXIMITY SWITCH MOUNTING PLATE	22438-200
20	6	A25242-010	GEARBOX SPACER	22438-200
21	2	A25380-000	SPROCKET REWORK	22438-200
22	4	A25380-001	SPROCKET REWORK	22438-200
23	2	A25380-002	SPROCKET REWORK	22438-200
24	4	A25398-000	GUARD MOUNTING BLOCK	22438-200
25	2	A25409-000	DRIVE PIN	22438-200
26	2	A25410-000	IDLER PIN	22438-200
27	2	A25413-000	TENSIONER MOUNTING PLATE	22438-200
28	2	A25415-000	TENSIONER MOUNTING BLOCK	22438-200
29	2	A25505-000	SPROCKET SPACER	22438-200
30	1	A25507-000	ADJUSTMENT BLOCK	22438-200
31	1	A25507-001	ADJUSTMENT BLOCK, LH	22438-200
32	2	A25528-010	MOTOR SPACER	22438-200
33	6	A25539-000	IDLER PULLEY	22438-200
34	4	A25541-000	TENSIONER SHAFT	22438-200
35	1	A25663-100A	SPLINE ADAPTER SLEEVE	22438-200
36	1	A25665-100A	U-JOINT MALE SPLINE ASSEMBLY	22438-200
37	1	A25886-000	SERVO MOTOR MOUNTING ANGLE	22438-200
38	1	A25893-000	TORQ TENDER MODIFICATION	22438-200
39	1	B22005-012	BEARING PLATE	22438-200
40	4	B22104-010	MOUNTING ANGLE	22438-200
41	4	B22106-000	PIVOT MOUNTING BLOCK	22438-200
42	2	B22245-000	PIVOT SHAFT	22438-200
43	1	B22246-000	LOWER PIVOT ARM	22438-200
44	1	B22246-001	LOWER PIVOT ARM	22438-200
45	2	B22247-001	UPPER PIVOT ARM	22438-200
46	1	B22248-002	PIVOT ARM	22438-200
47	1	B22248-003	PIVOT ARM	22438-200
48	2	B22381-000	DRYLIN RAIL	22438-200
49	2	B22381-001	DRYLIN RAIL	22438-200
50	2	B22874-000	MOUNTING PLATE	22438-200
51	1	C21104-002	PIVOT ARM COVER	22438-200
52	1	C21104-003	PIVOT ARM COVER	22438-200
53	2	C21159-010	REAR COVER	22438-200
54	2	C21160-010	GUARD END PLATE	22438-200
55	4	CSSD0411		22438-200
56	2	D22325-011	FEEDSCREW MAIN PLATE	22438-200
57	2	D22675-010	FEEDSCREW GUARD	22438-200

REV	DATE	DESCRIPTION
B	21-MAR-16	ADDED 801332-000
B	21-MAR-16	REMOVED 801080-000
A	30-SEP-15	NEW DRAWING

PARTS NOT SHOWN:
361131-001 (4) CONNECTING LINK
361130-001 3/8" CHAIN (4 FT)

SHEET 1 OF 2

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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

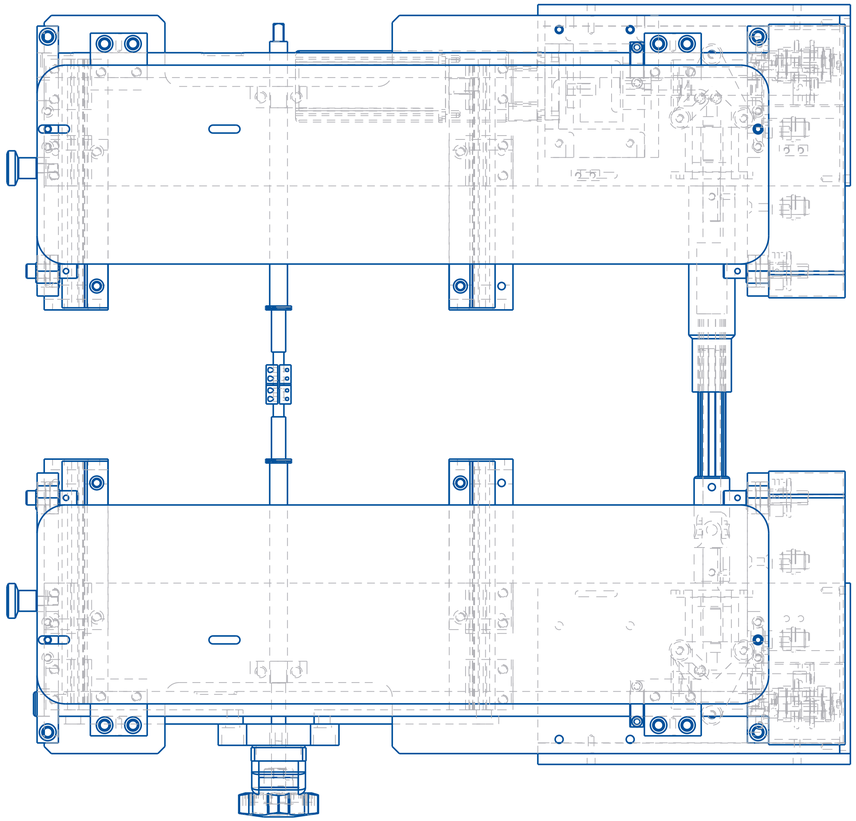
QUADREL LABELING SYSTEMS
7670 JENTHER DRIVE
MENTOR, OHIO 44060
(440) 602-4700

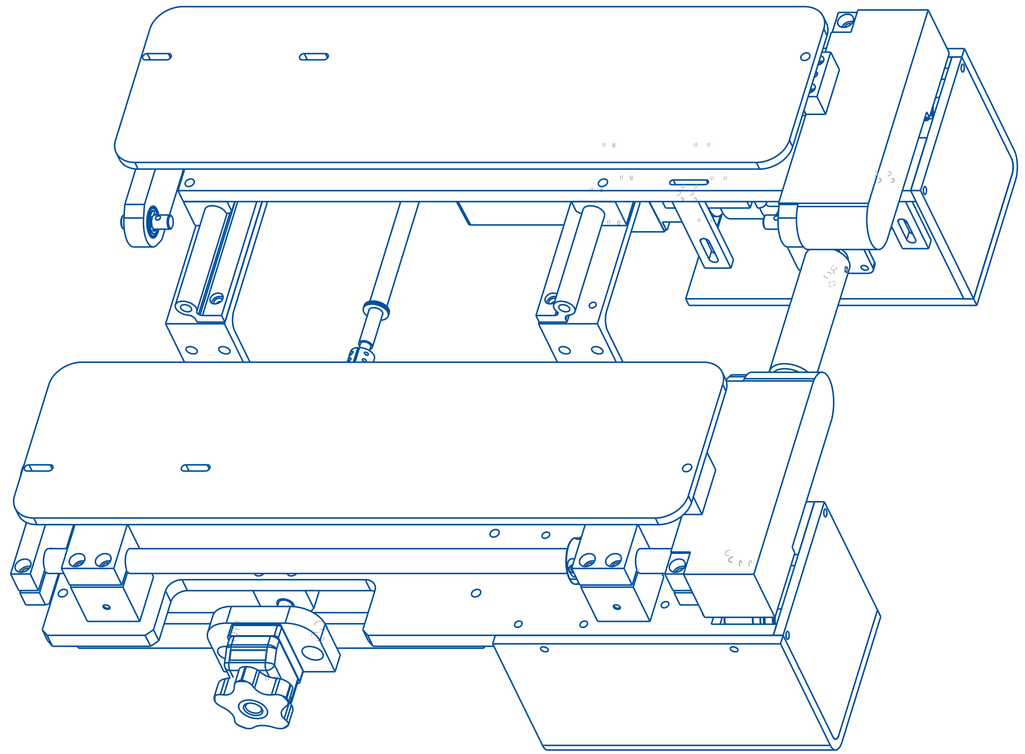
SCALE: 7/32
DATE: 30-SEP-15
DRW BY: CRT
CHK BY:03/04/2024-SEM
APPR BY:

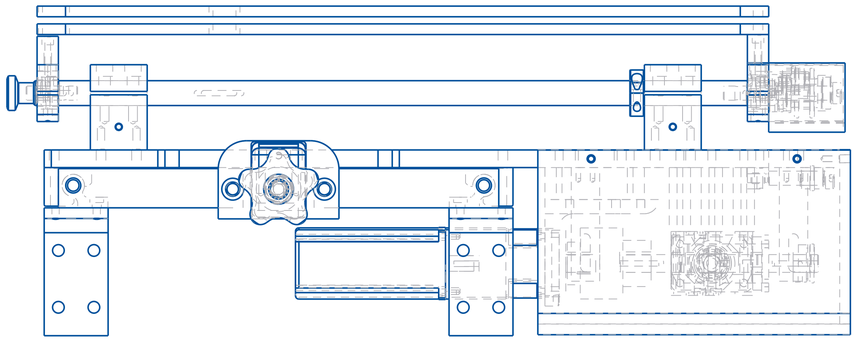
24" DUAL SELF POWERED FEEDSCREWS

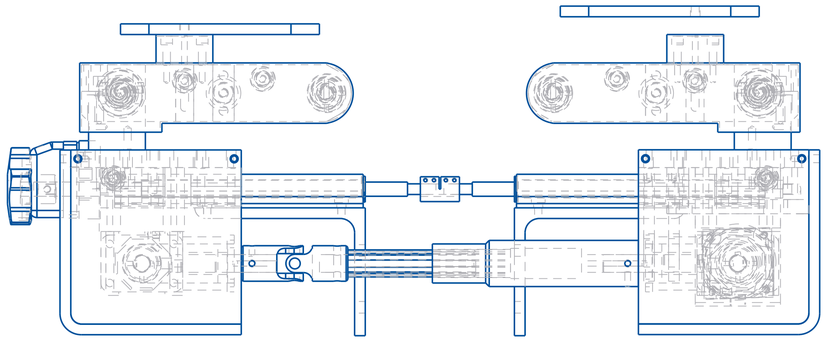
MAT'L 22438-000

22438-200









REV	DATE	DESCRIPTION	BY
A	MAW	NEW DRAWING	MAW

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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: 3/8
DATE: 7-9-11
DRW BY: MAW
CHK BY:03/04/2024-SEM
APPR BY:

24" DUAL SELF POWERED FEEDSCREWS

MAT'L 22438-000

22438-200

INDENTED BILL OF MATERIAL

Items: 21559-004 Thru 21559-004 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	Opr	UOM	Scrap	Act	Stk	B/I	Qty On-Hand	Qty-Per-Parent
				Loc	LLC	Draw	REV	P/M	Ctl	B/F	Qty-Allocated	Qty-On-Order

Parent Item: 21559-004 PROX SENSORS, POS & CLUTCH Loc: 01 LLC: 2
FEEDSCREWS, STANDARD

1	5	202086-002	SWITCH, PROXIMITY, PNP, 55mm "TURCK" NI3	0	EA	.0	A	Y	N			2.000000
1	10	252019-000	CONNECTOR, M12, 4P, MALE "LUMBERG" F	0	EA	.0	A	Y	N			2.000000

7.7 TOP HOLD DOWN ASSEMBLY

7.7.1 GENERAL INFORMATION

The top hold down module is a motor driven spring loaded belt that applies overhead pressure to the containers and enables the product to remain stable as the label is applied. This assembly is powered by an AC motor or servo motor. Ideal for front / back or single side applications.

7.7.2 ADJUSTMENTS

Adjusting the height of the top hold down is achieved by turning the hand wheel on the top of the assembly counter clockwise or clockwise.

ASSEMBLY TITLE: **SERVO TOP TRAP ASSEMBLY**

GENERAL FUNCTION:

- As a product enters the label application area near the labeling head, it needs additional support to prevent it from being upset as a label is applied. A product hold down conveyor or more commonly known as a "top trap" is used to provide product support. The cantilever top trap adjusts vertically by a handwheel and is driven directly by a servo motor that is synchronized to match the conveyor speed. The top trap is spring loaded to accommodate slight product variations.
-

SETUP AND ADJUSTMENTS:

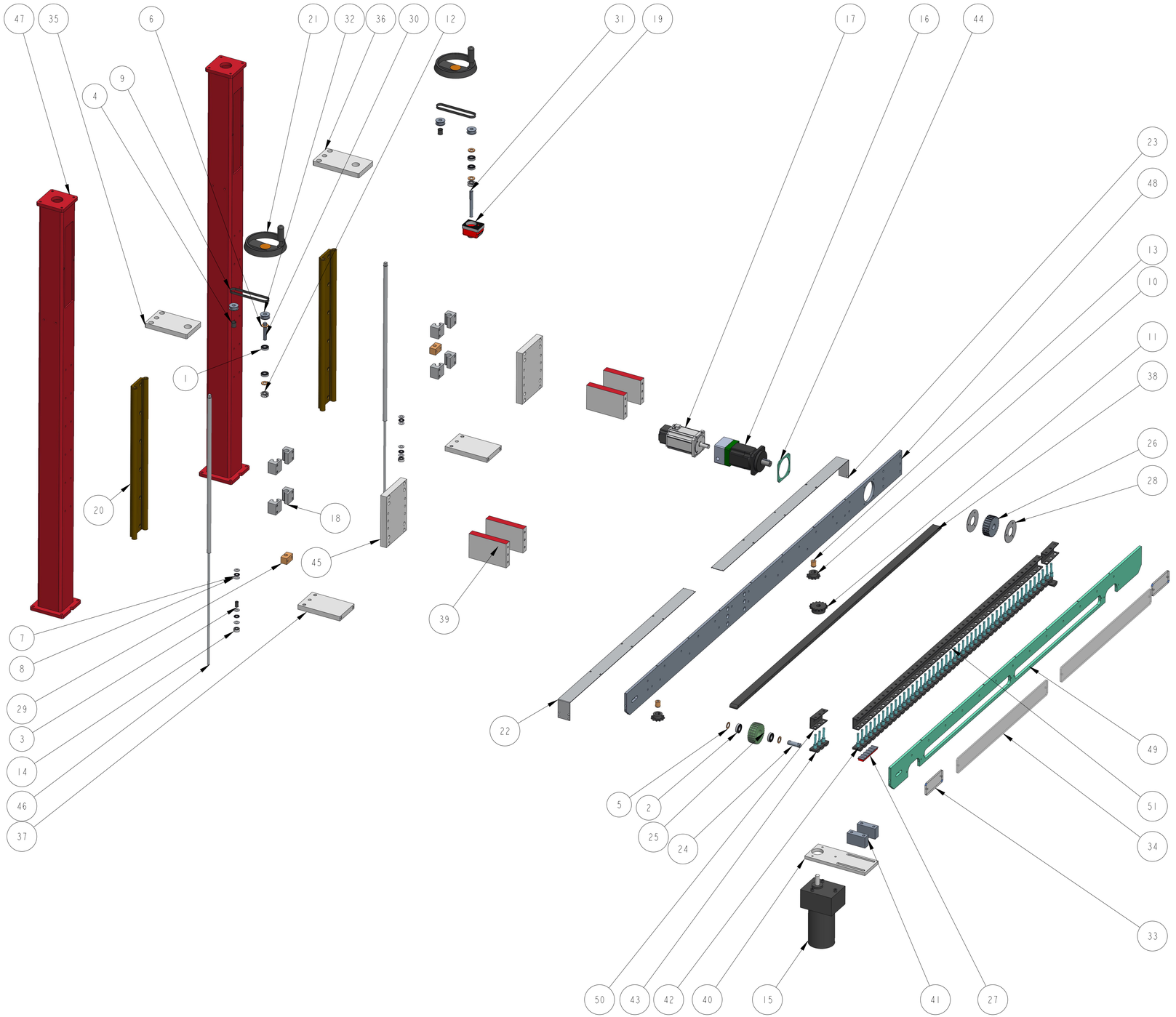
- Place the product to be labeled under the top trap. turn the handwheel so that the rubber belt of the top trap compresses the product slightly.
- Top trap belt tension can be adjusted by tightening or loosening the set screws at the infeed end of the top trap.

MAINTENANCE:

- No maintenance is required except for an occasional belt replacement.

TROUBLESHOOTING:

PROBLEM	WHAT TO DO
- Top trap jumping teeth	- Tighten top trap belt
- Too much pressure on product	- Raise top trap
- Top trap not moving	- Check servo drive for faults
- Product moving while being labeled	- Add top trap pressure



ITEM	QTY	PART NO.	DESCRIPTION	PARENT ITEM
1	4	111072-000	BEARING, BALL	22442-250
2	2	111075-000	BEARING, BALL	22442-250
3	1	141172-000	SLEEVE BEARING, 1/2OD. x 3/8ID. x 3/4LNG	22442-250
4	2	141173-000	SLEEVE BEARING, 23/32OD. x 5/8ID. x 3/4LNG	22442-250
5	2	151008-000	BEARING, THRUST WASHER	22442-250
6	4	151018-000	BEARING, THRUST WASHER	22442-250
7	4	181108-000	BEARING, NEEDLE ROLLER	22442-250
8	8	181111-000	THRUST WASHER	22442-250
9	2	191562-18-18	TIMING BELT	22442-250
10	2	322093-000	SPROCKET, 11 TOOTH	22442-250
11	1	322191-000	SPROCKET	22442-250
12	2	361169-000	COLLAR, 1/2 IN. ID ONE-PIECE CLAMP	22442-250
13	2	361314-000	TRANTORQUE KEYLESS BUSHING	22442-250
14	2	362186-000	COLLAR, 3/8 IN. ID ONE-PIECE CLAMP	22442-250
15	1	411817-000	GEARMOTOR	22442-250
16	1	412562-000	SERVO GEARBOX, 16:1	22442-250
17	1	413002-000	SERVO MOTOR	22442-250
18	8	792248-001	PILLOW BLOCK	22442-250
19	1	792354-000	DIGITAL POSITION INDICATOR	22442-250
20	2	793019-000	DRYLIN RAIL	22442-250
21	2	801080-001	6" HANDWHEEL	22442-250
22	1	A21578-011	TOP TRAP COVER PLATE	22442-250
23	1	A21578-012	TOP TRAP COVER PLATE	22442-250
24	1	A21823-000	IDLER SHAFT	22442-250
25	1	A21824-200	CROWNED IDLER PULLEY	22442-250
26	1	A21826-103	DRIVE PULLEY	22442-250
27	1	A21830-200	TOP TRAP BELT	22442-250
28	2	A23403-000	FLANGE	22442-250
29	2	A24077-000	BRONZE NUT, RH	22442-250
30	1	A25701-000	HANDLE SHAFT	22442-250
31	1	A25701-010	HANDLE SHAFT	22442-250
32	4	A25702-000	TIMING PULLEY	22442-250
33	2	A26084-000	COVER	22442-250
34	2	A26084-240	COVER	22442-250
35	1	B21345-002	TOP BEARING PLATE	22442-250
36	1	B21345-012	TOP BEARING PLATE	22442-250
37	2	B21346-022	BOTTOM BEARING PLATE	22442-250
38	1	B21769-010	TOP TRAP SPACER	22442-250
39	4	B22465-002	TOP TRAP MTG PLATE	22442-250
40	1	B22473-000	MOTOR MOUNTING PLATE	22442-250
41	2	B22474-000	STAND OFF PLATE	22442-250
42	50	B22784-000	SPRING BLOCK STEM	22442-250
43	50	B22785-000	SPRING BLOCK PLATE	22442-250
44	1	B23069-000	GEARBOX SHIM	22442-250
45	2	C20626-020	TOP TRAP SLED	22442-250
46	2	C20910-517	THREADED ROD	22442-250
47	2	D21636-531	VERTICAL RISER	22442-250
48	1	D23228-226	INSIDE TOP TRAP PLATE	22442-250
49	1	D23228-624	INSIDE TOP TRAP PLATE	22442-250
50	2	D24415-001	SPRING BLOCK MOUNTING CHANNEL	22442-250
51	1	D24415-010	SPRING BLOCK MOUNTING CHANNEL	22442-250

REV	DATE	DESCRIPTION	BY
B	05-JUN-2024	CHANGED QTY OF A21824-200 TO 2.0 CHANGED A21824-000 TO A21824-200	CRT
A	10-13-23	NEW DRAWING	ATT

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DIMENSIONAL TOLERANCE
.X ± .1
.XX ± .01
.XXX ± .005
ANGLES ± 30'

SURFACE FINISH 125
BREAK ALL EDGES .005/.015
CORNER RADIOS .0107.030

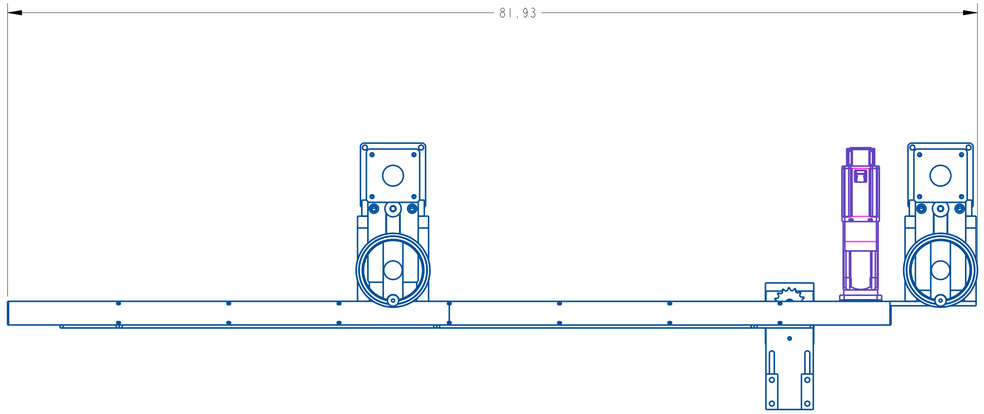
QUADREL LABELING SYSTEMS
7670 JENTHER DRIVE
MENTOR, OHIO 44060
(440) 602-4700

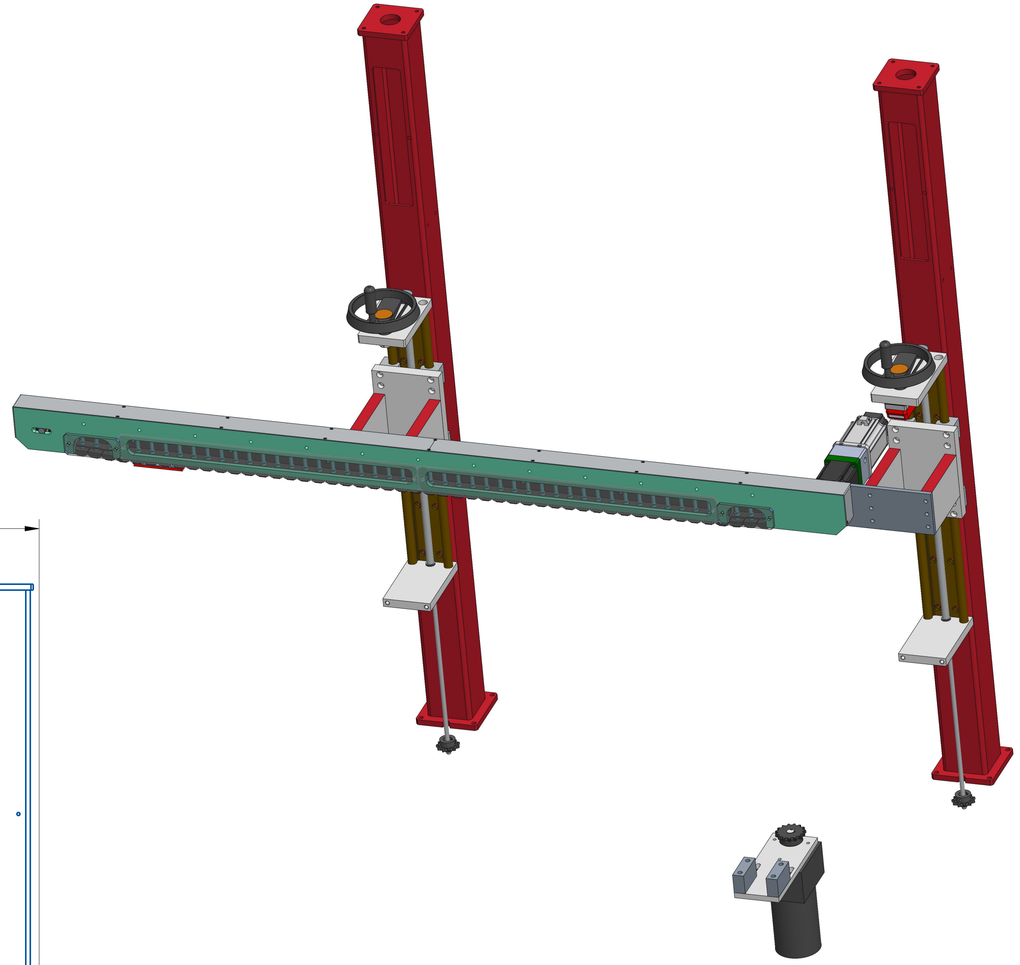
SCALE: 1/8
DATE: 10-13-23
DRW BY: ATT
CHK BY:09/17/2024-SEM
APPR BY:

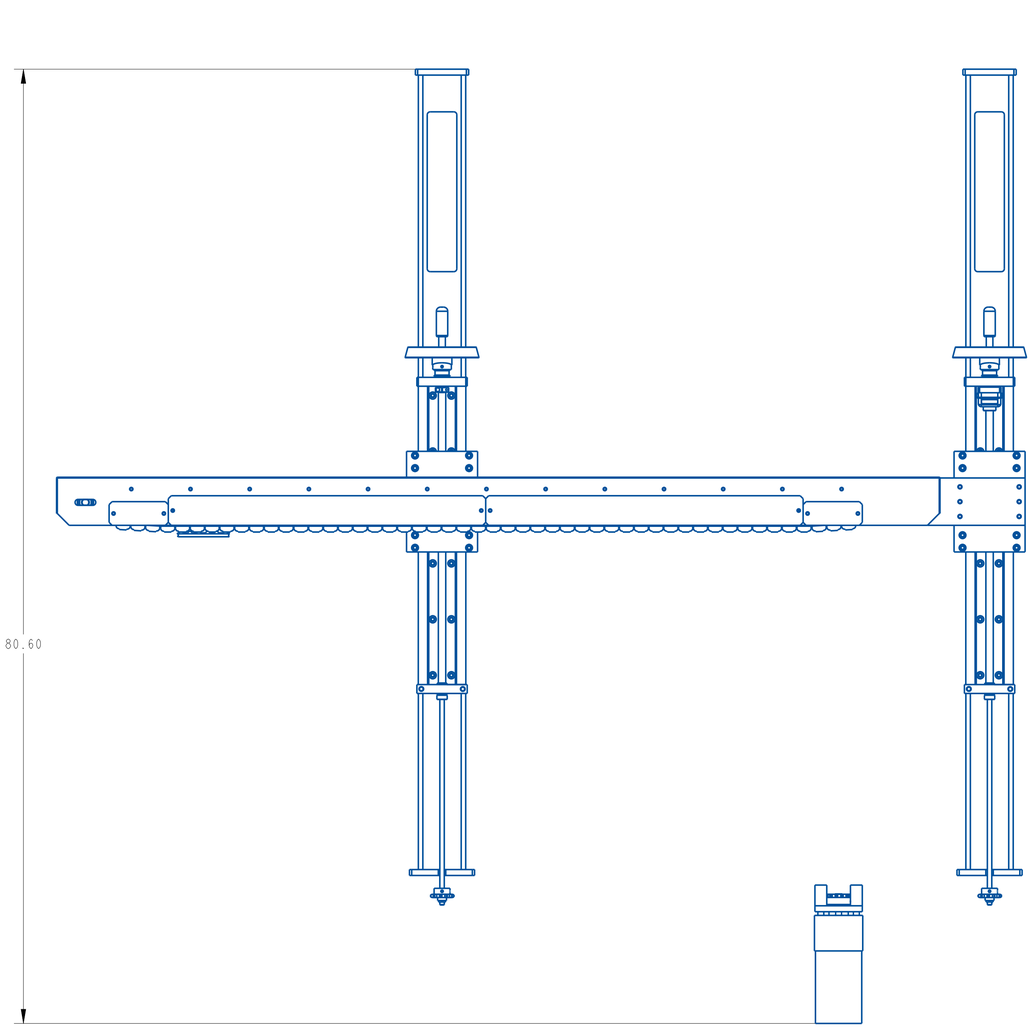
PROLINE SERVO TOP TRAP

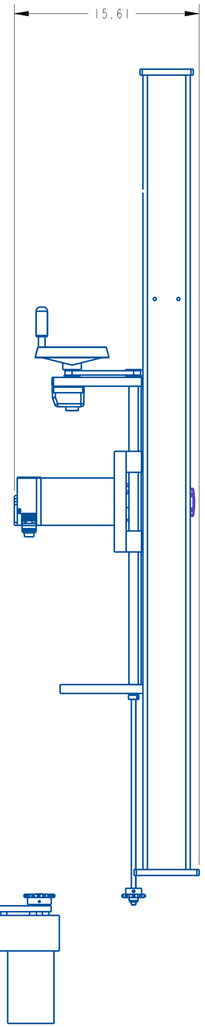
MAT'L

22442-250









REV	DATE	DESCRIPTION	BY
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A	10-13-23	NEW DRAWING	ATT

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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: 5/32
DATE: 10-13-23
DRW BY: ATT
CHK BY:09/17/2024-SEM
APPR BY:

PROLINE SERVO TOP TRAP

MAT'L

22442-250

INDENTED BILL OF MATERIAL

Items: 22442SN-000 Thru 22442SN-000 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 LLC	UOM Draw	Scrap REV	Act P/M	Stk Ctl	B/I B/F	Qty On-Hand Qty-Allocated	Qty-Per-Parent Qty-On-Order
Parent Item: 22442SN-000			SENSOR KIT, TOP TRAP LIFT LASER, PROX, CABLES	01	1							
1	5	203376-002	SENSOR, LASER DISTANCE, 0-10V		0	EA	.0	A	Y	N		1.000000
		"BANNER"	Q4XTULAF500-Q8	01	6				Y	N		
1	10	202161-001	CABLE, M12, 4P, FEM, 5m		0	EA	.0	A	Y	N		1.000000
		"LUMBERG"	RKT4-633/5M ****	01	6			P	Y	N		
1	15	202206-002	PROX, INDUCTIVE, NC, M8, 45mm		0	EA	.0	A	Y	N		2.000000
		"CONTRINEX"	DW-AS-614-M8-001 *	01	3			P	Y	N		
1	20	202089-001	PROX MTG BRKT 8mm CLAMP STYLE		0	EA	.0	A	Y	N		2.000000
		"BALLUFF"	BAM00A2	01	5			P	Y	N		
1	25	202624-001	CABLE, M8, 3 PIN, 5m		0	EA	.0	A	Y	N		2.000000
		"TURCK"	PKG3M-5/S760	01	6			P	Y	N		
1	30	252019-000	CONNECTOR, M12, 4P, MALE		0	EA	.0	A	Y	N		3.000000
		"LUMBERG"	RSC4/7	01	10			P	Y	N		

Q4X Stainless Steel Laser Sensor

more sensors, more solutions

Quick Start Guide

Class 1 laser CMOS sensor with a discrete (PNP or NPN) output. Patent pending.

This guide is designed to help you set up and install the Q4X Sensor. For complete information on programming, performance, troubleshooting, dimensions, and accessories, please refer to the Instruction Manual at *www.bannerengineering.com*. Search for p/n 181483 to view the Instruction Manual. Use of this document assumes familiarity with pertinent industry standards and practices.

For illustration purposes, the threaded barrel model Q4X images are used throughout this document.

WARNING: Not To Be Used for Personnel Protection

Never use this device as a sensing device for personnel protection. Doing so could lead to serious injury or death. This device does not include the self-checking redundant circuitry necessary to allow its use in personnel safety applications. A sensor failure or malfunction can cause either an energized or de-energized sensor output condition.

Features

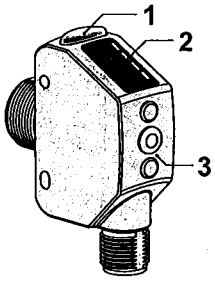


Figure 1. Sensor Features—Threaded Barrel Models

1. Output Indicator (Amber)
2. Display
3. Buttons

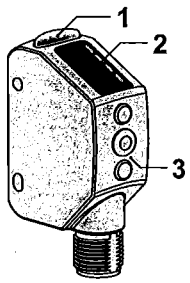


Figure 2. Sensor Features—Flush Mount Models

Display and Indicators

The display is a 4-digit, 7-segment LED. The main screen is the Run mode screen.

For 2-pt, BGS, FGS, and DYN TEACH modes, the display shows the current distance to the target in millimeters. For dual TEACH mode, the display shows the percentage matched to the taught reference surface. A display value of 999P indicates the sensor has not been taught.

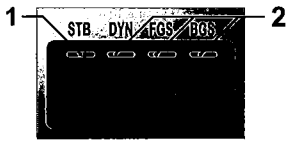


Figure 3. Display in Run Mode

1. Stability Indicator (STB—Green)
2. Active TEACH Indicators
   - DYN—Dynamic (Amber)
   - FGS—Foreground Suppression (Amber)
   - BGS—Background Suppression (Amber)

Output Indicator

- On—Outputs conducting (closed)
- Off—Outputs not conducting (open)

Active TEACH Indicators (DYN, FGS, and BGS)

- DYN, FGS, and BGS all off—Two-point TEACH mode selected (default)
- DYN on—Dynamic TEACH mode selected
- FGS on—Foreground suppression TEACH mode selected
- BGS on—Background suppression TEACH mode selected
- DYN, FGS, and BGS all on—Dual TEACH mode selected

Stability Indicator (STB)

- On—Stable signal within the specified sensing range
- Flashing—Marginal signal, the target is outside the limits of the specified sensing range, or a multiple peak condition exists
- Off—No target detected within the specified sensing range

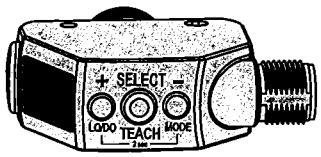
Original Document
181484 Rev. J

5 April 2017

181484

Buttons

Use the sensor buttons **(SELECT)(TEACH)**, **(+)(DISP)**, and **(-)(MODE)** to program the sensor.



(SELECT)(TEACH)

- Press to select menu items in Setup mode
- Press and hold for longer than 2 seconds to start the currently selected TEACH mode (the default is two-point TEACH)

(-)(MODE)

- Press to navigate the sensor menu in Setup mode
- Press to change setting values; press and hold to decrease numeric values
- Press and hold for longer than 2 seconds to enter Setup mode

(+)(DISP)

- Press to navigate the sensor menu in Setup mode
- Press to change setting values; press and hold to increase numeric values
- Press and hold for longer than 2 seconds to switch between light operate (LO) and dark operate (DO)

Note: When navigating the menu, the menu items loop.

Laser Description and Safety Information

CAUTION: Use of controls or adjustments or performance of procedures other than those specified herein may result in hazardous radiation exposure. Do not attempt to disassemble this sensor for repair. A defective unit must be returned to the manufacturer.

Class 1 Lasers

Class 1 lasers are lasers that are safe under reasonably foreseeable conditions of operation, including the use of optical instruments for intrabeam viewing.

COMPLIES WITH 21 CFR 1040.10 AND 1040.11
EXCEPT FOR DEVIATIONS PURSUANT TO
LASER NOTICE No. 50, DATED JUNE 24, 2007.
BANNER ENGINEERING CORP.
9714 10TH AVENUE NORTH
MINNEAPOLIS, MN 55441

CLASS 1
LASER PRODUCT
COMPLIES WITH IEC 60825-1:2007

Laser wavelength: 655 nm **Output:** < 0.20 mW **Pulse Duration:** 7 µs to 2 ms

Installation

Install the Safety Label

The safety label must be installed on Q4X sensors that are used in the United States.

Note: Position the label on the cable in a location that has minimal chemical exposure.

1. Remove the protective cover from the adhesive on the label.
2. Wrap the label around the Q4X cable, as shown.
3. Press the two halves of the label together.

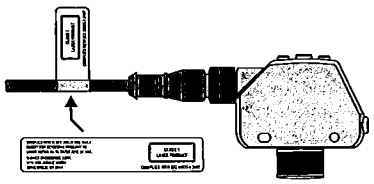


Figure 4. Safety Label Installation

Sensor Orientation

Optimize detection reliability and minimum object separation performance with correct sensor-to-target orientation. To ensure reliable detection, orient the sensor as shown in relation to the target to be detected.

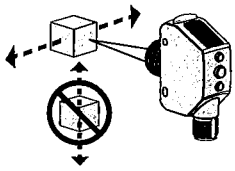


Figure 5. Optimal Orientation of Target to Sensor

See the following figures for examples of correct and incorrect sensor-to-target orientation as certain placements may pose problems for sensing some targets. The Q4X can be used in the less preferred orientation and provide reliable detection performance; refer to the *Performance Curves* for the minimum object separation distance required for each case.

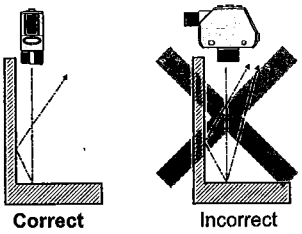


Figure 6. Orientation by a wall

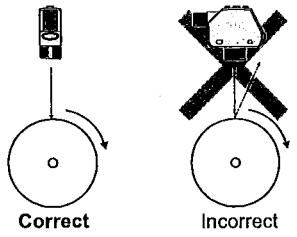


Figure 7. Orientation for a turning object

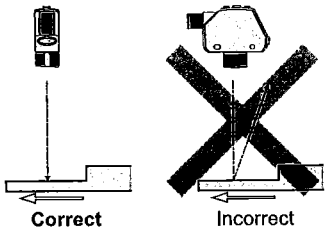


Figure 8. Orientation for a height difference

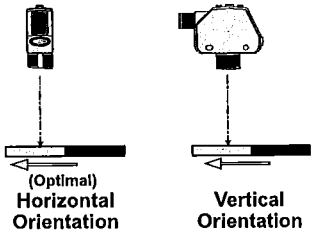
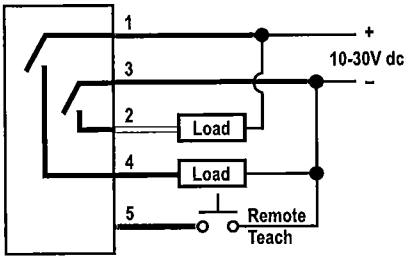


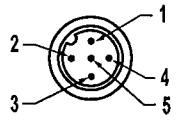
Figure 9. Orientation for a color or luster difference

Mount the Sensor

1. If a bracket is needed, mount the sensor onto the bracket.
2. Mount the sensor (or the sensor and the bracket) to the machine or equipment at the desired location. Do not tighten the mounting screws at this time.
3. Check the sensor alignment.
4. Tighten the mounting screws to secure the sensor (or the sensor and the bracket) in the aligned position.

Wiring Diagram—Threaded Barrel Models





Key

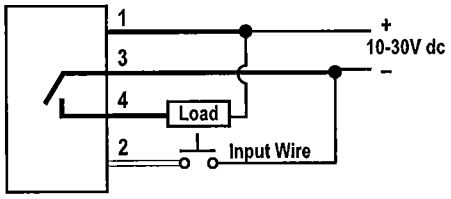
1 = Brown
2 = White
3 = Blue
4 = Black
5 = Gray

Note: Open lead wires must be connected to a terminal block.

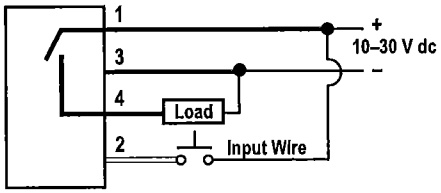
Note: The input wire function is user-selectable; see the Instruction Manual for details. The default for the input wire function is off (disabled).

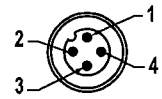
Wiring Diagram—Flush Mount Models

NPN Models



PNP Models





Key
1 = Brown
2 = White
3 = Blue
4 = Black

Note: Open lead wires must be connected to a terminal block.

Note: The input wire function is user-selectable; see the Instruction Manual for details. The default for the input wire function is off (disabled).

Cleaning and Maintenance

Handle the sensor with care during installation and operation. Sensor windows soiled by fingerprints, dust, water, oil, etc. may create stray light that may degrade the peak performance of the sensor. Blow the window clear using filtered, compressed air, then clean as necessary using water and a lint-free cloth.

Sensor Programming

Program the sensor using the buttons on the sensor or the remote input (limited programming options).

In addition to programming the sensor, use the remote input to disable the buttons for security, preventing unauthorized or accidental programming changes. See the Instruction Manual, p/n 181483 for more information.

Setup Mode

Access Setup mode and the sensor menu from Run mode by pressing and holding **MODE** for longer than 2 seconds. Use ⊕ and ⊖ to navigate through the menu. Press **SELECT** to select a menu option and access the submenus. Use ⊕ and ⊖ to navigate through the submenus. Press **SELECT** to select a submenu option and return to the top menu, or press and hold **SELECT** for longer than 2 seconds to select a submenu option and return immediately to Run mode.

To exit Setup mode and return to Run mode, navigate to End and press **SELECT**.

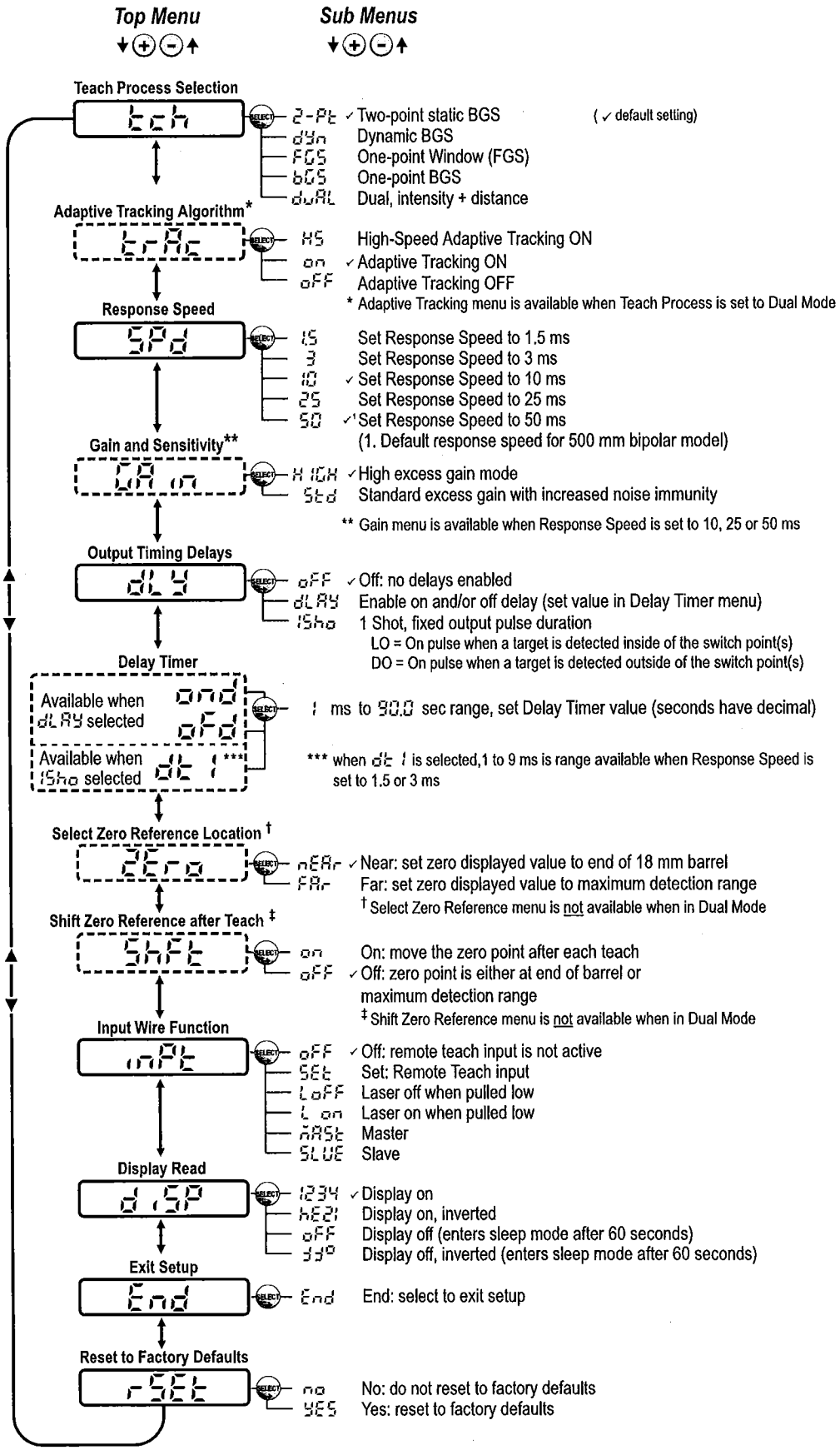


Figure 10. Sensor Menu Map—Channel 1

Basic TEACH Instructions

Use the following instructions to teach the Q4X sensor. The instructions provided on the sensor display vary depending on the type of TEACH mode selected. Two-point TEACH is the default TEACH mode.

1. Press and hold **TEACH** for longer than 2 seconds to start the selected TEACH mode.
2. Present the target.
3. Press **TEACH** to teach the target. The target is taught and the sensor waits for the second target, if required by the selected TEACH mode, or returns to Run mode.

   Complete steps 4 and 5 only if required for the selected TEACH mode:
4. Present the second target.
5. Press **TEACH** to teach the target. The target is taught and the sensor returns to Run mode.

See the Instruction Manual for detailed instructions and other available TEACH modes. The TEACH modes include:

- Two-point static background suppression 2-Pt —Two-point TEACH sets a single switch point. The sensor sets the switch point between two taught target distances, relative to the shifted origin location.
- Dynamic background suppression dyn —Dynamic TEACH sets a single switch point during machine run conditions. The sensor takes multiple samples and the switch point is set between the minimum and the maximum sampled distances.
- One-point window (foreground suppression) FGS —One-point window sets a window (two switch points) centered around the taught target distance.
- One-point background suppression bGS —One-point background suppression sets a single switch point in front of the taught target distance. Objects beyond the taught switch point are ignored.
- Dual intensity + distance duAL —Dual mode records the distance and amount of light received from the reference surface. See *Dual Mode Reference Surface Considerations* on page 10 for more information about selecting a reference surface. The output switches when an object passing between the sensor and the reference surface changes the perceived distance or amount of returned light.

Manual Adjustments

Manually adjust the sensor switch point using the ⊕ and ⊖ buttons.

1. From Run mode, press either ⊕ or ⊖ one time. The current switch point value flashes slowly.
2. Press ⊕ to move the switch point up or ⊖ to move the switch point down. After 1 second of inactivity, the new switch point value flashes rapidly, the new setting is accepted, and the sensor returns to Run mode.

Note: When FGS mode is selected (FGS indicator is on), manual adjustment moves both sides of the symmetrical threshold window simultaneously, expanding and collapsing the window size. Manual adjustment does not move the center point of the window.

Note: When dual mode is selected (DYN, FGS, and BGS indicators are on), after the TEACH process is completed, use the manual adjustment to adjust the sensitivity of the thresholds around the taught reference point. The taught reference point is a combination of the measured distance and returned signal intensity from the reference target.

Manual adjustment does not move the taught reference point, but pressing ⊕ increases the sensitivity, and pressing ⊖ decreases the sensitivity. When re-positioning the sensor or changing the reference target, re-teach the sensor.

Light Operate/Dark Operate

The default output configuration is light operate. To switch between light operate and dark operate, use the following instructions:

1. Press and hold **LO/DO** for longer than 2 seconds. The current selection displays.
2. Press **LO/DO** again. The new selection flashes slowly.
3. Press **SELECT** to change the output configuration and return to Run mode.

Note: If neither **SELECT** nor **LO/DO** are pressed after step 2, the new selection flashes slowly for a few seconds, then flashes quickly and the sensor automatically changes the output configuration and returns to Run mode.

Locking and Unlocking the Sensor Buttons

Use the lock and unlock feature to prevent unauthorized or accidental programming changes. Three settings are available:

- uLoc —The sensor is unlocked and all settings can be modified (default).
- Loc — The sensor is locked and no changes can be made.

- OLoc —The switch point value can be changed by teaching or manual adjustment, but no sensor settings can be changed through the menu.

When in Loc mode, Loc displays when the **(SELECT)(TEACH)** button is pressed. The switch point displays when **(+)(DISP)** or **(-)(MODE)** are pressed, but Loc displays if the buttons are pressed and held.

When in OLoc mode, Loc displays when **(+)(DISP)** or **(-)(MODE)** are pressed and held. To access the manual adjust options, briefly press and release **(+)(DISP)** or **(-)(MODE)**. To enter TEACH mode, press the **(SELECT)(TEACH)** button and hold for longer than 2 seconds.

To enter Loc mode, hold ⊕ and press ⊖ four times. To enter OLoc mode, hold ⊕ and press ⊖ seven times. Holding ⊕ and pressing ⊖ four times unlocks the sensor from either lock mode and the sensor displays uLoc .

Specifications

Sensing Beam
Visible red Class 1 laser, 655 nm

Supply Voltage (Vcc)
10 to 30 V dc

Power and Current Consumption, exclusive of load
< 675 mW

Sensing Range—Threaded Barrel Models
500 mm models: 25 mm to 500 mm (0.98 in to 19.69 in)
300 mm models: 25 mm to 300 mm (0.98 in to 11.81 in)
100 mm models: 25 mm to 100 mm (0.98 in to 3.94 in)

Sensing Range—Flush Mount Models
310 mm models: 35 mm to 310 mm (1.38 in to 12.20 in)
110 mm models: 35 mm to 110 mm (1.38 in to 4.33 in)

Output Configuration
Threaded Barrel Models: Bipolar (1 PNP and 1 NPN) output
Flush Mount Models: PNP or NPN output, depending on model

Output Rating
100 mA total maximum (protected against continuous overload and short circuit)
Off-state leakage current: < 5 µA at 30 V dc
PNP On-state saturation voltage: < 1.5 V dc at 100 mA load
NPN On-state saturation voltage: < 1.0 V dc at 100 mA load

Discrete Output Distance Repeatability

Table 1: Beam Spot Size—300/310 mm and 500 mm Models

Distance (mm)		Repeatability
Threaded Barrel Models	Flush Mount Models	
25 to 50 mm	35 to 60 mm	± 0.5 mm
50 to maximum range	60 to 310 mm	± 1% of range

Table 2: Beam Spot Size—100/110 mm Models

Distance (mm)		Repeatability
Threaded Barrel Models	Flush Mount Models	
25 to 100 mm	35 to 110 mm	+/-0.2 mm

Remote Input
Allowable Input Voltage Range: 0 to Vcc
Active Low (Internal weak pullup—sinking current): Low State < 2.0 V at 1 mA max.

Supply Protection Circuitry
Protected against reverse polarity and transient overvoltages

Response Speed
User selectable:

- 1.5 —1.5 milliseconds
- 3 —3 milliseconds
- 10 —10 milliseconds
- 25 —25 milliseconds
- 50 —50 milliseconds

Excess Gain—Threaded Barrel Models

Table 3: HIGH Excess Gain (Std Excess Gain[1])

Response Speed (ms)	Excess Gain—90% White Card			
	at 25 mm	at 100 mm	at 300 mm	at 500 mm
1.5	200	100	20	7
3	200	100	20	7
10	1000 (500)	500 (250)	100 (50)	36 (18)
25	2500 (1000)	1250 (500)	250 (100)	90 (36)
50	5000 (2500)	2500 (1250)	500 (250)	180 (90)

Excess Gain—Flush Mount Models

Table 4: HIGH Excess Gain (Std Excess Gain[2])

Response Speed (ms)	Excess Gain—90% White Card		
	at 35 mm	at 110 mm	at 310 mm
1.5	200	100	20
3	200	100	20
10	1000 (500)	500 (250)	100 (50)
25	2500 (1000)	1250 (500)	250 (100)
50	5000 (2500)	2500 (1250)	500 (250)

1
- Std *excess gain available in 10 ms, 25 ms, and 50 ms response speeds only*
- Std *excess gain provides increased noise immunity*

2
- Std *excess gain available in 10 ms, 25 ms, and 50 ms response speeds only*
- Std *excess gain provides increased noise immunity*

Beam Spot Size—300/310 mm and 500 mm Models

Table 5: Beam Spot Size—300/310 mm and 500 mm Models

Distance (mm)		Size (Horizontal × Vertical)
Threaded Barrel Models	Flush Mount Models	
25	35	2.6 mm × 1.0 mm
150	160	2.3 mm × 0.9 mm
300	310	2.0 mm × 0.8 mm
500	-	1.9 mm × 1.0 mm

Beam Spot Size—100/110 mm Models

Table 6: Beam Spot Size—100/110 mm Models

Distance (mm)		Size (Horizontal × Vertical)
Threaded Barrel Models	Flush Mount Models	
25	35	2.4 mm × 1.0 mm
50	60	2.2 mm × 0.9 mm
100	110	1.8 mm × 0.7 mm

Delay at Power Up
< 750 ms

Maximum Torque
Side mounting: 1 N·m (9 in·lbs)
Nose mounting: 20 N·m (177 in·lbs)

Ambient Light Immunity
> 5,000 lux at 300 mm
> 2,000 lux at 500 mm

Connector
Threaded Barrel Models: Integral 5-pin M12/Euro-style male quick disconnect (QD)
Flush Mount Models: Integral 4-pin M12/Euro-style male quick disconnect (QD)

Construction
Housing: 316 L stainless steel
Lens cover: PMMA acrylic
Lightpipe and display window: polysulfone

Temperature Effect
0.05 mm/°C at <125 mm (threaded barrel models)/< 135 mm (flush mount models)
0.35 mm/°C at 300 mm (threaded barrel models)/< 310 mm (flush mount models)
1 mm/°C at 500 mm (threaded barrel models)

Chemical Compatibility
Compatible with commonly used acidic or caustic cleaning and disinfecting chemicals used in equipment cleaning and sanitation. ECOLAB® certified.
Compatible with typical cutting fluids and lubricating fluids used in machining centers

Application Note
For optimum performance, allow 10 minutes for the sensor to warm up

Environmental Rating
IEC IP67 per IEC60529
IEC IP68 per IEC60529
IEC IP69K per DIN40050-9

Vibration
MIL-STD-202G, Method 201A (10 Hz to 60 Hz, 0.06 inch (1.52 mm) double amplitude, 2 hours each along X, Y and Z axes), with sensor operating

Shock
MIL-STD-202G, Method 213B, Condition I (100G 6x along X, Y and Z axes, 18 total shocks), with sensor operating

Operating Conditions
–10 °C to +50 °C (+14 °F to +122 °F)
35% to 95% relative humidity

Storage Temperature
–25 °C to +75 °C (–13 °F to +167 °F)

Required Overcurrent Protection

WARNING: Electrical connections must be made by qualified personnel in accordance with local and national electrical codes and regulations.

Overcurrent protection is required to be provided by end product application per the supplied table.
Overcurrent protection may be provided with external fusing or via Current Limiting, Class 2 Power Supply.
Supply wiring leads < 24 AWG shall not be spliced.
For additional product support, go to *www.bannerengineering.com*.

Supply Wiring (AWG)	Required Overcurrent Protection (Amps)
20	5.0
22	3.0
24	2.0
26	1.0
28	0.8
30	0.5

Certifications

Industrial Control Equipment 3TJJ

Class 2 power
UL Environmental Rating: Type 1

chemical compatibility certified

Performance Curves—Threaded Barrel Models

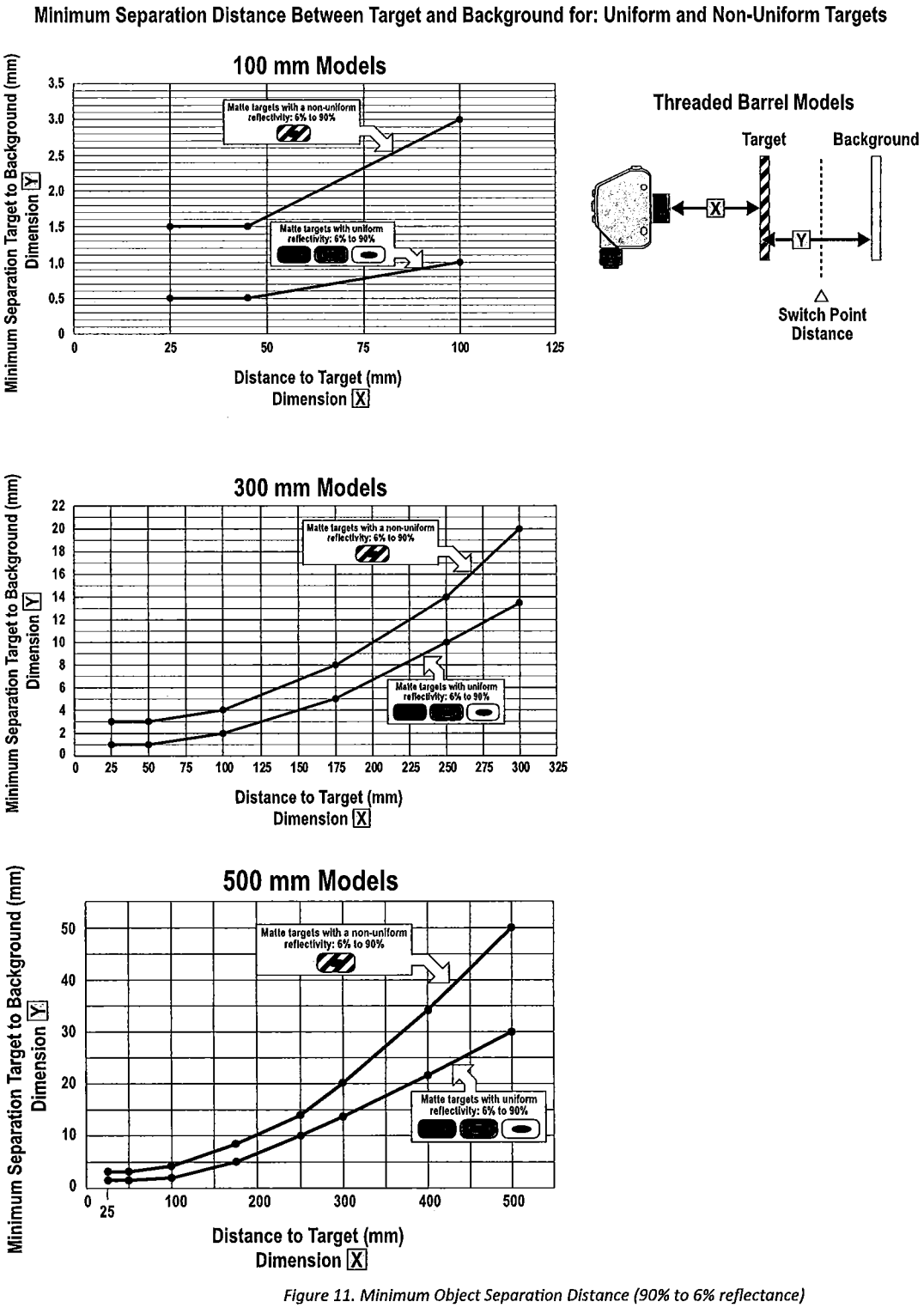
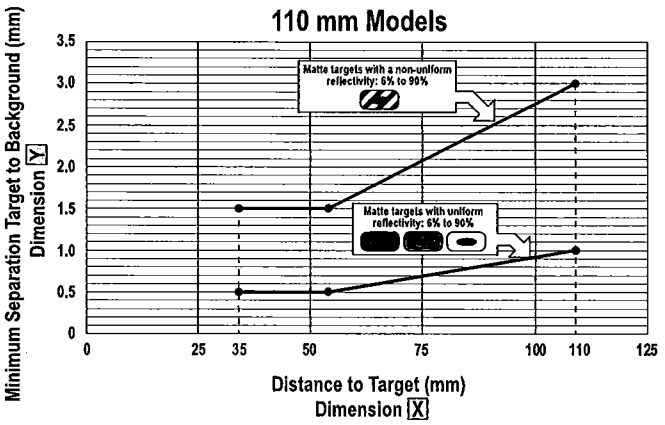
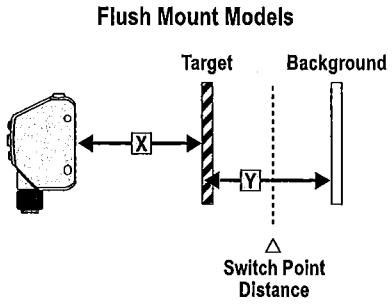


Figure 11. Minimum Object Separation Distance (90% to 6% reflectance)

Performance Curves—Flush Mount Models

Minimum Separation Distance Between Target and Background for: Uniform and Non-Uniform Targets





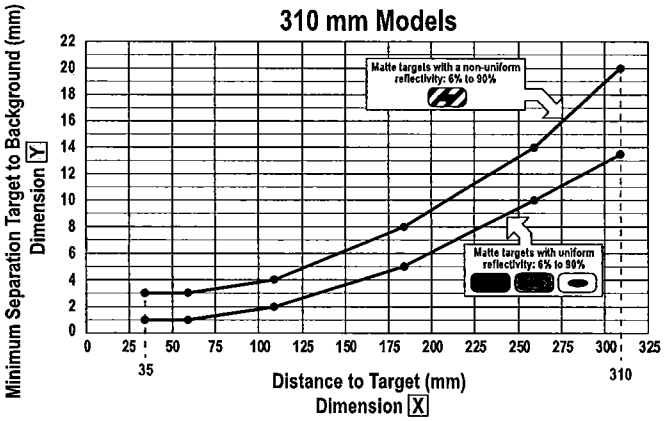


Figure 12. Minimum Object Separation Distance (90% to 6% reflectance)

Dual Mode Reference Surface Considerations

Optimize reliable detection by applying these principals when selecting your reference surface, positioning your sensor relative to the reference surface, and presenting your target. The robust detection capabilities of the Q4X allows successful detection even under non-ideal conditions in many cases. Typical reference surfaces are metal machine frames, conveyor side rails, or mounted plastic targets. Contact Banner Engineering if you require assistance setting up a stable reference surface in your application. For detailed instructions for detecting clear or transparent objects, refer to the Instruction Manual, p/n 181483.

1. Select a reference surface with these characteristics where possible:
   - Matte or diffuse surface finish
   - Fixed surface with no vibration
   - Dry surface with no build-up of oil, water, or dust
2. Position the reference surface between 50 mm and the maximum sensing range for threaded barrel models or between 60 mm and the maximum sensing range for flush mount models.
3. Position the target to be detected as close to the sensor as possible, and as far away from the reference surface as possible.
4. Angle the sensing beam relative to the target and relative to the reference surface 10 degrees or more.

Banner Engineering Corp. Limited Warranty

Banner Engineering Corp. warrants its products to be free from defects in material and workmanship for one year following the date of shipment. Banner Engineering Corp. will repair or replace, free of charge, any product of its manufacture which, at the time it is returned to the factory, is found to have been defective during the warranty period. This warranty does not cover damage or liability for misuse, abuse, or the improper application or installation of the Banner product.

THIS LIMITED WARRANTY IS EXCLUSIVE AND IN LIEU OF ALL OTHER WARRANTIES WHETHER EXPRESS OR IMPLIED (INCLUDING, WITHOUT LIMITATION, ANY WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE), AND WHETHER ARISING UNDER COURSE OF PERFORMANCE, COURSE OF DEALING OR TRADE USAGE.

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ASSEMBLY TITLE: **PRODUCT DETECT ASSEMBLY**

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-steam 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:

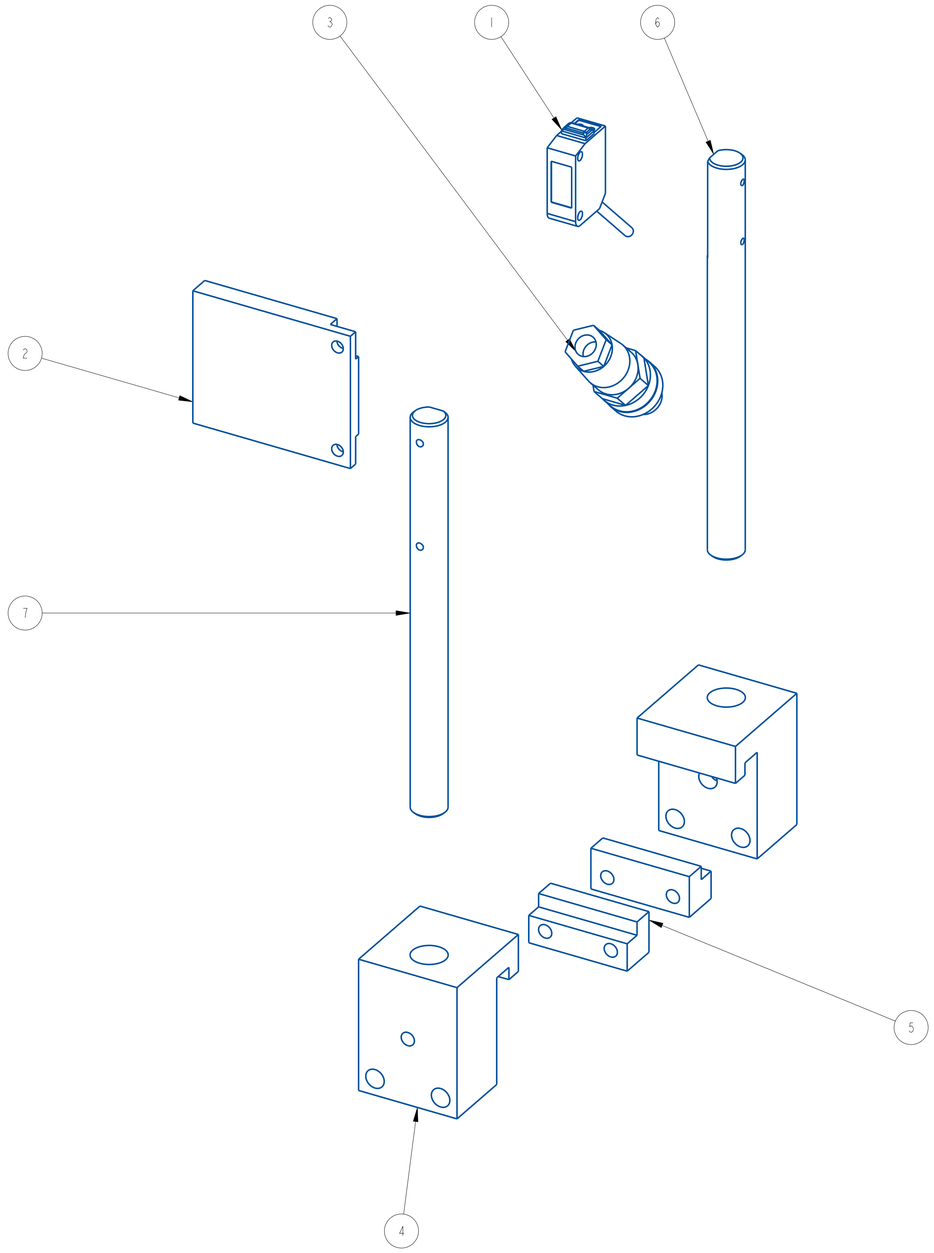
No scheduled maintenance is required for this assembly. Always keep the drive areas free of label flash and debris.

CAUTION: Before performing any maintenance or cleaning make sure the system is powered down.

TROUBLESHOOTING:

PROBLEM:	**WHAT TO DO:**
- No label trigger or intermittent trigger.	- 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	202192-002	CLEAR PRODUCT SENSOR	21560-012
2	1	203160-000	REFLECTOR	21560-012
3	1	252019-000	4 PIN MALE CONNECTOR	21560-012
4	2	A20875-000	RETAINER BLOCK, CONV. RAIL	21560-012
5	2	A20876-000	RETAINER BLOCK	21560-012
6	1	A24278-000	SENSOR MTG. SHAFT	21560-012
7	1	A24279-000	REFLECTOR MTG. SHAFT	21560-012



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

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

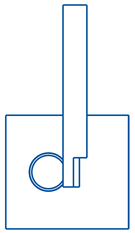
QUADREL LABELING SYSTEMS
7670 JENTHER DRIVE
MENTOR, OHIO 44060
(440) 602-4700

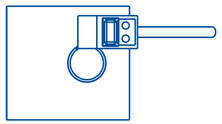
SCALE: 1/1
DATE: 07/18/2024
DRW BY: SEM
CHK BY: 07/18/2024-SEM
APPR BY:

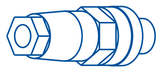
CLEAR PRODUCT DETECT, PNP

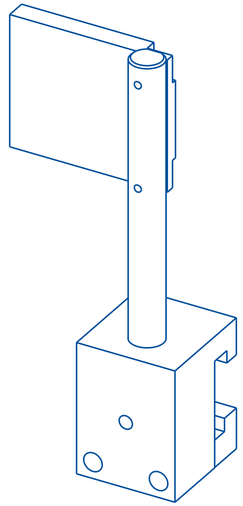
MAT'L 21560-002

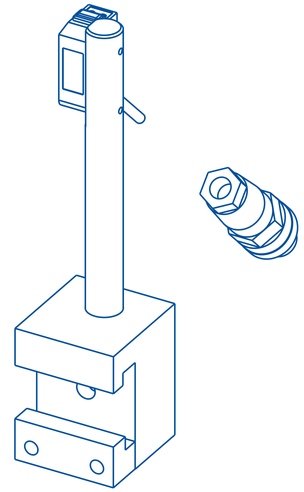
21560-012

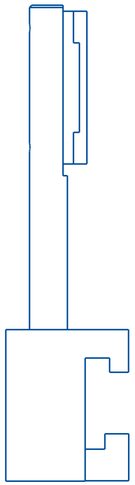


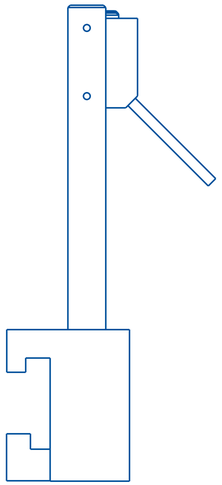


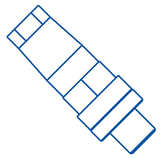


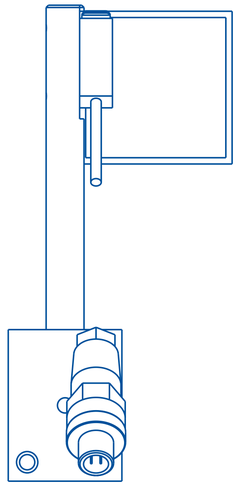












SHEET 2 OF 2

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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: 1/1
DATE: 07/18/2024
DRW BY: SEM
CHK BY: 07/18/2024-SEM
APPR BY:

CLEAR PRODUCT DETECT, PNP

MAT'L
21560-002

21560-012

KEYENCE

96M11227

Self-contained
Photoelectric Sensor

PZ-G Series
Instruction Manual

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

■ 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.

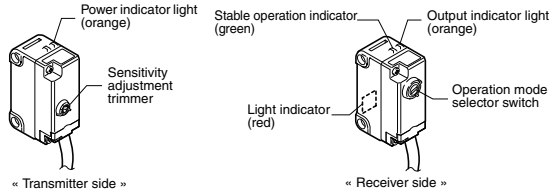
- UL File No. E301717
- Category NRKH,NRKH7
- Enclosure Type 1 (Based on UL50)

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

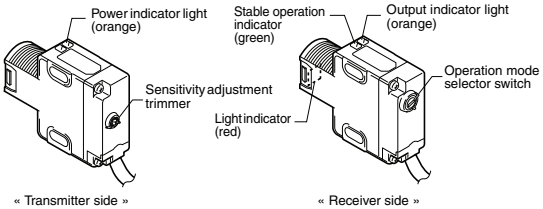
- Use the power supply with Class 2 output defined in NFPA70 (NEC: National Electrical Code).
- Power supply/ Control input/ Control output circuits shall be connected to a single Class 2 source only.
- Use with the over current protection device which is rated 30V or more and not more than 1A.

Part Names

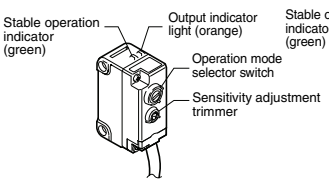
● **PZ-G5xN/G5xP**



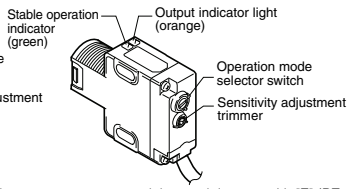
● **PZ-G5xB**



● **PZ-G4xN/G4xP/G10xN/ G10xP/G6xN/G6xP**



● **PZ-G4xB/G10xB/G6xB**

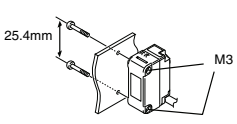


* The model name with "C" (PZ-GxxCx) is the connector type, and the model name with "E" (PZ-GxxEx) is the pigtail quick disconnect type.

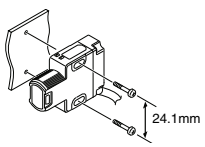
Mounting Method

■ Side Mounting (Prepare M3 screws)

Tightening torque: 0.5 N·m or less

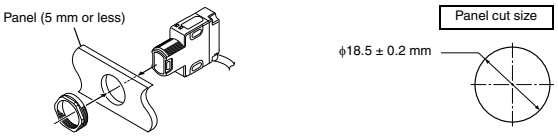


Tightening torque: 0.5 N·m or less



■ Mounting with the M18 nut (includes nut type)

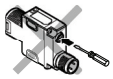
The M18 nut is also available separately as OP-84225 (2 pcs. supplied).
Tightening torque:1.0 N·m or less



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.

LIGHT-ON setting

DARK-ON setting

■ 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)

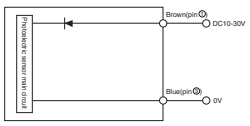
The following assumes DARK-ON (D) is set.

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)	

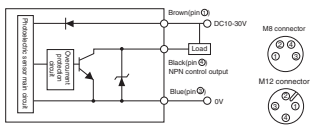
Reference To use the sensor in LIGHT-ON mode, adjust the mode selector switch to "L".

I/O Circuit Diagram

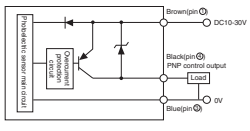
● **PZ-G5xN/G5xP/G5xB (Transmitter side)**



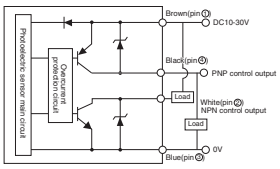
● **PZ-G5xN (Receiver side)/ G4xN/G10xN/G6xN**



● **PZ-G5xP (Receiver side)/ G4xP/G10xP/G6xP**



● **PZ-G5xB (Receiver side)/ G4xB/G10xB/G6xB**



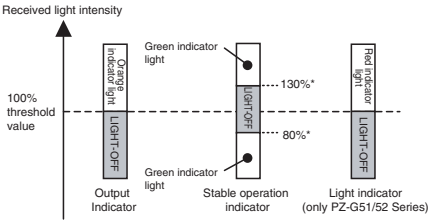
* The pin numbers represent those of the connector type / pigtail quick disconnect type. The model name with "C" (PZ-GxxCx) is the connector type, and the model name with "E" (PZ-GxxEx) is the pigtail quick disconnect type.

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 thrubeam 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			Thrubeam		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
	M12 pigtail quick disconnect	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	Cable	Bipolar (NPN+PNP)	PZ-G51B	PZ-G52B	PZ-G41B	PZ-G42B	PZ-G101B	PZ-G102B	PZ-G61B	PZ-G62B			
	M12 connector		PZ-G51CB	PZ-G52CB	PZ-G41CB	PZ-G42CB	PZ-G101CB	PZ-G102CB	PZ-G61CB	PZ-G62CB			
Detecting distance*1			20 m	40 m	1 m (30 × 30 cm white mat paper)	300 mm (10 × 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 × 4 mm (when the detecting distance is 10 mm)		
Light source (LED)			Red LED	Infrared LED × 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^2 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, Polybutyleneterephtalate (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*2			Instruction manual, M18 nut x 2 (nut thrubeam type), M18 nut x 1 (other nut types)										
Weight			Rectangular cable type: Approx. 60 g (Approx. 50 g for thrubeam 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 thrubeam 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

11227E 1070-1 96M11227
Printed in Japan

ASSEMBLY TITLE: **STOP BLADDER**

GENERAL FUNCTION:

- The stop bladder 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:

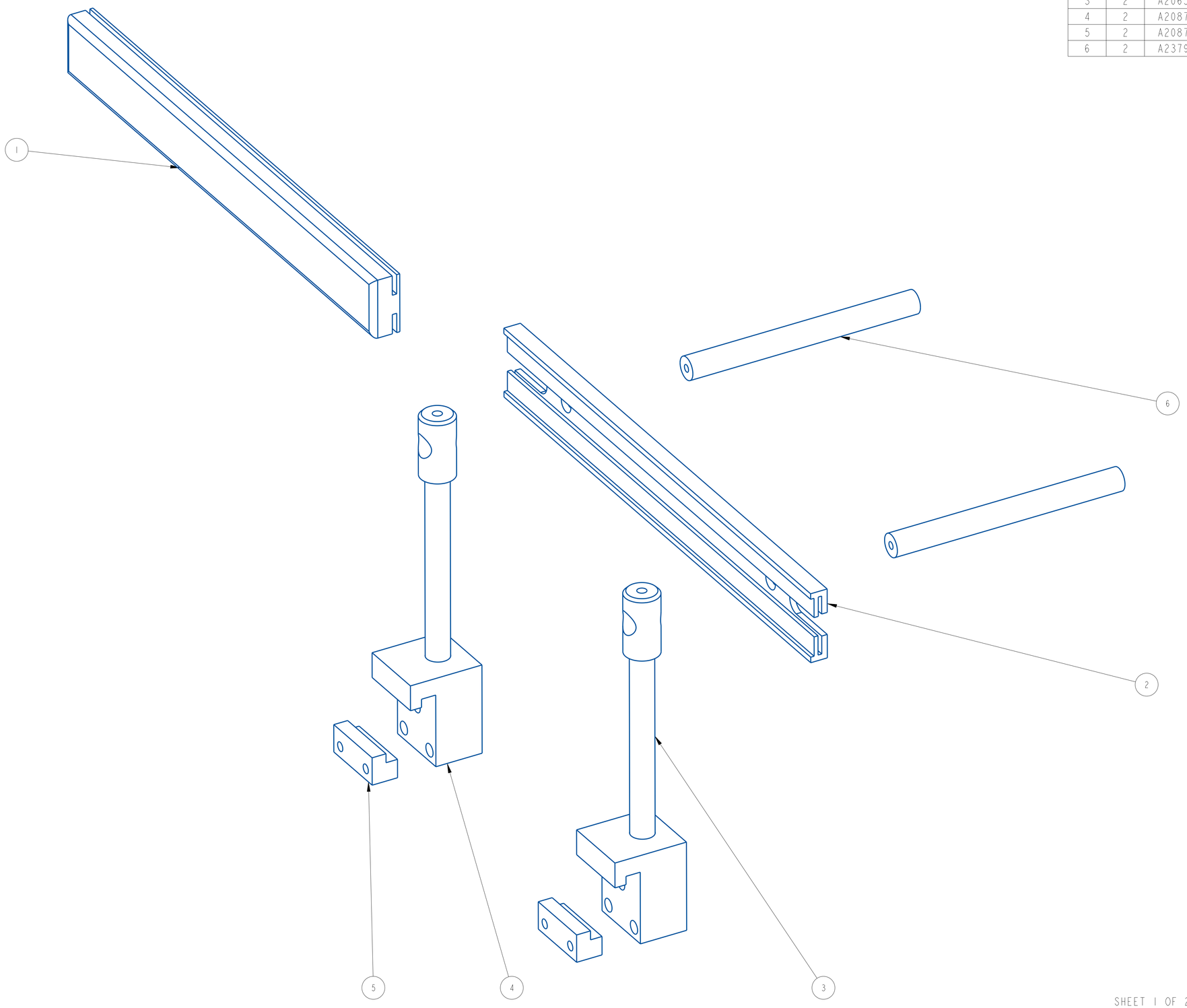
- The Stop bladder assembly is generally mounted to versaline rail
-

MAINTENANCE:

- Keep the stop bladder free of any objects that may cut or rupture the bladder.

BLADDER 792708-000
BLADDER SUPPORT 792709-000

ITEM	QTY	PART NO.	DESCRIPTION	PARENT ITEM
1	1	792708-000	BLADDER	22860-000
2	1	792709-000	BLADDER RETAINER	22860-000
3	2	A20653-000	CLAMPING ROD	22860-000
4	2	A20875-000	RETAINER BLOCK, CONV. RAIL	22860-000
5	2	A20876-000	RETAINER BLOCK	22860-000
6	2	A23791-000	SHAFT, IDLER ROLLER	22860-000



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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

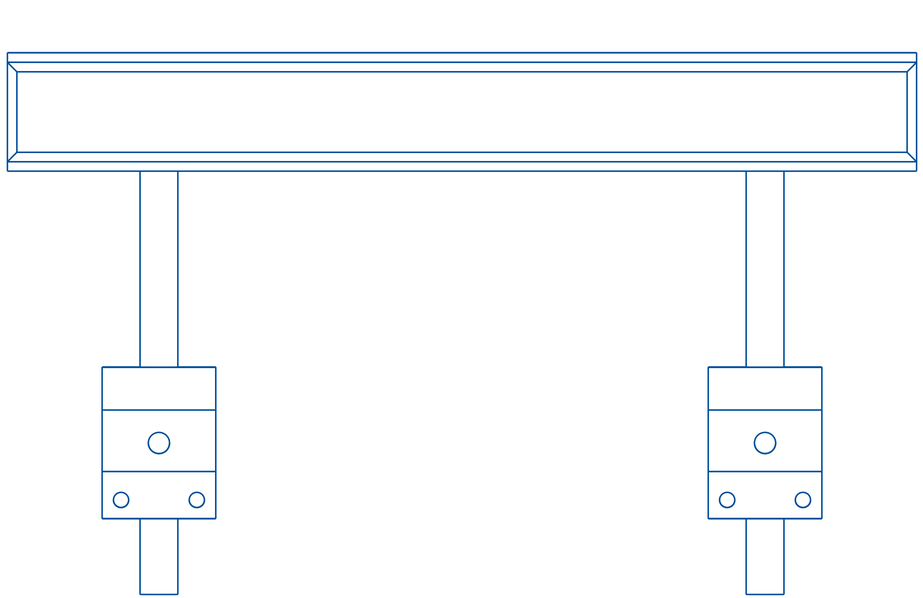
SCALE: 1/1
DATE: 07/26/2024
DRW BY: SEM
CHK BY: 07/26/2024-SEM
APPR BY:

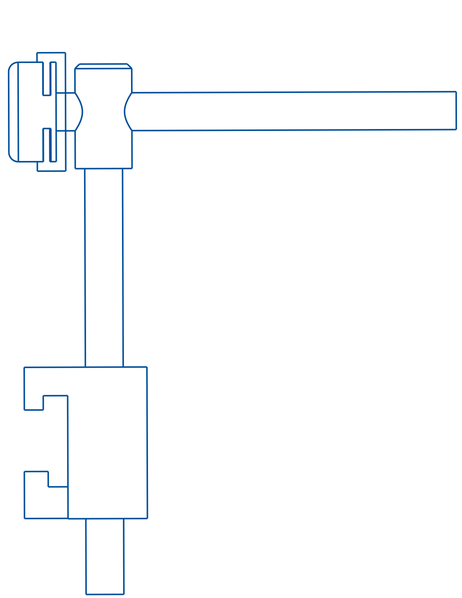
STOP GATE, BLADDER KIT

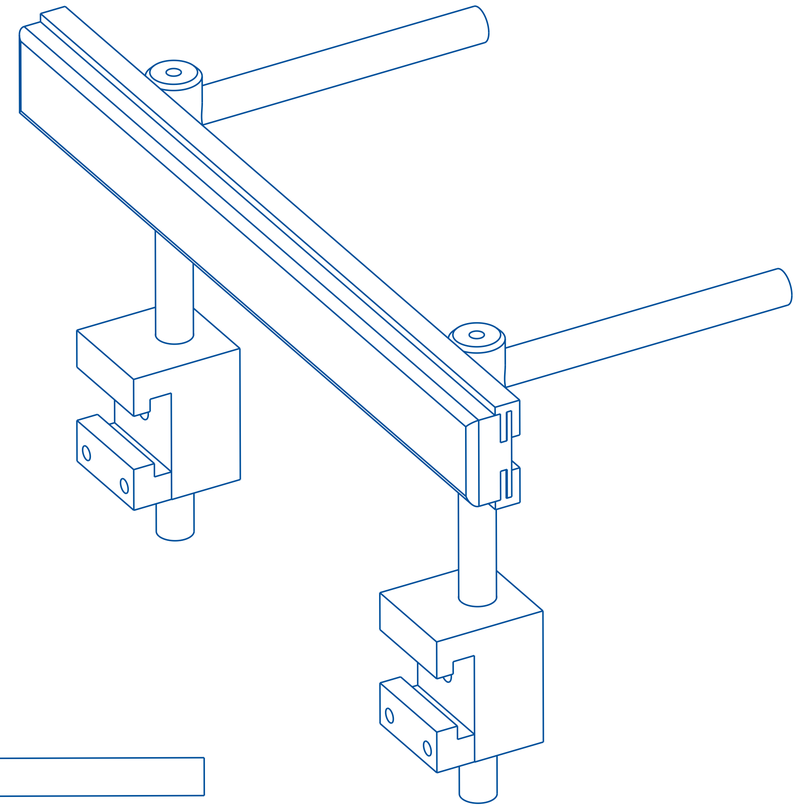
MAT'L

22860-000

SHEET 1 OF 2







SHEET 2 OF 2

REV	DATE	DESCRIPTION	BY
A	07/26/2024	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
ALL ANGLES ARE 90°

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

SCALE: 1/1
DATE: 07/26/2024
DRW BY: SEM
CHK BY:07/26/2024-SEM
APPR BY:

STOP GATE, BLADDER KIT

MAT'L

22860-000

ASSEMBLY TITLE: **EJECT STATION**

DRAWING NO.: **D21103-000**

GENERAL FUNCTION:

- Removes products from the conveyor that did not pass an inspection requirement.

SET UP AND ADJUSTMENTS:

- Position the trigger sensor to read all products that come by.
- Position the inspection device properly – refer to manufacturer cut sheet for additional information.
- Move the eject cylinder up and down so that it pushes the product away. Too low or high may tip it over and not remove it from the conveyor. Adjust the air pressure to apply more or less pressure to the product.
- Place the eject bin across from the cylinder so that it collects all rejected product.

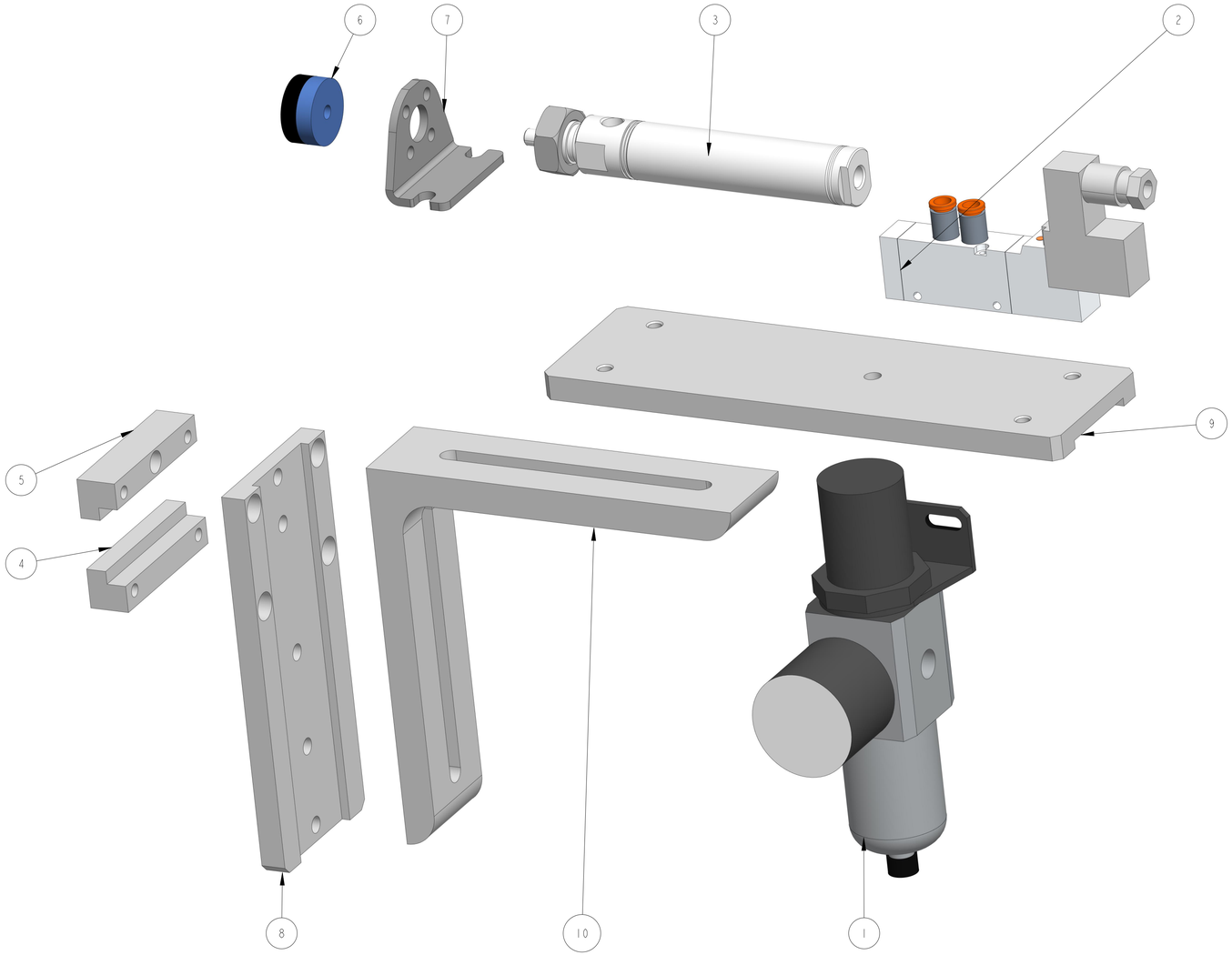
MAINTENANCE:

- Clean all parts that have acquired label or glue residue

TROUBLESHOOTING:

PROBLEM	WHAT TO DO
- Cylinder fires too late	- Decrease EJECT DELAY
- Cylinder fires early	- Increase EJECT DELAY
- Product not entering eject bin	- Increase air pressure
- Product getting shot over bin	- Decrease air pressure

ITEM	QTY	PART NO.	DESCRIPTION	PARENT ITEM
1	1	391240-000	FILTER / REGULATOR W/GUAGE & BRK	21449-002
2	1	392268-000	VALVE,	21449-002
3	1	393575-000	CYLINDER, 2" STR, 3/4" BORE	21449-002
4	1	A20844-000	GUIDE RAIL CLAMP BAR	21449-002
5	1	A20845-000	GUIDE RAIL CLAMP BAR	21449-002
6	1	A20846-004	PUSHER	21449-002
7	1	A23780-000	CYLINDER MOUNTING ANGLE	21449-002
8	1	B20266-000	CONVEYOR MOUNTING PLATE	21449-002
9	1	B21009-000	SMC CYLINDER MOUNTING PLATE	21449-002
10	1	C20175-000	MOUNTING ANGLE	21449-002



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

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

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

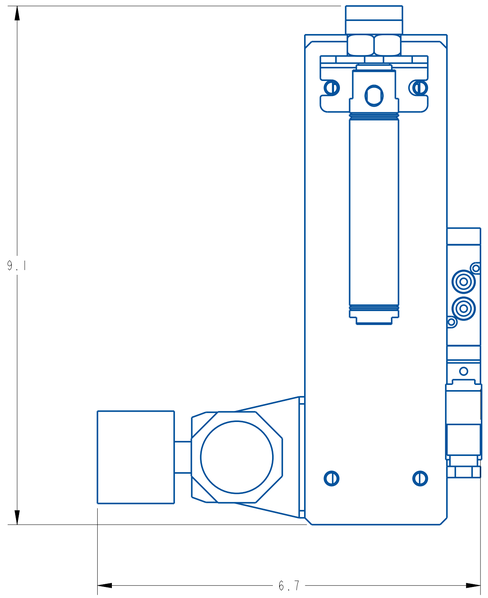
QUADREL LABELING SYSTEMS
7670 JENTHER DRIVE
MENTOR, OHIO 44060
(440) 602-4700

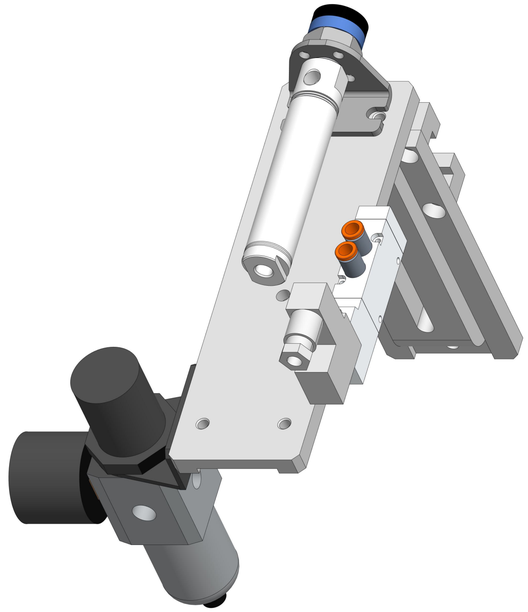
SCALE: 1/1
DATE: Feb-23-22
DRW BY: TJS
CHK BY: 09/03/2025-SEM
APPR BY:

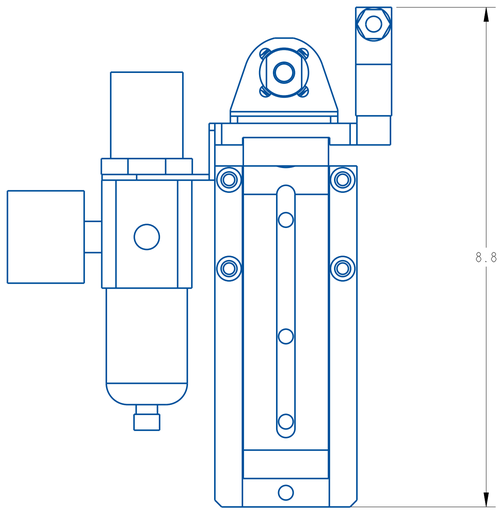
PRODUCT EJECT ASSEMBLY

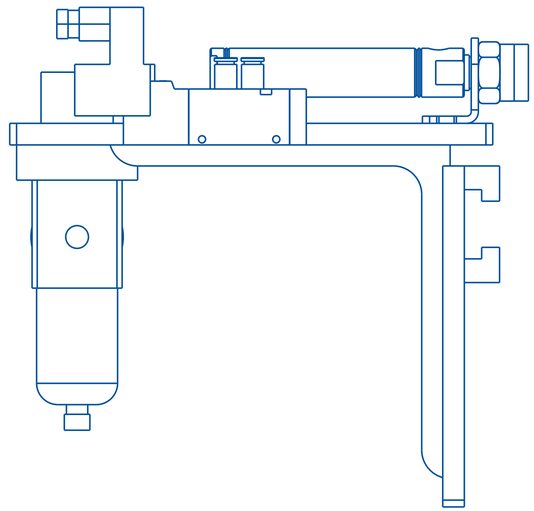
MAT'L

21449-002









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

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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

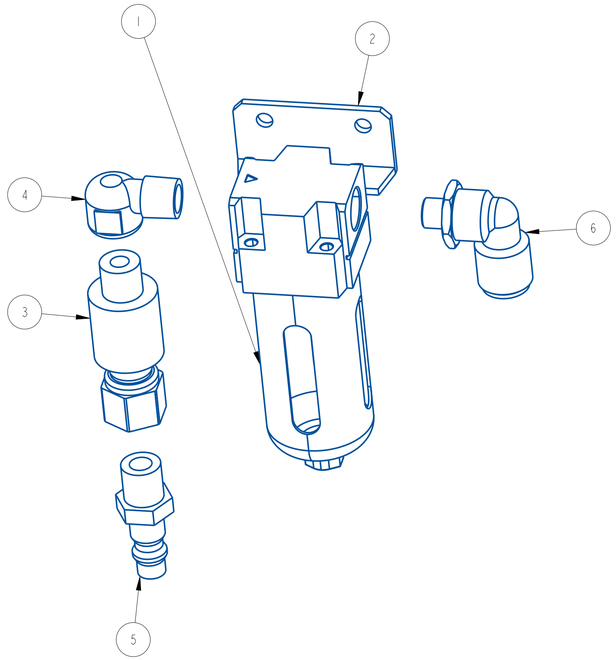
SCALE: 3/4
DATE: Feb-23-22
DRW BY: TJS
CHK BY:09/03/2025-SEM
APPR BY:

PRODUCT EJECT ASSEMBLY

MAT'L

21449-002

ITEM	QTY	PART NO.	DESCRIPTION	PARENT ITEM
1	1	391201-000	FILTER, AIR	22677-000
2	1	391201-MTG	FILTER / REGULATOR W/GUAGE & BRK	22677-000
3	1	391811-000	DISCONNECT, SLEEVE	22677-000
4	1	391906-000	90 ELBOW	22677-000
5	1	391954-000	FITTING, 1/4 NPT QUICK DISCONNECT	22677-000
6	1	392111-000	3/8" TUBE TO 1/8" THREAD MALE ELBOW	22677-000



REV	DATE	DESCRIPTION	BY
A	8-17-22	NEW DRAWING	ATT

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ANGLES ± 30'

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

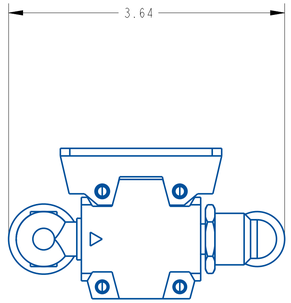
QUADREL LABELING SYSTEMS
7670 JENTHER DRIVE
MENTOR, OHIO 44060
(440) 602-4700

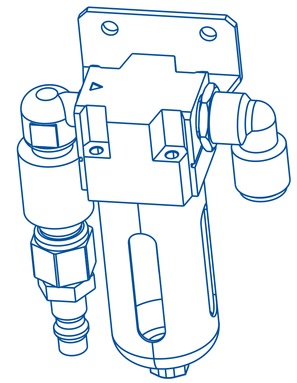
SCALE: 1/1
DATE: 8-17-22
DRW BY: ATT
CHK BY: 03/05/2024-SEM
APPR BY:

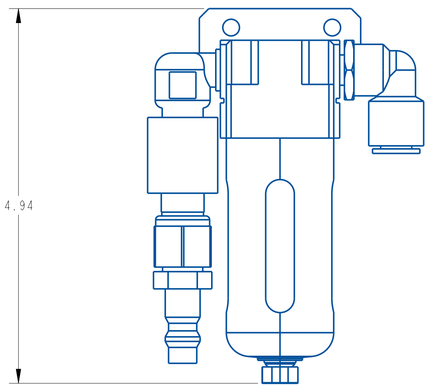
PNEUMATIC INLET

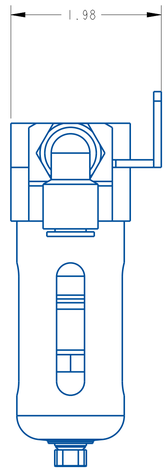
MAT'L

22677-000









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QUADREL LABELING SYSTEMS
7670 JENTHER DRIVE
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(440) 602-4700

SCALE:	1/1
DATE:	8-17-22
DRW BY:	ATT
CHK BY:	03/05/2024-SEM
APPR BY:	

PNEUMATIC INLET

MAT'L

22677-000

ASSEMBLY TITLE: **INFEED / 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.

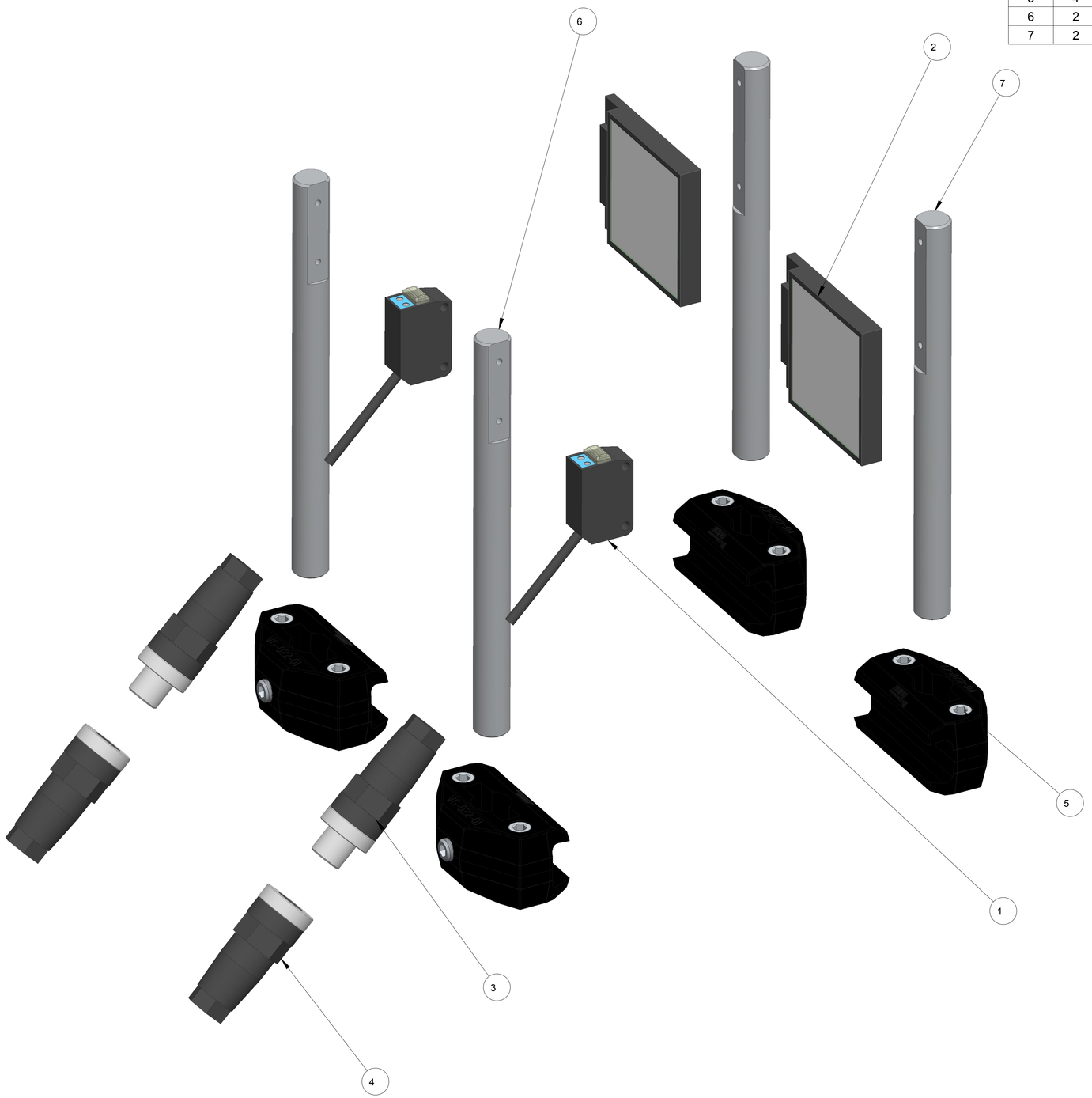
MAINTENANCE:

- 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.**

ITEM	QTY	PART NO.	DESCRIPTION	PARENT ITEM
1	2	202192-002	CLEAR PRODUCT SENSOR, PNP	22546-001
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



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A	Mar-12-20	NEW DRAWING	TJS

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

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

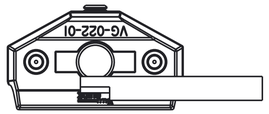
QUADREL LABELING SYSTEMS
7670 JENTHER DRIVE
MENTOR, OHIO 44060
(440) 602-4700

SCALE	5/4
DATE	Mar-12-20
DRAWN BY	TJS

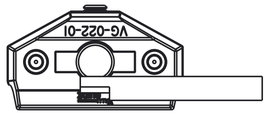
INFEED & OUTFEED BANK SENSOR ASSEMBLY

MAT'L 22546-003

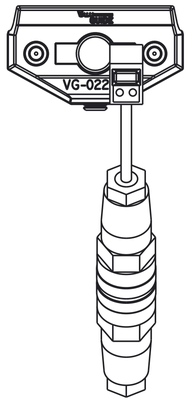
22546-003

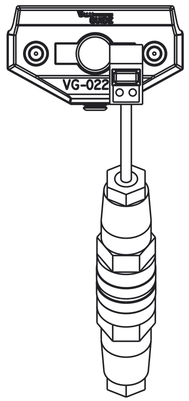


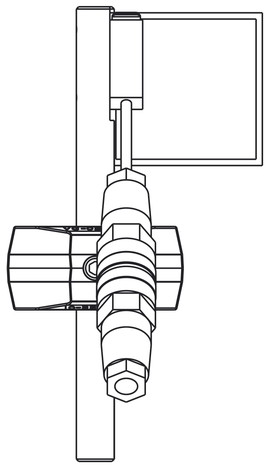
INFEED

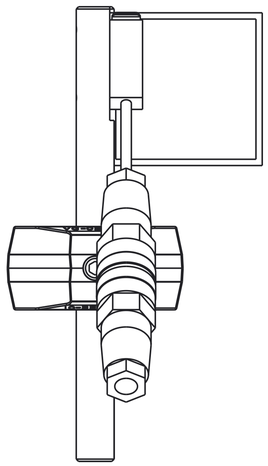


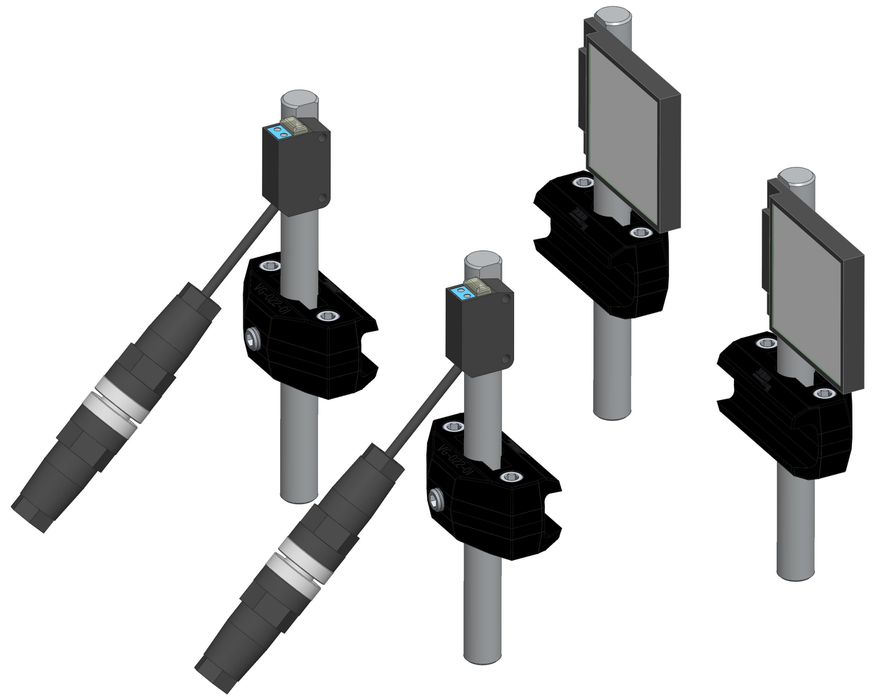
OUTFEED

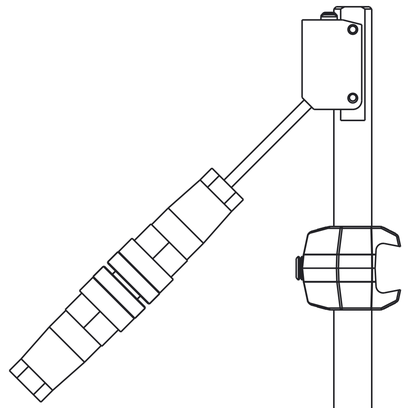


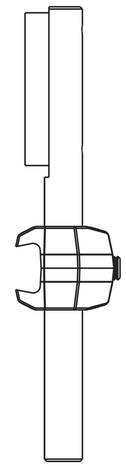












SHEET 2 OF 2

REV	DATE	DESCRIPTION	BY
A	Mar-12-20	NEW DRAWING	TJS

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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

KEYENCE

96M11227

Self-contained
Photoelectric Sensor

PZ-G Series
Instruction Manual

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

■ 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.

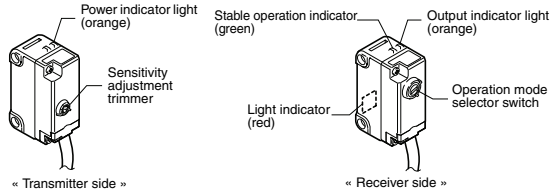
- UL File No. E301717
- Category NRKH,NRKH7
- Enclosure Type 1 (Based on UL50)

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

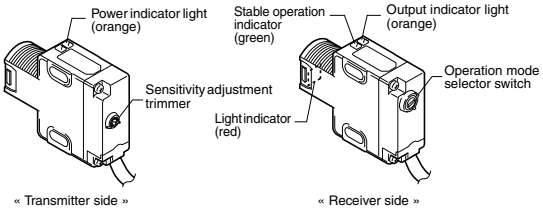
- Use the power supply with Class 2 output defined in NFPA70 (NEC: National Electrical Code).
- Power supply/ Control input/ Control output circuits shall be connected to a single Class 2 source only.
- Use with the over current protection device which is rated 30V or more and not more than 1A.

Part Names

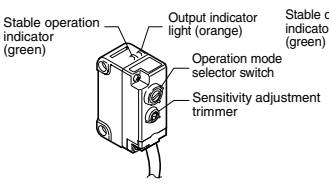
● **PZ-G5xN/G5xP**



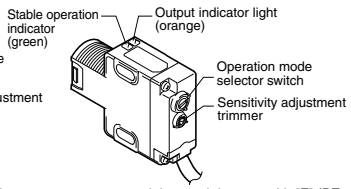
● **PZ-G5xB**



● **PZ-G4xN/G4xP/G10xN/ G10xP/G6xN/G6xP**



● **PZ-G4xB/G10xB/G6xB**

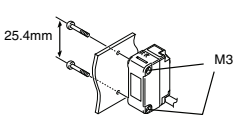


* The model name with "C" (PZ-GxxCx) is the connector type, and the model name with "E" (PZ-GxxEx) is the pigtail quick disconnect type.

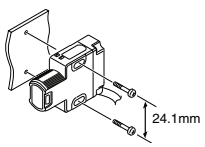
Mounting Method

■ Side Mounting (Prepare M3 screws)

Tightening torque: 0.5 N·m or less

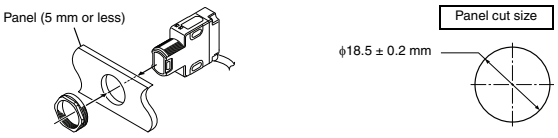


Tightening torque: 0.5 N·m or less



■ Mounting with the M18 nut (includes nut type)

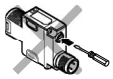
The M18 nut is also available separately as OP-84225 (2 pcs. supplied).
Tightening torque:1.0 N·m or less



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.

LIGHT-ON setting

DARK-ON setting

■ 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)

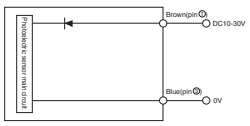
The following assumes DARK-ON (D) is set.

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)	

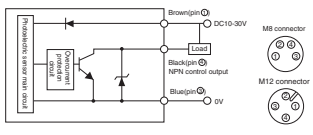
Reference To use the sensor in LIGHT-ON mode, adjust the mode selector switch to "L".

I/O Circuit Diagram

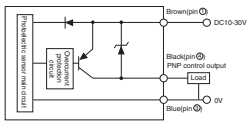
● **PZ-G5xN/G5xP/G5xB (Transmitter side)**



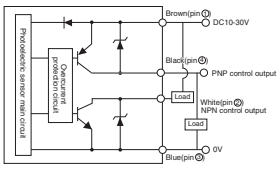
● **PZ-G5xN (Receiver side)/ G4xN/G10xN/G6xN**



● **PZ-G5xP (Receiver side)/ G4xP/G10xP/G6xP**



● **PZ-G5xB (Receiver side)/ G4xB/G10xB/G6xB**



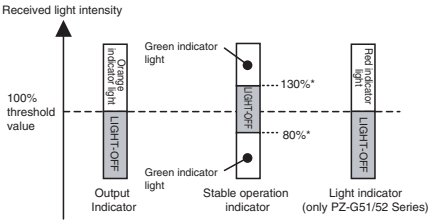
* The pin numbers represent those of the connector type / pigtail quick disconnect type. The model name with "C" (PZ-GxxCx) is the connector type, and the model name with "E" (PZ-GxxEx) is the pigtail quick disconnect type.

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 thrubeam 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			Thrubeam		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
	M12 pigtail quick disconnect	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	Cable	Bipolar (NPN+PNP)	PZ-G51B	PZ-G52B	PZ-G41B	PZ-G42B	PZ-G101B	PZ-G102B	PZ-G61B	PZ-G62B			
	M12 connector		PZ-G51CB	PZ-G52CB	PZ-G41CB	PZ-G42CB	PZ-G101CB	PZ-G102CB	PZ-G61CB	PZ-G62CB			
Detecting distance*1			20 m	40 m	1 m (30 × 30 cm white mat paper)	300 mm (10 × 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 × 4 mm (when the detecting distance is 10 mm)		
Light source (LED)			Red LED	Infrared LED × 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^2 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, Polybutyleneterephtalate (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*2			Instruction manual, M18 nut x 2 (nut thrubeam type), M18 nut x 1 (other nut types)										
Weight			Rectangular cable type: Approx. 60 g (Approx. 50 g for thrubeam 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 thrubeam 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

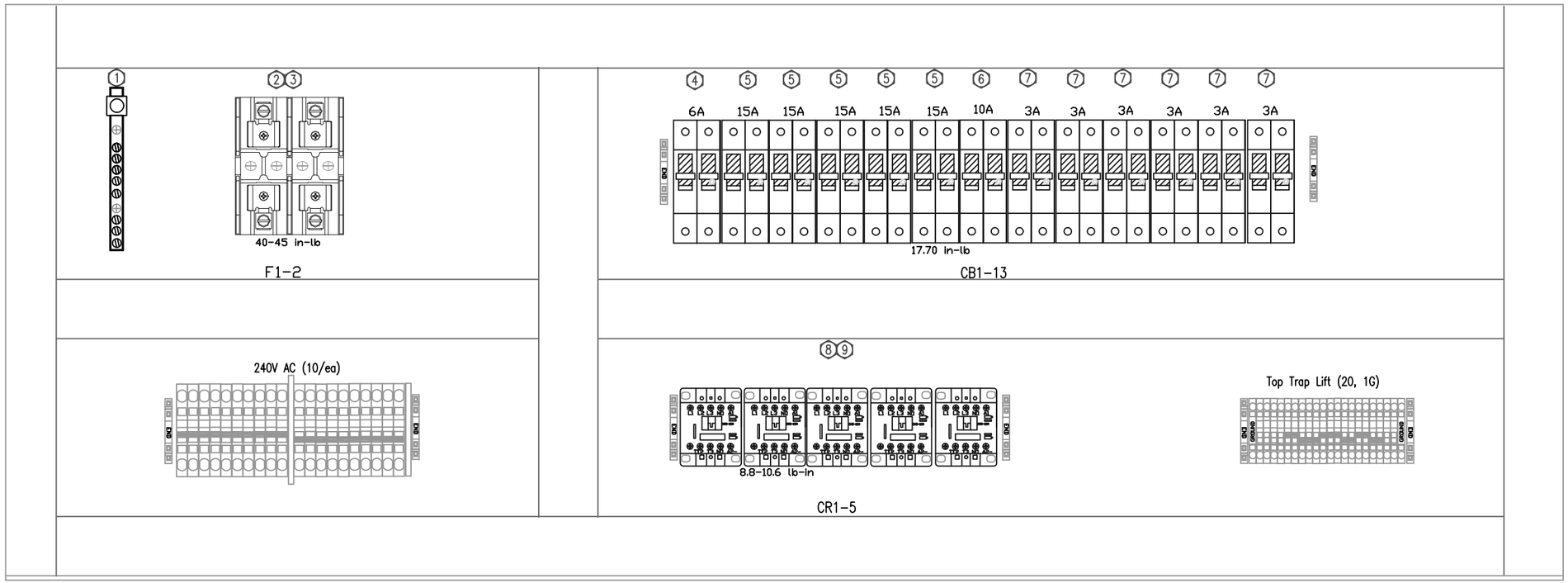
KEYENCE CORPORATION

1-3-14, Higashi-Nakajima, Higashi-Yodogawa-ku,
Osaka, 533-8555, Japan
PHONE: +81-6-6379-2211 www.keyence.com

11227E 1070-1 96M11227
Printed in Japan


Electronics

Power Panel



Wireway Hardware: 8-32 BHCS
Wireway: 1.5" unless noted

Component Hardware: 8-32 SHCS

NO.	PART NO.	QTY	DESCRIPTION
9	202607-000	5	Altech Contactor Surge Suppressor
8	202604-000	5	Altech Contactor, 24VDC, GMD-12M-10-DC24V
7	241166-001	6	Circuit Breaker, 2 Pole, 3A
6	241116-001	1	Circuit Breaker, 2 Pole, 10A
5	241137-002	5	Circuit Breaker, 2 Pole, 15A
4	241319-001	1	Circuit Breaker, 2 Pole, 6A
3	241311-000	2	Fuse Cover, 60A
2	241314-001	1	Fuse Holder, Jx2, 60A, Marathon 6J60A2B (IZLT.E35113)
1	251830-002	1	Ground Bar
--	251795-000	10	Phoenix Contact 3022276 End Terminal
--	251801-000	4	2 Position Jumper, ST2.5
--	251802-000	2	3 Position Jumper, ST2.5
--	251799-000	1	Phoenix Contact 3030417 End Cover, ST2.5
--	251797-000	20	Phoenix Contact 3031212 Terminal Block, ST2.5 (E60425)
--	251796-000	2	Phoenix Contact 3031238 Ground Terminal, ST2.5
--	251841-000	1	End Cover, ST6
--	251840-000	1	Partition Plate, ST6
--	251852-000	2	10 Position Jumper, ST6
--	251842-000	20	Phoenix Contact Terminal Block, ST6 (E60425)
--	2413010-000	2	Fuse, 35A, J, Shawmut AJT35

UNLESS OTHERWISE SPECIFIED
DIMENSIONAL TOLERANCE
.X ± .08
.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
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Power Panel Layout
BOM: 84209E1-000

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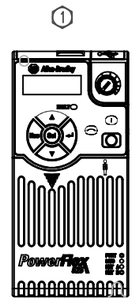
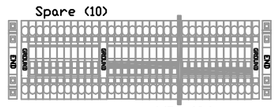
B84209E1-000

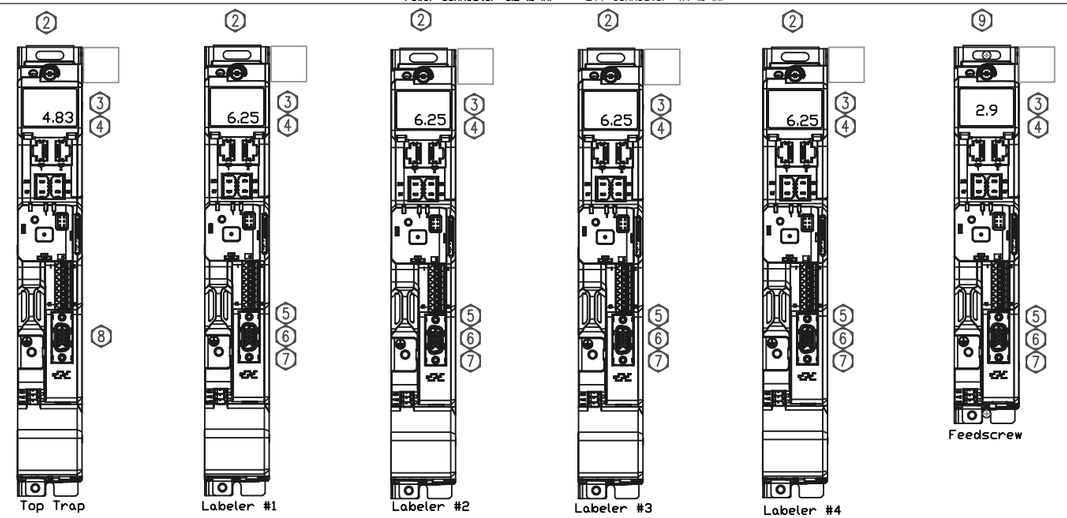
Drive Panel



Conveyor
DR1



Power Connector: 6.2 lb-in. 24V Connector: 4.4 lb-in.



Top Trap
DR2

Labeler #1
DR3

Labeler #2
DR4

Labeler #3
DR5

Labeler #4
DR6

Feedscrew
DR7

2" Wireway

Wireway: 1" unless noted

Wireway Hardware: 8-32 BHCS
Component Hardware: 8-32 SHCS

NO.	PART NO.	QTY	DESCRIPTION
--	262822-000	5	Ethernet Cable, 1ft
9	411900-000	1	Servo Drive, Digitax HD M750 3.5A (E171230)
8	411902-002	1	Universal Encoder Module
7	252073-000	6	HD15 Connector (Motor Feedback)
6	412410-002	5	DB44 Cable, Female, for IO Plus
5	411902-001	5	IO 24 Plus Module
4	411902-000	6	PTi Module
3	411901-000	6	Option Card Mounting Kit
2	411900-002	5	Servo Drive, Digitax HD M750 7.5A (E171230)
1	411400-000	1	Allen Bradley PowerFlex 525 Drive, 1HP, 240V (14-05)

--	251799-000	1	End Cover
--	251798-000	1	Partition Plate
--	251859-000	2	10-Pole Jumper
--	251795-000	2	Phoenix Contact End Terminal
--	251854-000	3	Phoenix Contact Ground Terminal, ST1.5
--	251853-000	30	Phoenix Contact Terminal Block, ST1.5

UNLESS OTHERWISE SPECIFIED
DIMENSIONAL TOLERANCE
.X ± .08
.XX ± .01
.XXX ± .005
ANGLES ± 30'
SURFACE FINISH 125√
BREAK ALL EDGES .005/.015
CORNER RADIUS .010/.030

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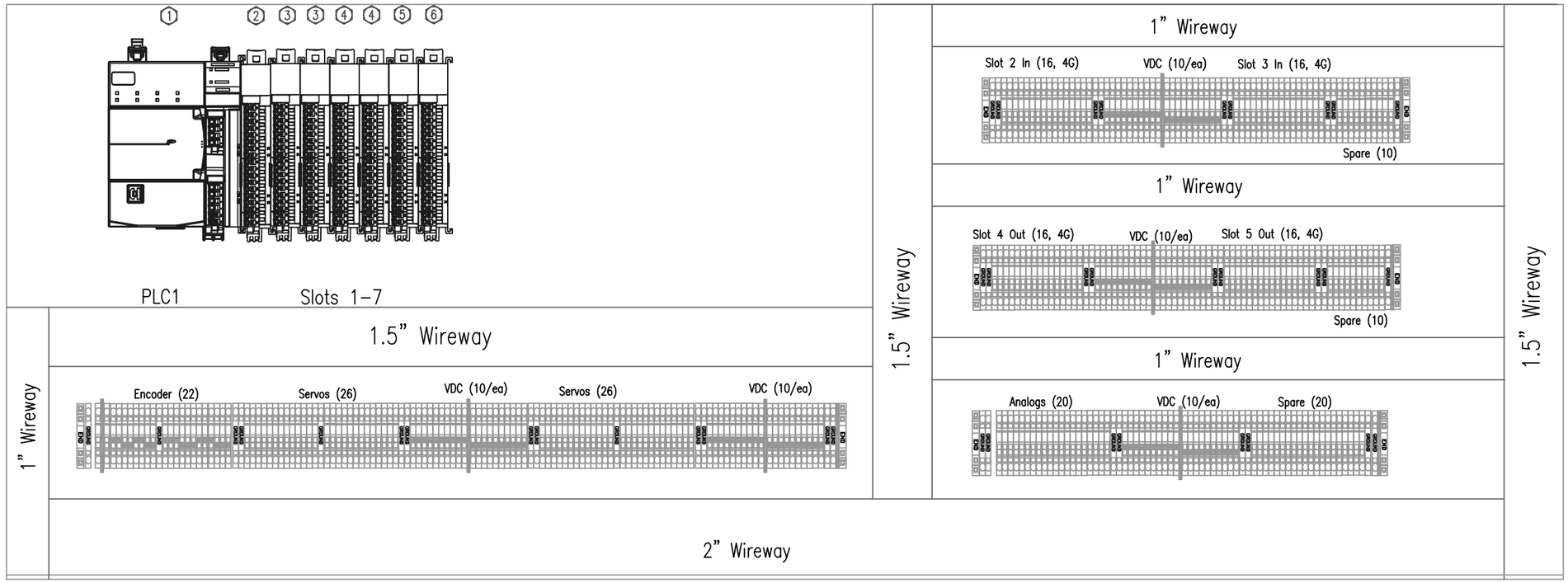
PLC Panel



All Terminal Block Din Rail on 1" Spacers

Wireway Hardware: 8–32 BHCS

Component Hardware: 8–32 SHCS

NO.	PART NO.	QTY	DESCRIPTION
--	221609–003	7	Terminal Blocks, Expansion Cards
--	221609–001	1	Terminal Blocks, PLC
6	221620–001	1	Analog Output Expansion Module 5069–OF4
5	221515–001	1	Analog Input Expansion Module 5069–IY4 (E65584)
4	221486–001	2	Output Expansion Module 5069–OB16 (E65584)
3	221489–001	2	Input Expansion Module 5069–IB16 (E65584)
2	221545–001	1	High Speed Counter Module 5069–HSC2XOB4 (E65584)
1	221616–005	1	PLC, AB CompactLogix L306 (E194810)

--	251855–000	4	2 Position Jumpers
--	251856–000	4	3 Position Jumpers
--	251859–000	10	10 Position Jumpers
--	792356–000	12	1" Spacers, 8–32
--	251798–000	6	Phoenix Contact Partition Plate
--	251799–000	4	Phoenix Contact 3030417 End Cover
--	251854–000	40	Phoenix Contact 3031513 Ground Terminal, ST1.5
--	251853–000	310	Phoenix Contact 3031076 Terminal Block, ST1.5 (E60425)
--	251795–000	10	Phoenix Contact 3022276 End Terminal

UNLESS OTHERWISE SPECIFIED
DIMENSIONAL TOLERANCE
.X ± .08
.XX ± .01
.XXX ± .005
ANGLES ± 30'
SURFACE FINISH 125
BREAK ALL EDGES .005/.015
CORNER RADIUS .010/.030

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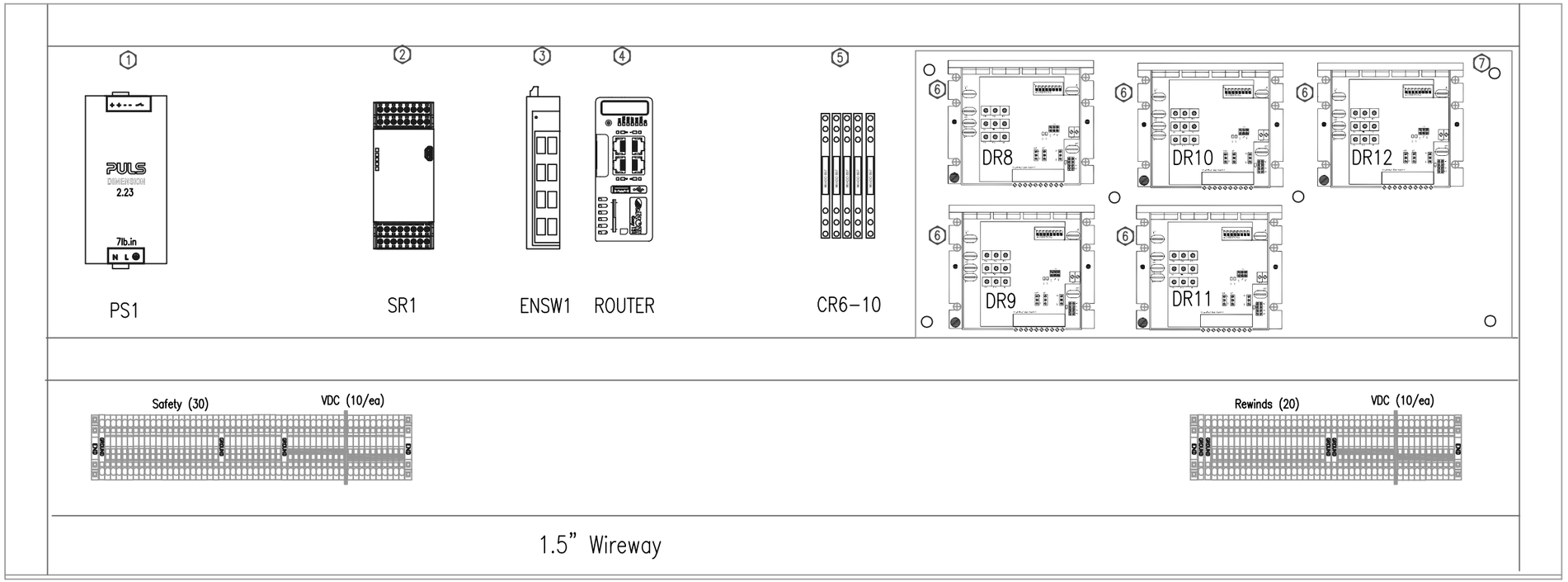
Accessory Panel



NO.	PART NO.	QTY	DESCRIPTION
--	262822-002	2	Ethernet Cable, 7ft
--	262822-005	2	Ethernet Cable, 5ft
--	262822-000	1	Ethernet Cable, 1ft
--	251859-000	4	10 Position Jumpers
--	251855-000	10	2 Position Jumpers
--	251798-000	2	Phoenix Contact Partition Plate
--	251799-000	4	Phoenix Contact 3030417 End Cover
--	251854-000	10	Phoenix Contact 3031513 Ground Terminal, ST1.5
--	251853-000	90	Phoenix Contact 3031076 Terminal Block, ST1.5 (E60425)
--	251795-000	4	Phoenix Contact 3022276 End Terminal
7	A20568-007	6	Standoffs
6	411457-002	5	DC Drive, Minarik MGC403
5	202628-000	5	Relay, 24V, Single
4	221690-000	1	Router, eWon EC7133J_00MA (350576)
3	221683-000	1	Ethernet Switch, 8 Port
2	202613-007	1	Safety Relay, Pizzato MP202MO
1	211540-000	1	Power Supply, 24V, 10A Puls CS10.241 (E198865)

Wireway Hardware: 8-32 BHCS
Wireway: 1" unless noted

Component Hardware: 8-32 SHCS

UNLESS OTHERWISE SPECIFIED
DIMENSIONAL TOLERANCE
.X ± .08
.XX ± .01
.XXX ± .005
ANGLES ± 30'
SURFACE FINISH 125√
BREAK ALL EDGES .005/.015
CORNER RADIUS .010/.030

QUADREL
LABELING SYSTEMS
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(440) 602-4700

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MAT'L 84209E4-000

B84209E4-000

PROLINE FRONT/BACK ZERO DOWNTIME
COMPACTLOGIX PLC
NIDEC DIGITAX SERVO DRIVES
AB POWERFLEX INVERTER
MINARIK DC DRIVES

Voltage: 208-240VAC
Phase: 1
FLA: 35A
SCCR: 10kA

Fuse Table

F1-F2: 35A, Shawmut AJT35

Page Descriptions

WIRE SIZE/COLOR TABLE (UNLESS OTHERWISE NOTED)

240VAC:14AWG BLACK
24VDC/SIGNAL: 18AWG BLUE
0VDC: 18AWG WHITE/BLUE
EARTH GROUND WIRES: 14 AWG GREEN/YELLOW
AC MOTOR WIRES: 4-16AWG

: Terminal Block

: 2 Jumpered Terminal Blocks

: 3 Jumpered Terminal Blocks, etc

QUADREL
LABELING SYSTEMS
7670 JENTHER DR.
MENTOR, OH
44060

Drawn By: CAV

REV	DESCRIPTION	BY	DATE
-	Draft	CAV	28AUG2025

Title: PROLINE FRONT/BACK

Schematic # SB84209-000

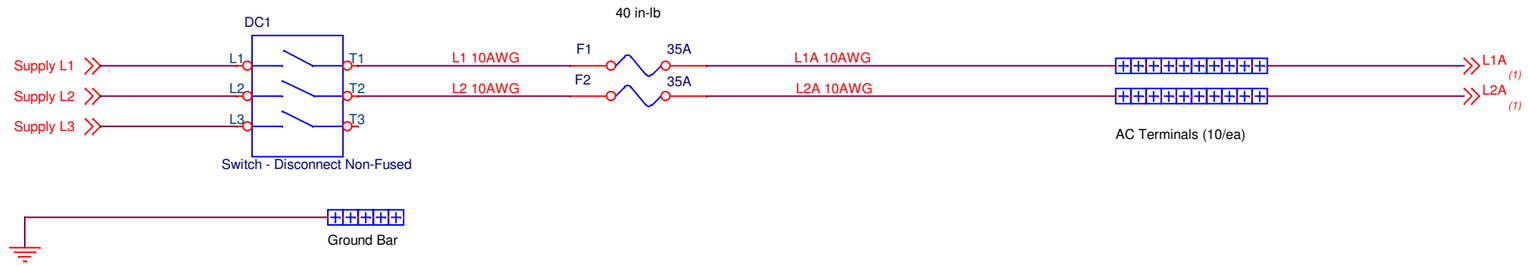
Rev -

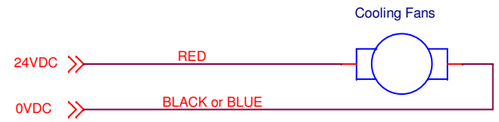
Date: Wednesday, September 03, 2025

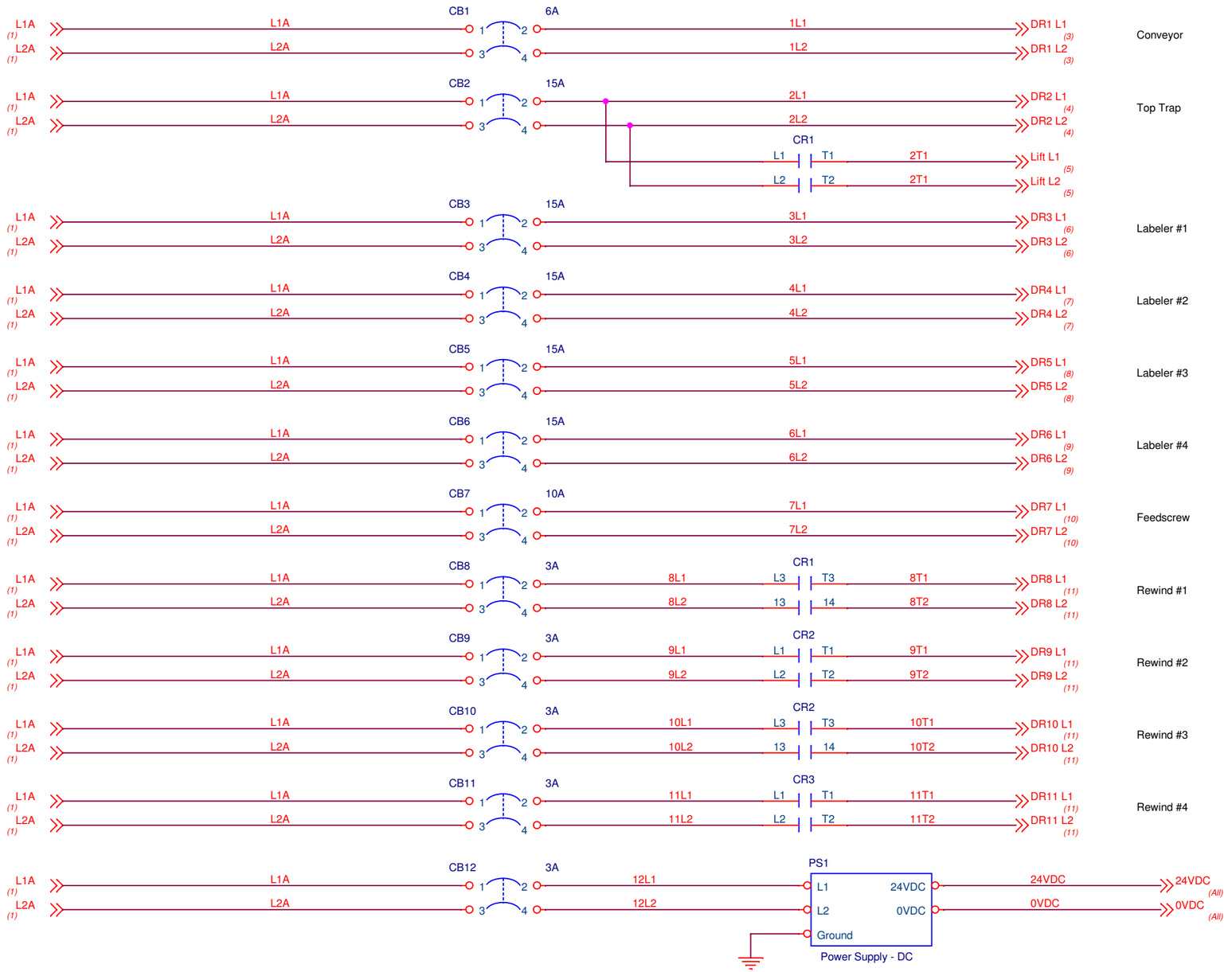
Sheet 00 of 17

Main AC
Page 1

208-240V, 1PH, 35A







COLOR	TECHNICIAN	DATE

For Quadrel Assembly Use

QUADREL
LABELING SYSTEMS
7670 Jenther Dr.
Mentor, OH
44060

Drawn By: CAV

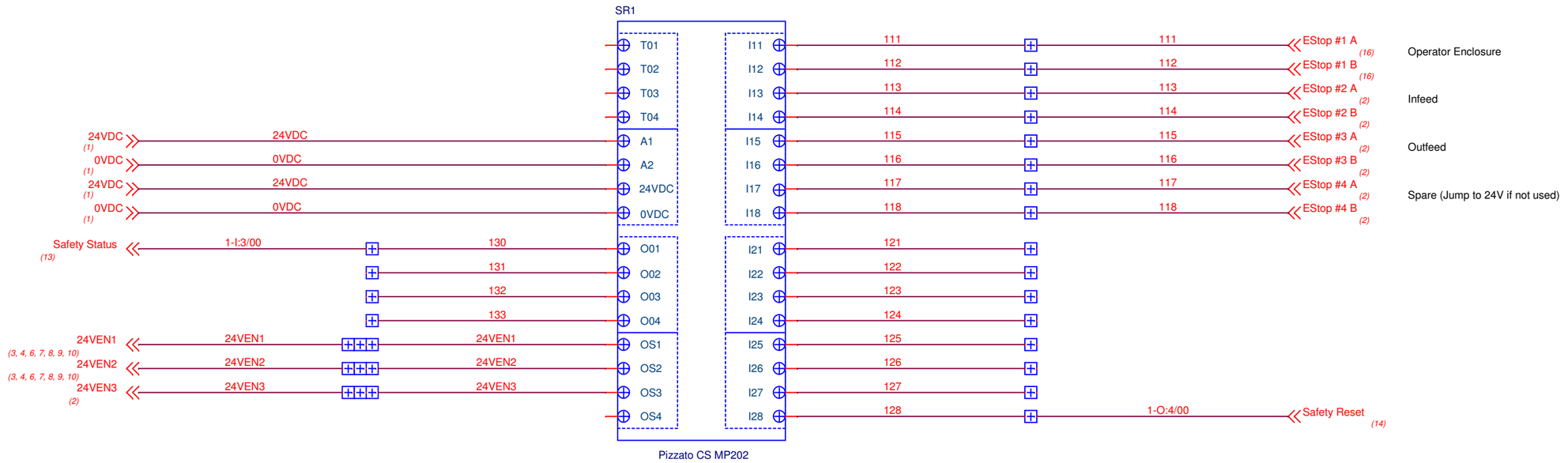
REV	DESCRIPTION	BY	DATE
-	Draft	CAV	28AUG2025

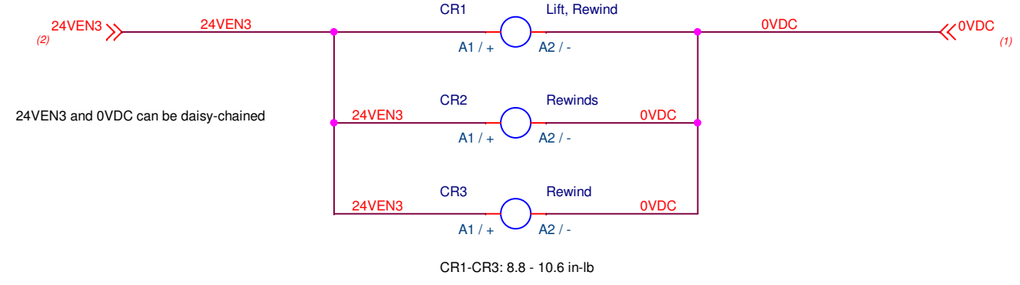
Title: POWER

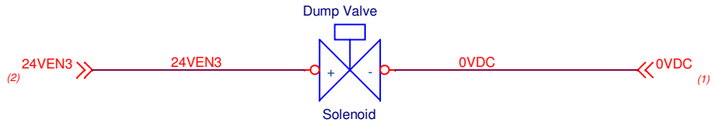
Schematic # SB84209-000 Rev -

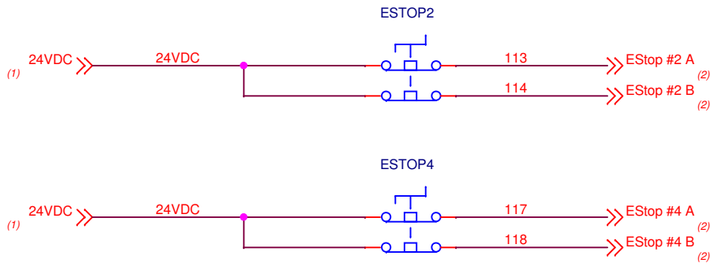
Date: Tuesday, September 02, 2025 Sheet 01 of 17

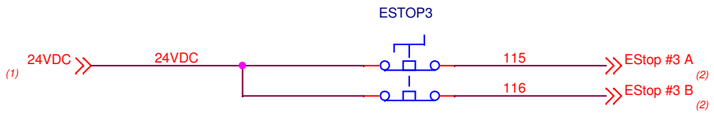
Safety Relay
Page 2











COLOR	TECHNICIAN	DATE

For Quadrel Assembly Use

QUADREL LABELING SYSTEMS
7670 Jenther Dr.
Mentor, OH
44060

Drawn By: CAV

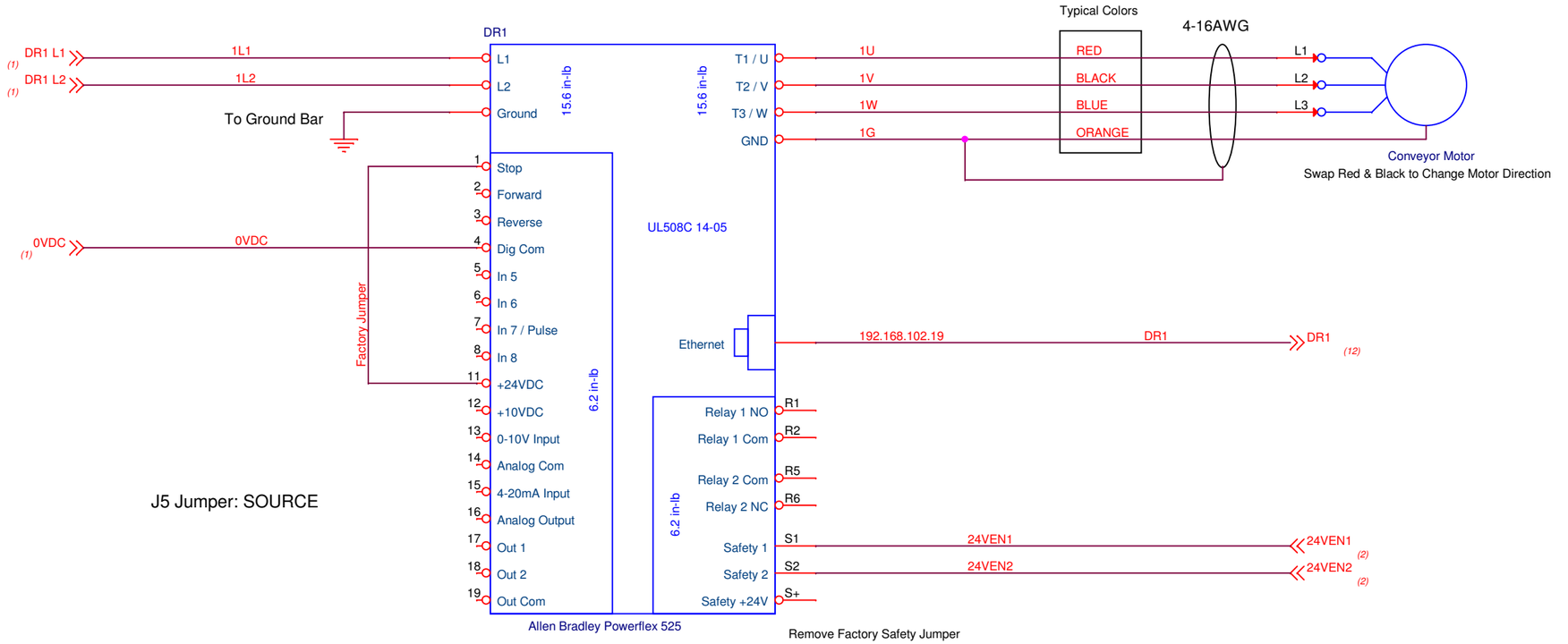
REV	DESCRIPTION	BY	DATE
-	Draft	CAV	28AUG2025

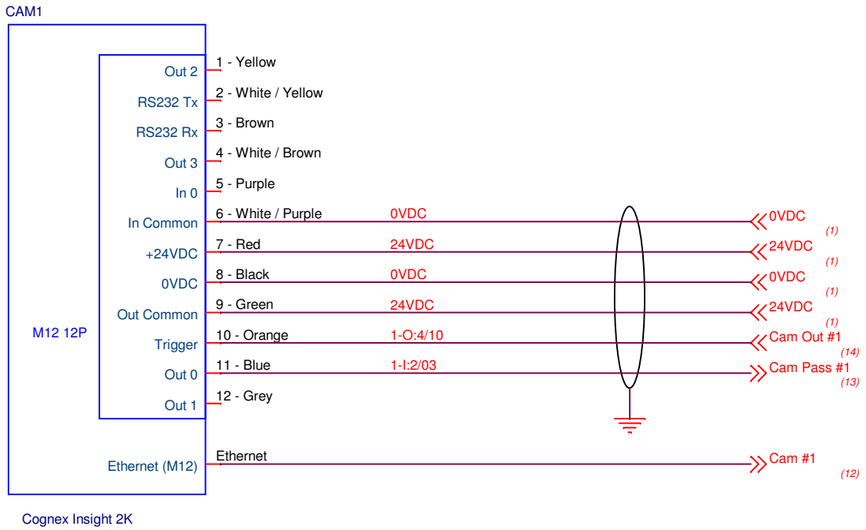
Title: SAFETY RELAY

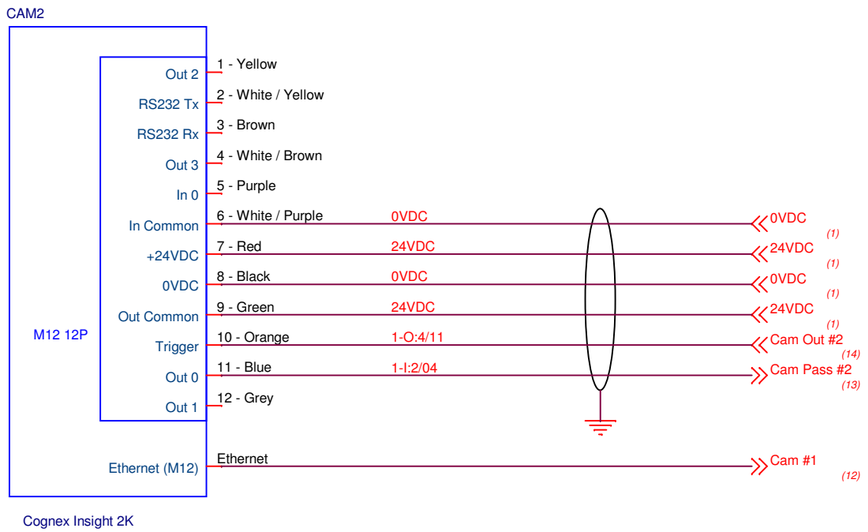
Schematic # SB84209-000 Rev -

Date: Thursday, August 28, 2025 Sheet 02 of 17

Drives: Conveyor Page 3







COLOR	TECHNICIAN	DATE

For Quadrel Assembly Use

QUADREL LABELING SYSTEMS
7670 Jenther Dr.
Mentor, OH
44060

Drawn By: CAV

REV	DESCRIPTION	BY	DATE
-	Draft	CAV	28AUG2025

Title: CONVEYOR, CAMERAS

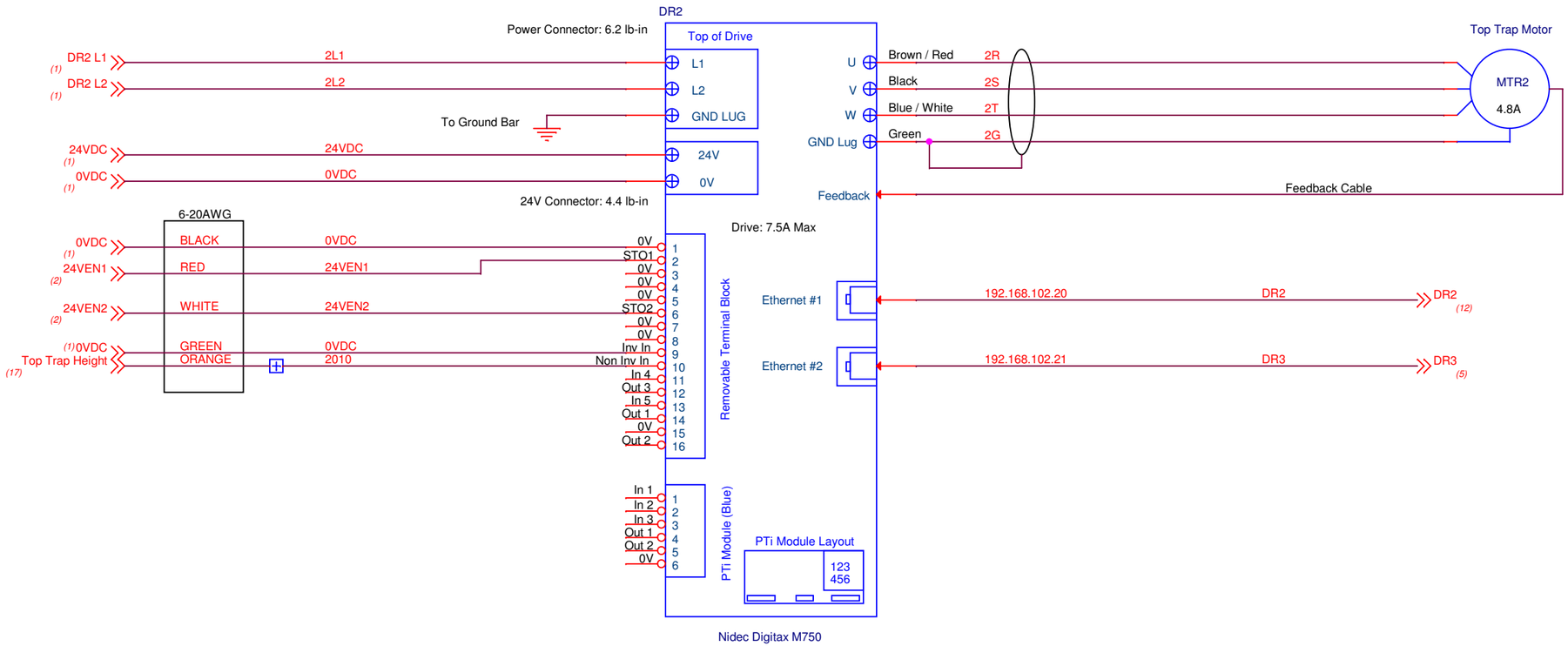
Schematic # SB84209-000

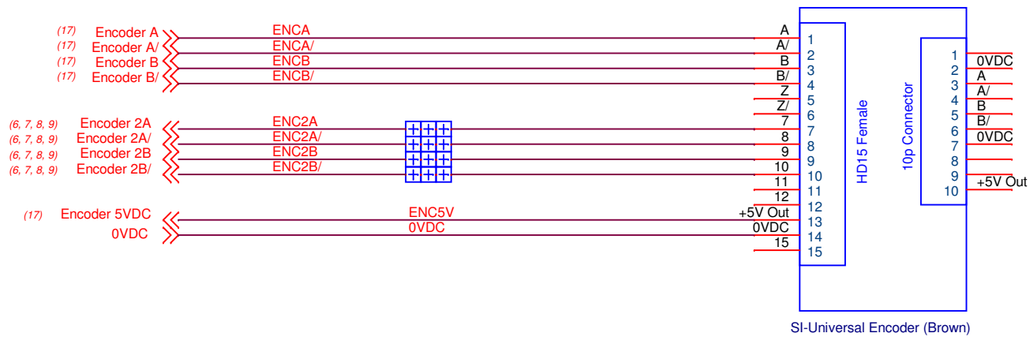
Rev -

Date: Friday, November 21, 2025

Sheet 03 of 17

Drives, Top Trap Page 4





COLOR	TECHNICIAN	DATE

For Quadrel Assembly Use

QUADREL LABELING SYSTEMS
7670 Jenther Dr.
Mentor, OH
44060

Drawn By: CAV

REV	DESCRIPTION	BY	DATE
-	Draft	CAV	28AUG2025

Title: TOP TRAP DRIVE

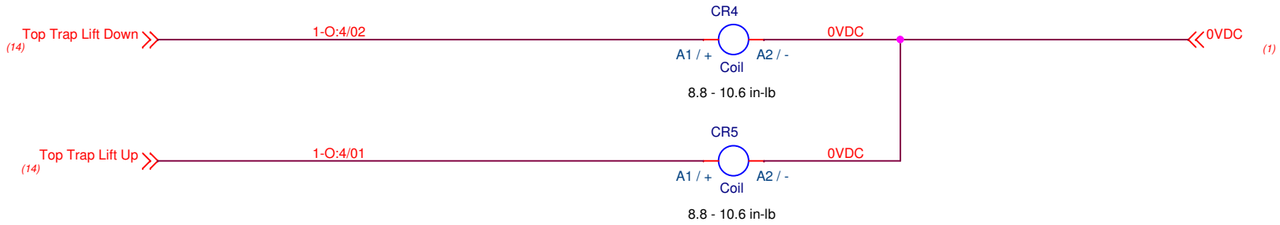
Schematic # SB84209-000

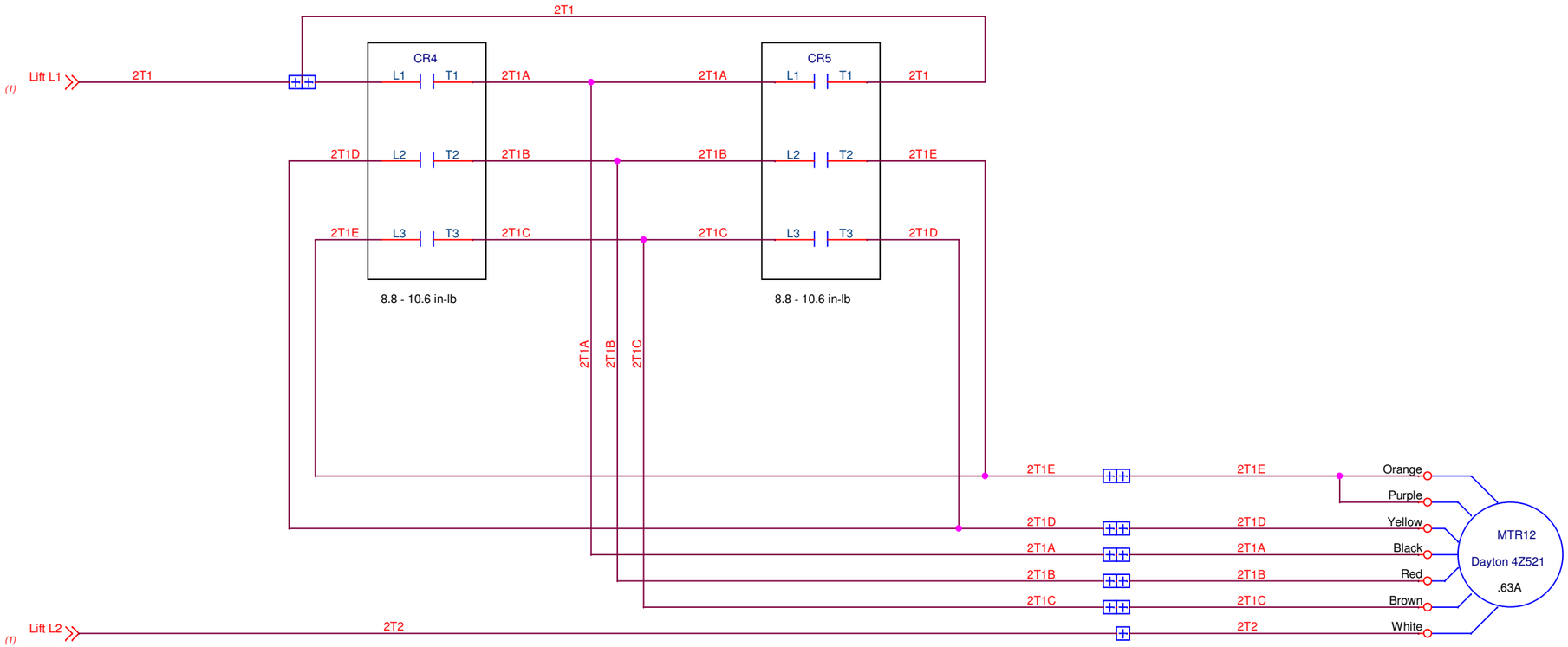
Rev -

Date: Friday, November 21, 2025

Sheet 04 of 17

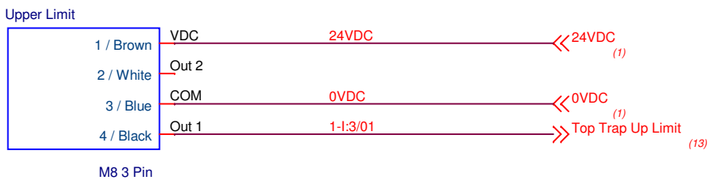
Top Trap Lift
Page 5

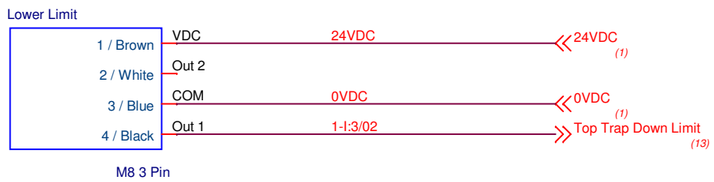




COLOR	TECHNICIAN	DATE

For Quadrel Assembly Use





QUADREL
LABELING SYSTEMS
7670 Jenther Dr.
Mentor, OH
44060

Drawn By: CAV

REV	DESCRIPTION	BY	DATE
-	Draft	CAV	28AUG2025

Title
TOP TRAP LIFT

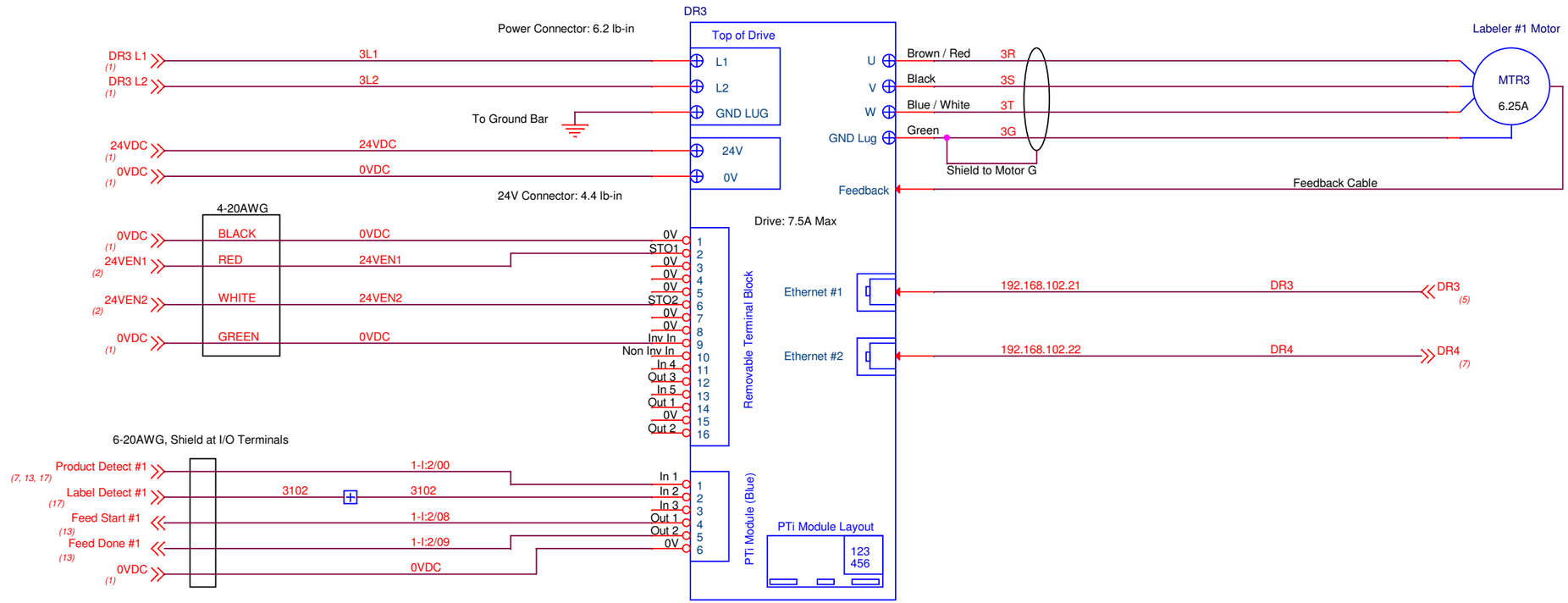
Schematic #
SB84209-000

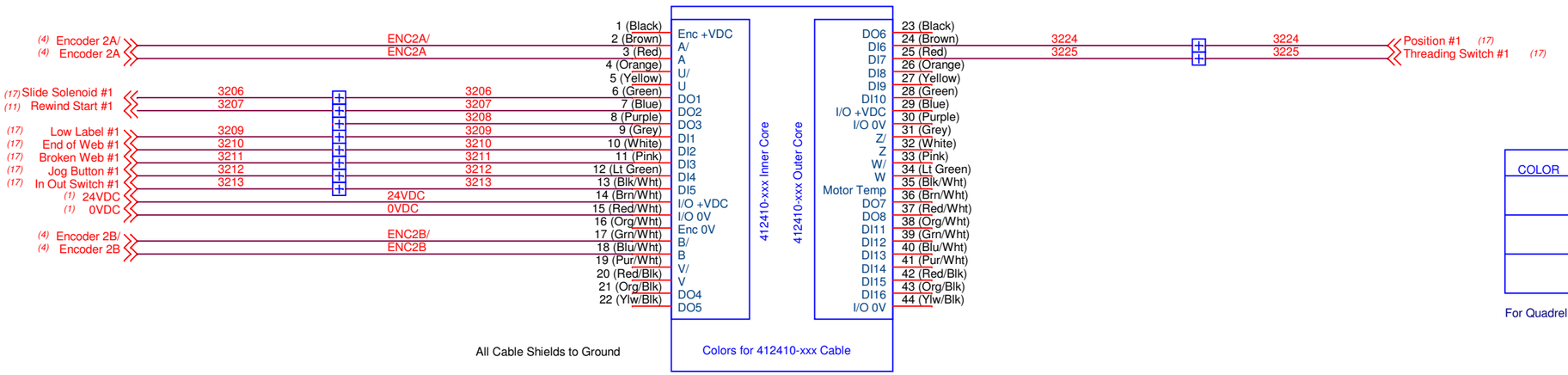
Rev
-

Date: Tuesday, September 02, 2025

Sheet 05 of 17

DR3 Labeler #1
Page 6





COLOR	TECHNICIAN	DATE

For Quadrel Assembly Use

QUADREL
LABELING SYSTEMS
7670 Jenther Dr.
Mentor, OH
44060

Drawn By: CAV

REV	DESCRIPTION	BY	DATE
-	Draft	CAV	28AUG2025

Title: LABELER #1 DRIVE

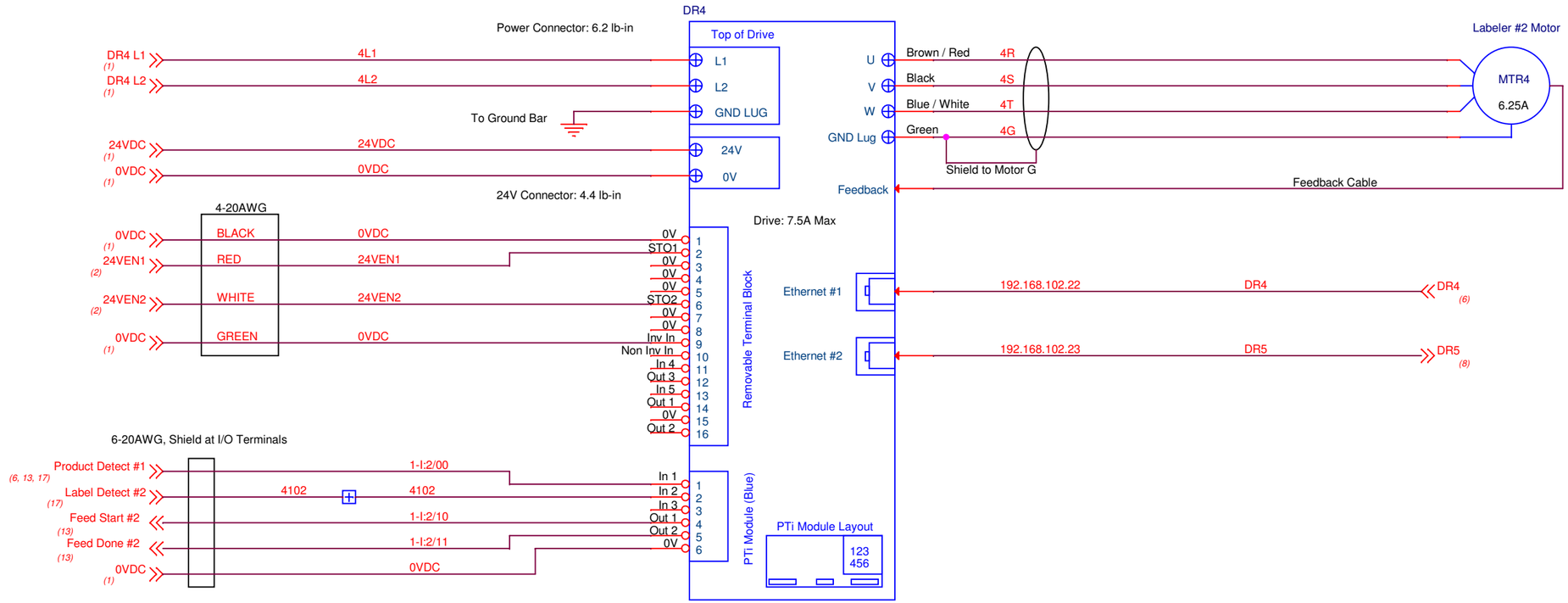
Schematic # SB84209-000

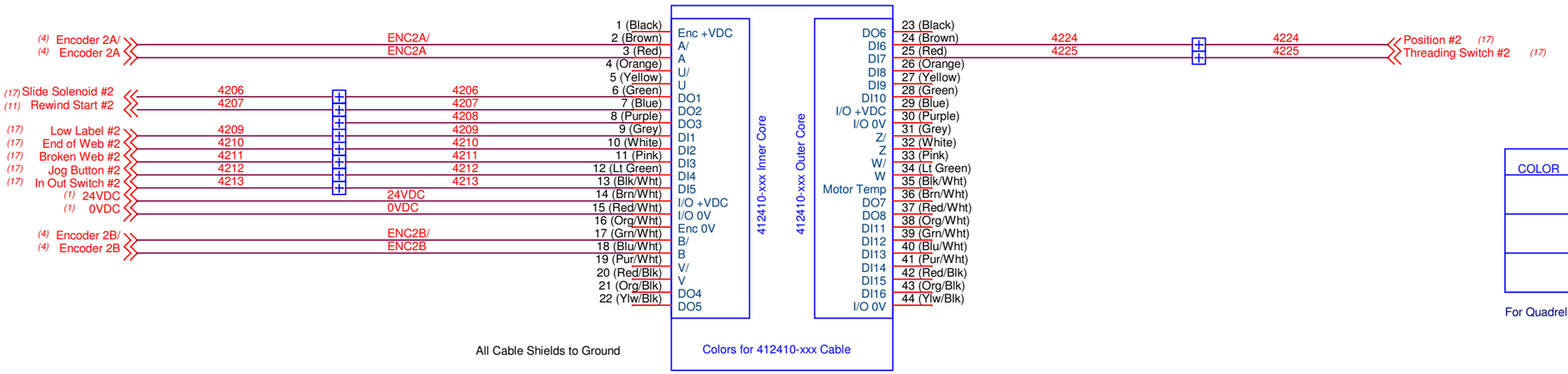
Rev: -

Date: Thursday, August 28, 2025

Sheet 06 of 17

DR4 Labeler #2
Page 7





COLOR	TECHNICIAN	DATE

For Quadrel Assembly Use

QUADREL
LABELING SYSTEMS
7670 JENTHER DR.
MENTOR, OH
44060

Drawn By: CAV

REV	DESCRIPTION	BY	DATE
-	Draft	CAV	28AUG2025

Title: LABELER #2 DRIVE

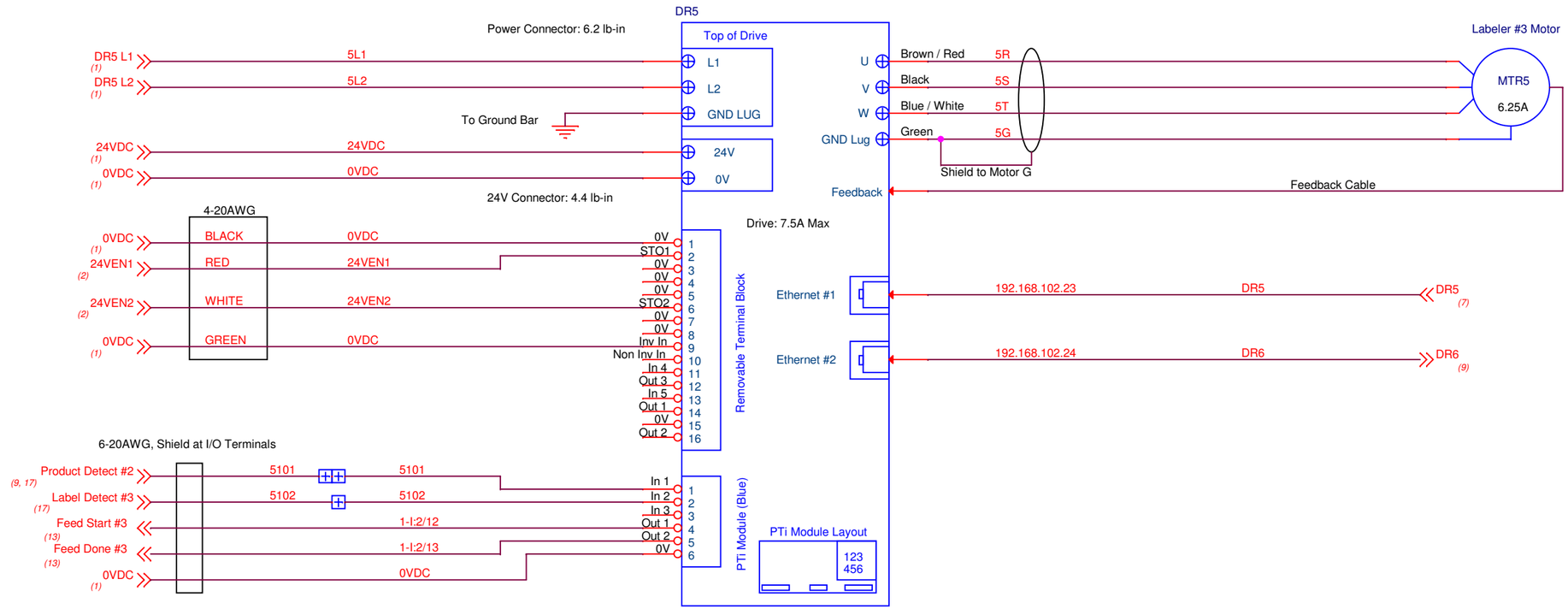
Schematic # SB84209-000

Rev: -

Date: Tuesday, September 02, 2025

Sheet 07 of 17

DR5 Labeler #3
Page 8



COLOR	TECHNICIAN	DATE

For Quadrel Assembly Use

QUADREL
LABELING SYSTEMS
7670 JENTHER DR.
MENTOR, OH
44060

Drawn By: CAV

REV	DESCRIPTION	BY	DATE
-	Draft	CAV	28AUG2025

Title: LABELER #3 DRIVE

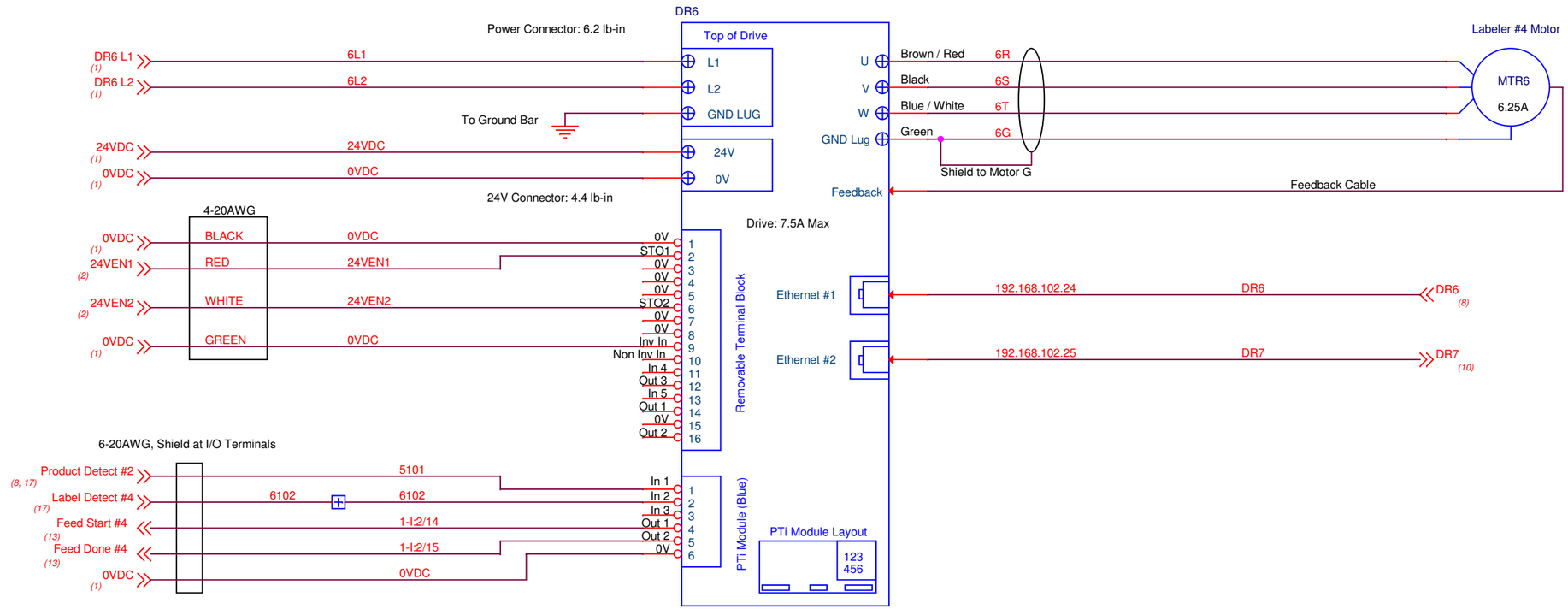
Schematic # SB84209-000

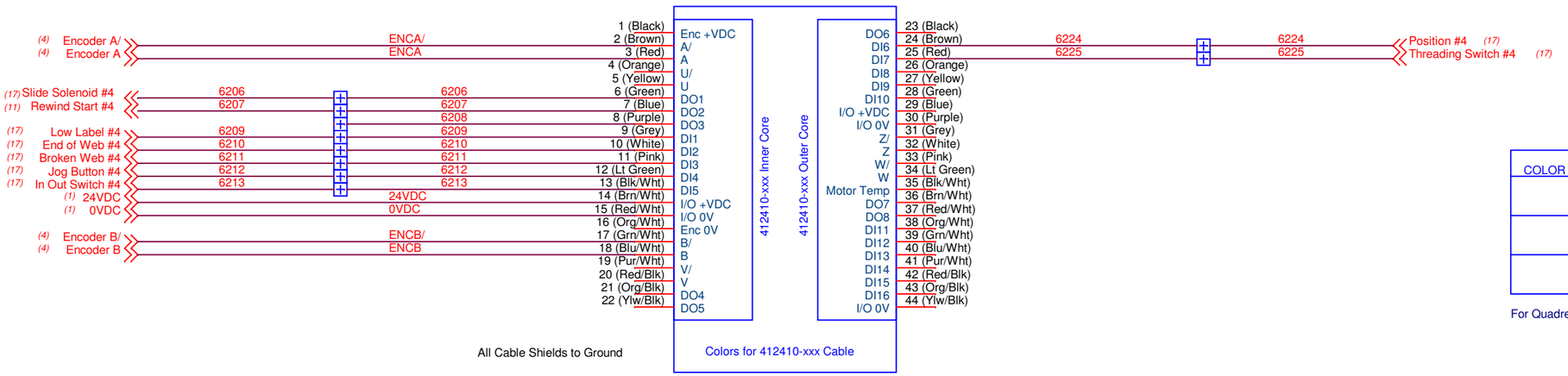
Rev: -

Date: Wednesday, September 03, 2025

Sheet 08 of 17

DR6 Labeler #4
Page 9





COLOR	TECHNICIAN	DATE

For Quadrel Assembly Use

QUADREL
LABELING SYSTEMS
7670 Jenther Dr.
Mentor, OH
44060

Drawn By: CAV

REV	DESCRIPTION	BY	DATE
-	Draft	CAV	28AUG2025

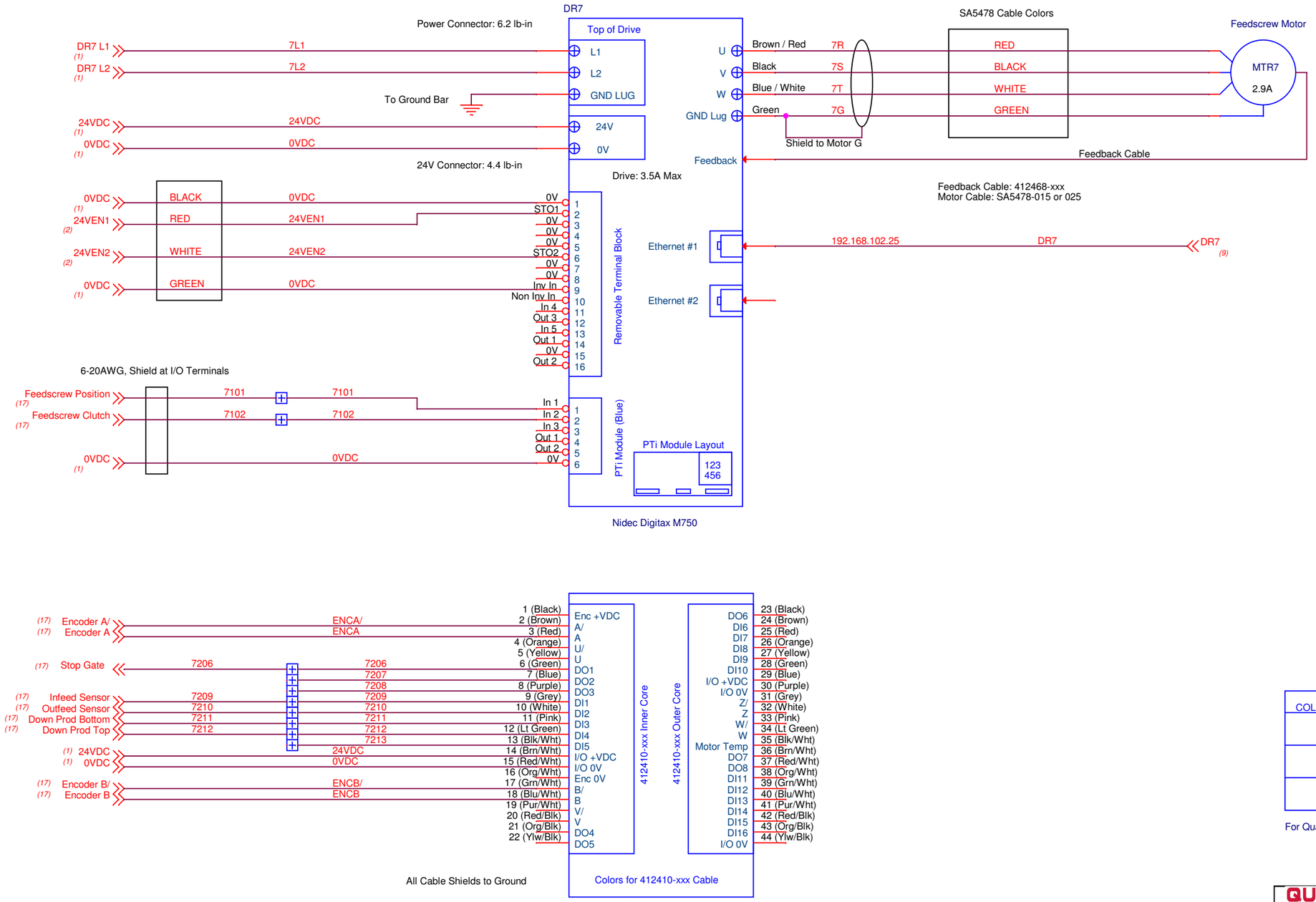
Title: LABELER #4 DRIVE

Schematic # SB84209-000

Rev -

Date: Wednesday, September 03, 2025

Sheet 09 of 17



COLOR	TECHNICIAN	DATE

For Quadrel Assembly Use

QUADREL
LABELING SYSTEMS
7670 JENTHER DR.
MENTOR, OH
44060

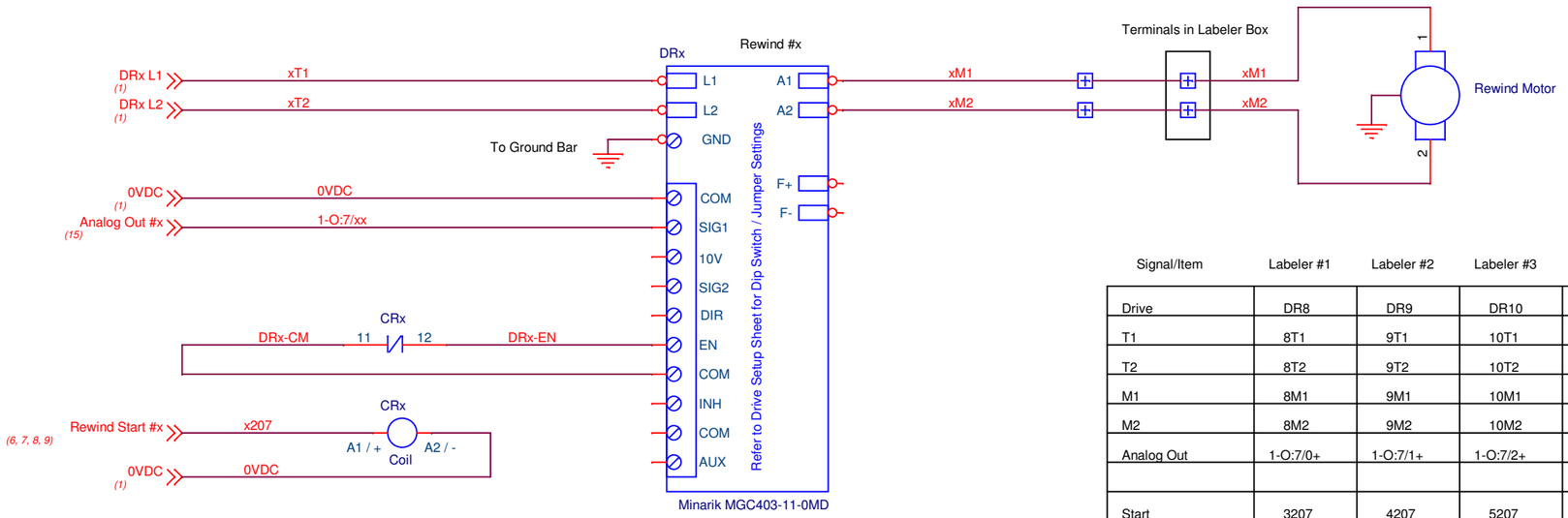
REV	DESCRIPTION	BY	DATE
-	Draft	CAV	28AUG2025

Drawn By: CAV

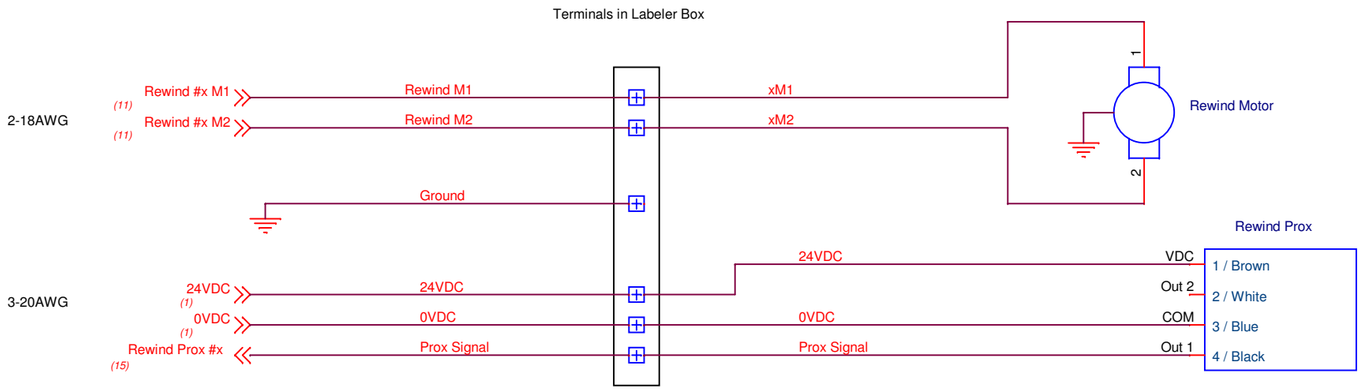
Title: FEEDSCREW

Schematic # SB84209-000 Rev -

Date: Thursday, August 28, 2025 Sheet 10 of 17



Signal/Item	Labeler #1	Labeler #2	Labeler #3	Labeler #4
Drive	DR8	DR9	DR10	DR11
T1	8T1	9T1	10T1	11T1
T2	8T2	9T2	10T2	11T2
M1	8M1	9M1	10M1	11M1
M2	8M2	9M2	10M2	11M2
Analog Out	1-O:7/0+	1-O:7/1+	1-O:7/2+	1-O:7/3+
Start	3207	4207	5207	6207
Relay	CR6	CR7	CR8	CR9
Enable	DR8-EN	DR9-EN	DR10-EN	DR11-EN
Enable Com	DR8-CM	DR9-CM	DR10-CM	DR11-CM
Rewind Prox	1-I:6/0+	1-I:6/1+	1-I:6/2+	1-I:6/3+



COLOR	TECHNICIAN	DATE

For Quadrel Assembly Use

QUADREL
LABELING SYSTEMS
7670 Jenther Dr.
Mentor, OH
44060

Drawn By: CAV

REV	DESCRIPTION	BY	DATE
-	Draft	CAV	28AUG2025

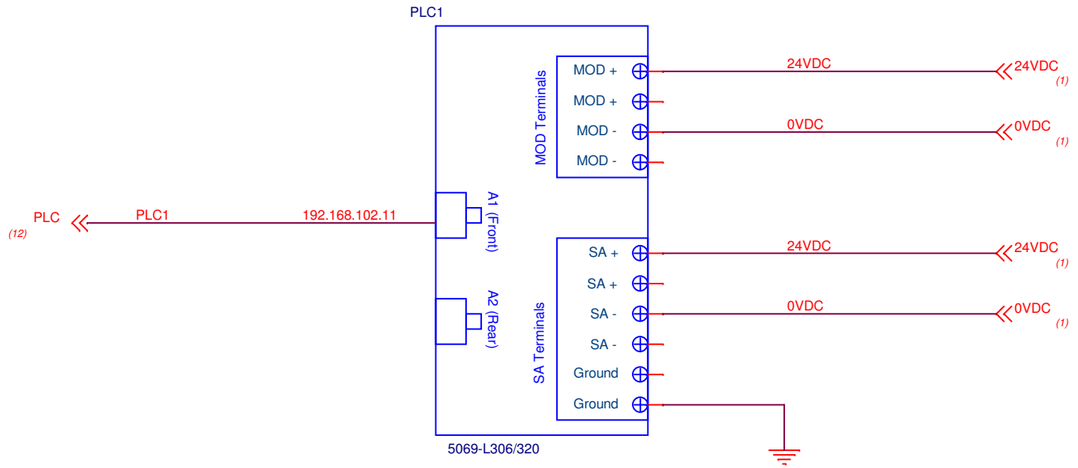
Title
REWIND DRIVES

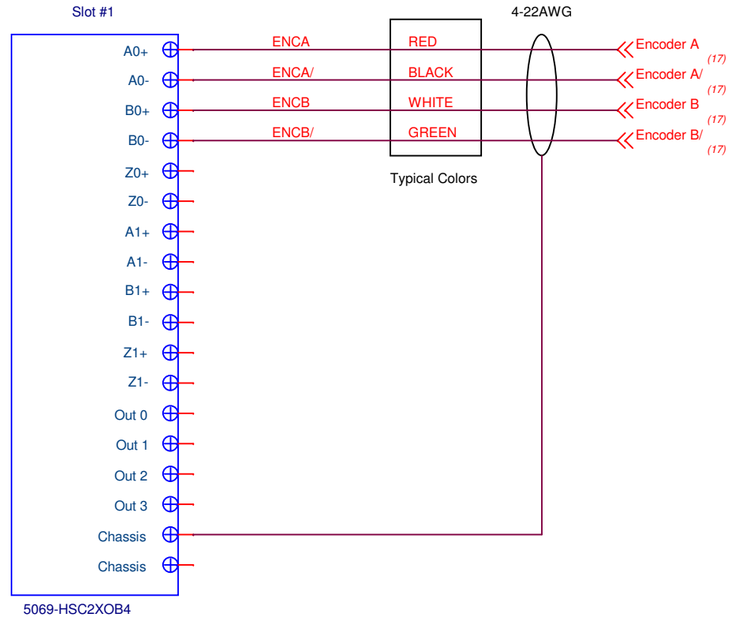
Schematic #
SB84209-000

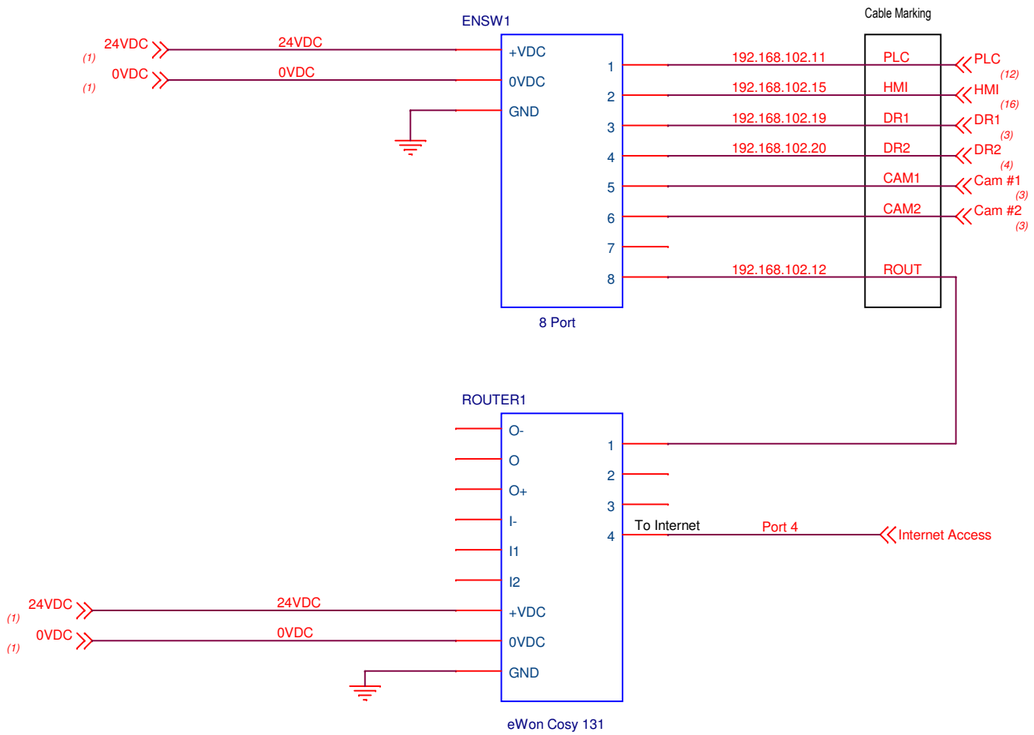
Rev
-

Date: Wednesday, September 10, 2025

Sheet 11 of 17







COLOR	TECHNICIAN	DATE

For Quadrel Assembly Use

PLC, Network Page 12

QUADREL LABELING SYSTEMS
7670 JENTHER DR.
MENTOR, OH
44060

REV	DESCRIPTION	BY	DATE
-	Draft	CAV	28AUG2025

Drawn By: CAV

Title: PLC, NETWORK

Schematic # SB84209-000

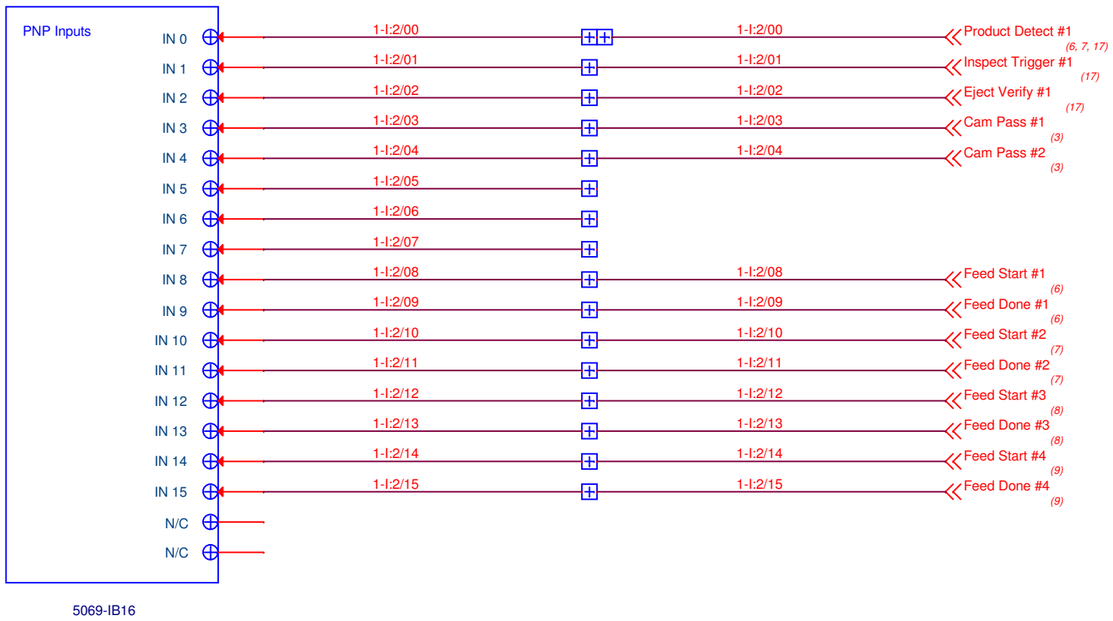
Rev -

Date: Friday, November 21, 2025

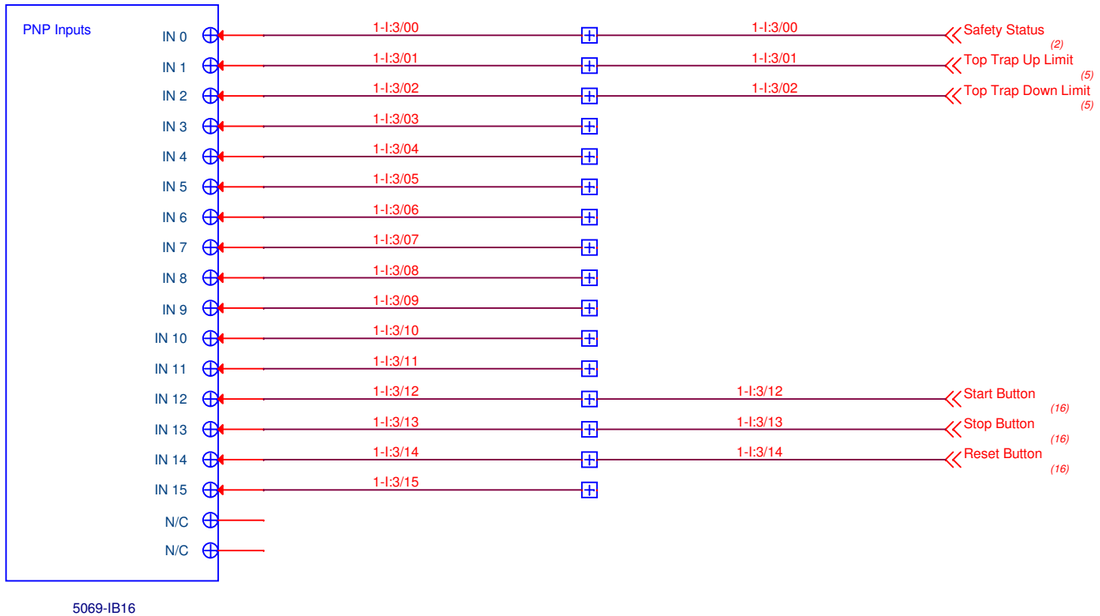
Sheet 12 of 17

PLC Slots #2 and #3 Page 13

Slot #2



Slot #3



COLOR	TECHNICIAN	DATE

For Quadrel Assembly Use

QUADREL
LABELING SYSTEMS
7670 Jenther Dr.
Mentor, OH
44060

Drawn By: CAV

REV	DESCRIPTION	BY	DATE
-	Draft	CAV	28AUG2025

Title: PLC SLOTS 2-3

Schematic # SB84209-000

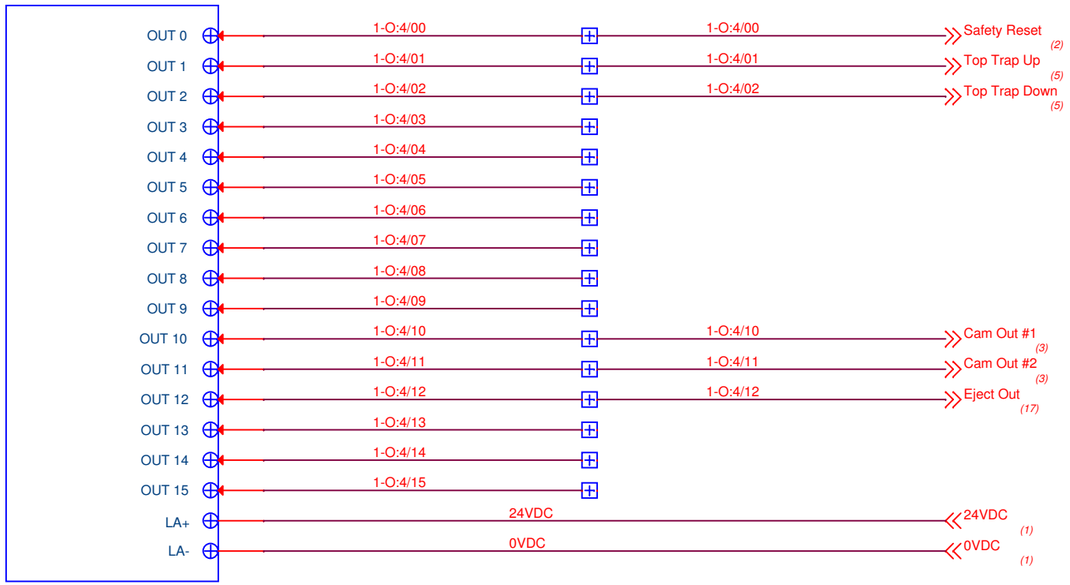
Rev: -

Date: Friday, November 21, 2025

Sheet 13 of 17

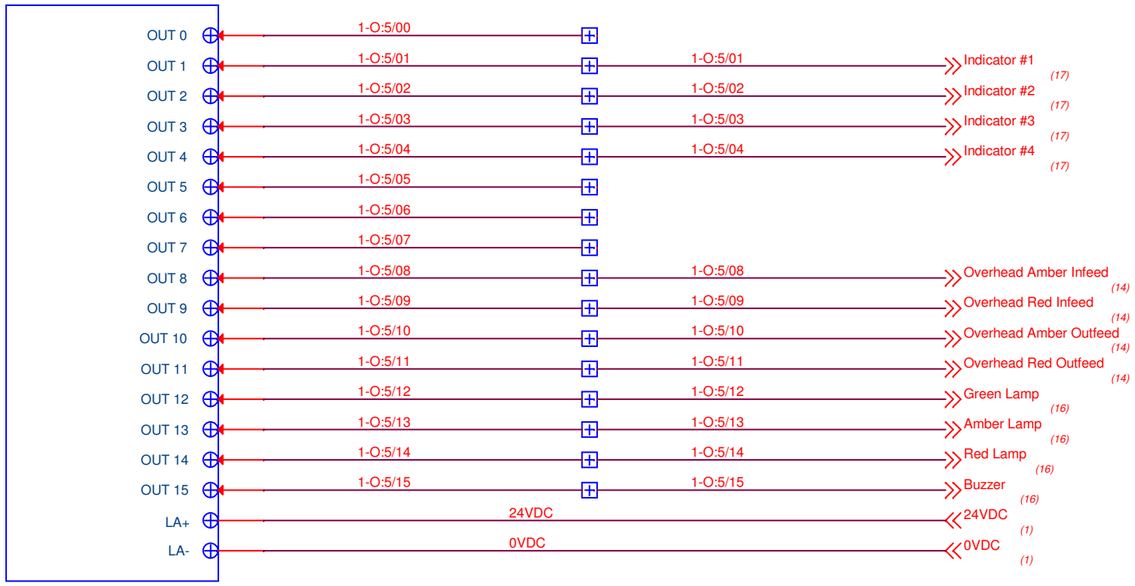
PLC Slots #4 and #5 Page 14

Slot #4



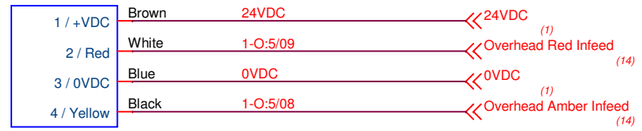
5069-OB16

Slot #5



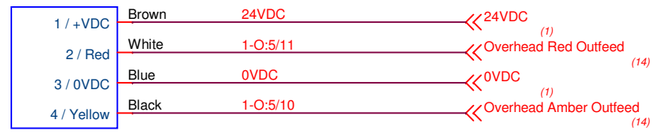
5069-OB16

Infeed Overhead Light



WYR Lamp, M12 4P Connection

Outfeed Overhead Light



WYR Lamp, M12 4P Connection

COLOR	TECHNICIAN	DATE

For Quadrel Assembly Use

QUADREL LABELING SYSTEMS
7670 Jenther Dr.
Mentor, OH
44060

Drawn By: CAV

REV	DESCRIPTION	BY	DATE
-	Draft	CAV	28AUG2025

Title: PLC SLOTS 4-5

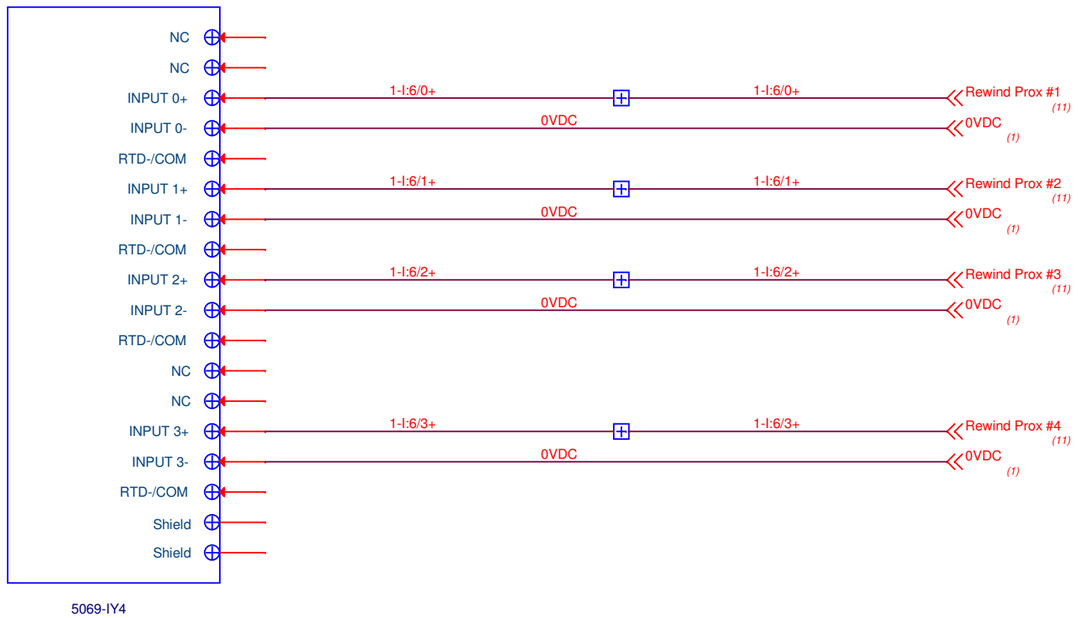
Schematic #: SB84209-000

Rev: -

Date: Friday, November 21, 2025

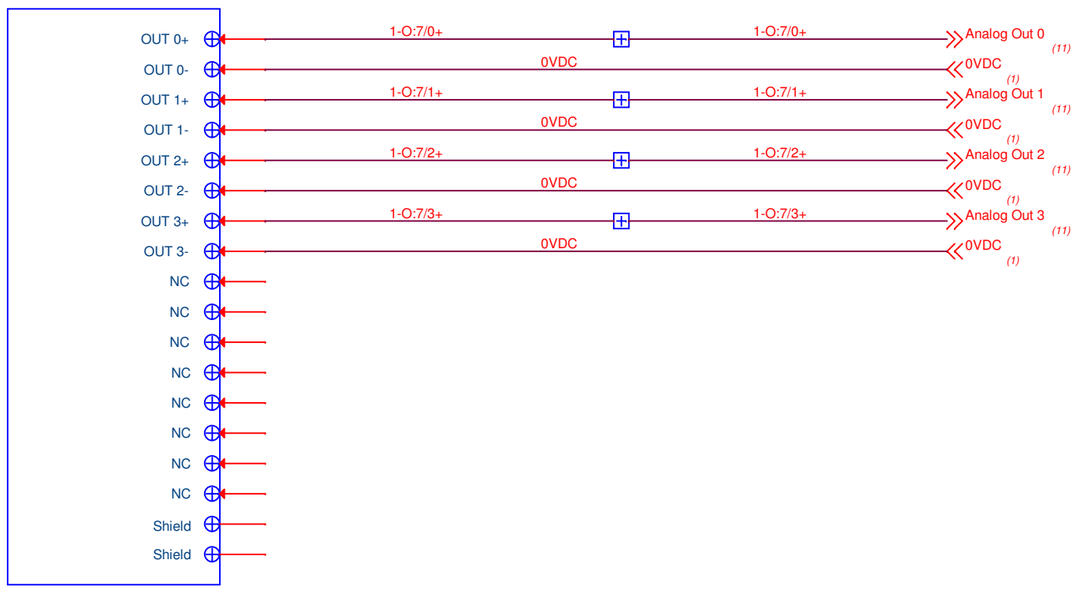
Sheet 14 of 17

Slot #6



5069-IY4

Slot #7



5069-OF4

COLOR	TECHNICIAN	DATE

For Quadrel Assembly Use

QUADREL
LABELING SYSTEMS
7670 Jenther Dr.
Mentor, OH
44060

Drawn By: CAV

REV	DESCRIPTION	BY	DATE
-	Draft	CAV	28AUG2025

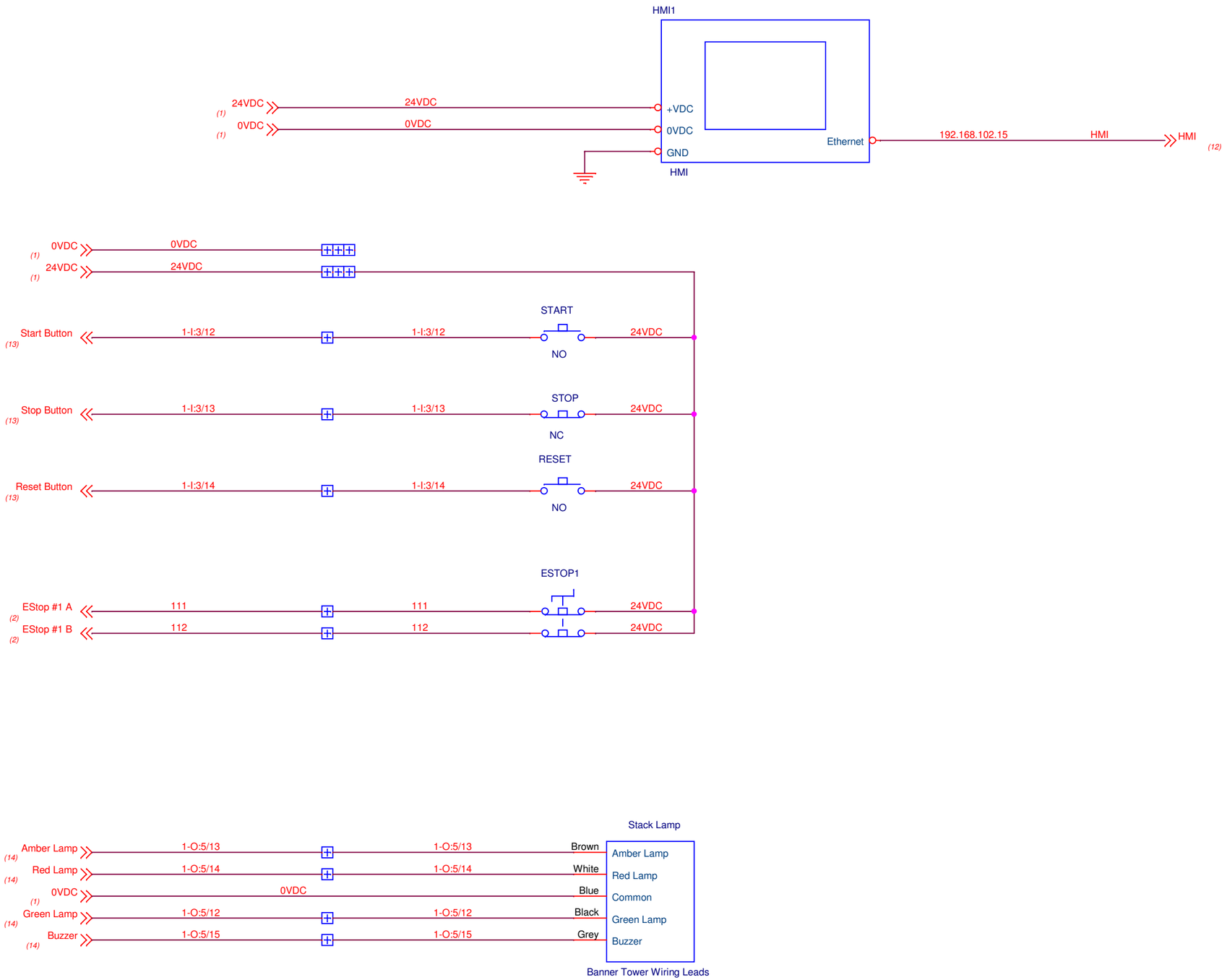
Title
PLC SLOTS 6-7

Schematic #
SB84209-000

Rev
-

Date: Wednesday, September 10, 2025

Sheet 15 of 17



COLOR	TECHNICIAN	DATE

For Quadrel Assembly Use

QUADREL
LABELING SYSTEMS
7670 JENTHER DR.
MENTOR, OH
44060

Drawn By: CAV

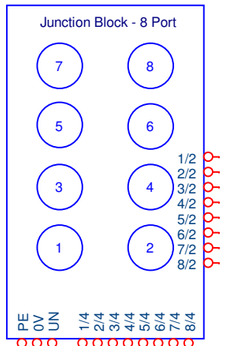
REV	DESCRIPTION	BY	DATE
-	Draft	CAV	28AUG2025

Title
OPERATOR ENCLOSURE

Schematic # SB84209-000

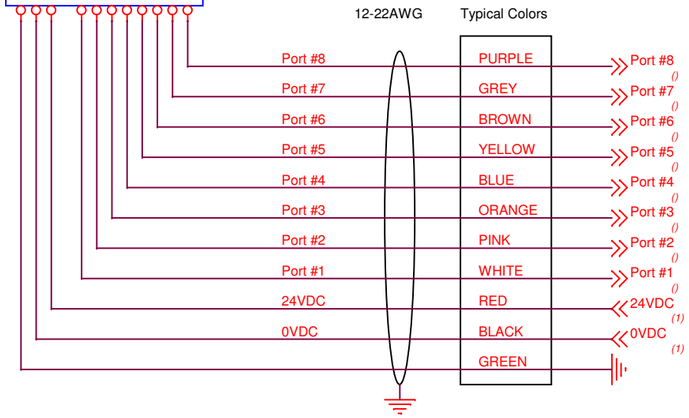
Rev -

Date: Tuesday, September 02, 2025



All Signals: PNP

Port #	Infeed	Address	Outfeed	Address	Labeler #1	Address	Labeler #2	Address	Labeler #3	Address	Labeler #4	Address
#1	Infeed Sensor	7209	Outfeed Sensor	7210	Label Detect #1	3102	Label Detect #2	4102	Label Detect #3	5102	Label Detect #4	6102
#2	Down Prod Bottom	7211	Product Detect #1	1-I:2/00	Low Label #1	3209	Low Label #2	4209	Low Label #3	5209	Low Label #4	6209
#3	Down Prod Top	7212	Product Detect #2	5101	End of Web #1	3210	End of Web #2	4210	End of Web #3	5210	End of Web #4	6210
#4	Feedscrew Position	7101	Inspect Trigger	1-I:2/01	Broken Web #1	3211	Broken Web #2	4211	Broken Web #3	5211	Broken Web #4	6211
#5	Feedscrew Clutch	7102	Eject Verify	1-I:2/02	Jog Button #1	3212	Jog Button #2	4212	Jog Button #3	5212	Jog Button #4	6212
#6	Position #1	3224	Position #3	5224	Thread Switch #1	3225	Thread Switch #2	4225	Thread Switch #3	5225	Thread Switch #4	6225
#7	Position #2	4224	Position #4	6224	Slide Solenoid #1	3206	Slide Solenoid #2	4206	Slide Solenoid #3	5206	Slide Solenoid #4	6206
#8	Stop Gate	7206	Eject	1-O:4/12	Spare		Spare		Spare		Spare	



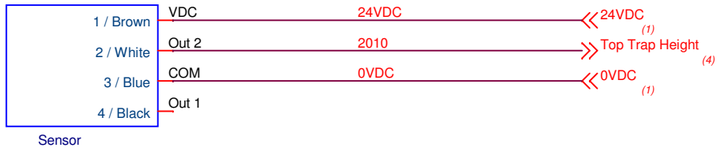
Sensor to Junction Block Example

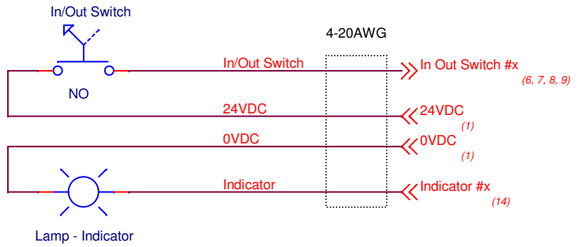
Jog Button to Junction Block Example

Threading Switch Example

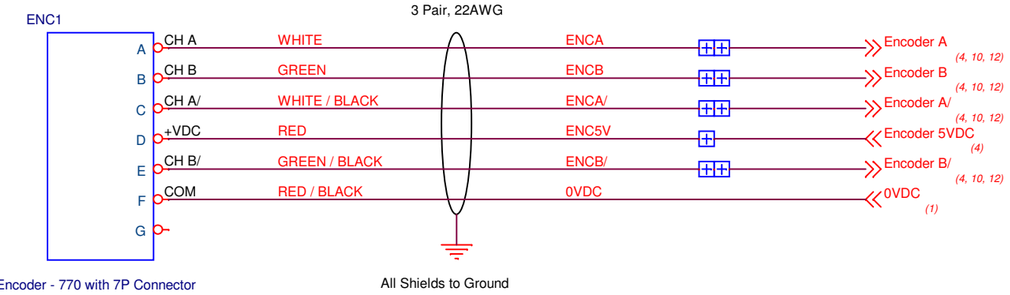
Solenoid to Junction Block Example

Top Trap Height





Labeler	In/Out Switch	Indicator
#1	3213	1-O:5/01
#2	4213	1-O:5/02
#3	5213	1-O:5/03
#4	6213	1-O:5/04



COLOR	TECHNICIAN	DATE

For Quadrel Assembly Use

QUADREL
LABELING SYSTEMS
7670 JENTHER DR.
MENTOR, OH
44060

Drawn By: CAV

REV	DESCRIPTION	BY	DATE
-	Draft	CAV	28AUG2025

Title: SENSORS

Schematic # SB84209-000

Rev: -

Date: Wednesday, September 10, 2025

Sheet 17 of 17

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 maintaning 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.

Quadrel labeling heads are reliable, versatile and durable. They will operate for years with very light maintenance. Most of the maintenance takes only a few minutes and substantially increases the operational life of the machine and maintains label placement accuracy. Not all items listed below are applicable to every machine. See sections that apply to your equipment

Daily: D
Weekly: W
Monthly M
Semi-Annually S

ASSEMBLY TITLE: **LABELING HEAD ASSEMBLY**

D- Remove glue residue and labels from all rollers and idler
M- Check and tighten all fasteners.

ASSEMBLY TITLE: **UNWIND ASSEMBLY**

W- Check and adjust dancer spring if final spring tension is too soft. Replace
W- Check and inspect band brake. Replace if torn

ASSEMBLY TITLE: **REWIND ASSEMBLY**

W- Check and inspect friction disc, Replace when worn out. (A-DRIVE only)
W- Check kinetrol for leaks, Replace if necessary. (B-DRIVE only)

ASSEMBLY TITLE: **BRAKE BRUSH ASSEMBLY**

W- Reverse brake brush direction.
M- 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- Check and inspect and grease all rollers and idler**.**

ASSEMBLY TITLE: **PEEL PLATE ASSEMBLY**

D- Clean all the parts that may acquire labels or glue residue.
W- Inspect Teflon tap on peel plate tip
S- Check and inspect and grease all rollers and idler**.**

ASSEMBLY TITLE: **DRIVE AND PINCH ROLL ASSEMBLY**

D- Remove glue residue and labels from drive roller.
W- Clean with soft brass brush knurled roll.
W- Check and inspect drive roll, No play when powered up
S- Replace springs and slugs.

ASSEMBLY TITLE: **ROLLER/BRUSH IMPRESSER**

D- Check the rollers/brushes 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.

ASSEMBLY TITLE: **ELECTRICAL**

W- Check the foam for fan clean or replace.

ASSEMBLY TITLE: **ROLLER/BRUSH IMPRESSER**

D- Check the rollers/brushes 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: **TAMP PAD ASSEMBLY**

D – Check the tamp pad for label flash, glue residue and debris on tamp pad. If found clean tamp pad with adhesive remover and/or cleaner

D – (**RFID REJECT PADDLE ONLY**) – Remove rejected labels from reject paddle at least 1 time per shift and/or as needed. **No more than 5-6 labels are to be on reject paddle at any time. Once 5-6 labels are on reject paddle they should be removed to ensure proper operation**

W – Lightly run scotch bright across pad to ensure it is lightly scuffed. A shiny pad could cause label to stick to the pad as it is dispensing

W – Check for air leaks around tamp pad block and pad. Reseal as necessary with RTV silicon sealant.

W – Inspect all pneumatic components for wear.

W – Lubricate Pneumatic cylinder slide rods

ASSEMBLY TITLE: **OPERATOR PANEL**

-No maintenance is required for the operator panel

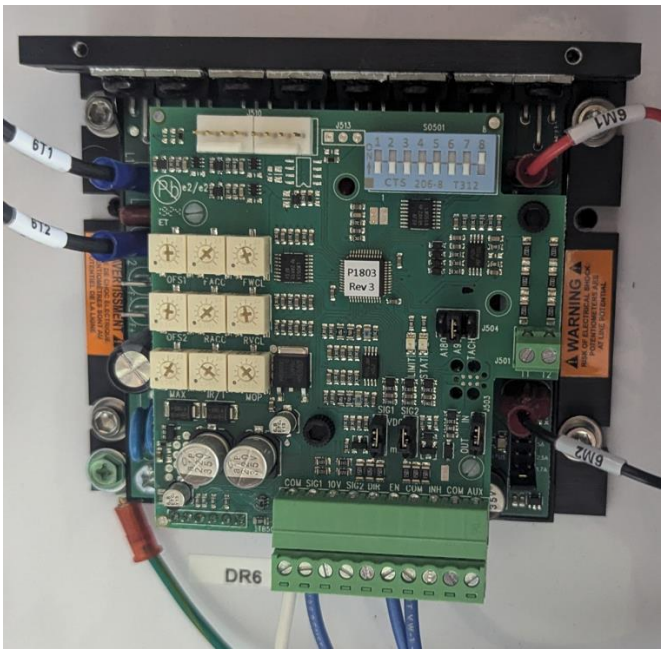
-Occasionally, the keypad may be cleaned with any non-solvent based cleaning solution.

ASSEMBLY TITLE: **ELECTRICAL**

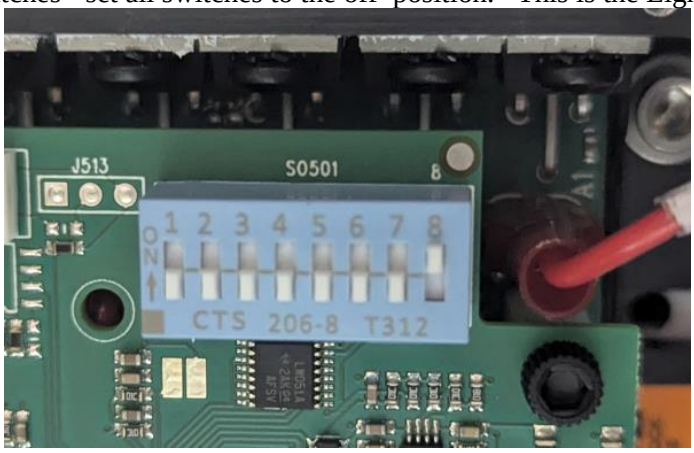
W- Check the foam for fan clean or replace.

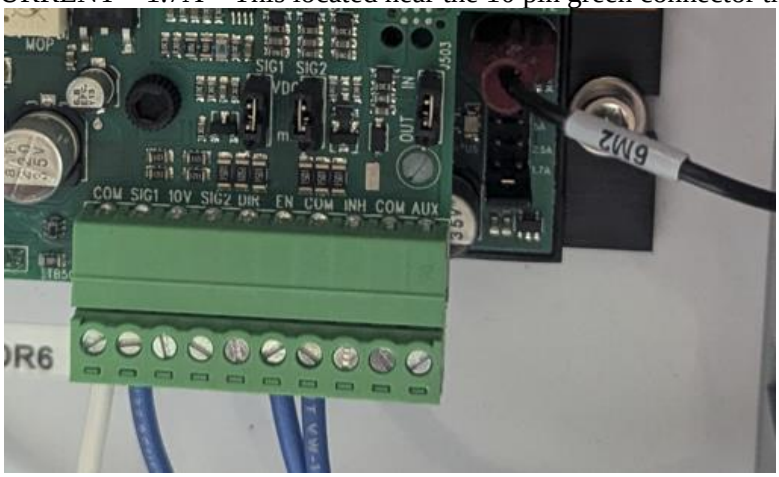
NOTES:

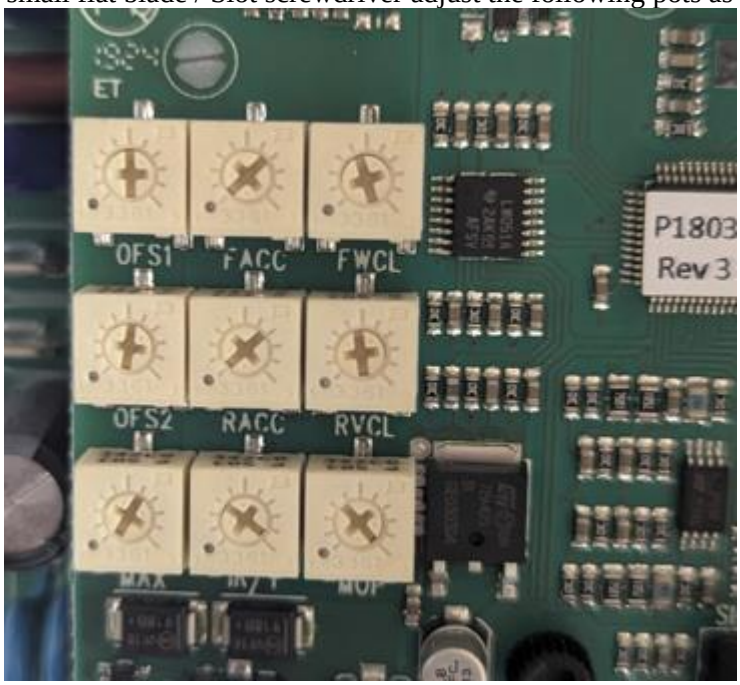
Setup procedure for Powered rewind using MGC403-11-00MD drive



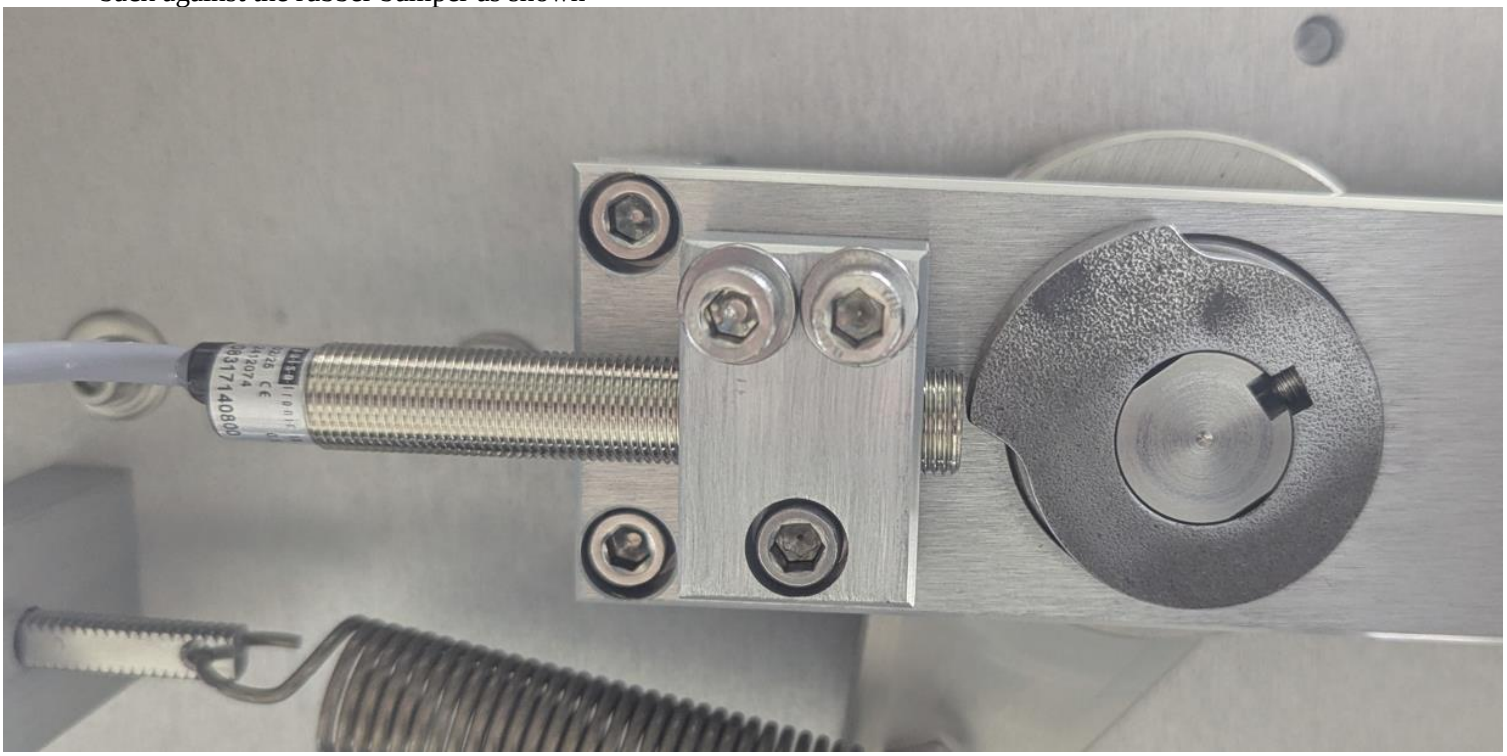
Upon receiving drive set the following BEFORE installing in the machine.

1. Dip switches - set all switches to the off position. This is the Light blue row of switches shown in the image below
   a. 

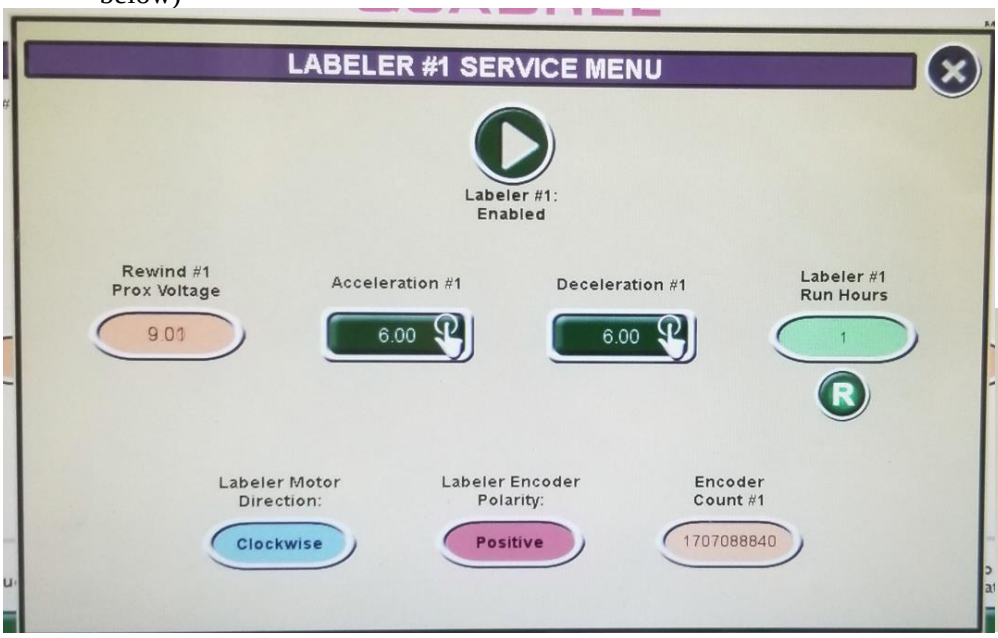
2. Set Jumpers on drive based on electrical schematic for your machine
   a. SIG1 – VDC
   b. SIG2 – VDC
   c. J504 – A90
   d. AMP CURRENT – 1.7A – This located near the 10 pin green connector that
      i. 

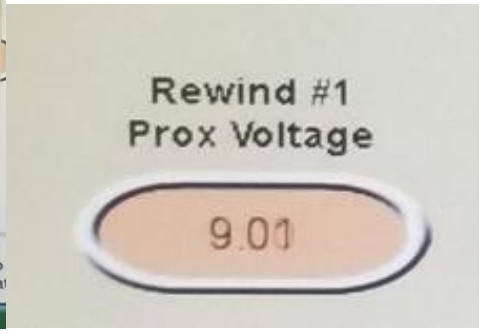
3. Using a small flat blade / Slot screwdriver adjust the following pots as indicated in the image below:
   a. 

      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

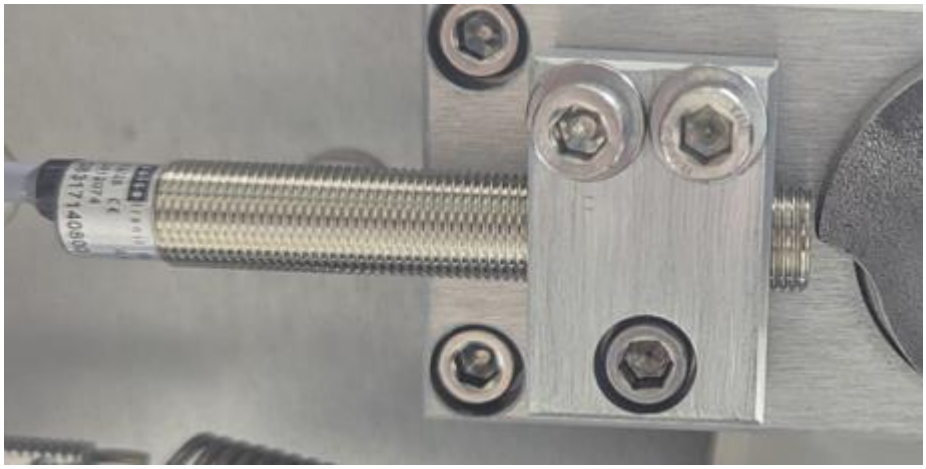


6. On the HMI go to into labeling head service menu. You will be looking at the REWIND PROX VOLTAGE (example below)

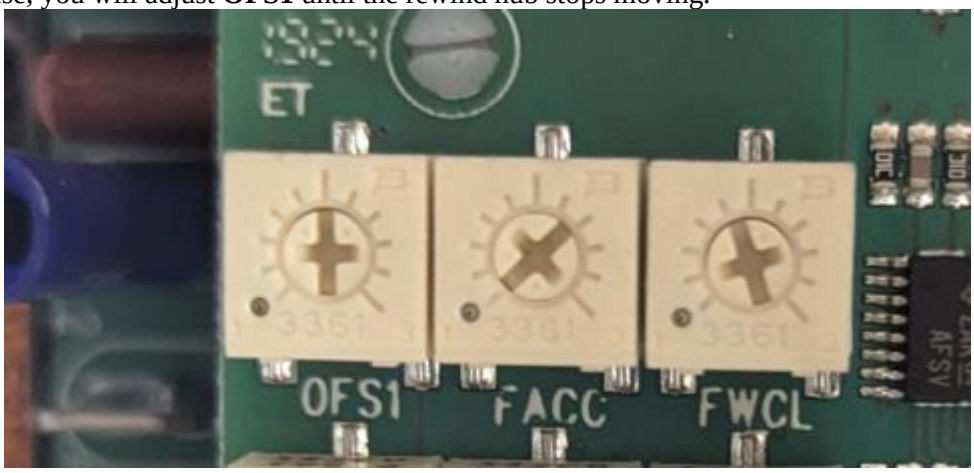




7. Adjust the sensor gap at the cam by loosening the bolt using an allen key so that the sensor can be moved forward or backward. The bolt does NOT touch the sensor. Loosening it opens the clamp so you can adjust.
8. Set the gap so the REWIND PROX VOLTAGE on the HMI reads .**90 it must be under 1 volt.**
    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. 

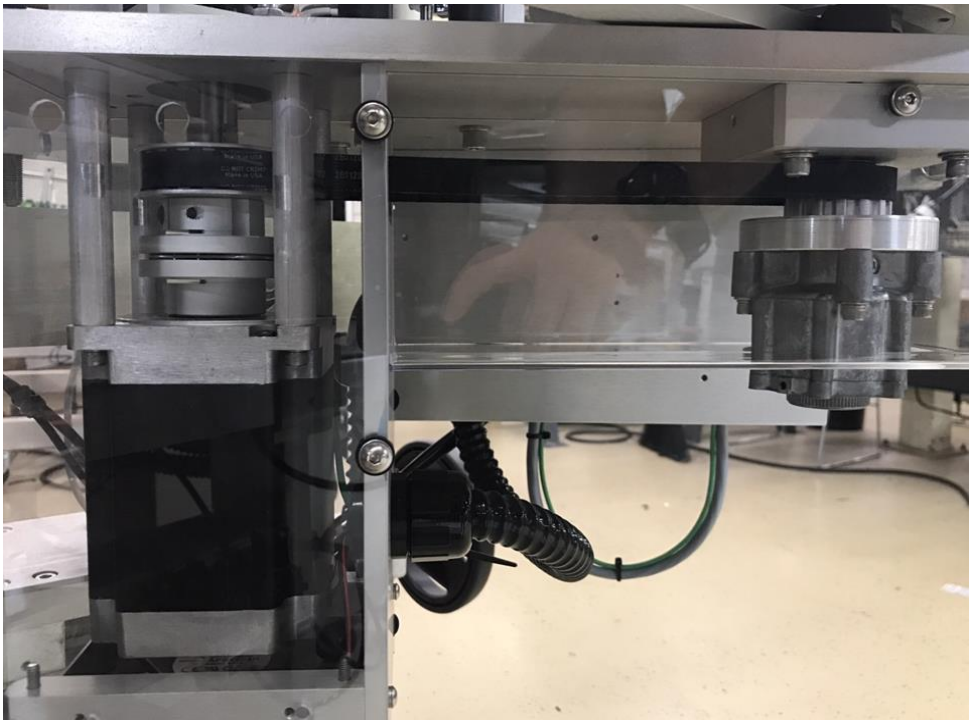
    b. This adjustment may need to be done multiple times until it no longer moves counter clockwise when rewind arm is all the forward and at rest.

9.2 BELTS

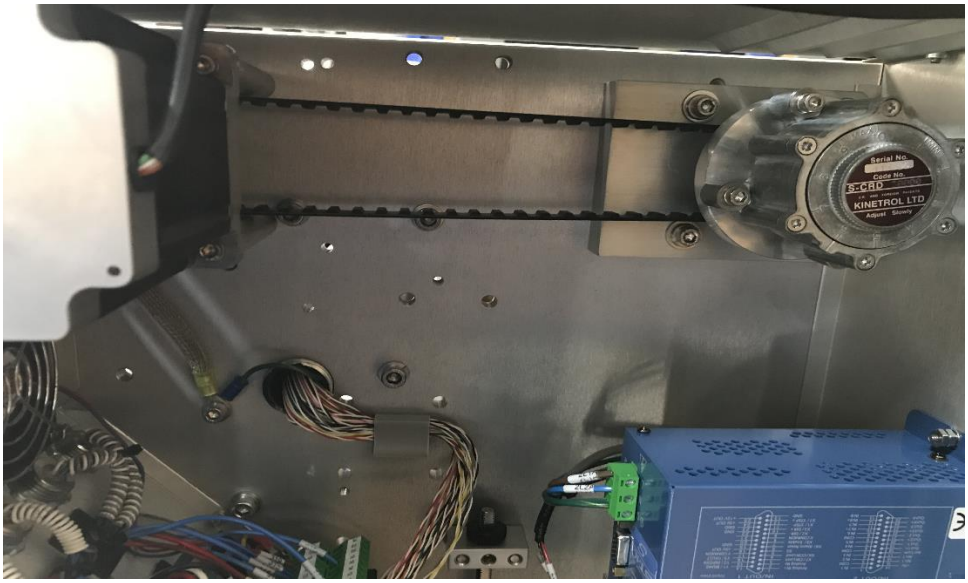
Monthly, a visual inspection of the rewind belt and timing belt, to do this depending on the labeling head you may need to remove the bottom cover on the head.

Refer to photos below.

Servo labeling head.

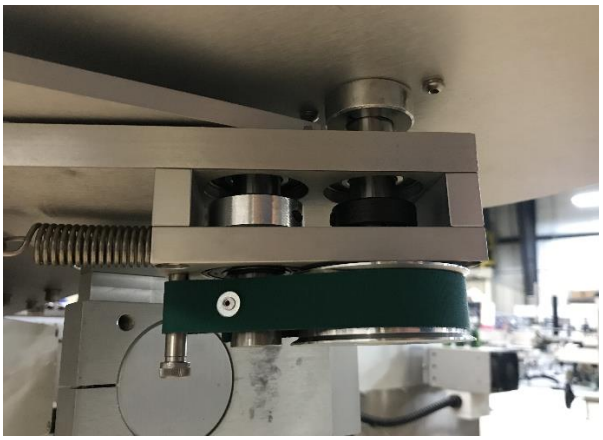


Stepping labeling head.



⚠ 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.

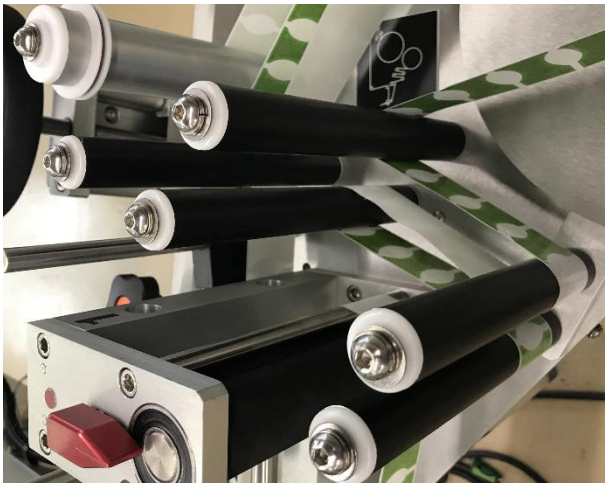


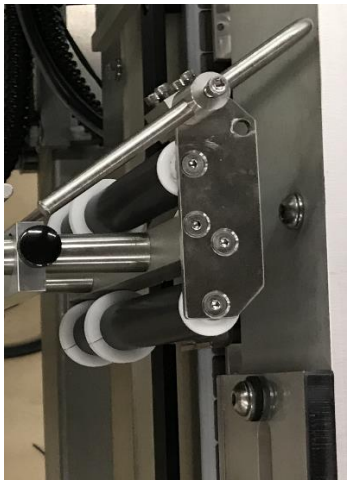
For replacement parts see the unwind assembly drawing for your labeling head in this manual.

9.3 ROLLERS

It is important that your labeler is as clean as possible in its environment in order for it to perform property. 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

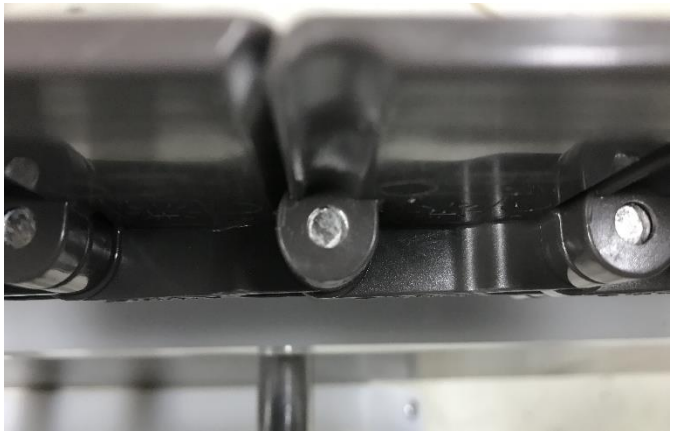
The sensors all have an electronic eye called a photocell; these must be free of lint or dirt. Since the photocells are generally made with glass or plastic lenses. They naturally attract substances which could easily trigger the sensor, use a cotton swap to gently clean the eye of the sensor as you would any lens, in a circular motion.

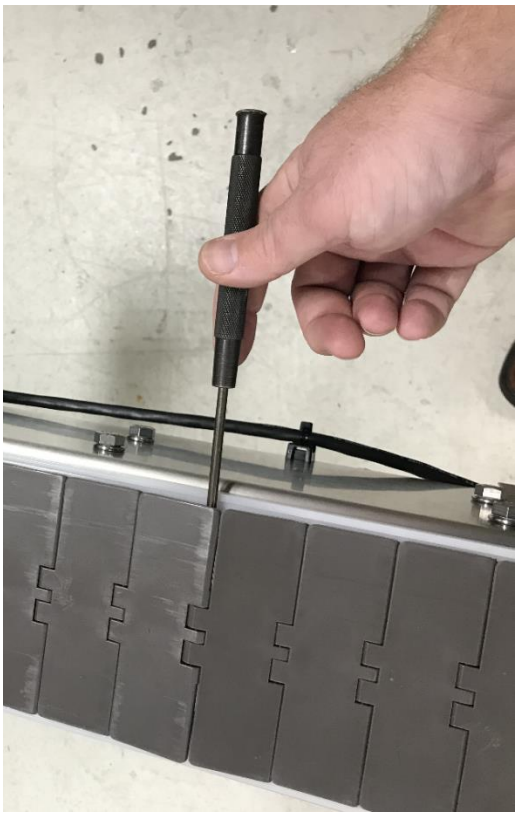
9.5 CONVEYOR

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 are 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 though our parts department. Please specify the serial number of the equiptment, the client’s name, address, phone number, contact name and the nature of the problem. To get a replacment 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.