QUADREL
LABELING SYSTEMS

Operating & Maintenance
Manual
For

TRI TECH LABORATORIES, INC

TECHLINE TOP/BOTTOM
Automatic Labeling System

Labeler Model #: Q120 STEPPER
Serial #: 84222-100

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.

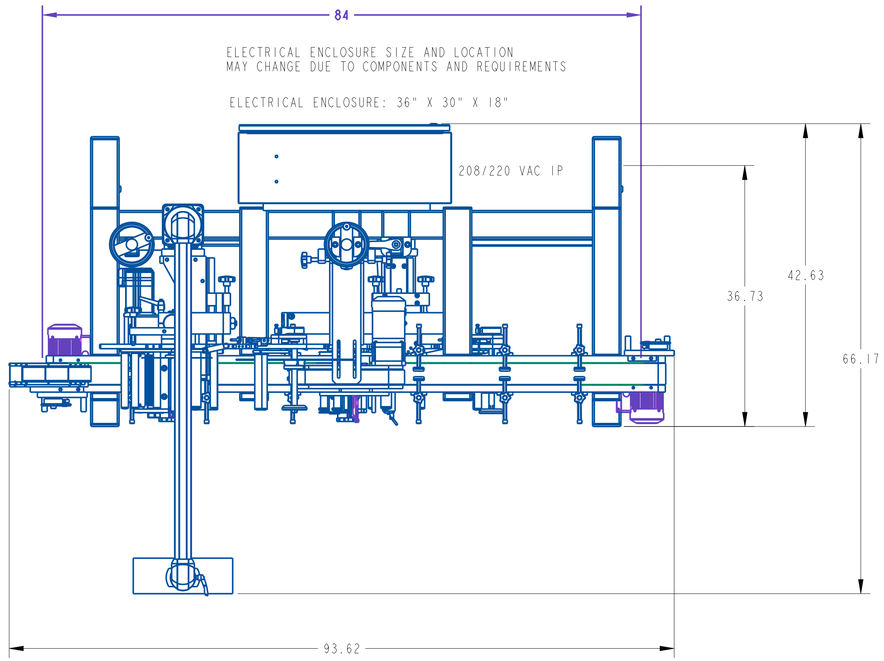
Any order put on hold or left dormant for any reason for 90 days will be considered cancelled. See Cancellation Policy below.

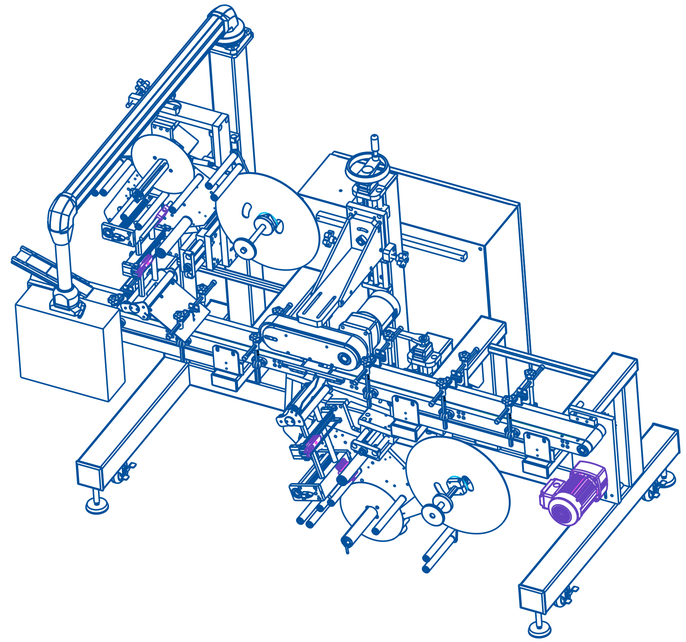
CANCELLATION POLICY:

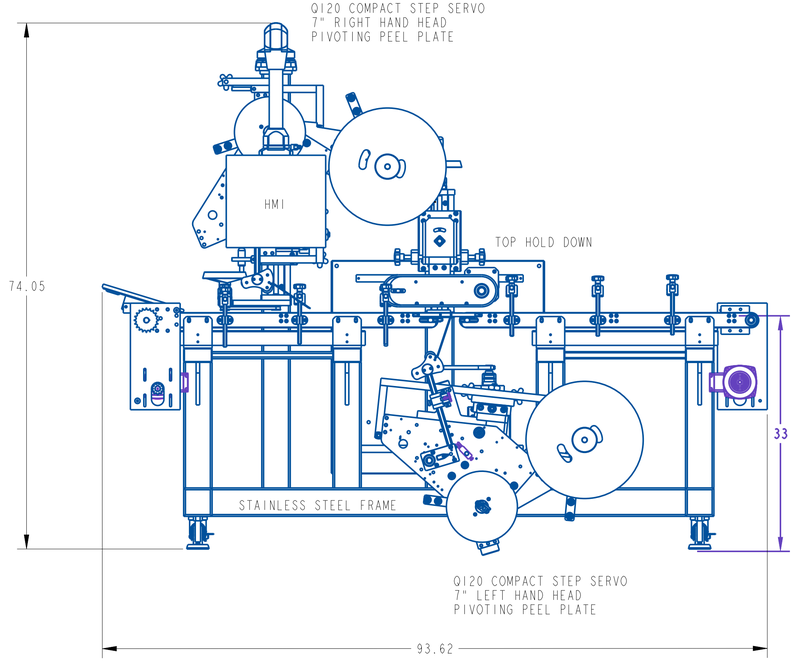
In the event of order cancellation, the 50% down payment is non-refundable. Customer may also be responsible for additional charges covering engineering resources expended and committed materials depending upon the custom nature of the project and the point in the order process in which the cancellation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







+3 INCHES
ON LEVELING
PADS

SHEET 1 OF 1

REV	DATE	DESCRIPTION	BY
B	Sep-30-25	ADDED HMI BOOM	RDL
A	Sep-22-25	NEW DRAWING	RDL

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

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

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

SCALE: 3/32
DATE: Sep-22-25
DRW BY: RDL
CHK BY:
APPR BY:

TECHLINE TOP/BOTTOM LABELING SYSTEM

MAT'L TRI-TECH LABORATORIES
APPROVAL DRAWING

84222-100

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 - TECHLINE

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

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

3 WARNING/CAUTION SAFETY INSTRUCTION

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

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

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

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

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

3.1 SAFETY INTEGRATION

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

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

3.2 GENERAL SAFETY INFORMATION

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

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

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

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

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

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

⚠ WARNING

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

- This equipment must have an operator attending the machine at all times to monitor the operations. **DO NOT** leave this equipment unattended during maintenance or perform any maintenance unless the e-stop condition has been activated or power turned off.
- The electrical power to device is: ____220__ Volts, _SINGLE(1)_Phase, __60__Hz, __15__Amps. While installing make sure it's properly configured and connected by a qualified electrical technician.
- **DO NOT** by pass any of the safety circuits or safety features designed into this equipment.

- ALWAYS turn off **power and pneumatics** before performing repairs.
- The doors on all electrical enclosures must be closed. All covers on labeling heads must be on labeling heads. (if applicable)

- This device is built to perform in humid conditions, but must not be pressure washed. Wiping down the device is the recommended cleaning method.

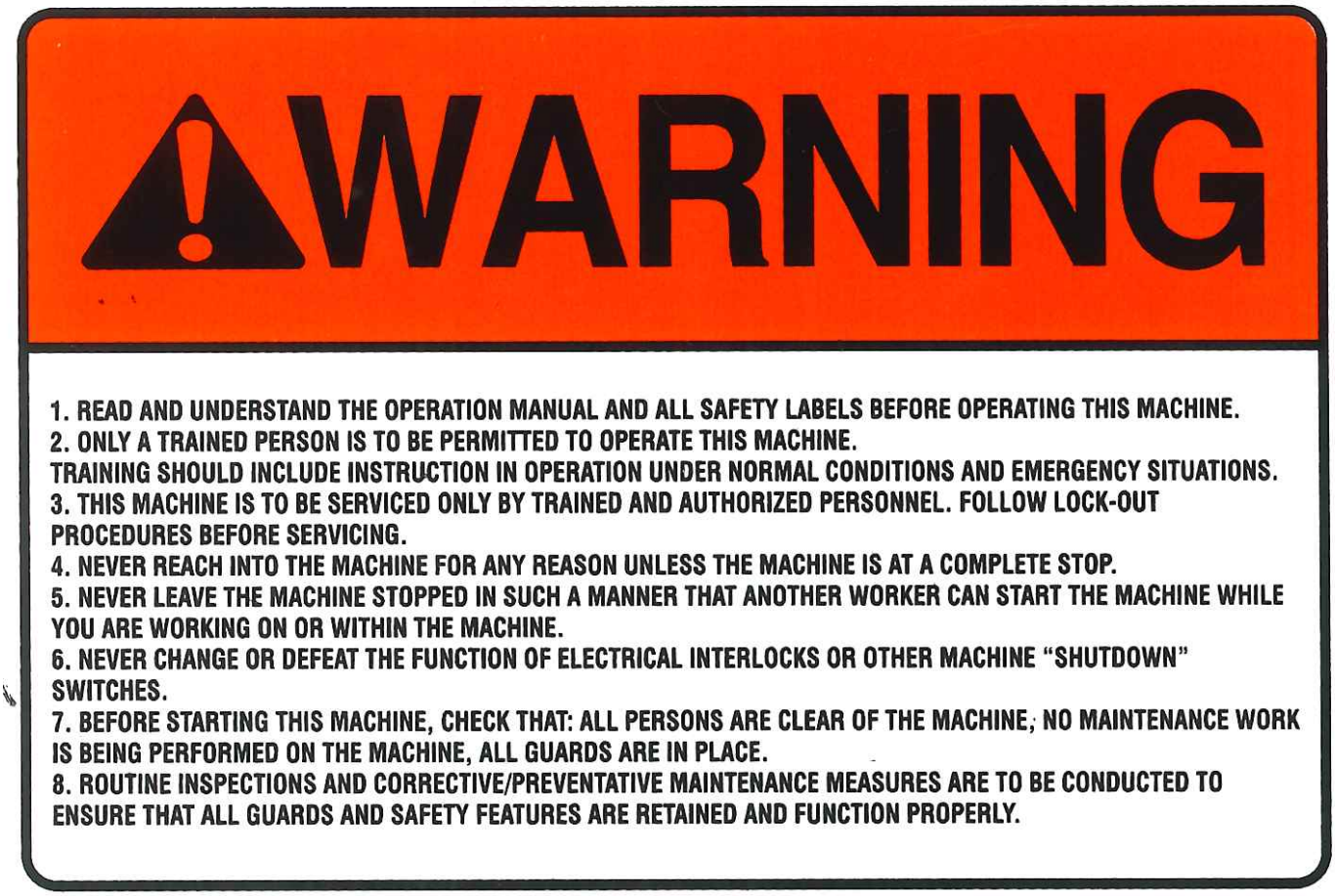
- Do not stand, sit, or allow any personnel to be within reach of the tamp cylinder/ swing arm activation (if so equip).
- Report any malfunctions, or problems with the equipment to qualified maintenance personnel for repair or adjustments that may be required.
- Keep hands clear of moving parts. Do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

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

TUCK IN ANY LOOSE CLOTHING. DO NOT WEAR TIES. PENDANTS, 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.

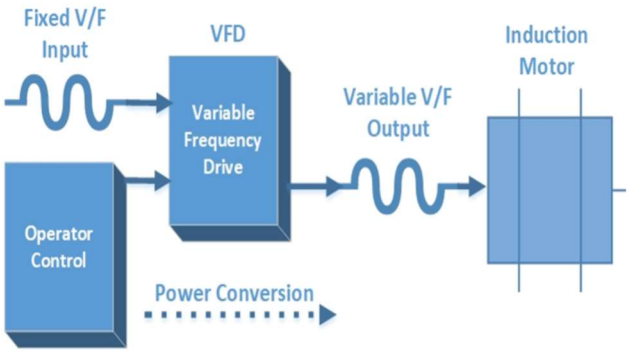


Figure-1: Typical VFD System

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).

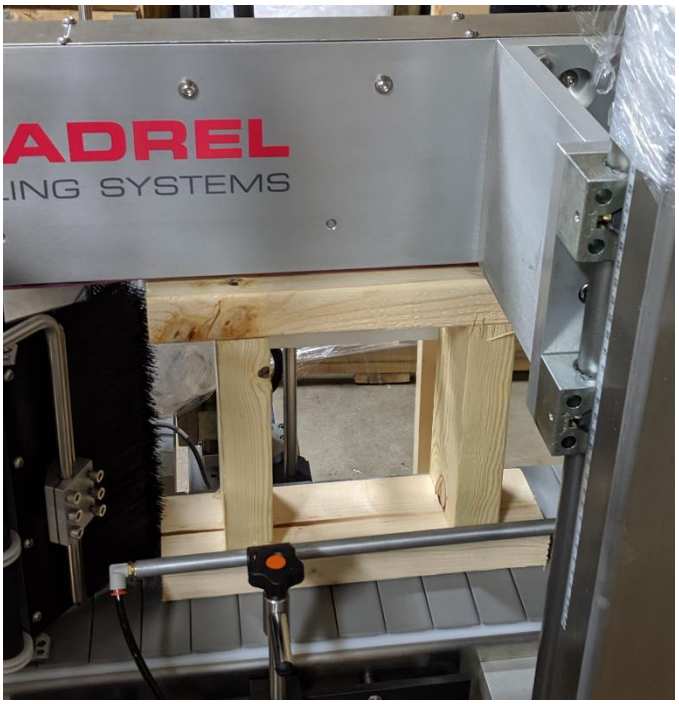
Let's get started…

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.



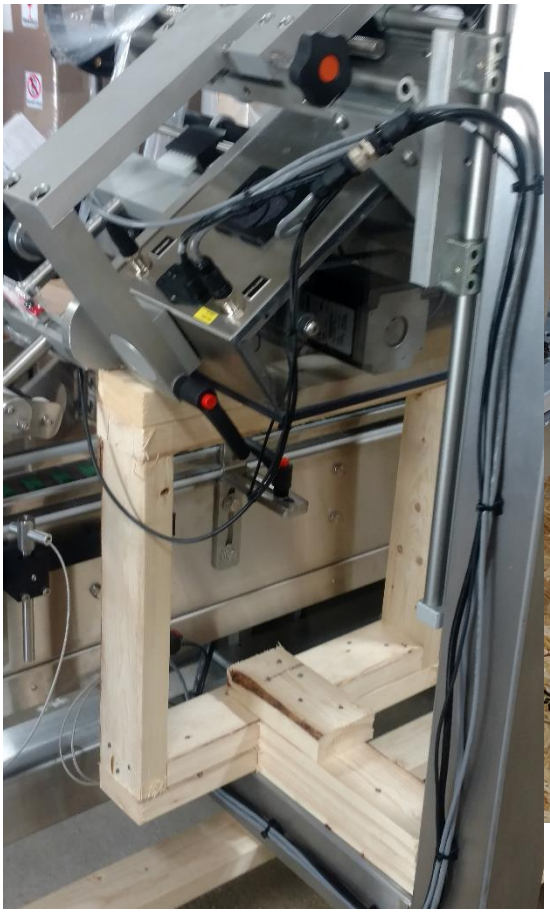
Most assemblies supported have a tool-less vertical adjustment using a knob or hand wheel.

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

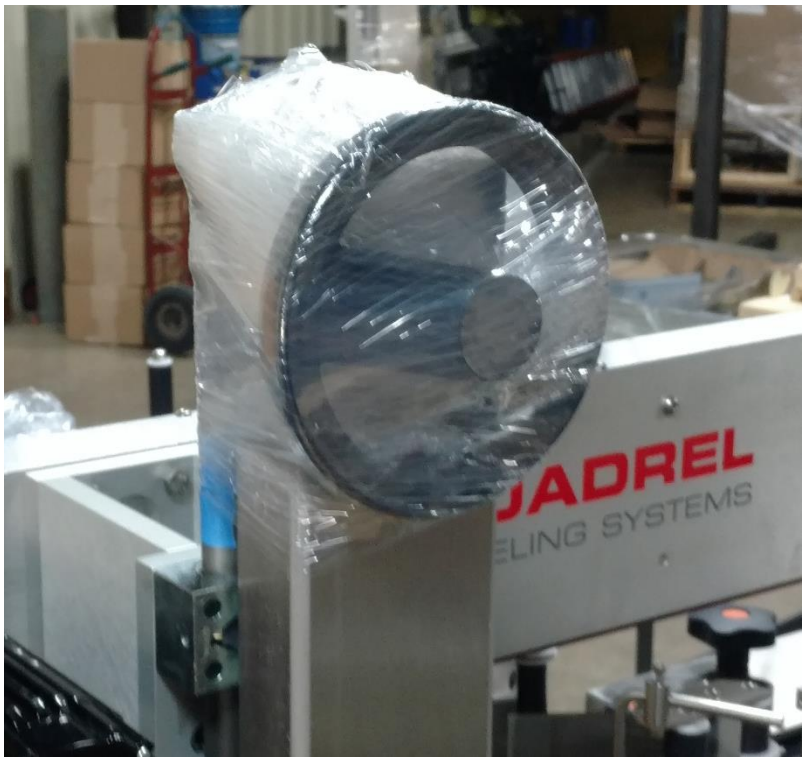
Remove the hand wheel from the wrap, then fasten the hand wheel to the square end on the lead screw using a 3/32 “L” handle Allen wrench.

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)



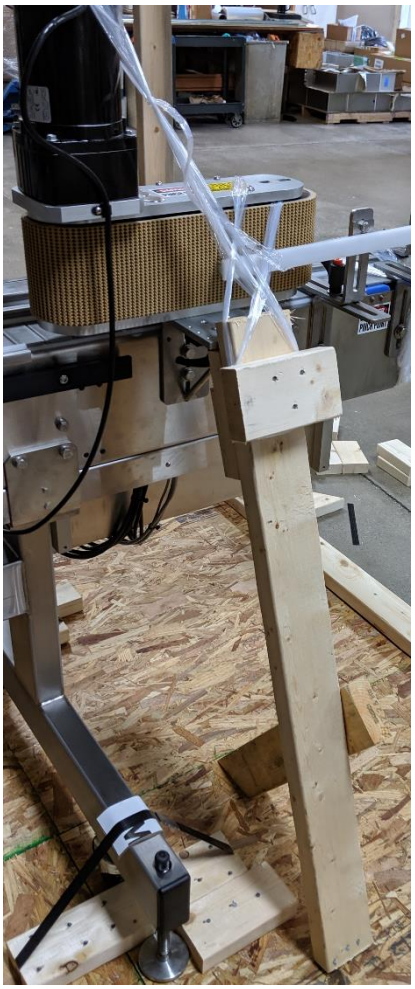
All top and bottom labeling heads will be supported



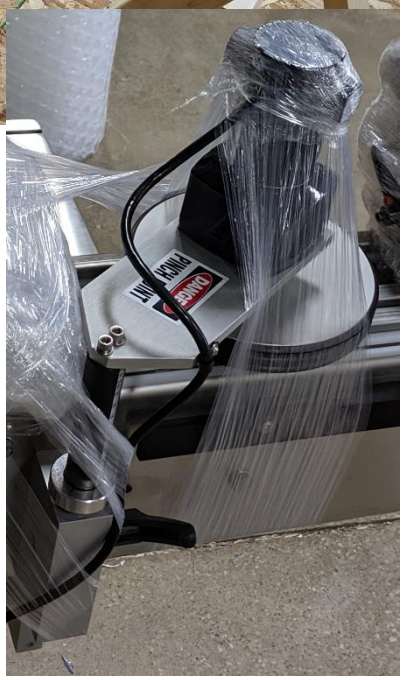
similar to the image shown on the left.

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

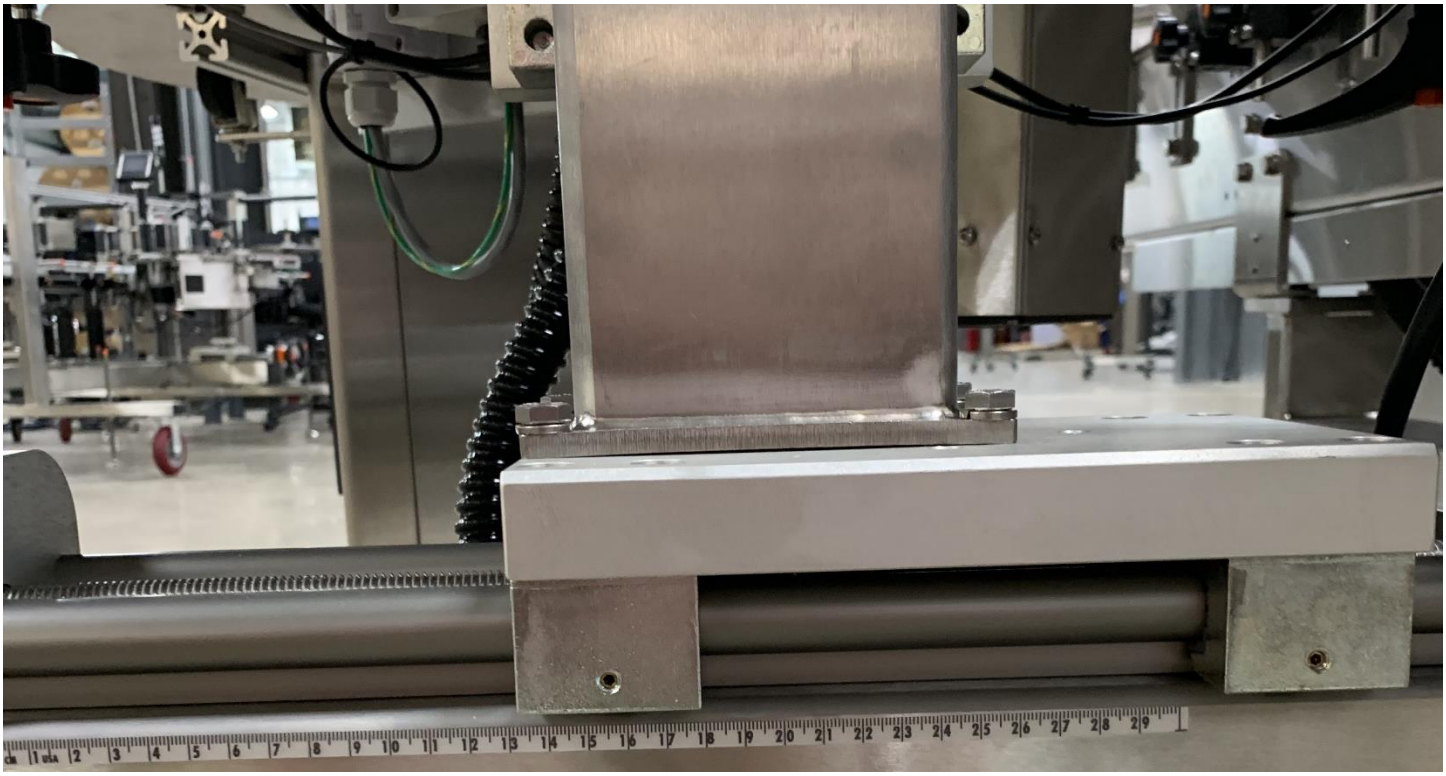
Pacing belt assembly supports can be removed will be without raising the assembly.



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.

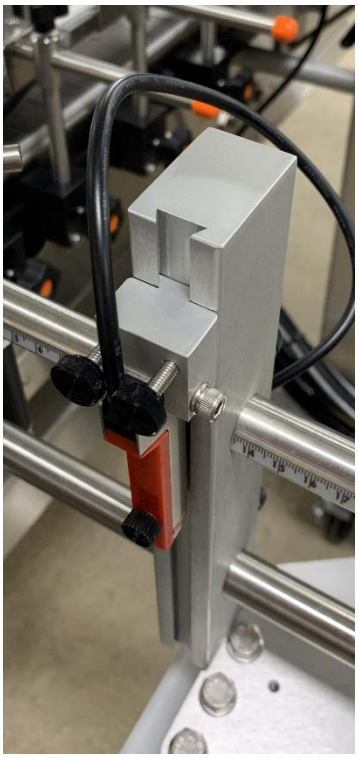
If you have the peel plate rods removed with the peel plate assembly and the label detect assembly (as shown below).

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.

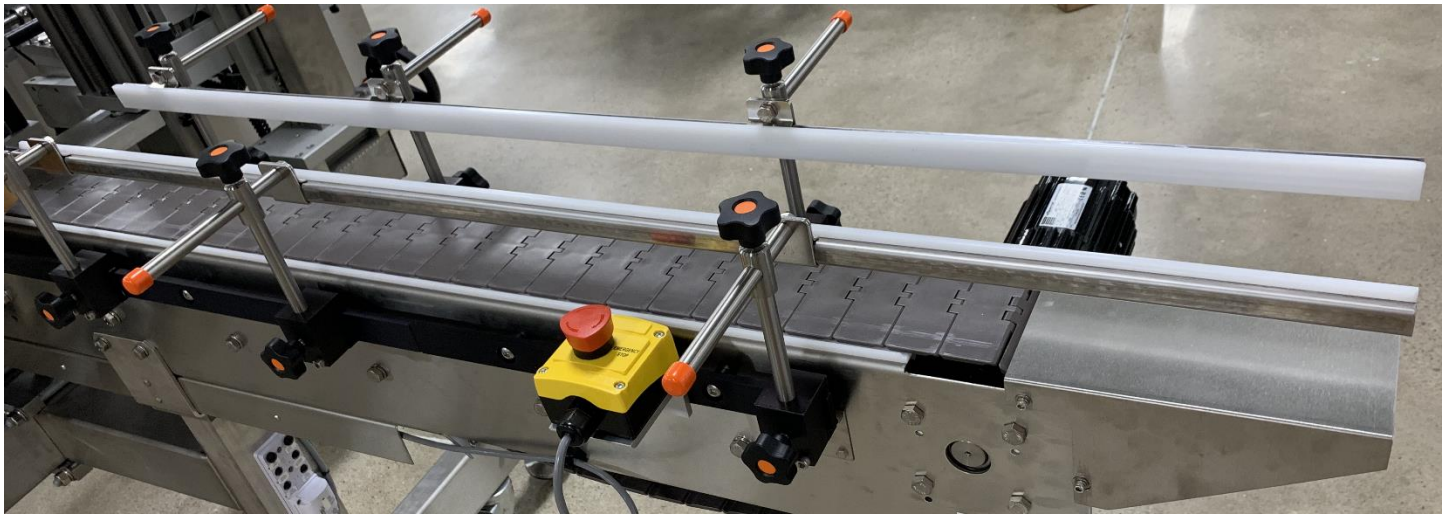
All assemblies removed will be bubble wrapped then plastic wrapped to the machine or in box on the pallet the machine is on.

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.

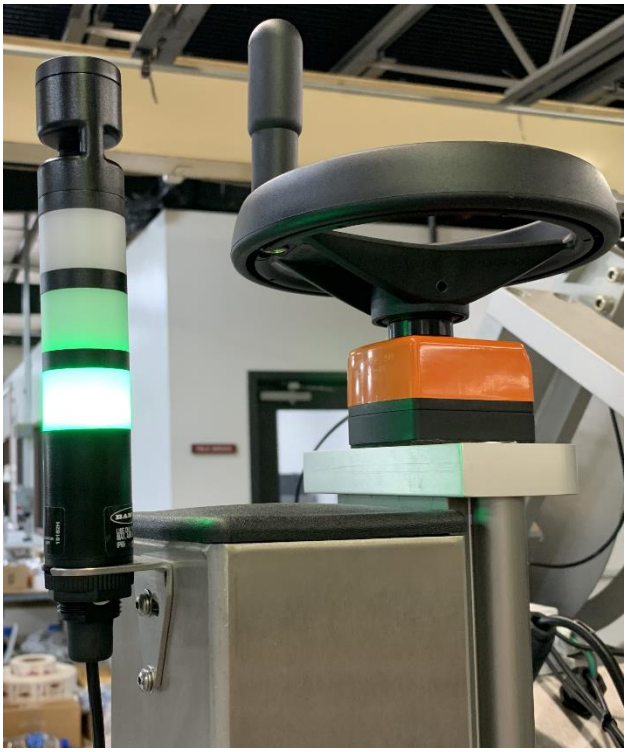
-3/32 L handle Allen wrench

-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.

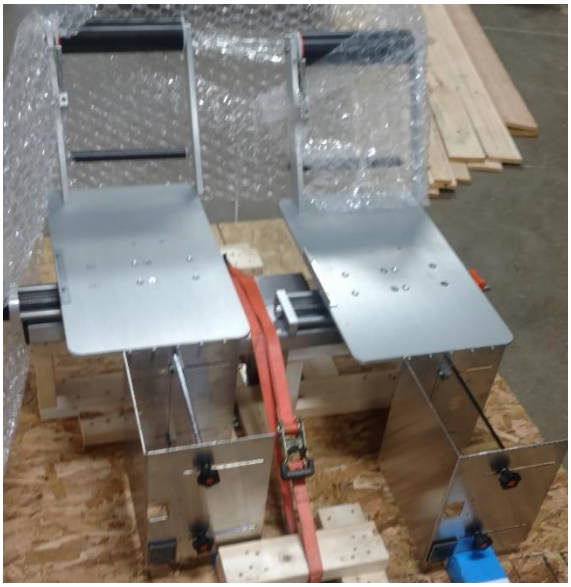
If HMI is located remotely off the enclosure it will still be supported during shipping.

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.

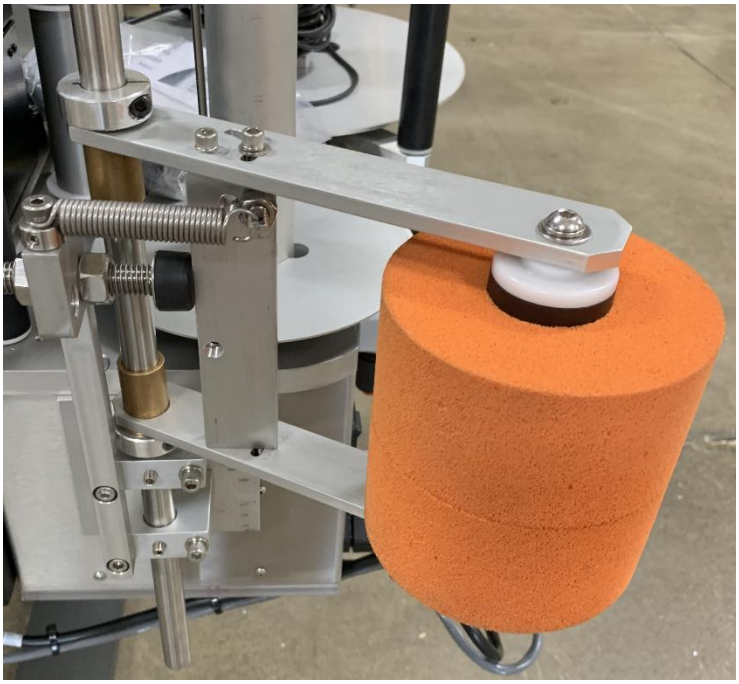
Table top printers with printer tables will ship in separate boxes or pallets (as shown to the left) the printer will be disconnected and placed in the manufacturer's box. The table will either get banded to the pallet with the machine or a separate pallet tethered to the machine pallet. Printer tables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

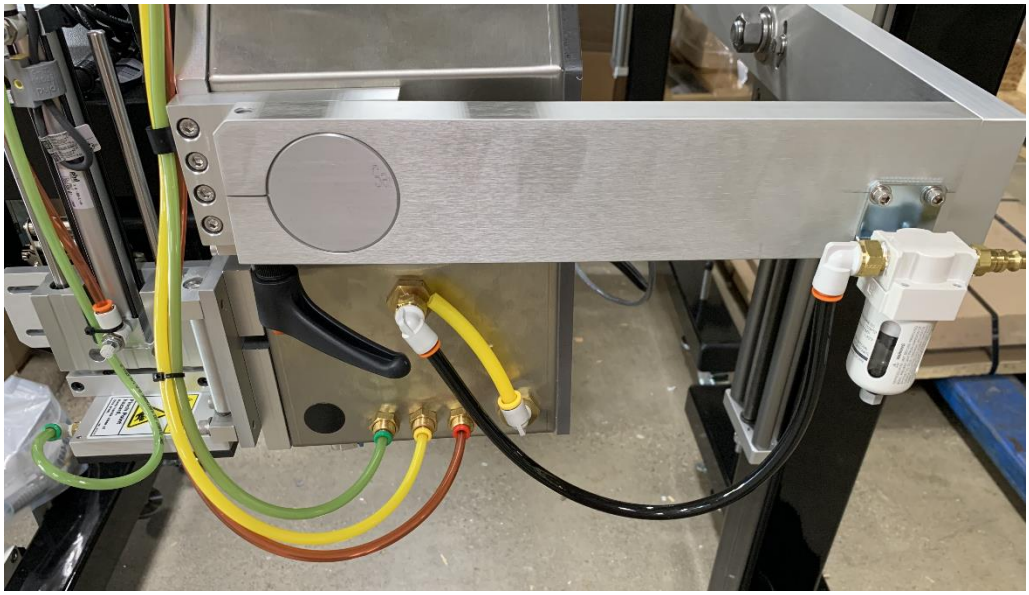


The corner wrap modules will be removed for shipping purposes. They will be wrapped in bubble wrap, plastic wrap, and placed into the box with the labeler.

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.

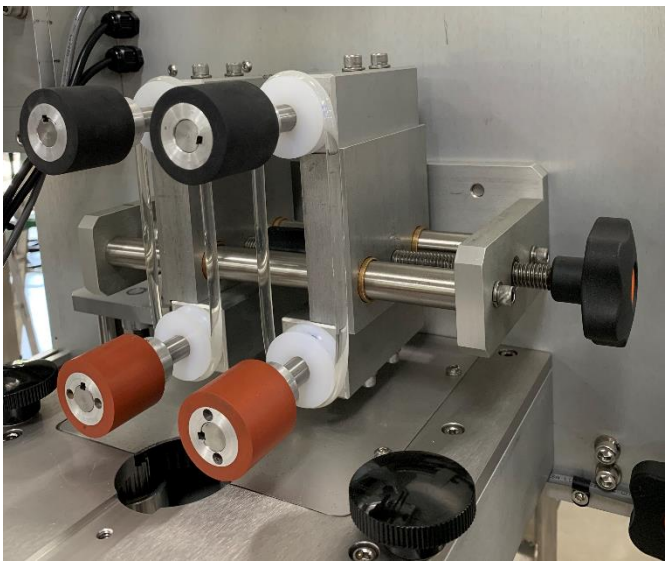
Carefully remove the banding and wrapping.

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

QUADREL
LABELING SYSTEMS

Operator Interface Guide

Techline Labeling System

For Use with Files 84222_v000

Panel View Plus 7” Touch Screen with Allen Bradley CompactLogix L306 PLC

General Overview:

The Operator interface communicates to one PLC through an Ethernet connection. The application file is stored in the terminal’s internal memory area and is executed on power-up. The actual data written to any parameter is stored in the PLC and is saved in its battery backed-up memory area.

Table of Contents

Opening Splash Screen

Upon initial power up, the terminal will initialize and display a splash screen. Once this screen appears it sends a signal to the PLC to start executing logic.

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.

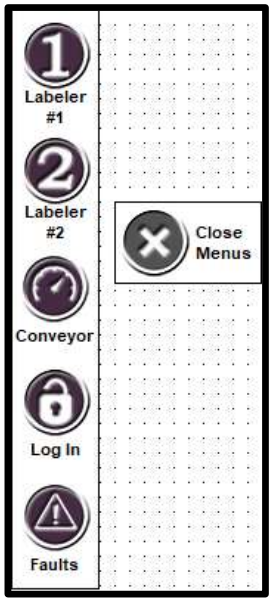
Numeric and Text Displays: Numbers or Text displays will have a light orange background with black text, surrounded by a dark orange border. These are used to reflect numbers or recipe descriptions.

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

System Menus:

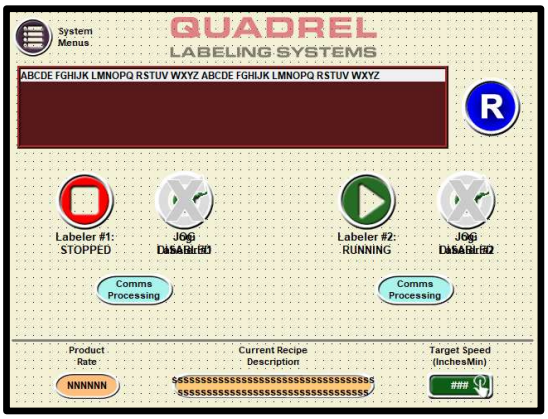
Pressing the System Menu button in the top left corner of the screen will cause the menus to appear as pictured below.

Press any button to navigate to that menu, or the Close Menus button



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).



Menu/Setup Navigation Buttons:
These purple buttons across the top allow the operator to access the various screens that make up the entire touchscreen application. If you are currently on one of the screens, that screen's button will be green in color.

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 button will identify which fault state the labeler is in.
Ready/OK(green): The labeler has no fault conditions and may operate normally.
Warning (yellow): The labeler has a warning present (typically low on labels). The labeler may operate normally, but will require attention soon.
Faulted (red): The labeler has a fault on it that will prevent it from dispensing labels.
Disabled (grey): An emergency stop (both labelers) or Wrap Enable (Labeler #2) will disable the labeler. Faults and functions will be ignored.

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.

Product Count:
This counter reflects how many Products have passed the first product detect sensor while either labeler is Running. This count can be reset in either Labeler Menu.

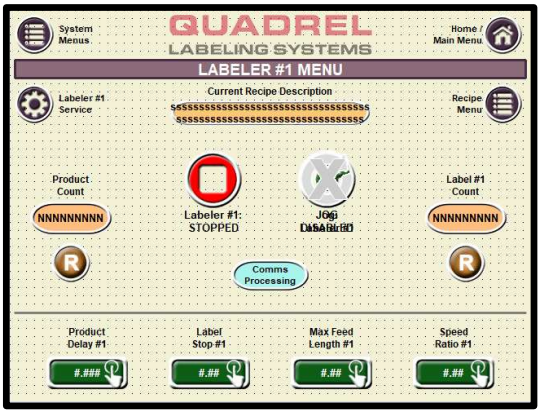
Current Recipe Description:
This display reflects the description for the currently selected recipe. Recipes are explained in the Recipe / Labeler Menu.

Target Speed:
This entry box will change the speed of the system. It is entered as Inches per Minute.

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

Labeler Menu:

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



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Faulted (red): The labeler has a fault on it that will prevent it from dispensing labels.
Disabled (grey): An emergency stop (both labelers) or Wrap Enable (Labeler #2) will disable the labeler. Faults and functions will be ignored.

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. The Product count and reset are global, so they will be identical on all labeler menus.

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.

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

Product Delay:
Product Delay (in inches) controls the point at which the labeler dispenses a label. A lower product delay value will cause the labeler to dispense "earlier" as the product passes by. A higher product delay value will cause the labeler to dispense "later" as the product passes.

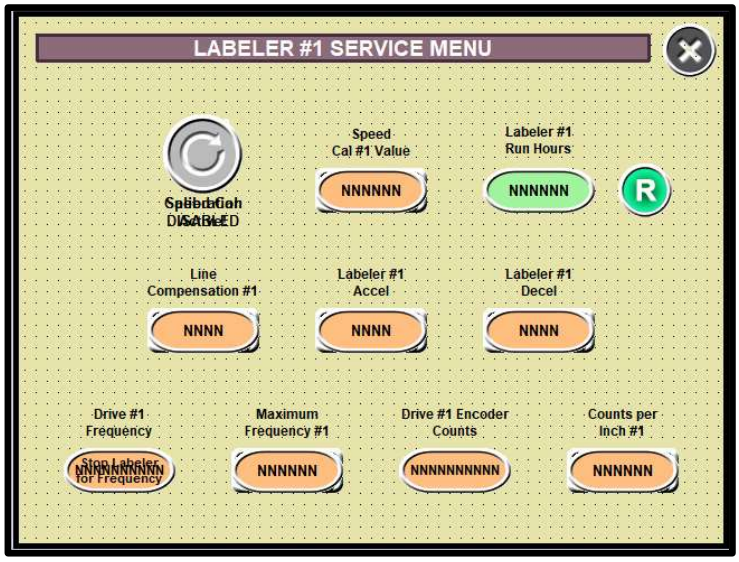
Label Stop:
Label Stop (in inches) controls the label's stop position. Typically, the label should stop with 1/8" to ¼" sticking off of the peel plate. A higher Label Stop will result in more label off of the peel plate.
Note that a high label stop can result in more than one label being dispensed at once.

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.

Speed Ratio:
Labeler Speed Ratio is the value that determines the speed of the labeler in relation to the conveyor belt.

Labeler Service Menu:

Each Labeler Service Menu contains parameters and toggles related to the Labeler that are not typically accessed on a regular basis. The Labeler Service Menu button is only visible when logged in.



Speed Calibration Toggle (Supervisor Level):
Calibration: Pressing this button will put the labeler into a Calibration Mode. While active, the labeler's drive system will continue to spin until Calibration Mode is turned off.

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

While the Calibration is active, the Speed Cal value can be changed so the labeler's drive roll speed is equal to that of the master encoder (conveyor). The Labeler should be Stopped to use the Calibration mode. Note that the speed ratio for the labeler will be forced to 1.0 while the Calibration is active.

Speed Calibration Value (Supervisor Level):
The Speed Calibration is the value that determines the actual dispensing speed in relation to the master encoder speed (typically the conveyor belt). Increasing the Speed Calibration value will decrease the labeler's speed in relation to the master encoder. A lower Speed Calibration value will increase the labeler's speed.
This value should not be changed while the labeler is running as it will affect accuracy and performance.

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

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

Accel and Decel (Supervisor Level):
These are the ramp values used by the labeler drive when dispensing labels while running. A lower value results in a longer Acceleration or Deceleration rate.

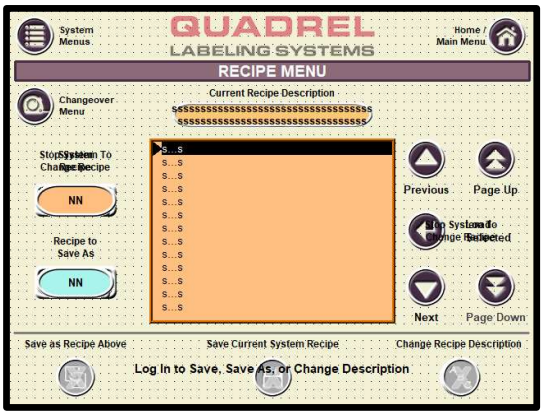
Encoder Count:
This is the current encoder count as interpreted by the respective labeler drive.

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

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

Max Frequency (Supervisor Level):
The Max Frequency is calculated by running the system at max speed and adding 200 to 300 Hz to the displayed drive frequency. This is used for line speed compensation purposes.

Recipe Menu:



Current Recipe Description:
The description display at the top of the screen reflects the stored description for the recipe currently loaded.

Change Recipe Description (Supervisor Level): Pressing this button will allow the operator to change the current recipe description.
Note that the current recipe must be saved to retain the new description.

System Recipe (Load):
When the system is stopped, a new recipe number can be entered. When this number is changed, the newly entered recipe settings will automatically be loaded to the system.

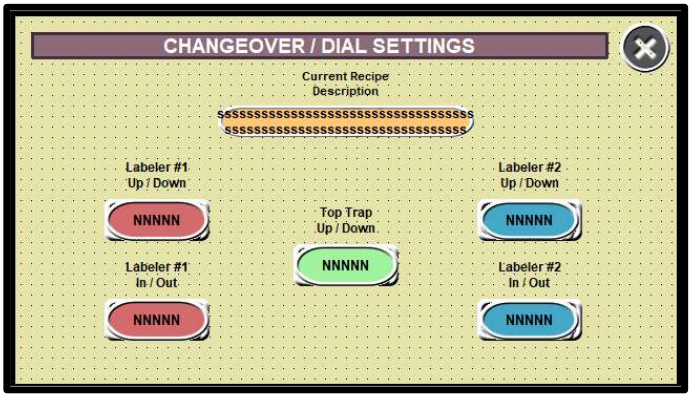
Recipe to Save As (Supervisor Level):
Enter a target recipe to overwrite in this box. Note that the "Save As" button must be pressed in order to execute a save.

Save As Recipe Above (Supervisor Level): Pressing this button will save all current recipe values to the Recipe Number entered in the
"Recipe to Save As" box. Note that pressing this button will not change the system recipe, it only writes values to the target recipe.

Save Current System Recipe (Supervisor Level): Pressing this button will save all current recipe values to the currently loaded recipe.

Load Recipe 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.

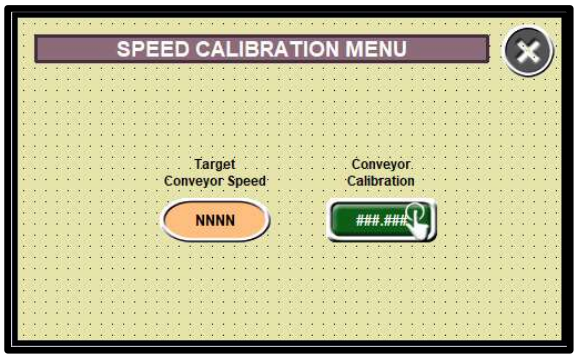
Changeover Menu:



The Changeover / Dial settings menu contains indicators that make changing over from one product to another easier. These values can only be changed when logged in at the Supervisor level.

Speed Calibration Menu:

The System Speed Menu contains parameters and indicators related to the linear speed of the system.

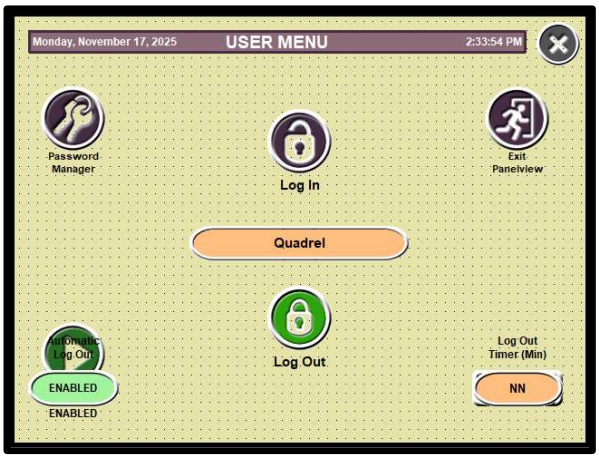


Target Conveyor Speed:
This indicator reflects the current target linear speed of the conveyor in Inches per Minute.

Conveyor Calibration (Supervisor Level):
This value allows the conveyor to run at the Target Conveyor Speed. It is calibrated at the factory using a tachometer and should not be changed.

User Menu:

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



Log In: Press this button to enter a user password.

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

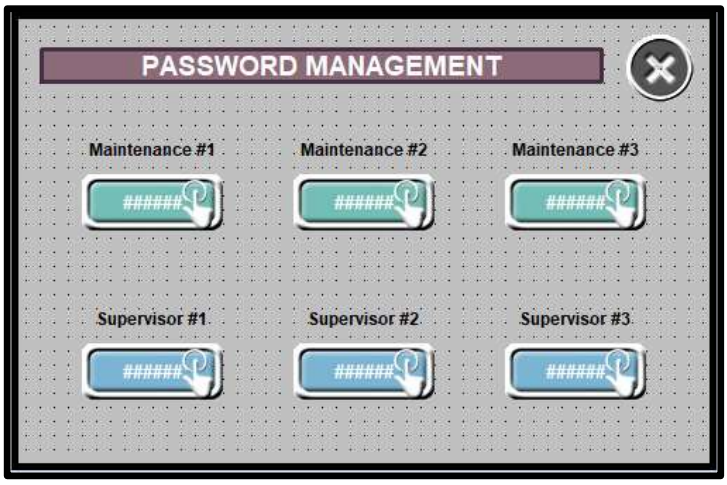
Password Menu: This will open up a security prompt before opening the password menu, where the passwords for the Maintenance and Supervisor levels are set.

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

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

Password Menu:

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



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

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

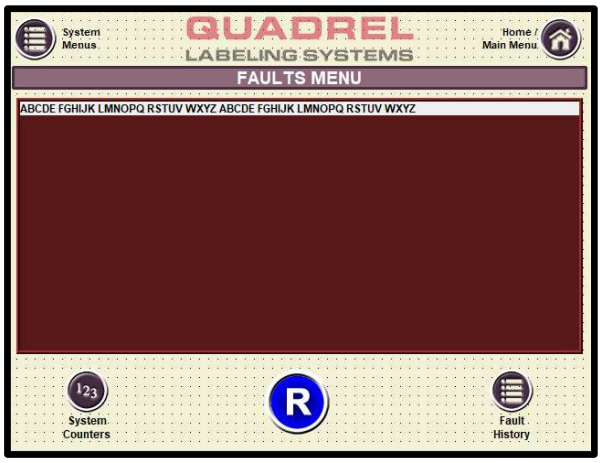
If a Maintenance and Supervisor password are the same, the system will log that user in at the Maintenance level.

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

Quadrel:
There is a hard coded Quadrel level password that cannot be viewed or changed. This is typically only used when a machine is first commissioned to set motor directions or global variables that do not change on a regular basis.

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.

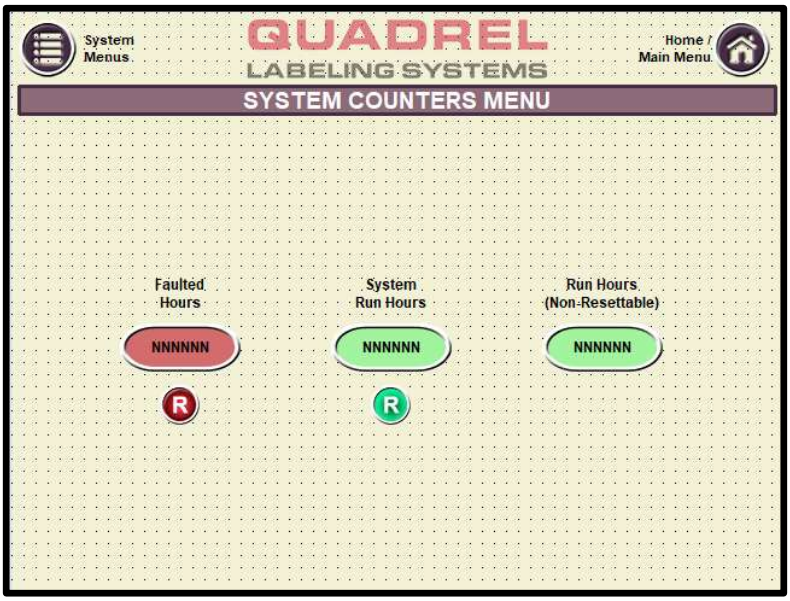


Fault Display:
The Fault dialog box will display all of the active faults on the machine.

Fault Reset:
Used to reset active faults displayed above.

Counters Menu:

The Counters Menu shows system level counters and status indicators. Counters may be reset when logged in at the Supervisor level.



Fault History:

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

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 a warning is active on the system.

Red Lamp:
Flash: The Red lamp will flash while a 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.

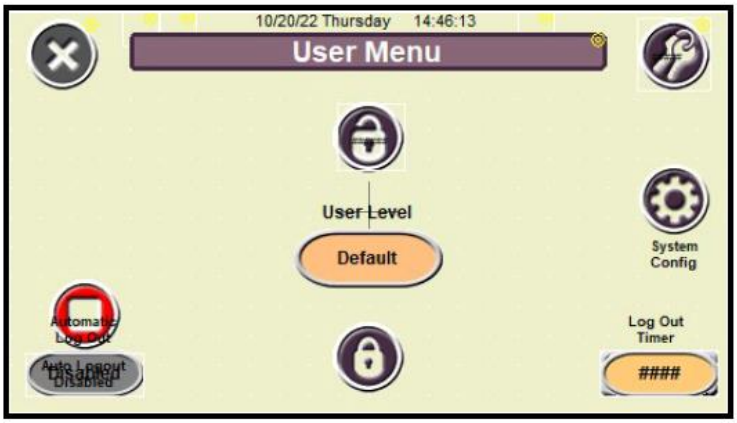
Warning Messages: Warning messages identify a status or event that may need action soon. The machine will not stop from a warning message, but a warning may turn into a fatal fault that will stop the machine. Many warning messages will automatically clear once the problem is remedied.

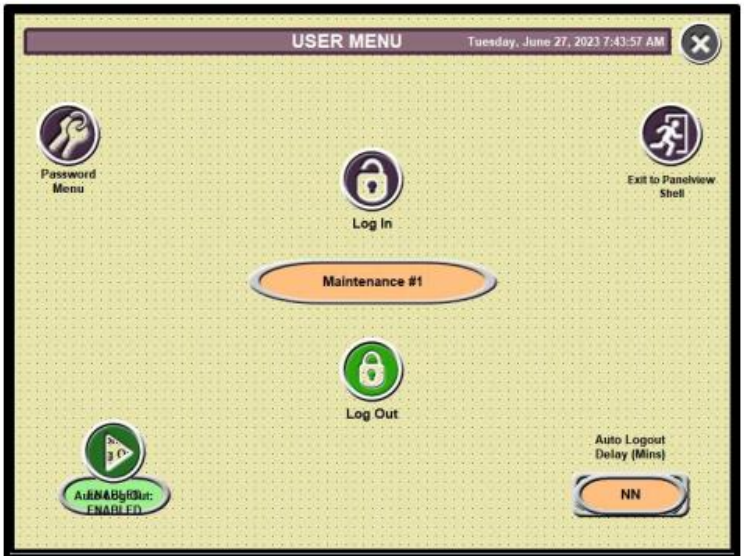
Fatal Messages: Fatal messages will cause the system to stop immediately or initiate a cycle stop. Fatal faults are typically associated to events that prevent labels being applied properly, safety related faults, or other events that may prevent proper machine operation.

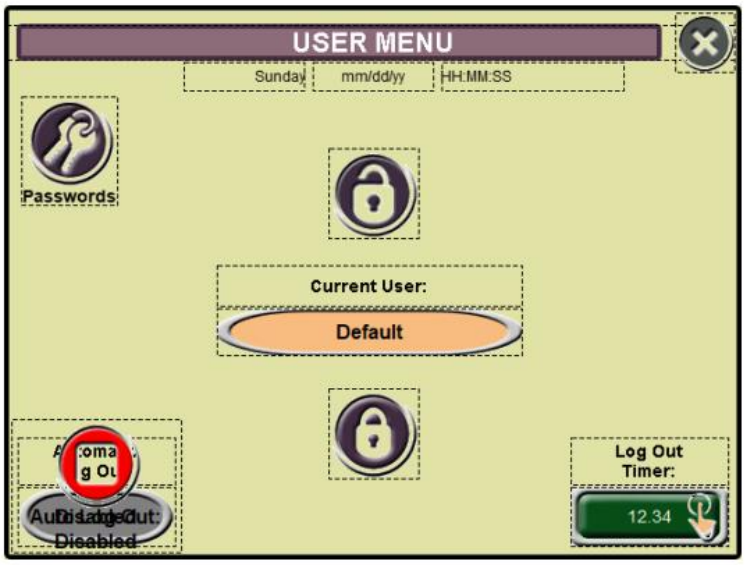
Messages	Cause/Solution
Warning Messages	
PLC Cycled without Screen. Restart System or Touch Screen	The PLC waits for a signal from the touch screen after power-up to verify communications before executing logic. If the PLC is cycled from power or downloading, the screen must be cycled as well.
Infeed Conveyor Drive (DR1) Faulted / Turned Off Warning	The drive that controls the infeed conveyor 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 Drive (DR2) Faulted / Turned Off Warning	The drive that controls the top trap motor is faulted or turned off. If pressing the reset button does not clear this message, verify that the drive is powered up.
Outfeed Conveyor Drive (DR3) Faulted / Turned Off Warning	The drive that controls the outfeed conveyor motor is faulted or turned off. If pressing the reset button does not clear this message, verify that the drive is powered up.
Labeler #1 Drive (DR4) Faulted Warning	The drive that controls the Labeler #1 motor is faulted or turned off. If pressing the reset button does not clear this message, verify that the drive is powered up.
Labeler #1 Missing Label / Maximum Feed Length Reached	The listed labeler has reported it reached its maximum feed length. This can be an indicator of a missing label on the liner. If you feel you received this message in error, check the Maximum Feed Length value for the labeler.
Labeler #1 Drive (DR4) Program Stopped Warning	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 #1 Communications Warning	The communications between the PLC and listed drive has timed out. Correct this issue before running or using that drive. Note that a communication failure with one drive may affect others.
Labeler #2 Drive (DR5) Faulted Warning	The drive that controls the Labeler #2 motor is faulted or turned off. If pressing the reset button does not clear this message, verify that the drive is powered up.
Labeler #2 Missing Label / Maximum Feed Length Reached	The listed labeler has reported it reached its maximum feed length. This can be an indicator of a missing label on the liner. If you feel you received this message in error, check the Maximum Feed Length value for the labeler.
Labeler #2 Drive (DR5) Program Stopped Warning	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 #2 Communications Warning	The communications between the PLC and listed drive has timed out. Correct this issue before running or using that drive. Note that a communication failure with one drive may affect others.

Messages	Cause/Solution
Fatal Messages	
Safety Relay Active. Check E-Stops, Reset	The Safety relay has been activated by an Emergency Stop. Unlatch all Emergency Stops and press the Reset button to reset the safety relay.
Infeed Conveyor Drive (DR1) Faulted / Turned Off	The drive that controls the infeed conveyor 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 Drive (DR2) Faulted / Turned Off	The drive that controls the top trap motor is faulted or turned off. If pressing the reset button does not clear this message, verify that the drive is powered up.
Outfeed Conveyor Drive (DR3) Faulted / Turned Off	The drive that controls the outfeed conveyor motor is faulted or turned off. If pressing the reset button does not clear this message, verify that the drive is powered up.
PLC Faulted	The PLC has become faulted. If resetting system power does not clear this fault, contact Quadrel support
Labeler #1 Drive (DR4) Faulted	The drive that controls the Labeler #1 motor is faulted or turned off while it was running or attempted to run. Reset the drive or re-enable the drive.
Labeler #1 Missing Label / Maximum Feed Length Reached	The listed labeler's drive has reported a maximum feed length movement while running. If there was no missing label on the web, ensure the "Max Feed Length" in the labeler menu is set to the proper value.
Labeler #1 Drive (DR4) Program Stopped Fault	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 #1 Communications Fault	The communications between the PLC and listed drive has timed out while it was running or attempted to run.
Labeler #2 Drive (DR4) Faulted	The drive that controls the Labeler #2 motor is faulted or turned off while it was running or attempted to run. Reset the drive or re-enable the drive.
Labeler #2 Missing Label / Maximum Feed Length Reached	The listed labeler's drive has reported a maximum feed length movement while running. If there was no missing label on the web, ensure the "Max Feed Length" in the labeler menu is set to the proper value.
Labeler #2 Drive (DR4) Program Stopped Fault	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 #2 Communications Fault	The communications between the PLC and listed drive has timed out while it was running or attempted to run.

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

SERIAL # _84222-100___

Q120 TECHLINE SETUP PARAMETERS

PRODUCT_0.5 OZ SS_____

PRODUCT PITCH __1”_____ PRODUCT RATE_____50_____

MAIN MENU

RECIPE	1
CONVEYOR SPEED	275

LABELER MENU

	LABELER 1	**LABELER 2**
RECIPE	1	1
PRODUCT DELAY	12.55	14.80
LABEL STOP	0.85	1.30
SPEED RATIO	0.85	1.40
MAX FEED	5.00	5.00

LABELER SERVICE MENU

	LABELER 1	**LABELER 2**
SPEED CAL	10500	10500
LINE COMPENSATION	50	50
ACCEL	4500	4500
DECEL	4500	4500
MAX FREQUENCY	22500	22500
COUNTS PER INCH	4500	4500

SPEED CAL MENU

CONVEYOR SPEED	275
CONVEYOR CALIBRATION	112.000

CHANGEOVER SETTINGS

	LABELER 1	**LABELER 2**
LABELER IN/OUT	110	110
LABELER UP/DOWN	0	99842
TOP TRAP	24	

Fuji ACE Setup. Includes Master/Follower v006 12SEP2022

Job: 84222-100 Drive: DR 1 Motor: Inf. Conveyor

SETUP AND ADJUSTMENTS: (Reference Fuji drive manual for detailed information)

Initial Power-Up:
The display will show "8.dES". Press the Func/Data Key.
"ASIA" will be displayed. Press the Stop and Up/Down keys until "ANEr" is displayed.
Press the Func/Data Key to save the setting.

Set Primary Parameters:

Parameter	Fuji Default	Quadrel Default Value	Quadrel Final Value	Description
F01	0	1 (0-10V Terminals) 12* (PG Card)	1	Frequency Command 12 Drives with PG Card
F02	2	1 (Terminals)	1	Operation
F03**	60.0	60.0	90.0	Max Frequency **If Max Frequency Exceeds 70.0 then adjust F15 First.
F07***	6.0	3.0	3.00	Accel Time *** Set to 0.0 If PG Card Installed
F08***	6.0	3.0	3.00	Decel Time *** Set to 0.0 if PG Card Installed
F15	70	70	90.0	Upper Freq Limit
F29	0	0 or 3	0	Terminal FM Function. 0 if wired to Another Drive 3 if wired to PLC Encoder Input
F42	0	2	2	Control Mode
H04	0	5	5	Auto Reset Attempts
H05	5.0	3.0	3.0	Auto Reset Delay
P99	0	1 (HP)	1	Motor Type
P02	Varies	See Motor Nameplate	0.38	Rated Capacity (HP)
E27	99	10	10	Status Relay Setting

PG Card Parameters for Following Drive with PG Card Installed:

D59	2	2 or 3		Command Encoder Type Set to 3 to Change Motor Direction
D62	1	1		Command Scaling Factor 1
D63	1	1		Command Scaling Factor 2
F14	1	5	5	Restart Mode
H96	3	0	0	Stop/Start Check

Following parameters If encoder installed on the Following Drive's Motor:

Parameter	Fuji Default	Quadrel Default Value	Quadrel Final Value	Description
D14	2	2 or 3	2	Feedback Encoder Type Set to 3 If Drive Errors Immediately upon Following
D15*	400 (1024)	Check Encoder		Feedback Encoder PPR (HEX!)
D16	1	1	1	Feedback Scaling Factor 1
D17	1	1	1	Feedback Scaling Factor 2
D41	0	2	2	Application Function
D60*	400 (1024)	Check Encoder		Command Encoder PPR (HEX!)
F31	0	21	21	FM Terminal Output
F42	0	2	6	Control Mode

* 78 For Techline Bodine Top Trap / Hugger (120 PPR Encoder to Motor Shaft)
* 7D For Techline Conveyor (1200 PPR Encoder to Conveyor Sidewall)
* 400 For Leeson Conveyor / Hugger (1024 PPR Encoder between Motor and Gearbox
* 708 for Bodine Hugger (1800 PPR Encoder to Motor Shaft)

Initialize Parameters

- **Navigate to Parameter H03**
- **Use the STOP and UP Arrow to change H03 to "2"**
- **H03 will revert back to "0" once the parameters are automatically set.**

Set the Motor Current based on the Motor Nameplate value. Entered as Amps.

Parameter	Fuji Default	Motor Nameplate	Quadrel Final value
P03	Varies	1.90	

For Service/Troubleshooting Encoder Signals:
Enable Input Monitor: Set E52 to 2
4_15: Reference Pulse Rate (Pulse/Sec)
4_17: Slave Pulse Rate (Pulse/Sec)

Fuji ACE Setup. Includes Master/Follower v006 12SEP2022

Job: 64222-100 Drive: DR2 Motor: Top Trap

SETUP AND ADJUSTMENTS: (Reference Fuji drive manual for detailed information)

Initial Power-Up:
The display will show "8.dES". Press the Func/Data Key.
"ASiA" will be displayed. Press the Stop and Up/Down keys until "ANEr" is displayed.
Press the Func/Data Key to save the setting.

Set Primary Parameters:

Parameter	Fuji Default	Quadrel Default Value	Quadrel Final Value	Description
F01	0	1 (0-10V Terminals) 12* (PG Card)	12	Frequency Command 12 Drives with PG Card
F02	2	1 (Terminals)	1	Operation
F03**	60.0	60.0	90.0	Max Frequency **If Max Frequency Exceeds 70.0 then adjust F15 First.
F07***	6.0	3.0	3.00	Accel Time *** Set to 0.0 if PG Card Installed
F08***	6.0	3.0	3.00	Decel Time *** Set to 0.0 if PG Card Installed
F15	70	70	90.0	Upper Freq Limit
F29	0	0 or 3	0	Terminal FM Function. 0 if wired to Another Drive 3 If wired to PLC Encoder Input
F42	0	2	2	Control Mode
H04	0	5	5	Auto Reset Attempts
H05	5.0	3.0	3.0	Auto Reset Delay
P99	0	1 (HP)	1	Motor Type
P02	Varies	See Motor Nameplate	0.17	Rated Capacity (HP)
E27	99	10	10	Status Relay Setting

PG Card Parameters for Following Drive with PG Card Installed:

D59	2	2 or 3	2	Command Encoder Type Set to 3 to Change Motor Direction
D62	1	1	10	Command Scaling Factor 1
D63	1	1	82	Command Scaling Factor 2
F14	1	5	5 ✓	Restart Mode
H96	3	0	0 ✓	Stop/Start Check

Following parameters if encoder installed on the Following Drive's Motor:

Parameter	Fuji Default	Quadrel Default Value	Quadrel Final Value	Description
D14	2	2 or 3	2	Feedback Encoder Type Set to 3 If Drive Errors Immediately upon Following
D15*	400 (1024)	Check Encoder		Feedback Encoder PPR (HEX!)
D16	1	1	1	Feedback Scaling Factor 1
D17	1	1	1	Feedback Scaling Factor 2
D41	0	2	2	Application Function
D60*	400 (1024)	Check Encoder		Command Encoder PPR (HEX!)
F31	0	21	21	FM Terminal Output
F42	0	2	6	Control Mode

* 78 For Techline Bodine Top Trap / Hugger (120 PPR Encoder to Motor Shaft)
* 7D For Techline Conveyor (1200 PPR Encoder to Conveyor Sidewall)
* 400 For Leeson Conveyor / Hugger (1024 PPR Encoder between Motor and Gearbox
* 708 for Bodine Hugger (1800 PPR Encoder to Motor Shaft)

Initialize Parameters

- **Navigate to Parameter H03**
- **Use the STOP and UP Arrow to change H03 to "2"**
- **H03 will revert back to "0" once the parameters are automatically set.**

Set the Motor Current based on the Motor Nameplate value. Entered as Amps.

Parameter	Fuji Default	Motor Nameplate	Quadrel Final value
P03	Varies	1.00	

For Service/Troubleshooting Encoder Signals:
Enable Input Monitor: Set E52 to 2
4_15: Reference Pulse Rate (Pulse/Sec)
4_17: Slave Pulse Rate (Pulse/Sec)

Fuji ACE Setup. Includes Master/Follower v006 12SEP2022

Job: 64222-100 Drive: DR 3 Motor: Out. Conveyor

SETUP AND ADJUSTMENTS: (Reference Fuji drive manual for detailed information)

Initial Power-Up:
The display will show "8.dES". Press the Func/Data Key.
"ASIA" will be displayed. Press the Stop and Up/Down keys until "ANEr" is displayed.
Press the Func/Data Key to save the setting.

Set Primary Parameters:

Parameter	Fuji Default	Quadrel Default Value	Quadrel Final Value	Description
F01	0	1 (0-10V Terminals) 12* (PG Card)	12	Frequency Command 12 Drives with PG Card
F02	2	1 (Terminals)	1	Operation
F03**	60.0	60.0	90.0	Max Frequency **If Max Frequency Exceeds 70.0 then adjust F15 First.
F07***	6.0	3.0	3.00	Accel Time *** Set to 0.0 if PG Card Installed
F08***	6.0	3.0	3.00	Decel Time *** Set to 0.0 if PG Card Installed
F15	70	70	90.0	Upper Freq Limit
F29	0	0 or 3	0	Terminal FM Function. 0 if wired to Another Drive 3 if wired to PLC Encoder Input
F42	0	2	2	Control Mode
H04	0	5	5	Auto Reset Attempts
H05	5.0	3.0	3.0	Auto Reset Delay
P99	0	1 (HP)	1	Motor Type
P02	Varies	See Motor Nameplate	0.38	Rated Capacity (HP)
E27	99	10	10	Status Relay Setting

PG Card Parameters for Following Drive with PG Card Installed:

D59	2	2 or 3	3	Command Encoder Type Set to 3 to Change Motor Direction
D62	1	1	10	Command Scaling Factor 1
D63	1	1	167	Command Scaling Factor 2
F14	1	5	5 ✓	Restart Mode
H96	3	0	0 ✓	Stop/Start Check

Following parameters if encoder Installed on the Following Drive's Motor:

Parameter	Fuji Default	Quadrel Default Value	Quadrel Final Value	Description
D14	2	2 or 3	2	Feedback Encoder Type Set to 3 If Drive Errors Immediately upon Following
D15*	400 (1024)	Check Encoder		Feedback Encoder PPR (HEX!)
D16	1	1	1	Feedback Scaling Factor 1
D17	1	1	1	Feedback Scaling Factor 2
D41	0	2	2	Application Function
D60*	400 (1024)	Check Encoder		Command Encoder PPR (HEX!)
F31	0	21	21	FM Terminal Output
F42	0	2	6	Control Mode

* 78 For Techline Bodine Top Trap / Hugger (120 PPR Encoder to Motor Shaft)
* 7D For Techline Conveyor (1200 PPR Encoder to Conveyor Sidewall)
* 400 For Leeson Conveyor / Hugger (1024 PPR Encoder between Motor and Gearbox
* 708 for Bodine Hugger (1800 PPR Encoder to Motor Shaft)

Initialize Parameters

- **Navigate to Parameter H03**
- **Use the STOP and UP Arrow to change H03 to "2"**
- **H03 will revert back to "0" once the parameters are automatically set.**

Set the Motor Current based on the Motor Nameplate value. Entered as Amps.

Parameter	Fuji Default	Motor Nameplate	Quadrel Final value
P03	Varies	1.90	

For Service/Troubleshooting Encoder Signals:
Enable Input Monitor: Set E52 to 2
4_15: Reference Pulse Rate (Pulse/Sec)
4_17: Slave Pulse Rate (Pulse/Sec)

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.

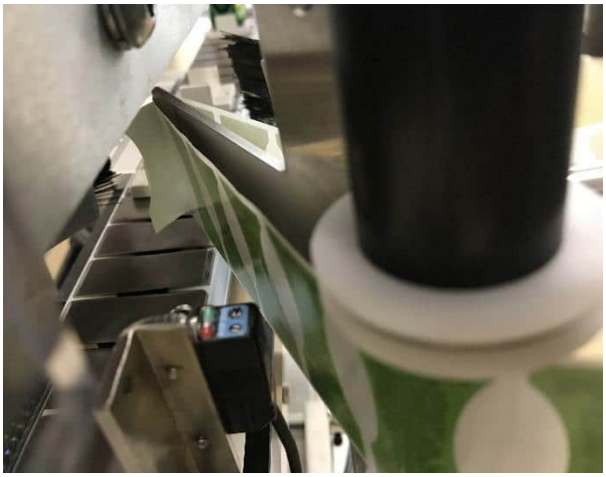
You will also find the threading diagram directly on the labeling head.

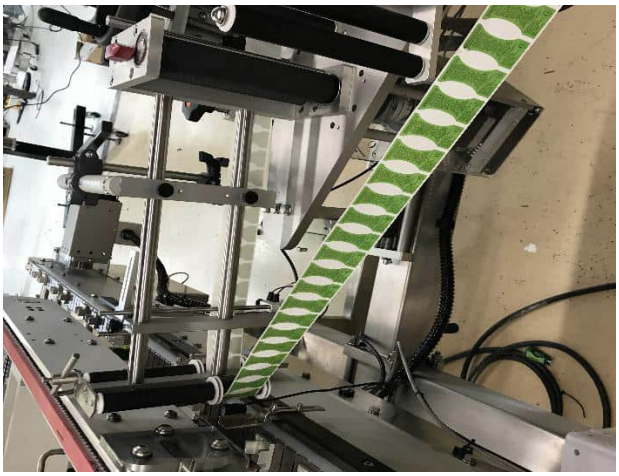
1) Place the label stock roll on the unwind shaft. Press the roll firmly against the flange. Then slide the locking collar over the unwind shaft aligning the set screw with the shaft. Press into the roll and twist to lock the collar in place.

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

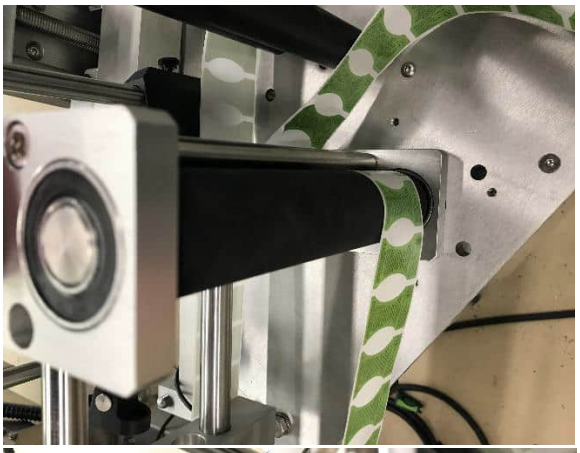
3) Follow the threading diagram on the labeling head for routing the web.
4) Thread through the dancer to the peel plate.

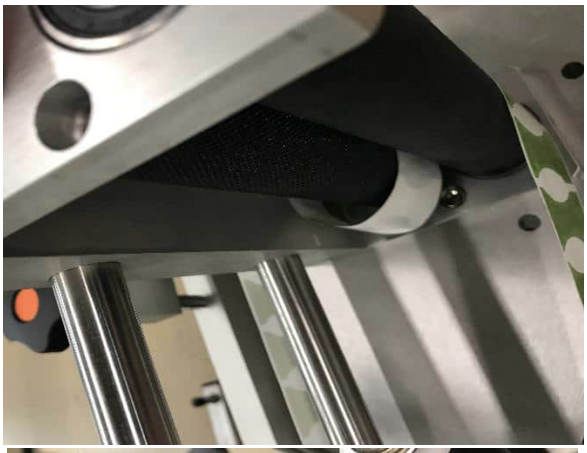
5) Feed the label around the peel plate and under the pressure shoe if (if there is one). Feed the label up the head to the pull roll. Pull all the slack out.

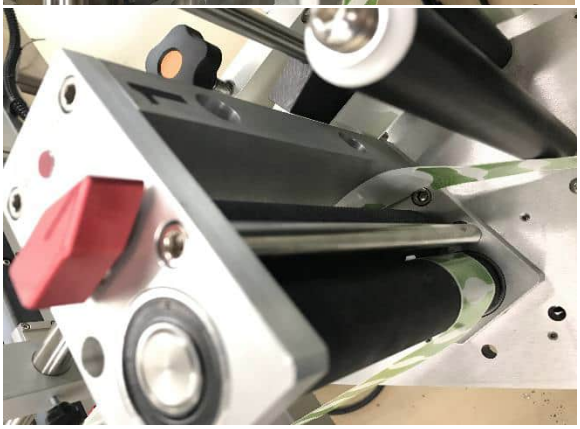




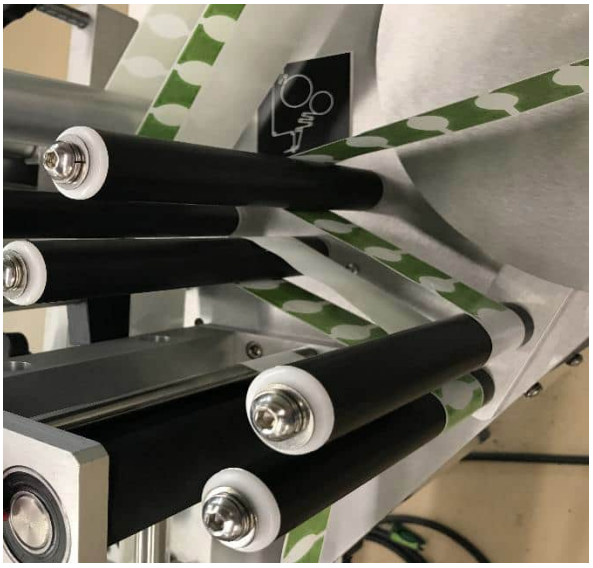
6) Wrap labels around the rubber roller as shown, then around the knurled roller. Make sure the knurled roller is not locked in by turning the red knob to the left or right of the red dot on the drive roll. When you have the labels completely threaded you can turn the knob to the red dot.



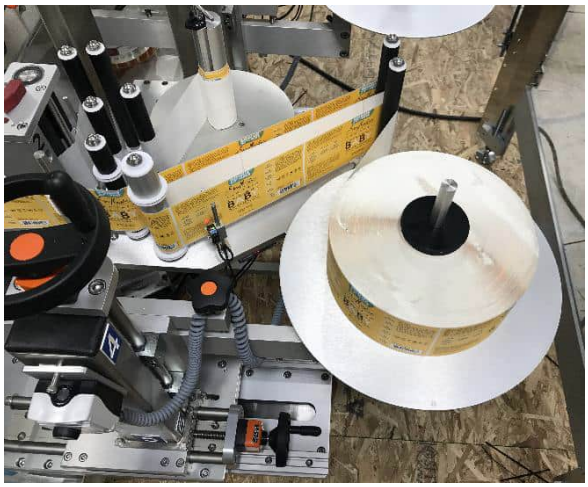




7) Thread the labels through the rewind dancers to the rewind shaft. Place the end of the label through the clip and rotate the rewind hub to take up the slack.



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.

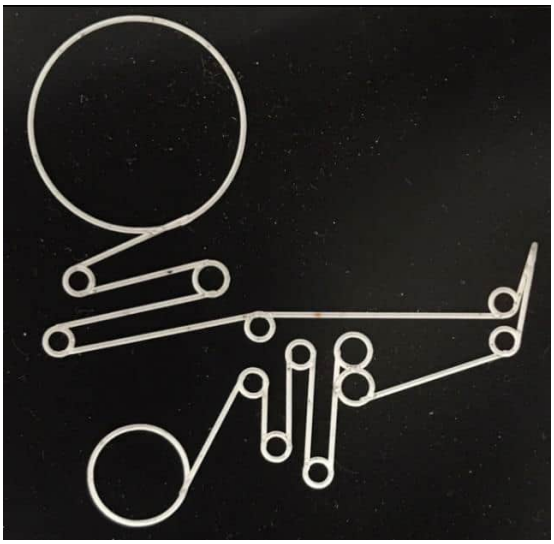


9) To unload the rewind loosen (counter clockwise) the “clevis” bolt on the top of the rewind hub. this will collapse the rewind and you can pull the liner off the hub.

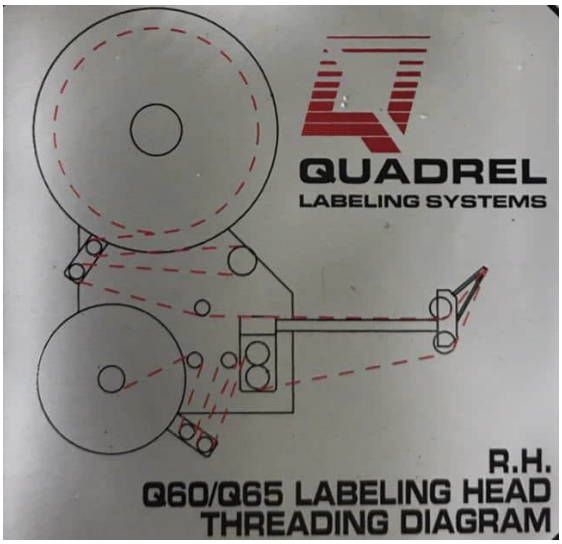
⚠ CAUTION There are many pinch points on a labeler. to avoid injury read and understand the owner’s manual before operating.

6.1.2 THREADING DIAGRAMS

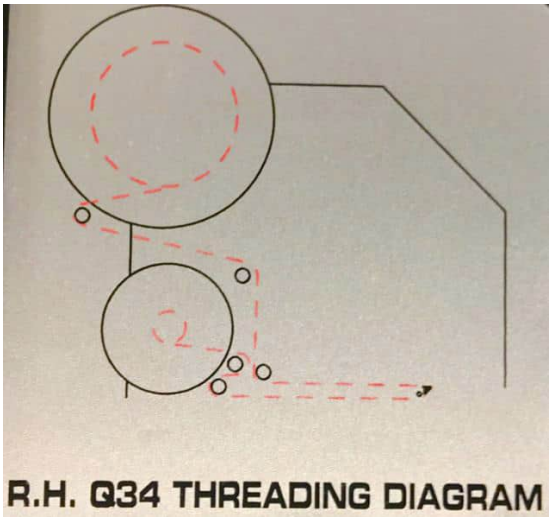
Here are the following threading diagrams for our standard labeling heads.



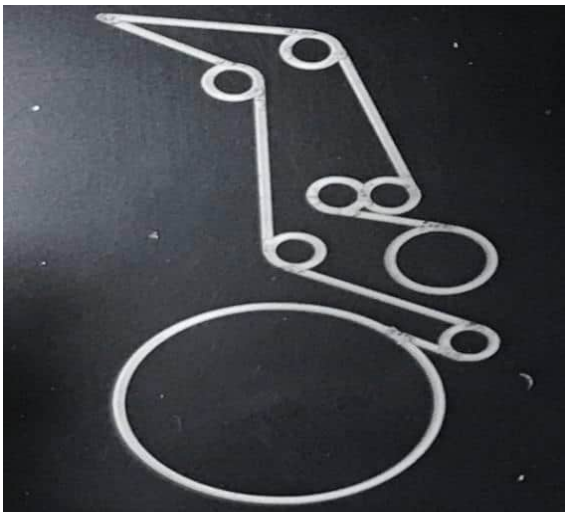
Q120/Q125/Q115/Q110



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

Q120 7 ” LABELING HEAD

GENERAL DESCRIPTION

- The Q120 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 Q120 labeler features a PLC based control, insuring accurate and drift free label application. The Q120 uses a high-torque stepping motor for web drive. The step motor drive system is indexed directly from the PLC controller. This allows for precise adjustment and calibration for any number of applications. In addition, a built in system of fault logic can easily interface with a host of optional sensors.

PRINCIPLE OF FUNCTION

- The Q120 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 Q120 labeler can be supplied either as a stand alone head (head on a stand) or integrated into a complete conveying/product handling system.

  - 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 labeling head uses a DC step motor to dispense the label. The label dispensing cycle begins when a product is sensed by the product sensor. This signal engages the drive motor which advances the unwind, and dispenses a label. As the label is dispensed, a slot sensor detects the division between the labels and disengages the motor. The DC step motor uses an internal braking action which holds the motor in a locked position preventing web movement between application cycles. All delays, sequencing and indexing are controlled by the PLC.

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 Key" is provided for manual set-up of label dispensing. When it is depressed a single label dispense cycle is initiated.

- The label dispensing cycle is described in the following manner:

    1. The labeling cycle is initiated by the detection of a product by the product detect sensor. This triggers the start of the PRODUCT DELAY cycle which is indicated by the PRODUCT DETECT control panel LED.
    2. Label position time is initiated. The duration of the delay is set by the PRODUCT DELAY preset.
    3. At the end of this preset delay period, the label dispensing motor is energized. Label dispensing "starts."
    4. The label division (space between labels) passes through the label sensor gap and initiates the LABEL DELAY time-out. (Also considered label FLAG) As the label division is sensed by the label sensor, the red front panel LABEL DETECT LED will indicate the LABEL DELAY time-out.
    5. Label stop (flag) time is initiated.
    6. At the end of a preset time period, the label dispensing motor is de-energized and the label feed stops.
    7. If the optional imprinter is installed, the imprint cycle commences. At the completion of this cycle, the system is reset.

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

DRAWING NO.: **None Applicable**

GENERAL FUNCTION:

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

SET UP AND ADJUSTMENTS:

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

MAINTENANCE:

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

TROUBLESHOOTING:

PROBLEM	WHAT TO DO
- Web break	- Lower spring tension on dancer arm
- Too much web slack	- Increase sprint tension
- Dancer arm hits supply flange	- Correct dancer arm final position by loosening the brake cam.

ASSEMBLY TITLE: **Q120 LABELING HEAD - BRAKE BRUSH ASSEMBLY**

GENERAL FUNCTION:

- The brake brush establishes web tension and controls backlash

SET UP AND ADJUSTMENTS:

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

MAINTENANCE:

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

TROUBLESHOOTING:

PROBLEM	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

ASSEMBLY TITLE: **Q120 LABELING HEAD - THREADING**

GENERAL FUNCTION:

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

SET UP AND ADJUSTMENTS:

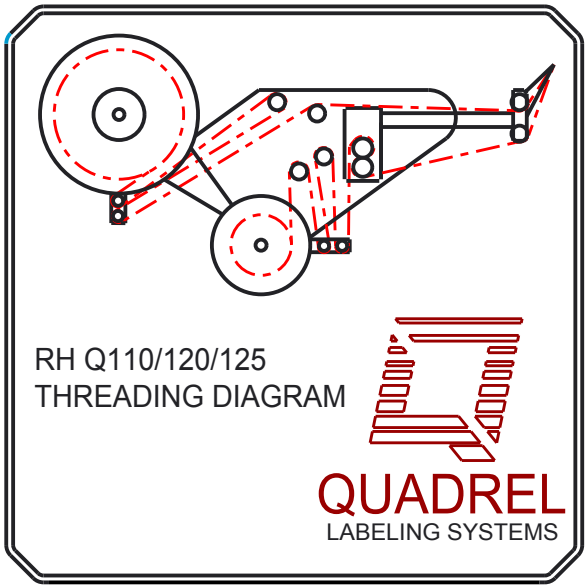
- Load label spool onto unwind hub. Secure unwind retainer onto hub and lock. Pull 3-4 feet of web from unwind and strip labels free of web.
- Unlock the drive roller locking handle.
- Using the threading diagram located on the labeling head, feed the web through the labeling head. Start at the unwind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

MAINTENANCE:

- None this section.

TROUBLESHOOTING:

PROBLEM	WHAT TO DO
- Web break	- Check web path and insure web routed correctly. - Debris causing web tear and break. Clear as needed.
- No Web Tension	- Check web path through unwind and dancer assembly. - Check drive roller lock position.



NOTES:

1) LABEL MATERIAL IS .003" ALUMINUM FOIL W/PERMANENT PRESSURE SENSITIVE ADHESIVE.

2) ALL LETTERING IS .125" HIGH EUROSTYLE 2, BOLD EXTENDED 2.

3) USE QUADREL STANDARD LOGO.

4) ALL LINES AND LETTERS ARE BLACK ON A SILVER BACKGROUND QUADREL AND (WEB PATH) ARE RED #(199c) LINES ARE DASHED LINES.

5) LABEL SIZE 3.0" X 3.0".

REV	DATE	DESCRIPTION
A	5-8-19	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 .010/.030

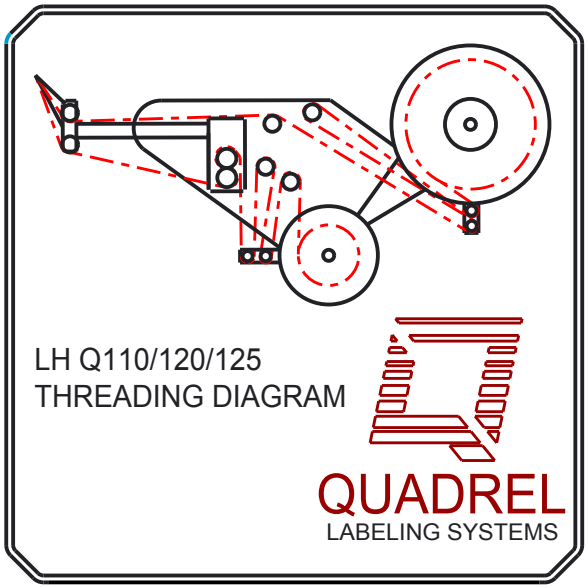
QUADREL LABELING SYSTEMS
7670 JENTHER DRIVE
MENTOR, OHIO 44060
(440) 602-4700

SCALE:	DRAWING SCALE
DATE:	5-8-19
DRW BY:	TJS
CHK BY:	
APPR BY:	

Q110/120/125 R.H. THREADING DIAGRAM

MAT'L
SEE NOTES

A26222-110RH



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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:	DRAWING SCALE
DATE:	5-8-19
DRW BY:	TJS
CHK BY:	
APPR BY:	

Q110/120/125 L.H. THREADING DIAGRAM

MAT'L
SEE NOTES

A26222-110LH

ASSEMBLY TITLE: **Q120 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

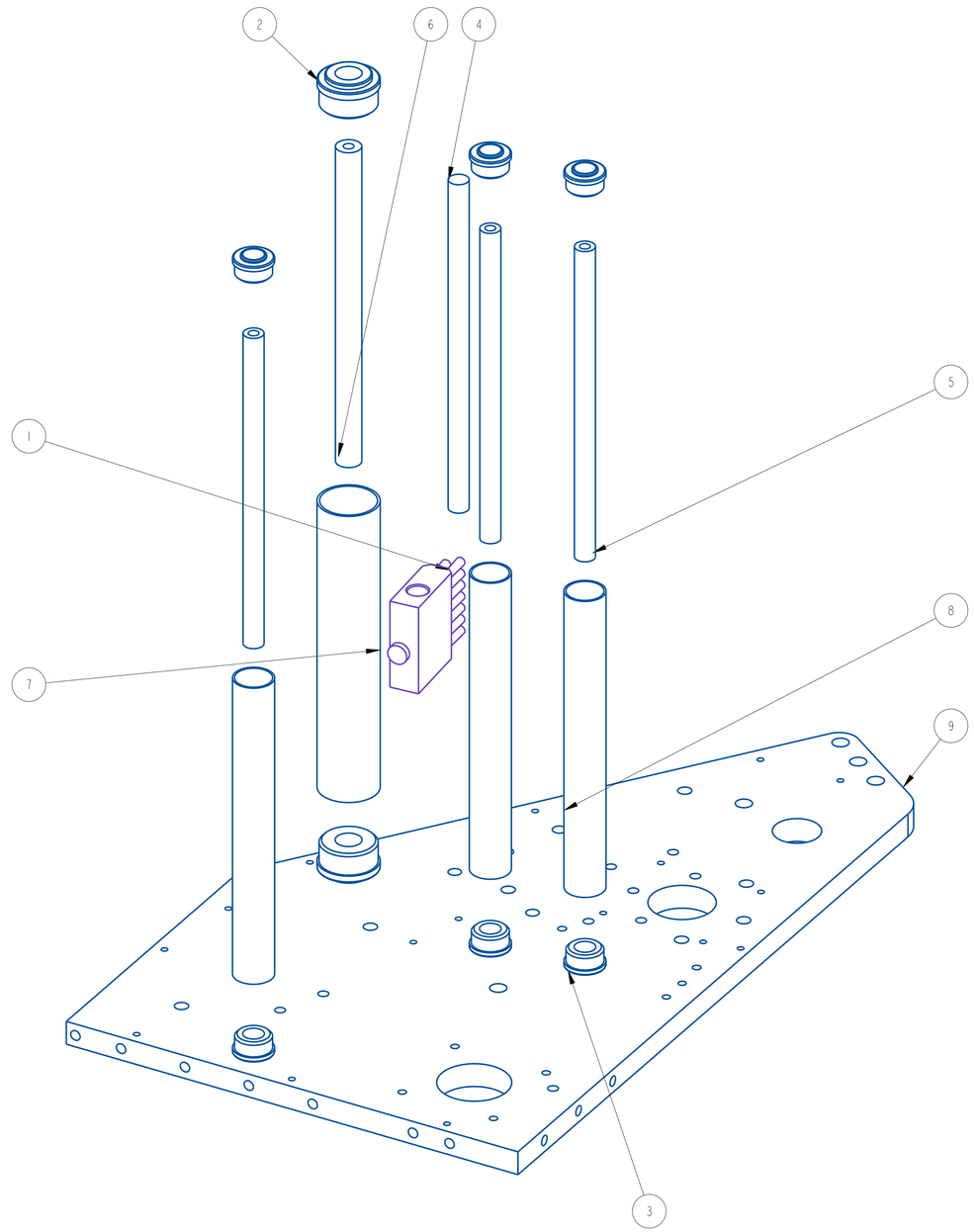
MAINTENANCE:

- None

TROUBLESHOOTING:

- None

ITEM	QTY	PART NO.	DESCRIPTION	PARENT ITEM
1	1	00669-01	BRAKE BRUSH 2 x 7 nylon	23100SPC-007RH
2	2	181062-000	BEARING, ROLL END	23100SPC-007RH
3	6	181063-000	BEARING, ROLL END	23100SPC-007RH
4	1	A20654-003	ADJ. ROD	23100SPC-007RH
5	3	A20928-001	ROLLER SHAFT	23100SPC-007RH
6	1	A21618-001	IDLER SHAFT	23100SPC-007RH
7	1	A22291-006	ROLLER	23100SPC-007RH
8	3	B20071-002	IDLER ROLLER (DANCER)	23100SPC-007RH
9	1	D22800-Q105C	Q105C SIDE PLATE	23100SPC-007RH



REV	DATE	DESCRIPTION	BY
A	Sep-26-25	NEW DRAWING	RDL

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

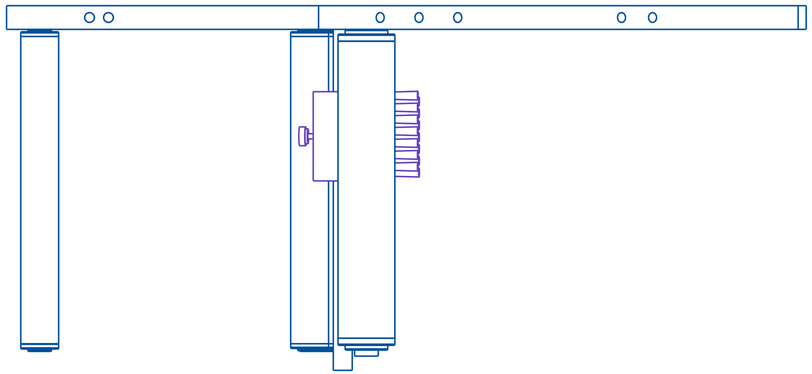
QUADREL LABELING SYSTEMS
7670 JENTHER DRIVE
MENTOR, OHIO 44060
(440) 602-4700

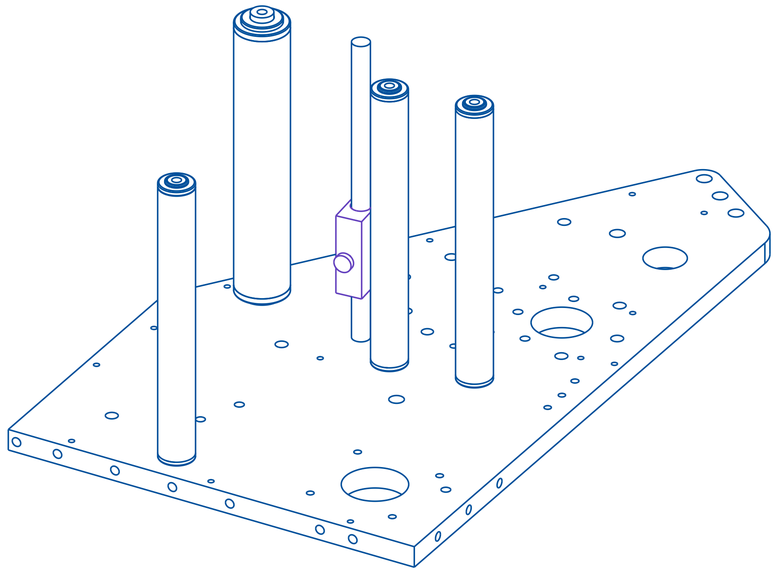
SCALE: 9/16
DATE: Sep-26-25
DRW BY: RDL
CHK BY:
APPR BY:

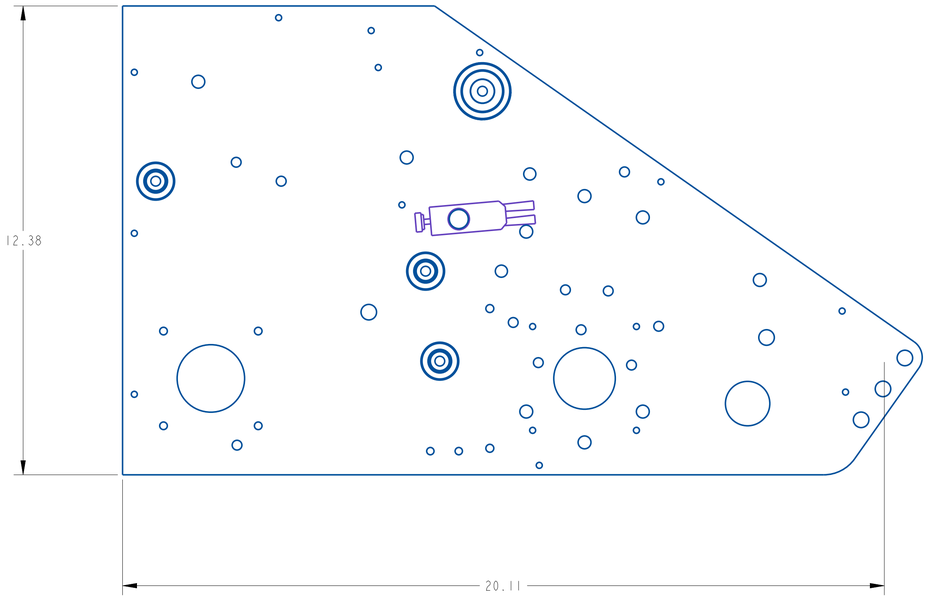
SIDE PLATE ASSEMBLY, COMPACT

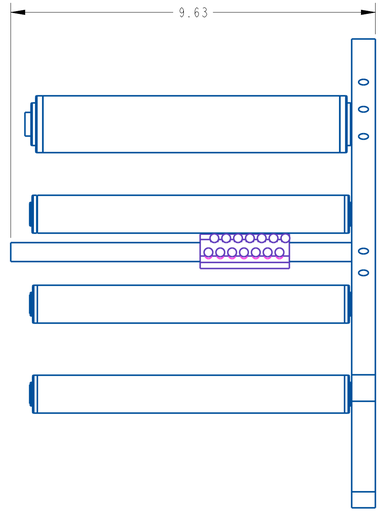
MAT'L

23100SPC-007RH









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.XX ± .01
.XXX ± .005
ANGLES ± 30'

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

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

SCALE:	1/2
DATE:	Sep-26-25
DRW BY:	RDL
CHK BY:	
APPR BY:	

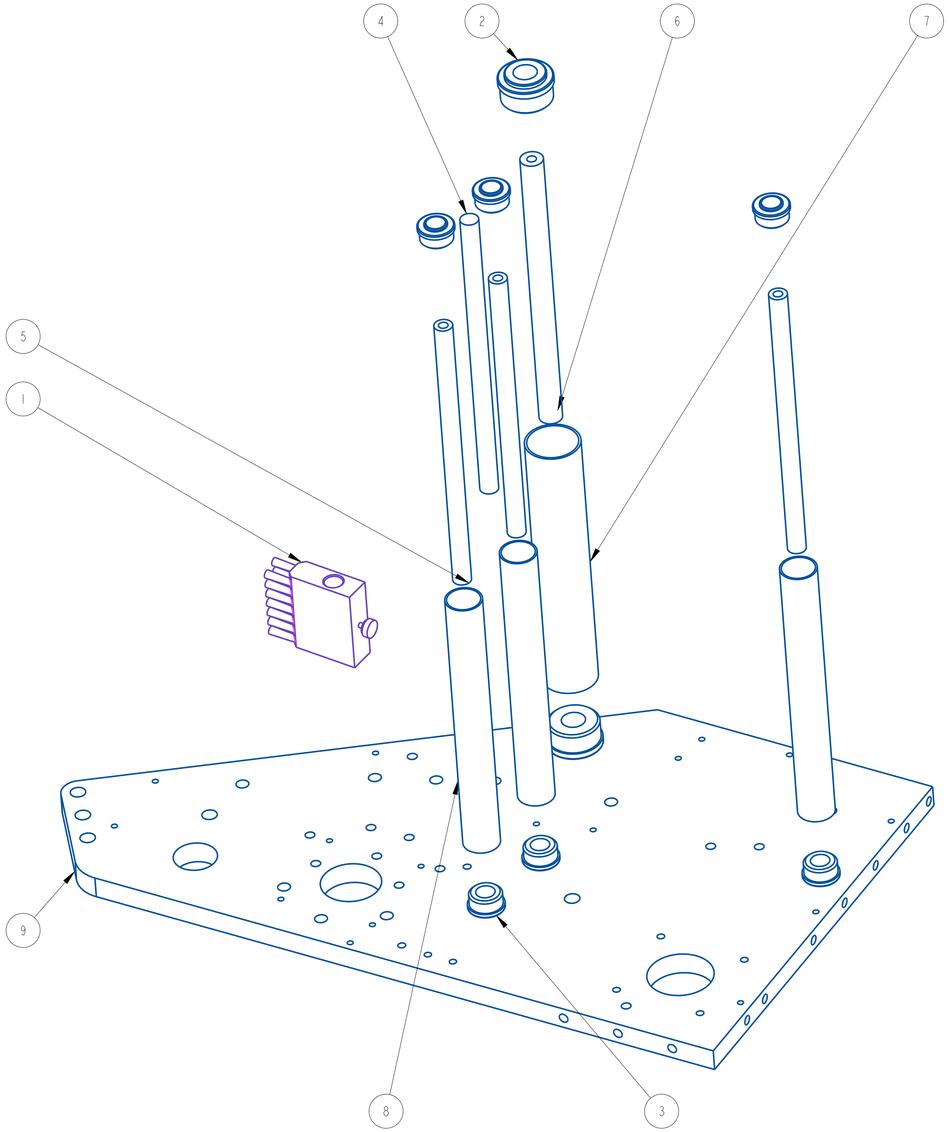
SIDE PLATE ASSEMBLY, COMPACT

MAT'L

23100SPC-007RH

SHEET 2 OF 2

ITEM	QTY	PART NO.	DESCRIPTION	PARENT ITEM
1	1	00669-01	BRAKE BRUSH 2 x 7 nylon	23100SPC-007LH
2	2	181062-000	BEARING, ROLL END	23100SPC-007LH
3	6	181063-000	BEARING, ROLL END	23100SPC-007LH
4	1	A20654-003	ADJ. ROD	23100SPC-007LH
5	3	A20928-001	ROLLER SHAFT	23100SPC-007LH
6	1	A21618-001	IDLER SHAFT	23100SPC-007LH
7	1	A22291-006	ROLLER	23100SPC-007LH
8	3	B20071-002	IDLER ROLLER (DANCER)	23100SPC-007LH
9	1	D22800-Q105C	Q105C SIDE PLATE	23100SPC-007LH



REV	DATE	DESCRIPTION	BY
A	Sep-16-25	NEW DRAWING	RDL

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DIMENSIONAL TOLERANCE
X ± .1
XX ± .01
XXX ± .005
ANGLES ± 30'
SURFACE FINISH 125
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ALL ANGLES ARE 90°

QUADREL LABELING SYSTEMS
7670 JENTHER DRIVE
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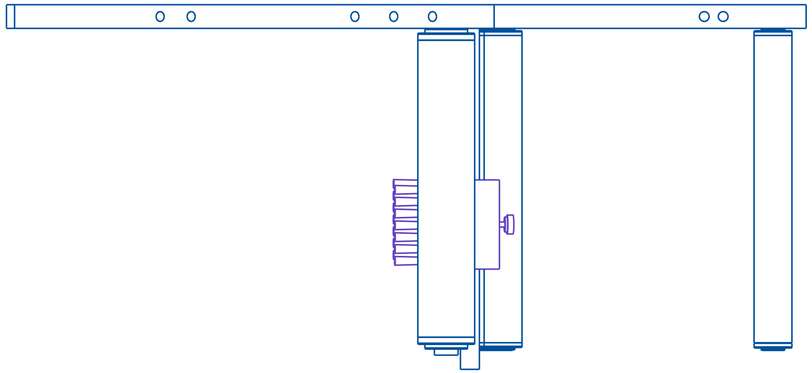
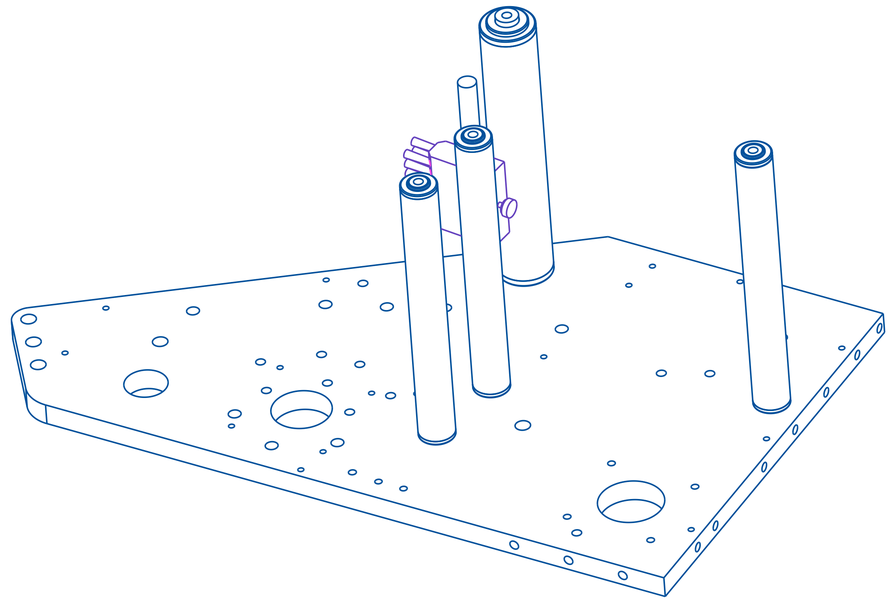
SCALE: 1/2
DATE: Sep-16-25
DRW BY: RDL
CHK BY:
APPR BY:

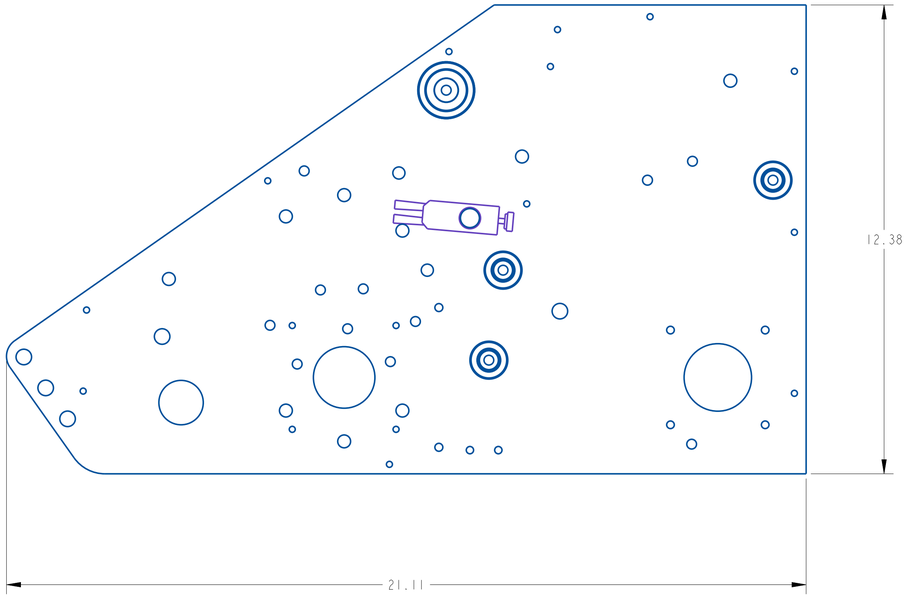
SIDE PLATE ASSEMBLY, COMPACT

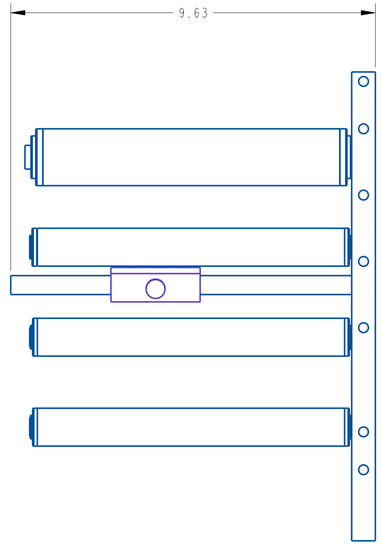
MAT'L

23100SPC-007LH









REV	DATE	DESCRIPTION	BY
A	Sep-16-25	NEW DRAWING	RDL

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

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

SCALE:	1/2
DATE:	Sep-16-25
DRW BY:	RDL
CHK BY:	
APPR BY:	

SIDE PLATE ASSEMBLY, COMPACT

MAT'L

23100SPC-007LH

ASSEMBLY TITLE: **Q120 UNWIND ASSEMBLY**

GENERAL FUNCTION:

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

SET UP AND ADJUSTMENTS:

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

DANCER TENSION ADJUSTMENT LOCATION:

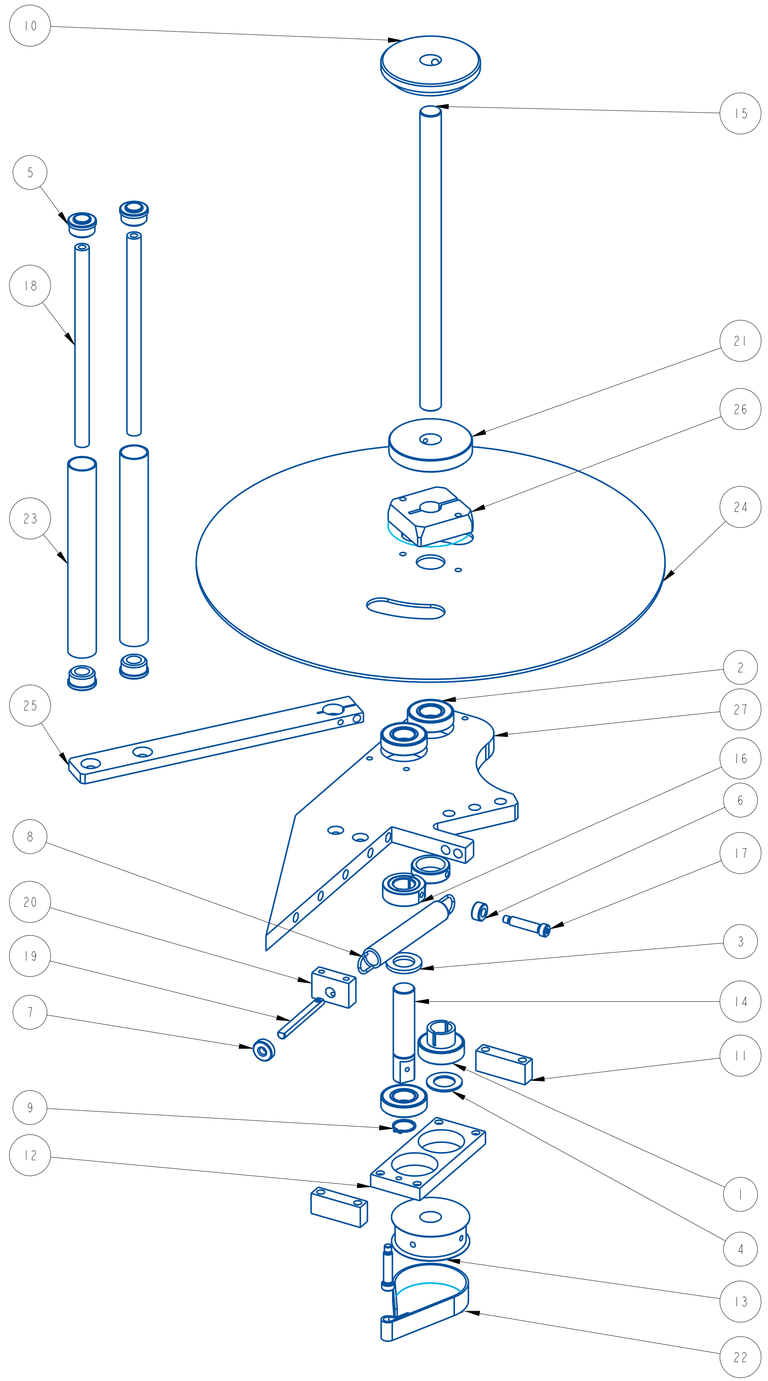
- **The unwind tension adjustment is located on the middle underside of the Q120 head. Use the knurled ring to adjust the dancer tension.**

MAINTENANCE:

- Clean all the parts that may acquire glue residue

TROUBLESHOOTING:

PROBLEM	**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	PARENT ITEM
1	1	111044-000	BEARING, 3/4 ID CLAMP TYPE	23100U-007RH
2	3	111074-000	BEARING, BALL	23100U-007RH
3	1	151001-000	BEARING, THRUST WASHER	23100U-007RH
4	1	151006-000	BEARING, THRUST WASHER	23100U-007RH
5	4	181063-000	BEARING, ROLL END	23100U-007RH
6	1	361165-000	COLLAR, SETSCREW, 5/16" BORE	23100U-007RH
7	1	801601-000	CHECK NUT	23100U-007RH
8	1	811216-000	EXTENSION SPRING, STAINLESS	23100U-007RH
9	1	871025-000	EXTERNAL SNAP RING	23100U-007RH
10	1	A20583-000	QUICK LOCK COLLAR REWORK	23100U-007RH
11	2	A20585-000	SUPPORT SPACER	23100U-007RH
12	1	A20590-000	BEARING PLATE	23100U-007RH
13	1	A20591-000	UNWIND BRAKE DRUM	23100U-007RH
14	1	A20592-200	UNWIND DANCER SHAFT	23100U-007RH
15	1	A20593-001	UNWIND SHAFT	23100U-007RH
16	1	A20595-000	DANCER COLLAR	23100U-007RH
17	2	A20596-000	DANCER BOLT	23100U-007RH
18	2	A20928-002	ROLLER SHAFT	23100U-007RH
19	1	A23131-000	STUD	23100U-007RH
20	1	A23298-000	BLOCK, SPRING TENSION	23100U-007RH
21	1	A23406-000	SUPPLY REEL CENTER HUB	23100U-007RH
22	1	A25825-000_22620	BRAKE BAND	23100U-007RH
23	2	B20071-003	IDLER ROLLER (DANCER)	23100U-007RH
24	1	B20980-001	UNWIND FLANGE	23100U-007RH
25	1	B21113-000	DANCER ARM, 16" UNWIND	23100U-007RH
26	1	B21931-001	CORE HUB	23100U-007RH
27	1	C21236-120	UNWIND SUPPORT PLATE	23100U-007RH

REV	DATE	DESCRIPTION	BY
A	Sep-26-25	NEW DRAWING	RDL

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

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

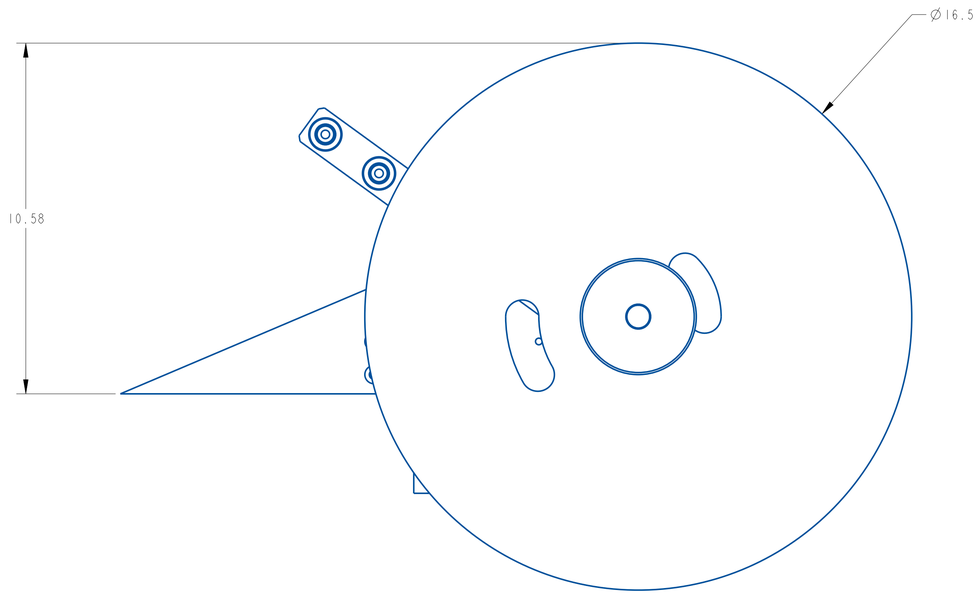
QUADREL LABELING SYSTEMS
7670 JENTHER DRIVE
MENTOR, OHIO 44060
(440) 602-4700

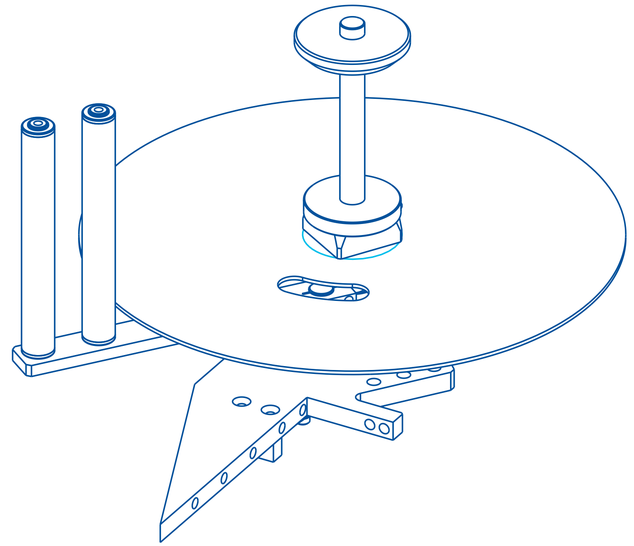
SCALE: 3/8
DATE: Sep-26-25
DRW BY: RDL
CHK BY:
APPR BY:

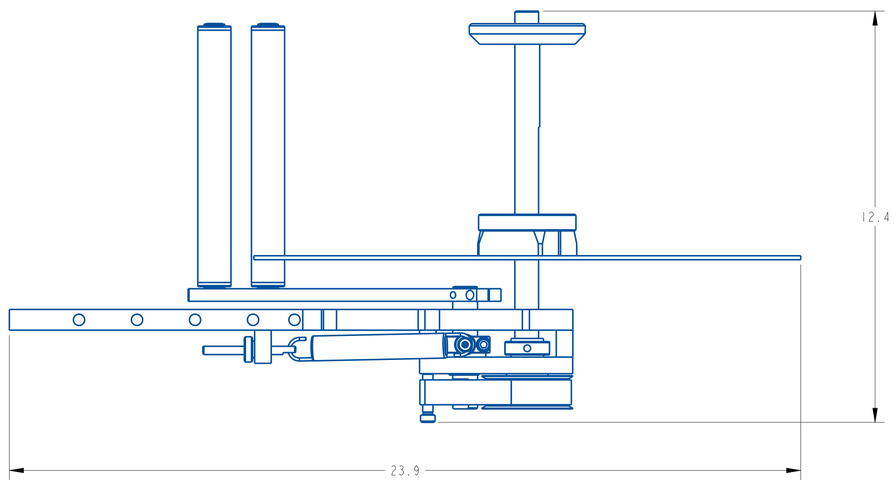
UNWIND ASSEMBLY, 7"

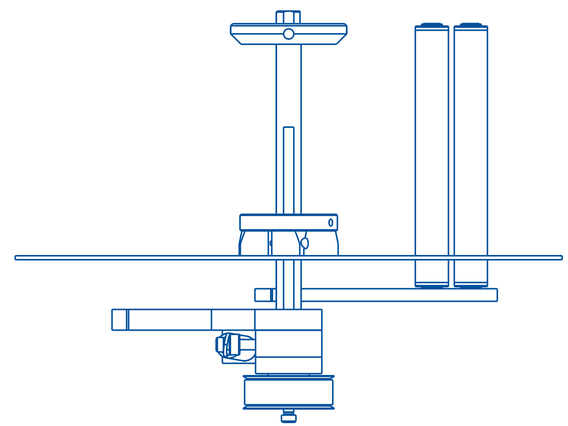
MAT'L

23100U-007RH









REV	DATE	DESCRIPTION	BY
A	Sep-26-25	NEW DRAWING	RDL

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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

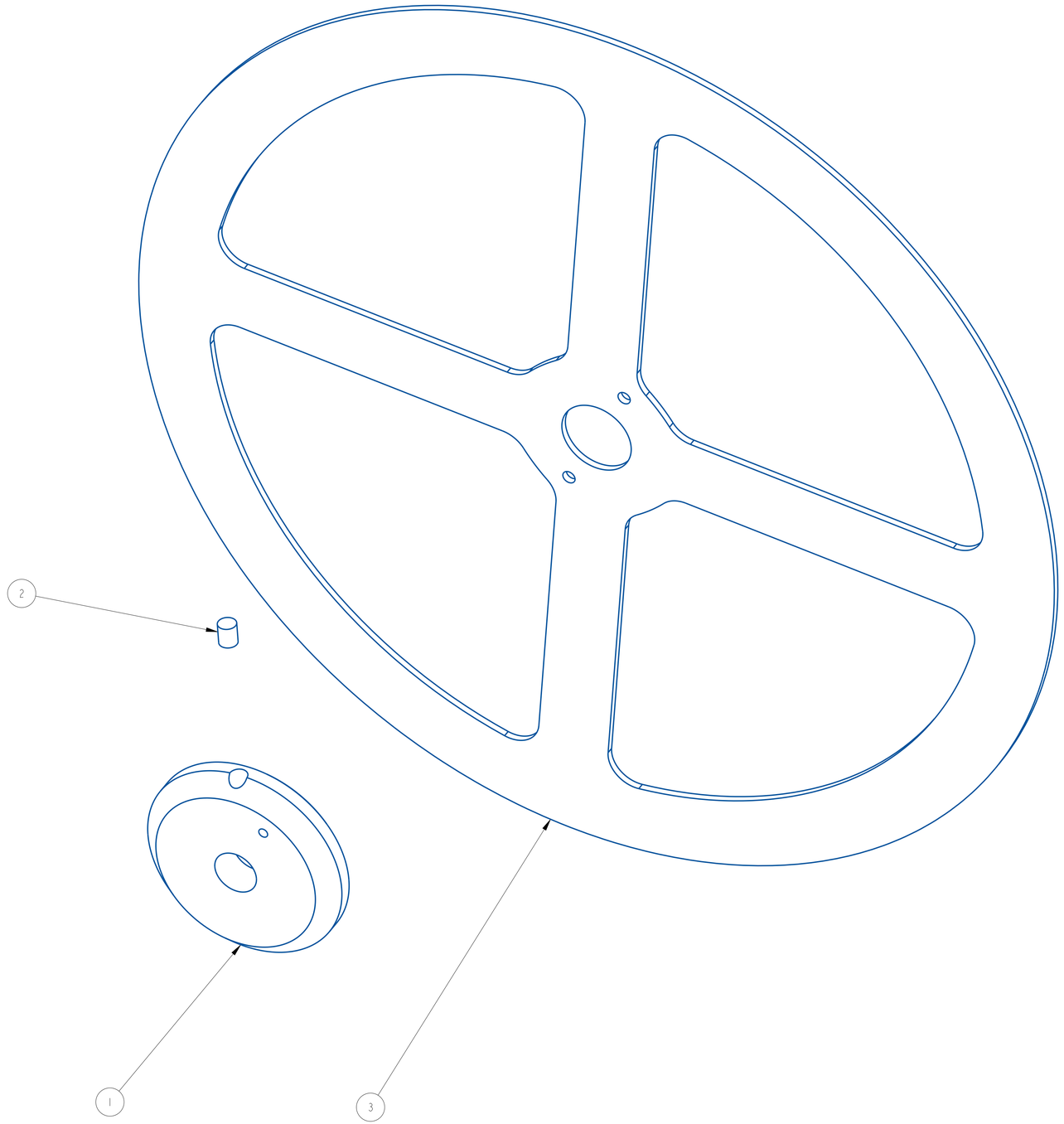
SCALE: 7/16
DATE: Sep-26-25
DRW BY: RDL
CHK BY:
APPR BY:

UNWIND ASSEMBLY, 7"

MAT'L

23100U-007RH

ITEM	QTY	PART NO.	DESCRIPTION	PARENT ITEM
1	1	A20583-005	QUICK LOCK COLLAR	22604-000
⚠A 2	1	A20586-000	WHITE NYLON SLUG	22604-000
3	1	B20980-200	UNWIND FLANGE	22604-000



REV	DATE	DESCRIPTION	BY
B	Feb-28-24	WAS A21775-000	TAZ
A	02/24/24	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°

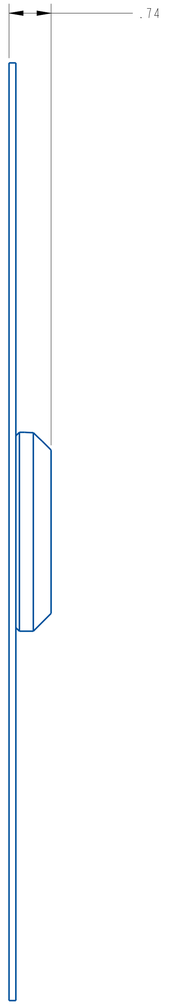
QUADREL LABELING SYSTEMS
7670 JENTHER DRIVE
MENTOR, OHIO 44060
(440) 602-4700

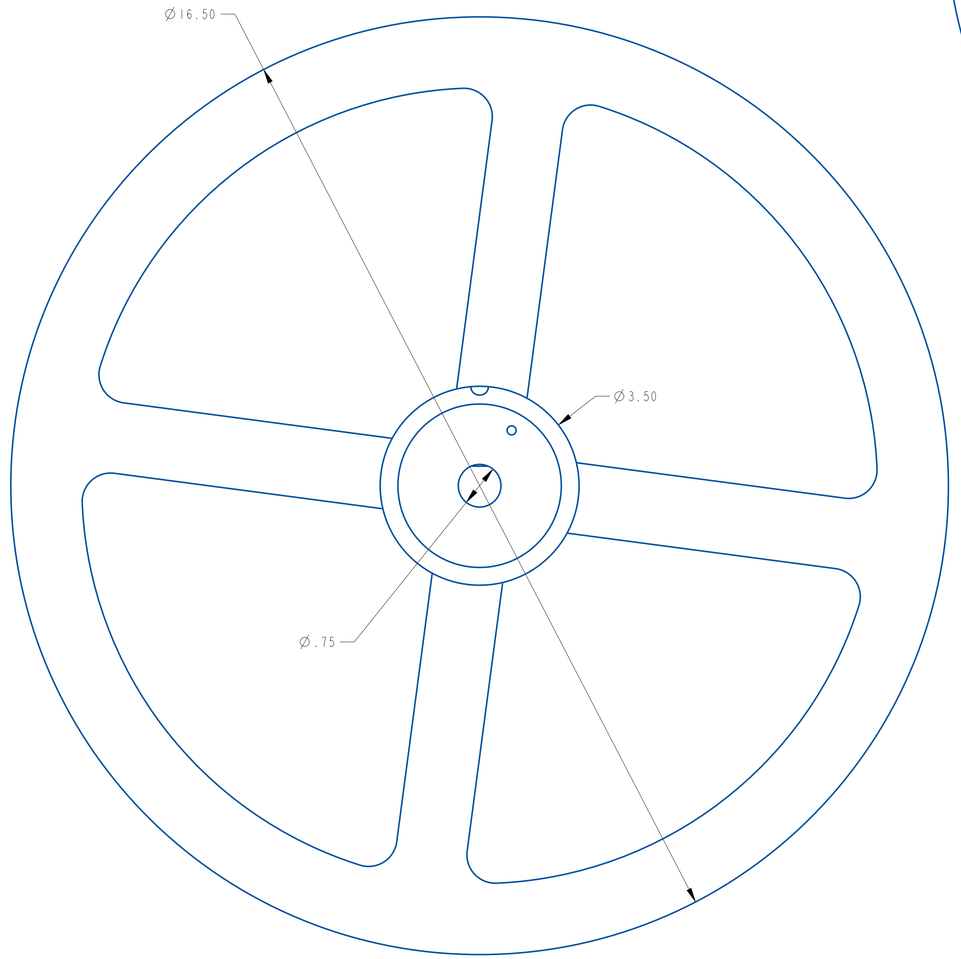
SCALE: 1/1
DATE: 02/24/24
DRW BY: SEM
CHK BY:02/25/2024-SEM
APPR BY:

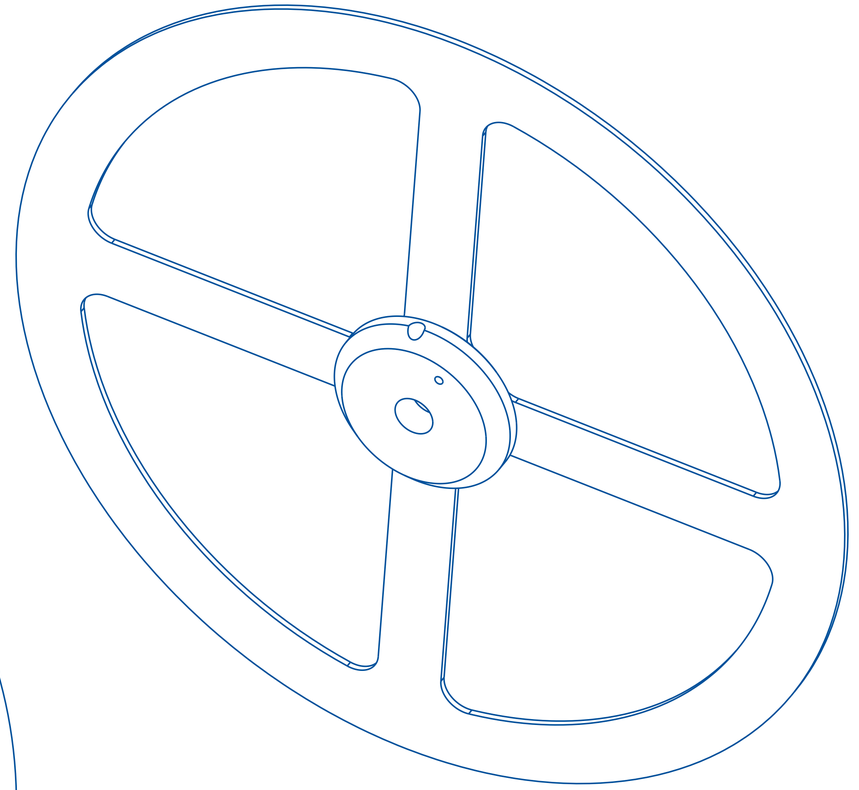
16" OUTSIDE FLANGE KIT 3/4" BORE

MAT'L

22604-000







REV	DATE	DESCRIPTION	BY
B	Feb-28-24	WAS A21775-000	TAZ
A	02/24/24	NEW DRAWING	SEM

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

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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: 3/4
DATE: 02/24/24
DRW BY: SEM
CHK BY:02/25/2024-SEM
APPR BY:

16" OUTSIDE FLANGE KIT 3/4" BORE

MAT'L

22604-000

ASSEMBLY TITLE: **Q120 PEEL PLATE ASSEMBLY**

GENERAL FUNCTION:

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

SET UP AND ADJUSTMENTS:

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

MAINTENANCE:

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

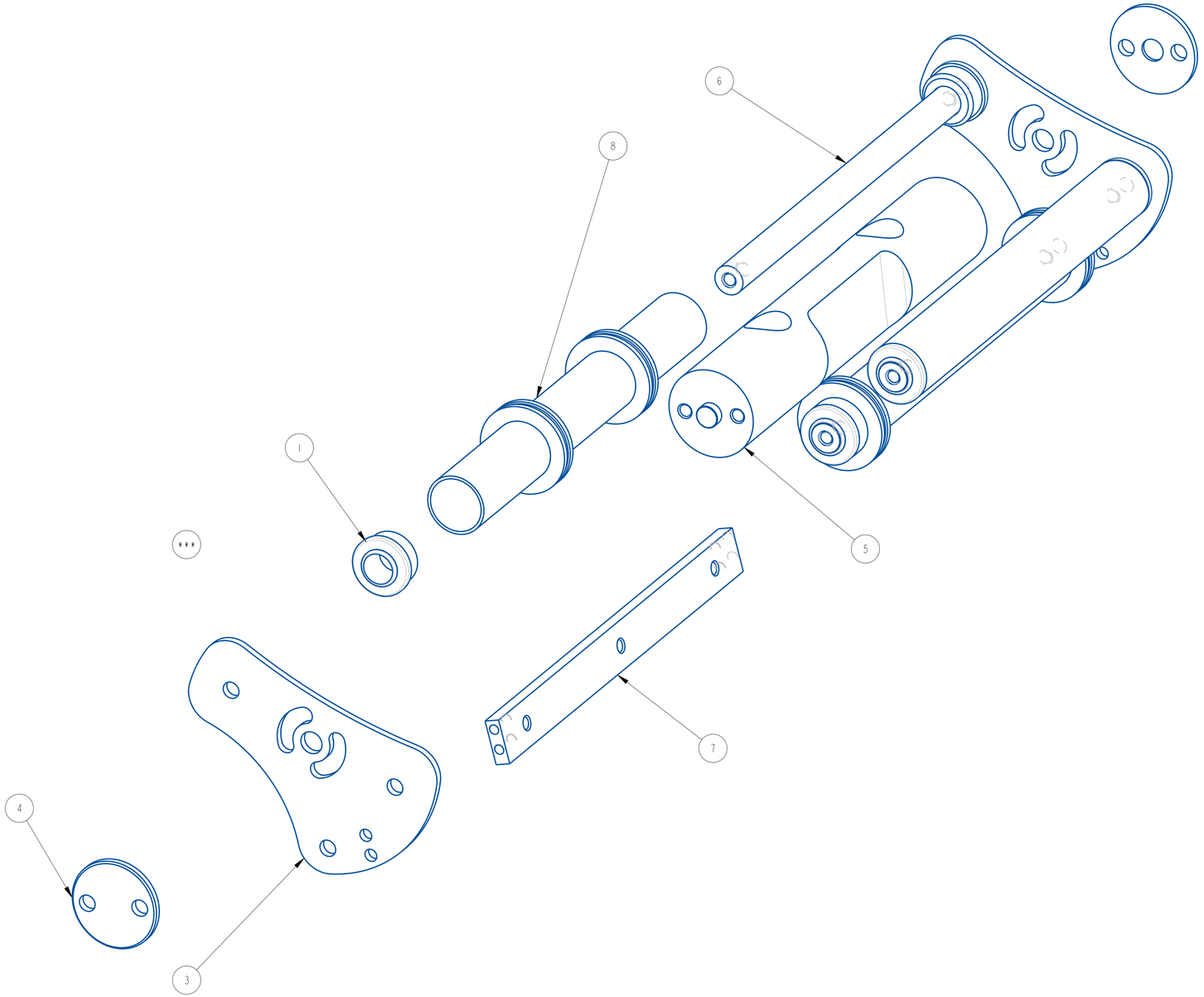
TROUBLESHOOTING:

PROBLEM	WHAT TO DO
- Too much label flag at peel plate	- Move slot sensor away from peel edge
- Too little label flag at peel	- Move slot sensor towards peel plate edge
- Web moving up and down peel plate	- Make sure guide collars are properly positioned on idler roll.

ITEM	QTY	PART NO.	DESCRIPTION	PARENT ITEM
1	6	181063-000	BEARING, ROLL END	21720-000
2	4	361198-000	COLLAR, GUIDE, 1" ID	21720-000
3	2	A22065-000	PEEL PLATE MOUNTING PLATE	21720-000
4	2	A22066-000	WASHER	21720-000
5	1	A22094-001	PEEL PLATE ROD MTG BAR, 7"	21720-000
6	3	A22102-001	P.P. IDLER SHAFT	21720-000
7	1	A23946-001	PEEL PLATE MOUNTING BAR, 7"	21720-000
8	3	B20740-001	IDLER ROLLER-(PEEL PLATE)	21720-000

NOT SHOWN:

B22046-001 PEEL PLATE FOR DIVERTER
B21281-000 PEEL PLATE FULL WIDTH



REV	DATE	DESCRIPTION	BY
B	12-FEB-2024	UPDATE DRAWING AND BOM	CRT
A	02/27/2006	NEW DRAWING	SEM

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

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

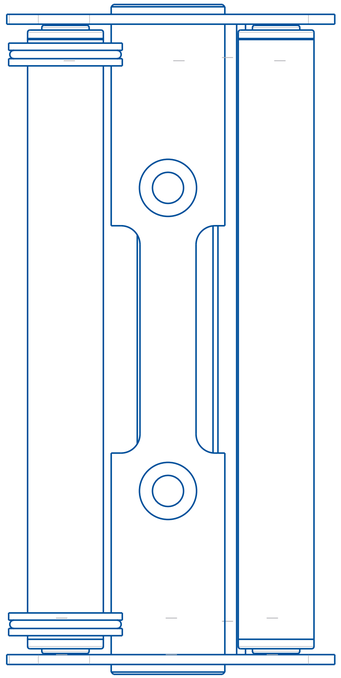
QUADREL LABELING SYSTEMS
7670 JENTHER DRIVE
MENTOR, OHIO 44060
(440) 602-4700

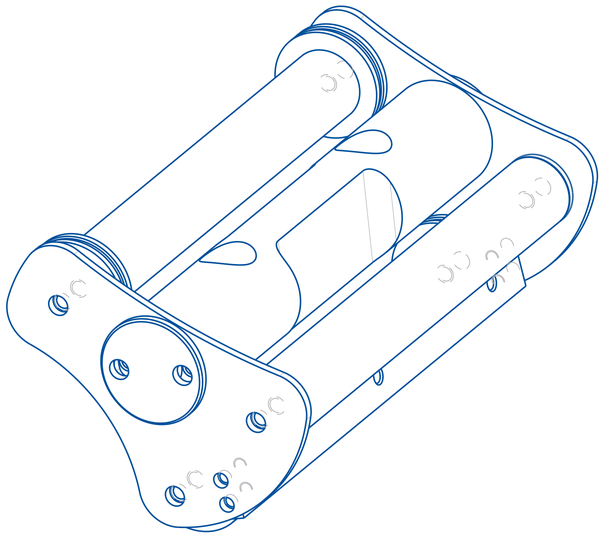
SCALE: 1/1
DATE: 02/27/2006
DRW BY: SEM
CHK BY: 03/05/2024-SEM
APPR BY:

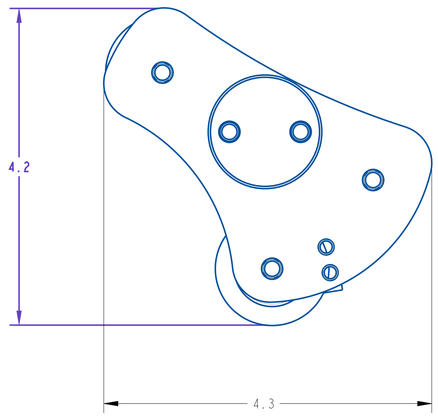
7" PEEL PLATE ASSEMBLY

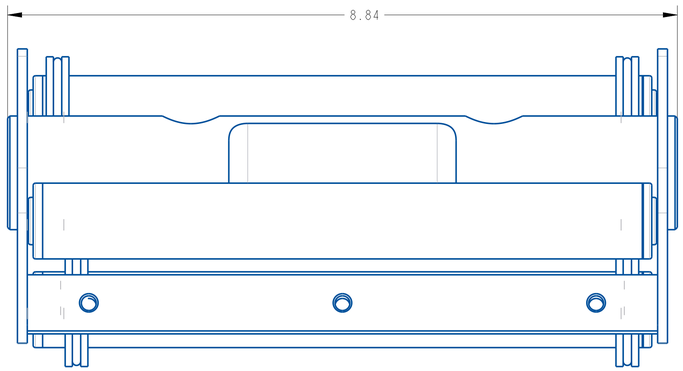
MAT'L BOM 21720-000

21720-000









REV	DATE	DESCRIPTION	BY
B	12-FEB-2024	UPDATE DRAWING AND BOM	CRT
A	02/27/2006	NEW DRAWING	SEM

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

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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: 1/1
DATE: 02/27/2006
DRW BY: SEM
CHK BY: 03/05/2024-SEM
APPR BY:

7" PEEL PLATE ASSEMBLY

MAT'L

BOM 21720-000

21720-000

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!

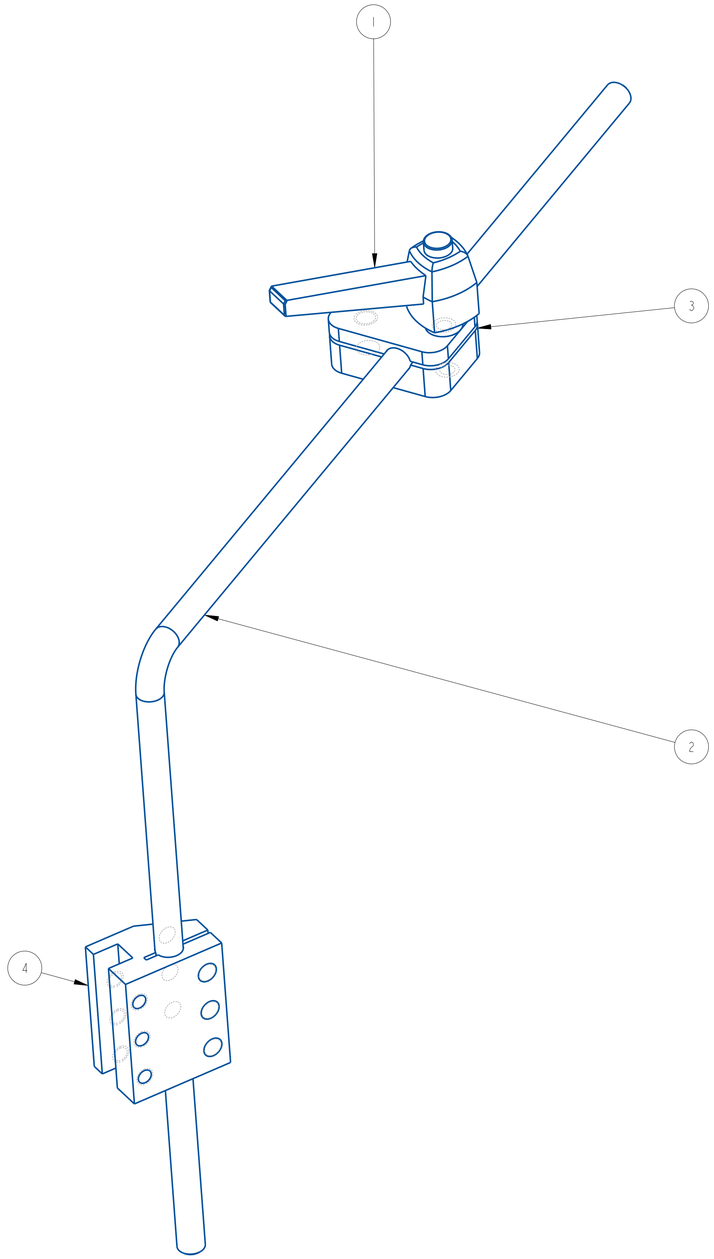
TROUBLESHOOTING:

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	801868-000	CLAMPING LEVER	10228-007
2	1	A21264-018	CROSS ARM	10228-007
3	1	A21693-301	IMPRESSOR MOUNTING BLOCK	10228-007
4	1	A23463-100	BRUSH HOLDER	10228-007

NOT SHOWN:

A28416-020 SQUEEGEE 2"



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

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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

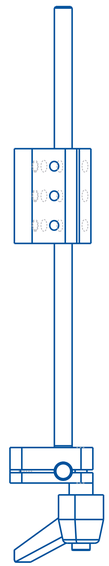
QUADREL LABELING SYSTEMS
7670 JENTHER DRIVE
MENTOR, OHIO 44060
(440) 602-4700

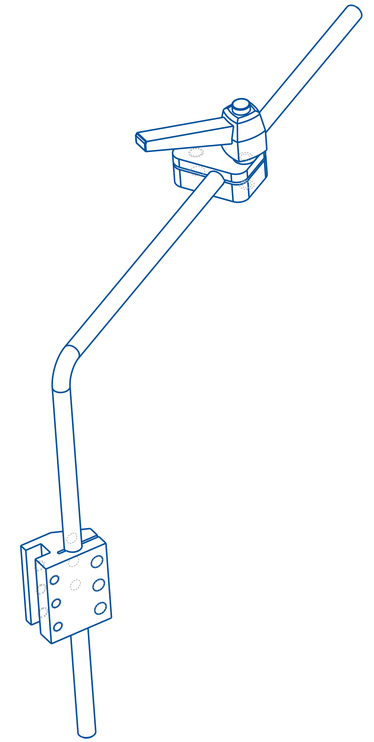
SCALE: 1/1
DATE: 11-13-23
DRW BY: SEM
CHK BY: 02/23/2024-SEM
APPR BY:

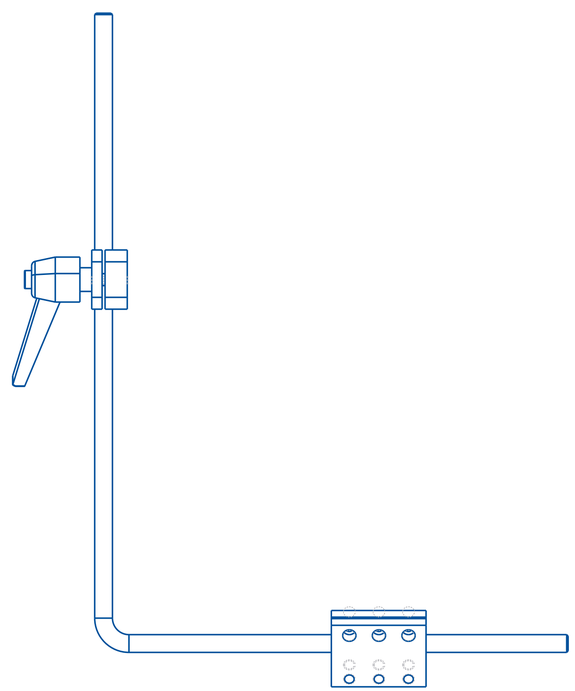
HEAVY DUTY IMPRESSOR MOUNTING

MAT'L

10228-007







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

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DIMENSIONAL TOLERANCE
X ± .1
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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: 11-13-23
DRW BY: SEM
CHK BY:02/23/2024-SEM
APPR BY:

HEAVY DUTY IMPRESSOR MOUNTING

MAT'L

10228-007

ASSEMBLY TITLE: **Q120 DRIVE AND PINCH ROLL ASSEMBLY**

GENERAL FUNCTION:

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

SET UP AND ADJUSTMENTS:

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

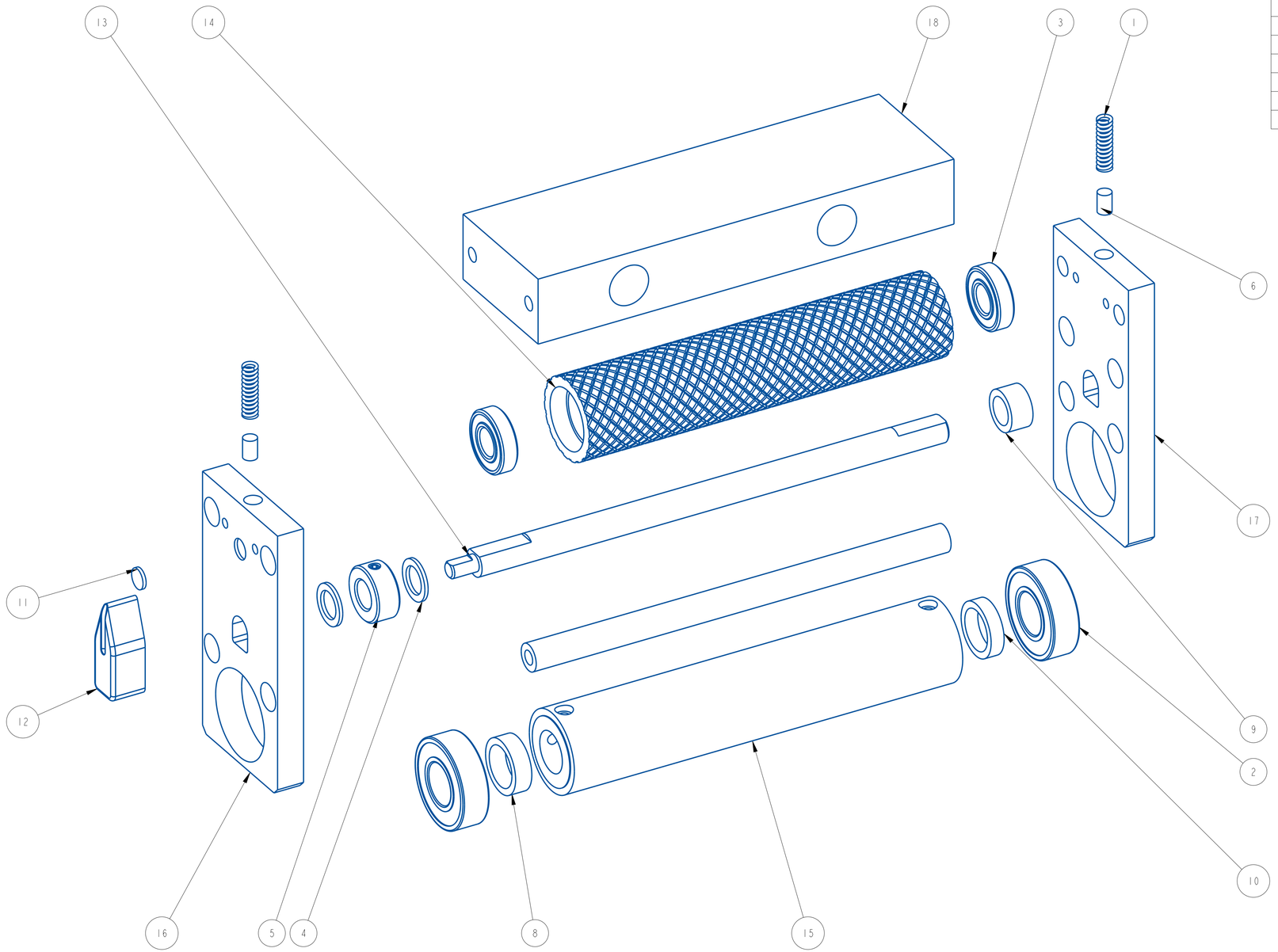
MAINTENANCE:

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

TROUBLESHOOTING:

PROBLEM	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 stepping motor rotates	- Replace timing belt from motor to drive roll
- Pinch roll not providing enough pressure against drive roll	- Replace pinch roll spring - Increase tension on drive roll by adjusting spring loaded locking pins.
- 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	23100DR-007RH
2	2	111052-000	BEARING	23100DR-007RH
3	2	111072-000	BEARING, BALL	23100DR-007RH
4	2	151004-000	BEARING, THRUST WASHER	23100DR-007RH
5	1	362161-000	COLLAR, SETSCREW, 1/2 IN. ID	23100DR-007RH
6	2	A20567-000	WHITE NYLON SLUG	23100DR-007RH
7	1	A21750-000	PINCH POINT GUARD ROD	23100DR-007RH
8	1	A23125-000	SPACER	23100DR-007RH
9	1	A23751-000	SPACER	23100DR-007RH
10	1	A23752-000	SPACER	23100DR-007RH
11	1	A25249-000	INDEX DOT	23100DR-007RH
12	1	A25250-000	IND KNOB	23100DR-007RH
13	1	B20125-001	KNURLED ROLL SHAFT,	23100DR-007RH
14	1	B20126-001	KNURLED ROLL	23100DR-007RH
15	1	B20137-002	PULL ROLL, 7"	23100DR-007RH
16	1	B21614-000	YOKE OUTSIDE PLATE	23100DR-007RH
17	1	B21615-000	YOKE INSIDE PLATE	23100DR-007RH
18	1	B21616-001	YOKE FILLER BAR	23100DR-007RH



REV	DATE	DESCRIPTION	BY
A	10/13/25	NEW DRAWING	RDL

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.XXX ± .005
ANGLES ± 30'
SURFACE FINISH 125
BREAK ALL EDGES .005/.015
CORNER RADIUS .010/.030

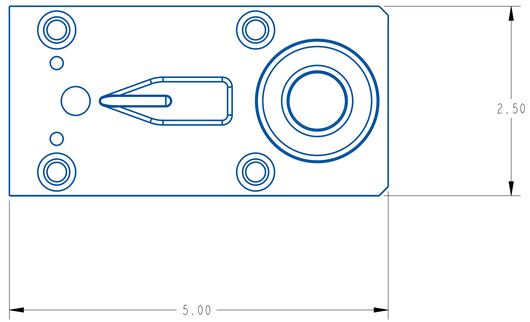
QUADREL LABELING SYSTEMS
7670 JENTHER DRIVE
MENTOR, OHIO 44060
(440) 602-4700

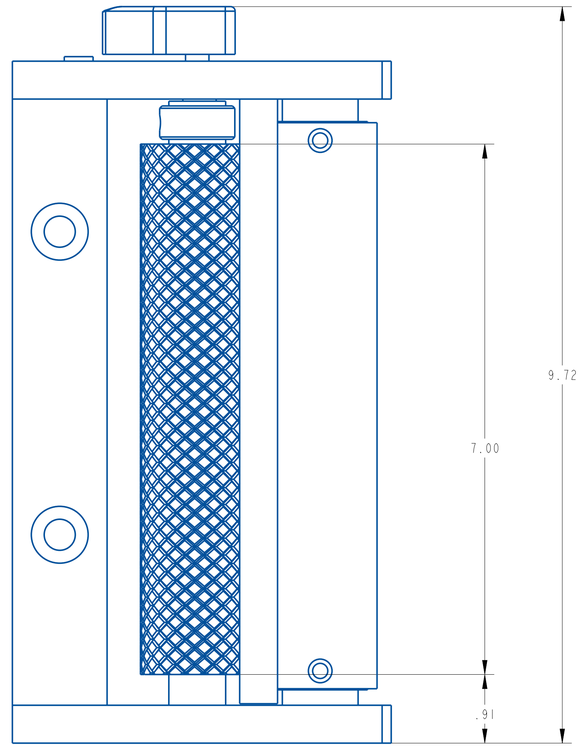
SCALE: 1/1
DATE: 10/13/25
DRW BY: RDL
CHK BY: 10/13/2025-SEM
APPR BY:

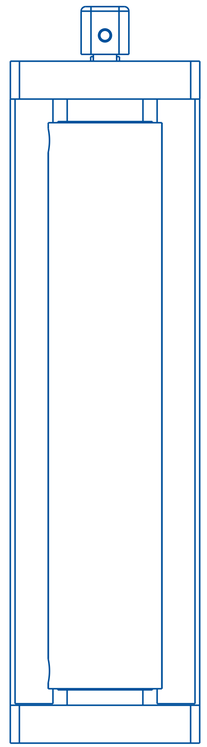
DRIVE ASSEMBLY, 7" LHH

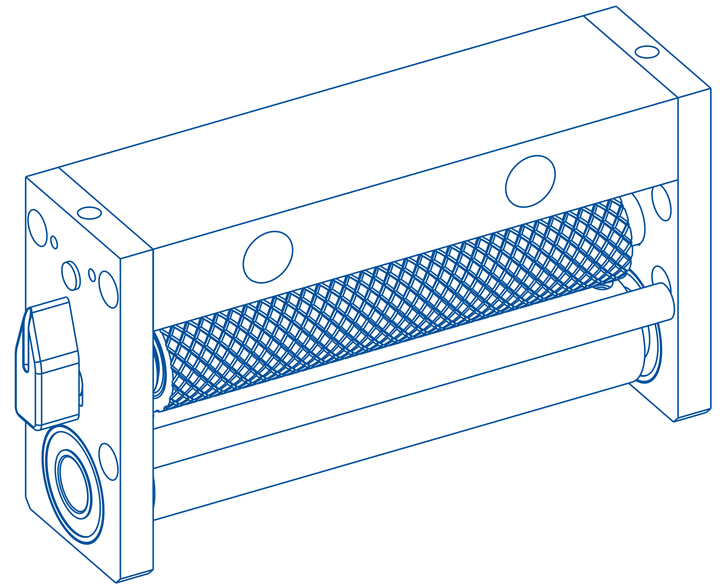
MAT'L

23100DR-007RH









REV	DATE	DESCRIPTION	BY
A	10/05/25	NEW DRAWING	RDL

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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

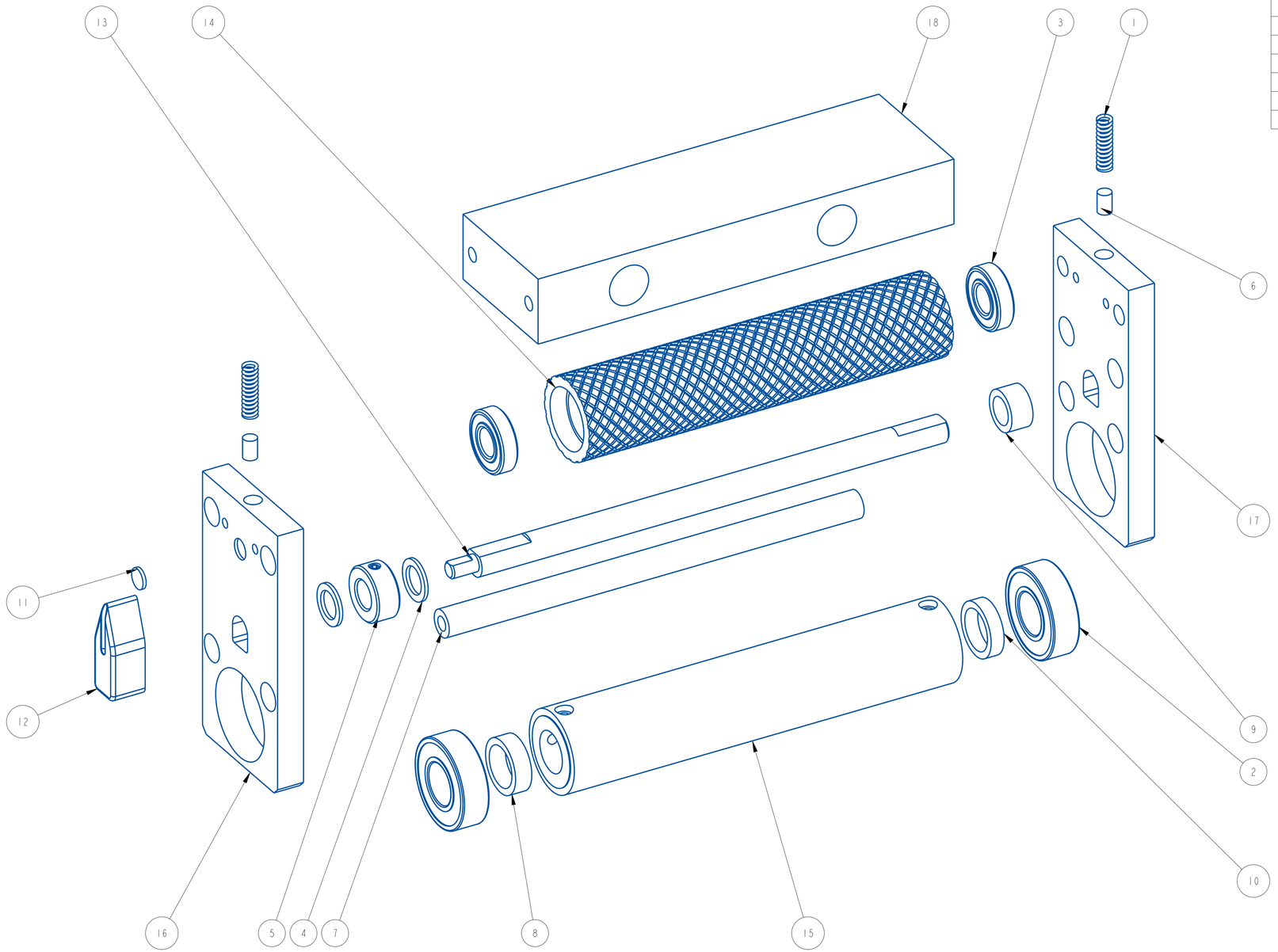
SCALE: 1/1
DATE: 05-OCT-15
DRW BY: RDL
CHK BY: 10/13/2025-SEM
APPR BY:

DRIVE ASSEMBLY, 7" LHH

MAT'L

23100DR-007RH

ITEM	QTY	PART NO.	DESCRIPTION	PARENT ITEM
1	2	00301-17	SPRING, .275 x .052 x .94	23100DR-007LH
2	2	111052-000	BEARING	23100DR-007LH
3	2	111072-000	BEARING, BALL	23100DR-007LH
4	2	151004-000	BEARING, THRUST WASHER	23100DR-007LH
5	1	362161-000	COLLAR, SETSCREW, 1/2 IN. ID	23100DR-007LH
6	2	A20567-000	WHITE NYLON SLUG	23100DR-007LH
7	1	A21750-000	PINCH POINT GUARD ROD	23100DR-007LH
8	1	A23125-000	SPACER	23100DR-007LH
9	1	A23751-000	SPACER	23100DR-007LH
10	1	A23752-000	SPACER	23100DR-007LH
11	1	A25249-000	INDEX DOT	23100DR-007LH
12	1	A25250-000	IND KNOB	23100DR-007LH
13	1	B20125-001	KNURLED ROLL SHAFT,	23100DR-007LH
14	1	B20126-001	KNURLED ROLL	23100DR-007LH
15	1	B20137-002	PULL ROLL, 7"	23100DR-007LH
16	1	B21614-000	YOKE OUTSIDE PLATE	23100DR-007LH
17	1	B21615-000	YOKE INSIDE PLATE	23100DR-007LH
18	1	B21616-001	YOKE FILLER BAR	23100DR-007LH



REV	DATE	DESCRIPTION	BY
A	10/13/25	NEW DRAWING	RDL

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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

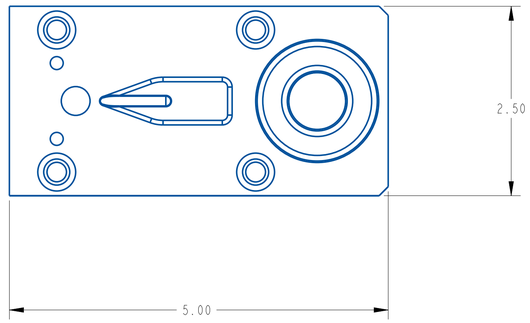
QUADREL LABELING SYSTEMS
7670 JENTHER DRIVE
MENTOR, OHIO 44060
(440) 602-4700

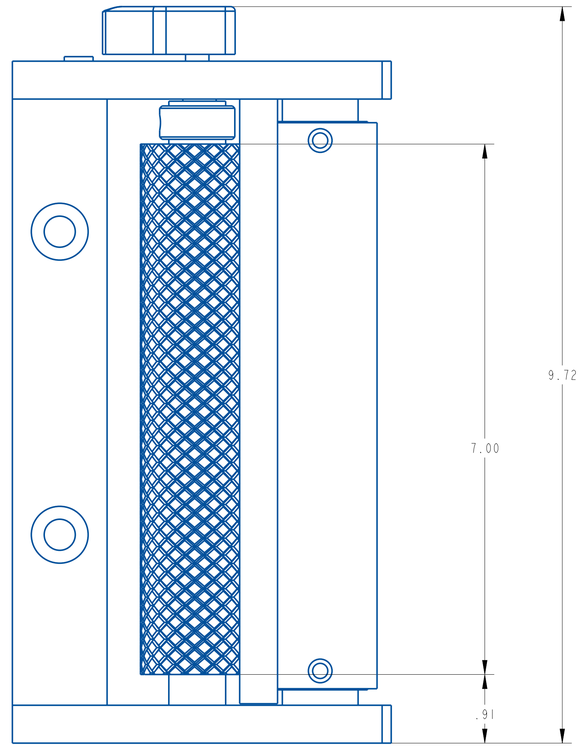
SCALE: 1/1
DATE: 10/13/25
DRW BY: RDL
CHK BY: 10/13/2025-SEM
APPR BY:

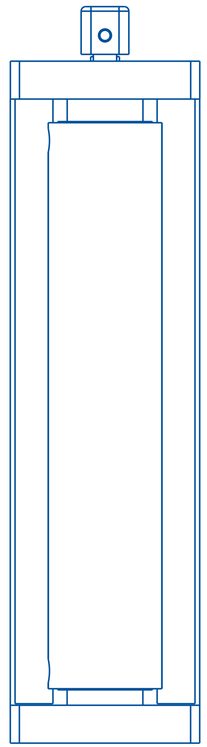
DRIVE ASSEMBLY, 7" LHH

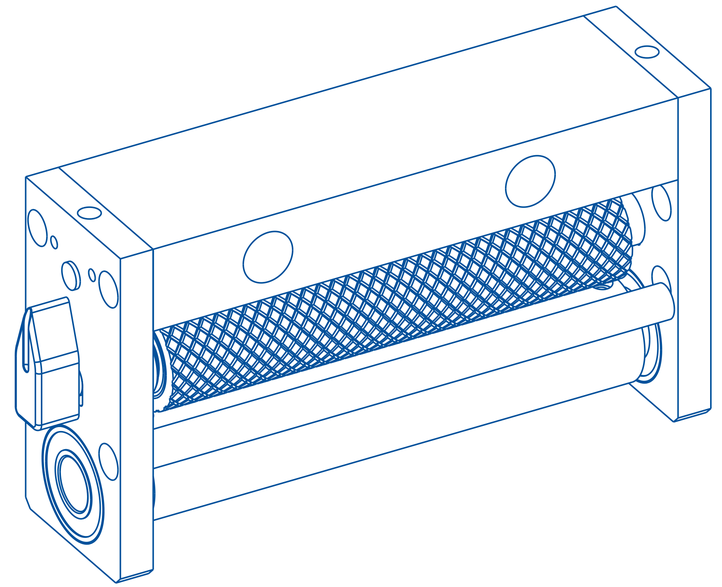
MAT'L

23100DR-007LH









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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

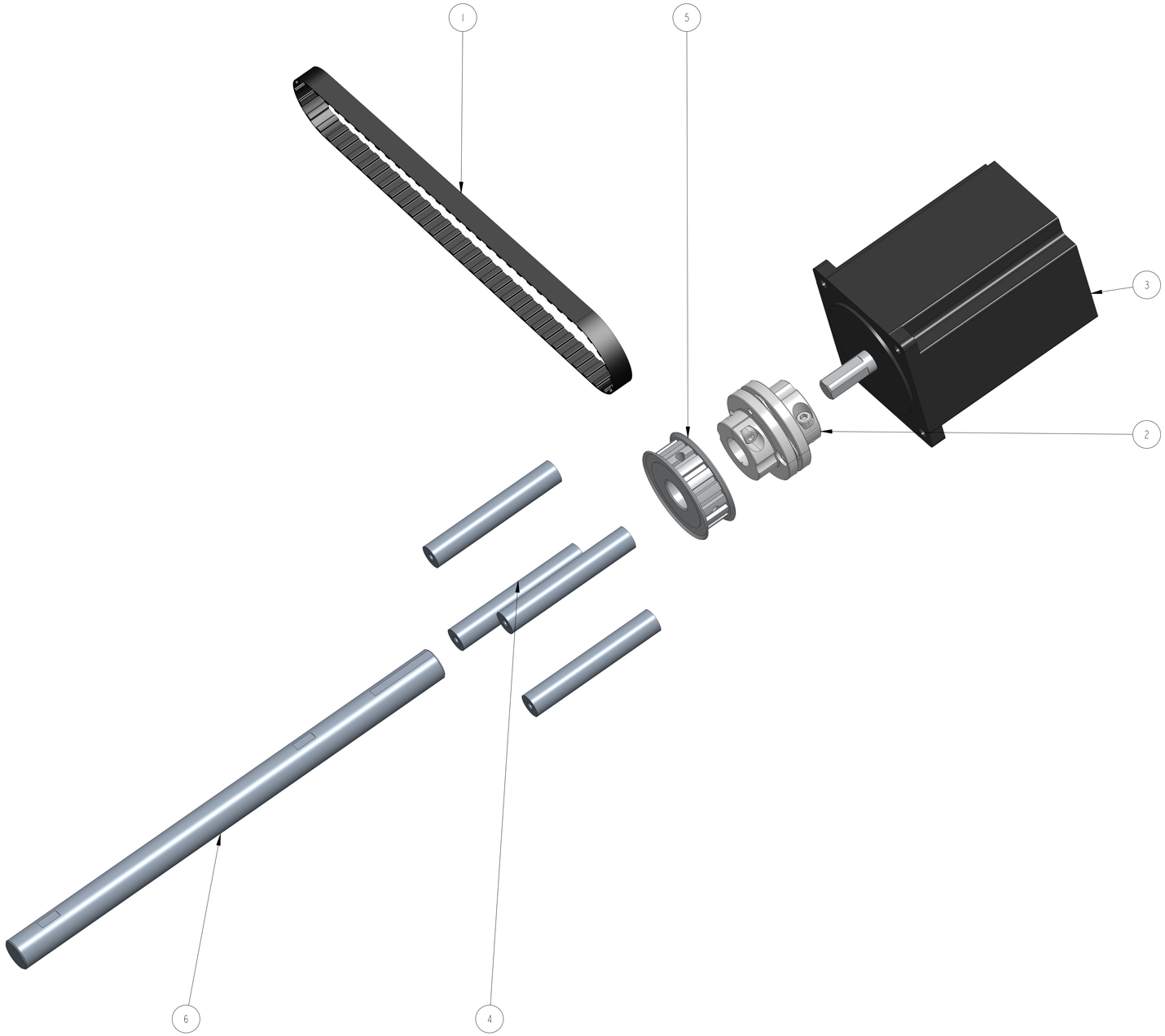
SCALE: 1/1
DATE: 05-OCT-15
DRW BY: RDL
CHK BY: 10/13/2025-SEM
APPR BY:

DRIVE ASSEMBLY, 7" LHH

MAT'L

23100DR-007LH

ITEM	QTY	PART NO.	DESCRIPTION	PARENT ITEM
1	1	191592-000	BELT, TIMING, 1/2P	23120D-007LH
2	1	363157-000	COUPLING	23120D-007LH
3	1	412108-000	MOTOR,STEPPER 2 STACK,HITORQ	23120D-007LH
4	4	A20568-005	DRIVE MOTOR RISER	23120D-007LH
5	1	A21421-000	DRIVE PULLEY (MODIFIED)	23120D-007LH
6	1	C20097-011	PULL ROLL DRIVE SHAFT	23120D-007LH



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A	Oct-16-25	NEW DRAWING	RDL

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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
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SCALE:	3/4
DATE:	Oct-16-25
DRW BY:	RDL
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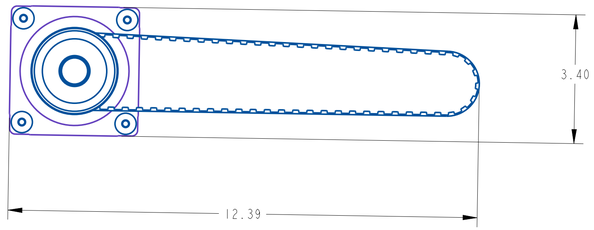
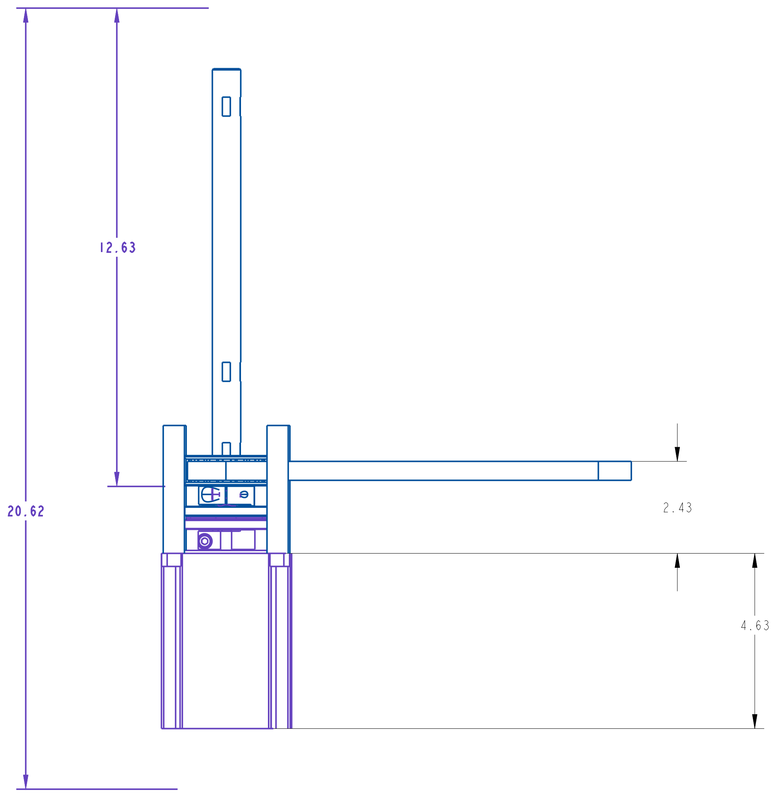
APPR BY:	

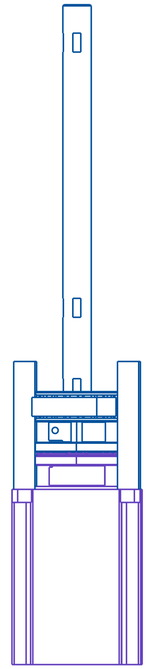
STEPPER DRIVE ASSEMBLY

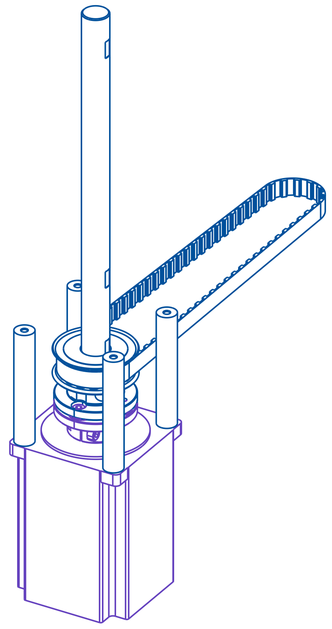
MAT'L

23120D-007LH









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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:	1/2
DATE:	Oct-06-25
DRW BY:	RDL
CHK BY:	
APPR BY:	

STEPPER DRIVE ASSEMBLY

MAT'L

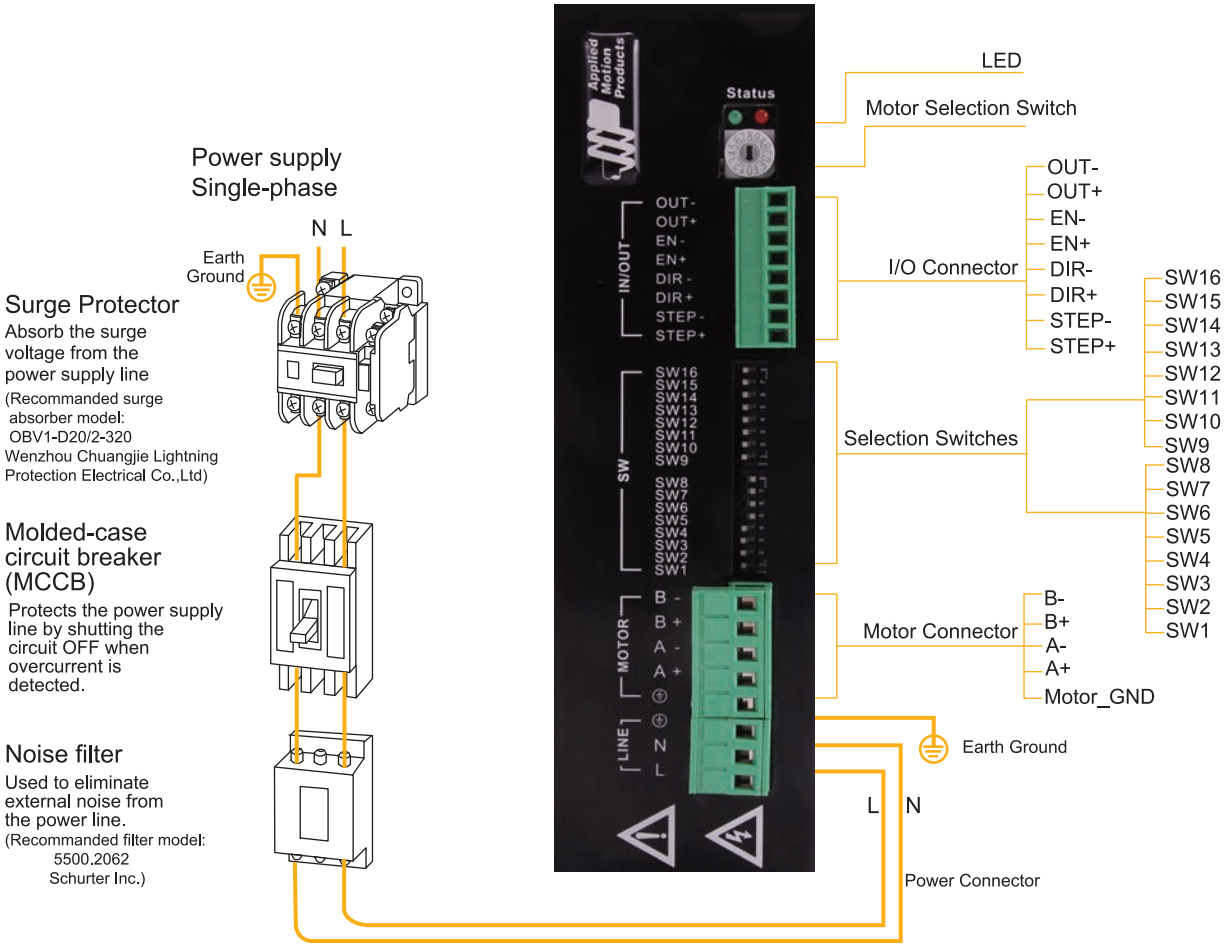
23120D-007LH

3 Connections

To use the STRAC8 Step Drive, the following items are needed:

- Universal AC input of 90 to 240 VAC
- Pulse & Direction signal
- A compatible step motor

STRAC8 Wiring Diagram



412476-000 STRAC8 STEPPER DRIVE

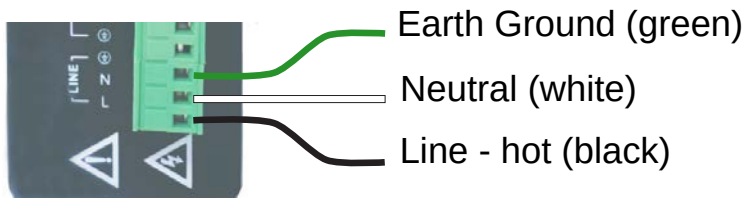
3.1 Connecting to Power

Use the supplied connector to connect to the AC supply according to the diagram below. Use 16 AWG wire for Line (L) and Neutral (N). Use 14 AWG for Earth Ground (G).

Care should always be taken when working with high voltages.

In regions where the single-phase supply is higher, an auto transformer can be used to drop the voltage to the correct level.

The STRAC8 contains an internal 10A fast acting fuse.



Regeneration Clamping Circuit

High speed motion generates high voltage which can be transferred to the drive during rapid deceleration, and the drive may indicate an over-voltage error condition after stopping from a high speed motion. The STRAC8 has regeneration clamping circuitry with an internal 200ohm 10W resistor. To protect the drive in a high speed, high load inertia application Applied Motion Products' recommends connecting an external 80ohm 80W resistor to the regen connector located on the side of the STRAC8 drive.

External Resistor Connector

Housing: 39-01-3028(MOLEX)

Crimp: 39-00-0038(MOLEX)

3.2 Connecting to a Motor

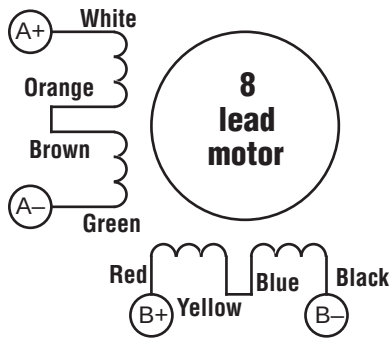
Motor connections should be made according to the following diagrams.

Never connect or disconnect the motor while the power is on.

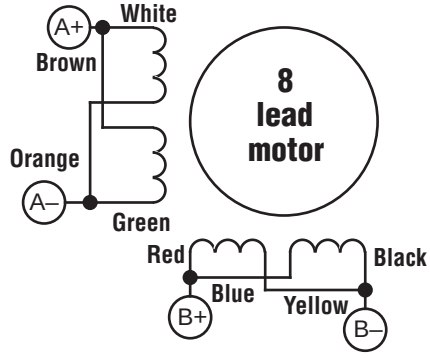
Note: it is highly recommended that you use a motor with a shielded cable with the STRAC8. Always connect the cable drain wire to the drive's ⏚ terminal (next to the A+ terminal)

The recommended Applied Motion motors for the STRAC8 include shielded cables. See the Recommended Motors section for a list of part numbers. The recommended motors should be connected to 120V drives in parallel, and to 220V drives in series, according to the diagram below.

Be sure to connect the cable shield for safety and to minimize electrical interference.



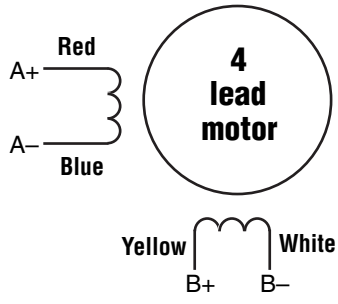
8 Leads Series Connected



8 Leads Parallel Connected

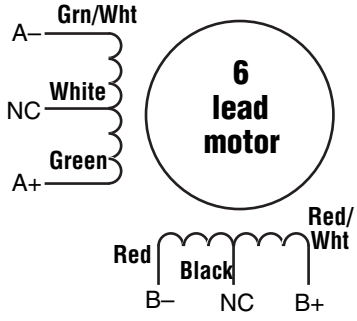
Connecting Other Motors

Four lead motors can only be connected one way. Please follow the sketch at the right.

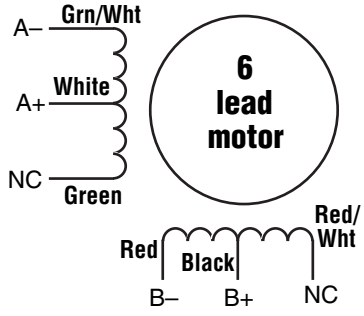


4 Leads

Six lead motors can be connected in series or center tap. In series mode, motors produce more torque at low speeds, but cannot run as fast as in the center tap configuration. In series operation, the motor should be operated at 30% less than the rated current to prevent overheating. Winding diagrams for both connection methods are shown below. NC means not connected.

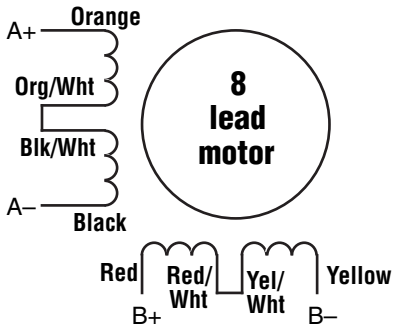


6 Leads Series Connected

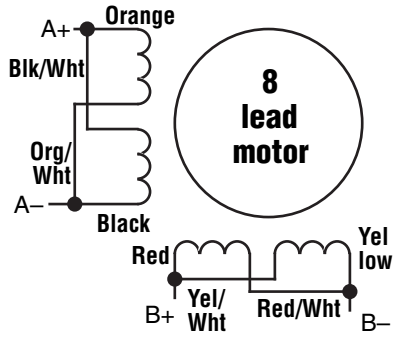


6 Leads Center Tap Connected

Eight lead motors can also be connected in two ways: series and parallel. As with six lead motors, series operation gives you less torque at high speeds, but may result in lower motor losses and less heating. In series operation, the motor should be operated at 30% less than the unipolar rated current. The wiring diagrams for eight lead motors without shielded cables are shown below.



8 Leads Series Connected



8 Leads Parallel Connected

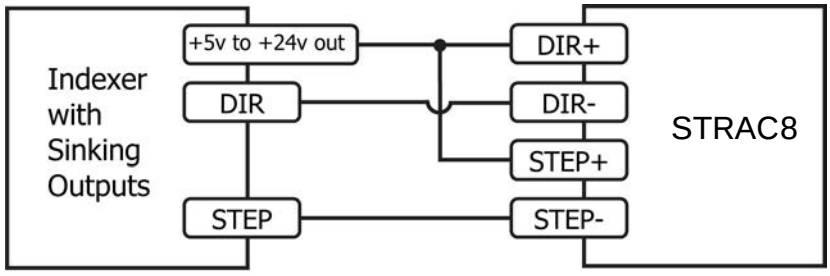
3.3 Connecting the Inputs and Outputs

3.3.1 Step & Direction Inputs

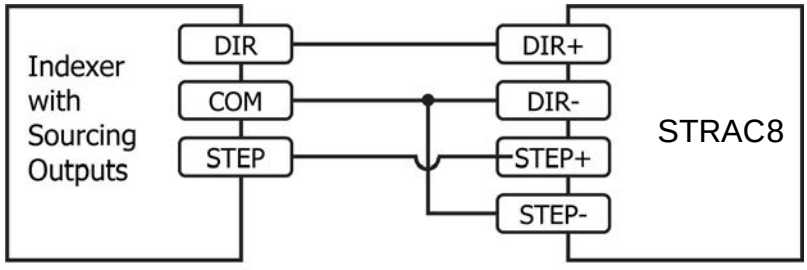
The STRAC8 Step Drive has two high speed optically isolated inputs called STEP and DIR. They accept 5 to 24 volt single-ended or differential signals, up to 2MHz. The maximum voltage that can be applied to the input is 28V.

The motor executes one step when the STEP input closes.

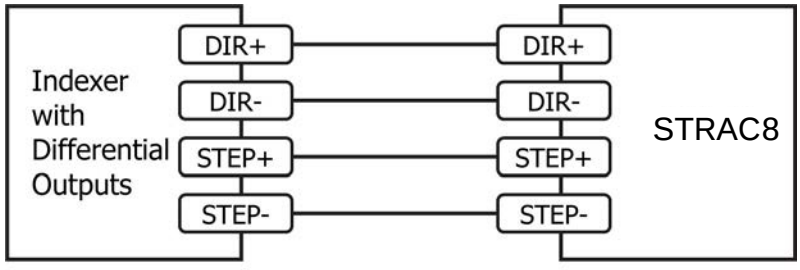
The direction of rotation is controlled by the DIR input state. A closed input (logic "0") will result in clockwise rotation, and an open input (logic "1") will result in counterclockwise rotation.



Connecting to Indexer with Sinking Outputs



Connecting to Indexer with Sourcing Outputs



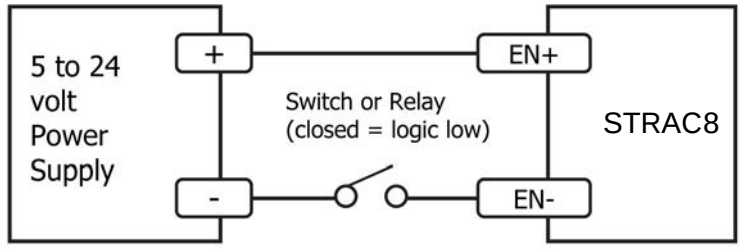
Connecting to Indexer with Differential Outputs
Many high-speed indexers have differential outputs

3.3.2 EN input

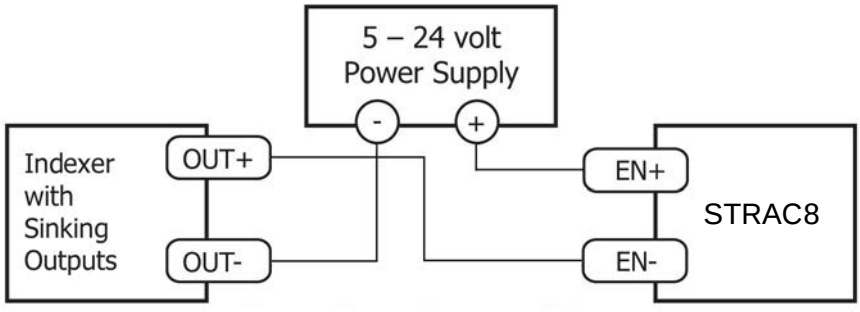
The EN input enables or disables the drive amplifier. It is an optically isolated input that accepts a 5 to 24 volt single-ended or differential signal. The maximum voltage that can be applied to the input is 28V.

When EN input is closed, the driver amplifier is deactivated, all the MOSFETs will shut down, and the motor will be free. When EN input is open, the drive is activated.

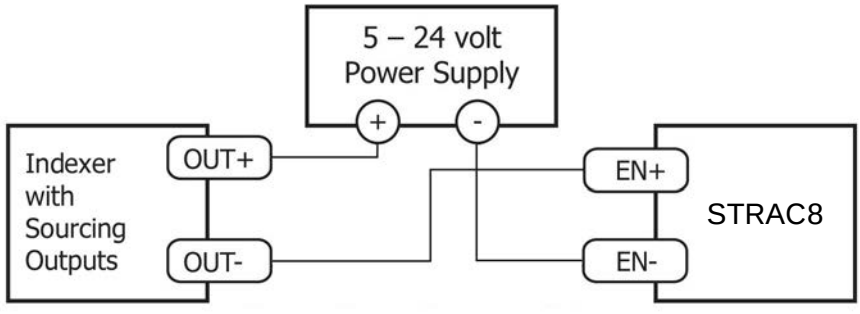
When the drive has encountered an error and the fault is removed from the system, a falling signal into the EN input will reset the error status and activate the drive amplifier again.



Connecting the Input to a Switch or Relay



Connecting the Input to Sinking Outputs

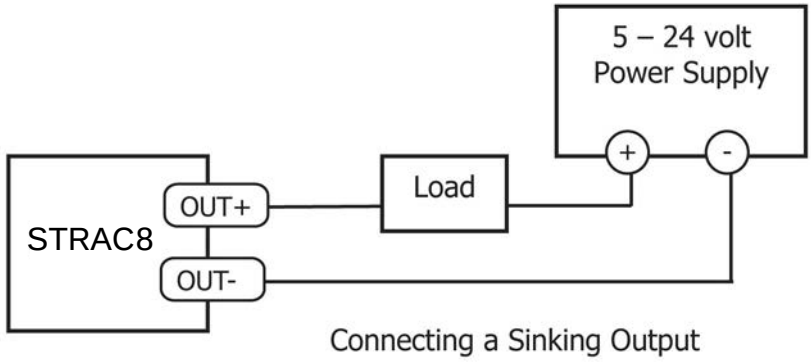


Connecting the Input to Sourcing Outputs

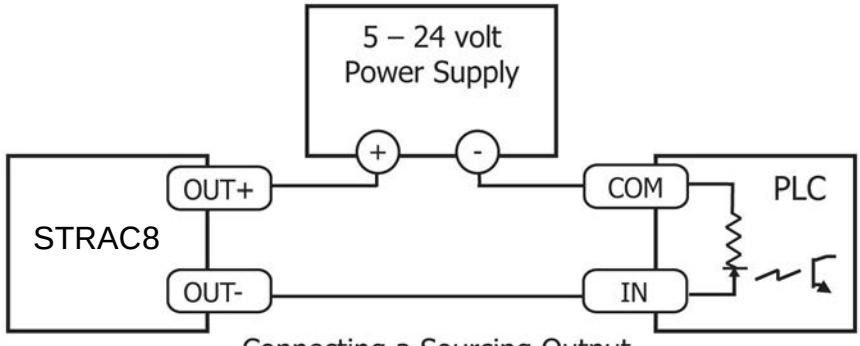
3.3.3 Fault Output

The FAULT Output is optically isolated. The maximum collector current is 100mA, and the maximum collector to emitter voltage is 30 volts. The output can be wired to sink or source current.

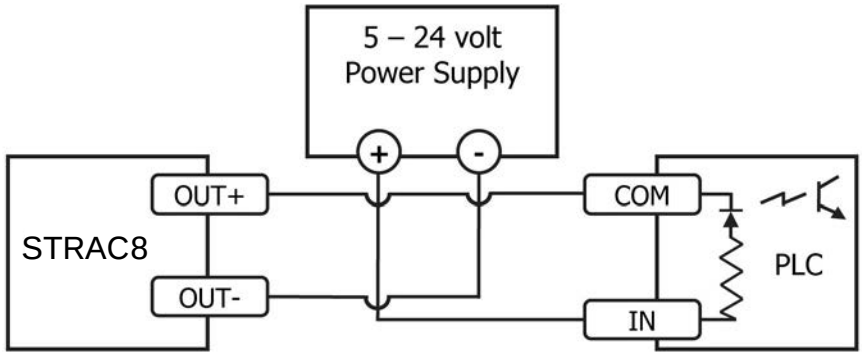
When drive is working normally, the output is open. When the drive encounters an error, the output closes.



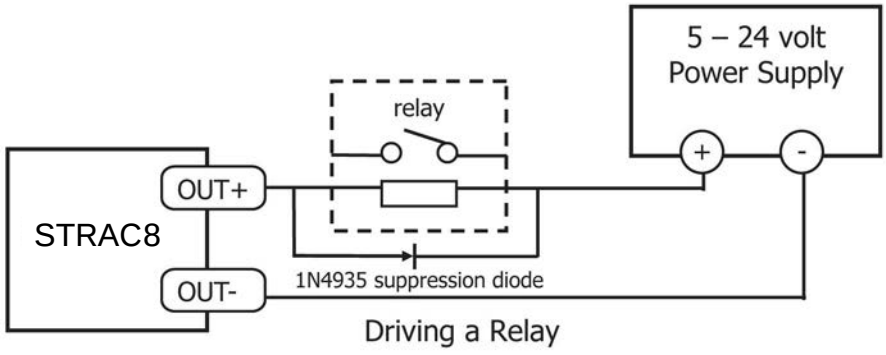
Connecting a Sinking Output



Connecting a Sourcing Output



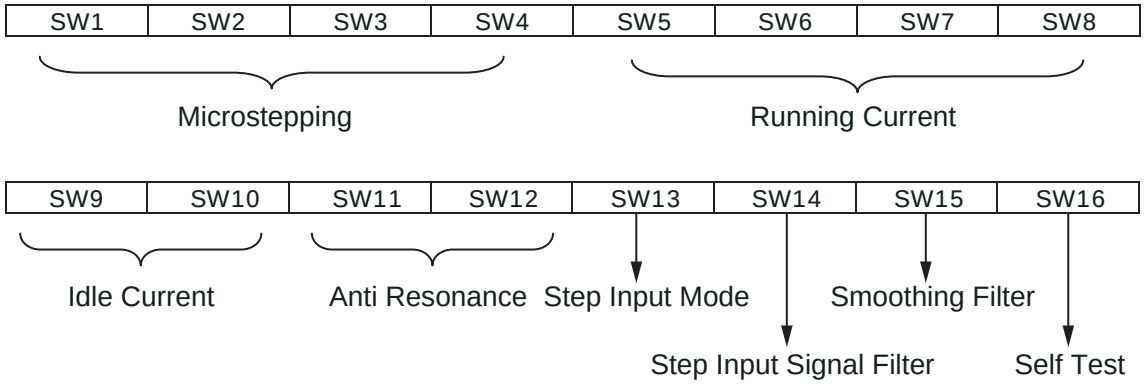
Connecting a Sourcing Output again



Driving a Relay

4 Switch Selection

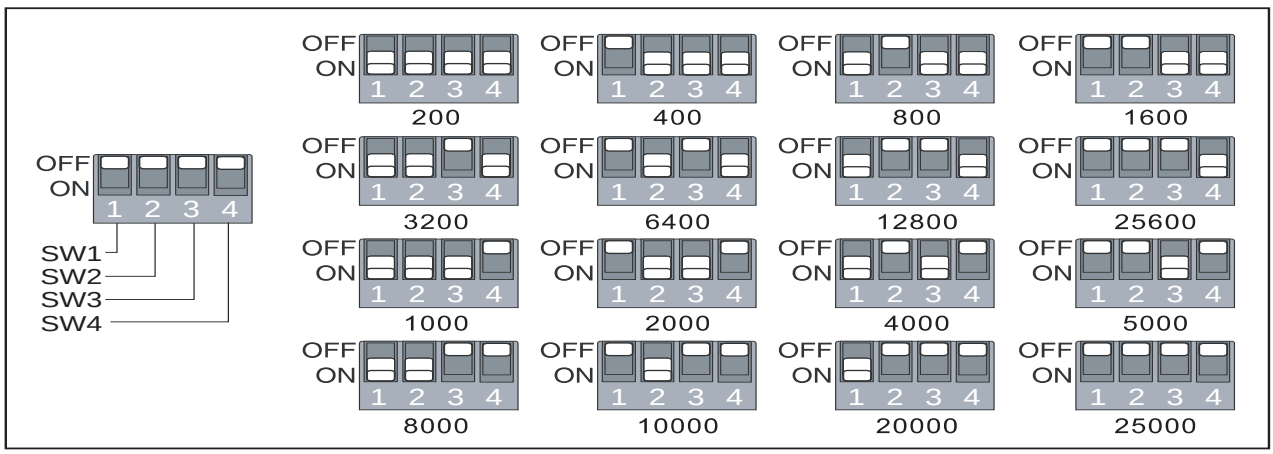
Many of the operational parameters of the STRAC8 can be set or changed by position switches - either by a single switch or a combination of ON/OFF settings of 2 or more switches.



4.1 Microstep Resolution

The microstep resolution is set by the SW1, SW2, SW3 and SW4 switches. There are 16 settings.

Microstep(steps/rev)	SW1	SW2	SW3	SW4
200	ON	ON	ON	ON
400	OFF	ON	ON	ON
800	ON	OFF	ON	ON
1600	OFF	OFF	ON	ON
3200	ON	ON	OFF	ON
6400	OFF	ON	OFF	ON
12800	ON	OFF	OFF	ON
25600	OFF	OFF	OFF	ON
1000	ON	ON	ON	OFF
2000	OFF	ON	ON	OFF
4000	ON	OFF	ON	OFF
5000	OFF	OFF	ON	OFF
8000	ON	ON	OFF	OFF
10000	OFF	ON	OFF	OFF
20000	ON	OFF	OFF	OFF
25000	OFF	OFF	OFF	OFF

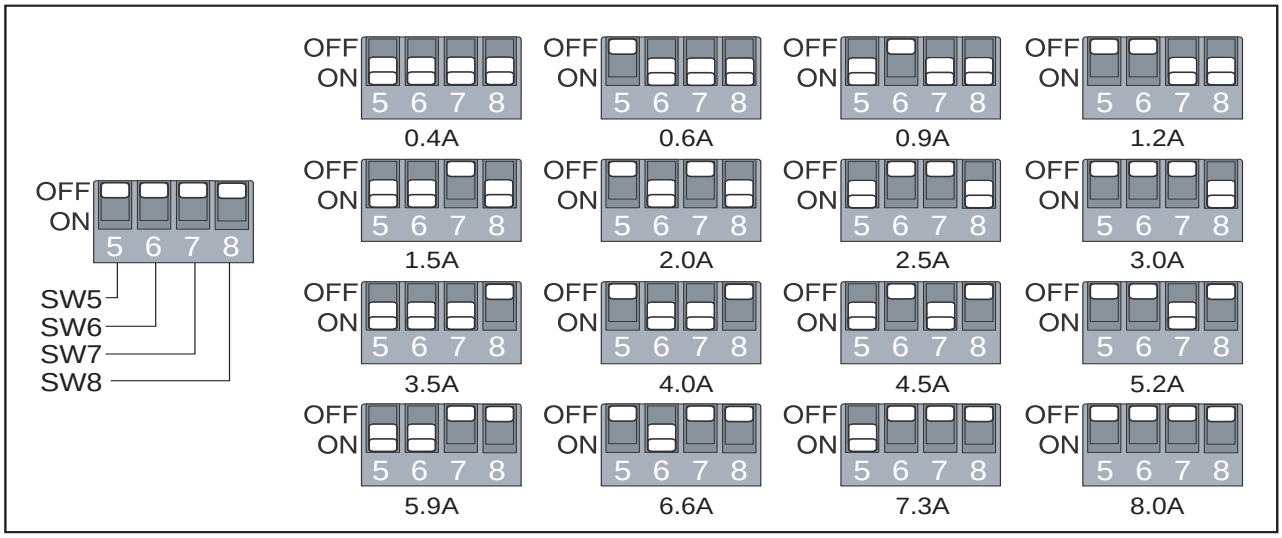


4.2 Running Current

The output current is set by the SW5, SW6, SW7and SW8 switches. There are 16 settings.

NOTE: Drive's running current will be limited by the lower value between motor selection rotary switch and the dip current switch

Current (Peak)	SW5	SW6	SW7	SW8
0.4A	ON	ON	ON	ON
0.6A	OFF	ON	ON	ON
0.9A	ON	OFF	ON	ON
1.2A	OFF	OFF	ON	ON
1.5A	ON	ON	OFF	ON
2.0A	OFF	ON	OFF	ON
2.5A	ON	OFF	OFF	ON
3.0A	OFF	OFF	OFF	ON
3.5A	ON	ON	ON	OFF
4.0A	OFF	ON	ON	OFF
4.5A	ON	OFF	ON	OFF
5.2A	OFF	OFF	ON	OFF
5.9A	ON	ON	OFF	OFF
6.6A	OFF	ON	OFF	OFF
7.3A	ON	OFF	OFF	OFF
8.0A	OFF	OFF	OFF	OFF



4.3 Idle Current

The running current of the STRAC8 drive is automatically reduced whenever the motor isn't moving. The SW9 and SW10 switches control the percentage of the running current the idle current is reduced to. The 90% setting is useful when a high holding torque is required. To minimize motor and drive heating it is highly recommended that the idle current reduction feature be set as low as the application can tolerate.

Idle	SW9	SW10
25%	ON	ON
50%	OFF	ON
70%	ON	OFF
90%	OFF	OFF

4.4 Anti Resonance

The SW11 and SW12 switches select the load inertia. There are 4 settings. The inertia selection can help the STRAC8 drive to calculate the current control parameter. If the load inertia is close to that of the motor rotor, the low setting should be selected. If the load inertia is higher than that of the rotor, a proportionally higher setting should be selected.

Option	SW11	SW12	Inertia
0	ON	ON	Low ↓ High
1	OFF	ON	
2	ON	OFF	
3	OFF	OFF	

4.5 Step Input Mode

Most indexers and motion controllers provide motion commands in the Step and Direction format. The Step signal pulses once for each motor step and the Direction signal commands direction. Some PLCs use a CW/CCW command signal: one signal pulses once for each desired step in the clockwise direction (CW Step), while a second signal pulses for counterclockwise motion (CCW Step). In the CW/CCW control mode, the CW signal should be connected to the STEP input and the CCW signal to the DIR input.

Setting SW13 to OFF enables the Step & Direction format, the ON position enables the CW/CCW format.

Note: The power must be cycled each time the position of SW13 is changed.

4.6 Step Input Signal Filter

The STEP and DIR signal inputs have a built-in digital filter to reduce the external noise. If the system works on the low microstep, the 150 KHz setting should be selected. If the system works on the high microstep, the 2 MHz setting should be used.

The SW14 switch selects the digital signal filter. ON sets it to 150 KHz, OFF sets it to 2 MHz.

Note: The power must be cycled each time the position of SW14 is changed.

4.7 Step Smoothing Filter

Command signal smoothing can soften the effect of immediate changes in velocity and direction, making the motion of the motor less jerky. An added advantage is that it can reduce the wear on mechanical components. SW15 selects this function - ON enables it, OFF disables it.

This function can cause a small delay in following the control signal, and it should be used with that in mind.

Note: The power must be cycled each time the position of SW15 is changed.

4.8 Self Test

Setting SW16 to ON after the drive is powered up, will cause the drive to perform a Self Test move of 2 revolutions both CW and CCW at .5 rps. Setting SW16 to OFF will disable this feature.

5 Motor selection

Each position of the 16-bit rotary switch selects a different motor, and automatically sets the configuration parameters in the drive. The STRAC8 drive comes programmed with up to 16 typical motors as factory defaults. Drives can be customized with specially selected motors when required.

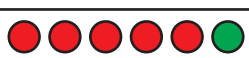
NOTE: Drive's running current will be limited by the lower value between motor selection rotary switch and the dip current switch

NOTE: When the motor selection is changed, the drive power supply will need to be cycled.

SW position	MOTOR	WIRING	Input Voltage	Input Voltage
0	Reserved	Reserved	0 A	
1	Reserved	Reserved	0 A	
2	HT23-552	Parallel	1.5 A	120VAC
3	HT23-553	Parallel	1.5 A	120VAC
4	HT23-554	Parallel	1.8 A	120VAC
5	HT34-495/695	Parallel	5.1 A	120VAC
6	HT34-496/696	Parallel	5.1 A	120VAC
7	HT34-497/697	Parallel	5.8 A	120VAC
8	HT23-552	Series	0.75 A	240VAC
9	HT23-553	Series	0.75 A	240VAC
A	HT23-554	Series	0.9 A	240VAC
B	HT34-495/695	Series	2.5 A	240VAC
C	HT34-496/696	Series	2.5 A	240VAC
D	HT34-497/697	Series	2.5 A	240VAC
E	Custom Motor	Reserved	8 A	120VAC/240VAC
F	Custom Motor	Reserved	8 A	120VAC/240VAC

6 Error Codes

The STRAC8 Drive has two LEDs to indicate status. When the motor is enabled the green LED flashes slowly, when the green LED is solid the motor is disabled. If the red LED flashes, an error has occurred. Errors are indicated by combinations of red and green flashes as shown below:

Code		Error
	Solid green	Motor Disabled
	Flashing green	Motor Enabled
	3 red, 1 green	Over Temperature
	3 red, 2 green	Bad Internal Voltage
	4 red, 1 green	Supply Voltage High
	4 red, 2 green	Supply Voltage Low
	5 red, 1 green	Over Current
	5 red, 2 green	Excess Regen
	6 red, 1 green	Open Motor Phase

ASSEMBLY TITLE: **Q120 REWIND ASSEMBLY**

GENERAL FUNCTION:

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

SET UP AND ADJUSTMENTS:

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

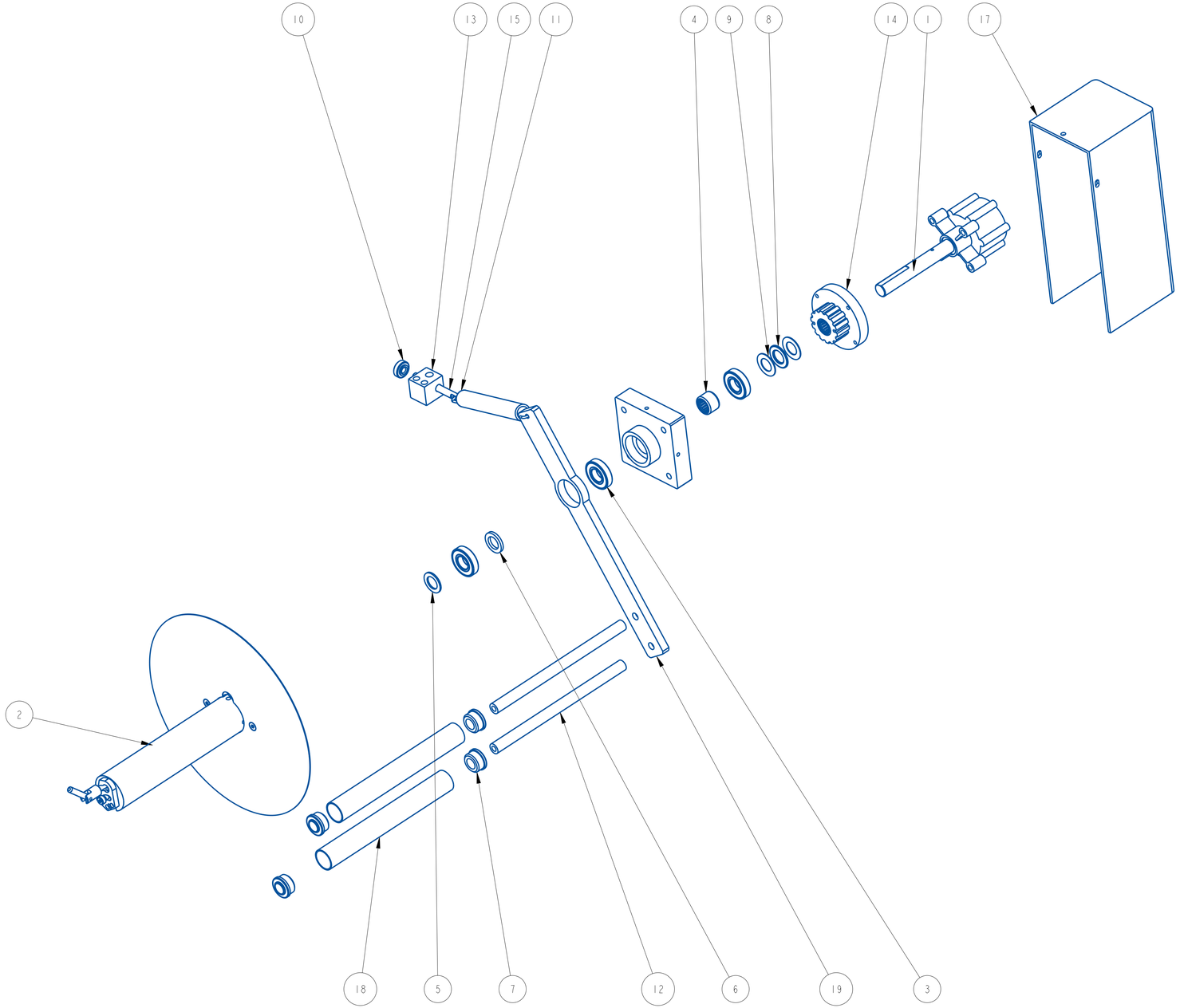
NOTE: Excessive tightening will cause the web to be wound very tight, causing difficulty in removal and possible step motor stall.

MAINTENANCE:

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

TROUBLESHOOTING:

PROBLEM	**WHAT TO DO**
- Rewind drum not rotating when stepping motor rotates	- Replace timing belt from motor to rewind
- Rewind drum not keeping up with drive roll	- Tighten adjusting knob
- Web winding too tight on hub	- Loosen adjusting knob
- Grinding in rewind hub	- Replace friction disc by removing knob and sliding off rewind drum



ITEM	QTY	PART NO.	DESCRIPTION	PARENT ITEM
1	1	20499-001	DASHPOT & SHAFT ASSEMBLY	23100R-007LH
2	1	22188-000	7" COLLAPSIBLE REWIND ASSEMBLY	23100R-007LH
3	3	111075-000	BEARING, BALL	23100R-007LH
4	1	121067-000	BEARING, NEEDLE	23100R-007LH
5	1	151008-000	BEARING, THRUST WASHER	23100R-007LH
6	1	151017-000	BEARING, THRUST WASHER	23100R-007LH
7	4	181063-000	BEARING, ROLL END	23100R-007LH
8	1	181081-000	BEARING, NEEDLE ROLLER	23100R-007LH
9	2	181082-000	BEARING, THRUST WASHER	23100R-007LH
10	1	801601-000	CHECK NUT	23100R-007LH
11	1	811216-000	EXTENSION SPRING, STAINLESS	23100R-007LH
12	2	A20928-002	ROLLER SHAFT	23100R-007LH
13	1	A21479-000	SPRING ADJUSTMENT BLOCK	23100R-007LH
14	1	A22120-000	REWIND PULLEY ASSEMBLY	23100R-007LH
15	1	A23131-000	STUD	23100R-007LH
16	1	B20004-007	REWIND BEARING PLATE	23100R-007LH
17	1	B20005-120	GUARD	23100R-007LH
18	2	B20071-003	IDLER ROLLER (DANCER)	23100R-007LH
19	1	C20894-004	REWIND DANCER ARM	23100R-007LH

REV	DATE	DESCRIPTION	BY
A	09/08/25	NEW DRAWING	SEM

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

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

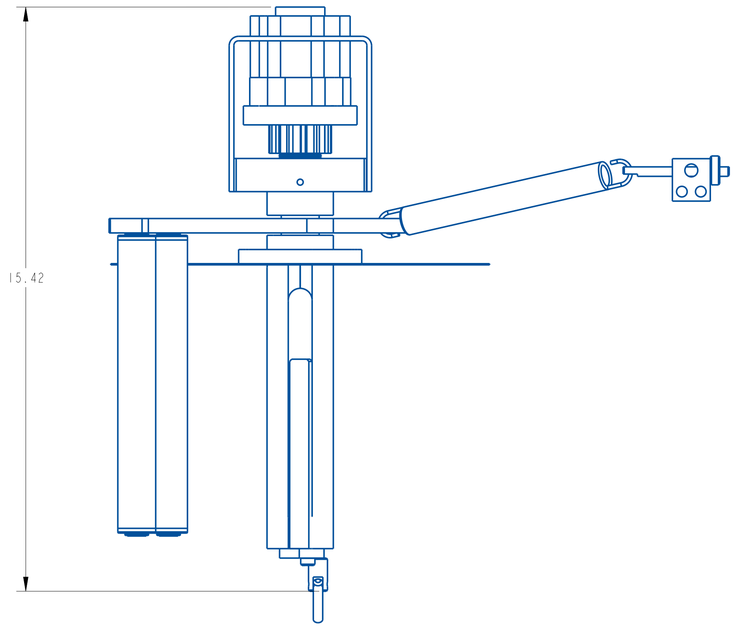
QUADREL LABELING SYSTEMS
7670 JENTHER DRIVE
MENTOR, OHIO 44060
(440) 602-4700

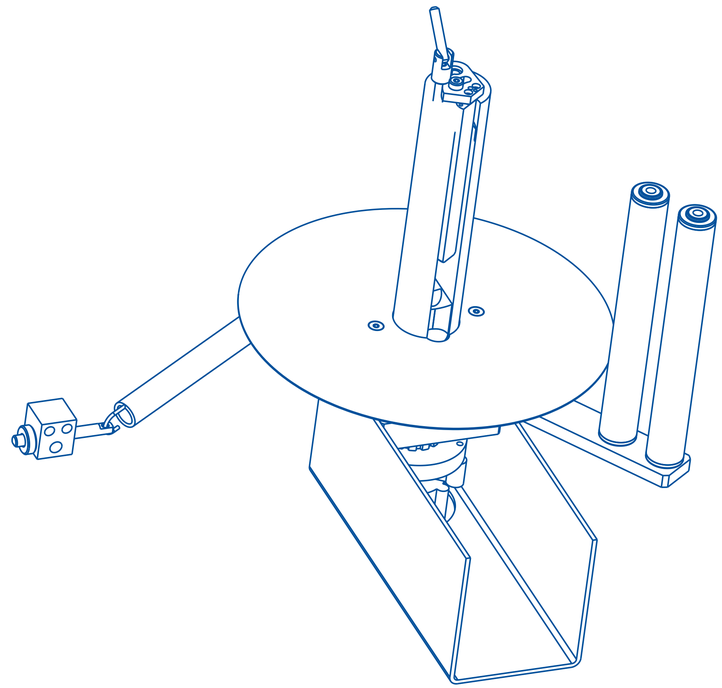
SCALE: 3/8
DATE: 09/08/25
DRW BY: SEM
CHK BY: 09/08/2025-SEM
APPR BY:

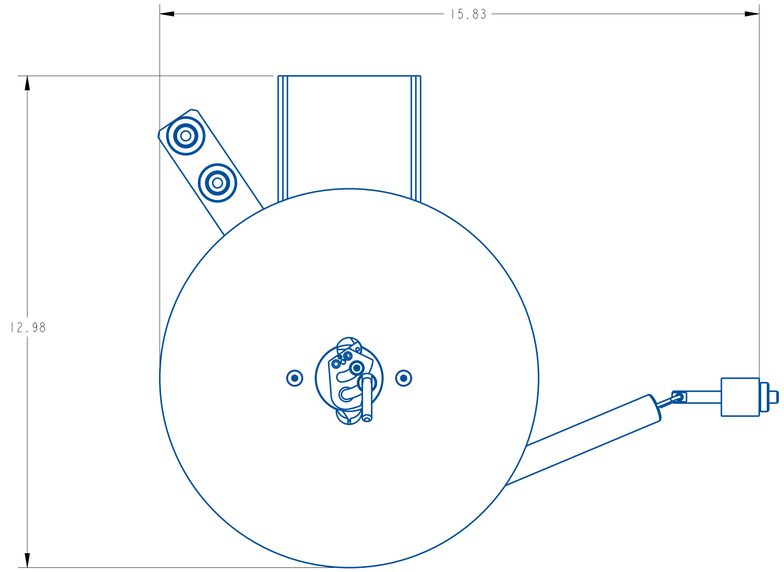
REWIND & DANCER ASSEMBLY w/KINETROL, 7"

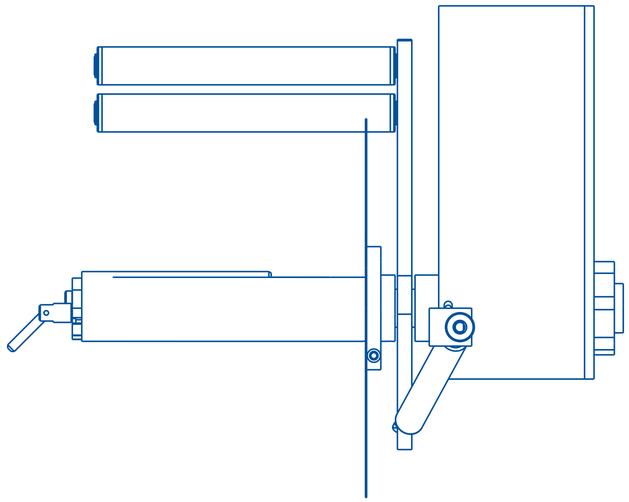
MAT'L

23100R-007LH









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A	09/08/25	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
ALL ANGLES ARE 90°

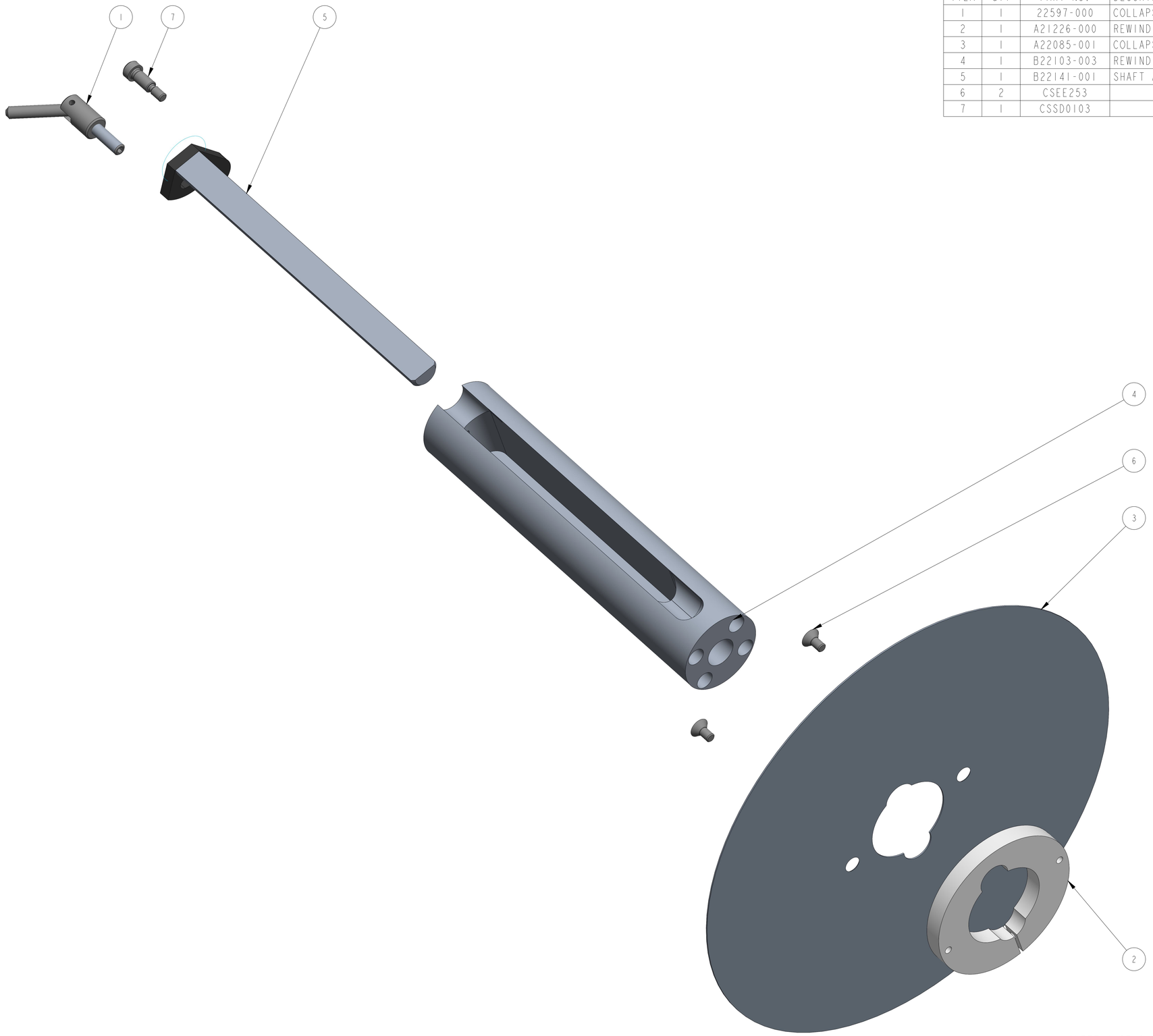
QUADREL LABELING SYSTEMS
7670 JENTHER DRIVE
MENTOR, OHIO 44060
(440) 602-4700

SCALE: 1/2
DATE: 09/08/25
DRW BY: SEM
CHK BY: 09/08/2025-SEM
APPR BY:

REWIND & DANCER ASSEMBLY w/KINETROL, 7"

MAT'L

23100R-007LH



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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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°

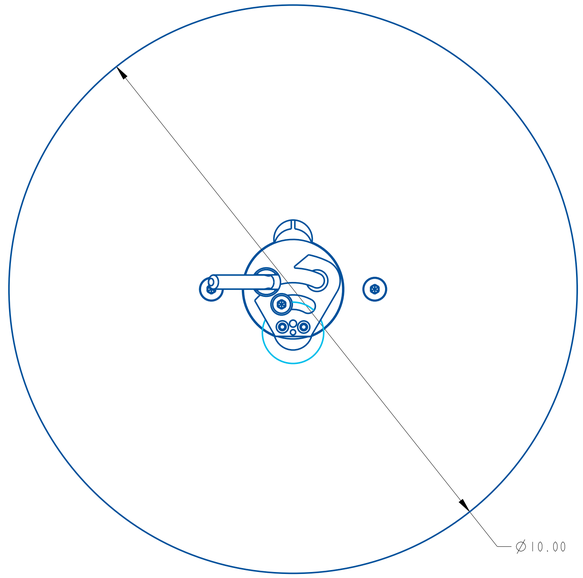
QUADREL LABELING SYSTEMS
7670 JENTHER DRIVE
MENTOR, OHIO 44060
(440) 602-4700

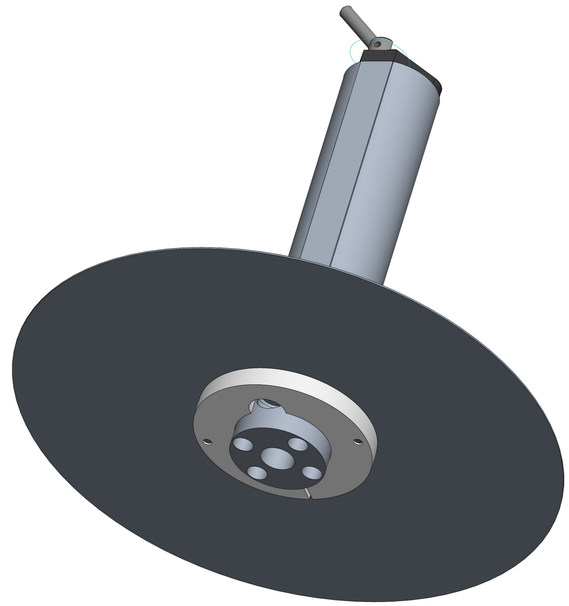
SCALE: 1/1
DATE: MAR-30-21
DRW BY: TJS
CHK BY:02/29/2024-SEM
APPR BY:

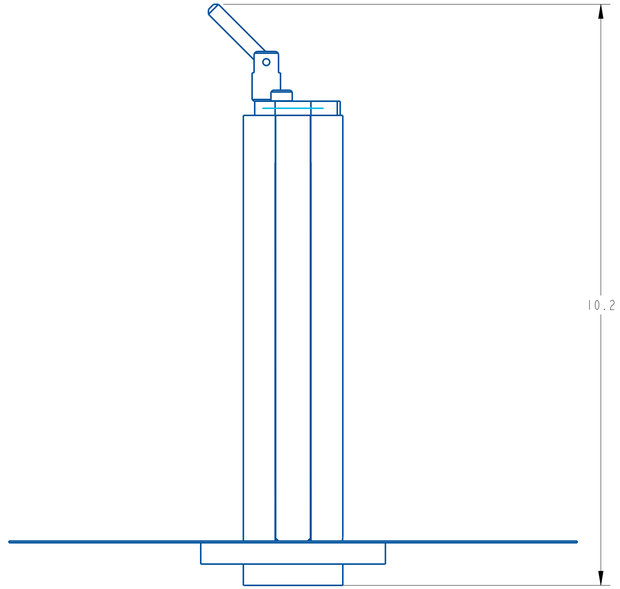
7" COLLAPSIBLE REWIND ASSEMBLY

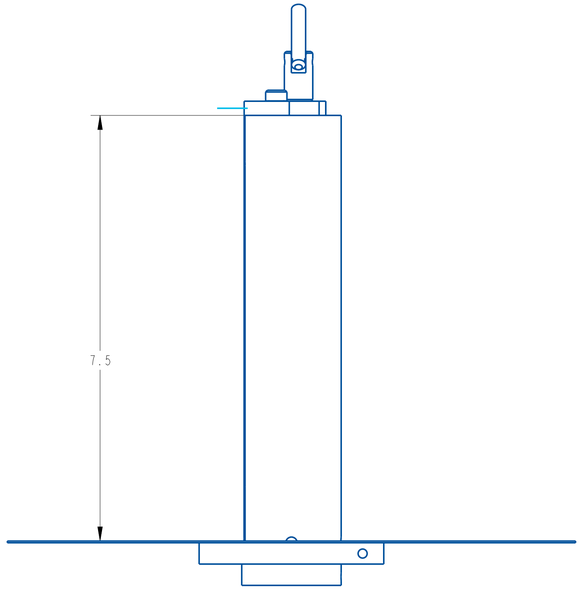
MAT'L
22188-000

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°

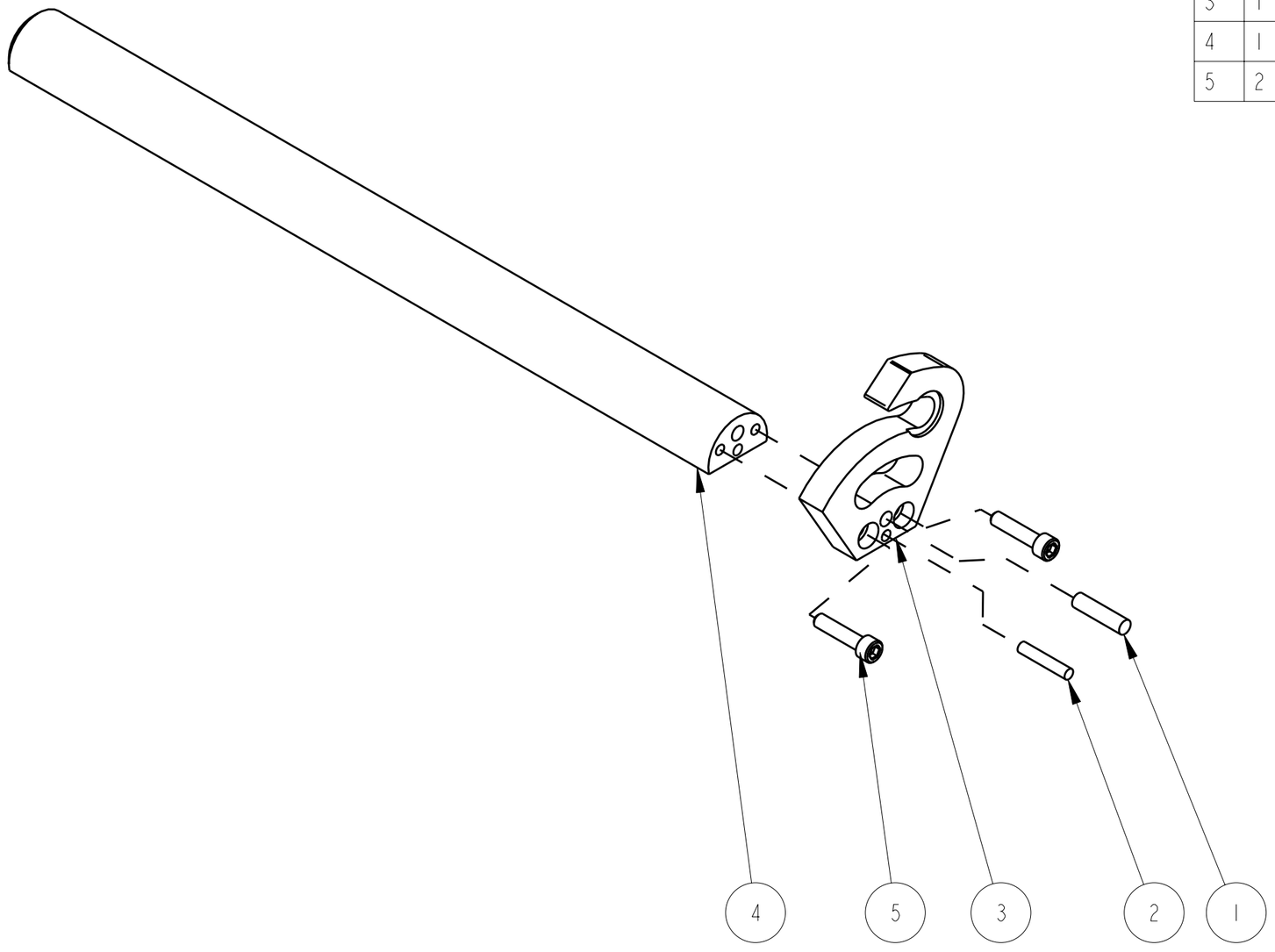
QUADREL LABELING SYSTEMS
7670 JENTHER DRIVE
MENTOR, OHIO 44060
(440) 602-4700

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



ITEM	QTY	PART NO.	DESCRIPTION
1	1	871352-000	DOWELL,PIN 1/8" x 1/2" SS.
2	1	871352-000	DOWELL,PIN 3/32" x 1/2" SS.
3	1	A22081-000	COLLAPSIBLE REWIND CAM
4	1	A25272-001	COLLAPSIBLE REWIND SHAFT
5	2	#4-40X0-500	SHCS #4-40 UNC 1/2" LG.

REV	DATE	DESCRIPTION
A	06/09/2008	NEW DRAWING

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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
(216) 975-0006

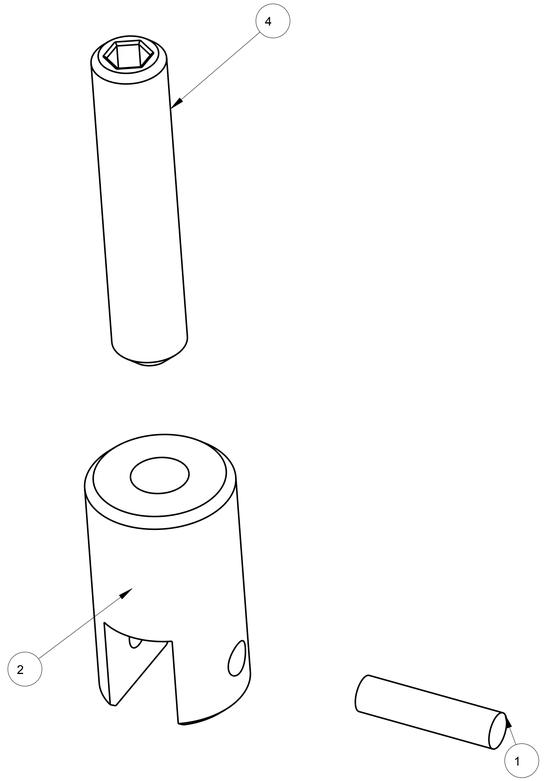
SCALE:	1/1
DATE:	06/09/2008
DRW BY:	SEM
CHK BY:	
APPR BY:	

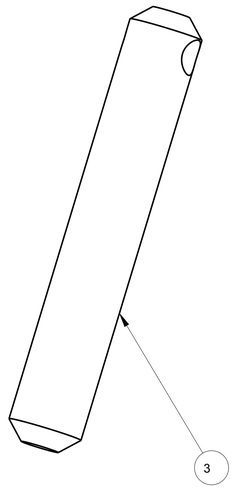
SHAFT ASSEMBLY 7.0"

MAT'L

B22141-001

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





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

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

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

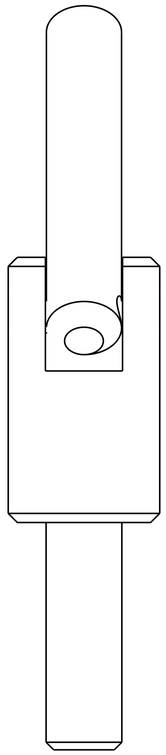
QUADREL LABELING SYSTEMS
7670 JENTHER DRIVE
MENTOR, OHIO 44060
(440) 602-4700

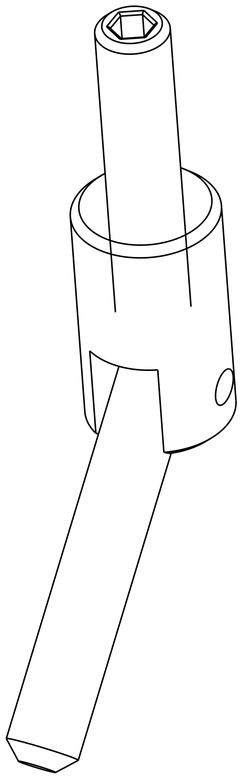
SCALE	4/1
DATE	12-11-14
DRAWN BY	ATT

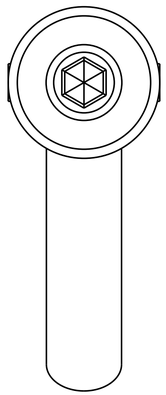
COLLAPSIBLE REWIND LOCKING HANDLE

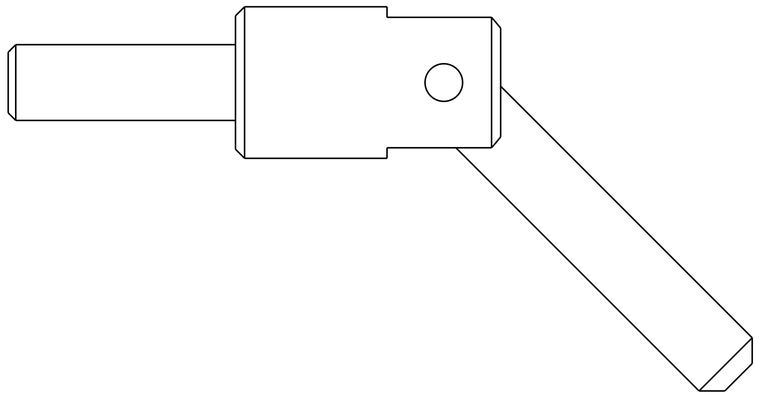
MAT'L 22597-000

22597-000









REV	DATE	DESCRIPTION	BY
A	12-11-14	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	4/1
DATE	12-11-14
DRAWN BY	ATT

COLLAPSIBLE REWIND LOCKING HANDLE

MAT'L 22597-000

22597-000

ASSEMBLY TITLE: **Q60 KINETROL REWIND**

GENERAL FUNCTION:

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

SET UP AND ADJUSTMENTS:

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

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

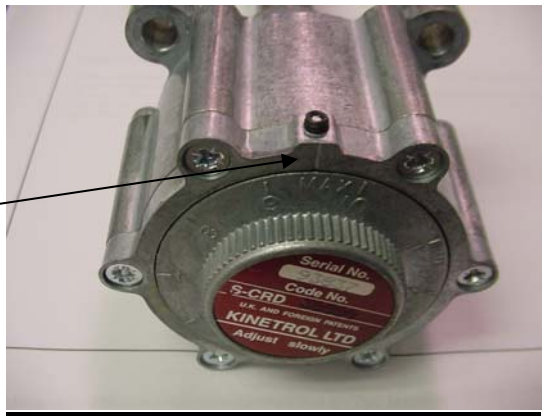
MAINTENANCE:

- Clean all parts that have acquired label or glue residue

TROUBLESHOOTING:

PROBLEM	**WHAT TO DO**
- Rewind drum not rotating when stepping motor rotates	- Replace timing belt from motor to rewind
- Rewind drum not keeping up with drive roll	- Adjust clutch dial (1 being loosest & 10 being tightest)
- Web winding too tight on hub	- Loosen adjusting knob
- Grinding in rewind hub	- Replace Kinetrol

Set screw location



ASSEMBLY TITLE: **SLOT SENSOR ASSEMBLY**

GENERAL FUNCTION:

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

SET UP AND ADJUSTMENTS:

- See attached cut sheet

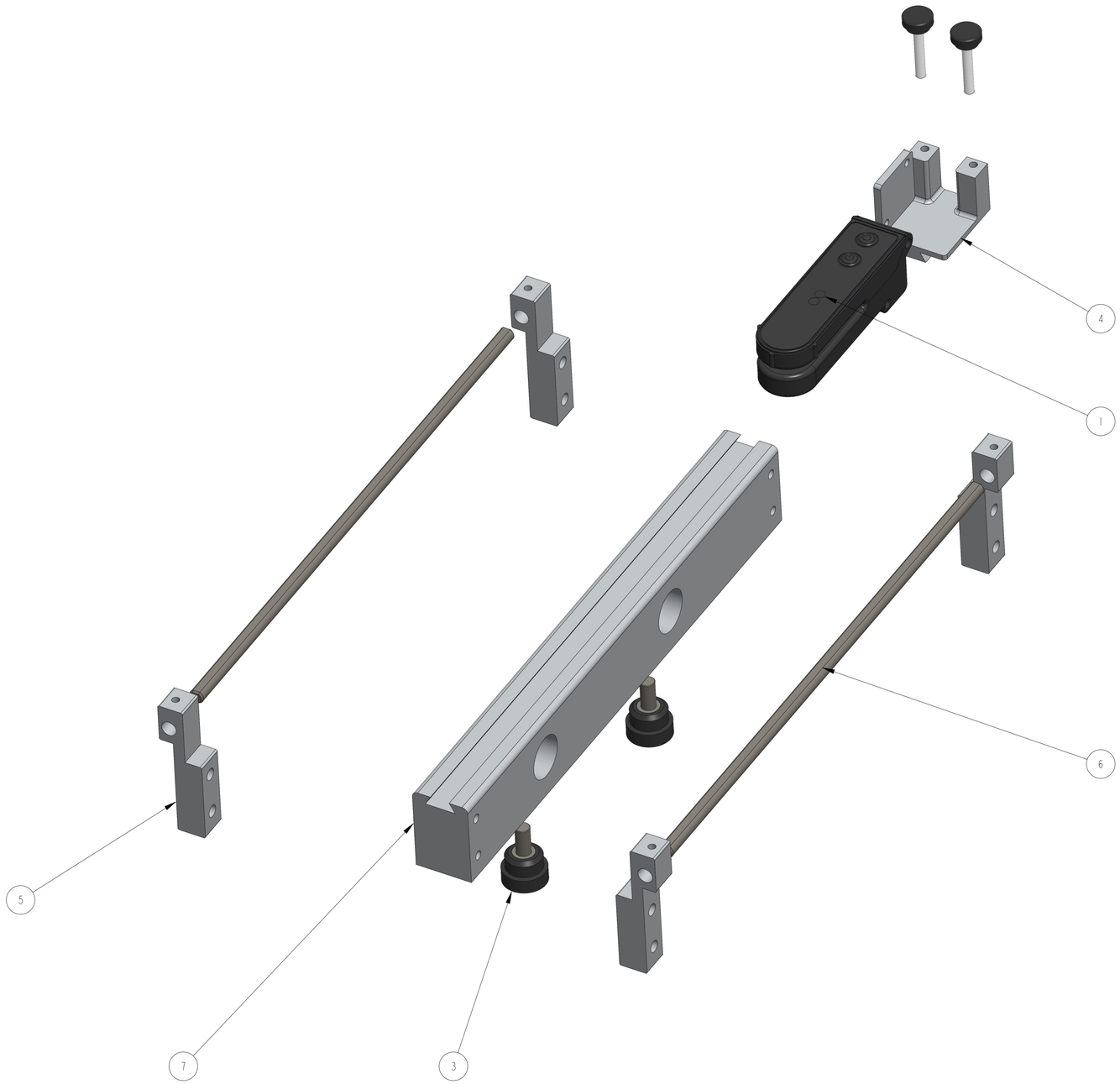
MAINTENANCE:

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

TROUBLESHOOTING:

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

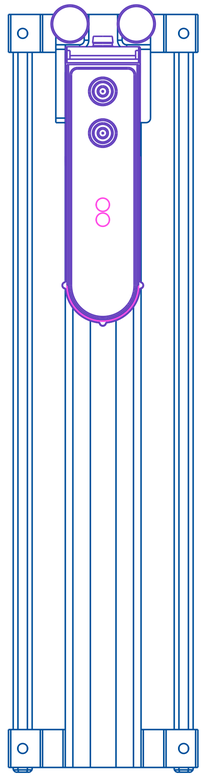
QUADREL LABELING SYSTEMS
7670 JENTHER DRIVE
MENTOR, OHIO 44060
(440) 602-4700

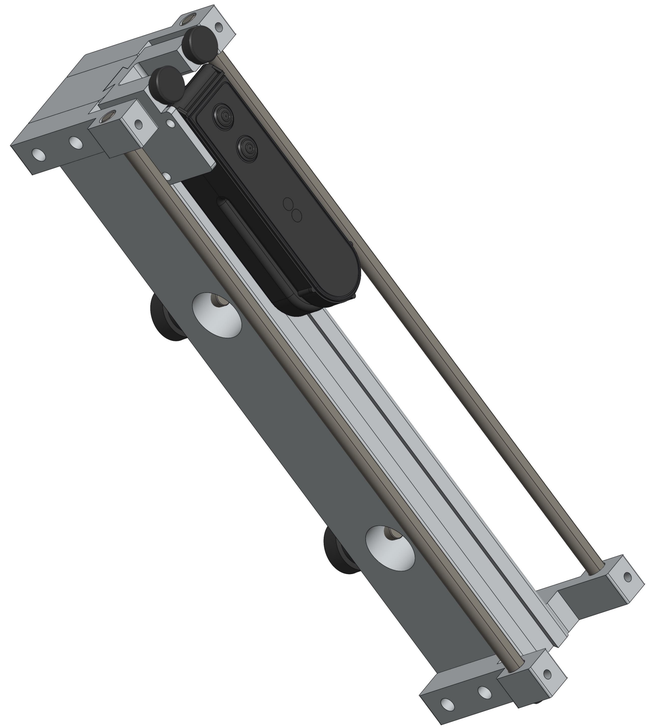
SCALE: 1/1
DATE: Mar-04-21
DRW BY: TJS
CHK BY:02/24/2024-SEM
APPR BY:

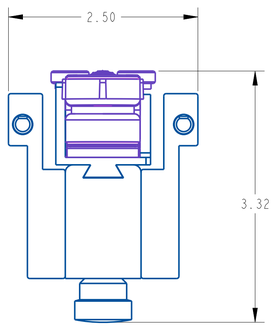
LABEL DETECT ASSEMBLY

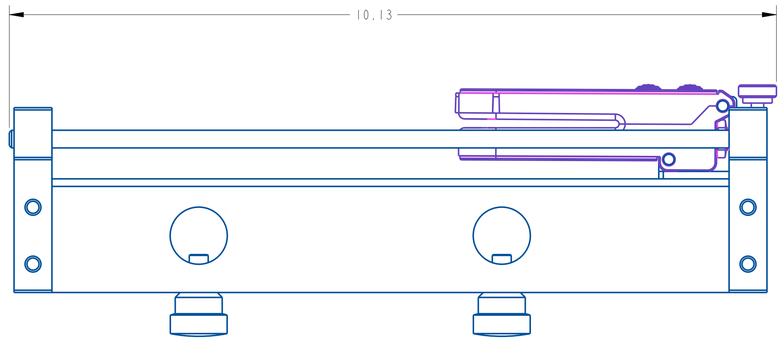
MAT'L

20033-300









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

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

LABEL DETECT ASSEMBLY

MAT'L

20033-300

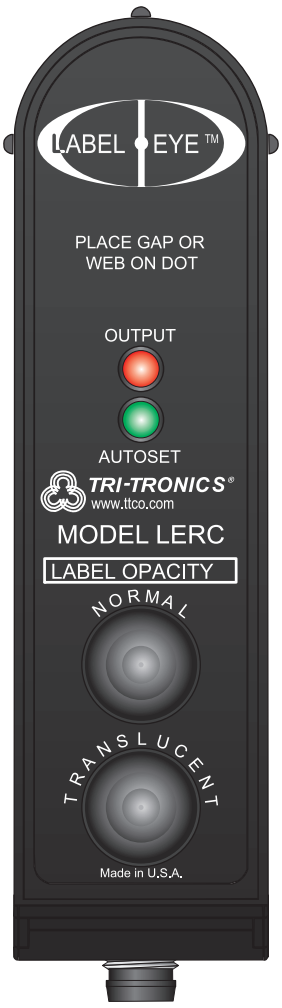
LABEL•EYE
Set-Up Instructions

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.

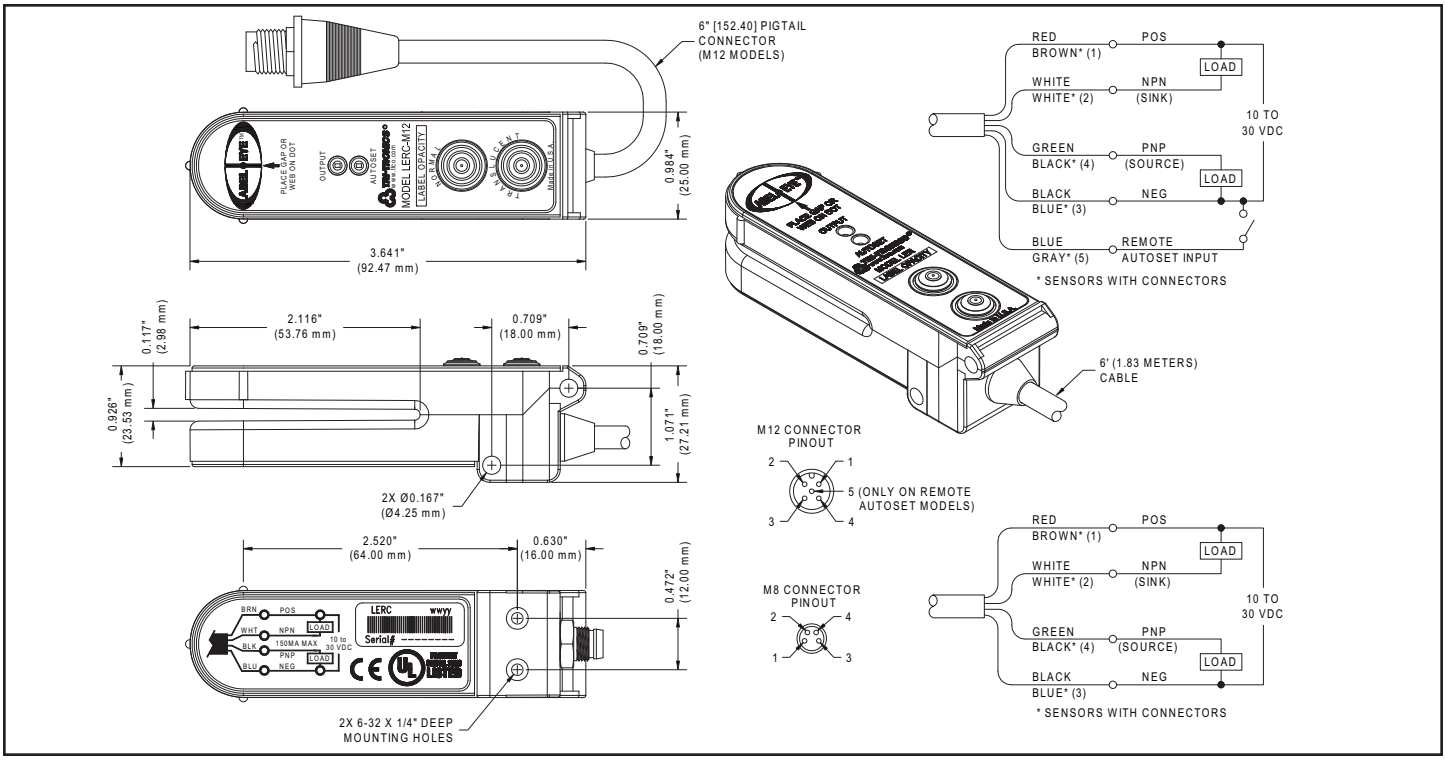
Model Numbers:

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



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


System

ASSEMBLY TITLE: **FRAME ASSEMBLY**

GENERAL FUNCTION:

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

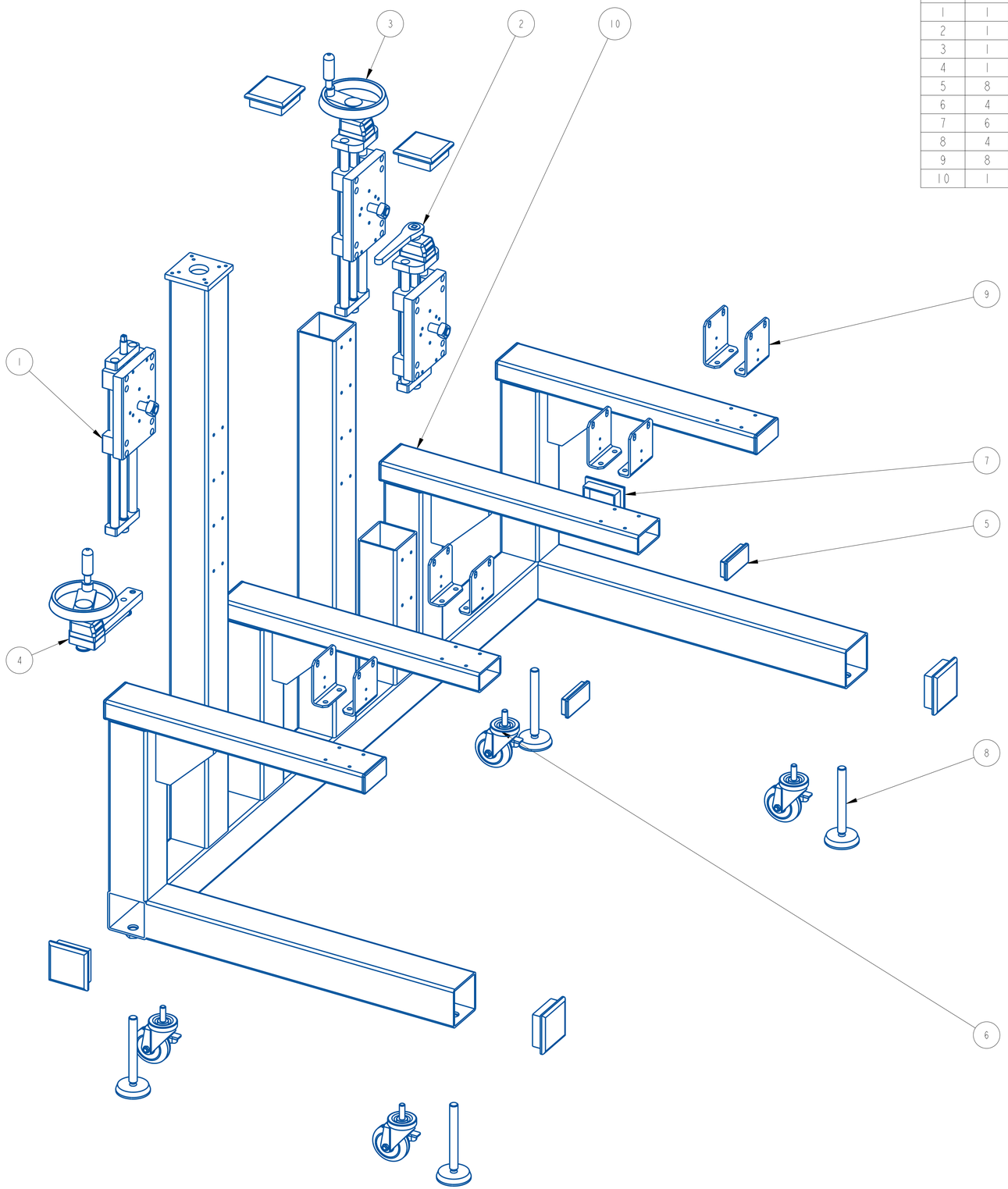
SET-UP AND ADJUSTMENTS:

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

MAINTENANCE:

- Clean wipe down rails with clean cloth.

ITEM	QTY	PART NO.	DESCRIPTION	PARENT ITEM
1	1	22173-251	VERTICAL IGUS SLIDE, 17.5"	22913-001
2	1	22173-501	VERTICAL IGUS SLIDE	22913-001
3	1	22173-601	VERTICAL IGUS SLIDE, 17.5"	22913-001
4	1	22489-004S	6" HANDWHEEL EXTENSION KIT	22913-001
5	8	729006-000	CAP INSERT FOR 2 X 4 TUBE	22913-001
6	4	791449-000	SWIVEL CASTER	22913-001
7	6	792065-000	CAP INSERT FOR 4X4 TUBE (1/4WALL)	22913-001
8	4	A24366-000	MODIFIED LEVELING MOUNT	22913-001
9	8	B22787-000	CONVEYOR RISER	22913-001
10	1	D26023-001	WELDED FRAME ASSEMBLY	22913-001



REV	DATE	DESCRIPTION	BY
A	Sep-29-25	NEW DRAWING	RDL

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

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

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

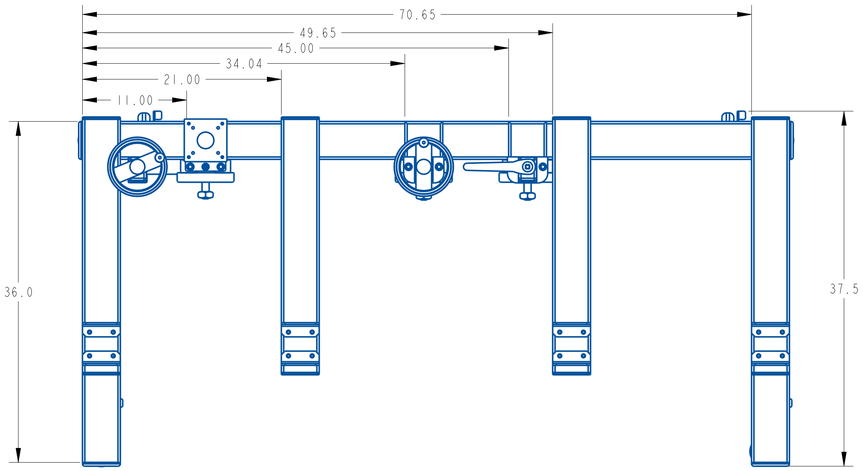
QUADREL LABELING SYSTEMS
7670 JENTHER DRIVE
MENTOR, OHIO 44060
(440) 602-4700

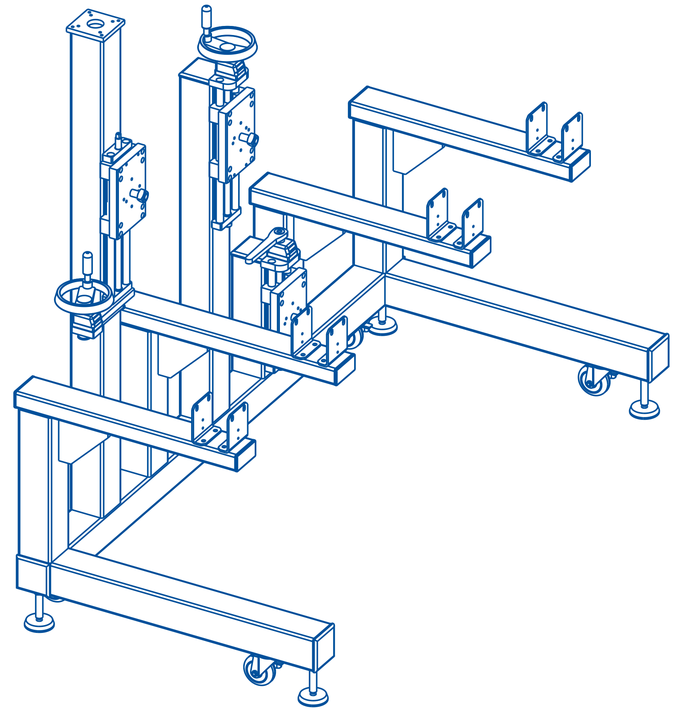
SCALE: 3/16
DATE: Sep-29-25
DRW BY: RDL
CHK BY:
APPR BY:

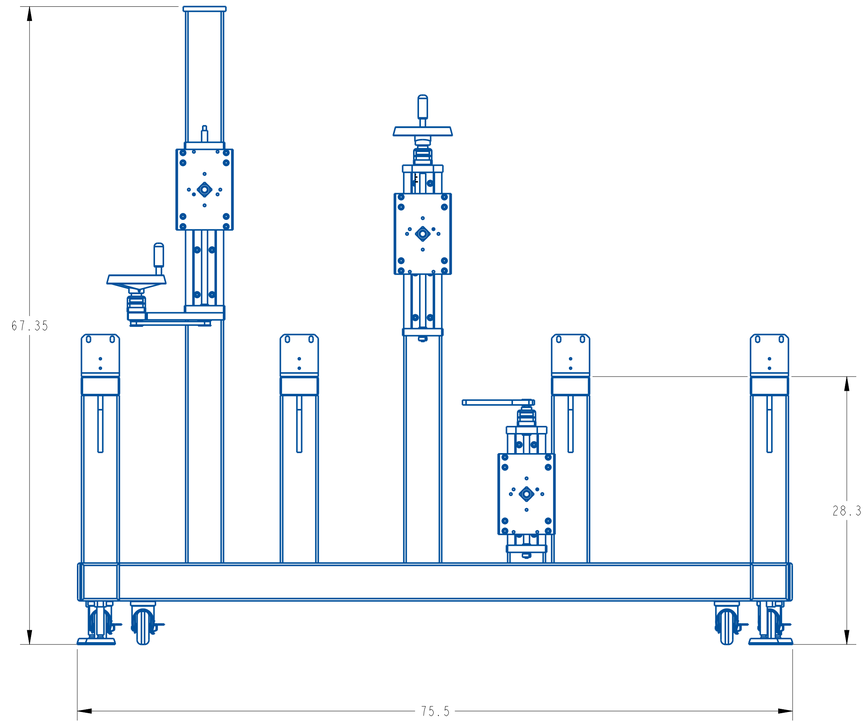
FRAME ASSEMBLY

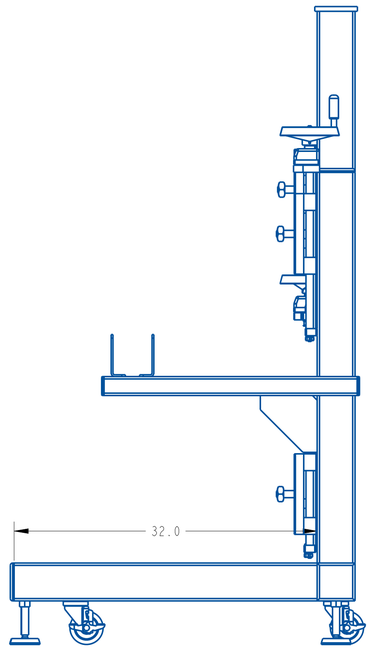
MAT'L

22913-001









REV	DATE	DESCRIPTION	BY
A	Sep-23-25	NEW DRAWING	RDL

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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°

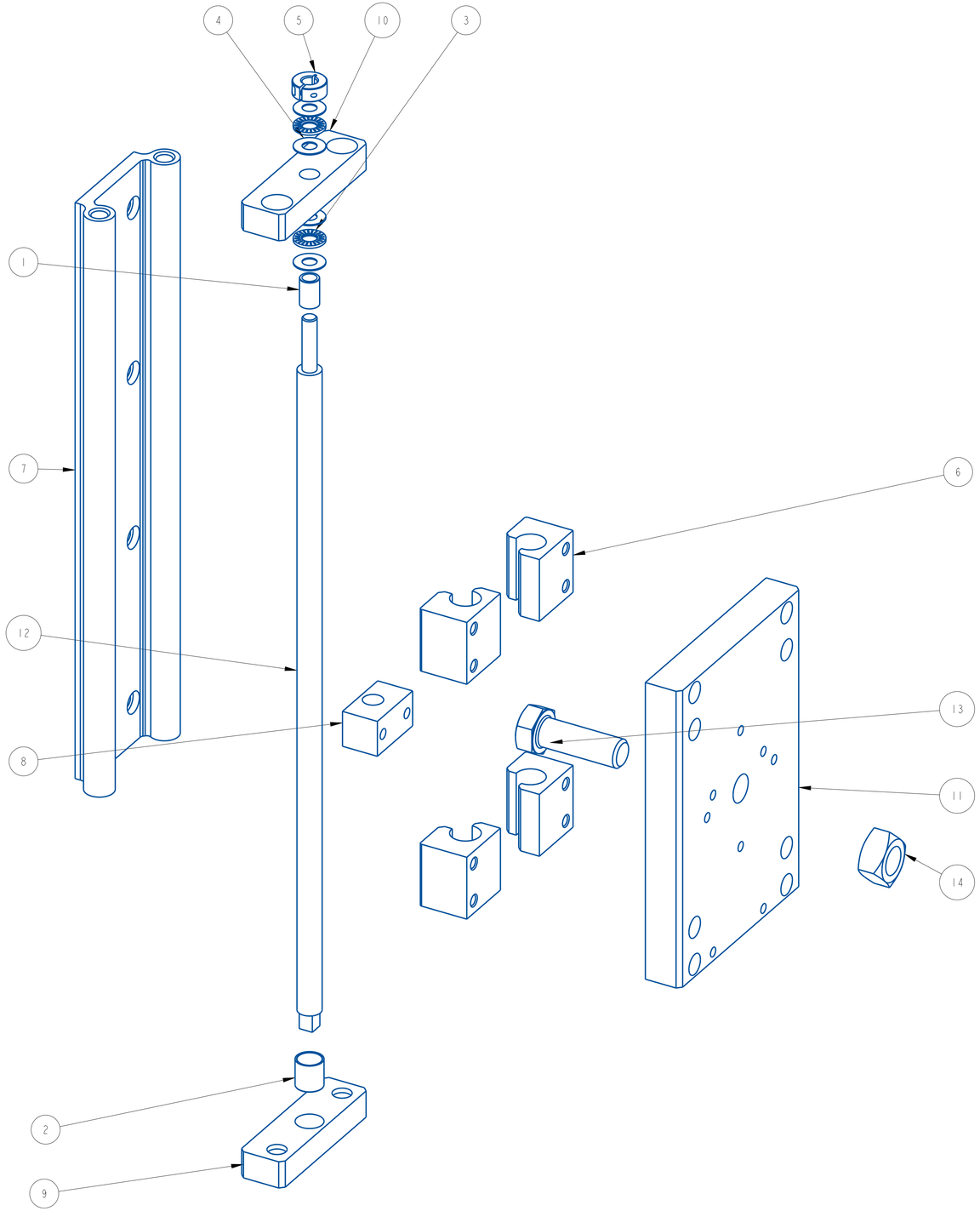
QUADREL LABELING SYSTEMS
7670 JENTHER DRIVE
MENTOR, OHIO 44060
(440) 602-4700

SCALE:	1/8
DATE:	Sep-23-25
DRW BY:	RDL
CHK BY:	
APPR BY:	

FRAME ASSEMBLY

MAT'L

22913-001



ITEM	QTY	PART NO.	DESCRIPTION	PARENT ITEM
1	1	141172-000	SLEEVE BEARING, 1/2OD. x 3/8ID. x 3/4LNG	22173-251
2	1	141173-000	SLEEVE BEARING, 23/32OD. x 5/8ID. x 3/4LNG	22173-251
3	2	181108-000	BEARING, NEEDLE ROLLER	22173-251
4	4	181111-000	THRUST WASHER	22173-251
5	1	362186-000	COLLAR, 3/8 IN. ID ONE-PIECE CLAMP	22173-251
6	4	792248-001	PILLOW BLOCK	22173-251
7	1	792355-000	DRYLIN RAIL	22173-251
8	1	A24077-000	BRONZE NUT, RH	22173-251
9	1	B21345-000	TOP BEARING PLATE	22173-251
10	1	B21346-000	BOTTOM BEARING PLATE	22173-251
11	1	C20626-000	STAND SLED	22173-251
12	1	C20910-001	THREADED ROD	22173-251
13	1	HCS281		22173-251
14	1	SQN022		22173-251

REV	DATE	DESCRIPTION	BY
A	7-13-18	NEW DRAWING	ATTT

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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°

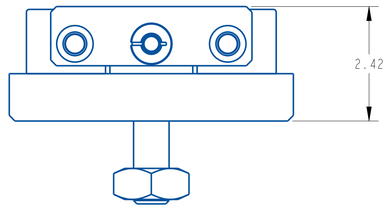
QUADREL LABELING SYSTEMS
7670 JENTHER DRIVE
MENTOR, OHIO 44060
(440) 602-4700

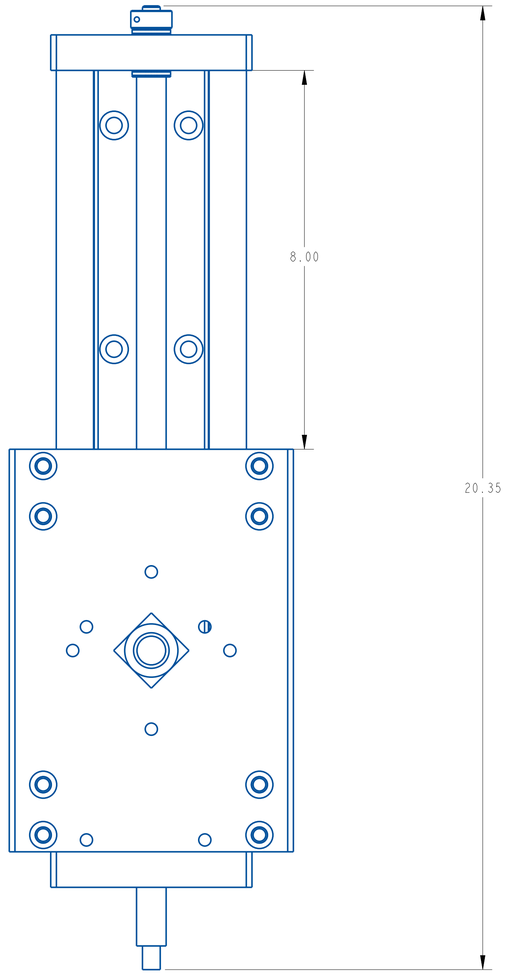
SCALE: 5/8
DATE: 7-3-18
DRW BY: ATT
CHK BY:04/24/2025-SEM
APPR BY:

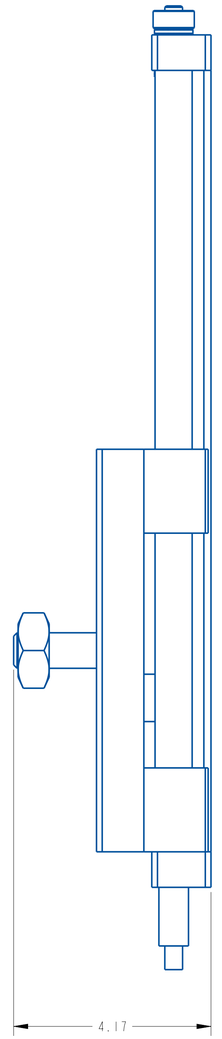
VERTICAL IGUS SLIDE, 17.5"

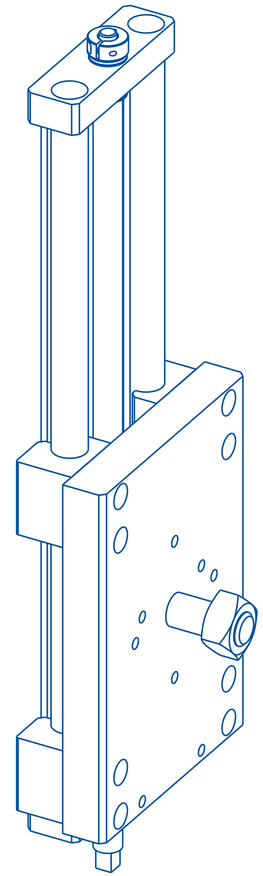
MAT'L

22173-251









SHEET 2 OF 2

REV	DATE	DESCRIPTION	BY
A		NEW DRAWING	

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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°

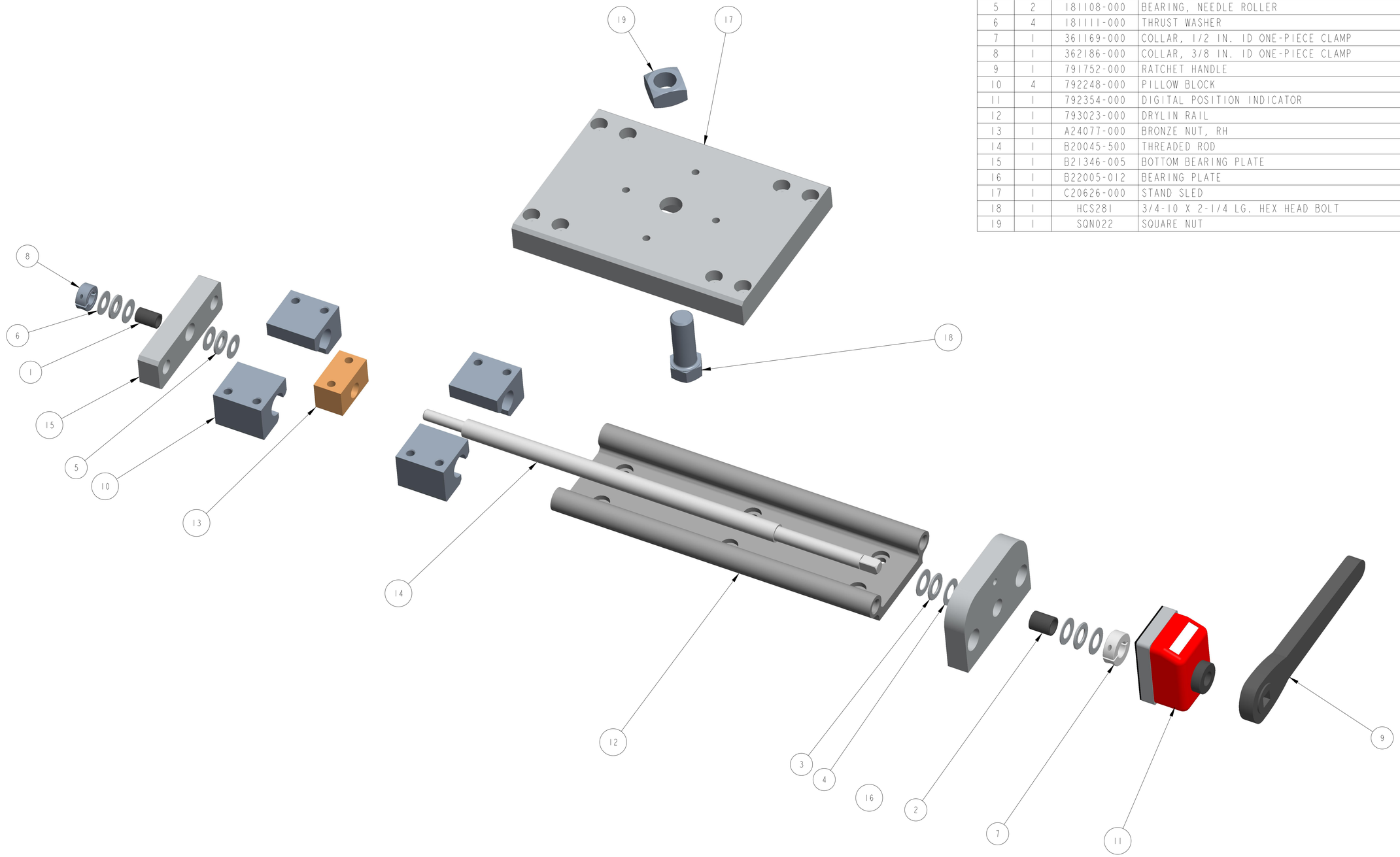
QUADREL LABELING SYSTEMS
7670 JENTHER DRIVE
MENTOR, OHIO 44060
(440) 602-4700

SCALE:	5/8
DATE:	7-3-18
DRW BY:	ATT
CHK BY:	04/24/2025-SEM
APPR BY:	

VERTICAL IGUS SLIDE, 17.5"

MAT'L: 22173-000

22173-251



ITEM	QTY	PART NO.	DESCRIPTION	PARENT ITEM
1	1	141172-000	SLEEVE BEARING	22173-501
2	1	141177-000	SLEEVE BEARING	22173-501
3	2	181079-000	BEARING, NEEDLE ROLLER	22173-501
4	4	181080-000	BEARING, THRUST WASHER	22173-501
5	2	181108-000	BEARING, NEEDLE ROLLER	22173-501
6	4	181111-000	THRUST WASHER	22173-501
7	1	361169-000	COLLAR, 1/2 IN. ID ONE-PIECE CLAMP	22173-501
8	1	362186-000	COLLAR, 3/8 IN. ID ONE-PIECE CLAMP	22173-501
9	1	791752-000	RATCHET HANDLE	22173-501
10	4	792248-000	PILLOW BLOCK	22173-501
11	1	792354-000	DIGITAL POSITION INDICATOR	22173-501
12	1	793023-000	DRYLIN RAIL	22173-501
13	1	A24077-000	BRONZE NUT, RH	22173-501
14	1	B20045-500	THREADED ROD	22173-501
15	1	B21346-005	BOTTOM BEARING PLATE	22173-501
16	1	B22005-012	BEARING PLATE	22173-501
17	1	C20626-000	STAND SLED	22173-501
18	1	HCS281	3/4-10 X 2-1/4 LG. HEX HEAD BOLT	22173-501
19	1	SQN022	SQUARE NUT	22173-501

REV	DATE		BY
A	3-17-23	NEW DRAWING	ATT
REV	DATE	ATT	BY

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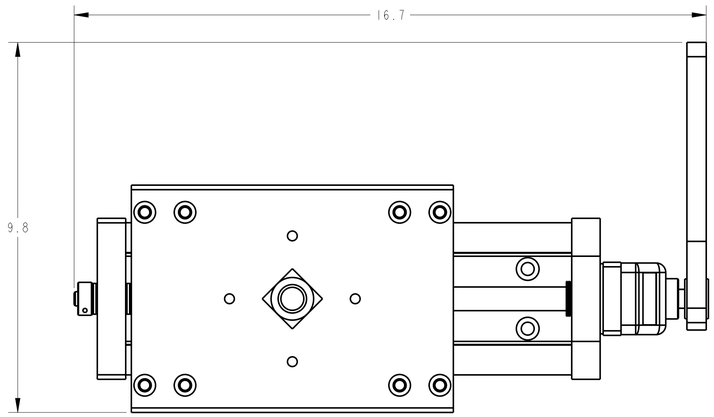
DIMENSIONAL TOLERANCE
X ± .1
XX ± .01
XXX ± .005
ANGLES ± 30'
SURFACE FINISH 125
BREAK ALL EDGES .005/.015
CORNER RADIUS .010/.030

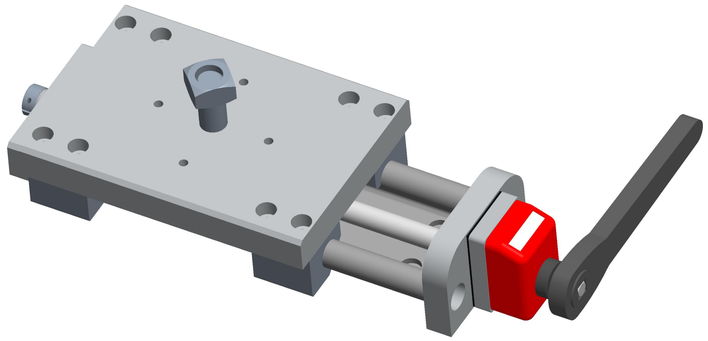
QUADREL LABELING SYSTEMS
7670 JENTHER DRIVE
MENTOR, OHIO 44060
(440) 602-4700

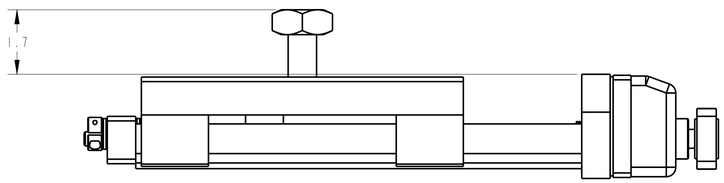
SCALE	5/8
DATE	3-17-23
DRAWN BY	ATT

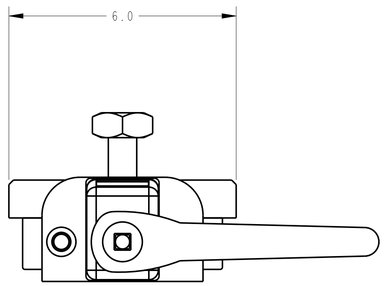
VERTICAL IGUS SLIDE

MAT'L | 22173-501 | 22173-501









REV	DATE	DESCRIPTION	BY
A	3-17-23	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

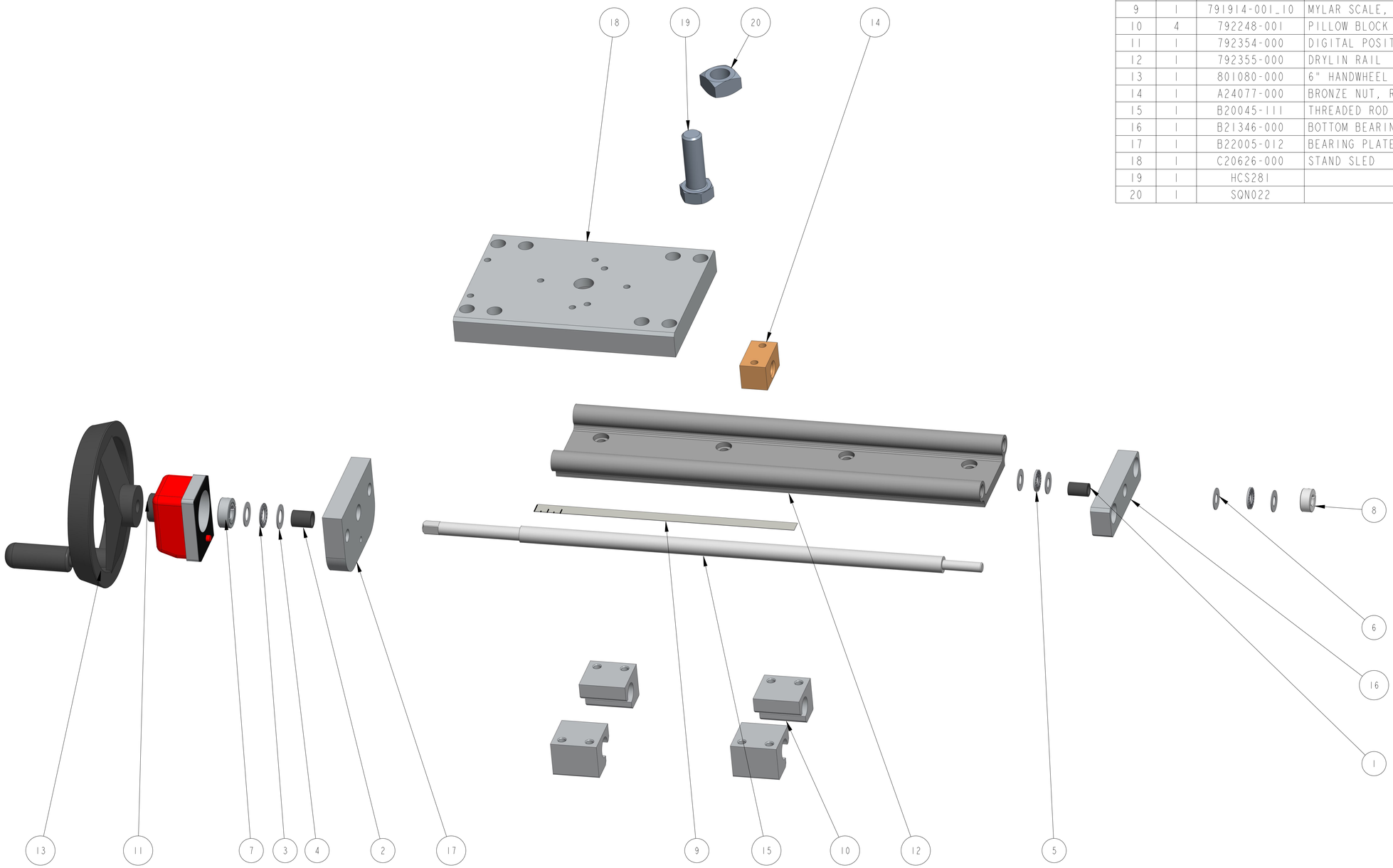
SCALE	1/2
DATE	3-17-23
DRAWN BY	ATT

VERTICAL IGUS SLIDE

MAT'L: 22173-501

22173-501

ITEM	QTY	PART NO.	DESCRIPTION	PARENT ITEM
1	1	141172-000	SLEEVE BEARING, 1/2OD. x 3/8ID. x 3/4LNG	22173-601
2	1	141177-000	SLEEVE BEARING, 5/8OD. x 1/2ID. x 3/4LNG	22173-601
3	1	181079-000	BEARING, NEEDLE ROLLER	22173-601
4	2	181080-000	BEARING, THRUST WASHER	22173-601
5	2	181108-000	BEARING, NEEDLE ROLLER	22173-601
6	4	181111-000	THRUST WASHER	22173-601
7	1	361169-000	COLLAR, 1/2 IN. ID ONE-PIECE CLAMP	22173-601
8	1	362186-000	COLLAR, 3/8 IN. ID ONE-PIECE CLAMP	22173-601
9	1	791914-001_10	MYLAR SCALE, QUADREL LOGO	22173-601
10	4	792248-001	PILLOW BLOCK	22173-601
11	1	792354-000	DIGITAL POSITION INDICATOR	22173-601
12	1	792355-000	DRYLIN RAIL	22173-601
13	1	801080-000	6" HANDWHEEL	22173-601
14	1	A24077-000	BRONZE NUT, RH	22173-601
15	1	B20045-111	THREADED ROD	22173-601
16	1	B21346-000	BOTTOM BEARING PLATE	22173-601
17	1	B22005-012	BEARING PLATE	22173-601
18	1	C20626-000	STAND SLED	22173-601
19	1	HCS281		22173-601
20	1	SQN022		22173-601



REV	DATE	DESCRIPTION	BY
A	3-25-20	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

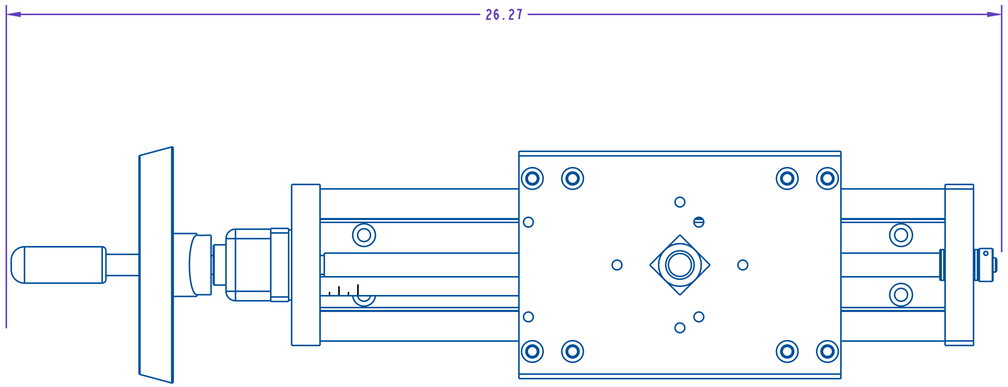
QUADREL LABELING SYSTEMS
7670 JENTHER DRIVE
MENTOR, OHIO 44060
(440) 602-4700

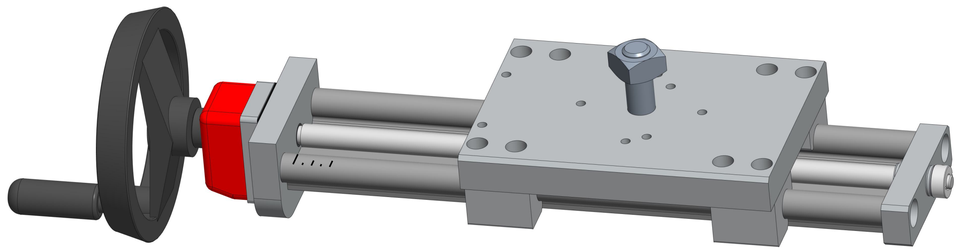
SCALE: 1/2
DATE: 3-25-20
DRW BY: ATT
CHK BY: 03/02/24-SEM
APPR BY:

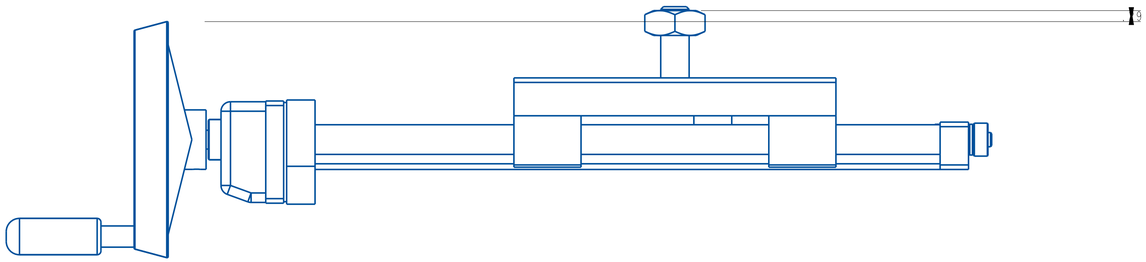
VERTICAL IGUS SLIDE, 17.5"

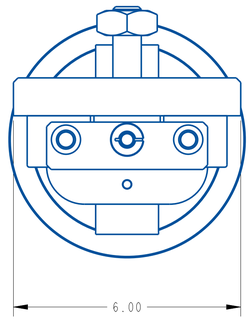
MAT'L

22173-601









REV	DATE	DESCRIPTION	BY
A	3-25-20	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°

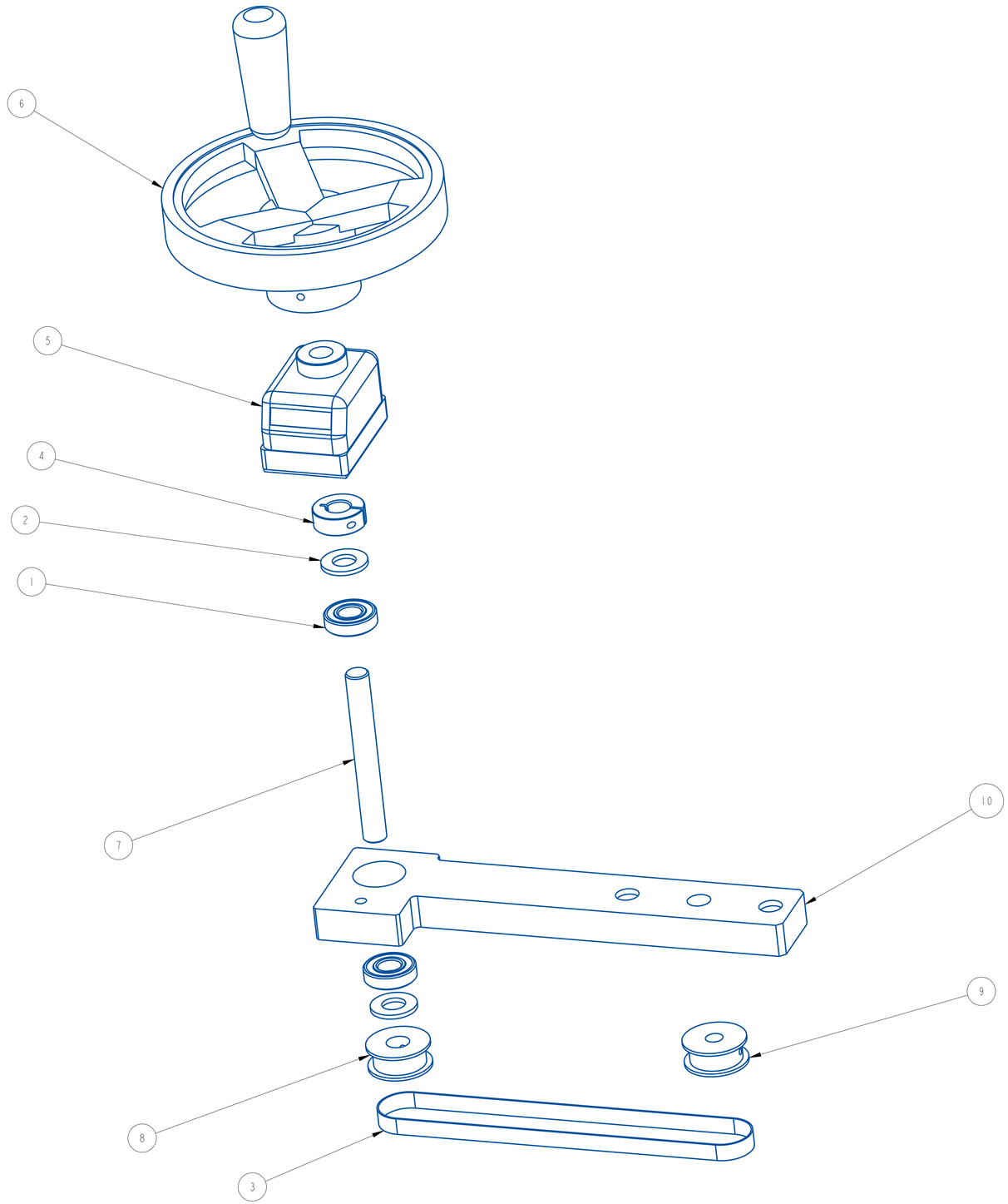
QUADREL LABELING SYSTEMS
7670 JENTHER DRIVE
MENTOR, OHIO 44060
(440) 602-4700

SCALE: 1/2
DATE: 3-25-20
DRW BY: ATT
CHK BY: 03/02/24-SEM
APPR BY:

VERTICAL IGUS SLIDE, 17.5"

MAT'L
22173-000

22173-601



ITEM	QTY	PART NO.	DESCRIPTION	PARENT ITEM
1	2	111072-000	BEARING, BALL	22489-004S
2	2	151018-000	BEARING, THRUST WASHER	22489-004S
3	1	191644-000	TIMING BELT	22489-004S
4	1	361169-000	COLLAR, 1/2 IN. ID ONE-PIECE CLAMP	22489-004S
5	1	792354-000	DIGITAL POSITION INDICATOR	22489-004S
6	1	801080-000	HANDLE WHEEL, MODIFIED	22489-004S
7	1	A25701-005	HANDLE SHAFT	22489-004S
8	1	A25702-000	TIMING PULLEY	22489-004S
9	1	A25881-000	TIMING PULLEY	22489-004S
10	1	B22738-004S	BOTTOM BEARING PLATE	22489-004S

REV	DATE	DESCRIPTION	BY
B	Feb-28-24	UPDATED DRAWING AND BOM	CRT
A	2-6-24	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°

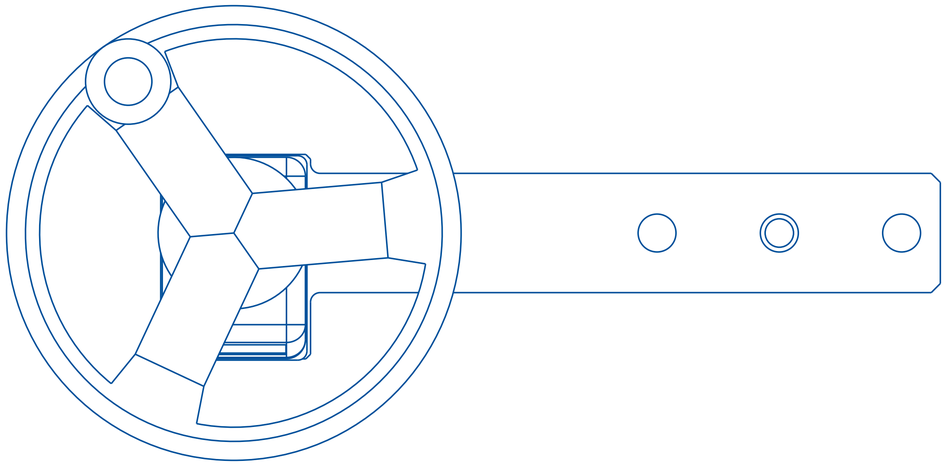
QUADREL LABELING SYSTEMS
7670 JENTHER DRIVE
MENTOR, OHIO 44060
(440) 602-4700

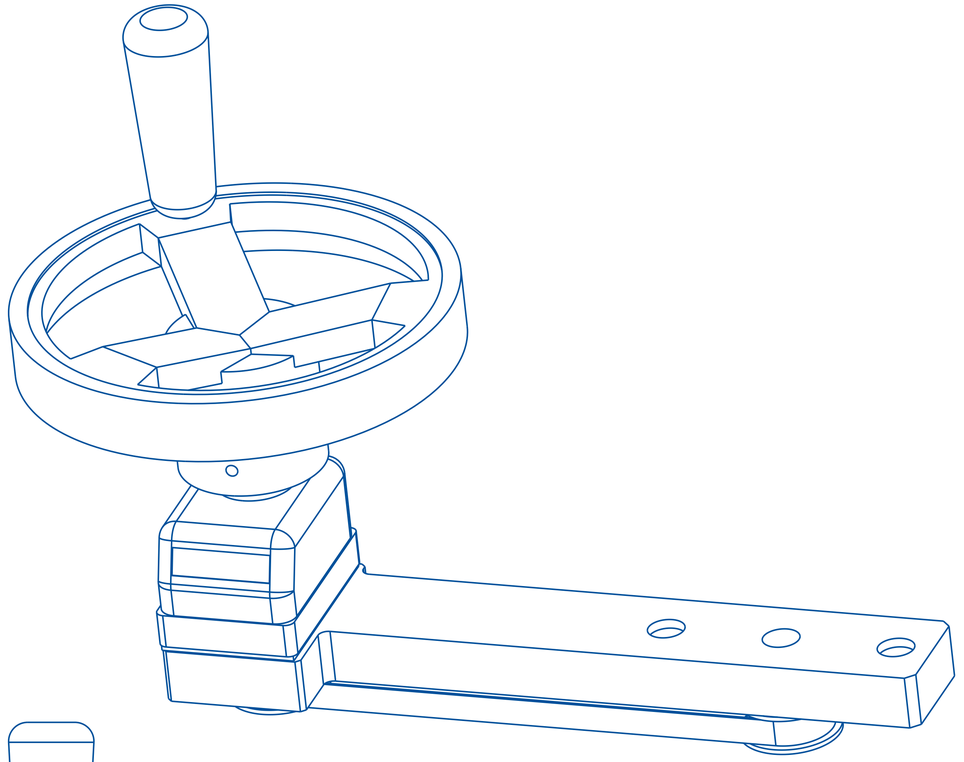
SCALE: 3/4
DATE: 2-6-24
DRW BY: ATT
CHK BY:02/27/2024-CRT
APPR BY:

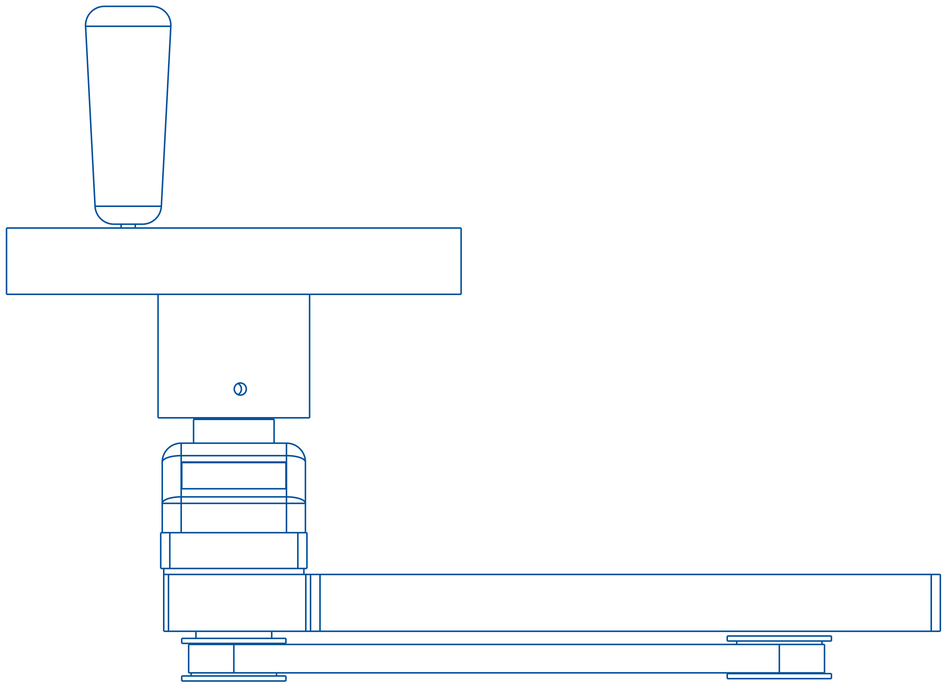
6" HANDWHEEL EXTENSION KIT

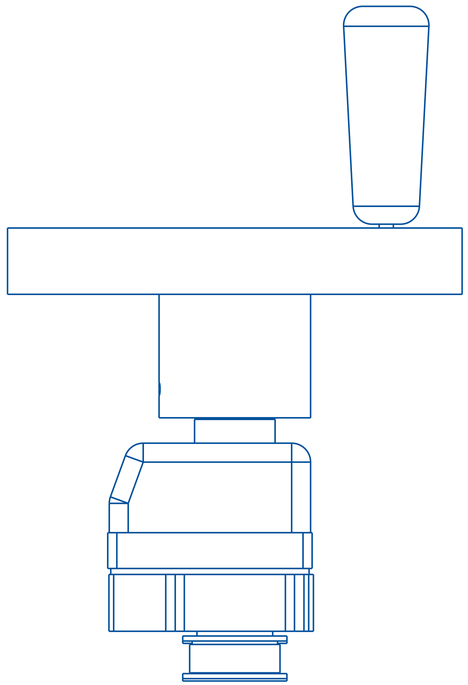
MAT'L 22489-004S

22489-004S









SHEET 2 OF 2

REV	DATE	DESCRIPTION	BY
A	2-6-24	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: 1/1
DATE: 2-6-24
DRW BY: ATT
CHK BY:02/27/2024-CRT
APPR BY:

6" HANDWHEEL EXTENSION KIT

MAT'L
22489-004S

22489-004S

ASSEMBLY TITLE: **FLAT BELT CONVEYOR**

GENERAL FUNCTION:
To transfer products to the labeling head to be labeled. To transfer the product to the labeling heads at a predetermined speed. To provide support for the guide rails and retention for the head support and guide rails.

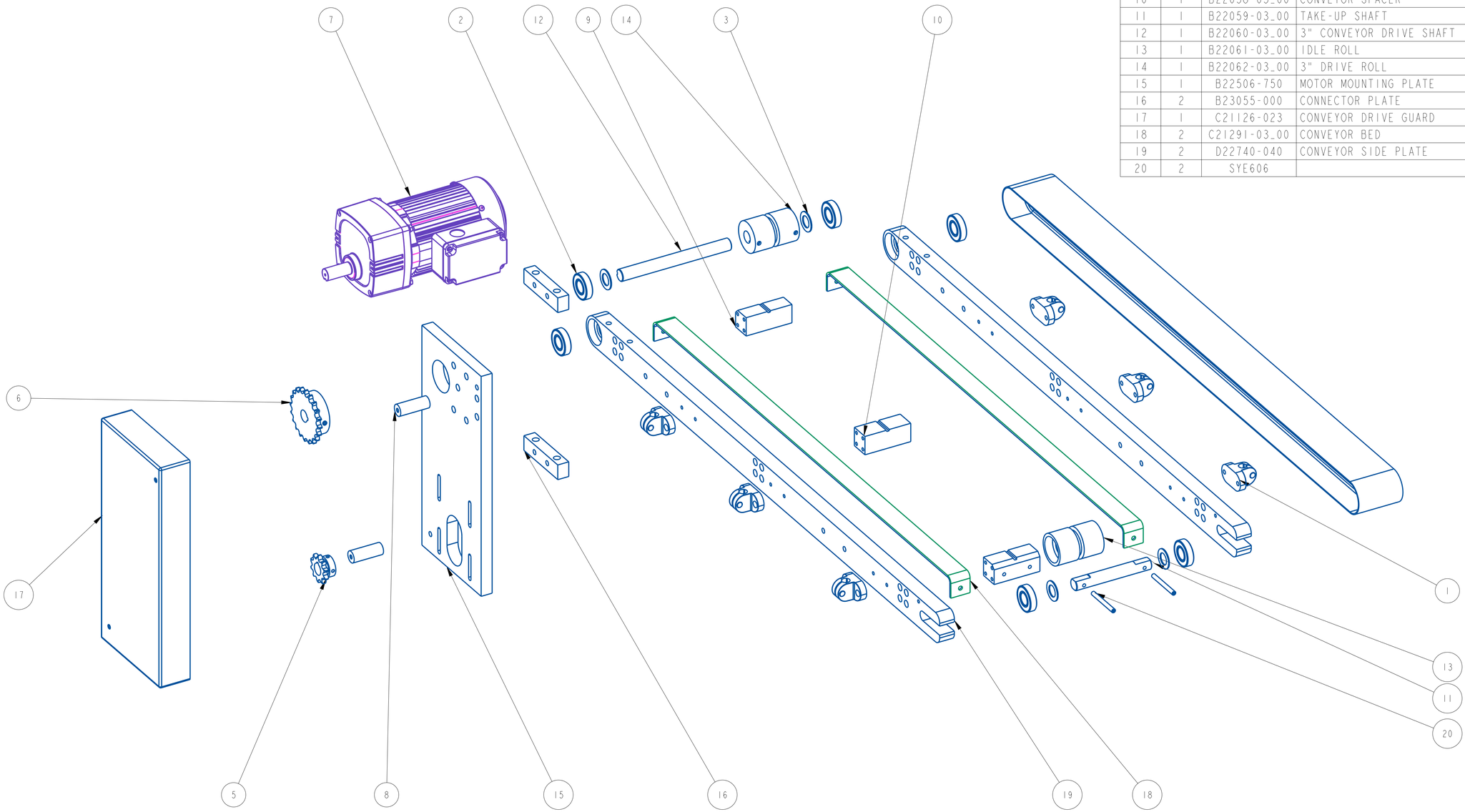
SET-UP AND ADJUSTMENTS:
Using adjustment knobs, adjust guide rails to direct flow of products along the conveyor. Adjust conveyor speed by means of conveyor speed potentiometer located in the remote electronics enclosure mounted to the conveyor.

MAINTENANCE:
The drive and idler assembly is pre-lubricated at the factory.
The main belt should be cleaned regularly using an environmentally safe cleaner.

TROUBLESHOOTING:

PROBLEM	WHAT TO DO
- Belt not tracking square	- Realign idler shafts by adjusting set screws. Creating more tension on one side will cause the belt to track toward the opposite side.
- Drive belts too loose	- Slide gear motor to create more tension on belts.

ITEM	QTY	PART NO.	DESCRIPTION	PARENT ITEM
1	6	092043-000	"T" CLAMP, 1/2 BORE	84222C-000
2	6	111074-000	BEARING, BALL	84222C-000
3	5	151063-000	BEARING, THRUST WASHER	84222C-000
4	1	193458-03_00	CONTINUOUS SILICONE BELT, V-GUIDE, 3.0" X 86.283"	84222C-000
5	1	322087-001	SPROCKET, 10 TOOTH, 1/2" BORE	84222C-000
6	1	322189-001	FINISHED SPROCKET-3/4" BORE KEY & SS	84222C-000
7	1	413016-000	GEARMOTOR-3/8HP-57 RPM 3PHASE	84222C-000
8	2	A25452-001	GUARD STAND OFF	84222C-000
9	2	B22057-03_00	CONVEYOR SPACER WITH CHAMFER	84222C-000
10	1	B22058-03_00	CONVEYOR SPACER	84222C-000
11	1	B22059-03_00	TAKE-UP SHAFT	84222C-000
12	1	B22060-03_00	3" CONVEYOR DRIVE SHAFT	84222C-000
13	1	B22061-03_00	IDLE ROLL	84222C-000
14	1	B22062-03_00	3" DRIVE ROLL	84222C-000
15	1	B22506-750	MOTOR MOUNTING PLATE	84222C-000
16	2	B23055-000	CONNECTOR PLATE	84222C-000
17	1	C21126-023	CONVEYOR DRIVE GUARD	84222C-000
18	2	C21291-03_00	CONVEYOR BED	84222C-000
19	2	D22740-040	CONVEYOR SIDE PLATE	84222C-000
20	2	SYE606		84222C-000



REV	DATE	DESCRIPTION	BY
B	Oct-28-25	WAS 1/6HP MOTOR	RDL
A	Oct-08-25	NEW DRAWING	RDL

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

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

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

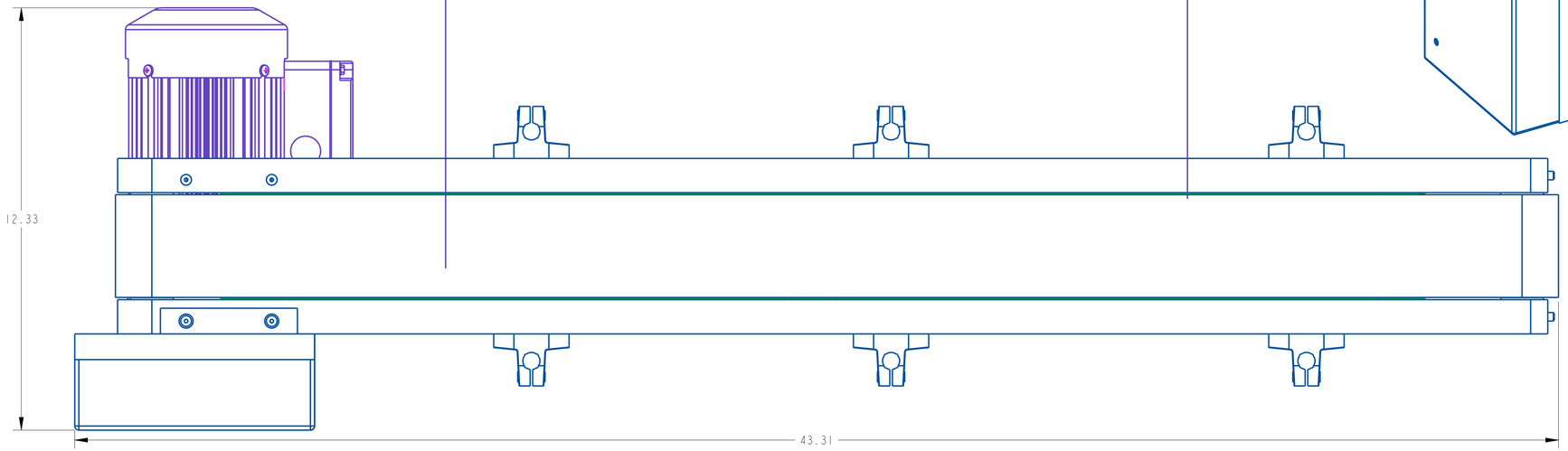
QUADREL LABELING SYSTEMS
7670 JENTHER DRIVE
MENTOR, OHIO 44060
(440) 602-4700

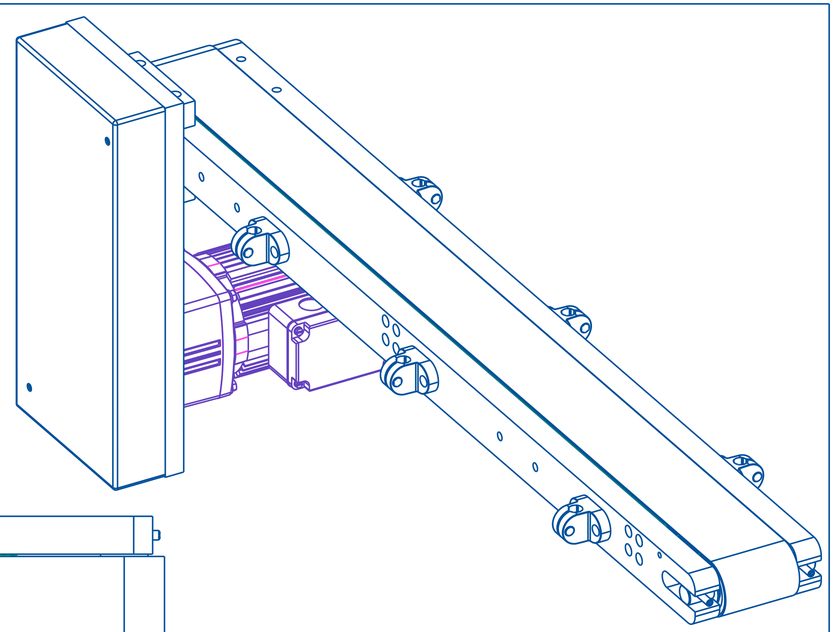
SCALE: 5/16
DATE: Oct-08-25
DRW BY: RDL
CHK BY: 10/09/2025-SEM
APPR BY:

FLAT BELT CONVEYOR, 3" X 40"

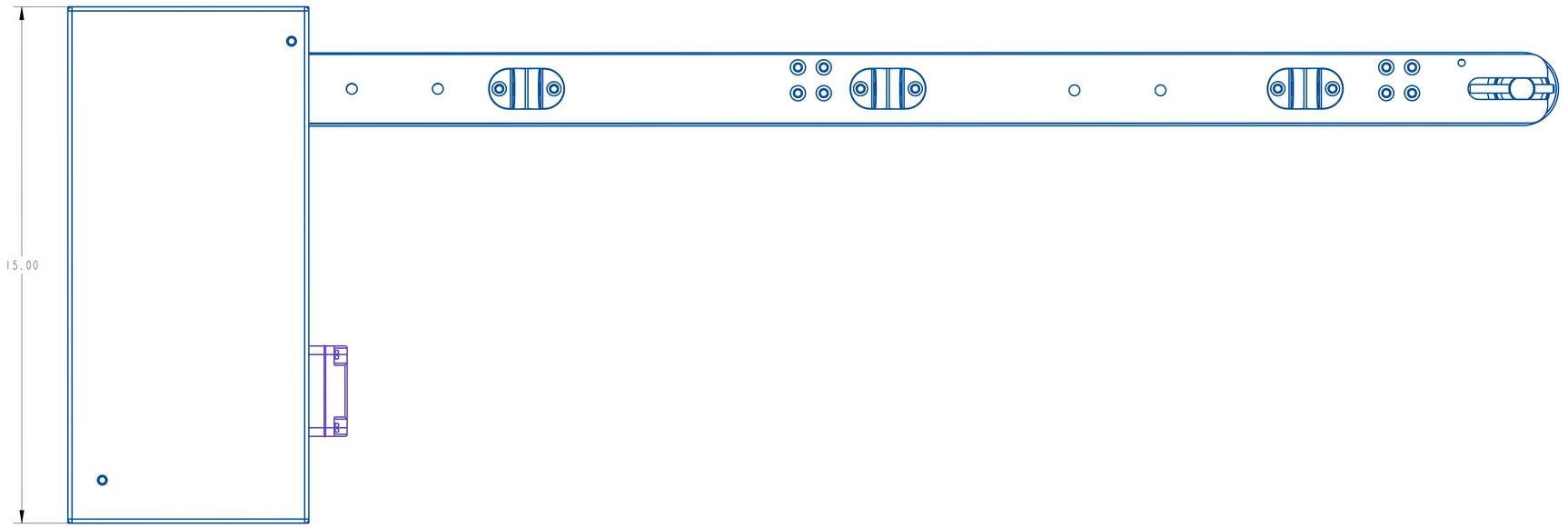
MAT'L 84222C-0000

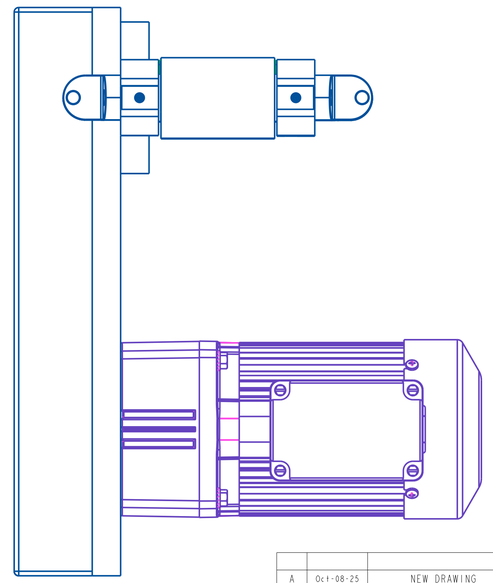
84222C-000





SCALE 3/8





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

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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

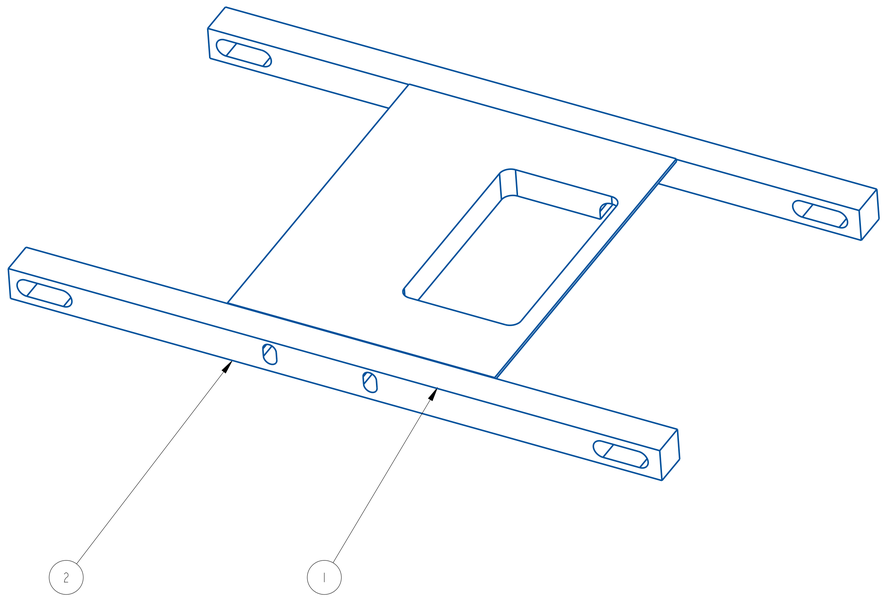
SCALE: 1/2
DATE: Oct-08-25
DRW BY: RDL
CHK BY:10/09/2025-SEM
APPR BY:

FLAT BELT CONVEYOR, 3" X 40"

MAT'L
84222C-0000

84222C-000

ITEM	QTY	PART NO.	DESCRIPTION	PARENT ITEM
1	1	A28321-000	TRANSFER PLATE 3" WIDE CONVYOR	22831-001
2	2	A28322-000	MOUNTING BAR	22831-001



REV	DATE	DESCRIPTION	BY
A	10/08/25	NEW DRAWING	SEM

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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°

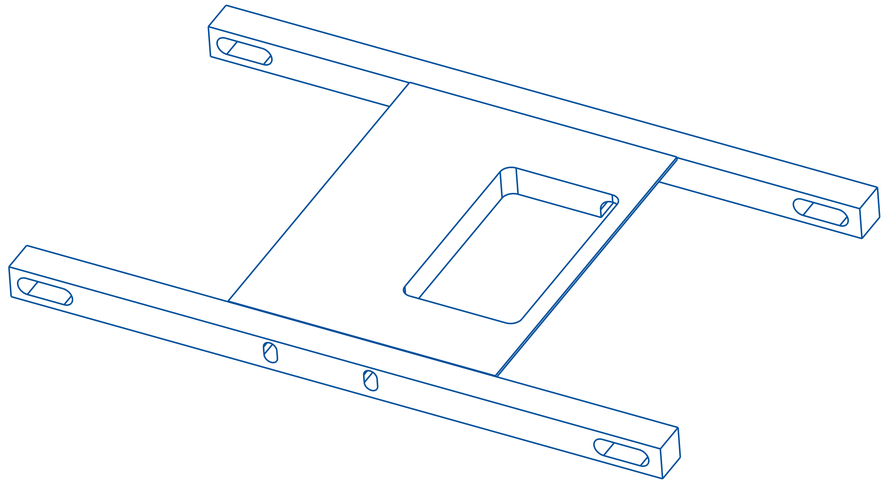
QUADREL LABELING SYSTEMS
7670 JENTHER DRIVE
MENTOR, OHIO 44060
(440) 602-4700

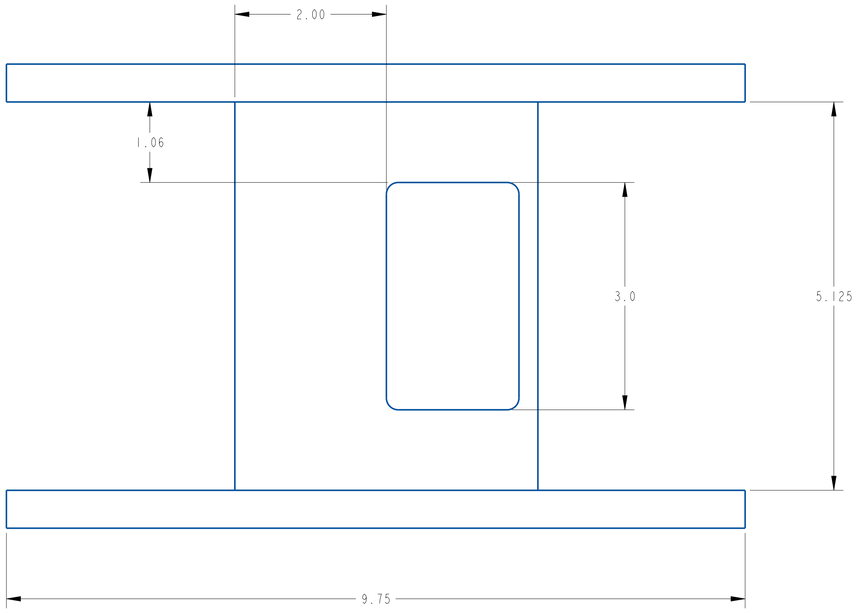
SCALE: 1/1
DATE: 10/08/25
DRW BY: SEM
CHK BY: 10/08/2025-SEM
APPR BY:

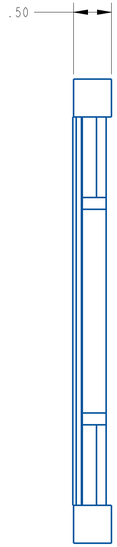
END TRANSFER 3.0" F/B-CONV TO F/B-CONV

MAT'L

22831-001







SHEET 2 OF 2

REV	DATE	DESCRIPTION	BYE
A	10/08/25	NEW DRAWING	SEM

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

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

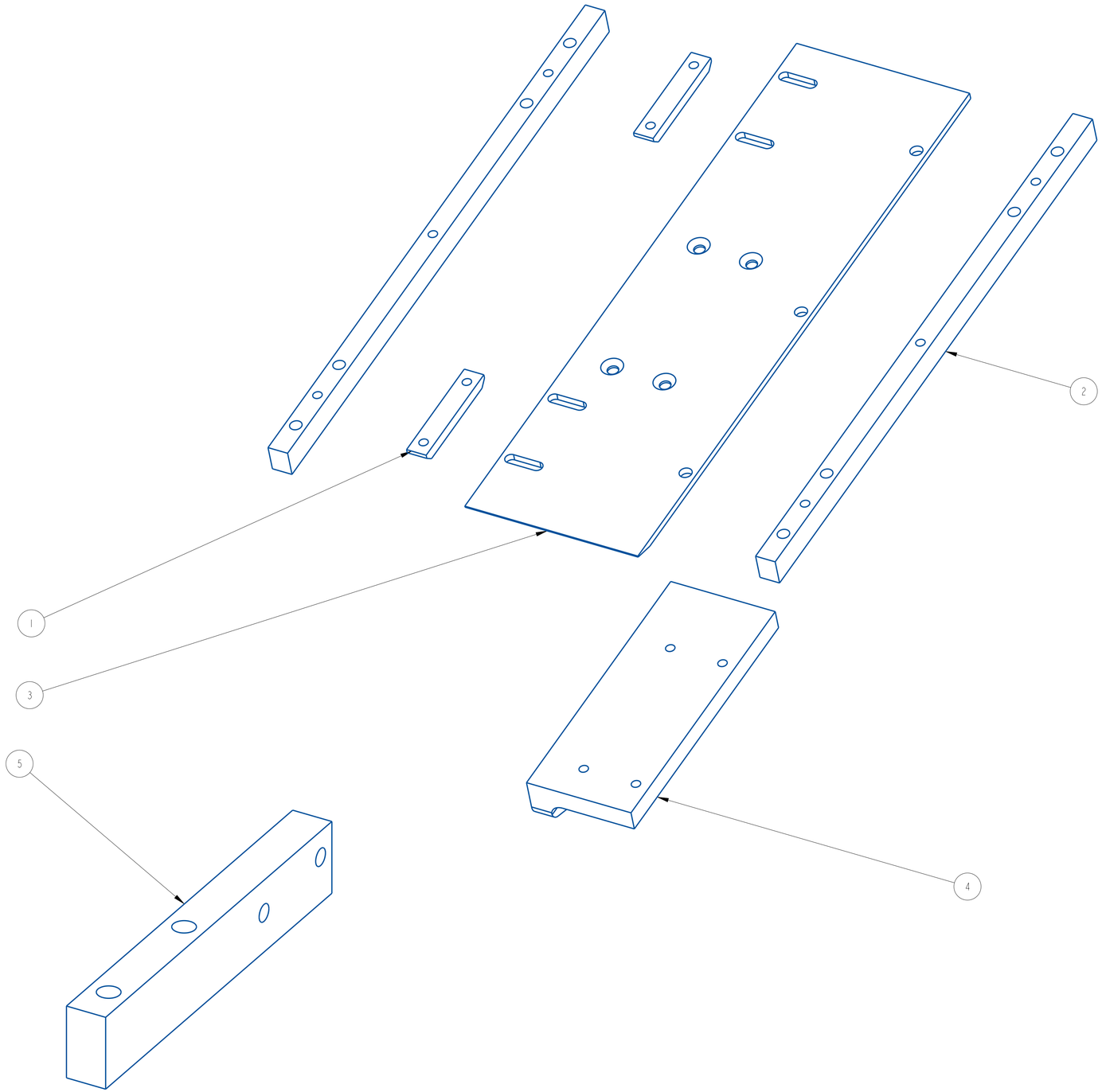
SCALE: 1/1
DATE: 10/08/25
DRW BY: SEM
CHK BY: 10/08/2025-SEM
APPR BY:

END TRANSFER 3.0" F/B-CONV TO F/B-CONV

MAT'L

22831-001

ITEM	QTY	PART NO.	DESCRIPTION	PARENT ITEM
1	2	A28315-000	STAP NUT, #10-32 x 1.50 oc	22751-000
2	2	A28316-000	GUILD RAIL	22751-000
3	1	B21319-003	INFEED RAMP	22751-000
4	1	B22546-005	MOUNTING ANGLE	22751-000
5	1	B23055-003	CONNECTOR PLATE	22751-000



REV	DATE	DESCRIPTION	BY
A	Oct-10-25	NEW DRAWING	SEM

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ALL ANGLES ARE 90°

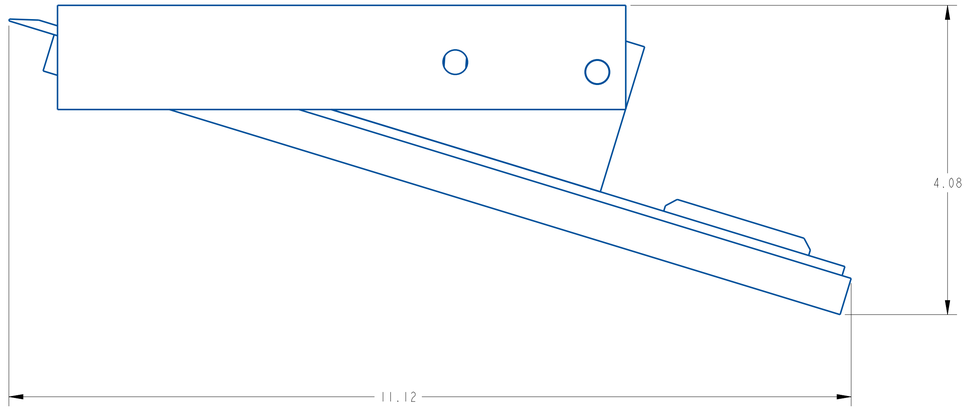
QUADREL LABELING SYSTEMS
7670 JENTHER DRIVE
MENTOR, OHIO 44060
(440) 602-4700

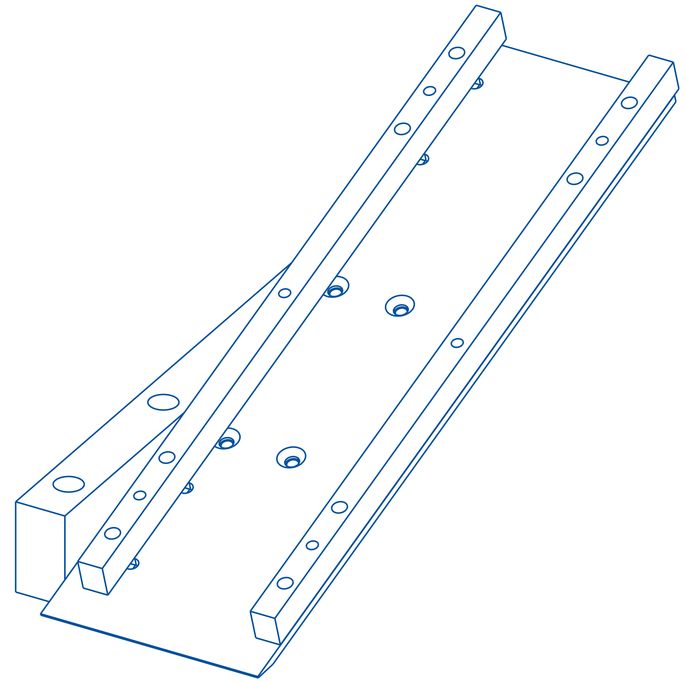
SCALE: 1/1
DATE: 10/10/25
DRW BY: SEM
CHK BY:10/10/2025-SEM
APPR BY:

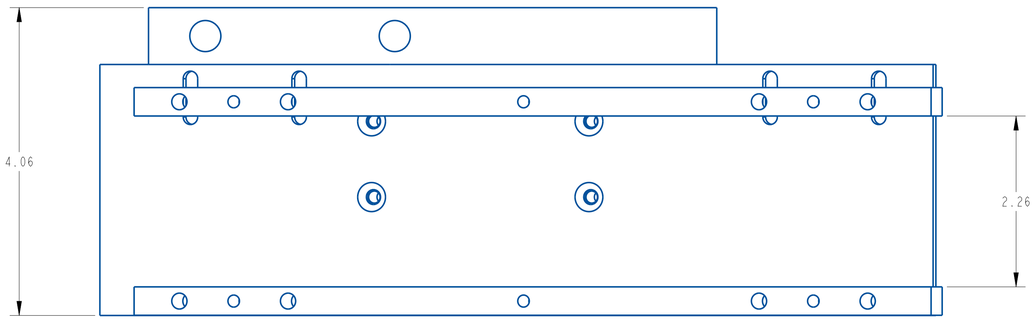
INFEED RAMP, 3"

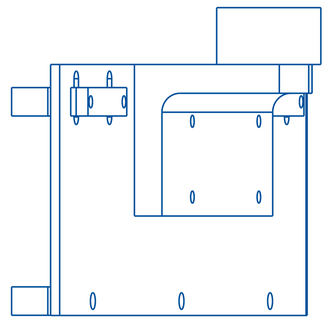
MAT'L

22751-000









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

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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: 10/10/25
DRW BY: SEM
CHK BY:10/10/2025-SEM
APPR BY:

INFEED RAMP, 3"

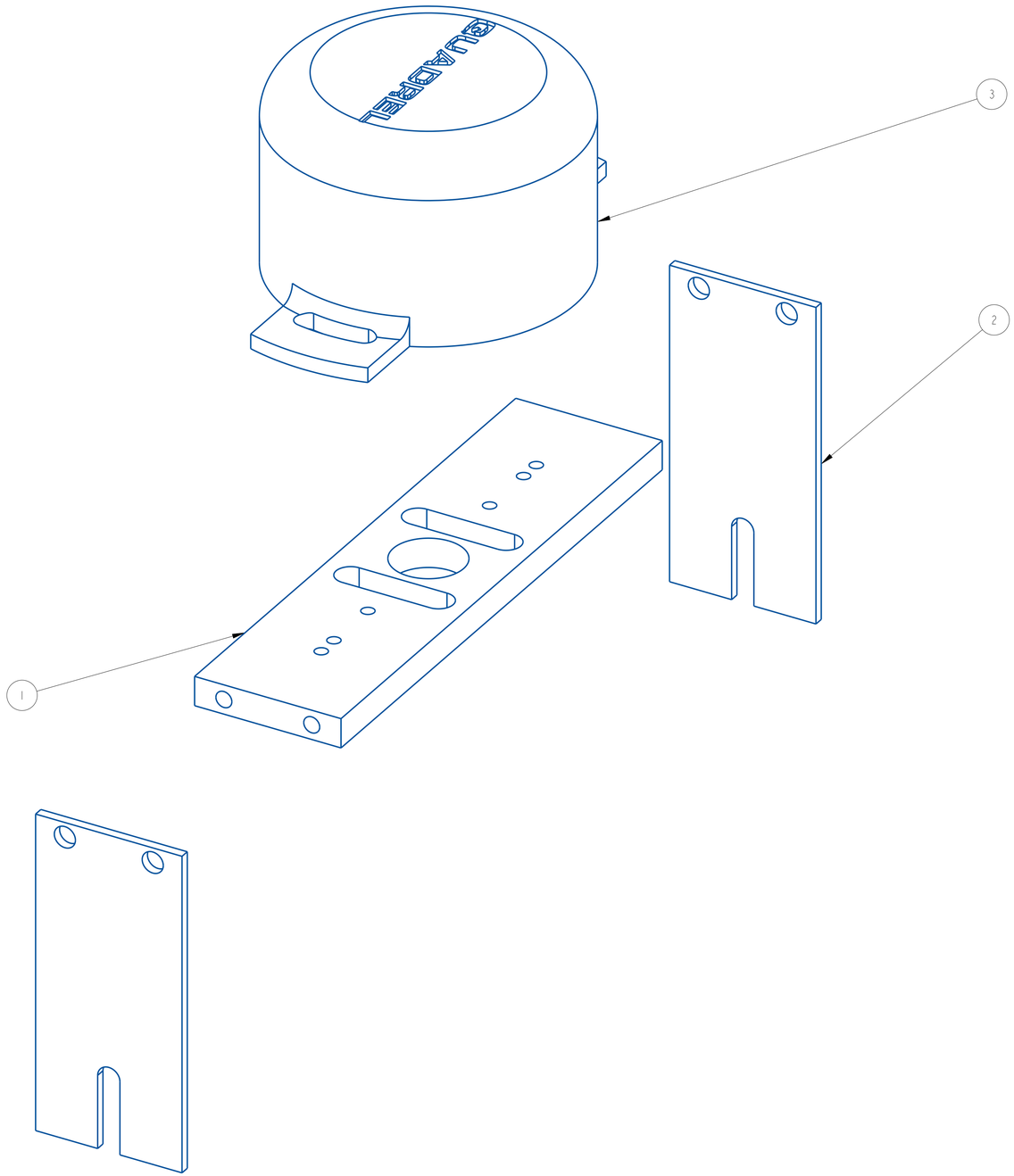
MAT'L

22751-000

ITEM	QTY	PART NO.	DESCRIPTION	PARENT ITEM
1	1	A25400-100	ENCODER MOUNTING PLATE	22888-000
2	2	A25400-102	ENCODER MOUNTING PLATE	22888-000
3	1	A25400-201	ENCODERCOV	22888-000

NOT SHOWN:

202057-001 ENCODER
0964 ENCODER SHAFT KIT



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

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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°

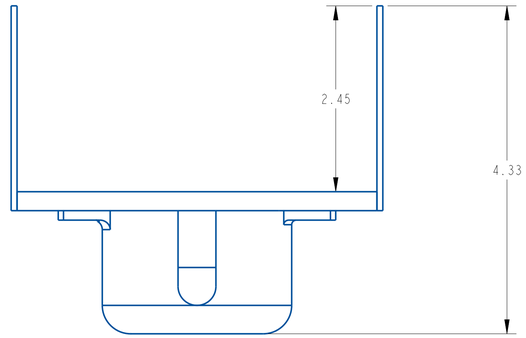
QUADREL LABELING SYSTEMS
7670 JENTHER DRIVE
MENTOR, OHIO 44060
(440) 602-4700

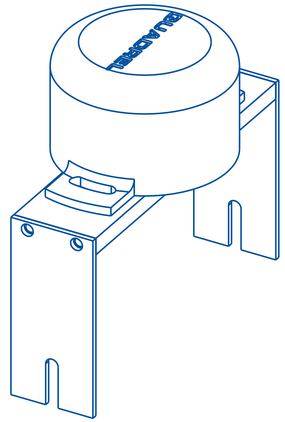
SCALE: 2/1
DATE: 11/11/24
DRW BY: SEM
CHK BY: 00/00/000-sem
APPR BY:

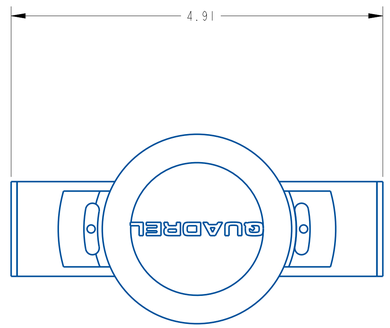
ENCODER COVER ASSEMBLY

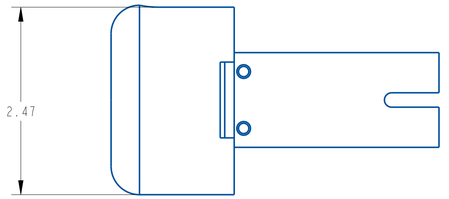
MAT'L -

22888-000









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
ALL ANGLES ARE 90°

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

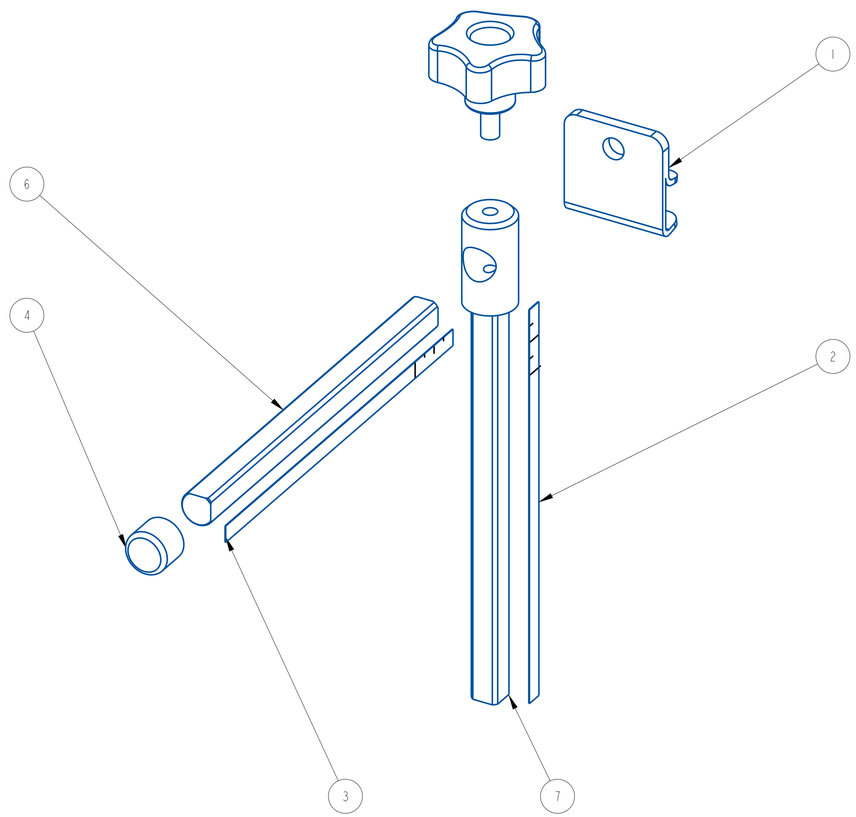
SCALE: 1/1
DATE: 11/11/24
DRW BY: SEM
CHK BY: 00/00/000-sem
APPR BY:

ENCODER COVER ASSEMBLY

MAT'L
-

22888-000

ITEM	QTY	PART NO.	DESCRIPTION	PARENT ITEM
1	1	791732-000	CLAMP FOR CONICAL SIDE GUIDE	22435-035
2	1	791914-002_06	MYLAR SCALE, QUADREL LOGO	22435-035
3	1	791914-003_06	MYLAR SCALE, QUADREL LOGO, 6" LG.	22435-035
4	1	792711-000	CAP, ORANGE	22435-035
5	1	801308-000	KNOB W/ 1/4-20 STUD	22435-035
6	1	A21198-199	ADJUSTMENT ROD	22435-035
7	1	A28000-000	CLAMPING ROD ASSEMBLY 6"	22435-035



REV	DATE	DESCRIPTION	BY
A	Oct-29-25	NEW DRAWING	RDL

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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°

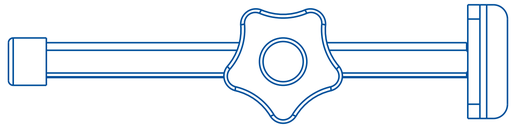
QUADREL LABELING SYSTEMS
7670 JENTHER DRIVE
MENTOR, OHIO 44060
(440) 602-4700

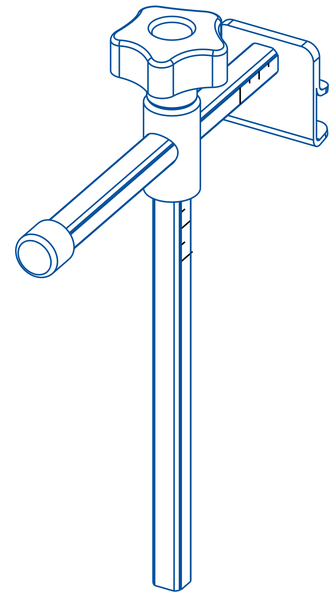
SCALE:	1/1
DATE:	Oct-29-25
DRW BY:	RDL
CHK BY:	
APPR BY:	

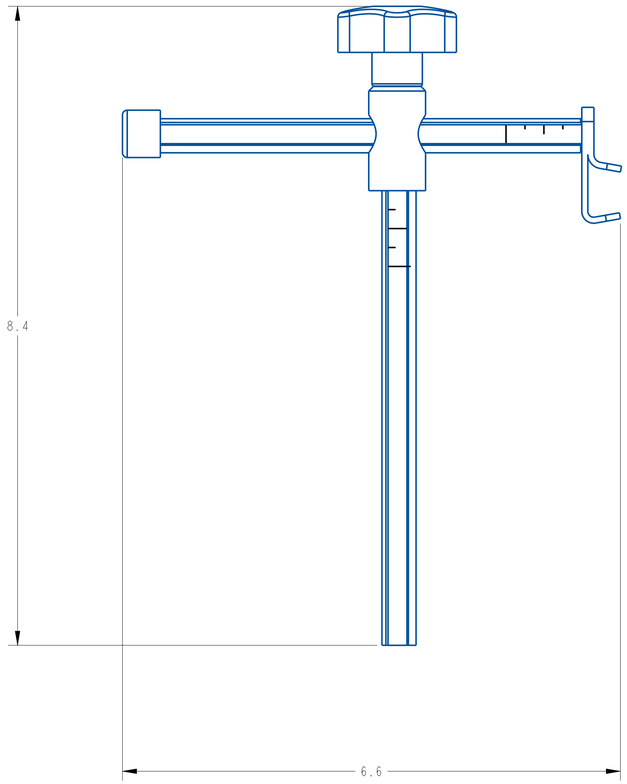
RAIL KIT WITH SCALES

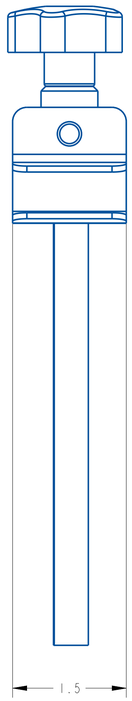
MAT'L

22435-035









REV	DATE	DESCRIPTION	BY
A	Oct-29-25	NEW DRAWING	RDL

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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

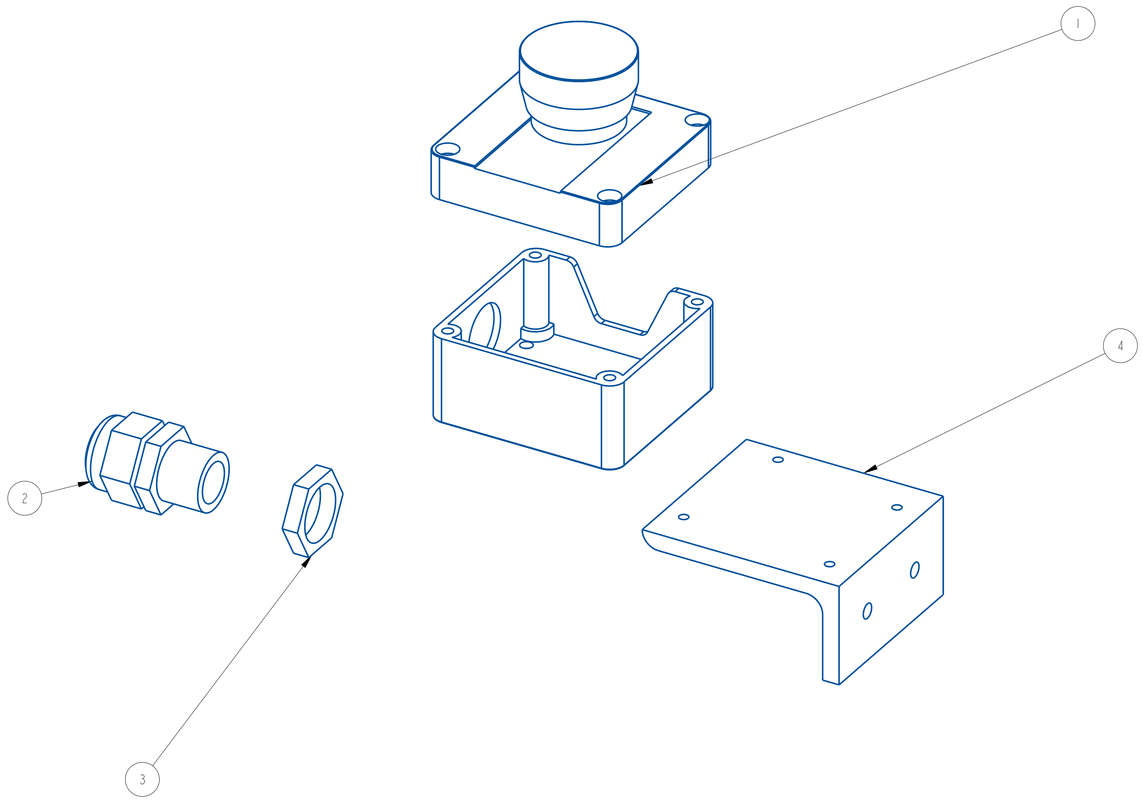
SCALE:	1/1
DATE:	Oct-29-25
DRW BY:	RDL
CHK BY:	
APPR BY:	

RAIL KIT WITH SCALES

MAT'L

22435-035

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

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

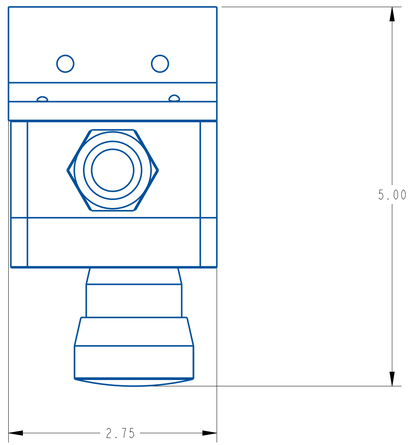
QUADREL LABELING SYSTEMS
7670 JENTHER DRIVE
MENTOR, OHIO 44060
(440) 602-4700

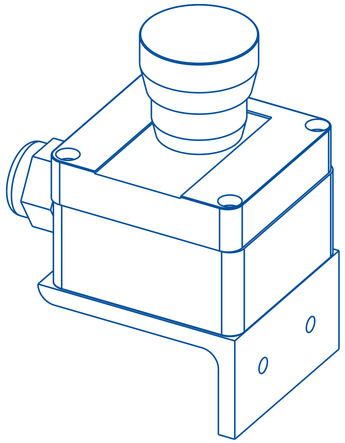
SCALE: 1/1
DATE: 8-29-16
DRW BY: TJS
CHK BY: 03/08/2024-SEM
APPR BY:

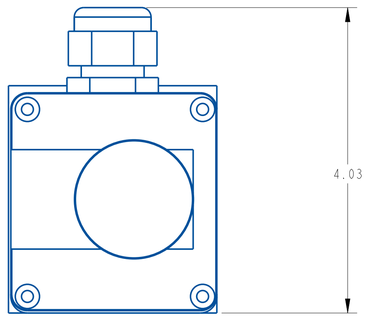
EMERGENCY STOP ASSEMBLY

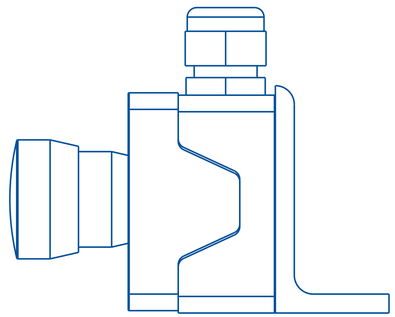
MAT'L

20789-000









REV	DATE	DESCRIPTION	BY
A	8-29-16	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
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: **YARDARM ASSEMBLY**

DRAWING NO.:

GENERAL FUNCTION:

- Provides solid mounting for labeling head when installed on a system which allows for third axis of adjustment.
- Allows for rotational movement of the labeling head assembly in the setup procedure.

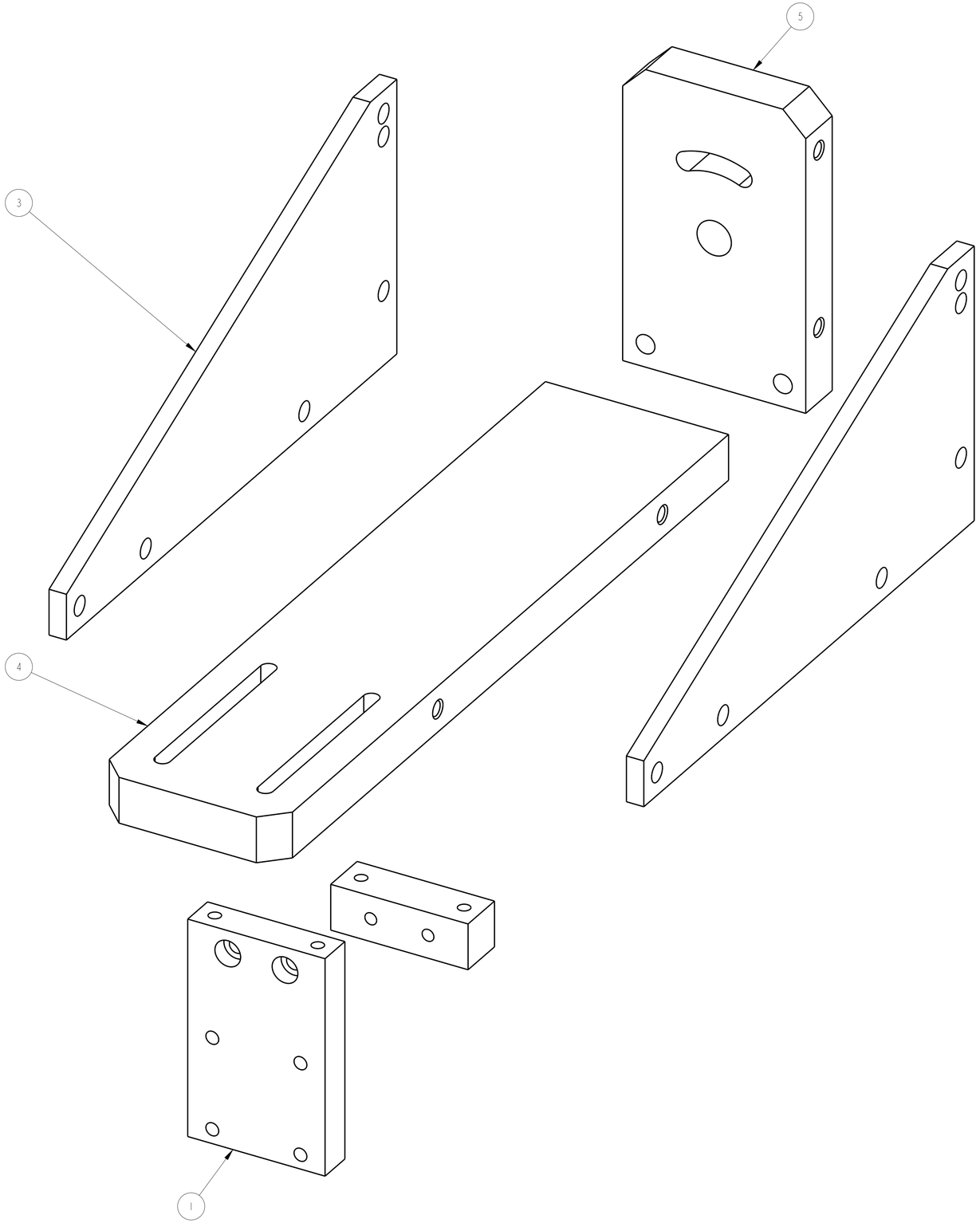
SET-UP AND ADJUSTMENTS:

- Secure bolts when proper position is achieved.
- Using ratchet handle, adjust labeling head vertical position. The location need to be in the extended position in order to achieve correct location.

MAINTENANCE:

- Clean and remove labels

ITEM	QTY	PART NO.	DESCRIPTION	PARENT ITEM
1	1	A28449-000	PACING BELT YARD ARM MOUNT	21367-005
2	1	A28455-000	GUSSET BLOCK	21367-005
3	2	B20823-000	YARD ARM GUSSET	21367-005
4	1	B20824-011	TOP PLATE YARD ARM	21367-005
5	1	B20827-005	YARD ARM MOUNTING PLATE	21367-005



REV	DATE	DESCRIPTION	BY
A	Sep-22-25	NEW DRAWING	RDL

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

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

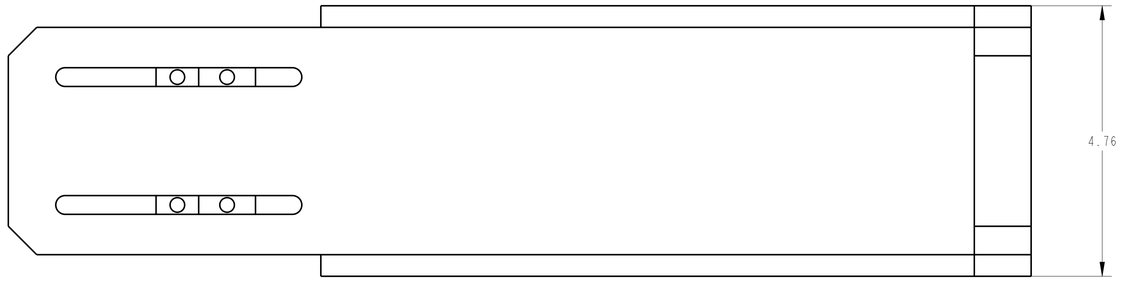
QUADREL LABELING SYSTEMS
7670 JENTHER DRIVE
MENTOR, OHIO 44060
(440) 602-4700

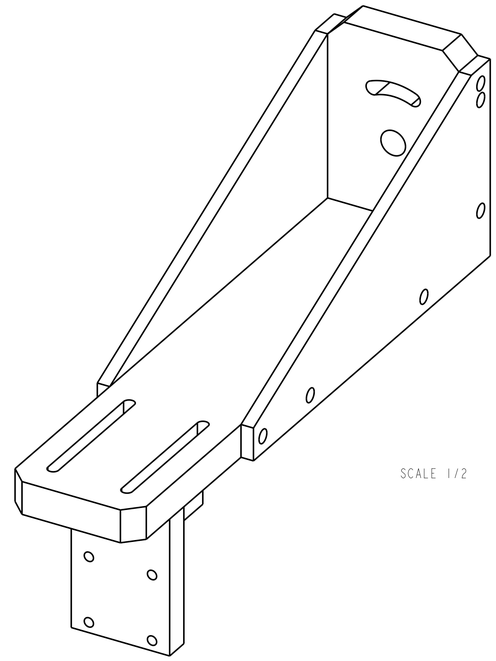
SCALE:	7/8
DATE:	Sep-22-25
DRW BY:	RDL
CHK BY:	
APPR BY:	

TOP PACING YARDARM

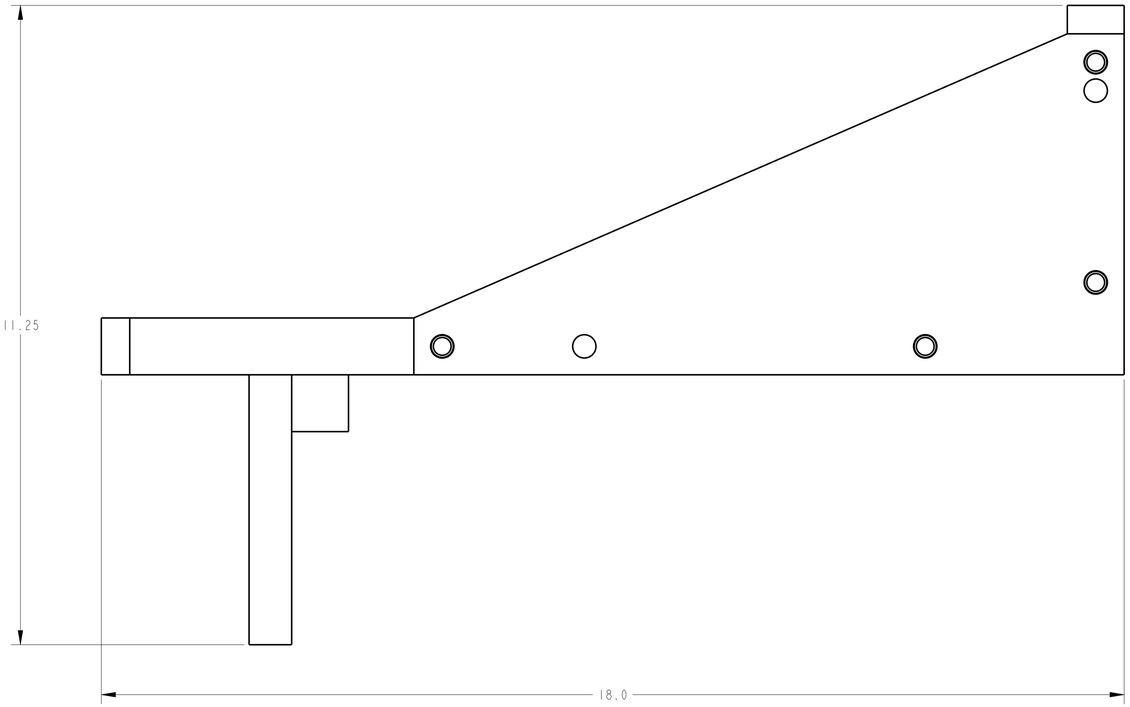
MAT'L

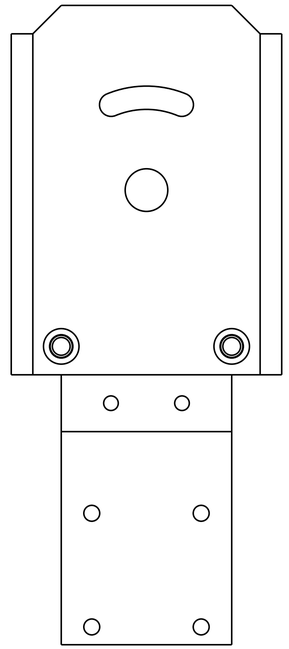
21367-005





SCALE 1/2





SHEET 2 OF 2

REV	DATE	DESCRIPTION	BY
A	Sep-22-25	NEW DRAWING	RDL

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

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

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

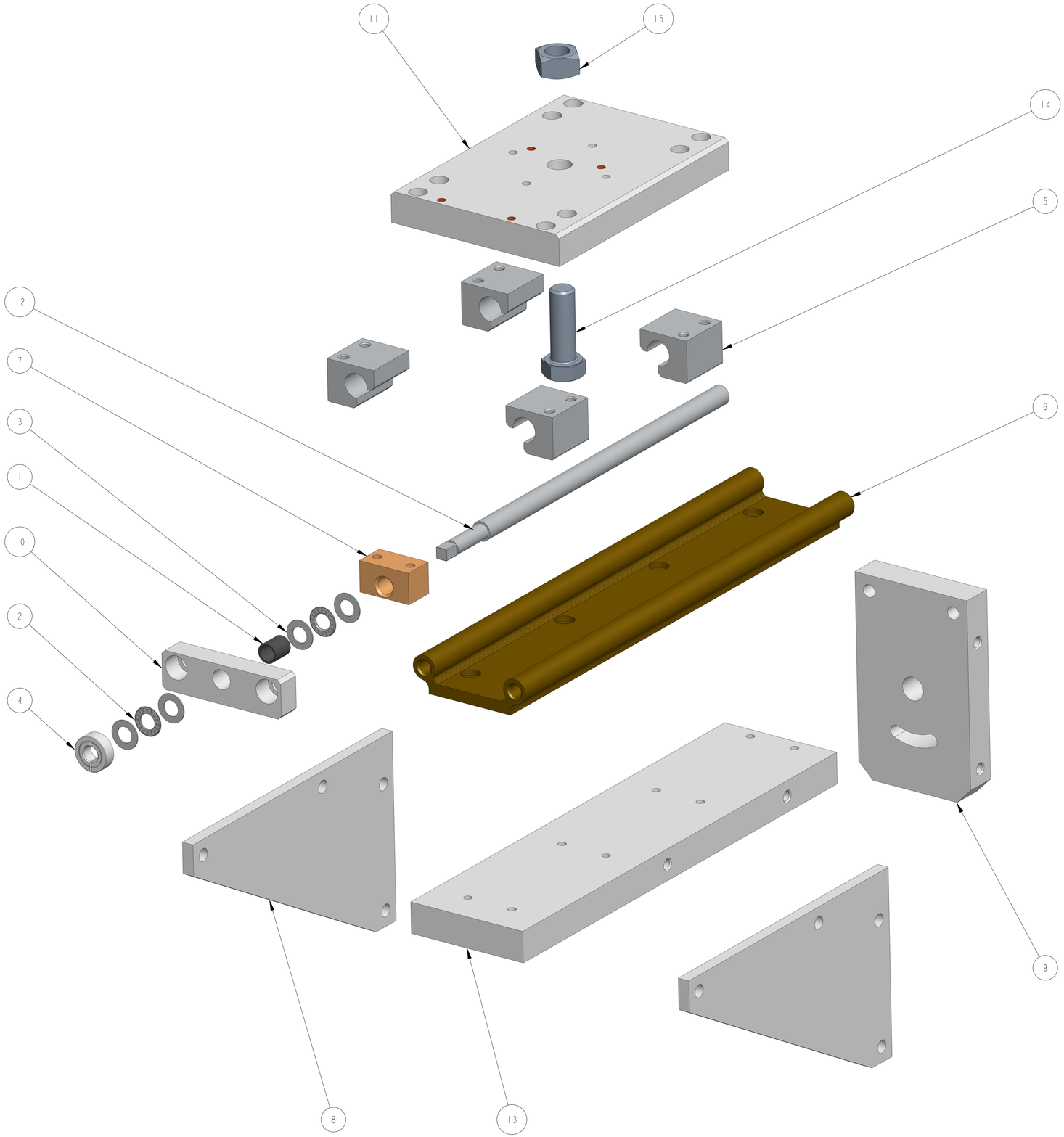
QUADREL LABELING SYSTEMS
7670 JENTHER DRIVE
MENTOR, OHIO 44060
(440) 602-4700

SCALE:	3/4
DATE:	Sep-22-25
DRW BY:	RDL
CHK BY:	
APPR BY:	

TOP PACING YARDARM

MAT'L

21367-005



ITEM	QTY	PART NO.	DESCRIPTION	PARENT ITEM
1	1	141177-000	SLEEVE BEARING, 5/8OD. x 1/2ID. x 3/4LNG	22448-000
2	2	181079-000	BEARING, NEEDLE ROLLER	22448-000
3	4	181080-000	BEARING, THRUST WASHER	22448-000
4	1	361169-000	COLLAR, 1/2 IN. ID ONE-PIECE CLAMP	22448-000
5	4	792248-000	PILLOW BLOCK *NOTE USE 792248-001*	22448-000
6	1	792355-000	DRYLIN RAIL	22448-000
7	1	A24077-000	BRONZE NUT, RH	22448-000
8	2	B20823-006	YARD ARM GUSSET	22448-000
9	1	B20827-000	YARD ARM MOUNTING PLATE	22448-000
10	1	B21346-001	BOTTOM BEARING PLATE	22448-000
11	1	C20626-000	STAND SLED	22448-000
12	1	C20977-002	THREADED ROD, RH	22448-000
13	1	C21189-001	TOP PLATE YARD ARM	22448-000
14	1	HCS281		22448-000
15	1	SQN022		22448-000

SHEET 1 OF 2

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

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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°

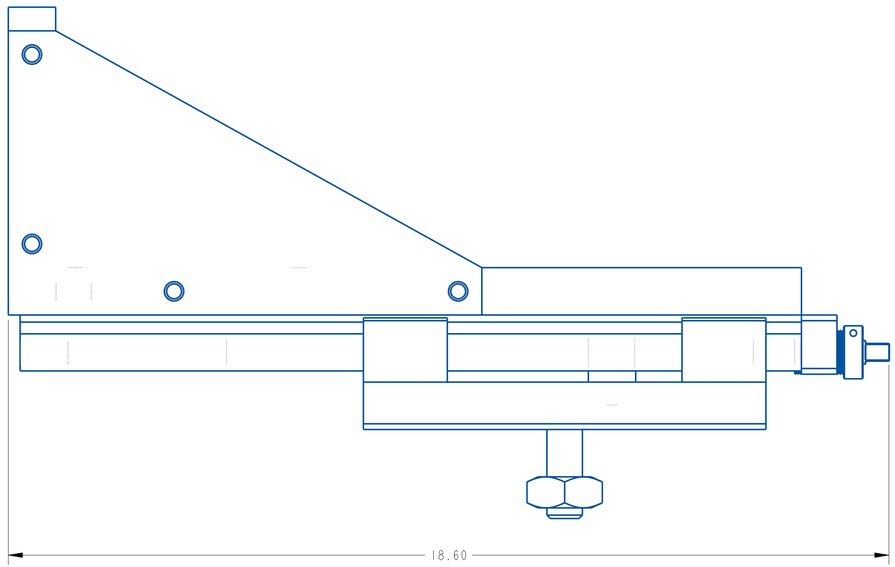
QUADREL LABELING SYSTEMS
7670 JENTHER DRIVE
MENTOR, OHIO 44060
(440) 602-4700

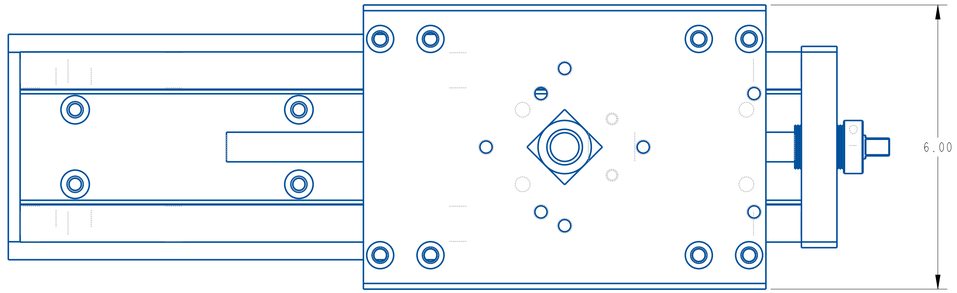
SCALE:	5/8
DATE:	Mar-02-20
DRW BY:	CRT
CHK BY:	06/13/2025-SEM
APPR BY:	

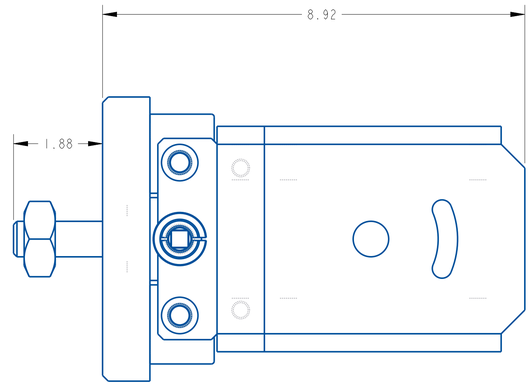
YARDARM

MAT'L

22448-000







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

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

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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

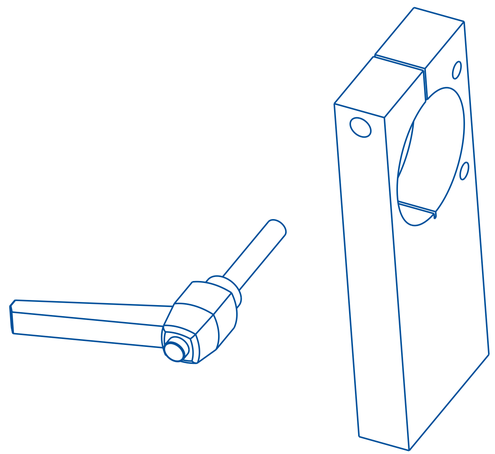
SCALE: 5/8
DATE: Mar-02-20
DRW BY: CRT
CHK BY: 06/13/2025-SEM
APPR BY:

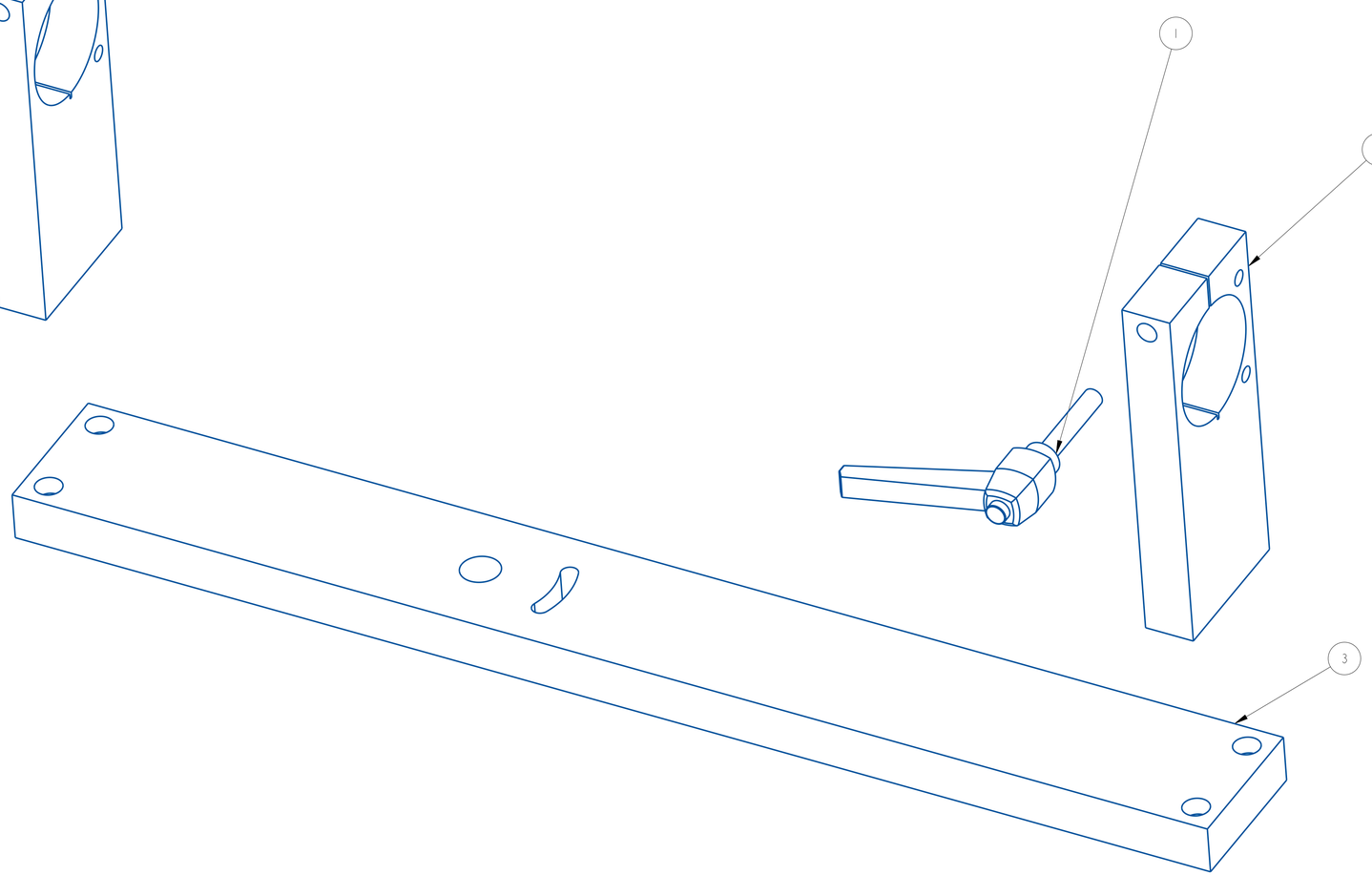
YARDARM

MAT'L

22448-000

ITEM	QTY	PART NO.	DESCRIPTION	PARENT ITEM
1	2	801850-000	CLAMPING LEVER	22816-010
2	2	B21190-106	YOKE SIDE PLATE	22816-010
3	1	B21555-953	MTG YOKE BACK PLATE	22816-010





REV	DATE	DESCRIPTION	BY
A	Jun-05-25	NEW DRAWING	TAZ

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DIMENSIONAL TOLERANCE
.X ± .1
.XX ± .01
.XXX ± .005
ANGLES ± 30'
SURFACE FINISH 125
BREAK ALL EDGES .005/.015
CORNER RADIUS .0107.030"

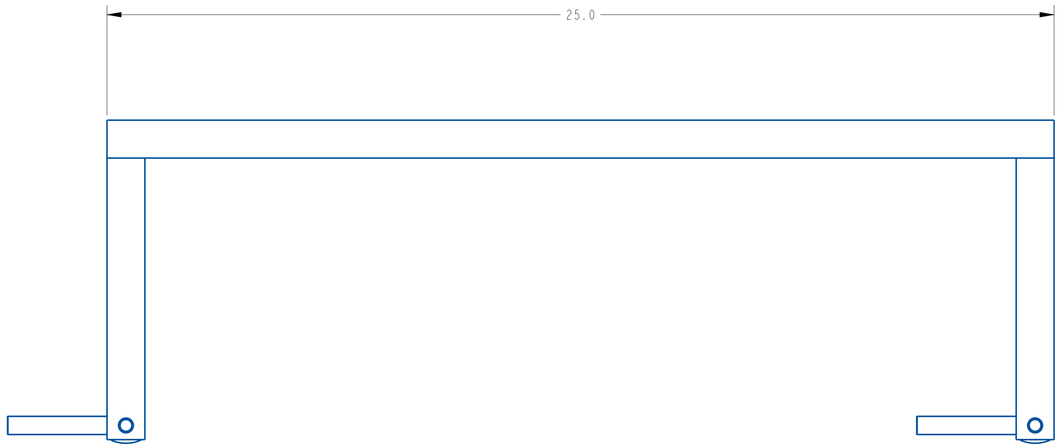
QUADREL LABELING SYSTEMS
7670 JENTHER DRIVE
MENTOR, OHIO 44060
(440) 602-4700

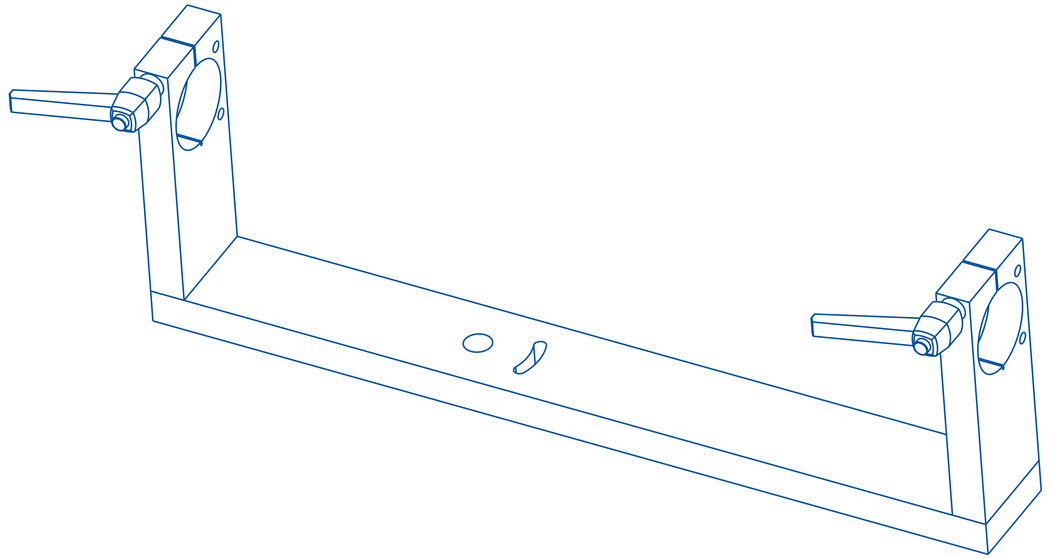
SCALE: 3/4
DATE: Jun-05-25
DRW BY: TAZ
CHK BY: 06/13/2025-SEM
APPR BY:

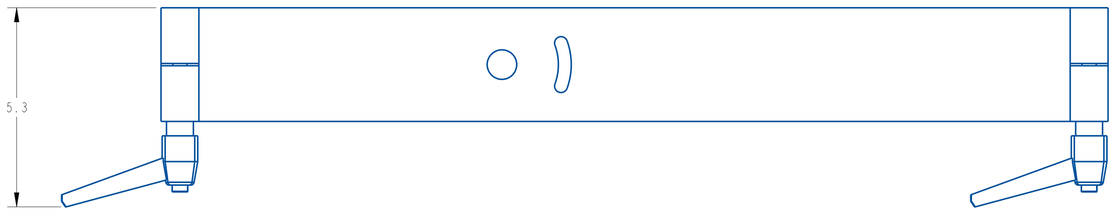
YOKE

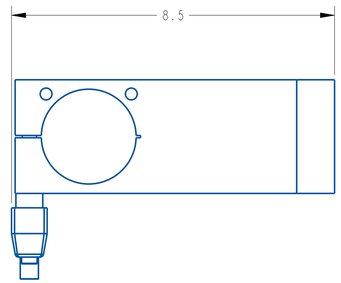
MAT'L

22816-010









REV	DATE	DESCRIPTION	BY
A	Jun-05-25	NEW DRAWING	TAZ

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

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

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

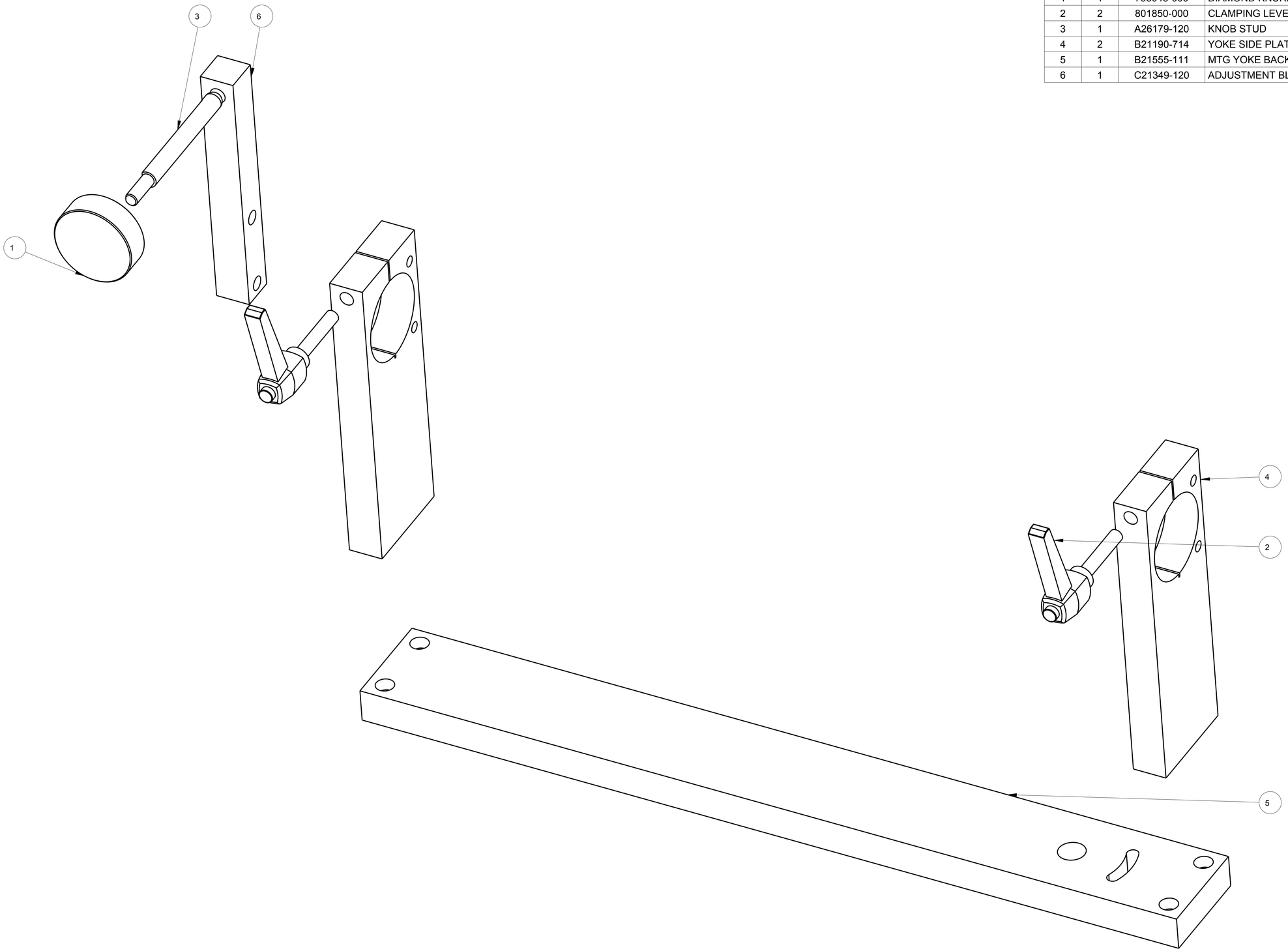
SCALE: 1/2
DATE: Jun-05-25
DRW BY: TAZ
CHK BY: 06/13/2025-SEM
APPR BY:

YOKE

MAT'L

22816-010

ITEM	QTY	PART NO.	DESCRIPTION	PARENT ITEM
1	1	793045-000	DIAMOND KNURL KNOB	83073Y-000
2	2	801850-000	CLAMPING LEVER	83073Y-000
3	1	A26179-120	KNOB STUD	83073Y-000
4	2	B21190-714	YOKE SIDE PLATE	83073Y-000
5	1	B21555-111	MTG YOKE BACK PLATE	83073Y-000
6	1	C21349-120	ADJUSTMENT BLOCK	83073Y-000



REV	DATE	DESCRIPTION	BY
A	4-2-19	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

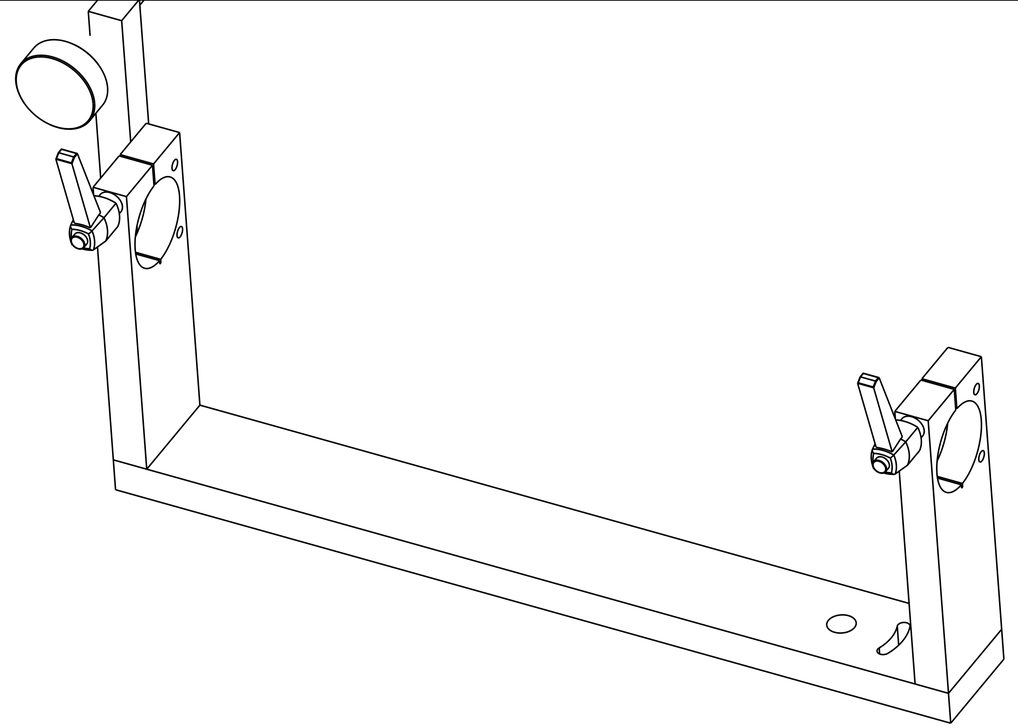
QUADREL LABELING SYSTEMS
7670 JENTHER DRIVE
MENTOR, OHIO 44060
(440) 602-4700

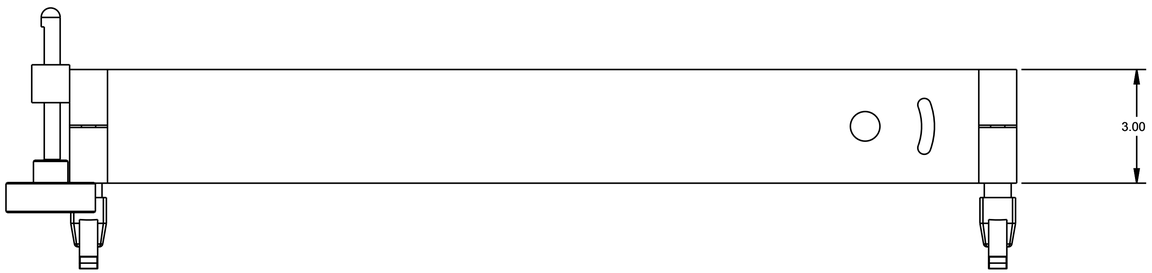
SCALE	3/4
DATE	4-2-19
DRAWN BY	MAW

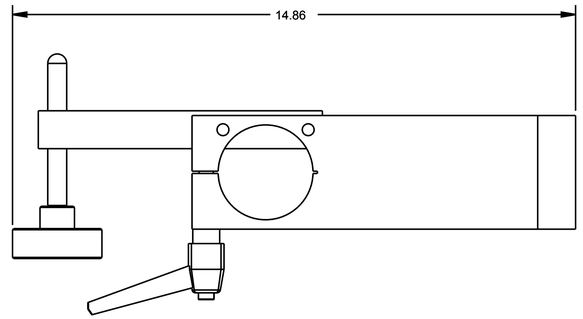
CUSTOM YOKE

MAT'L 83073Y-000

83073Y-000







REV	DATE	DESCRIPTION	BY
A	4-2-19	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

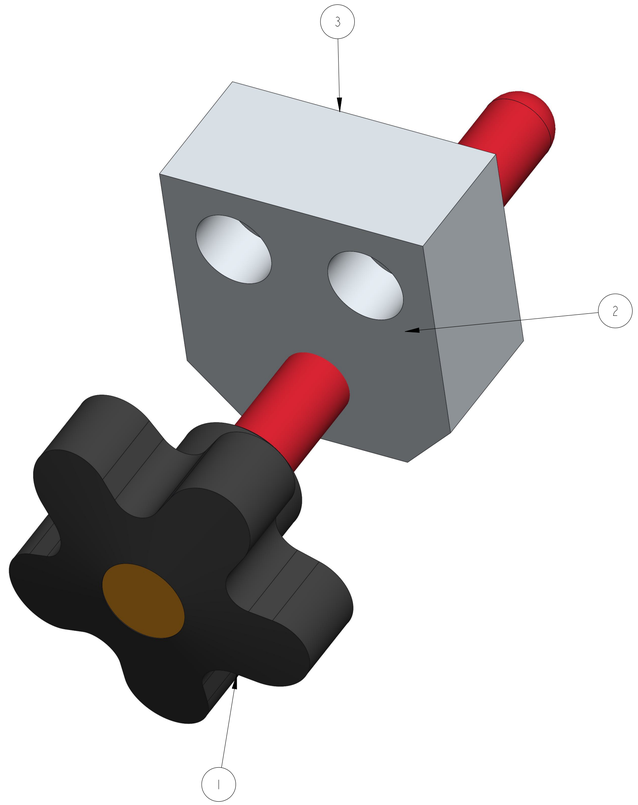
SCALE	1/2
DATE	4-2-19
DRAWN BY	MAW

CUSTOM YOKE

MAT'L 83073Y-000

83073Y-000

ITEM	QTY	PART NO.	DESCRIPTION	PARENT ITEM
1	1	793045-000	DIAMOND KNURL KNOB	22824-000
2	1	A26179-000	KNOB STUD	22824-000
3	1	C21348-400	ADJUSTMENT PLATE	22824-000



REV	DATE	DESCRIPTION	BY
A	21-FEB-2024	NEW DRAWING	CRT

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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

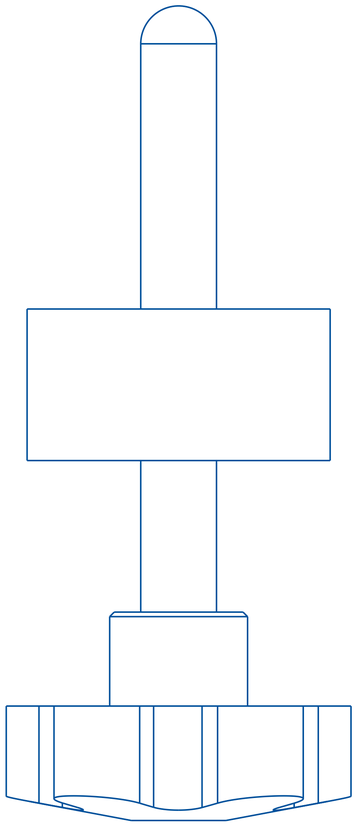
QUADREL LABELING SYSTEMS
7670 JENTHER DRIVE
MENTOR, OHIO 44060
(440) 602-4700

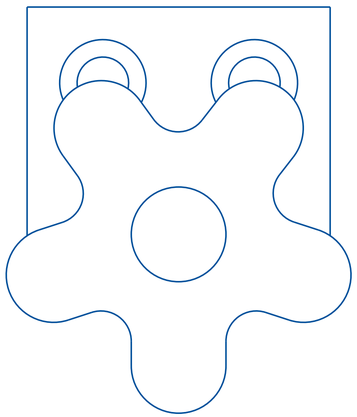
SCALE: 2/1
DATE: 21-FEB-2024
DRW BY: CRT
CHK BY:03/09/2024-SEM
APPR BY:

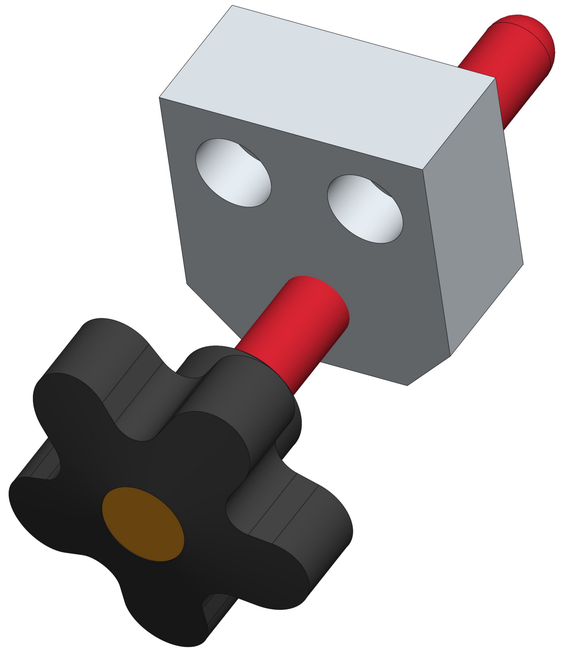
ADJUSTMENT BLOCK ASSEMBLY

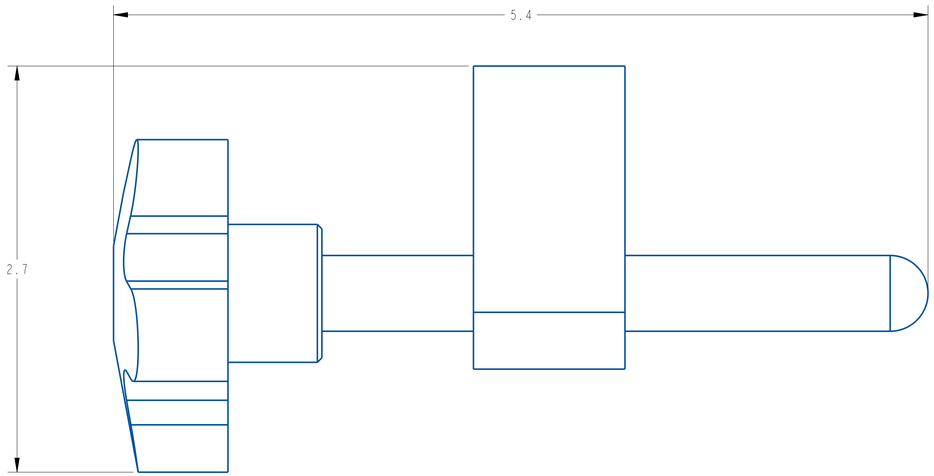
MAT'L 22824-000

22824-000









REV	DATE	DESCRIPTION	BY
A	21-FEB-2024	NEW DRAWING	CRT

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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

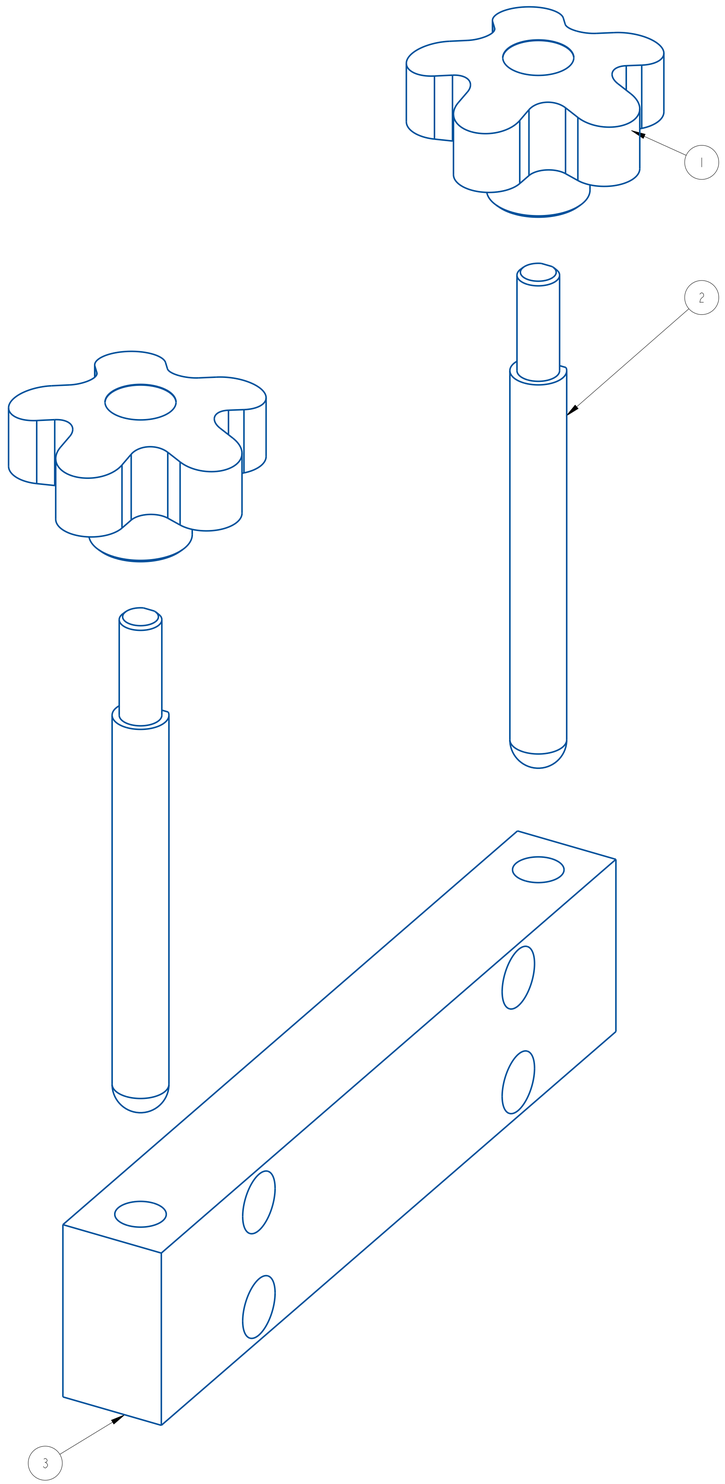
SCALE: 2/1
DATE: 21-FEB-2024
DRW BY: CRT
CHK BY: 03/09/2024-SEM
APPR BY:

ADJUSTMENT BLOCK ASSEMBLY

MAT'L 22824-000

22824-000

ITEM	QTY	PART NO.	DESCRIPTION	PARENT ITEM
1	2	793045-000	DIAMOND KNURL KNOB	22824-002
2	2	A26179-120	KNOB STUD	22824-002
3	1	C21348-000	ADJUSTMENT PLATE	22824-002



REV	DATE	DESCRIPTION	BY
A	Oct-02-25	NEW DRAWING	RDL

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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°

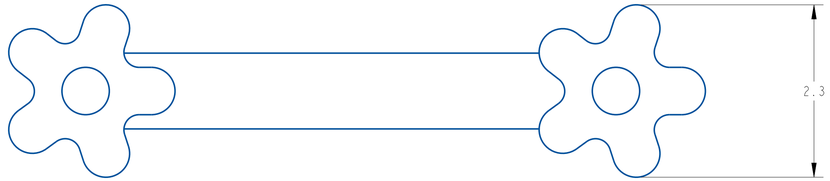
QUADREL LABELING SYSTEMS
7670 JENTHER DRIVE
MENTOR, OHIO 44060
(440) 602-4700

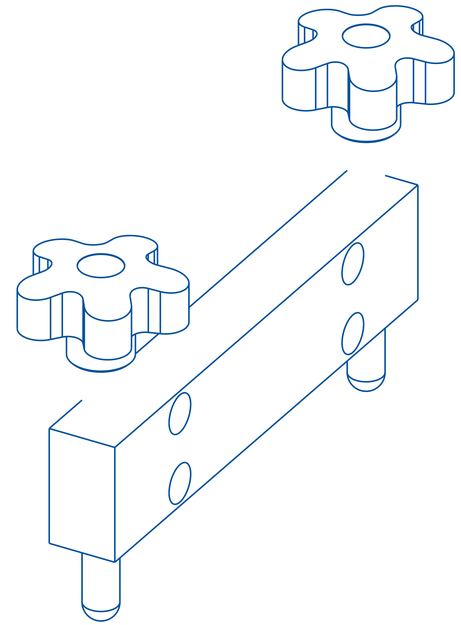
SCALE:	3/2
DATE:	Oct-02-25
DRW BY:	RDL
CHK BY:	
APPR BY:	

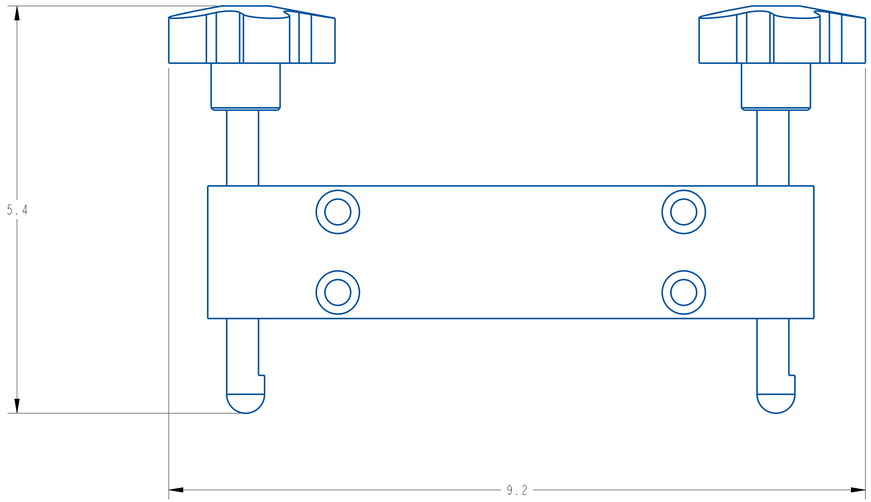
ADJUSTMENT BLOCK ASSEMBLY

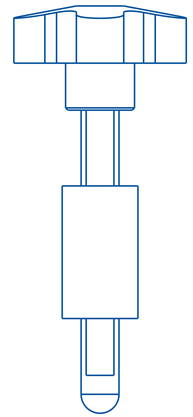
MAT'L

22824-002









A	Oct-02-25	NEW DRAWING	RDL
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: 1/1
DATE: Oct-02-25
DRW BY:
CHK BY:
APPR BY:

ADJUSTMENT BLOCK ASSEMBLY

MAT'L

22824-002

ASSEMBLY TITLE: **WRAP ASSEMBLY**

DRAWING NO: **D21938-001**

GENERAL FUNCTION:

The product pacing wrap is offsets each product a variable distance from the preceding product and guarantees adequate product separation.

SETUP AND ADJUSTMENTS:

- Adjust the brackets so that the pacing wheel slightly presses the product against the back rail. Lock into place using the adjustment knobs.

- The speed of the pacing wheel is controlled by a potentiometer located in the remote enclosure mounted on the conveyor riser.

MAINTENANCE:

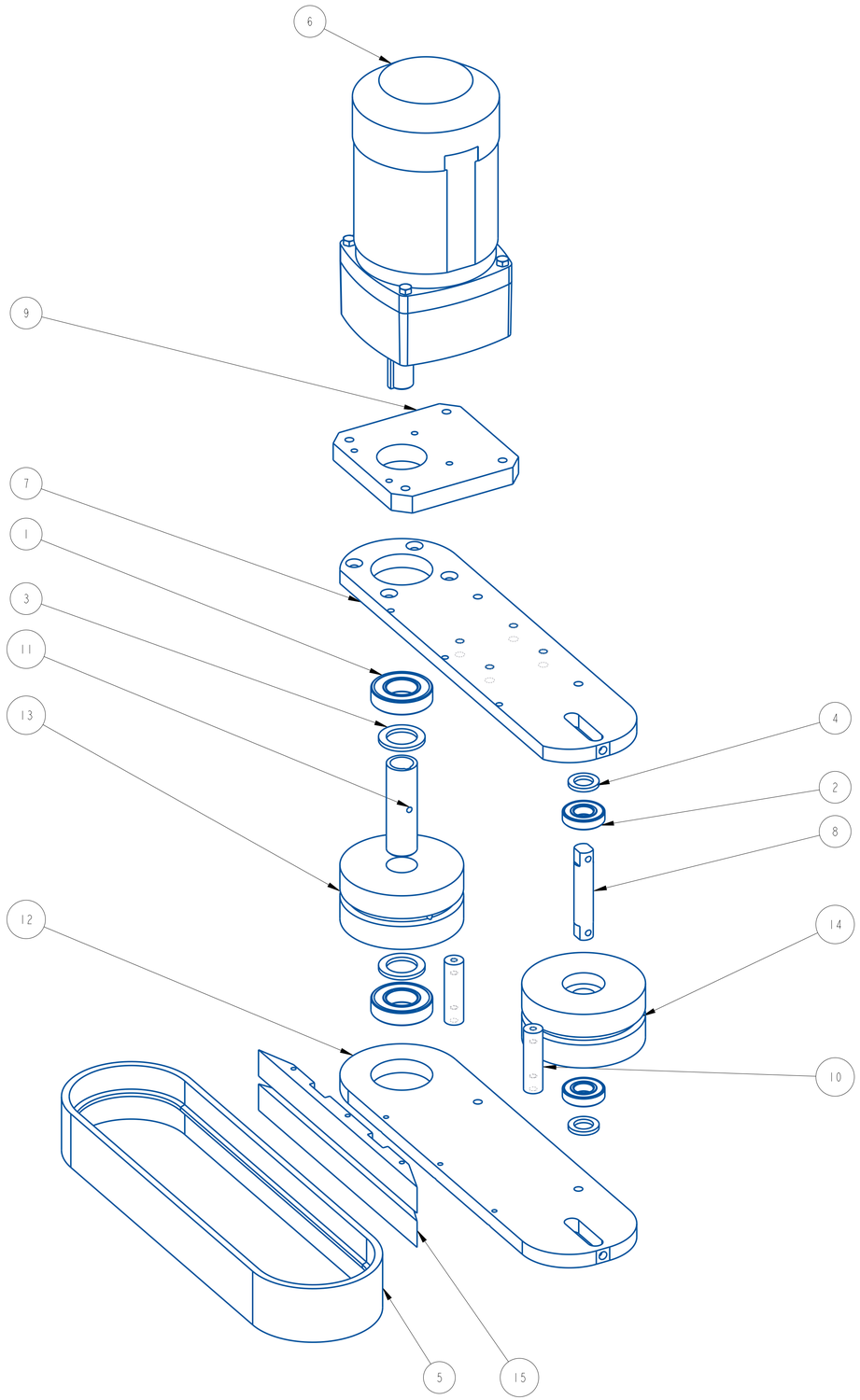
No scheduled maintenance is required for this assembly. Always keep the drive areas free of label flash and debris.

CAUTION:

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

TROUBLESHOOTING:

PROBLEM:	WHAT TO DO:
- Product spaced to close	- Reduce the speed of the pacing wheel.
- Product spaced too far apart	- Increase the speed of the pacing wheel.



ITEM	QTY	PART NO.	DESCRIPTION	PARENT ITEM
1	2	111064-000	BEARING, BANDED THRUST BALL	21978-203
2	2	111075-000	BEARING, BALL	21978-203
3	2	151011-000	BEARING, THRUST WASHER	21978-203
4	2	151017-000	BEARING, THRUST WASHER	21978-203
5	1	193384-005	BELT, WRAP RUFTEX W/V-GUIDE	21978-203
6	1	411391-000	MOTOR, 1/4HP 28 RPM 220VAC	21978-203
7	1	A21277-004	LOWER WRAP PLATE	21978-203
8	1	A21743-009	IDLER SHAFT	21978-203
9	1	A23731-000	MOTOR MTG. PLATE (MODULINE)	21978-203
10	2	A25302-225	SPACER	21978-203
11	1	B20776-001	DRIVE SHAFT	21978-203
12	1	B21200-008	UPPER WRAP PLATE	21978-203
13	1	B21968-001	DRIVE ROLL W/GROOVE	21978-203
14	1	B21969-002	IDLER ROLL W/GROOVE	21978-203
15	1	D21857-001	BACK-UP PLATE W/ V-GROOVE SLOT	21978-203

REV	DATE	DESCRIPTION	BY
B	Oct-27-25	UPDATED MOTOR	RDL
A	Sep-29-25	NEW DRAWING	RDL

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BREAK ALL EDGES .005/.015
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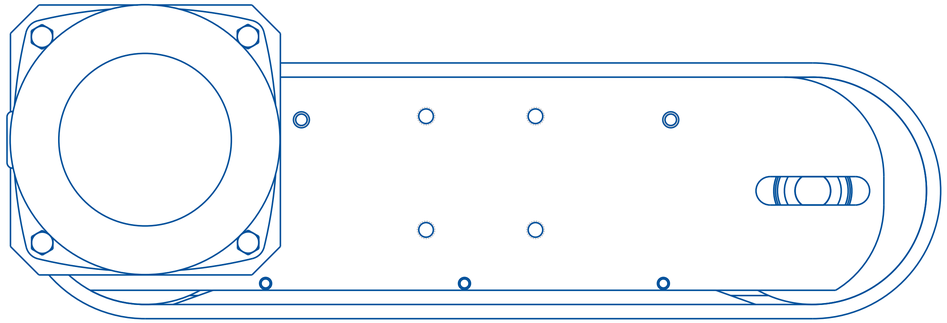
7670 JENTHER DRIVE
MENTOR, OHIO 44060
(440) 602-4700

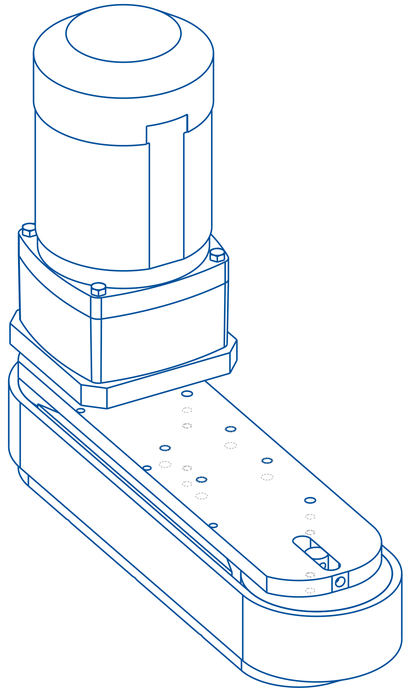
SCALE: 7/16
DATE: Sep-29-25
DRW BY: RDL
CHK BY: SEM
APPR BY:

2 X 12 PACING BELT

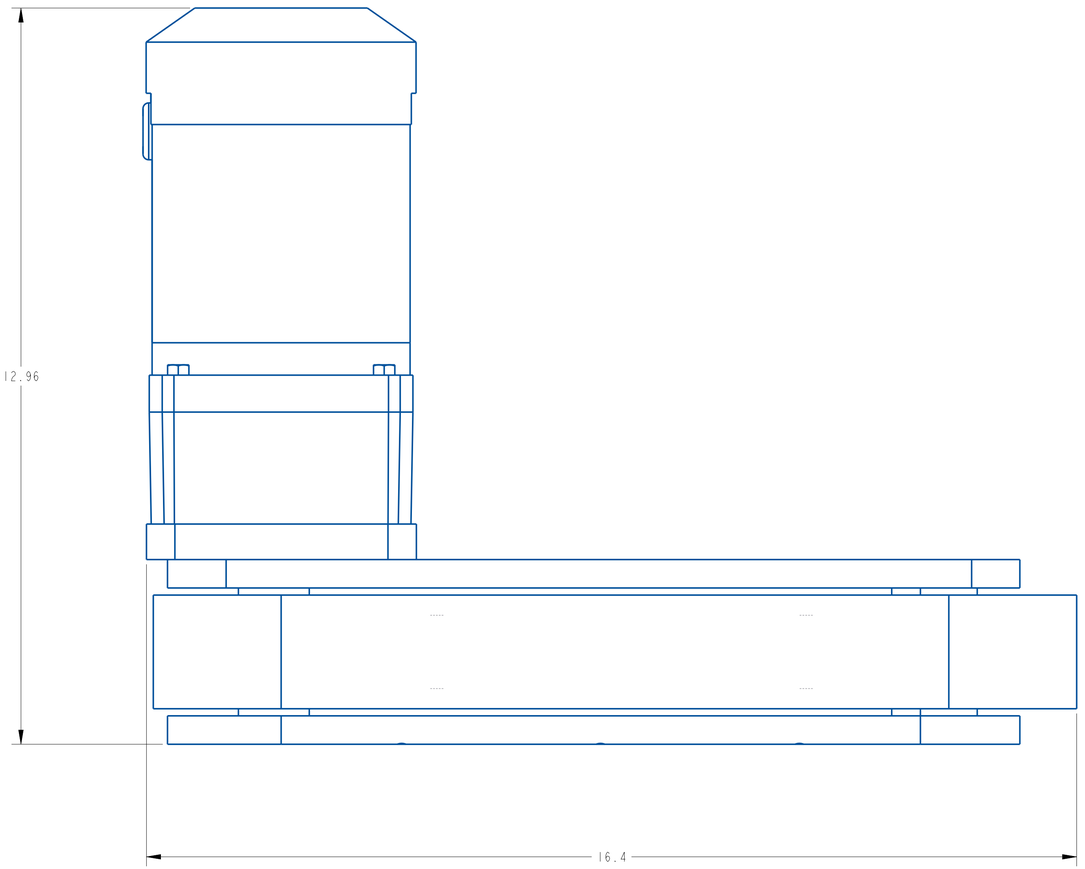
MAT'L

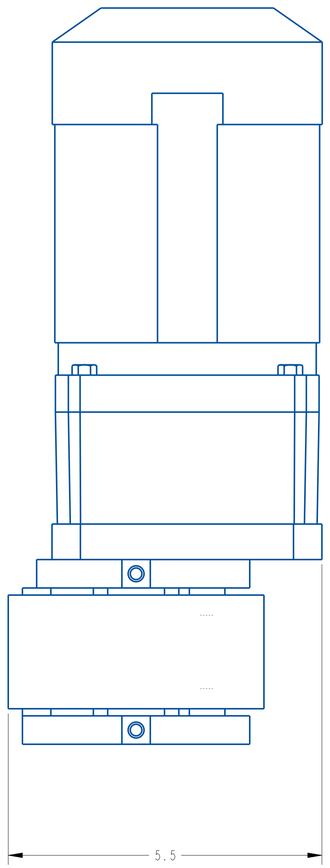
21978-203





SCALE 1/2





REV	DATE	DESCRIPTION	BY
B	Oct-28-25	UPDATED MOTOR	RDL
A	Sep-29-25	NEW DRAWING	RDL

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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:	3/4
DATE:	Sep-29-25
DRW BY:	RDL
CHK BY:	SEM
APPR BY:	

2 X 12 PACING BELT

MAT'L

21978-203

ASSEMBLY TITLE: **PRODUCT DETECT ASSEMBLY**

DRAWING NO.:

GENERAL FUNCTION:

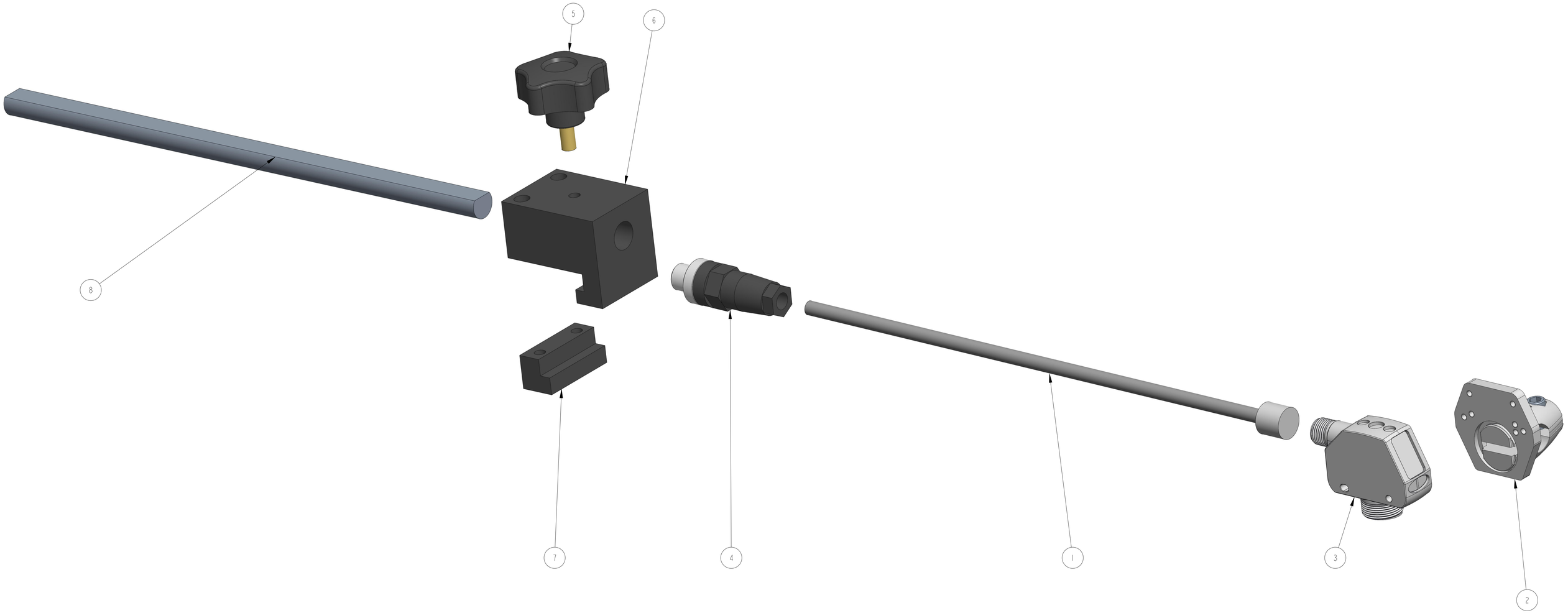
- The product detect signal is used to trigger the labeling cycle. Optimum placement and setup of the product detect sensor is critical to accurate and repeatable label placement.

SETUP AND ADJUSTMENTS:

- Set the vertical position of the sensor at a point on the product that provides a stable and repeatable sense area. Loosen the bolts securing the sensor, and move as required, then retighten screws.
- The sensor is configured at the factory for optimum performance however if a new product is introduced adjustments may be required or a different sensor may if adjustments are required please refer to manufacturers data sheet for detailed setup and calibration if needed.

MAINTENANCE: None

ITEM	QTY	PART NO.	DESCRIPTION	PARENT ITEM
1	1	202161-001	CABLE	10964-005
2	1	203300-001	SENSOR BRACKET	10964-005
3	1	203376-001	SENSOR	10964-005
4	1	252019-000	4 PIN MALE CONNECTOR	10964-005
5	1	801308-000	KNOB W/ 1/4-20 STUD	10964-005
6	1	A20875-000	RETAINER BLOCK, CONV. RAIL	10964-005
7	1	A20876-000	RETAINER BLOCK	10964-005
8	1	A22297-100	SENSOR MTG. SHAFT	10964-005



REV	DATE	DESCRIPTION	BY
A	Oct-15-21	NEW DRAWING	TJS

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SURFACE FINISH 125
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QUADREL LABELING SYSTEMS
7670 JENTHER DRIVE
MENTOR, OHIO 44060
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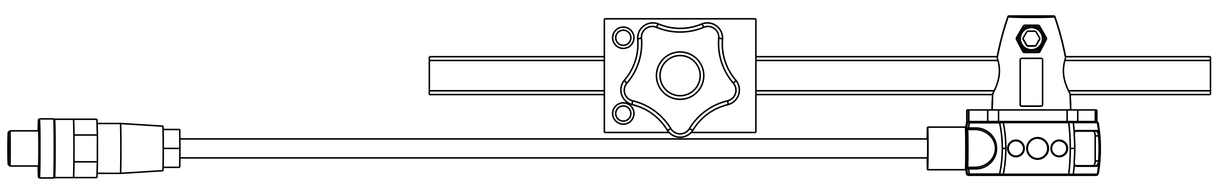
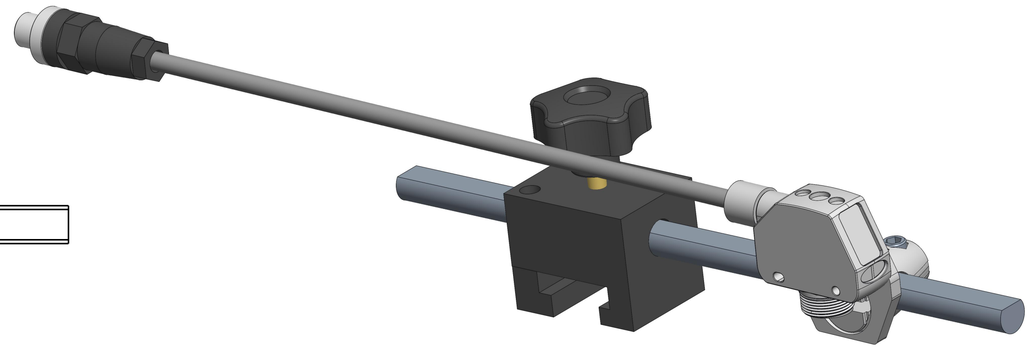
SCALE 5/4
DATE Oct-15-21
DRAWN BY TJS

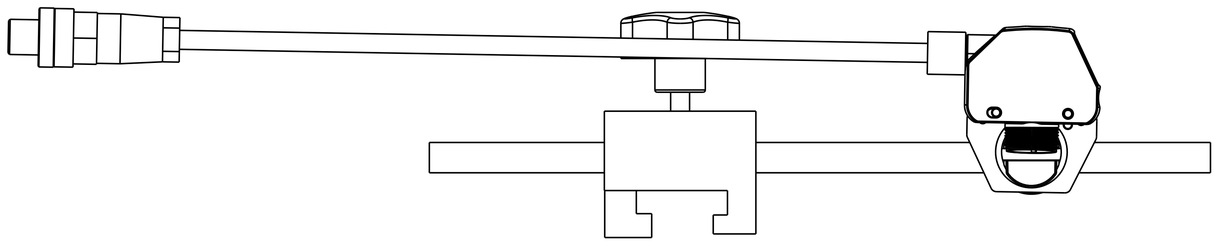
VERTICAL ROLLER PRODUCT DETECT

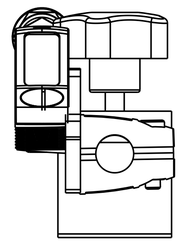
MAT'L 10964-005

10964-005









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CORNER RADIUS .010/.030

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

SCALE	1/1
DATE	Oct-15-21
DRAWN BY	TJS

VERTICAL ROLLER PRODUCT DETECT

MAT'L | 10964-005 | 10964-005

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

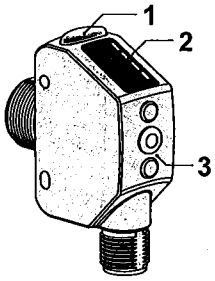


Figure 1. Sensor Features—Threaded Barrel Models

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

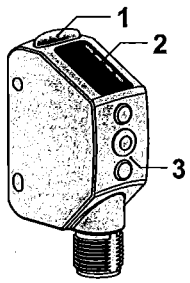


Figure 2. Sensor Features—Flush Mount Models

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.

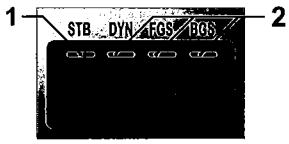


Figure 3. Display in Run Mode

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)

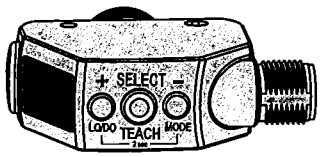
- DYN, FGS, and BGS all off—Two-point TEACH mode selected (default)
- DYN on—Dynamic TEACH mode selected
- FGS on—Foreground suppression TEACH mode selected
- BGS on—Background suppression TEACH mode selected
- DYN, FGS, and BGS all on—Dual TEACH mode selected

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

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.

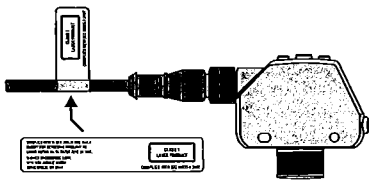


Figure 4. Safety Label Installation

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.

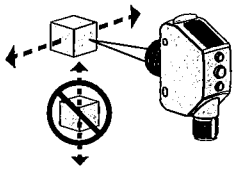


Figure 5. Optimal Orientation of Target to Sensor

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.

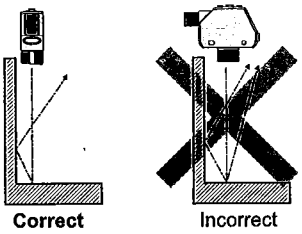


Figure 6. Orientation by a wall

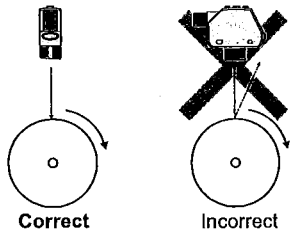


Figure 7. Orientation for a turning object

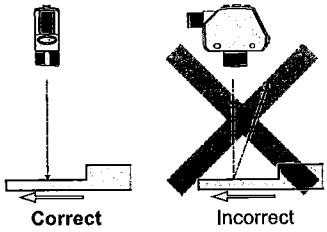


Figure 8. Orientation for a height difference

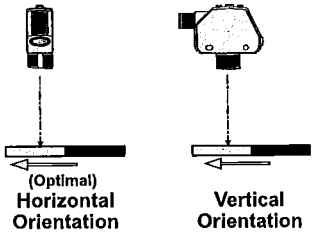
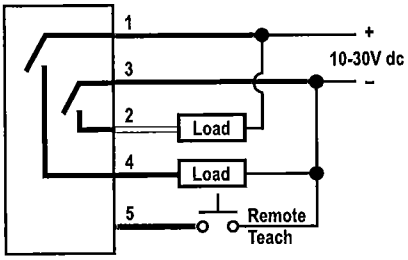


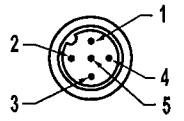
Figure 9. Orientation for a color or luster difference

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

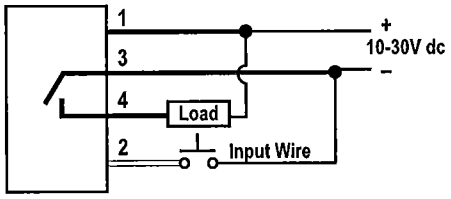
1 = Brown
2 = White
3 = Blue
4 = Black
5 = Gray

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

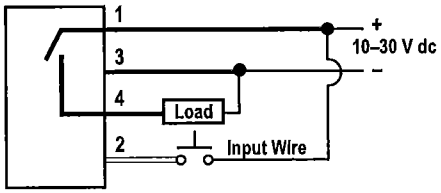
Note: The input wire function is user-selectable; see the Instruction Manual for details. The default for the input wire function is off (disabled).

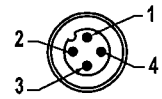
Wiring Diagram—Flush Mount Models

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**.

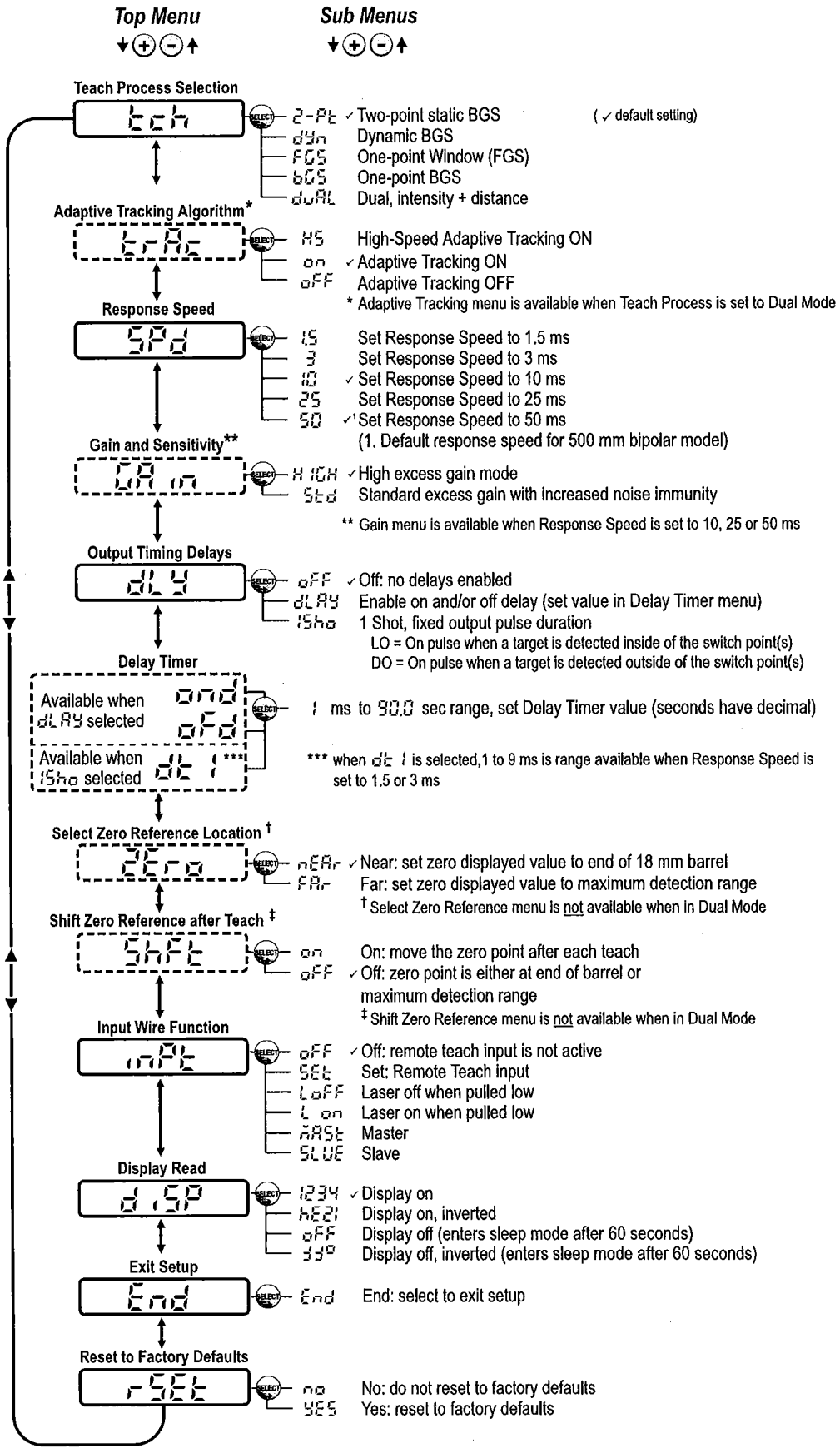


Figure 10. Sensor Menu Map—Channel 1

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

Class 2 power
UL Environmental Rating: Type 1

chemical compatibility certified

Performance Curves—Threaded Barrel Models

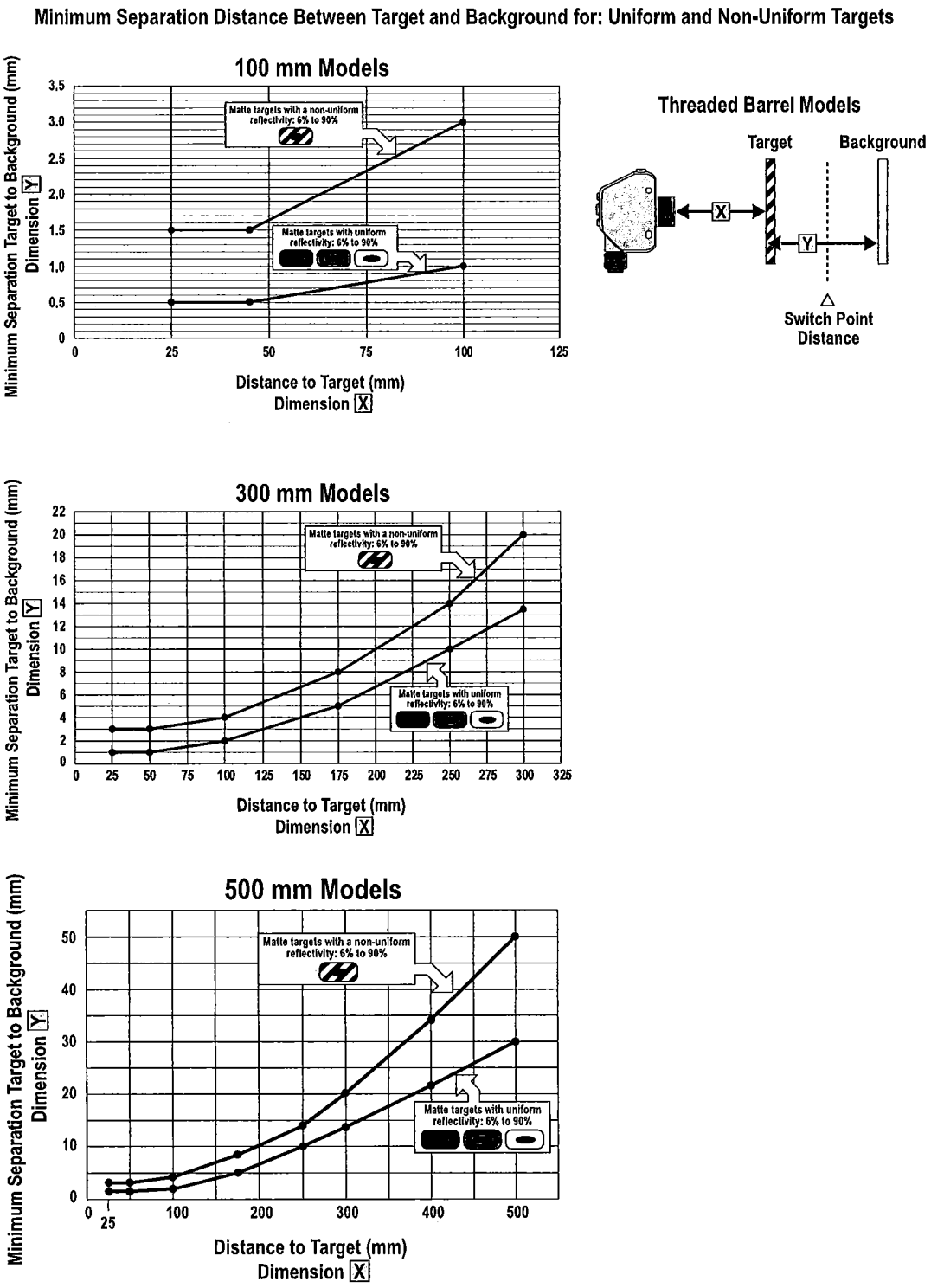


Figure 11. Minimum Object Separation Distance (90% to 6% reflectance)

Performance Curves—Flush Mount Models

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

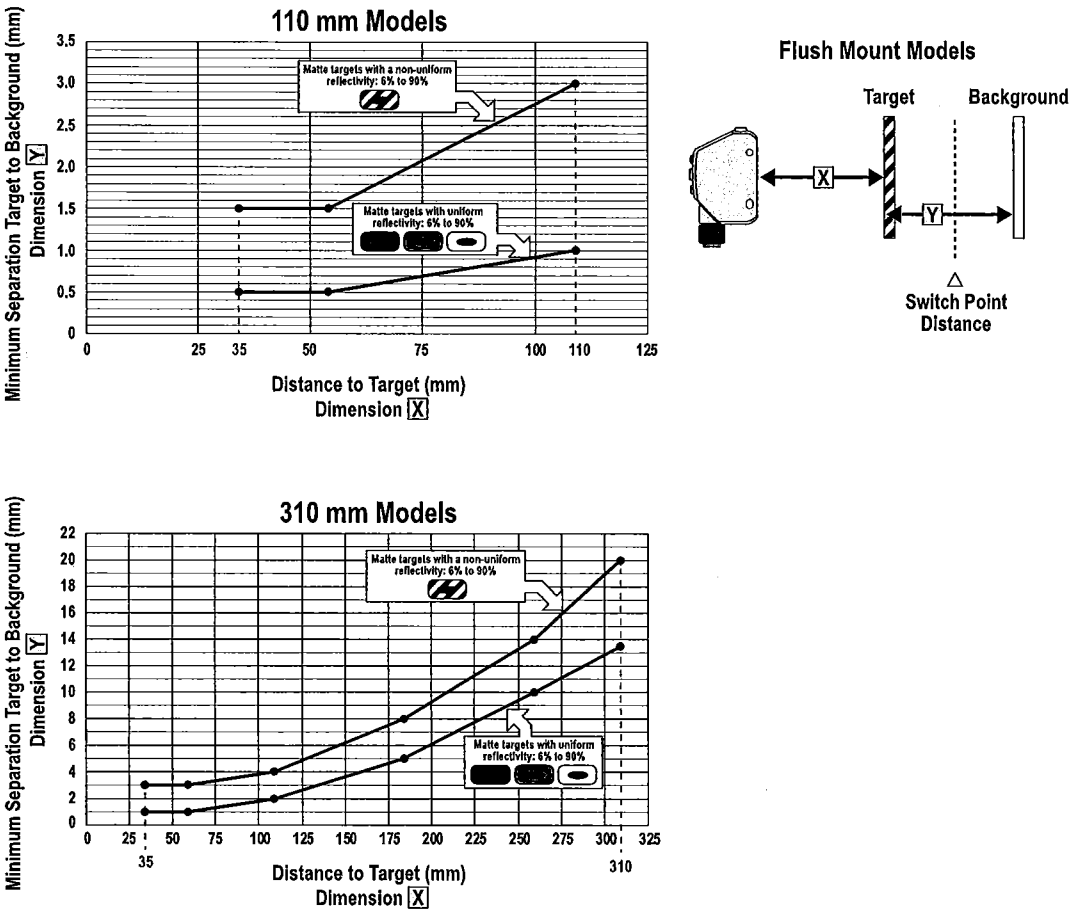


Figure 12. Minimum Object Separation Distance (90% to 6% reflectance)

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.

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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.

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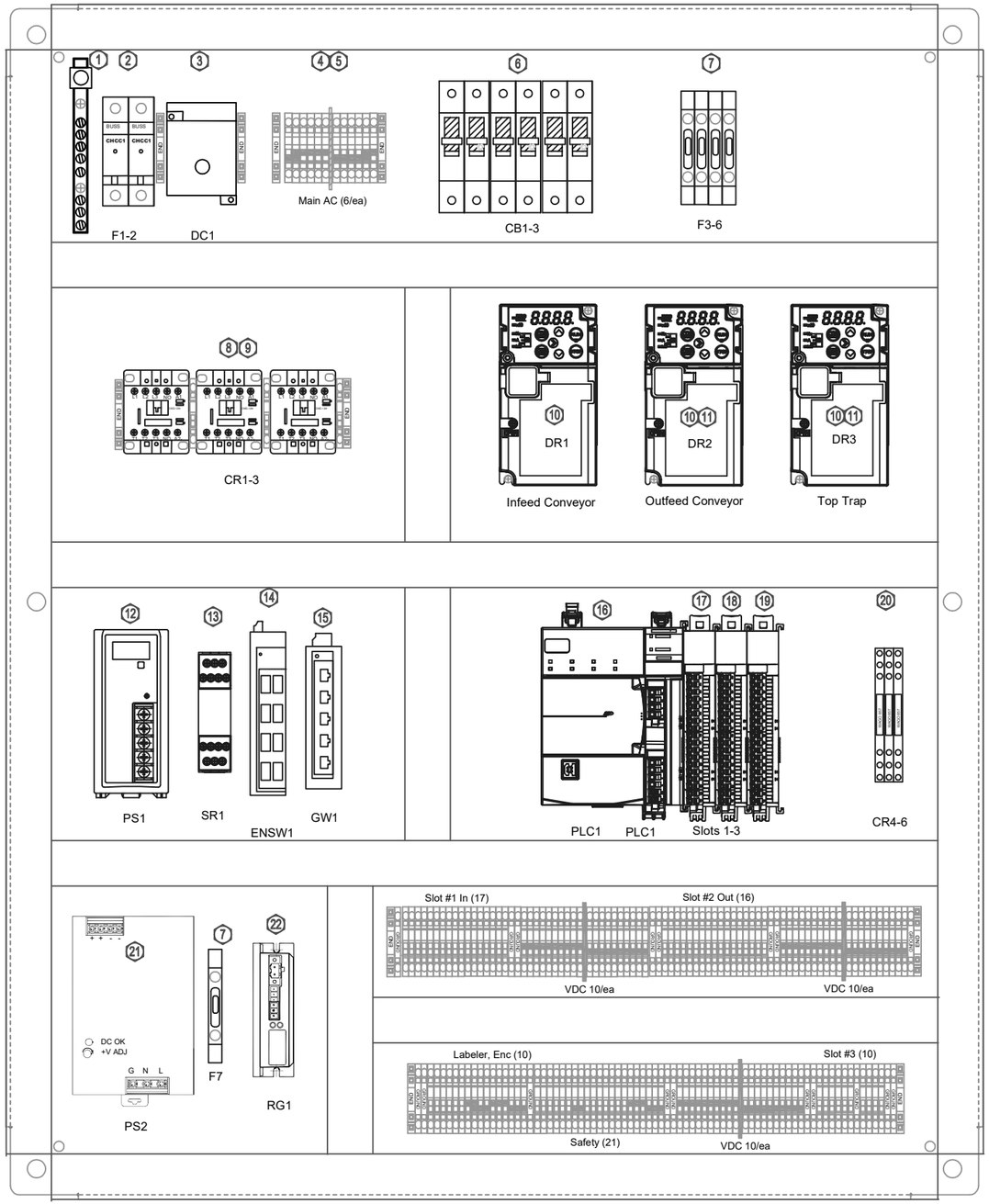
Electronics

36P30

--	222265-001	1	Enclosure, 36EL3010
--	222267-000	1	Panel, SCE-36P30
--	241085-001	1	Fuse, 10A, 1.25 x .25
--	241187-000	2	Fuse, 15A, CC
--	241060-000	4	Fuse, 5A, 1.25 x .25
--	262822-006	4	Ethernet Cable, 2 ft
--	251799-000	3	End Cover
--	251798-000	3	Partition Plate
--	251859-000	4	10-Pole Jumper
--	251855-000	6	2-Pole Jumper
--	251795-000	8	Phoenix Contact End Terminal
--	251854-000	18	Phoenix Contact Ground Terminal, ST1.5
--	251853-000	110	Phoenix Contact Terminal Block, ST1.5

NO	PART NO	QTY	DESCRIPTION
22	221678-000	1	Regeneration Clamp
21	211548-003	1	Power Supply, 48V, 10A
20	202628-000	3	Relay, 24V
19	221620-001	1	Analog Output Module, 5069-OF4
18	221486-001	1	Output Expansion Module, AB 5069-OB16
17	221489-001	1	Input Expansion Module, AB 5069-IB16
16	221616-005	1	PLC, AB CompactLogix 5069-L306ER
15	221713-003	1	Gateway, Weintek cMT-G01
14	221683-000	1	Ethernet Switch, 8 Port
13	221650-005	1	Phoenix 1301402 Safety Relay
12	211534-001	1	Keyence MS2-H100 Power Supply, 24V, 4.5A
11	411458-004	2	AC Drive Encoder Card
10	411458-003	3	AC Drive, Frenic ACE, 1 HP
9	202607-000	3	Altech Contactor Surge Suppressor
8	202604-000	3	Altech GMD-12M-10-DC24V Contactor, 24V, 12A
7	251788-001	5	Fuse Holder, 1.25 x .25
6	241319-001	3	Circuit Breaker, 2 Pole, 6A
5b	251801-000	2	2 Pole Jumper, ST2.5
5a	251804-000	2	5 Pole Jumper, ST2.5
4	251797-000	12	Phoenix Contact Terminal Block 3031212, ST2.5
3	272117-003	1	Non-Fused Disconnect, 25A
2	241285-000	2	Fuse Holder, CC
1	251830-002	1	Ground Bar



1" Wireway Unless Noted
Component Hardware: 8-32 SHCS
Wireway/Din Rail Hardware: 8-32 BHCS

UNLESS OTHERWISE SPECIFIED
DIMENSIONAL TOLERANCE
.X ± .XTOL
.XX ± .XXTOL
.XXX ± .XXXTOL
ANGLES ± ANGTOL
SURFACE FINISH FINISHTOL
BREAK ALL EDGES .005/.015

QUADREL LABELING SYSTEMS
7670 Jenther Drive
Mentor, Ohio 44060
(440) 602-4700

SCALE: 1:1
DATE: 23SEP202
DRAWN BY: CMT
REVISED:

Layout, PLC Techline

MAT'L 84222E1-000

B84222-0000

PLC TECHLINE
220VAC SINGLE PHASE, 15A
COMPACTLOGIX PLC
APPLIED MOTION TXM STEPSERVOS
FUJI ACE INVERTERS

Page Listing:

WIRE SIZE/COLOR TABLE (UNLESS OTHERWISE NOTED)

120,240VAC:14AWG BLACK

24VDC/SIGNAL: 18AWG BLUE
0VDC: 18AWG WHITE/BLUE

EARTH GROUND WIRES: 14 AWG GREEN/YELLOW
AC MOTOR WIRES: 4-16AWG

: Terminal Block

: 2 Jumpered Terminal Blocks

: 3 Jumpered Terminal Blocks, etc

QUADREL
LABELING SYSTEMS
7670 JENTHER DR.
MENTOR, OH
44060

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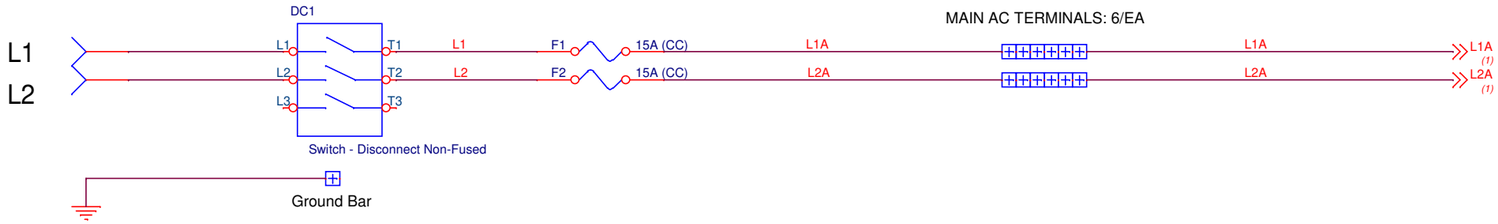
REV	DESCRIPTION	BY	DATE
-	Release	CMT	13OCT2025

Title: TECHLINE LABELING SYSTEM

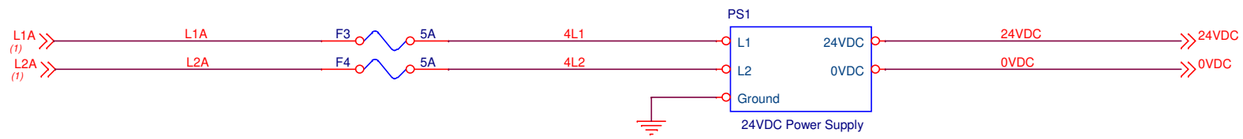
Schematic # SB84222-000 Rev -

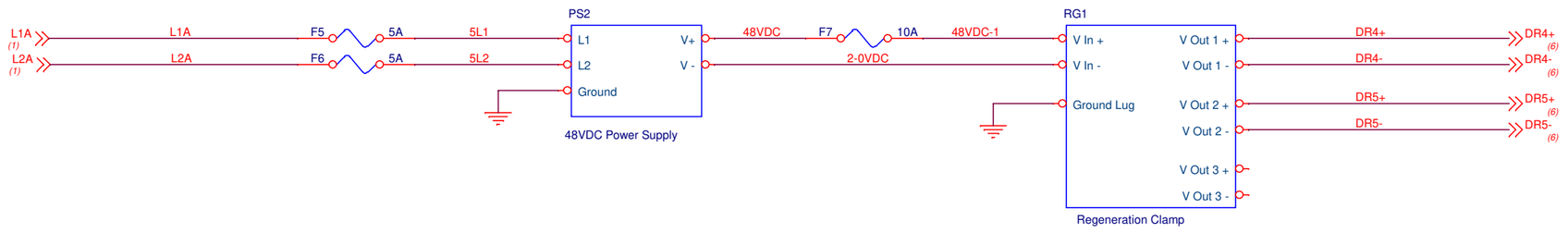
Date: Wednesday, October 15, 2025 Sheet 00 of 09

208/220VAC 1PH. 15AMP



WIRES RUN INDIVIDUALLY TO BREAKERS / FUSES FROM TERMINAL BLOCKS





COLOR	TECHNICIAN	DATE

For Quadrel Assembly Use

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REV	DESCRIPTION	BY	DATE
-	Release	CMT	13OCT2025

Drawn By: CMT

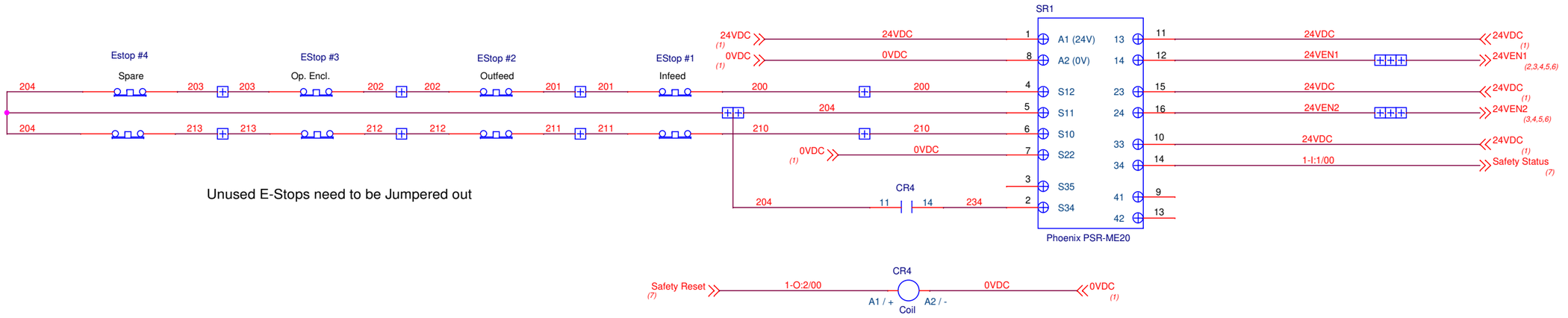
Title: POWER

Schematic # SB84222-000

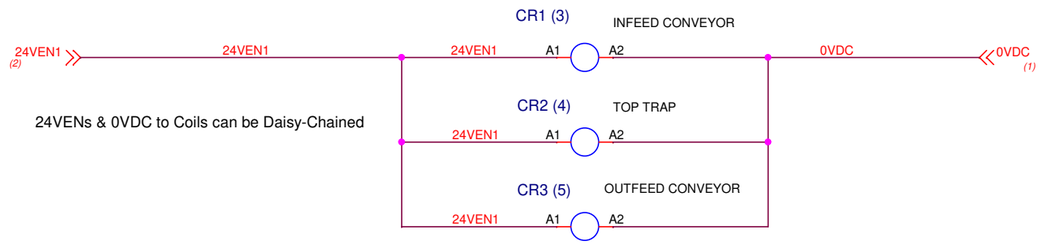
Rev -

Date: Wednesday, November 05, 2025

Sheet 01 of 09



Unused E-Stops need to be Jumpered out



24VENs & 0VDC to Coils can be Daisy-Chained

COLOR	TECHNICIAN	DATE

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Title: SAFETY RELAY

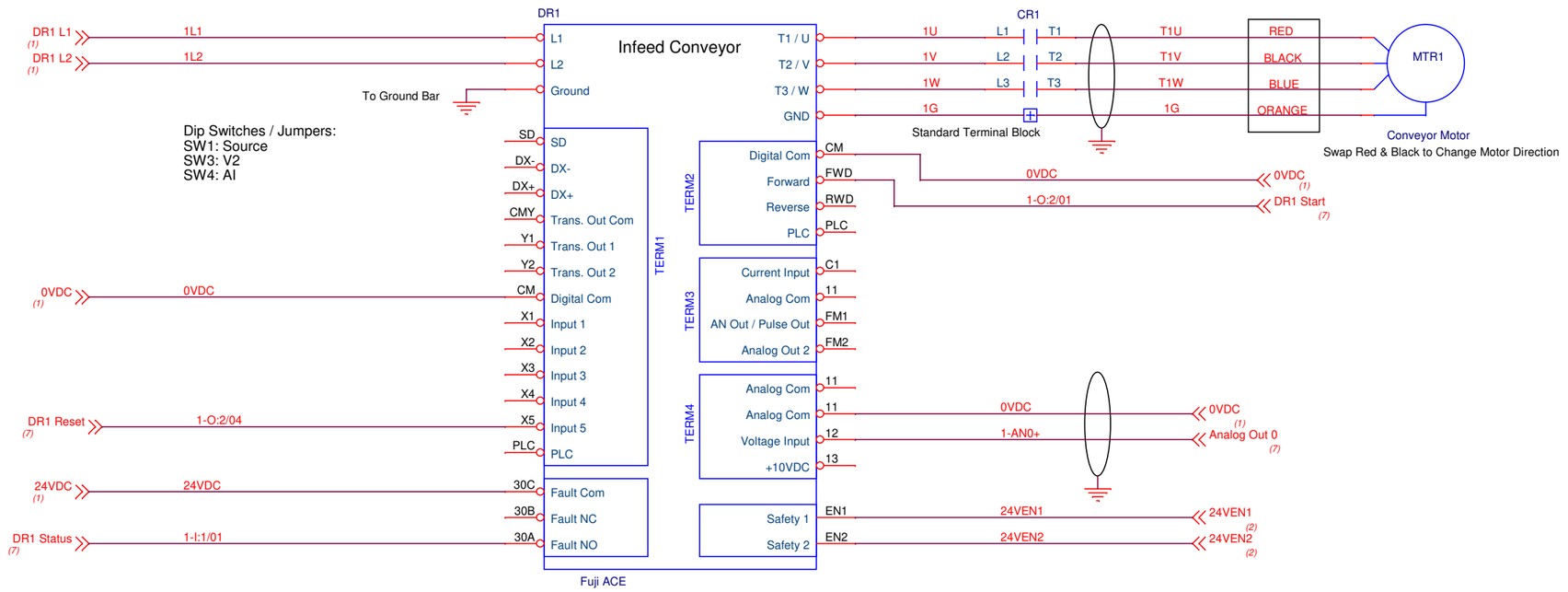
Schematic #: SB84222-000

Rev: -

Date: Wednesday, October 15, 2025

Sheet 02 of 09

Drive:
Infeed Conveyor
Page 3



COLOR	TECHNICIAN	DATE

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REV	DESCRIPTION	BY	DATE
-	Release	CMT	13OCT2025

Title: INFEED CONVEYOR

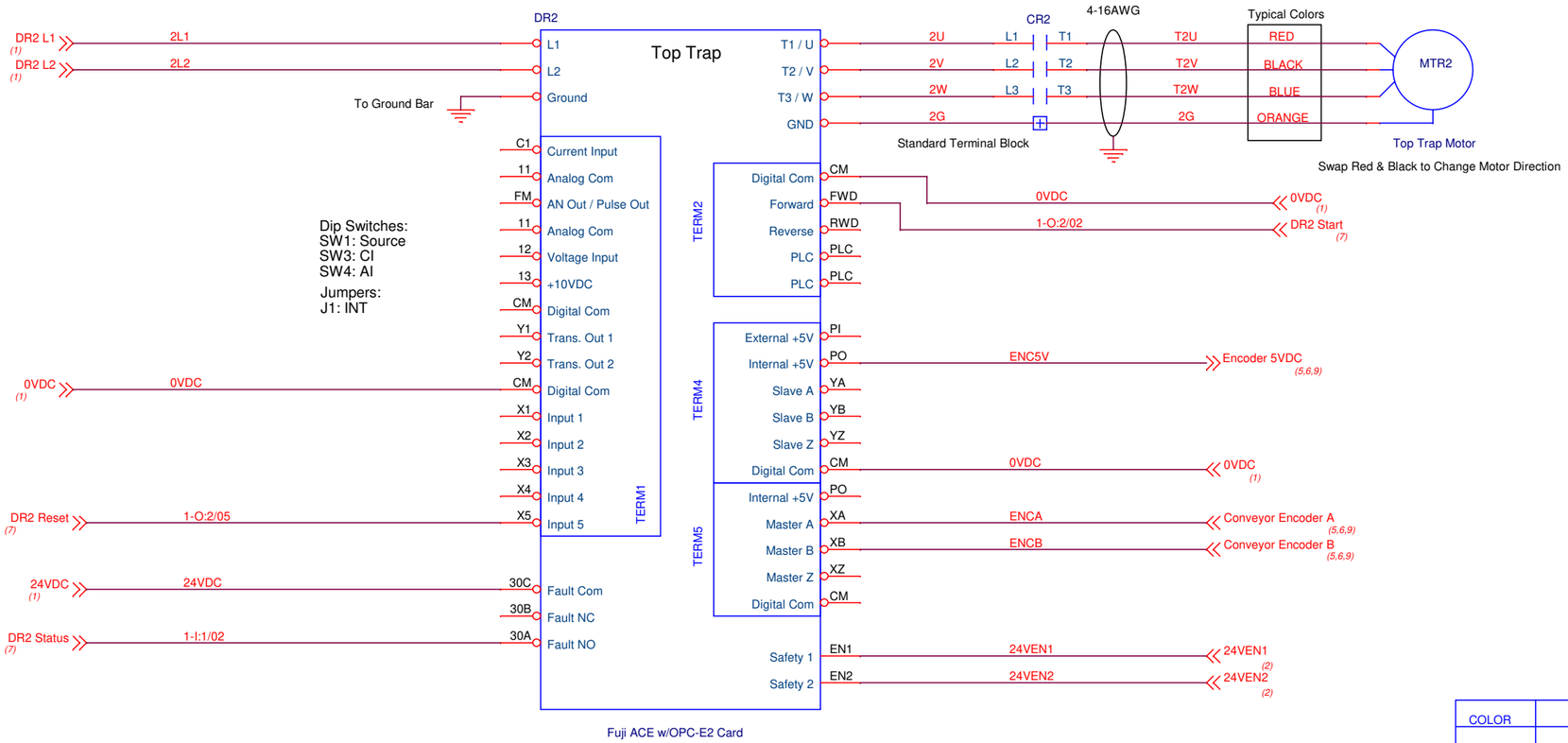
Schematic #: SB84222-000

Rev: -

Date: Monday, October 13, 2025

Sheet 03 of 09

Drive:
Top Trap
Page 4



Fuji ACE w/OPC-E2 Card

COLOR	TECHNICIAN	DATE

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-	Release	CMT	13OCT2025

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Title: TOP TRAP

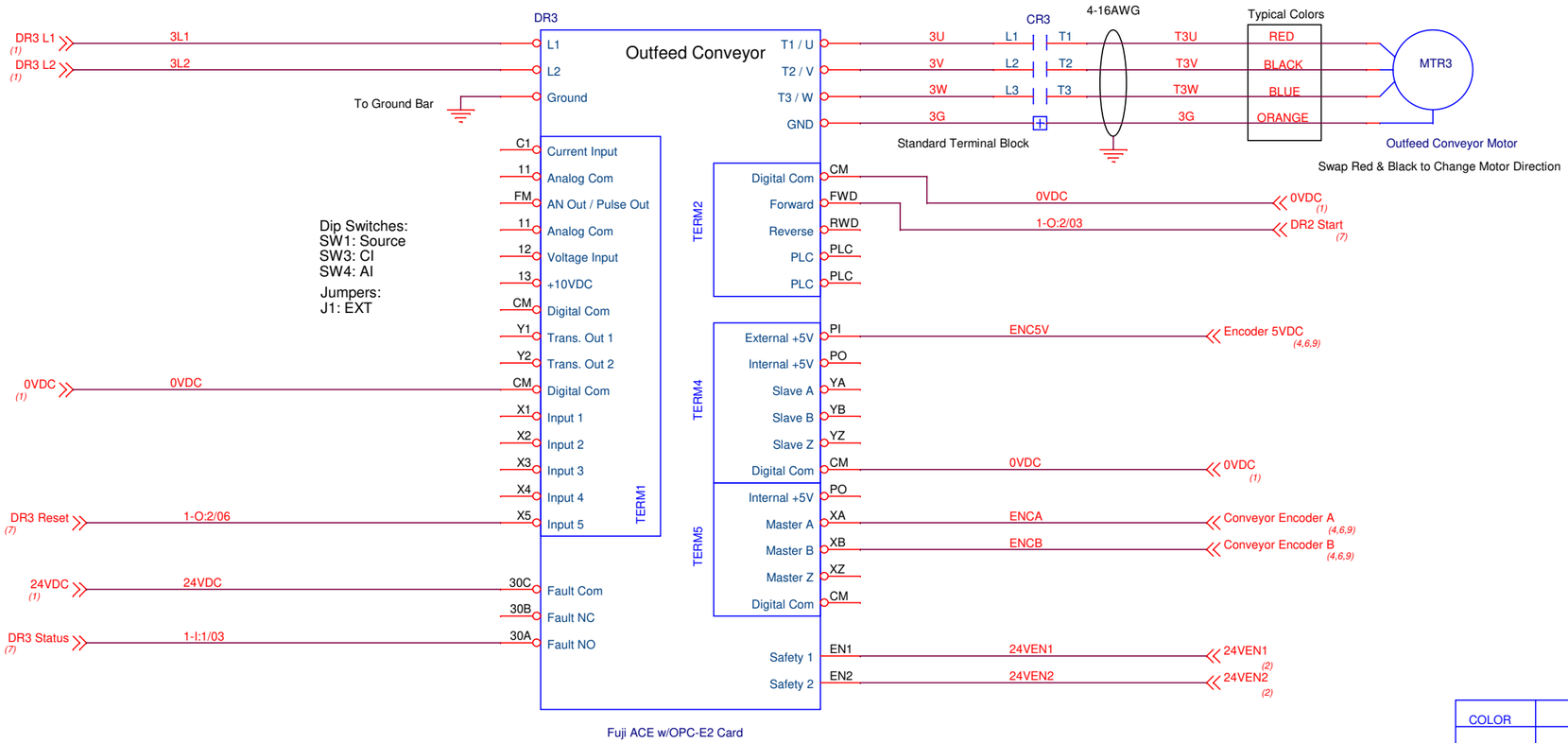
Schematic # SB84222-000

Rev -

Date: Monday, October 13, 2025

Sheet 04 of 09

Drive:
Outfeed Conveyor
Page 5



Fuji ACE w/OPC-E2 Card

COLOR	TECHNICIAN	DATE

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OUTFEED CONVEYOR

Schematic #
SB84222-000

Rev
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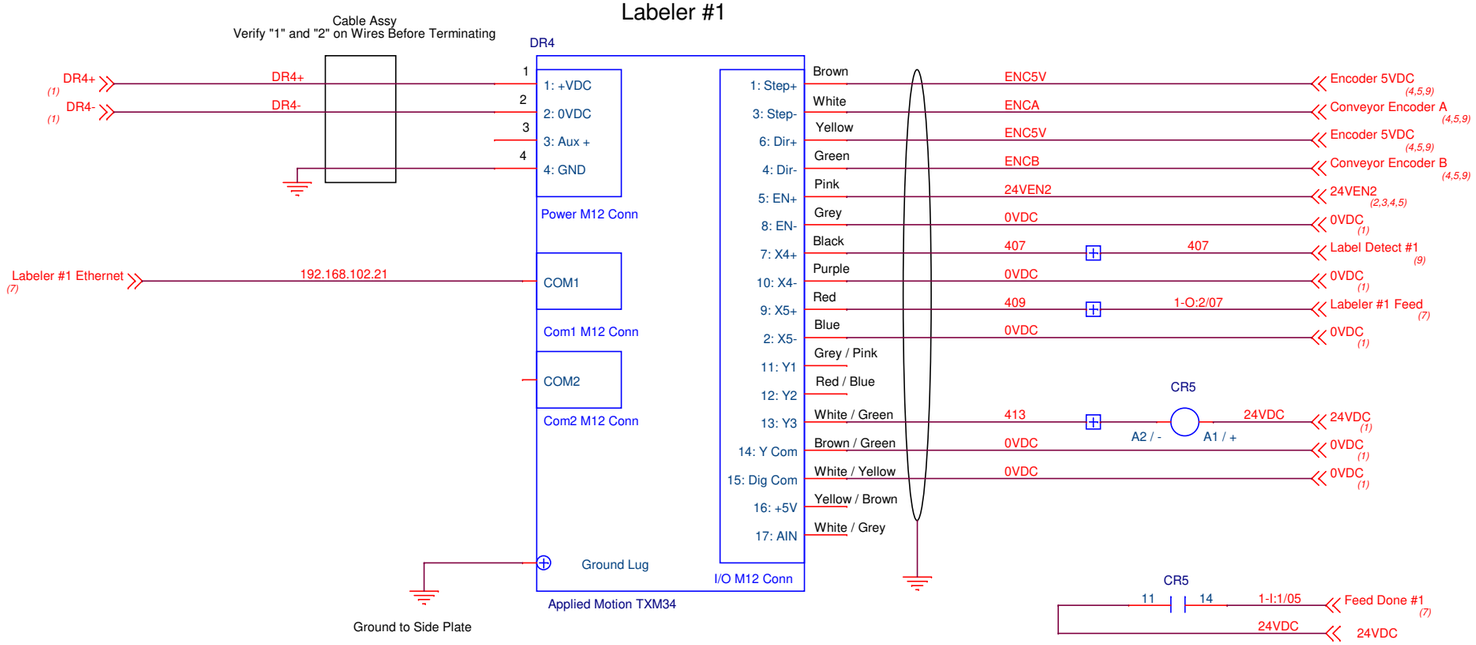
Date: Monday, October 13, 2025

Sheet 05 of 09

Drives:
Labelers
Page 6

Labeler #1



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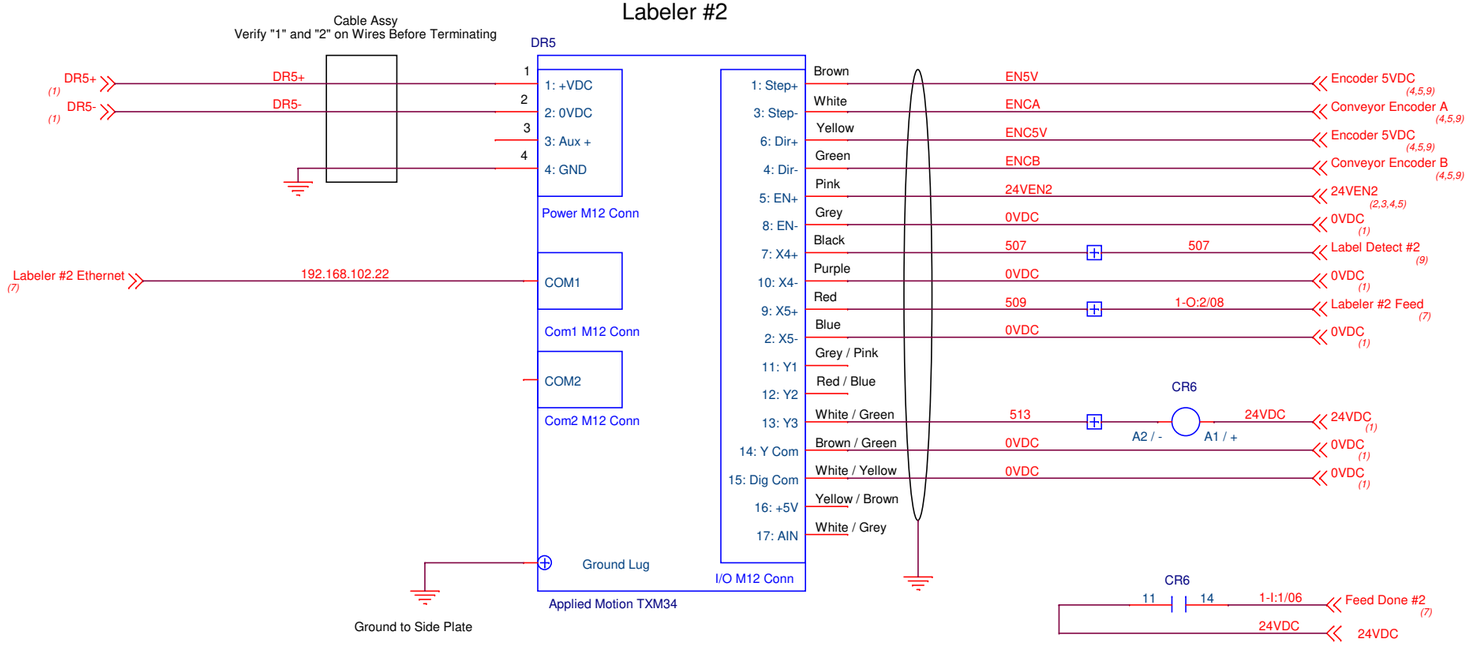

COLOR	TECHNICIAN	DATE

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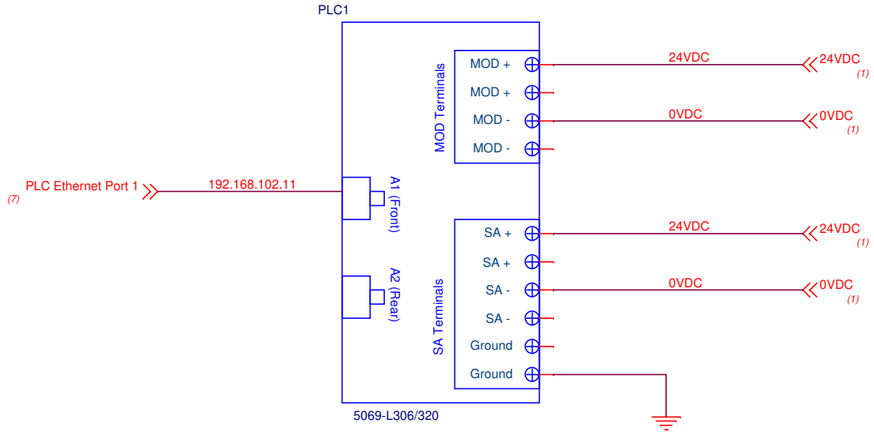
-	Release	CMT	13OCT2025

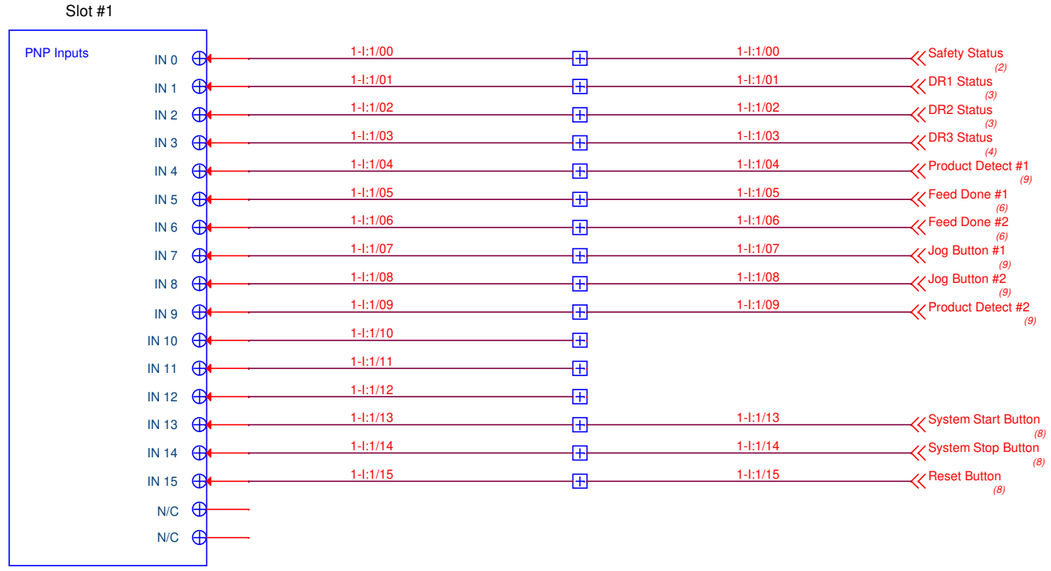
Title: LABELERS

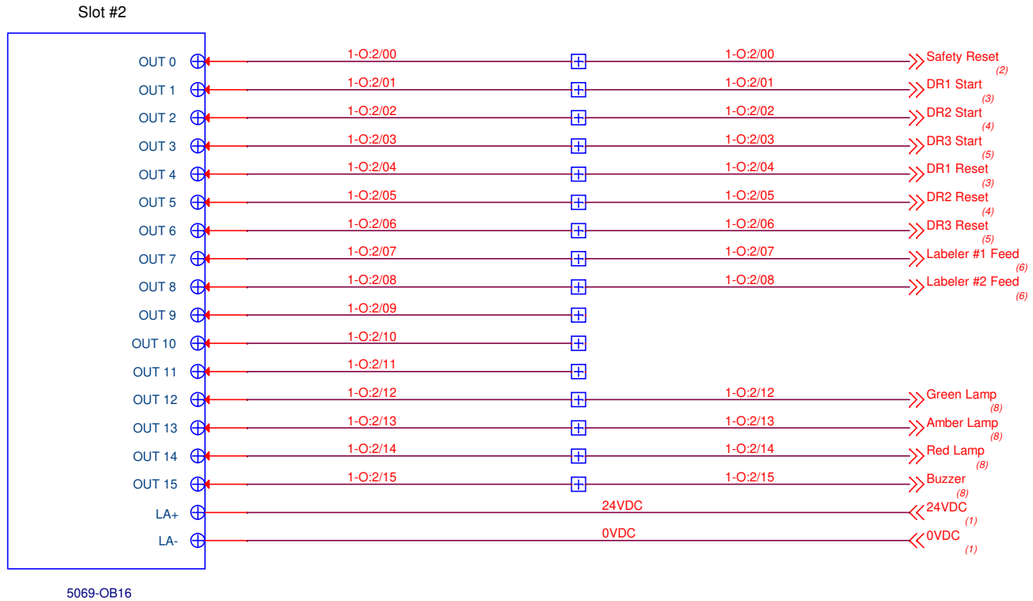
Schematic # SB84222-000 Rev -

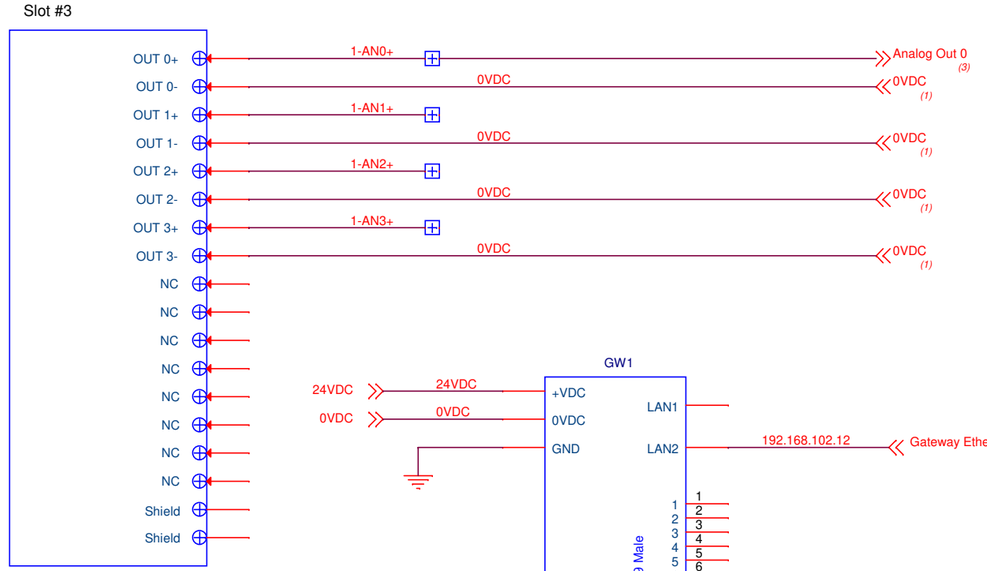
Date: Monday, October 13, 2025 Sheet 06 of 09

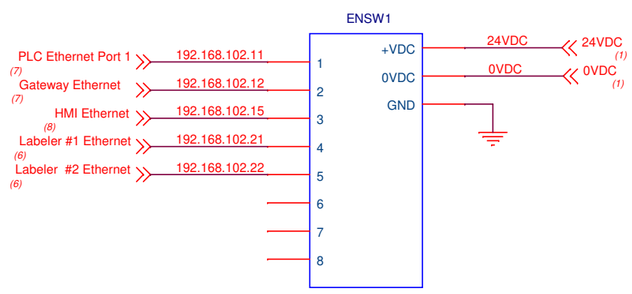
PLC, Ethernet Page 7











COLOR	TECHNICIAN	DATE

For Quadrel Assembly Use

QUADREL LABELING SYSTEMS
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Drawn By: CMT

REV	DESCRIPTION	BY	DATE
-	Release	CMT	13OCT2025

Title: PLC, ETHERNET

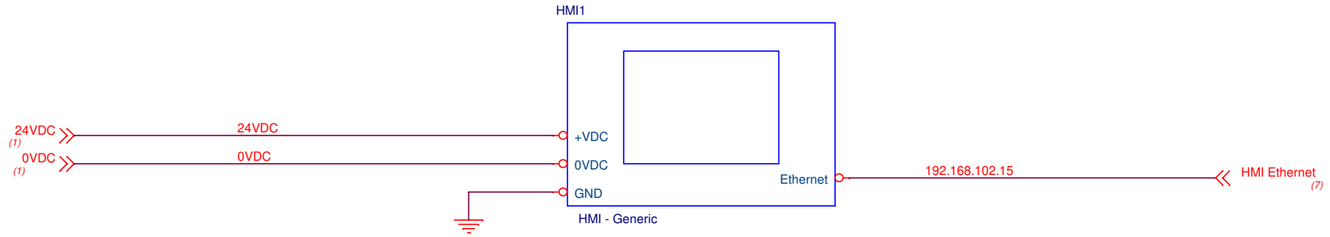
Schematic # SB84222-000

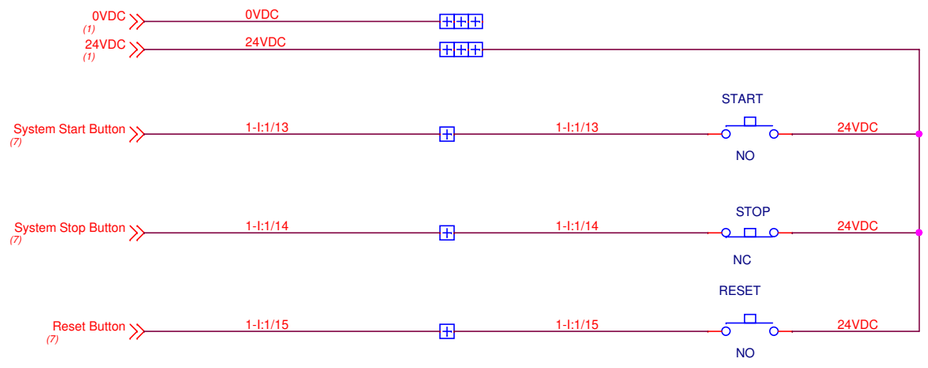
Rev -

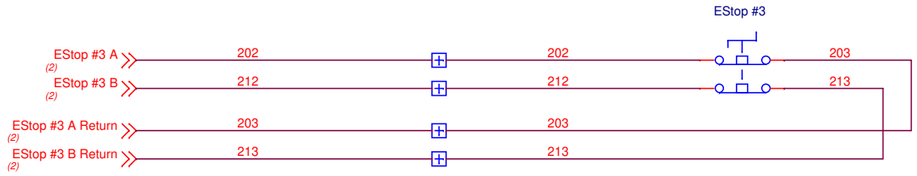
Date: Wednesday, November 05, 2025

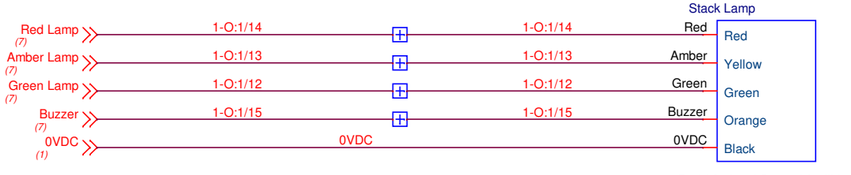
Sheet 07 of 09

Operator Enclosure
Page 8









COLOR	TECHNICIAN	DATE

For Quadrel Assembly Use

QUADREL
LABELING SYSTEMS
7670 Jenther Dr.
Mentor, OH
44060

Drawn By: CMT

REV	DESCRIPTION	BY	DATE
-	Release	CMT	13OCT2025

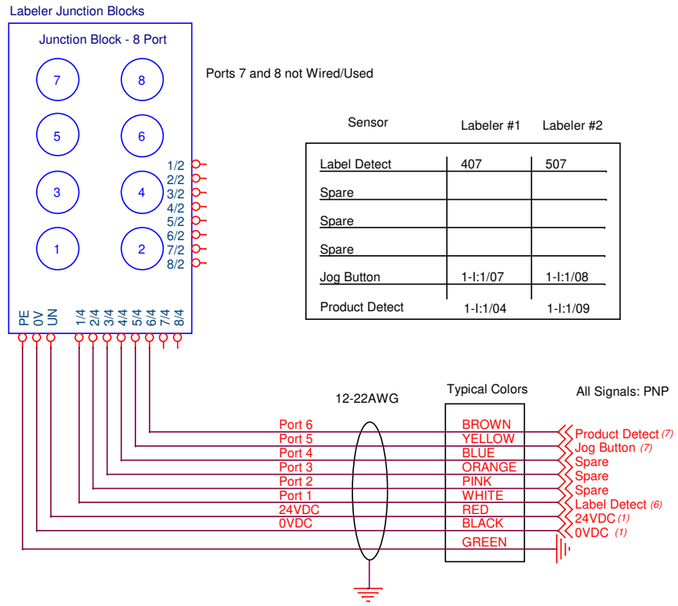
Title: OP. ENCLOSURE

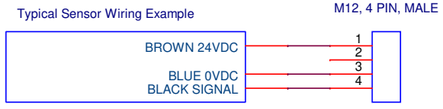
Schematic #: SB84222-000

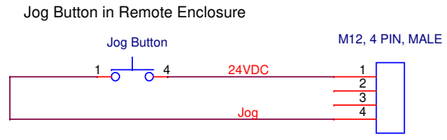
Rev: -

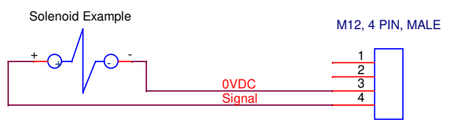
Date: Wednesday, November 05, 2025

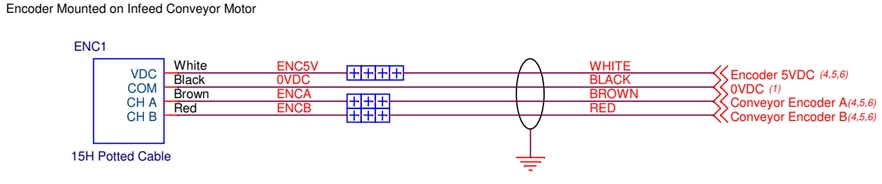
Sheet 08 of 09











COLOR	TECHNICIAN	DATE

For Quadrel Assembly Use

QUADREL
LABELING SYSTEMS
7670 Jenther Dr.
Mentor, OH
44060

REV	DESCRIPTION	BY	DATE
-	Release	CMT	13OCT2025

Drawn By: CMT

Title: SENSORS

Schematic #: SB84222-000

Rev: -

Date: Wednesday, November 05, 2025

Sheet 09 of 09

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

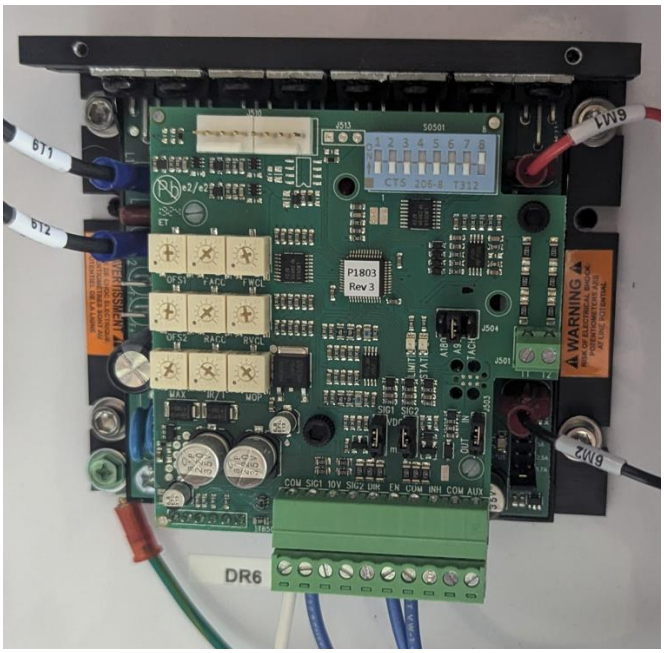
-Occasionally, the keypad may be cleaned with any non-solvent based cleaning solution.

ASSEMBLY TITLE: **ELECTRICAL**

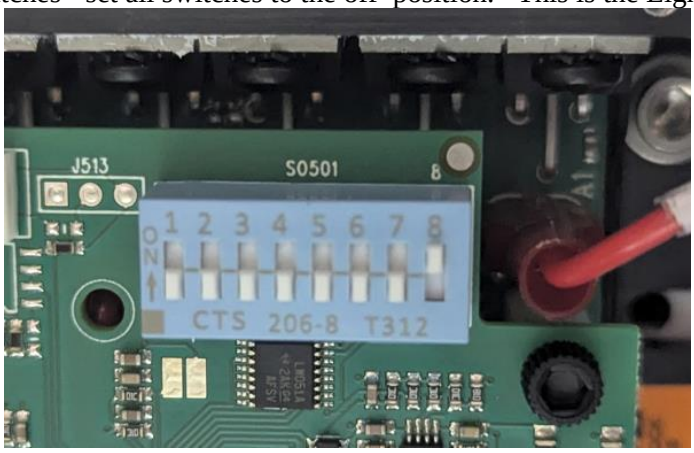
W- Check the foam for fan clean or replace.

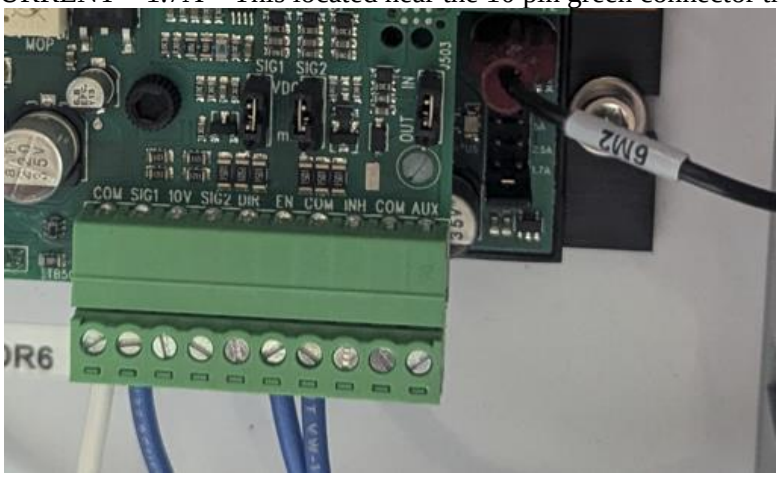
NOTES:

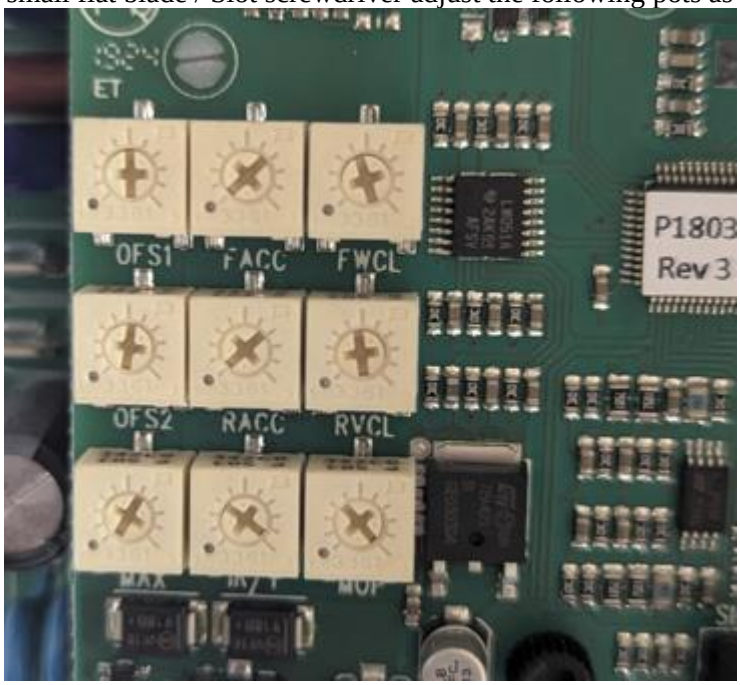
Setup procedure for Powered rewind using MGC403-11-00MD drive



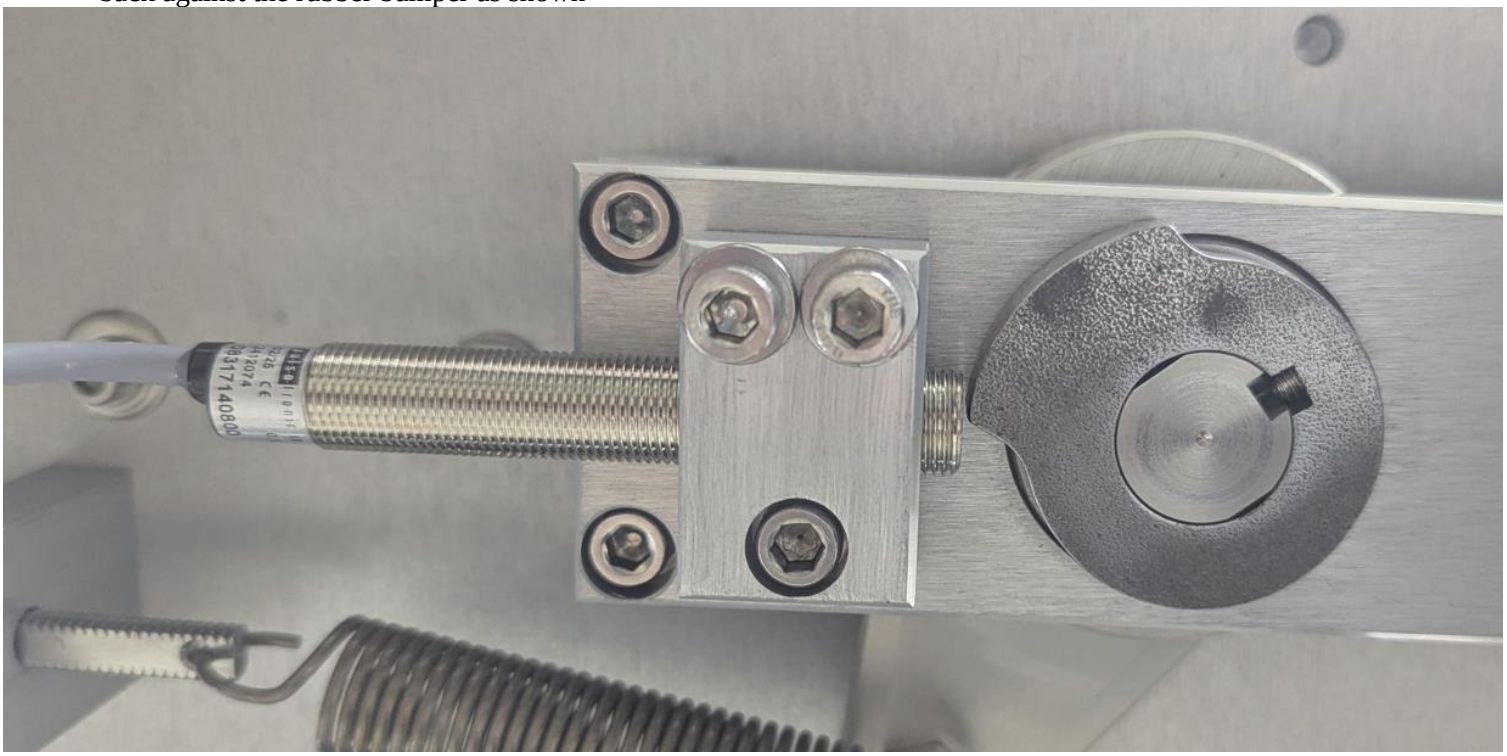
Upon receiving drive set the following BEFORE installing in the machine.

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

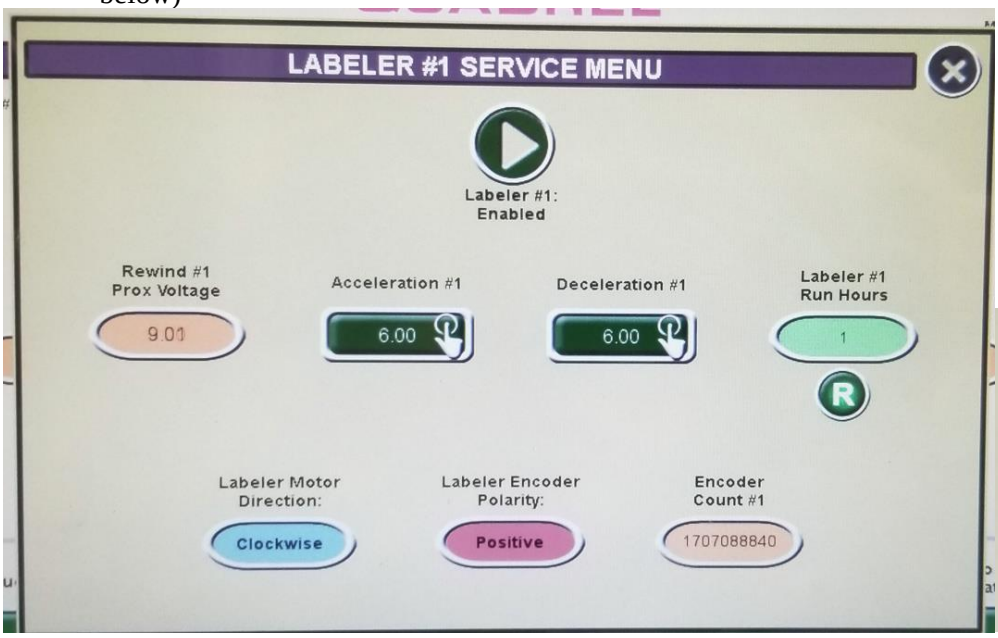
2. Set Jumpers on drive based on electrical schematic for your machine
   a. SIG1 – VDC
   b. SIG2 – VDC
   c. J504 – A90
   d. AMP CURRENT – 1.7A – This located near the 10 pin green connector that
      i. 

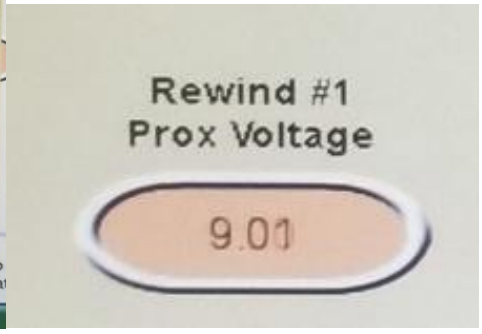
3. Using a small flat blade / Slot screwdriver adjust the following pots as indicated in the image below:
   a. 

      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

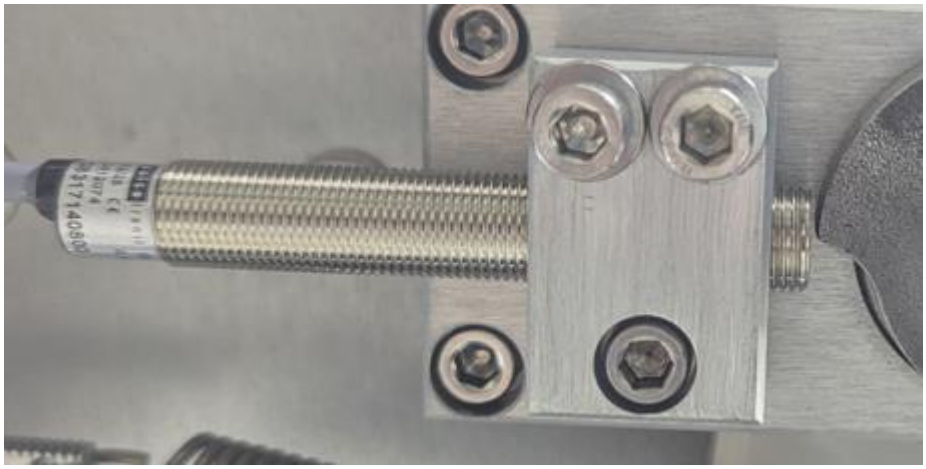


6. On the HMI go to into labeling head service menu. You will be looking at the REWIND PROX VOLTAGE (example below)

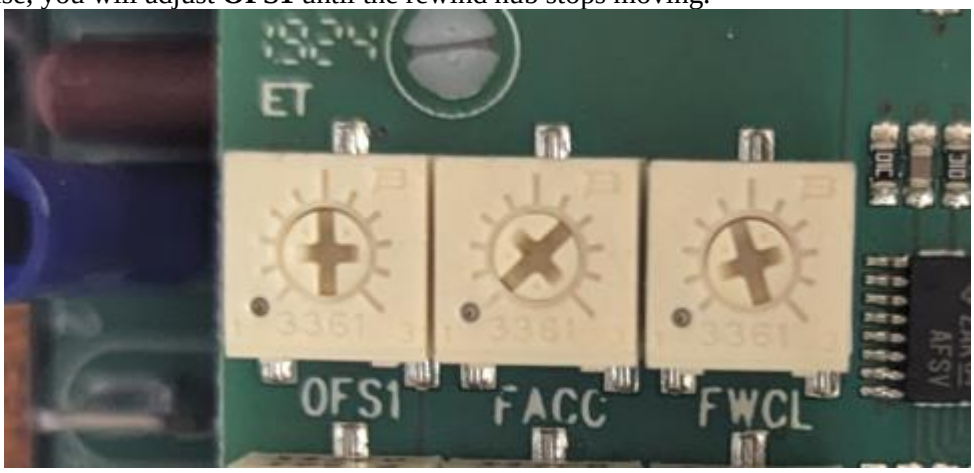




7. Adjust the sensor gap at the cam by loosening the bolt using an allen key so that the sensor can be moved forward or backward. The bolt does NOT touch the sensor. Loosening it opens the clamp so you can adjust.
8. Set the gap so the REWIND PROX VOLTAGE on the HMI reads .**90 it must be under 1 volt.**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

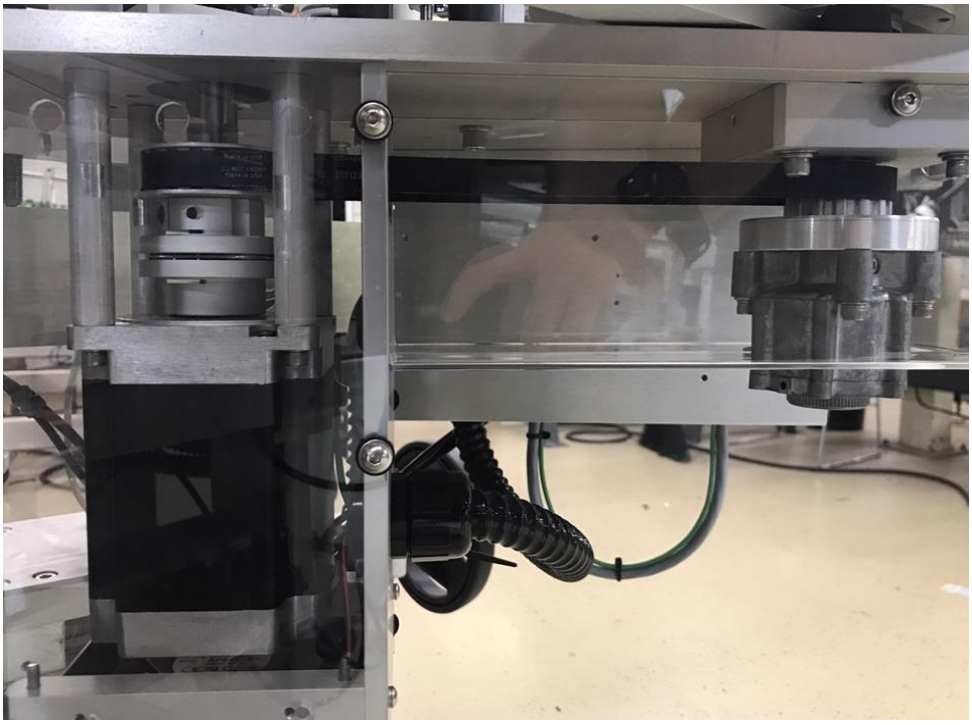
    b. This adjustment may need to be done multiple times until it no longer moves counter clockwise when rewind arm is all the forward and at rest.

9.2 BELTS

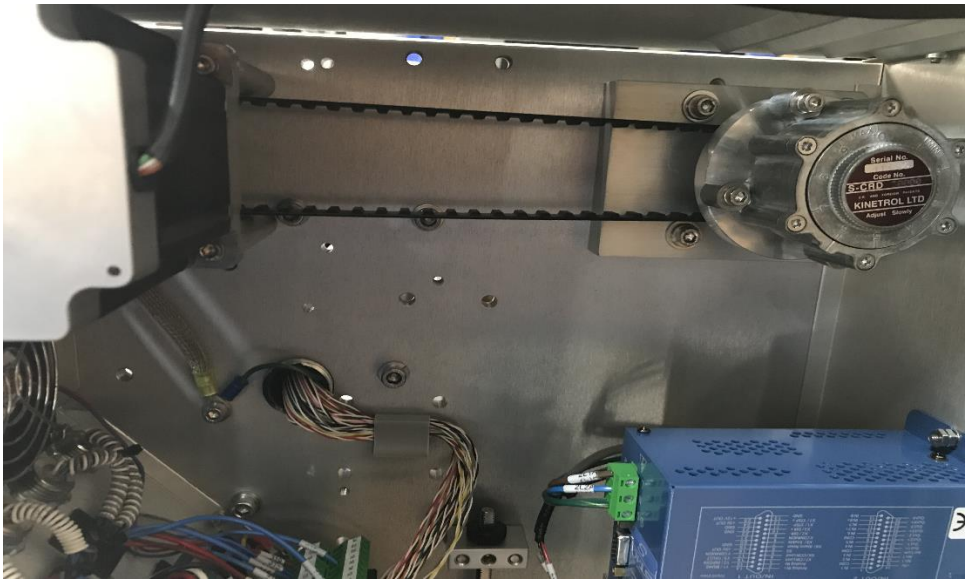
Monthly, a visual inspection of the rewind belt and timing belt, to do this depending on the labeling head you may need to remove the bottom cover on the head.

Refer to photos below.

Servo labeling head.

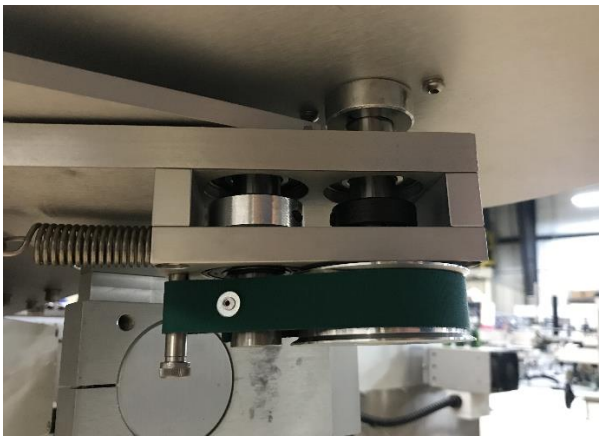


Stepping labeling head.



⚠ 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.

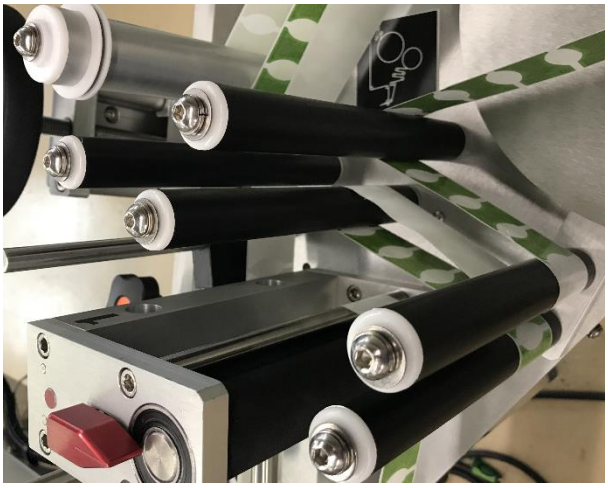


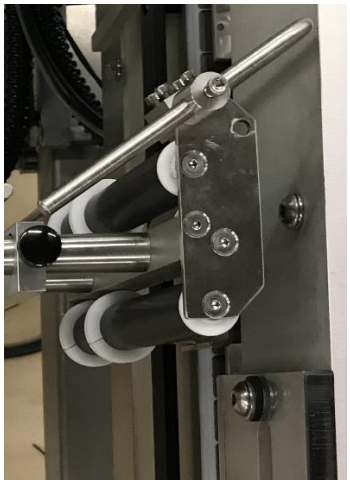
For replacement parts see the unwind assembly drawing for your labeling head in this manual.

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

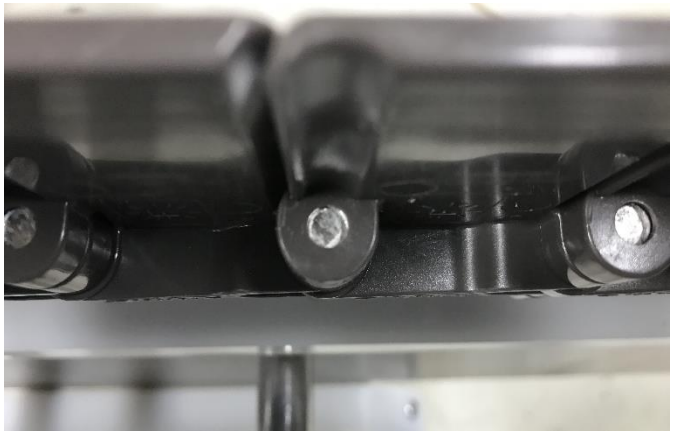
The sensors all have an electronic eye called a photocell; these must be free of lint or dirt. Since the photocells are generally made with glass or plastic lenses. They naturally attract substances which could easily trigger the sensor, use a cotton swap to gently clean the eye of the sensor as you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

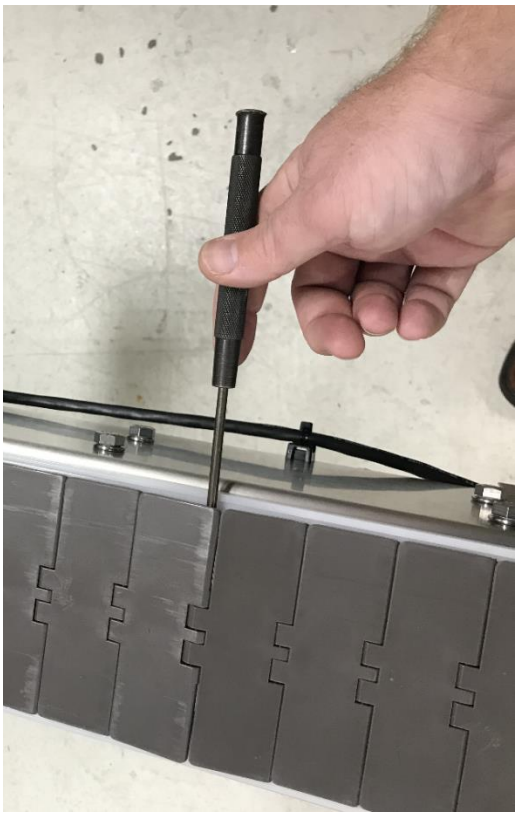
9.5 CONVEYOR

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 oriention 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.