

QUADREL

LABELING SYSTEMS

Operating & Maintenance
Manual
For

ORANGE SEAL

SHRINK SLEEVE

Automatic Labeling System

Labeler Model #: SL200 SLEEVE
Serial #: 84240-100

QUADREL LABELING SYSTEMS
7670 Jenther Drive
Mentor, Ohio 44060
440.602.4700

customerservice@quadrel.com
parts@quadrel.com

TERMS AND CONDITIONS OF SALE

QUADREL, INC

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

PERFORMANCE GUARANTEE:

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

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

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

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

GENERAL WARRANTY (EXCLUDES TABLETOP LABELERS)

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

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

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

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

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

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

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

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

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

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

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

ORDERS:

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

START-UP SERVICE:

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

SERVICE AFTER INSTALLATION:

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

PAYMENT TERMS:

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

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

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

TAXES:

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

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

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

RETURNS:

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

FORCE MAJEURE:

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

TITLE AND RISK OF LOSS:

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

ENTIRE AGREEMENT:

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

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

EFFECTIVE:

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

INDEMNIFICATION:

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

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

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

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

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

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

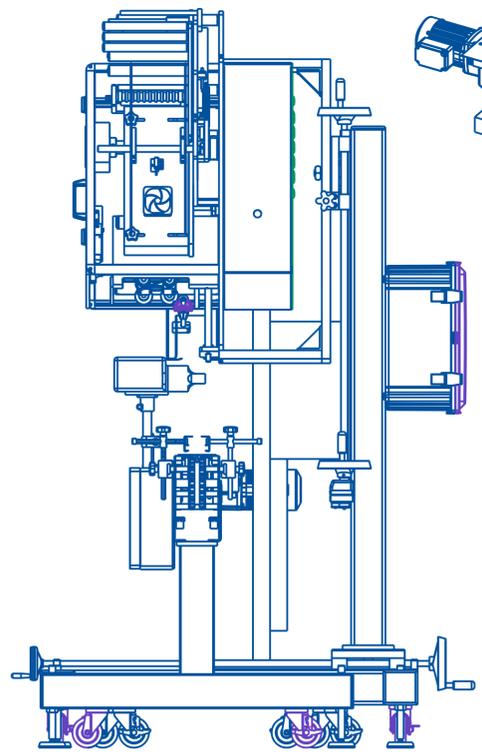
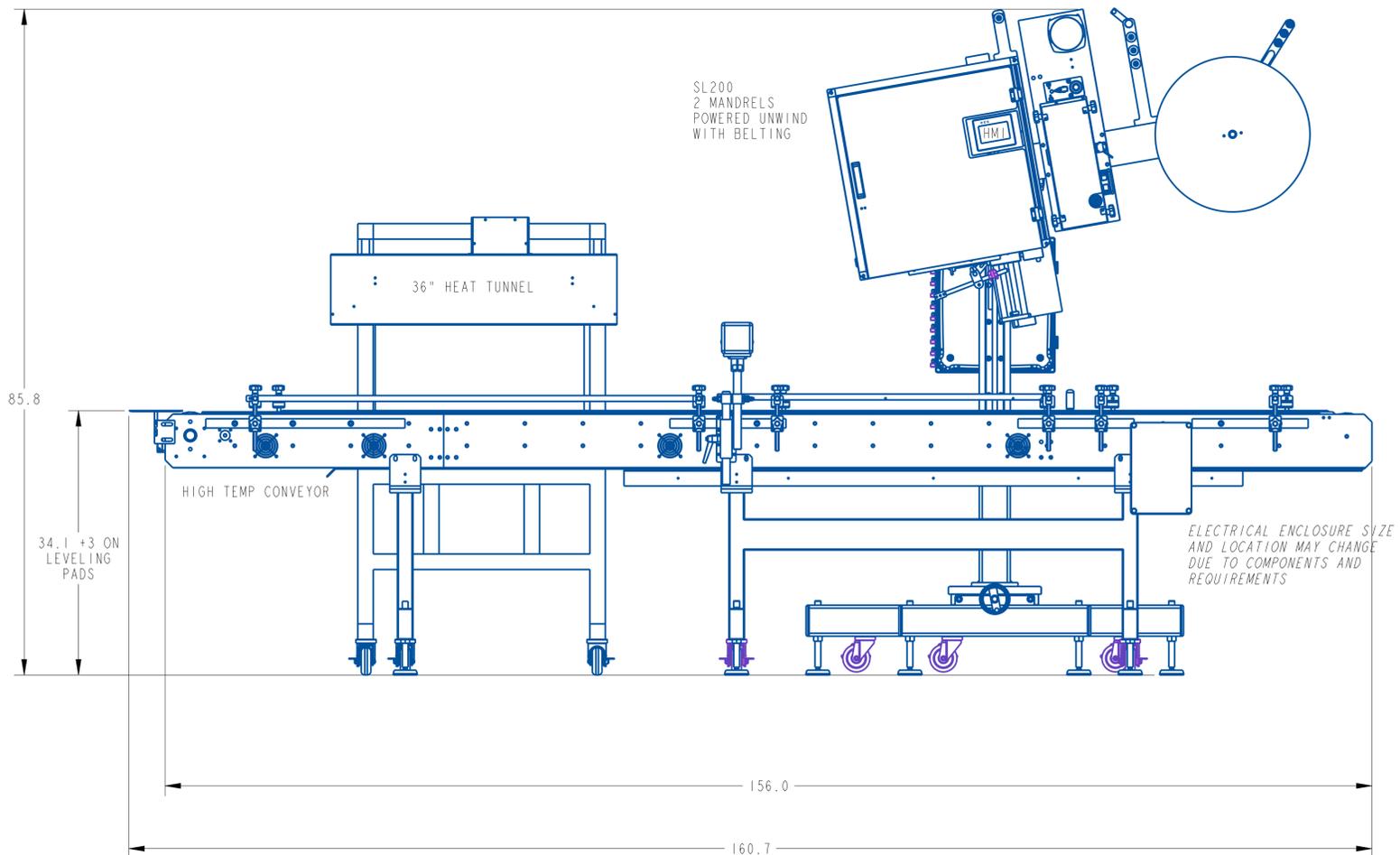
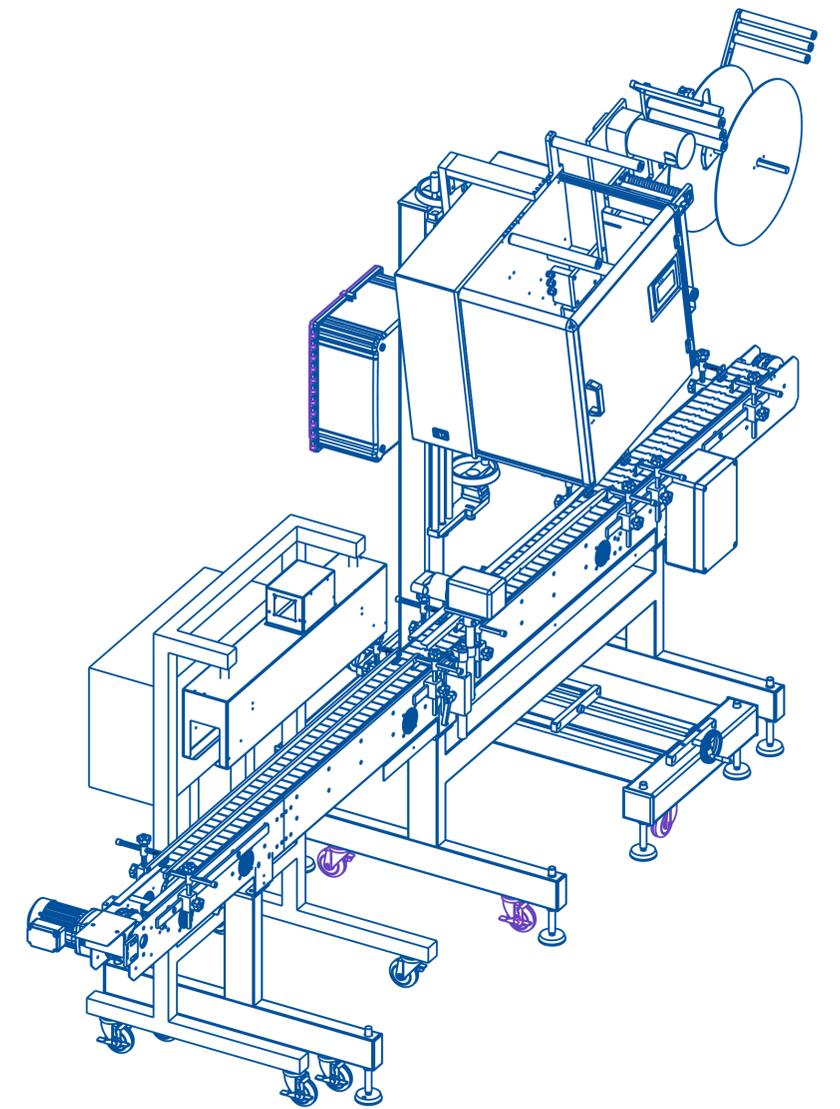
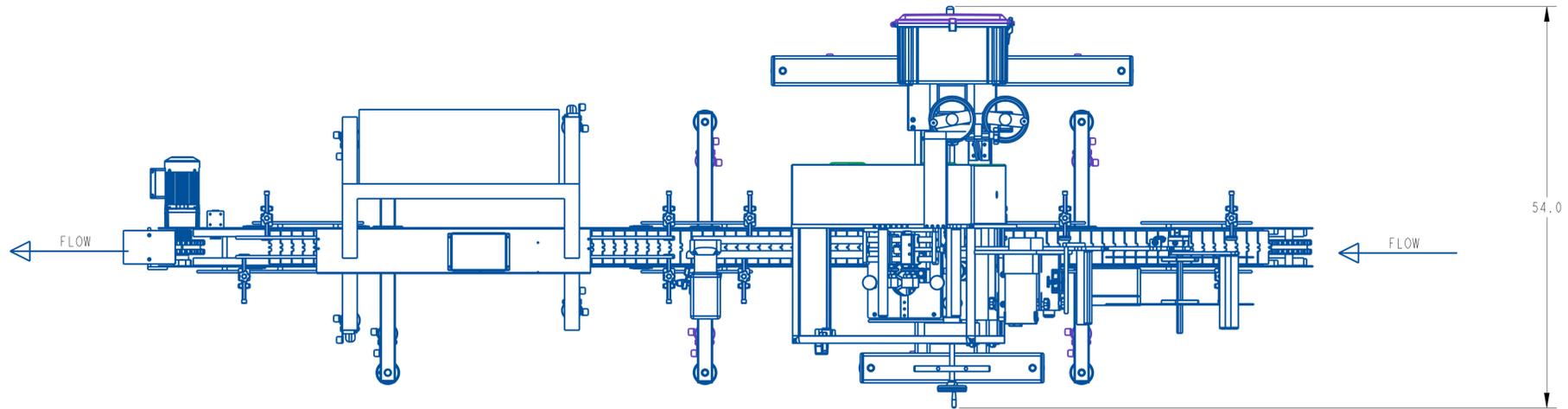
Any order put on hold or left dormant for any reason for 90 days will be considered cancelled. See Cancellation Policy below.

CANCELLATION POLICY:

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

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

Please sign and acknowledge acceptance to these terms and conditions _____ Date _____



REV	DATE	DESCRIPTION	BY
A	Nov-06-25	NEW DRAWING	TAZ

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

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

SCALE: 3/32
 DATE: Nov-06-25
 DRW BY: TAZ
 CHK BY:
 APPR BY:

SL200 SHRINK SLEEVE SYSTEM

MAT'L ORANGE SEAL CYCLING APPROVAL DRAWING

84240-101

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°

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Quadrel Labeling Systems Quality Manual

Quality Statement:

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

100% on-time delivery

zero defects

Value added service and support

Engineered solutions

Employee development and diversity

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

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

Chuck Wepler
General Manager / President

1 MANUAL PREFACE

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

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

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

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

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

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

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

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, THREE (3) Phase, 60 Hz, 60 Amps. While installing make sure it's properly configured and connected by a qualified electrical technician.
- **DO NOT** by pass any of the safety circuits or safety features designed into this equipment.



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



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



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

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

FOR PROLINE SYSTEMS ONLY

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

WARNING

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

Using VFDs On GFCI Devices

By Bill Szatkiewicz, Senior Software Engineer
KB Electronics
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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.

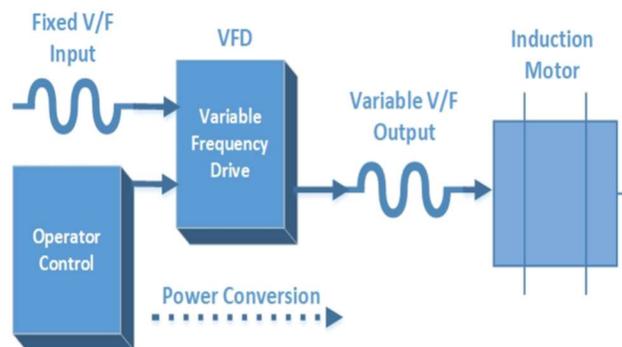


Figure-1: Typical VFD System

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

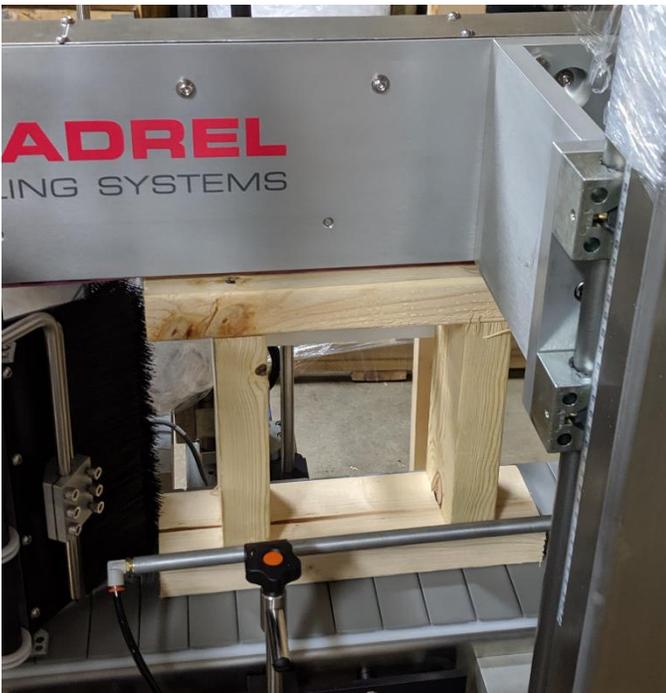


wrapped in bubble wrap or plastic wrap go ahead and carefully cut and remove that as well. Ensure you are wearing the appropriate safety gear when removing your machine from the crate.



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.

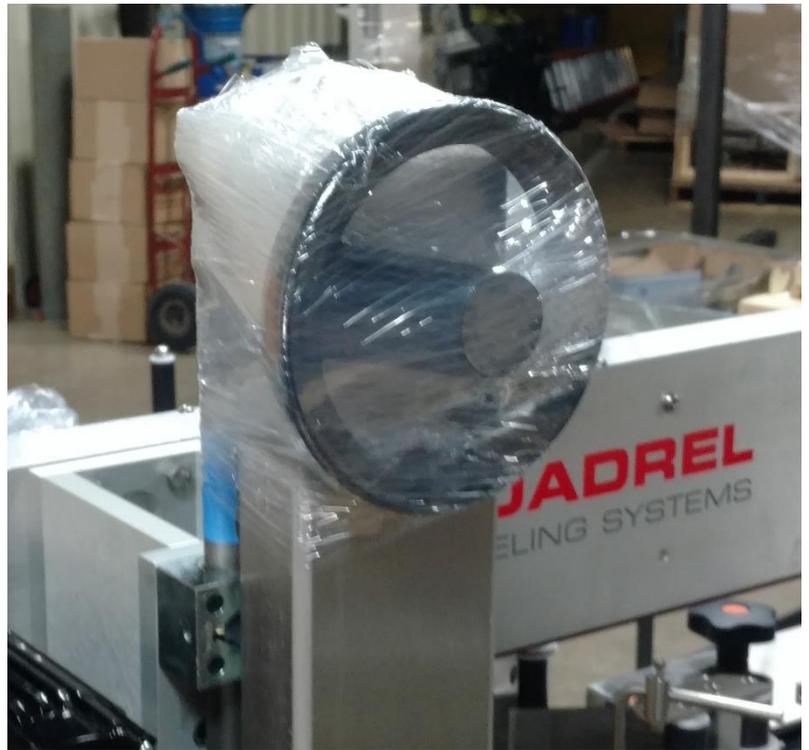
Remove the hand wheel from the wrap, then fasten the hand wheel to the square end on the lead screw using a 3/32 "L" handle Allen wrench.

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)



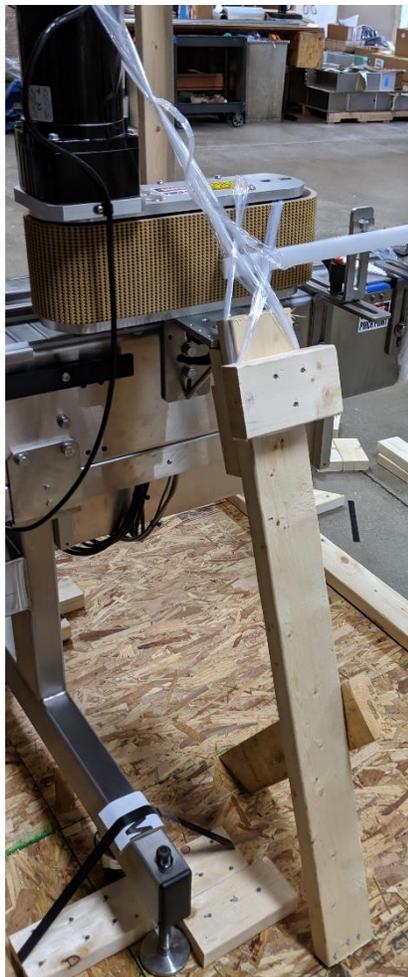
All top and bottom labeling heads will be supported



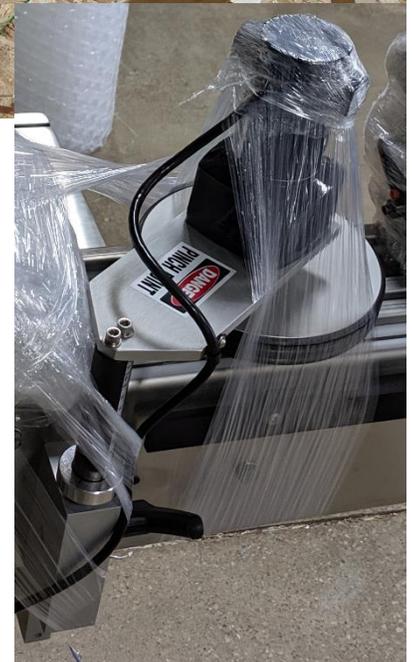
similar to the image shown on the left.

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 without raising the assembly.

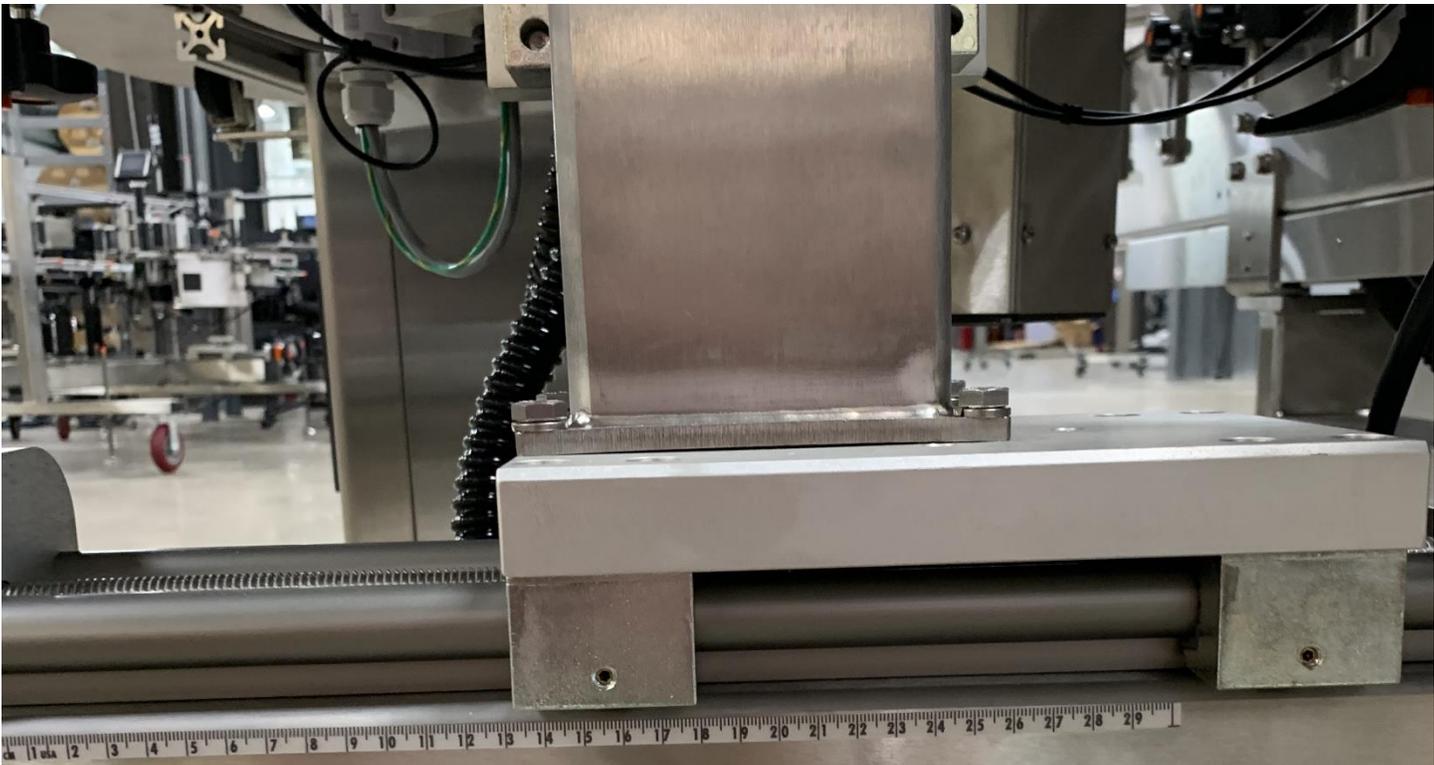


Pacing wheels supported as shown





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



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

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



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

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

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

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

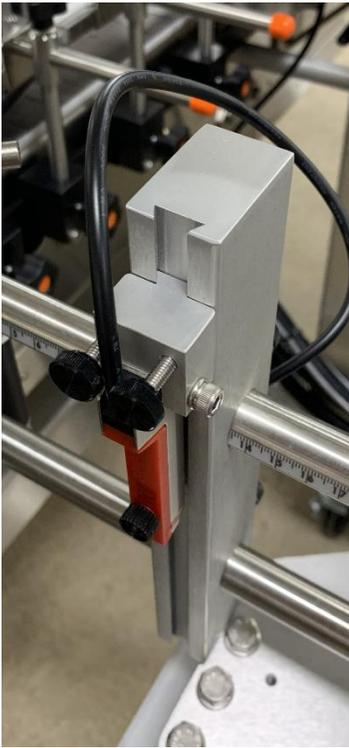


First back the head out all the way. Locate your peel plate assembly and slide it into the holes in the drive roll assembly (as shown on the left of the image above). Make sure you take the bolts out of the end of the rods before putting them into the drive roll assembly.



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

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



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



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

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

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

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

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



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



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

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

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

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

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



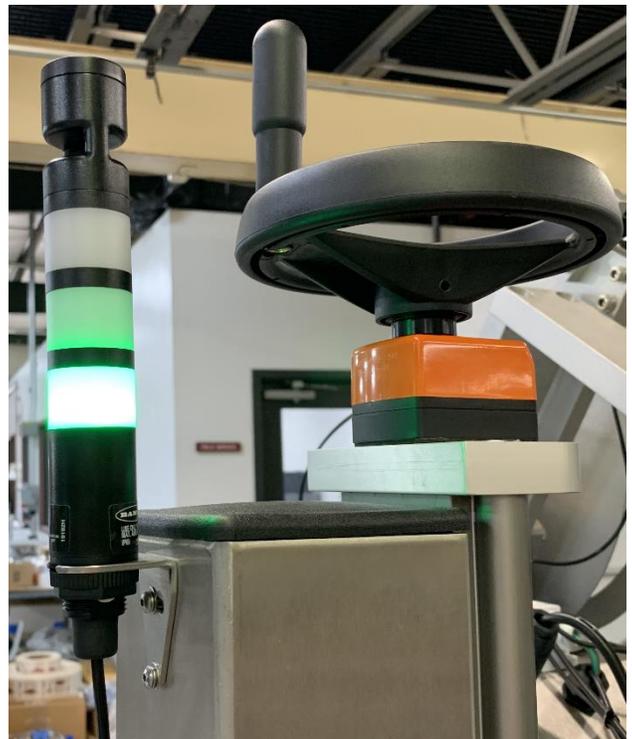
End transfers will be wrapped in bubble wrap and plastic wrap. They will be located in a box on the pallet with your machine or wrapped to the machine itself.

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

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

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

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



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

Carefully remove the plastic wrap and bubble wrap.

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

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



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

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

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

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

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



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





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

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

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



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

Take out of the box, carefully remove the wrapping.

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



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



Rotary accumulation tables are banded to a pallet and wrapped.

These tables usually operate independently to the machine.

Carefully un-band and unwrap the table.

Line it up to the transfer plate on the conveyor.

Level the table using the leveling pads.

Plus in and adjust speed through the control box.



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

Carefully remove the banding and wrapping.

Raise the head and remove the supports.

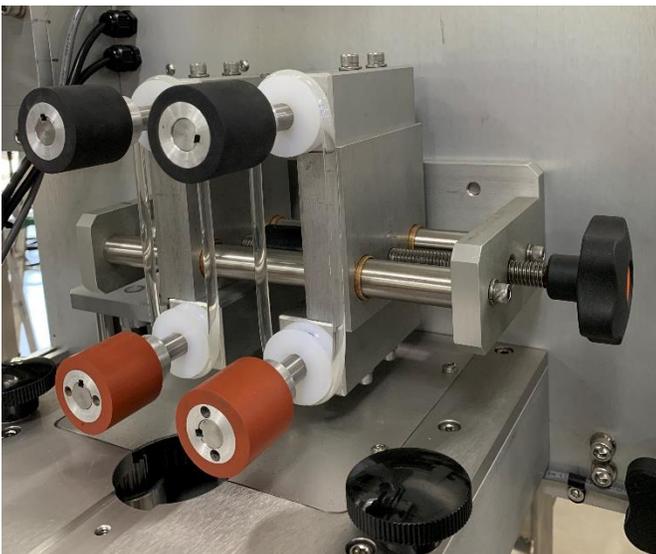
The pallet will contain boxes with. Misc assemblies and or parts (ie mandrels).



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



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



Carefully remove the mandrel from the packaging.

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

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

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

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

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

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

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



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

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

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





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

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



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

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



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



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

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



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

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

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

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



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



BEFORE



AFTER

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

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

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



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

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

FAMILY GUIDE



Operator Interface Guide

Shrink Sleeve Applicator System

For 22565_v002 files.

Delta 4” touch screen with Keyence Nano 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.

Opening Splash Screen

Upon initial power up, the terminal will initialize and display a splash screen. The PLC will start executing logic once this screen appears. Touch the screen to continue to the main screen.



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 as indicators if the current user does not have proper access.

Indicators: Status and Mode/Toggle Indicators will be oval in shape and will change color based on states.

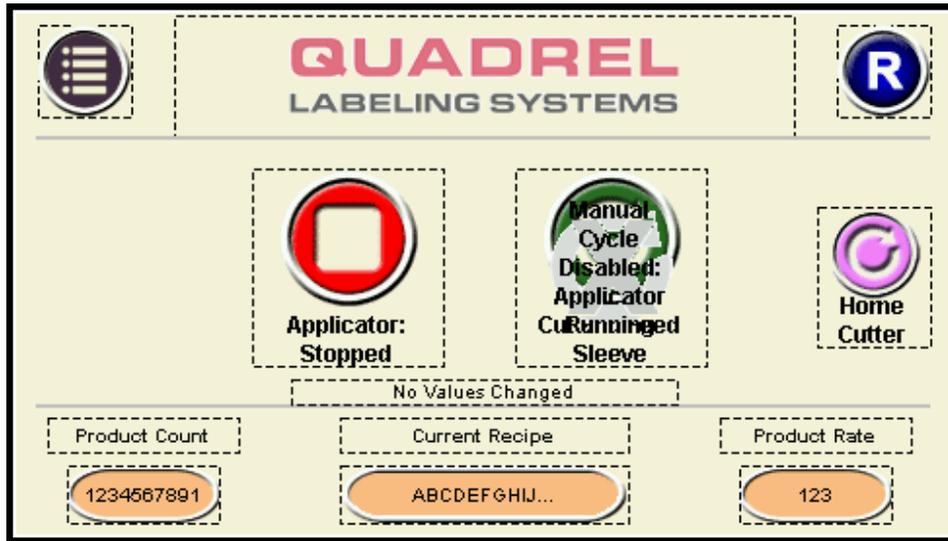
Numeric and Text Displays: Numbers or Text displays will be oval in shape and typically have a light orange background.

Numeric and Text Inputs: If a number or text can be entered, the button will be rectangular in shape with a white touch icon on the right side of the entry box.



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 Navigation Button:

This button in the top left will open up the System Menus page, which will contain the buttons to all of the system sub-screens.

Fault/Message window:

Displays current alarms and status messages about the status of the labeling system.

Pressing a reset button on the touch screen or optional physical button on the machine will clear these messages if the fault was remedied. When no faults or messages are active, the fault dialog box will be hidden.

Fault Reset:

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

Applicator Run/Stop:

The Sleever Applicator 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 sleever is currently running. The sleever will only feed sleeves onto products while running. If threading or changeover is needed, the sleever must be stopped.



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

Sleever Cycle:

When the sleever is stopped, the Cycle button becomes available. Pressing the Cycle button will initiate a feeding process where the sleever will cut and then feed material based on settings. It is important to manually cycle sleeves when changing over and setting up.



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



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



Home Cutter: When the cutter needs to be homed, this button will appear. Pressing it will cause the cutter to move at a slow speed until it reaches the home sensor. This verifies the cutter is operational before cycling or running the sleeve.

Product Count:

This indicator shows how many Products have passed the product detect sensor while the sleeve is Running. This can be reset in the Counters Menu.

Current Recipe:

This indicator shows the description for the current recipe that is running.

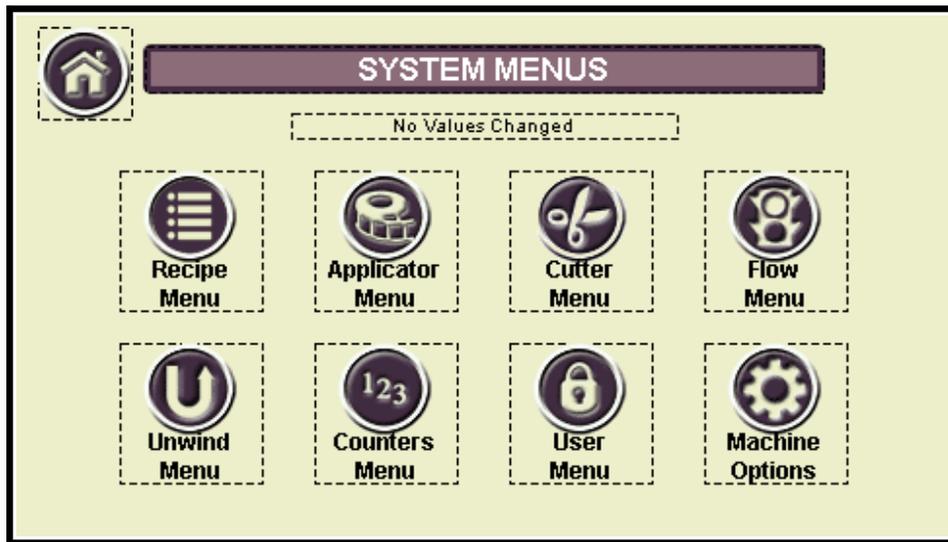
Product Rate:

This indicator will show how many products are passing the product detect sensor every minute. It will average over a period of time and needs 5-10 products to begin averaging.



System Setup Menu:

The System Setup Menu contains shortcuts to the sub-menus that make up all components on the system. It also shows the status of some items and toggles.



Main Menu:

Press this to return to the Main Menu.



Recipe Menu:

The system can store 9 recipes. The Recipe Menu allows saving, copying, and changing the description.



Applicator Menu:

The Applicator Menu contains the parameters associated with applying sleeves onto products.



Cutter Menu:

The Cutter Menu contains the parameters and buttons associated with the cutting of material.



Flow Menu:

The Flow Menu has the timers and control for optional flow sensors and stop gate/pacing device.



Unwind Menu:

The Unwind Menu will have the timers and controls for the optional attached powered unwind unit.



Counters Menu:

The Product and Label Counts can be viewed and reset in the Counters Menu.



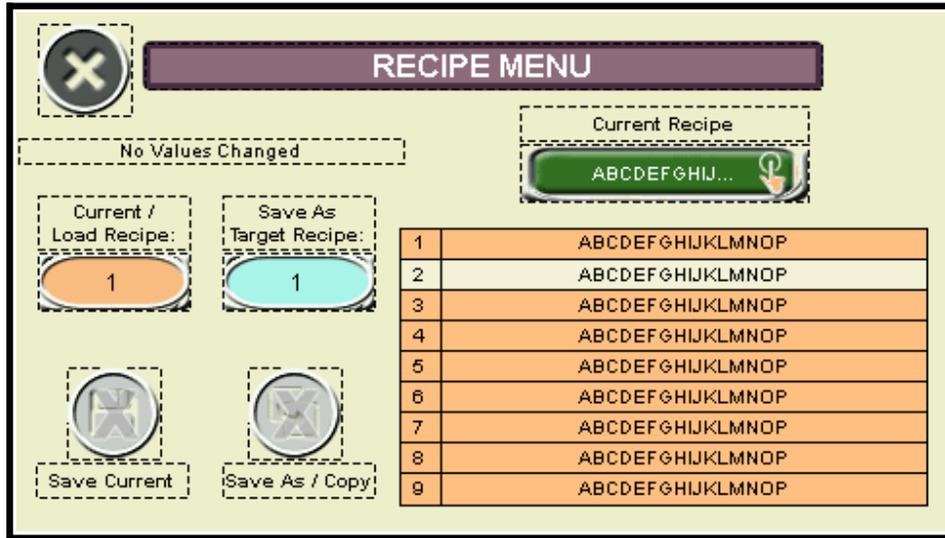
User Menu:

The User Menu allows an operator to log in at different levels to change protected parameters and toggles.



Recipe Menu:

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



Recipe:

Recipes are presets that contain parameters unique to each product. Setting Recipes for different products expedites changeover times. A total of 9 recipes can be stored and descriptions can be changed by pressing the bottom description box when logged in at a Supervisor Level.

Recipes store the following information:

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

Toggles/Options: Encoder, Unwind, Pacing, Wipers, Button Option

Applicator Parameters: Product Delay, Feed Length, Max Feed, Gap Offset

Loading:

Recipes can be loaded by entering a new Recipe number on the left side. Once entered, all stored toggles and parameters will be loaded to the system. If a new recipe is loaded it can trigger the save button to appear in the event the system loaded default/non-zero values to various toggles and parameters.

Saving:

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

Save As Target Recipe (Supervisor Level):

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

Save As / Copy (Supervisor Level):

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

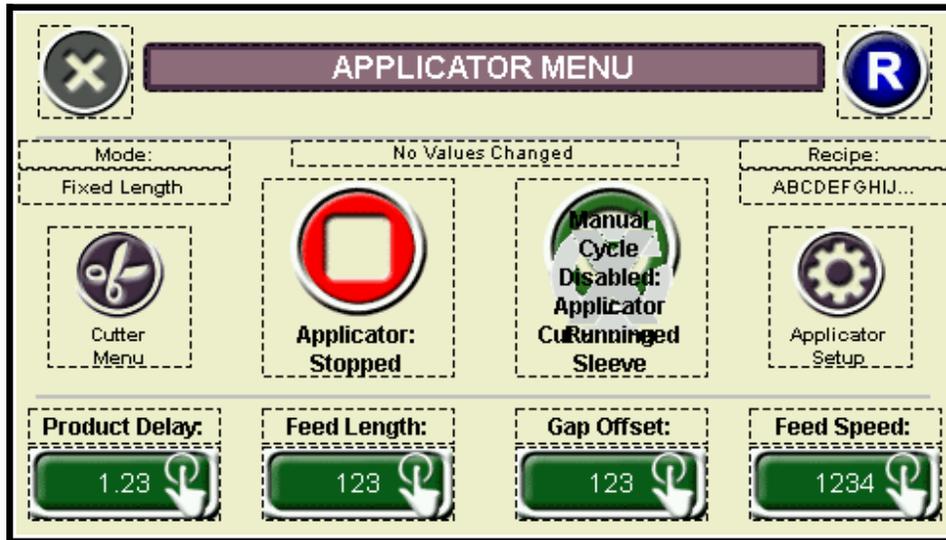
Change Description (Supervisor Level):

Pressing the Recipe Description at the top will bring up a keyboard that allows the user to enter a new description for the current recipe. The box will be green when the input is enabled.



Applicator Menu:

The Applicator Menu contains parameters related to dispensing sleeves on products.



Sleever Run/Stop:

The Sleever 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 sleever is currently running. The sleever will only feed sleeves onto products while running. If threading or changeover is needed, the sleever must be stopped.



Red "Stopped" Button: This indicates the sleever is currently stopped.. While stopped, the sleever will ignore products passing by and can be manually fed. To **run** the sleever, press this button.

Sleever Cycle:

When the sleever is stopped, the Cycle button becomes available. Pressing the Cycle button will initiate a feeding process where the sleever will cut and then feed material based on settings. It is important to manually cycle sleeves when changing over and setting up.



Green "Cycle" Button: This indicates the sleever can be jogged. Press this button to start a jog process. This button will be grey while the sleever is jogging.



Greyed out "Jog" Button: This indicates the sleever is currently running, and may not be manually cycled.

Product Delay:

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

If the Encoder is enabled this value is entered as inches.

If the Encoder is disabled this value is entered as seconds.

Feed Length:

The Feed Length (in mms) determines how much sleeve is fed when the Gap Detection is Disabled. This is usually equal or close to equal the length of the sleever's mandrel. This can only be altered while Gap Detection is Disabled.

Max Feed Length:

The Max Length (in mms) determines how much sleeve can be fed when the Gap Detection is Enabled. This is used to prevent a runaway situation in the event a gap is not detected properly.

Gap Offset:

The Gap Offset (in mms) controls the sleeve's stop position when Gap Detection is Enabled. When feeding, the system will monitor the Gap Detect sensor. Once this sensor sees a gap in the sleeve, the system will continue feeding sleeve equal to this number. Adjust this number so the gap between artwork stops where the cutter blades are located.

Feed Speed:

The Feed Speed determines how fast the sleeve will feed sleeve material and is entered as inches per minute. A speed that is too slow may result in missed products while a speed that is too high can result in slipping and inaccurate cut lengths.

Mode Display:

Fixed Length: The system will feed a set distance of sleeve material when requested.

Gap Mode: The system will feed and monitor a gap sensor to determine when to stop.



Applicator Service / Setup:



Gap Detection Mode (Supervisor Level):

The sleever can use a sensor to determine when to stop feeding or feed at a fixed length.



Green “Enabled” Button: The system will monitor a gap detect sensor to determine when the sleeve stops when feeding.



Red “Disabled” Button: The system will dispense sleeves at a fixed length.

Feeder Speed (Maintenance Level):

The Feeder Speed determines how fast the sleever will feed sleeve material and is entered as inches per minute. A speed that is too slow may result in missed products while a speed that is too high can result in slipping and inaccurate cut lengths.

Accel (Supervisor Level):

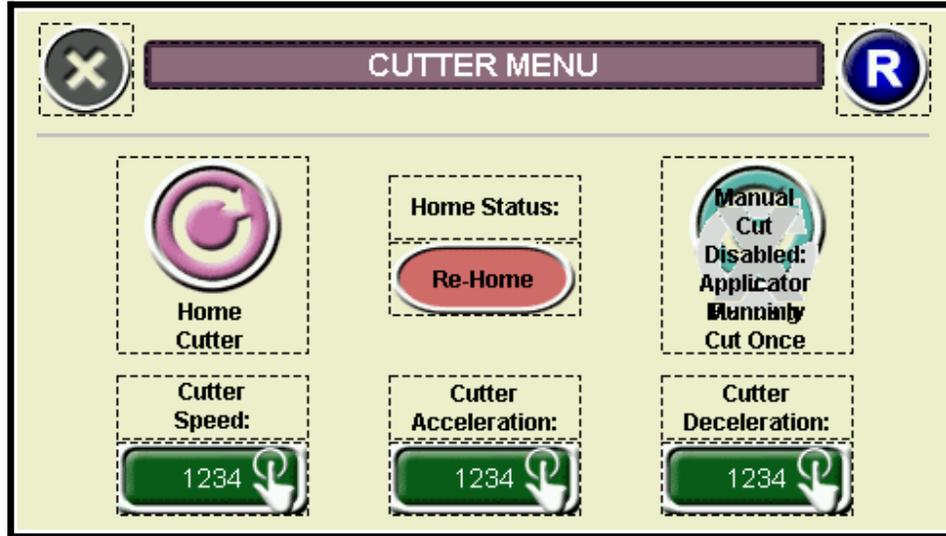
The acceleration rate of the feeder (the time it takes the material to reach the target dispensing speed) can be changed here. A higher value increases the acceleration rate, but a value that is too high can lead to motor stalling. A lower number decreases the acceleration rate, but a value that is too low can lead to inaccuracy if system speed is frequently changed.

Decel (Supervisor Level):

The deceleration rate of the feeder (the time it takes the material to stop from the target dispensing speed) can be changed here. A higher value increases the deceleration rate, but a value that is too high can lead to inaccurate label stopping position. A lower number decreases the deceleration rate, but a value that is too low can lead to missed products if spacing between products is close.



Cutter Menu:



Home Cutter:

The cutter must be homed first for proper operation. If the Cutter has already been homed, pressing this button will not result in any action.



“Home” Button: The home cutter button will perform a homing process for the blades. The motor will turn at a slow speed until the home sensor is activated.

Home Status:

This indicator will show the home status of the cutter.

Manual Cut:

The cutter may be cycled independently of the feeder to test operation.



“Manual Cut” Button: The cutter will cycle once at the cutter speed. This will only execute if the Sleever is stopped and Cutter has been homed.



Greyed out “Cut” Button: This indicates the sleever is currently running, and cutter may not be manually cycled.

Cutter Speed (Maintenance Level):

The Cutter Speed determines how fast the cutter blades will rotate and is entered as inches per minute. A speed that is too slow may result in missed products and poor cut quality while a speed that is too high can result in motor stalling.

Accel (Supervisor Level):

The acceleration rate of the cutter (the time it takes the cutter to reach the target speed) can be changed here. A higher value increases the acceleration rate, but a value that is too high can lead to motor stalling. A lower number decreases the acceleration rate, but a value that is too low can lead to missed products or poor cut quality.

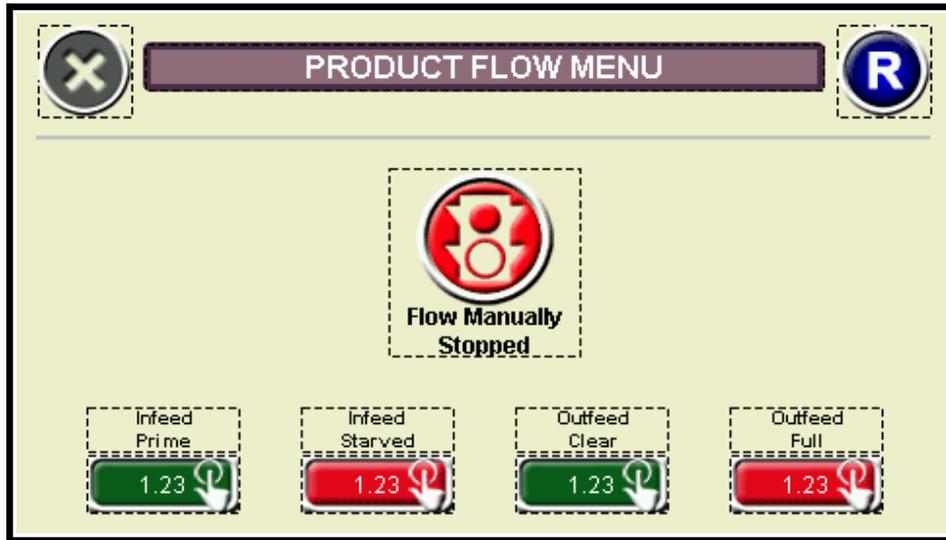
Decel (Supervisor Level):

The deceleration rate of the cutter (the time it takes the blades to stop from the target speed) can be changed here. A higher value increases the deceleration rate, but a value that is too high can lead to missed products.



Product Flow Menu:

The Product Flow has timers and toggles associated with an optional Pacing Wheel / Stop Gate and sensors.



Product Flow Mode:

An optional stop gate or pacing wheel can be added to help control product flow through the system.



Green “Automatic” Button: This indicates the flow device will open and close based on certain conditions listed below.

Product Flow will start when:

The mode is set to automatic, the infeed sensor is blocked by products, the outfeed sensor is clear of products, and the system is running. If any of those conditions are not met, the product flow will stop.



Red “Stopped” Button: This indicates the product flow is manually stopped and will not let products enter the system until it is toggled to the automatic mode.

Infeed Empty / Starved Time (Maintenance Level):

When the infeed sensor is not blocked by products, this timer will start. Once the timer expires, the Product Flow will stop.

Infeed Full / Primed Time (Maintenance Level):

When the infeed sensor is blocked by products, this timer will start. Once the timer expires, the Product Flow will start.

Outfeed Clear / Empty Time (Maintenance Level):

When the outfeed sensor is not blocked by products, this timer will start. Once the timer expires, the Product Flow will start.

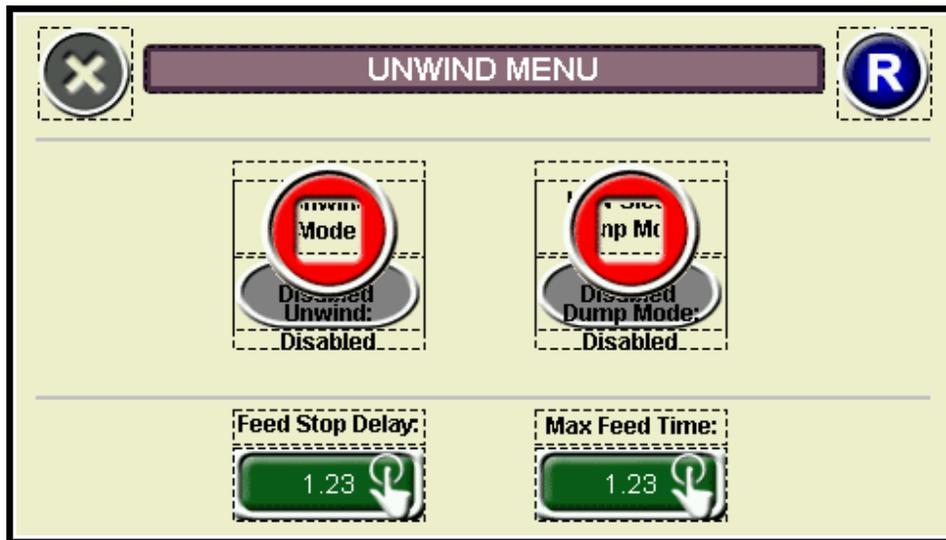
Outfeed Full / Backup Time (Maintenance Level):

When the outfeed sensor is blocked by products, this timer will start. Once the timer expires, the Product Flow will stop.



Unwind Menu:

The Unwind Menu contains the timers and indicators associated with the optional attached powered label unwind system.



Powered Unwind Mode (Supervisor Level):

A Powered Unwind system can be installed as an option. If installed, the indicator should reflect that it's enabled. This indicator does not change into a toggle based on any log in level.

Enabled: The system will control the unwind and monitor it for faults.

Disabled: The remote unwind unit will not function and all faults are ignored.

Low Sleeve Dump Mode (Supervisor Level):

The unwind system can dispense the rest of a sleeve roll into the bin when the low material sensor is triggered, which allows the operator time to splice on a new roll without stopping the system.

Enabled: When the Unwind is low on sleeves, it will continuously feed until the End of Web sensor on the unwind is activated. Once activated, the unwind will stop dispensing and will not process a system fault until the bin sensor is activated.

Disabled: The Low Material sensor will be a warning only.

Feed Stop Delay (Maintenance Level):

The Feed Stop Delay is a timer that starts once the Bin Sensor becomes Blocked / Full. While this timer is active, the Unwind motor will continue turning, filling the bin with more sleeve material.

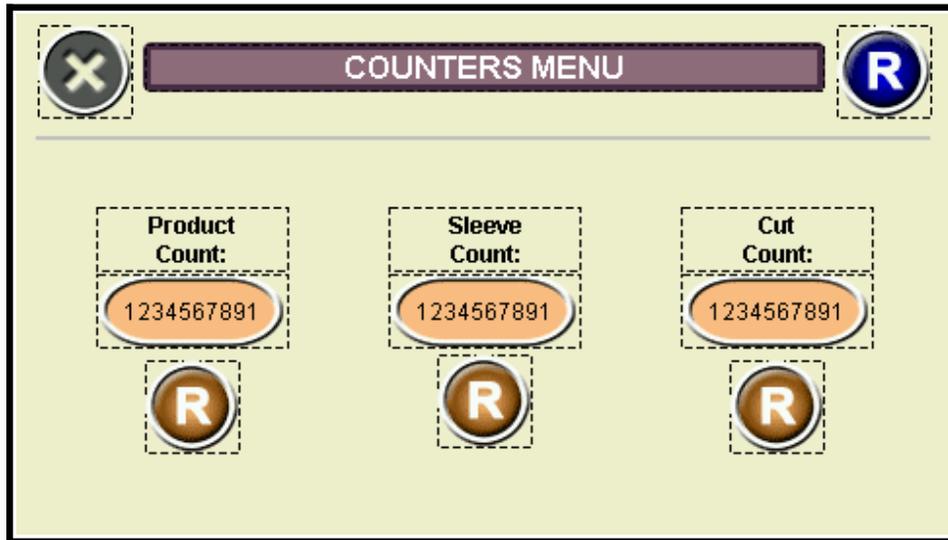
Maximum Feed Time (Maintenance Level):

The Max Feed Time timer will start when the unwind motor is active. If this timer expires, a fault will occur. This prevents the unwind from continuously feeding in the event the sleeves are not being placed into the bin or to help identify other issues.



Counters Menu:

All system counters can be viewed and reset here.



Product Count:

This counter reflects how many Products have passed the product detect sensor while the sleever is Running. This counter rolls over at 999,999 and can be reset by pressing the “R” button below the counter.

Sleeve Count:

This counter reflects how many Sleeves have been dispensed by the sleever while running and being manually fed. This counter rolls over at 999,999 and can be reset by pressing the “R” button below the counter.

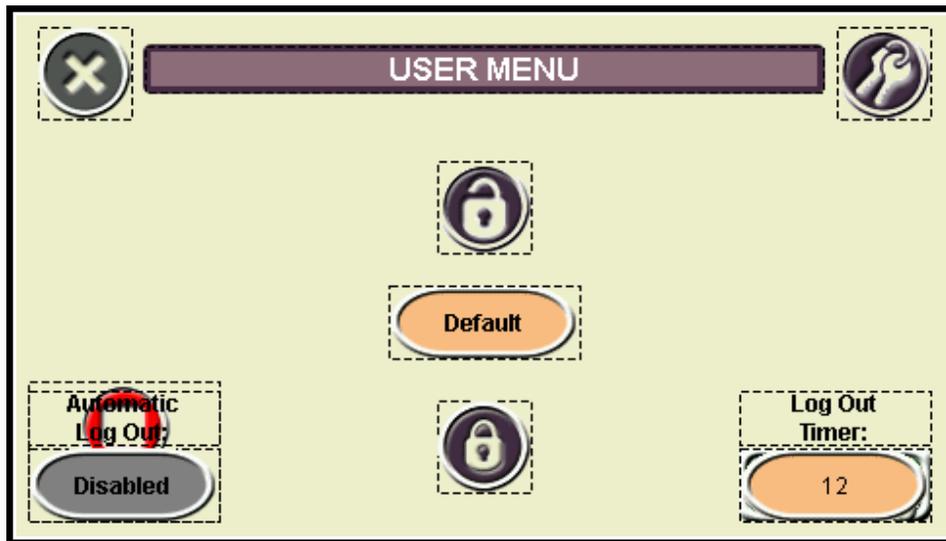
Cut Count:

This counter reflects how many Cut cycles have been executed by the cutter while running, manually fed, homed, and manually cut. This counter rolls over at 999,999 and can be reset by pressing the “R” button below the counter.



User Menu:

The User Menu enables alternate login levels to access protected screens and buttons.



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



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

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 Manager:

Pressing the Password Manager button opens a numeric entry prompt. A hard-coded password must be entered in order to bring up the Password Manager Menu, which allows custom passwords to be entered.



Password Manager:

The Password Manager Menu allows the creation of multiple passwords for the 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 PLC and would only be equal to a user defined password by coincidence.

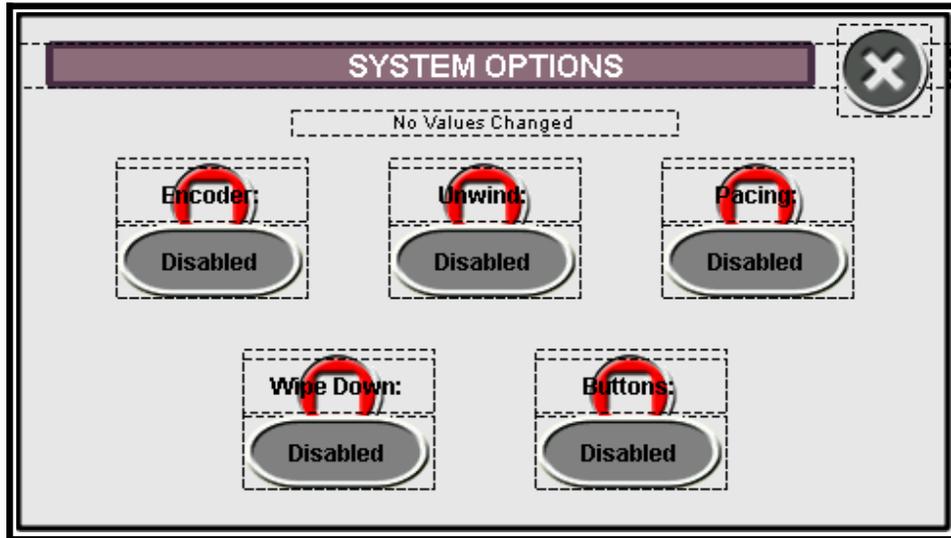
Quadrel:

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.



System Options:

All of the various system options can be changed here. All buttons are protected to the Supervisor level.



Encoder:

Enabled: The system will use an encoder to track products for application. This is useful in systems that vary speed frequently.

Disabled: The system will run in a time based setup to apply sleeves to products.

Unwind:

Enabled: The system will control the optional attached powered unwind and monitor it for faults.

Disabled: The attached unwind unit will not function and all faults are ignored.

Pacing:

Enabled: The system will monitor optional infeed and outfeed sensors to control an output that can be used for a stop gate, pacing wheel, or other device.

Disabled: The system will ignore the optional sensors and will not activate the pacing output.

Wipe Down:

Enabled: A set of secondary powered wipers can be turned on/off when the Sleever is running. These help push a sleeve down over the product as it travels down the conveyor.

Disabled: The system will not turn the wiper output on.

Buttons:

Enabled: The system will monitor external button signals that can run/stop the sleever, reset faults, and manually cycle / jog the sleever.

Disabled: The system will not process or rely on external signals.

Fault Messages and Indicators:

Green Lamp: The Green Lamp will be steady while the sleeve is running and no warnings are active. The lamp will flash if the sleeve is running and a warning is active.

Amber Lamp: An Amber lamp will flash to signal that there is a warning condition present on the system. Warning conditions typically allow the system to function normally, but action will be needed soon. Some warning messages will turn into fatal faults if they are not addressed before taking additional actions.

Red Lamp and Buzzer: A Red lamp and audible alarm indicates that a fatal fault occurred and the system is unable to run properly.

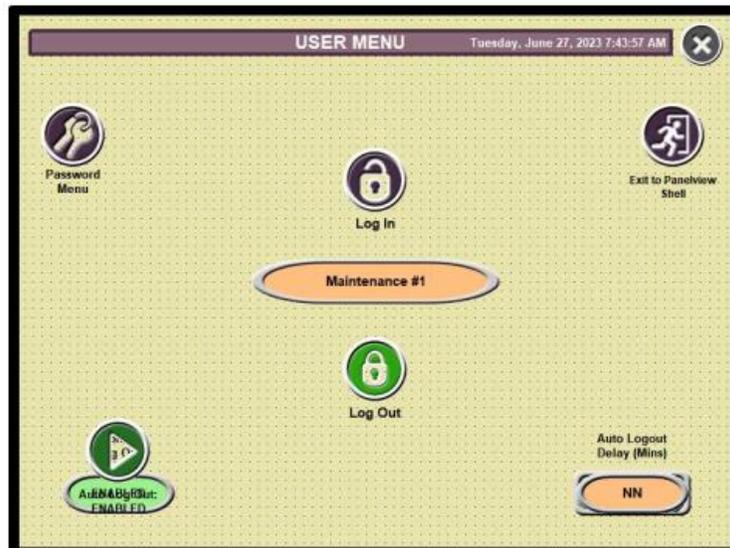
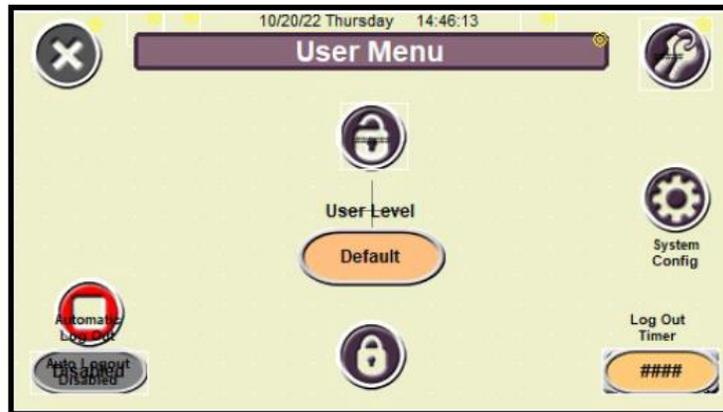
Messages	Cause/Solution
Warning Messages	
Warning messages identify a status or event that may need action soon. The machine will not stop from a warning message, but a warning may turn into a fatal fault that will stop the machine. Many warning messages will automatically clear once the problem is remedied.	
xxx Drive Faulted / Turned Off Warning (DRx)	The drive that controls the listed motor is faulted or turned off. If pressing the reset button does not clear this message, verify that the drive is powered up.
Low Material Supply	The sleeve supply has been determined low by the sensor fiber under the flange or on the remote unwind unit.
End of Sleeve Material Warning. Correct Before Running.	The End Of Material sensor (between sleeve roll and mandrel on the sleeve or prior to the splice plate on the remote unwind) is active and the System is Stopped. Placing the System into Run will generate a Fatal Fault.
Threading Switch ON. Turn Off when Finished Threading	The threading switch on the optional Powered Unwind is currently in the ON position. While on, the unwind will not function automatically but may be manually threaded. Turn the threading switch off before placing the sleeve in Run.
Unwind Sleeve Material Dump in Process	The Powered Unwind is currently in a low material dump process. It will continue feeding sleeve material into the bin until the end of material sensor is triggered.
Unwind Sleeve Material Dump Process Finished	The Remote Unwind's Low Material Dump Process has finished. The operator may now splice a new roll without generating a fault. The reset button must be pressed once the splicing is finished.
PLC Power Cycled without Screen. Re-Start System or 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.
Cutter Not Homed Warning	The Cutter must be re-homed before operating. Navigate to the Cutter Menu to re-home the cutter.
Infeed Empty / Starved. Stop Gate Closed	The infeed sensor is not blocked by products, which closes the Stop Gate to prevent products from entering the system.
Outfeed Full / Backed Up. Stop Gate Closed	The outfeed sensor is blocked by products, which closes the Stop Gate to prevent products from entering the system.

Fatal Fault Messages

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

xxx Drive Faulted / Turned Off (DRx)	The drive that controls the listed motor is faulted or turned off. If pressing the reset button does not clear this message, verify that the drive is powered up.
End of Sleeve Material Fault	The End Of Material sensor (between sleeve roll and mandrel on the sleever or prior to the splice plate on the remote unwind) is active and the System was Running.
Threading Switch ON. Turn Off when Finished Threading	The threading switch on the optional Powered Unwind is currently in the ON position. While on, the unwind will not function automatically but may be manually threaded. Turn the threading switch off before placing the sleever in Run.
Unwind Maximum Feed Time Fault	The unwind motor was continuously running for a period of time defined by the Max Feed Timer. This indicates the bin did not fill up properly or the timer value is set too low.
Unwind Bin Empty Fault	The Low Label Dump process completed, but the sleever pulled material out of the bin and activated the bin sensor.
Safety Fault / EStop Active	The Safety relay has been activated by an Emergency Stop. Unlatch all Emergency Stops and press the Reset button to reset the safety relay.
Cutter Not Homed Fault	The Cutter must be re-homed before operating. Navigate to the Cutter Menu to re-home the cutter.

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



USER MENU 

Sunday mm/dd/yy HH:MM:SS

 Passwords



Current User:
Default



 Log Out
Disabled

Log Out
Timer:
12:34 

Setup sheets

QUADREL

LABELING SYSTEMS

SL 200 SETUP PARAMETERS

SERIAL # 84240-100

RECIPE #1

PRODUCT: 8oz LAY FLAT: 116mm LF x 85mm CL

SLEEVE MENU

	FACTORY VALUES	USER VALUES
PRODUCT DELAY	1.92	
FEED LENGTH	85	
GAP OFFSET	1	
FEED SPEED	1200	

CUTTER MENU

	FACTORY VALUES	USER VALUES
CUTTER SPEED	1200	
CUTTER ACCEL	250	
CUTTER DECEL	250	

APPLICATOR SERVICE MENU

	FACTORY VALUES	USER VALUES
GAP DETECT	FIXED LENGTH	
FEEDER SPEED	1200	
FEEDER ACCEL	250	
FEEDER DECEL	250	

UNWIND MENU

	FACTORY VALUES	USER VALUES
POWER UNWIND MODE	ENABLED	
DUMP MODE	DISABLED	
FEED STOP DELAY	1.00	
MAX FEED TIME	2.00	

SYSTEM OPTIONS MENU

	FACTORY VALUES	USER VALUES
ENCODER	DISABLED	
UNWIND	ENABLED	
PACING	ENABLED	
WIPERS	ENABLED	
BUTTONS	DISABLED	

PRODUCT FLOW MENU

	FACTORY VALUES	USER VALUES
FLOW STATUS FUNCTION	N/A	
INFEED EMPTY	N/A	
INFEED FULL	N/A	
OUTFEED CLEAR	N/A	
OUTFEED FULL	N/A	

***MUST BE TURNED ON MANUALLY ON INITIAL POWER UP**

	FACTORY VALUES	USER VALUES
SLEEVE VERTICAL	173	
SLEEVE HORIZONTAL	163	
THROW DOWN SPEED DIAL	30	
UNWIND SPEED DIAL	30	
CONVEYOR SPEED DIAL	15	
HEAT TUNNEL TEMP	290° F	

QUADREL

LABELING SYSTEMS

SL 200 SETUP PARAMETERS

SERIAL # 84240-100

RECIPE # 2

PRODUCT: 4oz LAY FLAT: 102mm LF x 75mm CL

SLEEVEV MENU

	FACTORY VALUES	USER VALUES
PRODUCT DELAY	1.38	
FEED LENGTH	75	
GAP OFFSET	1	
FEED SPEED	1200	

CUTTER MENU

	FACTORY VALUES	USER VALUES
CUTTER SPEED	1200	
CUTTER ACCEL	250	
CUTTER DECEL	250	

APPLICATOR SERVICE MENU

	FACTORY VALUES	USER VALUES
GAP DETECT	FIXED LENGTH	
FEEDER SPEED	1200	
FEEDER ACCEL	250	
FEEDER DECEL	250	

UNWIND MENU

	FACTORY VALUES	USER VALUES
POWER UNWIND MODE	ENABLED	
DUMP MODE	DISABLED	
FEED STOP DELAY	1.00	
MAX FEED TIME	2.00	

SYSTEM OPTIONS MENU

	FACTORY VALUES	USER VALUES
ENCODER	DISABLED	
UNWIND	ENABLED	
PACING	ENABLED	
WIPERS	ENABLED	
BUTTONS	DISABLED	

PRODUCT FLOW MENU

	FACTORY VALUES	USER VALUES
FLOW STATUS FUNCTION	N/A	
INFEEED EMPTY	N/A	
INFEEED FULL	N/A	
OUTFEED CLEAR	N/A	
OUTFEED FULL	N/A	

***MUST BE TURNED ON MANUALLY ON INITIAL POWER UP**

	FACTORY VALUES	USER VALUES
SLEEVEE VERTICAL	146	
SLEEVEE HORIZONTAL	158	
THROW DOWN SPEED DIAL	40	
UNWIND SPEED DIAL	30	
CONVEYOR SPEED DIAL	15	
HEAT TUNNEL TEMP	250° F	

Fuji Frenic Mini v.006
For Single Drive Enclosures

Job: 84240 Drive: DRI Motor: Conveyor

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

Set Primary Parameters:

Parameter	Fuji Default	Quadrel Default Value	Quadrel Final Value	Description
F01	4	2 (mA): Q105/Q110 1 (10V): Pot, M2	1	Freq. Command
F02	2	1 (Terminals)	1 ✓	Operation
F03*	60.0	60.0	60.0	Max Frequency
F07	6.0	3.0	3.0	Accel Time
F08	6.0	3.0	3.0	Decel Time
F15	70.0	70.0	70.0	Frequency Limit
F42	0	2	2 ✓	Control Mode
E99	99	6	6 ✓	REV Term Function
P99	0	1 (HP)	1	Motor Type
P02	Varies	See Motor Nameplate	.38	Rated Capacity (HP)

*: If F03 needs to be higher than 70.0, F15 must be changed first.

P02 Reference for frequently used motors:

- 1/6 Conveyor, Top Trap: 0.17
- 3/8 Conveyor, Wrap, Top Trap: 0.38
- 1/6 Chain Aligners: 0.34

F11 = 2.0

E27 = ~~0~~ Relay output to heat tunnel lift

Initialize Parameters

- Navigate to Parameter H03
- Use the STOP and UP Arrow to change H03 to "2". Press the Func/Data button.
- "Save" will flash on the display. 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	1.9	1.9

P03 Reference for frequently used motors:

- 1/6 Conveyor, Top Trap: 0.73
- 3/8 Conveyor, Wrap. Top Trap: 1.9
- 1/6 Chain Aligners: 1.75

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.

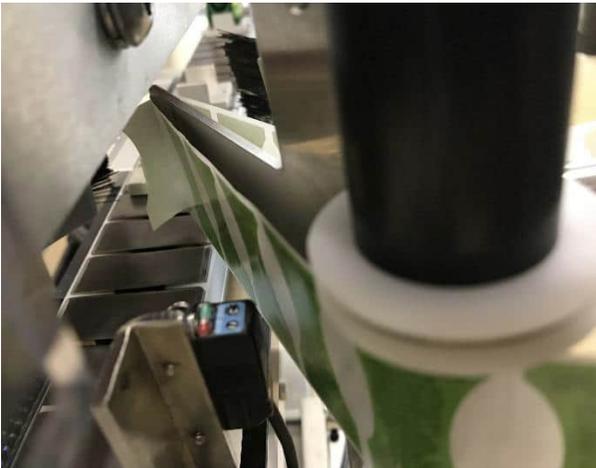


- 3) Follow the threading diagram on the labeling head for routing the web.
- 4) Thread through the dancer to the peel plate.

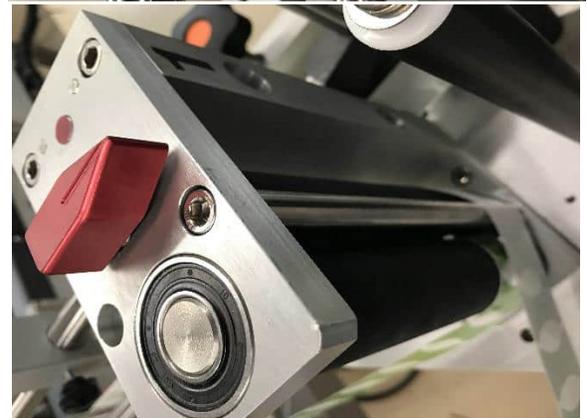
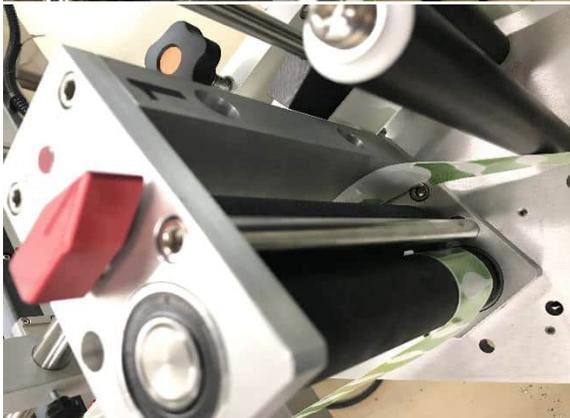
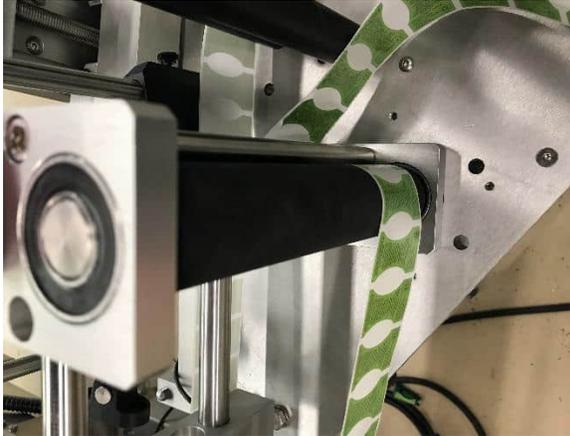




- 5) Feed the label around the peel plate and under the pressure shoe if (if there is one). Feed the label up the head to the pull roll. Pull all the slack out.



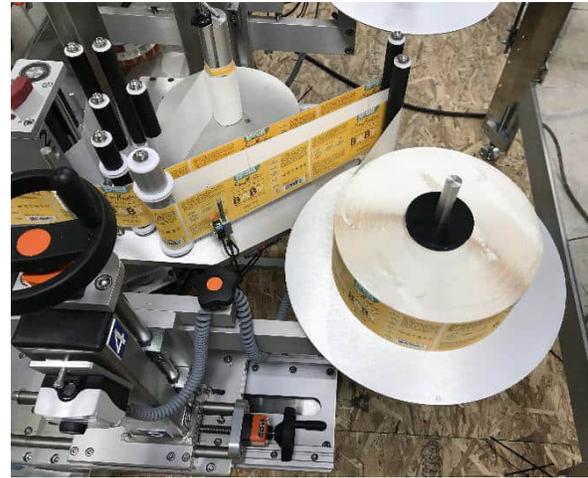
- 6) Wrap labels around the rubber roller as shown, then around the knurled roller. Make sure the knurled roller is not locked in by turning the red knob to the left or right of the red dot on the drive roll. When you have the labels completely threaded you can turn the knob to the red dot.



- 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.

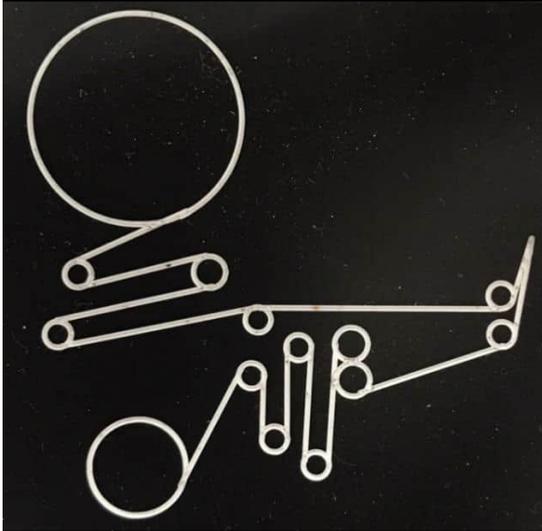


CAUTION

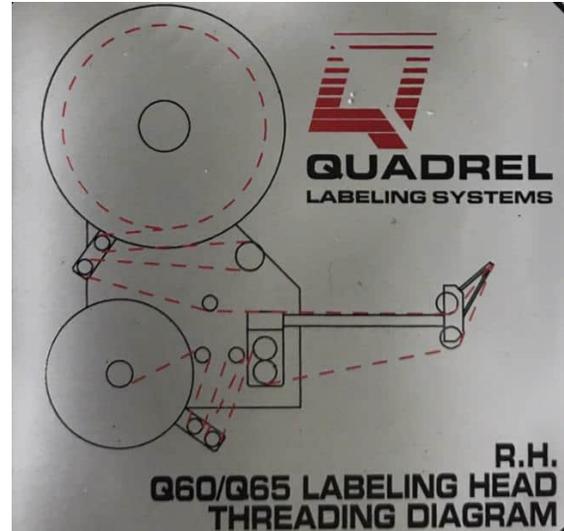
There are many pinch points on a labeler. to avoid injury read and understand the owner's manual before operating.

6.1.2 THREADING DIAGRAMS

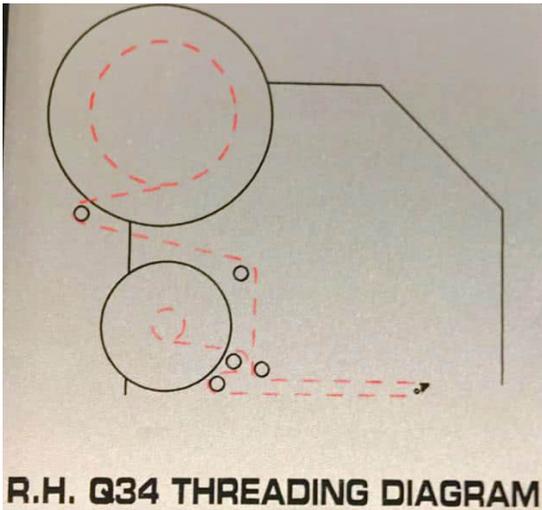
Here are the following threading diagrams for our standard labeling heads.



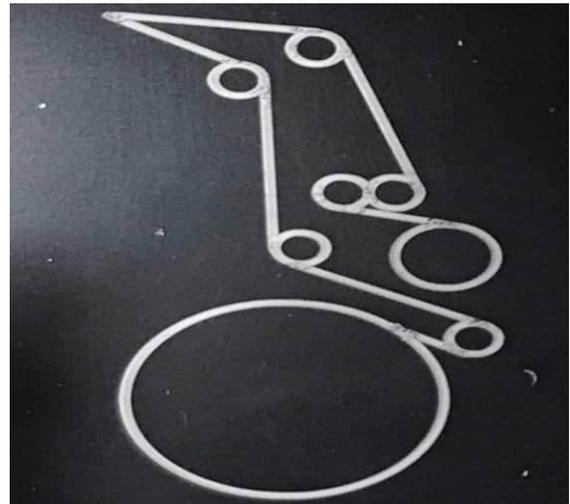
Q120/Q125/Q115/Q110



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 will move the labeler out.



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

 **CAUTION** DO NOT remove the nut & bolt.



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



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

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



CAUTION

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





ASSEMBLY TITLE: SL200 SIDE PLATE ASSEMBLY

DRAWING NO.:

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:

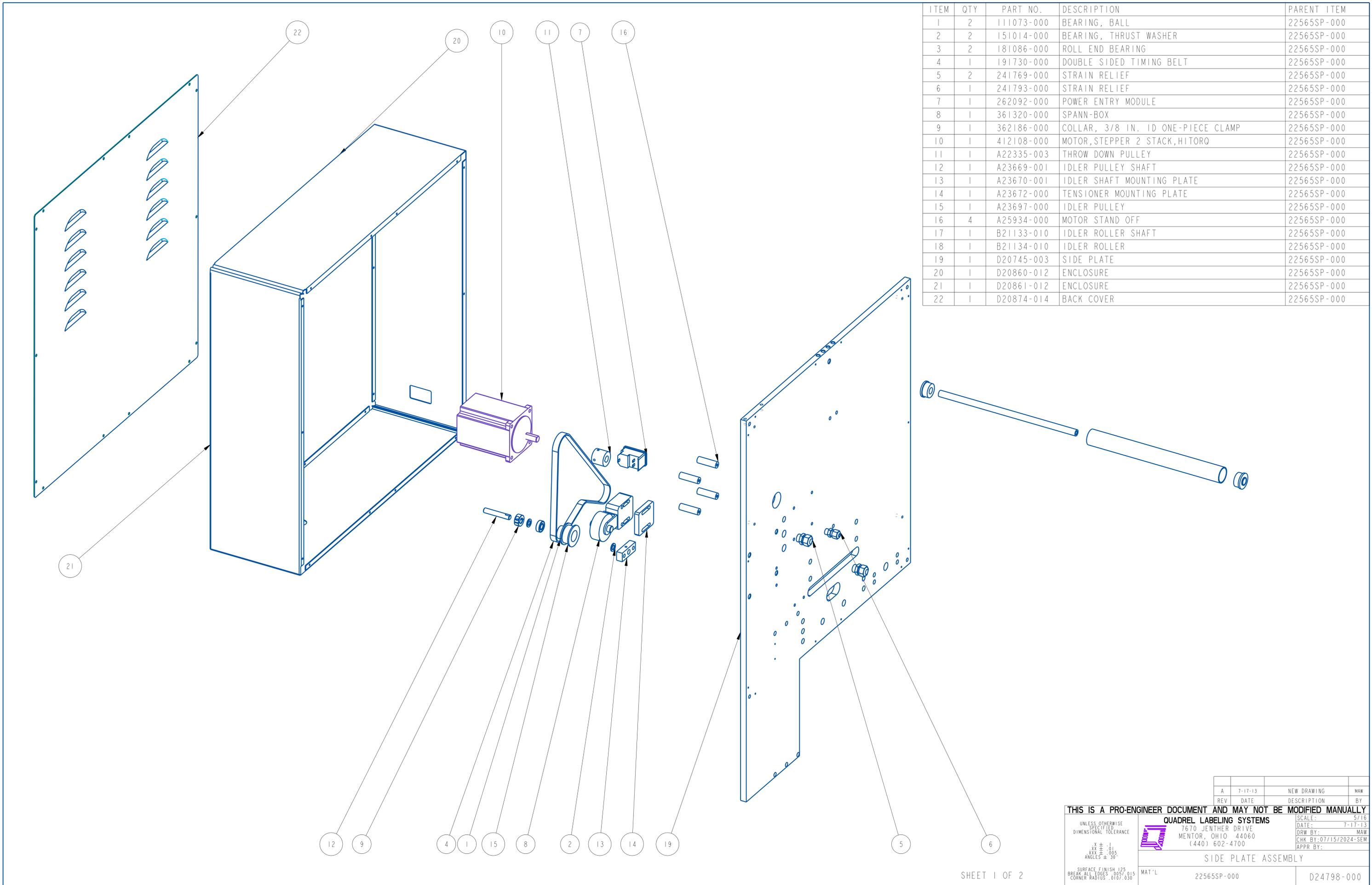
- None

MAINTENANCE:

- None

TROUBLESHOOTING:

- None



ITEM	QTY	PART NO.	DESCRIPTION	PARENT ITEM
1	2	111073-000	BEARING, BALL	22565SP-000
2	2	151014-000	BEARING, THRUST WASHER	22565SP-000
3	2	181086-000	ROLL END BEARING	22565SP-000
4	1	191730-000	DOUBLE SIDED TIMING BELT	22565SP-000
5	2	241769-000	STRAIN RELIEF	22565SP-000
6	1	241793-000	STRAIN RELIEF	22565SP-000
7	1	262092-000	POWER ENTRY MODULE	22565SP-000
8	1	361320-000	SPANN-BOX	22565SP-000
9	1	362186-000	COLLAR, 3/8 IN. ID ONE-PIECE CLAMP	22565SP-000
10	1	412108-000	MOTOR, STEPPER 2 STACK, HITORQ	22565SP-000
11	1	A22335-003	THROW DOWN PULLEY	22565SP-000
12	1	A23669-001	IDLER PULLEY SHAFT	22565SP-000
13	1	A23670-001	IDLER SHAFT MOUNTING PLATE	22565SP-000
14	1	A23672-000	TENSIONER MOUNTING PLATE	22565SP-000
15	1	A23697-000	IDLER PULLEY	22565SP-000
16	4	A25934-000	MOTOR STAND OFF	22565SP-000
17	1	B21133-010	IDLER ROLLER SHAFT	22565SP-000
18	1	B21134-010	IDLER ROLLER	22565SP-000
19	1	D20745-003	SIDE PLATE	22565SP-000
20	1	D20860-012	ENCLOSURE	22565SP-000
21	1	D20861-012	ENCLOSURE	22565SP-000
22	1	D20874-014	BACK COVER	22565SP-000

A	7-17-13	NEW DRAWING	MAW
REV	DATE	DESCRIPTION	BY

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

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

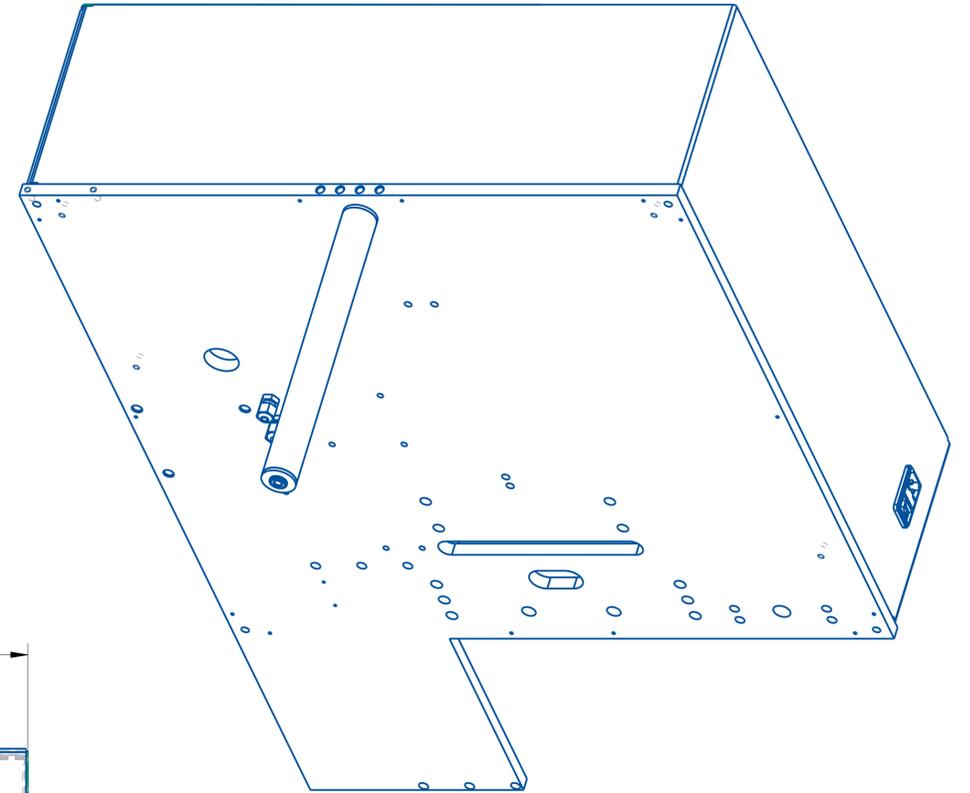
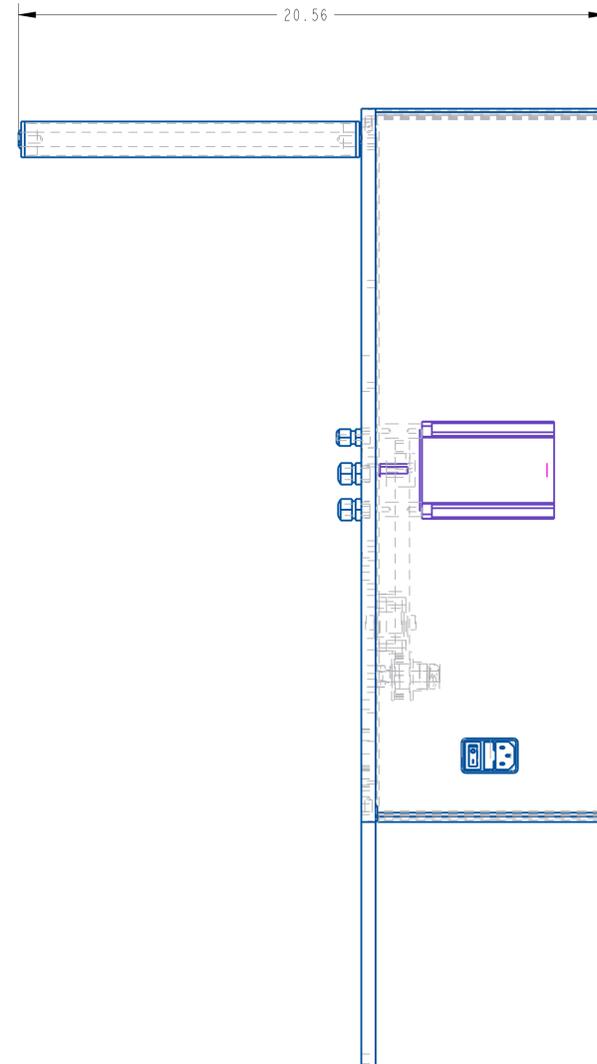
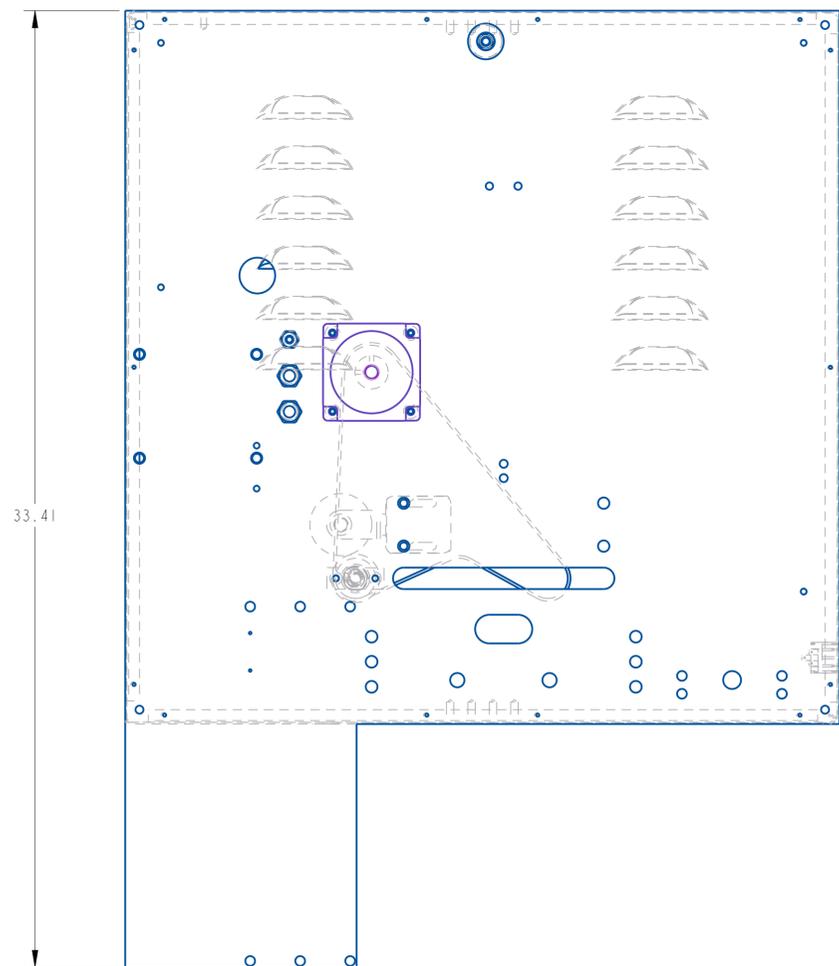
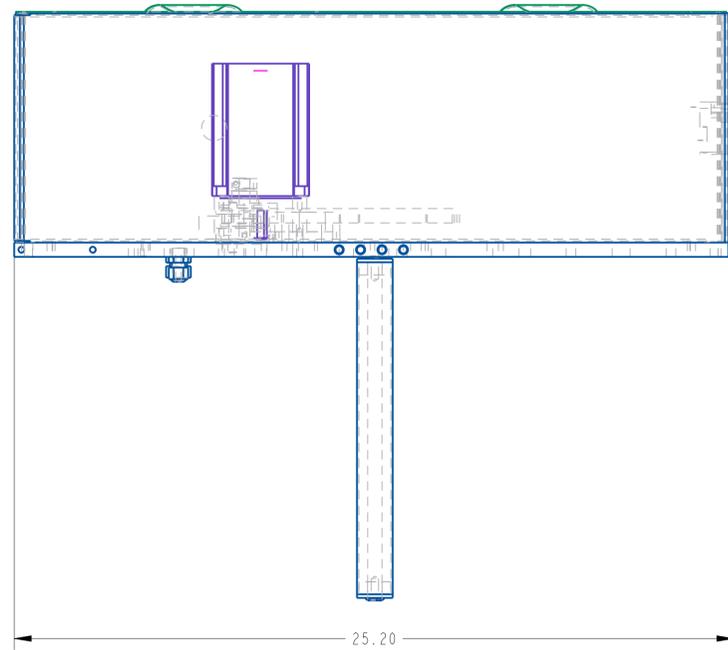
SURFACE FINISH 125
 BREAK ALL EDGES .005/0.15
 CORNER RADIUS .010/0.30

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

SCALE: 5/16
 DATE: 7-17-13
 DRW BY: MAW
 CHK BY: 07/15/2024-SEM
 APPR BY:

SIDE PLATE ASSEMBLY

MAT'L 22565SP-000 D24798-000

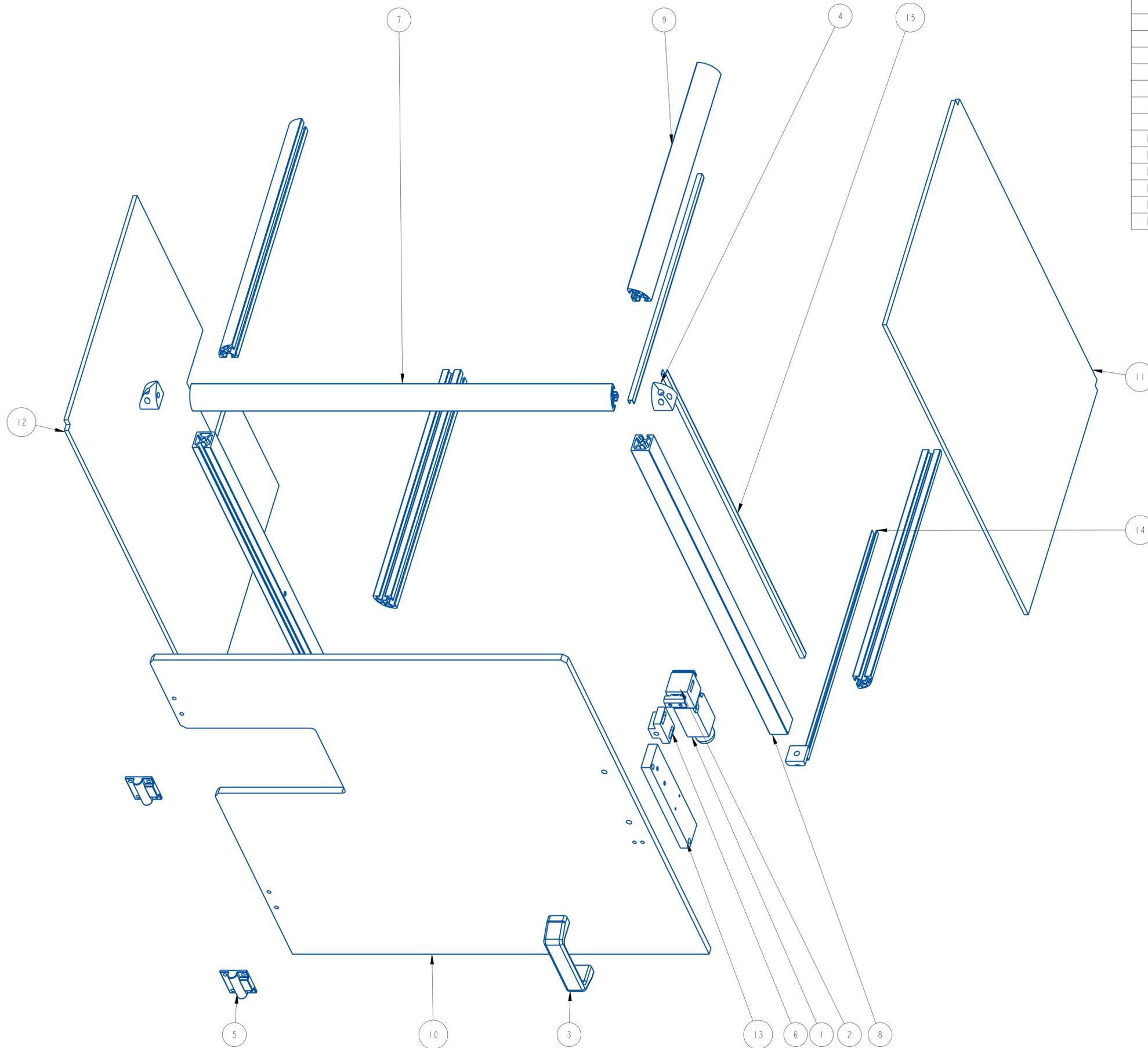


REV	DATE	DESCRIPTION	BY
A	7-17-13	NEW DRAWING	MAW

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

UNLESS OTHERWISE SPECIFIED DIMENSIONAL TOLERANCE	x ± .01 xx ± .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: 5/16 DATE: 7-17-13 DRW BY: MAW CHK BY: 07/15/2024-SEM APPR BY:
SIDE PLATE ASSEMBLY			
MAT'L	22565SP-000		D24798-000

ITEM	QTY	PART NO.	DESCRIPTION	PARENT ITEM
1	1	272304-000	INTERLOCK SWITCH	22565G-000
2	2	272305-000	INTERLOCK KEY	22565G-000
3	1	792114-000	HANDLE, STD. DUTY	22565G-000
4	4	792234-000	CORNER JOINT	22565G-000
5	2	792236-000	HINGE	22565G-000
6	1	792682-000	MAGNETIC CATCH	22565G-000
7	1	B21258-002	TOP BAR	22565G-000
8	2	B21259-011	GUARD HINGE MOUNTING BRACE	22565G-000
9	4	B21260-000	GUARD RISER	22565G-000
10	1	B21261-013	FRONT GUARD DOOR	22565G-000
11	1	B21262-012	SIDE GUARD DOOR	22565G-000
12	1	B21262-013	SIDE GUARD DOOR	22565G-000
13	1	B22900-000	MOUNTING PLATE	22565G-000
14	2	B22901-000	PANEL RETAINING GASKET	22565G-000
15	1	B22901-001	PANEL RETAINING GASKET	22565G-000



REV	DATE	DESCRIPTION	BY
A	7-17-13	NEW DRAWING	TAZ

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

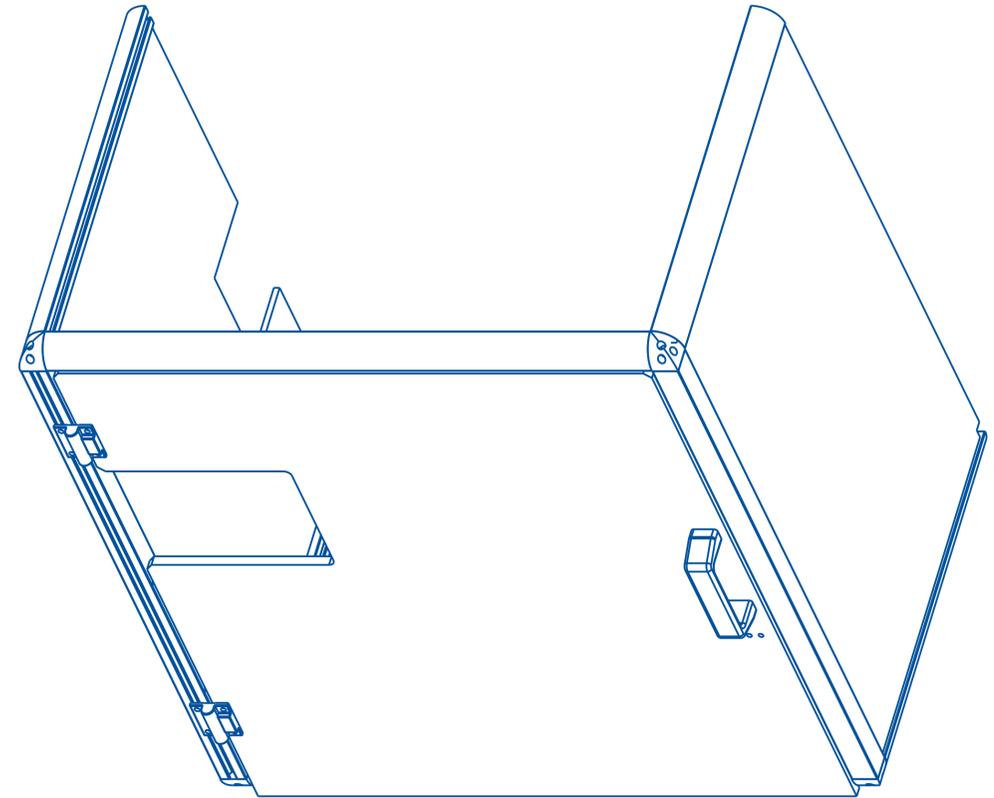
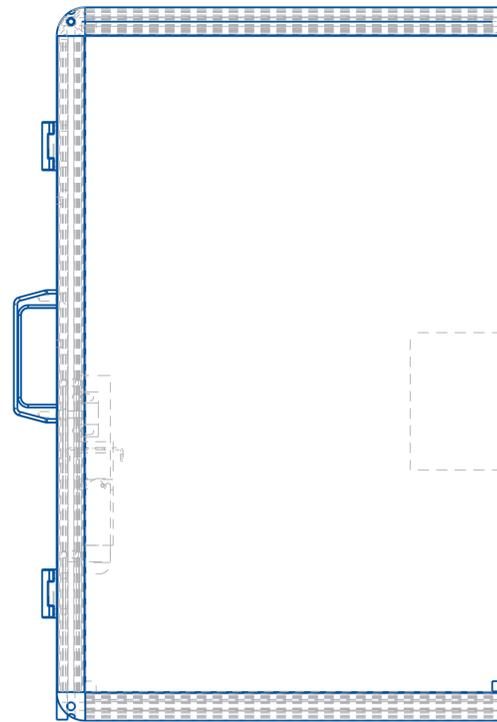
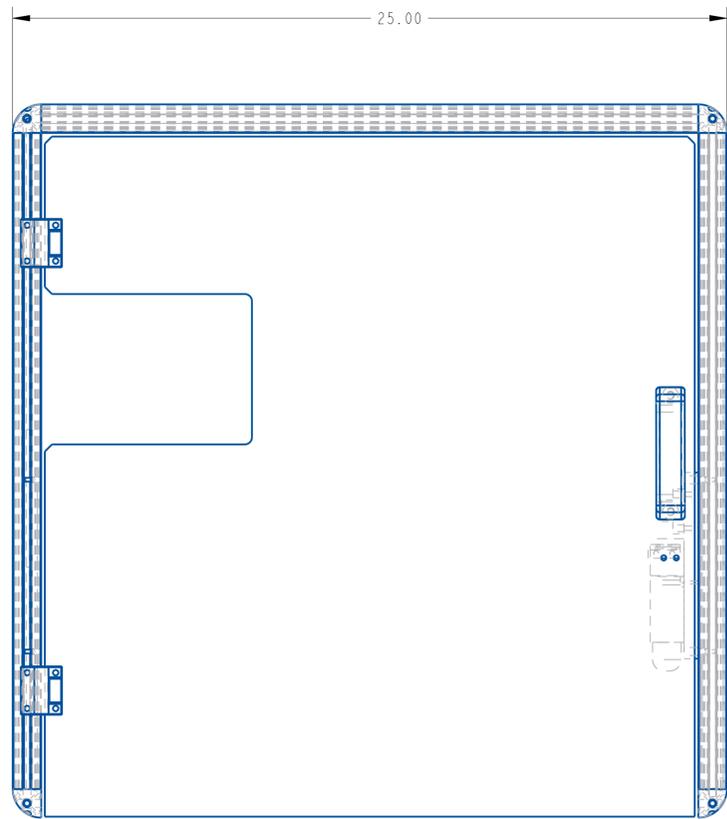
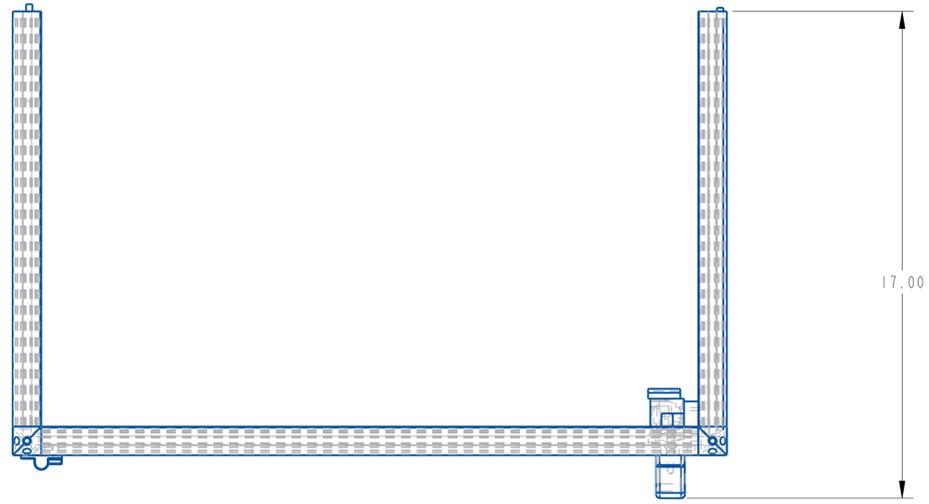
SURFACE FINISH 125
 BREAK ALL EDGES .005/0.15
 CORNER RADIUS .010/0.30

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

SCALE: 3/8
 DATE: 7-17-13
 DRW BY: MAW
 CHK BY: 05/27/2025-SEM
 APPR BY:

GUARD ASSEMBLY

MAT'L	22565G-000	D24797-000
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UNLESS OTHERWISE SPECIFIED	SCALE: 5/16
DIMENSIONAL TOLERANCE	DATE: 7-17-13
x ± .1	DRW BY: MAW
xx ± .01	CHK BY: 05/27/2025-SEM
xxx ± .005	APPR BY: MAW
ANGLES ± .30°	
SURFACE FINISH 125	
BREAK ALL EDGES .005/0.15	
CORNER RADIUS .010/0.30	
ALL ANGLES ARE 90°	

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

GUARD ASSEMBLY

MAT'L	22565G-000	D24797-000
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ASSEMBLY TITLE: UNWIND ASSEMBLY

GENERAL FUNCTION:

- The unwind flanges provide positional support for the sleeve rolls.
- The inboard flange is located by loosening the locking screw. The outboard flange by rotating the flange until the set screw lines up with the flat on the unwind shaft.
- 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 flanges to required position to allow sleeves the be centered through the sleever.
- Adjust dancer tension by turning check nut so that dancer roll snaps back to braking position when sleeves are 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.

MAINTENANCE:

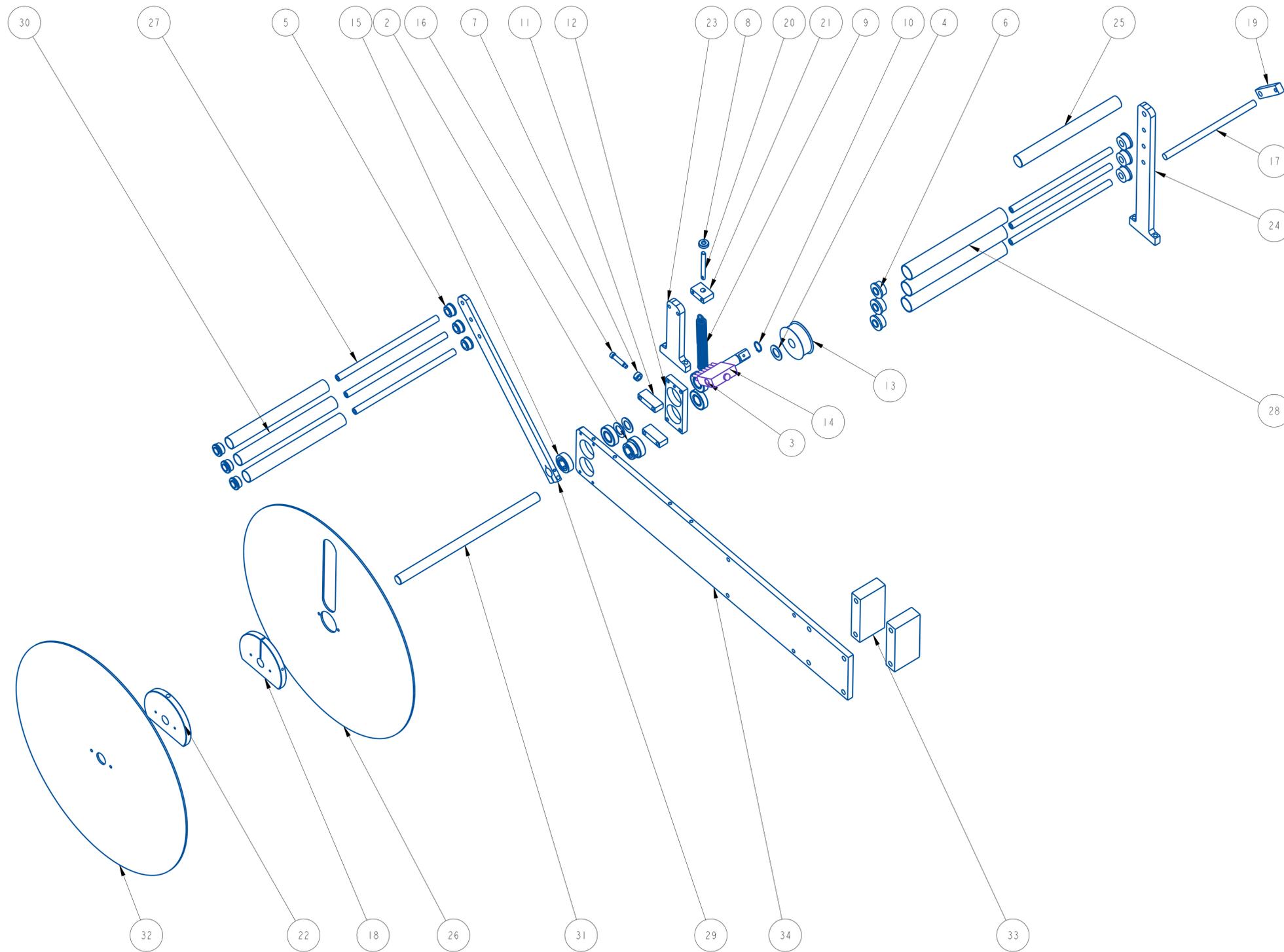
- Clean all the parts that may acquire glue residue

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 |



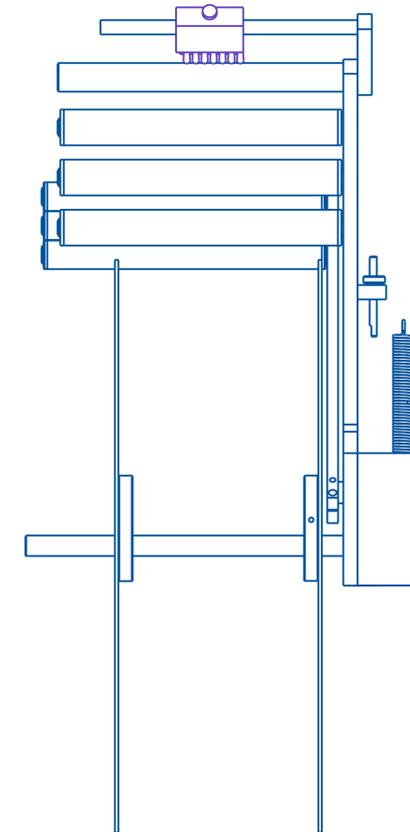
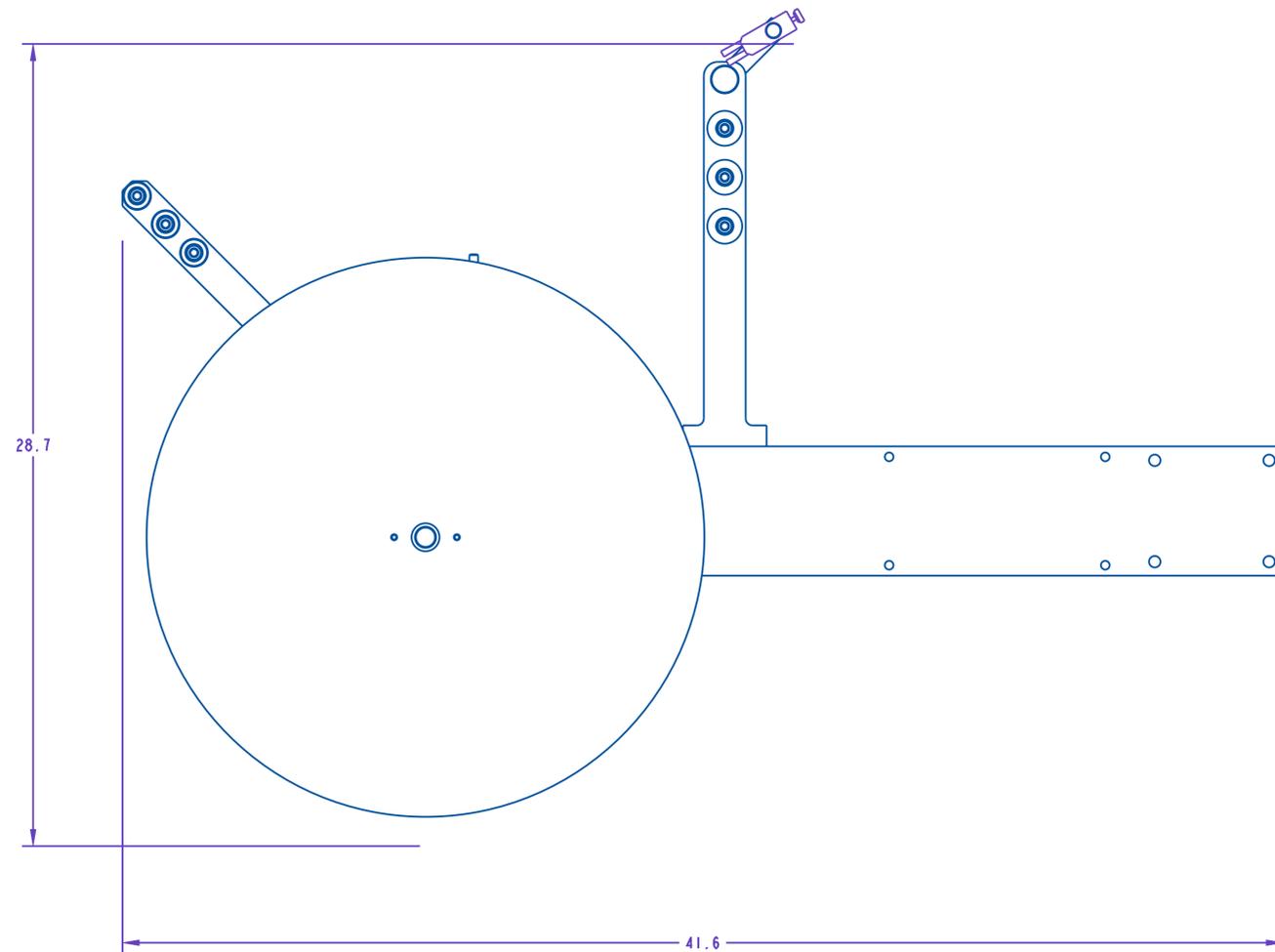
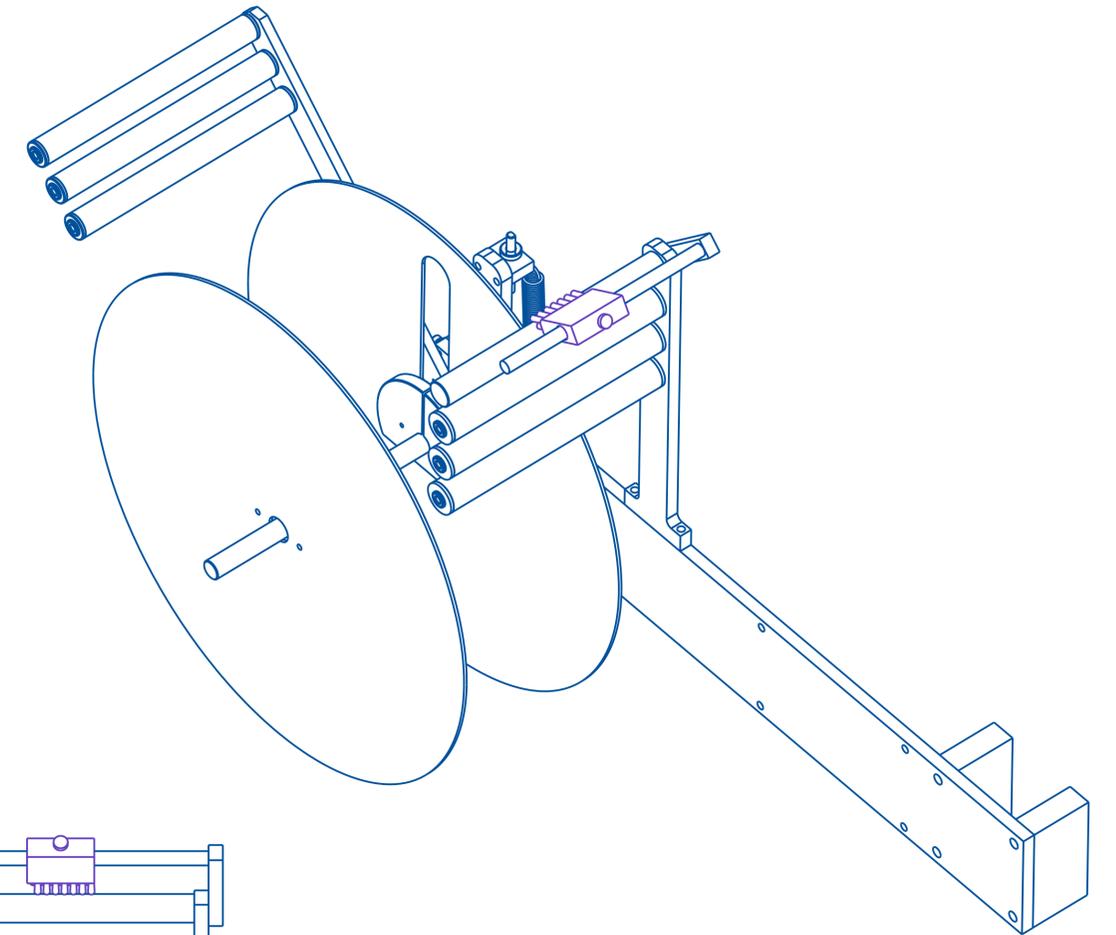
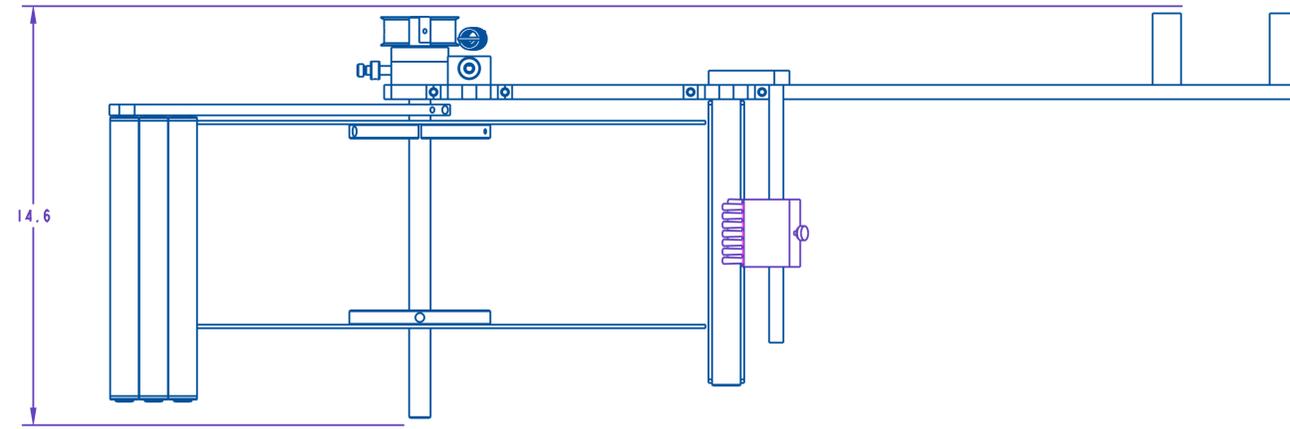
ITEM	QTY	PART NO.	DESCRIPTION	PARENT ITEM
1	1	00669-01	BRAKE BRUSH 2 x 7 nylon	22565U-250
2	1	111044-000	BEARING, 3/4 ID CLAMP TYPE	22565U-250
3	3	111074-000	BEARING, BALL	22565U-250
4	3	151063-000	BEARING, THRUST WASHER	22565U-250
5	6	181063-000	BEARING, ROLL END	22565U-250
6	6	181086-000	ROLL END BEARING	22565U-250
7	1	361165-000	COLLAR, SETSCREW, 5/16" BORE	22565U-250
8	1	801601-000	CHECK NUT	22565U-250
9	1	811216-000	EXTENSION SPRING	22565U-250
10	1	871025-000	EXTERNAL SNAP RING	22565U-250
11	2	A20585-000	SUPPORT SPACER	22565U-250
12	1	A20590-000	BEARING PLATE	22565U-250
13	1	A20591-000	UNWIND BRAKE DRUM	22565U-250
14	1	A20592-000	UNWIND DANCER SHAFT	22565U-250
15	1	A20595-000	DANCER COLLAR	22565U-250
16	1	A20596-000	DANCER BOLT	22565U-250
17	1	A20654-003	ADJ. ROD	22565U-250
18	1	A21225-002	SUPPLY REEL LOCKING HUB	22565U-250
19	1	A21535-001	BRAKE BRUSH MTG. BAR	22565U-250
20	1	A23131-000	STUD	22565U-250
21	1	A23298-000	BLOCK, SPRING TENSION	22565U-250
22	1	A23833-003	OUTSIDE FLANGE HUB	22565U-250
23	1	A24646-000	RETAINING BLOCK MOUNTING PLATE	22565U-250
24	1	A24646-010	RETAINING BLOCK MOUNTING PLATE	22565U-250
25	1	A25936-001	FIXED IDLER	22565U-250
26	1	B20524-002	SUPPLY REEL FLANGE	22565U-250
27	6	B21133-000	IDLER ROLLER SHAFT	22565U-250
28	3	B21134-000	IDLER ROLLER	22565U-250
29	1	B21141-003	DANCER ARM	22565U-250
30	3	B21142-000	DANCER ROLLER	22565U-250
31	1	B21143-000	UNWIND SHAFT	22565U-250
32	1	B21634-000	SUPPLY REEL FLANGE	22565U-250
33	2	B22801-000	SPACER	22565U-250
34	1	D20748-050	20" UNWIND PLATE	22565U-250

REV	DATE	DESCRIPTION	BY
A	Feb-16-23	NEW DRAWING	

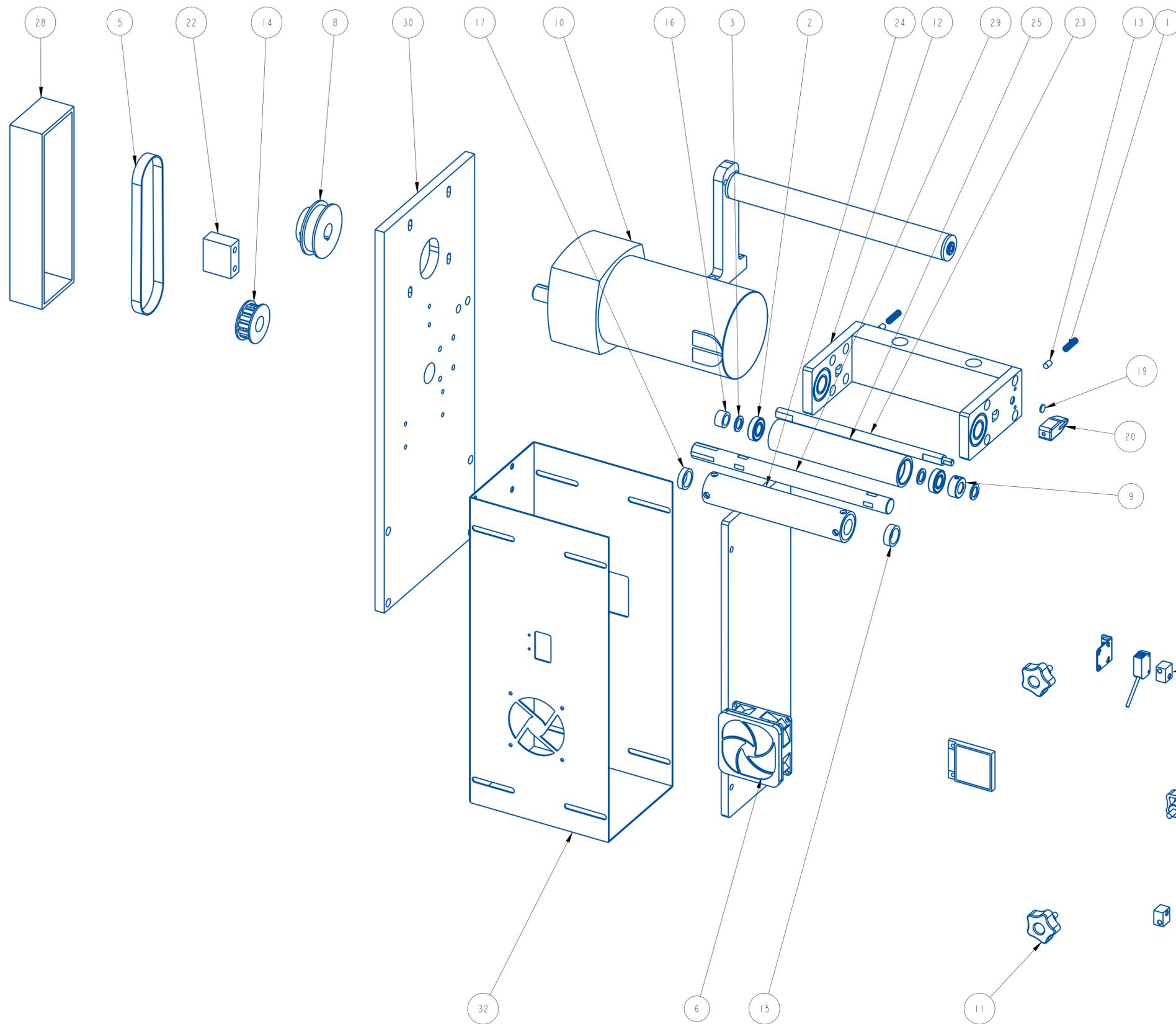
THIS IS A PRO-ENGINEER DOCUMENT AND MAY NOT BE MODIFIED MANUALLY

UNLESS OTHERWISE SPECIFIED DIMENSIONAL TOLERANCE	<p>7670 JENTHER DRIVE MENTOR, OHIO 44060 (440) 602-4700</p> <p>SCALE: 7/32 DATE: Feb-16-23 DRW BY: TAZ CHK BY: 07/17/2024-SEM APPR BY:</p>
<p>XX ± .01 XXX ± .005 ANGLES ± .30°</p> <p>SURFACE FINISH 125 BREAK ALL EDGES .005/0.15 CORNER RADIUS .010/0.30</p>	<p>20" UNWIND ASSEMBLY</p>

MAT'L 22565U-000 22565U-250



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A	Feb-16-23	NEW DRAWING	TAZ
REV	DATE	DESCRIPTION	BY
UNLESS OTHERWISE SPECIFIED		SCALE: 5/16	
DIMENSIONAL TOLERANCE		DATE: Feb-16-23	
X ± .1		DRW BY: TAZ	
XX ± .01		CHK BY: 07/17/2024-SEM	
XXX ± .005		APPR BY:	
ANGLES ± .30°		20" UNWIND ASSEMBLY	
SURFACE FINISH 125		MATERIAL	
BREAK ALL EDGES .005/.015		22565U-000	
CORNER RADIUS .010/.030		22565U-250	
ALL ANGLES ARE 90°			



ITEM	QTY	PART NO.	DESCRIPTION	PARENT ITEM
1	2	00301-17	SPRING, .275 x .052 x .94	22899-000
2	2	111072-000	BEARING, BALL	22899-000
3	3	151004-000	BEARING, THRUST WASHER	22899-000
4	2	181086-000	ROLL END BEARING	22899-000
5	1	191746-000	TIMING BELT	22899-000
6	1	202032-000	FAN, 24V DC	22899-000
7	1	262111-000	FAN COVER, GRID & FILTER	22899-000
8	1	351307-000	TIMING PULLEY	22899-000
9	1	362161-000	COLLAR, SETSCREW, 1/2 IN. ID	22899-000
10	1	411295-000	MOTOR, DC	22899-000
11	4	801308-000	KNOB W/ 1/4-20 STUD	22899-000
12	1	21700DY-000	7" 3-PIECE DRIVE ROLL YOKE	22899-000
13	2	A20567-000	WHITE NYLON SLUG	22899-000
14	1	A21325-001	PULLEY	22899-000
15	1	A23125-000	SPACER	22899-000
16	1	A23751-000	SPACER	22899-000
17	1	A23752-000	SPACER	22899-000
18	1	A24646-003	RETAINING BLOCK MOUNTING PLATE	22899-000
19	1	A25249-000	INDEX DOT	22899-000
20	1	A25250-000	IND KNOB	22899-000
21	4	A25622-000	PANEL MOUNTING BLOCK	22899-000
22	1	A26270-001	SPACER	22899-000
23	1	B20125-001	KNURLED ROLL SHAFT,	22899-000
24	1	B20137-002	PULL ROLL, 7"	22899-000
25	1	B20922-000	SILICONE ROLLER	22899-000
26	1	B21133-010	IDLER ROLLER SHAFT	22899-000
27	1	B21134-010	IDLER ROLLER	22899-000
28	1	B21157-002	REAR ENCLOSURE	22899-000
29	1	C20097-002	PULL ROLL DRIVE SHAFT	22899-000
30	1	D23284-250	DRIVE MOTOR MOUNTING PLATE	22899-000
31	2	D23286-200	DUMP BIN SIDE	22899-000
32	1	D25120-751	DUMP BUCKET	22899-000

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

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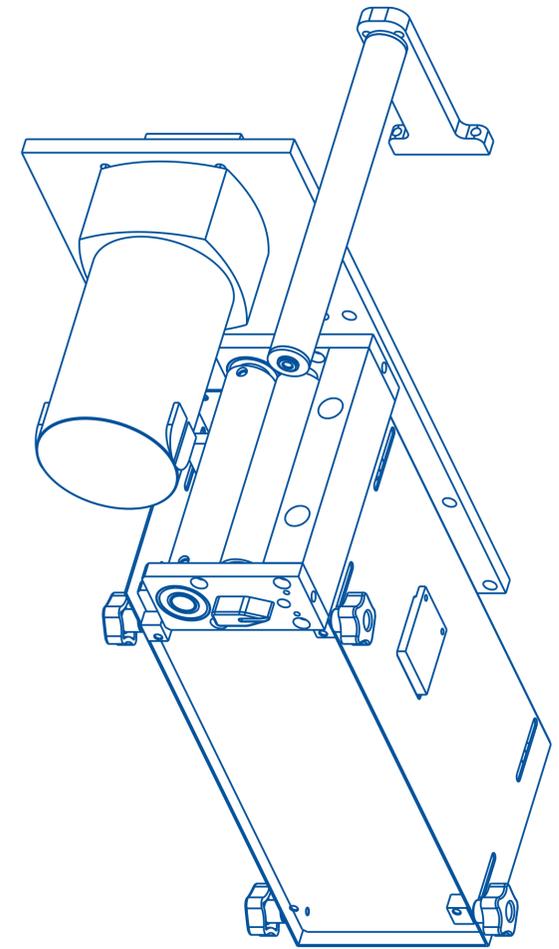
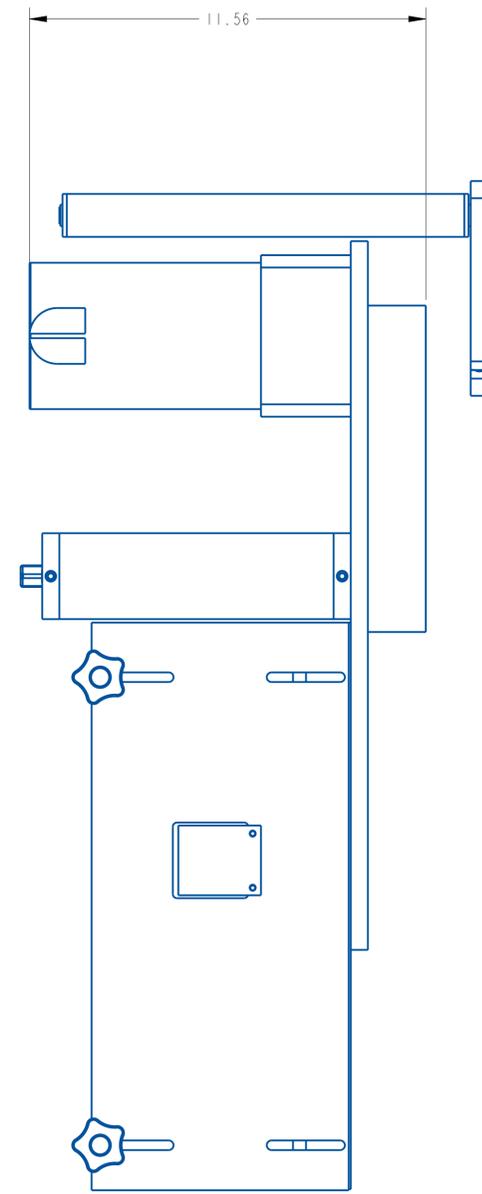
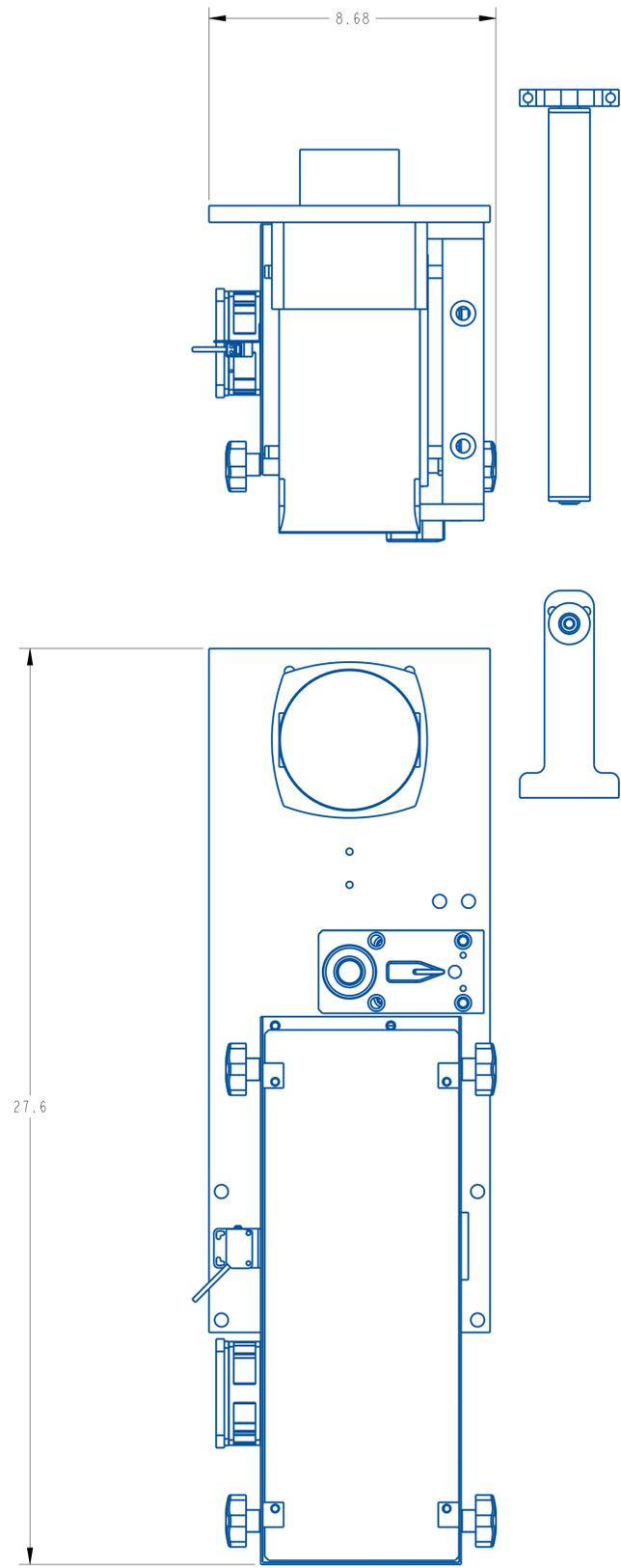
UNLESS OTHERWISE SPECIFIED
DIMENSIONAL TOLERANCE
 X ± .1
 XX ± .01
 XXX ± .005
 ANGLES ± 30°

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

SCALE: 3/8
 DATE: May-05-25
 DRW BY: TAZ
 CHK BY: 05/27/2025-SEM
 APPR BY:

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

POWERED UNWIND
 MAT'L 22899-000



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A	May-05-25	NEW DRAWING	TAZ
REV	DATE	DESCRIPTION	BY
UNLESS OTHERWISE SPECIFIED		SCALE: 3/8	
DIMENSIONAL TOLERANCE		DATE: May-05-25	
x ± .1		DRW BY: TAZ	
xx ± .01		CHK BY: 05/27/2025-SEM	
xxx ± .005		APPR BY:	
ANGLES ± .30°		POWERED UNWIND	
SURFACE FINISH 125		MAT'L	
BREAK ALL EDGES .005/0.15		22899-000	
CORNER RADIUS .010/0.30			
ALL ANGLES ARE 90°			

QUADREL LABELING SYSTEMS
INDENTED BILL OF MATERIAL

Items: 21776-003 Thru 21776-003 Location: 01 QUADREL WHSE

Activity Codes: Active Items Only

1 Levels With No Blow Through

No Selection On Basis Of Effectivity Date

No Selection On Basis Of Obsolete Date

Level	Seq	Component-Item	Component-Description	Loc	Opr	UOM	Scrap	Act	Stk	B/I	Qty On-Hand	Qty-Per-Parent	
						LLC Draw	REV	P/M	Ctl	B/F	Qty-Allocated	Qty-On-Order	
=====													
Parent Item:		21776-003	SENSOR ASSEMBLY, BINS	Loc:	01	LLC:	3						
			USES KEYENCE PZ-G62P, PNP										
1	5	202192-002	SENSOR, CLEAR, RETRO, 1m, PNP		0	EA	.0	A	Y	N		1.000000	
		"KEYENCE"	PZ-G62P	01	7			P	Y	N			
1	15	252019-000	CONNECTOR, M12, 4P, MALE		0	EA	.0	A	Y	N		1.000000	
		"LUMBERG"	RSC4/7	01	10			P	Y	N			
1	20	203005-002	BRACKET, SENSOR, L SHAPE, 25.4		0	EA	.0	A	Y	N		1.000000	
		"AUTOMATION DIRECT"	ST102	01	7			P	Y	N			
1	30	203160-001	REFLECTOR, SQUARE, POLARIZED *		0	EA	.0	A	Y	N		1.000000	
		"AUTOMATION DIRECT"	RL113G-1	01	7			P	Y	N			

PZ-G Series

Instruction Manual

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

96M11227



Safety precautions

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

Precautions on Regulations and Standards

UL Certificate

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

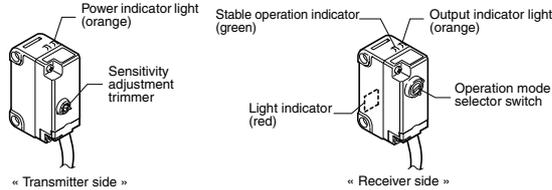
- UL File No. E301717
- Category NRKH,NRKH7
- Enclosure Type 1 (Based on UL50)

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

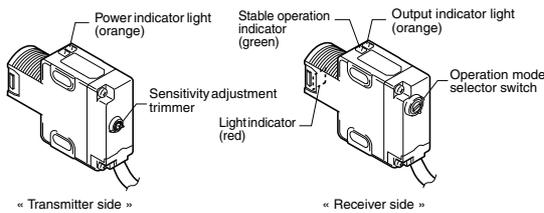
- Use the power supply with Class 2 output defined in NFPA70 (NEC: National Electrical Code).
- Power supply/ Control input/ Control output circuits shall be connected to a single Class 2 source only.
- Use with the over current protection device which is rated 30V or more and not more than 1A.

Part Names

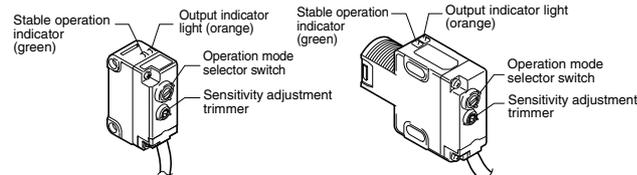
PZ-G5xN/G5xP



PZ-G5xB



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

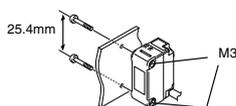


* The model name with "C" (PZ-GxxCx) is the connector type, and the model name with "E" (PZ-GxxEx) is the pigtail quick disconnect type.

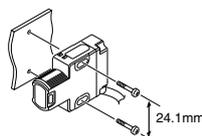
Mounting Method

Side Mounting (Prepare M3 screws)

Tightening torque: 0.5 N·m or less



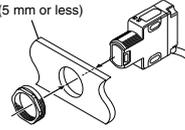
Tightening torque: 0.5 N·m or less



Mounting with the M18 nut (includes nut type)

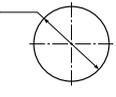
The M18 nut is also available separately as OP-84225 (2 pcs. supplied).
Tightening torque: 1.0 N·m or less

Panel (5 mm or less)



Panel cut size

$\phi 18.5 \pm 0.2$ mm



Note

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

Sensitivity Adjustment Method

Caution



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



Operation mode selector switch

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



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

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

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

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

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

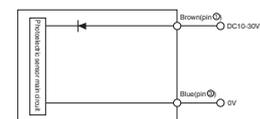
The following assumes DARK-ON (D) is set.

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

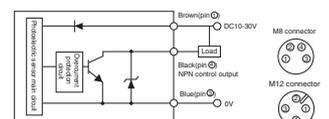
Reference To use the sensor in LIGHT-ON mode, adjust the mode selector switch to "L".

I/O Circuit Diagram

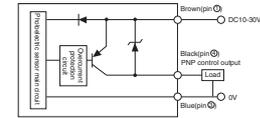
PZ-G5xN/G5xP/G5xB (Transmitter side)



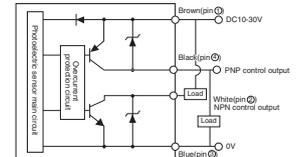
PZ-G5xN (Receiver side)/ G4xN/G10xN/G6xN



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



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



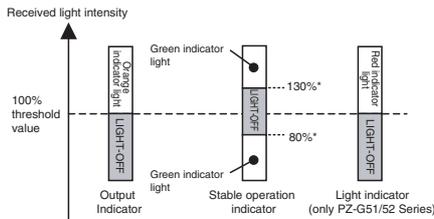
* The pin numbers represent those of the connector type / pigtail quick disconnect type. The model name with "C" (PZ-GxxCx) is the connector type, and the model name with "E" (PZ-GxxEx) is the pigtail quick disconnect type.

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

Indicators

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

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



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

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

Mutual interference

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

Specifications

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

¹ The detection distance is measured with the maximum sensitivity.

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

WARRANTY

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

1. WARRANTY PERIOD

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

2. WARRANTY SCOPE

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

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

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

3. PRODUCT APPLICABILITY

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

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

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

E 1040-1

KEYENCE CORPORATION

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

PHONE: +81-6-6379-2211 www.keyence.com

Specifications are subject to change without notice.

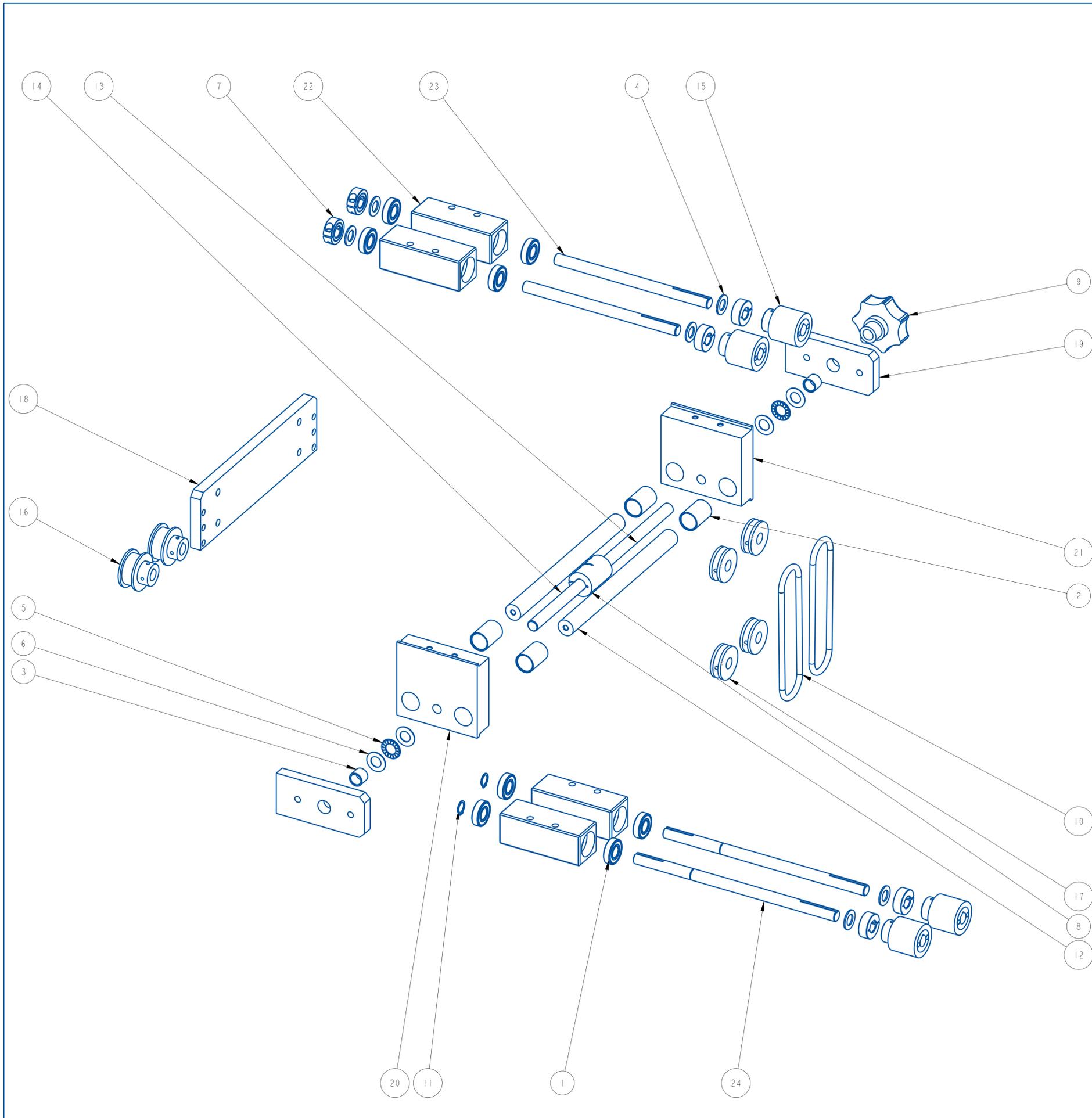
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11227E 1070-1 96M11227J

Printed in Japan





ITEM	QTY	PART NO.	DESCRIPTION	PARENT ITEM
1	8	111072-000	BEARING, BALL	22565DR-000
2	4	141097-001	BEARING, SLEEVE	22565DR-000
3	2	141166-000	BEARING, SLEEVE	22565DR-000
4	6	151062-000	BEARING, THRUST WASHER	22565DR-000
5	2	181079-000	BEARING, NEEDLE ROLLER	22565DR-000
6	4	181080-000	BEARING, THRUST WASHER	22565DR-000
7	6	361169-000	COLLAR, 1/2 IN. ID ONE-PIECE CLAMP	22565DR-000
8	1	361259-000	COUPLING, ONE PIECE CLAMP-ON	22565DR-000
9	1	801320-000	HAND KNOB	22565DR-000
10	2	841586-000	O-RING BELT	22565DR-000
11	2	871030-000	EXTERNAL SNAP RING	22565DR-000
12	2	A23581-010	GUIDE ROD	22565DR-000
13	1	A23583-000	R.H. ADJUSTMENT ROD	22565DR-000
14	1	A23584-000	R.H. ADJUSTMENT ROD	22565DR-000
15	4	A23587-000	DRIVE ROLLER	22565DR-000
16	2	A25276-000	TIMING PULLEY	22565DR-000
17	4	A25940-000	ROUND BELT PULLEY	22565DR-000
18	1	B21164-001	SIDE PLATE MOUNTING PLATE	22565DR-000
19	2	B21165-000	GUIDE ROD MOUNTING PLATE	22565DR-000
20	1	B21166-002	BEARING MOUNTING PLATE-R.H.	22565DR-000
21	1	B21166-003	BEARING MOUNTING PLATE-L.H.	22565DR-000
22	4	B21167-000	DRIVE SHAFT MTG. BLOCK	22565DR-000
23	2	B21168-000	IDLER ROLLER SHAFT	22565DR-000
24	2	B21169-000	DRIVE ROLLER SHAFT	22565DR-000

NOT SHOWN:
A26226-000 SLEEVE DRIVE ROLLER TOOL

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

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

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

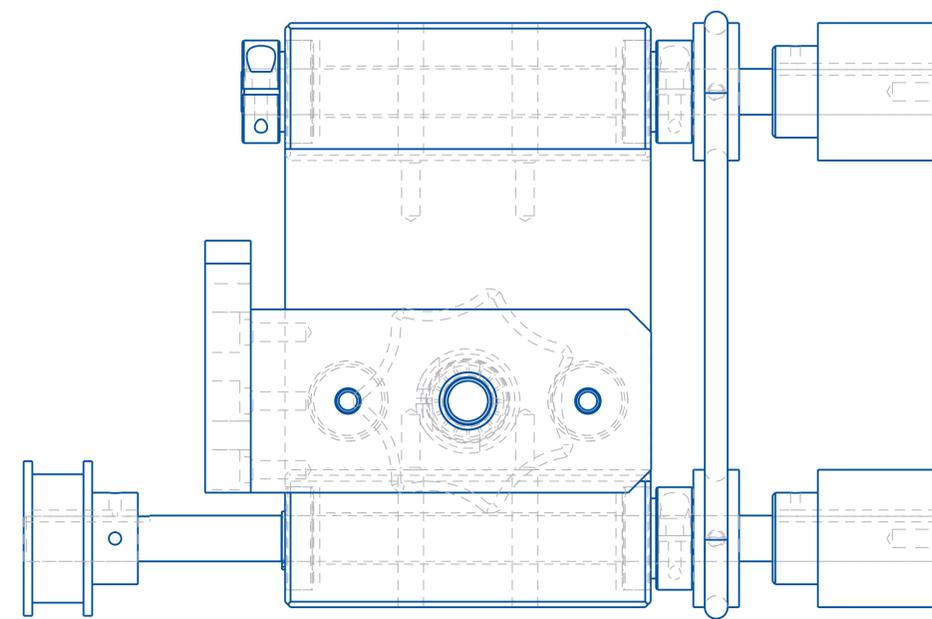
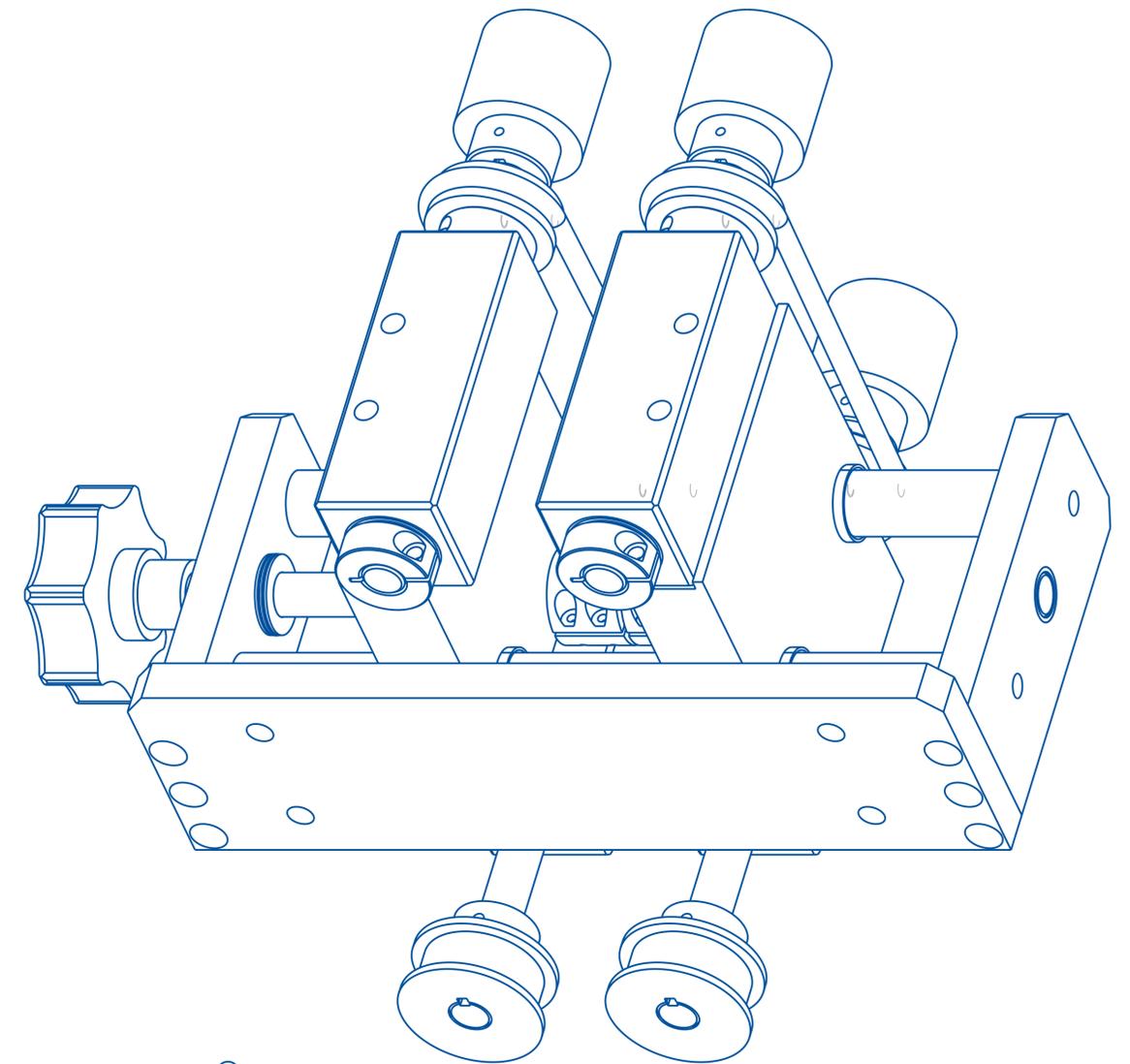
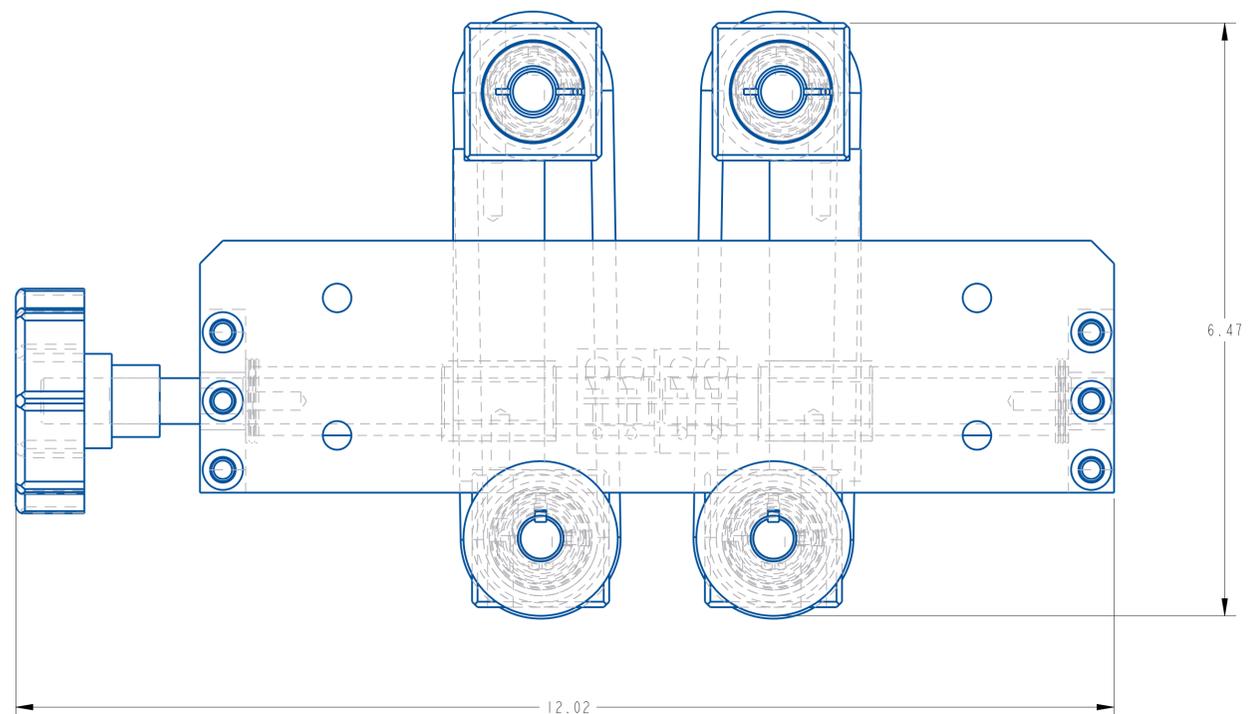
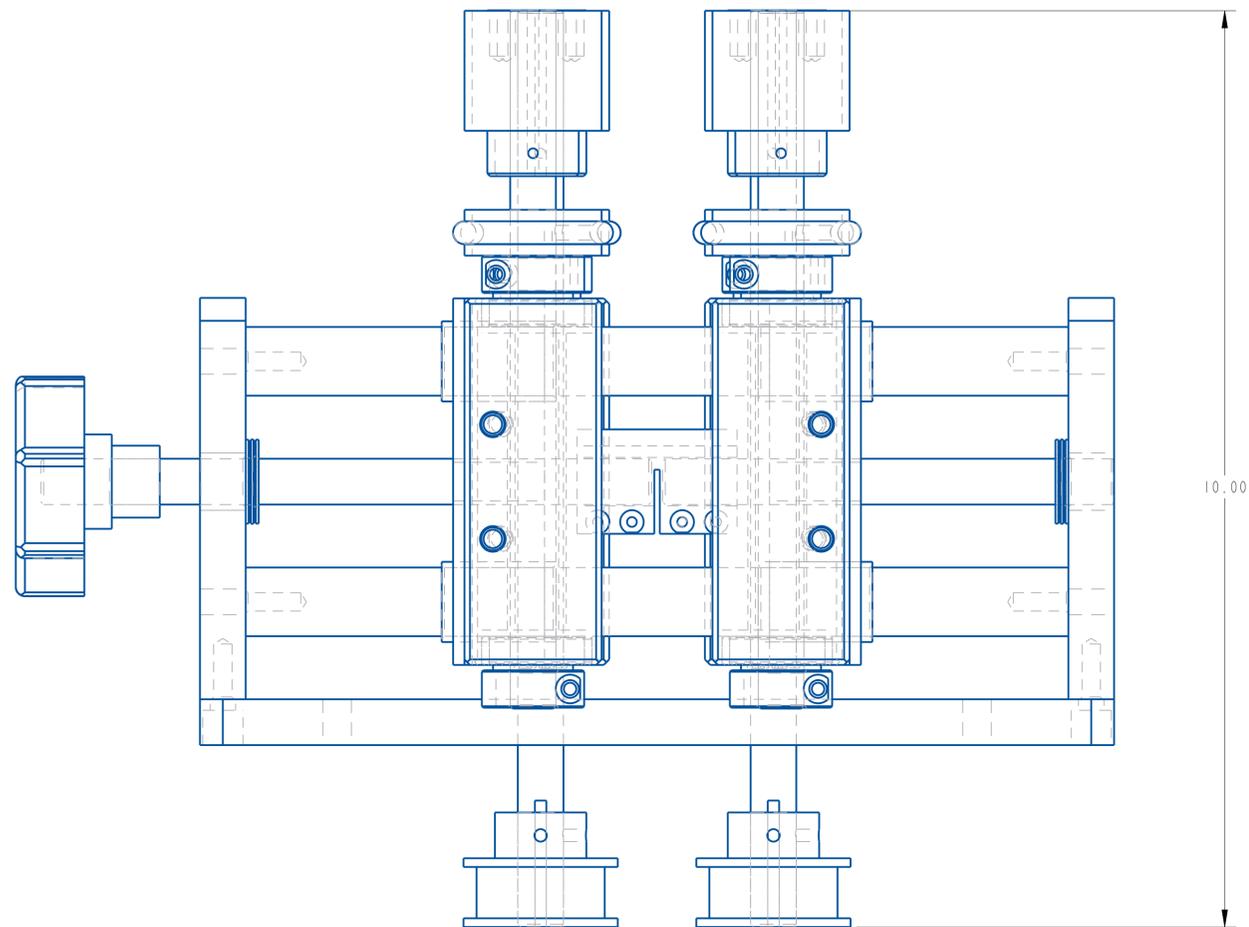
SURFACE FINISH 125
 BREAK ALL EDGES .005/0.15
 CORNER RADIUS .010/0.30

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

SCALE: 7/16
 DATE: 7-18-13
 DRW BY: MAW
 CHK BY: 07/16/2024-SEM
 APPR BY:

DRIVE ROLLER

MAT'L 22565DR-000 D24801-000



SHEET 2 OF 2

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

UNLESS OTHERWISE SPECIFIED
 DIMENSIONAL TOLERANCE
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 XX ± .01
 XXX ± .005
 ANGLES ± .30°
 SURFACE FINISH 125
 BREAK ALL EDGES .005/0.15
 CORNER RADIUS .010/0.30
 ALL ANGLES ARE 90°

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

SCALE: 1/1
 DATE: 7-18-13
 DRW BY: MAW
 CHK BY: 07/16/2024-SEM
 APPR BY:

DRIVE ROLLER
 MAT'L 22565DR-000 D24801-000

ASSEMBLY TITLE: YOKE ASSEMBLY

DRAWING NO.:

GENERAL FUNCTION:

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

SET UP AND ADJUSTMENTS:

-

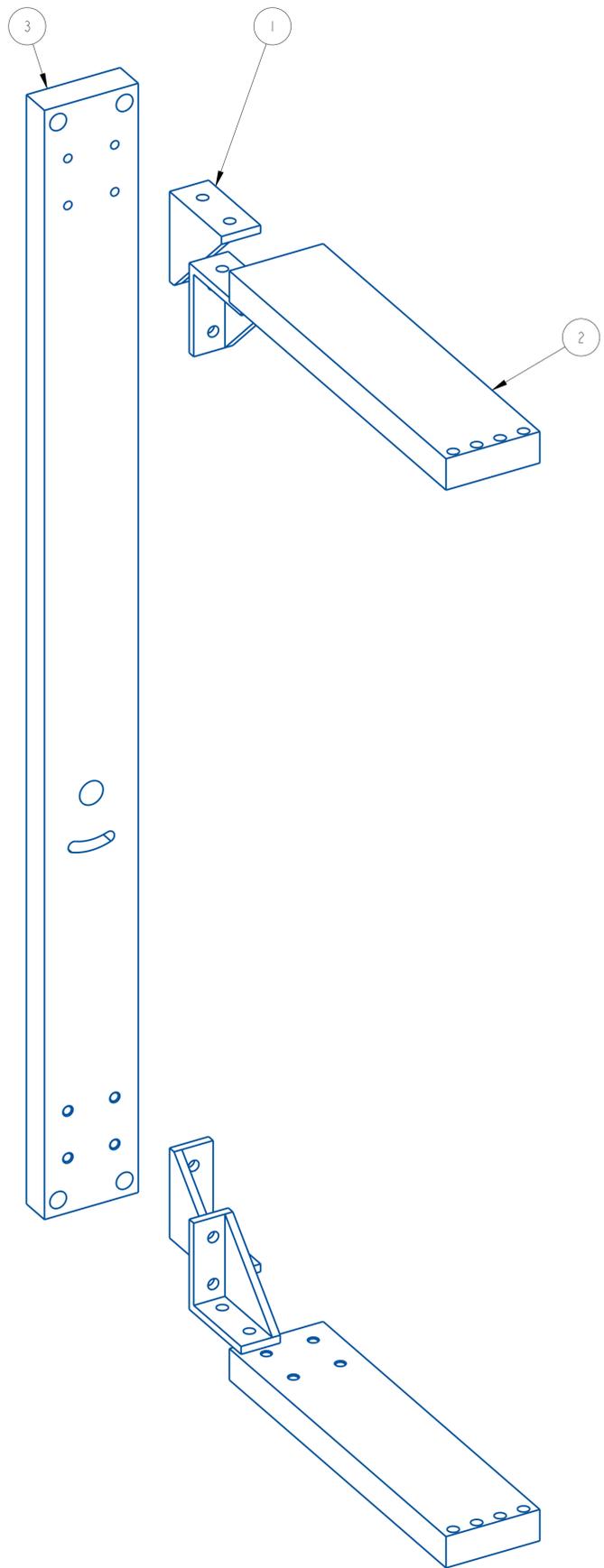
MAINTENANCE:

- No scheduled maintenance for this assembly.

TROUBLESHOOTING:

-

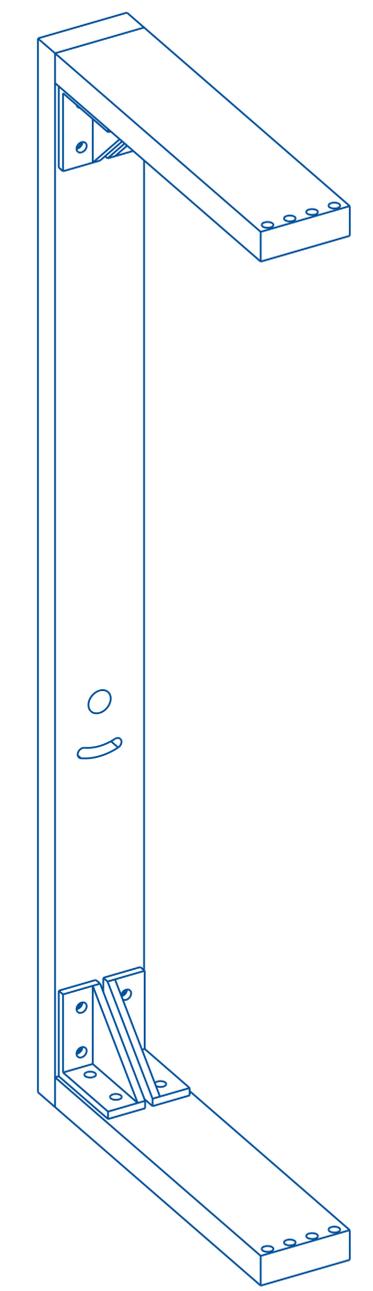
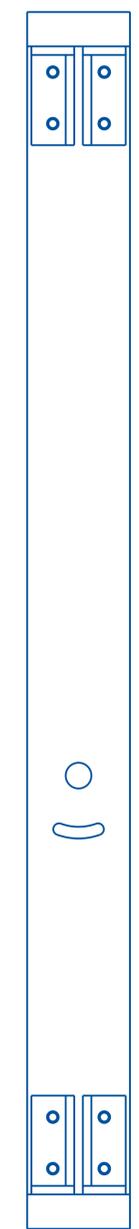
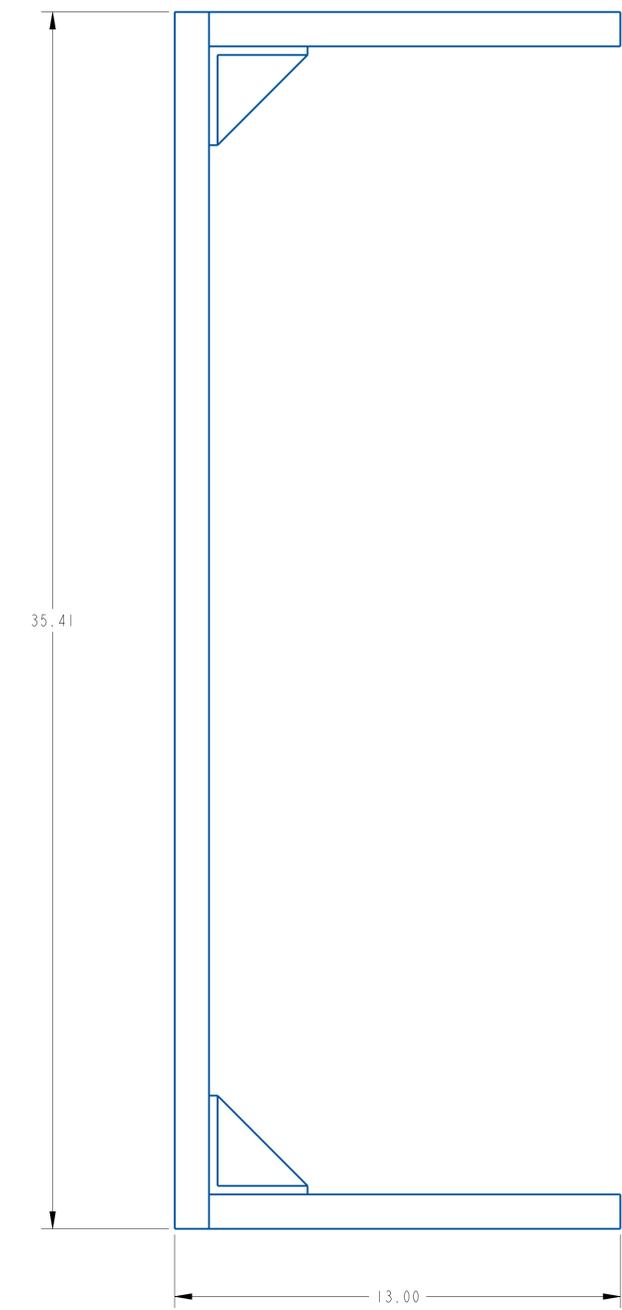
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1	4	791889-000	CORNER GUSSET	22565Y-003
2	2	B21287-001	YOKE SIDE ARM	22565Y-003
3	1	B21288-004	YOKE BACK PLATE 35"	22565Y-003



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

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UNLESS OTHERWISE SPECIFIED DIMENSIONAL TOLERANCE .X ± .1 .XX ± .01 .XXX ± .005 ANGLES ± .30° SURFACE FINISH 125 BREAK ALL EDGES .005/0.15 CORNER RADIUS .010/0.30 ALL ANGLES ARE 90°	QUADREL LABELING SYSTEMS 7670 JENTHER DRIVE MENTOR, OHIO 44060 (440) 602-4700		SCALE: 7/16 DATE: Nov-07-25 DRW BY: TAZ CHK BY: 11/12/2025-SEM APPR BY:
	MOUNTING YOKE		
	MAT'L	22565Y-003	22565Y-003



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

UNLESS OTHERWISE SPECIFIED
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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

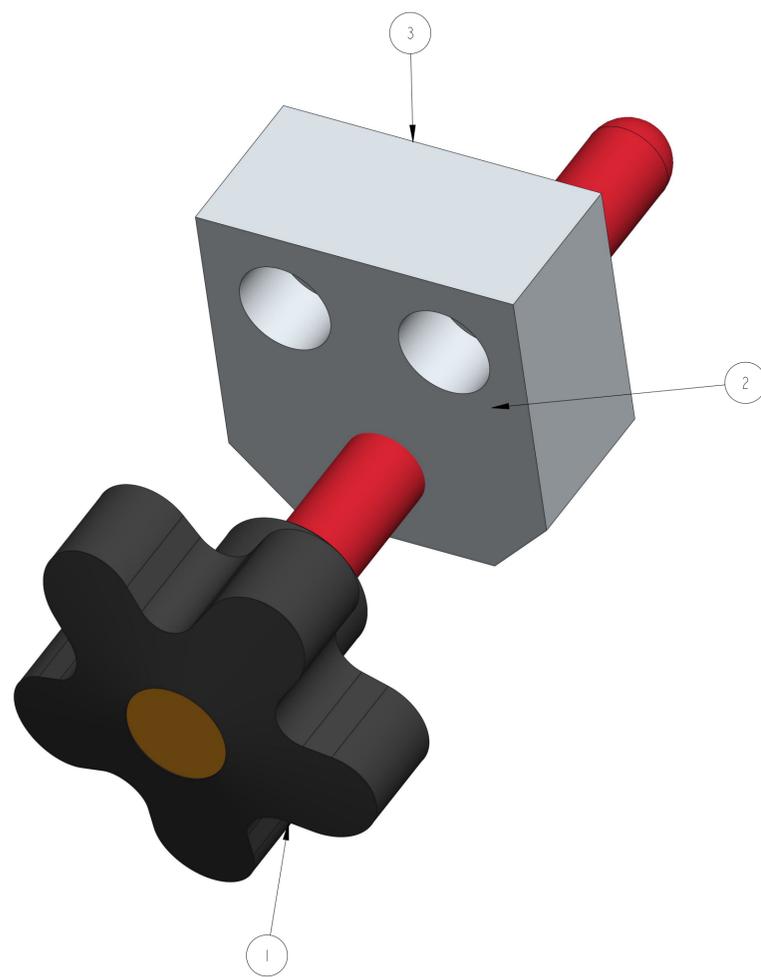
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 DATE: Nov-07-25
 DRW BY: TAZ
 CHK BY: 11/12/2025-SEM
 APPR BY:

MOUNTING YOKE

MAT'L

22565Y-003

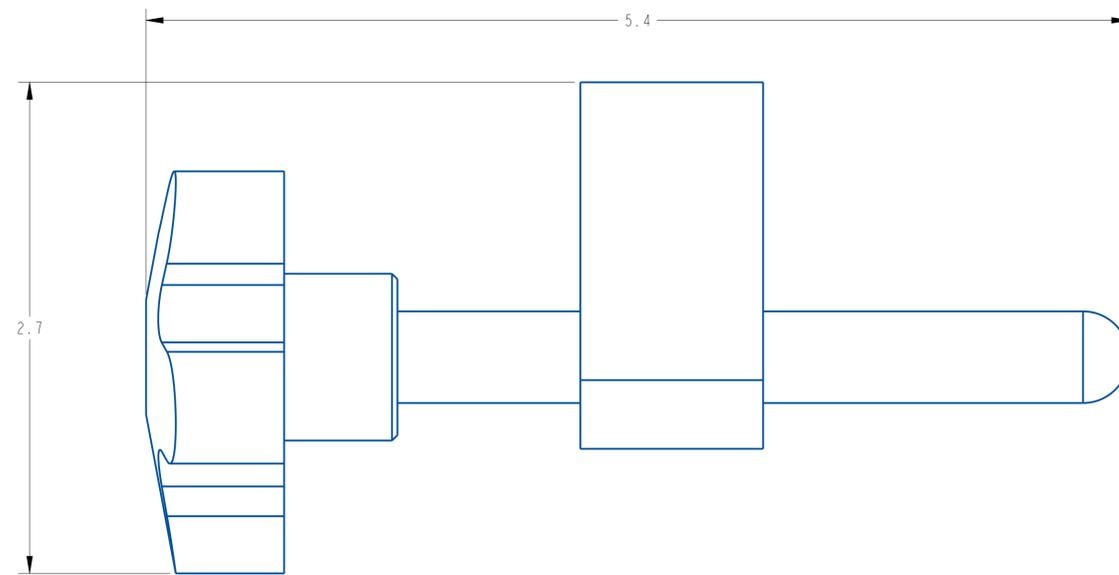
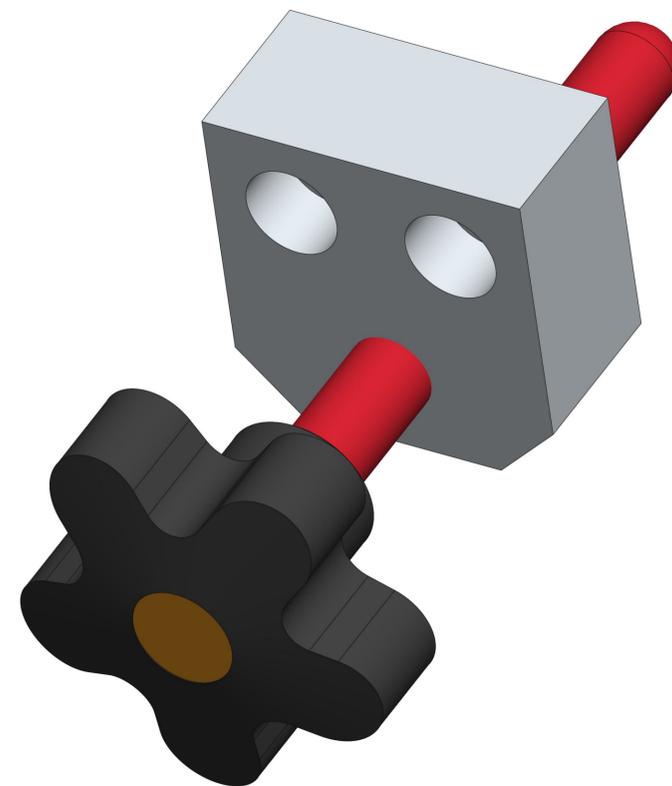
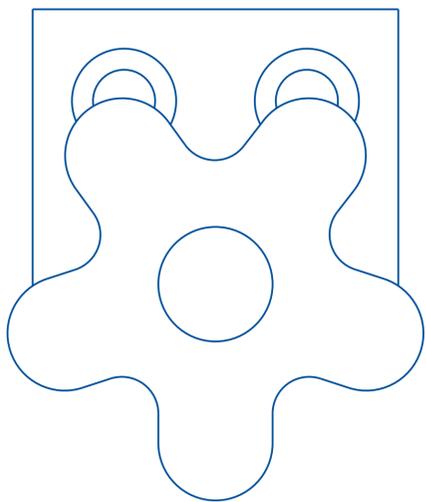
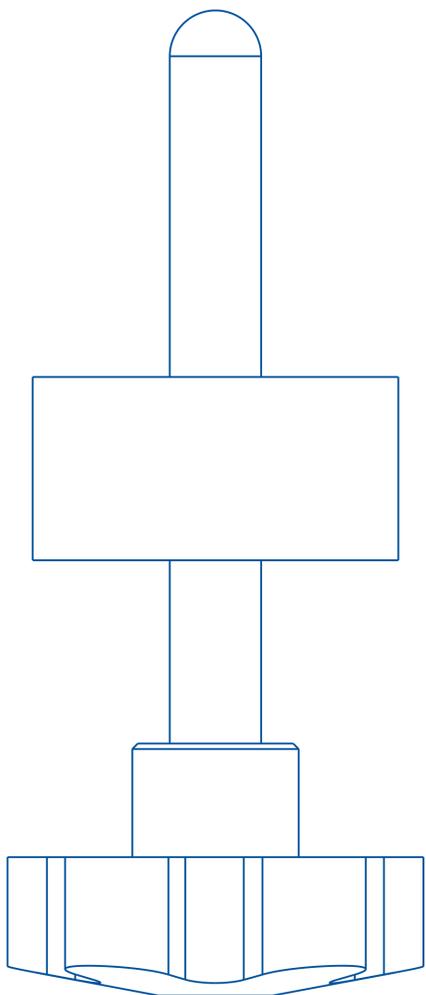
ITEM	QTY	PART NO.	DESCRIPTION	PARENT ITEM
1	1	793045-000	DIAMOND KNURL KNOB	22824-000
2	1	A26179-000	KNOB STUD	22824-000
3	1	C21348-400	ADJUSTMENT PLATE	22824-000



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

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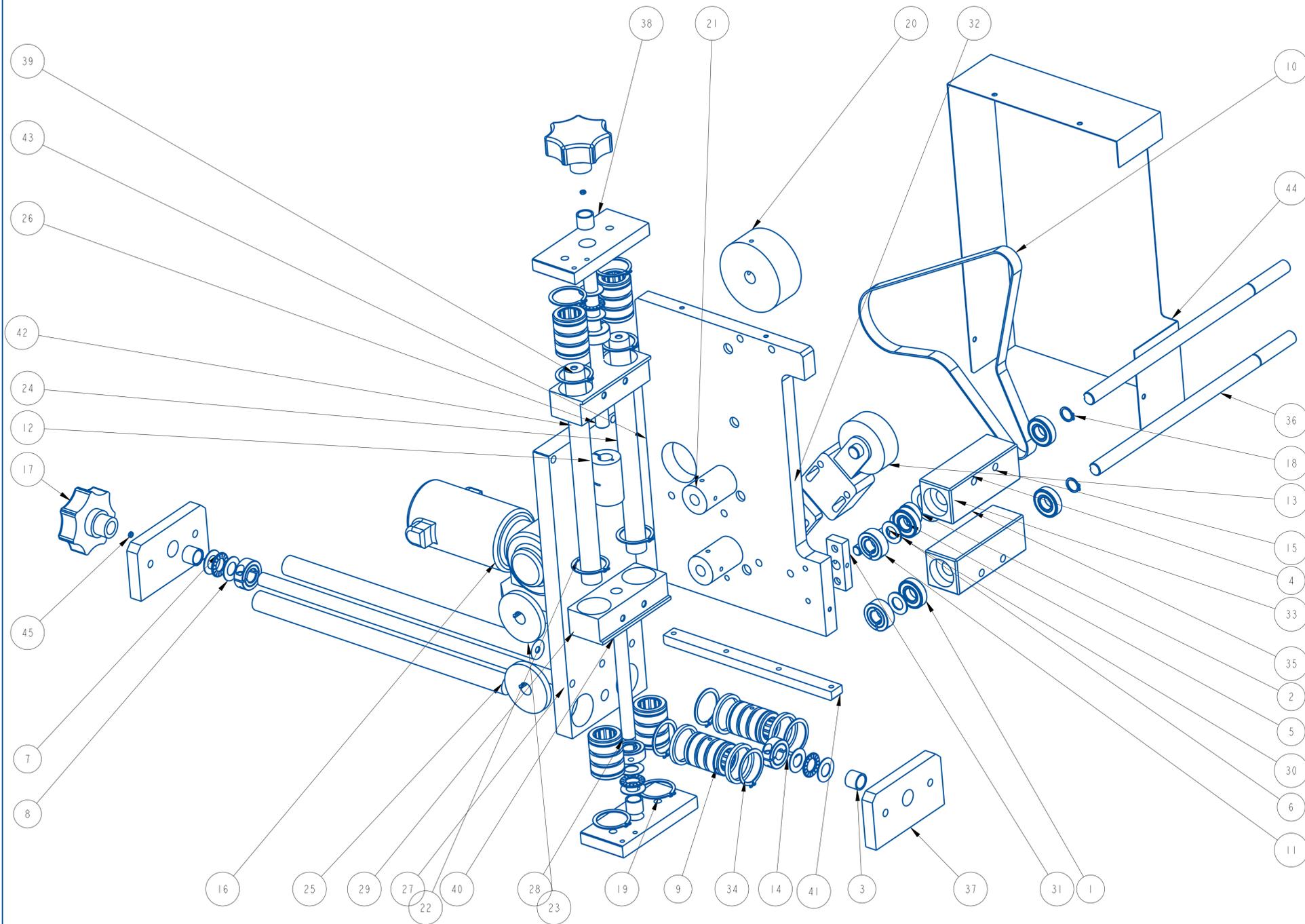
UNLESS OTHERWISE SPECIFIED DIMENSIONAL TOLERANCE .X ± .1 .XX ± .01 .XXX ± .005 ANGLES ± 30°	QUADREL LABELING SYSTEMS 7670 JENTHER DRIVE MENTOR, OHIO 44060 (440) 602-4700		SCALE: 2/1 DATE: 21-FEB-2024 DRW BY: CRT CHK BY: 03/09/2024-SEM APPR BY:
	ADJUSTMENT BLOCK ASSEMBLY		
	SURFACE FINISH 125 BREAK ALL EDGES .005/0.15 CORNER RADIUS .010/0.30	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°	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		
	SURFACE FINISH 125 BREAK ALL EDGES .005/ .015 CORNER RADIUS .010/ .030	MAT'L 22824-000	22824-000
	SHEET 2 OF 2		



ITEM	QTY	PART NO.	DESCRIPTION	PARENT ITEM
1	4	111072-000	BEARING, BALL	21490TDR-001
2	2	111073-000	BEARING, BALL	21490TDR-001
3	4	141166-000	BEARING, SLEEVE	21490TDR-001
4	1	151014-000	BEARING, THRUST WASHER	21490TDR-001
5	1	151021-000	BEARING, THRUST WASHER	21490TDR-001
6	2	151062-000	BEARING, THRUST WASHER	21490TDR-001
7	4	181079-000	BEARING, NEEDLE ROLLER	21490TDR-001
8	8	181080-000	BEARING, THRUST WASHER	21490TDR-001
9	6	181148-000	LINER BEARING	21490TDR-001
10	1	191730-000-TDR	DOUBLE SIDED TIMING BELT	21490TDR-001
11	5	361169-000	COLLAR, 1/2 IN. ID ONE-PIECE CLAMP	21490TDR-001
12	1	361259-000	COUPLING, ONE PIECE CLAMP-ON	21490TDR-001
13	1	361320-000	SPANN-BOX	21490TDR-001
14	1	362167-000	COLLAR, 1/2 IN. ID ONE-PIECE CLAMP	21490TDR-001
15	1	362186-000	COLLAR, 3/8 IN. ID ONE-PIECE CLAMP	21490TDR-001
16	1	412141-000	1/17 HP RIGHT ANGLE GERMOTOR	21490TDR-001
17	2	801320-000	HAND KNOB	21490TDR-001
18	2	871030-000	EXTERNAL SNAP RING	21490TDR-001
19	12	871046-000	EXTERNAL SNAP RING	21490TDR-001
20	1	A22335-002	STEPPER MOTOR PULLEY	21490TDR-001
21	2	A22335-006	STEPPER MOTOR PULLEY	21490TDR-001
22	1	A22335-007	STEPPER MOTOR PULLEY	21490TDR-001
23	2	A23429-012	THROW DOWN DRIVE ROLLER	21490TDR-001
24	2	A23581-000	GUIDE ROD	21490TDR-001
25	2	A23581-001	GUIDE ROD	21490TDR-001
26	1	A23583-000	R.H. ADJUSTMENT ROD	21490TDR-001
27	1	A23583-001	R.H. ADJUSTMENT ROD	21490TDR-001
28	1	A23584-000	L.H. ADJUSTMENT ROD	21490TDR-001
29	1	A23645-000	MOTOR MOUNTING PLATE	21490TDR-001
30	1	A23669-000	IDLER PULLEY SHAFT	21490TDR-001
31	1	A23670-000	IDLER SHAFT MOUNTING PLATE	21490TDR-001
32	1	A23672-000	TENSIONER MOUNTING PLATE	21490TDR-001
33	1	A23697-001	IDLER PULLEY	21490TDR-001
34	4	A24044-000	SLEEVE BRG RETAINER SPACER	21490TDR-001
35	2	B21167-000	DRIVE SHAFT MTG. BLOCK	21490TDR-001
36	2	B21169-001	DRIVE ROLLER SHAFT	21490TDR-001
37	2	B21170-000	GUIDE ROD MTG PLATE	21490TDR-001
38	2	B21171-000	GUIDE ROD MOUNTING PLATE	21490TDR-001
39	1	B21174-000	R.H. BEARING MOUNTING PLATE	21490TDR-001
40	1	B21174-001	L.H. BEARING MOUNTING PLATE	21490TDR-001
41	1	B21175-000	WEAR STRIP	21490TDR-001
42	1	C20561-004	BEARING MOUNTING PLATE	21490TDR-001
43	1	C20563-003	MOTOR MOUNTING PLATE	21490TDR-001
44	1	C20593-001		21490TDR-001
45	2	HMSN04		21490TDR-001

REV	DATE	DESCRIPTION	BY
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UNLESS OTHERWISE SPECIFIED
DIMENSIONAL TOLERANCE
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 XX ± .005
 XXX ± .003
 ANGLES ± 30°

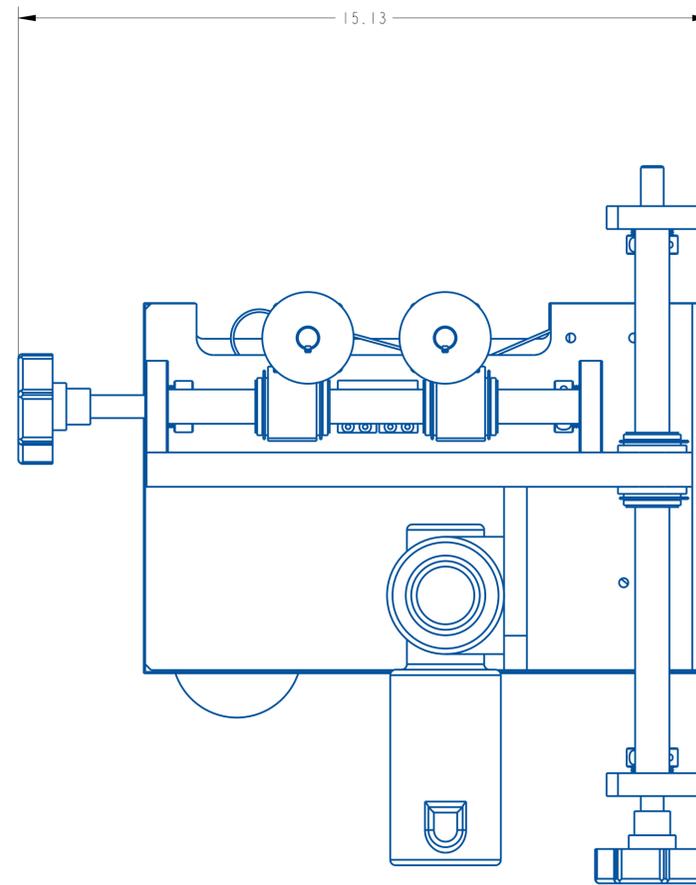
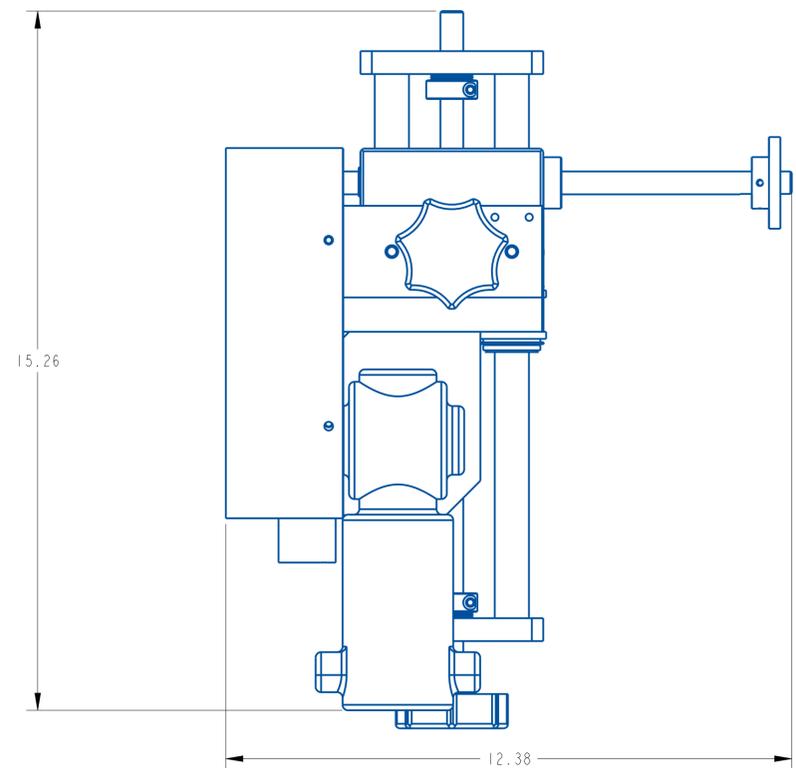
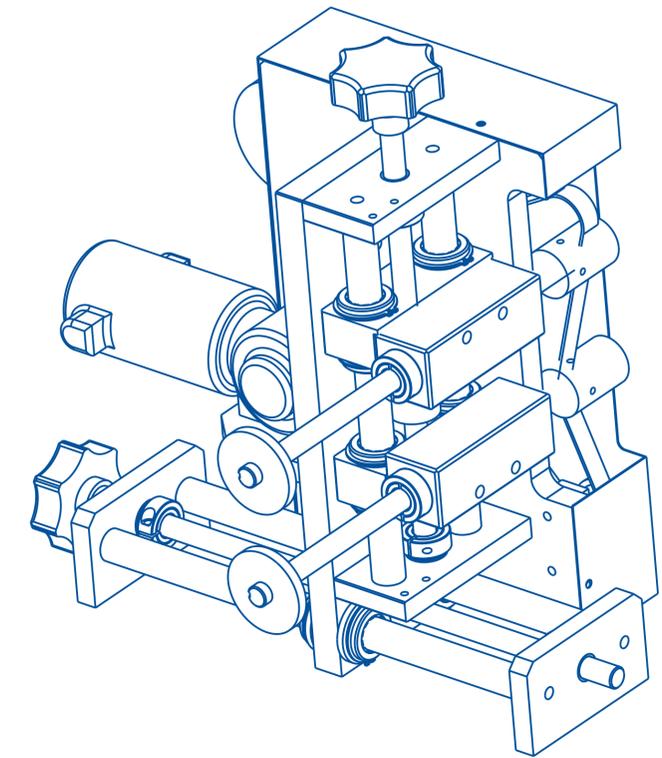
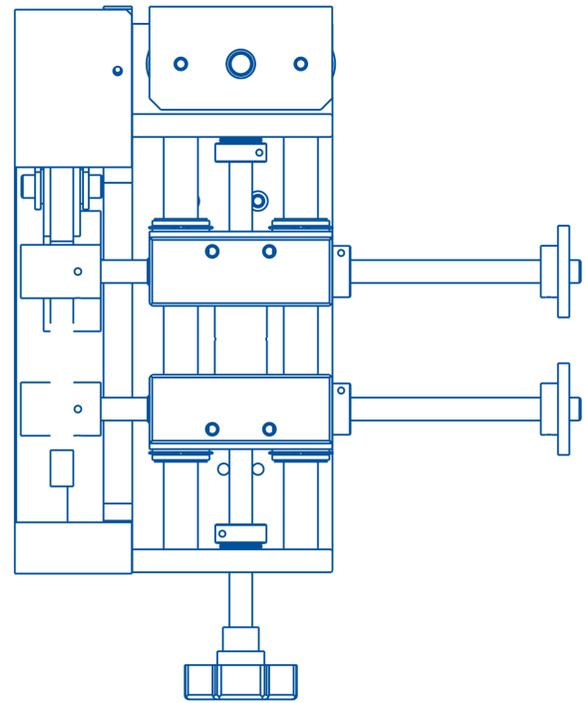
SURFACE FINISH 125
 BREAK ALL EDGES .005/.015
 CORNER RADIUS .010/.030

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

SCALE: 7/16
 DATE: Aug-24-22
 DRW BY: TAZ
 CHK BY: 11/12/2025-SEM
 APPR BY:

THROW DOWN ROLLER ASSEMBLY LEFT HAND

MAT'L 21490TDR-001



REV	DATE	DESCRIPTION	BY
A	Aug-24-22	NEW DRAWING	TAZ

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: 1/2
DATE: Aug-24-22
DRW BY: TAZ
CHK BY: 11/12/2025-SEM
APPR BY:

THROW DOWN ROLLER ASSEMBLY LEFT HAND
MAT'L

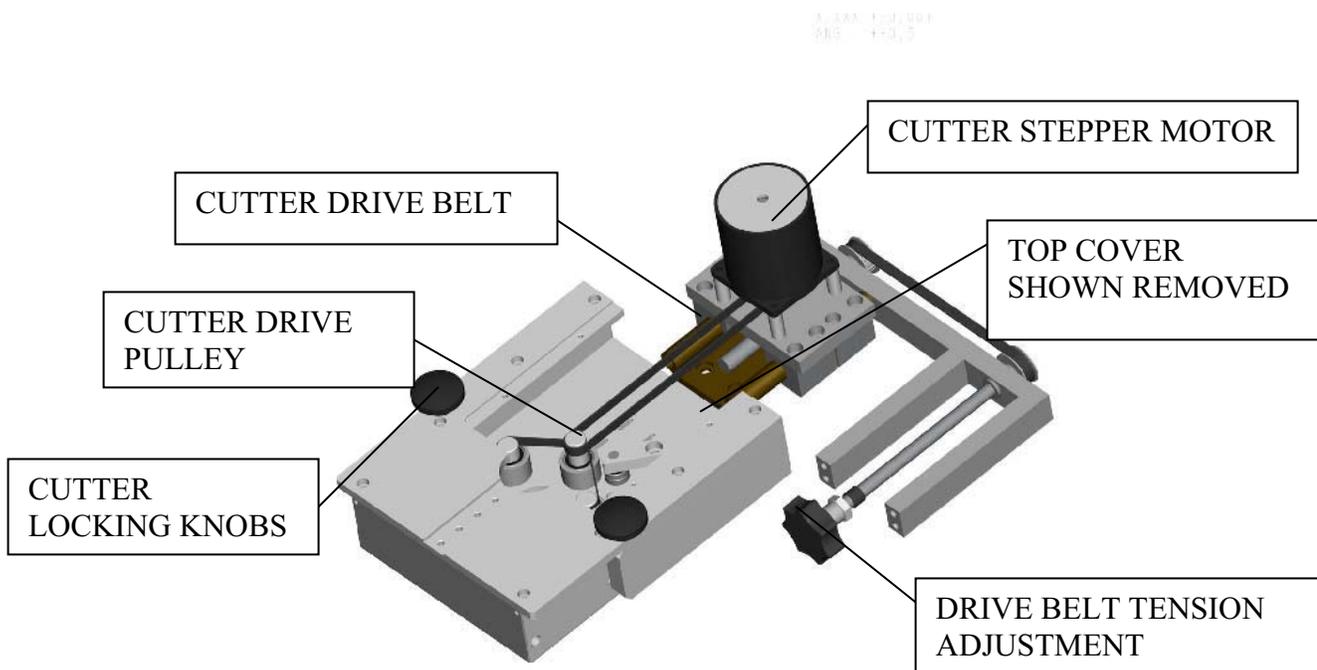
21490TDR-001

CUTTER ASSEMBLY

SEQUENCE OF OPERATION:

The cutter assembly provides the appropriate cut length for the application. It is controlled by a stepper motor and utilizes a series of replaceable blades. Once a product is detected the drive rolls will advance the sleeve material to the appropriate length. The cutter blades will rotate and cut the material. The cut material will remain on the lower portion of the mandrel until the next product is detected.

When the material advances it will push the cut material into the throw down rollers and the rollers will push the material onto the product.



REMOVAL AND REPLACEMENT:

The cutter assembly is removable for maintenance and replacement for multiple size sleeves. Before removal, ensure that all power is turned off. The cutter blades are located in the bottom half of the cutter. **Ensure that the blade cover is installed before removing assembly.**

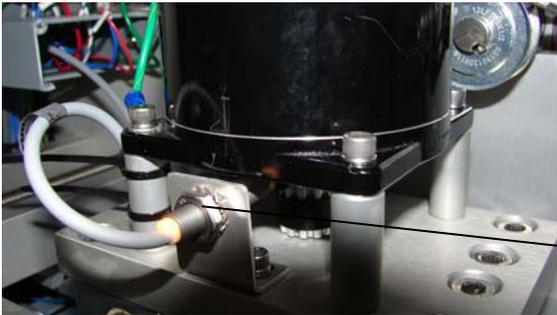
REMOVAL:

1. Remove the sleever mandrel assembly.
2. Remove the top cover to access the drive belt. Turn the drive belt tension adjustment clockwise to loosen belt tension and remove drive belt from the drive pulley on the cutter.
3. Remove the cutter locking knobs and slide the cutter assembly from the sleever.

REPLACEMENT:

Before replacing the cutter assembly, the cutter drive motor and blades must be preset.

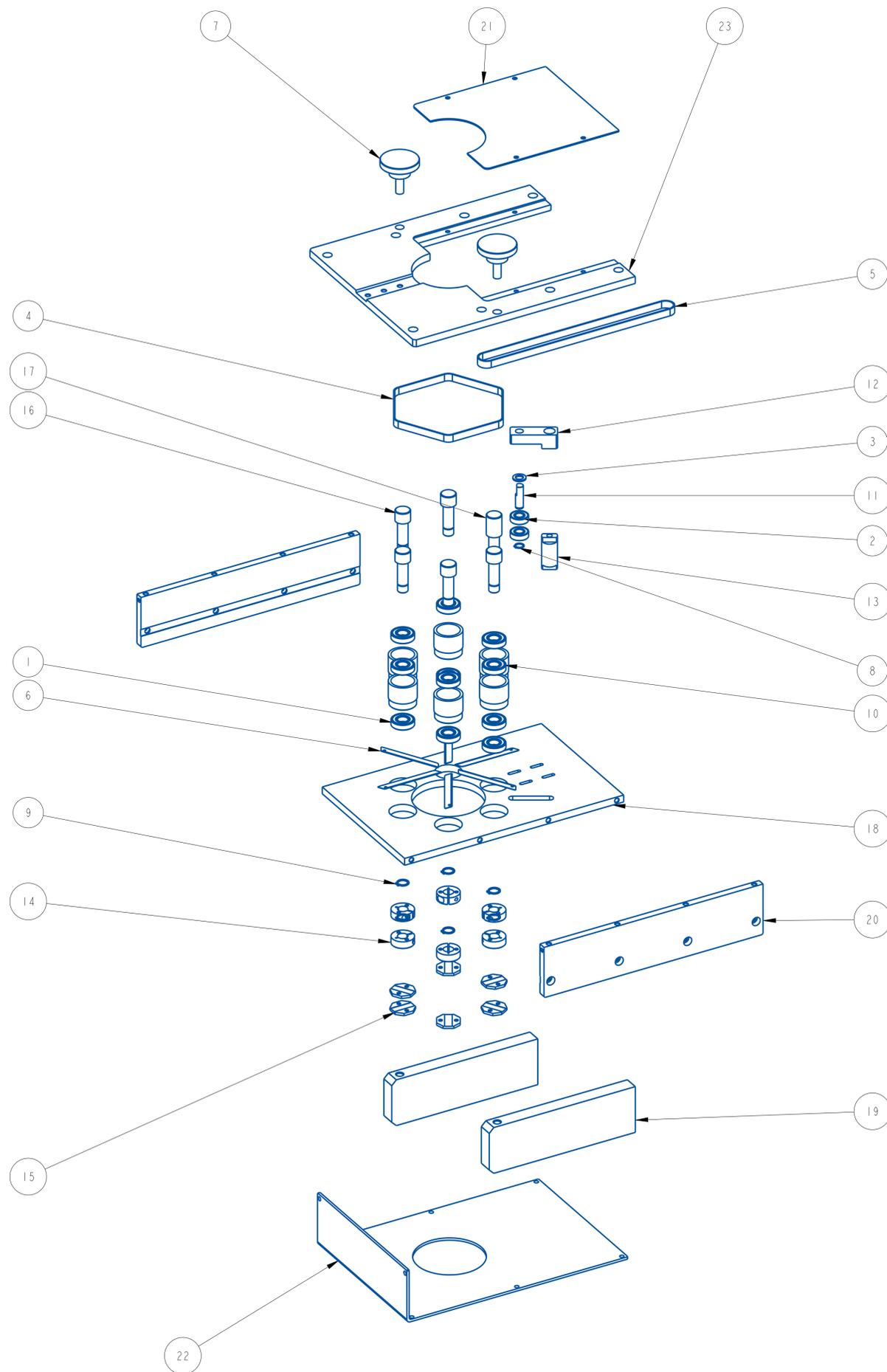
1. Before installing the cutter assembly, rotate the cutter drive pulley until the blades are as illustrated below.
2. Apply power to the sleever and press the cutter home button on operator's panel to preset the cutter drive motor to the correct position.
3. Slide the cutter assembly into position and tighten the cutter locking knobs.
4. Slide the cutter drive belt onto the drive pulley and rotate the tension adjustment knob CCW until belt is tight. Replace the top cover.



CUTTER DRIVE MOTOR
HOME SENSOR: 202086-002



CUTTER BLADES
ROTATED 180* FROM
MANDREL



ITEM	QTY	PART NO.	DESCRIPTION	PARENT ITEM
1	13	111072-000	BEARING, BALL	22480C-016
2	2	111073-000	BEARING, BALL	22480C-016
3	1	151014-000	BEARING, THRUST WASHER	22480C-016
4	1	191644-000-6	TIMING BELT	22480C-016
5	1	191728-001	TIMING BELT	22480C-016
6	6	792230-003	SPARE BLADE	22480C-016
7	2	801255-000	KNOB, 3/8-16 X 1	22480C-016
8	1	871019-000	EXTERNAL SNAP RING	22480C-016
9	6	871030-000	EXTERNAL SNAP RING	22480C-016
10	6	A23846-000	BEARING STAND OFF	22480C-016
11	1	A23885-000	TENSIONER SHAFT	22480C-016
12	1	A23886-003	TENSIONER SHAFT MTG. PLATE	22480C-016
13	1	A23887-002	TENSIONER RISER	22480C-016
14	6	A25495-000	COLLAR, 1/2 IN. ID REWORK	22480C-016
15	6	A25496-002	BLADE CLAMP PLATE	22480C-016
16	5	B21244-002	PULLEY/SHAFT	22480C-016
17	1	B21244-003	PULLEY/SHAFT	22480C-016
18	1	C20585-016	BEARING STAND OFF MTG. PLATE	22480C-016
19	2	C20586-000	KNIFE ASSEMBLY MOUNTING BAR	22480C-016
20	2	C20587-000	SIDE PLATE	22480C-016
21	1	C20591-016	TOP COVER	22480C-016
22	1	C20592-016	BOTTOM COVER-5 BLADES	22480C-016
23	1	D20847-016	TOP PLATE	22480C-016

REV	DATE	DESCRIPTION	BY
A	9-23-13	NEW DRAWING	ATT

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

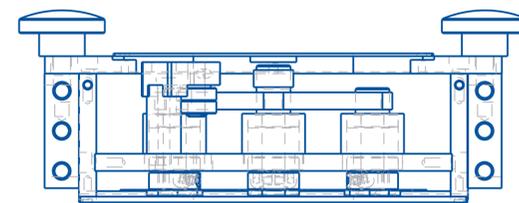
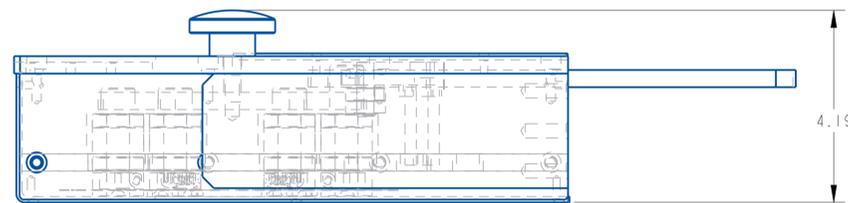
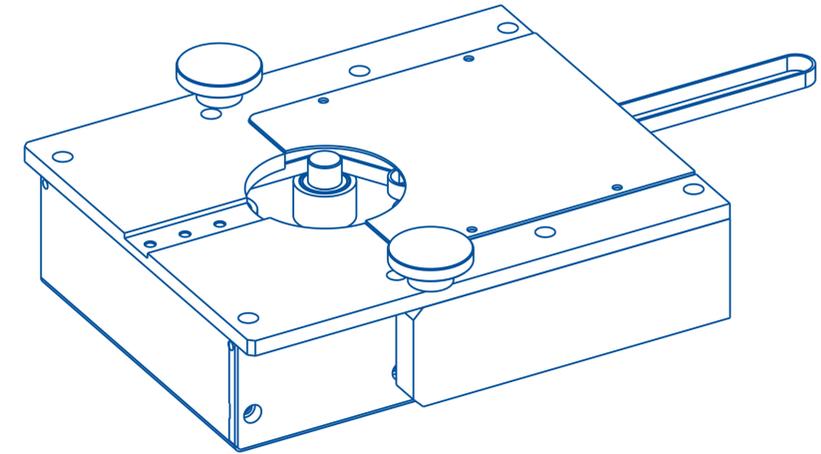
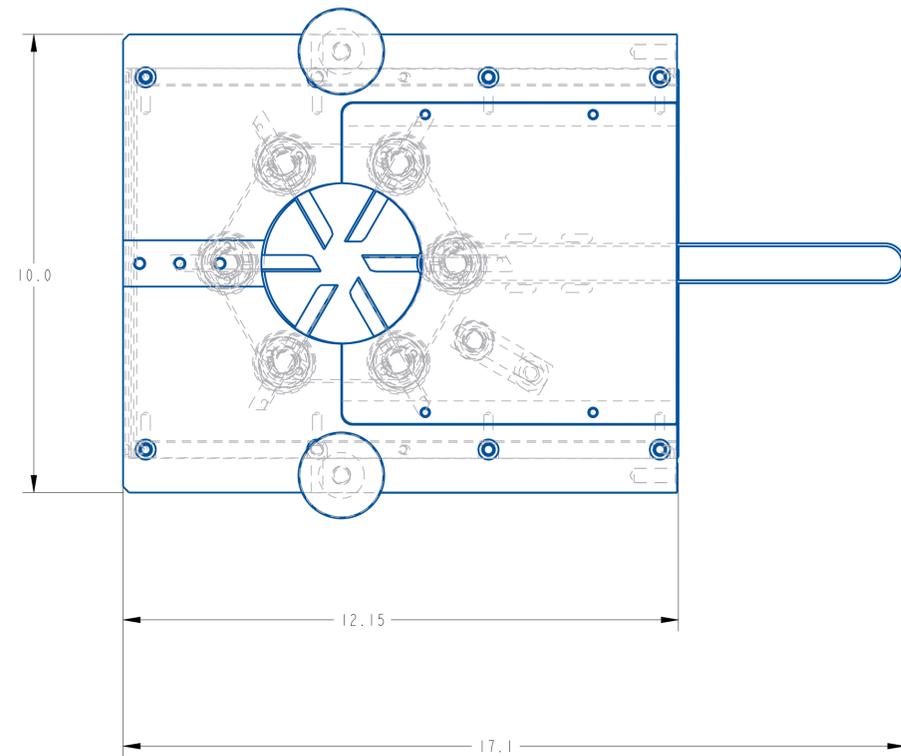
SURFACE FINISH 125
 BREAK ALL EDGES .005/.015
 CORNER RADIUS .010/.030

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

SCALE: 5/16
 DATE: 9-23-13
 DRW BY: ATT
 CHK BY: 07/18/2024-SEM
 APPR BY:

SLEEVE CUTTER ASSEMBLY

MAT'L	22480C-016	D24505-016
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REV	DATE	DESCRIPTION	BY
A	9-23-13	NEW DRAWING	ATT

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XXX ± .005
ANGLES ± .30°

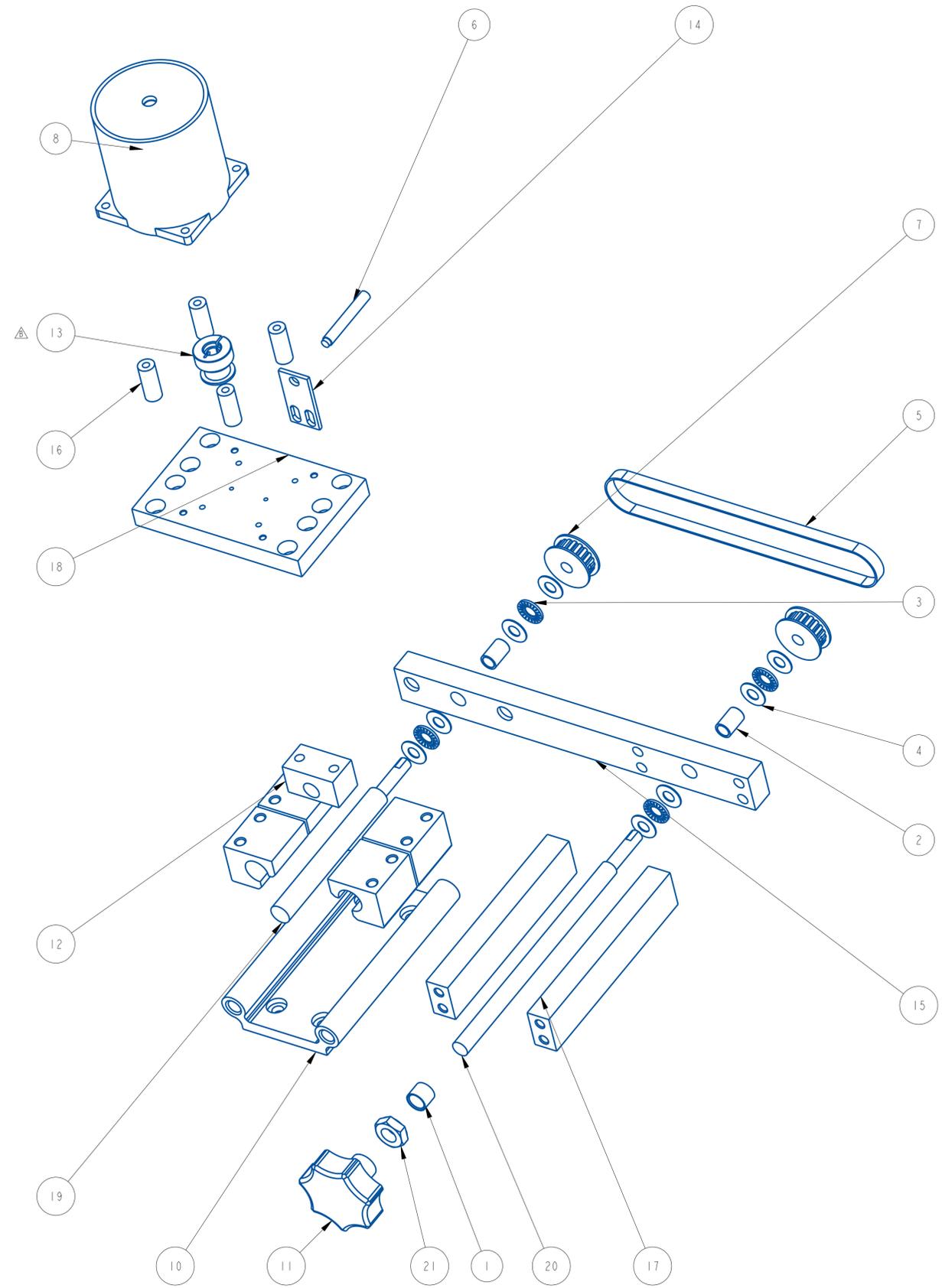
SURFACE FINISH 125
BREAK ALL EDGES .005/ .015
CORNER RADIUS .010/ .030
ALL ANGLES ARE 90°

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

SCALE: 1/2
DATE: 9-23-13
DRW BY: ATT
CHK BY: 07/18/2024-SEM
APPR BY:

SLEEVE CUTTER ASSEMBLY

MAT'L 22480C-016 D24505-016



ITEM	QTY	PART NO.	DESCRIPTION	PARENT ITEM
1	1	141166-000	BEARING, SLEEVE	22480CD-000
2	2	141172-000	SLEEVE BEARING, 1/20D. x 3/8ID. x 3/4LNG	22480CD-000
3	4	181108-000	BEARING, NEEDLE ROLLER	22480CD-000
4	8	181111-000	THRUST WASHER	22480CD-000
5	1	191728-002	TIMING BELT	22480CD-000
6	1	202086-005	PROX. SWITCH	22480CD-000
7	2	352189-001	PULLEY, 1/5P 20 GROOVE	22480CD-000
8	1	411385-000	MOTOR, STEPPER	22480CD-000
9	4	792248-001	PILLOW BLOCK	22480CD-000
10	1	793036-000	DRYLIN RAIL	22480CD-000
11	1	801320-000	HAND KNOB	22480CD-000
12	1	A24077-000	BRONZE NUT, RH	22480CD-000
13	1	A25911-001	PULLEY/COLLAR ASSEMBLY	22480CD-000
14	1	A25983-000	PROX. MTG. PLATE	22480CD-000
15	1	B21346-050	BEARING PLATE	22480CD-000
16	4	B22713-000	SPACER	22480CD-000
17	2	B22797-000	SPACER	22480CD-000
18	1	C20626-060	MOTOR MTG. SLED	22480CD-000
19	1	C20717-010	THREADED ROD	22480CD-000
20	1	C20717-020	THREADED ROD	22480CD-000
21	1	HHJN02		22480CD-000

REV	DATE	DESCRIPTION	BY
B	8/11/21	CHANGED PULLEY	TAZ
A	10-7-20	NEW DRAWING	ATT

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 ANGLES ± 30°

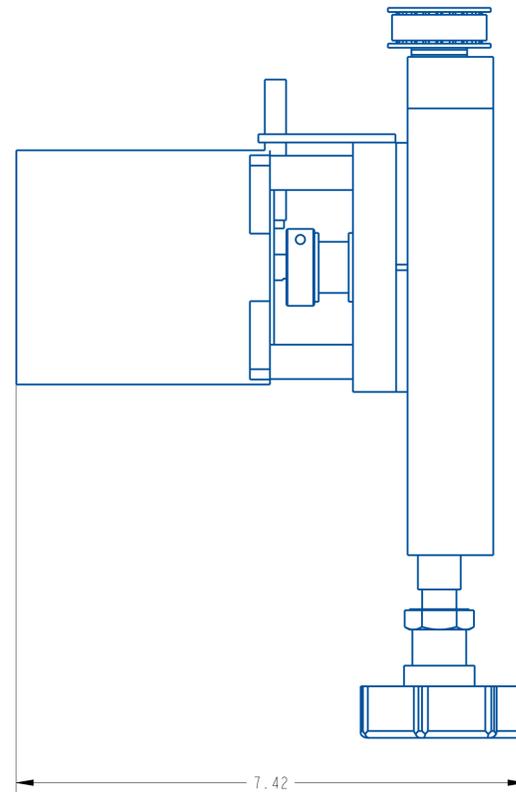
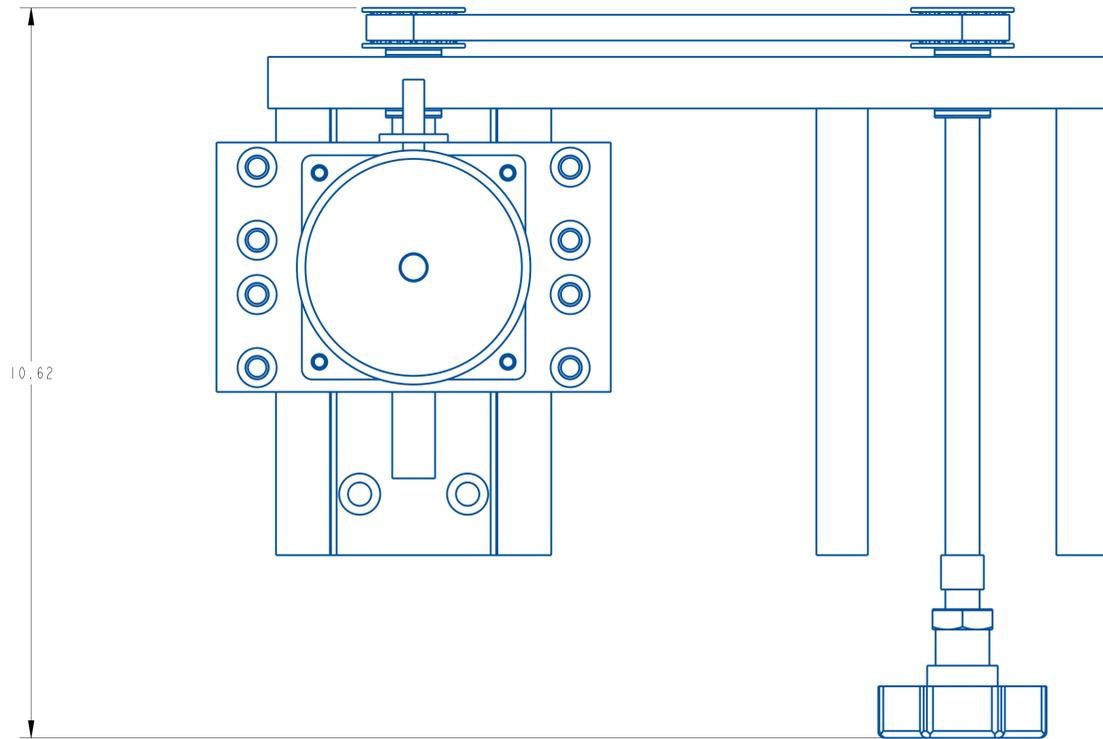
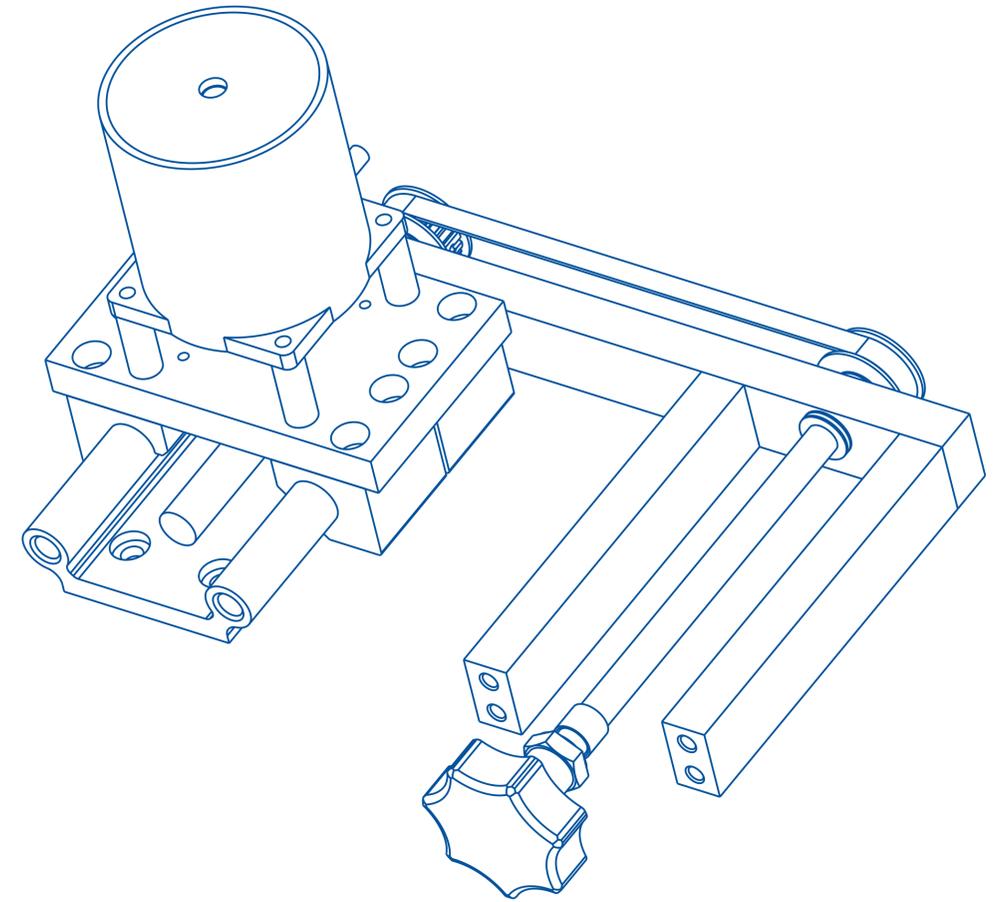
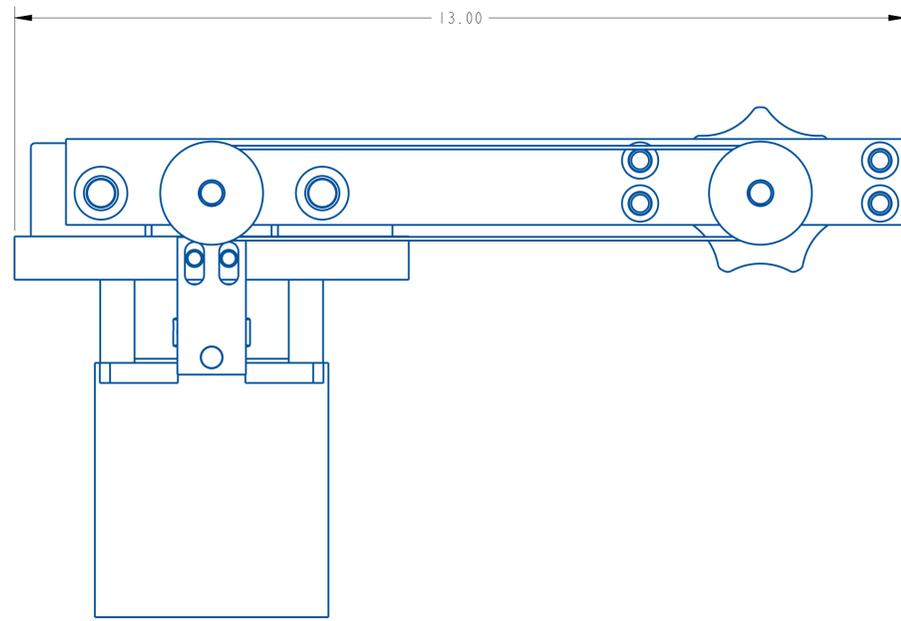
SURFACE FINISH 125
 BREAK ALL EDGES .005/015
 CORNER RADIUS .010/030

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

SCALE: 1/2
 DATE: 10-7-20
 DRW BY: ATT
 CHK BY: 05/28/2025-SEM
 APPR BY:

SLEEVER CUTTER ASSEMBLY

MAT'L	22480C-000	22480CD-000
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B	8-11-21	CHANGED PULLEY	TAZ
A	10-7-20	NEW DRAWING	ATT
REV	DATE	DESCRIPTION	BY

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

SCALE: 3/4
 DATE: 10-7-20
 DRW BY: ATT
 CHK BY: 05/28/2025-SEM
 APPR BY:

SLEEVE CUTTER ASSEMBLY

MAT'L	22480C-000	22480CD-000
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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
INDENTED BILL OF MATERIAL

Items: 22588-003 Thru 22588-003 Location: 01 QUADREL WHSE

Activity Codes: Active Items Only

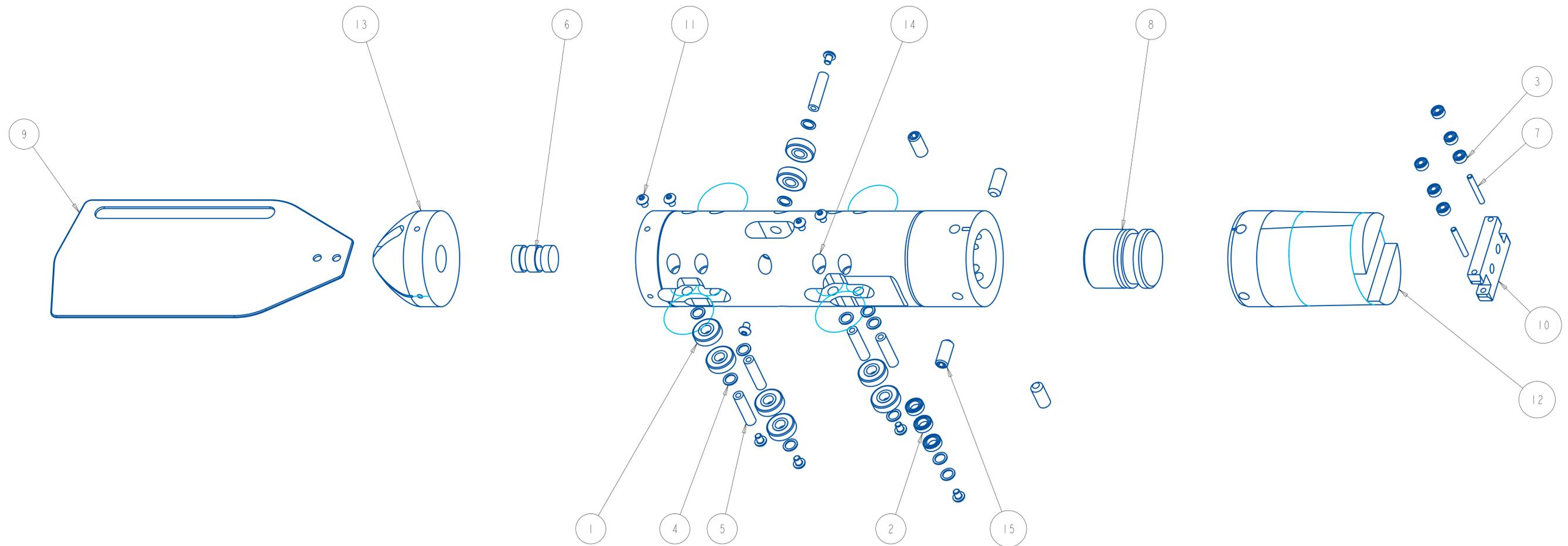
1 Levels With No Blow Through

No Selection On Basis Of Effectivity Date

No Selection On Basis Of Obsolete Date

Level	Seq	Component-Item	Component-Description	Loc	Opr	UOM	Scrap	Act	Stk	B/I	Qty On-Hand	Qty-Per-Parent
						LLC Draw	REV	P/M	Ctl	B/F	Qty-Allocated	Qty-On-Order
=====												
Parent Item: 22588-003 IONIZER KIT, SINGLE, BLOWER Loc: 01 LLC: 1												
USES KEYENCE SJ-L005F												
1	5	793059-000	IONIZER, COMPACT BLOWER		0	EA	.0	A	Y	N		1.000000
		"KEYENCE"	SJ-L005F	01	3			P	Y	N		
1	10	793059-001	I/O CABLE, 2m, FOR SJ-L005F		0	EA	.0	A	Y	N		1.000000
		"KEYENCE"	OP-88095	01	3			P	Y	N		
1	15	204012-001	MOUNTING BASE, XS SERIES		0	EA	.0	A	Y	N		1.000000
		"SWIVEL LINK"	AFSB-1XS	01	7			P	Y	N		
1	20	204013-002	KNUCKLE, XS SERIES		0	EA	.0	A	Y	N		3.000000
		"SWIVEL LINK"	AFSB-2XS	01	6			P	Y	N		
1	25	204016-000X	LINK, 2", INSPECT MOUNT, XS		0	EA	.0	A	Y	N		1.000000
		"SWIVEL LINK"	AFSB-3-2XS	01	5			P	Y	N		
1	30	204016-001X	LINK, 4", INSPECT MOUNT, XS		0	EA	.0	A	Y	N		1.000000
		"SWIVEL LINK"	AFSB-3-4XS	01	6			P	Y	N		
1	40	793059-003	MOUNTING BRACKET FOR SJ-L, 1/2		0	EA	.0	A	Y	N		1.000000
		"KEYENCE"	OP-88319	01	3			P	Y	N		

ITEM	QTY	PART NO.	DESCRIPTION	PARENT ITEM
1	16	111070-000	BALL BEARING, 22mmOD 8mmID 7mmW, SEALED	84240M-116
2	6	111082-000	BALL BEARING, 14mmOD 8mmID 4mmW SEALED	84240M-116
3	6	111091-000	BALL BEARING, 10mm OD X 4mm ID X 4mm W	84240M-116
4	24	841798-000	HARDENED FLAT WASHER	84240M-116
5	10	A24063-002	BEARING SHAFT	84240M-116
6	1	A24522-000	STUD	84240M-116
7	2	A25258-002	SHAFT	84240M-116
8	1	A25287-004	STUD	84240M-116
9	1	B22560-116	MANDREL INFEED PLATE, 116mm	84240M-116
10	1	B22605-002	BEARING MOUNTING BLOCK	84240M-116
11	20	CSFF56		84240M-116
12	1	D23392-116	MANDREL - BOTTOM 116mmLF X 102mmCL	84240M-116
13	1	D23542-116	SLEEVE MANDREL - TOP 116mmLF	84240M-116
14	1	D23543-116	SLEEVE MANDREL - MIDDLE 116mmLF	84240M-116
15	4	SYE124		84240M-116



REV	DATE	DESCRIPTION	BY
A	Nov-12-25	NEW DRAWING	TAZ

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XX ± .01
XXX ± .005
ANGLES ± 30°

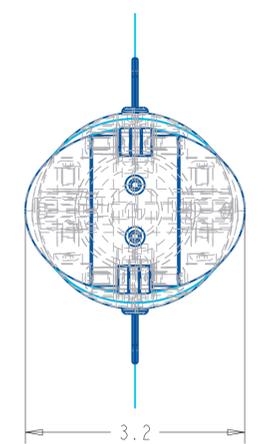
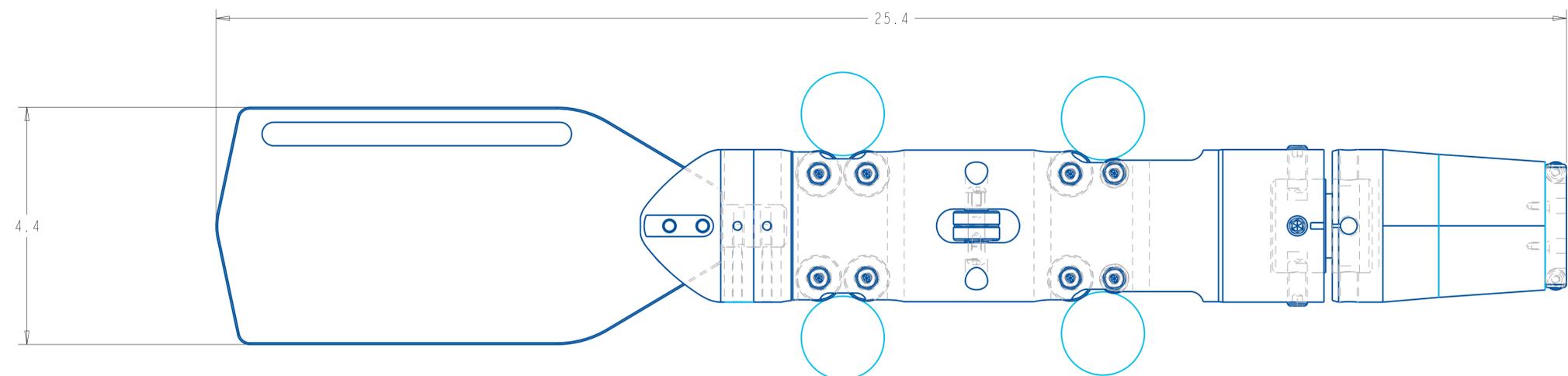
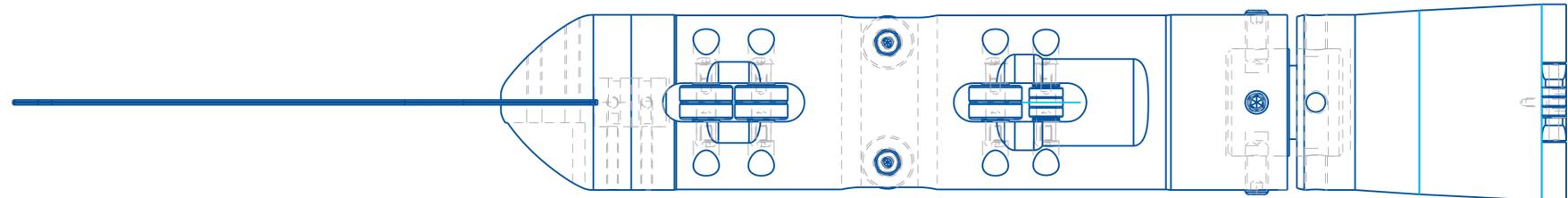
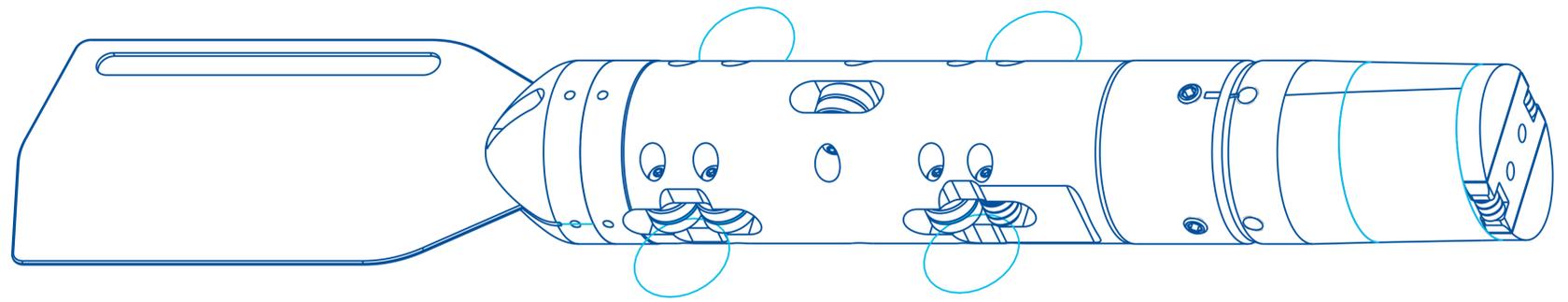
SURFACE FINISH 125
BREAK ALL EDGES .005/.015
CORNER RADIUS .010/.030

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

SCALE: 0.625
DATE: Nov-12-25
DRW BY: TAZ
CHK BY:
APPR BY:

MANDREL, 116mm LAY FLAT X 102mm CUT LENGTH

MAT'L 84240M-116 84240M-116



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 X ± .1
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 ANGLES ± 30°
 SURFACE FINISH 125
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 ALL ANGLES ARE 90°

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

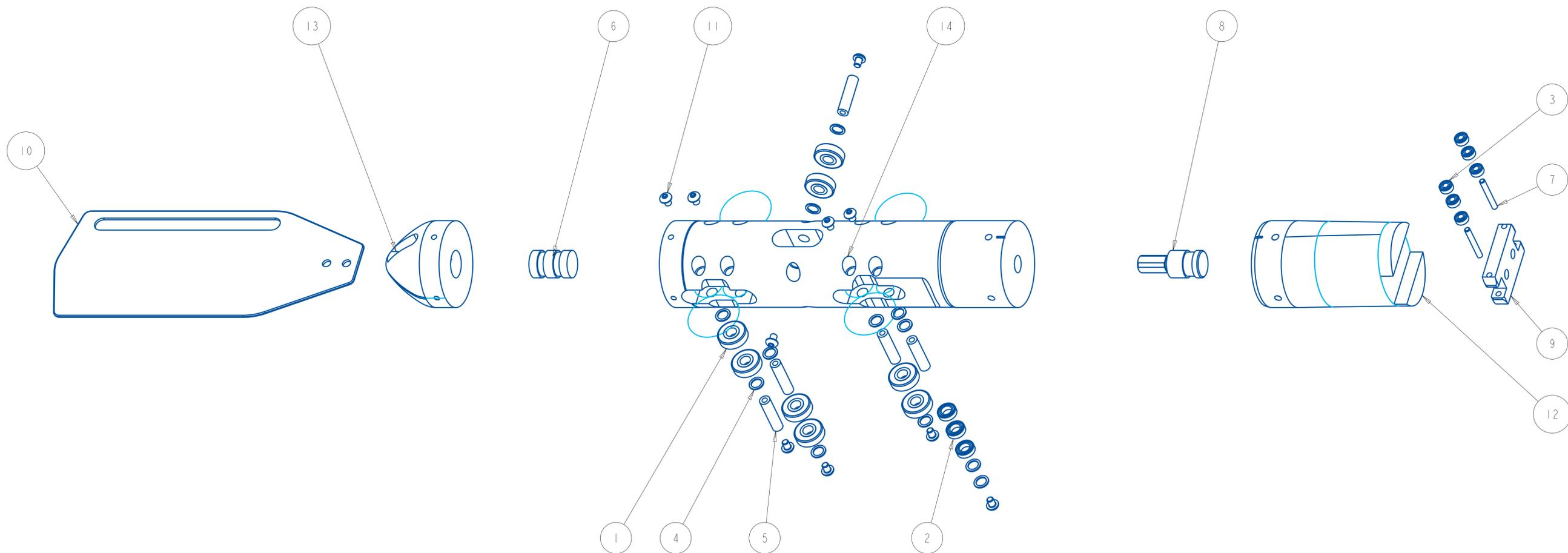
MANDREL, 116mm LAY FLAT X 102mm CUT LENGTH

REV	DATE	DESCRIPTION	BY
A	Nov-12-25	NEW DRAWING	TAZ

SCALE: 0.750
 DATE: Nov-12-25
 DRW BY: TAZ
 CHK BY:
 APPR BY:

MAT'L 84240M-116 84240M-116

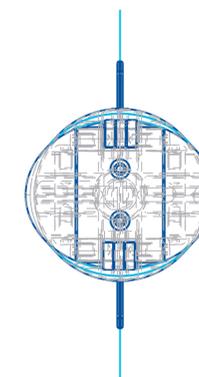
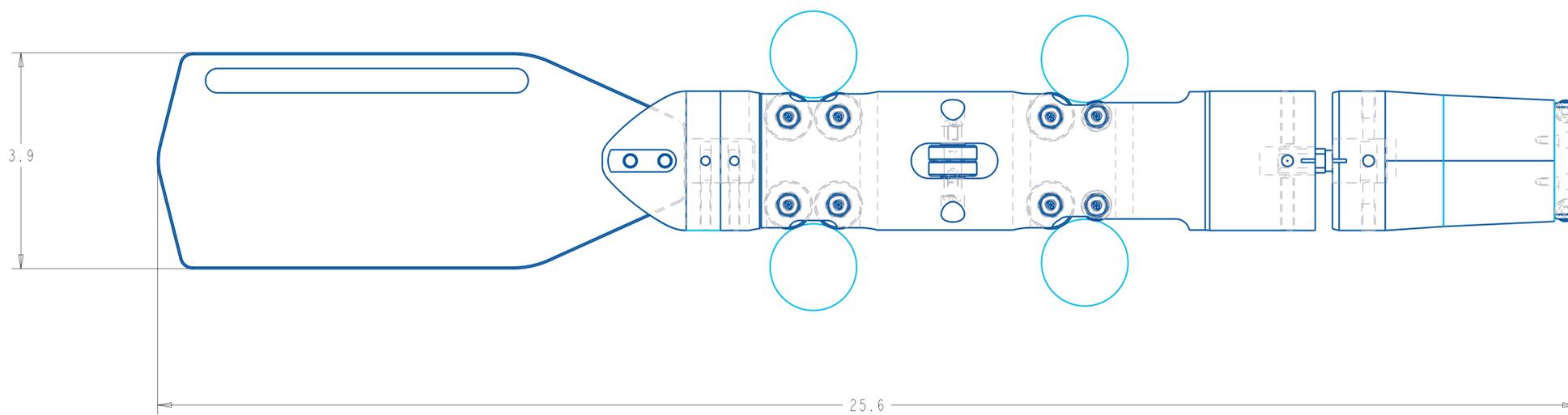
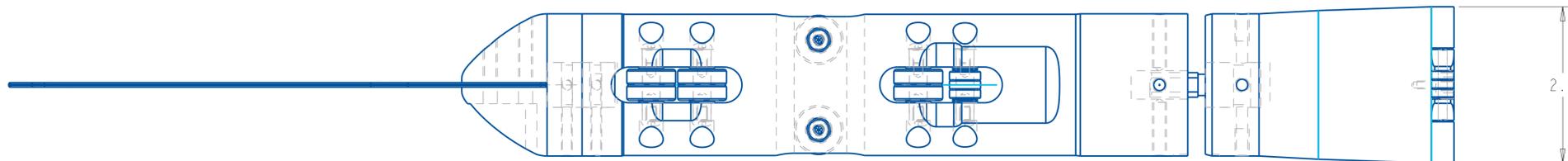
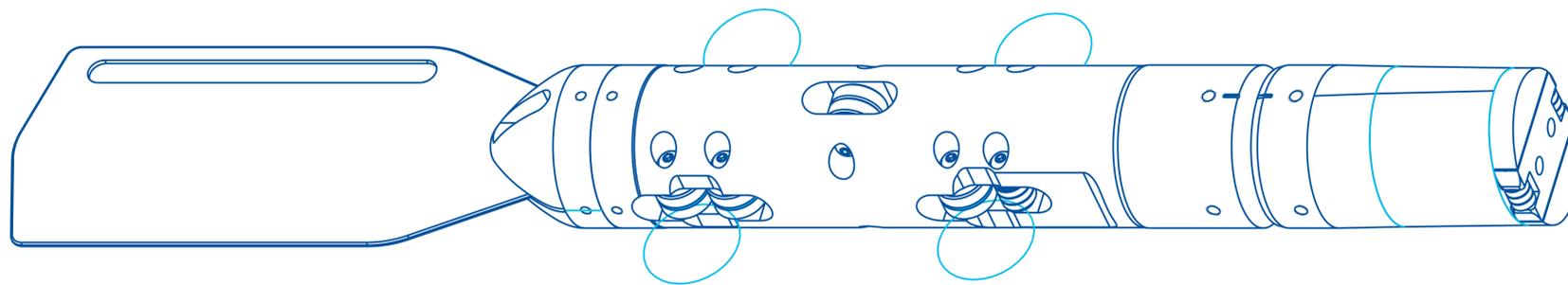
ITEM	QTY	PART NO.	DESCRIPTION	PARENT ITEM
1	16	111070-000	BALL BEARING, 22mmOD 8mmID 7mmW, SEALED	84240M-102
2	6	111082-000	BALL BEARING, 14mmOD 8mmID 4mmW SEALED	84240M-102
3	6	111091-000	BALL BEARING, 10mm OD X 4mm ID X 4mm W	84240M-102
4	24	841798-000	HARDENED FLAT WASHER	84240M-102
5	10	A24063-002	BEARING SHAFT	84240M-102
6	1	A24522-000	STUD	84240M-102
7	2	A25258-002	SHAFT	84240M-102
8	1	A25287-009	STUD	84240M-102
9	1	B22605-001	BEARING MOUNTING BLOCK	84240M-102
10	1	B22878-102	MANDREL INFEED PLATE, 102mmLF	84240M-102
11	20	CSFF56		84240M-102
12	1	D23392-102	MANDREL - BOTTOM 102mmLF X 102mmCL	84240M-102
13	1	D24769-102	SLEEVE MANDREL - TOP 102mmLF	84240M-102
14	1	D24770-102	SLEEVE MANDREL - MIDDLE 102mmLF	84240M-102



REV	DATE	DESCRIPTION	BY
A	Nov-12-25	NEW DRAWING	TAZ

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UNLESS OTHERWISE SPECIFIED DIMENSIONAL TOLERANCE	<p>QUADREL LABELING SYSTEMS</p> <p>7670 JENTHER DRIVE MENTOR, OHIO 44060 (440) 602-4700</p>	<p>SCALE: 0.625</p> <p>DATE: Nov-12-25</p> <p>DRW BY: TAZ</p> <p>CHK BY:</p> <p>APPR BY:</p>
<p>x ± .1</p> <p>xx ± .01</p> <p>xxx ± .005</p> <p>ANGLES ± .30°</p> <p>SURFACE FINISH 125</p> <p>BREAK ALL EDGES .005/0.15</p> <p>CORNER RADIUS .010/0.30</p>	<p>MANDREL, 102mm LAY FLAT X 102mm CUT LENGTH</p>	<p>MAT'L 84240M-102</p>



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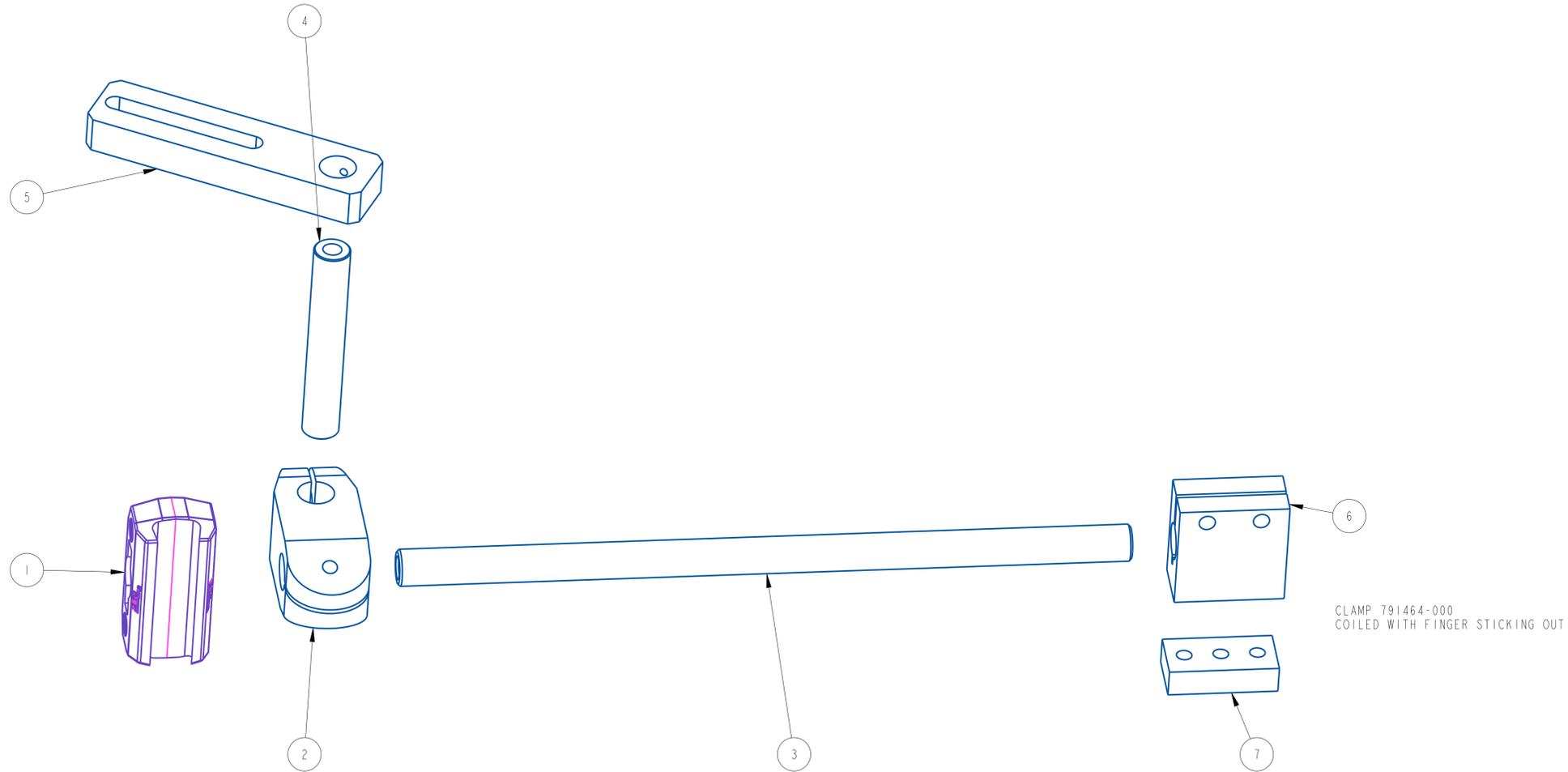
UNLESS OTHERWISE SPECIFIED
 DIMENSIONAL TOLERANCE
 .x ± .1
 .xx ± .01
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 ANGLES ± .30°
 SURFACE FINISH 125
 BREAK ALL EDGES .005/0.15
 CORNER RADIUS .010/0.30
 ALL ANGLES ARE 90°

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

SCALE: 0.750
 DATE: Nov-12-25
 DRW BY: TAZ
 CHK BY:
 APPR BY:

MANDREL, 102mm LAY FLAT X 102mm CUT LENGTH
 MAT'L 84240M-102 84240M-102

ITEM	QTY	PART NO.	DESCRIPTION	PARENT ITEM
1	1	791460-000	CLAMP RAIL, ROUND HOLE	22823-000
2	1	792067-000	1/2" ROD CROSS CLAMP	22823-000
3	1	A21198-002	ADJUSTMENT ROD	22823-000
4	1	A21198-300	ADJUSTMENT ROD	22823-000
5	1	A23017-500	MOUNTING BRACKET	22823-000
6	1	A23463-500	HOLDER	22823-000
7	1	A23463-501	HOLDER BOTTOM PLATE	22823-000



REV	DATE	DESCRIPTION	BY
A	9-21-20	NEW DRAWING	ATT

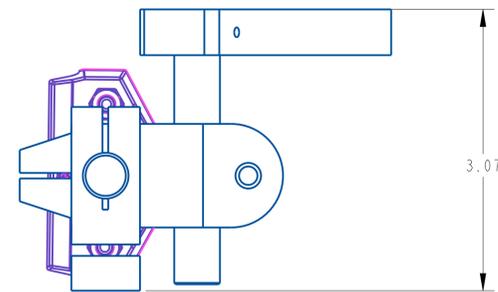
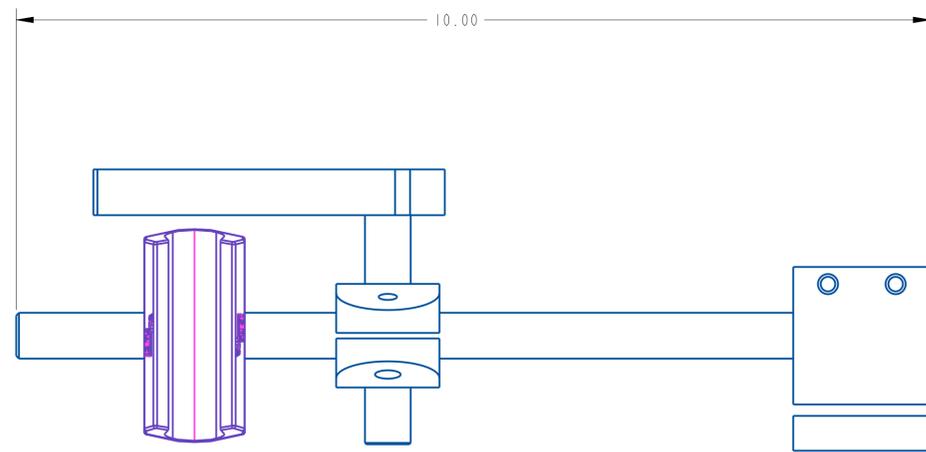
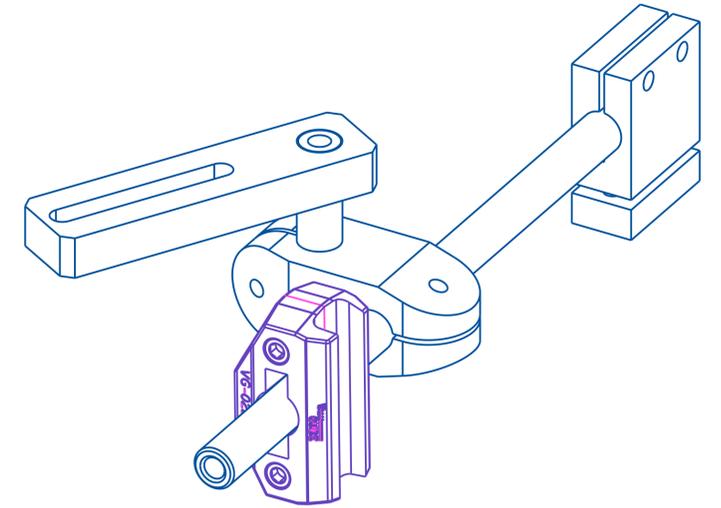
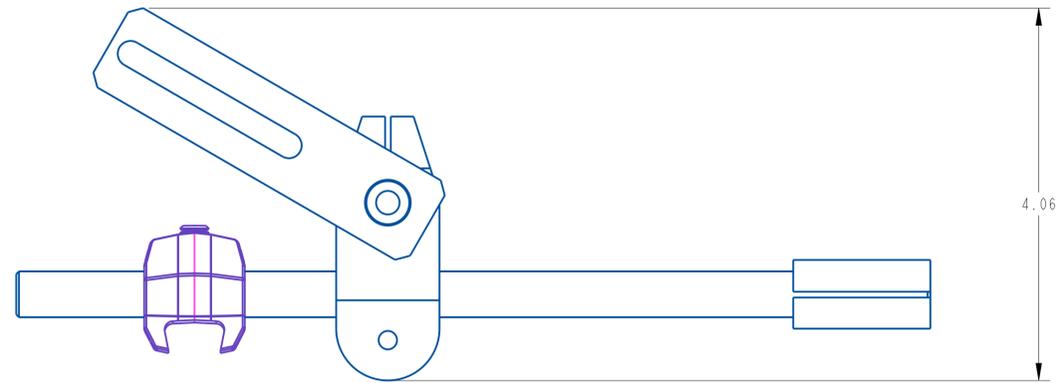
THIS IS A PRO-ENGINEER DOCUMENT AND MAY NOT BE MODIFIED MANUALLY

UNLESS OTHERWISE SPECIFIED DIMENSIONAL TOLERANCE .X ± .1 .XX ± .01 .XXX ± .005 ANGLES ± 30°	QUADREL LABELING SYSTEMS 7670 JENTHER DRIVE MENTOR, OHIO 44060 (440) 602-4700	SCALE: 1/1 DATE: 9-21-20 DRW BY: ATT CHK BY: 07/18/2024-SEM APPR BY:
--	---	--

SLEEVE STOP

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

MAT'L



REV	DATE	DESCRIPTION	BY
A	9-21-20	NEW DRAWING	ATT

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

UNLESS OTHERWISE SPECIFIED DIMENSIONAL TOLERANCE	.XX ± .01 .XXX ± .005 ANGLES ± .30° SURFACE FINISH 125 BREAK ALL EDGES .005/ .015 CORNER RADIUS .010/ .030 ALL ANGLES ARE 90°	QUADREL LABELING SYSTEMS 7670 JENTHER DRIVE MENTOR, OHIO 44060 (440) 602-4700	SCALE: 1/1 DATE: 9-21-20 DRW BY: ATT CHK BY: 07/18/2024-SEM APPR BY:
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MAT'L	SLEEVE STOP	22823-000
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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.

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.

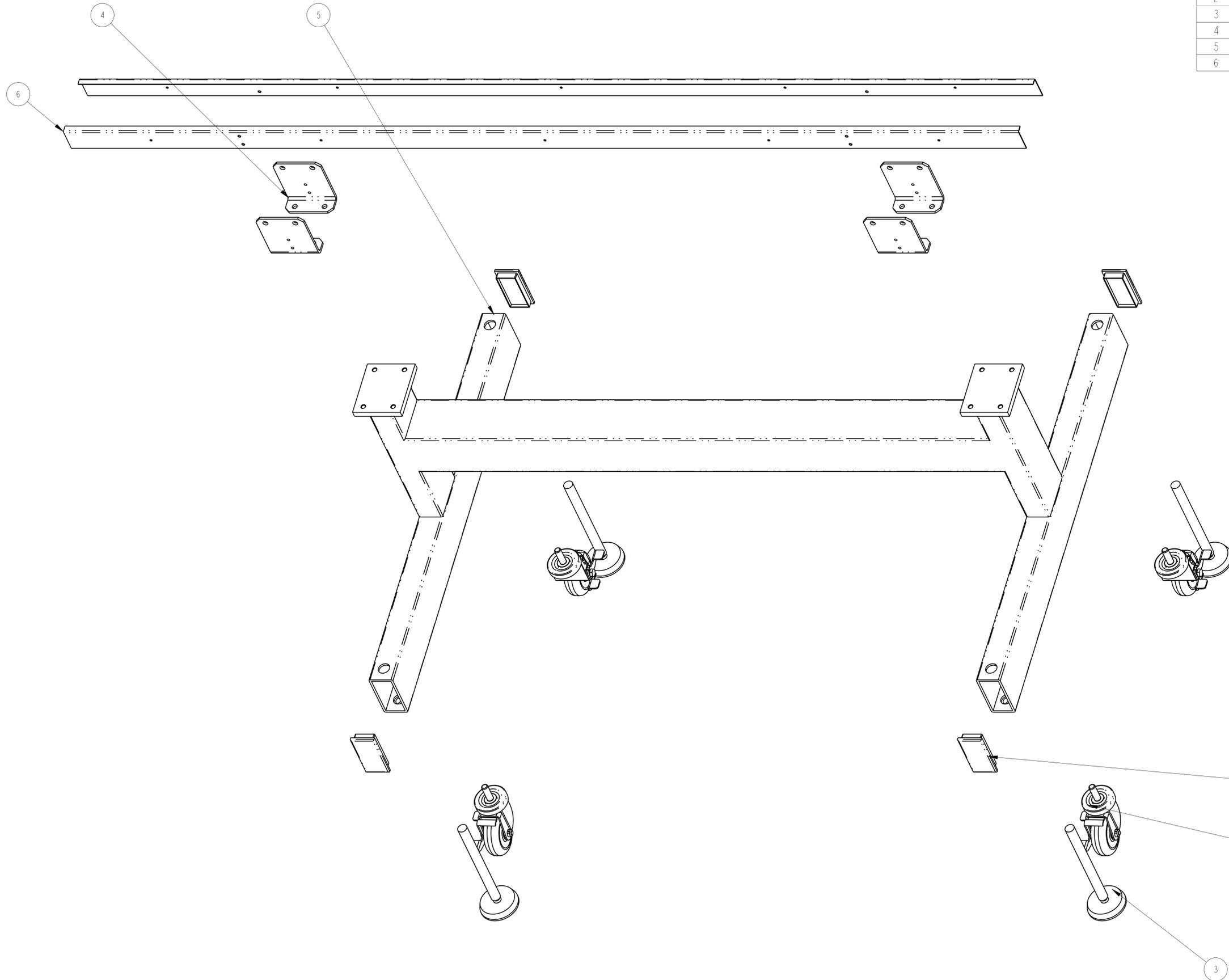
SET-UP AND ADJUSTMENTS:

- 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
1	4	729006-000	CAP INSERT FOR 2 X 4 TUBE
2	4	791449-000	SWIVEL CASTER
3	4	793020-000	LEVELING MOUNT
4	4	B22787-000	CONVEYOR RISER
5	1	D24424-034S	WELDED FRAME ASSEMBLY
6	2	D24425-000	WIRE COVER



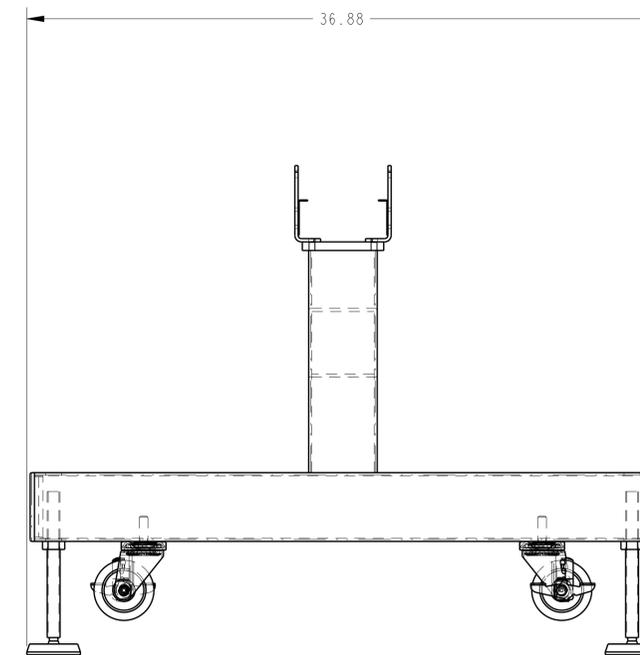
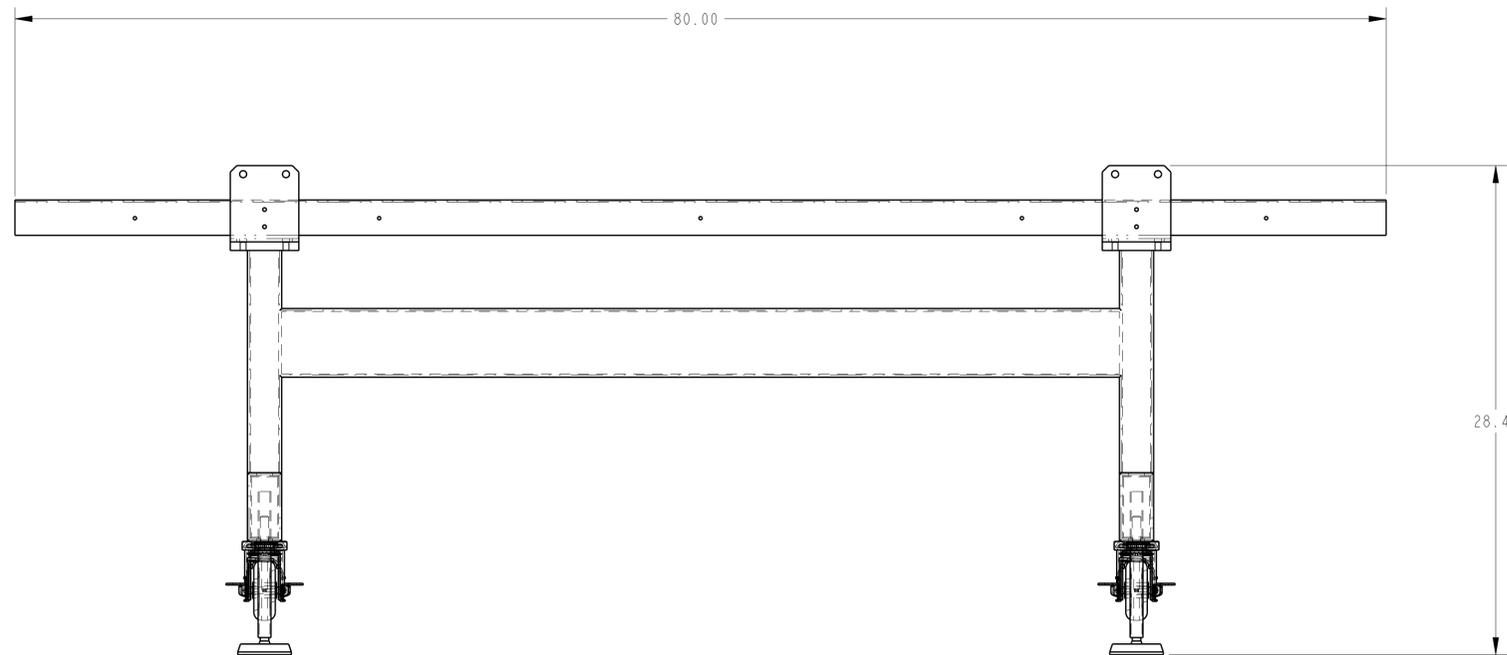
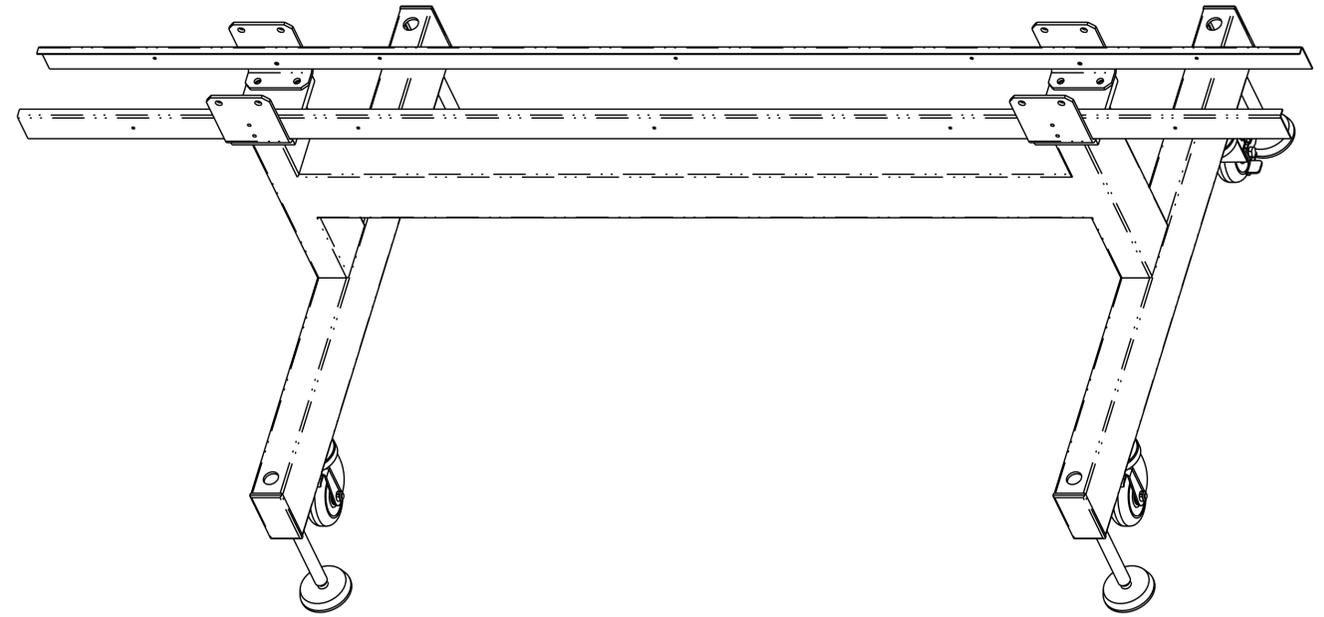
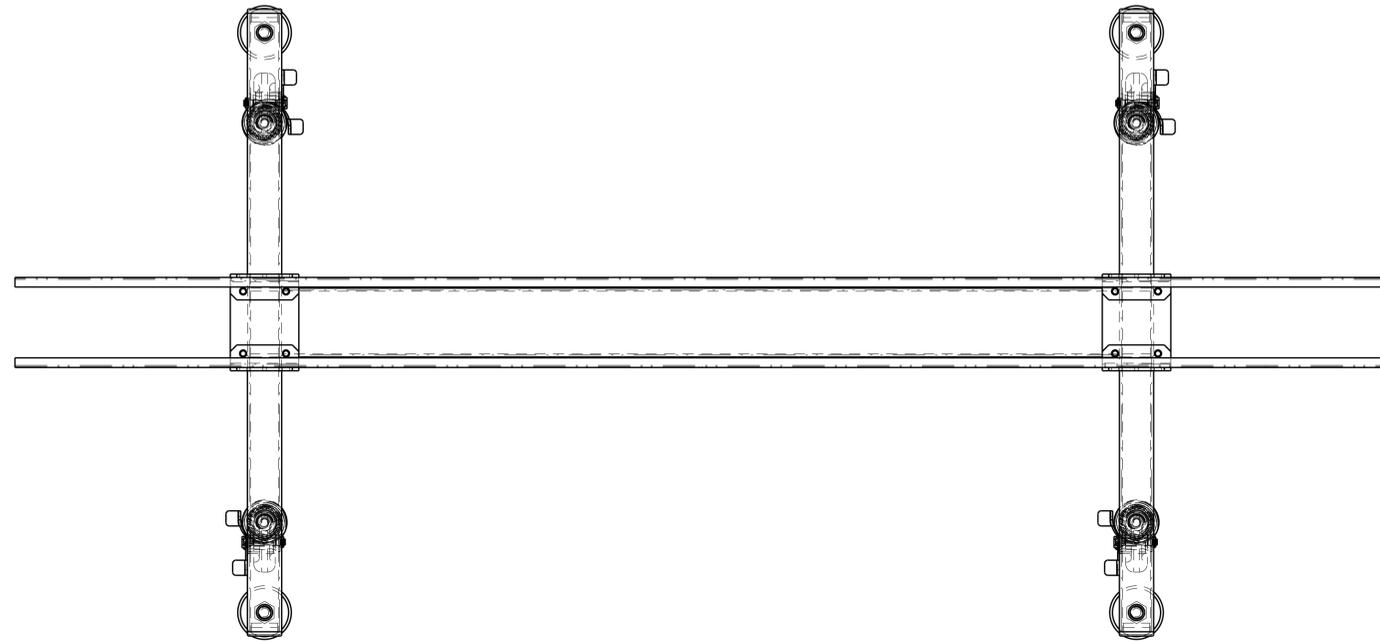
REV	DATE	DESCRIPTION
A	8-13-12	NEW DRAWING

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

UNLESS OTHERWISE SPECIFIED DIMENSIONAL TOLERANCE X ± .01 XX ± .005 ANGLES ± .00° SURFACE FINISH .125 BREAK ALL EDGES .005/.015 CORNER RADIUS .010/.030 ALL ANGLES ARE 90°	QUADREL LABELING SYSTEMS 7670 JENTHER DRIVE MENTOR, OHIO 44060 (440) 602-4700	SCALE: 1/4 DATE: 8-13-12 DRW BY: MAW CHK BY: MAW APPR BY: MAW
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CONVEYOR MTG FRAME

MAT'L	22529-034S	D24460-000
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REV	DATE	DESCRIPTION
A	8-13-12	NEW DRAWING

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UNLESS OTHERWISE SPECIFIED
 DIMENSIONAL TOLERANCE
 XX ± .1
 XXX ± .005
 ANGLES ± .005

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: 3/16
 DATE: 8-13-12
 DRW BY: MAW
 CHK BY: MAW
 APPR BY: MAW

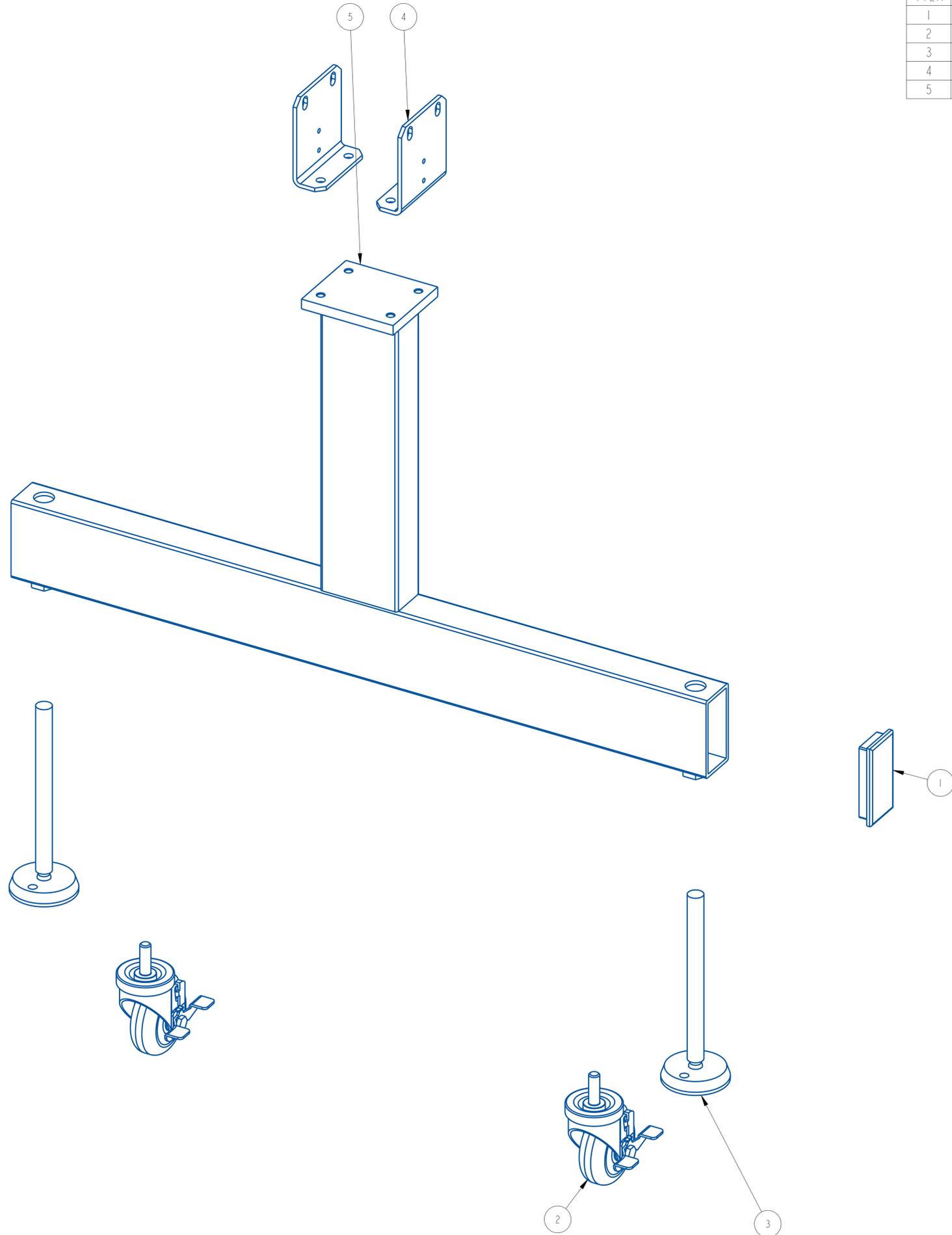
CONVEYOR MTG FRAME

MAT'L 22529-034S D24460-000

NOTES:

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

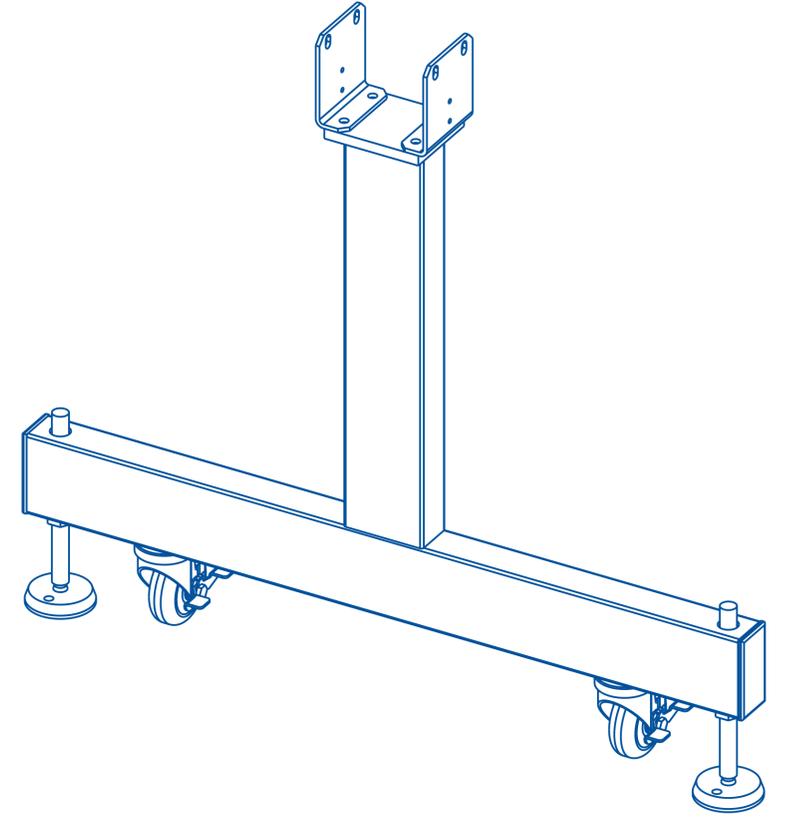
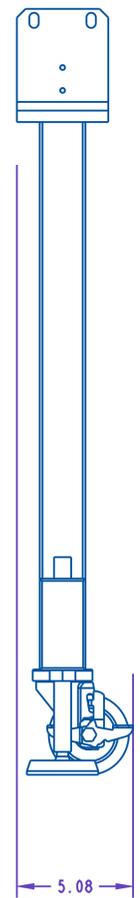
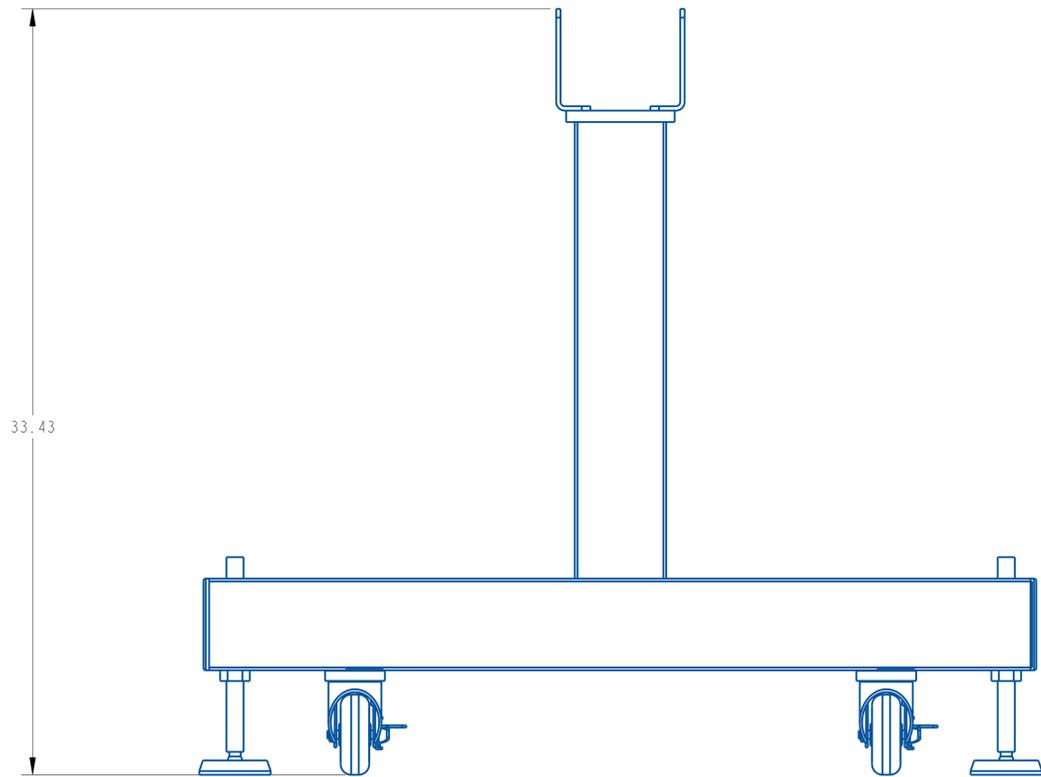
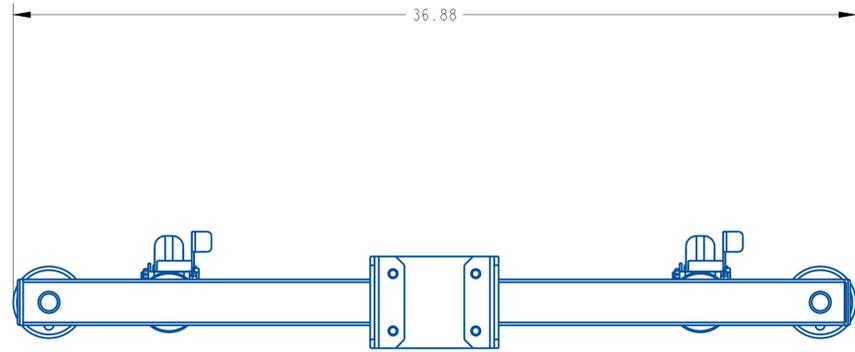
ITEM	QTY	PART NO.	DESCRIPTION	PARENT ITEM
1	2	729006-000	CAP INSERT FOR 2 X 4 TUBE	22614-034S
2	2	791449-000	SWIVEL CASTER	22614-034S
3	2	793020-000	LEVELING MOUNT	22614-034S
4	2	B22787-000	CONVEYOR RISER	22614-034S
5	1	D25009-034S	WELDED FRAME ASSEMBLY	22614-034S



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

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UNLESS OTHERWISE SPECIFIED DIMENSIONAL TOLERANCE X ± .1 XX ± .01 XXX ± .005 ANGLES ± 30°	7670 JENTHER DRIVE MENTOR, OHIO 44060 (440) 602-4700	SCALE: 3/8
		DATE: 10-22-19
		DRW BY: ATT
		CHK BY: 05/20/2024-SEM
CONVEYOR SUPPORT		APPR BY:
MATERIAL		22614-034S



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

THIS IS A PRO-ENGINEER DOCUMENT AND MAY NOT BE MODIFIED MANUALLY
QUADREL LABELING SYSTEMS
 7670 JENTHER DRIVE
 MENTOR, OHIO 44060
 (440) 602-4700

SCALE:	1/4
DATE:	10-22-19
DRW BY:	ATT
CHK BY:	05/20/2024-SEM
APPR BY:	

CONVEYOR SUPPORT

MAT'L	22614-034S
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ASSEMBLY TITLE: NON-INTEGRATED CONVEYOR

GENERAL FUNCTION:

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

SET-UP AND ADJUSTMENTS:

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

MAINTENANCE:

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

TROUBLESHOOTING:

PROBLEM

- Excessive Noise

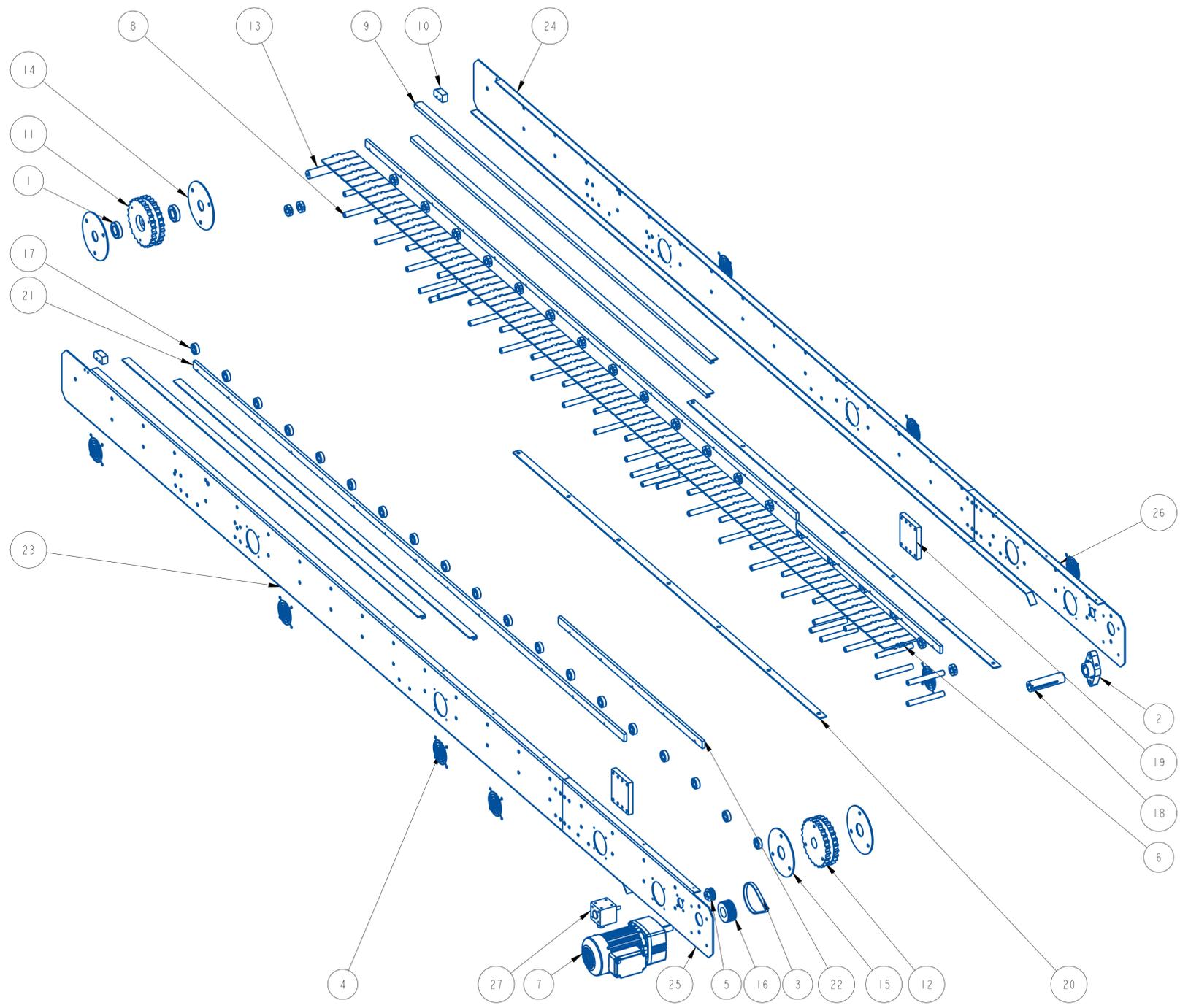
- Chain too loose

- Uneven wear on sprockets.
- Shaft not running concentric

WHAT TO DO

- Realign sprocket.
- Check if chain and sprockets are lubricated. If dry, lubricate as discussed above.
- Slide gear motor downward to create more tension on chain.
- Realign sprockets.
- Replace flange bearing.





ITEM	QTY	PART NO.	DESCRIPTION	PARENT ITEM
1	2	111064-000	BEARING, BANDED THRUST BALL	84240C-000
2	1	171033-001	BEARING	84240C-000
3	1	192571-000	TIMING BELT 150XL037	84240C-000
4	8	262047-000	FAN GUARD	84240C-000
5	1	351166-000	TIMING PULLEY	84240C-000
6	90	361088-001	TABLE TOP CHAIN LINK	84240C-000
7	1	413016-000	GEARMOTOR 3/8HP-57RPM AC	84240C-000
8	44	791838-000	SPACER	84240C-000
9	4	792612-000_109-50	HIGH TEMPERATURE WEAR STRIP, FLAT BAR CLIP-ON	84240C-000
10	2	A22118-000	ANTI STATIC CHAIN BELT GUIDE	84240C-000
11	1	A22125-000	DRIVE SPROCKET	84240C-000
12	1	A22125-003	DRIVE SPROCKET	84240C-000
13	1	A23098-000	IDLER SHAFT	84240C-000
14	2	A23857-000	IDLER PULLEY FLANGE	84240C-000
15	2	A23857-001	IDLER PULLEY FLANGE	84240C-000
16	1	A25119-500	DRIVE SHAFT PULLEY	84240C-000
17	40	A25508-000	COLLAR, 5/8 IN. ID ONE-PIECE CLAMP	84240C-000
18	1	B20237-500	CONVEYOR DRIVE SHAFT	84240C-000
19	2	B22558-004	SPLICE PLATE	84240C-000
20	2	B23205-002	WEAR STRIP	84240C-000
21	2	D23417-000	TABLE TOP CHAIN GUIDE PLATE	84240C-000
22	2	D23417-008	TABLE TOP CHAIN GUIDE PLATE	84240C-000
23	1	D24421-83998L	CONVEYOR SIDE WALL	84240C-000
24	1	D24421-83998R	CONVEYOR SIDE WALL	84240C-000
25	1	D25008-442	CONVEYOR EXTENTION SIDE WALL	84240C-000
26	1	D25008-443	CONVEYOR EXTENTION SIDE WALL	84240C-000
27	1	ENCODER_CUBE	CUBE ENCODER	84240C-000

NOT SHOWN:
 B22182-101 STAINLESS STEEL GUIDE RAIL
 C21418-101 SLEEVE SUPPORT RAIL
 C21418-102 SLEEVE SUPPORT RAIL

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

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UNLESS OTHERWISE SPECIFIED
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 .XX ± .01
 .XXX ± .005
 ANGLES ± 30°

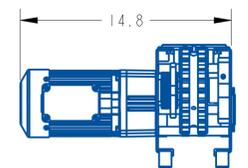
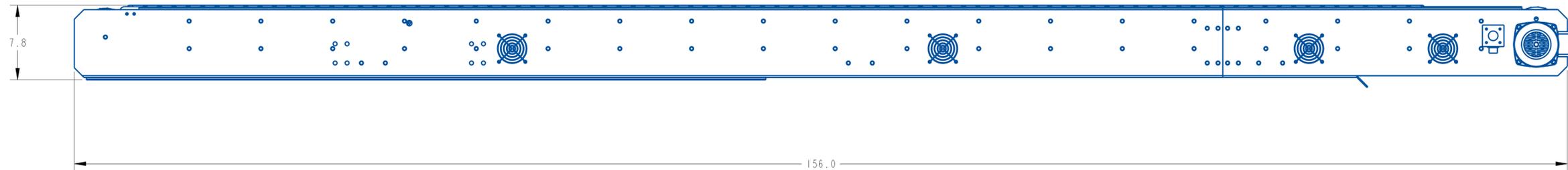
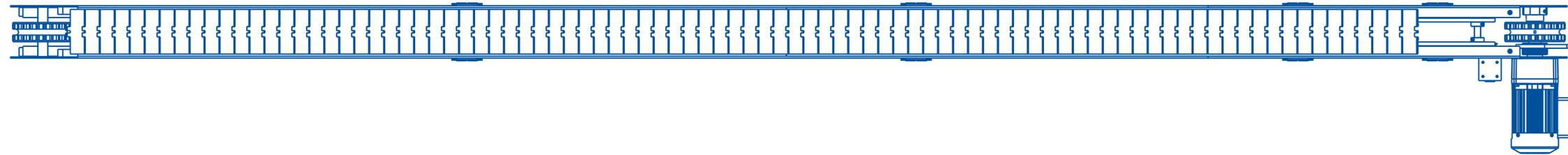
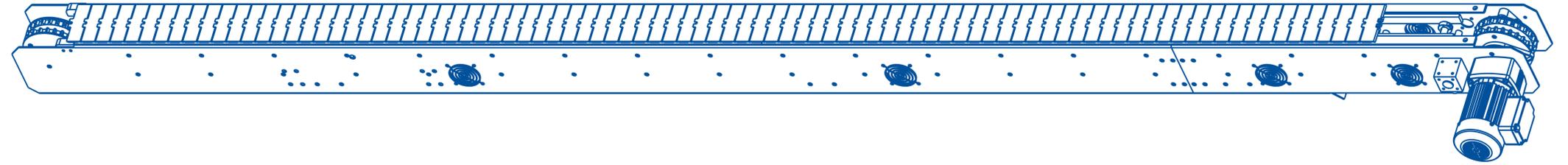
SURFACE FINISH 125
 BREAK ALL EDGES .005/0.15
 CORNER RADIUS .010/0.30

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

SCALE: 1/8
 DATE: Nov-07-25
 DRW BY: TAZ
 CHK BY: 11/17/2025-SEM
 APPR BY:

13' HEAT RESISTANT CONVEYOR

MAT'L	84240C-000	84240C-000
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REV	DATE	DESCRIPTION	BY
A	Nov-07-25	NEW DRAWING	TAZ

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

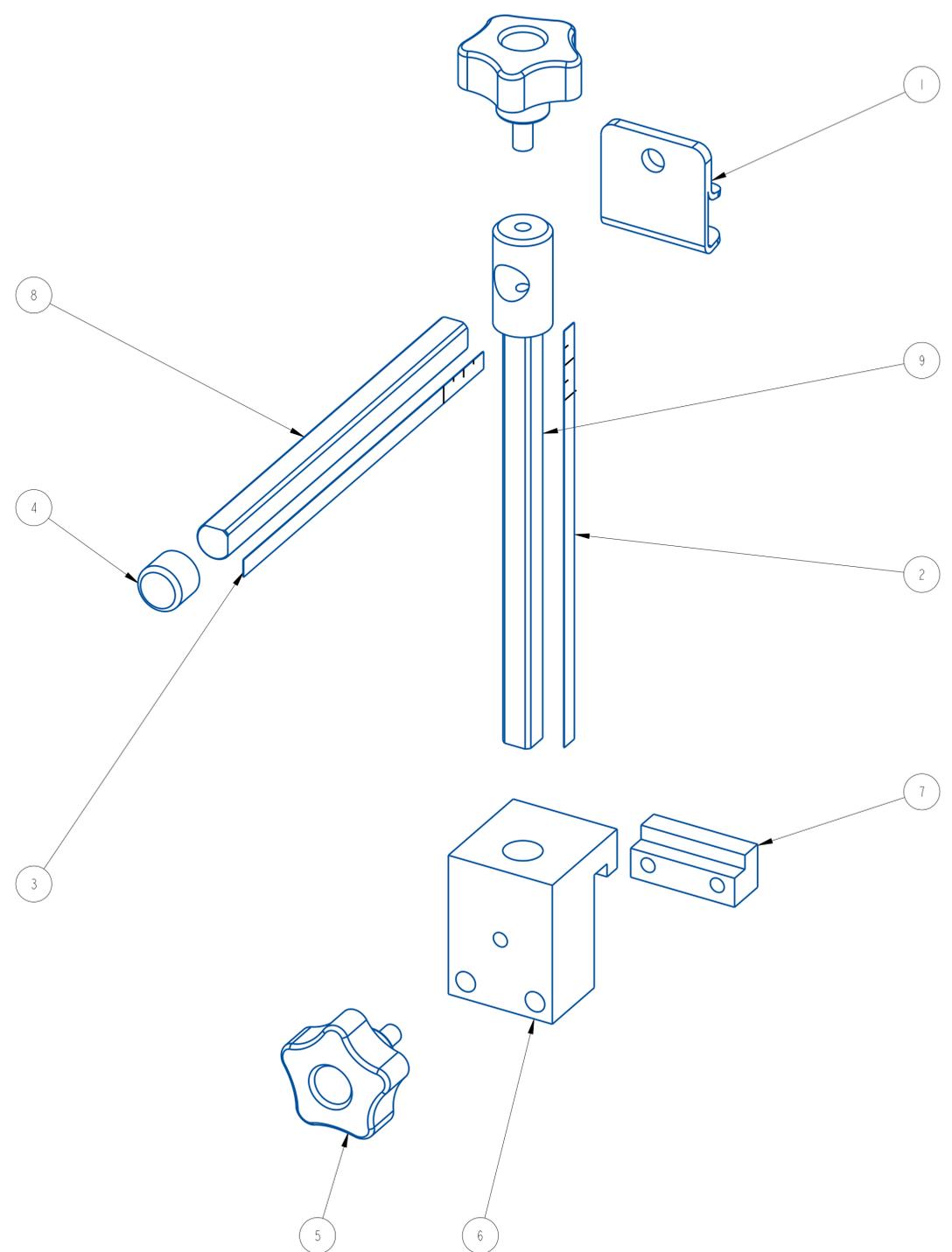
QUADREL LABELING SYSTEMS
7670 JENTHER DRIVE
MENTOR, OHIO 44060
(440) 602-4700

SCALE: 5/32
DATE: Nov-07-25
DRW BY: TAZ
CHK BY: 11/17/2025-SEM
APPR BY:

13' HEAT RESISTANT CONVEYOR

MAT'L 84240C-000 84240C-000

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



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

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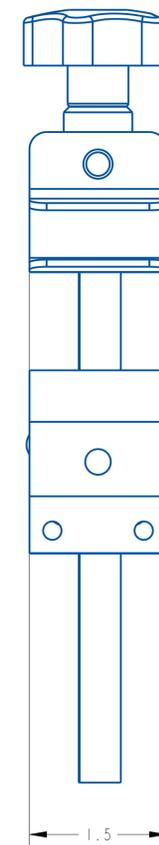
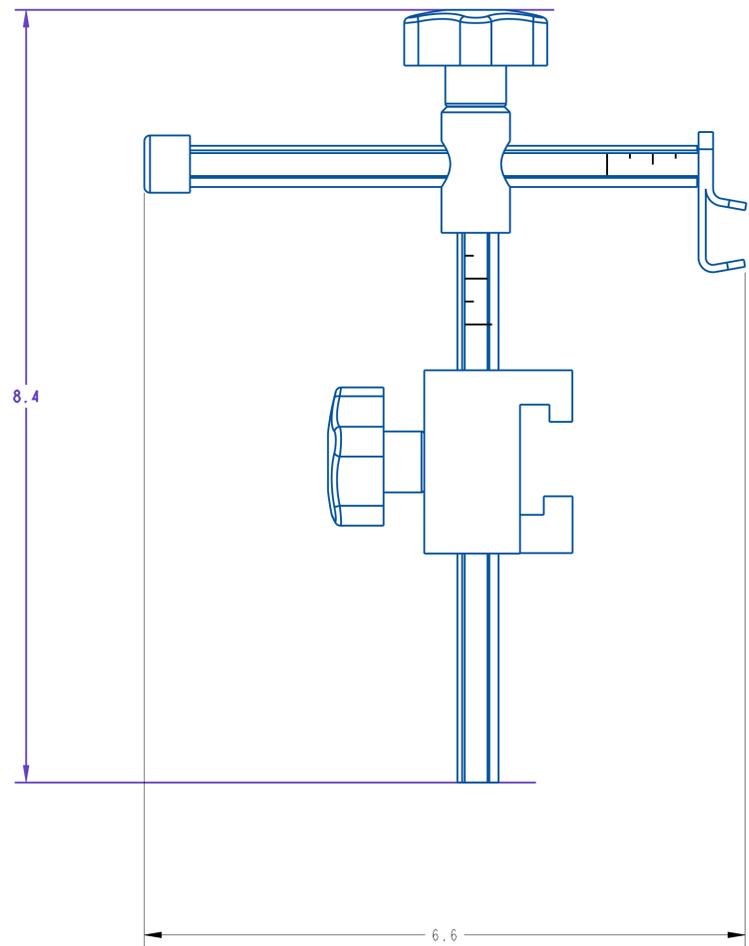
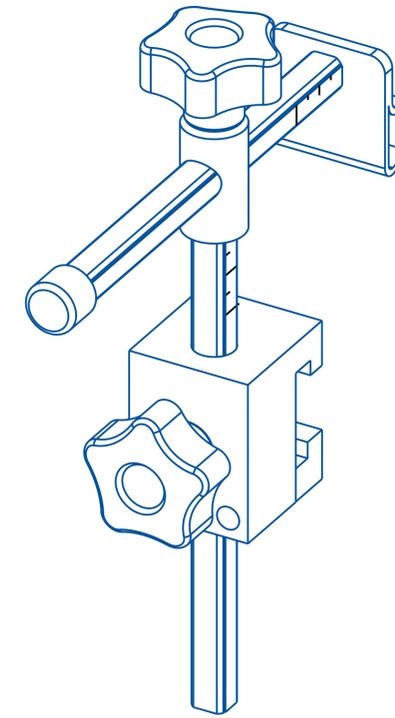
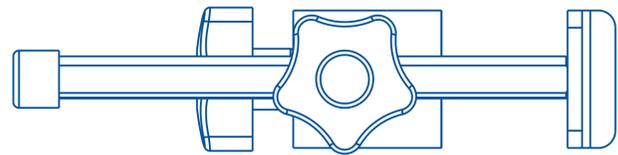
QUADREL LABELING SYSTEMS
 7670 JENTHER DRIVE
 MENTOR, OHIO 44060
 (440) 602-4700

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

RAIL KIT WITH SCALES

MAT'L: 22435-034

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



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

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UNLESS OTHERWISE SPECIFIED
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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

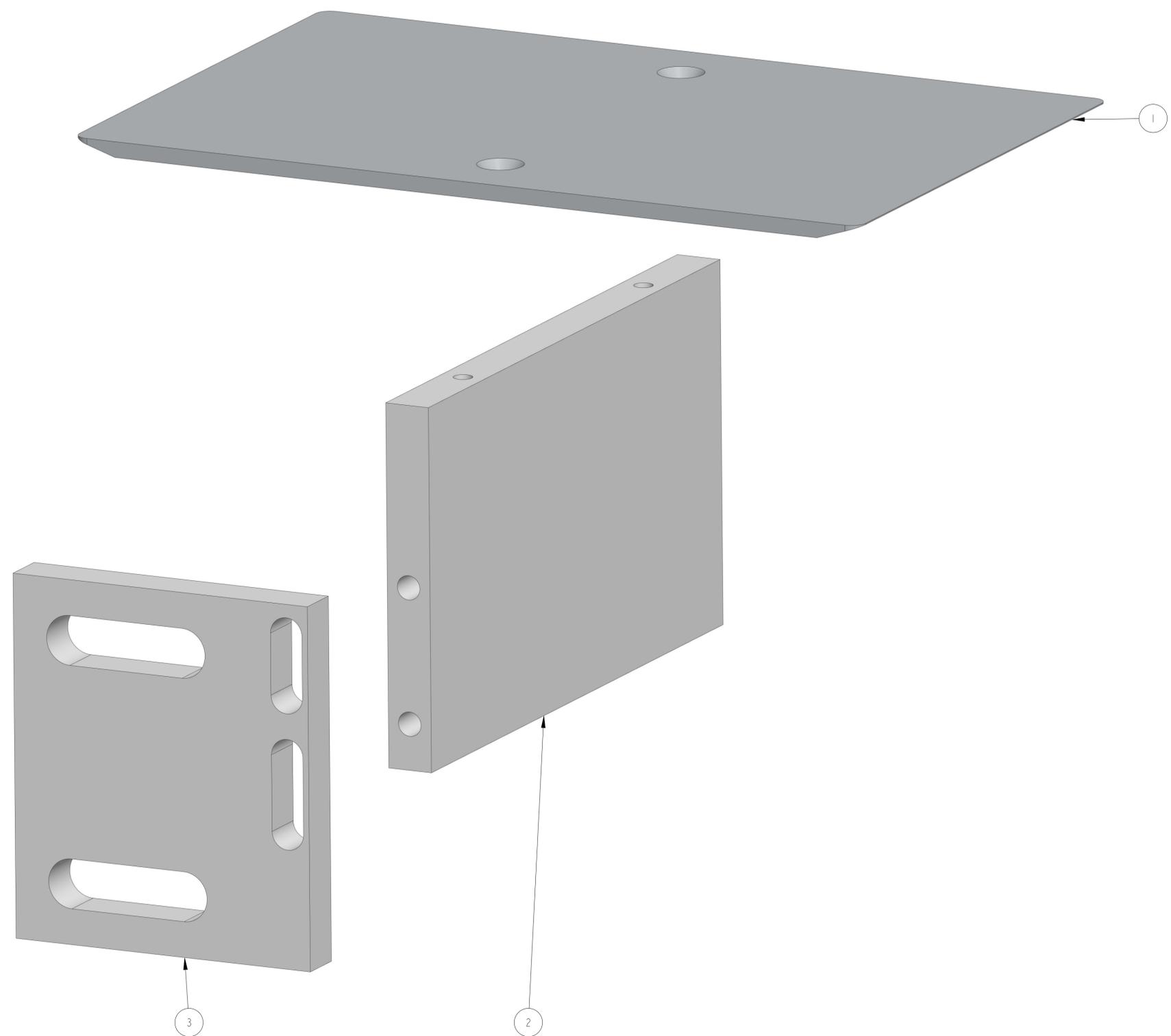
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 CHK BY: 08/28/2025-SEM
 APPR BY:

RAIL KIT WITH SCALES

MAT'L

22435-034

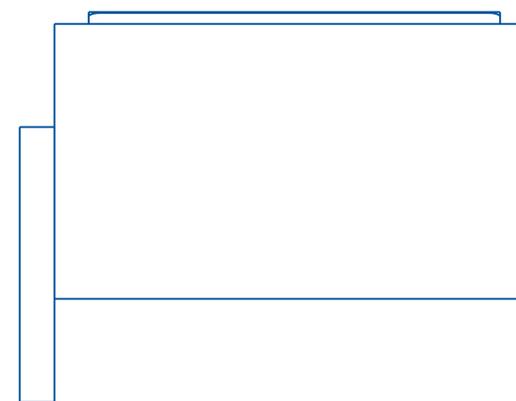
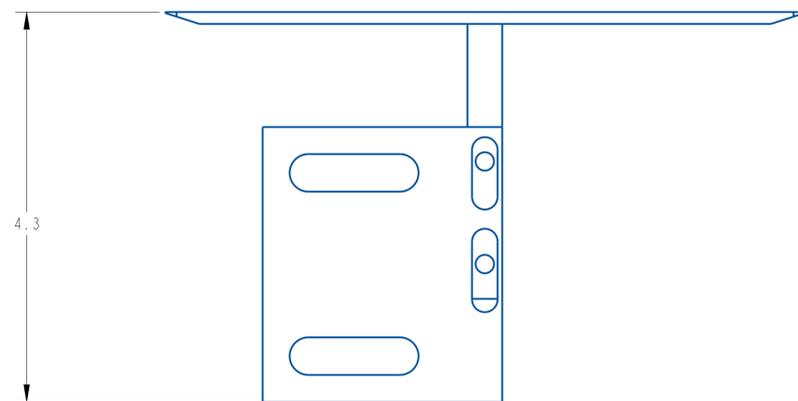
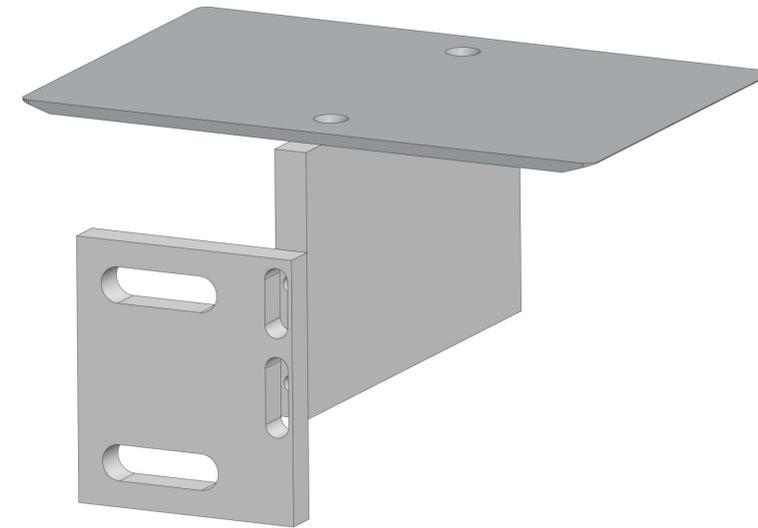
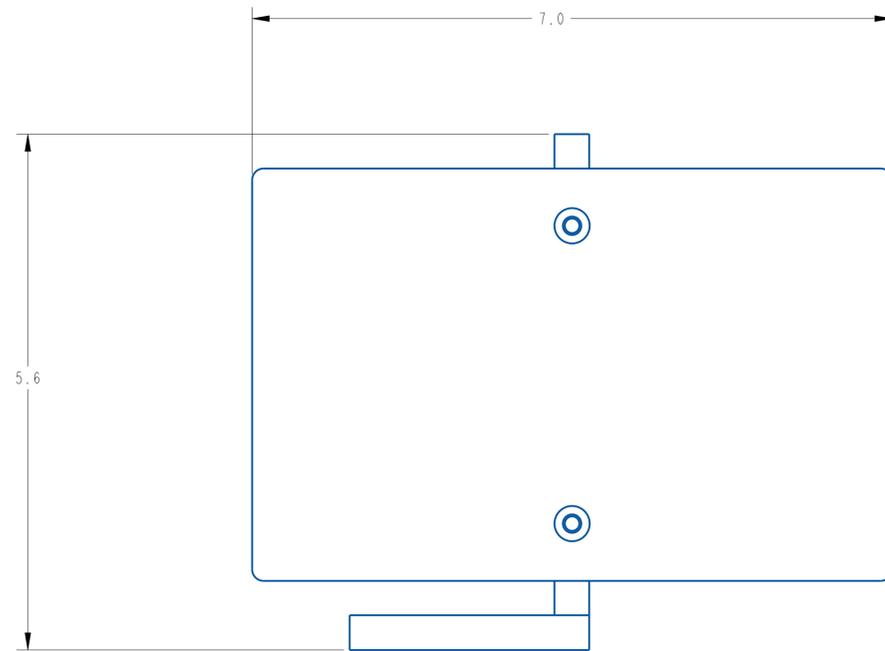
ITEM	QTY	PART NO.	DESCRIPTION	PARENT ITEM
1	1	B21924-100	TRANSFER PLATE	21180-100_RH
2	1	B21925-005	TRANSFER SUPPORT PLATE	21180-100_RH
3	1	B21926-003	TRANSFER CONNECTING PLATE	21180-100_RH



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

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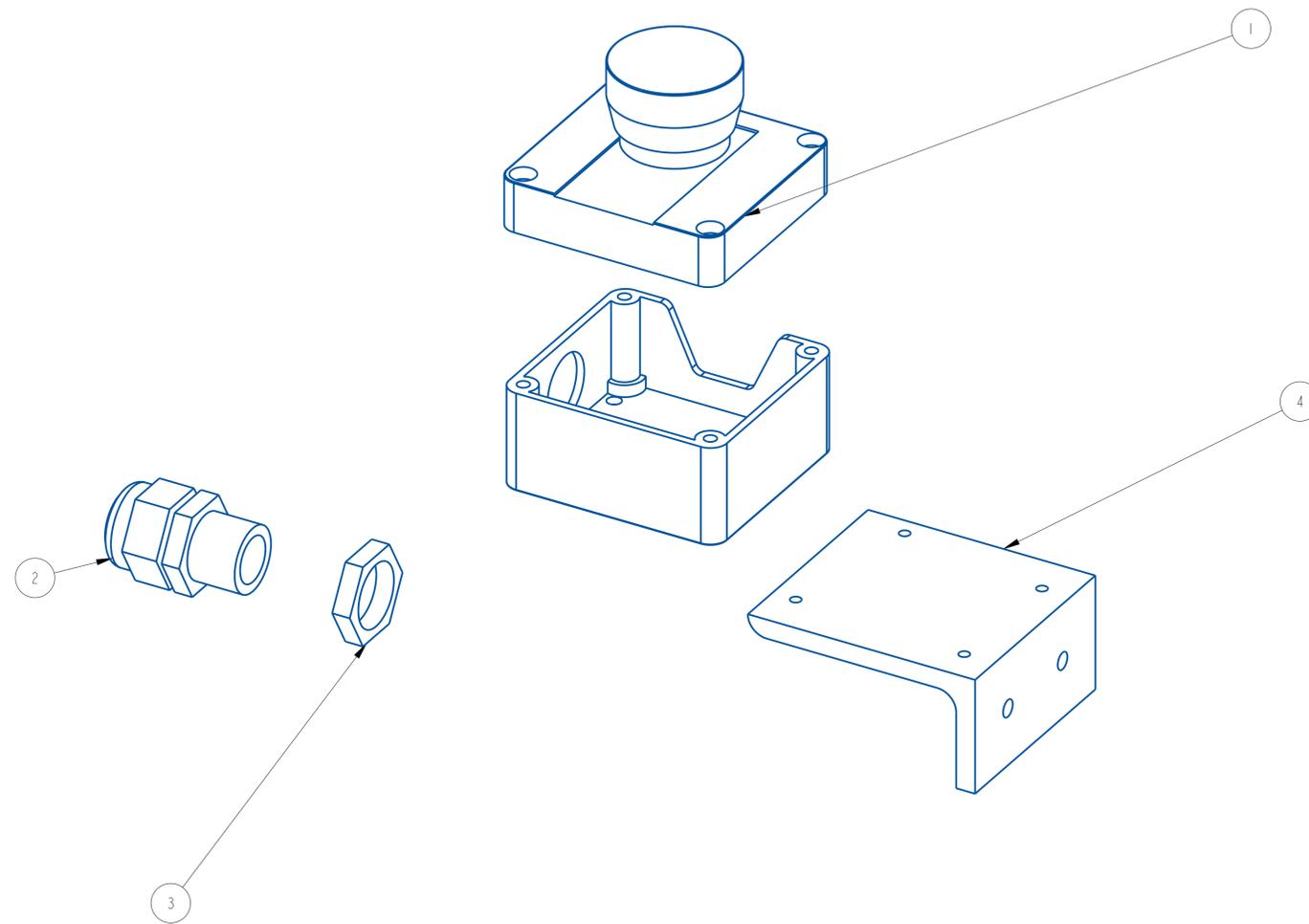
<small>UNLESS OTHERWISE SPECIFIED</small> <small>DIMENSIONAL TOLERANCE</small> <small>x ± .1</small> <small>xx ± .01</small> <small>xxx ± .005</small> <small>ANGLES ± .30°</small>	 QUADREL LABELING SYSTEMS <small>7670 JENTHER DRIVE</small> <small>MENTOR, OHIO 44060</small> <small>(440) 602-4700</small>	SCALE: 2/1
		DATE: May-25-21
		DRW BY: TJS
		CHK BY: 10/17/2024-SEM
<small>SURFACE FINISH 125</small> <small>BREAK ALL EDGES .005/0.15</small> <small>CORNER RADIUS .010/0.30</small>		<small>MAT'L</small> END TRANSFER 21180-100



UNLESS OTHERWISE SPECIFIED		THIS IS A PRO-ENGINEER DOCUMENT AND MAY NOT BE MODIFIED MANUALLY	
DIMENSIONAL TOLERANCE		QUADREL LABELING SYSTEMS 7670 JENTHER DRIVE MENTOR, OHIO 44060 (440) 602-4700	
x ± .1	xx ± .01	SCALE: 1/1	DATE: May-25-21
xxx ± .005	ANGLES ± .30°	DRW BY: TJS	
SURFACE FINISH 125		CHK BY: 10/17/2024-SEM	
BREAK ALL EDGES .005/0.15		APPR BY:	
CORNER RADIUS .010/0.30		END TRANSFER	
ALL ANGLES ARE 90°		MAT'L	21180-100

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

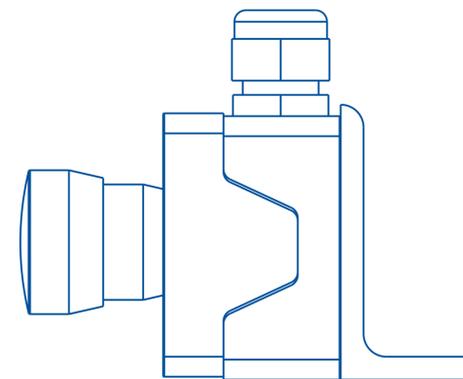
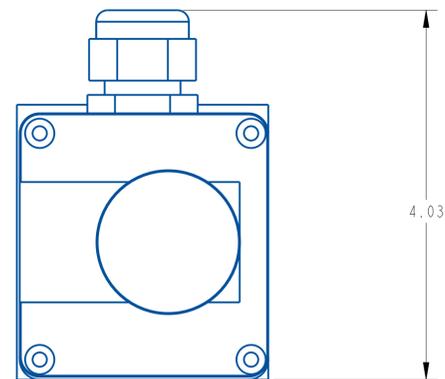
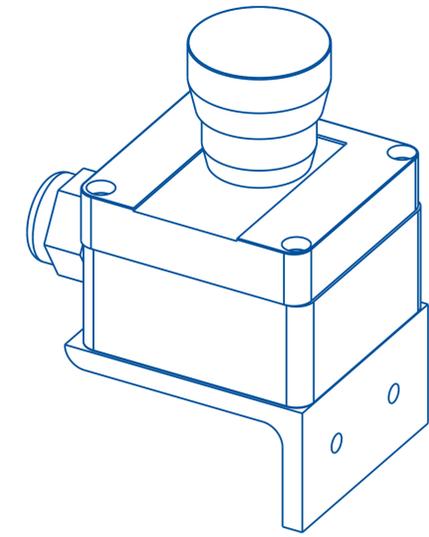
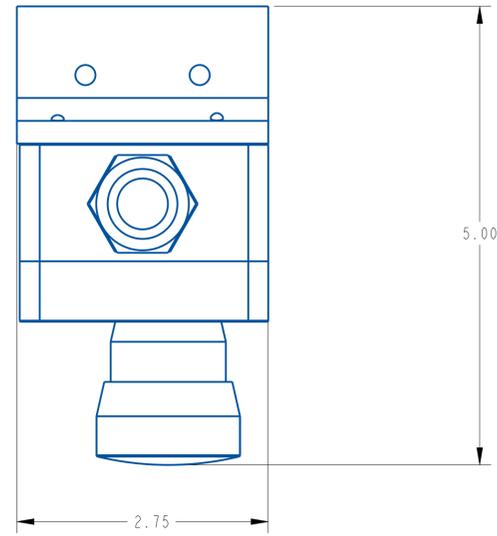
ITEM	QTY	PART NO.	DESCRIPTION	PARENT ITEM
1	1	221152-005	ENCLOSURE, E-STOP W/ BUTTON	20789-000
2	1	241780-000	STRAIN RELIEF, CABLE	20789-000
3	1	241780-001	STRAIN RELIEF, CABLE PANEL	20789-000
4	1	A25719-000	CYLINDER MOUNTING ANGLE	20789-000



REV	DATE	DESCRIPTION	BY
A	8-29-16	NEW DRAWING	TJS

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UNLESS OTHERWISE SPECIFIED DIMENSIONAL TOLERANCE	 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		
MATERIAL		20789-000



REV	DATE	DESCRIPTION	BY
A	8-29-16	NEW DRAWING	TJS

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

UNLESS OTHERWISE SPECIFIED DIMENSIONAL TOLERANCE	x ± .1 xx ± .01 xxx ± .005 ANGLES ± .30°	SCALE: 1/1 DATE: 8-29-16 DRW BY: TJS CHK BY: 03/08/2024-SEM APPR BY:
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
EMERGENCY STOP ASSEMBLY		MAT'L
		20789-000

ASSEMBLY TITLE: HORIZONTAL & VERTICAL ADJUSTMENT STAND

DRAWING NO.: D21115-000

GENERAL FUNCTION:

- Provides solid mounting for labeling head if not installed on a system that allows for vertical and horizontal adjustment.
- Minimizes possible damage to the labeling head.

SET-UP AND ADJUSTMENTS:

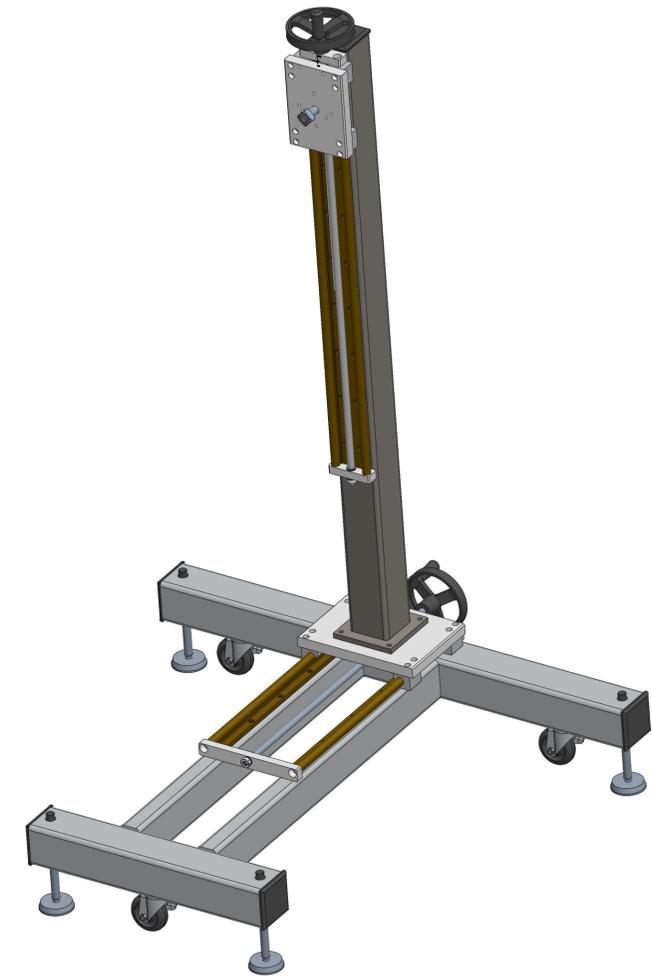
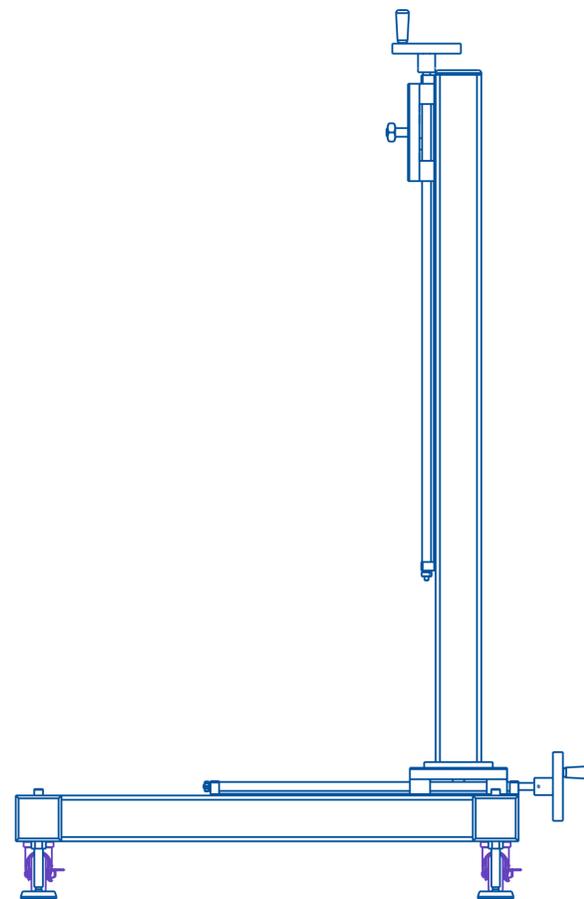
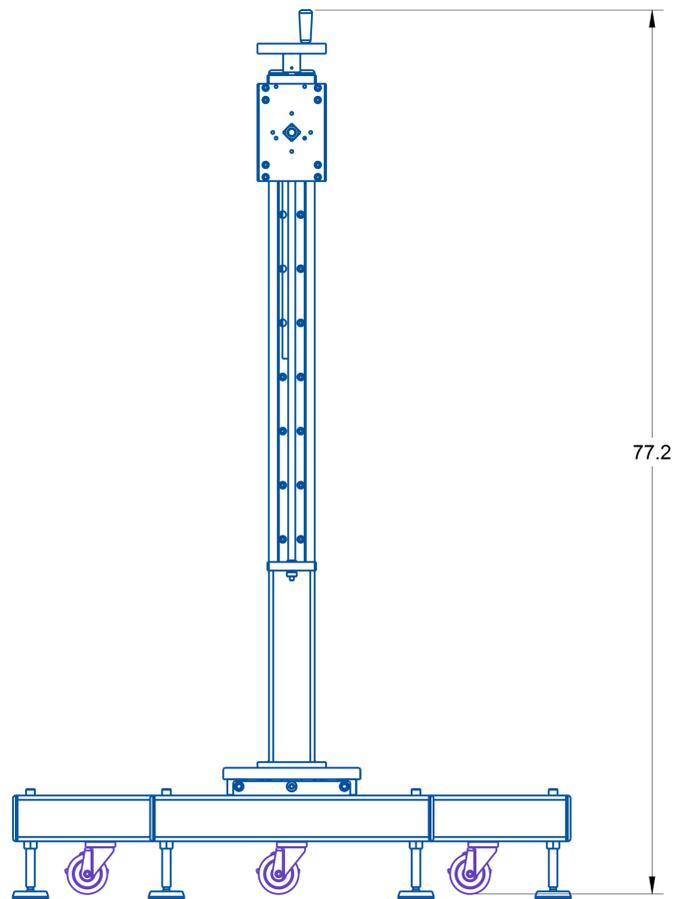
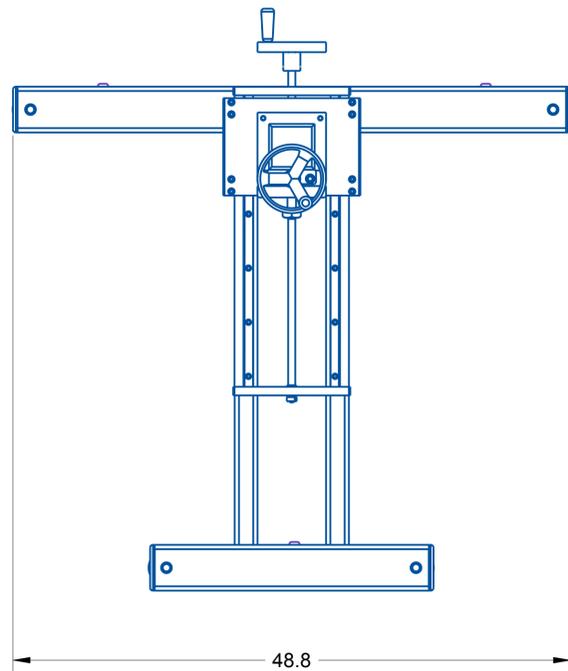
- Rotate leveling pads to appropriate position. Secure locknut when proper height is achieved.
- Using ratchet handle, adjust labeling head vertical and horizontal position.

MAINTENANCE:

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

TROUBLESHOOTING: None this section

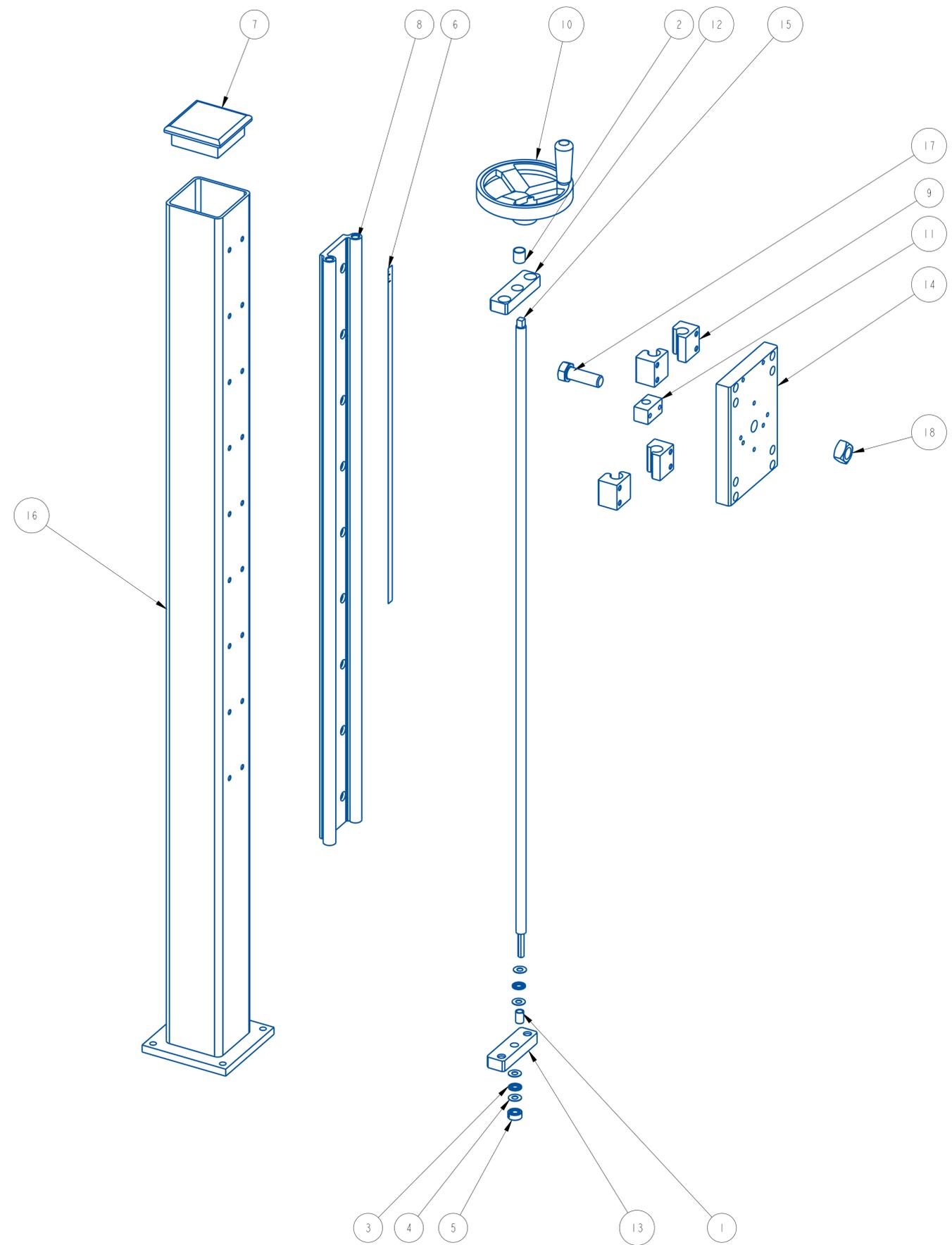
ITEM	QTY	PART NO.	DESCRIPTION	PARENT ITEM
1	1	21654-001	VERTICAL STAND W/ IGUS SLIDE	21692-001
2	1	21691-000	HORIZ. ADJ. FRAME ASSEMBLY	21692-001



REV	DATE	DESCRIPTION	BY
A	12-FEB-2024	NEW DRAWING	CRT

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UNLESS OTHERWISE SPECIFIED DIMENSIONAL TOLERANCE	 QUADREL LABELING SYSTEMS 7670 JENTHER DRIVE MENTOR, OHIO 44060 (440) 602-4700	SCALE: 0.125 DATE: 12-FEB-2024 DRW BY: CRT CHK BY: APPR BY:
x ± .1 xx ± .01 xxx ± .005 ANGLES ± .30°	HORIZ. AND VERT. ADJ. H-BASE STAND	
SURFACE FINISH 125 BREAK ALL EDGES .005/0.15 CORNER RADIUS .010/0.30	MAT'L BOM 21692-000	21692-001

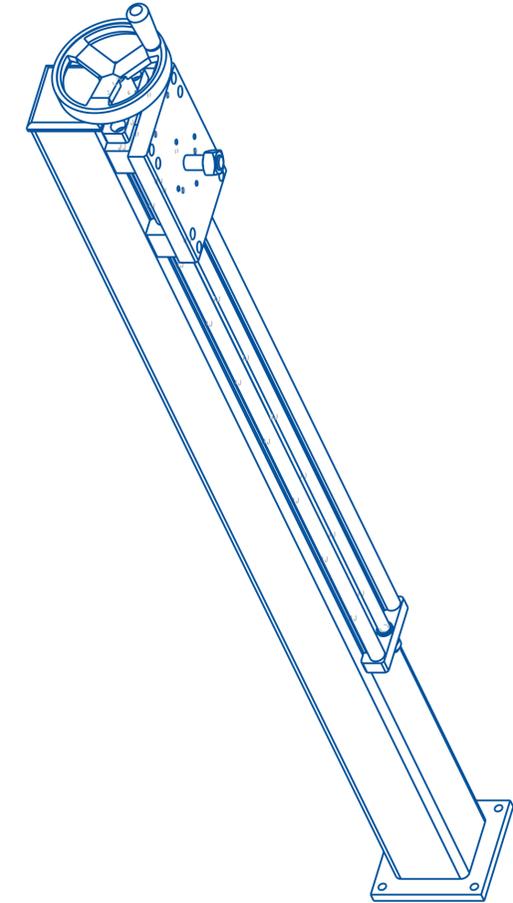
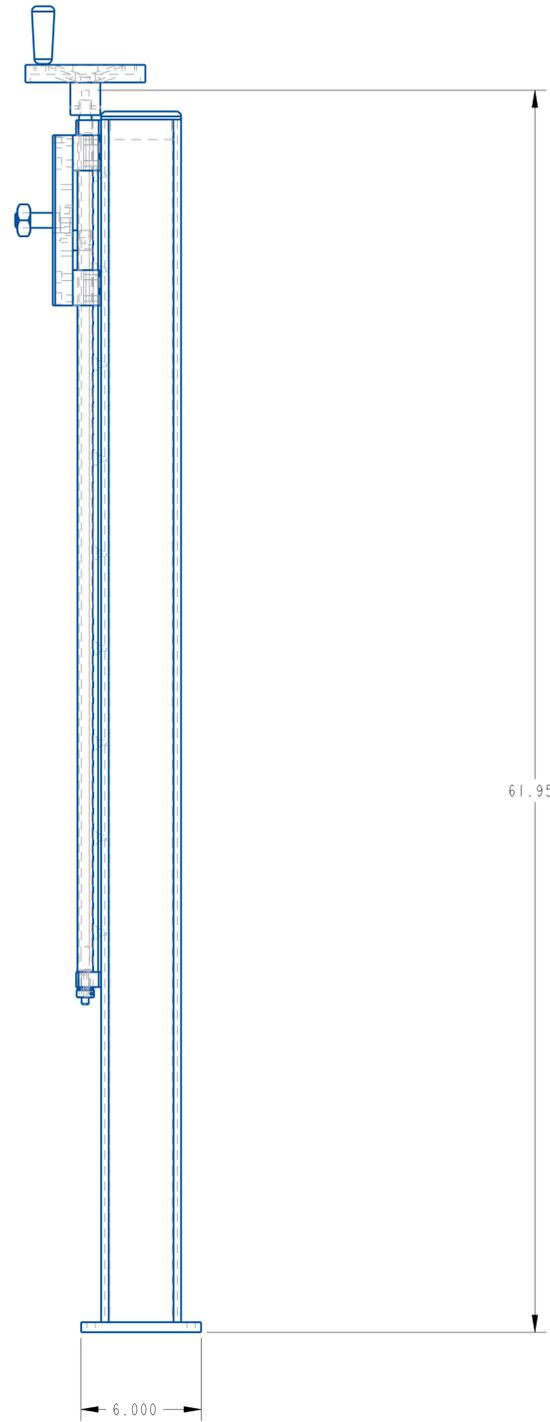
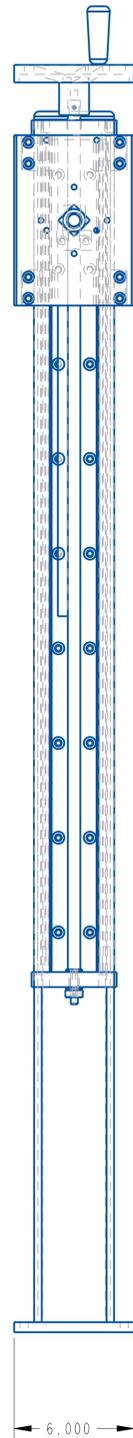
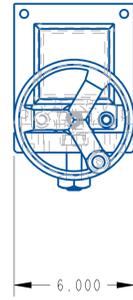


ITEM	QTY	PART NO.	DESCRIPTION	PARENT ITEM
1	1	141172-000	SLEEVE BEARING, 1/2OD. x 3/8ID. x 3/4LNG	21654-001
2	1	141173-000	SLEEVE BEARING, 23/32OD. x 5/8ID. x 3/4LNG	21654-001
3	2	181108-000	BEARING, NEEDLE ROLLER	21654-001
4	4	181111-000	THRUST WASHER	21654-001
5	1	362186-000	COLLAR, 3/8 IN. ID ONE-PIECE CLAMP	21654-001
6	1	791914-001	MYLAR SCALE, QUADREL LOGO	21654-001
7	1	792065-000	CAP INSERT FOR 4X4 TUBE (1/4WALL)	21654-001
8	1	792247-000	DRYLIN RAIL	21654-001
9	4	792248-000	PILLOW BLOCK *NOTE USE 792248-001*	21654-001
10	1	801080-000	HANDLE WHEEL, MODIFIED	21654-001
11	1	A24077-000	BRONZE NUT, RH	21654-001
12	1	B21345-000	TOP BEARING PLATE	21654-001
13	1	B21346-000	BOTTOM BEARING PLATE	21654-001
14	1	C20626-000	STAND SLED	21654-001
15	1	C20835-000	THREADED ROD, SQUARE END	21654-001
16	1	D21045-000	VERTICAL RISER, 60"	21654-001
17	1	HCS281		21654-001
18	1	SNQ022		21654-001

REV	DATE	DESCRIPTION	BY
A	4-17-09	NEW DRAWING	ATT

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UNLESS OTHERWISE SPECIFIED DIMENSIONAL TOLERANCE .x ± .1 .xx ± .01 .xxx ± .005 ANGLES ± .30° SURFACE FINISH 125 BREAK ALL EDGES .005/.015 CORNER RADIUS .010/.030	 QUADREL LABELING SYSTEMS 7670 JENTHER DRIVE MENTOR, OHIO 44060 (440) 602-4700	SCALE: 1/4
		DATE: 4-17-09
		DRW BY: ATT
		CHK BY: 07/15/2024-SEM
VERTICAL STAND W/ IGUS SLIDE		MAT'L 21654-001
		D22807-000



61.956

6.000

6.000

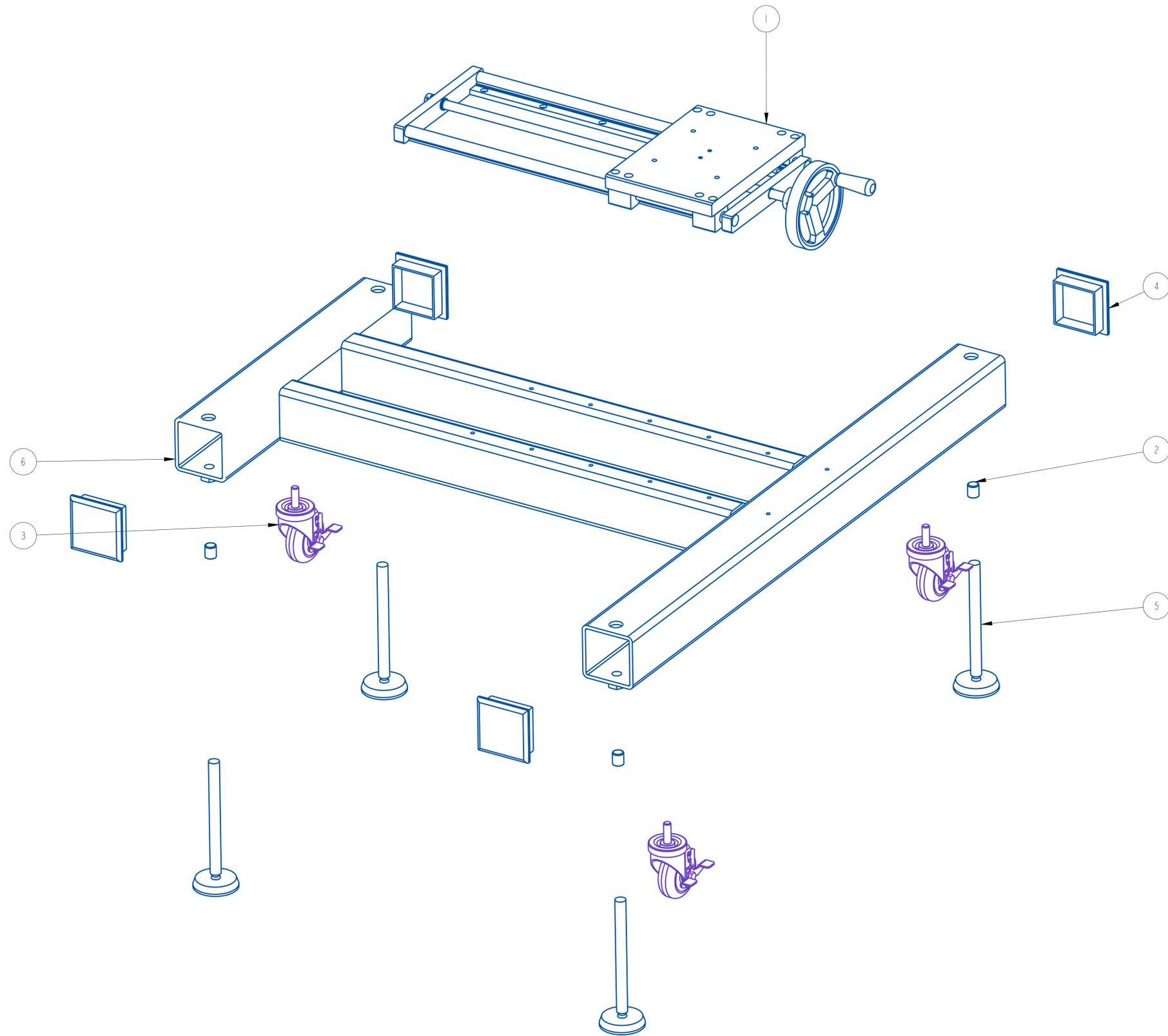
SHEET 2 OF 2

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UNLESS OTHERWISE SPECIFIED	QUADREL LABELING SYSTEMS	SCALE:	7/32
DIMENSIONAL TOLERANCE	7670 JENTHER DRIVE	DATE:	4-17-09
X ± .1	MENTOR, OHIO 44060	DRW BY:	ATT
XX ± .01	(440) 602-4700	CHK BY:	07/15/2024-SEM
XXX ± .005		APPR BY:	
ANGLES ± .30°			
SURFACE FINISH 125	VERTICAL STAND W/ IGUS SLIDE		
BREAK ALL EDGES .005/0.15	MAT'L	21654-001	D22807-000
CORNER RADIUS .010/0.30			
ALL ANGLES ARE 90°			

REV	DATE	DESCRIPTION	BY
A	4-17-09	NEW DRAWING	ATT

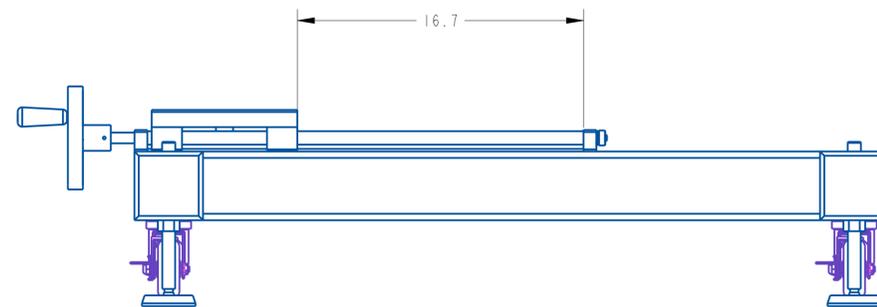
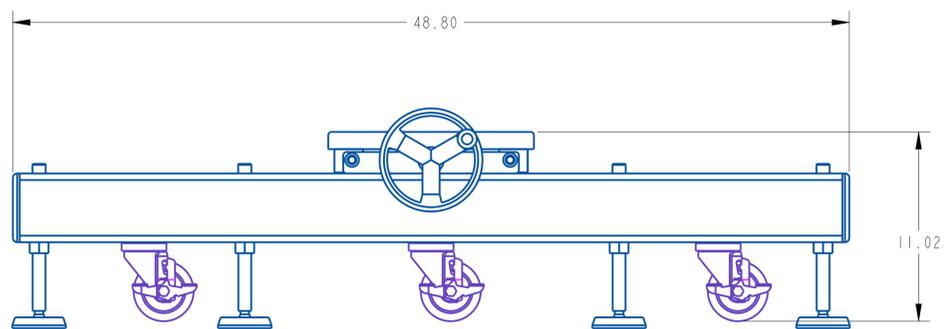
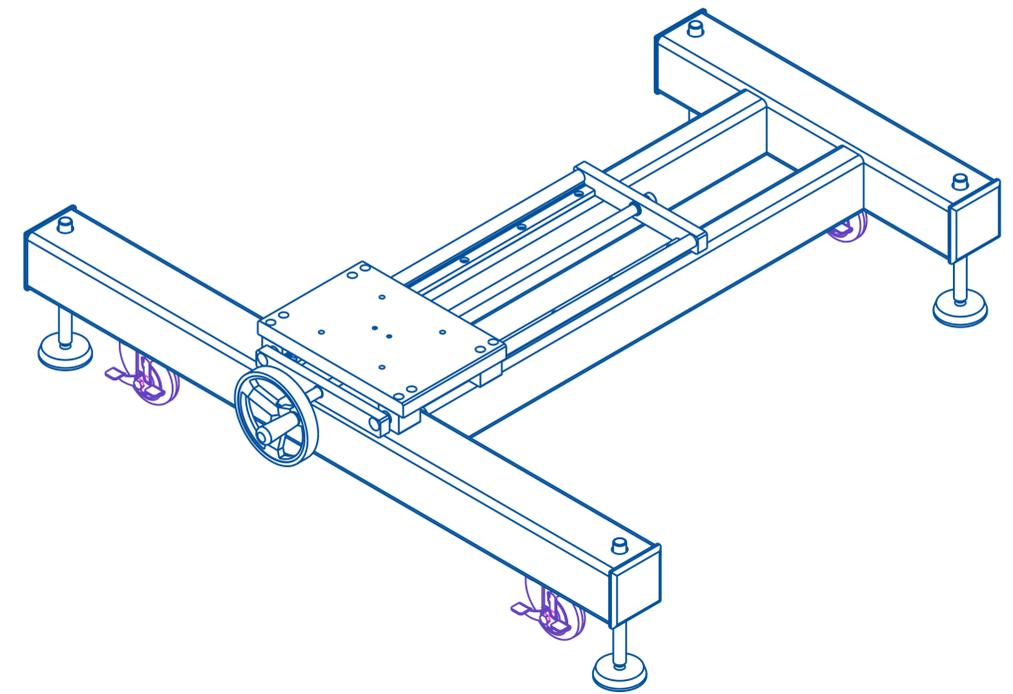
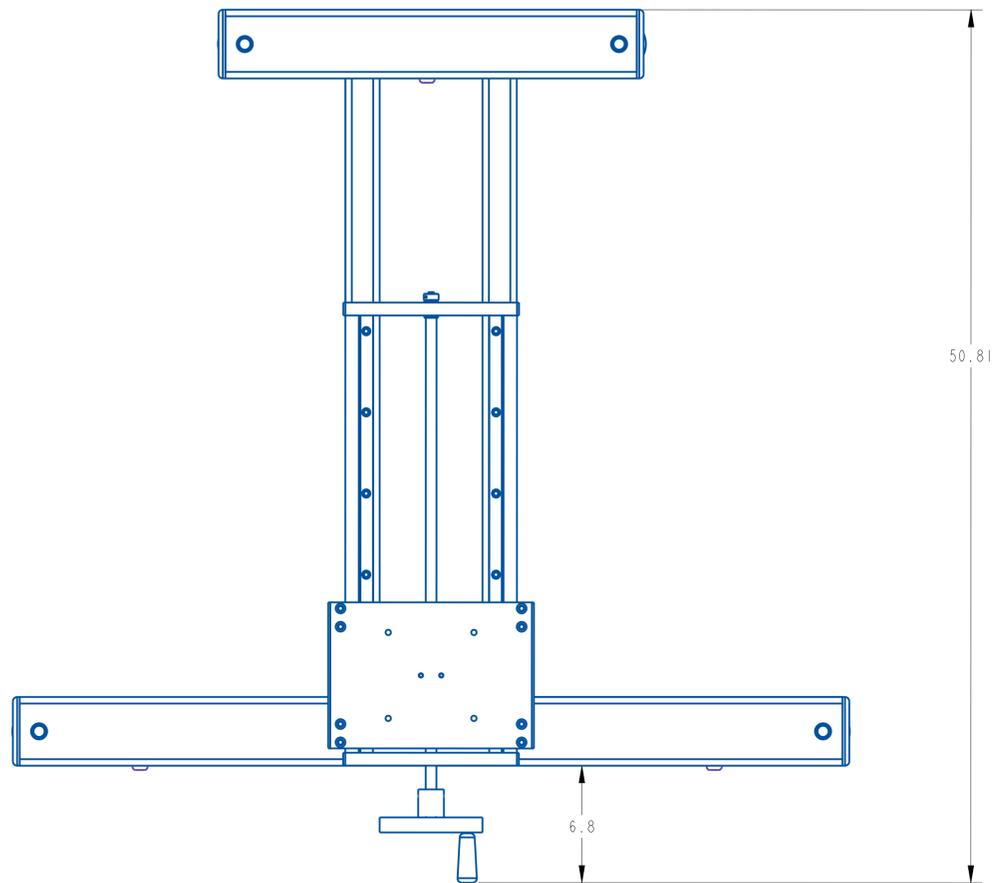
ITEM	QTY	PART NO.	DESCRIPTION	PARENT ITEM
1	1	21691-100	HORIZONTAL ADJUSTMENT	21691-000
2	4	791436-000	CAP, 3/4" HIGH X 5/8" I.D.	21691-000
3	3	791449-000	CASTERS, SWIVEL 3-1/2"	21691-000
4	4	792065-000	CAP INSERT FOR 4X4 TUBE (1/4WALL)	21691-000
5	4	793020-000	LEVELING MOUNT	21691-000
6	1	D21114-006	WELDMENT, HORIZONTAL ADJ.	21691-000



REV	DATE	DESCRIPTION	BY
A	09/22/2009	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: 1/4 DATE: 09/22/2009 DRW BY: SEM CHK BY: 07/15/2024-SEM APPR BY:	
	HORZ. ADJ. FRAME ASSEMBLY		
	MAT'L	BOM 21691-000	D22998-000



REV	DATE	DESCRIPTION	BY
A		NEW DRAWING	SEM

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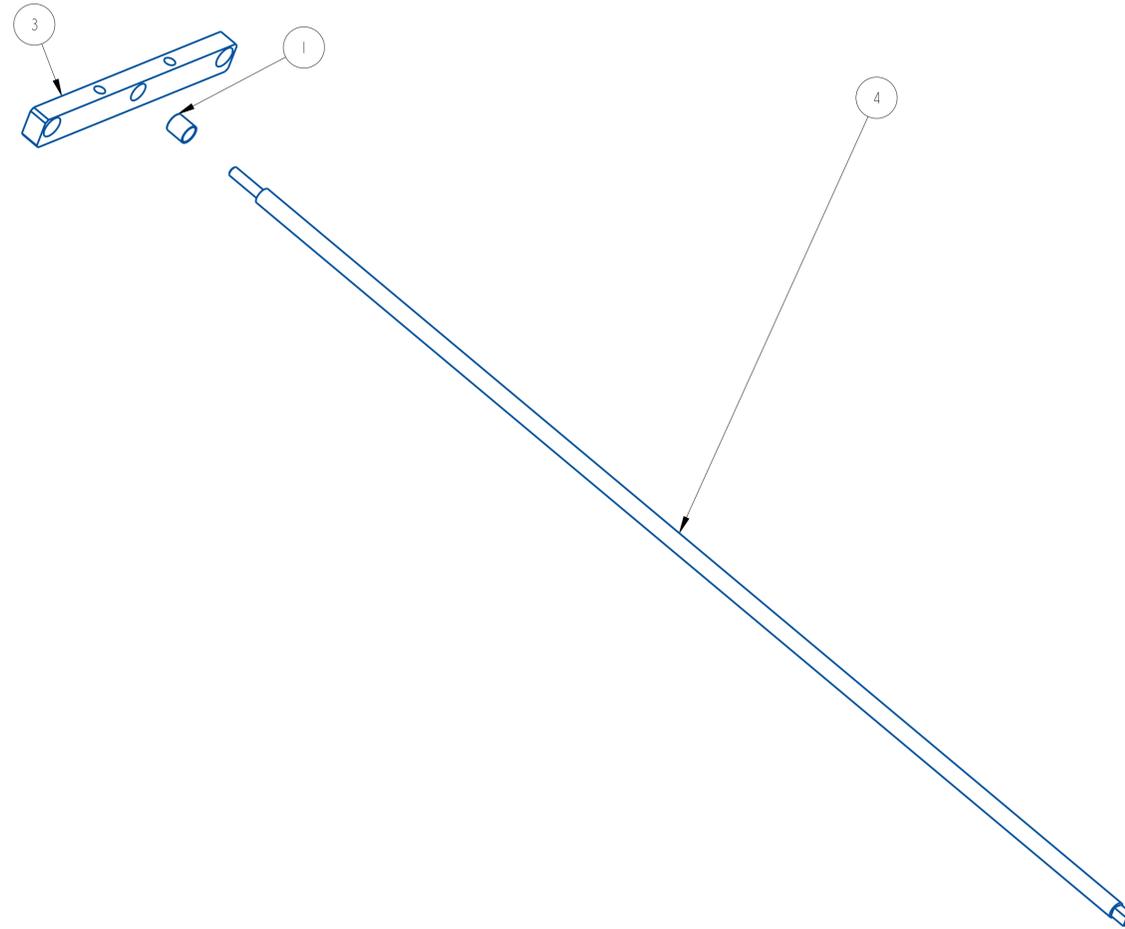
UNLESS OTHERWISE SPECIFIED DIMENSIONAL TOLERANCE	SCALE: 3/16
X ± .1	DATE: 09/22/2009
XX ± .01	DRW BY: SEM
XXX ± .005	CHK BY: 07/15/2024-SEM
ANGLES ± .30°	APPR BY:
SURFACE FINISH 125	
BREAK ALL EDGES .005/0.15	
CORNER RADIUS .010/0.30	
ALL ANGLES ARE 90°	

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

HORZ. ADJ. FRAME ASSEMBLY

MAT'L	BOM 21691-000	D22998-000
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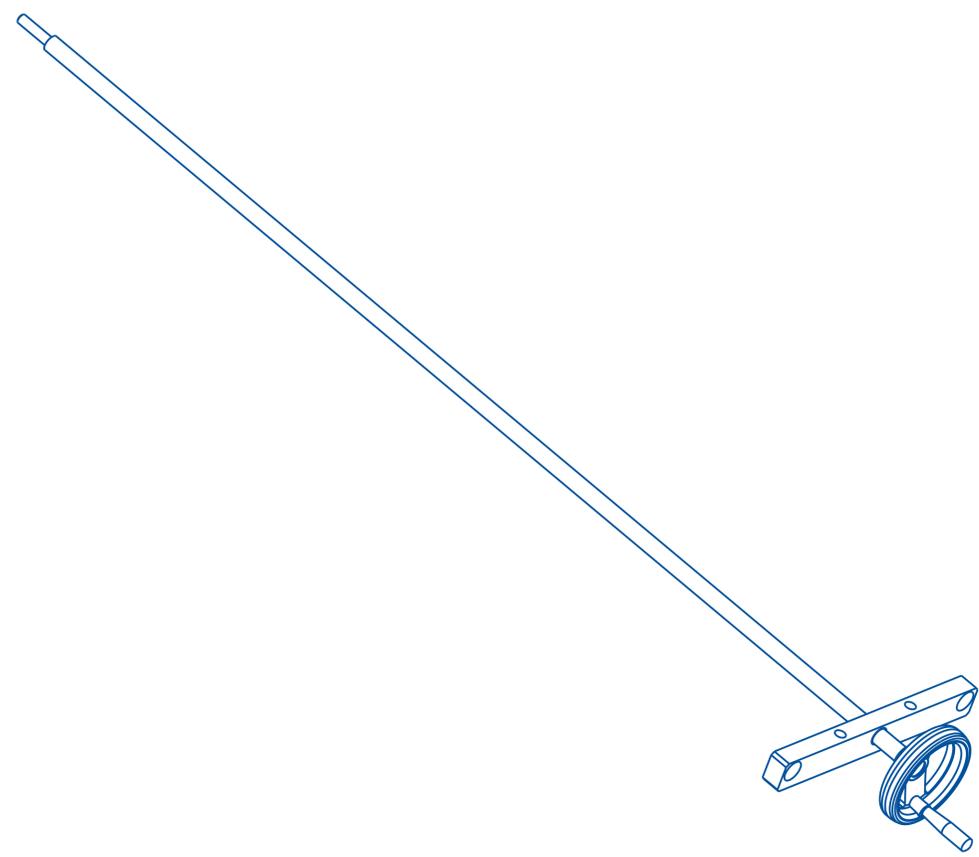
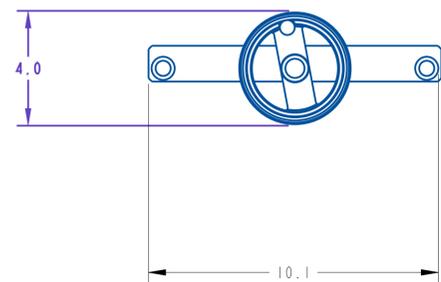
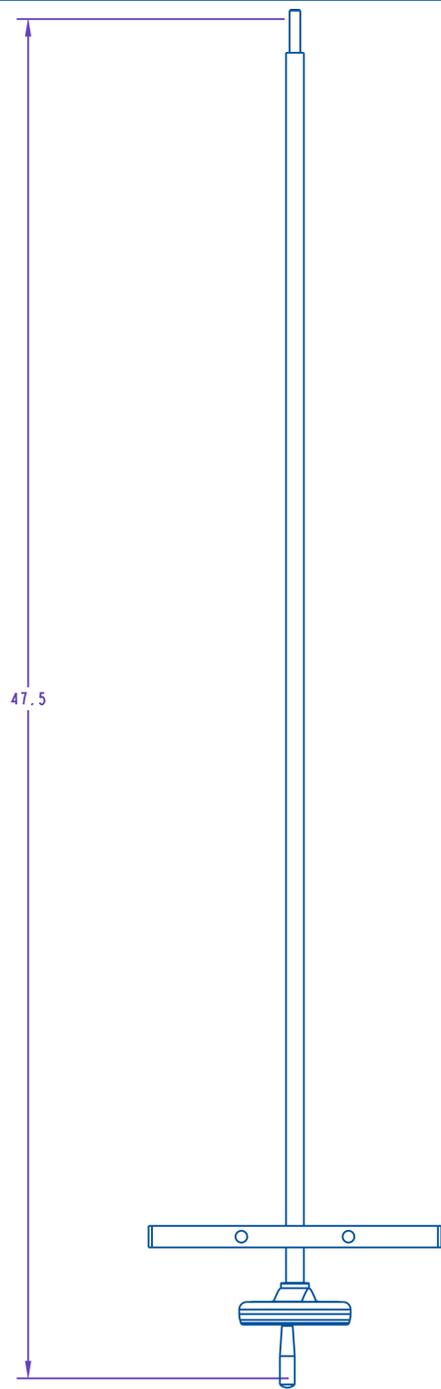
ITEM	QTY	PART NO.	DESCRIPTION	PARENT ITEM
1	1	141173-000	SLEEVE BEARING	83345H-000
2	1	801079-000	4" DIA HANDWHEEL 1/2" BORE	83345H-000
3	1	B21530-001	INNER BEARING PLATE	83345H-000
4	1	C20729-000	THREADED ROD	83345H-000



REV	DATE	DESCRIPTION	BY
A	Feb-17-23	NEW DRAWING	TAZ

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UNLESS OTHERWISE SPECIFIED DIMENSIONAL TOLERANCE X ± .01 XX ± .005 ANGLES ± .30° SURFACE FINISH 125 BREAK ALL EDGES .005/0.15 CORNER RADIUS .010/0.30 ALL ANGLES ARE 90°	 7670 JENTHER DRIVE MENTOR, OHIO 44060 (440) 602-4700	SCALE: 5/16
		DATE: Feb-17-23
		DRW BY: TAZ
		CHK BY: 11/12/2025-SEM
7.5" IGUS SLIDE ASSEMBLY LOW-COST HOR. ADJ.		MAT'L
		83345H-000



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REV	DATE	DESCRIPTION	BY
A	Feb-17-23	NEW DRAWING	TAZ

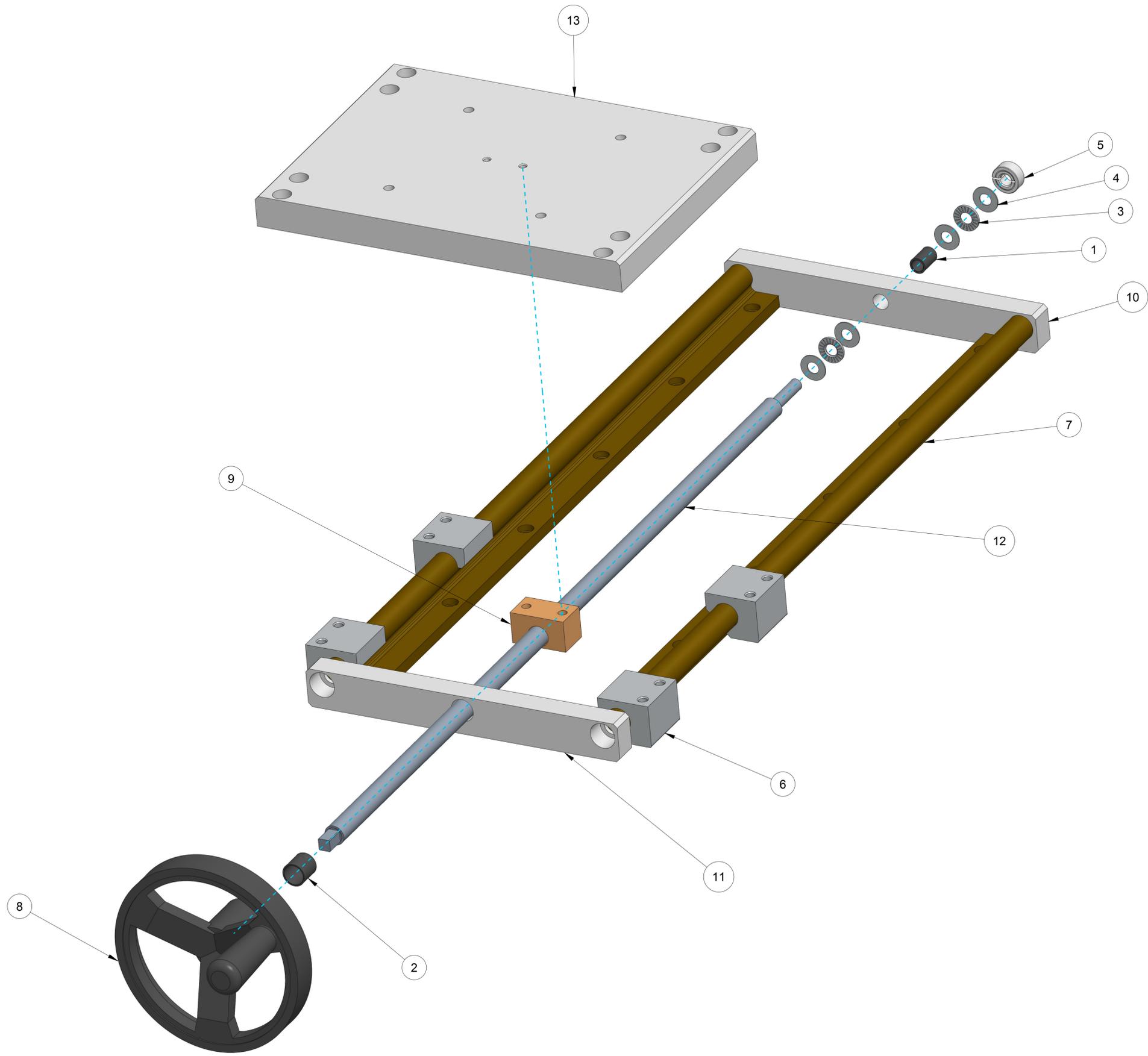
UNLESS OTHERWISE SPECIFIED
 DIMENSIONAL TOLERANCE
 X ± .1
 XX ± .01
 XXX ± .005
 ANGLES ± .30°
 SURFACE FINISH 125
 BREAK ALL EDGES .005/.015
 CORNER RADIUS .010/.030
 ALL ANGLES ARE 90°

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

SCALE: 5/16
 DATE: Feb-17-23
 DRW BY: TAZ
 CHK BY: 11/12/2025-SEM
 APPR BY:

7.5" IGUS SLIDE ASSEMBLY LOW-COST HOR. ADJ.
 MAT'L

83345H-000

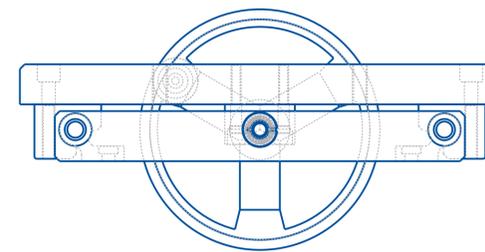
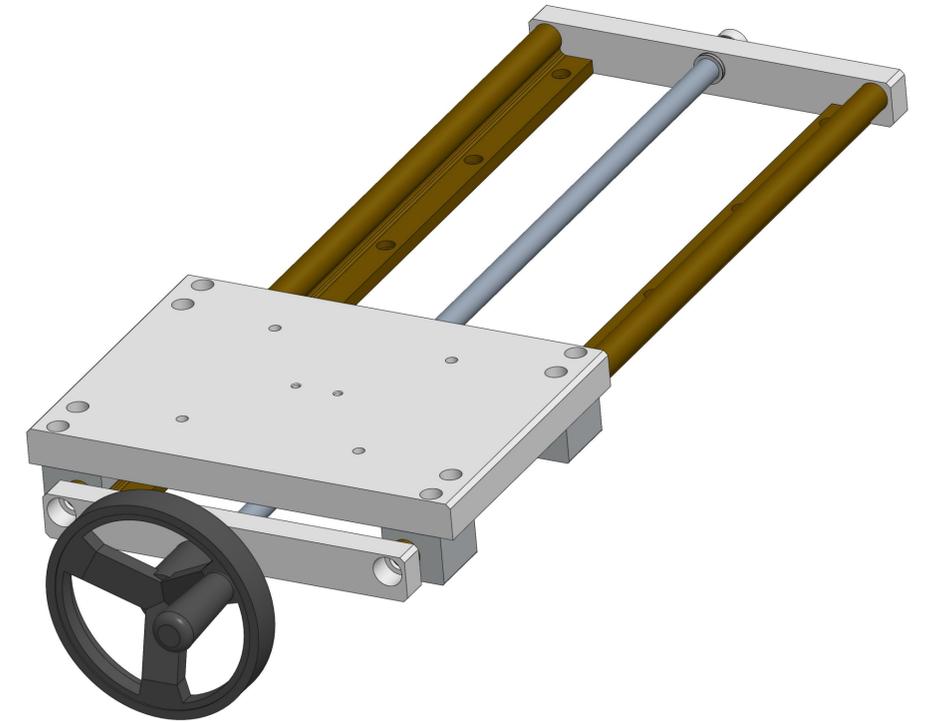
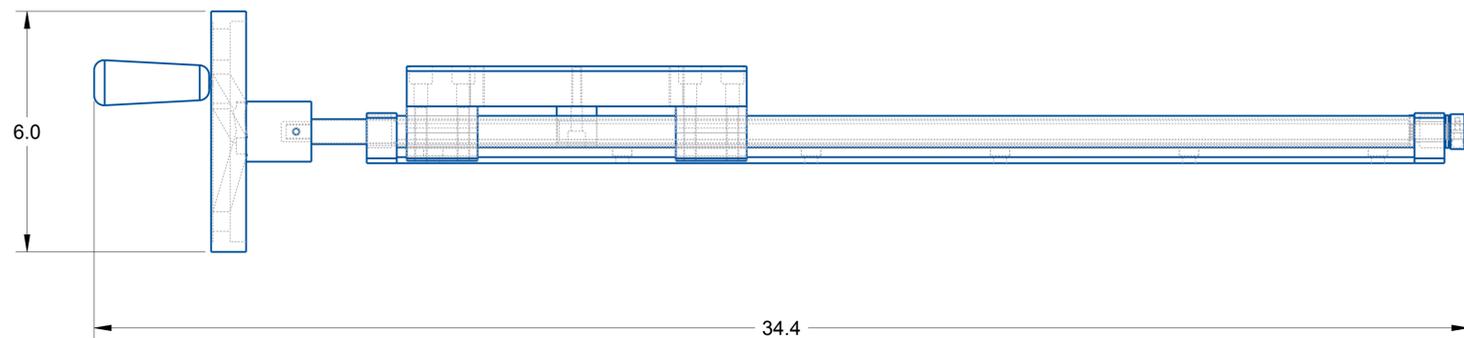
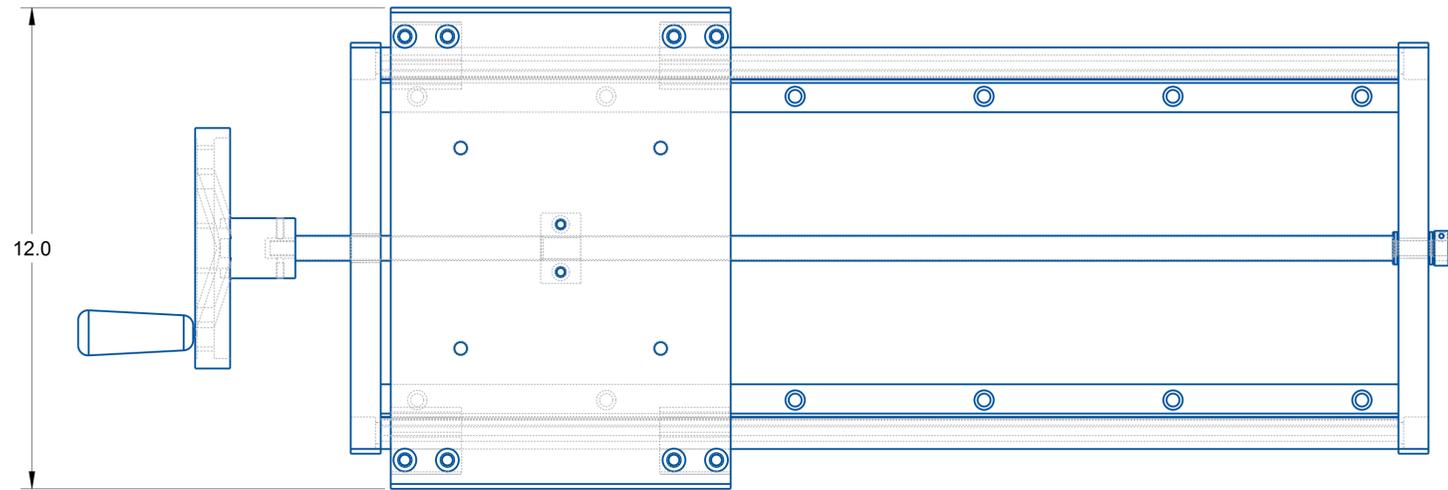


ITEM	QTY	PART NO.	DESCRIPTION	PARENT ITEM
1	1	141172-000	SLEEVE BEARING, 1/2OD. x 3/8ID. x 3/4LNG	21691-100
2	1	141173-000	SLEEVE BEARING, 23/32OD. x 5/8ID. x 3/4LNG	21691-100
3	2	181108-000	BEARING, NEEDLE ROLLER	21691-100
4	4	181111-000	THRUST WASHER	21691-100
5	1	362186-000	COLLAR, 3/8 IN. ID ONE-PIECE CLAMP	21691-100
6	4	792248-001	PILLOW BLOCK	21691-100
7	2	792331-000	DRYLIN RAIL	21691-100
8	1	801080-000	HANDLE WHEEL, MODIFIED	21691-100
9	1	A24077-000	BRONZE NUT, RH	21691-100
10	1	B21529-000	OUTER BEARING PLATE	21691-100
11	1	B21530-000	INNER BEARING PLATE	21691-100
12	1	C20729-008	THREADED ROD	21691-100
13	1	C20753-000	HORIZONTAL SLED, WIDE VERSION	21691-100

REV	DATE	DESCRIPTION	BY
B	12-FEB-2024	UPDATED BOM TO REMOVE P & B BOM	CRT
A	12-FEB-2024	NEW DRAWING	CRT

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UNLESS OTHERWISE SPECIFIED DIMENSIONAL TOLERANCE	.1 .01 .005 .001 .005 .015 .030	SCALE: 0.625 DATE: 12-FEB-2024 DRW BY: CRT CHK BY: APPR BY:
SURFACE FINISH 125 BREAK ALL EDGES .005/.015 CORNER RADIUS .010/.030		HORIZONTAL ADJUSTMENT SLED ASSEMBLY MAT'L 21691-100



B	12-FEB-2024	UPDATED BOM TO REMOVE P & B BOM	CRT
A	12-FEB-2024	NEW DRAWING	CRT
REV	DATE	DESCRIPTION	BY

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

UNLESS OTHERWISE SPECIFIED DIMENSIONAL TOLERANCE .X ± .1 .XX ± .01 .XXX ± .005 ANGLES ± .30° SURFACE FINISH 125 BREAK ALL EDGES .005/0.15 CORNER RADIUS .010/0.30	 QUADREL LABELING SYSTEMS 7670 JENTHER DRIVE MENTOR, OHIO 44060 (440) 602-4700	SCALE: 0.438
		DATE: 12-FEB-2024
		DRW BY: CRT
		CHK BY: CRT
HORIZONTAL ADJUSTMENT SLED ASSEMBLY		APPR BY:
MAT'L		21691-100

ASSEMBLY TITLE:**PRODUCT DETECT ASSEMBLY****GENERAL FUNCTION:**

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

SETUP AND ADJUSTMENTS:

Set the position of the product detect sensor at a point up-stream of the peel plate area. Set the vertical position of the sensor at a point on the product that provides a stable and repeatable sense area. Loosen the vertical adjustment knobs to move the assembly along the vertical axis.

Follow the manufactures data sheet for a particular set and calibration.

MAINTENANCE:

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

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

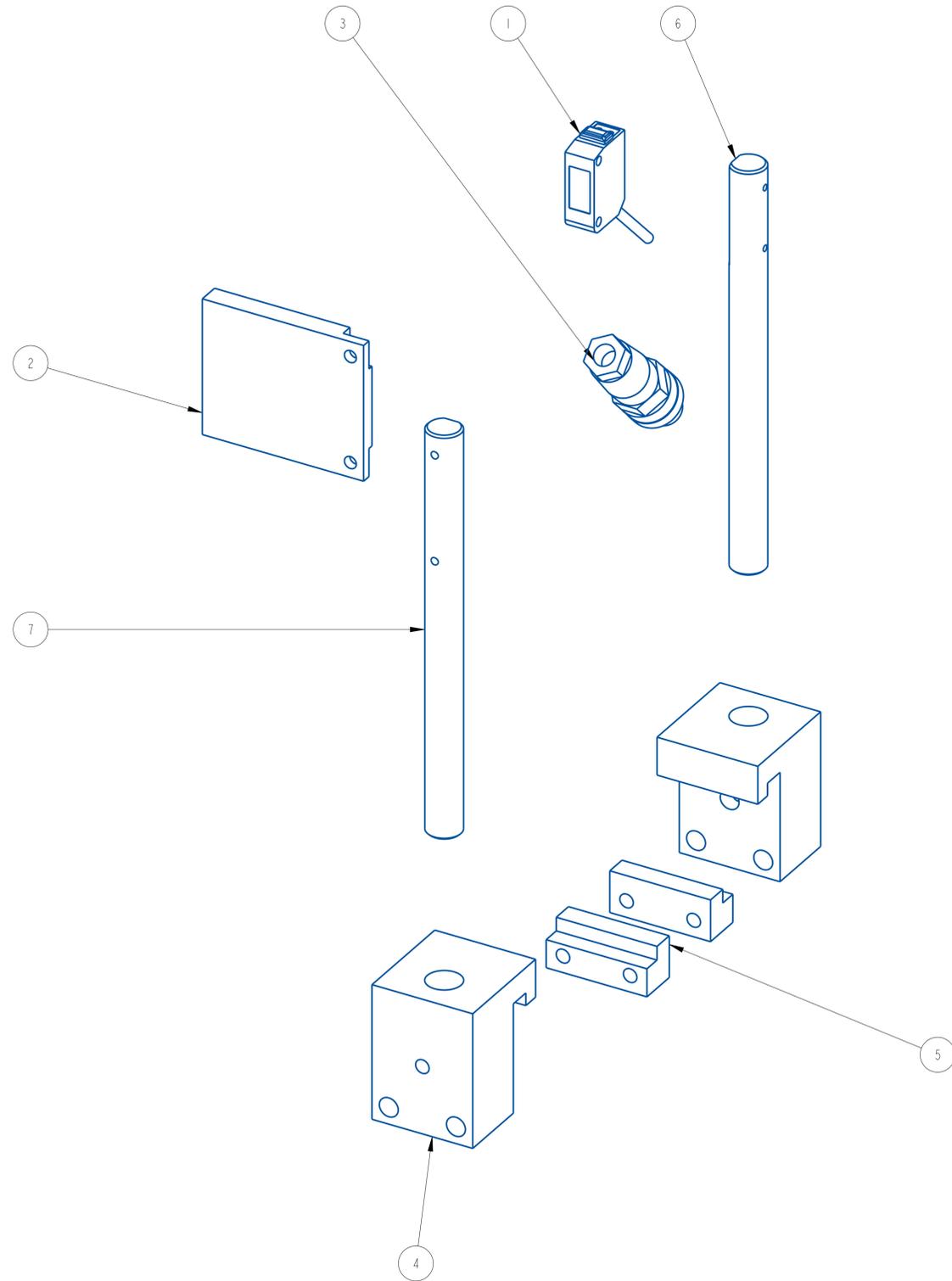
TROUBLESHOOTING:**PROBLEM:**

- No label trigger or intermittent trigger.

WHAT TO DO:

- Product does not intersect sensor scan field. Adjust sensor position until sensor detects product.
- Sensor gain set is too low. Increase gain until sensor indicator displays ON status(with product in sensor field).

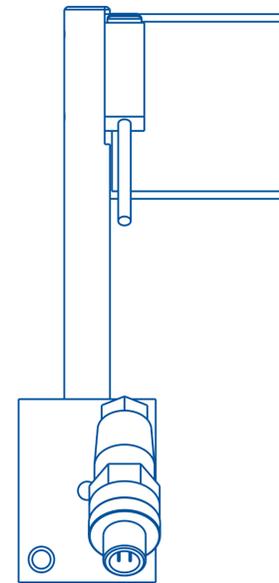
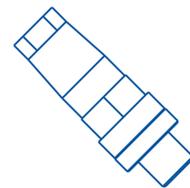
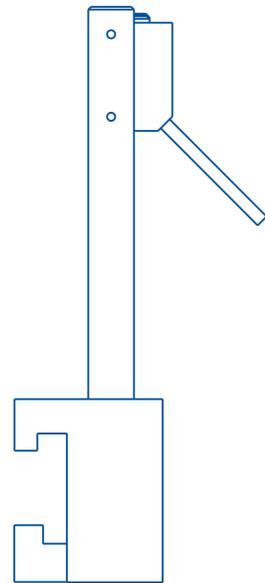
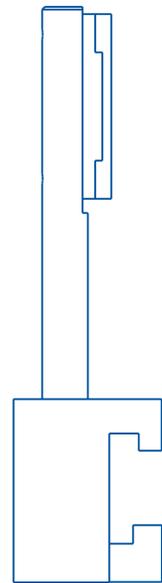
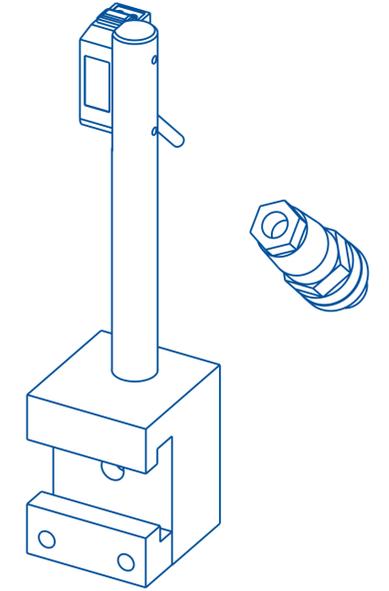
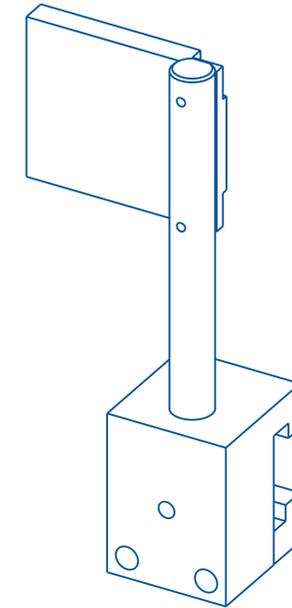
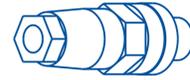
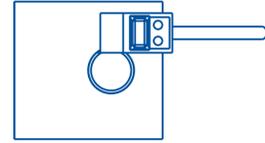
ITEM	QTY	PART NO.	DESCRIPTION	PARENT ITEM
1	1	202192-002	CLEAR PRODUCT SENSOR	21560-012
2	1	203160-000	REFLECTOR	21560-012
3	1	252019-000	4 PIN MALE CONNECTOR	21560-012
4	2	A20875-000	RETAINER BLOCK, CONV. RAIL	21560-012
5	2	A20876-000	RETAINER BLOCK	21560-012
6	1	A24278-000	SENSOR MTG. SHAFT	21560-012
7	1	A24279-000	REFLECTOR MTG. SHAFT	21560-012



REV	DATE	DESCRIPTION	BY
A	07/18/2024	NEW DRAWING	SEM

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UNLESS OTHERWISE SPECIFIED DIMENSIONAL TOLERANCE X ± .1 XX ± .01 XXX ± .005 ANGLES ± 30°	QUADREL LABELING SYSTEMS 7670 JENTHER DRIVE MENTOR, OHIO 44060 (440) 602-4700		SCALE: 1/1 DATE: 07/18/2024 DRW BY: SEM CHK BY: 07/18/2024-SEM APPR BY:
	CLEAR PRODUCT DETECT, PNP		
	MAT'L	21560-002	21560-012



REV	DATE	DESCRIPTION	BY
A	07/18/2024	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: 07/18/2024
DRW BY: SEM
CHK BY: 07/18/2024-SEM
APPR BY:



CLEAR PRODUCT DETECT, PNP

MAT'L	21560-002	21560-012
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PZ-G Series

Instruction Manual

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

96M11227



Safety precautions

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

Precautions on Regulations and Standards

UL Certificate

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

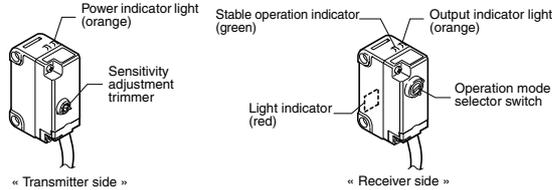
- UL File No. E301717
- Category NRKH,NRKH7
- Enclosure Type 1 (Based on UL50)

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

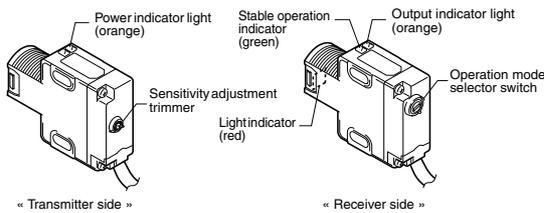
- Use the power supply with Class 2 output defined in NFPA70 (NEC: National Electrical Code).
- Power supply/ Control input/ Control output circuits shall be connected to a single Class 2 source only.
- Use with the over current protection device which is rated 30V or more and not more than 1A.

Part Names

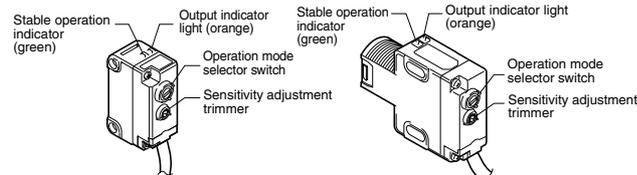
PZ-G5xN/G5xP



PZ-G5xB



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

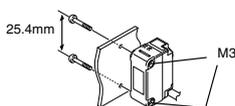


* The model name with "C" (PZ-GxxCx) is the connector type, and the model name with "E" (PZ-GxxEx) is the pigtail quick disconnect type.

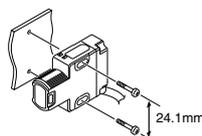
Mounting Method

Side Mounting (Prepare M3 screws)

Tightening torque: 0.5 N·m or less



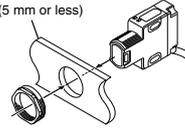
Tightening torque: 0.5 N·m or less



Mounting with the M18 nut (includes nut type)

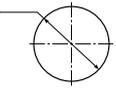
The M18 nut is also available separately as OP-84225 (2 pcs. supplied).
Tightening torque: 1.0 N·m or less

Panel (5 mm or less)



Panel cut size

$\phi 18.5 \pm 0.2$ mm



Note

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

Sensitivity Adjustment Method

Caution



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



Operation mode selector switch

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



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

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

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

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

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

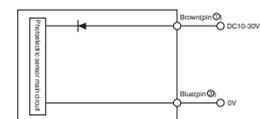
The following assumes DARK-ON (D) is set.

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

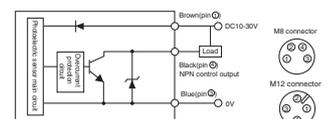
Reference To use the sensor in LIGHT-ON mode, adjust the mode selector switch to "L".

I/O Circuit Diagram

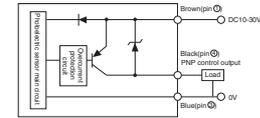
PZ-G5xN/G5xP/G5xB (Transmitter side)



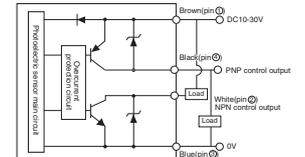
PZ-G5xN (Receiver side)/ G4xN/G10xN/G6xN



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



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



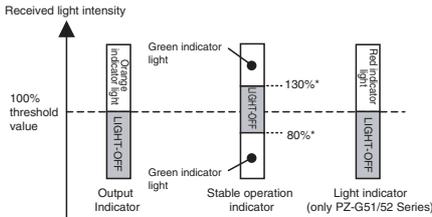
* The pin numbers represent those of the connector type / pigtail quick disconnect type. The model name with "C" (PZ-GxxCx) is the connector type, and the model name with "E" (PZ-GxxEx) is the pigtail quick disconnect type.

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

Indicators

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

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



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

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

Mutual interference

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

Specifications

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

¹ The detection distance is measured with the maximum sensitivity.

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

WARRANTY

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

1. WARRANTY PERIOD

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

2. WARRANTY SCOPE

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

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

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

3. PRODUCT APPLICABILITY

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

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

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

E 1040-1

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Specifications are subject to change without notice.

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HEAT TUMBLE

ERT-OAL36 & 48

Radiant Heat Shrink Tunnel User Guide



ERT-OAL36 & 48

Radiant Heat Shrink Tunnel

Models:

ERT-OAL36-V2

ERT-OAL36-V6

ERT-OAL48-V2

ERT-OAL48-V6

User Guide

Revised 4/19/2022

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Abbreviations

The following abbreviations are used throughout this User Guide:

Abbreviation	Meaning	Abbreviation	Meaning
AC	Alternating Current	lbs	Pounds
AFM	American Film & Machinery (714) 974-9006 info@afmsleeves.com	MAN	Manual
C	Celsius	RTD	Resistance Temperature Device
cm	Centimeters	SSR	Solid State Relay
CR	Control Relay	V	Volts
F	Fahrenheit	VDC	Volts Direct Current
GMP	Good Manufacturing Practices	°	Degrees
Hz	Hertz	"	Inches
kW	Kilowatts	#	Number

Safety

When installing, operating, and maintaining the ERT-OAL36 or ERT-OAL48 Heat Shrink Tunnel, follow these safety practices.

Warnings

- All operators should study this manual thoroughly before operating the machine.
- Always follow GMP (Good Manufacturing Practices) when operating this machinery.
- The machine is heavy. While unpacking and setting up the unit, always use proper lifting techniques. Avoid overreaching and leaning over while handling the machine and accessories. Use more than one person to lift and move the Heat Tunnel.
- Wear safety shoes and work gloves when moving the machine.
- Beware of uneven spots on the factory floor, as the machine could tip over.
- Make sure the electrical power source is properly wired and grounded. The power source should comply with all safety regulations and codes applicable to the installation location.
- Always turn off and disconnect the machine from the power source before servicing or performing maintenance procedures.
- The equipment generates heat, so make sure the area is properly ventilated.
- Do not place any body parts or tools into a running machine.
- The machine has electrical and moving parts which can cause injury.
- Do not tamper with electrical wiring. Use only licensed electricians for maintenance.
- To prevent injury to machinery and/or personnel, do not increase settings on either electrical or mechanical overload safety devices.
- Keep hands away from moving conveyors and assemblies. Conveyor belts that have become worn or frayed can be hazardous and should be replaced promptly.
- Never operate this or any moving equipment without all covers and guards in place. The internal mechanism of most packaging machinery contains numerous shear, pinch, and in-running nip points, many of which are capable of causing severe injury and permanent disfiguration.
- To minimize potential for personal injury, always be sure that machine operators and others working on machinery are properly trained in the correct usage of the equipment and properly instructed regarding the safety procedures for operation.
- Do not make any modifications to either the electrical circuitry or the mechanical assemblies of this machinery. Such modifications may introduce hazards that would not otherwise be associated with this machinery. American Film & Machinery will not be responsible for any consequence resulting from such unauthorized modification.

- The use of certain types of plastic films in sealing and/or shrinking equipment may result in the release of hazardous fumes due to the degradation of the film at high temperatures. Before using any plastic film in this equipment, the manufacturer or supplier of the film should be contacted for specific information concerning the potential release of hazardous fumes. Adequate ventilation should be provided at all times.
- Keep combustible and explosive materials away from this equipment. The equipment may be a source of ignition.
- Do not use with pressurized containers. Exposure to high temperatures can cause pressurized containers to burst, and could cause injury to operators and other personnel nearby.
- Take care when clearing product jams inside the Heat Tunnel. Do not use anything that could potentially puncture a container. Use an electric lift to raise the tunnel from the conveyor before clearing product from inside the Heat Tunnel. Turn off power and allow the temperature to drop below 100 °F (38 °C) before clearing. Temperature inside the Heat Tunnel can easily cause burns.

Understanding Safety Notifications

	DANGER: Indicates a hazardous situation which, if not avoided, will result in death or serious injury.
	WARNING: Indicates a hazardous situation which, if not avoided, could result in death or serious injury.
	CAUTION: Indicates a hazardous situation which, if not avoided, could result in minor or moderate injury.
	ATTENTION Indicates a hazardous situation which, if not avoided, could result in property damage only.

Cautions

When installing, operating, and maintaining the ERT-OAL36 or ERT-OAL48 Radiant Heat Shrink Tunnel, observe these cautions.

	Electrical Hazard: Do not open cover. No user-serviceable parts inside.
	Electrical Ground Hazard: Ensure that unit is properly grounded.
	Hot Surfaces: May cause burns. Do not touch when equipment is operating.
	Fire Hazard: Do not tamper with electrical equipment.
	Health Hazard: Some fumes may be a health hazard with prolonged exposure. Ensure that the area has adequate ventilation.
	Live Steam: Some areas will be very hot.
	Keep Dry: Keep the equipment dry and indoors.

Introduction

General System Description

AFM heat shrink tunnels use heat to shrink film (labels, tamper bands, multi-pack) onto containers over which they have been applied. Containers with labels enter the Tunnel on a conveyor for a “dwell time” of 3-6 seconds – the timeframe needed to achieve proper coverage without overheating the containers. Operators must ensure that no container stays inside the AFM tunnel for no longer than 6 seconds.

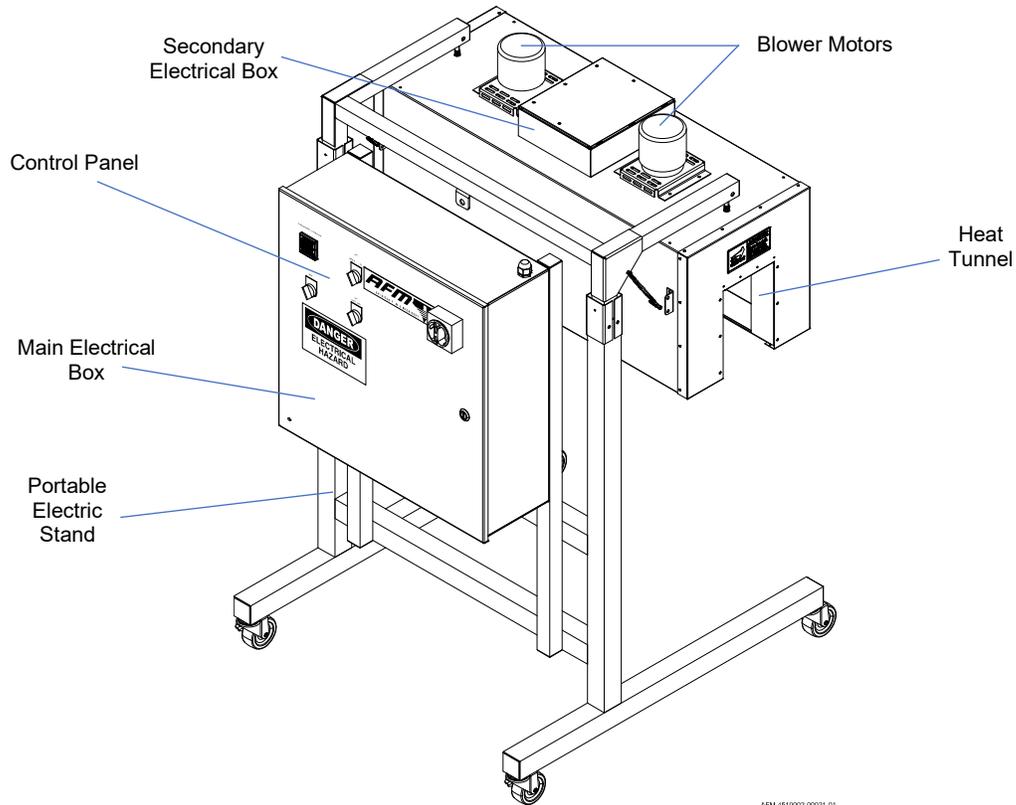
Four models of the ERT-OAL are available:

Model	Tunnel Chamber Length		Electrical Requirements
	Inches	Centimeters	
ERT-OAL36-V2	36	91.4	240 V
ERT-OAL36-V6	36	91.4	480 V
ERT-OAL48-V2	48	121.9	240 V
ERT-OAL48-V6	48	121.9	480 V

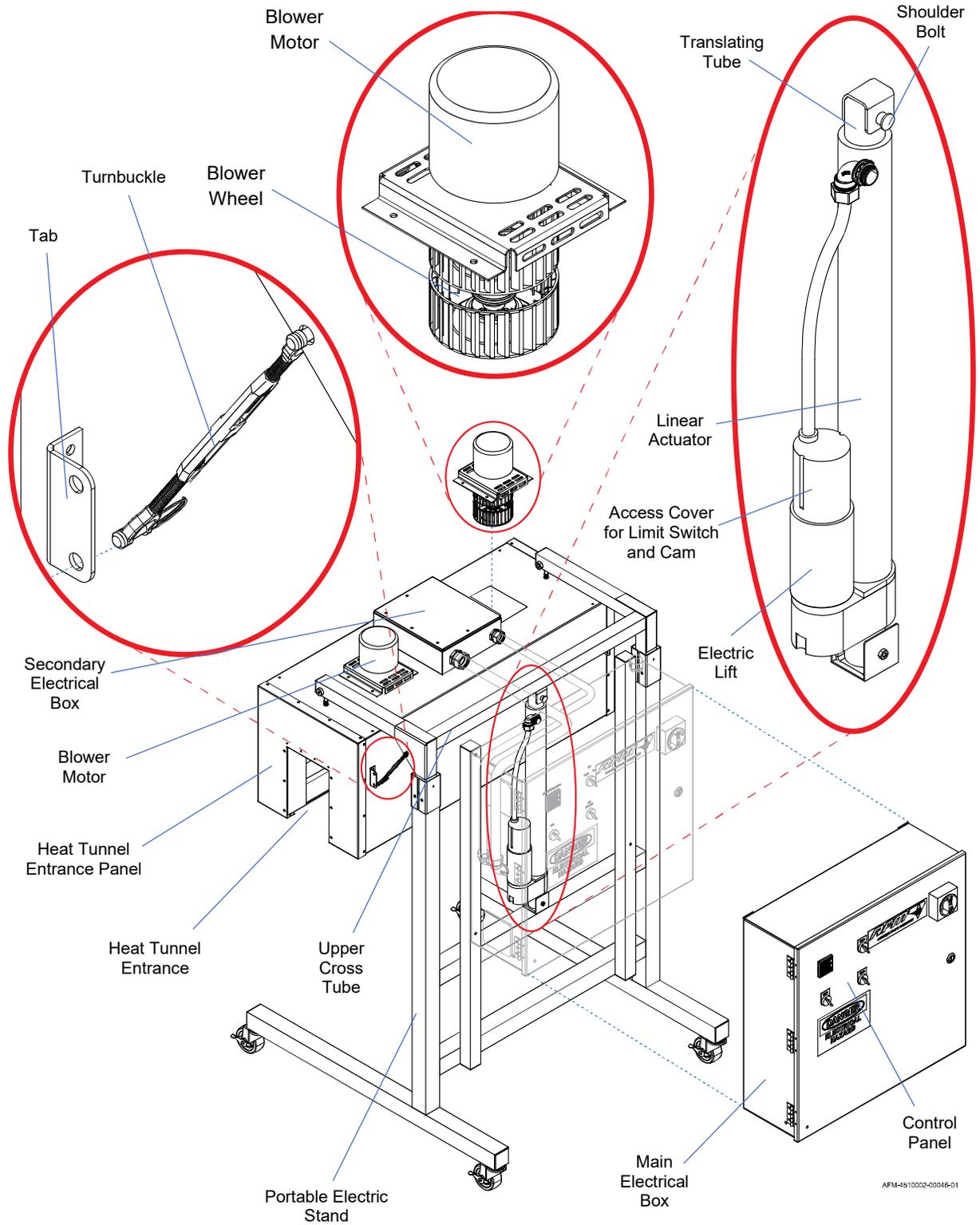
AFM shrink tunnels are intended for industrial use only.

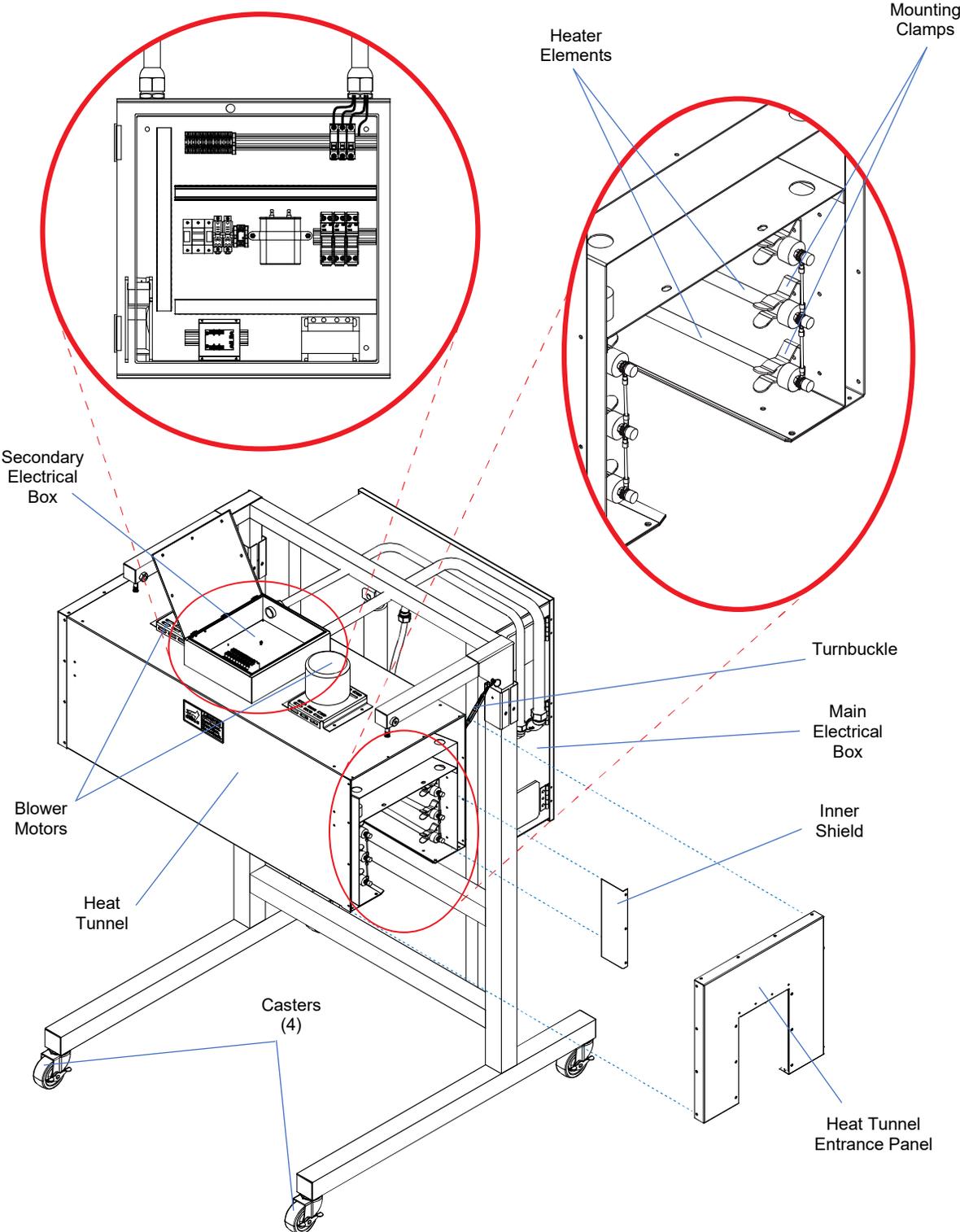
System Components

- Stainless Steel Stand with Motorized Height Control
- IR Heat Tunnel
- Digital Time Proportional Control
- Electrical Boxes
- Operator Controls



System Overview





AFM-4510002-00047-01

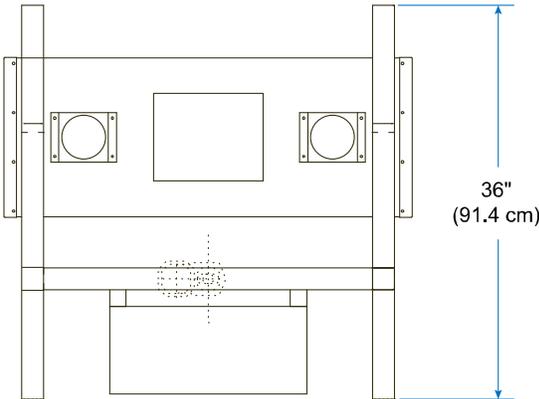
System Specifications

Power	ERT-OAL36-V2 ERT-OAL48-V2	AC 3-Phase, 240 Volt, 50/60 Hz, 12 kW, 35 Amp	
	ERT-OAL36-V6 ERT-OAL48-V6	AC 3-Phase, 480 Volt, 50/60 Hz, 12 kW, 18 Amp	
Chamber Dimensions	ERT-OAL36 (V2 or V6)	Length 37.3" 94.7 cm Width 6.0" 15.2 cm Height 9.0" 22.8 cm	
	ERT-OAL48 (V2 or V6)	Length 49.3" 125.2 cm Width 6.0" 15.2 cm Height 9.0" 22.8 cm	
Machine Dimensions	ERT-OAL36 (V2 or V6)	Length 37.3" 94.7 cm Width 31.5" 80.0 cm Height 70.0" 17.8 cm	
	ERT-OAL48 (V2 or V6)	Length 49.3" 125.2 cm Width 31.5" 80.0 cm Height 70.0" 17.8 cm	
Max Temperature		400 °F	204 °C

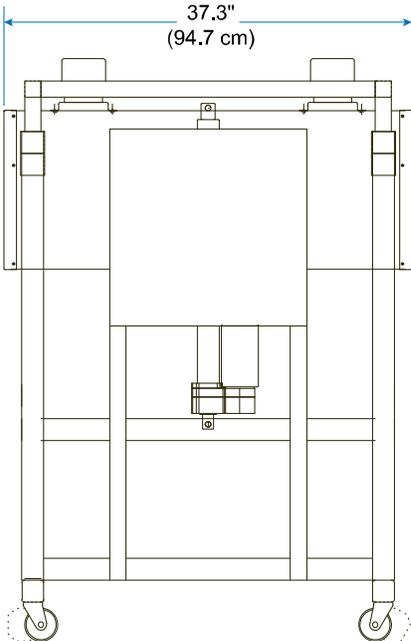
Component Dimensions

ERT-OAL36-V2 and ERT-OAL36-V6

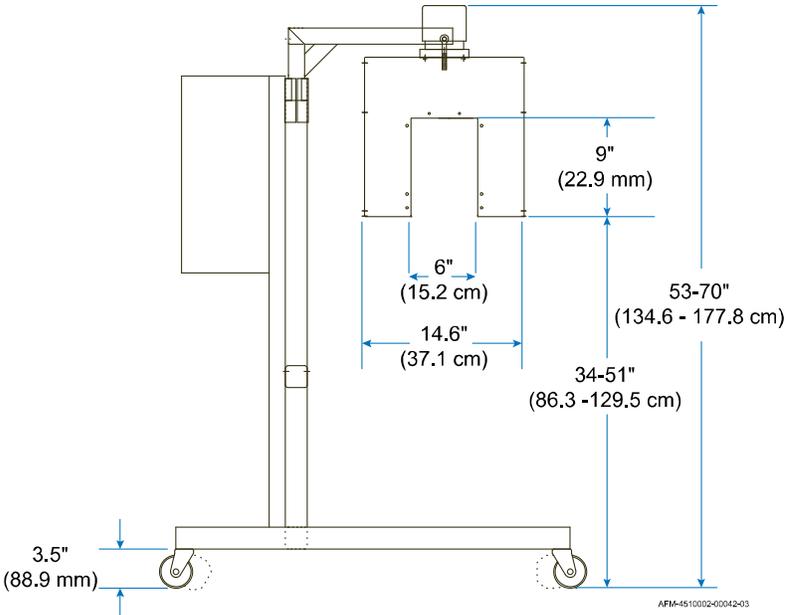
Top View



Front View



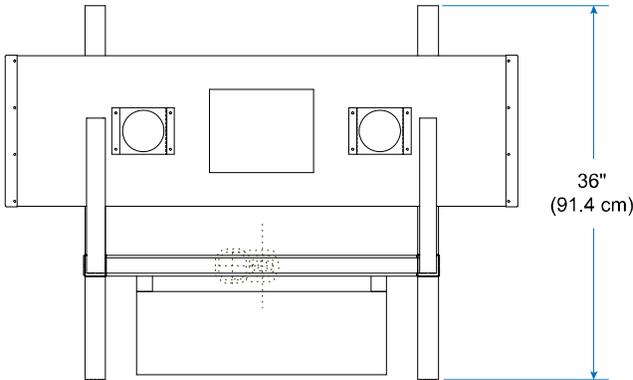
Side View



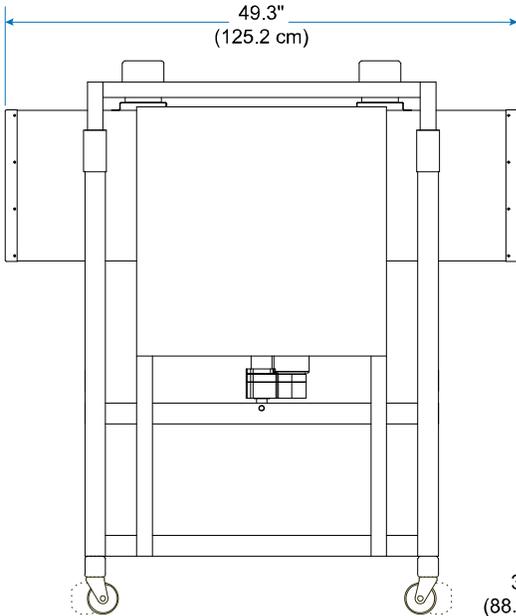
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ERT-OAL48-V2 and ERT-OAL48-V6

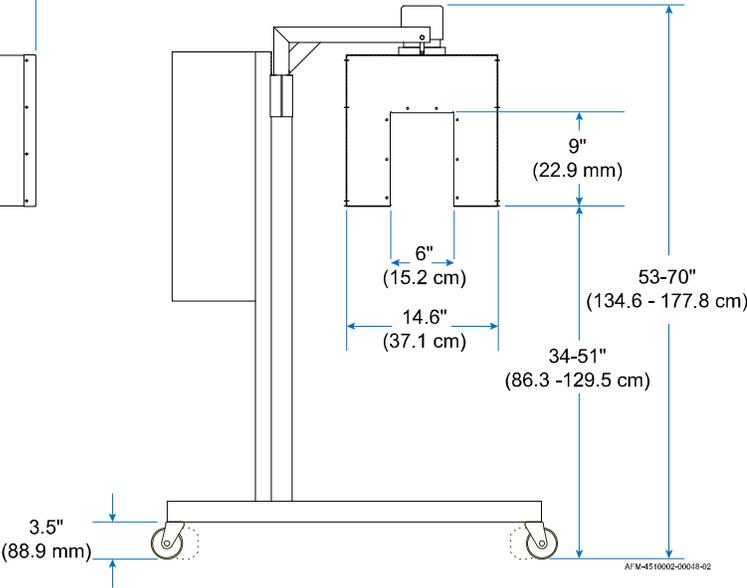
Top View



Front View



Side View



Optional Equipment

Depending on the labeling tasks being performed, additional equipment may be needed to complete the standard ERT-OAL setup:

Sleever

A Sleever applies labels to products before the ERT-OAL shrinks those labels onto the products. A Sleever is not included with the ERT-OAL, but AFM offers several models depending on label size and production speed.

AFM LX-100



AFM-4510002-00006-01

AFM LX-150



AFM-4510002-00007-01

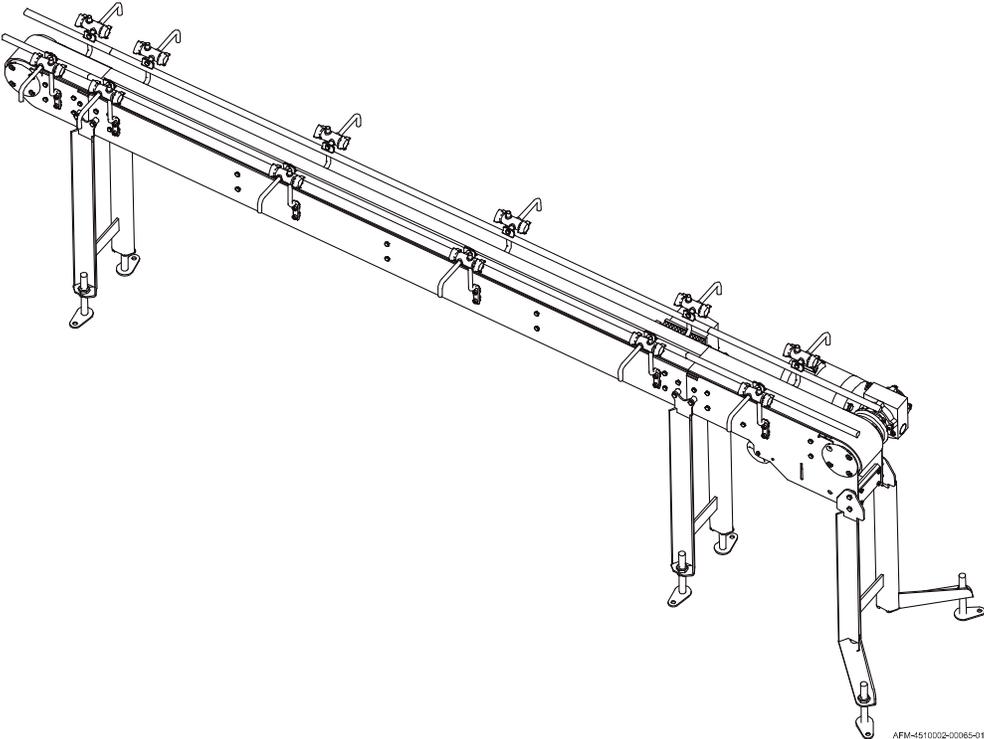
AFM LX-350



AFM-4510002-00008-01

Conveyor

A Conveyor is not included with the ERT-OAL, but is needed to carry products to and from Shrink Tunnels. AFM can offer Conveyor solutions as required.



Accumulation Table

An Accumulation Table is not included with the ERT-OAL36-48, but can be used to stop, hold, and release products after the ERT-OAL36-48 has fixed the labels onto them. Two height-adjustable Accumulation Table options are available from AFM's sister company, Eastey – the 36" diameter TT36 and the 48" diameter TT48.

Accumulation Table



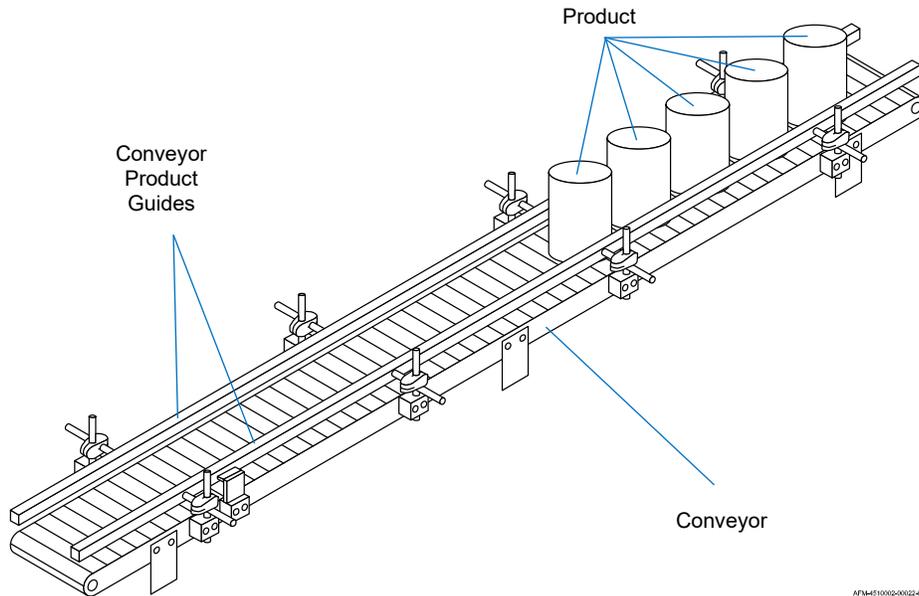
Installation and Setup

General Recommendations

Material Handling

The most critical factor for consistently achieving superior quality heat shrinking is material handling. Adequate conveyor product guides must be provided, correctly installed, and properly maintained. Incorrect or inconsistent product handling may cause shrink quality problems, maintenance problems, and could lead to product damage. The customer is responsible for maintaining proper material handling equipment.

Conveyor Product Guides



Conveyor Material Requirements

The ERT-OAL Tunnel Chamber is very hot (up to 400 °F / 224 °C) and can potentially damage Conveyor Belts, Wear Rails and Guide Rails. Particularly when shrinking full-body labels, or where the Tunnel is near the Conveyor Belt, stainless steel Conveyor Belting is recommended. Please contact AFM for Conveyor solutions.

Work Area

The ERT-OAL is a sturdy and durable machine. Reducing the amount of dust and dirt in the work area will result in the best performance. The ERT-OAL may occasionally require cleaning due to environmental contaminants.

Maintenance Access

When planning the ERT-OAL installation, allow for easy access to the Tunnel so that clean-up can be done conveniently.

IMPORTANT: Turn off the power and allow the Tunnel to cool before doing any cleaning or maintenance.

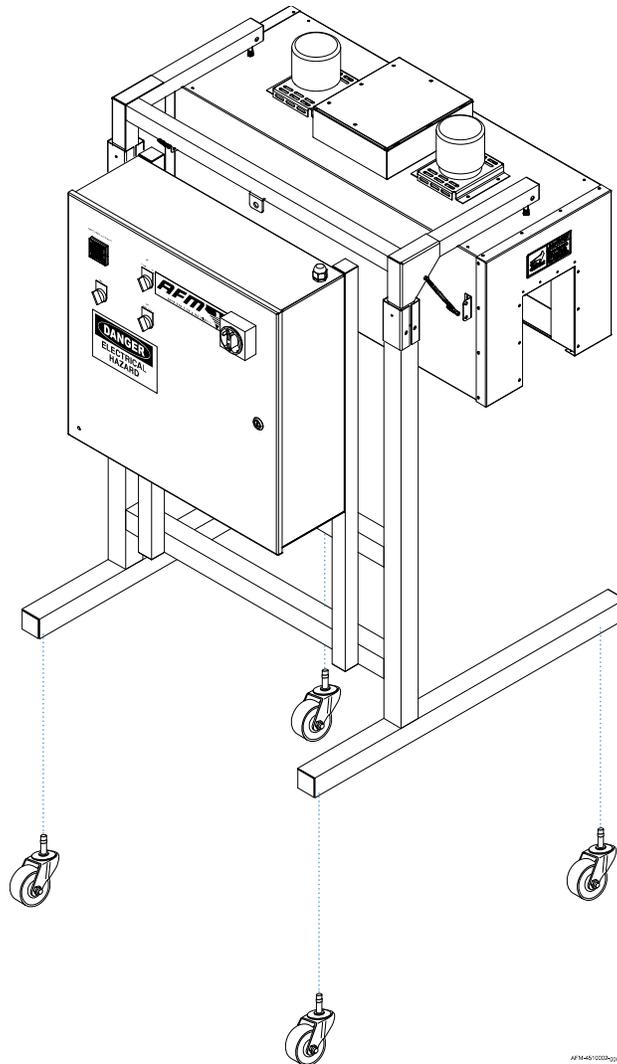
Unpacking and Placement



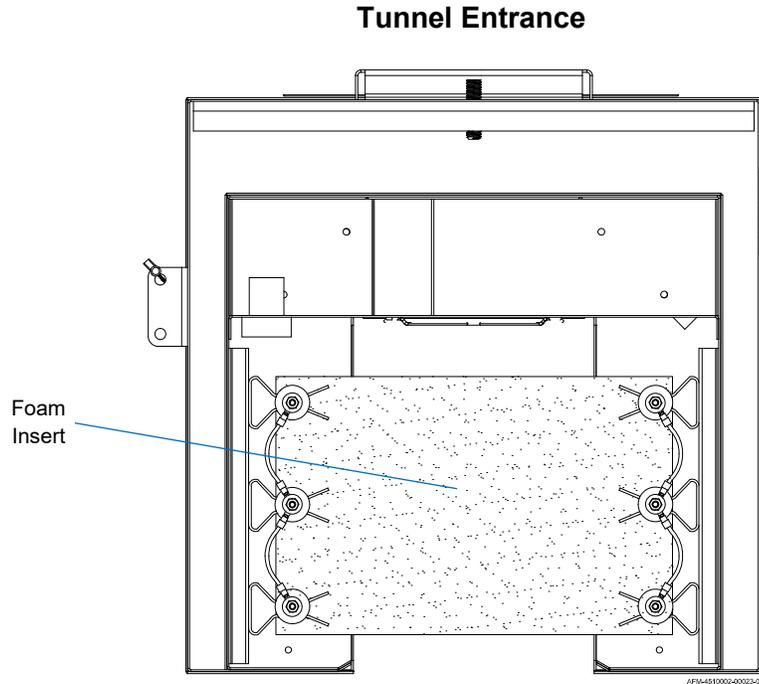
CAUTION: Use only the supplied mounting hardware to attach the Tunnel to the Stand. Using hardware other than that supplied by AFM can damage the assembly and void the warranty.

1. Open the crate and carefully remove the system. A forklift may be necessary.
2. The ERT-OAL36 and ERT-OAL48 ship fully assembled, with the exception of the Casters, which are shipped separately. Before proceeding, install the Casters.

Installing the Casters



3. Remove the packing boards holding the Tunnel up from the stand.
4. Remove the foam insert block used to cushion the Tubes inside the Heat Tunnel.



5. Inspect the Quartz Heating Tubes to make sure that no breakage has occurred. If there is any breakage, do not proceed. Contact your authorized AFM distributor immediately.

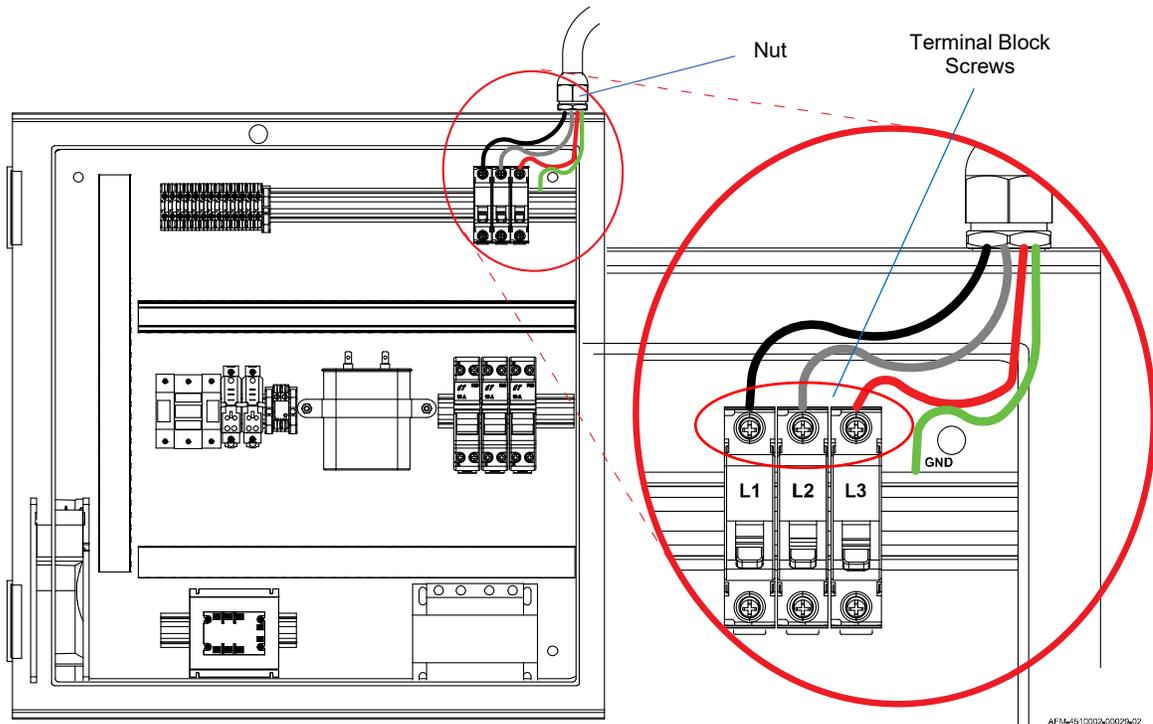


CAUTION: Do not operate the Heat Tunnel with broken Heating Tubes.

AC Wiring

NOTE: Customer must provide any required Fittings, AC Cord, and Wiring.

1. If required, remove the nut on the AC cord connector end.
2. Slip the AC cord wiring through the hole on the top of the main electrical box.
3. Attach the wiring as shown in the following illustration:

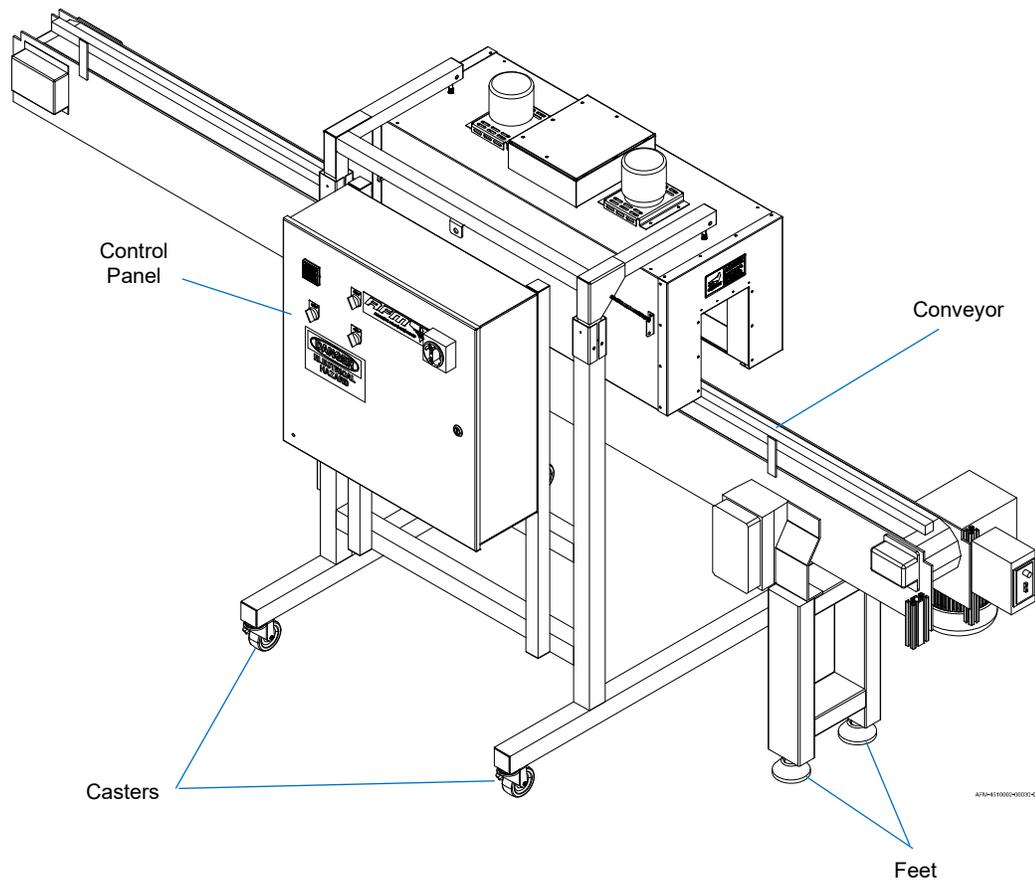


4. Tighten the terminal block screws.
5. Retighten the nut on the end of the cord.
6. Place the correct male AC plug onto the end of the power wire.
7. Check the connections.

Tunnel Placement

Conveyor Alignment

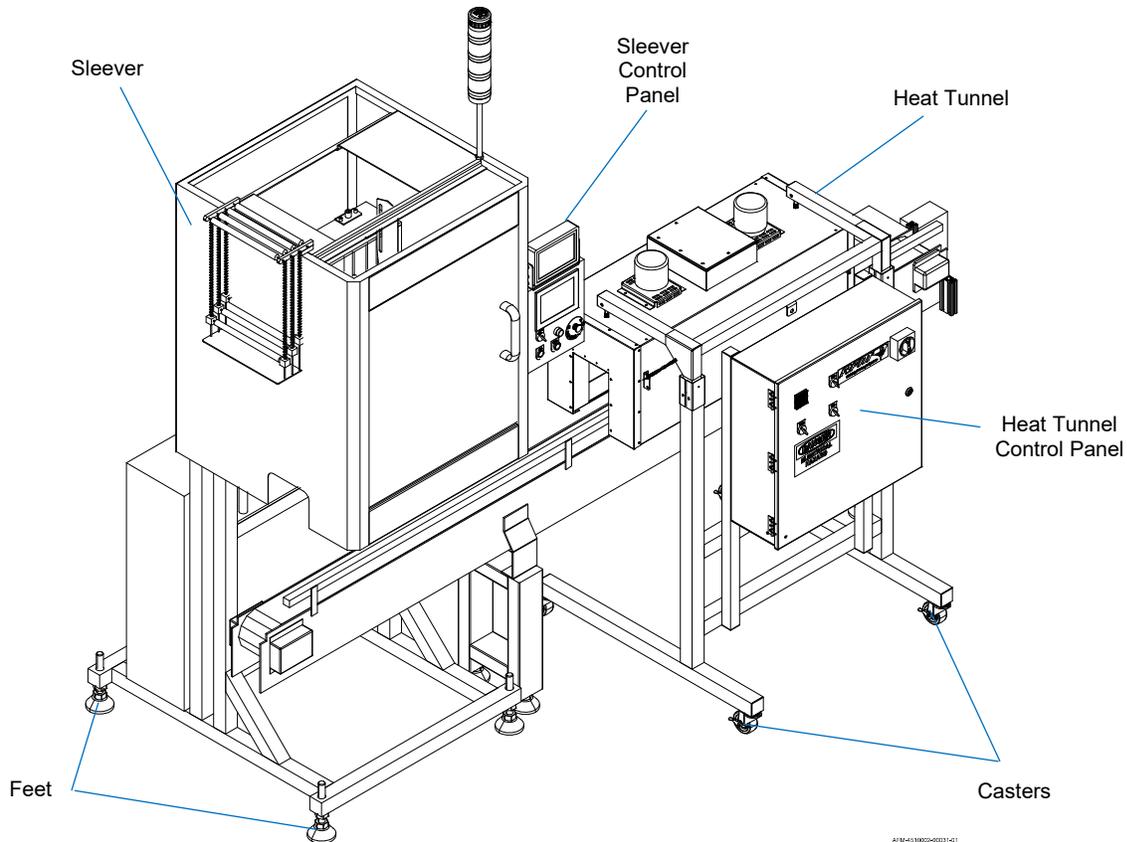
1. Position the Heat Tunnel over the existing conveyor.
2. Ensure that all controls on the Control Panel are easily accessible.
3. Ensure that the Tunnel Chamber is centered over the centerline of the Conveyor Belt.
4. Ensure sufficient space around the Tunnel so that the heat emitted from the Tunnel does not damage other equipment.
5. On the Heat Tunnel and Conveyor Stands, lock the wheels and feet.



Sleever Alignment

If using a Sleever with the Heat Tunnel:

1. Align the Heat Tunnel with the existing Sleever.
2. Ensure that all controls on the Control Panels are easily accessible.
3. On the Sleever and Heat Tunnel stands, lock the Casters and Feet.



If not using a Sleever with the Heat Tunnel:

1. Ensure that the operator has enough room to move and is not in danger of getting caught in moving mechanisms.

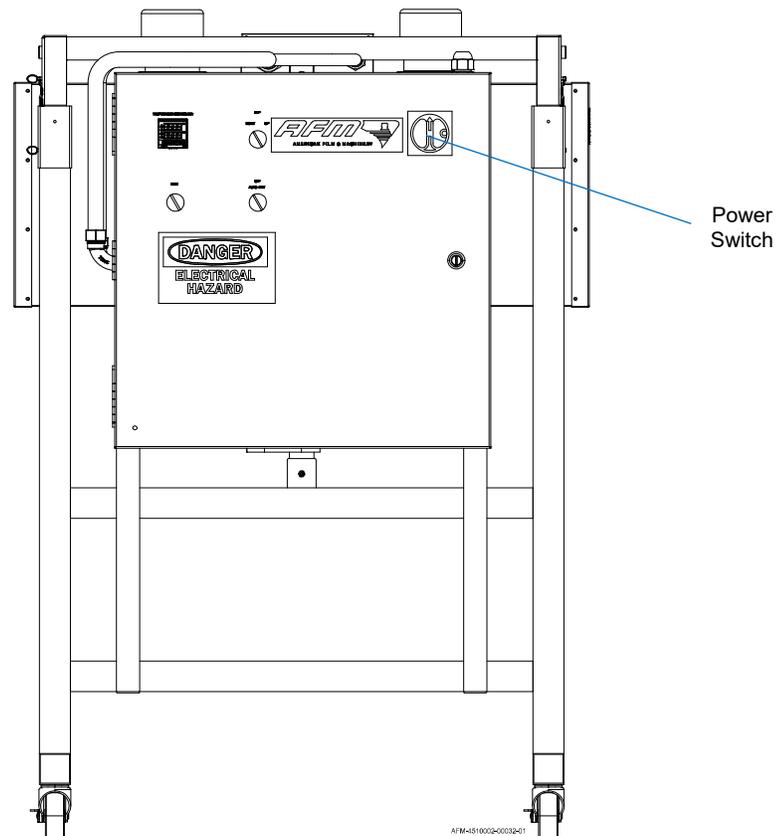
Operation

When all components have been properly mounted and connected, the ERT-OAL Heat Tunnel is ready to begin production.

Startup

To power up the ERT-OAL Tunnel:

1. Double-check the installation. Ensure that all components are securely mounted and that all data and power cables are properly seated and connected.
2. Ensure that the system is connected to an appropriate power source.
3. On the front of the Control Panel, turn the Power Switch to the ON (I) position.



4. Ensure that all six Quartz Heating Tubes glow red upon startup.
5. Listen to ensure that both Blowers are operating.

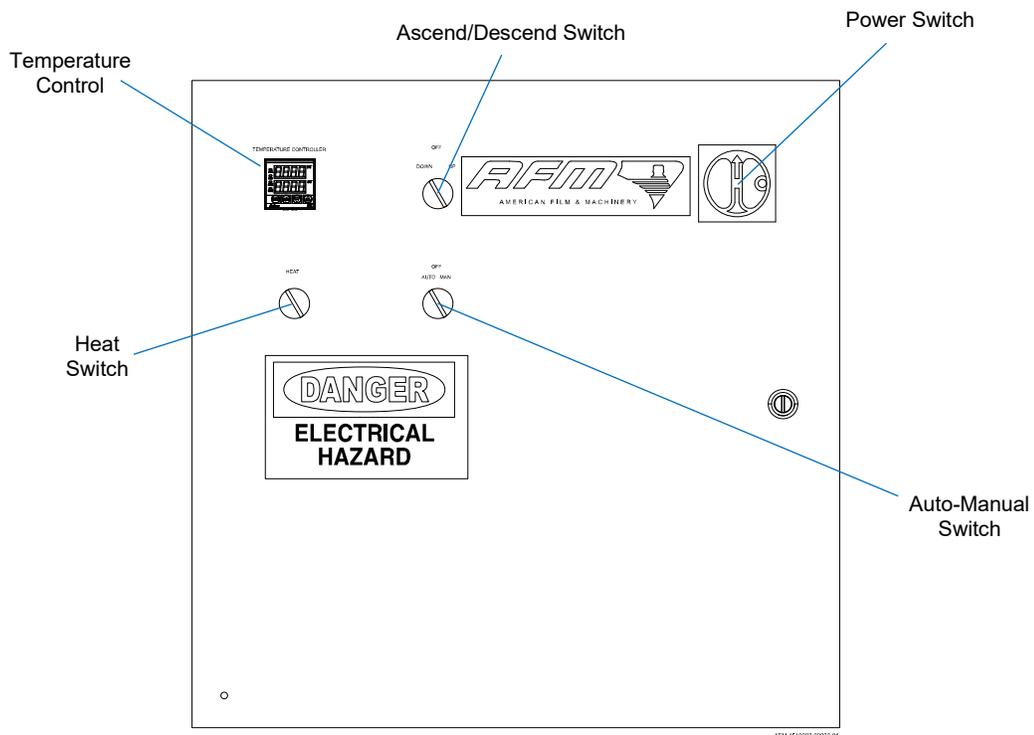
Control Panel



CAUTION: The Main Electrical Box is not a watertight enclosure. Do not splash the Control Panel or Main Electrical Box with liquid. If liquid does splash on the Main Electrical Box, turn off the machine immediately and clean/dry it.

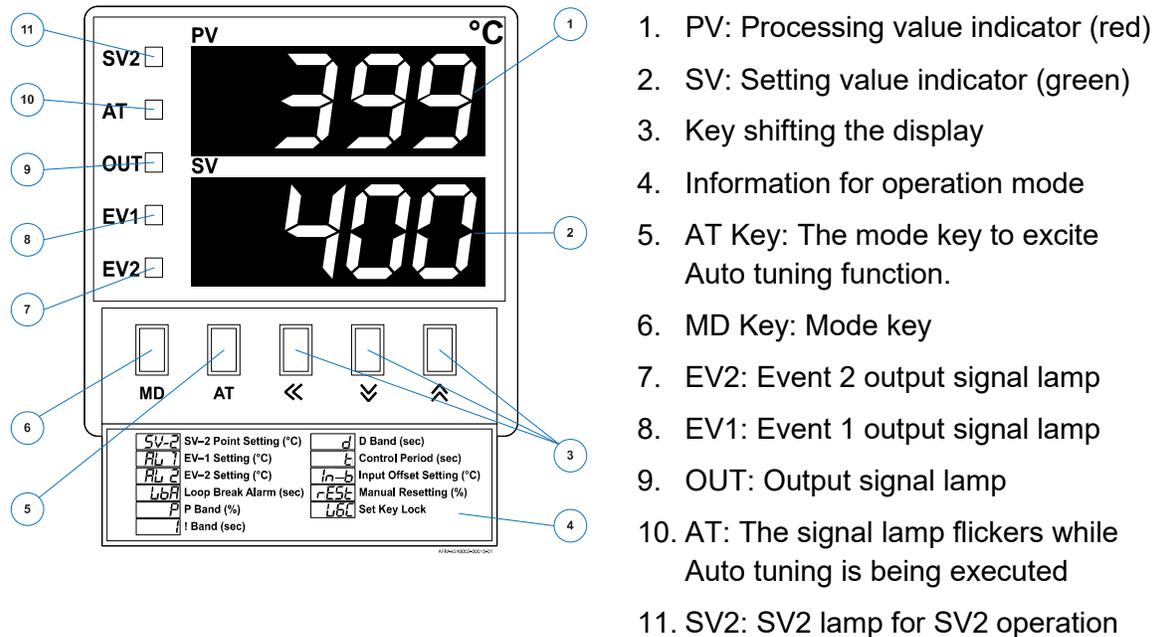
The Control Panel on the Main Electrical Box includes the following:

- Power Switch
- TZ4ST Digital Temperature Control
- HEAT Switch
- Lift (DOWN OFF UP) Vertical Switch
- Lift (AUTO OFF MANUAL) Auto-Manual Switch



TZ4ST Digital Temperature Controller

The Autonics TZ4ST Temperature Controller controls the Heat Chamber temperature in the heat zone. The RTD (Resistance Temperature Device) Sensor that connects to the Temperature Controller is located inside the Secondary Electrical Box on top of the Heat Tunnel. The temperature setting may have to be changed for each product application to obtain the desired results.



1. PV: Processing value indicator (red)
2. SV: Setting value indicator (green)
3. Key shifting the display
4. Information for operation mode
5. AT Key: The mode key to excite Auto tuning function.
6. MD Key: Mode key
7. EV2: Event 2 output signal lamp
8. EV1: Event 1 output signal lamp
9. OUT: Output signal lamp
10. AT: The signal lamp flickers while Auto tuning is being executed
11. SV2: SV2 lamp for SV2 operation

Changing the Set Value

1. Press the left-arrow (←) button and a digit will begin to flash. The flashing digit indicates the digit whose value can be changed by pressing the down- (↓) or up-arrow (↑) buttons.
2. If necessary, press the left-arrow (←) to shift to the place of the digit that needs to be changed. (The digit to the right will begin flashing.)
3. Press up (↑) or down (↓), as required to change the flashing digit to the required value.
4. Repeat instructions 2 and 3 above as necessary until all digits have been set to the required value, and then press the MD button. No digits will be flashing, the new value entered is applied.

Fine Tuning the Set Value

After a temperature setpoint has been selected, wait for the temperature inside the Heat Tunnel to stabilize and run some product to observe the results. Adjust the temperature as required, again waiting for the temperature to stabilize before doing further testing.

Changing the Set Value for Over Temperature

The Temperature Controller has a high limit set at the factory to 500° F. This turns the heat off if the temperature inside the Heat Chamber exceeds 500 °F. This high limit can be changed if it is necessary to reduce the temperature at which the heat turns off.

PV, the Process Value is the actual temperature reading at the sealing elements. PV and SV are mentioned in this procedure, but they are only displayed at the beginning of the procedure.

1. Press and hold the MD button until SV-2 is displayed.
2. Press the MD button (do not hold it down) repeatedly to scroll through the menu until LOC is displayed.
3. Press the left-arrow (⏪) button. (ON will begin flashing.)
4. Press the down-arrow button (⏴). (ON will turn to OFF and OFF will be flashing.)
5. Press the MD button. (OFF will stop flashing.)
6. Press MD again. (This will bring you back to SV-2.)
7. Press MD again until AL-1 is displayed.
8. AL-1 is set to 500 °F.

Setting the Over Temperature Alarm

1. Press and hold the MD button for approximately three (3) seconds.
 - a. IN-T is displayed.
2. Press and hold the MD button and up-arrow (⏶) buttons at the same time for three (3) seconds to activate the menu.
3. Scroll to LOC and press the left-arrow (⏪) button. On will begin flashing. Press the down-arrow button (⏴). When “On” turns to “Off,” press the MD button until LOC appears, indicating that the “Off” setting is locked.
4. Press the MD button until EU-1 appears (Event 1). Below EU-1, AL-6 should appear. If not, use the up and down buttons to select AL-6.
5. Return to LOC and change it to “On.”
6. Press and hold both the MD and up-arrow (⏶) buttons at the same time for three (3) seconds to access the other menu.
7. Scroll through the menu using just the MD button and turn LOC Off.
8. Scroll through the menu until AL-1 appears. This is your high alarm. The normal factory setting is 500 °F.
9. Return to LOC and change it to “On.”

Electric Lift Operation

The ERT-OAL Electric Lift may be used to raise the Heat Tunnel up from the Conveyor or lower it onto the Conveyor.

	<p>ATTENTION: The Heat Tunnel should be raised whenever the Conveyor stops to prevent heat damage to product.</p>
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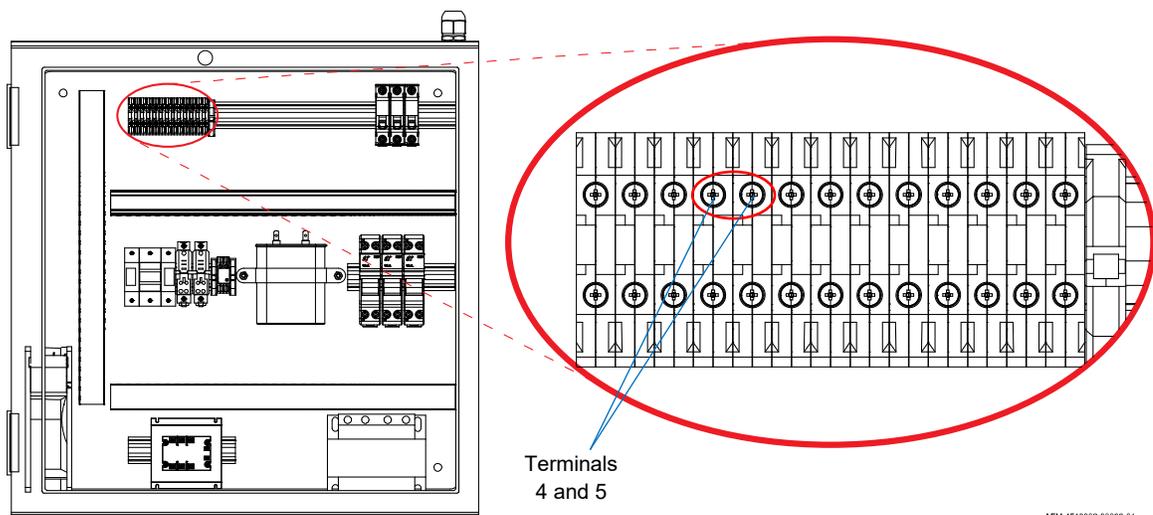
The Electric Lift can be operated manually or automatically with an external trigger signal. Contact AFM for guidance electronically integrating the Heat Tunnel into an overall production system.

Manual Mode

When the “Auto-Manual” switch on the Control Panel is in the **MANUAL** position, the “Ascend/Descend” switch may be used to cause the Electric Lift to raise and lower the Heat Tunnel. The Electric Lift stops when the user releases the “Ascend/Descend Switch.”

Auto Mode

When the “Auto-Manual” switch on the Control Panel is in the **AUTO** position, the Electric Lift automatically raises and lowers the Heat Tunnel to positions that have been preset on the Limit Switch in the Linear Actuator (see “Setting the Raised and Lowered Lift Positions for AUTO Mode” on page 37). Lowering of the Electric Lift occurs when 24 VDC is applied to terminals 4 and 5 in the Secondary Electrical Box.



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NOTE: When in **AUTO**, the Electric Lift begins to raise immediately upon removal of power to the Lift Control Terminals (terminals 4 and 5). If power to the Lift is interrupted, the Lift will not move.

The 24 VDC relay may be replaced with whatever relay is desired to allow a different voltage signal to operate the Lift remotely.



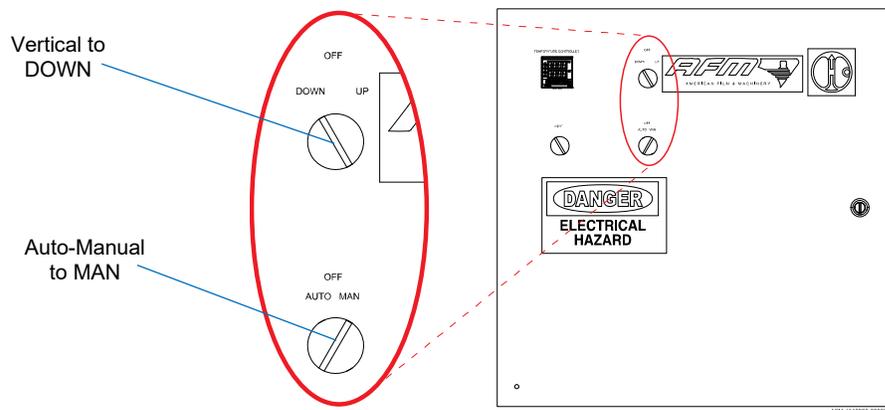
CAUTION: To avoid damage to equipment, set the “Lowered Lift Position” before operating the Electric Lift in the **AUTO** mode (see “Setting the Lowered Lift Position” on page [37](#)).

Setting the Raised and Lowered Lift Positions for AUTO Mode

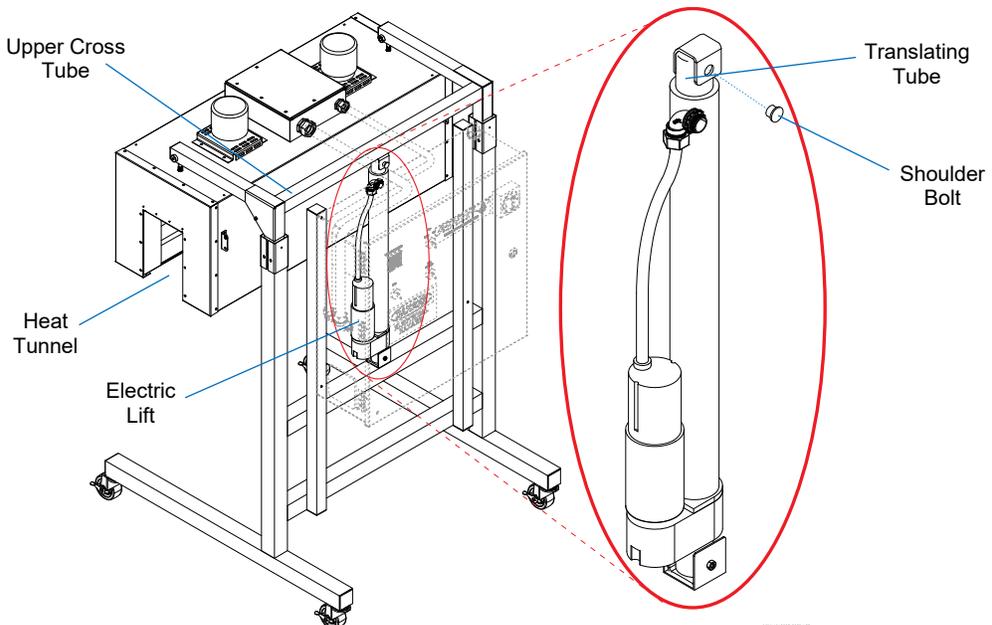
Before using the Electric Lift in “Auto” mode, the desired raised and lowered positions must be set.

Setting the Lowered Lift Position

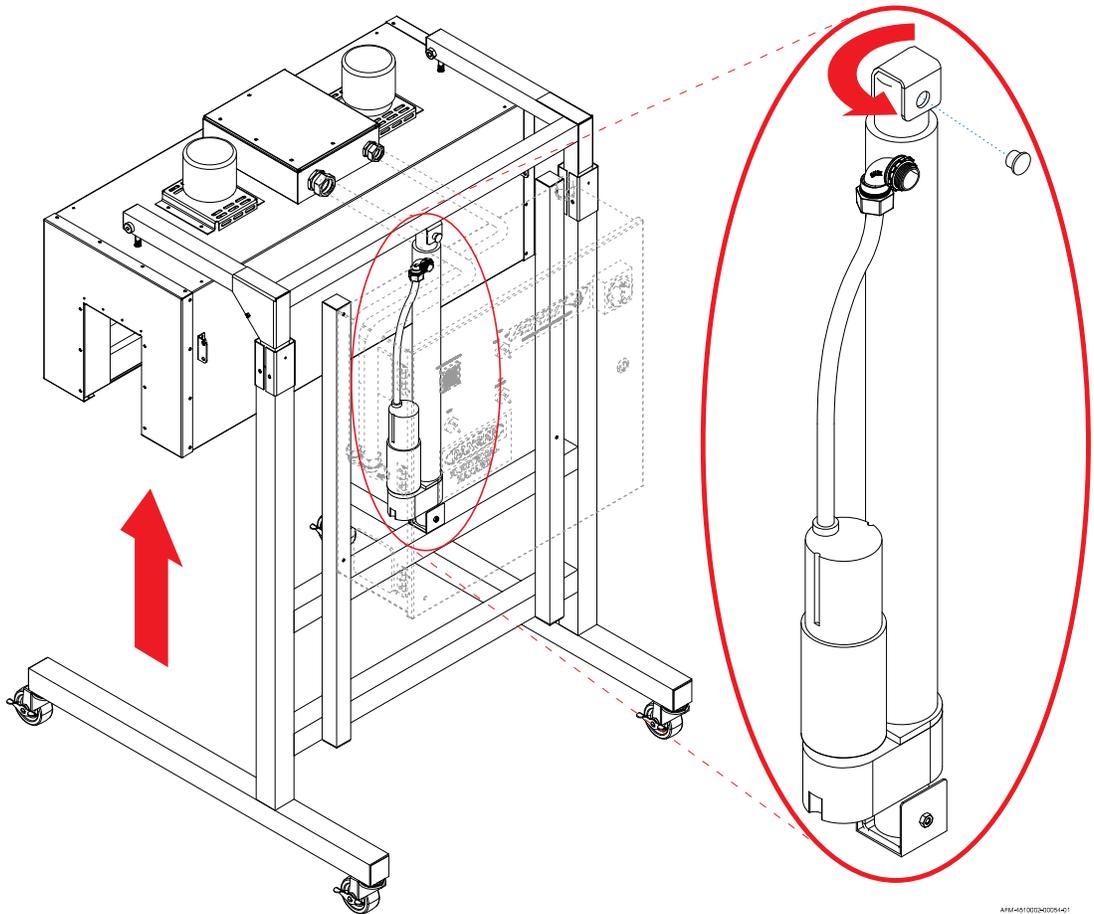
1. Ensure that the Heat Tunnel is properly attached to its Stand.
2. Make sure that the Heat Tunnel and the Stand are in a clear area with no obstructions to the vertical motion of the Lift.
3. Turn the “Auto-Manual” switch to the **MAN** position.
4. Hold the “Vertical” switch in the **DOWN** position until the Electric Lift stops.



5. Disconnect the Translating Tube from the Upper Cross Tube on the Stand by removing the Shoulder Bolt.



6. With multiple people, physically lift the Upper Cross Tube and the Heat Tunnel (the Heat Tunnel weighs approximately 125 lbs).
7. Unscrew the Translating Tube until it moves to the desired minimum height.

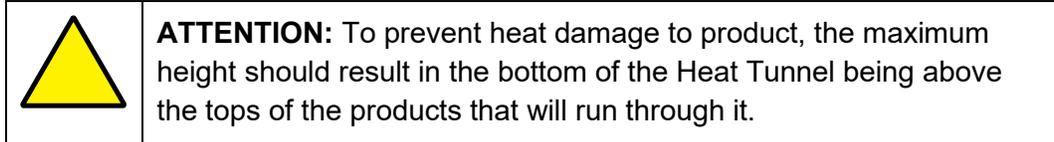


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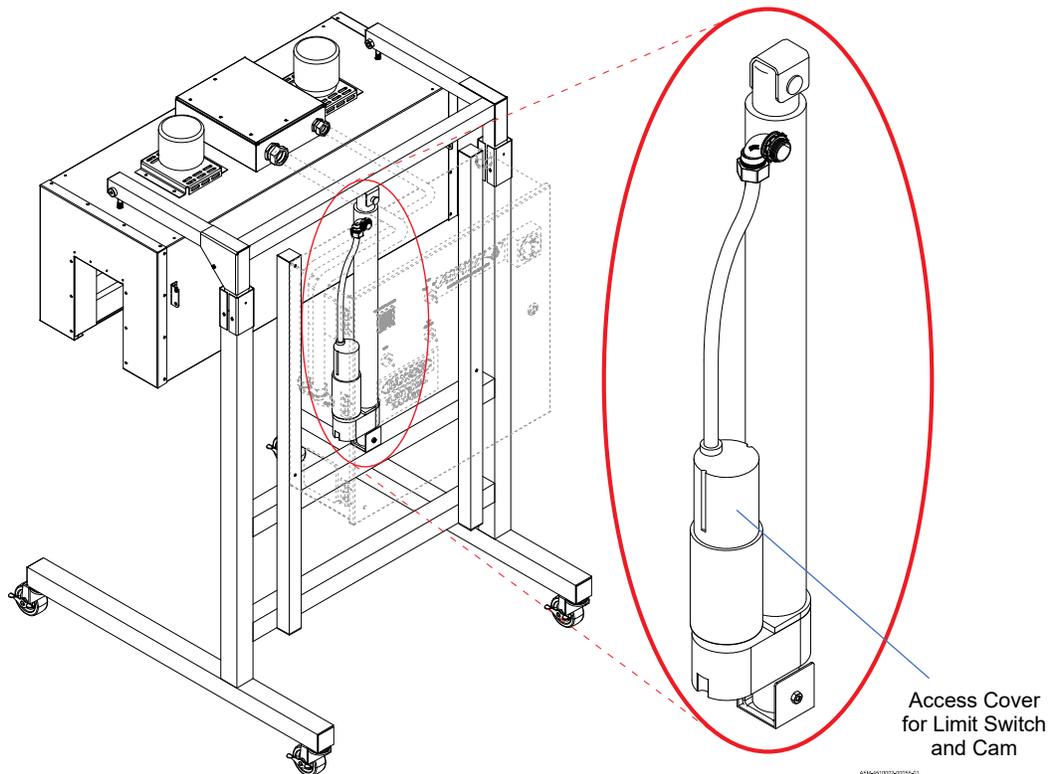
8. Align the Translating Tube with the Upper Cross Tube and reinsert the Shoulder Bolt.

Setting the Raised Lift Position

1. Use the "Vertical" switch to raise the Heat Tunnel to your maximum desired height (the upper position at which the Electric Lift will stop in Automatic mode).



2. Remove the cover from the Limit Switch.



3. Adjust the Cam Switch (next to the Limit Switch) until the Limit Switch is actuated. Allow for vertical drift of the Heat Tunnel, especially when the Heat Tunnel lowers.
4. Check the operation of the Electric Lift to ensure correct range of movement and readjust if necessary.
5. Replace the cover on the Limit Switch.

Maintenance

Mounting Hardware and Connections

Occasionally check the mounting hardware and retighten any mounting brackets or screws that may have vibrated loose during operation.

External Cleaning

1. Verify that the Heat Tunnel is cool and that all power has been disconnected.
2. Apply cleaning spray to a fresh cloth, and gently but thoroughly wipe and dry the external components.



CAUTION: Do not attempt to clean electronics, Heater Elements, or parts that are inaccessible.



CAUTION: Do not attempt to clean inside the Main Electrical Box or the Secondary Electrical Box.

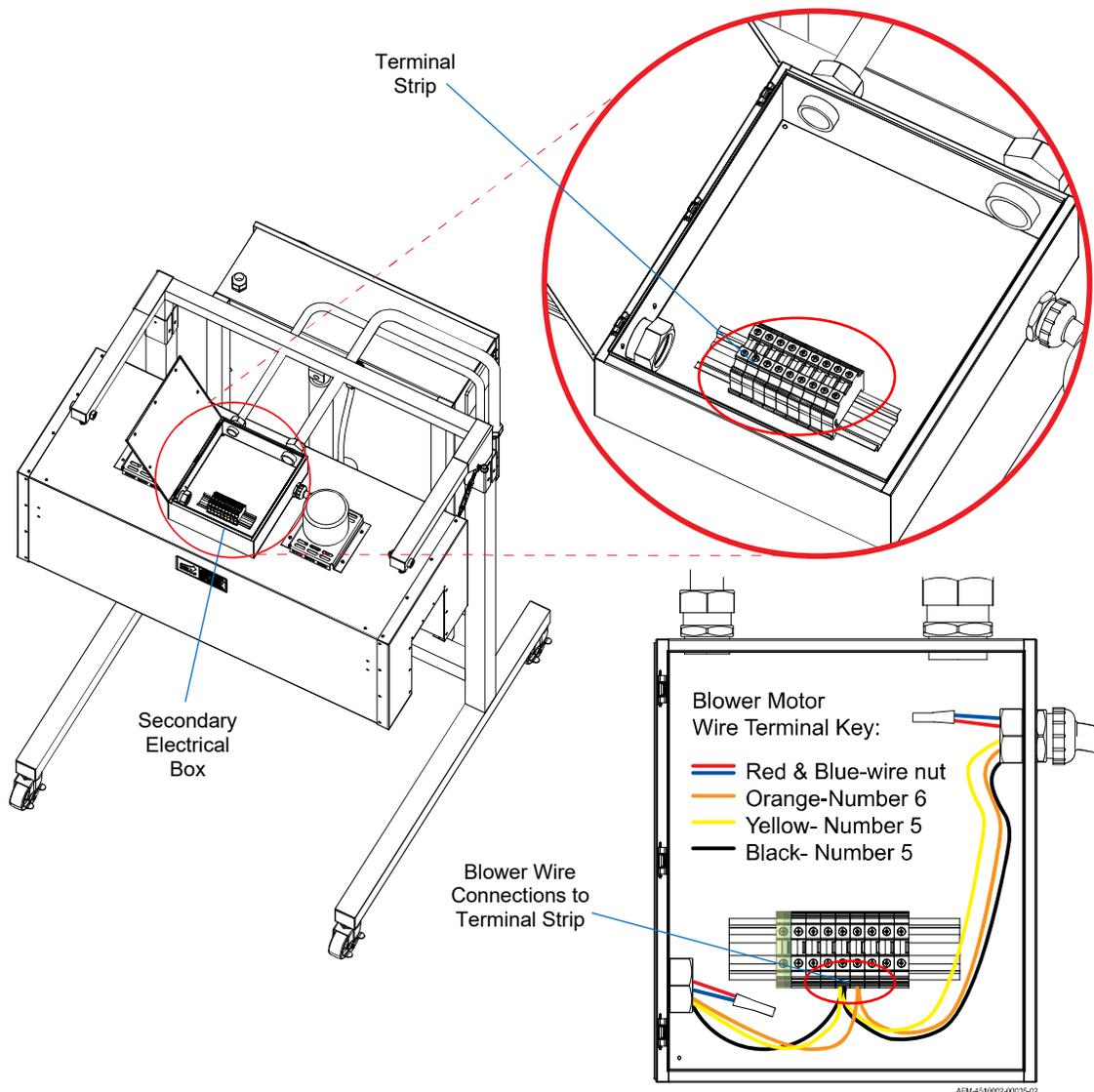
3. Be sure that any residual cleaning spray dries before reconnecting the power supply and turning the power on.

Parts Replacement

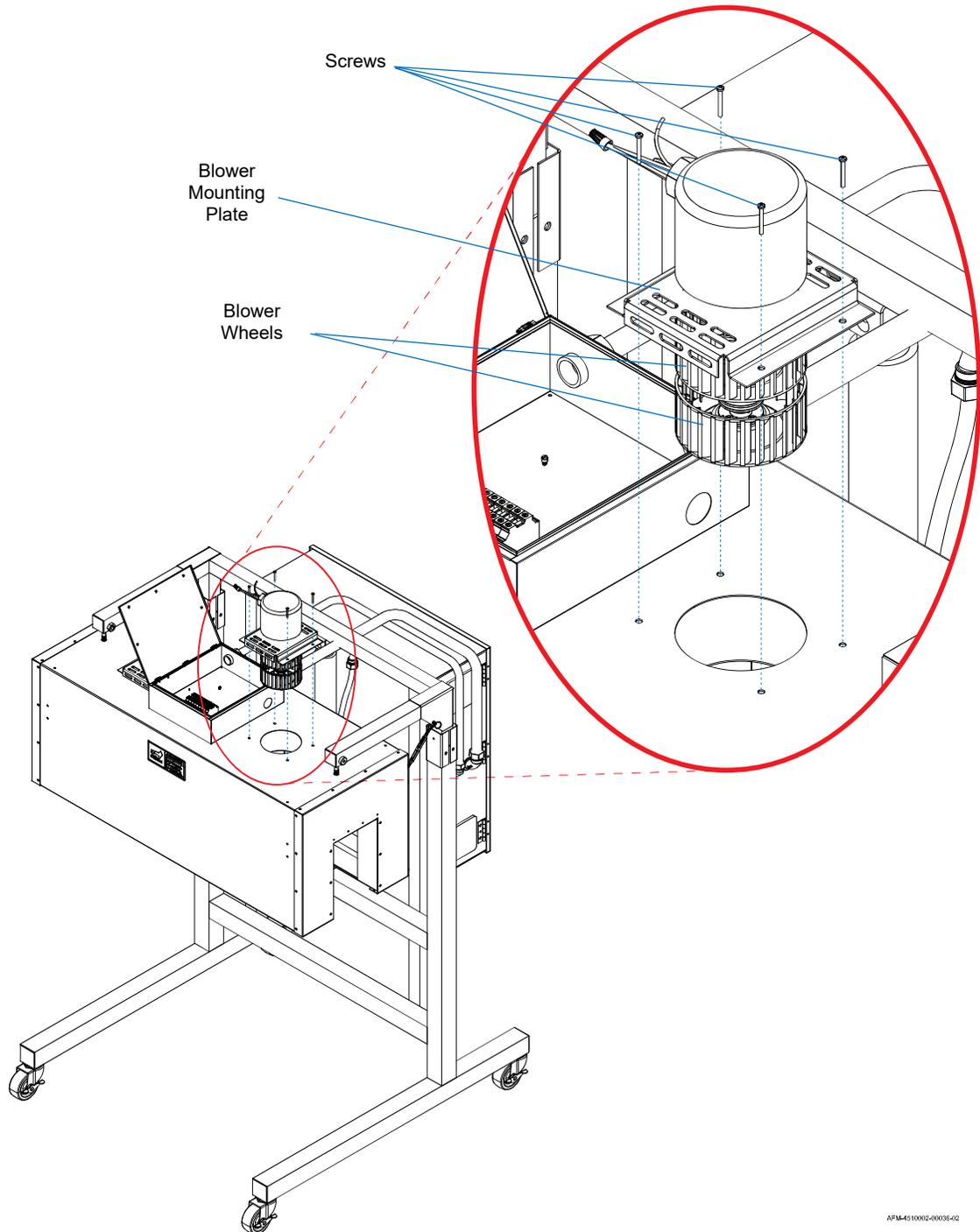
Blower Motor Replacement

1. Before replacing the Blower Motor, make sure that all power to the Main Electrical Box is turned off.
2. Unplug the Heat Tunnel from power.
3. Disconnect the blower wires by removing the wires at the Terminal Strip inside the Secondary Electrical Box.

NOTE: Other wiring has been removed for clarity. Refer to the “AC Wiring” section on page 27 for more wiring diagrams.



4. Remove the four #8-32 Phillips head screws that hold the Blower Mounting Plate to the Heat Tunnel's outer shell.



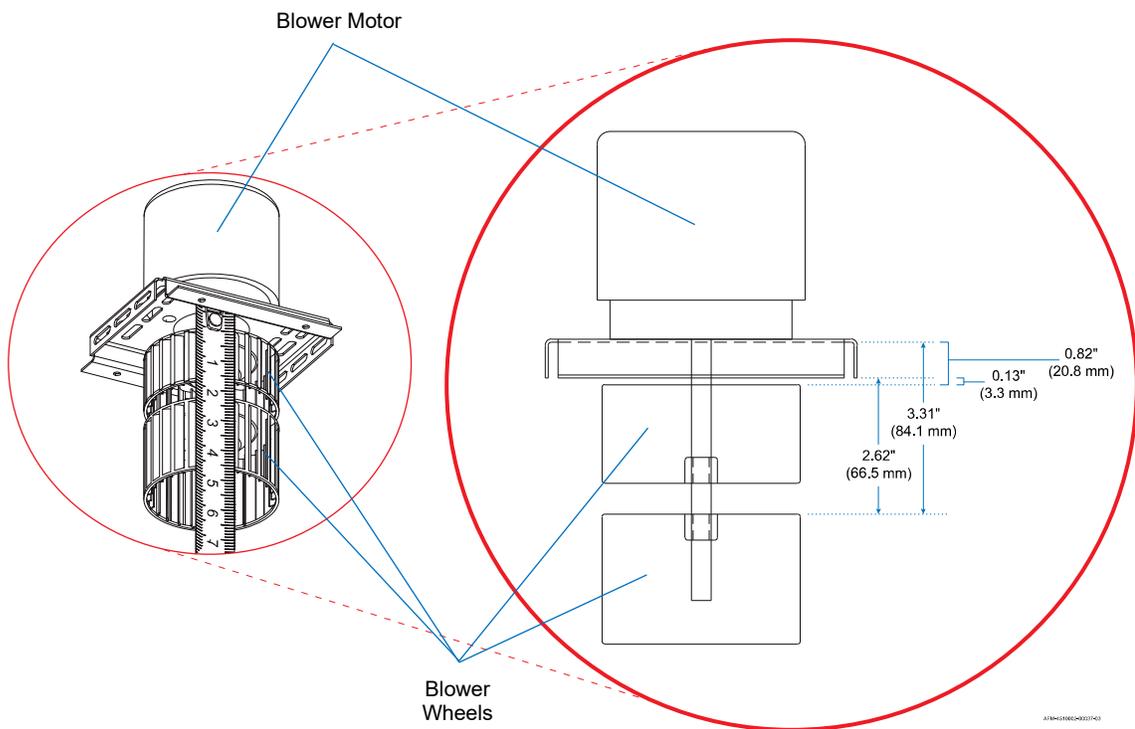
AFM-4510002-00035-02

5. Remove the Blower, Blower Mounting Plate, and Blower Wheels as an assembly.



CAUTION: Blower Wheels are sharp; be careful when removing them from the old motor.

- When replacing, install the Blower Wheels on the fan shaft as shown in the illustration below.



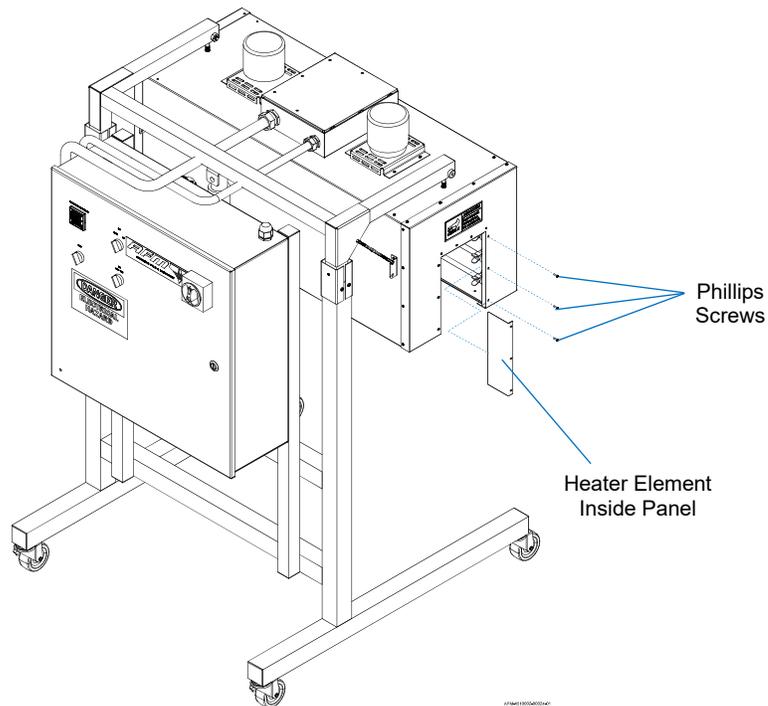
- Replace the Blower Motor and reinstall the Blower assembly. Do not reuse damaged Blower Wheels.

Replacing Heater Elements

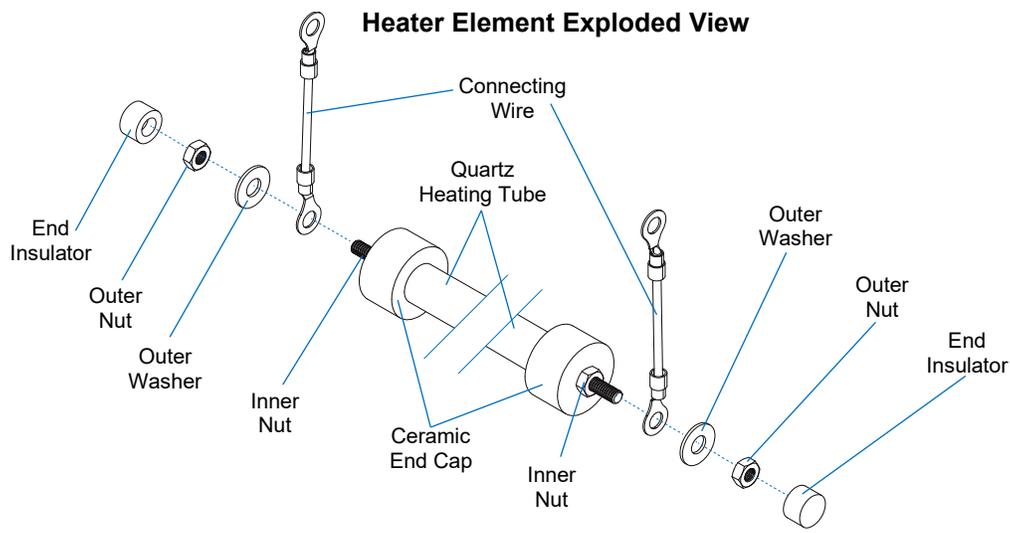


WARNING: Heater Elements should be removed and replaced one at a time to avoid rewiring them incorrectly, which can result in equipment failure or a dangerous safety hazard.

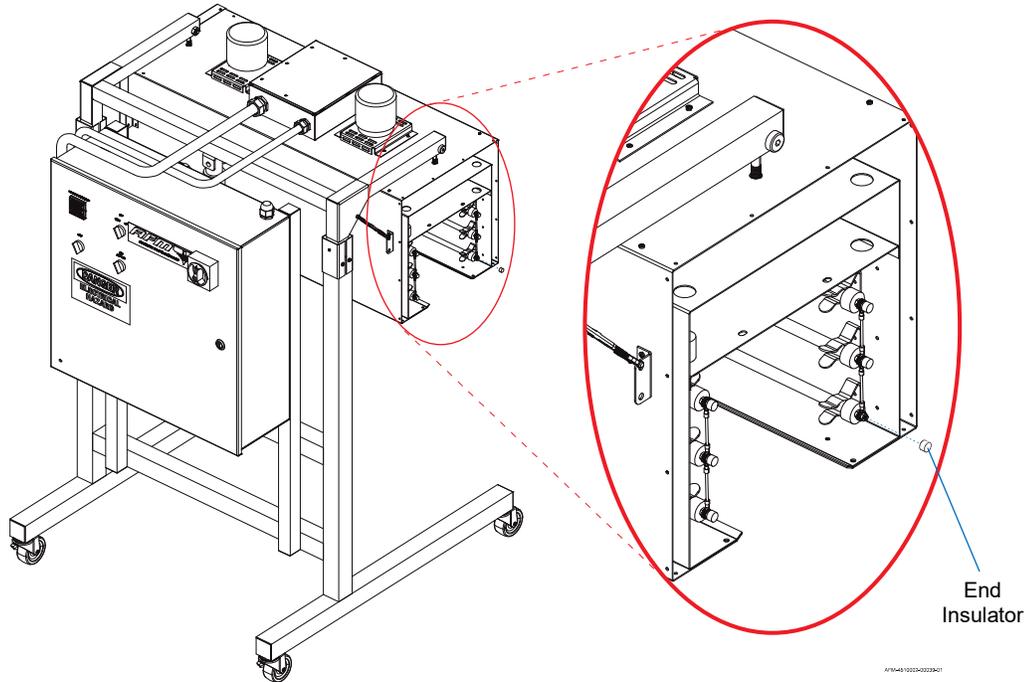
1. Verify that the Heat Tunnel is cool and that all power has been disconnected.
2. Remove the Heater Element Inside Panels from each side within the Heat Tunnel by removing the #8-32 Phillips head screws.



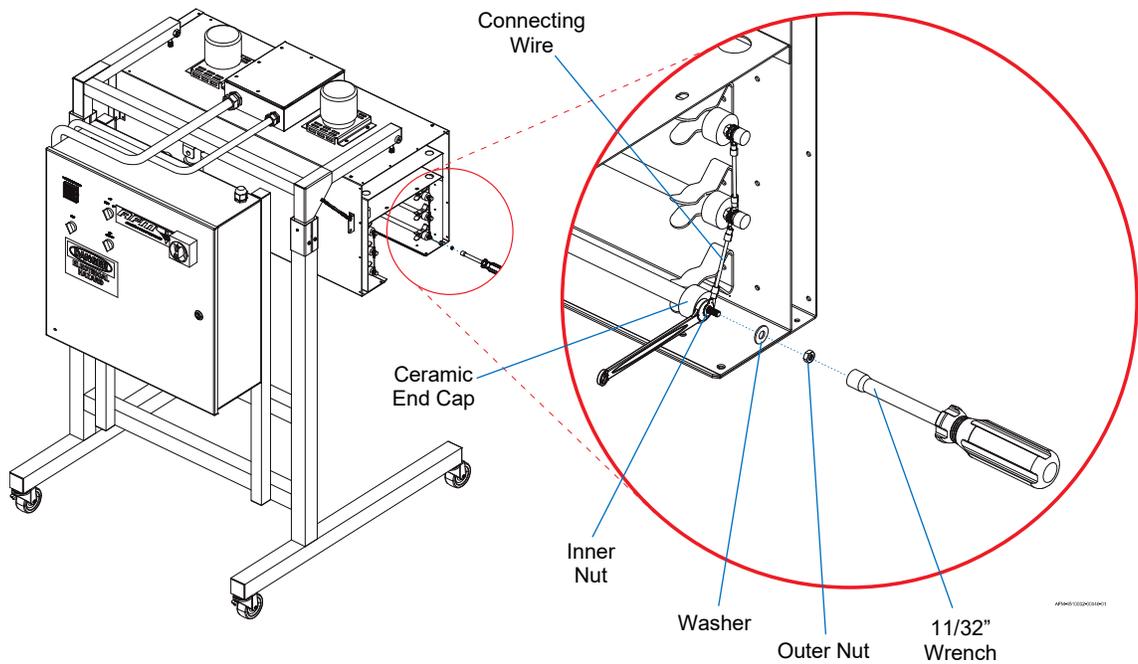
3. Reaching into the Heat Tunnel, remove the ceramic End Insulators from both Heater Element ends.



NOTE: End Panels shown removed for clarity; do not remove End Panels.



4. Holding the Inner Nut with a (skinny) 11/32" wrench on the Inner Nut, use a Nut Driver to remove the #8-32 Outer Nut and Washer at both ends of the Heater Element.



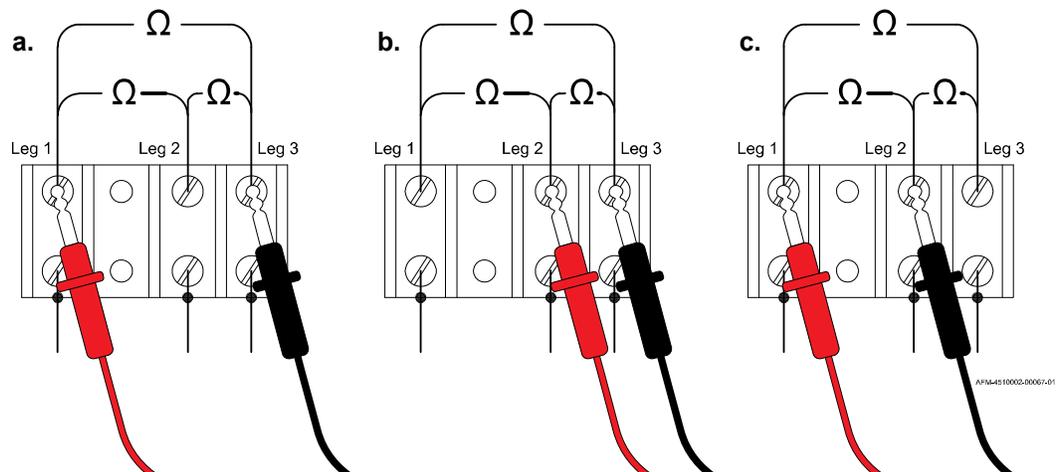
5. Remove the Connecting Wires from each end of the Heater Element so that the Heater Element is free from the wiring. Set the Connecting Wires aside for later use.
6. Remove and discard the old Heater Element.
7. Insert a new Heater Element into the Mounting Clamps.
8. Reattach the Connecting Wires at either end of the Heater Element.
9. Holding the Inner Nut firmly with a (skinny) 11/32" wrench on, securely tighten the Outer Nut with a #8-32 Wrench.



WARNING: Electrical arcing can occur if the nuts are not properly tightened, creating a safety hazard and potentially damaging the equipment.

10. Replace the ceramic End Insulators to prevent short circuits. Verify that the Heater Element Terminals are not pinched, and that the Heater Element Terminals do not touch the stainless steel housings or other Heater Elements.
11. Repeat this entire process for each Heater Element to be replaced.
12. Using a Volt-Ohm meter, measure resistance between each leg (see Diagram !D269 in "Heating Element – All Models" on page 57).
 - a. Measure resistance across Leg 1 and Leg 3.
 - b. Measure resistance across Leg 2 and Leg 3.
 - c. Measure resistance across Leg 1 and Leg 2.

All measurements should be equal, and at the Ohm measurements shown below:



ERT-OAL36-V2 or ERT-OAL48-V2:

All should be 9.5 Ohms/Phase

ERT-OAL36-V6 or ERT-OAL48-V6:

All should be 38 Ohms/Phase

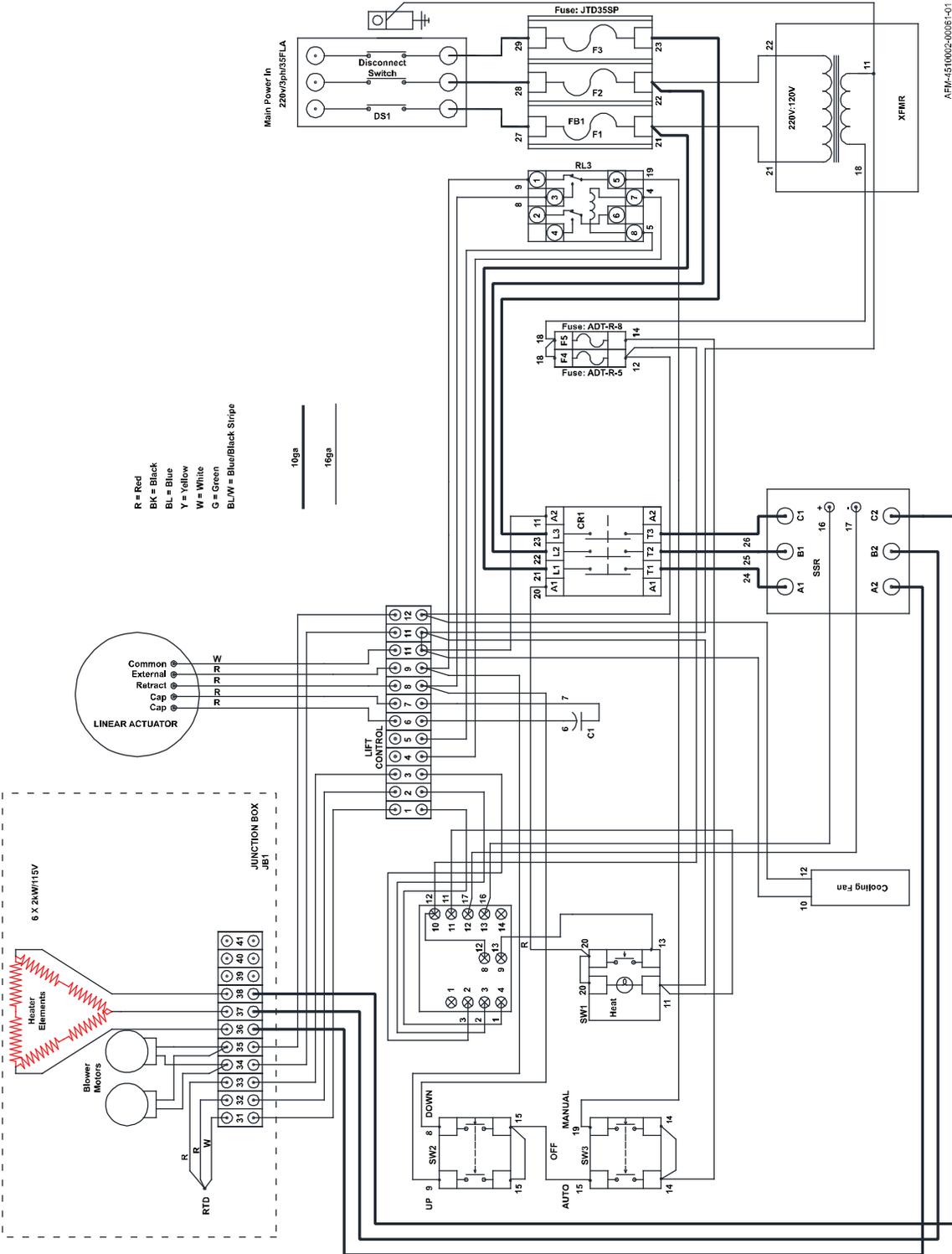
Troubleshooting

Below are some problems that may be encountered during heat shrinking. If other issues occur that are not covered in this section, call your authorized AFM distributor for assistance.

Problem	Possible Cause	Solution
No power.	System is not connected to power source.	Check power source.
	Blown fuse.	Check main fuses (F1, F2, F3) and replace if needed. (see "Schematics" starting on page 51).
No heat.	Heater Element(s) burned out.	Check Heater Elements and replace if needed (see "Replacing Heater Elements" on page 45).
	Temperature Probe failed.	Replace Temperature Probe.
	SSR failed.	Replace SSR.
	CR1 Contactor failed.	Replace CR1.
	Temperature Control failed.	Replace Temperature Control on the Control Panel (see "Control Panel" on page 32).
Fan not working.	Overheat condition.	Allow Blower Motor to cool and try again.
	Blower Motor stalled.	Check that Blower Motor is free to spin.
	Blower Motor failed.	Replace Blower Motor (see "Blower Motor Replacement" on page 42).

Schematics

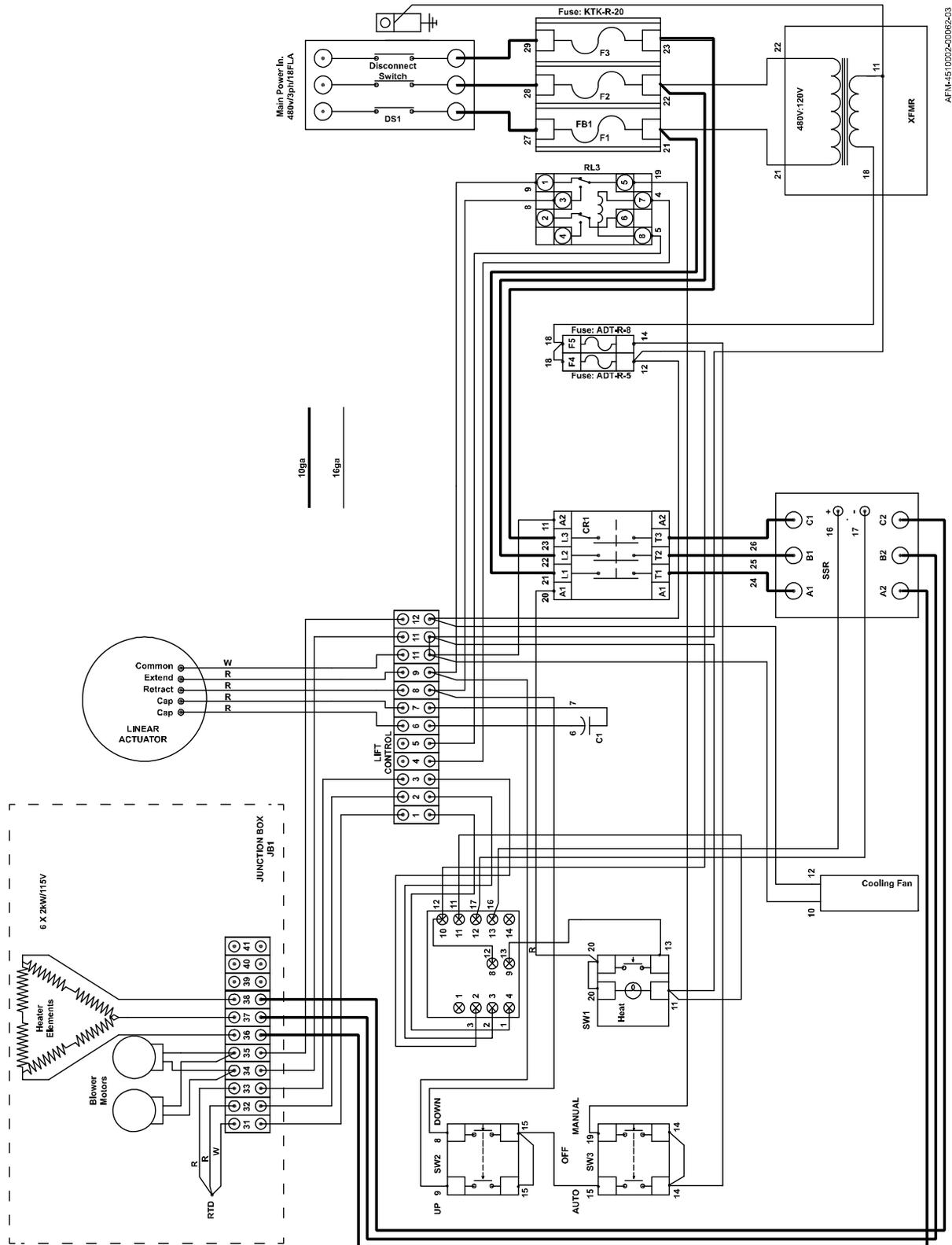
ERT-OAL36-V2 and ERT-OAL48-V2

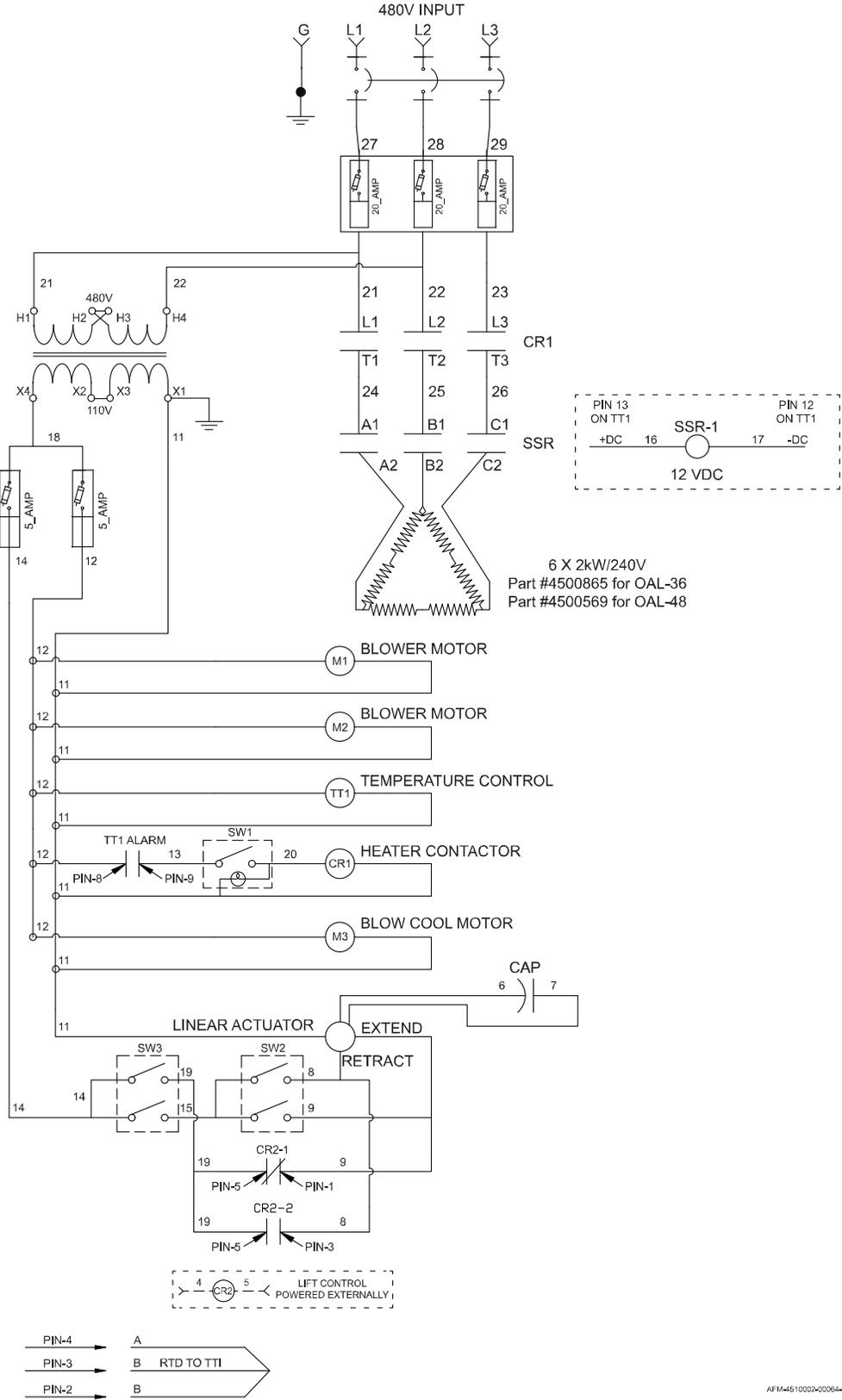


AFIM-451002-0005-01

Item	Part No.	Description	Manufacturing No.	Qty
CAP	4500091	CAPACITOR, AC MOTOR-RUN, 370 V	50 MICROFARAD RATING	1
CR1	4500541	RELAY, DIN RAIL INFREQUENT USE	3 PST, 40 AMPS @ 600 VAC, 120	1
CR2-BASE	4501352	SOCKET, RELAY. 8PIN 15 A	4DG59	1
CR2-RELAY	4501361	RELAY, ICE CUBE, DPDT	24 VDC, COIL VOLTS, 15A	1
FUSE 35 AMP 600V LPJ-35SP	4500786	FUSE UL CLASS J TD,600 VAC, 35A	LPJ-SP-35	3
FUSE 5 AMP KTK-R-5	4500784	FUSE UL CLASS CC, 5A, 600V	KTK-R5	1
FUSE 8 AMP KTK-R-8	4501959	FUSE UL CLASS CC, 8A, 600 V	ATD-R8	1
HEATER ELEMENT 2KW/115V	4500591	ELEMENT, HEATER FOR -V2 (240V)	ELEM754	6
LINEAR ACTUATOR	4500101	ACTUATOR, LINEAR FOR LIFT	TAL10-1A20-18	1
M1	4501098	MOTOR, 3000RPM 115/230 V – M1	MOTO91WR	1
M2	4501098	MOTOR, 3000RPM 115/230 V – M2	MOTO91WR	1
M3	4501935	FAN, COOLING 4.69SQ, 120 V	1976K43	1
RTD	4501403	RTD 100 OHM 8" LONG	RTD100-8	1
SSR1	4501375	RELAY; SSR; ZERO-SW	CUR-RTG 50A; CTRL-V 3-32 DC; VOL-RTG 48	1
SW1	4501439	SELECTOR SWITCH, ILLUMINATED	2 POS, RED	1
SW2	4501438	SELECTOR SWITCH, 3 POS	MOMENTARY	1
SW3	4501437	SELECTOR SWITCH, 3 POS	MAINTAINED	1
TT1	EAST0494	CONTROL, TEMP. DIGITAL		1
TRANSFORMER	4501775	TRANSFORMER, CONTROL	240/480VAC TO 110V, 1KVA	1

ERT-OAL36-V6 and ERT-OAL48-V6





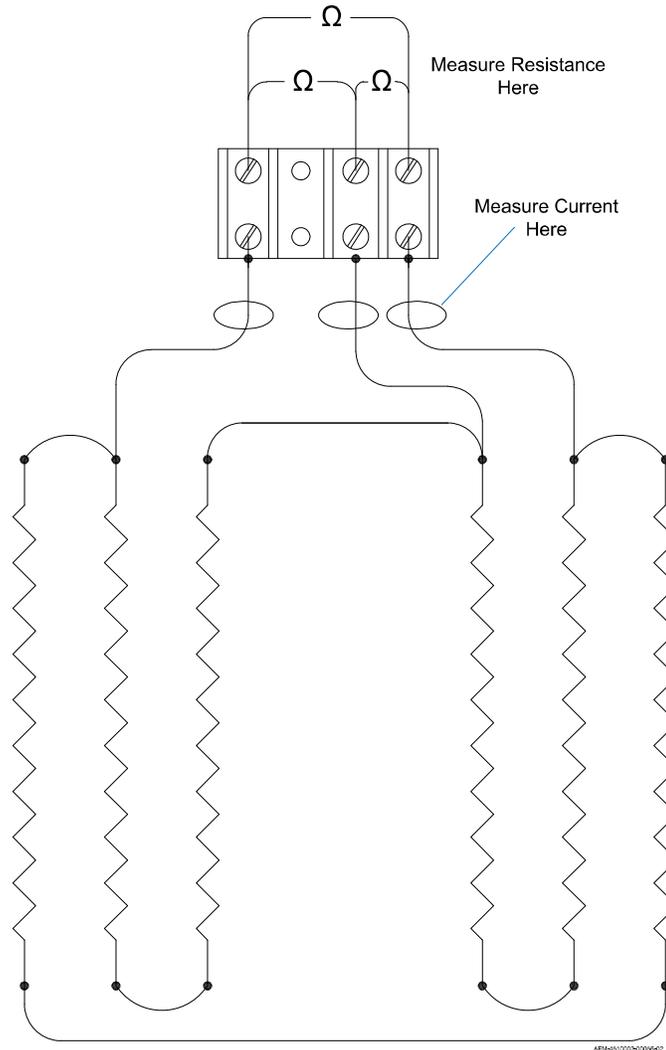
AFM-4510002-00064-02

Item	Part No.	Description	Manufacturing No.	Qty
CAP	4500091	CAPACITOR, AC MOTOR-RUN, 370 V	50 MICROFARAD RATING	1
CR1	4500541	RELAY, DIN RAIL INFREQUENT USE	3 PST, 40 AMPS @ 600 VAC, 120	1
CR2-BASE	4501352	SOCKET, RELAY. 8PIN 15 A	4DG59	1
CR2-RELAY	4501361	RELAY, ICE CUBE, DPDT	24 VDC, COIL VOLTS, 15A	1
FUSE 20 AMP 600V KTK-R-20	ETC00129	FUSE UL CLASS CC, 600 VAC, 20A		3
FUSE 5 AMP KTK-R-5	4500784	FUSE UL CLASS CC, 5A, 600V	KTK-R5	1
FUSE 8 AMP KTK-R-8	4501959	FUSE UL CLASS CC, 8A, 600 V	ATD-R8	1
HEATER ELEMENT 2KW/240V	4500865	ELEMENT, HEATER FOR -V6 (480V)	ELEM34	6
LINEAR ACTUATOR	4500101	ACTUATOR, LINEAR FOR LIFT	TAL10-1A20-18	1
M1	4501098	MOTOR, 3000RPM 115/230 V	MOTO91WR	1
M2	4501098	MOTOR, 3000RPM 115/230 V	MOTO91WR	1
M3	4501935	FAN, COOLING 4.69SQ, 120 V	1976K43	1
RTD	4501403	RTD 100 OHM 8" LONG	RTD100-8	1
SSR1	4501375	RELAY; SSR; ZERO-SW	CUR-RTG 50A; CTRL-V 3-32 DC; VOL-RTG 48	1
SW1	4501439	SELECTOR SWITCH, ILLUMINATED	2 POS, RED	1
SW2	4501438	SELECTOR SWITCH, 3 POS	MOMENTARY	1
SW3	4501437	SELECTOR SWITCH, 3 POS	MAINTAINED	1
TRANSFORMER	4501775	TRANSFORMER, CONTROL	240/480VAC TO 110V, 1KVA	1
TT1	EAST0494	CONTROL, TEMP. DIGITAL		1

Wiring Diagrams

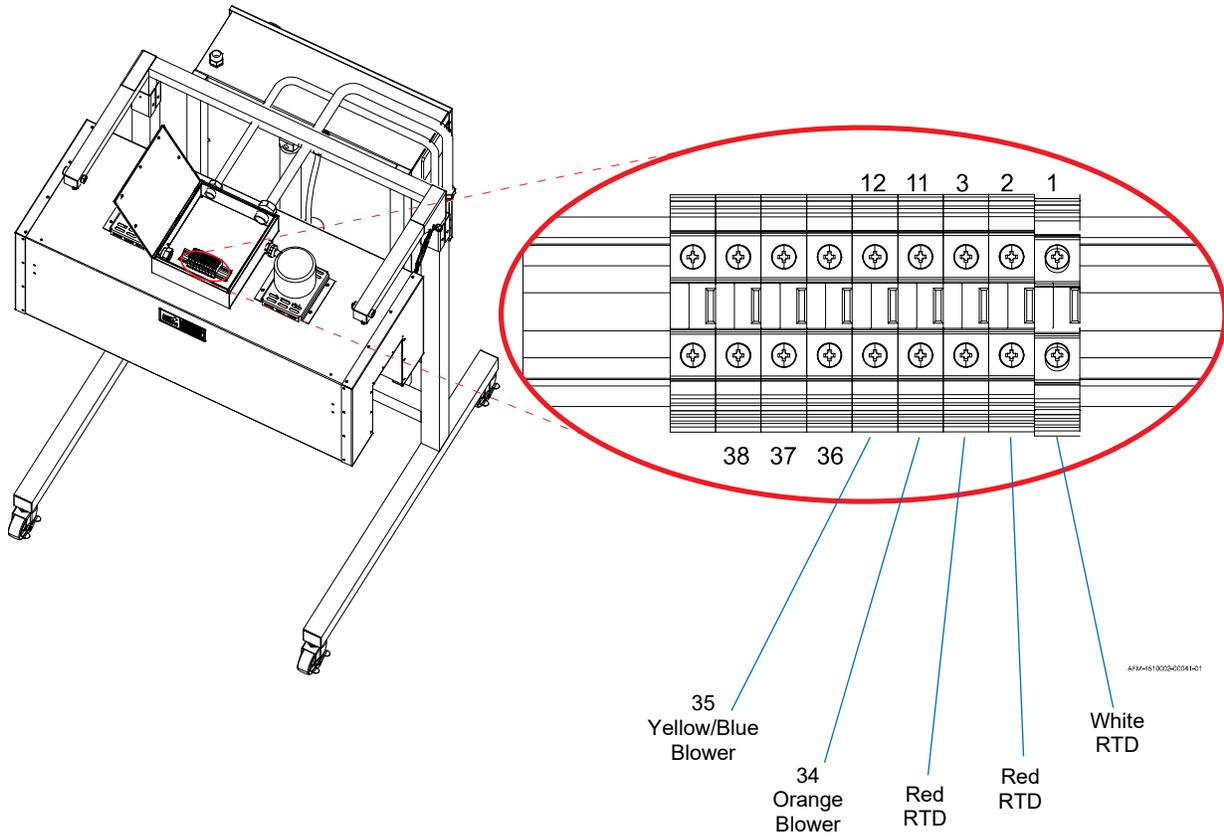
Heating Element – All Models

Diagram ID-269



Model	Tunnel Length	Tunnel Voltage	Ohms/Phase (All must be equal)	Amps/Phase (All must be equal)	Heater Element Part Number	Element Voltage	Element Wattage	Total Wattage
ERT-OAL36-V2	36"	240	9.5	29	4500591	115	2000	12000
ERT-OAL36-V6	36"	480	38	15	4500865	240	2000	12000
ERT-OAL48-V2	48"	240	9.5	29	4500602	115	2000	12000
ERT-OAL48-V6	48"	480	38	15	4500569	240	2000	12000

Heater/Blower/RTD – All Models



Parts List

Electrical Parts

Part No.	Description	Manufacturing No.	Model	Qty
4500091	CAPACITOR, AC MOTOR-RUN, 370 V	50 MICROFARAD RATING	All	1
4500101	ACTUATOR, LINEAR FOR LIFT	TAL10-1A20-18	All	1
4500400	CONTACT BLOCK, 22 mm	6HZ06	All	2
4500451	COVER; POLYCARBONATE	4.4 IN 2.80; 0.25; UL94V-0	All	1
4500541	RELAY, DIN RAIL INFREQUENT USE	3 PST, 40 AMPS @ 600 VAC, 120	All	1
4500543	FUSE BLOCK, CLASS CC 30A, 1 POLE	6113T14	All	2
4500569	ELEMENT, HEATER FOR -V6 (480V)	ELEM481	ERT-OAL48-V2 ERT-OAL48-V6	6
4500591	ELEMENT, HEATER FOR -V2 (240V)	ELEM754	ERT-OAL36-V2 ERT-OAL36-V6	6
4500602	ELEMENT, HEATER FOR -V2 (240V)	ELEM386	ERT-OAL48-V2 ERT-OAL48-V6	6
4500626	ENCLOSURE DISC. SWITCH	63 AMPS @ 600 VAC, 5 HP @ 240 VAC: S	All	1
4500763	FUSE BLOCK, UL CLASS CC 3 POLE		ERT-OAL36-V6 ERT-OAL48-V6	1
4500764	FUSE BLOCK, UL CLASS J 3 POLE		ERT-OAL36-V2 ERT-OAL48-V2	1
4500784	FUSE UL CLASS CC, 5A, 600V	KTK-R5	All	1
4500786	FUSE UL CLASS J TD,600 VAC, 35A	LPJ-SP-35	ERT-OAL36-V2 ERT-OAL48-V2	3
4500842	GRAY END SECT. FOR DIN 1&3	5-10MM, 1-CIRCUIT MOD. DR-M TE	All	3
4500854	HEAT SINK, DIN RAIL	1.0C/W, -1, 2 OR 3 SSRS	All	1
4500865	ELEMENT, HEATER FOR -V6 (480V)	ELEM34	ERT-OAL36-V2 ERT-OAL36-V6	6
4500992	LED, LAMP MODULE, 22 mm 120 V RED	6HZ63	All	1
4501098	MOTOR, 3000RPM 115/230 V	MOTO91WR	All	2
4501117	MOUNTING BASE WITH CONTACT	BLOCK, 22 mm	All	3
4501352	SOCKET, RELAY. 8PIN 15 A	4DG59	All	1
4501361	RELAY, ICE CUBE, DPDT	24 VDC, COIL VOLTS, 15A	All	1
4501375	RELAY; SSR; ZERO-SW	CUR-RTG 50A; CTRL-V 3-32 DC; VOL-RTG 48	All	1
4501403	RTD 100 OHM 8" LONG	RTD100-8	All	1

Part No.	Description	Manufacturing No.	Model	Qty
4501437	SELECTOR SWITCH, 3 POS	MAINTAINED	All	1
4501438	SELECTOR SWITCH, 3 POS	MOMENTARY	All	1
4501439	SELECTOR SWITCH, ILLUMINATED	2 POS, RED	All	1
4501674	TERMINAL BLOCK MOD., DIN 1 & 3	SCREW CLAMP, 8MM WIDTH, GRAY	All	20
4501675	TERMINAL BLOCK MOD., DIN 1 & 3	SCREW-CLAMP GROUND, 10 MM WIDT	All	3
4501775	TRANSFORMER, CONTROL	240/480VAC TO 110V, 1KVA	All	1
4501884	WIRE, TYPE MG	10 GA., PER FOOT	All	20
4501935	FAN, COOLING 4.69SQ, 120 V	1976K43	All	1
4501943	STOP, END FOR TERMINAL BLOCKS	7641K35	All	3
4501959	FUSE UL CLASS CC, 8A, 600 V	ATD-R8	All	1
EAST0494	CONTROL, TEMP. DIGITAL		All	1
ETC00129	FUSE UL CLASS CC, 600 VAC, 20A		ERT-OAL36-V6 ERT-OAL48-V6	3

Mechanical Parts

Part No.	Description	Manufacturing No.	Model	Qty
4500109	DEFLECTOR, AIR	CTAD	All	4
4500241	MOUNT, BLOWER	RBMMB	All	2
4500243	BLOWER WHEEL, 3.81 DIA × 2.87	LOWER, P/N 2-20	All	2
4500253	BRACKET	AB2A	All	2
4500256	BRACKET SST72	SST72B1	All	2
4500257	BRACKET, LIFT MOUNT ERT-OAL CLASSIC	AB14	All	2
4500271	BUSHING, CERAMIC #20	BUSH20	All	5
4500319	STRAP, CAPACITOR MOUNTING	7602K21-29, 39, 41, 43 MOTOR-R	All	1
4500357	COLLAR ONE-PIECE ALUM. CLAMP	1/4" BORE 11/16" OD	All	1
4500369	CONDUIT SUP. TCH. LIQ. TIGHT	PVC 1/2" TRADE SIZE, 0.63" ID	All	5
4500370	CONDUIT SUP. TCH. LIQ. TIGHT	PVC 3/4" TRADE SIZE, 0.83" ID	All	5
4500440	CORROSION-RESISTANT TURNBUCKLE	JAW & JAW, 3/16"-24 THREAD, 2	All	2
4500496	DIN RAIL, STEEL, DIN 3	35MM X 7.5 MM H	All	1
4500558	MOUNT, ELEMENT	REM9	All	4
4500641	ENCLOSURE, NEMA 1 24" × 24" × 8.6"	A24N24BLP	All	1
4500725	FITTING, LIQ. TIGHT METAL	CONDUIT 90 D ELBOW, MALL. IRON	All	2
4500727	FITTING, LIQ. TIGHT METAL	CONDUIT STRAIGHT, STEEL, 1/2"	All	2
4500729	FITTING, LIQ. TIGHT METAL	CONDUIT, PREM., 90 DEG ELBOW	All	1
4500730	FITTING, LIQ. TIGHT METAL	CONDUIT, STRAIGHT, STEEL, 3/4	All	1
4500739	FITTING, CONDUIT 1/2" LOCKNUT	STEEL	All	2
4500934	INNER CAP, 6 × 9 REV. N	RIC69N	All	2
4500671	FAN FILTER GUARD 4-11/16"	19155K23	All	2
4500721	BUSHING, CONDUIT 1/2" POLY	7513K211	All	1
4500738	FITTING, LIQ. TIGHT NONMETAL	CONDUIT, STRAIGHT, NYLON, 1/4"	All	2
4500936	INNER COVER, 9" HIGH, FOR GUARD	RIC9N	All	4
4501060	MID SHELL 48" ERT-OAL CLASSIC	RM469NB	ERT-OAL48-V2 ERT-OAL48-V6	1
4501141	ENCLOSURE, NEMA 1 10 × 8 × 4	A10N84	All	1
4501146	NIPPLE, STD-WALL TYPE 304/304L	SS THRD PIPE 1/2 PIPE SIZE X 2	All	1

62 Parts List

Part No.	Description	Manufacturing No.	Model	Qty
4501154	NUT, STD NO-SLIP CLIP-ON	8-32 SIZE, .045"-.062" PANEL, .328	All	12
4501177	OUTER CAP, 6 × 9	ROC69	All	2
4501179	OUTER SHELL 6 × 9 × 36	RO369N	ERT-OAL36-V2 ERT-OAL36-V6	1
4501183	OUTER SHELL 6 × 9 × 48	RO469NB	ERT-OAL48-V2 ERT-OAL48-V6	1
4501196	PANEL FOR ENCLOSURE, 10 × 8 × 4	A10N8P	All	1
4501198	PANEL, FOR 24" × 24" ENCLOSURE	A24N24MP	All	1
4501384	NUT, RIVET, 3/8-16	ZINC PLATED 0.027-0.150"	All	4
4501386	MID SHELL 36" ERT-OAL CLASSIC	RM369NA	ERT-OAL36-V2 ERT-OAL36-V6	1
4501387	ROD END,304 SS, 3/8"-16 THREAD	6251K14	All	2
4501429	SCREW 18-8 SS SHOULDER, 1/2"	1-3/4" L SHOULDER, 3/8"-16	All	2
4501430	SCREW 18-8 SS SHOULDER, 3/8"	1-1/2" L SHOULDER, 5/16"-1	All	2
4501565	SST EXTENSION	SSTX4	All	4
4501595	STEM CASTER, WITH BRAKE	3" X 1-1/4" RUBBER WHEEL, 1/2"-13	All	4
4501691	THIRD SHELL	RT369NA	ERT-OAL36-V2 ERT-OAL36-V6	1
4501693	THIRD SHELL	RT469NB	ERT-OAL48-V2 ERT-OAL48-V6	1
4501763	TOOL HOLDER TYPE 302	5/8" TO 7/8" TOOL DIA, 1-9/16" PROJECT	All	2.2
4501836	WHEEL, BLOWER 3.81" × 1.50"	UPPER, P/N 2-14	All	2
4501847	WIRE DUCT PVC SLT.	1-1/2" W X 3" H, 6' 6" L	All	1
4501849	WIRE DUCT PVC SLT.	1" W × 1-1/2" H, 6' 6" L	All	0.3
4501907	BLOWER HOUSING 6"	RBH6N	All	4
4501908	STAND, FOR 36" TUNNEL	SST-36	All	1
4501958	TUBE, S.S. ¼ × 0.028 × 72"	8457K53	All	0.1
4501964	SPRING, CONICAL COMPRESSION	1692K55	All	4

Recommended Spare Parts – ERT-OAL36

Part No.	Description	Manufacturing No.	Model	Qty
4500591	ELEMENT, HEATER FOR -V2 (240V)	ELEM754	V2	3
4500784	FUSE UL CLASS CC, 5A, 600V	KTK-R5	V2 ,V6	1
4500786	FUSE UL CLASS J TD,600 VAC, 35A	LPJ-SP-35	V2	3
4500865	ELEMENT, HEATER FOR -V6 (480V)	ELEM34	V6	3
4501098	MOTOR, 3000RPM 115/230 V	MOTO91WR	V2 ,V6	1
4501375	RELAY; SSR; ZERO-SW	CUR-RTG 50A; CTRL-V 3-32 DC; VOL-RTG 48	V2 ,V6	1
4501403	RTD 100 OHM 8" LONG	RTD100-8	V2 ,V6	1
4501959	FUSE UL CLASS CC, 8A, 600 V	ATD-R8	V2 ,V6	1
ETC00129	FUSE UL CLASS CC, 600 VAC, 20A		V6	3

Recommended Spare Parts – ERT-OAL48

Part No.	Description	Manufacturing No.	Model	Qty
4500569	ELEMENT, HEATER FOR -V6 (480V)	ELEM481	V6	3
4500602	ELEMENT, HEATER FOR -V2 (240V)	ELEM386	V2	3
4500784	FUSE UL CLASS CC, 5A, 600V	KTK-R5	V2, V6	1
4500786	FUSE UL CLASS J TD,600 VAC, 35A	LPJ-SP-35	V2	3
4501098	MOTOR, 3000RPM 115/230 V	MOTO91WR	V2, V6	1
4501375	RELAY; SSR; ZERO-SW	CUR-RTG 50A; CTRL-V 3-32 DC; VOL-RTG 48	V2, V6	1
4501403	RTD 100 OHM 8" LONG	RTD100-8	V2, V6	1
4501959	FUSE UL CLASS CC, 8A, 600 V	ATD-R8	V2, V6	1
ETC00129	FUSE UL CLASS CC, 600 VAC, 20A		V6	

Warranty Statement

American Film & Machinery (AFM) warrants that all products it ships will be in good working order and free from defects in material and workmanship for a period of one year from the date of shipment by AFM and will conform to the published specifications for that product.

Limitations

The warranty of AFM is contingent upon installation, operation, and maintenance of equipment under normal operating conditions. The warranty is void on equipment or parts: damaged by corrosion, improper use, accident, negligence or not operating within the specifications provided; damaged by fire, flood, earthquake, or such other causes beyond the control of AFM; that have been altered or repaired in any way changing the original performance and; that are normally expendable in the usual course of operation.

Expendable items include, but are not limited to, heater elements, cutter blades and belts.

The warranty period on each replacement equipment or part in fulfillment of the warranty on new equipment or parts shall be for the unexpired portion of the original warranty.

Repairs

All in-house repairs are rigorously tested for optimum operation and performance and warranted to be, under normal and proper use, free from defects in material and workmanship for a period of 90 days from the date of service.

Shrinking Quality

Shrinking quality achieved in a given application is dependent on the film, product, installation, material handling, and the maintenance provided. AFM makes no warranty that the shrinking quality achieved in an application will be the same as that achieved on a test piece in our demo facility.

Shipping Policy

Customer pays all incoming shipping charges for replacement components. If the item is defective and under warranty, AFM will pay all return shipping charges via the least costly method. If expedited shipping is desired, the customer must furnish their shipping account number and shipping fees will be charged to that account.

Exclusions

Damage due to tampering, abuse, improper adjustment, electrical interference, or the use of non-approved components will void any and all warranties by AFM and its distributors.

Warranty Verification

If you believe that a product or component may be defective and may be covered by warranty, obtain a Return Material Authorization number by contacting AFM Technical Support (Phone: 714-974-9006, Fax: 763-795-8867, Email: info@afmsleeves.com). Based

on the recommendation from AFM Technical Support, replacement components may be shipped via UPS Ground or similar method. If expedited shipping is desired, customer must furnish their shipping account and shipping fees will be charged to that account.

Customer is required to return the defective component to AFM. If, after 30 days, AFM hasn't received the defective component, the customer will be invoiced for the replacement component. If the returned component is found to not be eligible for warranty, AFM will contact the customer, and the customer will be invoiced for the replacement component.

Warranty Eligibility

The warranty provided by AFM is only to the original buyer.

Limited Warranty

THIS WARRANTY SHALL NOT APPLY IF ANY MODIFICATION, ALTERATION, OR ADDITION IS MADE TO THE PRODUCT WITHOUT AFM'S PRIOR WRITTEN APPROVAL. FURTHERMORE, THIS WARRANTY DOES NOT APPLY TO PRODUCT DEFECTS DUE TO MISUSE, ABUSE, NEGLIGENCE, OR FAILURE TO FOLLOW RECOMMENDED PROCEDURES. ANY PRODUCT REPAIRED OR ALTERED BY PERSONS OTHER THAN AUTHORIZED AFM REPRESENTATIVES WILL NOT BE COVERED BY THIS WARRANTY. THIS WARRANTY DOES NOT APPLY TO CONSUMABLE ITEMS.

EXCEPT AS EXPRESSLY PROVIDED IN THIS WARRANTY, AFM MAKES NO REPRESENTATION OR WARRANTY, EXPRESSED OR IMPLIED, WITH RESPECT TO THE PRODUCT, INCLUDING, WITHOUT LIMITATION, ANY WARRANTY AS TO MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE, NON-INFRINGEMENT OR ANY OTHER MATTER.

AFM SHALL HAVE NO LIABILITY TO ANY PERSON FOR INCIDENTAL, CONSEQUENTIAL, OR SPECIAL DAMAGES OF ANY DESCRIPTION WHETHER ARISING OUT OF WARRANTY OR INABILITY TO USE THESE PRODUCTS EVEN IF AFM HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES.

AFM Technical Support

For assistance with installing, operating, and maintaining the ERT-OAL36-48 Shrink Tunnel, contact your authorized AFM reseller or AFM Technical Support.

Phone: 714-974-9006

Fax: 763-795-8867

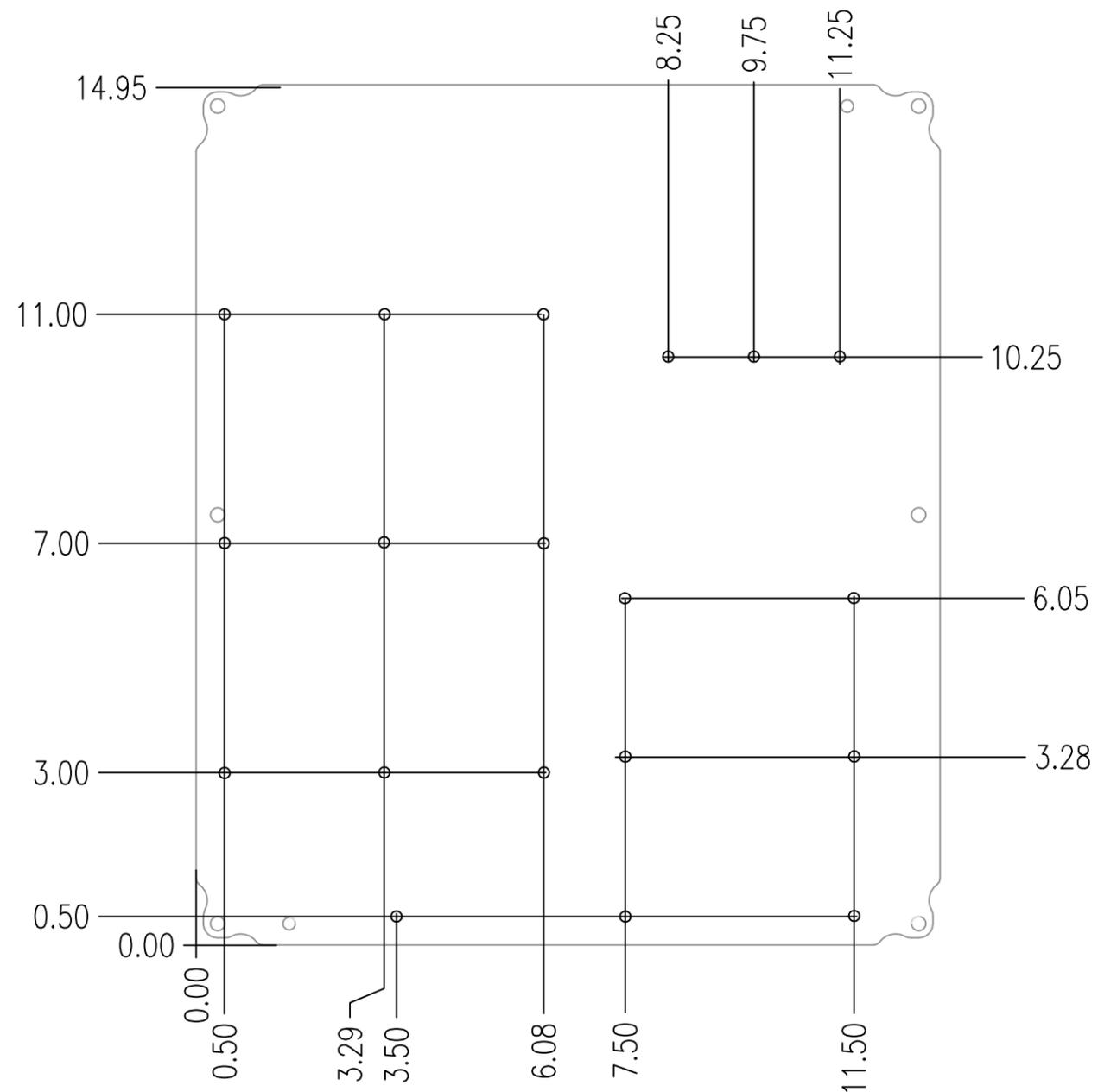
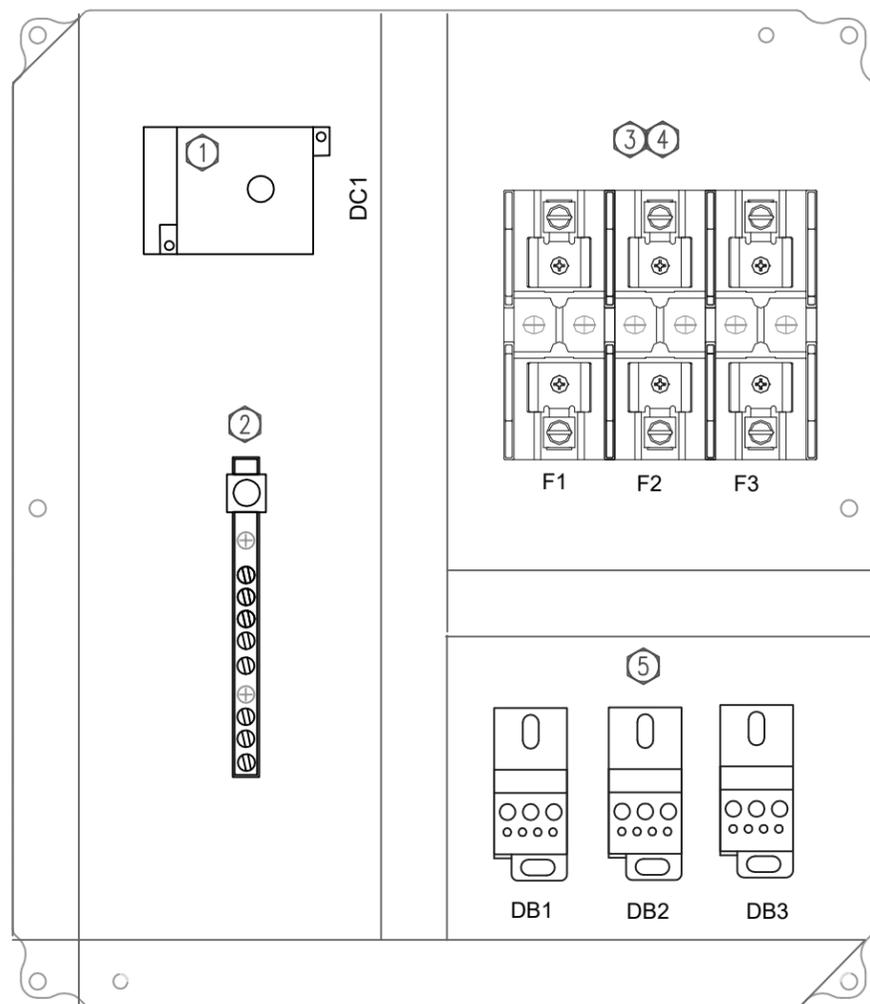
Email: info@afmsleeves.com

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Thank you for your purchase of AFM products. We are pleased to be a part of your shrink sleeve labeling requirements.



Electronics

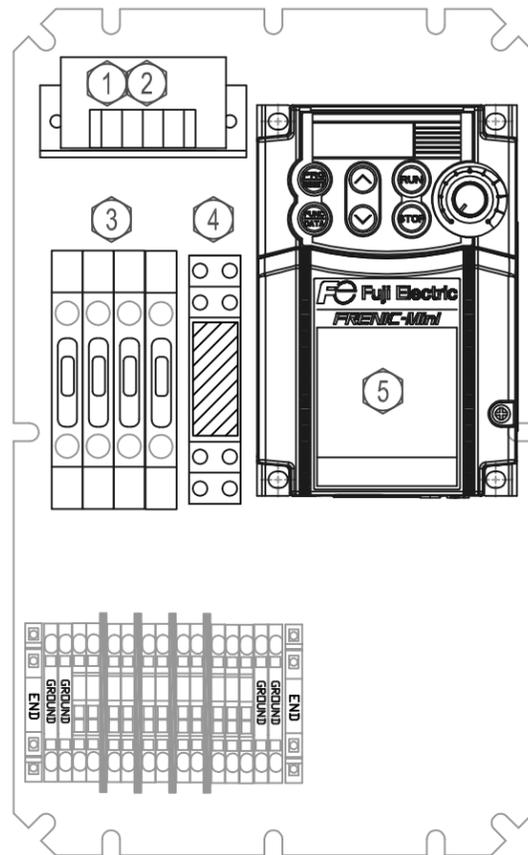


--	222436-000	1	Enclosure, 16x14x9
--	222437-000	1	Panel, 16P14
--	251839-000	3	Phoenix Contact 3031500 Ground Terminal
--	241211-001	3	Fuse, J-Class, 60A

5	262086-000	3	Distribution Block, 80A, Altech 38049
4	241311-000	3	Fuse Cover, J Class
3	241314-000	1	Fuse Holder, J-Class, 3 x 60A
2	251830-002	1	Ground Bar
1	272117-005	1	Disconnect, 63A Base Mount

3/4" Wireway Unless Noted
Component Hardware: 8-32 SHCS
Wireway/Din Rail Hardware: 8-32 BHCS

<small>UNLESS OTHERWISE SPECIFIED</small> <small>DIMENSIONAL TOLERANCE</small> .X ± .XTOL .XX ± .XXTOL .XXX ± .XXXTOL <small>ANGLES ± ANGTOL</small> <small>SURFACE FINISH FINISHTOL</small> <small>BREAK ALL EDGES .005/.015</small> <small>CORNER RADIUS .010/.030</small>	QUADREL LABELING SYSTEMS 7670 Jenther Drive Mentor, Ohio 44060 (440) 602-4700	<small>SCALE: 1:1</small> <small>DATE: 05NOV2025</small> <small>DRAWN BY: CMT</small> <small>REVISED: -</small>
	External Disconnect	
<small>MAT'L</small>	222437-000	B84240-000P



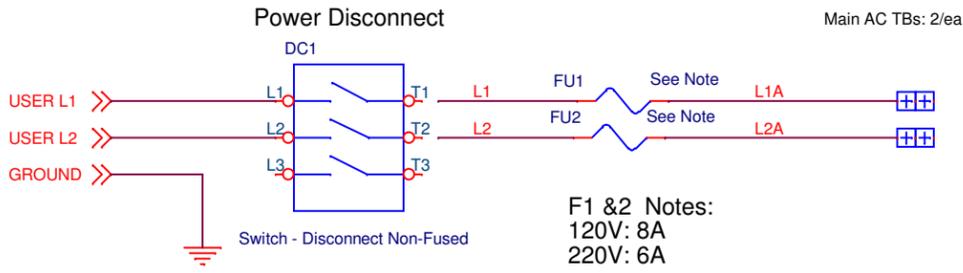
NOT SHOWN:

- 241084-000 - FUSE, 6A
- 241095-000 - FUSE, 2A

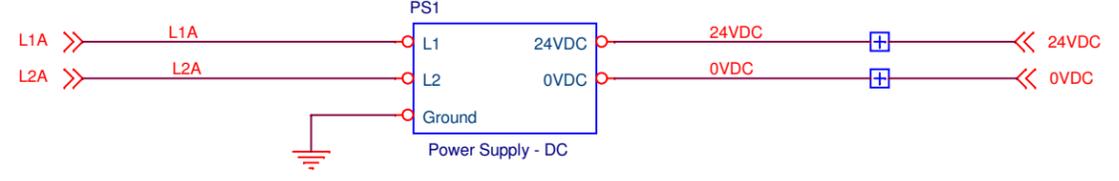
--	222307-000	1	Panel
--	222188-000	1	Enclosure, 11x7x4, B22502-001
5	411458-000	1	AC Drive, Fuji Mini,
4	202626-000	1	Relay, 24V, Dual
3	251788-000	4	Fuse Holder, 1.25 x .25
2	A23200-000	1	Power Supply Mounting Bracket
1	211536-000	1	Power Supply, 24V, 25W

<small>UNLESS OTHERWISE SPECIFIED</small> <small>DIMENSIONAL TOLERANCE</small> .X ± .XTOL .XX ± .XXTOL .XXX ± .XXXTOL ANGLES ± ANG TOL <small>SURFACE FINISH FINISH TOL</small> <small>BREAK ALL EDGES .005/.015</small> <small>CORNER RADIUS .010/.030</small>	QUADREL <small>7670 Jenther Drive</small> <small>Mentor, Ohio 44060</small> <small>(440) 602-4700</small>	SCALE: 1:1
		DATE: 10MAY2022
Panel, Modified Econoline Drive Enclosure		DRAWN BY: CAV
MAT'L QLS #222307-000		REVISED: B22502-008

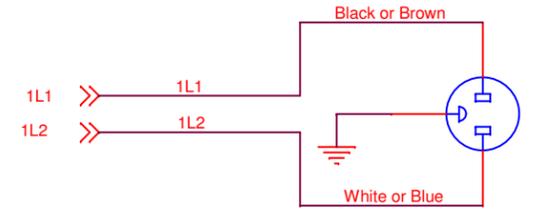
Main Power:
120V, 8A
220V, 6A



F1 & 2 Notes:
120V: 8A
220V: 6A

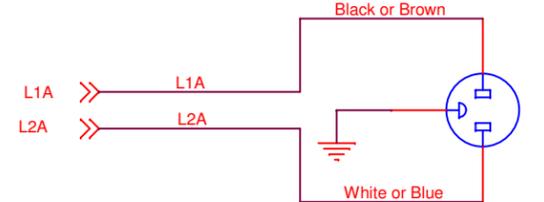


Labeler Power For:
Q44/55/65/105/110, E100, C1



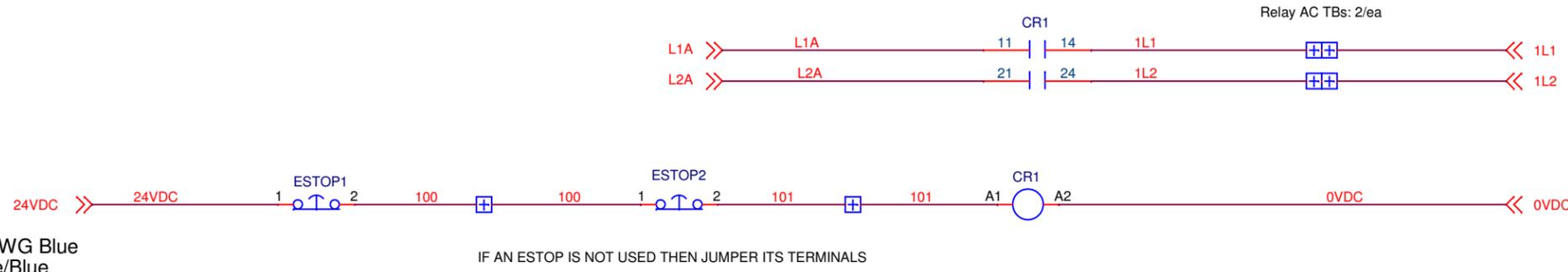
Power Cable, 3-14AWG Female

Applicator Power For:
Q31, Q32, Q33, Q34



Power Cable, 3-14AWG Female

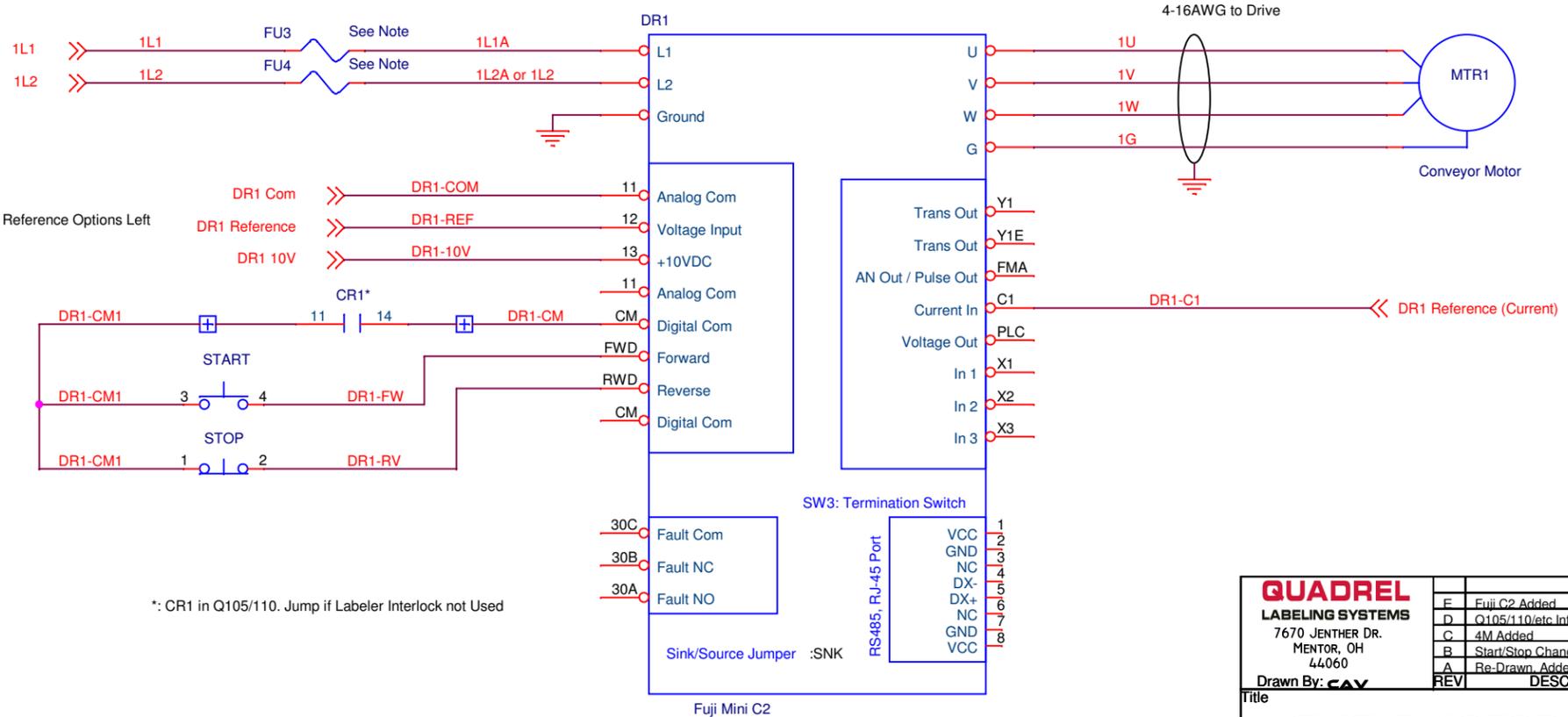
Wiring:
AC: 18AWG Black
+VDC / Signals: 20AWG Blue
-VDC: 20AWG White/Blue



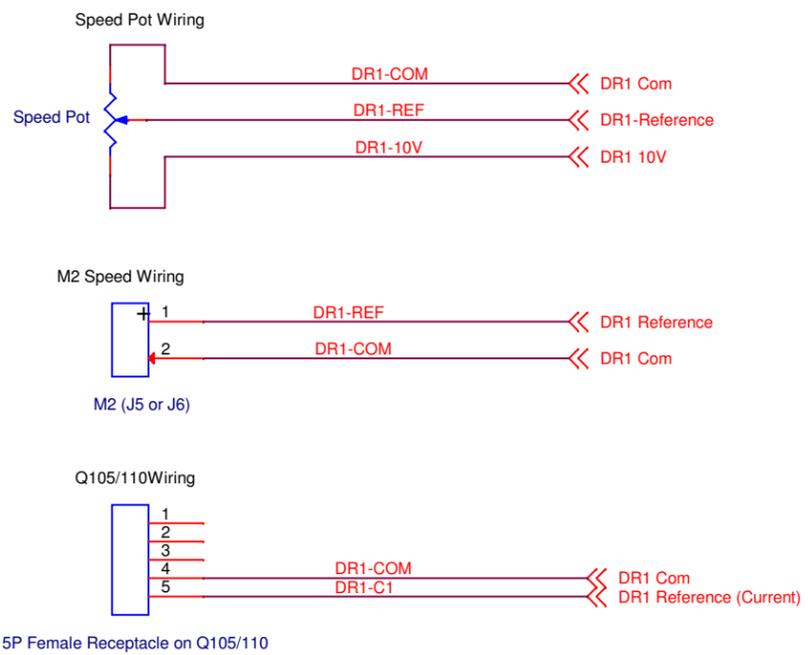
F3 Notes:
F3 120V: 4A
F3: 220V: 2A

F4 Notes:
F4 120V: Not Used
F4: 220V: 2A

Fuji C2
(Use V006 Setup Form)

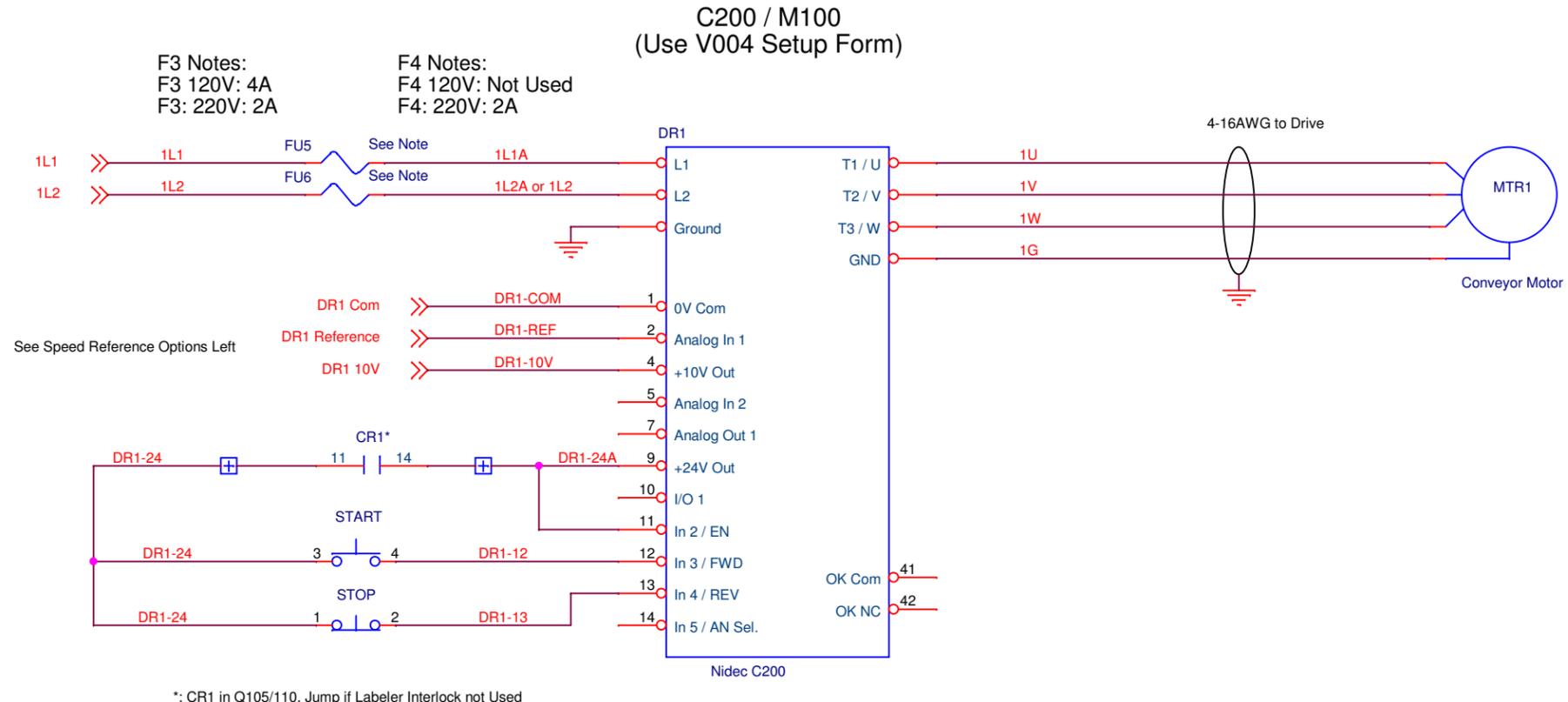
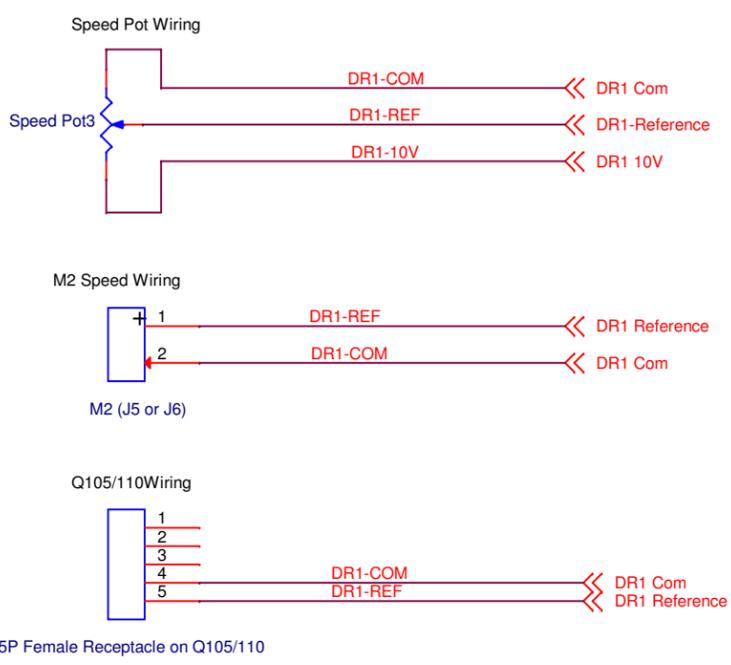


*: CR1 in Q105/110. Jump if Labeler Interlock not Used

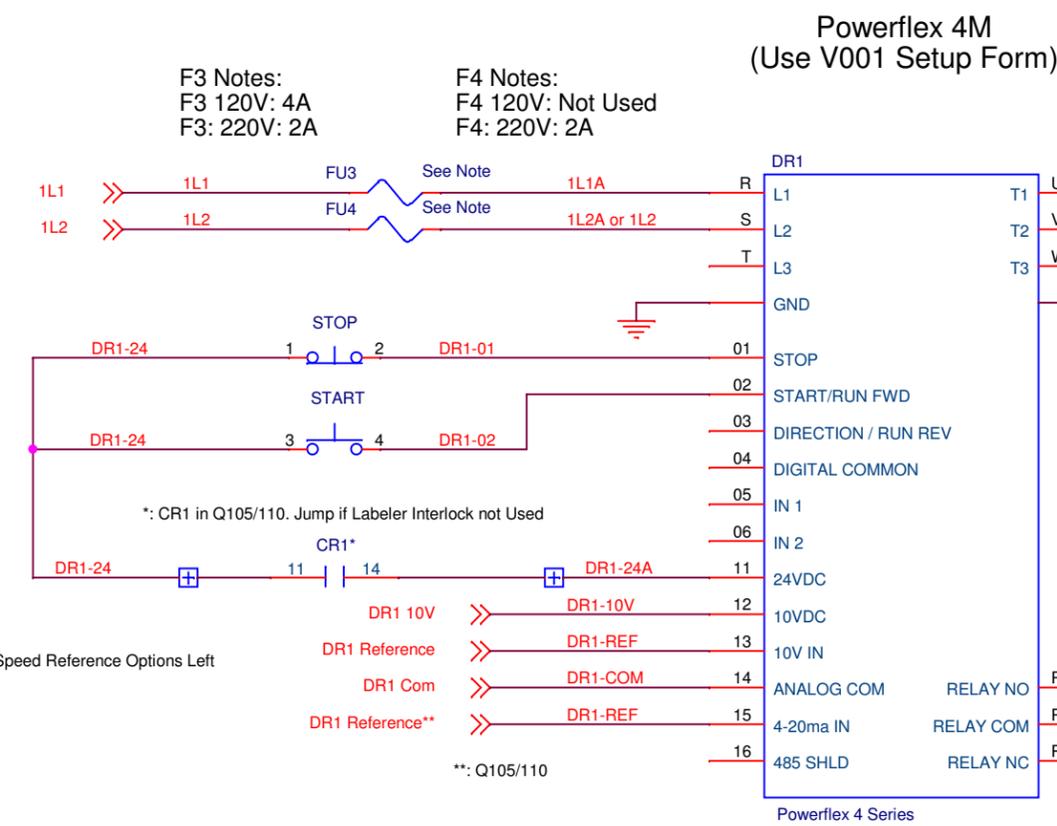
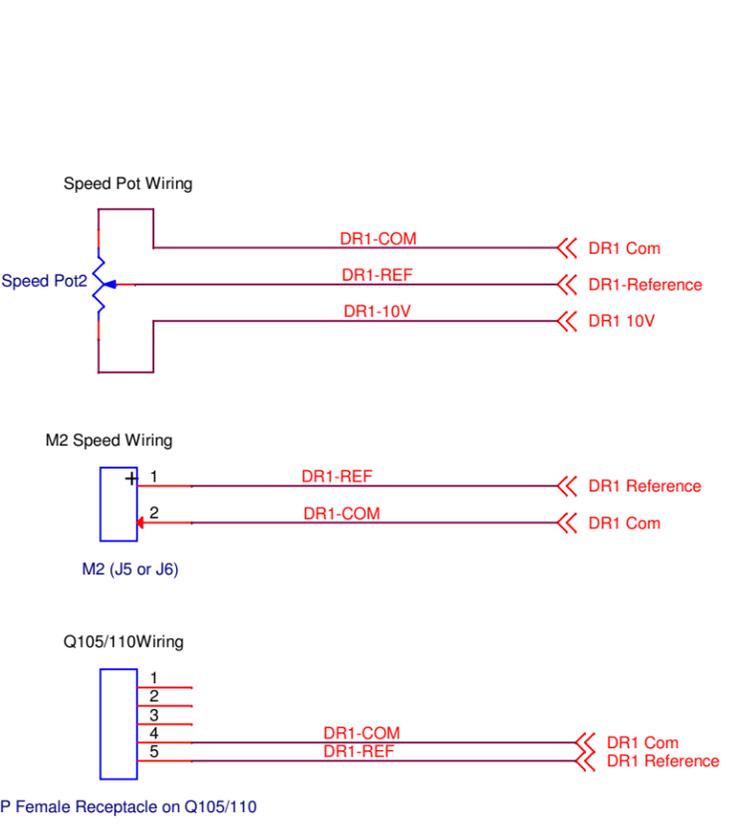
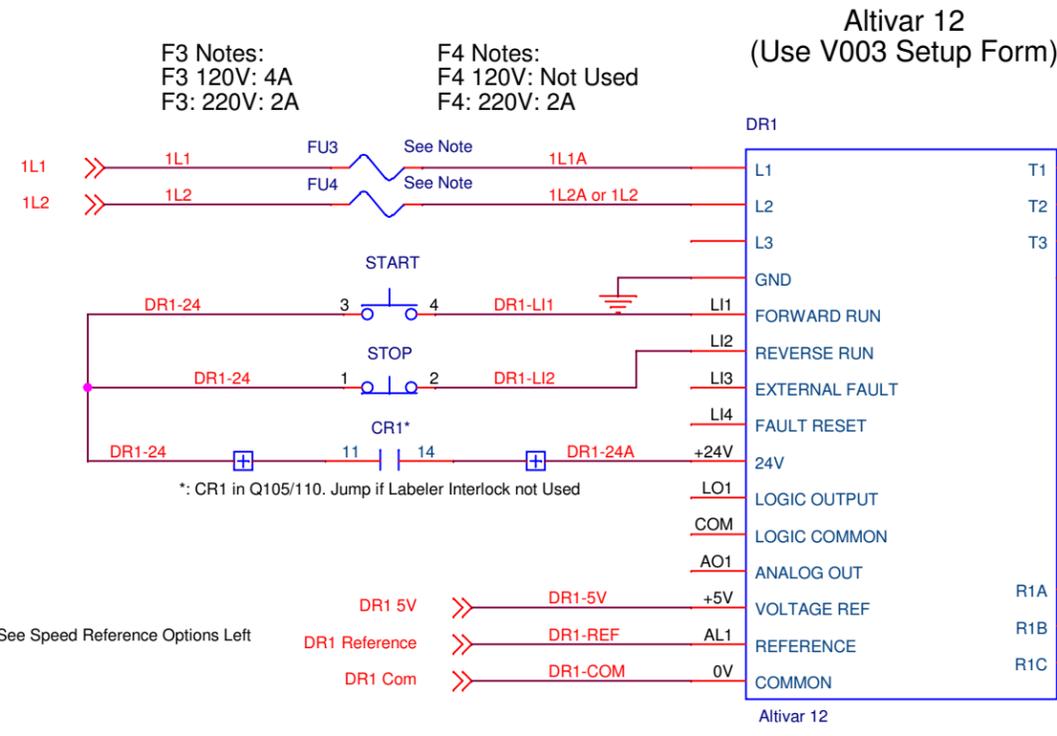
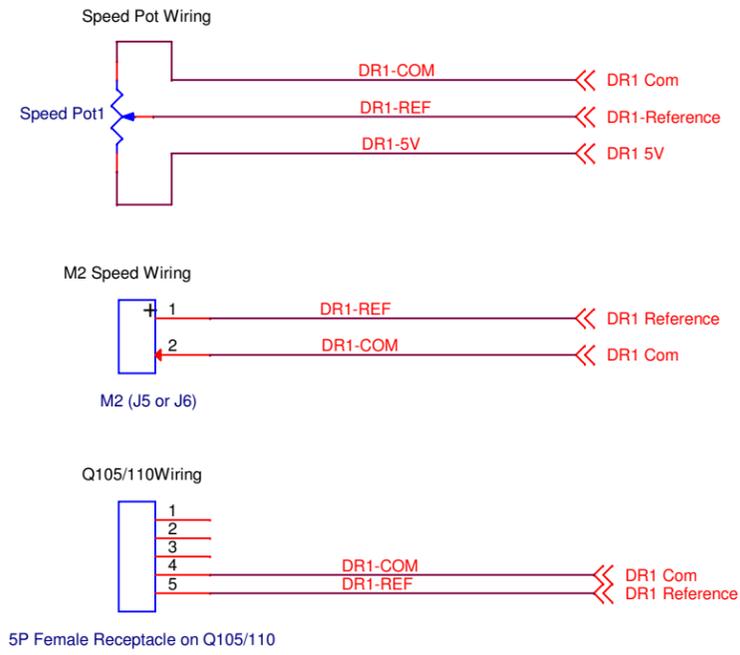


QUADREL LABELING SYSTEMS 7670 JENTHER DR. MENTOR, OH 44060		REV	DESCRIPTION	BY	DATE
F	Fuji C2 Added	CAV			11JUL2022
D	Q105/110/etc Integration	CAV			23JUL2020
C	4M Added	CAV			18JUL19
B	Start/Stop Changed to Momentary	CAV			02MAR18
A	Re-Drawn, Added M100	CAV			10OCT17

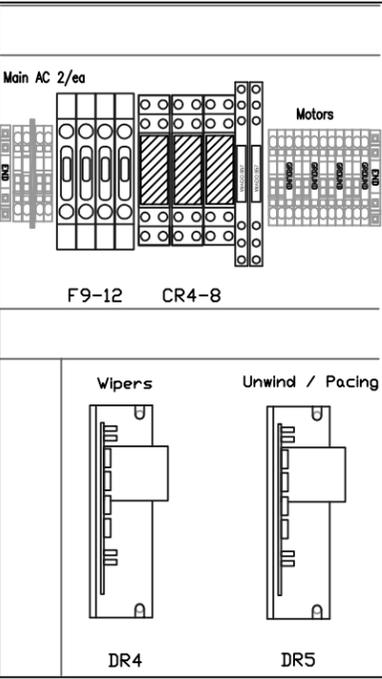
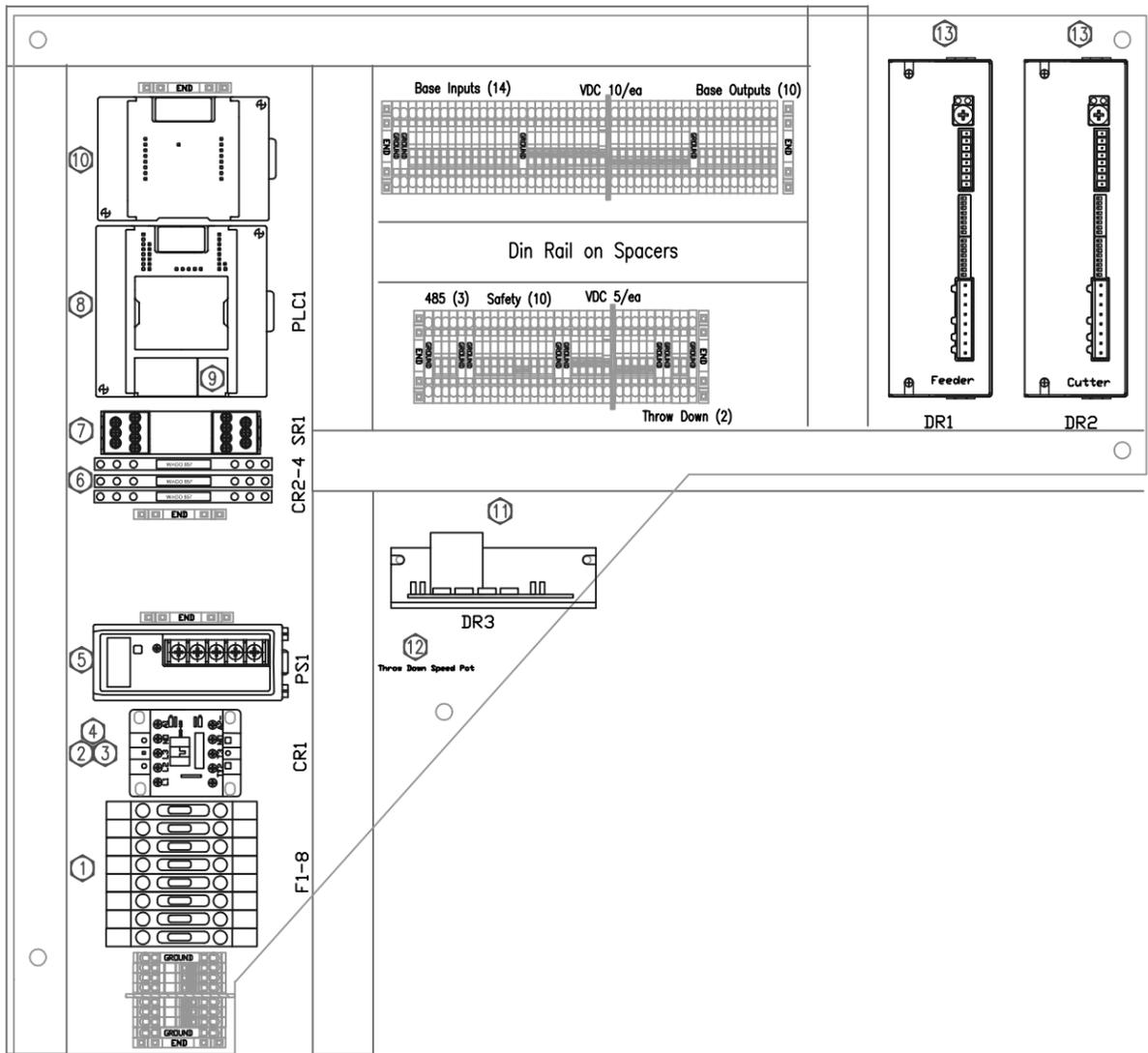
SINGLE MOTOR ENCLOSURE		Rev
Schematic #		E
Date: Friday, February 21, 2025		Sheet 1 of 3



QUADREL LABELING SYSTEMS 7670 JENTHER DR. MENTOR, OH 44060			
REV	DESCRIPTION	BY	DATE
F	Fuji C2 Added	CAV	11JUL2022
D	Q105/110/etc Integration	CAV	23JUL2020
C	4M Added	CAV	18JUL19
B	Start/Stop Changed to Momentary	CAV	02MAR18
A	Re-Drawn, Added M100	CAV	10OCT17
Title		SINGLE MOTOR ENCLOSURE	
Schematic #		SB5172-000	
Date: Friday, February 21, 2025		Sheet 2 of 3	



QUADREL LABELING SYSTEMS			
7670 JENTHER DR. MENTOR, OH 44060			
Drawn By: CAV	REV	DESCRIPTION	BY DATE
Title		SINGLE MOTOR ENCLOSURE	
Schematic #		SB5172-000	
Date: Monday, July 11, 2022	Sheet	3	of 3



13	412476-000	2	Applied Motion STRAC8 Stepper Drive	---	263824-000	1	DC Drive Inhibit Connector
12	A24852-000	1	Potentiometer Mounting Bracket	---	251855-000	6	Jumper, 2 Position, ST1,5
11	411457-000	1	Minarik MM23001C DC Drive Kit	---	251858-000	2	Jumper, 5 Position, ST1,5
10	221720-005	1	In/Out Expansion, Keyence KV-N8EXR	---	251859-000	2	Jumper, 10 Position, ST1,5
9	262821-000	1	Cable, RJ12, 1ft	---	251854-000	12	Phoenix Contact 3031513 Ground Terminal
8	221717-001	1	PLC, Keyence KV-N24DTP	---	251853-000	60	Phoenix Contact 3031076 Terminal Block
7	221650-004	1	Safety Relay	---	251802-000	2	Jumper, 3 Position, ST2,5
6	202628-000	3	24V Relay, SPDT	---	251799-000	3	Phoenix Contact End Cover Plate
5	211528-003	1	Power Supply, 24V, 2.1A	---	251798-000	3	Phoenix Contact Partition Plate
4	202620-000	1	Contacteur Aux 2 NO	---	251797-000	6	Phoenix Contact Terminal Block (AC)
3	202607-000	1	Contacteur Surge Suppressor	---	251796-000	2	Phoenix Contact Ground Terminal (AC)
2	202604-000	1	Contacteur, 24V, 12A	---	251795-000	8	Phoenix Contact End Terminal
1	251788-001	8	Fuse Holder, 1.25 x .25	-	241053-000	2	3A Fuse (F7 -8)
NO.	PART NO.	QTY	DESCRIPTION	-	241062-000	6	5A Fuse (F1-6)

Wireway: 1" Unless Noted
Wireway Hardware: 8/32 BHCS

Drive Hardware: 8/32 SHCS

UNLESS OTHERWISE SPECIFIED DIMENSIONAL TOLERANCE .X ± .XTOL .XX ± .XXTOL .XXX ± .XXXTOL ANGLES ± ANGTOL SURFACE FINISH FINISH/TOL BREAK ALL EDGES .005/.015 CORNER RADIUS .010/.030	QUADREL LABELING SYSTEMS 7670 Jenther Drive Mentor, Ohio 44060 (440) 602-4700	SCALE:
		DATE: 27JUN2024
		DRAWN BY: CAV
		REVISED:
SL200 Panel Layout		
MAT'L	Layout Only	B22565-006P

QUADREL LABELING SYSTEMS
INDENTED BILL OF MATERIAL

Items: 22565DC-000 Thru 22565DC-000 Location: 01 QUADREL WHSE

Activity Codes: Active Items Only

1 Levels With No Blow Through

No Selection On Basis Of Effectivity Date

No Selection On Basis Of Obsolete Date

Level	Seq	Component-Item	Component-Description	Loc	Opr	UOM	Scrap	Act	Stk	B/I	Qty On-Hand	Qty-Per-Parent
						LLC Draw	REV	P/M	Ctl	B/F	Qty-Allocated	Qty-On-Order
=====												
Parent Item: 22565DC-000 ELECTRICAL, SL200 ACCESSORIES Loc: 01 LLC: 3												
UNWIND, PACE, WIPER DRIVES												
1	5	B22565DC-000	PANEL, FABRICATED	01	0	EA	.0		A	Y	N	1.000000
			FOR SL200 SLEEVER ACCESSORIES	01	5				M	Y	N	
1	10	412421-000	MOTOR DRIVE, DC, DUAL 120/240V	01	0	EA	.0		A	Y	N	2.000000
			"MINARIK" M2-D	01	7				P	Y	N	
1	15	251788-001	FUSE HOLDER, 1.25x.25 250V IND	01	0	EA	.0		A	Y	N	4.000000
			"PHOENIX" 3038778	01	9				P	Y	N	
1	20	202626-000	RELAY, 24VDC 8A 2P w/BASE IND	01	0	EA	.0		A	Y	N	3.000000
			"WAGO" 788-312	01	9				P	Y	N	
1	25	202626-002	RELAY JUMPER (788), 2 POSITION	01	0	EA	.0		A	Y	N	1.000000
			"WAGO" 788-113	01	6				P	Y	N	
1	45	241060-000	FUSE, 5A, 1.25x.25, 250V, SLOW	01	0	EA	.0		A	Y	N	4.000000
			BUSS #MDL-5-R LITTFUSE#313005	01	9				P	Y	N	
1	50	251795-000	END BRACKET, SNAP-ON	01	0	EA	.0		A	Y	N	2.000000
			"PHOENIX CONTACT" 3022276	01	9				P	Y	N	
1	55	251799-000	COVER PLATE, ST1.5 - 2.5	01	0	EA	.0		A	Y	N	2.000000
			"PHOENIX CONTACT" 3030417	01	9				P	Y	N	
1	60	251853-000	TERMINAL BLOCK, ST 1.5 GREY	01	0	EA	.0		A	Y	N	12.000000
			"PHOENIX CONTACT" 3031076	01	9				P	Y	N	
1	65	251854-000	GROUND TERMINAL BLOCK, ST 1.5	01	0	EA	.0		A	Y	N	4.000000
			"PHOENIX CONTACT" 3031513	01	9				P	Y	N	
1	70	251855-000	2 POLE JUMPER, ST 1.5	01	0	EA	.0		A	Y	N	2.000000
			"PHOENIX CONTACT" 3030116	01	9				M	Y	N	
1	75	271793-000	DIAL PLATE, BLACK, 0-100 RANGE	01	0	EA	.0		A	Y	N	2.000000
			"MINARIK" 110-0038	01	9				P	Y	N	
1	80	271794-000	KNOB, FOR MINARIK MOTOR CONTRL	01	0	EA	.0		A	Y	N	2.000000
			"MINARIK" 140-0009	01	9				P	Y	N	
1	85	A24852-000	BRACKET, POT MOUNTING	01	0	EA	.0		A	Y	N	4.000000
				01	7				M	Y	N	

SLEEVE
 120/240VAC
 KEYENCE NANO PLC
 APPLIED MOTION STRAC8 STEPPER DRIVES
 MINARIK DC DRIVES

Page Descriptions

- 1: Main AC Distribution
- 2: Safety Relay, DC Drive
- 3: Feeder and Cutter
- 4: PLC
- 5: Sensors
- 6: Ionizer Options
- 7: Accessory Options

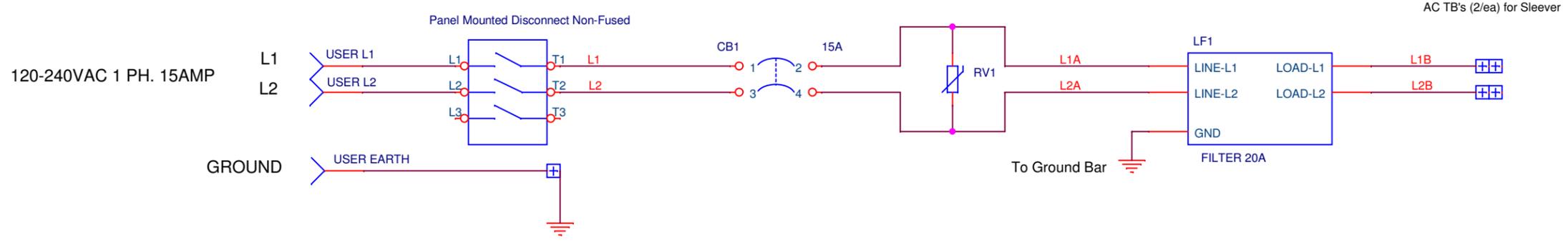
WIRE SIZE/COLOR TABLE (UNLESS OTHERWISE NOTED)

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

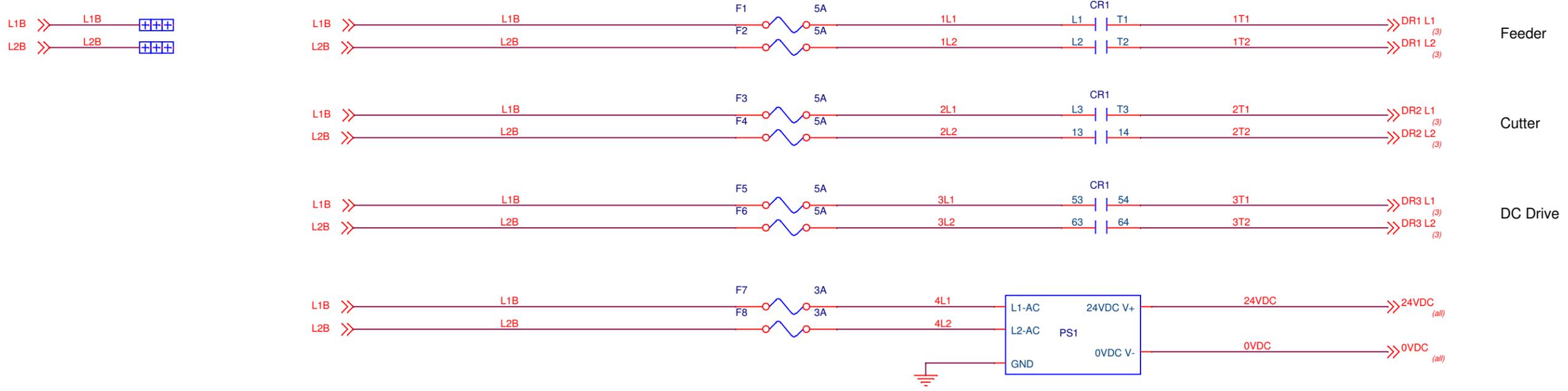
-  : Terminal Block
-  : 2 Jumpered Terminal Blocks
-  : 3 Jumpered Terminal Blocks, etc

QUADREL				
LABELING SYSTEMS				
7670 JENTHER DR.				
MENTOR, OH				
44060				
Drawn By: CAV	REV	DESCRIPTION	BY	DATE
	A	Safety Relay, Perforator	CAV	08AUG2025
	-	Draft	CAV	27JUN2024
Title		SL200 SLEEVE		
Schematic #		SB22565-003		Rev A
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Disconnect Wiring



AC TB's (3/ea) In Sleever. AC from Disconnect



COLOR	TECHNICIAN	DATE

For Quadrel Assembly Use

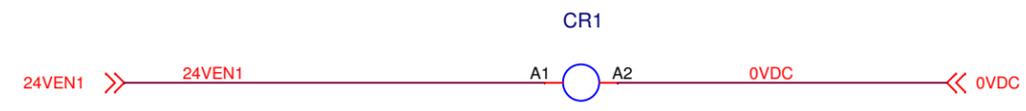
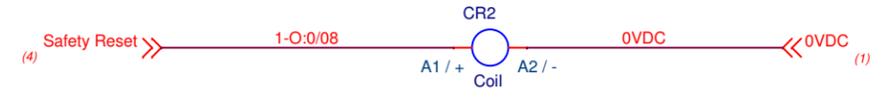
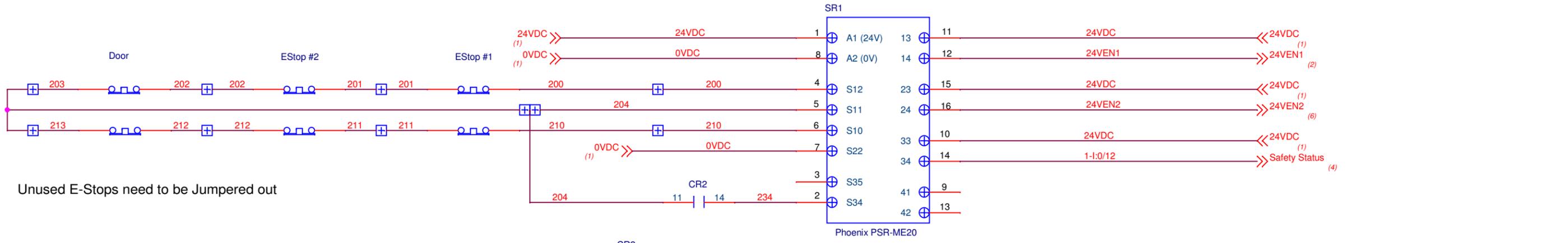
QUADREL LABELING SYSTEMS
7670 JENTHER DR.
MENTOR, OH 44060

Drawn By: CAV	REV	DESCRIPTION	BY	DATE
A	-	Safety Relay, Perforator	CAV	08AUG2025
-	-	Draft	CAV	27JUN2024

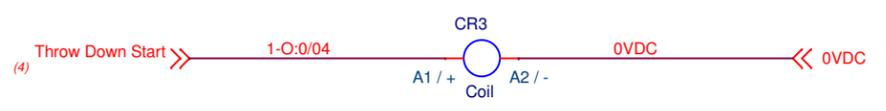
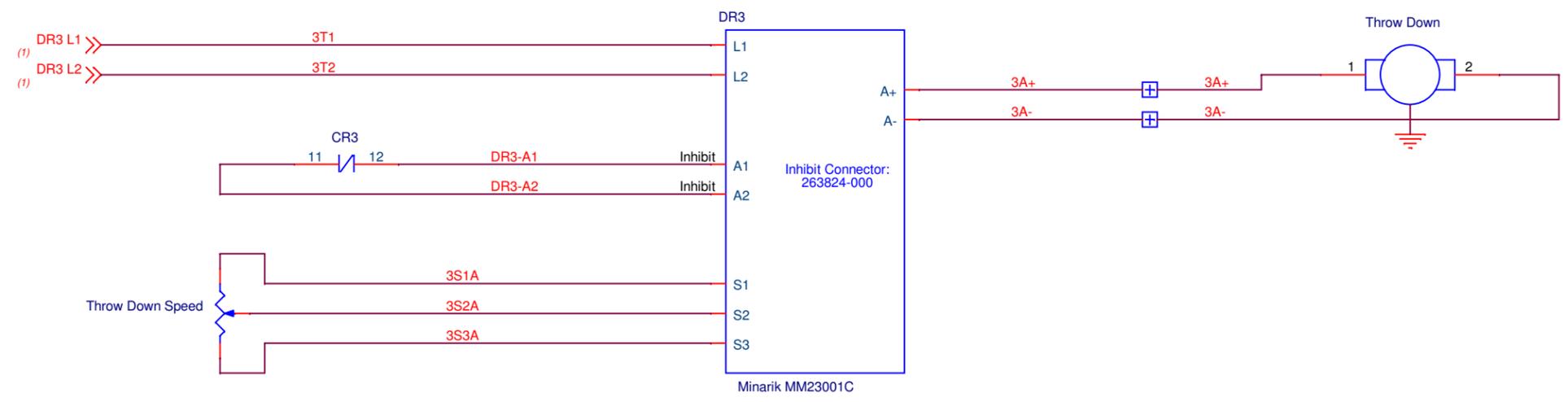
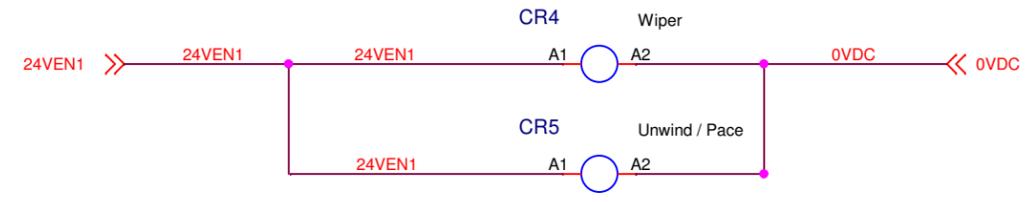
Title: **POWER**

Schematic #: **SB22565-003** Rev **A**

Date: Tuesday, August 12, 2025 | Sheet 01 of 07



CR4 and CR5 on Optional Accessory Panel



COLOR	TECHNICIAN	DATE

For Quadrel Assembly Use

QUADREL LABELING SYSTEMS
7670 JENTHER DR.
MENTOR, OH 44060

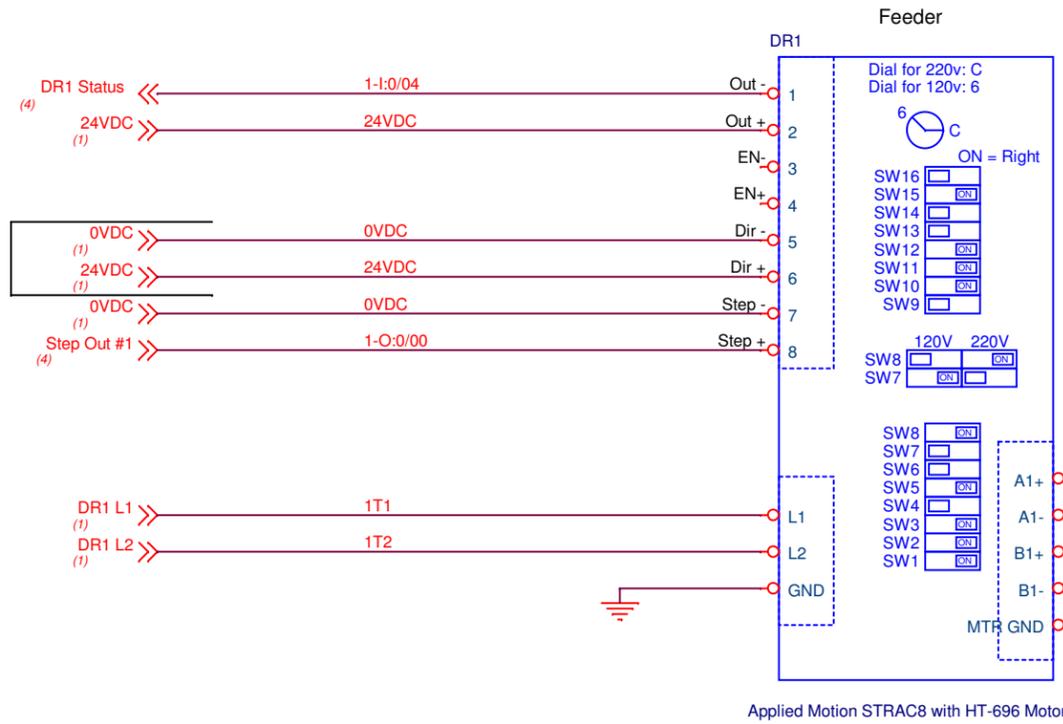
Drawn By: CAV	REVISION	DESCRIPTION	BY	DATE
A	-	Safety Relay, Perforator	CAV	08AUG2025
-	-	Draft	CAV	27JUN2024

Title: **SAFETY, DC DRIVE**

Schematic #: **SB22565-003** Rev: **A**

Date: Friday, August 08, 2025 | Sheet 02 of 07

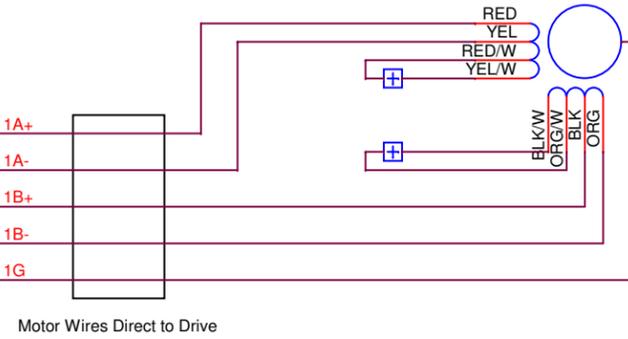
Install Wires to Change Motor Direction



220V Motor Wiring

Feeder Motor

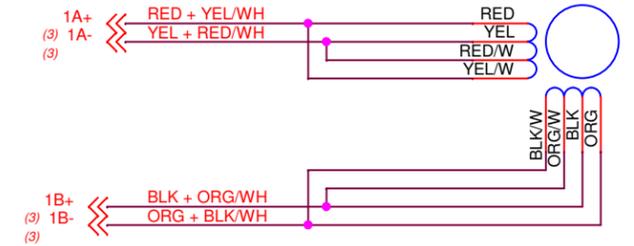
Do not add additional grounding wires and straps to motor.



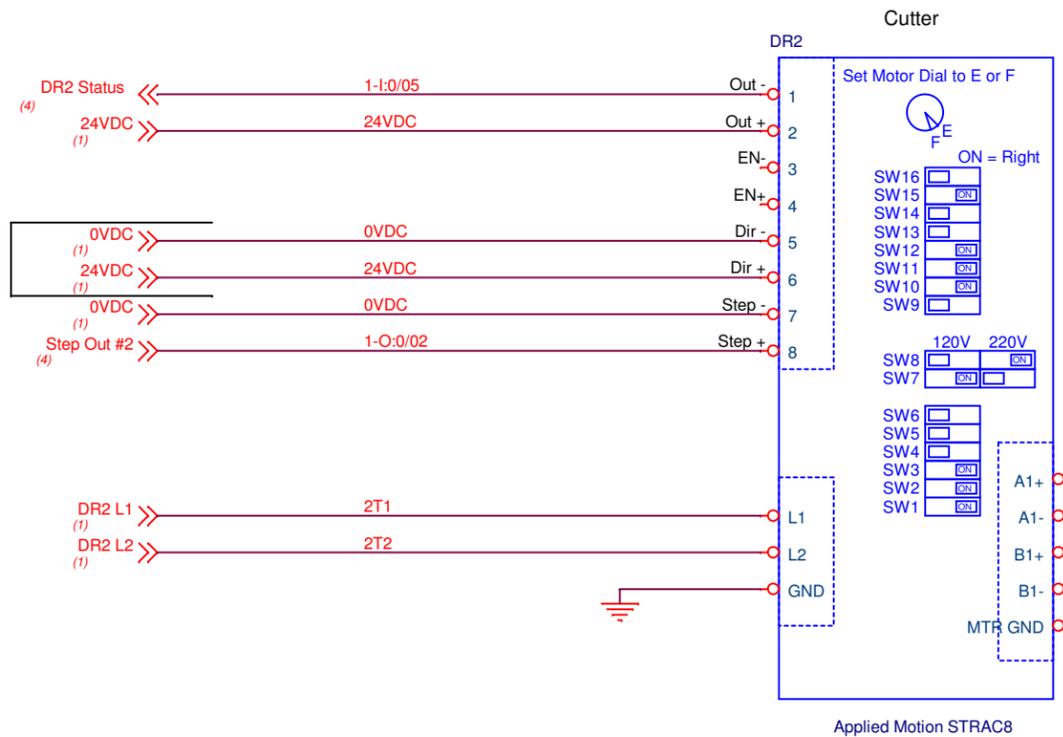
120V Motor Wiring

Feeder Motor

Do not add additional grounding wires and straps to motor.



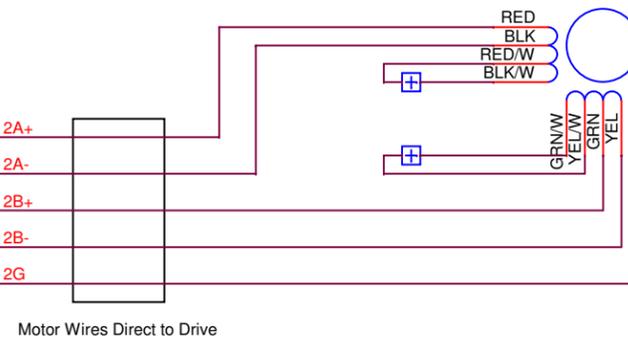
Install Wires to Change Motor Direction



220V Motor Wiring

Cutter Motor

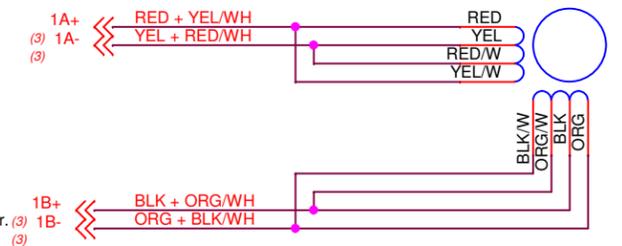
Do not add additional grounding wires and straps to motor.



120V Motor Wiring

Cutter Motor

Do not add additional grounding wires and straps to motor.

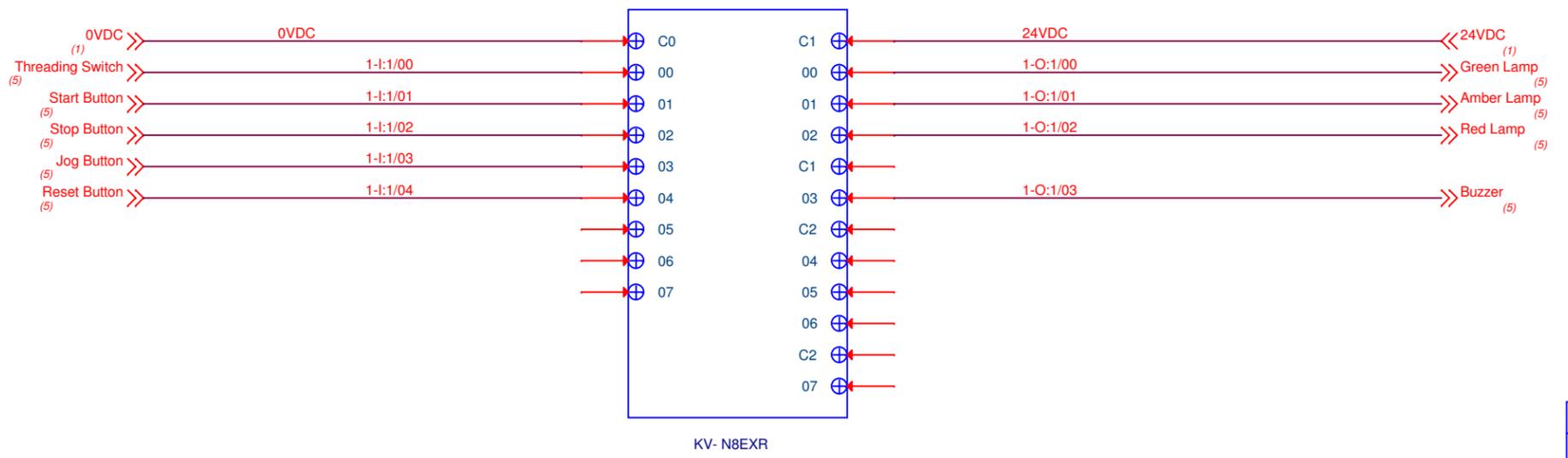
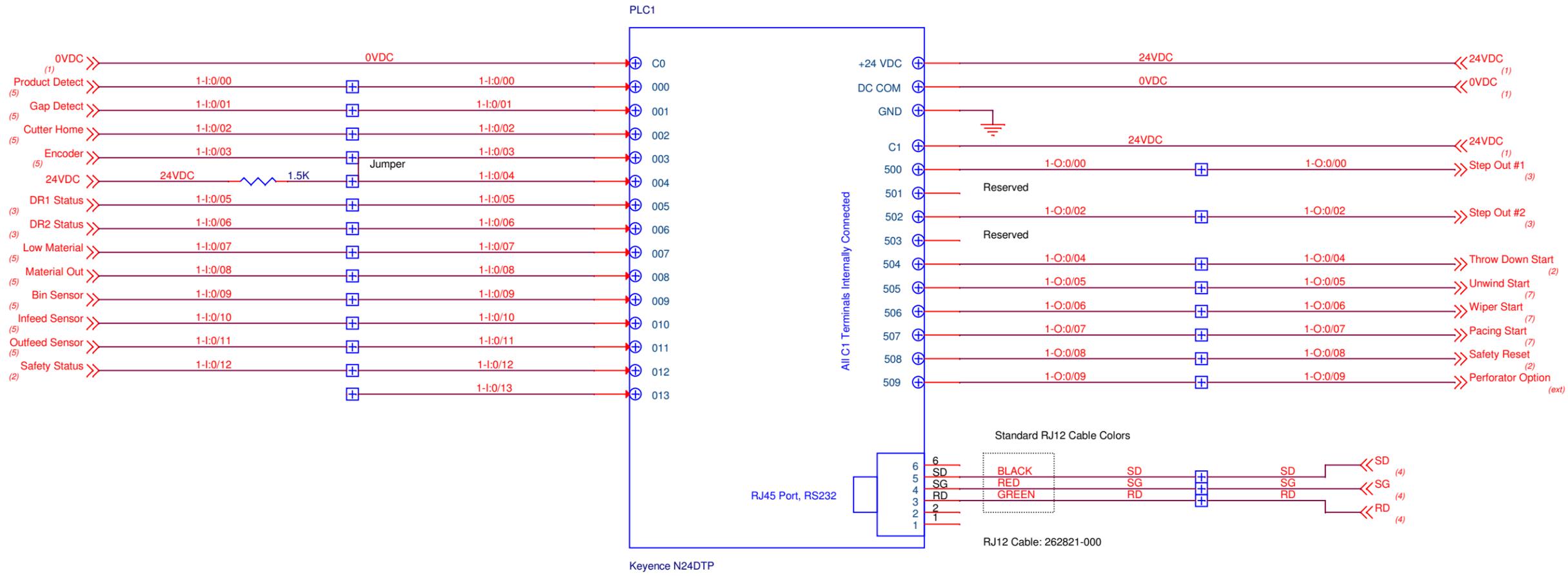


COLOR	TECHNICIAN	DATE

For Quadrel Assembly Use

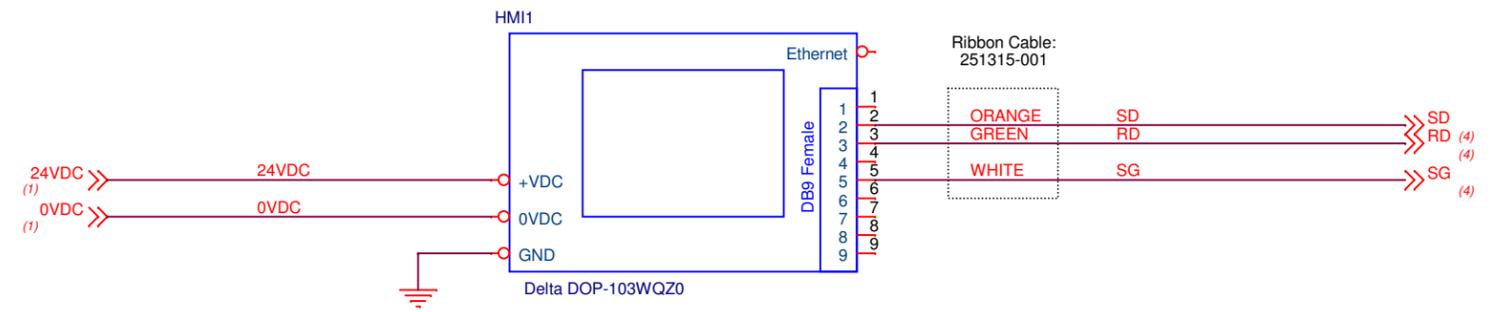
QUADREL LABELING SYSTEMS
7670 JENTHER DR.
MENTOR, OH 44060

Drawn By: CAV	REV	DESCRIPTION	BY	DATE
Title				
STEPPER DRIVES				
Schematic #			Rev	
S822565-003			A	
Date: Friday, August 08, 2025		Sheet 03 of 07		



COLOR	TECHNICIAN	DATE

For Quadrel Assembly Use



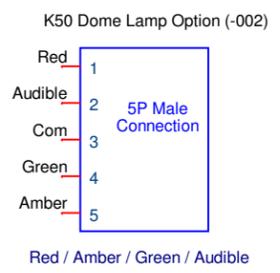
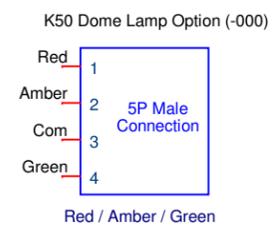
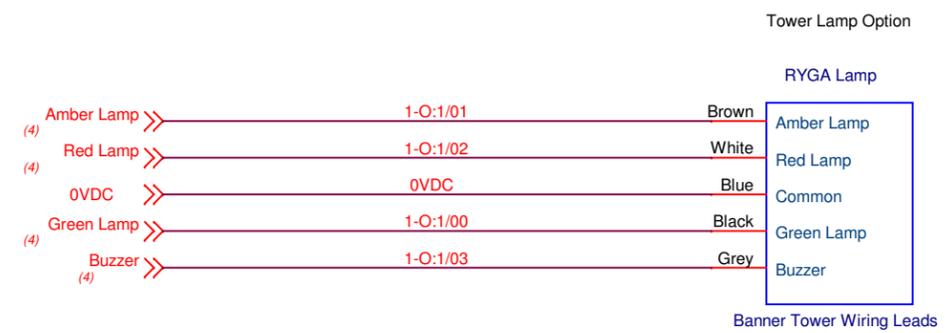
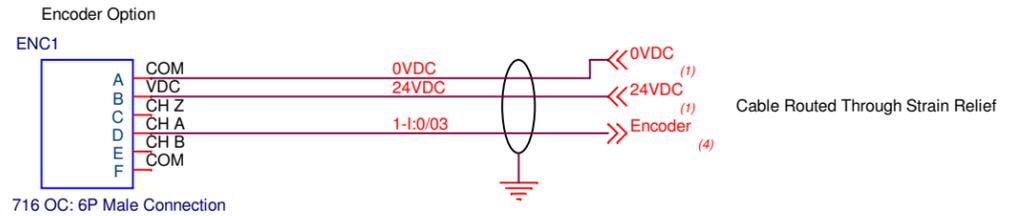
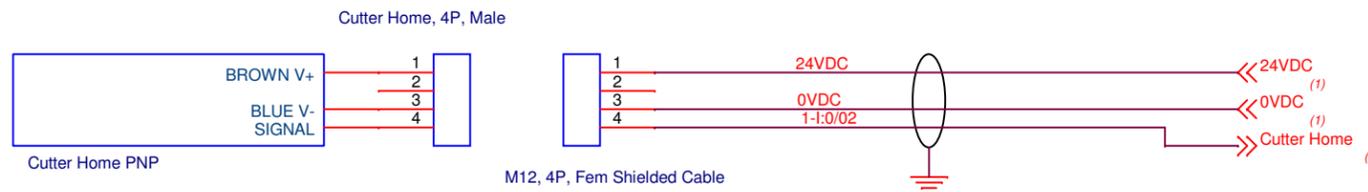
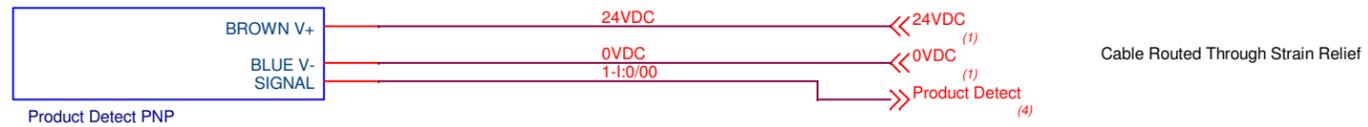
QUADREL LABELING SYSTEMS
7670 JENTHER DR.
MENTOR, OH 44060

Drawn By: CAV	REVISION	DESCRIPTION	BY	DATE
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	-	Draft	CAV	27JUN2024

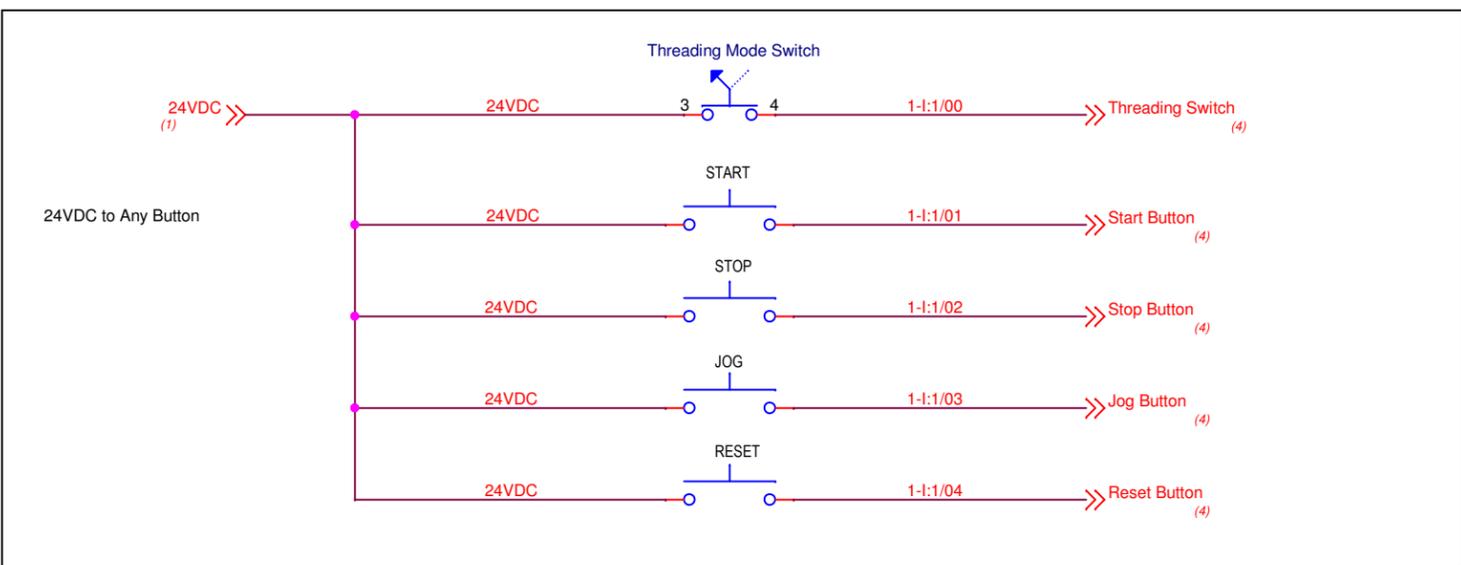
Title: **PLC, HMI**

Schematic #: **SB22565-003** Rev: **A**

Date: Tuesday, August 12, 2025 | Sheet 04 of 07



Optional Buttons



COLOR	TECHNICIAN	DATE

For Quadrel Assembly Use

QUADREL LABELING SYSTEMS
7670 JENTHER DR.
MENTOR, OH 44060

REV	DESCRIPTION	BY	DATE
A	Safety Relay, Perforator	CAV	08AUG2025
-	Draft	CAV	27JUN2024

Drawn By: CAV

Title: **SENSORS**

Schematic #: **SB22565-003**

Date: Friday, August 08, 2025

Rev: **A**

Sheet 05 of 07

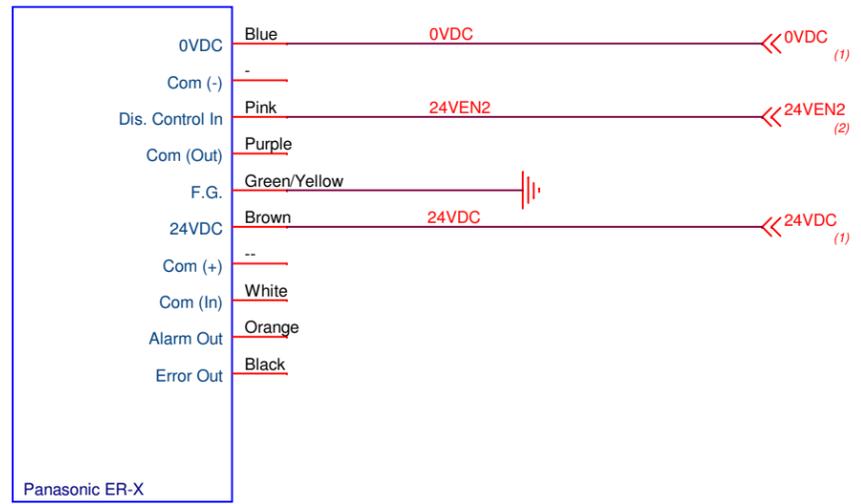
Keyence



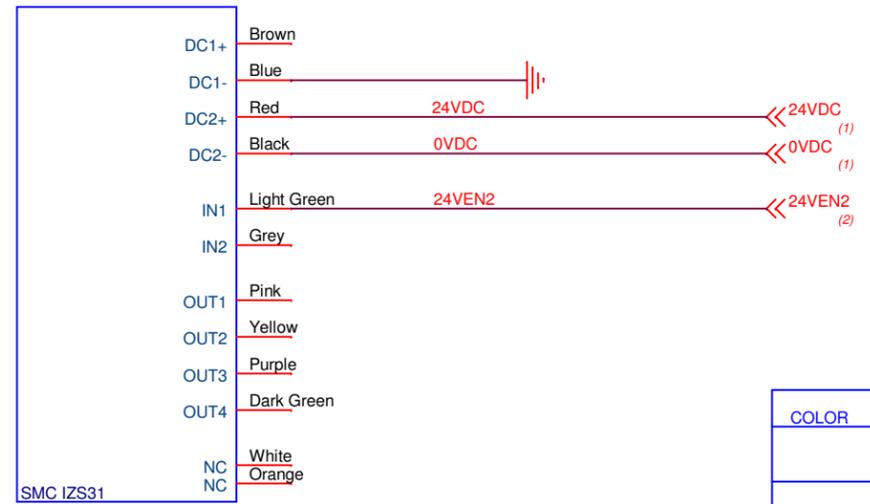
Keyence



Panasonic



SMC



COLOR	TECHNICIAN	DATE

For Quadrel Assembly Use

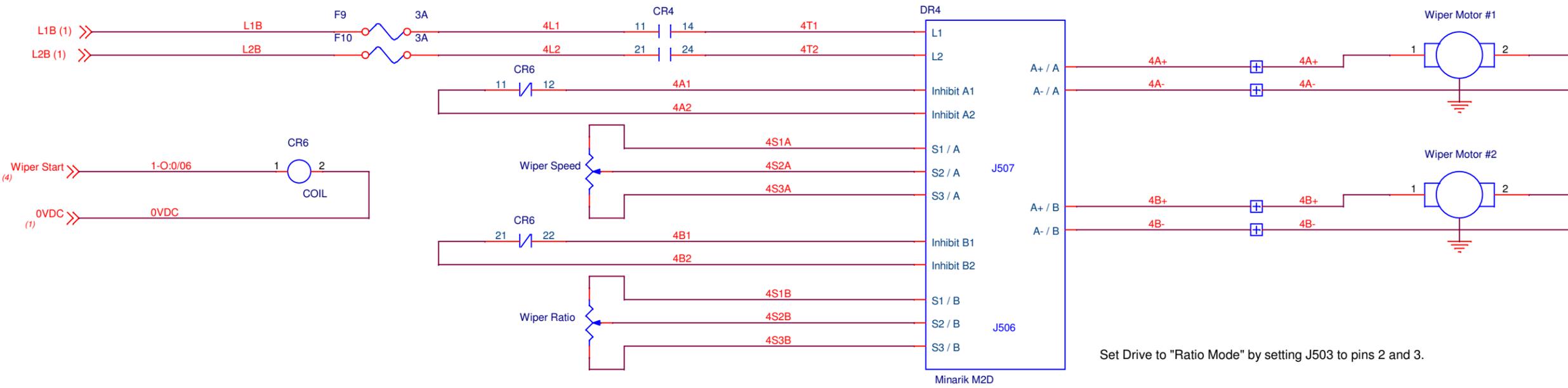
QUADREL LABELING SYSTEMS
7670 JENTHER DR.
MENTOR, OH 44060

Drawn By: CAV	REV	DESCRIPTION	BY	DATE
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	-	Draft	CAV	27JUN2024

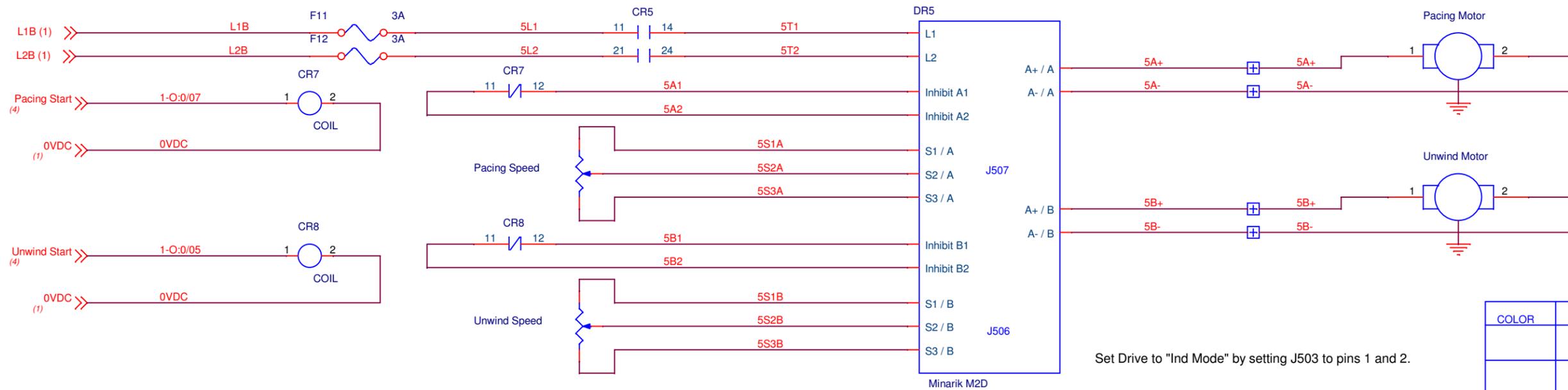
Title: **IONIZERS**

Schematic #: **SB22565-003** Rev **A**

Date: Friday, August 08, 2025 | Sheet 06 of 07



Set Drive to "Ratio Mode" by setting J503 to pins 2 and 3.



Set Drive to "Ind Mode" by setting J503 to pins 1 and 2.

COLOR	TECHNICIAN	DATE

For Quadrel Assembly Use

QUADREL LABELING SYSTEMS			
7670 JENTHER DR. MENTOR, OH 44060			
Drawn By: CAV	REVISION	DESCRIPTION	BY DATE
	A	Safety Relay, Perforator	CAV 08AUG2025
	-	Draft	CAV 27JUN2024
ACCESSORY PANEL			
Schematic # SB22565-003			Rev A
Date: Friday, August 08, 2025 Sheet 07 of 07			

9 MAINTENANCE

9.1 GENERAL INFORMATION

This labeler has been designed with the minimal maintenance requirement possible. There are however some things to take into consideration.

The system is built to perform in humid conditions, but must not be pressure washed. In case of wash down conditions, it is recommended to cover each labeling head with a plastic tarp.

For the overall cleaning, it is recommended to use compressed air and clean, damp wipes.

Always turn off the system before proceeding with cleaning and maintenance.

The following section explains the preventive maintenance for each section

After every 100 hours of operation, a visual inspection of the system should be done and where it is necessary, lubricate and cleaning should be performed.



CAUTION

WEAR PROTECTIVE EYEWEAR when performing any maintenance on this equipment.



CAUTION

To reduce risk of fire, electrocution or other personal Injury when operating or maintaining the labeling head, follow basic safety precaution, including the following:

DO NOT perform any servicing or maintenance with the power ON.

Always disconnect the electrical plug from the wall socket

Make sure that the power is OFF or that the available E-stop buttons have been activated.

LABELING SYSTEM

This labeling system is reliable, versatile and durable. It will operate for years with very light maintenance if it is performed regularly. Most of the maintenance takes only a few minutes and substantially increases the operational life of the system and maintains label placement accuracy.

Not all sections may apply to your equipment.

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

ASSEMBLY TITLE: LABELING HEAD ASSEMBLY

D- Remove glue residue and labels from all rollers and idler. DO NOT use a knife or other tool to scrape the rollers. Adhesive Remover such as Goo-Gone or 3M Adhesive Remover is recommended. DO NOT use an adhesive remover that reacts with plastics or sensor lenses will be damaged.

M- Check for loose idlers and components and tighten as needed.

S – Lubricate all idler rollers shafts using 80w-90w gear lube on the white bearings where they contact the axle.

ASSEMBLY TITLE: UNWIND ASSEMBLY

S- Check and adjust dancer spring. If final spring tension is too soft then replace.

S- Check and inspect band brake. Replace if torn

ASSEMBLY TITLE: REWIND ASSEMBLY

S- Check and inspect friction disc (if applicable), Replace when worn out.

S- Check Kinetrol (if applicable) for leaks, Replace if necessary.

ASSEMBLY TITLE: BRAKE BRUSH ASSEMBLY

S- Reverse brake brush direction

S- Inspect Brake brush when brush body contour no longer viable or bristles are worn down. Replace

ASSEMBLY TITLE: SLOT SENSOR ASSEMBLY

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

ASSEMBLY TITLE: SIDE PLATE ASSEMBLY

S- Lubricate all idler rollers shafts using 80w-90w gear lube on the white bearings where they contact the axle.

ASSEMBLY TITLE: PEEL PLATE ASSEMBLY

D- Clean all the parts that may acquire labels or glue residue. DO NOT use a knife or other tool to scrape the rollers. Adhesive removers are recommended.

W- Inspect Teflon tape on peel plate tip. Replace if the steel is exposed.

S – Lubricate all idler rollers shafts 80w-90w gear lube

ASSEMBLY TITLE: DRIVE AND PINCH ROLL ASSEMBLY

D- Remove glue residue and labels from drive roller. DO NOT use a knife or other tool to scrape the rollers. Isopropyl alcohol and adhesive removers are recommended.

W- Clean the knurled roll with a soft brass brush and adhesive remover.

M- Check and inspect drive roll. No play should be present when powered up. If there is a groove the width of the label liner, replace the worn roller.

M – Lubricate knurled roll shafts using 80w-90w gear lube.

S- Inspect and Lubricate, springs and slugs.

ASSEMBLY TITLE: ROLLER/BRUSH IMPRESSER

D- Check the rollers/brushes. They should be free of label flash, glue and debris. This will prevent jamming and web tears.

W- Check the foam rollers. If foam wear is noticeable, replace as necessary.

NOTE: Exercise caution when removing bad labels from foam. Careless removal can result in torn foam which may leave the labeler inoperable until the roller is replaced!

ASSEMBLY TITLE: OPERATOR PANEL

-No maintenance is required for the operator panel

-Occasionally, the keypad may be cleaned with any non-solvent based cleaning solution. Glass cleaner on a clean towel then wipe the membrane.

ASSEMBLY TITLE: ELECTRICAL

W- Check the foam filter for the fan. Clean or replace.

ASSEMBLY TITLE: CONVEYOR

D – Inspect conveyor chain for broken flights of table top chain

W – Inspect conveyor for labels / adhesive and remove as needed

S – Check gearbox oil levels and add as needed.

American Lubricants SHC-90W oil.

ASSEMBLY TITLE: FEEDSCREW

W – Remove glue residue and labels from feed screws

W – Lubricate internal feedscrew drive assembly, with multi-purpose grease.

S – Lubricate grease fittings / chains / bearings with quality multi-purpose grease – as needed

ASSEMBLY TITLE: VERTICAL ROLLER

W – Remove labels from rollers with adhesive remover / cleaner

W – Lubricate chains with food grade grease.

ASSEMBLY TITLE: EJECT STATION

D – Clean all parts that have acquired label or glue residue

ASSEMBLY TITLE: INFEEED / OUTFEED BANK SENSOR

W – Clean and glue residue or labels off sensor and/or reflectors

ASSEMBLY TITLE: SLEEVE

M – Drive rollers – Inspect for wear and clean with a citrus based adhesive removal

M – Inspect tension belts for cutter blade and cutter assembly for wear. Replace as needed.

M – Inspect cutter blades and bearings for wear. Replace as needed

M – Inspect perforation blades / bearings for wear and free of debris. Replace as needed.

S- Check, inspect, and grease all lead screws (threaded rods)

S – Inspect mandrel and bearings for wear. Ensure they spin freely
Replace as needed.

NOTES:

GENERAL PURPOSE FEEDSCREW LUBRICATION GUIDE

During your weekly maintenance of your Quadrel Labeling Systems equipment follow the steps below to ensure proper lubrication of the internal drive system for your feedscrew assembly.



Step 1 – Your dual feedscrews are connected inside the conveyor with a spline shaft assembly. First remove the chain so you have easy access to the this.



Step 2 – Open your feedscrews to your largest product. This will expose the spline assembly shaft that you will be applying the multi-purpose grease to.



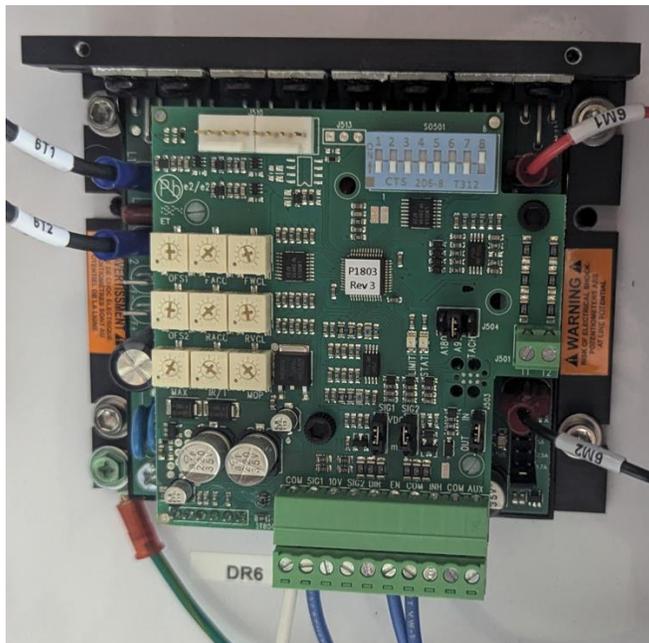
Step 3 – Apply multi-purpose grease to the now exposed spline shaft assembly. Ensure to apply multi-purpose grease all the way around the spline shaft– Top, bottom and sides



Step 4 – Slowly move the feedscrews in and out to so the grease can spread evenly over the length of entire spline shaft assembly.

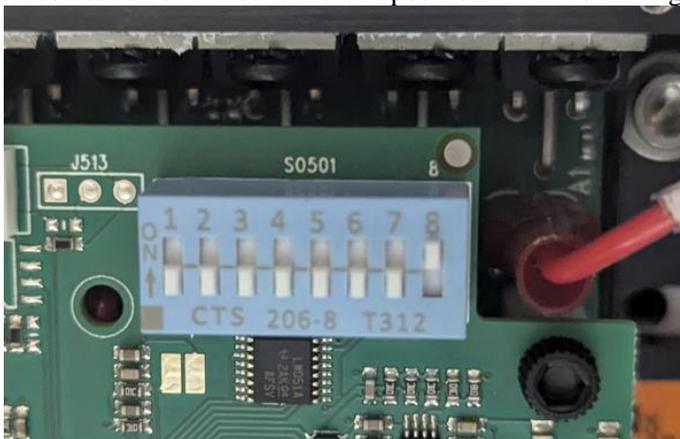
Step 5 – Reconnect conveyor chain

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

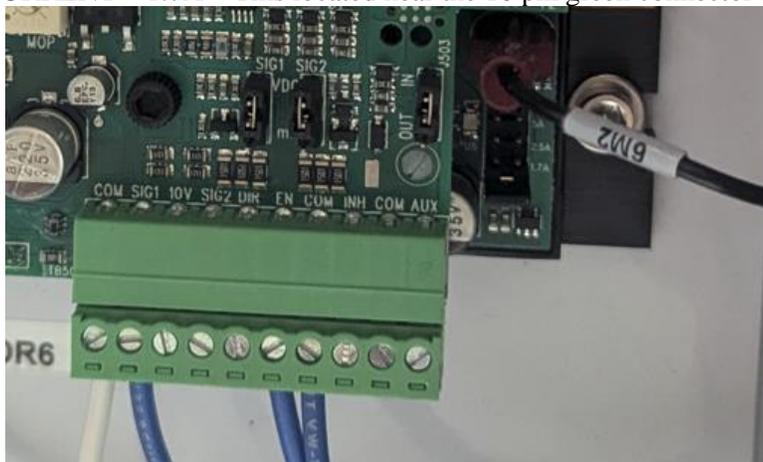


Upon receiving drive set the following **BEFORE** installing in the machine.

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

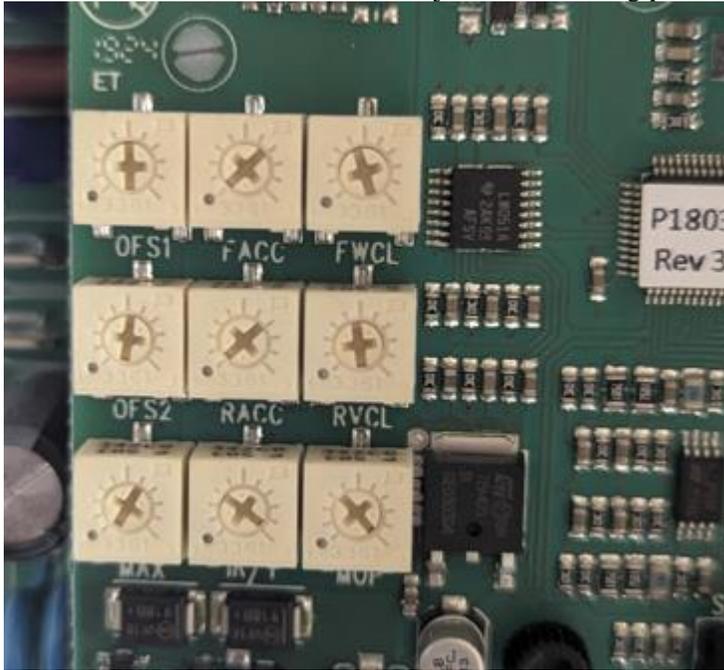


- a.
2. Set Jumpers on drive based on electrical schematic for your machine
 - a. SIG1 – VDC
 - b. SIG2 – VDC
 - c. J504 – A90
 - d. AMP CURRENT – 1.7A – This located near the 10 pin green connector that



i.

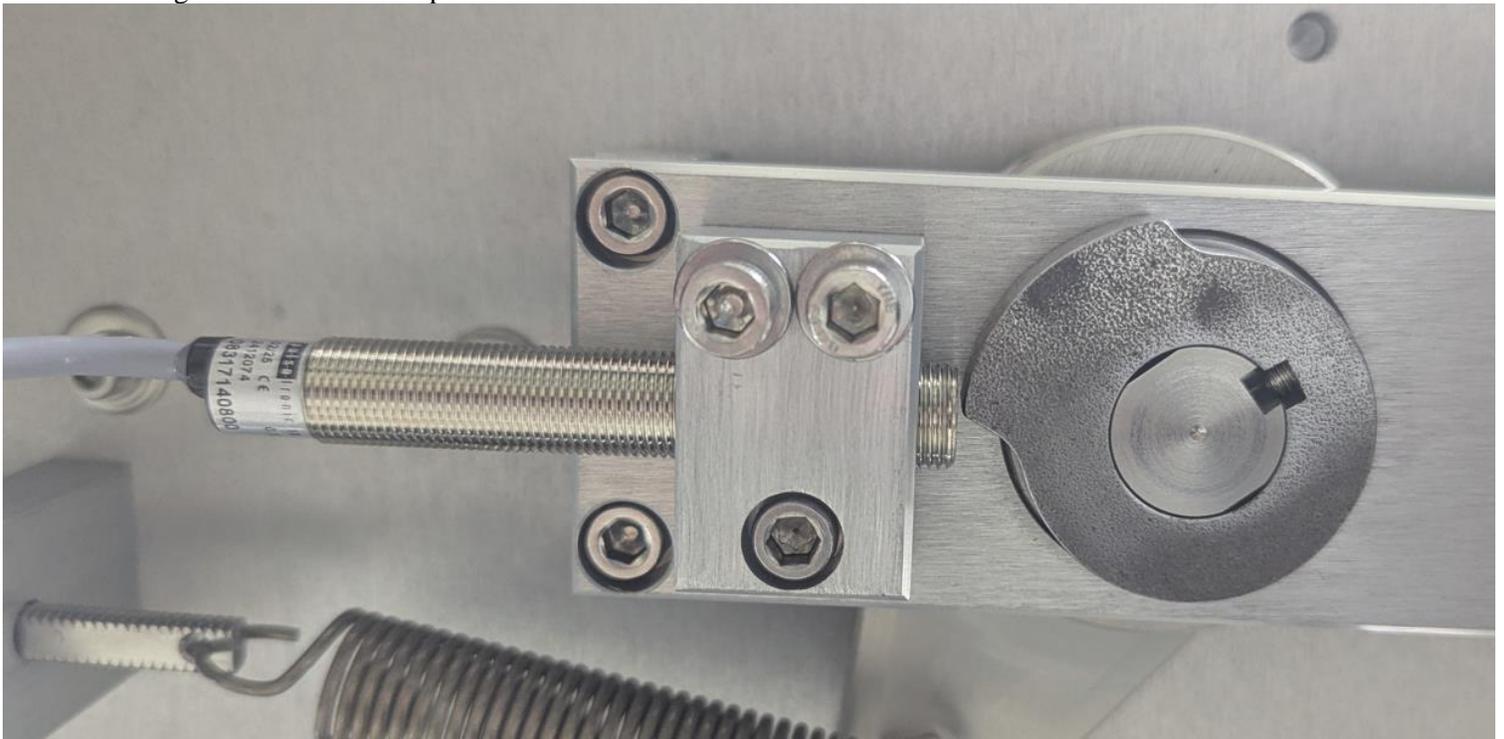
3. Using a small flat blade / Slot screwdriver adjust the following pots as indicated in the image below:



- a.
- i. Top row **OFS1** – WILL BE ADJUSTED AT LATER STEP
 - ii. Top row – **FACC** - turn counter clockwise until it stops.
 - iii. Top row **FWCL** – set to half way point – midpoint
 - iv. Middle row - **OFS2** – turn counter clockwise until it stops. This turns the pot OFF
 - v. Middle row – **RACC** - turn counter clockwise until it stops
 - vi. Middle row – **RVCL** – set to half way point – midpoint
 - vii. Bottom row – **MAX** – Set to 3/4 point
 - viii. Bottom row – **Leave other 2 pots at factory setting – DO NOT ADJUST**

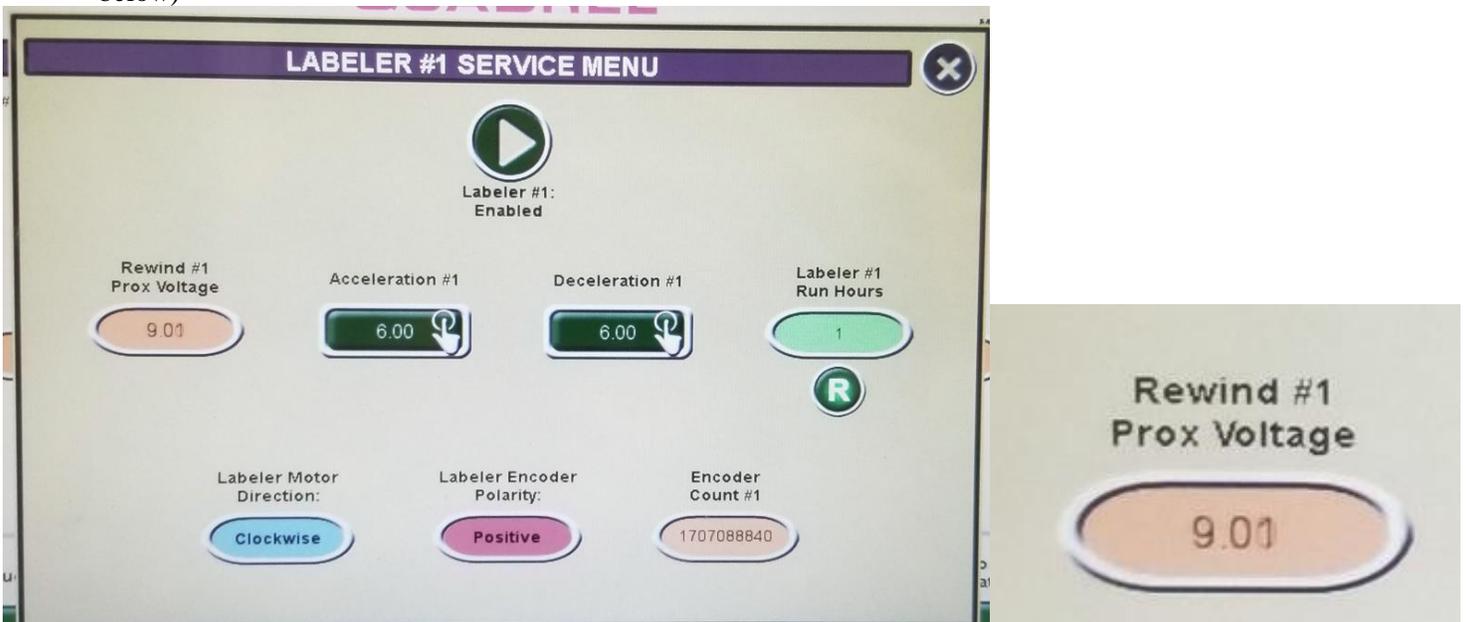
4. Install drive in machine then proceed to next steps

5. Set the Cam on the rewind dancer per image below when the dancer arm is at rest. Rest is when the arm is all the way back against the rubber bumper as shown

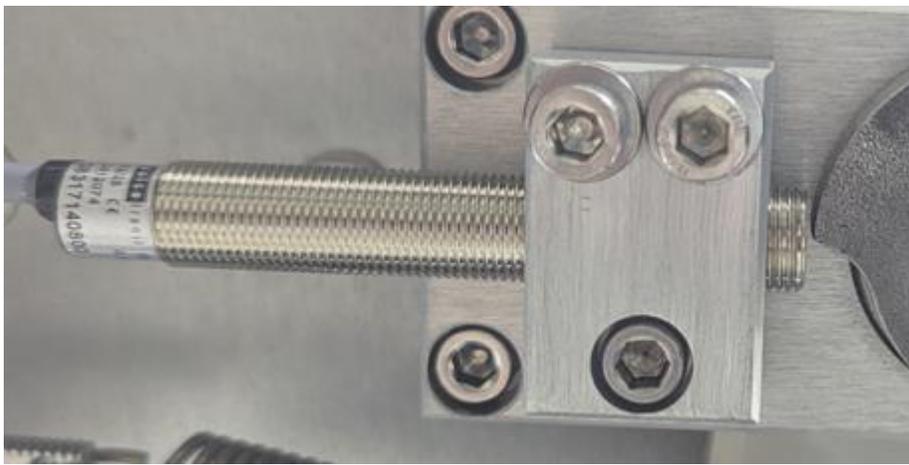




6. On the HMI go to into labeling head service menu. You will be looking at the REWIND PROX VOLTAGE (example below)



7. Adjust the sensor gap at the cam by loosening the bolt using an allen key so that the sensor can be moved forward or backward. The bolt does NOT touch the sensor. Loosening it opens the clamp so you can adjust.
8. Set the gap so the REWIND PROX VOLTAGE on the HMI reads **.90 it must be under 1 volt.**
 - a. **Retighten screw so the clamp sensor no longer moves**



b.

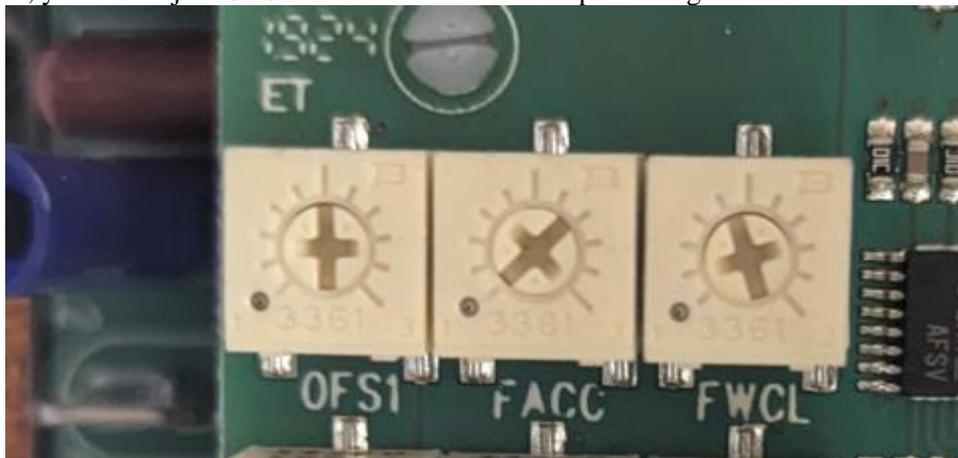
9. Test by moving the rewind dancer arm forward. When doing this you should see the rewind prox voltage on the HMI increase up to 9 volts

a. If you do not see the voltage increase steadily, recheck cam sensor gap in step 7

10. Turn on rewind switch on the back of the labeler. This will engage / turn on the motor.

11. Move the rewind dancer arm forward the rewind hub should start to turn clockwise. It will slow then stop as you move forward. Rewind hub should ALWAYS be turning clockwise. If it moves counter clockwise move to **step 11a**

a. While holding the arm in the position where it started to run counter clockwise, it MUST be running counter clockwise, you will adjust **OFS1** until the rewind hub stops moving.



i.

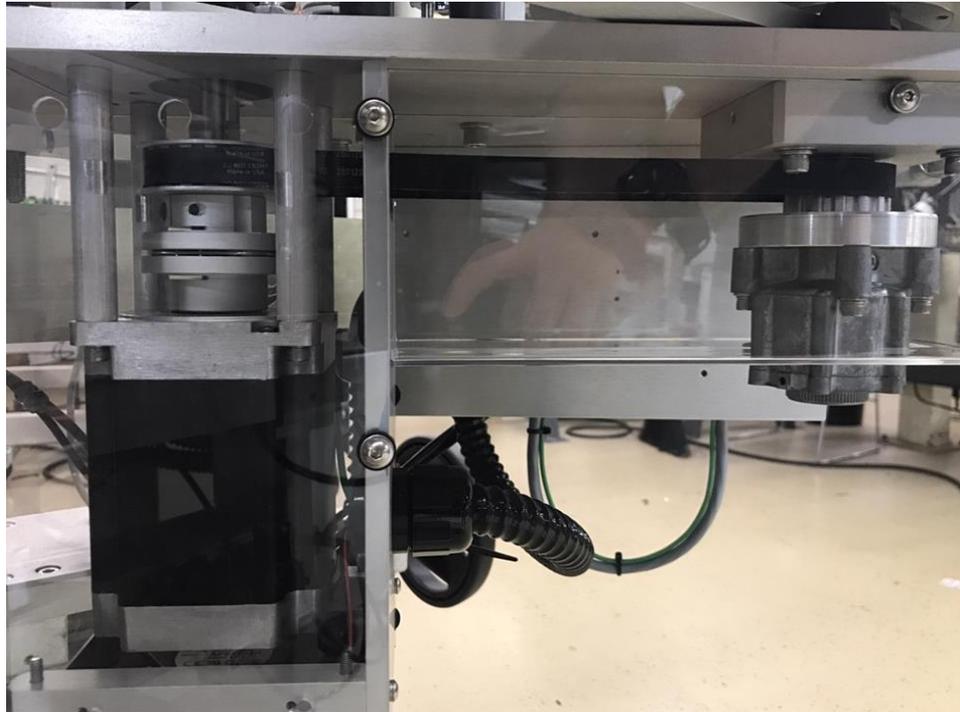
b. This adjustment may need to be done multiple times until it no longer moves counter clockwise when rewind arm is all the forward and at rest.

9.2 BELTS

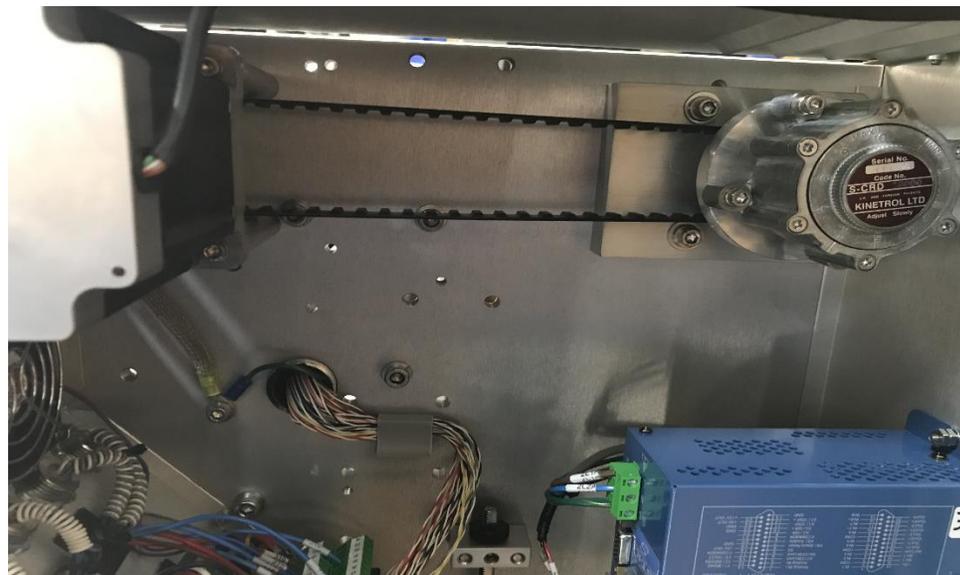
Monthly, a visual inspection of the rewind belt and timing belt, to do this depending on the labeling head you may need to remove the bottom cover on the head.

Refer to photos below.

Servo labeling head.



Stepping labeling head.



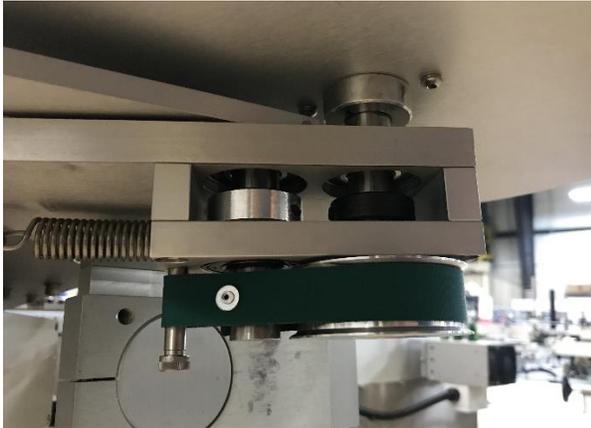
CAUTION

DO NOT ATTEMPT doing this with the equipment under tension (with power on).

The visual inspection should consist of looking for cracks or defects in the belts. If this is the case, change the belts that are defective. Refer to the parts listing in the labeling head section of this manual.

The brake band mechanism requires a monthly visual inspection as well. Also once every 12 months you should consider replacing the belt (it is possible that you may need to change it later or earlier than 12 months depending the usage of the labeling head).

The brake band belt assembly is located at the base of the unwind assembly. See images below for reference.

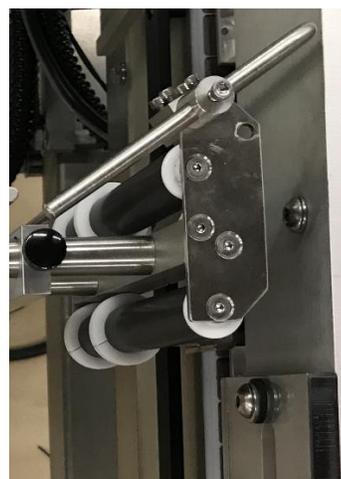
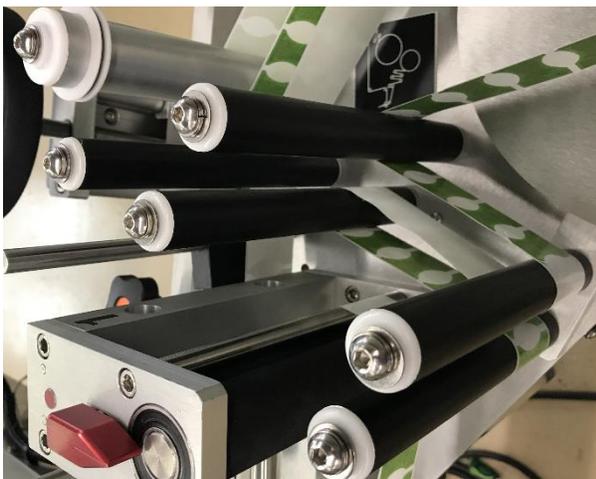


For replacement parts see the unwind assembly drawing for your labeling head in this manual.

9.3 ROLLERS

It is important that your labeler is as clean as possible in its environment in order for it to perform properly. Daily, it is suggested to clean all the rollers including the drive roller (the rubber roller), the pressure shoe and peel plate using a damp cloth with alcohol. Make sure those parts have no glue or labels on it.

Weekly, spray a silicone base lubricant on each end of the plastic bearing.



9.4 SENSORS

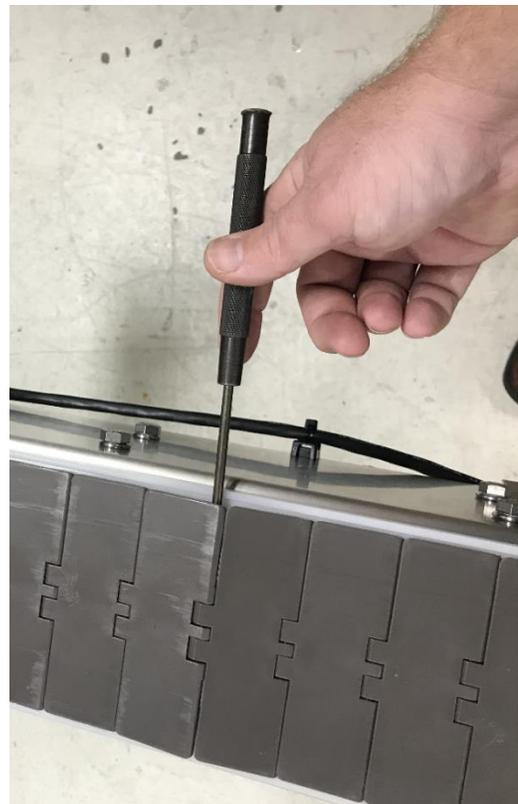
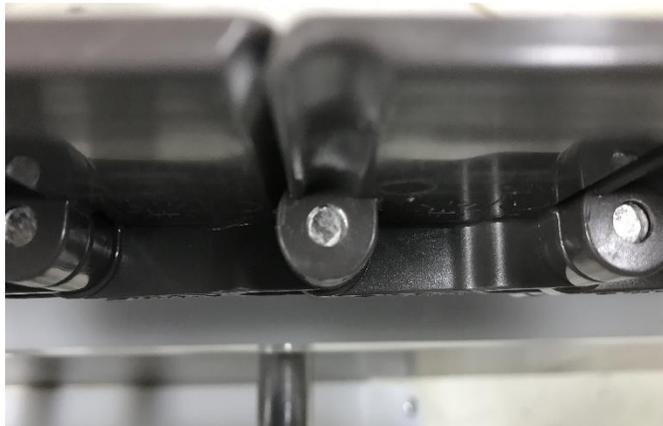
The sensors all have an electronic eye called a photocell; these must be free of lint or dirt. Since the photocells are generally made with glass or plastic lenses. They naturally attract substances which could easily trigger the sensor, use a cotton swap to gently clean the eye of the sensor as you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

9.5 CONVEYOR

Always keep the belt or (chain) clean. To clean it simply use compressed air with an osha approved nozzle and/or damp wipes. If necessary, a soft cleaning agent can be used.

9.5.1 CLEANING

To clean the under carriage portion of the conveyor, simply remove the belt using an punch or similar tool and hammer to tap out the retaining belt link pin. (see images below, the chain has an orientation to the pins, you must tap it out from the narrow diameter) Clean the desired portion with a damp cloth and replace the pin to the belt. The pin will be tapped in the opposite side you tapped it out. *You can also lift the chain and wipe under it.



10 CLEARING A JAM

In the event a jam occurs on your Quadrel Labeler reference the following steps to clear.

1. Press the conveyor stop button or the emergency stop if you are unable to reach the stop button.
2. Clear the jam manually in the affected area of the equipment where jam is located
3. Once jam is cleared reenergize the estop, if pressed, and press the reset button (where applicable) to clear faults.
4. Put equipment back into "run" and press start to turn the system back online to continue labeling

11 WARRANTY

The standard warranty period for Quadrel equipment is 12 months following invoicing. The warranty covers all parts with consideration taken towards reasonable use and normal wear and tear. Not covered by warranty are parts that have a limited wear factor, any required labor by Quadrel. Prior to return to Quadrel, parts must be verified defective.

Return of defective parts

To return a defective part, you will need to get an RMA number from Quadrel. All RMA's are issued through our parts department. Please specify the serial number of the equipment, the client's name, address, phone number, contact name and the nature of the problem. To get a replacement part, a purchase order is required. You will be billed for the new part and credited for the defective part after return and evaluation. If the part is determined to be defective due to improper use, no credit will be issued.

Appropriate Use of Equipment

The equipment supplied to the end user by Quadrel are to be used for the sole purpose for which they were intended and must follow Quadrel's specifications on usage as well as appropriate functions. Quadrel will not assume any responsibility for any inappropriate use or modifications to the said equipment other than for the use it was initially built for. The warranty will cease to apply forthwith, in Quadrel's opinion, the equipment has been used abnormally or in an abusive manner, if it has not been properly maintained, if it has not been carried on a truck equipped with an air-ride suspension when required by Quadrel or if it has been used, or maintained contrary to the owners manual provided by Quadrel.

Responsibility Limits

The solution put forth has been prepared with the information that has been provided to Quadrel by the end user. Subsequently, Quadrel cannot assume any responsibility for the exactitude, precision, and the validity of the information which was supplied. Moreover, Quadrel cannot be responsible for (a) any damages, direct or indirect, secondary, or

accessory, including without limitations, the loss of profit, workflow interruption, loss of production, loss of profits and other; (b) any and all damages claimed against the end user by a third party; (c) any or all damages caused to the property of end user or any other third party; (d) any or all resulting in an act from the end user or third party, major force, or act of god, unforeseen cause, or event.

With all reservation, in the eventuality where the responsibility is that of Quadrel relative to any defect of quality of said equipment or proposed solution Quadrel would be able to accept the responsibility, to its entire discretion, with the replacement of part of the said equipment or solution. By a compatible or identical equipment or solution or by a reimbursement of value agreed upon. In no case can Quadrel's responsibility exceed the total monetary sums received for the said defective equipment or solution.